

Motor attachment
Summary – System Program

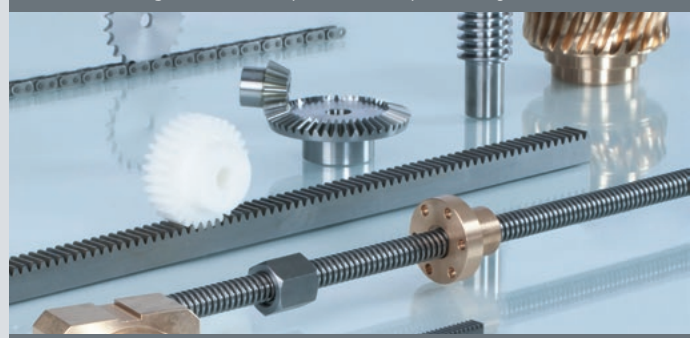


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Standard Program Standard parts, further processing



System Program Screwjack systems, standard gearboxes



Toothed components, electromechanical and pneumatical drives





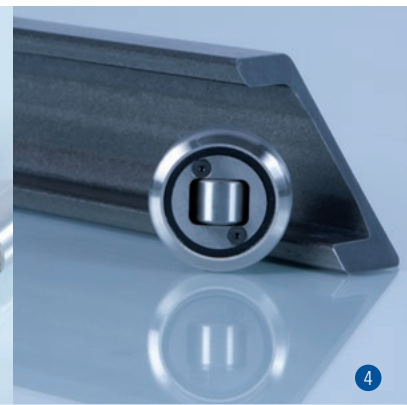
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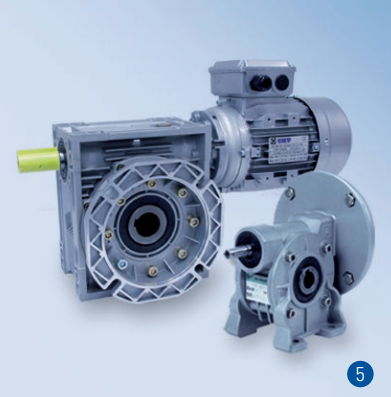
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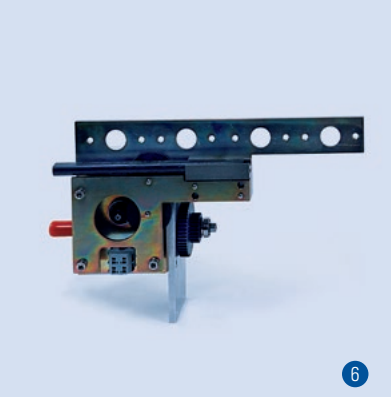
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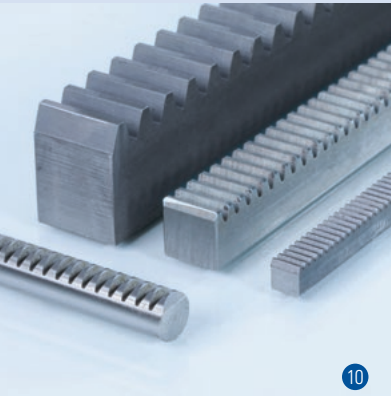
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System Program

- 1 Screw jacks
- 2 Bevel gearboxes
- 3 Connecting shafts
- 4 Linear drives
- 5 Gear, worm gear
- 6 Customer-specific construction group

Standard Program

- 7 Spur gears module 0.3 to 8
- 8 Bevel gears up to module 6
- 9 Worms and worm wheels
- 10 Standard racks
- 11 Trapezoid threaded screws, trapezoid threaded nuts
- 12 Chains and chain wheels
- 13 Couplings
- 14 Hardened precision steel shafts
- 15 Manufacturing according to drawing

| | |
|--|-----|
| Screw jack | |
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We reserve the right on printing and dimension errors, as well as technical changes and improvements.

5. Motor attachment

Our screw jack kit makes it possible to install various motor sizes or types, including braking motors, matched according to the required lifting force, directly on the screw jack.

If there is not enough space for the brake on the motor side, the spring-loaded brake provides a solution. It is mounted on the free shaft end.

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Properties/specifications

Rotational speeds

Three-phase motors have different rotational speeds, depending on the number of poles. Basically, we recommend that you should select our standard motor with 1400 min⁻¹ (4-pole). Other numbers of poles can be provided for upon request.

| Rotational speed (50 Hz) | Number of poles |
|--------------------------|-----------------|
| 2800 | 2 |
| 1400 | 4 |
| 900 | 6 |
| 700 | 8 |

Braking motor

To reduce the overrun of the system to a minimum, we recommend using a braking motor. In the case of gearboxes with a ball screw drive or 2-thread spindles, a brake is absolutely necessary. Brake motors are supplied as standard with high torque DC brake (ATDC). Supply 230VAC. Other supply voltages can be provided upon request.

Operation with frequency converter FU

Especially in the case of large gearboxes and systems, we recommend the use of a frequency converter to achieve a uniform starting and braking ramp. This minimises the acceleration load and increases the operating life of the system. When using a frequency converter, it must be remembered that with prolonged operation below 25 Hz, an external fan is necessary. This is important to ensure sufficient cooling of the motor. If you operate a braking motor with a frequency converter, provide the brake with a separate control lead through the FU. This protects the system and increases the life.

Cooling

The motors are surface-cooled (IC411). Upon request, motors with external ventilation can be supplied.

Condensation water holes

The motors size 63 to 132 have condensation water holes. Depending on the installation position, condensation water holes are made at the deepest point of the A- or B bearing plate. These are plugged with lens-head screws. Before initial operation and during operation, the condensation water holes should be opened regularly and the condensed water drained.

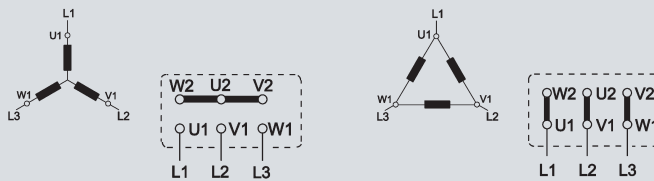
Thermosensors (TF)

Other common designations: Thermistor, thermistor thermo-sensor, PTC-thermistor. The resistance of the thermo-sensor jumps up suddenly upon reaching the rated actuation temperature (NAT) to almost ten times the value. The thermistor thermo-sensor fulfils its protective function only if there is a triggering device connected. The 4-pole motors of size 80 to 132 have thermo-sensors built in factory made.

Circuit diagram for three-phase motors

The standard version of the motors have 6 stator terminals. By using exchangeable bridges, the stator winding can be connected in star (Y) or delta (Δ). For direct switching on, the operating circuit of the motor can be both star (Y), as well as delta (Δ). The star/delta starting process is not suitable for lifting jack systems, since the full torque is required right from the start.

Star and delta connection for motors with one rotational speed



RAL/NCS

Two component acryl paint are weather-resistant and resistant to petrol and cleaners. Motors with special paint (paints according to RAL shade no. or NCS shade no. available upon request)

(TROP) tropical protection /(FEU)-moisture protection

When using motors in extreme climatic conditions (tropics), we recommend the tropical protection version (encapsulated terminal box, winding with additional impregnation).

When using motors in a humid environment, we recommend the version with humidity protection insulation.

- Terminal boxes encapsulated

Housing and bearing shields

The standard housing of the motors size 56 to 112 is of aluminium pressure casting (size 132 of cast iron).

Bearing shields and flanges of the series 56 to 80 are made of aluminium pressure castings. Bearing shields and flanges of the series 90 to 132 are made of cast iron.

Universal version (stator housing)

The motors sizes 80 to 112 have unscrewable feet. The motor feet are fastened with two Allen screws each to the motor housing. The feet can also be screwed on to the sides of the motors, so that the terminal box positioning is possible to the left or the right. The motor housings already have suitable threaded holes for this purpose.

Universal version (terminal box cable glands)

Motors size 63 to 132 have unscrewable terminal boxes, which can be rotated through 45°. Therefore, the position of the metric cable glands can be freely selected. The terminal box is designed in protection class IP 55. Metric ISO fine threads according to EN 50262 are provided.

Rotor

The rotor is encapsulated in cast aluminium. The rotor and the shaft are dynamically balanced with half keys according to DIN ISO 8821.

Fan and fan hood

The fans for the motors size 56 to 132 are of plastic. The fan hood for all motors is made of sheet steel. Caution in case of damage to the fan hood; this could cause the fan to touch it.

Operating conditions of the motor

The technical values and data in this catalogue are based on the following fundamentals:

1. Continuous operation (S1)
2. Frequency 50 Hz
3. Rated voltage in the case of 3ph motors 400V. $\pm 10\%$
1ph motors 230V. $\pm 10\%$
4. Relative humidity up to 95%

Protection category

Unless otherwise specified, all motors are made with protection class IP 55 (IP... International Protection) (other protection classes can also be provided upon request).

Brake motors are delivered as safety class IP54, other safety classes on demand.

Insulation class

Unless otherwise specified, all motors are supplied with insulation class F. I.e. with an ambient temperature of 40°C, the permissible over-temperature in the winding is maximum 150°C. Insulation class H available upon request).

Options and special designs

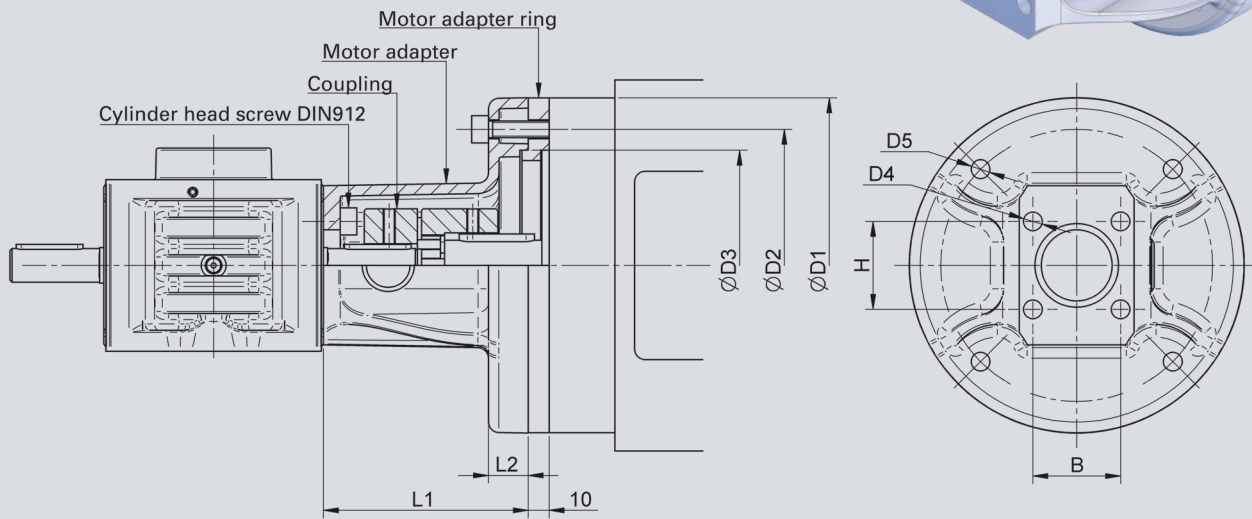
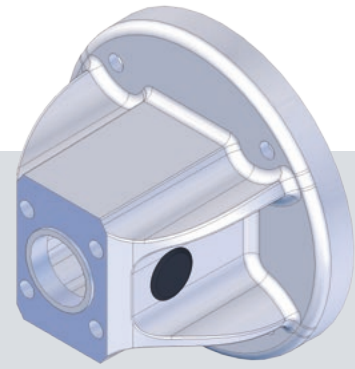
The motors can also be built with the following options. Other special versions available upon request.

| Abbreviation | Description of the special version |
|--------------|---|
| 2WE | 2 nd shaft end (shaft end according to IEC on both sides of the motor) |
| REDA | Rain roof (protection from foreign bodies falling into the fan) |
| TROP | Tropical protection version (use in extreme climatic conditions: Tropics) |
| FEU | Humidity protection version (terminal boxes encapsulated) |
| TF | Thermosensors (thermistor, thermistor thermo-sensors, PTC-thermistor) |
| TW | Thermo-monitor (thermo-openers, Klixon, bimetallic opener) |
| FREMD | External fan (in use with frequency converter, low rotational speeds) |
| INKR | Incremental transmitter (rotational speed feedback) |
| OL | Without fan (cooling to be taken care of by the user) |
| SPWE | Special shaft (special shafts in accordance with customer request, drawing) |
| BLIN | Without terminal box (stator with dummy cover) |
| KABE | Terminal box with cable (cable from terminal box onwards according to customer request) |
| STIL | Standstill heating (prevents moisture in the interior of the motor) |
| RAL | Motor in special paint (paint according to RAL colour shade no.) |
| NCS | Motor in special paint (paint according to NCS colour shade no.) |
| KKU | Motor terminal boxes (terminal box position universal) |
| KKR | Motor terminal box (terminal box position to the right of the drive side) |
| KKL | Motor terminal box (terminal box position to the left of the drive side) |
| S | Motor with special voltage (special voltage according to customer request) |
| MOFU | Motor with frequency converter (frequency converter placed on motor) |
| SCH | Motor data plate (special motor data plate according to customer request) |

Ordering example

| | | | | | |
|------|-----------------------------------|----------|--------------|------------------|----------------|
| Size | Type | Power kW | Construction | Brake on request | Special design |
| 90 | L 4-pole = 1400 min ⁻¹ | 4 | B3 | B | — |

Motor adapter



Apart from the requirement for a good, appealing design, simplicity and user-friendliness have played a significant role in this new development with a copyright design.

The motor adapter is made in such a way that simple fastening on the coupling used is possible.

Dimensions

| | B | D1 | D2 | D3 | D4 | D5 | H | L1 | L2 |
|----------------------|------|-----|-----|-----|------|------|------|-------|------|
| NSE2-MOA120 | 28.3 | 120 | 100 | 80 | 5.5 | 6.6 | 28.3 | 59.0 | 5.5 |
| NSE5-MOA140 | 32.5 | 140 | 115 | 95 | 6.6 | 9.0 | 32.5 | 65.0 | 12.0 |
| NSE10-MOA160 | 35.4 | 160 | 130 | 110 | 9.0 | 9.0 | 35.4 | 70.5 | 17.0 |
| NSE25-MOA160 | 42.0 | 160 | 130 | 110 | 9.0 | 9.0 | 42.0 | 98.0 | 19.0 |
| NSE50-MOA200 | 50.0 | 200 | 165 | 130 | 11.0 | 11.0 | 70.0 | 110.5 | 23.5 |
| NSE100-MOA200 | 46.0 | 200 | 165 | 130 | 13.0 | 11.0 | 96.0 | 142.0 | 25.0 |

System overview

| Screw jack size | Motor | | | | NSE | | | Motor adapter | | | | Motor adapter ring | Coupling | | Fixing | |
|-----------------|----------------------------|-------|--------|----------------|----------------|-----------|--------------|---------------|----------|---------------------|--------|--------------------|----------|---------|-------------------|---------------------------------|
| | Motor size Motor flange | Power | Torque | Shaft diameter | Shaft diameter | Key width | Shaft length | Outside Ø | Inside Ø | Screw hole circle Ø | Length | | Coupling | Insert* | Screw for gearbox | Screw for motor |
| 2 | 56 B5 | 0.12 | 0.82 | 9 | 9 | 3 | 18 | 120 | 80 | 100 | 59.0 | | 050 | SOX | IS M5/10 | IS M6/25 with 2 washer and nut |
| | 63 B14-1 | 0.25 | 1.70 | 11 | 11 | 4 | 22 | 120 | 80 | 100 | 59.0 | | 050 | SOX | IS M5/10 | IS M6/15 with washer |
| 5 | 63 B5 | 0.25 | 1.70 | 11 | 11 | 4 | 22 | 140 | 95 | 115 | 65.0 | | 050 | SOX | IS M6/12 | IS M8/35 with 2 washer and nut |
| | 71 B14-1 | 0.55 | 3.75 | 14 | 11 | 4 | 22 | 140 | 95 | 115 | 65.0 | | 070 | SOX | IS M6/12 | IS M8/25 with washer |
| 10 | 71 B5 | 0.55 | 3.75 | 14 | 14 | 5 | 25 | 160 | 110 | 130 | 70.5 | | 070 | SOX | IS M8/14 | IS M8/40 with 2 washer and nut |
| | 80 B14-1 | 1.10 | 10.4 | 19 | 14 | 5 | 25 | 160 | 110 | 130 | 70.5 | yes | 070 | HYTREL | IS M8/14 | IS M8/30 with washer |
| 25 | 71 B5 | 0.55 | 3.75 | 14 | 16 | 5 | 43 | 160 | 110 | 130 | 98.0 | | 095 | SOX | IS M8/18 | IS M8/40 with 2 washer and nut |
| | 80 B14-1 | 1.10 | 10.40 | 19 | 16 | 5 | 43 | 160 | 110 | 130 | 98.0 | | 070 | HYTREL | IS M8/18 | IS M8/35 with washer |
| | 90 B14-1 | 2.20 | 15.20 | 24 | 16 | 5 | 43 | 160 | 110 | 130 | 98.0 | yes | 095 | HYTREL | IS M8/18 | IS M8/35 with washer |
| 50 | 90 B5 | 2.20 | 15.20 | 24 | 20 | 6 | 45 | 200 | 130 | 165 | 110.5 | | 095 | HYTREL | IS M10/22 | IS M10/50 with 2 washer and nut |
| | 100 B14-1 | 4.00 | 27.00 | 28 | 20 | 6 | 45 | 200 | 130 | 165 | 110.5 | yes | 095 | HYTREL | IS M10/22 | IS M10/40 with washer |
| | 112 B14-1 | 5.50 | 37.00 | 28 | 20 | 6 | 45 | 200 | 130 | 165 | 110.5 | yes | 100 | SOX | IS M10/22 | IS M10/40 with washer |
| 100 | 90 B5 | 2.20 | 15.20 | 24 | 25 | 8 | 57 | 200 | 130 | 165 | 142.0 | | 100 | SOX | IS M12/30 | IS M10/50 with 2 washer and nut |
| | 100 B14-1 | 4.00 | 27.00 | 28 | 25 | 8 | 57 | 200 | 130 | 165 | 142.0 | | 095 | HYTREL | IS M12/30 | IS M10/40 with washer |
| | 112 B14-1 | 5.50 | 37.00 | 28 | 25 | 8 | 57 | 200 | 130 | 165 | 142.0 | | 100 | SOX | IS M12/30 | IS M10/40 with washer |

IS = Hexagon socket screw DIN912

* 92 = Urethan insert 92 Shore A (with/yellow)/98 = Urethan insert 98 Shore A (red)

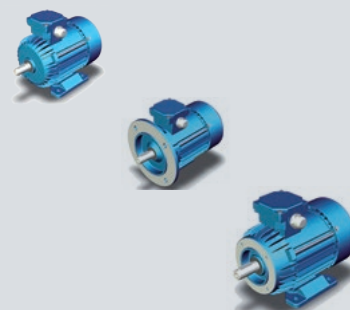


Flexible couplings on Chapter 4

Motor output

motor output and revolutions (r.p.m) for IEC sizes

| Motor by IEC | Type | 1400 min ⁻¹ | IE Norm | 900 min ⁻¹ | IE Norm | 700 min ⁻¹ | IE Norm |
|--------------|------|------------------------|---------|-----------------------|---------|-----------------------|---------|
| | | kW | | kW | | kW | |
| 56 | A | 0.06 | 1 | | | | |
| 56 | B | 0.09 | 1 | | | | |
| 56 | XC | 0.12 | 1 | | | | |
| 63 | A | 0.12 | 1 | 0.09 | 1 | | |
| 63 | B | 0.18 | 1 | 0.12 | 1 | | |
| 63 | XC | 0.25 | 1 | 0.15 | 1 | | |
| 71 | A | 0.25 | 1 | 0.18 | 1 | 0.09 | 1 |
| 71 | B | 0.37 | 1 | 0.25 | 1 | 0.12 | 1 |
| 71 | XC | 0.55 | 1 | 0.37 | 1 | | |
| 80 | A | 0.55 | 1 | 0.37 | 1 | 0.18 | 1 |
| 80 | B | 0.75 | 2 | 0.55 | 1 | 0.25 | 1 |
| 80 | XC | 1.10 | 2 | 0.75 | 2 | | |
| 90 | S | 1.10 | 2 | 0.75 | 2 | 0.37 | 1 |
| 90 | L | 1.50 | 2 | 1.10 | 2 | 0.55 | 1 |
| 100 | LA | 2.20 | 2 | | | 0.75 | 1 |
| 100 | LB | 3.00 | 2 | 1.50 | 2 | 1.10 | 1 |
| 112 | M | 4.00 | 2 | 2.20 | 2 | 1.50 | 1 |
| 112 | MA | 5.50 | 2 | 3.00 | 2 | | |
| 132 | S | 5.50 | 2 | 3.00 | 2 | 2.20 | 1 |
| 132 | M | 7.50 | 3 | 4.00 | 2 | 3.00 | 1 |
| 132 | MA | 9.20 | 2 | 5.50 | 2 | | |

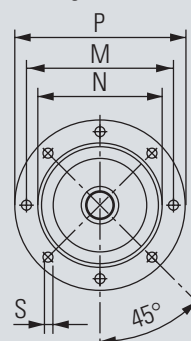


Motor flange

Dimensions of flange models

| IEC Motor | B5 | | | | | B14 -1 | | | | | B14 -2 | | | |
|-----------|-----|-----|-----|----------------|---|--------|-----|-----|-----|---|--------|-----|-----|-----|
| | P | M | N | S _ø | Z | P | M | N | S | Z | P | M | N | S |
| 56 | 120 | 100 | 80 | 6.6 | 4 | 105 | 85 | 70 | M6 | 4 | 80 | 65 | 50 | M5 |
| 63 | 140 | 115 | 95 | 9.0 | 8 | 120 | 100 | 80 | M6 | 8 | 90 | 75 | 60 | M5 |
| 71 | 160 | 130 | 110 | 9.0 | 8 | 140 | 115 | 95 | M8 | 8 | 105 | 85 | 70 | M6 |
| 80 | 200 | 165 | 130 | 11 | 8 | 160 | 130 | 110 | M8 | 8 | 120 | 100 | 80 | M6 |
| 90 | 200 | 165 | 130 | 11 | 8 | 160 | 130 | 110 | M8 | 8 | 140 | 115 | 95 | M8 |
| 100 | 250 | 215 | 180 | 14 | 8 | 200 | 165 | 130 | M10 | 8 | 160 | 130 | 110 | M8 |
| 112 | 250 | 215 | 180 | 14 | 8 | 200 | 165 | 130 | M10 | 8 | 160 | 130 | 110 | M8 |
| 132 | 300 | 265 | 230 | 14 | 8 | 250 | 215 | 180 | M12 | 8 | 200 | 165 | 130 | M10 |

Flange 63-132

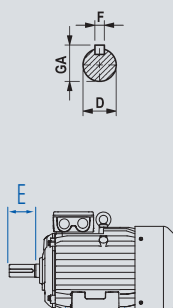


Motor shaft

Dimensions of shaft model

| IEC Motor | Poles | D ømm | E mm | GA mm | F mm |
|-----------|-------|----------|---------|----------|---------|
| 56 | 2-6 | 9 | 20 | 10.2 | 3 |
| 63 | 2-8 | 11 | 23 | 12.5 | 4 |
| 71 | 2-8 | 14 | 30 | 16.0 | 5 |
| 80 | 2-8 | 19 | 40 | 21.5 | 6 |
| 90 | 2-8 | 24 | 50 | 27.0 | 8 |
| 100 | 2-8 | 28 | 60 | 31.0 | 8 |
| 112 | 2-8 | 28 | 60 | 31.0 | 8 |
| 132 | 2-8 | 38 | 80 | 41.0 | 10 |

Shaft 56-132



Motors

| IEC | Type | Poles | Power rating (KW) | Model | Brake | Options |
|-----|------|-----------------------------|-------------------|-----------------|-------|---|
| 56 | A | 2 2800 min ⁻¹ | 0.06 | B3 Foot | B | 2WE 2 nd shaft end |
| 63 | B | 4 1400 min ⁻¹ | 11.00 | B5 Flange | – | REDA rain roof |
| 71 | X | 6 900 min ⁻¹ | | B14-1 Flange | | TROP Tropical protection (IP54) |
| 80 | B | 8 750 min ⁻¹ | | B14-2 Flange | | FEU Humidity protection |
| 90 | L | | | | | TF Thermosensor |
| 100 | LB | | | | | TW Thermomonitor |
| 112 | M | | | | | FREMD External fan |
| 132 | S | | | | | INKR Incremental transmitter |
| | M | | | | | OL without fan |
| | MA | | | | | SPWE Special shaft |
| | | | | | | BLIN without terminal box |
| | | | | | | KABE Terminal box with cable |
| | | | | | | STIL Standstill heating |
| | | | | | | RAL motor with special paint |
| | | | | | | NCS motor with special paint |
| | | | | | | KKU Motor terminal box universal |
| | | | | | | KKR Motor terminal box right |
| | | | | | | KKL Motor terminal box left |
| | | | | | | S Motor with special voltage |
| | | | | | | MOFU Motor with frequency converter |
| | | | | | | SCH motor data plate |

Three-phase motors 1400 min⁻¹

3Ph motor IEC 60034.30 400 Volt +/- 10 % IP55 Isol.Cl. F Serv. S1

| IEC | Type | kW | min ⁻¹ | Nm | V | I _{na} | W | kg | ∅ WE | L We | K.K | IE Norm |
|-----|------|------|-------------------|-------|---------|-----------------|------|------|------|------|-----|---------|
| 56 | A 4 | 0.06 | 1400 | 0.41 | 230/400 | 0.25 | 55.0 | 2.6 | 9 | 20 | o | 1 |
| 56 | B 4 | 0.09 | 1400 | 0.61 | 230/400 | 0.40 | 61.0 | 2.8 | 9 | 20 | o | 1 |
| 56 | XC 4 | 0.12 | 1400 | 0.82 | 230/400 | 0.50 | 59.0 | 4.0 | 9 | 20 | o | 1 |
| 63 | A 4 | 0.12 | 1380 | 0.83 | 230/400 | 0.45 | 60.0 | 3.5 | 11 | 23 | o | 1 |
| 63 | B 4 | 0.18 | 1380 | 1.25 | 230/400 | 0.65 | 65.0 | 4.2 | 11 | 23 | o | 1 |
| 63 | XC 4 | 0.25 | 1400 | 1.70 | 230/400 | 0.77 | 69.0 | 5.0 | 11 | 23 | o | 1 |
| 71 | A 4 | 0.25 | 1380 | 1.73 | 230/400 | 0.85 | 66.0 | 4.8 | 14 | 30 | o | 1 |
| 71 | B 4 | 0.37 | 1370 | 2.59 | 230/400 | 1.30 | 68.0 | 5.9 | 14 | 30 | o | 1 |
| 71 | XC 4 | 0.55 | 1400 | 3.86 | 230/400 | 1.54 | 70.0 | 7.2 | 14 | 30 | o | 1 |
| 80 | A 4 | 0.55 | 1400 | 3.75 | 230/400 | 1.70 | 72.0 | 7.5 | 19 | 40 | u | 1 |
| 80 | B 4 | 0.75 | 1400 | 5.12 | 230/400 | 2.20 | 80.0 | 9.6 | 19 | 40 | u | 2 |
| 80 | XC 4 | 1.10 | 1380 | 7.61 | 230/400 | 3.00 | 81.4 | 11.5 | 19 | 40 | u | 2 |
| 90 | S 4 | 1.10 | 1425 | 7.62 | 230/400 | 2.60 | 81.4 | 16.3 | 24 | 50 | u | 2 |
| 90 | L 4 | 1.50 | 1425 | 10.10 | 230/400 | 3.40 | 82.8 | 18.0 | 24 | 50 | u | 2 |
| 100 | LA 4 | 2.20 | 1440 | 14.60 | 230/400 | 4.50 | 84.7 | 25.5 | 28 | 60 | u | 2 |
| 100 | LB 4 | 3.00 | 1445 | 19.80 | 400/690 | 6.80 | 85.5 | 27.5 | 28 | 60 | u | 2 |
| 112 | M 4 | 4.00 | 1550 | 26.30 | 400/690 | 8.40 | 87.0 | 35.5 | 28 | 60 | u | 2 |
| 112 | MA 4 | 5.50 | 1440 | 36.50 | 400/690 | 11.50 | 87.7 | 39.0 | 28 | 60 | u | 2 |
| 132 | S 4 | 5.50 | 1460 | 36.00 | 400/690 | 11.30 | 88.0 | 69.0 | 38 | 80 | o | 2 |
| 132 | M 4 | 7.50 | 1460 | 49.10 | 400/690 | 15.30 | 88.7 | 73.5 | 38 | 80 | o | 3 |

Approximate values, exact data sheets on request.

Three-phase motors 900 min⁻¹

3Ph motor IEC 60034.30 400 Volt +/- 10 % IP55 Isol.Cl. F Serv. S1

| IEC | Type | kW | min ⁻¹ | Nm | V | I _{na} | W | kg | ∅ WE | L We | K.K | IE Norm |
|-----|------|------|-------------------|-------|---------|-----------------|------|------|------|------|-----|---------|
| 63 | B 6 | 0.12 | 880 | 1.30 | 230/400 | 0.65 | 50.0 | 4.2 | 11 | 23 | o | 1 |
| 63 | XC 6 | 0.15 | 870 | 1.65 | 230/400 | 1.00 | 45.0 | 5.1 | 11 | 23 | o | 1 |
| 71 | A 6 | 0.18 | 890 | 1.93 | 230/400 | 0.75 | 57.0 | 4.8 | 14 | 30 | o | 1 |
| 71 | B 6 | 0.25 | 860 | 2.78 | 230/400 | 1.00 | 55.0 | 5.8 | 14 | 30 | o | 1 |
| 71 | XC 6 | 0.37 | 880 | 4.02 | 230/400 | 1.35 | 60.0 | 7.3 | 14 | 30 | o | 1 |
| 80 | A 6 | 0.37 | 910 | 3.88 | 230/400 | 1.40 | 64.0 | 7.4 | 19 | 40 | u | 1 |
| 80 | B 6 | 0.55 | 900 | 5.84 | 230/400 | 1.80 | 67.0 | 8.6 | 19 | 40 | u | 1 |
| 80 | XC 6 | 0.75 | 920 | 7.80 | 230/400 | 2.25 | 75.9 | 7.3 | 19 | 40 | u | 2 |
| 90 | S 6 | 0.75 | 925 | 7.70 | 230/400 | 2.00 | 75.9 | 16.5 | 24 | 50 | u | 2 |
| 90 | L 6 | 1.10 | 910 | 11.50 | 230/400 | 2.90 | 78.1 | 18.2 | 24 | 50 | u | 2 |
| 100 | L 6 | 1.50 | 950 | 15.10 | 230/400 | 3.70 | 80.3 | 22.0 | 28 | 60 | u | 2 |
| 112 | M 6 | 2.20 | 955 | 22.00 | 230/400 | 5.10 | 82.3 | 32.0 | 28 | 60 | u | 2 |
| 132 | S 6 | 3.00 | 945 | 30.30 | 400/690 | 6.60 | 83.3 | 50.0 | 38 | 80 | o | 2 |
| 132 | MA 6 | 4.00 | 950 | 40.20 | 400/690 | 8.40 | 84.6 | 62.0 | 38 | 80 | o | 2 |
| 132 | MB 6 | 5.50 | 950 | 55.30 | 400/690 | 11.70 | 86.0 | 72.0 | 38 | 80 | o | 2 |

Approximate values, exact data sheets on request.

- Nm Nominal torque in Nm
- V Voltage
- I_{na} Nominal current in A
- W Efficiency in %
- kg Weight on bases B3 (foot version)
- ∅ WE IEC-Shaft diameter
- L WE IEC-Shaft length
- K.K Terminal box o > above
Terminal box u > universal (above, right, left)

5.3 Motors power rating/output

Motor attachment

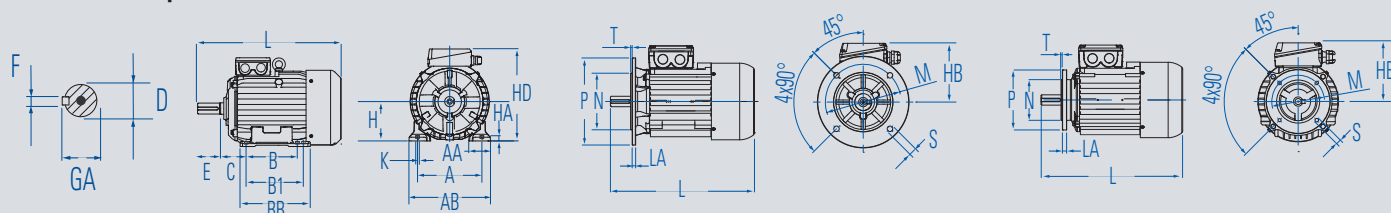
Three-phase motors 700 min⁻¹

3Ph motor IEC 60034.30 400 Volt +/- 10 % IP55 Isol.Cl. F Serv. S1

| IEC | Type | kW | min ⁻¹ | Nm | V | I _{na} | W | kg | ø WE | L We | K.K | IE Norm |
|-----|------|------|-------------------|-------|---------|-----------------|------|------|------|------|-----|---------|
| 63 | B 8 | 0.06 | 670 | 0.85 | 230/400 | 0.45 | 38.0 | 4.2 | 11 | 23 | o | 1 |
| 71 | A 8 | 0.09 | 680 | 1.26 | 230/400 | 0.75 | 35.0 | 4.9 | 14 | 30 | o | 1 |
| 71 | B 8 | 0.12 | 670 | 1.71 | 230/400 | 0.70 | 47.0 | 5.8 | 14 | 30 | o | 1 |
| 71 | XC 8 | 0.18 | 680 | 2.53 | 230/400 | 1.40 | 45.0 | 7.3 | 14 | 30 | o | 1 |
| 80 | A 8 | 0.18 | 680 | 2.53 | 230/400 | 0.90 | 53.0 | 7.5 | 19 | 40 | u | 1 |
| 80 | B 8 | 0.25 | 680 | 3.51 | 230/400 | 1.20 | 57.0 | 8.9 | 19 | 40 | u | 1 |
| 80 | XC 8 | 0.37 | 680 | 5.20 | 230/400 | 1.70 | 58.0 | 11.0 | 19 | 40 | u | 1 |
| 90 | S 8 | 0.37 | 695 | 5.10 | 230/400 | 1.40 | 63.4 | 13.4 | 24 | 50 | u | 1 |
| 90 | L 8 | 0.55 | 675 | 7.80 | 230/400 | 1.90 | 65.0 | 15.3 | 24 | 50 | u | 1 |
| 100 | LA 8 | 0.75 | 710 | 10.10 | 230/400 | 2.30 | 71.1 | 23.6 | 28 | 60 | u | 1 |
| 100 | LB 8 | 1.10 | 705 | 14.90 | 230/400 | 3.40 | 72.2 | 26.3 | 28 | 60 | u | 1 |
| 112 | M 8 | 1.50 | 720 | 19.90 | 230/400 | 4.00 | 76.8 | 31.0 | 28 | 60 | u | 1 |
| 132 | S 8 | 2.20 | 710 | 29.60 | 230/400 | 5.50 | 78.0 | 53.0 | 38 | 80 | o | 1 |
| 132 | M 8 | 3.00 | 710 | 40.40 | 230/400 | 7.30 | 80.0 | 65.0 | 38 | 80 | o | 1 |

Approximate values, exact data sheets on request.

Dimensions of 3-phase motor from sizes 56 -132



| IEC Type | Pols | Base* | | | | | | | | Housing* | | | | Shaft | | | | Flange B5 | | | | | Flange B14-1 | | | | | Flange B14-2 | | | | | |
|----------|------|-------|-----|-----|-----|----|-----|-----|----|----------|-----|-----|----|-------|----|------|----|-----------|-----|-----|-----|-----|--------------|-----|-----|-----|-----|--------------|-----|-----|-----|-----|-----|
| | | H | B | A | HA | BB | AB | K | AA | L | HD | C | D | E | GA | F | LA | P | N | M | T | S | P | N | M | T | S | P | N | M | T | S | |
| 56 | A | 2-4 | 56 | 71 | 90 | 7 | 92 | 110 | 8 | 30 | 188 | 154 | 36 | 9 | 20 | 10.2 | 3 | 8 | 120 | 80 | 100 | 3.0 | 7 | 105 | 70 | 85 | 2.5 | M6 | 80 | 65 | 50 | 2.5 | M5 |
| 56 | B | 2-4 | 56 | 71 | 90 | 7 | 92 | 110 | 8 | 30 | 196 | 154 | 36 | 9 | 20 | 10.2 | 3 | 8 | 120 | 80 | 100 | 3.0 | 7 | 105 | 70 | 85 | 2.5 | M6 | 80 | 65 | 50 | 2.5 | M5 |
| 63 | A | 2-8 | 63 | 80 | 100 | 8 | 106 | 124 | 7 | 36 | 201 | 165 | 40 | 11 | 23 | 12.5 | 4 | 9 | 140 | 95 | 115 | 3.0 | 10 | 120 | 80 | 100 | 3.0 | M6 | 90 | 60 | 75 | 2.5 | M5 |
| 63 | B | 2-8 | 63 | 80 | 100 | 8 | 106 | 124 | 7 | 36 | 213 | 165 | 40 | 11 | 23 | 12.5 | 4 | 9 | 140 | 95 | 115 | 3.0 | 10 | 120 | 80 | 100 | 3.0 | M6 | 90 | 60 | 75 | 2.5 | M5 |
| 63 | XC | 2-8 | 63 | 80 | 100 | 8 | 106 | 124 | 7 | 36 | 228 | 165 | 40 | 11 | 23 | 12.5 | 4 | 9 | 140 | 95 | 115 | 3.0 | 10 | 120 | 80 | 100 | 3.0 | M6 | 90 | 60 | 75 | 2.5 | M5 |
| 71 | A | 2-8 | 71 | 90 | 112 | 8 | 116 | 142 | 7 | 45 | 223 | 182 | 45 | 14 | 30 | 16.0 | 5 | 9 | 160 | 110 | 130 | 3.5 | 10 | 140 | 95 | 115 | 3.5 | M8 | 105 | 70 | 85 | 3.0 | M6 |
| 71 | B | 2-8 | 71 | 90 | 112 | 8 | 116 | 142 | 7 | 45 | 245 | 182 | 45 | 14 | 30 | 16.0 | 5 | 9 | 160 | 110 | 130 | 3.5 | 10 | 140 | 95 | 115 | 3.5 | M8 | 105 | 70 | 85 | 3.0 | M6 |
| 71 | XC | 2-8 | 71 | 90 | 112 | 8 | 116 | 142 | 7 | 45 | 266 | 200 | 45 | 14 | 30 | 16.0 | 5 | 9 | 160 | 110 | 130 | 3.5 | 10 | 140 | 95 | 115 | 3.5 | M8 | 105 | 70 | 85 | 3.0 | M6 |
| 80 | A | 2-8 | 80 | 100 | 125 | 9 | 130 | 160 | 10 | 55 | 266 | 200 | 50 | 19 | 40 | 21.5 | 6 | 10 | 200 | 130 | 165 | 3.5 | 12 | 160 | 110 | 130 | 3.5 | M8 | 120 | 80 | 100 | 3.0 | M6 |
| 80 | B | 2-8 | 80 | 100 | 125 | 9 | 130 | 160 | 10 | 55 | 278 | 200 | 50 | 19 | 40 | 21.5 | 6 | 10 | 200 | 130 | 165 | 3.5 | 12 | 160 | 110 | 130 | 3.5 | M8 | 120 | 80 | 100 | 3.0 | M6 |
| 80 | XC | 2-6 | 80 | 100 | 125 | 9 | 130 | 160 | 10 | 55 | 306 | 200 | 50 | 19 | 40 | 21.5 | 6 | 10 | 200 | 130 | 165 | 3.5 | 12 | 160 | 110 | 130 | 3.5 | M8 | 120 | 80 | 100 | 3.0 | M6 |
| 90 | S | 2-8 | 90 | 100 | 140 | 12 | 153 | 170 | 10 | 41 | 331 | 228 | 56 | 24 | 50 | 27.0 | 8 | 10 | 200 | 130 | 165 | 3.5 | 12 | 160 | 110 | 130 | 3.5 | M8 | 140 | 95 | 115 | 3.0 | M8 |
| 90 | L | 2-8 | 90 | 125 | 140 | 12 | 153 | 170 | 10 | 41 | 356 | 228 | 56 | 24 | 50 | 27.0 | 8 | 10 | 200 | 130 | 165 | 3.5 | 12 | 160 | 110 | 130 | 3.5 | M8 | 140 | 95 | 115 | 3.0 | M8 |
| 100 | LA | 2-8 | 100 | 140 | 160 | 14 | 174 | 197 | 12 | 44 | 440 | 240 | 63 | 28 | 60 | 31.0 | 8 | 11 | 250 | 180 | 215 | 4.0 | 15 | 200 | 130 | 165 | 3.5 | M10 | 160 | 110 | 130 | 3.5 | M8 |
| 100 | LB | 2-8 | 100 | 140 | 160 | 14 | 174 | 197 | 12 | 44 | 440 | 240 | 63 | 28 | 60 | 31.0 | 8 | 11 | 250 | 180 | 215 | 4.0 | 15 | 200 | 130 | 165 | 3.5 | M10 | 160 | 110 | 130 | 3.5 | M8 |
| 112 | M | 2-8 | 112 | 140 | 190 | 14 | 174 | 230 | 12 | 49 | 416 | 276 | 70 | 28 | 60 | 31.0 | 8 | 12 | 250 | 180 | 215 | 4.0 | 15 | 200 | 130 | 165 | 3.5 | M10 | 160 | 110 | 130 | 3.5 | M8 |
| 112 | MA | 2-6 | 112 | 140 | 190 | 14 | 174 | 230 | 12 | 49 | 466 | 276 | 70 | 28 | 60 | 31.0 | 8 | 12 | 250 | 180 | 215 | 4.0 | 15 | 200 | 130 | 165 | 3.5 | M10 | 160 | 110 | 130 | 3.5 | M8 |
| 132 | S | 2-8 | 132 | 140 | 216 | 16 | 220 | 274 | 12 | 62 | 499 | 310 | 89 | 38 | 80 | 41.0 | 10 | 12 | 300 | 230 | 265 | 4.0 | 15 | 250 | 180 | 215 | 4.0 | M12 | 200 | 130 | 165 | 3.5 | M10 |
| 132 | M | 2-8 | 132 | 178 | 216 | 16 | 220 | 274 | 12 | 62 | 531 | 310 | 89 | 38 | 80 | 41.0 | 10 | 12 | 300 | 230 | 265 | 4.0 | 15 | 250 | 180 | 215 | 4.0 | M12 | 200 | 130 | 165 | 3.5 | M10 |
| 132 | MA | 2-4 | 132 | 178 | 216 | 16 | 220 | 274 | 12 | 62 | 531 | 310 | 89 | 38 | 80 | 41.0 | 10 | 12 | 300 | 230 | 265 | 4.0 | 15 | 250 | 180 | 215 | 4.0 | M12 | 200 | 130 | 165 | 3.5 | M10 |

* Subject to change without notice, exact dimension sheets on request.

Three-phase motors 1400 min⁻¹

3Ph Brake motor IEC 60034.30 400 Volt +/- 10 % IP54 Isol.Cl. F Serv. S1

| IEC | Type | kW | min ⁻¹ | Nm | V | I _{na} | W | kg | ∅ WE | L We | DC brake Nm |
|-----|------|------|-------------------|-------|---------|-----------------|------|------|------|------|-------------|
| 63 | A 4 | 0.12 | 1355 | 0.92 | 230/400 | 0.40 | 64.7 | 8.5 | 11 | 23 | 4.5 |
| 63 | B 4 | 0.18 | 1393 | 1.23 | 230/400 | 0.56 | 68.2 | 8.7 | 11 | 23 | 4.5 |
| 63 | C 4 | 0.25 | 1380 | 1.73 | 230/400 | 0.72 | 71.0 | 9.7 | 11 | 23 | 4.5 |
| 71 | A 4 | 0.25 | 1400 | 1.71 | 230/400 | 0.69 | 72.7 | 11.0 | 14 | 30 | 8.0 |
| 71 | B 4 | 0.37 | 1366 | 2.59 | 230/400 | 1.04 | 71.5 | 11.3 | 14 | 30 | 8.0 |
| 71 | C 4 | 0.55 | 1400 | 3.75 | 230/400 | 1.47 | 74.9 | 12.3 | 14 | 30 | 8.0 |
| 80 | A 4 | 0.55 | 1391 | 3.78 | 230/400 | 1.49 | 75.0 | 15.5 | 19 | 40 | 12.5 |
| 80 | B 4 | 0.75 | 1394 | 5.14 | 230/400 | 1.99 | 79.6 | 16.5 | 19 | 40 | 12.5 |
| 80 | C 4 | 1.10 | 1390 | 7.56 | 230/400 | 2.85 | 81.5 | 18.0 | 19 | 40 | 12.5 |
| 90 | S 4 | 1.10 | 1378 | 7.62 | 230/400 | 2.50 | 81.4 | 19.0 | 24 | 50 | 20.0 |
| 90 | L 4 | 1.50 | 1413 | 10.10 | 230/400 | 3.54 | 82.9 | 20.0 | 24 | 50 | 20.0 |
| 90 | LB 4 | 1.90 | 1415 | 12.80 | 230/400 | 4.47 | 84.3 | 22.0 | 24 | 50 | 20.0 |
| 100 | LA 4 | 2.20 | 1435 | 14.60 | 230/400 | 4.80 | 84.4 | 30.0 | 28 | 60 | 38.0 |
| 100 | LB 4 | 3.00 | 1407 | 20.30 | 400/690 | 6.39 | 85.5 | 32.0 | 28 | 60 | 38.0 |
| 112 | M 4 | 4.00 | 1415 | 27.00 | 400/690 | 7.75 | 86.6 | 38.5 | 28 | 60 | 55.0 |
| 112 | MB 4 | 5.00 | 1445 | 33.00 | 400/690 | 10.20 | 87.7 | 45.0 | 28 | 60 | 55.0 |
| 132 | S 4 | 5.50 | 1446 | 36.30 | 400/690 | 10.70 | 87.8 | 57.0 | 38 | 80 | 90.0 |
| 132 | M 4 | 7.50 | 1450 | 49.40 | 400/690 | 14.30 | 88.8 | 59.0 | 38 | 80 | 90.0 |

Approximate values, exact data sheets on request.

Three-phase motors 900 min⁻¹

3Ph Brake motor IEC 60034.30 400 Volt +/- 10 % IP54 Isol.Cl. F Serv. S1

| IEC | Type | kW | min ⁻¹ | Nm | V | I _{na} | W | kg | ∅ WE | L We | DC brake Nm |
|-----|------|------|-------------------|-------|---------|-----------------|------|------|------|------|-------------|
| 71 | A 6 | 0.18 | 921 | 1.87 | 230/400 | 0.66 | 62.7 | 11.0 | 14 | 30 | 8.0 |
| 71 | B 6 | 0.25 | 910 | 2.62 | 230/400 | 0.87 | 64.0 | 11.3 | 14 | 30 | 8.0 |
| 80 | A 6 | 0.37 | 928 | 3.81 | 230/400 | 1.20 | 67.3 | 15.5 | 19 | 40 | 12.5 |
| 80 | B 6 | 0.55 | 917 | 5.73 | 230/400 | 1.71 | 70.5 | 16.5 | 19 | 40 | 12.5 |
| 90 | S 6 | 0.75 | 915 | 7.83 | 230/400 | 2.01 | 76.0 | 19.0 | 24 | 50 | 20.0 |
| 90 | L 6 | 1.10 | 915 | 11.48 | 230/400 | 2.74 | 78.3 | 20.0 | 24 | 50 | 20.0 |
| 100 | LA 6 | 1.50 | 944 | 15.17 | 230/400 | 3.91 | 79.9 | 30.0 | 28 | 60 | 38.0 |
| 112 | M 6 | 2.20 | 951 | 22.09 | 230/400 | 5.45 | 81.9 | 35.0 | 28 | 60 | 55.0 |
| 132 | S 6 | 3.00 | 969 | 29.57 | 230/400 | 6.95 | 84.5 | 40.0 | 38 | 80 | 90.0 |
| 132 | M 6 | 4.00 | 969 | 39.42 | 400/690 | 8.85 | 84.7 | 57.0 | 38 | 80 | 90.0 |
| 132 | MB 6 | 5.50 | 969 | 54.37 | 400/690 | 12.38 | 87.0 | 67.0 | 38 | 80 | 90.0 |

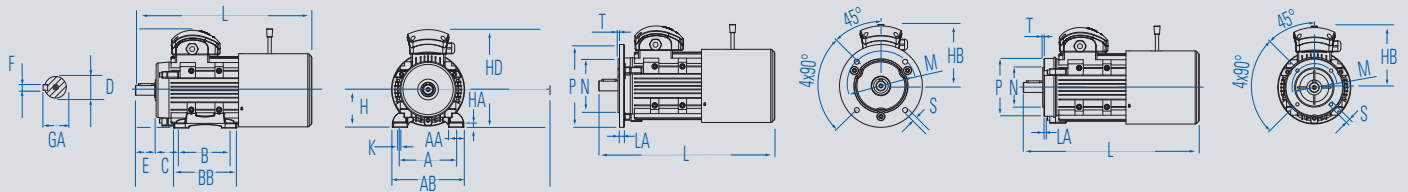
Approximate values, exact data sheets on request.

- Nm Nominal torque in Nm
- V Voltage
- I_{na} Nominal current in A
- W Efficiency in %
- kg Weight on bases B3 (foot version)
- ∅ WE IEC-Shaft diameter
- L WE IEC-Shaft length

5.4 Brake motors power rating/output

Motor attachment

Dimensions of 3-phase motor from sizes 63-132

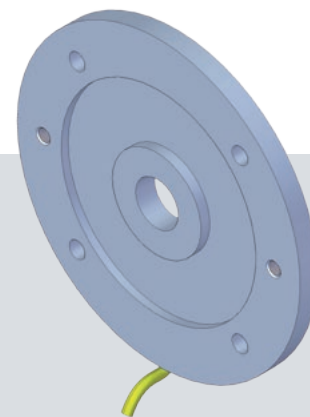
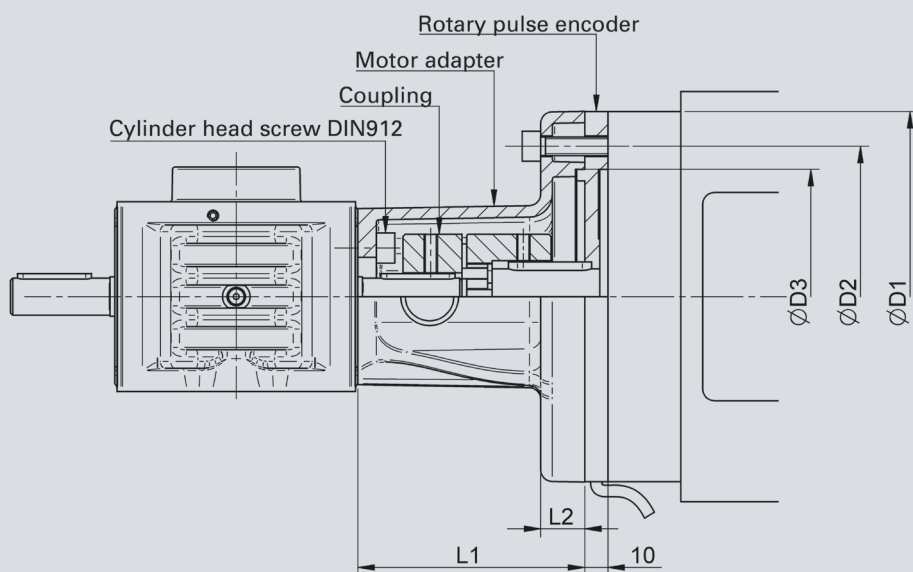


| IEC Type | Pols | Base* | | | | | Housing* | | | | Shaft | | | | Flange B5 | | | | | Flange B14-1 | | | | | Flange B14-2 | | | | | |
|------------|-----------|-------|-----|-----|-----|-----|----------|-----|-----|----|-------|----|------|----|-----------|-----|-----|-----|-----|--------------|-----|-----|-----|-----|--------------|-----|-----|-----|-----|-----|
| | | H | B | A | AB | K | L | HD | C | D | E | GA | F | LA | P | N | M | T | S | P | N | M | T | S | P | N | M | T | S | |
| 63 | A | 2-6 | 63 | 80 | 100 | 123 | 7 | 261 | 179 | 40 | 11 | 23 | 12.5 | 4 | 9 | 140 | 95 | 115 | 3.0 | 10 | 120 | 80 | 100 | 3.0 | M6 | 90 | 60 | 75 | 2.5 | M5 |
| 63 | B | 2-6 | 63 | 80 | 100 | 123 | 7 | 261 | 179 | 40 | 11 | 23 | 12.5 | 4 | 9 | 140 | 95 | 115 | 3.0 | 10 | 120 | 80 | 100 | 3.0 | M6 | 90 | 60 | 75 | 2.5 | M5 |
| 71 | A | 2-6 | 71 | 90 | 112 | 138 | 7 | 295 | 195 | 45 | 14 | 30 | 16.0 | 5 | 9 | 160 | 110 | 130 | 3.5 | 10 | 140 | 95 | 115 | 3.5 | M8 | 105 | 70 | 85 | 3.0 | M6 |
| 71 | B | 2-6 | 71 | 90 | 112 | 138 | 7 | 295 | 195 | 45 | 14 | 30 | 16.0 | 5 | 9 | 160 | 110 | 130 | 3.5 | 10 | 140 | 95 | 115 | 3.5 | M8 | 105 | 70 | 85 | 3.0 | M6 |
| 71 | C | 2-6 | 71 | 90 | 112 | 138 | 7 | 295 | 195 | 45 | 14 | 30 | 16.0 | 5 | 9 | 160 | 110 | 130 | 3.5 | 10 | 140 | 95 | 115 | 3.5 | M8 | 105 | 70 | 85 | 3.0 | M6 |
| 80 | A | 2-6 | 80 | 100 | 125 | 157 | 10 | 340 | 219 | 50 | 19 | 40 | 21.5 | 6 | 10 | 200 | 130 | 165 | 3.5 | 10 | 160 | 110 | 130 | 3.5 | M8 | 120 | 80 | 100 | 3.0 | M6 |
| 80 | B | 2-6 | 80 | 100 | 125 | 157 | 10 | 340 | 219 | 50 | 19 | 40 | 21.5 | 6 | 10 | 200 | 130 | 165 | 3.5 | 10 | 160 | 110 | 130 | 3.5 | M8 | 120 | 80 | 100 | 3.0 | M6 |
| 80 | C | 2-6 | 80 | 100 | 125 | 157 | 10 | 340 | 219 | 50 | 19 | 40 | 21.5 | 6 | 10 | 200 | 130 | 165 | 3.5 | 10 | 160 | 110 | 130 | 3.5 | M8 | 120 | 80 | 100 | 3.0 | M6 |
| 90 | S | 2-6 | 90 | 100 | 140 | 173 | 10 | 385 | 236 | 56 | 24 | 50 | 27.0 | 8 | 10 | 200 | 130 | 165 | 3.5 | 12 | 160 | 110 | 130 | 3.5 | M8 | 140 | 95 | 115 | 3.0 | M8 |
| 90 | L | 2-6 | 90 | 125 | 140 | 173 | 10 | 410 | 236 | 56 | 24 | 50 | 27.0 | 8 | 10 | 200 | 130 | 165 | 3.5 | 12 | 160 | 110 | 130 | 3.5 | M8 | 140 | 95 | 115 | 3.0 | M8 |
| 90 | LB | 2-6 | 90 | 125 | 140 | 173 | 10 | 410 | 236 | 56 | 24 | 50 | 27.0 | 8 | 10 | 200 | 130 | 165 | 3.5 | 12 | 160 | 110 | 130 | 3.5 | M8 | 140 | 95 | 115 | 3.0 | M8 |
| 100 | LA | 2-6 | 100 | 140 | 160 | 196 | 12 | 450 | 261 | 63 | 28 | 60 | 31.0 | 8 | 11 | 250 | 180 | 215 | 4.0 | 15 | 200 | 130 | 165 | 3.5 | M10 | 160 | 110 | 130 | 3.5 | M8 |
| 100 | LB | 2-6 | 100 | 140 | 160 | 196 | 12 | 450 | 261 | 63 | 28 | 60 | 31.0 | 8 | 11 | 250 | 180 | 215 | 4.0 | 15 | 200 | 130 | 165 | 3.5 | M10 | 160 | 110 | 130 | 3.5 | M8 |
| 112 | M | 2-6 | 100 | 140 | 190 | 227 | 12 | 475 | 289 | 70 | 28 | 60 | 31.0 | 8 | 12 | 250 | 180 | 215 | 4.0 | 15 | 200 | 130 | 165 | 3.5 | M10 | 160 | 110 | 130 | 3.5 | M8 |
| 112 | MB | 2-6 | 112 | 140 | 190 | 227 | 12 | 475 | 289 | 70 | 28 | 60 | 31.0 | 8 | 12 | 250 | 180 | 215 | 4.0 | 15 | 200 | 130 | 165 | 3.5 | M10 | 160 | 110 | 130 | 3.5 | M8 |
| 132 | S | 2-6 | 132 | 140 | 216 | 262 | 12 | 550 | 327 | 89 | 38 | 80 | 41.0 | 10 | 12 | 300 | 230 | 265 | 4.0 | 15 | 250 | 180 | 215 | 4.0 | M12 | 200 | 130 | 165 | 3.5 | M10 |
| 132 | M | 2-6 | 132 | 178 | 216 | 262 | 12 | 550 | 327 | 89 | 38 | 80 | 41.0 | 10 | 12 | 300 | 230 | 265 | 4.0 | 15 | 250 | 180 | 215 | 4.0 | M12 | 200 | 130 | 165 | 3.5 | M10 |
| 132 | MB | 2-6 | 132 | 178 | 216 | 262 | 12 | 590 | 327 | 89 | 38 | 80 | 41.0 | 10 | 12 | 300 | 230 | 265 | 4.0 | 15 | 250 | 180 | 215 | 4.0 | M12 | 200 | 130 | 165 | 3.5 | M10 |

* Subject to change without notice, exact dimension sheets on request.

5.5 Rotary pulse encoders

Motor attachment



Dimensions

| | D1 | D2 | D3 | L1 | L2 |
|-----------------------|-----|-----|-----|-------|------|
| NSE2-DIG-... | 120 | 100 | 80 | 59.0 | 5.5 |
| NSE5-DIG-... | 140 | 115 | 95 | 65.0 | 12.0 |
| NSE10-DIG-... | 160 | 130 | 110 | 70.5 | 17.0 |
| NSE25-DIG-... | 160 | 130 | 110 | 98.0 | 19.0 |
| NSE50-DIG-... | 200 | 165 | 130 | 110.5 | 23.5 |
| NSE100-DIG-... | 200 | 165 | 130 | 142.0 | 25.0 |

Rotary pulse encoder DIG

An intelligent intermediate flange was developed, which significantly simplifies the recording of the rotational speed and direction of rotation and the linkage with super-ordinate control systems. This magnetic pulse transmitter is designed as an intermediate flange, which is simply installed between the motor and the motor adapter. This considerably simplifies the integration of incremental position transmitters in drive systems, regardless of whether they are used for rotational speed adjustment, as positioning controllers (e.g. for dosage control) or for synchronous run control.

Advantages

- Compact construction. Depending on the size, only 7 to 12 mm flange thickness are required in the installation space.
- Simple and fast assembly. The flange with the sensors is fixed directly on the motor; the magnetic ring is engaged on the motor shaft.
- Suitable for all IEC flange motors.
- A cost-effective solution, which is also suitable for economical retrofitting of existing drives.
- No mechanical changes necessary at the time of assembly.
- Proven, exact principle of measurement. Two Hall sensors pick up the signals for rotational speed and direction of rotation. As a result, the measurements are wear-free and maintenance-free.
- Universal HTL- and TTL signals for all the usual evaluations (PNP, NPN, RS 422).
- Short-circuit resistant, reverse polarity-protected and surge-protected transmitter electronics, in SMD-technology, completely integrated in the flange.

Mechanical values

| | |
|---------------------------------------|---|
| max. rotational speed | 6000 min ⁻¹ |
| Temperature range, electronics | -40° C to 100° C at load ≤ 20 mA (120° C at load ≤ 15 mA) |
| Temperature range, cable | -40° C to 80° C |
| Flange-/collar material | aluminium/steel |
| Connecting cable | PUR-jacket/4 x 0.25/ Ø 5 mm (TTL 6 x 0.14) |
| Cable length | Standard 2 m or upon request |
| Design with plug-in socket connection | plug 4-pole/cable length 5 m or 10 m (not for TTL-version) |
| Protection class | depends on the sealing between the motor flange and machine flange (max. IP 67 e.g. in case of sealing with silicon) |
| permissible vibration | 100 m/s ² |
| permissible shock | 1000 m/s ² |

5.5 Rotary pulse encoder

Motor attachment

| Flange | Shaft | Motor size | dxlength | ta | Da | Number of pulses | | | | | | |
|--------|-------|------------|----------|----|----|------------------|---|---|---|----|----|----|
| | | | | | | 1 | 2 | 4 | 5 | 10 | 25 | 50 |
| Ø120 | Ø9 | 56 | Ø9x20 | 2 | 63 | x | x | x | x | x | | |
| | Ø11 | 63 | Ø11x23 | 2 | 63 | x | x | x | x | x | | |
| | Ø19 | 80 | Ø19x40 | 2 | 63 | x | x | x | x | x | | |
| Ø140 | Ø11 | 63 | Ø11x23 | 2 | 85 | x | x | x | x | x | x | x |
| | Ø14 | 71 | Ø14x30 | 2 | 85 | x | x | x | x | x | x | x |
| | Ø24 | 90 | Ø24x50 | 3 | 85 | x | x | x | x | x | x | x |
| Ø160 | Ø14 | 71 | Ø14x30 | 2 | 90 | x | x | x | x | x | x | x |
| | Ø19 | 80 | Ø19x40 | 2 | 90 | x | x | x | x | x | x | x |
| | Ø24 | 90 | Ø24x50 | 3 | 90 | x | x | x | x | | x | x |
| | Ø28 | 100 | Ø28x60 | 3 | 90 | x | x | x | x | | x | x |
| Ø200 | Ø19 | 90 | Ø24x50 | 3 | 90 | x | x | x | x | | x | x |
| | Ø24 | 100 | Ø28x60 | 3 | 90 | x | x | x | x | | x | x |
| | Ø28 | 112 | Ø28x60 | 3 | 90 | x | x | x | x | | x | x |

Other number of pulses on demand.

Example for ordering

Type
Flange diameter
Shaft diameter
Number of pulses

DIG - 160 - 19 - 25

Electrical values

Voltage supply UB
Max. pulse frequency
Output signals

Pulse sequence

Pulse/Pause ratio
Signal level

Loading capacity

Insulation resistance

Insulation test

Short-circuit resistant

Secured against reverse polarity

Standard

10 to 24 VDC/+ 20%
20 kHz
rectangular pulse (2-channel) A + B

A 90° B Tolerance ± 40° el

180° : 180° Tolerance ± 20° el
Uhigh ≥ UB - 4 V at LLast ≤ 10 mA

≤ 30 mA at UB = 10 V resp.
≤ 20 mA at UB = 24 V

100 MΩ

4 kV

yes

yes

TTL-version

5 VDC/± 5%
20 kHz
rectangular pulse (2-channel)
A + B and A + B inv.

A 90° B Tolerance ± 40° el
A 90° B inv. Tolerance ± 40° el
180° : 180° Tolerance ± 20° el
Uhigh ≥ 3,5 V
Ulow ≤ 1 V Ulow ≤ 0,3 V
max. 30 mA of the outputs

100 MΩ

4 kV

no

no

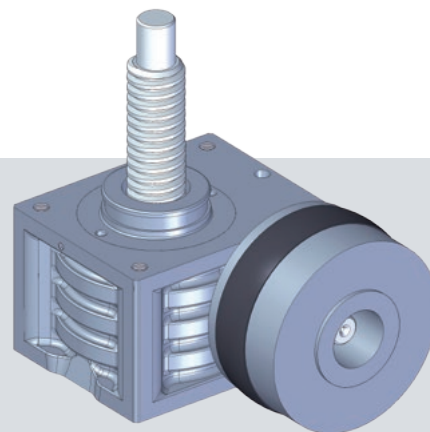
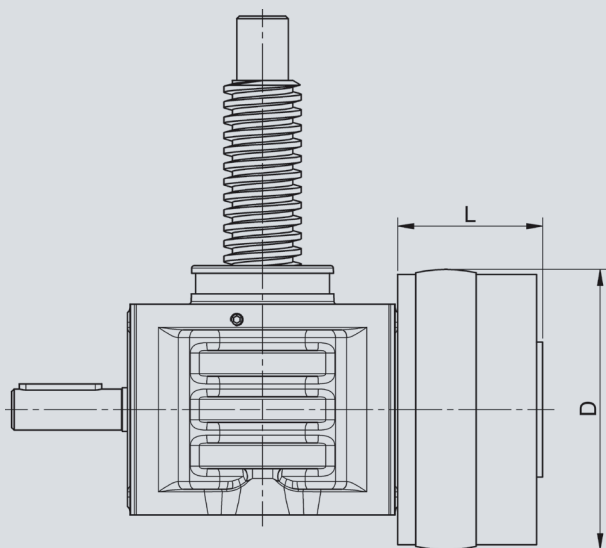
INKR Incremental rotary pulse transmitter



| Mechanical properties, materials | |
|----------------------------------|-------------------------------|
| Dimensions | see drawing |
| Hollow shaft | Ø 10 mm |
| Shaft load (axial and radial) | 20 N max. |
| Flange | Aluminium |
| Housing | Anticorodal |
| Shaft | Stainless steel, non-magnetic |
| Ball bearing | ABEC 5 |

| Electrical properties | |
|------------------------|-------------------------------|
| Pulses | 512,1024,2048 |
| Operating voltage | +10V +30V, +5V +30V |
| Outputs | Push-Pull, Line Driver, PP/LD |
| Loading per channel | 40 mA max. |
| Counter frequency | 100 kHz max. |
| Current drawn | 70 mA max. |
| Optoelectric. Lifetime | 100.000 h min. |

Functional description



General

The spring-loaded brakes type FDB described here are dual-surface brakes for dry running. The braking torque is generated by compression springs in a current-less state. Venting takes place electronically by applying a DC voltage. Thanks to the guard rings that are used as a standard feature, the friction surfaces are mostly protected from external influences.

Under no circumstances may the friction surfaces come into contact with oil or grease or other lubricants.

Minor fouling of this kind can greatly reduce the braking torque. The protection class in the standard version is IP 54. The maximum permissible temperature is 145 °C; Duty cycle 100% ED.

Method of functioning

The existing compression springs press the brake rotor, which is positively locked with the gearbox shaft, against the flange via the axially movable ar-

mature disc. The braking torque is generated, applying a DC voltage to the exciter winding in the solenoid body results in a magnetic force, which pulls the armature disk towards the magnetic body. The brake rotor is released and the brake is vented.

Before working on an installed spring-loaded brake, the voltage supply source must always be disconnected or turned off. The brake should be rendered free of load if required, in order to avoid uncontrolled rotary motion of the shaft.

Manual venting

By providing a manual venting device (lever), the brake can be vented mechanically, e.g. in case of a power failure. For reasons of safety, nothing should be changed in the settings of the manual venting system.

Spring-loaded brake FDB

| Design | Brakes-Type | T _B (Nm) | P (W) | Centres | | | |
|---------------|-------------|------------------------|----------|---------|----|----|-----|
| | | | | Ø | L | D | |
| NSE5 | SL/RL | FDB 08 | 5.0 | 22 | 11 | 46 | 89 |
| | SN/RN | FDB 08 | 5.0 | 22 | 11 | 46 | 89 |
| NSE10 | SL/RL | FDB 08 | 5.0 | 22 | 14 | 46 | 89 |
| | SN/RN | FDB 10 | 10.0 | 28 | 14 | 54 | 109 |
| NSE25 | SL/RL | FDB 10 | 10.0 | 28 | 16 | 54 | 109 |
| | SN/RN | FDB 13 | 20.0 | 34 | 16 | 62 | 135 |
| NSE50 | SL/RL | FDB 13 | 20.0 | 34 | 20 | 62 | 135 |
| | SN/RN | FDB 15 | 40.0 | 42 | 20 | 69 | 155 |
| NSE100 | SL/RL | FDB 15 | 40.0 | 42 | 25 | 69 | 155 |
| | SN/RN | FDB 17 | 60.0 | 50 | 25 | 81 | 175 |

T_B = braking torque

$$\text{with direct current: } P = U \times I \longrightarrow I = \frac{P}{U}$$

FDB60 at 205 V DC coil voltage

$$I = \frac{50W}{205V} = 0.24 \text{ A}$$

Electrical Connection

There are half-wave and bridge rectifiers available for providing a power supply to the brakes from the AC supply. Both types are available for DC-side or AC-side connection. Owing to the inductance of the magnetic coil, the release of the armature disc after switching off takes place in a delayed manner. This switch-off delay is relatively long when connecting before the DC rectifier on the AC side. The switch-off delay can be reduced when the connections present at the rectifier are used for the DC-side switching (6x faster). If connections are to be made on the AC side, a bridge should be connected to the contacts. The electrical connections should only be made in a voltage-less state. The operating voltage (DC) of the brake is given on the magnet housing.

Maintenance

The load should be secured with a suitable support. The spring-loaded brakes are almost maintenance-free. The air gap «a» and hence the rotor wear must be checked at certain intervals of time and if required, reset, or the rotor must be replaced.

Re-adjusting the brake air gap

Loosen the 3 fastening screws of the brake through half a revolution. Now, the sleeve bolts, which surround the fastening screws, can be screwed into the magnet body by turning them counter-clockwise. With the 3 fastening screws, the magnet body is moved to such an extent in the direction of the armature disc, till the nominal air gap, see the table, is reached. Now, the 3 sleeve bolts are unscrewed out of the magnet body by rotating them clockwise till fixed contact is made. Next, the fastening screws are re-tightened and the air gap is once again checked with a feeler gauge.

| Supply voltage | Operating voltage of the brake | Transformer rectifier / type |
|----------------|--------------------------------|---------------------------------|
| 24V DC | 24V DC | without |
| 230V AC | 105V DC | Half wave rectifier/KSE 500/1-S |
| 230V AC | 205V DC | Jumper rectifier/PMB 400-S |
| 400V AC | 180V DC | Half wave rectifier/KSE 500/1-S |
| 500V AC | 220V DC | Half wave rectifier/KSE 500/1-S |

| Brake size | FDB5 | FDB10 | FDB20 | FDB40 | FDB60 |
|------------------------------|------|-------|-------|-------|-------|
| Air gap a_{nominal} | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 |
| Air gap a_{max} | 0.8 | 0.8 | 0.8 | 0.9 | 1.0 |
| min. rotor thickness | 4.5 | 5.5 | 7.5 | 9.5 | 11.5 |

Example for ordering

Size
Spring-loaded brake
Nominal torque (TB)
Operational voltage
Direct current
Rectifier package (if required)
Manual venting (if required)

NSE10 FDB10 10Nm 205V DC GL HL

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