



MP SERIES GEARED MOTORS

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1. The Premium Group

Combined for better performance

Integrated solutions for mechanical drive technology are our strength. We have formed a group of top businesses which in cooperation with one other, offer economical solutions for your drive technology needs, everything from single products to integrated system solutions.

Your basis for success

High-quality products, application expertise and absolute dependability; your decision for the whole Spectrum of the Premium family is a decision for a strong and reliable partner.

The Premium Stephan Company

Premium Stephan, a member of the Premium group, has been developing and manufacturing a wide choice of gear units, geared motors and other products from the field of mechanical drive technology at the Hameln site for decades. Perfected design, computation and manufacturing technologies have contributed to Premium Stephan's outstanding reputation as a partner for individual drive solutions. Customer-oriented customised gear units or backlash-free precision gears for industrial robots are established components in our product assortment, along with the M4, C4 and E4 series. In our production area of 17,000 m², we manufacture according to the most modern, computer-assisted and especially "streamlined" management principles of the third century. Premium Stephan is an associated partner of the Premium group for mechanical drive technology. Along with planning, development and design, we offer our customers not only individual products, but customised solutions through worldwide distribution. Whether assemblies or closed systems, we have the correct solution for your application.

We possess outstanding references in the development, construction and manufacture of individual drive solutions. Through our worldwide distribution, we also offer package solutions for over-sized gear units and drive elements:

- Standard gear units
- Drive-Packages
- Complete solutions
- Customised gear units
- Low-backlash gear units

2. The M4 Product Family

Features	Strong	Advantages
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The optimized gearing and shaft geometry compensates deflection under load. Application-hardened, hard-machined gear wheels correspond to high quality requirements.

Gear unit casings, covers, feet, flanges, and motor casings are heavily ribbed and securely connected to each other.

Carefully dimensioned shaft and roller bearings absorb high external loads. The components are dimensioned to withstand peak loads even under the most adverse operating conditions.

The Premium Stephan M4 transfers higher torques with a given shaft-center distance for a long, low-maintenance service life.

The ruggedly designed casing ensures maximum robustness under high load and failure-free operation.

High load-carrying capacities to absorb high external forces at the input and output shaft ensure a long bearing life of the Premium Stephan M4 geared motor.

Features	Silent	Advantages
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Optimized gearing geometry and precise abrasive engineering practice create a smooth rolling of the tooth flanks involved in the engagement.

The inside of the casing was reinforced by ribs. Similar to the star-shaped output cover.

Using high-precision machining of the motor flange, motor and gear unit were integrated into a harmonic unit.

The result is a nearly perfect tooth engagement, even load distribution across the complete face width, minimum vibrations and, therefore, a smooth, low-noise running.

Perfectly tied-in ribs dampen vibrations and ensure that vibrations are not passed on to the environment as noise.

The pinion mounted directly on the motor shaft engages in the gearing of the gear unit without angle error and does not create any disturbing noise.

Features	Standard	Advantages
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Connection dimensions of shafts, feet, and flanges are identical with those of the market standard.

The Premium Stephan M4 program features a broad range of designs and numerous standard options. Additional information can be found in the overview of the product program.

The Premium Stephan M4 series corresponds to the market standard; based on the outstanding performance Specifications, it is predestined to replace existing drives.

The most economical design for the respective application can be selected and is available worldwide.

Features	Smart	Advantages
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The Easy Fit System :

Pre-assembled gear units, motors and wheel sets are stocked in the Premium Stephan assembly centers throughout the world.

Short assembly time and high part interchangeability are granted at each assembly center side due to the unique Easy Fit System.

Guaranteed High Quality.

Over millions of design variants can be quickly assembled through a corresponding combination of pre-assembly components which allows for worldwide availability.

Short delivery time.

2. The M4 Product Family

The Premium Stephan **M4** pre-assembly system offers the right components for every application.

The M4 series includes a complete range of coaxial helical geared motors, parallel shaft helical geared motors, and helical bevel geared motors.

The four **S**

Strong,
Silent,
Standard,
Smart

"**Strong**" because of the high rated torques that are above the market standard. They are the most powerful drives on the geared motor market.

"**Silent**" because of the optimized gearing geometry and precision-finished face flanks that allow for an extremely smooth, low-noise running, and

"**Standard**" because of market-oriented dimensions that facilitate the conversion to M4 and allow for a Simple assembly for a worldwide geared motor application.

"**Smart**" The unique EasyFit system allows in minutes to assembly a customize geared motor at dealers place (assembly house).

The modular M4 series was built using a minimum of components, thereby ensuring high reliability and Simple maintenance.

2.1 Use as prescribed

Gear units/geared motors are designed for the purpose of converting rotational Speed and torque. They are intended for use in industrial systems and may only be used as recommended in the Premium Stephan technical documentation and in accordance with the Specifications on the nameplate.

3. Product Description

3.1 Quality through innovation and control

The products manufactured by Premium Stephan meet very high quality requirements. Constant control with strict compliance of initiated quality guidelines meets highest demands. State-of-the-art processing centers, contiguous measuring and test technology, and distinctive quality awareness in all employees are a guarantor for efficient and function-oriented products.

Flexible production flows, supported by the Premium Stephan modular system, guarantee high availability while considering individual demands.

The torsionally-rigid gear unit casings are made of high-quality cast iron and guarantee a vibration-free operation. The robust structure of the M4 geared motors is based on ribbed castings and optimum roller bearings to allow for absorbing even high external loads.

A high efficiency is reached through helical, hardened and precision-machined gear wheels. The motor output becomes effective at the output shaft without nearly any losses.

The gear units are tested in the experimental test field and tested for extreme requirements. With standard motor type of enclosure IP 55 and insulation class F, our electric motors are even safe to operate under extreme operating conditions.

Constant innovation and always looking for better manufacturing processes allow for withstanding the growing requirements of the market.

3.2 General technical data

3.2.1 Motor output and output torque

The motor output and torque values listed in the selection tables refer to normal operating conditions and the standard type of construction or to comparable types of construction of the respective type of gear unit. The decisive factor is that the drive stage does not completely run in the oil bath.

3.2.2 Output Speeds

The output Speeds listed in the selection tables are guide values and can be calculated using the Specified motor Speed n_1 (for rated operation) and the respectively valid exact gear ratio i_{ex} . However, the actual output Speed depends on the effective motor load and the local supply conditions and, therefore, may deviate slightly.

3.2.3 Service Factor

The Service Factor SF listed in the selection tables is calculated using the maximum permissible torque of the gear unit and the output torque permitted by the installed motor output. Service Factors are not standardized and, therefore, may differ dependent upon the manufacturer. For Premium Stephan M4 geared motors, a gear unit with an application factor of $SF = 1$ already offers an enduring dimensioning and, therefore, ensures highest reliability. In case of doubt, we would gladly provide you with more information in a personal consultation.

3.2.4 Weights

The weights Specified are guide values for further dimensioning. Due to the variation in gear ratios and different types of construction (oil quantity), the exact weights may deviate slightly.

3. Product Description

3.3 General construction design and dimensioning

3.3.1 The gear unit

Gear wheels	Carburized and hardened helical and ground or rotary-beveled Spur gears. Bevel gear wheels with helical gearing, lapped bearing surfaces
Castings	GG-20 cast iron as standard
Bearings	Sufficiently dimensioned roller bearings so that input and output shaft can absorb Significant external loads
Shafts	Output shafts made of quenched and tempered steel
Lubrication	Splash lubrication with gear unit oil or grease for designs with oil-feed tubing, the lubrication is carried out via integrated pump. Roller bearing at the output shaft end is lubricated for life with grease.
Seals	Radial shaft seals, with dust lip at the output Side
Efficiency	The efficiency of a gear unit is primarily determined by Splash losses, bearing and gearing friction. On an average across all sizes, the efficiency measures approx. 99 % for standard (or Similar) types of construction for each gear stage.

3.3.2 The Motor

Design	Geared motors with integrated motor up to 45 kW (pinion directly on motor shaft). For universal motor assembly (drive end U), a standard IEC motor of B5 may be attached.
Casting	Aluminum alloy as standard up to size 132. A motor housing of cast iron is available as an option. Cast iron is standard starting with Size 160.
Bearing	Deep-groove ball bearing lubricated for life. Starting at Size 200 with equipment for regreasing.
Type of enclosure	IP 55, higher types of enclosure available upon request. Number of poles: Preferably 4-pole motors (1,500 rpm), other number of poles and pole changing motors are possible.
Voltages	up to 3 kW: 230/400 V $\pm$ 10% 50 Hz, 265/460 V $\pm$ 10% 60 Hz from 4 kW to 22 kW: 400/690 V $\pm$ 10% 50 Hz, 460 V delta $\pm$ 10% 60 Hz. Other voltages upon request
Insulation	Insulation class F, utilized to B. Suitable for humidity up to 95%.
Cable entries	On principle, the cable entries of the motors are implemented with the corresponding metric threads. Screwed cable glands are not part of the scope of delivery.
Efficiency class	The standard motors are manufactured according to efficiency class IE 2 . Energy efficient motors to efficiency class IE 3 are available as an option.
Standards	The motors in the range of 0.12 to 22 kW, are according to the standards to CE, CSA and UL. Country Specific executions for USA and Canada are possible on request.

3. Product Description

3.3.3 The brake motor

Design	Integrated, DC-excited Spring-applied disk brake. Connection via a rectifier installed in the terminal box.
Voltage	Connection: 230 or 400 VAC corresponding to 102 or 178 V DC at the brake coil.
Type of enclosure	IP 55 as standard.

3.3.4 Operating conditions

Please consult page 14, chapter 2.5 for hazardous locations according to ATEX.
The geared motors are suited for use at ambient temperatures from -10 °C to +40 °C and installation altitudes up to 1.000 m.a.s.l.. As delivered with oil filling (see above), ambient temperatures from 0 °C to 40 °C are permitted as standard. In case of deviating ambient temperatures and in aggressive environments (acid vapors or Similar), the manufacturer must be consulted first.

3.3.5 Outputs, torques and Speeds

The outputs and torques listed in the tables refer to a condition at operating temperature with permissible ambient temperatures and standard lubricants. The Specified output Speeds are rounded values and refer to the rated Speed of the motor at delivered rated output.

3.3.6 Installation instructions

The geared motor must be installed free of vibrations. Power transmission elements such as belt pulleys or Similar should be arranged as close to the gear unit housing as possible. The cooling air intake of the motor must not be obstructed by unfavorable installation or contamination. The brake must be accessible for maintenance work.

3.3.7 Reference to applicable standards

The gear unit components, such as shafts, pinions, gear wheels, and bearings are dimensioned according to pertinent EN, ISO or DIN standards.

3.3.8 Delivery instructions

Lubricant	Sizes 1 and 2: Filled with lubricant for life, ventilation not necessary.
Gear unit oil	Starting with size 3: Gear units for Germany, Switzerland, and Austria are delivered in filled condition (except for SCA, SCP), otherwise unfilled (internally preserved). Before commissioning, the drain plug must be replaced by the supplied vent plug.
Coating	RAL 5002 top coat as standard.
Terminal box	Bores are closed with plastic plugs. Screwed glands are not supplied.
Corrosion protection	Uncoated parts of the drives (e.g. output shafts) are corrosion-protected.
Lifting Lugs	Starting with gear unit Size 3 and motor Size 112.

3.4 Notes about the operation in hazardous atmosphere (ATEX)

Attention! You cannot select gearboxes and geared motors for application in hazardous locations (ATEX) from this catalogue. Please advise requirements to your nearest Premium Stephan branch. In the framework of harmonizing European laws, the EC Directive 94/9/EG, generally known as ATEX 100a, has been in force since July 2003. Premium Stephan gear units and geared motors implemented as parallel shaft gear units, helical and bevel gear units in ATEX design meet all the requirements of EC Directive 94/9/EG for device category 2 and 3. The drives can be delivered for use in gaseous as well as dust atmosphere.

3. Product Description

3.4.1 Zonal classification

According to Directive 99/92 EG (ATEX 137), the system operator together with the controlling authority determines which zone must be taken into account. The zone definition is carried out according to different criteria, such as operating condition of the system, the period in which an explosive atmosphere may occur, and whether an air-dust or an air-gas mixture occurs.

Probability of occurrence	Air-gas mixture (G) zone	Air-dust mixture (D) zone
Continuous and long-term	0	20
Occasionally during normal operation	1	21
Rarely, without importance during normal operation	2	22

3.4.2 Device safety classified into categories

Electrical and mechanical equipment are classified into three categories according to the safety requirements. Assigning the devices to the categories is determined by the manufacturer based on a detailed danger analysis. The connection between the zones and the device category is Specified in Directive 94/9/EG.

Premium Stephan gear units meet all requirements of category 2 and 3. The design, dimensioning and classification- on into the corresponding category was performed in close collaboration with TÜV NORD CERT. Devices of category 1 are not supplied by Premium Stephan. Devices of category 2 meet all requirements of category 3 and may also be used here.

Category	Type of defect	Prerequisite/use
1 (no drives from Premium Stephan)	Safety in normal operation and also for rare faults (two errors occurring Simultaneously must be handled)	Devices of this category: • 1 G in zone 0, 1 and 2 for gas • 1 D in zone 20, 21 and 22 for dust
2	Safety in normal operation and in case of an expected fault	Devices of this category: • 2 G in zone 1 and 2 for gas • 2 D in zone 21 and 22 for dust
3	Safety in normal operation	Devices of this category: 3G in zone 2 for Gas 3D in zone 22 for dust

Premium Stephan gear units to Directive 94/9/EG for use in air-gas and air-dust mixture.

Premium Stephan has several decades of experience in the design, manufacture and use of drives in hazardous areas. With the introduction of Directive 94/9/EG, the standard series EN 13463 was issued as the basis for explosion protection for mechanical devices.

Premium Stephan M4 gear units in the designs MP, MP and MP meet all requirements of category 2. Requirements for dust protection and gas protection were taken into account for the approval. For this reason, no distinctions are made with respect to categories 2 and 3. Our gear units of category 2 also meet all requirements of category 3.

3.4.3 Type of protection for gear units

Protection through structural safety

EN 13463-5 (identifier "c")

For this type of explosion protection, the protection is ensured through design and construction measures at the devices as well as the experience of the manufacturer.

3. Product Description

Protection through liquid enclosure

EN 13463-8 (identifier "k")

Potential ignition sources inside the gear unit are rendered ineffective through complete or partial immersion in a protective liquid (gear unit oil) or through constant wetting with a liquid film, the protective liquid can be exclusively intended for preventing a potential ignition source to become effective. In devices such as gear units, it also serves the purpose of lubricating and cooling moving parts.

Premium Stephan gear units for category 2G and 2D

Gear units of category 2G can be used in zone 1 and 2 for gases and gear units of category 2D can be used in zone 21 and 22 for dust. For category 2, Premium Stephan issues a certificate of conformity and certifies the following:

- The compliance of the products with standard EN 13463 with the relevant sections.
- The internal manufacturing control according to Directive 94/9/EG Appendix VIII
- Filing the product documentation with the notified body, TÜV NORD CERT

Premium Stephan gear units for category 3G and 3D

Gear units of category 3 can be used in zone 2 for gases and zone 22 for dust. A separate certification for category 3 is not issued. Since all devices for category 2 also meet the requirements of category 3.

Premium Stephan geared motors conforming to Directive 94/9/EG

The experiences collected over decade-long use in hazardous atmosphere also entered into the dimensioning and design according to the new ATEX directives. The following components were taken into account based on this experience:

- Shrink-fit ring covers according to the standard
- All bolts are secured against automatic loosening and protected against rust
- Stainless steel nameplates
- Proven shaft seals at input and output shaft
- High-quality lubricants
- Oil-level control for all Sizes

3.4.4 Type of protection for motors

Motors to Directive 94/9/EG for use with gas

The ATEX motors used by Premium Stephan are manufactured by a well-known German manufacturer. The EN 50014 standard is the basis for the approval. Supplementary standards specify the measures of how an ignition is prevented.

Flameproof enclosure to EN 50018, type of protection "d"

Motors of this type of enclosure can be used for mains operation and inverter operation in zone 1. Motors with flame-proof enclosure can only be combined with the Premium Stephan gear unit in lantern version.

Increased safety to EN 50019, type of protection "e"

The basis of this type of enclosure is avoiding high temperatures at the surface and in the inside during normal operation and in case of a fault, such as a blocked rotor with applied supply voltage. Motors to EN 50019 can be used in zone 1 with mains operation.

Protection through non-sparking equipment to EN 50021, type of protection "n"

The motor design ensures that no gases are ignited during normal operation. A malfunction is not taken into account. Motors to "n" can be used in zone 2 with mains operation.

Motors to Directive 94/9/EG for use with dust

The EN 50281-1 standard serves as the basis for the approval of motors in an explosive dust-gas atmosphere. The decisive factor consists of meeting certain criteria against the intrusion of foreign particles in accordance with EN 60259 IP types of enclosure. Motors of category 3 require at least type of enclosure IP54 and category 2 type of enclosure IP6x.

Dust-proof motors to EN50281-1-1, type of enclosure IP65

Design measures prevent any dust from entering into the inside of the motor. The surface temperature under normal operating conditions does not cause an ignition of dust deposits. A protection in case of faults is ensured through temperature monitoring. These motors correspond to category 2D and can be used in zone 21 and 22 with mains operation.

Dust-protected motors to EN50281-1-1, type of enclosure IP55

In this case, dust cannot enter the motor in dangerous quantities. Only the surface temperature represents an ignition risk and, for this reason, must be protected with temperature sensors. These motors are certified to category 3D and can be used for mains operation in zone 22. For inverter operation, Premium Stephan can perform a corresponding acceptance with the selected inverter.

4. Instructions for Drive Selection

4.1 Service factors / Applications / Operating conditions

4.1.1 Required Service Factor (SF_{min})

Determine the required application factor according to the following formula:

$$SF_{min} = F \times C$$

Whereby the following applies:

F = application factor dependent upon the load characteristic values of the application and the operating time.

The values listed below can be used as guide values for applications that are not listed.

Both criteria - the "Load characteristics related to the application" as well as the "inertia factor M " - must be taken into account. The criterion resulting in the highest F -value is decisive.

Load characteristics of the application	M	F		
		8h/24h	16h/24h	24h/24h
Uniform loads	<0,2	0.8 - 1*	1	1.2
Moderate shock load	<3	1.1	1.25	1.5
Heavy shock load	<10	1.4	1.6	1.7

M = Inertia factor

$$M = \frac{\text{Moment of inertia of driven machine related to motor shaft}}{\text{Mass moments of inertia of the motor (+brake)}}$$

C = correction factor dependent upon the number of start-ups per hour.

		C		
		8h/24h	16h/24h	24h/24h
	<10	1	1	1
Start-ups / hour	<100	1.1	1.1	1.15
	<500	1.1	1.15	1.25

4.1.2 Selecting the frame Size

A geared motor must be selected for the required motor output (P_m) and the output Speed (n_2) who's Service Factor (SF) is greater than or equal to the required Service Factor (SF_{min}). The selection can also be made based on the available output torque (T_{2m}) of the geared motor.

4. Instructions for Drive Selection

4.1.3 Required application factors for different applications

APPLICATION	Runtime hours/day		
	8h/24h	16h/24h	24h/24h
Construction and building materials machinery			
Mixer	1.25	1.5	1.75
Cement mills	1.5	1.75	2
Mortar guns	0.8 - 1*	1	1.25
Breweries, distilleries			
Mills	0.8 - 1*	1	1.25
Bottling machinery	0.8 - 1*	1	1.25
Elevators			
Bucket elevators	1	1.25	1.5
Load elevators	1	1.25	1.5
Escalators	0.8 - 1*	1	1.25
Filters	1	1.25	1.5
Generators	0.8 - 1*	1	1.25
Wood and plastics processing			
Main drive for saws	1.5	1.75	2
Feed drives for saws	1	1.25	1.5
Crushers	1.5	1.75	2
Machines for gluing, veneering	0.8 - 1*	1	1.25
Drills	0.8 - 1*	1	1.25
Extruders	1.25	1.5	1.75
Machine tools			
Roller straightening, punching device, bending machines	1.25	1.5	1.75
Main and feed drives	1	1.25	1.5
Supply and servo drives	0.8 - 1*	1	1.25
Presses	1.75	2	2
Edging machines	1.5	1.75	2
Plate shears	1.75	2	2
Cranes and hoisting machines			
Hoisting gears, traveling drives	**	**	**
Packaging machines			
Packing machines	1.25	1.5	1.75
Wrapping machines	0.8 - 1*	1	1.25
Compressors			
Centrifugal compressors	1	1.25	1.5
Rotating screw compressors	1	1.25	1.5
Mixers			
Constant density	0.8 - 1*	1	1.25
Variable density	1	1.25	1.5
Iron and steel industry			
Wire-drawing benches	1.25	1.5	1.75
Winding drums	1	1.25	1.5
Roller-table drives	**	**	**

* = 0.8 if operating time < 3h/24h and no external loads occur

** = drives must be dimensioned by the manufacturer

+ = it is recommended consulting the manufacturer for selecting the reverse lock

4. Instructions for Drive Selection

APPLICATION	Runtime hours/day		
	8h/24h	16h/24h	24h/24h
Iron and steel industry Non-reversible rolling mills - multi-operation - single operation	1.25 1.5	1.5 1.75	1.75 2
Mills Ball mills, rod mills Hammer mills, centrifugal mills	1.75 1.5	1.75 1.75	1.75 2
Winding drives Pumps Rotary pumps Circulation, gear, vane pumps Piston pumps: 1 cylinder 2 cylinders or more Screw pumps	1 0.8 - 1* ** 1 1 +	1.25 1 ** 1.25 1.25 +	1.5 1.25 ** 1.5 1.5
Agitators Pure liquid (constant density) Liquid with variable density Liquid mixed with solid bodies	0.8 - 1* 1 1.25	1 1.25 1.5	1.25 1.5 1.75
Conveyor systems Even load Heavy operation, chain, screw conveyor Shaker conveyor	0.8 - 1* 1 1.5	1 1.25 1.75	1.25 1.5 2
Fans Radial Industrial fans Fan drives in cooling towers	0.8 - 1* 1 2	1 1.25 2	1.25 1.5 2
Food-processing industry Crusher Root cutting, kneading machines Meat grinders Filling machines Dough kneading machine Extruders Sugar-cane cutter Toaster	1.75 1.25 1.25 0.8 - 1* 1 1.25 1.75 1.25	2 1.5 1.5 1 1.25 1.5 1.75 1.25	2.25 1.75 1.5 1.5 1.5 1.75 1.75 1.25
Waste water facilities Surface aerator Revolving systems Rakes and channels Screw pumps	1.5 1.75 0.8 - 1* 1	1.5 1.75 1 1.25	1.5 1.75 1.25 1.5
Screens Revolving screens (stones, grit) Screens with water circulation	1 0.8 - 1*	1.25 1	1.5 1.25
Servo drives for systems Service operation Setting-up mode, operation without load Normal operation	0.8 - 1* 1.25 Same as main drive	- 1.25	- 1.25

* = 0.8 if operating time < 3h/24h and no external loads occur

** = drives must be dimensioned by the manufacturer

+ = it is recommended consulting the manufacturer for selecting the reverse lock

4. Instructions for Drive Selection

APPLICATION		Runtime hours/day	
	8h/24h	16h/24h	24h/24h
Agricultural machines			
Mechanical gutter cleaners	0.8 - 1*	1	*
Harvesting machines	0.8 - 1*	1	*
Textile machinery			
Looms	1.25	1.5	1.75
Spinning machines	0.8 - 1*	1	1.25
Laundry machines	1	1.25	1.5
Print and paper technology			
Sheeting cutter	1	1.25	1.5
Winding drives	0.8 - 1*	1	1.25
Bale feeder	1	1.25	1.25

* = 0.8 if operating time < 3h/24h and no external loads occur

** = drives must be dimensioned by the manufacturer

+ = it is recommended consulting the manufacturer for selecting the reverse lock

These Service factors (SF) are empirical values that are based on AGMA and ISO information and experience. They apply to driven machines corresponding to today's state of the art for normal operating conditions and for actuating with electric motors. A consultation is required for Special applications, passenger elevators or Special operating conditions, e.g. high mass acceleration factors.

4.2 External loads, axial / radial, conversion, connections

The permissible radial loads listed in the selection tables are guide values and used only for rough orientation purposes. The data refer to action of load in the middle of the respective solid shaft. If no radial load is present, half the value of the radial load specified in the selection tables is permitted as axial load. The resulting maximum value of a radial load for each gear unit size generally occurs at low speeds and is determined by the material and geometry of the shaft. For all lower values of the frame size, the predetermined bearing life LH10 of the output shaft bearing is limiting. Since variables such as torque, speed, direction of rotation and load angle of action enter into the calculation and Premium Stephan always assumes the worst-case scenario, significantly higher external loads are permissible in most cases while giving the effective loads. Please contact us and we will gladly recalculate your specific case.

4.3 Thermal break even performance

Torque and output stated in the selection charts are mechanical limit values. Depending on mounting position and mounting situation it is possible that the gearbox will overload thermal before reaching the mechanical breakeven performance. Outputs marked (1) are exceeding the thermal break even performance already under normal application conditions.

If the real operation conditions are known, the heat breakeven performance can be recalculated by Premium Stephan. The heat breakeven performance can be increased by using appropriate measures (such as using synthetic lubricants with increased thermal consistency). The following data is necessary for recalculation:

Type or gearbox
 Mounting position
 Input Speed (range)1/min
 Ratio
 Used outputkW
 Duty / power-on time
 Ambient Temperature°C

Installation Site
☐ in a small, closed room
☐ large rooms
☐ outside
 Mounting Situation (Sketch/drawing)

4. Instructions for Drive Selection

Increased Splash losses may occur for mounting positions with high oil level. (MP all V-mountings, MP mounting pos. 2, 5 and 6, MP mounting pos. 2 and 4) or input Speed above 1800 1/min and may lead to excessive heating. Please contact Premium Stephan in these individual cases.

4.4 Notes about the dimensional drawings

The dimensional drawings featured in this catalog are nonbinding. In particular, slightly deviating dimensions may occur for motor dimensions dependent upon the technical requirements. Binding dimensional drawings can be created upon request.

Note:

The user is responsible for providing protective covers and professional setup of the complete equipment.

The flanges on the output Side are manufactured according to DIN 42955-N, whereby the tolerances of the center- ring gears correspond to DIN 42948. Keyways of the output shafts are manufactured according to DIN 6885-T1-"Form A".

Detailed dimensions of the shafts and recommendations for the designs of the machine shafts can be found in the technical appendix of this catalog.

4.5 Delivery times

Manufacturing and stocking of M4 components are constantly adapted to customer demands. Modern control methods are used in the process. Delivery time for standard design is max. 3 weeks. If necessary we can also achieve 24h delivery service. We can also achieve short delivery times for all remaining geared motors. Please contact us and we will gladly assist you.

4.6 Shaft arrangements

In most cases, different shaft arrangements can be implemented for the parallel shaft helical geared motors MP4 and the helical bevel geared motors MP4.

Definitions:

Gear Unit with Solid shaft with MKB/V..A

- Deign L : Shaft output left (top view)
- Deign R : Shaft output right (top view)
- Deign T : Shaft output right and left (top view)

Gear Unit with Hollow shaft MKB/V..S

- Deign L : Machine shaft is inserted in the hollow shaft from the left (top view)
- Deign R : Machine shaft is inserted in the hollow shaft from the right (top view)
- Deign T : Machine shaft is inserted through the hollow shaft. Shaft output right and left (top view)

Gear Unit with Hollow shaft with shrink disc MKB/V..A

- Deign L : Machine shaft is inserted in the hollow shaft from the left (top view)
- Deign R : Machine shaft is inserted in the hollow shaft from the right (top view)
- Deign T : Machine shaft is inserted through the hollow shaft. Shaft output right and left (top view)

Gear Unit with Hollow shaft with taper bush MKB/V..A

- Deign L : Machine shaft is inserted in the hollow shaft from the left (top view)
- Deign R : Machine shaft is inserted in the hollow shaft from the right (top view)
- Deign T : Machine shaft is inserted through the hollow shaft. Shaft output right and left (top view)

Gear Unit with Hollow spline shaft MKB/V..A

- Deign L : Machine shaft is inserted in the hollow shaft from the left (top view)
- Deign R : Machine shaft is inserted in the hollow shaft from the right (top view)
- Deign T : Machine shaft is inserted through the hollow shaft. Shaft output right and left (top view)

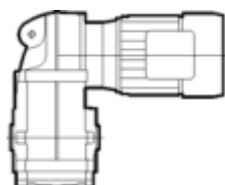
4. Instructions for Drive Selection

4.7 Types of construction outside of the axis intersection

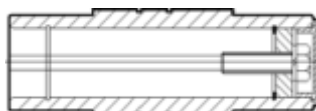
In addition to the mounting positions in the axis intersection, any other mounting positions are also feasible. The use of geared motors in sloping positions are frequently permissible. However, the optimum lubricant supply must always be ensured. Fill quantities and required oil attachments are Specified by Premium Stephan. Please contact us. We will find a solution for your mounting position.

5. MP4 Helical Bevel

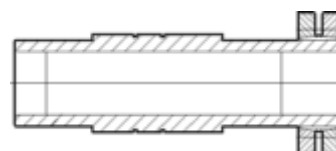
5.1.1 Version variants for MP4 parallel shaft helical geared motors



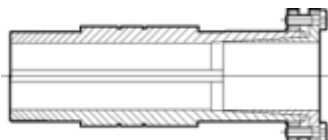
MPB...S
Shaft-mounted version
Basic version with hollow shaft



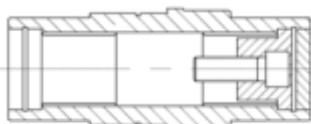
MPB...S
Hollow shaft with keyway



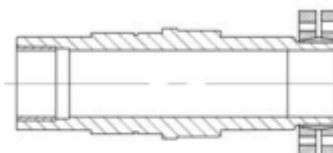
MPB...A
Hollow shaft with shrink disc



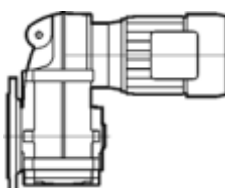
MPB...A
Hollow shaft with conical clamp sleeve



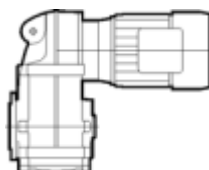
MPB...A
Hollow spline shaft



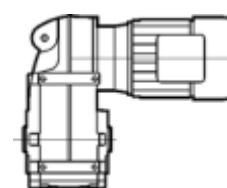
MPB...A
Hollow shaft with shrink disc and
bronze bushing



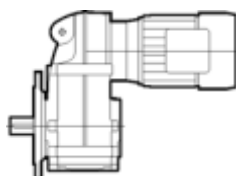
MPV...A
B5 flange version with hollow shaft



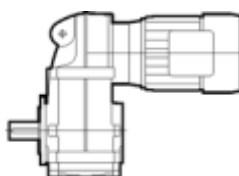
MPV...A
B14 flange version with hollow shaft



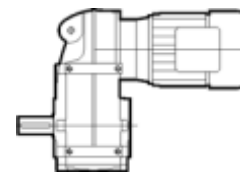
MPV...A
Foot mounting with hollow shaft



MPV...S
B5 flange version with solid shaft



MPV...A
B14 flange version with solid shaft

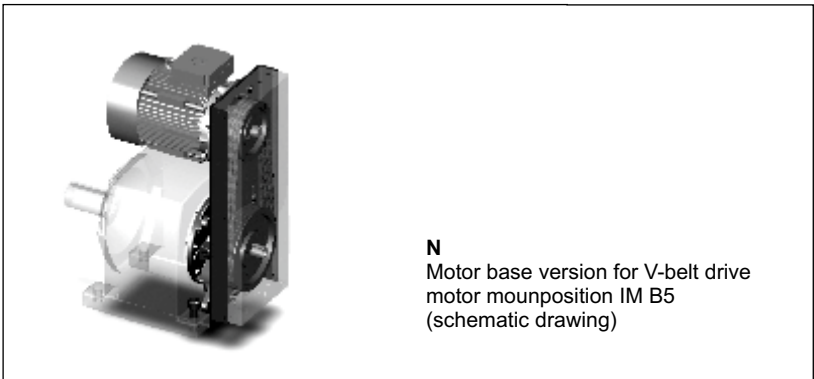
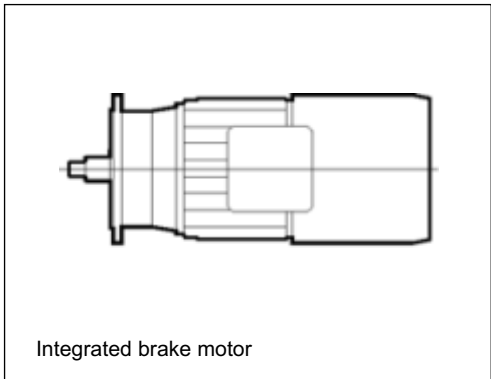
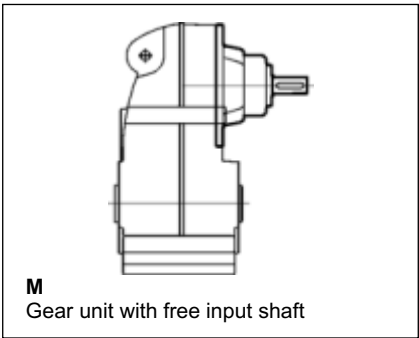
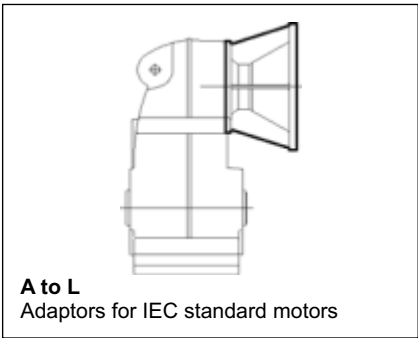
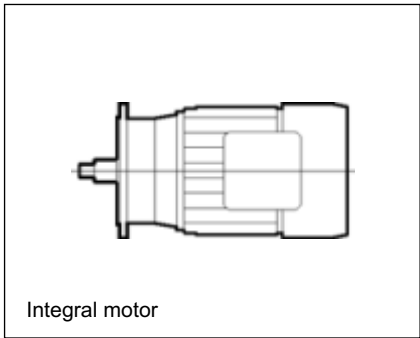


MPV...A
Foot mounting with solid shaft

5. MP4 Inline

5.1.1 Version variants for MP4 helical bevel geared motors

Versions on the drive end



Overview		7 Sizes						
		1	2	3	4	5	6	7
	T2m (Nm)	200	420	850	1700	3000	5400	9000
	Pm (kW)	0.12 to 90 kW						
	i	3.15 ... 100  B				35.5 ... 315  C		

5. MP4 Inline

5.2 Ordering information

Gear units with two and three stages

M	P	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
----------	----------	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----

3	Casing B Foot Version V Flange Version	8-11	Motor Frame Size 0000 - No Motor
4	Number of Stages 2 2-stage 3 3-stage	12	Number of Motor Poles 0 - No Motor T - Two Pole F - Four Pole S - Six Pole E - Eight Pole
5-6	Size 2-3-4-5-6-7	13-17	Total Gear Ratio
7	Adaptor Size A 140 - 11 B 160 - 14 C 200 - 19 D 200 - 24 E 250 - 28 F 300 - 38 G 350 - 42 H 350 - 48 I 400 - 55 J 450 - 60 K 500 - 65 L 550 - 75 M SISO	18	Supply Condition S - Standard A - Additional Accessories e.g. Torque arm, hold back, Special motor etc.

Example

M	P	B	3	0	5	D	0	9	0	L	F	1	5	5	1	0	S
----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------

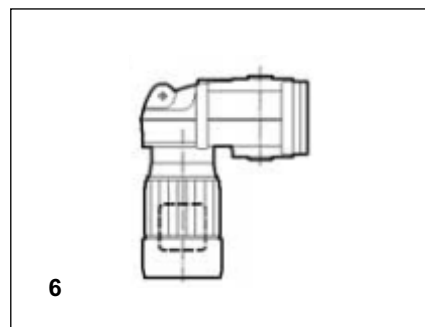
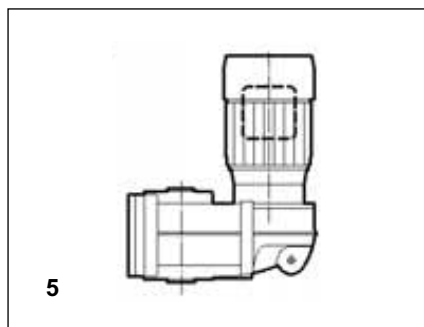
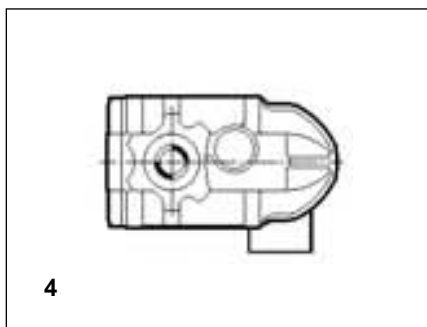
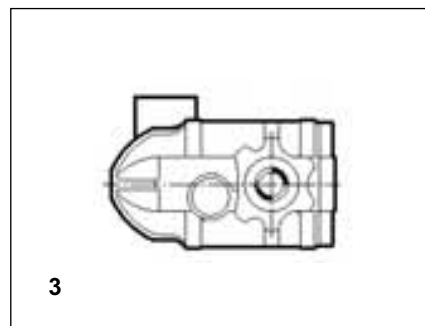
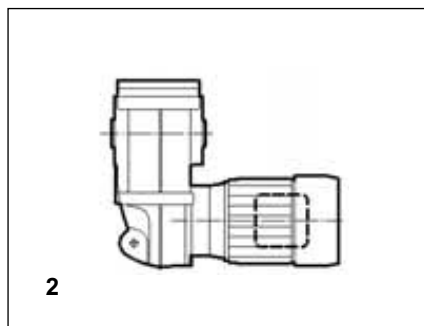
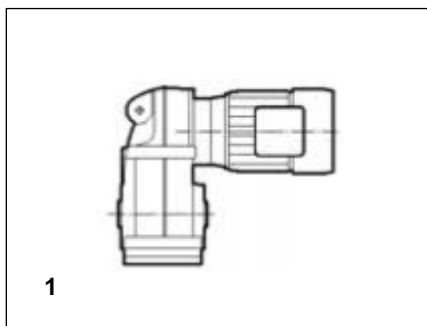
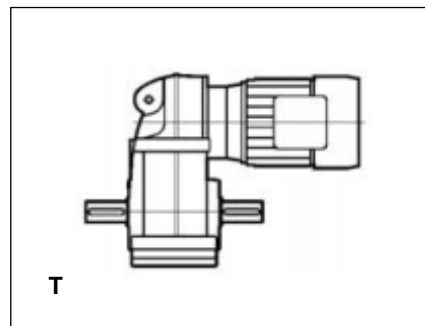
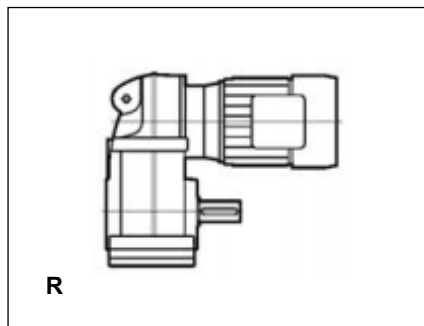
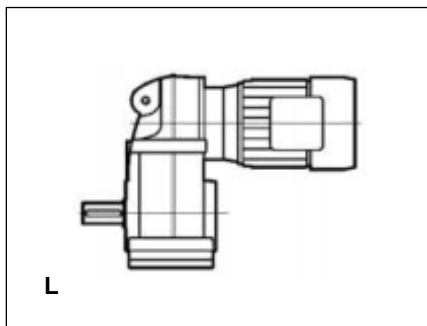
MP foot casing, Three stage, Size 5, Adaptor 200-24 Motor frame size 090L,
Four pole motor, Total gear ratio I = 155.10, Standard Supply Condition.

M	P	B	2	0	1	D	0	9	0	S	F	0	0	3	4	7	S
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MP foot casing, Two stage, Size 1, Adaptor 200-24 Motor frame size 090S,
Four pole motor, Total gear ratio I = 36.65, Standard Supply Condition.

5. MP4 Inline

5.3 Mounting positions



5. MP4 Inline

5.4 Auswahltabellen Getriebemotoren MP4 Selection tables for MP4 geared motors Tableaux de sélection pour les motoréducteurs MP4

Beispiel : Auswahltabelle Getriebemotoren
Example : Geared Motor selection table
Exemple de tableau de sélection pour motoréducteurs

Motorleistung Motor output Puissance moteur		Exakte Übersetzung Exact gear ratio Valeur exacte du rapport de démultiplication		Motordrehzahl Motor speed Vitesse moteur		Zulässige Radialkraft für verstärkte Lagerung Permissible radial force for reinforced bearing Force radiale admissible pour paliers support renforcés		Zulässige Radialkraft Permissible radial force Force radiale admissible		Weight	
P 0.12 kW n ₁ 1360 min											
n _{2ex} min-1	T _{2m} Nm	i _{ex}	SF	TYPE		FrN N	FrN-G N	M kg			
392.4	3	3.47	56	MPB201A063SF00347S			4100	21			
342.3	3	3.97	49	MPB201A063SF00397S			4300	21			
319.4	4	4.26	46	MPB201A063SF00426S			4400	21			

P 0.12 kW n_1 1360 min⁻¹

n _{2ex} min ⁻¹	T _{2m} Nm	i _{ex}	SF	TYPE	Fr NN	FrN-G N	M kg
392.4	3	3.47	56	MPB201A063SF00347S		4100	21
342.3	3	3.97	49	MPB201A063SF00397S		4300	21
319.4	4	4.26	46	MPB201A063SF00426S		4400	21
277.6	4	4.9	40	MPB201A063SF00490S		4600	21
240.1	5	5.66	34	MPB201A063SF00566S		4900	21
222.8	5	6.1	32	MPB201A063SF00610S		5000	21
206.4	6	6.59	30	MPB201A063SF00659S		5000	21
175.8	7	7.73	25	MPB201A063SF00773S		5000	21
160.9	7	8.45	32	MPB201A063SF00845S		5000	21
140.3	8	9.69	28	MPB201A063SF00969S		5000	21
131	9	10.39	26	MPB201A063SF01039S		5000	21
113.8	10	11.95	23	MPB201A063SF01195S		5000	21
98.4	12	13.82	20	MPB201A063SF01382S		5000	21
84.6	14	16.08	17	MPB201A063SF01608S		5000	21
72.1	16	18.87	14	MPB201A063SF01887S		5000	21
66.3	17	20.52	13	MPB201A063SF02052S		5000	21
55.4	21	24.55	11	MPB201A063SF02455S		5000	21
50.3	23	27.02	10	MPB201A063SF02702S		5000	21
45.5	25	29.91	9.1	MPB201A063SF02991S		5000	21
36.3	32	37.42	7.3	MPB201A063SF03742S		5000	21
32.7	35	41.65	6.6	MPB201A063SF04165S		5000	21
29.2	39	46.58	5.9	MPB201A063SF04658S		5000	21
25.1	46	54.15	5	MPB201A063SF05415S		5000	21
22.5	51	60.33	4.5	MPB201A063SF06033S		5000	21
18.1	63	74.98	3.6	MPB201A063SF07498S		5000	21
16.3	70	83.24	3.3	MPB201A063SF08324S		5000	21
14.6	79	93.33	2.9	MPB201A063SF09333S		5000	21

P 0.18 kW n_1 1370 min⁻¹

n _{2ex} min ⁻¹	T _{2m} Nm	i _{ex}	SF	TYPE	Fr NN	FrN-G N	M kg
395.3	4	3.47	38	MPB201A063LF00347S		4 100	21
344.8	5	3.97	33	MPB201A063LF00397S		4 300	21
321.8	5	4.26	31	MPB201A063LF00426S		4 400	21
279.6	6	4.9	27	MPB201A063LF00490S		4 600	21
241.9	7	5.66	23	MPB201A063LF00566S		4 800	21
224.4	8	6.1	21	MPB201A063LF00610S		4 900	21
207.9	8	6.59	20	MPB201A063LF00659S		5 000	21
177.1	10	7.73	17	MPB201A063LF00773S		5 000	21
162	11	8.45	22	MPB201A063LF00845S		5 000	21
141.3	12	9.69	19	MPB201A063LF00969S		5 000	21
131.9	13	10.39	18	MPB201A063LF01039S		5 000	21
114.6	15	11.95	15	MPB201A063LF01195S		5 000	21

P 0.18 kW n_1 1370 min⁻¹

n _{2ex} min-1	T _{2m} Nm	i _{ex}	SF	TYPE	Fr NN	FrN-G N	M kg
99.1	17	13.82	13	MPB201A063LF01382S		5000	21
85.2	20	16.08	11	MPB201A063LF01608S		5000	21
72.6	24	18.87	9.7	MPB201A063LF01887S		5000	21
66.8	26	20.52	8.9	MPB201A063LF02052S		5000	21
55.8	31	24.55	7.5	MPB201A063LF02455S		5000	21
50.7	34	27.02	6.8	MPB201A063LF02702S		5000	21
45.8	38	29.91	6.1	MPB201A063LF02991S		5000	21
36.6	47	37.42	4.9	MPB201A063LF03742S		5000	21
32.9	52	41.65	4.4	MPB201A063LF04165S		5000	21
29.4	58	46.58	3.9	MPB201A063LF04658S		5000	21
25.3	68	54.15	3.4	MPB201A063LF05415S		5000	21
22.7	76	60.33	3	MPB201A063LF06033S		5000	21
18.3	94	74.98	2.4	MPB201A063LF07498S		5000	21
16.5	104	83.24	2.2	MPB201A063LF08324S		5000	21
14.7	117	93.33	2	MPB201A063LF09333S		5000	21
14.9	116	92.15	2.9	MPB202A063LF09215S	6900	6900	28
13.3	130	103.33	2.4	MPB202A063LF10333S	6900	6900	28

P 0.25 kW n_1 1400 min⁻¹

n _{2ex} min-1	T _{2m} Nm	i _{ex}	SF	TYPE	Fr NN	FrN-G N	M kg
403.9	6	3.47	28	MPB201B071LF00347S		4100	22
352.4	7	3.97	24	MPB201B071LF00397S		4300	22
328.8	7	4.26	23	MPB201B071LF00426S		4400	22
285.7	8	4.9	20	MPB201B071LF00490S		4600	22
247.1	10	5.66	17	MPB201B071LF00566S		4800	22
229.3	10	6.1	16	MPB201B071LF00610S		4900	22
212.4	11	6.59	15	MPB201B071LF00659S		5000	22
181	13	7.73	12	MPB201B071LF00773S		5000	22
165.6	14	8.45	16	MPB201B071LF00845S		5000	22
144.4	17	9.69	14	MPB201B071LF00969S		5000	22
134.8	18	10.39	13	MPB201B071LF01039S		5000	22
117.1	20	11.95	11	MPB201B071LF01195S		5000	22
101.3	24	13.82	9.8	MPB201B071LF01382S		5000	22
87.1	27	16.08	8.4	MPB201B071LF01608S		5000	22
74.2	32	18.87	7.1	MPB201B071LF01887S		5000	22
68.2	35	20.52	6.6	MPB201B071LF02052S		5000	22
57	42	24.55	5.5	MPB201B071LF02455S		5000	22
51.8	46	27.02	5	MPB201B071LF02702S		5000	22
46.8	51	29.91	4.5	MPB201B071LF02991S		5000	22
37.4	64	37.42	3.6	MPB201B071LF03742S		5000	22
33.6	71	41.65	3.2	MPB201B071LF04165S		5000	22
30.1	79	46.58	2.9	MPB201B071LF04658S		5000	22
25.9	92	54.15	2.5	MPB201B071LF05415S		5000	22

P 0.25 kW n_1 1400 min⁻¹

n _{2ex} min-1	T _{2m} Nm	i _{ex}	SF	TYPE	Fr NN	FrN-G N	M kg
23.2	103	60.33	2.2	MPB201B071LF06033S		5000	22
18.7	128	74.98	1.8	MPB201B071LF07498S		5000	22
16.8	142	83.24	1.6	MPB201B071LF08324S		5000	22
16.9	142	83.01	2.5	MPB202B071LF06894S	6900	6900	29
15	159	93.33	1.4	MPB201B071LF09333S		5000	22
15.2	157	92.15	2.1	MPB202B071LF09251S	6900	6900	29

P 0.37 kW n_1 1400 min⁻¹

n _{2ex} min-1	T _{2m} Nm	i _{ex}	SF	TYPE	Fr NN	FrN-G N	M kg
403.9	9	3.47	19	MPB201B071SF00347S		4100	23
352.4	10	3.97	16	MPB201B071SF00397S		4200	23
328.8	11	4.26	15	MPB201B071SF00426S		4300	23
285.7	12	4.9	13	MPB201B071SF00490S		4500	23
247.1	14	5.66	11	MPB201B071SF00566S		4700	23
229.3	15	6.1	11	MPB201B071SF00610S		4800	23
212.4	17	6.59	9.9	MPB201B071SF00659S		5000	23
181	20	7.73	8.4	MPB201B071SF00773S		5000	23
165.6	21	8.45	11	MPB201B071SF00845S		5000	23
144.4	24	9.69	9.4	MPB201B071SF00969S		5000	23
134.8	26	10.39	8.8	MPB201B071SF01039S		5000	23
117.1	30	11.95	7.6	MPB201B071SF01195S		5000	23
101.3	35	13.82	6.6	MPB201B071SF01382S		5000	23
87.1	41	16.08	5.7	MPB201B071SF01608S		5000	23
74.2	48	18.87	4.8	MPB201B071SF01887S		5000	23
68.2	52	20.52	4.4	MPB201B071SF02052S		5000	23
57	62	24.55	3.7	MPB201B071SF02455S		5000	23
51.8	68	27.02	3.4	MPB201B071SF02702S		5000	23
46.8	75	29.91	3	MPB201B071SF02991S		5000	23
37.4	94	37.42	2.4	MPB201B071SF03742S		5000	23
33.6	105	41.65	2.2	MPB201B071SF04165S		5000	23
30.1	118	46.58	2	MPB201B071SF04658S		5000	23
25.9	137	54.15	1.7	MPB201B071SF05415S		5000	23
23.4	151	59.95	2.9	MPB202B071SF05995S	6900	6900	30
23.2	152	60.33	1.5	MPB201B071SF06033S		5000	23
21	169	66.79	2.6	MPB202B071SF06679S	6900	6900	30
18.7	189	74.98	1.2	MPB201B071SF07498S		5000	23
20.3	174	68.94	2.1	MPB202B071SF06894S	6900	6900	30
16.8	210	83.24	1.1	MPB201B071SF08324S		5000	23
16.9	209	83.01	1.7	MPB202B071SF08301S	6900	6900	30
15	236	93.33	0.98	MPB201B071SF09333S		5 000	23
15.2	233	92.15	1.4	MPB202B071SF09215S	6 900	6 900	30
13.5	261	103.33	1.2	MPB202B071SF10333S	6 900	6 900	30
13.2	268	106.33	3	MPB203B071SF10633S	10 500	13 500	37

P 0.55 kW n_1 1420 min⁻¹

n _{2ex} min-1	T _{2m} Nm	i _{ex}	SF	TYPE	Fr NN	FrN-G N	M kg
409.7	13	3.47	13	MPB201C080KF00347S		4000	25
357.4	15	3.97	11	MPB201C080KF00397S		4200	25
333.5	16	4.26	10	MPB201C080KF00426S		4300	25
289.8	18	4.9	9	MPB201C080KF00490S		4500	25
250.7	21	5.66	7.8	MPB201C080KF00566S		4600	25
232.6	23	6.1	7.3	MPB201C080KF00610S		4800	25
215.5	24	6.59	6.7	MPB201C080KF00659S		4900	25
183.6	29	7.73	5.7	MPB201C080KF00773S		5000	25
168	31	8.45	7.4	MPB201C080KF00845S		5000	25
146.5	36	9.69	6.4	MPB201C080KF00969S		5000	25
136.7	38	10.39	6	MPB201C080KF01039S		5000	25
118.8	44	11.95	5.2	MPB201C080KF01195S		5000	25
102.8	51	13.82	4.5	MPB201C080KF01382S		5000	25
88.3	59	16.08	3.9	MPB201C080KF01608S		5000	25
75.3	70	18.87	3.3	MPB201C080KF01887S		5000	25
69.2	76	20.52	3	MPB201C080KF02052S		5000	25
57.9	91	24.55	2.5	MPB201C080KF02455S		5000	25
52.6	100	27.02	2.3	MPB201C080KF02702S		5000	25
47.5	111	29.91	2.1	MPB201C080KF02991S		5000	25
37.9	138	37.42	1.7	MPB201C080KF03742S		5000	25
34.1	154	41.65	1.5	MPB201C080KF04165S		5000	25
34.3	153	41.43	2.9	MPB202C080KF04143S		6900	32
30.5	172	46.58	1.3	MPB201C080KF04658S		5000	25
30.8	171	46.12	2.6	MPB202C080KF04612S	6200	6900	32
27.5	191	51.57	2.3	MPB202C080KF05157S	6400	6900	32
26.2	200	54.15	1.1	MPB201C080KF05415S		5000	25
23.7	222	59.95	2	MPB202C080KF05995S	6500	6900	32
23.5	223	60.33	1	MPB201C080KF06033S		5000	25
21.3	247	66.79	1.8	MPB202C080KF06679S		6900	32
18.9	277	74.98	0.83	MPB201C080KF07498S		5000	25
20.6	255	68.94	1.4	MPB202C080KF06894S	6700	6900	32
17.1	307	83.01	1.2	MPB202C080KF08301S	6800	6900	32
18.2	288	77.94	2.9	MPB203C080KF07794S	9100	13500	39
15.4	341	92.15	0.98	MPB202C080KF09215S	6900	6900	32
16.6	317	85.68	2.7	MPB203C080KF08568S	9300	13500	39
13.7	382	103.33	0.81	MPB202C080KF10333S	6900	6900	32
13.4	393	106.33	2	MPB203C080KF10633S	9700	13500	39
8.7	605	163.58	2.8	MPB304C080KF16360S	14800	18000	65
7.8	669	180.96	2.5	MPB304C080KF18096S	15100	18000	65
7.1	744	201.03	2.3	MPB304C080KF20103S	15400	18000	65
6.1	861	232.92	2	MPB304C080KF23292S	15700	18000	65
4.9	1069	289.06	1.6	MPB304C080KF28906S	16200	18000	65
4.9	1073	290.23	2.7	MPB305C080KF29023S	21400	27000	102
4.4	1204	325.39	2.4	MPB305C080KF32539S	21800	27000	102

P 0.75 kW n_1 1415 min⁻¹

n _{2ex} min-1	T _{2m} Nm	i _{ex}	SF	TYPE	Fr NN	FrN-G N	M kg
408.3	18	3.47	9.3	MPB201C080NF00347S		3900	26
356.1	20	3.97	8.2	MPB201C080NF00397S		4100	26
332.4	22	4.26	7.6	MPB201C080NF00426S		4200	26
288.8	25	4.9	6.6	MPB201C080NF00490S		4400	26
249.8	29	5.66	5.7	MPB201C080NF00566S		4600	26
231.8	31	6.1	5.3	MPB201C080NF00610S		4700	26
214.7	33	6.59	4.9	MPB201C080NF00659S		4800	26
183	39	7.73	4.2	MPB201C080NF00773S		5000	26
167.4	43	8.45	5.4	MPB201C080NF00845S		5000	26
146	49	9.69	4.7	MPB201C080NF00969S		5000	26
136.2	53	10.39	4.4	MPB201C080NF01039S		5000	26
118.4	60	11.95	3.8	MPB201C080NF01195S		5000	26
102.4	70	13.82	3.3	MPB201C080NF01382S		5000	26
88	81	16.08	2.8	MPB201C080NF01608S		5000	26
75	95	18.87	2.4	MPB201C080NF01887S		5000	26
68.9	104	20.52	2.2	MPB201C080NF02052S		5000	26
57.6	124	24.55	1.9	MPB201C080NF02455S		5000	26
52.4	137	27.02	1.7	MPB201C080NF02702S		5000	26
47.3	151	29.92	2.9	MPB202C080NF02992S	5400	6900	33
47.3	151	29.91	1.5	MPB201C080NF02991S		5000	26
42.7	168	33.11	2.6	MPB202C080NF03311S	5500	6900	33
37.8	189	37.42	1.2	MPB201C080NF03742S		5000	26
38.4	187	36.89	2.4	MPB202C080NF03689S	5600	6900	33
34	211	41.65	1.1	MPB201C080NF04165S		5000	26
34.2	210	41.43	2.1	MPB202C080NF04143S	5700	6900	33
30.4	236	46.58	0.98	MPB201C080NF04658S		5000	26
30.7	233	46.12	1.9	MPB202C080NF04612S	5800	6900	33
27.4	261	51.57	1.7	MPB202C080NF05157S	5900	6900	33
26.1	274	54.15	0.84	MPB201C080NF05415S		5000	26
23.6	303	59.95	1.5	MPB202C080NF05995S	5900	6900	33
23.5	305	60.18	2.8	MPB203C080NF06018S	8100	13500	40
21.2	338	66.79	1.3	MPB202C080NF06679S	6000	6900	33
21.3	337	66.57	2.5	MPB203C080NF06657S	8300	13500	40
20.5	349	68.94	1	MPB202C080NF06894S	6000	6900	33
19.1	374	73.95	2.3	MPB203C080NF07395S	8400	13500	40
17	420	83.01	0.86	MPB202C080NF08301S	6000	6900	33
18.2	394	77.94	2.2	MPB203C080NF07794S	8500	13500	40
16.5	434	85.68	2	MPB203C080NF08568S	8600	13500	40
13.3	538	106.33	1.5	MPB203C080NF10633S	8800	13500	40
12.7	563	111.21	3	MPB304C080NF11121S	12900	18000	66
11.5	622	122.8	2.7	MPB304C080NF12280S	13100	18000	66
9.6	744	146.92	2.3	MPB304C080NF14692S	13500	18000	66
8.7	828	163.58	2.1	MPB304C080NF16358S	13700	18000	66

P 0.75 kW n_1 1415 min⁻¹

n _{2ex} min-1	T _{2m} Nm	i _{ex}	SF	TYPE	Fr NN	FrN-G N	M kg
7.8	916	180.96	1.9	MPB304C080NF18096S	13900	18000	66
7	1017	201.03	1.7	MPB304C080NF20103S	14100	18000	66
7.4	971	191.86	3	MPB305C080NF19190S	18500	27000	103
6.1	1179	232.92	1.4	MPB304C080NF23292S	14200	18000	66
6.4	1121	221.46	2.6	MPB305C080NF22150S	19000	27000	103
5.8	1231	243.22	2.4	MPB305C080NF24322S	19300	27000	103
4.9	1463	289.06	1.2	MPB304C080NF28906S	14400	18000	66
4.9	1469	290.23	2	MPB305C080NF29020S	19800	27000	103
4.3	1647	325.39	1.8	MPB305C080NF32539S	20000	27000	103

P 1.1 kW n_1 1410 min⁻¹

n _{2ex} min-1	T _{2m} Nm	i _{ex}	SF	TYPE	Fr NN	FrN-G N	M kg
406.8	26	3.47	6.4	MPB201D090SF00347S		3900	31
354.9	30	3.97	5.5	MPB201D090SF00397S		4000	31
331.2	32	4.26	5.2	MPB201D090SF00426S		4100	31
287.8	37	4.9	4.5	MPB201D090SF00490S		4300	31
248.9	42	5.66	3.9	MPB201D090SF00566S		4400	31
231	45	6.1	3.6	MPB201D090SF00610S		4500	31
213.9	49	6.59	3.3	MPB201D090SF00659S		4600	31
182.3	58	7.73	2.8	MPB201D090SF00773S		4800	31
166.8	63	8.45	3.7	MPB201D090SF00845S		5000	31
145.5	72	9.69	3.2	MPB201D090SF00969S		5000	31
135.8	77	10.39	3	MPB201D090SF01039S		5000	31
118	89	11.95	2.6	MPB201D090SF01195S		5000	31
102	103	13.82	2.2	MPB201D090SF01382S		5000	31
87.7	120	16.08	1.9	MPB201D090SF01608S		5000	31
74.7	141	18.87	1.6	MPB201D090SF01887S		5000	31
68.7	153	20.52	1.5	MPB201D090SF02052S		5000	31
67.5	156	20.89	2.8	MPB202D090SF02089S	4600	6900	38
62.1	169	22.72	2.6	MPB202D090SF02272S	4700	6900	38
57.4	183	24.55	1.3	MPB201D090SF02455S		5000	31
51.9	202	27.18	2.2	MPB202D090SF02718S	4800	6900	38
52.2	201	27.02	1.1	MPB201D090SF02702S		5000	31
47.1	223	29.92	2	MPB202D090SF02992S	4800	6900	38
47.1	223	29.91	1	MPB201D090SF02991S		5000	31
42.6	247	33.11	1.8	MPB202D090SF03311S	4900	6900	38
37.7	279	37.42	0.83	MPB201D090SF03742S		5000	31
38.2	275	36.89	1.6	MPB202D090SF03689S	4900	6900	38
34	309	41.43	1.4	MPB202D090SF04143S	5000	6900	38
34.5	305	40.91	2.8	MPB203D090SF04091S	6900	13500	45
30.6	344	46.12	1.3	MPB202D090SF04612S	5000	6900	38
31.2	337	45.17	2.5	MPB203D090SF04517S	7100	13500	45

P 1.1 kW **n_1 1410 min⁻¹**

n _{2ex} min-1	T _{2m} Nm	i _{ex}	SF	TYPE	Fr NN	FrN-G N	M kg
27.3	384	51.57	1.1	MPB202D090SF05157S	5000	6900	38
26.1	403	54.05	2.1	MPB203D090SF05405S	7200	13500	45
23.5	447	59.95	0.99	MPB202D090SF05995S	4900	6900	38
23.4	448	60.18	1.9	MPB203D090SF06018S	7300	13500	45
21.1	498	66.79	0.88	MPB202D090SF06679S	4900	6900	38
21.2	496	66.57	1.7	MPB203D090SF06657S	7400	13500	45
19.1	551	73.95	1.5	MPB203D090SF07395S	7400	13500	45
18.6	566	75.97	2.9	MPB204D090SF07597S	11000	18000	71
18.1	581	77.94	1.5	MPB203D090SF07794S	7400	13500	45
18.1	580	77.8	2.9	MPB304D090SF07780S	11000	18000	71
16.5	638	85.68	1.3	MPB203D090SF08568S	7400	13500	45
16	656	88.11	2.6	MPB304D090SF08811S	11200	18000	71
13.3	792	106.33	1	MPB203D090SF10633S	7400	13500	45
14.7	716	96.08	2.4	MPB304D090SF09608S	11400	18000	71
12.7	829	111.21	2.1	MPB304D090SF11121S	11600	18000	71
11.5	915	122.8	1.9	MPB304D090SF12280S	11700	18000	71
10.9	967	129.77	3	MPB305D090SF12977S	15800	27000	108
9.6	1095	146.92	1.6	MPB304D090SF14692S	11800	18000	71
10.2	1035	138.87	2.8	MPB305D090SF13887S	15900	27000	108
8.6	1219	163.58	1.4	MPB304D090SF16358S	11800	18000	71
9.1	1155	155.1	2.5	MPB305D090SF15510S	16200	27000	108
7.8	1348	180.96	1.3	MPB304D090SF18096S	11800	18000	71
8	1318	176.96	2.2	MPB305D090SF17696S	16500	27000	108
7	1498	201.03	1.1	MPB304D090SF20103S	11800	18000	71
7.3	1429	191.86	2	MPB305D090SF19186S	16600	27000	108
6.1	1735	232.92	0.98	MPB304D090SF23292S	11600	18000	71
6.4	1650	221.46	1.8	MPB305D090SF22146S	16800	27000	108
5.8	1812	243.22	1.6	MPB305D090SF24322S	16900	27000	108
4.9	2162	290.23	1.3	MPB305D090SF29023S	16900	27000	108
4.3	2424	325.39	1.2	MPB305D090SF32539S	16900	27000	108

P 1.5 kW **n_1 1410 min⁻¹**

n _{2ex} min-1	T _{2m} Nm	i _{ex}	SF	TYPE	Fr NN	FrN-G N	M kg
406.8	35	3.47	4.7	MPB201D090LF00347S		3800	32
354.9	40	3.97	4.1	MPB201D090LF00397S		3900	32
331.2	43	4.26	3.8	MPB201D090LF00426S		4000	32
287.8	50	4.9	3.3	MPB201D090LF00490S		4100	32
248.9	58	5.66	2.8	MPB201D090LF00566S		4300	32
231	62	6.1	2.6	MPB201D090LF00610S		4300	32
213.9	67	6.59	2.4	MPB201D090LF00659S		4400	32
185.5	77	7.6	2.8	MPB202D090LF00760S	3500	6900	39
182.3	79	7.73	2.1	MPB201D090LF00773S		4600	32

P 1.5 kW n_1 1410 min⁻¹

n _{2ex} min-1	T _{2m} Nm	i _{ex}	SF	TYPE	Fr NN	FrN-G N	M kg
172.2	83	8.19	2.6	MPB202D090LF00819S	3500	6900	39
166.8	86	8.45	2.7	MPB201D090LF00845S		4800	32
145.5	98	9.69	2.3	MPB201D090LF00969S		4900	32
135.8	106	10.39	2.2	MPB201D090LF01039S		5000	32
118	121	11.95	1.9	MPB201D090LF01195S		5000	32
102	140	13.82	1.6	MPB201D090LF01382S		5000	32
92.2	155	15.3	2.8	MPB202D090LF01530S	4000	6900	39
87.7	163	16.08	1.4	MPB201D090LF01608S		5000	32
85.5	167	16.49	2.6	MPB202D090LF01649S	4100	6900	39
74.7	192	18.87	1.2	MPB202D090LF01780S		5000	32
79.2	181	17.8	2.4	MPB201D090LF01887S	4100	6900	39
68.7	208	20.52	1.1	MPB201D090LF02052S		5000	32
67.5	212	20.89	2.1	MPB202D090LF02089S	4200	6900	39
62.1	231	22.72	1.9	MPB202D090LF02272S	4200	6900	39
57.4	249	24.55	0.92	MPB201D090LF02455S		5000	32
51.9	276	27.18	1.6	MPB202D090LF02718S	4300	6900	39
52.2	275	27.02	0.84	MPB201D090LF02702S		5000	32
47.1	304	29.92	1.4	MPB202D090LF02992S	4300	6900	39
49.3	291	28.62	2.9	MPB203D090LF02862S	6000	13500	46
42.6	336	33.11	1.3	MPB202D090LF03311S	4300	6900	39
43.5	329	32.41	2.6	MPB203D090LF03241S	6100	13500	46
38.2	375	36.89	1.2	MPB202D090LF03689S	4200	6900	39
39.9	359	35.34	2.4	MPB203D090LF03534S	6200	13500	46
34	421	41.43	1	MPB202D090LF04143S	4200	6900	39
34.5	416	40.91	2	MPB203D090LF04091S	6300	13500	46
30.6	468	46.12	0.94	MPB202D090LF04612S	4100	6900	39
31.2	459	45.17	1.9	MPB203D090LF04517S	6300	13500	46
27.3	524	51.57	0.84	MPB202D090LF05157S	4000	6900	39
26.1	549	54.05	1.5	MPB203D090LF05405S	6300	13500	46
27.8	516	50.79	2.9	MPB304D090LF05079S	9500	18000	72
23.4	611	60.18	1.4	MPB203D090LF06018S	6300	13500	46
24.8	577	56.78	2.9	MPB204D090LF05678S	9600	18000	72
21.2	676	66.57	1.3	MPB203D090LF06657S	6300	13500	46
20.8	688	67.76	2.5	MPB204D090LF06776S	9900	18000	72
19.1	751	73.95	1.1	MPB203D090LF07395S	6200	13500	46
18.6	772	75.97	2.1	MPB204D090LF07597S	10000	18000	72
20.6	696	68.51	2.4	MPB304D090LF06851S	9900	18000	72
18.1	792	77.94	1.1	MPB203D090LF07794S	6200	13500	46
18.1	790	77.8	2.2	MPB304D090LF07780S	10000	18000	72
16.5	870	85.68	0.98	MPB203D090LF08568S	6000	13500	46
16	895	88.11	1.9	MPB304D090LF08811S	10100	18000	72
14.7	976	96.08	1.7	MPB304D090LF09608S	10100	18000	72
14.6	980	96.48	3	MPB305D090LF09648S	13800	27000	109

P 1.5 kW n_1 1410 min⁻¹

n _{2ex} min-1	T _{2m} Nm	i _{ex}	SF	TYPE	Fr NN	FrN-G N	M kg
12.7	1130	111.21	1.5	MPB304D090LF11121S	10100	18000	72
12.8	1123	110.51	2.6	MPB305D090LF11051S	14100	27000	109
11.5	1247	122.8	1.4	MPB304D090LF12280S	10100	18000	72
10.9	1318	129.77	2.2	MPB305D090LF12977S	14300	27000	109
9.6	1493	146.92	1.1	MPB304D090LF14692S	9900	18000	72
10.2	1411	138.87	2.1	MPB305D090LF13887S	14400	27000	109
8.6	1662	163.58	1	MPB304D090LF16358S	9700	18000	72
9.1	1576	155.1	1.8	MPB305D090LF15510S	14500	27000	109
7.8	1838	180.96	0.92	MPB304D090LF18096S	9500	18000	72
8	1798	176.96	1.6	MPB305D090LF17696S	14500	27000	109
7	2042	201.03	0.83	MPB304D090LF20103S	9200	18000	72
7.3	1949	191.86	1.5	MPB305D090LF19186S	14500	27000	109
6.4	2250	221.46	1.3	MPB305D090LF22146S	14400	27000	109
5.8	2471	243.22	1.2	MPB305D090LF24322S	14200	27000	109
4.9	2948	290.23	0.98	MPB305D090LF29023S	13700	27000	109
4.3	3306	325.39	0.88	MPB305D090LF32539S	13300	27000	109

P 2.2 kW n_1 1420 min⁻¹

n _{2ex} min-1	T _{2m} Nm	i _{ex}	SF	TYPE	Fr NN	FrN-G N	M kg
409.7	51	3.47	3.2	MPB201E100LF00347S		3600	35
357.4	59	3.97	2.8	MPB201E100LF00397S		3700	35
333.5	63	4.26	2.6	MPB201E100LF00426S		3800	35
289.8	72	4.9	2.3	MPB201E100LF00490S		3900	35
266.4	79	5.33	2.8	MPB202E100IF00533S	3000	6900	42
250.7	84	5.66	2	MPB201E100LF00566S		4000	35
248.6	85	5.71	2.6	MPB202E100IF00571S	3000	6900	42
232.6	90	6.1	1.8	MPB201E100LF00610S		4100	35
216	97	6.57	2.3	MPB202E100IF00657S	3100	6900	42
215.5	98	6.59	1.7	MPB201E100LF00659S		4100	35
186.8	112	7.6	2	MPB202E100IF00760S	3200	6900	42
183.6	114	7.73	1.4	MPB201E100LF00773S		4200	35
173.4	121	8.19	1.8	MPB202E100IF00819S	3200	6900	42
168	125	8.45	1.8	MPB201E100LF00845S		4400	35
146.5	143	9.69	1.6	MPB201E100LF00969S		4500	35
132.3	159	10.73	2.7	MPB202E100LF01073S	3400	6900	42
136.7	154	10.39	1.5	MPB201E100LF01039S		4600	35
123.5	170	11.5	2.6	MPB202E100LF01150S	3500	6900	42
118.8	177	11.95	1.3	MPB201E100LF01195S		4700	35
107.3	196	13.23	2.2	MPB202E100LF01323S	3500	6900	42
102.8	204	13.82	1.1	MPB201E100LF01382S		4700	35
92.8	226	15.3	1.9	MPB202E100LF01530S	3500	6900	42
88.3	238	16.08	0.97	MPB201E100LF01608S		4800	35

P 2.2 kW n_1 1420 min⁻¹

n _{2ex} min ⁻¹	T _{2m} Nm	i _{ex}	SF	TYPE	Fr NN	FrN-G N	M kg
86.1	244	16.49	1.8	MPB202E100LF01649S	3500	6900	42
75.3	279	18.87	0.82	MPB201E100LF01887S		4800	35
79.8	263	17.8	1.7	MPB202E100LF01780S	3500	6900	42
68	309	20.89	1.4	MPB202E100LF02089S	3500	6900	42
71	296	20.01	2.9	MPB203E100LF02001S	5100	13500	49
62.5	336	22.72	1.3	MPB202E100LF02272S	3500	6900	42
60.7	346	23.4	2.5	MPB203E100LF02340S	5200	13500	49
52.3	402	27.18	1.1	MPB202E100LF02718S	3300	6900	42
56.3	373	25.2	2.3	MPB203E100LF02520S	5200	13500	49
47.5	443	29.92	0.99	MPB202E100LF02992S	3300	6900	42
49.6	423	28.62	2	MPB203E100LF02862S	5200	13500	49
49.8	422	28.53	3	MPB304E100LF02853S	7800	18000	75
42.9	490	33.11	0.9	MPB202E100LF03311S	3100	6900	42
43.8	480	32.41	1.8	MPB203E100LF03241S	5200	13500	49
43.5	483	32.66	2.7	MPB204E100LF03266S	8000	18000	75
43.8	480	32.42	3	MPB204E100LF03242S	8000	18000	75
38.5	546	36.89	0.81	MPB202E100LF03689S	3000	6900	42
40.2	523	35.34	1.6	MPB203E100LF03534S	5200	13500	49
39.6	530	35.83	2.5	MPB304E100LF03583S	8100	18000	75
39.2	536	36.21	2.8	MPB204E100LF03621S	8100	18000	75
34.7	605	40.91	1.4	MPB203E100LF04091S	5100	13500	49
34.3	612	41.39	2.3	MPB304E100LF04139S	8200	18000	75
34.4	611	41.31	2.6	MPB204E100LF04131S	8200	18000	75
31.4	668	45.17	1.3	MPB203E100LF04517S	5100	13500	49
31	677	45.75	2.2	MPB304E100LF04575S	8300	18000	75
31.7	663	44.79	2.4	MPB204E100LF04479S	8300	18000	75
26.3	800	54.05	1.1	MPB203E100LF05405S	4800	13500	49
28	751	50.79	2	MPB304E100LF05079S	8300	18000	75
27.5	765	51.7	2.2	MPB204E100LF05170S	8400	18000	75
23.6	890	60.18	0.95	MPB203E100LF06018S	4600	13500	49
25	840	56.78	2	MPB204E100LF05678S	8400	18000	75
21.3	985	66.57	0.86	MPB203E100LF06657S	4400	13500	49
21	1002	67.76	1.7	MPB204E100LF06776S	8300	18000	75
22.3	941	63.59	2.9	MPB305E100LF06359S	11700	27000	112
18.7	1124	75.97	1.5	MPB204E100LF07597S	8300	18000	75
20.2	1038	70.17	2.7	MPB305E100LF07017S	11800	27000	112
18.3	1151	77.8	1.5	MPB304E100LF07780S	8300	18000	75
18.4	1142	77.21	2.5	MPB305E100LF07721S	11900	27000	112
16.1	1304	88.11	1.3	MPB304E100LF08811S	8100	18000	75
16.3	1287	86.98	2.3	MPB305E100LF08698S	11900	27000	112
14.8	1421	96.08	1.2	MPB304E100LF09608S	8000	18000	75
14.7	1427	96.48	2	MPB305E100LF09648S	12000	27000	112
2.8	1645	111.21	1	MPB304E100LF11121S	7600	18000	75

P 2.2 kW **n_1 1420 min⁻¹**

n _{2ex} min ⁻¹	T _{2m} Nm	i _{ex}	SF	TYPE	Fr NN	FrN-G N	M kg
12.8	1635	110.51	1.8	MPB305E100LF11051S	12000	27000	112
11.6	1817	122.8	0.94	MPB304E100LF12280S	7300	18000	75
10.9	1920	129.77	1.5	MPB305E100LF12977S	11800	27000	112
11.4	1850	125.03	3	MPB306E100LF12503S		30000	173
10.2	2055	138.87	1.4	MPB305E100LF13887S	11700	27000	112
9.7	2172	146.82	2.5	MPB306E100LF14682S		30000	173
9.2	2295	155.1	1.3	MPB305E100LF15510S	11500	27000	112
9	2324	157.12	2.4	MPB306E100LF15712S		30000	173
8	2618	176.96	1.1	MPB305E100LF17696S	11100	27000	112
8.1	2596	175.48	2.1	MPB306E100LF17548S		30000	173
7.8	2685	181.46	3	MPB307E100LF18146S		50000	264
7.4	2838	191.86	1	MPB305E100LF19186S	10800	27000	112
7.1	2962	200.21	1.9	MPB306E100LF20021S		30000	173
6.9	3063	207.03	2.6	MPB307E100LF20703S		50000	264
6.4	3276	221.46	0.89	MPB305E100LF22146S	10100	27000	112
6.5	3211	217.07	1.7	MPB306E100LF21707S		30000	173
6.3	3321	224.46	2.4	MPB307E100LF22446S		50000	264
5.8	3598	243.22	0.81	MPB305E100LF24322S	9500	27000	112
5.7	3707	250.56	1.5	MPB306E100LF25056S		30000	173
5.5	3833	259.09	2.1	MPB307E100LF25909S		50000	264
5.2	4071	275.17	1.4	MPB306E100LF27517S		30000	173
5	4210	284.55	1.9	MPB307E100LF28455S		50000	264
4.3	4858	328.36	1.1	MPB306E100LF32836S		30000	173
3.9	5447	368.15	1	MPB306E100LF36815S		30000	173
4.2	5023	339.55	1.6	MPB307E100LF33955S		50000	264
3.7	5632	380.68	1.4	MPB307E100LF38068S		50000	264

P 3.7 kW **n_1 1420 min⁻¹**

n _{2ex} min ⁻¹	T _{2m} Nm	i _{ex}	SF	TYPE	Fr NN	FrN-G N	M kg
409.7	86	3.47	1.94	MPB201E112MF00347S		3 200	43
357.4	99	3.97	1.62	MPB201E112MF00397S		3 200	43
333.5	106	4.26	1.52	MPB201E112MF00426S		3 300	43
305.4	116	4.65	1.94	MPB202E112MF00465S	2 500	6 900	50
289.8	122	4.9	1.30	MPB201E112MF00490S		3 300	43
266.4	133	5.33	1.62	MPB202E112MF00533S	2 500	6 900	50
250.7	141	5.66	1.19	MPB201E112MF00566S		3 300	43
248.6	142	5.71	1.52	MPB202E112MF00571S	2 500	6 900	50
253.6	139	5.6	3.03	MPB203E112MF00560S	3 400	12 900	57
232.6	152	6.1	1.08	MPB201E112MF00610S		3 300	43
216	164	6.57	1.30	MPB202E112MF00657S	2 500	6 900	50
229.4	154	6.19	2.71	MPB203E112MF00619S	3 500	13 300	57
215.5	164	6.59	1.00	MPB201E112MF00659S		3 300	43

P 3.7 kW n_1 1420 min⁻¹

n _{2ex} min-1	T _{2m} Nm	i _{ex}	SF	TYPE	Fr NN	FrN-G N	M kg
206.6	171	6.87	2.38	MPB203E112MF00687S	3 500	13 500	57
186.8	189	7.6	1.19	MPB202E112MF00760S	2 500	6 900	50
173.4	204	8.19	1.08	MPB202E112MF00819S	2 400	6 900	50
168	210	8.45	1.08	MPB201E112MF00845S		3 500	43
151.7	233	9.36	1.84	MPB202E112MF00936S	2 600	6 900	50
146.5	241	9.69	0.95	MPB201E112MF00969S		3 500	43
132.3	267	10.73	1.62	MPB202E112MF01073S	2 500	6 900	50
135.3	261	10.49	3.24	MPB203E112MF01049S	3 900	13 500	57
136.7	258	10.39	0.89	MPB201E112MF01039S		3 500	43
123.5	286	11.5	1.51	MPB202E112MF01150S	2 500	6 900	57
118.2	299	12.01	2.81	MPB203E112MF01201S	3 900	13 500	50
107.3	329	13.23	1.30	MPB202E112MF01323S	2 300	6 900	50
107.7	328	13.18	2.60	MPB203E112MF01318S	3 900	13 500	57
95.7	369	14.85	3.13	MPB204E112MF01485S	6 000	18 000	83
92.8	381	15.3	1.19	MPB202E112MF01530S	2 200	6 900	50
93.3	379	15.23	2.27	MPB203E112MF01523S	3 800	13 500	57
86.1	410	16.49	1.07	MPB202E112MF01649S	2 100	6 900	50
84.4	419	16.83	2.06	MPB203E112MF01683S	3 800	13 500	57
86.7	408	16.38	2.92	MPB204E112MF01638S	6 100	18 000	83
79.8	443	17.8	1.00	MPB202E112MF01780S	2 000	6 900	50
76465	18.68	1.84		MPB203E112MF01868S	3 700	13 500	57
78.8	448	18.03	2.70	MPB204E112MF01803S	6 100	18 000	83
71498	20.01	1.73		MPB203E112MF02001S	3 700	13 500	57
69.9	505	20.31	2.48	MPB204E112MF02031S	6 200	18 000	83
64.7	546	21.95	2.05	MPB304E112MF02195S	6 200	18 000	83
63561	22.52	2.27		MPB204E112MF02252S	6 200	18 000	83
60.7	582	23.4	1.51	MPB203E112MF02340S	3 500	13 500	57
56.3	628	25.2	1.40	MPB203E112MF02520S	3 400	13 500	57
55642	25.8	2.05		MPB204E112MF02580S	6 200	18 000	83
49.6	712	28.62	1.19	MPB203E112MF02862S	3 200	13 500	57
46.9	753	30.3	1.84	MPB204E112MF03030S	6 200	18 000	83
45.2	782	31.43	2.70	MPB305E112MF03143S	8 800	27 000	120
44.5	794	31.91	3.13	MPB205E112MF03191S	8 800	27 000	120
43.8	807	32.41	1.05	MPB203E112MF03241S	2 900	13 500	57
43.5	812	32.66	1.62	MPB304E112MF03266S	6 100	18 000	83
43.8	807	32.42	1.84	MPB204E112MF03242S	6 100	18 000	83
42.1	839	33.69	2.59	MPB305E112MF03369S	8 800	27 000	120
40.2	879	35.34	0.96	MPB203E112MF03534S	2 700	13 500	57
39.6	892	35.83	1.51	MPB304E112MF03583S	6 000	18 000	83
39.2	901	36.21	1.73	MPB204E112MF03621S	6 000	18 000	83
38.8	911	36.58	2.92	MPB205E112MF03658S	8 900	27 000	120
37.6	940	37.78	2.49	MPB305E112MF03778S	8 900	27 000	120
35.8	987	39.65	2.81	MPB205E112MF03965S	8 900	27 000	120

P 3.7 kW n_1 **1420 min⁻¹**

n2ex min-1	T2m Nm	iex	SF	TYPE	Fr NN	FrN-G N	M kg
34.4	1027	41.31	1.51	MPB204E112MF04131S	5 800	18 000	83
32.7	1081	43.49	2.27	MPB305E112MF04349S	8 900	27 000	120
31.7	1115	44.79	1.41	MPB204E112MF04479S	5 700	18 000	83
30.4	1162	46.78	2.49	MPB205E112MF04678S	8 800	27 000	120
28.8	1227	49.3	2.05	MPB305E112MF04930S	8 800	27 000	120
27.5	1285	51.7	1.30	MPB204E112MF05170S	5 400	18 000	83
27.2	1299	52.18	2.27	MPB205E112MF05218S	8 800	27 000	120
25	1413	56.78	1.19	MPB204E112MF05678S	5 100	18 000	83
24.5	1442	58.03	1.84	MPB205E112MF05803S	8 700	27 000	120
23	1536	61.68	3.13	MPB206E112MF06168S		30 000	181
22.3	1584	63.59	1.73	MPB305E112MF06359S	8 500	27 000	120
21	1682	67.76	1.01	MPB204E112MF06776S	4 400	18 000	83
20.7	1707	68.49	2.59	MPB206E112MF06849S		30 000	181
20.2	1749	70.17	1.62	MPB305E112MF07017S	8 300	27 000	120
19.7	1794	71.94	3.02	MPB306E112MF07194S		30 000	181
18.7	1889	75.97	0.88	MPB204E112MF07597S	3 900	18 000	83
18.3	1931	77.8	0.88	MPB304E112MF07780S	3 800	18 000	83
18.4	1920	77.21	1.51	MPB305E112MF07721S	8 000	27 000	120
17.9	1974	79.38	2.81	MPB306E112MF07938S		30 000	181
16.3	2168	86.98	1.30	MPB305E112MF08698S	7 600	27 000	120
16.3	2168	87.35	2.49	MPB306E112MF08735S		30 000	181
14.7	2404	96.48	1.19	MPB305E112MF09648S	7 200	27 000	120
14.4	2454	98.4	2.27	MPB306E112MF09840S		30 000	181
14	2524	101.75	3.15	MPB307E112MF10175S		50 000	272
13	2718	109.15	2.05	MPB306E112MF10915S		30 000	181
12.8	2760	110.51	1.06	MPB305E112MF11051S	6 500	27 000	120
12.6	2804	112.87	2.81	MPB307E112MF11287S		50 000	272
11.4	3099	125.03	1.74	MPB306E112MF12503S		30 000	181
10.9	3242	129.77	0.89	MPB305E112MF12977S	5 400	27 000	120
11	3212	129.29	2.49	MPB307E112MF12929S		50 000	272
9.7	3643	146.82	1.52	MPB306E112MF14682S		30 000	181
9.4	3759	151.82	2.17	MPB307E112MF15182S		50 000	272
9	3926	157.12	1.40	MPB306E112MF15712S		30 000	181
8.7	4061	162.47	1.94	MPB307E112MF16247S		50 000	272
8.1	4362	175.48	1.30	MPB306E112MF17548S		30 000	181
7.8	4530	181.46	1.72	MPB307E112MF18146S		50 000	272
7.1	4976	200.21	1.08	MPB306E112MF20021S		30 000	181
6.9	5121	207.03	1.52	MPB307E112MF20703S		50 000	272
6.5	5436	217.07	1.01	MPB306E112MF21707S		30 000	181
6.3	5608	224.46	1.40	MPB307E112MF22446S		50 000	272
5.7	6199	250.56	0.89	MPB306E112MF25056S		30 000	181
5.5	6424	259.09	1.19	MPB307E112MF25909S		50 000	272
5	7066	284.55	1.08	MPB307E112MF28455S		50 000	272
4.2	8412	339.55	0.96	MPB307E112MF33955S		50 000	272

P 5.5 kW n_1 1440 min⁻¹

n _{2ex} min ⁻¹	T _{2m} Nm	i _{ex}	SF	TYPE	Fr NN	FrN-G N	M kg
417.7	126	3.45	2.9	MPB203F132SF00345S	2900	11200	68
373.1	141	3.86	2.9	MPB203F132SF00386S	3000	11500	68
325.9	161	4.42	2.6	MPB203F132SF00442S	3000	11900	68
297	177	4.85	2.3	MPB203F132SF00485S	3000	12100	68
257.1	204	5.6	2	MPB203F132SF00560S	3000	12500	68
232.6	226	6.19	1.8	MPB203F132SF00619S	3000	12800	68
212.8	247	6.77	3	MPB204F132SF00677S	4700	15400	94
209.6	251	6.87	1.7	MPB203F132SF00687S	3000	13100	68
178.4	294	8.07	2.5	MPB203F132SF00807S	3300	13500	68
153.6	342	9.37	2.3	MPB203F132SF00937S	3300	13500	68
163.3	322	8.82	3	MPB204F132SF00882S	5100	16600	94
137.2	383	10.49	2.2	MPB203F132SF01049S	3200	13500	68
141.8	370	10.15	2.7	MPB204F132SF01015S	5200	17200	94
119.9	438	12.01	1.9	MPB203F132SF01201S	3200	13500	68
125.1	420	11.51	2.5	MPB204F132SF01151S	5200	17700	94
109.2	481	13.18	1.8	MPB203F132SF01318S	3100	13500	68
111.2	472	12.95	2.3	MPB204F132SF01295S	5300	18000	94
94.6	555	15.23	1.5	MPB203F132SF01523S	3000	13500	68
97	541	14.85	2.1	MPB204F132SF01485S	5300	18000	94
85.6	614	16.83	1.4	MPB203F132SF01683S	2800	13500	68
87.9	597	16.38	2	MPB204F132SF01638S	5300	18000	94
77.1	681	18.68	1.2	MPB203F132SF01868S	2700	13500	68
79.9	657	18.03	1.8	MPB204F132SF01803S	5300	18000	94
72	730	20.01	1.2	MPB203F132SF02001S	2500	13500	68
70.9	741	20.31	1.7	MPB204F132SF02031S	5200	18000	94
73.2	718	19.68	3	MPB205F132SF01968S	7500	26700	131
61.5	853	23.4	1	MPB203F132SF02340S	2200	13500	68
65.6	801	21.95	1.4	MPB304F132SF02195S	5200	18000	94
63.9	822	22.52	1.6	MPB204F132SF02252S	5100	18000	94
63.6	826	22.65	2.7	MPB205F132SF02265S	7600	27000	131
57.1	919	25.2	0.92	MPB203F132SF02520S	2000	13500	68
55.8	941	25.8	1.4	MPB204F132SF02580S	5000	18000	94
56.4	932	25.55	2.5	MPB205F132SF02555S	7600	27000	131
50.3	1044	28.62	0.81	MPB203F132SF02862S	1500	13500	68
47.5	1105	30.3	1.3	MPB204F132SF03030S	4700	18000	94
49.5	1061	29.09	2.3	MPB205F132SF02909S	7600	27000	131
44.4	1182	32.42	1.2	MPB204F132SF03242S	4600	18000	94
45.8	1146	31.43	1.8	MPB305F132SF03143S	7500	27000	131
45.1	1164	31.91	2.2	MPB205F132SF03191S	7500	27000	131
39.8	1321	36.21	1.1	MPB204F132SF03621S	4300	18000	94
42.7	1229	33.69	1.8	MPB305F132SF03369S	7500	27000	131
39.4	1334	36.58	2	MPB205F132SF03658S	7400	27000	131
34.9	1507	41.31	1	MPB204F132SF04131S	3900	18000	94
38.1	1378	37.78	1.7	MPB305F132SF03778S	7300	27000	131

P 5.5 kW n_1 1440 min⁻¹

n _{2ex} min-1	T _{2m} Nm	i _{ex}	SF	TYPE	Fr NN	FrN-G N	M kg
36.3	1446	39.65	1.9	MPB205F132SF03965S	7300	27000	131
31.5	1669	45.75	0.87	MPB304F132SF04575S	3500	18000	94
32.1	1634	44.79	0.99	MPB204F132SF04479S	3600	18000	94
33.1	1586	43.49	1.5	MPB305F132SF04349S	7100	27000	131
30.8	1706	46.78	1.7	MPB205F132SF04678S	7000	27000	131
33.7	1559	42.75	3	MPB306F132SF04275S		30000	192
27.9	1886	51.7	0.9	MPB204F132SF05170S	3000	18000	94
27.6	1903	52.18	1.5	MPB205F132SF05218S	6700	27000	131
30.3	1734	47.54	2.8	MPB206F132SF04754S		30000	192
25.4	2071	56.78	0.82	MPB204F132SF05678S	2400	18000	94
24.8	2117	58.03	1.3	MPB205F132SF05803S	6300	27000	131
25.7	2042	56	2.4	MPB206F132SF05600S		30000	192
22.6	2319	63.59	1.2	MPB305F132SF06359S	6000	27000	131
23.3	2250	61.68	2.2	MPB206F132SF06168S		30000	192
20.5	2559	70.17	1.1	MPB305F132SF07017S	5500	27000	131
21	2498	68.49	1.8	MPB206F132SF06849S		30000	192
20	2624	71.94	2.1	MPB306F132SF07194S		30000	192
19.4	2713	74.39	2.9	MPB307F132SF07439S		50000	283
18.7	2816	77.21	1	MPB305F132SF07721S	5000	27000	131
18.1	2895	79.38	1.9	MPB306F132SF07938S		30000	192
17.5	2994	82.09	2.7	MPB307F132SF08209S		50000	283
16.6	3172	86.98	0.91	MPB305F132SF08698S	4200	27000	131
16.5	3186	87.35	1.7	MPB306F132SF08735S		30000	192
15.9	3295	90.33	2.4	MPB307F132SF09033S		50000	283
14.9	3519	96.48	0.82	MPB305F132SF09648S	3400	27000	131
14.6	3589	98.4	1.5	MPB306F132SF09840S		30000	192
14.2	3711	101.75	2.2	MPB307F132SF10175S		50000	283
13.2	3981	109.15	1.4	MPB306F132SF10915S		30000	192
12.8	4117	112.87	1.9	MPB307F132SF11287S		50000	283
11.5	4560	125.03	1.2	MPB306F132SF12503S		30000	192
11.1	4716	129.29	1.7	MPB307F132SF12929S		50000	283
9.8	5355	146.82	1	MPB306F132SF14682S		30000	192
9.5	5537	151.82	1.4	MPB307F132SF15182S		50000	283
9.2	5730	157.12	0.96	MPB306F132SF15712S		30000	192
8.9	5926	162.47	1.4	MPB307F132SF16247S		50000	283
8.2	6400	175.48	0.86	MPB306F132SF17548S		30000	192
7.9	6618	181.46	1.2	MPB307F132SF18146S		50000	283
7	7551	207.03	1.1	MPB307F132SF20703S		50000	283
6.4	8187	224.46	0.98	MPB307F132SF22446S		50000	283
5.6	9450	259.09	0.85	MPB307F132SF25909S		50000	283

P 7.5 kW n_1 1445 min⁻¹

n ₂ ex min-1	T _{2m} Nm	i _{ex}	SF	TYPE	Fr NN	FrN-G N	M kg
486.6	147	2.97	2.5	MPB203F132MF00297S	2600	10500	69
444.8	161	3.25	3	MPB204F132MF00325S	3900	12600	95
419.2	171	3.45	2.1	MPB203F132MF00345S	2600	10800	69
396.6	181	3.64	2.9	MPB204F132MF00364S	4000	12900	95
374.4	191	3.86	2.1	MPB203F132MF00386S	2600	11100	69
344.6	208	4.19	2.7	MPB204F132MF00419S	4000	13400	95
327	219	4.42	1.9	MPB203F132MF00442S	2600	11400	69
304	236	4.75	2.6	MPB204F132MF00475S	4100	13800	95
298	240	4.85	1.7	MPB203F132MF00485S	2600	11700	69
270.2	265	5.35	2.5	MPB204F132MF00535S	4200	14200	95
258	278	5.6	1.5	MPB203F132MF00560S	2500	12000	69
235.7	304	6.13	2.3	MPB204F132MF00613S	4200	14700	95
233.4	307	6.19	1.4	MPB203F132MF00619S	2500	12200	69
213.6	335	6.77	2.2	MPB204F132MF00677S	4200	15000	95
210.3	341	6.87	1.2	MPB203F132MF00687S	2400	12400	69
194.1	369	7.44	2.3	MPB204F132MF00744S	4300	15300	95
179	400	8.07	1.8	MPB203F132MF00807S	2700	13200	69
183.7	390	7.87	2.3	MPB204F132MF00787S	4500	15700	95
154.2	465	9.37	1.7	MPB203F132MF00937S	2600	13500	69
163.8	437	8.82	2.2	MPB204F132MF00882S	4500	16100	95
137.7	520	10.49	1.6	MPB203F132MF01049S	2400	13500	69
142.3	503	10.15	2	MPB204F132MF01015S	4500	16600	95
120.3	595	12.01	1.4	MPB203F132MF01201S	2200	13500	69
125.5	570	11.51	1.9	MPB204F132MF01151S	4500	17000	95
109.6	653	13.18	1.3	MPB203F132MF01318S	2100	13500	69
111.6	642	12.95	1.7	MPB204F132MF01295S	4500	17400	95
111.2	644	13	3	MPB205F132MF01300S	6400	23500	132
94.9	755	15.23	1.1	MPB203F132MF01523S	1800	13500	69
97.3	736	14.85	1.5	MPB204F132MF01485S	4400	17800	95
100	716	14.45	2.8	MPB205F132MF01445S	6500	24000	132
85.9	834	16.83	1	MPB203F132MF01683S	1500	13500	69
88.2	812	16.38	1.4	MPB204F132MF01638S	4300	18000	95
87.9	815	16.45	2.5	MPB205F132MF01645S	6500	24700	132
77.3	926	18.68	0.92	MPB203F132MF01868S	1200	13500	69
80.2	893	18.03	1.4	MPB204F132MF01803S	4100	18000	95
81.4	880	17.75	2.4	MPB205F132MF01775S	6500	25100	132
72.2	992	20.01	0.86	MPB203F132MF02001S	1000	13500	69
71.2	1006	20.31	1.2	MPB204F132MF02031S	3900	18000	95
73.4	975	19.68	2.2	MPB205F132MF01968S	6400	25600	132
64.2	1116	22.52	1.2	MPB204F132MF02252S	3700	18000	95
63.8	1123	22.65	2	MPB205F132MF02265S	6300	26300	132
56.7	1263	25.48	0.95	MPB304F132MF02548S	3400	18000	95
56	1279	25.8	1.1	MPB204F132MF02580S	3400	18000	95
56.6	1266	25.55	1.9	MPB205F132MF02555S	6200	26900	132

P 7.5 kW n_1 1445 min⁻¹

n ₂ ex min-1	T _{2m} Nm	i _{ex}	SF	TYPE	Fr NN	FrN-G N	M kg
47.7	1502	30.3	0.93	MPB204F132MF03030S	2800	18000	95
49.7	1442	29.09	1.7	MPB205F132MF02909S	6000	27000	132
44.6	1607	32.42	0.9	MPB204F132MF03242S	2500	18000	95
46	1558	31.43	1.3	MPB305F132MF03143S	5800	27000	132
45.3	1582	31.91	1.6	MPB205F132MF03191S	5800	27000	132
39.9	1795	36.21	0.84	MPB204F132MF03621S	2000	18000	95
42.9	1670	33.69	1.3	MPB305F132MF03369S	5600	27000	132
39.5	1813	36.58	1.5	MPB205F132MF03658S	5400	27000	132
41.5	1726	34.82	2.8	MPB206F132MF03482S		30000	193
38.2	1873	37.78	1.2	MPB305F132MF03778S	5300	27000	132
36.4	1965	39.65	1.4	MPB205F132MF03965S	5100	27000	132
37.9	1889	38.12	2.3	MPB306F132MF03812S		30000	193
38	1884	38.01	2.7	MPB206F132MF03801S		30000	193
30.9	2319	46.78	1.2	MPB205F132MF04678S	4400	27000	132
33.8	2119	42.75	2.2	MPB306F132MF04275S		30000	193
33.2	2156	43.51	2.4	MPB206F132MF04351S		30000	193
27.7	2586	52.18	1.1	MPB205F132MF05218S	3900	27000	132
30.4	2356	47.54	2.1	MPB206F132MF04754S		30000	193
28.4	2522	50.88	3	MPB307F132MF05088S		50000	284
24.9	2876	58.03	0.94	MPB205F132MF05803S	3200	27000	132
25.8	2776	56	1.7	MPB206F132MF05600S		30000	193
26	2753	55.55	2.9	MPB207F132MF05555S		50000	284
22.7	3152	63.59	0.86	MPB305F132MF06359S	2600	27000	132
23.4	3057	61.68	1.6	MPB206F132MF06168S		30000	193
22.3	3216	64.88	2.5	MPB307F132MF06488S		50000	284
20.6	3478	70.17	0.81	MPB305F132MF07017S	1700	27000	132
21.1	3395	68.49	1.3	MPB206F132MF06849S		30000	193
20.1	3566	71.94	1.5	MPB306F132MF07194S		30000	193
19.4	3687	74.39	2.2	MPB307F132MF07439S		50000	284
18.2	3935	79.38	1.4	MPB306F132MF07938S		30000	193
17.6	4069	82.09	2	MPB307F132MF08209S		50000	284
16.5	4330	87.35	1.3	MPB306F132MF08735S		30000	193
16	4477	90.33	1.8	MPB307F132MF09033S		50000	284
14.7	4877	98.4	1.1	MPB306F132MF09840S		30000	193
14.2	5043	101.75	1.6	MPB307F132MF10175S		50000	284
14.3	5007	101.01	3	MPB308F132MF10101S		81900	439
13.2	5410	109.15	1	MPB306F132MF10915S		30000	193
12.8	5594	112.87	1.4	MPB307F132MF11287S		50000	284
11.6	6197	125.03	0.89	MPB306F132MF12503S		30000	193
11.2	6408	129.29	1.2	MPB307F132MF12929S		50000	284
9.5	7525	151.82	1.1	MPB307F132MF15182S		50000	284
8.9	8052	162.47	0.99	MPB307F132MF16247S		50000	284
8	8994	181.46	0.89	MPB307F132MF18146S		50000	284

P 9.3 kW n_1 1435 min⁻¹

n _{2ex} min-1	T _{2m} Nm	i _{ex}	SF	TYPE	Fr NN	FrN-G N	M kg
483.2	184	2.97	2.03	MPB203G160SF00297S	2400	10300	71
441.7	201	3.25	2.42	MPB204G160SF00325S	3700	12400	97
416.3	213	3.45	1.74	MPB203G160SF00345S	2400	10600	71
393.9	225	3.64	2.32	MPB204G160SF00364S	3800	12800	97
371.8	239	3.86	1.74	MPB203G160SF00386S	2300	10900	71
342.2	260	4.19	2.22	MPB204G160SF00419S	3800	13200	97
324.7	274	4.42	1.55	MPB203G160SF00442S	2300	11200	71
301.9	294	4.75	2.03	MPB204G160SF00475S	3900	13600	97
296	300	4.85	1.35	MPB203G160SF00485S	2200	11300	71
268.4	331	5.35	1.93	MPB204G160SF00535S	3900	13900	97
256.3	347	5.6	1.16	MPB203G160SF00560S	2100	11600	71
234	380	6.13	1.84	MPB204G160SF00613S	3900	14400	97
231.8	383	6.19	1.07	MPB203G160SF00619S	2000	11800	71
212.1	419	6.77	1.74	MPB204G160SF00677S	3900	14600	97
208.8	425	6.87	0.97	MPB203G160SF00687S	1900	12000	71
192.8	461	7.44	1.84	MPB204G160SF00744S	3900	14900	97
177.7	500	8.07	1.45	MPB203G160SF00807S	2200	12800	71
182.4	487	7.87	1.84	MPB204G160SF00787S	4100	15300	97
153.1	580	9.37	1.35	MPB203G160SF00937S	2000	13000	71
162.7	546	8.82	1.74	MPB204G160SF00882S	4100	15700	97
136.8	649	10.49	1.35	MPB203G160SF01049S	1800	13200	71
141.3	629	10.15	1.55	MPB204G160SF01015S	4000	16100	97
140.8	631	10.19	2.80	MPB205G160SF01019S	5900	21800	134
119.4	744	12.01	1.16	MPB203G160SF01201S	1500	13300	71
124.7	712	11.51	1.45	MPB204G160SF01151S	4000	16500	97
124.1	716	11.56	2.61	MPB205G160SF01156S	5900	22400	134
108.9	816	13.18	1.06	MPB203G160SF01318S	1300	13400	71
110.8	802	12.95	1.35	MPB204G160SF01295S	3800	16800	97
110.4	804	13	2.42	MPB205G160SF01300S	5900	23000	134
94.3	942	15.23	0.90	MPB203G160SF01523S	900	13500	71
96.7	918	14.85	1.26	MPB204G160SF01485S	3600	17100	97
99.3	894	14.45	2.22	MPB205G160SF01445S	5900	23500	134
85.3	1041	16.83	0.81	MPB203G160SF01683S	500	13500	71
87.6	1014	16.38	1.16	MPB204G160SF01638S	3500	17300	97
87.3	1017	16.45	2.03	MPB205G160SF01645S	5800	24100	134
79.6	1116	18.03	1.06	MPB204G160SF01803S	3300	17500	97
80.8	1099	17.75	1.93	MPB205G160SF01775S	5800	24400	134
70.7	1256	20.31	0.97	MPB204G160SF02031S	3000	17700	97
72.9	1218	19.68	1.74	MPB205G160SF01968S	5600	24900	134
63.7	1394	22.52	0.93	MPB204G160SF02252S	2600	17800	97
63.4	1401	22.65	1.65	MPB205G160SF02265S	5400	25500	134
61.7	1439	23.26	2.90	MPB206G160SF02326S		30000	195
55.6	1597	25.8	0.84	MPB204G160SF02580S	2100	17900	97
56.2	1580	25.55	1.45	MPB205G160SF02555S	5200	25900	134

P 9.3 kW n_1 1435 min⁻¹

n _{2ex} min ⁻¹	T _{2m} Nm	i _{ex}	SF	TYPE	Fr NN	FrN-G N	M kg
55.5	1600	25.85	2.71	MPB206G160SF02585S		30000	195
49.3	1801	29.09	1.35	MPB205G160SF02909S	4800	26400	134
52	1708	27.61	2.61	MPB206G160SF02761S		30000	195
45.7	1943	31.43	1.07	MPB305G160SF03143S	4500	26600	134
45	1974	31.91	1.26	MPB205G160SF03191S	4500	26600	134
46.8	1898	30.69	2.42	MPB206G160SF03069S		30000	195
39.2	2266	36.58	1.16	MPB205G160SF03658S	3900	26900	134
41.2	2156	34.82	2.22	MPB206G160SF03482S		30000	195
38	2337	37.78	0.97	MPB305G160SF03778S	3700	27000	134
36.2	2453	39.65	1.16	MPB205G160SF03965S	3500	27000	134
37.6	2362	38.12	1.84	MPB306G160SF03812S		30000	195
37.8	2349	38.01	2.13	MPB206G160SF03801S		30000	195
36.4	2440	39.42	2.90	MPB307G160SF03942S		50000	286
30.7	2893	46.78	0.97	MPB205G160SF04678S	2500	27000	134
33.6	2643	42.75	1.74	MPB306G160SF04275S		30000	195
33	2691	43.51	1.94	MPB206G160SF04351S		30000	195
31.7	2802	45.22	2.71	MPB207G160SF04522S		50000	286
27.5	3229	52.18	0.90	MPB205G160SF05218S	1700	27000	134
30.2	2941	47.54	1.65	MPB206G160SF04754S		30000	195
28.2	3149	50.88	2.42	MPB307G160SF05088S		50000	286
8.7	3094	49.92	2.61	MPB207G160SF04992S		50000	286
25.6	3469	56	1.35	MPB206G160SF05600S		30000	195
25.8	3442	55.55	2.32	MPB207G160SF05555S		50000	286
23.3	3812	61.68	1.26	MPB206G160SF06168S		30000	195
22.1	4018	64.88	2.03	MPB307G160SF06488S		50000	286
21	4229	68.49	1.07	MPB206G160SF06849S		30000	195
19.9	4463	71.94	1.26	MPB306G160SF07194S		30000	195
19.3	4601	74.39	1.74	MPB307G160SF07439S		50000	286
18.1	4907	79.38	1.16	MPB306G160SF07938S		30000	195
17.5	5075	82.09	1.55	MPB307G160SF08209S		50000	286
16.4	5415	87.35	1.06	MPB306G160SF08735S		30000	195
15.9	5585	90.33	1.45	MPB307G160SF09033S		50000	286
14.6	6083	98.4	0.90	MPB306G160SF09840S		30000	195
14.1	6298	101.75	1.26	MPB307G160SF10175S		50000	286
13.1	6779	109.15	0.81	MPB306G160SF10915S		30000	195
2.7	6993	112.87	1.16	MPB307G160SF11287S		50000	286
11.1	8001	129.29	0.97	MPB307G160SF12929S		50000	286
9.5	9348	151.82	0.86	MPB307G160SF15182S		50000	286
8.8	10092	162.47	0.79	MPB307G160SF16247S		50000	286

P 11.0 kW n_1 1465 min⁻¹

n _{2ex} min-1	T _{2m} Nm	i _{ex}	SF	TYPE	Fr NN	FrN-G N	M kg
493.3	213	2.97	1.7	MPB203G160MF00297S	2100	10000	140
450.9	233	3.25	2.1	MPB204G160MF00325S	3500	12200	166
425	247	3.45	1.5	MPB203G160MF00345S	2000	10300	140
402.1	261	3.64	2	MPB204G160MF00364S	3500	12500	166
379.6	277	3.86	1.5	MPB203G160MF00386S	2000	10500	140
349.4	301	4.19	1.9	MPB204G160MF00419S	3500	12900	166
331.5	317	4.42	1.3	MPB203G160MF00442S	1900	10700	140
308.2	341	4.75	1.8	MPB204G160MF00475S	3500	13200	166
302.2	348	4.85	1.2	MPB203G160MF00485S	1800	10900	140
274	383	5.35	1.7	MPB204G160MF00535S	3500	13500	166
261.6	402	5.6	1	MPB203G160MF00560S	1600	11100	140
238.9	440	6.13	1.6	MPB204G160MF00613S	3500	13900	166
255.3	412	5.74	3	MPB205G160MF00574S	5000	18500	203
236.7	444	6.19	0.93	MPB203G160MF00619S	1500	11200	140
216.5	485	6.77	1.5	MPB204G160MF00677S	3400	14100	166
213.2	493	6.87	0.84	MPB203G160MF00687S	1300	11300	140
196.8	534	7.44	1.6	MPB204G160MF00744S	3300	14400	166
206.4	509	7.1	2.9	MPB205G160MF00710S	5300	19600	203
181.4	579	8.07	1.3	MPB203G160MF00807S	1600	12100	140
186.2	564	7.87	1.6	MPB204G160MF00787S	3600	14800	166
179.3	586	8.17	2.7	MPB205G160MF00817S	5300	20300	203
156.3	672	9.37	1.2	MPB203G160MF00937S	1300	12300	140
166.1	632	8.82	1.5	MPB204G160MF00882S	3600	15100	166
158.7	662	9.23	2.6	MPB205G160MF00923S	5400	20800	203
139.6	752	10.49	1.1	MPB203G160MF01049S	1000	12300	140
144.3	728	10.15	1.4	MPB204G160MF01015S	3400	15500	166
143.8	731	10.19	2.5	MPB205G160MF01019S	5300	21200	203
121.9	861	12.01	0.99	MPB203G160MF01201S	600	12400	140
127.3	825	11.51	1.3	MPB204G160MF01151S	3200	15700	166
126.7	829	11.56	2.2	MPB205G160MF01156S	5300	21800	203
111.1	945	13.18	0.9	MPB203G160MF01318S	300	12400	140
113.2	928	12.95	1.2	MPB204G160MF01295S	3000	16000	166
112.7	932	13	2.1	MPB205G160MF01300S	5200	22300	203
98.7	1064	14.85	1.1	MPB204G160MF01485S	2700	16200	166
101.4	1036	14.45	1.9	MPB205G160MF01445S	5100	22700	203
89.4	1175	16.38	1	MPB204G160MF01638S	2500	16300	166
89.1	1179	16.45	1.7	MPB205G160MF01645S	4900	23200	203
81.3	1292	18.03	0.94	MPB204G160MF01803S	2200	16400	166
82.5	1273	17.75	1.7	MPB205G160MF01775S	4800	23500	203
83.7	1255	17.51	3	MPB206G160MF01751S		30000	264
72.1	1456	20.31	0.86	MPB204G160MF02031S	1700	16400	166
74.4	1411	19.68	1.5	MPB205G160MF01968S	4600	23800	203
73	1440	20.08	2.7	MPB206G160MF02008S		30000	264
65	1615	22.52	0.8	MPB204G160MF02252S	1300	16400	166

P 11.0 kW n_1 **1465 min⁻¹**

n _{2ex} min ⁻¹	T _{2m} Nm	i _{ex}	SF	TYPE	Fr NN	FrN-G N	M kg
64.7	1624	22.65	1.4	MPB205G160MF02265S	4200	24200	203
63	1668	23.26	2.5	MPB206G160MF02326S		30000	264
57.3	1832	25.55	1.3	MPB205G160MF02555S	3800	24600	203
56.7	1853	25.85	2.4	MPB206G160MF02585S		30000	264
50.4	2085	29.09	1.2	MPB205G160MF02909S	3300	24800	203
53.1	1980	27.61	2.3	MPB206G160MF02761S		30000	264
46.6	2253	31.43	0.93	MPB305G160MF03143S	2900	24900	203
45.9	2288	31.91	1.1	MPB205G160MF03191S	2800	24900	203
47.7	2201	30.69	2.1	MPB206G160MF03069S		30000	264
45.3	2318	32.32	3	MPB207G160MF03232S		50000	355
40	2623	36.58	1	MPB205G160MF03658S	2000	25000	203
42.1	2497	34.82	1.9	MPB206G160MF03482S		30000	264
41.5	2533	35.33	2.9	MPB207G160MF03533S		50000	355
38.8	2709	37.78	0.85	MPB305G160MF03778S	1800	25100	203
36.9	2843	39.65	0.97	MPB205G160MF03965S	1500	25100	203
38.4	2733	38.12	1.6	MPB306G160MF03812S		30000	264
38.5	2725	38.01	1.8	MPB206G160MF03801S		30000	264
37.2	2826	39.42	2.5	MPB307G160MF03942S		50000	355
38.2	2747	38.31	2.7	MPB207G160MF03831S		50000	355
31.3	3354	46.78	0.86	MPB205G160MF04678S	100	24900	203
34.3	3065	42.75	1.5	MPB306G160MF04275S		30000	264
33.7	3120	43.51	1.7	MPB206G160MF04351S		30000	264
32.4	3243	45.22	2.4	MPB207G160MF04522S		50000	355
30.8	3409	47.54	1.4	MPB206G160MF04754S		30000	264
29.3	3579	49.92	2.2	MPB207G160MF04992S		50000	355
26.2	4015	56	1.2	MPB206G160MF05600S		30000	264
26.4	3983	55.55	2	MPB207G160MF05555S		50000	355
23.8	4422	61.68	1.1	MPB206G160MF06168S		30000	264
22.6	4652	64.88	1.7	MPB307G160MF06488S		50000	355
21.4	4911	68.49	0.92	MPB206G160MF06849S		30000	264
19.7	5334	74.39	1.5	MPB307G160MF07439S		50000	355
18.5	5692	79.38	0.97	MPB306G160MF07938S		30000	264
17.8	5886	82.09	1.4	MPB307G160MF08209S		50000	355
16.8	6263	87.35	0.88	MPB306G160MF08735S		30000	264
16.2	6477	90.33	1.2	MPB307G160MF09033S		50000	355
14.4	7296	101.75	1.1	MPB307G160MF10175S		50000	355
13	8093	112.87	0.99	MPB307G160MF11287S		50000	355
11.3	9270	129.29	0.86	MPB307G160MF12929S		50000	355

P 15.0 kW n_1 1460 min⁻¹

n _{2ex} min-1	T _{2m} Nm	i _{ex}	SF	TYPE	Fr NN	FrN-G N	M kg
491.6	291	2.97	1.3	MPB203G160LF00297S	1600	9400	160
449.4	319	3.25	1.5	MPB204G160LF00325S	3000	11700	186
457.2	313	3.19	2.9	MPB205G160LF00319S	4200	15600	223
423.5	338	3.45	1.1	MPB203G160LF00345S	1400	9600	160
400.8	357	3.64	1.5	MPB204G160LF00364S	3000	12000	186
414.6	346	3.52	2.7	MPB205G160LF00352S	4300	16000	223
378.3	379	3.86	1.1	MPB203G160LF00386S	1300	9800	160
348.2	411	4.19	1.4	MPB204G160LF00419S	2900	12300	186
360	398	4.06	2.6	MPB205G160LF00406S	4300	16500	223
330.4	434	4.42	0.96	MPB203G160LF00442S	1100	9900	160
307.1	466	4.75	1.3	MPB204G160LF00475S	2900	12600	186
318.7	449	4.58	2.4	MPB205G160LF00458S	4300	17000	223
301.1	476	4.85	0.87	MPB203G160LF00485S	900	10000	160
273	525	5.35	1.2	MPB204G160LF00535S	2800	12800	186
288.7	496	5.06	2.3	MPB205G160LF00506S	4300	17300	223
238.1	602	6.13	1.1	MPB204G160LF00613S	2600	13000	186
254.4	563	5.74	2.2	MPB205G160LF00574S	4300	17800	223
215.8	664	6.77	1.1	MPB204G160LF00677S	2500	13200	186
226.9	631	6.43	2.2	MPB205G160LF00643S	4600	18500	223
196.1	730	7.44	1.2	MPB204G160LF00744S	2300	13400	186
205.7	696	7.1	2.2	MPB205G160LF00710S	4500	18900	223
180.8	792	8.07	0.93	MPB203G160LF00807S	400	10900	160
185.6	772	7.87	1.2	MPB204G160LF00787S	2700	13900	186
178.7	802	8.17	2	MPB205G160LF00817S	4500	19400	223
155.8	919	9.37	0.87	MPB203G160LF00937S		10800	160
165.5	865	8.82	1.1	MPB204G160LF00882S	2500	14100	186
158.2	906	9.23	1.9	MPB205G160LF00923S	4400	19800	223
139.1	1030	10.49	0.83	MPB203G160LF01049S		10800	160
143.8	996	10.15	1	MPB204G160LF01015S	2200	14200	186
143.3	1000	10.19	1.8	MPB205G160LF01019S	4300	20200	223
140	1023	10.43	2.9	MPB206G160LF01043S		26900	284
126.8	1129	11.51	0.94	MPB204G160LF01151S	1800	14300	186
126.3	1135	11.56	1.6	MPB205G160LF01156S	4100	20600	223
125.2	1144	11.66	2.7	MPB206G160LF01166S		27500	284
112.8	1270	12.95	0.87	MPB204G160LF01295S	1400	14400	186
112.3	1275	13	1.5	MPB205G160LF01300S	3800	20900	223
115.9	1235	12.59	2.6	MPB206G160LF01259S		27900	284
101.1	1417	14.45	1.4	MPB205G160LF01445S	3600	21200	223
103	1391	14.18	2.4	MPB206G160LF01418S		28600	284
88.8	1613	16.45	1.3	MPB205G160LF01645S	3200	21500	223
90.9	1575	16.06	2.3	MPB206G160LF01606S		29100	284
82.2	1742	17.75	1.2	MPB205G160LF01775S	2900	21600	223
83.4	1718	17.51	2.2	MPB206G160LF01751S		29500	284
74.2	1931	19.68	1.1	MPB205G160LF01968S	2500	21800	223

P 15.0 kW n_1 1460 min⁻¹

n _{2ex} min-1	T _{2m} Nm	i _{ex}	SF	TYPE	Fr NN	FrN-G N	M kg
72.7	1970	20.08	2	MPB206G160LF02008S		30000	284
64.5	2222	22.65	1	MPB205G160LF02265S	1800	21900	223
62.8	2282	23.26	1.8	MPB206G160LF02326S		30000	284
66.2	2164	22.06	2.9	MPB207G160LF02206S		46700	375
57.2	2506	25.55	0.94	MPB205G160LF02555S	1100	21900	223
56.5	2536	25.85	1.7	MPB206G160LF02585S		30000	284
58.6	2443	24.9	2.7	MPB207G160LF02490S		47800	375
50.2	2854	29.09	0.86	MPB205G160LF02909S	200	21800	223
52.9	2709	27.61	1.7	MPB206G160LF02761S		30000	284
52.1	2749	28.02	2.5	MPB207G160LF02802S		48900	375
45.8	3131	31.91	0.8	MPB205G160LF03191S		21700	223
47.6	3011	30.69	1.5	MPB206G160LF03069S		30000	284
45.2	3171	32.32	2.2	MPB207G160LF03232S		50000	375
41.9	3416	34.82	1.4	MPB206G160LF03482S		30000	284
41.3	3466	35.33	2.1	MPB207G160LF03533S		50000	375
38.4	3729	38.01	1.3	MPB206G160LF03801S		30000	284
37	3867	39.42	1.8	MPB307G160LF03942S		50000	375
38.1	3758	38.31	2	MPB207G160LF03831S		50000	375
33.6	4269	43.51	1.2	MPB206G160LF04351S		30000	284
32.3	4437	45.22	1.7	MPB207G160LF04522S		50000	375
30.7	4664	47.54	1	MPB206G160LF04754S		30000	284
29.2	4897	49.92	1.6	MPB207G160LF04992S		50000	375
26.1	5494	56	0.88	MPB206G160LF05600S		30000	284
26.3	5450	55.55	1.5	MPB207G160LF05555S		50000	375
23.7	6051	61.68	0.8	MPB206G160LF06168S		30000	284
22.5	6365	64.88	1.3	MPB307G160LF06488S		50000	375
19.6	7299	74.39	1.1	MPB307G160LF07439S		50000	375
17.8	8054	82.09	0.99	MPB307G160LF08209S		50000	375
16.2	8862	90.33	0.9	MPB307G160LF09033S		50000	375
14.3	9983	101.75	0.8	MPB307G160LF10175S		50000	375

P 18.5 kW n_1 1455 min⁻¹

n _{2ex} min-1	T _{2m} Nm	i _{ex}	SF	TYPE	Fr NN	FrN-G N	M kg
447.9	394	3.25	1.2	MPB204H180MF00325S	2600	11300	216
455.7	388	3.19	2.3	MPB205H180MF00319S	3900	15300	253
399.4	442	3.64	1.2	MPB204H180MF00364S	2500	11500	216
413.1	428	3.52	2.2	MPB205H180MF00352S	3900	15700	253
347	509	4.19	1.1	MPB204H180MF00419S	2400	11800	216
358.8	492	4.06	2.1	MPB205H180MF00406S	3900	16100	253
306.1	577	4.75	1.1	MPB204H180MF00475S	2300	12000	216
317.6	556	4.58	2	MPB205H180MF00458S	3800	16500	253
272.1	649	5.35	1	MPB204H180MF00535S	2100	12200	216

P 18.5 kW n_1 1455 min⁻¹

n _{2ex} min-1	T _{2m} Nm	i _{ex}	SF	TYPE	Fr NN	FrN-G N	M kg
287.7	614	5.06	1.9	MPB205H180MF00506S	3800	16800	253
284.1	622	5.12	2.9	MPB206H180MF00512S		22300	314
237.3	744	6.13	0.93	MPB204H180MF00613S	1800	12300	216
253.5	697	5.74	1.8	MPB205H180MF00574S	3700	17200	253
254	696	5.73	2.7	MPB206H180MF00573S		22900	314
215.1	821	6.77	0.89	MPB204H180MF00677S	1600	12400	216
226.1	781	6.43	1.8	MPB205H180MF00643S	4000	17900	253
229.1	771	6.35	2.9	MPB206H180MF00635S		23600	314
205	862	7.1	1.7	MPB205H180MF00710S	3900	18300	253
206.4	856	7.05	2.8	MPB206H180MF00705S		24200	314
185	955	7.87	0.94	MPB204H180MF00787S	1800	13100	216
178.1	992	8.17	1.6	MPB205H180MF00817S	3700	18700	253
173.2	1020	8.4	2.6	MPB206H180MF00840S		25000	314
165	1071	8.82	0.89	MPB204H180MF00882S	1500	13100	216
157.6	1121	9.23	1.5	MPB205H180MF00923S	3500	19000	253
161.3	1095	9.02	2.5	MPB206H180MF00902S		25400	314
143.3	1233	10.15	0.81	MPB204H180MF01015S	1000	13200	216
142.8	1237	10.19	1.5	MPB205H180MF01019S	3300	19300	253
139.5	1266	10.43	2.3	MPB206H180MF01043S		26100	314
125.8	1404	11.56	1.3	MPB205H180MF01156S	3000	19500	253
124.8	1416	11.66	2.2	MPB206H180MF01166S		26600	314
111.9	1578	13	1.2	MPB205H180MF01300S	2600	19800	253
115.6	1529	12.59	2.1	MPB206H180MF01259S		26900	314
100.7	1754	14.45	1.1	MPB205H180MF01445S	2200	19900	253
102.6	1722	14.18	2	MPB206H180MF01418S		27400	314
88.5	1997	16.45	1	MPB205H180MF01645S	1700	20000	253
90.6	1949	16.06	1.8	MPB206H180MF01606S		27800	314
92.5	1910	15.73	3	MPB207H180MF01573S		42400	405
81.9	2156	17.75	0.98	MPB205H180MF01775S	1300	20000	253
83.1	2126	17.51	1.8	MPB206H180MF01751S		28100	314
82.3	2147	17.68	2.7	MPB207H180MF01768S		43400	405
73.9	2389	19.68	0.91	MPB205H180MF01968S	700	20000	253
72.5	2438	20.08	1.6	MPB206H180MF02008S		28400	314
73.9	2390	19.69	2.6	MPB207H180MF01969S		44300	405
64.2	2750	22.65	0.83	MPB205H180MF02265S		19900	253
62.5	2824	23.26	1.5	MPB206H180MF02326S		28700	314
66	2678	22.06	2.4	MPB207H180MF02206S		45100	405
56.3	3138	25.85	1.4	MPB206H180MF02585S		28800	314
58.4	3023	24.9	2.2	MPB207H180MF02490S		46000	405
52.7	3352	27.61	1.3	MPB206H180MF02761S		28800	314
51.9	3402	28.02	2	MPB207H180MF02802S		46800	405
47.4	3727	30.69	1.2	MPB206H180MF03069S		28800	314
45	3924	32.32	1.8	MPB207H180MF03232S		47600	405

P 18.5 kW n_1 1455 min⁻¹

n _{2ex} min-1	T _{2m} Nm	i _{ex}	SF	TYPE	Fr NN	FrN-G N	M kg
41.8	4228	34.82	1.1	MPB206H180MF03482S		28600	314
41.2	4289	35.33	1.7	MPB207H180MF03533S		48100	405
38.2	4628	38.12	0.95	MPB306H180MF03812S		28300	314
38.3	4615	38.01	1.1	MPB206H180MF03801S		28300	314
38	4651	38.31	1.6	MPB207H180MF03831S		48400	405
33.4	5283	43.51	0.97	MPB206H180MF04351S		27700	314
32.2	5491	45.22	1.4	MPB207H180MF04522S		49000	405
30.6	5772	47.54	0.84	MPB206H180MF04754S		27200	314
29.1	6061	49.92	1.3	MPB207H180MF04992S		49100	405
26.2	6744	55.55	1.2	MPB207H180MF05555S		49100	405
22.4	7877	64.88	1	MPB307H180MF06488S		48900	405
19.6	9032	74.39	0.89	MPB307H180MF07439S		48200	405
17.7	9967	82.09	0.8	MPB307H180MF08209S		47500	405

P 22.0 kW n_1 1460 min⁻¹

n _{2ex} min-1	T _{2m} Nm	i _{ex}	SF	TYPE	Fr NN	FrN-G N	M kg
449.4	467	3.25	1	MPB204H180LF00325S	2200	10900	246
457.2	459	3.19	2	MPB205H180LF00319S	3600	15000	283
468.1	449	3.12	3	MPB206H180LF00312S		19600	344
400.8	524	3.64	1	MPB204H180LF00364S	2100	11100	246
414.6	507	3.52	1.9	MPB205H180LF00352S	3500	15300	283
421.7	498	3.46	2.9	MPB206H180LF00346S		20100	344
348.2	603	4.19	0.94	MPB204H180LF00419S	1900	11300	246
360	584	4.06	1.8	MPB205H180LF00406S	3500	15700	283
353.8	594	4.13	2.7	MPB206H180LF00413S		20900	344
307.1	684	4.75	0.89	MPB204H180LF00475S	1700	11400	246
318.7	659	4.58	1.7	MPB205H180LF00458S	3400	16100	283
329.6	637	4.43	2.7	MPB206H180LF00443S		21200	344
273	769	5.35	0.84	MPB204H180LF00535S	1400	11500	246
288.7	728	5.06	1.6	MPB205H180LF00506S	3300	16300	283
285.1	737	5.12	2.4	MPB206H180LF00512S		21800	344
254.4	826	5.74	1.5	MPB205H180LF00574S	3100	16700	283
254.9	824	5.73	2.3	MPB206H180LF00573S		22300	344
226.9	926	6.43	1.5	MPB205H180LF00643S	3400	17400	283
229.9	914	6.35	2.5	MPB206H180LF00635S		23100	344
205.7	1021	7.1	1.5	MPB205H180LF00710S	3200	17600	283
207.1	1014	7.05	2.4	MPB206H180LF00705S		23600	344
185.6	1132	7.87	0.8	MPB204H180LF00787S	900	12200	246
178.7	1176	8.17	1.4	MPB205H180LF00817S	3000	17900	283
173.8	1209	8.4	2.2	MPB206H180LF00840S		24300	344
158.2	1328	9.23	1.3	MPB205H180LF00923S	2700	18200	283
161.9	1298	9.02	2.1	MPB206H180LF00902S		24600	344

P 22.0 kW n_1 1460 min⁻¹

n _{2ex} min ⁻¹	T _{2m} Nm	i _{ex}	SF	TYPE	Fr NN	FrN-G N	M kg
143.3	1466	10.19	1.2	MPB205H180LF01019S	2400	18400	283
140	1500	10.43	2	MPB206H180LF01043S		25200	344
126.3	1664	11.56	1.1	MPB205H180LF01156S	1900	18500	283
125.2	1678	11.66	1.8	MPB206H180LF01166S		25600	344
112.3	1870	13	1	MPB205H180LF01300S	1400	18600	283
115.9	1812	12.59	1.8	MPB206H180LF01259S		25800	344
117.9	1782	12.38	3	MPB207H180LF01238S		39500	435
101.1	2079	14.45	0.95	MPB205H180LF01445S	900	18600	283
103	2040	14.18	1.7	MPB206H180LF01418S		26200	344
102.4	2052	14.26	2.7	MPB207H180LF01426S		40500	435
88.8	2366	16.45	0.87	MPB205H180LF01645S	100	18600	283
90.9	2310	16.06	1.6	MPB206H180LF01606S		26400	344
92.8	2264	15.73	2.5	MPB207H180LF01573S		41300	435
82.2	2555	17.75	0.83	MPB205H180LF01775S		18500	283
83.4	2519	17.51	1.5	MPB206H180LF01751S		26600	344
82.6	2544	17.68	2.3	MPB207H180LF01768S		42100	435
72.7	2889	20.08	1.4	MPB206H180LF02008S		26700	344
74.2	2833	19.69	2.2	MPB207H180LF01969S		42800	435
62.8	3347	23.26	1.3	MPB206H180LF02326S		26700	344
66.2	3174	22.06	2	MPB207H180LF02206S		43500	435
56.5	3719	25.85	1.2	MPB206H180LF02585S		26600	344
58.6	3583	24.9	1.8	MPB207H180LF02490S		44100	435
52.9	3973	27.61	1.1	MPB206H180LF02761S		26500	344
52.1	4032	28.02	1.7	MPB207H180LF02802S		44700	435
47.6	4416	30.69	1.1	MPB206H180LF03069S		26200	344
45.2	4651	32.32	1.5	MPB207H180LF03232S		45200	435
41.9	5010	34.82	0.97	MPB206H180LF03482S		25600	344
41.3	5084	35.33	1.4	MPB207H180LF03533S		45400	435
38.3	5485	38.12	0.8	MPB306H180LF03812S		25100	344
38.4	5469	38.01	0.91	MPB206H180LF03801S		25100	344
38.1	5512	38.31	1.3	MPB207H180LF03831S		45600	435
33.6	6260	43.51	0.82	MPB206H180LF04351S		24000	344
32.3	6507	45.22	1.2	MPB207H180LF04522S		45600	435
29.2	7183	49.92	1.1	MPB207H180LF04992S		45400	435
26.3	7993	55.55	1	MPB207H180LF05555S		45000	435
22.5	9335	64.88	0.86	MPB307H180LF06488S		44000	435

P 30.0 kW n_1 1465 min⁻¹

n _{2ex} min-1	T _{2m} Nm	i _{ex}	SF	TYPE	Fr NN	FrN-G N	M kg
458.8	624	3.19	1.4	MPB205I200LF00319S	2800	14300	293
469.7	610	3.12	2.2	MPB206I200LF00312S		18900	354
416	689	3.52	1.4	MPB205I200LF00352S	2700	14500	293
423.1	677	3.46	2.1	MPB206I200LF00346S		19300	354
361.3	793	4.06	1.3	MPB205I200LF00406S	2500	14800	293
355.1	807	4.13	2	MPB206I200LF00413S		20000	354
367.6	779	3.99	2.9	MPB207I200LF00399S		29400	445
319.8	896	4.58	1.2	MPB205I200LF00458S	2300	15000	293
330.7	866	4.43	2	MPB206I200LF00443S		20200	354
323.9	884	4.52	2.7	MPB207I200LF00452S		30200	445
289.7	989	5.06	1.2	MPB205I200LF00506S	2100	15200	293
286	1002	5.12	1.8	MPB206I200LF00512S		20700	354
297.3	964	4.93	2.6	MPB207I200LF00493S		30800	445
255.3	1122	5.74	1.1	MPB205I200LF00574S	1700	15300	293
255.7	1120	5.73	1.7	MPB206I200LF00573S		21100	354
260.6	1099	5.62	2.4	MPB207I200LF00562S		31700	445
227.7	1258	6.43	1.1	MPB205I200LF00643S	2000	16000	293
230.7	1242	6.35	1.8	MPB206I200LF00635S		21900	354
206.4	1388	7.1	1.1	MPB205I200LF00710S	1700	16200	293
207.8	1378	7.05	1.7	MPB206I200LF00705S		22200	354
207	1384	7.08	3	MPB207I200LF00708S		33700	445
179.3	1598	8.17	1	MPB205I200LF00817S	1200	16300	293
174.4	1643	8.4	1.6	MPB206I200LF00840S		22700	354
182.7	1568	8.02	2.9	MPB207I200LF00802S		34600	445
158.7	1805	9.23	0.94	MPB205I200LF00923S	700	16300	293
162.4	1764	9.02	1.6	MPB206I200LF00902S		22900	354
161	1779	9.1	2.7	MPB207I200LF00910S		35500	445
143.8	1993	10.19	0.9	MPB205I200LF01019S	200	16300	293
140.5	2039	10.43	1.4	MPB206I200LF01043S		23200	354
147.8	1938	9.91	2.6	MPB207I200LF00991S		36000	445
126.7	2261	11.56	0.82	MPB205I200LF01156S		16100	293
125.6	2281	11.66	1.4	MPB206I206LF01166S		23300	354
129.5	2212	11.31	2.3	MPB207I200LF01131S		36800	445
116.3	2462	12.59	1.3	MPB206I200LF01259S		23400	354
118.3	2421	12.38	2.2	MPB207I200LF01238S		37300	445
103.3	2773	14.18	1.2	MPB206I200LF01418S		23400	354
102.7	2788	14.26	2	MPB207I200LF01426S		38100	445
91.2	3140	16.06	1.1	MPB206I200LF01606S		23300	354
93.1	3077	15.73	1.9	MPB207I200LF01573S		38600	445
83.7	3424	17.51	1.1	MPB206I200LF01751S		23200	354
82.9	3457	17.68	1.7	MPB207I200LF01768S		39100	445
73	3926	20.08	1	MPB206I200LF02008S		22800	354
74.4	3850	19.69	1.6	MPB207I200LF01969S		39400	445

P 30.0 kW n_1 1465 min⁻¹

n _{2ex} min-1	T _{2m} Nm	i _{ex}	SF	TYPE	Fr NN	FrN-G N	M kg
63	4549	23.26	0.92	MPB206I200LF02326S		22200	354
66.4	4313	22.06	1.5	MPB207I200LF02206S		39700	445
56.7	5054	25.85	0.87	MPB206I200LF02585S		21600	354
58.8	4869	24.9	1.3	MPB207I200LF02490S		39900	445
53.1	5399	27.61	0.83	MPB206I200LF02761S		21100	354
52.3	5480	28.02	1.2	MPB207I200LF02802S		40000	445
45.3	6321	32.32	1.1	MPB207I200LF03232S		39700	445
41.5	6908	35.33	1	MPB207I200LF03533S		39400	445
38.2	7491	38.31	0.99	MPB207I200LF03831S		39000	445
32.4	8844	45.22	0.87	MPB207I200LF04522S		37900	445
29.3	9761	49.92	0.82	MPB207I200LF04992S		36900	445

P 37.0 kW n_1 1470 min⁻¹

n _{2ex} min-1	T _{2m} Nm	i _{ex}	SF	TYPE	Fr NN	FrN-G N	M kg
471.3	750	3.12	1.8	MPB206J225SF00312S		18300	424
472.8	747	3.11	2.6	MPB207J225SF00311S		27100	515
424.6	832	3.46	1.7	MPB206J225SF00346S		18600	424
417.7	846	3.52	2.5	MPB207J225SF00352S		27900	515
356.3	992	4.13	1.6	MPB206J225SF00413S		19100	424
368.8	958	3.99	2.3	MPB207J225SF00399S		28700	515
331.8	1065	4.43	1.6	MPB206J225SF00443S		19300	424
325	1087	4.52	2.2	MPB207J225SF00452S		29400	515
287	1231	5.12	1.5	MPB206J225SF00512S		19700	424
298.3	1184	4.93	2.1	MPB207J225SF00493S		30000	515
256.6	1377	5.73	1.4	MPB206J225SF00573S		19900	424
261.5	1351	5.62	1.9	MPB207J225SF00562S		30700	515
231.5	1526	6.35	1.5	MPB206J225SF00635S		20800	424
235	1503	6.25	2.6	MPB207J225SF00625S		31900	515
208.5	1694	7.05	1.4	MPB206J225SF00705S		21000	424
207.7	1701	7.08	2.5	MPB207J225SF00708S		32700	515
175	2019	8.4	1.3	MPB206J225SF00840S		21300	424
183.3	1927	8.02	2.3	MPB207J225SF00802S		33400	515
163	2168	9.02	1.3	MPB206J225SF00902S		21400	424
161.6	2187	9.1	2.2	MPB207J225SF00910S		34100	515
141	2506	10.43	1.2	MPB206J225SF01043S		21400	424
148.3	2383	9.91	2.1	MPB207J225SF00991S		34500	515
126	2803	11.66	1.1	MPB206J225SF01166S		21400	424
130	2718	11.31	1.9	MPB207J225SF01131S		35100	515
116.7	3027	12.59	1.1	MPB206J225SF01259S		21300	424
118.7	2976	12.38	1.8	MPB207J225SF01238S		35500	515
103.7	3408	14.18	1	MPB206J225SF01418S		21000	424
103.1	3427	14.26	1.6	MPB207J225SF01426S		36000	515

P 37.0 kW n_1 1470 min⁻¹

n _{2ex} min-1	T _{2m} Nm	i _{ex}	SF	TYPE	Fr NN	FrN-G N	M kg
91.6	3859	16.06	0.93	MPB206J225SF01606S		20600	424
93.4	3782	15.73	1.5	MPB207J225SF01573S		36200	515
83.1	4250	17.68	1.4	MPB207J225SF01768S		36400	515
59	5985	24.9	1.1	MPB207J225SF02490S		36200	515
52.5	6735	28.02	1	MPB207J225SF02802S		35800	515
45.5	7769	32.32	0.91	MPB207J225SF03232S		35000	515
41.6	8491	35.33	0.85	MPB207J225SF03533S		34200	515
38.4	9208	38.31	0.8	MPB207J225SF03831S		33400	515

P 45.0 kW n_1 1470 min⁻¹

n _{2ex} min-1	T _{2m} Nm	i _{ex}	SF	TYPE	Fr NN	FrN-G N	M kg
471.3	912	3.12	1.5	MPB206J225MF00312S		17600	454
472.8	909	3.11	2.1	MPB207J225MF00311S		26500	545
424.6	1012	3.46	1.4	MPB206J225MF00346S		17900	454
417.7	1029	3.52	2	MPB207J225MF00352S		27200	545
356.3	1206	4.13	1.3	MPB206J225MF00413S		18200	454
368.8	1165	3.99	1.9	MPB207J225MF00399S		27900	545
331.8	1295	4.43	1.3	MPB206J225MF00443S		18400	454
325	1322	4.52	1.8	MPB207J225MF00452S		28600	545
287	1497	5.12	1.2	MPB206J225MF00512S		18600	454
298.3	1441	4.93	1.7	MPB207J225MF00493S		29000	545
256.6	1675	5.73	1.1	MPB206J225MF00573S		18700	454
261.5	1644	5.62	1.6	MPB207J225MF00562S		29700	545
231.5	1856	6.35	1.2	MPB206J225MF00635S		19600	454
235	1828	6.25	2.1	MPB207J225MF00625S		30900	545
208.5	2061	7.05	1.2	MPB206J225MF00705S		19700	454
207.7	2069	7.08	2	MPB207J225MF00708S		31500	545
175	2456	8.4	1.1	MPB206J225MF00840S		19700	454
183.3	2344	8.02	1.9	MPB207J225MF00802S		32000	545
163	2637	9.02	1	MPB206J225MF00902S		19600	454
161.6	2660	9.1	1.8	MPB207J225MF00910S		32500	545
141	3048	10.43	0.97	MPB206J225MF01043S		19400	454
148.3	2898	9.91	1.7	MPB207J225MF00991S		32800	545
126	3409	11.66	0.91	MPB206J225MF01166S		19100	454
130	3306	11.31	1.6	MPB207J225MF01131S		33200	545
116.7	3681	12.59	0.88	MPB206J225MF01259S		18800	454
118.7	3620	12.38	1.5	MPB207J225MF01238S		33400	545
103.7	4145	14.18	0.82	MPB206J225MF01418S		18300	454
103.1	4168	14.26	1.3	MPB207J225MF01426S		33600	545
93.4	4599	15.73	1.3	MPB207J225MF01573S		33600	545
83.1	5168	17.68	1.1	MPB207J225MF01768S		33400	545
59	7279	24.9	0.9	MPB207J225MF02490S		32000	545
52.5	8191	28.02	0.83	MPB207J225MF02802S		31000	545

P 55.0 kW n_1 1475 min⁻¹

n _{2ex} min-1	T _{2m} Nm	i _{ex}	SF	TYPE	Fr NN	FrN-G N	M kg
472.9	1111	3.12	1.2	MPB206K250MF00312S		16700	544.4
474.4	1107	3.11	1.8	MPB207K250MF00311S		25800	644.5
426	1233	3.46	1.2	MPB206K250MF00346S		16900	544.4
419.2	1253	3.52	1.7	MPB207K250MF00352S		26400	644.5
357.5	1469	4.13	1.1	MPB206K250MF00413S		17100	544.4
370.1	1419	3.99	1.6	MPB207K250MF00399S		27000	644.5
332.9	1578	4.43	1.1	MPB206K250MF00443S		17100	544.4
326.1	1610	4.52	1.5	MPB207K250MF00452S		27500	644.5
288	1824	5.12	0.99	MPB206K250MF00512S		17200	544.4
299.3	1755	4.93	1.4	MPB207K250MF00493S		27900	644.5
257.5	2040	5.73	0.93	MPB206K250MF00573S		17100	544.4
262.3	2002	5.62	1.3	MPB207K250MF00562S		28300	644.5
232.3	2261	6.35	1	MPB206K250MF00635S		18000	544.4
235.8	2227	6.25	1.8	MPB207K250MF00625S		29500	644.5
209.3	2510	7.05	0.96	MPB206K250MF00705S		18000	544.4
208.4	2521	7.08	1.7	MPB207K250MF00708S		30000	644.5
175.6	2991	8.4	0.89	MPB206K250MF00840S		17600	544.4
184	2855	8.02	1.6	MPB207K250MF00802S		30300	644.5
163.5	3212	9.02	0.86	MPB206K250MF00902S		17400	544.4
162.1	3240	9.1	1.5	MPB207K250MF00910S		30600	644.5
148.8	3530	9.91	1.4	MPB207K250MF00991S		30700	644.5
130.4	4027	11.31	1.3	MPB207K250MF01131S		30800	644.5
119.1	4409	12.38	1.2	MPB207K250MF01238S		30800	644.5
103.4	5077	14.26	1.1	MPB207K250MF01426S		30500	644.5
93.7	5602	15.73	1	MPB207K250MF01573S		30200	644.5
83.4	6296	17.68	0.94	MPB207K250MF01768S		29700	644.5
74.9	7010	19.69	0.87	MPB207K250MF01969S		29000	644.5
66.9	7854	22.06	0.8	MPB207K250MF02206S		28100	644.5

P 75.0 kW n_1 1480 min⁻¹

n _{2ex} min-1	T _{2m} Nm	i _{ex}	SF	TYPE	Fr NN	FrN-G N	M kg
474.5	1509	3.12	0.89	MPB206L280SF00312S		15000	689.4
476	1505	3.11	1.3	MPB207L280SF00311S		24300	789.5
427.4	1676	3.46	0.87	MPB206L280SF00346S		15000	689.4
420.6	1703	3.52	1.2	MPB207L280SF00352S		24700	789.5
358.7	1997	4.13	0.8	MPB206L280SF00413S		14800	689.4
371.3	1929	3.99	1.2	MPB207L280SF00399S		25100	789.5
327.2	2189	4.52	1.1	MPB207L280SF00452S		25400	789.5
300.3	2385	4.93	1	MPB207L280SF00493S		25500	789.5
263.2	2721	5.62	0.96	MPB207L280SF00562S		25700	789.5
236.6	3027	6.25	1.3	MPB207L280SF00625S		26900	789.5
209.1	3425	7.08	1.2	MPB207L280SF00708S		27000	789.5

P 75.0 kW n_1 1480 min⁻¹

n _{2ex} min-1	T _{2m} Nm	i _{ex}	SF	TYPE	Fr NN	FrN-G N	M kg
184.6	3880	8.02	1.2	MPB207L280SF00802S		26900	789.5
162.7	4403	9.1	1.1	MPB207L280SF00910S		26800	789.5
149.3	4797	9.91	1	MPB207L280SF00991S		26500	789.5
130.9	5473	11.31	0.94	MPB207L280SF01131S		26000	789.5
119.5	5992	12.38	0.89	MPB207L280SF01238S		25600	789.5
103.8	6900	14.26	0.8	MPB207L280SF01426S		24500	789.5

P 90.0 kW n_1 1480 min⁻¹

n _{2ex} min-1	T _{2m} Nm	i _{ex}	SF	TYPE	Fr NN	FrN-G N	M kg
476	1805	3.11	10	MPB207L280MF00311S		23200	849.5
420.6	2043	3.52	0	MPB207L280MF00352S		23500	849.5
371.3	2315	3.99	97	MPB207L280MF00399S		23700	849.5
327.2	2626	4.52	91	MPB207L280MF00452S		23700	849.5
300.3	2862	4.93	87	MPB207L280MF00493S		23700	849.5
263.2	3265	5.62	80	MPB207L280MF00562S		23700	849.5
236.6	3632	6.25	10	MPB207L280MF00625S		24900	849.5
209.1	4111	7.08	0	MPB207L280MF00708S		24700	849.5
184.6	4656	8.02	97	MPB207L280MF00802S		24400	849.5
162.7	5283	9.1	90	MPB207L280MF00910S		23900	849.5
149.3	5756	9.91	87	MPB207L280MF00991S		23400	849.5

5. MP4

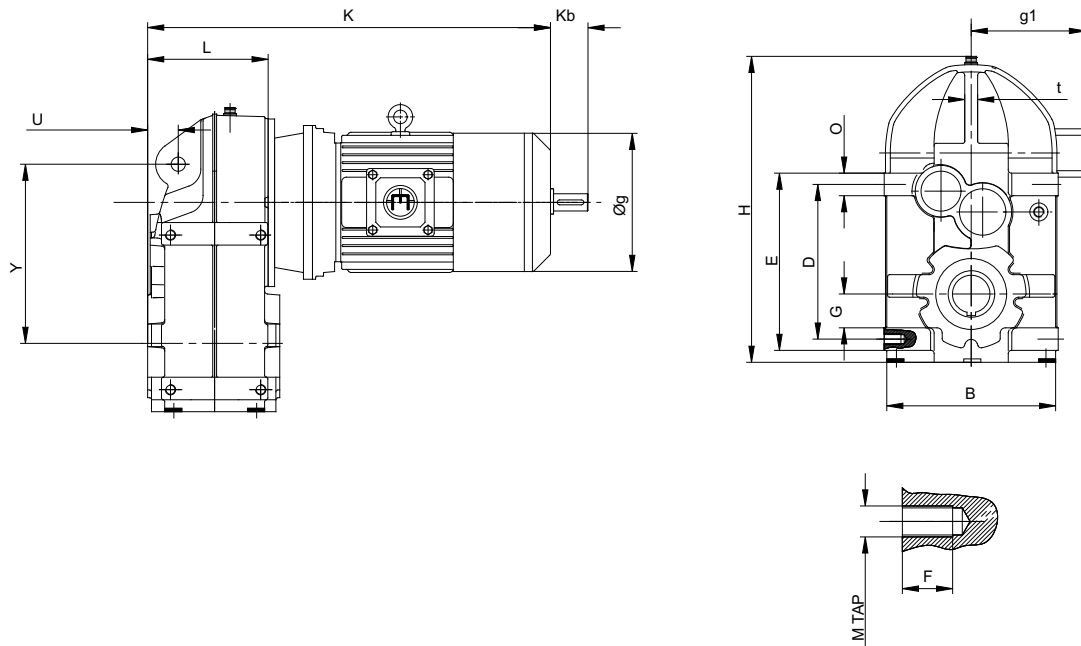
5.5 DIMENSIONAL DRAWING OF GEAR MOTOR MPB2/3...S : SHAFT MOUNTED

MOTOR DETAILS

MOTOR FRAME		63	71	80	90S	90L	100	112	132S	132M	160M	160L	180M	180L
	d	124	140	157	174	174	195	220	260	260	316	316	354	354
	Kb	35	44	57	72	72	82	83	103	103	136	136	120	121
	g1	116	124	134	140	140	162	170	206	206	226	226	265	265
Model														
MP-01	K	347	381.5	385.7	424	449	485	507	-	-	-	-	-	-
MP-02	K	367.5	402	406.2	444.5	469.5	505.5	527.5	-	-	-	-	-	-
MP-03	K	-	412.8	419.3	457.5	482.5	529.2	551.2	613.5	651.5	753.8	797.8	-	-
MP-04	K	-	-	456	492.8	517.8	566.8	588.8	655.8	693.8	795.5	839.5	889.5	927.5
MP-05	K	-	-	477.5	514.3	539.3	588.3	610.3	677.3	715.3	817	861	911	949

5. MP4

MPB2/3...S : SHAFT MOUNTED



DIMENSIONAL DRAWINGS OF GEARED MOTORS

Model	L	B	H	G	D	E	O	t	F	Y	U	MTAP
MP-06	251	400	655	120	350	400	50	30	28	395	70	M20
MP-07	294	450	750	125	400	460	60	36	36	485	88	M24

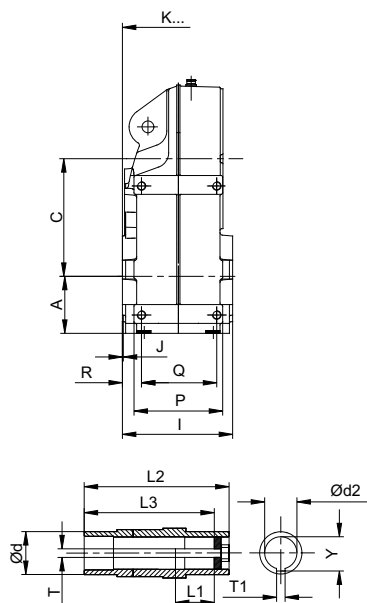
MOTOR DETAILS

MOTOR FRAME		100	112	132S	132M	160M	160L	180M	180L	200L	225S	225M	250M	280
	d	195	220	260	260	316	316	354	354	394	450	450	489	544
	Kb	82	83	103	103	136	136	120	121	125	149	149	151	150
	g1	162	170	206	206	226	226	265	265	312	337	337	415	445
Model														
MP-06	K	624.13	646.13	712.12	750.12	851.3	895.3	945.3	983.3	1043	1088.12	1113.12	1185.12	1281.12
MP-07	K	667.13	689.13	755.12	793.12	894.3	938.3	988.3	1026	1086	1131.12	1156.12	1228.12	1324.12

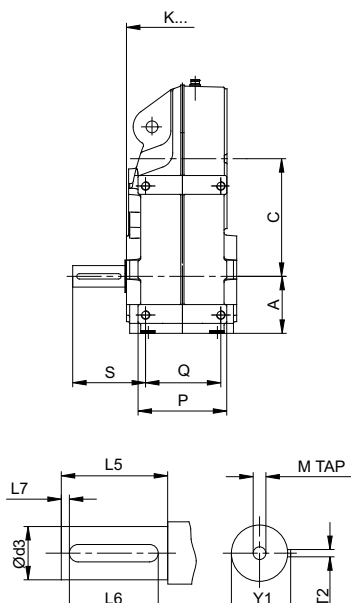
5. MP4

MPB2/3...S/A : SHAFT MOUNTED

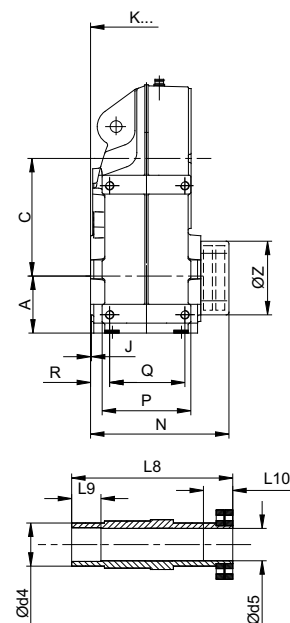
MPB2/3...S : SHAFT MOUNTED



MPB2/3...A : SOLID SHAFT



MPB2/3...A : HOLLOW SHAFT WITH SHRINK DISK



DIMENSIONAL DRAWINGS OF GEARED MOTORS

Model	A	C	R	J	Q	P	I	S	N	ØZ	L1	L2	L3	L5	L6
MP-01	78	115	22.5	2	77	95	135	72.5	160	86	45	120	105	50	40
MP-02	86	123	31	2	93	109	166	91	190	100	49	150	132	60	50
MP-03	105	174	37	2	112	131	195	118	225	110	58	180	156	80	70
MP-04	125	219	36.5	2.5	140	165	230	138	255	135	58	210	183	100	80
MP-05	152	241	43	2.5	165	195	265	163	300	165	74	240	210	120	110
MP-06	178	285	48.5	3	205	240	325	191	360	205	76	300	270	140	125
MP-07	200	337	69.5	2	220	260	380	242	435	225	83	350	313	170	160

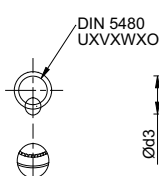
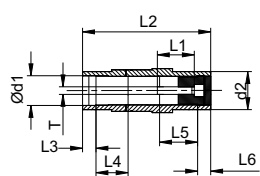
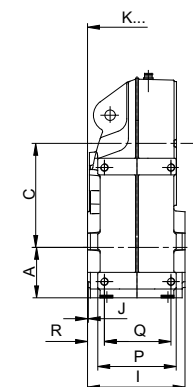
MOTOR DETAILS

Model	L7	L8	L9	L10	Ød	Ød2	Ød3	Ød4	Ød5	T	T1	Y	T2	Y1	MTAP
MP-01	5	146	20	31	45	30H7	25k6	45	30H7	M10	8	33.3	8	28	M10X22
MP-02	3.5	177	20	32	50	35H7	30k6	50	35H7	M12	10	38.3	8	33	M10X22
MP-03	2	208	20	38	55	40H7	40k6	55	40H7	M16	12	43.3	12	43	M16X36
MP-04	10	241	25	36	70	50H7	50k6	70	50H7	M16	14	53.8	14	53.5	M16X36
MP-05	5	281	40	41	85	60H7	60m6	85	65H7	M20	18	64.4	18	64	M20X42
MP-06	7.5	345	50	55	100	70H7	70m6	100	75H7	M20	20	74.9	20	74.5	M20X42
MP-07	3	405	60	65	120	90H7	90m6	120	95H7	M24	25	95.4	25	95	M24X50

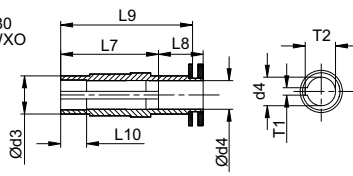
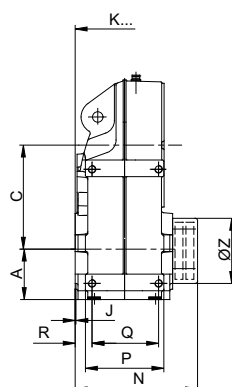
5. MP4

MPB 2/3...S/A : SHAFT MOUNTED

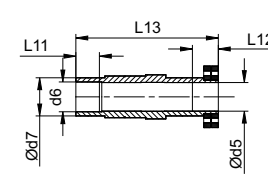
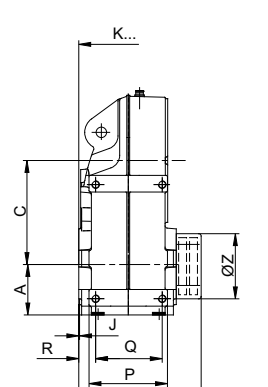
MPB2/3...A : HOLLOW SHAFT
WITH SPLINING



MPB2/3...A : HOLLOW SHAFT WITH
CONICAL CLAMPING SLEEVE



MPB2/3...A : HOLLOW SHAFT WITH
SHRINK DISK AND BRONZE BUSH



DIMENSIONAL DRAWINGS OF GEARED MOTORS

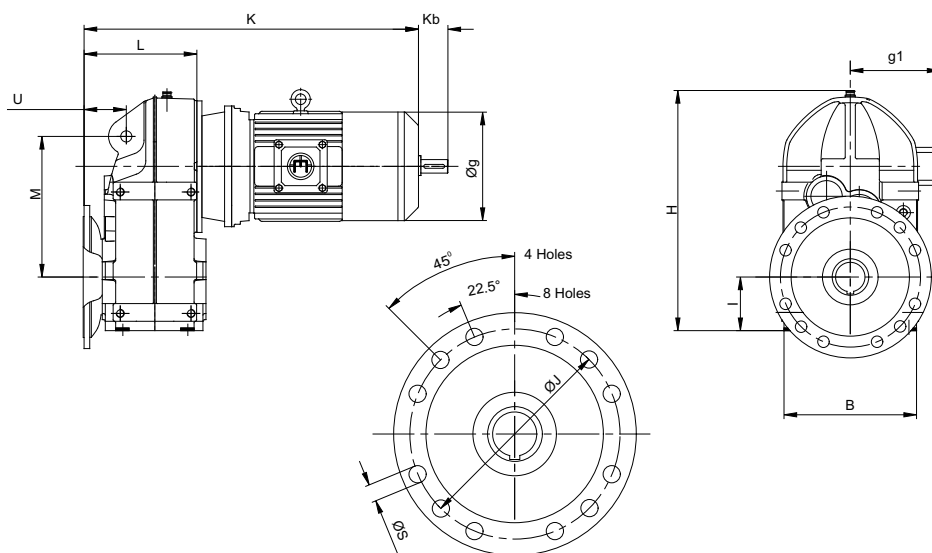
Model	A	C	R	J	Q	P	I	N	ØZ	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10
MP-01	78	115	22.5	2	77	95	135	160	86	30	120	18	25	25	18	NA			
MP-02	86	123	31	2	93	109	166	190	100	30	150	18	32	32	18	NA			
MP-03	105	174	37	2	112	131	195	225	110	50	180	25	42	42	25	NA			
MP-04	125	219	36.5	2.5	140	165	230	255	135	50	210	23	52	52	23	174	66.5	228	30
MP-05	152	241	43	2.5	165	195	265	300	165	60	240	25	62	62	25	191	85	261	40
MP-06	178	285	48.5	3	205	240	325	360	205	60	300	25	72	72	25	243	91	322	70
MP-07	200	337	69.5	2	220	260	380	435	225	60	350	26	89	89	26	309	75.5	372	90

MOTOR DETAILS

Model	L11	L12	L13	Ød1	Ød2	Ød3	Ød4	Ød5	Ød6	Ød7	T	T1	T2	UXVXWXO
MP-01	20	31	146	37(+0.1)	50	NA		30H7	32H7	45	M10	NA		30X1.25X30X22
MP-02	20	32	177	37(+0.1)	50	NA		35H7	36H7	50	M10	NA		35X2X30X16
MP-03	20	38	208	47(+0.1)	55	NA		40H7	42H7	55	M16	NA		45X2X30X21
MP-04	30	36	241	55(+0.1)	70	70	50H7	50H7	52H7	70	M16	14	53.8	50X2X30X24
MP-05	40	41	281	72(+0.1)	85	85	60H7	65H7	66H7	85	M20	18	64.4	65X2X30X31
MP-06	50	55	345	72(+0.1)	100	100	70H7	75H7	76H7	100	M20	20	74.9	70X2X30X34
MP-07	60	65	405	90(+0.1)	120	120	90H7	95H7	96H7	120	M20	25	95.4	85X3X30X27

5. MP4

MPV2/3...S : FLANGE MOUNTED – MAXI FLANGE (B5)



DIMENSIONAL DRAWINGS OF GEARED MOTORS

MODEL	M	L	I	B	H	ØS	ØJ	U	NO OF HOLES ON OUTPUT FLANGE
MP-01	158	131	78	169	266	9	130	57.5	4
MP-02	170	146	86	184	282	11	165	53	4
MP-03	218	171	105	216	383	13.5	215	66	4
MP-04	278	229	125	276	493	13.5	265	89.5	4
MP-05	346	244	152	336	547	17.5	300	94.5	4
MP-06	395	293	178	406	655	17.5	400	112	8
MP-07	485	335	200	456	750	17.5	400	129	8

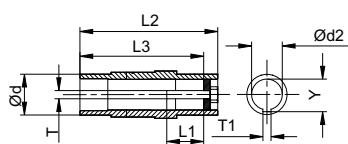
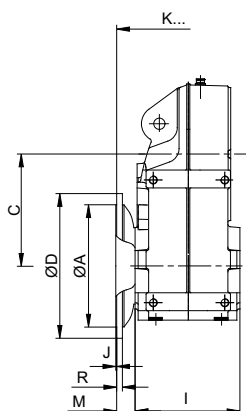
MOTOR DETAILS

MOTOR FRAME		63	71	80	90S	90L	100	112	132S	132M	160M	160L	180M	180L
	d	124	140	157	174	174	195	220	260	260	316	316	354	354
	Kb	35	44	57	72	72	82	83	103	103	136	136	120	121
	g1	116	124	134	140	140	162	170	206	206	226	226	265	265
Model														
MP-01	K	373	407	412	450	475	511	533	-	-	-	-	-	-
MP-02	K	389	423	427	466	491	526.5	549	-	-	-	-	-	-
MP-03	K	-	438	444	483	508	554.2	576	639	677	779	823	-	-
MP-04	K	-	-	496	532	557	606.33	628	695	733	835	879	929	967
MP-05	K	-	-	510	547	572	620.83	643	710	748	850	894	944	982

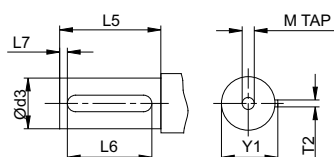
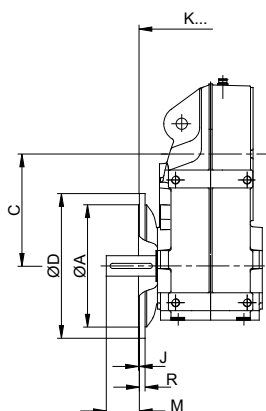
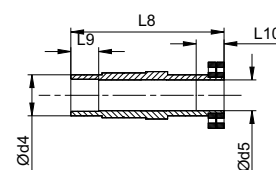
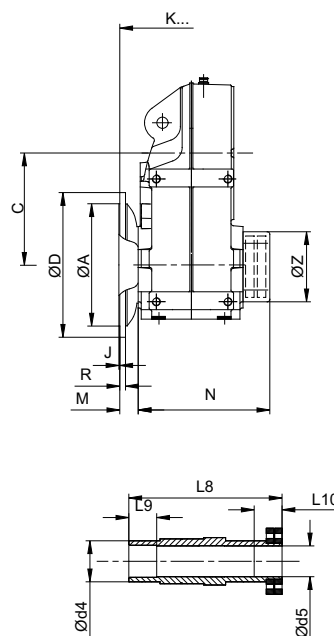
MOTOR FRAME		100	112	132S	132M	160M	160L	180M	180L	200L	225S	225M	250M	280
	d	195	220	260	260	316	316	354	354	394	450	450	489	544
	Kb	82	83	103	103	136	136	120	121	125	149	149	151	150
	g1	162	170	206	206	226	226	265	265	312	337	337	415	445
Model														
MP-06	K	666.1	688	754	792	893	937	987	1025	1085	1130	1155	1227	1323
MP-07	K	708.1	730	796	834	935	979	1029	1067	1127	1172	1197	1269	1365

5. MP4

MPV2/3...S/A : FLANGE MOUNTED – MAXI FLANGE (B5)

MPV2/3...S : HOLLOW SHAFT
WITH KEY WAY

MPV2/3...A : SOLID SHAFT

MPV2/3...A : HOLLOW SHAFT
WITH SHRINK DISK

DIMENSIONAL DRAWINGS OF GEARED MOTORS

MODEL	I	M	R	J	C	S	N	ØA	ØD	ØZ	L1	L2	L3	L5	L6	L7
MP-01	135	24	10	3.5	115	26	160	110	160	86	45	120	105	50	40	5
MP-02	166	25	12	3.5	123	41	190	130	200	100	49	150	132	60	50	3.5
MP-03	195	23	15	4	174	58	225	180	250	110	58	180	156	80	70	2
MP-04	230	37	16	4	219	64	255	230	300	135	58	210	183	100	80	10
MP-05	265	30	18	5	241	90	300	250	350	165	74	240	210	120	110	5
MP-06	325	42	22	5	285	100	360	350	450	205	76	300	270	140	125	7.5
MP-07	380	41	22	5	337	131	435	350	450	225	83	350	313	170	160	3

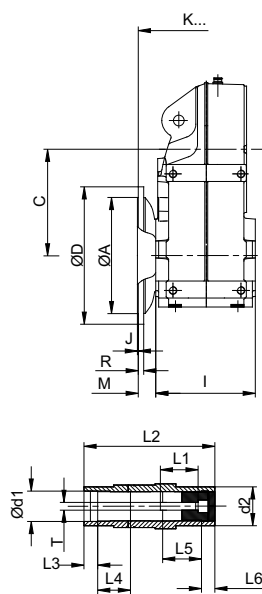
MOTOR DETAILS

MODEL	L8	L9	L10	Ød	Ød2	Ød3	Ød4	Ød5	T	T1	Y	T2	Y1	MTAP
MP-01	146	20	31	45	30H7	25k6	45	30H7	M10	8	33.3	8	28	M10X22
MP-02	177	20	32	50	35H7	30k6	50	35H7	M12	10	38.3	8	33	M10X22
MP-03	208	20	38	55	40H7	40k6	55	40H7	M16	12	43.3	12	43	M16X36
MP-04	241	25	36	70	50H7	50k6	70	50H7	M16	14	53.8	14	53.5	M16X36
MP-05	281	40	41	85	60H7	60m6	85	65H7	M20	18	64.4	18	64	M20X42
MP-06	345	50	55	100	70H7	70m6	100	75H7	M20	20	74.9	20	74.5	M20X42
MP-07	405	60	65	120	90H7	90m6	120	95H7	M24	25	95.4	25	95	M24X50

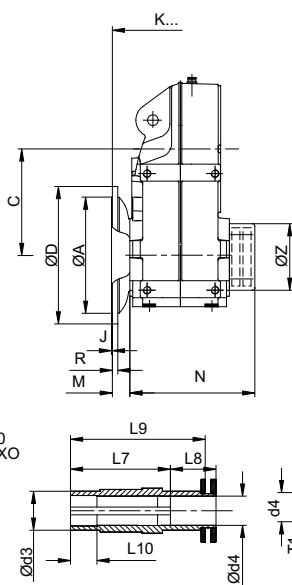
5. MP4

MPV2/3...S/A : FLANGE MOUNTED – MAXI FLANGE (B5)

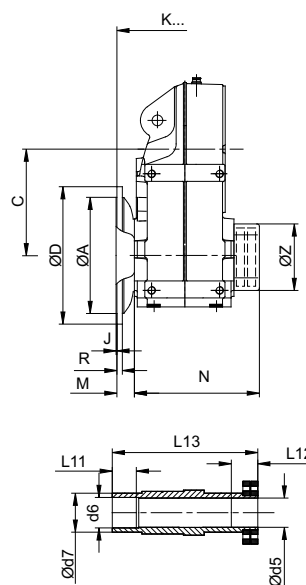
MPV2/3...A : HOLLOW SHAFT WITH SPLINING



MPV2/3...A : HOLLOW SHAFT WITH CONICAL CLAMPING SLEEVE



MPV2/3...A : HOLLOW SHAFT WITH SHRINK DISK AND BRONZE BUSH



DIMENSIONAL DRAWINGS OF GEARED MOTORS

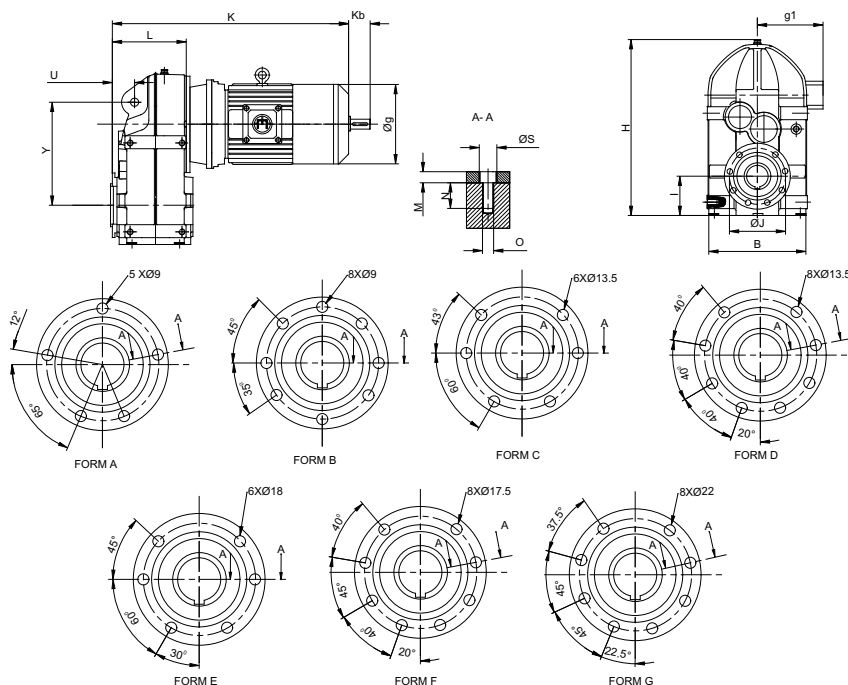
MODEL	I	M	R	J	C	N	ØA	ØD	ØZ	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10
MP-01	135	24	10	3.5	115	160	110	160	86	30	120	18	25	25	18	NA			
MP-02	166	25	12	3.5	123	190	130	200	100	30	150	18	32	32	18	NA			
MP-03	195	23	15	4	174	225	180	250	110	50	180	25	42	42	25	NA			
MP-04	230	37	16	4	219	255	230	300	135	50	210	23	52	52	23	174	66.5	228	30
MP-05	265	30	18	5	241	300	250	350	165	60	240	25	62	62	25	191	85	261	40
MP-06	325	41.5	22	5	285	360	350	450	205	60	300	25	72	72	25	243	91	322	70
MP-07	380	41	22	5	337	435	350	450	225	60	350	26	89	89	26	309	75.5	372	90

MOTOR DETAILS

MODEL	L11	L12	L13	Ød1	Ød2	Ød3	Ød4	Ød5	Ød6	Ød7	T	T1	T2	UXVXWYO
MP-01	20	31	146	37(+0.1)	50	NA		30H7	32H7	45	M10	NA		30X1.25X30X22
MP-02	20	32	177	37(+0.1)	50	NA		35H7	36H7	50	M10	NA		35X2X30X16
MP-03	20	38	208	47(+0.1)	55	NA		40H7	42H7	55	M16	NA		45X2X30X21
MP-04	30	36	241	55(+0.1)	70	70	50H7	50H7	52H7	70	M16	14	53.8	50X2X30X24
MP-05	40	41	281	72(+0.1)	85	85	60H7	65H7	66H7	85	M20	18	64.4	65X2X30X31
MP-06	50	55	345	72(+0.1)	100	100	70H7	75H7	76H7	100	M20	20	74.9	70X2X30X34
MP-07	60	65	405	90(+0.1)	120	120	90H7	95H7	96H7	120	M20	25	95.4	85X3X30X27

5. MP4

MPV2/3...A : FLANGE MOUNTED – Mini Flange (B14)



DIMENSIONAL DRAWINGS OF GEARED MOTORS

MODEL	L	B	I	H	ØJ	ØS	M	N	O	Y	U	HOLE PATTERN OF OUTPUT
MP-01	116	169	78	266	94	9	11	13	M8	158	42.5	FORM A
MP-02	135	184	86	281.5	102	9	10	13	M8	170	42	FORM B
MP-03	157	216	104.5	382.5	125	13.5	10.5	20	M12	218	51.5	FORM C
MP-04	202	276	125	493	142	13.5	12.5	22	M12	278	62.5	FORM D
MP-05	225	336	151.5	547	178	18	13.5	26	M16	346	75.5	FORM E
MP-06	259	405	178	655	220	17.5	18	26	M16	395	78	FORM F
MP-07	286	456	200	750	260	22	8	28	M20	485	96	FORM G

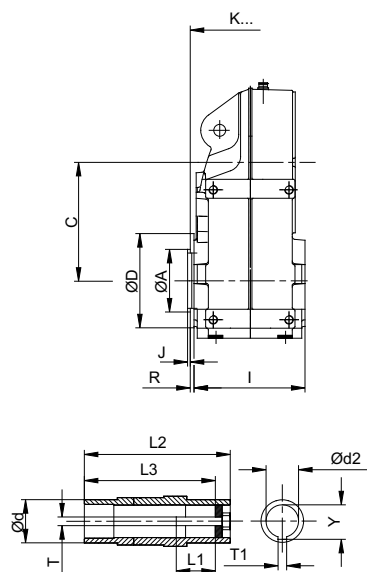
MOTOR DETAILS

MOTOR FRAME	63	71	80	90S	90L	100	112	132S	132M	160M	160L	180M	180L
d	124	140	157	174	174	195	220	260	260	316	316	354	354
Kb	35	44	57	72	72	82	83	103	103	136	136	120	121
g1	116	124	134	140	140	162	170	206	206	226	226	265	265
Model													
MP-01	K	358	392	397	435	460	496	518	-	-	-	-	-
MP-02	K	378	412	416	455	480	516	538	-	-	-	-	-
MP-03	K	-	423	430	468	493	540	562	624	662	764	808	-
MP-04	K	-	-	469	505	530	579	601	668	706	808	852	902
MP-05	K	-	-	491	528	553	602	624	691	729	831	875	925

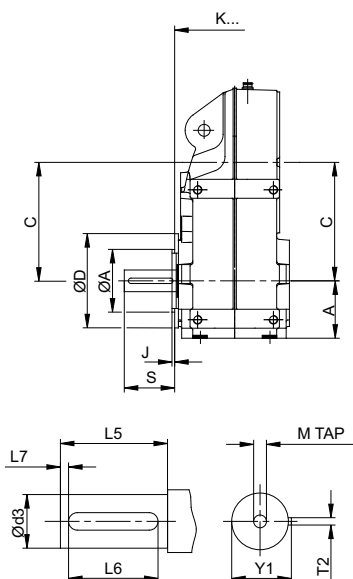
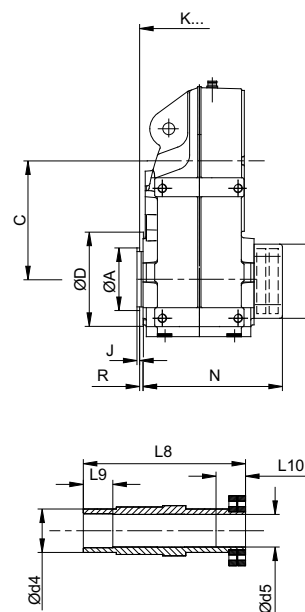
MOTOR FRAME	100	112	132S	132M	160M	160L	180M	180L	200L	225S	225M	250M	280
d	195	220	260	260	316	316	354	354	394	450	450	489	544
Kb	82	83	103	103	136	136	120	121	125	149	149	151	150
g1	162	170	206	206	226	226	265	265	312	337	337	415	445
Model													
MP-06	K	632	654	720	758	859	903	953	991	1051	1096	1121	1193
MP-07	K	659	681	747	785	886	930	980	1018	1078	1123	1148	1220

5. MP4

MPV2/3...A : FLANGE MOUNTED – Mini Flange (B14)

MPV2/3...A : HOLLOW SHAFT
WITH KEY WAY


MPV2/3...A : SOLID SHAFT


MPV2/3...A : HOLLOW SHAFT
WITH SHRINK DISK


DIMENSIONAL DRAWINGS OF GEARED MOTORS

MODEL	I	R	J	C	S	N	ØA	ØD	ØZ	L1	L2	L3	L5	L6	L7
MP-01	135	9	3	115	41	160	80	110	86	45	120	105	50	40	5
MP-02	166	8	3	123	52	190	80	120	100	49	150	132	60	50	3.5
MP-03	195	8.5	3.5	174	72.5	225	105	155	110	58	180	156	80	70	2
MP-04	230	10	3.5	219	91	255	125	170	135	58	210	183	100	80	10
MP-05	265	11	4	241	109	300	155	215	165	74	240	210	120	110	5
MP-06	325	14	4	285	131	360	180	260	205	76	300	270	140	125	7.5
MP-07	380	8	4	337	180	435	210	304	225	83	350	313	170	160	3

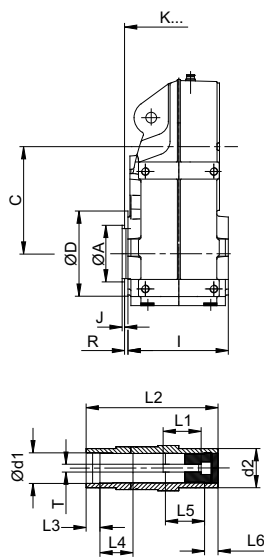
MOTOR DETAILS

MODEL	L8	L9	L10	Ød	Ød2	Ød3	Ød4	Ød5	T	T1	Y	T2	Y1	MTAP
MP-01	146	20	31	45	30H7	25k6	45	30H7	M10	8	33.3	8	28	M10X22
MP-02	177	20	32	50	35H7	30k6	50	35H7	M12	10	38.3	8	33	M10X22
MP-03	208	20	38	55	40H7	40k6	55	40H7	M16	12	43.3	12	43	M16X36
MP-04	241	25	36	70	50H7	50k6	70	50H7	M16	14	53.8	14	53.5	M16X36
MP-05	281	40	41	85	60H7	60m6	85	65H7	M20	18	64.4	18	64	M20X42
MP-06	345	50	55	100	70H7	70m6	100	75H7	M20	20	74.9	20	74.5	M20X42
MP-07	405	60	65	120	90H7	90m6	120	95H7	M20	25	95.4	25	95	M24X50

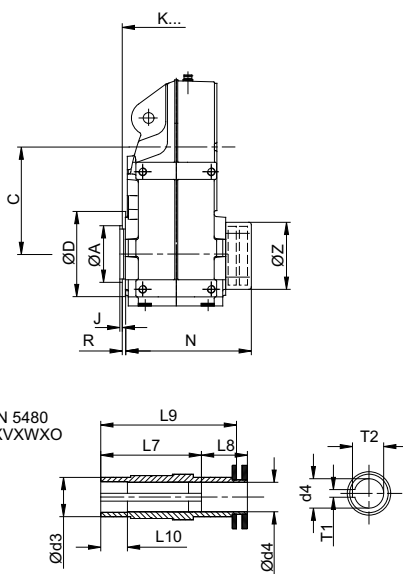
5. MP4

MPV2/3...A : FLANGE MOUNTED – Mini Flange (B14)

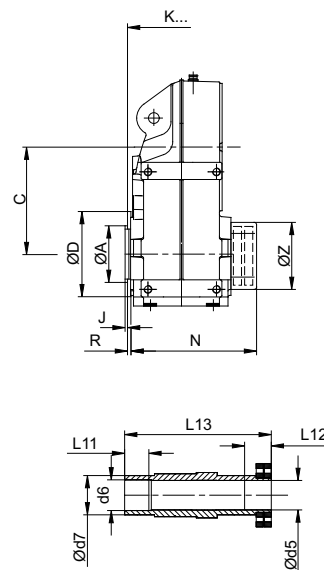
MPV2/3...A : HOLLOW SHAFT WITH SPLINING



MPV2/3...A : HOLLOW SHAFT WITH CONICAL CLAMPING SLEEVE



MPV2/3...A : HOLLOW SHAFT WITH SHRINK DISK AND BRONZE BUSH



DIMENSIONAL DRAWINGS OF GEARED MOTORS

MODEL	I	R	J	C	N	ØA	ØD	ØZ	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10
MP-01	135	9	3	115	160	80	110	86	30	120	18	25	25	18	NA			
MP-02	166	8	3	123	190	80	120	100	30	150	18	32	32	18	NA			
MP-03	195	8.5	3.5	174	225	105	155	110	50	180	25	42	42	25	NA			
MP-04	230	10	3.5	219	255	125	170	135	50	210	23	52	52	23	174	67	228	30
MP-05	265	11	4	241	300	155	215	165	60	240	25	62	62	25	191	85	261	40
MP-06	325	14	4	285	360	180	260	205	60	300	25	72	72	25	243	91	322	70
MP-07	380	8	4	337	435	210	304	225	60	350	26	89	89	26	309	76	372	90

MOTOR DETAILS

MODEL	L11	L12	L13	Ød1	Ød2	Ød3	Ød4	Ød5	Ød6	Ød7	T	T1	T2	UXVXWXO
MP-01	20	31	146	37(+0.1)	50	NA		30H7	32H7	45	M10	NA		30X1.25X30X22
MP-02	20	32	177	37(+0.1)	50	NA		35H7	36H7	50	M10	NA		35X2X30X16
MP-03	20	38	208	47(+0.1)	55	NA		40H7	42H7	55	M16	NA		45X2X30X21
MP-04	30	36	241	55(+0.1)	70	70	50H7	50H7	52H7	70	M16	14	53.8	50X2X30X24
MP-05	40	41	281	72(+0.1)	85	85	60H7	65H7	66H7	85	M20	18	64.4	65X2X30X31
MP-06	50	55	345	72(+0.1)	100	100	70H7	75H7	76H7	100	M20	20	74.9	70X2X30X34
MP-07	60	65	405	90(+0.1)	120	120	90H7	95H7	96H7	120	M20	25	95.4	85X3X30X27

5. MP4

5.6 Auswahl Getriebe MP4 Selection of gear unit MP4 Sélection d'un réducteur MP4

Beispiel: Auswahltabellen Getriebe
Example: Gear unit selection table
Exemple de tableau de sélection pour réducteurs

Getriebeart und -größe
Gear unit type and size
Type et taille du réducteur

Synchrondrehzahl des Motors
Synchronous speed of motor
Vitesse synchrone du moteur

Gewichte
Weights
Poids

Max. Nenndrehmoment
Max. rated torque
Couple nominal maxi.

MP..01			Type	m [kg]										230 Nm				
			MP.01.....0...	18														
			MP.01M00000...	20														
Type	...	n _{syn} = i _{ex}	1500 min ⁻¹					1000 1/min					750 1/min					
			n ₂ min ⁻¹	P kW	T ₂ Nm	F _r N N	F _r N GN	n ₂ min ⁻¹	P kW	T ₂ Nm	F _r N	F _r N GN	n ₂ min ⁻¹	P kW	T ₂ Nm	F _r N N	F _r N GN	
MP201...	2.8																	
	3.15																	
	3.55	3.47	4	7.5	165	261		2	5	165	2690		2	3.7	16	2770		
	4	3.97	3	6.5	165	263		2	4.3	165	2650		1	3.3	16	2910		

Zulässige Radialkraft
Permissible radial force
Force radiale admissible

Drehmoment an der Abtriebswelle
Torque at output shaft
Couple au niveau de l'arbre de sortie

Mechanische Nennleistung des Getriebes
Mechanical rated power of gear unit
Puissance nominale mécanique du réducteur

Auswahldrehzahl der Abtriebswelle
Selection speed of output shaft
Vitesse de l'arbre de sortie

Exakte Übersetzung
Exact gear ratio
Valeur exacte du rapport de démultiplication

Nenn Übersetzung
Rated gear ratio
Réduction nominale

5. MP4

MP..01 Type MP.01.....0... MP.01M00000... m [kg] 18 20 230 Nm																	
Type	...	$n_{syn} =$ i_{ex}	1500 min ⁻¹					1000 1/min					750 1/min				
			n_2 min ⁻¹	P kW	T ₂ Nm	F _r N N	F _r N GN	n_2 min ⁻¹	P kW	T ₂ Nm	F _r N	F _r N GN	n_2 min ⁻¹	P kW	T ₂ Nm	F _r N N	F _r N GN
MP201...	2.8																
	3.15																
	3.55	3.47	433	7.5	165	2610		289	5	165	2690		216	3.7	165	2770	
	4	3.97	378	6.5	165	2630		252	4.3	165	2640		189	3.3	165	2910	
	4.5	4.26	352	6.1	165	2650		235	4.1	165	2700		176	3	165	3080	
	5	4.9	306	5.3	165	2670		204	3.5	165	2840		153	2.6	165	3280	
	5.6	5.67	265	4.6	165	2620		177	3	165	3000		132	2.3	165	3460	
	6.3	6.1	246	4.2	165	2670		164	2.8	165	3180		123	2.1	165	3660	
	7.1	6.59	228	3.9	165	2770		152	2.6	165	3400		114	2	165	3900	
	8	7.73	194	3.4	165	2910		129	2.2	165	3590		97	1.7	165	4090	
	9	8.46	177	4.3	230	2910		118	2.8	230	3460		89	2.1	230	4000	
	10	9.69	155	3.7	230	2930		103	2.5	230	3640		77	1.9	230	4210	
	11.2	10.39	144	3.5	230	3100		96	2.3	230	3860		72	1.7	230	4440	
	12.5	11.95	126	3	230	3310		84	2	230	4080		63	1.5	230	4680	
	14	13.82	109	2.6	230	3550		72	1.7	230	4310		54	1.3	230	4920	
	16	16.08	93	2.2	230	3760		62	1.5	230	4570		47	1.1	230	5000	
	18	18.87	79	1.9	230	4000		53	1.3	230	4840		40	0.96	230	5000	
	20	20.52	73	1.8	230	4210		49	1.2	230	5000		37	0.88	230	5000	
	22.4	22.4	67	1.6	230	4440		45	1.1	230	5000		33	0.81	230	5000	
	25	24.55	61	1.5	230	4680		41	0.98	230	5000		31	0.74	230	5000	
	28	27.02	56	1.3	230	5000		37	0.89	230	5000		28	0.67	230	5000	
	31.5	29.91	50	1.2	230	5000		33	0.81	230	5000		25	0.6	230	5000	
	35.5	37.42	40	1	230	5000		27	0.64	230	5000		20	0.48	230	5000	
	40	41.65	36	0.87	230	5000		24	0.58	230	5000		18	0.43	230	5000	
	45	46.58	32	0.78	230	5000		21	0.52	230	5000		16	0.39	230	5000	
	50	49	31	0.74	230	5000		20	0.49	230	5000		15	0.37	230	5000	
	56	54.15	28	0.67	230	5000		18	0.44	230	5000		14	0.33	230	5000	
	63	60.33	25	0.6	230	5000		17	0.4	230	5000		12	0.3	230	5000	
	71	74.98	20	0.48	230	5000		13	0.32	230	5000		10	0.24	230	5000	
	80	83.24	18	0.43	230	5000		12	0.29	230	5000		9	0.22	230	5000	
	90	93.33	16	0.39	230	5000		11	0.26	230	5000		8	0.19	230	5000	

5. MP4

MP..02 Type MP.02.....0... MP.02M00000... m [kg] 25 27 440 Nm																	
Type	...	$n_{syn} =$	1500 min ⁻¹					1000 1/min					750 1/min				
		i_{ex}	n_2 min ⁻¹	P kW	T ₂ Nm	F _r N N	F _r N GN	n_2 min ⁻¹	P kW	T ₂ Nm	F _r N	F _r N GN	n_2 min ⁻¹	P kW	T ₂ Nm	F _r N N	F _r N GN
MP202...	2.8																
	3.15																
	3.55																
	4																
	4.5	4.65	323	7.4	220	1500	6900	215	5	220	2000	6900	161	3.7	220	2500	6900
	5	5.33	281	6.5	220	2000	6900	188	4.3	220	2500	6900	141	3.2	220	2500	6900
	5.6	5.71	263	6	220	2000	6900	175	4	220	2500	6900	131	3	220	3000	6900
	6.3	6.57	228	5.3	220	2000	6900	152	3.5	220	2500	6900	114	2.6	220	3000	6900
	7.1	7.6	197	4.5	220	2500	6900	132	3	220	3000	6900	99	2.3	220	3500	6900
	8	8.19	183	4.2	220	2500	6900	122	2.8	220	3000	6900	92	2.1	220	3500	6900
	9	9.36	160	7.2	430	1000	6900	107	4.8	430	2000	6900	80	3.6	430	2000	6900
	10	10.7	140	6.4	435	1500	6900	93	4.2	435	2000	6900	70	3.2	435	2500	6900
	11.2	11.5	130	6	440	1500	6900	87	4	440	2000	6900	65	3	440	2500	6900
	12.5	13.2	113	5.2	440	1500	6900	76	3.5	440	2000	6900	57	2.6	440	3000	6900
	14	15.3	98	4.5	440	2000	6900	65	3	440	2500	6900	49	2.3	440	3000	6900
	16	16.5	91	4.2	440	2000	6900	61	2.8	440	2500	6900	45	2.1	440	3500	6900
	18	17.8	84	3.9	440	2000	6900	56	2.6	440	3000	6900	42	1.9	440	3500	6900
	20	20.9	72	3.3	440	2500	6900	48	2.2	440	3000	6900	36	1.7	440	4000	6900
	22.4	22.7	66	3	440	2500	6900	44	2	440	3500	6900	33	1.5	440	4000	6900
	25	27.2	55	2.5	440	3000	6900	37	1.7	440	3500	6900	28	1.3	440	4500	6900
	28	29.9	50	2.3	440	3000	6900	33	1.5	440	4000	6900	25	1.2	440	4500	6900
	31.5	33.1	45	2.1	440	3500	6900	30	1.4	440	4500	6900	23	1	440	4500	6900
	35.5	36.9	41	1.9	440	3500	6900	27	1.2	440	4500	6900	20	0.9	440	4500	6900
	40	41.4	36	1.7	440	4000	6900	24	1.1	440	4500	6900	18	0.8	440	4500	6900
	45	46.1	33	1.5	440	4000	6900	22	1	440	4500	6900	16	0.8	440	4500	6900
	50	51.6	29	1.3	440	4500	6900	19	0.89	440	4500	6900	15	0.7	440	4500	6900
	56	60	25	1.2	440	4500	6900	17	0.77	440	4500	6900	13	0.6	440	4500	6900
	63	66.8	22	1	440	4500	6900	15	0.69	440	4500	6900	11	0.5	440	4500	6900
	71	68.9	22	0.83	365	4500	6900	15	0.55	365	4500	6900	11	0.4	365	4500	6900
	80	83	18	0.68	360	4500	6900	12	0.45	360	4500	6900	9	0.3	360	4500	6900
	90	92.2	16	0.57	335	4500	6900	11	0.38	335	4500	6900	8.1	0.3	335	4500	6900
	100	103	15	0.47	310	4500	6900	10	0.31	310	4500	6900	7.3	0.2	310	4500	6900

5. MP4

MP..03 Type MP.03.....0... MP.03M00000... m [kg] 34 38 850 Nm																	
Type	...	$n_{syn} =$ i_{ex}	1500 min ⁻¹					1000 1/min					750 1/min				
			n_2 min ⁻¹	P kW	T ₂ Nm	F _r N N	F _r N GN	n_2 min ⁻¹	P kW	T ₂ Nm	F _r N	F _r N GN	n_2 min ⁻¹	P kW	T ₂ Nm	F _r N N	F _r N GN
MP203...	2.8																
	3.15	2.97	505	19.3(1)	365	1500	9450	337	12.9(1)	365	1500	10330	253	9.7	365	2000	11480
	3.55	3.45	435	16.6(1)	365	1500	6580	290	11	365	2000	10840	218	8.3	365	2000	12060
	4	3.86	389	16.7(1)	410	1500	9710	259	11	410	1500	11020	194	8.3	410	2000	12180
	4.5	4.42	339	14.8(1)	415	1000	9830	226	9.8	415	2000	11540	170	7.4	415	2000	12660
	5	4.85	309	13.4(1)	415	1500	10230	206	9	415	2000	11940	155	6.7	415	2500	13250
	5.6	5.6	268	11.6(1)	415	1500	10670	179	7.8	415	2000	12420	134	5.8	415	2500	13500
	6.3	6.19	242	10.5(1)	415	1500	11140	162	7	415	2500	13500	121	5.3	415	3000	13500
	7.1	6.87	218	9.5(1)	415	2000	11300	146	6.3	415	2500	13390	109	4.7	415	3000	13500
	8	8.07	186	14.4(1)	740	500	11620	124	9.6	740	1500	13500	93	7.2	740	2000	13500
	9	9.37	160	13.4(1)	800	500	11830	107	8.9	800	1000	13500	80	6.7	800	2000	13500
	10	10.49	143	12.7(1)	850	500	12360	95	8.5	850	1000	13500	71	6.4	850	1500	13500
	11.2	12.01	125	11	850	500	12950	83	7.4	850	1500	13500	62	5.6	850	2000	13500
	12.5	13.18	114	10	850	500	13500	76	6.8	850	1500	13500	57	5.1	850	2000	13500
	14	15.23	98	8.8	850	1000	13500	66	5.8	850	2000	13500	49	4.4	850	2500	13500
	16	16.83	89	7.9	850	1000	13500	59	5.3	850	2000	13500	45	4	850	3000	13500
	18	18.68	80	7.1	850	1500	13500	54	4.8	850	2500	13500	40	3.6	850	3000	13500
	20	20.01	75	6.7	850	1500	13500	50	4.4	850	2500	13500	37	3.3	850	3500	13500
	22.4	23.4	64	5.7	850	2000	13500	43	3.8	850	3000	13500	32	2.9	850	4000	13500
	25	25.2	60	5.3	850	2000	13500	40	3.5	850	3500	13500	30	2.6	850	4000	13500
	28	28.62	52	4.7	850	2500	13500	35	3.1	850	3500	13500	26	2.3	850	4500	13500
	31.5	32.41	46	4.1	850	3000	13500	31	2.7	850	4000	13500	23	2.1	850	4500	13500
	35.5	35.34	42	3.8	850	3000	13500	28	2.5	850	4500	13500	21	1.9	850	4500	13500
	40	40.91	37	3.3	850	3500	13500	24	2.2	850	4500	13500	18	1.6	850	4500	13500
	45	45.17	33	3	850	4000	13500	22	2	850	4500	13500	17	1.5	850	4500	13500
	50	54.05	28	2.5	850	4000	13500	19	1.6	850	4500	13500	14	1.2	850	4500	13500
	56	60.18	25	2.2	850	4500	13500	17	1.5	850	4500	13500	12	1.1	850	4500	13500
	63	66.57	23	2	850	4500	13500	15	1.3	850	4500	13500	11	1	850	4500	13500
	71	73.95	20	1.8	850	4500	13500	14	1.2	850	4500	13500	10	0.9	850	4500	13500
	80	77.94	19	1.7	850	4500	13500	13	1.1	850	4500	13500	9.6	0.86	850	4500	13500
	90	85.68	18	1.6	850	4500	13500	12	1	850	4500	13500	8.8	0.78	850	4500	13500
	100	106.33	14	1.2	800	4500	13500	9.4	0.79	800	4500	13500	7.1	0.59	800	4500	13500

(1) Achtung! Maximale Thermische Leistung beachten Attention! Please consult page 12 for thermal break even performance.
Attention! Vérifier svp la puissance thermique maximum.

5. MP4

MP..04 Type MP.04.....0... MP.04M00000... m [kg] 70 84 1700 Nm																	
Type	...	$n_{syn} =$	1500 min ⁻¹					1000 1/min					750 1/min				
		i_{ex}	n_2 min ⁻¹	P kW	T ₂ Nm	F _r N N	F _r N GN	n_2 min ⁻¹	P kW	T ₂ Nm	F _r N	F _r N GN	n_2 min ⁻¹	P kW	T ₂ Nm	F _r N N	F _r N GN
MP204...	2.8	3.29	495	23.3(1)	450	2000	10780										
	3.15	3.29	456	23.4(1)	490	2000	10780	304	17	525	2000	12090	228	14	580	2500	13140
	3.55	3.64	412	22.9(1)	530	2000	10930	274	17	585	2000	12310	206	14	645	2000	13360
	4	4.19	358	21.4(1)	570	1500	11090	238	16	650	2000	12470	179	13	720	2000	13500
	4.5	4.75	316	20.2(1)	610	1500	11370	210	15	695	2000	12880	158	13	770	2000	13790
	5	5.35	281	19.1	650	1500	11660	187	14	740	2000	13100	140	12	820	2000	14270
	5.6	6.13	245	17.7	690	1500	11930	163	13	790	2000	13440	122	11	870	2000	14560
	6.3	6.77	222	16.9	730	1500	12280	148	13	835	2000	13800	111	11	920	2000	14390
	7.1	7.45	201	16	760	1500	12760	134	12	870	2000	14360	101	9	860	2500	16120
	8	7.87	191	18	900	1500	12580	127	14	1030	2000	14220	95	11	1135	2000	15350
	9	8.82	170	16.9	950	1500	13060	113	13	1085	2000	14710	85	11	1200	2000	15910
	10	10.2	148	15.5	1000	1500	13240	99	12	1140	2000	15000	74	9.7	1260	2000	16270
	11.2	11.5	130	14.5	1060	1500	13620	87	11	1210	2000	15410	65	9.1	1340	2000	16690
	12.5	13	116	13.3	1100	2000	14100	77	10	1260	2000	15840	58	8.4	1390	2000	17200
	14	14.9	101	12.1	1140	2000	14720	67	9.2	1300	2000	16410	51	7.6	1440	2000	17630
	16	16.4	92	11.2	1170	2000	15200	61	8.5	1335	2000	17050	46	7.1	1480	2500	18000
	18	18	83	10.5	1210	2000	15770	55	8	1380	2500	17710	42	6.6	1525	2500	18000
	20	20.3	74	9.7	1250	2000	16270	49	7.3	1425	2500	18000	37	6.1	1575	2500	18000
	22.4	22.5	67	9.1	1300	2000	16770	44	6.9	1480	2500	18000	33	5.7	1640	2500	18000
	25	25.8	58	8.2	1350	2500	17340	39	6.3	1540	2500	18000	29	5.2	1700	3000	18000
	28	30.3	50	7.3	1400	2500	17850	33	5.5	1600	3000	18000	25	4.4	1700	3500	18000
	31.5	32.4	46	7	1450	2500	18000	31	5.3	1650	3000	18000	23	4.1	1700	3500	18000
	35.5	36.2	41	6.5	1510	2500	18000	28	4.9	1700	3000	18000	21	3.7	1700	4000	18000
	40	41.3	36	6	1570	2500	18000	24	4.3	1700	3500	18000	18	3.2	1700	4500	18000
	45	44.8	33	5.7	1620	3000	18000	22	4	1700	4000	18000	17	3	1700	5000	18000
	50	51.7	29	5.2	1700	3000	18000	19	3.4	1700	4500	18000	15	2.6	1700	5500	18000
	56	56.8	26	4.7	1700	3500	18000	18	3.1	1700	5000	18000	13	2.4	1700	5500	18000
	63	67.8	22	3.9	1700	4000	18000	15	2.6	1700	5500	18000	11	2	1700	5500	18000
	71	76	20	3.4	1650	4500	18000	13	2.3	1650	5500	18000	10	1.7	1650	5500	18000
	80																
	90																
	100																
MP304...	35.5	35.8	42	5.9	1350	3500	18000	28	5	1700	3000	18000	21	3.7	1700	4000	18000
	40	41.4	36	5.3	1400	3500	18000	24	4.3	1700	3500	18000	18	3.2	1700	4500	18000
	45	45.8	33	5	1460	3500	18000	22	3.9	1700	4000	18000	16	2.9	1700	5500	18000
	50	50.8	30	4.6	1500	4000	18000	20	3.5	1700	4500	18000	15	2.6	1700	5500	18000
	56	54.4	28	4.4	1540	4000	18000	18	3.3	1700	5000	18000	14	2.5	1700	5500	18000
	63	63.6	24	4	1620	4000	18000	16	2.8	1700	5500	18000	12	2.1	1700	5500	18000
	71	68.5	22	3.8	1660	4500	18000	15	2.6	1700	5500	18000	11	1.9	1700	5500	18000
	80	77.8	19	3.4	1700	4500	18000	13	2.3	1700	5500	18000	9.6	1.7	1700	5500	18000
	90	88.1	17	3	1700	5500	18000	11	2	1700	5500	18000	8.5	1.5	1700	5500	18000
	100	96.1	16	2.8	1700	5500	18000	10	1.9	1700	5500	18000	7.8	1.4	1700	5500	18000
	112	111	13	2.4	1700	5500	18000	9	1.6	1700	5500	18000	6.7	1.2	1700	5500	18000
	125	123	12	2.2	1700	5500	18000	8.1	1.4	1700	5500	18000	6.1	1.1	1700	5500	18000
	140	147	10	1.8	1700	5500	18000	6.8	1.2	1700	5500	18000	5.1	0.9	1700	5500	18000
	160	164	9.2	1.6	1700	5500	18000	6.1	1.1	1700	5500	18000	4.6	0.8	1700	5500	18000
	180	181	8.3	1.5	1700	5500	18000	5.5	0.98	1700	5500	18000	4.1	0.7	1700	5500	18000
	200	201	7.5	1.3	1700	5500	18000	5.0	0.89	1700	5500	18000	3.7	0.7	1700	5500	18000
	224																
	250																
	280																
	315																

(1) Achtung! Maximale Thermische Leistung beachten Attention! Please consult page 12 for thermal break even performance.
Attention! Vérifier svp la puissance thermique maximum.

5. MP4

MP..05 Type MP.05.....0... MP.05M00000... m [kg] 107 121 2900 Nm																	
Type	...	$n_{syn} =$ i_{ex}	1500 min ⁻¹					1000 1/min					750 1/min				
			n_2 min ⁻¹	P kW	T ₂ Nm	F _r N N	F _r N GN	n_2 min ⁻¹	P kW	T ₂ Nm	F _r N	F _r N GN	n_2 min ⁻¹	P kW	T ₂ Nm	F _r N N	F _r N GN
MP205...	2.8																
	3.15	3.19	470	44.3(1)	900	2000	13450	313	30	905	2500	15120	235	25	1000	2500	16440
	3.55	3.52	426	42.1(1)	945	2000	13760	284	30	1000	2000	15470	213	25	1100	2500	16860
	4	4.06	370	39.9(1)	1030	1500	13770	247	30	1150	1500	15530	185	25	1270	2000	16740
	4.5	4.58	327	37.5(1)	1095	1500	14070	218	29	1250	1500	15930	164	24	1380	1500	17050
	5	5.06	297	36.0(1)	1160	1500	14400	198	27	1325	1500	16180	148	23	1465	1500	17560
	5.6	5.74	261	34.2(1)	1250	1000	14630	174	26	1425	1500	16480	131	22	1575	1500	17880
	6.3	6.43	233	34.7(1)	1420	1500	14610	155	26	1620	1500	16450	117	22	1790	2000	17830
	7.1	7.1	211	33.2(1)	1500	1500	15800	141	25	1710	1500	17780	106	21	1890	1500	19290
	8	8.17	184	31.0(1)	1610	1000	16020	122	24	1835	1500	18180	92	20	2030	1500	19600
	9	9.23	162	28.9(1)	1700	1000	16990	108	22	1940	1500	18780	81	18	2145	1500	20310
	10	10.19	147	27.7(1)	1800	1000	16930	98	21	2050	1000	19100	74	17	2270	1000	20400
	11.2	11.56	130	25.3(1)	1860	1000	17500	87	19	2120	1000	19810	65	16	2345	1500	21360
	12.5	13	115	23	1920	1000	18110	77	18	2190	1500	20420	58	15	2420	1500	22180
	14	14.45	104	22	1980	1500	18990	69	16	2260	1500	21240	52	14	2495	1500	22620
	16	16.45	91	20	2050	1500	19600	61	15	2340	1500	21970	46	12	2585	1500	23870
	18	17.75	85	19	2110	1500	20420	56	14	2405	2000	22810	42	12	2660	2000	24720
	20	19.68	76	17	2175	1500	21040	51	13	2480	2000	23650	38	11	2740	2000	25480
	22.4	22.65	66	16	2270	1500	21660	44	12	2590	2000	24290	33	9.9	2860	2000	26560
	25	25.55	59	12	2000	3000	23750	39	11	2700	2000	25150	29	8.9	2900	2500	27000
	28	29.09	52	12	2250	2500	23760	34	10	2800	2000	25910	26	7.8	2900	3000	27000
	31.5	31.91	47	12	2520	2000	23970	31	9.4	2875	2000	26890	24	7.1	2900	3500	27000
	35.5	36.58	41	11	2650	2000	24830	27	8.3	2900	2500	27000	21	6.2	2900	4000	27000
	40	39.65	38	11	2750	2000	25470	25	7.7	2900	3500	27000	19	5.7	2900	5000	27000
	45	46.78	32	10	2870	2000	26560	21	6.5	2900	4000	27000	16	4.9	2900	5500	27000
	50	52.18	29	9	2900	2500	27000	19	5.8	2900	4500	27000	14	4.4	2900	6000	27000
	56	58.03	26	7	2700	3500	27000	17	4.9	2700	6000	27000	13	3.7	2700	7500	27000
MP305...	63																
	71																
	80																
	90																
	100																
	35.5	33.69	45	10	2200	3500	27000	30	7.8	2500	4500	27000	22	6.5	2780	4500	27000
	40	37.78	40	9.6	2300	3500	27000	26	7.3	2620	4500	27000	20	6	2900	5000	27000
	45	43.49	34	8.7	2400	4000	27000	23	6.6	2740	4500	27000	17	5.2	2900	5500	27000
	50	49.3	30	8	2500	4000	27000	20	6.1	2850	4500	27000	15	4.6	2900	6000	27000
	56	55.45	27	7.4	2600	4000	27000	18	5.5	2900	5000	27000	14	4.1	2900	6500	27000
	63	63.59	24	6.7	2700	4500	27000	16	4.8	2900	5500	27000	12	3.6	2900	7500	27000
	71	70.17	21	6.3	2800	4500	27000	14	4.3	2900	6500	27000	11	3.2	2900	7500	27000
	80	77.21	19	5.9	2900	4500	27000	13	3.9	2900	7500	27000	9.7	2.9	2900	7500	27000
	90	86.98	17	5.2	2900	5500	27000	11	3.5	2900	7500	27000	8.6	2.6	2900	7500	27000
	100	96.48	16	4.7	2900	6000	27000	10	3.1	2900	7500	27000	7.8	2.4	2900	7500	27000
	112	110.5	14	4.1	2900	6500	27000	9	2.7	2900	7500	27000	6.8	2.1	2900	7500	27000
	125	129.8	12	3.5	2900	7500	27000	7.7	2.3	2900	7500	27000	5.8	1.8	2900	7500	27000
	140	138.9	11	3.3	2900	7500	27000	7.2	2.2	2900	7500	27000	5.4	1.6	2900	7500	27000
	160	155.1	9.7	2.9	2900	7500	27000	6.4	2	2900	7500	27000	4.8	1.5	2900	7500	27000
	180	177	8.5	2.6	2900	7500	27000	5.6	1.7	2900	7500	27000	4.2	1.3	2900	7500	27000
	200	191.9	7.8	2.4	2900	7500	27000	5.2	1.6	2900	7500	27000	3.9	1.2	2900	7500	27000
	224	221.5	6.8	2.1	2900	7500	27000	4.5	1.4	2900	7500	27000	3.4	1	2900	7500	27000
	250	243.2	6.2	1.9	2900	7500	27000	4.1	1.2	2900	7500	27000	3.1	0.94	2900	7500	27000
	280	290.2	5.2	1.6	2900	7500	27000	3.4	1	2900	7500	27000	2.6	0.78	2900	7500	27000
	315	325.4	4.6	1.4	2900	7500	27000	3.1	0.93	2900	7500	27000	2.3	0.7	2900	7500	27000

(1) Achtung! Maximale Thermische Leistung beachten Attention! Please consult page 12 for thermal break even performance.
 Attention! Vérifier svp la puissance thermique maximum.

5. MP4

MP..06 Type MP.06.....0... MP.06M00000... m [kg] 201 286 5500 Nm																	
Type	...	$n_{syn} =$ i_{ex}	1500 min ⁻¹					1000 1/min					750 1/min				
			n_2 min ⁻¹	P kW	T ₂ Nm	F _r N N	F _r N GN	n_2 min ⁻¹	P kW	T ₂ Nm	F _r N	F _r N GN	n_2 min ⁻¹	P kW	T ₂ Nm	F _r N N	F _r N GN
MP206...	2.8																
	3.15	3.12	481	68(1)	1350		19000	321	52	1540		20000	240	43	1700		22000
	3.55	3.46	433	65.8(1)	1450		20000	289	50	1650		21000	217	42	1830		22500
	4	4.13	364	60.9(1)	1600		19500	242	46	1820		21000	182	38	2020		23000
	4.5	4.43	339	60.3(1)	1700		20000	226	46	1940		22000	169	38	2150		23500
	5	5.12	293	55.2(1)	1800		20000	195	42	2050		22000	146	35	2270		24000
	5.6	5.73	262	52.1(1)	1900		20000	175	40	2170		23000	131	33	2400		24500
	6.3	6.35	236	55.7(1)	2250		20000	157	42	2570		22500	118	35	2840		24500
	7.1	7.05	213	53.5(1)	2400		20500	142	41	2740		23000	106	34	3020		25000
	8	8.4	179	49.6(1)	2650		20500	119	38	3020		23000	89	31	3340		25000
	9	9.02	166	47.9(1)	2750		21500	111	36	3140		24000	83	30	3470		26000
	10	10.4	144	44.4(1)	2950		21500	96	34	3370		24000	72	28	3720		26500
	11.2	11.7	129	41.8(1)	3100		22000	86	32	3540		25000	64	26	3910		27000
	12.5	12.6	119	40.5(1)	3250		23000	79	31	3700		26000	60	26	4100		27500
	14	14.2	106	37.7(1)	3400		30000	71	29	3880		26500	53	24	4290		28500
	16	16.1	93	35.2(1)	3600		24000	62	27	4100		27000	47	22	4540		29500
	18	17.5	86	34	3750		25000	57	26	4280		28000	43	21	4730		30000
	20	20.1	75	31	3950		25500	50	23	4500		28500	37	19	4980		30000
	22.4	23.3	64	28	4200		26000	43	22	4790		29000	32	18	5290		30000
	25	25.9	58	27	4400		26500	39	20	5020		30000	29	17	5500		30000
	28	27.6	54	26	4500		21500	36	19	5130		25000	27	16	5500		27500
	31.5	30.7	49	24	4650		22500	33	18	5300		25500	24	14	5500		28500
	35.5	34.8	43	22	4850		24000	29	17	5500		27500	22	12	5500		30000
	40	38	39	21	5000		26500	26	15	5500		30000	20	11	5500		30000
	45	43.5	34	19	5150		27000	23	13	5500		30000	17	10	5500		30000
	50	47.5	32	16	4850		28000	21	12	5500		30000	16	9	5500		30000
	56	56	27	14	4850		30000	18	10	5500		30000	13	8	5500		30000
	63	61.7	24	12	4850		30000	16	9	5500		30000	12	7	5500		30000
	71	68.5	22	10	4500		30000	15	8	5130		30000	11	6	5500		30000
	80																
	90																
	100																
	35.5																
MP306...	40	38.1	39	18.1	4400		30000	26	14	5016		30000	20	11	5500		30000
	45	42.8	35	17.1	4650		30000	23	13	5301		30000	18	10	5500		30000
	50	49.2	30	15.6	4900		30000	20	12	5500		30000	15	8.8	5500		30000
	56	55.8	27	14.9	5300		30000	18	10	5500		30000	13	7.7	5500		30000
	63	62.7	24	13.5	5400		30000	16	9.2	5500		30000	12	6.9	5500		30000
	71	71.9	21	12	5500		30000	14	8	5500		30000	10	6	5500		30000
	80	79.4	19	10.9	5500		30000	13	7.3	5500		30000	9.4	5.4	5500		30000
	90	87.4	17	9.9	5500		30000	11	6.6	5500		30000	8.6	4.9	5500		30000
	100	98.4	15	8.8	5500		30000	10	5.9	5500		30000	7.6	4.4	5500		30000
	112	109	14	7.9	5500		30000	9.2	5.3	5500		30000	6.9	4	5500		30000
	125	125	12	6.9	5500		30000	8	4.6	5500		30000	6	3.5	5500		30000
	140	147	10	5.9	5500		30000	6.8	3.9	5500		30000	5.1	2.9	5500		30000
	160	157	9.5	5.5	5500		30000	6.4	3.7	5500		30000	4.8	2.7	5500		30000
	180	176	8.5	4.9	5500		30000	5.7	3.3	5500		30000	4.3	2.5	5500		30000
	200	200	7.5	4.3	5500		30000	5	2.9	5500		30000	3.7	2.2	5500		30000
	224	217	6.9	4	5500		30000	4.6	2.7	5500		30000	3.5	2	5500		30000
	250	251	6	3.4	5500		30000	4	2.3	5500		30000	3	1.7	5500		30000
	280	275	5.5	3.1	5500		30000	3.6	2.1	5500		30000	2.7	1.6	5500		30000
	315																

(1) Achtung! Maximale Thermische Leistung beachten Attention! Please consult page 12 for thermal break even performance.
Attention! Vérifier svp la puissance thermique maximum.

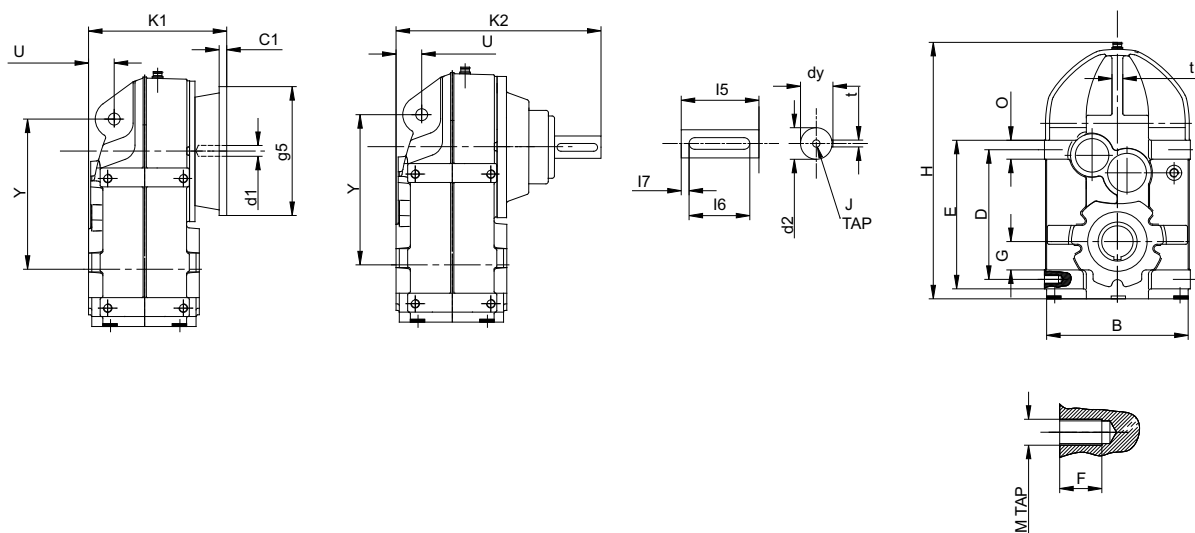
5. MP4

MP..07 Type MP.07.....0... MP.07M00000... m [kg] 292 359 8000 Nm																	
Type	...	$n_{syn} =$ i_{ex}	1500 min ⁻¹					1000 1/min					750 1/min				
			n_2 min ⁻¹	P kW	T ₂ Nm	F _r N N	F _r N GN	n_2 min ⁻¹	P kW	T ₂ Nm	F _r N	F _r N GN	n_2 min ⁻¹	P kW	T ₂ Nm	F _r N N	F _r N GN
MP207...	2.8																
	3.15	3.11	482	99(1)	1950		26000	322	75(1)	2220		27500	241	62(1)	2460		29500
	3.55	3.52	426	94(1)	2100		26500	284	71(1)	2400		28000	213	59(1)	2650		30500
	4	3.99	376	89(1)	2250		27000	251	68(1)	2570		29000	188	56(1)	2840		31000
	4.5	4.52	332	83(1)	2400		27000	221	63(1)	2740		30000	166	52(1)	3020		32000
	5	4.93	304	80(1)	2500		27500	203	57(1)	2679		31000	152	47(1)	2961		34000
	5.6	5.62	267	73(1)	2600		28000	178	55(1)	2960		31500	133	46(1)	3280		34000
	6.3	6.25	240	98(1)	3900		28000	160	75(1)	4450		28500	120	62(1)	4920		31000
	7.1	7.08	212	93(1)	4200		26000	141	71(1)	4790		29000	106	59(1)	5290		31500
	8	8.02	187	88(1)	4500		26000	125	67(1)	5130		29500	94	56(1)	5670		32000
	9	9.1	165	82(1)	4750		27000	110	62(1)	5415		30000	82	52(1)	5985		32500
	10	9.91	151	79(1)	5000		27500	101	60(1)	5700		31000	76	50(1)	6300		33000
	11.2	11.31	133	72(1)	5150		29000	88	54(1)	5870		32000	66	45(1)	6490		34500
	12.5	12.38	121	68(1)	5350		29500	81	52(1)	6100		33000	61	43(1)	6740		35500
	14	14.26	105	61(1)	5550		30500	70	46(1)	6330		34000	53	38	6990		36500
	16	15.73	95	57(1)	5750		31500	64	44(1)	6555		35000	48	36	7245		38000
	18	17.68	85	52(1)	5900		33000	57	40(1)	6730		37000	42	33	7430		40000
	20	19.69	76	49(1)	6100		34000	51	37	6950		38000	38	31	7690		41000
	22.4	22.06	68	45(1)	6300		35000	45	34	7180		39000	34	28	7940		43000
	25	24.9	60	41(1)	6550		36000	40	31	7470		40500	30	25	8000		45000
	28	28.02	54	38	6800		37000	36	28	7520		42500	27	22	8000		47000
	31.5	32.32	46	34	7050		38000	31	26	8000		43500	23	19	8000		49500
	35.5	35.33	42	32	7250		40500	28	24	8000		46500	21	18	8000		50000
	40	38.31	39	30	7400		42000	26	22	8000		48500	20	16	8000		50000
	45	45.22	33	27	7700		43500	22	19	8000		50000	17	14	8000		50000
	50	49.92	30	25	8000		45000	20	17	8000		50000	15	13	8000		50000
	56	55.55	27	23	8000		47000	18	15	8000		50000	14	11	8000		50000
	63																
	71																
	80																
	90																
	100																
	35.5																
MP307...	40	39.42	38	28	7050		43000	25	21	8000		50000	19	16	8000		50000
	45	44.2	34	26	7300		45000	23	19	8000		50000	17	14	8000		50000
	50	50.88	29	23	7600		46000	20	16	8000		50000	15	12	8000		50000
	56	57.68	26	22	7900		47500	17	15	8000		50000	13	11	8000		50000
	63	64.88	23	19	8000		49500	15	13	8000		50000	12	9.7	8000		50000
	71	74.39	20	17	8000		50000	13	11	8000		50000	10	8.4	8000		50000
	80	82.09	18	15	8000		50000	12	10	8000		50000	9.1	7.7	8000		50000
	90	90.33	17	14	8000		50000	11	9.3	8000		50000	8.3	7	8000		50000
	100	101.75	15	12	8000		50000	10	8.2	8000		50000	7.4	6.2	8000		50000
	112	112.9	13	11	8000		50000	8.9	7.4	8000		50000	6.6	5.6	8000		50000
	125	129.3	12	9.7	8000		50000	7.7	6.5	8000		50000	5.8	4.9	8000		50000
	140	151.8	10	8.3	8000		50000	6.6	5.5	8000		50000	4.9	4.1	8000		50000
	160	162.5	9.2	7.7	8000		50000	6.2	5.2	8000		50000	4.6	3.9	8000		50000
	180	181.5	8.3	6.9	8000		50000	5.5	4.6	8000		50000	4.1	3.5	8000		50000
	200	207	7.2	6.1	8000		50000	4.8	4	8000		50000	3.6	3	8000		50000
	224	224.5	6.7	5.6	8000		50000	4.5	3.7	8000		50000	3.3	2.8	8000		50000
	250	259.1	5.8	4.8	8000		50000	3.9	3.2	8000		50000	2.9	2.4	8000		50000
	280	284.5	5.3	4.4	8000		50000	3.5	2.9	8000		50000	2.6	2.2	8000		50000
	315																

(1) Achtung! Maximale Thermische Leistung beachten Attention! Please consult page 12 for thermal break even performance.
Attention! Vérifier svp la puissance thermique maximum.

5. MP4

5.7 DIMENSIONAL DRAWING OF GEAR HEAD MPB2/3...S/A : SHAFT MOUNTED



5.7 DIMENSIONAL DRAWINGS OF GEAR HEAD

MODEL	B	H	G	D	E	O	t	F	MTAP	K2	I5	I6	I7	d2	dy	t1	Y	U	J TAP
MP-01	165	266	31	115	135	20	12	13	M8	215	40	32	4	19k6	22	6	158	31.5	M6X16
MP-02	180	282	43	145	165	20	12	13	M10	236	40	32	4	19k6	22	6	170	32	M6X16
MP-03	212	383	60	190	215	25	16	20	M12	268	60	50	5	28k6	31	8	218	41	M10X22
MP-04	270	493	70	240	275	35	20	26	M16	336	80	70	5	38k6	41	10	278	50	M12X28
MP-05	330	547	100	310	350	40	26	26	M16	357	80	70	5	38k6	41	10	346	62	M12X28
MP-06	400	655	120	350	400	50	30	28	M20	481	110	100	5	48k6	52	14	395	70	M16X36
MP-07	450	750	125	400	460	60	36	36	M24	524	110	100	5	48k6	52	14	485	88	M16X36

TOTAL LENGTH

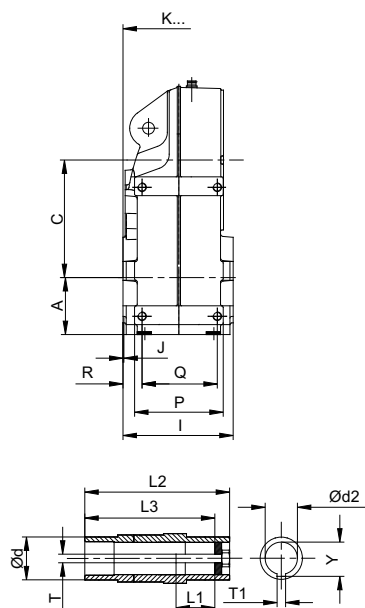
MOTOR FRAME	63	71	80	90S	90L	100	112	132S	132M	160M	160L	180M	180L
d	11	14	19	24	24	28	28	38	38	42	42	48	48
C1	16	17	17.5	17.5	17.5	22	22	22	22	24	24	24	24
g5	140	160	200	200	200	250	250	300	300	350	350	350	350
Model													
MP-01	K1	145	150.5	158.7	172	172	179	179	-	-	-	-	-
MP-02	K1	165.5	171	179.2	192.5	192.5	199.5	199.5	-	-	-	-	-
MP-03	K1	-	181.8	192.3	205.5	205.5	223.2	223.2	244.5	244.5	278.8	278.8	-
MP-04	K1	-	-	229	240.8	240.8	260.8	260.8	286.8	286.8	320.5	320.5	320.5
MP-05	K1	-	-	250.5	262.3	262.3	282.3	282.3	308.3	308.3	342	342	342

MOTOR FRAME	100	112	132S	132M	160M	160L	180M	180L	200L	225S	225M	250M	280
d	28	28	38	38	42	42	48	48	55	60	60	65	75
C1	22	22	22	22	24	24	24	24	26	26	26	28	28
g5	250	250	300	300	350	350	350	350	400	450	450	550	550
Model													
MP-06	K1	318	318	343	343	376	376	376	381	411	411	411	411
MP-07	K1	361	361	386	386	419	419	419	424	454	454	454	454

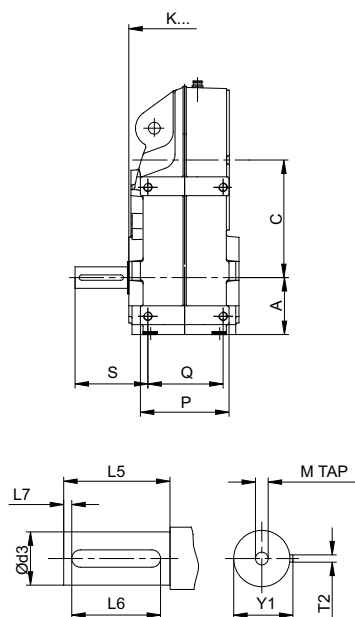
5. MP4

MPB2/3...S/A : SHAFT MOUNTED

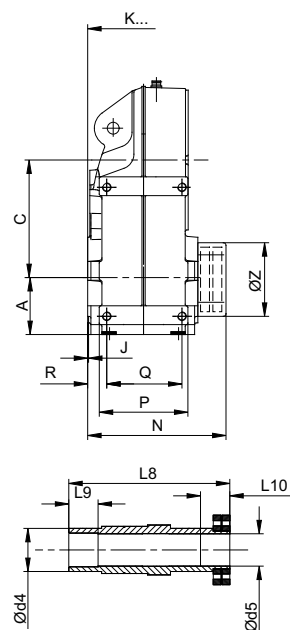
MPB2/3...S/A : SHAFT MOUNTED



MPB2/3...A : SOLID SHAFT



MPB2/3...A : HOLLOW SHAFT WITH SHRINK DISK



DIMENSIONAL DRAWINGS OF GEAR HEAD

Model	A	C	R	J	Q	P	I	S	N	ØZ	L1	L2	L3	L5	L6
MP-01	78	115	22.5	2	77	95	135	72.5	160	86	45	120	105	50	40
MP-02	86	122.5	31	2	93	109	166	91	190	100	49	150	132	60	50
MP-03	105	174	37	2	112	131	195	118	225	110	58	180	156	80	70
MP-04	125	219	36.5	2.5	140	165	230	138	255	135	58	210	183	100	80
MP-05	152	240.6	43	2.5	165	195	265	163	300	165	74	240	210	120	110
MP-06	178	285	48.5	3	205	240	325	191	360	205	76	300	270	140	125
MP-07	200	337	69.5	2	220	260	380	242	435	225	83	350	313	170	160

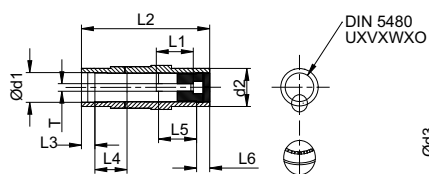
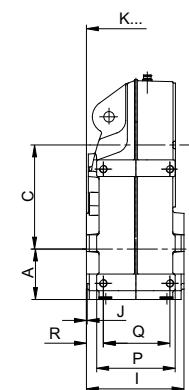
TOTAL LENGTH

Model	L7	L8	L9	L10	Ød	Ød2	Ød3	Ød4	Ød5	T	T1	Y	T2	Y1	MTAP
MP-01	5	146	20	31	45	30H7	25k6	45	30H7	M10	8	33.3	8	28	M10X22
MP-02	3.5	177	20	32	50	35H7	30k6	50	35H7	M12	10	38.3	8	33	M10X22
MP-03	2	208	20	38	55	40H7	40k6	55	40H7	M16	12	43.3	12	43	M16X36
MP-04	10	241	25	36	70	50H7	50k6	70	50H7	M16	14	53.8	14	53.5	M16X36
MP-05	5	281	40	41	85	60H7	60m6	85	65H7	M20	18	64.4	18	64	M20X42
MP-06	7.5	345	50	55	100	70H7	70m6	100	75H7	M20	20	74.9	20	74.5	M20X42
MP-07	3	405	60	65	120	90H7	90m6	120	95H7	M24	25	95.4	25	95	M24X50

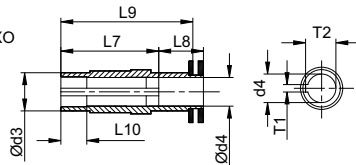
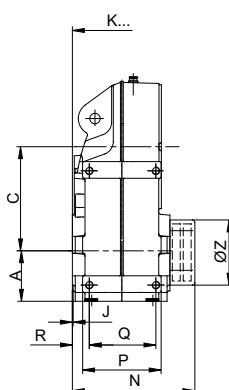
5. MP4

MPB2/3...S/A : SHAFT MOUNTED

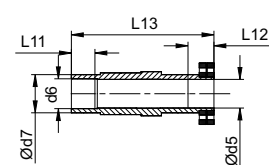
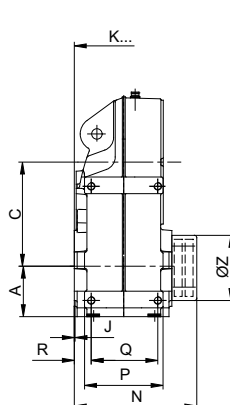
MPB2/3...A : HOLLOW SHAFT WITH SPLINING



MPB2/3...A : HOLLOW SHAFT WITH CONICAL CLAMPING SLEEVE



MPB2/3...A : HOLLOW SHAFT WITH SHRINK DISK AND BRONZE BUSH



DIMENSIONAL DRAWINGS OF GEAR HEAD

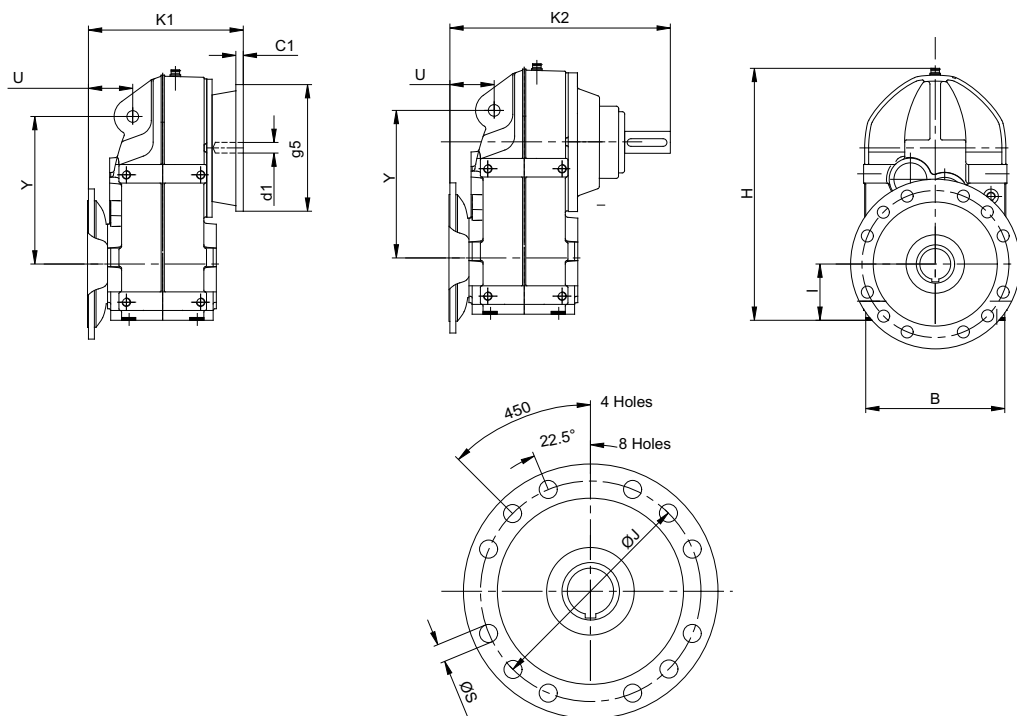
Model	A	C	R	J	Q	P	I	N	ØZ	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10
MP-01	78	115	22.5	2	77	95	135	160	86	30	120	18	25	25	18	NA			
MP-02	86	123	31	2	93	109	166	190	100	30	150	18	32	32	18	NA			
MP-03	105	174	37	2	112	131	195	225	110	50	180	25	42	42	25	NA			
MP-04	125	219	36.5	2.5	140	165	230	255	135	50	210	23	52	52	23	174	66.5	228	30
MP-05	152	241	43	2.5	165	195	265	300	165	60	240	25	62	62	25	191	85	261	40
MP-06	178	285	48.5	3	205	240	325	360	205	60	300	25	72	72	25	243	91	322	70
MP-07	200	337	69.5	2	220	260	380	435	225	60	350	26	89	89	26	309	75.5	372	90

TOTAL LENGTH

Model	L11	L12	L13	Ød1	Ød2	Ød3	Ød4	Ød5	Ød6	Ød7	T	T1	T2	UXVXWXO
MP-01	20	31	146	37(+0.1)	50	NA		30H7	32H7	45	M10	NA		30X1.25X30X22
MP-02	20	32	177	37(+0.1)	50	NA		35H7	36H7	50	M10	NA		35X2X30X16
MP-03	20	38	208	47(+0.1)	55	NA		40H7	42H7	55	M16	NA		45X2X30X21
MP-04	30	36	241	55(+0.1)	70	70	50H7	50H7	52H7	70	M16	14	53.8	50X2X30X24
MP-05	40	41	281	72(+0.1)	85	85	60H7	65H7	66H7	85	M20	18	64.4	65X2X30X31
MP-06	50	55	345	72(+0.1)	100	100	70H7	75H7	76H7	100	M20	20	74.9	70X2X30X34
MP-07	60	65	405	90(+0.1)	120	120	90H7	95H7	96H7	120	M20	25	95.4	85X3X30X27

5. MP4

MPV2/3...S/A : FLANGE MOUNTED – Maxi Flange (B5)



DIMENSIONAL DRAWINGS OF UNIT

MODEL	I	B	H	ØS	ØJ	K2	I5	I6	I7	d2	dy	t	Y	U	J TAP	NO OF HOLES ON OUTPUT
MP-01	78	169	266	9	130	241	40	32	4	19k6	21.5	6	158	57.5	M6X16	4
MP-02	86	184	282	11	165	256.5	40	32	4	19k6	21.5	6	170	53	M6X16	4
MP-03	105	216	383	13.5	215	292.5	60	50	5	28k6	31	8	218	66	M10X22	4
MP-04	125	276	493	13.5	265	375	80	70	5	38k6	41	10	278	89.5	M12X28	4
MP-05	152	336	547	17.5	300	389.5	80	70	5	38k6	41	10	346	94.5	M12X28	4
MP-06	178	406	655	17.5	400	522.5	110	100	5	48k6	51.5	14	395	112	M16X36	8
MP-07	200	456	750	17.5	400	564.5	110	100	5	48k6	51.5	14	485	129	M16X36	8

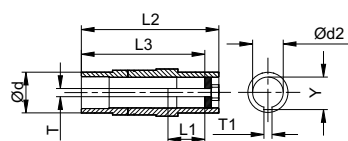
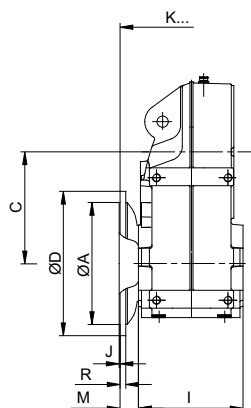
TOTAL LENGTH

MOTOR FRAME	63	71	80	90S	90L	100	112	132S	132M	160M	160L	180M	180L
d	11	14	19	24	24	28	28	38	38	42	42	48	48
C1	16	17	17.5	17.5	17.5	22	22	22	22	24	24	24	24
g5	140	160	200	200	200	250	250	300	300	350	350	350	350
Model													
MP-01	K1	171	176	185	198	198	205	205	-	-	-	-	-
MP-02	K1	187	192	200	214	213.5	220.5	220.5	-	-	-	-	-
MP-03	K1	-	207	217	231	230.5	248.2	248.2	269.5	269.5	303.8	303.8	-
MP-04	K1	-	-	269	280	280.3	300.3	300.3	326.3	326.3	360	360	360
MP-05	K1	-	-	283	295	294.8	314.8	314.8	340.8	340.8	374.5	374.5	374.5

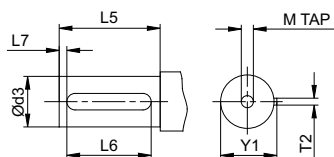
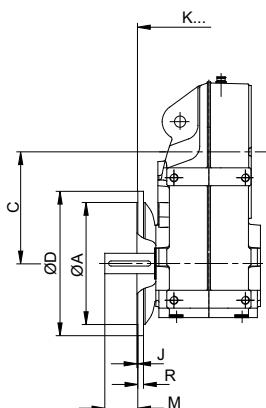
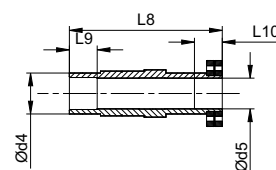
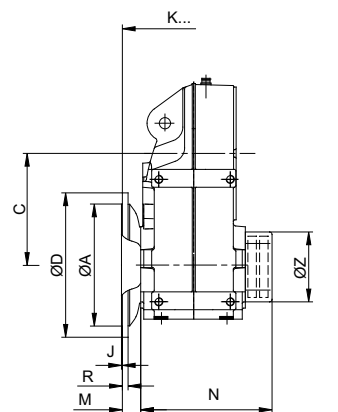
MOTOR FRAME	100	112	132S	132M	160M	160L	180M	180L	200L	225S	225M	250M	280
d	28	28	38	38	42	42	48	48	55	60	60	65	75
C1	22	22	22	22	24	24	24	24	26	26	26	28	28
g5	250	250	300	300	350	350	350	350	400	450	450	550	550
Model													
MP-06	K1	360	360	385	385	418	418	418	423	453	453	453	453
MP-07	K1	402	402	427	427	460	460	460	465	495	495	495	495

5. MP4

MPV2/3...S/A : FLANGE MOUNTED – Maxi Flange (B5)

MPV2/3...S/A : HOLLOW SHAFT
WITH KEY WAY


MPV2/3...A : SOLID SHAFT


MPV2/3...A : HOLLOW SHAFT
WITH SHRINK DISK


DIMENSIONAL DRAWINGS OF GEAR HEAD

MODEL	I	M	R	J	C	S	N	ØA	ØD	ØZ	L1	L2	L3	L5	L6	L7
MP-01	135	24	10	3.5	115	26	160	110	160	86	45	120	105	50	40	5
MP-02	166	25	12	3.5	123	41	190	130	200	100	49	150	132	60	50	3.5
MP-03	195	23	15	4	174	57.5	225	180	250	110	58	180	156	80	70	2
MP-04	230	37	16	4	219	64	255	230	300	135	58	210	183	100	80	10
MP-05	265	30	18	5	241	90	300	250	350	165	74	240	210	120	110	5
MP-06	325	41.5	22	5	285	100	360	350	450	205	76	300	270	140	125	7.5
MP-07	380	41	22	5	337	131	435	350	450	225	83	350	313	170	160	3

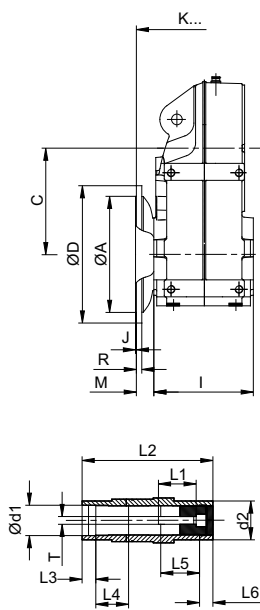
TOTAL LENGTH

MODEL	L8	L9	L10	Ød	Ød2	Ød3	Ød4	Ød5	T	T1	Y	T2	Y1	MTAP
MP-01	146	20	31	45	30H7	25k6	45	30H7	M10	8	33.3	8	28	M10X22
MP-02	177	20	32	50	35H7	30k6	50	35H7	M12	10	38.3	8	33	M10X22
MP-03	208	20	38	55	40H7	40k6	55	40H7	M16	12	43.3	12	43	M16X36
MP-04	241	25	36	70	50H7	50k6	70	50H7	M16	14	53.8	14	53.5	M16X36
MP-05	281	40	41	85	60H7	60m6	85	65H7	M20	18	64.4	18	64	M20X42
MP-06	345	50	55	100	70H7	70m6	100	75H7	M20	20	74.9	20	74.5	M20X42
MP-07	405	60	65	120	90H7	90m6	120	95H7	M24	25	95.4	25	95	M24X50

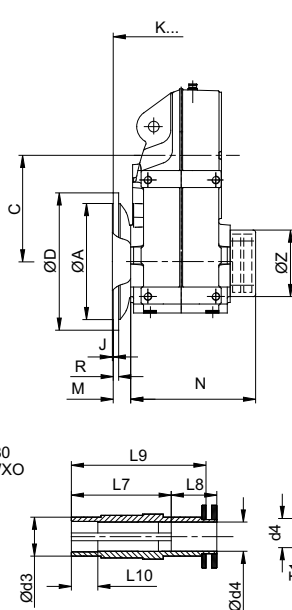
5. MP4

MPV2/3...S/A : FLANGE MOUNTED – Maxi Flange (B5)

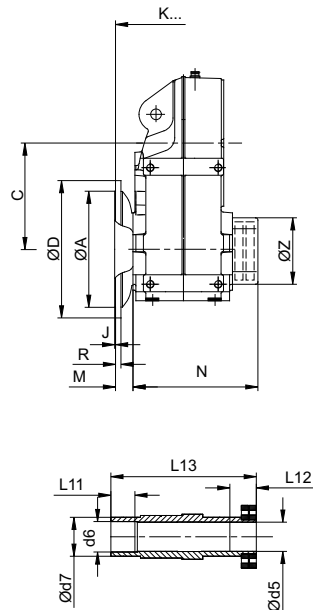
MPV2/3...A : HOLLOW SHAFT WITH SPLINING



MPV2/3...A : HOLLOW SHAFT WITH CONICAL CLAMPING SLEEVE



MPV2/3...A : HOLLOW SHAFT WITH SHRINK DISK AND BRONZE BUSH



DIMENSIONAL DRAWINGS OF GEAR HEAD

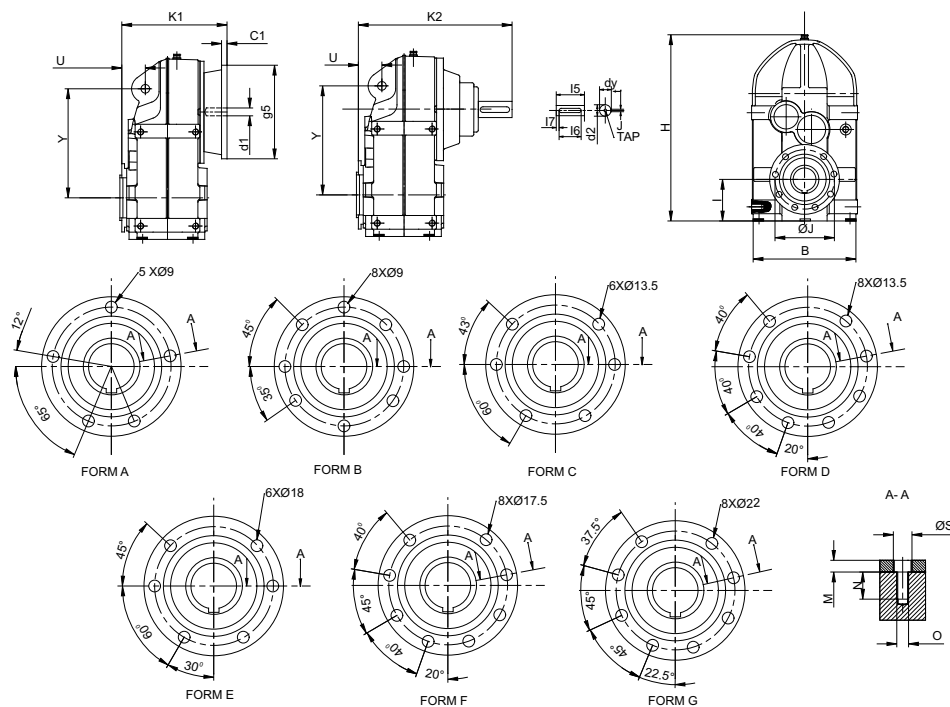
MODEL	I	M	R	J	C	N	ØA	ØD	ØZ	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10
MP-01	135	24	10	3.5	115	160	110	160	86	30	120	18	25	25	18	NA			
MP-02	166	25	12	3.5	123	190	130	200	100	30	150	18	32	32	18	NA			
MP-03	195	23	15	4	174	225	180	250	110	50	180	25	42	42	25	NA			
MP-04	230	37	16	4	219	255	230	300	135	50	210	23	52	52	23	174	66.5	228	30
MP-05	265	30	18	5	241	300	250	350	165	60	240	25	62	62	25	191	85	261	40
MP-06	325	41.5	22	5	285	360	350	450	205	60	300	25	72	72	25	243	91	322	70
MP-07	380	41	22	5	337	435	350	450	225	60	350	26	89	89	26	309	75.5	372	90

TOTAL LENGTH

MODEL	L11	L12	L13	Ød1	Ød2	Ød3	Ød4	Ød5	Ød6	Ød7	T	T1	T2	UXVXWYO
MP-01	20	31	146	37(+0.1)	50	NA		30H7	32H7	45	M10	NA		30X1.25X30X22
MP-02	20	32	177	37(+0.1)	50	NA		35H7	36H7	50	M10	NA		35X2X30X16
MP-03	20	38	208	47(+0.1)	55	NA		40H7	42H7	55	M16	NA		45X2X30X21
MP-04	30	36	241	55(+0.1)	70	70	50H7	50H7	52H7	70	M16	14	53.8	50X2X30X24
MP-05	40	41	281	72(+0.1)	85	85	60H7	65H7	66H7	85	M20	18	64.4	65X2X30X31
MP-06	50	55	345	72(+0.1)	100	100	70H7	75H7	76H7	100	M20	20	74.9	70X2X30X34
MP-07	60	65	405	90(+0.1)	120	120	90H7	95H7	96H7	120	M20	25	95.4	85X3X30X27

5. MP4

MPV2/3...A : FLANGE MOUNTED – Mini Flange (B14)



DIMENSIONAL DRAWINGS OF GEAR HEAD

MODEL	B	I	H	ØJ	ØS	M	N	O	K2	I5	I6	I7	d2	dy	t	Y	U	J TAP	HOLE PATTERN ON OUTPUT FLANGE
MP-01	169	78	266	94	9	11	13	M8	226	40	32	4	19k6	21.5	6	158	42.5	M6X16	FORM A
MP-02	184	86	282	102	9	10	13	M8	246	40	32	4	19k6	21.5	6	170	42	M6X16	FORM B
MP-03	216	105	383	125	13.5	10.5	20	M12	278	60	50	5	28k6	31	8	218	51.5	M10X22	FORM C
MP-04	276	125	493	142	13.5	12.5	22	M12	348	80	70	5	38k6	41	10	278	62.5	M12X28	FORM D
MP-05	336	152	547	178	18	13.5	26	M16	371	80	70	5	38k6	41	10	346	75.5	M12X28	FORM E
MP-06	405	178	655	220	17.5	18	26	M16	489	110	100	5	48k6	51.5	14	395	78	M16X36	FORM F
MP-07	456	200	750	260	22	8	28	M20	516	110	100	5	48k6	51.5	14	485	96	M16X36	FORM G

TOTAL LENGTH

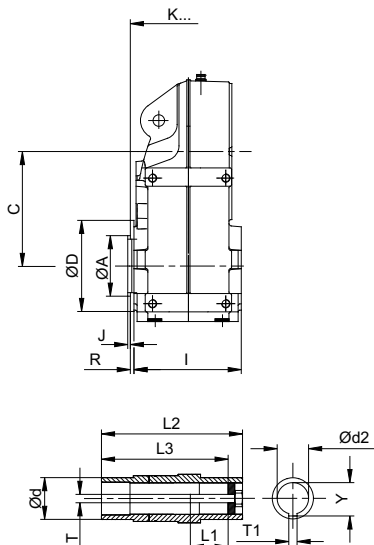
MOTOR FRAME	63	71	80	90S	90L	100	112	132S	132M	160M	160L	180M	180L
d	11	14	19	24	24	28	28	38	38	42	42	48	48
C1	16	17	17.5	17.5	17.5	22	22	22	22	24	24	24	24
g5	140	160	200	200	200	250	250	300	300	350	350	350	350
Model													
MP-01	K1	156	161	170	183	183	190	-	-	-	-	-	-
MP-02	K1	176	181	189	203	203	210	-	-	-	-	-	-
MP-03	K1	-	192	203	216	216	234	234	255	255	289.3	289.3	-
MP-04	K1	-	-	242	253	253	273	273	299.3	299.3	333	333	333
MP-05	K1	-	-	264	276	276	296	296	321.8	321.8	355.5	355.5	355.5

MOTOR FRAME	100	112	132S	132M	160M	160L	180M	180L	200L	225S	225M	250M	280
d	28	28	38	38	42	42	48	48	55	60	60	65	75
C1	22	22	22	22	24	24	24	24	26	26	26	28	28
g5	250	250	300	300	350	350	350	350	400	450	450	550	550
Model													
MP-06	K1	326	326	351.1	351.1	384.3	384.3	384.3	389	419.1	419.1	419	419
MP-07	K1	353	353	378.1	378.1	411.3	411.3	411.3	416	446.1	446.1	446	446

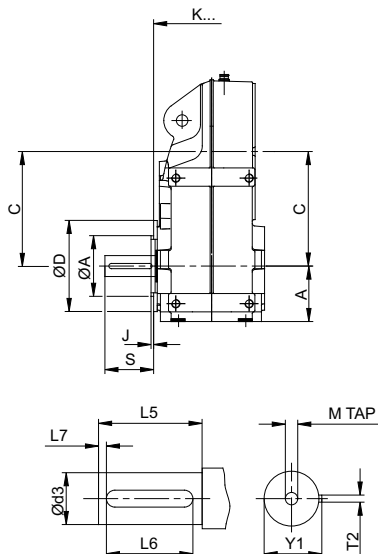
5. MP4

MPV2/3...A : FLANGE MOUNTED – Mini Flange (B14)

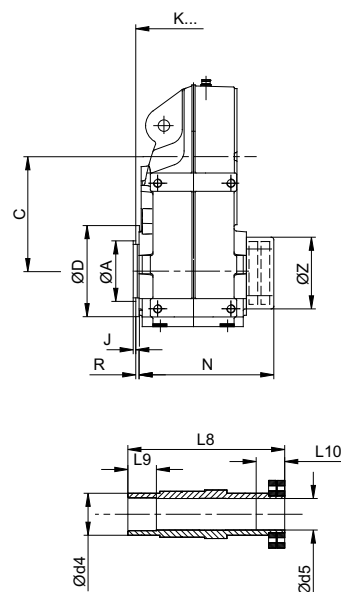
MPV2/3...A : HOLLOW SHAFT
WITH KEY WAY



MPV2/3...A : SOLID SHAFT



MPV2/3...A : HOLLOW SHAFT
WITH SHRINK DISK



DIMENSIONAL DRAWINGS OF GEAR HEAD

MODEL	I	R	J	C	S	N	ØA	ØD	ØZ	L1	L2	L3	L5	L6	L7
MP-01	135	9	3	115	41	160	80	110	86	45	120	105	50	40	5
MP-02	166	8	3	123	52	190	80	120	100	49	150	132	60	50	3.5
MP-03	195	8.5	3.5	174	72.5	225	105	155	110	58	180	156	80	70	2
MP-04	230	10	3.5	219	91	255	125	170	135	58	210	183	100	80	10
MP-05	265	11	4	241	109	300	155	215	165	74	240	210	120	110	5
MP-06	325	14	4	285	131	360	180	260	205	76	300	270	140	125	7.5
MP-07	380	8	4	337	180	435	210	304	225	83	350	313	170	160	3

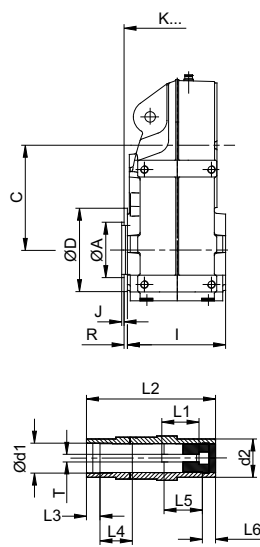
TOTAL LENGTH

MODEL	L8	L9	L10	Ød	Ød2	Ød3	Ød4	Ød5	T	T1	Y	T2	Y1	MTAP
MP-01	146	20	31	45	30H7	25k6	45	30H7	M10	8	33.3	8	28	M10X22
MP-02	177	20	32	50	35H7	30k6	50	35H7	M12	10	38.3	8	33	M10X22
MP-03	208	20	38	55	40H7	40k6	55	40H7	M16	12	43.3	12	43	M16X36
MP-04	241	25	36	70	50H7	50k6	70	50H7	M16	14	53.8	14	53.5	M16X36
MP-05	281	40	41	85	60H7	60m6	85	65H7	M20	18	64.4	18	64	M20X42
MP-06	345	50	55	100	70H7	70m6	100	75H7	M20	20	74.9	20	74.5	M20X42
MP-07	405	60	65	120	90H7	90m6	120	95H7	M24	25	95.4	25	95	M24X50

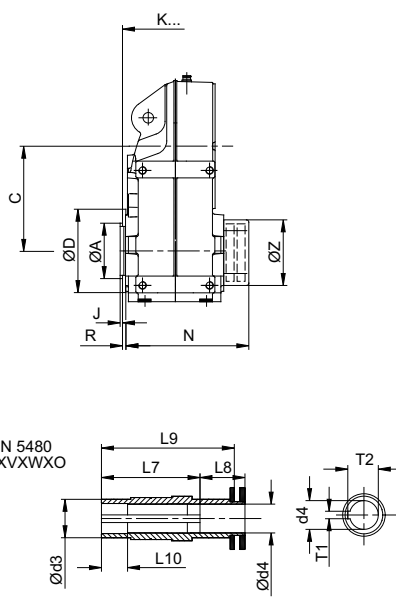
5. MP4

MPV2/3...A : FLANGE MOUNTED – Mini Flange (B14)

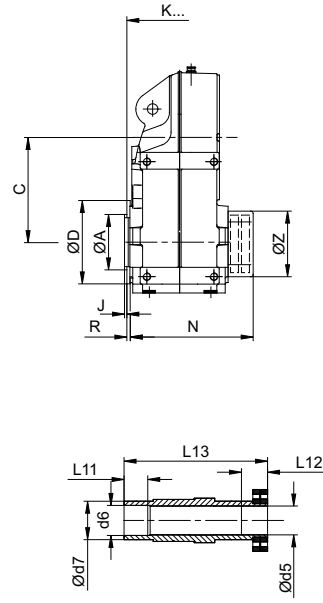
MPV2/3...A : HOLLOW SHAFT WITH SPLINING



MPV2/3...A : HOLLOW SHAFT WITH CONICAL CLAMPING SLEEVE



MPV2/3...A : HOLLOW SHAFT WITH SHRINK DISK AND BRONZE BUSH



DIMENSIONAL DRAWINGS OF GEAR HEAD

MODEL	I	R	J	C	N	ØA	ØD	ØZ	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10
MP-01	135	9	3	115	160	80	110	86	30	120	18	25	25	18	NA			
MP-02	166	8	3	123	190	80	120	100	30	150	18	32	32	18	NA			
MP-03	195	8.5	3.5	174	225	105	155	110	50	180	25	42	42	25	NA			
MP-04	230	10	3.5	219	255	125	170	135	50	210	23	52	52	23	174	66.5	228	30
MP-05	265	11	4	241	300	155	215	165	60	240	25	62	62	25	191	85	261	40
MP-06	325	14	4	285	360	180	260	205	60	300	25	72	72	25	243	91	322	70
MP-07	380	8	4	337	435	210	304	225	60	350	26	89	89	26	309	75.5	372	90

TOTAL LENGTH

MODEL	L11	L12	L13	Ød1	Ød2	Ød3	Ød4	Ød5	Ød6	Ød7	T	T1	T2	UXVXWYO
MP-01	20	31	146	37(+0.1)	50	NA		30H7	32H7	45	M10	NA		30X1.25X30X22
MP-02	20	32	177	37(+0.1)	50	NA		35H7	36H7	50	M10	NA		35X2X30X16
MP-03	20	38	208	47(+0.1)	55	NA		40H7	42H7	55	M16	NA		45X2X30X21
MP-04	30	36	241	55(+0.1)	70	70	50H7	50H7	52H7	70	M16	14	53.8	50X2X30X24
MP-05	40	41	281	72(+0.1)	85	85	60H7	65H7	66H7	85	M20	18	64.4	65X2X30X31
MP-06	50	55	345	72(+0.1)	100	100	70H7	75H7	76H7	100	M20	20	74.9	70X2X30X34
MP-07	60	65	405	90(+0.1)	120	120	90H7	95H7	96H7	120	M20	25	95.4	85X3X30X27

6. Technical Appendix

6. Technical Appendix

6.1 Technical Appendix, General

6.1.1 Symbols used

Formula sign	Description
C	Correction factor
$\cos \varphi$	Power factor
d	Speed of runner
F	Application factor
F_2	Factor dependent upon stray mass moment of inertia
F_b	Factor dependent upon output and operating time
F_m	Factor dependent upon load torque
F_{rN}	Permissible rated external load
F_{rN-G}	Permissible rated external load for reinforced bearing
F_p	Calculated radial load
f_r	Factor for the radial load
Fr	Calculated radial load (N)
F_x	Axial load
F_x	N Rated axial load
F_z	Dependent upon additional mass moment of inertia
i	Gear ratio
I_A	Starting current
i_{ex}	Exact gear ratio
i_N	Rated gear ratio
I_n	Rated current
J1	Inertia of brake hub and brake disk
J2	Inertia of the motor without brake
J3	Inertia of the motor with brake
JE	Inertia of the motor
J_{zus}	Inertia of the additional mass
M	Mass acceleration factor
m	Mass
M_b	Calculated bending moment
M_{bn}	Rated bending moment
η	Efficiency
n_1	Rated speed of the motor
n_2	Selection of the output speed
n_{2ex}	Exact speed of output shaft (full load)
L_p	Mean sound pressure level at 1 m, without load
n_{max}	Max. permissible speed
n_{syn}	Synchronous speed of the motor
P	Mechanical rated output of the gear unit
P_a	Output power
P_m	Motor output
P_N	Rated switching capacity (motor brake)

6. Technical Appendix

6. Technical Appendix

6.1 Technical Appendix, General

6.1.1 Symbols used

Formula sign	Description
P_{zo}	Drive power
r	Pitch circle radius of power transmission element
SF	Available service factor
SF_{min}	Required service factor
Sr	Speed range for motors with inverter
t_b	Brake time
t_1	Operating time of the single-disc safety brake
t_2	Braking time of the single-disc safety brake
T_2	Torque at the output shaft
t_3	Braking time of single-disc safety brakes switching at the AC side
T_A	Starting torque of the motor
T_a	Output torque (load torque)
T_B	Braking torque of the motor
T_K	Breakdown torque of the motor
T_n	Rated torque
T_s	Pull-up torque of the motor
W_{max}	Energy capability per braking
Z	Max. permissible operating frequency of brake motors
Z_B	No. of brakings per hour
Z_{o1}	No-load operating frequency per hour without brake
Z_{o2}	No-load operating frequency per hour with brake

6. Technical Appendix

6.2 Project planning checklist

Data

1. Load									
Motor output	P_m	=	kW						
Motor speed			min^{-1}						
Output power	P_a	=	kW						
Output torque	T_a	=	Nm						
Operating time in hours/day	<table border="1"> <tr> <td>$\leq 8h$</td> <td>$\leq 16h$</td> <td>$\leq 24h$</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </table>	$\leq 8h$	$\leq 16h$	$\leq 24h$					
$\leq 8h$	$\leq 16h$	$\leq 24h$							
Torque peaks T_a	T_a	=	Nm						
Frequency			/h						
Duration			S						
Operating frequency			c/h						
Inertia of driven machine			kgm^2						
Acceleration time			s						
Reversing operation									
Backstop required									
2. Speed									
Constant speed									
Variable speed									
Direction of rotation: CW = clockwise									
CCW = counter clockwise									
3. Connection of motor/gear unit									
Geared motor (integrated assembly)									
Gear unit for IEC motors									
Free drive shaft									
Coupling									
V-belt drive:									
Diameter of belt pulley :									
Motor	$\varnothing$		mm						
Gear unit	$\varnothing$		mm						
Belt profile									
Number of belts									
Other: please specify									
4. Connection of gear unit/driven machine									
Coupling									
Sprocket, diameter	$\varnothing$		mm						
Pinion, diameter	$\varnothing$		mm						
Other : please specify									

6. Technical Appendix

6.2 Project planning checklist

Data

5. External load on output shaft

Radial load

Distance between point of action
and shaft shoulder

F_r = N
 L_r = mm

Direction of load (see below)

Q_r = °

Axial load

Pointing to the gear unit

F_x = + N

Pointing away from the gear unit

F_x = - N

6. External load on drive shaft

Radial load

Distance between point of action
and shaft shoulder

F_{rHSS} = N
 L_{rHSS} = mm

Direction of load

Q_{rHSS} = ° Axial load

Axial load

Pointing to the gear unit

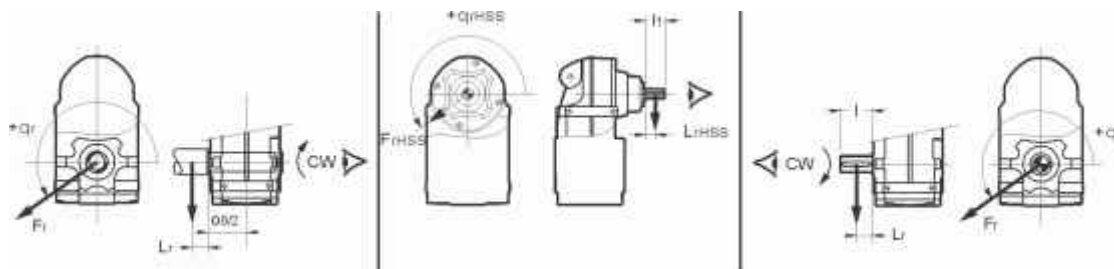
F_x = + NP

Pointing away from the gear unit

F_x = - N

Definitions :

MP4



6. Technical Appendix

6.2 Project planning checklist

Data

7. Brake

Braking torque TB

$$T_R = \quad \text{Nm}$$

Braking time

$$T_b = S$$

8. Mounting parameters

Mounting position

Ambient temperature (°C)

min/max = / °C

Exposure to solar radiation

Max. noise emission

dB(A)

Measuring distance

M

Environmental conditions

Air humidity in %

%

Dust

Aggressive atmosphere, please specify

Electrical details

Voltage and frequency

Operating mode

S

%

/

Type of enclosure

IP

Insulation class

Drive: Type

Order No.:

Sketch :

6. Technical Appendix

6.2.1 Coating Systems

The standard available coatings for the different types of applications from Premium Stephan are summarized in the following tables. Before the dip primer coating, all castings undergo grit blasting for surface preparation (SA 2 ½). If no special coating is defined, the delivery features system 1 in RAL 5002. For high-quality coatings (4...6), the final color tone can be defined by the customer. If no color tone is specified, the final coating is done in RAL 5002 (blue).

Deviating versions are possible in addition to the listed coatings (e.g. through customer regulations). However, they must be checked by Premium Stephan for feasibility in each case before placing an order. It is possible that it may result in significant deviations with respect to extra prices and delivery time. Please contact us.

Table : 1

System no.:	0		1		2		3	
Paint coat								
1	Dip primer coating Color : Red- brown	20 µm	Dip primer coating Color : Red- brown	20 µm	Dip primer coating Color : Red- brown	20 µm	Dip primer coating Color : Red- brown	20 µm
2			1C top coat Color: RAL 5002 Acrylic/PVC	40 µm	1C top coat Color: RAL 7035 Acrylic/PVC	40 µm	1C top coat Color: RAL 7035 Acrylic/PVC	40 µm
3							1C top coat Color: RAL 5002 Acrylic/PVC	40 µm
4								
5								
6								
Total coating thickness		20 µm		60 µm		60 µm		100 µm
Additional paint coats							1	
Drying time less than			1 day		1 day		1 day	
Corrosion protection	++		+++		++		++++	
Temperature resistance								
Continuous load up to	100 °C		100 °C		100 °C		100 °C	
Short-term load up to	160 °C		160 °C		160 °C		160 °C	
Chemical resistance	-		+		-		++	
Mechanical resistance	-		+		-		++	
UV resistance	-		+		-		++	
Application	Only S4 - gear heads for assembly center		Standard coating for S4 indoor installation		Pre-coating for final coating at customer		High-quality coating for S4 indoor installation	
Extra price	No		No		No		Yes	

6. Technical Appendix

6.2.1 Coating Systems

Table : 2

System no.:	4		5		6	
Paint coat						
1	Dip primer coat Color: Red-brown	20 µm	Dip primer coat Color: Red-brown	20 µm	Dip primer coat Color: Red-brown	20 µm
2	2C paint base Color: RAL 7035 Polyurethane (Derocryl)	40 µm	2C paint base Color: RAL 7035 Epoxy	40 µm	2C paint base Color: RAL 7035 Epoxy	40 µm
3	2C top coat Color: NKW Polyurethane (Derocryl)		2C paint base Color RAL 7035 Epoxy	40 µm	2C paint base Color RAL 7035 Epoxy	40 µm
4			2C top coat Color: NKW Epoxy	40 µm	2C top coat Color: NKW Epoxy	40 µm
5			2C top coat Color: NKW Epoxy	40 µm	2C top coat Color: NKW Epoxy	40 µm
6					2C top coat Color: NKW Polyurethane (Derocryl)	30 µm
Total coating thickness		100 µm		180 µm		210 µm
Additional paint coats	1		3		4	
Drying time less than	2 days		3 days		4 days	
Corrosion protection	+++++		+++++		+++++	
Temperature resistance						
Continuous load up to	100 °C		100 °C		100 °C	
Short-term load up to	160 °C		160 °C		160 °C	
Chemical resistance	+++		++++		+++++	
Mechanical resistance	+++		++++		+++++	
UV resistance	++++		++++		++++	
Application	Standard coating for S4 outdoor installation		High-quality coating for S4 indoor and outdoor installation at average environmental loads		High-quality coating for S4 indoor and outdoor installation in extreme applications	
Extra price	Yes		Yes		Yes	

Key					
-	Insufficient		NKW	Per customer request	
+	Available				
++	Sufficient				
+++	Satisfactory				
++++	Good				
	Excellent				

6. Technical Appendix

6.2.2 *Type of enclosure*

The motors correspond to type of enclosure IP55 to IEC 34 - 5 as standard, i.e. they are protected against harmful penetration of dust and water.

The first code number IP5* identifies the protection against harmful dust accumulations inside the motor. The second code IP*5 identifies the protection against the penetration of jet water from all directions. Higher types of enclosure can be supplied upon request.

6.2.3 *Insulation class*

Proven insulation materials according to class F are used for all motors (limiting temperature 155 °C). However, the actual heating corresponds only to insulation class B (limiting temperature 130 °C). Exception: size 132MG-4G (9 kW).

This ensures high reliability and long service life. It is also possible to operate the motors under special conditions, such as an unfavorable electrical supply, an ambient temperature of 55 °C, or a permanently increased load of up to 110 % of the rated output.

6.2.4 *Protection against tropical influences*

All motors are designed in type of enclosure IP55 to IEC 34 - 5. They are suitable for use under dusty and humid environmental influences and, to a limited extent, in tropical environments.

If the environmental conditions promote the formation of mildew, algae or condensate, an additional tropical insulation should be provided.

If motors are exposed to humid or condensate-forming conditions for an extended period of time, an electrical space heater (option) is recommended to avoid moisture condensate inside the motor windings. A control device must ensure that the space heater is switched off during operation and switched on during standstill. The standard supply voltage is 230 V ± 10 %.

6.2.5 *Protection of motors against non-permissible loads*

Selecting the correct protective device largely determines the operational reliability and service life of the motor. Suitable overcurrent release devices (motor protecting switches) are placed in the supply line for direct protection against overload and blocking.

Motors with an output starting at 4 kW are equipped with thermistors (PTC thermistors) as standard. Motors with lower outputs can be supplied with thermistors or thermostats (thermal contacts) upon request (option). Standard motors can be retrofitted with thermostats.

Thermistors (PTC thermistors) are temperature-dependent resistors to IEC 34-11 and DIN 44081 / 44082. Technical data: see below.

Thermostats (thermo switches, thermal contacts) are temperature-dependent bimetal switches. The response temperature is 150 °C and cannot be adjusted. Technical data: see below.

Selecting the correct motor protection is dependent upon the application:

- Possible causes of a thermal overload in each specific application
- Value of product being manufactured
- Costs arising from loss of production
- Possible dangers due to a motor fault

6. Technical Appendix

6.2.6 Type of enclosure

Motor fault	Motor protecting switch		Built into the motor windings	
	Thermal	Magnetic	Thermostats	Thermistors
Continuous overload	G	G	G	G
High operating frequency, unsuitable operating mode	A	A	A	G
Continuous undervoltage or overvoltage or incorrect supply frequency	A	A	G	G
High ambient temperature at motor installation site	P	P	G	G
Insufficient ventilation, blockage of air flow	P	P	G	G
Failure of a supply phase	P	P	A	G
Blockage of rotor	G	G	A	G

Key	
G	Good
A	Acceptable
P	Poor or no protection
Thermistor	Response temperature 160 °C, design to IEC34-11 and DIN 44081 / 44082
Thermostat	Response temperature 150 °C, max. 250 VAC, 1.6 A, cos η 0.6

6.2.7 Safe switching of high inductances

- Switching of multi-pole motor windings.
Switching a multi-pole motor winding in conjunction with unfavorable conductor routing may lead to voltage peaks that can damage or destroy the winding insulation. It is recommended to equip the supply lines with varistors.
- Switching of brake coils.
Varistors must be used to avoid damaging switching over voltages when switching brake coils on the DC side. The brake rectifiers and brake controllers used by Premium-Stephan feature varistors as standard. On principle, special braking contactors or contacts of category AC3 according to IEC 158 must be used for switching of brake coils.

6.2.8 50-Hz motors on a 60-Hz supply system

Motors dimensioned for 50 Hz can also be operated on 60-Hz supply networks without any problems. In this case, the rated speed increases by 20%. At the same time, current and power factor remain unchanged. The additional information can be found in the table.

Motor winding 50 Hz	Connection to 60 Hz	Power P	Torque T
400 V $\pm$ 10 %	380/400 V $\pm$ 5 % 50 Hz	0.90 x P(50 Hz)	0.75 x T(50 Hz)
400 V $\pm$ 10 %	400 V -10 % / + 25 %	1.00 x P(50 Hz)	0.83 x T(50 Hz)
400 V $\pm$ 10 %	440 V -10 % / +15 %	1.10 x P(50 Hz)	0.92 x T(50 Hz)
400 V $\pm$ 10 %	460 V $\pm$ 10 %	1.15 x P(50 Hz)	0.96 x T(50 Hz)
400 V $\pm$ 10 %	480 V - 10 % + 5%	1.20 x P(50 Hz)	1.00 x T(50 Hz)
500 V $\pm$ 10 %	500 V -10 % / + 25 %	1.00 x P(50 Hz)	0.83 x T(50 Hz)
500 V $\pm$ 10 %	575 V $\pm$ 10 %	1.15 x P(50 Hz)	0.96 x T(50 Hz)

6. Technical Appendix

6.2.9 Operation with inverter

The operation of three-phase AC induction motors with frequency inverter (variable voltage and frequency) causes stray losses in the motor. For this reason, it is generally required to reduce the rated torque of the motors so that the permissible winding temperature is not exceeded. An additional reduction of the output is required due to reduced motor speed and, therefore, reduced self-cooling. The output reduction is dependent upon the torque demand of the driven machine and the speed setting range.

For vertical versions with tubing (SCA, SFA, SCP), the output speed ranges according to chapter 7.4.7 must be taken into account. In case of doubt, a consultation with our plant is required.

High speeds

Standard motors can generally also be operated above their rated speed. If standard motors must be operated with frequencies above 60 Hz, please consult our plant.

Power tables

Rated powers of 4-pole motors from the Premium Stephan series are listed for various applications. Data for other pole numbers are available upon request.

The powers apply to correctly installed frequency inverters with characteristics of column A or B.

	A	B
Complete harmonic distortion	< 2.5%	< 6%
Maximum peak voltage	1600 V	1400 V
Max. voltage rise du / dt	1.0 kV / s	5.6 kV / s
Max. carrier switching frequency	5 kHz	5 kHz
Max. motor to inverter cable length	30 m	60 M

6.2.10 Standard version

Our motors and geared motors correspond to the relevant standards. The most important ones are:

	IEC (CEI)	DIN	VDE
Rated output	IEC 34 - 1, IEC 85	DIN EN 60034 - 1	VDE 0530 - 1
Dimensions	IEC 72	DIN 42673 / 42677	
Mounting position	IEC 34 - 7	DIN EN 60034 - 7	VDE 0530 - 7
Cylindrical shaft ends	IEC 72	DIN 748 - 3	
Terminal designations	IEC 34 - 8	DIN VDE 0530 - 8	VDE 0530 - 8
Enclosure types (IP code)	IEC 34 - 5	DIN VDE 0530 - 5	VDE 0530 - 5
Cooling types (IC code)	IEC 34 - 6	DIN EN 60034 - 6	VDE 0530 - 6
Noise limits	IEC 34 - 9	DIN EN 60034 - 9	VDE 0530 - 9
Supply voltage	IEC 38	DIN IEC 38	

6. Technical Appendix

6.2.11 Explosion-protected motors

	IEC (CEI)	DIN
General	IEC 79 - 0	DIN EN 50014
Increased safety (EEx e)	IEC 79 - 7	DIN EN 50019
Flame-proof enclosure (EEx d)	IEC 34 - 1	DIN EN 50018
Non sparking (EEx n)		DIN EN 50021
Electrical equipment for use in areas with combustible dust		DIN EN 50281

6.2.12 Thermal standards

Three-phase AC squirrel-cage motors from Premium-Stephan correspond to the thermal regulations of the relevant national and international standards for permissible over temperature.

Standard	Permissible ambient temperature	Permissible over temperature in K (measured using the resistance method) Insulation class	
		B	F
	°C		
DIN, VDE, IEC	40	80	105
British Standards (BS)	40	80	105
Canadian Standards (CSA)	40	80	105
USA (NEMA)	40	80	105
American Bureau of shipping (ABS)	50	75	95
Bureau Veritas (BV)	50	70	90
Det Norske Veritas	45	70	90
Germanischer Lloyd (GL)	45	75	95
Lloyds Register (LR)	45	70	90

6.2.13 Tolerances

The following tolerances apply to the performance specifications of electrical machines to DIN EN 60034:

- Efficiency η :
- 0.15 (1 - 0) for rated outputs ≤ 50 kW
- 0.10 (1 - 0) for rated outputs > 50 kW
- Power factor $\cos \phi$:
- $(1 - \cos \phi) / 6$
- Slip:
 $\pm 20 \%$ for rated outputs > 1 kW
 $\pm 30 \%$ for rated outputs 1 kW
- Starting current:
 $+ 20 \%$
- Starting torque:
 $- 15 \% \dots + 25 \%$
- Mass moment of inertia:
 $\pm 10 \%$
- Sound pressure level:
 $+ 3 \text{ dB(A)}$

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6.2.14 Calculation of maximum permissible operating frequency of motors:

The maximum permissible operating frequency of a brake motor is dependent upon:

- the size of the accelerated mass moments of inertia
- the relative operating time
- the relative load, i.e. the ratio of actual output power and rated output of the motor
- load torque during acceleration

The no-load operating frequency listed in the tables can be converted to the actual application using the following formula :

$$Z = Z_o \times F_z \times F_b \times F_m$$

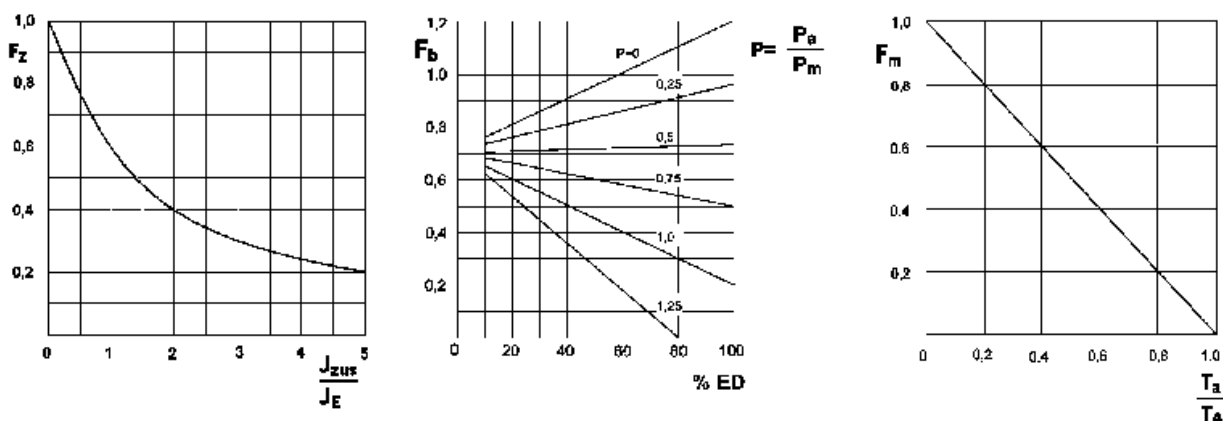
F_z	Dependent upon additional mass moment of inertia
F_b	Dependent upon output and operating time
F_m	Dependent upon load torque
Z_o	No-load operating frequency at 60% operating time
J_E	Mass moment of inertia of the motor
J_{zus}	Mass moment of inertia of driven machine referenced to the motor shaft
T_a	Load torque
T_A	Acceleration torque (motor)
ED	Operating time

whereby $P = P_a / P_m$

P_a Power demand after completed acceleration

P_m Rated motor output

Technical Appendix



6.2.15 Spring-applied single-disk safety brake for direct current and dry run

In the electromagnetic single-disk brake, the braking force is applied through springs and the brake is electrically released. In case of a power failure, the brake is applied. This allows it to meet the predetermined safety requirements. The brakes can be supplied with a manual release upon request.

The brakes are manufactured and tested according to VDE 0580 and correspond to CENELEC Memorandum no. 3, part 3, par. 2.3 of the EC safety directives.

6. Technical Appendix

6.2.15 Spring-applied single-disk safety brake for direct current and dry run

In the electromagnetic single-disk brake, the braking force is applied through springs and the brake is electrically released. In case of a power failure, the brake is applied. This allows it to meet the predetermined safety requirements. The brakes can be supplied with a manual release upon request.

The brakes are manufactured and tested according to VDE 0580 and correspond to CENELEC Memorandum no. 3, part 3, par. 2.3 of the EC safety directives.

Standard voltages:

102 VDC / 230 VAC	for motor output up to 3 kW
178 VDC / 400 VAC	for motor output starting at 4 kW

Other voltages can be supplied and must be specified when ordering.

Technical data:

The response times apply to normal operating temperatures and rated voltage with adjusted gap. The values listed are subject to the regular tolerances.

t_1 (operating time) is the time from switching on the voltage to the drop-off of the brake torque to 10% of the rated torque T_B .

t_2 or t_3 (breaktime) is the time from switching off the voltage to an increase of the brake torque to 90% of its rated value. t_2 applies to switching on the DC side, t_3 to switching on the AC side.

T29The brakes correspond to enclosure type IP55 and, therefore are protected against damaging dust accumulations and jet water.

P_R is the permissible braking energy in Joule per second. The permissible braking energy per braking W_{Rmax} is dependent upon the operating frequency. The listed values apply to a motor speed of 1500 min^{-1} .

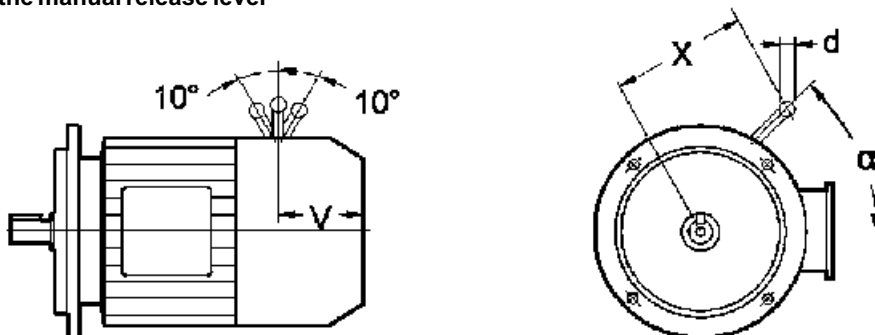
The dynamic braking torque T_B applies to dry run, run in brake and normal operating conditions. The braking torque decreases with increasing motor speed.

If the friction areas contain oil or grease, the braking torque is reduced down to 50%. If the brake is not run in, the braking torque may be 20% less than the rated torque.

6.2.16 Brake kit

Standard motors of size 63 to 180 can be converted to brake motors. *Brake kits* are available for this purpose. The brake hub is installed on the motor shaft to ensure an operationally reliable design. Only the plastic fan blade is driven by a screw-in shaft.

Position of the manual release lever



6. Technical Appendix

Motor Size	Brake Size	TB Nm	"0	X mm	d mm	Vmm
63	08	4	0	85	25	75
71	08	4	0	85	25	75
80	10	10	0	98	25	91
90	13	20	0	117	25	93
100	15	40	30	128	32	97
112	15	40	30	128	32	115
132	20	80	30	166	40	122
160	23	150	30	210	40	161
180	26	240	30	230	40	183
200 / 225	458-25	400	0	500	24	
250 / 280	Upon request					

6.2.17 Brake data

Motor Size	Brake Size	T _B Nm	n _{max.} min ⁻¹	P _R J/s	W _{Rmax} J	W _{RN} J	P _{zo} W	t ₁ ms	t ₂ ms	t ₃ ms	J ₁ kg*cm ²	m kg
63	08	5	10000	80	3 x 10 ³	5 x 10 ⁷	22	35	30	70	0.15	0.8
71	08	5	10000	80	3 x 10 ³	5 x 10 ⁷	22	35	30	70	0.15	0.8
80	10	10	5400	100	6 x 10 ³	12 x 10 ⁷	28	45	45	95	0.45	1.4
90	13	20	5400	130	12 x 10 ³	20 x 10 ⁷	34	60	60	140	1.72	2.5
100	15	40	4000	160	25 x 10 ³	35 x 10 ⁷	42	80	75	175	4.5	4.0
112	15	40	4000	160	25 x 10 ³	35 x 10 ⁷	42	80	75	175	4.5	4.0
132	20	100	3500	250	50 x 10 ³	125 x 10 ⁷	100	160	120	280	12.2	10
160	23	150	3000	300	75 x 10 ³	200 x 10 ⁷	150	200	150	350	28.5	12.6
180	26	250	3000	350	105 x 10 ³	340 x 10 ⁷	250	220	180	500	66.5	19,5
200	458-25	400	3000	520	125 x 10 ³		110	110	375	950	200	29
225	458-25	400	3000	520	125 x 10 ³		110	110	375	950	200	29
250	Upon request											
280	Upon request											

T _B	Rated torque
n _{max.}	Max. speed
P _R	Max. friction power
W _{Rmax}	Max. friction energy per operation
W _{RN}	Friction energy until re-adjustment
P _{zo}	Coil power
t ₁	Operating time
t ₂	Break time (switching on DC side)
t ₃	Break time (switching on AC side)
J ₁	Moment of inertia of the brake
m	Weight

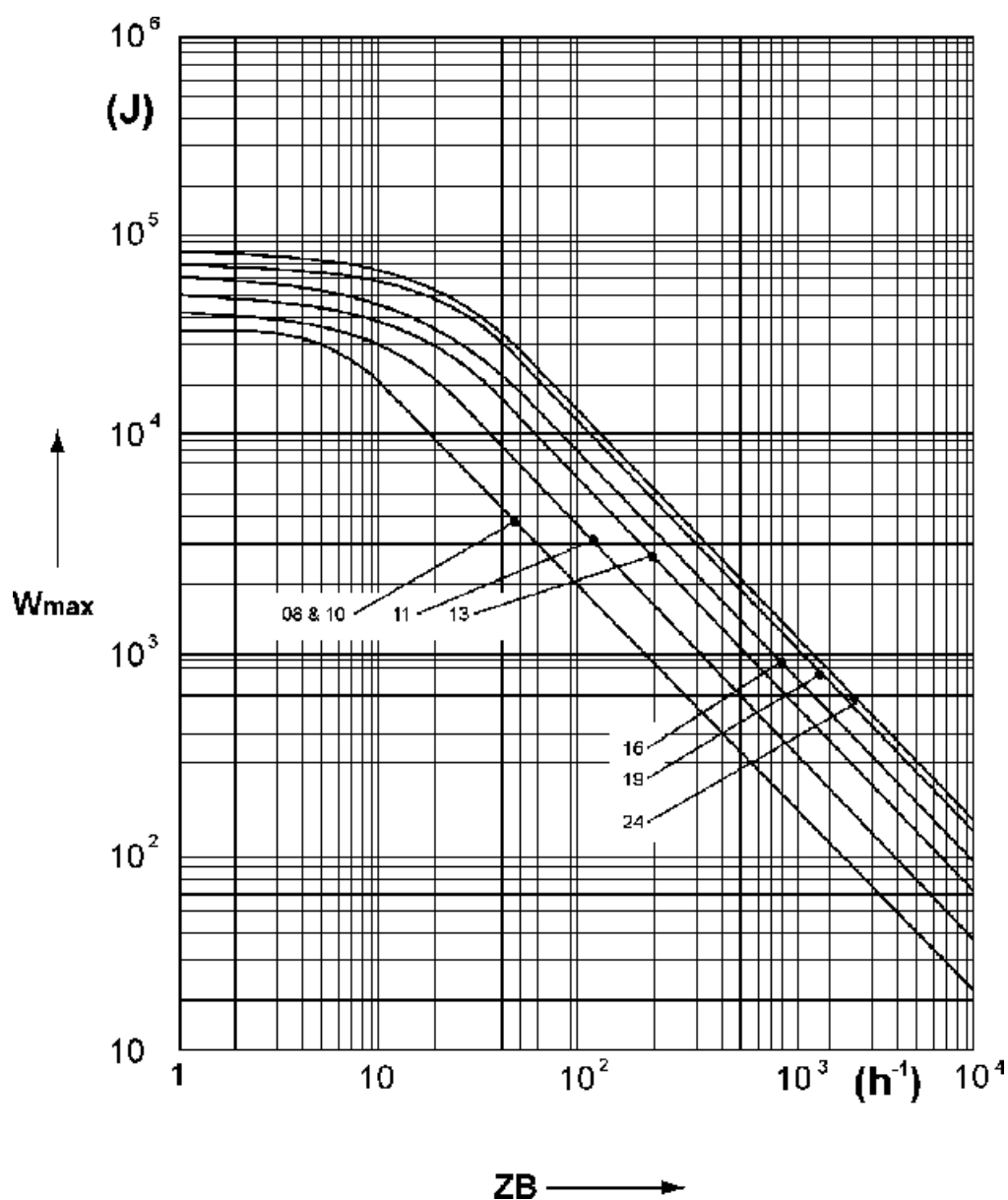
6. Technical Appendix

6.2.18 Power capability per braking

In general, the permissible operating frequency of a brake motor is limited by the heating of the motor. The brake output should be determined for each braking W for control purposes.

$$1W = 0.0055 \times n^2 \times (J_{\text{zus}} + JE)$$

The permissible value W_{Rmax} can be found in the diagram.



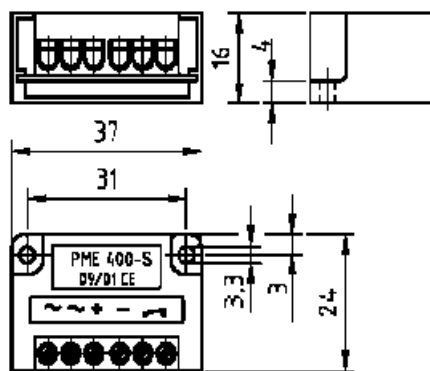
6. Technical Appendix

6.2.19 Brake rectifier

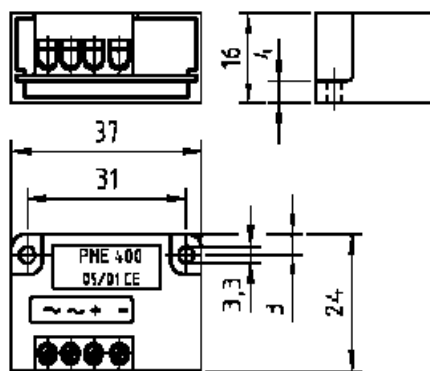
The brake rectifiers being used generate the necessary direct voltage (DC) for operating the brake from the AC supply voltage (AC).

Dependent upon the voltage applied, one-way or bridge rectifiers are used. The brakes are usually switched on the AC side. However, the brakes can also be switched on the DC side for short brake application times. For this purpose, the built-in switching bridge must be removed.

Rectifier for switching at the DC side
or at the AC side

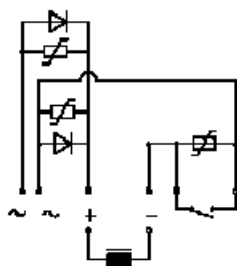


Rectifier for switching at the AC side



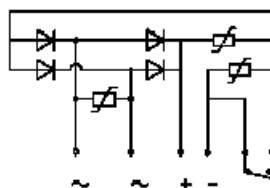
Half wave rectifier

Switching at the DC side
PME 400-S



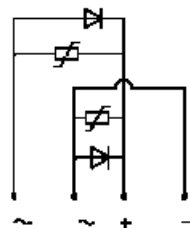
Full wave rectifier

Switching at the DC side
PMB 400 - S



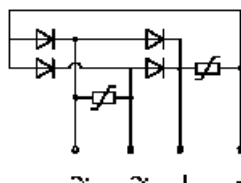
Half wave rectifier

Switching at the AC side
PME 400



Full wave rectifier

Switching at the AC side
PMB 400



6.2.20 Tachometer generator

T33If speed control or synchronous control is required, the motors can be equipped with tachometer generators or pulse generators.

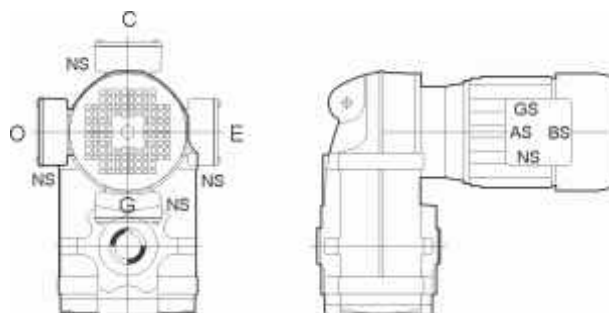
6. Technical Appendix

[illegible]

6. Technical Appendix

6.2.21 Terminal box position

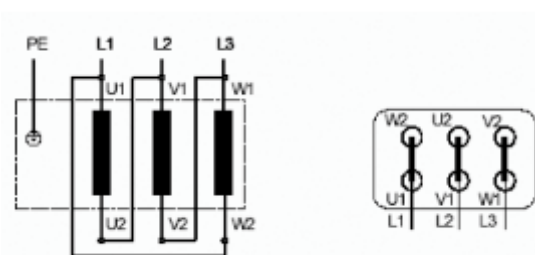
MP4



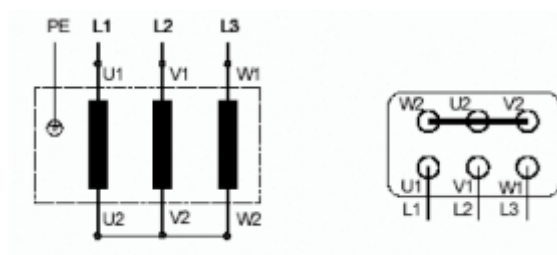
The terminal box position is independent of the mounting position. The normal position is "O". The cable entry is arranged in position "NS" as standard.

6.2.22 Connection diagrams

Motor connection diagrams



Delta Connection - Low Voltage



Star Connection - High Voltage

Connection designations of add-on devices

	IEC standard	UK standard
PTC thermistor	10 - 11	TP1 - TP2
Thermal contacts (NC contact)	20 - 21	TB1 - TB2
Thermal contacts (NO contact)	30 - 31	
Magnetic brake	60 - 61	BR1 - BR2
Space heater	70 - 71	H1 - H2
Three-phase AC external fan	U - V - W	
Single-phase external fan	U1 - U2	

6.2.23 2nd shaft end

The motors can be supplied with a second shaft end upon request. Please contact us.

6.2.24 Plug connectors (Harting)

The motors can be supplied with plug connectors upon request. Please contact us.

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6.2.25 Cast iron fan

The motors can be supplied with cast iron fan upon request. Please contact us.

6.2.26 Cable entries

Size	Cable entry
63 to 90	1 x M20X1.5
100	1 x M20X1.5
112 to 132	1 x M25X1.5
160 to 180	2 x M32X1.5

Cable entries are closed during transport.
Screwed cable glands are not part of the scope of delivery!

6.3.1 Technical Appendix, Mechanical

6.3.2 Backstops in the input lantern

Backstops are used to limit the direction of rotation to a freely selectable direction of rotation. In the opposite direction, backstops act as a blocker. Backstops are frequently used for conveyor drives that are operated in a tilt position or for fan drives. In both cases, there is only one free direction of rotation, whereby a spinning of the drive is desired for the opposite direction.

In certain applications, backstops can be an alternative to an electromagnetic brake on the motor.

The backstops are placed at the drive shaft (U/L-lantern) between the regular bearing and are mounted dependent upon the desired free direction of rotation according to the order. The free direction of rotation must be specified at ordering.

If speed-disengaging backstops are used, this safety component needs to be checked only every 6 000 operating hours or no later than every 3 years. The system operator must take all the necessary safety precautions to avoid failure of the backstop that may result in personal injuries and/or damages to the drive unit and/or the application.

It is necessary to replace the backstop under the following conditions:

- In the event of observing unusually high wear of the gear unit.
- When the oil in the gear unit is contaminated.
- In the event of unusually high load.

This may have had an adverse effect on the condition of the clamping elements and bearing races in the integrated backstop.

CAUTION!

Only authorized, qualified personnel is permitted to replace the backstop or change the direction of rotation of the backstop while complying with the operating instructions for the respective backstop.

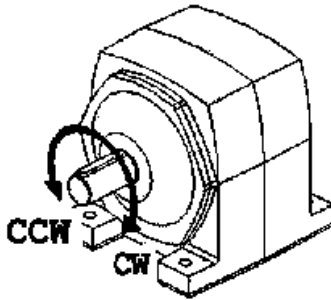
Never loosen or release any part of the backstop facility while the drive is under load: This could affect the reversal action of the drive and load; the drive unit must be in a no-load condition and secured against inadvertent movements.

6.3.3 Indication of output rotating direction when using backstops

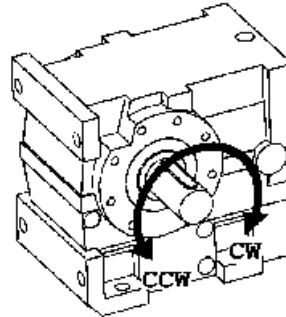
For the order of a gearbox with backstop you have to indicate the required direction of rotation, viewed at output shaft on output side of gearbox. For drives with left and right output shaft the direction of rotation is given viewed at side L. To avoid damage to the gearbox or the unit, the direction of rotation needs to be checked before operating.



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CW = rotation right, CCW = rotation left



CW = rotation right, CCW = rotation left

6.3.3 Slip coupling in the input lantern

If an input lantern is used, it can be equipped with an additional slip coupling, if necessary, to mechanically limit the torque of the drives. In this case, the slip coupling is installed between motor and gear unit drive shaft. In the normal case, only the standard coupling half of the motor is replaced by the special slip coupling half.

A slip coupling is a component where the permissible torque is transferred frictionally engaged. For this purpose, two spring-loaded friction linings are pressed against each other. The spring force determines the amount of torque that can be transferred. The spring force and, subsequently, the transferable torque can be adjusted.

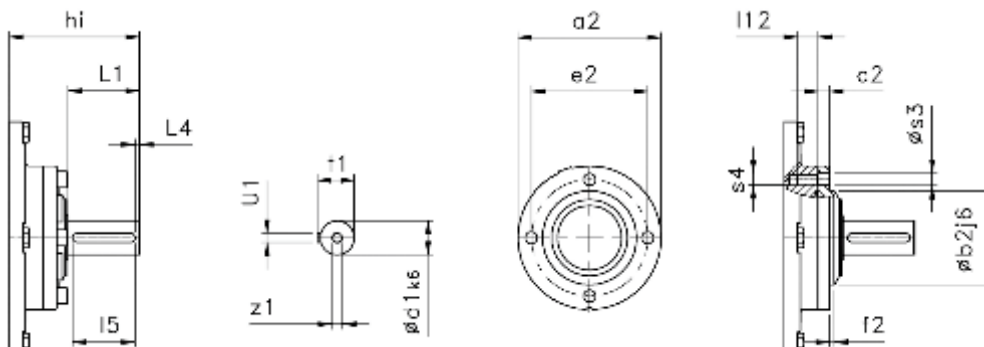
6.3.4 Motor base versions

Our motor base version is a special variant to connect or drive a gear unit with a motor by means of belt drive. This provides the following advantages:

- Compact version - an advantage, for example, if structural conditions do not allow for an integral mounting of the motor.
- After installing the drive in the machine or system, the total gear ratio can be adjusted using a simple change in the belt drive gear ratio.

6.3.5 Gear unit with free drive shaft

All gear units of the S4 family can also be designed with free drive shaft. In this case, there is a standard for the shaft dimensions of the drive shaft dependent upon the gear unit type (M14) and the gear unit size. This standard is also shown in the dimensioned drawings of the gear units. In addition to these standard dimensions, alternate dimensions are possible or even required, based on applied external loads. The following table provides an overview of the options in the design of the drive shafts. Lines with a light-gray background contain the values for our standard dimensions.



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Mounting flange

Gear unit connection	Mounting dimensions								Mounting flange on the drive end							
	Ød ₁	L ₁	L ₄	I ₅	t ₁	U ₁	z ₁	h _i	a ₂	b ₂	e ₂	f ₂	c ₂	I ₁₂	S ₄	s ₄
	mm	mm	mm	mm	mm	mm	mm	mm	mm	j6	mm	mm	mm	mm	mm	mm
S115	19	40	4	32	21.5	6	M6x16	110.5	130	85	105	14	11	19	11	M10
	28	60	5	50	31	8	M10x22	110.5	130	85	105	14	11	19	11	M10
S162	19	40	4	32	21.5	6	M6x16	101.5	130	85	105	14	11	19	11	M10
	28	60	5	50	31	8	M10x22	121.5	130	85	105	14	11	19	11	M10
	38	80	5	70	41	10	M12x28	158	160	105	130	13	13	23	13.5	M12
S235	28	60	5	50	31	8	M10x22	109.5	130	85	105	14	11	19	11	M10
	38	80	5	70	41	10	M12x28	146	160	105	130	13	13	23	13.5	M12
S300	38	80	5	70	41	10	M12x28	138	160	105	130	13	13	23	13.5	M12

T43For permissible loads at the drive shaft please contact *Premium-Stephan*.

Gear unit connection - Dimensional assignment

Gear unit connection	MP4
S115	MP..01 / MP..02
S162	MP..3
S235	MP..4 / MP..05
S300	MP..06 / MP..07

For permissible loads at the drive shaft please contact *Premium-Stephan*.

6.3.6 Noise level

This chapter discusses the noise levels (sound pressure levels) of the S4 gear unit series of size 1 to 9. design index 6 and 7. Motor noises are not taken into account.

Table 1 listed below shows sound pressure level L_{p'} that can be expected with high probability for standardized conditions. Slight deviations are possible due to manufacturing tolerances.

To obtain values from other conditions, correcting factors must be added according to Tables 2-4.

$$L_p = L_p' + K_1 + K_2 + K_3$$

If the noise level must be guaranteed, 3 dBA must be added at the top tolerance limit. See also the attached examples.

The listed values refer only to the gear units and are intended for an initial orientation. Lower values are partially possible for the noise level. Please contact us.

Sound pressure under standardized conditions:

Table 1 shows values and tolerances for sound pressure L_{p'} in dBA at a distance of 1 meter from the gear unit (Input speed n₁ = 1500 1/min gear ratio i = 11.2). The reference power is dependent upon the service factor SF.

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Table -1

Gear unit size	for SF = 2:	Consumed power in kW						
	for SF > 2:	Half the catalog power data, ½ P in kW						
		1 kW	2 kW	5 kW	10 kW	20 kW	50 kW	100 kW
1...4		58 +/- 1	62 +/- 1	66 +/- 1.5	69.5 +/- 1.5	73 +/- 2		
5...7		57 +/- 1	61 +/- 1	65 +/- 1.5	68.5 +/- 1.5	72 +/- 2	77 +/- 2	79 +/- 3
8...9		56 +/- 1	60 +/- 1	64 +/- 1.5	68.5 +/- 1.5	71 +/- 2	76 +/- 2	80 +/- 3

Correcting factor for non-standard conditions:

Table 2: Correcting factor K_1 in dBA for distance from gear unit

Gear unit size	Distance from gear unit [m]					
	1 m	3 m	5 m	10 m	30 m	50 m
1...4	0	-6	-10	-16	-26	-30
5...7	0	-5	-9	-15	-25	-29
8...9	0	-4	-8	-14	-24	-28

Table 3: Correcting factor K_2 in dBA for input speed n_1

Gear unit size	Input speed n_1 [1/min]						
	500 RPM	750 RPM	1000 RPM	1500 RPM	1800 RPM	2400 RPM	3000 RPM
1...9	-7	-5	-3	0	+1.5	+5	+8

Table 4: Correcting factor K_3 in dBA for gear ratio

Gear unit size	Gear unit ratio i	
	2.8...10	≥ 11.2
1...9	+2	0

Examples

Example 1 MPB304F132MF02500S, consumed power $P_a = 7.5$ kW
Expected sound pressure level at 1 meter?
Service factor $SF=1.2$ ' use consumed power according to Table 1 (interpolate and round the values)
 $L_p' = (67.8 \pm 1.5)$ dBA
Distance = 1 m, $n_1 = 1500$ 1/min $i = 11.2$ ' $K_1=K_2=K_3 = 0$
 $L_p = L_p'$
Guaranteed value = $(67.8 + 1.5 + 3)$ dBA = **72.3 dBA**

Example 2 MPB205G160MF00800S, consumed power $P_a = 11$ kW
Expected sound pressure level at 1 meter?
Service factor $SF = 3.45$ ' Use half the catalog power data (see Gear unit selection tables)
 $P/2 = (39/2)$ kW = 19.5 kW ---> $L_p' = (72 \pm 2)$ dBA
Distance = 1 m, $n_1 = 1500$ 1/min, $i < 11.2$ ' $K_1 = K_2 = 0$, $K_3 = 2$ dBA
 $L_p = (L_p' + 2)$ dBA = (74 ± 2) dBA
Guaranteed value = $(74 + 2 + 3)$ dBA = **79 dBA**

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6.3.7 Mass moments of inertia $J (10^{-3} \text{ kgm}^2)$

The listed values each refer to the drive shaft of the gear unit.

MP4

2-stage gear units $J (10^{-3} \text{ kgm}^2)$

i_N	Size						
	MP-01	MP-02	MP-03	MP-04	MP-05	MP-06	MP-07
3.15							
3.55							
4							
4.5							
5							
5.6	0.085	0.22	0.81	1.85	6.1		
6.3	0.077	0.2	0.73	1.65	5.4	9.9	20
7.1	0.069	0.18	0.64	1.5	4.7	8.5	17
8	0.059	0.16	0.58	1.25	4.1	7.4	14.5
9	0.055	0.135	0.53	1.15	3.7	6.4	13
10	0.049	0.12	0.47	1.05	3.2	5.8	11
11.2	0.045	0.11	0.44	0.89	2.8	4.9	10
12.5	0.043	0.093	0.4	0.82	2.55	4.5	8.9
14	0.04	0.085	0.37	0.71	2.35	4	7.9
16	0.036	0.077	0.35	0.64	2	3.4	6.4
18	0.033	0.069	0.32	0.58	1.8	3	5.6
20	0.031	0.062	0.3	0.53	1.65	2.75	4.8
22.4	0.029	0.055	0.28	0.47	1.55	2.6	4.5
25	0.0275	0.048	0.26	0.42	1.4	2.3	3.8
28	0.0265	0.045	0.255	0.37	1.3	2.2	3.5
31.5	0.0255	0.041	0.235	0.35	1.15	1.9	2.9
35.5	0.0245	0.037	0.23	0.31	1.1		
40	0.023	0.032	0.22	0.27	1		
45	0.022	0.028	0.215	0.23	0.9		
50	0.021	0.024	0.205	0.2	0.85		
63	0.0175	0.036	0.17	0.17			
71	0.016	0.0325	0.16	0.15			
80	0.0155	0.0295	0.1475				
90	0.0142	0.026	0.1375				
100	0.0137	0.0235	0.13				

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3-stage gear units J (10^{-3} kgm^2)

i _N	Size			
	MP-04	MP-05	MP-06	MP-07
35.5	1.02	3.25		
40	0.96	3	3.4	3.8
45	0.84	2.65	2.95	3.3
50	0.77	2.4	2.7	3
56	0.67	2.2	2.5	2.75
63	0.61	1.9	2.2	2.4
71	0.56	1.75	2	2.15
80	0.51	1.55	1.85	1.95
90	0.45	1.5	1.75	1.85
100	0.41	1.35	1.6	1.65
112	0.36	1.3	1.55	1.6
125	0.35	1.15	1.4	1.45
140	0.31	1.1	1.35	1.35
160	0.29	0.98	1.25	1.25
180	0.27			

6.3.8 External loads at the output shaft

Calculation

Occurring radial load

The radial load exerted through a power transmission element is derived from the following formula:

$$F_r = \frac{9550 \times P_a \times f_r}{n_2 \times r} \quad \text{or} \quad F_r = \frac{T_a \times f_r}{r}$$

whereby

- F_r = calculated radial load (N)
- T_a = output torque (Nm)
- n_2 = output speed (min⁻¹)
- r = pitch circle radius of power transmission element (m)
- f_r = factor for the radial load
 - = 1 for a sprocket (single string)
 - = 1.25 for a gear wheel or sprocket (double string)
 - = 1.5 for a V-belt pulley
 - = 2.5 for a flat belt pulley

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Point of action of the radial load

The distance of the point of action to the shaft shoulder must be as small as possible.

The following tables provide the permissible rated external loads (F_{rN}) at four different points of action. For other points of action, the values can be determined through interpolation.

Check:

Check whether

$$F_r N = F_r \times SF_{\min}$$

whereby

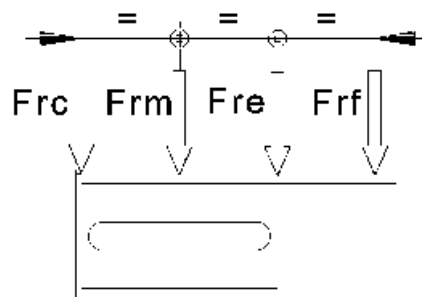
$SF_{\min}$ = required Service Factor

F_{rN} = permissible rated external load

Permissible rated external loads F_{rN} (N) at the output shaft for multi-stage gear units (entire S4 family).

Point of action A_r .

n_2	A_r	Size						
min^{-1}		MP-01	MP-02	MP-03	MP-04	MP-05	MP-06	MP-07
≤ 20	A_{rc}	1.4	1.25	1.25	1.25	1.25	1.25	1.3
	A_{rm}	1	1	1	1	1	1	1
	A_{re}	0.55	0.5	0.5	0.8	0.85	0.65	0.6
	A_{rf}	0.4	0.3	0.3	0.55	0.6	0.45	0.45
45	A_{rc}	1.4	1.25	1.25	1.25	1.25	1.25	1.25
	A_{rm}	1	1	1	1	1	1	1
	A_{re}	0.55	0.5	0.5	0.8	0.85	0.75	0.8
	A_{rf}	0.4	0.3	0.3	0.55	0.6	0.5	0.55
60	A_{rc}	1.4	1.25	1.25	1.25	1.25	1.25	1.25
	A_{rm}	1	1	1	1	1	1	1
	A_{re}	0.55	0.5	0.5	0.8	0.85	0.8	0.85
	A_{rf}	0.4	0.3	0.3	0.55	0.6	0.55	0.55
75	A_{rc}	1.25	1.25	1.3	1.25	1.25	1.25	1.25
	A_{rm}	1	1	1	1	1	1	1
	A_{re}	0.6	0.75	0.55	0.85	0.85	0.85	0.85
	A_{rf}	0.4	0.45	0.35	0.6	0.7	0.6	0.6
95	A_{rc}	1.25	1.25	1.25	1.25	1.25	1.25	1.25
	A_{rm}	1	1	1	1	1	1	1
	A_{re}	0.6	0.8	0.6	0.8	0.85	0.85	0.8
	A_{rf}	0.45	0.5	0.4	0.6	0.7	0.65	0.65
150	A_{rc}	1.25	1.2	1.2	1.25	1.25	1.25	1.25
	A_{rm}	1	1	1	1	1	1	1
	A_{re}	0.65	0.85	0.7	0.85	0.85	0.85	0.85
	A_{rf}	0.45	0.65	0.45	0.6	0.7	0.7	0.7
240	A_{rc}	1.25	1.25	1.15	1.25	1.25	1.25	1.25
	A_{rm}	1	1	1	1	1	1	1
	A_{re}	0.65	0.85	0.8	0.85	0.85	0.85	0.85
	A_{rf}	0.45	0.75	0.55	0.7	0.7	0.7	0.7



$$F_{rc} = F_{rN} \times A_{rc}$$

$$F_{rm} = F_{rN} \times A_{rm}$$

$$F_{re} = F_{rN} \times A_{re}$$

$$F_{rf} = F_{rN} \times A_{rf}$$

6. Technical Appendix

6.3.9 Installation, General Conditions

The drive units must be installed or attached free of vibration or mounted on a flat, rigid and solid frame or foundation in order to avoid vibrations.

CAUTION!

The drive units must be aligned with utmost care! Stress and strain in the housing must be avoided.

To align the gear unit, place it on 3 of the 4 mounting points and use shims to match the fourth point to an accuracy of less than 0.2 mm.

After the gear unit has been aligned correctly and after the shims have been fitted, the gear unit must be firmly screwed down to the foundation. Screw class 8.8 in accordance with DIN 267. Screw size: see dimensional drawings. The screws must be tightened to the torque requirements as specified by the manufacturer. Trouble-free lubrication and ventilation are ensured only when the gear unit is mounted in the correct position.

It is necessary to correct the amount of lubricant and the position of the breather screw if the mounting position of the gear unit is changed.

Before start-up, check the position-dependent oil level by loosening the oil level plug of the drive unit.

CAUTION!

Sizes 1 and 2 are lubricated for life. In this case, the surface temperature and the noise level emitted by the gear unit must be constantly monitored during the procedure.

Intermediate inserts or pads made of plastic must be used if there is a risk of electrochemical corrosion between the gear unit and system. Gear unit casings must be grounded.

The cooling air intake of the motor must not be obstructed.

6.3.10 Mounting power transmission elements

Observe the operating instructions provided with the power transmission elements. Use elastic couplings for direct power transmission from gear unit to driven machine, while slip couplings are required in case of a blocking risk. Only use rigid couplings in connection with unsupported or overhanging shafts (e.g. with agitators or aerators).

Due to the radial loads that occur, power transmission elements such as flat belts or V-belts, gearwheels and sprockets, cranks, eccentric cams etc. are to be arranged as close to the gear unit housing as possible. Consequently, the bearings and drive shaft are then subject to the lowest load. Refer to the technical sales documentation for the maximum permissible load values.

The protective coating on the end of the shaft must be removed by suitable means prior to mounting the transmission elements. The same procedure applies for transmitting the drive power to the gear unit in connection with a free drive shaft. Great care must be taken while fitting power transmission elements onto the ground output shaft of the gear unit, and can be carried out using the threaded hole provided for this purpose on the end face of the shaft. Preferably, the power transmission element should be heated to a temperature of approx. 100 °C. The hole is to be dimensioned in accordance with ISO H7. All parts must be thoroughly deburred, cleaned and the fit locations lightly greased. Avoid all knocks and impact to the end of the shaft.

6.3.11 Mounting coupling on output shaft

Observe the operating instructions from the coupling manufacturer.

Accurate alignment and regular inspection are necessary.

The maximum permissible shaft extensions of the coupling used must be maintained and checked.

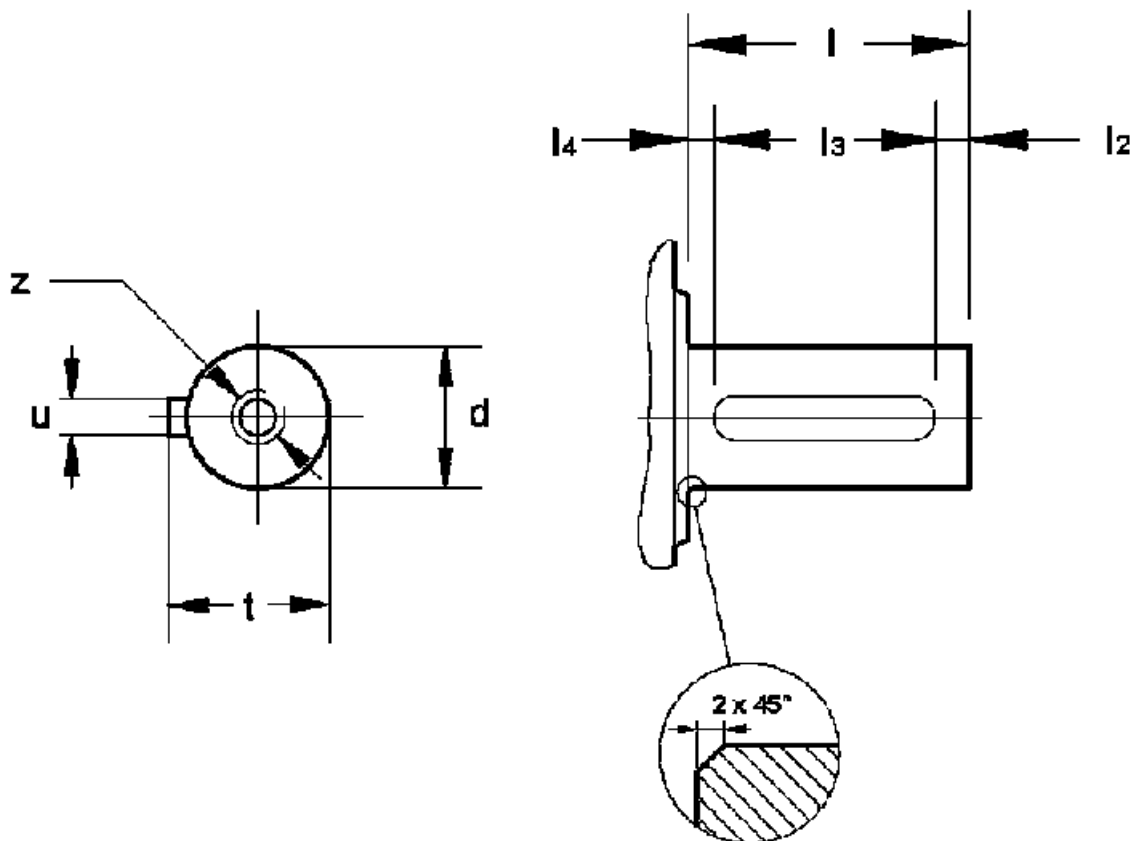
The specified distance between the coupling halves should be maintained.

Only adjust the radial offset after the angle offset and the distance between the shaft ends have been checked. Recheck the angle offset after correcting the radial offset.

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6.3.12 Mounting gear units with solid shaft

Shaft dimensions



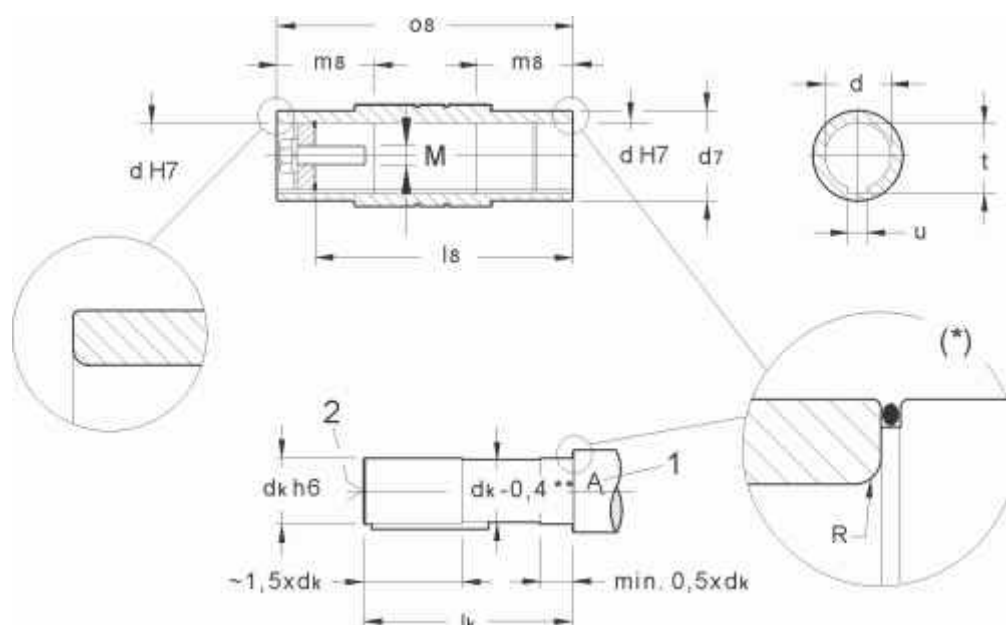
Size	d	L	l_2	l_3	l_4	t	u	z
MP-01	25k6	50	5	40	5	28	8	M10x22
MP-02	30k6	60	3,5	50	6.5	33	8	M10x22
MP-03	40k6	80	2	70	8	43	12	M16x36
MP-04	50k6	100	10	80	10	53.5	14	M16x36
MP-05	60m6	120	5	110	5	64	18	M20x42
MP-06	70m6	140	4	125	11	74.5	20	M20x42
MP-07	90m6	170	5	153	12	95	25	M24x50

Feather key to DIN 6885-T1-"Form A"

6. Technical Appendix

6.3.13 Mounting shaft-mounted geared motors with hollow shaft with keyway

Shaft dimensions



Size	d	d ₇	l ₈	M	m ₈	o ₈	R	t	u	d _k	L _k
MP-01	30	45	105	M10	45	120	3	33.3	8	30	82
MP-02	35	50	132	M12	50	150	3	38.3	10	35	109
MP-03	40	55	156	M16	60	180	3	43.3	12	40	127
MP-04	50	70	183	M16	65	210	4	53.8	14	50	154
MP-05	60	85	210	M20	75	240	4	64.4	18	60	174
MP-06	70	100	270	M20	80	300	4	74.9	20	70	234
MP-07	90	120	313	M24	90	350	4	95.4	25	90	279

1: Driven machine drive shaft

2: Centering to DIN 332 "Form D"

(*) An O-ring is recommended to provide increased protection against moisture.

The dimensions apply to the hollow shaft.

** Recommended for simple mounting.

Keyways to DIN 6885-T1-"Form A"

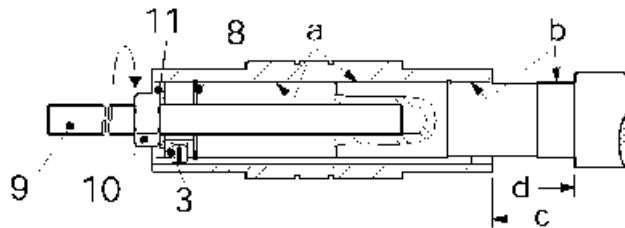
Feather key to DIN 6885-T1-"Form A"

Occurring loads must be considered for the selection of the material of the machine shaft.

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Assembly

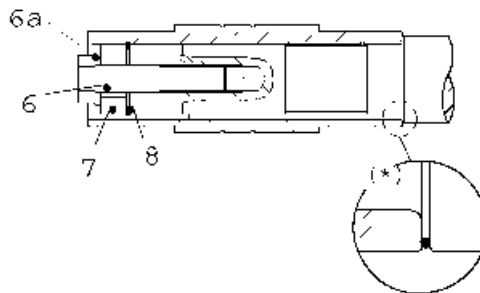
- Clean and degrease contact surfaces (a) and (b).
- Grease contact surfaces (a) and (b) with "Molykote D321R" or an equivalent lubricant.
- Slide the geared motor onto the driven shaft until the faces (c) and (d) are positioned opposite each other.
Fit a threaded rod (9), nut (10), puller ring (11), thrust washer (3) and a retaining ring (8) as required.
- Remove tools (3, 9, 10, 11).



Mounting

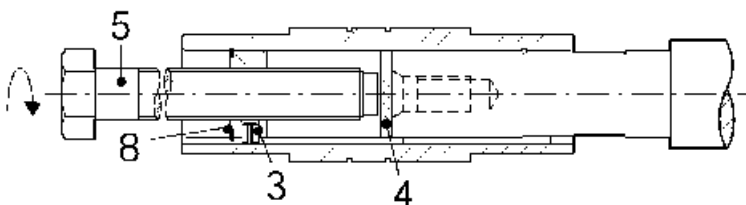
- Fit the mounting ring (7) against the retaining ring (8). Secure the machine shaft by means of mounting screw (6) and washer (6a).
- Fit protective cover.
- If the shaft is subject to external axial loads, follow the special guidelines provided on the dimensioned drawing.

(*) An O-ring is recommended to provide increased protection against moisture.



Disassembly

- Remove mounting screw (6), washer (6a), mounting ring (7) and retaining ring (8).
- Fit pulling washer (4) and thrust washer (3) and reinstall retaining ring (8).
- Fit pulling screw (5) in threaded center of thrust washer (3).
- Remove the geared motor from the drive shaft by tightening the screw (5).



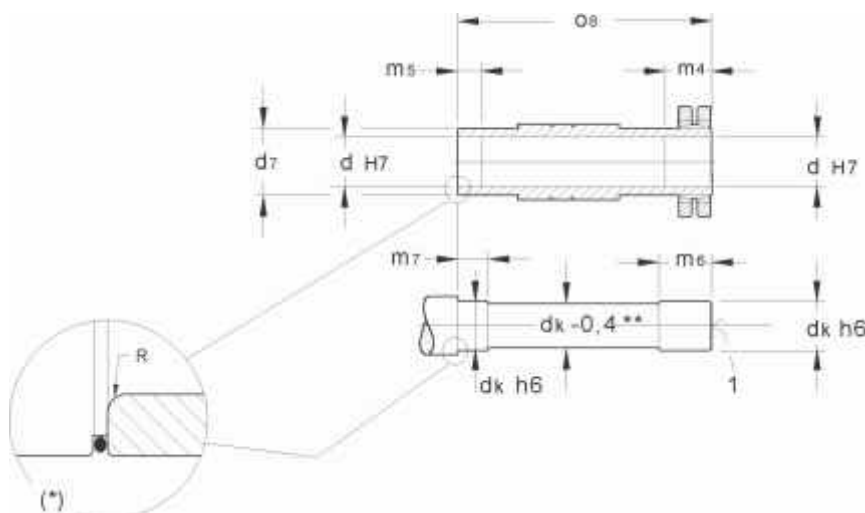
Note :

Items 3, 4, 5, 9, 10 and 11 do not belong to the standard scope of delivery, however, they are optionally available in the form of an assembly kit.

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6.3.14 Mounting shaft-mounted geared motors with hollow shaft with shrink-fit ring

Shaft dimensions



Size	d	dk	d ₇	m ₄	m ₅	m ₆	m ₇	o ₈	R
MP-01	30	30	45	31	20	36	25	146	3
MP-02	35	35	50	32	20	37	25	177	3
MP-03	40	40	55	38	20	43	25	208	3
MP-04	50	50	70	36	25	41	30	241	4
MP-05	65	65	85	41	40	46	30	281	4
MP-06	75	75	100	55	50	60	55	345	4
MP-07	95	95	120	65	60	75	70	405	4

1) Centering to DIN 332 "Form D" recommended for simple assembly/disassembly

(*) An O-ring is recommended to provide increased protection against moisture.

The dimensions apply to the hollow shaft.

** Recommended for simple mounting.

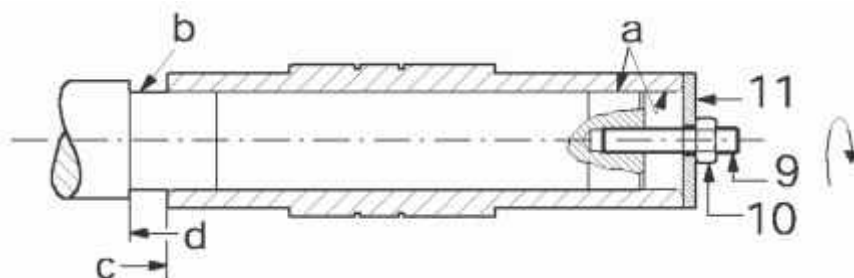
Occurring loads must be considered for the selection of the material of the machine shaft.

The shrink-fit ring supplied by Premium Stephan is ready for installation. Do not pull apart before initial assembly.

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Assembly

- Clean and degrease contact surfaces (a) and (b).
- Grease contact surface (b) - BUT ON NO ACCOUNT contact surface (a) - with "Molykote D321R" or an equivalent lubricant.
- Slide the geared motor onto the driven shaft until the faces (c) and (d) are positioned opposite each other. If necessary, fit a threaded rod (9), nut (10) and a thrust washer (11).
- Remove tools (9, 10, 11).



To prevent the shaft slipping, the screws must be tightened to the torque specified in the table below in order to be able to transmit the output torque specified on the type identification plate.

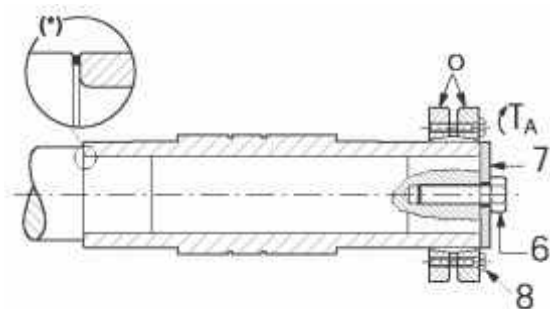
Mounting

- Install shrink-fit ring. Remove the spacer rings fitted between the outer rings (o) for transportation purposes.
IMPORTANT : The two outer rings (o) must be arranged plane-parallel during the assembly procedure and while tightening the screws.
- Use a torque wrench to tighten the screws (8) in stages one after the other until the specified tightening torque T_A (see table) is reached. Do not tighten the screws crosswise.

Size	T_A (Nm)
MP-01	12
MP-02	12
MP-03	12
MP-04	12
MP-05	30
MP-06	35
MP-07	59

CAUTION!

T60The screws for the shrink-fit ring must never be tightened if the shrink-fit ring is not fitted.



Securing in connection with axial load

A securing ring (7) and screw (6) must be fitted if the axial load is not taken up by the shoulder of the machine shaft.

Disassembly

- Release all screws (8) evenly by turning a quarter turn one after the other.
- Remove the shrink-fit ring from the hollow shaft.
- Remove the gear unit from the drive shaft.

Note : Items 6, 7, 9, 10 and 11 do not belong to the standard scope of delivery, however, they are optionally available in the form of an assembly kit.

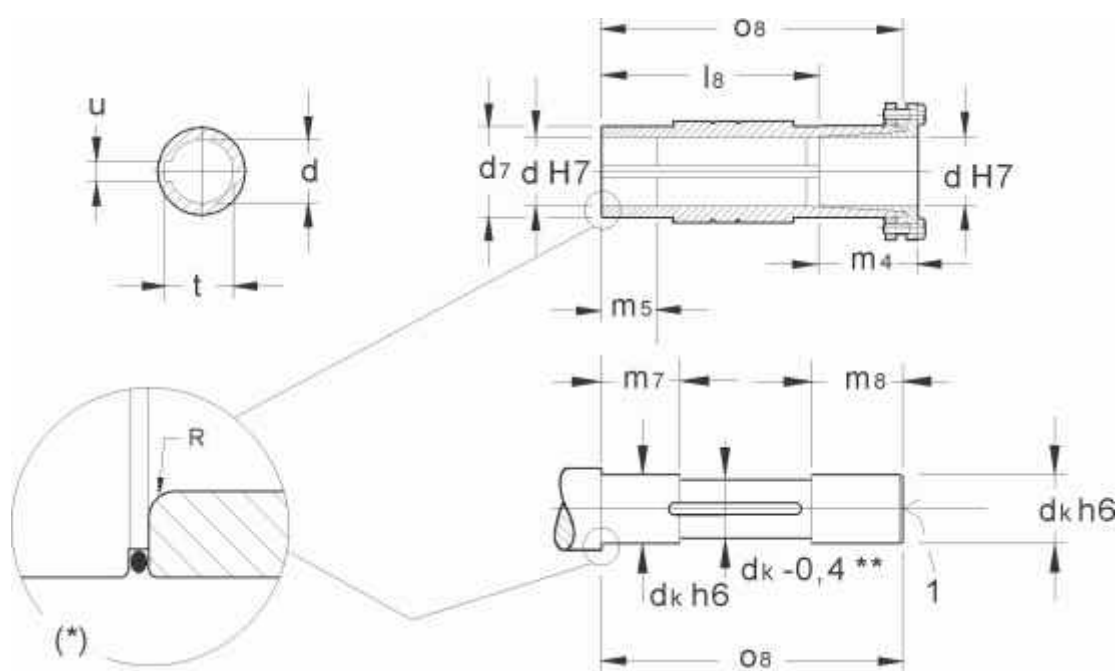
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Cleaning and lubricating

If reused, the removed shrink-fit rings need not be disassembled into individual parts for cleaning and lubricating purposes unless they are heavily soiled. After cleaning, grease the conical surfaces with "Molykote D321R" (or an equivalent, solid lubricant with a coefficient of friction of $\mu = 0.04$).

6.3.15 Mounting shaft-mounted geared motors with hollow shaft with conical taper bush

Shaft dimensions



Size	d	dk	d7	l8	m4	m5	m7	m8	o8	R	T	u
MP-04	50	50	70	174	66.5	30	40	70	228	4	53.8	14
MP-05	60	60	85	191	85	40	50	90	261	4	64.4	18
MP-06	70	70	100	243	91	70	80	80	322	4	74.9	20
MP-07	90	90	120	309	75.5	90	100	65	372	4	95.4	25

1) Centering to DIN 332 "Form D"

(*) An O-ring is recommended to provide increased protection against moisture.

The dimensions apply to the hollow shaft.

** Recommended for simple mounting.

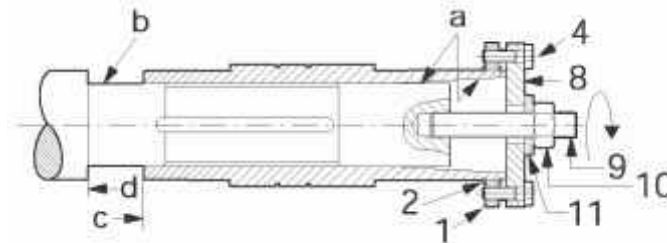
Occurring loads must be considered for the selection of the material of the machine shaft.

The Premium Stephan taper bush system is supplied separately.

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Assembly

- Clean and degrease contact surfaces (a) and (b).
- Grease contact surface (b) - BUT ON NO ACCOUNT contact surface (a) - with "Molykote D321R" or an equivalent lubricant.
- Fit support ring (1) either between the two shaft retaining rings (2) or between the shaft retaining ring (2) and the shoulder of the hollow shaft.
- Align the hollow shaft of the geared motor and the machine shaft. The feather key and keyway must be aligned opposite each other.
- Slide the geared motor onto the driven shaft until the faces (c) and (d) are positioned opposite each other. If necessary, fit a threaded rod (9), nut (10), washer (11) and a thrust washer (8). Secure the thrust washer with screws (4).
- Remove tools (8, 9, 10, 11).



To prevent the shaft slipping, the screws must be tightened to the torque specified in the table below in order to be able to transmit the output torque specified on the type identification plate.

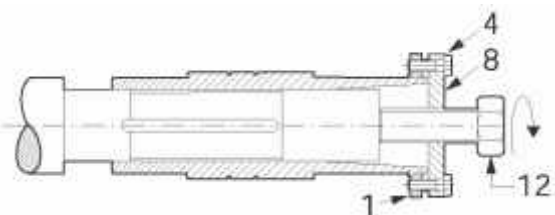
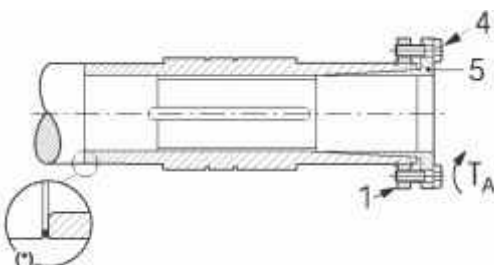
Mounting

- Fit conical clamping sleeve in hollow shaft without using force.
- Align through-holes in clamping sleeve with threaded holes in support ring (1), fit screws (4) and secure hand-tight.
- Use a torque wrench to tighten screws (4) in stages one after the other until the necessary tightening torque T_A (see table) is reached.
- Retighten screws after 24 hours of operation.
- Fit protective cover.

Size	T_A (Nm)
MP-04	15
MP-05	30
MP-06	30
MP-07	30

Disassembly

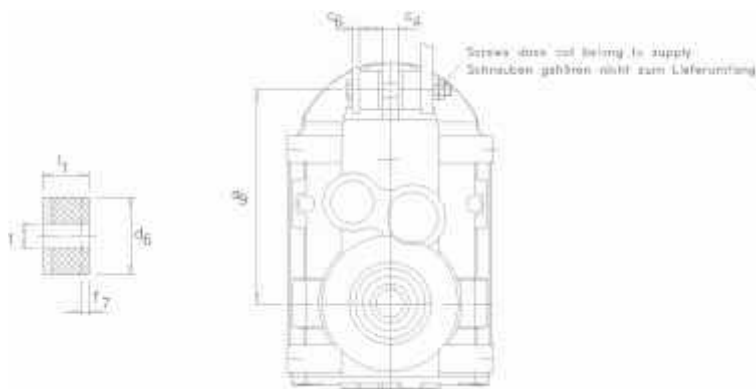
- Release all screws (4) evenly by turning a quarter turn one after the other.
- Remove taper bushing (5). If the taper bushing (5) does not release of its own accord, fit two bolts in the tapped holes and tighten them against the support ring (1).
- Secure thrust washer (8) with pin (4).
- Fit pulling screw (12) in threaded center of thrust washer (8).
- Tighten pulling screw (12) in order to remove the geared motor from the machine shaft.



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6.3.16 Torque support MP4

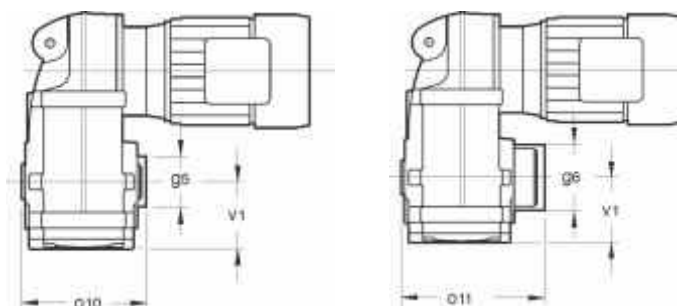
The reaction forces in connection with helical bevel gear unit motors that are used as slip-on gear units must be taken up by a torque support (optionally available) or by a flexible element (no rigid connection).



Size	a_9	c_4	c_6 min	d_1 +0.5	d_6	f_7	l_1
MP-01	158	12	5	12.5	40	1.6	20
MP-02	170	12	5	12.5	40	1.6	20
MP-03	218	16	5	12.5	40	2.5	20
MP-04	278	20	10	21	60	3.3	30
MP-05	346	26	10	21	60	4.3	30
MP-06	395	30	12	25	80	4	40
MP-07	485	36	12	25	80	6.3	40

Dimensions in mm / *approx. spring excursion at Mamax

6.3.17 Protection covers for MP4 output shafts



Size	Hollow Shaft			CONICAL DISK/SHRINK DISK		
	g_5	o_{10}	v_1	g_6	o_{11}	v_1
MP-01	86	135	78	86	160	78
MP-02	100	166	86	100	190	86
MP-03	110	195	104.5	110	225	104.5
MP-04	135	230	125	135	255	125
MP-05	165	265	151.5	165	300	151.5
MP-06	205	325	178	205	360	178
MP-07	225	380	200	225	435	200

The protection cover is not a part of the standard scope of delivery.

Notes

