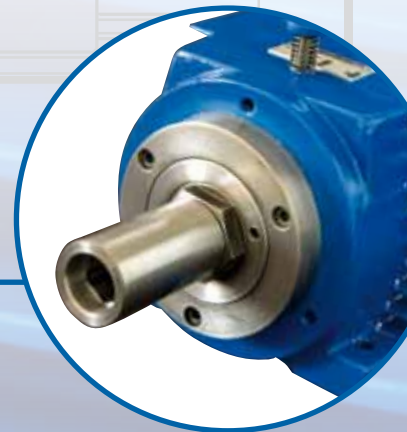




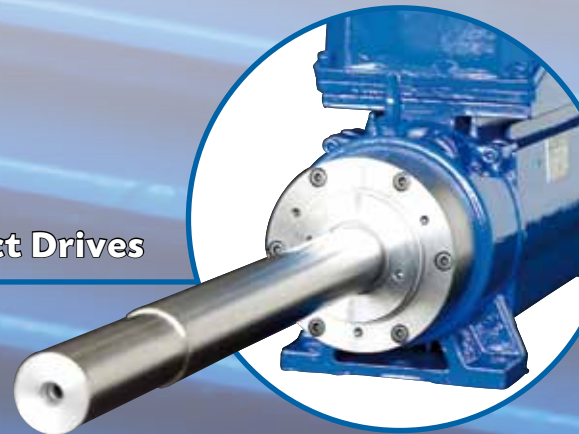
SPECIAL ELECTRIC MOTORS



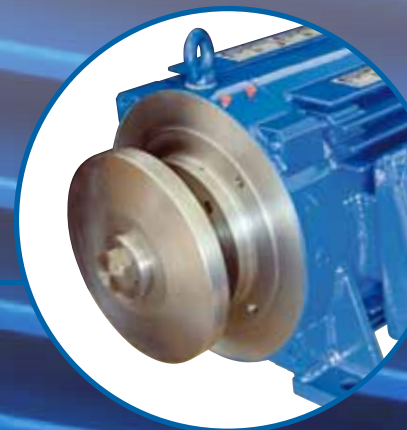
High-Speed
Machining Motors



Special Drives /
High-Speed Direct Drives



Flat Motors /
Circular Saw Motors





We keep you running.

PRECISION AND HIGH SPEED

As a financially independent, medium-sized, family-owned company, we manufacture specialty electric motors and induction motor elements, especially for high-speed operations.

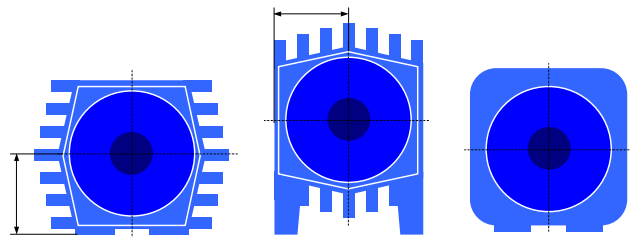
With our own R&D department and the latest technical equipment, we are able to manufacture motors according to customized specifications and designs for our customers. Our quality products manufactured in Germany have proven themselves for decades, even under the toughest conditions. It's no wonder that with our performance, we have become the leading supplier and partner for well-known original equipment manufacturers (OEM).

As a result, many customers from the industrial and trade sectors count on us and our technical support – and we're proud of it. However, we don't stop there. We work hard to earn our customers' trust in our knowledge and consulting skills – every single day. Ultimately, we want to continue improving, too.

We keep you running!

PERSKE ADVANTAGES AT A GLANCE



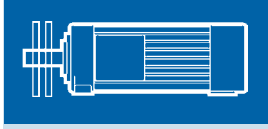
- Precision and high speed for cost-effective production
- Flexible design based on a modular system can adapt to different shaft ends and mounting dimensions
- Customer-specific, application-oriented development results in optimized solutions
- Best balance quality and smoothness with maximum precision ensure a long service life
- Space-saving, installation-ready, compact design.



Flat motor
Types: K, KN, and KC.
Small axle height

Narrow shape
Type: KR
Small axis distance

Rectangular motor
Type: V
Surface cooling, also non-ventilated

| | | |
|--|---|-----------|
| Design criteria | | 4 |
| Product philosophy | | 5 |
| Selection guide | | 6 |
| Motor selection with examples | | 8 |
| High-speed machining motors | | 9 |
| A  | 1 Basic design | |
| | 2 Milling motors for cylindrical shaft tools | 20 |
| | 3 High-precision motors for hydro-clamp chuck systems | 30 |
| | 4 Motor spindles with HSK (hollow taper shank) tool holders | 33 |
| Special drives/ high-speed direct drives | | 40 |
| B  | 1 Synchronous motors | |
| | 2 Direct drives | 42 |
| | Increased dust / water protection Induction motor elements (stator and rotor) | |
| Flat motors / Circular saw motors | | 46 |
| C  | 1 Circular saw motors with saw blade flange | |
| | 2 Circular saw motors with saw blade flange and brake | 51 |
| General Information | | 56 |
| Terms and Conditions for Sales and Deliveries | Technical information Permissible shaft loads Protection class and operating modes Designs/calculation formulas Instructions for ordering replacement parts Motor checklist (for inquiries and orders) | |
| | Contact | 64 |

A) Rules:

| | |
|---------------------------------------|--|
| Electrical design | DIN EN 60034-1 (VDE 0530-1) |
| Performance rating | Thermal class F |
| Site altitude | ≤ 1000 m above sea level |
| Ambient temperature | 40°C max. |
| Converter-fed induction motors | DIN VDE 0530-17 (VDE 0530-17) |
| Mechanical design | DIN EN 60034-7 (DE 0530-7) |
| Protection class | DIN EN 60034-5 (VDE 0530-5) IP 54 totally enclosed, fan cooled terminal box, IP 55-rated |
| Vibration level | DIN EN 60034-14 (VDE 0530-14) $V_{eff} \leq 1.8$ mm/s in the delivered state |
| Balancing | Vibration level R or S in accordance with DIN ISO 2373 upon request |

B) General:

| | |
|------------------------------|--|
| Low-Voltage Directive | 2006/95/EC Motors are intended for installation in machines according to Machine Directive 2006/42/EC, but are subject to the Low-Voltage Directive. |
| Energy efficiency | IEC 600 34 – 30 : 2008; EuP Directive 640/2009 Scope: low-voltage motors connected directly to 50 or 60 Hz and continuous duty. Not included are motors exclusively built for converter operations as well as brake motors. |

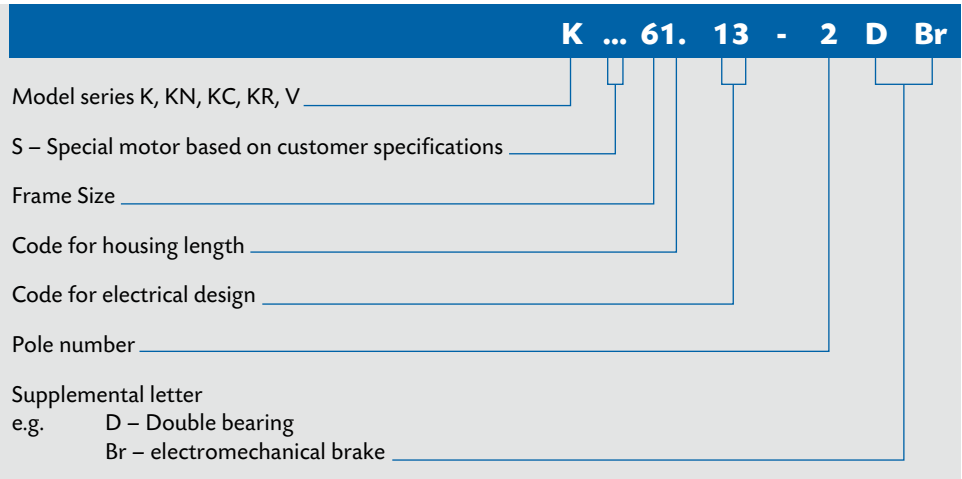
C) The following are possible upon request:

| | |
|-------------------------------------|---|
| Country-specific regulations | <i>USA</i> NEMA MG1 <i>Canada</i> CSA C22.2 No. 100, file L.R 16865 for selected Types, upon request |
| Dust protection | DIN EN 61241-1 (Zone 20-22) Increased dust protection in accordance with ATEX protection zone 22 for non-conductive dust |

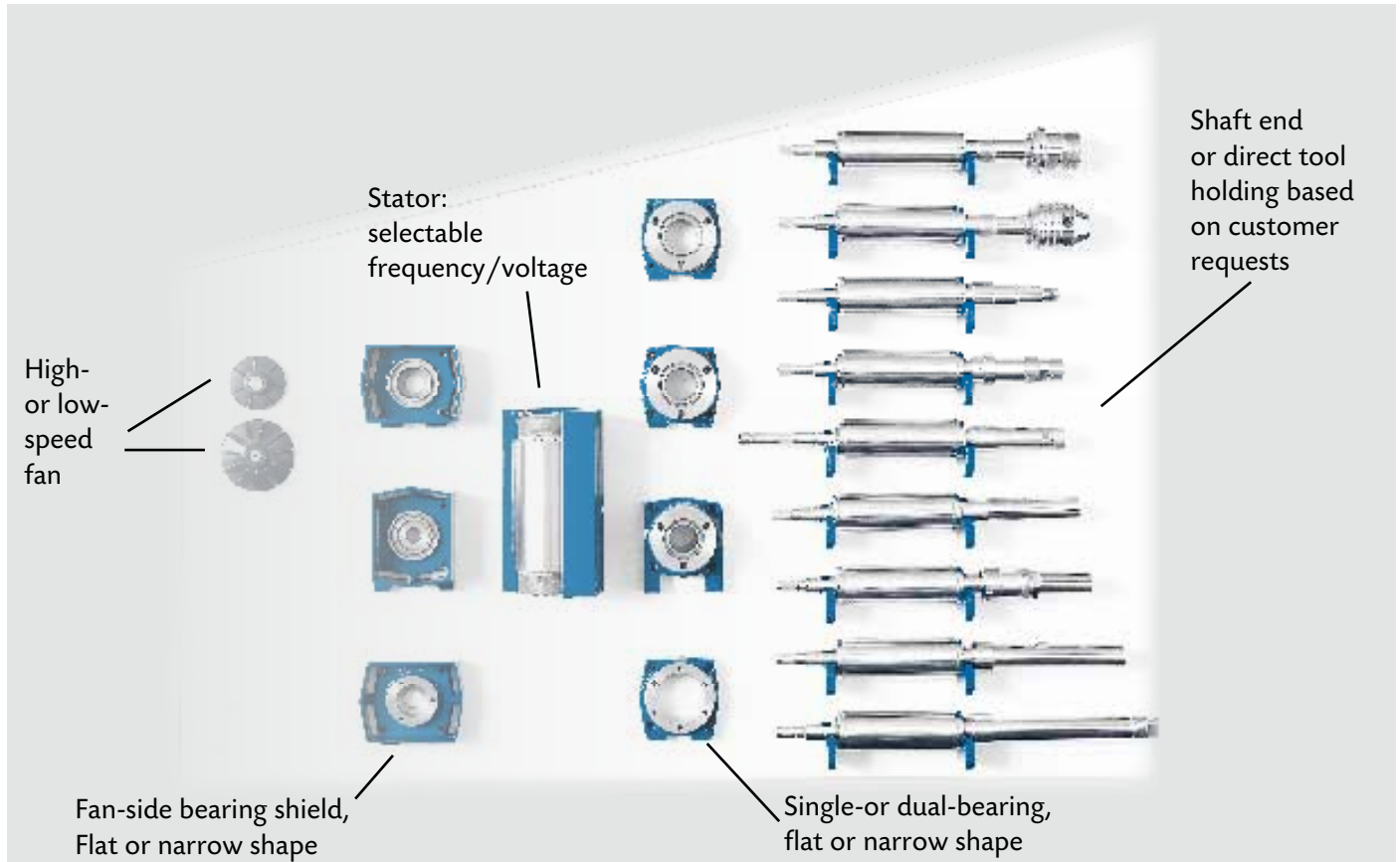
Breakdown of Type designation

Example

Note: performance data, rated voltage and frequency are not coded in the type - designation. These are indicated in plain text. The shaft design is provided in the drawings. The type designation does not provide complete order information!



Special electric motors based on a modular design



Precision and high speed

- Customer-specific drive solutions
- High-speed, speed-adjustable drives
- High overload capacity and high stalling torque
- Direct tool-holding
- High radial and axial run-out precision in micron-level quality
- Best balance quality and running smoothness
- All motors developed and manufactured in-house

Features that no standard motor offers.

Quality made in Germany

Machining motors for

- Wood
- Plastics
- Metal
- Composite materials
- Stone

Direct drives for

- Atomizers
- Pumps
- Fans
- Compressors
- Grinders
- Test benches

... over 60 years of experience attest to our quality.

| Type | Weight [kg] | Rated output [kW] | | | | | | |
|-------------------|----------------|--------------------|---------------------|---------------------|----------------------|----------------------|----------------------|----------------------|
| | | S6-60% | S 1 | | | | | |
| | | 50 Hz 3,000 rpm | 100 Hz 6,000 rpm | 150 Hz 9,000 rpm | 200 Hz 12,000 rpm | 300 Hz 18,000 rpm | 400 Hz 24,000 rpm | 500 Hz 30,000 rpm |
| KN 21.05-2 | 1.8 | - | - | 0.15 | 0.2 | 0.32 | 0.4 | 0.4 |
| KN 22.08-2 | 2.1 | - | - | 0.24 | 0.32 | 0.5 | 0.6 | 0.6 |
| KN 23.10-2 | 2.9 | - | - | 0.3 | 0.4 | 0.6 | 0.7 | - |
| V 30.06-2 | 2.7 | - | 0.2 | 0.3 | 0.42 | 0.6 | 0.65 | 0.65 |
| V 31.09-2 | 3.4 | - | 0.3 | 0.45 | 0.65 | 0.9 | 1.0 | 1.0 |
| KR 35.1-2 (D) | 4.0 | - | 0.3 | 0.5 | 0.7 | 0.9 | 1.0 | - |
| KR 35.3-2 (D) | 4.8 | - | 0.45 | 0.7 | 1.0 | 1.3 | 1.4 | - |
| KR 35.5-2 (D) | 5.8 | 0.28 | 0.6 | 1.0 | 1.4 | 1.9 | 2.0 | - |
| KR 35.7-2 (D) | 6.2 | 0.34 | 0.75 | 1.1 | 1.6 | 2.2 | - | - |
| KR 35.9-2 (D) | 7.2 | 0.4 | 0.9 | 1.4 | 2.0 | - | - | - |
| V 50.09-2 | 8.5 | 0.6 | 1.2 | 1.5 | 1.85 | 2.5 | 3.0 | 3.0 |
| KN/KR 50.11-2 (D) | 11.0 | 0.9 | 1.8 | 2.5 | 3.0 | 4.0 | - | - |
| KN/KR 51.14-2 (D) | 12.5 | 1.3 | 2.4 | 3.5 | 4.0 | 5.0 | - | - |
| KN/KR 52.16-2 (D) | 13.5 | 1.5 | 2.7 | 4.0 | 4.5 | - | - | - |
| V 60.11-2 | 16.0 | 1.7 | 2.2 | 3.0 | 4.0 | 5.0 | 5.0 | 5.0 |
| V 61.15-2 | 18.5 | 2.3 | 3.0 | 4.0 | 5.0 | - | - | - |
| KN/KR 60.09-2 (D) | 14.5 | 2.0 | 2.7 | 3.0 | 3.5 | - | - | - |
| KN/KR 61.13-2 (D) | 19.5 | 3.0 | 4.0 | 5.0 | 6.0 | 7.0 | - | - |
| KN/KR 62.18-2 (D) | 22.0 | 4.0 | 5.5 | 6.0 | 7.0 | - | - | - |
| KC 70.12-2 (D) | 26.0 | 3.7 | 5.2 | 5.5 | - | - | - | - |
| KC 71.16-2 (D) | 33.0 | 5.0 | 6.6 | 7.0 | 8.0* | 10.0* | - | - |
| KC 71.20-2 (D) | 38.0 | 6.5 | 8.0 | 9.0 | 10.0* | 12.0* | - | - |
| KC 72.28-2 (D) | 51.0 | 9.0 | 12.5 | 13.0 | - | - | - | - |
| K 81.23-2 (D) | 69.0 | 11.0 | 16.0 | 18.0 | - | - | - | - |
| K 82.27-2 (D) | 79.0 | 13.0 | 18.0 | 22.0 | - | - | - | - |
| K 83.37-2 (D) | 91.0 | 18.0 | 25.0 | - | - | - | - | - |
| K 91.31-2 (D) | 106.0 | 20.0 | 25.0 | 30.0 | - | - | - | - |
| K 93.38-2 (D) | 128.0 | 25.0 | 30.0 | 35.0 | - | - | - | - |

Legend:

Rated output based on thermal Class F

Weights are approximate value for single- bearing units

Output figures in the columns are assigned to various electrical models of the corresponding frequency

(D) Motor can be equipped with a single- or double bearing on the drive (tool) side

D = double-bearing only

* Special KNO model – see milling motors, p. 29

KR model, narrow design, see milling motors, p. 25-28

S6 - 60% rating for conventional use in sawing operations

4-pole motors available upon request

| Type | Weight [kg] | Rated output [kW] | | | | | |
|----------------|----------------|--------------------|--------------------|---------------------|---------------------|----------------------|----------------------|
| | | S6-60% | | S 1 | | | |
| | | 50 Hz 3,000 rpm | 75 Hz 4,500 rpm | 100 Hz 6,000 rpm | 150 Hz 9,000 rpm | 200 Hz 12,000 rpm | 300 Hz 18,000 rpm |
| K 110.24-2 (D) | 160.0 | 25.0 | 25.0 | 30.0 | 35.0 | 42.0 | 55.0 |
| K 111.31-2 (D) | 177.0 | 37.0 | 37.0 | 45.0 | - | - | - |
| K 112.38-2 (D) | 195.0 | 45.0 | 45.0 | 55.0 | - | - | - |
| K 113.50-2 (D) | 240.0 | 55.0 | 55.0 | 65.0 | - | - | - |
| K 140.38-2 (D) | 360.0 | 65.0 | 65.0 | 80.0 | - | - | - |
| K 141.50-2 (D) | 450.0 | 75.0 | 80.0 | 100.0 | - | - | - |
| K 160.50-2 D | 625.0 | 90.0 | 100.0 | - | - | - | - |
| K 162.60-2 D | 750.0 | 120.0 | 125.0 | - | - | - | - |
| K 200.50-2 D | 840.0 | 140.0 | 150.0 | - | - | - | - |
| K 202.60-2 D | 900.0 | 170.0 | 175.0 | - | - | - | - |

Main features of specialty motors

- Greater radial and axial run-out precision
- Reinforced bearings compared to standard motors
- Self-cooling by means of integrated fan
- Labyrinth seal
- Balancing at rated speed
- Voltage freely selectable
- Converter operating mode
- Variable speed

Options at a glance

Special shaft, tool mounting

- Cylindrical with / without key with tight rotational tolerance
- Front or exterior threads
- Interior taper (e.g., for holding collets) or exterior taper
- High-precision for radial and axial runout in micron-level quality
- HSK-C for manual tool changes
- HSK-F63 for automatic tool changes
- Saw blade flange
- Hollow shaft for lubricants or purge air

Bearings

- Spindle or hybrid bearing based on speed and precision requirements
- Single or dual bearing on drive/tool side

Shock loads (e.g., by flying saw)

- Housing and bearing shield are welded steel

Balancing

- Balancing at rated speed also for various operating speeds
- Vibration level R or S

Electrical connection

- Choice of terminal box position (looking at shaft end): front, rear, right, left, axial
- Plug instead of terminal box up to rated current $I_N \leq 5 \text{ A}$ possible

Motor protection, thermal

- Winding: PTC, PT 100, bimetal switch, KTY sensor
- Bearing: PTC, PT 100

Winding

- Tropical insulation
- Thermal Class H with thermal utilization based on class F

Protection against environmental influences

- Labyrinth seal in special models
- Sealing air for bearings
- Overpressure in the interior in the event of increased humidity
- Dust protection in accordance with ATEX Zone 22
- Anti-condensation heating
- Increased spray water protection

Add-on parts

- Brake, electromechanical
- Rpm indicator
- Mounting flange according to customer specifications

Motor Selection with Examples

A) Electrical requirements

The performance charts are type-specific and show the motor's maximum output for the associated frequency (speed). This always requires a particular winding configuration. The motors are then selected based on the operating requirements.

1) Fixed speed

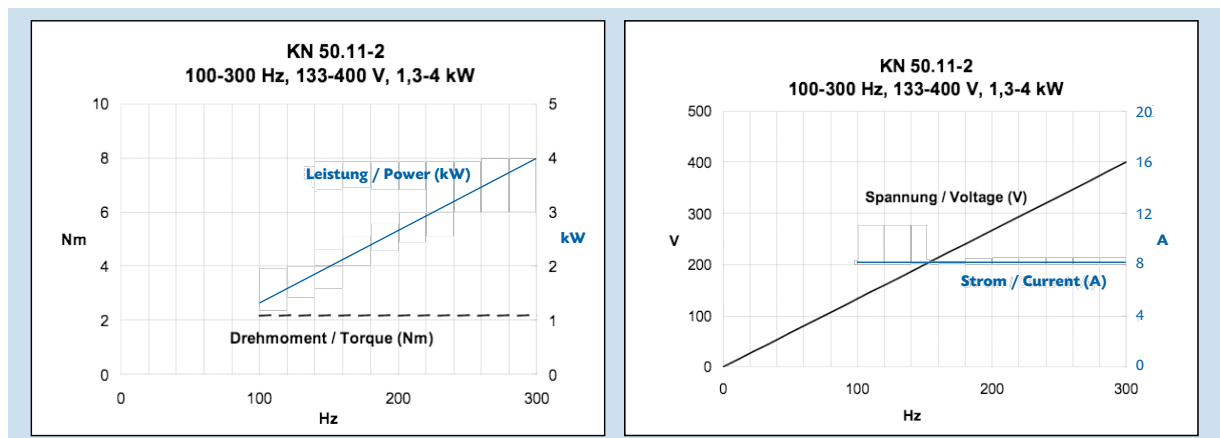
Example: 4 kW desired at 18,000 rpm
Results in Type KN 50.11-2 on p. 6, column 300 Hz

2) Variable-speed operation

Here, the required output is assigned to a given frequency.
Example: 4 kW desired for a speed range of 6,000 to 18,000 rpm
This request may require various motor configurations, e.g.,

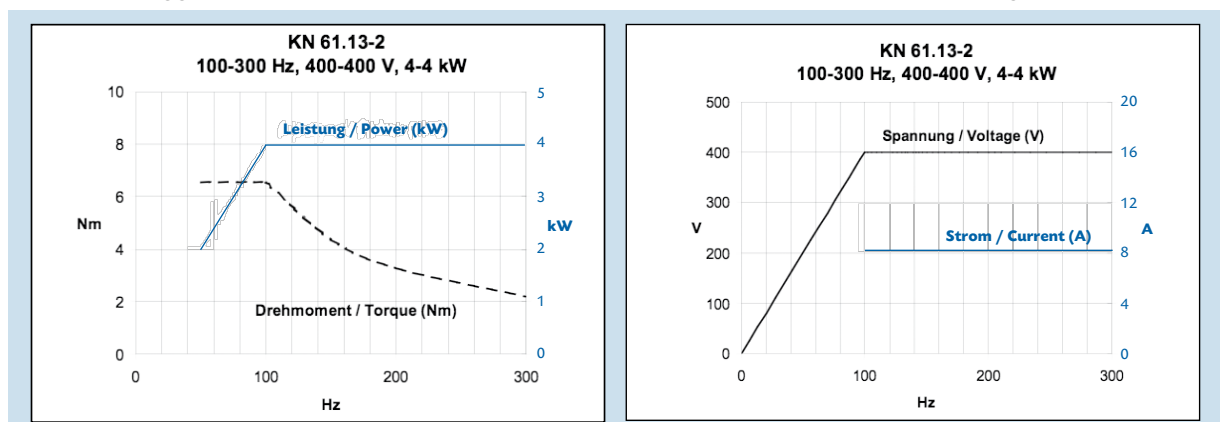
2.1) Maximum output is required at 18,000 rpm and output may fall off below that.

"Constant torque" operating mode
results in type KN 50.11-2 on p. 6, column 300 Hz with the following characteristics:



2.2) Max. output is already required at 6,000 rpm, without output increase up to 18,000 rpm.

"Constant output" operating mode now
results in a bigger motor, Type KN 61.13-2 on p. 6, column 100 Hz with the following characteristics:



B) Mechanical requirements

For a given motor-size, the bearing limits the maximum possible shaft diameter. If the required shaft end is bigger, then a bigger motor must be selected than needed in terms of output. This shall be verified on a case-by-case basis. The indicated maximum shaft diameters do not correspond to the basic models. The associated maximum speed depends on the bearing and application. Further inquiry is necessary. The drawings depicted here are non-binding; all dimensions are in mm. The valid drawings are provided with the order confirmation.



Basic Model

| | |
|--------------------------|--------------------------|
| Housing: | Aluminum |
| Bearing shield: | Aluminum |
| Impregnation: | Vacuum technology |
| Protection class: | IP 54 |

Model KN 20 V 30

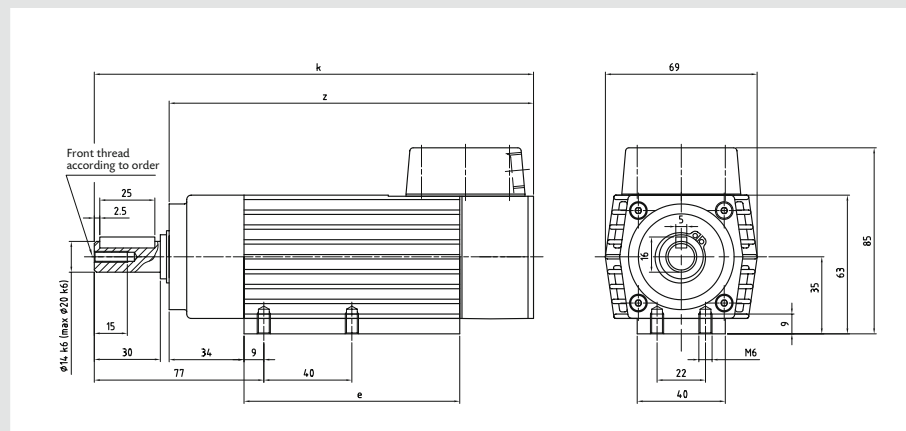
| Type | Weight [kg] | Rated output [kW] | | | | | |
|------------|-------------|---------------------|---------------------|----------------------|----------------------|----------------------|----------------------|
| | | S1 | | | | | |
| | | 100 Hz 6,000 rpm | 150 Hz 9,000 rpm | 200 Hz 12,000 rpm | 300 Hz 18,000 rpm | 400 Hz 24,000 rpm | 500 Hz 30,000 rpm |
| KN 21.05-2 | 1.8 | - | 0.15 | 0.2 | 0.32 | 0.4 | 0.4 |
| KN 22.08-2 | 2.1 | - | 0.24 | 0.32 | 0.5 | 0.6 | 0.6 |
| KN 23.10-2 | 2.9 | - | 0.3 | 0.4 | 0.6 | 0.7 | - |
| V 30.06-2 | 2.7 | 0.2 | 0.3 | 0.42 | 0.6 | 0.65 | 0.65 |
| V 31.09-2 | 3.4 | 0.3 | 0.45 | 0.65 | 0.9 | 1.0 | 1.0 |

Only available with single-bearing

Values in table pertain to the drawings depicted below.
The maximum shaft diameter or customer-specific designs can influence the values.

KN 20 Single-bearing

Drawing MS 151

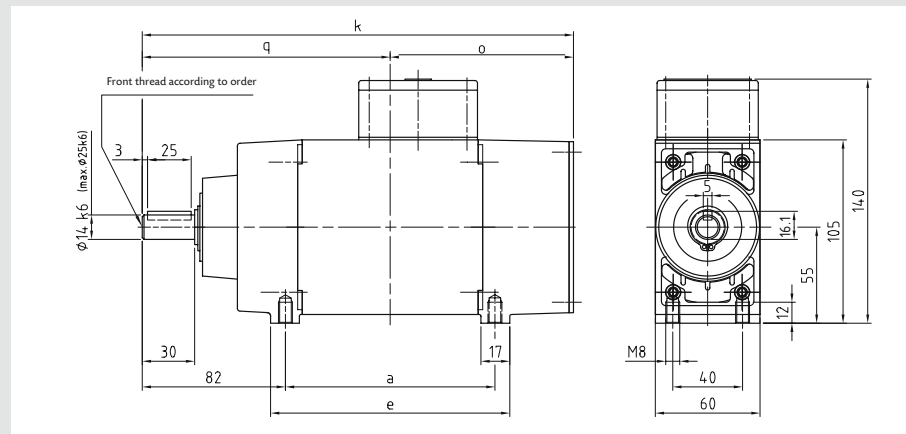


| Type | e | k | z |
|----------|-----|-----|-----|
| KN 21.05 | 98 | 200 | 166 |
| KN 22.08 | 133 | 235 | 201 |
| KN 23.10 | 153 | 255 | 221 |

Max. shaft diameter 20 mm

V 30 Single-bearing

Drawing MS 132



| Type | a | e | k | o | q |
|------|-----|-----|-----|-----|-----|
| V 30 | 90 | 108 | 217 | 90 | 127 |
| V 31 | 120 | 138 | 247 | 105 | 142 |

Max. shaft diameter 25 mm



Basic Model

Housing: Aluminum
Bearing shield: Aluminum, cast iron for double bearing models
Impregnation: Vacuum technology
Protection class: IP 54

Model KR 35

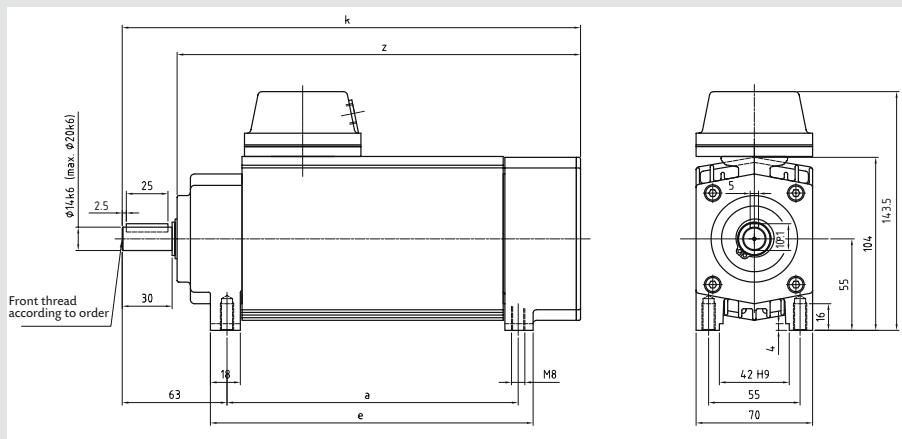
| Type | Weight [kg] | Rated output [kW] | | | | |
|---------------|-------------|---------------------|---------------------|----------------------|----------------------|----------------------|
| | | S 1 | | | | |
| | | 100 Hz 6,000 rpm | 150 Hz 9,000 rpm | 200 Hz 12,000 rpm | 300 Hz 18,000 rpm | 400 Hz 24,000 rpm |
| KR 35.1-2 (D) | 4.0 | 0.3 | 0.5 | 0.7 | 0.9 | 1.0 |
| KR 35.3-2 (D) | 4.8 | 0.45 | 0.7 | 1.0 | 1.3 | 1.4 |
| KR 35.5-2 (D) | 5.8 | 0.6 | 1.0 | 1.4 | 1.9 | 2.0 |
| KR 35.7-2 (D) | 6.2 | 0.75 | 1.1 | 1.6 | 2.2 | - |
| KR 35.9-2 (D) | 7.2 | 0.9 | 1.4 | 2.0 | - | - |

(D) Motor available with single or double bearings on drive (tool) side

Values in table pertain to the drawings depicted below.
 The maximum shaft diameter or customer-specific designs can influence the values.

KR 35 Single bearing

Drawing MS 3746

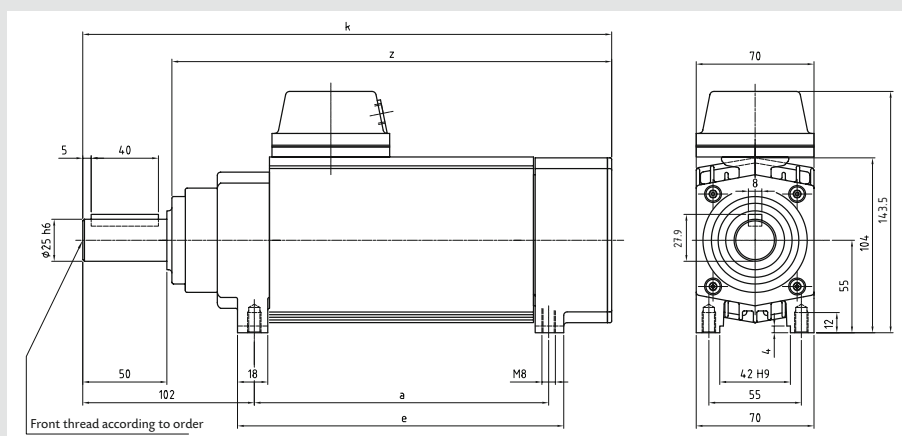


| Type | a | e | k | z |
|---------|-----|-----|-----|-----|
| KR 35.1 | 145 | 165 | 245 | 212 |
| KR 35.3 | 175 | 195 | 275 | 242 |
| KR 35.5 | 215 | 235 | 315 | 282 |
| KR 35.7 | 235 | 255 | 335 | 302 |
| KR 35.9 | 275 | 295 | 375 | 342 |

Max. shaft diameter 25 mm

KR 35 D Double bearing

Drawing MS 3772



| Type | a | e | k | z |
|-----------|-----|-----|-----|-----|
| KR 35.1 D | 145 | 165 | 284 | 231 |
| KR 35.3 D | 175 | 195 | 314 | 261 |
| KR 35.5 D | 215 | 235 | 354 | 301 |
| KR 35.7 D | 235 | 255 | 374 | 321 |
| KR 35.9 D | 275 | 295 | 414 | 361 |

Max. shaft diameter 25 mm



Basic Model

Housing: Aluminum
Bearing shield: Cast iron
Impregnation: Vacuum technology
Protection class: IP 54

Model KN 50

| Type | Weight [kg] | Rated output [kW] | | | |
|-----------------|-------------|---------------------|---------------------|----------------------|----------------------|
| | | S 1 | | | |
| | | 100 Hz 6,000 rpm | 150 Hz 9,000 rpm | 200 Hz 12,000 rpm | 300 Hz 18,000 rpm |
| KN* 50.11-2 (D) | 11.0 | 1.8 | 2.5 | 3.0 | 4.0 |
| KN* 51.14-2 (D) | 12.5 | 2.4 | 3.5 | 4.0 | 5.0 |
| KN* 52.16-2 (D) | 13.5 | 2.7 | 4.0 | 4.5 | - |

(D) Motor available with single or double bearings on drive (tool) side

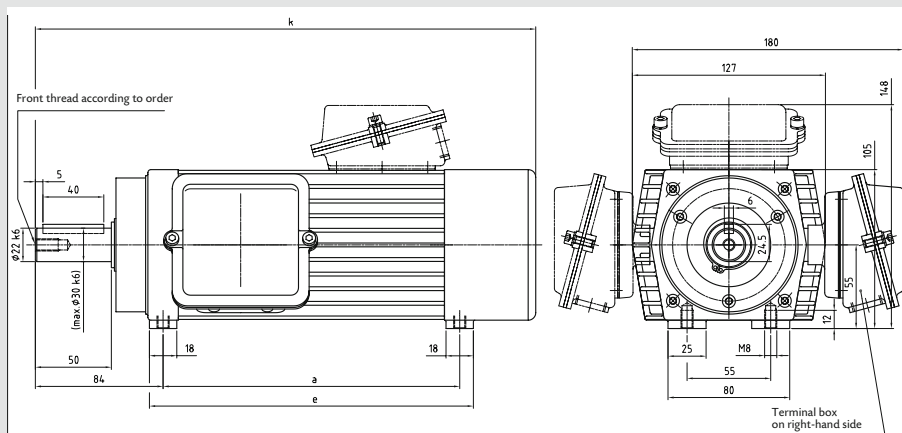
* KR model possible, see p. 26

Values in table pertain to the drawings depicted below.

The maximum shaft diameter or customer-specific designs can influence the values.

KN 50 Single-bearing

Drawing MS 170 A

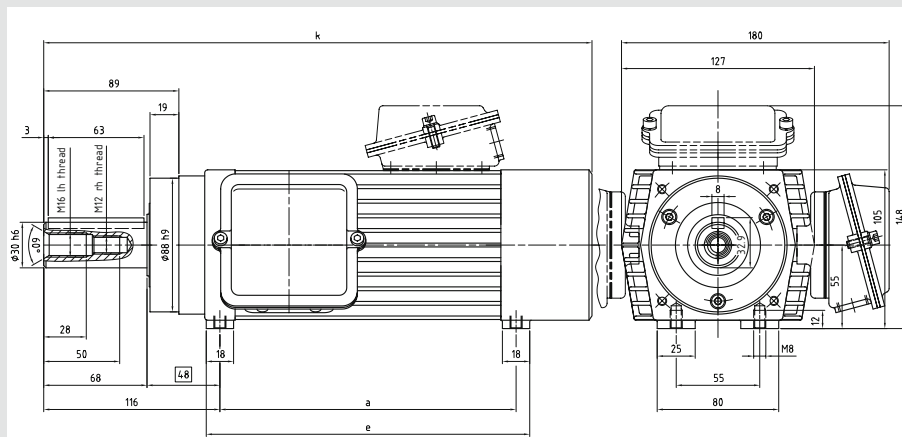


| Type | a | e | k |
|-------|-----|-----|-----|
| KN 50 | 195 | 213 | 330 |
| KN 51 | 225 | 243 | 360 |
| KN 52 | 245 | 263 | 380 |

Max. shaft diameter 30 mm

KN 50 D Double-bearing

Drawing MS 4046



| Type | a | e | k |
|---------|-----|-----|-----|
| KN 50 D | 195 | 213 | 361 |
| KN 51 D | 225 | 243 | 391 |
| KN 52 D | 245 | 263 | 411 |

Max. shaft diameter 30 mm



Basic Model

Housing: Aluminum
Bearing shield: Aluminum for V50/cast iron for V60
Impregnation: Vacuum technology
Protection class: IP 54

Model V 50 V 60

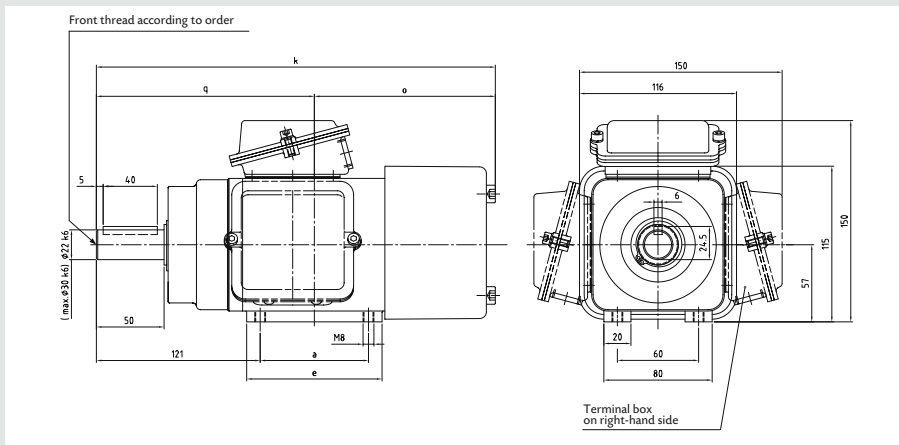
| Type | Weight [kg] | Rated output [kW] | | | | | |
|-----------|-------------|---------------------|---------------------|----------------------|----------------------|----------------------|----------------------|
| | | S 1 | | | | | |
| | | 100 Hz 6,000 rpm | 150 Hz 9,000 rpm | 200 Hz 12,000 rpm | 300 Hz 18,000 rpm | 400 Hz 24,000 rpm | 500 Hz 30,000 rpm |
| V 50.09-2 | 8.5 | 1.2 | 1.5 | 1.85 | 2.5 | 3.0 | 3.0 |
| V 60.11-2 | 16.0 | 2.2 | 3.0 | 4.0 | 5.0 | 5.0 | 5.0 |
| V 61.15-2 | 18.5 | 3.0 | 4.0 | 5.0 | - | - | - |

Only available with single bearing

Values in table pertain to the drawings depicted below.
The maximum shaft diameter or customer-specific designs can influence the values.

V 50

Drawing MS 113 A

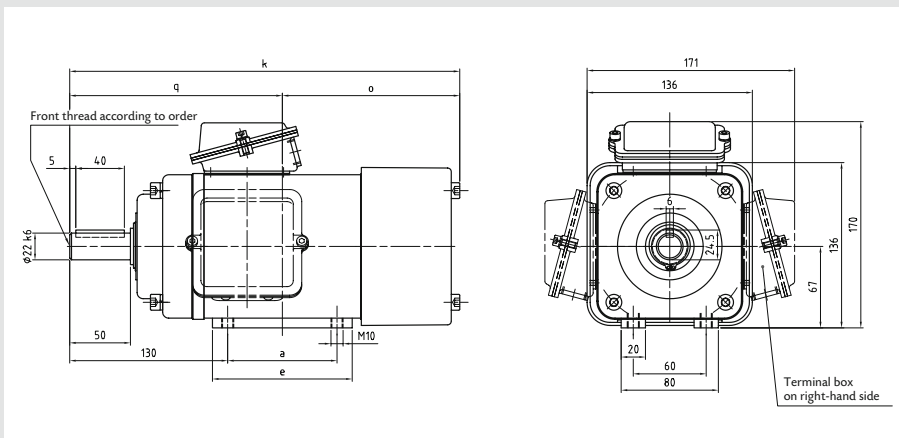


| Type | a | e | k | o | q |
|------|----|-----|-----|-----|-----|
| V 50 | 80 | 100 | 297 | 136 | 161 |

Max. shaft diameter 30 mm

V 60

Drawing MS 113 B



| Type | a | e | k | o | q |
|------|-----|-----|-----|-----|-----|
| V 60 | 90 | 115 | 320 | 145 | 175 |
| V 61 | 130 | 155 | 360 | 165 | 195 |

Max. shaft diameter 30 mm



Basic Model

Housing: Aluminum
Bearing shield: Cast iron
Impregnation: Vacuum technology
Protection class: IP 54

Model KN 60

| Type | Weight [kg] | Rated output [kW] | | | |
|-----------------|-------------|---------------------|---------------------|----------------------|----------------------|
| | | S 1 | | | |
| | | 100 Hz 6,000 rpm | 150 Hz 9,000 rpm | 200 Hz 12,000 rpm | 300 Hz 18,000 rpm |
| KN* 60.09-2 (D) | 14.5 | 2.7 | 3.0 | 3.5 | - |
| KN* 61.13-2 (D) | 19.5 | 4.0 | 5.0 | 6.0 | 7.0 |
| KN* 62.18-2 (D) | 22.0 | 5.5 | 6.0 | 7.0 | - |

(D) Motor available with single or double bearings on drive (tool) side

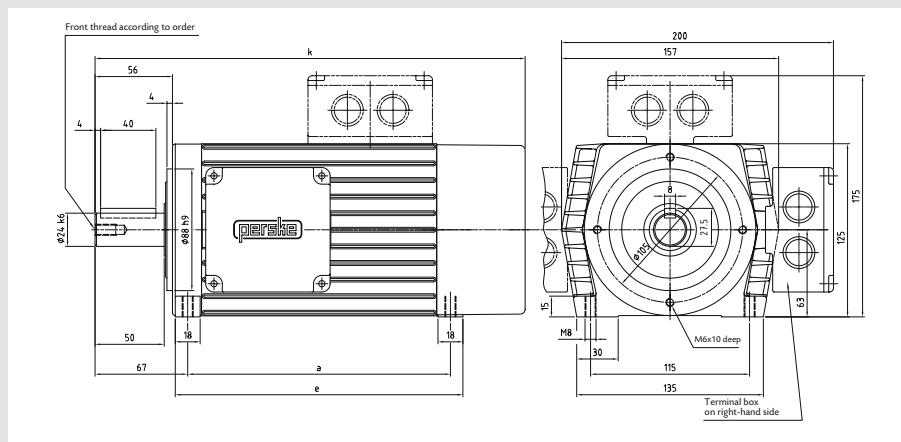
* KR model possible, see p. 28

Values in table pertain to the drawings depicted below.

The maximum shaft diameter or customer-specific designs can influence the values.

KN 60 Single bearing

Drawing MS 170 B

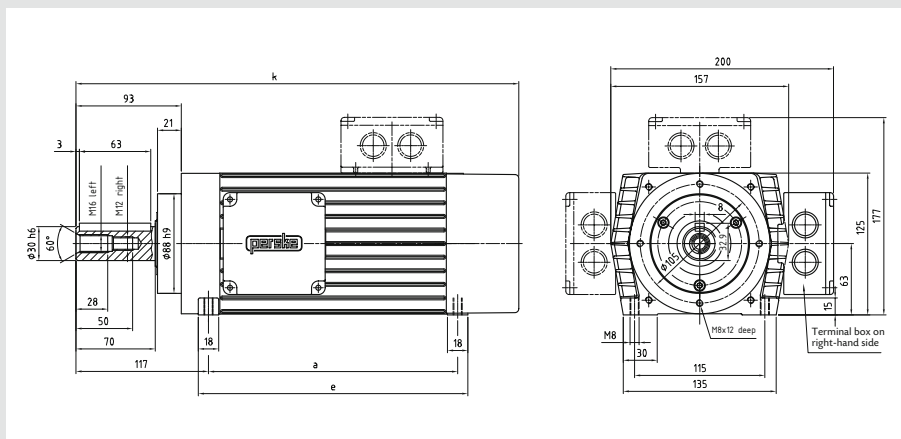


| Type | a | e | k |
|-------|-----|-----|-----|
| KN 60 | 190 | 210 | 311 |
| KN 61 | 220 | 240 | 341 |
| KN 62 | 270 | 290 | 391 |

Max. shaft diameter 35 mm

KN 60 D Double bearing

Drawing MS 171



| Type | a | e | k |
|---------|-----|-----|-----|
| KN 60 D | 190 | 210 | 361 |
| KN 61 D | 220 | 240 | 391 |
| KN 62 D | 270 | 290 | 441 |

Max. shaft diameter 40 mm



Basic Model

Housing: Aluminum
Bearing shield: Cast iron
Impregnation: Vacuum technology
Protection class: IP 54

Model KC 70

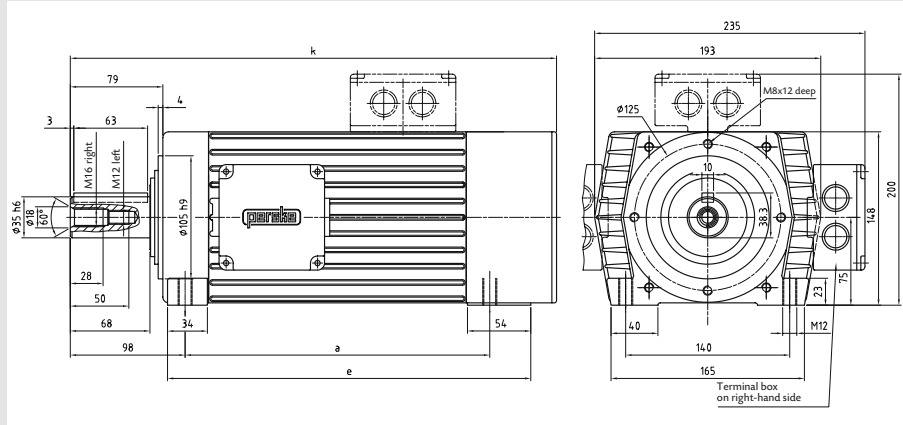
| Type | Weight [kg] | Rated output [kW] | | | |
|----------------|-------------|---------------------|---------------------|----------------------|----------------------|
| | | S 1 | | | |
| | | 100 Hz 6,000 rpm | 150 Hz 9,000 rpm | 200 Hz 12,000 rpm | 300 Hz 18,000 rpm |
| KC 70.12-2 (D) | 26.0 | 5.2 | 5.5 | - | - |
| KC 71.16-2 (D) | 33.0 | 6.6 | 7.0 | 8.0* | 10.0* |
| KC 71.20-2 (D) | 38.0 | 8.0 | 9.0 | 10.0* | 12.0* |
| KC 72.28-2 (D) | 51.0 | 12.5 | 13.0 | - | - |

* For KNO model, see milling motors pages 21 and 29
 (D) Motor available with single or double bearings on drive (tool) side

Values in table pertain to the drawings depicted below.
 The maximum shaft diameter or customer-specific designs can influence the values.

KC 70 Single bearing

Drawing MS 652 - 44

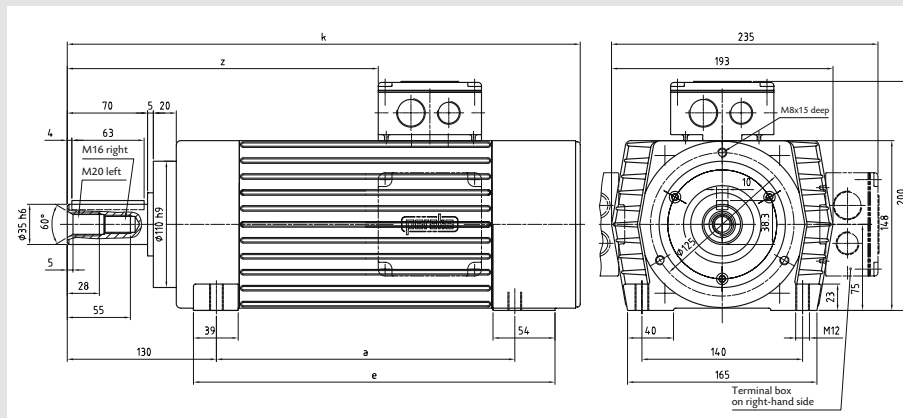


| Type | a | e | k |
|-------|-----|-----|-----|
| KC 70 | 260 | 310 | 415 |
| KC 71 | 340 | 390 | 495 |
| KC 72 | 420 | 470 | 575 |

Max. shaft diameter 40 mm

KC 70 D Double bearing

Drawing MS 182 - 5



| Type | a | e | k | z |
|---------|-----|-----|-----|-----|
| KC 70 D | 260 | 315 | 447 | 271 |
| KC 71 D | 340 | 395 | 527 | 351 |
| KC 72 D | 420 | 475 | 607 | 431 |

Max. shaft diameter 50 mm



Basic Model

Housing: Cast iron
Bearing shield: Cast iron
Impregnation: Vacuum technology
Protection class: IP 54

Model K 80

| Type | Weight [kg] | Rated output [kW] | |
|---------------|-------------|---------------------|---------------------|
| | | S 1 | |
| | | 100 Hz 6,000 rpm | 150 Hz 9,000 rpm |
| K 81.23-2 (D) | 69.0 | 16.0 | 18.0 |
| K 82.27-2 (D) | 79.0 | 18.0 | 22.0 |
| K 83.37-2 (D) | 91.0 | 25.0 | - |

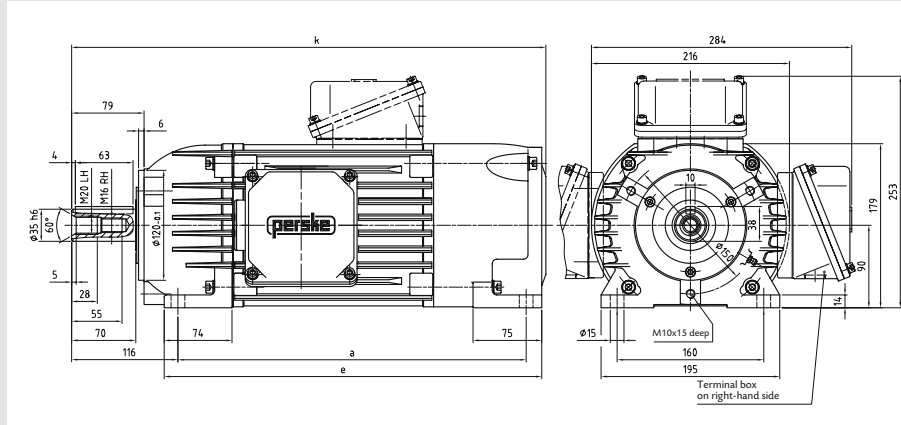
(D) Motor available with single or double bearings on drive (tool) side

Values in table pertain to the drawings depicted below.

The maximum shaft diameter or customer-specific designs can influence the values.

K 80 Single bearing

Drawing MS 630 A453

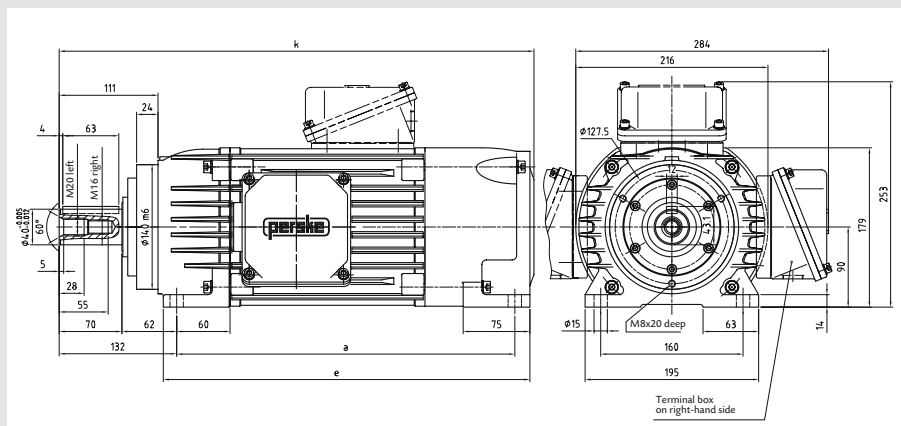


| Type | a | e | k |
|------|-----|-----|-----|
| K 81 | 460 | 492 | 600 |
| K 82 | 510 | 542 | 650 |
| K 83 | 570 | 602 | 710 |

Max. shaft diameter 40 mm

K 80 D Double bearing

Drawing MS 630 A196



| Type | a | e | k |
|--------|-----|-----|-----|
| K 81 D | 460 | 492 | 615 |
| K 82 D | 510 | 542 | 665 |
| K 83 D | 570 | 602 | 725 |

Max. shaft diameter 60 mm



Basic Model

Housing: Cast iron for K 91, steel for K 93
Bearing shield: Cast iron or steel
Impregnation: Vacuum technology
Protection class: IP 54

Model K 90

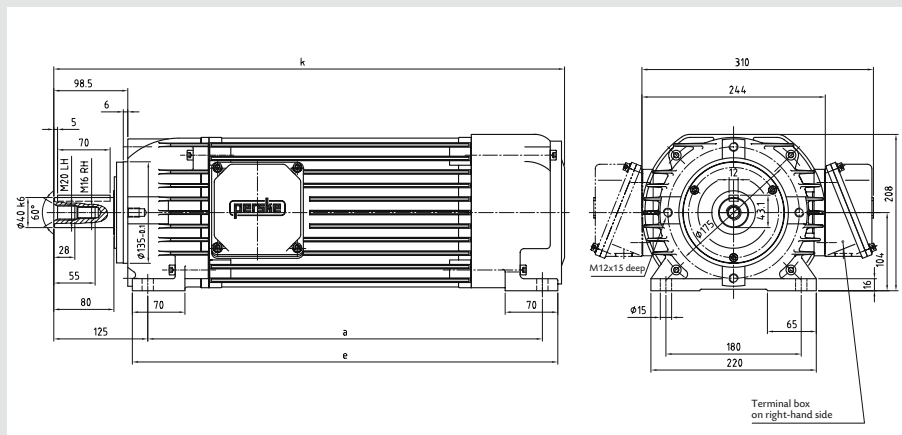
| Type | Weight [kg] | Rated output [kW] | |
|---------------|-------------|---------------------|---------------------|
| | | S 1 | |
| | | 100 Hz 6,000 rpm | 150 Hz 9,000 rpm |
| K 91.31-2 (D) | 106.0 | 25.0 | 30.0 |
| K 93.38-2 (D) | 128.0 | 30.0 | 35.0 |

(D) Motor available with single or double bearings on drive (tool) side

Values in table pertain to the drawings depicted below.
The maximum shaft diameter or customer-specific designs can influence the values.

K 90 Single bearing

Drawing MS 630 B182

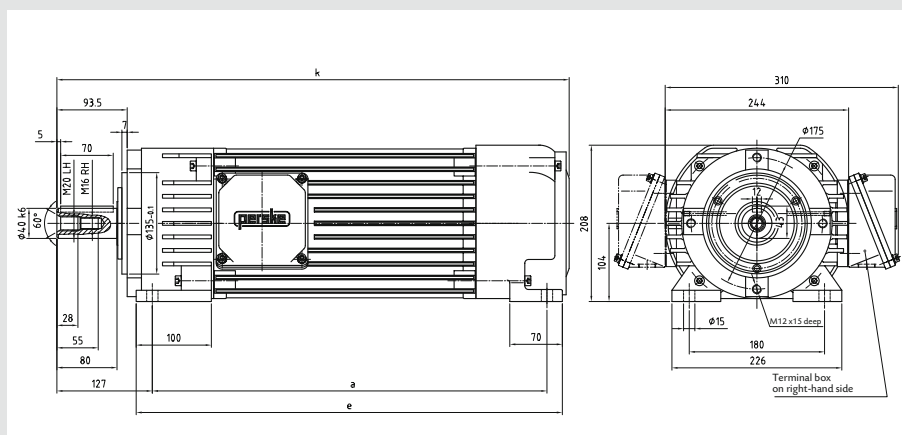


| Type | a | e | k |
|---------|-----|-----|-----|
| K 91.31 | 525 | 566 | 680 |
| K 93.38 | 615 | 656 | 770 |

Max. shaft diameter 50 mm

K 90 D Double bearing

Drawing MS 630 B183



| Type | a | e | k |
|-----------|-----|-----|-----|
| K 91.31 D | 525 | 567 | 682 |
| K 93.38 D | 615 | 657 | 772 |

Max. shaft diameter 50 mm



Basic Model

Housing: Cast iron for up to K 111, steel for K 112 & K 113
Bearing shield: Cast iron or steel
Impregnation: Vacuum technology
Protection class: IP 54

Model K 110

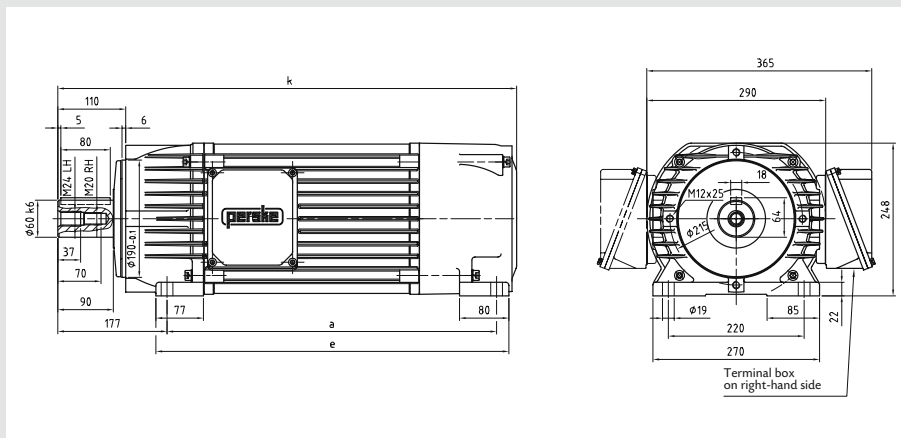
| Type | Weight [kg] | Rated output [kW] | |
|----------------|-------------|--------------------|---------------------|
| | | S 1 | |
| | | 75 Hz 4,500 rpm | 100 Hz 6,000 rpm |
| K 110.24-2 (D) | 160.0 | 25.0 | 30.0 |
| K 111.31-2 (D) | 177.0 | 37.0 | 45.0 |
| K 112.38-2 (D) | 195.0 | 45.0 | 55.0 |
| K 113.50-2 (D) | 240.0 | 55.0 | 65.0 |

(D) Motor available with single or double bearings on drive (tool) side

Values in table pertain to the drawings depicted below.
 The maximum shaft diameter or customer-specific designs can influence the values.

K 110 Single bearing

Drawing MS 630 C153

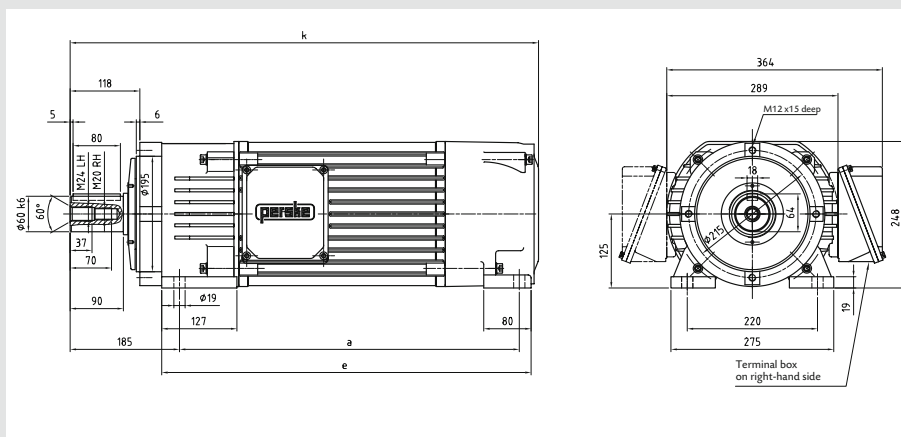


| Type | a | e | k |
|-------|-----|-----|-----|
| K 110 | 464 | 504 | 674 |
| K 111 | 534 | 574 | 743 |
| K 112 | 614 | 654 | 823 |
| K 113 | 734 | 774 | 943 |

Max. shaft diameter 70 mm

K 110 D Double bearing

Drawing MS 630 C154



| Type | a | e | k |
|---------|-----|-----|-----|
| K 110 D | 504 | 554 | 721 |
| K 111 D | 574 | 624 | 791 |
| K 112 D | 654 | 704 | 871 |
| K 113 D | 774 | 824 | 991 |

Max. shaft diameter 80 mm



Basic Model

Housing: Cast iron up to K 140, steel for K 141
Bearing shield: Cast iron or steel
Impregnation: Vacuum technology
Protection class: IP 54

Model K 140

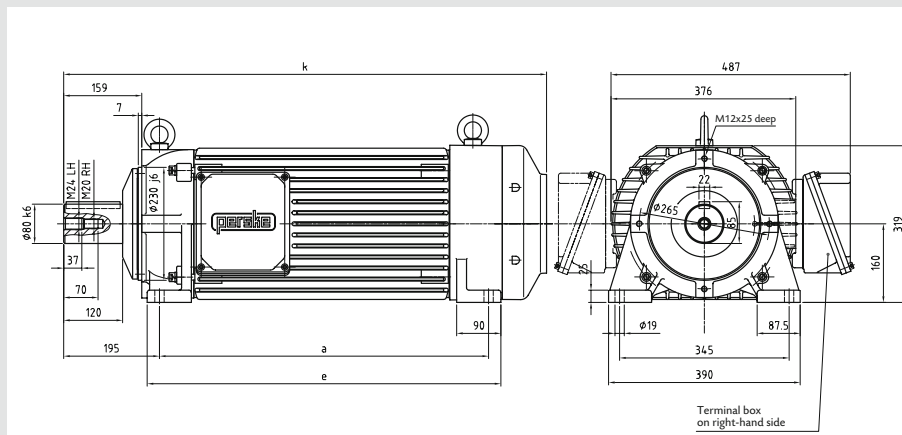
| Type | Weight [kg] | Rated output [kW] | |
|----------------|-------------|--------------------|---------------------|
| | | S 1 | |
| | | 75 Hz 4,500 rpm | 100 Hz 6,000 rpm |
| K 140.38-2 (D) | 360.0 | 65.0 | 80.0 |
| K 141.50-2 (D) | 450.0 | 80.0 | 100.0 |

(D) Motor available with single or double bearings on drive (tool) side

Values in table pertain to the drawings depicted below.
 The maximum shaft diameter or customer-specific designs can influence the values.

K 140 Single bearing

Drawing MS 630 D60

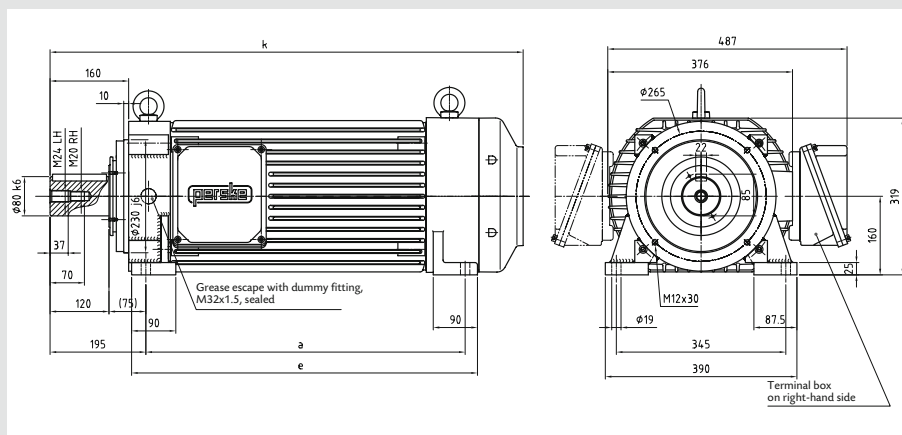


| Type | a | e | k |
|-------|-----|-----|------|
| K 140 | 670 | 720 | 983 |
| K 141 | 855 | 905 | 1168 |

Max. shaft diameter 80 mm

K 140 D Double bearing

Drawing MS 630 D61



| Type | a | e | k |
|---------|-----|-----|------|
| K 140 D | 650 | 704 | 963 |
| K 141 D | 835 | 889 | 1148 |

Max. shaft diameter 85 mm



Basic Model

| | |
|--------------------------|--------------------------|
| Housing: | Steel |
| Bearing shield: | Steel |
| Impregnation: | Vacuum technology |
| Protection class: | IP 54 |

Model K 160 K 200

| Type | Weight [kg] | Rated output [kW] |
|--------------|-------------|-------------------|
| | | S 1 |
| | | 75 Hz |
| | | 4,500 rpm |
| K 160.50-2 D | 625.0 | 100.0 |
| K 162.60-2 D | 750.0 | 125.0 |
| K 200.50-2 D | 840.0 | 150.0 |
| K 202.60-2 D | 900.0 | 175.0 |

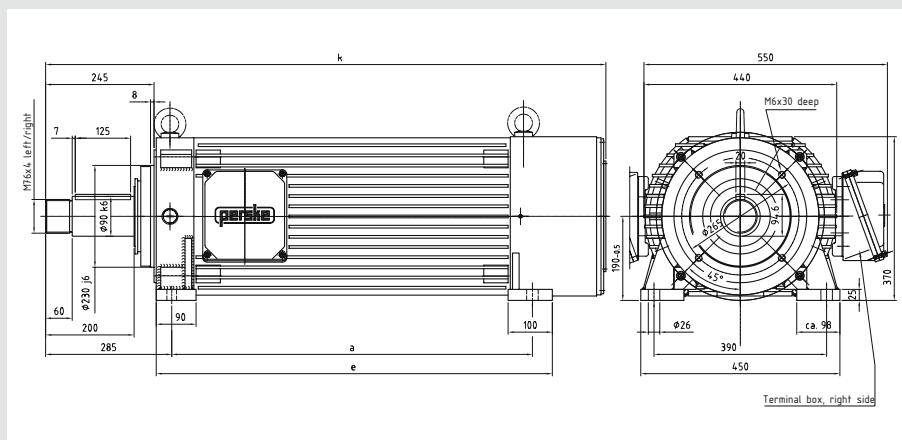
Only available with double bearing

Values in table pertain to the drawings depicted below.

The maximum shaft diameter or customer-specific designs can influence the values.

K 160 D Double bearing

Drawing MS 3503

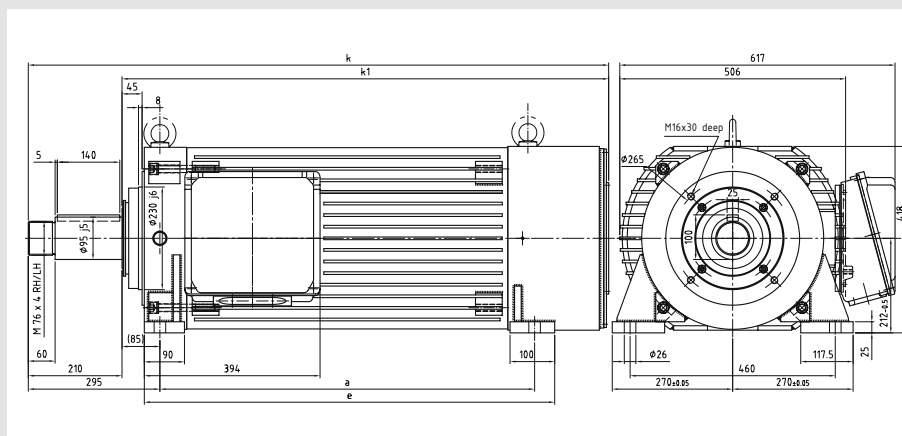


| Type | a | e | k |
|---------|-----|-----|------|
| K 160 D | 815 | 895 | 1266 |
| K 162 D | 895 | 975 | 1346 |

Max. shaft diameter 115 mm

K 200 D Double bearing

Drawing MS 4452



| Type | a | e | k | k1 |
|---------|-----|-----|------|------|
| K 200 D | 840 | 920 | 1301 | 1091 |
| K 202 D | 900 | 980 | 1361 | 1151 |

Max. shaft diameter 115 mm



Milling Motors

for cylindrical shaft tools with no-play double bearing

Protection class IP 54

General

Years of experience in the area of high-speed milling have resulted in the development of these compact milling motors. Robust milling spindles can accommodate collets up to 25 mm maximum. The stable bearing shields have an adjustment groove between the feet for proper mounting on the machine support. The dust extraction shroud can be easily attached thanks to holes and a centering diameter on the tool side.

Output

In the selection tables, the performance is indicated for continuous duty (operating mode S1). For intermittent operations (operating mode S6 – 60%) commonly seen in milling, one can assume an approx. 20% higher output. Please inquire to obtain a binding statement.

Bearings

By using lifetime-lubricated bearings, the motors are maintenance-free and thereby easy to operate. The shaft end is free of play both radially and axially thanks to a precision spindle bearing. This robust yet precise bearing makes the motor less sensitive to minor residual unbalancing of the tools used. If necessary, hybrid bearings are used, which are especially suited for high speeds.

Cooling

The motors are self-cooled with a built-in fan. It operates as a function of the motor's operating speed and makes it independent of other units. Noise generation is reduced to a large extent by the design of the air inlet and the fan. In special cases, separate ventilation is possible.

Toolholding

The motors are designed for commercially available collets (2 – 25 mm).

Safety notice: only one turning direction is permitted.

The motors with hydraulic chucks stand out thanks to the greatest run-out precision possible, secure tightening of the tool, and ease of operation. In addition, these spindles can be operated in left- or right-hand rotation.



Milling Motors

For cylindrical shaft tools and small axle center distances.
Standard right-hand thread, also available with left-hand thread.

Single bearing

| Type | Weight [kg] | Rated output [kW] | | | | | |
|---------------------------|-------------|---------------------|----------------------|----------------------|----------------------|----------------------|--|
| | | S 1 | | | | | |
| | | 150 Hz 9,000 rpm | 200 Hz 12,000 rpm | 300 Hz 18,000 rpm | 400 Hz 24,000 rpm | 500 Hz 30,000 rpm | Max. clamping capacity, in mm ² |
| KNS 21.05-2 | 1.8 | 0.15 | 0.2 | 0.32 | 0.4 | 0.4 | 13 ²⁾ |
| KNS 22.08-2 | 2.1 | 0.24 | 0.32 | 0.5 | 0.6 | 0.6 | 13 ²⁾ |
| KNS 23.10-2 | 2.9 | 0.3 | 0.4 | 0.6 | 0.7 | - | 13 ²⁾ |
| VS 30.06-2 | 2.7 | 0.3 | 0.42 | 0.6 | 0.65 | 0.65 | 13 ²⁾ |
| VS 31.09-2 | 3.4 | 0.45 | 0.65 | 0.9 | 1.0 | 1.0 | 13 ²⁾ |
| VS 50.09-2 | 8.5 | 1.5 | 1.85 | 2.5 | 3.0 | 3.0 | 16 |
| VS 60.11-2 | 16.0 | 3.0 | 4.0 | 5.0 | 5.0 | 5.0 | 16 |
| VS 61.15-2 | 19.0 | 4.0 | 5.0 | - | - | - | 16 |
| VUS 50.09-2 ³⁾ | 8.0 | 0.55 | 0.8 | 1.0 | 1.0 | | 16 |
| VUS 60.11-2 ³⁾ | 15.5 | 1.9 | 2.1 | 2.6 | 2.6 | | 16 |
| VUS 61.15-2 ³⁾ | 18.0 | 2.6 | 2.8 | - | - | | 16 |

Double bearing

| | | | | | | | |
|------------------------------|------|-----|------|------|-----|--|----|
| KRS 35.1-2 D | 4.5 | 0.5 | 0.7 | 0.9 | 1.0 | | 13 |
| KRS 35.3-2 D | 5.3 | 0.7 | 1.0 | 1.3 | 1.4 | | 13 |
| KRS 35.5-2 D | 6.3 | 1.0 | 1.4 | 1.9 | 2.0 | | 13 |
| KRS 35.7-2 D | 6.7 | 1.1 | 1.6 | 2.2 | - | | 13 |
| KRS 35.9-2 D | 7.7 | 1.4 | 2.0 | - | - | | 13 |
| KRS 50.11-2 D | 11.5 | 2.5 | 3.0 | 4.0 | | | 16 |
| KRS 51.14-2 D | 13.0 | 3.5 | 4.0 | 5.0 | | | 16 |
| KRS 52.16-2 D | 14.0 | 4.0 | 4.5 | - | | | 16 |
| KRSV 51.14-2 D | 13.5 | 3.5 | 4.0 | 5.0 | | | 25 |
| KRSV 51.14-2 D ¹⁾ | 14.5 | 3.5 | 4.0 | 5.0 | | | 25 |
| KRS 60.09-2 D | 16.0 | 3.0 | 3.5 | - | | | 20 |
| KRS 61.13-2 D | 20.0 | 5.0 | 6.0 | 7.0 | | | 20 |
| KRS 62.18-2 D | 22.0 | 6.0 | 7.0 | - | | | 20 |
| KRS 60.09-2 D | 16.5 | 3.0 | 3.5 | - | | | 25 |
| KRS 61.13-2 D | 20.5 | 5.0 | 6.0 | 7.0 | | | 25 |
| KRS 62.18-2 D | 23.0 | 6.0 | 7.0 | - | | | 25 |
| KRSV 61.13-2 D ¹⁾ | 24.0 | 5.0 | 6.0 | 7.0 | | | 25 |
| KNOCS 71.16-2 D | 35.0 | 7.0 | 8.0 | 10.0 | | | 20 |
| KNOS 71.16-2 D | 37.0 | 7.0 | 8.0 | 10.0 | | | 25 |
| KNOCS 71.20-2 D | 37.0 | 9.0 | 10.0 | 12.0 | | | 20 |
| KNOS 71.20-2 D | 39.0 | 9.0 | 10.0 | 12.0 | | | 25 |

¹⁾ clamping capacity dependent on collet system

¹⁾ with hydraulic chuck

²⁾ max. clamping capacity only up to 24,000 rpm

³⁾ non-ventilated, low noise



Milling Motors

For cylindrical shaft tools and small axle center distances.
Standard right-hand thread, also available with left-hand thread.

Model KN 20 V 30

Single bearing

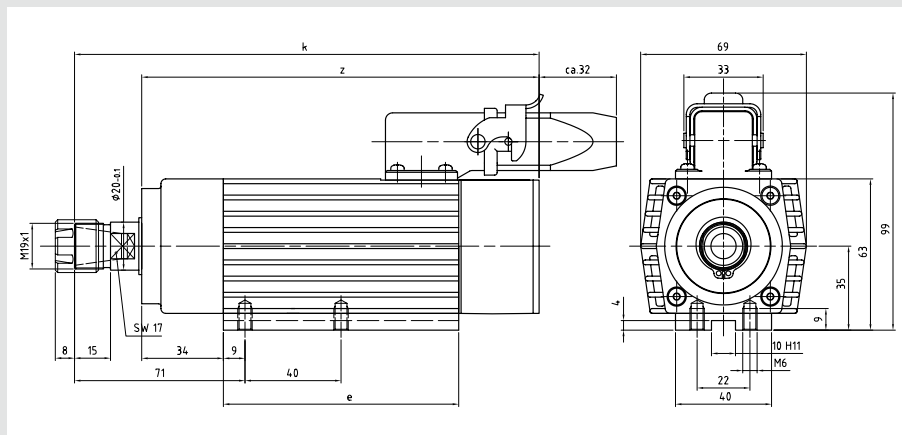
| Type | Weight [kg] | Rated output [kW] | | | | | |
|-------------|-------------|---------------------|----------------------|----------------------|----------------------|----------------------|---|
| | | S 1 | | | | | |
| | | 150 Hz 9,000 rpm | 200 Hz 12,000 rpm | 300 Hz 18,000 rpm | 400 Hz 24,000 rpm | 500 Hz 30,000 rpm | Max. clamping capacity, in mm ² |
| KNS 21.05-2 | 1.8 | 0.15 | 0.2 | 0.32 | 0.4 | 0.4 | 13 ²⁾ |
| KNS 22.08-2 | 2.1 | 0.24 | 0.32 | 0.5 | 0.6 | 0.6 | 13 ²⁾ |
| KNS 23.10-2 | 2.9 | 0.3 | 0.4 | 0.6 | 0.7 | - | 13 ²⁾ |
| VS 30.06-2 | 2.7 | 0.3 | 0.42 | 0.6 | 0.65 | 0.65 | 13 ²⁾ |
| VS 31.09-2 | 3.4 | 0.45 | 0.65 | 0.9 | 1.0 | 1.0 | 13 ²⁾ |

¹⁾ Clamping capacity dependent on collet system

²⁾ Max. clamping capacity only up to 24,000 rpm

KNS 20 Single bearing

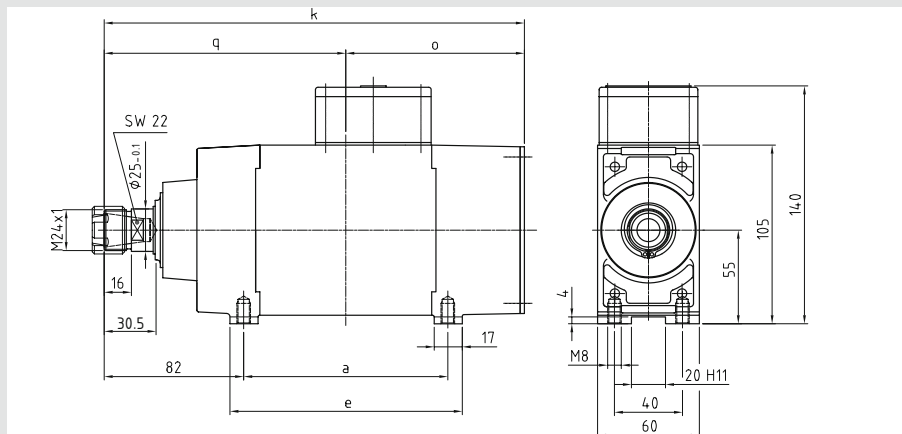
Drawing MS 151-64-7



| Type | e | k | z |
|-----------|-----|-----|-----|
| KNS 21.05 | 98 | 194 | 166 |
| KNS 22.08 | 133 | 229 | 201 |
| KNS 23.10 | 153 | 249 | 221 |

VS 30 Single bearing

Drawing MS 132-300



| Type | a | e | k | o | q |
|-------|-----|-----|-----|-----|-----|
| VS 30 | 90 | 108 | 217 | 90 | 127 |
| VS 31 | 120 | 138 | 247 | 105 | 142 |



Milling Motors

For cylindrical shaft tools and small axle center distances.
Standard right-hand thread, also available with left-hand thread.

Model V 50 V 60

Single bearing

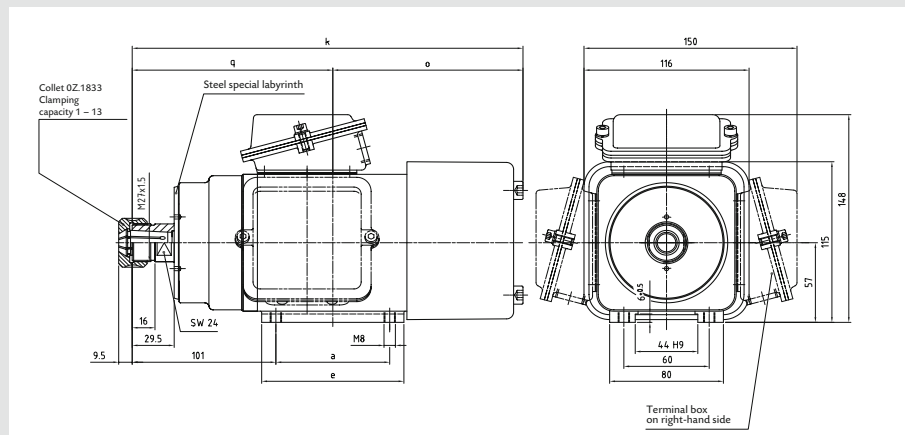
| Type | Weight [kg] | Rated output [kW] | | | | | |
|------------|-------------|---------------------|----------------------|----------------------|----------------------|----------------------|-----------------------------------|
| | | S 1 | | | | | |
| | | 150 Hz 9,000 rpm | 200 Hz 12,000 rpm | 300 Hz 18,000 rpm | 400 Hz 24,000 rpm | 500 Hz 30,000 rpm | Max. clamping capacity, in mm* |
| VS 50.09-2 | 8.5 | 1.5 | 1.85 | 2.5 | 3.0 | 3.0 | 16** |
| VS 60.11-2 | 16.0 | 3.0 | 4.0 | 5.0 | 5.0 | 5.0 | 16** |
| VS 61.15-2 | 19.0 | 4.0 | 5.0 | - | - | - | 16 |

*) Clamping capacity dependent on collet system

**) Max. clamping capacity up to 24,000 rpm

VS 50 Single bearing

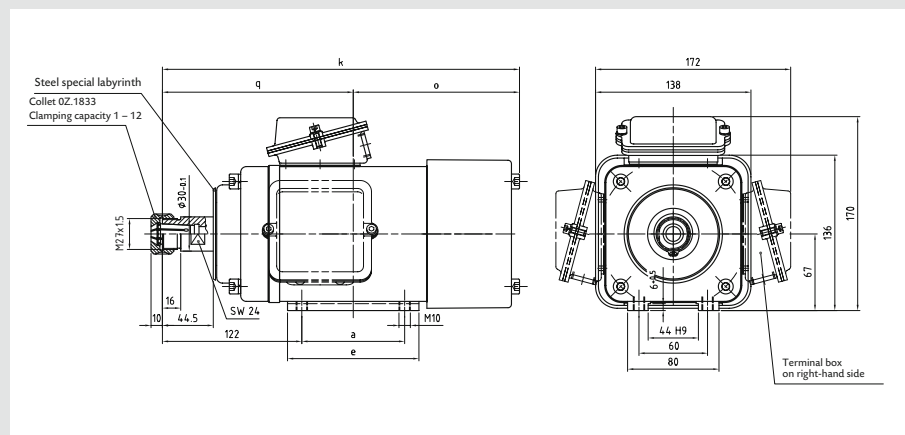
Drawing MS 3675-5



| Type | a | e | k | o | q |
|-------|----|-----|-----|-----|-----|
| VS 50 | 80 | 100 | 277 | 136 | 141 |

VS 60 Single bearing

Drawing MS 3110-7



| Type | a | e | k | o | q |
|-------|-----|-----|-----|-----|-----|
| VS 60 | 90 | 115 | 312 | 145 | 167 |
| VS 61 | 130 | 155 | 352 | 165 | 187 |



Milling Motors

For cylindrical shaft tools and small axle center distances.
Standard right-hand thread, also available with left-hand thread.

Model VU 50 VU 60

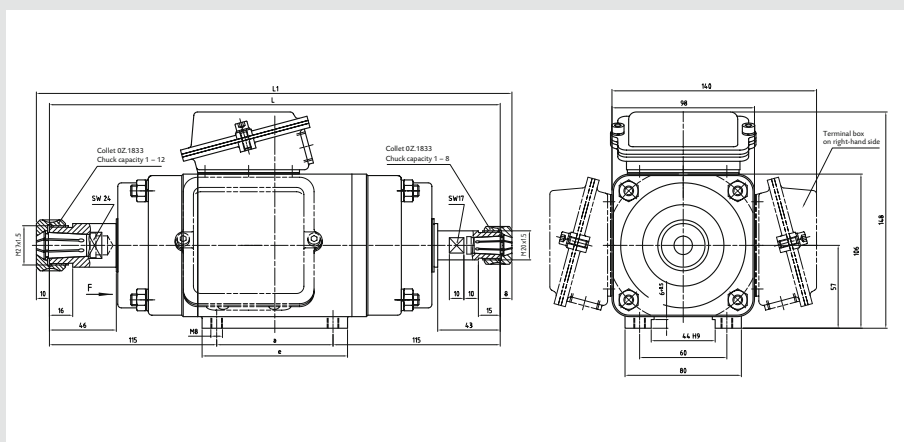
Single bearing

| Type | Weight [kg] | Rated output [kW] | | | | |
|-------------|-------------|---------------------|----------------------|----------------------|----------------------|--------------------------------|
| | | S 1 | | | | |
| | | 150 Hz 9,000 rpm | 200 Hz 12,000 rpm | 300 Hz 18,000 rpm | 400 Hz 24,000 rpm | Max. clamping capacity, in mm* |
| VUS 50.09-2 | 8.0 | 0.55 | 0.8 | 1.0 | 1.0 | 16 |
| VUS 60.11-2 | 15.5 | 1.9 | 2.1 | 2.6 | 2.6 | 16 |
| VUS 61.15-2 | 18.0 | 2.6 | 2.8 | - | - | 16 |

*) Clamping capacity dependent on collet system
Non-ventilated, low noise

VUS 50 Single bearing

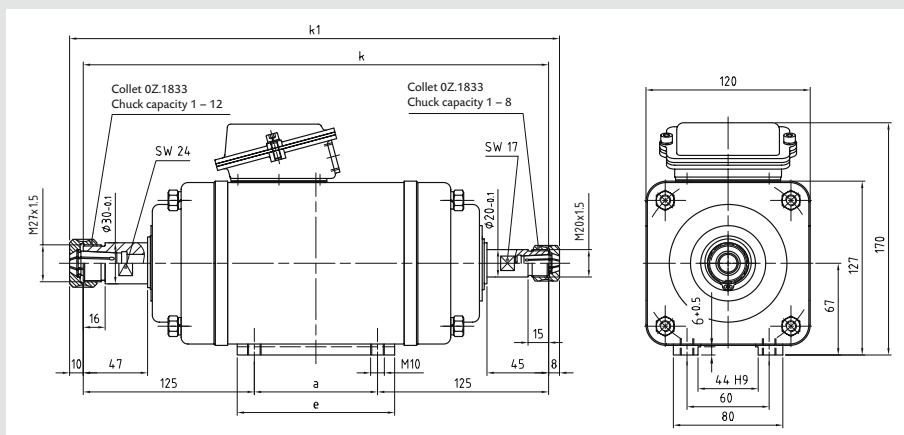
Drawing U 05/2436-1



| Type | a | e | L | L1 |
|--------|----|-----|-----|-----|
| VUS 50 | 80 | 100 | 310 | 328 |

VUS 60 Single bearing

Drawing U 06/2439-1



| Type | a | e | k | k1 |
|--------|-----|-----|-----|-----|
| VUS 60 | 90 | 115 | 340 | 358 |
| VUS 61 | 130 | 155 | 380 | 398 |



Milling Motors

For cylindrical shaft tools and small axle center distances.
Standard right-hand thread, also available with left-hand thread.

Model KRS 35

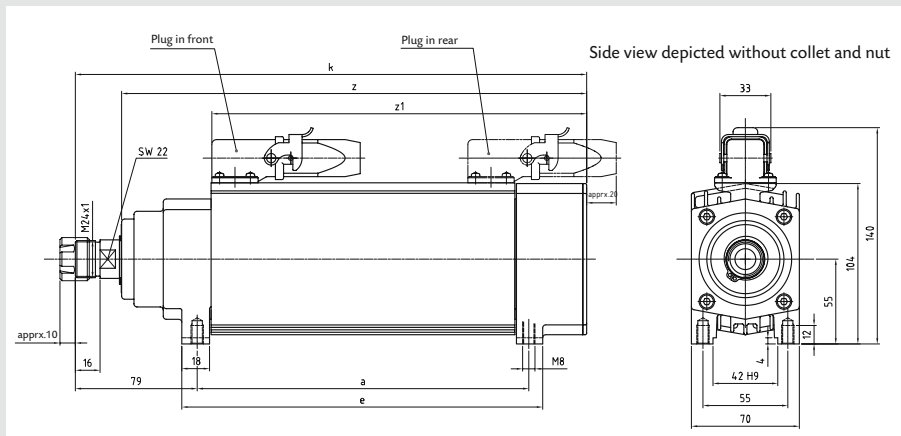
Double bearing

| Type | Weight [kg] | Rated output [kW] | | | | |
|--------------|-------------|---------------------|----------------------|----------------------|----------------------|--------------------------------|
| | | S 1 | | | | |
| | | 150 Hz 9,000 rpm | 200 Hz 12,000 rpm | 300 Hz 18,000 rpm | 400 Hz 24,000 rpm | Max. clamping capacity, in mm* |
| KRS 35.1-2 D | 4.5 | 0.5 | 0.7 | 0.9 | 1.0 | 13 |
| KRS 35.3-2 D | 5.3 | 0.7 | 1.0 | 1.3 | 1.4 | 13 |
| KRS 35.5-2 D | 6.3 | 1.0 | 1.4 | 1.9 | 2.0 | 13 |
| KRS 35.7-2 D | 6.7 | 1.1 | 1.6 | 2.2 | - | 13 |
| KRS 35.9-2 D | 7.7 | 1.4 | 2.0 | - | - | 13 |

*) Clamping capacity dependent on collet system

KRS 35 D Double bearing

Drawing MS 3870



| Type | a | e | k | z | z1 |
|------------|-----|-----|-----|-----|-----|
| KRS 35.1 D | 145 | 165 | 261 | 231 | 173 |
| KRS 35.3 D | 175 | 195 | 291 | 261 | 203 |
| KRS 35.5 D | 215 | 235 | 331 | 301 | 243 |
| KRS 35.7 D | 235 | 255 | 351 | 321 | 263 |
| KRS 35.9 D | 275 | 295 | 391 | 361 | 303 |



Milling Motors

For cylindrical shaft tools and small axle center distances.
Standard right-hand thread, also available with left-hand thread.

Model KR 50

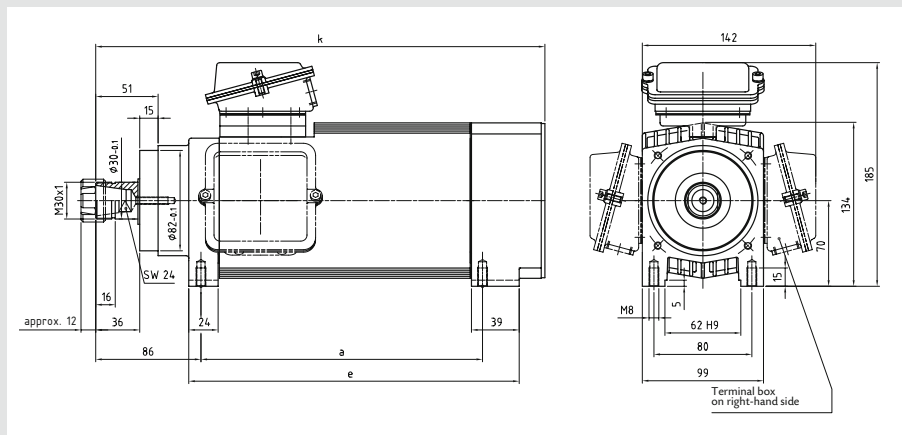
Double bearing

| Type | Weight [kg] | Rated output [kW] | | | |
|----------------|-------------|---------------------|----------------------|----------------------|--------------------------------|
| | | S 1 | | | |
| | | 150 Hz 9,000 rpm | 200 Hz 12,000 rpm | 300 Hz 18,000 rpm | Max. clamping capacity, in mm* |
| KRS 50.11-2 D | 11.5 | 2.5 | 3.0 | 4.0 | 16 |
| KRS 51.14-2 D | 13.0 | 3.5 | 4.0 | 5.0 | 16 |
| KRS 52.16-2 D | 14.0 | 4.0 | 4.5 | - | 16 |
| KRSV 51.14-2 D | 13.5 | 3.5 | 4.0 | 5.0 | 25 |

* Clamping capacity dependent on collet system

KRS 50 D Double bearing

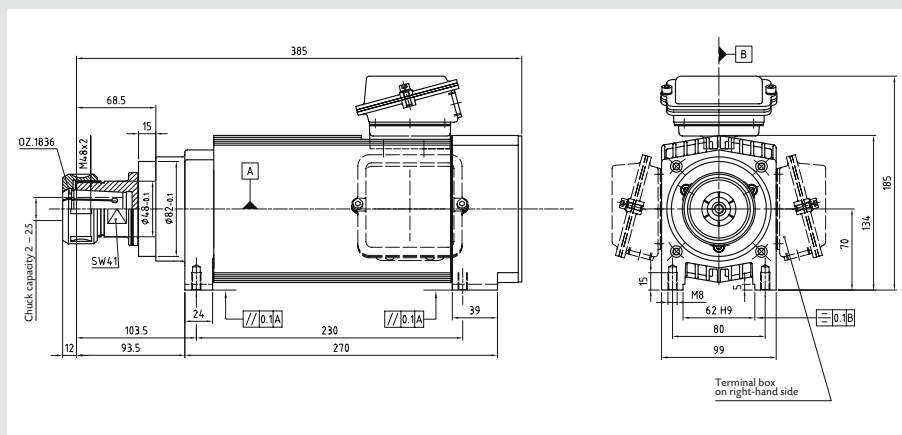
Drawing MS 161-11



| Type | a | e | k |
|----------|-----|-----|-----|
| KRS 50 D | 200 | 240 | 337 |
| KRS 51 D | 230 | 270 | 367 |
| KRS 52 D | 250 | 290 | 387 |

KRSV 51.14-2 D Double bearing

Drawing MS 164





Milling Motors

For cylindrical shaft tools and small axle center distances.

With hydraulic chucks, simple operation, and suitable for left-/right-hand rotation

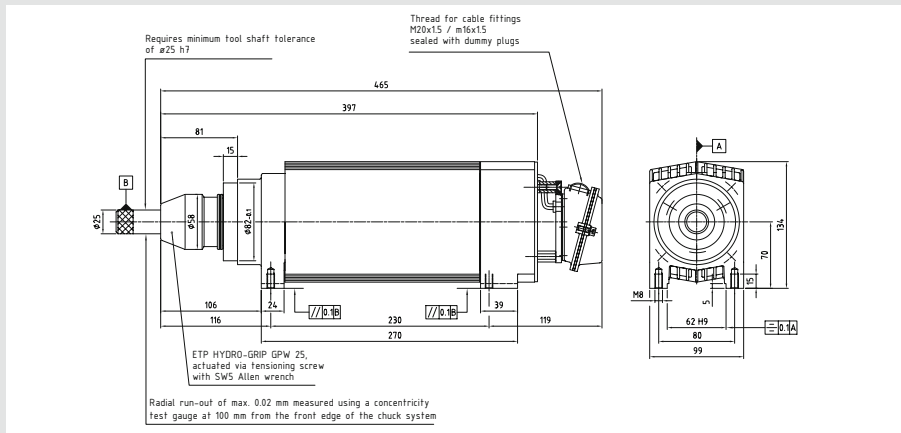
Model KR 50 KR 60

Double bearing

| Type | Weight [kg] | Rated output [kW] | | | |
|----------------|-------------|---------------------|----------------------|----------------------|--------------------------------|
| | | S 1 | | | |
| | | 150 Hz 9,000 rpm | 200 Hz 12,000 rpm | 300 Hz 18,000 rpm | Max. clamping capacity, in mm* |
| KRSV 51.14-2 D | 14.5 | 3.5 | 4.0 | 5.0 | 25 |
| KRSV 61.13-2 D | 24.0 | 5.0 | 6.0 | 7.0 | 25 |

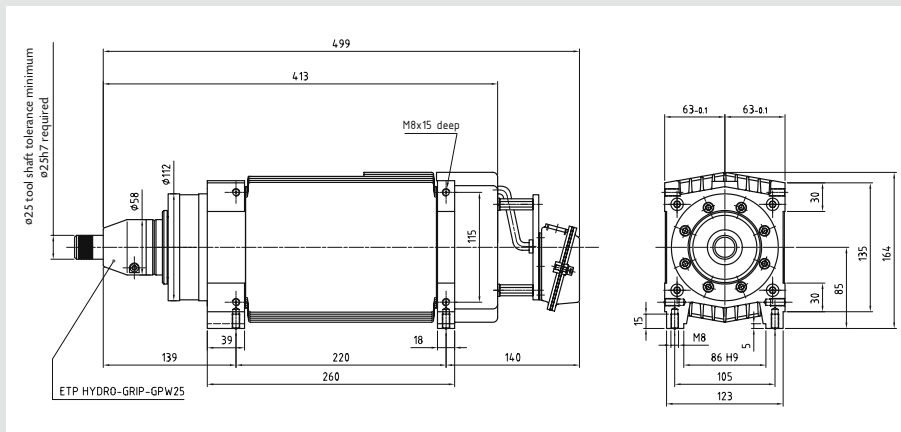
KRSV 51.14-2 D Double bearing

Drawing MS 164-7



KRSV 61.13-2 D Double bearing

Drawing MS 3757





Milling Motors

For cylindrical shaft tools and small axle center distances.
Standard right-hand thread, also available with left-hand thread.

Model KR 60

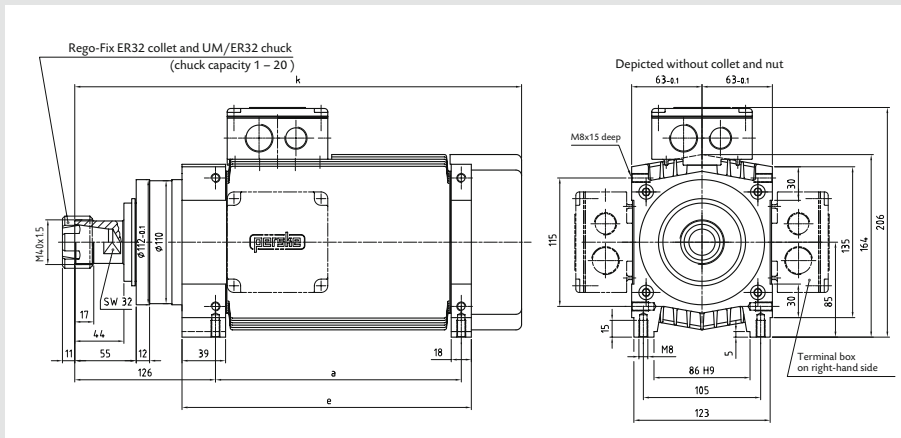
Double bearing

| Type | Weight [kg] | Rated output [kW] | | | |
|---------------|-------------|---------------------|----------------------|----------------------|--------------------------------|
| | | S 1 | | | |
| | | 150 Hz 9,000 rpm | 200 Hz 12,000 rpm | 300 Hz 18,000 rpm | Max. clamping capacity, in mm* |
| KRS 60.09-2 D | 16.0 | 3.0 | 3.5 | - | 20 |
| KRS 61.13-2 D | 20.0 | 5.0 | 6.0 | 7.0 | 20 |
| KRS 62.18-2 D | 22.0 | 6.0 | 7.0 | - | 20 |
| KRS 60.09-2 D | 16.5 | 3.0 | 3.5 | - | 25 |
| KRS 61.13-2 D | 20.5 | 5.0 | 6.0 | 7.0 | 25 |
| KRS 62.18-2 D | 23.0 | 6.0 | 7.0 | - | 25 |

* Clamping capacity dependent on collet system

KRS 60 D Double bearing

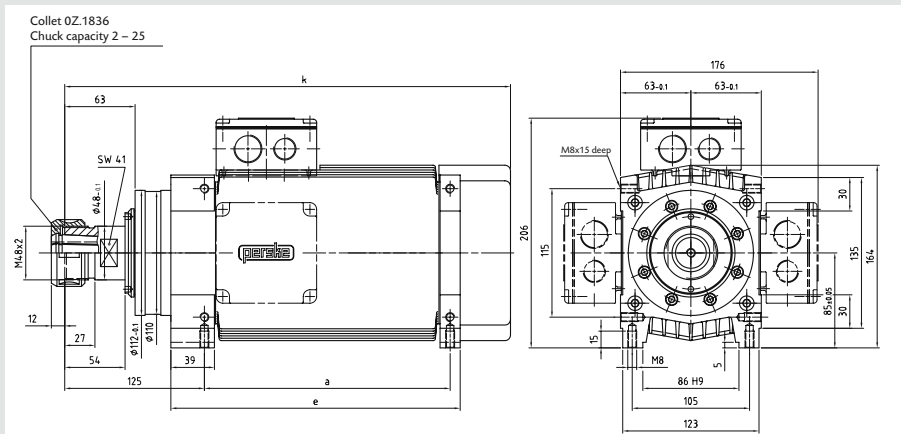
Drawing MS 3903



| Type | a | e | k |
|----------|-----|-----|-----|
| KRS 60 D | 190 | 230 | 370 |
| KRS 61 D | 220 | 260 | 400 |
| KRS 62 D | 270 | 310 | 450 |

KRS 60 D Double bearing

Drawing MS 4445



| Type | a | e | k |
|----------|-----|-----|-----|
| KRS 60 D | 190 | 230 | 369 |
| KRS 61 D | 220 | 260 | 399 |
| KRS 62 D | 270 | 310 | 449 |



Milling Motors

For cylindrical shaft tools.

Standard right-hand thread, also available with left-hand thread.

Model KNO 70

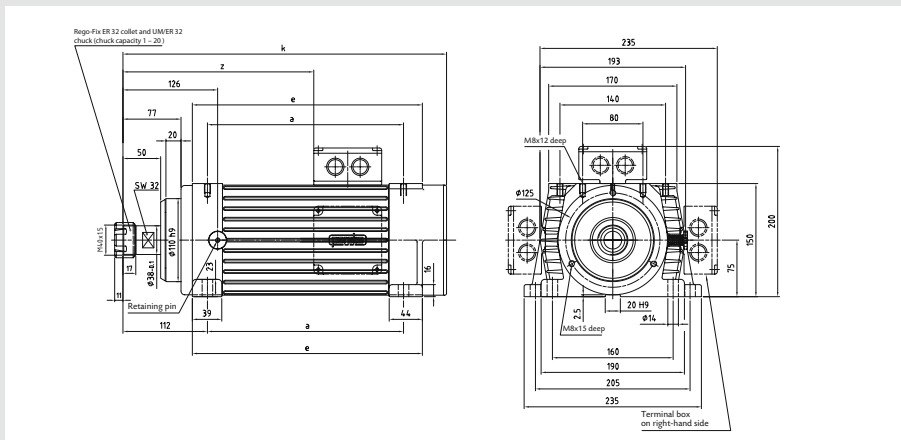
Double bearing

| Type | Weight [kg] | Rated output [kW] | | | |
|-----------------|-------------|---------------------|----------------------|----------------------|--------------------------------|
| | | S 1 | | | |
| | | 150 Hz 9,000 rpm | 200 Hz 12,000 rpm | 300 Hz 18,000 rpm | Max. clamping capacity, in mm* |
| KNOCS 71.16-2 D | 35.0 | 7.0 | 8.0 | 10.0 | 20 |
| KNOS 71.16-2 D | 37.0 | 7.0 | 8.0 | 10.0 | 25 |
| KNOCS 71.20-2 D | 37.0 | 9.0 | 10.0 | 12.0 | 20 |
| KNOS 71.20-2 D | 39.0 | 9.0 | 10.0 | 12.0 | 25 |

*) Clamping capacity dependent on collet system

KNOCS 70 D Double bearing

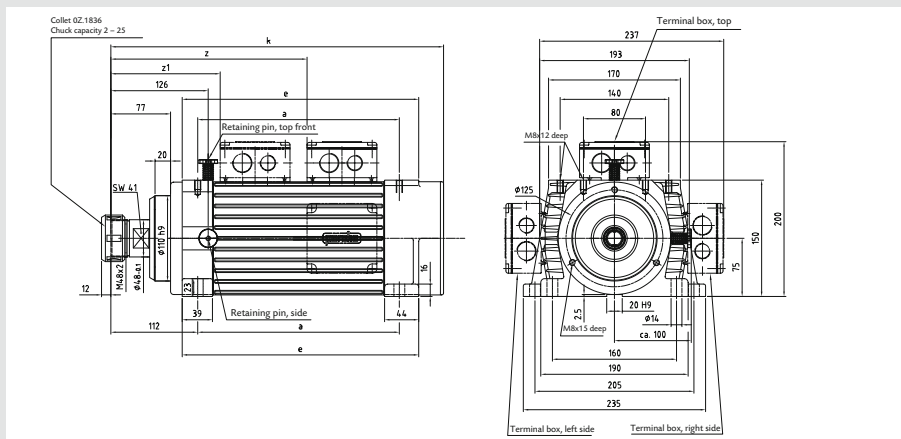
Drawing MS 181 A8



| Type | a | e | k | z |
|------------|-----|-----|-----|-----|
| KNOCS 71 D | 340 | 385 | 509 | 333 |

KNOS 70 D Double bearing

Drawing MS 181 A2



| Type | a | e | k | z | z1 |
|-----------|-----|-----|-----|-----|-----|
| KNOS 71 D | 340 | 385 | 509 | 333 | 221 |



High-Precision Motors for hydraulic chucks

A3

| Type | Weight [kg] | Rated output [kW] | | |
|---------------|----------------|---------------------|---------------------|----------------------|
| | | S 1 | | |
| | | 100 Hz 6,000 rpm | 150 Hz 9,000 rpm | 200 Hz 12,000 rpm |
| KNS 51.14-2 D | 13.5 | 2.4 | 3.5 | 4.0 |
| KNS 61.13-2 D | 20.0 | 4.0 | 5.0 | 6.0 |
| KCS 71.16-2 D | 35.0 | 6.6 | 7.0 | - |
| KCS 71.20-2 D | 40.0 | 8.0 | 9.0 | - |
| KS 81.23-2 D | 71.0 | 16.0 | 18.0 | - |
| KS 82.27-2 D | 82.0 | 18.0 | 22.0 | - |

High-Precision Motors

Perske high-precision motors are developed especially for **hydraulic chucks**. By using a reinforced bearing with high-precision ball bearings and a stiffer spindle, outstanding axial and radial run-out can be achieved in micron-level quality.

In combination with our precision balancing, we offer smooth-running, maximum-precision drives that are especially well-suited for use with PKD tools and can substantially increase their service lives. The result is improved cost-effectiveness and availability.

Perske high-precision motors are characterized by

- **Stiff motor spindles and precision bearings with double spindle bearings**
- **Ground and hardened shafts**
- **Radial and axial run-out precision ≤ 8 microns**
- **Uniform interface for milling and cutting tools**
- **Significantly longer tool service life**
- **No-play tool clamping**



High-Precision Motors

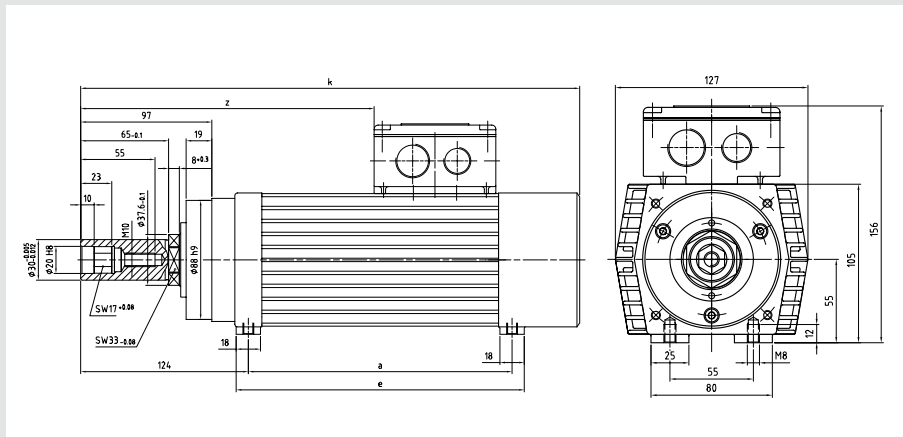
for hydraulic tool holders

Model KNS 50 KNS 60

| Type | Weight [kg] | Rated output [kW] | | |
|---------------|-------------|---------------------|---------------------|----------------------|
| | | S 1 | | |
| | | 100 Hz 6,000 rpm | 150 Hz 9,000 rpm | 200 Hz 12,000 rpm |
| KNS 51.14-2 D | 13.5 | 2.4 | 3.5 | 4.0 |
| KNS 61.13-2 D | 20.0 | 4.0 | 5.0 | 6.0 |

KNS 50 D Double bearing

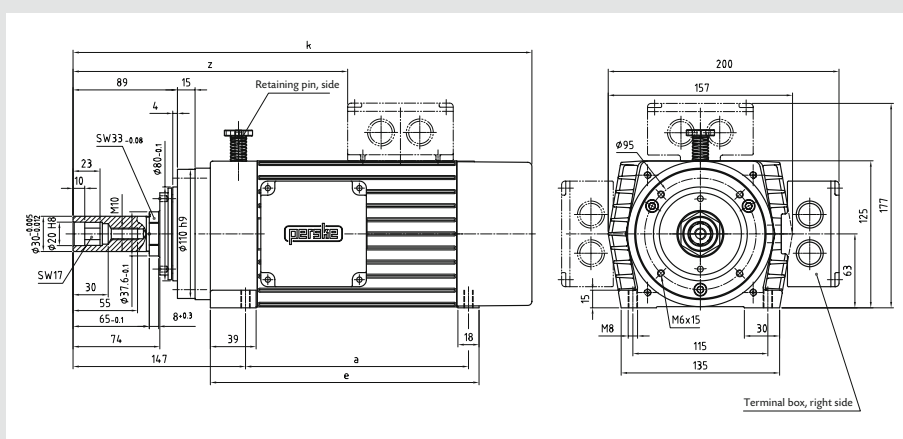
Drawing MS 3833-1



| Type | a | e | k | z |
|----------|-----|-----|-----|-----|
| KNS 51 D | 225 | 243 | 400 | 247 |

KNS 60 D Double bearing

Drawing MS 3946



| Type | a | e | k | z |
|----------|-----|-----|-----|-----|
| KNS 61 D | 220 | 260 | 421 | 264 |



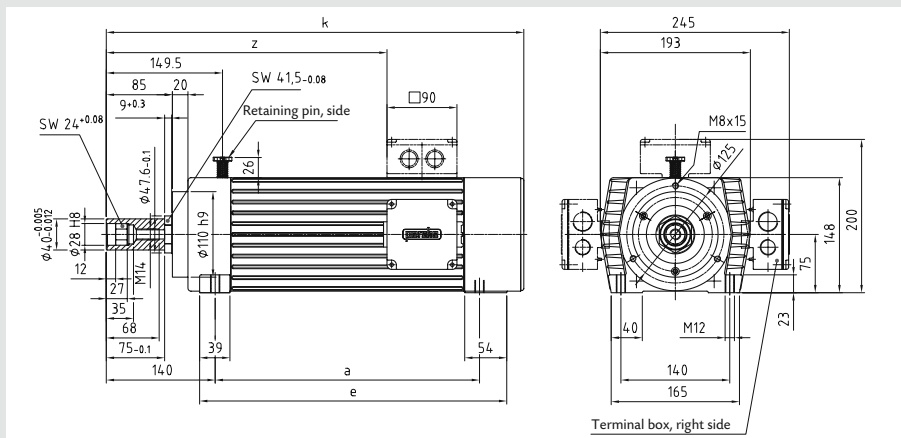
High-Precision Motors for hydraulic tool holders

Model KCS 70 KS 80

| Type | Weight [kg] | Rated output [kW] | |
|---------------|-------------|---------------------|---------------------|
| | | S 1 | |
| | | 100 Hz 6,000 rpm | 150 Hz 9,000 rpm |
| KCS 71.16-2 D | 35.0 | 6.6 | 7.0 |
| KCS 71.20-2 D | 40.0 | 8.0 | 9.0 |
| KS 81.23-2 D | 71.0 | 16.0 | 18.0 |
| KS 82.27-2 D | 82.0 | 18.0 | 22.0 |

KCS 70 D Double bearing

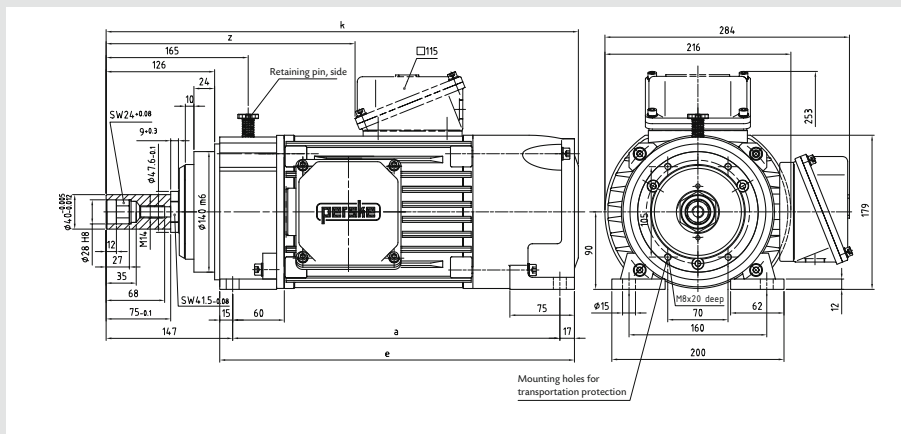
Drawing MS 182A-191



| Type | a | e | k | z |
|----------|-----|-----|-----|-----|
| KCS 71 D | 340 | 395 | 537 | 361 |

KS 80 D Double bearing

Drawing MS 630 A422-1



| Type | a | e | k | z |
|---------|-----|-----|-----|-----|
| KS 81 D | 460 | 492 | 630 | 370 |
| KS 82 D | 510 | 542 | 680 | 420 |



Motor spindles

Standardized tool holding systems for:

Manual quick tool changes according to DIN 69893-1 HSK-C

Automatic tool changes according to DIN 69893-6 HSK-F63

Special flat motors: proven milling and cutting drives further enhanced

- **High-performance asynchronous motor with high overload capacity**
- **Performance measured for S1 – continuous duty**
- **Robust mechanical design, thereby making it suitable for heavy tools**
- **Maintenance-free, no-play, lifetime-lubricated bearing**
- **Protection class IP 54, surface-cooled**
- **Self-cooling through integrated fan**
- **High-quality vacuum impregnation of the winding**
- **Centering diameter for protective shroud**

Advantages

- Standardized tool holding
- Existing shaft tools can be used by means of adapters
- High degree of radial and axial stiffness
- Optimal radial and axial run-out precision
- Precisely defined and reproducible cutting edge position
- Short mounting/removal path for tool changes
- Easy to use



HSK Motors

for manual tool changes according to DIN 69893-1 HSK-C
for automated tool changes according to DIN 69893-6 HSK-F63

HSK-C

| Type | Weight [kg] | Tool Interface | Rated output [kW] | | | |
|---------------|-------------|----------------|---------------------|---------------------|----------------------|----------------------|
| | | | S 1 | | | |
| | | | 100 Hz 6,000 rpm | 150 Hz 9,000 rpm | 200 Hz 12,000 rpm | 300 Hz 18,000 rpm |
| KNS 51.14-2 D | 13.5 | HSK-C40 | 2.4 | 3.5 | 4.0 | 5.0 |
| KNS 61.13-2 D | 19.5 | HSK-C50 | 4.0 | 5.0 | 6.0 | 7.0 |
| KCS 71.20-2 D | 40.0 | HSK-C63 | 8.0 | 9.0 | - | - |
| KS 81.23-2 D | 71.0 | HSK-C63 | 16.0 | 18.0 | - | - |
| | | | 33 Hz 1,000 rpm | | 100 Hz 3,000 rpm | |
| KS 111.32-4 D | 185.0 | HSK-C100 | 13.0 | | 30.0 | |

HSK-F63

| | | | 100 Hz 6,000 rpm | 150 Hz 9,000 rpm | 200 Hz 12,000 rpm |
|----------------|------|---------|---------------------|---------------------|----------------------|
| KNWS 61.13-2 D | 28.0 | HSK-F63 | 4.0 | 5.0 | 6.0 |
| KCWS 71.16-2 D | 50.0 | HSK-F63 | 6.6 | 7.0 | 8.0 |
| | | | 200 Hz 6,000 rpm | 300 Hz 9,000 rpm | 400 Hz 12,000 rpm |
| KRWS 80.14-4 D | 70.0 | HSK-F63 | 10.0 | 12.0 | 14.0 |

Manual

HSK-C interface

- Simple tool change with Allen wrench
- Insertion force between 2-4 times standardized requirements
- Insertion force increases with rpm
- Short mounting/removal path for tool changes

Automatic

HSK-F63 interface

- Pneumatic release device for 6 bar
- Insertion force >150% of standardized requirement
- Hollow shaft for cleaning air
- Clamping system easy to maintain
- Tool clamping with spring assembly
- Three-position sensor technology to monitor clamping system

For additional details, please contact our technical sales department



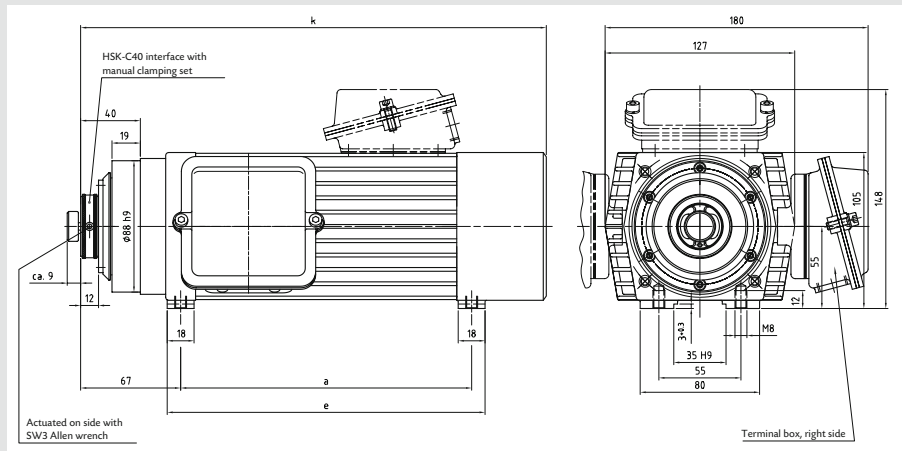
HSK Motors

for manual tool changes according to DIN 69893-1 HSK – C

| Type | Weight [kg] | Tool Interface | Rated output [kW] | | | |
|---------------|-------------|----------------|---------------------|---------------------|----------------------|----------------------|
| | | | S1 | | | |
| | | | 100 Hz 6,000 rpm | 150 Hz 9,000 rpm | 200 Hz 12,000 rpm | 300 Hz 18,000 rpm |
| KNS 51.14-2 D | 13.5 | HSK-C40 | 2.4 | 3.5 | 4.0 | 5.0 |
| KNS 61.13-2 D | 19.5 | HSK-C50 | 4.0 | 5.0 | 6.0 | 7.0 |
| KCS 71.20-2 D | 40.0 | HSK-C63 | 8.0 | 9.0 | - | - |
| KS 81.23-2 D | 71.0 | HSK-C63 | 16.0 | 18.0 | - | - |
| | | | 33 Hz 1,000 rpm | | 100 Hz 3,000 rpm | |
| KS 111.32-4 D | 185.0 | HSK-C100 | 13.0 | | 30.0 | |

KNS 51 D Double bearing

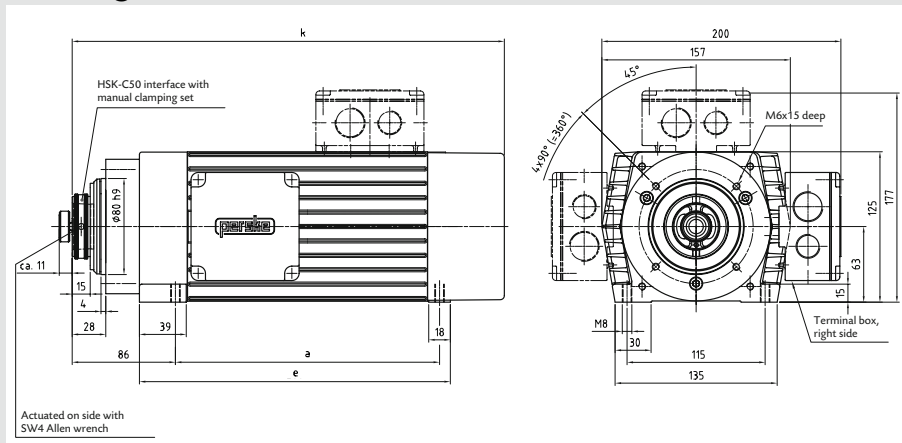
Drawing MS 4232, shaft end: HSK-C40



| Type | a | e | k |
|----------|-----|-----|-----|
| KNS 51 D | 225 | 243 | 342 |

KNS 61 D Double bearing

Drawing MS 4266, shaft end: HSK-C50



| Type | a | e | k |
|----------|-----|-----|-----|
| KNS 61 D | 220 | 260 | 360 |



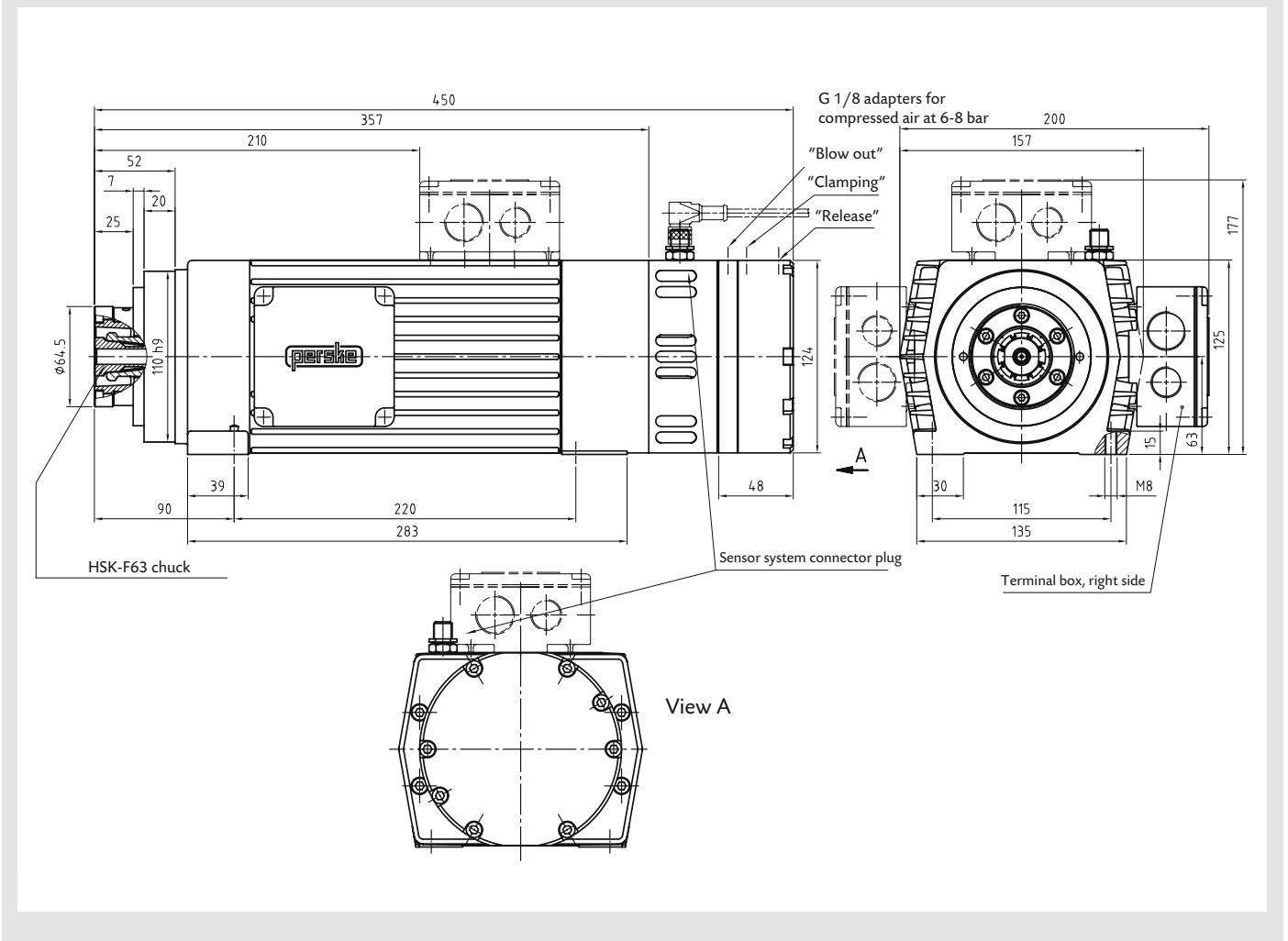
HSK Motors

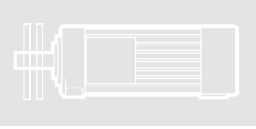
for automatic tool changes according to DIN 69893-6 HSK-F63

| Type | Weight [kg] | Tool Interface | Rated output [kW] | | |
|-----------------|-------------|----------------|---------------------|---------------------|----------------------|
| | | | S1 | | |
| | | | 100 Hz 6,000 rpm | 150 Hz 9,000 rpm | 200 Hz 12,000 rpm |
| KNWS 61.13-2 D | 28.0 | HSK-F63 | 4.0 | 5.0 | 6.0 |
| KCWS 71.16- 2 D | 50.0 | HSK-F63 | 6.6 | 7.0 | 8.0 |
| | | | 200 Hz 6,000 rpm | 300 Hz 9,000 rpm | 400 Hz 12,000 rpm |
| KRWS 80.14-4 D | 70.0 | HSK-F63 | 10.0 | 12.0 | 14.0 |

KNWS 61.13-2 D Double bearing

Drawing MS 4464



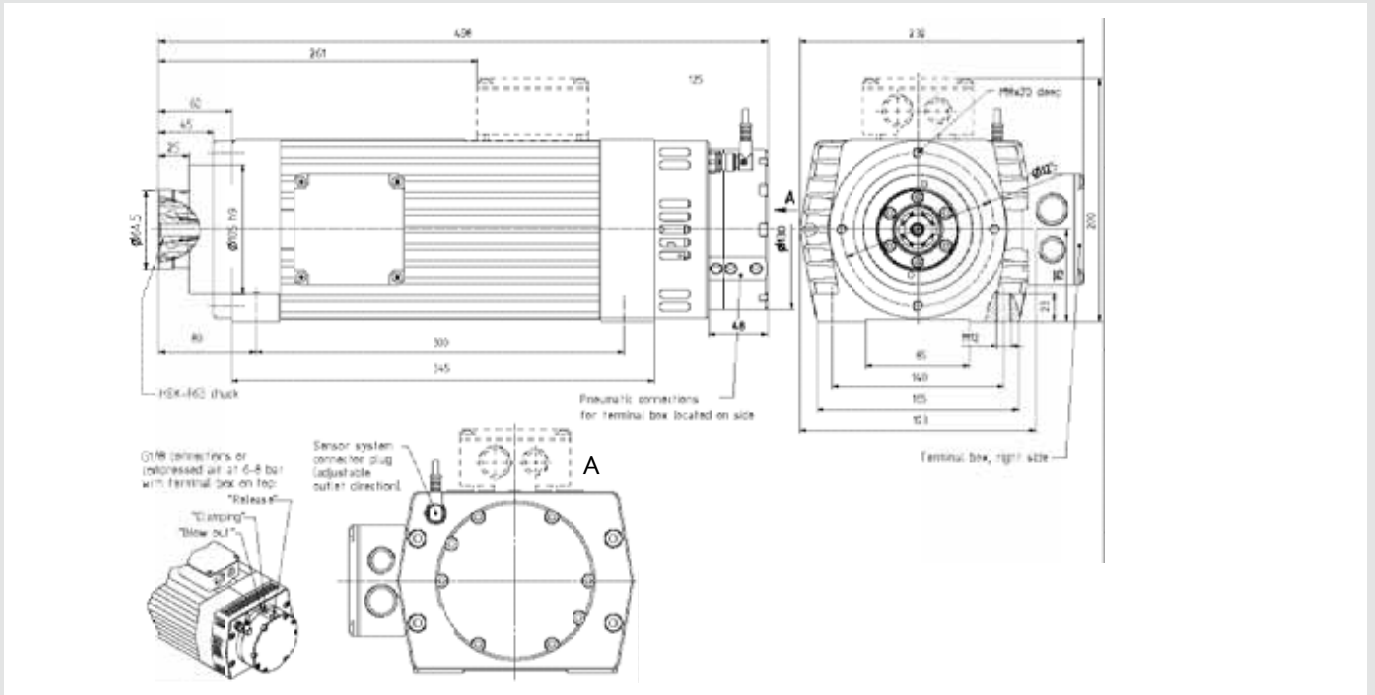


HSK Motors

for automatic tool changes according to DIN 69893-6 HSK-F63

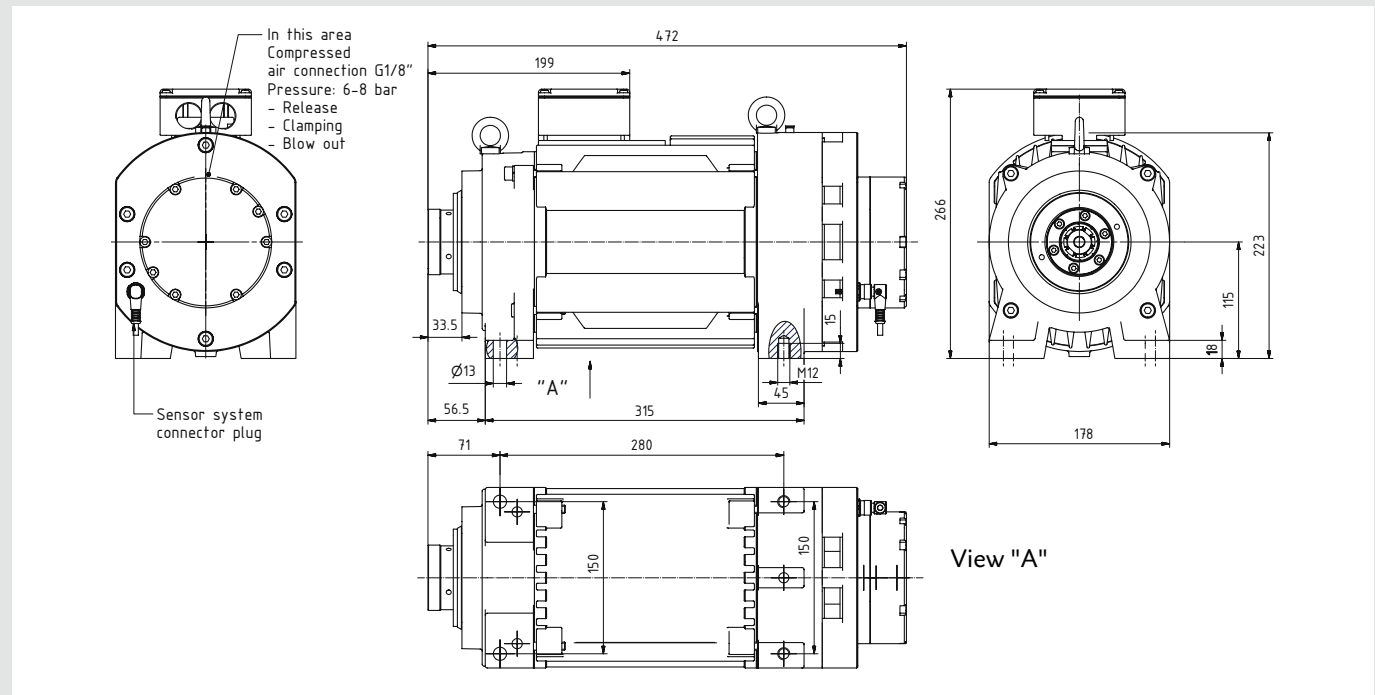
KCWS 71.16-2 D Double bearing

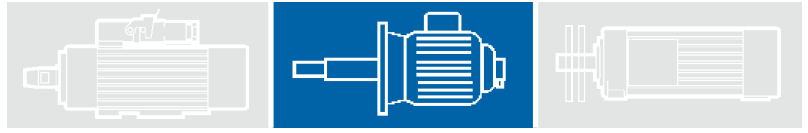
Drawing MS 182-493-1



KRWS 80.14-4 D Double bearing

Drawing MS 4475





Special drives / High-speed direct drives

For many years, Perske has specialized in developing and designing special electric motors. As a result, we have been able to gather valuable experience in many application areas that are very beneficial in regard to innovations.

Our partners are machine manufacturers domestically and abroad with whom we collaborate closely to develop demand-oriented, specially adapted drive solutions. The result is a diverse range of variants. They include mechanical features such as

- **shafts, bearing shields, and mounting flanges**

as well as electrical configurations pertaining to

- **voltage, frequencies, speed response characteristics, etc.**

The full range of possibilities cannot be depicted in this brochure.

To offer you an optimized, technical and cost-effective drive solution for you and your requirements, we ask that you please call us with your questions.

We offer from our range:

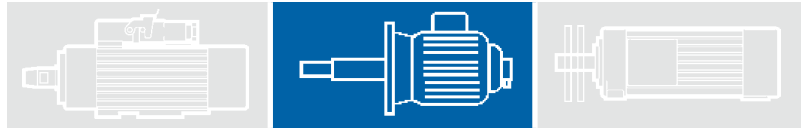
At 3,000 rpm up to 170 kW

At 18,000 rpm up to 55 kW

At 30,000 rpm up to 5 kW

We know that we can assist you with our expertise.

For the sake of offering some preliminary information, we would like to provide you with a few examples of drive solutions.



Synchronous Motors (permanent magnet excited)

In comparison to asynchronous motors, they offer a substantially higher power density. They are thus lighter and smaller than an asynchronous motor with comparable performance. As a result, this drive is especially well suited for highly dynamic or space-limited applications.

The high power density is achieved by high-quality, low-loss electroplates in the stators and rotors with rare earth magnets.

Perske offers a series of synchronous, no-feedback motors, which are also suitable as direct tool supports. By combining synchronous technology with our expertise in precision bearings, we can find special solutions for your needs.

Advantages/Properties

- **Small, lightweight construction thanks to a very high power density**
Weight reduction by over 40%
Performance increase by over 100%
- **Energy-saving due to high efficiency**
Efficiency increase by up to 20%
- **High overload capacity up to > 3 x rated torque**
- **Constant speed up to approx. three times the rated output**
- **Robust, lifetime-lubricated, maintenance-free bearing**
- **Easy to install since there is no speed feedback**

Synchronous motors are powered by electronic frequency converters. The motor and converter must be carefully matched to each other to operate optimally.

Overload behavior and speed constancy are primarily dependent on the converter. We are able to provide assistance in tuning them at any time.



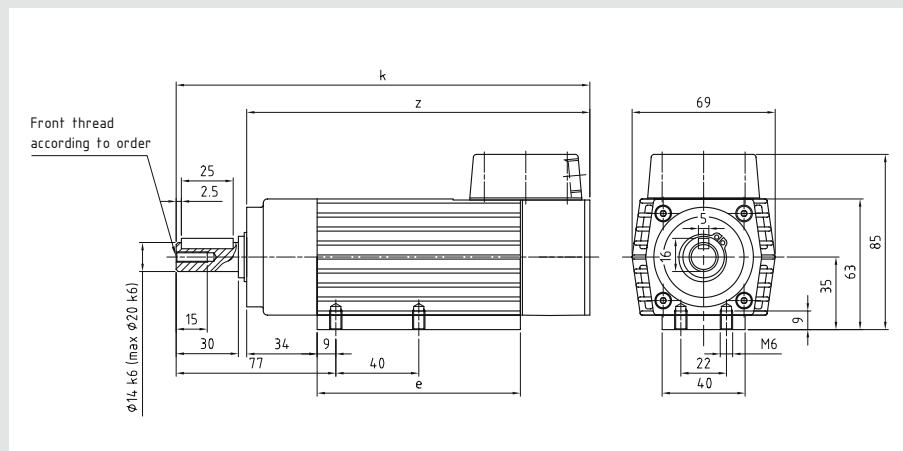
Synchronous Motors

| Type | Weight [kg] | Rated output [kW] | |
|-------------|-------------|----------------------|----------------------|
| | | S 1 | |
| | | 400 Hz 12,000 rpm | 600 Hz 18,000 rpm |
| KN 21.04-4S | 1.8 | 0.5 | 0.65 |
| KN 22.08-4S | 2.5 | 1.0 | 1.3 |
| KN 24.12-4S | 3.2 | 1.5 | 2.0 |
| KR 35.1-4S | 3.8 | 1.5 | 2.0 |
| KR 35.5-4S | 4.7 | 2.0 | 3.0 |
| KR 35.7-4S | 5.5 | 3.0 | 4.0 |

We can provide you with additional performance specifications and speeds upon request.
Available as direct drive or with direct tool holding system.

KN 20 S

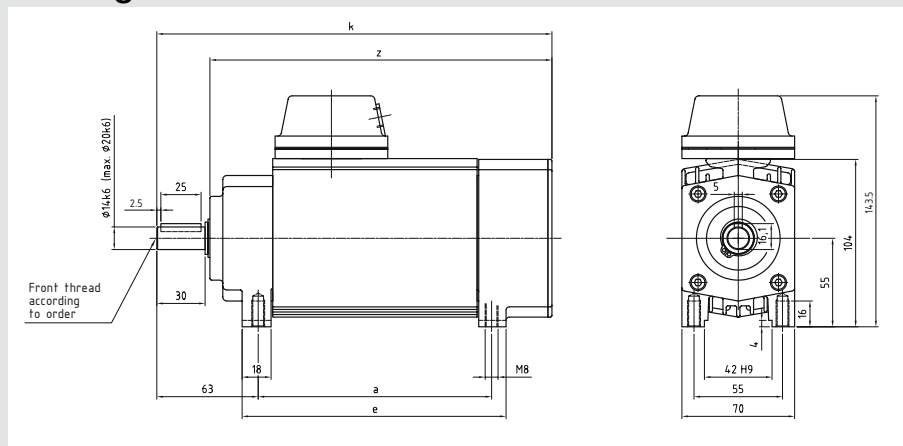
Drawing MS 151-188



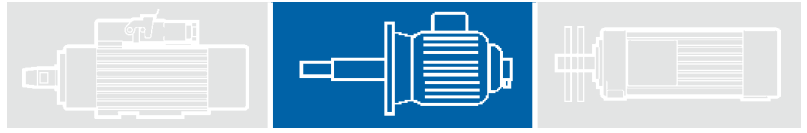
| Type | e | k | z |
|------------|-----|-----|-----|
| KN 21.04 S | 93 | 200 | 166 |
| KN 22.08 S | 133 | 235 | 201 |
| KN 24.12 S | 173 | 275 | 241 |

KR 35 S

Drawing MS 4490



| Type | a | e | k | z |
|-----------|-----|-----|-----|-----|
| KR 35.1 S | 145 | 165 | 245 | 212 |
| KR 35.5 S | 215 | 235 | 315 | 282 |
| KR 35.7 S | 235 | 255 | 335 | 302 |



Direct Drives for foot- or flange-mounting

The treatment of various materials in the **processing industry/process engineering** realm requires drives that precisely meet the requirements. Speed-regulated drives, designed especially for converter operations, offer the right solution for these applications.

The converter helps to precisely adjust to the speed. The asynchronous motor combined with the converter also results in an extremely useful "side effect," namely substantial energy savings, i.e., providing the most cost-effective solution.

PERSKE motors are designed together with the user according to the need profile, while also taking into account electrical data and ambient conditions.

More than 60 years of experience building machining motors made for high speeds and adverse operating conditions flow into each unit, and ensure a high degree of reliability and availability.

One should also note that the converters and motors must be tuned to each other.

From its comprehensive portfolio, Perske can offer you a wide selection of suitable direct drives and provide support in configuring them.

We would be pleased to show you examples of implemented and tested drive solutions.

How you benefit

- **Direct drive with low maintenance since there is no mechanical transmission**
- **Motors designed especially for converter operations**
- **Customer-specific performance/speed adjustment capability**
- **High degree of energy efficiency with low-loss materials**
- **A variety of models, all available from our portfolio**
- **Robust bearing**
- **Compact design**
- **Variable mounting flange upon request**
- **Speeds of up to 30,000 rpm**



Increased dust protection for ATEX 22 type protection zone with non-conductive dust

The Perske modular system has motors that comply with increased dust protection requirements. A detailed inquiry is necessary so that the design can be adapted to special specifications.

The design takes into account the following criteria:

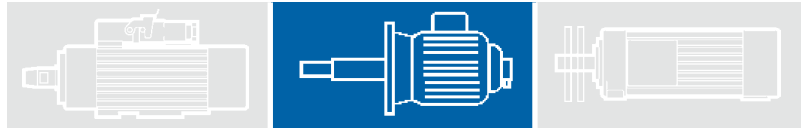
- Incidence of dust occurs only briefly if at all.
- The material-specific temperature class sets a maximum permissible temperature that is lower than the ignition temperature of the corresponding dust cloud or layer. The motor's surface temperature may not exceed this temperature and generally requires a lower output of the corresponding motor size.
- Voltage fluctuations of $\pm 10\%$ may not result in an unacceptable temperature increase.
- The motors must be equipped with a temperature monitoring system, e.g., thermistors.
- The motor housing must be grounded directly.

When inquiring, it is necessary to describe the dust material.

Increased water protection

Especially when working with stone, the motors must be protected from water penetration. Perske delivers motors that meet this requirement and incorporate the following features:

- Hollow shaft for supplying spray to the tool's center
- Specially sealed housing section interfaces
- Sealed cable inlet in the terminal box
- Shaft Labyrinth seals partially equipped with additional V- or O-rings.



Induction Motor, Stator Rotor Packages

General

Perske integrated motors are used to build high- and ultra-high-speed spindle and special drives. The integrated motor elements are brushless and thereby wear- and maintenance-free.

Additional advantages include:

- High efficiency and performance factor through the use of modern, low-loss materials
- Optimally balanceable thanks to a precisely designed die cast cage

The output depends on the size, speed, and type of cooling (water, air, or oil). To achieve high speeds, the integrated motors must have the frequency converter supply correspondingly high frequencies.

Design

Perske integrated motor elements consist of

- A stator package with a high-quality, vacuum-impregnated winding (thermal class F), 400-mm-long winding connections made of Teflon-insulated braided wire, oil-resistant, stator-hole machined, winding with 3 thermistors upon request
- A rotor package with a squirrel cage winding made of die cast aluminum, non-machined to allow an exact fit to the shaft

For production reasons, generally only complete packages, i.e., stator and rotor, are available.

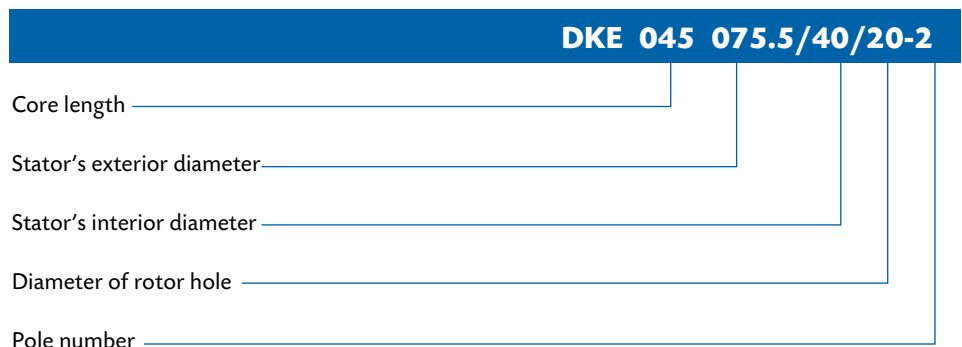
Option

Perske rotor packages can also be supplied with a shaft.

Performance

The performance data is based on empirical values obtained for bearing friction and sufficient cooling to dissipate heat loss. Increased cooling makes higher outputs possible. The transient peak power possible is substantially higher. Please contact us to obtain further details.

Type-designation



Example



Flat Motors / Circular Saw Motors

- Perske circular saw motors have proven themselves in many years of use and under the most adverse operating conditions as being extremely reliable.
- Due to their high overload capacity and high stalling torque (approx. 2-3 times the rated torque which is significantly higher than on standard motors), our motors can also overcome the increased high demands encountered in very non-homogenous material.
- A direct drive, without a separate saw blade shaft, may be the right design for an economical, cost-effective solution (also speed-adjustable).
- Available for right- or left-hand operation, with or without brakes, and variable terminal box position.
- Special shafts with large diameters, reinforced bearings, or extreme lengths are also possible.
- Special configurations with increased water protection may be available upon request.



Circular saw motors with saw blade flange

for sawing, drilling, and milling wood, plastics, and metal

Protection class IP 54

Mechanical design

Three-phase motor with squirrel cage rotor

The stable and aesthetically designed flat motors have an especially low loss of cutting depth thanks to their low center heights.

Type KN 50, KN 60, KC 70:

Especially flat housing made of die cast aluminum, bearing shields made of cast iron, and motors designed with labyrinth seals on both sides.

Type K 80, K 90, K 110, K 140:

Housing and bearing shields made of cast iron (welded steel for higher loads), and with borings to mount the protective shroud. The K 160 and K 200 models have their housings and bearing shields made of welded steel.

The shaft bearing consists of generously dimensioned grooved ball bearings. The drive-side bearing is designed as a fixed bearing, while the fan-side one is a self-aligning bearing. The bearings are dust-sealed for normal operating conditions. Permanent lubrication makes the motors of the KN 50, KN 60, KC 70 and K 80 maintenance-free and thus especially user-friendly.

When using the motors to cut plastics and metals, dust and chips are a major hazard for the bearings.

For such operating conditions, the bearings can also be equipped with special labyrinth seals on the bearing shield upon request.

Terminal boxes are normally located at the right front (when looking at the shaft end); however, they can be installed on the left side upon special request. The openings for the cable inlets can be turned 90 degrees with the terminal box if necessary. Flat motors for stonework are available upon request.

Protection class IP 55 upon request.

Electrical design

The motors are designed according to DIN EN 60034-1 (VDE 0530, Part 1) guidelines. Based on normal use in sawing operations, the output for intermittent operations S6-60% is provided.

Output measurement for thermal class F, high-quality vacuum impregnation, high stalling torque and high overload capacity, ambient temperature 40°C, and installation altitude < 1,000 m above sea level.

High-quality insulating materials are used for the insulation. Vacuum impregnation uses state-of-the-art technology. The motors are also available with tropical insulation upon request.

For installation in ambient temperatures above 40°C or at altitudes above 1,000 m above sea level, the motors will exhibit decreased performance.

All motors can be designed for alternative voltages and frequencies. Please inquire if such cases apply to you, especially if foreign electrical connection regulations must be complied with. Depending on the type, the motors develop stalling torques of approx. 250-350% of the rated torque. As a result, the motors have a high transient overload capacity and are thus especially designed for adverse sawing operations. For the transient use of peak output, it is recommended to measure the fuse and the lines based on the resulting higher currents. We ask that you please contact us for further details.



Circular saw motors with saw blade flange

| Type | Weight [kg] | Rated output [kW] | | [HP] | Saw blade flange Ø mm | Drawing |
|--------------|-------------|--------------------|--------------------|--------------------|--------------------------|--------------|
| | | S6-60% | | | | |
| | | 50 Hz 3,000 rpm | 60 Hz 3,600 rpm | 60 Hz 3,600 rpm | | |
| KN 50.11-2 | 11.0 | 0.9 | 1.1 | 1.5 | 80 | MS 170 A177 |
| KN 51.14-2 | 12.5 | 1.3 | 1.5 | 2.0 | 80 | MS 170 A177 |
| KN 52.16-2 | 13.5 | 1.5 | 1.7 | 2.3 | 80 | MS 170 A177 |
| KN 60.09-2 | 14.5 | 2.0 | 2.4 | 3.2 | 100 | MS 3614-1 |
| KN 61.13-2 | 19.5 | 3.0 | 3.5 | 4.7 | 100 | MS 3614-1 |
| KN 62.18-2 | 22.0 | 4.0 | 4.8 | 6.5 | 100 | MS 3614-1 |
| KC 70.12-2 | 26.0 | 3.7 | 4.4 | 6.0 | 120 | MS 3862 |
| KC 71.16-2 | 33.0 | 5.0 | 6.0 | 8.0 | 120 | MS 3862 |
| KC 71.20-2 | 38.0 | 6.5 | 7.5 | 10.0 | 120 | MS 3862 |
| KC 72.28-2 | 51.0 | 9.0 | 11.0 | 15.0 | 120 | MS 3862 |
| K 81.23-2 | 69.0 | 11.0 | 13.0 | 17.0 | 160 | MS 630 A 397 |
| K 82.27-2 | 79.0 | 13.0 | 15.0 | 20.0 | 160 | MS 630 A 397 |
| K 83.37-2 | 91.0 | 18.0 | 21.0 | 28.0 | 160 | MS 630 A 397 |
| K 91.31-2 | 106.0 | 20.0 | 25.0 | 34.0 | 180 | MS 630 B 130 |
| K 93.38-2 | 128.0 | 25.0 | 30.0 | 40.0 | 180 | MS 630 B 130 |
| K 110.24-2 | 160.0 | 25.0 | 30.0 | 40.0 | 200 | MS 3954 |
| K 111.31-2 | 177.0 | 37.0 | 43.0 | 58.0 | 200 | MS 3954 |
| K 112.38-2 | 195.0 | 45.0 | 52.0 | 70.0 | 200 | MS 3954 |
| K 113.50-2 | 240.0 | 55.0 | 65.0 | 87.0 | 200 | MS 3954 |
| K 140.38-2 | 360.0 | 65.0 | 78.0 | 105.0 | 300 | MS 630 D 62 |
| K 141.50-2 | 450.0 | 75.0 | 95.0 | 128.0 | 300 | MS 630 D 62 |
| K 160.50-2 D | 625.0 | 90.0 | 110.0 | 150.0 | Upon Request | MS 3503 |
| K 162.60-2 D | 750.0 | 120.0 | 140.0 | 190.0 | Upon Request | MS 3503 |
| K 200.50-2 D | 840.0 | 140.0 | 170.0 | 230.0 | Upon Request | MS 4452 |
| K 202.60-2 D | 900.0 | 170.0 | 200.0 | 270.0 | Upon Request | MS 4452 |

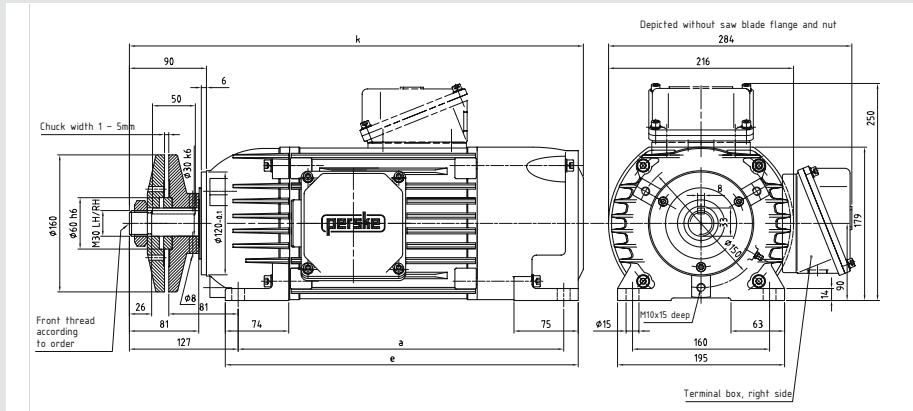
Configuration for 1,500/1,800 rpm with 4-pole motor available upon request



Circular saw motors with saw blade flange

K 80

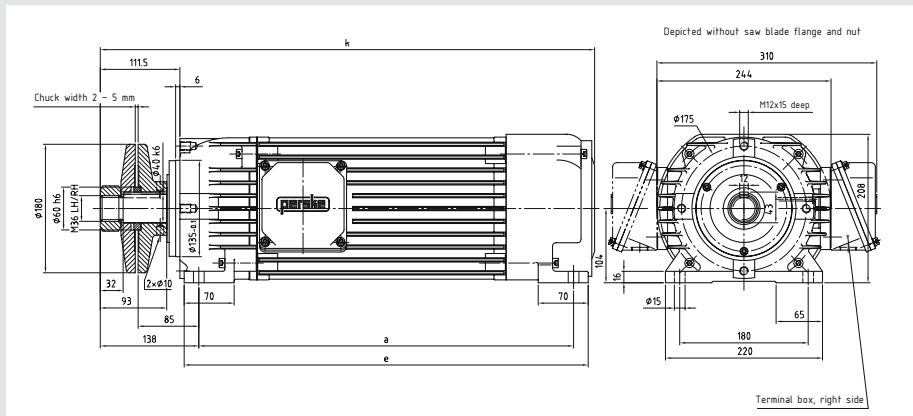
Drawing MS 630 A397



| Type | a | e | k |
|-------|-----|-----|-----|
| KS 81 | 460 | 492 | 610 |
| KS 82 | 510 | 542 | 660 |
| KS 83 | 570 | 602 | 720 |

K 90

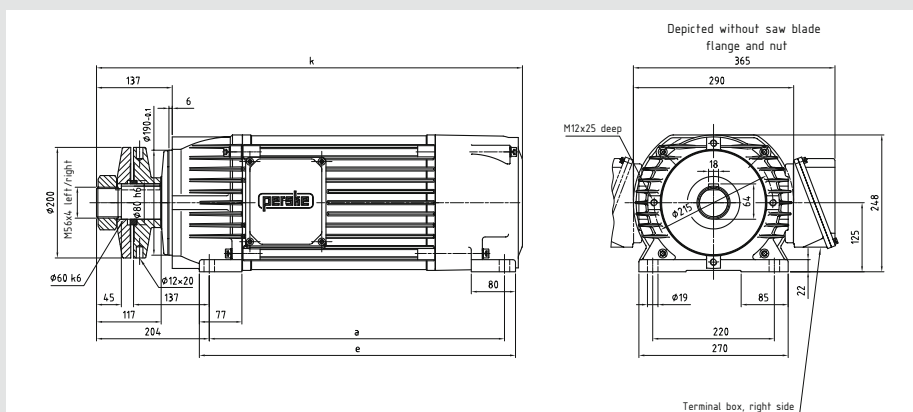
Drawing MS 630 B130



| Type | a | e | k |
|----------|-----|-----|-----|
| KS 91.31 | 525 | 566 | 693 |
| KS 93.38 | 615 | 656 | 783 |

K 110

Drawing MS 3954



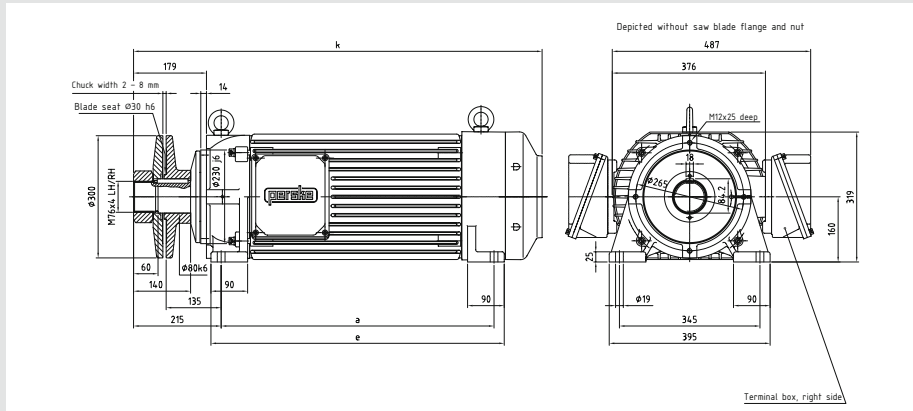
| Type | a | e | k |
|--------|-----|-----|-----|
| KS 110 | 464 | 504 | 705 |
| KS 111 | 534 | 574 | 775 |
| KS 112 | 614 | 654 | 855 |
| KS 113 | 734 | 774 | 975 |



Circular saw motors with saw blade flange

K 140

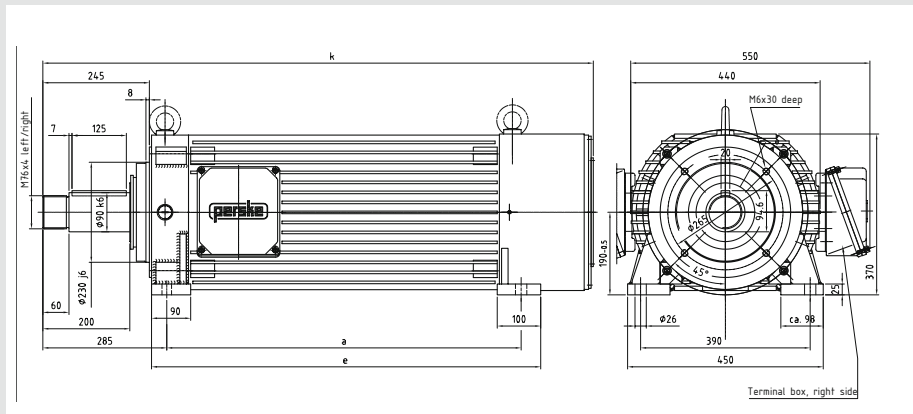
Drawing MS 630 D62



| Type | a | e | k |
|-------|-----|-----|------|
| K 140 | 670 | 720 | 1003 |
| K 141 | 855 | 905 | 1188 |

K 160 D

Drawing MS 3503

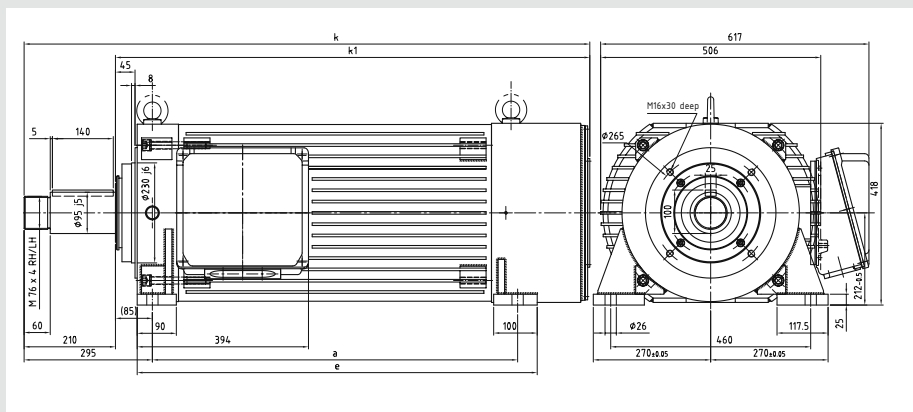


| Type | a | e | k |
|---------|-----|-----|------|
| K 160 D | 815 | 895 | 1266 |
| K 162 D | 895 | 975 | 1346 |

also for milling tool
Saw flange upon request

K 200 D

Drawing MS 4452



| Type | a | e | k | k1 |
|----------|-----|-----|------|------|
| KS 200 D | 840 | 920 | 1301 | 1091 |
| KS 202 D | 900 | 980 | 1361 | 1151 |

also for milling tool
Saw flange upon request



Circular saw motors with saw blade flange and brake

Mechanical design

Three-phase motor with squirrel cage rotor. Integrated electromechanical spring-pressure brake cooled by the motor's fan. When turning the motor ON, the brake is powered also. Its powerful electromagnet lifts the brake disk and lets the motor run. When turning the power OFF, the strong springs located in the brake exert a high braking force on the friction disks and bring the motor to a standstill. This naturally also applies in the event of a power outage, since the motors have a fail-safe brake.

Electrical design of the motor

As on p. 46

Electrical design of the brake

Supply voltage: 230- or 400-V, single-phase alternating current. The electromagnet is configured for DC current and is fed via a rectifier that is located, along with the connection terminals of the motor and brake, in the motor terminal box. For the power supply, single-phase alternating current is required. Normally, this is drawn parallel from the motor terminal board and thereby has the same switching states for motor and brake, and thus also automatic interaction. For star/delta startups, the brake's power supply must also be ensured in the event of a protective failover to prevent a transient, no-voltage state. However, if this is not possible because the motor voltage is deviating excessively from the brake's rated voltage or because the speed regulation is fed in variably, then a separate power supply is necessary for the brake. In this case, the user should ensure that synchronous switching states (motor/brake) are provided. Please request a wiring diagram.

Safety Note

If the brake motor is used as a circular saw motor, then in the event of braking, the saw blade would continue turning along with the outside flange and nut due to the rotational inertia and the nut would loosen on the thread with the corresponding results. Therefore, the nut is secured from loosening by a full-length fitted key that also applies to the external saw blade flange. The saw blade must then have a greater bore hole diameter than the shaft diameter, and rest on a spacer ring or corresponding flange bevel. It is especially pointed out that the brake is not suited to function as a holding device for tool changes (saw blade change).

Design of the brake

The integrated standard brakes provide the following braking torque:

Model KN 5... Br Braking torque 4 Nm
 Model KN 6... Br Braking torque 3 Nm
 Model KC 7... Br Braking torque 16 Nm
 Model K 8... Br Braking torque 36 Nm
 Model K 9... Br Braking torque 50 Nm
 Model K 10... Br Braking torque 80 Nm
 Model K 14... Br Braking torque 150 Nm
 Model K 16... Br Braking torque 150 Nm

General validity

The electromechanical spring-activated brake shall be checked for the intended use. The strength, i.e., the service life, of the brake lining is dependent on the speed, switching frequency, and the mass moment of inertia.

To perform a quick check, please provide:

- Speed [rpm] at which the brake will be actuated
- Switching frequency [switches per hour]
- Mass moment of inertia of external load [kgm²]



Circular saw motors with saw blade flange and brake

| Type | Weight [kg] | Rated output [kW] | | [HP] | Saw blade flange Ø mm | Drawing |
|-----------------|-------------|--------------------|--------------------|--------------------|--------------------------|----------|
| | | S6-60% | | | | |
| | | 50 Hz 3,000 rpm | 60 Hz 3,600 rpm | 60 Hz 3,600 rpm | | |
| KN 50.11-2 Br | 12.5 | 0.9 | 1.1 | 1.5 | 80 | MS 645 |
| KN 51.14-2 Br | 14.0 | 1.3 | 1.5 | 2.0 | 80 | MS 645 |
| KN 52.16-2 Br | 15.0 | 1.5 | 1.7 | 2.3 | 80 | MS 645 |
| KN 60.09-2 Br | 15.5 | 1.8 | 2.2 | 2.9 | 100 | MS 646 |
| KN 61.13-2 Br | 20.5 | 2.6 | 3.1 | 4.2 | 100 | MS 646 |
| KN 62.18-2 Br | 23.0 | 3.5 | 4.2 | 5.6 | 100 | MS 646 |
| KC 70.12-2 Br | 32.0 | 3.7 | 4.4 | 6.0 | 120 | MS 654-2 |
| KC 71.16-2 Br | 39.0 | 5.0 | 6.0 | 8.0 | 120 | MS 654-2 |
| KC 71.20-2 Br | 44.0 | 6.5 | 7.5 | 10.0 | 120 | MS 654-2 |
| KC 72.28-2 Br | 57.0 | 9.0 | 11.0 | 15.0 | 120 | MS 654-2 |
| K 81.23-2 Br | 77.0 | 11.0 | 13.0 | 17.0 | 160 | MS 635 |
| K 82.27-2 Br | 87.0 | 13.0 | 15.0 | 20.0 | 160 | MS 635 |
| K 83.37-2 Br | 99.0 | 18.0 | 21.0 | 28.0 | 160 | MS 635 |
| K 91.31-2 Br | 120.0 | 20.0 | 25.0 | 34.0 | 180 | MS 636 |
| K 93.38-2 Br | 145.0 | 25.0 | 30.0 | 40.0 | 180 | MS 636 |
| K 110.24-2 Br | 175.0 | 25.0 | 30.0 | 40.0 | 200 | MS 633 C |
| K 111.31-2 Br | 190.0 | 37.0 | 43.0 | 58.0 | 200 | MS 633 C |
| K 112.38-2 Br | 205.0 | 45.0 | 52.0 | 70.0 | 200 | MS 633 C |
| K 113.50-2 Br | 255.0 | 55.0 | 65.0 | 87.0 | 200 | MS 633 C |
| K 140.38-2 Br | 400.0 | 65.0 | 78.0 | 105.0 | 300 | MS 631-3 |
| K 141.50-2 Br | 460.0 | 75.0 | 95.0 | 128.0 | 300 | MS 631-3 |
| K 160.50-2 D Br | 655.0 | 90.0 | 110.0 | 150.0 | Upon request | MS 639 |
| K 162.60-2 D Br | 780.0 | 120.0 | 140.0 | 190.0 | Upon request | MS 639 |

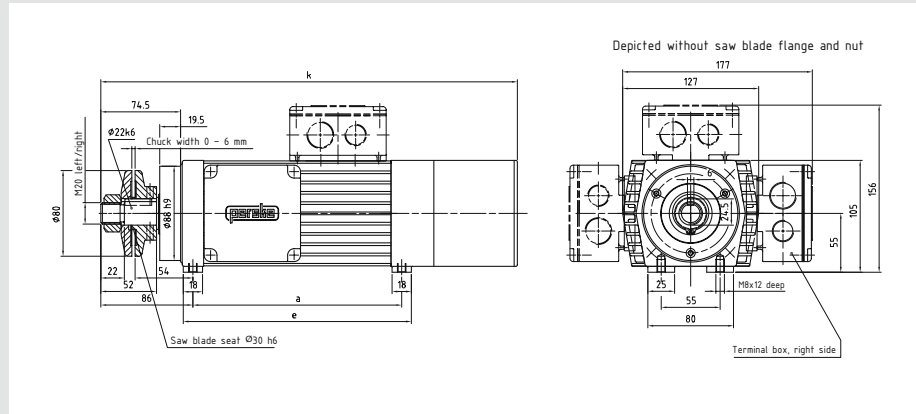
Configuration for 1,500/1,800 rpm with 4-pole motor available upon request



Circular saw motors with saw blade flange and brake

KN 50 Br

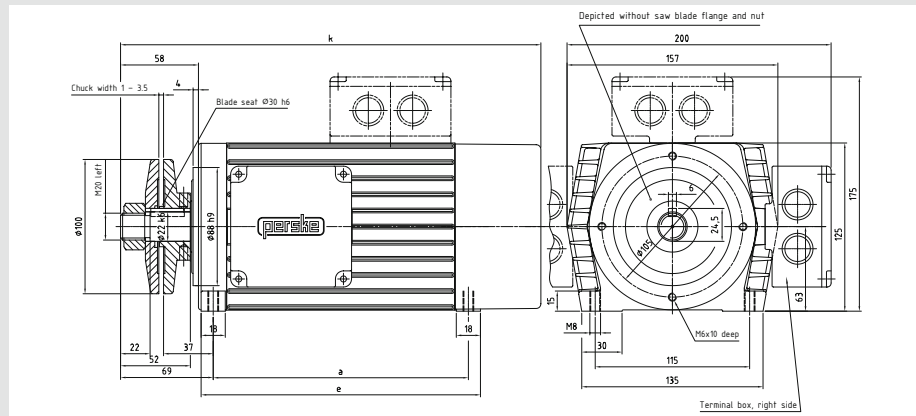
Drawing MS 645



| Type | a | e | k |
|----------|-----|-----|-----|
| KN 50 Br | 195 | 213 | 390 |
| KN 51 Br | 225 | 243 | 420 |
| KN 52 Br | 245 | 263 | 440 |

KN 60 Br

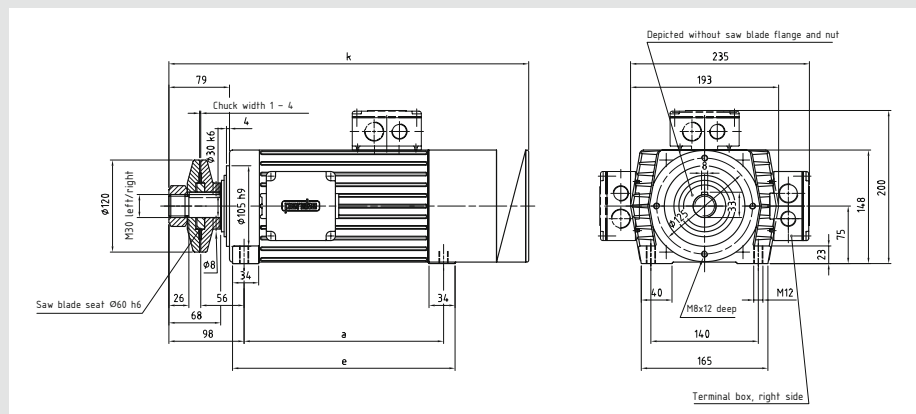
Drawing MS 646



| Type | a | e | k |
|-----------|-----|-----|-----|
| KNS 60 Br | 190 | 210 | 313 |
| KNS 61 Br | 220 | 240 | 343 |
| KNS 62 Br | 270 | 290 | 393 |

KC 70 Br

Drawing MS 654-2



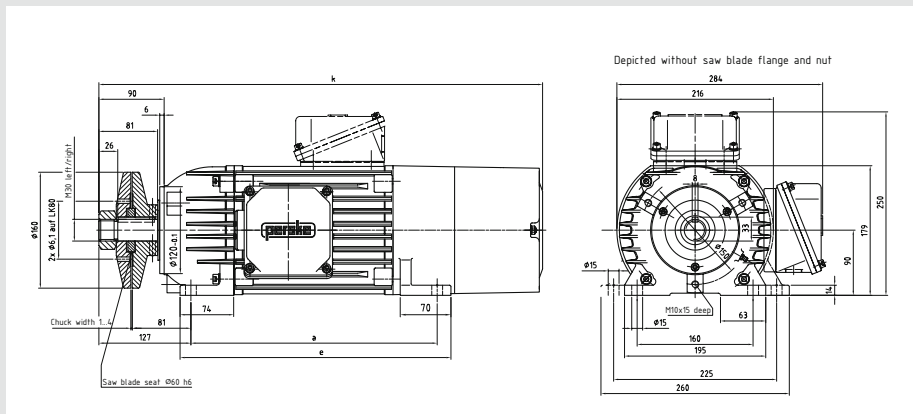
| Type | a | e | k |
|-----------|-----|-----|-----|
| KCS 70 Br | 260 | 290 | 469 |
| KCS 71 Br | 340 | 370 | 549 |
| KCS 72 Br | 420 | 450 | 629 |



Circular saw motors with saw blade flange and brake

K 80 Br

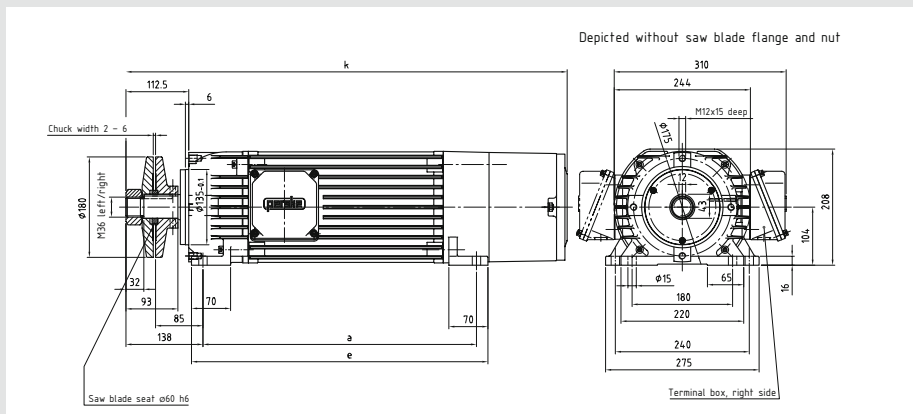
Drawing MS 635



| Type | a | e | k |
|---------|-----|-----|-----|
| K 81 Br | 420 | 455 | 695 |
| K 82 Br | 470 | 505 | 745 |
| K 83 Br | 530 | 565 | 805 |

K 90 Br

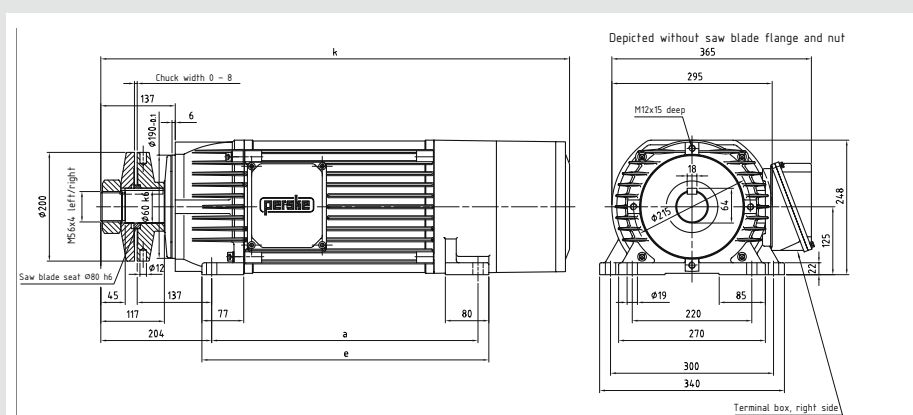
Drawing MS 636



| Type | a | e | k |
|------------|-----|-----|-----|
| K 91.31 Br | 490 | 531 | 791 |
| K 93.38 Br | 580 | 621 | 881 |

K 110 Br

Drawing MS 633 C



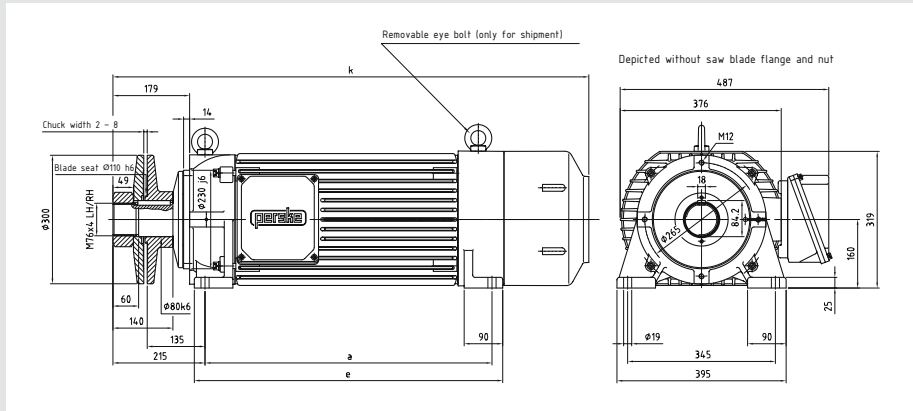
| Type | a | e | k |
|----------|-----|-----|------|
| K 110 Br | 420 | 460 | 793 |
| K 111 Br | 490 | 530 | 863 |
| K 112 Br | 570 | 610 | 943 |
| K 113 Br | 690 | 730 | 1063 |



Circular saw motors with saw blade flange and brake

K 140 Br

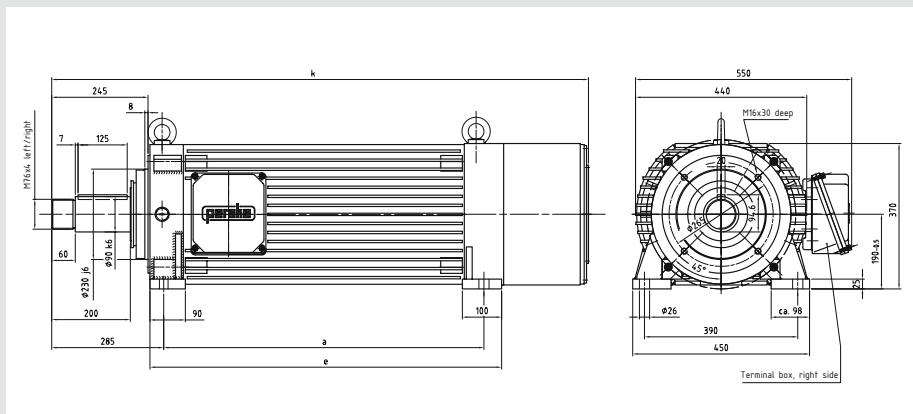
Drawing MS 631-3



| Type | a | e | k |
|----------|-----|-----|------|
| K 140 Br | 670 | 720 | 1111 |
| K 141 Br | 855 | 905 | 1296 |

K 160 D Br

Drawing MS 639



| Type | a | e | k |
|----------|-----|-----|------|
| K 160 Br | 815 | 895 | 1366 |
| K 162 Br | 895 | 975 | 1446 |

Also for milling tools
Saw flange upon request



General Information

Technical information

Permissible shaft loads

Types of protection and operating modes

Models/Calculation formulas

Notes about ordering parts

Motor checklist (for inquiries and orders)

Terms and Conditions of Sale and Delivery

Contact person

Technical information

Impregnation

The motors are impregnated in a vacuum impregnation process based on state-of-the-art technology. This method prevents air pockets in the winding and serves to increase the electrical strength of the winding against increased loads.

Performance

Perske motors are built for industrial use and designed to operate with a converter. The motor output is indicated for thermal class F and continuous duty (S1) or intermittent operation (S6-60%) and is valid for ambient temperatures up to 40°C and an installation altitude up to 1,000 m above sea level. When the motors are installed in ambient temperatures above 40°C or at altitudes above 1,000 m above sea level, the motor may exhibit decreased performance.

Operating with a static converter

Note: If a static frequency converter is used to operate high-speed motors, then one must plan on thermal class F. The converter is to be tailored to the motor. The EMC guidelines shall be complied with. When operating static converters, one shall preferably seek a sine-shaped outlet voltage. Under certain conditions, smoothing reactors or filters may be necessary. DIN VDE 0530-17, (dated January 2007) shall be complied with. When operating converters at the motor's rated frequency, the available torque is usually less than on sine-shaped voltages. This results from the heat increase stemming from the additional losses. For the rated frequency, the reduction coefficient fluctuates between 0 and 20% (DIN VDE 0530-17, Section 6).

Bearings

The motors have high-quality ball bearings whose specifications have been coordinated with the manufacturer. For high speeds, bearings with increased speed capability and special running smoothness are built into the motors. Normally, lifetime-lubricated bearings are used. This makes them user-friendly and almost maintenance-free. The drive-side bearing is a fixed bearing, while the fan-side bearing is a self-aligning bearing. The shafts are supported largely free of play by means of built-in corrugated springs, which enables close machining tolerances. Dual bearings on the tool-side are play-free and have proven themselves especially in milling and cutting. These bearings enable the absorption of high forces resulting from heavy tools or rapid feed rates.

Bearing and shaft loads

In regard to the sizing of the drive shaft and bearing, radial and axial forces are generously compensated for. When the technical features are used as intended, a high degree of operational safety can be provided. The permissible values in accordance with the table on page 59 shall be complied with in configuring a given machine.

Balancing

Despite the high speeds, meticulous dynamic balancing of the motors ensures smooth operation. In the delivered state, the vibration velocity V_{eff} is < 1.8 mm/s. For the bearing's service life, balancing of the entire motor-and-tool system is essential. For that reason, only balanced tools with a balance quality of at least G 6.3 shall be used. For heavier tools or higher speeds, a balance quality of G 2.5 may be necessary. Normally, full-key balancing is agreed upon, i.e., the entire inserted key and "F" shafts. Half-key balancing must be arranged separately. If a system is insufficiently balanced, one can expect the bearing to fail prematurely.

Safety and startup instructions

Ensure that the motors are installed, maintained, and repaired only by qualified personnel and that the safety provisions as well as local regulations are complied with. Startup and maintenance instructions shall be adhered to. If these startup instructions are not on hand, please request them by indicating the model type and the serial number. Low-voltage machines are components to be installed in machines in accordance with the Machine Directive 2006/42/EC. Startup is prohibited until the end product's conformity with these guidelines has been ascertained.

Permissible shaft loads

To preclude mechanical overloading of the shaft and bearing, the overload capacity of the shaft end shall be limited to permissible values.

To quickly select a motor and estimate loads, a simplified load model shall be established (see Fig. 1). Here, the radial load, the axial load, and the distance of the load application point from the front side of the motor are the parameters that the user shall verify when selecting a motor.

For every motor size, a fixed axial load limit shall be pre-defined and the associated radial load limits as a function of the effective distance "a" shall be indicated. The catalog provides the values for the loads on the shaft end ($a=L$) or on half the mounting length ($a=L/2$). The information provided applies only for the indicated lengths. If loads engage beyond the shaft end, we recommend that our engineering department perform a separate test.

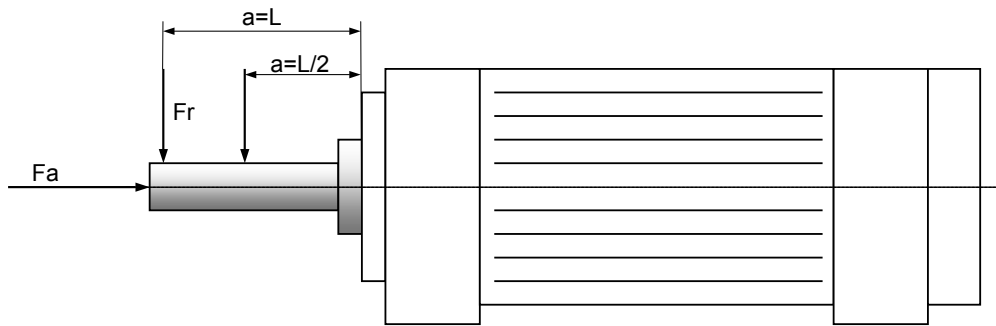


Fig. 1: Simplified load model. F_a = axial load, F_r = radial load.

Scope

- The radial loads provided in the table are permissible during continuous duty and incorporate at least twice the safety factor against the shaft's fatigue fracture.
- All figures apply only for the shaft ends indicated in the table or motor spec sheets.
- The load application point must be within the mounting range on the shaft.
- Permissible loads are calculated for an extended service life of 15,000 operating hours of the bearing according to DIN ISO 281.
- The weight of the parts that the customer mounts on the shaft are not taken into consideration. For heavier weights, a separate test is advisable to avoid problems with the critical bending frequencies.
- The figures are calculated values and not a binding statement in the sense of guaranteed characteristics.
- The calculation is based on the installation position on Model B3.

Basic recommendations

Tools or other customer components to be installed on the shaft must, at a minimum, meet a balance quality of G6.3 according to DIN ISO 1940-1. In special situations (large tool weight, high speeds), a balance quality of G2.5 or better may be necessary.

The load application point on the shaft should lie as close as possible to the motor since the load carrying capability is highest here. In practice, this means that tools or other components to be mounted by the customer should be clamped on the shaft as close as possible to the motor. In the design phase, this should be considered as early as possible.

Permissible shaft load

| Type | Drawing | Shaft end | Permissible radial load | | Axial load Fa | Valid up to n n = |
|------------|-------------|----------------|-------------------------|----------------|------------------|----------------------|
| | | | F_per_(a=L) | F_per_(a=0,5L) | | |
| KN 21.05 | MS 151 | ø14x30 PF | 450 N | 500 N | 200 N | 18,000 rpm |
| KN 22.08 | MS 151 | ø14x30 PF | 350 N | 550 N | 200 N | 18,000 rpm |
| KN 23.10 | MS 151 | ø14x30 PF | 300 N | 400 N | 200 N | 18,000 rpm |
| V 30.06 | MS 132 | ø14x30 PF | 500 N | 550 N | 200 N | 18,000 rpm |
| V 31.09 | MS 132 | ø14x30 PF | 500 N | 550 N | 200 N | 18,000 rpm |
| KR 35.1 | MS 3746 | ø14x30 PF | 550 N | 850 N | 300 N | 18,000 rpm |
| KR 35.3 | MS 3746 | ø14x30 PF | 550 N | 850 N | 300 N | 18,000 rpm |
| KR 35.5 | MS 3746 | ø14x30 PF | 550 N | 900 N | 300 N | 18,000 rpm |
| KR 35.7 | MS 3746 | ø14x30 PF | 550 N | 900 N | 300 N | 18,000 rpm |
| KR 35.9 | MS 3746 | ø14x30 PF | 600 N | 900 N | 300 N | 12,000 rpm |
| KR 35.1 D | MS 3772 | ø25x50 PF | 1100 N | 1200 N | 300 N | 18,000 rpm |
| KR 35.3 D | MS 3772 | ø25x50 PF | 1000 N | 1200 N | 300 N | 18,000 rpm |
| KR 35.5 D | MS 3772 | ø25x50 PF | 750 N | 1200 N | 300 N | 18,000 rpm |
| KR 35.7 D | MS 3772 | ø25x50 PF | 650 N | 1000 N | 300 N | 18,000 rpm |
| KR 35.9 D | MS 3772 | ø25x50 PF | 500 N | 800 N | 300 N | 12,000 rpm |
| V 50.09 | MS 113 A | ø22x50 PF | 900 N | 1000 N | 300 N | 18,000 rpm |
| KN 50.11 | MS 170A | ø22x50 PF | 1100 N | 1500 N | 300 N | 12,000 rpm |
| KN 51.14 | MS 170A | ø22x50 PF | 850 N | 1400 N | 300 N | 12,000 rpm |
| KN 52.16 | MS 170A | ø22x50 PF | 750 N | 1200 N | 300 N | 12,000 rpm |
| KN 50.11 D | MS 4046 | ø30x68 PF | 1100 N | 1700 N | 300 N | 12,000 rpm |
| KN 51.14 D | MS 4046 | ø30x68 PF | 950 N | 1600 N | 300 N | 12,000 rpm |
| KN 52.16 D | MS 4046 | ø30x68 PF | 850 N | 1400 N | 300 N | 12,000 rpm |
| V 60.11 | MS 113 B | ø22x50 PF | 750 N | 800 N | 400 N | 18,000 rpm |
| V 61.15 | MS 113 B | ø22x50 PF | 750 N | 850 N | 400 N | 18,000 rpm |
| KN 60.09 | MS 170B | ø24x50 PF | 1100 N | 1200 N | 400 N | 12,000 rpm |
| KN 61.13 | MS 170B | ø24x50 PF | 1100 N | 1200 N | 400 N | 12,000 rpm |
| KN 62.18 | MS 170B | ø24x50 PF | 1200 N | 1300 N | 400 N | 12,000 rpm |
| KN 60.09 D | MS 171 | ø30x70 PF | 1300 N | 1900 N | 400 N | 12,000 rpm |
| KN 61.13 D | MS 171 | ø30x70 PF | 1300 N | 2000 N | 400 N | 12,000 rpm |
| KN 62.18 D | MS 171 | ø30x70 PF | 1300 N | 2000 N | 400 N | 12,000 rpm |
| KC 70.12 | MS 652-44 | ø35x68 PF | 2300 N | 2500 N | 600 N | 9,000 rpm |
| KC 71.16 | MS 652-44 | ø35x68 PF | 2400 N | 2600 N | 600 N | 9,000 rpm |
| KC 71.20 | MS 652-44 | ø35x68 PF | 2400 N | 2600 N | 600 N | 9,000 rpm |
| KC 72.28 | MS 652-44 | ø35x68 PF | 2500 N | 2700 N | 600 N | 9,000 rpm |
| KC 70.12 D | MS 182-5 | ø35x70 PF | 2400 N | 2600 N | 600 N | 9,000 rpm |
| KC 71.16 D | MS 182-5 | ø35x70 PF | 2500 N | 2800 N | 600 N | 9,000 rpm |
| KC 71.20 D | MS 182-5 | ø35x70 PF | 2500 N | 2800 N | 600 N | 9,000 rpm |
| KC 72.28 D | MS 182-5 | ø35x70 PF | 2500 N | 2800 N | 600 N | 9,000 rpm |
| K 81.23 | MS 630 A397 | ø30x81 Flange | 2000 N | 2900 N | 800 N | 6,000 rpm |
| K 82.27 | MS 630 A397 | ø30x81 Flange | 1900 N | 2700 N | 800 N | 6,000 rpm |
| K 83.37 | MS 630 A397 | ø30x81 Flange | 1800 N | 2400 N | 800 N | 6,000 rpm |
| K 81.23 D | MS 630 A196 | ø40x70 PF | 2400 N | 2600 N | 800 N | 6,000 rpm |
| K 82.27 D | MS 630 A196 | ø40x70 PF | 2500 N | 2600 N | 800 N | 6,000 rpm |
| K 83.37 D | MS 630 A196 | ø40x70 PF | 2500 N | 2700 N | 800 N | 6,000 rpm |
| K 91.31 | MS 630 B130 | ø40x93 Flange | 4100 N | 5000 N | 1000 N | 6,000 rpm |
| K 93.38 | MS 630 B130 | ø40x93 Flange | 4000 N | 5100 N | 1000 N | 6,000 rpm |
| K 110.24 | MS 3954 | ø60x117 Flange | 6400 N | 7700 N | 1500 N | 6,000 rpm |
| K 111.31 | MS 3954 | ø60x117 Flange | 6000 N | 7900 N | 1500 N | 6,000 rpm |
| K 112.38 | MS 3954 | ø60x117 Flange | 4500 N | 8000 N | 1500 N | 6,000 rpm |
| K 113.50 | MS 3954 | ø60x117 Flange | 4200 N | 8300 N | 1500 N | 6,000 rpm |
| K 140.38 | MS 630 D62 | ø80x140 Flange | 11600 N | 12200 N | 2500 N | 5,000 rpm |
| K 141.50 | MS 630 D62 | ø80x140 Flange | 12000 N | 12500 N | 2500 N | 5,000 rpm |
| K 160.50 D | MS 3503 | ø90x200 PF | 13200 N | 14200 N | 4000 N | 4,500 rpm |
| K 162.60 D | MS 3503 | ø90x200 PF | 13500 N | 14400 N | 4000 N | 4,500 rpm |
| K 200.50 D | MS 4452 | ø95x210 PF | 13200 N | 14200 N | 4000 N | 4,500 rpm |
| K 202.60 D | MS 4452 | ø95x210 PF | 13400 N | 14400 N | 4000 N | 4,500 rpm |

Protection Class and Operating Modes

The protection classes of electrical machines are indicated in letter symbols consisting of two letters and two digits. The following protection classes are generally used:

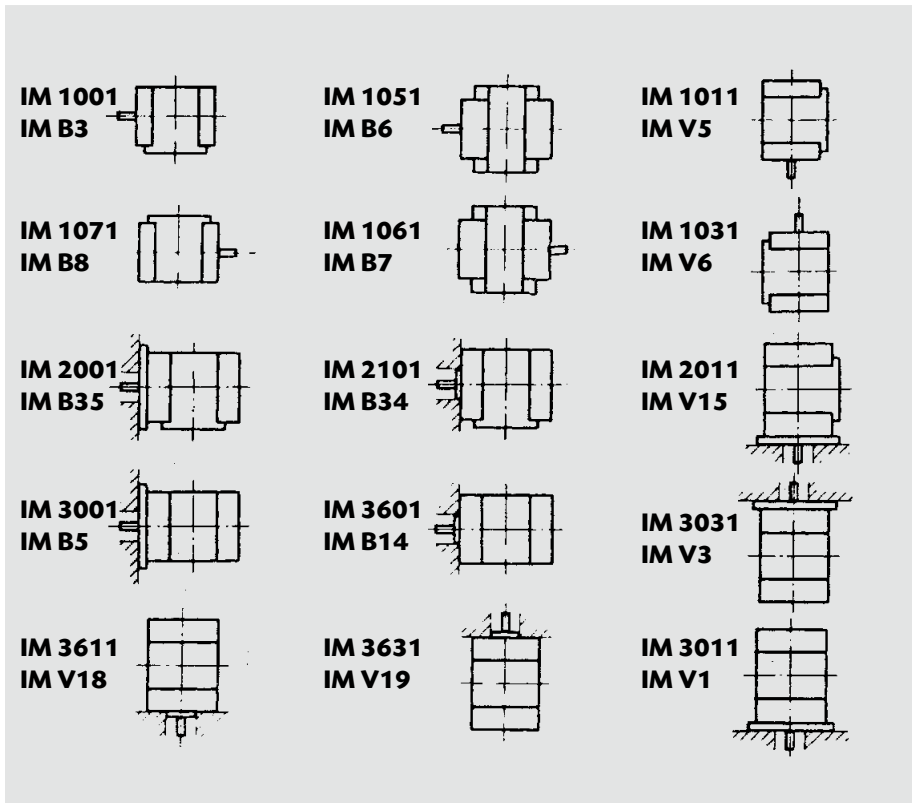
Protection classes according to DIN EN 60034-5 / VDE 0530, Part 5

| Protection Class | 1 st number: contact protection | Protection against foreign objects | 2 nd number: water protection |
|------------------|--|--|--|
| IP 00 | No protection | No protection | No protection |
| IP 11 | Against inadvertent large-surface area contact of interior components that are moving or under voltage | Against foreign objects having a diameter greater than 50 mm | Against water dripping vertically down from above |
| IP 23 | Against contact with fingers | Against medium-sized, solid foreign objects having a diameter greater than 12 mm | Against water spray from a vertical direction to 60° |
| IP 44 | Against contact with tools, wires thicker than 1 mm | Against small, solid foreign objects having a diameter greater than 1 mm | Against water spray from all directions |
| IP 54 | Complete protection against contact | Against harmful dust deposits | Against water spray from all directions |
| IP 55 | Complete protection against contact | Against harmful dust deposits | Against water jets from all directions |

Operating modes according to DIN EN 60034-1/VDE 0530, Part 1

| Code | Operating mode | Additional explanation | Additional information | For example |
|------|--|--|---|-----------------------|
| S 1 | Continuous duty | Constant rated output possible | | |
| S 2 | Short-term operation | Constant rated output possible with no-voltage pause and full cool-down | Activation time ED in minutes | S 2 – 10 min |
| S 3 | Intermittent operation | Result of similar short-term loads with no-voltage pauses and full cool-down | Load duration ED in % of cycle period | S 3 – 40% |
| S 4 | Intermittent operation influenced by startup | Result of startup, constant rated output, and no-voltage, recurring pauses | Load duration ED in % of cycle period | S 4 – 30% – 10 cycles |
| S 5 | Intermittent operation influenced by startup and electrical braking | Result of startup, constant rated output, electrical braking, and no-voltage, recurring pauses | Load duration ED in % of cycle period | S 5 – 20% – 24 cycles |
| S 6 | Continuous duty with intermittent loads | Result of constant rated output and idle mode, continuously repeated | Load duration in % of cycle period | S 6 – 60% |
| S 7 | Uninterrupted operation with startup and braking | Result of startup, constant rated output, electrical braking. No stoppage, machine continuously under voltage. | | |
| S 8 | Uninterrupted operation with pole-changing | Periods of various loads and speeds, continuously changing, without stoppage | For every speed, load and duration indicated separately | |
| S 9 | Intermittent operation influenced by startup and electrical braking and load changes | Non-periodic result of startup, various loads, speeds, and direction of rotation, electrical braking, and no-voltage stoppage of various lengths of time | Given this operating mode, a corresponding duration value is to be determined to specify the motor-type | |

Construction type



Codes for models and mounting of rotating electrical machines

**DIN EN 60034-7
VDE 0530, Part 7**

Calculation formula

Torque: $M = 9,55 \cdot \frac{P}{n}$

Mechanical power: $P = \frac{1}{9,55} \cdot M \cdot n$

Power input: $P_1 = \sqrt{3} \cdot U \cdot I \cdot \cos \phi$

Power output: $P_2 = \sqrt{3} \cdot U \cdot I \cdot \cos \phi \cdot \eta$

Apparent power: $S = \sqrt{3} \cdot U \cdot I$

Rated current: $I = \frac{S}{\sqrt{3} \cdot U}$

M = Torque [Nm]

P = Power [W]

n = Speed [rpm]

η = Efficiency

$\cos \phi$ = Power factor

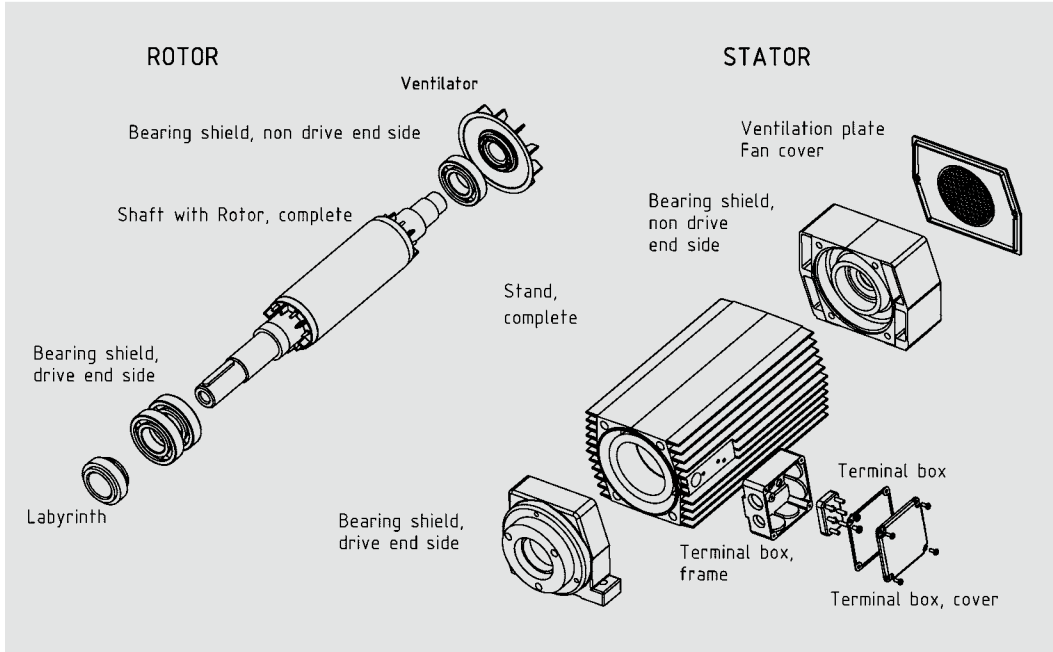
U = Voltage [V]

I = Current [A]

S = Apparent power [VA]

Instructions for ordering parts

Principle schematic of motor's main components



Note:
When ordering parts, always provide the model-type and serial number.

This information is indicated on the rating plate (see below):

Rating plate

| | | | | | |
|----------|-------|------------------|----------------|-----|--------------------|
| | | D 68167 MANNHEIM | | | |
| | | Made in Germany | | | |
| 3 ~ Mot. | Typ | KS 10.24-2 | | | |
| IP 54 | I.Cl. | F | EN 60034 | Nr. | 01234567 |
| | | | Δ 400 V | | 72 A |
| | | | 42 kW | | S1 BA |
| | | | 11940 1/min | | 200 Hz |
| | | | RT 500 G | | 0.9 $\cos \varphi$ |

Motor-type
Serial number
Rated current [A]
Operation-mode
Rated frequency [Hz]
Power factor
Additional information
Speed [rpm]
Rated power [kW]
Thermal class
Voltage [V] / Connection type
Protection-type



Motor checklist

Inquiries **Enclosure to Purchase order**

To
Walter Perske GmbH
Sales Department
Friedrich-Ebert-Strasse 80-84
68167 Mannheim
Tel. 0621/33090-0
Fax 0621/33090-33
E-mail permo@perske.de

Company _____
Processed by _____
Tel.: _____ Fax: _____
Street _____
Postal code / city _____
E-mail _____

New motor

- Application** Sawing Drilling Stonework Direct drive
 Milling Grinding
- Ambient conditions** Dry Wet

| Quantity | Type | According to catalogue page | Drawing no.: |
|----------------------------|--|--|------------------------------|
| Regulation, rule | <input type="checkbox"/> DIN EN 60034-1 (VDE 0530-1) | <input type="checkbox"/> NEMA | <input type="checkbox"/> CSA |
| Output | <input type="checkbox"/> _____ kW S1/S6-60% | <input type="checkbox"/> Special speed-output characteristics (attached) | |
| Voltage | _____ V | Frequency _____ Hz | Speed _____ rpm |
| Model | _____ | Position of terminal box _____ | |
| Bearing arrangement | <input type="checkbox"/> Single bearing | <input type="checkbox"/> Double bearing | |

A. 1. Shaft design

- According to diagram (attached)
- With saw flange Ø _____ mm
- cylindrical With key Without key
- Diameter _____ mm length _____ mm without thread
- Exterior thread size M _____ left right
- Interior thread size M _____ left right
- Collet design Max. clamping diameter Ø _____ mm
- Collet _____ Size _____
- Key _____ Nut _____
- Electromagnetic brake
- Wrench flat

A. 2. Motor protection

- With thermistors With thermal contacts (bimetal break contact)
- PT 100 KTY

Spare motor/Repeat order

| Quantity | Type |
|----------|------|
|----------|------|

Same as serial no. _____

Comments _____

Enclosures _____

Date _____ Company stamp _____

Terms and Conditions for Sales and Deliveries

General Information

The models depicted in the spec sheets of the preceding lists are the basic models of the respective motor. The illustrations are non-binding. Designs deviating from these are special configurations and are subject to surcharges. In the absence of any other agreement, we will charge the customary fee for all agreed upon modifications after signing of the contract.

Prices

The prices are considered to include delivery without installation or assembly, ex works, and not including packaging. Prices do not include the applicable statutory value-added tax.

Material Surcharge

Copper

Bid prices are based on a quotation for electrolyte copper (Cu-DEL-Notiz) of € 230.00 per 100 kg. For quotations above € 230.00 per 100 kg, the following surcharges will be assessed:

| DEL quotation in € per 100 kg | Copper surcharge in % |
|-------------------------------|-----------------------|
| 225 to below 275 | 1.2 |
| 275 to below 325 | 2.5 |
| 325 to below 375 | 3.5 |
| 375 to below 425 | 4.5 |
| 425 to below 475 | 5.5 |
| 475 to below 525 | 6.5 |
| 525 to below 575 | 7.5 |
| 575 to below 625 | 8.5 |
| 625 to below 675 | 9.5 |
| 675 to below 725 | 10.5 |
| 725 to below 775 | 11.5 |

When calculating the copper surcharges, the DEL quotation of the order reception date is authoritative.

Other material

We reserve the right to impose additional material surcharges.

Complying with instructions

During operations, our operating instructions and lubricating guidelines shall be complied with. In particular, we wish to point out that all accident prevention and installation guidelines shall be strictly complied with at the location of the ordering/using party. We assume no liability for improper use. Special requirements pertaining to noise emissions shall be taken into account in designing the machine or system.

Terms and conditions for sales and deliveries

The following shall apply: the "Electrical Industry's General Delivery Terms for Goods and Services" (ZVEI), including the "retention of title" addendum as well as "Walter Perske GmbH's General Terms for Sales of Goods and Services." We reserve the right to modify the technical data. The sole place of fulfillment for all contractual or ex-contractual obligations stemming from the service contract is Mannheim. Upon publication of this list, all earlier editions shall no longer be valid.

The terms and conditions for sales and deliveries can be viewed on the Internet or be mailed upon request.

Motor-collet correlation

| motor type | OZ-type collet DIN 6388 taper ratio 1:10 | | | | ER-type collet DIN 6449 taper angle 8° | | | | max. speed (rpm) |
|---------------|---|------|----------------------|------|---|------|----------------------|------|---------------------|
| | OZ-type | size | max. collet capacity | | ER-type | size | max. collet capacity | | |
| | | | mm | inch | | | mm | inch | |
| KN 21.05 | OZ 1832 | 10 | 10 ⁽¹⁾ | 3/8" | ER 20 | 20 | 13 ⁽¹⁾ | 1/2" | 30,000 |
| KN 22.08 | OZ 1832 | 10 | 10 ⁽¹⁾ | 3/8" | ER 20 | 20 | 13 ⁽¹⁾ | 1/2" | 30,000 |
| KN 23.10 | OZ 1832 | 10 | 10 | 3/8" | ER 20 | 20 | 13 | 1/2" | 24,000 |
| V 30.06 | OZ 1832 | 10 | 10 ⁽¹⁾ | 3/8" | ER 20 | 20 | 13 ⁽¹⁾ | 1/2" | 30,000 |
| V 31.09 | OZ 1832 | 10 | 10 ⁽¹⁾ | 3/8" | ER 20 | 20 | 13 ⁽¹⁾ | 1/2" | 30,000 |
| KR 35.1 D | OZ 1832 | 10 | 10 | 3/8" | ER 20 | 20 | 13 | 1/2" | 24,000 |
| KR 35.3 D | OZ 1832 | 10 | 10 | 3/8" | ER 20 | 20 | 13 | 1/2" | 24,000 |
| KR 35.5 D | OZ 1832 | 10 | 10 | 3/8" | ER 20 | 20 | 13 | 1/2" | 24,000 |
| KR 35.7 D | OZ 1832 | 10 | 10 | 3/8" | ER 20 | 20 | 13 | 1/2" | 18,000 |
| KR 35.9 D | OZ 1832 | 10 | 10 | 3/8" | ER 20 | 20 | 13 | 1/2" | 12,000 |
| V/VU 50.09 | OZ 1833 | 12 | 12 | 1/2" | ER 25 | 25 | 16 | 5/8" | 30,000 |
| V/VU 60.11 | OZ 1833 | 12 | 12 | 1/2" | ER 25 | 25 | 16 | 5/8" | 30,000 |
| V/VU 61.15 | OZ 1833 | 12 | 12 | 1/2" | ER 25 | 25 | 16 | 5/8" | 12,000 |
| KR 50.11 D | OZ 1833 | 12 | 12 | 1/2" | ER 25 | 25 | 16 | 5/8" | 18,000 |
| KR 51.14 D | OZ 1833 | 12 | 12 | 1/2" | ER 25 | 25 | 16 | 5/8" | 18,000 |
| KR 52.16 D | OZ 1833 | 12 | 12 | 1/2" | ER 25 | 25 | 16 | 5/8" | 12,000 |
| KRSV 51.14 D | OZ 1836 | 25 | 25 | 1" | - | - | - | - | 18,000 |
| KR 60.09 D | OZ 1834 | 16 | 16 | 5/8" | ER 32 | 32 | 20 | 3/4" | 18,000 |
| KR 61.13 D | OZ 1834 | 16 | 16 | 5/8" | ER 32 | 32 | 20 | 3/4" | 18,000 |
| KR 62.18 D | OZ 1834 | 16 | 16 | 5/8" | ER 32 | 32 | 20 | 3/4" | 12,000 |
| KRS 61.13-2 D | OZ 1836 | 25 | 25 | 1" | - | - | - | - | 18,000 |
| KC 70/71/72 | OZ 1836 | 25 | 25 | 1" | ER 32 | 32 | 20 | 3/4" | 9,000 |
| KC 70/71/72 D | OZ 1836 | 25 | 25 | 1" | - | - | - | - | 9,000 |
| KNOC 71 D | - | - | - | - | ER 32 | 32 | 20 | 3/4" | 18,000 |
| KNO 71 D | OZ 1836 | 25 | 25 | 1" | - | - | - | - | 18,000 |

(1) = the maximum collet capacity can only be used up to 24,000 rpm at the maximum.

D = double bearing arrangement on tool side

The maximum collet capacities and maximum speeds stated in the above list do not conform with all standard motor versions but sometimes need special bearing arrangements.

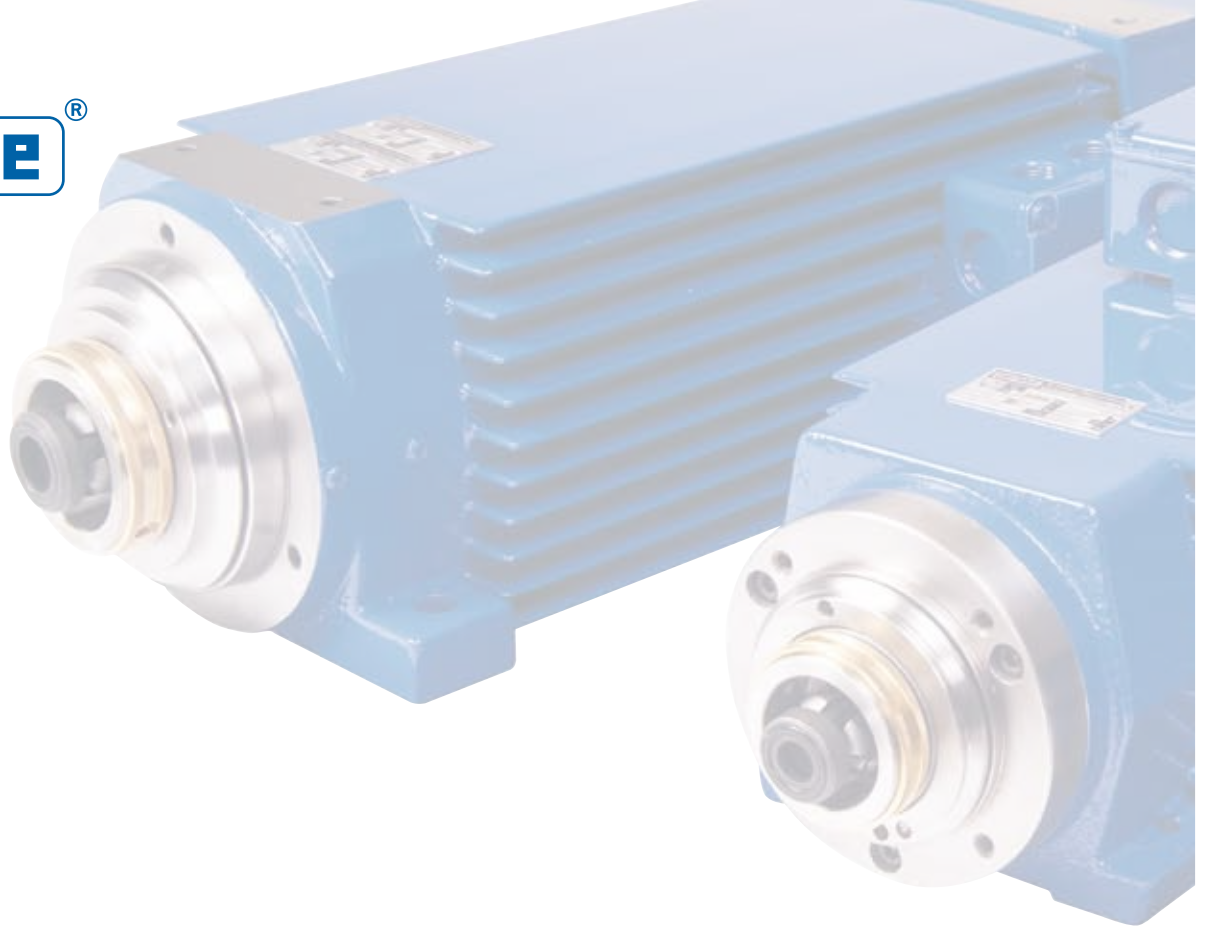
Only balanced tools are to be used. Depending on the weight of tool, restrictions may be necessary.

Measurements conversion table

| | | | | | |
|----------------|--------------|----------------------|--|--|--|
| power 1 HP | = 0.7457 kW | 1 kW = 1.341 Hp | | | |
| length 1 inch | = 25.4 mm | 1 mm = 0.039 inch | | | |
| length 1 ft | = 304.8 mm | 1 m = 3.28 ft | | | |
| weight 1 lb | = 0.454 kg | 1 kg = 2.20 lbs | | | |
| temperature °F | = 9/5°C + 32 | °C = (°F - 32) x 5/9 | | | |
| pressure 1 psi | = 68.95 mbar | 1 mbar = 0.0145 psi | | | |
| speed 1 ft/s | = 0.305 m/s | 1 m/s = 3.28 ft/s | | | |



Notes



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Managing Director: Ulrich Perske



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