



## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

GH225

GH250

GH280

GH315

GH355

GH400

GH450





## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

GH315

GH355

GH400

GH450

## 1. GENERAL INFORMATION

GH 225-630 type machines are designed to meet and exceed the rigorous performance requirements of industrial applications. Their exemplary electrical and mechanical designs assure flawless operation in the most severe, heavy duty service.

All stator cores contain high performance electrical steel laminations, with compensating windings provided in main poles. The standard winding insulation system employs Class H materials, but standard performance is limited to Class F temperatures to extend machine life. Where required, size GH 225 can be supplied without compensation.

Mechanically, modular components are featured to allow the greatest flexibility to meet Customer's varied needs.

GH four-pole series of motors utilizes frames having seven shaft axis heights: 225, 250, 280, 315, 355, 400, and 450 mm.

GH six-pole series covers three shaft axis heights: 500, 560, and 630 mm.

While the usual mounting arrangement is horizontal foot mounted (IM B3 [code I] or IM 1001 [code II] in accordance with EN 60034-7) alternate arrangements are available on request. The factories are equipped with up-to-date machinery and modern manufacturing techniques for the production of the highest quality interchangeable parts.

The motors described in this catalogue cover a range of power output from 160 kW at 1500 rpm (1,019 kNm) [GH225SK] to 1800 kW at 500 rpm (34,38 kNm) [GH630ZK].



## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

GH315

GH355

GH400

GH450

## 2. STANDARDS AND QUALITY

### 2.1. REFERENCE STANDARDS

The GH series of motors is designed and manufactured to comply with the International Standard IEC 34-1 and the CENELEC harmonized standards EN 60034 and HD53 for European countries. In particular, the ratings and performance characteristics are in full compliance with EN 60034-1.

Upon request, motors can be supplied to meet the performance requirements of other standards (e.g. NEMA MG-1).

### 2.2. CE MARKING

GH series machines are manufactured in conformance to European Directive 73/23/EEC mod. 93/68/EEC (LVD) and meet the essential protective requirements specified in the European Directive 89/336/EEC (EMC) mod. 92/31/EEC and 93/68/EEC. The "CE" mark is applied to each machine to certify compliance with these directives.

### 2.3. QUALITY SYSTEM

The Quality System of NIDEC ASI S.p.A. covers the design, manufacturing and testing of DC machines. Related activities, such as procurement, component quality verification, project management and customer service, are also included within the system's comprehensive scope.

This Quality System is certified by CISQ/RINA (certification n. 50/92) – EQNet (Registration n. IT-2624) to comply with European standards UNI-EN 29001 (ISO 9001).



## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

HOME

GH225

GH250

GH280

GH315

GH355

GH400

GH450

## 3. IDENTIFICATION CODE

|                                                  | GH | 355 | P | K |
|--------------------------------------------------|----|-----|---|---|
| 1 Machine series                                 |    |     |   |   |
| 2 Frame size (shaft height in mm)                |    |     |   |   |
| 3 Armature core length identification            |    |     |   |   |
| 4 Machine with compensating winding (if present) |    |     |   |   |





## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Ground terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

HOME

GH225

GH250

GH280

GH315

GH355

GH400

GH450

## 4. DESIGN FEATURES

### 4.1. ROTOR

The armature core is made up of preinsulated steel laminations, and is heatshrunk on the shaft to obtain rigid mechanical integrity. Armature windings are manufactured from preinsulated copper rectangular wire having a Class H enamel coating or enamel covered with glass yarn. Ground insulation is NOMEX®.

Wave or frog-leg armature winding patterns are employed according to the customer's requirements for electrical performance. Commutation capability of the motor can be improved considerably where a frog-leg type arrangement is used instead of lap winding. The armature coil leads are secured to the commutator by means of TIG welding system. Armature winding end turns are supported by special metallic or insulated rings and anchored by pre-impregnated fiberglass bandings. After assembly of the winding, the complete rotor is impregnated with Class H resin, using a Vacuum Pressure Impregnation (VPI) system and oven cured for polymerization. Additionally, a second impregnation with Class H resin is performed in open tank, followed by oven cure (polymerization).

### 4.2. COMMUTATOR

The commutator is designed to have an overspeed capability greater than that required of the motor. To ensure long term operational stability, these components are mechanically rotated and thermally aged prior to being secured to the shaft by an interference fit.

### 4.3. STATOR

The magnetically active stator core component, main and commutating poles are fully laminated to provide for rapid response times to transients in load or speed. During assembly these laminations are hydraulically compressed under tons of pressure, then bound to form a rigid, stable assembly. Stator coils are formed from Class H insulated copper wire, and include NOMEX® ground wall insulation materials.

These coils are bonded to the pole cores with special epoxy resins and interconnected with flexible cables. These cables are braced with high strength, extreme temperature tolerant lacing material. After completion, stator assembly is Vacuum Pressure Impregnated (VPI) with Class H resin and cured in a temperature controlled oven. For severe applications where high humidity, carbon dust or abrasive material is encountered, an additional highbuild resin coating is applied by immersion and thermal catalyzation.

### 4.4. BRUSHHOLDER YOKE

Designed for strength and stiffness, the brush yoke is mounted to the mechanically rigid end shield. This yoke supports the brush holders, and allows individual adjustment of the brushes for optimal neutral zone alignment. Such design also incorporates sensitivity for the 1% positioning required for tough bi-directional rotating applications.

The brushes are split type, and are manufactured from high quality electrographitic grade material. The brushes are selected to consider the motor rating, application and environmental conditions.

### 4.5. BEARINGS

Tables 1 and 2 list the standard bearings furnished with each motor frame. These bearings are sized in accordance with the largest rated torque for that frame size, regardless of the length of the machine, to provide for lower bearing temperatures, improved vibrational stability and improved bearing life. In horizontal, direct coupled use, the B10 life is in excess of 40,000 hours, and 20,000 hours for belted applications.

Bearing seals are provided for totally enclosed motors having an IP 55 degree of protection.

Figures 1 and 2 illustrate the bearing arrangement for both the drive and non-drive end.





## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

HOME

GH225

GH250

GH280

GH315

GH355

GH400

GH450

## 4. DESIGN FEATURES

**TABLE 1**

Bearings for GH Series (4 poles)

| FRAME         | OPPOSITE DRIVE END |             |            |             | DRIVE END        |             |            |             |               |             |
|---------------|--------------------|-------------|------------|-------------|------------------|-------------|------------|-------------|---------------|-------------|
|               |                    |             |            |             |                  |             |            |             |               |             |
|               |                    |             |            |             | ELASTIC COUPLING |             |            |             | BELT COUPLING |             |
|               | B3-B5              | Grease<br>g | V1-V3      | Grease<br>g | B3-B5            | Grease<br>g | V1-V3      | Grease<br>g | B3-B5-V1-V3   | Grease<br>g |
| <b>GH 225</b> | 6217 2Z C3         | -           | 6217 2Z C3 | -           | 6218 2Z C3       | -           | 6218 2Z C3 | -           | NU 218 ECP C3 | 25          |
| <b>GH 250</b> | 6217 2Z C3         | -           | 6217 2Z C3 | -           | 6218 2Z C3       | -           | 6218 2Z C3 | -           | NU 218 ECP C3 | 25          |
| <b>GH 280</b> | 6219 C3            | 30          | 7219 BE    | 30          | 6221 C3          | 35          | 6221 C3    | 35          | NU 221 ECJ C3 | 35          |
| <b>GH 315</b> | 6221 C3            | 35          | 7221 BE    | 35          | 6222 C3          | 40          | 6222 C3    | 40          | NU 222 ECJ C3 | 40          |
| <b>GH 355</b> | 6224 C3            | 45          | 7224 B     | 45          | 6224 C3          | 45          | 6224 C3    | 45          | NU 224 ECJ C3 | 45          |
| <b>GH 400</b> | 6228 C3            | 55          | 7228 B     | 55          | NU 228 ECM C3    | 55          | 6228 M C3  | 55          | NU 228 ECM C3 | 55          |
| <b>GH 450</b> | 6232 M C3          | 70          | 7232 BCB   | 70          | NU 232 ECM C3    | 70          | 6232 M C3  | 70          | NU 232 ECM C3 | 70          |





DC MOTORS

|      |                                                          |
|------|----------------------------------------------------------|
| 1.   | GENERAL INFORMATION                                      |
| 2.   | STANDARDS AND QUALITY                                    |
| 2.1  | Reference standards                                      |
| 2.2  | CE Marking                                               |
| 2.3  | Quality system                                           |
| 3.   | IDENTIFICATION CODE                                      |
| 4.   | DESIGN FEATURES                                          |
| 4.1  | Rotor                                                    |
| 4.2  | Commutator                                               |
| 4.3  | Stator                                                   |
| 4.4  | Brushholder yoke                                         |
| 4.5  | Bearings                                                 |
| 4.6  | Belted and radial thrust application                     |
| 5.   | CONSTRUCTION FEATURES                                    |
| 5.1  | Coupling and shaft extension                             |
| 5.2  | Mounting arrangement                                     |
| 5.3  | Degree of protection                                     |
| 5.4  | Cooling method                                           |
| 5.5  | Maximum allowable speeds                                 |
| 5.6  | Noise level                                              |
| 5.7  | Vibrations and balancing                                 |
| 5.8  | Conduit box                                              |
| 5.9  | Groud terminals                                          |
| 5.10 | Cross-section drawing                                    |
| 6.   | MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS |
| 6.1  | Ratings                                                  |
| 6.2  | Supply voltage                                           |
| 6.3  | Maximum loads                                            |
| 6.4  | Current rate-of-rise                                     |
| 6.5  | Speed regulation                                         |
| 6.6  | Duty with large speed regulation                         |
| 6.7  | Excitation                                               |
| 6.8  | Maximum current at locked rotor                          |
| 6.9  | Accessories                                              |
| 7.   | TESTS                                                    |
| 8.   | OUTPUT POWER DIAGRAMS                                    |
| HOME |                                                          |

GH225

GH250

GH280

GH315

GH355

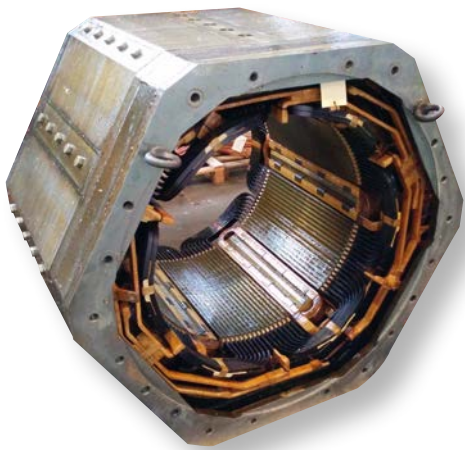
GH400

GH450

4. DESIGN FEATURES

TABLE 2  
Bearings for GH Series (6 poles)

| FRAME  | SHAFT | OPPOSITE DRIVE END         |        |            |        | DRIVE END        |        |           |        |               |        |
|--------|-------|----------------------------|--------|------------|--------|------------------|--------|-----------|--------|---------------|--------|
|        |       |                            |        |            |        | ELASTIC COUPLING |        |           |        | BELT COUPLING |        |
|        |       | B3-B5                      | Grease | V1-V3      | Grease | B3-B5            | Grease | V1-V3     | Grease | B3-B5-V1-V3   | Grease |
|        |       |                            | g      |            | g      |                  | g      |           | g      |               | g      |
| GH 500 | ø150  | 6232 M C3                  | 70     | 7232 BCB M | 70     | NU232 EC M C3    | 70     | 6232 M C3 | 70     | NU232 EC M C3 | 70     |
|        | ø170  | 6236 M C3                  | 83     | 7236 BCB M | 83     | NU236 EC M C3    | 83     | 6236 M C3 | 83     | NU236 EC M C3 | 83     |
| GH 560 | ø170  | 6236 M C3                  | 83     | -          | -      | NU236 EC M C3    | 83     | -         | -      | NU236 EC M C3 | 83     |
|        | ø190  | NU1040 M C3<br>+ 6040 M C3 | 160    | -          | -      | NU1040 M C3      | 80     | -         | -      | NU1040 M C3   | 80     |
| GH 630 | ø170  | 6236 M C3                  | 83     | -          | -      | NU236 EC M C3    | 83     | -         | -      | NU236 EC M C3 | 83     |
|        | ø190  | NU1040 M C3<br>+ 6040 M C3 | 160    | -          | -      | NU1040 M C3      | 80     | -         | -      | NU1040 M C3   | 80     |
|        | ø210  | NU1044 M C3<br>+ 6044 M C3 | 190    | -          | -      | NU1044 M C3      | 95     | -         | -      | NU1044 M C3   | 95     |



## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Ground terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

HOME

GH225

GH250

GH280

GH315

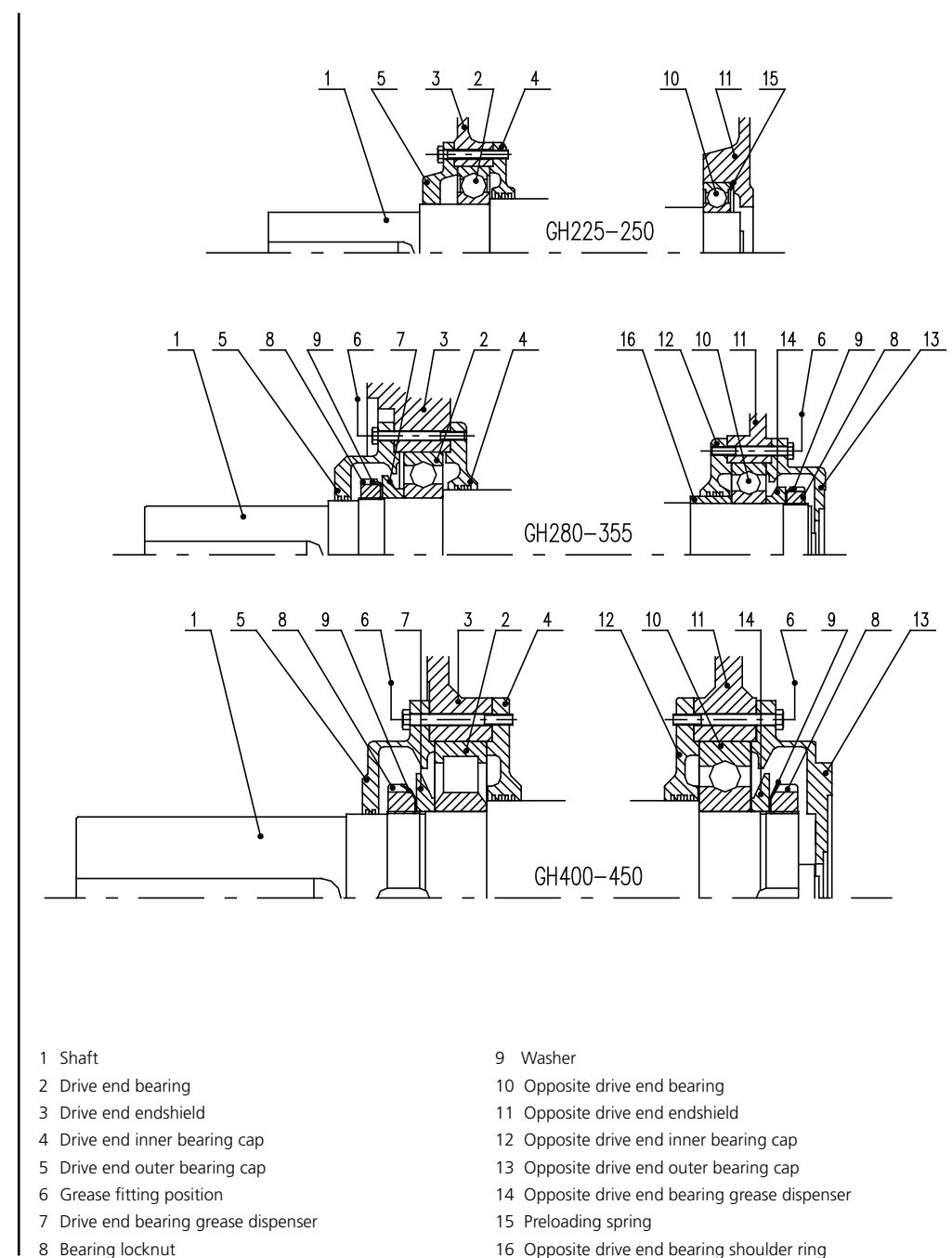
GH355

GH400

GH450

## 4. DESIGN FEATURES

**FIGURE 1**  
Bearing assembly



## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

GH225

GH250

GH280

GH315

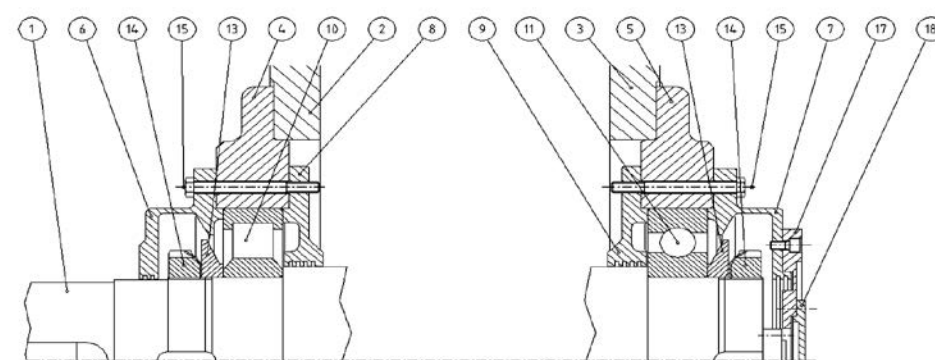
GH355

GH400

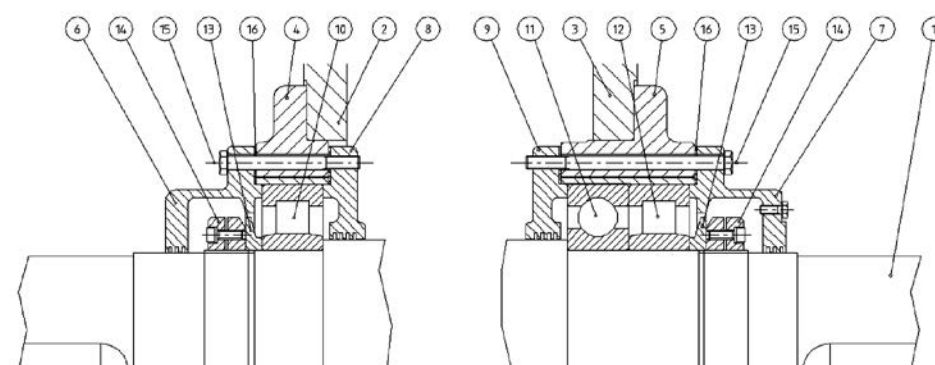
GH450

## 4. DESIGN FEATURES

**FIGURE 2**  
Bearing assembly (Size GH500-630)



**GH500-GH630**  
(shaft end  
Ø150-170 mm)



**GH560-GH630**  
(shaft end  
Ø190-210 mm)

- |                                        |                                        |
|----------------------------------------|----------------------------------------|
| 1 Shaft                                | 10 Drive end bearing (roller)          |
| 2 Drive end endshield                  | 11 Opposite drive end endshield (ball) |
| 3 Opposite drive end endshield         | 12 Opposite drive end bearing (roller) |
| 4 Drive end hub                        | 13 Grease valve                        |
| 5 Opposite drive end hub               | 14 Ferrule                             |
| 6 Drive end outer bearing cap          | 15 Grease fitting position             |
| 7 Opposite drive end outer bearing cap | 16 Insulator disc (only GH630 IM 1002) |
| 8 Drive end inner bearing cap          | 17 Accessories support flange          |
| 9 Opposite drive end inner bearing cap | 18 Opposite drive end closing cap      |



## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

GH315

GH355

GH400

GH450

## 4. DESIGN FEATURES

### 4.6. BELTED AND RADIAL THRUST APPLICATION

Power transmission components (pulleys, sheaves and belts) must be designed and selected in accordance with the manufacturers recommendations. Once the motor side pulley or sheave has been selected, the allowable radial (side) thrust load must be within the values listed in Table 3 for ball bearings or Table 4 for roller bearings (for other cases, please contact Nidec ASI).

**TABLE 3**

| ALLOWABLE RADIAL THRUST ON BALL BEARINGS (N) |         |             |       |       |       |       |       |      |      |                     |
|----------------------------------------------|---------|-------------|-------|-------|-------|-------|-------|------|------|---------------------|
| SIZE                                         | BEARING | SPEED [RPM] |       |       |       |       |       |      |      | MAXIMUM SPEED [RPM] |
|                                              |         | 400         | 600   | 1000  | 1500  | 2000  | 2500  | 3000 | 4000 |                     |
| GH225                                        | 6218-2Z | 12200       | 11500 | 10650 | 9700  | 9100  | 8650  | 8300 | -    | 3000                |
| GH250                                        | 6218-2Z | 12200       | 11500 | 10650 | 9700  | 9100  | 8650  | -    | -    | 2800                |
| GH280                                        | 6221    | 17300       | 16300 | 1500  | 13800 | 12900 | 12300 | -    | -    | 2600                |

**TABLE 4**

| ALLOWABLE RADIAL THRUST ON ROLLER BEARINGS (N) |            |             |       |       |       |       |       |       |      |                     |
|------------------------------------------------|------------|-------------|-------|-------|-------|-------|-------|-------|------|---------------------|
| SIZE                                           | BEARING    | SPEED [RPM] |       |       |       |       |       |       |      | MAXIMUM SPEED [RPM] |
|                                                |            | 400         | 600   | 1000  | 1500  | 2000  | 2500  | 3000  | 4000 |                     |
| GH225                                          | NU 218 ECP | 24800       | 24500 | 23330 | 21600 | 20200 | 19200 | 18500 | -    | 3000                |
| GH250                                          | NU 218 ECP | 24800       | 24500 | 23330 | 21600 | 20200 | 19200 | -     | -    | 2800                |
| GH280                                          | NU 221 ECP | 36800       | 36000 | 33500 | 31300 | 29700 | 28500 | -     | -    | 2600                |

It is necessary that pulley length be no more than twice shaft end length, whereas an air gap of about 10 mm has to be kept between the pulley and motor end shield (bearing bracket).



## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

GH225

GH250

GH280

GH315

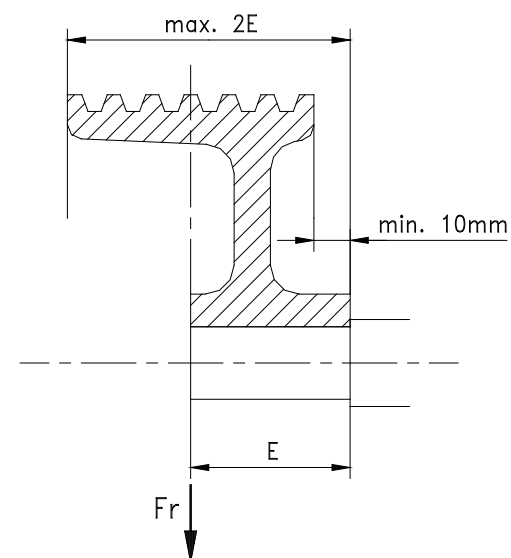
GH355

GH400

GH450

## 4. DESIGN FEATURES

Radial thrust can be obtained from the equation below:



$$Fr = 19.5 \times 10^6 \times \frac{P}{n \times D} \times K$$

$Fr$  = radial thrust (N)  
 $P$  = rated motor power (kW)  
 $n$  = motor speed (rpm)  
 $D$  = pulley diameter (mm)  
 $K$  = tension factor (given by the pulley manufacturer)

If  $K$  is not available, use as approximate assumption:

$K = 3,5 \div 4$  for flat leather belts

$K = 2,2 \div 2,5$  for V-belts or for high adhesion belts

If the radial thrust so obtained is higher than the value specified in the tables, roller bearings or special bearings must be used, or the pulley diameter must be increased.

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

GH315

GH355

GH400

GH450

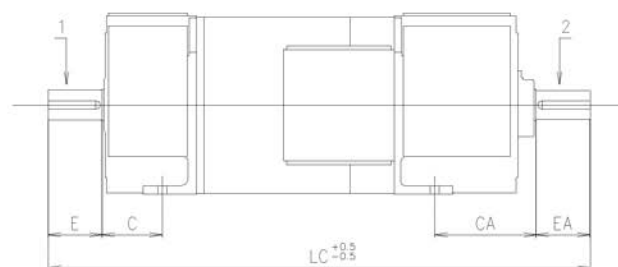
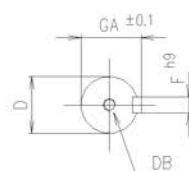
## 5. CONSTRUCTION FEATURES

### 5.1. COUPLING AND SHAFT EXTENSION

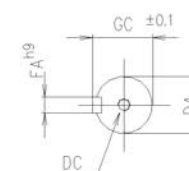
Standard machines are furnished with one drive end extension which is cylindrical with a keyway (IM 1001). On request, machines are available with two shaft extensions (IM 1002) for a tandem arrangement, and the shaft end dimensions may be of different size from the standard solution and are shown in Table 5.

Unless otherwise specified, standard machines are designed for direct drive using flexible type couplings.

Shaft extension 1



Shaft extension 2



\* Please enquire the manufacturer NIDEC ASI

Dimensions without tolerance UNI ISO 2768 - c



## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

HOME

GH225

GH250

GH280

GH315

GH355

GH400

GH450

## 5. CONSTRUCTION FEATURES

**TABLE 5**

Machines (GH225-450) with two shaft extensions (IM 1002)

| TYPE  | SIZE | LC   | C   | E   | D     | F  | GA  | DB     | CA  | EA  | DA    | FA | GC  | DC       |
|-------|------|------|-----|-----|-------|----|-----|--------|-----|-----|-------|----|-----|----------|
| GH225 | S    | 1365 | 149 | 170 | 80M6  | 22 | 85  | M20X40 | 221 | 170 | 80M6  | 22 | 85  | M20X40   |
|       | M    | 1415 |     |     |       |    |     |        |     |     |       |    |     |          |
|       | L    | 1460 |     |     |       |    |     |        |     |     |       |    |     |          |
|       | P    | 1510 |     |     |       |    |     |        |     |     |       |    |     |          |
|       | X    | 1560 |     |     |       |    |     |        |     |     |       |    |     |          |
| GH250 | M    | 1569 | 168 | 170 | 85M6  | 22 | 90  | M20X40 | 251 | 170 | 80M6  | 22 | 85  | M20X40   |
|       | L    | 1629 |     |     |       |    |     |        |     |     |       |    |     |          |
|       | X    | 1709 |     |     |       |    |     |        |     |     |       |    |     |          |
| GH280 | S    | 1710 | 190 | 170 | 95M6  | 25 | 100 | M20X40 | 320 | 170 | 90M6  | 25 | 95  | M20X40   |
|       | M    | 1760 |     |     |       |    |     |        |     |     |       |    |     |          |
|       | L    | 1810 |     |     |       |    |     |        |     |     |       |    |     |          |
|       | P    | 1870 |     |     |       |    |     |        |     |     |       |    |     |          |
| GH315 | M    | 2067 | 216 | 210 | 110M6 | 28 | 116 | M20X50 | 471 | 210 | 100M6 | 28 | 106 | M20X50   |
|       | L    | 2117 |     |     |       |    |     |        |     |     |       |    |     |          |
|       | P    | 2177 |     |     |       |    |     |        |     |     |       |    |     |          |
|       | X    | 2247 |     |     |       |    |     |        |     |     |       |    |     |          |
| GH355 | S    | 2195 | 254 | 250 | 130M6 | 32 | 137 | M24X65 | 521 | 210 | 110M6 | 28 | 116 | M20X50   |
|       | M    | 2245 |     |     |       |    |     |        |     |     |       |    |     |          |
|       | L    | 2305 |     |     |       |    |     |        |     |     |       |    |     |          |
|       | P    | 2375 |     |     |       |    |     |        |     |     |       |    |     |          |
| GH400 | M    | 2400 | 280 | 250 | 130M6 | 32 | 137 | M24X65 | 500 | 250 | 130M6 | 32 | 137 | M24X65   |
|       | L    | 2480 |     |     | *     | *  | *   |        |     |     |       |    |     |          |
|       | P    | 2570 |     |     |       |    |     |        |     |     |       |    |     |          |
| GH450 | M    | 2490 | 315 | 250 | 150M6 | 36 | 158 | M42X80 | 315 | 250 | 150M6 | 36 | 158 | M42X3X80 |
|       | L    | 2550 |     | 300 | 170M6 | 40 | 179 |        |     | 300 | 170M6 | 40 | 179 |          |
|       | P    | 2720 |     |     |       |    |     |        |     |     |       |    |     |          |
|       | X    | 2800 |     |     |       |    |     |        |     |     |       |    |     |          |
|       | Y    | 2890 |     |     |       |    |     |        |     |     |       |    |     |          |



## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

GH315

GH355

GH400

GH450

## 5. CONSTRUCTION FEATURES

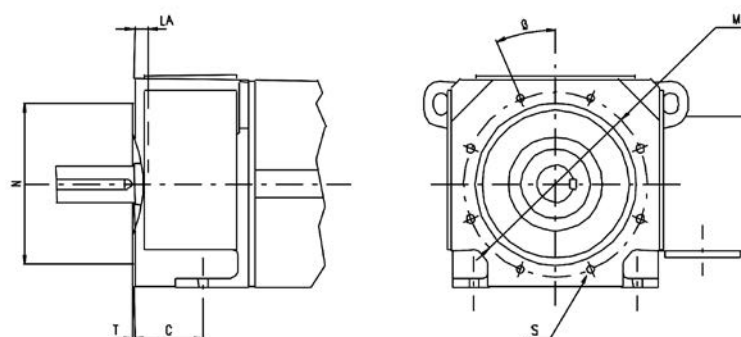
### 5.2. MOUNTING ARRANGEMENT

Machines are furnished in accordance with EN 60034-7 standard mounting arrangement IM B3 (code I) or IM 1001 (code II). Vertical machines in the IM V1 (code I) or IM 3011 (code II) mounting arrangement and those shown in Figure 3 are available upon request.

For the IM B5 or IM 3001 arrangement, the mounting flange holes and dimensions are shown in Table 6.

**TABLE 6**

Machines with im B5 mounting arrangement



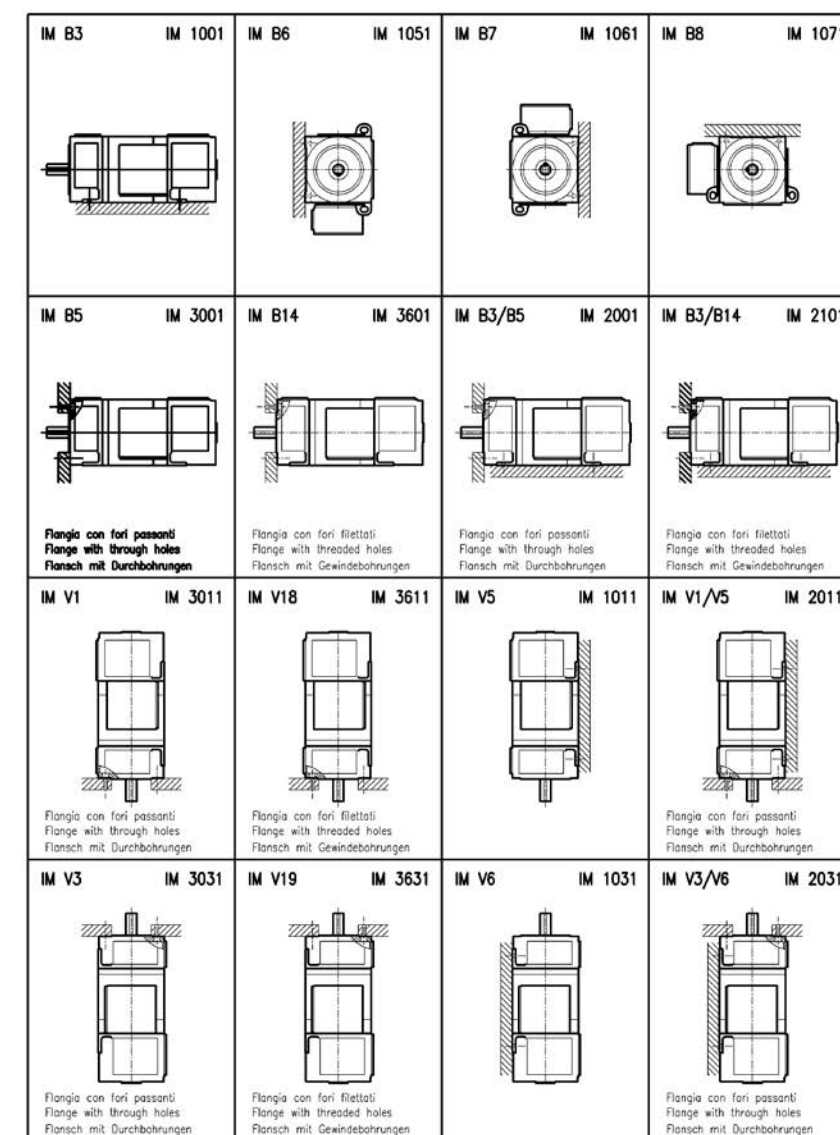
\* Deve essere in forma costruttiva IM2001 (B3/B5)  
Only in mounting arrangement IM2001 (B3/B5)  
Nur für Bauform IM2001 (B3/B5)

Quote senza indic. di tolleranza  
Dimensions without tolerance  
Abmessungen ohne Toleranzangabe  
UNI ISO 2768 - m

| TYPE    | C   | N     | T | M   | S       | β     | LA |
|---------|-----|-------|---|-----|---------|-------|----|
| GH225   | 149 | 350J6 | 5 | 400 | 8 X Ø18 | 22.5° | 20 |
| GH250 * | 168 | 350J6 | 5 | 400 | 8 X Ø18 | 22.5° | 20 |

**FIGURE 3**

Main Mounting Arrangements



## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

GH315

GH355

GH400

GH450

## 5. CONSTRUCTION FEATURES

### 5.3. DEGREE OF PROTECTION

Machines are normally furnished with one of the following degrees of protection, in accordance with EN 60034-5:

IP 23: Protected machine

IP 44: Enclosed machine

Other enclosures or more restrictive degrees of protection are available on request.

### 5.4. COOLING METHOD

The various standard cooling methods are listed in Table 7. Cooling method IC666 (air-to-air heat exchanger with primary and secondary air blowers) or IC410 (enclosed machine, not ventilated) require special handling by the factory (Table 8).

Normal environmental conditions according to EN 60034-1:

- altitude: 0 ÷ 1000 m above sea-level;
- temperature: -15°C ÷ +40°C;
- humidity: not less than 5 g/m<sup>3</sup> in absolute value, not more than 90% in relative value;
- cooling air: free of dust, oils, or aggressive gases such as, in particular, ammonia, chlorine, sulfur and silicon.

Applications using water-to-air heat exchangers may require special handling due to water temperatures or non-fresh water sources.

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

HOME

GH225

GH250

GH280

GH315

GH355

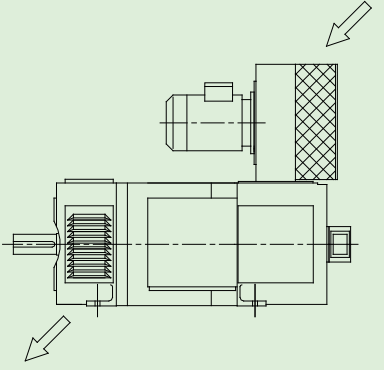
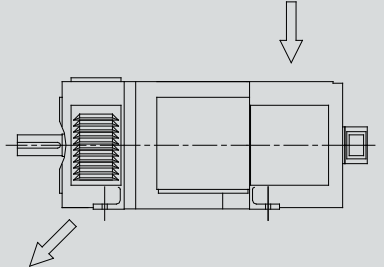
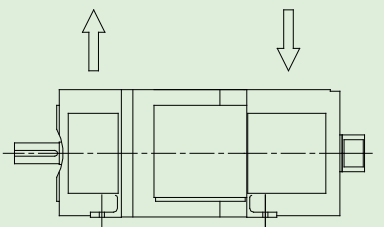
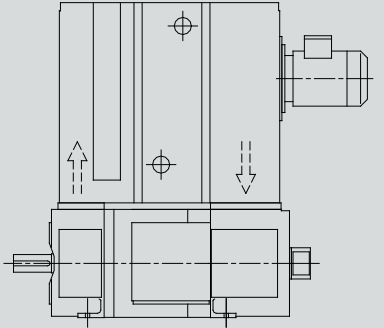
GH400

GH450

## 5. CONSTRUCTION FEATURES

**TABLE 7**

Standard cooling methods

| TIPO DI RAFFREDDAMENTO<br>EN 60034-6 | GRADO DI PROTEZIONE<br>EN 60034-5 | DESCRIPTION                                                                                                 |                                                                                       |
|--------------------------------------|-----------------------------------|-------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| IC06                                 | IP 23                             | SEPARATE VENTILATION<br>USING A MOTOR-DRIVEN<br>BLOWER MOUNTED<br>ON THE OPPOSITE DRIVE END<br>ENDSHIELD    |   |
| IC17                                 | IP 23                             | SEPARATE VENTILATION<br>FROM AN AIR DUCT<br>CONNECTED TO THE<br>OPPOSITE DRIVE END                          |  |
| IC37                                 | IP 44                             | SEPARATE VENTILATION<br>FROM AIR DUCTS CONNECTED<br>TO BOTH ENDS. AIR INLET<br>ON THE OPPOSITE<br>DRIVE END |  |
| IC86W                                | IP 44                             | TOTALLY ENCLOSED WITH<br>AIR TO WATER HEAT<br>EXCHANGER                                                     |  |



DC MOTORS

|      |                                                          |
|------|----------------------------------------------------------|
| 1.   | GENERAL INFORMATION                                      |
| 2.   | STANDARDS AND QUALITY                                    |
| 2.1  | Reference standards                                      |
| 2.2  | CE Marking                                               |
| 2.3  | Quality system                                           |
| 3.   | IDENTIFICATION CODE                                      |
| 4.   | DESIGN FEATURES                                          |
| 4.1  | Rotor                                                    |
| 4.2  | Commutator                                               |
| 4.3  | Stator                                                   |
| 4.4  | Brushholder yoke                                         |
| 4.5  | Bearings                                                 |
| 4.6  | Belted and radial thrust application                     |
| 5.   | CONSTRUCTION FEATURES                                    |
| 5.1  | Coupling and shaft extension                             |
| 5.2  | Mounting arrangement                                     |
| 5.3  | Degree of protection                                     |
| 5.4  | Cooling method                                           |
| 5.5  | Maximum allowable speeds                                 |
| 5.6  | Noise level                                              |
| 5.7  | Vibrations and balancing                                 |
| 5.8  | Conduit box                                              |
| 5.9  | Groud terminals                                          |
| 5.10 | Cross-section drawing                                    |
| 6.   | MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS |
| 6.1  | Ratings                                                  |
| 6.2  | Supply voltage                                           |
| 6.3  | Maximum loads                                            |
| 6.4  | Current rate-of-rise                                     |
| 6.5  | Speed regulation                                         |
| 6.6  | Duty with large speed regulation                         |
| 6.7  | Excitation                                               |
| 6.8  | Maximum current at locked rotor                          |
| 6.9  | Accessories                                              |
| 7.   | TESTS                                                    |
| 8.   | OUTPUT POWER DIAGRAMS                                    |
| HOME |                                                          |

GH225

GH250

GH280

GH315

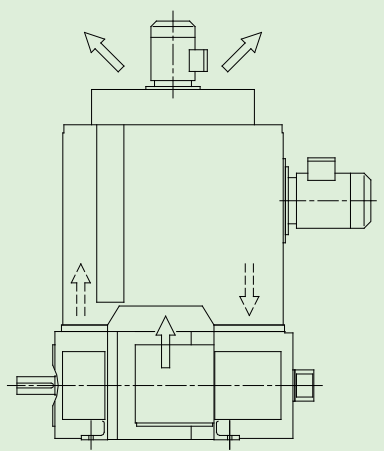
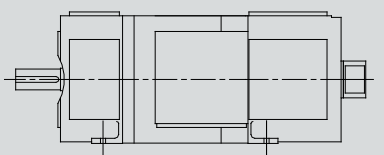
GH355

GH400

GH450

5. CONSTRUCTION FEATURES

TABLE 8  
Special cooling methods

| TIPO DI RAFFREDDAMENTO<br>EN 60034-6 | GRADO DI PROTEZIONE<br>EN 60034-5 | DESCRIPTION                                           |                                                                                       |
|--------------------------------------|-----------------------------------|-------------------------------------------------------|---------------------------------------------------------------------------------------|
| IC666                                | IP 44                             | TOTALLY ENCLOSED<br>WITH AIR TO AIR<br>HEAT EXCHANGER |   |
| IC410                                | IP 44 / IP 55                     | TOTALLY ENCLOSED<br>NON VENTILATED                    |  |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

GH315

GH355

GH400

GH450

## 5. CONSTRUCTION FEATURES

### 5.4.1. COOLING METHOD IC06 WITH BLOWER MOUNTED ON THE MOTOR (PVA)

For frames 225 through 450 the blower assembly is normally mounted on the non-drive end shield.

Frames 500 and 630 have the blower assembly mounted on the drive end shield.

Blower assemblies are always furnished with a filter.

The blower motor kW ratings are listed in Table 9, with the normal power supply of 400 V, 3 Ph, 50 Hz. Other voltages and frequencies may be available upon request.

**TABLE 9**

Blower motor power (50 Hz)

| SIZE       | GH225 | GH250 | GH280 | GH315 | GH355 |
|------------|-------|-------|-------|-------|-------|
| POWER [KW] | 2.2   | 3.0   | 5.5   | 5.5   | 7.5   |
| SIZE       | GH400 | GH450 | GH500 | GH560 | GH630 |
| POWER [KW] | 7.5   | 9.2   | 9.2   | 11.0  | 11.0  |

### 5.4.2. COOLING METHOD IC17 AND IC37 WITH AIR DUCTS (PVB AND CVB)

When cooling air is supplied from separate ventilation ducts (provided by the Customer), the required air flow and expected pressure drop across the motor are listed in Table 10.

**TABLE 10**

Ventilation data

| FRAME | AIR FLOW [m³/min] | INTERNAL PRESSURE DROP OF THE MACHINE |           |
|-------|-------------------|---------------------------------------|-----------|
|       |                   | IC17 [Pa]                             | IC37 [Pa] |
| GH225 | 50                | 1400                                  | 1300      |
| GH250 | 70                | 1400                                  | 1300      |
| GH280 | 85                | 2050                                  | 1950      |
| GH315 | 120               | 1800                                  | 1700      |
| GH355 | 140               | 2050                                  | 1950      |
| GH400 | 180               | 1600                                  | 1500      |
| GH450 | 220               | 1250                                  | 1150      |
| GH500 | 260               | 1200                                  | 1200      |
| GH560 | 320               | 1200                                  | 1200      |
| GH630 | 380               | 1200                                  | 1200      |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

GH315

GH355

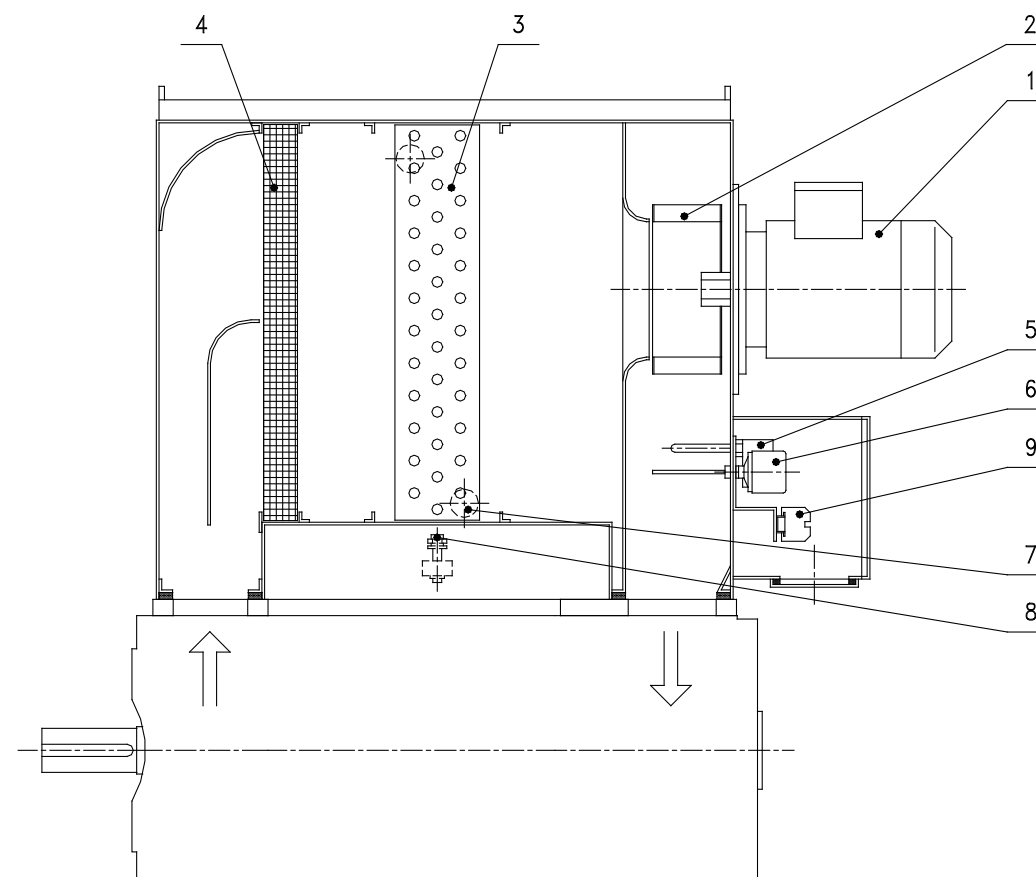
GH400

GH450

## 5. CONSTRUCTION FEATURES

**FIGURE 4**

Air to water heat exchanger (4-pole GH motors)



- 1 Blower motor
- 2 Blower impeller
- 3 Air to water heat exchanger

- 4 Air filter
- 5 Thermostat
- 6 Internal air circulation switch

- 7 Water flow detector
- 8 Water leak detector
- 9 Terminal box

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

GH315

GH355

GH400

GH450

## 5. CONSTRUCTION FEATURES

### 5.4.3. COOLING METHOD IC86W, TOTALLY ENCLOSED WATER-TO-AIR COOLED (TEWAC)

The air-to-water heat exchanger, available for fresh water, is of simple tube type with finned tube bundles. The tubes are made of copper and the fins of anticorodal. A motor-driven centrifugal blower circulates the internal air through the motor and then through the finned heat exchanger.

All standard air-to-water heat exchangers are normally provided with a filter for the internal air and provided with the following accessories:

- water flow indicator (connected on water inlet pipe) with electric contacts;
- water leak detector with electric contacts;
- internal air flow indicator with electric contacts;
- air thermostat with electric contacts;
- inlet and outlet water block valves (pipe thread connection, flanged alternate).

As an alternate it is possible to limit the accessories to the air thermostat only.

The water supply system must be connected to the heat exchanger through flexible pipes to avoid the transmission of vibrations. The above mentioned heat exchangers are built for fresh water only. In addition the water hardness should not exceed 15 French degrees. Other special heat exchangers may be supplied for particular water types (seawater, dirty or acid water, etc.).

The standard heat exchanger is designed for an inlet water temperature of 30°C and a temperature difference between inlet and outlet of about 3-4 K. The rated water pressure is 500 kPa (5 bar) and the test pressure is 1000 kPa (10 bar).

The normal pressure drop in the water circuit is about 50 kPa (500 mbar). Figure 4 shows a cross-section drawing of an air to water heat exchanger. In sizes GH 500-630 (6 poles motor) the internal air circulates in the opposite direction (cold air entering the motor on drive end).

The blower motor power ratings at 50 Hz are given in Table 11. The accessories terminal markings are shown on Figure 6.

**TABLE 11**

Blower motor power for air to water heat exchangers (50 Hz)

| SIZE       | GH225 | GH250 | GH280 | GH315 | GH355 |
|------------|-------|-------|-------|-------|-------|
| POWER [KW] | 4.0   | 4.0   | 5.5   | 7.5   | 9.2   |

| SIZE       | GH400 | GH450 | GH500 | GH560 | GH630 |
|------------|-------|-------|-------|-------|-------|
| POWER [KW] | 15.0  | 15.0  | 11.0  | 11.0  | 18.5  |

### 5.4.4. COOLING METHOD IC666, AIR-TO-AIR COOLED (TEAAC)

Use of an air-to-air heat exchanger requires consultation with the manufacturer for proper application and design. Standard heat exchangers consist of aluminum alloy tubes (< 0.2% copper), steel tube sheets and a fabricated steel plate housing.

This assembly is mounted to the machine frame, and is provided with two blowers. One blower, mounted on the opposite drive end of the machine (GH225-450) or on the drive end of the machine (GH500-630), circulates internal air through the tube bundle. A second blower, mounted on the top of the assembly, moves external air up through the heat exchanger tubes. A washable filter is mounted in the air duct assembly at the hot air entrance.

The following accessories are provided:

- internal air flow indicator with electric contacts;
- external air flow indicator with electric contacts
- air thermostat with electric contacts.

Other accessories are available on request.

Figure 5 shows a sectional view of a TEAAC machine.

Terminal markings for the accessory devices are shown in Figure 7.

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

GH225

GH250

GH280

GH315

GH355

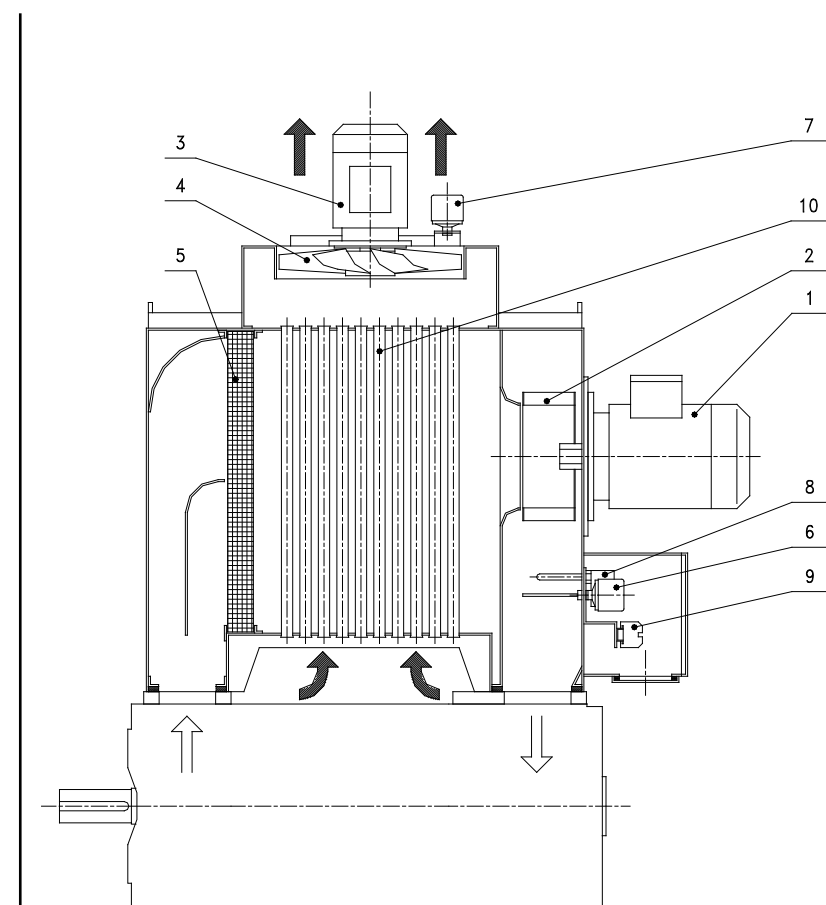
GH400

GH450

## 5. CONSTRUCTION FEATURES

**FIGURE 5**

Air-to-air heat exchanger (4-pole GH motors)



- 1 Internal air flow blower motor
- 2 Internal air flow blower impeller
- 3 External air flow blower motor
- 4 External air flow blower impeller
- 5 Filter
- 6 Internal air flow circulation switch
- 7 External air flow circulation switch (on request)
- 8 Thermostat
- 9 Terminal box
- 10 Air-to-air heat exchanger

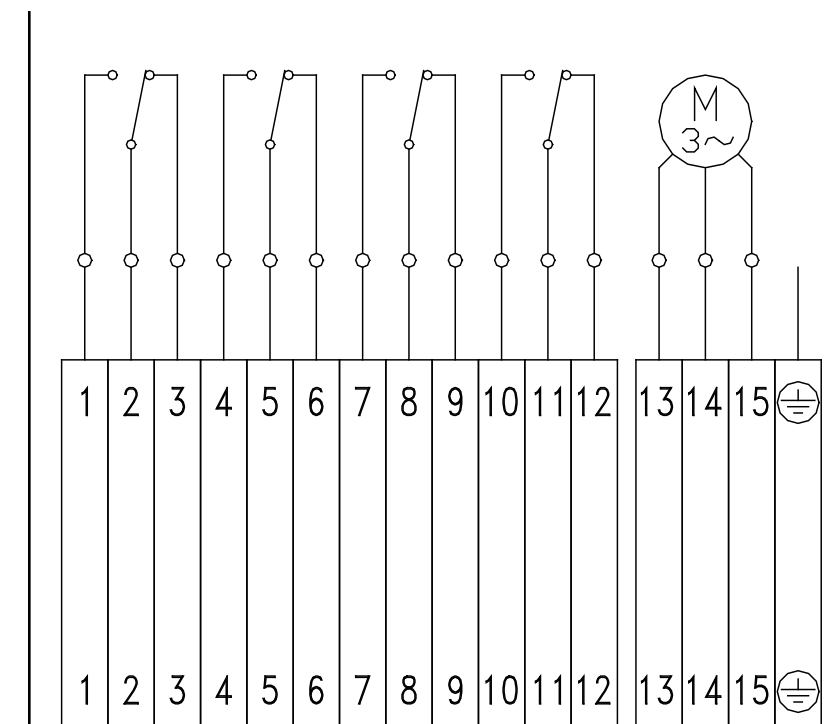
### 5.4.5. 5.4.5 COOLING METHOD IC410 (CNV)

Enclosed Machine with protection degree between IP 44 and IP 55, without internal and external air heat exchanger.

Cooling systems by natural convection: the heat is dissipated through the machine. This cooling method requires consultation with the manufacturer for proper application and design.

**FIGURE 6**

Connection diagram of air-to-water heat exchanger



- 1 - 2 - 3 Water leak detector
- 4 - 5 - 6 Water flow detector
- 7 - 8 - 9 Internal air circulation switch
- 10 - 11 - 12 Air thermostat
- 13 - 14 - 15 Blower motor

DC MOTORS

|      |                                                          |
|------|----------------------------------------------------------|
| 1.   | GENERAL INFORMATION                                      |
| 2.   | STANDARDS AND QUALITY                                    |
| 2.1  | Reference standards                                      |
| 2.2  | CE Marking                                               |
| 2.3  | Quality system                                           |
| 3.   | IDENTIFICATION CODE                                      |
| 4.   | DESIGN FEATURES                                          |
| 4.1  | Rotor                                                    |
| 4.2  | Commutator                                               |
| 4.3  | Stator                                                   |
| 4.4  | Brushholder yoke                                         |
| 4.5  | Bearings                                                 |
| 4.6  | Belted and radial thrust application                     |
| 5.   | CONSTRUCTION FEATURES                                    |
| 5.1  | Coupling and shaft extension                             |
| 5.2  | Mounting arrangement                                     |
| 5.3  | Degree of protection                                     |
| 5.4  | Cooling method                                           |
| 5.5  | Maximum allowable speeds                                 |
| 5.6  | Noise level                                              |
| 5.7  | Vibrations and balancing                                 |
| 5.8  | Conduit box                                              |
| 5.9  | Groud terminals                                          |
| 5.10 | Cross-section drawing                                    |
| 6.   | MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS |
| 6.1  | Ratings                                                  |
| 6.2  | Supply voltage                                           |
| 6.3  | Maximum loads                                            |
| 6.4  | Current rate-of-rise                                     |
| 6.5  | Speed regulation                                         |
| 6.6  | Duty with large speed regulation                         |
| 6.7  | Excitation                                               |
| 6.8  | Maximum current at locked rotor                          |
| 6.9  | Accessories                                              |
| 7.   | TESTS                                                    |
| 8.   | OUTPUT POWER DIAGRAMS                                    |
| HOME |                                                          |

GH225

GH250

GH280

GH315

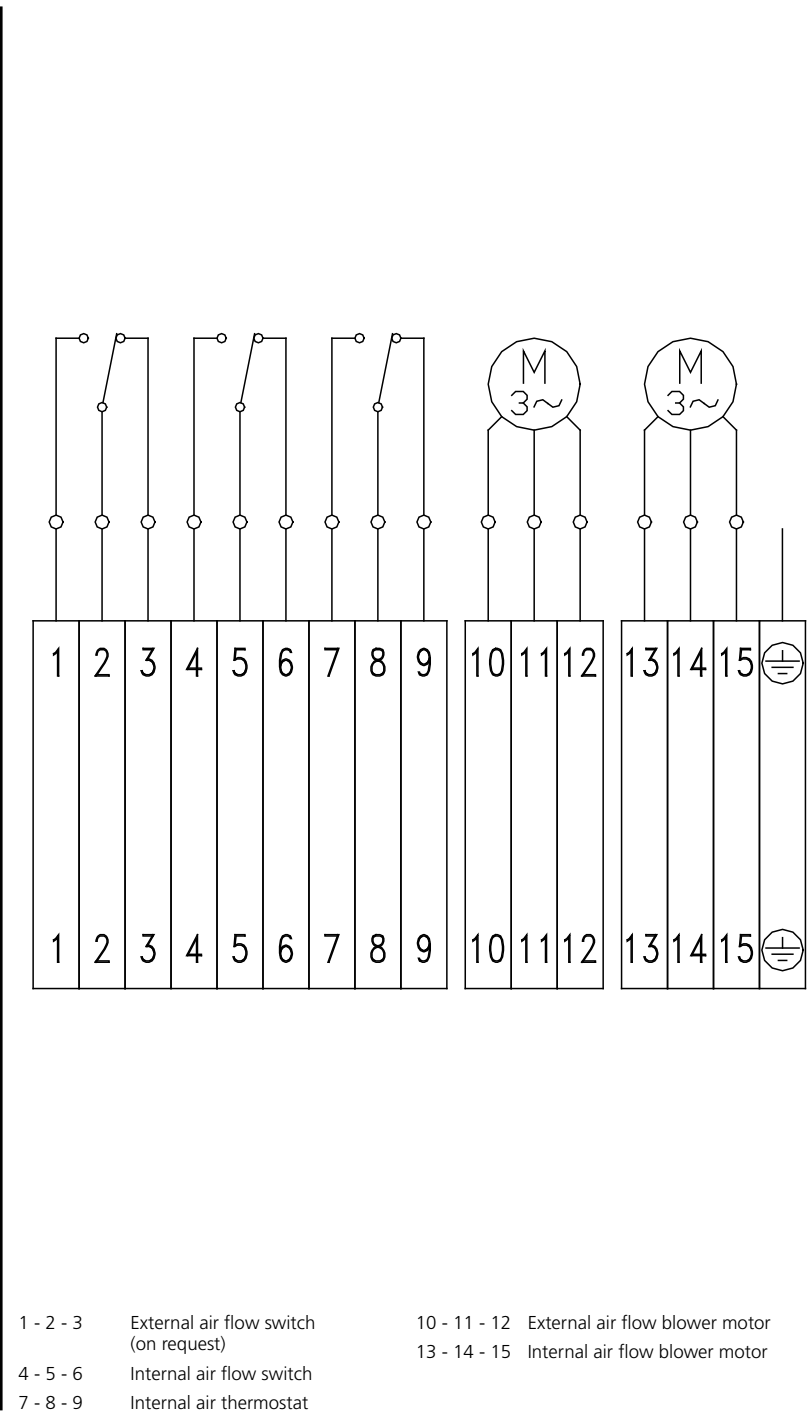
GH355

GH400

GH450

5. CONSTRUCTION FEATURES

**FIGURE 7**  
Connection diagram of air-to-air heat exchanger



5.5. MAXIMUM ALLOWABLE SPEEDS

Table 12 lists the maximum allowable operating speeds, maximum mechanical speeds and maximum overspeeds for 4 pole machines <sup>1</sup>.

**TABLE 12**  
Maximum allowable speeds

| SIZE          | MAXIMUM OPERATING SPEED (*) [rpm] | MAXIMUM MECHANICAL SPEED [RPM] | OVERSPEED [RPM] |
|---------------|-----------------------------------|--------------------------------|-----------------|
| GH225         | 3000                              | 3000                           | 3450            |
| GH250 M, L    | 2800                              | 2800                           | 3300            |
| GH250 X       | 2700                              | 2700                           | 3100            |
| GH280         | 2600                              | 2600                           | 3050            |
| GH315 M, L, P | 2400                              | 2400                           | 2800            |
| GH315 X       | 2300                              | 2300                           | 2600            |
| GH355 S, M, L | 2200                              | 2200                           | 2650            |
| GH355 P       | 2100                              | 2100                           | 2350            |
| GH400 M, L    | 2000                              | 2000                           | 2400            |
| GH400 P       | 1900                              | 1900                           | 2250            |
| GH450 M, L, P | 1800                              | 1800                           | 2160            |
| GH450 X       | 1700                              | 1700                           | 2050            |
| GH450 Y       | 1600                              | 1600                           | 1950            |

(\*) With 160% maximum load and 1:2 maximum speed range by field control.  
<sup>1</sup> This product catalogue excludes the performance of 6 pole machines, so in case you need to make assessments on the maximum allowable speed for a motor GH 500-560-630 it is recommended to ask for a verification to the technical office of Nidec ASI.



## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

GH315

GH355

GH400

GH450

## 5. CONSTRUCTION FEATURES

### 5.6. NOISE LEVEL

Motor noise levels are evaluated on the weighted A scale basis, by either the Sound Pressure Level  $L_p$ , or the Sound Power Level  $L_w$ , and are measured in accordance with ISO 1680/1. Standard machine noise levels comply with the limits of EN 60034-9. Machines with reduced noise levels can be furnished upon request.

### 5.7. VIBRATIONS AND BALANCING

Where the shaft extension includes a keyway, rotor balancing is performed with a half key secured in the slot. Otherwise, the rotor is balanced without the half coupling, pulley or other device mounted. Any component added to the rotor after this must be independently balanced.

All machines comply EN 60034-14 and CENELEC HD 53.14.51 with vibration level "A" for all frames. On request, the motors may be supplied in compliance with level "B" (special).

Motor vibration levels are listed in Table 13, with a tolerance of +10%. These values are applicable also where the operating speed of the motor exceeds the maximum speed listed in the table (CENELEC HD 53.14.51).

**TABLE 13**

Limits of maximum vibration magnitude (in displacement, velocity and acceleration)

| VIBRATION GRADE | SHAFT HEIGHT, $H$ [mm] | $56 \leq H \leq 132$ |      |                  | $132 < H \leq 280$ |      |                  | $H > 280$     |      |                  |
|-----------------|------------------------|----------------------|------|------------------|--------------------|------|------------------|---------------|------|------------------|
|                 |                        | DISPLAC.             | VEL. | ACC.             | DISPLAC.           | VEL. | ACC.             | DISPLAC.      | VEL. | ACC.             |
|                 |                        | $\mu\text{m}$        | mm/s | m/s <sup>2</sup> | $\mu\text{m}$      | mm/s | m/s <sup>2</sup> | $\mu\text{m}$ | mm/s | m/s <sup>2</sup> |
| A               | FREE SUSPENSION        | 25                   | 1.6  | 2.5              | 35                 | 2.2  | 3.5              | 45            | 2.8  | 4.4              |
|                 | RIGID MOUNTING         | 21                   | 1.3  | 2.0              | 29                 | 1.8  | 2.8              | 37            | 2.3  | 3.6              |
| B               | FREE SUSPENSION        | 11                   | 0.7  | 1.1              | 18                 | 1.1  | 1.7              | 29            | 1.8  | 2.8              |
|                 | RIGID MOUNTING         |                      |      |                  | 14                 | 0.9  | 1.4              | 24            | 1.5  | 2.4              |



## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

GH315

GH355

GH400

GH450

## 5. CONSTRUCTION FEATURES

### 5.8. CONDUIT BOX

Terminal box, usually supplied for all motor frames, is manufactured in IP 55 protection, and it is normally mounted on motor right side, seeing from drive end; position on the left is always possible, whereas position on motor top generally requires a confirmation by Nidec ASI, based on motor frame.

Terminal box position cannot be the same as blower position; for motors with air-to-water heat exchanger, standard position for terminal box is opposite to water connections.

Terminal box is usually supplied closed; on request it is possible to have it provided with cable glands.

Terminal box types are shown in Figure 8 and Figure 9, for four-pole and six-pole machines respectively; terminal end markings are shown in Table 14. On request different solutions can be adopted (for example, execution with free cable ends).

### 5.9. GROUD TERMINALS

To ground the machine, two terminals are provided with threaded holes and screws. One terminal is available in the conduit box; the other is on the frame near the box, complete of identification nameplate.

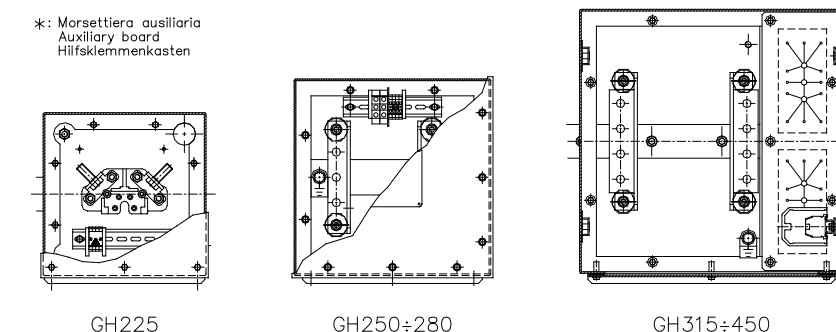
**TABLE 14**

Terminal head markings

| MARKING ACCORDING TO IEC 60034-8 |    | DESCRIPTION                 |
|----------------------------------|----|-----------------------------|
| A1                               | A2 | ARMATURE WINDING (ROTOR)    |
| B1                               | B2 | COMMUTATING POLES WINDING   |
| C1                               | C2 | COMPENSATING WINDING        |
| D1                               | D2 | SERIES EXCITATION WINDING   |
| E1                               | E2 | SHUNT EXCITATION WINDING    |
| F1                               | F2 | SEPARATE EXCITATION WINDING |

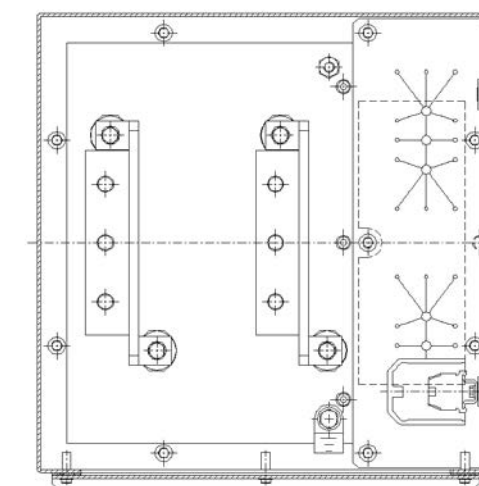
**FIGURE 8**

Terminal box for 4-pole GH machines



**FIGURE 9**

Terminal box for GH500-630 machines



## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

GH315

GH355

GH400

GH450

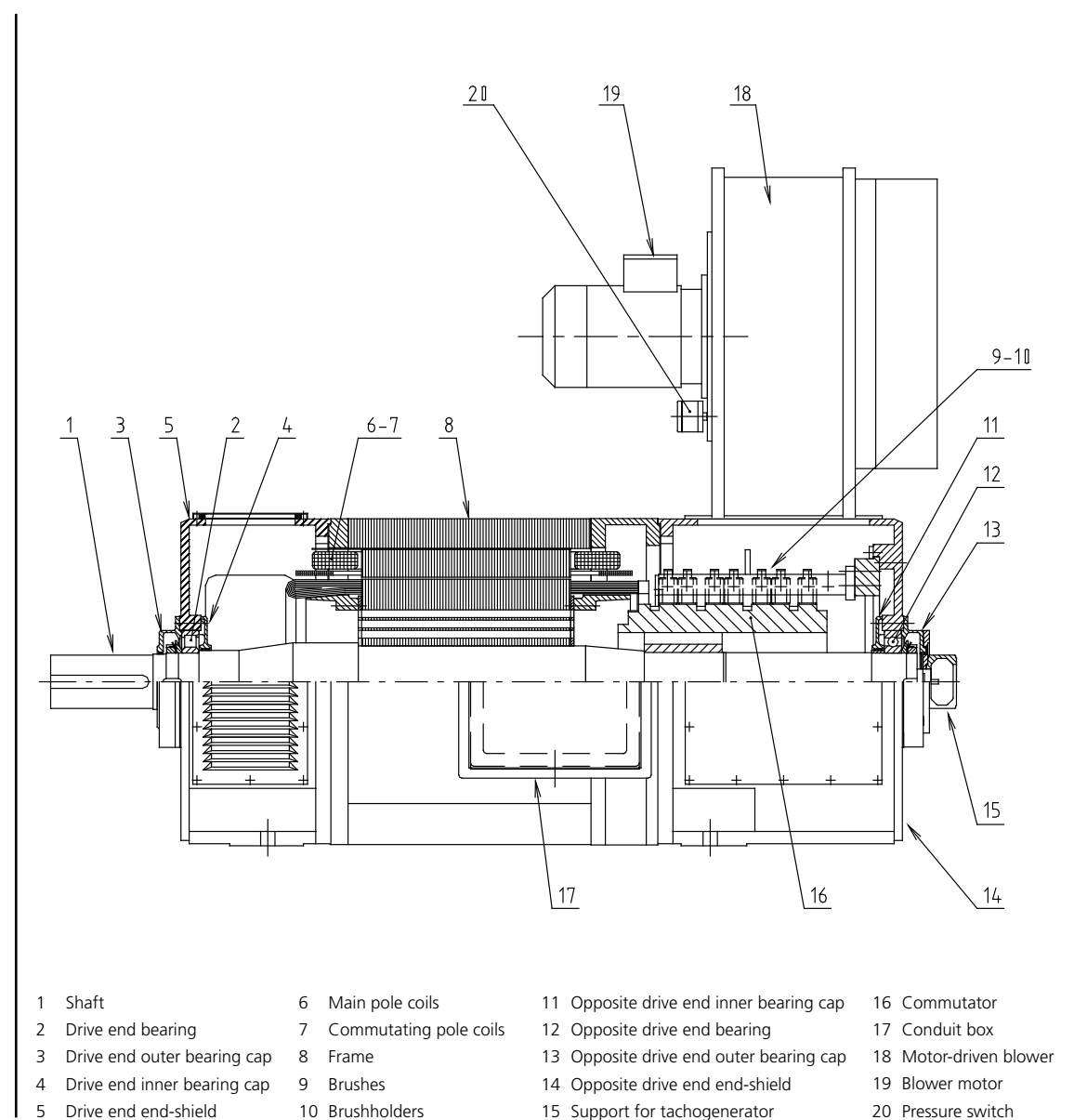
## 5. CONSTRUCTION FEATURES

### 5.10. CROSS-SECTION DRAWING

A typical sectional assembly drawing for frames GH225-450 is shown in Figure 10.

**FIGURE 10**

Sectional view of a GH series motor (4 poles)



## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

GH315

GH355

GH400

GH450

## 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS<sup>2</sup>

### 6.1. RATINGS

Maximum ratings, with de-rating curves for field weakening operation, for each GH 4 pole (225-450) motor design are given in the tables of the following section, together with dimensional drawings. These data are valid in the conditions shown hereafter.

- Continuous duty (S1), per EN 60034-1.
- Cooling by forced ventilation (IC06, IC17, IC37, IC86W for EN 60034-5).
- Cooling air temperature not exceeding 40°C, or cooling water temperature not exceeding 30°C.
- Altitude of the installation not exceeding 1000 meters.
- Power supply from a static converter connected in a fully controlled three-phase bridge (identification code for converter connection: B6C per IEC 971).

The maximum current ripple factor is 18%. The manufacturer must be consulted for other power supply conditions to determine if an external series inductor must be added. Current ripple ( $r$ ) is defined (EN 60034-1) as the ratio between current alternating component RMS value and current average value. A current shape factor ( $f$ ) can be also used: it is defined as the ratio between current RMS value and current average value. For an ideal direct current it would be  $f = 1$ , whereas for a real rectified current, with the same rated value, it would be  $f < 1$ , in general: this causes power loss to increase, but worse commutation too derives from this. Here is the relation between the above parameters:  $f^2 = 1 + r^2$ .

To prevent commutation capability decrease and power loss increase it is necessary that current dissimetry be lower than 10%. Current dissimetry can be defined as the ratio (in percent) between the two following quantities: the difference between maximum and minimum value of rectified current, in one cycle; and rated current.

- Speed regulation lower than 1:1.5 by means of field weakening control for non-compensated machines, and 1:2.5 for compensated machines. The manufacturer must be consulted for wider speed range regulation by means of field weakening control. Additional information is given in paragraph 6.5.
- Maximum load of 160% for 15 s per EN 60034-1. The duty cycle should be such that RMS current does not exceed rated current. Additional information on overload capability is given in paragraph 6.3.
- Class F temperature rises, according to EN 60034-1; insulating system is Class H. The effects of cooling air temperature and altitude on machine power and speed are shown in Table 15.

The manufacturer must be consulted for other temperature rise requirements (Class H or Class B).

In all cases where required working conditions are different (eg, intermittent services, ventilation and air-to-air heat exchangers or executions without ventilation, field weakening operation, heavy overloads, etc.) please check with the technical department of Nidec ASI.

In the performance tables are described the characteristics of each four-pole GH motor related of armature voltage and normal speed, more precisely:

- power (kW);
- efficiency (%);
- armature current in S1 duty (A);
- resistance of the armature circuit at 115°C ( $\Omega$ );
- saturated armature inductance (mH);
- armature winding code;
- maximum excitation power (W);
- time constant of excitation circuit (s);
- motor weight, in IC06, including the fan (kg);
- moment of inertia (kg m<sup>2</sup>).

The performances shown in the tables for the machines GH 225-450 are deducted from the calculation and do not take into account the loss of the excitation circuit (if separate, as usual) and power for forced ventilation.

<sup>2</sup> All the following tables are related to the performance of four-pole motors. **For the selection of a six-pole machine or higher a check by Nidec ASI technical department is always necessary.**

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

GH315

GH355

GH400

GH450

## 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS<sup>2</sup>

**TABLE 15**

Derating factors for power and speed based on altitude and ambient temperature

| ALTITUDE | $K_p$ | $K_n$ | AMBIENT TEMPERATURE | $K_p$ | $K_n$ |
|----------|-------|-------|---------------------|-------|-------|
| m a.s.l. |       |       | °C                  |       |       |
| 1000     | 1     | 1     | 30                  | 1     | 1     |
| 1500     | 1.03  | 0.99  | 35                  | 1     | 1     |
| 2000     | 1.07  | 0.98  | 40                  | 1     | 1     |
| 2500     | 1.11  | 0.96  | 45                  | 1.04  | 0.98  |
| 3000     | 1.15  | 0.94  | 50                  | 1.09  | 0.96  |
| 3500     | 1.20  | 0.92  | 55                  | 1.13  | 0.93  |
| 4000     | 1.27  | 0.90  | 60                  | 1.17  | 0.90  |

### 6.2. SUPPLY VOLTAGE

Supply voltage values as indicated in rating tables can be obtained from full rectifier bridge converter (B6C), from the following typical AC supplies:

|       |      |               |
|-------|------|---------------|
| 220 V | from | 220 V - 50 Hz |
| 420 V | from | 400 V - 50 Hz |
| 460 V | from | 400 V - 50 Hz |
| 520 V | from | 500 V - 50 Hz |
| 600 V | from | 500 V - 50 Hz |
| 700 V | from | 600 V - 50 Hz |

Motors with different supply voltages are in any case available. If voltage is not indicated in catalogue ratings, motor speed  $n$  can be obtained from the relation:

$$n = n_c \left( \frac{V - \Delta V}{V_c - \Delta V} \right)$$

where:

$$\Delta V = R \cdot I + 2.5 \text{ (V)}$$

$n$  : required speed (rpm)

$n_c$  : catalogue speed (rpm)

$V$  : armature voltage (V)

$V_c$  : catalogue closest voltage value (V)

$\Delta V$  : motor voltage drop (V)

$R$  : armature resistance at 115°C ( $\Omega$ )

$I$  : armature current (A)

Motor power can be calculated with good accuracy by assuming a linear relation between two group catalogue data:

$$P = P_2 + \frac{(P_1 - P_2)(n - n_2)}{n_1 - n_2}$$

where:

$P$  = new power (kW) at voltage  $V$

$P_1$  = catalogue power (kW) at the closest (rounded up) catalogue voltage

$P_2$  = catalogue power (kW) at the closest (rounded down) catalogue voltage

$n_1$  = catalogue base speed (rpm) at the closest (rounded up) catalogue voltage

$n_2$  = catalogue base speed (rpm) at the closest (rounded down) catalogue voltage

When  $V$  is higher than the maximum catalogue voltage for the armature winding considered, ask the Manufacturer.

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

GH315

GH355

GH400

GH450

## 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS<sup>2</sup>

### 6.3. MAXIMUM LOADS

As noted in paragraph 6.1, maximum loading is subject to a specific set of conditions. GH type machines are designed to meet and exceed the severe operating demands of industrial applications. Capabilities of uncompensated and compensated wound machines are noted hereafter.

#### Non-compensated size GH225

The maximum torque is 1.6 times the rated torque for 15 s on the basis of approximately 200% instantaneous current with such cycling that the RMS load value during a 5 minute load cycle does not exceed the rated armature current.

Motors with a stabilizing series field are capable of carrying out a torque 1.8-2.0 times the rated torque with a current twice the rated current.

#### Compensated sizes GH 225-450

The maximum torque is 1.8 times the rated torque for 15 s on the basis of approximately 200% current with such cycling that the RMS load value during a 5 minute load cycle does not exceed the rated armature current.

### 6.4. CURRENT RATE-OF-RISE

Reference signal step variations in control loops normally adopted in industrial plants, such as speed and torque control loops, cause current to vary rapidly, with high peak values; current derivative (with respect to time) maximum value, or current temporal rate-of-rise, during transient affects commutation in DC machines.

A current rate-of-rise of 200 In /s at rated current and speed is generally allowed (In being rated current value).

### 6.5. SPEED REGULATION

Values of maximum allowable speeds are listed in Table 12.

Each motor can operate at full field (with speed control) at constant torque up to one fiftieth (1/50) of the base speed without significant torque pulsation.

Each motor can operate with field weakening speed regulation (with a stabilizing series field or compensating winding) up to the maximum mechanical speed. When the motor speed is controlled by field weakening, it is necessary to reduce the rating given in the tables in accordance with the derating diagram.

In particular:  $P = P_n \times K$

Where:

$P$  = allowable output power,

$P_n$  = output power given in the tables,

$K$  = derating coefficient shown in the diagrams versus maximum required speed and winding code.

For each frame size, the derating diagram is indicated for the machine having the maximum frame length. For motors having a shorter frame length, the maximum speed is obtained by multiplying the speed determined from the diagram by the derating coefficients given in the tables.

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

GH315

GH355

GH400

GH450

## 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS<sup>2</sup>

### 6.6. DUTY WITH LARGE SPEED REGULATION

The use of mixed control systems provides a large increase in the allowable speed range, including overloads. This type of speed regulation reaches maximum speed by a combination of increasing armature voltage (and corresponding decrease in current) and field weakening.

This arrangement provides the advantages of operating with a pre-determined ratio of field weakening, and of reducing armature current approximately by the ratio between the speed at the beginning of field weakening, and base speed.

It is good for commutation since it depends not only on current value (reactance voltage), but also on the saturation of the commutating pole circuit (divergent black commutation bands).

The adoption of a mixed type speed control (or "false characteristic") does not involve changes in either frame size or core length. While the static converter size increases for larger current, the cost is compensated by the improved operation of the complete drive system.

### 6.7. EXCITATION

All standard motors, with or without compensating windings, are designed for separate excitation without the use of a stabilizing series winding.

Size GH225 can be fitted with a stabilizing series field upon request.

Standard excitation voltages are 220 V and 330 V, with alternate voltages available upon request.

Connection diagrams and terminal markings are shown in Table 16 (for normalized, cf. Table 14).

**TABLE 16**

Terminal marking

|                                                                                                                                                                                       | ROTAZIONE ORARIA<br>VISTA LATO ACCOPPIAMENTO<br>CLOCKWISE ROTATION<br>WHEN FACING DRIVE END<br>RECHTSLAUF<br>DREHSINN VON<br>ANTRIEBSSEITE GESEHEN | ROTAZIONE ANTIORARIA<br>VISTA LATO ACCOPPIAMENTO<br>CON INVERSIONE DI CAMPO<br>COUNTERCLOCKWISE ROTATION<br>WHEN FACING DRIVE END<br>BY FIELD INVERSION<br>LINKSLAUF<br>DREHSINN VON ANTRIEBSSEITE<br>GESEHEN, MIT FELDUMSCHALTUNG | ROTAZIONE ANTIORARIA<br>VISTA LATO ACCOPPIAMENTO<br>CON INVERSIONE DI INDOTTO<br>COUNTERCLOCKWISE ROTATION<br>WHEN FACING DRIVE END<br>BY ARMATURE INVERSION<br>LINKSLAUF<br>DREHSINN VON ANTRIEBSSEITE<br>GESEHEN, MIT ANKERUMSCHALTUNG |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MOTORE A ECCITAZIONE<br>INDIPENDENTE<br><br>SEPARATE EXCITED MOTOR<br><br>FREIWEREUNGSMOTOR                                                                                           |                                                                                                                                                    |                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                          |
| MOTORE A ECCITAZIONE<br>INDIPENDENTE<br>CON SERIE STABILIZZATRICE<br><br>SEPARATE EXCITED MOTOR<br>WITH STABILIZING SERIES<br><br>FREIWEREUNGSMOTOR<br>MIT HILFSREIHENSCHLUSSWICKLUNG |                                                                                                                                                    |                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                          |
| MOTORE A ECCITAZIONE<br>INDIPENDENTE<br>CON AVVOLG. DI COMPENSAZIONE<br><br>SEPARATE EXCITED MOTOR<br>WITH COMPENSATING WINDING<br><br>FREIWEREUNGSMOTOR<br>MIT KOMPENSATORWICKLUNG   |                                                                                                                                                    |                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                          |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

GH315

GH355

GH400

GH450

## 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS<sup>2</sup>

### 6.8. MAXIMUM CURRENT AT LOCKED ROTOR

Typical maximum permissible values of armature current at locked rotor condition based on time are specified in Table 17. This data are for information use only: the manufacturer must be consulted for data applicable to specific machine ratings and applications.

### 6.9. ACCESSORIES

Following a summary of the main accessories normally mounted on GH machines.

#### Stator thermal protective devices

To prevent machine from reaching dangerous temperature values, or at any rate higher temperature values than allowed, it is advisable to adopt one of the following solutions:

- opening an electric circuit by means of bimetallic thermostats (this is Nidec ASI standard solution: a first thermostat protecting excitation winding, a second one protecting interpole winding);
- same action as above, by means of thermistor devices (on request);
- continuous temperature monitoring by means of resistance temperature detectors (PT100, on request).

Temperature detectors' leads are normally wired to the auxiliary board in main terminal box.

#### Space heaters

Space heaters of armoured type can be provided on request. Typical ratings are given in Table 18 for 220 V, 1-phase, 50 Hz power supply. When automatic control of the space heaters is desired, a dedicated thermostat is available upon request.

#### Air flow switch

On request, a pressure switch is mounted on motors with separate ventilation blowers or air duct connections to detect the presence, or absence, of cooling air. This device is also part of the standard equipment of the air-water or air-to-air exchangers (see diagrams in Figure 6 and Figure 7).

Please note that the device cannot in any case protect the machine in case of insufficient air flow due to dirty or clogged filter.

#### Speed monitoring devices

Motors are usually supplied with a pre-arrangement for solid shaft tachogenerator or digital encoder, for axial mounting on opposite drive end side, with standard RE.0444 type connection flange (Euroflange). An elastic coupling to connect the device is always included in standard pre-arrangement (normally the coupling bore diameter is 11 mm).

It is possible, on request, to supply different devices and special pre-arrangements (for instance, pre-arrangement for hollow shaft encoders, for mounting without elastic coupling).

On machines with two shaft ends, intended for tandem front position, a special arrangement is available for B5 mounting of speed control devices on drive end side (transmission by means of pulley and belt).



## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

HOME

GH225

GH250

GH280

GH315

GH355

GH400

GH450

## 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS<sup>2</sup>

**TABLE 17**

Maximum current at locked rotor

| ARMATURE CURRENT | TIME PERIOD |
|------------------|-------------|
| %                | S           |
| 200              | 10          |
| 150              | 20          |
| 100              | 30          |
| 50               | 90          |
| 20               | 600         |
| 15               | Continuous  |

**TABLE 18**

Space heaters ratings

| SIZE       | 225 | 250 | 280 | 315 | 355 | 400 | 450 | 500       | 560       | 630       |
|------------|-----|-----|-----|-----|-----|-----|-----|-----------|-----------|-----------|
| POWER<br>W | 120 | 200 | 300 | 300 | 400 | 400 | 720 | 2X<br>720 | 2X<br>720 | 2X<br>720 |



## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

GH315

GH355

GH400

GH450

## 7. TESTS

Each motor is subjected to all tests that are necessary to ensure the product is fully acceptable; in particular, for each DC machine of ours a specific electric set-up is performed, in order to get good commutation at rated load and in overload, in the whole speed range.

We distinguish routine tests, performed on each machine built, and type tests, intended to prototypes or performed at the request of the customer. See also Table 19.

**TABLE 19**

Main tests

| TEST                                   | ROUTINE TEST | TYPE TEST |
|----------------------------------------|--------------|-----------|
| Winding resistance at room temperature | ×            | ×         |
| Saturation curves                      |              | ×         |
| No-load losses                         |              | ×         |
| Speed regulation at base and top speed | ×            | ×         |
| Constant torque characteristics        | ×            | ×         |
| Constant power characteristics         | ×            | ×         |
| Heat run test                          |              | ×         |
| Visual commutation check               | ×            | ×         |
| Momentary overload tests               | ×            | ×         |
| Noise Level                            |              | ×         |
| Vibrations                             | ×            | ×         |
| Overspeed                              | ×            | ×         |
| High-potential test (AC)               | ×            | ×         |
| Insulation resistance                  | ×            | ×         |
| Measurement of moment of inertia       |              | ×         |





## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

## GH315

## GH355

## GH400

## GH450

### GH225

Derating for field weakening operation

GH225 - GH225 K

Performance of uncompensated motors

GH225 S

GH225 M

GH225 L

GH225 P

GH225 X

Performance of compensated motors

GH225 SK

GH225 MK

GH225 LK

GH225 PK

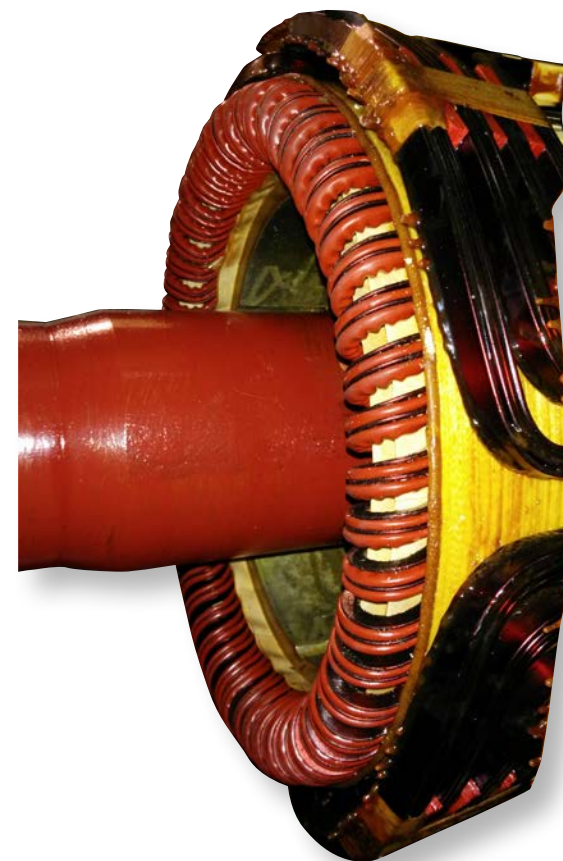
GH225 XK

Overall dimensions

GH225 IM1001-IP23-IC06

GH225 IM1001-IP54-IC86W

GH225 IM1001-IP44-IC37



Performance Tables are displayed on multiple pages, alongside the data tables are repeated alternately overall dimensions (IC06- IC86W-IC37)



## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

## GH315

## GH355

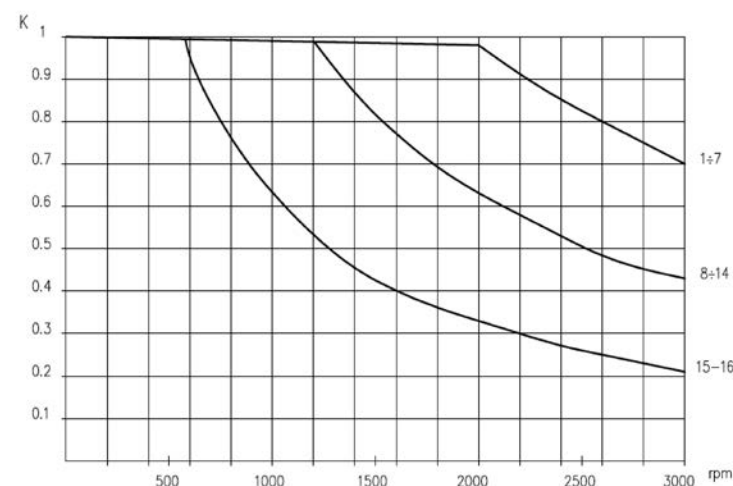
## GH400

## GH450

#### GH 225

**RIDUZIONE DELLA POTENZA IN DISECCITAZIONE  
DERATING FOR FIELD WEAKENING OPERATION  
LEISTUNGSREDUZIERUNG BEI FELDSWÄCHUNG**

GH 225 (non compensata - uncompensated - unkompensiert)  
[ 160% sovraccarico - overload - überlast ]



P = K x P tabella potenza disponibile Allowable power output P = K x P table Verfügbare Leistung P = K x P table

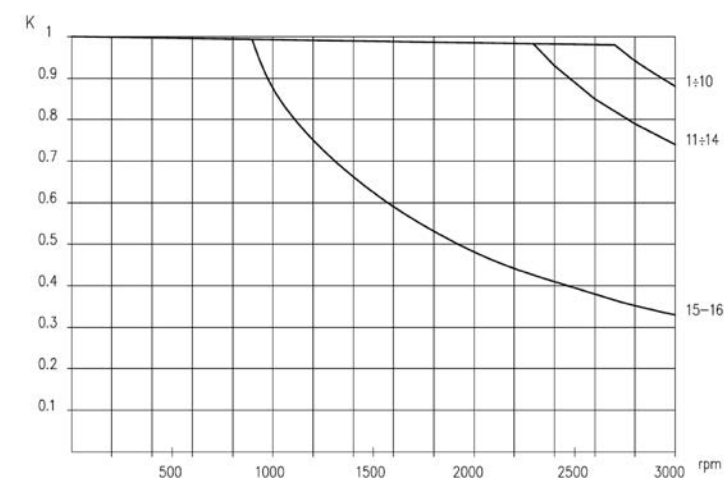
|             |          |              |
|-------------|----------|--------------|
| per/for/für | GH 225 S | K = K x 1.5  |
|             | GH 225 M | K = K x 1.41 |
|             | GH 225 L | K = K x 1.25 |
|             | GH 225 P | K = K x 1.11 |
|             | GH 225 X | K = K x 1.0  |

Per K ≥ 1 niente declassamento For K ≥ 1 no derating Für K ≥ 1 keine Leistungsreduzierung

#### GH 225 K

**RIDUZIONE DELLA POTENZA IN DISECCITAZIONE  
DERATING FOR FIELD WEAKENING OPERATION  
LEISTUNGSREDUZIERUNG BEI FELDSWÄCHUNG**

GH 225 K (compensata - compensated - kompensiert)  
[ 180% sovraccarico - overload - überlast ]



P = K x P tabella potenza disponibile Allowable power output P = K x P table Verfügbare Leistung P = K x P table

|             |           |              |
|-------------|-----------|--------------|
| per/for/für | GH 225 SK | K = K x 1.5  |
|             | GH 225 MK | K = K x 1.41 |
|             | GH 225 LK | K = K x 1.25 |
|             | GH 225 PK | K = K x 1.11 |
|             | GH 225 XK | K = K x 1.0  |

Per K ≥ 1 niente declassamento For K ≥ 1 no derating Für K ≥ 1 keine Leistungsreduzierung

| TECHNICAL DATA |                    |                                 |                            |                               |                              |                      |                       |
|----------------|--------------------|---------------------------------|----------------------------|-------------------------------|------------------------------|----------------------|-----------------------|
| Size           | Motor mass<br>(kg) | Moment of<br>inertia<br>(kg m²) | Excitation<br>power<br>(W) | Field time<br>constant<br>(s) | Max. mech.<br>speed<br>(rpm) | Ventilation data     |                       |
|                |                    |                                 |                            |                               |                              | Air flow<br>(m³/min) | Pressure<br>drop (Pa) |
| GH225 S        | 755                | 1.75                            | 2400                       | 0.68                          | 3000                         | 50                   | 1400                  |
| GH225 M        | 810                | 1.95                            | 2600                       | 0.77                          | 3000                         | 50                   | 1400                  |
| GH225 L        | 870                | 2.2                             | 3000                       | 0.81                          | 3000                         | 50                   | 1400                  |
| GH225 P        | 925                | 2.4                             | 3300                       | 0.84                          | 3000                         | 50                   | 1400                  |
| GH225 X        | 1000               | 2.6                             | 3500                       | 0.87                          | 3000                         | 50                   | 1400                  |
| GH225 SK       | 755                | 1.75                            | 2100                       | 0.58                          | 3000                         | 50                   | 1400                  |
| GH225 MK       | 810                | 1.95                            | 2400                       | 0.62                          | 3000                         | 50                   | 1400                  |
| GH225 LK       | 870                | 2.2                             | 2600                       | 0.65                          | 3000                         | 50                   | 1400                  |
| GH225 PK       | 925                | 2.4                             | 2900                       | 0.68                          | 3000                         | 50                   | 1400                  |
| GH225 XK       | 1000               | 2.6                             | 3200                       | 0.71                          | 3000                         | 50                   | 1400                  |

| Bearings                             | Drive end  |                            | Opposite drive end |
|--------------------------------------|------------|----------------------------|--------------------|
|                                      | Coupling   | Pulley                     |                    |
| GH225 S-M-L-P-X                      | 6218 2Z C3 | NU218ECP C3                | 6217 2Z C3         |
| Electrical blower (IC06)             | Weight     | Blower motor power         |                    |
|                                      | 40 kg      | 2.2 kW (50/60 Hz)          |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight     | Heat exchanger motor power |                    |
|                                      | 240 kg     | 3.0 kW (50/60 Hz)          |                    |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

## GH315

## GH355

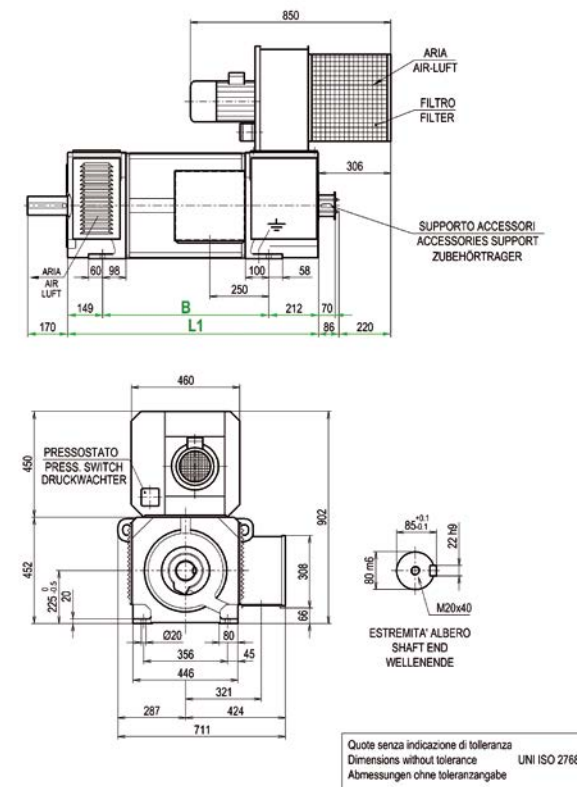
## GH400

## GH450

## GH225 S

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 2400<br>Field time constant (s): 0.68<br>Motor mass (kg): 795 (IC06)<br>Moment of inertia (kg m²): 1.75 |                    |              | Armature circuit        |                        | Winding code |
|---------------------------------------|-------|-------|-------|-------|-------|-------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|
| 220 V                                 | 400 V | 420 V | 460 V | 520 V | 600 V | RATED OUTPUT kW                                                                                                               | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |
| 1300                                  | 2470  | 2630  |       |       |       | 149                                                                                                                           | 750                | 90.6         | 0.412                   | 0.019                  | 1            |
|                                       |       |       |       |       |       | 281                                                                                                                           | 750                | 93.7         |                         |                        |              |
|                                       |       |       |       |       |       | 292                                                                                                                           | 740                | 93.9         |                         |                        |              |
| 1190                                  | 2250  | 2370  |       |       |       | 128                                                                                                                           | 650                | 89.9         | 0.509                   | 0.023                  | 2            |
|                                       |       |       |       |       |       | 239                                                                                                                           | 640                | 93.2         |                         |                        |              |
|                                       |       |       |       |       |       | 251                                                                                                                           | 640                | 93.4         |                         |                        |              |
| 1080                                  |       |       | 2590  |       |       | 269                                                                                                                           | 625                | 93.8         | 0.583                   | 0.028                  | 3            |
|                                       | 2070  |       |       |       |       | 114                                                                                                                           | 585                | 88.9         |                         |                        |              |
|                                       |       | 2170  |       |       |       | 213                                                                                                                           | 575                | 92.7         |                         |                        |              |
|                                       |       |       | 2390  |       |       | 225                                                                                                                           | 575                | 93.1         | 0.746                   | 0.033                  | 4            |
|                                       |       |       |       |       |       | 247                                                                                                                           | 575                | 93.4         |                         |                        |              |
| 950                                   |       |       |       |       |       | 107                                                                                                                           | 550                | 88.5         |                         |                        |              |
|                                       | 1830  |       |       |       |       | 204                                                                                                                           | 550                | 92.7         | 0.914                   | 0.043                  | 5            |
|                                       |       | 1920  |       |       |       | 215                                                                                                                           | 550                | 92.9         |                         |                        |              |
|                                       |       |       | 2120  |       |       | 228                                                                                                                           | 530                | 93.4         |                         |                        |              |
|                                       |       |       |       | 2410  |       | 254                                                                                                                           | 520                | 93.9         | 1.047                   | 0.052                  | 6            |
| 860                                   |       |       |       |       |       | 94                                                                                                                            | 490                | 87.2         |                         |                        |              |
|                                       | 1650  |       |       |       |       | 178                                                                                                                           | 485                | 91.9         |                         |                        |              |
|                                       |       | 1750  |       |       |       | 188                                                                                                                           | 485                | 92.2         | 1.179                   | 0.056                  | 7            |
|                                       |       |       | 1920  |       |       | 207                                                                                                                           | 485                | 92.6         |                         |                        |              |
|                                       |       |       |       | 2190  |       | 230                                                                                                                           | 475                | 93.2         |                         |                        |              |
|                                       |       |       |       |       | 2540  | 262                                                                                                                           | 465                | 93.9         | 1.754                   | 0.075                  | 8            |
| 780                                   |       |       |       |       |       | 85                                                                                                                            | 450                | 86.2         |                         |                        |              |
|                                       | 1520  |       |       |       |       | 161                                                                                                                           | 440                | 91.3         |                         |                        |              |
|                                       |       | 1590  |       |       |       | 169                                                                                                                           | 440                | 91.6         | 1.179                   | 0.056                  | 7            |
|                                       |       |       | 1760  |       |       | 186                                                                                                                           | 440                | 92.2         |                         |                        |              |
|                                       |       |       |       | 2000  |       | 203                                                                                                                           | 420                | 93.0         |                         |                        |              |
|                                       |       |       |       |       | 2320  | 230                                                                                                                           | 410                | 93.7         | 1.179                   | 0.056                  | 7            |
| 740                                   |       |       |       |       |       | 81                                                                                                                            | 430                | 85.8         |                         |                        |              |
|                                       | 1450  |       |       |       |       | 153                                                                                                                           | 420                | 91.2         |                         |                        |              |
|                                       |       | 1520  |       |       |       | 161                                                                                                                           | 420                | 91.4         | 1.179                   | 0.056                  | 7            |
|                                       |       |       | 1670  |       |       | 177                                                                                                                           | 420                | 92.0         |                         |                        |              |
|                                       |       |       |       | 1910  |       | 197                                                                                                                           | 410                | 92.6         |                         |                        |              |
|                                       |       |       |       |       | 2210  | 227                                                                                                                           | 405                | 93.6         | 1.754                   | 0.075                  | 8            |
| 590                                   |       |       |       |       |       | 70                                                                                                                            | 380                | 83.6         |                         |                        |              |
|                                       | 1160  |       |       |       |       | 134                                                                                                                           | 375                | 90.0         |                         |                        |              |
|                                       |       | 1220  |       |       |       | 140                                                                                                                           | 370                | 90.3         | 1.754                   | 0.075                  | 8            |
|                                       |       |       |       |       |       | 154                                                                                                                           | 370                | 91.0         |                         |                        |              |

## GH225 IM1001 - IP23 - IC06



| Size    | B   | L1   |
|---------|-----|------|
| GH225 S | 655 | 1016 |
| GH225 M | 705 | 1066 |
| GH225 L | 750 | 1111 |
| GH225 P | 800 | 1161 |
| GH225 X | 850 | 1211 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH225 S        | 755             | 1.75                      | 2400                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 M        | 810             | 1.95                      | 2600                 | 0.77                    | 3000                   | 50                | 1400               |
| GH225 L        | 870             | 2.2                       | 3000                 | 0.81                    | 3000                   | 50                | 1400               |
| GH225 P        | 925             | 2.4                       | 3300                 | 0.84                    | 3000                   | 50                | 1400               |
| GH225 X        | 1000            | 2.6                       | 3500                 | 0.87                    | 3000                   | 50                | 1400               |
| GH225 SK       | 755             | 1.75                      | 2100                 | 0.58                    | 3000                   | 50                | 1400               |
| GH225 MK       | 810             | 1.95                      | 2400                 | 0.62                    | 3000                   | 50                | 1400               |
| GH225 LK       | 870             | 2.2                       | 2600                 | 0.65                    | 3000                   | 50                | 1400               |
| GH225 PK       | 925             | 2.4                       | 2900                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 XK       | 1000            | 2.6                       | 3200                 | 0.71                    | 3000                   | 50                | 1400               |

| Bearings                             | Drive end  |                            | Opposite drive end |
|--------------------------------------|------------|----------------------------|--------------------|
|                                      | Coupling   | Pulley                     |                    |
| GH225 S-M-L-P-X                      | 6218 2Z C3 | NU218ECP C3                | 6217 2Z C3         |
| Electrical blower (IC06)             | Weight     | Blower motor power         |                    |
|                                      | 40 kg      | 2.2 kW (50/60 Hz)          |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight     | Heat exchanger motor power |                    |
|                                      | 240 kg     | 3.0 kW (50/60 Hz)          |                    |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

## GH315

## GH355

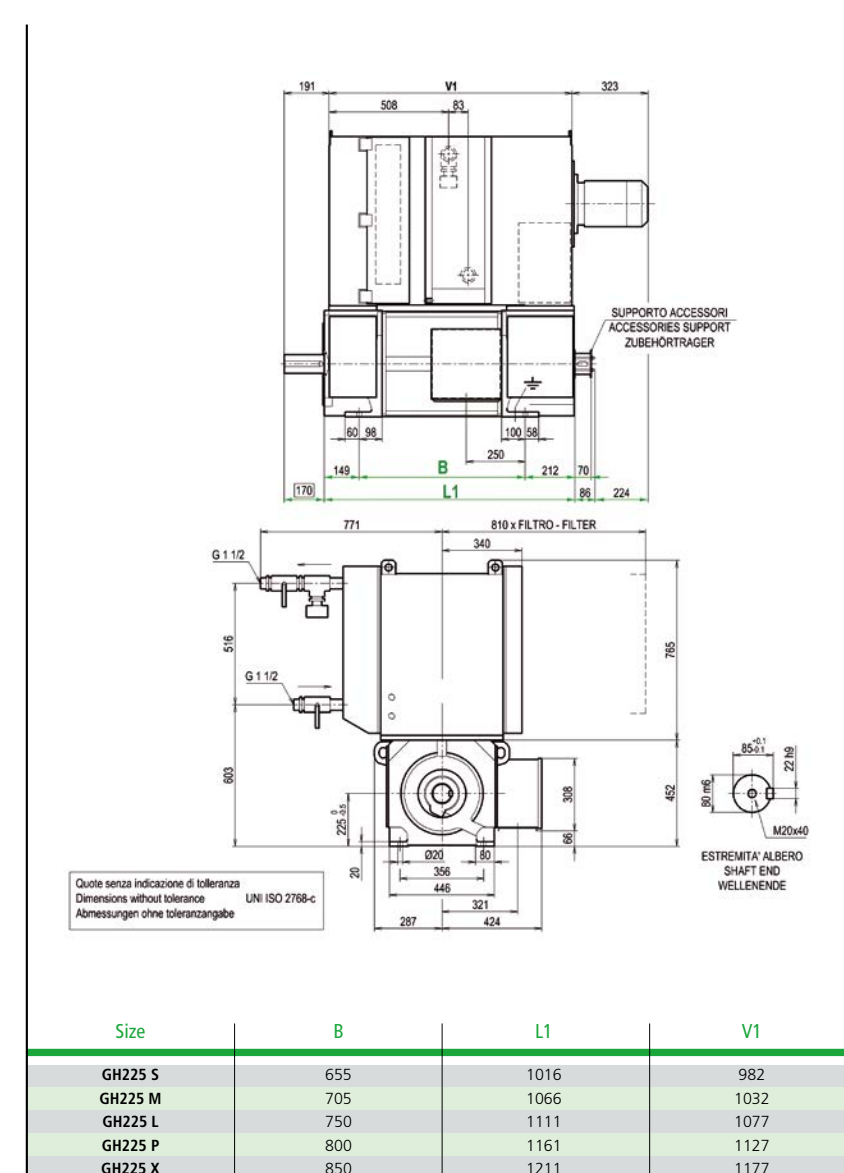
## GH400

## GH450

## GH225 S

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 2400<br>Field time constant (s): 0.68<br>Motor mass (kg): 795 (IC06)<br>Moment of inertia (kg m²): 1.75 |                    |              | Armature circuit        |                        | Winding code |
|---------------------------------------|-------|-------|-------|-------|-------|-------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|
| 220 V                                 | 400 V | 420 V | 460 V | 520 V | 600 V | RATED OUTPUT kW                                                                                                               | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |
| 540                                   | 1040  |       |       |       |       | 60                                                                                                                            | 330                | 82.7         | 2.105                   | 0.094                  | 9            |
|                                       |       |       |       |       |       | 116                                                                                                                           | 325                | 89.6         |                         |                        |              |
|                                       |       | 1110  |       |       |       | 123                                                                                                                           | 325                | 89.9         |                         |                        |              |
|                                       |       |       | 1220  |       |       | 135                                                                                                                           | 325                | 90.7         |                         |                        |              |
|                                       |       |       |       | 1390  |       | 151                                                                                                                           | 320                | 91.6         |                         |                        |              |
| 480                                   | 950   |       |       |       |       | 52                                                                                                                            | 290                | 81.1         | 2.454                   | 0.115                  | 10           |
|                                       |       |       |       |       |       | 102                                                                                                                           | 288                | 88.7         |                         |                        |              |
|                                       |       | 1010  |       |       |       | 108                                                                                                                           | 288                | 89.2         |                         |                        |              |
|                                       |       |       | 1120  |       |       | 118                                                                                                                           | 288                | 89.9         |                         |                        |              |
|                                       |       |       |       | 1280  |       | 135                                                                                                                           | 288                | 90.8         |                         |                        |              |
| 420                                   | 850   |       |       |       |       | 47                                                                                                                            |                    | 80.7         | 3.080                   | 0.137                  | 11           |
|                                       |       |       |       |       |       | 94                                                                                                                            |                    | 88.6         |                         |                        |              |
|                                       |       | 900   |       |       |       | 99                                                                                                                            | 265                | 89.1         |                         |                        |              |
|                                       |       |       | 990   |       |       | 108                                                                                                                           |                    | 89.8         |                         |                        |              |
|                                       |       |       |       | 1130  |       | 125                                                                                                                           |                    | 90.7         |                         |                        |              |
| 370                                   | 760   |       |       |       | 1310  | 145                                                                                                                           |                    | 91.8         | 3.704                   | 0.168                  | 12           |
|                                       |       |       |       |       |       | 41                                                                                                                            |                    | 77.5         |                         |                        |              |
|                                       |       |       |       |       |       | 83                                                                                                                            |                    | 86.4         |                         |                        |              |
|                                       |       | 810   |       |       |       | 88                                                                                                                            | 240                | 87.1         |                         |                        |              |
|                                       |       |       | 900   |       |       | 96                                                                                                                            |                    | 88.0         |                         |                        |              |
| 340                                   | 700   |       |       |       |       | 112                                                                                                                           |                    | 90.2         | 4.362                   | 0.209                  | 13           |
|                                       |       |       |       |       |       | 130                                                                                                                           |                    | 90.6         |                         |                        |              |
|                                       |       |       |       |       |       | 35                                                                                                                            |                    | 73.6         |                         |                        |              |
|                                       |       | 730   |       |       |       | 73                                                                                                                            |                    | 85.3         |                         |                        |              |
|                                       |       |       | 820   |       |       | 77                                                                                                                            | 216                | 85.8         |                         |                        |              |
|                                       | 650   |       |       |       |       | 86                                                                                                                            |                    | 86.7         | 4.779                   | 0.224                  | 14           |
|                                       |       |       |       |       |       | 98                                                                                                                            |                    | 88.5         |                         |                        |              |
|                                       |       |       | 930   |       |       | 115                                                                                                                           |                    | 89.5         |                         |                        |              |
|                                       |       |       |       | 1090  |       | 72                                                                                                                            |                    | 85.3         |                         |                        |              |
|                                       |       |       | 700   |       |       | 76                                                                                                                            |                    | 85.9         |                         |                        |              |
|                                       | 540   |       |       |       |       | 84                                                                                                                            | 210                | 86.7         | 7.015                   | 0.304                  | 15           |
|                                       |       |       |       |       |       | 95                                                                                                                            |                    | 88.5         |                         |                        |              |
|                                       |       |       |       |       |       | 111                                                                                                                           |                    | 89.0         |                         |                        |              |
|                                       |       | 560   |       |       |       | 62                                                                                                                            |                    | 82.9         |                         |                        |              |
|                                       |       |       | 630   |       |       | 65                                                                                                                            | 185                | 83.6         |                         |                        |              |
|                                       | 480   |       |       |       |       | 72                                                                                                                            |                    | 84.9         | 8.419                   | 0.382                  | 16           |
|                                       |       |       |       |       |       | 54                                                                                                                            |                    | 82.5         |                         |                        |              |
|                                       |       |       |       |       |       | 58                                                                                                                            | 165                | 83.0         |                         |                        |              |
|                                       |       | 520   |       |       |       | 64                                                                                                                            |                    | 84.5         |                         |                        |              |
|                                       |       |       |       | 560   |       | 73                                                                                                                            |                    | 86.0         |                         |                        |              |

## GH225 IM1001 - IP54 - IC86W



| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH225 S        | 755             | 1.75                      | 2400                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 M        | 810             | 1.95                      | 2600                 | 0.77                    | 3000                   | 50                | 1400               |
| GH225 L        | 870             | 2.2                       | 3000                 | 0.81                    | 3000                   | 50                | 1400               |
| GH225 P        | 925             | 2.4                       | 3300                 | 0.84                    | 3000                   | 50                | 1400               |
| GH225 X        | 1000            | 2.6                       | 3500                 | 0.87                    | 3000                   | 50                | 1400               |
| GH225 SK       | 755             | 1.75                      | 2100                 | 0.58                    | 3000                   | 50                | 1400               |
| GH225 MK       | 810             | 1.95                      | 2400                 | 0.62                    | 3000                   | 50                | 1400               |
| GH225 LK       | 870             | 2.2                       | 2600                 | 0.65                    | 3000                   | 50                | 1400               |
| GH225 PK       | 925             | 2.4                       | 2900                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 XK       | 1000            | 2.6                       | 3200                 | 0.71                    | 3000                   | 50                | 1400               |

| Bearings                             | Drive end  |                            | Opposite drive end |
|--------------------------------------|------------|----------------------------|--------------------|
|                                      | Coupling   | Pulley                     |                    |
| GH225 S-M-L-P-X                      | 6218 2Z C3 | NU218ECP C3                | 6217 2Z C3         |
| Electrical blower (IC06)             | Weight     | Blower motor power         |                    |
|                                      | 40 kg      | 2.2 kW (50/60 Hz)          |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight     | Heat exchanger motor power |                    |
|                                      | 240 kg     | 3.0 kW (50/60 Hz)          |                    |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

## GH315

## GH355

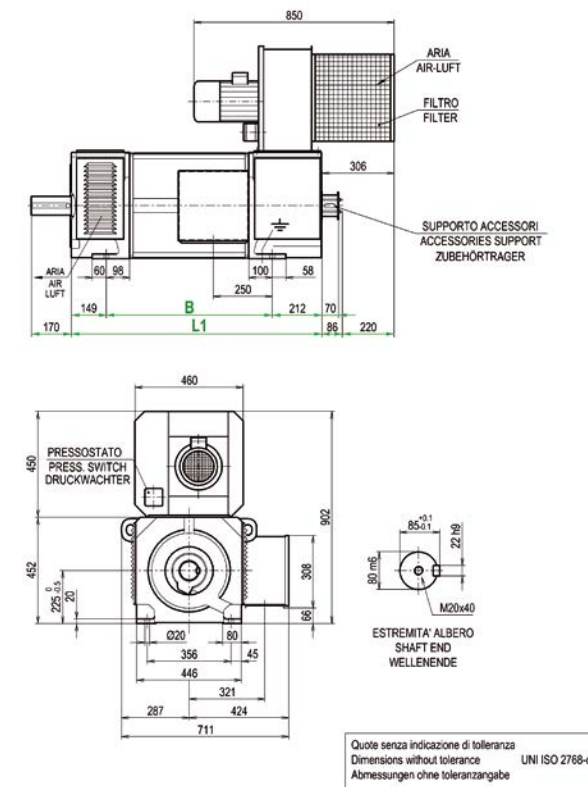
## GH400

## GH450

## GH225 M

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 2600<br>Field time constant (s): 0.77<br>Motor mass (kg): 850 (IC06)<br>Moment of inertia (kg m²): 1.95 |                    |              | Armature circuit        |                        | Winding code |
|---------------------------------------|-------|-------|-------|-------|-------|-------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|
| 220 V                                 | 400 V | 420 V | 460 V | 520 V | 600 V | RATED OUTPUT kW                                                                                                               | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |
| 1120                                  | 2120  |       |       |       |       | 148                                                                                                                           | 750                | 90.2         | 0.466                   | 0.020                  | 1            |
|                                       |       |       |       |       |       | 280                                                                                                                           | 750                | 93.5         |                         |                        |              |
|                                       |       | 2260  |       |       |       | 291                                                                                                                           | 740                | 93.7         |                         |                        |              |
|                                       |       |       | 2460  |       |       | 309                                                                                                                           | 715                | 94.0         |                         |                        |              |
| 1020                                  | 1930  |       |       |       |       | 128                                                                                                                           | 650                | 89.4         | 0.551                   | 0.025                  | 2            |
|                                       |       |       |       |       |       | 238                                                                                                                           | 640                | 93.0         |                         |                        |              |
|                                       |       | 2030  |       |       |       | 250                                                                                                                           | 640                | 93.2         |                         |                        |              |
|                                       |       |       | 2230  |       |       | 269                                                                                                                           | 625                | 93.6         |                         |                        |              |
| 930                                   | 1170  |       |       | 2560  |       | 300                                                                                                                           | 615                | 94.0         | 0.646                   | 0.030                  | 3            |
|                                       |       |       |       |       |       | 114                                                                                                                           | 585                | 88.4         |                         |                        |              |
|                                       |       | 1860  |       |       |       | 224                                                                                                                           | 575                | 92.8         |                         |                        |              |
|                                       |       |       | 2050  |       |       | 246                                                                                                                           | 575                | 93.2         |                         |                        |              |
| 820                                   | 1570  |       |       | 2340  |       | 272                                                                                                                           | 560                | 93.8         | 0.817                   | 0.035                  | 4            |
|                                       |       |       |       |       |       | 107                                                                                                                           | 550                | 88.2         |                         |                        |              |
|                                       |       | 1650  |       |       |       | 203                                                                                                                           | 550                | 92.5         |                         |                        |              |
|                                       |       |       | 1820  |       |       | 214                                                                                                                           | 550                | 92.7         |                         |                        |              |
| 740                                   | 1420  |       |       | 2070  |       | 227                                                                                                                           | 530                | 93.2         | 0.994                   | 0.045                  | 5            |
|                                       |       |       |       |       | 2420  | 253                                                                                                                           | 520                | 93.7         |                         |                        |              |
|                                       |       | 1500  |       |       |       | 283                                                                                                                           | 500                | 94.3         |                         |                        |              |
|                                       |       |       | 1650  |       |       | 93                                                                                                                            | 490                | 86.4         |                         |                        |              |
| 670                                   | 1300  |       |       |       |       | 177                                                                                                                           | 485                | 91.5         | 1.149                   | 0.056                  | 6            |
|                                       |       |       |       |       |       | 187                                                                                                                           | 485                | 91.8         |                         |                        |              |
|                                       |       | 1500  |       |       |       | 205                                                                                                                           | 485                | 92.3         |                         |                        |              |
|                                       |       |       | 1650  |       |       | 230                                                                                                                           | 475                | 93.0         |                         |                        |              |
| 640                                   | 1240  |       |       |       |       | 261                                                                                                                           | 465                | 93.7         | 1.286                   | 0.060                  | 7            |
|                                       |       |       |       |       |       | 84                                                                                                                            | 450                | 85.3         |                         |                        |              |
|                                       |       | 1370  |       |       |       | 160                                                                                                                           | 440                | 90.9         |                         |                        |              |
|                                       |       |       | 1510  |       |       | 168                                                                                                                           | 440                | 91.2         |                         |                        |              |
| 510                                   | 990   |       |       | 1720  |       | 185                                                                                                                           | 440                | 91.8         | 1.965                   | 0.081                  | 8            |
|                                       |       |       |       |       | 2000  | 202                                                                                                                           | 420                | 92.6         |                         |                        |              |
|                                       |       |       |       |       |       | 230                                                                                                                           | 410                | 93.3         |                         |                        |              |
|                                       |       | 1050  |       |       |       | 80                                                                                                                            | 430                | 84.8         |                         |                        |              |
|                                       |       |       |       |       |       | 152                                                                                                                           | 420                | 90.7         |                         |                        |              |
|                                       |       |       |       |       |       | 160                                                                                                                           | 420                | 91.0         |                         |                        |              |
|                                       |       |       | 1440  |       |       | 176                                                                                                                           | 420                | 91.6         |                         |                        |              |
|                                       |       |       |       | 1640  |       | 197                                                                                                                           | 410                | 92.3         |                         |                        |              |
|                                       |       |       |       |       | 1900  | 226                                                                                                                           | 405                | 93.2         |                         |                        |              |
|                                       |       |       |       |       |       | 69                                                                                                                            | 380                | 82.4         |                         |                        |              |
|                                       |       |       |       |       |       | 133                                                                                                                           | 375                | 89.4         |                         |                        |              |
|                                       |       |       |       |       |       | 140                                                                                                                           | 370                | 89.8         |                         |                        |              |
|                                       |       |       |       |       |       | 153                                                                                                                           | 370                | 90.5         |                         |                        |              |

## GH225 IM1001 - IP23 - IC06



| Size    | B   | L1   |
|---------|-----|------|
| GH225 S | 655 | 1016 |
| GH225 M | 705 | 1066 |
| GH225 L | 750 | 1111 |
| GH225 P | 800 | 1161 |
| GH225 X | 850 | 1211 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH225 S        | 755             | 1.75                      | 2400                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 M        | 810             | 1.95                      | 2600                 | 0.77                    | 3000                   | 50                | 1400               |
| GH225 L        | 870             | 2.2                       | 3000                 | 0.81                    | 3000                   | 50                | 1400               |
| GH225 P        | 925             | 2.4                       | 3300                 | 0.84                    | 3000                   | 50                | 1400               |
| GH225 X        | 1000            | 2.6                       | 3500                 | 0.87                    | 3000                   | 50                | 1400               |
| GH225 SK       | 755             | 1.75                      | 2100                 | 0.58                    | 3000                   | 50                | 1400               |
| GH225 MK       | 810             | 1.95                      | 2400                 | 0.62                    | 3000                   | 50                | 1400               |
| GH225 LK       | 870             | 2.2                       | 2600                 | 0.65                    | 3000                   | 50                | 1400               |
| GH225 PK       | 925             | 2.4                       | 2900                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 XK       | 1000            | 2.6                       | 3200                 | 0.71                    | 3000                   | 50                | 1400               |

| Bearings                             | Drive end  |                            | Opposite drive end |
|--------------------------------------|------------|----------------------------|--------------------|
|                                      | Coupling   | Pulley                     |                    |
| GH225 S-M-L-P-X                      | 6218 2Z C3 | NU218ECP C3                | 6217 2Z C3         |
| Electrical blower (IC06)             | Weight     | Blower motor power         |                    |
|                                      | 40 kg      | 2.2 kW (50/60 Hz)          |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight     | Heat exchanger motor power |                    |
|                                      | 240 kg     | 3.0 kW (50/60 Hz)          |                    |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

## GH315

## GH355

## GH400

## GH450

## GH225 M

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 2600<br>Field time costant (s): 0.77<br>Motor mass (kg): 850 (IC06)<br>Moment of inertia (kg m²): 1.95 |                    |              | Armature circuit        |                        | Winding code |
|---------------------------------------|-------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|
| 220 V                                 | 400 V | 420 V | 460 V | 520 V | 600 V | RATED OUTPUT kW                                                                                                              | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |
| 460                                   | 900   |       |       |       |       | 59                                                                                                                           | 330                | 81.6         | 2.321                   | 0.103                  | 9            |
|                                       |       |       |       |       |       | 115                                                                                                                          | 325                | 89.0         |                         |                        |              |
|                                       |       | 950   |       |       |       | 122                                                                                                                          | 325                | 89.4         |                         |                        |              |
|                                       |       |       | 1050  |       |       | 135                                                                                                                          | 325                | 90.2         |                         |                        |              |
|                                       |       |       |       | 1200  |       | 151                                                                                                                          | 320                | 91.1         |                         |                        |              |
| 410                                   | 820   |       |       |       |       | 51                                                                                                                           | 290                | 79.8         | 2.702                   | 0.127                  | 10           |
|                                       |       |       |       |       |       | 101                                                                                                                          | 288                | 88.0         |                         |                        |              |
|                                       |       | 870   |       |       |       | 107                                                                                                                          | 288                | 88.5         |                         |                        |              |
|                                       |       |       | 960   |       |       | 118                                                                                                                          | 288                | 89.3         |                         |                        |              |
|                                       |       |       |       | 1100  |       | 135                                                                                                                          | 288                | 90.3         |                         |                        |              |
| 360                                   | 730   |       |       |       |       | 46                                                                                                                           |                    | 79.4         | 3.314                   | 0.148                  | 11           |
|                                       |       |       |       |       |       | 93                                                                                                                           |                    | 87.9         |                         |                        |              |
|                                       |       | 770   |       |       |       | 98                                                                                                                           | 265                | 88.4         |                         |                        |              |
|                                       |       |       | 850   |       |       | 108                                                                                                                          |                    | 89.2         |                         |                        |              |
|                                       |       |       |       | 970   |       | 124                                                                                                                          |                    | 90.2         |                         |                        |              |
| 320                                   | 660   |       |       |       |       | 145                                                                                                                          |                    | 91.3         | 4.038                   | 0.182                  | 12           |
|                                       |       |       |       |       |       | 40                                                                                                                           |                    | 75.8         |                         |                        |              |
|                                       |       | 690   |       |       |       | 82                                                                                                                           |                    | 85.9         |                         |                        |              |
|                                       |       |       | 770   |       |       | 87                                                                                                                           | 240                | 86.5         |                         |                        |              |
|                                       |       |       |       | 880   |       | 96                                                                                                                           |                    | 87.5         |                         |                        |              |
| 290                                   | 600   |       |       |       |       | 111                                                                                                                          |                    | 88.7         | 4.747                   | 0.226                  | 13           |
|                                       |       |       |       |       |       | 130                                                                                                                          |                    | 90.0         |                         |                        |              |
|                                       |       | 630   |       |       |       | 34                                                                                                                           |                    | 72.6         |                         |                        |              |
|                                       |       |       | 700   |       |       | 72                                                                                                                           |                    | 84.2         |                         |                        |              |
|                                       |       |       |       | 800   |       | 76                                                                                                                           | 216                | 84.8         |                         |                        |              |
|                                       | 560   |       |       |       |       | 85                                                                                                                           |                    | 86.0         | 5.236                   | 0.242                  | 14           |
|                                       |       |       |       |       |       | 98                                                                                                                           |                    | 87.4         |                         |                        |              |
|                                       |       |       |       | 940   |       | 115                                                                                                                          |                    | 88.8         |                         |                        |              |
|                                       |       | 600   |       |       |       | 71                                                                                                                           |                    | 84.2         |                         |                        |              |
|                                       |       |       | 660   |       |       | 75                                                                                                                           |                    | 84.9         |                         |                        |              |
|                                       | 460   |       |       |       |       | 83                                                                                                                           | 210                | 86.0         | 7.520                   | 0.325                  | 15           |
|                                       |       |       |       |       |       | 95                                                                                                                           |                    | 87.4         |                         |                        |              |
|                                       |       |       |       | 760   |       | 111                                                                                                                          |                    | 88.9         |                         |                        |              |
|                                       |       |       |       | 890   |       | 60                                                                                                                           |                    | 81.6         |                         |                        |              |
|                                       |       | 480   |       |       |       | 64                                                                                                                           | 185                | 82.4         |                         |                        |              |
| 410                                   |       |       |       |       |       | 71                                                                                                                           |                    | 83.8         | 8.960                   | 0.408                  | 16           |
|                                       |       |       |       |       |       | 53                                                                                                                           |                    | 81.2         |                         |                        |              |
|                                       |       | 440   |       |       |       | 57                                                                                                                           | 165                | 82.0         |                         |                        |              |
|                                       |       |       | 480   |       |       | 63                                                                                                                           |                    | 83.4         |                         |                        |              |
|                                       |       |       |       | 565   |       | 73                                                                                                                           |                    | 85.1         |                         |                        |              |

## GH225 IM1001 - IP54 - IC86W

|         |     |      |      |
|---------|-----|------|------|
|         |     |      |      |
| Size    | B   | L1   | V1   |
| GH225 S | 655 | 1016 | 982  |
| GH225 M | 705 | 1066 | 1032 |
| GH225 L | 750 | 1111 | 1077 |
| GH225 P | 800 | 1161 | 1127 |
| GH225 X | 850 | 1211 | 1177 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH225 S        | 755             | 1.75                      | 2400                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 M        | 810             | 1.95                      | 2600                 | 0.77                    | 3000                   | 50                | 1400               |
| GH225 L        | 870             | 2.2                       | 3000                 | 0.81                    | 3000                   | 50                | 1400               |
| GH225 P        | 925             | 2.4                       | 3300                 | 0.84                    | 3000                   | 50                | 1400               |
| GH225 X        | 1000            | 2.6                       | 3500                 | 0.87                    | 3000                   | 50                | 1400               |
| GH225 SK       | 755             | 1.75                      | 2100                 | 0.58                    | 3000                   | 50                | 1400               |
| GH225 MK       | 810             | 1.95                      | 2400                 | 0.62                    | 3000                   | 50                | 1400               |
| GH225 LK       | 870             | 2.2                       | 2600                 | 0.65                    | 3000                   | 50                | 1400               |
| GH225 PK       | 925             | 2.4                       | 2900                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 XK       | 1000            | 2.6                       | 3200                 | 0.71                    | 3000                   | 50                | 1400               |

| Bearings                             | Drive end  |                            | Opposite drive end |
|--------------------------------------|------------|----------------------------|--------------------|
|                                      | Coupling   | Pulley                     |                    |
| GH225 S-M-L-P-X                      | 6218 2Z C3 | NU218ECP C3                | 6217 2Z C3         |
| Electrical blower (IC06)             | Weight     | Blower motor power         |                    |
|                                      | 40 kg      | 2.2 kW (50/60 Hz)          |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight     | Heat exchanger motor power |                    |
|                                      | 240 kg     | 3.0 kW (50/60 Hz)          |                    |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

## GH315

## GH355

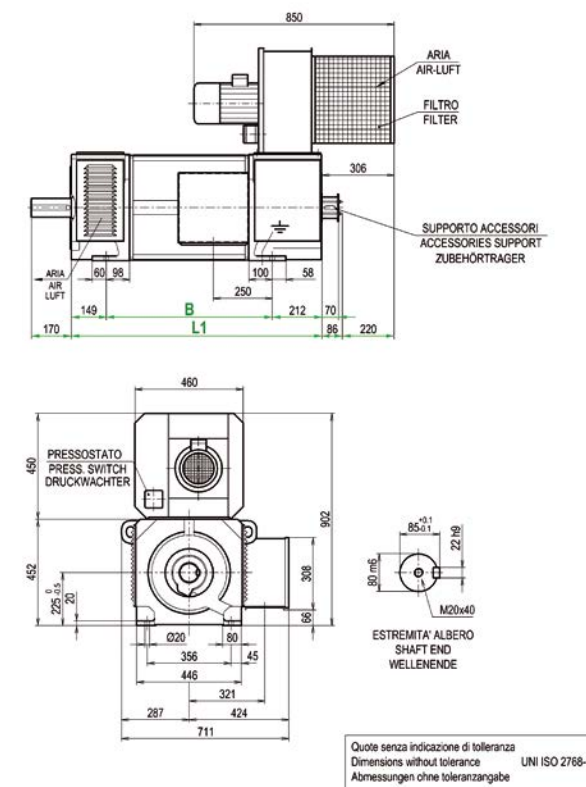
## GH400

## GH450

## GH225 L

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 3000<br>Field time constant (s): 0.81<br>Motor mass (kg): 910 (IC06)<br>Moment of inertia (kg m²): 2.2 |                    |              | Armature circuit        |                        | Winding code |
|---------------------------------------|-------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|
| 220 V                                 | 400 V | 420 V | 460 V | 520 V | 600 V | RATED OUTPUT kW                                                                                                              | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |
| 990                                   | 1870  | 1980  | 2200  |       |       | 148                                                                                                                          | 750                | 89.8         | 0.524                   | 0.021                  | 1            |
|                                       |       |       |       |       |       | 280                                                                                                                          | 750                | 93.3         |                         |                        |              |
|                                       |       |       |       |       |       | 290                                                                                                                          | 740                | 93.5         |                         |                        |              |
|                                       |       |       |       |       |       | 310                                                                                                                          | 720                | 93.8         |                         |                        |              |
| 900                                   | 1710  | 1800  | 1970  | 2260  |       | 127                                                                                                                          | 655                | 88.9         | 0.620                   | 0.027                  | 2            |
|                                       |       |       |       |       |       | 238                                                                                                                          | 640                | 92.8         |                         |                        |              |
|                                       |       |       |       |       |       | 250                                                                                                                          | 640                | 93.0         |                         |                        |              |
|                                       |       |       |       |       |       | 268                                                                                                                          | 625                | 93.4         |                         |                        |              |
| 820                                   | 1560  | 1650  | 1810  | 2060  |       | 300                                                                                                                          | 615                | 93.9         | 0.726                   | 0.033                  | 3            |
|                                       |       |       |       |       |       | 113                                                                                                                          | 585                | 87.9         |                         |                        |              |
|                                       |       |       |       |       |       | 212                                                                                                                          | 575                | 92.3         |                         |                        |              |
|                                       |       |       |       |       |       | 223                                                                                                                          | 575                | 92.5         |                         |                        |              |
| 730                                   | 1390  | 1460  | 1610  | 1840  | 2150  | 245                                                                                                                          | 575                | 93.0         | 0.919                   | 0.038                  | 4            |
|                                       |       |       |       |       |       | 275                                                                                                                          | 565                | 93.6         |                         |                        |              |
|                                       |       |       |       |       |       | 107                                                                                                                          | 555                | 87.6         |                         |                        |              |
|                                       |       |       |       |       |       | 202                                                                                                                          | 550                | 92.2         |                         |                        |              |
| 650                                   | 1260  | 1330  | 1460  | 1660  | 1950  | 213                                                                                                                          | 550                | 92.5         | 1.118                   | 0.048                  | 5            |
|                                       |       |       |       |       |       | 229                                                                                                                          | 535                | 92.9         |                         |                        |              |
|                                       |       |       |       |       |       | 253                                                                                                                          | 520                | 93.6         |                         |                        |              |
|                                       |       |       |       |       |       | 282                                                                                                                          | 500                | 94.1         |                         |                        |              |
| 590                                   | 1150  | 1210  | 1330  | 1520  | 1770  | 93                                                                                                                           | 495                | 85.6         | 1.292                   | 0.060                  | 6            |
|                                       |       |       |       |       |       | 176                                                                                                                          | 485                | 91.1         |                         |                        |              |
|                                       |       |       |       |       |       | 186                                                                                                                          | 485                | 91.4         |                         |                        |              |
|                                       |       |       |       |       |       | 205                                                                                                                          | 485                | 92.0         |                         |                        |              |
| 560                                   | 1090  | 1150  | 1270  | 1450  | 1680  | 230                                                                                                                          | 475                | 92.8         | 1.446                   | 0.064                  | 7            |
|                                       |       |       |       |       |       | 261                                                                                                                          | 465                | 93.5         |                         |                        |              |
|                                       |       |       |       |       |       | 83                                                                                                                           | 450                | 84.4         |                         |                        |              |
|                                       |       |       |       |       |       | 159                                                                                                                          | 440                | 90.5         |                         |                        |              |
| 440                                   | 880   | 920   | 1020  |       |       | 167                                                                                                                          | 440                | 90.8         | 2.211                   | 0.087                  | 8            |
|                                       |       |       |       |       |       | 185                                                                                                                          | 440                | 91.4         |                         |                        |              |
|                                       |       |       |       |       |       | 201                                                                                                                          | 420                | 92.2         |                         |                        |              |
|                                       |       |       |       |       |       | 231                                                                                                                          | 415                | 92.9         |                         |                        |              |

## GH225 IM1001 - IP23 - IC06



| Size    | B   | L1   |
|---------|-----|------|
| GH225 S | 655 | 1016 |
| GH225 M | 705 | 1066 |
| GH225 L | 750 | 1111 |
| GH225 P | 800 | 1161 |
| GH225 X | 850 | 1211 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH225 S        | 755             | 1.75                      | 2400                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 M        | 810             | 1.95                      | 2600                 | 0.77                    | 3000                   | 50                | 1400               |
| GH225 L        | 870             | 2.2                       | 3000                 | 0.81                    | 3000                   | 50                | 1400               |
| GH225 P        | 925             | 2.4                       | 3300                 | 0.84                    | 3000                   | 50                | 1400               |
| GH225 X        | 1000            | 2.6                       | 3500                 | 0.87                    | 3000                   | 50                | 1400               |
| GH225 SK       | 755             | 1.75                      | 2100                 | 0.58                    | 3000                   | 50                | 1400               |
| GH225 MK       | 810             | 1.95                      | 2400                 | 0.62                    | 3000                   | 50                | 1400               |
| GH225 LK       | 870             | 2.2                       | 2600                 | 0.65                    | 3000                   | 50                | 1400               |
| GH225 PK       | 925             | 2.4                       | 2900                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 XK       | 1000            | 2.6                       | 3200                 | 0.71                    | 3000                   | 50                | 1400               |

| Bearings                             | Drive end  |                            | Opposite drive end |
|--------------------------------------|------------|----------------------------|--------------------|
|                                      | Coupling   | Pulley                     |                    |
| GH225 S-M-L-P-X                      | 6218 2Z C3 | NU218ECP C3                | 6217 2Z C3         |
| Electrical blower (IC06)             | Weight     | Blower motor power         |                    |
|                                      | 40 kg      | 2.2 kW (50/60 Hz)          |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight     | Heat exchanger motor power |                    |
|                                      | 240 kg     | 3.0 kW (50/60 Hz)          |                    |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

## GH315

## GH355

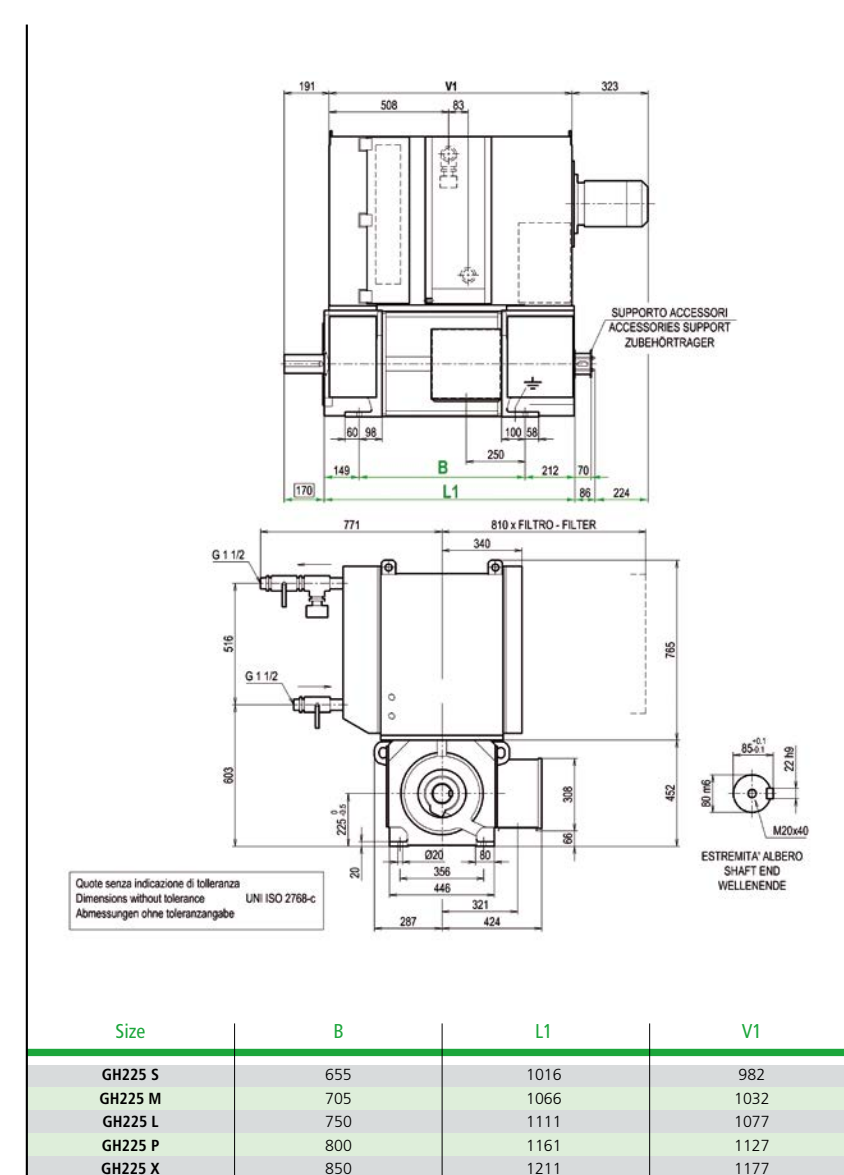
## GH400

## GH450

## GH225 L

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 3000<br>Field time constant (s): 0.81<br>Motor mass (kg): 910 (IC06)<br>Moment of inertia (kg m²): 2.2 |                    |              | Armature circuit        |                        | Winding code |
|---------------------------------------|-------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|
| 220 V                                 | 400 V | 420 V | 460 V | 520 V | 600 V | RATED OUTPUT kW                                                                                                              | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |
| 400                                   | 790   |       |       |       |       | 58                                                                                                                           | 330                | 80.5         | 2.612                   | 0.110                  | 9            |
|                                       |       |       |       |       |       | 115                                                                                                                          | 325                | 88.4         |                         |                        |              |
|                                       |       | 840   |       |       |       | 121                                                                                                                          | 325                | 88.9         |                         |                        |              |
|                                       |       |       | 930   |       |       | 134                                                                                                                          | 325                | 89.7         |                         |                        |              |
|                                       |       |       |       | 1060  |       | 150                                                                                                                          | 320                | 90.6         |                         |                        |              |
| 360                                   | 730   |       |       |       |       | 50                                                                                                                           | 290                | 78.5         | 3.041                   | 0.133                  | 10           |
|                                       |       |       |       |       |       | 100                                                                                                                          | 288                | 87.3         |                         |                        |              |
|                                       |       | 770   |       |       |       | 106                                                                                                                          | 288                | 87.8         |                         |                        |              |
|                                       |       |       | 850   |       |       | 117                                                                                                                          | 288                | 88.7         |                         |                        |              |
|                                       |       |       |       | 970   |       | 134                                                                                                                          | 288                | 89.8         |                         |                        |              |
| 320                                   | 640   |       |       |       |       | 45                                                                                                                           |                    | 78.1         | 3.729                   | 0.159                  | 11           |
|                                       |       |       |       |       |       | 92                                                                                                                           |                    | 87.2         |                         |                        |              |
|                                       |       | 680   |       |       |       | 97                                                                                                                           | 265                | 87.7         |                         |                        |              |
|                                       |       |       | 750   |       |       | 108                                                                                                                          |                    | 88.6         |                         |                        |              |
|                                       |       |       |       | 860   |       | 123                                                                                                                          |                    | 89.7         |                         |                        |              |
| 280                                   | 580   |       |       |       | 1000  | 144                                                                                                                          |                    | 90.8         | 4.544                   | 0.194                  | 12           |
|                                       |       |       |       |       |       | 39                                                                                                                           |                    | 74.1         |                         |                        |              |
|                                       |       | 610   |       |       |       | 81                                                                                                                           | 241                | 85.0         |                         |                        |              |
|                                       |       |       | 680   |       |       | 86                                                                                                                           |                    | 85.6         |                         |                        |              |
|                                       |       |       |       | 770   |       | 96                                                                                                                           |                    | 86.7         |                         |                        |              |
| 520                                   | 550   |       |       |       |       | 110                                                                                                                          |                    | 88.0         | 5.341                   | 0.243                  | 13           |
|                                       |       |       |       |       |       | 129                                                                                                                          |                    | 89.4         |                         |                        |              |
|                                       |       | 610   |       |       |       | 71                                                                                                                           |                    | 83.1         |                         |                        |              |
|                                       |       |       | 700   |       |       | 76                                                                                                                           |                    | 83.8         |                         |                        |              |
|                                       |       |       |       | 830   |       | 84                                                                                                                           | 216                | 85.1         |                         |                        |              |
| 490                                   | 520   |       |       |       |       | 97                                                                                                                           |                    | 86.6         | 5.892                   | 0.260                  | 14           |
|                                       |       |       |       |       |       | 114                                                                                                                          |                    | 88.1         |                         |                        |              |
|                                       |       |       |       |       |       | 70                                                                                                                           |                    | 83.2         |                         |                        |              |
|                                       |       | 580   |       |       |       | 74                                                                                                                           |                    | 83.9         |                         |                        |              |
|                                       |       |       | 670   |       |       | 82                                                                                                                           | 210                | 85.2         |                         |                        |              |
| 400                                   | 420   |       |       |       |       | 94                                                                                                                           |                    | 86.7         | 8.461                   | 0.348                  | 15           |
|                                       |       |       |       |       |       | 110                                                                                                                          |                    | 88.2         |                         |                        |              |
|                                       |       |       |       |       | 780   | 70                                                                                                                           |                    | 82.7         |                         |                        |              |
|                                       |       | 470   |       |       |       | 52                                                                                                                           |                    | 79.9         |                         |                        |              |
|                                       |       |       |       |       |       | 56                                                                                                                           | 165                | 80.8         |                         |                        |              |
| 360                                   | 380   |       |       |       |       | 62                                                                                                                           |                    | 82.3         | 10.082                  | 0.436                  | 16           |
|                                       |       | 425   |       |       |       | 72                                                                                                                           |                    | 84.2         |                         |                        |              |
|                                       |       |       |       | 490   |       |                                                                                                                              |                    |              |                         |                        |              |

## GH225 IM1001 - IP54 - IC86W



| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH225 S        | 755             | 1.75                      | 2400                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 M        | 810             | 1.95                      | 2600                 | 0.77                    | 3000                   | 50                | 1400               |
| GH225 L        | 870             | 2.2                       | 3000                 | 0.81                    | 3000                   | 50                | 1400               |
| GH225 P        | 925             | 2.4                       | 3300                 | 0.84                    | 3000                   | 50                | 1400               |
| GH225 X        | 1000            | 2.6                       | 3500                 | 0.87                    | 3000                   | 50                | 1400               |
| GH225 SK       | 755             | 1.75                      | 2100                 | 0.58                    | 3000                   | 50                | 1400               |
| GH225 MK       | 810             | 1.95                      | 2400                 | 0.62                    | 3000                   | 50                | 1400               |
| GH225 LK       | 870             | 2.2                       | 2600                 | 0.65                    | 3000                   | 50                | 1400               |
| GH225 PK       | 925             | 2.4                       | 2900                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 XK       | 1000            | 2.6                       | 3200                 | 0.71                    | 3000                   | 50                | 1400               |

| Bearings                             | Drive end  |                            | Opposite drive end |
|--------------------------------------|------------|----------------------------|--------------------|
|                                      | Coupling   | Pulley                     |                    |
| GH225 S-M-L-P-X                      | 6218 2Z C3 | NU218ECP C3                | 6217 2Z C3         |
| Electrical blower (IC06)             | Weight     | Blower motor power         |                    |
|                                      | 40 kg      | 2.2 kW (50/60 Hz)          |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight     | Heat exchanger motor power |                    |
|                                      | 240 kg     | 3.0 kW (50/60 Hz)          |                    |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

## GH315

## GH355

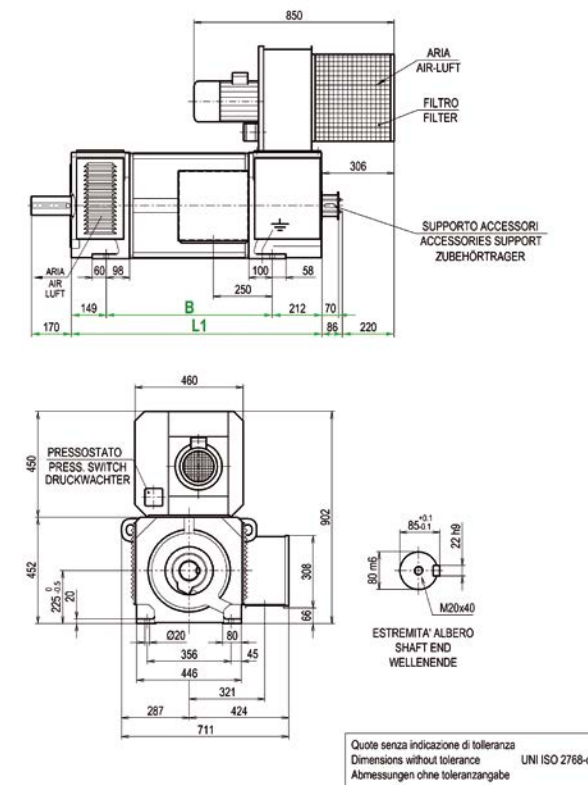
## GH400

## GH450

## GH225 P

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 3300<br>Field time constant (s): 0.84<br>Motor mass (kg): 965 (IC06)<br>Moment of inertia (kg m²): 2.4 |                    |              | Armature circuit        |                        | Winding code |
|---------------------------------------|-------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|
| 220 V                                 | 400 V | 420 V | 460 V | 520 V | 600 V | RATED OUTPUT kW                                                                                                              | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |
| 880                                   | 1670  |       |       |       |       | 147                                                                                                                          | 750                | 89.3         | 0.588                   | 0.023                  | 1            |
|                                       |       |       |       |       |       | 279                                                                                                                          | 750                | 93.1         |                         |                        |              |
|                                       |       | 1750  |       |       |       | 293                                                                                                                          | 750                | 93.3         |                         |                        |              |
|                                       |       |       | 1950  |       |       | 310                                                                                                                          | 720                | 93.6         |                         |                        |              |
| 790                                   | 1510  |       |       |       |       | 127                                                                                                                          | 655                | 88.3         | 0.696                   | 0.029                  | 2            |
|                                       |       |       |       |       |       | 237                                                                                                                          | 640                | 92.6         |                         |                        |              |
|                                       |       | 1590  |       |       |       | 249                                                                                                                          | 640                | 92.8         |                         |                        |              |
|                                       |       |       | 1750  |       |       | 267                                                                                                                          | 625                | 93.2         |                         |                        |              |
| 720                                   | 1390  |       |       | 2000  |       | 300                                                                                                                          | 615                | 93.9         | 0.815                   | 0.036                  | 3            |
|                                       |       |       |       |       |       | 112                                                                                                                          | 585                | 87.2         |                         |                        |              |
|                                       |       | 1460  |       |       |       | 222                                                                                                                          | 575                | 92.2         |                         |                        |              |
|                                       |       |       | 1610  |       |       | 245                                                                                                                          | 575                | 92.7         |                         |                        |              |
| 640                                   | 1230  |       |       | 1830  |       | 275                                                                                                                          | 565                | 93.5         | 1.032                   | 0.041                  | 4            |
|                                       |       |       |       |       |       | 106                                                                                                                          | 555                | 86.9         |                         |                        |              |
|                                       |       | 1300  |       |       |       | 202                                                                                                                          | 550                | 91.9         |                         |                        |              |
|                                       |       |       | 1430  |       |       | 212                                                                                                                          | 550                | 92.2         |                         |                        |              |
| 580                                   | 1110  |       |       |       | 1900  | 228                                                                                                                          | 535                | 92.6         | 1.256                   | 0.052                  | 5            |
|                                       |       |       |       |       |       | 252                                                                                                                          | 520                | 93.2         |                         |                        |              |
|                                       |       | 1170  |       |       |       | 282                                                                                                                          | 500                | 94.0         |                         |                        |              |
|                                       |       |       | 1290  |       |       | 92                                                                                                                           | 495                | 84.7         |                         |                        |              |
| 520                                   | 1020  |       |       |       |       | 175                                                                                                                          | 485                | 90.7         | 1.451                   | 0.065                  | 6            |
|                                       |       |       |       |       |       | 185                                                                                                                          | 485                | 91.0         |                         |                        |              |
|                                       |       | 1070  |       |       |       | 204                                                                                                                          | 485                | 91.6         |                         |                        |              |
|                                       |       |       | 1180  |       |       | 228                                                                                                                          | 475                | 92.5         |                         |                        |              |
| 490                                   | 970   |       |       |       |       | 260                                                                                                                          | 465                | 93.2         | 1.624                   | 0.069                  | 7            |
|                                       |       |       |       |       |       | 82                                                                                                                           | 450                | 83.5         |                         |                        |              |
|                                       |       | 1070  |       |       |       | 158                                                                                                                          | 440                | 90.0         |                         |                        |              |
|                                       |       |       | 1120  |       |       | 167                                                                                                                          | 440                | 90.4         |                         |                        |              |
| 390                                   | 770   |       |       |       |       | 184                                                                                                                          | 440                | 91.0         | 2.485                   | 0.094                  | 8            |
|                                       |       |       |       |       |       | 200                                                                                                                          | 420                | 91.8         |                         |                        |              |
|                                       |       | 820   |       |       |       | 230                                                                                                                          | 415                | 92.6         |                         |                        |              |
|                                       |       |       | 900   |       |       | 78                                                                                                                           | 430                | 82.8         |                         |                        |              |

## GH225 IM1001 - IP23 - IC06



| Size    | B   | L1   |
|---------|-----|------|
| GH225 S | 655 | 1016 |
| GH225 M | 705 | 1066 |
| GH225 L | 750 | 1111 |
| GH225 P | 800 | 1161 |
| GH225 X | 850 | 1211 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH225 S        | 755             | 1.75                      | 2400                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 M        | 810             | 1.95                      | 2600                 | 0.77                    | 3000                   | 50                | 1400               |
| GH225 L        | 870             | 2.2                       | 3000                 | 0.81                    | 3000                   | 50                | 1400               |
| GH225 P        | 925             | 2.4                       | 3300                 | 0.84                    | 3000                   | 50                | 1400               |
| GH225 X        | 1000            | 2.6                       | 3500                 | 0.87                    | 3000                   | 50                | 1400               |
| GH225 SK       | 755             | 1.75                      | 2100                 | 0.58                    | 3000                   | 50                | 1400               |
| GH225 MK       | 810             | 1.95                      | 2400                 | 0.62                    | 3000                   | 50                | 1400               |
| GH225 LK       | 870             | 2.2                       | 2600                 | 0.65                    | 3000                   | 50                | 1400               |
| GH225 PK       | 925             | 2.4                       | 2900                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 XK       | 1000            | 2.6                       | 3200                 | 0.71                    | 3000                   | 50                | 1400               |

| Bearings                             | Drive end  |                            | Opposite drive end |
|--------------------------------------|------------|----------------------------|--------------------|
|                                      | Coupling   | Pulley                     |                    |
| GH225 S-M-L-P-X                      | 6218 2Z C3 | NU218ECP C3                | 6217 2Z C3         |
| Electrical blower (IC06)             | Weight     | Blower motor power         |                    |
|                                      | 40 kg      | 2.2 kW (50/60 Hz)          |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight     | Heat exchanger motor power |                    |
|                                      | 240 kg     | 3.0 kW (50/60 Hz)          |                    |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

## GH315

## GH355

## GH400

## GH450

## GH225 P

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 3300<br>Field time costant (s): 0.84<br>Motor mass (kg): 965 (IC06)<br>Moment of inertia (kg m²): 2.4 |                    |              | Armature circuit        |                        | Winding code |      |      |
|---------------------------------------|-------|-------|-------|-------|-------|-----------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|------|------|
| 220 V                                 | 400 V | 420 V | 460 V | 520 V | 600 V | RATED OUTPUT kW                                                                                                             | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |      |      |
| 350                                   |       |       |       |       |       | 57                                                                                                                          | 330                | 79.2         | 2.935                   | 0.118                  | 9            |      |      |
|                                       | 700   |       |       |       |       | 114                                                                                                                         | 325                | 87.7         |                         |                        |              |      |      |
|                                       |       | 740   |       |       |       |                                                                                                                             | 120                | 325          |                         |                        |              | 88.2 |      |
|                                       |       |       | 820   |       |       |                                                                                                                             |                    | 133          |                         |                        |              | 325  | 89.1 |
|                                       |       |       |       | 940   |       |                                                                                                                             |                    |              |                         |                        |              | 150  | 320  |
| 320                                   |       |       |       |       |       | 49                                                                                                                          | 290                | 77.0         | 3.417                   | 0.144                  | 10           |      |      |
|                                       | 640   |       |       |       |       | 99                                                                                                                          | 288                | 86.6         |                         |                        |              |      |      |
|                                       |       | 680   |       |       |       |                                                                                                                             | 105                | 288          |                         |                        |              | 87.1 |      |
|                                       |       |       | 750   |       |       |                                                                                                                             |                    | 116          |                         |                        |              | 288  | 88.1 |
|                                       |       |       |       | 860   |       |                                                                                                                             |                    |              |                         |                        |              | 133  | 288  |
| 280                                   |       |       |       |       |       | 44                                                                                                                          |                    | 76.6         | 4.190                   | 0.171                  | 11           |      |      |
|                                       | 570   |       |       |       |       | 91                                                                                                                          |                    | 86.4         |                         |                        |              |      |      |
|                                       |       | 600   |       |       |       |                                                                                                                             | 96                 | 265          |                         |                        |              | 86.9 |      |
|                                       |       |       | 670   |       |       |                                                                                                                             |                    | 107          |                         |                        |              |      | 87.9 |
|                                       |       |       |       | 760   |       |                                                                                                                             | 890                |              |                         |                        |              | 122  |      |
|                                       |       |       |       |       |       | 143                                                                                                                         |                    | 90.3         | 5.106                   | 0.209                  | 12           |      |      |
|                                       | 510   |       |       |       |       | 81                                                                                                                          |                    | 84.0         |                         |                        |              |      |      |
|                                       |       | 540   |       |       |       |                                                                                                                             | 85                 |              |                         |                        |              | 84.7 |      |
|                                       |       |       | 600   |       |       |                                                                                                                             |                    | 95           |                         |                        |              | 240  | 85.9 |
|                                       |       |       |       | 690   |       |                                                                                                                             | 800                |              |                         |                        |              | 109  |      |
|                                       |       |       |       |       |       | 128                                                                                                                         |                    | 88.8         | 6.002                   | 0.261                  | 13           |      |      |
|                                       | 460   |       |       |       |       | 70                                                                                                                          |                    | 82.0         |                         |                        |              |      |      |
|                                       |       | 490   |       |       |       |                                                                                                                             | 75                 |              |                         |                        |              | 82.8 |      |
|                                       |       |       | 540   |       |       |                                                                                                                             |                    | 83           |                         |                        |              | 216  | 84.1 |
|                                       |       |       |       | 620   |       |                                                                                                                             | 730                |              |                         |                        |              | 96   |      |
|                                       |       |       |       |       |       | 113                                                                                                                         |                    | 87.4         | 6.621                   | 0.280                  | 14           |      |      |
|                                       | 430   |       |       |       |       | 69                                                                                                                          |                    | 82.1         |                         |                        |              |      |      |
|                                       |       | 460   |       |       |       |                                                                                                                             | 73                 |              |                         |                        |              | 82.9 |      |
|                                       |       |       | 510   |       |       |                                                                                                                             |                    | 81           |                         |                        |              | 210  | 84.2 |
|                                       |       |       |       | 590   |       |                                                                                                                             | 690                |              |                         |                        |              | 93   |      |
|                                       |       |       |       |       |       | 110                                                                                                                         |                    | 87.5         | 9.508                   | 0.375                  | 15           |      |      |
|                                       | 350   |       |       |       |       | 58                                                                                                                          |                    | 79.0         |                         |                        |              |      |      |
|                                       |       | 370   |       |       |       |                                                                                                                             | 62                 | 185          |                         |                        |              | 79.9 |      |
|                                       |       |       | 410   |       |       |                                                                                                                             |                    | 69           |                         |                        |              |      | 81.5 |
|                                       |       |       |       | 51    |       |                                                                                                                             |                    |              |                         |                        |              | 55   | 165  |
| 320                                   | 340   |       |       |       |       | 61                                                                                                                          |                    | 81.1         |                         |                        |              |      |      |
|                                       |       | 370   |       |       |       |                                                                                                                             | 71                 |              | 83.1                    |                        |              |      |      |
|                                       |       |       | 430   |       |       |                                                                                                                             |                    |              |                         |                        |              |      |      |

## GH225 IM1001 - IP54 - IC86W

| Size    | B   | L1   | V1   |
|---------|-----|------|------|
| GH225 S | 655 | 1016 | 982  |
| GH225 M | 705 | 1066 | 1032 |
| GH225 L | 750 | 1111 | 1077 |
| GH225 P | 800 | 1161 | 1127 |
| GH225 X | 850 | 1211 | 1177 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH225 S        | 755             | 1.75                      | 2400                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 M        | 810             | 1.95                      | 2600                 | 0.77                    | 3000                   | 50                | 1400               |
| GH225 L        | 870             | 2.2                       | 3000                 | 0.81                    | 3000                   | 50                | 1400               |
| GH225 P        | 925             | 2.4                       | 3300                 | 0.84                    | 3000                   | 50                | 1400               |
| GH225 X        | 1000            | 2.6                       | 3500                 | 0.87                    | 3000                   | 50                | 1400               |
| GH225 SK       | 755             | 1.75                      | 2100                 | 0.58                    | 3000                   | 50                | 1400               |
| GH225 MK       | 810             | 1.95                      | 2400                 | 0.62                    | 3000                   | 50                | 1400               |
| GH225 LK       | 870             | 2.2                       | 2600                 | 0.65                    | 3000                   | 50                | 1400               |
| GH225 PK       | 925             | 2.4                       | 2900                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 XK       | 1000            | 2.6                       | 3200                 | 0.71                    | 3000                   | 50                | 1400               |

| Bearings                             | Drive end  |                            | Opposite drive end |
|--------------------------------------|------------|----------------------------|--------------------|
|                                      | Coupling   | Pulley                     |                    |
| GH225 S-M-L-P-X                      | 6218 2Z C3 | NU218ECP C3                | 6217 2Z C3         |
| Electrical blower (IC06)             | Weight     | Blower motor power         |                    |
|                                      | 40 kg      | 2.2 kW (50/60 Hz)          |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight     | Heat exchanger motor power |                    |
|                                      | 240 kg     | 3.0 kW (50/60 Hz)          |                    |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

## GH315

## GH355

## GH400

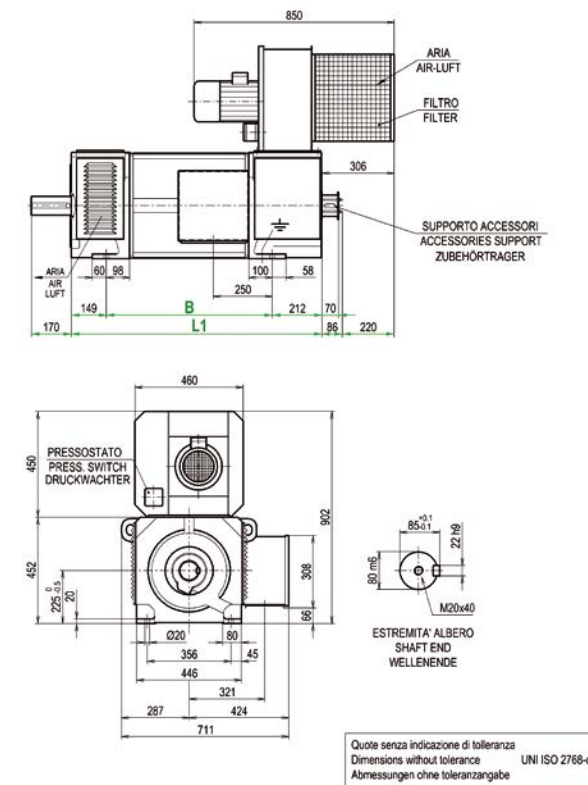
## GH450

## GH225 X

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 3500<br>Field time constant (s): 0.87<br>Motor mass (kg): 1040 (IC06)<br>Moment of inertia (kg m²): 2.6 |                    |              | Armature circuit        |                        | Winding code |
|---------------------------------------|-------|-------|-------|-------|-------|-------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|
| 220 V                                 | 400 V | 420 V | 460 V | 520 V | 600 V | RATED OUTPUT kW                                                                                                               | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |
| 790                                   | 1500  |       |       |       |       | 146                                                                                                                           | 750                | 88.8         | 0.652                   | 0.025                  | 1            |
|                                       |       |       |       |       |       | 278                                                                                                                           | 750                | 92.8         |                         |                        |              |
|                                       |       | 1600  |       |       |       | 292                                                                                                                           | 750                | 93.0         |                         |                        |              |
|                                       |       |       | 1750  |       |       | 310                                                                                                                           | 720                | 93.6         |                         |                        |              |
| 710                                   | 1360  |       |       |       |       | 126                                                                                                                           | 655                | 87.8         | 0.772                   | 0.031                  | 2            |
|                                       |       |       |       |       |       | 235                                                                                                                           | 640                | 92.3         |                         |                        |              |
|                                       |       | 1430  |       |       |       | 248                                                                                                                           | 640                | 92.5         |                         |                        |              |
|                                       |       |       | 1580  |       |       | 267                                                                                                                           | 625                | 93.0         |                         |                        |              |
| 650                                   | 1240  |       |       | 1800  |       | 300                                                                                                                           | 615                | 93.7         | 0.905                   | 0.037                  | 3            |
|                                       |       |       |       |       |       | 111                                                                                                                           | 585                | 86.6         |                         |                        |              |
|                                       |       |       |       |       |       | 210                                                                                                                           | 575                | 91.6         |                         |                        |              |
|                                       |       | 1310  |       |       |       | 222                                                                                                                           | 575                | 91.9         |                         |                        |              |
| 570                                   | 1100  |       |       |       |       | 244                                                                                                                           | 575                | 92.4         | 1.145                   | 0.044                  | 4            |
|                                       |       |       |       |       |       | 274                                                                                                                           | 565                | 93.2         |                         |                        |              |
|                                       |       |       |       |       |       | 105                                                                                                                           | 555                | 86.2         |                         |                        |              |
|                                       |       | 1160  |       |       |       | 201                                                                                                                           | 550                | 91.5         |                         |                        |              |
| 510                                   | 1000  |       |       |       |       | 210                                                                                                                           | 550                | 91.8         | 1.393                   | 0.055                  | 5            |
|                                       |       |       |       |       |       | 227                                                                                                                           | 535                | 92.3         |                         |                        |              |
|                                       |       |       |       | 1460  |       | 251                                                                                                                           | 520                | 93.0         |                         |                        |              |
|                                       |       |       |       | 1720  |       | 280                                                                                                                           | 500                | 93.8         |                         |                        |              |
| 460                                   | 910   |       |       |       |       | 91                                                                                                                            | 495                | 83.9         | 1.610                   | 0.068                  | 6            |
|                                       |       |       |       |       |       | 175                                                                                                                           | 485                | 90.3         |                         |                        |              |
|                                       |       | 1050  |       |       |       | 184                                                                                                                           | 485                | 90.6         |                         |                        |              |
|                                       |       |       |       |       |       | 203                                                                                                                           | 485                | 91.2         |                         |                        |              |
| 440                                   | 870   |       |       |       |       | 228                                                                                                                           | 475                | 92.2         | 1.802                   | 0.074                  | 7            |
|                                       |       |       |       |       |       | 260                                                                                                                           | 465                | 93.0         |                         |                        |              |
|                                       |       |       |       |       |       | 81                                                                                                                            | 450                | 82.5         |                         |                        |              |
|                                       |       |       |       |       |       | 157                                                                                                                           | 440                | 89.5         |                         |                        |              |
| 350                                   | 690   |       |       |       |       | 166                                                                                                                           | 440                | 89.9         | 2.759                   | 0.101                  | 8            |
|                                       |       |       |       |       |       | 183                                                                                                                           | 440                | 90.6         |                         |                        |              |
|                                       |       |       |       |       |       | 200                                                                                                                           | 420                | 91.7         |                         |                        |              |
|                                       |       |       |       |       |       | 230                                                                                                                           | 415                | 92.6         |                         |                        |              |
|                                       |       |       |       |       |       | 77                                                                                                                            | 430                | 81.8         | 1.802                   | 0.074                  | 7            |
|                                       |       |       |       |       |       | 149                                                                                                                           | 420                | 89.2         |                         |                        |              |
|                                       |       | 910   |       |       |       | 158                                                                                                                           | 420                | 89.6         |                         |                        |              |
|                                       |       |       | 1010  |       |       | 174                                                                                                                           | 420                | 90.3         |                         |                        |              |
|                                       |       |       |       |       |       | 198                                                                                                                           | 410                | 91.2         | 2.759                   | 0.101                  | 8            |
|                                       |       |       |       |       |       | 224                                                                                                                           | 405                | 92.3         |                         |                        |              |
|                                       |       |       |       |       |       | 66                                                                                                                            | 380                | 78.8         |                         |                        |              |
|                                       |       |       |       |       |       | 131                                                                                                                           | 375                | 87.5         |                         |                        |              |
|                                       |       |       |       |       |       | 136                                                                                                                           | 370                | 88.0         | 2.759                   | 0.101                  | 8            |
|                                       |       |       |       |       |       | 150                                                                                                                           | 370                | 88.9         |                         |                        |              |
|                                       |       | 730   |       |       |       |                                                                                                                               |                    |              |                         |                        |              |
|                                       |       |       | 810   |       |       |                                                                                                                               |                    |              |                         |                        |              |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH225 S        | 755             | 1.75                      | 2400                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 M        | 810             | 1.95                      | 2600                 | 0.77                    | 3000                   | 50                | 1400               |
| GH225 L        | 870             | 2.2                       | 3000                 | 0.81                    | 3000                   | 50                | 1400               |
| GH225 P        | 925             | 2.4                       | 3300                 | 0.84                    | 3000                   | 50                | 1400               |
| GH225 X        | 1000            | 2.6                       | 3500                 | 0.87                    | 3000                   | 50                | 1400               |
| GH225 SK       | 755             | 1.75                      | 2100                 | 0.58                    | 3000                   | 50                | 1400               |
| GH225 MK       | 810             | 1.95                      | 2400                 | 0.62                    | 3000                   | 50                | 1400               |
| GH225 LK       | 870             | 2.2                       | 2600                 | 0.65                    | 3000                   | 50                | 1400               |
| GH225 PK       | 925             | 2.4                       | 2900                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 XK       | 1000            | 2.6                       | 3200                 | 0.71                    | 3000                   | 50                | 1400               |

## GH225 IM1001 - IP23 - IC06



| Size    | B   | L1   |
|---------|-----|------|
| GH225 S | 655 | 1016 |
| GH225 M | 705 | 1066 |
| GH225 L | 750 | 1111 |
| GH225 P | 800 | 1161 |
| GH225 X | 850 | 1211 |

| Bearings                             | Drive end  |                            | Opposite drive end |
|--------------------------------------|------------|----------------------------|--------------------|
|                                      | Coupling   | Pulley                     |                    |
| GH225 S-M-L-P-X                      | 6218 2Z C3 | NU218ECP C3                | 6217 2Z C3         |
| Electrical blower (IC06)             | Weight     | Blower motor power         |                    |
|                                      | 40 kg      | 2.2 kW (50/60 Hz)          |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight     | Heat exchanger motor power |                    |
|                                      | 240 kg     | 3.0 kW (50/60 Hz)          |                    |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

## GH315

## GH355

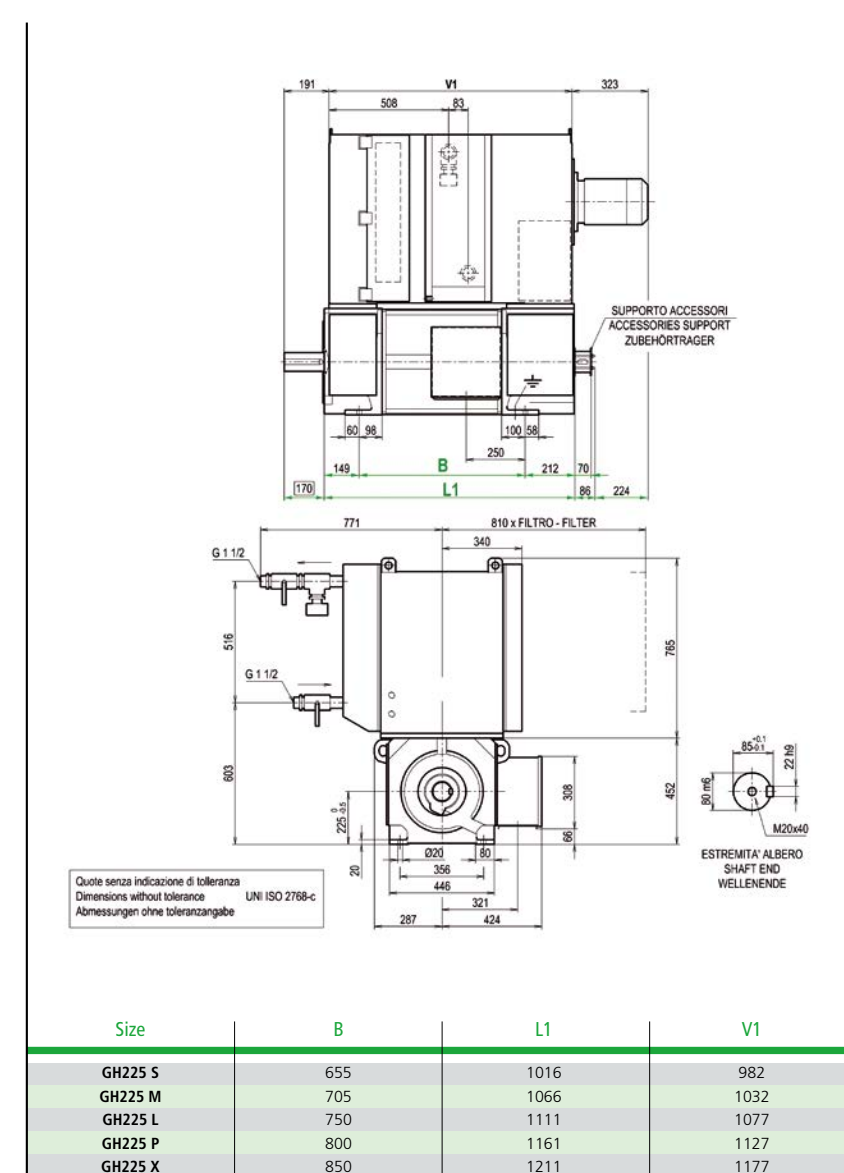
## GH400

## GH450

## GH225 X

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 3500<br>Field time costant (s): 0.87<br>Motor mass (kg): 1040 (IC06)<br>Moment of inertia (kg m²): 2.6 |                    |              | Armature circuit        |                        | Winding code |      |
|---------------------------------------|-------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|------|
| 220 V                                 | 400 V | 420 V | 460 V | 520 V | 600 V | RATED OUTPUT kW                                                                                                              | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |      |
| 310                                   |       |       |       |       |       | 56                                                                                                                           | 330                | 77.9         | 3.258                   | 0.126                  | 9            |      |
|                                       | 630   |       |       |       |       | 113                                                                                                                          | 325                | 87.1         |                         |                        |              |      |
|                                       |       | 660   |       |       |       | 119                                                                                                                          | 325                | 87.6         |                         |                        |              |      |
|                                       |       |       | 730   |       |       |                                                                                                                              | 132                | 325          |                         |                        |              | 88.5 |
|                                       |       |       |       |       | 840   |                                                                                                                              |                    | 148          |                         |                        |              | 320  |
| 280                                   |       |       |       |       |       | 48                                                                                                                           | 290                | 75.6         | 3.793                   | 0.154                  | 10           |      |
|                                       | 570   |       |       |       |       | 98                                                                                                                           | 288                | 85.8         |                         |                        |              |      |
|                                       |       | 600   |       |       |       | 104                                                                                                                          | 288                | 86.4         |                         |                        |              |      |
|                                       |       |       | 670   |       |       |                                                                                                                              | 115                | 288          |                         |                        |              | 87.4 |
|                                       |       |       |       |       | 770   |                                                                                                                              |                    | 132          |                         |                        |              | 288  |
| 250                                   |       |       |       |       |       | 43                                                                                                                           |                    | 75.2         | 4.651                   | 0.184                  | 11           |      |
|                                       | 510   |       |       |       |       | 90                                                                                                                           |                    | 85.6         |                         |                        |              |      |
|                                       |       | 530   |       |       |       | 95                                                                                                                           | 265                | 86.2         |                         |                        |              |      |
|                                       |       |       | 590   |       |       |                                                                                                                              | 106                |              |                         |                        |              | 87.2 |
|                                       |       |       |       |       | 680   |                                                                                                                              | 800                | 121          |                         |                        |              |      |
| 450                                   |       |       |       |       |       | 142                                                                                                                          |                    | 89.8         | 5.668                   | 0.224                  | 12           |      |
|                                       | 480   |       |       |       |       | 80                                                                                                                           |                    | 83.1         |                         |                        |              |      |
|                                       |       | 530   |       |       |       | 84                                                                                                                           |                    | 83.8         |                         |                        |              |      |
|                                       |       |       | 610   |       |       |                                                                                                                              | 94                 | 240          |                         |                        |              | 85.1 |
|                                       |       |       |       |       |       | 720                                                                                                                          |                    | 108          |                         |                        |              |      |
| 410                                   |       |       |       |       |       | 127                                                                                                                          |                    | 88.1         | 6.662                   | 0.280                  | 13           |      |
|                                       | 430   |       |       |       |       | 69                                                                                                                           |                    | 80.9         |                         |                        |              |      |
|                                       |       | 480   |       |       |       | 74                                                                                                                           |                    | 81.7         |                         |                        |              |      |
|                                       |       |       | 560   |       |       |                                                                                                                              | 82                 | 216          |                         |                        |              | 83.2 |
|                                       |       |       |       |       |       | 650                                                                                                                          |                    | 95           |                         |                        |              |      |
| 390                                   |       |       |       |       |       | 112                                                                                                                          |                    | 86.7         | 7.349                   | 0.300                  | 14           |      |
|                                       | 410   |       |       |       |       | 68                                                                                                                           |                    | 81.0         |                         |                        |              |      |
|                                       |       | 450   |       |       |       | 71                                                                                                                           |                    | 81.8         |                         |                        |              |      |
|                                       |       |       | 520   |       |       |                                                                                                                              | 79                 | 210          |                         |                        |              | 83.3 |
|                                       |       |       |       |       |       | 620                                                                                                                          |                    | 92           |                         |                        |              |      |
| 310                                   |       |       |       |       |       | 109                                                                                                                          |                    | 86.8         | 10.554                  | 0.402                  | 15           |      |
|                                       | 330   |       |       |       |       | 57                                                                                                                           |                    | 77.6         |                         |                        |              |      |
|                                       |       | 370   |       |       |       | 61                                                                                                                           | 185                | 78.6         |                         |                        |              |      |
|                                       |       |       |       |       |       |                                                                                                                              | 68                 |              |                         |                        |              | 80.3 |
|                                       |       |       |       | 280   |       |                                                                                                                              |                    |              |                         |                        |              |      |
| 300                                   |       |       |       |       |       | 54                                                                                                                           | 165                | 78.2         |                         |                        |              |      |
|                                       | 330   |       |       |       |       | 60                                                                                                                           |                    | 80.0         |                         |                        |              |      |
|                                       |       |       |       |       | 390   |                                                                                                                              | 70                 |              | 82.1                    |                        |              |      |

## GH225 IM1001 - IP54 - IC86W



| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH225 S        | 755             | 1.75                      | 2400                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 M        | 810             | 1.95                      | 2600                 | 0.77                    | 3000                   | 50                | 1400               |
| GH225 L        | 870             | 2.2                       | 3000                 | 0.81                    | 3000                   | 50                | 1400               |
| GH225 P        | 925             | 2.4                       | 3300                 | 0.84                    | 3000                   | 50                | 1400               |
| GH225 X        | 1000            | 2.6                       | 3500                 | 0.87                    | 3000                   | 50                | 1400               |
| GH225 SK       | 755             | 1.75                      | 2100                 | 0.58                    | 3000                   | 50                | 1400               |
| GH225 MK       | 810             | 1.95                      | 2400                 | 0.62                    | 3000                   | 50                | 1400               |
| GH225 LK       | 870             | 2.2                       | 2600                 | 0.65                    | 3000                   | 50                | 1400               |
| GH225 PK       | 925             | 2.4                       | 2900                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 XK       | 1000            | 2.6                       | 3200                 | 0.71                    | 3000                   | 50                | 1400               |

| Bearings                             | Drive end  |                            | Opposite drive end |
|--------------------------------------|------------|----------------------------|--------------------|
|                                      | Coupling   | Pulley                     |                    |
| GH225 S-M-L-P-X                      | 6218 2Z C3 | NU218ECP C3                | 6217 2Z C3         |
| Electrical blower (IC06)             | Weight     | Blower motor power         |                    |
|                                      | 40 kg      | 2.2 kW (50/60 Hz)          |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight     | Heat exchanger motor power |                    |
|                                      | 240 kg     | 3.0 kW (50/60 Hz)          |                    |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

## GH315

## GH355

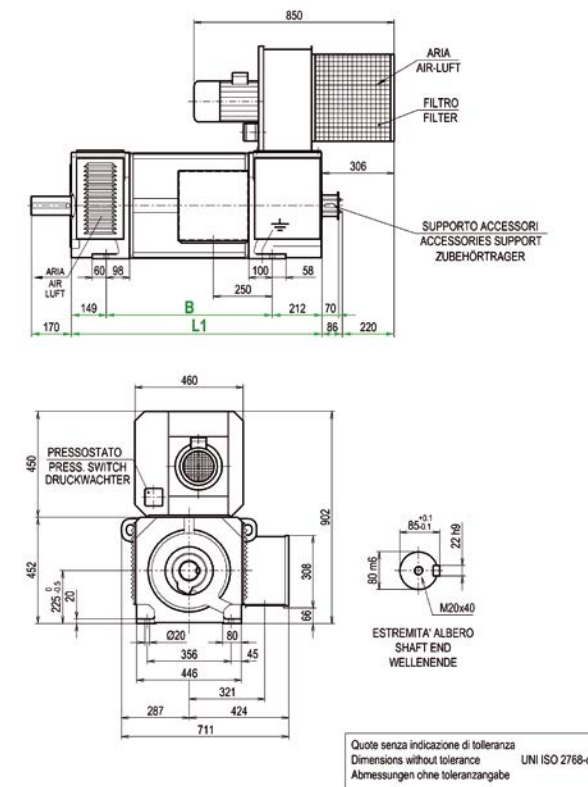
## GH400

## GH450

## GH225 SK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 2100<br>Field time costant (s): 0.58<br>Motor mass (kg): 795 (IC06)<br>Moment of inertia (kg m²): 1.75 |                    |              | Armature circuit        |                        | Winding code |
|---------------------------------------|-------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|
| 220 V                                 | 400 V | 420 V | 460 V | 520 V | 600 V | RATED OUTPUT kW                                                                                                              | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |
| 1290                                  |       |       |       |       |       | 148                                                                                                                          | 750                | 89.7         | 0.141                   | 0.024                  | 1            |
|                                       | 2450  |       |       |       |       | 280                                                                                                                          | 750                | 93.4         |                         |                        |              |
|                                       |       | 2570  |       |       |       | 293                                                                                                                          | 745                | 93.5         |                         |                        |              |
| 1180                                  |       |       |       |       |       | 128                                                                                                                          | 650                | 89.4         | 0.190                   | 0.029                  | 2            |
|                                       | 2220  |       |       |       |       | 237                                                                                                                          | 640                | 93.0         |                         |                        |              |
|                                       |       | 2340  |       |       |       | 250                                                                                                                          | 640                | 93.2         |                         |                        |              |
|                                       |       |       | 2580  |       |       | 268                                                                                                                          | 625                | 93.6         |                         |                        |              |
| 1060                                  |       |       |       |       |       | 115                                                                                                                          | 585                | 88.1         | 0.204                   | 0.032                  | 3            |
|                                       | 2030  |       |       |       |       | 212                                                                                                                          | 575                | 92.3         |                         |                        |              |
|                                       |       | 2140  |       |       |       | 223                                                                                                                          | 575                | 92.7         |                         |                        |              |
|                                       |       |       | 2350  |       |       | 245                                                                                                                          | 575                | 92.9         |                         |                        |              |
| 940                                   |       |       |       |       |       | 107                                                                                                                          | 555                | 87.6         | 0.261                   | 0.036                  | 4            |
|                                       | 1810  |       |       |       |       | 203                                                                                                                          | 550                | 92.3         |                         |                        |              |
|                                       |       | 1900  |       |       |       | 214                                                                                                                          | 550                | 92.7         |                         |                        |              |
|                                       |       |       | 2100  |       |       | 228                                                                                                                          | 535                | 93.0         |                         |                        |              |
|                                       |       |       |       | 2390  |       | 253                                                                                                                          | 520                | 93.6         |                         |                        |              |
| 840                                   |       |       |       |       |       | 94                                                                                                                           | 495                | 86.3         | 0.331                   | 0.050                  | 5            |
|                                       | 1630  |       |       |       |       | 177                                                                                                                          | 485                | 90.9         |                         |                        |              |
|                                       |       | 1720  |       |       |       | 186                                                                                                                          | 485                | 91.3         |                         |                        |              |
|                                       |       | 1900  |       |       |       | 205                                                                                                                          | 485                | 91.8         |                         |                        |              |
|                                       |       |       | 2150  |       |       | 228                                                                                                                          | 475                | 92.5         |                         |                        |              |
|                                       |       |       |       | 4660  |       | 260                                                                                                                          | 465                | 93.5         |                         |                        |              |
| 760                                   |       |       |       |       |       | 81                                                                                                                           | 450                | 82.5         | 1.610                   | 0.068                  | 6            |
|                                       | 1500  |       |       |       |       | 157                                                                                                                          | 440                | 89.5         |                         |                        |              |
|                                       |       | 1570  |       |       |       | 166                                                                                                                          | 440                | 89.9         |                         |                        |              |
|                                       |       | 1740  |       |       |       | 183                                                                                                                          | 440                | 90.6         |                         |                        |              |
|                                       |       |       | 1980  |       |       | 200                                                                                                                          | 420                | 91.7         |                         |                        |              |
|                                       |       |       |       | 2300  |       | 230                                                                                                                          | 415                | 92.6         |                         |                        |              |
| 730                                   |       |       |       |       |       | 80                                                                                                                           | 430                | 84.7         | 0.393                   | 0.059                  | 7            |
|                                       | 1410  |       |       |       |       | 152                                                                                                                          | 420                | 90.3         |                         |                        |              |
|                                       |       | 1500  |       |       |       | 159                                                                                                                          | 420                | 90.5         |                         |                        |              |
|                                       |       | 1650  |       |       |       | 175                                                                                                                          | 420                | 91.3         |                         |                        |              |
|                                       |       |       | 1890  |       |       | 196                                                                                                                          | 410                | 91.9         |                         |                        |              |
|                                       |       |       |       | 2200  |       | 225                                                                                                                          | 405                | 93.0         |                         |                        |              |
| 570                                   |       |       |       |       |       | 69                                                                                                                           | 380                | 82.8         | 0.628                   | 0.083                  | 8            |
|                                       | 1140  |       |       |       |       | 132                                                                                                                          | 370                | 89.5         |                         |                        |              |
|                                       |       | 1200  |       |       |       | 139                                                                                                                          | 370                | 89.8         |                         |                        |              |
|                                       |       | 1320  |       |       |       | 153                                                                                                                          | 370                | 91.5         |                         |                        |              |
|                                       |       |       |       | 1520  |       | 171                                                                                                                          | 360                | 91.4         |                         |                        |              |

## GH225 IM1001 - IP23 - IC06



| Size    | B   | L1   |
|---------|-----|------|
| GH225 S | 655 | 1016 |
| GH225 M | 705 | 1066 |
| GH225 L | 750 | 1111 |
| GH225 P | 800 | 1161 |
| GH225 X | 850 | 1211 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH225 S        | 755             | 1.75                      | 2400                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 M        | 810             | 1.95                      | 2600                 | 0.77                    | 3000                   | 50                | 1400               |
| GH225 L        | 870             | 2.2                       | 3000                 | 0.81                    | 3000                   | 50                | 1400               |
| GH225 P        | 925             | 2.4                       | 3300                 | 0.84                    | 3000                   | 50                | 1400               |
| GH225 X        | 1000            | 2.6                       | 3500                 | 0.87                    | 3000                   | 50                | 1400               |
| GH225 SK       | 755             | 1.75                      | 2100                 | 0.58                    | 3000                   | 50                | 1400               |
| GH225 MK       | 810             | 1.95                      | 2400                 | 0.62                    | 3000                   | 50                | 1400               |
| GH225 LK       | 870             | 2.2                       | 2600                 | 0.65                    | 3000                   | 50                | 1400               |
| GH225 PK       | 925             | 2.4                       | 2900                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 XK       | 1000            | 2.6                       | 3200                 | 0.71                    | 3000                   | 50                | 1400               |

| Bearings                             | Drive end  |                            | Opposite drive end |
|--------------------------------------|------------|----------------------------|--------------------|
|                                      | Coupling   | Pulley                     |                    |
| GH225 S-M-L-P-X                      | 6218 2Z C3 | NU218ECP C3                | 6217 2Z C3         |
| Electrical blower (IC06)             | Weight     | Blower motor power         |                    |
|                                      | 40 kg      | 2.2 kW (50/60 Hz)          |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight     | Heat exchanger motor power |                    |
|                                      | 240 kg     | 3.0 kW (50/60 Hz)          |                    |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

## GH315

## GH355

## GH400

## GH450

## GH225 SK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 2100<br>Field time costant (s): 0.58<br>Motor mass (kg): 795 (IC06)<br>Moment of inertia (kg m²): 1.75 |                    |              | Armature circuit        |                        | Winding code |
|---------------------------------------|-------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|
| 220 V                                 | 400 V | 420 V | 460 V | 520 V | 600 V | RATED OUTPUT kW                                                                                                              | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |
| 520                                   | 1030  | 1080  | 1200  | 1370  |       | 58                                                                                                                           | 330                | 81.9         | 0.699                   | 0.105                  | 9            |
|                                       |       |       |       |       |       | 114                                                                                                                          | 325                | 88.7         |                         |                        |              |
|                                       |       |       |       |       |       | 121                                                                                                                          | 325                | 88.5         |                         |                        |              |
|                                       |       |       |       |       |       | 133                                                                                                                          | 325                | 90.3         |                         |                        |              |
|                                       |       |       |       |       |       | 150                                                                                                                          | 320                | 91.1         |                         |                        |              |
| 460                                   | 940   | 990   | 1110  | 1260  | 1470  | 51                                                                                                                           | 290                | 80.3         | 0.801                   | 0.125                  | 10           |
|                                       |       |       |       |       |       | 101                                                                                                                          | 288                | 87.8         |                         |                        |              |
|                                       |       |       |       |       |       | 106                                                                                                                          | 288                | 88.7         |                         |                        |              |
|                                       |       |       |       |       |       | 117                                                                                                                          | 288                | 89.2         |                         |                        |              |
|                                       |       |       |       |       |       | 134                                                                                                                          | 288                | 90.2         |                         |                        |              |
| 156                                   | 288   | 90.7  |       |       |       |                                                                                                                              |                    |              |                         |                        |              |
| 410                                   | 840   | 890   | 980   | 1120  | 1300  | 46                                                                                                                           |                    | 80.0         | 1.056                   | 0.146                  | 11           |
|                                       |       |       |       |       |       | 93                                                                                                                           |                    | 87.3         |                         |                        |              |
|                                       |       |       |       |       |       | 98                                                                                                                           | 265                | 88.0         |                         |                        |              |
|                                       |       |       |       |       |       | 107                                                                                                                          |                    | 88.9         |                         |                        |              |
|                                       |       |       |       |       |       | 123                                                                                                                          |                    | 90.1         |                         |                        |              |
| 144                                   |       | 91.0  |       |       |       |                                                                                                                              |                    |              |                         |                        |              |
| 360                                   | 740   | 780   | 880   | 1000  | 1170  | 39                                                                                                                           |                    | 74.5         | 1.203                   | 0.197                  | 12           |
|                                       |       |       |       |       |       | 82                                                                                                                           |                    | 85.0         |                         |                        |              |
|                                       |       |       |       |       |       | 86                                                                                                                           | 241                | 86.3         |                         |                        |              |
|                                       |       |       |       |       |       | 95                                                                                                                           |                    | 86.6         |                         |                        |              |
|                                       |       |       |       |       |       | 110                                                                                                                          |                    | 88.2         |                         |                        |              |
| 128                                   |       | 89.5  |       |       |       |                                                                                                                              |                    |              |                         |                        |              |
| 330                                   | 670   | 720   | 800   | 920   | 1070  | 34                                                                                                                           |                    | 72.5         | 1.412                   | 0.231                  | 13           |
|                                       |       |       |       |       |       | 72                                                                                                                           |                    | 84.4         |                         |                        |              |
|                                       |       |       |       |       |       | 76                                                                                                                           | 216                | 85.0         |                         |                        |              |
|                                       |       |       |       |       |       | 85                                                                                                                           |                    | 86.1         |                         |                        |              |
|                                       |       |       |       |       |       | 97                                                                                                                           |                    | 88.0         |                         |                        |              |
| 114                                   |       | 88.9  |       |       |       |                                                                                                                              |                    |              |                         |                        |              |
| 640                                   | 670   | 750   | 870   | 900   |       | 70                                                                                                                           |                    | 83.5         | 1.461                   | 0.243                  | 14           |
|                                       |       |       |       |       |       | 74                                                                                                                           |                    | 84.2         |                         |                        |              |
|                                       |       |       |       |       |       | 82                                                                                                                           | 210                | 85.0         |                         |                        |              |
|                                       |       |       |       |       |       | 94                                                                                                                           |                    | 86.9         |                         |                        |              |
|                                       |       |       |       |       |       | 110                                                                                                                          |                    | 88.0         |                         |                        |              |
| 520                                   | 550   | 610   | 710   |       |       | 60                                                                                                                           |                    | 81.1         | 2.359                   | 0.338                  | 15           |
|                                       |       |       |       |       |       | 64                                                                                                                           | 185                | 82.5         |                         |                        |              |
|                                       |       |       |       |       |       | 70                                                                                                                           |                    | 83.4         |                         |                        |              |
|                                       |       |       |       |       |       | 81                                                                                                                           |                    | 85.2         |                         |                        |              |
|                                       |       |       |       |       |       | 53                                                                                                                           |                    | 80.2         |                         |                        |              |
| 460                                   | 500   | 550   |       | 640   |       | 56                                                                                                                           | 165                | 81.5         | 3.270                   | 0.408                  | 16           |
|                                       |       |       |       |       |       | 62                                                                                                                           |                    | 83.2         |                         |                        |              |
|                                       |       |       |       |       |       | 71                                                                                                                           |                    | 84.9         |                         |                        |              |
|                                       |       |       |       |       |       |                                                                                                                              |                    |              |                         |                        |              |
|                                       |       |       |       |       |       |                                                                                                                              |                    |              |                         |                        |              |

## GH225 IM1001 - IP54 - IC86W

| Size    | B   | L1   | V1   |
|---------|-----|------|------|
| GH225 S | 655 | 1016 | 982  |
| GH225 M | 705 | 1066 | 1032 |
| GH225 L | 750 | 1111 | 1077 |
| GH225 P | 800 | 1161 | 1127 |
| GH225 X | 850 | 1211 | 1177 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH225 S        | 755             | 1.75                      | 2400                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 M        | 810             | 1.95                      | 2600                 | 0.77                    | 3000                   | 50                | 1400               |
| GH225 L        | 870             | 2.2                       | 3000                 | 0.81                    | 3000                   | 50                | 1400               |
| GH225 P        | 925             | 2.4                       | 3300                 | 0.84                    | 3000                   | 50                | 1400               |
| GH225 X        | 1000            | 2.6                       | 3500                 | 0.87                    | 3000                   | 50                | 1400               |
| GH225 SK       | 755             | 1.75                      | 2100                 | 0.58                    | 3000                   | 50                | 1400               |
| GH225 MK       | 810             | 1.95                      | 2400                 | 0.62                    | 3000                   | 50                | 1400               |
| GH225 LK       | 870             | 2.2                       | 2600                 | 0.65                    | 3000                   | 50                | 1400               |
| GH225 PK       | 925             | 2.4                       | 2900                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 XK       | 1000            | 2.6                       | 3200                 | 0.71                    | 3000                   | 50                | 1400               |

| Bearings                             | Drive end  |                            | Opposite drive end |
|--------------------------------------|------------|----------------------------|--------------------|
|                                      | Coupling   | Pulley                     |                    |
| GH225 S-M-L-P-X                      | 6218 2Z C3 | NU218ECP C3                | 6217 2Z C3         |
| Electrical blower (IC06)             | Weight     | Blower motor power         |                    |
|                                      | 40 kg      | 2.2 kW (50/60 Hz)          |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight     | Heat exchanger motor power |                    |
|                                      | 240 kg     | 3.0 kW (50/60 Hz)          |                    |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

## GH315

## GH355

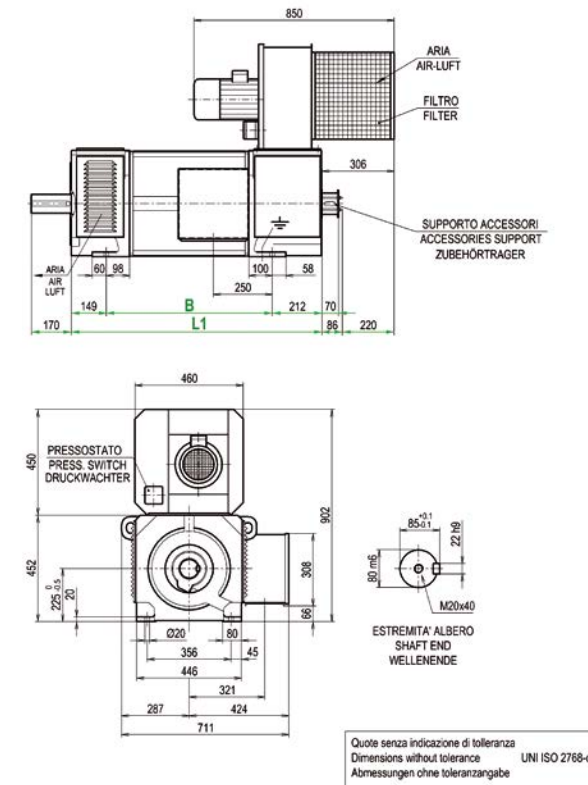
## GH400

## GH450

## GH225 MK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 2400<br>Field time constant (s): 0.62<br>Motor mass (kg): 850 (IC06)<br>Moment of inertia (kg m²): 1.95 |                    |              | Armature circuit        |                        | Winding code |
|---------------------------------------|-------|-------|-------|-------|-------|-------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|
| 220 V                                 | 400 V | 420 V | 460 V | 520 V | 600 V | RATED OUTPUT kW                                                                                                               | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |
| 1110                                  | 2100  |       |       |       |       | 147                                                                                                                           | 750                | 89.3         | 0.159                   | 0.022                  | 1            |
|                                       |       |       |       |       |       | 279                                                                                                                           | 750                | 93.1         |                         |                        |              |
|                                       |       | 2210  |       |       |       | 292                                                                                                                           | 745                | 93.3         |                         |                        |              |
|                                       |       |       | 2450  |       |       | 308                                                                                                                           | 715                | 93.7         |                         |                        |              |
| 1010                                  | 1910  |       |       |       |       | 127                                                                                                                           | 650                | 89.0         | 0.206                   | 0.026                  | 2            |
|                                       |       |       |       |       |       | 237                                                                                                                           | 640                | 92.9         |                         |                        |              |
|                                       |       | 2010  |       |       |       | 250                                                                                                                           | 640                | 93.1         |                         |                        |              |
|                                       |       |       | 2220  |       |       | 268                                                                                                                           | 625                | 93.5         |                         |                        |              |
| 910                                   | 1750  |       |       | 2530  |       | 298                                                                                                                           | 610                | 94.0         | 0.226                   | 0.034                  | 3            |
|                                       |       |       |       |       |       | 113                                                                                                                           | 585                | 87.5         |                         |                        |              |
|                                       |       | 1840  |       |       |       | 222                                                                                                                           | 575                | 92.3         |                         |                        |              |
|                                       |       |       | 2020  |       |       | 245                                                                                                                           | 575                | 92.7         |                         |                        |              |
| 810                                   | 1550  |       |       | 2310  |       | 275                                                                                                                           | 568                | 93.1         | 0.286                   | 0.038                  | 4            |
|                                       |       |       |       |       |       | 106                                                                                                                           | 555                | 87.2         |                         |                        |              |
|                                       |       | 1630  |       |       |       | 202                                                                                                                           | 550                | 92.0         |                         |                        |              |
|                                       |       |       | 1800  |       |       | 213                                                                                                                           | 550                | 92.3         |                         |                        |              |
| 720                                   | 1400  |       |       | 2050  |       | 228                                                                                                                           | 535                | 92.7         | 0.360                   | 0.052                  | 5            |
|                                       |       |       |       |       | 2400  | 252                                                                                                                           | 520                | 93.4         |                         |                        |              |
|                                       |       |       |       |       |       | 282                                                                                                                           | 500                | 93.9         |                         |                        |              |
|                                       |       | 1480  |       |       |       | 93                                                                                                                            | 495                | 85.0         |                         |                        |              |
| 660                                   | 1290  |       |       |       |       | 176                                                                                                                           | 485                | 90.7         | 0.370                   | 0.059                  | 6            |
|                                       |       |       |       |       |       | 185                                                                                                                           | 485                | 91.1         |                         |                        |              |
|                                       |       | 1630  |       |       |       | 204                                                                                                                           | 485                | 91.6         |                         |                        |              |
|                                       |       |       | 1850  |       |       | 228                                                                                                                           | 475                | 92.3         |                         |                        |              |
| 630                                   | 1220  |       |       |       |       | 260                                                                                                                           | 465                | 93.2         | 0.429                   | 0.063                  | 7            |
|                                       |       |       |       |       |       | 83                                                                                                                            | 450                | 84.7         |                         |                        |              |
|                                       |       | 1350  |       |       |       | 159                                                                                                                           | 440                | 90.6         |                         |                        |              |
|                                       |       |       | 1490  |       |       | 168                                                                                                                           | 440                | 90.9         |                         |                        |              |
| 490                                   | 980   |       |       | 1700  |       | 185                                                                                                                           | 440                | 91.5         | 0.703                   | 0.090                  | 8            |
|                                       |       |       |       |       | 1980  | 204                                                                                                                           | 425                | 92.3         |                         |                        |              |
|                                       |       |       |       |       |       | 232                                                                                                                           | 415                | 93.2         |                         |                        |              |
|                                       |       | 1220  |       |       |       | 79                                                                                                                            | 430                | 83.2         |                         |                        |              |
|                                       |       |       |       |       |       | 150                                                                                                                           | 420                | 89.9         | 0.703                   | 0.090                  |              |
|                                       |       |       |       |       |       | 159                                                                                                                           | 420                | 90.2         |                         |                        |              |
|                                       |       |       | 1420  |       |       | 175                                                                                                                           | 420                | 90.9         |                         |                        |              |
|                                       |       |       |       | 1620  |       | 196                                                                                                                           | 410                | 91.7         |                         |                        |              |
|                                       |       |       |       |       |       | 225                                                                                                                           | 405                | 92.8         | 0.703                   | 0.090                  |              |
|                                       |       |       |       |       |       | 68                                                                                                                            | 380                | 81.7         |                         |                        |              |
|                                       |       |       |       |       |       | 131                                                                                                                           | 370                | 89.0         |                         |                        |              |
|                                       |       | 1030  |       |       |       | 139                                                                                                                           | 370                | 89.5         |                         |                        |              |
|                                       |       |       |       |       |       | 153                                                                                                                           | 370                | 90.2         | 0.703                   | 0.090                  |              |
|                                       |       |       |       |       |       | 170                                                                                                                           | 360                | 91.1         |                         |                        |              |
|                                       |       |       | 1140  |       |       |                                                                                                                               |                    |              |                         |                        |              |
|                                       |       |       |       | 1300  |       |                                                                                                                               |                    |              |                         |                        |              |

## GH225 IM1001 - IP23 - IC06



| Size    | B   | L1   |
|---------|-----|------|
| GH225 S | 655 | 1016 |
| GH225 M | 705 | 1066 |
| GH225 L | 750 | 1111 |
| GH225 P | 800 | 1161 |
| GH225 X | 850 | 1211 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH225 S        | 755             | 1.75                      | 2400                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 M        | 810             | 1.95                      | 2600                 | 0.77                    | 3000                   | 50                | 1400               |
| GH225 L        | 870             | 2.2                       | 3000                 | 0.81                    | 3000                   | 50                | 1400               |
| GH225 P        | 925             | 2.4                       | 3300                 | 0.84                    | 3000                   | 50                | 1400               |
| GH225 X        | 1000            | 2.6                       | 3500                 | 0.87                    | 3000                   | 50                | 1400               |
| GH225 SK       | 755             | 1.75                      | 2100                 | 0.58                    | 3000                   | 50                | 1400               |
| GH225 MK       | 810             | 1.95                      | 2400                 | 0.62                    | 3000                   | 50                | 1400               |
| GH225 LK       | 870             | 2.2                       | 2600                 | 0.65                    | 3000                   | 50                | 1400               |
| GH225 PK       | 925             | 2.4                       | 2900                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 XK       | 1000            | 2.6                       | 3200                 | 0.71                    | 3000                   | 50                | 1400               |

| Bearings                             | Drive end  |                            | Opposite drive end |
|--------------------------------------|------------|----------------------------|--------------------|
|                                      | Coupling   | Pulley                     |                    |
| GH225 S-M-L-P-X                      | 6218 2Z C3 | NU218EC P C3               | 6217 2Z C3         |
| Electrical blower (IC06)             | Weight     | Blower motor power         |                    |
|                                      | 40 kg      | 2.2 kW (50/60 Hz)          |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight     | Heat exchanger motor power |                    |
|                                      | 240 kg     | 3.0 kW (50/60 Hz)          |                    |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

## GH315

## GH355

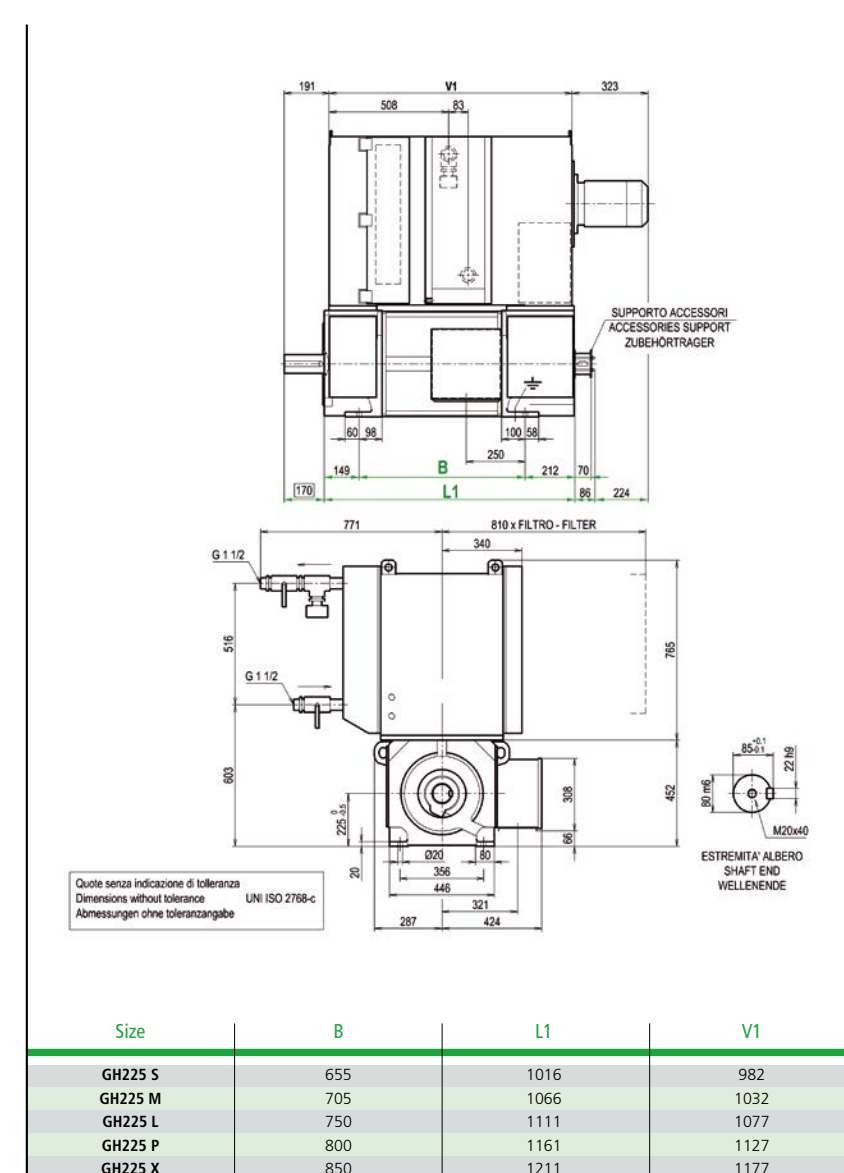
## GH400

## GH450

## GH225 MK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 2400<br>Field time costant (s): 0.62<br>Motor mass (kg): 850 (IC06)<br>Moment of inertia (kg m²): 1.95 |                    |              | Armature circuit        |                        | Winding code |      |
|---------------------------------------|-------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|------|
| 220 V                                 | 400 V | 420 V | 460 V | 520 V | 600 V | RATED OUTPUT kW                                                                                                              | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |      |
| 440                                   |       |       |       |       |       | 57                                                                                                                           | 330                | 79.2         | 0.771                   | 0.115                  | 9            |      |
|                                       | 890   |       |       |       |       | 114                                                                                                                          | 325                | 87.7         |                         |                        |              |      |
|                                       |       | 930   |       |       |       | 120                                                                                                                          | 325                | 88.2         |                         |                        |              |      |
|                                       |       |       | 1030  |       |       |                                                                                                                              | 133                | 325          |                         |                        |              | 89.0 |
|                                       |       |       |       | 1180  |       |                                                                                                                              |                    | 150          |                         |                        |              | 320  |
| 400                                   |       |       |       |       |       | 50                                                                                                                           | 290                | 78.1         | 0.882                   | 0.138                  | 10           |      |
|                                       | 810   |       |       |       |       | 100                                                                                                                          | 288                | 87.1         |                         |                        |              |      |
|                                       |       | 850   |       |       |       | 106                                                                                                                          | 288                | 87.6         |                         |                        |              |      |
|                                       |       |       | 950   |       |       |                                                                                                                              | 117                | 288          |                         |                        |              | 88.5 |
|                                       |       |       |       | 1080  |       |                                                                                                                              | 1260               | 134          |                         |                        |              | 288  |
| 350                                   |       |       |       |       |       | 156                                                                                                                          | 288                | 90.7         | 1.136                   | 0.158                  | 11           |      |
|                                       | 720   |       |       |       |       | 45                                                                                                                           |                    | 77.7         |                         |                        |              |      |
|                                       |       | 760   |       |       |       | 92                                                                                                                           |                    | 86.9         |                         |                        |              |      |
|                                       |       |       | 840   |       |       |                                                                                                                              | 97                 | 265          |                         |                        |              | 87.5 |
|                                       |       |       |       | 960   |       |                                                                                                                              | 1120               | 107          |                         |                        |              |      |
| 310                                   |       |       |       |       |       | 123                                                                                                                          |                    | 89.5         | 1.312                   | 0.213                  | 12           |      |
|                                       | 640   |       |       |       |       | 144                                                                                                                          |                    | 90.6         |                         |                        |              |      |
|                                       |       | 670   |       |       |       |                                                                                                                              | 38                 |              |                         |                        |              | 73.2 |
|                                       |       |       | 750   |       |       |                                                                                                                              | 81                 |              |                         |                        |              | 84.5 |
|                                       |       |       |       | 860   |       |                                                                                                                              | 1000               | 86           |                         |                        |              | 241  |
| 280                                   |       |       |       |       |       | 95                                                                                                                           |                    | 86.2         | 1.537                   | 0.250                  | 13           |      |
|                                       | 580   |       |       |       |       | 109                                                                                                                          |                    | 87.6         |                         |                        |              |      |
|                                       |       | 620   |       |       |       | 128                                                                                                                          |                    | 89.0         |                         |                        |              |      |
|                                       |       |       | 685   |       |       |                                                                                                                              | 34                 |              |                         |                        |              | 71.7 |
|                                       |       |       |       | 790   |       |                                                                                                                              | 920                | 72           |                         |                        |              |      |
| 550                                   |       |       |       |       |       | 76                                                                                                                           | 216                | 84.3         | 1.601                   | 0.263                  | 14           |      |
|                                       | 580   |       |       |       |       | 85                                                                                                                           |                    | 85.5         |                         |                        |              |      |
|                                       |       | 650   |       |       |       | 97                                                                                                                           |                    | 87.0         |                         |                        |              |      |
|                                       |       |       | 745   |       |       |                                                                                                                              | 114                |              |                         |                        |              | 88.5 |
|                                       |       |       |       | 870   |       |                                                                                                                              |                    | 69           |                         |                        |              |      |
| 440                                   |       |       |       |       |       | 73                                                                                                                           |                    | 83.0         | 2.529                   | 0.361                  | 15           |      |
|                                       | 470   |       |       |       |       | 81                                                                                                                           | 210                | 84.3         |                         |                        |              |      |
|                                       |       | 520   |       |       |       | 94                                                                                                                           |                    | 85.9         |                         |                        |              |      |
|                                       |       |       | 610   |       |       |                                                                                                                              | 110                |              |                         |                        |              | 87.6 |
|                                       |       |       |       | 870   |       |                                                                                                                              |                    | 59           |                         |                        |              |      |
| 400                                   |       |       |       |       |       | 63                                                                                                                           | 185                | 81.4         | 3.480                   | 0.436                  | 16           |      |
|                                       | 425   |       |       |       |       | 70                                                                                                                           |                    | 82.9         |                         |                        |              |      |
|                                       |       | 470   |       |       |       | 81                                                                                                                           |                    | 84.7         |                         |                        |              |      |
|                                       |       |       | 550   |       |       |                                                                                                                              | 52                 |              |                         |                        |              | 79.3 |
|                                       |       |       |       | 62    |       |                                                                                                                              |                    | 55           |                         |                        |              | 165  |
|                                       |       |       |       |       | 62    |                                                                                                                              | 81.8               |              |                         |                        |              |      |
|                                       |       |       |       |       | 71    |                                                                                                                              | 83.7               |              |                         |                        |              |      |

## GH225 IM1001 - IP54 - IC86W



| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH225 S        | 755             | 1.75                      | 2400                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 M        | 810             | 1.95                      | 2600                 | 0.77                    | 3000                   | 50                | 1400               |
| GH225 L        | 870             | 2.2                       | 3000                 | 0.81                    | 3000                   | 50                | 1400               |
| GH225 P        | 925             | 2.4                       | 3300                 | 0.84                    | 3000                   | 50                | 1400               |
| GH225 X        | 1000            | 2.6                       | 3500                 | 0.87                    | 3000                   | 50                | 1400               |
| GH225 SK       | 755             | 1.75                      | 2100                 | 0.58                    | 3000                   | 50                | 1400               |
| GH225 MK       | 810             | 1.95                      | 2400                 | 0.62                    | 3000                   | 50                | 1400               |
| GH225 LK       | 870             | 2.2                       | 2600                 | 0.65                    | 3000                   | 50                | 1400               |
| GH225 PK       | 925             | 2.4                       | 2900                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 XK       | 1000            | 2.6                       | 3200                 | 0.71                    | 3000                   | 50                | 1400               |

| Bearings                             | Drive end  |                            | Opposite drive end |
|--------------------------------------|------------|----------------------------|--------------------|
|                                      | Coupling   | Pulley                     |                    |
| GH225 S-M-L-P-X                      | 6218 2Z C3 | NU218ECP C3                | 6217 2Z C3         |
| Electrical blower (IC06)             | Weight     | Blower motor power         |                    |
|                                      | 40 kg      | 2.2 kW (50/60 Hz)          |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight     | Heat exchanger motor power |                    |
|                                      | 240 kg     | 3.0 kW (50/60 Hz)          |                    |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

## GH315

## GH355

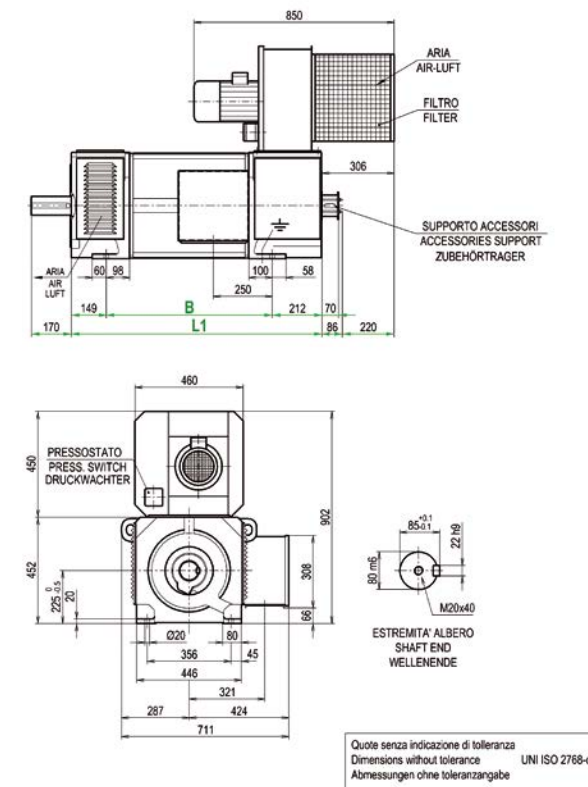
## GH400

## GH450

## GH225 LK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 2600<br>Field time constant (s): 0.65<br>Motor mass (kg): 910 (IC06)<br>Moment of inertia (kg m²): 2.2 |                    |              | Armature circuit        |                        | Winding code |
|---------------------------------------|-------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|
| 220 V                                 | 400 V | 420 V | 460 V | 520 V | 600 V | RATED OUTPUT kW                                                                                                              | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |
| 980                                   | 1850  | 1950  | 2150  | 2450  |       | 147                                                                                                                          | 750                | 89.0         | 0.179                   | 0.024                  | 1            |
|                                       |       |       |       |       |       | 278                                                                                                                          | 750                | 92.9         |                         |                        |              |
|                                       |       |       |       |       |       | 293                                                                                                                          | 750                | 93.1         |                         |                        |              |
|                                       |       |       |       |       |       | 309                                                                                                                          | 720                | 93.5         |                         |                        |              |
|                                       |       |       |       |       |       | 337                                                                                                                          | 690                | 93.9         |                         |                        |              |
| 890                                   | 1690  | 1780  | 1960  | 2250  |       | 127                                                                                                                          | 655                | 88.6         | 0.231                   | 0.028                  | 2            |
|                                       |       |       |       |       |       | 237                                                                                                                          | 640                | 92.7         |                         |                        |              |
|                                       |       |       |       |       |       | 250                                                                                                                          | 640                | 92.9         |                         |                        |              |
|                                       |       |       |       |       |       | 268                                                                                                                          | 625                | 93.3         |                         |                        |              |
|                                       |       |       |       |       |       | 300                                                                                                                          | 615                | 93.8         |                         |                        |              |
| 800                                   | 1540  | 1620  | 1790  | 2050  | 2370  | 112                                                                                                                          | 585                | 86.9         | 0.254                   | 0.037                  | 3            |
|                                       |       |       |       |       |       | 211                                                                                                                          | 575                | 91.7         |                         |                        |              |
|                                       |       |       |       |       |       | 222                                                                                                                          | 575                | 92.0         |                         |                        |              |
|                                       |       |       |       |       |       | 244                                                                                                                          | 575                | 92.5         |                         |                        |              |
|                                       |       |       |       |       |       | 276                                                                                                                          | 570                | 93.0         |                         |                        |              |
| 710                                   | 1370  | 1440  | 1590  | 1810  | 2110  | 305                                                                                                                          | 545                | 93.6         | 0.321                   | 0.042                  | 4            |
|                                       |       |       |       |       |       | 106                                                                                                                          | 560                | 86.7         |                         |                        |              |
|                                       |       |       |       |       |       | 201                                                                                                                          | 550                | 91.7         |                         |                        |              |
|                                       |       |       |       |       |       | 212                                                                                                                          | 550                | 92.0         |                         |                        |              |
|                                       |       |       |       |       |       | 227                                                                                                                          | 535                | 92.5         |                         |                        |              |
| 630                                   | 1240  | 1300  | 1430  | 1640  | 1910  | 251                                                                                                                          | 520                | 93.1         | 0.404                   | 0.056                  | 5            |
|                                       |       |       |       |       |       | 281                                                                                                                          | 500                | 93.6         |                         |                        |              |
|                                       |       |       |       |       |       | 92                                                                                                                           | 495                | 84.2         |                         |                        |              |
|                                       |       |       |       |       |       | 175                                                                                                                          | 485                | 90.3         |                         |                        |              |
|                                       |       |       |       |       |       | 184                                                                                                                          | 485                | 90.7         |                         |                        |              |
| 580                                   | 1130  | 1190  | 1320  | 1500  | 1750  | 203                                                                                                                          | 485                | 91.3         | 0.414                   | 0.065                  | 6            |
|                                       |       |       |       |       |       | 227                                                                                                                          | 475                | 92.0         |                         |                        |              |
|                                       |       |       |       |       |       | 260                                                                                                                          | 465                | 92.9         |                         |                        |              |
|                                       |       |       |       |       |       | 83                                                                                                                           | 450                | 83.8         |                         |                        |              |
|                                       |       |       |       |       |       | 158                                                                                                                          | 440                | 90.2         |                         |                        |              |
| 550                                   | 1080  | 1140  | 1250  | 1430  | 1670  | 167                                                                                                                          | 440                | 90.5         | 0.480                   | 0.068                  | 7            |
|                                       |       |       |       |       |       | 184                                                                                                                          | 440                | 91.2         |                         |                        |              |
|                                       |       |       |       |       |       | 203                                                                                                                          | 425                | 92.0         |                         |                        |              |
|                                       |       |       |       |       |       | 231                                                                                                                          | 415                | 92.8         |                         |                        |              |
|                                       |       |       |       |       |       | 78                                                                                                                           | 430                | 82.3         |                         |                        |              |

## GH225 IM1001 - IP23 - IC06



| Size    | B   | L1   |
|---------|-----|------|
| GH225 S | 655 | 1016 |
| GH225 M | 705 | 1066 |
| GH225 L | 750 | 1111 |
| GH225 P | 800 | 1161 |
| GH225 X | 850 | 1211 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH225 S        | 755             | 1.75                      | 2400                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 M        | 810             | 1.95                      | 2600                 | 0.77                    | 3000                   | 50                | 1400               |
| GH225 L        | 870             | 2.2                       | 3000                 | 0.81                    | 3000                   | 50                | 1400               |
| GH225 P        | 925             | 2.4                       | 3300                 | 0.84                    | 3000                   | 50                | 1400               |
| GH225 X        | 1000            | 2.6                       | 3500                 | 0.87                    | 3000                   | 50                | 1400               |
| GH225 SK       | 755             | 1.75                      | 2100                 | 0.58                    | 3000                   | 50                | 1400               |
| GH225 MK       | 810             | 1.95                      | 2400                 | 0.62                    | 3000                   | 50                | 1400               |
| GH225 LK       | 870             | 2.2                       | 2600                 | 0.65                    | 3000                   | 50                | 1400               |
| GH225 PK       | 925             | 2.4                       | 2900                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 XK       | 1000            | 2.6                       | 3200                 | 0.71                    | 3000                   | 50                | 1400               |

| Bearings                             | Drive end  |                            | Opposite drive end |
|--------------------------------------|------------|----------------------------|--------------------|
|                                      | Coupling   | Pulley                     |                    |
| GH225 S-M-L-P-X                      | 6218 2Z C3 | NU218EC P C3               | 6217 2Z C3         |
| Electrical blower (IC06)             | Weight     | Blower motor power         |                    |
|                                      | 40 kg      | 2.2 kW (50/60 Hz)          |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight     | Heat exchanger motor power |                    |
|                                      | 240 kg     | 3.0 kW (50/60 Hz)          |                    |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

## GH315

## GH355

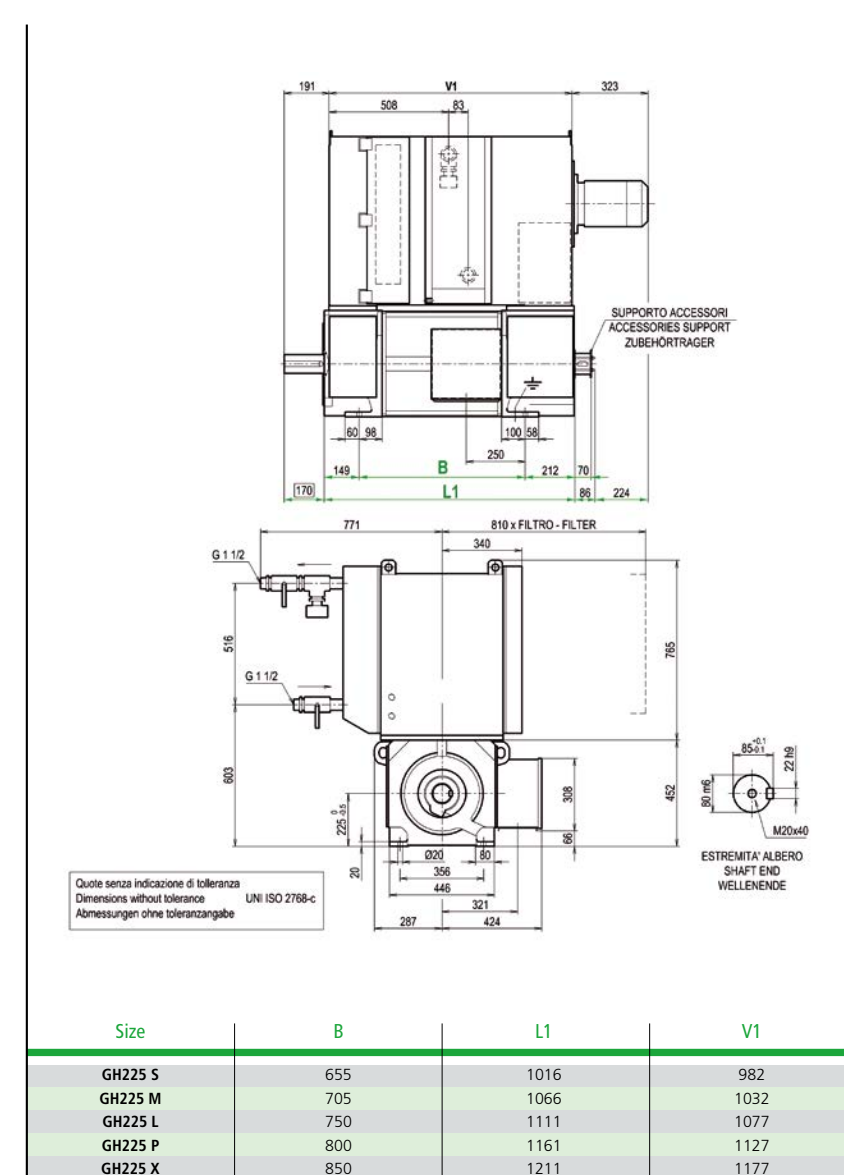
## GH400

## GH450

## GH225 LK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 2600<br>Field time constant (s): 0.65<br>Motor mass (kg): 910 (IC06)<br>Moment of inertia (kg m²): 2.2 |                    |              | Armature circuit        |                        | Winding code |
|---------------------------------------|-------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|
| 220 V                                 | 400 V | 420 V | 460 V | 520 V | 600 V | RATED OUTPUT kW                                                                                                              | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |
| 430                                   | 860   |       |       |       |       | 67                                                                                                                           | 380                | 80.6         | 0.789                   | 0.097                  | 8            |
|                                       |       |       |       |       |       | 132                                                                                                                          | 375                | 88.5         |                         |                        |              |
|                                       |       | 910   |       |       |       | 138                                                                                                                          | 370                | 88.9         |                         |                        |              |
|                                       |       |       | 1000  |       |       | 152                                                                                                                          | 370                | 89.7         |                         |                        |              |
|                                       |       |       |       | 1150  |       | 169                                                                                                                          | 360                | 90.7         |                         |                        |              |
| 390                                   | 780   |       |       |       |       | 57                                                                                                                           | 330                | 78.0         | 0.865                   | 0.124                  | 9            |
|                                       |       |       |       |       |       | 113                                                                                                                          | 325                | 87.0         |                         |                        |              |
|                                       |       | 820   |       |       |       | 119                                                                                                                          | 325                | 87.6         |                         |                        |              |
|                                       |       |       | 910   |       |       | 132                                                                                                                          | 325                | 88.5         |                         |                        |              |
|                                       |       |       |       | 1040  |       | 148                                                                                                                          | 320                | 89.6         |                         |                        |              |
| 350                                   | 710   |       |       |       |       | 49                                                                                                                           | 290                | 76.8         | 0.990                   | 0.150                  | 10           |
|                                       |       |       |       |       |       | 99                                                                                                                           | 288                | 86.4         |                         |                        |              |
|                                       |       | 750   |       |       |       | 105                                                                                                                          | 288                | 87.0         |                         |                        |              |
|                                       |       |       | 830   |       |       | 116                                                                                                                          | 288                | 87.9         |                         |                        |              |
|                                       |       |       |       | 950   |       | 133                                                                                                                          | 288                | 89.1         |                         |                        |              |
| 310                                   | 630   |       |       |       | 1110  | 156                                                                                                                          | 288                | 90.3         | 1.275                   | 0.170                  | 11           |
|                                       |       |       |       |       |       | 44                                                                                                                           |                    | 76.3         |                         |                        |              |
|                                       |       | 660   |       |       |       | 91                                                                                                                           |                    | 86.2         |                         |                        |              |
|                                       |       |       | 740   |       |       | 96                                                                                                                           | 265                | 86.8         |                         |                        |              |
|                                       |       |       |       | 840   |       | 106                                                                                                                          |                    | 87.7         |                         |                        |              |
| 270                                   | 560   |       |       |       |       | 122                                                                                                                          |                    | 88.9         | 1.472                   | 0.230                  | 12           |
|                                       |       |       |       |       |       | 143                                                                                                                          |                    | 90.2         |                         |                        |              |
|                                       |       | 590   |       |       |       | 80                                                                                                                           |                    | 83.6         |                         |                        |              |
|                                       |       |       | 660   |       |       | 85                                                                                                                           | 241                | 84.2         |                         |                        |              |
|                                       |       |       |       | 755   |       | 94                                                                                                                           |                    | 85.5         |                         |                        |              |
| 230                                   | 460   |       |       |       |       | 108                                                                                                                          |                    | 86.9         | 1.724                   | 0.270                  | 13           |
|                                       |       |       |       |       |       | 127                                                                                                                          |                    | 88.4         |                         |                        |              |
|                                       |       |       |       |       |       | 71                                                                                                                           |                    | 82.6         |                         |                        |              |
|                                       |       | 540   |       |       |       | 75                                                                                                                           |                    | 83.4         |                         |                        |              |
|                                       |       |       | 600   |       |       | 84                                                                                                                           | 216                | 84.7         |                         |                        |              |
| 190                                   | 380   |       |       |       |       | 96                                                                                                                           |                    | 86.2         | 1.796                   | 0.284                  | 14           |
|                                       |       |       |       |       |       | 113                                                                                                                          |                    | 87.8         |                         |                        |              |
|                                       |       |       |       |       |       | 68                                                                                                                           |                    | 81.2         |                         |                        |              |
|                                       |       | 510   |       |       |       | 72                                                                                                                           |                    | 82.0         |                         |                        |              |
|                                       |       |       | 570   |       |       | 80                                                                                                                           | 210                | 83.4         |                         |                        |              |
| 150                                   | 300   |       |       |       |       | 93                                                                                                                           |                    | 85.1         | 1.796                   | 0.284                  | 14           |
|                                       |       |       |       |       |       | 109                                                                                                                          |                    | 86.8         |                         |                        |              |
|                                       |       |       |       |       |       | 770                                                                                                                          |                    |              |                         |                        |              |

## GH225 IM1001 - IP54 - IC86W



| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH225 S        | 755             | 1.75                      | 2400                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 M        | 810             | 1.95                      | 2600                 | 0.77                    | 3000                   | 50                | 1400               |
| GH225 L        | 870             | 2.2                       | 3000                 | 0.81                    | 3000                   | 50                | 1400               |
| GH225 P        | 925             | 2.4                       | 3300                 | 0.84                    | 3000                   | 50                | 1400               |
| GH225 X        | 1000            | 2.6                       | 3500                 | 0.87                    | 3000                   | 50                | 1400               |
| GH225 SK       | 755             | 1.75                      | 2100                 | 0.58                    | 3000                   | 50                | 1400               |
| GH225 MK       | 810             | 1.95                      | 2400                 | 0.62                    | 3000                   | 50                | 1400               |
| GH225 LK       | 870             | 2.2                       | 2600                 | 0.65                    | 3000                   | 50                | 1400               |
| GH225 PK       | 925             | 2.4                       | 2900                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 XK       | 1000            | 2.6                       | 3200                 | 0.71                    | 3000                   | 50                | 1400               |

| Bearings                             | Drive end  |                            | Opposite drive end |
|--------------------------------------|------------|----------------------------|--------------------|
|                                      | Coupling   | Pulley                     |                    |
| GH225 S-M-L-P-X                      | 6218 2Z C3 | NU218ECP C3                | 6217 2Z C3         |
| Electrical blower (IC06)             | Weight     | Blower motor power         |                    |
|                                      | 40 kg      | 2.2 kW (50/60 Hz)          |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight     | Heat exchanger motor power |                    |
|                                      | 240 kg     | 3.0 kW (50/60 Hz)          |                    |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

## GH315

## GH355

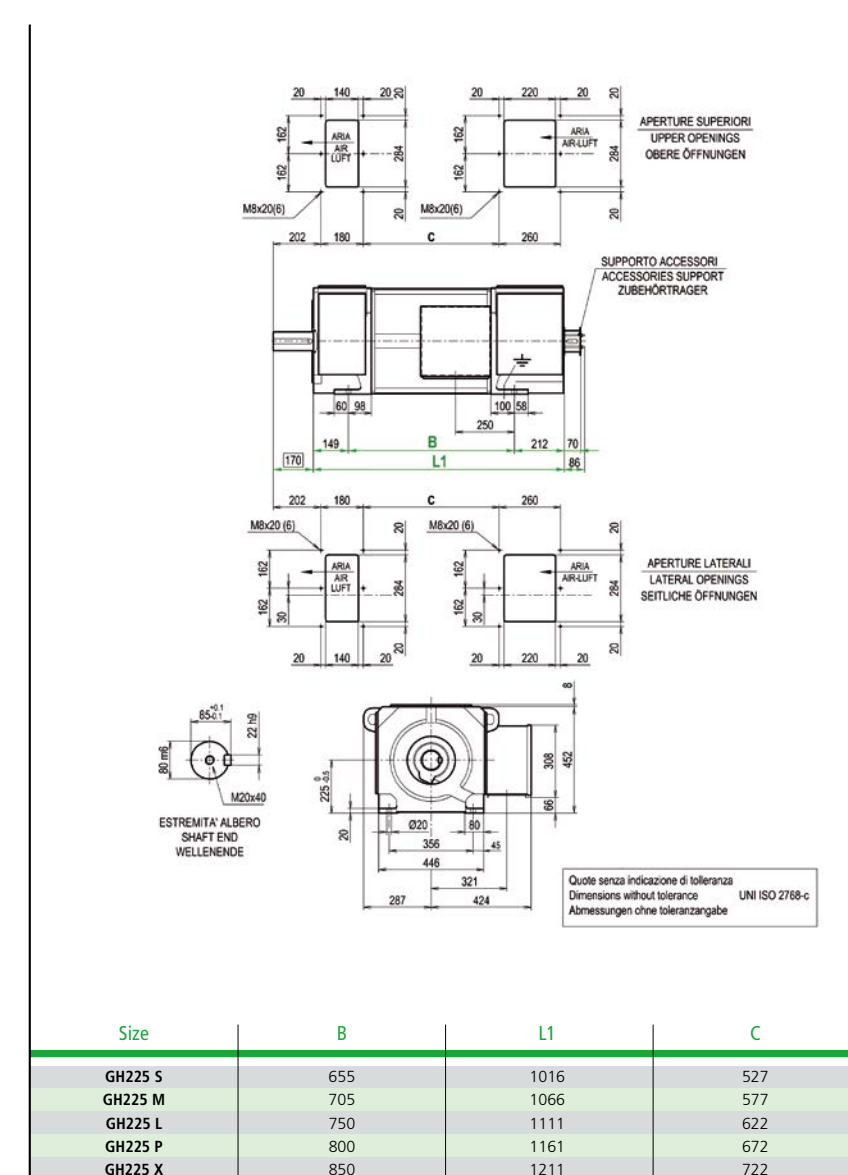
## GH400

## GH450

## GH225 LK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 2600<br>Field time constant (s): 0.65<br>Motor mass (kg): 910 (IC06)<br>Moment of inertia (kg m²): 2.2 |                       |                 | Armature circuit           |                           | Winding code |
|---------------------------------------|-------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------|----------------------------|---------------------------|--------------|
| 220 V                                 | 400 V | 420 V | 460 V | 520 V | 600 V | RATED OUTPUT<br>kW                                                                                                           | ARMATURE CURRENT<br>A | EFFICIENCY<br>% | SATURATED INDUCTANCE<br>mH | RESISTANCE AT 115 °C<br>Ω |              |
|                                       | 390   |       |       |       |       | 58                                                                                                                           |                       | 79.3            |                            |                           |              |
|                                       |       | 410   |       |       |       | 62                                                                                                                           | 185                   | 80.2            | 2.837                      | 0.390                     | 15           |
|                                       |       |       | 460   |       |       | 69                                                                                                                           |                       | 81.8            |                            |                           |              |
|                                       |       |       |       | 530   |       | 80                                                                                                                           |                       | 83.7            |                            |                           |              |
|                                       | 350   |       |       |       |       | 51                                                                                                                           |                       | 77.9            |                            |                           |              |
|                                       |       | 370   |       |       |       | 55                                                                                                                           | 165                   | 78.9            | 3.907                      | 0.471                     | 16           |
|                                       |       |       | 410   |       |       | 61                                                                                                                           |                       | 80.6            |                            |                           |              |
|                                       |       |       |       | 480   |       | 71                                                                                                                           |                       | 82.6            |                            |                           |              |

## GH225 IM1001 - IP44 - IC37



| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH225 S        | 755             | 1.75                      | 2400                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 M        | 810             | 1.95                      | 2600                 | 0.77                    | 3000                   | 50                | 1400               |
| GH225 L        | 870             | 2.2                       | 3000                 | 0.81                    | 3000                   | 50                | 1400               |
| GH225 P        | 925             | 2.4                       | 3300                 | 0.84                    | 3000                   | 50                | 1400               |
| GH225 X        | 1000            | 2.6                       | 3500                 | 0.87                    | 3000                   | 50                | 1400               |
| GH225 SK       | 755             | 1.75                      | 2100                 | 0.58                    | 3000                   | 50                | 1400               |
| GH225 MK       | 810             | 1.95                      | 2400                 | 0.62                    | 3000                   | 50                | 1400               |
| GH225 LK       | 870             | 2.2                       | 2600                 | 0.65                    | 3000                   | 50                | 1400               |
| GH225 PK       | 925             | 2.4                       | 2900                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 XK       | 1000            | 2.6                       | 3200                 | 0.71                    | 3000                   | 50                | 1400               |

| Bearings                             | Drive end  |                            | Opposite drive end |
|--------------------------------------|------------|----------------------------|--------------------|
|                                      | Coupling   | Pulley                     |                    |
| GH225 S-M-L-P-X                      | 6218 2Z C3 | NU218ECP C3                | 6217 2Z C3         |
| Electrical blower (IC06)             | Weight     | Blower motor power         |                    |
|                                      | 40 kg      | 2.2 kW (50/60 Hz)          |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight     | Heat exchanger motor power |                    |
|                                      | 240 kg     | 3.0 kW (50/60 Hz)          |                    |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

## GH315

## GH355

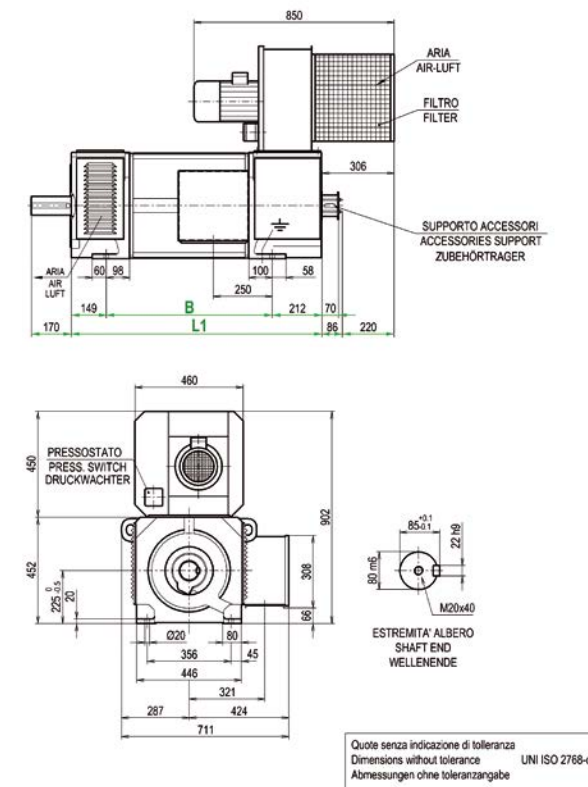
## GH400

## GH450

### GH225 PK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 2900<br>Field time costant (s): 0.68<br>Motor mass (kg): 965 (IC06)<br>Moment of inertia (kg m²): 2.4 |                    |              | Armature circuit        |                        | Winding code |      |
|---------------------------------------|-------|-------|-------|-------|-------|-----------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|------|
| 220 V                                 | 400 V | 420 V | 460 V | 520 V | 600 V | RATED OUTPUT kW                                                                                                             | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |      |
| 860                                   |       |       |       |       |       | 145                                                                                                                         | 750                | 88.4         | 0.200                   | 0.026                  | 1            |      |
|                                       | 1640  |       |       |       |       | 277                                                                                                                         | 750                | 92.5         |                         |                        |              |      |
|                                       |       | 1730  |       |       |       | 291                                                                                                                         | 750                | 92.7         |                         |                        |              |      |
|                                       |       |       | 1900  |       |       |                                                                                                                             | 308                | 720          |                         |                        |              | 93.3 |
|                                       |       |       |       |       | 2200  |                                                                                                                             |                    | 336          |                         |                        |              | 690  |
| 780                                   |       |       |       |       |       | 127                                                                                                                         | 655                | 88.2         | 0.259                   | 0.031                  | 2            |      |
|                                       | 1490  |       |       |       |       | 236                                                                                                                         | 640                | 92.5         |                         |                        |              |      |
|                                       |       | 1570  |       |       |       | 249                                                                                                                         | 640                | 92.7         |                         |                        |              |      |
|                                       |       |       | 1730  |       |       |                                                                                                                             | 267                | 625          |                         |                        |              | 93.1 |
|                                       |       |       |       |       | 2000  |                                                                                                                             |                    | 300          |                         |                        |              | 615  |
| 710                                   |       |       |       |       |       | 111                                                                                                                         | 585                | 86.2         | 0.284                   | 0.040                  | 3            |      |
|                                       | 1360  |       |       |       |       | 210                                                                                                                         | 575                | 91.4         |                         |                        |              |      |
|                                       |       | 1440  |       |       |       | 221                                                                                                                         | 575                | 91.7         |                         |                        |              |      |
|                                       |       |       | 1580  |       |       |                                                                                                                             | 244                | 575          |                         |                        |              | 92.2 |
|                                       |       |       |       |       | 1800  |                                                                                                                             |                    | 275          |                         |                        |              | 570  |
| 630                                   |       |       |       |       | 2100  | 306                                                                                                                         | 545                | 93.5         | 0.359                   | 0.044                  | 4            |      |
|                                       | 1210  |       |       |       |       | 105                                                                                                                         | 560                | 86.0         |                         |                        |              |      |
|                                       |       | 1280  |       |       |       | 200                                                                                                                         | 550                | 91.4         |                         |                        |              |      |
|                                       |       |       | 1410  |       |       |                                                                                                                             | 211                | 550          |                         |                        |              | 91.7 |
|                                       |       |       |       |       |       | 1610                                                                                                                        |                    | 226          |                         |                        |              | 535  |
| 560                                   |       |       |       |       | 1870  | 251                                                                                                                         | 520                | 92.8         | 0.452                   | 0.060                  | 5            |      |
|                                       | 1100  |       |       |       |       | 281                                                                                                                         | 500                | 93.5         |                         |                        |              |      |
|                                       |       | 1150  |       |       |       | 91                                                                                                                          | 495                | 83.3         |                         |                        |              |      |
|                                       |       |       | 1270  |       |       |                                                                                                                             | 174                | 485          |                         |                        |              | 89.9 |
|                                       |       |       |       |       | 1450  |                                                                                                                             |                    | 184          |                         |                        |              | 485  |
| 510                                   |       |       |       |       | 1680  | 202                                                                                                                         | 485                | 90.9         | 0.463                   | 0.070                  | 6            |      |
|                                       | 1000  |       |       |       |       | 226                                                                                                                         | 475                | 91.7         |                         |                        |              |      |
|                                       |       | 1050  |       |       |       | 258                                                                                                                         | 465                | 92.5         |                         |                        |              |      |
|                                       |       |       | 1160  |       |       |                                                                                                                             | 82                 | 450          |                         |                        |              | 82.9 |
|                                       |       |       |       |       |       |                                                                                                                             |                    | 158          |                         |                        |              | 440  |
| 490                                   |       |       |       |       |       | 166                                                                                                                         | 440                | 90.1         | 0.538                   | 0.073                  | 7            |      |
|                                       | 950   |       |       |       |       | 184                                                                                                                         | 440                | 90.8         |                         |                        |              |      |
|                                       |       | 1000  |       |       |       | 202                                                                                                                         | 425                | 91.6         |                         |                        |              |      |
|                                       |       |       | 1110  |       |       |                                                                                                                             | 230                | 415          |                         |                        |              | 92.4 |
|                                       |       |       |       |       |       | 1270                                                                                                                        |                    | 77           |                         |                        |              | 430  |
|                                       |       |       |       |       | 1470  | 149                                                                                                                         | 420                | 88.8         | 0.538                   | 0.073                  |              |      |
|                                       |       |       |       |       |       | 157                                                                                                                         | 420                | 89.3         |                         |                        |              |      |
|                                       |       |       |       |       |       | 173                                                                                                                         | 420                | 90.0         |                         |                        |              |      |
|                                       |       |       |       |       |       |                                                                                                                             | 196                | 415          |                         |                        |              | 90.9 |
|                                       |       |       |       |       |       |                                                                                                                             |                    | 223          |                         |                        |              | 405  |

### GH225 IM1001 - IP23 - IC06



| Size    | B   | L1   |
|---------|-----|------|
| GH225 S | 655 | 1016 |
| GH225 M | 705 | 1066 |
| GH225 L | 750 | 1111 |
| GH225 P | 800 | 1161 |
| GH225 X | 850 | 1211 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH225 S        | 755             | 1.75                      | 2400                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 M        | 810             | 1.95                      | 2600                 | 0.77                    | 3000                   | 50                | 1400               |
| GH225 L        | 870             | 2.2                       | 3000                 | 0.81                    | 3000                   | 50                | 1400               |
| GH225 P        | 925             | 2.4                       | 3300                 | 0.84                    | 3000                   | 50                | 1400               |
| GH225 X        | 1000            | 2.6                       | 3500                 | 0.87                    | 3000                   | 50                | 1400               |
| GH225 SK       | 755             | 1.75                      | 2100                 | 0.58                    | 3000                   | 50                | 1400               |
| GH225 MK       | 810             | 1.95                      | 2400                 | 0.62                    | 3000                   | 50                | 1400               |
| GH225 LK       | 870             | 2.2                       | 2600                 | 0.65                    | 3000                   | 50                | 1400               |
| GH225 PK       | 925             | 2.4                       | 2900                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 XK       | 1000            | 2.6                       | 3200                 | 0.71                    | 3000                   | 50                | 1400               |

| Bearings                             | Drive end  |                            | Opposite drive end |
|--------------------------------------|------------|----------------------------|--------------------|
|                                      | Coupling   | Pulley                     |                    |
| GH225 S-M-L-P-X                      | 6218 2Z C3 | NU218EC P C3               | 6217 2Z C3         |
| Electrical blower (IC06)             | Weight     | Blower motor power         |                    |
|                                      | 40 kg      | 2.2 kW (50/60 Hz)          |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight     | Heat exchanger motor power |                    |
|                                      | 240 kg     | 3.0 kW (50/60 Hz)          |                    |



## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

## GH315

## GH355

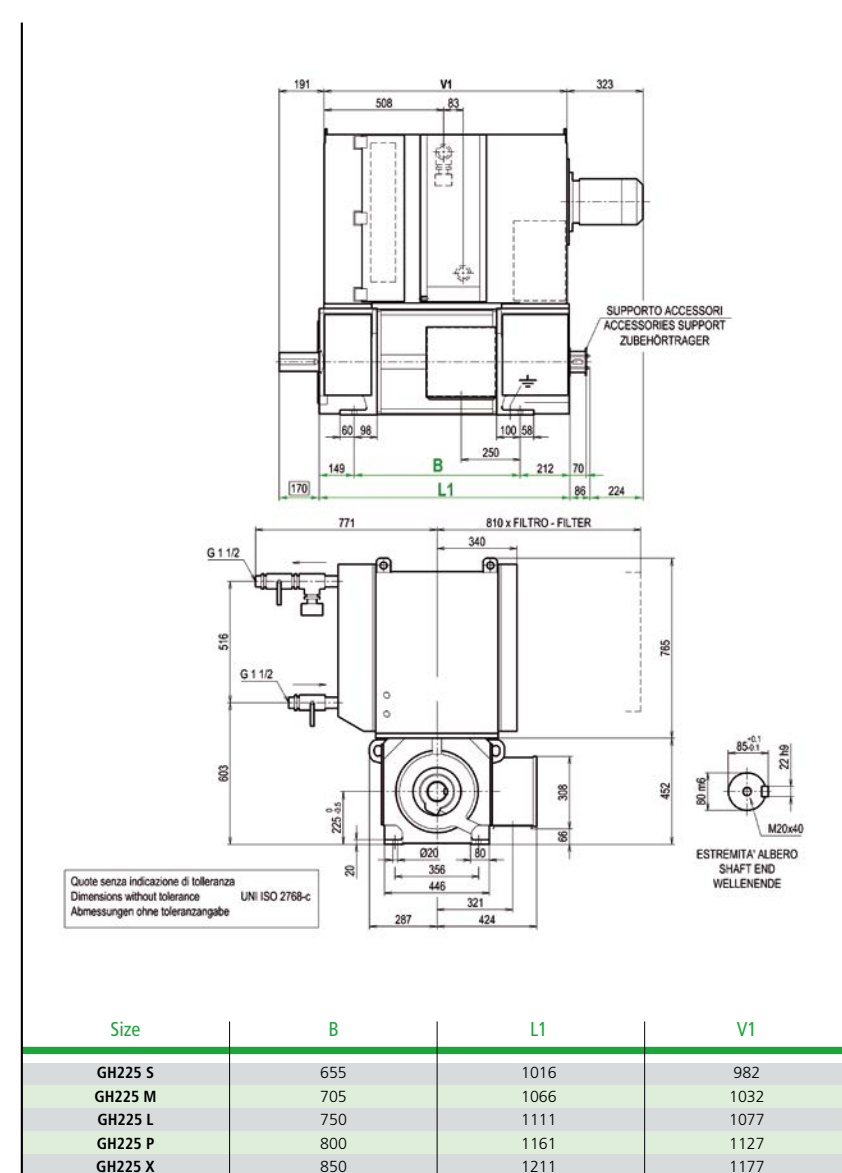
## GH400

## GH450

### GH225 PK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 2900<br>Field time costant (s): 0.68<br>Motor mass (kg): 965 (IC06)<br>Moment of inertia (kg m²): 2.4 |                    |              | Armature circuit        |                        | Winding code |      |
|---------------------------------------|-------|-------|-------|-------|-------|-----------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|------|
| 220 V                                 | 400 V | 420 V | 460 V | 520 V | 600 V | RATED OUTPUT kW                                                                                                             | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |      |
| 380                                   |       |       |       |       |       | 66                                                                                                                          | 380                | 79.4         | 0.885                   | 0.104                  | 8            |      |
|                                       | 760   |       |       |       |       | 132                                                                                                                         | 375                | 87.8         |                         |                        |              |      |
|                                       |       | 800   |       |       |       | 137                                                                                                                         | 370                | 88.3         |                         |                        |              |      |
|                                       |       |       | 890   |       |       | 152                                                                                                                         | 370                | 89.2         |                         |                        |              |      |
|                                       |       |       |       | 1020  |       | 169                                                                                                                         | 360                | 90.2         |                         |                        |              |      |
| 340                                   |       |       |       |       |       | 55                                                                                                                          | 330                | 76.6         | 0.969                   | 0.132                  | 9            |      |
|                                       | 690   |       |       |       |       | 112                                                                                                                         | 325                | 86.3         |                         |                        |              |      |
|                                       |       | 730   |       |       |       | 118                                                                                                                         | 325                | 86.9         |                         |                        |              |      |
|                                       |       |       | 800   |       |       | 131                                                                                                                         | 325                | 87.9         |                         |                        |              |      |
|                                       |       |       |       | 920   |       | 148                                                                                                                         | 320                | 89.0         |                         |                        |              |      |
| 300                                   |       |       |       |       |       | 48                                                                                                                          | 290                | 75.4         | 1.110                   | 0.161                  | 10           |      |
|                                       | 625   |       |       |       |       | 98                                                                                                                          | 288                | 85.6         |                         |                        |              |      |
|                                       |       | 660   |       |       |       | 104                                                                                                                         | 288                | 86.2         |                         |                        |              |      |
|                                       |       |       | 730   |       |       | 115                                                                                                                         | 288                | 87.3         |                         |                        |              |      |
|                                       |       |       |       | 840   |       | 132                                                                                                                         | 288                | 88.5         |                         |                        |              |      |
|                                       |       |       |       | 980   | 155   | 288                                                                                                                         | 89.8               |              |                         |                        |              |      |
| 270                                   |       |       |       |       |       | 43                                                                                                                          |                    | 74.8         | 1.429                   | 0.183                  | 11           |      |
|                                       | 550   |       |       |       |       | 90                                                                                                                          |                    | 85.4         |                         |                        |              |      |
|                                       |       | 590   |       |       |       | 95                                                                                                                          | 265                | 86.0         |                         |                        |              |      |
|                                       |       |       | 650   |       |       | 106                                                                                                                         |                    | 87.1         |                         |                        |              |      |
|                                       |       |       |       | 740   |       | 121                                                                                                                         |                    | 88.3         |                         |                        |              |      |
|                                       |       |       |       |       | 870   |                                                                                                                             | 89.6               |              |                         |                        |              |      |
|                                       | 490   |       |       |       |       | 79                                                                                                                          |                    | 82.6         | 1.650                   | 0.246                  | 12           |      |
|                                       |       |       |       |       |       | 84                                                                                                                          |                    | 83.3         |                         |                        |              |      |
|                                       |       |       | 580   |       |       | 93                                                                                                                          | 241                | 84.6         |                         |                        |              |      |
|                                       |       |       | 660   |       | 108   |                                                                                                                             | 86.2               |              |                         |                        |              |      |
|                                       |       |       |       | 780   |       | 127                                                                                                                         |                    | 87.8         |                         |                        |              |      |
| 450                                   |       |       |       |       |       | 70                                                                                                                          |                    | 81.6         | 1.932                   | 0.289                  | 13           |      |
|                                       |       |       |       |       |       | 74                                                                                                                          |                    | 82.4         |                         |                        |              |      |
|                                       |       |       | 475   |       |       | 83                                                                                                                          | 216                | 83.7         |                         |                        |              |      |
|                                       |       |       | 530   |       | 96    |                                                                                                                             | 85.4               |              |                         |                        |              |      |
|                                       |       |       |       | 610   |       | 113                                                                                                                         |                    | 87.1         |                         |                        |              |      |
| 420                                   |       |       |       |       |       | 68                                                                                                                          |                    | 80.0         | 2.012                   | 0.304                  | 14           |      |
|                                       |       |       |       |       |       | 72                                                                                                                          |                    | 80.9         |                         |                        |              |      |
|                                       |       |       | 450   |       |       | 80                                                                                                                          | 210                | 82.4         |                         |                        |              |      |
|                                       |       |       | 500   |       |       |                                                                                                                             | 92                 |              |                         |                        |              | 84.2 |
|                                       |       |       |       | 580   |       | 108                                                                                                                         |                    | 86.1         |                         |                        |              |      |

### GH225 IM1001 - IP54 - IC86W



| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH225 S        | 755             | 1.75                      | 2400                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 M        | 810             | 1.95                      | 2600                 | 0.77                    | 3000                   | 50                | 1400               |
| GH225 L        | 870             | 2.2                       | 3000                 | 0.81                    | 3000                   | 50                | 1400               |
| GH225 P        | 925             | 2.4                       | 3300                 | 0.84                    | 3000                   | 50                | 1400               |
| GH225 X        | 1000            | 2.6                       | 3500                 | 0.87                    | 3000                   | 50                | 1400               |
| GH225 SK       | 755             | 1.75                      | 2100                 | 0.58                    | 3000                   | 50                | 1400               |
| GH225 MK       | 810             | 1.95                      | 2400                 | 0.62                    | 3000                   | 50                | 1400               |
| GH225 LK       | 870             | 2.2                       | 2600                 | 0.65                    | 3000                   | 50                | 1400               |
| GH225 PK       | 925             | 2.4                       | 2900                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 XK       | 1000            | 2.6                       | 3200                 | 0.71                    | 3000                   | 50                | 1400               |

| Bearings                             | Drive end  |                            | Opposite drive end |
|--------------------------------------|------------|----------------------------|--------------------|
|                                      | Coupling   | Pulley                     |                    |
| GH225 S-M-L-P-X                      | 6218 2Z C3 | NU218ECP C3                | 6217 2Z C3         |
| Electrical blower (IC06)             | Weight     | Blower motor power         |                    |
|                                      | 40 kg      | 2.2 kW (50/60 Hz)          |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight     | Heat exchanger motor power |                    |
|                                      | 240 kg     | 3.0 kW (50/60 Hz)          |                    |



## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

## GH315

## GH355

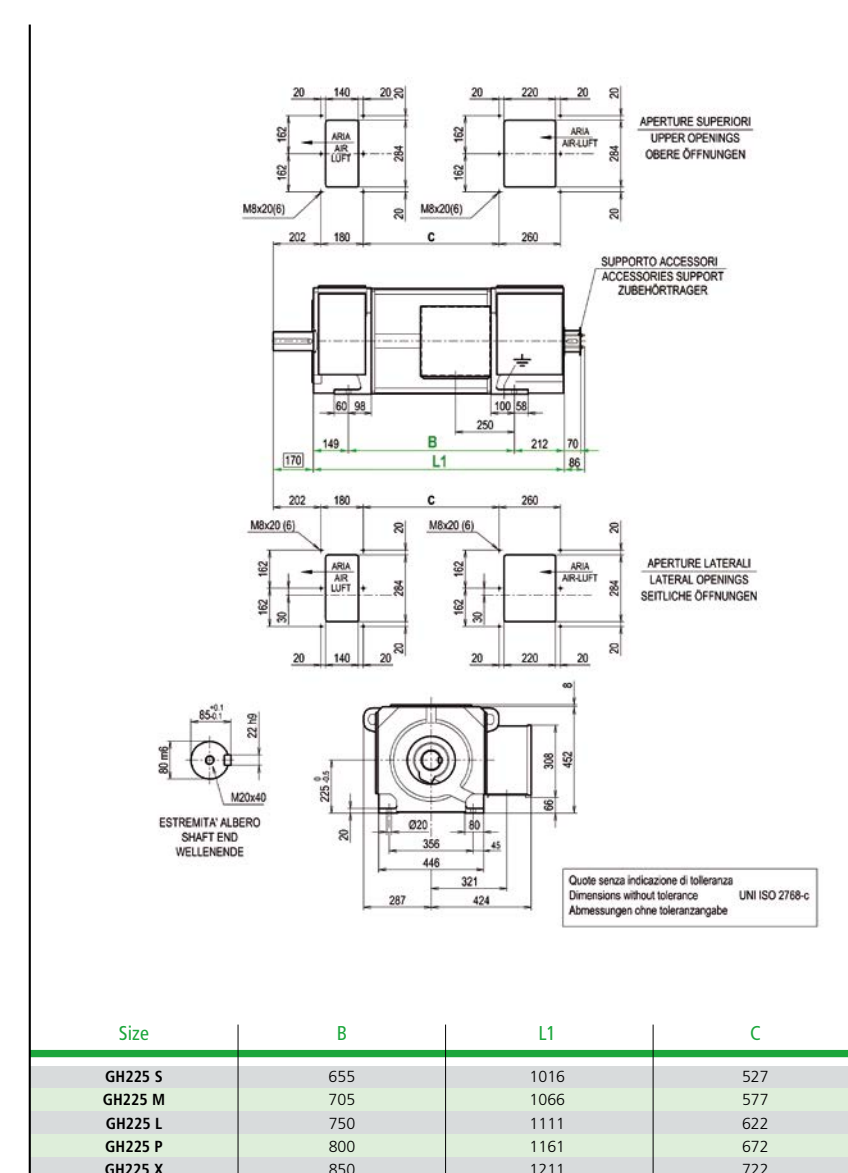
## GH400

## GH450

## GH225 PK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 2900<br>Field time constant (s): 0.68<br>Motor mass (kg): 965 (IC06)<br>Moment of inertia (kg m²): 2.4 |                    |              | Armature circuit        | Winding code           |
|---------------------------------------|-------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|
| 220 V                                 | 400 V | 420 V | 460 V | 520 V | 600 V | RATED OUTPUT kW                                                                                                              | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |
|                                       | 340   |       |       |       |       | 57                                                                                                                           |                    | 78.0         |                         |                        |
|                                       |       | 360   |       |       |       | 61                                                                                                                           | 185                | 79.0         |                         |                        |
|                                       |       |       | 400   |       |       | 68                                                                                                                           |                    | 80.7         | 3.180                   | 0.418                  |
|                                       |       |       |       | 465   |       | 79                                                                                                                           |                    | 82.7         |                         |                        |
|                                       | 310   |       |       |       |       | 50                                                                                                                           |                    | 76.5         |                         |                        |
|                                       |       | 320   |       |       |       | 54                                                                                                                           | 165                | 77.5         |                         |                        |
|                                       |       |       | 360   |       |       | 60                                                                                                                           |                    | 79.3         | 4.381                   | 0.505                  |
|                                       |       |       |       | 420   |       | 70                                                                                                                           |                    | 81.5         |                         |                        |

## GH225 IM1001 - IP44 - IC37



| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH225 S        | 755             | 1.75                      | 2400                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 M        | 810             | 1.95                      | 2600                 | 0.77                    | 3000                   | 50                | 1400               |
| GH225 L        | 870             | 2.2                       | 3000                 | 0.81                    | 3000                   | 50                | 1400               |
| GH225 P        | 925             | 2.4                       | 3300                 | 0.84                    | 3000                   | 50                | 1400               |
| GH225 X        | 1000            | 2.6                       | 3500                 | 0.87                    | 3000                   | 50                | 1400               |
| GH225 SK       | 755             | 1.75                      | 2100                 | 0.58                    | 3000                   | 50                | 1400               |
| GH225 MK       | 810             | 1.95                      | 2400                 | 0.62                    | 3000                   | 50                | 1400               |
| GH225 LK       | 870             | 2.2                       | 2600                 | 0.65                    | 3000                   | 50                | 1400               |
| GH225 PK       | 925             | 2.4                       | 2900                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 XK       | 1000            | 2.6                       | 3200                 | 0.71                    | 3000                   | 50                | 1400               |

| Bearings                             | Drive end  |                            | Opposite drive end |
|--------------------------------------|------------|----------------------------|--------------------|
|                                      | Coupling   | Pulley                     |                    |
| GH225 S-M-L-P-X                      | 6218 2Z C3 | NU218ECP C3                | 6217 2Z C3         |
| Electrical blower (IC06)             | Weight     | Blower motor power         |                    |
|                                      | 40 kg      | 2.2 kW (50/60 Hz)          |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight     | Heat exchanger motor power |                    |
|                                      | 240 kg     | 3.0 kW (50/60 Hz)          |                    |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

## GH315

## GH355

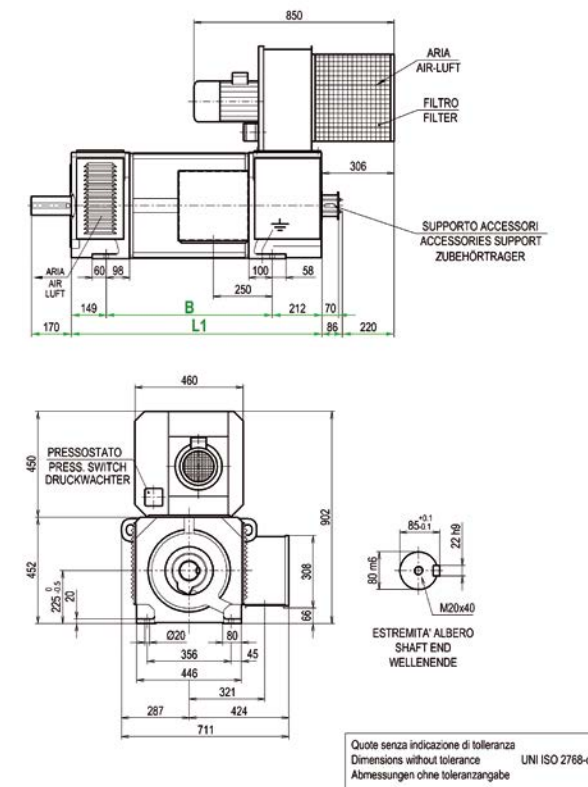
## GH400

## GH450

## GH225 XK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 3200<br>Field time constant (s): 0.71<br>Motor mass (kg): 1040 (IC06)<br>Moment of inertia (kg m²): 2.6 |                    |              | Armature circuit        |                        | Winding code |          |
|---------------------------------------|-------|-------|-------|-------|-------|-------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|----------|
| 220 V                                 | 400 V | 420 V | 460 V | 520 V | 600 V | RATED OUTPUT kW                                                                                                               | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |          |
| 770                                   |       |       |       |       |       | 144                                                                                                                           | 750                | 88.0         | 0.221                   | 0.027                  | 1            |          |
|                                       | 1470  |       |       |       |       | 276                                                                                                                           | 750                | 92.4         |                         |                        |              |          |
|                                       |       | 1550  |       |       |       | 290                                                                                                                           | 750                | 92.7         |                         |                        |              |          |
|                                       |       |       |       | 1720  |       |                                                                                                                               | 308                | 720          |                         |                        |              | 93.1     |
|                                       |       |       |       |       | 1970  |                                                                                                                               |                    | 336          |                         |                        |              | 690 93.8 |
| 700                                   |       |       |       |       |       | 126                                                                                                                           | 655                | 87.6         | 0.286                   | 0.033                  | 2            |          |
|                                       | 1350  |       |       |       |       | 235                                                                                                                           | 640                | 92.2         |                         |                        |              |          |
|                                       |       | 1410  |       |       |       | 247                                                                                                                           | 640                | 92.5         |                         |                        |              |          |
|                                       |       |       |       | 1580  |       |                                                                                                                               | 267                | 625          |                         |                        |              | 92.9     |
|                                       |       |       |       |       | 1800  |                                                                                                                               |                    | 300          |                         |                        |              | 615      |
| 630                                   |       |       |       |       |       | 110                                                                                                                           | 585                | 85.6         | 0.314                   | 0.042                  | 3            |          |
|                                       | 1220  |       |       |       |       | 210                                                                                                                           | 575                | 91.1         |                         |                        |              |          |
|                                       |       | 1300  |       |       |       | 220                                                                                                                           | 575                | 91.4         |                         |                        |              |          |
|                                       |       |       |       | 1420  |       |                                                                                                                               | 243                | 575          |                         |                        |              | 92.0     |
|                                       |       |       |       |       | 1630  |                                                                                                                               |                    | 273          |                         |                        |              | 568      |
| 560                                   |       |       |       |       | 1900  | 305                                                                                                                           | 545                | 93.4         | 0.397                   | 0.048                  | 4            |          |
|                                       | 1100  |       |       |       |       | 105                                                                                                                           | 560                | 85.3         |                         |                        |              |          |
|                                       |       | 1150  |       |       |       | 200                                                                                                                           | 550                | 90.9         |                         |                        |              |          |
|                                       |       |       |       | 1260  |       |                                                                                                                               | 210                | 550          |                         |                        |              | 91.3     |
|                                       |       |       |       |       | 1450  |                                                                                                                               |                    | 225          |                         |                        |              | 535      |
| 500                                   |       |       |       |       | 1690  | 250                                                                                                                           | 520                | 92.7         | 0.500                   | 0.064                  | 5            |          |
|                                       | 980   |       |       |       |       | 280                                                                                                                           | 500                | 93.3         |                         |                        |              |          |
|                                       |       | 1030  |       |       |       | 90                                                                                                                            | 495                | 82.4         |                         |                        |              |          |
|                                       |       |       |       | 1150  |       |                                                                                                                               | 173                | 485          |                         |                        |              | 89.4     |
|                                       |       |       |       |       | 1300  |                                                                                                                               |                    | 183          |                         |                        |              | 485      |
| 450                                   |       |       |       |       | 1520  | 202                                                                                                                           | 485                | 90.5         | 0.512                   | 0.074                  | 6            |          |
|                                       | 900   |       |       |       |       | 225                                                                                                                           | 475                | 91.4         |                         |                        |              |          |
|                                       |       | 950   |       |       |       | 257                                                                                                                           | 465                | 92.2         |                         |                        |              |          |
|                                       |       |       |       | 1050  |       |                                                                                                                               | 80                 | 450          |                         |                        |              | 82.0     |
|                                       |       |       |       |       | 1200  |                                                                                                                               |                    | 157          |                         |                        |              | 440      |
| 430                                   |       |       |       |       |       | 165                                                                                                                           | 440                | 89.7         | 0.538                   | 0.073                  | 7            |          |
|                                       | 850   |       |       |       |       | 183                                                                                                                           | 440                | 90.4         |                         |                        |              |          |
|                                       |       | 900   |       |       |       | 200                                                                                                                           | 425                | 91.2         |                         |                        |              |          |
|                                       |       |       |       | 1000  |       |                                                                                                                               | 230                | 415          |                         |                        |              | 92.1     |
|                                       |       |       |       |       | 1140  |                                                                                                                               |                    | 76           |                         |                        |              | 430      |
|                                       |       |       |       |       |       | 148                                                                                                                           | 420                | 88.3         | 0.538                   | 0.073                  |              |          |
|                                       |       |       |       |       |       | 156                                                                                                                           | 420                | 88.8         |                         |                        |              |          |
|                                       |       |       |       |       |       | 173                                                                                                                           | 420                | 89.6         |                         |                        |              |          |
|                                       |       |       |       |       |       |                                                                                                                               | 195                | 415          |                         |                        |              | 90.5     |
|                                       |       |       |       |       | 1320  |                                                                                                                               |                    | 222          |                         |                        |              | 405      |

## GH225 IM1001 - IP23 - IC06



| Size    | B   | L1   |
|---------|-----|------|
| GH225 S | 655 | 1016 |
| GH225 M | 705 | 1066 |
| GH225 L | 750 | 1111 |
| GH225 P | 800 | 1161 |
| GH225 X | 850 | 1211 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH225 S        | 755             | 1.75                      | 2400                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 M        | 810             | 1.95                      | 2600                 | 0.77                    | 3000                   | 50                | 1400               |
| GH225 L        | 870             | 2.2                       | 3000                 | 0.81                    | 3000                   | 50                | 1400               |
| GH225 P        | 925             | 2.4                       | 3300                 | 0.84                    | 3000                   | 50                | 1400               |
| GH225 X        | 1000            | 2.6                       | 3500                 | 0.87                    | 3000                   | 50                | 1400               |
| GH225 SK       | 755             | 1.75                      | 2100                 | 0.58                    | 3000                   | 50                | 1400               |
| GH225 MK       | 810             | 1.95                      | 2400                 | 0.62                    | 3000                   | 50                | 1400               |
| GH225 LK       | 870             | 2.2                       | 2600                 | 0.65                    | 3000                   | 50                | 1400               |
| GH225 PK       | 925             | 2.4                       | 2900                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 XK       | 1000            | 2.6                       | 3200                 | 0.71                    | 3000                   | 50                | 1400               |

| Bearings                             | Drive end  |                            | Opposite drive end |
|--------------------------------------|------------|----------------------------|--------------------|
|                                      | Coupling   | Pulley                     |                    |
| GH225 S-M-L-P-X                      | 6218 2Z C3 | NU218EC P C3               | 6217 2Z C3         |
| Electrical blower (IC06)             | Weight     | Blower motor power         |                    |
|                                      | 40 kg      | 2.2 kW (50/60 Hz)          |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight     | Heat exchanger motor power |                    |
|                                      | 240 kg     | 3.0 kW (50/60 Hz)          |                    |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

## GH315

## GH355

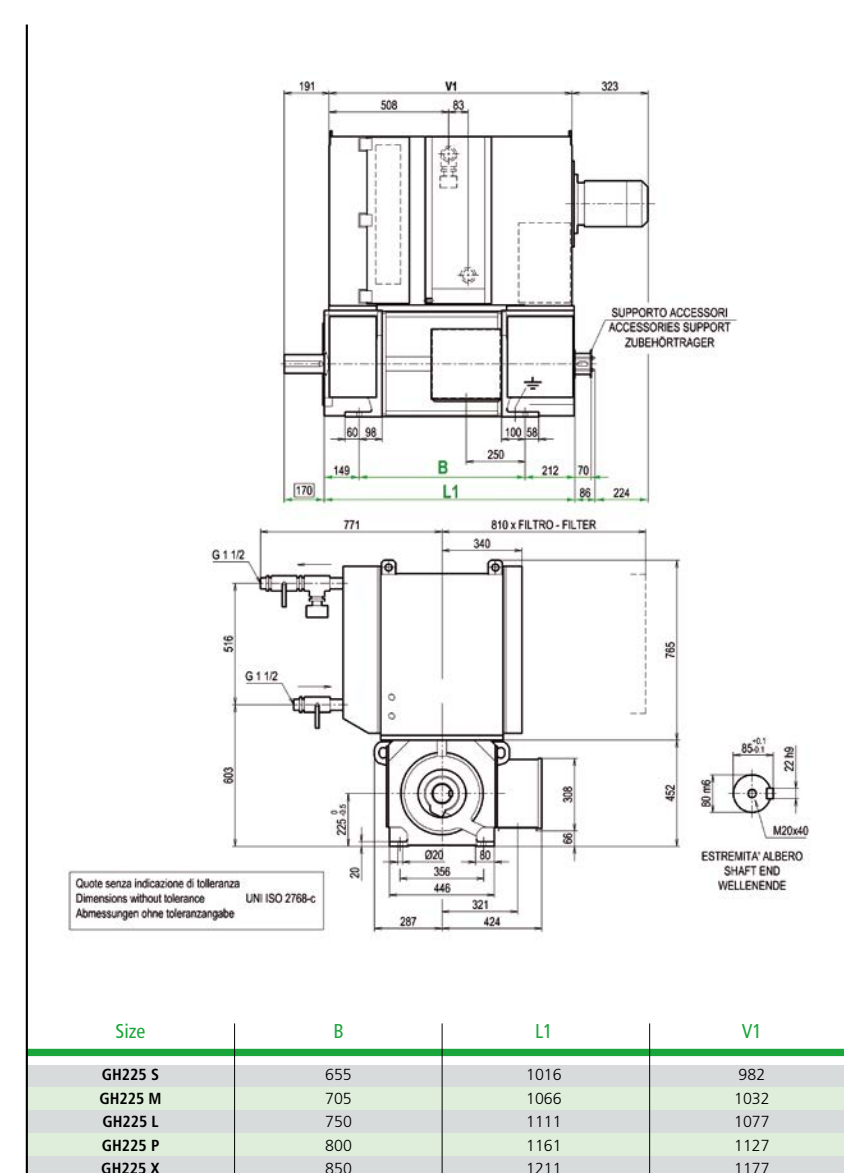
## GH400

## GH450

## GH225 XK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 3200<br>Field time constant (s): 0.71<br>Motor mass (kg): 1040 (IC06)<br>Moment of inertia (kg m²): 2.6 |                       |                 | Armature circuit           |                           | Winding code |      |
|---------------------------------------|-------|-------|-------|-------|-------|-------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------|----------------------------|---------------------------|--------------|------|
| 220 V                                 | 400 V | 420 V | 460 V | 520 V | 600 V | RATED OUTPUT<br>kW                                                                                                            | ARMATURE CURRENT<br>A | EFFICIENCY<br>% | SATURATED INDUCTANCE<br>mH | RESISTANCE AT 115 °C<br>Ω |              |      |
| 340                                   | 680   |       |       |       |       | 65                                                                                                                            | 380                   | 78.2            | 0.981                      | 0.111                     | 8            |      |
|                                       |       |       |       |       |       | 130                                                                                                                           | 375                   | 87.2            |                            |                           |              |      |
|                                       |       | 720   | 800   |       |       | 135                                                                                                                           | 370                   | 87.7            |                            |                           |              |      |
|                                       |       |       |       | 910   |       |                                                                                                                               | 150                   | 370             |                            |                           |              | 88.6 |
| 300                                   | 610   |       |       |       |       | 168                                                                                                                           | 360                   | 89.7            | 1.074                      | 0.141                     | 9            |      |
|                                       |       |       |       |       |       | 55                                                                                                                            | 330                   | 75.3            |                            |                           |              |      |
|                                       |       | 650   |       |       |       | 111                                                                                                                           | 325                   | 85.6            |                            |                           |              |      |
|                                       |       | 720   |       |       |       | 118                                                                                                                           | 325                   | 86.2            |                            |                           |              |      |
| 270                                   | 560   |       |       | 820   |       | 130                                                                                                                           | 325                   | 87.2            | 1.229                      | 0.170                     | 10           |      |
|                                       |       |       |       |       |       | 147                                                                                                                           | 320                   | 88.5            |                            |                           |              |      |
|                                       |       |       |       |       |       | 47                                                                                                                            | 290                   | 74.0            |                            |                           |              |      |
|                                       |       | 590   |       |       |       | 97                                                                                                                            | 288                   | 84.9            |                            |                           |              |      |
|                                       | 490   |       | 660   |       |       | 103                                                                                                                           | 288                   | 85.5            | 1.583                      | 0.195                     | 11           |      |
|                                       |       |       | 750   |       |       | 114                                                                                                                           | 288                   | 86.6            |                            |                           |              |      |
|                                       |       |       |       | 880   |       |                                                                                                                               | 131                   | 288             |                            |                           |              | 87.9 |
|                                       |       |       |       |       |       | 154                                                                                                                           | 288                   | 89.3            |                            |                           |              |      |
|                                       | 440   |       |       |       |       | 89                                                                                                                            |                       | 84.6            | 1.828                      | 0.262                     | 12           |      |
|                                       |       | 520   |       |       |       | 94                                                                                                                            |                       | 85.2            |                            |                           |              |      |
|                                       |       |       | 580   |       |       | 105                                                                                                                           | 265                   | 86.4            |                            |                           |              |      |
|                                       |       |       | 670   |       |       | 120                                                                                                                           |                       | 87.7            |                            |                           |              |      |
|                                       | 400   |       |       | 790   |       | 141                                                                                                                           |                       | 89.1            | 2.140                      | 0.309                     | 13           |      |
|                                       |       |       |       |       |       | 78                                                                                                                            |                       | 81.6            |                            |                           |              |      |
|                                       |       | 460   |       |       |       | 83                                                                                                                            |                       | 82.4            |                            |                           |              |      |
|                                       |       |       | 520   |       |       | 92                                                                                                                            | 241                   | 83.8            |                            |                           |              |      |
|                                       | 380   |       |       |       |       | 107                                                                                                                           |                       | 85.4            | 2.228                      | 0.324                     | 14           |      |
|                                       |       |       |       | 700   |       | 126                                                                                                                           |                       | 87.1            |                            |                           |              |      |
|                                       |       |       |       |       |       | 69                                                                                                                            |                       | 80.5            |                            |                           |              |      |
|                                       |       | 420   |       |       |       | 73                                                                                                                            |                       | 81.4            |                            |                           |              |      |
|                                       | 400   |       | 470   |       |       | 82                                                                                                                            | 216                   | 82.8            |                            |                           |              |      |
|                                       |       |       |       | 540   |       | 95                                                                                                                            |                       | 84.6            |                            |                           |              |      |
|                                       |       |       |       | 640   |       | 112                                                                                                                           |                       | 86.4            |                            |                           |              |      |
|                                       |       |       |       |       |       | 67                                                                                                                            |                       | 78.9            |                            |                           |              |      |
|                                       | 450   |       |       |       |       | 71                                                                                                                            |                       | 79.8            |                            |                           |              |      |
|                                       |       |       |       |       |       | 79                                                                                                                            | 210                   | 81.4            |                            |                           |              |      |
|                                       |       |       |       | 520   |       | 92                                                                                                                            |                       | 83.4            |                            |                           |              |      |
|                                       |       |       |       | 610   |       | 107                                                                                                                           |                       | 85.3            |                            |                           |              |      |

## GH225 IM1001 - IP54 - IC86W



| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH225 S        | 755             | 1.75                      | 2400                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 M        | 810             | 1.95                      | 2600                 | 0.77                    | 3000                   | 50                | 1400               |
| GH225 L        | 870             | 2.2                       | 3000                 | 0.81                    | 3000                   | 50                | 1400               |
| GH225 P        | 925             | 2.4                       | 3300                 | 0.84                    | 3000                   | 50                | 1400               |
| GH225 X        | 1000            | 2.6                       | 3500                 | 0.87                    | 3000                   | 50                | 1400               |
| GH225 SK       | 755             | 1.75                      | 2100                 | 0.58                    | 3000                   | 50                | 1400               |
| GH225 MK       | 810             | 1.95                      | 2400                 | 0.62                    | 3000                   | 50                | 1400               |
| GH225 LK       | 870             | 2.2                       | 2600                 | 0.65                    | 3000                   | 50                | 1400               |
| GH225 PK       | 925             | 2.4                       | 2900                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 XK       | 1000            | 2.6                       | 3200                 | 0.71                    | 3000                   | 50                | 1400               |

| Bearings                             | Drive end  |                            | Opposite drive end |
|--------------------------------------|------------|----------------------------|--------------------|
|                                      | Coupling   | Pulley                     |                    |
| GH225 S-M-L-P-X                      | 6218 2Z C3 | NU218ECP C3                | 6217 2Z C3         |
| Electrical blower (IC06)             | Weight     | Blower motor power         |                    |
|                                      | 40 kg      | 2.2 kW (50/60 Hz)          |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight     | Heat exchanger motor power |                    |
|                                      | 240 kg     | 3.0 kW (50/60 Hz)          |                    |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

## GH315

## GH355

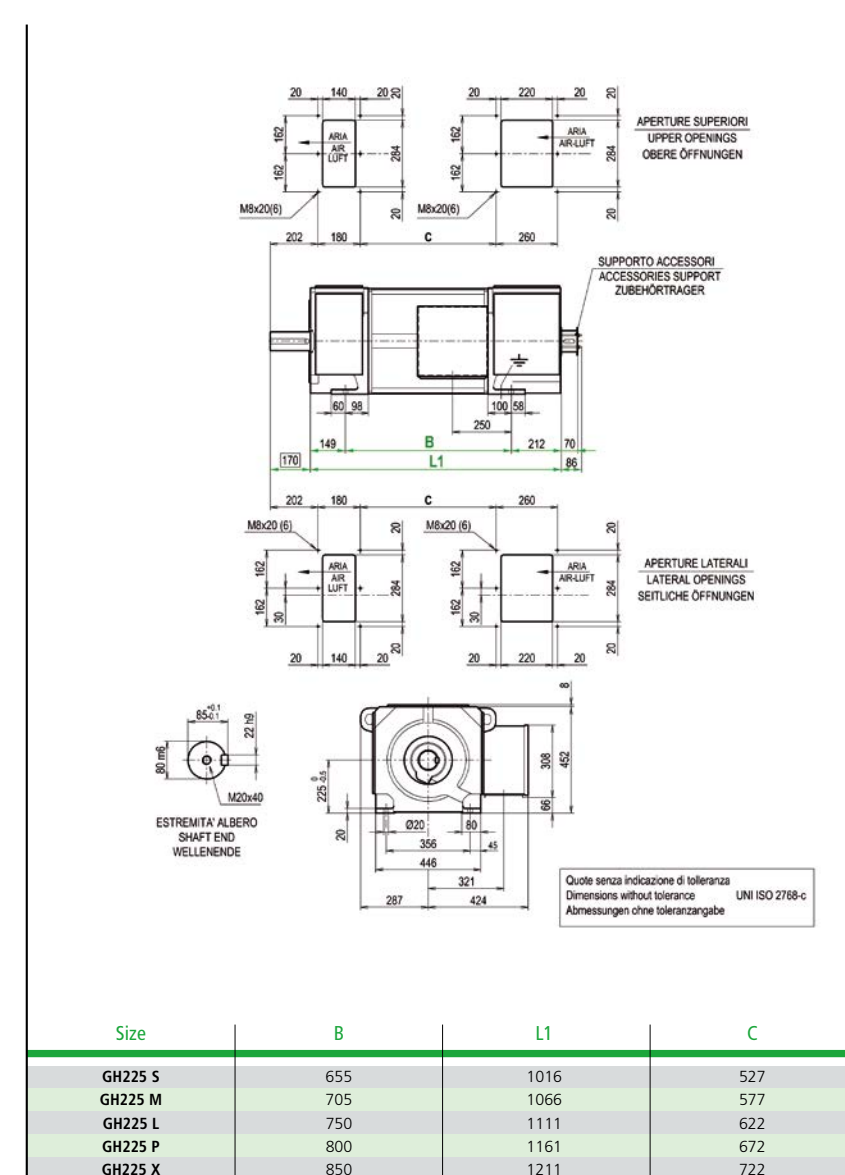
## GH400

## GH450

## GH225 XK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 3200<br>Field time constant (s): 0.71<br>Motor mass (kg): 1040 (IC06)<br>Moment of inertia (kg m²): 2.6 |                    |              | Armature circuit        | Winding code           |
|---------------------------------------|-------|-------|-------|-------|-------|-------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|
| 220 V                                 | 400 V | 420 V | 460 V | 520 V | 600 V | RATED OUTPUT kW                                                                                                               | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |
|                                       | 300   |       |       |       |       | 56                                                                                                                            |                    | 76.7         |                         |                        |
|                                       |       | 320   |       |       |       | 60                                                                                                                            | 185                | 77.7         | 3.523                   | 0.446                  |
|                                       |       |       | 360   |       |       | 67                                                                                                                            |                    | 79.5         |                         |                        |
|                                       |       |       |       | 410   |       | 78                                                                                                                            |                    | 81.7         |                         |                        |
|                                       | 270   |       |       |       |       | 49                                                                                                                            |                    | 75.1         |                         |                        |
|                                       |       | 290   |       |       |       | 53                                                                                                                            | 165                | 76.2         | 4.856                   | 0.539                  |
|                                       |       |       | 320   |       |       | 59                                                                                                                            |                    | 78.1         |                         |                        |
|                                       |       |       |       | 370   |       | 68                                                                                                                            |                    | 80.4         |                         |                        |

## GH225 IM1001 - IP44 - IC37



| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH225 S        | 755             | 1.75                      | 2400                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 M        | 810             | 1.95                      | 2600                 | 0.77                    | 3000                   | 50                | 1400               |
| GH225 L        | 870             | 2.2                       | 3000                 | 0.81                    | 3000                   | 50                | 1400               |
| GH225 P        | 925             | 2.4                       | 3300                 | 0.84                    | 3000                   | 50                | 1400               |
| GH225 X        | 1000            | 2.6                       | 3500                 | 0.87                    | 3000                   | 50                | 1400               |
| GH225 SK       | 755             | 1.75                      | 2100                 | 0.58                    | 3000                   | 50                | 1400               |
| GH225 MK       | 810             | 1.95                      | 2400                 | 0.62                    | 3000                   | 50                | 1400               |
| GH225 LK       | 870             | 2.2                       | 2600                 | 0.65                    | 3000                   | 50                | 1400               |
| GH225 PK       | 925             | 2.4                       | 2900                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 XK       | 1000            | 2.6                       | 3200                 | 0.71                    | 3000                   | 50                | 1400               |

| Bearings                             | Drive end  |                            | Opposite drive end |
|--------------------------------------|------------|----------------------------|--------------------|
|                                      | Coupling   | Pulley                     |                    |
| GH225 S-M-L-P-X                      | 6218 2Z C3 | NU218ECP C3                | 6217 2Z C3         |
| Electrical blower (IC06)             | Weight     | Blower motor power         |                    |
|                                      | 40 kg      | 2.2 kW (50/60 Hz)          |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight     | Heat exchanger motor power |                    |
|                                      | 240 kg     | 3.0 kW (50/60 Hz)          |                    |



## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

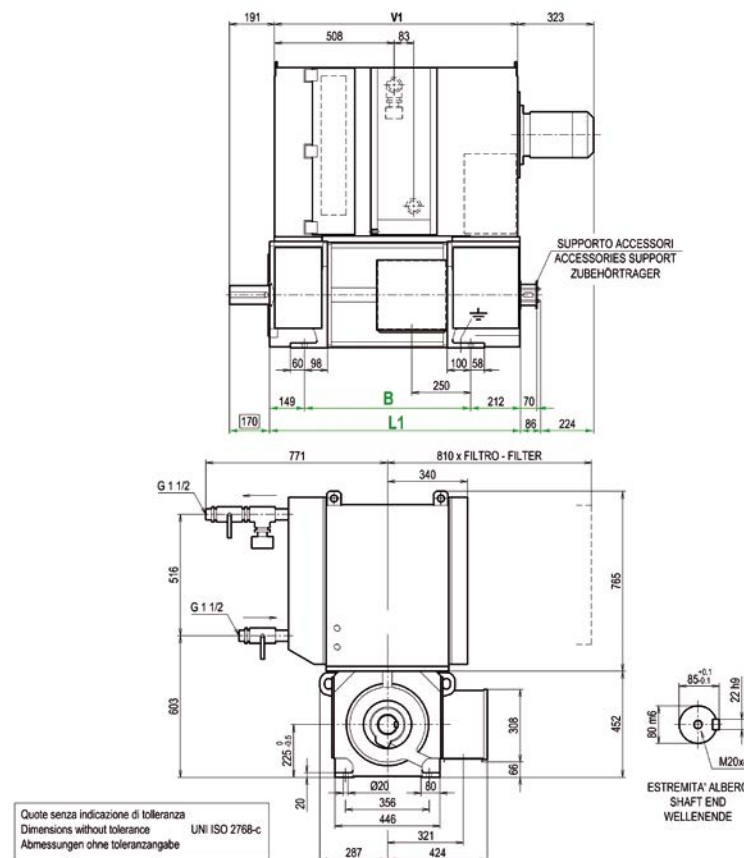
## GH315

## GH355

## GH400

## GH450

## GH225 IM1001 - IP54 - IC86W



| Size    | B   | L1   | V1   |
|---------|-----|------|------|
| GH225 S | 655 | 1016 | 982  |
| GH225 M | 705 | 1066 | 1032 |
| GH225 L | 750 | 1111 | 1077 |
| GH225 P | 800 | 1161 | 1127 |
| GH225 X | 850 | 1211 | 1177 |

| TECHNICAL DATA |                    |                              |                         |                            |                           |                      |                    |
|----------------|--------------------|------------------------------|-------------------------|----------------------------|---------------------------|----------------------|--------------------|
| Size           | Motor mass<br>(kg) | Moment of inertia<br>(kg m²) | Excitation power<br>(W) | Field time constant<br>(s) | Max. mech. speed<br>(rpm) | Ventilation data     |                    |
|                |                    |                              |                         |                            |                           | Air flow<br>(m³/min) | Pressure drop (Pa) |
| GH225 S        | 755                | 1.75                         | 2400                    | 0.68                       | 3000                      | 50                   | 1400               |
| GH225 M        | 810                | 1.95                         | 2600                    | 0.77                       | 3000                      | 50                   | 1400               |
| GH225 L        | 870                | 2.2                          | 3000                    | 0.81                       | 3000                      | 50                   | 1400               |
| GH225 P        | 925                | 2.4                          | 3300                    | 0.84                       | 3000                      | 50                   | 1400               |
| GH225 X        | 1000               | 2.6                          | 3500                    | 0.87                       | 3000                      | 50                   | 1400               |
| GH225 SK       | 755                | 1.75                         | 2100                    | 0.58                       | 3000                      | 50                   | 1400               |
| GH225 MK       | 810                | 1.95                         | 2400                    | 0.62                       | 3000                      | 50                   | 1400               |
| GH225 LK       | 870                | 2.2                          | 2600                    | 0.65                       | 3000                      | 50                   | 1400               |
| GH225 PK       | 925                | 2.4                          | 2900                    | 0.68                       | 3000                      | 50                   | 1400               |
| GH225 XK       | 1000               | 2.6                          | 3200                    | 0.71                       | 3000                      | 50                   | 1400               |

| Bearings                             | Drive end  |                            | Opposite drive end |
|--------------------------------------|------------|----------------------------|--------------------|
|                                      | Coupling   | Pulley                     |                    |
| GH225 S-M-L-P-X                      | 6218 2Z C3 | NU218ECP C3                | 6217 2Z C3         |
| Electrical blower (IC06)             | Weight     | Blower motor power         |                    |
|                                      | 40 kg      | 2.2 kW (50/60 Hz)          |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight     | Heat exchanger motor power |                    |
|                                      | 240 kg     | 3.0 kW (50/60 Hz)          |                    |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

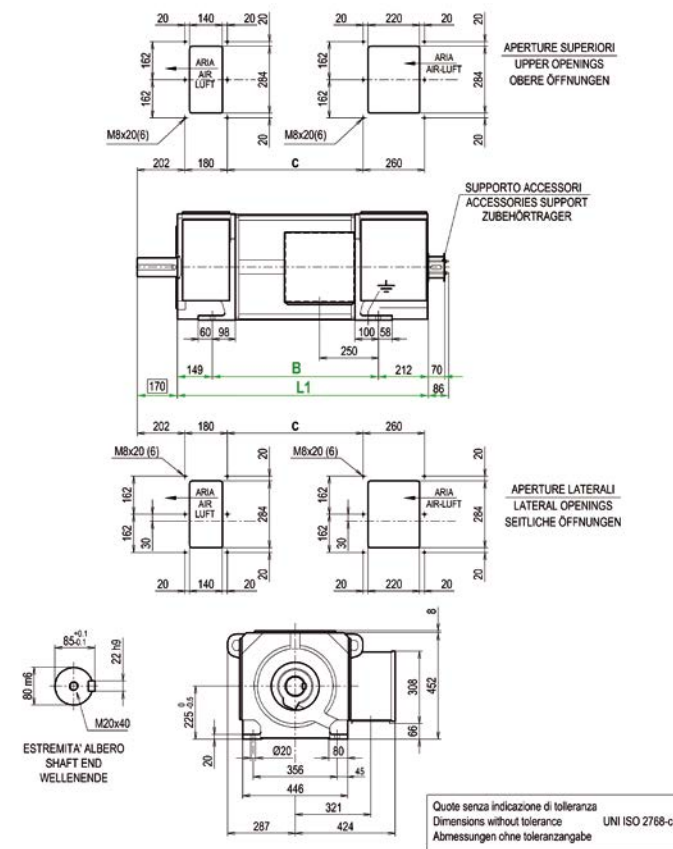
## GH315

## GH355

## GH400

## GH450

## GH225 IM1001 - IP44 - IC37



| Size    | B   | L1   | C   |
|---------|-----|------|-----|
| GH225 S | 655 | 1016 | 527 |
| GH225 M | 705 | 1066 | 577 |
| GH225 L | 750 | 1111 | 622 |
| GH225 P | 800 | 1161 | 672 |
| GH225 X | 850 | 1211 | 722 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH225 S        | 755             | 1.75                      | 2400                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 M        | 810             | 1.95                      | 2600                 | 0.77                    | 3000                   | 50                | 1400               |
| GH225 L        | 870             | 2.2                       | 3000                 | 0.81                    | 3000                   | 50                | 1400               |
| GH225 P        | 925             | 2.4                       | 3300                 | 0.84                    | 3000                   | 50                | 1400               |
| GH225 X        | 1000            | 2.6                       | 3500                 | 0.87                    | 3000                   | 50                | 1400               |
| GH225 SK       | 755             | 1.75                      | 2100                 | 0.58                    | 3000                   | 50                | 1400               |
| GH225 MK       | 810             | 1.95                      | 2400                 | 0.62                    | 3000                   | 50                | 1400               |
| GH225 LK       | 870             | 2.2                       | 2600                 | 0.65                    | 3000                   | 50                | 1400               |
| GH225 PK       | 925             | 2.4                       | 2900                 | 0.68                    | 3000                   | 50                | 1400               |
| GH225 XK       | 1000            | 2.6                       | 3200                 | 0.71                    | 3000                   | 50                | 1400               |

| Bearings        | Drive end  |             | Opposite drive end |
|-----------------|------------|-------------|--------------------|
|                 | Coupling   | Pulley      |                    |
| GH225 S-M-L-P-X | 6218 2Z C3 | NU218ECP C3 | 6217 2Z C3         |

| Electrical blower (IC06) | Weight | Blower motor power |  |
|--------------------------|--------|--------------------|--|
|                          | 40 kg  | 2.2 kW (50/60 Hz)  |  |

| Air-To-Water Heat Exchanger (IC 86W) | Weight | Heat exchanger motor power |  |
|--------------------------------------|--------|----------------------------|--|
|                                      | 240 kg | 3.0 kW (50/60 Hz)          |  |

DC MOTORS

- 1. GENERAL INFORMATION
- 2. STANDARDS AND QUALITY
  - 2.1 Reference standards
  - 2.2 CE Marking
  - 2.3 Quality system
- 3. IDENTIFICATION CODE
- 4. DESIGN FEATURES
  - 4.1 Rotor
  - 4.2 Commutator
  - 4.3 Stator
  - 4.4 Brushholder yoke
  - 4.5 Bearings
  - 4.6 Belted and radial thrust application
- 5. CONSTRUCTION FEATURES
  - 5.1 Coupling and shaft extension
  - 5.2 Mounting arrangement
  - 5.3 Degree of protection
  - 5.4 Cooling method
  - 5.5 Maximum allowable speeds
  - 5.6 Noise level
  - 5.7 Vibrations and balancing
  - 5.8 Conduit box
  - 5.9 Groud terminals
  - 5.10 Cross-section drawing
- 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS
  - 6.1 Ratings
  - 6.2 Supply voltage
  - 6.3 Maximum loads
  - 6.4 Current rate-of-rise
  - 6.5 Speed regulation
  - 6.6 Duty with large speed regulation
  - 6.7 Excitation
  - 6.8 Maximum current at locked rotor
  - 6.9 Accessories
- 7. TESTS
- 8. OUTPUT POWER DIAGRAMS
- HOME

GH225

**GH250**

GH280

GH315

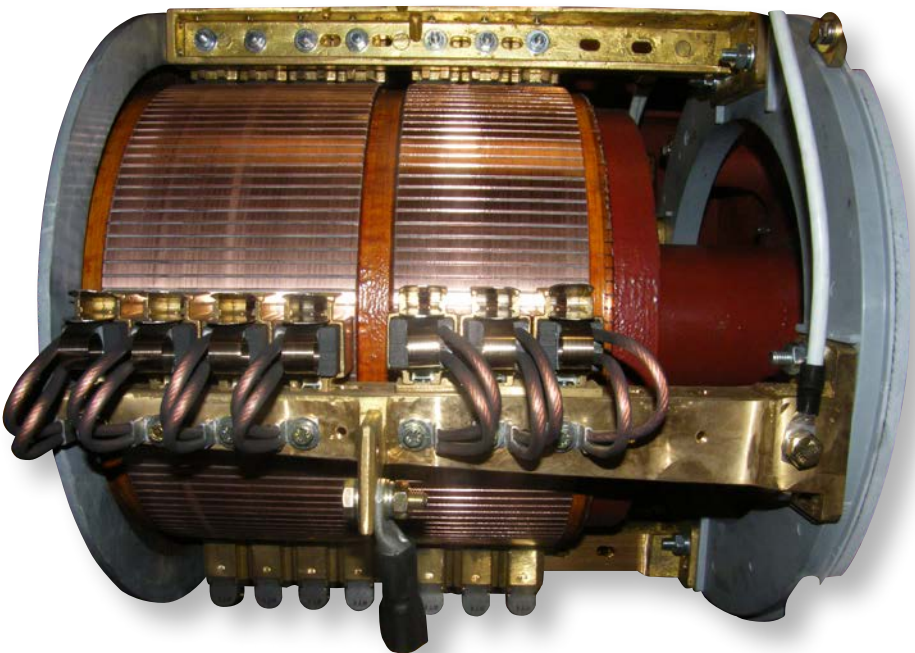
GH355

GH400

GH450

**GH250**

- Derating for field weakening operation
  - GH250 K
- Performance of compensated motors
  - GH250 MK
  - GH250 LK
  - GH250 XK
- Dimensioni di ingombro
  - GH250 IM1001-IP23-IC06
  - GH250 IM1001-IP54-IC86W
  - GH250 IM1001-IP44-IC37



Performance Tables are displayed on multiple pages, alongside the data tables are repeated alternately overall dimensions (IC06- IC86W-IC37)



DC MOTORS

|      |                                                          |
|------|----------------------------------------------------------|
| 1.   | GENERAL INFORMATION                                      |
| 2.   | STANDARDS AND QUALITY                                    |
| 2.1  | Reference standards                                      |
| 2.2  | CE Marking                                               |
| 2.3  | Quality system                                           |
| 3.   | IDENTIFICATION CODE                                      |
| 4.   | DESIGN FEATURES                                          |
| 4.1  | Rotor                                                    |
| 4.2  | Commutator                                               |
| 4.3  | Stator                                                   |
| 4.4  | Brushholder yoke                                         |
| 4.5  | Bearings                                                 |
| 4.6  | Belted and radial thrust application                     |
| 5.   | CONSTRUCTION FEATURES                                    |
| 5.1  | Coupling and shaft extension                             |
| 5.2  | Mounting arrangement                                     |
| 5.3  | Degree of protection                                     |
| 5.4  | Cooling method                                           |
| 5.5  | Maximum allowable speeds                                 |
| 5.6  | Noise level                                              |
| 5.7  | Vibrations and balancing                                 |
| 5.8  | Conduit box                                              |
| 5.9  | Groud terminals                                          |
| 5.10 | Cross-section drawing                                    |
| 6.   | MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS |
| 6.1  | Ratings                                                  |
| 6.2  | Supply voltage                                           |
| 6.3  | Maximum loads                                            |
| 6.4  | Current rate-of-rise                                     |
| 6.5  | Speed regulation                                         |
| 6.6  | Duty with large speed regulation                         |
| 6.7  | Excitation                                               |
| 6.8  | Maximum current at locked rotor                          |
| 6.9  | Accessories                                              |
| 7.   | TESTS                                                    |
| 8.   | OUTPUT POWER DIAGRAMS                                    |
| HOME |                                                          |

GH225

GH250

GH280

GH315

GH355

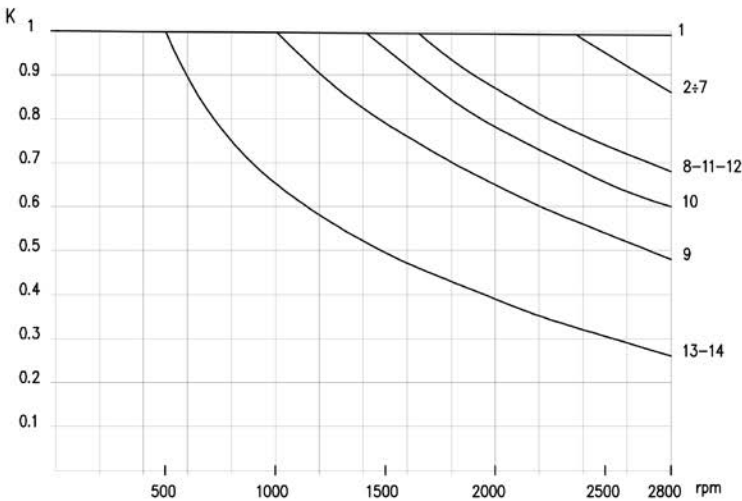
GH400

GH450

GH 250 K

RIDUZIONE DELLA POTENZA IN DISECCITAZIONE  
DERATING FOR FIELD WEAKENING OPERATION  
LEISTUNGSREDUZIERUNG BEI FELDSWÄCHUNG

GH 250 K (compensata - compensated - kompensiert)  
[ 180% sovraccarico - overload - überlast ]



|                                       |                                        |                                             |
|---------------------------------------|----------------------------------------|---------------------------------------------|
| P = K x P tabella potenza disponibile | Allowable power output P = K x P table | Verfügbare Leistung P = K x P table         |
| per/for/für                           | GH 250 MK<br>GH 250 LK<br>GH 250 XK    | K = K x 1.33<br>K = K x 1.16<br>K = K x 1.0 |
| Per K ≥ 1 niente declassamento        | For K ≥ 1 no derating                  | Für K ≥ 1 keine Leistungsreduzierung        |

| TECHNICAL DATA |                    |                                 |                            |                               |                              |                      |                       |
|----------------|--------------------|---------------------------------|----------------------------|-------------------------------|------------------------------|----------------------|-----------------------|
| Size           | Motor mass<br>(kg) | Moment of<br>inertia<br>(kg m²) | Excitation<br>power<br>(W) | Field time<br>constant<br>(s) | Max. mech.<br>speed<br>(rpm) | Ventilation data     |                       |
|                |                    |                                 |                            |                               |                              | Air flow<br>(m³/min) | Pressure<br>drop (Pa) |
| GH250 MK       | 1080               | 3.37                            | 3200                       | 1.01                          | 2800                         | 70                   | 1400                  |
| GH250 LK       | 1160               | 3.73                            | 3600                       | 1.05                          | 2800                         | 70                   | 1400                  |
| GH250 XK       | 1260               | 4.20                            | 4000                       | 1.09                          | 2700                         | 70                   | 1400                  |

| Bearings                             | Drive end  |                                    | Opposite drive end |
|--------------------------------------|------------|------------------------------------|--------------------|
|                                      | Coupling   | Pulley                             |                    |
| GH250 MK-LK-XK                       | 6218 2Z C3 | NU218ECP C3                        | 6217 2Z C3         |
| Electrical blower (IC06)             | Weight     | Blower motor power                 |                    |
|                                      | 90 kg      | 3.0 kW (50/60 Hz) - 4.0 kW (60 Hz) |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight     | Heat exchanger motor power         |                    |
|                                      | 300 kg     | 4.0 / 5.5 kW (50/60 Hz)            |                    |



## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
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### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

## GH315

## GH355

## GH400

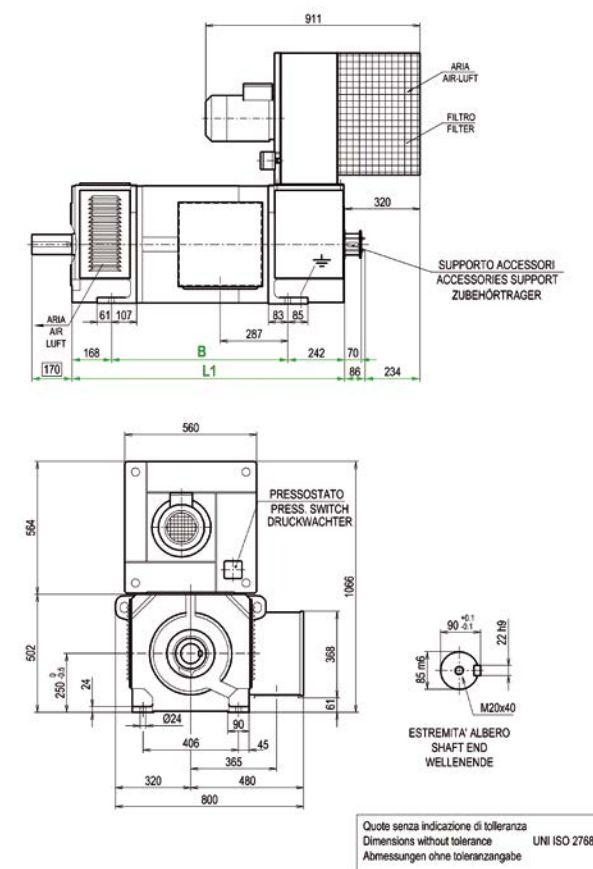
## GH450

### GH250 MK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 3200<br>Field time constant (s): 1.01<br>Motor mass (kg): 1170 (IC06)<br>Moment of inertia (kg m²): 3.37 |                    |              | Armature circuit        |                        | Winding code |
|---------------------------------------|-------|-------|-------|-------|-------|--------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|
| 220 V                                 | 400 V | 420 V | 460 V | 520 V | 600 V | RATED OUTPUT kW                                                                                                                | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |
| 950                                   | 1800  |       |       |       |       | 161                                                                                                                            | 822                | 90.0         | 0.186                   | 0.017                  | 1            |
|                                       |       |       |       |       |       | 305                                                                                                                            | 815                | 93.4         |                         |                        |              |
|                                       |       | 1890  |       |       |       | 320                                                                                                                            | 815                | 93.6         |                         |                        |              |
|                                       |       |       | 2080  |       |       | 350                                                                                                                            | 810                | 93.8         |                         |                        |              |
|                                       |       |       |       | 2360  |       | 396                                                                                                                            | 810                | 94.2         |                         |                        |              |
| 800                                   | 1500  |       |       |       |       | 158                                                                                                                            | 806                | 89.1         | 0.269                   | 0.022                  | 2            |
|                                       |       |       |       |       |       | 290                                                                                                                            | 780                | 93.0         |                         |                        |              |
|                                       |       | 1570  |       |       |       | 305                                                                                                                            | 780                | 93.2         |                         |                        |              |
|                                       |       |       | 1730  |       |       | 330                                                                                                                            | 765                | 93.5         |                         |                        |              |
|                                       |       |       |       | 1970  |       | 360                                                                                                                            | 735                | 94.1         |                         |                        |              |
| 700                                   | 1320  |       |       |       |       | 410                                                                                                                            | 725                | 94.4         | 0.409                   | 0.027                  | 3            |
|                                       |       |       |       |       |       | 141                                                                                                                            | 730                | 88.0         |                         |                        |              |
|                                       |       | 1400  |       |       |       | 260                                                                                                                            | 700                | 92.5         |                         |                        |              |
|                                       |       |       | 1540  |       |       | 272                                                                                                                            | 700                | 92.6         |                         |                        |              |
|                                       |       |       |       | 1760  |       | 300                                                                                                                            | 700                | 93.0         |                         |                        |              |
| 610                                   | 1200  |       |       |       |       | 321                                                                                                                            | 660                | 93.8         | 0.358                   | 0.037                  | 4            |
|                                       |       |       |       |       |       | 370                                                                                                                            | 653                | 94.2         |                         |                        |              |
|                                       |       | 1250  |       |       |       | 117                                                                                                                            | 625                | 86.3         |                         |                        |              |
|                                       |       |       | 1370  |       |       | 223                                                                                                                            | 610                | 91.4         |                         |                        |              |
|                                       |       |       |       | 1560  |       | 235                                                                                                                            | 610                | 91.7         |                         |                        |              |
| 570                                   | 1050  |       |       |       |       | 260                                                                                                                            | 610                | 92.4         | 0.538                   | 0.046                  | 5            |
|                                       |       |       |       |       |       | 294                                                                                                                            | 610                | 92.8         |                         |                        |              |
|                                       |       | 1100  |       |       |       | 342                                                                                                                            | 610                | 93.4         |                         |                        |              |
|                                       |       |       | 1220  |       |       | 104                                                                                                                            | 555                | 85.3         |                         |                        |              |
|                                       |       |       |       | 1390  |       | 198                                                                                                                            | 545                | 91.0         |                         |                        |              |
| 490                                   | 930   |       |       |       |       | 208                                                                                                                            | 545                | 91.2         | 0.499                   | 0.062                  | 6            |
|                                       |       |       |       |       |       | 230                                                                                                                            | 545                | 91.7         |                         |                        |              |
|                                       |       |       |       |       |       | 262                                                                                                                            | 545                | 92.4         |                         |                        |              |
|                                       |       |       | 1080  |       |       | 304                                                                                                                            | 545                | 93.1         |                         |                        |              |
|                                       |       |       |       | 1250  |       | 83                                                                                                                             |                    | 83.6         |                         |                        |              |
| 380                                   | 760   |       |       |       |       | 163                                                                                                                            |                    | 90.0         | 0.847                   | 0.080                  | 7            |
|                                       |       |       |       |       |       | 172                                                                                                                            | 454                | 90.4         |                         |                        |              |
|                                       |       | 800   |       |       |       | 190                                                                                                                            |                    | 91.0         |                         |                        |              |
|                                       |       |       | 880   |       |       | 216                                                                                                                            |                    | 91.8         |                         |                        |              |
|                                       |       |       |       | 1000  |       | 252                                                                                                                            |                    | 92.5         |                         |                        |              |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH250 MK       | 1080            | 3.37                      | 3200                 | 1.01                    | 2800                   | 70                | 1400               |
| GH250 LK       | 1160            | 3.73                      | 3600                 | 1.05                    | 2800                   | 70                | 1400               |
| GH250 XK       | 1260            | 4.20                      | 4000                 | 1.09                    | 2700                   | 70                | 1400               |

### GH250 IM1001 - IP23 - IC06



| Size    | B   | L1   |
|---------|-----|------|
| GH250 M | 810 | 1220 |
| GH250 L | 870 | 1280 |
| GH250 X | 950 | 1360 |

| Bearings                             | Drive end  |                                    | Opposite drive end |
|--------------------------------------|------------|------------------------------------|--------------------|
|                                      | Coupling   | Pulley                             |                    |
| GH250 MK-LK-XK                       | 6218 2Z C3 | NU218ECP C3                        | 6217 2Z C3         |
| Electrical blower (IC06)             | Weight     | Blower motor power                 |                    |
|                                      | 90 kg      | 3.0 kW (50/60 Hz) - 4.0 kW (60 Hz) |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight     | Heat exchanger motor power         |                    |
|                                      | 300 kg     | 4.0 / 5.5 kW (50/60 Hz)            |                    |

| Bearings       | Drive end  |             | Opposite drive end |
|----------------|------------|-------------|--------------------|
|                | Coupling   | Pulley      |                    |
| GH250 MK-LK-XK | 6218 2Z C3 | NU218ECP C3 | 6217 2Z C3         |

| Electrical blower (IC06) | Weight | Blower motor power                 |
|--------------------------|--------|------------------------------------|
|                          | 90 kg  | 3.0 kW (50/60 Hz) - 4.0 kW (60 Hz) |

| Air-To-Water Heat Exchanger (IC 86W) | Weight | Heat exchanger motor power |
|--------------------------------------|--------|----------------------------|
|                                      | 300 kg | 4.0 / 5.5 kW (50/60 Hz)    |

| Bearings                             | Drive end  |                                    | Opposite drive end |
|--------------------------------------|------------|------------------------------------|--------------------|
|                                      | Coupling   | Pulley                             |                    |
| GH250 MK-LK-XK                       | 6218 2Z C3 | NU218ECP C3                        | 6217 2Z C3         |
| Electrical blower (IC06)             | Weight     | Blower motor power                 |                    |
|                                      | 90 kg      | 3.0 kW (50/60 Hz) - 4.0 kW (60 Hz) |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight     | Heat exchanger motor power         |                    |
|                                      | 300 kg     | 4.0 / 5.5 kW (50/60 Hz)            |                    |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

## GH315

## GH355

## GH400

## GH450

## GH250 LK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 3600<br>Field time costant (s): 1.05<br>Motor mass (kg): 1250 (IC06)<br>Moment of inertia (kg m²): 3.73 |                    |              | Armature circuit        |                        | Winding code |
|---------------------------------------|-------|-------|-------|-------|-------|-------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|
| 220 V                                 | 400 V | 420 V | 460 V | 520 V | 600 V | RATED OUTPUT kW                                                                                                               | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |
| 300                                   |       |       |       |       |       | 63                                                                                                                            |                    | 78.1         | 1.028                   | 0.110                  | 8            |
|                                       | 600   |       |       |       |       | 127                                                                                                                           |                    | 87.1         |                         |                        |              |
|                                       |       | 630   |       |       |       | 134                                                                                                                           | 364                | 87.6         |                         |                        |              |
|                                       |       |       | 690   |       |       | 148                                                                                                                           |                    | 88.5         |                         |                        |              |
|                                       |       |       |       | 800   |       | 170                                                                                                                           |                    | 89.6         |                         |                        |              |
|                                       |       |       |       |       | 930   | 198                                                                                                                           | 90.7               |              |                         |                        |              |
| 270                                   |       |       |       |       |       | 56                                                                                                                            |                    | 75.6         | 1.663                   | 0.141                  | 9            |
|                                       | 530   |       |       |       |       | 116                                                                                                                           |                    | 85.5         |                         |                        |              |
|                                       |       | 560   |       |       |       | 122                                                                                                                           | 337                | 86.0         |                         |                        |              |
|                                       |       |       | 600   |       |       | 135                                                                                                                           |                    | 87.0         |                         |                        |              |
|                                       |       |       |       | 700   |       | 156                                                                                                                           |                    | 88.6         |                         |                        |              |
|                                       |       |       |       |       | 820   | 180                                                                                                                           | 89.5               |              |                         |                        |              |
| 240                                   |       |       |       |       |       | 51                                                                                                                            |                    | 74.6         | 1.602                   | 0.153                  | 10           |
|                                       | 480   |       |       |       |       | 105                                                                                                                           |                    | 85.2         |                         |                        |              |
|                                       |       | 500   |       |       |       | 111                                                                                                                           | 310                | 85.8         |                         |                        |              |
|                                       |       |       | 560   |       |       | 123                                                                                                                           |                    | 86.9         |                         |                        |              |
|                                       |       |       |       | 650   |       | 142                                                                                                                           |                    | 88.2         |                         |                        |              |
|                                       |       |       |       |       | 750   | 166                                                                                                                           | 89.5               |              |                         |                        |              |
| 200                                   |       |       |       |       |       | 43                                                                                                                            |                    | 70.5         | 2.536                   | 0.211                  | 11           |
|                                       | 410   |       |       |       |       | 92                                                                                                                            |                    | 82.6         |                         |                        |              |
|                                       |       | 430   |       |       |       | 96                                                                                                                            | 276                | 83.2         |                         |                        |              |
|                                       |       |       | 480   |       |       | 108                                                                                                                           |                    | 84.5         |                         |                        |              |
|                                       |       |       |       | 550   |       | 123                                                                                                                           |                    | 86.1         |                         |                        |              |
|                                       |       |       |       |       | 650   | 145                                                                                                                           | 87.7               |              |                         |                        |              |
| 370                                   |       |       |       |       |       | 75                                                                                                                            |                    | 82.2         | 2.228                   | 0.256                  | 12           |
|                                       | 390   |       |       |       |       | 80                                                                                                                            | 230                | 83.0         |                         |                        |              |
|                                       |       |       |       |       |       | 89                                                                                                                            |                    | 84.3         |                         |                        |              |
|                                       |       |       | 430   |       |       | 102                                                                                                                           |                    | 85.9         |                         |                        |              |
|                                       |       |       |       | 500   |       | 120                                                                                                                           |                    | 87.5         |                         |                        |              |
|                                       |       |       |       |       | 590   |                                                                                                                               |                    |              |                         |                        |              |
| 290                                   |       |       |       |       |       | 66                                                                                                                            |                    | 79.0         | 3.858                   | 0.345                  | 13           |
|                                       | 310   |       |       |       |       | 70                                                                                                                            | 210                | 79.7         |                         |                        |              |
|                                       |       |       |       |       |       | 78                                                                                                                            |                    | 81.3         |                         |                        |              |
|                                       |       |       | 350   |       |       | 90                                                                                                                            |                    | 83.3         |                         |                        |              |
|                                       |       |       |       | 410   |       |                                                                                                                               |                    |              |                         |                        |              |
| 220                                   |       |       |       |       |       | 49                                                                                                                            |                    | 74.4         | 6.652                   | 0.564                  | 14           |
|                                       | 230   |       |       |       |       | 52                                                                                                                            | 163                | 75.2         |                         |                        |              |
|                                       |       |       |       |       |       | 57                                                                                                                            |                    | 76.9         |                         |                        |              |
|                                       |       |       |       | 260   |       | 68                                                                                                                            |                    | 80.0         |                         |                        |              |
|                                       |       |       |       |       | 300   |                                                                                                                               | 80                 | 81.9         |                         |                        |              |
|                                       |       |       |       |       | 360   |                                                                                                                               |                    |              |                         |                        |              |

## GH250 IM1001 - IP54 - IC86W

| <p>Technical drawing of the GH250 IM1001 motor. It includes a top view showing dimensions 199, 528, 83, 342, 170, 168, 61, 107, 83, 85, 287, 242, 70, 86, 258. A side view shows dimensions 836, 990 x FILTER - FILTER, 406, 770, 516, 654, 250, 24, 308, 502, 320, 480, 496, 365, 406, 90, 61. A detail view shows dimensions 90, 21, 22, 18, 85, M20x40. Text labels include 'SUPPORTO ACCESSORI ACCESSORIES SUPPORT ZUBEHÖRTRÄGER' and 'ESTREMITÀ ALBERO SHAFT END WELLENENDE'. A note states: 'Quote senza indicazioni di tolleranza Dimensions without tolerance Abmessungen ohne toleranzangabe UNI ISO 2768-c'.</p> |     |     |     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----|-----|
| Size                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | B   | L1  | V1  |
| GH250 M                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 436 | 761 | 706 |
| GH250 L                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 491 | 816 | 761 |
| GH250 X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 546 | 871 | 816 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH250 MK       | 1080            | 3.37                      | 3200                 | 1.01                    | 2800                   | 70                | 1400               |
| GH250 LK       | 1160            | 3.73                      | 3600                 | 1.05                    | 2800                   | 70                | 1400               |
| GH250 XK       | 1260            | 4.20                      | 4000                 | 1.09                    | 2700                   | 70                | 1400               |

| Bearings                             | Drive end  |                                    | Opposite drive end |
|--------------------------------------|------------|------------------------------------|--------------------|
|                                      | Coupling   | Pulley                             |                    |
| GH250 MK-LK-XK                       | 6218 2Z C3 | NU218ECP C3                        | 6217 2Z C3         |
| Electrical blower (IC06)             | Weight     | Blower motor power                 |                    |
|                                      | 90 kg      | 3.0 kW (50/60 Hz) - 4.0 kW (60 Hz) |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight     | Heat exchanger motor power         |                    |
|                                      | 300 kg     | 4.0 / 5.5 kW (50/60 Hz)            |                    |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

## GH315

## GH355

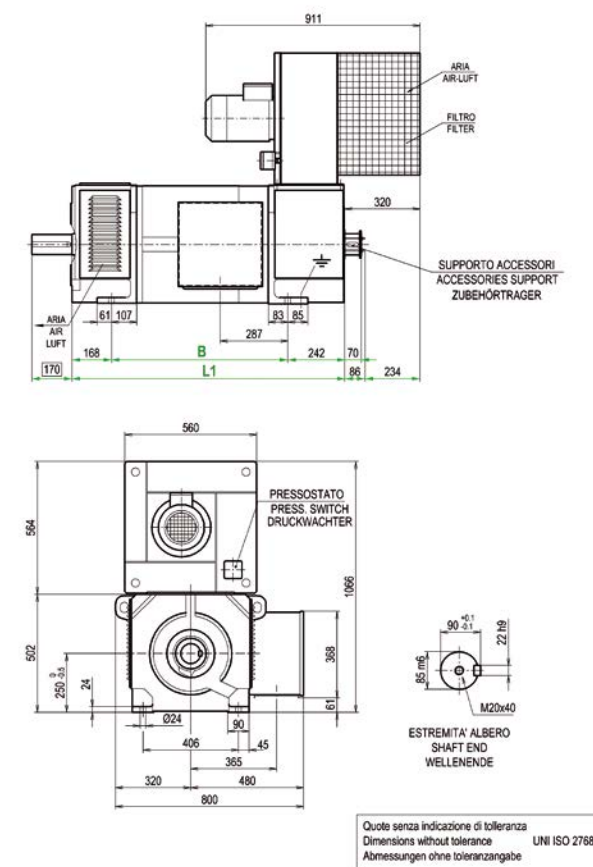
## GH400

## GH450

### GH250 XK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 4000<br>Field time constant (s): 1.09<br>Motor mass (kg): 1350 (IC06)<br>Moment of inertia (kg m²): 4.20 |                    |              | Armature circuit        |                        | Winding code |
|---------------------------------------|-------|-------|-------|-------|-------|--------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|
| 220 V                                 | 400 V | 420 V | 460 V | 520 V | 600 V | RATED OUTPUT kW                                                                                                                | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |
| 710                                   | 1350  |       |       |       |       | 161                                                                                                                            | 825                | 88.8         | 0.245                   | 0.021                  | 1            |
|                                       |       |       |       |       |       | 302                                                                                                                            | 815                | 92.7         |                         |                        |              |
|                                       |       | 1410  |       |       |       | 318                                                                                                                            | 815                | 92.9         |                         |                        |              |
|                                       |       |       | 1560  |       |       | 347                                                                                                                            | 810                | 93.3         |                         |                        |              |
|                                       |       |       |       | 1800  |       | 395                                                                                                                            | 810                | 93.7         |                         |                        |              |
| 580                                   | 1120  |       |       |       |       | 155                                                                                                                            | 810                | 87.2         | 0.356                   | 0.027                  | 2            |
|                                       |       |       |       |       |       | 288                                                                                                                            | 780                | 92.2         |                         |                        |              |
|                                       |       | 1170  |       |       |       | 303                                                                                                                            | 780                | 92.5         |                         |                        |              |
|                                       |       |       | 1300  |       |       | 328                                                                                                                            | 765                | 93.1         |                         |                        |              |
|                                       |       |       |       | 1470  |       | 358                                                                                                                            | 735                | 93.5         |                         |                        |              |
| 520                                   | 990   |       |       |       | 1750  | 409                                                                                                                            | 725                | 94.0         | 0.542                   | 0.032                  | 3            |
|                                       |       |       |       |       |       | 139                                                                                                                            | 730                | 86.3         |                         |                        |              |
|                                       |       | 1050  |       |       |       | 257                                                                                                                            | 700                | 91.6         |                         |                        |              |
|                                       |       |       | 1150  |       |       | 270                                                                                                                            | 700                | 92.0         |                         |                        |              |
|                                       |       |       |       | 1310  |       | 297                                                                                                                            | 700                | 92.4         |                         |                        |              |
| 450                                   | 900   |       |       |       | 1550  | 320                                                                                                                            | 660                | 93.2         | 0.473                   | 0.044                  | 4            |
|                                       |       |       |       |       |       | 370                                                                                                                            | 655                | 93.8         |                         |                        |              |
|                                       |       | 930   |       |       |       | 116                                                                                                                            | 625                | 84.3         |                         |                        |              |
|                                       |       |       | 1030  |       |       | 220                                                                                                                            | 610                | 90.5         |                         |                        |              |
|                                       |       |       |       | 1180  |       | 232                                                                                                                            | 610                | 90.8         |                         |                        |              |
| 400                                   | 780   |       |       |       | 1380  | 256                                                                                                                            | 610                | 91.4         | 0.711                   | 0.055                  | 5            |
|                                       |       |       |       |       |       | 292                                                                                                                            | 610                | 92.1         |                         |                        |              |
|                                       |       | 820   |       |       |       | 340                                                                                                                            | 610                | 92.9         |                         |                        |              |
|                                       |       |       | 910   |       |       | 101                                                                                                                            | 555                | 83.2         |                         |                        |              |
|                                       |       |       |       | 1030  |       | 195                                                                                                                            | 545                | 89.7         |                         |                        |              |
| 340                                   | 690   |       |       |       | 1200  | 206                                                                                                                            | 545                | 90.1         | 0.656                   | 0.074                  | 6            |
|                                       |       |       |       |       |       | 227                                                                                                                            | 545                | 90.8         |                         |                        |              |
|                                       |       |       |       |       |       | 259                                                                                                                            | 545                | 91.6         |                         |                        |              |
|                                       |       |       |       |       |       | 302                                                                                                                            | 545                | 92.4         |                         |                        |              |
|                                       |       | 720   |       |       |       | 81                                                                                                                             |                    | 81.1         |                         |                        |              |
| 280                                   | 560   |       |       |       | 1050  | 161                                                                                                                            |                    | 88.7         | 1.121                   | 0.095                  | 7            |
|                                       |       |       |       |       |       | 170                                                                                                                            | 455                | 89.1         |                         |                        |              |
|                                       |       |       |       |       |       | 188                                                                                                                            |                    | 89.9         |                         |                        |              |
|                                       |       |       |       |       |       | 215                                                                                                                            |                    | 90.8         |                         |                        |              |
|                                       |       |       |       |       |       | 250                                                                                                                            |                    | 91.7         |                         |                        |              |
|                                       |       |       |       |       |       | 69                                                                                                                             |                    | 79.0         |                         |                        |              |
|                                       |       | 590   |       |       |       | 140                                                                                                                            |                    | 87.6         |                         |                        |              |
|                                       |       |       | 650   |       |       | 148                                                                                                                            | 400                | 88.1         |                         |                        |              |
|                                       |       |       |       | 750   |       | 163                                                                                                                            |                    | 88.9         |                         |                        |              |
|                                       |       |       |       |       |       | 187                                                                                                                            |                    | 90.0         |                         |                        |              |

### GH250 IM1001 - IP23 - IC06



| Size    | B   | L1   |
|---------|-----|------|
| GH250 M | 810 | 1220 |
| GH250 L | 870 | 1280 |
| GH250 X | 950 | 1360 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH250 MK       | 1080            | 3.37                      | 3200                 | 1.01                    | 2800                   | 70                | 1400               |
| GH250 LK       | 1160            | 3.73                      | 3600                 | 1.05                    | 2800                   | 70                | 1400               |
| GH250 XK       | 1260            | 4.20                      | 4000                 | 1.09                    | 2700                   | 70                | 1400               |

| Bearings                             | Drive end  |                                    | Opposite drive end |
|--------------------------------------|------------|------------------------------------|--------------------|
|                                      | Coupling   | Pulley                             |                    |
| GH250 MK-LK-XK                       | 6218 2Z C3 | NU218ECP C3                        | 6217 2Z C3         |
| Electrical blower (IC06)             | Weight     | Blower motor power                 |                    |
|                                      | 90 kg      | 3.0 kW (50/60 Hz) - 4.0 kW (60 Hz) |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight     | Heat exchanger motor power         |                    |
|                                      | 300 kg     | 4.0 / 5.5 kW (50/60 Hz)            |                    |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

## GH315

## GH355

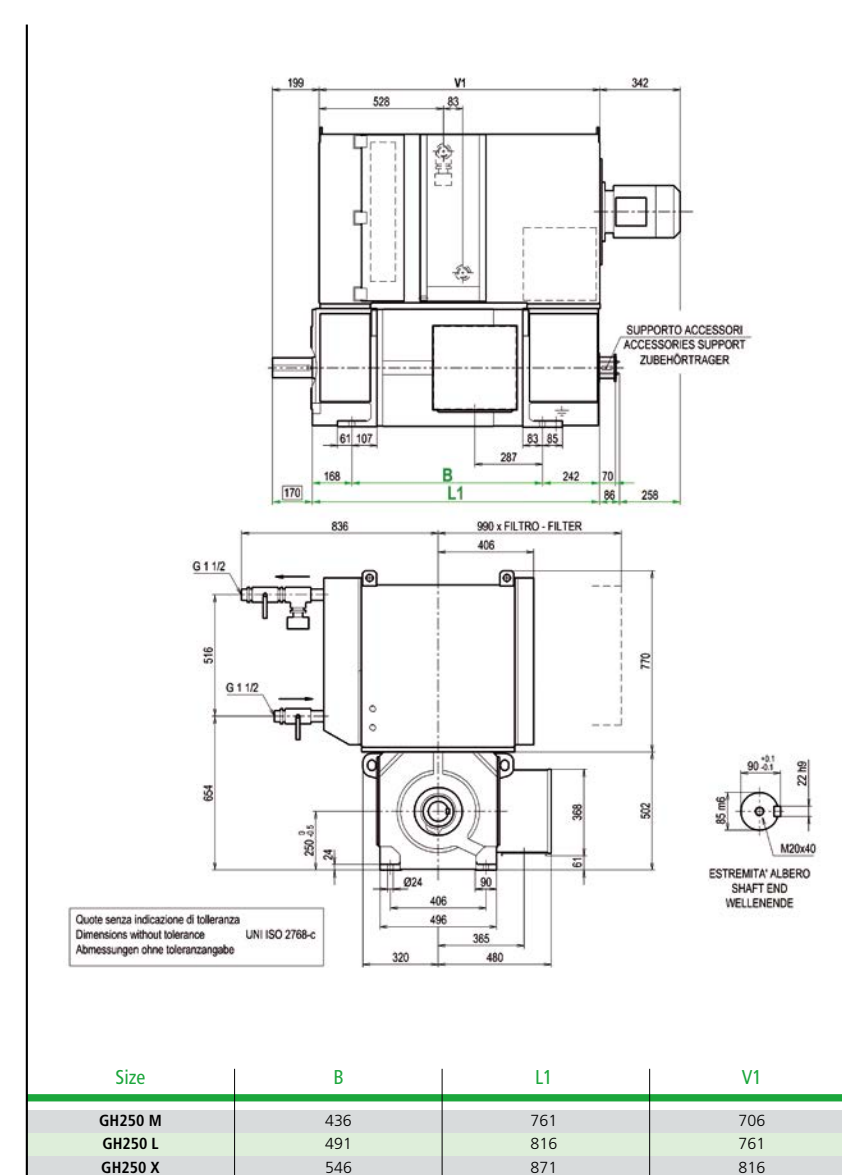
## GH400

## GH450

## GH250 XK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 4000<br>Field time costant (s): 1.09<br>Motor mass (kg): 1350 (IC06)<br>Moment of inertia (kg m²): 4.20 |                    |              | Armature circuit        |                        | Winding code |
|---------------------------------------|-------|-------|-------|-------|-------|-------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|
| 220 V                                 | 400 V | 420 V | 460 V | 520 V | 600 V | RATED OUTPUT kW                                                                                                               | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |
| 250                                   | 500   |       |       |       |       | 62                                                                                                                            |                    | 77.0         | 1.195                   | 0.121                  | 8            |
|                                       |       |       |       |       |       | 125                                                                                                                           |                    | 86.1         |                         |                        |              |
|                                       |       | 530   |       |       |       | 132                                                                                                                           | 364                | 86.7         |                         |                        |              |
|                                       |       |       | 590   |       |       | 146                                                                                                                           |                    | 87.6         |                         |                        |              |
|                                       |       |       |       | 680   |       | 168                                                                                                                           |                    | 88.8         |                         |                        |              |
|                                       |       |       |       | 790   | 196   |                                                                                                                               | 90.0               |              |                         |                        |              |
| 220                                   | 450   |       |       |       |       | 53                                                                                                                            |                    | 72.3         | 1.933                   | 0.156                  | 9            |
|                                       |       |       |       |       |       | 113                                                                                                                           |                    | 84.0         |                         |                        |              |
|                                       |       | 480   |       |       |       | 119                                                                                                                           | 337                | 84.7         |                         |                        |              |
|                                       |       |       | 530   |       |       | 133                                                                                                                           |                    | 85.8         |                         |                        |              |
|                                       |       |       |       | 600   |       | 152                                                                                                                           |                    | 87.3         |                         |                        |              |
|                                       |       |       |       | 710   | 179   |                                                                                                                               | 88.7               |              |                         |                        |              |
| 190                                   | 400   |       |       |       |       | 49                                                                                                                            |                    | 72.3         | 1.862                   | 0.169                  | 10           |
|                                       |       |       |       |       |       | 104                                                                                                                           |                    | 84.0         |                         |                        |              |
|                                       |       | 430   |       |       |       | 110                                                                                                                           | 310                | 84.7         |                         |                        |              |
|                                       |       |       | 470   |       |       | 122                                                                                                                           |                    | 85.8         |                         |                        |              |
|                                       |       |       |       | 540   |       | 140                                                                                                                           |                    | 87.2         |                         |                        |              |
|                                       |       |       |       | 640   | 165   |                                                                                                                               | 88.7               |              |                         |                        |              |
| 340                                   | 360   |       |       |       |       | 89                                                                                                                            |                    | 80.9         | 2.949                   | 0.233                  | 11           |
|                                       |       |       |       |       |       | 94                                                                                                                            | 276                | 81.7         |                         |                        |              |
|                                       |       |       | 410   |       |       | 105                                                                                                                           |                    | 83.2         |                         |                        |              |
|                                       |       |       |       | 470   |       | 121                                                                                                                           |                    | 84.9         |                         |                        |              |
|                                       |       |       |       |       | 550   | 143                                                                                                                           |                    | 86.7         |                         |                        |              |
| 310                                   | 330   |       |       |       |       | 74                                                                                                                            |                    | 80.7         | 2.588                   | 0.282                  | 12           |
|                                       |       |       |       |       |       | 78                                                                                                                            | 230                | 81.5         |                         |                        |              |
|                                       |       |       | 370   |       |       | 87                                                                                                                            |                    | 83.0         |                         |                        |              |
|                                       |       |       |       | 420   |       | 101                                                                                                                           |                    | 84.7         |                         |                        |              |
|                                       |       |       |       |       | 500   | 119                                                                                                                           |                    | 86.5         |                         |                        |              |
| 250                                   | 260   |       |       |       |       | 64                                                                                                                            |                    | 76.8         | 4.484                   | 0.382                  | 13           |
|                                       |       |       |       |       |       | 68                                                                                                                            | 210                | 77.8         |                         |                        |              |
|                                       |       |       | 290   |       |       | 76                                                                                                                            |                    | 79.6         |                         |                        |              |
|                                       |       |       |       | 340   |       | 89                                                                                                                            |                    | 81.8         |                         |                        |              |
|                                       |       |       |       |       |       |                                                                                                                               |                    |              |                         |                        |              |
| 180                                   | 190   |       |       |       |       | 46                                                                                                                            |                    | 71.2         | 7.733                   | 0.622                  | 14           |
|                                       |       |       |       |       |       | 49                                                                                                                            | 163                | 72.5         |                         |                        |              |
|                                       |       |       | 220   |       |       | 56                                                                                                                            |                    | 74.8         |                         |                        |              |
|                                       |       |       |       | 250   |       | 65                                                                                                                            |                    | 77.5         |                         |                        |              |
|                                       |       |       |       |       | 300   | 78                                                                                                                            |                    | 80.3         |                         |                        |              |

## GH250 IM1001 - IP54 - IC86W



| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH250 MK       | 1080            | 3.37                      | 3200                 | 1.01                    | 2800                   | 70                | 1400               |
| GH250 LK       | 1160            | 3.73                      | 3600                 | 1.05                    | 2800                   | 70                | 1400               |
| GH250 XK       | 1260            | 4.20                      | 4000                 | 1.09                    | 2700                   | 70                | 1400               |

| Bearings                             | Drive end  |                                    | Opposite drive end |
|--------------------------------------|------------|------------------------------------|--------------------|
|                                      | Coupling   | Pulley                             |                    |
| GH250 MK-LK-XK                       | 6218 2Z C3 | NU218ECP C3                        | 6217 2Z C3         |
| Electrical blower (IC06)             | Weight     | Blower motor power                 |                    |
|                                      | 90 kg      | 3.0 kW (50/60 Hz) - 4.0 kW (60 Hz) |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight     | Heat exchanger motor power         |                    |
|                                      | 300 kg     | 4.0 / 5.5 kW (50/60 Hz)            |                    |



## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
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- 2.3 Quality system

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- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

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- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
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- 6.3 Maximum loads
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- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

**GH250**

GH280

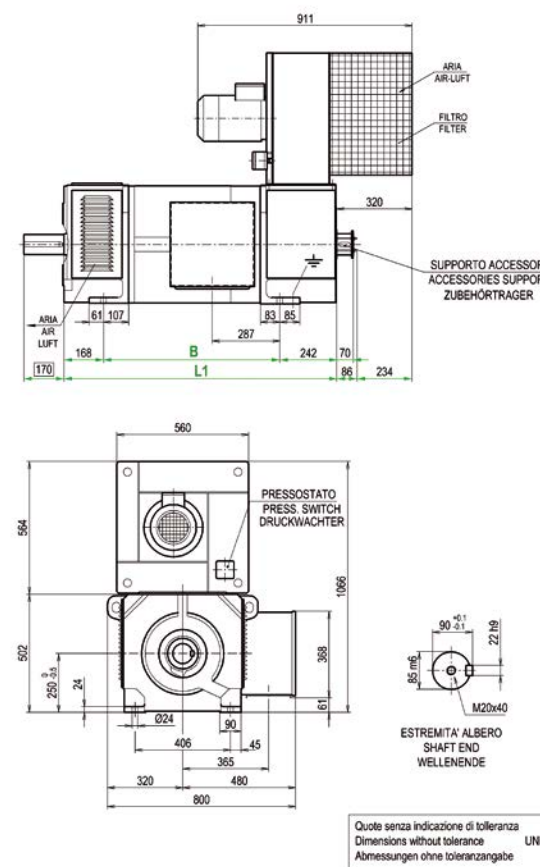
GH315

GH355

GH400

GH450

## GH250 IM1001 - IP23 - IC06



| Size    | B   | L1   |
|---------|-----|------|
| GH250 M | 810 | 1220 |
| GH250 L | 870 | 1280 |
| GH250 X | 950 | 1360 |

| TECHNICAL DATA |                    |                              |                         |                            |                           |                      |                    |
|----------------|--------------------|------------------------------|-------------------------|----------------------------|---------------------------|----------------------|--------------------|
| Size           | Motor mass<br>(kg) | Moment of inertia<br>(kg m²) | Excitation power<br>(W) | Field time constant<br>(s) | Max. mech. speed<br>(rpm) | Ventilation data     |                    |
|                |                    |                              |                         |                            |                           | Air flow<br>(m³/min) | Pressure drop (Pa) |
| GH250 MK       | 1080               | 3.37                         | 3200                    | 1.01                       | 2800                      | 70                   | 1400               |
| GH250 LK       | 1160               | 3.73                         | 3600                    | 1.05                       | 2800                      | 70                   | 1400               |
| GH250 XK       | 1260               | 4.20                         | 4000                    | 1.09                       | 2700                      | 70                   | 1400               |

| Bearings                             | Drive end  |                                    | Opposite drive end |
|--------------------------------------|------------|------------------------------------|--------------------|
|                                      | Coupling   | Pulley                             |                    |
| GH250 MK-LK-XK                       | 6218 2Z C3 | NU218ECP C3                        | 6217 2Z C3         |
| Electrical blower (IC06)             | Weight     | Blower motor power                 |                    |
|                                      | 90 kg      | 3.0 kW (50/60 Hz) - 4.0 kW (60 Hz) |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight     | Heat exchanger motor power         |                    |
|                                      | 300 kg     | 4.0 / 5.5 kW (50/60 Hz)            |                    |



GO TO MENU





DC MOTORS

|      |                                                          |
|------|----------------------------------------------------------|
| 1.   | GENERAL INFORMATION                                      |
| 2.   | STANDARDS AND QUALITY                                    |
| 2.1  | Reference standards                                      |
| 2.2  | CE Marking                                               |
| 2.3  | Quality system                                           |
| 3.   | IDENTIFICATION CODE                                      |
| 4.   | DESIGN FEATURES                                          |
| 4.1  | Rotor                                                    |
| 4.2  | Commutator                                               |
| 4.3  | Stator                                                   |
| 4.4  | Brushholder yoke                                         |
| 4.5  | Bearings                                                 |
| 4.6  | Belted and radial thrust application                     |
| 5.   | CONSTRUCTION FEATURES                                    |
| 5.1  | Coupling and shaft extension                             |
| 5.2  | Mounting arrangement                                     |
| 5.3  | Degree of protection                                     |
| 5.4  | Cooling method                                           |
| 5.5  | Maximum allowable speeds                                 |
| 5.6  | Noise level                                              |
| 5.7  | Vibrations and balancing                                 |
| 5.8  | Conduit box                                              |
| 5.9  | Groud terminals                                          |
| 5.10 | Cross-section drawing                                    |
| 6.   | MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS |
| 6.1  | Ratings                                                  |
| 6.2  | Supply voltage                                           |
| 6.3  | Maximum loads                                            |
| 6.4  | Current rate-of-rise                                     |
| 6.5  | Speed regulation                                         |
| 6.6  | Duty with large speed regulation                         |
| 6.7  | Excitation                                               |
| 6.8  | Maximum current at locked rotor                          |
| 6.9  | Accessories                                              |
| 7.   | TESTS                                                    |
| 8.   | OUTPUT POWER DIAGRAMS                                    |
| HOME |                                                          |

GH225

GH250

GH280

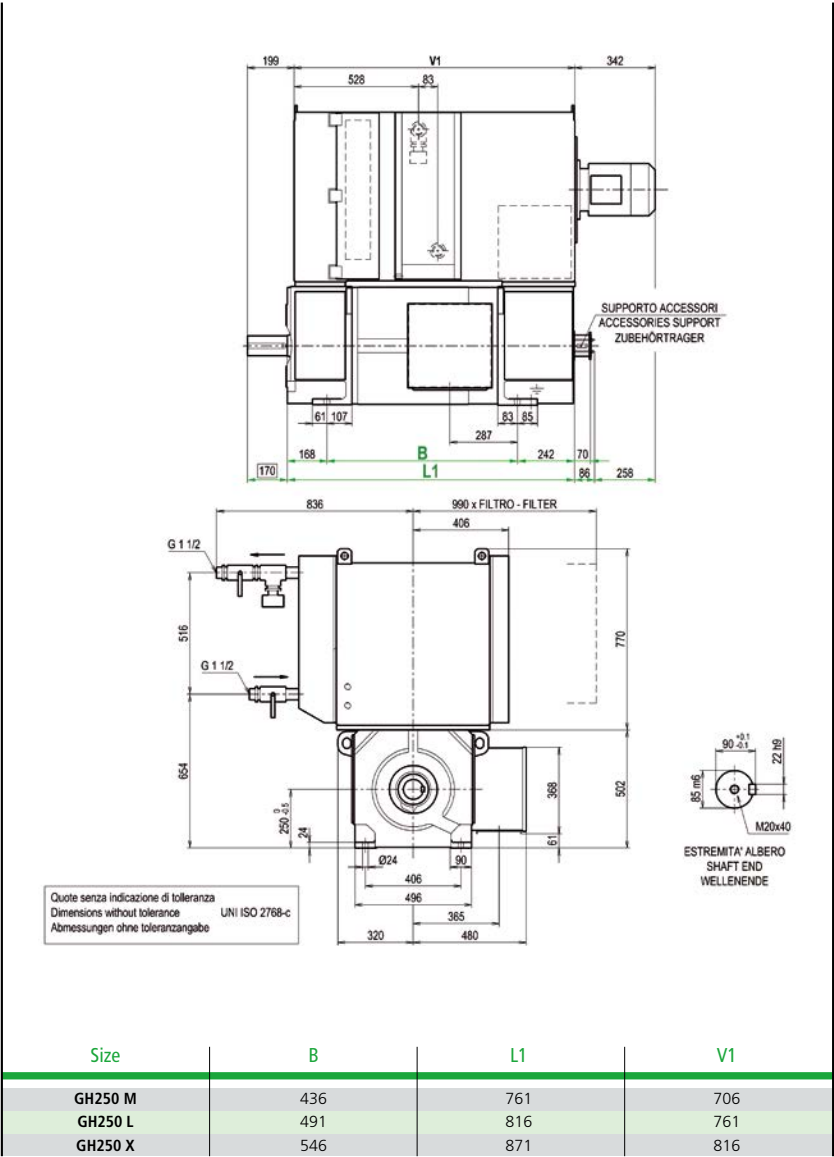
GH315

GH355

GH400

GH450

GH250 IM1001 - IP54 - IC86W



| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    | Bearings                             |        |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|--------------------------------------|--------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    | Drive end                            |        | Opposite drive end |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) | Coupling                             | Pulley |                    |
| GH250 MK       | 1080            | 3.37                      | 3200                 | 1.01                    | 2800                   | 70                | 1400               | GH250 MK-LK-XK                       |        | 6217 2Z C3         |
| GH250 LK       | 1160            | 3.73                      | 3600                 | 1.05                    | 2800                   | 70                | 1400               | Electrical blower (IC06)             |        | Weight             |
| GH250 XK       | 1260            | 4.20                      | 4000                 | 1.09                    | 2700                   | 70                | 1400               | Blower motor power                   |        | 90 kg              |
|                |                 |                           |                      |                         |                        |                   |                    | Air-To-Water Heat Exchanger (IC 86W) |        | Weight             |
|                |                 |                           |                      |                         |                        |                   |                    | Heat exchanger motor power           |        | 300 kg             |
|                |                 |                           |                      |                         |                        |                   |                    | 4.0 / 5.5 kW (50/60 Hz)              |        |                    |



DC MOTORS

|      |                                                          |
|------|----------------------------------------------------------|
| 1.   | GENERAL INFORMATION                                      |
| 2.   | STANDARDS AND QUALITY                                    |
| 2.1  | Reference standards                                      |
| 2.2  | CE Marking                                               |
| 2.3  | Quality system                                           |
| 3.   | IDENTIFICATION CODE                                      |
| 4.   | DESIGN FEATURES                                          |
| 4.1  | Rotor                                                    |
| 4.2  | Commutator                                               |
| 4.3  | Stator                                                   |
| 4.4  | Brushholder yoke                                         |
| 4.5  | Bearings                                                 |
| 4.6  | Belted and radial thrust application                     |
| 5.   | CONSTRUCTION FEATURES                                    |
| 5.1  | Coupling and shaft extension                             |
| 5.2  | Mounting arrangement                                     |
| 5.3  | Degree of protection                                     |
| 5.4  | Cooling method                                           |
| 5.5  | Maximum allowable speeds                                 |
| 5.6  | Noise level                                              |
| 5.7  | Vibrations and balancing                                 |
| 5.8  | Conduit box                                              |
| 5.9  | Groud terminals                                          |
| 5.10 | Cross-section drawing                                    |
| 6.   | MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS |
| 6.1  | Ratings                                                  |
| 6.2  | Supply voltage                                           |
| 6.3  | Maximum loads                                            |
| 6.4  | Current rate-of-rise                                     |
| 6.5  | Speed regulation                                         |
| 6.6  | Duty with large speed regulation                         |
| 6.7  | Excitation                                               |
| 6.8  | Maximum current at locked rotor                          |
| 6.9  | Accessories                                              |
| 7.   | TESTS                                                    |
| 8.   | OUTPUT POWER DIAGRAMS                                    |
| HOME |                                                          |

GH225

GH250

GH280

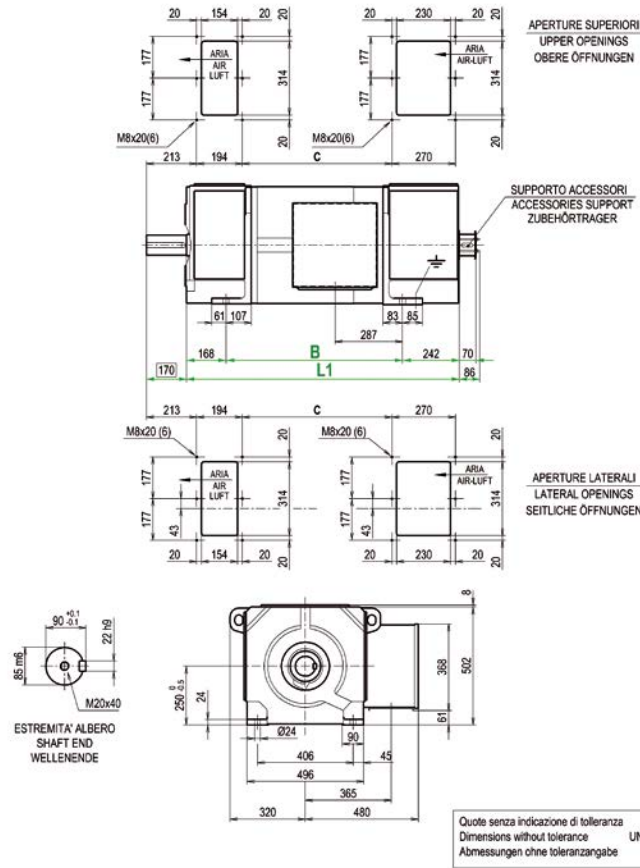
GH315

GH355

GH400

GH450

GH250 IM1001 - IP44 - IC37



| Size    | B   | L1   | C   |
|---------|-----|------|-----|
| GH250 M | 810 | 1220 | 696 |
| GH250 L | 870 | 1280 | 756 |
| GH250 X | 950 | 1360 | 836 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH250 MK       | 1080            | 3.37                      | 3200                 | 1.01                    | 2800                   | 70                | 1400               |
| GH250 LK       | 1160            | 3.73                      | 3600                 | 1.05                    | 2800                   | 70                | 1400               |
| GH250 XK       | 1260            | 4.20                      | 4000                 | 1.09                    | 2700                   | 70                | 1400               |

| Bearings       | Drive end  |             | Opposite drive end |
|----------------|------------|-------------|--------------------|
|                | Coupling   | Pulley      |                    |
| GH250 MK-LK-XK | 6218 2Z C3 | NU218ECP C3 | 6217 2Z C3         |

| Electrical blower (IC06) | Weight | Blower motor power                 |  |
|--------------------------|--------|------------------------------------|--|
|                          | 90 kg  | 3.0 kW (50/60 Hz) - 4.0 kW (60 Hz) |  |

| Air-To-Water Heat Exchanger (IC 86W) | Weight | Heat exchanger motor power |  |
|--------------------------------------|--------|----------------------------|--|
|                                      | 300 kg | 4.0 / 5.5 kW (50/60 Hz)    |  |



GO TO MENU



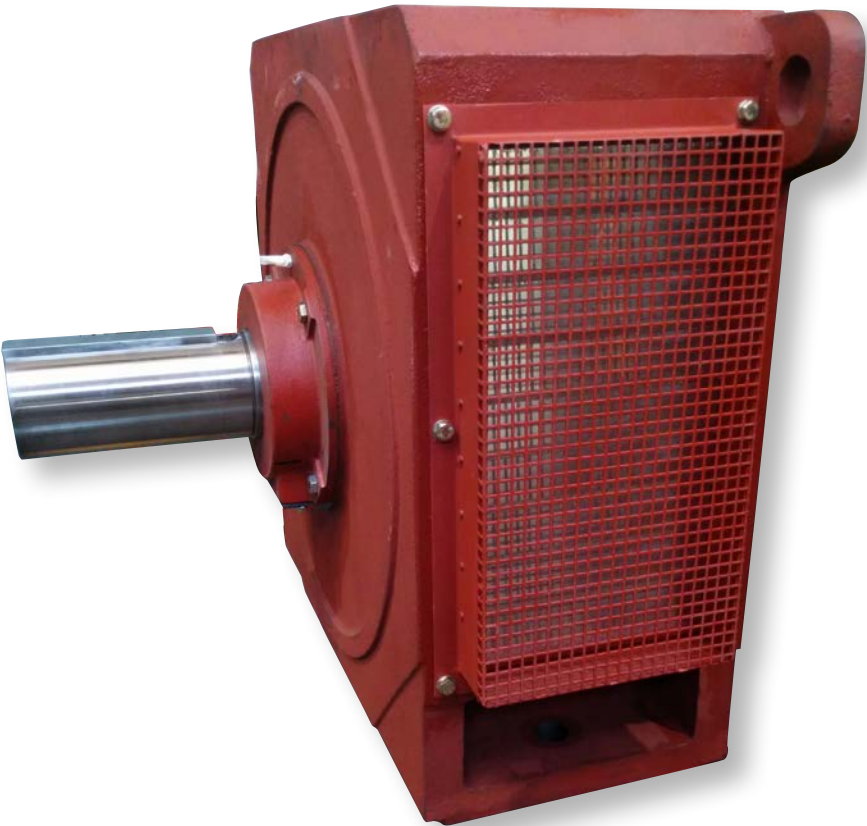


**DC MOTORS**

- 1. GENERAL INFORMATION**
- 2. STANDARDS AND QUALITY**
  - 2.1 Reference standards
  - 2.2 CE Marking
  - 2.3 Quality system
- 3. IDENTIFICATION CODE**
- 4. DESIGN FEATURES**
  - 4.1 Rotor
  - 4.2 Commutator
  - 4.3 Stator
  - 4.4 Brushholder yoke
  - 4.5 Bearings
  - 4.6 Belted and radial thrust application
- 5. CONSTRUCTION FEATURES**
  - 5.1 Coupling and shaft extension
  - 5.2 Mounting arrangement
  - 5.3 Degree of protection
  - 5.4 Cooling method
  - 5.5 Maximum allowable speeds
  - 5.6 Noise level
  - 5.7 Vibrations and balancing
  - 5.8 Conduit box
  - 5.9 Groud terminals
  - 5.10 Cross-section drawing
- 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS**
  - 6.1 Ratings
  - 6.2 Supply voltage
  - 6.3 Maximum loads
  - 6.4 Current rate-of-rise
  - 6.5 Speed regulation
  - 6.6 Duty with large speed regulation
  - 6.7 Excitation
  - 6.8 Maximum current at locked rotor
  - 6.9 Accessories
- 7. TESTS**
- 8. OUTPUT POWER DIAGRAMS**
- HOME**

**GH280**

- Derating for field weakening operation
  - GH280 K
- Performance of compensated motors
  - GH280 SK
  - GH280 MK
  - GH280 LK
  - GH280 PK
- Overall dimensions
  - GH280 IM1001-IP23-IC06
  - GH280 IM1001-IP54-IC86W
  - GH280 IM1001-IP44-IC37



Performance Tables are displayed on multiple pages, alongside the data tables are repeated alternately overall dimensions (IC06- IC86W-IC37)





DC MOTORS

|      |                                                          |
|------|----------------------------------------------------------|
| 1.   | GENERAL INFORMATION                                      |
| 2.   | STANDARDS AND QUALITY                                    |
| 2.1  | Reference standards                                      |
| 2.2  | CE Marking                                               |
| 2.3  | Quality system                                           |
| 3.   | IDENTIFICATION CODE                                      |
| 4.   | DESIGN FEATURES                                          |
| 4.1  | Rotor                                                    |
| 4.2  | Commutator                                               |
| 4.3  | Stator                                                   |
| 4.4  | Brushholder yoke                                         |
| 4.5  | Bearings                                                 |
| 4.6  | Belted and radial thrust application                     |
| 5.   | CONSTRUCTION FEATURES                                    |
| 5.1  | Coupling and shaft extension                             |
| 5.2  | Mounting arrangement                                     |
| 5.3  | Degree of protection                                     |
| 5.4  | Cooling method                                           |
| 5.5  | Maximum allowable speeds                                 |
| 5.6  | Noise level                                              |
| 5.7  | Vibrations and balancing                                 |
| 5.8  | Conduit box                                              |
| 5.9  | Groud terminals                                          |
| 5.10 | Cross-section drawing                                    |
| 6.   | MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS |
| 6.1  | Ratings                                                  |
| 6.2  | Supply voltage                                           |
| 6.3  | Maximum loads                                            |
| 6.4  | Current rate-of-rise                                     |
| 6.5  | Speed regulation                                         |
| 6.6  | Duty with large speed regulation                         |
| 6.7  | Excitation                                               |
| 6.8  | Maximum current at locked rotor                          |
| 6.9  | Accessories                                              |
| 7.   | TESTS                                                    |
| 8.   | OUTPUT POWER DIAGRAMS                                    |
|      | HOME                                                     |



GH225

GH250

GH280

GH315

GH355

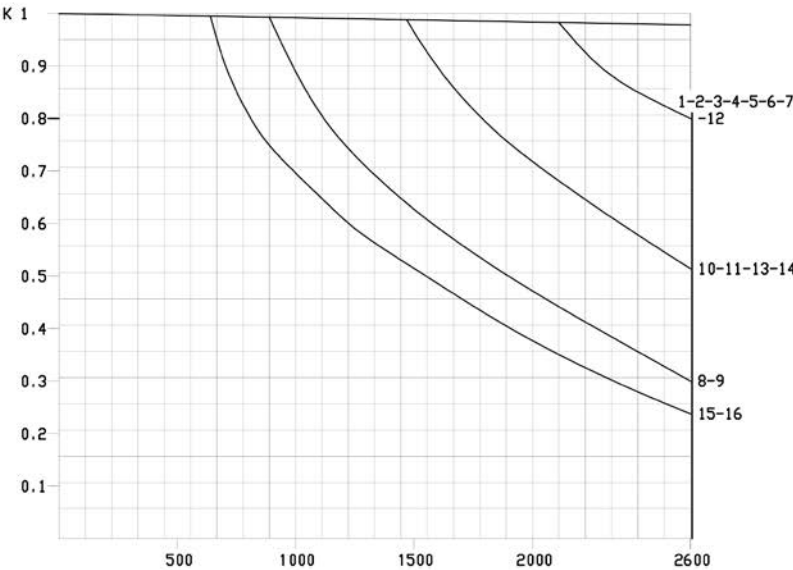
GH400

GH450

GH 280 K

RIDUZIONE DELLA POTENZA IN DISECCITAZIONE  
DERATING FOR FIELD WEAKENING OPERATION  
LEISTUNGSREDUZIERUNG BEI FELDSWÄCHUNG

GH 280 K (compensata - compensated - kompensiert)  
[ 180% sovraccarico - overload - überlast ]



|                                       |                                                  |                                                             |
|---------------------------------------|--------------------------------------------------|-------------------------------------------------------------|
| P = K x P tabella potenza disponibile | Allowable power output P = K x P table           | Verfügbare Leistung P = K x P table                         |
| per/for/für                           | GH 280 SK<br>GH 280 MK<br>GH 280 LK<br>GH 280 PK | K = K x 1.30<br>K = K x 1.20<br>K = K x 1.12<br>K = K x 1.0 |
| Per K ≥ 1 niente declassamento        | For K ≥ 1 no derating                            | Für K ≥ 1 keine Leistungsreduzierung                        |

| TECHNICAL DATA |                    |                                 |                            |                               |                              |                      |                       |                                      |           |                            |                    |
|----------------|--------------------|---------------------------------|----------------------------|-------------------------------|------------------------------|----------------------|-----------------------|--------------------------------------|-----------|----------------------------|--------------------|
| Size           | Motor mass<br>(kg) | Moment of<br>inertia<br>(kg m²) | Excitation<br>power<br>(W) | Field time<br>constant<br>(s) | Max. mech.<br>speed<br>(rpm) | Ventilation data     |                       | Bearings                             | Drive end |                            | Opposite drive end |
|                |                    |                                 |                            |                               |                              | Air flow<br>(m³/min) | Pressure<br>drop (Pa) |                                      | Coupling  | Pulley                     |                    |
| GH280 SK       | 1400               | 4.9                             | 3400                       | 1.07                          | 2600                         | 85                   | 2050                  | GH280 SK-MK-LK-PK                    | 6221 C3   | NU221ECP                   | 6219 C3            |
| GH280 MK       | 1500               | 5.6                             | 3700                       | 1.12                          | 2600                         | 85                   | 2050                  |                                      |           |                            |                    |
| GH280 LK       | 1600               | 6.1                             | 4000                       | 1.17                          | 2600                         | 85                   | 2050                  |                                      |           |                            |                    |
| GH280 PK       | 1720               | 6.8                             | 4400                       | 1.25                          | 2600                         | 85                   | 2050                  |                                      |           |                            |                    |
|                |                    |                                 |                            |                               |                              |                      |                       | Electrical blower (IC06)             | Weight    | Blower motor power         |                    |
|                |                    |                                 |                            |                               |                              |                      |                       |                                      | 105 kg    | 5.5 kW (50/60 Hz)          |                    |
|                |                    |                                 |                            |                               |                              |                      |                       | Air-To-Water Heat Exchanger (IC 86W) | Weight    | Heat exchanger motor power |                    |
|                |                    |                                 |                            |                               |                              |                      |                       |                                      | 370 kg    | 5.5 / 7.5 kW (50/60 Hz)    |                    |





## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

## GH315

## GH355

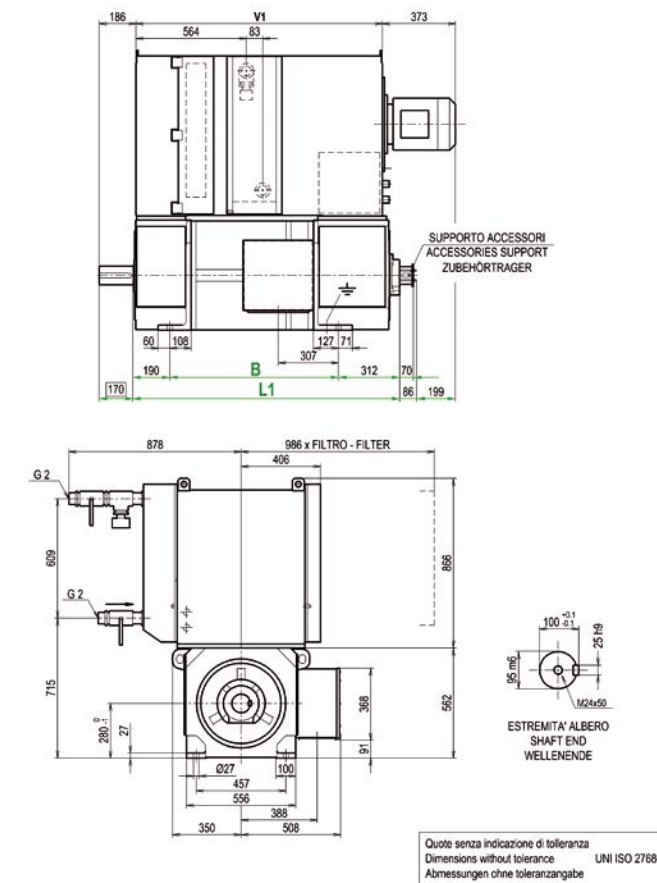
## GH400

## GH450

### GH280 SK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 3400<br>Field time constant (s): 1.07<br>Motor mass (kg): 1505 (IC06)<br>Moment of inertia (kg m²): 4.9 |                    |              | Armature circuit        |                        | Winding code |      |
|---------------------------------------|-------|-------|-------|-------|-------|-------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|------|
| 220 V                                 | 400 V | 420 V | 460 V | 520 V | 600 V | RATED OUTPUT kW                                                                                                               | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |      |
| 330                                   |       |       |       |       |       | 94                                                                                                                            |                    | 80.0         | 0.589                   | 0.068                  | 8            |      |
|                                       | 670   |       |       |       |       | 189                                                                                                                           |                    | 88.2         |                         |                        |              |      |
|                                       |       | 710   |       |       |       | 200                                                                                                                           | 537                | 88.6         |                         |                        |              |      |
|                                       |       |       |       | 780   |       |                                                                                                                               | 222                |              |                         |                        |              | 89.7 |
|                                       |       |       |       |       | 890   |                                                                                                                               |                    | 253          |                         |                        |              |      |
| 300                                   |       |       |       |       |       | 86                                                                                                                            |                    | 79.4         | 0.871                   | 0.078                  | 9            |      |
|                                       | 610   |       |       |       |       | 172                                                                                                                           |                    | 87.8         |                         |                        |              |      |
|                                       |       | 640   |       |       |       | 181                                                                                                                           | 490                | 88.3         |                         |                        |              |      |
|                                       |       |       | 700   |       |       | 201                                                                                                                           |                    | 89.3         |                         |                        |              |      |
|                                       |       |       |       |       | 810   |                                                                                                                               |                    | 230          |                         |                        |              |      |
| 270                                   |       |       |       |       | 950   | 268                                                                                                                           |                    | 91.2         | 0.741                   | 0.097                  | 10           |      |
|                                       | 550   |       |       |       |       | 75                                                                                                                            |                    | 78.0         |                         |                        |              |      |
|                                       |       | 580   |       |       |       | 151                                                                                                                           |                    | 86.9         |                         |                        |              |      |
|                                       |       |       | 650   |       |       | 160                                                                                                                           | 435                | 87.4         |                         |                        |              |      |
|                                       |       |       |       |       | 740   |                                                                                                                               |                    | 177          |                         |                        |              |      |
| 210                                   |       |       |       |       |       | 202                                                                                                                           |                    | 89.5         | 1.546                   | 0.148                  | 11           |      |
|                                       | 440   |       |       |       |       | 865                                                                                                                           |                    | 90.6         |                         |                        |              |      |
|                                       |       | 465   |       |       |       | 56                                                                                                                            |                    | 72.5         |                         |                        |              |      |
|                                       |       |       | 510   |       |       | 119                                                                                                                           |                    | 84.2         |                         |                        |              |      |
|                                       |       |       |       |       | 590   |                                                                                                                               |                    | 127          |                         |                        |              | 355  |
| 400                                   |       |       |       |       | 690   | 140                                                                                                                           |                    | 85.7         | 1.241                   | 0.181                  | 12           |      |
|                                       | 420   |       |       |       | 161   |                                                                                                                               | 87.5               |              |                         |                        |              |      |
|                                       |       | 460   |       |       | 189   |                                                                                                                               | 88.9               |              |                         |                        |              |      |
|                                       |       |       | 540   |       |       | 106                                                                                                                           |                    | 82.7         |                         |                        |              |      |
|                                       |       |       |       |       | 630   |                                                                                                                               |                    | 113          |                         |                        |              | 323  |
| 370                                   |       |       |       |       |       | 126                                                                                                                           |                    | 85.1         | 1.655                   | 0.191                  | 13           |      |
|                                       | 390   |       |       |       | 145   |                                                                                                                               | 86.3               |              |                         |                        |              |      |
|                                       |       | 440   |       |       | 170   |                                                                                                                               | 87.9               |              |                         |                        |              |      |
|                                       |       |       | 510   |       |       | 103                                                                                                                           |                    | 82.2         |                         |                        |              |      |
|                                       |       |       |       |       | 590   |                                                                                                                               |                    | 110          |                         |                        |              | 316  |
| 340                                   |       |       |       |       |       | 123                                                                                                                           |                    | 84.6         | 2.399                   | 0.231                  | 14           |      |
|                                       | 360   |       |       |       | 141   |                                                                                                                               | 85.9               |              |                         |                        |              |      |
|                                       |       | 400   |       |       | 166   |                                                                                                                               | 87.6               |              |                         |                        |              |      |
|                                       |       |       | 460   |       |       | 91                                                                                                                            |                    | 80.9         |                         |                        |              |      |
|                                       |       |       |       |       | 540   |                                                                                                                               |                    | 98           |                         |                        |              | 283  |

### GH280 IM1001 - IP54 - IC86W



| Size    | B    | L1   | V1   |
|---------|------|------|------|
| GH280 S | 860  | 1362 | 1258 |
| GH280 M | 910  | 1412 | 1308 |
| GH280 L | 960  | 1462 | 1358 |
| GH280 P | 1020 | 1522 | 1418 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH280 SK       | 1400            | 4.9                       | 3400                 | 1.07                    | 2600                   | 85                | 2050               |
| GH280 MK       | 1500            | 5.6                       | 3700                 | 1.12                    | 2600                   | 85                | 2050               |
| GH280 LK       | 1600            | 6.1                       | 4000                 | 1.17                    | 2600                   | 85                | 2050               |
| GH280 PK       | 1720            | 6.8                       | 4400                 | 1.25                    | 2600                   | 85                | 2050               |

| Bearings                             | Drive end |                            | Opposite drive end |
|--------------------------------------|-----------|----------------------------|--------------------|
|                                      | Coupling  | Pulley                     |                    |
| GH280 SK-MK-LK-PK                    | 6221 C3   | NU221ECP                   | 6219 C3            |
| Electrical blower (IC06)             | Weight    | Blower motor power         |                    |
|                                      | 105 kg    | 5.5 kW (50/60 Hz)          |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight    | Heat exchanger motor power |                    |
|                                      | 370 kg    | 5.5 / 7.5 kW (50/60 Hz)    |                    |



DC MOTORS

1. GENERAL INFORMATION

2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

3. IDENTIFICATION CODE

4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

7. TESTS

8. OUTPUT POWER DIAGRAMS

GH225

GH250

GH280

GH315

GH355

GH400

GH450

GH280 SK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 3400<br>Field time constant (s): 1.07<br>Motor mass (kg): 1505 (IC06)<br>Moment of inertia (kg m²): 4.9 |                       |                 | Armature circuit           |                           | Winding code |
|---------------------------------------|-------|-------|-------|-------|-------|-------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------|----------------------------|---------------------------|--------------|
| 220 V                                 | 400 V | 420 V | 460 V | 520 V | 600 V | RATED OUTPUT<br>kW                                                                                                            | ARMATURE CURRENT<br>A | EFFICIENCY<br>% | SATURATED INDUCTANCE<br>mH | RESISTANCE AT 115 °C<br>Ω |              |
|                                       | 300   |       |       |       |       | 85                                                                                                                            |                       | 78.8            | 2.358                      | 0.273                     | 15           |
|                                       |       | 320   |       |       |       | 91                                                                                                                            | 270                   | 79.8            |                            |                           |              |
|                                       |       |       | 360   |       |       | 102                                                                                                                           |                       | 81.9            |                            |                           |              |
|                                       |       |       |       | 410   |       | 118                                                                                                                           |                       | 83.4            |                            |                           |              |
|                                       | 270   |       |       |       |       |                                                                                                                               | 76                    |                 | 78.1                       | 3.485                     | 0.313        |
|                                       |       | 290   |       |       |       | 82                                                                                                                            | 245                   | 79.0            |                            |                           |              |
|                                       |       |       | 320   |       |       | 91                                                                                                                            |                       | 81.0            |                            |                           |              |
|                                       |       |       |       | 370   |       | 105                                                                                                                           |                       | 82.8            |                            |                           |              |
|                                       |       |       |       |       |       | 440                                                                                                                           | 124                   |                 | 84.9                       |                           |              |

GH280 IM1001 - IP44 - IC37

Technical drawing of the GH280 IM1001 motor. The drawing includes three main views: a top view showing the motor's footprint with dimensions 200x230mm and mounting holes (M8x20 (6)); a front view showing the motor's height and width with dimensions 170x312mm and mounting holes (M8x20 (6)); and a shaft end view showing the shaft diameter (Ø27) and length (100). Labels include 'ARIA AIR-LUFT' for the upper and lateral openings, 'SUPPORTO ACCESSORI ACCESSORIES SUPPORT ZUBEHÖRTRAGER' for the accessory support, and 'ESTREMITÀ ALBERO SHAFT END WELLENENDE' for the shaft end. A note at the bottom right states: 'Quote senza indicazione di tolleranza Dimensions without tolerance UNI ISO 2768-c Abmessungen ohne toleranzangabe'.

| Size    | B    | L1   | C   |
|---------|------|------|-----|
| GH280 S | 860  | 1362 | 701 |
| GH280 M | 910  | 1412 | 751 |
| GH280 L | 960  | 1462 | 801 |
| GH280 P | 1020 | 1522 | 861 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH280 SK       | 1400            | 4.9                       | 3400                 | 1.07                    | 2600                   | 85                | 2050               |
| GH280 MK       | 1500            | 5.6                       | 3700                 | 1.12                    | 2600                   | 85                | 2050               |
| GH280 LK       | 1600            | 6.1                       | 4000                 | 1.17                    | 2600                   | 85                | 2050               |
| GH280 PK       | 1720            | 6.8                       | 4400                 | 1.25                    | 2600                   | 85                | 2050               |

| Bearings                             | Drive end |                            | Opposite drive end |
|--------------------------------------|-----------|----------------------------|--------------------|
|                                      | Coupling  | Pulley                     |                    |
| GH280 SK-MK-LK-PK                    | 6221 C3   | NU221ECP                   | 6219 C3            |
| Electrical blower (IC06)             | Weight    | Blower motor power         |                    |
|                                      | 105 kg    | 5.5 kW (50/60 Hz)          |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight    | Heat exchanger motor power |                    |
|                                      | 370 kg    | 5.5 / 7.5 kW (50/60 Hz)    |                    |



## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

## GH315

## GH355

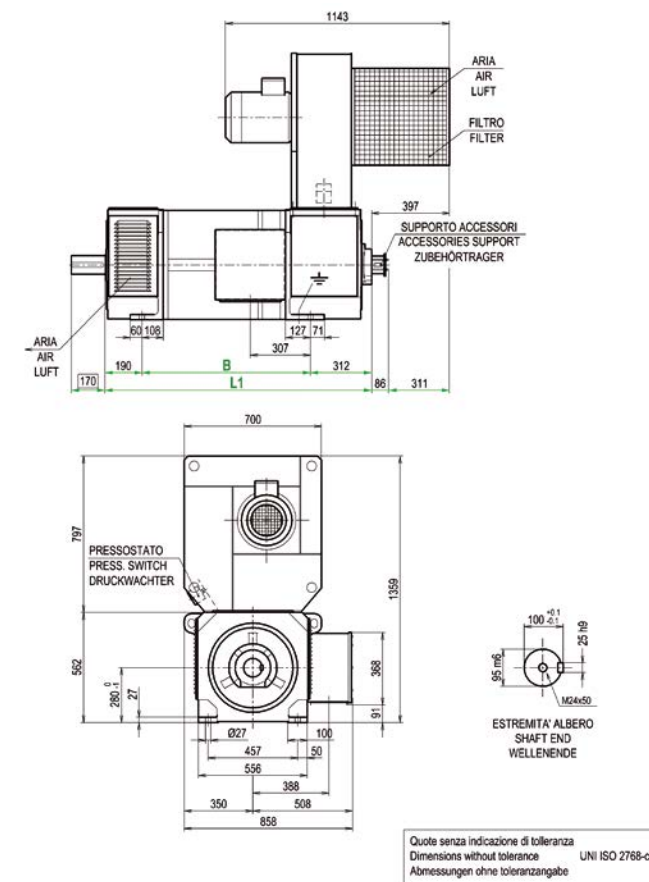
## GH400

## GH450

## GH280 MK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 3700<br>Field time costant (s): 1.12<br>Motor mass (kg): 1605 (IC06)<br>Moment of inertia (kg m²): 5.6 |                    |              | Armature circuit        |                        | Winding code |
|---------------------------------------|-------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|
| 220 V                                 | 400 V | 420 V | 460 V | 520 V | 600 V | RATED OUTPUT kW                                                                                                              | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |
| 660                                   | 1300  |       |       |       |       | 207                                                                                                                          | 1080               | 87.9         | 0.158                   | 0.018                  | 1            |
|                                       |       |       |       |       |       | 405                                                                                                                          | 1100               | 92.3         |                         |                        |              |
|                                       |       | 1370  |       |       |       | 428                                                                                                                          | 1100               | 92.6         |                         |                        |              |
|                                       |       |       | 1510  |       |       | 470                                                                                                                          | 1100               | 93.2         |                         |                        |              |
|                                       |       |       |       | 1730  |       | 512                                                                                                                          | 1060               | 93.6         |                         |                        |              |
| 600                                   | 1160  |       |       |       |       | 191                                                                                                                          | 990                | 87.7         | 0.233                   | 0.020                  | 2            |
|                                       |       |       |       |       |       | 361                                                                                                                          | 980                | 92.3         |                         |                        |              |
|                                       |       | 1220  |       |       |       | 380                                                                                                                          | 980                | 92.5         |                         |                        |              |
|                                       |       |       | 1370  |       |       | 419                                                                                                                          | 980                | 93.0         |                         |                        |              |
|                                       |       |       |       | 1550  |       | 466                                                                                                                          | 960                | 93.2         |                         |                        |              |
|                                       |       |       |       | 1820  | 540   | 960                                                                                                                          | 93.8               |              |                         |                        |              |
| 550                                   | 1060  |       |       |       |       | 169                                                                                                                          | 885                | 86.7         | 0.209                   | 0.025                  | 3            |
|                                       |       |       |       |       |       | 321                                                                                                                          | 875                | 91.8         |                         |                        |              |
|                                       |       | 1120  |       |       |       | 338                                                                                                                          | 875                | 92.1         |                         |                        |              |
|                                       |       |       | 1230  |       |       | 372                                                                                                                          | 875                | 92.5         |                         |                        |              |
|                                       |       |       |       | 1400  |       | 423                                                                                                                          | 875                | 93.2         |                         |                        |              |
|                                       |       |       |       | 1650  | 483   | 860                                                                                                                          | 93.8               |              |                         |                        |              |
| 480                                   | 940   |       |       |       |       | 147                                                                                                                          |                    | 85.2         | 0.286                   | 0.033                  | 4            |
|                                       |       |       |       |       |       | 285                                                                                                                          |                    | 91.0         |                         |                        |              |
|                                       |       | 990   |       |       |       | 301                                                                                                                          | 785                | 91.3         |                         |                        |              |
|                                       |       |       | 1090  |       |       | 332                                                                                                                          |                    | 92.0         |                         |                        |              |
|                                       |       |       |       | 1240  |       | 378                                                                                                                          |                    | 92.6         |                         |                        |              |
|                                       |       |       |       | 1440  | 440   |                                                                                                                              | 93.3               |              |                         |                        |              |
| 440                                   | 850   |       |       |       |       | 132                                                                                                                          |                    | 84.2         | 0.418                   | 0.039                  | 5            |
|                                       |       |       |       |       |       | 258                                                                                                                          |                    | 90.5         |                         |                        |              |
|                                       |       | 900   |       |       |       | 273                                                                                                                          | 715                | 90.8         |                         |                        |              |
|                                       |       |       | 990   |       |       | 301                                                                                                                          |                    | 91.6         |                         |                        |              |
|                                       |       |       |       | 1120  |       | 342                                                                                                                          |                    | 92.2         |                         |                        |              |
|                                       |       |       |       | 1310  | 397   |                                                                                                                              | 92.9               |              |                         |                        |              |
| 390                                   | 780   |       |       |       |       | 118                                                                                                                          |                    | 82.8         | 0.340                   | 0.047                  | 6            |
|                                       |       |       |       |       |       | 233                                                                                                                          |                    | 89.7         |                         |                        |              |
|                                       |       | 825   |       |       |       | 246                                                                                                                          | 650                | 90.1         |                         |                        |              |
|                                       |       |       | 900   |       |       | 272                                                                                                                          |                    | 91.0         |                         |                        |              |
|                                       |       |       |       | 1030  |       | 310                                                                                                                          |                    | 91.6         |                         |                        |              |
|                                       |       |       |       | 1200  | 360   |                                                                                                                              | 92.4               |              |                         |                        |              |
| 340                                   | 680   |       |       |       |       | 101                                                                                                                          |                    | 80.8         | 0.639                   | 0.062                  | 7            |
|                                       |       |       |       |       |       | 202                                                                                                                          |                    | 88.6         |                         |                        |              |
|                                       |       | 720   |       |       |       | 213                                                                                                                          | 570                | 89.0         |                         |                        |              |
|                                       |       |       | 780   |       |       | 236                                                                                                                          |                    | 90.0         |                         |                        |              |
|                                       |       |       |       | 900   |       | 269                                                                                                                          |                    | 90.8         |                         |                        |              |
|                                       |       |       |       | 1050  | 311   |                                                                                                                              | 91.8               |              |                         |                        |              |

## GH280 IM1001 - IP23 - IC06



| Size    | B    | L1   |
|---------|------|------|
| GH280 S | 860  | 1362 |
| GH280 M | 910  | 1412 |
| GH280 L | 960  | 1462 |
| GH280 P | 1020 | 1522 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH280 SK       | 1400            | 4.9                       | 3400                 | 1.07                    | 2600                   | 85                | 2050               |
| GH280 MK       | 1500            | 5.6                       | 3700                 | 1.12                    | 2600                   | 85                | 2050               |
| GH280 LK       | 1600            | 6.1                       | 4000                 | 1.17                    | 2600                   | 85                | 2050               |
| GH280 PK       | 1720            | 6.8                       | 4400                 | 1.25                    | 2600                   | 85                | 2050               |

| Bearings                             | Drive end |                            | Opposite drive end |
|--------------------------------------|-----------|----------------------------|--------------------|
|                                      | Coupling  | Pulley                     |                    |
| GH280 SK-MK-LK-PK                    | 6221 C3   | NU221ECP                   | 6219 C3            |
| Electrical blower (IC06)             | Weight    | Blower motor power         |                    |
|                                      | 105 kg    | 5.5 kW (50/60 Hz)          |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight    | Heat exchanger motor power |                    |
|                                      | 370 kg    | 5.5 / 7.5 kW (50/60 Hz)    |                    |



## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

## GH315

## GH355

## GH400

## GH450

### GH280 MK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 3700<br>Field time costant (s): 1.12<br>Motor mass (kg): 1605 (IC06)<br>Moment of inertia (kg m²): 5.6 |                    |              | Armature circuit        |                        | Winding code |
|---------------------------------------|-------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|
| 220 V                                 | 400 V | 420 V | 460 V | 520 V | 600 V | RATED OUTPUT kW                                                                                                              | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |
| 290                                   | 600   |       |       |       |       | 93                                                                                                                           |                    | 78.9         | 0.659                   | 0.073                  | 8            |
|                                       |       |       |       |       |       | 188                                                                                                                          |                    | 87.6         |                         |                        |              |
|                                       |       | 640   |       |       |       | 198                                                                                                                          | 537                | 88.0         |                         |                        |              |
|                                       |       |       | 680   |       |       | 220                                                                                                                          |                    | 89.2         |                         |                        |              |
|                                       |       |       |       | 780   |       | 251                                                                                                                          |                    | 90.1         |                         |                        |              |
| 270                                   | 530   |       |       |       |       | 83                                                                                                                           |                    | 78.3         | 0.976                   | 0.083                  | 9            |
|                                       |       |       |       |       |       | 170                                                                                                                          |                    | 87.3         |                         |                        |              |
|                                       |       | 560   |       |       |       | 180                                                                                                                          | 490                | 87.8         |                         |                        |              |
|                                       |       |       | 620   |       |       | 200                                                                                                                          |                    | 88.9         |                         |                        |              |
|                                       |       |       |       | 710   |       | 228                                                                                                                          |                    | 89.8         |                         |                        |              |
| 240                                   | 490   |       |       |       | 830   | 266                                                                                                                          |                    | 90.8         | 0.829                   | 0.103                  | 10           |
|                                       |       |       |       |       |       | 72                                                                                                                           |                    | 76.3         |                         |                        |              |
|                                       |       | 520   |       |       |       | 149                                                                                                                          |                    | 86.2         |                         |                        |              |
|                                       |       |       | 570   |       |       | 158                                                                                                                          | 435                | 86.9         |                         |                        |              |
|                                       |       |       |       | 650   |       | 176                                                                                                                          |                    | 88.0         |                         |                        |              |
| 380                                   | 400   |       |       |       |       | 202                                                                                                                          |                    | 89.0         | 1.732                   | 0.157                  | 11           |
|                                       |       |       |       | 760   |       | 235                                                                                                                          |                    | 90.2         |                         |                        |              |
|                                       |       |       |       |       |       | 118                                                                                                                          |                    | 83.4         |                         |                        |              |
|                                       |       | 450   |       |       |       | 125                                                                                                                          | 355                | 84.0         |                         |                        |              |
|                                       |       |       |       | 520   |       | 140                                                                                                                          |                    | 85.4         |                         |                        |              |
| 350                                   | 370   |       |       |       | 610   | 160                                                                                                                          |                    | 86.8         | 1.387                   | 0.192                  | 12           |
|                                       |       |       |       |       |       | 188                                                                                                                          |                    | 88.3         |                         |                        |              |
|                                       |       | 410   |       |       |       | 105                                                                                                                          |                    | 81.8         |                         |                        |              |
|                                       |       |       | 470   |       |       | 112                                                                                                                          | 323                | 82.5         |                         |                        |              |
|                                       |       |       |       | 550   |       | 125                                                                                                                          |                    | 84.4         |                         |                        |              |
| 330                                   | 350   |       |       |       |       | 143                                                                                                                          |                    | 85.6         | 1.852                   | 0.203                  | 13           |
|                                       |       |       |       |       |       | 169                                                                                                                          |                    | 87.3         |                         |                        |              |
|                                       |       |       |       |       |       | 102                                                                                                                          |                    | 81.2         |                         |                        |              |
|                                       |       | 390   |       |       |       | 109                                                                                                                          | 316                | 82.0         |                         |                        |              |
|                                       |       |       | 450   |       |       | 122                                                                                                                          |                    | 84.0         |                         |                        |              |
| 290                                   | 310   |       |       |       | 520   | 140                                                                                                                          |                    | 85.2         | 2.687                   | 0.246                  | 14           |
|                                       |       |       |       |       |       | 164                                                                                                                          |                    | 86.9         |                         |                        |              |
|                                       |       |       |       |       |       | 90                                                                                                                           |                    | 79.8         |                         |                        |              |
|                                       |       | 350   |       |       |       | 96                                                                                                                           | 283                | 80.6         |                         |                        |              |
|                                       |       |       |       | 400   |       | 108                                                                                                                          |                    | 82.7         |                         |                        |              |
|                                       |       |       |       |       | 470   | 123                                                                                                                          |                    | 84.1         |                         |                        |              |
|                                       |       |       |       |       |       | 146                                                                                                                          |                    | 86.0         |                         |                        |              |

### GH280 IM1001 - IP54 - IC86W

| Size    | B    | L1   | V1   |
|---------|------|------|------|
| GH280 S | 860  | 1362 | 1258 |
| GH280 M | 910  | 1412 | 1308 |
| GH280 L | 960  | 1462 | 1358 |
| GH280 P | 1020 | 1522 | 1418 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH280 SK       | 1400            | 4.9                       | 3400                 | 1.07                    | 2600                   | 85                | 2050               |
| GH280 MK       | 1500            | 5.6                       | 3700                 | 1.12                    | 2600                   | 85                | 2050               |
| GH280 LK       | 1600            | 6.1                       | 4000                 | 1.17                    | 2600                   | 85                | 2050               |
| GH280 PK       | 1720            | 6.8                       | 4400                 | 1.25                    | 2600                   | 85                | 2050               |

| Bearings                             | Drive end |                            | Opposite drive end |
|--------------------------------------|-----------|----------------------------|--------------------|
|                                      | Coupling  | Pulley                     |                    |
| GH280 SK-MK-LK-PK                    | 6221 C3   | NU221ECP                   | 6219 C3            |
| Electrical blower (IC06)             | Weight    | Blower motor power         |                    |
|                                      | 105 kg    | 5.5 kW (50/60 Hz)          |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight    | Heat exchanger motor power |                    |
|                                      | 370 kg    | 5.5 / 7.5 kW (50/60 Hz)    |                    |



## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

## GH315

## GH355

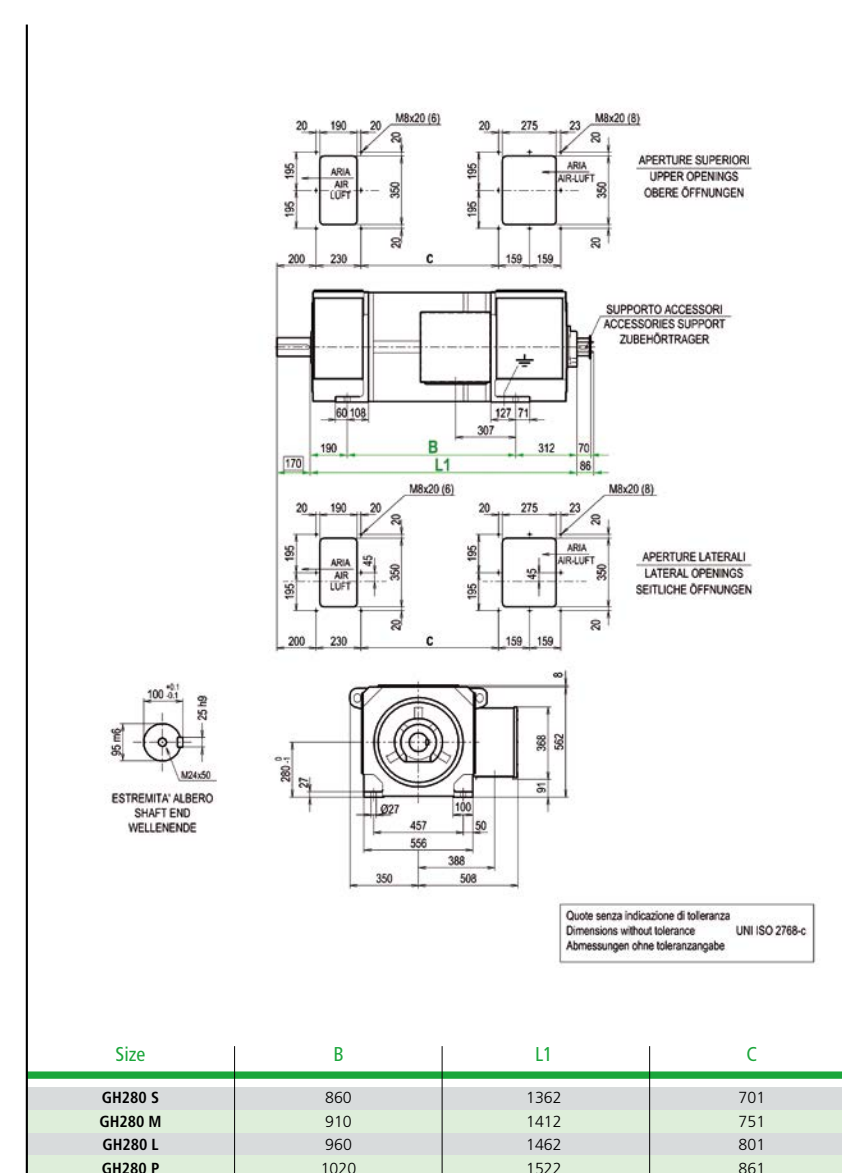
## GH400

## GH450

## GH280 MK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 3700<br>Field time constant (s): 1.12<br>Motor mass (kg): 1605 (IC06)<br>Moment of inertia (kg m²): 5.6 |                    |              | Armature circuit        | Winding code           |
|---------------------------------------|-------|-------|-------|-------|-------|-------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|
| 220 V                                 | 400 V | 420 V | 460 V | 520 V | 600 V | RATED OUTPUT kW                                                                                                               | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |
|                                       | 260   |       |       |       |       | 83                                                                                                                            |                    | 77.6         |                         |                        |
|                                       |       | 280   |       |       |       | 89                                                                                                                            | 270                | 78.6         | 2.638                   | 0.290                  |
|                                       |       |       | 310   |       |       | 100                                                                                                                           |                    | 80.8         |                         |                        |
|                                       |       |       |       | 360   |       | 115                                                                                                                           |                    | 82.4         |                         |                        |
|                                       | 240   |       |       |       |       | 75                                                                                                                            |                    | 76.8         |                         |                        |
|                                       |       | 255   |       |       |       | 80                                                                                                                            | 245                | 77.8         | 3.904                   | 0.333                  |
|                                       |       |       | 290   |       |       | 90                                                                                                                            |                    | 80.0         |                         |                        |
|                                       |       |       |       | 330   |       | 104                                                                                                                           |                    | 81.8         |                         |                        |
|                                       |       |       |       |       | 390   | 124                                                                                                                           |                    | 84.3         |                         |                        |

## GH280 IM1001 - IP44 - IC37



| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH280 SK       | 1400            | 4.9                       | 3400                 | 1.07                    | 2600                   | 85                | 2050               |
| GH280 MK       | 1500            | 5.6                       | 3700                 | 1.12                    | 2600                   | 85                | 2050               |
| GH280 LK       | 1600            | 6.1                       | 4000                 | 1.17                    | 2600                   | 85                | 2050               |
| GH280 PK       | 1720            | 6.8                       | 4400                 | 1.25                    | 2600                   | 85                | 2050               |

| Bearings                             | Drive end |                            | Opposite drive end |
|--------------------------------------|-----------|----------------------------|--------------------|
|                                      | Coupling  | Pulley                     |                    |
| GH280 SK-MK-LK-PK                    | 6221 C3   | NU221ECP                   | 6219 C3            |
| Electrical blower (IC06)             | Weight    | Blower motor power         |                    |
|                                      | 105 kg    | 5.5 kW (50/60 Hz)          |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight    | Heat exchanger motor power |                    |
|                                      | 370 kg    | 5.5 / 7.5 kW (50/60 Hz)    |                    |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

## GH315

## GH355

## GH400

## GH450

### GH280 LK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 4000<br>Field time costant (s): 1.17<br>Motor mass (kg): 1705 (IC06)<br>Moment of inertia (kg m²): 6.1 |                    |              | Armature circuit        |                        | Winding code |
|---------------------------------------|-------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|
| 220 V                                 | 400 V | 420 V | 460 V | 520 V | 600 V | RATED OUTPUT kW                                                                                                              | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |
| 590                                   |       |       |       |       |       | 208                                                                                                                          | 1080               | 87.6         | 0.174                   | 0.019                  | 1            |
|                                       | 1150  |       |       |       |       | 405                                                                                                                          | 1100               | 92.1         |                         |                        |              |
|                                       |       | 1210  |       |       |       | 426                                                                                                                          | 1100               | 92.3         |                         |                        |              |
|                                       |       |       | 1350  |       |       | 470                                                                                                                          | 1100               | 92.9         |                         |                        |              |
|                                       |       |       |       | 1550  |       | 512                                                                                                                          | 1060               | 93.4         |                         |                        |              |
| 540                                   |       |       |       |       |       | 191                                                                                                                          | 990                | 87.6         | 0.258                   | 0.022                  | 2            |
|                                       | 1040  |       |       |       |       | 361                                                                                                                          | 980                | 92.3         |                         |                        |              |
|                                       |       | 1100  |       |       |       | 380                                                                                                                          | 980                | 92.5         |                         |                        |              |
|                                       |       | 1210  |       |       | 420   | 980                                                                                                                          | 93.0               |              |                         |                        |              |
|                                       |       |       |       | 1400  |       | 466                                                                                                                          | 960                | 93.2         |                         |                        |              |
|                                       |       |       |       | 1630  | 540   | 960                                                                                                                          | 93.8               |              |                         |                        |              |
| 490                                   |       |       |       |       |       | 167                                                                                                                          | 885                | 86.0         | 0.230                   | 0.027                  | 3            |
|                                       | 950   |       |       |       |       | 320                                                                                                                          | 875                | 91.5         |                         |                        |              |
|                                       |       | 1000  |       |       |       | 337                                                                                                                          | 875                | 91.7         |                         |                        |              |
|                                       |       | 1100  |       |       | 372   | 875                                                                                                                          | 92.4               |              |                         |                        |              |
|                                       |       |       |       | 1250  |       | 424                                                                                                                          | 875                | 93.0         |                         |                        |              |
|                                       |       |       |       | 1480  | 482   | 860                                                                                                                          | 93.5               |              |                         |                        |              |
| 430                                   |       |       |       |       |       | 145                                                                                                                          |                    | 84.5         | 0.315                   | 0.035                  | 4            |
|                                       | 840   |       |       |       |       | 284                                                                                                                          |                    | 90.6         |                         |                        |              |
|                                       |       | 890   |       |       |       | 300                                                                                                                          | 785                | 90.8         |                         |                        |              |
|                                       |       | 980   |       |       | 331   |                                                                                                                              | 91.7               |              |                         |                        |              |
|                                       |       |       |       | 1110  |       | 377                                                                                                                          |                    | 92.2         |                         |                        |              |
|                                       |       |       |       | 1290  | 438   |                                                                                                                              | 92.9               |              |                         |                        |              |
| 390                                   |       |       |       |       |       | 131                                                                                                                          |                    | 83.5         | 0.463                   | 0.041                  | 5            |
|                                       | 760   |       |       |       |       | 257                                                                                                                          |                    | 90.0         |                         |                        |              |
|                                       |       | 800   |       |       |       | 271                                                                                                                          | 715                | 90.3         |                         |                        |              |
|                                       |       | 880   |       |       | 300   |                                                                                                                              | 91.0               |              |                         |                        |              |
|                                       |       |       |       | 1010  |       | 341                                                                                                                          |                    | 91.8         |                         |                        |              |
|                                       |       |       |       | 1170  | 396   |                                                                                                                              | 92.6               |              |                         |                        |              |
| 350                                   |       |       |       |       |       | 117                                                                                                                          |                    | 81.9         | 0.375                   | 0.050                  | 6            |
|                                       | 700   |       |       |       |       | 232                                                                                                                          |                    | 89.1         |                         |                        |              |
|                                       |       | 740   |       |       |       | 245                                                                                                                          | 650                | 89.5         |                         |                        |              |
|                                       |       | 810   |       |       | 270   |                                                                                                                              | 90.5               |              |                         |                        |              |
|                                       |       |       |       | 920   |       | 308                                                                                                                          |                    | 91.1         |                         |                        |              |
|                                       |       |       |       | 1070  | 360   |                                                                                                                              | 92.2               |              |                         |                        |              |
| 300                                   |       |       |       |       |       | 100                                                                                                                          |                    | 79.8         | 0.707                   | 0.065                  | 7            |
|                                       | 600   |       |       |       |       | 200                                                                                                                          |                    | 88.1         |                         |                        |              |
|                                       |       | 635   |       |       |       | 211                                                                                                                          | 570                | 88.5         |                         |                        |              |
|                                       |       | 700   |       |       | 235   |                                                                                                                              | 89.5               |              |                         |                        |              |
|                                       |       |       |       | 800   |       | 267                                                                                                                          |                    | 90.3         |                         |                        |              |
|                                       |       |       |       | 940   | 311   |                                                                                                                              | 91.3               |              |                         |                        |              |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH280 SK       | 1400            | 4.9                       | 3400                 | 1.07                    | 2600                   | 85                | 2050               |
| GH280 MK       | 1500            | 5.6                       | 3700                 | 1.12                    | 2600                   | 85                | 2050               |
| GH280 LK       | 1600            | 6.1                       | 4000                 | 1.17                    | 2600                   | 85                | 2050               |
| GH280 PK       | 1720            | 6.8                       | 4400                 | 1.25                    | 2600                   | 85                | 2050               |

### GH280 IM1001 - IP23 - IC06

|         |      |      |
|---------|------|------|
|         |      |      |
| Size    | B    | L1   |
| GH280 S | 860  | 1362 |
| GH280 M | 910  | 1412 |
| GH280 L | 960  | 1462 |
| GH280 P | 1020 | 1522 |

| Bearings                             | Drive end |                            | Opposite drive end |
|--------------------------------------|-----------|----------------------------|--------------------|
|                                      | Coupling  | Pulley                     |                    |
| GH280 SK-MK-LK-PK                    | 6221 C3   | NU221ECP                   | 6219 C3            |
| Electrical blower (IC06)             | Weight    | Blower motor power         |                    |
|                                      | 105 kg    | 5.5 kW (50/60 Hz)          |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight    | Heat exchanger motor power |                    |
|                                      | 370 kg    | 5.5 / 7.5 kW (50/60 Hz)    |                    |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

## GH315

## GH355

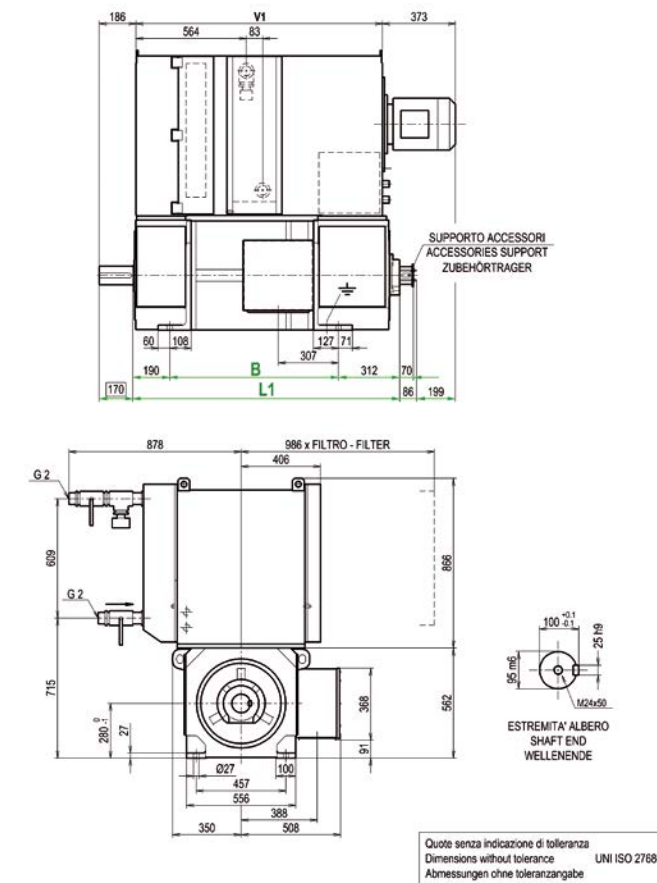
## GH400

## GH450

### GH280 LK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 4000<br>Field time costant (s): 1.17<br>Motor mass (kg): 1705 (IC06)<br>Moment of inertia (kg m²): 6.1 |                    |              | Armature circuit        |                        | Winding code |      |      |      |      |       |       |       |    |
|---------------------------------------|-------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|------|------|------|------|-------|-------|-------|----|
| 220 V                                 | 400 V | 420 V | 460 V | 520 V | 600 V | RATED OUTPUT kW                                                                                                              | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |      |      |      |      |       |       |       |    |
| 260                                   |       |       |       |       |       | 92                                                                                                                           |                    | 77.8         | 0.729                   | 0.077                  | 8            |      |      |      |      |       |       |       |    |
|                                       | 530   |       |       |       |       | 187                                                                                                                          |                    | 87.0         |                         |                        |              |      |      |      |      |       |       |       |    |
|                                       |       | 560   |       |       |       |                                                                                                                              | 197                | 537          |                         |                        |              | 87.5 |      |      |      |       |       |       |    |
|                                       |       |       | 610   |       |       |                                                                                                                              |                    | 219          |                         |                        |              |      | 88.6 |      |      |       |       |       |    |
|                                       |       |       |       | 700   |       |                                                                                                                              |                    |              |                         |                        |              | 250  |      | 89.5 |      |       |       |       |    |
| 240                                   |       |       |       |       |       | 83                                                                                                                           |                    | 77.0         | 1.080                   | 0.088                  | 9            |      |      |      |      |       |       |       |    |
|                                       | 480   |       |       |       |       | 170                                                                                                                          |                    | 86.7         |                         |                        |              |      |      |      |      |       |       |       |    |
|                                       |       | 510   |       |       |       |                                                                                                                              | 180                | 490          |                         |                        |              | 87.2 |      |      |      |       |       |       |    |
|                                       |       |       | 560   |       |       |                                                                                                                              |                    | 199          |                         |                        |              |      | 88.3 |      |      |       |       |       |    |
|                                       |       |       |       | 650   |       |                                                                                                                              |                    |              |                         |                        |              | 228  |      | 89.4 |      |       |       |       |    |
|                                       |       |       |       |       | 750   |                                                                                                                              |                    |              |                         |                        |              |      | 266  |      | 90.5 |       |       |       |    |
|                                       |       |       |       |       | 210   |                                                                                                                              |                    |              |                         |                        |              |      | 72   |      | 75.0 | 0.916 | 0.109 | 10    |    |
| 440                                   |       |       |       |       |       | 149                                                                                                                          |                    | 85.6         |                         |                        |              |      |      |      |      |       |       |       |    |
|                                       | 470   |       |       |       |       |                                                                                                                              | 157                | 435          | 86.1                    |                        |              |      |      |      |      |       |       |       |    |
|                                       |       | 520   |       |       |       |                                                                                                                              |                    | 175          |                         | 87.4                   |              |      |      |      |      |       |       |       |    |
|                                       |       |       | 590   |       |       |                                                                                                                              |                    |              | 200                     |                        | 88.5         |      |      |      |      |       |       |       |    |
| 690                                   |       |       |       |       |       |                                                                                                                              | 234                |              | 89.8                    |                        |              |      |      |      |      |       |       |       |    |
|                                       | 340   |       |       |       |       |                                                                                                                              |                    | 117          |                         | 82.5                   |              |      |      |      |      |       |       |       |    |
|                                       |       | 360   |       |       |       |                                                                                                                              |                    | 124          | 355                     | 83.2                   |              |      |      |      |      |       |       |       |    |
| 400                                   |       |       |       |       |       |                                                                                                                              |                    | 138          |                         | 84.8                   |              |      |      |      |      |       |       |       |    |
|                                       |       |       | 460   |       |       |                                                                                                                              |                    |              | 160                     |                        | 86.3         |      |      |      |      |       |       |       |    |
| 310                                   |       |       |       |       |       | 186                                                                                                                          |                    | 87.8         | 1.917                   | 0.167                  | 11           |      |      |      |      |       |       |       |    |
|                                       | 330   |       |       |       |       |                                                                                                                              | 104                |              |                         |                        |              | 80.8 |      |      |      |       |       |       |    |
|                                       |       | 370   |       |       |       |                                                                                                                              |                    | 110          |                         |                        |              | 323  | 81.6 |      |      |       |       |       |    |
|                                       |       |       | 420   |       |       |                                                                                                                              |                    |              |                         |                        |              | 124  |      | 83.4 |      |       |       |       |    |
|                                       |       |       |       | 500   |       |                                                                                                                              |                    |              |                         |                        |              |      | 142  |      | 84.9 |       |       |       |    |
|                                       |       |       |       |       | 168   |                                                                                                                              |                    |              |                         |                        |              |      |      | 86.7 |      |       |       |       |    |
|                                       |       |       |       |       | 300   |                                                                                                                              |                    |              |                         |                        |              |      |      | 101  |      | 80.2  | 2.048 | 0.216 | 13 |
|                                       |       |       |       |       |       | 320                                                                                                                          |                    |              |                         |                        |              |      |      |      | 108  | 316   |       |       |    |
| 350                                   |       |       |       |       |       |                                                                                                                              |                    | 120          |                         | 83.0                   |              |      |      |      |      |       |       |       |    |
|                                       | 400   |       |       |       |       |                                                                                                                              |                    |              | 138                     |                        | 84.4         |      |      |      |      |       |       |       |    |
|                                       |       | 470   |       |       |       |                                                                                                                              |                    |              |                         | 163                    |              | 86.3 |      |      |      |       |       |       |    |
| 260                                   |       |       |       |       |       | 89                                                                                                                           |                    | 78.8         | 2.975                   | 0.261                  | 14           |      |      |      |      |       |       |       |    |
|                                       | 280   |       |       |       |       |                                                                                                                              | 95                 | 283          |                         |                        |              | 79.7 |      |      |      |       |       |       |    |
|                                       |       | 320   |       |       |       |                                                                                                                              |                    | 106          |                         |                        |              |      | 81.7 |      |      |       |       |       |    |
|                                       |       |       | 360   |       |       |                                                                                                                              |                    |              |                         |                        |              | 122  |      | 83.3 |      |       |       |       |    |
|                                       |       |       |       | 430   |       |                                                                                                                              |                    |              |                         |                        |              |      | 144  |      | 85.3 |       |       |       |    |

### GH280 IM1001 - IP54 - IC86W



| Size    | B    | L1   | V1   |
|---------|------|------|------|
| GH280 S | 860  | 1362 | 1258 |
| GH280 M | 910  | 1412 | 1308 |
| GH280 L | 960  | 1462 | 1358 |
| GH280 P | 1020 | 1522 | 1418 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH280 SK       | 1400            | 4.9                       | 3400                 | 1.07                    | 2600                   | 85                | 2050               |
| GH280 MK       | 1500            | 5.6                       | 3700                 | 1.12                    | 2600                   | 85                | 2050               |
| GH280 LK       | 1600            | 6.1                       | 4000                 | 1.17                    | 2600                   | 85                | 2050               |
| GH280 PK       | 1720            | 6.8                       | 4400                 | 1.25                    | 2600                   | 85                | 2050               |

| Bearings                             | Drive end |                            | Opposite drive end |
|--------------------------------------|-----------|----------------------------|--------------------|
|                                      | Coupling  | Pulley                     |                    |
| GH280 SK-MK-LK-PK                    | 6221 C3   | NU221ECP                   | 6219 C3            |
| Electrical blower (IC06)             | Weight    | Blower motor power         |                    |
|                                      | 105 kg    | 5.5 kW (50/60 Hz)          |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight    | Heat exchanger motor power |                    |
|                                      | 370 kg    | 5.5 / 7.5 kW (50/60 Hz)    |                    |



## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

**GH280**

GH315

GH355

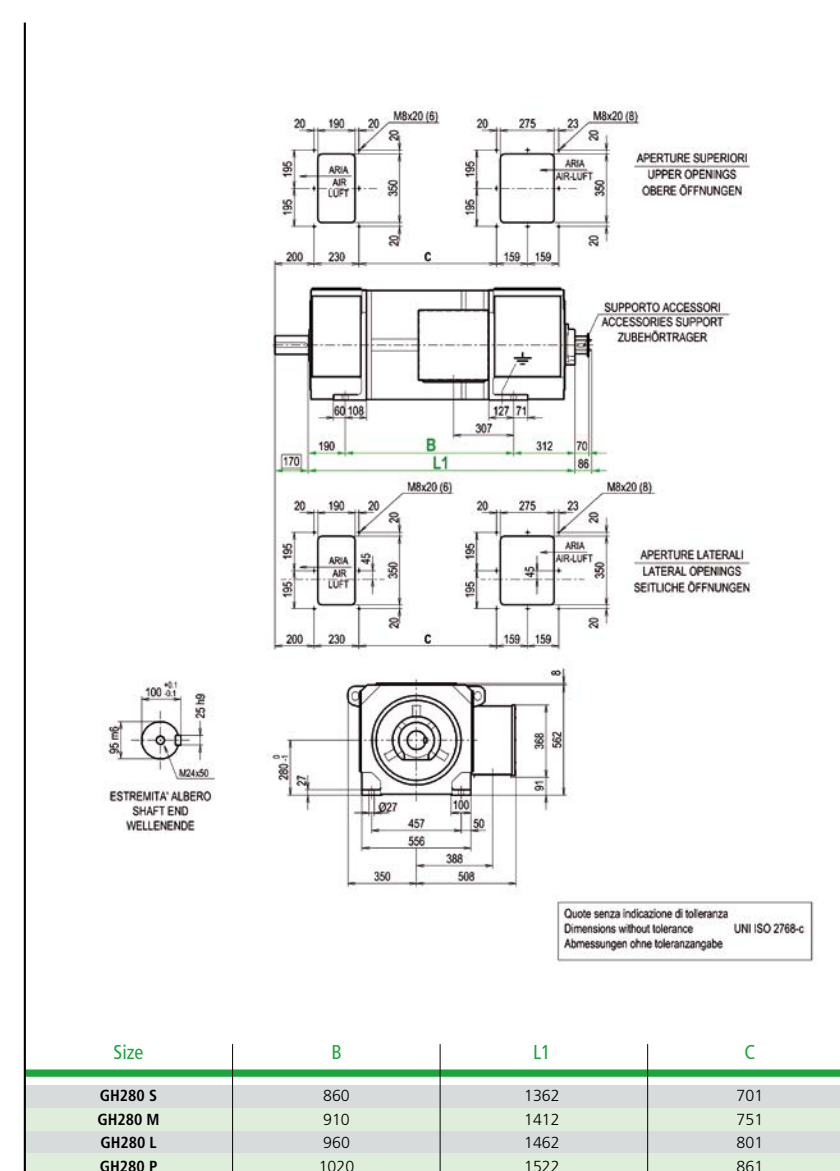
GH400

GH450

## GH280 LK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 4000<br>Field time constant (s): 1.17<br>Motor mass (kg): 1705 (IC06)<br>Moment of inertia (kg m²): 6.1 |                    |              | Armature circuit        | Winding code           |
|---------------------------------------|-------|-------|-------|-------|-------|-------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|
| 220 V                                 | 400 V | 420 V | 460 V | 520 V | 600 V | RATED OUTPUT kW                                                                                                               | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |
|                                       | 240   |       |       |       |       | 83                                                                                                                            |                    | 76.4         |                         |                        |
|                                       |       | 260   |       |       |       | 88                                                                                                                            | 270                | 77.4         | 2.918                   | 0.308                  |
|                                       |       |       | 280   |       |       | 99                                                                                                                            |                    | 79.7         |                         |                        |
|                                       |       |       |       | 320   |       | 114                                                                                                                           |                    | 81.5         |                         |                        |
|                                       |       | 230   |       |       |       | 80                                                                                                                            | 245                | 77.7         |                         |                        |
|                                       |       |       | 260   |       |       | 89                                                                                                                            |                    | 79.0         | 4.322                   | 0.353                  |
|                                       |       |       |       | 295   |       | 104                                                                                                                           |                    | 80.9         |                         |                        |
|                                       |       |       |       |       | 350   | 122                                                                                                                           |                    | 83.2         |                         |                        |

## GH280 IM1001 - IP44 - IC37



| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH280 SK       | 1400            | 4.9                       | 3400                 | 1.07                    | 2600                   | 85                | 2050               |
| GH280 MK       | 1500            | 5.6                       | 3700                 | 1.12                    | 2600                   | 85                | 2050               |
| GH280 LK       | 1600            | 6.1                       | 4000                 | 1.17                    | 2600                   | 85                | 2050               |
| GH280 PK       | 1720            | 6.8                       | 4400                 | 1.25                    | 2600                   | 85                | 2050               |

| Bearings                             | Drive end |                            | Opposite drive end |
|--------------------------------------|-----------|----------------------------|--------------------|
|                                      | Coupling  | Pulley                     |                    |
| GH280 SK-MK-LK-PK                    | 6221 C3   | NU221ECP                   | 6219 C3            |
| Electrical blower (IC06)             | Weight    | Blower motor power         |                    |
|                                      | 105 kg    | 5.5 kW (50/60 Hz)          |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight    | Heat exchanger motor power |                    |
|                                      | 370 kg    | 5.5 / 7.5 kW (50/60 Hz)    |                    |





## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

## GH315

## GH355

## GH400

## GH450

### GH280 PK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 4400<br>Field time constant (s): 1.25<br>Motor mass (kg): 1825 (IC06)<br>Moment of inertia (kg m²): 6.8 |                    |              | Armature circuit        |                        | Winding code |
|---------------------------------------|-------|-------|-------|-------|-------|-------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|
| 220 V                                 | 400 V | 420 V | 460 V | 520 V | 600 V | RATED OUTPUT kW                                                                                                               | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |
| 230                                   | 470   | 500   | 550   | 630   |       | 90                                                                                                                            | 537                | 76.5         | 0.814                   | 0.082                  | 8            |
|                                       |       |       |       |       |       | 185                                                                                                                           |                    | 86.3         |                         |                        |              |
|                                       |       |       |       |       |       | 196                                                                                                                           |                    | 86.8         |                         |                        |              |
|                                       |       |       |       |       |       | 217                                                                                                                           |                    | 88.0         |                         |                        |              |
|                                       |       |       |       |       |       | 249                                                                                                                           |                    | 89.1         |                         |                        |              |
| 210                                   | 420   | 450   | 500   | 570   | 670   | 81                                                                                                                            | 487                | 75.7         | 1.206                   | 0.094                  | 9            |
|                                       |       |       |       |       |       | 167                                                                                                                           |                    | 86.0         |                         |                        |              |
|                                       |       |       |       |       |       | 177                                                                                                                           |                    | 86.5         |                         |                        |              |
|                                       |       |       |       |       |       | 197                                                                                                                           |                    | 87.8         |                         |                        |              |
|                                       |       |       |       |       |       | 225                                                                                                                           |                    | 88.8         |                         |                        |              |
|                                       |       |       |       |       |       | 263                                                                                                                           |                    | 90.1         | 1.021                   | 0.116                  | 10           |
|                                       |       |       |       |       |       | 147                                                                                                                           | 84.7               |              |                         |                        |              |
|                                       |       |       |       |       |       | 155                                                                                                                           | 85.3               |              |                         |                        |              |
|                                       |       |       |       |       |       | 174                                                                                                                           | 86.8               |              |                         |                        |              |
|                                       |       |       |       |       |       | 198                                                                                                                           | 87.9               |              |                         |                        |              |
|                                       |       |       |       |       |       | 232                                                                                                                           |                    | 89.3         | 2.140                   | 0.178                  | 11           |
|                                       |       |       |       |       |       | 115                                                                                                                           | 81.5               |              |                         |                        |              |
|                                       |       |       |       |       |       | 122                                                                                                                           | 82.2               |              |                         |                        |              |
|                                       |       |       |       |       |       | 137                                                                                                                           | 84.1               |              |                         |                        |              |
|                                       |       |       |       |       |       | 157                                                                                                                           | 85.4               |              |                         |                        |              |
|                                       |       |       |       |       |       | 185                                                                                                                           |                    | 87.1         | 1.708                   | 0.217                  | 12           |
|                                       |       |       |       |       |       | 103                                                                                                                           | 79.7               |              |                         |                        |              |
|                                       |       |       |       |       |       | 110                                                                                                                           | 80.6               |              |                         |                        |              |
|                                       |       |       |       |       |       | 122                                                                                                                           | 82.5               |              |                         |                        |              |
|                                       |       |       |       |       |       | 141                                                                                                                           | 84.0               |              |                         |                        |              |
|                                       |       |       |       |       |       | 166                                                                                                                           |                    | 85.9         | 2.285                   | 0.230                  | 13           |
|                                       |       |       |       |       |       | 99                                                                                                                            | 79.1               |              |                         |                        |              |
|                                       |       |       |       |       |       | 106                                                                                                                           | 80.0               |              |                         |                        |              |
|                                       |       |       |       |       |       | 119                                                                                                                           | 82.0               |              |                         |                        |              |
|                                       |       |       |       |       |       | 137                                                                                                                           | 83.5               |              |                         |                        |              |
|                                       |       |       |       |       |       | 162                                                                                                                           |                    | 85.5         | 3.321                   | 0.279                  | 14           |
|                                       |       |       |       |       |       | 87                                                                                                                            | 77.5               |              |                         |                        |              |
|                                       |       |       |       |       |       | 93                                                                                                                            | 78.4               |              |                         |                        |              |
|                                       |       |       |       |       |       | 105                                                                                                                           | 80.6               |              |                         |                        |              |
|                                       |       |       |       |       |       | 121                                                                                                                           | 82.3               |              |                         |                        |              |
|                                       |       |       |       |       |       | 143                                                                                                                           |                    | 84.5         |                         |                        |              |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH280 SK       | 1400            | 4.9                       | 3400                 | 1.07                    | 2600                   | 85                | 2050               |
| GH280 MK       | 1500            | 5.6                       | 3700                 | 1.12                    | 2600                   | 85                | 2050               |
| GH280 LK       | 1600            | 6.1                       | 4000                 | 1.17                    | 2600                   | 85                | 2050               |
| GH280 PK       | 1720            | 6.8                       | 4400                 | 1.25                    | 2600                   | 85                | 2050               |

### GH280 IM1001 - IP54 - IC86W

| <p>SUPPORTO ACCESSORI<br/>ACCESSORIES SUPPORT<br/>ZUBEHÖRTRÄGER</p> <p>ESTREMITÀ ALBERO<br/>SHAFT END<br/>WELLENENDE</p> <p>Quote senza indicazione di tolleranza<br/>Dimensions without tolerance<br/>Abmessungen ohne Toleranzangabe</p> |      |      |      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|------|
| Size                                                                                                                                                                                                                                       | B    | L1   | V1   |
| GH280 S                                                                                                                                                                                                                                    | 860  | 1362 | 1258 |
| GH280 M                                                                                                                                                                                                                                    | 910  | 1412 | 1308 |
| GH280 L                                                                                                                                                                                                                                    | 960  | 1462 | 1358 |
| GH280 P                                                                                                                                                                                                                                    | 1020 | 1522 | 1418 |

| Bearings                             | Drive end |                            | Opposite drive end |
|--------------------------------------|-----------|----------------------------|--------------------|
|                                      | Coupling  | Pulley                     |                    |
| GH280 SK-MK-LK-PK                    | 6221 C3   | NU221ECP                   | 6219 C3            |
| Electrical blower (IC06)             | Weight    | Blower motor power         |                    |
|                                      | 105 kg    | 5.5 kW (50/60 Hz)          |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight    | Heat exchanger motor power |                    |
|                                      | 370 kg    | 5.5 / 7.5 kW (50/60 Hz)    |                    |



## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

## GH315

## GH355

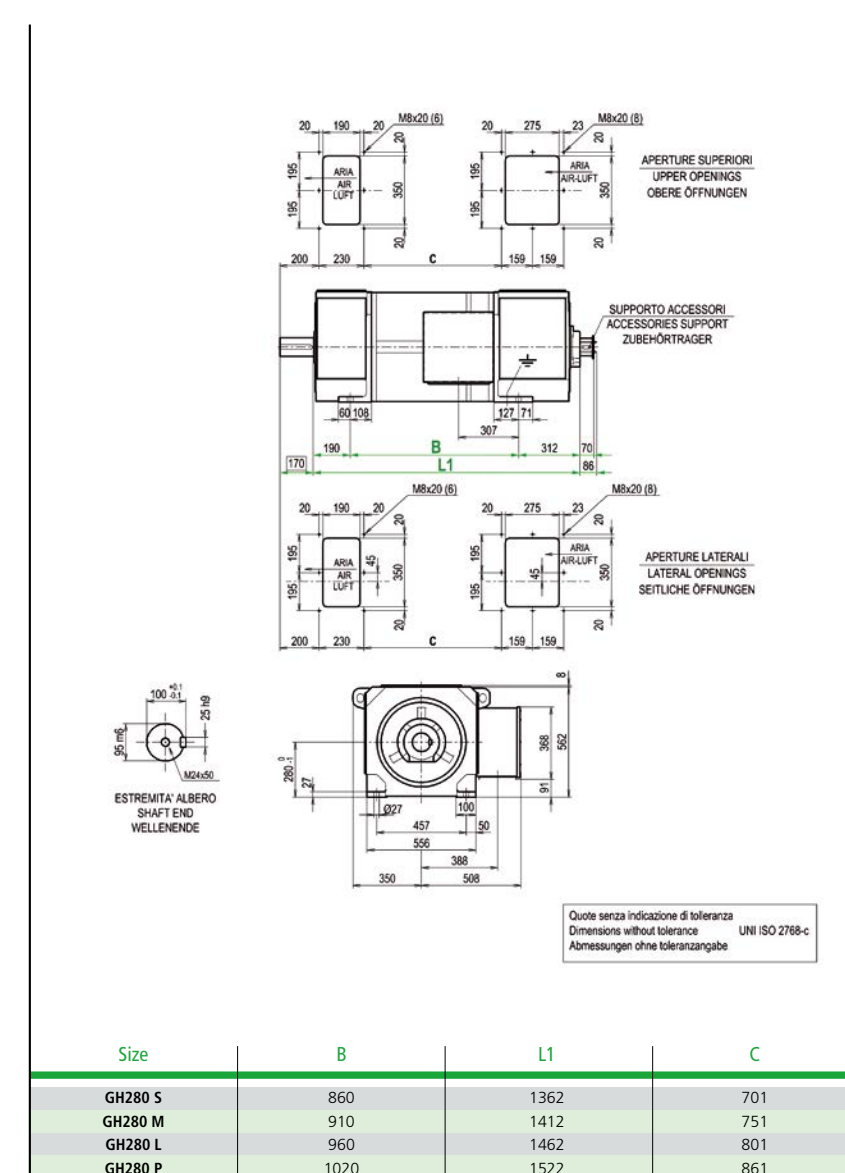
## GH400

## GH450

### GH280 PK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 4400<br>Field time constant (s): 1.25<br>Motor mass (kg): 1825 (IC06)<br>Moment of inertia (kg m²): 6.8 |                    |              | Armature circuit        |                        | Winding code |
|---------------------------------------|-------|-------|-------|-------|-------|-------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|
| 220 V                                 | 400 V | 420 V | 460 V | 520 V | 600 V | RATED OUTPUT kW                                                                                                               | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |
|                                       | 200   |       |       |       |       | 81                                                                                                                            |                    | 74.9         |                         |                        |              |
|                                       |       | 220   |       |       |       | 86                                                                                                                            | 270                | 76.0         | 3.254                   | 0.329                  | 15           |
|                                       |       |       | 250   |       |       | 97                                                                                                                            |                    | 78.5         |                         |                        |              |
|                                       |       |       |       | 280   |       | 113                                                                                                                           |                    | 80.3         |                         |                        |              |
|                                       |       | 200   |       |       |       | 78                                                                                                                            | 244                | 75.7         | 4.824                   | 0.377                  | 16           |
|                                       |       |       | 220   |       |       | 88                                                                                                                            |                    | 78.0         |                         |                        |              |
|                                       |       |       |       | 260   |       | 101                                                                                                                           |                    | 79.7         |                         |                        |              |
|                                       |       |       |       |       | 310   | 120                                                                                                                           |                    | 82.2         |                         |                        |              |

### GH280 IM1001 - IP44 - IC37



| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH280 SK       | 1400            | 4.9                       | 3400                 | 1.07                    | 2600                   | 85                | 2050               |
| GH280 MK       | 1500            | 5.6                       | 3700                 | 1.12                    | 2600                   | 85                | 2050               |
| GH280 LK       | 1600            | 6.1                       | 4000                 | 1.17                    | 2600                   | 85                | 2050               |
| GH280 PK       | 1720            | 6.8                       | 4400                 | 1.25                    | 2600                   | 85                | 2050               |

| Bearings                             | Drive end |                            | Opposite drive end |
|--------------------------------------|-----------|----------------------------|--------------------|
|                                      | Coupling  | Pulley                     |                    |
| GH280 SK-MK-LK-PK                    | 6221 C3   | NU221ECP                   | 6219 C3            |
| Electrical blower (IC06)             | Weight    | Blower motor power         |                    |
|                                      | 105 kg    | 5.5 kW (50/60 Hz)          |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight    | Heat exchanger motor power |                    |
|                                      | 370 kg    | 5.5 / 7.5 kW (50/60 Hz)    |                    |



DC MOTORS

|      |                                                          |
|------|----------------------------------------------------------|
| 1.   | GENERAL INFORMATION                                      |
| 2.   | STANDARDS AND QUALITY                                    |
| 2.1  | Reference standards                                      |
| 2.2  | CE Marking                                               |
| 2.3  | Quality system                                           |
| 3.   | IDENTIFICATION CODE                                      |
| 4.   | DESIGN FEATURES                                          |
| 4.1  | Rotor                                                    |
| 4.2  | Commutator                                               |
| 4.3  | Stator                                                   |
| 4.4  | Brushholder yoke                                         |
| 4.5  | Bearings                                                 |
| 4.6  | Belted and radial thrust application                     |
| 5.   | CONSTRUCTION FEATURES                                    |
| 5.1  | Coupling and shaft extension                             |
| 5.2  | Mounting arrangement                                     |
| 5.3  | Degree of protection                                     |
| 5.4  | Cooling method                                           |
| 5.5  | Maximum allowable speeds                                 |
| 5.6  | Noise level                                              |
| 5.7  | Vibrations and balancing                                 |
| 5.8  | Conduit box                                              |
| 5.9  | Groud terminals                                          |
| 5.10 | Cross-section drawing                                    |
| 6.   | MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS |
| 6.1  | Ratings                                                  |
| 6.2  | Supply voltage                                           |
| 6.3  | Maximum loads                                            |
| 6.4  | Current rate-of-rise                                     |
| 6.5  | Speed regulation                                         |
| 6.6  | Duty with large speed regulation                         |
| 6.7  | Excitation                                               |
| 6.8  | Maximum current at locked rotor                          |
| 6.9  | Accessories                                              |
| 7.   | TESTS                                                    |
| 8.   | OUTPUT POWER DIAGRAMS                                    |
| HOME |                                                          |

GH225

GH250

GH280

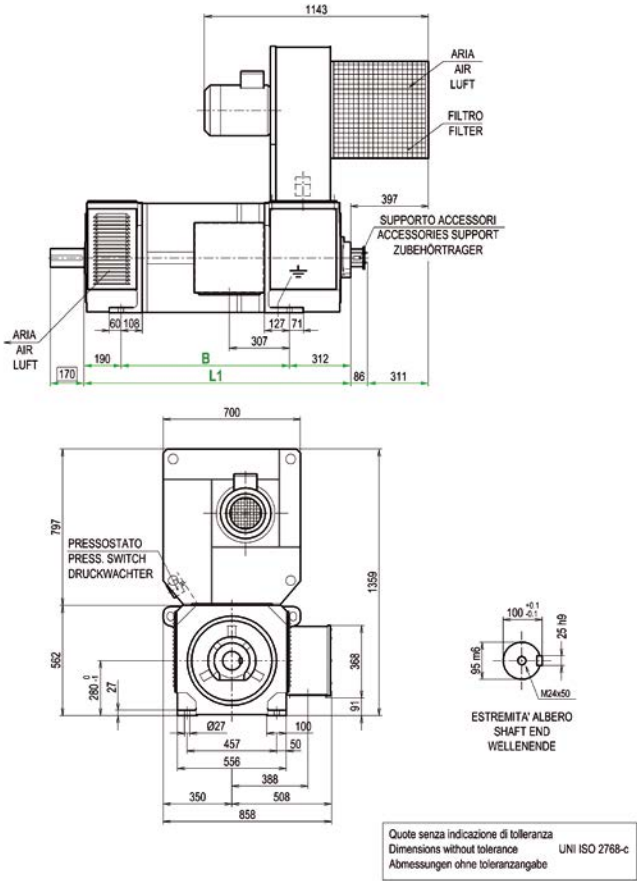
GH315

GH355

GH400

GH450

GH280 IM1001 - IP23 - IC06



| Size    | B    | L1   |
|---------|------|------|
| GH280 S | 860  | 1362 |
| GH280 M | 910  | 1412 |
| GH280 L | 960  | 1462 |
| GH280 P | 1020 | 1522 |

| TECHNICAL DATA |                    |                                 |                            |                               |                              |                      |                       |
|----------------|--------------------|---------------------------------|----------------------------|-------------------------------|------------------------------|----------------------|-----------------------|
| Size           | Motor mass<br>(kg) | Moment of<br>inertia<br>(kg m²) | Excitation<br>power<br>(W) | Field time<br>constant<br>(s) | Max. mech.<br>speed<br>(rpm) | Ventilation data     |                       |
|                |                    |                                 |                            |                               |                              | Air flow<br>(m³/min) | Pressure<br>drop (Pa) |
| GH280 SK       | 1400               | 4.9                             | 3400                       | 1.07                          | 2600                         | 85                   | 2050                  |
| GH280 MK       | 1500               | 5.6                             | 3700                       | 1.12                          | 2600                         | 85                   | 2050                  |
| GH280 LK       | 1600               | 6.1                             | 4000                       | 1.17                          | 2600                         | 85                   | 2050                  |
| GH280 PK       | 1720               | 6.8                             | 4400                       | 1.25                          | 2600                         | 85                   | 2050                  |

| Bearings                             | Drive end |                            | Opposite drive end |
|--------------------------------------|-----------|----------------------------|--------------------|
|                                      | Coupling  | Pulley                     |                    |
| GH280 SK-MK-LK-PK                    | 6221 C3   | NU221ECP                   | 6219 C3            |
| Electrical blower (IC06)             | Weight    | Blower motor power         |                    |
|                                      | 105 kg    | 5.5 kW (50/60 Hz)          |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight    | Heat exchanger motor power |                    |
|                                      | 370 kg    | 5.5 / 7.5 kW (50/60 Hz)    |                    |





DC MOTORS

|      |                                                          |
|------|----------------------------------------------------------|
| 1.   | GENERAL INFORMATION                                      |
| 2.   | STANDARDS AND QUALITY                                    |
| 2.1  | Reference standards                                      |
| 2.2  | CE Marking                                               |
| 2.3  | Quality system                                           |
| 3.   | IDENTIFICATION CODE                                      |
| 4.   | DESIGN FEATURES                                          |
| 4.1  | Rotor                                                    |
| 4.2  | Commutator                                               |
| 4.3  | Stator                                                   |
| 4.4  | Brushholder yoke                                         |
| 4.5  | Bearings                                                 |
| 4.6  | Belted and radial thrust application                     |
| 5.   | CONSTRUCTION FEATURES                                    |
| 5.1  | Coupling and shaft extension                             |
| 5.2  | Mounting arrangement                                     |
| 5.3  | Degree of protection                                     |
| 5.4  | Cooling method                                           |
| 5.5  | Maximum allowable speeds                                 |
| 5.6  | Noise level                                              |
| 5.7  | Vibrations and balancing                                 |
| 5.8  | Conduit box                                              |
| 5.9  | Groud terminals                                          |
| 5.10 | Cross-section drawing                                    |
| 6.   | MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS |
| 6.1  | Ratings                                                  |
| 6.2  | Supply voltage                                           |
| 6.3  | Maximum loads                                            |
| 6.4  | Current rate-of-rise                                     |
| 6.5  | Speed regulation                                         |
| 6.6  | Duty with large speed regulation                         |
| 6.7  | Excitation                                               |
| 6.8  | Maximum current at locked rotor                          |
| 6.9  | Accessories                                              |
| 7.   | TESTS                                                    |
| 8.   | OUTPUT POWER DIAGRAMS                                    |
| HOME |                                                          |

GH225

GH250

GH280

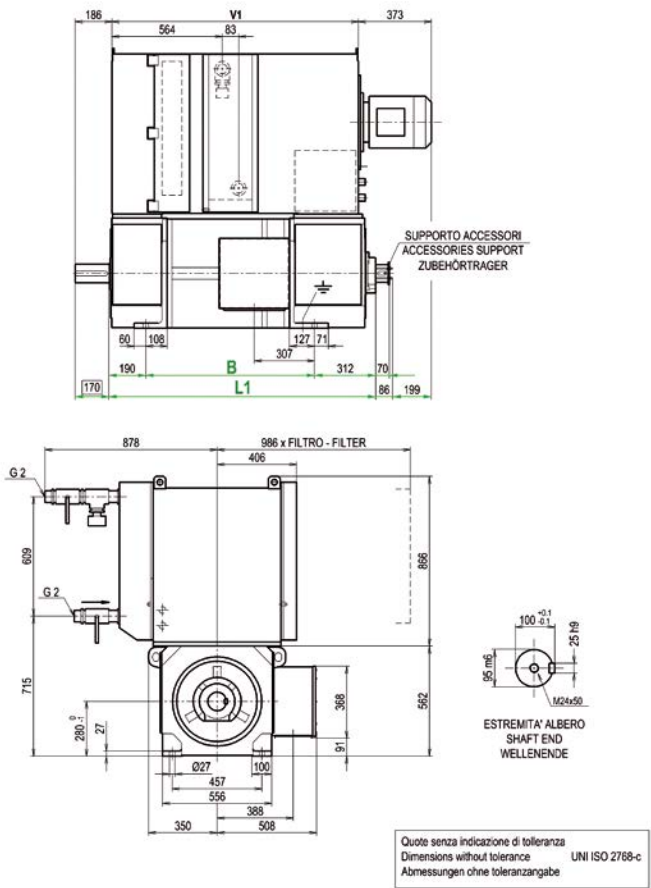
GH315

GH355

GH400

GH450

GH280 IM1001 - IP54 - IC86W



| Size    | B    | L1   | V1   |
|---------|------|------|------|
| GH280 S | 860  | 1362 | 1258 |
| GH280 M | 910  | 1412 | 1308 |
| GH280 L | 960  | 1462 | 1358 |
| GH280 P | 1020 | 1522 | 1418 |

| TECHNICAL DATA |                    |                                 |                            |                               |                              |                      |                       |                                      |           |                            |                    |
|----------------|--------------------|---------------------------------|----------------------------|-------------------------------|------------------------------|----------------------|-----------------------|--------------------------------------|-----------|----------------------------|--------------------|
| Size           | Motor mass<br>(kg) | Moment of<br>inertia<br>(kg m²) | Excitation<br>power<br>(W) | Field time<br>constant<br>(s) | Max. mech.<br>speed<br>(rpm) | Ventilation data     |                       | Bearings                             | Drive end |                            | Opposite drive end |
|                |                    |                                 |                            |                               |                              | Air flow<br>(m³/min) | Pressure<br>drop (Pa) |                                      | Coupling  | Pulley                     |                    |
| GH280 SK       | 1400               | 4.9                             | 3400                       | 1.07                          | 2600                         | 85                   | 2050                  | GH280 SK-MK-LK-PK                    | 6221 C3   | NU221ECP                   | 6219 C3            |
| GH280 MK       | 1500               | 5.6                             | 3700                       | 1.12                          | 2600                         | 85                   | 2050                  |                                      |           |                            |                    |
| GH280 LK       | 1600               | 6.1                             | 4000                       | 1.17                          | 2600                         | 85                   | 2050                  |                                      |           |                            |                    |
| GH280 PK       | 1720               | 6.8                             | 4400                       | 1.25                          | 2600                         | 85                   | 2050                  |                                      |           |                            |                    |
|                |                    |                                 |                            |                               |                              |                      |                       | Electrical blower (IC06)             | Weight    | Blower motor power         |                    |
|                |                    |                                 |                            |                               |                              |                      |                       |                                      | 105 kg    | 5.5 kW (50/60 Hz)          |                    |
|                |                    |                                 |                            |                               |                              |                      |                       | Air-To-Water Heat Exchanger (IC 86W) | Weight    | Heat exchanger motor power |                    |
|                |                    |                                 |                            |                               |                              |                      |                       |                                      | 370 kg    | 5.5 / 7.5 kW (50/60 Hz)    |                    |



# GH450

[HOME](#)

| Size    | B    | L1   | C   |
|---------|------|------|-----|
| GH280 S | 860  | 1362 | 701 |
| GH280 M | 910  | 1412 | 751 |
| GH280 L | 960  | 1462 | 801 |
| GH280 P | 1020 | 1522 | 861 |

| TECHNICAL DATA |                    |                              |                         |                            |                           |                      |                    |
|----------------|--------------------|------------------------------|-------------------------|----------------------------|---------------------------|----------------------|--------------------|
| Size           | Motor mass<br>(kg) | Moment of inertia<br>(kg m²) | Excitation power<br>(W) | Field time constant<br>(s) | Max. mech. speed<br>(rpm) | Ventilation data     |                    |
|                |                    |                              |                         |                            |                           | Air flow<br>(m³/min) | Pressure drop (Pa) |
| GH280 SK       | 1400               | 4.9                          | 3400                    | 1.07                       | 2600                      | 85                   | 2050               |
| GH280 MK       | 1500               | 5.6                          | 3700                    | 1.12                       | 2600                      | 85                   | 2050               |
| GH280 LK       | 1600               | 6.1                          | 4000                    | 1.17                       | 2600                      | 85                   | 2050               |
| GH280 PK       | 1720               | 6.8                          | 4400                    | 1.25                       | 2600                      | 85                   | 2050               |

| Bearings                             | Drive end |                            | Opposite drive end |
|--------------------------------------|-----------|----------------------------|--------------------|
|                                      | Coupling  | Pulley                     |                    |
| GH280 SK-MK-LK-PK                    | 6221 C3   | NU221ECP                   | 6219 C3            |
| Electrical blower (IC06)             | Weight    | Blower motor power         |                    |
|                                      | 105 kg    | 5.5 kW (50/60 Hz)          |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight    | Heat exchanger motor power |                    |
|                                      | 370 kg    | 5.5 / 7.5 kW (50/60 Hz)    |                    |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

**GH315**

GH355

GH400

GH450

#### GH315

Derating for field weakening operation

GH315 K

Performance of compensated motors

GH315 MK

GH315 LK

GH315 PK

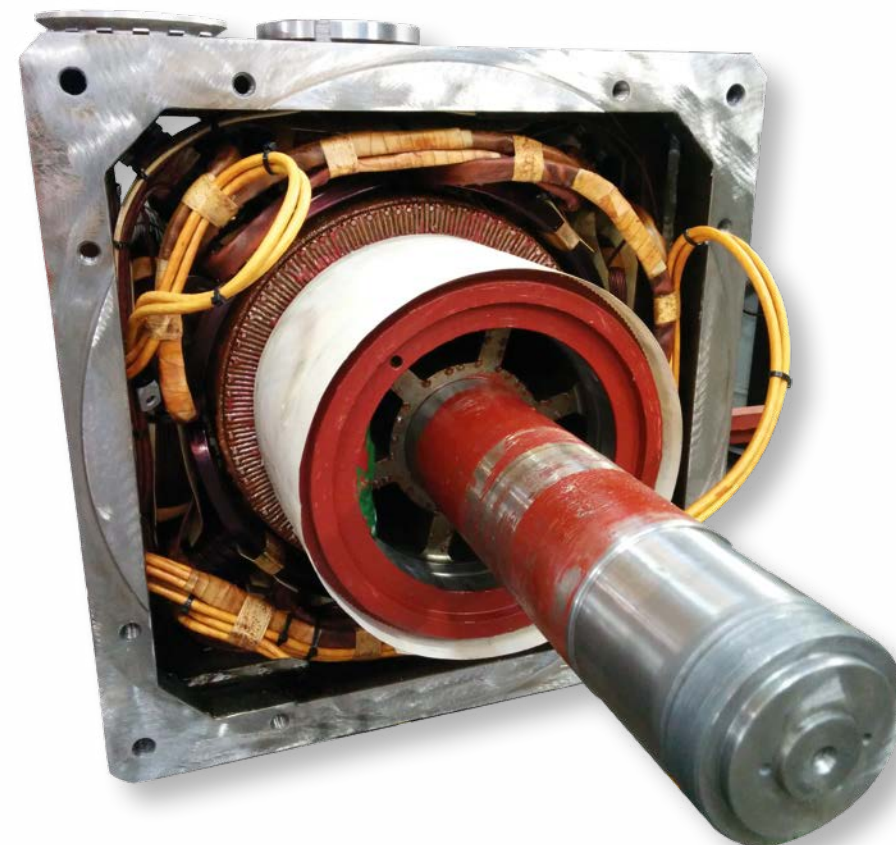
GH315 XK

Overall dimensions

GH315 IM1001-IP23-IC06

GH315 IM1001-IP54-IC86W

GH315 IM1001-IP44-IC37



Performance Tables are displayed on multiple pages, alongside the data tables are repeated alternately overall dimensions (IC06- IC86W-IC37)



## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

HOME

GH225

GH250

GH280

**GH315**

GH355

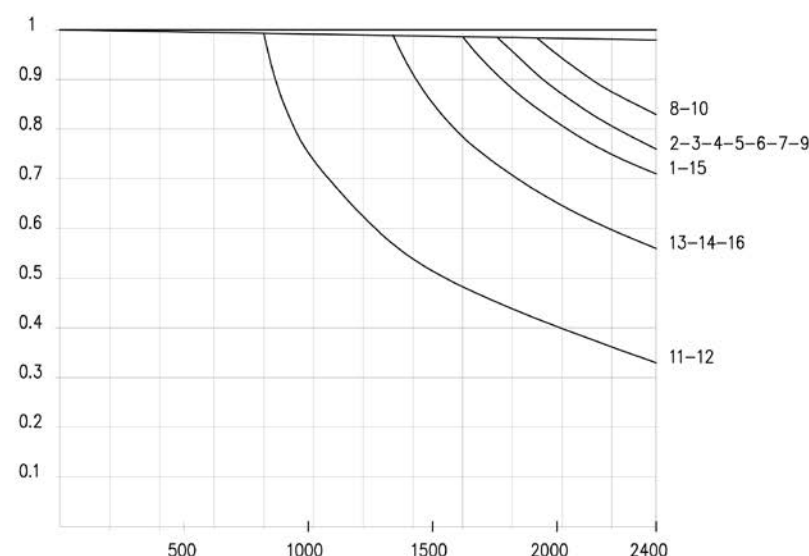
GH400

GH450

#### GH 315 K

**RIDUZIONE DELLA POTENZA IN DISECCITAZIONE  
DERATING FOR FIELD WEAKENING OPERATION  
LEISTUNGSREDUZIERUNG BEI FELDSWÄCHUNG**

GH 315 K (compensata - compensated - kompensiert)  
[ 180% sovraccarico - overload - überlast ]



P = K x P tabella potenza disponibile

Allowable power output P = K x P table

Verfügbare Leistung P = K x P table

per/for/für

GH 315 MK  
GH 315 LK  
GH 315 PK  
GH 315 XK

K = K x 1.40  
K = K x 1.25  
K = K x 1.12  
K = K x 1.0

Per K ≥ 1 niente declassamento

For K ≥ 1 no derating

Für K ≥ 1 keine Leistungsreduzierung

#### TECHNICAL DATA

| Size     | Motor mass<br>(kg) | Moment of<br>inertia<br>(kg m²) | Excitation<br>power<br>(W) | Field time<br>constant<br>(s) | Max. mech.<br>speed<br>(rpm) | Ventilation data     |                       |
|----------|--------------------|---------------------------------|----------------------------|-------------------------------|------------------------------|----------------------|-----------------------|
|          |                    |                                 |                            |                               |                              | Air flow<br>(m³/min) | Pressure<br>drop (Pa) |
| GH315 MK | 2100               | 9.2                             | 4200                       | 0.85                          | 2400                         | 120                  | 1800                  |
| GH315 LK | 2200               | 10.4                            | 4500                       | 0.92                          | 2400                         | 120                  | 1800                  |
| GH315 PK | 2340               | 11.5                            | 4900                       | 1.01                          | 2400                         | 120                  | 1800                  |
| GH315 XK | 2500               | 12.7                            | 5300                       | 1.10                          | 2300                         | 120                  | 1800                  |

| Bearings                             | Drive end |                                 | Opposite drive end |
|--------------------------------------|-----------|---------------------------------|--------------------|
|                                      | Coupling  | Pulley                          |                    |
| B3 – B5                              | 6222 C3   | NU222ECJ C3                     | 6221 C3            |
| V1 – V3                              | 6222 C3   | NU222ECJ C3                     | 7221 BE            |
| Electrical blower (IC06)             | Weight    | Blower motor power              |                    |
|                                      | 105 kg    | 5.5 kW (50 Hz) - 7.5 kW (60 Hz) |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight    | Heat exchanger motor power      |                    |
|                                      | 450 kg    | 7.5 kW (50/60 Hz)               |                    |



GO TO MENU



## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

**GH315**

GH355

GH400

GH450

## GH315 MK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 4200<br>Field time constant (s): 0.85<br>Motor mass (kg): 2205 (IC06)<br>Moment of inertia (kg m²): 9.2 |                    |              | Armature circuit        |                        | Winding code |
|---------------------------------------|-------|-------|-------|-------|-------|-------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|
| 400 V                                 | 420 V | 460 V | 520 V | 600 V | 700 V | RATED OUTPUT kW                                                                                                               | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |
| 1380                                  |       |       |       |       |       | 483                                                                                                                           |                    | 93.3         |                         |                        |              |
|                                       | 1450  |       |       |       |       | 509                                                                                                                           | 1295               | 93.6         | 0.077                   | 0.012                  | 1            |
|                                       |       | 1600  |       |       |       | 559                                                                                                                           |                    | 93.8         |                         |                        |              |
| 1180                                  |       |       |       |       |       | 436                                                                                                                           |                    | 93.3         |                         |                        |              |
|                                       | 1240  |       |       |       |       | 460                                                                                                                           |                    | 93.5         | 0.126                   | 0.014                  | 2            |
|                                       |       | 1360  |       |       |       | 505                                                                                                                           | 1171               | 93.8         |                         |                        |              |
|                                       |       |       | 1550  |       |       | 573                                                                                                                           |                    | 94.1         |                         |                        |              |
| 1070                                  |       |       |       |       |       | 392                                                                                                                           |                    | 92.6         |                         |                        |              |
|                                       | 1130  |       |       |       |       | 413                                                                                                                           |                    | 92.8         |                         |                        |              |
|                                       |       | 1240  |       |       |       | 455                                                                                                                           | 1060               | 93.3         | 0.159                   | 0.018                  | 3            |
|                                       |       |       | 1410  |       |       | 517                                                                                                                           |                    | 93.8         |                         |                        |              |
|                                       |       |       |       | 1630  |       | 599                                                                                                                           |                    | 94.2         |                         |                        |              |
| 970                                   |       |       |       |       |       | 341                                                                                                                           |                    | 91.7         |                         |                        |              |
|                                       | 1020  |       |       |       |       | 360                                                                                                                           |                    | 92.1         |                         |                        |              |
|                                       |       | 1130  |       |       |       | 396                                                                                                                           | 931                | 92.5         | 0.145                   | 0.024                  | 4            |
|                                       |       |       | 1290  |       |       | 450                                                                                                                           |                    | 93.1         |                         |                        |              |
|                                       |       |       |       | 1490  |       | 523                                                                                                                           |                    | 93.7         |                         |                        |              |
|                                       |       |       |       |       | 1750  | 613                                                                                                                           |                    | 94.2         |                         |                        |              |
| 900                                   |       |       |       |       |       | 320                                                                                                                           |                    | 91.4         |                         |                        |              |
|                                       | 950   |       |       |       |       | 337                                                                                                                           |                    | 91.6         |                         |                        |              |
|                                       |       | 1050  |       |       |       | 372                                                                                                                           | 876                | 92.3         | 0.187                   | 0.027                  | 5            |
|                                       |       |       | 1190  |       |       | 423                                                                                                                           |                    | 92.9         |                         |                        |              |
|                                       |       |       |       | 1380  |       | 492                                                                                                                           |                    | 93.5         |                         |                        |              |
|                                       |       |       |       |       | 1620  | 577                                                                                                                           |                    | 94.1         |                         |                        |              |
| 830                                   |       |       |       |       |       | 289                                                                                                                           |                    | 91.1         |                         |                        |              |
|                                       | 870   |       |       |       |       | 305                                                                                                                           |                    | 91.7         |                         |                        |              |
|                                       |       | 960   |       |       |       | 336                                                                                                                           | 793                | 92.1         | 0.234                   | 0.031                  | 6            |
|                                       |       |       | 1100  |       |       | 382                                                                                                                           |                    | 92.7         |                         |                        |              |
|                                       |       |       |       | 1280  |       | 444                                                                                                                           |                    | 93.3         |                         |                        |              |
|                                       |       |       |       |       | 1510  | 521                                                                                                                           |                    | 94.0         |                         |                        |              |
| 780                                   |       |       |       |       |       | 265                                                                                                                           |                    | 90.9         |                         |                        |              |
|                                       | 820   |       |       |       |       | 280                                                                                                                           |                    | 91.2         |                         |                        |              |
|                                       |       | 900   |       |       |       | 309                                                                                                                           | 731                | 91.9         | 0.300                   | 0.035                  | 7            |
|                                       |       |       | 1030  |       |       | 351                                                                                                                           |                    | 92.5         |                         |                        |              |
|                                       |       |       |       | 1200  |       | 409                                                                                                                           |                    | 93.2         |                         |                        |              |
|                                       |       |       |       |       | 1410  | 480                                                                                                                           |                    | 93.8         |                         |                        |              |
| 660                                   |       |       |       |       |       | 235                                                                                                                           |                    | 89.4         |                         |                        |              |
|                                       | 700   |       |       |       |       | 248                                                                                                                           |                    | 89.9         |                         |                        |              |
|                                       |       | 770   |       |       |       | 274                                                                                                                           | 657                | 90.7         | 0.312                   | 0.049                  | 8            |
|                                       |       |       | 880   |       |       | 312                                                                                                                           |                    | 91.4         |                         |                        |              |
|                                       |       |       |       | 1020  |       | 364                                                                                                                           |                    | 92.2         |                         |                        |              |
|                                       |       |       |       |       | 1200  | 428                                                                                                                           |                    | 93.0         |                         |                        |              |

## GH315 IM1001 - IP23 - IC06

| Size    | B    | L1   |
|---------|------|------|
| GH315 M | 960  | 1640 |
| GH315 L | 1010 | 1690 |
| GH315 P | 1070 | 1750 |
| GH315 X | 1140 | 1820 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH315 MK       | 2100            | 9.2                       | 4200                 | 0.85                    | 2400                   | 120               | 1800               |
| GH315 LK       | 2200            | 10.4                      | 4500                 | 0.92                    | 2400                   | 120               | 1800               |
| GH315 PK       | 2340            | 11.5                      | 4900                 | 1.01                    | 2400                   | 120               | 1800               |
| GH315 XK       | 2500            | 12.7                      | 5300                 | 1.10                    | 2300                   | 120               | 1800               |

| Bearings                             | Drive end |                                 | Opposite drive end |
|--------------------------------------|-----------|---------------------------------|--------------------|
|                                      | Coupling  | Pulley                          |                    |
| B3 – B5                              | 6222 C3   | NU222ECJ C3                     | 6221 C3            |
| V1 – V3                              | 6222 C3   | NU222ECJ C3                     | 7221 BE            |
| Electrical blower (IC06)             | Weight    | Blower motor power              |                    |
|                                      | 105 kg    | 5.5 kW (50 Hz) - 7.5 kW (60 Hz) |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight    | Heat exchanger motor power      |                    |
|                                      | 450 kg    | 7.5 kW (50/60 Hz)               |                    |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

## GH315

## GH355

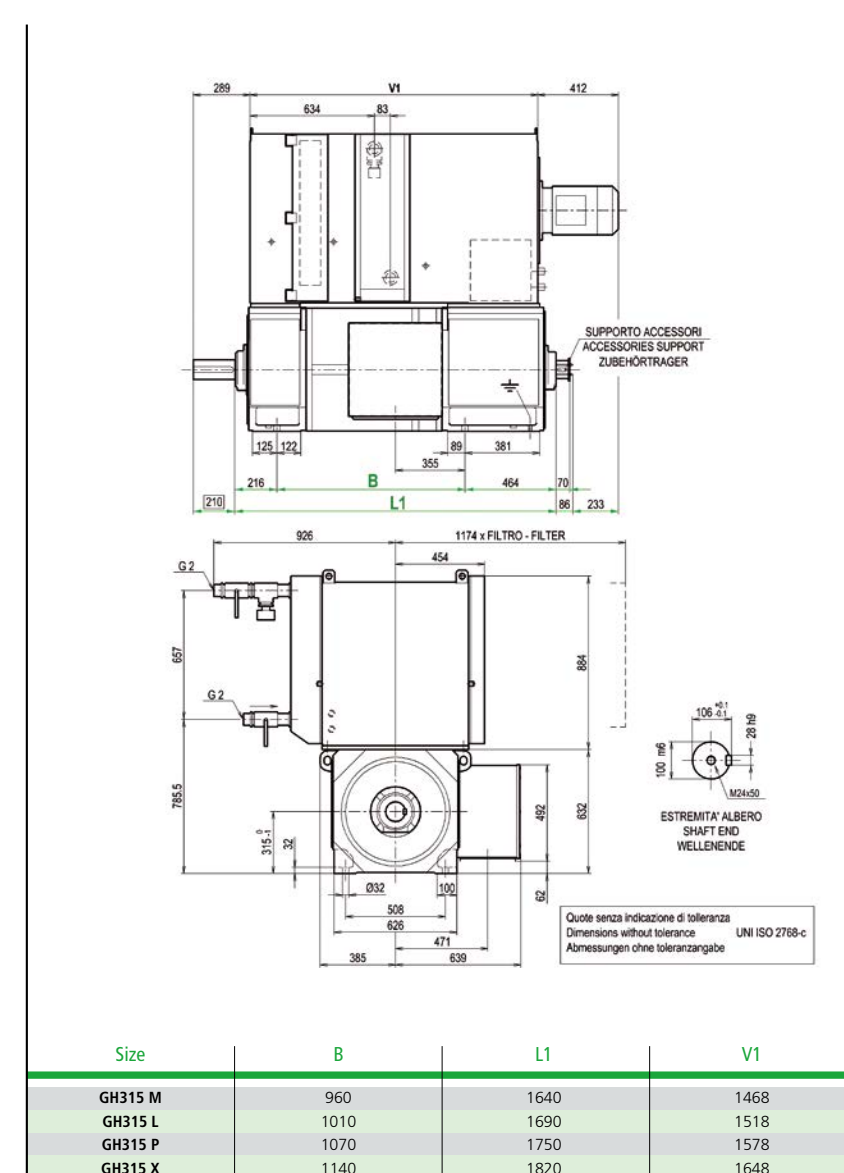
## GH400

## GH450

### GH315 MK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 4200<br>Field time costant (s): 0.85<br>Motor mass (kg): 2205 (IC06)<br>Moment of inertia (kg m²): 9.2 |                    |              | Armature circuit        |                        | Winding code |      |      |      |
|---------------------------------------|-------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|------|------|------|
| 400 V                                 | 420 V | 460 V | 520 V | 600 V | 700 V | RATED OUTPUT kW                                                                                                              | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |      |      |      |
| 610                                   |       |       |       |       |       | 210                                                                                                                          |                    | 88.5         | 0.382                   | 0.060                  | 9            |      |      |      |
|                                       | 640   |       |       |       |       | 222                                                                                                                          |                    | 89.0         |                         |                        |              |      |      |      |
|                                       |       | 700   |       |       |       |                                                                                                                              | 245                | 594          |                         |                        |              | 89.7 |      |      |
|                                       |       |       | 810   |       |       |                                                                                                                              |                    | 280          |                         |                        |              |      | 90.7 |      |
|                                       |       |       |       | 940   |       |                                                                                                                              |                    |              |                         |                        |              | 327  |      | 91.6 |
|                                       |       |       |       |       | 1110  |                                                                                                                              |                    |              |                         |                        |              |      | 385  |      |
| 560                                   |       |       |       |       |       | 200                                                                                                                          |                    | 88.2         | 0.443                   | 0.065                  | 10           |      |      |      |
|                                       | 590   |       |       |       |       | 211                                                                                                                          |                    | 88.8         |                         |                        |              |      |      |      |
|                                       |       | 650   |       |       |       |                                                                                                                              | 234                | 568          |                         |                        |              | 89.6 |      |      |
|                                       |       |       | 750   |       |       |                                                                                                                              |                    | 267          |                         |                        |              |      | 90.5 |      |
|                                       |       |       |       | 870   |       |                                                                                                                              |                    |              |                         |                        |              | 311  |      | 91.5 |
|                                       |       |       |       |       | 1030  |                                                                                                                              |                    |              |                         |                        |              |      | 367  |      |
| 500                                   |       |       |       |       |       | 186                                                                                                                          |                    | 88.0         | 0.645                   | 0.071                  | 11           |      |      |      |
|                                       | 530   |       |       |       |       | 197                                                                                                                          |                    | 88.5         |                         |                        |              |      |      |      |
|                                       |       | 580   |       |       |       |                                                                                                                              | 218                | 530          |                         |                        |              | 89.4 |      |      |
|                                       |       |       | 660   |       |       |                                                                                                                              |                    | 249          |                         |                        |              |      | 90.3 |      |
|                                       |       |       |       | 770   |       |                                                                                                                              |                    |              |                         |                        |              | 290  |      | 91.4 |
|                                       |       |       |       |       |       |                                                                                                                              |                    |              |                         |                        |              |      | 166  |      |
| 480                                   |       |       |       |       | 176   |                                                                                                                              | 88.2               |              |                         |                        |              |      |      |      |
|                                       | 530   |       |       |       |       | 194                                                                                                                          | 475                | 88.8         |                         |                        |              |      |      |      |
|                                       |       | 610   |       |       |       |                                                                                                                              | 222                |              | 90.0                    |                        |              |      |      |      |
|                                       |       |       | 710   |       |       |                                                                                                                              |                    | 260          |                         | 91.1                   |              |      |      |      |
|                                       |       |       |       | 840   |       |                                                                                                                              |                    |              | 306                     |                        | 92.1         |      |      |      |
| 410                                   |       |       |       |       |       | 148                                                                                                                          |                    | 85.5         | 0.728                   | 0.109                  | 13           |      |      |      |
|                                       | 430   |       |       |       |       | 157                                                                                                                          |                    | 86.1         |                         |                        |              |      |      |      |
|                                       |       | 480   |       |       |       |                                                                                                                              | 174                | 434          |                         |                        |              | 87.2 |      |      |
|                                       |       |       | 560   |       |       |                                                                                                                              |                    | 199          |                         |                        |              |      | 88.5 |      |
|                                       |       |       |       | 650   |       |                                                                                                                              |                    |              |                         |                        |              | 233  |      | 89.8 |
|                                       |       |       |       |       | 770   |                                                                                                                              |                    |              |                         |                        |              |      | 276  |      |
| 350                                   |       |       |       |       |       | 116                                                                                                                          |                    | 82.9         | 0.854                   | 0.165                  | 14           |      |      |      |
|                                       | 370   |       |       |       |       | 123                                                                                                                          |                    | 83.7         |                         |                        |              |      |      |      |
|                                       |       | 410   |       |       |       |                                                                                                                              | 137                | 350          |                         |                        |              | 85.1 |      |      |
|                                       |       |       | 470   |       |       |                                                                                                                              |                    | 157          |                         |                        |              |      | 86.5 |      |
|                                       |       |       |       | 560   |       |                                                                                                                              |                    |              |                         |                        |              | 185  |      | 88.0 |
|                                       |       |       |       |       | 660   |                                                                                                                              |                    |              |                         |                        |              |      | 219  |      |

### GH315 IM1001 - IP54 - IC86W



| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH315 MK       | 2100            | 9.2                       | 4200                 | 0.85                    | 2400                   | 120               | 1800               |
| GH315 LK       | 2200            | 10.4                      | 4500                 | 0.92                    | 2400                   | 120               | 1800               |
| GH315 PK       | 2340            | 11.5                      | 4900                 | 1.01                    | 2400                   | 120               | 1800               |
| GH315 XK       | 2500            | 12.7                      | 5300                 | 1.10                    | 2300                   | 120               | 1800               |

| Bearings                             | Drive end |                                 | Opposite drive end |
|--------------------------------------|-----------|---------------------------------|--------------------|
|                                      | Coupling  | Pulley                          |                    |
| B3 - B5                              | 6222 C3   | NU222ECJ C3                     | 6221 C3            |
| V1 - V3                              | 6222 C3   | NU222ECJ C3                     | 7221 BE            |
| Electrical blower (IC06)             | Weight    | Blower motor power              |                    |
|                                      | 105 kg    | 5.5 kW (50 Hz) - 7.5 kW (60 Hz) |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight    | Heat exchanger motor power      |                    |
|                                      | 450 kg    | 7.5 kW (50/60 Hz)               |                    |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

**GH315**

GH355

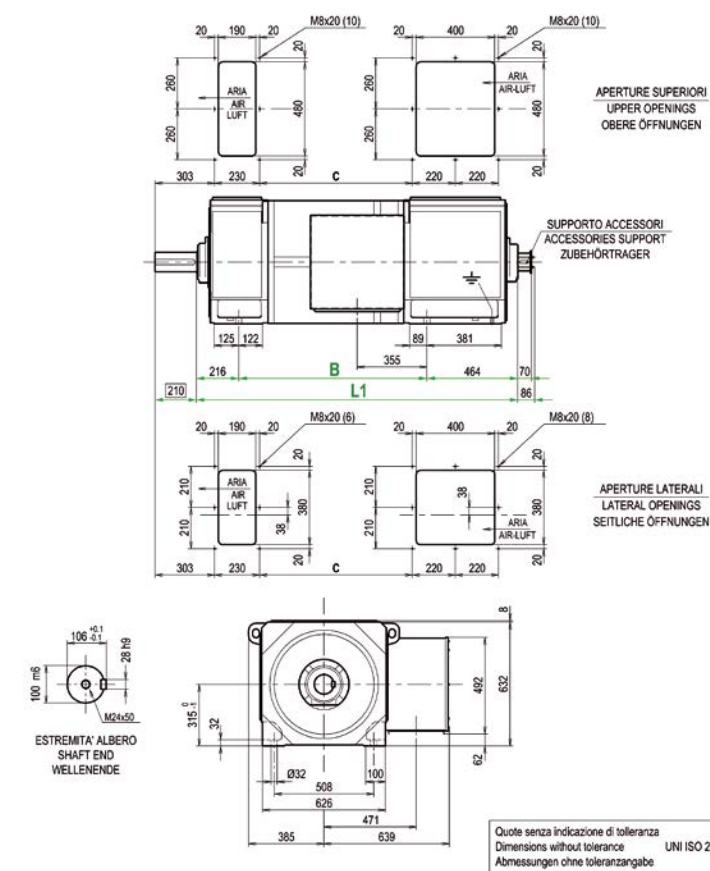
GH400

GH450

## GH315 MK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 4200<br>Field time constant (s): 0.85<br>Motor mass (kg): 2205 (IC06)<br>Moment of inertia (kg m²): 9.2 |                    |              | Armature circuit        |                        | Winding code |
|---------------------------------------|-------|-------|-------|-------|-------|-------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|
| 400 V                                 | 420 V | 460 V | 520 V | 600 V | 700 V | RATED OUTPUT kW                                                                                                               | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |
| 300                                   | 320   |       |       |       |       | 105                                                                                                                           |                    | 81.3         | 1.231                   | 0.196                  | 15           |
|                                       |       |       |       |       |       | 112                                                                                                                           |                    | 82.1         |                         |                        |              |
|                                       |       | 350   |       |       |       | 125                                                                                                                           | 325                | 83.6         |                         |                        |              |
|                                       |       |       | 400   |       |       | 144                                                                                                                           |                    | 85.3         |                         |                        |              |
|                                       |       |       | 470   |       | 169   |                                                                                                                               | 87.0               |              |                         |                        |              |
| 270                                   | 280   |       |       |       | 560   | 201                                                                                                                           |                    | 88.6         | 1.605                   | 0.224                  | 16           |
|                                       |       |       |       |       |       | 93                                                                                                                            |                    | 81.1         |                         |                        |              |
|                                       |       |       |       |       |       | 99                                                                                                                            |                    | 81.8         |                         |                        |              |
|                                       |       | 330   |       |       |       | 111                                                                                                                           | 288                | 83.8         |                         |                        |              |
|                                       |       |       | 370   |       |       | 127                                                                                                                           |                    | 85.1         |                         |                        |              |
|                                       |       |       | 440   |       | 150   |                                                                                                                               | 86.9               |              |                         |                        |              |
|                                       |       |       |       | 520   | 178   |                                                                                                                               | 88.5               |              |                         |                        |              |

## GH315 IM1001 - IP44 - IC37



| Size    | B    | L1   | C   |
|---------|------|------|-----|
| GH315 M | 960  | 1640 | 779 |
| GH315 L | 1010 | 1690 | 829 |
| GH315 P | 1070 | 1750 | 889 |
| GH315 X | 1140 | 1820 | 959 |

| TECHNICAL DATA |                 |                                        |                      |                         |                        |                                |                    |
|----------------|-----------------|----------------------------------------|----------------------|-------------------------|------------------------|--------------------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m <sup>2</sup> ) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data               |                    |
|                |                 |                                        |                      |                         |                        | Air flow (m <sup>3</sup> /min) | Pressure drop (Pa) |
| GH315 MK       | 2100            | 9.2                                    | 4200                 | 0.85                    | 2400                   | 120                            | 1800               |
| GH315 LK       | 2200            | 10.4                                   | 4500                 | 0.92                    | 2400                   | 120                            | 1800               |
| GH315 PK       | 2340            | 11.5                                   | 4900                 | 1.01                    | 2400                   | 120                            | 1800               |
| GH315 XK       | 2500            | 12.7                                   | 5300                 | 1.10                    | 2300                   | 120                            | 1800               |

| Bearings                             | Drive end |                                 | Opposite drive end |
|--------------------------------------|-----------|---------------------------------|--------------------|
|                                      | Coupling  | Pulley                          |                    |
| B3 – B5                              | 6222 C3   | NU222ECJ C3                     | 6221 C3            |
| V1 – V3                              | 6222 C3   | NU222ECJ C3                     | 7221 BE            |
| Electrical blower (IC06)             | Weight    | Blower motor power              |                    |
|                                      | 105 kg    | 5.5 kW (50 Hz) - 7.5 kW (60 Hz) |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight    | Heat exchanger motor power      |                    |
|                                      | 450 kg    | 7.5 kW (50/60 Hz)               |                    |



## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

**GH315**

GH355

GH400

GH450

## GH315 LK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 4500<br>Field time costant (s): 0.92<br>Motor mass (kg): 2305 (IC06)<br>Moment of inertia (kg m²): 10.4 |                    |              | Armature circuit        |                        | Winding code |
|---------------------------------------|-------|-------|-------|-------|-------|-------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|
| 400 V                                 | 420 V | 460 V | 520 V | 600 V | 700 V | RATED OUTPUT kW                                                                                                               | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |
| 1230                                  |       |       |       |       |       | 482                                                                                                                           |                    | 93.3         |                         |                        |              |
|                                       | 1300  |       |       |       |       | 508                                                                                                                           | 1295               | 93.4         | 0.084                   | 0.013                  | 1            |
|                                       |       | 1420  |       |       |       | 558                                                                                                                           |                    | 93.7         |                         |                        |              |
| 1050                                  |       |       |       |       |       | 435                                                                                                                           |                    | 92.9         |                         |                        |              |
|                                       | 1100  |       |       |       |       | 458                                                                                                                           |                    | 93.1         |                         |                        |              |
|                                       |       | 1210  |       |       |       | 504                                                                                                                           | 1171               | 93.6         | 0.138                   | 0.015                  | 2            |
|                                       |       |       | 1380  |       |       | 572                                                                                                                           |                    | 94.0         |                         |                        |              |
| 950                                   |       |       |       |       |       | 391                                                                                                                           |                    | 92.4         |                         |                        |              |
|                                       | 1000  |       |       |       |       | 413                                                                                                                           |                    | 92.8         |                         |                        |              |
|                                       |       | 1110  |       |       |       | 455                                                                                                                           | 1060               | 93.3         | 0.176                   | 0.019                  | 3            |
|                                       |       |       | 1260  |       |       | 516                                                                                                                           |                    | 93.6         |                         |                        |              |
|                                       |       |       |       | 1460  |       | 598                                                                                                                           |                    | 94.1         |                         |                        |              |
| 870                                   |       |       |       |       |       | 340                                                                                                                           |                    | 91.4         |                         |                        |              |
|                                       | 920   |       |       |       |       | 358                                                                                                                           |                    | 91.6         |                         |                        |              |
|                                       |       | 1000  |       |       |       | 395                                                                                                                           | 931                | 92.2         | 0.159                   | 0.026                  | 4            |
|                                       |       |       | 1150  |       |       | 449                                                                                                                           |                    | 92.9         |                         |                        |              |
|                                       |       |       |       | 1330  |       | 522                                                                                                                           |                    | 93.5         |                         |                        |              |
|                                       |       |       |       |       | 1570  | 613                                                                                                                           |                    | 94.1         |                         |                        |              |
| 800                                   |       |       |       |       |       | 319                                                                                                                           |                    | 91.1         |                         |                        |              |
|                                       | 840   |       |       |       |       | 336                                                                                                                           |                    | 91.3         |                         |                        |              |
|                                       |       | 930   |       |       |       | 370                                                                                                                           | 876                | 91.8         | 0.205                   | 0.029                  | 5            |
|                                       |       |       | 1060  |       |       | 422                                                                                                                           |                    | 92.7         |                         |                        |              |
|                                       |       |       |       | 1230  |       | 491                                                                                                                           |                    | 93.4         |                         |                        |              |
|                                       |       |       |       |       | 1450  | 576                                                                                                                           |                    | 94.0         |                         |                        |              |
| 740                                   |       |       |       |       |       | 288                                                                                                                           |                    | 90.8         |                         |                        |              |
|                                       | 780   |       |       |       |       | 303                                                                                                                           |                    | 91.0         |                         |                        |              |
|                                       |       | 860   |       |       |       | 334                                                                                                                           | 793                | 91.6         | 0.257                   | 0.033                  | 6            |
|                                       |       |       | 980   |       |       | 381                                                                                                                           |                    | 92.4         |                         |                        |              |
|                                       |       |       |       | 1140  |       | 443                                                                                                                           |                    | 93.1         |                         |                        |              |
|                                       |       |       |       |       | 1350  | 520                                                                                                                           |                    | 93.8         |                         |                        |              |
| 690                                   |       |       |       |       |       | 264                                                                                                                           |                    | 90.5         |                         |                        |              |
|                                       | 730   |       |       |       |       | 279                                                                                                                           |                    | 90.9         |                         |                        |              |
|                                       |       | 810   |       |       |       | 308                                                                                                                           | 731                | 91.6         | 0.331                   | 0.038                  | 7            |
|                                       |       |       | 920   |       |       | 350                                                                                                                           |                    | 92.2         |                         |                        |              |
|                                       |       |       |       | 1070  |       | 408                                                                                                                           |                    | 93.0         |                         |                        |              |
|                                       |       |       |       |       | 1260  | 479                                                                                                                           |                    | 93.6         |                         |                        |              |
| 590                                   |       |       |       |       |       | 233                                                                                                                           |                    | 88.9         |                         |                        |              |
|                                       | 620   |       |       |       |       | 247                                                                                                                           |                    | 89.5         |                         |                        |              |
|                                       |       | 680   |       |       |       | 273                                                                                                                           | 657                | 90.3         | 0.343                   | 0.052                  | 8            |
|                                       |       |       | 780   |       |       | 311                                                                                                                           |                    | 91.0         |                         |                        |              |
|                                       |       |       |       | 910   |       | 362                                                                                                                           |                    | 92.0         |                         |                        |              |
|                                       |       |       |       |       | 1070  | 427                                                                                                                           |                    | 92.8         |                         |                        |              |

## GH315 IM1001 - IP23 - IC06

|         |      |      |                                                                                                                                         |  |  |
|---------|------|------|-----------------------------------------------------------------------------------------------------------------------------------------|--|--|
|         |      |      | <p>Quote senza indicazione di tolleranza<br/>Dimensions without tolerance<br/>Abmessungen ohne Toleranzangabe</p> <p>UNI ISO 2768-c</p> |  |  |
| Size    | B    | L1   |                                                                                                                                         |  |  |
| GH315 M | 960  | 1640 |                                                                                                                                         |  |  |
| GH315 L | 1010 | 1690 |                                                                                                                                         |  |  |
| GH315 P | 1070 | 1750 |                                                                                                                                         |  |  |
| GH315 X | 1140 | 1820 |                                                                                                                                         |  |  |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH315 MK       | 2100            | 9.2                       | 4200                 | 0.85                    | 2400                   | 120               | 1800               |
| GH315 LK       | 2200            | 10.4                      | 4500                 | 0.92                    | 2400                   | 120               | 1800               |
| GH315 PK       | 2340            | 11.5                      | 4900                 | 1.01                    | 2400                   | 120               | 1800               |
| GH315 XK       | 2500            | 12.7                      | 5300                 | 1.10                    | 2300                   | 120               | 1800               |

| Bearings                             | Drive end |                                 | Opposite drive end |
|--------------------------------------|-----------|---------------------------------|--------------------|
|                                      | Coupling  | Pulley                          |                    |
| B3 - B5                              | 6222 C3   | NU222ECJ C3                     | 6221 C3            |
| V1 - V3                              | 6222 C3   | NU222ECJ C3                     | 7221 BE            |
| Electrical blower (IC06)             | Weight    | Blower motor power              |                    |
|                                      | 105 kg    | 5.5 kW (50 Hz) - 7.5 kW (60 Hz) |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight    | Heat exchanger motor power      |                    |
|                                      | 450 kg    | 7.5 kW (50/60 Hz)               |                    |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

**GH315**

GH355

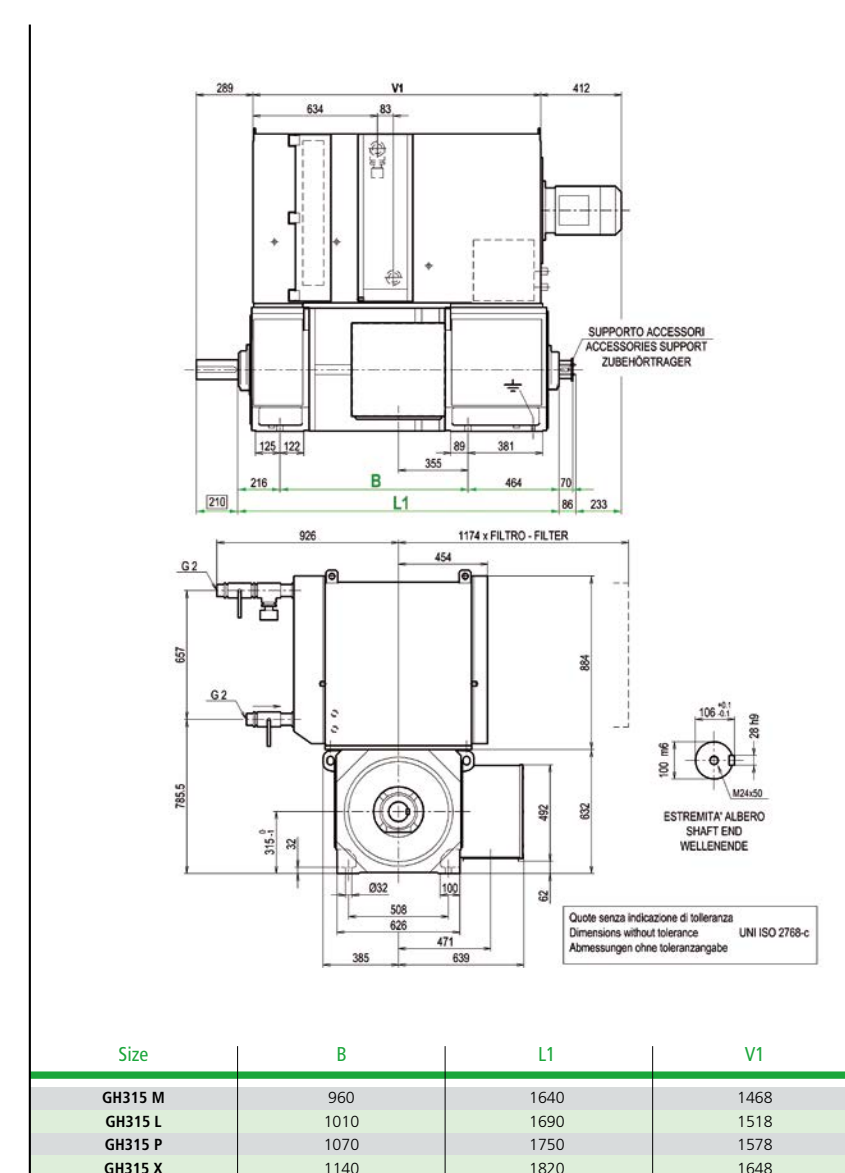
GH400

GH450

## GH315 LK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 4500<br>Field time costant (s): 0.92<br>Motor mass (kg): 2305 (IC06)<br>Moment of inertia (kg m²): 10.4 |                    |              | Armature circuit        |                        | Winding code |      |      |      |
|---------------------------------------|-------|-------|-------|-------|-------|-------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|------|------|------|
| 400 V                                 | 420 V | 460 V | 520 V | 600 V | 700 V | RATED OUTPUT kW                                                                                                               | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |      |      |      |
| 540                                   |       |       |       |       |       | 209                                                                                                                           |                    | 87.9         | 0.420                   | 0.064                  | 9            |      |      |      |
|                                       | 570   |       |       |       |       | 220                                                                                                                           |                    | 88.2         |                         |                        |              |      |      |      |
|                                       |       | 630   |       |       |       |                                                                                                                               | 244                | 594          |                         |                        |              | 89.3 |      |      |
|                                       |       |       | 720   |       |       |                                                                                                                               |                    | 279          |                         |                        |              |      | 90.3 |      |
|                                       |       |       |       | 840   |       |                                                                                                                               |                    |              |                         |                        |              | 325  |      | 91.3 |
|                                       |       |       |       |       | 990   |                                                                                                                               |                    |              |                         |                        |              |      | 385  |      |
| 500                                   |       |       |       |       |       | 199                                                                                                                           |                    | 87.7         | 0.488                   | 0.069                  | 10           |      |      |      |
|                                       | 530   |       |       |       |       | 210                                                                                                                           |                    | 88.0         |                         |                        |              |      |      |      |
|                                       |       | 590   |       |       |       |                                                                                                                               | 232                | 568          |                         |                        |              | 88.8 |      |      |
|                                       |       |       | 670   |       |       |                                                                                                                               |                    | 266          |                         |                        |              |      | 90.1 |      |
|                                       |       |       |       | 780   |       |                                                                                                                               |                    |              |                         |                        |              | 310  |      | 91.1 |
|                                       |       |       |       |       | 920   |                                                                                                                               |                    |              |                         |                        |              |      | 366  |      |
| 440                                   |       |       |       |       |       | 185                                                                                                                           |                    | 87.4         | 0.712                   | 0.075                  | 11           |      |      |      |
|                                       | 460   |       |       |       |       | 196                                                                                                                           |                    | 88.1         |                         |                        |              |      |      |      |
|                                       |       | 510   |       |       |       |                                                                                                                               | 218                | 530          |                         |                        |              | 89.4 |      |      |
|                                       |       |       | 590   |       |       |                                                                                                                               |                    | 247          |                         |                        |              |      | 89.9 |      |
|                                       |       |       |       | 690   |       |                                                                                                                               |                    |              |                         |                        |              | 289  |      | 91.0 |
|                                       |       |       |       |       |       |                                                                                                                               |                    |              |                         |                        |              |      |      |      |
| 400                                   |       |       |       |       |       | 165                                                                                                                           |                    | 86.9         | 1.004                   | 0.089                  | 12           |      |      |      |
|                                       | 420   |       |       |       |       | 174                                                                                                                           |                    | 87.2         |                         |                        |              |      |      |      |
|                                       |       | 470   |       |       |       |                                                                                                                               | 193                | 475          |                         |                        |              | 88.3 |      |      |
|                                       |       |       | 540   |       |       |                                                                                                                               |                    | 221          |                         |                        |              |      | 89.5 |      |
|                                       |       |       |       | 630   |       |                                                                                                                               |                    |              |                         |                        |              | 258  |      | 90.7 |
|                                       |       |       |       |       | 750   |                                                                                                                               |                    |              |                         |                        |              |      | 305  |      |
| 370                                   |       |       |       |       |       | 147                                                                                                                           |                    | 84.5         | 0.803                   | 0.115                  | 13           |      |      |      |
|                                       | 390   |       |       |       |       | 155                                                                                                                           |                    | 85.0         |                         |                        |              |      |      |      |
|                                       |       | 430   |       |       |       |                                                                                                                               | 173                | 434          |                         |                        |              | 86.7 |      |      |
|                                       |       |       | 490   |       |       |                                                                                                                               |                    | 198          |                         |                        |              |      | 88.0 |      |
|                                       |       |       |       | 580   |       |                                                                                                                               |                    |              |                         |                        |              | 232  |      | 89.3 |
|                                       |       |       |       |       | 680   |                                                                                                                               |                    |              |                         |                        |              |      | 275  |      |
| 310                                   |       |       |       |       |       | 115                                                                                                                           |                    | 82.0         | 0.941                   | 0.174                  | 14           |      |      |      |
|                                       | 330   |       |       |       |       | 121                                                                                                                           |                    | 82.3         |                         |                        |              |      |      |      |
|                                       |       | 370   |       |       |       |                                                                                                                               | 134                | 350          |                         |                        |              | 83.2 |      |      |
|                                       |       |       | 420   |       |       |                                                                                                                               |                    | 157          |                         |                        |              |      | 85.8 |      |
|                                       |       |       |       | 490   |       |                                                                                                                               |                    |              |                         |                        |              | 183  |      | 87.5 |
|                                       |       |       |       |       | 590   |                                                                                                                               |                    |              |                         |                        |              |      | 218  |      |

## GH315 IM1001 - IP54 - IC86W



| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH315 MK       | 2100            | 9.2                       | 4200                 | 0.85                    | 2400                   | 120               | 1800               |
| GH315 LK       | 2200            | 10.4                      | 4500                 | 0.92                    | 2400                   | 120               | 1800               |
| GH315 PK       | 2340            | 11.5                      | 4900                 | 1.01                    | 2400                   | 120               | 1800               |
| GH315 XK       | 2500            | 12.7                      | 5300                 | 1.10                    | 2300                   | 120               | 1800               |

| Bearings                             | Drive end |                                 | Opposite drive end |
|--------------------------------------|-----------|---------------------------------|--------------------|
|                                      | Coupling  | Pulley                          |                    |
| B3 - B5                              | 6222 C3   | NU222ECJ C3                     | 6221 C3            |
| V1 - V3                              | 6222 C3   | NU222ECJ C3                     | 7221 BE            |
| Electrical blower (IC06)             | Weight    | Blower motor power              |                    |
|                                      | 105 kg    | 5.5 kW (50 Hz) - 7.5 kW (60 Hz) |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight    | Heat exchanger motor power      |                    |
|                                      | 450 kg    | 7.5 kW (50/60 Hz)               |                    |



## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

HOME

GH225

GH250

GH280

**GH315**

GH355

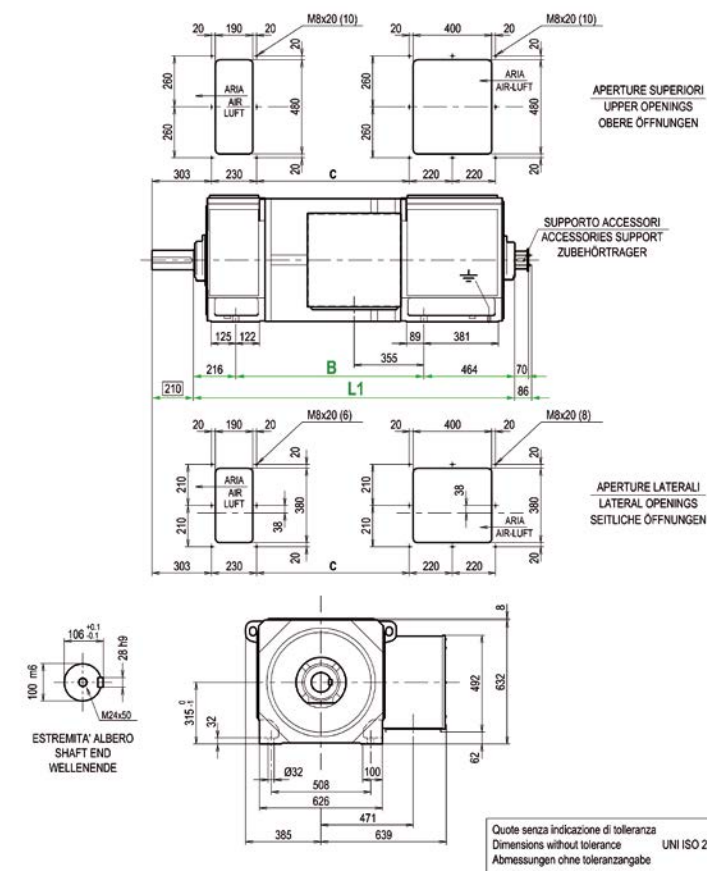
GH400

GH450

## GH315 LK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 4200<br>Field time costant (s): 0.85<br>Motor mass (kg): 2205 (IC06)<br>Moment of inertia (kg m²): 9.2 |                       |                 | Armature circuit           |                           | Winding code |
|---------------------------------------|-------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------|----------------------------|---------------------------|--------------|
| 400 V                                 | 420 V | 460 V | 520 V | 600 V | 700 V | RATED OUTPUT<br>kW                                                                                                           | ARMATURE CURRENT<br>A | EFFICIENCY<br>% | SATURATED INDUCTANCE<br>mH | RESISTANCE AT 115 °C<br>Ω |              |
| 260                                   | 270   | 300   | 360   | 420   | 500   | 104                                                                                                                          | 325                   | 80.3            | 1.357                      | 0.208                     | 15           |
|                                       |       |       |       |       |       | 111                                                                                                                          |                       | 81.3            |                            |                           |              |
|                                       |       |       |       |       |       | 123                                                                                                                          |                       | 82.3            |                            |                           |              |
|                                       |       |       |       |       |       | 143                                                                                                                          |                       | 84.5            |                            |                           |              |
|                                       |       |       |       |       |       | 168                                                                                                                          |                       | 86.3            |                            |                           |              |
| 240                                   | 250   | 280   | 330   | 390   | 460   | 200                                                                                                                          | 288                   | 88.1            | 1.771                      | 0.238                     | 16           |
|                                       |       |       |       |       |       | 92                                                                                                                           |                       | 80.1            |                            |                           |              |
|                                       |       |       |       |       |       | 98                                                                                                                           |                       | 81.0            |                            |                           |              |
|                                       |       |       |       |       |       | 109                                                                                                                          |                       | 82.3            |                            |                           |              |
|                                       |       |       |       |       |       | 126                                                                                                                          |                       | 84.4            |                            |                           |              |
|                                       |       |       |       |       |       | 149                                                                                                                          |                       | 86.2            |                            |                           |              |
|                                       |       |       |       |       |       | 177                                                                                                                          |                       | 87.9            |                            |                           |              |

## GH315 IM1001 - IP44 - IC37



| Size    | B    | L1   | C   |
|---------|------|------|-----|
| GH315 M | 960  | 1640 | 779 |
| GH315 L | 1010 | 1690 | 829 |
| GH315 P | 1070 | 1750 | 889 |
| GH315 X | 1140 | 1820 | 959 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH315 MK       | 2100            | 9.2                       | 4200                 | 0.85                    | 2400                   | 120               | 1800               |
| GH315 LK       | 2200            | 10.4                      | 4500                 | 0.92                    | 2400                   | 120               | 1800               |
| GH315 PK       | 2340            | 11.5                      | 4900                 | 1.01                    | 2400                   | 120               | 1800               |
| GH315 XK       | 2500            | 12.7                      | 5300                 | 1.10                    | 2300                   | 120               | 1800               |

| Bearings                             | Drive end |                                 | Opposite drive end |
|--------------------------------------|-----------|---------------------------------|--------------------|
|                                      | Coupling  | Pulley                          |                    |
| B3 – B5                              | 6222 C3   | NU222ECJ C3                     | 6221 C3            |
| V1 – V3                              | 6222 C3   | NU222ECJ C3                     | 7221 BE            |
| Electrical blower (IC06)             | Weight    | Blower motor power              |                    |
|                                      | 105 kg    | 5.5 kW (50 Hz) - 7.5 kW (60 Hz) |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight    | Heat exchanger motor power      |                    |
|                                      | 450 kg    | 7.5 kW (50/60 Hz)               |                    |



## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

**GH315**

GH355

GH400

GH450

## GH315 PK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 4900<br>Field time constant (s): 1.01<br>Motor mass (kg): 2445 (IC06)<br>Moment of inertia (kg m²): 11.5 |                    |              | Armature circuit        |                        | Winding code |
|---------------------------------------|-------|-------|-------|-------|-------|--------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|
| 400 V                                 | 420 V | 460 V | 520 V | 600 V | 700 V | RATED OUTPUT kW                                                                                                                | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |
| 1120                                  |       |       |       |       |       | 481                                                                                                                            | 1295               | 92.9         |                         |                        |              |
|                                       | 1180  |       |       |       |       | 506                                                                                                                            | 1295               | 93.2         | 0.094                   | 0.013                  | 1            |
|                                       |       | 1330  |       |       |       | 546                                                                                                                            | 1270               | 93.5         |                         |                        |              |
| 950                                   |       |       |       |       |       | 433                                                                                                                            | 1171               | 92.6         |                         |                        |              |
|                                       | 1000  |       |       |       |       | 457                                                                                                                            | 1171               | 92.9         | 0.154                   | 0.016                  | 2            |
|                                       |       | 1130  |       |       |       | 503                                                                                                                            | 1171               | 93.4         |                         |                        |              |
|                                       |       |       | 1280  |       |       | 561                                                                                                                            | 1150               | 93.8         |                         |                        |              |
| 850                                   |       |       |       |       |       | 390                                                                                                                            | 1060               | 92.1         |                         |                        |              |
|                                       | 900   |       |       |       |       | 411                                                                                                                            | 1060               | 92.3         | 0.195                   | 0.020                  | 3            |
|                                       |       | 990   |       |       |       | 453                                                                                                                            | 1060               | 92.9         |                         |                        |              |
|                                       |       |       | 1150  |       |       | 510                                                                                                                            | 1050               | 93.4         |                         |                        |              |
|                                       |       |       |       | 1360  |       | 585                                                                                                                            | 1040               | 94.0         |                         |                        |              |
| 770                                   |       |       |       |       |       | 338                                                                                                                            | 931                | 91.0         |                         |                        |              |
|                                       | 810   |       |       |       |       | 357                                                                                                                            | 931                | 91.3         | 0.176                   | 0.027                  | 4            |
|                                       |       | 890   |       |       |       | 394                                                                                                                            | 931                | 92.0         |                         |                        |              |
|                                       |       |       | 1020  |       |       | 448                                                                                                                            | 931                | 92.6         |                         |                        |              |
|                                       |       |       |       | 1230  |       | 515                                                                                                                            | 920                | 93.3         |                         |                        |              |
|                                       |       |       |       |       | 1450  | 598                                                                                                                            | 910                | 93.9         |                         |                        |              |
| 710                                   |       |       |       |       |       | 318                                                                                                                            | 876                | 90.7         |                         |                        |              |
|                                       | 750   |       |       |       |       | 335                                                                                                                            | 876                | 91.1         | 0.228                   | 0.031                  | 5            |
|                                       |       | 830   |       |       |       | 370                                                                                                                            | 876                | 91.8         |                         |                        |              |
|                                       |       |       | 940   |       |       | 421                                                                                                                            | 876                | 92.4         |                         |                        |              |
|                                       |       |       |       | 1100  |       | 480                                                                                                                            | 860                | 93.1         |                         |                        |              |
|                                       |       |       |       |       | 1300  | 551                                                                                                                            | 840                | 93.8         |                         |                        |              |
| 660                                   |       |       |       |       |       | 286                                                                                                                            | 793                | 90.4         |                         |                        |              |
|                                       | 700   |       |       |       |       | 302                                                                                                                            | 793                | 90.7         | 0.286                   | 0.033                  | 6            |
|                                       |       | 770   |       |       |       | 333                                                                                                                            | 793                | 91.3         |                         |                        |              |
|                                       |       |       | 870   |       |       | 379                                                                                                                            | 793                | 92.1         |                         |                        |              |
|                                       |       |       |       | 1020  |       | 442                                                                                                                            | 793                | 92.9         |                         |                        |              |
|                                       |       |       |       |       | 1200  | 513                                                                                                                            | 785                | 93.6         |                         |                        |              |
| 620                                   |       |       |       |       |       | 263                                                                                                                            |                    | 90.1         |                         |                        |              |
|                                       | 650   |       |       |       |       | 278                                                                                                                            |                    | 90.5         | 0.368                   | 0.040                  | 7            |
|                                       |       | 710   |       |       |       | 306                                                                                                                            | 731                | 91.0         |                         |                        |              |
|                                       |       |       | 820   |       |       | 349                                                                                                                            |                    | 91.9         |                         |                        |              |
|                                       |       |       |       | 950   |       | 406                                                                                                                            |                    | 92.7         |                         |                        |              |
|                                       |       |       |       |       | 1120  | 478                                                                                                                            |                    | 93.4         |                         |                        |              |
| 520                                   |       |       |       |       |       | 232                                                                                                                            |                    | 88.3         |                         |                        |              |
|                                       | 550   |       |       |       |       | 245                                                                                                                            |                    | 88.8         | 0.381                   | 0.055                  | 8            |
|                                       |       | 610   |       |       |       | 271                                                                                                                            | 657                | 89.7         |                         |                        |              |
|                                       |       |       | 690   |       |       | 309                                                                                                                            |                    | 90.6         |                         |                        |              |
|                                       |       |       |       | 810   |       | 361                                                                                                                            |                    | 91.6         |                         |                        |              |
|                                       |       |       |       |       | 950   | 425                                                                                                                            |                    | 92.5         |                         |                        |              |

## GH315 IM1001 - IP23 - IC06

| Size    | B    | L1   |
|---------|------|------|
| GH315 M | 960  | 1640 |
| GH315 L | 1010 | 1690 |
| GH315 P | 1070 | 1750 |
| GH315 X | 1140 | 1820 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH315 MK       | 2100            | 9.2                       | 4200                 | 0.85                    | 2400                   | 120               | 1800               |
| GH315 LK       | 2200            | 10.4                      | 4500                 | 0.92                    | 2400                   | 120               | 1800               |
| GH315 PK       | 2340            | 11.5                      | 4900                 | 1.01                    | 2400                   | 120               | 1800               |
| GH315 XK       | 2500            | 12.7                      | 5300                 | 1.10                    | 2300                   | 120               | 1800               |

| Bearings                             | Drive end |                                 | Opposite drive end |
|--------------------------------------|-----------|---------------------------------|--------------------|
|                                      | Coupling  | Pulley                          |                    |
| B3 – B5                              | 6222 C3   | NU222ECJ C3                     | 6221 C3            |
| V1 – V3                              | 6222 C3   | NU222ECJ C3                     | 7221 BE            |
| Electrical blower (IC06)             | Weight    | Blower motor power              |                    |
|                                      | 105 kg    | 5.5 kW (50 Hz) - 7.5 kW (60 Hz) |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight    | Heat exchanger motor power      |                    |
|                                      | 450 kg    | 7.5 kW (50/60 Hz)               |                    |



## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

**GH315**

GH355

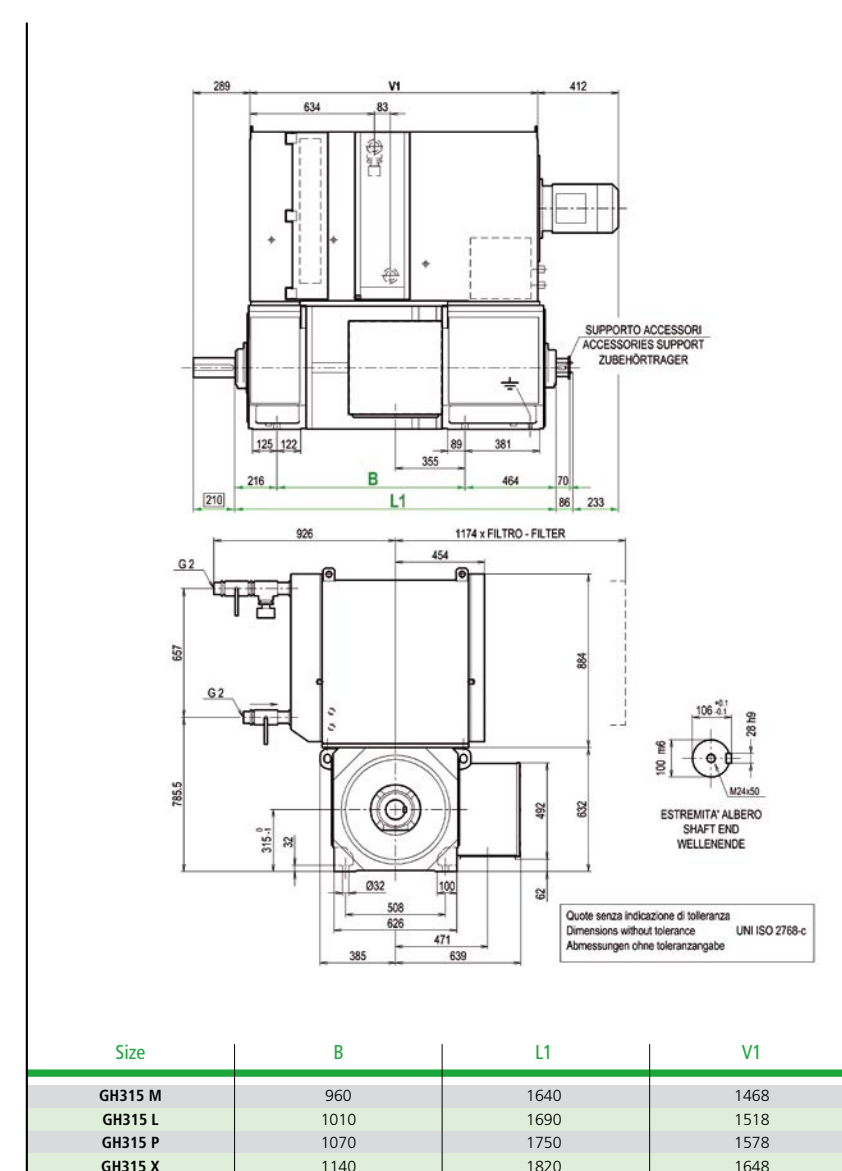
GH400

GH450

## GH315 PK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 4900<br>Field time constant (s): 1.01<br>Motor mass (kg): 2445 (IC06)<br>Moment of inertia (kg m²): 11.5 |                    |              | Armature circuit        |                        | Winding code |
|---------------------------------------|-------|-------|-------|-------|-------|--------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|
| 400 V                                 | 420 V | 460 V | 520 V | 600 V | 700 V | RATED OUTPUT kW                                                                                                                | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |
| 480                                   | 510   | 560   | 640   | 750   | 880   | 207                                                                                                                            |                    | 87.3         | 0.466                   | 0.068                  | 9            |
|                                       |       |       |       |       |       | 220                                                                                                                            |                    | 88.2         |                         |                        |              |
|                                       |       |       |       |       |       | 242                                                                                                                            | 594                | 88.6         |                         |                        |              |
|                                       |       |       |       |       |       | 277                                                                                                                            |                    | 89.8         |                         |                        |              |
|                                       |       |       |       |       |       | 324                                                                                                                            |                    | 90.9         |                         |                        |              |
| 440                                   | 460   | 510   | 590   | 690   | 820   | 382                                                                                                                            |                    | 91.9         | 0.541                   | 0.073                  | 10           |
|                                       |       |       |       |       |       | 197                                                                                                                            |                    | 87.0         |                         |                        |              |
|                                       |       |       |       |       |       | 209                                                                                                                            |                    | 87.6         |                         |                        |              |
|                                       |       |       |       |       |       | 231                                                                                                                            | 568                | 88.4         |                         |                        |              |
|                                       |       |       |       |       |       | 264                                                                                                                            |                    | 89.6         |                         |                        |              |
| 390                                   | 410   | 460   | 520   | 610   |       | 309                                                                                                                            |                    | 90.7         | 0.793                   | 0.081                  | 11           |
|                                       |       |       |       |       |       | 365                                                                                                                            |                    | 91.8         |                         |                        |              |
|                                       |       |       |       |       |       | 183                                                                                                                            |                    | 86.8         |                         |                        |              |
|                                       |       |       |       |       |       | 194                                                                                                                            |                    | 87.3         |                         |                        |              |
|                                       |       |       |       |       |       | 215                                                                                                                            | 529                | 88.4         |                         |                        |              |
| 360                                   | 380   | 420   | 480   | 560   | 660   | 246                                                                                                                            |                    | 89.4         | 1.119                   | 0.095                  | 12           |
|                                       |       |       |       |       |       | 287                                                                                                                            |                    | 90.6         |                         |                        |              |
|                                       |       |       |       |       |       | 164                                                                                                                            |                    | 86.1         |                         |                        |              |
|                                       |       |       |       |       |       | 173                                                                                                                            |                    | 86.7         |                         |                        |              |
|                                       |       |       |       |       |       | 192                                                                                                                            | 475                | 87.9         |                         |                        |              |
| 320                                   | 340   | 380   | 440   | 510   | 610   | 220                                                                                                                            |                    | 89.0         | 0.893                   | 0.123                  | 13           |
|                                       |       |       |       |       |       | 257                                                                                                                            |                    | 90.2         |                         |                        |              |
|                                       |       |       |       |       |       | 304                                                                                                                            |                    | 91.3         |                         |                        |              |
|                                       |       |       |       |       |       | 145                                                                                                                            |                    | 84.0         |                         |                        |              |
|                                       |       |       |       |       |       | 154                                                                                                                            |                    | 84.5         |                         |                        |              |
| 280                                   | 300   | 330   | 370   | 440   | 520   | 171                                                                                                                            | 434                | 85.7         | 1.046                   | 0.181                  | 14           |
|                                       |       |       |       |       |       | 197                                                                                                                            |                    | 87.3         |                         |                        |              |
|                                       |       |       |       |       |       | 231                                                                                                                            |                    | 88.8         |                         |                        |              |
|                                       |       |       |       |       |       | 273                                                                                                                            |                    | 90.1         |                         |                        |              |
|                                       |       |       |       |       |       | 114                                                                                                                            |                    | 80.9         |                         |                        |              |
|                                       |       |       |       |       |       | 121                                                                                                                            |                    | 82.1         |                         |                        |              |
|                                       |       |       |       |       |       | 134                                                                                                                            | 351                | 83.0         |                         |                        |              |
|                                       |       |       |       |       |       | 155                                                                                                                            |                    | 85.0         |                         |                        |              |
|                                       |       |       |       |       |       | 182                                                                                                                            |                    | 86.7         |                         |                        |              |
|                                       |       |       |       |       |       | 217                                                                                                                            |                    | 88.4         |                         |                        |              |

## GH315 IM1001 - IP54 - IC86W



| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH315 MK       | 2100            | 9.2                       | 4200                 | 0.85                    | 2400                   | 120               | 1800               |
| GH315 LK       | 2200            | 10.4                      | 4500                 | 0.92                    | 2400                   | 120               | 1800               |
| GH315 PK       | 2340            | 11.5                      | 4900                 | 1.01                    | 2400                   | 120               | 1800               |
| GH315 XK       | 2500            | 12.7                      | 5300                 | 1.10                    | 2300                   | 120               | 1800               |

| Bearings                             | Drive end |                                 | Opposite drive end |
|--------------------------------------|-----------|---------------------------------|--------------------|
|                                      | Coupling  | Pulley                          |                    |
| B3 - B5                              | 6222 C3   | NU222ECJ C3                     | 6221 C3            |
| V1 - V3                              | 6222 C3   | NU222ECJ C3                     | 7221 BE            |
| Electrical blower (IC06)             | Weight    | Blower motor power              |                    |
|                                      | 105 kg    | 5.5 kW (50 Hz) - 7.5 kW (60 Hz) |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight    | Heat exchanger motor power      |                    |
|                                      | 450 kg    | 7.5 kW (50/60 Hz)               |                    |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

**GH315**

GH355

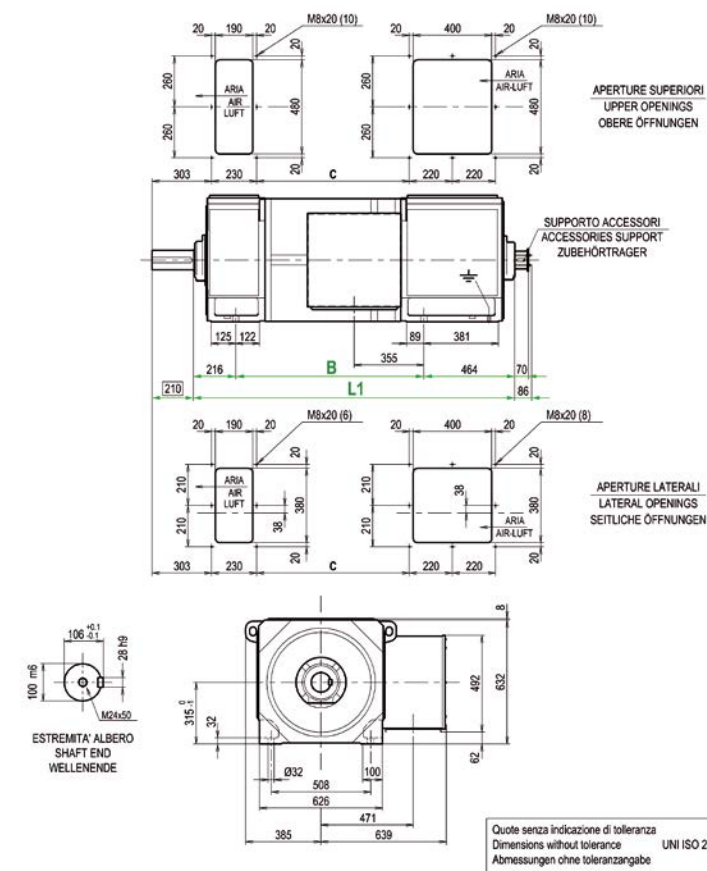
GH400

GH450

## GH315 PK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 4900<br>Field time constant (s): 1.01<br>Motor mass (kg): 2445 (IC06)<br>Moment of inertia (kg m²): 11.5 |                    |              | Armature circuit        | Winding code           |
|---------------------------------------|-------|-------|-------|-------|-------|--------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|
| 400 V                                 | 420 V | 460 V | 520 V | 600 V | 700 V | RATED OUTPUT kW                                                                                                                | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |
| 230                                   |       |       |       |       |       | 103                                                                                                                            |                    | 79.1         |                         |                        |
|                                       | 240   |       |       |       |       | 110                                                                                                                            |                    | 80.6         |                         |                        |
|                                       |       | 270   |       |       |       | 122                                                                                                                            | 325                | 81.6         | 1.509                   | 0.223                  |
|                                       |       |       | 310   |       |       | 141                                                                                                                            |                    | 83.6         |                         |                        |
|                                       |       |       |       | 370   |       | 167                                                                                                                            |                    | 85.6         |                         |                        |
|                                       |       |       |       |       | 440   | 199                                                                                                                            |                    | 87.4         |                         |                        |
| 210                                   |       |       |       |       |       | 92                                                                                                                             |                    | 78.6         |                         |                        |
|                                       | 220   |       |       |       |       | 98                                                                                                                             |                    | 79.6         | 1.971                   | 0.254                  |
|                                       |       | 250   |       |       |       | 110                                                                                                                            | 293                | 81.6         |                         |                        |
|                                       |       |       | 290   |       |       | 126                                                                                                                            |                    | 83.2         |                         |                        |
|                                       |       |       |       | 340   |       | 150                                                                                                                            |                    | 85.2         |                         |                        |
|                                       |       |       |       |       | 410   | 178                                                                                                                            |                    | 87.1         |                         |                        |

## GH315 IM1001 - IP44 - IC37



| Size    | B    | L1   | C   |
|---------|------|------|-----|
| GH315 M | 960  | 1640 | 779 |
| GH315 L | 1010 | 1690 | 829 |
| GH315 P | 1070 | 1750 | 889 |
| GH315 X | 1140 | 1820 | 959 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH315 MK       | 2100            | 9.2                       | 4200                 | 0.85                    | 2400                   | 120               | 1800               |
| GH315 LK       | 2200            | 10.4                      | 4500                 | 0.92                    | 2400                   | 120               | 1800               |
| GH315 PK       | 2340            | 11.5                      | 4900                 | 1.01                    | 2400                   | 120               | 1800               |
| GH315 XK       | 2500            | 12.7                      | 5300                 | 1.10                    | 2300                   | 120               | 1800               |

| Bearings                             | Drive end |                                 | Opposite drive end |
|--------------------------------------|-----------|---------------------------------|--------------------|
|                                      | Coupling  | Pulley                          |                    |
| B3 – B5                              | 6222 C3   | NU222ECJ C3                     | 6221 C3            |
| V1 – V3                              | 6222 C3   | NU222ECJ C3                     | 7221 BE            |
| Electrical blower (IC06)             | Weight    | Blower motor power              |                    |
|                                      | 105 kg    | 5.5 kW (50 Hz) - 7.5 kW (60 Hz) |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight    | Heat exchanger motor power      |                    |
|                                      | 450 kg    | 7.5 kW (50/60 Hz)               |                    |



## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

**GH315**

GH355

GH400

GH450

## GH315 XK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 5300<br>Field time constant (s): 1.10<br>Motor mass (kg): 2605 (IC06)<br>Moment of inertia (kg m²): 12.7 |                    |              | Armature circuit        |                        | Winding code |
|---------------------------------------|-------|-------|-------|-------|-------|--------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|
| 400 V                                 | 420 V | 460 V | 520 V | 600 V | 700 V | RATED OUTPUT kW                                                                                                                | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |
| 1000                                  | 1050  | 1150  |       |       |       | 475                                                                                                                            | 500                | 92.7         | 0.104                   | 0.015                  | 1            |
|                                       |       |       |       |       |       | 550                                                                                                                            | 1280               | 93.0         |                         |                        |              |
|                                       |       |       |       |       |       | 550                                                                                                                            |                    | 93.3         |                         |                        |              |
| 850                                   | 890   | 980   |       |       |       | 430                                                                                                                            | 1160               | 92.5         | 0.171                   | 0.017                  | 2            |
|                                       |       |       |       |       |       | 451                                                                                                                            | 1160               | 92.6         |                         |                        |              |
|                                       |       |       |       |       |       | 497                                                                                                                            | 1160               | 93.1         |                         |                        |              |
| 770                                   | 800   | 890   | 1130  |       |       | 555                                                                                                                            | 1140               | 93.6         | 0.218                   | 0.021                  | 3            |
|                                       |       |       |       |       |       | 385                                                                                                                            | 1050               | 91.8         |                         |                        |              |
|                                       |       |       |       |       |       | 407                                                                                                                            | 1050               | 92.2         |                         |                        |              |
|                                       |       |       |       |       |       | 449                                                                                                                            | 1050               | 92.7         | 0.196                   | 0.029                  | 4            |
|                                       |       |       |       |       |       | 500                                                                                                                            | 1030               | 93.2         |                         |                        |              |
|                                       |       |       |       |       |       | 574                                                                                                                            | 1020               | 93.8         |                         |                        |              |
| 690                                   | 730   | 800   | 920   |       |       | 333                                                                                                                            | 920                | 90.6         | 0.254                   | 0.033                  | 5            |
|                                       |       |       |       |       |       | 351                                                                                                                            | 920                | 91.0         |                         |                        |              |
|                                       |       |       |       |       |       | 388                                                                                                                            | 920                | 91.7         |                         |                        |              |
|                                       |       |       |       |       |       | 441                                                                                                                            | 920                | 92.3         | 0.319                   | 0.038                  | 6            |
|                                       |       |       |       |       |       | 507                                                                                                                            | 910                | 93.1         |                         |                        |              |
|                                       |       |       |       |       |       | 590                                                                                                                            | 900                | 93.7         |                         |                        |              |
| 640                                   | 670   | 750   | 850   |       |       | 316                                                                                                                            | 875                | 90.3         | 0.411                   | 0.043                  | 7            |
|                                       |       |       |       |       |       | 333                                                                                                                            | 875                | 90.6         |                         |                        |              |
|                                       |       |       |       |       |       | 368                                                                                                                            | 875                | 91.4         |                         |                        |              |
|                                       |       |       |       |       |       | 419                                                                                                                            | 875                | 92.0         | 0.424                   | 0.060                  | 8            |
|                                       |       |       |       |       |       | 474                                                                                                                            | 850                | 92.8         |                         |                        |              |
|                                       |       |       |       |       |       | 544                                                                                                                            | 830                | 93.5         |                         |                        |              |
| 590                                   | 620   | 690   | 780   |       |       | 285                                                                                                                            | 790                | 90.0         | 0.424                   | 0.060                  | 8            |
|                                       |       |       |       |       |       | 300                                                                                                                            | 790                | 90.4         |                         |                        |              |
|                                       |       |       |       |       |       | 331                                                                                                                            | 790                | 91.0         |                         |                        |              |
|                                       |       |       |       |       |       | 377                                                                                                                            | 790                | 91.7         | 0.424                   | 0.060                  | 8            |
|                                       |       |       |       |       |       | 439                                                                                                                            | 790                | 92.6         |                         |                        |              |
|                                       |       |       |       |       |       | 510                                                                                                                            | 780                | 93.3         |                         |                        |              |
| 550                                   | 580   | 640   | 730   |       |       | 262                                                                                                                            |                    | 89.5         | 0.424                   | 0.060                  | 8            |
|                                       |       |       |       |       |       | 276                                                                                                                            |                    | 90.0         |                         |                        |              |
|                                       |       |       |       |       |       | 305                                                                                                                            | 730                | 90.6         |                         |                        |              |
|                                       |       |       |       |       |       | 348                                                                                                                            |                    | 91.5         | 0.424                   | 0.060                  | 8            |
|                                       |       |       |       |       |       | 405                                                                                                                            |                    | 92.4         |                         |                        |              |
|                                       |       |       |       |       |       | 477                                                                                                                            |                    | 93.2         |                         |                        |              |
| 470                                   | 490   | 540   | 630   |       |       | 231                                                                                                                            |                    | 87.8         | 0.424                   | 0.060                  | 8            |
|                                       |       |       |       |       |       | 244                                                                                                                            |                    | 88.3         |                         |                        |              |
|                                       |       |       |       |       |       | 270                                                                                                                            | 657                | 89.1         |                         |                        |              |
|                                       |       |       |       |       |       | 308                                                                                                                            |                    | 90.1         | 0.424                   | 0.060                  | 8            |
|                                       |       |       |       |       |       | 359                                                                                                                            |                    | 91.2         |                         |                        |              |
|                                       |       |       |       |       |       | 424                                                                                                                            |                    | 92.2         |                         |                        |              |

## GH315 IM1001 - IP23 - IC06

|         |      |      |
|---------|------|------|
|         |      |      |
| Size    | B    | L1   |
| GH315 M | 960  | 1640 |
| GH315 L | 1010 | 1690 |
| GH315 P | 1070 | 1750 |
| GH315 X | 1140 | 1820 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH315 MK       | 2100            | 9.2                       | 4200                 | 0.85                    | 2400                   | 120               | 1800               |
| GH315 LK       | 2200            | 10.4                      | 4500                 | 0.92                    | 2400                   | 120               | 1800               |
| GH315 PK       | 2340            | 11.5                      | 4900                 | 1.01                    | 2400                   | 120               | 1800               |
| GH315 XK       | 2500            | 12.7                      | 5300                 | 1.10                    | 2300                   | 120               | 1800               |

| Bearings                             | Drive end |                                 | Opposite drive end |
|--------------------------------------|-----------|---------------------------------|--------------------|
|                                      | Coupling  | Pulley                          |                    |
| B3 – B5                              | 6222 C3   | NU222ECJ C3                     | 6221 C3            |
| V1 – V3                              | 6222 C3   | NU222ECJ C3                     | 7221 BE            |
| Electrical blower (IC06)             | Weight    | Blower motor power              |                    |
|                                      | 105 kg    | 5.5 kW (50 Hz) - 7.5 kW (60 Hz) |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight    | Heat exchanger motor power      |                    |
|                                      | 450 kg    | 7.5 kW (50/60 Hz)               |                    |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

**GH315**

GH355

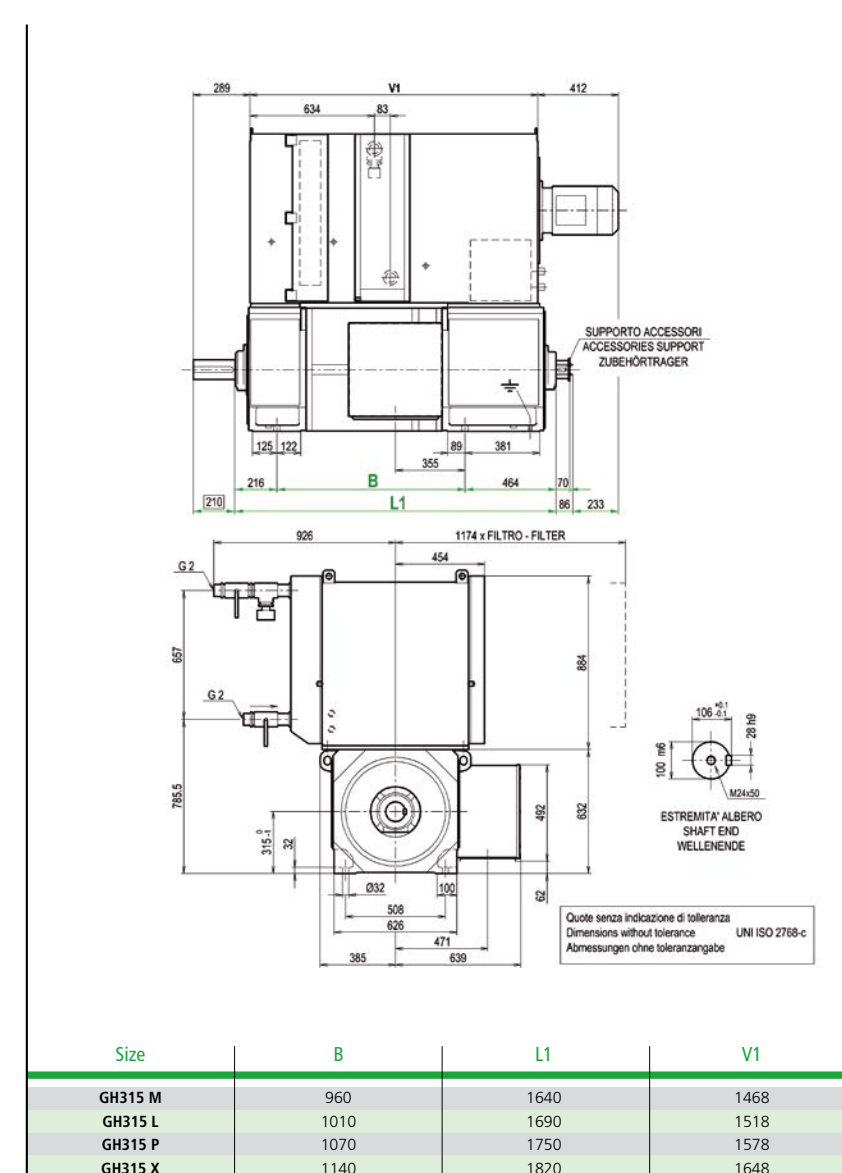
GH400

GH450

## GH315 XK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 5300<br>Field time constant (s): 1.10<br>Motor mass (kg): 2605 (IC06)<br>Moment of inertia (kg m²): 12.7 |                    |              | Armature circuit        |                        | Winding code |
|---------------------------------------|-------|-------|-------|-------|-------|--------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|
| 400 V                                 | 420 V | 460 V | 520 V | 600 V | 700 V | RATED OUTPUT kW                                                                                                                | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |
| 430                                   |       |       |       |       |       | 206                                                                                                                            |                    | 86.5         |                         |                        |              |
|                                       | 450   |       |       |       |       | 218                                                                                                                            |                    | 87.2         |                         |                        |              |
|                                       |       | 500   |       |       |       | 242                                                                                                                            | 594                | 88.5         | 0.519                   | 0.073                  | 9            |
|                                       |       |       | 570   |       |       | 276                                                                                                                            |                    | 89.2         |                         |                        |              |
|                                       |       |       |       | 670   |       | 322                                                                                                                            |                    | 90.4         |                         |                        |              |
|                                       |       |       |       |       | 800   | 381                                                                                                                            |                    | 91.5         |                         |                        |              |
| 400                                   |       |       |       |       |       | 196                                                                                                                            |                    | 86.2         |                         |                        |              |
|                                       | 420   |       |       |       |       | 207                                                                                                                            |                    | 86.8         | 0.603                   | 0.079                  | 10           |
|                                       |       | 470   |       |       |       | 230                                                                                                                            | 568                | 87.8         |                         |                        |              |
|                                       |       |       | 530   |       |       | 262                                                                                                                            |                    | 89.0         |                         |                        |              |
|                                       |       |       |       | 620   |       | 307                                                                                                                            |                    | 90.2         |                         |                        |              |
|                                       |       |       |       |       | 740   | 363                                                                                                                            |                    | 91.3         |                         |                        |              |
| 355                                   |       |       |       |       |       | 183                                                                                                                            |                    | 85.9         |                         |                        |              |
|                                       | 370   |       |       |       |       | 192                                                                                                                            |                    | 86.5         |                         |                        |              |
|                                       |       | 410   |       |       |       | 215                                                                                                                            | 530                | 87.7         | 0.888                   | 0.087                  | 11           |
|                                       |       |       | 475   |       |       | 244                                                                                                                            |                    | 88.8         |                         |                        |              |
|                                       |       |       |       | 550   |       | 286                                                                                                                            |                    | 90.1         |                         |                        |              |
| 320                                   |       |       |       |       |       | 162                                                                                                                            |                    | 85.3         |                         |                        |              |
|                                       | 330   |       |       |       |       | 172                                                                                                                            |                    | 86.0         |                         |                        |              |
|                                       |       | 375   |       |       |       | 190                                                                                                                            | 475                | 87.0         | 1.254                   | 0.102                  | 12           |
|                                       |       |       | 430   |       |       | 218                                                                                                                            |                    | 88.3         |                         |                        |              |
|                                       |       |       |       | 500   |       | 255                                                                                                                            |                    | 89.6         |                         |                        |              |
|                                       |       |       |       |       | 590   | 302                                                                                                                            |                    | 90.9         |                         |                        |              |
| 290                                   |       |       |       |       |       | 145                                                                                                                            |                    | 83.0         |                         |                        |              |
|                                       | 310   |       |       |       |       | 152                                                                                                                            |                    | 83.7         |                         |                        |              |
|                                       |       | 350   |       |       |       | 170                                                                                                                            | 434                | 85.1         | 1.001                   | 0.132                  | 13           |
|                                       |       |       | 400   |       |       | 195                                                                                                                            |                    | 86.5         |                         |                        |              |
|                                       |       |       |       | 460   |       | 230                                                                                                                            |                    | 88.1         |                         |                        |              |
|                                       |       |       |       |       | 550   | 272                                                                                                                            |                    | 89.6         |                         |                        |              |
| 245                                   |       |       |       |       |       | 112                                                                                                                            |                    | 79.8         |                         |                        |              |
|                                       | 260   |       |       |       |       | 120                                                                                                                            |                    | 81.6         |                         |                        |              |
|                                       |       | 290   |       |       |       | 133                                                                                                                            | 350                | 82.3         | 1.168                   | 0.200                  | 14           |
|                                       |       |       | 330   |       |       | 155                                                                                                                            |                    | 84.0         |                         |                        |              |
|                                       |       |       |       | 400   |       | 180                                                                                                                            |                    | 86.0         |                         |                        |              |
|                                       |       |       |       |       | 470   | 215                                                                                                                            |                    | 87.7         |                         |                        |              |

## GH315 IM1001 - IP54 - IC86W



| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH315 MK       | 2100            | 9.2                       | 4200                 | 0.85                    | 2400                   | 120               | 1800               |
| GH315 LK       | 2200            | 10.4                      | 4500                 | 0.92                    | 2400                   | 120               | 1800               |
| GH315 PK       | 2340            | 11.5                      | 4900                 | 1.01                    | 2400                   | 120               | 1800               |
| GH315 XK       | 2500            | 12.7                      | 5300                 | 1.10                    | 2300                   | 120               | 1800               |

| Bearings                             | Drive end |                                 | Opposite drive end |
|--------------------------------------|-----------|---------------------------------|--------------------|
|                                      | Coupling  | Pulley                          |                    |
| B3 - B5                              | 6222 C3   | NU222ECJ C3                     | 6221 C3            |
| V1 - V3                              | 6222 C3   | NU222ECJ C3                     | 7221 BE            |
| Electrical blower (IC06)             | Weight    | Blower motor power              |                    |
|                                      | 105 kg    | 5.5 kW (50 Hz) - 7.5 kW (60 Hz) |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight    | Heat exchanger motor power      |                    |
|                                      | 450 kg    | 7.5 kW (50/60 Hz)               |                    |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

**GH315**

GH355

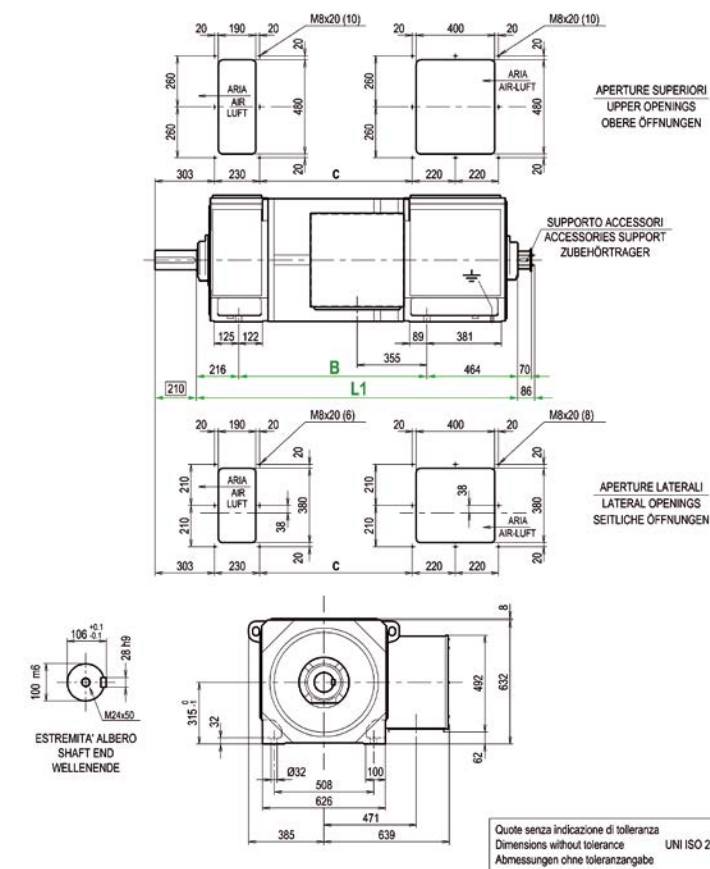
GH400

GH450

## GH315 XK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 5300<br>Field time constant (s): 1.10<br>Motor mass (kg): 2605 (IC06)<br>Moment of inertia (kg m²): 12.7 |                    |              | Armature circuit        | Winding code           |
|---------------------------------------|-------|-------|-------|-------|-------|--------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|
| 400 V                                 | 420 V | 460 V | 520 V | 600 V | 700 V | RATED OUTPUT kW                                                                                                                | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |
| 205                                   | 215   | 250   | 280   | 330   | 400   | 102                                                                                                                            | 108                | 77.8         | 1.1687                  | 0.240                  |
|                                       |       |       |       |       |       | 120                                                                                                                            | 325                | 80.5         |                         |                        |
|                                       |       |       |       |       |       | 140                                                                                                                            |                    | 82.5         |                         |                        |
|                                       |       |       |       |       |       | 166                                                                                                                            |                    | 84.6         |                         |                        |
|                                       |       |       |       |       |       | 198                                                                                                                            |                    | 86.6         |                         |                        |
|                                       |       | 220   | 260   | 310   | 370   | 108                                                                                                                            | 293                | 80.0         | 2.204                   | 0.273                  |
|                                       |       |       |       |       |       | 125                                                                                                                            |                    | 82.1         |                         |                        |
|                                       |       |       |       |       |       | 149                                                                                                                            |                    | 84.3         |                         |                        |
|                                       |       |       |       |       |       | 177                                                                                                                            |                    | 86.3         |                         |                        |

## GH315 IM1001 - IP44 - IC37



| Size    | B    | L1   | C   |
|---------|------|------|-----|
| GH315 M | 960  | 1640 | 779 |
| GH315 L | 1010 | 1690 | 829 |
| GH315 P | 1070 | 1750 | 889 |
| GH315 X | 1140 | 1820 | 959 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH315 MK       | 2100            | 9.2                       | 4200                 | 0.85                    | 2400                   | 120               | 1800               |
| GH315 LK       | 2200            | 10.4                      | 4500                 | 0.92                    | 2400                   | 120               | 1800               |
| GH315 PK       | 2340            | 11.5                      | 4900                 | 1.01                    | 2400                   | 120               | 1800               |
| GH315 XK       | 2500            | 12.7                      | 5300                 | 1.10                    | 2300                   | 120               | 1800               |

| Bearings                             | Drive end |                                 | Opposite drive end |
|--------------------------------------|-----------|---------------------------------|--------------------|
|                                      | Coupling  | Pulley                          |                    |
| B3 – B5                              | 6222 C3   | NU222ECJ C3                     | 6221 C3            |
| V1 – V3                              | 6222 C3   | NU222ECJ C3                     | 7221 BE            |
| Electrical blower (IC06)             | Weight    | Blower motor power              |                    |
|                                      | 105 kg    | 5.5 kW (50 Hz) - 7.5 kW (60 Hz) |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight    | Heat exchanger motor power      |                    |
|                                      | 450 kg    | 7.5 kW (50/60 Hz)               |                    |



DC MOTORS

|      |                                                          |
|------|----------------------------------------------------------|
| 1.   | GENERAL INFORMATION                                      |
| 2.   | STANDARDS AND QUALITY                                    |
| 2.1  | Reference standards                                      |
| 2.2  | CE Marking                                               |
| 2.3  | Quality system                                           |
| 3.   | IDENTIFICATION CODE                                      |
| 4.   | DESIGN FEATURES                                          |
| 4.1  | Rotor                                                    |
| 4.2  | Commutator                                               |
| 4.3  | Stator                                                   |
| 4.4  | Brushholder yoke                                         |
| 4.5  | Bearings                                                 |
| 4.6  | Belted and radial thrust application                     |
| 5.   | CONSTRUCTION FEATURES                                    |
| 5.1  | Coupling and shaft extension                             |
| 5.2  | Mounting arrangement                                     |
| 5.3  | Degree of protection                                     |
| 5.4  | Cooling method                                           |
| 5.5  | Maximum allowable speeds                                 |
| 5.6  | Noise level                                              |
| 5.7  | Vibrations and balancing                                 |
| 5.8  | Conduit box                                              |
| 5.9  | Groud terminals                                          |
| 5.10 | Cross-section drawing                                    |
| 6.   | MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS |
| 6.1  | Ratings                                                  |
| 6.2  | Supply voltage                                           |
| 6.3  | Maximum loads                                            |
| 6.4  | Current rate-of-rise                                     |
| 6.5  | Speed regulation                                         |
| 6.6  | Duty with large speed regulation                         |
| 6.7  | Excitation                                               |
| 6.8  | Maximum current at locked rotor                          |
| 6.9  | Accessories                                              |
| 7.   | TESTS                                                    |
| 8.   | OUTPUT POWER DIAGRAMS                                    |
| HOME |                                                          |

GH225

GH250

GH280

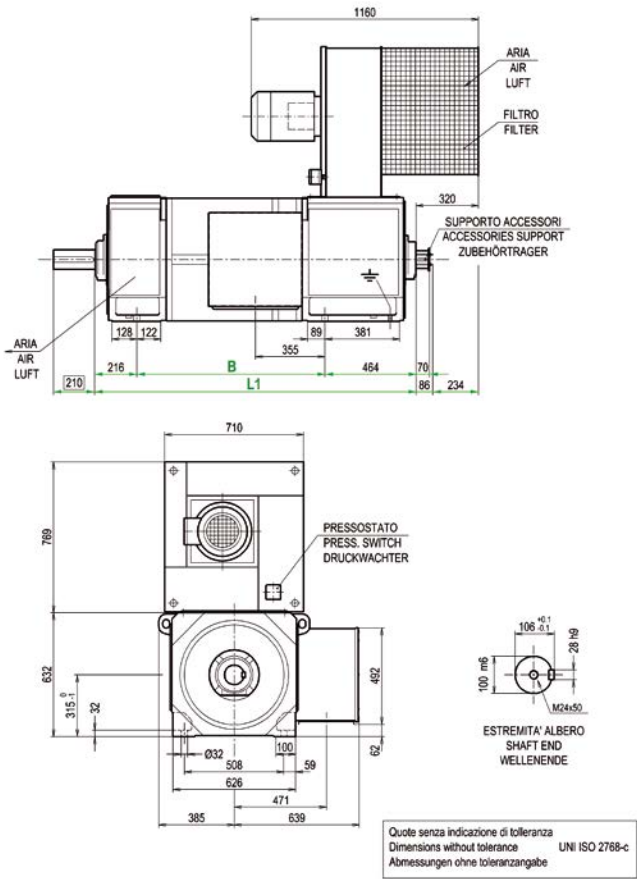
GH315

GH355

GH400

GH450

GH315 IM1001 - IP23 - IC06



| Size    | B    | L1   |
|---------|------|------|
| GH315 M | 960  | 1640 |
| GH315 L | 1010 | 1690 |
| GH315 P | 1070 | 1750 |
| GH315 X | 1140 | 1820 |

| TECHNICAL DATA                       |                 |                           |                      |                         |                        |                   |                    | Bearings |                                 |  | Drive end |        | Opposite drive end |
|--------------------------------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|----------|---------------------------------|--|-----------|--------|--------------------|
| Size                                 | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    | Coupling | Pulley                          |  | Coupling  | Pulley |                    |
|                                      |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |          |                                 |  |           |        |                    |
| GH315 MK                             | 2100            | 9.2                       | 4200                 | 0.85                    | 2400                   | 120               | 1800               |          |                                 |  |           |        |                    |
| GH315 LK                             | 2200            | 10.4                      | 4500                 | 0.92                    | 2400                   | 120               | 1800               |          |                                 |  |           |        |                    |
| GH315 PK                             | 2340            | 11.5                      | 4900                 | 1.01                    | 2400                   | 120               | 1800               |          |                                 |  |           |        |                    |
| GH315 XK                             | 2500            | 12.7                      | 5300                 | 1.10                    | 2300                   | 120               | 1800               |          |                                 |  |           |        |                    |
| Electrical blower (IC06)             |                 |                           |                      |                         |                        |                   |                    | Weight   | Blower motor power              |  |           |        |                    |
|                                      |                 |                           |                      |                         |                        |                   |                    | 105 kg   | 5.5 kW (50 Hz) - 7.5 kW (60 Hz) |  |           |        |                    |
| Air-To-Water Heat Exchanger (IC 86W) |                 |                           |                      |                         |                        |                   |                    | Weight   | Heat exchanger motor power      |  |           |        |                    |
|                                      |                 |                           |                      |                         |                        |                   |                    | 450 kg   | 7.5 kW (50/60 Hz)               |  |           |        |                    |





DC MOTORS

|      |                                                          |
|------|----------------------------------------------------------|
| 1.   | GENERAL INFORMATION                                      |
| 2.   | STANDARDS AND QUALITY                                    |
| 2.1  | Reference standards                                      |
| 2.2  | CE Marking                                               |
| 2.3  | Quality system                                           |
| 3.   | IDENTIFICATION CODE                                      |
| 4.   | DESIGN FEATURES                                          |
| 4.1  | Rotor                                                    |
| 4.2  | Commutator                                               |
| 4.3  | Stator                                                   |
| 4.4  | Brushholder yoke                                         |
| 4.5  | Bearings                                                 |
| 4.6  | Belted and radial thrust application                     |
| 5.   | CONSTRUCTION FEATURES                                    |
| 5.1  | Coupling and shaft extension                             |
| 5.2  | Mounting arrangement                                     |
| 5.3  | Degree of protection                                     |
| 5.4  | Cooling method                                           |
| 5.5  | Maximum allowable speeds                                 |
| 5.6  | Noise level                                              |
| 5.7  | Vibrations and balancing                                 |
| 5.8  | Conduit box                                              |
| 5.9  | Groud terminals                                          |
| 5.10 | Cross-section drawing                                    |
| 6.   | MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS |
| 6.1  | Ratings                                                  |
| 6.2  | Supply voltage                                           |
| 6.3  | Maximum loads                                            |
| 6.4  | Current rate-of-rise                                     |
| 6.5  | Speed regulation                                         |
| 6.6  | Duty with large speed regulation                         |
| 6.7  | Excitation                                               |
| 6.8  | Maximum current at locked rotor                          |
| 6.9  | Accessories                                              |
| 7.   | TESTS                                                    |
| 8.   | OUTPUT POWER DIAGRAMS                                    |
| HOME |                                                          |

GH225

GH250

GH280

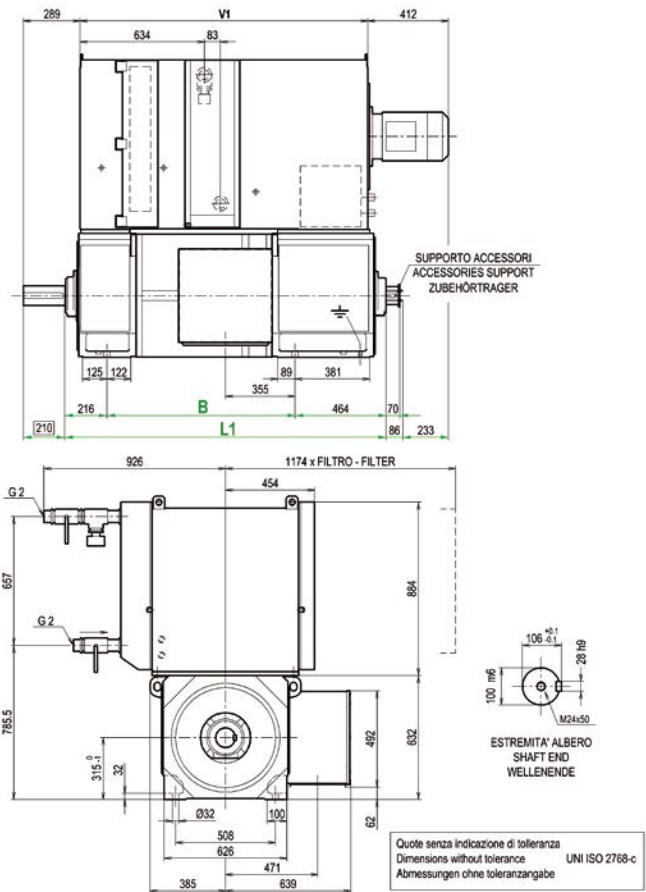
GH315

GH355

GH400

GH450

GH315 IM1001 - IP54 - IC86W



| Size    | B    | L1   | V1   |
|---------|------|------|------|
| GH315 M | 960  | 1640 | 1468 |
| GH315 L | 1010 | 1690 | 1518 |
| GH315 P | 1070 | 1750 | 1578 |
| GH315 X | 1140 | 1820 | 1648 |

| TECHNICAL DATA |                    |                              |                         |                            |                           |                      |                    |                                      |                          |                            |                                 |  |
|----------------|--------------------|------------------------------|-------------------------|----------------------------|---------------------------|----------------------|--------------------|--------------------------------------|--------------------------|----------------------------|---------------------------------|--|
| Size           | Motor mass<br>(kg) | Moment of inertia<br>(kg m²) | Excitation power<br>(W) | Field time constant<br>(s) | Max. mech. speed<br>(rpm) | Ventilation data     |                    | Bearings                             | Drive end                |                            | Opposite drive end              |  |
|                |                    |                              |                         |                            |                           | Air flow<br>(m³/min) | Pressure drop (Pa) |                                      | Coupling                 | Pulley                     |                                 |  |
| GH315 MK       | 2100               | 9.2                          | 4200                    | 0.85                       | 2400                      | 120                  | 1800               | B3 – B5<br>V1 – V3                   | 6222 C3                  | NU222ECJ C3                | 6221 C3                         |  |
| GH315 LK       | 2200               | 10.4                         | 4500                    | 0.92                       | 2400                      | 120                  | 1800               |                                      | 6222 C3                  | NU222ECJ C3                | 7221 BE                         |  |
| GH315 PK       | 2340               | 11.5                         | 4900                    | 1.01                       | 2400                      | 120                  | 1800               |                                      | Electrical blower (IC06) | Weight                     | Blower motor power              |  |
| GH315 XK       | 2500               | 12.7                         | 5300                    | 1.10                       | 2300                      | 120                  | 1800               |                                      |                          | 105 kg                     | 5.5 kW (50 Hz) - 7.5 kW (60 Hz) |  |
|                |                    |                              |                         |                            |                           |                      |                    | Air-To-Water Heat Exchanger (IC 86W) | Weight                   | Heat exchanger motor power |                                 |  |
|                |                    |                              |                         |                            |                           |                      |                    |                                      | 450 kg                   | 7.5 kW (50/60 Hz)          |                                 |  |





DC MOTORS

|      |                                                          |
|------|----------------------------------------------------------|
| 1.   | GENERAL INFORMATION                                      |
| 2.   | STANDARDS AND QUALITY                                    |
| 2.1  | Reference standards                                      |
| 2.2  | CE Marking                                               |
| 2.3  | Quality system                                           |
| 3.   | IDENTIFICATION CODE                                      |
| 4.   | DESIGN FEATURES                                          |
| 4.1  | Rotor                                                    |
| 4.2  | Commutator                                               |
| 4.3  | Stator                                                   |
| 4.4  | Brushholder yoke                                         |
| 4.5  | Bearings                                                 |
| 4.6  | Belted and radial thrust application                     |
| 5.   | CONSTRUCTION FEATURES                                    |
| 5.1  | Coupling and shaft extension                             |
| 5.2  | Mounting arrangement                                     |
| 5.3  | Degree of protection                                     |
| 5.4  | Cooling method                                           |
| 5.5  | Maximum allowable speeds                                 |
| 5.6  | Noise level                                              |
| 5.7  | Vibrations and balancing                                 |
| 5.8  | Conduit box                                              |
| 5.9  | Groud terminals                                          |
| 5.10 | Cross-section drawing                                    |
| 6.   | MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS |
| 6.1  | Ratings                                                  |
| 6.2  | Supply voltage                                           |
| 6.3  | Maximum loads                                            |
| 6.4  | Current rate-of-rise                                     |
| 6.5  | Speed regulation                                         |
| 6.6  | Duty with large speed regulation                         |
| 6.7  | Excitation                                               |
| 6.8  | Maximum current at locked rotor                          |
| 6.9  | Accessories                                              |
| 7.   | TESTS                                                    |
| 8.   | OUTPUT POWER DIAGRAMS                                    |
| HOME |                                                          |

GH225

GH250

GH280

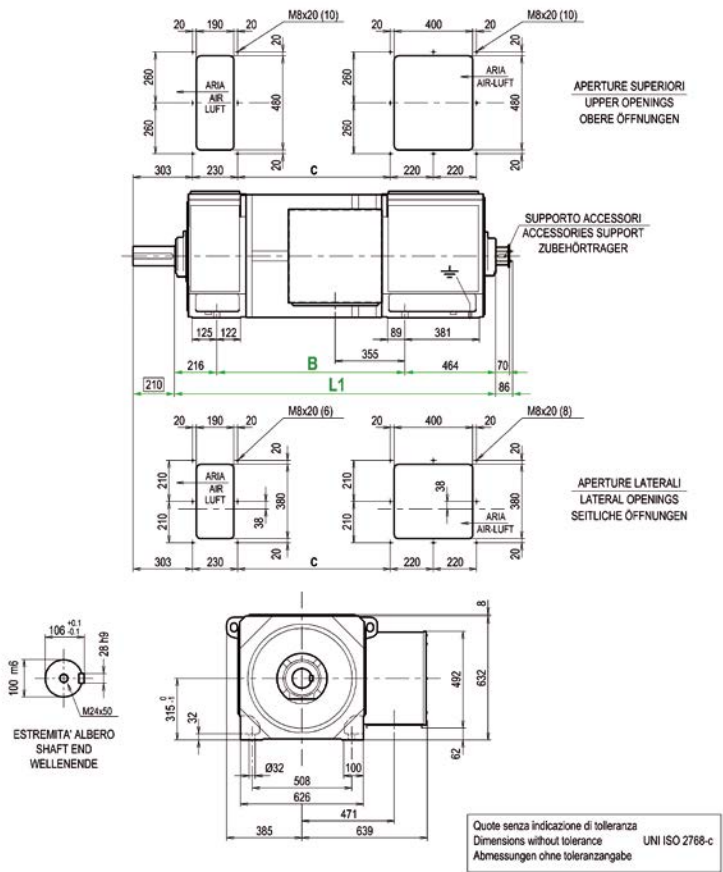
GH315

GH355

GH400

GH450

GH315 IM1001 - IP44 - IC37



| Size    | B    | L1   | C   |
|---------|------|------|-----|
| GH315 M | 960  | 1640 | 779 |
| GH315 L | 1010 | 1690 | 829 |
| GH315 P | 1070 | 1750 | 889 |
| GH315 X | 1140 | 1820 | 959 |

| TECHNICAL DATA |                    |                                 |                            |                               |                              |                      |                       |
|----------------|--------------------|---------------------------------|----------------------------|-------------------------------|------------------------------|----------------------|-----------------------|
| Size           | Motor mass<br>(kg) | Moment of<br>inertia<br>(kg m²) | Excitation<br>power<br>(W) | Field time<br>constant<br>(s) | Max. mech.<br>speed<br>(rpm) | Ventilation data     |                       |
|                |                    |                                 |                            |                               |                              | Air flow<br>(m³/min) | Pressure<br>drop (Pa) |
| GH315 MK       | 2100               | 9.2                             | 4200                       | 0.85                          | 2400                         | 120                  | 1800                  |
| GH315 LK       | 2200               | 10.4                            | 4500                       | 0.92                          | 2400                         | 120                  | 1800                  |
| GH315 PK       | 2340               | 11.5                            | 4900                       | 1.01                          | 2400                         | 120                  | 1800                  |
| GH315 XK       | 2500               | 12.7                            | 5300                       | 1.10                          | 2300                         | 120                  | 1800                  |

| Bearings                             | Drive end |                                 | Opposite drive end |
|--------------------------------------|-----------|---------------------------------|--------------------|
|                                      | Coupling  | Pulley                          |                    |
| B3 – B5                              | 6222 C3   | NU222ECJ C3                     | 6221 C3            |
| V1 – V3                              | 6222 C3   | NU222ECJ C3                     | 7221 BE            |
| Electrical blower (IC06)             | Weight    | Blower motor power              |                    |
|                                      | 105 kg    | 5.5 kW (50 Hz) - 7.5 kW (60 Hz) |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight    | Heat exchanger motor power      |                    |
|                                      | 450 kg    | 7.5 kW (50/60 Hz)               |                    |





## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

GH315

**GH355**

GH400

GH450

#### GH355

Derating for field weakening operation

GH355 K

Performance of compensated motors

GH355 SK

GH355 MK

GH355 LK

GH355 PK

Overall dimensions

GH355 IM1001-IP23-IC06

GH355 IM1001-IP54-IC86W

GH355 IM1001-IP44-IC37



Performance Tables are displayed on multiple pages, alongside the data tables are repeated alternately overall dimensions (IC06- IC86W-IC37)

## DC MOTORS

|      |                                                          |
|------|----------------------------------------------------------|
| 1.   | GENERAL INFORMATION                                      |
| 2.   | STANDARDS AND QUALITY                                    |
| 2.1  | Reference standards                                      |
| 2.2  | CE Marking                                               |
| 2.3  | Quality system                                           |
| 3.   | IDENTIFICATION CODE                                      |
| 4.   | DESIGN FEATURES                                          |
| 4.1  | Rotor                                                    |
| 4.2  | Commutator                                               |
| 4.3  | Stator                                                   |
| 4.4  | Brushholder yoke                                         |
| 4.5  | Bearings                                                 |
| 4.6  | Belted and radial thrust application                     |
| 5.   | CONSTRUCTION FEATURES                                    |
| 5.1  | Coupling and shaft extension                             |
| 5.2  | Mounting arrangement                                     |
| 5.3  | Degree of protection                                     |
| 5.4  | Cooling method                                           |
| 5.5  | Maximum allowable speeds                                 |
| 5.6  | Noise level                                              |
| 5.7  | Vibrations and balancing                                 |
| 5.8  | Conduit box                                              |
| 5.9  | Groud terminals                                          |
| 5.10 | Cross-section drawing                                    |
| 6.   | MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS |
| 6.1  | Ratings                                                  |
| 6.2  | Supply voltage                                           |
| 6.3  | Maximum loads                                            |
| 6.4  | Current rate-of-rise                                     |
| 6.5  | Speed regulation                                         |
| 6.6  | Duty with large speed regulation                         |
| 6.7  | Excitation                                               |
| 6.8  | Maximum current at locked rotor                          |
| 6.9  | Accessories                                              |
| 7.   | TESTS                                                    |
| 8.   | OUTPUT POWER DIAGRAMS                                    |
|      | HOME                                                     |

GH225

GH250

GH280

GH315

**GH355**

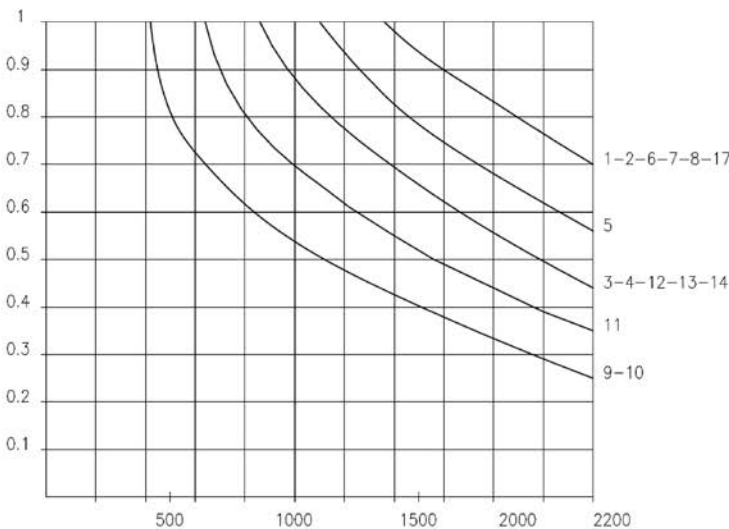
GH400

GH450

### GH 355 K

**RIDUZIONE DELLA POTENZA IN DISECCITAZIONE  
DERATING FOR FIELD WEAKENING OPERATION  
LEISTUNGSREDUZIERUNG BEI FELDSWÄCHUNG**

GH 355 K (compensata - compensated - kompensiert)  
[ 180% sovraccarico - overload - überlast ]



P = K x P tabella potenza disponibile    Allowable power output P = K x P table    Werfügbare Leistung P = K x P table

per/for/für  
GH 355 SK    K = K x 1.40  
GH 355 MK    K = K x 1.26  
GH 355 LK    K = K x 1.12  
GH 355 PK    K = K x 1.0

Per K ≥ 1 niente declassamento    For K ≥ 1 no derating    Für K ≥ 1 keine Leistungsreduzierung

| TECHNICAL DATA |                    |                                 |                            |                               |                              |                      |                       |
|----------------|--------------------|---------------------------------|----------------------------|-------------------------------|------------------------------|----------------------|-----------------------|
| Size           | Motor mass<br>(kg) | Moment of<br>inertia<br>(kg m²) | Excitation<br>power<br>(W) | Field time<br>constant<br>(s) | Max. mech.<br>speed<br>(rpm) | Ventilation data     |                       |
|                |                    |                                 |                            |                               |                              | Air flow<br>(m³/min) | Pressure<br>drop (Pa) |
| GH355 SK       | 2700               | 15.0                            | 5000                       | 1.33                          | 2200                         | 140                  | 2050                  |
| GH355 MK       | 2950               | 16.5                            | 5200                       | 1.40                          | 2200                         | 140                  | 2050                  |
| GH355 LK       | 3100               | 18.8                            | 5600                       | 1.48                          | 2200                         | 140                  | 2050                  |
| GH355 PK       | 3320               | 21.0                            | 6000                       | 1.55                          | 2100                         | 140                  | 2050                  |

| Bearings | Drive end |             | Opposite drive end |
|----------|-----------|-------------|--------------------|
|          | Coupling  | Pulley      |                    |
| B3 – B5  | 6224 C3   | NU224ECJ C3 | 6224 C3            |
| V1 – V3  | 6224 C3   | NU224ECJ C3 | 7224 B             |

|                          |        |                     |  |
|--------------------------|--------|---------------------|--|
| Electrical blower (IC06) | Weight | Blower motor power  |  |
|                          | 110 kg | 7.5 kW (50 / 60 Hz) |  |

|                                      |        |                            |  |
|--------------------------------------|--------|----------------------------|--|
| Air-To-Water Heat Exchanger (IC 86W) | Weight | Heat exchanger motor power |  |
|                                      | 440 kg | 9.2 kW (50 / 60 Hz)        |  |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

## GH315

## GH355

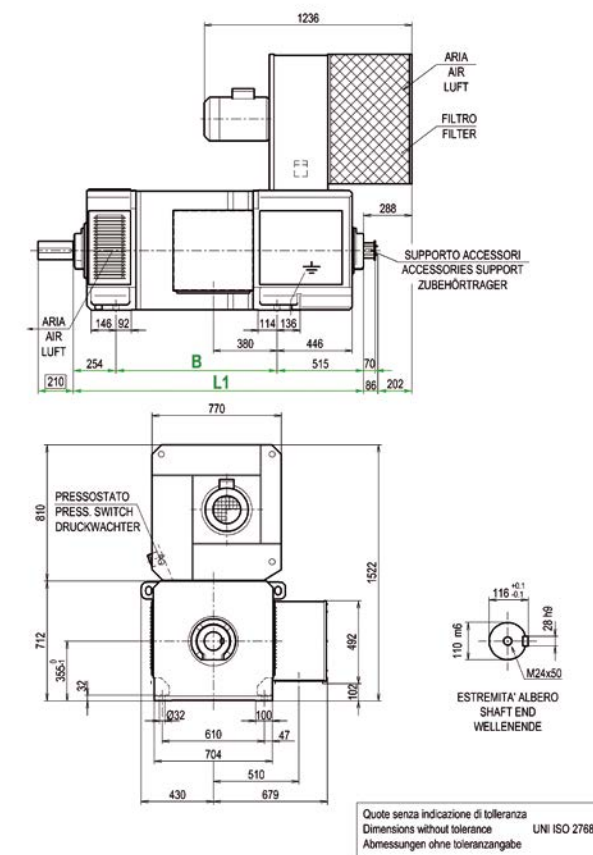
## GH400

## GH450

### GH355 SK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 5000<br>Field time costant (s): 1.33<br>Motor mass (kg): 2810 (IC06)<br>Moment of inertia (kg m²): 15.0 |                    |              | Armature circuit        |                        | Winding code |      |      |
|---------------------------------------|-------|-------|-------|-------|-------|-------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|------|------|
| 400 V                                 | 420 V | 460 V | 520 V | 600 V | 700 V | RATED OUTPUT kW                                                                                                               | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |      |      |
| 1010                                  |       |       |       |       |       | 556                                                                                                                           | 1500               | 92.7         | 0.211                   | 0.012                  | 1            |      |      |
|                                       | 1080  |       |       |       |       | 585                                                                                                                           | 1500               | 93.0         |                         |                        |              |      |      |
|                                       |       | 1200  |       |       |       |                                                                                                                               | 645                | 1500         |                         |                        |              | 93.4 |      |
|                                       |       |       |       | 1370  |       |                                                                                                                               |                    | 725          |                         |                        |              | 1485 | 93.9 |
| 920                                   |       |       |       |       |       | 510                                                                                                                           | 1380               | 92.2         | 0.253                   | 0.015                  | 2            |      |      |
|                                       | 970   |       |       |       |       | 535                                                                                                                           | 1380               | 92.5         |                         |                        |              |      |      |
|                                       |       | 1060  |       |       |       |                                                                                                                               | 589                | 1380         |                         |                        |              | 92.9 |      |
|                                       |       |       |       | 1250  |       |                                                                                                                               |                    | 665          |                         |                        |              | 1370 | 93.5 |
| 840                                   |       |       |       |       | 1450  | 760                                                                                                                           | 1350               | 94.1         | 0.307                   | 0.017                  | 3            |      |      |
|                                       | 900   |       |       |       |       | 465                                                                                                                           | 1260               | 91.9         |                         |                        |              |      |      |
|                                       |       |       |       |       |       |                                                                                                                               | 487                | 1260         |                         |                        |              | 92.2 |      |
|                                       |       | 980   |       |       |       |                                                                                                                               | 537                | 1260         |                         |                        |              | 92.7 |      |
|                                       |       |       | 1140  |       |       |                                                                                                                               |                    | 611          |                         |                        |              | 1260 | 93.3 |
|                                       |       |       |       |       | 1340  |                                                                                                                               |                    |              |                         |                        |              | 698  | 1240 |
| 750                                   |       |       |       |       | 1570  | 800                                                                                                                           | 1210               | 94.4         | 0.375                   | 0.020                  | 4            |      |      |
|                                       | 790   |       |       |       |       | 410                                                                                                                           | 1115               | 91.8         |                         |                        |              |      |      |
|                                       |       |       |       |       |       |                                                                                                                               | 431                | 1115         |                         |                        |              | 92.1 |      |
|                                       |       |       | 870   |       |       |                                                                                                                               | 474                | 1115         |                         |                        |              | 92.6 |      |
| 680                                   |       |       |       |       |       | 540                                                                                                                           | 1115               | 93.2         | 0.450                   | 0.025                  | 5            |      |      |
|                                       | 720   |       |       |       |       | 624                                                                                                                           | 1110               | 93.8         |                         |                        |              |      |      |
|                                       |       |       |       |       |       | 1370                                                                                                                          | 720                | 1090         |                         |                        |              | 94.4 |      |
|                                       |       | 790   |       |       |       |                                                                                                                               | 371                | 1019         |                         |                        |              | 91.0 |      |
|                                       |       |       |       |       |       |                                                                                                                               |                    | 391          |                         |                        |              | 1019 | 91.4 |
|                                       |       |       |       |       |       |                                                                                                                               |                    | 431          |                         |                        |              | 1019 | 91.9 |
| 590                                   |       |       |       |       |       | 491                                                                                                                           | 1019               | 92.6         | 0.587                   | 0.036                  | 6            |      |      |
|                                       | 620   |       |       |       |       |                                                                                                                               | 565                | 1010         |                         |                        |              | 93.4 |      |
|                                       |       | 790   |       |       |       |                                                                                                                               | 660                | 1005         |                         |                        |              | 94.0 |      |
|                                       |       |       | 910   |       |       |                                                                                                                               |                    | 312          |                         |                        |              |      | 89.6 |
|                                       |       |       |       |       |       |                                                                                                                               |                    |              |                         |                        |              | 329  |      |
|                                       |       | 540   |       |       |       |                                                                                                                               |                    | 364          |                         |                        |              | 872  | 90.7 |
| 570                                   |       |       |       |       |       | 415                                                                                                                           |                    | 91.6         |                         |                        |              |      |      |
|                                       | 680   |       |       |       |       |                                                                                                                               | 483                |              | 92.5                    |                        |              |      |      |
|                                       |       |       |       |       |       |                                                                                                                               | 1090               | 570          |                         | 93.3                   |              |      |      |
| 540                                   |       |       |       |       |       | 285                                                                                                                           |                    | 89.4         | 0.704                   | 0.040                  | 7            |      |      |
|                                       | 570   |       |       |       |       |                                                                                                                               | 300                |              |                         |                        |              | 89.8 |      |
|                                       |       | 620   |       |       |       |                                                                                                                               | 331                | 796          |                         |                        |              | 90.5 |      |
|                                       |       |       | 710   |       |       |                                                                                                                               |                    | 378          |                         |                        |              |      | 91.4 |
|                                       |       |       |       |       |       |                                                                                                                               |                    |              |                         |                        |              | 440  |      |
|                                       |       |       |       |       |       |                                                                                                                               | 970                | 519          |                         |                        |              |      | 93.1 |

### GH355 IM1001 - IP23 - IC06



| Size    | B    | L1   |
|---------|------|------|
| GH355 S | 960  | 1729 |
| GH355 M | 1010 | 1779 |
| GH355 L | 1070 | 1839 |
| GH355 P | 1140 | 1909 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH355 SK       | 2700            | 15.0                      | 5000                 | 1.33                    | 2200                   | 140               | 2050               |
| GH355 MK       | 2950            | 16.5                      | 5200                 | 1.40                    | 2200                   | 140               | 2050               |
| GH355 LK       | 3100            | 18.8                      | 5600                 | 1.48                    | 2200                   | 140               | 2050               |
| GH355 PK       | 3320            | 21.0                      | 6000                 | 1.55                    | 2100                   | 140               | 2050               |

| Bearings                             | Drive end |                            | Opposite drive end |
|--------------------------------------|-----------|----------------------------|--------------------|
|                                      | Coupling  | Pulley                     |                    |
| B3 - B5                              | 6224 C3   | NU224ECJ C3                | 6224 C3            |
| V1 - V3                              | 6224 C3   | NU224ECJ C3                | 7224 B             |
| Electrical blower (IC06)             | Weight    | Blower motor power         |                    |
|                                      | 110 kg    | 7.5 kW (50 / 60 Hz)        |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight    | Heat exchanger motor power |                    |
|                                      | 440 kg    | 9.2 kW (50 / 60 Hz)        |                    |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

GH315

**GH355**

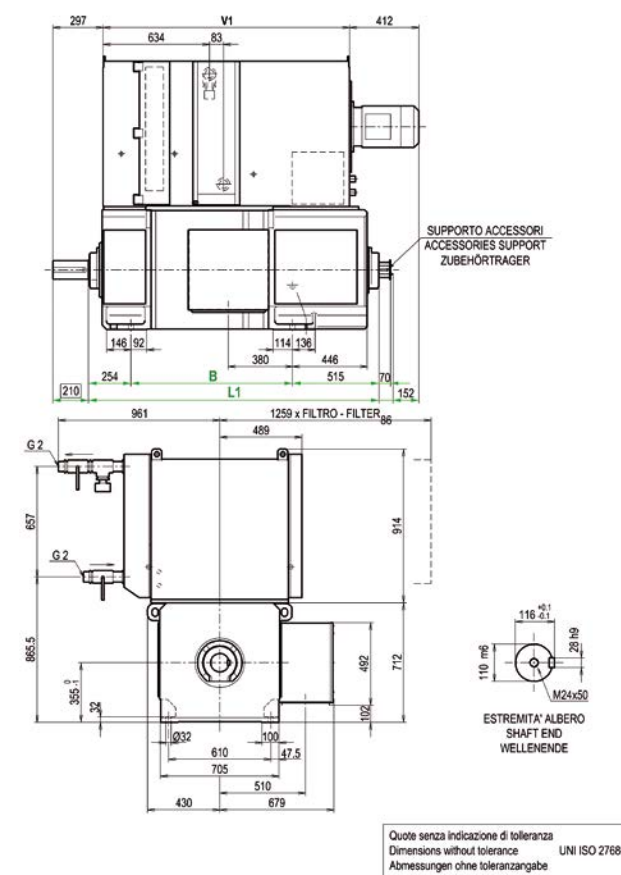
GH400

GH450

## GH355 SK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 5000<br>Field time costant (s): 1.33<br>Motor mass (kg): 2810 (IC06)<br>Moment of inertia (kg m²): 15.0 |                    |              | Armature circuit        |                        | Winding code |
|---------------------------------------|-------|-------|-------|-------|-------|-------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|
| 400 V                                 | 420 V | 460 V | 520 V | 600 V | 700 V | RATED OUTPUT kW                                                                                                               | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |
| 450                                   | 480   |       |       |       |       | 240                                                                                                                           |                    | 87.8         | 0.970                   | 0.056                  | 8            |
|                                       |       |       |       |       |       | 251                                                                                                                           |                    | 88.3         |                         |                        |              |
|                                       |       | 530   |       |       |       | 278                                                                                                                           | 678                | 89.2         |                         |                        |              |
|                                       |       |       | 600   |       |       | 318                                                                                                                           |                    | 90.2         |                         |                        |              |
|                                       |       |       |       | 700   |       | 371                                                                                                                           |                    | 91.3         |                         |                        |              |
|                                       |       |       |       |       | 820   | 438                                                                                                                           |                    | 92.3         |                         |                        |              |
| 400                                   | 420   |       |       |       |       | 216                                                                                                                           | 628                | 86.2         | 1.295                   | 0.071                  | 9            |
|                                       |       |       |       |       |       | 230                                                                                                                           | 628                | 86.8         |                         |                        |              |
|                                       |       | 460   |       |       |       | 250                                                                                                                           | 621                | 87.8         |                         |                        |              |
|                                       |       |       | 530   |       |       | 287                                                                                                                           | 621                | 89.0         |                         |                        |              |
|                                       |       |       |       | 620   |       | 336                                                                                                                           | 621                | 90.3         |                         |                        |              |
|                                       |       |       |       |       |       |                                                                                                                               |                    |              |                         |                        |              |
| 350                                   | 370   |       |       |       |       | 189                                                                                                                           |                    | 85.9         | 1.574                   | 0.083                  | 10           |
|                                       |       |       |       |       |       | 200                                                                                                                           |                    | 86.5         |                         |                        |              |
|                                       |       | 410   |       |       |       | 222                                                                                                                           | 552                | 87.5         |                         |                        |              |
|                                       |       |       | 480   |       |       | 255                                                                                                                           |                    | 88.8         |                         |                        |              |
|                                       |       |       |       | 540   |       | 298                                                                                                                           |                    | 90.0         |                         |                        |              |
|                                       |       |       |       |       | 660   | 352                                                                                                                           |                    | 91.2         |                         |                        |              |
| 320                                   | 330   |       |       |       |       | 171                                                                                                                           |                    | 84.2         | 1.880                   | 0.102                  | 11           |
|                                       |       |       |       |       |       | 181                                                                                                                           |                    | 84.9         |                         |                        |              |
|                                       |       | 370   |       |       |       | 202                                                                                                                           | 510                | 86.1         |                         |                        |              |
|                                       |       |       | 420   |       |       | 232                                                                                                                           |                    | 87.5         |                         |                        |              |
|                                       |       |       |       | 490   |       | 272                                                                                                                           |                    | 89.0         |                         |                        |              |
|                                       |       |       |       |       | 580   | 322                                                                                                                           |                    | 90.3         |                         |                        |              |
| 270                                   | 280   |       |       |       |       | 139                                                                                                                           |                    | 81.3         | 2.459                   | 0.147                  | 12           |
|                                       |       |       |       |       |       | 148                                                                                                                           |                    | 82.1         |                         |                        |              |
|                                       |       | 310   |       |       |       | 165                                                                                                                           | 429                | 83.5         |                         |                        |              |
|                                       |       |       | 360   |       |       | 190                                                                                                                           |                    | 85.3         |                         |                        |              |
|                                       |       |       |       | 420   |       | 224                                                                                                                           |                    | 87.0         |                         |                        |              |
|                                       |       |       |       |       | 500   | 266                                                                                                                           |                    | 88.6         |                         |                        |              |
| 250                                   | 260   |       |       |       |       | 128                                                                                                                           |                    | 81.0         | 2.938                   | 0.163                  | 13           |
|                                       |       |       |       |       |       | 135                                                                                                                           |                    | 81.8         |                         |                        |              |
|                                       |       | 290   |       |       |       | 151                                                                                                                           | 395                | 83.3         |                         |                        |              |
|                                       |       |       | 330   |       |       | 174                                                                                                                           |                    | 85.0         |                         |                        |              |
|                                       |       |       |       | 390   |       | 206                                                                                                                           |                    | 86.8         |                         |                        |              |
|                                       |       |       |       |       | 460   | 245                                                                                                                           |                    | 88.5         |                         |                        |              |
| 200                                   | 220   |       |       |       |       | 105                                                                                                                           |                    | 77.6         | 4.023                   | 0.227                  | 14           |
|                                       |       |       |       |       |       | 112                                                                                                                           |                    | 78.6         |                         |                        |              |
|                                       |       | 240   |       |       |       | 125                                                                                                                           | 340                | 80.4         |                         |                        |              |
|                                       |       |       | 280   |       |       | 146                                                                                                                           |                    | 82.5         |                         |                        |              |
|                                       |       |       |       | 320   |       | 172                                                                                                                           |                    | 84.6         |                         |                        |              |
|                                       |       |       |       |       | 380   | 206                                                                                                                           |                    | 86.6         |                         |                        |              |

## GH355 IM1001 - IP54 - IC86W



| Size    | B    | L1   | V1   |
|---------|------|------|------|
| GH355 S | 960  | 1729 | 1468 |
| GH355 M | 1010 | 1779 | 1518 |
| GH355 L | 1070 | 1839 | 1578 |
| GH355 P | 1140 | 1909 | 1648 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH355 SK       | 2700            | 15.0                      | 5000                 | 1.33                    | 2200                   | 140               | 2050               |
| GH355 MK       | 2950            | 16.5                      | 5200                 | 1.40                    | 2200                   | 140               | 2050               |
| GH355 LK       | 3100            | 18.8                      | 5600                 | 1.48                    | 2200                   | 140               | 2050               |
| GH355 PK       | 3320            | 21.0                      | 6000                 | 1.55                    | 2100                   | 140               | 2050               |

| Bearings                             | Drive end |                            | Opposite drive end |
|--------------------------------------|-----------|----------------------------|--------------------|
|                                      | Coupling  | Pulley                     |                    |
| B3 - B5                              | 6224 C3   | NU224ECJ C3                | 6224 C3            |
| V1 - V3                              | 6224 C3   | NU224ECJ C3                | 7224 B             |
| Electrical blower (IC06)             | Weight    | Blower motor power         |                    |
|                                      | 110 kg    | 7.5 kW (50 / 60 Hz)        |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight    | Heat exchanger motor power |                    |
|                                      | 440 kg    | 9.2 kW (50 / 60 Hz)        |                    |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

## GH315

## GH355

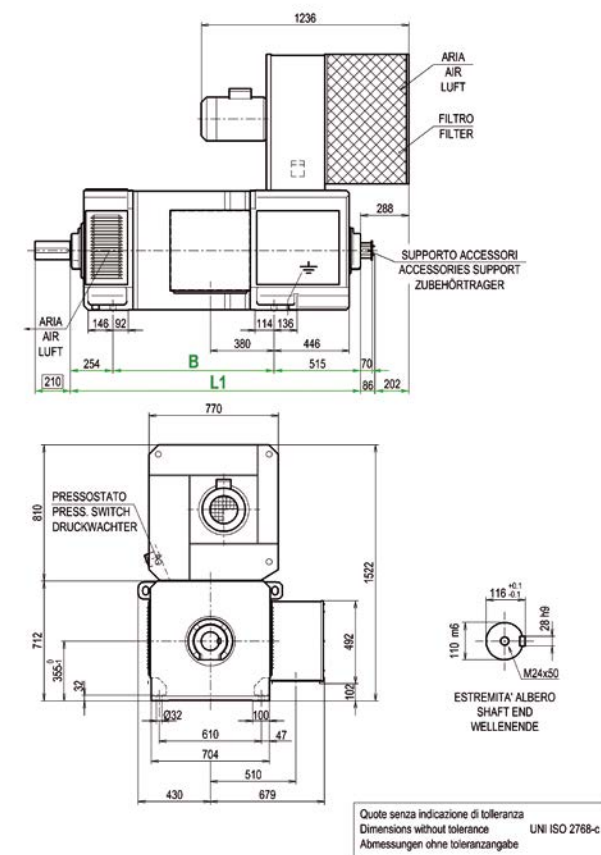
## GH400

## GH450

### GH355 MK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 5200<br>Field time costant (s): 1.40<br>Motor mass (kg): 3060 (IC06)<br>Moment of inertia (kg m²): 16.5 |                    |              | Armature circuit        |                        | Winding code |      |      |
|---------------------------------------|-------|-------|-------|-------|-------|-------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|------|------|
| 400 V                                 | 420 V | 460 V | 520 V | 600 V | 700 V | RATED OUTPUT kW                                                                                                               | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |      |      |
| 910                                   |       |       |       |       |       | 558                                                                                                                           | 1508               | 92.5         | 0.222                   | 0.013                  | 1            |      |      |
|                                       | 980   |       |       |       |       | 587                                                                                                                           | 1508               | 92.7         |                         |                        |              |      |      |
|                                       |       | 1080  |       |       |       |                                                                                                                               | 646                | 1508         |                         |                        |              | 93.2 |      |
|                                       |       |       |       | 1240  |       |                                                                                                                               |                    | 725          |                         |                        |              | 1485 | 93.7 |
| 830                                   |       |       |       |       |       | 507                                                                                                                           | 1380               | 91.9         | 0.267                   | 0.016                  | 2            |      |      |
|                                       | 870   |       |       |       |       | 534                                                                                                                           | 1380               | 92.2         |                         |                        |              |      |      |
|                                       |       | 960   |       |       |       |                                                                                                                               | 588                | 1380         |                         |                        |              | 92.7 |      |
|                                       |       |       |       | 1110  |       |                                                                                                                               |                    | 664          |                         |                        |              | 1370 | 93.3 |
| 760                                   |       |       |       |       |       | 763                                                                                                                           | 1355               | 93.9         | 0.323                   | 0.018                  | 3            |      |      |
|                                       | 800   |       |       |       |       | 462                                                                                                                           | 1260               | 91.6         |                         |                        |              |      |      |
|                                       |       |       |       |       |       |                                                                                                                               | 486                | 1260         |                         |                        |              | 91.9 |      |
|                                       |       | 880   |       |       |       |                                                                                                                               | 536                | 1260         |                         |                        |              | 92.5 |      |
|                                       |       |       | 1010  |       |       |                                                                                                                               |                    | 610          |                         |                        |              | 1260 | 93.1 |
|                                       |       |       |       |       | 1170  |                                                                                                                               |                    |              |                         |                        |              | 697  | 1240 |
| 680                                   |       |       |       |       | 1400  | 800                                                                                                                           | 1215               | 94.4         | 0.395                   | 0.021                  | 4            |      |      |
|                                       | 710   |       |       |       |       |                                                                                                                               | 408                | 1115         |                         |                        |              | 91.5 |      |
|                                       |       |       |       |       |       |                                                                                                                               | 430                | 1115         |                         |                        |              | 91.8 |      |
|                                       |       | 780   |       |       |       |                                                                                                                               | 473                | 1115         |                         |                        |              | 92.4 |      |
|                                       |       |       | 890   |       |       |                                                                                                                               |                    | 539          |                         |                        |              | 1115 | 93.0 |
|                                       |       |       |       |       | 1050  |                                                                                                                               |                    |              |                         |                        |              | 623  | 1110 |
| 610                                   |       |       |       |       |       | 720                                                                                                                           | 1090               | 94.3         | 0.474                   | 0.026                  | 5            |      |      |
|                                       | 650   |       |       |       |       |                                                                                                                               | 370                | 1020         |                         |                        |              | 90.7 |      |
|                                       |       |       |       |       |       |                                                                                                                               | 390                | 1020         |                         |                        |              | 91.0 |      |
|                                       |       | 710   |       |       |       |                                                                                                                               | 430                | 1020         |                         |                        |              | 91.7 |      |
|                                       |       |       | 810   |       |       |                                                                                                                               |                    | 490          |                         |                        |              | 1020 | 92.4 |
|                                       |       |       |       |       | 960   |                                                                                                                               |                    |              |                         |                        |              | 565  | 1010 |
| 530                                   |       |       |       |       |       | 663                                                                                                                           | 1010               | 93.8         | 0.617                   | 0.038                  | 6            |      |      |
|                                       | 560   |       |       |       |       |                                                                                                                               | 311                |              |                         |                        |              | 89.2 |      |
|                                       |       |       |       |       |       |                                                                                                                               | 328                |              |                         |                        |              | 89.6 |      |
|                                       |       | 620   |       |       |       |                                                                                                                               | 362                | 872          |                         |                        |              | 90.4 |      |
|                                       |       |       | 700   |       |       |                                                                                                                               |                    | 414          |                         |                        |              |      | 91.3 |
|                                       |       |       |       |       | 820   |                                                                                                                               |                    |              |                         |                        |              | 482  |      |
| 480                                   |       |       |       |       |       | 568                                                                                                                           |                    | 93.0         | 0.741                   | 0.043                  | 7            |      |      |
|                                       | 510   |       |       |       |       |                                                                                                                               | 283                |              |                         |                        |              | 88.9 |      |
|                                       |       |       |       |       |       |                                                                                                                               | 298                |              |                         |                        |              | 89.4 |      |
|                                       |       | 560   |       |       |       |                                                                                                                               | 330                | 796          |                         |                        |              | 90.2 |      |
|                                       |       |       | 640   |       |       |                                                                                                                               |                    | 377          |                         |                        |              |      | 91.1 |
|                                       |       |       |       |       | 750   |                                                                                                                               |                    |              |                         |                        |              | 439  |      |
|                                       |       |       |       |       | 880   |                                                                                                                               | 92.9               |              |                         |                        |              |      |      |

### GH355 IM1001 - IP23 - IC06



| Size    | B    | L1   |
|---------|------|------|
| GH355 S | 960  | 1729 |
| GH355 M | 1010 | 1779 |
| GH355 L | 1070 | 1839 |
| GH355 P | 1140 | 1909 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH355 SK       | 2700            | 15.0                      | 5000                 | 1.33                    | 2200                   | 140               | 2050               |
| GH355 MK       | 2950            | 16.5                      | 5200                 | 1.40                    | 2200                   | 140               | 2050               |
| GH355 LK       | 3100            | 18.8                      | 5600                 | 1.48                    | 2200                   | 140               | 2050               |
| GH355 PK       | 3320            | 21.0                      | 6000                 | 1.55                    | 2100                   | 140               | 2050               |

| Bearings                             | Drive end |                            | Opposite drive end |
|--------------------------------------|-----------|----------------------------|--------------------|
|                                      | Coupling  | Pulley                     |                    |
| B3 - B5                              | 6224 C3   | NU224ECJ C3                | 6224 C3            |
| V1 - V3                              | 6224 C3   | NU224ECJ C3                | 7224 B             |
| Electrical blower (IC06)             | Weight    | Blower motor power         |                    |
|                                      | 110 kg    | 7.5 kW (50 / 60 Hz)        |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight    | Heat exchanger motor power |                    |
|                                      | 440 kg    | 9.2 kW (50 / 60 Hz)        |                    |



## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

## GH315

## GH355

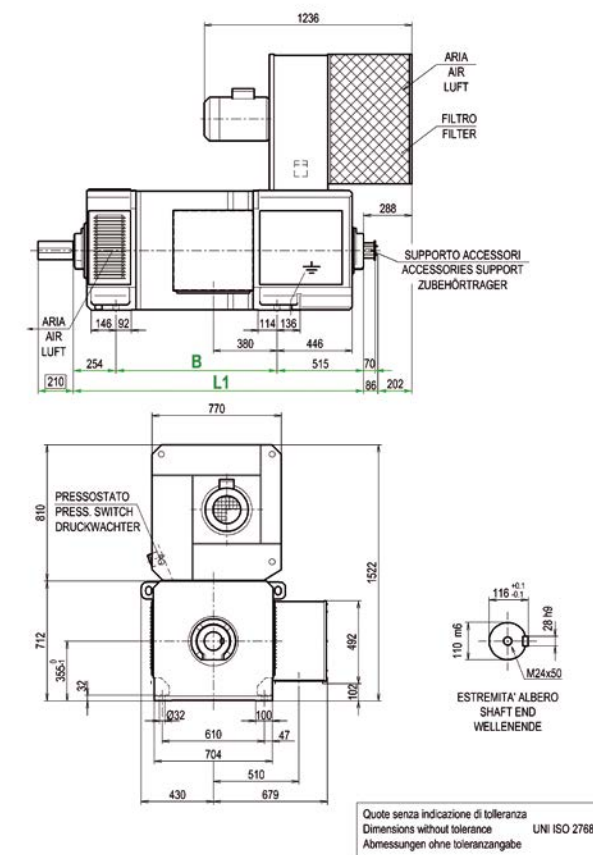
## GH400

## GH450

### GH355 LK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 5600<br>Field time constant (s): 1.48<br>Motor mass (kg): 3210 (IC06)<br>Moment of inertia (kg m²): 18.8 |                    |              | Armature circuit        |                        | Winding code |
|---------------------------------------|-------|-------|-------|-------|-------|--------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|
| 400 V                                 | 420 V | 460 V | 520 V | 600 V | 700 V | RATED OUTPUT kW                                                                                                                | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |
| 810                                   | 860   | 960   | 1080  |       |       | 556                                                                                                                            | 1508               | 92.2         | 0.236                   | 0.014                  | 1            |
|                                       |       |       |       |       |       | 586                                                                                                                            | 1508               | 92.5         |                         |                        |              |
|                                       |       |       |       |       |       | 645                                                                                                                            | 1508               | 93.0         |                         |                        |              |
| 730                                   | 770   | 850   | 1010  | 1150  |       | 723                                                                                                                            | 1485               | 93.5         | 0.283                   | 0.017                  | 2            |
|                                       |       |       |       |       |       | 505                                                                                                                            | 1380               | 91.6         |                         |                        |              |
|                                       |       |       |       |       |       | 532                                                                                                                            | 1380               | 91.9         |                         |                        |              |
| 670                                   | 710   | 780   | 910   | 1060  | 1250  | 586                                                                                                                            | 1380               | 92.5         | 0.343                   | 0.019                  | 3            |
|                                       |       |       |       |       |       | 663                                                                                                                            | 1370               | 93.1         |                         |                        |              |
|                                       |       |       |       |       |       | 761                                                                                                                            | 1355               | 93.8         |                         |                        |              |
| 600                                   | 630   | 700   | 790   | 940   | 1110  | 461                                                                                                                            | 1260               | 91.3         | 0.419                   | 0.023                  | 4            |
|                                       |       |       |       |       |       | 485                                                                                                                            | 1260               | 91.6         |                         |                        |              |
|                                       |       |       |       |       |       | 535                                                                                                                            | 1260               | 92.2         |                         |                        |              |
| 540                                   | 570   | 630   | 720   | 830   | 1010  | 610                                                                                                                            | 1260               | 92.9         | 0.502                   | 0.028                  | 5            |
|                                       |       |       |       |       |       | 695                                                                                                                            | 1240               | 93.5         |                         |                        |              |
|                                       |       |       |       |       |       | 800                                                                                                                            | 1215               | 94.2         |                         |                        |              |
| 470                                   | 500   | 550   | 620   | 720   | 860   | 406                                                                                                                            | 1115               | 91.1         | 0.654                   | 0.040                  | 6            |
|                                       |       |       |       |       |       | 428                                                                                                                            | 1115               | 91.5         |                         |                        |              |
|                                       |       |       |       |       |       | 472                                                                                                                            | 1115               | 92.1         |                         |                        |              |
| 430                                   | 450   | 500   | 570   | 660   | 780   | 537                                                                                                                            | 1115               | 92.8         | 0.785                   | 0.045                  | 7            |
|                                       |       |       |       |       |       | 622                                                                                                                            | 1110               | 93.5         |                         |                        |              |
|                                       |       |       |       |       |       | 720                                                                                                                            | 1090               | 94.1         |                         |                        |              |
|                                       |       |       |       |       |       | 370                                                                                                                            | 1021               | 90.3         | 0.785                   | 0.045                  | 7            |
|                                       |       |       |       |       |       | 388                                                                                                                            | 1021               | 90.6         |                         |                        |              |
|                                       |       |       |       |       |       | 428                                                                                                                            | 1021               | 91.3         |                         |                        |              |
|                                       |       |       |       |       |       | 489                                                                                                                            | 1021               | 92.1         | 0.785                   | 0.045                  | 7            |
|                                       |       |       |       |       |       | 563                                                                                                                            | 1010               | 92.9         |                         |                        |              |
|                                       |       |       |       |       |       | 662                                                                                                                            | 1010               | 93.6         |                         |                        |              |
|                                       |       |       |       |       |       | 309                                                                                                                            |                    | 88.7         | 0.785                   | 0.045                  | 7            |
|                                       |       |       |       |       |       | 326                                                                                                                            |                    | 89.2         |                         |                        |              |
|                                       |       |       |       |       |       | 360                                                                                                                            | 872                | 90.0         |                         |                        |              |
|                                       |       |       |       |       |       | 412                                                                                                                            |                    | 90.9         | 0.785                   | 0.045                  | 7            |
|                                       |       |       |       |       |       | 480                                                                                                                            |                    | 91.9         |                         |                        |              |
|                                       |       |       |       |       |       | 566                                                                                                                            |                    | 92.8         |                         |                        |              |
|                                       |       |       |       |       |       | 281                                                                                                                            |                    | 88.4         | 0.785                   | 0.045                  | 7            |
|                                       |       |       |       |       |       | 297                                                                                                                            |                    | 88.9         |                         |                        |              |
|                                       |       |       |       |       |       | 328                                                                                                                            | 796                | 89.7         |                         |                        |              |
|                                       |       |       |       |       |       | 375                                                                                                                            |                    | 90.7         | 0.785                   | 0.045                  | 7            |
|                                       |       |       |       |       |       | 438                                                                                                                            |                    | 91.7         |                         |                        |              |
|                                       |       |       |       |       |       | 516                                                                                                                            |                    | 92.6         |                         |                        |              |

### GH355 IM1001 - IP23 - IC06



| Size    | B    | L1   |
|---------|------|------|
| GH355 S | 960  | 1729 |
| GH355 M | 1010 | 1779 |
| GH355 L | 1070 | 1839 |
| GH355 P | 1140 | 1909 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH355 SK       | 2700            | 15.0                      | 5000                 | 1.33                    | 2200                   | 140               | 2050               |
| GH355 MK       | 2950            | 16.5                      | 5200                 | 1.40                    | 2200                   | 140               | 2050               |
| GH355 LK       | 3100            | 18.8                      | 5600                 | 1.48                    | 2200                   | 140               | 2050               |
| GH355 PK       | 3320            | 21.0                      | 6000                 | 1.55                    | 2100                   | 140               | 2050               |

| Bearings                             | Drive end |                            | Opposite drive end |
|--------------------------------------|-----------|----------------------------|--------------------|
|                                      | Coupling  | Pulley                     |                    |
| B3 - B5                              | 6224 C3   | NU224ECJ C3                | 6224 C3            |
| V1 - V3                              | 6224 C3   | NU224ECJ C3                | 7224 B             |
| Electrical blower (IC06)             | Weight    | Blower motor power         |                    |
|                                      | 110 kg    | 7.5 kW (50 / 60 Hz)        |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight    | Heat exchanger motor power |                    |
|                                      | 440 kg    | 9.2 kW (50 / 60 Hz)        |                    |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

GH315

**GH355**

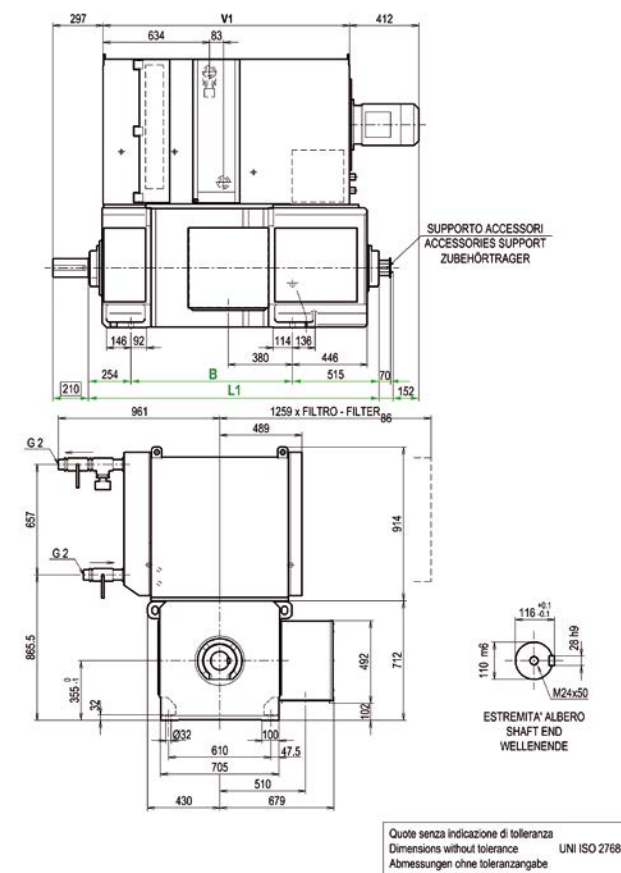
GH400

GH450

## GH355 LK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 5600<br>Field time constant (s): 1.48<br>Motor mass (kg): 3210 (IC06)<br>Moment of inertia (kg m²): 18.8 |                    |              | Armature circuit        |                        | Winding code |
|---------------------------------------|-------|-------|-------|-------|-------|--------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|
| 400 V                                 | 420 V | 460 V | 520 V | 600 V | 700 V | RATED OUTPUT kW                                                                                                                | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |
| 360                                   |       |       |       |       |       | 234                                                                                                                            |                    | 86.6         |                         |                        |              |
|                                       | 380   |       |       |       |       | 248                                                                                                                            |                    | 87.2         |                         |                        |              |
|                                       |       | 420   |       |       |       | 275                                                                                                                            | 678                | 88.1         | 1.082                   | 0.063                  | 8            |
|                                       |       |       | 480   |       |       | 315                                                                                                                            |                    | 89.3         |                         |                        |              |
|                                       |       |       |       | 560   |       | 368                                                                                                                            |                    | 90.5         |                         |                        |              |
|                                       |       |       |       |       | 660   | 435                                                                                                                            |                    | 91.6         |                         |                        |              |
| 315                                   |       |       |       |       |       | 215                                                                                                                            | 628                | 84.9         |                         |                        |              |
|                                       | 330   |       |       |       |       | 226                                                                                                                            | 628                | 85.5         | 1.445                   | 0.080                  | 9            |
|                                       |       | 370   |       |       |       | 250                                                                                                                            | 620                | 86.6         |                         |                        |              |
|                                       |       |       | 430   |       |       | 285                                                                                                                            | 620                | 88.0         |                         |                        |              |
|                                       |       |       |       | 520   |       | 332                                                                                                                            | 620                | 89.4         |                         |                        |              |
| 275                                   |       |       |       |       |       | 186                                                                                                                            |                    | 84.4         |                         |                        |              |
|                                       | 290   |       |       |       |       | 197                                                                                                                            |                    | 85.1         |                         |                        |              |
|                                       |       | 320   |       |       |       | 219                                                                                                                            | 552                | 86.3         | 1.756                   | 0.093                  | 10           |
|                                       |       |       | 390   |       |       | 251                                                                                                                            |                    | 87.7         |                         |                        |              |
|                                       |       |       |       | 450   |       | 295                                                                                                                            |                    | 89.1         |                         |                        |              |
|                                       |       |       |       |       | 530   | 349                                                                                                                            |                    | 90.4         |                         |                        |              |
| 245                                   |       |       |       |       |       | 168                                                                                                                            |                    | 82.6         |                         |                        |              |
|                                       | 260   |       |       |       |       | 178                                                                                                                            |                    | 83.3         |                         |                        |              |
|                                       |       | 290   |       |       |       | 198                                                                                                                            | 510                | 84.7         | 2.098                   | 0.115                  | 11           |
|                                       |       |       | 340   |       |       | 228                                                                                                                            |                    | 86.3         |                         |                        |              |
|                                       |       |       |       | 390   |       | 268                                                                                                                            |                    | 87.9         |                         |                        |              |
|                                       |       |       |       |       | 465   | 319                                                                                                                            |                    | 89.4         |                         |                        |              |
| 210                                   |       |       |       |       |       | 136                                                                                                                            |                    | 79.3         |                         |                        |              |
|                                       | 220   |       |       |       |       | 144                                                                                                                            |                    | 80.2         |                         |                        |              |
|                                       |       | 250   |       |       |       | 161                                                                                                                            | 429                | 81.8         | 2.744                   | 0.165                  | 12           |
|                                       |       |       | 290   |       |       | 187                                                                                                                            |                    | 83.7         |                         |                        |              |
|                                       |       |       |       | 340   |       | 221                                                                                                                            |                    | 85.7         |                         |                        |              |
|                                       |       |       |       |       | 400   | 263                                                                                                                            |                    | 87.5         |                         |                        |              |
| 190                                   |       |       |       |       |       | 124                                                                                                                            |                    | 79.0         |                         |                        |              |
|                                       | 210   |       |       |       |       | 132                                                                                                                            |                    | 79.9         |                         |                        |              |
|                                       |       | 230   |       |       |       | 148                                                                                                                            | 395                | 81.5         | 3.278                   | 0.183                  | 13           |
|                                       |       |       | 260   |       |       | 171                                                                                                                            |                    | 83.5         |                         |                        |              |
|                                       |       |       |       | 310   |       | 202                                                                                                                            |                    | 85.5         |                         |                        |              |
|                                       |       |       |       |       | 360   | 241                                                                                                                            |                    | 87.4         |                         |                        |              |
|                                       |       |       |       |       |       | 123                                                                                                                            |                    | 79.0         |                         |                        |              |
|                                       |       | 185   |       |       |       | 143                                                                                                                            | 340                | 80.6         | 4.489                   | 0.255                  | 14           |
|                                       |       |       | 215   |       |       | 170                                                                                                                            |                    | 83.0         |                         |                        |              |
|                                       |       |       |       | 255   |       | 203                                                                                                                            |                    | 85.2         |                         |                        |              |
|                                       |       |       |       |       | 305   |                                                                                                                                |                    |              |                         |                        |              |

## GH355 IM1001 - IP54 - IC86W



| Size    | B    | L1   | V1   |
|---------|------|------|------|
| GH355 S | 960  | 1729 | 1468 |
| GH355 M | 1010 | 1779 | 1518 |
| GH355 L | 1070 | 1839 | 1578 |
| GH355 P | 1140 | 1909 | 1648 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH355 SK       | 2700            | 15.0                      | 5000                 | 1.33                    | 2200                   | 140               | 2050               |
| GH355 MK       | 2950            | 16.5                      | 5200                 | 1.40                    | 2200                   | 140               | 2050               |
| GH355 LK       | 3100            | 18.8                      | 5600                 | 1.48                    | 2200                   | 140               | 2050               |
| GH355 PK       | 3320            | 21.0                      | 6000                 | 1.55                    | 2100                   | 140               | 2050               |

| Bearings                             | Drive end |                            | Opposite drive end |
|--------------------------------------|-----------|----------------------------|--------------------|
|                                      | Coupling  | Pulley                     |                    |
| B3 - B5                              | 6224 C3   | NU224ECJ C3                | 6224 C3            |
| V1 - V3                              | 6224 C3   | NU224ECJ C3                | 7224 B             |
| Electrical blower (IC06)             | Weight    | Blower motor power         |                    |
|                                      | 110 kg    | 7.5 kW (50 / 60 Hz)        |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight    | Heat exchanger motor power |                    |
|                                      | 440 kg    | 9.2 kW (50 / 60 Hz)        |                    |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

## GH315

## GH355

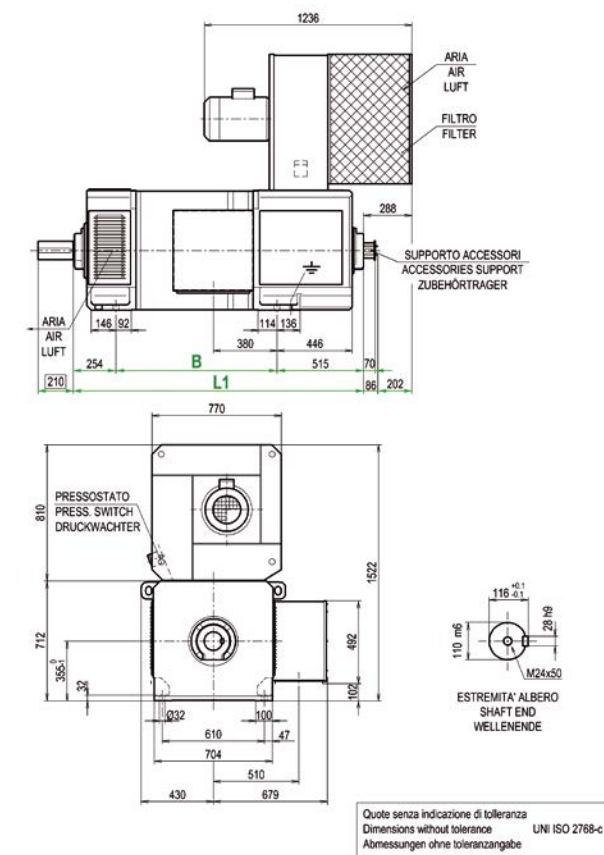
## GH400

## GH450

### GH355 PK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 6000<br>Field time costant (s): 1.55<br>Motor mass (kg): 3430 (IC06)<br>Moment of inertia (kg m²): 21.0 |                    |              | Armature circuit        |                        | Winding code |      |
|---------------------------------------|-------|-------|-------|-------|-------|-------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|------|
| 400 V                                 | 420 V | 460 V | 520 V | 600 V | 700 V | RATED OUTPUT kW                                                                                                               | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |      |
| 720                                   | 760   |       |       |       |       | 555                                                                                                                           | 1508               | 91.9         | 0.251                   | 0.015                  | 1            |      |
|                                       |       | 830   |       |       |       | 585                                                                                                                           | 1508               | 92.2         |                         |                        |              |      |
|                                       |       |       |       |       |       | 643                                                                                                                           | 1508               | 92.7         |                         |                        |              |      |
|                                       |       |       |       | 960   |       |                                                                                                                               | 720                | 1485         |                         |                        |              | 93.3 |
| 655                                   | 685   |       |       |       |       | 503                                                                                                                           | 1380               | 91.3         | 0.301                   | 0.018                  | 2            |      |
|                                       |       | 760   |       |       |       | 530                                                                                                                           | 1380               | 91.6         |                         |                        |              |      |
|                                       |       |       |       | 860   |       |                                                                                                                               | 584                | 1380         |                         |                        |              | 92.2 |
|                                       |       |       |       |       | 1020  |                                                                                                                               | 660                | 1370         |                         |                        |              | 92.8 |
| 600                                   | 630   |       |       |       |       | 760                                                                                                                           | 1355               | 93.5         | 0.366                   | 0.021                  | 3            |      |
|                                       |       |       |       |       |       | 460                                                                                                                           | 1260               | 90.9         |                         |                        |              |      |
|                                       |       | 690   |       |       |       | 482                                                                                                                           | 1260               | 91.2         |                         |                        |              |      |
|                                       |       |       |       |       |       | 532                                                                                                                           | 1260               | 91.8         |                         |                        |              |      |
|                                       |       |       | 790   |       |       | 606                                                                                                                           | 1260               | 92.6         |                         |                        |              |      |
|                                       |       |       |       |       | 920   |                                                                                                                               | 695                | 1240         |                         |                        |              | 93.3 |
| 530                                   | 560   |       |       |       | 1110  | 800                                                                                                                           | 1210               | 94.1         | 0.447                   | 0.025                  | 4            |      |
|                                       |       |       |       |       |       | 405                                                                                                                           | 1115               | 90.7         |                         |                        |              |      |
|                                       |       | 620   |       |       |       | 426                                                                                                                           | 1115               | 91.1         |                         |                        |              |      |
|                                       |       |       |       |       |       | 470                                                                                                                           | 1115               | 91.7         |                         |                        |              |      |
|                                       |       |       | 700   |       |       | 536                                                                                                                           | 1115               | 92.5         |                         |                        |              |      |
|                                       |       |       |       |       | 820   |                                                                                                                               | 620                | 1110         |                         |                        |              | 93.2 |
| 485                                   | 510   |       |       |       | 980   | 722                                                                                                                           | 1100               | 93.9         | 0.536                   | 0.031                  | 5            |      |
|                                       |       |       |       |       |       | 366                                                                                                                           | 1020               | 89.8         |                         |                        |              |      |
|                                       |       | 560   |       |       |       | 386                                                                                                                           | 1020               | 90.2         |                         |                        |              |      |
|                                       |       |       |       |       |       | 426                                                                                                                           | 1020               | 90.9         |                         |                        |              |      |
|                                       |       |       | 650   |       |       | 486                                                                                                                           | 1020               | 91.7         |                         |                        |              |      |
|                                       |       |       |       |       | 750   |                                                                                                                               | 560                | 1010         |                         |                        |              | 92.6 |
| 420                                   | 440   |       |       |       | 890   | 660                                                                                                                           | 1010               | 93.4         | 0.698                   | 0.043                  | 6            |      |
|                                       |       |       |       |       |       | 307                                                                                                                           |                    | 88.1         |                         |                        |              |      |
|                                       |       | 490   |       |       |       | 324                                                                                                                           |                    | 88.6         |                         |                        |              |      |
|                                       |       |       |       |       |       | 358                                                                                                                           | 872                | 89.4         |                         |                        |              |      |
|                                       |       |       | 560   |       |       | 410                                                                                                                           |                    | 90.5         |                         |                        |              |      |
|                                       |       |       |       |       | 650   |                                                                                                                               | 478                |              |                         |                        |              | 91.5 |
| 380                                   | 400   |       |       |       | 770   | 564                                                                                                                           |                    | 92.5         | 0.837                   | 0.049                  | 7            |      |
|                                       |       |       |       |       |       | 277                                                                                                                           |                    | 87.9         |                         |                        |              |      |
|                                       |       | 440   |       |       |       | 293                                                                                                                           |                    | 88.4         |                         |                        |              |      |
|                                       |       |       |       |       |       | 324                                                                                                                           | 790                | 89.2         |                         |                        |              |      |
|                                       |       |       | 500   |       |       | 370                                                                                                                           |                    | 90.3         |                         |                        |              |      |
|                                       |       |       |       |       | 590   |                                                                                                                               | 433                |              |                         |                        |              | 91.3 |
|                                       |       |       | 690   |       | 510   |                                                                                                                               | 92.3               |              |                         |                        |              |      |

### GH355 IM1001 - IP23 - IC06



| Size    | B    | L1   |
|---------|------|------|
| GH355 S | 960  | 1729 |
| GH355 M | 1010 | 1779 |
| GH355 L | 1070 | 1839 |
| GH355 P | 1140 | 1909 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH355 SK       | 2700            | 15.0                      | 5000                 | 1.33                    | 2200                   | 140               | 2050               |
| GH355 MK       | 2950            | 16.5                      | 5200                 | 1.40                    | 2200                   | 140               | 2050               |
| GH355 LK       | 3100            | 18.8                      | 5600                 | 1.48                    | 2200                   | 140               | 2050               |
| GH355 PK       | 3320            | 21.0                      | 6000                 | 1.55                    | 2100                   | 140               | 2050               |

| Bearings                             | Drive end |                            | Opposite drive end |
|--------------------------------------|-----------|----------------------------|--------------------|
|                                      | Coupling  | Pulley                     |                    |
| B3 - B5                              | 6224 C3   | NU224ECJ C3                | 6224 C3            |
| V1 - V3                              | 6224 C3   | NU224ECJ C3                | 7224 B             |
| Electrical blower (IC06)             | Weight    | Blower motor power         |                    |
|                                      | 110 kg    | 7.5 kW (50 / 60 Hz)        |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight    | Heat exchanger motor power |                    |
|                                      | 440 kg    | 9.2 kW (50 / 60 Hz)        |                    |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

GH315

**GH355**

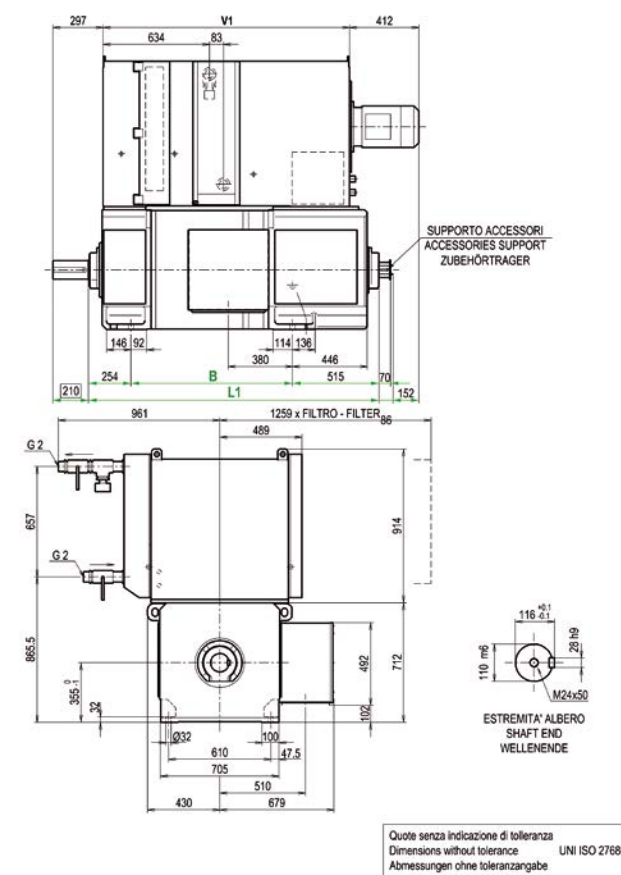
GH400

GH450

## GH355 PK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 6000<br>Field time costant (s): 1.55<br>Motor mass (kg): 3430 (IC06)<br>Moment of inertia (kg m²): 21.0 |                    |              | Armature circuit        |                        | Winding code |       |      |      |
|---------------------------------------|-------|-------|-------|-------|-------|-------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|-------|------|------|
| 400 V                                 | 420 V | 460 V | 520 V | 600 V | 700 V | RATED OUTPUT kW                                                                                                               | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |       |      |      |
| 315                                   |       |       |       |       |       | 232                                                                                                                           |                    | 85.8         | 1.153                   | 0.069                  | 8            |       |      |      |
|                                       | 335   |       |       |       |       | 246                                                                                                                           |                    | 86.4         |                         |                        |              |       |      |      |
|                                       |       | 370   |       |       |       |                                                                                                                               | 272                | 678          |                         |                        |              | 87.5  |      |      |
|                                       |       |       | 425   |       |       |                                                                                                                               |                    | 313          |                         |                        |              |       | 88.7 |      |
|                                       |       |       |       | 495   |       |                                                                                                                               |                    |              |                         |                        |              | 366   |      | 90.0 |
|                                       |       |       |       |       | 585   |                                                                                                                               |                    |              |                         |                        |              |       | 433  |      |
| 275                                   |       |       |       |       |       | 212                                                                                                                           | 628                | 83.8         | 1.540                   | 0.087                  | 9            |       |      |      |
|                                       | 290   |       |       |       |       | 224                                                                                                                           | 628                | 84.5         |                         |                        |              |       |      |      |
|                                       |       | 320   |       |       |       |                                                                                                                               | 245                | 620          |                         |                        |              | 85.7  |      |      |
|                                       |       |       | 370   |       |       |                                                                                                                               |                    | 280          |                         |                        |              | 620   | 87.2 |      |
|                                       |       |       |       | 440   |       |                                                                                                                               |                    |              |                         |                        |              | 330   | 620  | 88.7 |
|                                       |       |       |       |       |       |                                                                                                                               |                    |              |                         |                        |              |       |      |      |
| 240                                   |       |       |       |       |       | 184                                                                                                                           |                    | 83.5         | 1.872                   | 0.101                  | 10           |       |      |      |
|                                       | 255   |       |       |       |       | 195                                                                                                                           |                    | 84.2         |                         |                        |              |       |      |      |
|                                       |       | 285   |       |       |       |                                                                                                                               | 217                | 553          |                         |                        |              | 85.5  |      |      |
|                                       |       |       | 330   |       |       |                                                                                                                               |                    | 250          |                         |                        |              |       | 87.0 |      |
|                                       |       |       |       | 390   |       |                                                                                                                               |                    |              |                         |                        |              | 293   |      | 88.5 |
|                                       |       |       |       |       | 460   |                                                                                                                               |                    |              |                         |                        |              |       | 348  |      |
| 215                                   |       |       |       |       |       | 166                                                                                                                           |                    | 81.5         | 2.237                   | 0.125                  | 11           |       |      |      |
|                                       | 230   |       |       |       |       | 176                                                                                                                           |                    | 82.3         |                         |                        |              |       |      |      |
|                                       |       | 255   |       |       |       |                                                                                                                               | 196                | 510          |                         |                        |              | 83.7  |      |      |
|                                       |       |       | 295   |       |       |                                                                                                                               |                    | 226          |                         |                        |              |       | 85.5 |      |
|                                       |       |       |       | 350   |       |                                                                                                                               |                    |              |                         |                        |              | 266   |      | 87.2 |
|                                       |       |       |       |       | 410   |                                                                                                                               |                    |              |                         |                        |              |       | 317  |      |
| 180                                   |       |       |       |       |       | 134                                                                                                                           |                    | 78.0         | 2.925                   | 0.179                  | 12           |       |      |      |
|                                       | 190   |       |       |       |       | 142                                                                                                                           |                    | 79.0         |                         |                        |              |       |      |      |
|                                       |       | 215   |       |       |       |                                                                                                                               | 159                | 430          |                         |                        |              | 80.7  |      |      |
|                                       |       |       | 250   |       |       |                                                                                                                               |                    | 185          |                         |                        |              |       | 82.7 |      |
|                                       |       |       |       | 295   |       |                                                                                                                               |                    |              |                         |                        |              | 219   |      | 84.8 |
|                                       |       |       |       |       | 345   |                                                                                                                               |                    |              |                         |                        |              |       | 261  |      |
|                                       | 200   |       |       |       |       |                                                                                                                               | 146                |              | 80.4                    | 3.495                  | 0.198        | 13    |      |      |
|                                       |       | 230   |       |       |       |                                                                                                                               | 169                | 395          | 82.5                    |                        |              |       |      |      |
|                                       |       |       | 270   |       |       |                                                                                                                               |                    | 200          |                         |                        |              |       | 84.6 |      |
|                                       |       |       |       | 320   |       |                                                                                                                               |                    |              | 239                     |                        |              |       |      | 86.6 |
|                                       |       | 160   |       |       |       |                                                                                                                               |                    | 120          |                         | 76.8                   | 4.786        | 0.277 | 14   |      |
|                                       |       |       | 190   |       |       |                                                                                                                               |                    | 140          | 340                     | 79.3                   |              |       |      |      |
|                                       |       |       |       | 225   |       |                                                                                                                               |                    |              | 167                     |                        |              |       |      | 81.9 |
|                                       |       |       |       |       | 270   |                                                                                                                               |                    |              |                         | 200                    |              |       |      |      |

## GH355 IM1001 - IP54 - IC86W



| Size    | B    | L1   | V1   |
|---------|------|------|------|
| GH355 S | 960  | 1729 | 1468 |
| GH355 M | 1010 | 1779 | 1518 |
| GH355 L | 1070 | 1839 | 1578 |
| GH355 P | 1140 | 1909 | 1648 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH355 SK       | 2700            | 15.0                      | 5000                 | 1.33                    | 2200                   | 140               | 2050               |
| GH355 MK       | 2950            | 16.5                      | 5200                 | 1.40                    | 2200                   | 140               | 2050               |
| GH355 LK       | 3100            | 18.8                      | 5600                 | 1.48                    | 2200                   | 140               | 2050               |
| GH355 PK       | 3320            | 21.0                      | 6000                 | 1.55                    | 2100                   | 140               | 2050               |

| Bearings                             | Drive end |                            | Opposite drive end |
|--------------------------------------|-----------|----------------------------|--------------------|
|                                      | Coupling  | Pulley                     |                    |
| B3 - B5                              | 6224 C3   | NU224ECJ C3                | 6224 C3            |
| V1 - V3                              | 6224 C3   | NU224ECJ C3                | 7224 B             |
| Electrical blower (IC06)             | Weight    | Blower motor power         |                    |
|                                      | 110 kg    | 7.5 kW (50 / 60 Hz)        |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight    | Heat exchanger motor power |                    |
|                                      | 440 kg    | 9.2 kW (50 / 60 Hz)        |                    |



## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

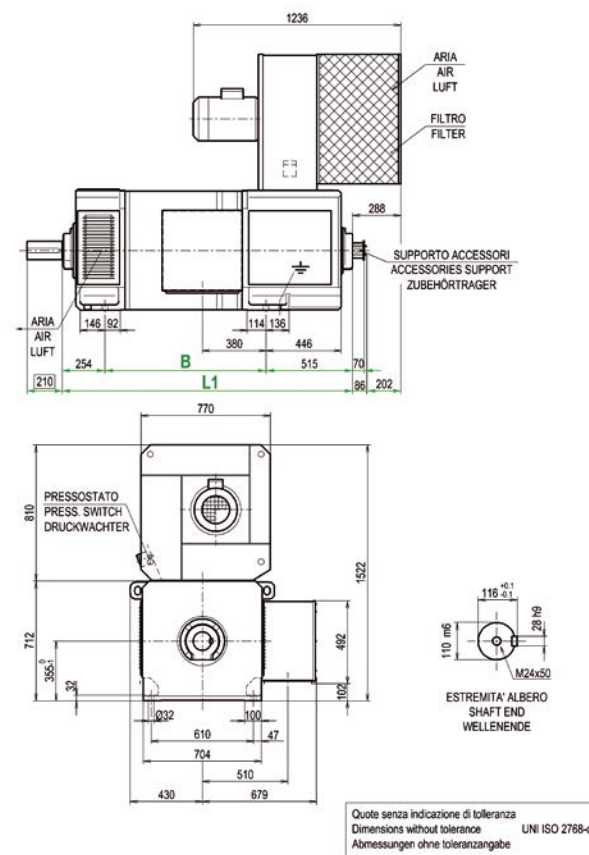
GH315

**GH355**

GH400

GH450

## GH355 IM1001 - IP23 - IC06



| Size    | B    | L1   |
|---------|------|------|
| GH355 S | 960  | 1729 |
| GH355 M | 1010 | 1779 |
| GH355 L | 1070 | 1839 |
| GH355 P | 1140 | 1909 |

| TECHNICAL DATA |                    |                              |                         |                            |                           |                      |                    |                                      |                          |                            |                     |  |
|----------------|--------------------|------------------------------|-------------------------|----------------------------|---------------------------|----------------------|--------------------|--------------------------------------|--------------------------|----------------------------|---------------------|--|
| Size           | Motor mass<br>(kg) | Moment of inertia<br>(kg m²) | Excitation power<br>(W) | Field time constant<br>(s) | Max. mech. speed<br>(rpm) | Ventilation data     |                    | Bearings                             | Drive end                |                            | Opposite drive end  |  |
|                |                    |                              |                         |                            |                           | Air flow<br>(m³/min) | Pressure drop (Pa) |                                      | Coupling                 | Pulley                     |                     |  |
| GH355 SK       | 2700               | 15.0                         | 5000                    | 1.33                       | 2200                      | 140                  | 2050               | B3 – B5<br>V1 – V3                   | 6224 C3                  | NU224ECJ C3                | 6224 C3             |  |
| GH355 MK       | 2950               | 16.5                         | 5200                    | 1.40                       | 2200                      | 140                  | 2050               |                                      | 6224 C3                  | NU224ECJ C3                | 7224 B              |  |
| GH355 LK       | 3100               | 18.8                         | 5600                    | 1.48                       | 2200                      | 140                  | 2050               |                                      | Electrical blower (IC06) | Weight                     | Blower motor power  |  |
| GH355 PK       | 3320               | 21.0                         | 6000                    | 1.55                       | 2100                      | 140                  | 2050               |                                      |                          | 110 kg                     | 7.5 kW (50 / 60 Hz) |  |
|                |                    |                              |                         |                            |                           |                      |                    | Air-To-Water Heat Exchanger (IC 86W) | Weight                   | Heat exchanger motor power |                     |  |
|                |                    |                              |                         |                            |                           |                      |                    |                                      | 440 kg                   | 9.2 kW (50 / 60 Hz)        |                     |  |



GO TO MENU





DC MOTORS

1. GENERAL INFORMATION

2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

3. IDENTIFICATION CODE

4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

7. TESTS

8. OUTPUT POWER DIAGRAMS

GH225

GH250

GH280

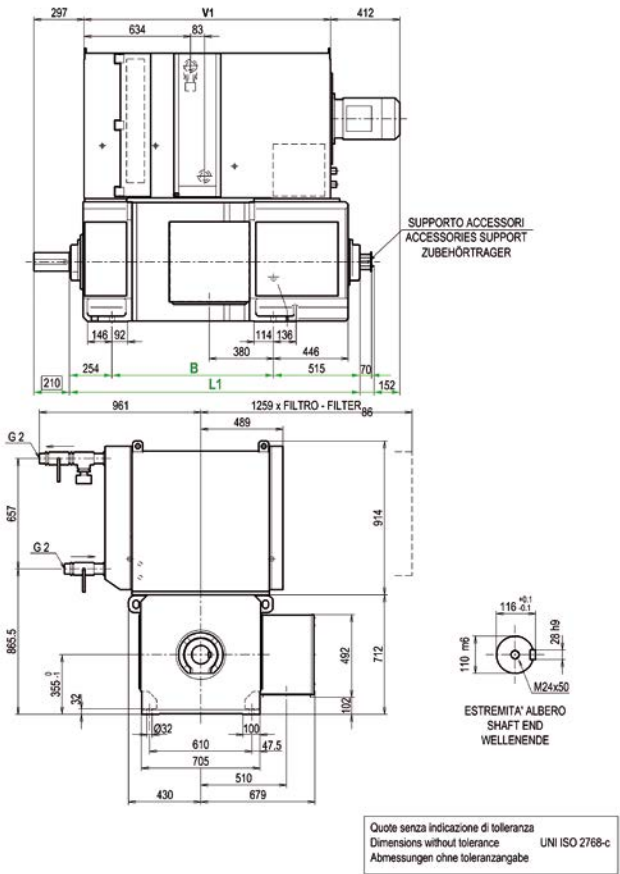
GH315

GH355

GH400

GH450

GH355 IM1001 - IP54 - IC86W



| Size    | B    | L1   | V1   |
|---------|------|------|------|
| GH355 S | 960  | 1729 | 1468 |
| GH355 M | 1010 | 1779 | 1518 |
| GH355 L | 1070 | 1839 | 1578 |
| GH355 P | 1140 | 1909 | 1648 |

| TECHNICAL DATA |                    |                                 |                            |                               |                              |                      |                       |                                         |           |                               |                    |
|----------------|--------------------|---------------------------------|----------------------------|-------------------------------|------------------------------|----------------------|-----------------------|-----------------------------------------|-----------|-------------------------------|--------------------|
| Size           | Motor mass<br>(kg) | Moment of<br>inertia<br>(kg m²) | Excitation<br>power<br>(W) | Field time<br>constant<br>(s) | Max. mech.<br>speed<br>(rpm) | Ventilation data     |                       | Bearings                                | Drive end |                               | Opposite drive end |
|                |                    |                                 |                            |                               |                              | Air flow<br>(m³/min) | Pressure<br>drop (Pa) |                                         | Coupling  | Pulley                        |                    |
|                |                    |                                 |                            |                               |                              |                      |                       |                                         |           |                               |                    |
| GH355 SK       | 2700               | 15.0                            | 5000                       | 1.33                          | 2200                         | 140                  | 2050                  | B3 – B5<br>V1 – V3                      | 6224 C3   | NU224ECJ C3                   | 6224 C3            |
| GH355 MK       | 2950               | 16.5                            | 5200                       | 1.40                          | 2200                         | 140                  | 2050                  |                                         | 6224 C3   | NU224ECJ C3                   | 7224 B             |
| GH355 LK       | 3100               | 18.8                            | 5600                       | 1.48                          | 2200                         | 140                  | 2050                  |                                         |           |                               |                    |
| GH355 PK       | 3320               | 21.0                            | 6000                       | 1.55                          | 2100                         | 140                  | 2050                  |                                         |           |                               |                    |
|                |                    |                                 |                            |                               |                              |                      |                       | Electrical blower (IC06)                | Weight    | Blower motor power            |                    |
|                |                    |                                 |                            |                               |                              |                      |                       |                                         | 110 kg    | 7.5 kW (50 / 60 Hz)           |                    |
|                |                    |                                 |                            |                               |                              |                      |                       | Air-To-Water Heat<br>Exchanger (IC 86W) | Weight    | Heat exchanger<br>motor power |                    |
|                |                    |                                 |                            |                               |                              |                      |                       |                                         | 440 kg    | 9.2 kW (50 / 60 Hz)           |                    |



## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

HOME

GH225

GH250

GH280

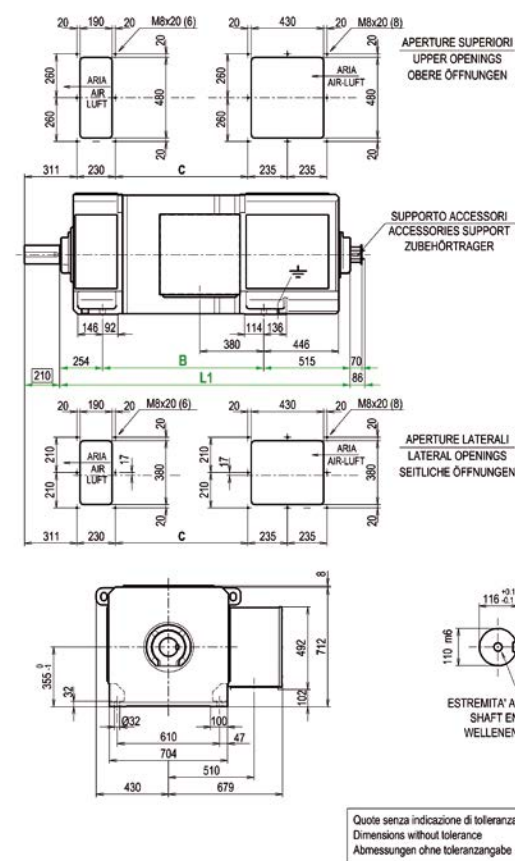
GH315

**GH355**

GH400

GH450

## GH355 IM1001 - IP44 - IC37



| Size    | B    | L1   | C   |
|---------|------|------|-----|
| GH355 S | 960  | 1729 | 789 |
| GH355 M | 1010 | 1779 | 839 |
| GH355 L | 1070 | 1839 | 899 |
| GH355 P | 1140 | 1909 | 969 |

| TECHNICAL DATA |                    |                              |                         |                            |                           |                      |                    |                                      |                          |                            |                     |  |
|----------------|--------------------|------------------------------|-------------------------|----------------------------|---------------------------|----------------------|--------------------|--------------------------------------|--------------------------|----------------------------|---------------------|--|
| Size           | Motor mass<br>(kg) | Moment of inertia<br>(kg m²) | Excitation power<br>(W) | Field time constant<br>(s) | Max. mech. speed<br>(rpm) | Ventilation data     |                    | Bearings                             | Drive end                |                            | Opposite drive end  |  |
|                |                    |                              |                         |                            |                           | Air flow<br>(m³/min) | Pressure drop (Pa) |                                      | Coupling                 | Pulley                     |                     |  |
| GH355 SK       | 2700               | 15.0                         | 5000                    | 1.33                       | 2200                      | 140                  | 2050               | B3 – B5<br>V1 – V3                   | 6224 C3                  | NU224ECJ C3                | 6224 C3             |  |
| GH355 MK       | 2950               | 16.5                         | 5200                    | 1.40                       | 2200                      | 140                  | 2050               |                                      | 6224 C3                  | NU224ECJ C3                | 7224 B              |  |
| GH355 LK       | 3100               | 18.8                         | 5600                    | 1.48                       | 2200                      | 140                  | 2050               |                                      | Electrical blower (IC06) | Weight                     | Blower motor power  |  |
| GH355 PK       | 3320               | 21.0                         | 6000                    | 1.55                       | 2100                      | 140                  | 2050               |                                      |                          | 110 kg                     | 7.5 kW (50 / 60 Hz) |  |
|                |                    |                              |                         |                            |                           |                      |                    | Air-To-Water Heat Exchanger (IC 86W) | Weight                   | Heat exchanger motor power |                     |  |
|                |                    |                              |                         |                            |                           |                      |                    |                                      | 440 kg                   | 9.2 kW (50 / 60 Hz)        |                     |  |



GO TO MENU





**DC MOTORS**

|                                                                    |
|--------------------------------------------------------------------|
| <b>1. GENERAL INFORMATION</b>                                      |
| <b>2. STANDARDS AND QUALITY</b>                                    |
| 2.1 Reference standards                                            |
| 2.2 CE Marking                                                     |
| 2.3 Quality system                                                 |
| <b>3. IDENTIFICATION CODE</b>                                      |
| <b>4. DESIGN FEATURES</b>                                          |
| 4.1 Rotor                                                          |
| 4.2 Commutator                                                     |
| 4.3 Stator                                                         |
| 4.4 Brushholder yoke                                               |
| 4.5 Bearings                                                       |
| 4.6 Belted and radial thrust application                           |
| <b>5. CONSTRUCTION FEATURES</b>                                    |
| 5.1 Coupling and shaft extension                                   |
| 5.2 Mounting arrangement                                           |
| 5.3 Degree of protection                                           |
| 5.4 Cooling method                                                 |
| 5.5 Maximum allowable speeds                                       |
| 5.6 Noise level                                                    |
| 5.7 Vibrations and balancing                                       |
| 5.8 Conduit box                                                    |
| 5.9 Groud terminals                                                |
| 5.10 Cross-section drawing                                         |
| <b>6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS</b> |
| 6.1 Ratings                                                        |
| 6.2 Supply voltage                                                 |
| 6.3 Maximum loads                                                  |
| 6.4 Current rate-of-rise                                           |
| 6.5 Speed regulation                                               |
| 6.6 Duty with large speed regulation                               |
| 6.7 Excitation                                                     |
| 6.8 Maximum current at locked rotor                                |
| 6.9 Accessories                                                    |
| <b>7. TESTS</b>                                                    |
| <b>8. OUTPUT POWER DIAGRAMS</b>                                    |
| <b>HOME</b>                                                        |

GH225

GH250

GH280

GH315

GH355

**GH400**

GH450

**GH400**

Derating for field weakening operation

GH400 K

Performance of compensated motors

GH400 MK

GH400 LK

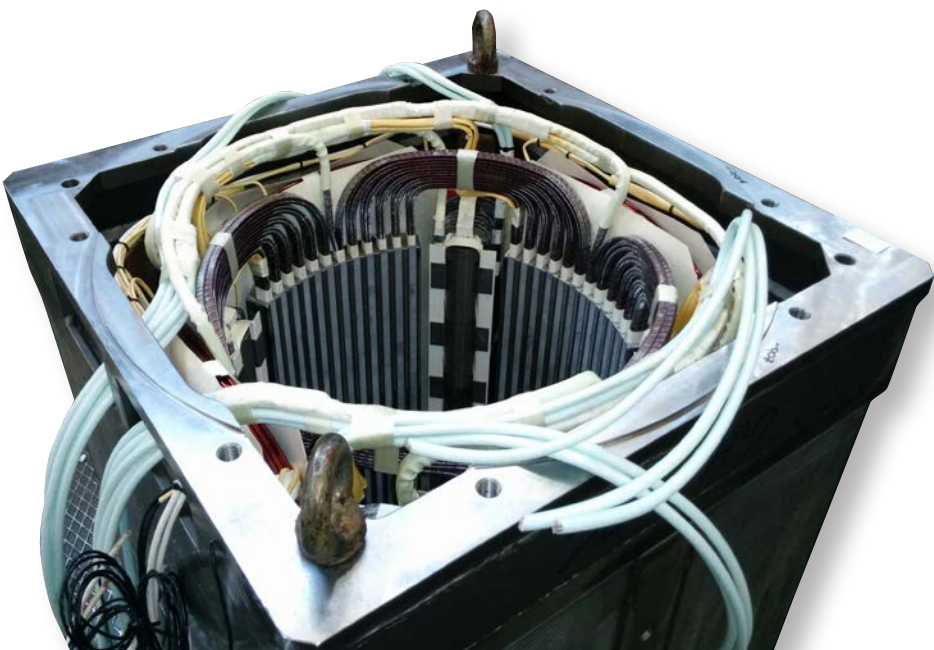
GH400 PK

Overall dimensions

GH400 IM1001-IP23-IC06

GH400 IM1001-IP54-IC86W

GH400 IM1001-IP44-IC37



Performance Tables are displayed on multiple pages, alongside the data tables are repeated alternately overall dimensions (IC06- IC86W-IC37)



## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

HOME

GH225

GH250

GH280

GH315

GH355

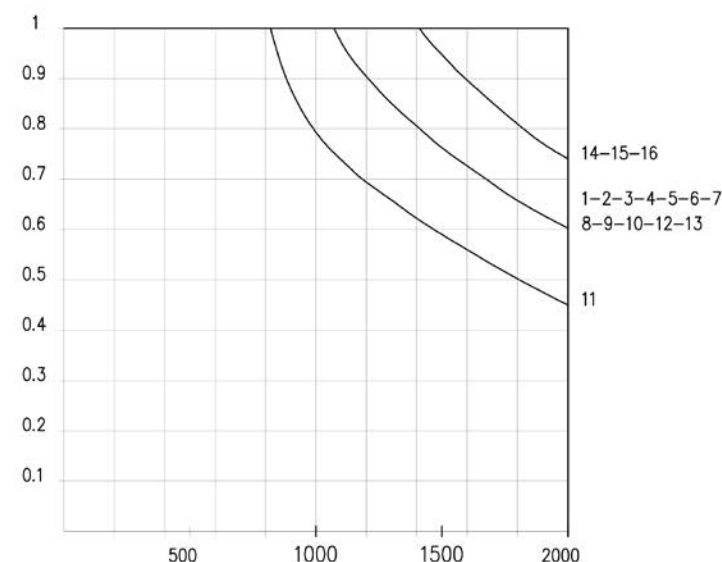
**GH400**

GH450

#### GH 400 K

**RIDUZIONE DELLA POTENZA IN DISECCITAZIONE  
DERATING FOR FIELD WEAKENING OPERATION  
LEISTUNGSREDUZIERUNG BEI FELDSWÄCHUNG**

GH 400 K (compensata - compensated - kompensiert)  
[ 180% sovraccarico - overload - überlast ]



P = K x P tabella potenza disponibile    Allowable power output P = K x P table    Verfügbare Leistung P = K x P table

per/for/für  
GH 400 MK    K = K x 1.57  
GH 400 LK    K = K x 1.35  
GH 400 PK    K = K x 1.17

Per K ≥ 1 niente declassamento    For K ≥ 1 no derating    Für K ≥ 1 keine Leistungsreduzierung

| TECHNICAL DATA |                    |                                 |                            |                               |                              |                      |                       |
|----------------|--------------------|---------------------------------|----------------------------|-------------------------------|------------------------------|----------------------|-----------------------|
| Size           | Motor mass<br>(kg) | Moment of<br>inertia<br>(kg m²) | Excitation<br>power<br>(W) | Field time<br>constant<br>(s) | Max. mech.<br>speed<br>(rpm) | Ventilation data     |                       |
|                |                    |                                 |                            |                               |                              | Air flow<br>(m³/min) | Pressure<br>drop (Pa) |
| GH400 MK       | 3700               | 31.5                            | 5700                       | 1.20                          | 2000                         | 180                  | 1300                  |
| GH400 LK       | 4200               | 34.5                            | 6200                       | 1.30                          | 2000                         | 180                  | 1300                  |
| GH400 PK       | 4600               | 38.5                            | 6600                       | 1.40                          | 1900                         | 180                  | 1300                  |

| Bearings | Drive end   |             | Opposite drive end |
|----------|-------------|-------------|--------------------|
|          | Coupling    | Pulley      |                    |
| B3 – B5  | NU228ECM C3 | NU228ECM C3 | 6228 C3            |
| V1 – V3  | 6228 C3     | NU228ECM C3 | 7228 B             |

| Electrical blower (IC06) | Weight | Blower motor power              |  |
|--------------------------|--------|---------------------------------|--|
|                          | 160 kg | 7.5 kW (50 Hz) - 9.2 kW (60 Hz) |  |

| Air-To-Water Heat Exchanger (IC 86W) | Weight | Heat exchanger motor power |  |
|--------------------------------------|--------|----------------------------|--|
|                                      | 620 kg | 15.0 / 15.0 kW (50/60 Hz)  |  |



GO TO MENU





## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

GH315

GH355

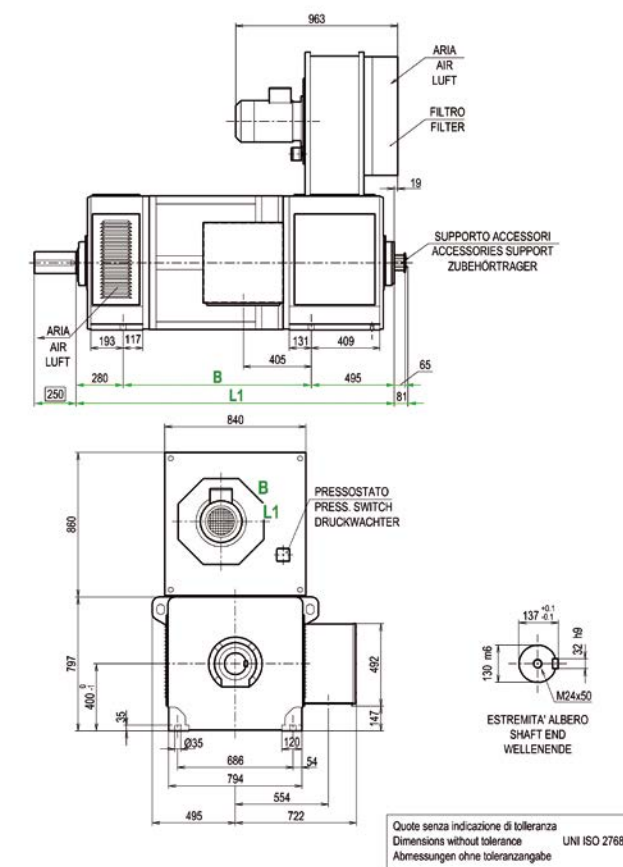
**GH400**

GH450

## GH400 MK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 5700<br>Field time constant (s): 1.2<br>Motor mass (kg): 3860 (IC06)<br>Moment of inertia (kg m²): 31.5 |                    |              | Armature circuit        |                        | Winding code |      |      |
|---------------------------------------|-------|-------|-------|-------|-------|-------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|------|------|
| 400 V                                 | 420 V | 460 V | 520 V | 600 V | 700 V | RATED OUTPUT kW                                                                                                               | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE MH | RESISTANCE AT 115 °C Ω |              |      |      |
| 780                                   |       |       |       |       |       | 612                                                                                                                           | 1650               | 92.7         | 0.23                    | 0.0135                 | 1            |      |      |
|                                       | 810   |       |       |       |       | 646                                                                                                                           | 1650               | 93.2         |                         |                        |              |      |      |
|                                       |       | 900   |       |       |       |                                                                                                                               | 710                | 1650         |                         |                        |              | 93.5 |      |
|                                       |       |       | 1030  |       |       |                                                                                                                               |                    | 806          |                         |                        |              | 1650 | 93.9 |
|                                       |       |       |       |       | 1190  |                                                                                                                               |                    |              |                         |                        |              | 916  | 1620 |
| 700                                   |       |       |       |       |       | 590                                                                                                                           | 1600               | 92.2         | 0.26                    | 0.016                  | 2            |      |      |
|                                       | 740   |       |       |       |       | 622                                                                                                                           | 1600               | 92.6         |                         |                        |              |      |      |
|                                       |       | 810   |       |       |       |                                                                                                                               | 685                | 1600         |                         |                        |              | 93.1 |      |
|                                       |       |       | 920   |       |       |                                                                                                                               |                    | 769          |                         |                        |              | 1580 | 93.6 |
|                                       |       |       |       |       | 1080  |                                                                                                                               |                    |              |                         |                        |              | 885  | 1565 |
| 640                                   |       |       |       |       |       | 538                                                                                                                           | 1470               | 91.5         | 0.31                    | 0.019                  | 3            |      |      |
|                                       | 670   |       |       |       |       | 568                                                                                                                           | 1470               | 92.0         |                         |                        |              |      |      |
|                                       |       | 740   |       |       |       |                                                                                                                               | 625                | 1470         |                         |                        |              | 92.4 |      |
|                                       |       |       | 850   |       |       |                                                                                                                               |                    | 703          |                         |                        |              | 1450 | 93.2 |
|                                       |       |       |       |       | 980   |                                                                                                                               |                    | 1150         |                         |                        |              | 812  | 1440 |
| 520                                   |       |       |       |       |       | 932                                                                                                                           | 1410               | 94.4         | 0.44                    | 0.028                  | 4            |      |      |
|                                       | 540   |       |       |       |       | 450                                                                                                                           | 1250               | 90.0         |                         |                        |              |      |      |
|                                       |       | 600   |       |       |       |                                                                                                                               | 472                | 1240         |                         |                        |              | 90.6 |      |
|                                       |       |       | 680   |       |       |                                                                                                                               |                    | 519          |                         |                        |              | 1240 | 91.0 |
|                                       |       |       |       |       |       |                                                                                                                               |                    |              |                         |                        |              | 593  | 1240 |
| 470                                   |       |       |       |       |       | 685                                                                                                                           | 1230               | 92.8         | 0.55                    | 0.032                  | 5            |      |      |
|                                       | 500   |       |       |       |       | 788                                                                                                                           | 1200               | 93.8         |                         |                        |              |      |      |
|                                       |       | 550   |       |       |       |                                                                                                                               | 394                | 1100         |                         |                        |              | 89.5 |      |
|                                       |       |       | 620   |       |       |                                                                                                                               |                    | 416          |                         |                        |              | 1100 | 90.0 |
|                                       |       |       |       |       |       |                                                                                                                               |                    |              |                         |                        |              | 458  | 1100 |
| 430                                   |       |       |       |       |       | 520                                                                                                                           | 1095               | 91.3         | 0.66                    | 0.040                  | 6            |      |      |
|                                       | 450   |       |       |       |       | 604                                                                                                                           | 1090               | 92.4         |                         |                        |              |      |      |
|                                       |       | 500   |       |       |       |                                                                                                                               | 700                | 1070         |                         |                        |              | 93.5 |      |
|                                       |       |       | 570   |       |       |                                                                                                                               |                    | 355          |                         |                        |              | 1000 | 88.8 |
|                                       |       |       |       |       |       |                                                                                                                               |                    |              |                         |                        |              | 375  | 1000 |
| 400                                   |       |       |       |       |       | 413                                                                                                                           | 1000               | 89.8         | 0.78                    | 0.044                  | 7            |      |      |
|                                       | 420   |       |       |       |       | 467                                                                                                                           | 990                | 90.7         |                         |                        |              |      |      |
|                                       |       | 470   |       |       |       |                                                                                                                               | 544                | 990          |                         |                        |              | 91.6 |      |
|                                       |       |       | 530   |       |       |                                                                                                                               |                    | 630          |                         |                        |              | 970  | 92.8 |
|                                       |       |       |       |       |       |                                                                                                                               |                    |              |                         |                        |              | 328  | 930  |
|                                       |       |       |       |       |       | 346                                                                                                                           | 930                | 88.6         | 0.78                    | 0.044                  |              |      |      |
|                                       |       |       |       |       |       | 382                                                                                                                           | 930                | 89.2         |                         |                        |              |      |      |
|                                       |       |       |       |       |       |                                                                                                                               | 436                | 930          |                         |                        |              | 90.2 |      |
|                                       |       |       |       |       |       |                                                                                                                               |                    | 498          |                         |                        |              | 910  | 91.2 |
|                                       |       |       |       |       |       |                                                                                                                               |                    |              |                         |                        |              | 582  | 900  |

## GH400 IM1001 - IP23 - IC06



| Size    | B    | L1   |
|---------|------|------|
| GH400 M | 1120 | 1895 |
| GH400 L | 1200 | 1975 |
| GH400 P | 1290 | 2065 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH400 MK       | 3700            | 31.5                      | 5700                 | 1.20                    | 2000                   | 180               | 1300               |
| GH400 LK       | 4200            | 34.5                      | 6200                 | 1.30                    | 2000                   | 180               | 1300               |
| GH400 PK       | 4600            | 38.5                      | 6600                 | 1.40                    | 1900                   | 180               | 1300               |

| Bearings                             | Drive end   |                                 | Opposite drive end |
|--------------------------------------|-------------|---------------------------------|--------------------|
|                                      | Coupling    | Pulley                          |                    |
| B3 - B5                              | NU228ECM C3 | NU228ECM C3                     | 6228 C3            |
| V1 - V3                              | 6228 C3     | NU228ECM C3                     | 7228 B             |
| Electrical blower (IC06)             | Weight      | Blower motor power              |                    |
|                                      | 160 kg      | 7.5 kW (50 Hz) - 9.2 kW (60 Hz) |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight      | Heat exchanger motor power      |                    |
|                                      | 620 kg      | 15.0 / 15.0 kW (50/60 Hz)       |                    |





## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

GH315

GH355

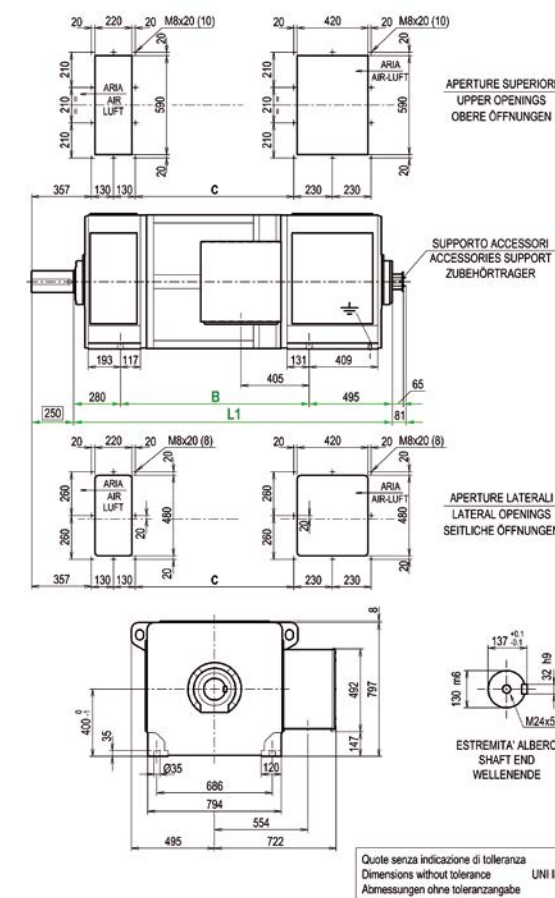
**GH400**

GH450

## GH400 MK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 5700<br>Field time constant (s): 1.2<br>Motor mass (kg): 3860 (IC06)<br>Moment of inertia (kg m²): 31.5 |                    |              | Armature circuit        |                        | Winding code |
|---------------------------------------|-------|-------|-------|-------|-------|-------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|
| 400 V                                 | 420 V | 460 V | 520 V | 600 V | 700 V | RATED OUTPUT kW                                                                                                               | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE MH | RESISTANCE AT 115 °C Ω |              |
| 210                                   | 220   |       |       |       |       | 171                                                                                                                           |                    | 79.2         | 2.30                    | 0.150                  | 14           |
|                                       |       |       |       |       |       | 183                                                                                                                           |                    | 80.7         |                         |                        |              |
|                                       |       | 250   |       |       |       | 202                                                                                                                           | 540                | 81.3         |                         |                        |              |
|                                       |       |       | 280   |       |       | 235                                                                                                                           |                    | 83.7         |                         |                        |              |
|                                       |       |       |       | 330   |       | 277                                                                                                                           |                    | 85.5         |                         |                        |              |
| 190                                   | 200   |       |       |       | 400   | 330                                                                                                                           |                    | 87.3         | 2.70                    | 0.157                  | 15           |
|                                       |       |       |       |       |       | 156                                                                                                                           |                    | 78.8         |                         |                        |              |
|                                       |       |       |       |       |       | 167                                                                                                                           |                    | 80.3         |                         |                        |              |
|                                       |       | 220   |       |       |       | 185                                                                                                                           | 495                | 81.2         |                         |                        |              |
|                                       |       |       | 260   |       |       | 216                                                                                                                           |                    | 83.9         |                         |                        |              |
|                                       | 190   |       |       |       |       | 253                                                                                                                           |                    | 85.2         | 3.00                    | 0.170                  | 16           |
|                                       |       |       |       |       | 370   | 302                                                                                                                           |                    | 87.2         |                         |                        |              |
|                                       |       |       |       |       |       | 154                                                                                                                           |                    | 78.9         |                         |                        |              |
|                                       |       | 210   |       |       |       | 173                                                                                                                           | 465                | 80.9         |                         |                        |              |
|                                       |       |       |       | 240   |       | 202                                                                                                                           |                    | 83.5         |                         |                        |              |
|                                       |       |       |       |       |       | 237                                                                                                                           |                    | 84.9         |                         |                        |              |
|                                       |       |       | 290   |       |       | 283                                                                                                                           |                    | 86.9         |                         |                        |              |
|                                       |       |       |       | 340   |       |                                                                                                                               |                    |              |                         |                        |              |

## GH400 IM1001 - IP44 - IC37



| Size    | B    | L1   | C    |
|---------|------|------|------|
| GH400 M | 1120 | 1895 | 942  |
| GH400 L | 1200 | 1975 | 1022 |
| GH400 P | 1290 | 2065 | 1112 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH400 MK       | 3700            | 31.5                      | 5700                 | 1.20                    | 2000                   | 180               | 1300               |
| GH400 LK       | 4200            | 34.5                      | 6200                 | 1.30                    | 2000                   | 180               | 1300               |
| GH400 PK       | 4600            | 38.5                      | 6600                 | 1.40                    | 1900                   | 180               | 1300               |

| Bearings                             | Drive end   |                                 | Opposite drive end |
|--------------------------------------|-------------|---------------------------------|--------------------|
|                                      | Coupling    | Pulley                          |                    |
| B3 - B5                              | NU228ECM C3 | NU228ECM C3                     | 6228 C3            |
| V1 - V3                              | 6228 C3     | NU228ECM C3                     | 7228 B             |
| Electrical blower (IC06)             | Weight      | Blower motor power              |                    |
|                                      | 160 kg      | 7.5 kW (50 Hz) - 9.2 kW (60 Hz) |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight      | Heat exchanger motor power      |                    |
|                                      | 620 kg      | 15.0 / 15.0 kW (50/60 Hz)       |                    |





## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

GH315

GH355

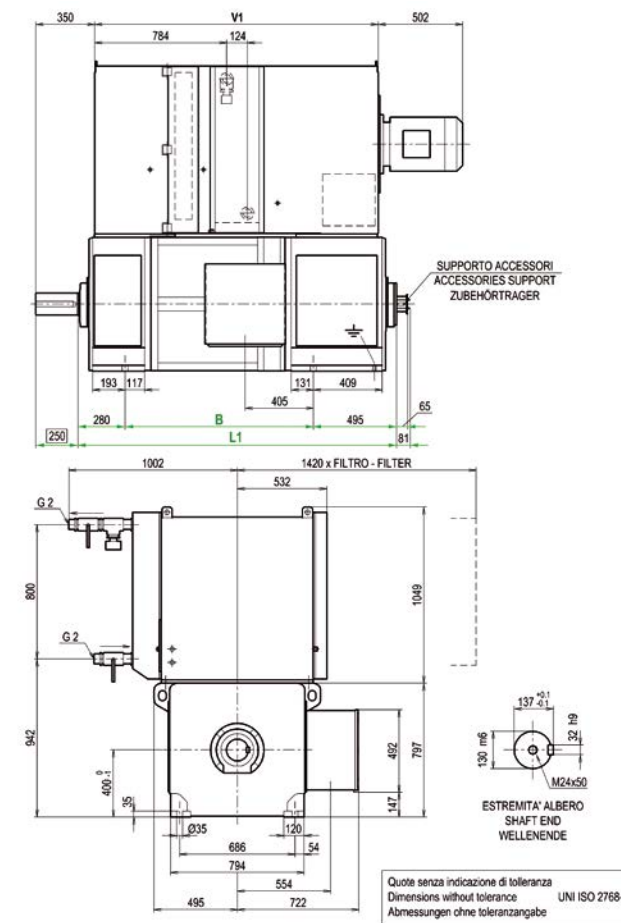
**GH400**

GH450

## GH400 LK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 6200<br>Field time constant (s): 1.3<br>Motor mass (kg): 4360 (IC06)<br>Moment of inertia (kg m²): 34.5 |                    |              | Armature circuit        |                        | Winding code |
|---------------------------------------|-------|-------|-------|-------|-------|-------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|
| 400 V                                 | 420 V | 460 V | 520 V | 600 V | 700 V | RATED OUTPUT kW                                                                                                               | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE MH | RESISTANCE AT 115 °C Ω |              |
| 310                                   | 330   | 370   | 420   | 500   | 590   | 297                                                                                                                           | 855                | 86.8         | 1.08                    | 0.058                  | 8            |
|                                       |       |       |       |       |       | 314                                                                                                                           | 855                | 87.4         |                         |                        |              |
|                                       |       |       |       |       |       | 346                                                                                                                           | 855                | 88.0         |                         |                        |              |
|                                       |       |       |       |       |       | 393                                                                                                                           | 850                | 88.9         |                         |                        |              |
|                                       |       |       |       |       |       | 453                                                                                                                           | 840                | 89.9         |                         |                        |              |
| 280                                   | 300   | 320   | 370   | 440   | 520   | 528                                                                                                                           | 825                | 91.4         | 1.36                    | 0.068                  | 9            |
|                                       |       |       |       |       |       | 262                                                                                                                           |                    | 85.1         |                         |                        |              |
|                                       |       |       |       |       |       | 277                                                                                                                           |                    | 85.7         |                         |                        |              |
|                                       |       |       |       |       |       | 305                                                                                                                           | 770                | 86.1         |                         |                        |              |
|                                       |       |       |       |       |       | 352                                                                                                                           |                    | 87.9         |                         |                        |              |
| 260                                   | 280   | 310   | 350   | 410   | 490   | 412                                                                                                                           |                    | 89.2         | 1.70                    | 0.078                  | 10           |
|                                       |       |       |       |       |       | 489                                                                                                                           |                    | 90.7         |                         |                        |              |
|                                       |       |       |       |       |       | 244                                                                                                                           |                    | 84.1         |                         |                        |              |
|                                       |       |       |       |       |       | 259                                                                                                                           |                    | 85.1         |                         |                        |              |
|                                       |       |       |       |       |       | 286                                                                                                                           | 725                | 85.8         |                         |                        |              |
| 230                                   | 240   | 270   | 310   | 360   | 440   | 329                                                                                                                           |                    | 87.3         | 2.00                    | 0.087                  | 11           |
|                                       |       |       |       |       |       | 387                                                                                                                           |                    | 89.0         |                         |                        |              |
|                                       |       |       |       |       |       | 457                                                                                                                           |                    | 90.0         |                         |                        |              |
|                                       |       |       |       |       |       | 224                                                                                                                           |                    | 83.8         |                         |                        |              |
|                                       |       |       |       |       |       | 238                                                                                                                           |                    | 84.8         |                         |                        |              |
| 210                                   | 220   | 250   | 290   | 340   | 400   | 262                                                                                                                           | 668                | 85.3         | 2.32                    | 0.107                  | 12           |
|                                       |       |       |       |       |       | 303                                                                                                                           |                    | 87.2         |                         |                        |              |
|                                       |       |       |       |       |       | 354                                                                                                                           |                    | 88.3         |                         |                        |              |
|                                       |       |       |       |       |       | 420                                                                                                                           |                    | 89.8         |                         |                        |              |
|                                       |       |       |       |       |       | 202                                                                                                                           |                    | 81.5         |                         |                        |              |
| 200                                   | 210   | 230   | 270   | 320   | 380   | 216                                                                                                                           |                    | 82.9         | 2.62                    | 0.118                  | 13           |
|                                       |       |       |       |       |       | 239                                                                                                                           | 620                | 83.8         |                         |                        |              |
|                                       |       |       |       |       |       | 276                                                                                                                           |                    | 85.6         |                         |                        |              |
|                                       |       |       |       |       |       | 324                                                                                                                           |                    | 87.1         |                         |                        |              |
|                                       |       |       |       |       |       | 385                                                                                                                           |                    | 88.7         |                         |                        |              |
|                                       |       |       |       |       |       | 186                                                                                                                           |                    | 80.9         |                         |                        |              |
|                                       |       |       |       |       |       | 200                                                                                                                           |                    | 82.8         | 2.62                    | 0.118                  |              |
|                                       |       |       |       |       |       | 220                                                                                                                           | 575                | 83.2         |                         |                        |              |
|                                       |       |       |       |       |       | 255                                                                                                                           |                    | 85.3         |                         |                        |              |
|                                       |       |       |       |       |       | 299                                                                                                                           |                    | 86.7         |                         |                        |              |
|                                       |       |       |       |       |       | 356                                                                                                                           |                    | 88.4         |                         |                        |              |

## GH400 IM1001 - IP54 - IC86W



| Size    | B    | L1   | V1   |
|---------|------|------|------|
| GH400 M | 1120 | 1895 | 1685 |
| GH400 L | 1200 | 1975 | 1765 |
| GH400 P | 1290 | 2065 | 1855 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH400 MK       | 3700            | 31.5                      | 5700                 | 1.20                    | 2000                   | 180               | 1300               |
| GH400 LK       | 4200            | 34.5                      | 6200                 | 1.30                    | 2000                   | 180               | 1300               |
| GH400 PK       | 4600            | 38.5                      | 6600                 | 1.40                    | 1900                   | 180               | 1300               |

| Bearings                             | Drive end   |                                 | Opposite drive end |
|--------------------------------------|-------------|---------------------------------|--------------------|
|                                      | Coupling    | Pulley                          |                    |
| B3 - B5                              | NU228ECM C3 | NU228ECM C3                     | 6228 C3            |
| V1 - V3                              | 6228 C3     | NU228ECM C3                     | 7228 B             |
| Electrical blower (IC06)             | Weight      | Blower motor power              |                    |
|                                      | 160 kg      | 7.5 kW (50 Hz) - 9.2 kW (60 Hz) |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight      | Heat exchanger motor power      |                    |
|                                      | 620 kg      | 15.0 / 15.0 kW (50/60 Hz)       |                    |





## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

GH315

GH355

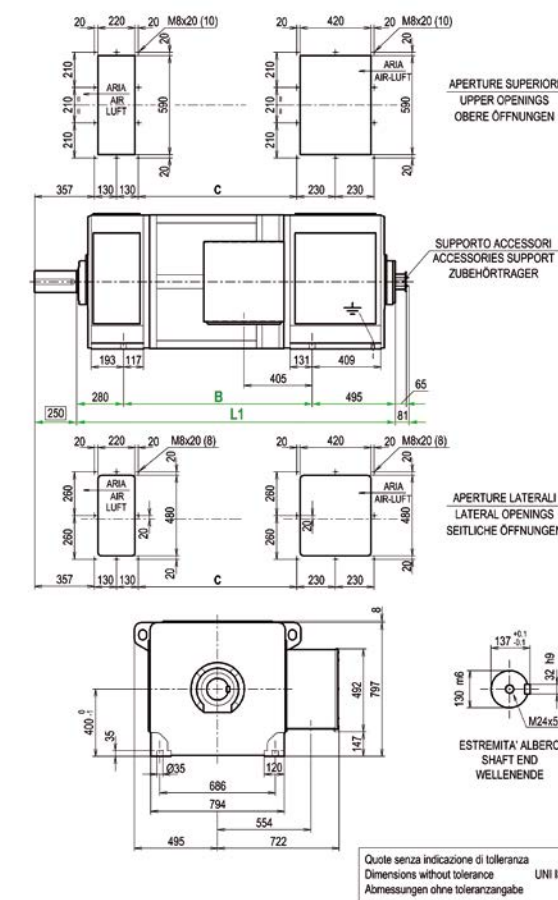
**GH400**

GH450

## GH400 LK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 6200<br>Field time constant (s): 1.3<br>Motor mass (kg): 4360 (IC06)<br>Moment of inertia (kg m²): 34.5 |                    |              | Armature circuit        |                        | Winding code |      |
|---------------------------------------|-------|-------|-------|-------|-------|-------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|------|
| 400 V                                 | 420 V | 460 V | 520 V | 600 V | 700 V | RATED OUTPUT kW                                                                                                               | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |      |
|                                       |       | 210   |       |       |       | 198                                                                                                                           | 540                | 79.7         | 2.80                    | 0.163                  | 14           |      |
|                                       |       | 240   |       |       |       | 231                                                                                                                           |                    | 82.3         |                         |                        |              |      |
|                                       |       |       | 290   |       |       |                                                                                                                               | 272                |              |                         |                        |              | 84.0 |
|                                       |       |       |       | 350   |       |                                                                                                                               |                    | 326          |                         |                        |              |      |
|                                       |       | 200   |       |       |       | 181                                                                                                                           | 495                | 79.5         | 3.60                    | 0.168                  | 15           |      |
|                                       |       | 230   |       |       |       | 213                                                                                                                           |                    | 82.8         |                         |                        |              |      |
|                                       |       |       | 270   |       |       |                                                                                                                               | 250                |              |                         |                        |              | 84.2 |
|                                       |       |       |       | 320   |       |                                                                                                                               |                    | 300          |                         |                        |              |      |
|                                       |       | 210   |       |       |       | 198                                                                                                                           | 465                | 81.9         | 4.03                    | 0.185                  | 16           |      |
|                                       |       |       | 250   |       |       |                                                                                                                               | 234                |              |                         |                        |              | 83.9 |
|                                       |       |       |       | 300   |       |                                                                                                                               |                    | 280          |                         |                        |              |      |

## GH400 IM1001 - IP44 - IC37



| Size    | B    | L1   | C    |
|---------|------|------|------|
| GH400 M | 1120 | 1895 | 942  |
| GH400 L | 1200 | 1975 | 1022 |
| GH400 P | 1290 | 2065 | 1112 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH400 MK       | 3700            | 31.5                      | 5700                 | 1.20                    | 2000                   | 180               | 1300               |
| GH400 LK       | 4200            | 34.5                      | 6200                 | 1.30                    | 2000                   | 180               | 1300               |
| GH400 PK       | 4600            | 38.5                      | 6600                 | 1.40                    | 1900                   | 180               | 1300               |

| Bearings                             | Drive end   |                                 | Opposite drive end |
|--------------------------------------|-------------|---------------------------------|--------------------|
|                                      | Coupling    | Pulley                          |                    |
| B3 - B5                              | NU228ECM C3 | NU228ECM C3                     | 6228 C3            |
| V1 - V3                              | 6228 C3     | NU228ECM C3                     | 7228 B             |
| Electrical blower (IC06)             | Weight      | Blower motor power              |                    |
|                                      | 160 kg      | 7.5 kW (50 Hz) - 9.2 kW (60 Hz) |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight      | Heat exchanger motor power      |                    |
|                                      | 620 kg      | 15.0 / 15.0 kW (50/60 Hz)       |                    |





## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

GH315

GH355

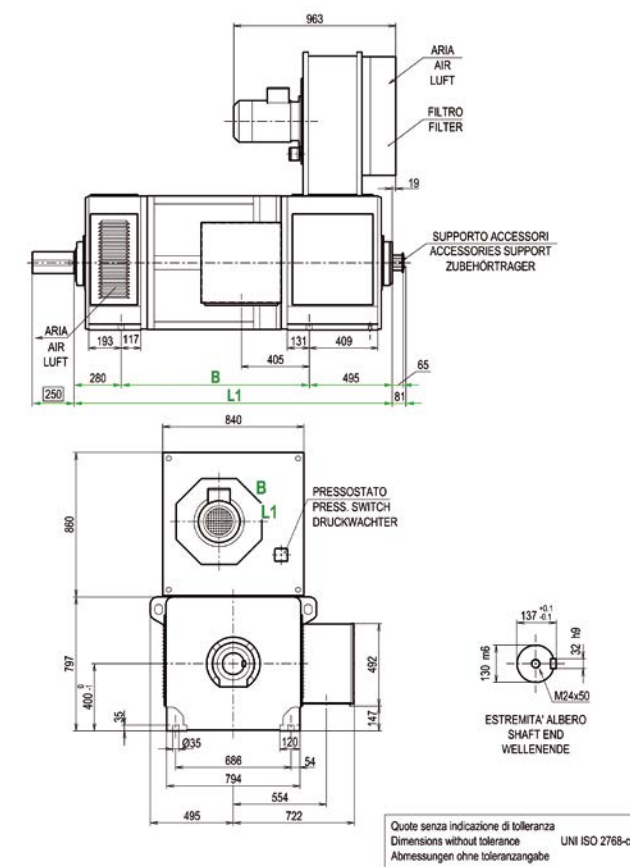
**GH400**

GH450

## GH400 PK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 6600<br>Field time constant (s): 1.4<br>Motor mass (kg): 4760 (IC06)<br>Moment of inertia (kg m²): 38.5 |                    |              | Armature circuit        |                        | Winding code |
|---------------------------------------|-------|-------|-------|-------|-------|-------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|
| 400 V                                 | 420 V | 460 V | 520 V | 600 V | 700 V | RATED OUTPUT kW                                                                                                               | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |
| 570                                   | 600   |       |       |       |       | 607                                                                                                                           | 1650               | 92.0         | 0.30                    | 0.016                  | 1            |
|                                       |       | 660   |       |       |       | 704                                                                                                                           | 1650               | 92.8         |                         |                        |              |
|                                       |       |       | 760   |       |       | 803                                                                                                                           | 1650               | 93.6         |                         |                        |              |
|                                       |       |       |       | 870   |       | 916                                                                                                                           | 1620               | 94.2         |                         |                        |              |
|                                       |       |       |       |       |       | 585                                                                                                                           | 1600               | 91.4         |                         |                        |              |
| 510                                   | 540   |       |       |       |       | 616                                                                                                                           | 1600               | 91.7         | 0.35                    | 0.018                  | 2            |
|                                       |       | 590   |       |       |       | 677                                                                                                                           | 1600               | 92.0         |                         |                        |              |
|                                       |       |       | 680   |       |       | 764                                                                                                                           | 1580               | 93.0         |                         |                        |              |
|                                       |       |       |       | 790   |       | 878                                                                                                                           | 1560               | 93.8         |                         |                        |              |
|                                       |       |       |       |       |       | 532                                                                                                                           | 1470               | 90.5         |                         |                        |              |
| 470                                   | 500   |       |       |       |       | 557                                                                                                                           | 1460               | 90.8         | 0.41                    | 0.021                  | 3            |
|                                       |       | 550   |       |       |       | 614                                                                                                                           | 1460               | 91.4         |                         |                        |              |
|                                       |       |       | 630   |       |       | 697                                                                                                                           | 1450               | 92.4         |                         |                        |              |
|                                       |       |       |       | 730   |       | 800                                                                                                                           | 1430               | 93.2         |                         |                        |              |
|                                       |       |       |       |       | 860   | 923                                                                                                                           | 1400               | 94.2         |                         |                        |              |
| 380                                   | 400   |       |       |       |       | 442                                                                                                                           | 1240               | 89.1         | 0.60                    | 0.032                  | 4            |
|                                       |       | 440   |       |       |       | 465                                                                                                                           | 1240               | 89.3         |                         |                        |              |
|                                       |       |       | 500   |       |       | 512                                                                                                                           | 1240               | 89.8         |                         |                        |              |
|                                       |       |       |       | 580   |       | 584                                                                                                                           | 1235               | 90.8         |                         |                        |              |
|                                       |       |       |       |       | 690   | 679                                                                                                                           | 1230               | 92.0         |                         |                        |              |
| 350                                   | 370   |       |       |       |       | 788                                                                                                                           | 1210               | 93.0         | 0.74                    | 0.037                  | 5            |
|                                       |       |       |       |       |       | 386                                                                                                                           | 1095               | 88.1         |                         |                        |              |
|                                       |       | 400   |       |       |       | 407                                                                                                                           | 1095               | 88.5         |                         |                        |              |
|                                       |       |       | 460   |       |       | 448                                                                                                                           | 1095               | 88.9         |                         |                        |              |
|                                       |       |       |       | 530   |       | 512                                                                                                                           | 1090               | 90.4         |                         |                        |              |
| 310                                   | 330   |       |       |       |       | 592                                                                                                                           | 1080               | 91.4         | 0.90                    | 0.047                  | 6            |
|                                       |       |       |       |       |       | 692                                                                                                                           | 1068               | 92.6         |                         |                        |              |
|                                       |       |       |       |       |       | 349                                                                                                                           | 1000               | 87.3         |                         |                        |              |
|                                       |       | 370   |       |       |       | 368                                                                                                                           | 1000               | 87.6         |                         |                        |              |
|                                       |       |       | 420   |       |       | 406                                                                                                                           | 1000               | 88.3         |                         |                        |              |
| 290                                   | 310   |       |       |       |       | 462                                                                                                                           | 990                | 89.7         | 1.05                    | 0.052                  | 7            |
|                                       |       |       |       |       |       | 539                                                                                                                           | 990                | 90.7         |                         |                        |              |
|                                       |       |       |       |       |       | 631                                                                                                                           | 980                | 92.0         |                         |                        |              |
|                                       |       | 340   |       |       |       | 321                                                                                                                           | 930                | 86.3         |                         |                        |              |
|                                       |       |       | 390   |       |       | 339                                                                                                                           | 930                | 86.9         |                         |                        |              |
|                                       |       |       |       |       |       | 375                                                                                                                           | 930                | 87.7         |                         |                        |              |
|                                       |       |       |       |       |       | 426                                                                                                                           | 920                | 89.0         |                         |                        |              |
|                                       |       |       |       |       |       | 491                                                                                                                           | 910                | 89.9         |                         |                        |              |
|                                       |       |       |       |       |       | 577                                                                                                                           | 900                | 91.6         |                         |                        |              |

## GH400 IM1001 - IP23 - IC06



| Size    | B    | L1   |
|---------|------|------|
| GH400 M | 1120 | 1895 |
| GH400 L | 1200 | 1975 |
| GH400 P | 1290 | 2065 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH400 MK       | 3700            | 31.5                      | 5700                 | 1.20                    | 2000                   | 180               | 1300               |
| GH400 LK       | 4200            | 34.5                      | 6200                 | 1.30                    | 2000                   | 180               | 1300               |
| GH400 PK       | 4600            | 38.5                      | 6600                 | 1.40                    | 1900                   | 180               | 1300               |

| Bearings                             | Drive end   |                                 | Opposite drive end |
|--------------------------------------|-------------|---------------------------------|--------------------|
|                                      | Coupling    | Pulley                          |                    |
| B3 - B5                              | NU228ECM C3 | NU228ECM C3                     | 6228 C3            |
| V1 - V3                              | 6228 C3     | NU228ECM C3                     | 7228 B             |
| Electrical blower (IC06)             | Weight      | Blower motor power              |                    |
|                                      | 160 kg      | 7.5 kW (50 Hz) - 9.2 kW (60 Hz) |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight      | Heat exchanger motor power      |                    |
|                                      | 620 kg      | 15.0 / 15.0 kW (50/60 Hz)       |                    |



## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

## GH315

## GH355

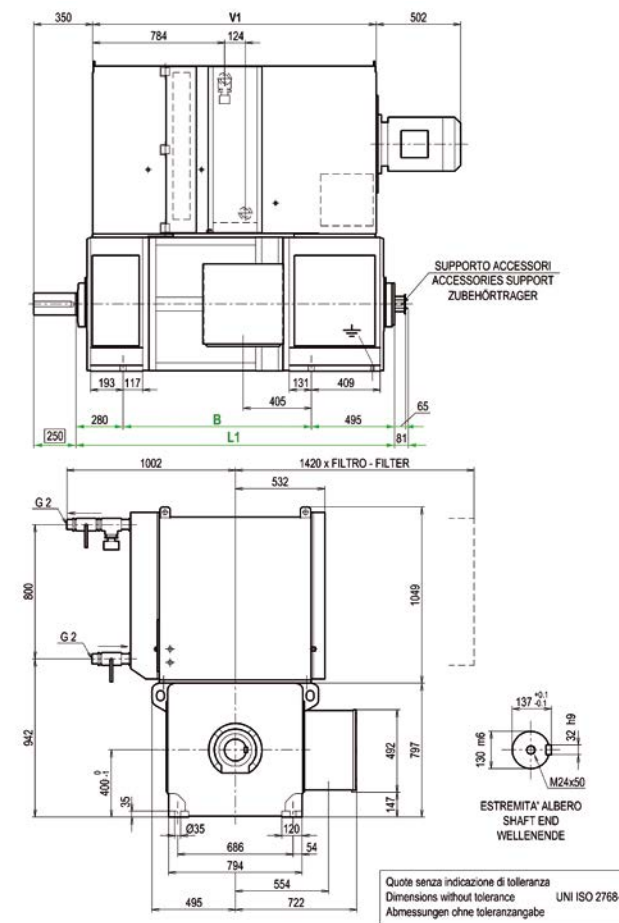
## GH400

## GH450

### GH400 PK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 6600<br>Field time constant (s): 1.4<br>Motor mass (kg): 4760 (IC06)<br>Moment of inertia (kg m²): 38.5 |                    |              | Armature circuit        |                        | Winding code |
|---------------------------------------|-------|-------|-------|-------|-------|-------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|
| 400 V                                 | 420 V | 460 V | 520 V | 600 V | 700 V | RATED OUTPUT kW                                                                                                               | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |
| 270                                   | 280   | 310   | 360   | 420   | 500   | 292                                                                                                                           | 855                | 85.4         | 1.26                    | 0.065                  | 8            |
|                                       |       |       |       |       |       | 310                                                                                                                           | 855                | 86.3         |                         |                        |              |
|                                       |       |       |       |       |       | 343                                                                                                                           | 855                | 87.2         |                         |                        |              |
|                                       |       |       |       |       |       | 390                                                                                                                           | 850                | 88.2         |                         |                        |              |
|                                       |       |       |       |       |       | 454                                                                                                                           | 840                | 90.0         |                         |                        |              |
| 240                                   | 250   | 280   | 320   | 380   | 450   | 525                                                                                                                           | 825                | 90.9         | 1.57                    | 0.075                  | 9            |
|                                       |       |       |       |       |       | 258                                                                                                                           | 770                | 83.8         |                         |                        |              |
|                                       |       |       |       |       |       | 274                                                                                                                           | 770                | 84.7         |                         |                        |              |
|                                       |       |       |       |       |       | 304                                                                                                                           | 770                | 85.8         |                         |                        |              |
|                                       |       |       |       |       |       | 344                                                                                                                           | 760                | 87.0         |                         |                        |              |
| 230                                   | 240   | 270   | 300   | 350   | 420   | 400                                                                                                                           | 756                | 88.2         | 1.90                    | 0.083                  | 10           |
|                                       |       |       |       |       |       | 473                                                                                                                           | 750                | 90.1         |                         |                        |              |
|                                       |       |       |       |       |       | 241                                                                                                                           |                    | 83.1         |                         |                        |              |
|                                       |       |       |       |       |       | 256                                                                                                                           |                    | 84.0         |                         |                        |              |
|                                       |       |       |       |       |       | 283                                                                                                                           | 725                | 84.9         |                         |                        |              |
| 200                                   | 210   | 230   | 270   | 320   | 380   | 327                                                                                                                           |                    | 86.7         | 2.30                    | 0.095                  | 11           |
|                                       |       |       |       |       |       | 383                                                                                                                           |                    | 88.0         |                         |                        |              |
|                                       |       |       |       |       |       | 455                                                                                                                           |                    | 89.7         |                         |                        |              |
|                                       |       |       |       |       |       | 221                                                                                                                           |                    | 82.7         |                         |                        |              |
|                                       |       |       |       |       |       | 235                                                                                                                           |                    | 83.8         |                         |                        |              |
| 190                                   | 210   | 230   | 270   | 320   | 380   | 260                                                                                                                           | 668                | 84.6         | 2.60                    | 0.110                  | 12           |
|                                       |       |       |       |       |       | 300                                                                                                                           |                    | 86.4         |                         |                        |              |
|                                       |       |       |       |       |       | 351                                                                                                                           |                    | 87.6         |                         |                        |              |
|                                       |       |       |       |       |       | 416                                                                                                                           |                    | 89.0         |                         |                        |              |
|                                       |       |       |       |       |       | 213                                                                                                                           |                    | 81.8         |                         |                        |              |
|                                       |       |       |       |       |       | 238                                                                                                                           | 620                | 83.5         | 3.04                    | 0.125                  | 13           |
|                                       |       |       |       |       |       | 274                                                                                                                           |                    | 85.0         |                         |                        |              |
|                                       |       |       |       |       |       | 322                                                                                                                           |                    | 86.6         |                         |                        |              |
|                                       |       |       |       |       |       | 383                                                                                                                           |                    | 88.2         |                         |                        |              |
|                                       |       |       |       |       |       | 219                                                                                                                           | 575                | 82.8         |                         |                        |              |
|                                       |       |       |       |       |       | 253                                                                                                                           |                    | 84.6         | 3.20                    | 0.178                  | 14           |
|                                       |       |       |       |       |       | 295                                                                                                                           |                    | 85.5         |                         |                        |              |
|                                       |       |       |       |       |       | 354                                                                                                                           |                    | 88.0         |                         |                        |              |
|                                       |       |       |       |       |       | 288                                                                                                                           | 540                | 81.2         |                         |                        |              |
|                                       |       |       |       |       |       | 267                                                                                                                           |                    | 82.4         |                         |                        |              |
|                                       |       |       |       |       |       | 322                                                                                                                           |                    | 85.2         | 4.10                    | 0.182                  | 15           |
|                                       |       |       |       |       |       | 209                                                                                                                           | 495                | 81.2         |                         |                        |              |
|                                       |       |       |       |       |       | 247                                                                                                                           |                    | 83.2         |                         |                        |              |
|                                       |       |       |       |       |       | 296                                                                                                                           |                    | 86.4         |                         |                        |              |
|                                       |       |       |       |       |       | 230                                                                                                                           | 465                | 82.4         |                         |                        |              |
|                                       |       |       |       |       |       | 277                                                                                                                           |                    | 85.1         | 3.20                    | 0.178                  | 16           |
|                                       |       |       |       |       |       |                                                                                                                               |                    |              |                         |                        |              |

### GH400 IM1001 - IP54 - IC86W



| Size    | B    | L1   | V1   |
|---------|------|------|------|
| GH400 M | 1120 | 1895 | 1685 |
| GH400 L | 1200 | 1975 | 1765 |
| GH400 P | 1290 | 2065 | 1855 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH400 MK       | 3700            | 31.5                      | 5700                 | 1.20                    | 2000                   | 180               | 1300               |
| GH400 LK       | 4200            | 34.5                      | 6200                 | 1.30                    | 2000                   | 180               | 1300               |
| GH400 PK       | 4600            | 38.5                      | 6600                 | 1.40                    | 1900                   | 180               | 1300               |

| Bearings                             | Drive end   |                                 | Opposite drive end |
|--------------------------------------|-------------|---------------------------------|--------------------|
|                                      | Coupling    | Pulley                          |                    |
| B3 - B5                              | NU228ECM C3 | NU228ECM C3                     | 6228 C3            |
| V1 - V3                              | 6228 C3     | NU228ECM C3                     | 7228 B             |
| Electrical blower (IC06)             | Weight      | Blower motor power              |                    |
|                                      | 160 kg      | 7.5 kW (50 Hz) - 9.2 kW (60 Hz) |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight      | Heat exchanger motor power      |                    |
|                                      | 620 kg      | 15.0 / 15.0 kW (50/60 Hz)       |                    |





DC MOTORS

|      |                                                          |
|------|----------------------------------------------------------|
| 1.   | GENERAL INFORMATION                                      |
| 2.   | STANDARDS AND QUALITY                                    |
| 2.1  | Reference standards                                      |
| 2.2  | CE Marking                                               |
| 2.3  | Quality system                                           |
| 3.   | IDENTIFICATION CODE                                      |
| 4.   | DESIGN FEATURES                                          |
| 4.1  | Rotor                                                    |
| 4.2  | Commutator                                               |
| 4.3  | Stator                                                   |
| 4.4  | Brushholder yoke                                         |
| 4.5  | Bearings                                                 |
| 4.6  | Belted and radial thrust application                     |
| 5.   | CONSTRUCTION FEATURES                                    |
| 5.1  | Coupling and shaft extension                             |
| 5.2  | Mounting arrangement                                     |
| 5.3  | Degree of protection                                     |
| 5.4  | Cooling method                                           |
| 5.5  | Maximum allowable speeds                                 |
| 5.6  | Noise level                                              |
| 5.7  | Vibrations and balancing                                 |
| 5.8  | Conduit box                                              |
| 5.9  | Groud terminals                                          |
| 5.10 | Cross-section drawing                                    |
| 6.   | MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS |
| 6.1  | Ratings                                                  |
| 6.2  | Supply voltage                                           |
| 6.3  | Maximum loads                                            |
| 6.4  | Current rate-of-rise                                     |
| 6.5  | Speed regulation                                         |
| 6.6  | Duty with large speed regulation                         |
| 6.7  | Excitation                                               |
| 6.8  | Maximum current at locked rotor                          |
| 6.9  | Accessories                                              |
| 7.   | TESTS                                                    |
| 8.   | OUTPUT POWER DIAGRAMS                                    |
| HOME |                                                          |

GH225

GH250

GH280

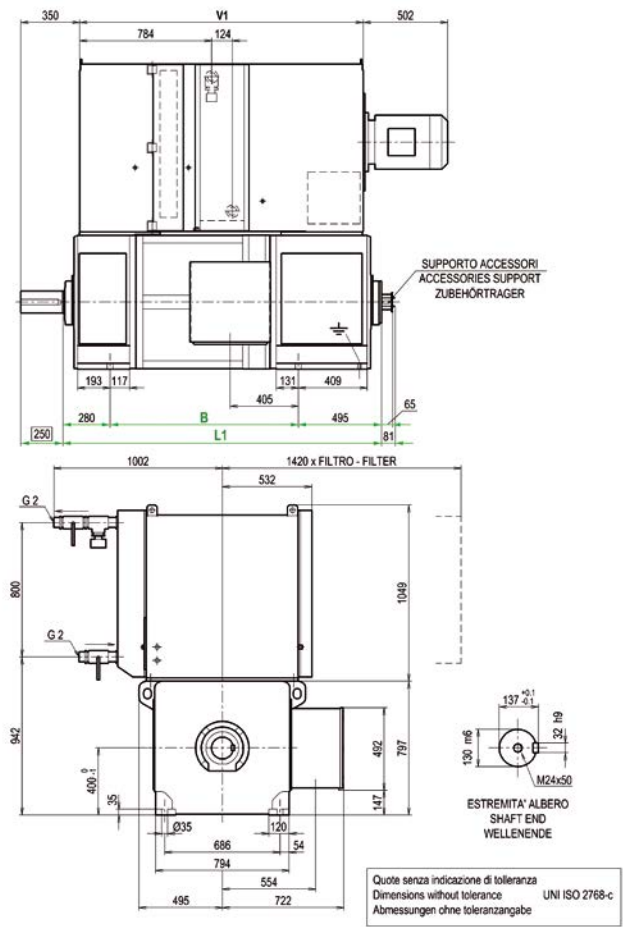
GH315

GH355

GH400

GH450

GH400 IM1001 - IP54 - IC86W



| Size    | B    | L1   | V1   |
|---------|------|------|------|
| GH400 M | 1120 | 1895 | 1685 |
| GH400 L | 1200 | 1975 | 1765 |
| GH400 P | 1290 | 2065 | 1855 |

| TECHNICAL DATA |                    |                              |                         |                            |                           |                      |                       |
|----------------|--------------------|------------------------------|-------------------------|----------------------------|---------------------------|----------------------|-----------------------|
| Size           | Motor mass<br>(kg) | Moment of inertia<br>(kg m²) | Excitation power<br>(W) | Field time constant<br>(s) | Max. mech. speed<br>(rpm) | Ventilation data     |                       |
|                |                    |                              |                         |                            |                           | Air flow<br>(m³/min) | Pressure drop<br>(Pa) |
| GH400 MK       | 3700               | 31.5                         | 5700                    | 1.20                       | 2000                      | 180                  | 1300                  |
| GH400 LK       | 4200               | 34.5                         | 6200                    | 1.30                       | 2000                      | 180                  | 1300                  |
| GH400 PK       | 4600               | 38.5                         | 6600                    | 1.40                       | 1900                      | 180                  | 1300                  |

| Bearings | Drive end   |             | Opposite drive end |
|----------|-------------|-------------|--------------------|
|          | Coupling    | Pulley      |                    |
| B3 – B5  | NU228ECM C3 | NU228ECM C3 | 6228 C3            |
| V1 – V3  | 6228 C3     | NU228ECM C3 | 7228 B             |

| Electrical blower (IC06) |  | Blower motor power |                                 |
|--------------------------|--|--------------------|---------------------------------|
|                          |  | Weight             |                                 |
|                          |  | 160 kg             | 7.5 kW (50 Hz) - 9.2 kW (60 Hz) |

| Air-To-Water Heat Exchanger (IC 86W) |  | Heat exchanger motor power |                           |
|--------------------------------------|--|----------------------------|---------------------------|
|                                      |  | Weight                     |                           |
|                                      |  | 620 kg                     | 15.0 / 15.0 kW (50/60 Hz) |





## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

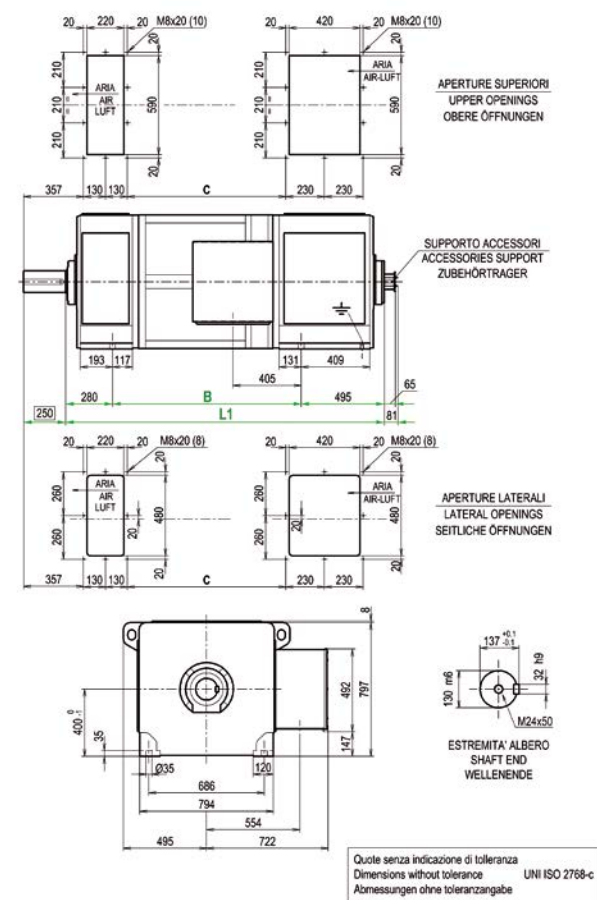
GH315

GH355

**GH400**

GH450

## GH400 IM1001 - IP44 - IC37



| Size    | B    | L1   | C    |
|---------|------|------|------|
| GH400 M | 1120 | 1895 | 942  |
| GH400 L | 1200 | 1975 | 1022 |
| GH400 P | 1290 | 2065 | 1112 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH400 MK       | 3700            | 31.5                      | 5700                 | 1.20                    | 2000                   | 180               | 1300               |
| GH400 LK       | 4200            | 34.5                      | 6200                 | 1.30                    | 2000                   | 180               | 1300               |
| GH400 PK       | 4600            | 38.5                      | 6600                 | 1.40                    | 1900                   | 180               | 1300               |

| Bearings | Drive end   |             | Opposite drive end |
|----------|-------------|-------------|--------------------|
|          | Coupling    | Pulley      |                    |
| B3 - B5  | NU228ECM C3 | NU228ECM C3 | 6228 C3            |
| V1 - V3  | 6228 C3     | NU228ECM C3 | 7228 B             |

| Electrical blower (IC06) |  | Blower motor power              |  |
|--------------------------|--|---------------------------------|--|
| Weight                   |  | Blower motor power              |  |
| 160 kg                   |  | 7.5 kW (50 Hz) - 9.2 kW (60 Hz) |  |

| Air-To-Water Heat Exchanger (IC 86W) |  | Heat exchanger motor power |  |
|--------------------------------------|--|----------------------------|--|
| Weight                               |  | Heat exchanger motor power |  |
| 620 kg                               |  | 15.0 / 15.0 kW (50/60 Hz)  |  |



GO TO MENU



## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

GH315

GH355

GH400

**GH450**

#### GH450

Derating for field weakening operation

GH450 K

Performance of compensated motors

GH450 MK

GH450 LK

GH450 PK

GH450 XK

GH450 YK

Overall dimensions

GH450 IM1001-IP23-IC06

GH450 IM1001-IP54-IC86W

GH450 IM1001-IP44-IC37



Performance Tables are displayed on multiple pages, alongside the data tables are repeated alternately overall dimensions (IC06- IC86W-IC37)



DC MOTORS

1. GENERAL INFORMATION

2. STANDARDS AND QUALITY

2.1 Reference standards

2.2 CE Marking

2.3 Quality system

3. IDENTIFICATION CODE

4. DESIGN FEATURES

4.1 Rotor

4.2 Commutator

4.3 Stator

4.4 Brushholder yoke

4.5 Bearings

4.6 Belted and radial thrust application

5. CONSTRUCTION FEATURES

5.1 Coupling and shaft extension

5.2 Mounting arrangement

5.3 Degree of protection

5.4 Cooling method

5.5 Maximum allowable speeds

5.6 Noise level

5.7 Vibrations and balancing

5.8 Conduit box

5.9 Groud terminals

5.10 Cross-section drawing

6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

6.1 Ratings

6.2 Supply voltage

6.3 Maximum loads

6.4 Current rate-of-rise

6.5 Speed regulation

6.6 Duty with large speed regulation

6.7 Excitation

6.8 Maximum current at locked rotor

6.9 Accessories

7. TESTS

8. OUTPUT POWER DIAGRAMS

HOME

GH225

GH250

GH280

GH315

GH355

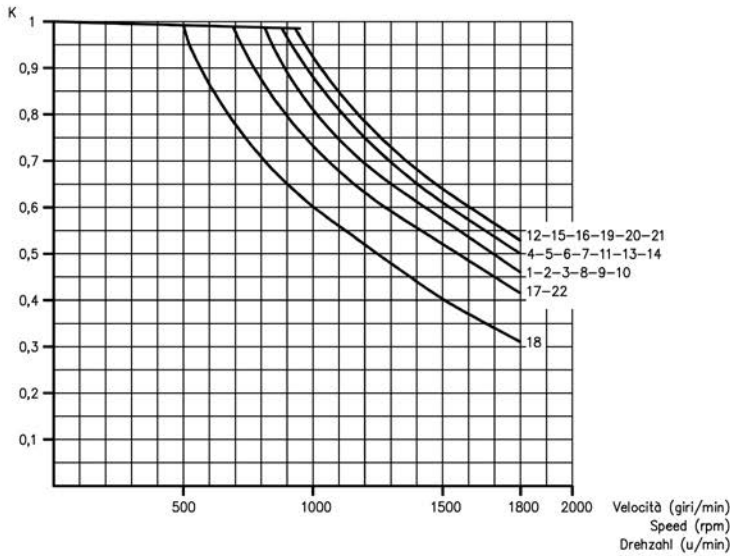
GH400

GH450

GH 450 K

RIDUZIONE DELLA POTENZA IN DISECCITAZIONE  
DERATING FOR FIELD WEAKENING OPERATION  
LEISTUNGSREDUZIERUNG BEI FELDSWÄCHUNG

GH 450 K (compensata - compensated - kompensiert)  
[ 180% sovraccarico - overload - überlast ]



P = K x P tabella potenza disponibile    Allowable power output P = K x P table    Verfügbare Leistung P = K x P table

per/for/für  
GH 450 M    K = K x 1.55  
GH 450 L    K = K x 1.40  
GH 450 P    K = K x 1.25  
GH 450 X    K = K x 1.10  
GH 450 Y    K = K x 1

Per K ≥ 1 niente declassamento    For K ≥ 1 no derating    Für K ≥ 1 keine Leistungsreduzierung

| TECHNICAL DATA |                    |                              |                         |                            |                           |                      |                    |
|----------------|--------------------|------------------------------|-------------------------|----------------------------|---------------------------|----------------------|--------------------|
| Size           | Motor mass<br>(kg) | Moment of inertia<br>(kg m²) | Excitation power<br>(W) | Field time constant<br>(s) | Max. mech. speed<br>(rpm) | Ventilation data     |                    |
|                |                    |                              |                         |                            |                           | Air flow<br>(m³/min) | Pressure drop (Pa) |
|                |                    |                              |                         |                            |                           |                      |                    |
| GH450 M        | 4900               | 38.0                         | 5300                    | 1.50                       | 1800                      | 220                  | 1250               |
| GH450 L        | 5200               | 43.0                         | 6000                    | 1.95                       | 1800                      | 220                  | 1250               |
| GH450 P        | 5500               | 49.0                         | 6500                    | 2.00                       | 1800                      | 220                  | 1250               |
| GH450 X        | 5900               | 55.0                         | 7000                    | 2.05                       | 1700                      | 220                  | 1250               |
| GH450 Y        | 6350               | 62.0                         | 7500                    | 2.10                       | 1600                      | 220                  | 1250               |

| Bearings                             | Drive end   |                                  | Opposite drive end |
|--------------------------------------|-------------|----------------------------------|--------------------|
|                                      | Coupling    | Pulley                           |                    |
|                                      |             |                                  |                    |
| B3 – B5                              | NU232ECM C3 | NU232ECM C3                      | 6232 MC3           |
| V1 – V3                              | 6232 C3     | NU232ECM C3                      | 7232 BCB           |
| Electrical blower (IC06)             | Weight      | Blower motor power               |                    |
|                                      | 160 kg      | 9.2 kW (50 Hz) - 11.0 kW (60 Hz) |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight      | Heat exchanger motor power       |                    |
|                                      | 650 kg      | 15.0 kW (50 / 60 Hz)             |                    |





## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

GH315

GH355

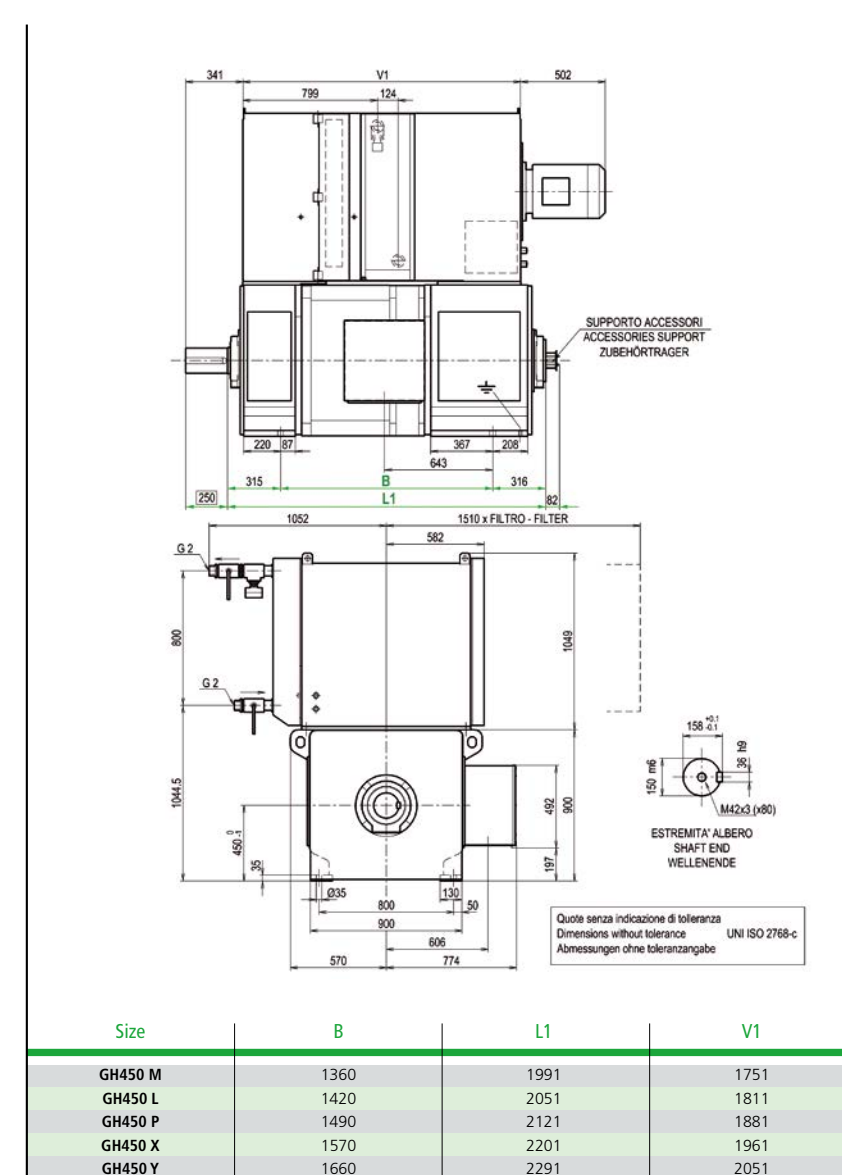
GH400

**GH450**

## GH450 MK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 5300<br>Field time constant (s): 1.5<br>Motor mass (kg): 5060 (IC06)<br>Moment of inertia (kg m²): 38.0 |                    |              | Armature circuit        |                        | Winding code |
|---------------------------------------|-------|-------|-------|-------|-------|-------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|
| 420 V                                 | 460 V | 520 V | 600 V | 700 V | 800 V | RATED OUTPUT kW                                                                                                               | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |
| 420                                   | 460   | 520   | 610   | 720   | 830   | 441                                                                                                                           |                    | 89.3         | 0.64                    | 0.029                  | 9            |
|                                       |       |       |       |       |       | 489                                                                                                                           |                    | 90.4         |                         |                        |              |
|                                       |       |       |       |       |       | 557                                                                                                                           | 1176               | 91.1         |                         |                        |              |
|                                       |       |       |       |       |       | 648                                                                                                                           |                    | 91.9         |                         |                        |              |
|                                       |       |       |       |       |       | 764                                                                                                                           |                    | 92.8         |                         |                        |              |
| 390                                   | 430   | 490   | 580   | 680   | 780   | 880                                                                                                                           |                    | 93.5         | 0.71                    | 0.032                  | 10           |
|                                       |       |       |       |       |       | 426                                                                                                                           |                    | 89.0         |                         |                        |              |
|                                       |       |       |       |       |       | 471                                                                                                                           |                    | 89.8         |                         |                        |              |
|                                       |       |       |       |       |       | 537                                                                                                                           | 1140               | 90.6         |                         |                        |              |
|                                       |       |       |       |       |       | 628                                                                                                                           |                    | 91.8         |                         |                        |              |
| 370                                   | 410   | 470   | 550   | 650   | 750   | 739                                                                                                                           |                    | 92.6         | 0.78                    | 0.034                  | 11           |
|                                       |       |       |       |       |       | 851                                                                                                                           |                    | 93.3         |                         |                        |              |
|                                       |       |       |       |       |       | 407                                                                                                                           |                    | 88.6         |                         |                        |              |
|                                       |       |       |       |       |       | 451                                                                                                                           |                    | 89.6         |                         |                        |              |
|                                       |       |       |       |       |       | 515                                                                                                                           | 1094               | 90.6         |                         |                        |              |
| 340                                   | 380   | 430   | 510   | 600   | 690   | 602                                                                                                                           |                    | 91.7         | 0.91                    | 0.040                  | 12           |
|                                       |       |       |       |       |       | 709                                                                                                                           |                    | 92.6         |                         |                        |              |
|                                       |       |       |       |       |       | 817                                                                                                                           |                    | 93.3         |                         |                        |              |
|                                       |       |       |       |       |       | 374                                                                                                                           |                    | 87.6         |                         |                        |              |
|                                       |       |       |       |       |       | 414                                                                                                                           |                    | 88.6         |                         |                        |              |
| 320                                   | 360   | 410   | 480   | 560   | 650   | 473                                                                                                                           | 1016               | 89.5         | 1.01                    | 0.047                  | 13           |
|                                       |       |       |       |       |       | 554                                                                                                                           |                    | 90.9         |                         |                        |              |
|                                       |       |       |       |       |       | 654                                                                                                                           |                    | 91.9         |                         |                        |              |
|                                       |       |       |       |       |       | 754                                                                                                                           |                    | 92.8         |                         |                        |              |
|                                       |       |       |       |       |       | 343                                                                                                                           |                    | 86.9         |                         |                        |              |
| 300                                   | 340   | 380   | 450   | 530   | 610   | 384                                                                                                                           | 940                | 88.8         | 1.14                    | 0.052                  | 14           |
|                                       |       |       |       |       |       | 435                                                                                                                           |                    | 89.1         |                         |                        |              |
|                                       |       |       |       |       |       | 509                                                                                                                           |                    | 90.2         |                         |                        |              |
|                                       |       |       |       |       |       | 602                                                                                                                           |                    | 91.5         |                         |                        |              |
|                                       |       |       |       |       |       | 696                                                                                                                           |                    | 92.5         |                         |                        |              |
|                                       |       |       |       |       |       | 319                                                                                                                           |                    | 86.5         | 1.14                    | 0.052                  | 14           |
|                                       |       |       |       |       |       | 353                                                                                                                           |                    | 87.4         |                         |                        |              |
|                                       |       |       |       |       |       | 405                                                                                                                           | 878                | 88.7         |                         |                        |              |
|                                       |       |       |       |       |       | 474                                                                                                                           |                    | 90.0         |                         |                        |              |
|                                       |       |       |       |       |       | 561                                                                                                                           |                    | 91.3         |                         |                        |              |
|                                       |       |       |       |       |       | 649                                                                                                                           |                    | 92.2         |                         |                        |              |

## GH450 IM1001 - IP54 - IC86W



| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH450 M        | 4900            | 38.0                      | 5300                 | 1.50                    | 1800                   | 220               | 1250               |
| GH450 L        | 5200            | 43.0                      | 6000                 | 1.95                    | 1800                   | 220               | 1250               |
| GH450 P        | 5500            | 49.0                      | 6500                 | 2.00                    | 1800                   | 220               | 1250               |
| GH450 X        | 5900            | 55.0                      | 7000                 | 2.05                    | 1700                   | 220               | 1250               |
| GH450 Y        | 6350            | 62.0                      | 7500                 | 2.10                    | 1600                   | 220               | 1250               |

| Bearings                             | Drive end   |                                  | Opposite drive end |
|--------------------------------------|-------------|----------------------------------|--------------------|
|                                      | Coupling    | Pulley                           |                    |
| B3 - B5                              | NU232ECM C3 | NU232ECM C3                      | 6232 MC3           |
| V1 - V3                              | 6232 C3     | NU232ECM C3                      | 7232 BCB           |
| Electrical blower (IC06)             | Weight      | Blower motor power               |                    |
|                                      | 160 kg      | 9.2 kW (50 Hz) - 11.0 kW (60 Hz) |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight      | Heat exchanger motor power       |                    |
|                                      | 650 kg      | 15.0 kW (50 / 60 Hz)             |                    |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

GH315

GH355

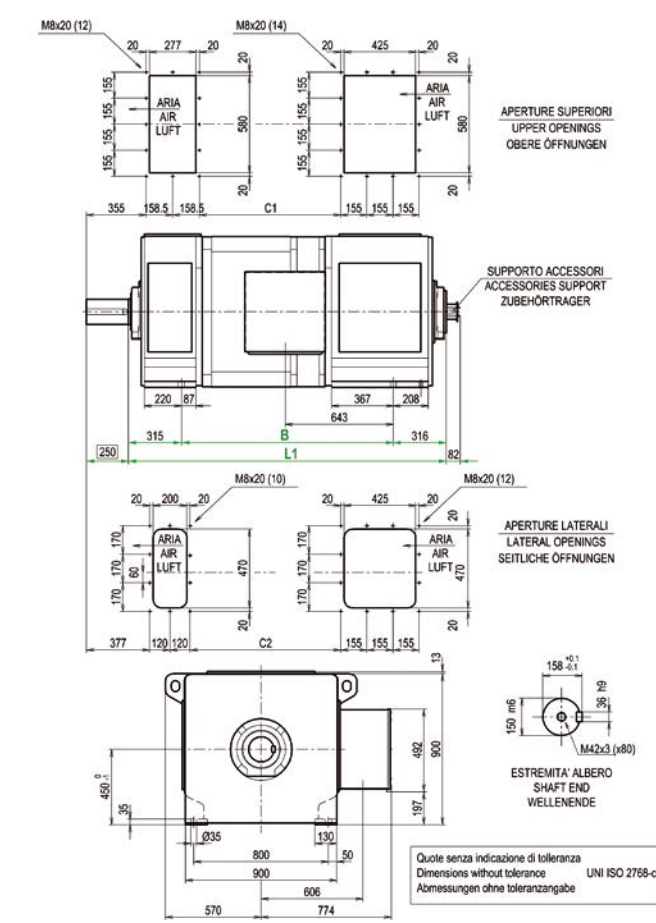
GH400

**GH450**

## GH450 MK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 5300<br>Field time constant (s): 1.5<br>Motor mass (kg): 5060 (IC06)<br>Moment of inertia (kg m²): 38.0 |                    |              | Armature circuit        | Winding code           |
|---------------------------------------|-------|-------|-------|-------|-------|-------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|
| 420 V                                 | 460 V | 520 V | 600 V | 700 V | 800 V | RATED OUTPUT kW                                                                                                               | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |
| 290                                   | 320   | 370   | 430   | 510   | 590   | 309                                                                                                                           | 862                | 85.3         | 1.22                    | 0.059                  |
|                                       |       |       |       |       |       | 343                                                                                                                           |                    | 86.5         |                         |                        |
|                                       |       |       |       |       |       | 393                                                                                                                           |                    | 87.7         |                         |                        |
|                                       |       |       |       |       |       | 461                                                                                                                           |                    | 89.1         |                         |                        |
|                                       |       |       |       |       |       | 546                                                                                                                           |                    | 90.5         |                         |                        |
| 270                                   | 300   | 340   | 400   | 470   | 550   | 630                                                                                                                           | 792                | 91.3         | 1.39                    | 0.067                  |
|                                       |       |       |       |       |       | 282                                                                                                                           |                    | 84.7         |                         |                        |
|                                       |       |       |       |       |       | 313                                                                                                                           |                    | 85.9         |                         |                        |
|                                       |       |       |       |       |       | 360                                                                                                                           |                    | 87.4         |                         |                        |
|                                       |       |       |       |       |       | 422                                                                                                                           |                    | 88.8         |                         |                        |
|                                       |       |       |       |       |       | 500                                                                                                                           |                    | 90.1         |                         |                        |
|                                       |       |       |       |       |       | 577                                                                                                                           |                    | 91.1         |                         |                        |

## GH450 IM1001 - IP44 - IC37



Technical drawing of the GH450 IM1001 motor showing dimensions and mounting details. The drawing includes views of the motor frame, air ducts, and mounting brackets. Key dimensions include: B (1360, 1420, 1490, 1570, 1660), L1 (1991, 2051, 2121, 2201, 2291), C1 (941, 1001, 1071, 1151, 1241), and C2 (996, 1056, 1126, 1206, 1296). The drawing also shows the location of the air ducts (ARIA AIR LUFT) and the mounting brackets (SUPPORTO ACCESSORI ACCESSORIES SUPPORT ZUBEHÖRTRAGER). The shaft end (ESTREMITÀ ALBERO SHAFT END WELLENENDE) is shown with dimensions 158 ±0.1, 150 m6, and M42x3 (x80). The drawing is labeled with 'Quote senza indicazione di tolleranza' (Dimensions without tolerance) and 'UNI ISO 2768-c'.

| Size    | B    | L1   | C1   | C2   |
|---------|------|------|------|------|
| GH450 M | 1360 | 1991 | 941  | 996  |
| GH450 L | 1420 | 2051 | 1001 | 1056 |
| GH450 P | 1490 | 2121 | 1071 | 1126 |
| GH450 X | 1570 | 2201 | 1151 | 1206 |
| GH450 Y | 1660 | 2291 | 1241 | 1296 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH450 M        | 4900            | 38.0                      | 5300                 | 1.50                    | 1800                   | 220               | 1250               |
| GH450 L        | 5200            | 43.0                      | 6000                 | 1.95                    | 1800                   | 220               | 1250               |
| GH450 P        | 5500            | 49.0                      | 6500                 | 2.00                    | 1800                   | 220               | 1250               |
| GH450 X        | 5900            | 55.0                      | 7000                 | 2.05                    | 1700                   | 220               | 1250               |
| GH450 Y        | 6350            | 62.0                      | 7500                 | 2.10                    | 1600                   | 220               | 1250               |

| Bearings                             | Drive end   |                                  | Opposite drive end |
|--------------------------------------|-------------|----------------------------------|--------------------|
|                                      | Coupling    | Pulley                           |                    |
| B3 - B5                              | NU232ECM C3 | NU232ECM C3                      | 6232 MC3           |
| V1 - V3                              | 6232 C3     | NU232ECM C3                      | 7232 BCB           |
| Electrical blower (IC06)             | Weight      | Blower motor power               |                    |
|                                      | 160 kg      | 9.2 kW (50 Hz) - 11.0 kW (60 Hz) |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight      | Heat exchanger motor power       |                    |
|                                      | 650 kg      | 15.0 kW (50 / 60 Hz)             |                    |



## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

GH315

GH355

GH400

**GH450**

## GH450 LK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 6000<br>Field time constant (s): 1.95<br>Motor mass (kg): 5360 (IC06)<br>Moment of inertia (kg m²): 43.0 |                    |              | Armature circuit        |                        | Winding code |
|---------------------------------------|-------|-------|-------|-------|-------|--------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|
| 420 V                                 | 460 V | 520 V | 600 V | 700 V | 800 V | RATED OUTPUT kW                                                                                                                | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |
| 650                                   | 720   | 820   | 950   |       |       | 750                                                                                                                            | 1940               | 92.0         | 0.24                    | 0.011                  | 1            |
|                                       |       |       |       |       |       | 827                                                                                                                            | 1940               | 92.7         |                         |                        |              |
|                                       |       |       |       |       |       | 940                                                                                                                            | 1940               | 93.2         |                         |                        |              |
|                                       |       |       |       |       |       | 1080                                                                                                                           | 1920               | 93.8         |                         |                        |              |
| 610                                   | 680   | 770   | 890   |       |       | 722                                                                                                                            | 1870               | 92.0         | 0.27                    | 0.012                  | 2            |
|                                       |       |       |       |       |       | 797                                                                                                                            | 1870               | 92.7         |                         |                        |              |
|                                       |       |       |       |       |       | 906                                                                                                                            | 1870               | 93.2         |                         |                        |              |
|                                       |       |       |       |       |       | 1040                                                                                                                           | 1850               | 93.8         |                         |                        |              |
| 540                                   | 600   | 680   | 790   | 930   |       | 652                                                                                                                            | 1700               | 91.3         | 0.34                    | 0.016                  | 3            |
|                                       |       |       |       |       |       | 720                                                                                                                            | 1700               | 92.0         |                         |                        |              |
|                                       |       |       |       |       |       | 817                                                                                                                            | 1700               | 92.5         |                         |                        |              |
|                                       |       |       |       |       |       | 950                                                                                                                            | 1700               | 93.2         |                         |                        |              |
| 510                                   | 560   | 640   | 750   | 880   |       | 1106                                                                                                                           | 1680               | 94.1         | 0.37                    | 0.017                  | 4            |
|                                       |       |       |       |       |       | 625                                                                                                                            |                    | 91.3         |                         |                        |              |
|                                       |       |       |       |       |       | 690                                                                                                                            |                    | 92.0         |                         |                        |              |
|                                       |       |       |       |       |       | 784                                                                                                                            | 1630               | 92.5         |                         |                        |              |
| 490                                   | 540   | 620   | 720   | 840   |       | 912                                                                                                                            |                    | 93.2         | 0.40                    | 0.018                  | 5            |
|                                       |       |       |       |       |       | 1072                                                                                                                           |                    | 94.0         |                         |                        |              |
|                                       |       |       |       |       |       | 605                                                                                                                            |                    | 91.3         |                         |                        |              |
|                                       |       |       |       |       |       | 666                                                                                                                            |                    | 91.8         |                         |                        |              |
| 460                                   | 500   | 570   | 670   | 780   |       | 758                                                                                                                            | 1578               | 92.4         | 0.46                    | 0.020                  | 6            |
|                                       |       |       |       |       |       | 881                                                                                                                            |                    | 93.1         |                         |                        |              |
|                                       |       |       |       |       |       | 1036                                                                                                                           |                    | 93.8         |                         |                        |              |
|                                       |       |       |       |       |       | 562                                                                                                                            |                    | 91.0         |                         |                        |              |
| 420                                   | 460   | 530   | 620   | 730   | 840   | 619                                                                                                                            |                    | 91.5         | 0.53                    | 0.026                  | 7            |
|                                       |       |       |       |       |       | 705                                                                                                                            | 1470               | 92.2         |                         |                        |              |
|                                       |       |       |       |       |       | 820                                                                                                                            |                    | 93.0         |                         |                        |              |
|                                       |       |       |       |       |       | 962                                                                                                                            |                    | 93.5         |                         |                        |              |
| 390                                   | 440   | 500   | 580   | 680   | 790   | 514                                                                                                                            |                    | 89.3         | 0.60                    | 0.028                  | 8            |
|                                       |       |       |       |       |       | 568                                                                                                                            |                    | 90.1         |                         |                        |              |
|                                       |       |       |       |       |       | 648                                                                                                                            | 1370               | 91.0         |                         |                        |              |
|                                       |       |       |       |       |       | 756                                                                                                                            |                    | 92.0         |                         |                        |              |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH450 M        | 4900            | 38.0                      | 5300                 | 1.50                    | 1800                   | 220               | 1250               |
| GH450 L        | 5200            | 43.0                      | 6000                 | 1.95                    | 1800                   | 220               | 1250               |
| GH450 P        | 5500            | 49.0                      | 6500                 | 2.00                    | 1800                   | 220               | 1250               |
| GH450 X        | 5900            | 55.0                      | 7000                 | 2.05                    | 1700                   | 220               | 1250               |
| GH450 Y        | 6350            | 62.0                      | 7500                 | 2.10                    | 1600                   | 220               | 1250               |

## GH450 IM1001 - IP23 - IC06

|         |      |      |  |
|---------|------|------|--|
|         |      |      |  |
| Size    | B    | L1   |  |
| GH450 M | 1360 | 1991 |  |
| GH450 L | 1420 | 2051 |  |
| GH450 P | 1490 | 2121 |  |
| GH450 X | 1570 | 2201 |  |
| GH450 Y | 1660 | 2291 |  |

| Bearings                             | Drive end   |                                  | Opposite drive end |
|--------------------------------------|-------------|----------------------------------|--------------------|
|                                      | Coupling    | Pulley                           |                    |
| B3 - B5                              | NU232ECM C3 | NU232ECM C3                      | 6232 MC3           |
| V1 - V3                              | 6232 C3     | NU232ECM C3                      | 7232 BCB           |
| Electrical blower (IC06)             | Weight      | Blower motor power               |                    |
|                                      | 160 kg      | 9.2 kW (50 Hz) - 11.0 kW (60 Hz) |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight      | Heat exchanger motor power       |                    |
|                                      | 650 kg      | 15.0 kW (50 / 60 Hz)             |                    |

## DC MOTORS

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### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

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- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
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- 5.9 Groud terminals
- 5.10 Cross-section drawing

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- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

GH315

GH355

GH400

**GH450**

## GH450 LK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 6000<br>Field time costant (s): 1.95<br>Motor mass (kg): 5360 (IC06)<br>Moment of inertia (kg m²): 43.0 |                    |              | Armature circuit        |                        | Winding code |      |
|---------------------------------------|-------|-------|-------|-------|-------|-------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|------|
| 420 V                                 | 460 V | 520 V | 600 V | 700 V | 800 V | RATED OUTPUT kW                                                                                                               | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |      |
| 370                                   |       |       |       |       |       | 440                                                                                                                           |                    | 89.1         | 0.67                    | 0.032                  | 9            |      |
|                                       | 410   |       |       |       |       | 488                                                                                                                           |                    | 90.2         |                         |                        |              |      |
|                                       |       | 470   |       |       |       | 555                                                                                                                           | 1176               | 90.8         |                         |                        |              |      |
|                                       |       |       | 550   |       |       | 647                                                                                                                           |                    | 91.7         |                         |                        |              |      |
|                                       |       |       |       | 640   |       | 740                                                                                                                           | 762                |              |                         |                        |              | 92.6 |
| 350                                   |       |       |       |       |       | 878                                                                                                                           |                    | 93.3         | 0.75                    | 0.033                  | 10           |      |
|                                       | 390   |       |       |       |       | 425                                                                                                                           |                    | 88.8         |                         |                        |              |      |
|                                       |       | 440   |       |       |       | 470                                                                                                                           |                    | 89.7         |                         |                        |              |      |
|                                       |       |       | 510   |       |       | 536                                                                                                                           | 1140               | 90.4         |                         |                        |              |      |
|                                       |       |       |       | 610   |       | 700                                                                                                                           | 626                |              |                         |                        |              | 91.5 |
| 330                                   |       |       |       |       |       | 737                                                                                                                           |                    | 92.4         | 0.96                    | 0.043                  | 11           |      |
|                                       | 370   |       |       |       |       | 849                                                                                                                           |                    | 93.1         |                         |                        |              |      |
|                                       |       | 420   |       |       |       | 373                                                                                                                           |                    | 87.4         |                         |                        |              |      |
|                                       |       |       | 490   |       |       | 413                                                                                                                           |                    | 88.4         |                         |                        |              |      |
|                                       |       |       |       | 580   |       | 670                                                                                                                           | 472                | 1016         |                         |                        |              | 89.3 |
| 300                                   |       |       |       |       |       | 552                                                                                                                           |                    | 90.6         | 0.96                    | 0.043                  | 12           |      |
|                                       | 340   |       |       |       |       | 652                                                                                                                           |                    | 91.7         |                         |                        |              |      |
|                                       |       | 390   |       |       |       | 752                                                                                                                           |                    | 92.5         |                         |                        |              |      |
|                                       |       |       | 450   |       |       | 373                                                                                                                           |                    | 87.4         |                         |                        |              |      |
|                                       |       |       |       | 530   |       | 620                                                                                                                           | 413                |              |                         |                        |              | 88.4 |
| 290                                   |       |       |       |       |       | 472                                                                                                                           | 1016               | 89.3         | 1.07                    | 0.050                  | 13           |      |
|                                       | 320   |       |       |       |       | 552                                                                                                                           |                    | 90.6         |                         |                        |              |      |
|                                       |       | 360   |       |       |       | 652                                                                                                                           |                    | 91.7         |                         |                        |              |      |
|                                       |       |       | 430   |       |       | 752                                                                                                                           |                    | 92.5         |                         |                        |              |      |
|                                       |       |       |       | 500   |       | 580                                                                                                                           | 342                |              |                         |                        |              | 86.6 |
| 270                                   |       |       |       |       |       | 383                                                                                                                           |                    | 88.5         | 1.20                    | 0.054                  | 14           |      |
|                                       | 300   |       |       |       |       | 434                                                                                                                           | 940                | 88.9         |                         |                        |              |      |
|                                       |       | 340   |       |       |       | 508                                                                                                                           |                    | 90.1         |                         |                        |              |      |
|                                       |       |       | 400   |       |       | 580                                                                                                                           | 600                |              |                         |                        |              | 91.2 |
|                                       |       |       |       | 470   |       | 550                                                                                                                           | 694                |              |                         |                        |              | 92.3 |
|                                       |       |       |       |       |       | 318                                                                                                                           |                    | 86.2         |                         |                        |              |      |
|                                       |       |       |       |       |       | 352                                                                                                                           |                    | 87.2         |                         |                        |              |      |
|                                       |       |       |       |       |       | 404                                                                                                                           | 878                | 88.5         |                         |                        |              |      |
|                                       |       |       |       |       |       | 473                                                                                                                           |                    | 89.8         |                         |                        |              |      |
|                                       |       |       |       |       |       |                                                                                                                               | 560                |              |                         |                        |              | 91.1 |
|                                       |       |       |       |       | 646   |                                                                                                                               | 92.0               |              |                         |                        |              |      |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH450 M        | 4900            | 38.0                      | 5300                 | 1.50                    | 1800                   | 220               | 1250               |
| GH450 L        | 5200            | 43.0                      | 6000                 | 1.95                    | 1800                   | 220               | 1250               |
| GH450 P        | 5500            | 49.0                      | 6500                 | 2.00                    | 1800                   | 220               | 1250               |
| GH450 X        | 5900            | 55.0                      | 7000                 | 2.05                    | 1700                   | 220               | 1250               |
| GH450 Y        | 6350            | 62.0                      | 7500                 | 2.10                    | 1600                   | 220               | 1250               |

## GH450 IM1001 - IP54 - IC86W

| Size    | B    | L1   | V1   |
|---------|------|------|------|
| GH450 M | 1360 | 1991 | 1751 |
| GH450 L | 1420 | 2051 | 1811 |
| GH450 P | 1490 | 2121 | 1881 |
| GH450 X | 1570 | 2201 | 1961 |
| GH450 Y | 1660 | 2291 | 2051 |

| Bearings                             | Drive end   |                                  | Opposite drive end |
|--------------------------------------|-------------|----------------------------------|--------------------|
|                                      | Coupling    | Pulley                           |                    |
| B3 – B5                              | NU232ECM C3 | NU232ECM C3                      | 6232 MC3           |
| V1 – V3                              | 6232 C3     | NU232ECM C3                      | 7232 BCB           |
| Electrical blower (IC06)             | Weight      | Blower motor power               |                    |
|                                      | 160 kg      | 9.2 kW (50 Hz) - 11.0 kW (60 Hz) |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight      | Heat exchanger motor power       |                    |
|                                      | 650 kg      | 15.0 kW (50 / 60 Hz)             |                    |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

## GH315

## GH355

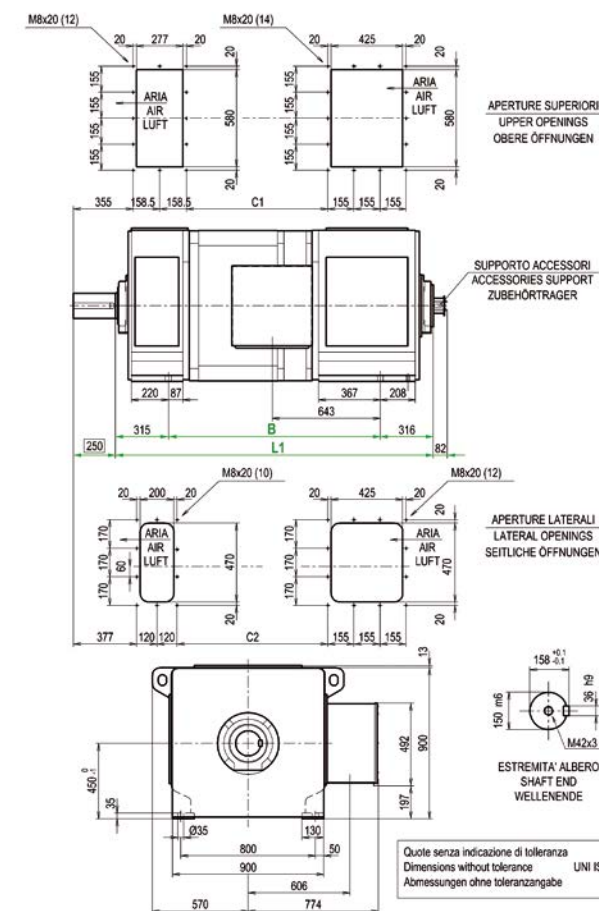
## GH400

## GH450

### GH450 LK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 6000<br>Field time constant (s): 1.95<br>Motor mass (kg): 5360 (IC06)<br>Moment of inertia (kg m²): 43.0 |                    |              | Armature circuit        | Winding code           |
|---------------------------------------|-------|-------|-------|-------|-------|--------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|
| 420 V                                 | 460 V | 520 V | 600 V | 700 V | 800 V | RATED OUTPUT kW                                                                                                                | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |
| 260                                   | 290   | 330   | 380   | 450   | 520   | 308                                                                                                                            | 862                | 85.0         | 1.29                    | 0.062                  |
|                                       |       |       |       |       |       | 342                                                                                                                            |                    | 86.3         |                         |                        |
|                                       |       |       |       |       |       | 392                                                                                                                            |                    | 87.5         |                         |                        |
|                                       |       |       |       |       |       | 460                                                                                                                            |                    | 88.9         |                         |                        |
|                                       |       |       |       |       |       | 544                                                                                                                            |                    | 90.2         |                         |                        |
| 240                                   | 270   | 300   | 360   | 420   | 590   | 628                                                                                                                            | 792                | 91.1         | 1.47                    | 0.071                  |
|                                       |       |       |       |       |       | 281                                                                                                                            |                    | 84.5         |                         |                        |
|                                       |       |       |       |       |       | 312                                                                                                                            |                    | 85.6         |                         |                        |
|                                       |       |       |       |       |       | 359                                                                                                                            |                    | 87.2         |                         |                        |
|                                       |       |       |       |       |       | 421                                                                                                                            |                    | 88.6         |                         |                        |
|                                       |       |       |       |       |       | 500                                                                                                                            |                    | 90.1         |                         |                        |
|                                       |       |       |       |       |       | 576                                                                                                                            |                    | 90.9         |                         |                        |

### GH450 IM1001 - IP44 - IC37



| Size    | B    | L1   | C1   | C2   |
|---------|------|------|------|------|
| GH450 M | 1360 | 1991 | 941  | 996  |
| GH450 L | 1420 | 2051 | 1001 | 1056 |
| GH450 P | 1490 | 2121 | 1071 | 1126 |
| GH450 X | 1570 | 2201 | 1151 | 1206 |
| GH450 Y | 1660 | 2291 | 1241 | 1296 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH450 M        | 4900            | 38.0                      | 5300                 | 1.50                    | 1800                   | 220               | 1250               |
| GH450 L        | 5200            | 43.0                      | 6000                 | 1.95                    | 1800                   | 220               | 1250               |
| GH450 P        | 5500            | 49.0                      | 6500                 | 2.00                    | 1800                   | 220               | 1250               |
| GH450 X        | 5900            | 55.0                      | 7000                 | 2.05                    | 1700                   | 220               | 1250               |
| GH450 Y        | 6350            | 62.0                      | 7500                 | 2.10                    | 1600                   | 220               | 1250               |

| Bearings                             | Drive end   |                                  | Opposite drive end |
|--------------------------------------|-------------|----------------------------------|--------------------|
|                                      | Coupling    | Pulley                           |                    |
| B3 - B5                              | NU232ECM C3 | NU232ECM C3                      | 6232 MC3           |
| V1 - V3                              | 6232 C3     | NU232ECM C3                      | 7232 BCB           |
| Electrical blower (IC06)             | Weight      | Blower motor power               |                    |
|                                      | 160 kg      | 9.2 kW (50 Hz) - 11.0 kW (60 Hz) |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight      | Heat exchanger motor power       |                    |
|                                      | 650 kg      | 15.0 kW (50 / 60 Hz)             |                    |



## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

GH315

GH355

GH400

**GH450**

## GH450 PK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 6500<br>Field time constant (s): 2.0<br>Motor mass (kg): 5660 (IC06)<br>Moment of inertia (kg m²): 49.0 |                    |              | Armature circuit        |                        | Winding code |
|---------------------------------------|-------|-------|-------|-------|-------|-------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|
| 420 V                                 | 460 V | 520 V | 600 V | 700 V | 800 V | RATED OUTPUT kW                                                                                                               | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |
| 320                                   | 360   | 410   | 480   | 570   | 660   | 438                                                                                                                           | 1176               | 88.7         | 0.71                    | 0.033                  | 9            |
|                                       |       |       |       |       |       | 482                                                                                                                           |                    | 89.1         |                         |                        |              |
|                                       |       |       |       |       |       | 552                                                                                                                           |                    | 90.3         |                         |                        |              |
|                                       |       |       |       |       |       | 644                                                                                                                           |                    | 91.3         |                         |                        |              |
|                                       |       |       |       |       |       | 760                                                                                                                           |                    | 92.3         |                         |                        |              |
| 310                                   | 340   | 390   | 460   | 540   | 620   | 876                                                                                                                           | 1140               | 93.1         | 0.80                    | 0.036                  | 10           |
|                                       |       |       |       |       |       | 423                                                                                                                           |                    | 88.3         |                         |                        |              |
|                                       |       |       |       |       |       | 465                                                                                                                           |                    | 88.7         |                         |                        |              |
|                                       |       |       |       |       |       | 533                                                                                                                           |                    | 89.9         |                         |                        |              |
|                                       |       |       |       |       |       | 623                                                                                                                           |                    | 91.1         |                         |                        |              |
| 300                                   | 330   | 370   | 440   | 510   | 590   | 736                                                                                                                           | 1094               | 92.2         | 0.87                    | 0.039                  | 11           |
|                                       |       |       |       |       |       | 847                                                                                                                           |                    | 92.9         |                         |                        |              |
|                                       |       |       |       |       |       | 405                                                                                                                           |                    | 88.1         |                         |                        |              |
|                                       |       |       |       |       |       | 445                                                                                                                           |                    | 88.5         |                         |                        |              |
|                                       |       |       |       |       |       | 511                                                                                                                           |                    | 89.8         |                         |                        |              |
| 270                                   | 300   | 340   | 400   | 470   | 550   | 598                                                                                                                           | 1016               | 91.1         | 1.01                    | 0.047                  | 12           |
|                                       |       |       |       |       |       | 705                                                                                                                           |                    | 92.1         |                         |                        |              |
|                                       |       |       |       |       |       | 813                                                                                                                           |                    | 92.9         |                         |                        |              |
|                                       |       |       |       |       |       | 371                                                                                                                           |                    | 86.9         |                         |                        |              |
|                                       |       |       |       |       |       | 410                                                                                                                           |                    | 87.7         |                         |                        |              |
| 250                                   | 280   | 320   | 380   | 450   | 520   | 470                                                                                                                           | 941                | 89.0         | 1.13                    | 0.052                  | 13           |
|                                       |       |       |       |       |       | 549                                                                                                                           |                    | 90.0         |                         |                        |              |
|                                       |       |       |       |       |       | 650                                                                                                                           |                    | 91.4         |                         |                        |              |
|                                       |       |       |       |       |       | 750                                                                                                                           |                    | 92.3         |                         |                        |              |
|                                       |       |       |       |       |       | 342                                                                                                                           |                    | 86.5         |                         |                        |              |
| 240                                   | 270   | 300   | 360   | 420   | 490   | 376                                                                                                                           | 878                | 86.9         | 1.27                    | 0.058                  | 14           |
|                                       |       |       |       |       |       | 433                                                                                                                           |                    | 88.5         |                         |                        |              |
|                                       |       |       |       |       |       | 506                                                                                                                           |                    | 89.7         |                         |                        |              |
|                                       |       |       |       |       |       | 598                                                                                                                           |                    | 90.8         |                         |                        |              |
|                                       |       |       |       |       |       | 692                                                                                                                           |                    | 91.9         |                         |                        |              |
|                                       |       |       |       |       |       | 318                                                                                                                           |                    | 86.2         |                         |                        |              |
|                                       |       |       |       |       |       | 350                                                                                                                           |                    | 86.7         |                         |                        |              |
|                                       |       |       |       |       |       | 402                                                                                                                           |                    | 88.0         |                         |                        |              |
|                                       |       |       |       |       |       | 471                                                                                                                           |                    | 89.4         |                         |                        |              |
|                                       |       |       |       |       |       | 557                                                                                                                           |                    | 90.6         |                         |                        |              |
|                                       |       |       |       |       |       | 644                                                                                                                           |                    | 91.7         |                         |                        |              |
|                                       |       |       |       |       |       |                                                                                                                               |                    |              |                         |                        |              |

## GH450 IM1001 - IP54 - IC86W

SUPPORTO ACCESSORI  
ACCESSORIES SUPPORT  
ZUBEHÖRTRÄGER

1510 x FILTRO - FILTER

ESTREMITÀ ALBERO  
SHAFT END  
WELLENENDE

Quote senza indicazione di tolleranza  
Dimensions without tolerance  
Abmessungen ohne Toleranzangabe

UNI ISO 2768-c

| Size    | B    | L1   | V1   |
|---------|------|------|------|
| GH450 M | 1360 | 1991 | 1751 |
| GH450 L | 1420 | 2051 | 1811 |
| GH450 P | 1490 | 2121 | 1881 |
| GH450 X | 1570 | 2201 | 1961 |
| GH450 Y | 1660 | 2291 | 2051 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH450 M        | 4900            | 38.0                      | 5300                 | 1.50                    | 1800                   | 220               | 1250               |
| GH450 L        | 5200            | 43.0                      | 6000                 | 1.95                    | 1800                   | 220               | 1250               |
| GH450 P        | 5500            | 49.0                      | 6500                 | 2.00                    | 1800                   | 220               | 1250               |
| GH450 X        | 5900            | 55.0                      | 7000                 | 2.05                    | 1700                   | 220               | 1250               |
| GH450 Y        | 6350            | 62.0                      | 7500                 | 2.10                    | 1600                   | 220               | 1250               |

| Bearings                             | Drive end   |                                  | Opposite drive end |
|--------------------------------------|-------------|----------------------------------|--------------------|
|                                      | Coupling    | Pulley                           |                    |
| B3 - B5                              | NU232ECM C3 | NU232ECM C3                      | 6232 MC3           |
| V1 - V3                              | 6232 C3     | NU232ECM C3                      | 7232 BCB           |
| Electrical blower (IC06)             | Weight      | Blower motor power               |                    |
|                                      | 160 kg      | 9.2 kW (50 Hz) - 11.0 kW (60 Hz) |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight      | Heat exchanger motor power       |                    |
|                                      | 650 kg      | 15.0 kW (50 / 60 Hz)             |                    |

## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

GH315

GH355

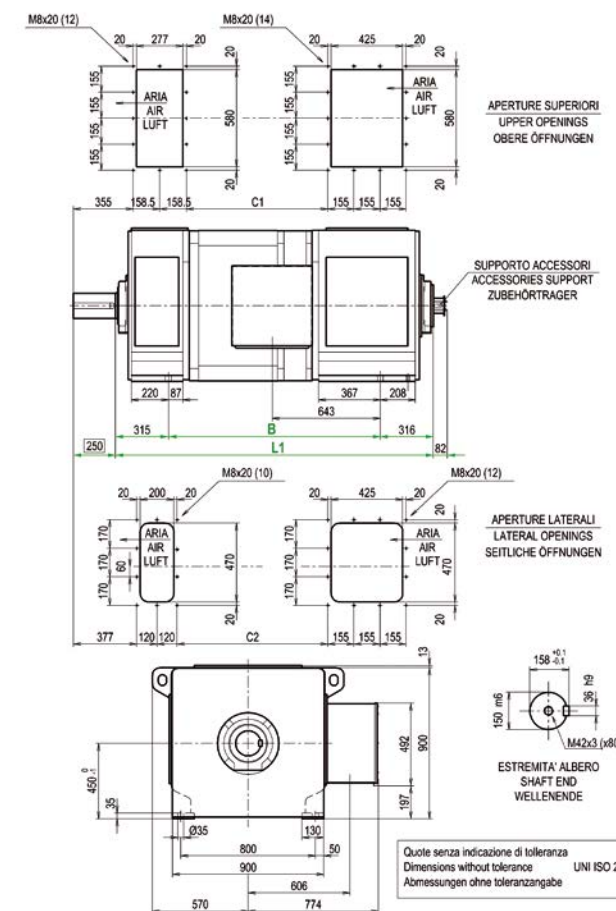
GH400

**GH450**

## GH450 PK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 6500<br>Field time constant (s): 2.0<br>Motor mass (kg): 5660 (IC06)<br>Moment of inertia (kg m²): 49.0 |                    |              | Armature circuit        |                        | Winding code |
|---------------------------------------|-------|-------|-------|-------|-------|-------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|
| 420 V                                 | 460 V | 520 V | 600 V | 700 V | 800 V | RATED OUTPUT kW                                                                                                               | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |
| 230                                   | 250   | 290   | 340   | 400   | 460   | 306                                                                                                                           |                    | 84.5         | 1.36                    | 0.067                  | 15           |
|                                       |       |       |       |       |       | 337                                                                                                                           |                    | 85.0         |                         |                        |              |
|                                       |       |       |       |       |       | 389                                                                                                                           | 862                | 86.8         |                         |                        |              |
|                                       |       |       |       |       |       | 457                                                                                                                           |                    | 88.3         |                         |                        |              |
|                                       |       |       |       |       |       | 541                                                                                                                           |                    | 89.7         |                         |                        |              |
| 210                                   | 230   | 270   | 320   | 380   | 430   | 626                                                                                                                           |                    | 90.8         | 1.56                    | 0.075                  | 16           |
|                                       |       |       |       |       |       | 279                                                                                                                           |                    | 83.9         |                         |                        |              |
|                                       |       |       |       |       |       | 308                                                                                                                           |                    | 84.5         |                         |                        |              |
|                                       |       |       |       |       |       | 356                                                                                                                           | 792                | 86.4         |                         |                        |              |
|                                       |       |       |       |       |       | 418                                                                                                                           |                    | 88.0         |                         |                        |              |
|                                       |       | 496   |       | 89.5  |       |                                                                                                                               |                    |              |                         |                        |              |
|                                       |       | 574   |       | 90.6  |       |                                                                                                                               |                    |              |                         |                        |              |

## GH450 IM1001 - IP44 - IC37



| Size    | B    | L1   | C1   | C2   |
|---------|------|------|------|------|
| GH450 M | 1360 | 1991 | 941  | 996  |
| GH450 L | 1420 | 2051 | 1001 | 1056 |
| GH450 P | 1490 | 2121 | 1071 | 1126 |
| GH450 X | 1570 | 2201 | 1151 | 1206 |
| GH450 Y | 1660 | 2291 | 1241 | 1296 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH450 M        | 4900            | 38.0                      | 5300                 | 1.50                    | 1800                   | 220               | 1250               |
| GH450 L        | 5200            | 43.0                      | 6000                 | 1.95                    | 1800                   | 220               | 1250               |
| GH450 P        | 5500            | 49.0                      | 6500                 | 2.00                    | 1800                   | 220               | 1250               |
| GH450 X        | 5900            | 55.0                      | 7000                 | 2.05                    | 1700                   | 220               | 1250               |
| GH450 Y        | 6350            | 62.0                      | 7500                 | 2.10                    | 1600                   | 220               | 1250               |

| Bearings                             | Drive end   |                                  | Opposite drive end |
|--------------------------------------|-------------|----------------------------------|--------------------|
|                                      | Coupling    | Pulley                           |                    |
| B3 - B5                              | NU232ECM C3 | NU232ECM C3                      | 6232 MC3           |
| V1 - V3                              | 6232 C3     | NU232ECM C3                      | 7232 BCB           |
| Electrical blower (IC06)             | Weight      | Blower motor power               |                    |
|                                      | 160 kg      | 9.2 kW (50 Hz) - 11.0 kW (60 Hz) |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight      | Heat exchanger motor power       |                    |
|                                      | 650 kg      | 15.0 kW (50 / 60 Hz)             |                    |





## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
- 2.3 Quality system

### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

## GH225

## GH250

## GH280

## GH315

## GH355

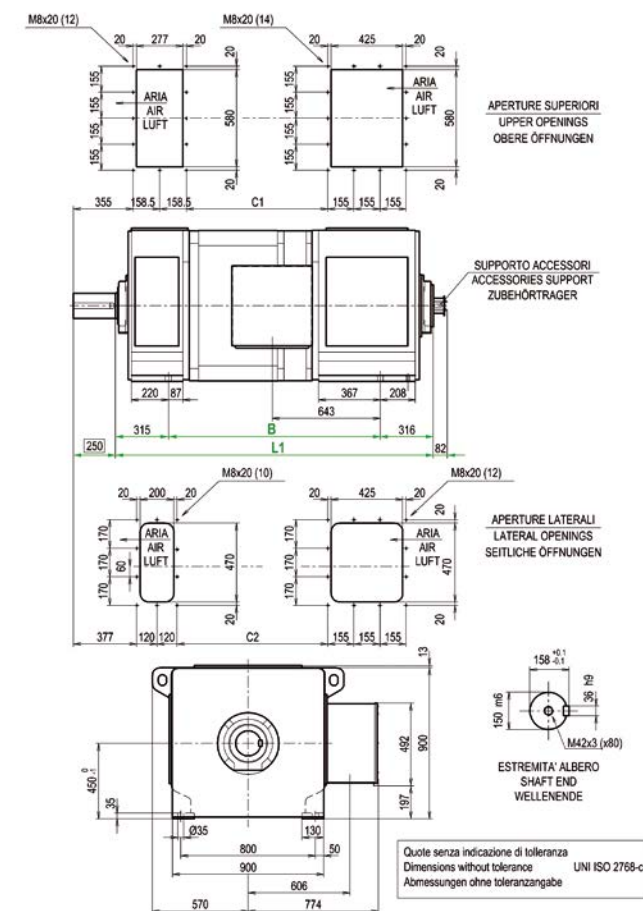
## GH400

## GH450

### GH450 XK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 7000<br>Field time constant (s): 2.05<br>Motor mass (kg): 6060 (IC06)<br>Moment of inertia (kg m²): 55.0 |                    |              | Armature circuit        | Winding code           |
|---------------------------------------|-------|-------|-------|-------|-------|--------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|
| 420 V                                 | 460 V | 520 V | 600 V | 700 V | 800 V | RATED OUTPUT kW                                                                                                                | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |
| 200                                   | 220   | 250   | 300   | 350   | 410   | 297                                                                                                                            | 850                | 83.2         | 1.45                    | 0.070                  |
|                                       |       |       |       |       |       | 329                                                                                                                            |                    | 84.1         |                         |                        |
|                                       |       |       |       |       |       | 380                                                                                                                            |                    | 86.0         |                         |                        |
|                                       |       |       |       |       |       | 447                                                                                                                            |                    | 87.6         |                         |                        |
|                                       |       |       |       |       |       | 530                                                                                                                            |                    | 89.1         |                         |                        |
| 180                                   | 200   | 240   | 280   | 330   | 380   | 614                                                                                                                            | 780                | 90.3         | 1.66                    | 0.081                  |
|                                       |       |       |       |       |       | 272                                                                                                                            |                    | 83.0         |                         |                        |
|                                       |       |       |       |       |       | 301                                                                                                                            |                    | 83.9         |                         |                        |
|                                       |       |       |       |       |       | 347                                                                                                                            |                    | 85.6         |                         |                        |
|                                       |       |       |       |       |       | 408                                                                                                                            |                    | 87.2         |                         |                        |
|                                       |       |       |       |       |       | 485                                                                                                                            |                    | 88.8         |                         |                        |
|                                       |       |       |       |       |       | 562                                                                                                                            |                    | 90.1         |                         |                        |

### GH450 IM1001 - IP44 - IC37



| Size    | B    | L1   | C1   | C2   |
|---------|------|------|------|------|
| GH450 M | 1360 | 1991 | 941  | 996  |
| GH450 L | 1420 | 2051 | 1001 | 1056 |
| GH450 P | 1490 | 2121 | 1071 | 1126 |
| GH450 X | 1570 | 2201 | 1151 | 1206 |
| GH450 Y | 1660 | 2291 | 1241 | 1296 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH450 M        | 4900            | 38.0                      | 5300                 | 1.50                    | 1800                   | 220               | 1250               |
| GH450 L        | 5200            | 43.0                      | 6000                 | 1.95                    | 1800                   | 220               | 1250               |
| GH450 P        | 5500            | 49.0                      | 6500                 | 2.00                    | 1800                   | 220               | 1250               |
| GH450 X        | 5900            | 55.0                      | 7000                 | 2.05                    | 1700                   | 220               | 1250               |
| GH450 Y        | 6350            | 62.0                      | 7500                 | 2.10                    | 1600                   | 220               | 1250               |

| Bearings                             | Drive end   |                                  | Opposite drive end |
|--------------------------------------|-------------|----------------------------------|--------------------|
|                                      | Coupling    | Pulley                           |                    |
| B3 - B5                              | NU232ECM C3 | NU232ECM C3                      | 6232 MC3           |
| V1 - V3                              | 6232 C3     | NU232ECM C3                      | 7232 BCB           |
| Electrical blower (IC06)             | Weight      | Blower motor power               |                    |
|                                      | 160 kg      | 9.2 kW (50 Hz) - 11.0 kW (60 Hz) |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight      | Heat exchanger motor power       |                    |
|                                      | 650 kg      | 15.0 kW (50 / 60 Hz)             |                    |





## DC MOTORS

### 1. GENERAL INFORMATION

### 2. STANDARDS AND QUALITY

- 2.1 Reference standards
- 2.2 CE Marking
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### 3. IDENTIFICATION CODE

### 4. DESIGN FEATURES

- 4.1 Rotor
- 4.2 Commutator
- 4.3 Stator
- 4.4 Brushholder yoke
- 4.5 Bearings
- 4.6 Belted and radial thrust application

### 5. CONSTRUCTION FEATURES

- 5.1 Coupling and shaft extension
- 5.2 Mounting arrangement
- 5.3 Degree of protection
- 5.4 Cooling method
- 5.5 Maximum allowable speeds
- 5.6 Noise level
- 5.7 Vibrations and balancing
- 5.8 Conduit box
- 5.9 Groud terminals
- 5.10 Cross-section drawing

### 6. MOTOR SELECTION BASED ON RATING AND OPERATING CONDITIONS

- 6.1 Ratings
- 6.2 Supply voltage
- 6.3 Maximum loads
- 6.4 Current rate-of-rise
- 6.5 Speed regulation
- 6.6 Duty with large speed regulation
- 6.7 Excitation
- 6.8 Maximum current at locked rotor
- 6.9 Accessories

### 7. TESTS

### 8. OUTPUT POWER DIAGRAMS

### HOME

GH225

GH250

GH280

GH315

GH355

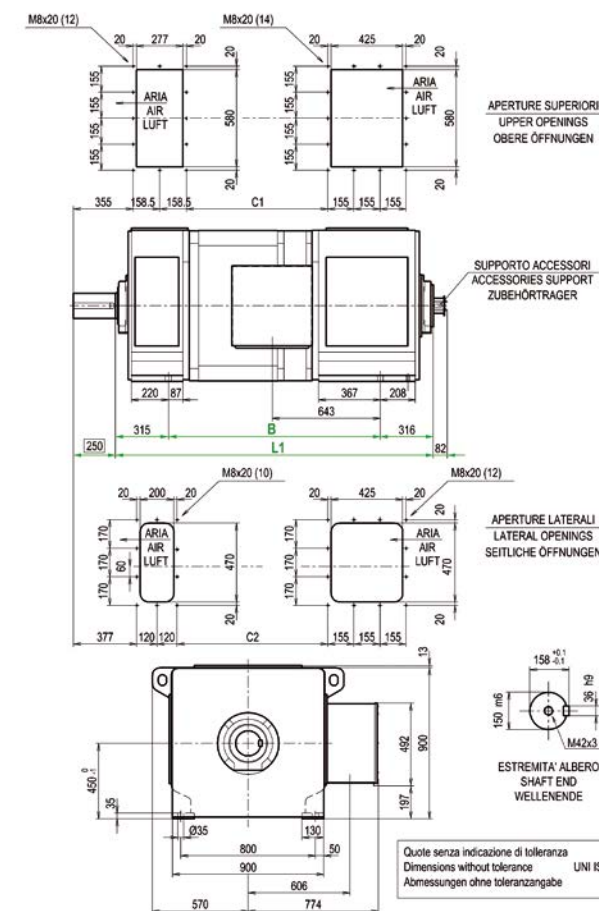
GH400

**GH450**

## GH450 YK

| Rated speed (rpm) at armature voltage |       |       |       |       |       | Excitation power (W): 7500<br>Field time constant (s): 2.10<br>Motor mass (kg): 6510 (IC06)<br>Moment of inertia (kg m²): 62.0 |                    |              | Armature circuit        |                        | Winding code |
|---------------------------------------|-------|-------|-------|-------|-------|--------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------|------------------------|--------------|
| 420 V                                 | 460 V | 520 V | 600 V | 700 V | 800 V | RATED OUTPUT kW                                                                                                                | ARMATURE CURRENT A | EFFICIENCY % | SATURATED INDUCTANCE mH | RESISTANCE AT 115 °C Ω |              |
|                                       | 190   |       |       |       |       | 322                                                                                                                            |                    | 83.3         |                         |                        |              |
|                                       |       | 220   |       |       |       | 372                                                                                                                            | 840                | 85.2         |                         |                        |              |
|                                       |       |       | 260   |       |       | 438                                                                                                                            |                    | 86.9         | 1.55                    | 0.077                  | 15           |
|                                       |       |       |       | 310   |       | 521                                                                                                                            |                    | 88.6         |                         |                        |              |
|                                       |       |       |       |       | 360   | 603                                                                                                                            |                    | 89.7         |                         |                        |              |
|                                       | 180   |       |       |       |       | 295                                                                                                                            |                    | 83.3         |                         |                        |              |
|                                       |       | 210   |       |       |       | 339                                                                                                                            | 770                | 84.7         |                         |                        |              |
|                                       |       |       | 240   |       |       | 400                                                                                                                            |                    | 86.6         | 1.77                    | 0.088                  | 16           |
|                                       |       |       |       | 290   |       | 475                                                                                                                            |                    | 88.1         |                         |                        |              |
|                                       |       |       |       |       | 340   | 551                                                                                                                            |                    | 89.4         |                         |                        |              |

## GH450 IM1001 - IP44 - IC37



| Size    | B    | L1   | C1   | C2   |
|---------|------|------|------|------|
| GH450 M | 1360 | 1991 | 941  | 996  |
| GH450 L | 1420 | 2051 | 1001 | 1056 |
| GH450 P | 1490 | 2121 | 1071 | 1126 |
| GH450 X | 1570 | 2201 | 1151 | 1206 |
| GH450 Y | 1660 | 2291 | 1241 | 1296 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH450 M        | 4900            | 38.0                      | 5300                 | 1.50                    | 1800                   | 220               | 1250               |
| GH450 L        | 5200            | 43.0                      | 6000                 | 1.95                    | 1800                   | 220               | 1250               |
| GH450 P        | 5500            | 49.0                      | 6500                 | 2.00                    | 1800                   | 220               | 1250               |
| GH450 X        | 5900            | 55.0                      | 7000                 | 2.05                    | 1700                   | 220               | 1250               |
| GH450 Y        | 6350            | 62.0                      | 7500                 | 2.10                    | 1600                   | 220               | 1250               |

| Bearings                             | Drive end   |                                  | Opposite drive end |
|--------------------------------------|-------------|----------------------------------|--------------------|
|                                      | Coupling    | Pulley                           |                    |
| B3 - B5                              | NU232ECM C3 | NU232ECM C3                      | 6232 MC3           |
| V1 - V3                              | 6232 C3     | NU232ECM C3                      | 7232 BCB           |
| Electrical blower (IC06)             | Weight      | Blower motor power               |                    |
|                                      | 160 kg      | 9.2 kW (50 Hz) - 11.0 kW (60 Hz) |                    |
| Air-To-Water Heat Exchanger (IC 86W) | Weight      | Heat exchanger motor power       |                    |
|                                      | 650 kg      | 15.0 kW (50 / 60 Hz)             |                    |







## DC MOTORS

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- 6.6 Duty with large speed regulation
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- 6.9 Accessories

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### HOME

GH225

GH250

GH280

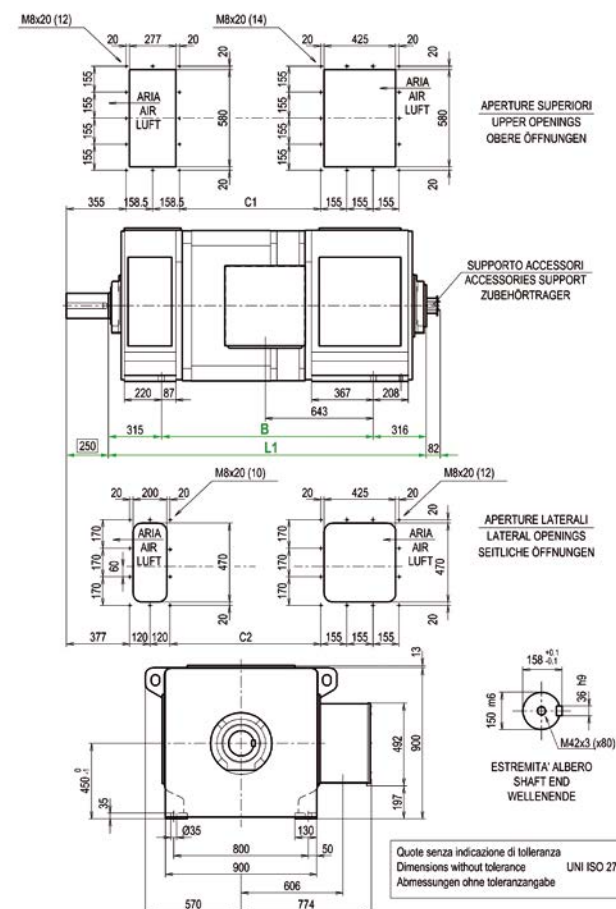
GH315

GH355

GH400

**GH450**

## GH450 IM1001 - IP44 - IC37



| Size    | B    | L1   | C1   | C2   |
|---------|------|------|------|------|
| GH450 M | 1360 | 1991 | 941  | 996  |
| GH450 L | 1420 | 2051 | 1001 | 1056 |
| GH450 P | 1490 | 2121 | 1071 | 1126 |
| GH450 X | 1570 | 2201 | 1151 | 1206 |
| GH450 Y | 1660 | 2291 | 1241 | 1296 |

| TECHNICAL DATA |                 |                           |                      |                         |                        |                   |                    |
|----------------|-----------------|---------------------------|----------------------|-------------------------|------------------------|-------------------|--------------------|
| Size           | Motor mass (kg) | Moment of inertia (kg m²) | Excitation power (W) | Field time constant (s) | Max. mech. speed (rpm) | Ventilation data  |                    |
|                |                 |                           |                      |                         |                        | Air flow (m³/min) | Pressure drop (Pa) |
| GH450 M        | 4900            | 38.0                      | 5300                 | 1.50                    | 1800                   | 220               | 1250               |
| GH450 L        | 5200            | 43.0                      | 6000                 | 1.95                    | 1800                   | 220               | 1250               |
| GH450 P        | 5500            | 49.0                      | 6500                 | 2.00                    | 1800                   | 220               | 1250               |
| GH450 X        | 5900            | 55.0                      | 7000                 | 2.05                    | 1700                   | 220               | 1250               |
| GH450 Y        | 6350            | 62.0                      | 7500                 | 2.10                    | 1600                   | 220               | 1250               |

| Bearings | Drive end   |             | Opposite drive end |
|----------|-------------|-------------|--------------------|
|          | Coupling    | Pulley      |                    |
| B3 - B5  | NU232ECM C3 | NU232ECM C3 | 6232 MC3           |
| V1 - V3  | 6232 C3     | NU232ECM C3 | 7232 BCB           |

| Electrical blower (IC06) |  | Blower motor power |                                  |
|--------------------------|--|--------------------|----------------------------------|
|                          |  | Weight             | Blower motor power               |
|                          |  | 160 kg             | 9.2 kW (50 Hz) - 11.0 kW (60 Hz) |

| Air-To-Water Heat Exchanger (IC 86W) |  | Heat exchanger motor power |                            |
|--------------------------------------|--|----------------------------|----------------------------|
|                                      |  | Weight                     | Heat exchanger motor power |
|                                      |  | 650 kg                     | 15.0 kW (50 / 60 Hz)       |



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