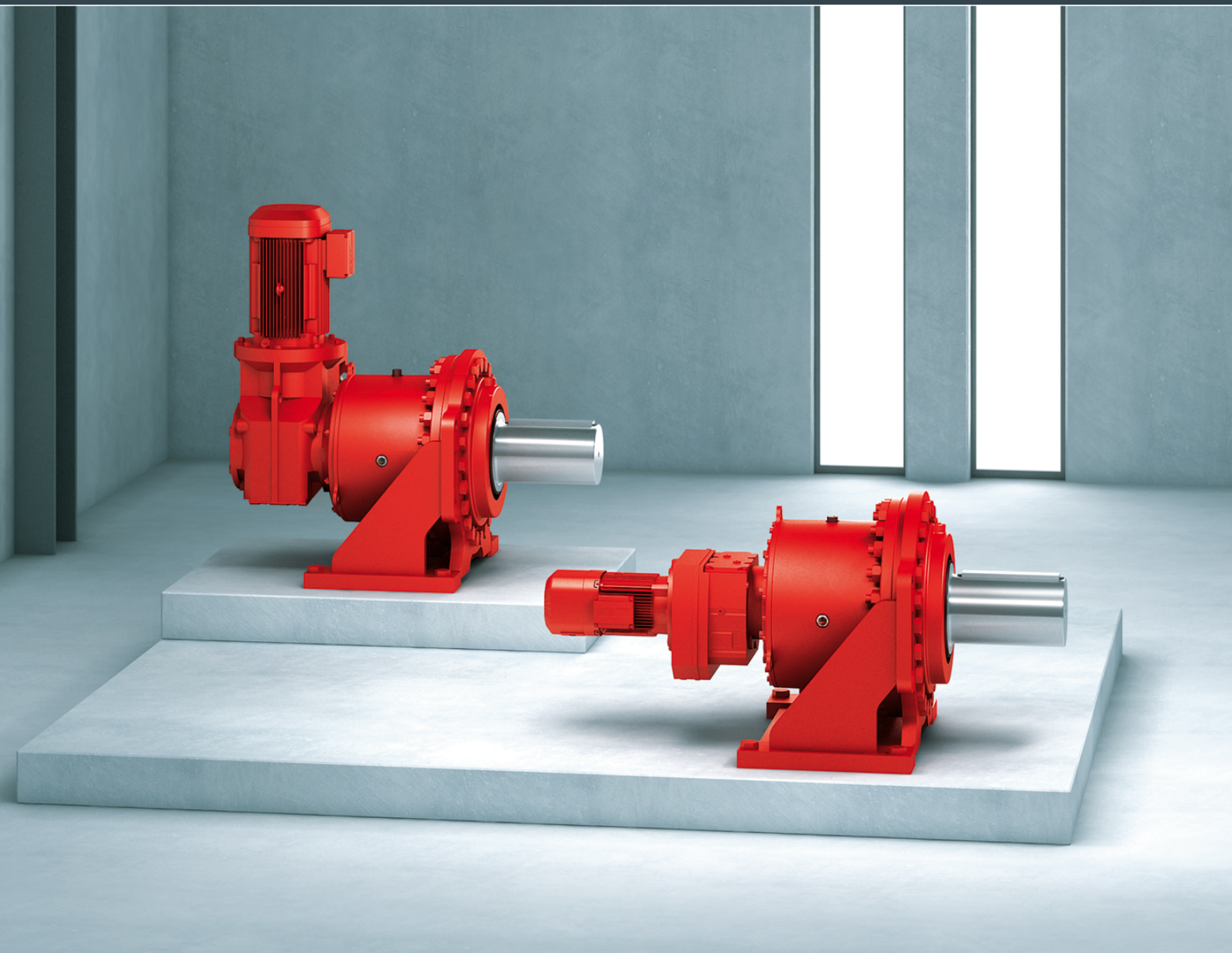




SEW
EURODRIVE

Catalog



Industrial Gear Units

P.002 - P.102 Series Planetary Gearmotors

Torque Classes from 24 – 631 kNm



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1 Introduction

1.1 The SEW-EURODRIVE group of companies

1.1.1 Global presence

Driving the world – with innovative drive solutions for all industries and for every application. Products and systems from SEW-EURODRIVE are used all over the world. Be it in the automotive, building materials, food and beverage or metal-processing industry – the decision to use drive technology "made by SEW-EURODRIVE" stands for reliability for both functionality and investment.

We are represented in the most important branches of industry all over the world: with 15 manufacturing plants and 77 Drive Technology Centers worldwide as well as our customer support, which we consider an integrative service that continues our commitment to outstanding quality.

1.1.2 Always the right drive

The SEW-EURODRIVE modular concept offers millions of combinations. This wide selection enables you to choose the correct drive for all applications, each based on the required speed and torque range, available space, and ambient conditions. Gear units and gearmotors offering a unique and finely tuned performance range and the best economic prerequisites to meet your drive requirements.

The modular DR.. motor series includes the energy-efficient motor types IE1 to IE4 and was designed and constructed with all worldwide requirements for energy efficiency classes in mind. The DR.. motor easily meets the requirements for approval and certification in all relevant countries. The energy-efficient drives achieve the highest efficiency in combination with SEW-EURODRIVE gear units.

The gearmotors are electronically enhanced by MOVITRAC® frequency inverters, MOVIDRIVE® drive inverters, and MOVIAxis® multi-axis servo inverters – a combination that blends perfectly with the existing SEW-EURODRIVE program. As is the case with the mechanical systems, all development, production, and assembly is carried out entirely by SEW-EURODRIVE. In combination with our drive electronics, these drives provide the utmost in flexibility.

Products of the servo drive system, such as low backlash servo gear units, compact servomotors, or MOVIAxis® multi-axis servo inverters ensure precision and dynamics. From single-axis or multi-axis applications to synchronized process sequences, servo drive systems from SEW-EURODRIVE enable flexible and customized implementation of your applications.

For economical, decentralized installations, SEW-EURODRIVE offers components from its decentralized drive system, such as MOVIMOT®, the gearmotor with integrated frequency inverter, or MOVI-SWITCH®, the gearmotor with integrated switching and protection function. SEW-EURODRIVE has developed hybrid cables to provide cost-effective functional solutions, irrespective of the system philosophy or scope. The latest developments from SEW-EURODRIVE: DRC.. electronic motor, MOVIGEAR® mechatronic drive system, MOVIFIT® decentralized drive controller, MOVIPRO® decentralized drive, positioning, and application controller, as well as MOVITRANS® system components for contactless energy transfer.

Power, quality, and robustness combined in a single standard product: with SEW-EURODRIVE, powerful movements are delivered by industrial gear units with high torques. The modular concept once again ensures optimum adaptation of industrial gear units to meet a wide range of different applications.

1.1.3 Your ideal partner

Its global presence, extensive product range and broad spectrum of services make SEW-EURODRIVE the ideal partner for the machinery and plant construction industry when it comes to providing drive systems for demanding drive tasks in all industries and applications.

1.2 Products and systems from SEW-EURODRIVE

The products and systems by SEW-EURODRIVE are divided into the following product groups:

- Industrial gear units
- Gearmotors and frequency inverters
- Servo drive systems
- Decentralized drive systems
- MAXOLUTION®

Products and systems used in applications of several groups are listed in a separate group entitled "products and systems covering several product groups". The following tables indicate the products and systems included in the respective product group:

Industrial gear units
• X, MC, ML series helical and bevel-helical gear units • P002 – 102 series planetary gear units • XP130 – 250 series planetary gear units • P-X series planetary bevel-helical gear units • Application solutions with connections – Girth gears – Swing base – Gearmotor – Motor – Coupling – Brake – Lubrication system For conveyor drives, bucket conveyors, agitators, cooling towers, crane systems, and much more

Gearmotors and frequency inverters		
Gear units / gearmotors	Motors	Frequency inverters
• Helical gear units / helical gearmotors • Parallel-shaft helical gear units / parallel-shaft helical gearmotors • Helical-bevel gear units / gearmotors • Helical-worm gear units / helical-worm gearmotors • SPIROPLAN® right-angle gearmotors • EMS drives • Geared torque motors • Pole-changing gearmotors • Variable-speed gear units / variable-speed gearmotors • Aseptic gearmotors • Explosion-proof gear units/ gearmotors • Explosion-proof variable-speed gear units / variable-speed gearmotors	• Asynchronous AC motors / AC brakemotors • Pole-changing AC motors / AC brakemotors • Energy-efficient motors • Explosion-proof AC motors / AC brakemotors • Torque motors • Single-phase motors / single-phase brakemotors • Asynchronous linear motors	• MOVITRAC® frequency inverters • MOVI4R-U® frequency inverters • MOVIDRIVE® drive inverters • Control, technology and communication options for inverters

Servo drive systems		
Servo gear units / gearmotors	Servomotors	Servo drive inverters / servo inverters
• Low backlash planetary servo gear units / planetary gearmotors • Low backlash helical-bevel servo gear units / helical-bevel gear units • R, F, K, S, W gear units / gearmotors • Explosion-proof servo gear units / servo gearmotors	• Asynchronous servomotors / servo brakemotors • Synchronous servomotors / servo brakemotors • Explosion-proof servomotors / servo brakemotors • Synchronous linear motors	• MOVIDRIVE® servo drive inverters • MOVIAXIS® multi-axis servo inverter • Control, technology and communication options for servo drive inverters and servo inverters

Decentralized drive systems		
Decentralized drives	Communication and installation	Contactless energy transfer system
• DRC.. electronic motor / MOVIGEAR® mechatronic drive systems – DBC – Direct Binary Communication – DAC – Direct AS-Interface Communication – DSC – Direct SBus Communication – SNI – Single Line Network Installation • MOVIMOT® gearmotors with integrated frequency inverter • MOVIMOT® motors / brakemotors with integrated frequency inverter • MOVI-SWITCH® gearmotors with integrated switching and protection functions • MOVI-SWITCH® motors / brakemotors with integrated switching and protection function • Explosion-proof MOVIMOT® and MOVI-SWITCH® gearmotors	• Fieldbus interfaces • Field distributors for decentralized installation • MOVIFIT® product range – MOVIFIT® FDC for controlling MOVIGEAR® and DRC.. drive units – MOVIFIT® MC for controlling MOVIMOT® drives – MOVIFIT® SC with integrated electronic motor switch – MOVIFIT® FC with integrated frequency inverter • MOVIPRO® product range – MOVIPRO® SDC decentralized drive and positioning control	• MOVITRANS® system – Stationary components for energy supply – Mobile components for energy consumption – Line cables and installation material

MAXOLUTION®
• MAXOLUTION® packages for predefined application solutions • MAXOLUTION® systems for customer-specific system solutions and plants

Products and systems covering several product groups
• Operator panels • MOVI-PLC® drive-based control system • Components of the type "functional safety" • Diagnostic units

In addition to its products and systems, SEW-EURODRIVE offers a comprehensive range of services. These include:

- Technical consulting
- User software
- Seminars and training
- Extensive technical documentation
- Worldwide customer service

Visit our website at

→ **www.sew-eurodrive.com**

The website provides comprehensive information and services.

1

1.3 Product names and trademarks

All product names included in this documentation are trademarks or registered trademarks of the respective titleholders.

1.4 Copyright notice

© 2016 SEW-EURODRIVE. All rights reserved. Unauthorized reproduction, modification, distribution or any other use of the whole or any part of this documentation is strictly prohibited.

2 Product description and overview of types

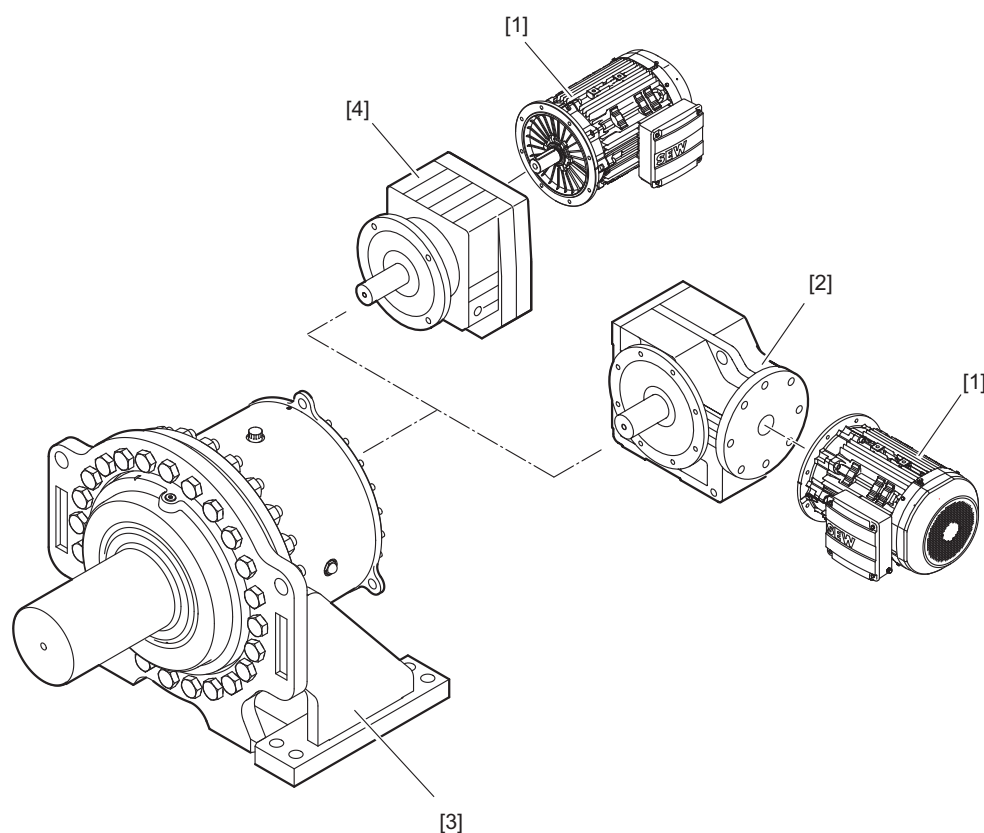
Planetary gearmotors are a combination of the following:

- P.. planetary gear unit output stage
- KF../K.. or RF.. primary gear unit
- Mount-on components: Motor, coupling, adapter, and backstop

There are 11 sizes of planetary gear units with rated torques from 24830 Nm to 631300 Nm.

The load distribution to several planet wheels results in a significantly higher power density and consequently in smaller dimensions compared to helical and bevel-helical gear units.

The following figure shows a sample combination of a planetary gear unit, a primary gear unit and a motor.



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- | | |
|-----|--|
| [1] | Motor |
| [2] | KF../K.. Helical-bevel gear unit (flange-mounted design) |
| [3] | P.. Planetary gear unit |
| [4] | RF.. Helical gear unit (flange-mounted design) |

2.1 Design features

Planetary gear units ...

- can transmit high torques
- are very compact
- offer a high degree of torsional rigidity

Primary gearmotors ...

- offer a large variance on the input side
- are variable in the gear reduction range
- can be combined with the planetary gear unit in helical or bevel designs

2.2 Overview of advantages

- Perfectly matched units (gear unit and motor)
- Large range of options thanks to the SEW-EURODRIVE modular concept
- Short, compact design because there is no need for couplings and adapter flanges
- Standardized units, which means excellent price/performance ratio and short delivery times

2.3 Application areas

Planetary gearmotors are mainly used in applications where low output speeds and high torques are required.

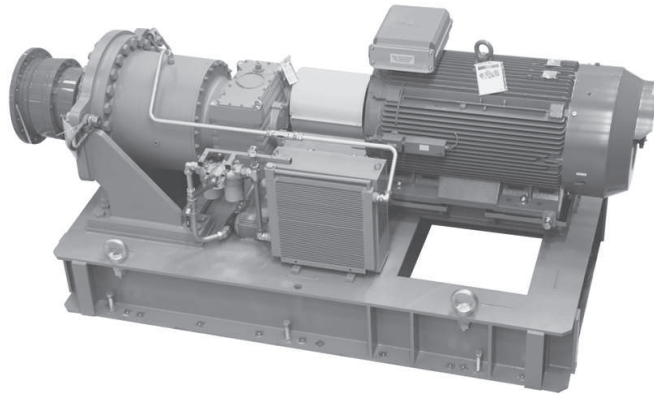
For example:

- For drying processes in the construction materials industry
- For filling processes in the cement industry
- For slow-running material processing systems, e.g. mixers, rotary filters
- For all branches of industry with similar requirements
- For conveyor belts, e.g. apron conveyors
- In the food industry

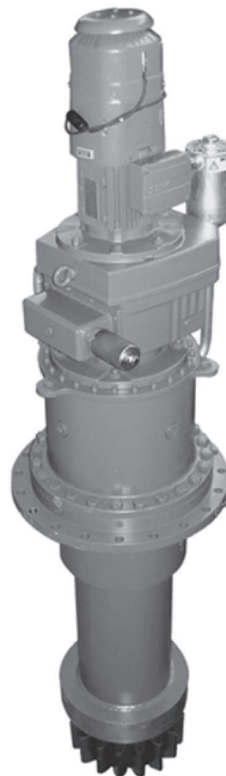
2.4 Customer-specific application solutions

The following examples show application-specific solutions.

- Complete drive package consisting of
 - 2-stage planetary gear unit including helical preliminary stage
 - Motor with coupling
 - Oil-air cooling system



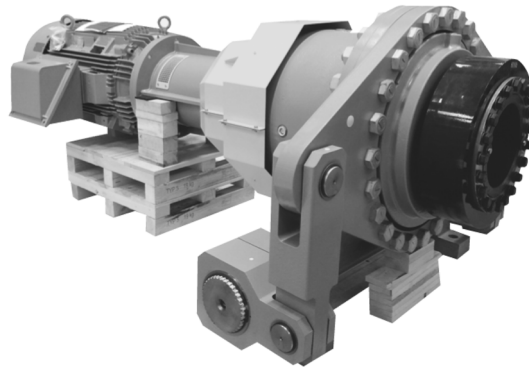
- SEW-EURODRIVE slewing gear drive: P.RF planetary gear unit with extended output shaft with pinion



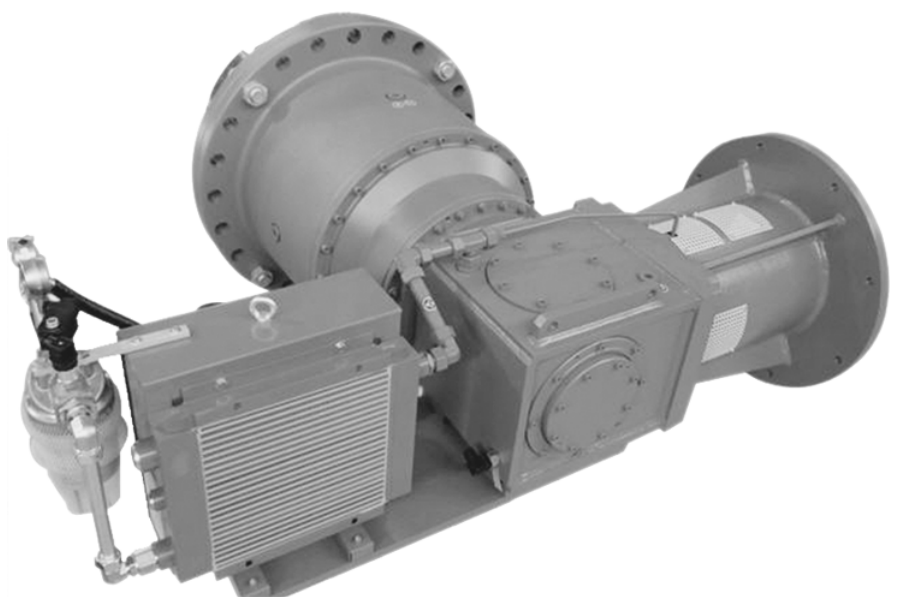
- 3-stage planetary gear unit with:

- Hollow shaft and shrink disk connection
- Torque arm including torsion bar
- Axial fan
- Motor adapter with direct mounted motor

2



- Planetary gear unit including helical-bevel gear unit with:
 - Hollow shaft and shrink disk connection
 - Oil-air cooling system
 - Motor adapter suitable for direct mounting of an IEC motor



2.5 General information

2.5.1 Important information

Note the following points:



INFORMATION

- The illustrations in the catalog are examples. Final dimensions are available from SEW-EURODRIVE on request.
- The specified lubricant quantities are guide values only. Use the marks on the oil dipstick or oil level glass to determine the oil level.
- On delivery, the planetary gear units are ready for operation, but not filled with oil. However, it is possible to have the gear units delivered filled with oil. The RF../KF../K.. primary gear units are filled with lubricant at the factory depending on the mounting position.
- Oil viscosity and grade must comply with those specified on the nameplate.
- The specified weights are guide values. The exact gear unit weight is given in the order-specific dimension sheet. The nameplate shows the weight of the basic gear unit including all mounted gear unit options.
- The buyer must provide protection against unintentional contact with moving parts. The applicable safety regulations of the country in which the unit will be used are to be followed.

2.5.2 Power and torque

The power and torque values listed in the catalogs apply to standard design and standard lubrication of the gearmotors under normal ambient conditions.

Please note that the motor power shown in the selection tables for gearmotors is subject to selection. However, the output torque and the desired output speed are essential for the application and need to be checked.

2.5.3 Speeds

The quoted output speeds of the gearmotors are recommended values. You can calculate the rated output speed based on the rated motor speed and the gear unit ratio. Please note that the actual output speed depends on the motor load and the supply system conditions.

2.5.4 Noise

The noise levels of all gearmotors and motors (brakemotors) are well within the maximum permitted noise levels set forth in ISO 8579-1 for gear units and EN 60034 for motors.

2.5.5 Paint

Gearmotors and motors (brakemotors) are painted in "blue gray"/RAL 7031 as per DIN 1843 as standard. Special paint coatings are available on request.

2.5.6 Weight information

INFORMATION



Please note that all weights shown in the catalog exclude the oil fill because the lubricant fill quantity depends on the mounting position.

2.5.7 Air admission and accessibility

The gearmotors/brakemotors must be mounted on the driven machine in such a way that both axially and radially there is enough space left for unimpeded air admission and for the purposes of maintenance of the brake. Also refer to the notes in the motor dimension sheets.

2.5.8 Primary gearmotor

All the possibilities and restrictions specified in the SEW-EURODRIVE "Gearmotors" catalog apply.

2.5.9 Brakemotors

On request, motors and gearmotors can be supplied with an integrated mechanical brake. The SEW-EURODRIVE brake is an electromagnetic disk brake with a DC coil that releases electrically and brakes using spring force. Due to its operating principle, the brake is applied if the power fails. It meets the basic safety requirements. The brake can also be released mechanically if equipped with manual brake release. For this purpose, the brake is supplied with either a hand lever with automatic reset or an adjustable set screw. The brake is controlled by a brake controller that is either installed in the motor wiring space or in the control cabinet.

A characteristic feature of the brakes is their extremely short design. The brake end-shield is a part of both the motor and the brake. The integrated construction of the SEW-EURODRIVE brakemotor permits particularly compact and sturdy solutions.

2.5.10 International markets

Upon request, we deliver motors with connection requirements according to CSA and NEMA guidelines (UL listed).

For the Japanese market, we offer motors conforming to JIS standard. Contact your sales representative to assist you in such cases.

2.6 Sizes, torque ratings

In addition to the already known gear unit project planning with infinite fatigue strength (referring to gearing according to DIN 3990), it is now also possible to select a gear unit with defined service life. This results in a size-specific torque increase. For gear units in explosion-proof design only a gear unit project planning with infinite fatigue strength is possible.

The nominal output torque ratings are listed in the table below.

The fields marked in gray indicate ranges in which project planning with defined service life is not possible.

Size	Service life factor f_{LC}											$M_{N2 \text{ Lim}}$ Nm
	≤ 7.5	≤ 15	≤ 25	≤ 30	≤ 35	≤ 45	≤ 52.5	≤ 70	≤ 95	≤ 107.5	$> 107,5^{1)}$	
	M_{N2}											
P.002	29 200	26 300									24 830	49 660
P.012	46 200	41 600	38 500								36 810	73 620
P.022	64 200	60 100	55 600	54 200	54 200	54 200	54 200	54 200	54 200		51 190	102 380
P.032	86 800	84 900	78 600	76 600	76 600	76 600	76 600	76 600	76 400	73 700	69 620	139 240
P.042	111 000	111 000	103 200								100 170	200 340
P.052	140 600	134 500									124 060	248 120
P.062	209 100	201 400									185 660	371 320
P.072	274 600	274 600	264 500	257 300	256 400	256 400	256 400				245 660	491 320
P.082	397 100	397 100	397 100	383 500							359 400	718 800
P.092	513 900	513 900	488 900	476 200	476 200	446 300					423 000	846 000
P.102	631 300	630 800	572 300	541 800	517 300						500 000	1 000 000

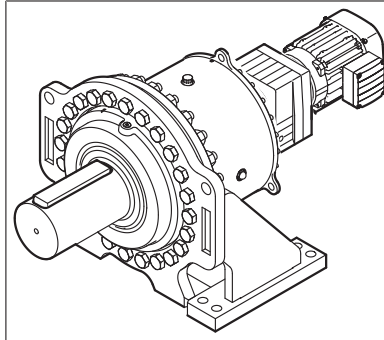
1) Gearing with infinite fatigue strength (referring to DIN 3990)

2.7 Basic designs of planetary gearmotors

2.7.1 P..RF.. helical-planetary gearmotors

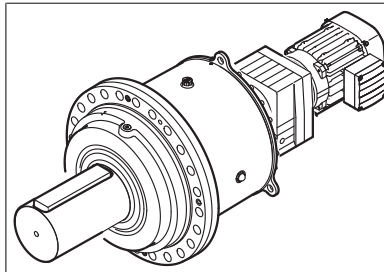
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Planetary gearmotors are available in 3 mounting types. Foot-mounted design, flange-mounted design, and design with torque arm:



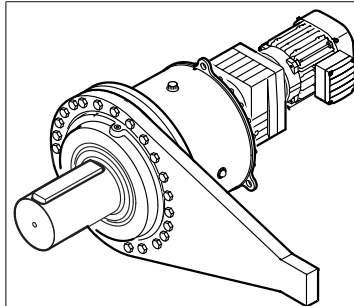
P..RF.. DR..

Helical-planetary gearmotor in foot-mounted design



PF..RF.. DR..

Helical-planetary gearmotor in flange-mounted design



PF..RF.. DR..

Helical-planetary gearmotor in flange-mounted design with torque arm

INFORMATION

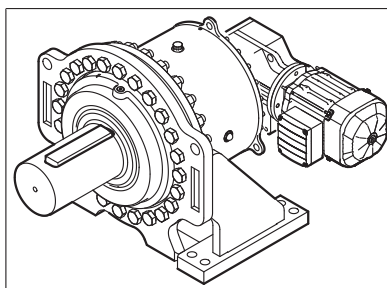


The various mounting types can be combined with the available output shaft types.

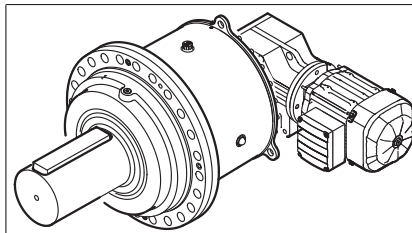
For information on the available output shaft types, refer to chapter "Output shaft variants" (→ 20). The mounting design "torque arm" can be combined with the output shaft type "hollow shaft with shrink disk" as standard. Please contact SEW-EURODRIVE for information on deviating combinations.

2.7.2 P..KF../P..K.. bevel-planetary gearmotors

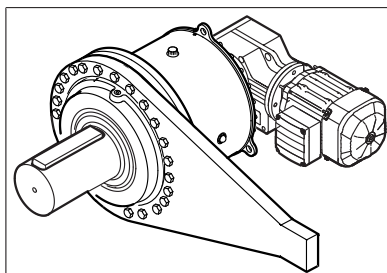
Planetary gearmotors are available in 3 gear unit designs. Foot-mounted design, flange-mounted design, and design with torque arm:

**P..KF.. DR../P..K.. DR..**

Bevel-planetary gearmotor in foot-mounted design

**PF..KF.. DR../PF..K.. DR..**

Bevel-planetary gearmotor in flange-mounted design

**PF..KF.. DR../PF..K.. DR..**

Bevel-planetary gearmotor in flange-mounted design

INFORMATION

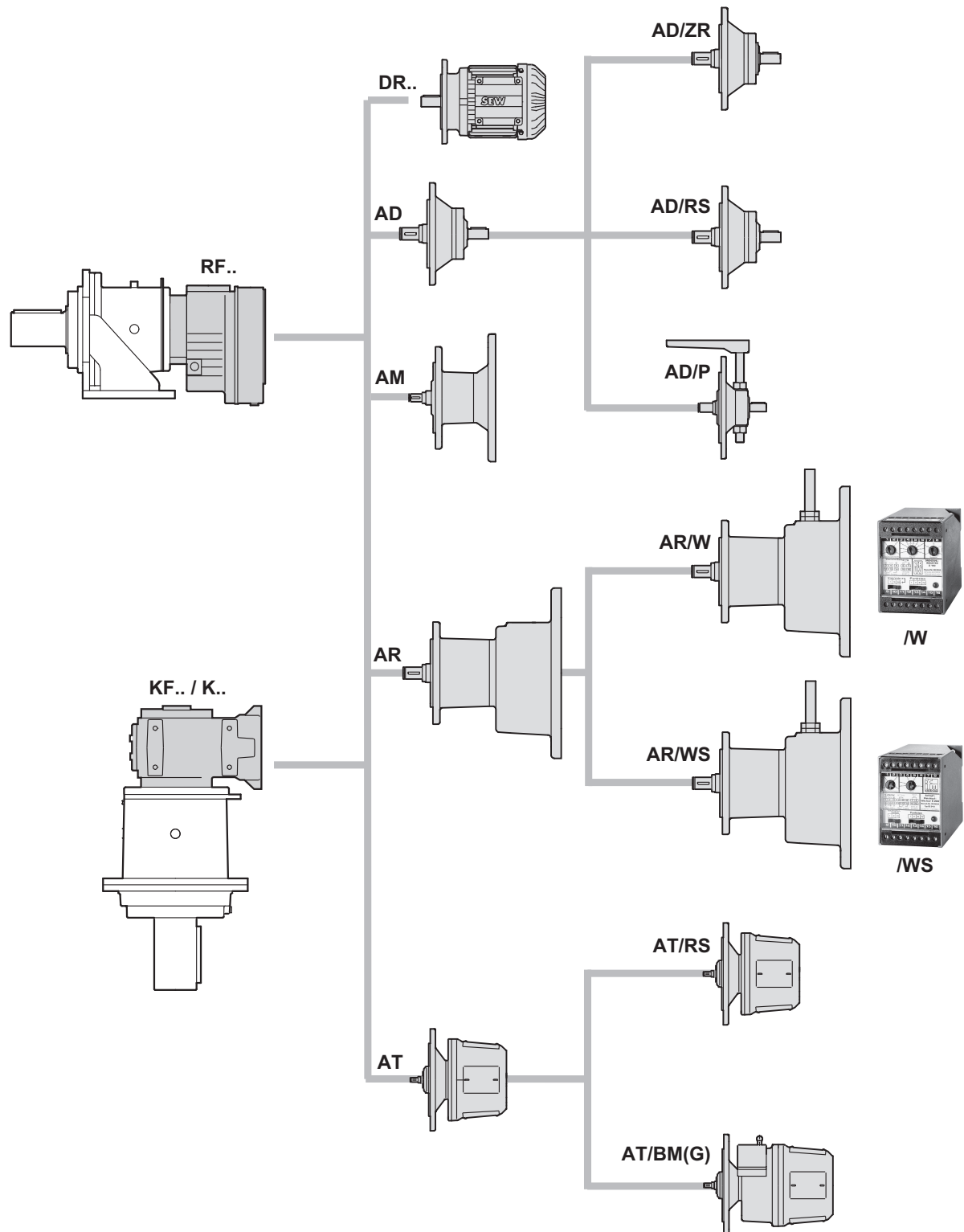
The various mounting types can be combined with the available output shaft types.

For information on the available output shaft types, refer to chapter "Output shaft variants" (→ 20). The mounting design "torque arm" can be combined with the output shaft type "hollow shaft with shrink disk" as standard. Please contact SEW-EURODRIVE for information on deviating combinations.

2.7.3 Components on the input side

The following figure shows the components on the input side.

2

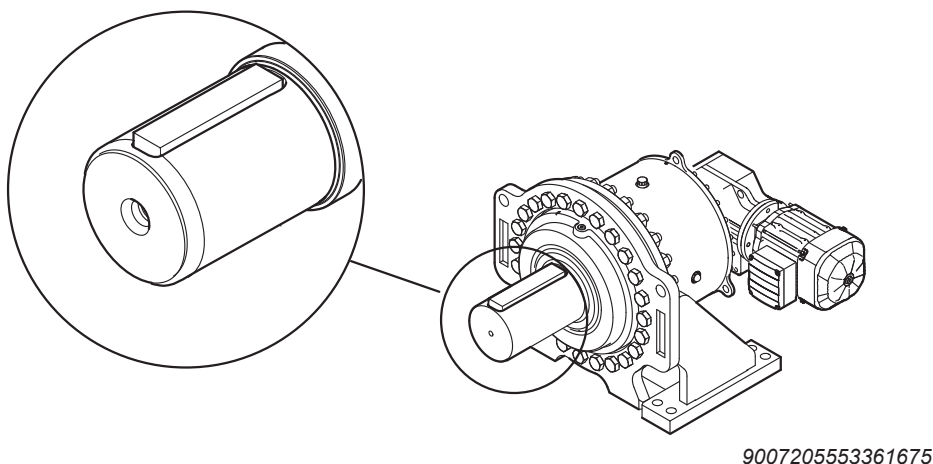


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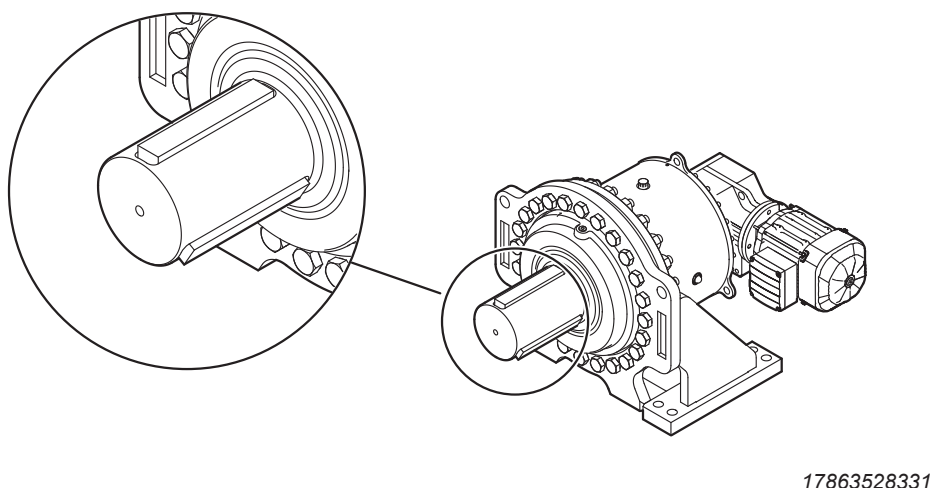
2.7.4 Output shaft variants

The [LSS] output shaft of the planetary gearmotor can have the following design as standard:

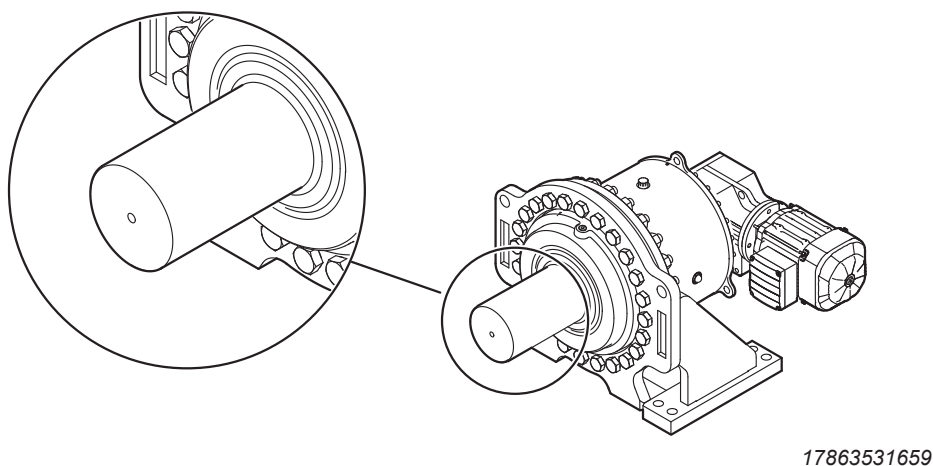
P.. Solid shaft with key



P.. Solid shaft with 2 keys

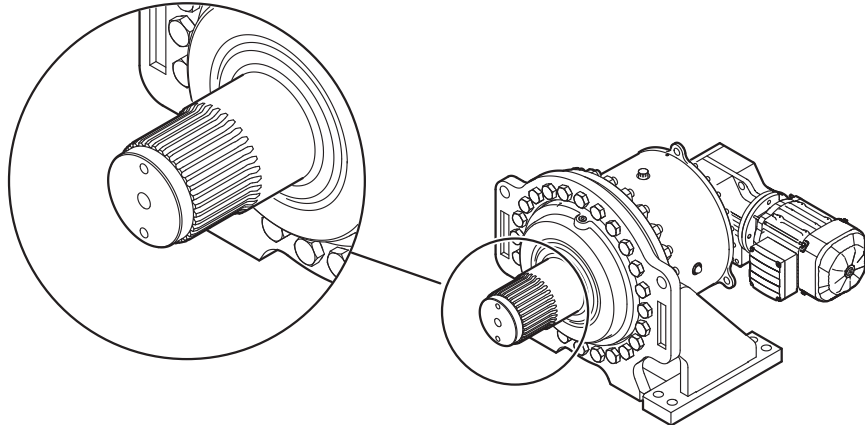


PR.. Smooth solid shaft



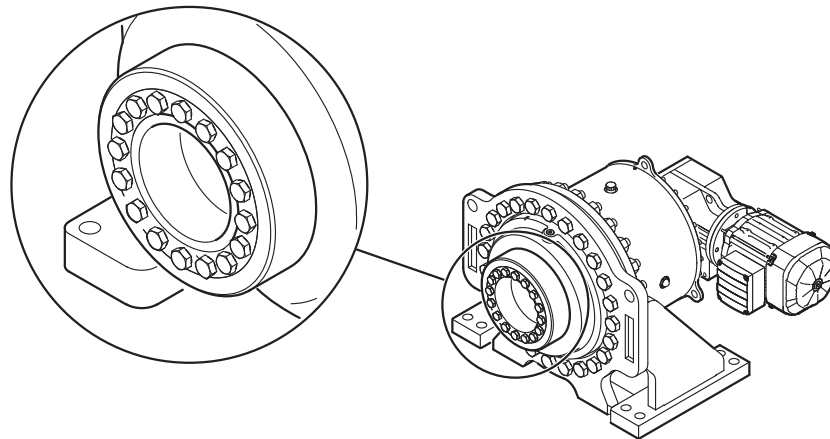
PL.. Splined solid shaft

2



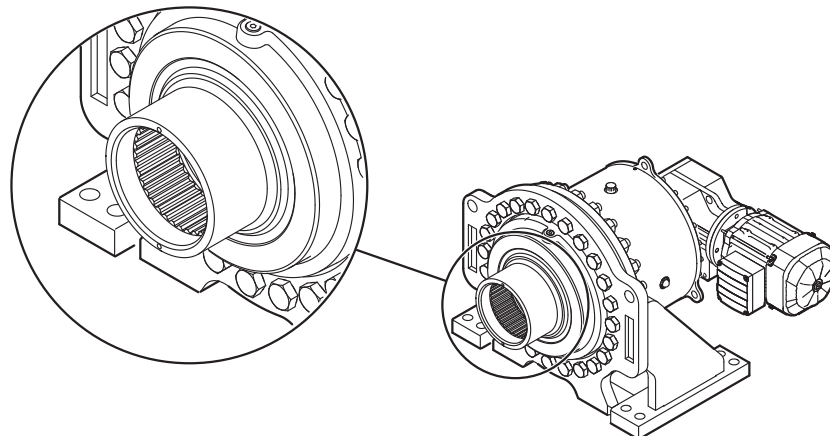
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PH.. Hollow shaft with shrink disk



9007205553363339

PV.. Splined hollow shaft



17863717515

2.8 Type designations for gear units and options

2.8.1 P..RF.. helical-planetary gear units

Gear unit design	Abbreviation	Meaning
Foot-mounted design (solid shaft)	P..RF..	• Solid shaft with key • Solid shaft with 2 keys (optional)
	PR..RF..	Smooth solid shaft
	PL..RF..	Splined solid shaft
Flange-mounted design (solid shaft)	PF..RF..	• Solid shaft with key • Solid shaft with 2 keys (optional)
	PRF..RF..	Smooth solid shaft
	PLF..RF..	Splined solid shaft
Foot-mounted design (hollow shaft)	PH..RF..	Hollow shaft with shrink disk
	PV..RF..	Splined hollow shaft
Flange-mounted design (hollow shaft)	PHF..RF..	Hollow shaft with shrink disk
	PVF..RF..	Splined hollow shaft

2.8.2 P..KF../P..K.. bevel-planetary gear unit

Gear unit design	Abbreviation	Meaning
Foot-mounted design (solid shaft)	P..KF../P..K..	• Solid shaft with key • Solid shaft with 2 keys (optional)
	PR..KF../PR..K..	Smooth solid shaft
	PL..KF../PL..K..	Splined solid shaft
Flange-mounted design (solid shaft)	PF..KF../PF..K..	• Solid shaft with key • Solid shaft with 2 keys (optional)
	PRF..KF../PRF..K..	Smooth solid shaft
	PLF..KF../PLF..K..	Splined solid shaft
Foot-mounted design (hollow shaft)	PH..KF../PH..K..	Hollow shaft with shrink disk
	PV..KF../PV..K..	Splined hollow shaft
Flange-mounted design (hollow shaft)	PHF..KF../PHF..K..	Hollow shaft with shrink disk
	PVF..KF../PVF..K..	Splined hollow shaft

2.8.3 Additional features of gear units

Designation	
/T	With torque arm

2

2.8.4 Input shaft assembly

Designation	
AD	Input shaft assembly
.../P	With motor platform
.../RS	With backstop
.../ZR	With centering shoulder

2.8.5 Adapters

Designation	
AM	Adapter for mounting IEC/NEMA motors
AQ	Adapter for mounting servomotors
AT	Adapter with hydraulic start-up coupling
.../RS	and backstop
.../BM(G)	and disk brake
.../HF	With manual brake release, lockable
.../HR	With manual brake release with automatic re-engaging function

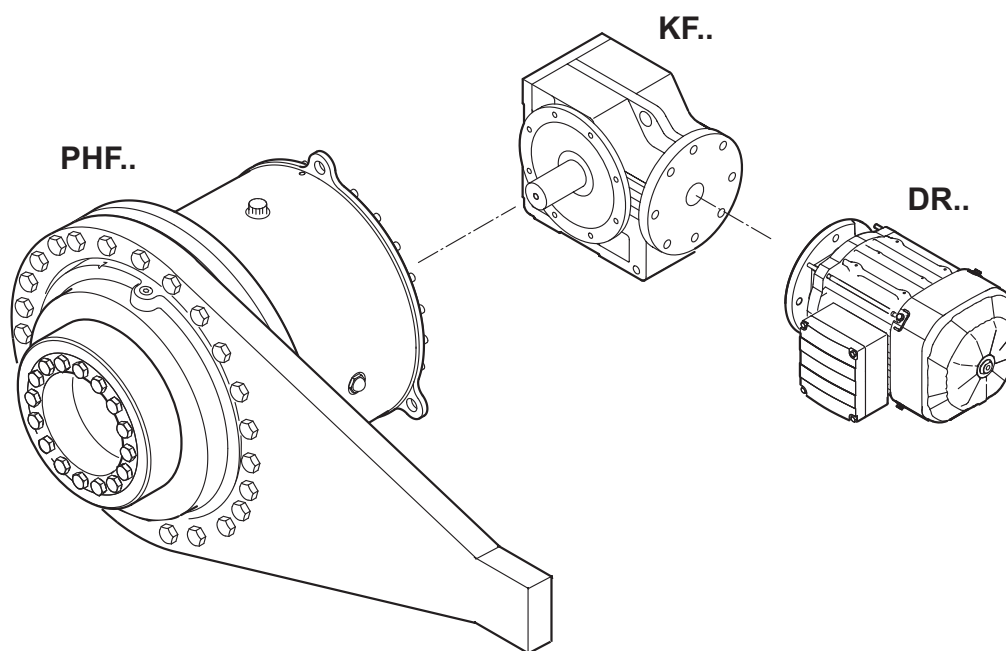
2.9 Type designation

The type designation of the gearmotor starts from the component on the output end.

2.9.1 Example: Type designation for a PHF.. planetary gear unit with KF.. primary gear unit

The type designation of the gear unit is structured as follows:

Example: PHF012/T KF77 DRN112M4		
Planetary gear unit	P	Gear unit type
	H	Hollow shaft
	F	Flange-mounted design
	012	Gear unit size
	/T	Torque arm
Primary gear unit	KF	Series
	77	Gear unit size
Motor	DRN..	Series
	112M4	Size + number of poles



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2.10 Nameplate

2.10.1 Planetary gear units

The following example shows the structure of the nameplate.

SEW-EURODRIVE						76646 Bruchsal/Germany	
Typ		PHF012KF87DRN112M4/BE5/TF/C					
Nr.		01.7346341401.0001.16					
		Min	Norm	Max	i	1433.00	
PK1	kW	1.20	3.58	3.5	F _s	1.12	
MK2	Nm	32768	32768	32768	PM	kW 4.00	
n1	r/min	482	1464	1445	Ta	°C 0...40	
n2	r/min	0.34	1	1	1743 897 7 DE		
IM M1 F1							
Made in Germany							
					Gewicht kg	415	Jahr 2016
 CLP HC 680 Synth.Öl					~ 6.8 L		

18588813963

Type		Type designation
No.		Production number
P _{K1}	kW	Operating power on the input shaft (HSS)
M _{K2}	Nm	Gear unit output torque
n ₁	rpm	Input speed (HSS)
n ₂	rpm	Output speed (LSS)
Min.		Operating point at minimum speed
Norm.		Normal operating point
Max.		Operating point at maximum speed
i		Exact gear unit ratio
F _s		Service factor
PM	kW	Nominal motor power
TA	°C	Deviation from standard temperature range (–20 °C – +40 °C)
Weight	kg	Gear unit weight
Greasing points		Number of regreasing points
		Oil grade and viscosity class/approx. oil quantity
Year		Year of manufacture
IM		Mounting position and mounting surface

2.10.2 KF.. primary gear units

The following example shows the structure of the nameplate.

[1]

[2]

SEW-EURODRIVE

76646 Bruchsal/Germany

KF127 AD4

01.7207046941.0001.16

na r/min 1460/23

Ma max Nm 9980.0

IM M1A

i 62.6

kg 498.00

Made in Germany

CLP 220 Miner.Öl / 21.0 l

641 591 1

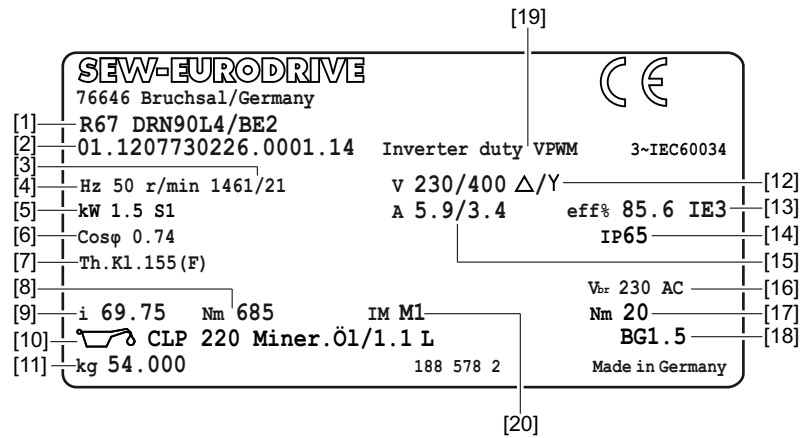
18014404889304459

Type		Type designation
[1]		Type designation
[2]		Serial number of primary gear unit
Pe	kW	Input power of the gear unit
Ma max	Nm	Output speed
na	rpm	Input/output speed
IM		Mounting position
i		Gear ratio
kg	kg	Weight

2.10.3 Primary gearmotor

The following figure shows an example of the nameplate of a DRN.. gearmotor.

2



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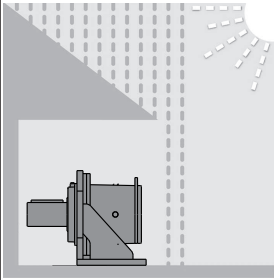
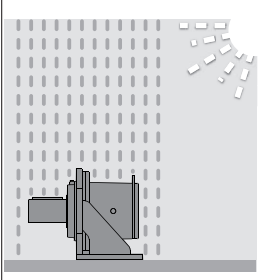
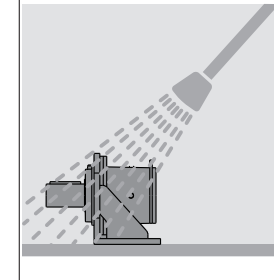
[1]		Type designation gearmotor
[2]		Serial number
[3]	min ⁻¹	Rated speed of the motor / speed of the gear unit output shaft
[4]	Hz	Nominal frequency
[5]	kW	Rated power/operating mode
[6]		Power factor
[7]		Thermal class
[8]	Nm	Output torque
[9]		Gear unit ratio
[10]		Oil type and oil fill volume
[11]	kg	Weight
[12]	V	Nominal voltage
[13]		Efficiency and energy efficiency class
[14]		Degree of protection according to IEC 60034-5
[15]		Rated current
[16]	V	Brake voltage
[17]	Nm	Nominal braking torque
[18]		Brake control
[19]		Suitability for inverter operation
[20]		Mounting position

2.11 Corrosion and surface protection

2.11.1 OS surface protection

Gear units are available with surface protection OS1, OS2, and OS3.

The following table provides an overview of coating and surface protection systems.

SEW-EURODRIVE design	OS1 Low environmental impact	OS2 Medium environmental impact	OS3 High environmental impact
Used as surface protection with typical ambient conditions Corrosivity categories DIN EN ISO 12944-2			
	Suited for environments prone to condensation and atmospheres with low humidity or contamination, such as outdoor applications under roof or with protection, unheated buildings where condensation can build up. According to corrosivity category: C2 (low)	Suitable for environments with high humidity or mean atmospheric contamination, such as applications outdoors subject to direct weathering. According to corrosivity category: C3 (moderate)	Suitable for environments with high humidity and occasionally severe atmospheric and chemical contamination. Occasionally acidic or caustic wet cleaning. Also for applications in coastal areas with moderate salt load. According to corrosivity category: C4 (high)
Sample applications	• Systems in saw mills • Agitators and mixers	• Applications in gravel plants • Cableways	• Port cranes • Sewage treatment plants • Mining applications
Condensation test ISO 6270	120 h	120 h	240 h
Salt spray test ISO 7253	–	240 h	480 h
Top coat color ¹⁾	RAL 7031	RAL 7031	RAL 7031
Color according to RAL	Yes	Yes	Yes
Uncoated parts shaft end/flanges	Water and hand perspiration repelling anticorrosion agent applied at the factory for external preservation		

1) Standard color

INFORMATION



Sheet metal parts (e.g. protection covers) are painted in RAL 1003.

Special surface protection is also available, please contact SEW-EURODRIVE.

2.12 Storage and transport conditions

The gear units can be provided with the following protection and packaging types depending on the storage and transport conditions.

2.12.1 Internal conservation

Standard corrosion protection

After the test run of the gear unit at the factory, the gear unit is protected against corrosion for a limited time.

Long-term corrosion protection

After the test run of the gear unit at the factory, a phase inhibitor is filled into the gear unit to protect it against corrosion for a limited time. The breather filter is replaced by a screw plug and enclosed with the gear unit.

2.12.2 Exterior corrosion protection

The following measures are taken for exterior corrosion protection:

- Anti-corrosion agent is applied to bare, non-painted functional surfaces of shafts, flanges, mounting and foot surfaces of the housing. The anti-corrosion agent must be removed with a suitable solvent that does not damage the oil seal.
- Small spare parts and loose pieces, such as bolts, nuts, etc., are packed in corrosion protection plastic bags (VCI corrosion protection bags).
- Threaded holes and blind holes are covered by plastic plugs.
- If the gear unit is stored longer than 6 months, regularly check the protective coating of unpainted areas as well as the paint coating. Areas in which the protective coating and/or painting has been damaged may have to be repainted.

2.12.3 Packaging

Standard packaging

The gear unit is delivered on a pallet, securely attached and without cover.

Use: Land transport

Long-term packaging

The gear unit is delivered in a wooden box that is also appropriate for sea transport.

Use: Sea transport and/or for extended storage

2.12.4 Storage conditions

NOTICE

Improper storage may result in damages to the gear unit.

Possible damage to property.

- During storage up to startup, the gear unit must be stored in a shock-free manner to prevent damage to the rolling bearing raceways.
- The output shaft must be rotated at least one full rotation every 6 months so that the position of the rolling elements in the bearings of the input and output shafts changes.

INFORMATION

The gear units are delivered without oil as standard; different protection systems are required depending on the storage period and storage conditions as shown in the following table.

Corrosion protection + packaging	Storage location	Storage duration
Standard corrosion protection + Standard packaging	Under roof and enclosed at constant temperature and atmospheric humidity (5 °C < ϑ < 60 °C, < 50% relative humidity). No sudden temperature fluctuations. Controlled ventilation with filter (free from dust and dirt). No aggressive vapors, no shocks.	Max. 6 months with intact surface protection.
Long-term corrosion protection + Standard packaging	Under roof and enclosed at constant temperature and atmospheric humidity (5 °C < ϑ < 60 °C, < 50% relative humidity). No sudden temperature fluctuations. Controlled ventilation of the storage location with filter (free from dust and dirt). No aggressive vapors, no shocks.	Max. 3 years with regular inspection and checking for intactness.
Long-term corrosion protection + Long-term packaging	With roof, protected against rain and shocks.	Max. 3 years with regular inspection and checking for intactness.

INFORMATION

If stored in tropical zones, provide for sufficient protection against insect damage. Contact SEW-EURODRIVE for differing requirements.

2.13 DR.. series primary gearmotors

The motors of the DR.. series comply with all international standards and meet the new requirements of the IEC motor standard already today.

The following table describes the energy-efficient motor IE3. If required, the planetary gear unit can also be combined with other energy-efficient motors (IE1, IE2).

IE3 motor standard: Premium Efficiency

- Extremely high levels of efficiency
- **DRN..**-type AC motors (energy-efficient motors)
- Aluminum die-cast rotor cage

Observe the following information:

INFORMATION



- As the auxiliary drive is typically not used for continuous duty, the motor is stamped with S2 duty cycle according to the intended use. This means that an IE1 motor can also be used in countries where an IE1 motor in S1 operation is no longer permitted due to efficiency regulations. Please contact SEW-EURODRIVE in such cases.
- The SEW website (www.sew-eurodrive.com) provides further information regarding the DR.. motor series. If you are unclear about any of the information in this documentation, or if you require further information, contact SEW-EURODRIVE.
- The DRN.. motor combinations with the planetary gear unit are listed in the selection tables, see chapter "P.RF.." (→ 100)." Helical planetary gearmotors" (→ 100) and "P.KF.. Bevel planetary gearmotors" (→ 198).
- For dimensions for the DRN.. motor series, refer to the dimension sheets, see chapters P.RF.. dimension sheets and P.KF.. dimension sheets.

2.14 Output sealing system

As standard, radial oil seals according to DIN 3770 with AS shape (with dust lip) are used in planetary gearmotors.

If high demands are placed on the sealing system, e.g. high dust load with abrasive particles at the place of operation, a labyrinth seal is used to protect the radial oil seal.

In this sealing variant, only one radial oil seal is used irrespective of the mounting position. The grease-filled labyrinth protects the oil seal from dirt.

The following tables show the standard input sealing system for horizontal and vertical mounting positions.

Standard for mounting positions M1/M3/M5/M6	Standard for mounting position M4 (Optional for mounting positions M1/M3/M5/M6)	Standard for mounting position M2 (Optional for mounting positions M1/M3/M5/M6)	Radial labyrinth seal Regreasable for mounting positions M1/M2/M3/M4/M5/M6
Single oil seal, inside sealing with dust protection lip on a hardened sleeve [1]	2 oil seals, inside sealing on a hardened sleeve [1]	1 oil seal, inside sealing, and 1 oil seal, outside sealing, on a hardened sleeve [1]	Single oil seal with radial labyrinth seal on a hardened sleeve [1]
Normal environment	Medium dust load with abrasive particles	High dust load with abrasive particles and splash water load	Very high dust load with abrasive particles

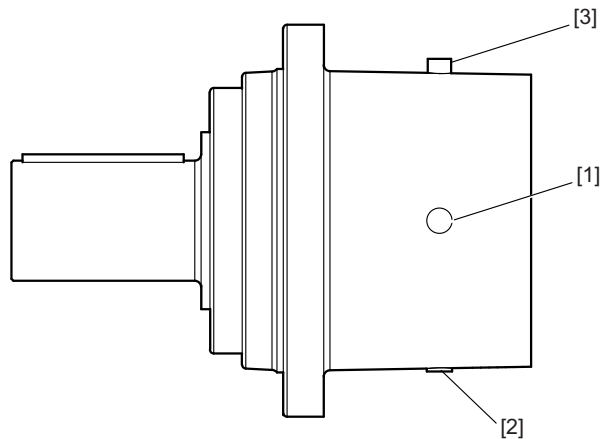
2.15 Lubrication types

There are two lubrication types that are described on the following pages.

- **Splash lubrication** for gear units in horizontal mounting positions (M1/M3/M5/M6)
- **Oil bath lubrication** for gear units in vertical mounting positions (M2/M4)

2.15.1 Splash lubrication for horizontal mounting positions (M1/M3/M5/M6):

The gear unit is half filled with oil. Gearing and bearing parts that are not immersed in the oil bath are lubricated by splashing oil. The oil level is checked at the oil sight glass [1] on the housing gear rim. Oil is filled in via the breather valve [3].



- [1] Oil sight glass
[2] Oil drain plug

- [3] Breather valve

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2.15.2 Oil drain valve option for horizontal mounting positions (M1/M3/M5/M6)

In addition to the standard oil drain plug, SEW-EURODRIVE offers the oil drain valve option. Observe the variants that are described below.

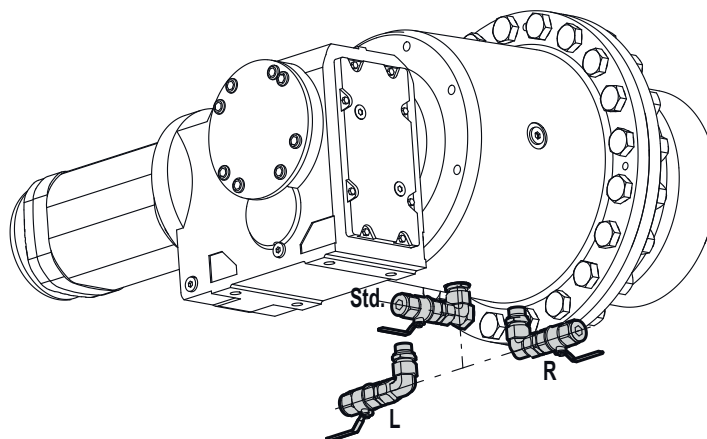
INFORMATION



For some small foot-mounted gear unit sizes, the installation of an oil drain valve is not possible, or is only possible with restrictions due to limited space. Please contact SEW-EURODRIVE.

Position of the oil drain valve

The following figure shows the installation options of the oil drain valve.

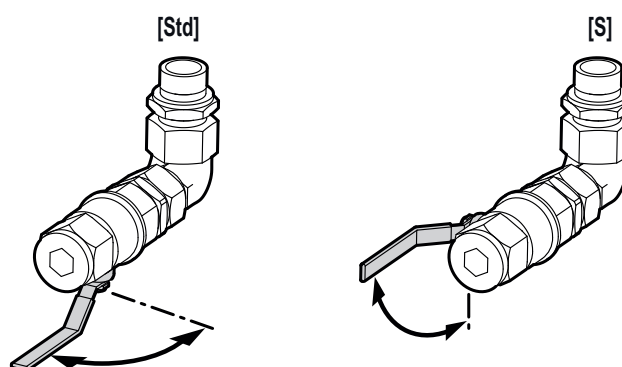


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Std = Standard
R = Right
L = Left

Position of the lever

The following figure shows the possible positions of the lever.



13350041611

Std = Standard
S = On the side

2.15.3 Oil bath lubrication for vertical mounting positions (M2/M4)

The gear unit is (almost completely) filled with oil. All tooth engagement or bearing points are immersed in the oil bath completely or partly.

2

INFORMATION



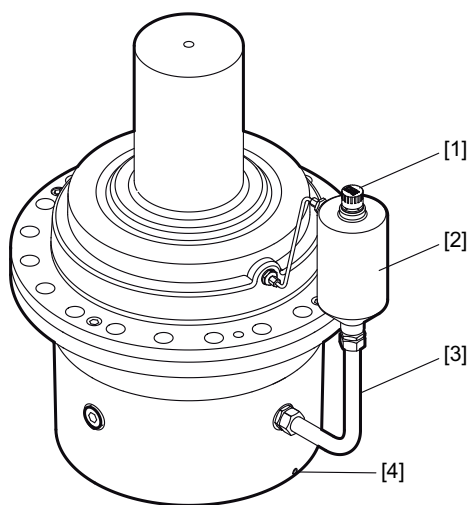
- Any deviations from the standard mounting positions, standard temperature ranges or standard primary gear units must be clarified with SEW-EURODRIVE first.
- If there is little space available for installing the oil expansion tank (M2 mounting position) or the oil riser pipes (M4 mounting positions), you can request an order-specific dimension drawing from SEW-EURODRIVE.
- See chapters 10.4/10.5 and 11.4/11.5 for detailed dimensions of the oil expansion tank/oil riser pipe.

Mounting position M2

Gear units with oil expansion tank have the following characteristics:

- The oil expansion tank [2] serves as volume compensation.
- The oil level is checked by means of a combined oil dipstick with breather valve [1].
- Oil is filled in via the oil expansion tank.

Sizes **P.002 - P.082**:

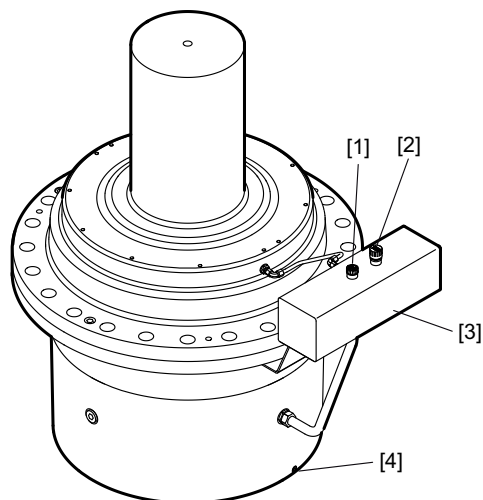


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- [1] Oil dipstick with breather plug
[2] Oil expansion tank

- [3] Riser pipe
[4] Oil drain plug

Sizes **P.092 - P.102:**



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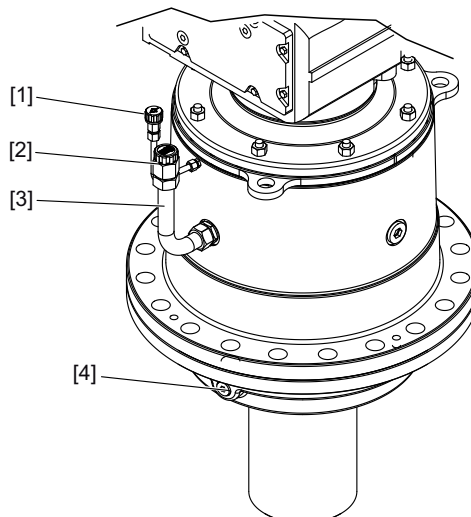
- [1] Oil dipstick
[2] Breather plug

- [3] Oil expansion tank
[4] Oil drain plug

Mounting position M4

Gear units without oil expansion tank have the following characteristics:

- The oil level is checked with an oil dipstick [2].
- A separate breather valve [1] is used.
- Oil is filled in via the riser pipe [3].



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- [1] Breather valve
[2] Oil dipstick

- [3] Riser pipe
[4] Oil drain plug

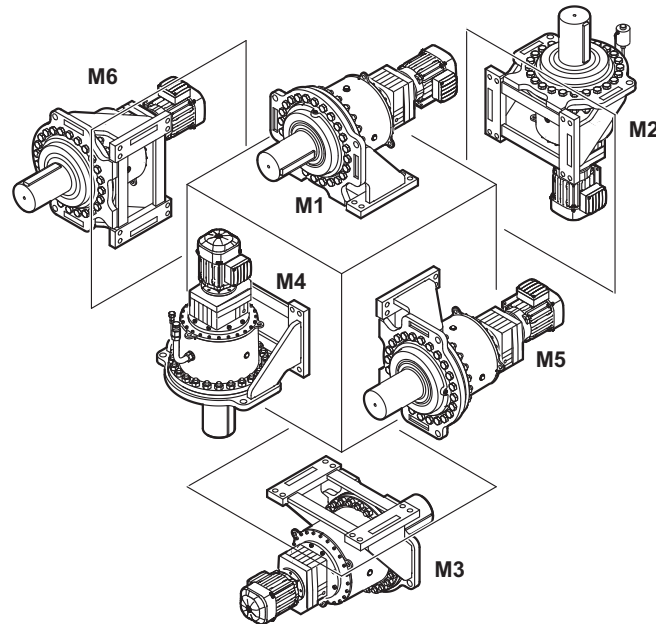
3 Mounting positions

3.1 Standard mounting position

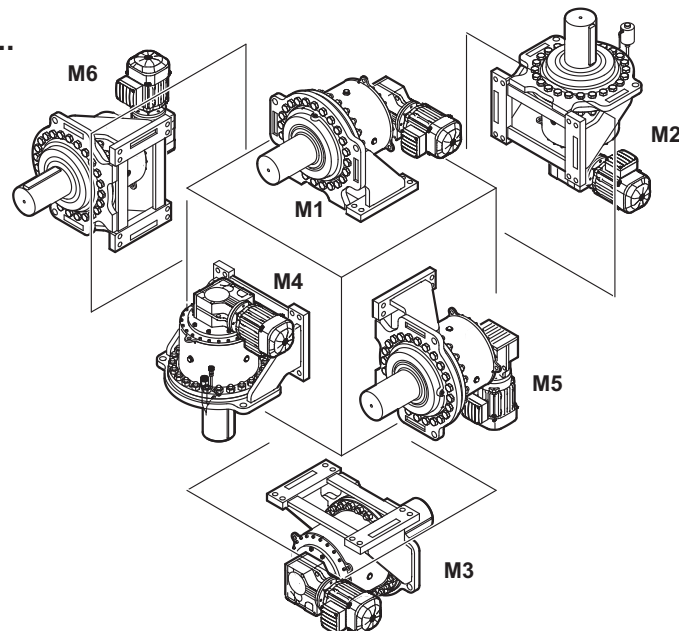
The mounting position defines the spatial orientation of the gear unit housing and is designated **M1...M6**. The mounting positions apply to planetary gear units with solid shafts and hollow shafts.

For mounting position M2, an oil expansion tank is necessary. Mounting position M4 requires a riser pipe. For dimensions, refer to the dimension sheets in chapters 10.3 and 11.3.

P..RF..



P..KF..



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3.2 Pivoted mounting position: Fixed and variable mounting positions

Mounting positions deviating from the standard are distinguished as **fixed** or **variable** pivoted mounting position.

Gear units with fixed pivoted mounting position have a fixed mounting position that differs from the standard. This means the gear unit does not change its mounting position during operation.

Gear units with variable pivoted mounting position can change the mounting position **variably** during operation within the specified max./min. range.

The designation of pivoted and variable mounting positions is set up as follows:

M1 - M2/20°/V

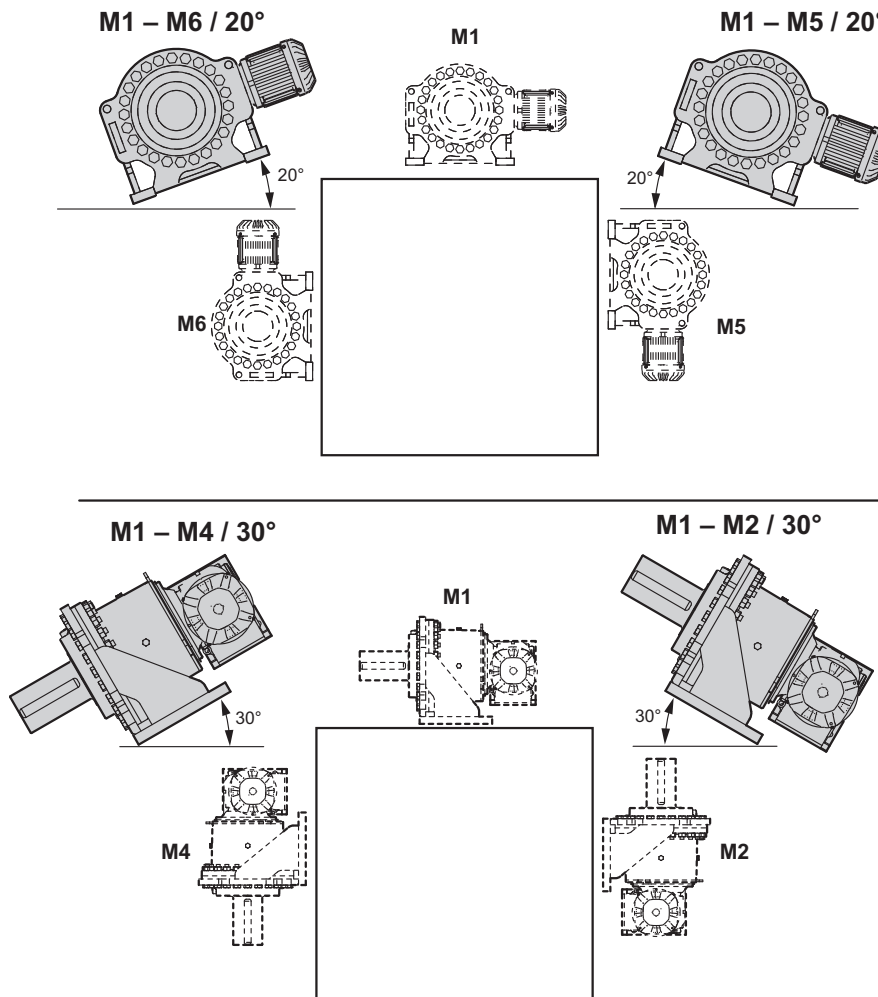
[1] [2] [3] [4]

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- [1] Initial mounting position
[2] Required mounting position

- [3] Pivoting angle
[4] F = Fixed final position; V = Variable final position

The following figure shows examples:



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All final positions have to be specified if the mounting position of the gear unit deviates from standard mounting positions in several directions. Fixed and variable final positions can be combined.

Example of a gear unit based on mounting position M1 that is tilted by $\pm 20^\circ$ around the output shaft during operation and is mounted in a fixed angle of 30° around the longitudinal axis:

M1 - M2/20°/V - M4/20°/V - M5/30°/F

3

INFORMATION



Pivoted mounting positions may involve restrictions for accessories and technical data and possibly longer delivery times. Contact SEW-EURODRIVE.

3.3 Mounting position sheets

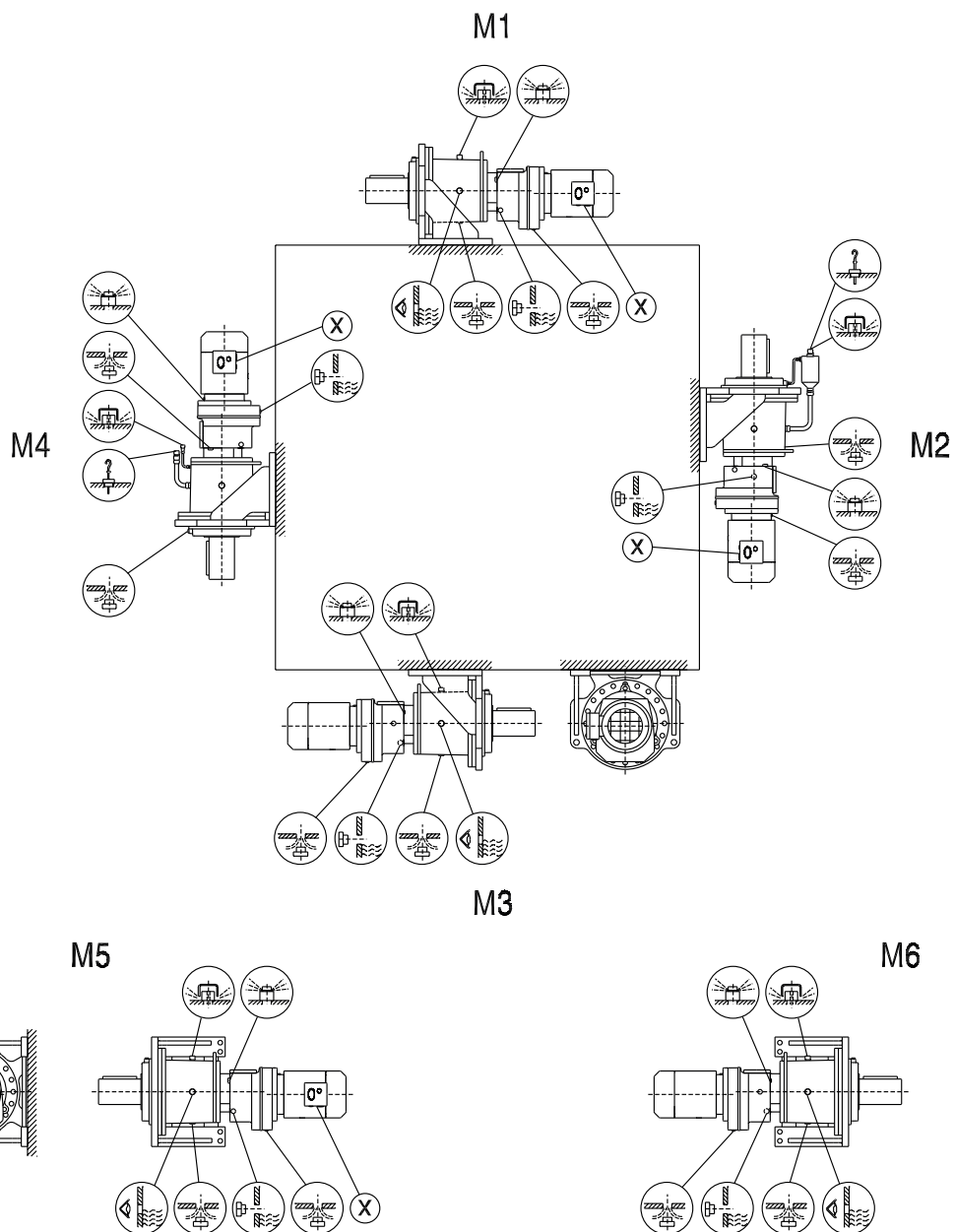
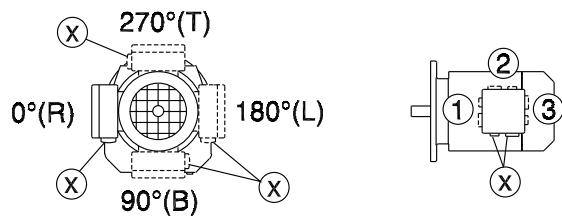
The following table shows the icons used in the mounting position sheets and their meaning:

Icon	Meaning
	Breather plug
	Oil level plug
	Oil drain plug
	Breather
	Oil dipstick
	Oil sight glass

3.3.1 P..RF..

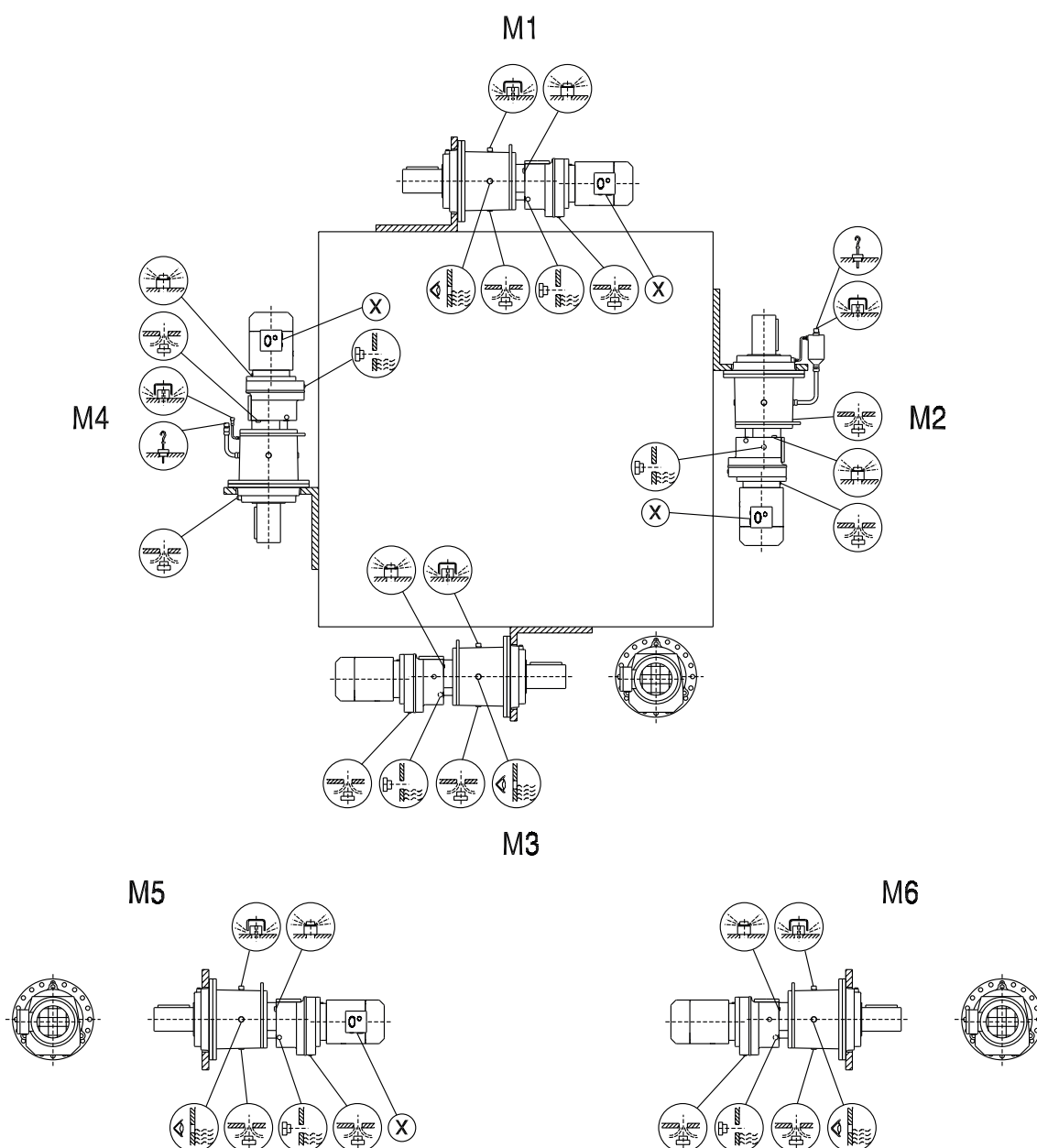
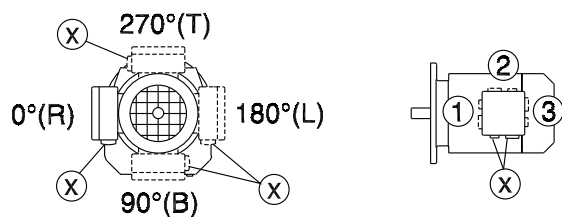
45 129 00 08

3



3.3.2 PF..RF..

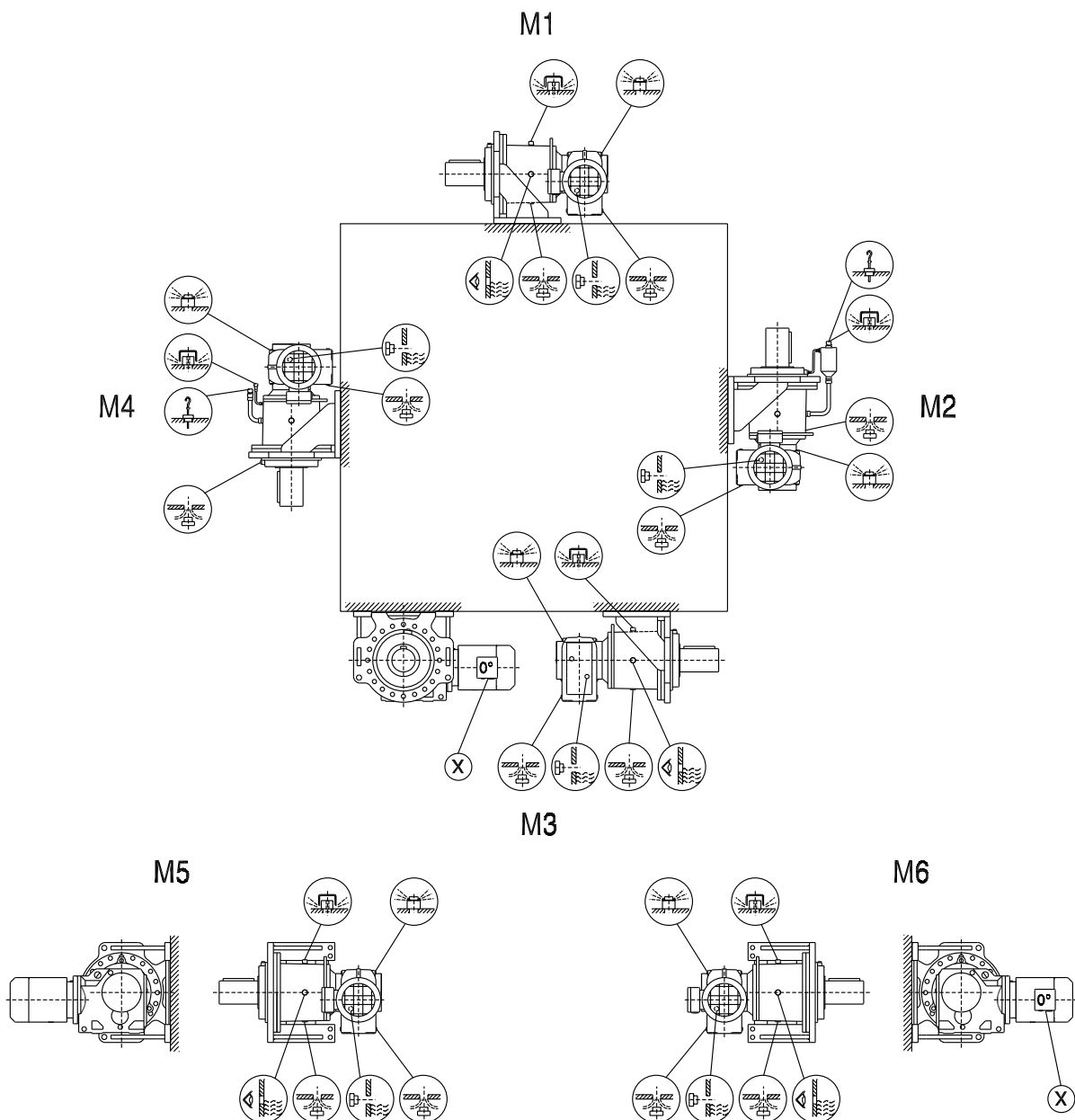
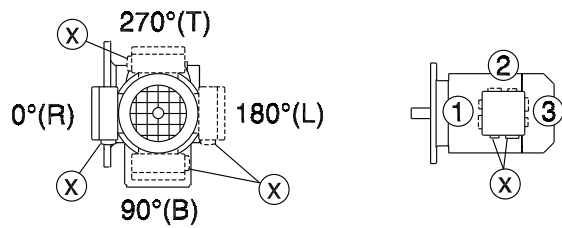
45 130 00 08



3.3.3 P..KF../K..

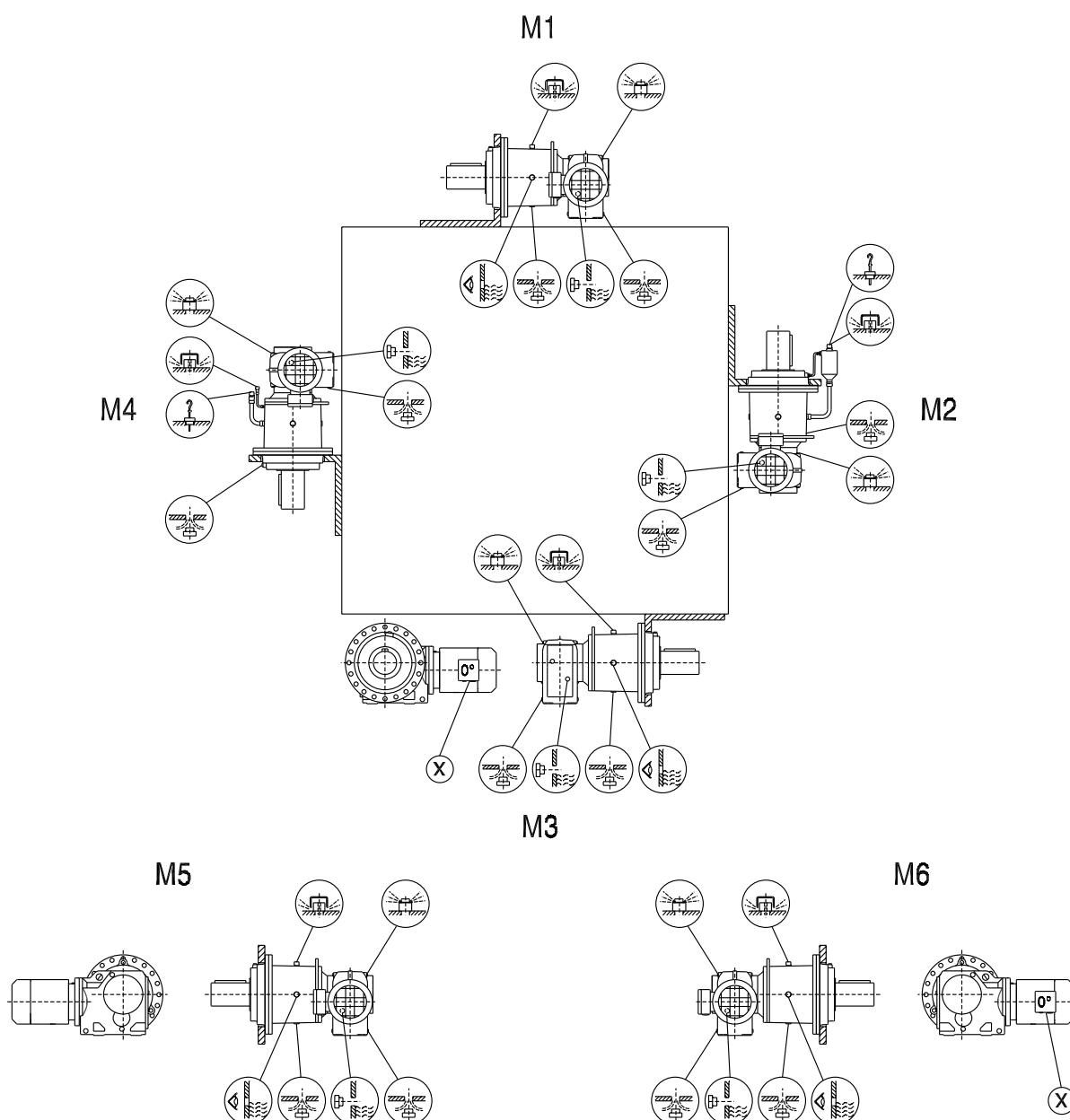
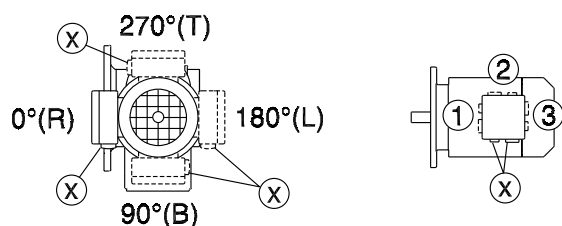
45 131 00 08

3



3.3.4 PF.KF../K..

45 132 00 08



4 Important order information

4.1 For all gearmotors

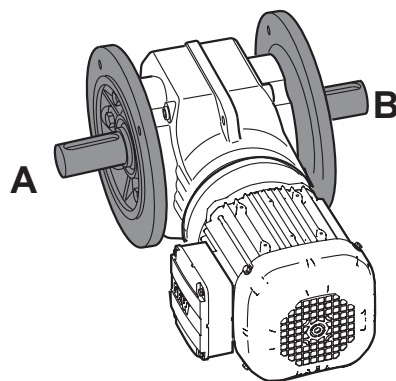
The following order information is required for planetary gearmotors in addition to the mounting position for an accurate configuration of the drive.

4

4.2 Mounting positions of KF.. bevel-helical primary gear units

For the primary bevel gear units KF.., the positions 0° , 90° , 180° or 270° must be defined.

Also define the position of the mounting flange on the **A** or **B** side.



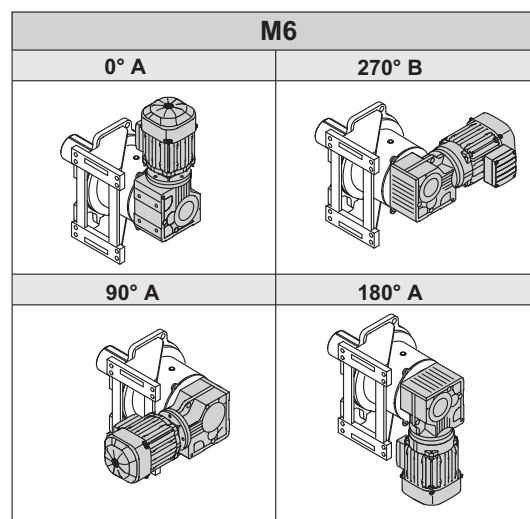
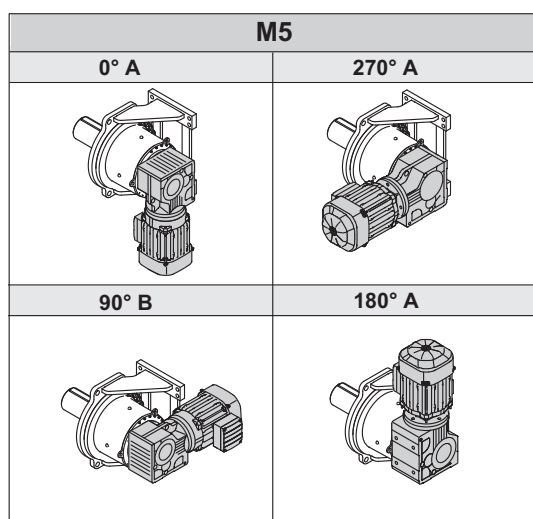
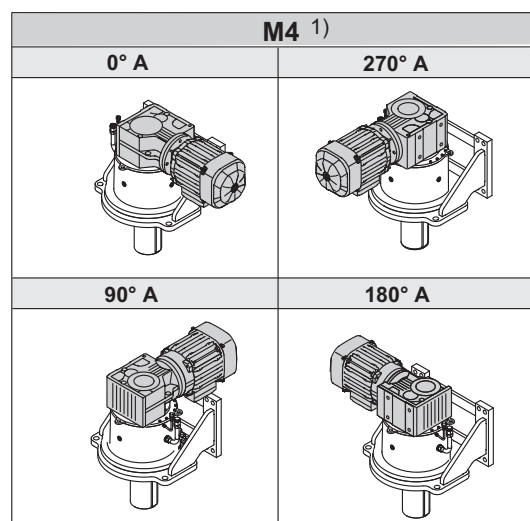
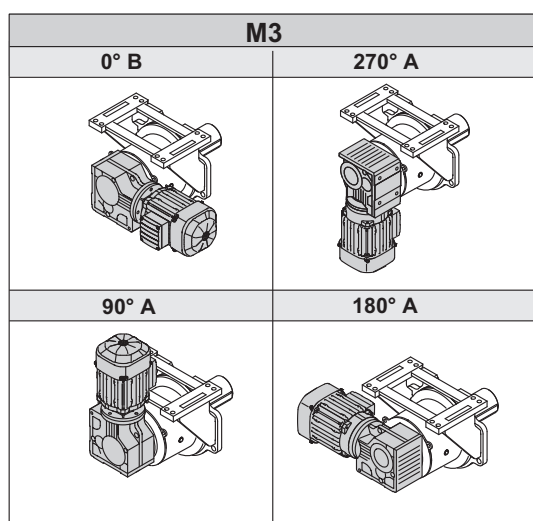
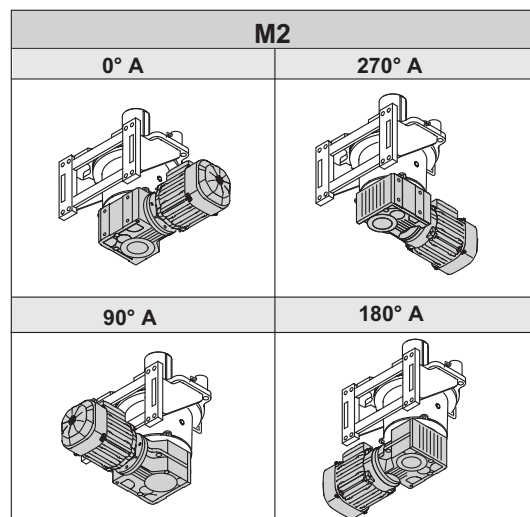
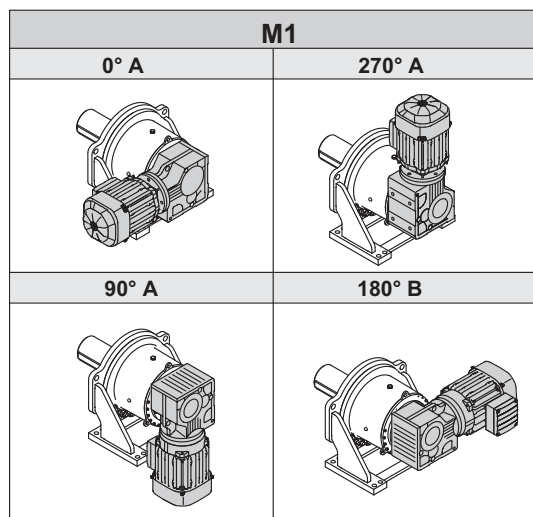
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To reduce the churning losses in the primary gear unit to a minimum, SEW-EURODRIVE recommends that you choose one of the standard mounting positions shown below.

INFORMATION



Contact SEW-EURODRIVE in case of deviating mounting conditions.



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- M1 to M6 = Mounting positions of planetary gear units
 0° to 270° = Mounting positions of primary bevel gear units
 A/B = Position of the mounting flange at the KF.. primary gear unit
 1) Example position; the position of the piping deviates from the figure.

4.3 Mounting positions of RF.. primary helical gear units

For the primary helical gear units RF.., the position **0°**, **90°**, **180°** or **270°** must be defined.

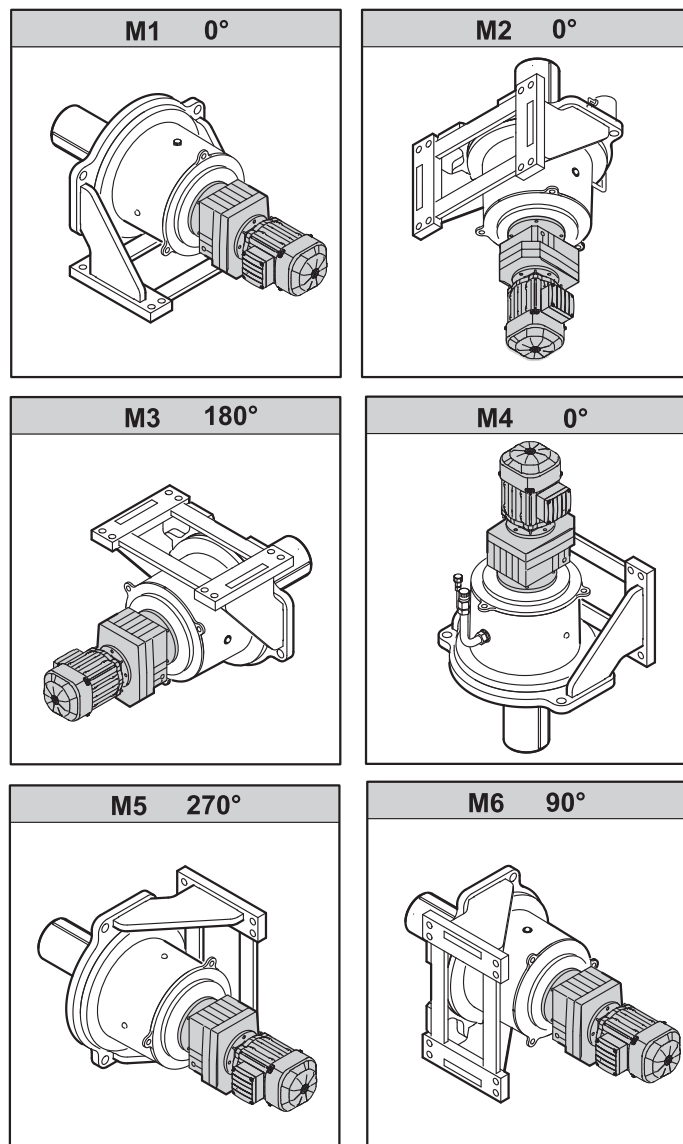
To reduce the churning losses in the primary gear unit to a minimum, SEW-EURODRIVE recommends that you choose one of the standard mounting positions shown below.

4

INFORMATION



Contact SEW-EURODRIVE in case of deviating mounting conditions.



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M1 to M6
0° to 270°

= Mounting positions of planetary gear units
= Mounting position of primary helical gear unit

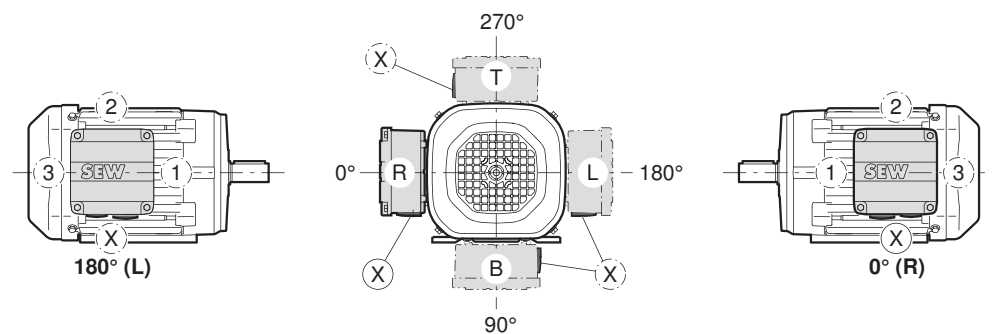
4.4 Position of motor terminal box and cable entry

The position of the motor terminal box has so far been indicated with 0°, 90°, 180° or 270° as viewed onto the fan guard (see figure below). A change in the product standard EN 60034 specifies that the following designations will have to be used for terminal box positions for foot-mounted motors in the future:

- As viewed onto the output shaft = A-end
- Designation as R (right), B (bottom), L (left) and T (top)

This new designation applies to foot-mounted motors without a gear unit in mounting position B3 (= M1). For gearmotors, the previous designation is retained. The following figure shows both designations. If the mounting position of the motor changes, R, B, L and T are rotated accordingly.

The position of the cable entry can be selected as well. Available positions are "X" (= standard position), "1", "2" or "3" (see the following figure).



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Unless other information is given regarding the terminal box, the 0° type (R) with "X" cable entry will be supplied.

INFORMATION



When the terminal box is in the 90° (B) position, check to see if the planetary gearmotor has to be supported.

4.5 Torque arm

The torque arm can be enclosed in the delivery or can be mounted according to customer requirements.

The retaining screws are included in the delivery.

The position of the torque arm is determined as looking onto the output shaft (mounting position 0° , 90° , 180° , 270°).

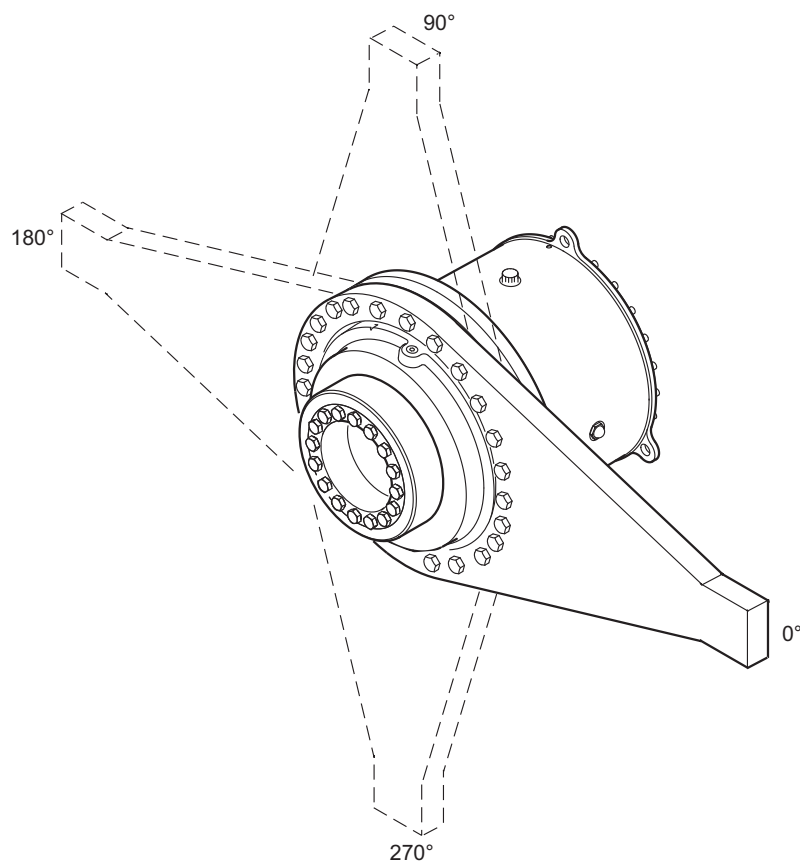
4

INFORMATION



Different mounting positions are possible depending on the angle division (number of retaining screws).

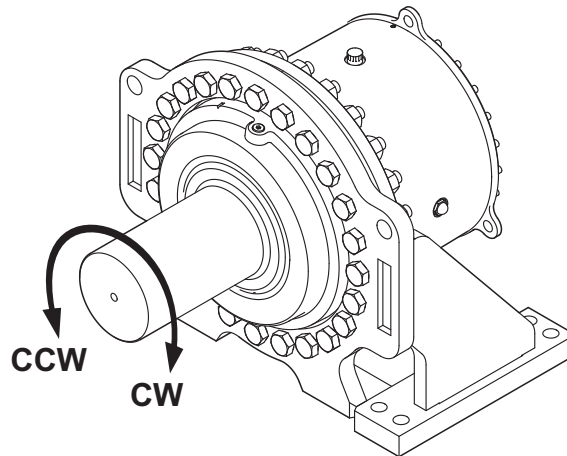
The following figure shows an example of the mounting position of the torque arm.



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4.6 Output direction of rotation with backstop

With planetary gear units, specify the required direction of rotation of the output shaft. The direction of rotation is specified as viewed onto the output shaft.



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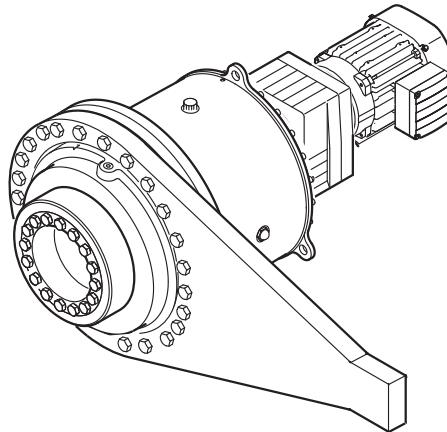
As viewed at the output shaft:

Clockwise rotation (**CW**) = Rotating clockwiseCounterclockwise rotation (**CCW**) = Rotating counterclockwise

4.7 Sample orders

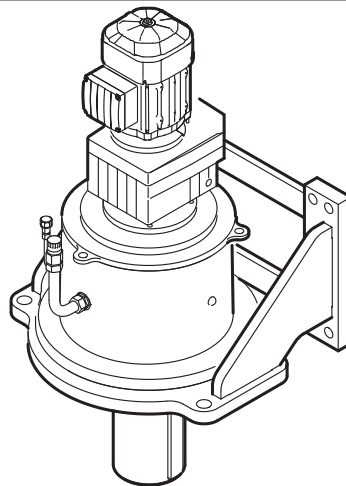
The following order examples show a combination of a planetary gear unit, a primary gear unit and a motor.

Type	Mounting position of planetary gear unit	Mounting position					Additional feature
		Primary gear unit	Mounting flange	Terminal box	Cable entry	Torque arm	
PHF042/T RF107DRN100L4	M1	0 °	—	0 °	X	0 °	LSS labyrinth seal



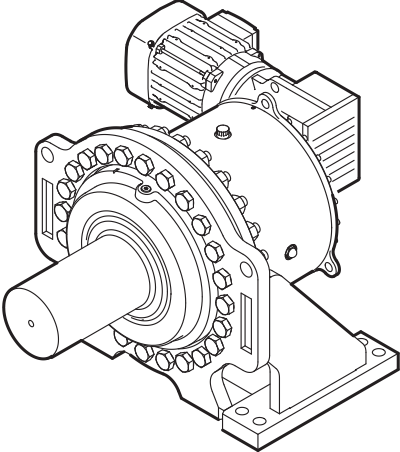
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Type	Mounting position of planetary gear unit	Mounting position					Additional feature
		Primary gear unit	Mounting flange	Terminal box	Cable entry	Torque arm	
P032 RF97DRN100L4	M4	0 °	—	0 °	X		



4 Important order information

Sample orders

Type	Mounting position of planetary gear unit	Mounting position					Additional feature
		Primary gear unit	Mounting flange	Terminal box	Cable entry	Torque arm	
P082 KF157DRN180M4	M1	180 °	B	180°	X		
 9007205555752587							

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5 Project planning for gear units

5.1 Additional documentation

In addition to the information in this catalog, SEW-EURODRIVE offers extensive documentation covering the entire topic of electrical drive engineering. This is primarily documentation from the "Drive Engineering – Practical Implementation" series. You can order the latest documentation from SEW-EURODRIVE. The documentation can also be downloaded in PDF format from the SEW-EURODRIVE homepage (<http://www.sew-eurodrive.de>).

5

5.1.1 Drive Engineering – Practical Implementation

The publication "Drive Engineering – Practical Implementation – Drive Arrangements with SEW-EURODRIVE Gearmotors" features extensive information on characteristics, different features and application areas of SEW-EURODRIVE drives. A comprehensive collection and assignment of the most important formulae for drive calculation as well as detailed examples for the most frequently used applications make this documentation an important tool for project planning and an essential addition to SEW-EURODRIVE product catalogs.

5.2 Project planning procedure**INFORMATION**

For gear units in explosion-proof design only a gear unit project planning with infinite fatigue strength is possible.

5.2.1 Step 1: Drive selection data

1.0 Machine on LSS (normally the driven machine)

Key: [...] = fill in values

[X] = make your selections by ☒

1.1 Field of application/industry [...]

1.2 Application [...]

1.3 Ambient temperature [°C] [...]

normal	min.	max.

1.4 Altitude [m] [...]

1.5 Installation [X]

- ☐ small rooms ($v_a \geq 0.5$ m/s)
- ☐ large rooms and halls ($v_a \geq 1.4$ m/s)
- ☐ outdoors with protection from the sun ($v_a \geq 3$ m/s)

1.6 Ambient conditions [X]

- ☐ normal ☐ corrosive
- ☐ dusty ☐ dry
- ☐ moist

2.0 Load characteristics

2.1 Required speed n_2 [min⁻¹] [...]

normal	min.	max.

2.2 Operating power on HSS P_{K1} [kW] [...]

normal	min.	max.

2.3 Operating torque on LSS M_{K2} [Nm] [...]

normal	min.	max.

2.4 Frequency of peak load ($M_{K2 \text{ max.}}$ or $P_{K1 \text{ max.}}$) [...]

 per hour

2.5 Number of starts per hour [...]

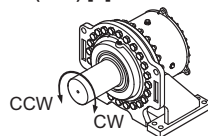
 starts

2.6 Service life [X]

- ☐ Infinite fatigue strength (gearing to DIN 3990)
- ☐ Defined service life [h]

2.7 Rotation direction under load (LSS) [X]

- ☐ clockwise (CW)
- ☐ counter-clockwise (CCW)
- ☐ both directions
- ☐ reversible



2.8 Operating period/day [X]

- ☐ ≤ 3 hours
- ☐ 3 ... 10 hours
- ☐ > 10 hours

2.9 Backstop required in gear unit [X]

- ☐ No
- ☐ Yes

2.10 Exact load cycle attached [X]

- ☐ No
- ☐ Yes

3.0 Machine on HSS (normally the drive machine)

3.1 Type: [X]

- ☐ AC motor ☐ AC motor/inverter ☐ DC motor
- ☐ Hydraulic motor ☐ Servomotor

3.2 Motor power P_M [kW] [...]

normal	min.	max.

3.3 Motor speed n_M [min⁻¹] [...]

normal	min.	max.

3.4 Motor torque M_M [Nm] [...]

normal	min.	max.

3.5 Input speed n_1 [min⁻¹] [...]

normal	min.	max.

3.6 If electric motor: [X] [...]

- ☐ IEC
- ☐ NEMA

Motor size (IEC- or NEMA code):

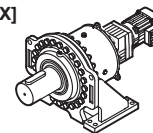
3.7 Mounting of motor [X] [...]

- ☐ B3
- ☐ B5
- ☐ V1
- ☐ other:

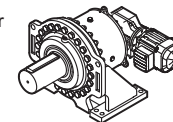
4.0 Gear unit requirements

4.1 Gear Unit Type [X]

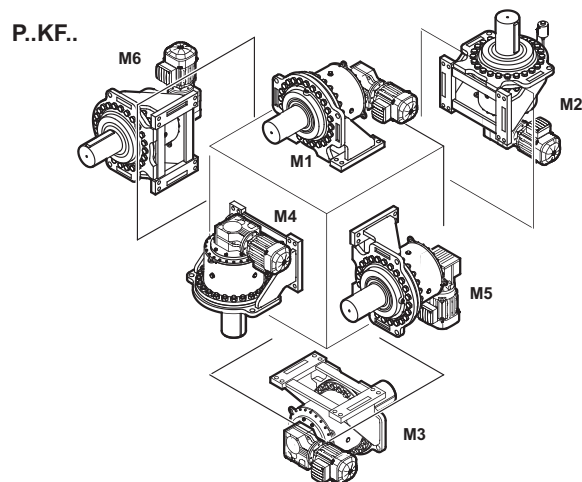
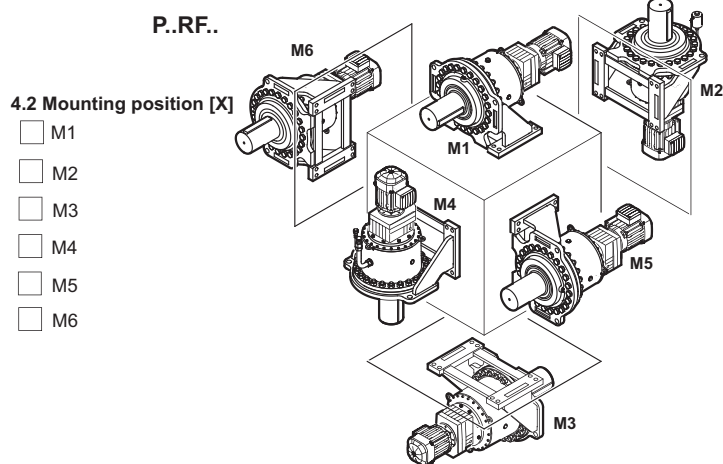
- ☐ Helical gear unit
P.. RF..



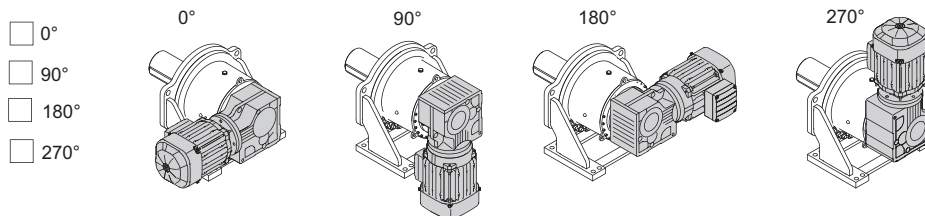
- ☐ Bevel-helical gear
unit P..KF..



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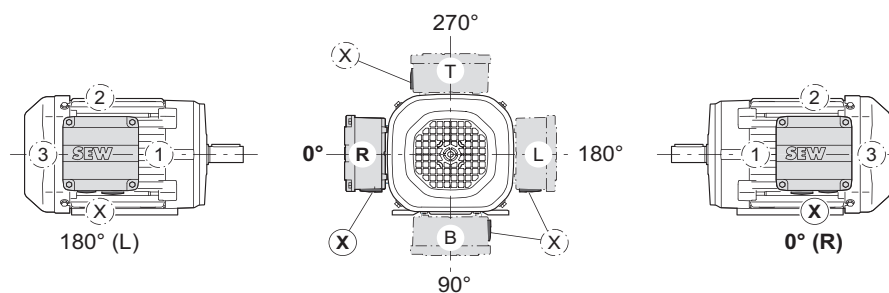
4.3 Mounting positions for RF / KF gearmotor preliminary stage [X]



4.4 Position of motor terminal box and cable entry [X]

- ☐ 0° (R)
☐ 90° (B)
☐ 180° (L)
☐ 270° (T)

- ☐ X
☐ 1
☐ 2
☐ 3



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4.6 Application-specific operating factor $F_{S\ min.}$ [X] [...]

- ☐ In relation to motor power P_M /
motor torque M_M
- ☐ Operating power at LSS P_{K2} /
operating torque at LSS M_{K2}

4.7 Required bearing service life $L_{h\ min}$ [...]

 hours

4.8 Mounting of gear unit housing [X]

- ☐ Foot
- ☐ Flange
- ☐ Torque arm

4.9 LSS connection to customer machine shaft [X] [...]

- ☐ Elastic clutch (claw or bolt coupling)
- ☐ Flexible coupling
- ☐ Rigid flange coupling
- ☐ Barrel coupling
- ☐ Sprocket
- ☐ Pinion

- ☐ Hollow shaft – torque arm
- ☐ Hollow shaft – foot-mounting
- ☐ Hollow shaft – flange-mounting
- ☐ Other

4.10 LSS gear unit design [X] [...]

LSS design (if with solid shaft)

- ☐ Solid shaft with keyway
- ☐ Solid shaft with 2 keyways
- ☐ Smooth solid shaft
- ☐ Solid shaft with splined hollow shaft DIN 5480
- ☐ Other

LSS design (if with hollow shaft)

- ☐ Hollow shaft for shrink disk connection,
including shrink disk
- ☐ Splined hollow shaft DIN 5480
- ☐ Other

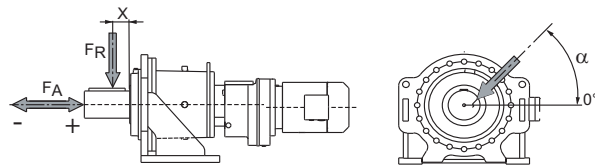
4.11 HSS connection to motor [X]

- ☐ Customer installation (base frame)
- ☐ Motor adapter with elastic coupling
- ☐ Swing base / base frame
- ☐ Motor bracket with V-belt drive
- ☐ Motor scoop
- ☐ Other, see sketch

4.12 Machine shaft bearings

- ☐ 2 bearings, gear unit transmits only the torque
- ☐ 1 bearing opposite the gear unit, gear unit acts as a point of support
- ☐ 1 bearing right at the gear unit, gear unit acts as a point of support

4.13 Forces at the LSS [X] [...]



Axial force F_{A2} [N]

normal	min.	max.

Radial force F_{R2} [N]

normal	min.	max.

Distance from shaft shoulder X [mm]

normal	min.	max.

Application angle of radial force α [°]

or rotating ☐

4.15 Electric power supply [X] [...]

Line voltage V_{line}

AC		DC	
3-phase	1-phase		
☐	☐	☐	V HZ

Auxiliary voltage V_{aux}

AC		DC	
3-phase	1-phase		
☐	☐	☐	V HZ

Degree of protection

IP

Explosion protection required

☐ Yes ☐ No

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5.2.2 Step 2: Calculation of basic data – M_{K2} , n_2 , i , η

Constant torque	$M_{K2} = \frac{P_{K1} \times 9550 \times \eta}{n_2} \text{ Nm}$ Note: If P_{K1} unknown $\rightarrow P_{K1} = P_M$ M_{K2} = Operating torque on LSS in Nm P_{K1} = Required operating power at HSS in kW n_2 = Output speed (LSS) in min^{-1}
Gear ratio	$i = \frac{n_1}{n_2}$ n_1 = Input speed (HSS) in min^{-1} n_2 = Output speed (LSS) in min^{-1}
Efficiency – η	$\eta = f(i; \text{gear unit type})$ The efficiency of the gear unit is mainly determined by the gearing and bearing friction as well by churning losses. For the calculation, a guide value of 96% is used.

5.2.3 Step 3: Selecting application factors

Application-specific service factor	$F_{S \min}$
Peak load factor	F_F ($\rightarrow$ 61)
Startup factor	F_{Start} ($\rightarrow$ 61)
Service life factor	f_{LC}''' ($\rightarrow$ 62)

$F_{S \min}$ - application-specific service factor

The application-specific service factor F_s considers the typical load behavior with regard to the driven machine.

Recommended values with reference to

- Area of application
- Type of driven machine
- Operating hours/day

are listed in the table below.

INFORMATION



These tables apply only to gear units driven by electric motors. For other types of drive motors, the following correction values apply:

Consequences

- Combustion engines with four or more cylinders:
 - $F_{S \min}$ (selection table) +0.25
- Combustion engines with one to three cylinders:
 - $F_{S \min}$ (selection table) +0.5

INFORMATION



In the event of deviations from the typical load behavior, please contact SEW-EURODRIVE.

5

Area of application	Type of application (driven machine)	Application-specific service factor $F_{S \min}$ Operating hours/day			
		Gearing with infinite fatigue strength (refer- ring to DIN 3990)			Defined Service life
		< 3 h	3-10 h	> 10 h	
Waste water treatment	Impeller aerator	-	1.80	2.00	1.80
	Thickeners	1.15	1.25	1.50	1.15
	Vacuum filters	1.15	1.30	1.50	1.15
	Collector	1.15	1.25	1.50	1.15
	Screw pump	-	1.30	1.50	1.30
	Brush aerators	-	-	2.00	2.00
Mining	Crushers	1.55	1.75	2.00	1.55
	Screens and shakers	1.55	1.75	2.00	1.55
	Slewing drives	-	1.55	1.80	1.55
	Bucket-wheel excavator	1)	1)	1)	1)
Energy	Frequency inverters	-	1.80	2.00	1.80
	Water wheels (low speed)	-	-	1.70	1.70
	Water turbines	-	-	1)	-
Conveyors	Bucket elevators	-	1.40	1.50	1.40
	Vertical conveyors – other	-	1.50	1.80	1.50
	Belt conveyors ≤ 100 kW	1.15	1.25	1.40	1.15
	Belt conveyors > 100 kW	1.15	1.30	1.50	1.15
	Apron feeders	-	1.25	1.50	1.25
	Screw feeders	1.15	1.25	1.50	1.15
	Shakers, screens	1.55	1.75	2.00	1.55
	Escalators	1.25	1.25	1.50	1.25
	Passenger elevators	1)	1)	1)	1)
Rubber and plastic in- dustry	Extruders (plastic)	-	1.40	1.60	1.40
	Extruders (rubber)	-	1.50	1.80	1.50
	Rubber rollers (2 in a row)	1.55	1.75	2.00	1.55
	Rubber rollers (3 in a row)	-	1.50	1.75	1.50
	Heating rollers	1.35	1.50	1.75	1.35
	Calender	-	1.65	1.65	1.65
	Mills	1.55	1.75	2.00	1.55
	Mixing rollers	1)	1)	1)	1)
	Slab rollers	1.55	1.75	2.00	1.55
	Refiners	1.55	1.75	2.00	1.55
	Tire machines	1)	1)	1)	1)
Timber industry	Timber industry	1)	1)	1)	1)
Cranes	Cranes and hoists	2)	2)	2)	2)
Food industry	Crushers and mills	-	-	1.75	1.75
	Beet slicers	-	1.25	1.50	1.25
	Drying drums	-	1.25	1.50	1.25

1) Contact SEW-EURODRIVE

2) Please contact SEW-EURODRIVE; dimensioning according to FEM1001

Area of application	Type of application (driven machine)	Application-specific service factor $F_{S \min}$ Operating period / day			
		Gearing with infinite fatigue strength (refer- ring to DIN 3990)			Defined Service life
		< 3 h	3-10 h	> 10 h	

Metal production and processing	Winder	-	1.60	1.75	1.60
	Cutting rollers	1.55	1.75	2.00	1.55
	Table conveyors, single drives	1)	1)	1)	1)
	Table conveyors, group drives	1)	1)	1)	1)
	Table conveyors, reciprocating	1)	1)	1)	1)
	Wire drawing machines	1.35	1.50	1.75	1.35
	Rollers	1)	1)	1)	1)
Mills and drums	Cooling and drying drums	-	1.50	1.60	1.50
	Rotary kilns	-	-	2.00	2.00
	Ball mills	-	-	2.00	2.00
	Coal mills	-	1.50	1.75	1.50
Pulp and paper industry	Debarking drums and machines	1.55	1.80	-	1.55
	Rolls (pick-up, wire drive, wire suction)	-	1.80	2.00	1.80
	Drying cylinders (rolling bearings)	-	1.80	2.00	1.80
	Calenders (rolling bearings)	-	1.80	2.00	1.80
	Filters (pressure and vacuum)	-	1.80	2.00	1.80
	Beaters and chippers	1.55	1.75	2.00	1.55
	Jordan mills	-	1.50	1.75	1.50
	Presses (bark, felt, glue, suction)	-	-	1.75	1.75
	Reels	-	-	1.75	1.75
	Pulpers	1)	1)	1)	1)
	Washer filters	-	-	1.50	1.50
	Yankee cylinders (dryers)	1)	1)	1)	1)
Pumps	Centrifugal pumps	1.15	1.35	1.45	1.15
	Reciprocating pumps (single-cylinder)	1.35	1.50	1.80	1.35
	Reciprocating pumps (multi-cylinder)	1.20	1.40	1.50	1.20
	Screw pumps	-	1.25	1.50	1.25
	Rotary pumps (gear pump, vane pump)	-	-	1.25	1.25
Agitators and mixers	Agitators for liquids	1.00	1.25	1.50	1.00
	Agitators for liquids (variable density)	1.20	1.50	1.65	1.20
	Agitators for solids (non-uniform material)	1.40	1.60	1.70	1.40
	Agitators for solids (uniform material)	-	1.35	1.40	1.35
	Concrete mixers	-	1.50	1.50	1.50
Cable cars	Material ropeways	-	1.40	1.50	1.40
	Aerial tramways	-	1)	1)	1)
	Surface lifts	1)	1)	1)	1)
	Continuous aerial tramways	1)	1)	1)	1)
	Funicular railways	1)	1)	1)	1)
Fans	Heat exchangers	1.50	1.50	1.50	1.50
	Dry cooling tower	-	-	2.00	2.00
	Wet cooling towers	2.00	2.00	2.00	2.00
	Blowers (axial and radial)	1.50	1.50	1.50	1.50
Compressors	Reciprocating compressors	-	1.80	1.90	1.80
	Radial compressors	-	1.40	1.50	1.40
	Screw-type compressors	-	1.50	1.75	1.50

1) Contact SEW-EURODRIVE

Peak load factor – F_F

The peak load factor F_F takes account of the overload capacity of the gearing and the torque-transmitting parts.

Planetary gear unit type/size	Peak load factor – F_F					
	Peak load frequency per hour					
	1...5	6...20	21...40	41...80	81...160	> 160
Output shaft as solid shaft P.002 – P.102	1	1.2	1.3	1.5	1.75	2.0
Hollow shaft with shrink disk connection P.002	1.25	1.25	1.3	1.5	1.75	2.0
Hollow shaft with shrink disk connection P.002 – P.102	1.1	1.2	1.3	1.5	1.75	2.0

Startup factor – F_{start}

The startup factor F_{start} takes account of the overload caused by startup.

Startup mode	Startup factor – F_{start}
Direct	3.0
Soft start	1.8
Frequency inverter	1.5 to 2.0 ¹⁾
Star/delta	1.3
Hydraulic coupling without delay chamber	2.0
Hydraulic coupling with delay chamber	1.6

1) Depending on settings

Service life factor – f_{LC}

For applications with defined service life

$$f_{LC} = \frac{L_h \times n_2}{1000}$$

f_{LC} = Service life factor
 L_h = Required service life h
 n_2 = Speed at output shaft in min^{-1}

For applications with infinite fatigue strength according to DIN 3990

$$f_{LC} > 107.5$$

5.2.4 Step 4: Calculation of the required nominal gear unit torque M_{N2}

Constant load direction – constant torque:

$$M_{N2} \geq M_{K2} \times F_{S\min} Nm$$

M_{N2} = Nominal gear unit torque in Nm
 M_{K2} = Operating torque at LSS in Nm
 $F_{S\min}$ = Application-specific service factor

Reversing load direction – constant torque:

$$M_{N2} \geq M_{K2} \times F_{S\min} \times 1.43 Nm$$

M_{N2} = Nominal gear unit torque in Nm
 M_{K2} = Operating torque at LSS in Nm
 $F_{S\min}$ = Application-specific service factor

5.2.5 Step 5: Selection of nominal gear unit torque M_{N2}

Size	Service life factor f_{LC}											$M_{N2 \text{ Lim}}$ Nm
	≤ 7.5	≤ 15	≤ 25	≤ 30	≤ 35	≤ 45	≤ 52.5	≤ 70	≤ 95	≤ 107.5	$> 107,5^{1)}$	
	M_{N2}											
P.002	29 200	26 300									24 830	49 660
P.012	46 200	41 600	38 500								36 810	73 620
P.022	64 200	60 100	55 600	54 200	54 200	54 200	54 200	54 200	54 200		51 190	102 380
P.032	86 800	84 900	78 600	76 600	76 600	76 600	76 600	76 600	76 400	73 700	69 620	139 240
P.042	111 000	111 000	103 200								100 170	200 340
P.052	140 600	134 500									124 060	248 120
P.062	209 100	201 400									185 660	371 320
P.072	274 600	274 600	264 500	257 300	256 400	256 400	256 400				245 660	491 320
P.082	397 100	397 100	397 100	383 500							359 400	718 800
P.092	513 900	513 900	488 900	476 200	476 200	446 300					423 000	846 000
P.102	631 300	630 800	572 300	541 800	517 300						500 000	1 000 000

1) Gearing with infinite fatigue strength (referring to DIN 3990)

5.2.6 Step 6: Selecting the nominal motor power P_M

$$P_M \geq P_{K1} = \frac{P_{K2}}{\eta} \text{ kW}$$

P_M = Nominal motor power in kW
 P_{K1} = Operating power at HSS in kW
 P_{K2} = Operating power at LSS in kW
 η = Efficiency

5.2.7 Step 7: Selecting the combination with gearmotor for project planning with defined service life

The following figure shows the structure of the selection tables.

$P_m = 0.75 \text{ kW}$										
[1]	[3]	[4]	[5]	[6]	[7]				[9]	[10]
n_2	M_a	i_{ex}	$F_{Ra}^{1)}$	M_{N2}	M_{N2}				m	
min^{-1}	Nm		N	$f_{LC} \leq 7.5$	$f_{LC} > 107.5$				kg	
				Nm	Nm					
0.35	19800	4066	156000	46200	36810	P	012RF87	DRN	80M4	400
0.39	17800	3663	156000	46200	36810	PF	012RF87	DRN	80M4	330
0.45	15600	3214	156000	46200	36810	PH	012RF87	DRN	80M4	410
0.51	13800	2847	156000	46200	36810	PHF	012RF87	DRN	80M4	340

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- [1] Nominal motor power
- [2] Output speed
- [3] Output torque in relation to nominal motor power
- [4] Gear unit ratio
- [5] Permitted radial load at LSS
 - 1) Overhung load for foot-mounted gear units with solid shaft; overhung loads for other gear unit types upon request
- [6] Nominal gear unit torque for project planning with defined service life for $f_{LC} \leq 7.5$
- [7] Nominal gear unit torque for project planning with gearing with infinite fatigue strength referring to DIN 3990 ($f_{LC} > 107.5$)
- [8] Gear unit type
- [9] Weight
- [10] Page number dimension sheet

After selecting the gearmotor combination, checking of output torque: $M_a > M_{k2}$

5.2.8 Step 8: Checking the peak load conditions – $M_{K2\ per} < M_{K2\ max}$ **Constant load direction:**

$$M_{K2\ per} = \frac{M_{N2Lim}}{F_F} Nm$$

 $M_{K2\ per}$ = Permitted peak output torque in Nm M_{N2Lim} = Nominal gear unit torque in Nm F_F = Peak load factor**Reversing load direction:**

$$M_{K2\ per} = \frac{M_{N2Lim}}{F_F} \times 0.7 Nm$$

 $M_{K2\ per}$ = Permitted peak output torque in Nm M_{N2Lim} = Nominal gear unit torque in Nm F_F = Peak load factor**Calculating the peak load $M_{K2\ max}$:**

$$M_{K2\ max} = M_a \times F_{start}^* Nm$$

 $M_{K2\ max}$ = Peak output torque in Nm M_a = Output torque in relation to nominal motor power in Nm F_{start} = Startup factor

* If F_{start} is not specified, take the startup factors from the table on "Startup factor – F_{start} ".

Checking the gear unit selection:

$$M_{K2\ max} \leq M_{K2\ per}$$

5.2.9 Step 9: Checking external additional forces

Influences and dependencies:

The permitted additional forces depend on the following factors:

- Existing service factor of the gear unit with respect to the selection data
- Required bearing service life
- Direction of the axial force (from or towards gear unit)
- Application angle of the radial load (rotating or at a specific position)
- Point of force application
- Ratio between radial and axial load
- Gear unit mounting

Determining the overhung load

If no overhung loads are specified, they can be determined by approximation as follows. When determining the resulting overhung load, the type of transmission element mounted on the shaft end must be considered. The following transmission element factors f_z must be considered for various transmission elements.

Transmission element	Transmission element factor f_z	Comments
Gears	1.15	< 17 teeth
Sprockets	1.40	< 13 teeth
Sprockets	1.25	< 20 teeth
Narrow V-belt pulleys	1.75	Influence of pre-tensioning
Flat belt pulleys	2.50	Influence of pre-tensioning
Toothed belt pulleys	1.50	Influence of pre-tensioning

The overhung load exerted on the motor or gear shaft is calculated as follows:

$$F_R = \frac{M_d \times 2000}{d_0} \times f_z N$$

F_R = Overhung load in N

M_d = Torque in Nm

d_0 = Mean diameter of the installed transmission element in mm

f_z = Transmission element factor

Permitted overhung load

The basis for determining the permitted overhung loads in the roller bearing calculation is the nominal bearing service life L_{10h} (according to ISO 281).

For special operating conditions, the permitted overhung loads can be determined on the basis of the modified service life L_{nmh} on request.

For applications with defined service life, the permitted overhung loads have been calculated based on an adapted shaft safety. The values can therefore be reduced.

Overhung load on output

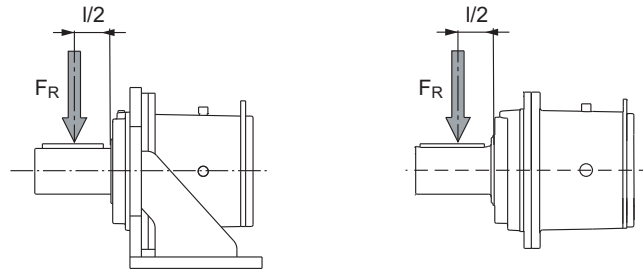
The permitted overhung loads $F_{R\text{ per}}$ for solid shaft gear units can be calculated exactly. The force values relate to the force application in the center of the shaft end for solid shafts and to the gear unit flange contact point for hollow shafts. In planetary gear units, the force application angle and direction of rotation do not influence the permitted values as there are no inner forces from the gear unit acting on the output bearing.

Permitted overhung loads and axial loads on the input

All the possibilities and restrictions specified in the SEW "Gearmotors" catalog apply.

Checking the permitted overhung load on the output

The permitted overhung load F_R on the center of the shaft end is checked according to the following table. The load is permitted if $F_{R\text{ per}} \geq F_R$.



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Permitted overhung loads $F_{R\text{ per}}$ for solid shafts (Project planning with infinite fatigue strength):

The values apply to force application to the center of the shaft end and an output speed of $n = 10 \text{ min}^{-1}$.

Size	P.002	P.012	P.022	P.032	P.042	P.052	P.062	P.072	P.082	P.092	P.102
$F_{R\text{ per}}$ kN	96	134	183	194	249	280	364	403	526	580	680

Calculation of $F_{R\text{ per}}$ N for different output speeds $n^* \text{ 1/min}$ (project planning with infinite fatigue strength):

$$F_{R\text{ per}}^* = F_{R\text{ per}} \times \left(\frac{10}{n^*}\right)^{3.33} \leq F_{R\text{ max}} N$$

$F_{R\text{ per}}^*$ = Permitted overhung load in N for different output speed

$F_{R\text{ per}}$ = Permitted overhung load in N

$F_{R\text{ max}}$ = Maximum overhung load in N (see following table)

n^* = Differing output speed in 1/min

Size	P.002	P.012	P.022	P.032	P.042	P.052	P.062	P.072	P.082	P.092	P.102
$F_{R\text{ max}}$ kN	124	156	197	252	323	364	473	523	683	720	850

INFORMATION



Contact SEW-EURODRIVE regarding the permitted radial load.

Permitted overhung loads for solid shafts (project planning with defined service life):

The values apply to force application to the center of the shaft end and an output speed up to $n = 10 \text{ min}^{-1}$.

For project planning with defined service life:

Size	P.002	P.012	P.022	P.032	P.042	P.052	P.062	P.072	P.082	P.092	P.102
$F_{R \text{ per}} = F_{R \text{ max}}$ kNm	78	119	162	171	177	192	252	315	285	575	680

INFORMATION

Contact SEW-EURODRIVE regarding the permitted radial load.

Calculation of $F_{R \text{ per}}$ (N) for output speeds $n^* > 10 \text{ min}^{-1}$ (project planning with defined service life):

$$F_{R \text{ per}}^* = F_{R \text{ per}} \times \left(\frac{10}{n^*}\right)^{\frac{1}{3.33}} \leq F_{R \text{ max}} N$$

$F_{R \text{ per}}^*$ = Permitted overhung load in N for different output speed

$F_{R \text{ per}}$ = Permitted overhung load in N, see previous table (defined service life)

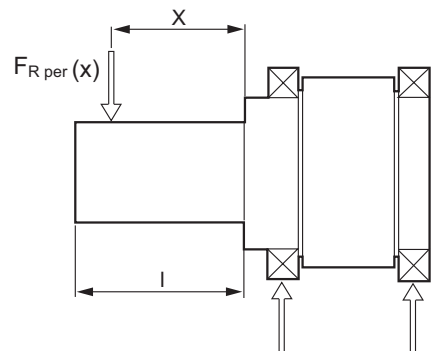
$F_{R \text{ max}}$ = Maximum overhung load in N, see previous table (defined service life)

n^* = Differing output speed in min^{-1}

Comment

$$F_R \leq F_{R \text{ per}}^* \leq F_{R \text{ max}}$$

However, if $F_{R \text{ per}}^* > F_{R \text{ max}}$, you will have to check: $F_R \leq F_{R \text{ max}}$

Conversion of permitted overhung load on the output for force application away from the middle of the shaft end

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Size	a	b	l
P.002	173	163	200
P.012	188.5	177	220
P.022	211	179	220
P.032	231.5	194	250
P.042	268	229	300
P.052	283	260	350
P.062	308	287	400
P.072	334	291	400
P.082	377	321	450
P.092	445	343	450
P.102	473	375	550

Calculating off-center force application:

$$F_{Rper}(x) = F_{Rper} \times \frac{(a+b)}{(a+b^*)} \leq F_{Rmax} N$$

$$b^* = (b - l/2) + x \text{ mm}$$

$F_{Rper}(x)$ = Permitted overhung load N of the off-center force application

F_{Rper} = Permitted overhung load N

F_{Rmax} = Maximum overhung load N

5

Comment

$$F_R \leq F_{Rper}(x) \leq F_{Rmax}$$

However, if $F_{Rper}(x) > F_{Rmax}$, you will have to check: $F_R \leq F_{Rmax}$

Permitted axial force

For applications with axial loads, consult SEW-EURODRIVE.

INFORMATION



- Consult SEW-EURODRIVE if you use the PH.. design in combination with overhung forces, or the PHF.. variant with flange mounting.
- Contact SEW-EURODRIVE if a purely axial force is applied.

5.2.10 Step 10: Check of the thermal rating/heating

INFORMATION



Contact SEW-EURODRIVE for the following operating conditions:

- High ambient temperatures (over 45 °C)
- Vertical mounting position and/or motor speed over 1800 min⁻¹

5.2.11 Step 11: Selecting the lubricant

Lubricants can be chosen according to the lubricant table.

For output speeds $n_2 < 3.0 \text{ min}^{-1}$, contact SEW-EURODRIVE.

5.2.12 Step 12: Technical specifications

Example: PHF012/T KF77 DRN112M4		
Planetary gear unit	P	Gear unit type
	H	Hollow shaft
	F	Flange-mounted design
	012	Gear unit size
	/T	Torque arm
Primary gear unit	KF	Series
	77	Gear unit size
Motor	DRN..	Series
	112M4	Size + number of poles

5.3 Dimensioning example – project planning with defined service life

5.3.1 Step 1: Drive selection data

- Application: Belt conveyor
- Bevel-helical-planetary gear unit
- Hollow shaft with shrink disk and torque arm
- Required service life: 15 000 hours
- Required output speed $n_2 = 1.5 \text{ min}^{-1}$
- Required operating power at LSS $P_{k2} = 10.5 \text{ kW}$
- 4-pole motor / frequency inverter operation
- Input speed $n_1 = 1440 \text{ min}^{-1}$
- Operating time: 12 hours per day
- Cyclic duration factor: 100% cdf, 10 starts per hour
- Direction of rotation under load: CW rotation
- Outdoors, dusty environment
- Ambient temperature = 0 °C...40 °C
- Installation altitude $H = 10 \text{ m}$
- Horizontal mounting position
- No axial or radial forces acting on the output shaft

5.3.2 Step 2: Calculation of basic data M_{K2} , i , η

Operating torque on LSS

$$M_{K2} = \frac{P_{K2} \times 9550}{n_2} \text{ Nm}$$

M_{K2} = Operating torque at LSS in Nm
 P_{K2} = Operating power at LSS in kW
 n_2 = Output speed (LSS) in min^{-1}

$$M_{K2} = \frac{10.5 \text{ kW} \times 9550}{1.5 \text{ min}^{-1}} = 66850 \text{ Nm}$$

Required gear ratio

$$i = \frac{n_1}{n_2} = \frac{1440 \text{ min}^{-1}}{1.5 \text{ min}^{-1}} = 960$$

n_1 = Input speed (HSS) in min^{-1}
 n_2 = Output speed (LSS) in min^{-1}

Efficiency:

$$\eta = 0.98$$

5.3.3 Step 3: Selecting the application factors $F_{S \min}$, F_F , F_{start} , f_{LC} Application-specific service factor $F_{S \min}$

Application: Belt conveyors $\leq 100 \text{ kW}$

t = Defined service life $\rightarrow F_{S \min} = 1,15$

Peak load factor F_F

Hollow shaft with shrink disk

Load per hour = 6...20 $\rightarrow F_F = 1.2$

Startup factor F_{start}

Motor in frequency inverter operation $\rightarrow F_{\text{start}} = 1.5$

Service life factor f_{LC}

For applications with defined service life

$$f_{LC} = \frac{L_h \times n_2}{1000} = \frac{15000 \text{ h} \times 1.5 \text{ min}^{-1}}{1000} = 22.5$$

f_{LC} = Service life factor
 L_h = Required service life h
 n_2 = Speed at output shaft in min^{-1}
 t = Daily operating period

5.3.4 Step 4: Calculating the required nominal output torque M_{N2}

Constant direction of the load – constant torque:

$$M_{N2} \geq M_{K2} \times F_{Smin} = 66850 Nm \times 1.15 = 76878 Nm$$

M_{N2} = Nominal torque in Nm
 M_{K2} = Operating torque at LSS in Nm
 F_{Smin} = Application-specific service factor

5

5.3.5 Step 5: Selecting the planetary gear unit size M_{N2}

Size	Service life factor f_{LC}											$M_{N2 \text{ Lim}}$ Nm
	≤ 7.5	≤ 15	≤ 25	≤ 30	≤ 35	≤ 45	≤ 52.5	≤ 70	≤ 95	≤ 107.5	$> 107,5^{1)}$	
	M_{N2}											
P.002	29 200	26 300									24 830	49 660
P.012	46 200	41 600	38 500								36 810	73 620
P.022	64 200	60 100	55 600	54 200	54 200	54 200	54 200	54 200	54 200		51 190	102 380
P.032	86 800	84 900	78 600	76 600	76 600	76 600	76 600	76 600	76 400	73 700	69 620	139 240
P.042	111 000	111 000	103 200								100 170	200 340
P.052	140 600	134 500									124 060	248 120
P.062	209 100	201 400									185 660	371 320
P.072	274 600	274 600	264 500	257 300	256 400	256 400	256 400				245 660	491 320
P.082	397 100	397 100	397 100	383 500							359 400	718 800
P.092	513 900	513 900	488 900	476 200	476 200	446 300					423 000	846 000
P.102	631 300	630 800	572 300	541 800	517 300						500 000	1 000 000

1) Gearing with infinite fatigue strength (referring to DIN 3990)

→ Project planning with defined service life is possible

5.3.6 Step 6: Selecting the motor power P_M

$$P_M \geq P_{K1} = \frac{P_{K2}}{\eta} = \frac{10.5 \text{ kW}}{0.98} = 10.7 \text{ kW}$$

P_M = Nominal motor power in kW

P_{K1} = Operating power on the input shaft (HSS) in kW

P_{K2} = Operating power at LSS in kW

Motor selection $\rightarrow P_M = 11 \text{ kW}$

5.3.7 Step 7: Selection of gearmotor combination

$P_m = 11.0 \text{ kW}$									
n_2	M_a	i_{ex}	$F_{Ra}^{1)}$	M_{N2}					
min^{-1}	Nm		N	$f_{LC} \leq 7.5$ Nm	$f_{LC} > 107.5$ Nm				m kg
1.4	76500	1095	213700	86800	69620	P	032KF97	DRN	160M4
1.5	67800	971	225600	86800	69620	PF	032KF97	DRN	160M4
1.7	61300	878	233400	86800	69620	PH	032KF97	DRN	160M4
2.0	51900	744	243300	86800	69620	PHF	032KF97	DRN	160M4
2.3	45400	650	249400	86800	69620				

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Selecting a combination:

PHF032 KF97 DRN160M4

Checking the output torque:

$M_a = 67\,800 \text{ Nm} > M_{K2} = 66\,850 \text{ Nm} \rightarrow \text{ok}$

Exact gear ratio:

$i_{ex} = 971 \text{ (required = 960)} \rightarrow \text{ok}$

5.3.8 Step 8: Checking the peak load conditions $M_{K2 \max} < M_{K2 \text{ per}}$

Permitted peak output torque $M_{K2 \text{ per}} \rightarrow$

Constant direction of the load – constant torque:

$$M_{K2 \text{ per}} = \frac{M_{N2 \text{ Lim}}}{F_F} = \frac{139240 \text{ Nm}}{1.2} = 116033 \text{ Nm}$$

$M_{K2 \text{ per}}$ = Permitted peak output torque in Nm

$M_{N2 \text{ Lim}}$ = Limited nominal gear unit torque in Nm

F_F = Peak load factor

Calculating the peak load $M_{K2 \max}$:

$$M_{K2 \max} = M_a \times F_{\text{Start}} = 67800 \text{ Nm} \times 1.5 = 101700 \text{ Nm}$$

$M_{K2 \max}$ = Peak output torque in Nm

M_a = Output torque in relation to the motor power in Nm

F_{Start} = Startup factor

Checking the gear unit selection:

$$M_{K2 \max} < M_{K2 \text{ per}} \rightarrow \text{OK}$$

$M_{K2 \max}$ = Peak output torque

$M_{K2 \text{ per}}$ = Permitted peak output torque

5.3.9 Step 9: Checking the external additional forces

There are no overhung loads or axial forces in this case → OK.

5.3.10 Step 10: Check of the thermal rating/heating

The ambient temperature is below 45 °C

Horizontal mounting position

→ Thermal rating is OK.

5.3.11 Step 11: Selecting the lubricant

As $n_2 = 1.5 \text{ min}^{-1}$ ($n_2 < 3.0 \text{ min}^{-1}$) contact SEW-EURODRIVE.

5.3.12 Step 12: Technical specification

Example: PHF032/T KF97 DRN160M4		
Planetary gear unit	P	Gear unit type
	H	Hollow shaft
	F	Flange-mounted design
	032	Gear unit size
	/T	Torque arm
Primary gear unit	KF	Series
	97	Gear unit size
Motor	DRN..	Series
	160M4	Size + number of poles

5.4 Dimensioning example – Project planning with infinite fatigue strength (gearing according to DIN 3990)

5.4.1 Step 1: Drive selection data

- Application: Apron feeders
- Bevel-helical planetary gear unit
- Hollow shaft with shrink disk and torque arm
- Required output speed $n_2 = 1.5 \text{ min}^{-1}$
- Required operating power at LSS $P_{k2} = 10 \text{ kW}$
- Motor 4-pole/50 Hz in star/delta connection
- Input speed $n_1 = 1440 \text{ min}^{-1}$
- Operating time: 24 hours per day
- Cyclic duration factor: 100% cdf, 10 starts per hour
- Direction of rotation under load: CW rotation
- Outdoors, dusty environment
- Ambient temperature = 0 °C...40 °C
- Installation altitude $H = 10 \text{ m}$
- No axial or radial forces acting on the output shaft

5.4.2 Step 2: Calculation of basic data M_{K2} , i , η **Operating torque on LSS:**

$$M_{K2} = \frac{P_{K2} \times 9550}{n_2} \text{ Nm}$$

M_{K2} = Operating torque at LSS in Nm
 P_{K2} = Operating power at LSS in kW
 n_2 = Output speed (LSS) in min^{-1}

$$M_{K2} = \frac{10 \text{ kW} \times 9550}{1.5 \text{ min}^{-1}} = 63667 \text{ Nm}$$

Required gear ratio:

$$i = \frac{n_1}{n_2} = \frac{1440 \text{ min}^{-1}}{1.5 \text{ min}^{-1}} = 960$$

n_1 = Input speed (HSS) in min^{-1}
 n_2 = Output speed (LSS) in min^{-1}

Efficiency:

$$\eta = 0.98$$

5.4.3 Step 3: Selecting the application factors $F_{S \min}$, F_F , F_{Start} **Application-specific service factor $F_{S \min}$** Application: Apron feeder $t > 10 \text{ h} \rightarrow F_{S \min} = 1.5$ **Peak load factor F_F**

Hollow shaft with shrink disk

Load per hour = 6...20 $\rightarrow F_F = 1.2$ **Startup factor F_{start}** Motor in star/delta $\rightarrow F_{\text{Start}} = 1.3$ t = Daily operating period**5.4.4 Step 4: Calculating the required nominal output torque M_{N2}**

Constant direction of the load – constant torque:

$$M_{N2} \geq M_{K2} \times F_{S \min} = 63667 \text{ Nm} \times 1.5 = 95500 \text{ Nm}$$

M_{N2} = Nominal torque in Nm
 M_{K2} = Operating torque at LSS in Nm
 $F_{S \min}$ = Application-specific service factor

5 Project planning for gear units

Dimensioning example – Project planning with infinite fatigue strength (gearing according to DIN 3990)

5.4.5 Step 5: Selecting the planetary gear unit size M_{N2}

$$PHF\ 042 \rightarrow M_{N2} = 100\ 170\ \text{Nm}$$

Size	Service life factor f_{LC}											$M_{N2\ Lim}$ [Nm]
	≤ 7.5	≤ 15	≤ 25	≤ 30	≤ 35	≤ 45	≤ 52.5	≤ 70	≤ 95	≤ 107.5	$> 107.5^{1)}$	
	M_{N2}											
P.002	29 200	26 300									24 830	49 660
P.012	46 200	41 600	38 500								36 810	73 620
P.022	64 200	60 100	55 600	54 200	54 200	54 200	54 200	54 200	54 200		51 190	102 380
P.032	86 800	84 900	78 600	76 600	76 600	76 600	76 600	76 600	76 400	73 700	69 620	139 240
P.042	111 000	111 000	103 200								100 170	200 340
P.052	140 600	134 500									124 060	248 120
P.062	209 100	201 400									185 660	371 320
P.072	274 600	274 600	264 500	257 300	256 400	256 400	256 400				245 660	491 320
P.082	397 100	397 100	397 100	383 500							359 400	718 800
P.092	513 900	513 900	488 900	476 200	476 200	446 300					423 000	846 000
P.102	631 300	630 800	572 300	541 800	517 300						500 000	1 000 000

1) Gearing with infinite fatigue strength (referring to DIN 3990)

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5.4.6 Step 6: Selecting the motor power P_M

$$P_M \geq P_{K1} = \frac{P_{K2}}{\eta} = \frac{10\text{ kW}}{0.98} = 10.2\text{ kW}$$

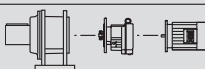
P_M = Nominal motor power in kW

P_{K1} = Operating power on the input shaft (HSS) in kW

P_{K2} = Operating power at LSS in kW

Motor selection $\rightarrow P_M = 11\text{ kW}$

5.4.7 Step 7: Selection of gearmotor combination

P _m = 11.0 kW										
n ₂	M _a	i _{ex}	F _{Ra} ¹⁾	M _{N2}					m	
min ⁻¹	Nm		N	f _{LC} ≤ 7.5 Nm	f _{LC} > 107.5 Nm				kg	
1.2	84400	1209	310300	111000	100170	P	042KF97	DRN	160M4	1080
1.5	67800	971	323000	111000	100170	PF	042KF97	DRN	160M4	890
1.7	61300	878	323000	111000	100170	PH	042KF97	DRN	160M4	1090
						PHF	042KF97	DRN	160M4	900

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Selecting a combination:

Checking the output torque:

Exact gear ratio:

PHF042 KF97 DRN160M4

$M_a = 67\ 800\ \text{Nm} > M_{K2} = 63\ 667\ \text{Nm} \rightarrow \text{ok}$

$i_{ex} = 971\ (\text{required} = 960 \rightarrow \text{ok})$

5.4.8 Step 8: Checking the peak load conditions $M_{K2\max} < M_{K2\text{per}}$

Permitted peak output torque $M_{K2\text{per}} \rightarrow$

Constant direction of the load – constant torque:

$$M_{K2\text{per}} = \frac{M_{N2\text{Lim}}}{F_F} = \frac{200340\text{Nm}}{1.3} = 154108\text{Nm}$$

$M_{K2\text{per}}$ = Permitted peak output torque in Nm
 $M_{N2\text{Lim}}$ = Limited nominal gear unit torque in Nm
 F_F = Peak load factor

Calculating the peak load $M_{K2\max}$:

$$M_{K2\max} = M_a \times F_{\text{Start}} = 67800\text{Nm} \times 1.5 = 101700\text{Nm}$$

$M_{K2\max}$ = Peak output torque in Nm
 M_a = Output torque in relation to the motor power in Nm
 F_{Start} = Startup factor

Checking the gear unit selection:

$$M_{K2\max} < M_{K2\text{per}} \rightarrow \text{OK}$$

$M_{K2\max}$ = Peak output torque
 $M_{K2\text{per}}$ = Permitted peak output torque

5.4.9 Step 9: Checking the external additional forces

There are no overhung loads or axial forces in this case $\rightarrow$ OK.

5.4.10 Step 10: Checking the thermal rating/heating

The ambient temperature is below 45 °C

Horizontal mounting position

$\rightarrow$ Thermal rating is OK

5.4.11 Step 11: Selecting the lubricant

As $n_2 = 1.5 \text{ min}^{-1}$ ($n_2 < 3.0 \text{ min}^{-1}$) contact SEW-EURODRIVE.

5.4.12 Step 12: Technical specification

Example: PHF042/T KF97 DRN160M4		
Planetary gear unit	P	Gear unit type
	H	Hollow shaft
	F	Flange-mounted design
	042	Gear unit size
	/T	Torque arm
Primary gear unit	KF	Series
	97	Gear unit size
Motor	DRN..	Series
	160M4	Size + number of poles

6 Lubricants

6.1 Guidelines for lubricant selection

SEW-EURODRIVE delivers the planetary gear units without oil and the primary gear units filled with oil.

Generally it is possible to have the planetary gear unit delivered with oil.

INFORMATION



- The oil viscosity and type (mineral/synthetic) to be used are determined by SEW-EURODRIVE specifically for each order. This information is noted in the order confirmation and on the gear unit's nameplate. You must contact SEW-EURODRIVE in case of a deviation from this specification. This lubricant recommendation in chapter "Lubricant table" in no way represents a guarantee as to the quality of the lubricant delivered by each respective supplier. Each lubricant manufacturer is responsible for the quality of its product.
 - Ensure that the planetary gear units and primary gear units are filled with the correct oil grade and volume before startup. You can obtain the corresponding information from the gear unit nameplate and the lubricant table on the following pages.
 - Do not mix different synthetic lubricants and do not mix synthetic with mineral lubricants.
 - Check the compatibility of the used greases and oils.
-

6.2 General

The lubricant table on the following page shows the permitted lubricants for planetary gear units with output speeds ≥ 1.0 rpm. Observe the following key to the lubricant table.

6.3 Permitted lubricants

This chapter describes the permitted lubricants and the permitted temperatures for industrial gear units from SEW-EURODRIVE.



INFORMATION

- The standard for viscosity and oil grade is the type of oil that is specified by SEW-EURODRIVE in the order (see order confirmation and nameplate).
- Contact SEW-EURODRIVE if you use bio and food grade lubricants or polyglycol oils.
- Check the compatibility of the greases and oils used.
- The tables contain the lubricants approved by SEW-EURODRIVE.
- Oils of the same viscosity class from different manufacturers do not have the same characteristics. In particular, the minimum permitted oil bath temperatures are manufacturer-specific. These temperatures are specified in the lubricant tables.
- The minimum permitted oil bath temperatures depend on the lubrication type used. These temperatures are specified in the lubricant tables. The values correspond to the maximum viscosity of the individual lubricants.
- The values specified in the lubricant tables apply as of the time of printing of this document. The data of the lubricants are subject to dynamic change on the part of the lubricant manufacturers. For the latest information about the lubricants, visit: www.sew-eurodrive.de/lubricants

6

6.3.1 Lubricant selection

Note the following when selecting the lubricants.

NOTICE

Selecting improper lubricants may damage the gear unit.

Possible damage to property.

- Observe the following notes.

- The oil viscosity and type (mineral/synthetic) to be used are determined by SEW-EURODRIVE specifically for each order. This information is noted in the order confirmation and on the gear unit's nameplate.

If other lubricants are used in the gear units and/or in other temperature ranges as those recommended, the right to claim under warranty will become invalid. Exceptions are application-specific approvals that have to be confirmed by SEW-EURODRIVE in written form.

The lubricant recommendation in the lubricant table in no way represents a guarantee regarding the quality of the lubricant delivered by each respective supplier. Each lubricant manufacturer is responsible for the quality of its product.

- Oils of the same viscosity class from different manufacturers do not have the same characteristics. In particular, the minimum permitted oil bath temperatures are manufacturer-specific. These temperatures are specified in the lubricant tables.
- The minimum permitted oil bath temperatures depend on the lubrication type used. These temperatures are specified in the lubricant tables. The values correspond to the maximum viscosity of the individual lubricants.

- The values specified in the lubricant tables apply as of the time of printing of this document. The data of the lubricants are subject to dynamic change on the part of the lubricant manufacturers. For up-to-date information about the lubricants, visit:

www.sew-eurodrive.de/lubricants

- Before startup, ensure that the planetary gear unit and the primary gear unit are filled with the correct oil grade and quantity. You can obtain the corresponding information from the gear unit nameplate and the lubricant table on the following page.
- As standard, planetary gear units and primary gear units have separate oil chambers. With separate oil chambers, the planetary gear unit is delivered without oil, the primary gear unit is delivered with oil.
- The lubricant fill quantity and viscosity of planetary gearmotors with common oil chamber depend only on the information on the nameplate of the planetary gear unit. Planetary gear units and primary gear units with a common oil chamber are delivered without oil fill as standard.
- Do not mix different synthetic lubricants and do not mix synthetic with mineral lubricants.
- Check the compatibility of the greases and oils used.
- Observe the safety notes in the individual chapters.

6.3.2 Structure of the tables and abbreviations

		DIN (ISO) API	ISO,SAE NLGI					
[1]	CLP	VG 150 ¹⁾	-20	+65	-20	+65		
			-5		-5			
			+5		+5			
			Optigear BM 150		Alpha SP 150			
			S0		S0			
VG 220		-15	+75	-15	+75			
		0		0				
		+10		+10				
		Optigear BM 220		Alpha SP 220				
		S0		S0				
VG 320		-10	+85	-10	+80			
		+5		+5				
		+15		+15				
		Optigear BM 320		Alpha SP 320				
		S0		S0				

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[1] Viscosity class

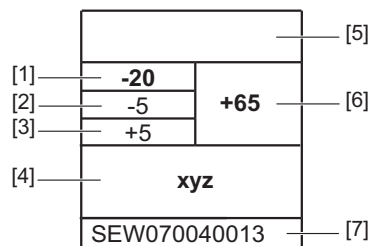
[2] Lubricant type

Abbreviations

Icons	Designation
CLP	= Mineral oil
CLP HC	= Synthetic polyalphaolefin (PAO)
E	= Ester-based oil

Icons	Designation
	= Mineral lubricant
	= Synthetic lubricant
	= Lubricant for the food industry (NSF H1 -compliant)
	= Biodegradable oil (lubricant for agriculture, forestry, and water management)
1)	= Lubricants may only be used if service factor $F_s \geq 1.3$

6.3.3 Explanation of the various lubricants



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- [1] Lowest cold start temperature in °C for splash lubrication*
- [2] Lowest cold start temperature in °C for drives with pumps up to a max. oil viscosity of 5000 cSt*
- [3] Lowest cold start temperature in °C for drives with pumps up to a max. oil viscosity of 2000 cSt*
- [4] Trade name
- [5] Manufacturer
- [6] Highest oil bath temperature in °C. MUST NOT BE EXCEEDED.
- [7] Approvals

*In case of low temperatures, the oil must be heated to the specified minimum temperature, for example by using an oil heater. The maximally permitted oil viscosity per pump type is specified in the following chapter.

6.3.4 Lubricant tables

The lubricant table is valid when this document is printed. Please refer to www.sew-eurodrive.de/lubricants for the latest version of the table.

DIN (ISO) API	ISO SAE NLGI							
CLP	VG 150 ¹⁾	-20 -5 0 +5	-20 -5 0 +5	-20 -5 0 +5	-20 -5 0 +5	-20 -5 0 +5	-20 -5 0 +5	-20 -5 0 +5
		Optigear BM 150	Alpha SP 150	Renolin CLP 150 Plus	Renolin HighGear 150	Mobilgear 600 XP 150	Kilberoil GEM 1-150 N	Meropa 150
		SO	SO	SO	SO	SO	SO	SO
		-15 0 +10	-15 0 +10	-15 0 +10	-15 0 +10	-15 0 +10	-15 0 +10	-15 0 +10
	VG 220	Optigear BM 220	Alpha SP 220	Renolin CLP 220 Plus	Renolin HighGear 220	Mobilgear 600 XP 220	Kilberoil GEM 1-220 N	Shell Omala Oil F 220
		SO	SO	SO	SO	SO	SO	SO
		-10 -5 +5 +15	-10 -5 +5 +15	-10 -5 +5 +15	-10 -5 +5 +15	-10 -5 +5 +15	-10 -5 +5 +15	-10 -5 +5 +15
		Optigear BM 320	Alpha SP 320	Renolin CLP 320 Plus	Renolin HighGear 320	Mobilgear 600 XP 320	Kilberoil GEM 1-320 N	Shell Omala Oil F 320
	VG 460	SO	SO	SO	SO	SO	SO	SO
		-5 +10 +20	-5 +10 +20	-5 +10 +20	-5 +10 +20	-5 +10 +20	-5 +10 +20	-5 +10 +20
		Optigear BM 460	Alpha SP 460	Renolin CLP 460 Plus	Renolin HighGear 460	Mobilgear 600 XP 460	Kilberoil GEM 1-460 N	Shell Omala Oil F 460
		SO	SO	SO	SO	SO	SO	SO
	VG 680	0 +15 +25	0 +15 +25	0 +15 +25	0 +15 +25	0 +15 +25	0 +15 +25	0 +15 +25
		Optigear BM 680	Alpha SP 680	Renolin CLP 680 Plus	Renolin HighGear 680	Mobilgear 600 XP 680	Kilberoil GEM 1-680 N	Meropa 680
		SO	SO	SO	SO	SO	SO	SO
		+5 +20 +30	+5 +20 +30	+5 +20 +30	+5 +20 +30	+5 +20 +30	+5 +20 +30	+5 +20 +30
	VG 1000	Optigear BM 1000						
		SO						

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The lubricant table is valid when this document is printed. Please refer to www.sew-eurodrive.de/lubricants for the latest version of the table.

DIN (ISO) API	ISO,SAE NLGI	Castrol	FUCHS	Mobil®	KLÜBER LUBRICATION	Shell	TEXACO	TOTAL
CLP HC	VG 32 ¹⁾			-40 +30 SHC 624 S0				
	VG 68 ¹⁾		-35 +50 Renolin Unisyn CLP 68 S0	-40 +50 SHC 626 S0	-35 +50 Klubersynth GEM 4-68 N S0	-40 +50 Omala S4 GX 68 S0		
	VG 150 ¹⁾	-25 +70 Alphasyn EP 150 S0	-30 +70 Renolin Unisyn CLP 150 S0	-35 +75 SHC Gear 150 S0	-25 70 Klubersynth GEM 4-150 N S0	-30 +75 Omala S4 GX 150 S0	-25 +70 Pinnacle EP 150 S0	-35 +75 Carter SH 150 S0
	VG 220	-25 +80 Alphasyn EP 220 S0	-25 +80 Renolin Unisyn CLP 220 S0	-30 +85 SHC Gear 220 S0	-25 +80 Klubersynth GEM 4-220 N S0	-25 +85 Omala S4 GX 220 S0	-25 +80 Pinnacle EP 220 S0	-25 +80 Carter SH 220 S0
	VG 320	-20 +90 Alphasyn EP 320 S0	-20 +90 Renolin Unisyn CLP 320 S0	-20 +95 SHC Gear 320 S0	-20 +95 Klubersynth GEM 4-320 N S0	-20 +95 Omala S4 GX 320 S0	-20 +90 Pinnacle EP 320 S0	-20 +90 Carter SH 320 S0
	VG 460	-15 +100 Alphasyn EP 460 S0	-15 +100 Renolin Unisyn CLP 460 S0	-15 +105 SHC Gear 460 S0	-15 +105 Klubersynth GEM 4-460 N S0	-15 +105 Omala S4 GX 460 S0	-15 +100 Pinnacle EP 460 S0	-15 +100 Carter SH 460 S0
	VG 680	-10 +110 Optigear Synthetic X 680 S0	-10 +110 Renolin Unisyn CLP 680 S0	-10 +110 SHC Gear 680 S0	-10 +110 Klubersynth GEM 4-680 N S0	-10 +110 Omala S4 GX 680 S0		-10 +110 Carter SH 680 S0
	VG 1000			-10 +110 SHC Gear 1000 S0	0 +110 Klubersynth EG4-1000 S0			

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The lubricant table is valid when this document is printed. Please refer to www.sew-eurodrive.de/lubricants for the latest version of the table.

DIN (ISO) API	ISO, SAE NLGI				
CLP HC NSF H1	VG 68 ¹⁾	-35	-40		-35
		-20	-25		-20
		-10	-15		-10
		+45	+45		+45
		Cassida Fluid HF 68	Optileb HY 68		Küberoil 4UH1-68 N
	VG 220 ¹⁾	S0	S0		S0
		-20	-25		-25
		-5	-5		-5
		+5	+5		+5
		Cassida Fluid GL 220	Optileb GT 220		Küberoil 4UH1-220 N
VG 460 ¹⁾	VG 460 ¹⁾	S0	S0		S0
		-15	-15		-15
		+5	+5		+5
		+20	+20		+15
		+90	+95		+95
	Cassida Fluid GL 460		Optileb GT 460		Küberoil 4UH1-460 N
		S0	S0		S0
E	VG 460				
	Plantogear 460 S				
	Küberbio CA2-460				

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6.4 Lubricant fill quantities

The specified lubricant fill quantities are **guide values** and apply only to the gear unit without mount-on components such as the oil supply system. The precise value varies depending on the gear ratio and the number of stages.

INFORMATION



- The oil chambers of the primary gear unit and the planetary gear unit are separated for standard designs.
- Planetary gear units are supplied without lubricant!
- RF..., KF..., and K.. gear units are filled with lubricant at the factory depending on the mounting position.
- For pivoted mounting positions adhere to the lubricant fill quantity on the nameplates.

6

6.4.1 Planetary gear units

The following table shows the lubricant fill quantities.

Size	Mounting position					
	M1	M2	M3	M4	M5	M6
	Liters l					
P.002	5	9	5	7	5	5
P.012	7	12	7	10	7	7
P.022	9	18	9	11	9	9
P.032	12	21	12	18	12	12
P.042	16	30	16	25	16	16
P.052	20	36	20	30	20	20
P.062	28	54	28	49	28	28
P.072	35	67	35	59	35	35
P.082	49	94	49	81	49	49
P.092	62	134	62	103	62	62
P.102	71	153	71	121	71	71

6.4.2 Helical (RF) primary gear units

INFORMATION



The lubricant fill quantity depends on the mounting position of the planetary gear unit and the mounting position of the RF primary gear unit. For notes on the mounting positions of RF primary gear units, see chapter 4.3.

The following table shows the lubricant fill quantities.

Size	Fill quantities in liters					
	M1	M2	M3	M4	M5	M6
	0°	0°	180°	0°	270°	90°
RF77	1.2	3.10	3.30	3.60	2.40	3.00
RF87	2.4	6.4	7.1	7.2	6.3	6.4
RF97	5.1	11.9	11.2	14.0	11.2	11.8
RF107	6.3	15.9	17.0	19.2	13.1	15.9
RF137	9.5	27.0	29.0	32.5	25.0	25.0
RF147	16.4	47.0	48.0	52.0	42.0	42.0
RF167	26.0	82.0	78.0	88.0	65.0	71.0

M1/M2/M3/M4/M5/M6

= Mounting position of planetary gear unit

0°/90°/180°/270°

= Mounting position of helical (RF) primary gear unit

6.4.3 Bevel (KF/K) primary gear units

INFORMATION



The lubricant fill quantity depends on the mounting position of the planetary gear unit and the mounting position of the KF and K primary gearmotor. For notes on the mounting positions of KF and K primary gear units, see chapter 4.2.

The table below shows the lubricant fill quantities.

Size	Fill quantities in liters											
	M1				M2				M3			
	0° A	90° A	180° B	270° A	0° A	90° A	180° A	270° A	0° B	90° A	180° A	270° A
KF67	1.1	2.4	1.1	3.7	2.7	2.7	2.7	2.7	1.1	3.7	1.1	2.4
KF77	2.1	4.1	2.1	5.9	4.5	4.5	4.5	4.5	2.1	5.9	2.1	4.1
KF87	3.7	8.2	3.7	11.9	8.4	8.4	8.4	8.4	3.7	11.9	3.7	8.2
KF97	7	14.7	7	21.5	16.5	16.5	16.5	16.5	7	21.5	7	14.7
KF107	10	21.8	10	35.1	25.2	25.2	25.2	25.2	10	35.1	10	21.8
KF127	21	41.5	21	55	41	41	41	41	21	55	21	41.5
KF157	31	62	31	92	62	62	62	62	31	92	31	66
K167	33	95	33	123	95	95	95	95	105	33	105	85
K187	53	152	53	200	152	152	152	152	167	53	167	143

Size	Fill quantities in liters											
	M4				M5				M6			
	0° A	90° A	180° B	270° A	0° A	90° B	180° A	270° A	0° B	90° A	180° A	270° B
KF67	2.7	2.7	2.7	2.7	2.4	1.1	3.7	1.1	3.7	1.1	2.4	1.1
KF77	4.5	4.5	4.5	4.5	4.1	2.1	5.9	2.1	5.9	2.1	4.1	2.1
KF87	8.4	8.4	8.4	8.4	8.2	3.7	11.9	3.7	11.9	3.7	8.2	3.7
KF97	15.7	15.7	15.7	15.7	14.7	7.0	21.5	7	21.5	7.0	14.7	7
KF107	25.2	25.2	25.2	25.2	21.8	10	35.1	10	35.1	10	21.8	10
KF127	41	41	41	41	41.5	21	55	21	55	21	41.5	21
KF157	62	62	62	62	66	31	90	31	92	31	66	31
K167	123	123	123	123	85	33	123	33	84	33	95	33
K187	200	200	200	200	143	53	200	53	143	53	152	53

M1/M2/M3/M4/M5/M6

0°/90°/180°/270°

A/B

= Mounting position of planetary gear unit

= Mounting position of bevel (KF/K) primary gear unit

= Position of the mounting flange at the primary bevel gear unit

6.5 Sealing greases/rolling bearing greases

The table shows the grease types recommended by SEW-EURODRIVE for operating temperatures from -40 °C to 100 °C.

	Manufacturer	Grease
Default	Fuchs	Renolit CX TOM 15 OEM¹⁾
	Castrol	Spheerol EPL 2
	Klüber	Petamo GHY 133 N
	Shell	Gadus S2 V220 2
	Texaco	Mulifak EP2
	Total	Multis EP 2
	Bremer & Leguil	Cassida Grease GTS2 ¹⁾
	Fuchs	Plantogel 2¹⁾

1) Grease used by the factory should be preferred.

INFORMATION



- The greases may only be interchanged within the same group. It is not permitted to mix different groups.
- If a customer wants to use a grease that is not listed in the table, the customer has to make sure that it is suitable for the intended application.

6.6 Comments

6.6.1 Planetary gearmotor with common oil chamber (special design)

INFORMATION



Lubricant fill quantity and viscosity depend on the data given on the nameplate of the planetary gear unit. The planetary gear unit and the primary gear unit will be delivered without oil fill.

6.6.2 Selecting the viscosity when using mineral oil

INFORMATION



If surface temperatures exceed 100 °C, contact SEW-EURODRIVE.

7 Options

The following additional options are available. Contact SEW-EURODRIVE if you require options.

- ATEX design
- Double-sided torque arm
- Output shaft types
 - Solid shaft with key
 - Solid shaft with 2 keys
 - Smooth solid shaft
 - Splined hollow shaft to DIN 5480
 - Splined solid shaft to DIN 5480
- Output shaft (LSS) sealing system
 - Labyrinth seal
 - 2 oil seals, inside sealing on a hardened sleeve (optional for M1/M3/M5/M6 mounting position)
 - 1 oil seal, inside sealing and 1 oil seal outside sealing on a hardened sleeve (optional for M1/M3/M5/M6 mounting position)

7.1 Torque arm

7.1.1 Single-sided torque arm

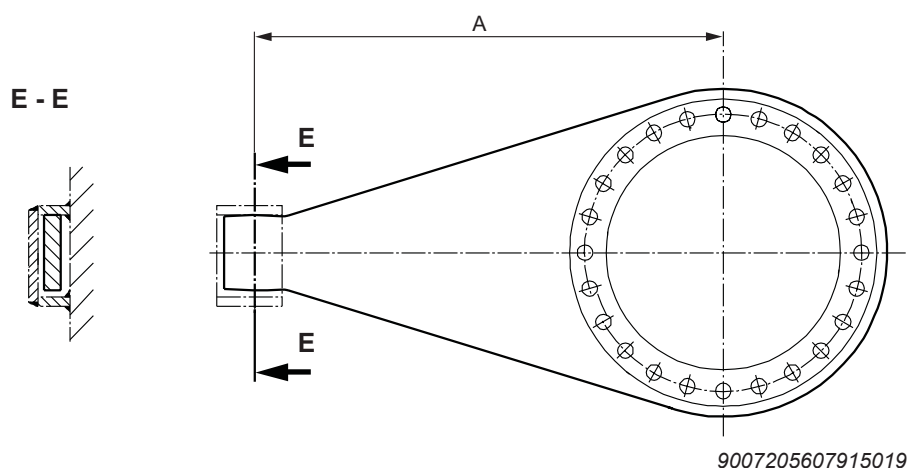
The reaction torque to the gear unit output torque is absorbed by the torque arm fixture via lever arm A. The illustration shows an example of absorption in a welded construction with design dimensions. Two supporting plates with the suggested dimensions are welded onto the customer's structure. Once the gear unit has been mounted, a connecting cover plate is welded onto the two supporting plates. The force acting on the support is the gear unit torque divided by the length of the lever arm A. The reaction force acts on the gear unit and customer bearings.

INFORMATION



See chapters 10.3 and 11.3 for detailed dimensions of the torque arm.

The following figure shows an example of a torque arm.



Weights

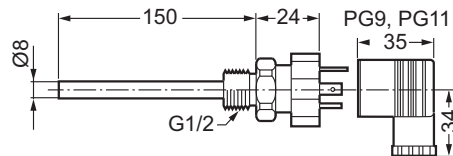
Size	Mass kg
P.002	25
P.012	25
P.022	48
P.032	58
P.042	93
P.052	102
P.062	183
P.072	317
P.082	420
P.092	440
P.102	510

7.2 PT100 Temperature sensor

The PT100 temperature sensor can be used to measure the temperature of the gear unit oil.

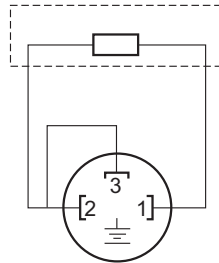
The temperature sensor is located in the oil sump of the gear unit. The exact position depends on the gear unit variant.

7.2.1 Dimensions



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7.2.2 Electrical connection



[1] / [2] Resistor element connection

7.2.3 Technical data

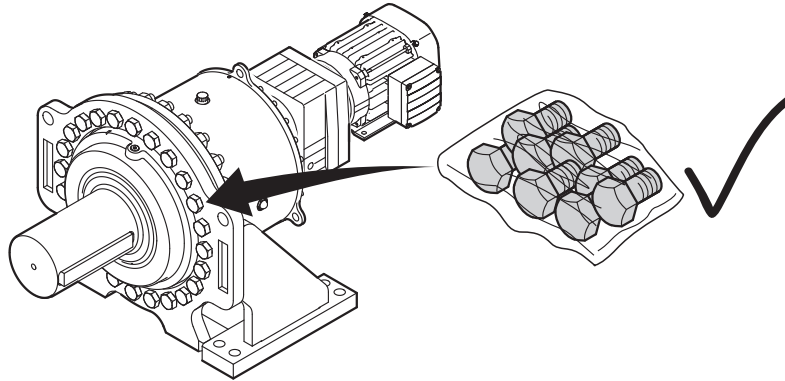
- Design with thermowell and changeable measuring insert
- Sensor tolerance $K \pm (0.3 + 0.005 \times T)$, (corresponds to DIN IEC 751 class B),
T = Oil temperature °C
- Plug connector DIN 43650 PG9 (IP65)
- The tightening torque for the retaining screw in the back of the plug connector for electrical connection is 0.25 Nm.

8 Design and operating notes

8.1 Screws included in the delivery

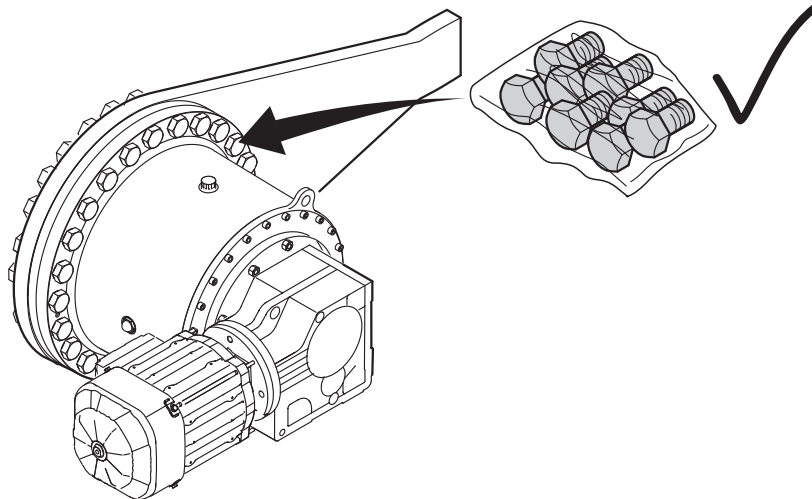
For the following gear unit variants, the screws are included in the **scope of delivery**:

- Foot-mounted gear unit



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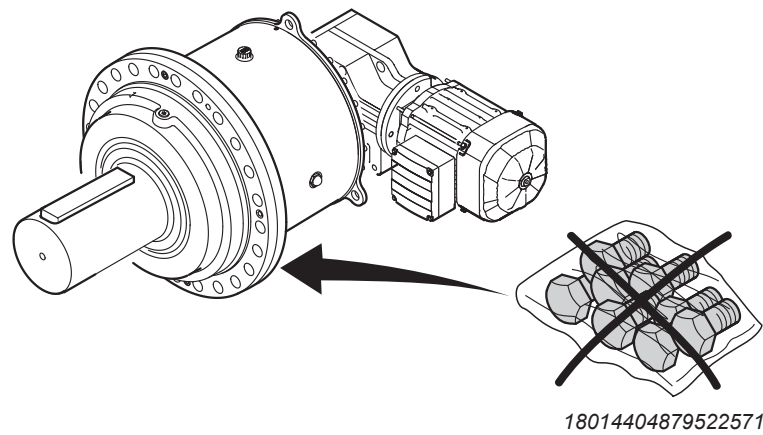
- Gear unit with torque arm



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Not included in the delivery:

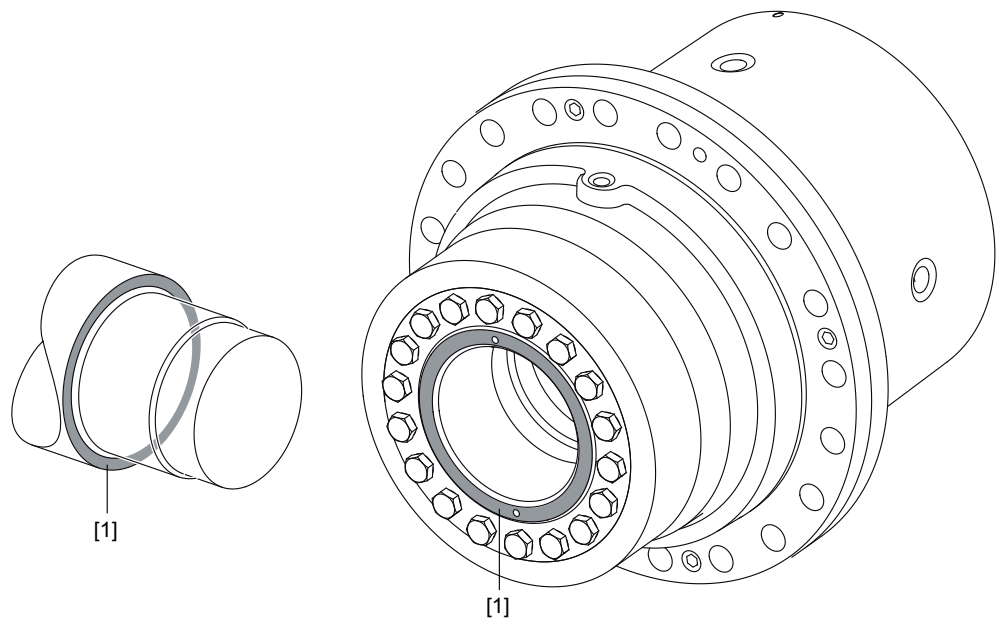
- Set of wrenches
- Torque wrench
- Mounting device
- Compensation elements (washers, spacing rings), if necessary
- Fasteners for input and output elements
- Lubricant e.g. NOCO® fluid from SEW-EURODRIVE
- Aids for assembly/disassembly onto the machine shaft
- Fasteners for the gear unit base
- Connection screws for flange-mounted gear units



8.2 Output shaft as hollow shaft with shrink disk

To guarantee a complete torque transmission from the gear unit to the machine shaft, observe the following procedure during construction and assembly.

Push the gear unit onto the machine shaft until the contact surfaces [1] touch.



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9 Important information on selection tables and dimension drawings

The following pages contain important information for chapters 10 and 11.

INFORMATION



Unless specified otherwise, all dimensions are given in **mm**.

9.1 Selection tables

INFORMATION



The selection tables show possible gear unit combinations. Different gear ratio ranges and options are possible. X.. series gear units are used as primary gear unit in this case. Contact SEW-EURODRIVE.

The following figure shows the structure of the selection tables.

P_m = 0.75 kW										
[1]	[3]	[4]	[5]	[6]	[7]				[9]	[10]
[2] n ₂	M _a	i _{ex}	F _{Ra} ¹⁾	M _{N2}					m	
min ⁻¹	Nm		N	Nm	Nm	f _{LC} ≤ 7.5	f _{LC} > 107.5		kg	
0.35	19800	4066	156000	46200	36810	P	012RF87	DRN	80M4	400
0.39	17800	3663	156000	46200	36810	PF	012RF87	DRN	80M4	330
0.45	15600	3214	156000	46200	36810	PH	012RF87	DRN	80M4	410
0.51	13800	2847	156000	46200	36810	PHF	012RF87	DRN	80M4	340

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- [1] Nominal motor power
- [2] Output speed
- [3] Output torque in relation to motor power
- [4] Gear unit ratio
- [5] Permitted radial load at LSS
 - 1) Overhung load for foot-mounted gear units with solid shaft; overhung loads for other gear unit types upon request
- [6] Nominal gear unit torque for project planning with defined service life for $f_{LC} \leq 7.5$
- [7] Nominal gear unit torque for project planning with gearing with infinite fatigue strength referring to DIN 3990 ($f_{LC} > 107.5$)
- [8] Gear unit type
- [9] Weight
- [10] Page number dimension sheet

9.2 Dimension sheets

9.2.1 Scope of delivery



= Standard parts supplied by SEW-EURODRIVE.



= Standard parts not supplied by SEW-EURODRIVE.

9.2.2 Tolerances

Keys

Keys: according to DIN 6885 (domed type A)

9

Spline

Splined shaft according to DIN 5480

9.2.3 Foot-mounted design

With the following combinations of foot-mounted planetary gear units with primary gear unit RF../KF../K.., the primary gear unit might protrude under the mounting surface.

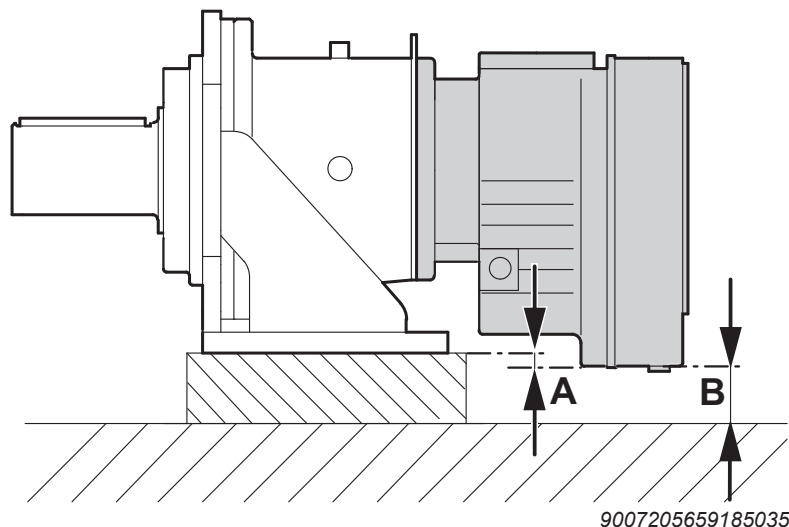
INFORMATION



For the following gear unit combinations, take account of **dimension A**. The customer base construction must be prepared accordingly. In addition, you need enough room to perform an oil change. The customer has to specify a **dimension B** for this purpose.

	Sizes/combinations		Dimension A (mm)
	RF..	KF../K..	
P.002	-	97	10
P.012	-	107	32.5
P.022	-	107	2.5
P.022	137	-	7.5
P.032	147	-	18.5
P.092	-	187	15

The following figure shows an example of a planetary gear unit with RF.. primary gear unit.



9.2.4 Oil expansion tank/oil riser pipe

In mounting position M2, there is an oil expansion tank mounted on the gear unit and in mounting position M4, an oil riser pipe is fitted. The dimensions specified in chapters 10.6/10.7 and 11.6/11.7 are guide values. Please contact SEW-EURODRIVE if there is little space available for installing.

9.2.5 Dimensions of motors and planetary gear units

Motor options

The motor dimensions can change when installing motor options. Refer to the dimension drawings of the motor options.

Special designs

The dimensions of the terminal box of special designs such as KS, CSA, VIK, extra-low voltage or voltage changeover may deviate from the standard dimensions.

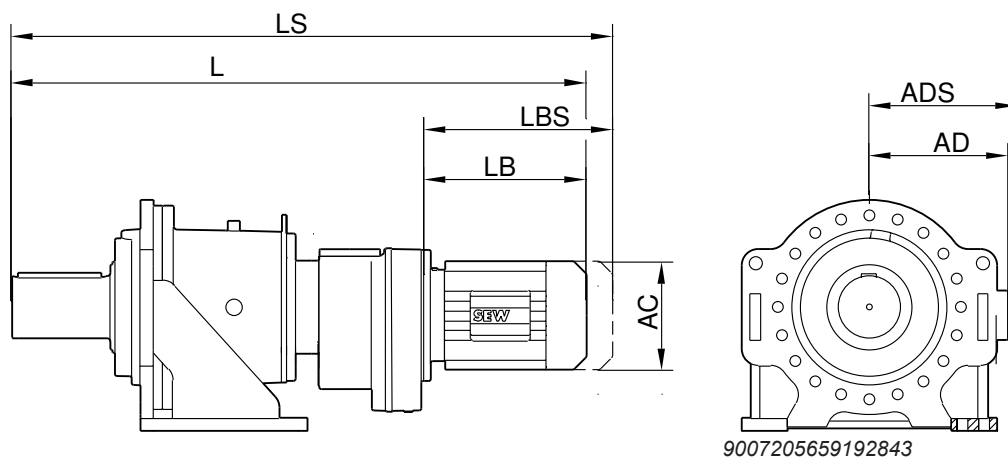
EN 50347

European standard EN 50347 became effective in August 2001. This standard adopts the dimension designations for three-phase AC motors for sizes 56 to 315M and flange sizes 65 to 740 from the IEC 72-1 standard.

The new dimension designations given in EN 50347 / IEC 72-1 are used for the dimensions in question in the dimension tables of the dimensions sheets.

Dimension designations

The dimensions of the planetary gearmotor are described below. They are specified in chapters 10.3 and 11.3.



- L** = Total length of the planetary gearmotor
- LS** = Total length of planetary gearmotor including brake
- LB** = Length of the motor
- LBS** = Length of the brakemotor
- AC** = Diameter of the motor
- AD** = Distance between the center of the motor shaft and the top part of the terminal box
- ADS** = Distance between the center of the brakemotor shaft and the top part of the terminal box

10 P.RF.. helical planetary gearmotors

10.1 Guide to the dimension sheets

10.1.1 P.. foot-mounted gear units

Size	Dimension sheet/page number						
	RF77	RF87	RF97	RF107	RF137	RF147	RF167
P002	130	132	134	136	-	-	-
P012	138	140	142	144	-	-	-
P022	-	146	148	150	152	-	-
P032	-	-	154	156	158	160	-
P042	-	-	-	162	164	166	-
P052	-	-	-	168	170	172	-
P062	-	-	-	-	174	176	-
P072	-	-	-	-	-	178	180
P082	-	-	-	-	-	182	184
P092	-	-	-	-	-	-	186
P102	-	-	-	-	-	-	188

10.1.2 PF.. flange-mounted gear units

Size	Dimension sheet/page number						
	RF77	RF87	RF97	RF107	RF137	RF147	RF167
PF002	131	133	135	137	-	-	-
PF012	139	141	143	145	-	-	-
PF022	-	147	149	151	153	-	-
PF032	-	-	155	157	159	161	-
PF042	-	-	-	163	165	167	-
PF052	-	-	-	169	171	173	-
PF062	-	-	-	-	175	177	-
PF072	-	-	-	-	-	179	181
PF082	-	-	-	-	-	183	185
PF092	-	-	-	-	-	-	187
PF102	-	-	-	-	-	-	189

10.1.3 Motor adapters

	Dimension sheet/page number						
	RF77	RF87	RF97	RF107	RF137	RF147	RF167
Adapter for mounting IEC motors P..RF..AM..	191	191	191	192	192	192	192
Adapter for mounting NEMA motors P..RF..AM..	193	193	193	194	194	194	194
Input shaft assembly P..RF..AD..	195	195	195	195	195	195	195
AQA motor adapter	196	196	197	197	197	197	-

10.2 Selection tables R..

P_m = 0.75 kW											
n ₂	M _a	i _{ex}	F _{Ra} ¹⁾	M _{N2}						m	
min ⁻¹	Nm		N	f _{LC} ≤ 7.5 Nm	f _{LC} > 107.5 Nm					kg	
0.35	19800	4066	156000	46200	36810	P	012RF87	DRN	80M4	400	140
0.39	17800	3663	156000	46200	36810	PF	012RF87	DRN	80M4	330	141
0.45	15600	3214	156000	46200	36810	PH	012RF87	DRN	80M4	410	140
0.51	13800	2847	156000	46200	36810	PHF	012RF87	DRN	80M4	340	141
0.45	15600	3209	156000	-	31500	P	012RF77	DRN	80M4	370	138
0.48	14700	3030	156000	-	31500	PF	012RF77	DRN	80M4	300	139
						PH	012RF77	DRN	80M4	385	138
						PHF	012RF77	DRN	80M4	315	139
0.36	19700	4051	122700	29200	24830	P	002RF87	DRN	80M4	320	132
0.39	17700	3649	123900	29200	24830	PF	002RF87	DRN	80M4	260	133
						PH	002RF87	DRN	80M4	320	132
						PHF	002RF87	DRN	80M4	265	133
0.45	15500	3197	124000	-	24830						
0.48	14700	3018	124000	-	24830						
0.56	12500	2570	124000	29200	24830	P	002RF77	DRN	80M4	290	130
0.64	10900	2254	124000	29200	24830	PF	002RF77	DRN	80M4	230	131
0.71	9910	2035	124000	29200	24830	PH	002RF77	DRN	80M4	295	130
0.80	8720	1790	124000	29200	24830	PHF	002RF77	DRN	80M4	235	131
0.85	8240	1691	124000	29200	24830						
1.0	7010	1439	124000	29200	24830						

P_m = 1.1 kW											
n ₂	M _a	i _{ex}	F _{Ra} ¹⁾	M _{N2}						m	
min ⁻¹	Nm		N	f _{LC} ≤ 7.5 Nm	f _{LC} > 107.5 Nm					kg	
0.36	28700	4066	197000	-	51190	P	022RF87	DRN	90S4	550	146
0.40	25900	3663	197000	-	51190	PF	022RF87	DRN	90S4	450	147
						PH	022RF87	DRN	90S4	570	146
						PHF	022RF87	DRN	90S4	465	147
0.36	28700	4066	156000	46200	36810						
0.40	25900	3663	156000	46200	36810	P	012RF87	DRN	90S4	405	140
0.45	22700	3214	156000	46200	36810	PF	012RF87	DRN	90S4	335	141
0.51	20100	2847	156000	46200	36810	PH	012RF87	DRN	90S4	415	140
0.58	17600	2498	156000	46200	36810	PHF	012RF87	DRN	90S4	345	141
0.61	16700	2368	156000	46200	36810						
0.70	14600	2072	156000	46200	36810						
0.64	16000	2263	156000	-	31500	P	012RF77	DRN	90S4	375	138
0.71	14400	2043	156000	-	31500	PF	012RF77	DRN	90S4	305	139
						PH	012RF77	DRN	90S4	390	138
						PHF	012RF77	DRN	90S4	320	139
0.36	28600	4051	111600	29200	24830	P	002RF87	DRN	90S4	325	132
0.40	25800	3649	116200	29200	24830	PF	002RF87	DRN	90S4	265	133
0.45	22600	3201	120800	29200	24830	PH	002RF87	DRN	90S4	325	132
0.51	20000	2836	122500	29200	24830	PHF	002RF87	DRN	90S4	270	133
0.58	17600	2489	124000	29200	24830						
0.65	15900	2254	124000	29200	24830						
0.72	14300	2035	124000	29200	24830						
0.81	12600	1790	124000	29200	24830	P	002RF77	DRN	90S4	295	130
0.86	11900	1691	124000	29200	24830	PF	002RF77	DRN	90S4	235	131
1.0	10100	1439	124000	29200	24830	PH	002RF77	DRN	90S4	300	130
1.1	9250	1308	124000	29200	24830	PHF	002RF77	DRN	90S4	240	131
1.3	8010	1133	124000	29200	24830						
1.5	6970	986	124000	29200	24830						

P _m = 1.5 kW											
n ₂	M _a	i _{ex}	F _{Ra} ¹⁾	M _{N2}						m	
				f _{LC} ≤7.5	f _{LC} >107.5						
min ⁻¹	Nm		N	Nm	Nm					kg	
0.36	38900	4058	197000	-	51190	P	022RF97	DRN	90L4	610	148
0.40	34800	3628	197000	-	51190	PF	022RF97	DRN	90L4	500	149
						PH	022RF97	DRN	90L4	620	148
						PHF	022RF97	DRN	90L4	520	149
0.45	30800	3214	197000	-	51190	P	022RF87	DRN	90L4	550	146
0.51	27300	2847	197000	-	51190	PF	022RF87	DRN	90L4	450	147
0.58	24000	2498	197000	-	51190	PH	022RF87	DRN	90L4	570	146
						PHF	022RF87	DRN	90L4	465	147
0.36	38900	4058	156000	46200	36810	P	012RF97	DRN	90L4	460	142
						PF	012RF97	DRN	90L4	390	143
						PH	012RF97	DRN	90L4	475	142
						PHF	012RF97	DRN	90L4	405	143
0.36	39000	4066	156000	46200	36810	P PF PH PHF	012RF87 012RF87 012RF87 012RF87	DRN DRN DRN DRN	90L4 90L4 90L4 90L4	405 335 420 350	140 141 140 141
0.40	35200	3663	156000	46200	36810						
0.45	30800	3214	156000	46200	36810						
0.51	27300	2847	156000	46200	36810						
0.58	24000	2498	156000	46200	36810						
0.62	22700	2368	156000	46200	36810						
0.71	19900	2072	156000	46200	36810						
0.78	17900	1867	156000	46200	36810						
0.89	15700	1637	156000	46200	36810						
0.86	16300	1697	156000	-	31500	P	012RF77	DRN	90L4	375	138
1.0	13800	1445	156000	-	31500	PF	012RF77	DRN	90L4	305	139
						PH	012RF77	DRN	90L4	390	138
						PHF	012RF77	DRN	90L4	320	139
0.52	27200	2836	113900	29200	24830	P	002RF87	DRN	90L4	325	132
0.59	23900	2489	119000	29200	24830	PF	002RF87	DRN	90L4	270	133
0.62	22600	2358	120800	29200	24830	PH	002RF87	DRN	90L4	330	132
0.71	19800	2064	122600	29200	24830	PHF	002RF87	DRN	90L4	270	133
0.57	24600	2570	117900	29200	24830	P PF PH PHF	002RF77 002RF77 002RF77 002RF77	DRN DRN DRN DRN	90L4 90L4 90L4 90L4	295 240 300 245	130 131 130 131
0.65	21600	2254	121500	29200	24830						
0.72	19500	2035	122800	29200	24830						
0.82	17200	1790	124000	29200	24830						
0.86	16200	1691	124000	29200	24830						
1.0	13800	1439	124000	29200	24830						
1.1	12500	1308	124000	29200	24830						
1.3	10800	1133	124000	29200	24830						
1.5	9470	986	124000	29200	24830						
1.6	8770	913	124000	-	24830	P	002RF77	DRN	90L4	295	130
1.7	8040	837	124000	-	24830	PF	002RF77	DRN	90L4	240	131
2.0	7060	735	124000	-	24830	PH	002RF77	DRN	90L4	300	130
						PHF	002RF77	DRN	90L4	240	131

P_m = 2.2 kW										
n₂	M_a	i_{ex}	F_{Ra}¹⁾	M_{N2}						m
min⁻¹	Nm		N	f_{LC} ≤ 7.5	f_{LC} > 107.5					kg
				Nm	Nm					
0.36	57100	4022	323000	111000	100170	P	042RF107	DRN	100LS4	990 162
0.40	51600	3637	323000	111000	100170	PF	042RF107	DRN	100LS4	800 163
						PH	042RF107	DRN	100LS4	990 162
						PHF	042RF107	DRN	100LS4	800 163
0.36	57100	4022	238100	86800	69620	P	032RF107	DRN	100LS4	740 156
0.40	51600	3637	243600	86800	69620	PF	032RF107	DRN	100LS4	620 157
0.47	43700	3082	250800	86800	69620	PH	032RF107	DRN	100LS4	760 156
0.51	40500	2859	252000	86800	69620	PHF	032RF107	DRN	100LS4	640 157
0.44	46300	3262	248600	-	69620	P	032RF97	DRN	100LS4	690 154
0.57	36300	2558	252000	-	69620	PF	032RF97	DRN	100LS4	570 155
						PH	032RF97	DRN	100LS4	710 154
						PHF	032RF97	DRN	100LS4	590 155

P_m = 2.2 kW

n ₂ min ⁻¹	M _a Nm	i _{ex}	F _{Ra} ¹⁾ N	M _{N2} f _{LC} ≤ 7.5 f _{LC} > 107.5						m kg	
				Nm	Nm						
0.36	57600	4058	180500	-	51190	P PF PH PHF	022RF97	DRN	100LS4	610	148
0.40	51500	3628	190300	-	51190					510	149
0.44	46300	3262	197000	-	51190					630	148
0.51	40200	2831	197000	-	51190					520	149
0.57	36300	2558	197000	-	51190						
0.62	33300	2351	197000	-	51190						
0.69	29600	2087	197000	-	51190	P PF PH PHF	022RF87	DRN	100LS4	560	146
0.70	29400	2072	197000	-	51190					455	147
										570	146
										470	147
0.51	40200	2831	156000	46200	36810	P PF PH PHF	012RF97	DRN	100LS4	465	142
0.69	29600	2087	156000	46200	36810					395	143
										475	142
										405	143
0.45	45600	3214	156000	46200	36810	P PF PH PHF	012RF87	DRN	100LS4	410	140
0.51	40400	2847	156000	46200	36810					340	141
0.58	35400	2498	156000	46200	36810					425	140
0.61	33600	2368	156000	46200	36810					355	141
0.70	29400	2072	156000	46200	36810						
0.78	26500	1867	156000	46200	36810						
0.89	23200	1637	156000	46200	36810						
1.0	20500	1445	156000	-	36810						
1.1	18100	1281	156000	46200	36810	P PF PH PHF	012RF77	DRN	100LS4	380	138
1.3	16100	1138	156000	-	31500					310	139
1.5	14000	990	156000	-	29900					395	138
										325	139
0.89	23100	1631	120100	29200	24830	P PF PH PHF	002RF87	DRN	100LS4	330	132
1.0	20400	1440	122300	29200	24830					275	133
1.1	18100	1276	123700	29200	24830					335	132
										275	133
0.71	28800	2035	111200	29200	24830	P PF PH PHF	002RF77	DRN	100LS4	300	130
0.81	25400	1790	116800	29200	24830					245	131
1.3	16000	1133	124000	29200	24830					305	130
1.5	14000	986	124000	29200	24830					245	131
1.6	12900	913	124000	-	24830	P PF PH PHF	002RF77	DRN	100LS4	300	130
1.7	11800	837	124000	-	24830					240	131
2.0	10400	735	124000	-	24830					305	130
2.4	8650	610	124000	-	24830					245	131
2.6	7790	549	124000	-	24830						
3.0	6840	482	124000	-	24830						

P_m = 3.0 kW

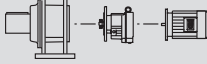
n ₂ min ⁻¹	M _a Nm	i _{ex}	F _{Ra} ¹⁾ N	M _{N2} f _{LC} ≤ 7.5 f _{LC} > 107.5						m kg	
				Nm	Nm						
0.36	77500	4022	364000	140600	124060	P PF PH PHF	052RF107	DRN	100L4	1140	168
0.40	70100	3637	364000	140600	124060					940	169
										1130	168
										930	169
0.36	77500	4022	316100	111000	100170	P PF PH PHF	042RF107	DRN	100L4	990	162
0.40	70100	3637	321700	111000	100170					800	163
0.47	59400	3082	323000	111000	100170					1000	162
0.51	55100	2859	323000	111000	100170					810	163
0.57	49600	2573	323000	111000	100170						
0.36	77500	4022	212200	86800	69620	P PF PH PHF	032RF107	DRN	100L4	750	156
0.40	70100	3637	222600	86800	69620					630	157
0.47	59400	3082	235500	86800	69620					770	156
0.51	55100	2859	240100	86800	69620					650	157
0.62	44900	2331	249800	86800	69620						
0.70	39800	2067	252000	86800	69620						

P_m = 3.0 kW											
n₂	M_a	i_{ex}	F_{Ra}¹⁾	M_{N2}						m	
min⁻¹	Nm		N	f_{LC} ≤ 7.5	f_{LC} > 107.5					kg	
				Nm	Nm						
0.45	62900	3262	231600	-	69620	P	032RF97	DRN	100L4	700	154
0.51	54600	2831	240700	-	69620	PF	032RF97	DRN	100L4	580	155
0.57	49300	2558	245800	-	69620	PH	032RF97	DRN	100L4	720	154
0.62	45300	2351	249400	-	69620	PHF	032RF97	DRN	100L4	600	155
0.70	40200	2087	252000	-	69620						
0.78	35900	1867	252000	-	69620						
0.51	54600	2831	185500	-	51190	P	022RF97	DRN	100L4	620	148
0.57	49300	2558	193500	-	51190	PF	022RF97	DRN	100L4	520	149
0.62	45300	2351	197000	-	51190	PH	022RF97	DRN	100L4	630	148
0.70	40200	2087	197000	-	51190	PHF	022RF97	DRN	100L4	530	149
0.78	35900	1867	197000	-	51190						
0.87	32300	1678	197000	-	51190						
1.0	28000	1457	197000	-	51190						
1.1	25100	1304	197000	-	51190						
0.89	31500	1637	197000	-	51190	P	022RF87	DRN	100L4	570	146
1.0	27800	1445	197000	-	51190	PF	022RF87	DRN	100L4	465	147
						PH	022RF87	DRN	100L4	580	146
						PHF	022RF87	DRN	100L4	480	147
1.1	26000	1350	197000	-	51190	P	022RF87	DRN	100L4	560	146
						PF	022RF87	DRN	100L4	460	147
						PH	022RF87	DRN	100L4	580	146
						PHF	022RF87	DRN	100L4	475	147
0.70	40200	2087	156000	46200	36810	P	012RF97	DRN	100L4	470	142
1.4	20800	1082	156000	46200	36810	PF	012RF97	DRN	100L4	400	143
						PH	012RF97	DRN	100L4	485	142
						PHF	012RF97	DRN	100L4	415	143
1.5	18900	982	156000	46200	36810	P	012RF97	DRN	100L4	465	142
						PF	012RF97	DRN	100L4	395	143
						PH	012RF97	DRN	100L4	480	142
						PHF	012RF97	DRN	100L4	410	143
0.61	45600	2368	156000	46200	36810	P	012RF87	DRN	100L4	420	140
0.70	39900	2072	156000	46200	36810	PF	012RF87	DRN	100L4	350	141
0.78	36000	1867	156000	46200	36810	PH	012RF87	DRN	100L4	430	140
0.89	31500	1637	156000	46200	36810	PHF	012RF87	DRN	100L4	360	141
1.0	27800	1445	156000	-	36810						
1.1	24700	1281	156000	46200	36810						
1.2	23700	1232	156000	46200	36810	P	012RF87	DRN	100L4	415	140
1.3	21000	1092	156000	46200	36810	PF	012RF87	DRN	100L4	345	141
1.6	17700	918	156000	46200	36810	PH	012RF87	DRN	100L4	430	140
1.7	16200	844	156000	46200	36810	PHF	012RF87	DRN	100L4	360	141
1.9	14400	749	156000	46200	36810						
1.0	27700	1440	113100	29200	24830	P	002RF87	DRN	100L4	340	132
1.1	24600	1276	118000	29200	24830	PF	002RF87	DRN	100L4	280	133
1.3	21000	1090	121900	29200	24830	PH	002RF87	DRN	100L4	340	132
						PHF	002RF87	DRN	100L4	285	133
1.6	17600	914	124000	29200	24830	P	002RF87	DRN	100L4	335	132
2.2	12800	667	124000	29200	24830	PF	002RF87	DRN	100L4	280	133
						PH	002RF87	DRN	100L4	340	132
						PHF	002RF87	DRN	100L4	280	133
1.0	27700	1439	113100	29200	24830	P	002RF77	DRN	100L4	310	130
1.1	25200	1308	117100	29200	24830	PF	002RF77	DRN	100L4	250	131
						PH	002RF77	DRN	100L4	310	130
						PHF	002RF77	DRN	100L4	255	131
1.7	16100	837	124000	-	24830	P	002RF77	DRN	100L4	305	130
2.0	14100	735	124000	-	24830	PF	002RF77	DRN	100L4	250	131
2.4	11700	610	124000	-	24830	PH	002RF77	DRN	100L4	310	130
2.6	10500	549	124000	-	24830	PHF	002RF77	DRN	100L4	255	131
3.0	9280	482	124000	-	24830						
3.4	8190	425	124000	-	24830						
3.9	7260	377	124000	-	24100						
4.3	6470	336	124000	-	24100						

P_m = 4.0 kW

n ₂	M _a	i _{ex}	F _{Ra} ¹⁾	M _{N2}						m	
				f _{LC} ≤7.5	f _{LC} >107.5						
min ⁻¹	Nm		N	Nm	Nm					kg	
0.51	73100	2859	364000	140600	124060	P	052RF107	DRN	112M4	1150	168
0.57	65800	2573	364000	140600	124060	PF	052RF107	DRN	112M4	950	169
						PH	052RF107	DRN	112M4	1140	168
						PHF	052RF107	DRN	112M4	940	169
0.36	102800	4022	292800	111000	100170	P	042RF107	DRN	112M4	1000	162
0.40	93000	3637	302600	111000	100170	PF	042RF107	DRN	112M4	810	163
0.71	52800	2067	323000	111000	100170	PH	042RF107	DRN	112M4	1010	162
0.78	47700	1869	323000	111000	100170	PHF	042RF107	DRN	112M4	820	163
0.47	78800	3082	210300	86800	69620	P	032RF107	DRN	112M4	760	156
0.51	73100	2859	218600	86800	69620	PF	032RF107	DRN	112M4	630	157
0.92	40500	1584	252000	86800	69620	PH	032RF107	DRN	112M4	780	156
						PHF	032RF107	DRN	112M4	660	157
0.57	65400	2558	228600	-	69620	P	032RF97	DRN	112M4	710	154
0.87	42900	1678	251500	-	69620	PF	032RF97	DRN	112M4	590	155
1.0	37200	1457	252000	-	69620	PH	032RF97	DRN	112M4	730	154
						PHF	032RF97	DRN	112M4	610	155
1.2	30800	1207	197000	64200	51190	P	022RF107	DRN	112M4	670	150
						PF	022RF107	DRN	112M4	570	151
						PH	022RF107	DRN	112M4	680	150
						PHF	022RF107	DRN	112M4	580	151
0.62	60100	2351	176100	-	51190						
0.70	53300	2087	187500	-	51190	P	022RF97	DRN	112M4	630	148
0.78	47700	1867	195800	-	51190	PF	022RF97	DRN	112M4	520	149
0.87	42900	1678	197000	-	51190	PH	022RF97	DRN	112M4	640	148
1.1	33300	1304	197000	-	51190	PHF	022RF97	DRN	112M4	540	149
1.4	27600	1082	197000	-	51190						
1.5	25100	982	197000	64200	51190	P	022RF97	DRN	112M4	620	148
1.7	22400	878	197000	64200	51190	PF	022RF97	DRN	112M4	520	149
						PH	022RF97	DRN	112M4	640	148
						PHF	022RF97	DRN	112M4	540	149
1.2	31400	1232	197000	-	51190	P	022RF87	DRN	112M4	570	146
1.3	27900	1092	197000	-	51190	PF	022RF87	DRN	112M4	470	147
1.6	23400	918	197000	-	51190	PH	022RF87	DRN	112M4	590	146
						PHF	022RF87	DRN	112M4	485	147
1.0	37200	1457	156000	46200	36810	P	012RF97	DRN	112M4	480	142
						PF	012RF97	DRN	112M4	410	143
						PH	012RF97	DRN	112M4	495	142
						PHF	012RF97	DRN	112M4	425	143
1.9	20200	790	156000	46200	36810	P	012RF97	DRN	112M4	475	142
2.0	18200	716	156000	46200	36810	PF	012RF97	DRN	112M4	405	143
2.3	16200	634	156000	46200	36810	PH	012RF97	DRN	112M4	490	142
						PHF	012RF97	DRN	112M4	420	143
0.89	41800	1637	156000	46200	36810	P	012RF87	DRN	112M4	425	140
1.1	32700	1281	156000	46200	36810	PF	012RF87	DRN	112M4	355	141
1.3	27900	1094	156000	46200	36810	PH	012RF87	DRN	112M4	440	140
						PHF	012RF87	DRN	112M4	370	141
1.7	21500	844	156000	46200	36810						
1.9	19100	749	156000	46200	36810	P	012RF87	DRN	112M4	425	140
2.2	17100	670	156000	46200	36810	PF	012RF87	DRN	112M4	355	141
2.4	15400	602	156000	46200	36810	PH	012RF87	DRN	112M4	440	140
2.8	13300	523	156000	46200	36810	PHF	012RF87	DRN	112M4	370	141
2.7	14000	551	156000	-	27600	P	012RF77	DRN	112M4	395	138
						PF	012RF77	DRN	112M4	325	139
						PH	012RF77	DRN	112M4	410	138
						PHF	012RF77	DRN	112M4	340	139
1.3	27800	1090	112900	29200	24830	P	002RF87	DRN	112M4	345	132
						PF	002RF87	DRN	112M4	290	133
						PH	002RF87	DRN	112M4	350	132
						PHF	002RF87	DRN	112M4	295	133
1.6	23300	914	119800	29200	24830	P	002RF87	DRN	112M4	345	132
1.7	21400	841	121600	29200	24830	PF	002RF87	DRN	112M4	290	133
2.0	19000	746	123100	29200	24830	PH	002RF87	DRN	112M4	350	132
2.2	17000	667	124000	29200	24830	PHF	002RF87	DRN	112M4	290	133

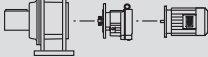
P_m = 4.0 kW

n ₂	M _a	i _{ex}	F _{Ra} ¹⁾	M _{N2}						m	
				f _{LC} ≤7.5	f _{LC} >107.5						
min ⁻¹	Nm		N	Nm	Nm					kg	
1.3	28900	1133	111000	29200	24830	P	002RF77	DRN	112M4	315	130
1.5	25200	986	117100	29200	24830	PF	002RF77	DRN	112M4	260	131
						PH	002RF77	DRN	112M4	320	130
						PHF	002RF77	DRN	112M4	265	131
2.4	15500	610	124000	-	24830						
2.7	14000	549	124000	-	24830						
3.0	12300	482	124000	-	24830	P	002RF77	DRN	112M4	315	130
3.4	10800	425	124000	-	24830	PF	002RF77	DRN	112M4	260	131
3.9	9630	377	124000	-	24100	PH	002RF77	DRN	112M4	320	130
4.4	8580	336	124000	-	24100	PHF	002RF77	DRN	112M4	260	131
4.8	7730	302	124000	-	23300						
5.5	6780	265	124000	-	22200						

P_m = 5.5 kW

n ₂	M _a	i _{ex}	F _{Ra} ¹⁾	M _{N2}						m		
				f _{LC} ≤7.5	f _{LC} >107.5							
min ⁻¹	Nm		N	Nm	Nm					kg		
0.36	142600	4049	467500	209100	185660	P	062RF137	DRN	132S4	1750	174	
0.42	122600	3480	473000	209100	185660	PF	062RF137	DRN	132S4	1390	175	
0.46	111800	3174	473000	209100	185660	PH	062RF137	DRN	132S4	1740	174	
						PHF	062RF137	DRN	132S4	1380	175	
0.36	142600	4049	340000	140600	124060	P	052RF137	DRN	132S4	1270	170	
0.42	122600	3480	357500	140600	124060	PF	052RF137	DRN	132S4	1070	171	
0.51	101500	2883	364000	140600	124060	PH	052RF137	DRN	132S4	1260	170	
0.57	90100	2558	364000	140600	124060	PHF	052RF137	DRN	132S4	1060	171	
0.40	128100	3637	352900	140600	124060	P	052RF107	DRN	132S4	1160	168	
0.51	100700	2859	364000	140600	124060	PF	052RF107	DRN	132S4	960	169	
0.57	90600	2573	364000	140600	124060	PH	052RF107	DRN	132S4	1150	168	
						PHF	052RF107	DRN	132S4	950	169	
0.46	111800	3174	282900	111000	100170	P	042RF137	DRN	132S4	1120	164	
0.63	81700	2321	312600	111000	100170	PF	042RF137	DRN	132S4	930	165	
						PH	042RF137	DRN	132S4	1130	164	
						PHF	042RF137	DRN	132S4	940	165	
0.47	108600	3082	286600	111000	100170							
0.51	100700	2859	295000	111000	100170	P	042RF107	DRN	132S4	1010	162	
0.57	90600	2573	304800	111000	100170	PF	042RF107	DRN	132S4	820	163	
0.63	82100	2331	312300	111000	100170	PH	042RF107	DRN	132S4	1020	162	
0.71	72800	2067	319700	111000	100170	PHF	042RF107	DRN	132S4	830	163	
0.78	65800	1869	323000	111000	100170							
0.63	82100	2331	205100	86800	69620	P	032RF107	DRN	132S4	770	156	
0.71	72800	2067	219000	86800	69620	PF	032RF107	DRN	132S4	650	157	
0.92	55800	1584	239400	86800	69620	PH	032RF107	DRN	132S4	790	156	
1.1	48700	1383	246400	86800	69620	PHF	032RF107	DRN	132S4	670	157	
1.2	42500	1207	251800	86800	69620	P	032RF107	DRN	132S4	760	156	
						PF	032RF107	DRN	132S4	640	157	
						PH	032RF107	DRN	132S4	780	156	
						PHF	032RF107	DRN	132S4	660	157	
0.78	65700	1867	228200	-	69620	P	032RF97	DRN	132S4	720	154	
0.87	59100	1678	235900	-	69620	PF	032RF97	DRN	132S4	600	155	
1.0	51300	1457	243900	-	69620	PH	032RF97	DRN	132S4	740	154	
1.4	38100	1082	252000	86800	69620	PHF	032RF97	DRN	132S4	620	155	
1.2	44200	1257	250300	-	69620	P	032RF97	DRN	132S4	720	154	
						PF	032RF97	DRN	132S4	590	155	
						PH	032RF97	DRN	132S4	740	154	
						PHF	032RF97	DRN	132S4	620	155	
0.87	59100	1678	177900	-	51190	P	022RF97	DRN	132S4	640	148	
1.0	51300	1457	190600	-	51190	PF	022RF97	DRN	132S4	540	149	
1.1	45900	1304	197000	-	51190	PH	022RF97	DRN	132S4	650	148	
						PHF	022RF97	DRN	132S4	550	149	

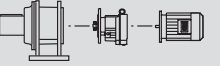
P_m = 5.5 kW

n ₂ min ⁻¹	M _a Nm	i _{ex}	F _{Ra} ¹⁾ N	M _{N2}						m	
				f _{LC} ≤ 7.5 Nm	f _{LC} > 107.5 Nm					kg	
1.5	34600	982	197000	64200	51190	P	022RF97	DRN	132S4	640	148
1.7	30900	878	197000	64200	51190	PF	022RF97	DRN	132S4	530	149
						PH	022RF97	DRN	132S4	650	148
						PHF	022RF97	DRN	132S4	550	149
1.6	32300	918	197000	-	51190	P	022RF87	DRN	132S4	580	146
						PF	022RF87	DRN	132S4	485	147
						PH	022RF87	DRN	132S4	600	146
						PHF	022RF87	DRN	132S4	500	147
1.4	38100	1082	156000	46200	36810	P	012RF97	DRN	132S4	490	142
						PF	012RF97	DRN	132S4	420	143
						PH	012RF97	DRN	132S4	500	142
						PHF	012RF97	DRN	132S4	435	143
1.5	34600	982	156000	46200	36810	P	012RF97	DRN	132S4	485	142
1.9	27800	790	156000	46200	36810	PF	012RF97	DRN	132S4	415	143
2.0	25200	716	156000	46200	36810	PH	012RF97	DRN	132S4	500	142
2.3	22300	634	156000	46200	36810	PHF	012RF97	DRN	132S4	430	143
1.1	45100	1281	156000	46200	36810	P	012RF87	DRN	132S4	440	140
1.3	38500	1094	156000	46200	36810	PF	012RF87	DRN	132S4	370	141
						PH	012RF87	DRN	132S4	450	140
						PHF	012RF87	DRN	132S4	380	141
1.3	38400	1092	156000	46200	36810						
1.6	32300	918	156000	46200	36810	P	012RF87	DRN	132S4	435	140
1.7	29700	844	156000	46200	36810	PF	012RF87	DRN	132S4	365	141
1.9	26400	749	156000	46200	36810	PH	012RF87	DRN	132S4	450	140
2.2	23600	670	156000	46200	36810	PHF	012RF87	DRN	132S4	380	141
2.4	21200	602	156000	46200	36810						
2.8	18400	523	156000	46200	36810						
2.0	26200	746	115500	29200	24830						
2.2	23500	667	119600	29200	24830						
2.4	21100	600	121800	29200	24830						
2.8	18300	521	123600	29200	24830						
3.1	16400	466	124000	29200	24830	P	002RF87	DRN	132S4	355	132
3.8	13600	387	124000	29200	24830	PF	002RF87	DRN	132S4	300	133
4.1	12500	357	124000	29200	24830	PH	002RF87	DRN	132S4	360	132
4.5	11300	321	124000	29200	24830	PHF	002RF87	DRN	132S4	305	133
5.2	9820	279	124000	29200	24830						
5.6	9160	260	124000	-	24400						
6.3	8210	233	122000	-	23500						
7.8	6630	188	114500	-	12000	P	002RF77	DRN	132S4	330	130
8.7	5910	168	110600	-	12000	PF	002RF77	DRN	132S4	270	131
						PH	002RF77	DRN	132S4	330	130
						PHF	002RF77	DRN	132S4	275	131

P_m = 7.5 kW

n ₂ min ⁻¹	M _a Nm	i _{ex}	F _{Ra} ¹⁾ N	M _{N2}						m	
				f _{LC} ≤ 7.5 Nm	f _{LC} > 107.5 Nm					kg	
0.36	193500	4049	432600	209100	185660						
0.42	166400	3480	452500	209100	185660	P	062RF137	DRN	132M4	1770	174
0.46	151700	3174	462000	209100	185660	PF	062RF137	DRN	132M4	1400	175
0.51	137800	2883	470300	209100	185660	PH	062RF137	DRN	132M4	1760	174
0.57	122300	2558	473000	209100	185660	PHF	062RF137	DRN	132M4	1390	175
0.63	110900	2321	473000	209100	185660						
0.51	137800	2883	344400	140600	124060	P	052RF137	DRN	132M4	1280	170
0.57	122300	2558	357800	140600	124060	PF	052RF137	DRN	132M4	1080	171
0.74	95400	1995	364000	140600	124060	PH	052RF137	DRN	132M4	1280	170
0.84	83200	1741	364000	140600	124060	PHF	052RF137	DRN	132M4	1080	171
0.51	136700	2859	345500	140600	124060	P	052RF107	DRN	132M4	1180	168
0.79	89300	1869	364000	140600	124060	PF	052RF107	DRN	132M4	980	169
						PH	052RF107	DRN	132M4	1170	168
						PHF	052RF107	DRN	132M4	970	169

P_m = 7.5 kW

n ₂	M _a	i _{ex}	F _{Ra} ¹⁾	M _{N2}						m		
				f _{LC} ≤7.5	f _{LC} >107.5							
min ⁻¹	Nm		N	Nm	Nm						kg	
0.63	110900	2321	283900	111000	100170	P	042RF137	DRN	132M4	1140	164	
0.99	70600	1477	321400	111000	100170	PF	042RF137	DRN	132M4	950	165	
						PH	042RF137	DRN	132M4	1140	164	
						PHF	042RF137	DRN	132M4	950	165	
0.71	98800	2067	297000	111000	100170	P	042RF107	DRN	132M4	1030	162	
0.79	89300	1869	306000	111000	100170	PF	042RF107	DRN	132M4	840	163	
0.93	75700	1584	317500	111000	100170	PH	042RF107	DRN	132M4	1040	162	
1.1	66100	1383	323000	111000	100170	PHF	042RF107	DRN	132M4	850	163	
1.2	57700	1207	323000	111000	100170	P	042RF107	DRN	132M4	1030	162	
						PF	042RF107	DRN	132M4	840	163	
						PH	042RF107	DRN	132M4	1030	162	
						PHF	042RF107	DRN	132M4	840	163	
0.93	75700	1584	214900	86800	69620	P	032RF107	DRN	132M4	790	156	
1.1	66100	1383	227700	86800	69620	PF	032RF107	DRN	132M4	660	157	
						PH	032RF107	DRN	132M4	810	156	
						PHF	032RF107	DRN	132M4	690	157	
1.4	51700	1082	243500	86800	69620	P	032RF107	DRN	132M4	780	156	
1.5	46700	977	248200	86800	69620	PF	032RF107	DRN	132M4	660	157	
						PH	032RF107	DRN	132M4	800	156	
						PHF	032RF107	DRN	132M4	680	157	
1.4	50900	1067	244300	-	69620	P	032RF97	DRN	132M4	730	154	
1.5	46900	982	248000	-	69620	PF	032RF97	DRN	132M4	610	155	
1.7	41900	878	252000	-	69620	PH	032RF97	DRN	132M4	750	154	
						PHF	032RF97	DRN	132M4	630	155	
1.2	57700	1207	180300	64200	51190	P	022RF107	DRN	132M4	700	150	
						PF	022RF107	DRN	132M4	600	151	
						PH	022RF107	DRN	132M4	710	150	
						PHF	022RF107	DRN	132M4	610	151	
1.4	51700	1082	190000	-	51190	P	022RF97	DRN	132M4	660	148	
						PF	022RF97	DRN	132M4	550	149	
						PH	022RF97	DRN	132M4	670	148	
						PHF	022RF97	DRN	132M4	570	149	
1.5	46900	982	196900	64200	51190	P	022RF97	DRN	132M4	650	148	
1.7	41900	878	197000	64200	51190	PF	022RF97	DRN	132M4	550	149	
1.9	37700	790	197000	64200	51190	PH	022RF97	DRN	132M4	670	148	
2.0	34200	716	197000	64200	51190	PHF	022RF97	DRN	132M4	570	149	
2.3	30300	634	197000	64200	51190							
1.9	37700	790	156000	46200	36810							
2.0	34200	716	156000	46200	36810	P	012RF97	DRN	132M4	510	142	
2.3	30300	634	156000	46200	36810	PF	012RF97	DRN	132M4	435	143	
2.6	27400	574	156000	46200	36810	PH	012RF97	DRN	132M4	520	142	
3.0	23200	486	156000	46200	36810	PHF	012RF97	DRN	132M4	450	143	
3.5	20300	425	156000	46200	36810							
1.6	43900	918	156000	46200	36810							
1.7	40300	844	156000	46200	36810							
2.4	28800	602	156000	46200	36810	P	012RF87	DRN	132M4	455	140	
2.8	25000	523	156000	46200	36810	PF	012RF87	DRN	132M4	385	141	
3.1	22300	468	156000	46200	36810	PH	012RF87	DRN	132M4	470	140	
3.8	18500	388	156000	46200	36810	PHF	012RF87	DRN	132M4	400	141	
4.1	17100	359	156000	-	36810							
4.5	15400	322	156000	46200	36810							

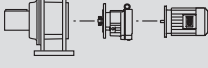
P_m = 7.5 kW

n ₂	M _a	i _{ex}	F _{Ra} ¹⁾	M _{N2}						m	
min ⁻¹	Nm		N	f _{LC} ≤ 7.5 Nm	f _{LC} > 107.5 Nm					kg	
2.5	28600	600	111500	29200	24830						
3.1	22200	466	121000	29200	24830						
3.8	18400	387	123500	29200	24830						
4.1	17000	357	124000	29200	24830						
4.6	15300	321	124000	29200	24830						
5.3	13300	279	124000	29200	24830	P	002RF87	DRN	132M4	375	132
5.6	12400	260	124000	-	24400	PF	002RF87	DRN	132M4	315	133
6.3	11100	233	121800	-	23500	PH	002RF87	DRN	132M4	380	132
7.6	9240	193	115200	-	22500	PHF	002RF87	DRN	132M4	320	133
8.2	8530	178	112500	-	23100						
9.2	7670	161	108900	-	22200						
11	6660	139	104400	-	20400						
12	5960	125	101000	-	19500						
14	4940	104	95500	-	17400						

10

P_m = 9.2 kW

n ₂	M _a	i _{ex}	F _{Ra} ¹⁾	M _{N2}						m	
min ⁻¹	Nm		N	f _{LC} ≤ 7.5 Nm	f _{LC} > 107.5 Nm					kg	
0.41	211300	3608	850000	631300	500000	P	102RF167	DRN	132L4	4590	188
0.46	188000	3210	850000	631300	500000	PF	102RF167	DRN	132L4	3630	189
0.52	167100	2854	850000	-	500000	PH	102RF167	DRN	132L4	4650	188
0.65	133000	2271	850000	-	500000	PHF	102RF167	DRN	132L4	3690	189
0.40	214100	3656	720000	513900	423000	P	092RF167	DRN	132L4	3730	186
0.45	190500	3253	720000	513900	423000	PF	092RF167	DRN	132L4	3040	187
0.51	169300	2891	720000	-	423000	PH	092RF167	DRN	132L4	3750	186
0.64	134700	2301	720000	-	423000	PHF	092RF167	DRN	132L4	3050	187
0.72	118900	2031	720000	-	423000						
0.81	105700	1805	720000	513900	423000	P	092RF167	DRN	132L4	3730	186
						PF	092RF167	DRN	132L4	3030	187
						PH	092RF167	DRN	132L4	3740	186
						PHF	092RF167	DRN	132L4	3040	187
0.35	243900	4165	523000	-	245660	P	072RF147	DRN	132L4	2320	178
0.54	160800	2747	523000	-	245660	PF	072RF147	DRN	132L4	1830	179
0.58	149400	2552	523000	-	245660	PH	072RF147	DRN	132L4	2370	178
0.63	136300	2328	523000	-	245660	PHF	072RF147	DRN	132L4	1880	179
0.40	217300	3711	412500	209100	185660	P	062RF147	DRN	132L4	1900	176
0.45	191800	3275	434000	209100	185660	PF	062RF147	DRN	132L4	1530	177
0.71	121500	2074	473000	209100	185660	PH	062RF147	DRN	132L4	1890	176
						PHF	062RF147	DRN	132L4	1520	177
0.42	203800	3480	424200	209100	185660	P	062RF137	DRN	132L4	1780	174
0.51	168800	2883	450800	209100	185660	PF	062RF137	DRN	132L4	1410	175
0.84	102000	1741	473000	209100	185660	PH	062RF137	DRN	132L4	1770	174
						PHF	062RF137	DRN	132L4	1400	175
0.57	149800	2558	333000	140600	124060	P	052RF137	DRN	132L4	1290	170
0.63	135900	2321	346100	140600	124060	PF	052RF137	DRN	132L4	1090	171
1.0	86500	1477	364000	140600	124060	PH	052RF137	DRN	132L4	1280	170
1.1	75600	1291	364000	140600	124060	PHF	052RF137	DRN	132L4	1080	171
1.1	81000	1383	364000	140600	124060	P	052RF107	DRN	132L4	1190	168
						PF	052RF107	DRN	132L4	990	169
						PH	052RF107	DRN	132L4	1180	168
						PHF	052RF107	DRN	132L4	980	169
1.2	70700	1207	364000	140600	124060	P	052RF107	DRN	132L4	1180	168
						PF	052RF107	DRN	132L4	980	169
						PH	052RF107	DRN	132L4	1170	168
						PHF	052RF107	DRN	132L4	970	169
0.74	116800	1995	277000	111000	100170	P	042RF137	DRN	132L4	1150	164
0.84	102000	1741	293700	111000	100170	PF	042RF137	DRN	132L4	960	165
1.4	63900	1092	323000	111000	100170	PH	042RF137	DRN	132L4	1150	164
						PHF	042RF137	DRN	132L4	960	165

P_m = 9.2 kW											
n₂	M_a	i_{ex}	F_{Ra}¹⁾	M_{N2}						m	
min⁻¹	Nm		N	f_{LC} ≤ 7.5	f_{LC} > 107.5					kg	
0.79	109400	1869	285600	111000	100170	P	042RF107	DRN	132L4	1040	162
0.93	92700	1584	302900	111000	100170	PF	042RF107	DRN	132L4	850	163
1.1	81000	1383	313200	111000	100170	PH	042RF107	DRN	132L4	1040	162
						PHF	042RF107	DRN	132L4	850	163
1.4	63300	1082	323000	111000	100170	P	042RF107	DRN	132L4	1030	162
1.5	57200	977	323000	111000	100170	PF	042RF107	DRN	132L4	840	163
1.7	51900	887	323000	111000	100170	PH	042RF107	DRN	132L4	1040	162
						PHF	042RF107	DRN	132L4	850	163
1.1	81000	1383	206900	86800	69620	P	032RF107	DRN	132L4	790	156
						PF	032RF107	DRN	132L4	670	157
						PH	032RF107	DRN	132L4	810	156
						PHF	032RF107	DRN	132L4	690	157
1.2	70700	1207	221800	86800	69620	P	032RF107	DRN	132L4	790	156
1.4	63300	1082	231000	86800	69620	PF	032RF107	DRN	132L4	670	157
1.9	46100	787	248700	86800	69620	PH	032RF107	DRN	132L4	810	156
2.1	41800	714	252000	86800	69620	PHF	032RF107	DRN	132L4	690	157
2.0	41900	716	252000	-	69620	P	032RF97	DRN	132L4	740	154
2.3	37100	634	252000	-	69620	PF	032RF97	DRN	132L4	620	155
						PH	032RF97	DRN	132L4	760	154
						PHF	032RF97	DRN	132L4	640	155
2.4	35900	614	197000	64200	51190	P	022RF107	DRN	132L4	710	150
2.7	31300	536	197000	64200	51190	PF	022RF107	DRN	132L4	610	151
						PH	022RF107	DRN	132L4	720	150
						PHF	022RF107	DRN	132L4	620	151
1.5	57500	982	180700	64200	51190						
1.7	51400	878	190500	64200	51190	P	022RF97	DRN	132L4	660	148
1.9	46200	790	197000	64200	51190	PF	022RF97	DRN	132L4	560	149
2.0	41900	716	197000	64200	51190	PH	022RF97	DRN	132L4	680	148
2.6	33600	574	197000	64200	51190	PHF	022RF97	DRN	132L4	570	149
3.0	28400	486	197000	64200	51190						
3.8	22700	388	197000	-	45300	P	022RF87	DRN	132L4	610	146
						PF	022RF87	DRN	132L4	510	147
						PH	022RF87	DRN	132L4	630	146
						PHF	022RF87	DRN	132L4	520	147
2.0	41900	716	156000	46200	36810						
2.3	37100	634	156000	46200	36810						
2.6	33600	574	156000	46200	36810	P	012RF97	DRN	132L4	510	142
3.0	28400	486	156000	46200	36810	PF	012RF97	DRN	132L4	445	143
3.5	24800	425	156000	46200	36810	PH	012RF97	DRN	132L4	530	142
4.0	21300	364	156000	46200	36810	PHF	012RF97	DRN	132L4	460	143
4.5	19200	329	156000	46200	36810						
5.3	16300	279	156000	46200	36810						
2.0	43800	749	156000	46200	36810	P	012RF87	DRN	132L4	465	140
2.2	39200	670	156000	46200	36810	PF	012RF87	DRN	132L4	395	141
4.1	21000	359	156000	-	36810	PH	012RF87	DRN	132L4	475	140
4.6	18800	322	156000	46200	36810	PHF	012RF87	DRN	132L4	405	141
5.2	16300	280	156000	-	36810						
6.0	14200	243	123300	29200	24830	P	002RF97	DRN	132L4	435	134
						PF	002RF97	DRN	132L4	375	135
						PH	002RF97	DRN	132L4	440	134
						PHF	002RF97	DRN	132L4	380	135
3.1	27300	466	113800	29200	24830						
3.8	22600	387	120800	29200	24830						
4.1	20900	357	121900	29200	24830						
4.6	18800	321	123300	29200	24830						
5.3	16300	279	124000	29200	24830						
5.9	14600	250	124000	29200	24830	P	002RF87	DRN	132L4	385	132
7.1	12100	207	117500	29200	24830	PF	002RF87	DRN	132L4	325	133
7.6	11300	193	115200	-	22500	PH	002RF87	DRN	132L4	385	132
8.2	10400	178	112400	-	23100	PHF	002RF87	DRN	132L4	330	133
9.2	9400	161	108900	-	22200						
11	8160	139	104400	-	20400						
12	7300	125	101000	-	19500						
14	6060	104	95500	-	17400						

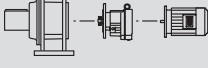
P_m = 11.0 kW

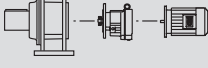
n ₂ min ⁻¹	M _a Nm	i _{ex}	F _{Ra} ¹⁾ N	M _{N2}						m 	
				f _{LC} ≤7.5 Nm	f _{LC} >107.5 Nm	P	PF	PH	PHF	kg	
0.41	252200	3608	850000	631300	500000	P PF PH PHF	102RF167	DRN	160M4	4620	188
0.46	224300	3210	850000	631300	500000		102RF167	DRN	160M4	3660	189
0.52	199400	2854	850000	-	500000		102RF167	DRN	160M4	4680	188
0.65	158700	2271	850000	-	500000		102RF167	DRN	160M4	3720	189
0.73	140000	2004	850000	-	500000						
0.83	124400	1781	850000	631300	500000	P PF PH PHF	102RF167	DRN	160M4	4610	188
							102RF167	DRN	160M4	3660	189
							102RF167	DRN	160M4	4670	188
							102RF167	DRN	160M4	3720	189
0.40	255500	3656	720000	513900	423000	P PF PH PHF	092RF167	DRN	160M4	3760	186
0.45	227300	3253	720000	513900	423000		092RF167	DRN	160M4	3070	187
0.51	202000	2891	720000	-	423000		092RF167	DRN	160M4	3780	186
0.64	160800	2301	720000	-	423000		092RF167	DRN	160M4	3080	187
0.73	141900	2031	720000	-	423000						
0.94	109400	1566	720000	-	423000						
0.82	126100	1805	720000	513900	423000	P PF PH PHF	092RF167	DRN	160M4	3760	186
							092RF167	DRN	160M4	3060	187
							092RF167	DRN	160M4	3770	186
							092RF167	DRN	160M4	3070	187
0.37	281900	4034	683000	397100	359400	P PF PH PHF	082RF167	DRN	160M4	3270	184
0.42	244400	3497	683000	397100	359400		082RF167	DRN	160M4	2620	185
							082RF167	DRN	160M4	3260	184
							082RF167	DRN	160M4	2610	185
0.47	220700	3159	523000	274600	245660	P PF PH PHF	072RF167	DRN	160M4	2610	180
							072RF167	DRN	160M4	2120	181
							072RF167	DRN	160M4	2660	180
							072RF167	DRN	160M4	2170	181
0.35	291000	4165	497300	-	245660	P PF PH PHF	072RF147	DRN	160M4	2350	178
0.41	251800	3604	523000	-	245660		072RF147	DRN	160M4	1860	179
0.46	222200	3180	523000	-	245660		072RF147	DRN	160M4	2400	178
0.54	191900	2747	523000	-	245660		072RF147	DRN	160M4	1910	179
0.58	178300	2552	523000	-	245660						
0.63	162600	2328	523000	-	245660						
0.52	197600	2828	429300	209100	185660	P PF PH PHF	062RF147	DRN	160M4	1930	176
0.71	144900	2074	466100	209100	185660		062RF147	DRN	160M4	1560	177
							062RF147	DRN	160M4	1920	176
							062RF147	DRN	160M4	1550	177
0.51	201500	2883	426200	209100	185660	P PF PH PHF	062RF137	DRN	160M4	1810	174
0.58	178700	2558	443800	209100	185660		062RF137	DRN	160M4	1440	175
0.63	162200	2321	455300	209100	185660		062RF137	DRN	160M4	1800	174
0.74	139400	1995	469400	209100	185660		062RF137	DRN	160M4	1430	175
0.85	121700	1741	473000	209100	185660						
0.74	139400	1995	342900	140600	124060	P PF PH PHF	052RF137	DRN	160M4	1320	170
0.85	121700	1741	358200	140600	124060		052RF137	DRN	160M4	1120	171
1.0	103200	1477	364000	140600	124060		052RF137	DRN	160M4	1320	170
1.1	90200	1291	364000	140600	124060		052RF137	DRN	160M4	1120	171
0.79	130600	1869	350800	140600	124060	P PF PH PHF	052RF107	DRN	160M4	1220	168
							052RF107	DRN	160M4	1020	169
							052RF107	DRN	160M4	1210	168
							052RF107	DRN	160M4	1010	169
1.0	103200	1477	292400	111000	100170	P PF PH PHF	042RF137	DRN	160M4	1180	164
1.4	76200	1092	317100	111000	100170		042RF137	DRN	160M4	990	165
							042RF137	DRN	160M4	1180	164
							042RF137	DRN	160M4	990	165
0.93	110600	1584	284200	111000	100170	P PF PH PHF	042RF107	DRN	160M4	1070	162
1.1	96600	1383	299100	111000	100170		042RF107	DRN	160M4	880	163
							042RF107	DRN	160M4	1080	162
							042RF107	DRN	160M4	890	163
1.2	84300	1207	310400	111000	100170	P PF PH PHF	042RF107	DRN	160M4	1070	162
1.4	75600	1082	317600	111000	100170		042RF107	DRN	160M4	880	163
1.5	68200	977	323000	111000	100170		042RF107	DRN	160M4	1070	162
1.7	62000	887	323000	111000	100170		042RF107	DRN	160M4	880	163

P_m = 11.0 kW											
n_2	M_a	i_{ex}	$F_{Ra}^{1)}$	M_{N2}						m	
min^{-1}	Nm		N	$f_{LC} \leq 7.5$ Nm	$f_{LC} > 107.5$ Nm					kg	
1.2	84300	1207	201400	86800	69620	P	032RF107	DRN	160M4	820	156
1.4	75600	1082	215000	86800	69620	PF	032RF107	DRN	160M4	700	157
1.5	68200	977	225000	86800	69620	PH	032RF107	DRN	160M4	840	156
1.9	55000	787	240300	86800	69620	PHF	032RF107	DRN	160M4	720	157
2.1	49900	714	245300	86800	69620						
1.4	75600	1082	215000	86800	69620	P	032RF97	DRN	160M4	780	154
						PF	032RF97	DRN	160M4	660	155
						PH	032RF97	DRN	160M4	800	154
						PHF	032RF97	DRN	160M4	680	155
1.7	61300	878	233400	-	69620	P	032RF97	DRN	160M4	770	154
						PF	032RF97	DRN	160M4	650	155
						PH	032RF97	DRN	160M4	800	154
						PHF	032RF97	DRN	160M4	670	155
2.4	42900	614	197000	64200	51190	P	022RF107	DRN	160M4	740	150
2.8	37400	536	197000	64200	51190	PF	022RF107	DRN	160M4	640	151
						PH	022RF107	DRN	160M4	760	150
						PHF	022RF107	DRN	160M4	650	151
1.7	61300	878	173800	64200	51190	P	022RF97	DRN	160M4	690	148
1.9	55200	790	184500	64200	51190	PF	022RF97	DRN	160M4	590	149
2.1	50000	716	192600	64200	51190	PH	022RF97	DRN	160M4	710	148
2.3	44300	634	197000	64200	51190	PHF	022RF97	DRN	160M4	610	149
2.6	40000	574	197000	64200	51190						
3.0	33900	486	197000	64200	51190						
2.3	44300	634	156000	46200	36810						
2.6	40000	574	156000	46200	36810						
3.0	33900	486	156000	46200	36810	P	012RF97	DRN	160M4	550	142
3.5	29600	425	156000	46200	36810	PF	012RF97	DRN	160M4	475	143
4.0	25400	364	156000	46200	36810	PH	012RF97	DRN	160M4	560	142
4.5	23000	329	156000	46200	36810	PHF	012RF97	DRN	160M4	490	143
5.3	19500	279	156000	46200	36810						
6.0	17000	244	152400	46200	36810						
7.2	14200	204	144500	46200	36810						
2.5	42100	602	156000	46200	36810						
3.8	27100	388	156000	46200	36810	P	012RF87	DRN	160M4	495	140
4.1	25000	359	156000	-	36810	PF	012RF87	DRN	160M4	425	141
4.6	22500	322	156000	46200	36810	PH	012RF87	DRN	160M4	510	140
5.3	19500	280	156000	-	36810	PHF	012RF87	DRN	160M4	440	141
5.9	17500	251	153700	-	36810						
7.1	14500	208	145300	-	34900						
3.8	27000	387	114300	29200	24830						
4.1	24900	357	117500	29200	24830						
4.6	22400	321	120900	29200	24830						
5.3	19400	279	122900	29200	24830	P	002RF87	DRN	160M4	415	132
5.9	17400	250	124000	29200	24830	PF	002RF87	DRN	160M4	355	133
7.1	14400	207	117500	29200	24830	PH	002RF87	DRN	160M4	420	132
7.6	13500	193	115100	-	22500	PHF	002RF87	DRN	160M4	360	133
8.2	12400	178	112400	-	23100						
9.2	11200	161	108800	-	22200						
11	9730	139	104300	-	20400						
12	8710	125	100900	-	19500						
14	7230	104	95400	-	17400						

P_m = 15.0 kW											
n_2	M_a	i_{ex}	$F_{Ra}^{1)}$	M_{N2}						m	
min^{-1}	Nm		N	$f_{LC} \leq 7.5$ Nm	$f_{LC} > 107.5$ Nm					kg	
0.41	343600	3608	850000	631300	500000						
0.46	305700	3210	850000	631300	500000	P	102RF167	DRN	160L4	4630	188
0.52	271800	2854	850000	-	500000	PF	102RF167	DRN	160L4	3680	189
0.65	216200	2271	850000	-	500000	PH	102RF167	DRN	160L4	4690	188
0.74	190800	2004	850000	-	500000	PHF	102RF167	DRN	160L4	3740	189
0.95	147200	1546	850000	-	500000						
1.1	126900	1332	850000	-	500000						

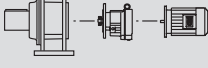
P_m = 15.0 kW

n ₂ min ⁻¹	M _a Nm	i _{ex}	F _{Ra} ¹⁾ N	M _{N2}						m	
				f _{LC} ≤ 7.5 Nm	f _{LC} > 107.5 Nm					kg	
0.83	169600	1781	850000	631300	500000	P	102RF167	DRN	160L4	4630	188
						PF	102RF167	DRN	160L4	3670	189
						PH	102RF167	DRN	160L4	4690	188
						PHF	102RF167	DRN	160L4	3730	189
0.40	348200	3656	720000	513900	423000						
0.45	309800	3253	720000	513900	423000						
0.51	275300	2891	720000	-	423000	P	092RF167	DRN	160L4	3780	186
0.64	219100	2301	720000	-	423000	PF	092RF167	DRN	160L4	3080	187
0.73	193300	2031	720000	-	423000	PH	092RF167	DRN	160L4	3790	186
0.94	149100	1566	720000	-	423000	PHF	092RF167	DRN	160L4	3090	187
1.1	128500	1350	720000	-	423000						
0.82	171800	1805	720000	513900	423000	P	092RF167	DRN	160L4	3770	186
1.2	114700	1205	720000	513900	423000	PF	092RF167	DRN	160L4	3080	187
						PH	092RF167	DRN	160L4	3790	186
						PHF	092RF167	DRN	160L4	3090	187
0.37	384200	4034	631300	397100	359400	P	082RF167	DRN	160L4	3280	184
0.42	333100	3497	676800	397100	359400	PF	082RF167	DRN	160L4	2630	185
0.47	296400	3112	683000	397100	359400	PH	082RF167	DRN	160L4	3270	184
0.53	263400	2766	683000	397100	359400	PHF	082RF167	DRN	160L4	2620	185
0.58	240900	2530	683000	397100	359400						
0.64	218400	2293	683000	-	359400	P	082RF147	DRN	160L4	3020	182
						PF	082RF147	DRN	160L4	2370	183
						PH	082RF147	DRN	160L4	3020	182
						PHF	082RF147	DRN	160L4	2370	183
0.47	300800	3159	485300	274600	245660	P	072RF167	DRN	160L4	2620	180
0.57	244500	2568	523000	274600	245660	PF	072RF167	DRN	160L4	2130	181
						PH	072RF167	DRN	160L4	2680	180
						PHF	072RF167	DRN	160L4	2190	181
0.54	261500	2747	523000	-	245660	P	072RF147	DRN	160L4	2370	178
0.58	243000	2552	523000	-	245660	PF	072RF147	DRN	160L4	1880	179
0.63	221600	2328	523000	-	245660	PH	072RF147	DRN	160L4	2420	178
0.73	191800	2014	523000	-	245660	PHF	072RF147	DRN	160L4	1930	179
0.83	169200	1777	523000	-	245660						
0.71	197500	2074	429400	209100	185660	P	062RF147	DRN	160L4	1940	176
0.81	174300	1830	447000	209100	185660	PF	062RF147	DRN	160L4	1580	177
0.93	150500	1581	462700	209100	185660	PH	062RF147	DRN	160L4	1930	176
1.1	133100	1398	472900	209100	185660	PHF	062RF147	DRN	160L4	1570	177
1.2	111900	1175	473000	209100	185660						
0.74	190000	1995	435300	209100	185660	P	062RF137	DRN	160L4	1820	174
0.85	165800	1741	452800	209100	185660	PF	062RF137	DRN	160L4	1460	175
1.0	140600	1477	468700	209100	185660	PH	062RF137	DRN	160L4	1810	174
1.1	122900	1291	473000	209100	185660	PHF	062RF137	DRN	160L4	1450	175
1.4	103900	1092	473000	209100	185660						
1.3	110400	1160	473000	209100	185660	P	062RF137	DRN	160L4	1810	174
						PF	062RF137	DRN	160L4	1450	175
						PH	062RF137	DRN	160L4	1800	174
						PHF	062RF137	DRN	160L4	1440	175
1.0	140600	1477	341800	140600	124060	P	052RF137	DRN	160L4	1340	170
1.1	122900	1291	357200	140600	124060	PF	052RF137	DRN	160L4	1140	171
1.4	103900	1092	364000	140600	124060	PH	052RF137	DRN	160L4	1330	170
						PHF	052RF137	DRN	160L4	1130	171
1.6	90100	946	364000	140600	124060	P	052RF137	DRN	160L4	1330	170
1.7	82200	863	364000	140600	124060	PF	052RF137	DRN	160L4	1130	171
						PH	052RF137	DRN	160L4	1320	170
						PHF	052RF137	DRN	160L4	1120	171
1.1	131700	1383	349800	140600	124060	P	052RF107	DRN	160L4	1230	168
						PF	052RF107	DRN	160L4	1030	169
						PH	052RF107	DRN	160L4	1230	168
						PHF	052RF107	DRN	160L4	1030	169
1.4	103900	1092	291600	111000	100170	P	042RF137	DRN	160L4	1200	164
						PF	042RF137	DRN	160L4	1010	165
						PH	042RF137	DRN	160L4	1200	164
						PHF	042RF137	DRN	160L4	1010	165

P_m = 15.0 kW											
n₂	M_a	i_{ex}	F_{Ra}¹⁾	M_{N2}						m	
min⁻¹	Nm		N	f_{LC} ≤ 7.5	f_{LC} > 107.5					kg	
1.6	90100	946	305300	111000	100170	P	042RF137	DRN	160L4	1190	164
1.7	82200	863	312300	111000	100170	PF	042RF137	DRN	160L4	1000	165
2.0	71100	747	321000	111000	100170	PH	042RF137	DRN	160L4	1190	164
						PHF	042RF137	DRN	160L4	1000	165
1.4	103000	1082	292600	111000	100170	P	042RF107	DRN	160L4	1080	162
1.5	93000	977	302600	111000	100170	PF	042RF107	DRN	160L4	890	163
1.7	84500	887	310300	111000	100170	PH	042RF107	DRN	160L4	1090	162
1.9	74900	787	318100	111000	100170	PHF	042RF107	DRN	160L4	900	163
2.1	68000	714	323000	111000	100170						
2.4	58400	614	323000	111000	100170						
1.9	74900	787	215900	86800	69620	P	032RF107	DRN	160L4	840	156
2.1	68000	714	225300	86800	69620	PF	032RF107	DRN	160L4	710	157
2.4	58400	614	236600	86800	69620	PH	032RF107	DRN	160L4	860	156
2.8	51000	536	244200	86800	69620	PHF	032RF107	DRN	160L4	740	157
3.2	43200	455	251200	86800	69620						
3.0	46300	486	248600	-	69620	P	032RF97	DRN	160L4	790	154
						PF	032RF97	DRN	160L4	670	155
						PH	032RF97	DRN	160L4	810	154
						PHF	032RF97	DRN	160L4	690	155
2.4	58400	614	179000	64200	51190	P	022RF107	DRN	160L4	760	150
2.8	51000	536	191000	64200	51190	PF	022RF107	DRN	160L4	650	151
3.2	43200	455	197000	64200	51190	PH	022RF107	DRN	160L4	770	150
3.7	37800	397	197000	64200	51190	PHF	022RF107	DRN	160L4	670	151
4.4	31900	336	197000	64200	51190						
2.3	60400	634	175500	64200	51190	P	022RF97	DRN	160L4	710	148
2.6	54600	574	185500	64200	51190	PF	022RF97	DRN	160L4	610	149
3.0	46300	486	197000	64200	51190	PH	022RF97	DRN	160L4	730	148
3.5	40400	425	197000	64200	51190	PHF	022RF97	DRN	160L4	620	149
4.0	34600	364	197000	-	51190						
4.5	31300	329	197000	-	51190						
5.3	26500	279	197000	-	51190						
3.5	40400	425	156000	46200	36810						
4.0	34600	364	156000	46200	36810						
4.5	31300	329	156000	46200	36810						
5.3	26500	279	156000	46200	36810						
6.0	23200	244	152400	46200	36810	P	012RF97	DRN	160L4	560	142
7.2	19400	204	144400	46200	36810	PF	012RF97	DRN	160L4	490	143
8.3	16800	177	138300	46200	36810	PH	012RF97	DRN	160L4	580	142
8.7	16000	169	136500	-	36810	PHF	012RF97	DRN	160L4	510	143
10	13600	143	129900	-	36810						
12	11900	125	124700	-	36810						
14	9950	105	118200	-	35000						
3.1	44500	468	156000	46200	36810	P	012RF87	DRN	160L4	510	140
						PF	012RF87	DRN	160L4	440	141
						PH	012RF87	DRN	160L4	530	140
						PHF	012RF87	DRN	160L4	455	141
6.1	23100	243	120100	29200	24830						
7.3	19300	203	116800	29200	24830						
8.1	17200	181	112900	29200	24830	P	002RF97	DRN	160L4	480	134
8.4	16700	176	111800	29200	24830	PF	002RF97	DRN	160L4	425	135
9.0	15600	164	109500	29200	24830	PH	002RF97	DRN	160L4	485	134
11	13200	139	104200	29200	24830	PHF	002RF97	DRN	160L4	430	135
12	11500	121	100000	29200	24830						
15	9660	102	94800	29200	24830						
17	8360	88	90800	29200	24830						
5.3	26500	279	115100	29200	24830	P	002RF87	DRN	160L4	430	132
14	9850	104	95400	-	17400	PF	002RF87	DRN	160L4	375	133
						PH	002RF87	DRN	160L4	435	132
						PHF	002RF87	DRN	160L4	375	133

P_m = 18.5 kW

n ₂	M _a	i _{ex}	F _{Ra} ¹⁾	M _{N2}						m	
				f _{LC} ≤7.5	f _{LC} >107.5						
min ⁻¹	Nm		N	Nm	Nm					kg	
0.46	376100	3210	850000	631300	500000	P PF PH PHF	102RF167	DRN	180M4	4660	188
0.52	334300	2854	850000	-	500000						
0.65	266000	2271	850000	-	500000						
0.74	234700	2004	850000	-	500000						
0.96	181000	1546	850000	-	500000						
1.1	156000	1332	850000	-	500000						
1.2	139300	1189	850000	631300	500000	P PF PH PHF	102RF167 102RF167 102RF167 102RF167	DRN DRN DRN DRN	180M4 180M4 180M4 180M4	4650 3700 4710 3760	188 189 188 189
0.40	428300	3656	720000	513900	423000	P PF PH PHF	092RF167	DRN	180M4	3800	186
0.45	381000	3253	720000	513900	423000						
0.51	338700	2891	720000	-	423000						
0.64	269500	2301	720000	-	423000						
0.73	237800	2031	720000	-	423000						
0.94	183400	1566	720000	-	423000						
1.1	158100	1350	720000	-	423000						
1.2	141100	1205	720000	513900	423000	P PF PH PHF	092RF167 092RF167 092RF167 092RF167	DRN DRN DRN DRN	180M4 180M4 180M4 180M4	3800 3100 3810 3110	186 187 186 187
1.5	112900	964	720000	513900	423000						
0.42	409700	3497	605400	397100	359400	P PF PH PHF	082RF167	DRN	180M4	3310	184
0.47	364500	3112	649800	397100	359400						
0.53	324000	2766	682800	397100	359400						
0.58	296300	2530	683000	397100	359400						
0.67	257800	2201	683000	397100	359400						
0.76	227500	1943	683000	397100	359400						
0.88	197200	1684	683000	397100	359400						
0.64	268600	2293	683000	-	359400	P PF PH PHF	082RF147 082RF147 082RF147 082RF147	DRN DRN DRN DRN	180M4 180M4 180M4 180M4	3050 2400 3040 2390	182 183 182 183
0.58	300700	2568	485400	274600	245660	P PF PH PHF	072RF167	DRN	180M4	2650	180
0.97	178100	1521	523000	274600	245660						
0.64	272600	2328	518200	-	245660	P PF PH PHF	072RF147	DRN	180M4	2390	178
0.73	235900	2014	523000	-	245660						
0.83	208200	1777	523000	-	245660						
0.96	179800	1535	523000	-	245660						
1.1	159000	1358	523000	-	245660						
1.3	133600	1141	523000	-	245660						
0.81	214400	1830	415200	209100	185660	P PF PH PHF	062RF147	DRN	180M4	1970	176
0.94	185100	1581	439000	209100	185660						
1.1	163700	1398	454200	209100	185660						
1.3	137600	1175	470400	209100	185660						
1.6	111100	949	473000	209100	185660						
0.85	204000	1741	424100	209100	185660	P PF PH PHF	062RF137	DRN	180M4	1850	174
1.0	173000	1477	447900	209100	185660						
1.1	151200	1291	462300	209100	185660						
1.4	127800	1092	473000	209100	185660						
1.3	135800	1160	471400	209100	185660	P PF PH PHF	062RF137	DRN	180M4	1840	174
1.6	110800	946	473000	209100	185660						
1.7	101100	863	473000	209100	185660						
1.4	127800	1092	353200	140600	124060	P PF PH PHF	052RF137	DRN	180M4	1360	170
1.6	110800	946	364000	140600	124060	P PF PH PHF	052RF137	DRN	180M4	1350	170
1.7	101100	863	364000	140600	124060						
2.0	87500	747	364000	140600	124060						
2.2	77200	659	364000	140600	124060						

P_m = 18.5 kW											
n₂	M_a	i_{ex}	F_{Ra}¹⁾	M_{N2}						m	
min⁻¹	Nm		N	f_{LC} ≤ 7.5	f_{LC} > 107.5					kg	
2.1	83600	714	364000	140600	124060	P	052RF107	DRN	180M4	1250	168
2.4	71900	614	364000	140600	124060	PF	052RF107	DRN	180M4	1050	169
						PH	052RF107	DRN	180M4	1240	168
						PHF	052RF107	DRN	180M4	1040	169
1.6	110800	946	284000	111000	100170	P	042RF137	DRN	180M4	1210	164
1.7	101100	863	294600	111000	100170	PF	042RF137	DRN	180M4	1020	165
2.0	87500	747	307700	111000	100170	PH	042RF137	DRN	180M4	1210	164
2.6	66600	569	323000	111000	100170	PHF	042RF137	DRN	180M4	1020	165
1.7	103900	887	291700	111000	100170	P	042RF107	DRN	180M4	1100	162
1.9	92200	787	303400	111000	100170	PF	042RF107	DRN	180M4	910	163
2.1	83600	714	311000	111000	100170	PH	042RF107	DRN	180M4	1110	162
2.4	71900	614	320400	111000	100170	PHF	042RF107	DRN	180M4	920	163
2.8	62700	536	323000	111000	100170						
3.2	53200	455	323000	111000	100170						
2.1	83600	714	202600	86800	69620	P	032RF107	DRN	180M4	860	156
2.4	71900	614	220200	86800	69620	PF	032RF107	DRN	180M4	740	157
2.8	62700	536	231700	86800	69620	PH	032RF107	DRN	180M4	880	156
3.2	53200	455	242000	86800	69620	PHF	032RF107	DRN	180M4	760	157
3.7	46500	397	248400	86800	69620						
4.4	39300	336	248600	86800	69620						
4.5	38500	329	247100	-	69620	P	032RF97	DRN	180M4	810	154
5.3	32700	279	235200	-	69620	PF	032RF97	DRN	180M4	690	155
						PH	032RF97	DRN	180M4	830	154
						PHF	032RF97	DRN	180M4	710	155
2.8	62700	536	171100	64200	51190						
3.2	53200	455	187700	64200	51190						
3.7	46500	397	197000	64200	51190	P	022RF107	DRN	180M4	780	150
4.4	39300	336	197000	64200	51190	PF	022RF107	DRN	180M4	680	151
4.8	36100	308	197000	64200	51190	PH	022RF107	DRN	180M4	790	150
5.7	30600	261	197000	64200	51190	PHF	022RF107	DRN	180M4	690	151
6.5	26700	228	197000	64200	51190						
7.7	22600	193	197000	64200	51190						
3.0	56900	486	181600	64200	51190						
4.1	42600	364	197000	-	51190						
4.5	38500	329	197000	-	51190	P	022RF97	DRN	180M4	730	148
5.3	32700	279	197000	-	51190	PF	022RF97	DRN	180M4	630	149
6.1	28500	244	197000	-	51190	PH	022RF97	DRN	180M4	750	148
7.2	23800	204	197000	-	51190	PHF	022RF97	DRN	180M4	650	149
8.4	20600	177	197000	-	51190						
8.8	19700	169	197000	-	40000						
8.6	20100	172	137200	46200	36810	P	012RF107	DRN	180M4	630	144
9.4	18500	158	133700	46200	36810	PF	012RF107	DRN	180M4	560	145
11	15600	134	127200	46200	36810	PH	012RF107	DRN	180M4	640	144
13	13700	117	122200	46200	36810	PHF	012RF107	DRN	180M4	570	145
4.1	42600	364	156000	46200	36810						
4.5	38500	329	156000	46200	36810						
5.3	32700	279	156000	46200	36810						
6.1	28500	244	152300	46200	36810	P	012RF97	DRN	180M4	580	142
7.2	23800	204	144300	46200	36810	PF	012RF97	DRN	180M4	510	143
8.4	20600	177	138200	46200	36810	PH	012RF97	DRN	180M4	600	142
8.8	19700	169	136400	-	36810	PHF	012RF97	DRN	180M4	530	143
10	16700	143	129800	-	36810						
12	14600	125	124600	-	36810						
14	12200	105	118100	-	35000						
16	10600	91	113100	-	32100						
3.8	45500	388	156000	46200	36810	P	012RF87	DRN	180M4	530	140
4.6	37700	322	156000	46200	36810	PF	012RF87	DRN	180M4	465	141
						PH	012RF87	DRN	180M4	550	140
						PHF	012RF87	DRN	180M4	475	141

P_m = 18.5 kW

n ₂	M _a	i _{ex}	F _{Ra} ¹⁾	M _{N2}						m	
min ⁻¹	Nm		N	f _{LC} ≤ 7.5 Nm	f _{LC} > 107.5 Nm					kg	
6.1	28400	243	111900	29200	24830						
7.3	23700	203	116700	29200	24830						
8.4	20600	176	111800	29200	24830	P	002RF97	DRN	180M4	500	134
9.0	19200	164	109400	29200	24830	PF	002RF97	DRN	180M4	445	135
11	16200	139	104100	29200	24830	PH	002RF97	DRN	180M4	510	134
12	14200	121	100000	29200	24830	PHF	002RF97	DRN	180M4	450	135
15	11800	102	94800	29200	24830						
17	10200	88	90700	29200	24830						

P_m = 22 kW

n ₂	M _a	i _{ex}	F _{Ra} ¹⁾	M _{N2}						m	
min ⁻¹	Nm		N	f _{LC} ≤ 7.5 Nm	f _{LC} > 107.5 Nm					kg	
0.41	503000	3608	850000	631300	500000						
0.46	447500	3210	850000	631300	500000	P	102RF167	DRN	180L4	4670	188
0.52	397800	2854	850000	-	500000	PF	102RF167	DRN	180L4	3720	189
0.65	316500	2271	850000	-	500000	PH	102RF167	DRN	180L4	4730	188
0.74	279300	2004	850000	-	500000	PHF	102RF167	DRN	180L4	3780	189
0.96	215500	1546	850000	-	500000						
1.1	185700	1332	850000	-	500000						
1.2	165700	1189	850000	631300	500000	P	102RF167	DRN	180L4	4670	188
1.6	132600	951	850000	631300	500000	PF	102RF167	DRN	180L4	3710	189
						PH	102RF167	DRN	180L4	4730	188
						PHF	102RF167	DRN	180L4	3770	189
0.40	509600	3656	670000	513900	423000						
0.45	453400	3253	720000	513900	423000	P	092RF167	DRN	180L4	3820	186
0.51	403000	2891	720000	-	423000	PF	092RF167	DRN	180L4	3120	187
0.64	320700	2301	720000	-	423000	PH	092RF167	DRN	180L4	3830	186
0.73	283000	2031	720000	-	423000	PHF	092RF167	DRN	180L4	3130	187
0.94	218300	1566	720000	-	423000						
1.1	188100	1350	720000	-	423000						
1.2	167900	1205	720000	513900	423000	P	092RF167	DRN	180L4	3810	186
1.5	134300	964	720000	513900	423000	PF	092RF167	DRN	180L4	3120	187
1.7	119400	857	720000	513900	423000	PH	092RF167	DRN	180L4	3830	186
2.0	104100	747	720000	513900	423000	PHF	092RF167	DRN	180L4	3130	187
0.53	385600	2766	630000	397100	359400						
0.58	352600	2530	660400	397100	359400	P	082RF167	DRN	180L4	3320	184
0.67	306800	2201	683000	397100	359400	PF	082RF167	DRN	180L4	2670	185
0.76	270800	1943	683000	397100	359400	PH	082RF167	DRN	180L4	3310	184
0.88	234700	1684	683000	397100	359400	PHF	082RF167	DRN	180L4	2660	185
0.99	208800	1498	683000	397100	359400						
1.1	180000	1291	683000	397100	359400						
0.64	319600	2293	683000	-	359400	P	082RF147	DRN	180L4	3060	182
0.84	244100	1751	683000	-	359400	PF	082RF147	DRN	180L4	2410	183
0.98	210800	1512	683000	-	359400	PH	082RF147	DRN	180L4	3050	182
1.1	186400	1338	683000	-	359400	PHF	082RF147	DRN	180L4	2400	183
1.3	156700	1141	683000	-	359400						
0.97	212000	1521	523000	274600	245660	P	072RF167	DRN	180L4	2660	180
1.4	148400	1065	523000	274600	245660	PF	072RF167	DRN	180L4	2170	181
						PH	072RF167	DRN	180L4	2720	180
						PHF	072RF167	DRN	180L4	2230	181
0.73	280800	2014	509200	-	245660	P	072RF147	DRN	180L4	2400	178
0.83	247700	1777	523000	-	245660	PF	072RF147	DRN	180L4	1910	179
1.1	189200	1358	523000	-	245660	PH	072RF147	DRN	180L4	2460	178
1.3	159000	1141	523000	-	245660	PHF	072RF147	DRN	180L4	1970	179
1.6	128400	922	523000	-	245660						
0.93	220300	1581	409800	209100	185660	P	062RF147	DRN	180L4	1980	176
1.1	194900	1398	431500	209100	185660	PF	062RF147	DRN	180L4	1620	177
1.3	163800	1175	454200	209100	185660	PH	062RF147	DRN	180L4	1970	176
1.6	132300	949	473000	209100	185660	PHF	062RF147	DRN	180L4	1610	177

P_m = 22 kW											
n₂	M_a	i_{ex}	F_{Ra}¹⁾	M_{N2}						m	
min⁻¹	Nm		N	f_{LC} ≤ 7.5	f_{LC} > 107.5					kg	
				Nm	Nm						
1.8	111700	802	473000	209100	185660	P	062RF147	DRN	180L4	1970	176
						PF	062RF147	DRN	180L4	1600	177
						PH	062RF147	DRN	180L4	1960	176
						PHF	062RF147	DRN	180L4	1590	177
1.0	205900	1477	422500	209100	185660	P	062RF137	DRN	180L4	1860	174
1.4	152100	1092	461700	209100	185660	PF	062RF137	DRN	180L4	1500	175
						PH	062RF137	DRN	180L4	1850	174
						PHF	062RF137	DRN	180L4	1490	175
1.7	120300	863	473000	209100	185660	P	062RF137	DRN	180L4	1850	174
2.0	104100	747	473000	209100	185660	PF	062RF137	DRN	180L4	1490	175
2.2	91800	659	473000	209100	185660	PH	062RF137	DRN	180L4	1840	174
						PHF	062RF137	DRN	180L4	1480	175
1.6	131900	946	349700	140600	124060	P	052RF137	DRN	180L4	1370	170
1.7	120300	863	359300	140600	124060	PF	052RF137	DRN	180L4	1170	171
2.0	104100	747	364000	140600	124060	PH	052RF137	DRN	180L4	1360	170
2.2	91800	659	364000	140600	124060	PHF	052RF137	DRN	180L4	1160	171
2.6	79300	569	364000	140600	124060						
2.9	70100	503	364000	140600	124060						
2.8	74700	536	364000	140600	124060	P	052RF107	DRN	180L4	1260	168
3.2	63300	455	364000	140600	124060	PF	052RF107	DRN	180L4	1060	169
						PH	052RF107	DRN	180L4	1260	168
						PHF	052RF107	DRN	180L4	1060	169
2.0	104100	747	291500	111000	100170	P	042RF137	DRN	180L4	1220	164
2.6	79300	569	314600	111000	100170	PF	042RF137	DRN	180L4	1030	165
3.5	58900	423	323000	111000	100170	PH	042RF137	DRN	180L4	1230	164
						PHF	042RF137	DRN	180L4	1040	165
1.9	109700	787	285300	111000	100170	P	042RF107	DRN	180L4	1120	162
2.1	99500	714	296200	111000	100170	PF	042RF107	DRN	180L4	930	163
2.4	85600	614	309400	111000	100170	PH	042RF107	DRN	180L4	1120	162
2.8	74700	536	318300	111000	100170	PHF	042RF107	DRN	180L4	930	163
3.2	63300	455	323000	111000	100170						
3.7	55300	397	323000	111000	100170						
2.4	85600	614	199400	86800	69620	P	032RF107	DRN	180L4	870	156
2.8	74700	536	216300	86800	69620	PF	032RF107	DRN	180L4	750	157
3.2	63300	455	231000	86800	69620	PH	032RF107	DRN	180L4	890	156
3.7	55300	397	239900	86800	69620	PHF	032RF107	DRN	180L4	770	157
4.4	46800	336	248100	86800	69620						
4.8	42900	308	242300	86800	69620						
5.7	36400	261	230600	86800	69620						
6.5	31800	228	221500	86800	69620						
3.2	63300	455	169900	64200	51190	P	022RF107	DRN	180L4	790	150
3.7	55300	397	184200	64200	51190	PF	022RF107	DRN	180L4	690	151
4.4	46800	336	197000	64200	51190	PH	022RF107	DRN	180L4	810	150
4.8	42900	308	197000	64200	51190	PHF	022RF107	DRN	180L4	710	151
5.7	36400	261	197000	64200	51190						
6.5	31800	228	197000	64200	51190						
7.7	26900	193	197000	64200	51190						
8.6	24000	172	197000	64200	51190						
9.3	22000	158	197000	64200	51190						
3.5	59200	425	177700	64200	51190	P	022RF97	DRN	180L4	750	148
4.5	45900	329	197000	-	51190	PF	022RF97	DRN	180L4	650	149
5.3	38900	279	197000	-	51190	PH	022RF97	DRN	180L4	760	148
6.1	33900	244	197000	-	51190	PHF	022RF97	DRN	180L4	660	149
7.2	28400	204	197000	-	51190						
8.4	24600	177	197000	-	51190						
8.6	24000	172	137200	46200	36810	P	012RF107	DRN	180L4	640	144
9.3	22000	158	133700	46200	36810	PF	012RF107	DRN	180L4	570	145
11	18600	134	127300	46200	36810	PH	012RF107	DRN	180L4	660	144
13	16300	117	122200	46200	36810	PHF	012RF107	DRN	180L4	590	145
15	13800	99	116200	46200	36810						

P_m = 22 kW

n ₂ min ⁻¹	M _a Nm	i _{ex}	F _{Ra} ¹⁾ N	M _{N2}						m kg	
				f _{LC} ≤ 7.5 Nm	f _{LC} > 107.5 Nm						
4.5	45900	329	156000	46200	36810						
5.3	38900	279	156000	46200	36810						
6.1	33900	244	152300	46200	36810						
7.2	28400	204	144400	46200	36810	P	012RF97	DRN	180L4	600	142
8.4	24600	177	138200	46200	36810	PF	012RF97	DRN	180L4	530	143
8.8	23500	169	136400	-	36810	PH	012RF97	DRN	180L4	610	142
10	19900	143	129800	-	36810	PHF	012RF97	DRN	180L4	540	143
12	17400	125	124600	-	36810						
14	14500	105	118100	-	35000						
16	12600	91	113100	-	32100						
4.6	44900	322	156000	46200	36810	P	012RF87	DRN	180L4	550	140
						PF	012RF87	DRN	180L4	480	141
						PH	012RF87	DRN	180L4	560	140
						PHF	012RF87	DRN	180L4	490	141
7.3	28300	203	112200	29200	24830						
8.2	25200	181	112800	29200	24830	P	002RF97	DRN	180L4	520	134
9.0	22800	164	109400	29200	24830	PF	002RF97	DRN	180L4	460	135
11	19300	139	104100	29200	24830	PH	002RF97	DRN	180L4	520	134
12	16900	121	100000	29200	24830	PHF	002RF97	DRN	180L4	465	135
15	14100	102	94800	29200	24830						
17	12200	88	90800	29200	24830						
7.1	28800	207	111200	29200	24830	P	002RF87	DRN	180L4	470	132
						PF	002RF87	DRN	180L4	410	133
						PH	002RF87	DRN	180L4	470	132
						PHF	002RF87	DRN	180L4	415	133

P_m = 30 kW

n ₂ min ⁻¹	M _a Nm	i _{ex}	F _{Ra} ¹⁾ N	M _{N2}						m kg	
				f _{LC} ≤ 7.5 Nm	f _{LC} > 107.5 Nm						
0.46	609000	3210	805700	631300	500000						
0.52	541400	2854	850000	-	500000	P	102RF167	DRN	200L4	4780	188
0.65	430800	2271	850000	-	500000	PF	102RF167	DRN	200L4	3830	189
0.74	380200	2004	850000	-	500000	PH	102RF167	DRN	200L4	4840	188
0.96	293200	1546	850000	-	500000	PHF	102RF167	DRN	200L4	3890	189
1.1	252700	1332	850000	-	500000						
1.2	225500	1189	850000	631300	500000	P	102RF167	DRN	200L4	4770	188
1.6	180400	951	850000	631300	500000	PF	102RF167	DRN	200L4	3820	189
1.8	160500	846	850000	631300	500000	PH	102RF167	DRN	200L4	4840	188
2.0	139800	737	850000	631300	500000	PHF	102RF167	DRN	200L4	3880	189
2.2	124700	657	850000	631300	500000						
0.64	436500	2301	720000	-	423000	P	092RF167	DRN	200L4	3930	186
0.73	385200	2031	720000	-	423000	PF	092RF167	DRN	200L4	3230	187
0.94	297100	1566	720000	-	423000	PH	092RF167	DRN	200L4	3940	186
1.1	256100	1350	720000	-	423000	PHF	092RF167	DRN	200L4	3240	187
1.2	228500	1205	720000	513900	423000	P	092RF167	DRN	200L4	3920	186
1.5	182800	964	720000	513900	423000	PF	092RF167	DRN	200L4	3220	187
1.7	162600	857	720000	513900	423000	PH	092RF167	DRN	200L4	3930	186
2.0	141600	747	720000	513900	423000	PHF	092RF167	DRN	200L4	3240	187
2.2	126400	666	720000	513900	423000						
2.6	107700	568	720000	513900	423000						
0.67	417600	2201	597000	397100	359400	P	082RF167	DRN	200L4	3430	184
0.76	368500	1943	646200	397100	359400	PF	082RF167	DRN	200L4	2780	185
0.88	319500	1684	683000	397100	359400	PH	082RF167	DRN	200L4	3420	184
0.99	284200	1498	683000	397100	359400	PHF	082RF167	DRN	200L4	2770	185
1.1	245000	1291	683000	397100	359400						
1.4	199000	1049	683000	397100	359400						
0.97	288500	1521	500300	274600	245660	P	072RF167	DRN	200L4	2770	180
1.4	202000	1065	523000	274600	245660	PF	072RF167	DRN	200L4	2280	181
						PH	072RF167	DRN	200L4	2820	180
						PHF	072RF167	DRN	200L4	2330	181

P_m = 30 kW										
n₂	M_a	i_{ex}	F_{Ra}¹⁾	M_{N2}						m
min⁻¹	Nm		N	f_{LC} ≤ 7.5	f_{LC} > 107.5					kg
				Nm	Nm					
1.1	257500	1358	523000	-	245660	P	072RF147	DRN	200L4	2510 178
1.3	216400	1141	523000	-	245660	PF	072RF147	DRN	200L4	2020 179
1.6	174800	922	523000	-	245660	PH	072RF147	DRN	200L4	2570 178
						PHF	072RF147	DRN	200L4	2080 179
1.9	147700	779	523000	274600	245660	P	072RF147	DRN	200L4	2500 178
						PF	072RF147	DRN	200L4	2010 179
						PH	072RF147	DRN	200L4	2550 178
						PHF	072RF147	DRN	200L4	2060 179
1.6	180000	949	442900	209100	185660	P	062RF147	DRN	200L4	2090 176
						PF	062RF147	DRN	200L4	1730 177
						PH	062RF147	DRN	200L4	2080 176
						PHF	062RF147	DRN	200L4	1720 177
1.9	152100	802	461800	209100	185660	P	062RF147	DRN	200L4	2080 176
2.1	134200	708	472300	209100	185660	PF	062RF147	DRN	200L4	1710 177
2.4	116300	614	473000	209100	185660	PH	062RF147	DRN	200L4	2070 176
						PHF	062RF147	DRN	200L4	1700 177
1.4	207100	1092	421500	209100	185660	P	062RF137	DRN	200L4	1970 174
						PF	062RF137	DRN	200L4	1610 175
						PH	062RF137	DRN	200L4	1960 174
						PHF	062RF137	DRN	200L4	1600 175
1.7	163700	863	454300	209100	185660	P	062RF137	DRN	200L4	1960 174
2.0	141700	747	468100	209100	185660	PF	062RF137	DRN	200L4	1600 175
2.2	125000	659	473000	209100	185660	PH	062RF137	DRN	200L4	1950 174
2.6	107900	569	473000	209100	185660	PHF	062RF137	DRN	200L4	1590 175
2.9	95500	503	473000	209100	185660					
2.0	141700	747	340800	140600	124060	P	052RF137	DRN	200L4	1480 170
2.2	125000	659	355500	140600	124060	PF	052RF137	DRN	200L4	1280 171
2.6	107900	569	364000	140600	124060	PH	052RF137	DRN	200L4	1470 170
2.9	95500	503	364000	140600	124060	PHF	052RF137	DRN	200L4	1270 171
3.5	80200	423	364000	140600	124060					
2.1	135500	714	346500	140600	124060	P	052RF107	DRN	200L4	1370 168
						PF	052RF107	DRN	200L4	1170 169
						PH	052RF107	DRN	200L4	1370 168
						PHF	052RF107	DRN	200L4	1170 169
2.6	107900	569	287300	111000	100170	P	042RF137	DRN	200L4	1330 164
3.5	80200	423	313900	111000	100170	PF	042RF137	DRN	200L4	1140 165
4.3	64800	342	308600	111000	100170	PH	042RF137	DRN	200L4	1340 164
5.0	56500	298	296100	111000	100170	PHF	042RF137	DRN	200L4	1150 165
5.9	47400	250	281100	111000	100170					
2.8	101600	536	294000	111000	100170	P	042RF107	DRN	200L4	1230 162
3.3	86200	455	308800	111000	100170	PF	042RF107	DRN	200L4	1040 163
3.7	75300	397	317800	111000	100170	PH	042RF107	DRN	200L4	1230 162
4.4	63700	336	306900	111000	100170	PHF	042RF107	DRN	200L4	1040 163
4.8	58400	308	299200	111000	100170					
5.7	49500	261	284800	111000	100170					
3.3	86200	455	198300	86800	69620	P	032RF107	DRN	200L4	980 156
3.7	75300	397	215400	86800	69620	PF	032RF107	DRN	200L4	860 157
4.4	63700	336	230600	86800	69620	PH	032RF107	DRN	200L4	1000 156
4.8	58400	308	236600	86800	69620	PHF	032RF107	DRN	200L4	880 157
5.7	49500	261	230500	86800	69620					
6.5	43300	228	221300	86800	69620					
7.7	36600	193	210500	86800	69620					
8.6	32600	172	203400	-	69620					
9.4	29900	158	198200	-	58500					
11	25400	134	188600	-	58500					
13	22200	117	181100	-	58500					
15	18700	99	172300	-	57100					
16	17100	91	167700	-	32100	P	032RF97	DRN	200L4	940 154
						PF	032RF97	DRN	200L4	820 155
						PH	032RF97	DRN	200L4	960 154
						PHF	032RF97	DRN	200L4	840 155

P_m = 30 kW

n ₂ min ⁻¹	M _a Nm	i _{ex}	F _{Ra} ¹⁾ N	M _{N2}							m kg	
				f _{LC} ≤ 7.5 Nm	f _{LC} > 107.5 Nm							
4.4	63700	336	169200	64200	51190	P PF PH PHF	022RF107	DRN	200L4		900	150
4.8	58400	308	179000	64200	51190						800	151
5.7	49500	261	193200	64200	51190						920	150
6.5	43300	228	197000	64200	51190						820	151
7.7	36600	193	197000	64200	51190							
8.6	32600	172	197000	64200	51190							
9.4	29900	158	197000	64200	51190							
8.6	32600	172	137200	46200	36810	P	012RF107	DRN	200L4		750	144
9.4	29900	158	133600	46200	36810	PF	012RF107	DRN	200L4		680	145
11	25400	134	127200	46200	36810	PH	012RF107	DRN	200L4		770	144
13	22200	117	122100	46200	36810	PHF	012RF107	DRN	200L4		700	145
15	18700	99	116200	46200	36810							
7.3	38600	204	144300	46200	36810	P	012RF97	DRN	200L4		710	142
16	17100	91	113100	-	32100	PF	012RF97	DRN	200L4		640	143
						PH	012RF97	DRN	200L4		720	142
						PHF	012RF97	DRN	200L4		650	143
11	24600	130	102100	29200	24830	P	002RF107	DRN	200L4		670	136
13	21500	114	98000	29200	24830	PF	002RF107	DRN	200L4		620	137
15	18200	96	93200	29200	24830	PH	002RF107	DRN	200L4		680	136
						PHF	002RF107	DRN	200L4		620	137
11	26300	139	104100	29200	24830	P	002RF97	DRN	200L4		630	134
17	16600	88	90700	29200	24830	PF	002RF97	DRN	200L4		570	135
						PH	002RF97	DRN	200L4		630	134
						PHF	002RF97	DRN	200L4		570	135

P_m = 37 kW

n ₂ min ⁻¹	M _a Nm	i _{ex}	F _{Ra} ¹⁾ N	M _{N2}							m kg	
				f _{LC} ≤ 7.5 Nm	f _{LC} > 107.5 Nm							
0.65	530600	2271	850000	-	500000	P	102RF167	DRN	225S4		4810	188
0.74	468200	2004	850000	-	500000	PF	102RF167	DRN	225S4		3860	189
0.96	361200	1546	850000	-	500000	PH	102RF167	DRN	225S4		4870	188
1.1	311300	1332	850000	-	500000	PHF	102RF167	DRN	225S4		3920	189
1.2	277800	1189	850000	631300	500000	P	102RF167	DRN	225S4		4810	188
1.6	222200	951	850000	631300	500000	PF	102RF167	DRN	225S4		3850	189
1.8	197600	846	850000	631300	500000	PH	102RF167	DRN	225S4		4870	188
2.0	172200	737	850000	631300	500000	PHF	102RF167	DRN	225S4		3910	189
2.2	153600	657	850000	631300	500000							
2.6	130900	561	850000	631300	500000							
0.73	474400	2031	707900	-	423000	P	092RF167	DRN	225S4		3960	186
0.95	365900	1566	720000	-	423000	PF	092RF167	DRN	225S4		3260	187
1.1	315400	1350	720000	-	423000	PH	092RF167	DRN	225S4		3970	186
						PHF	092RF167	DRN	225S4		3270	187
1.2	281500	1205	720000	513900	423000	P	092RF167	DRN	225S4		3950	186
1.5	225200	964	720000	513900	423000	PF	092RF167	DRN	225S4		3250	187
1.7	200200	857	720000	513900	423000	PH	092RF167	DRN	225S4		3960	186
2.0	174400	747	720000	513900	423000	PHF	092RF167	DRN	225S4		3270	187
2.2	155600	666	720000	513900	423000							
2.6	132600	568	720000	513900	423000							
3.1	109900	470	720000	513900	423000							
0.88	393500	1684	622200	397100	359400	P	082RF167	DRN	225S4		3460	184
0.99	350100	1498	662600	397100	359400	PF	082RF167	DRN	225S4		2810	185
1.1	301700	1291	683000	397100	359400	PH	082RF167	DRN	225S4		3450	184
1.4	245200	1049	683000	397100	359400	PHF	082RF167	DRN	225S4		2800	185
1.7	207900	890	683000	397100	359400							
1.8	191600	820	683000	397100	359400	P	082RF167	DRN	225S4		3450	184
						PF	082RF167	DRN	225S4		2800	185
						PH	082RF167	DRN	225S4		3450	184
						PHF	082RF167	DRN	225S4		2800	185

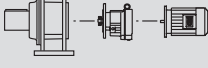
P_m = 37 kW											
n₂	M_a	i_{ex}	F_{Ra}¹⁾	M_{N2}						m	
min⁻¹	Nm		N	f_{LC} ≤ 7.5	f_{LC} > 107.5					kg	
				Nm	Nm						
1.4	248800	1065	523000	274600	245660	P	072RF167	DRN	225S4	2800	180
						PF	072RF167	DRN	225S4	2310	181
						PH	072RF167	DRN	225S4	2860	180
						PHF	072RF167	DRN	225S4	2360	181
1.6	215300	922	523000	-	245660	P	072RF147	DRN	225S4	2550	178
						PF	072RF147	DRN	225S4	2050	179
						PH	072RF147	DRN	225S4	2600	178
						PHF	072RF147	DRN	225S4	2110	179
1.9	181900	779	523000	274600	245660	P	072RF147	DRN	225S4	2530	178
2.2	160500	687	523000	274600	245660	PF	072RF147	DRN	225S4	2040	179
						PH	072RF147	DRN	225S4	2590	178
						PHF	072RF147	DRN	225S4	2090	179
1.9	187300	802	437400	209100	185660	P	062RF147	DRN	225S4	2110	176
2.1	165300	708	453200	209100	185660	PF	062RF147	DRN	225S4	1750	177
2.4	143300	614	467100	209100	185660	PH	062RF147	DRN	225S4	2100	176
2.7	127500	546	473000	209100	185660	PHF	062RF147	DRN	225S4	1730	177
1.7	201600	863	426000	209100	185660	P	062RF137	DRN	225S4	1990	174
2.0	174500	747	446800	209100	185660	PF	062RF137	DRN	225S4	1630	175
2.2	154000	659	460600	209100	185660	PH	062RF137	DRN	225S4	1980	174
2.6	133000	569	473000	209100	185660	PHF	062RF137	DRN	225S4	1620	175
2.9	117600	503	473000	209100	185660						
3.5	98800	423	473000	209100	185660						
2.6	133000	569	348800	140600	124060	P	052RF137	DRN	225S4	1510	170
2.9	117600	503	361500	140600	124060	PF	052RF137	DRN	225S4	1310	171
3.5	98800	423	364000	140600	124060	PH	052RF137	DRN	225S4	1500	170
4.3	79800	342	355600	140600	124060	PHF	052RF137	DRN	225S4	1300	171
2.8	125200	536	355400	140600	124060	P	052RF107	DRN	225S4	1410	168
						PF	052RF107	DRN	225S4	1210	169
						PH	052RF107	DRN	225S4	1400	168
						PHF	052RF107	DRN	225S4	1200	169
3.5	98800	423	296900	111000	100170	P	042RF137	DRN	225S4	1360	164
4.3	79800	342	308400	111000	100170	PF	042RF137	DRN	225S4	1170	165
5.0	69500	298	295900	111000	100170	PH	042RF137	DRN	225S4	1370	164
5.9	58400	250	280900	111000	100170	PHF	042RF137	DRN	225S4	1180	165
7.3	47200	202	263500	111000	100170						
3.3	106200	455	289200	111000	100170	P	042RF107	DRN	225S4	1260	162
3.7	92800	397	302800	111000	100170	PF	042RF107	DRN	225S4	1070	163
4.4	78500	336	306900	111000	100170	PH	042RF107	DRN	225S4	1260	162
						PHF	042RF107	DRN	225S4	1070	163
8.5	40900	175	204300	86800	69620	P	032RF137	DRN	225S4	1120	158
9.7	35600	153	196000	86800	69620	PF	032RF137	DRN	225S4	990	159
						PH	032RF137	DRN	225S4	1140	158
						PHF	032RF137	DRN	225S4	1020	159
4.4	78500	336	210800	86800	69620						
4.8	72000	308	220100	86800	69620						
5.7	61000	261	230400	86800	69620	P	032RF107	DRN	225S4	1010	156
6.5	53300	228	221200	86800	69620	PF	032RF107	DRN	225S4	890	157
7.7	45100	193	210400	86800	69620	PH	032RF107	DRN	225S4	1030	156
11	31300	134	188500	-	58500	PHF	032RF107	DRN	225S4	910	157
13	27300	117	181100	-	58500						
15	23100	99	172200	-	57100						
5.7	61000	261	174300	64200	51190	P	022RF107	DRN	225S4	930	150
6.5	53300	228	187500	64200	51190	PF	022RF107	DRN	225S4	830	151
7.7	45100	193	197000	64200	51190	PH	022RF107	DRN	225S4	950	150
8.6	40200	172	197000	64200	51190	PHF	022RF107	DRN	225S4	850	151
9.4	36900	158	197000	64200	51190						
8.6	40200	172	137100	46200	36810	P	012RF107	DRN	225S4	790	144
11	31300	134	127100	46200	36810	PF	012RF107	DRN	225S4	720	145
13	27300	117	122100	46200	36810	PH	012RF107	DRN	225S4	800	144
15	23100	99	116100	46200	36810	PHF	012RF107	DRN	225S4	730	145
8.4	41200	177	138100	46200	36810	P	012RF97	DRN	225S4	740	142
						PF	012RF97	DRN	225S4	670	143
						PH	012RF97	DRN	225S4	750	142
						PHF	012RF97	DRN	225S4	680	143

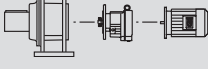
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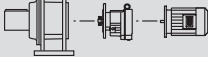
n ₂	M _a	i _{ex}	F _{Ra} ¹⁾	M _{N2}						m	
min ⁻¹	Nm		N	f _{LC} ≤ 7.5 Nm	f _{LC} > 107.5 Nm					kg	
13	26500	114	98000	29200	24830	P	002RF107	DRN	225S4	710	136
						PF	002RF107	DRN	225S4	650	137
						PH	002RF107	DRN	225S4	710	136
						PHF	002RF107	DRN	225S4	650	137
12	28300	121	99900	29200	24830	P	002RF97	DRN	225S4	660	134
						PF	002RF97	DRN	225S4	600	135
						PH	002RF97	DRN	225S4	660	134
						PHF	002RF97	DRN	225S4	610	135

P_m = 45 kW

n ₂	M _a	i _{ex}	F _{Ra} ¹⁾	M _{N2}						m	
min ⁻¹	Nm		N	f _{LC} ≤ 7.5 Nm	f _{LC} > 107.5 Nm					kg	
0.74	569500	2004	835500	-	500000	P	102RF167	DRN	225M4	4810	188
0.96	439300	1546	850000	-	500000	PF	102RF167	DRN	225M4	3860	189
1.1	378600	1332	850000	-	500000	PH	102RF167	DRN	225M4	4870	188
						PHF	102RF167	DRN	225M4	3920	189
1.2	337900	1189	850000	631300	500000	P PF PH PHF	102RF167	DRN	225M4	4810	188
1.6	270300	951	850000	631300	500000						
1.8	240400	846	850000	631300	500000						
2.0	209400	737	850000	631300	500000						
2.2	186800	657	850000	631300	500000						
2.6	159200	561	850000	631300	500000	P PF PH PHF	102RF167	DRN	225M4	3910	189
3.2	131900	464	850000	631300	500000						
0.95	445000	1566	720000	-	423000						
1.1	383600	1350	720000	-	423000						
1.2	342300	1205	720000	513900	423000	P PF PH PHF	092RF167	DRN	225M4	3950	186
1.5	273900	964	720000	513900	423000						
1.7	243500	857	720000	513900	423000						
2.0	212200	747	720000	513900	423000						
2.2	189300	666	720000	513900	423000						
2.6	161300	568	720000	513900	423000						
3.1	133700	470	720000	513900	423000						
3.7	114100	402	720000	513900	423000						
1.1	367000	1291	647600	397100	359400	P PF PH PHF	082RF167	DRN	225M4	3460	184
1.4	298200	1049	683000	397100	359400						
1.7	252900	890	683000	397100	359400						
1.8	233000	820	683000	397100	359400						
2.1	203000	714	683000	397100	359400	P PF PH PHF	082RF167	DRN	225M4	3450	184
2.3	181100	637	683000	397100	359400						
1.6	261800	922	523000	-	245660						
1.9	221200	779	523000	274600	245660						
2.2	195200	687	523000	274600	245660	P PF PH PHF	072RF147	DRN	225M4	2550	178
2.8	150600	530	523000	274600	245660						
3.2	129800	457	523000	274600	245660						
2.1	201000	708	426500	209100	185660	P PF PH PHF	062RF147	DRN	225M4	2110	176
2.4	174300	614	447000	209100	185660						
2.7	155100	546	459900	209100	185660						
3.9	108600	382	459800	209100	185660						
4.6	92100	324	437700	209100	185660						
5.2	80800	284	420900	209100	185660						
2.2	187300	659	437400	209100	185660	P PF PH PHF	062RF137	DRN	225M4	1990	174
2.6	161700	569	455600	209100	185660						
2.9	143000	503	467200	209100	185660						
3.5	120200	423	473000	209100	185660						

P_m = 45 kW										
n_2	M_a	i_{ex}	$F_{Ra}^{1)}$	M_{N2}						m
min^{-1}	Nm		N	$f_{LC} \leq 7.5$ Nm	$f_{LC} > 107.5$ Nm					kg
6.4	65600	231	316400	140600	124060	P	052RF147	DRN	225M4	1630 172
						PF	052RF147	DRN	225M4	1430 173
						PH	052RF147	DRN	225M4	1620 172
						PHF	052RF147	DRN	225M4	1420 173
3.5	120200	423	359400	140600	124060	P	052RF137	DRN	225M4	1510 170
4.3	97100	342	355600	140600	124060	PF	052RF137	DRN	225M4	1310 171
						PH	052RF137	DRN	225M4	1500 170
						PHF	052RF137	DRN	225M4	1300 171
3.3	129100	455	352100	140600	124060	P	052RF107	DRN	225M4	1410 168
						PF	052RF107	DRN	225M4	1210 169
						PH	052RF107	DRN	225M4	1400 168
						PHF	052RF107	DRN	225M4	1200 169
7.6	55700	196	261100	111000	100170	P	042RF147	DRN	225M4	1480 166
						PF	042RF147	DRN	225M4	1290 167
						PH	042RF147	DRN	225M4	1480 166
						PHF	042RF147	DRN	225M4	1290 167
4.3	97100	342	298700	111000	100170	P	042RF137	DRN	225M4	1360 164
5.0	84600	298	295900	111000	100170	PF	042RF137	DRN	225M4	1170 165
5.9	71100	250	280900	111000	100170	PH	042RF137	DRN	225M4	1370 164
7.3	57400	202	263500	111000	100170	PHF	042RF137	DRN	225M4	1180 165
5.9	71100	250	221300	86800	69620	P	032RF137	DRN	225M4	1120 158
7.3	57400	202	213300	86800	69620	PF	032RF137	DRN	225M4	990 159
8.5	49700	175	204300	86800	69620	PH	032RF137	DRN	225M4	1140 158
9.7	43300	153	196000	86800	69620	PHF	032RF137	DRN	225M4	1020 159
12	36400	128	186100	86800	69620					
14	29400	104	174600	86800	69620					
5.7	74200	261	216900	86800	69620	P	032RF107	DRN	225M4	1010 156
6.5	64900	228	221200	86800	69620	PF	032RF107	DRN	225M4	890 157
7.7	54900	193	210400	86800	69620	PH	032RF107	DRN	225M4	1030 156
						PHF	032RF107	DRN	225M4	910 157
8.5	49700	175	192900	64200	51190	P	022RF137	DRN	225M4	1040 152
9.7	43300	153	197000	64200	51190	PF	022RF137	DRN	225M4	930 153
12	36400	128	197000	64200	51190	PH	022RF137	DRN	225M4	1050 152
						PHF	022RF137	DRN	225M4	950 153
7.7	54900	193	185000	64200	51190	P	022RF107	DRN	225M4	930 150
13	33200	117	191700	-	51190	PF	022RF107	DRN	225M4	830 151
15	28100	99	182200	-	51190	PH	022RF107	DRN	225M4	950 150
						PHF	022RF107	DRN	225M4	850 151
9.4	44800	158	133600	46200	36810	P	012RF107	DRN	225M4	790 144
11	38000	134	127100	46200	36810	PF	012RF107	DRN	225M4	720 145
13	33200	117	122100	46200	36810	PH	012RF107	DRN	225M4	800 144
15	28100	99	116100	46200	36810	PHF	012RF107	DRN	225M4	730 145
15	27300	96	93200	29200	24830	P	002RF107	DRN	225M4	710 136
						PF	002RF107	DRN	225M4	650 137
						PH	002RF107	DRN	225M4	710 136
						PHF	002RF107	DRN	225M4	650 137

P_m = 55 kW										
n_2	M_a	i_{ex}	$F_{Ra}^{1)}$	M_{N2}						m
min^{-1}	Nm		N	$f_{LC} \leq 7.5$ Nm	$f_{LC} > 107.5$ Nm					kg
0.96	536900	1546	850000	-	500000	P	102RF167	DRN	250M4	4960 188
1.1	462800	1332	850000	-	500000	PF	102RF167	DRN	250M4	4010 189
						PH	102RF167	DRN	250M4	5020 188
						PHF	102RF167	DRN	250M4	4070 189
1.6	330400	951	850000	631300	500000					
1.8	293800	846	850000	631300	500000	P	102RF167	DRN	250M4	4960 188
2.0	256000	737	850000	631300	500000	PF	102RF167	DRN	250M4	4000 189
2.2	228400	657	850000	631300	500000	PH	102RF167	DRN	250M4	5020 188
2.6	194600	561	850000	631300	500000	PHF	102RF167	DRN	250M4	4060 189
3.2	161300	464	850000	631300	500000					
3.7	137600	396	850000	631300	500000					

P_m = 55 kW											
n₂	M_a	i_{ex}	F_{Ra}¹⁾	M_{N2}						m	
min⁻¹	Nm		N	f_{LC} ≤ 7.5	f_{LC} > 107.5					kg	
1.1	468900	1350	713500	-	423000	P	092RF167	DRN	250M4	4110	186
						PF	092RF167	DRN	250M4	3410	187
						PH	092RF167	DRN	250M4	4120	186
						PHF	092RF167	DRN	250M4	3420	187
1.5	334700	964	720000	513900	423000						
1.7	297700	857	720000	513900	423000	P	092RF167	DRN	250M4	4100	186
2.0	259300	747	720000	513900	423000	PF	092RF167	DRN	250M4	3410	187
2.2	231400	666	720000	513900	423000	PH	092RF167	DRN	250M4	4120	186
2.6	197200	568	720000	513900	423000	PHF	092RF167	DRN	250M4	3420	187
3.1	163400	470	720000	513900	423000						
3.7	139400	402	720000	513900	423000						
1.4	364400	1049	649900	397100	359400	P	082RF167	DRN	250M4	3610	184
1.7	309100	890	683000	397100	359400	PF	082RF167	DRN	250M4	2960	185
						PH	082RF167	DRN	250M4	3600	184
						PHF	082RF167	DRN	250M4	2950	185
1.8	284800	820	683000	397100	359400	P	082RF167	DRN	250M4	3600	184
2.1	248100	714	683000	397100	359400	PF	082RF167	DRN	250M4	2950	185
2.3	221400	637	683000	397100	359400	PH	082RF167	DRN	250M4	3600	184
2.7	188700	543	683000	397100	359400	PHF	082RF167	DRN	250M4	2950	185
2.5	203800	587	683000	397100	359400	P	082RF147	DRN	250M4	3340	182
2.8	181300	522	683000	397100	359400	PF	082RF147	DRN	250M4	2690	183
						PH	082RF147	DRN	250M4	3330	182
						PHF	082RF147	DRN	250M4	2680	183
1.9	270400	779	520600	274600	245660	P	072RF147	DRN	250M4	2680	178
2.2	238600	687	523000	274600	245660	PF	072RF147	DRN	250M4	2190	179
2.8	184000	530	523000	274600	245660	PH	072RF147	DRN	250M4	2730	178
3.2	158600	457	523000	274600	245660	PHF	072RF147	DRN	250M4	2240	179
4.0	128900	371	523000	274600	245660						
2.4	213000	614	416400	209100	185660						
2.7	189500	546	435700	209100	185660	P	062RF147	DRN	250M4	2260	176
3.9	132700	382	459800	209100	185660	PF	062RF147	DRN	250M4	1890	177
4.6	112500	324	437700	209100	185660	PH	062RF147	DRN	250M4	2250	176
5.2	98800	284	420900	209100	185660	PHF	062RF147	DRN	250M4	1880	177
6.4	80200	231	395500	209100	185660						
2.6	197700	569	429300	209100	185660	P	062RF137	DRN	250M4	2140	174
2.9	174800	503	446600	209100	185660	PF	062RF137	DRN	250M4	1780	175
3.5	146900	423	464900	209100	185660	PH	062RF137	DRN	250M4	2130	174
4.3	118700	342	444600	209100	185660	PHF	062RF137	DRN	250M4	1770	175
5.0	103400	298	426600	-	185660						
6.4	80200	231	316400	140600	124060	P	052RF147	DRN	250M4	1770	172
7.6	68000	196	301100	140600	124060	PF	052RF147	DRN	250M4	1570	173
						PH	052RF147	DRN	250M4	1770	172
						PHF	052RF147	DRN	250M4	1570	173
4.3	118700	342	355600	140600	124060	P	052RF137	DRN	250M4	1660	170
5.0	103400	298	341300	140600	124060	PF	052RF137	DRN	250M4	1460	171
5.9	86900	250	324000	140600	124060	PH	052RF137	DRN	250M4	1650	170
6.8	75300	217	310400	-	124060	PHF	052RF137	DRN	250M4	1450	171
7.3	70200	202	303900	140600	124060						
7.6	68000	196	261100	111000	100170	P	042RF147	DRN	250M4	1630	166
8.9	57700	166	248400	111000	100170	PF	042RF147	DRN	250M4	1440	167
10	50600	146	238900	111000	100170	PH	042RF147	DRN	250M4	1630	166
13	41100	118	224500	111000	100170	PHF	042RF147	DRN	250M4	1440	167
15	34800	101	213600	111000	100170						
5.0	103400	298	292200	111000	100170						
5.9	86900	250	280900	111000	100170	P	042RF137	DRN	250M4	1510	164
7.3	70200	202	263500	111000	100170	PF	042RF137	DRN	250M4	1320	165
8.5	60800	175	252400	111000	100170	PH	042RF137	DRN	250M4	1520	164
9.7	53000	153	242200	-	100170	PHF	042RF137	DRN	250M4	1330	165
12	44500	128	229900	-	100170						
14	35900	104	215600	-	90600						
4.8	107000	308	288300	111000	100170	P	042RF107	DRN	250M4	1410	162
						PF	042RF107	DRN	250M4	1220	163
						PH	042RF107	DRN	250M4	1410	162
						PHF	042RF107	DRN	250M4	1220	163

P_m = 55 kW

n ₂ min ⁻¹	M _a Nm	i _{ex}	F _{Ra} ¹⁾ N	M _{N2}						m		
				f _{LC} ≤7.5 Nm	f _{LC} >107.5 Nm					kg		
7.3	70200	202	213300	86800	69620	P	032RF137	DRN	250M4	1270	158	
8.5	60800	175	204300	86800	69620	PF	032RF137	DRN	250M4	1140	159	
9.7	53000	153	196000	86800	69620	PH	032RF137	DRN	250M4	1290	158	
						PHF	032RF137	DRN	250M4	1170	159	
6.5	79300	228	209500	86800	69620	P	032RF107	DRN	250M4	1160	156	
						PF	032RF107	DRN	250M4	1040	157	
						PH	032RF107	DRN	250M4	1180	156	
						PHF	032RF107	DRN	250M4	1060	157	
8.5	60800	175	174700	64200	51190	P	022RF137	DRN	250M4	1190	152	
9.7	53000	153	188000	64200	51190	PF	022RF137	DRN	250M4	1080	153	
12	44500	128	197000	64200	51190	PH	022RF137	DRN	250M4	1200	152	
14	35900	104	184800	64200	51190	PHF	022RF137	DRN	250M4	1100	153	
8.6	59800	172	176600	64200	51190	P	022RF107	DRN	250M4	1080	150	
9.4	54800	158	185100	64200	51190	PF	022RF107	DRN	250M4	980	151	
						PH	022RF107	DRN	250M4	1100	150	
						PHF	022RF107	DRN	250M4	990	151	
13	40600	117	122100	46200	36810	P	012RF107	DRN	250M4	930	144	
						PF	012RF107	DRN	250M4	860	145	
						PH	012RF107	DRN	250M4	950	144	
						PHF	012RF107	DRN	250M4	880	145	

P_m = 75 kW

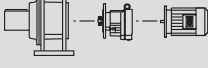
n ₂	M _a	i _{ex}	F _{Ra} ¹⁾	M _{N2}						m		
				f _{LC} ≤7.5	f _{LC} >107.5							
min ⁻¹	Nm		N	Nm	Nm						kg	
1.6	450500	951	850000	631300	500000	P PF PH PHF	102RF167 102RF167 102RF167 102RF167	DRN DRN DRN DRN	280S4 280S4 280S4 280S4	5010 4050 5070 4110	188 189 188 189	
1.8	400700	846	850000	631300	500000							
2.0	349100	737	850000	631300	500000							
2.2	311400	657	850000	631300	500000							
2.6	265400	561	850000	631300	500000							
3.2	219900	464	850000	631300	500000							
3.7	187700	396	850000	631300	500000							
1.5	456500	964	720000	513900	423000	P PF PH PHF	092RF167 092RF167 092RF167 092RF167	DRN DRN DRN DRN	280S4 280S4 280S4 280S4	4150 3450 4160 3470	186 187 186 187	
1.7	405900	857	720000	513900	423000							
2.0	353600	747	720000	513900	423000							
2.2	315500	666	720000	513900	423000							
2.6	268900	568	720000	513900	423000							
3.1	222800	470	720000	513900	423000							
3.7	190200	402	720000	513900	423000							
1.8	388400	820	627300	397100	359400	P	082RF167	DRN	280S4	3650	184	
2.1	338300	714	672600	397100	359400	PF	082RF167	DRN	280S4	3000	185	
2.3	301900	637	683000	397100	359400	PH	082RF167	DRN	280S4	3650	184	
2.7	257300	543	683000	397100	359400	PHF	082RF167	DRN	280S4	3000	185	
2.8	251000	530	523000	274600	245660	P	072RF147	DRN	280S4	2730	178	
3.2	216300	457	523000	274600	245660	PF	072RF147	DRN	280S4	2240	179	
4.0	175700	371	523000	274600	245660	PH	072RF147	DRN	280S4	2780	178	
						PHF	072RF147	DRN	280S4	2290	179	
3.9	181000	382	442100	209100	185660	P	062RF147	DRN	280S4	2310	176	
4.6	153500	324	437700	209100	185660	PF	062RF147	DRN	280S4	1940	177	
5.2	134700	284	420900	209100	185660	PH	062RF147	DRN	280S4	2300	176	
6.4	109400	231	395500	209100	185660	PHF	062RF147	DRN	280S4	1930	177	
3.5	200400	423	427100	209100	185660	P	062RF137	DRN	280S4	2190	174	
						PF	062RF137	DRN	280S4	1830	175	
						PH	062RF137	DRN	280S4	2180	174	
						PHF	062RF137	DRN	280S4	1820	175	
6.4	109400	231	316400	140600	124060	P	052RF147	DRN	280S4	1820	172	
7.6	92800	196	301100	140600	124060	PF	052RF147	DRN	280S4	1620	173	
8.9	78700	166	286500	140600	124060	PH	052RF147	DRN	280S4	1820	172	
						PHF	052RF147	DRN	280S4	1620	173	

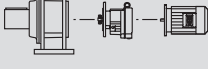
P_m = 75 kW

n ₂ min ⁻¹	M _a Nm	i _{ex}	F _{Ra} ¹⁾ N	M _{N2}							m kg	
				f _{LC} ≤ 7.5 Nm	f _{LC} > 107.5 Nm							
7.6	92800	196	261100	111000	100170	P	042RF147	DRN	280S4	1680	166	
8.9	78700	166	248400	111000	100170	PF	042RF147	DRN	280S4	1490	167	
10	69000	146	238900	111000	100170	PH	042RF147	DRN	280S4	1680	166	
13	56100	118	224500	111000	100170	PHF	042RF147	DRN	280S4	1490	167	
15	47500	101	213600	111000	100170							
10	69000	146	193400	86800	69620	P	032RF147	DRN	280S4	1430	160	
13	56100	118	181700	86800	69620	PF	032RF147	DRN	280S4	1310	161	
15	47500	101	172900	86800	69620	PH	032RF147	DRN	280S4	1450	160	
						PHF	032RF147	DRN	280S4	1330	161	
8.5	82900	175	203700	86800	69620	P	032RF137	DRN	280S4	1320	158	
9.7	72300	153	196000	86800	69620	PF	032RF137	DRN	280S4	1190	159	
						PH	032RF137	DRN	280S4	1340	158	
						PHF	032RF137	DRN	280S4	1220	159	
12	60700	128	174900	64200	51190	P	022RF137	DRN	280S4	1240	152	
						PF	022RF137	DRN	280S4	1130	153	
						PH	022RF137	DRN	280S4	1250	152	
						PHF	022RF137	DRN	280S4	1150	153	

P_m = 90 kW

n ₂ min ⁻¹	M _a Nm	i _{ex}	F _{Ra} ¹⁾ N	M _{N2}							m kg	
				f _{LC} ≤ 7.5 Nm	f _{LC} > 107.5 Nm							
1.6	541000	951	850000	631300	500000							
1.8	481100	846	850000	631300	500000	P	102RF167	DRN	280M4	5120	188	
2.0	419200	737	850000	631300	500000	PF	102RF167	DRN	280M4	4170	189	
2.2	374000	657	850000	631300	500000	PH	102RF167	DRN	280M4	5180	188	
2.6	318800	561	850000	631300	500000	PHF	102RF167	DRN	280M4	4230	189	
3.2	264100	464	850000	631300	500000							
3.7	225400	396	850000	631300	500000							
1.7	487500	857	694300	513900	423000							
2.0	424700	747	720000	513900	423000	P	092RF167	DRN	280M4	4270	186	
2.2	378900	666	720000	513900	423000	PF	092RF167	DRN	280M4	3570	187	
2.6	322900	568	720000	513900	423000	PH	092RF167	DRN	280M4	4280	186	
3.1	267600	470	720000	513900	423000	PHF	092RF167	DRN	280M4	3580	187	
3.7	228400	402	720000	513900	423000							
2.3	362500	637	651700	397100	359400	P	082RF167	DRN	280M4	3770	184	
2.7	309000	543	683000	397100	359400	PF	082RF167	DRN	280M4	3120	185	
						PH	082RF167	DRN	280M4	3760	184	
						PHF	082RF167	DRN	280M4	3110	185	
3.2	259800	457	523000	274600	245660	P	072RF147	DRN	280M4	2840	178	
4.0	211100	371	523000	274600	245660	PF	072RF147	DRN	280M4	2350	179	
						PH	072RF147	DRN	280M4	2900	178	
						PHF	072RF147	DRN	280M4	2410	179	
4.6	184300	324	437700	209100	185660	P	062RF147	DRN	280M4	2420	176	
5.2	161700	284	420900	209100	185660	PF	062RF147	DRN	280M4	2060	177	
6.4	131400	231	395500	209100	185660	PH	062RF147	DRN	280M4	2410	176	
						PHF	062RF147	DRN	280M4	2050	177	
4.3	194300	342	431900	209100	185660	P	062RF137	DRN	280M4	2310	174	
						PF	062RF137	DRN	280M4	1940	175	
						PH	062RF137	DRN	280M4	2290	174	
						PHF	062RF137	DRN	280M4	1930	175	
6.4	131400	231	316400	140600	124060	P	052RF147	DRN	280M4	1940	172	
7.6	111400	196	301100	140600	124060	PF	052RF147	DRN	280M4	1740	173	
						PH	052RF147	DRN	280M4	1930	172	
						PHF	052RF147	DRN	280M4	1730	173	
8.9	94500	166	248500	111000	100170	P	042RF147	DRN	280M4	1790	166	
10	82900	146	238900	111000	100170	PF	042RF147	DRN	280M4	1600	167	
12	67300	118	224500	111000	100170	PH	042RF147	DRN	280M4	1800	166	
15	57100	101	213700	111000	100170	PHF	042RF147	DRN	280M4	1610	167	

P_m = 90 kW										
n ₂	M _a	i _{ex}	F _{Ra} ¹⁾	M _{N2}						m
min ⁻¹	Nm		N	f _{LC} ≤ 7.5 Nm	f _{LC} > 107.5 Nm					kg
10	82900	146	193400	86800	69620	P	032RF147	DRN	280M4	1550 160
15	57100	101	173000	86800	69620	PF	032RF147	DRN	280M4	1420 161
						PH	032RF147	DRN	280M4	1570 160
						PHF	032RF147	DRN	280M4	1450 161
12	72900	128	186200	86800	69620	P	032RF137	DRN	280M4	1430 158
						PF	032RF137	DRN	280M4	1310 159
						PH	032RF137	DRN	280M4	1450 158
						PHF	032RF137	DRN	280M4	1330 159
14	58900	104	178200	64200	51190	P	022RF137	DRN	280M4	1350 152
						PF	022RF137	DRN	280M4	1250 153
						PH	022RF137	DRN	280M4	1360 152
						PHF	022RF137	DRN	280M4	1260 153

P_m = 110 kW										
n ₂	M _a	i _{ex}	F _{Ra} ¹⁾	M _{N2}						m
min ⁻¹	Nm		N	f _{LC} ≤ 7.5 Nm	f _{LC} > 107.5 Nm					kg
2.0	509900	737	850000	631300	500000	P	102RF167	DRN	315S4	5360 188
2.3	454900	657	850000	631300	500000	PF	102RF167	DRN	315S4	4410 189
2.6	387800	561	850000	631300	500000	PH	102RF167	DRN	315S4	5430 188
3.2	321300	464	850000	631300	500000	PHF	102RF167	DRN	315S4	4470 189
3.8	274200	396	850000	631300	500000					
2.0	516600	747	662000	513900	423000	P	092RF167	DRN	315S4	4510 186
2.2	460900	666	720000	513900	423000	PF	092RF167	DRN	315S4	3810 187
2.6	392900	568	720000	513900	423000	PH	092RF167	DRN	315S4	4520 186
3.2	325500	470	720000	513900	423000	PHF	092RF167	DRN	315S4	3830 187
3.7	277800	402	720000	513900	423000					
2.7	375900	543	639300	397100	359400	P	082RF167	DRN	315S4	4010 184
						PF	082RF167	DRN	315S4	3360 185
						PH	082RF167	DRN	315S4	4010 184
						PHF	082RF167	DRN	315S4	3360 185
2.9	361200	522	652800	397100	359400	P	082RF147	DRN	315S4	3740 182
						PF	082RF147	DRN	315S4	3090 183
						PH	082RF147	DRN	315S4	3740 182
						PHF	082RF147	DRN	315S4	3090 183
4.0	256700	371	523000	274600	245660	P	072RF147	DRN	315S4	3090 178
						PF	072RF147	DRN	315S4	2600 179
						PH	072RF147	DRN	315S4	3140 178
						PHF	072RF147	DRN	315S4	2650 179
5.2	196800	284	420400	209100	185660	P	062RF147	DRN	315S4	2660 176
						PF	062RF147	DRN	315S4	2300 177
						PH	062RF147	DRN	315S4	2650 176
						PHF	062RF147	DRN	315S4	2290 177
7.6	135600	196	300700	140600	124060	P	052RF147	DRN	315S4	2180 172
						PF	052RF147	DRN	315S4	1980 173
						PH	052RF147	DRN	315S4	2170 172
						PHF	052RF147	DRN	315S4	1970 173
10	100800	146	238600	111000	100170	P	042RF147	DRN	315S4	2040 166
						PF	042RF147	DRN	315S4	1850 167
						PH	042RF147	DRN	315S4	2040 166
						PHF	042RF147	DRN	315S4	1850 167
13	81900	118	181500	86800	69620	P	032RF147	DRN	315S4	1790 160
						PF	032RF147	DRN	315S4	1670 161
						PH	032RF147	DRN	315S4	1810 160
						PHF	032RF147	DRN	315S4	1690 161

P_m = 132 kW

n_2	M_a	i_{ex}	$F_{Ra}^{1)}$	M_{N2}						m	
min^{-1}	Nm		N	$f_{LC} \leq 7.5$ Nm	$f_{LC} > 107.5$ Nm					kg	
2.0	611900	737	803400	631300	500000	P	102RF167	DRN	315M4	5390	188
2.3	545900	657	850000	631300	500000	PF	102RF167	DRN	315M4	4430	189
2.6	465300	561	850000	631300	500000	PH	102RF167	DRN	315M4	5450	188
3.2	385500	464	850000	631300	500000	PHF	102RF167	DRN	315M4	4490	189
3.8	329000	396	850000	631300	500000						
2.6	471500	568	710800	513900	423000	P	092RF167	DRN	315M4	4530	186
3.2	390600	470	720000	513900	423000	PF	092RF167	DRN	315M4	3830	187
3.7	333400	402	720000	513900	423000	PH	092RF167	DRN	315M4	4540	186
						PHF	092RF167	DRN	315M4	3850	187

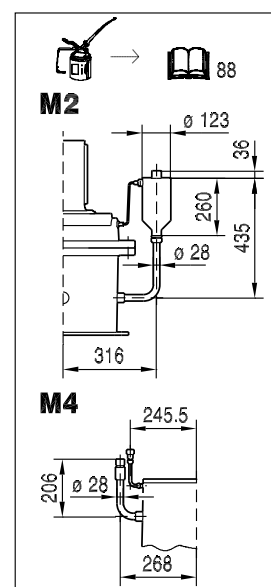
P_m = 160 kW

n_2	M_a	i_{ex}	$F_{Ra}^{1)}$	M_{N2}						m	
min^{-1}	Nm		N	$f_{LC} \leq 7.5$ Nm	$f_{LC} > 107.5$ Nm					kg	
2.6	564800	561	838900	631300	500000	P	102RF167	DRN	315L4	5520	188
3.2	468000	464	850000	631300	500000	PF	102RF167	DRN	315L4	4560	189
3.8	399400	396	850000	631300	500000	PH	102RF167	DRN	315L4	5580	188
						PHF	102RF167	DRN	315L4	4620	189
3.2	474100	470	708100	513900	423000	P	092RF167	DRN	315L4	4660	186
3.7	404600	402	720000	513900	423000	PF	092RF167	DRN	315L4	3970	187
						PH	092RF167	DRN	315L4	4680	186
						PHF	092RF167	DRN	315L4	3980	187

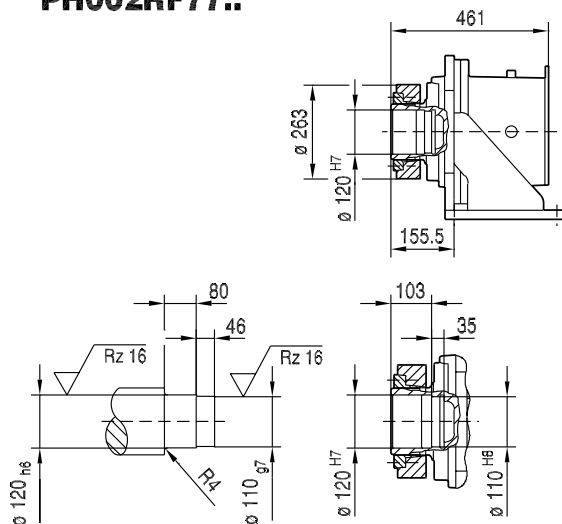
P_m = 200 kW

n_2	M_a	i_{ex}	$F_{Ra}^{1)}$	M_{N2}						m	
min^{-1}	Nm		N	$f_{LC} \leq 7.5$ Nm	$f_{LC} > 107.5$ Nm					kg	
3.2	583800	464	825000	631300	500000	P	102RF167	DRN	315H4	5630	188
3.8	498200	396	850000	631300	500000	PF	102RF167	DRN	315H4	4680	189
						PH	102RF167	DRN	315H4	5700	188
						PHF	102RF167	DRN	315H4	4740	189
3.7	504800	402	675400	513900	423000	P	092RF167	DRN	315H4	4780	186
						PF	092RF167	DRN	315H4	4080	187
						PH	092RF167	DRN	315H4	4790	186
						PHF	092RF167	DRN	315H4	4100	187

P002RF77..



PH002RF77..

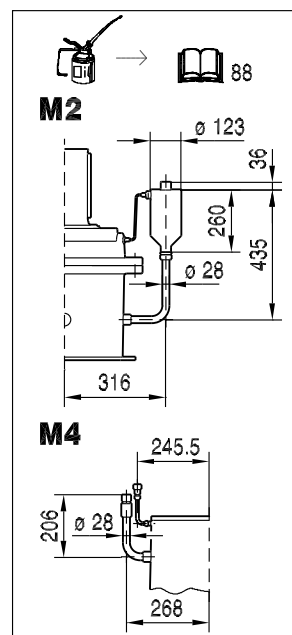
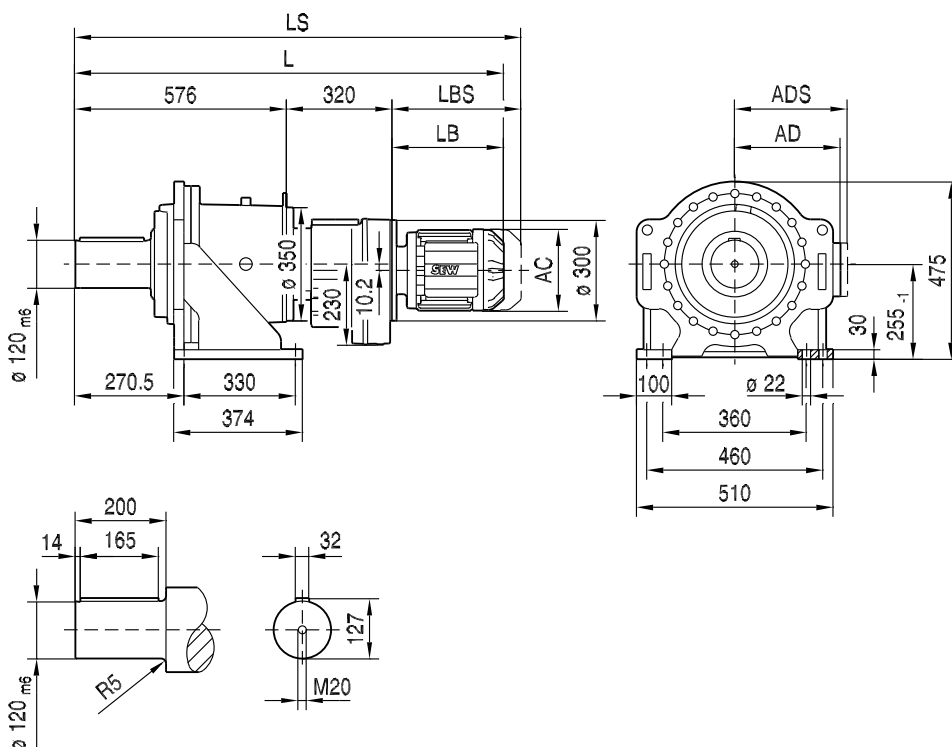
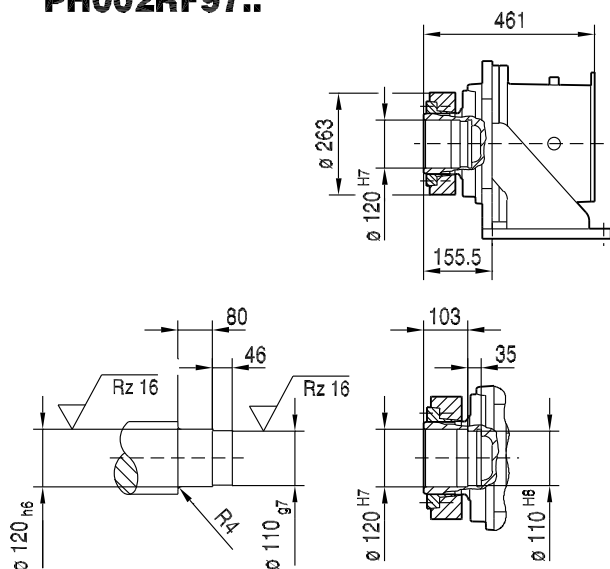


(→ 📄 99)	DRN90S	DRN90L	DRN100LS	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L
AC	179	179	197	197	221	221	261	261	314	314
AD	140	140	157	157	170	170	228	228	253	253
ADS	150	150	158	158	172	172	228	228	253	253
L	1066	1098	1094	1144	1175	1225	1243	1269	1335	1335
LS	1159	1191	1188	1238	1287	1337	1381	1406	1524	1524
LB	270	302	298	348	379	429	447	473	539	539
LBS	363	395	392	442	491	541	585	610	728	728

SEW
EURODRIVE

P002RF97..

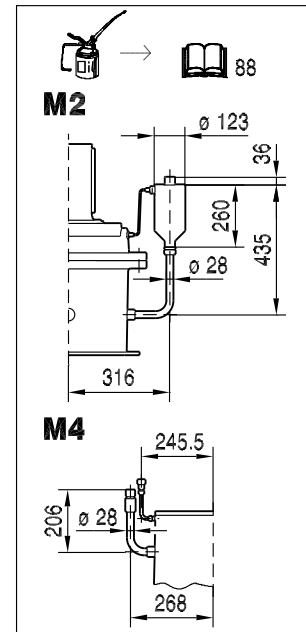
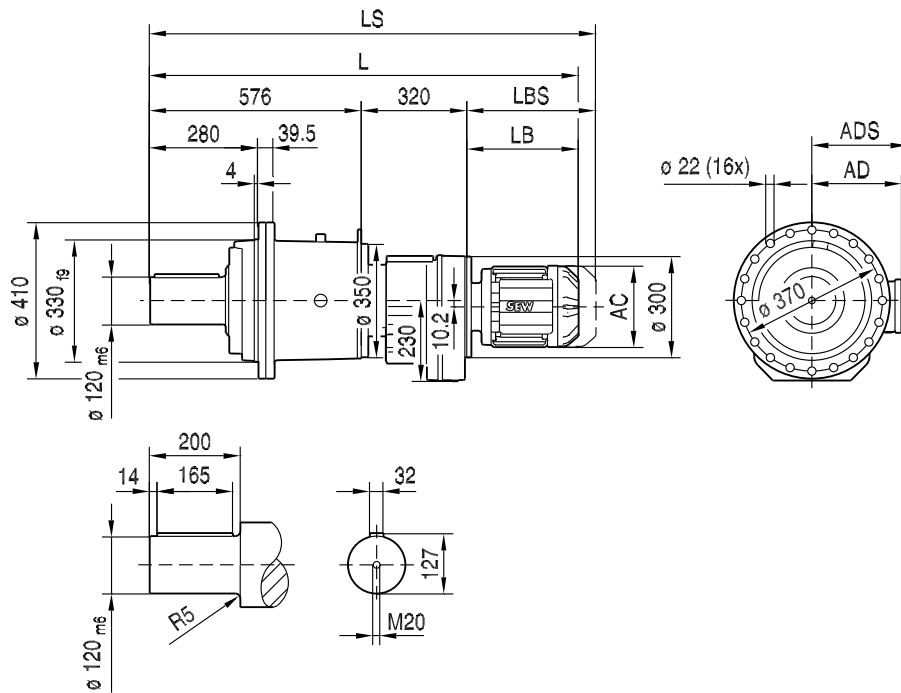
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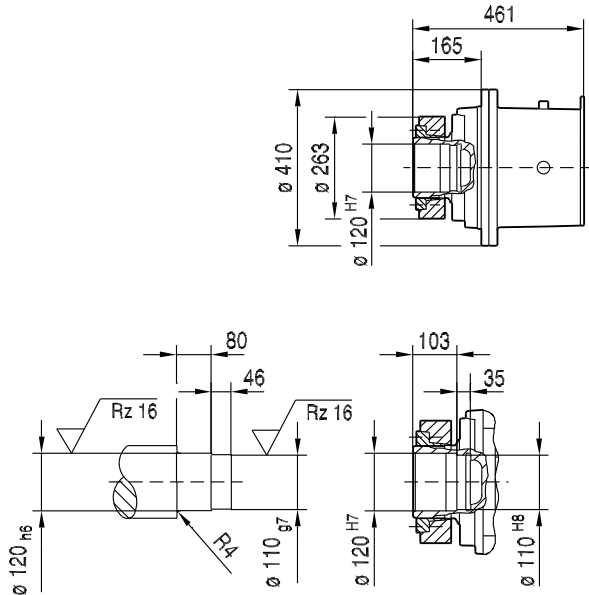
(→ 89)	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..
AC	197	221	221	261	261	314	314	357	394	434
AD	157	170	170	228	228	253	253	268	283	305
ADS	158	172	172	228	228	253	253	268	283	305
L	1234	1265	1315	1333	1359	1425	1425	1448	1558	1532
LS	1328	1377	1427	1471	1496	1614	1614	1637	1763	1737
LB	338	369	419	437	463	529	529	552	662	636
LBS	432	481	531	575	600	718	718	741	867	841

PF002RF97..

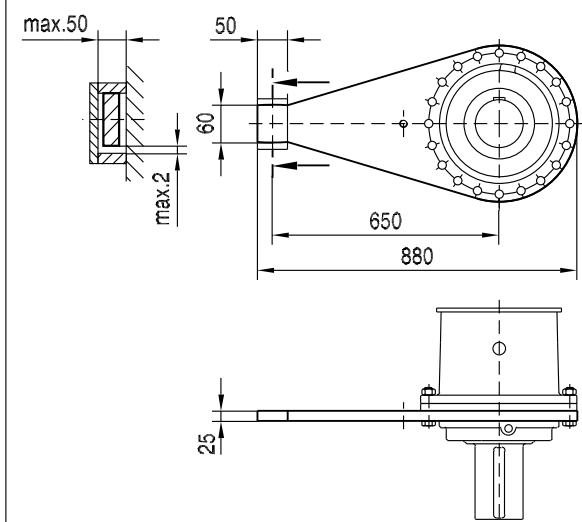
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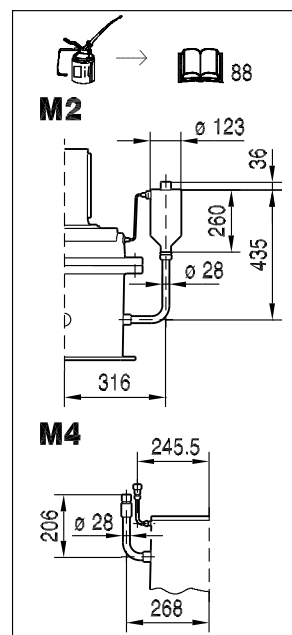
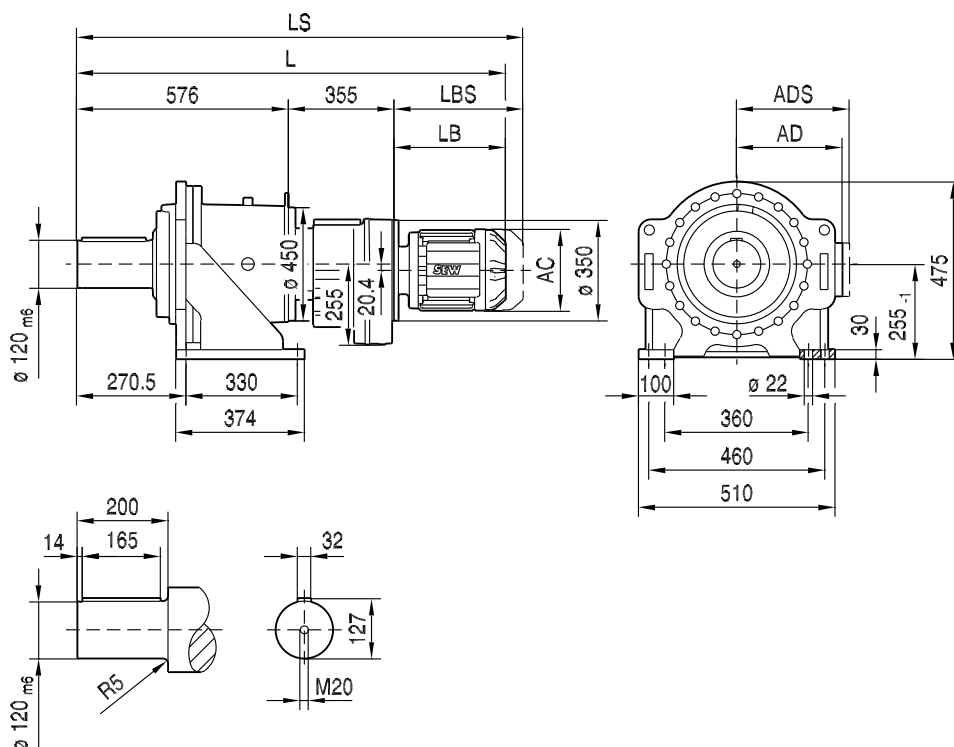
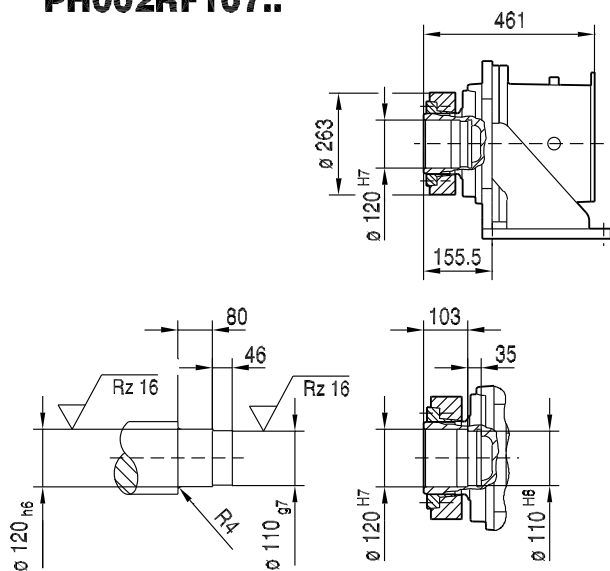
P..002/T..



(→ 99)	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..
AC	197	221	221	261	261	314	314	357	394	434
AD	157	170	170	228	228	253	253	268	283	305
ADS	158	172	172	228	228	253	253	268	283	305
L	1234	1265	1315	1333	1359	1425	1425	1448	1558	1532
LS	1328	1377	1427	1471	1496	1614	1614	1637	1763	1737
LB	338	369	419	437	463	529	529	552	662	636
LBS	432	481	531	575	600	718	718	741	867	841

P002RF107..

45 015 00 15

**PH002RF107..**

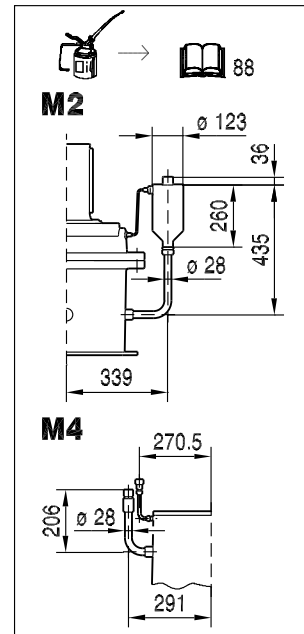
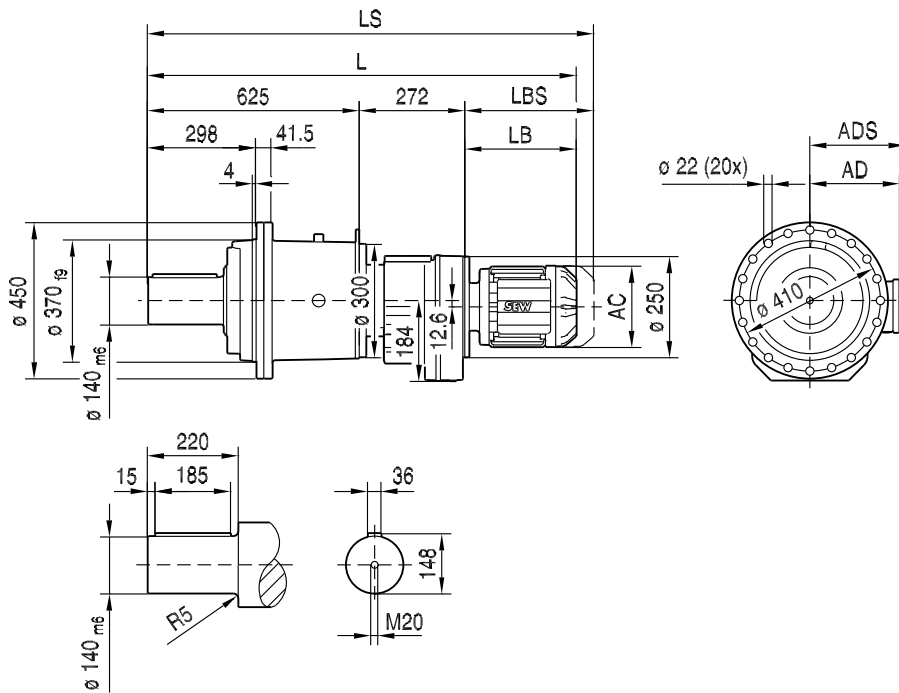
(→ 89)	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M
AC	221	261	261	314	314	357	394	434	495
AD	170	228	228	253	253	268	283	305	394
ADS	172	228	228	253	253	268	283	305	394
L	1344	1362	1388	1454	1454	1477	1587	1561	1698
LS	1456	1500	1525	1643	1643	1666	1792	1766	1938
LB	413	431	457	523	523	546	656	630	767
LBS	525	569	594	712	712	735	861	835	1007

SEW
EURODRIVE

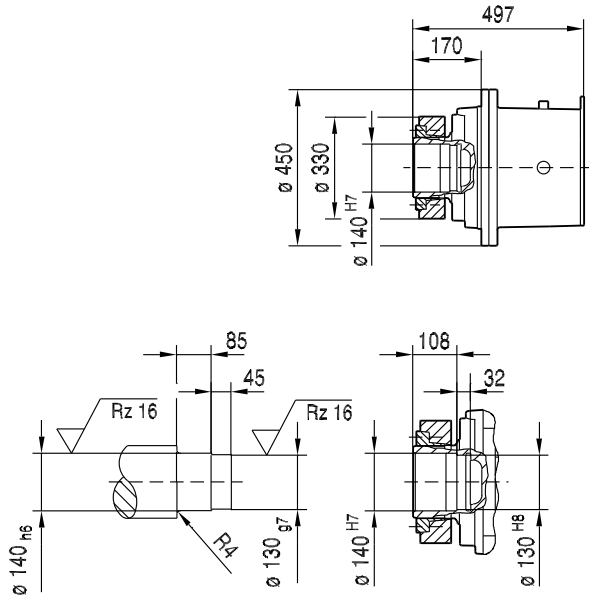
23056126/EN – 11/2016

PF012RF87..

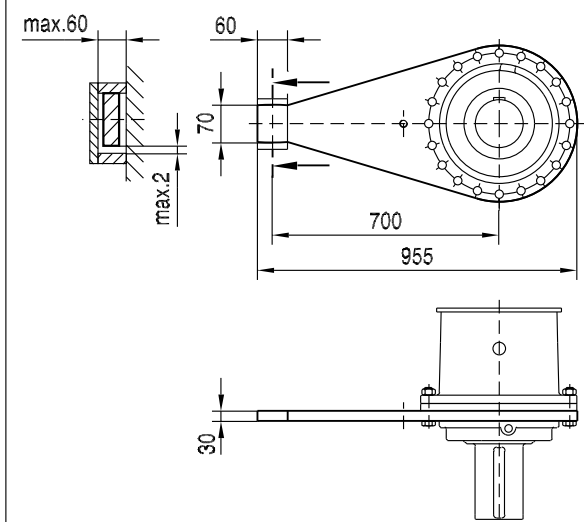
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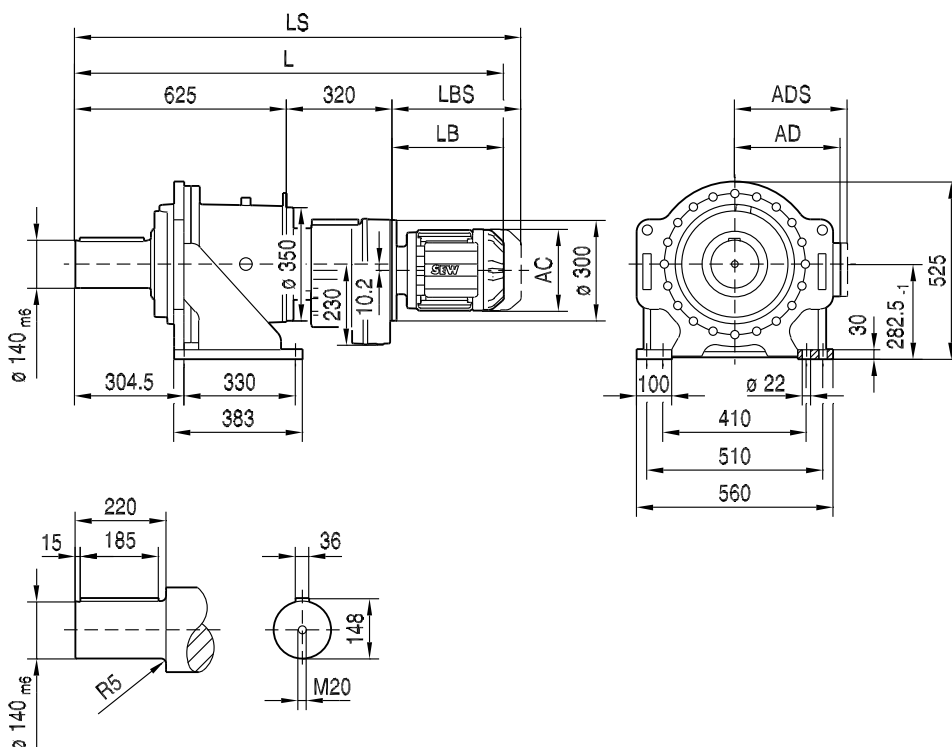
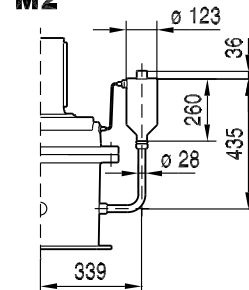
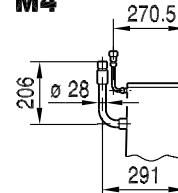
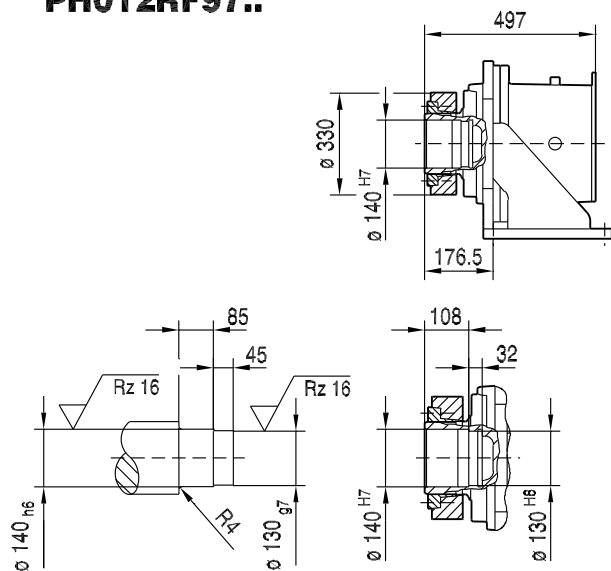
P..012/T..



(→ 99)	DRN100LS	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L
AC	197	197	221	221	261	261	314	314	357	394
AD	157	157	170	170	228	228	253	253	268	283
ADS	158	158	172	172	228	228	253	253	268	283
L	1190	1240	1271	1321	1339	1365	1431	1431	1454	1564
LS	1284	1334	1383	1433	1477	1502	1620	1620	1643	1769
LB	293	343	374	424	442	468	534	534	557	667
LBS	387	437	486	536	580	605	723	723	746	872

P012RF97..

45 021 00 15

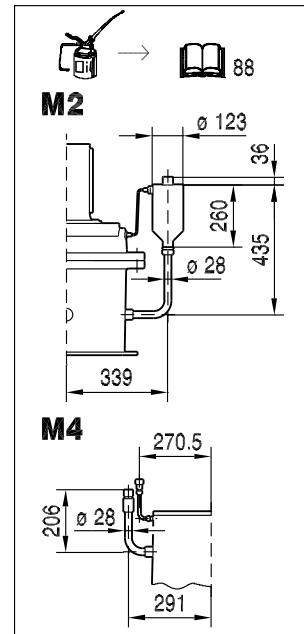
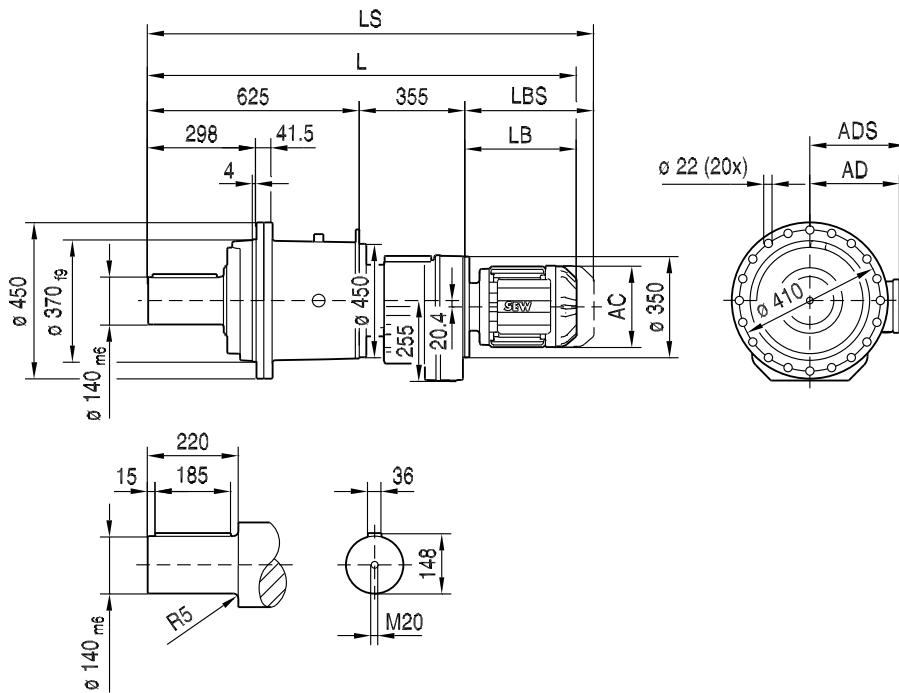
**M2****M4****PH012RF97..**

(→ 99)	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..
AC	197	221	221	261	261	314	314	357	394	434
AD	157	170	170	228	228	253	253	268	283	305
ADS	158	172	172	228	228	253	253	268	283	305
L	1283	1314	1364	1382	1408	1474	1474	1497	1607	1581
LS	1377	1426	1476	1520	1545	1663	1663	1686	1812	1786
LB	338	369	419	437	463	529	529	552	662	636
LBS	432	481	531	575	600	718	718	741	867	841

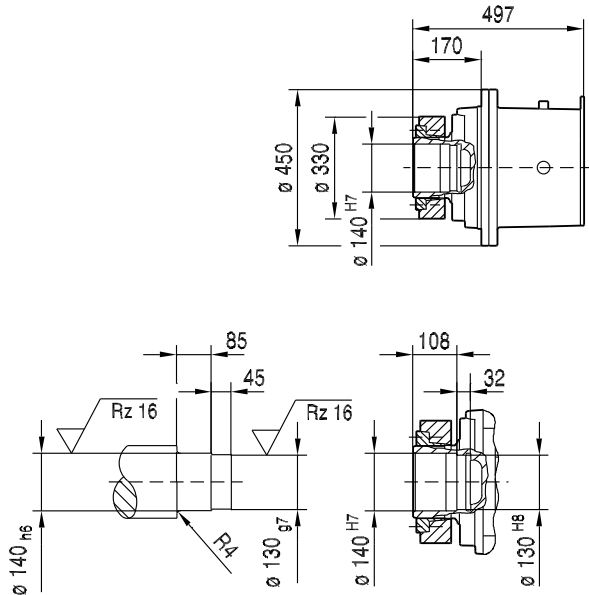
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PF012RF107..

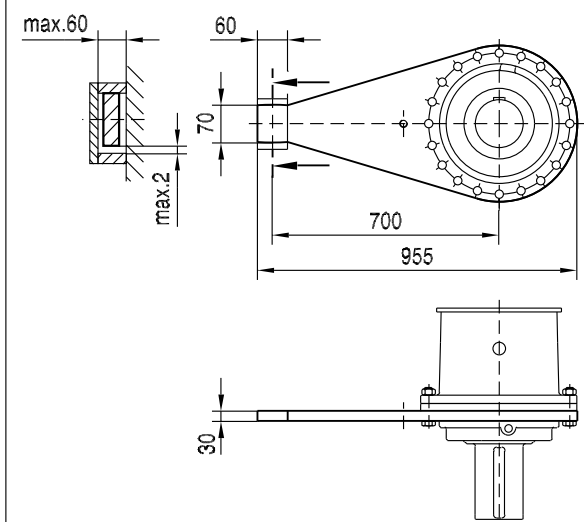
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PHF012RF107..



P..012/T..

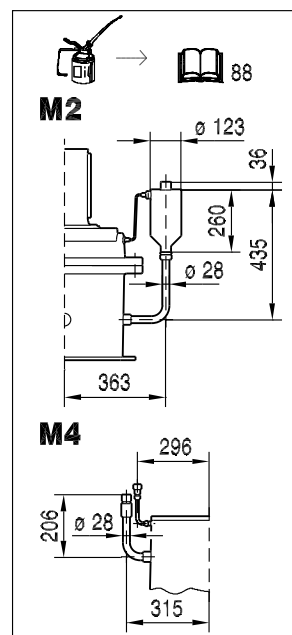
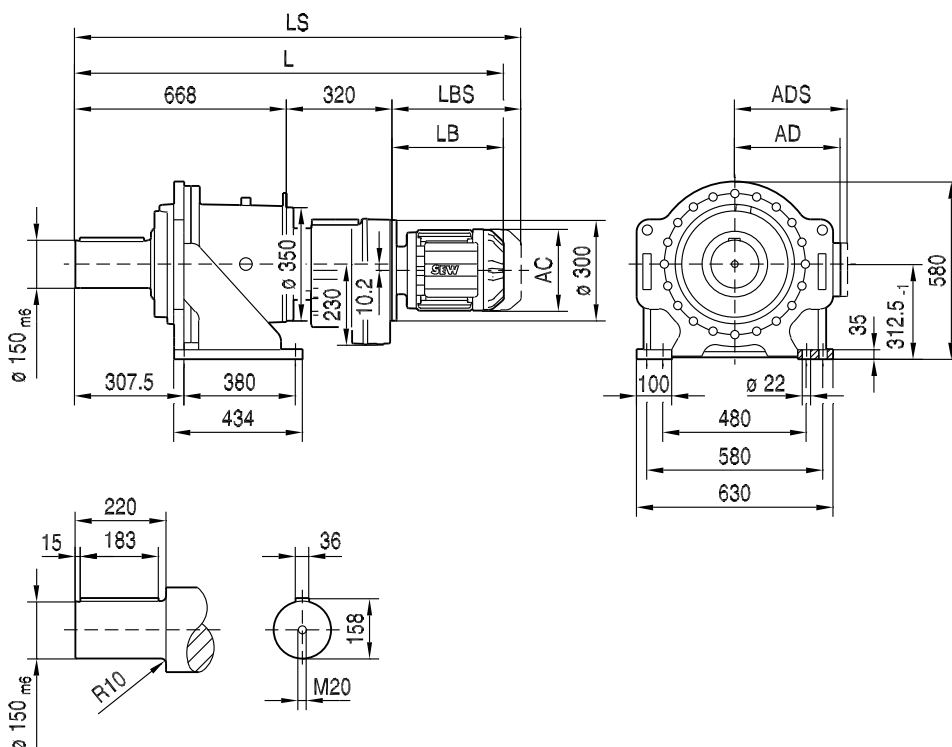
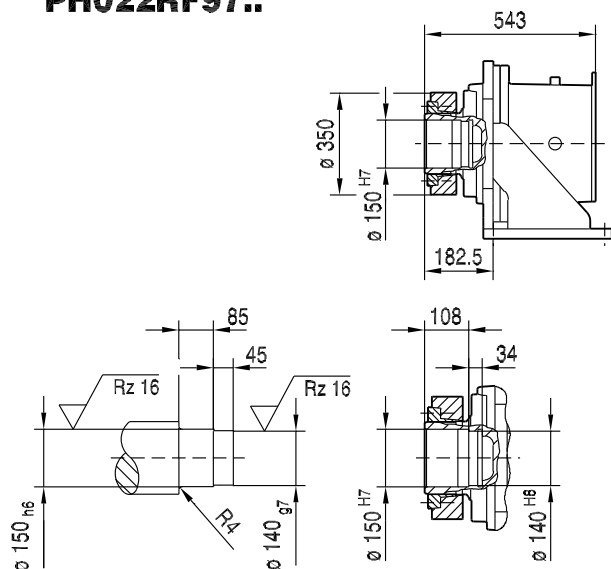


(→ 99)	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M
AC	221	261	261	314	314	357	394	434	495
AD	170	228	228	253	253	268	283	305	394
ADS	172	228	228	253	253	268	283	305	394
L	1393	1411	1437	1503	1503	1526	1636	1610	1747
LS	1505	1549	1574	1692	1692	1715	1841	1815	1987
LB	413	431	457	523	523	546	656	630	767
LBS	525	569	594	712	712	735	861	835	1007

SEW
EURODRIVE

P022RF97..

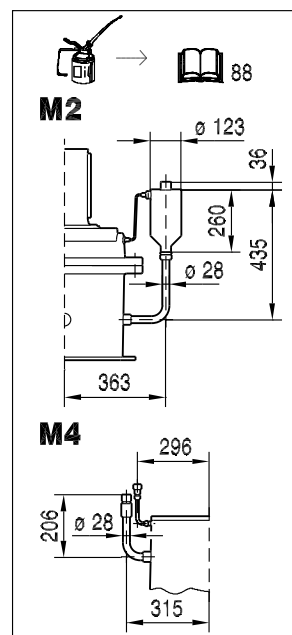
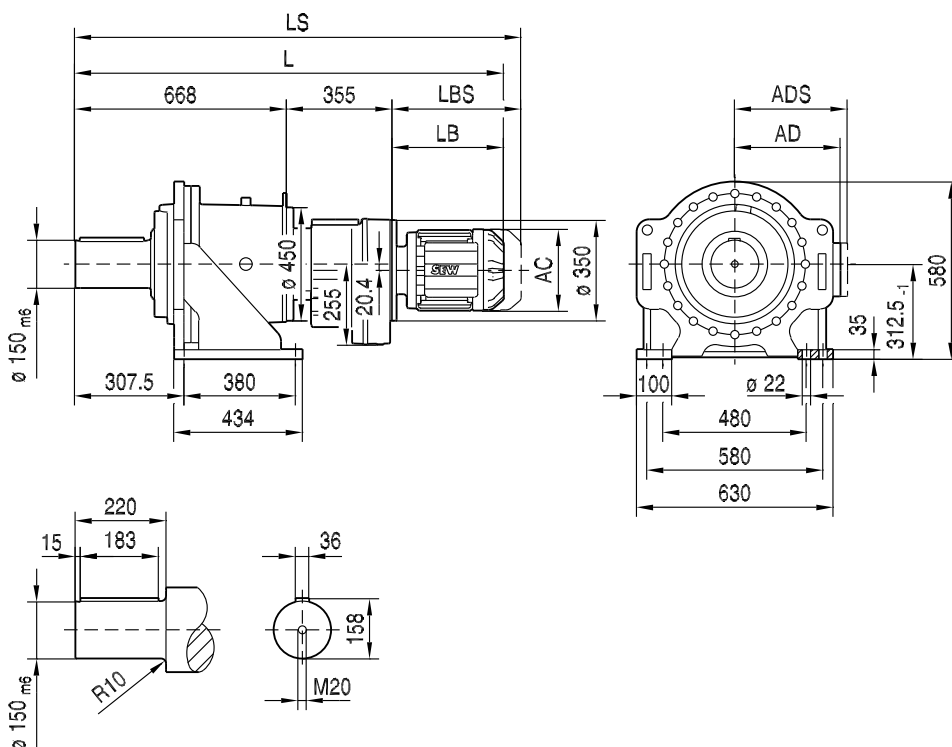
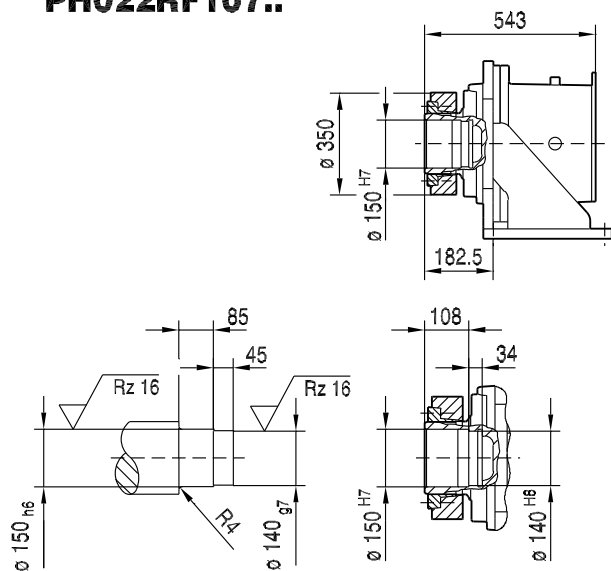
45 027 00 15

**PH022RF97..**

(→ 99)	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..
AC	197	221	221	261	261	314	314	357	394	434
AD	157	170	170	228	228	253	253	268	283	305
ADS	158	172	172	228	228	253	253	268	283	305
L	1326	1357	1407	1425	1451	1517	1517	1540	1650	1624
LS	1420	1469	1519	1563	1588	1706	1706	1729	1855	1829
LB	338	369	419	437	463	529	529	552	662	636
LBS	432	481	531	575	600	718	718	741	867	841

P022RF107..

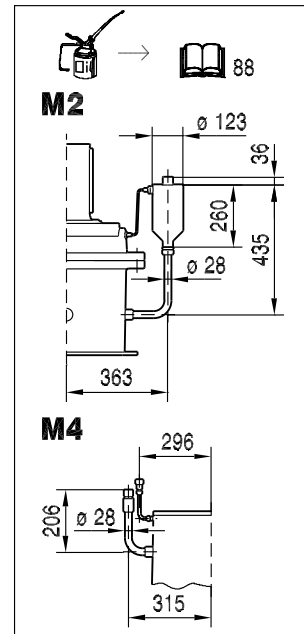
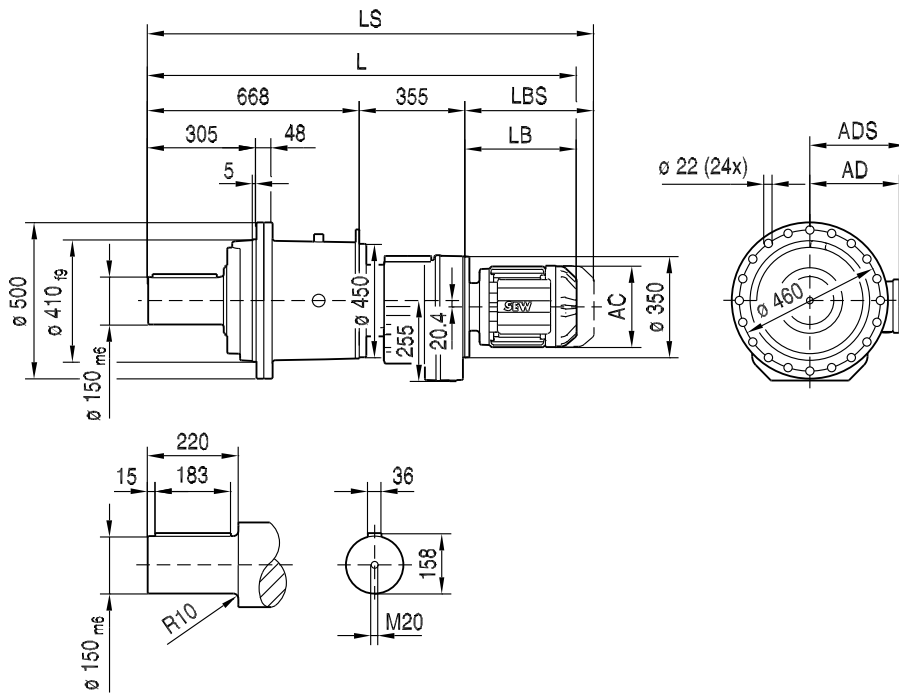
45 029 00 15

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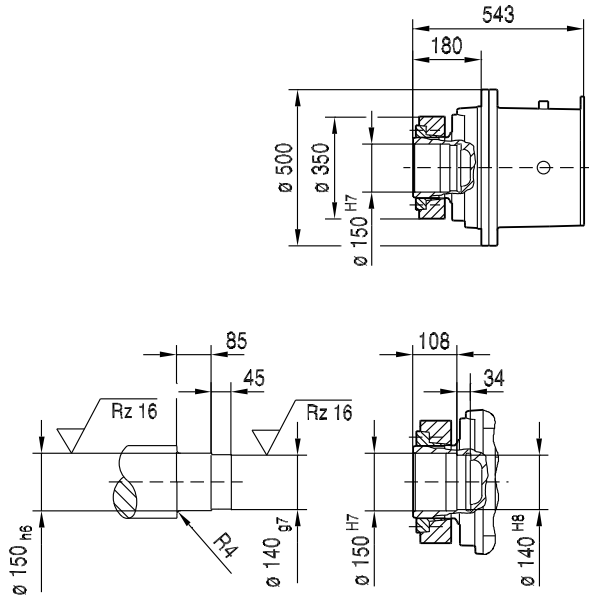
(→ 88)	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M
AC	221	221	261	261	314	314	357	394	434	495
AD	170	170	228	228	253	253	268	283	305	394
ADS	172	172	228	228	253	253	268	283	305	394
L	1386	1436	1454	1480	1546	1546	1569	1679	1653	1790
LS	1498	1548	1592	1617	1735	1735	1758	1884	1858	2030
LB	363	413	431	457	523	523	546	656	630	767
LBS	475	525	569	594	712	712	735	861	835	1007

PF022RF107..

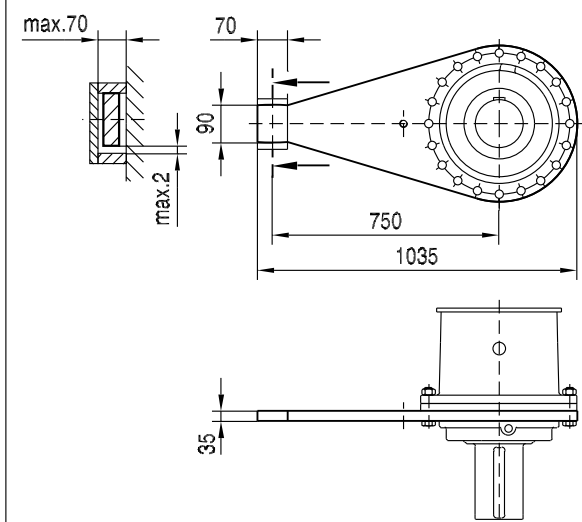
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PHF022RF107..



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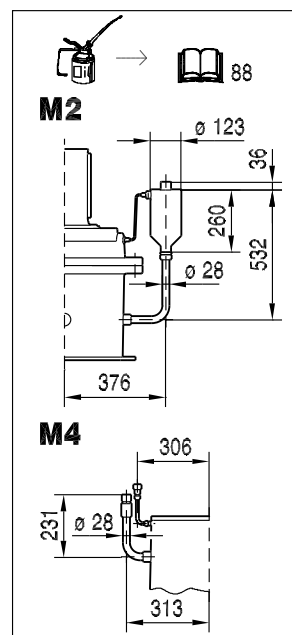
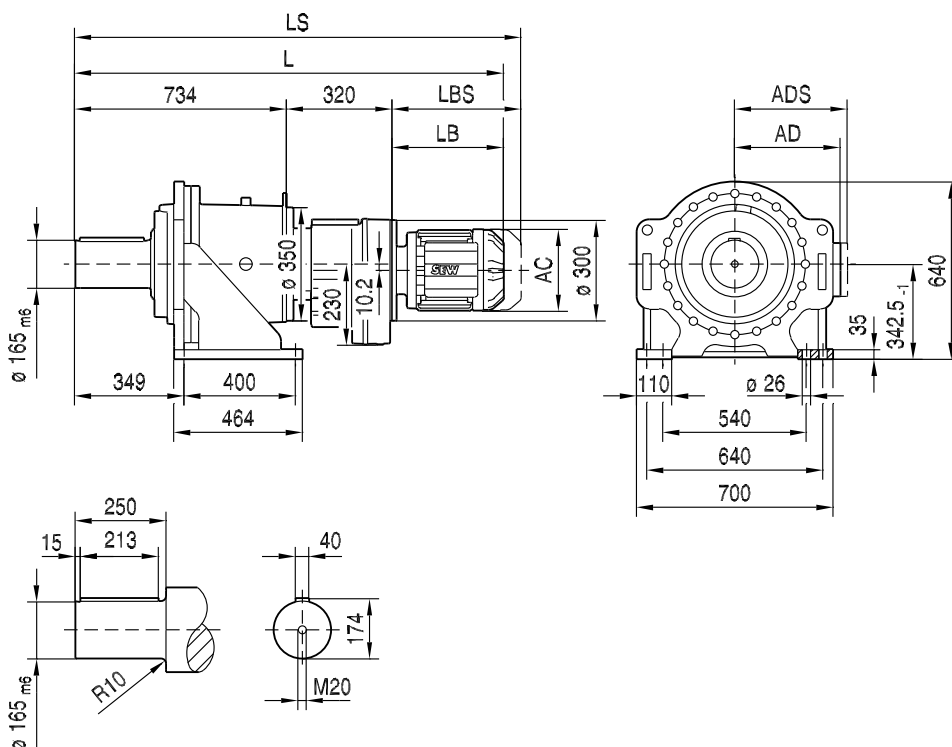
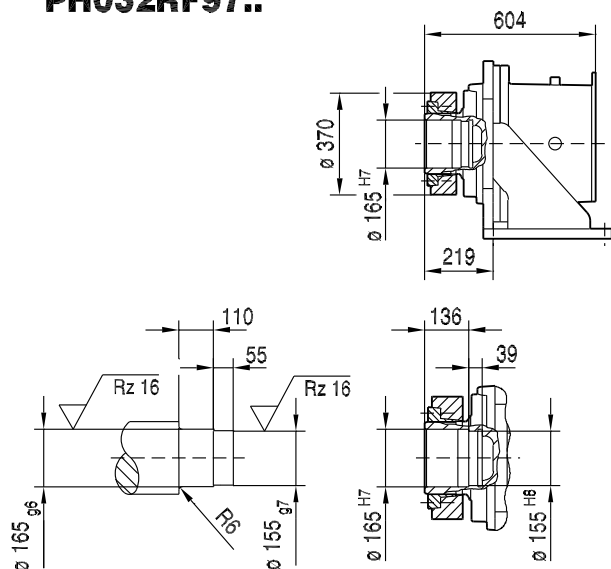
(→ 99)	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M
AC	221	221	261	261	314	314	357	394	434	495
AD	170	170	228	228	253	253	268	283	305	394
ADS	172	172	228	228	253	253	268	283	305	394
L	1386	1436	1454	1480	1546	1546	1569	1679	1653	1790
LS	1498	1548	1592	1617	1735	1735	1758	1884	1858	2030
LB	363	413	431	457	523	523	546	656	630	767
LBS	475	525	569	594	712	712	735	861	835	1007

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(→ 📄 99)	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M	DRN280S	DRN280M
AC	261	261	314	314	357	394	434	495	495	495
AD	228	228	253	253	268	283	305	394	394	394
ADS	228	228	253	253	268	283	305	394	394	394
L	1511	1537	1603	1603	1626	1736	1710	1847	1847	1942
LS	1649	1674	1792	1792	1815	1941	1915	2087	2087	2182
LB	424	450	516	516	539	649	623	760	760	855
LBS	562	587	705	705	728	854	828	1000	1000	1095

P032RF97..

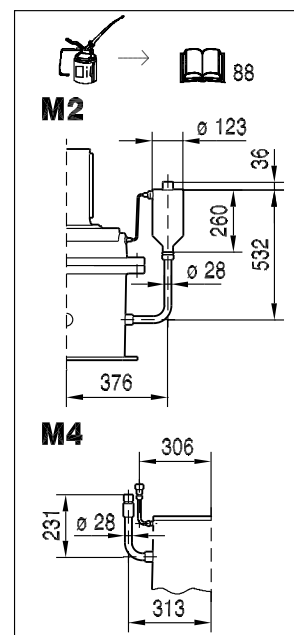
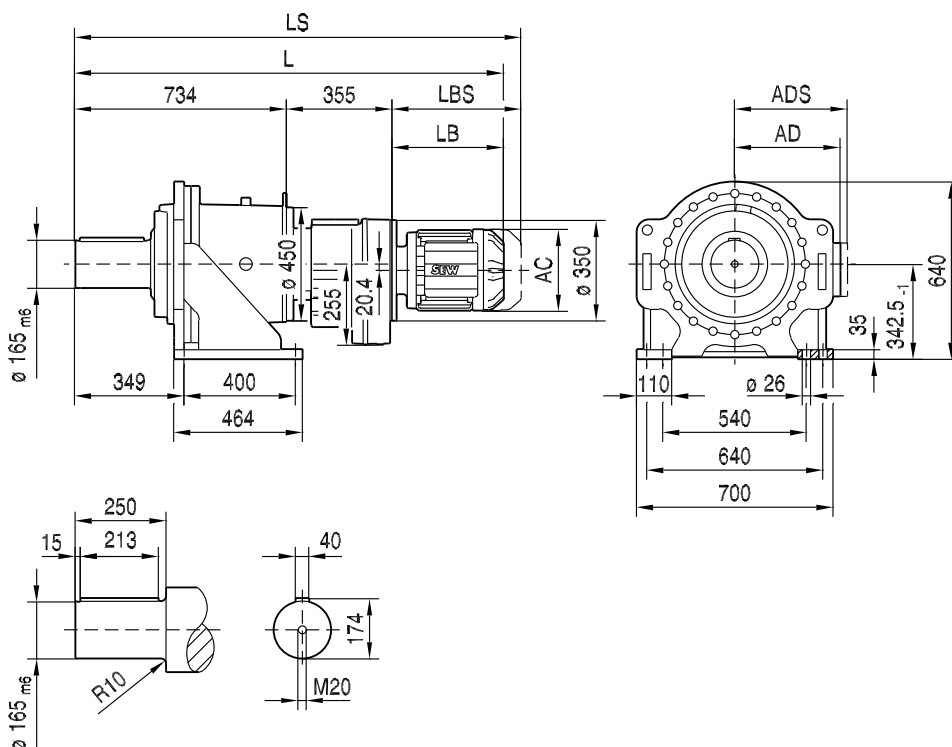
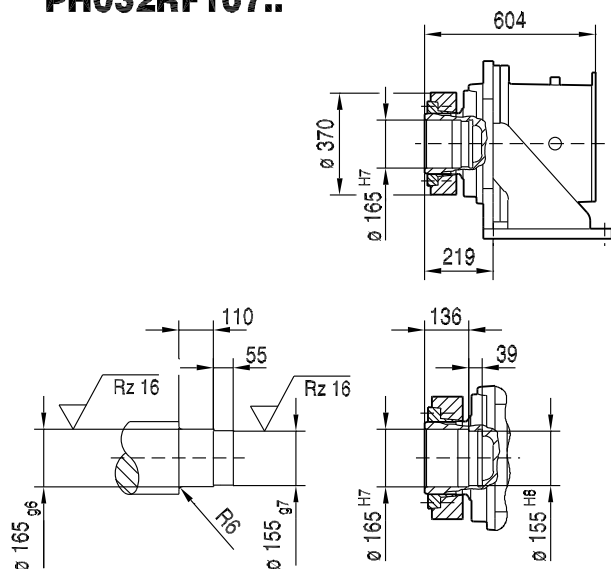
45 033 00 15

**PH032RF97..**

(→ 99)	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..
AC	197	221	221	261	261	314	314	357	394	434
AD	157	170	170	228	228	253	253	268	283	305
ADS	158	172	172	228	228	253	253	268	283	305
L	1392	1423	1473	1491	1517	1583	1583	1606	1716	1690
LS	1486	1535	1585	1629	1654	1772	1772	1795	1921	1895
LB	338	369	419	437	463	529	529	552	662	636
LBS	432	481	531	575	600	718	718	741	867	841

P032RF107..

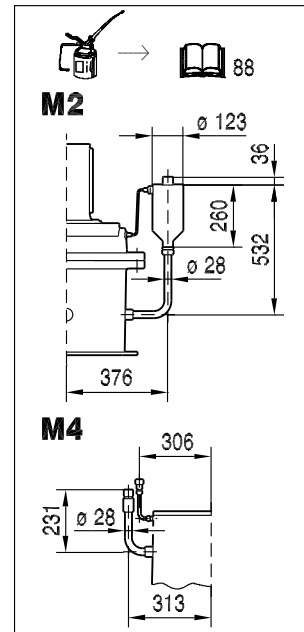
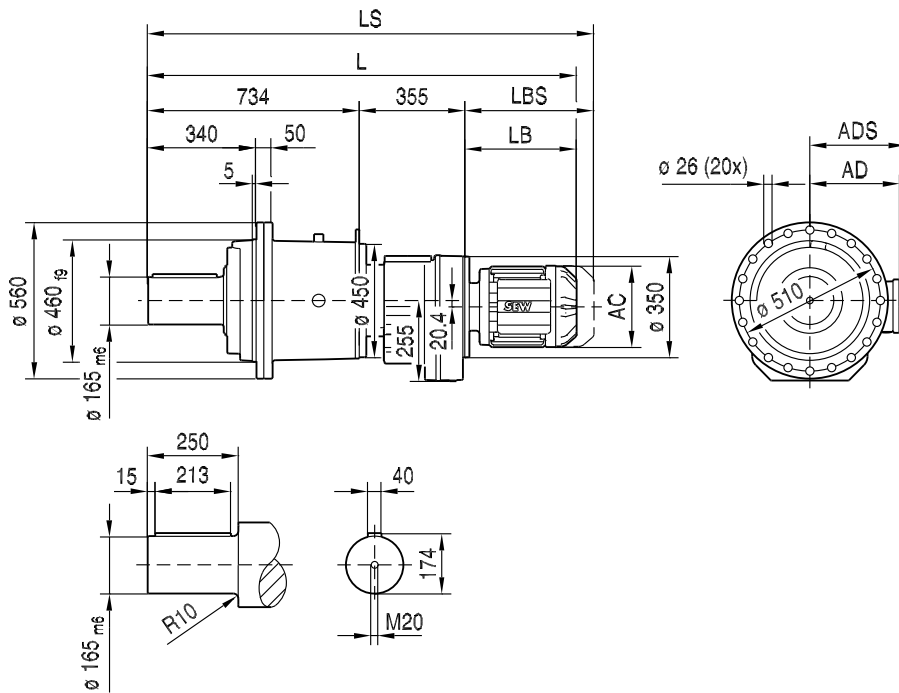
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**PH032RF107..**

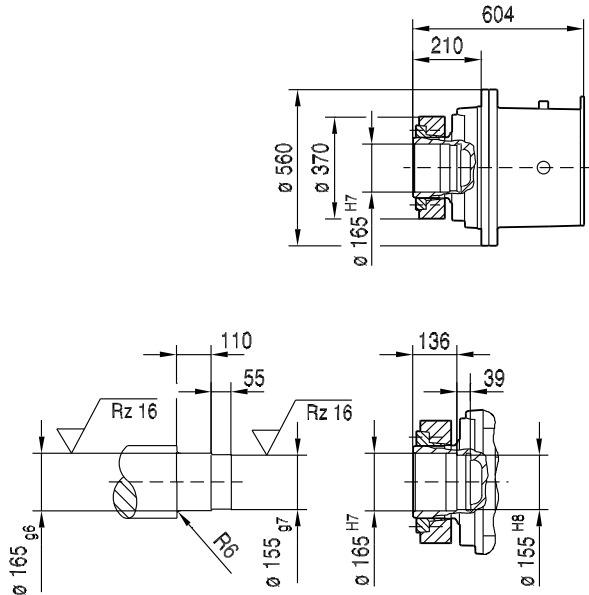
(→ 99)	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M
AC	221	221	261	261	314	314	357	394	434	495
AD	170	170	228	228	253	253	268	283	305	394
ADS	172	172	228	228	253	253	268	283	305	394
L	1452	1502	1520	1546	1612	1612	1635	1745	1719	1856
LS	1564	1614	1658	1683	1801	1801	1824	1950	1924	2096
LB	363	413	431	457	523	523	546	656	630	767
LBS	475	525	569	594	712	712	735	861	835	1007

PF032RF107..

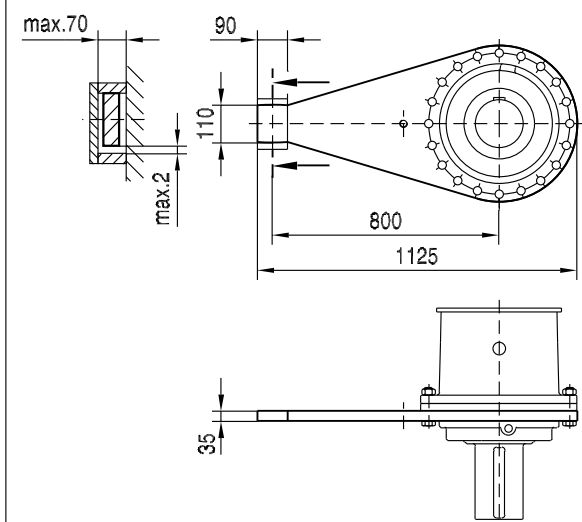
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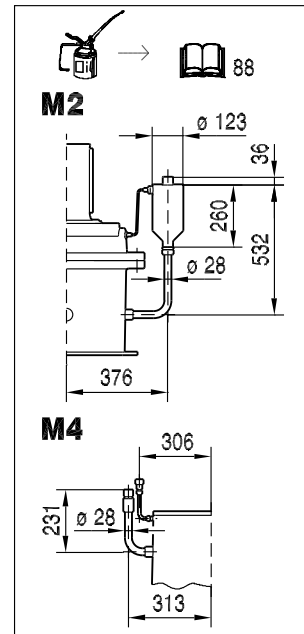
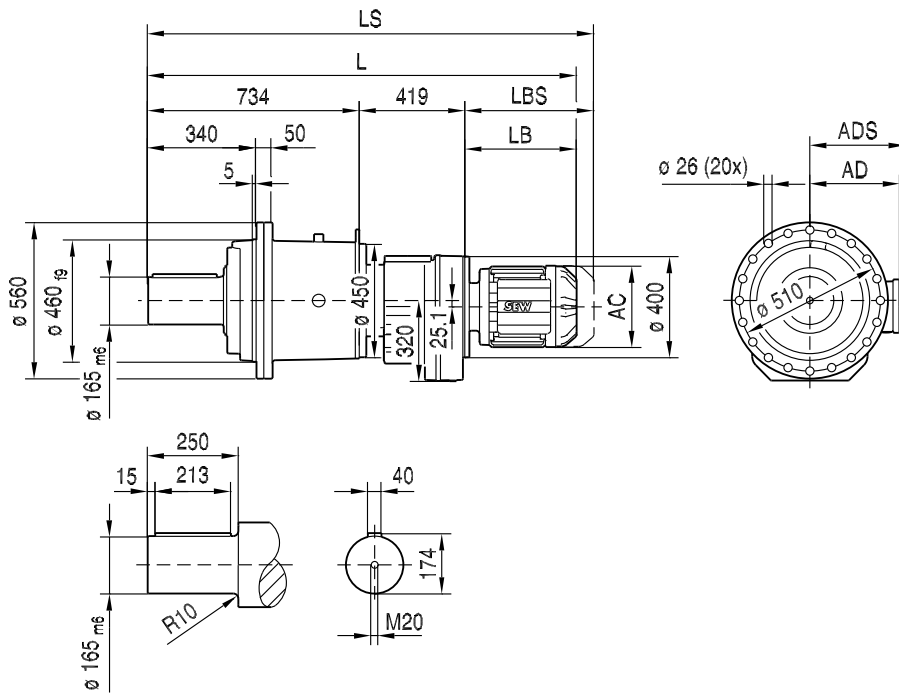


(→ 99)	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M
AC	221	221	261	261	314	314	357	394	434	495
AD	170	170	228	228	253	253	268	283	305	394
ADS	172	172	228	228	253	253	268	283	305	394
L	1452	1502	1520	1546	1612	1612	1635	1745	1719	1856
LS	1564	1614	1658	1683	1801	1801	1824	1950	1924	2096
LB	363	413	431	457	523	523	546	656	630	767
LBS	475	525	569	594	712	712	735	861	835	1007

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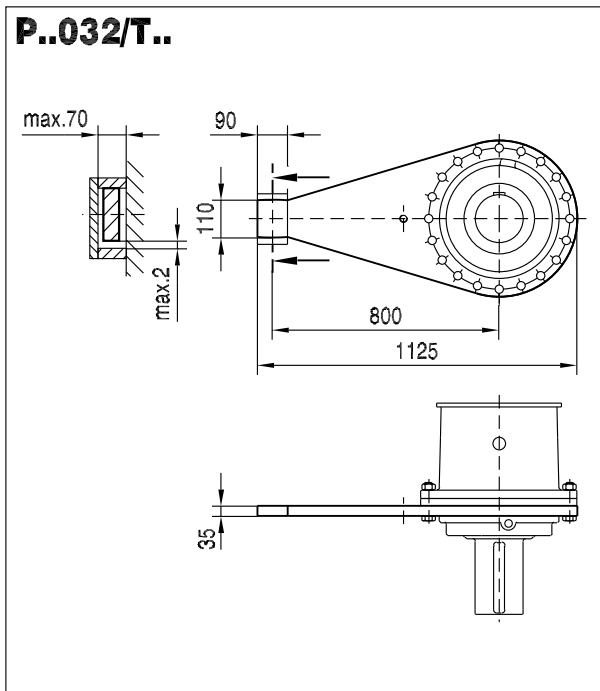
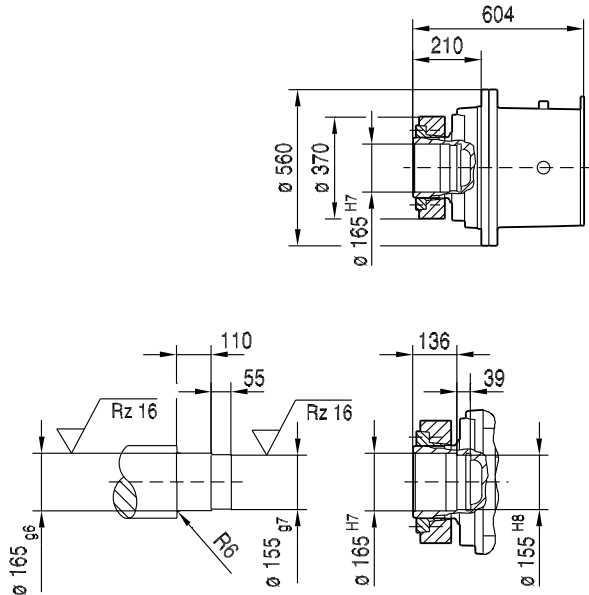
PF032RF137..

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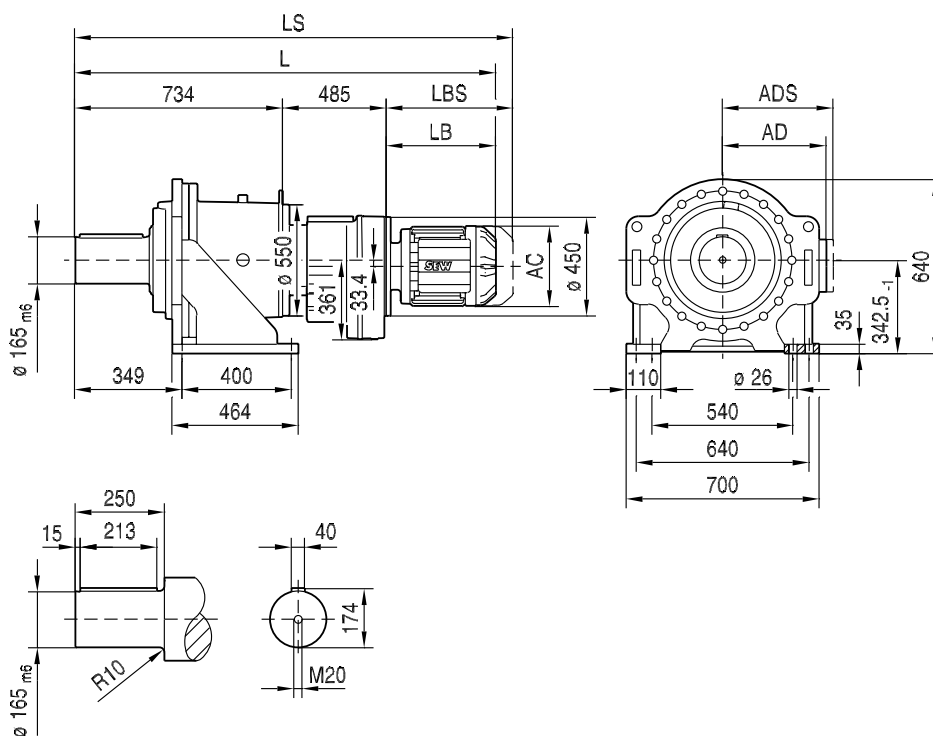


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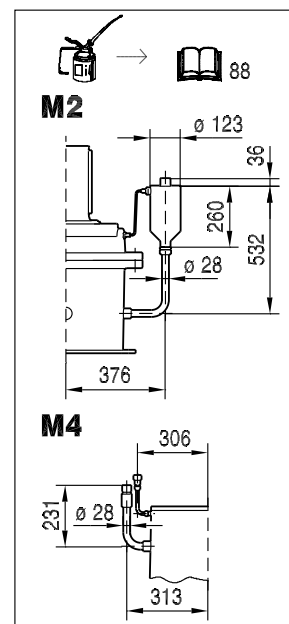
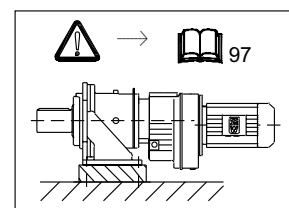
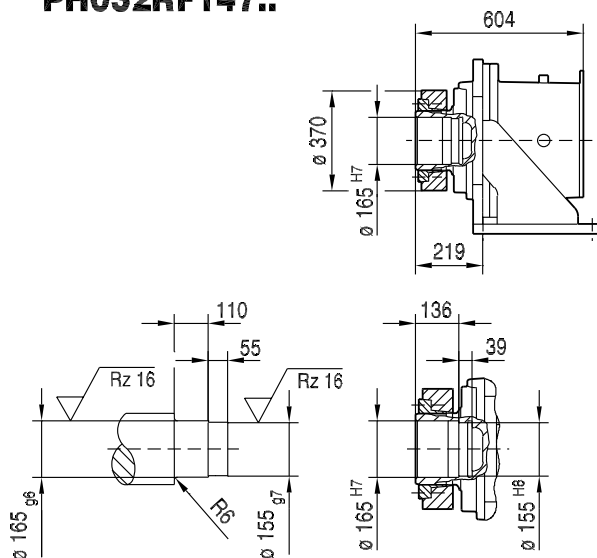
P..032/T..



(→ 99)	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M	DRN280S	DRN280M
AC	261	261	314	314	357	394	434	495	495	495
AD	228	228	253	253	268	283	305	394	394	394
ADS	228	228	253	253	268	283	305	394	394	394
L	1577	1603	1669	1669	1692	1802	1776	1913	1913	2008
LS	1715	1740	1858	1858	1881	2007	1981	2153	2153	2248
LB	424	450	516	516	539	649	623	760	760	855
LBS	562	587	705	705	728	854	828	1000	1000	1095

P032RF147..

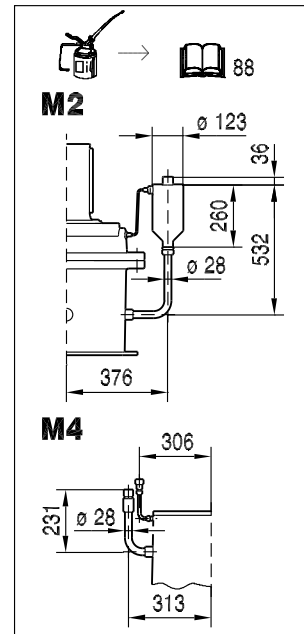
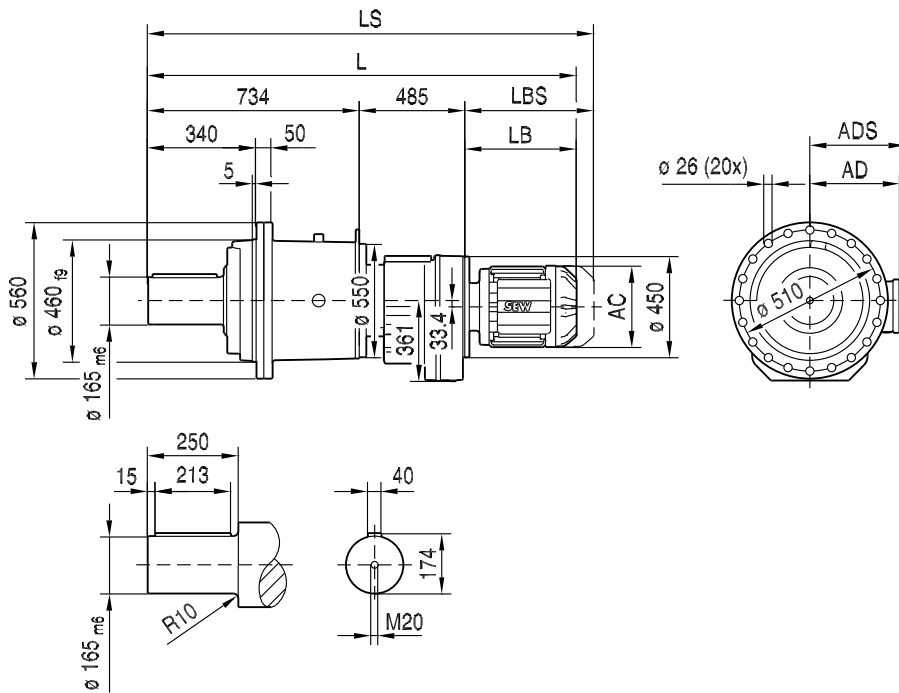
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**PH032RF147..**

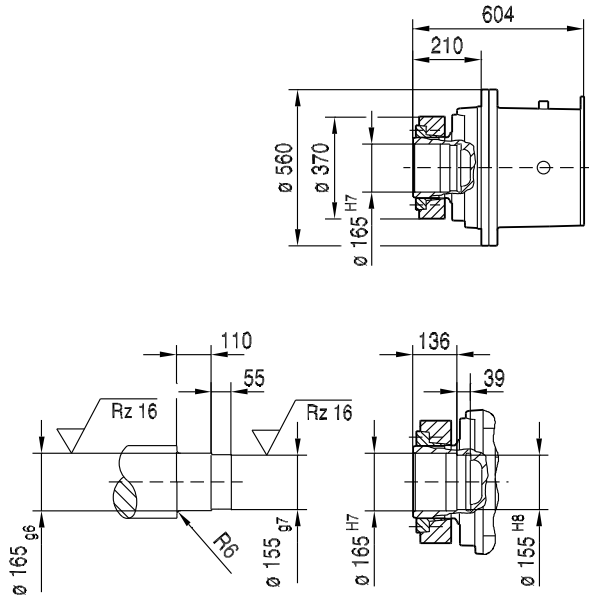
(→ 99)	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M	DRN280S	DRN280M	DRN315S-M
AC	261	314	314	357	394	434	495	495	495	624
AD	228	253	253	268	283	305	394	394	394	506
ADS	228	253	253	268	283	305	394	394	394	506
L	1661	1727	1727	1750	1860	1834	1971	1971	2066	2168
LS	1798	1916	1916	1939	2065	2039	2211	2211	2306	2419
LB	442	508	508	531	641	615	752	752	847	949
LBS	579	697	697	720	846	820	992	992	1087	1200

PF032RF147..

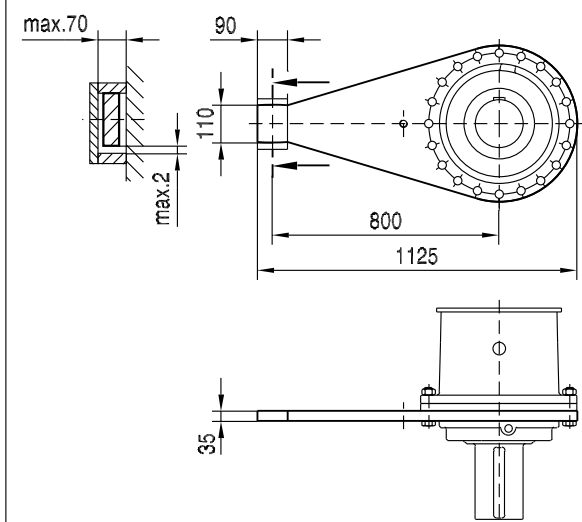
45 040 00 15



PHF032RF147..



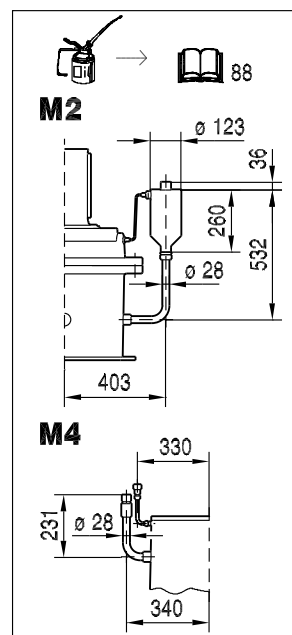
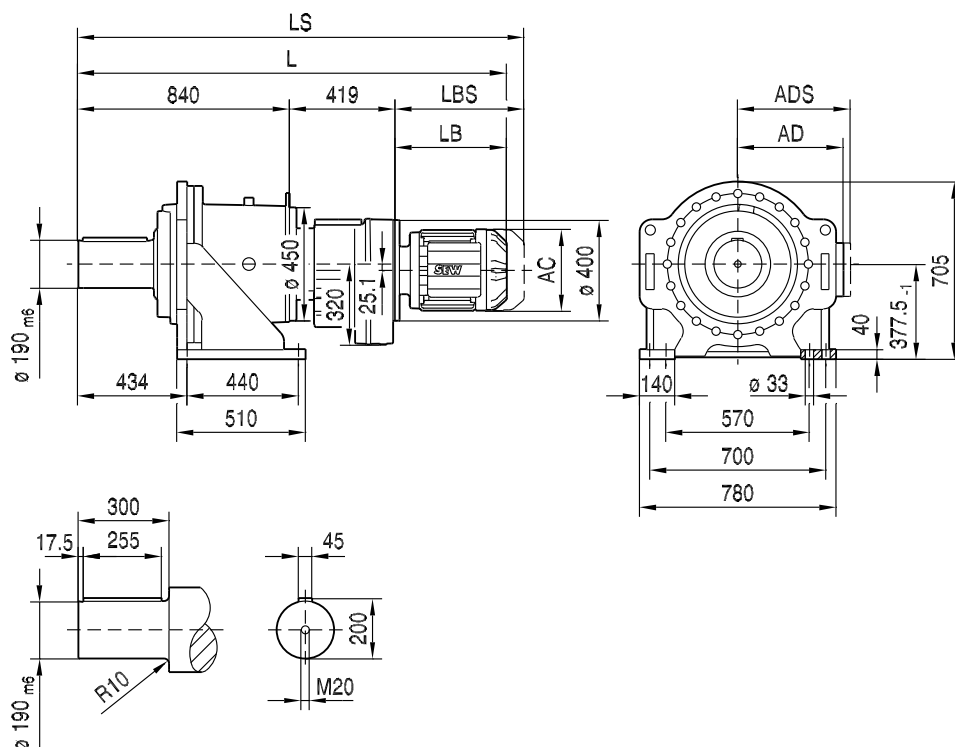
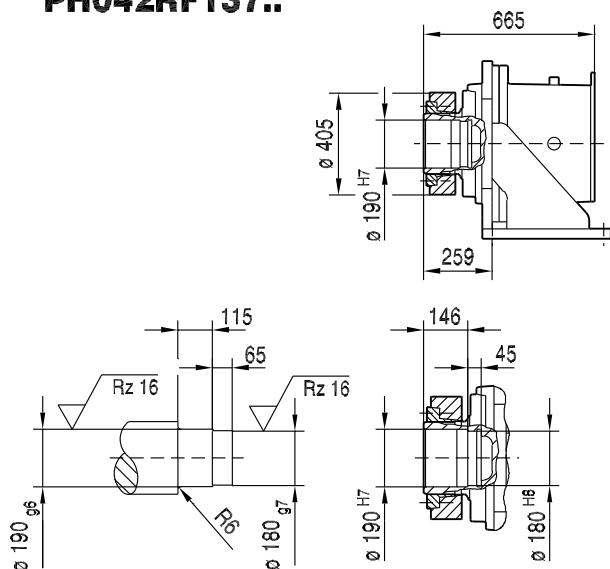
P..032/T..



(→ 99)	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M	DRN280S	DRN280M	DRN315S-M
AC	261	314	314	357	394	434	495	495	495	624
AD	228	253	253	268	283	305	394	394	394	506
ADS	228	253	253	268	283	305	394	394	394	506
L	1661	1727	1727	1750	1860	1834	1971	1971	2066	2168
LS	1798	1916	1916	1939	2065	2039	2211	2211	2306	2419
LB	442	508	508	531	641	615	752	752	847	949
LBS	579	697	697	720	846	820	992	992	1087	1200

P042RF137..

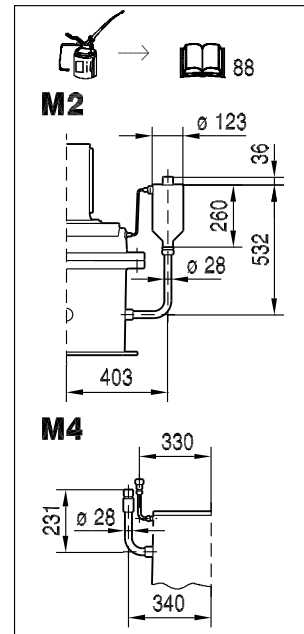
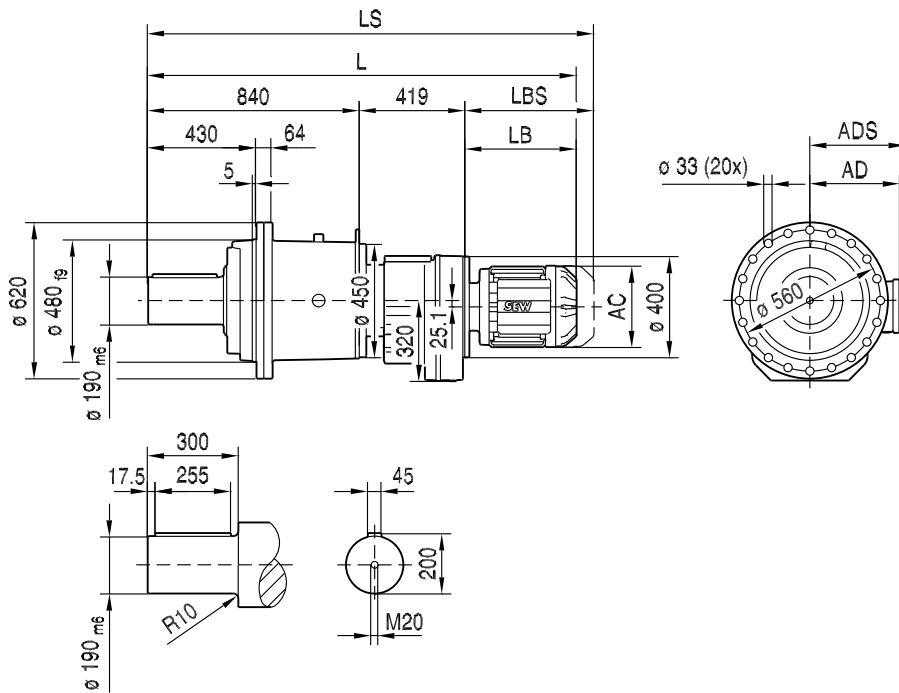
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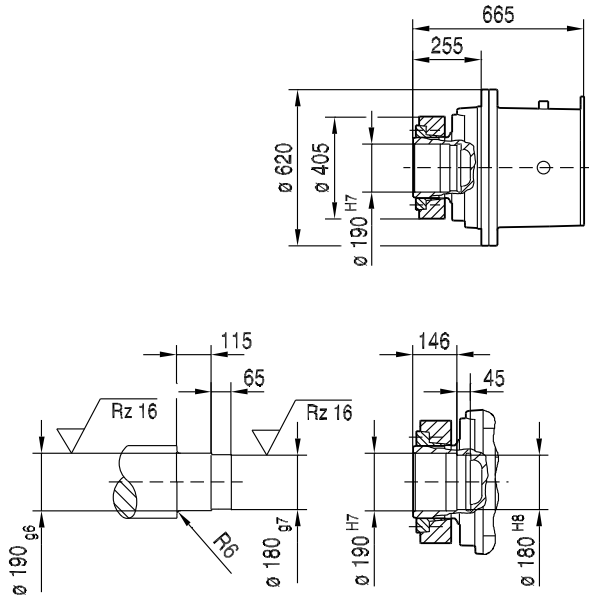
(→ 99)	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M	DRN280S	DRN280M
AC	261	261	314	314	357	394	434	495	495	495
AD	228	228	253	253	268	283	305	394	394	394
ADS	228	228	253	253	268	283	305	394	394	394
L	1683	1709	1775	1775	1798	1908	1882	2019	2019	2114
LS	1821	1846	1964	1964	1987	2113	2087	2259	2259	2354
LB	424	450	516	516	539	649	623	760	760	855
LBS	562	587	705	705	728	854	828	1000	1000	1095

PF042RF137..

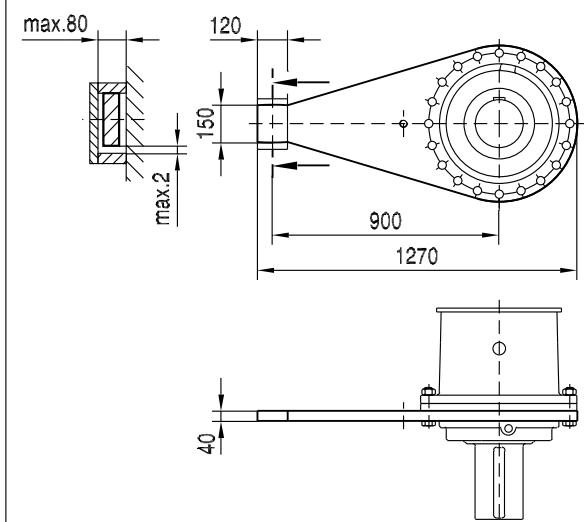
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PHF042RF137..



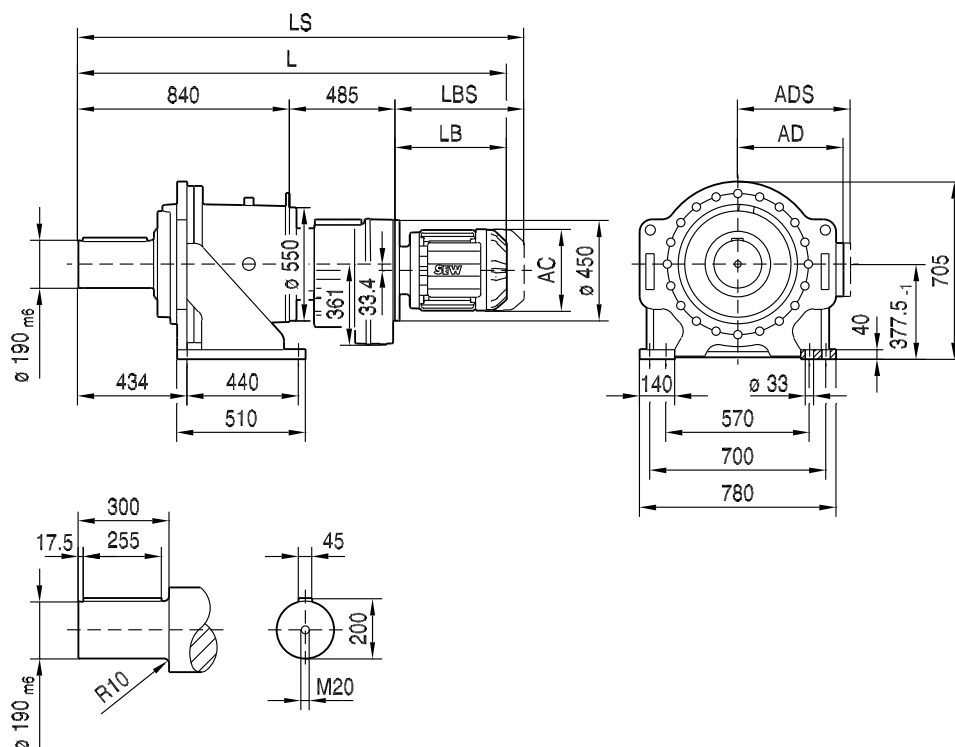
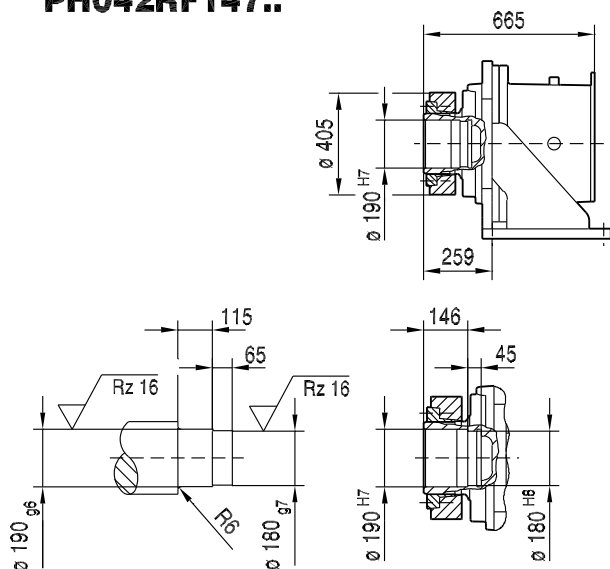
P..042/T..



(→ 99)	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M	DRN280S	DRN280M
AC	261	261	314	314	357	394	434	495	495	495
AD	228	228	253	253	268	283	305	394	394	394
ADS	228	228	253	253	268	283	305	394	394	394
L	1683	1709	1775	1775	1798	1908	1882	2019	2019	2114
LS	1821	1846	1964	1964	1987	2113	2087	2259	2259	2354
LB	424	450	516	516	539	649	623	760	760	855
LBS	562	587	705	705	728	854	828	1000	1000	1095

P042RF147..

45 045 00 15

**M2****M4****PH042RF147..**

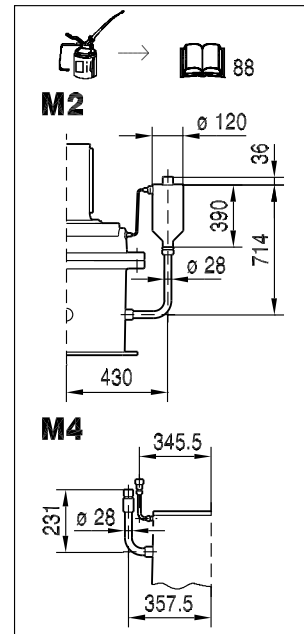
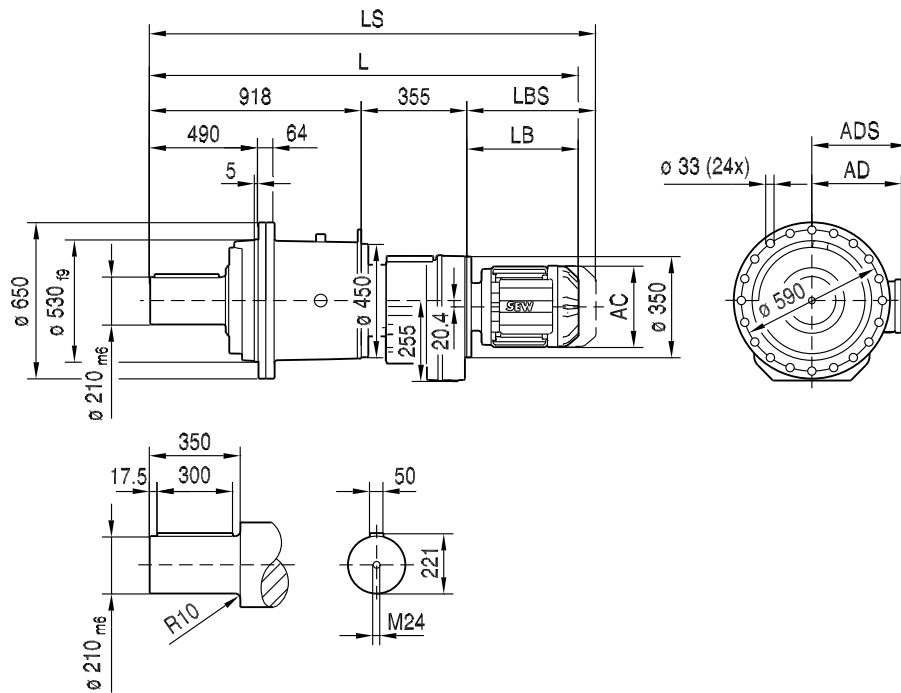
(→ 99)	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M	DRN280S	DRN280M	DRN315S-M
AC	261	314	314	357	394	434	495	495	495	624
AD	228	253	253	268	283	305	394	394	394	506
ADS	228	253	253	268	283	305	394	394	394	506
L	1767	1833	1833	1856	1966	1940	2077	2077	2172	2274
LS	1904	2022	2022	2045	2171	2145	2317	2317	2412	2525
LB	442	508	508	531	641	615	752	752	847	949
LBS	579	697	697	720	846	820	992	992	1087	1200

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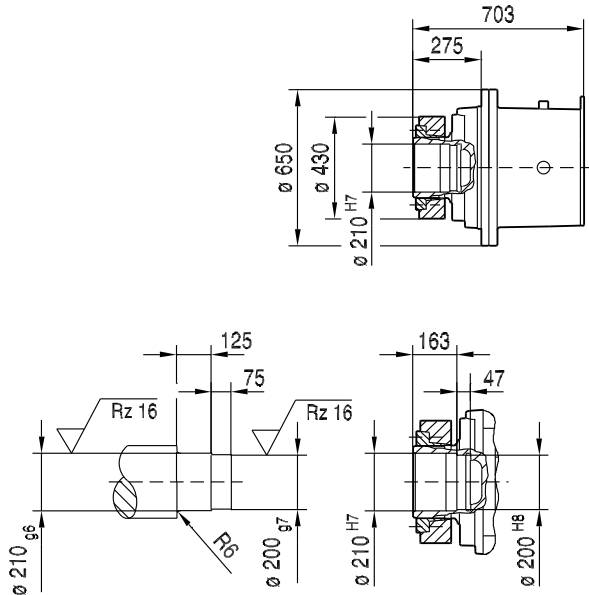
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PF052RF107..

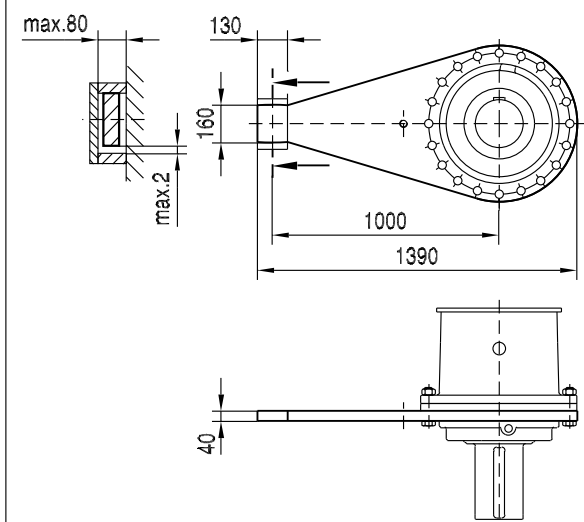
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PHF052RF107..



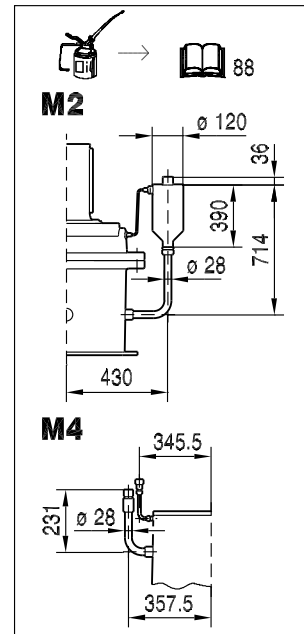
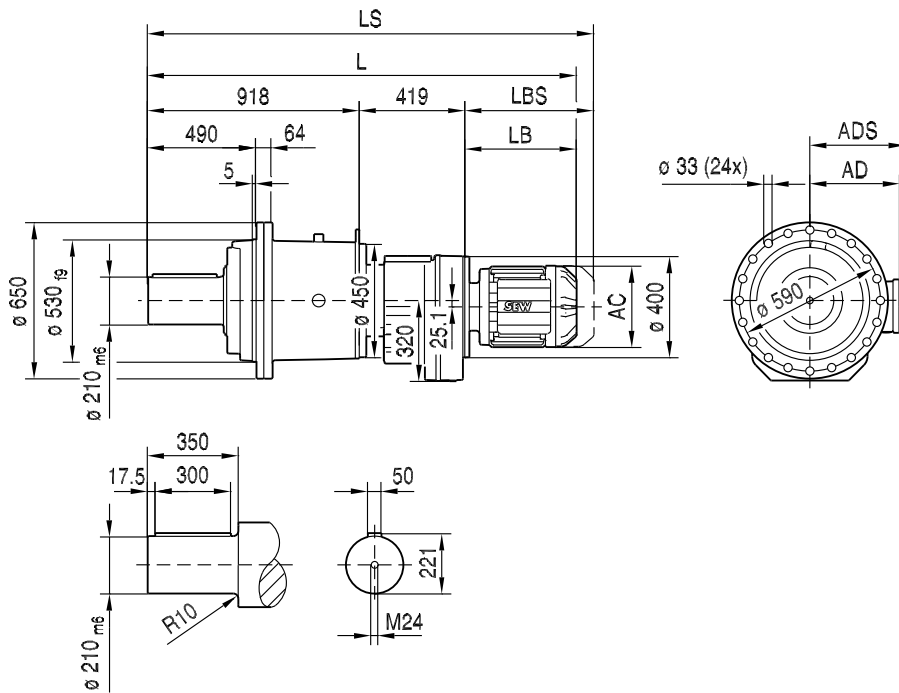
P..052/T..



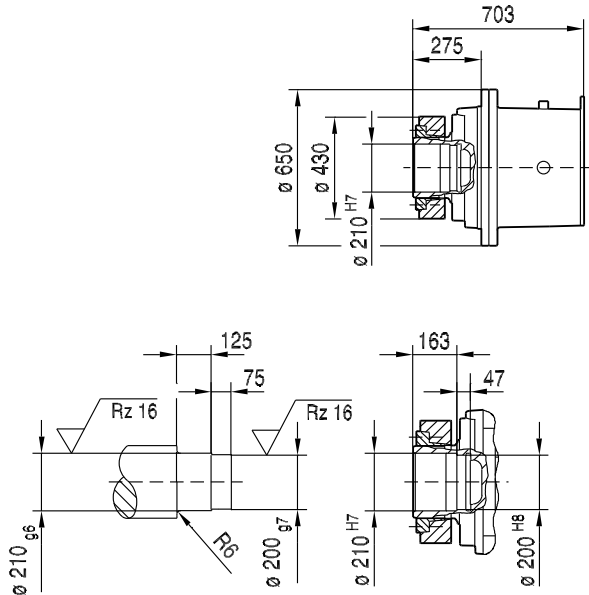
(→ 99)	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M
AC	221	221	261	261	314	314	357	394	434	495
AD	170	170	228	228	253	253	268	283	305	394
ADS	172	172	228	228	253	253	268	283	305	394
L	1636	1686	1704	1730	1796	1796	1819	1929	1903	2040
LS	1748	1798	1842	1867	1985	1985	2008	2134	2108	2280
LB	363	413	431	457	523	523	546	656	630	767
LBS	475	525	569	594	712	712	735	861	835	1007

PF052RF137..

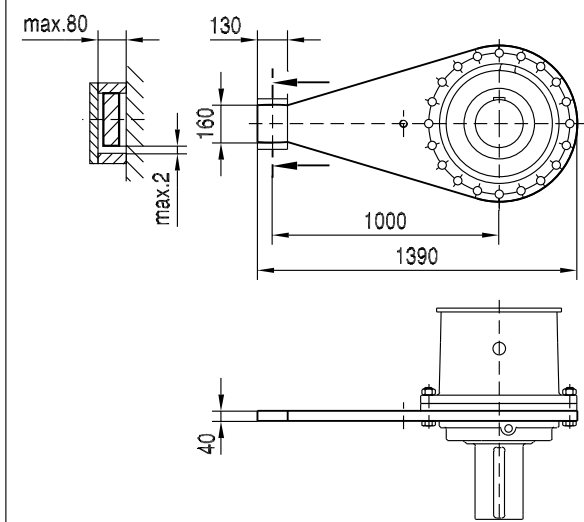
45 050 00 15



PHF052RF137..



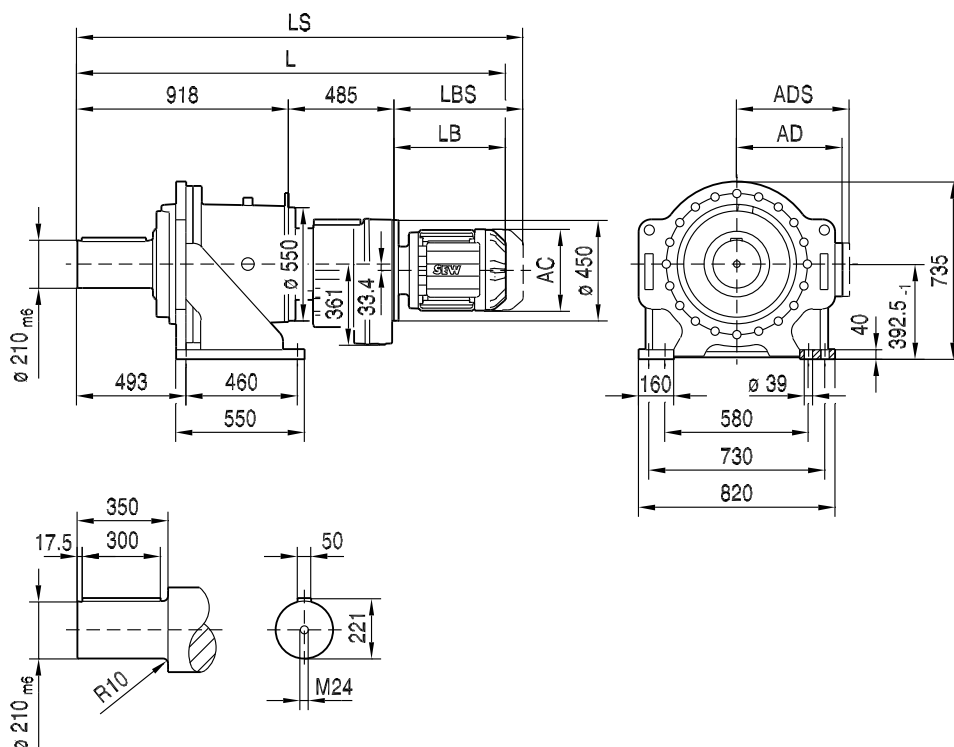
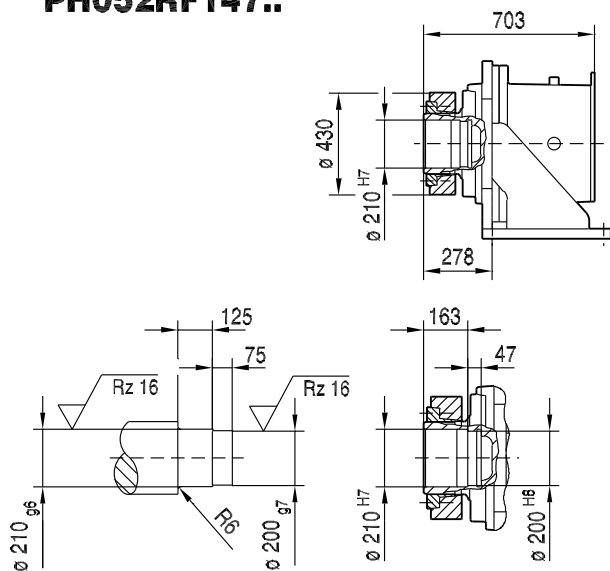
P..052/T..



(→ 99)	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M	DRN280S	DRN280M
AC	261	261	314	314	357	394	434	495	495	495
AD	228	228	253	253	268	283	305	394	394	394
ADS	228	228	253	253	268	283	305	394	394	394
L	1761	1787	1853	1853	1876	1986	1960	2097	2097	2192
LS	1899	1924	2042	2042	2065	2191	2165	2337	2337	2432
LB	424	450	516	516	539	649	623	760	760	855
LBS	562	587	705	705	728	854	828	1000	1000	1095

P052RF147..

45 051 00 15

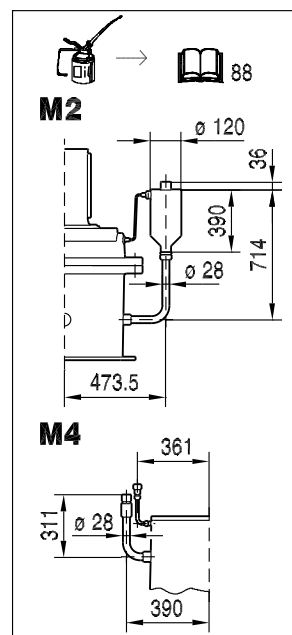
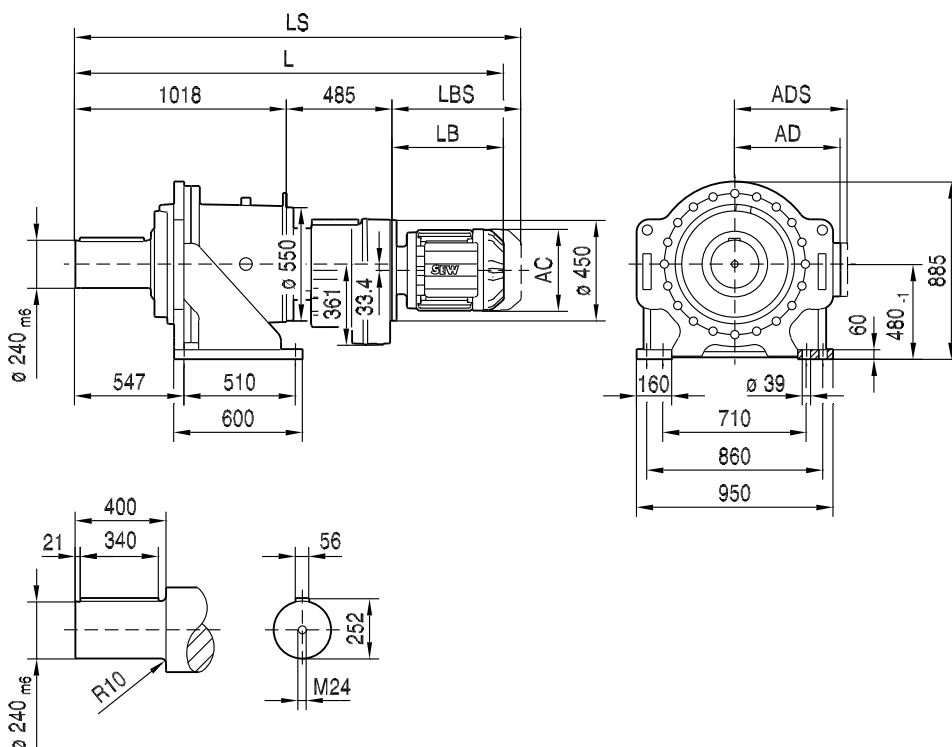
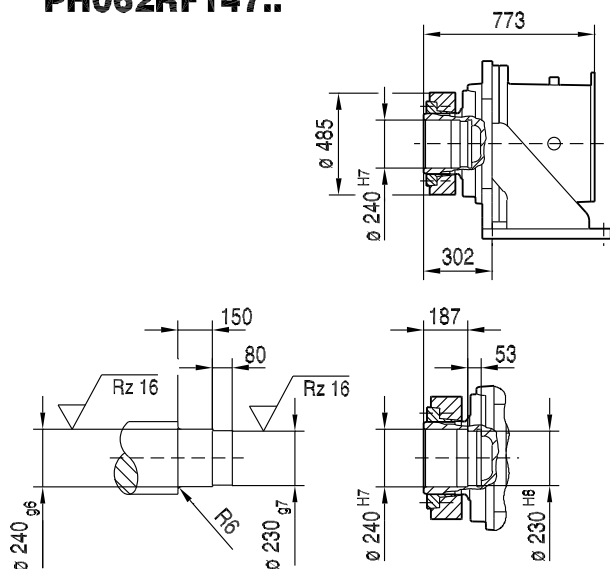
**M2****M4****PH052RF147..**

(→ 99)	DRN180..	DRN200L	DRN225..	DRN250M	DRN280S	DRN280M	DRN315S-M
AC	357	394	434	495	495	495	624
AD	268	283	305	394	394	394	506
ADS	268	283	305	394	394	394	506
L	1934	2044	2018	2155	2155	2250	2352
LS	2123	2249	2223	2395	2395	2490	2603
LB	531	641	615	752	752	847	949
LBS	720	846	820	992	992	1087	1200

SEW
EURODRIVE

P062RF147..

45 055 00 15

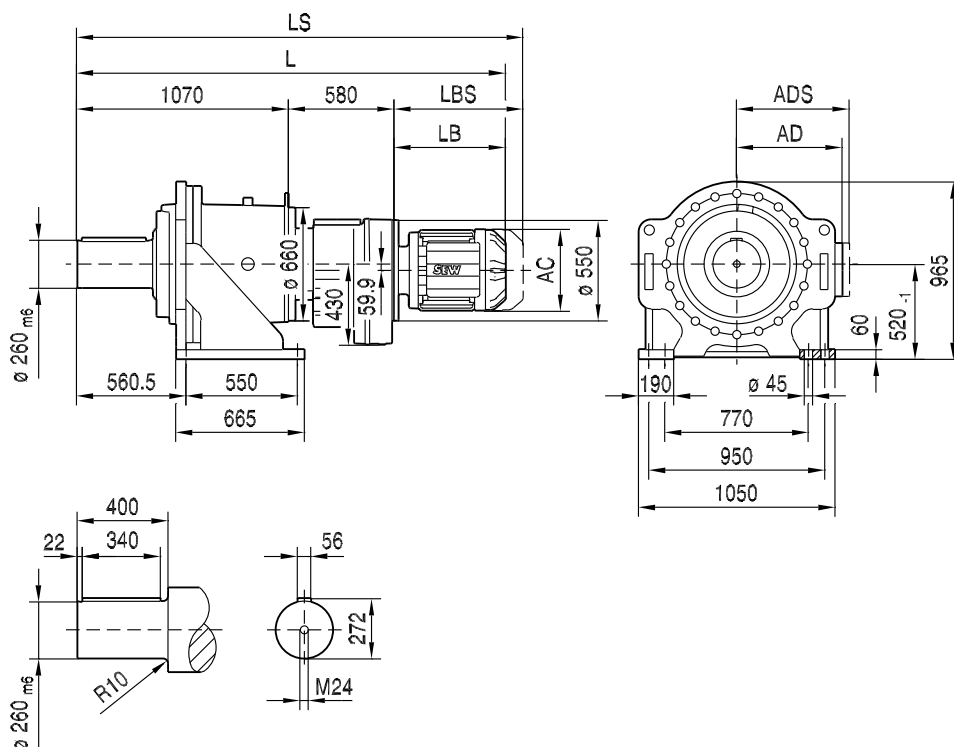
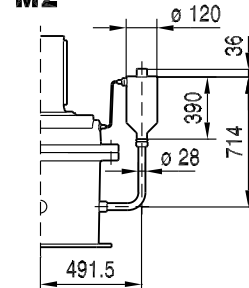
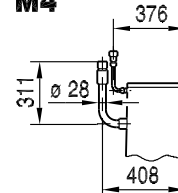
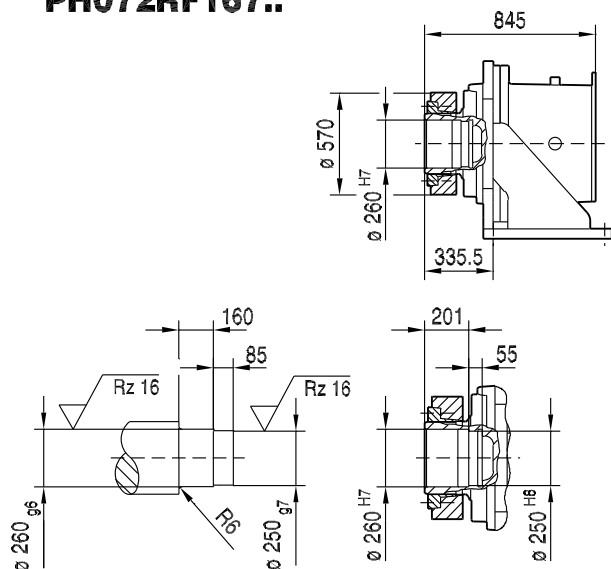
**PH062RF147..**

(→ 99)	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M	DRN280S	DRN280M	DRN315S-M
AC	261	314	314	357	394	434	495	495	495	624
AD	228	253	253	268	283	305	394	394	394	506
ADS	228	253	253	268	283	305	394	394	394	506
L	1945	2011	2011	2034	2144	2118	2255	2255	2350	2452
LS	2082	2200	2200	2223	2349	2323	2495	2495	2590	2703
LB	442	508	508	531	641	615	752	752	847	949
LBS	579	697	697	720	846	820	992	992	1087	1200

SEW
EURODRIVE

P072RF167..

45 059 00 15

**M2****M4****PH072RF167..**

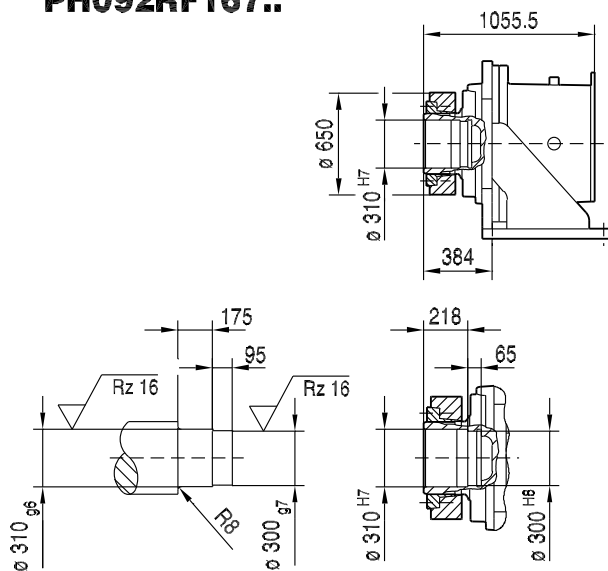
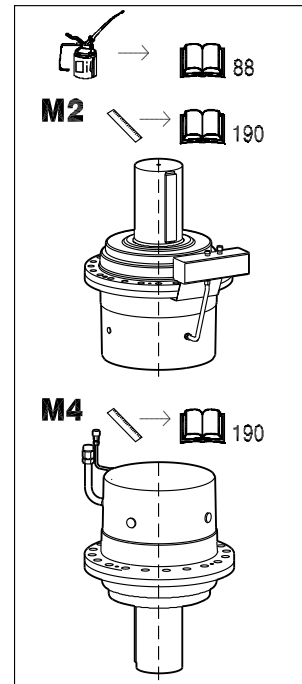
(→ 99)	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M	DRN280S	DRN280M	DRN315S-M	DRN315ME-H
AC	314	357	394	434	495	495	495	624	624
AD	253	268	283	305	394	394	394	506	506
ADS	253	268	283	305	394	394	394	506	506
L	2150	2173	2283	2257	2394	2394	2489	2591	2721
LS	2339	2362	2488	2462	2634	2634	2729	2842	2972
LB	500	523	633	607	744	744	839	941	1071
LBS	689	712	838	812	984	984	1079	1192	1322

SEW
EURODRIVE

(→ 99)	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M	DRN280S	DRN280M	DRN315S-M
AC	261	314	314	357	394	434	495	495	495	624
AD	228	253	253	268	283	305	394	394	394	506
ADS	228	253	253	268	283	305	394	394	394	506
L	2117	2183	2183	2206	2316	2290	2427	2427	2522	2624
LS	2254	2372	2372	2395	2521	2495	2667	2667	2762	2875
LB	442	508	508	531	641	615	752	752	847	949
LBS	579	697	697	720	846	820	992	992	1087	1200

SEW
EURODRIVE

(→ 99)	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M	DRN280S	DRN280M	DRN315S-M	DRN315ME-H
AC	314	357	394	434	495	495	495	624	624
AD	253	268	283	305	394	394	394	506	506
ADS	253	268	283	305	394	394	394	506	506
L	2270	2293	2403	2377	2514	2514	2609	2711	2841
LS	2459	2482	2608	2582	2754	2754	2849	2962	3092
LB	500	523	633	607	744	744	839	941	1071
LBS	689	712	838	812	984	984	1079	1192	1322

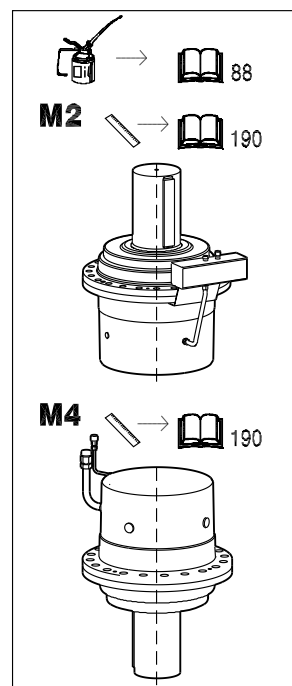
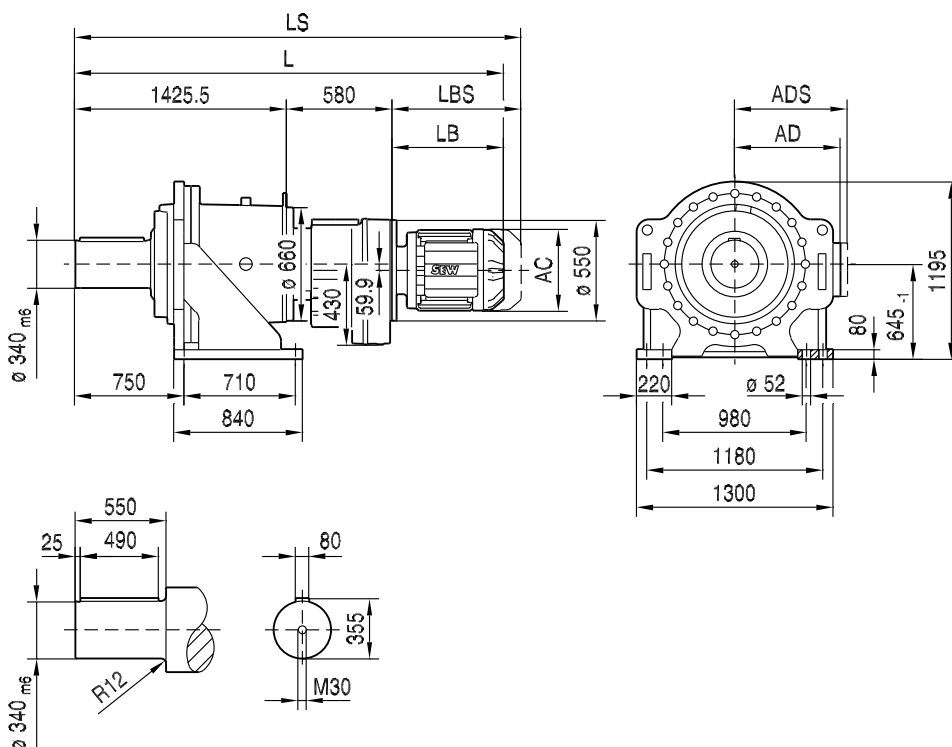
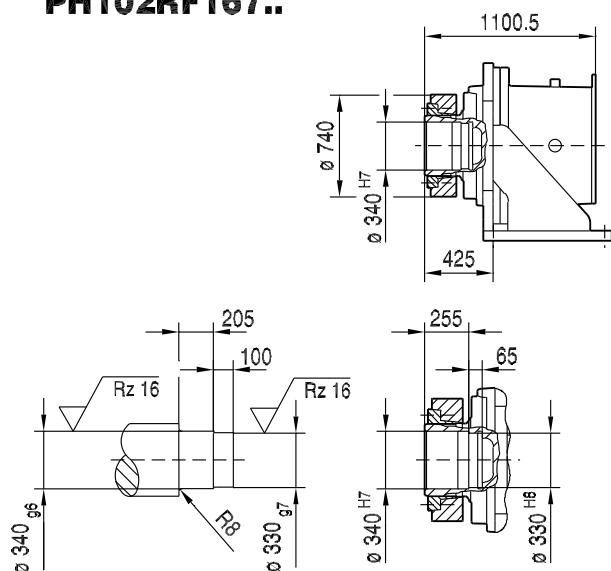


(→ 📄 99)	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M	DRN280S	DRN280M	DRN315S-M	DRN315ME-H
AC	314	357	394	434	495	495	495	624	624
AD	253	268	283	305	394	394	394	506	506
ADS	253	268	283	305	394	394	394	506	506
L	2396	2419	2528	2503	2640	2640	2735	2837	2967
LS	2585	2608	2733	2708	2880	2880	2975	3088	3218
LB	500	523	633	607	744	744	839	941	1071
LBS	689	712	838	812	984	984	1079	1192	1322

(→ 99)	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M	DRN280S	DRN280M	DRN315S-M	DRN315ME-H
AC	314	357	394	434	495	495	495	624	624
AD	253	268	283	305	394	394	394	506	506
ADS	253	268	283	305	394	394	394	506	506
L	2396	2419	2528	2503	2640	2640	2735	2837	2967
LS	2585	2608	2733	2708	2880	2880	2975	3088	3218
LB	500	523	633	607	744	744	839	941	1071
LBS	689	712	838	812	984	984	1079	1192	1322

P102RF167..

45 067 00 15

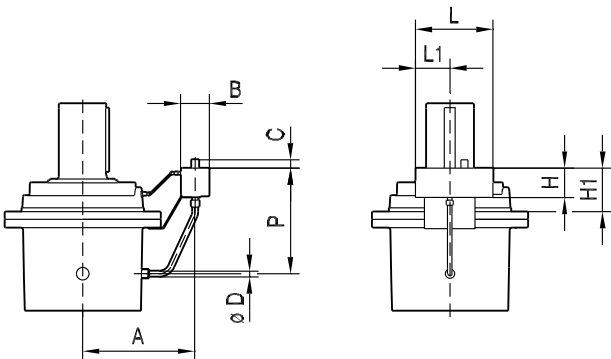
**PH102RF167..**

(→ 99)	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M	DRN280S	DRN280M	DRN315S-M	DRN315ME-H
AC	314	357	394	434	495	495	495	624	624
AD	253	268	283	305	394	394	394	506	506
ADS	253	268	283	305	394	394	394	506	506
L	2506	2529	2638	2613	2750	2750	2845	2947	3077
LS	2695	2718	2843	2818	2990	2990	3085	3198	3328
LB	500	523	633	607	744	744	839	941	1071
LBS	689	712	838	812	984	984	1079	1192	1322

10.4 Oil expansion tank for mounting position M2

P/PH/PF/PHF
M2

45 015 00 11

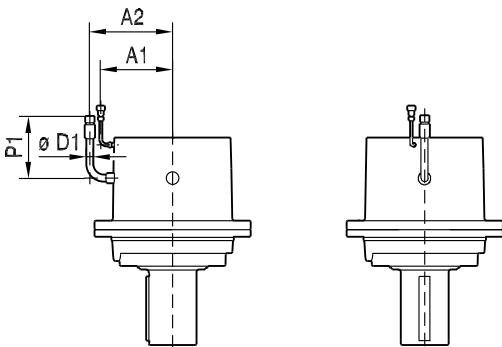


	A	B	C	Ø D	H	H1	L	L1	P
P.092	627.5	160	51	28	160	230	530	235	636.5
P.102	696.5	160	51	28	160	241	530	235	658.5

10.5 Oil expansion tank for mounting position M4

P/PH/PF/PHF
M4

45 016 00 11



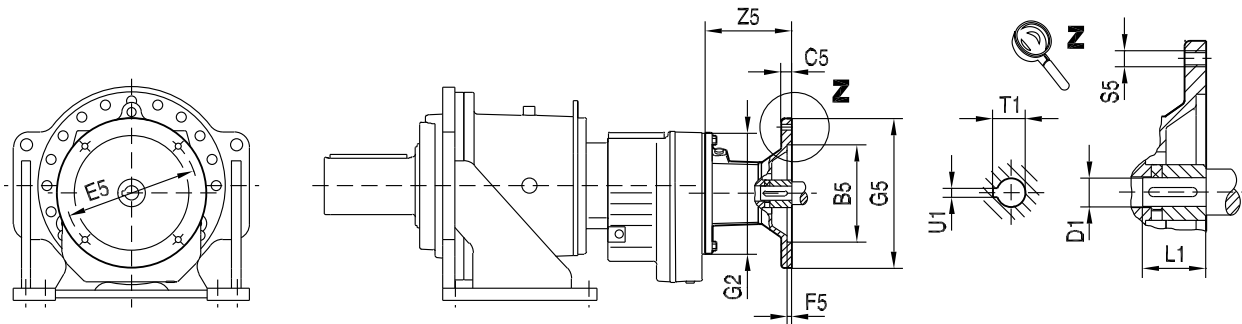
	A1	A2	Ø D1	P1
P.092	477	486	28	361
P.102	507	514	28	361

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10.6 AM adapters for mounting of IEC motors

P..RF..AM..

45 115 00 08



10

		B5	C5	E5	F5	G2	G5	S5	Z5	D1	L1	T1	U1
P..RF77	AM63	95	10	115	3.5	200	140	M8	60	11	23	12.8	4
	AM71	110	10	130	3.5	200	160	M8	60	14	30	16.3	5
	AM80	130	12	165	4.5	200	200	M10	92	19	40	21.8	6
	AM90	130	12	165	4.5	200	200	M10	92	24	50	27.3	8
	AM100	180	15	215	5	200	250	M12	126	28	60	31.3	8
	AM112	180	15	215	5	200	250	M12	126	28	60	31.3	8
	AM132S/M	230	16	265	5	200	300	M12	179	38	80	41.3	10
	AM132ML	230	16	265	5	200	300	M12	179	38	80	41.3	10
P..RF87	AM80	130	12	165	4.5	250	200	M10	87	19	40	21.8	6
	AM90	130	12	165	4.5	250	200	M10	87	24	50	27.3	8
	AM100	180	15	215	5	250	250	M12	121	28	60	31.3	8
	AM112	180	15	215	5	250	250	M12	121	28	60	31.3	8
	AM132S/M	230	16	265	5	250	300	M12	174	38	80	41.3	10
	AM132ML	230	16	265	5	250	300	M12	174	38	80	41.3	10
	AM160	250	18	300	6	250	350	M16	232	42	110	45.3	12
	AM180	250	18	300	6	250	350	M16	232	48	110	51.8	14
P..RF97	AM100	180	15	215	5	300	250	M12	116	28	60	31.3	8
	AM112	180	15	215	5	300	250	M12	116	28	60	31.3	8
	AM132S/M	230	16	265	5	300	300	M12	169	38	80	41.3	10
	AM132ML	230	16	265	5	300	300	M12	169	38	80	41.3	10
	AM160	250	18	300	6	300	350	M16	227	42	110	45.3	12
	AM180	250	18	300	6	300	350	M16	227	48	110	51.8	14
	AM200	300	20	350	7	300	400	M16	268	55	110	59.3	16

45 116 00 08

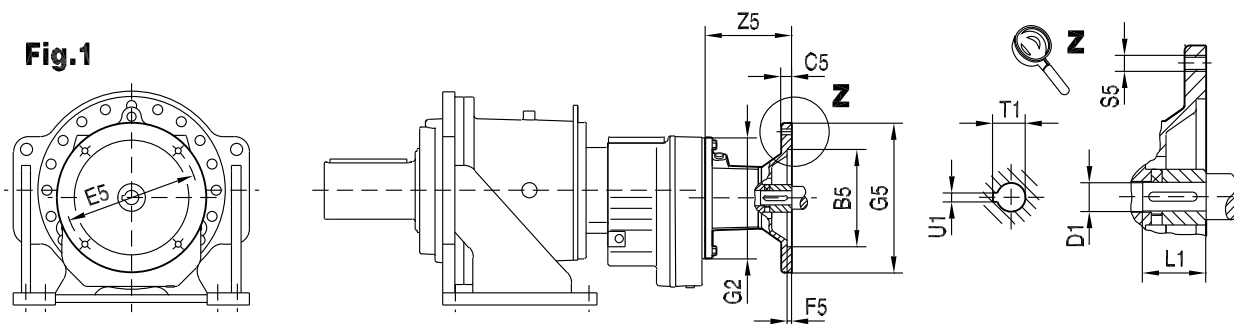
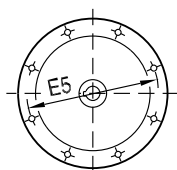
P..RF..AM..**Fig.1****Fig.2**

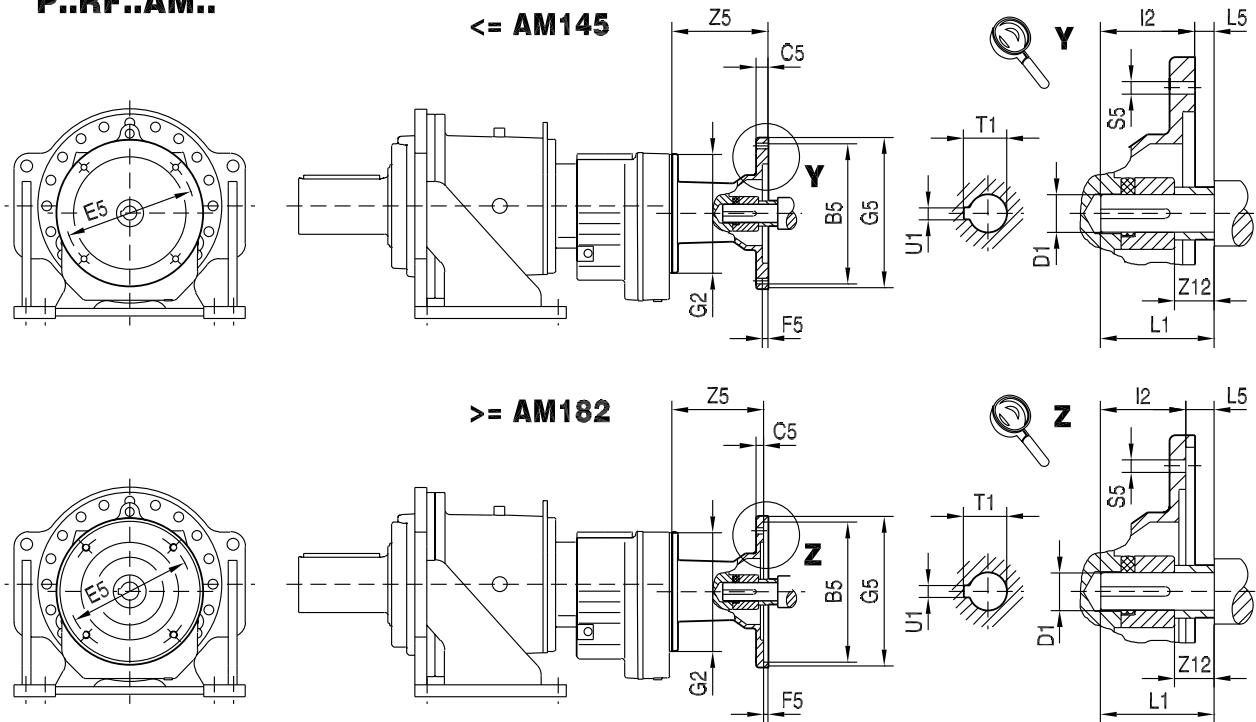
		Fig.	B5	C5	E5	F5	G2	G5	S5	Z5	D1	L1	T1	U1
P..RF107	AM100	1	180	15	215	5	350	250	M12	110	28	60	31.3	8
	AM112	1	180	15	215	5	350	250	M12	110	28	60	31.3	8
	AM132S/M	1	230	16	265	5	350	300	M12	163	38	80	41.3	10
	AM132ML	1	230	16	265	5	350	300	M12	163	38	80	41.3	10
	AM160	1	250	18	300	6	350	350	M16	221	42	110	45.3	12
	AM180	1	250	18	300	6	350	350	M16	221	48	110	51.8	14
	AM200	1	300	20	350	7	350	400	M16	262	55	110	59.3	16
	AM225	2	350	22	400	7	350	450	M16	277	60	140	64.4	18
P..RF137	AM132S/M	1	230	16	265	5	400	300	M12	156	38	80	41.3	10
	AM132ML	1	230	16	265	5	400	300	M12	156	38	80	41.3	10
	AM160	1	250	18	300	5	400	350	M16	214	42	110	45.3	12
	AM180	1	250	18	300	5	400	350	M16	214	48	110	51.8	14
	AM200	1	300	20	350	7	400	400	M16	255	55	110	59.3	16
	AM225	2	350	22	400	7	400	450	M16	270	60	140	64.4	18
P..RF147	AM132S/M	1	230	16	265	5	450	300	M12	148	38	80	41.3	10
	AM132ML	1	230	16	265	5	450	300	M12	148	38	80	41.3	10
	AM160	1	250	18	300	6	450	350	M16	206	42	110	45.3	12
	AM180	1	250	18	300	6	450	350	M16	206	48	110	51.8	14
	AM200	1	300	20	350	7	450	400	M16	247	55	110	59.3	16
	AM225	2	350	22	400	7	450	450	M16	262	60	140	64.4	18
	AM250	2	450	25	500	7	450	550	M16	336	65	140	69.4	18
	AM280	2	450	25	500	7	450	550	M16	336	75	140	79.9	20
P..RF167	AM160	1	250	18	300	6	550	350	M16	198	42	110	45.3	12
	AM180	1	250	18	300	6	550	350	M16	198	48	110	51.8	14
	AM200	1	300	20	350	7	550	400	M16	239	55	110	59.3	16
	AM225	2	350	22	400	7	550	450	M16	254	60	140	64.4	18
	AM250	2	450	25	500	7	550	550	M16	328	65	140	69.4	18
	AM280	2	450	25	500	7	550	550	M16	328	75	140	79.9	20

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10.7 AM adapters for mounting of NEMA motors

P..RF..AM..

45 117 01 08

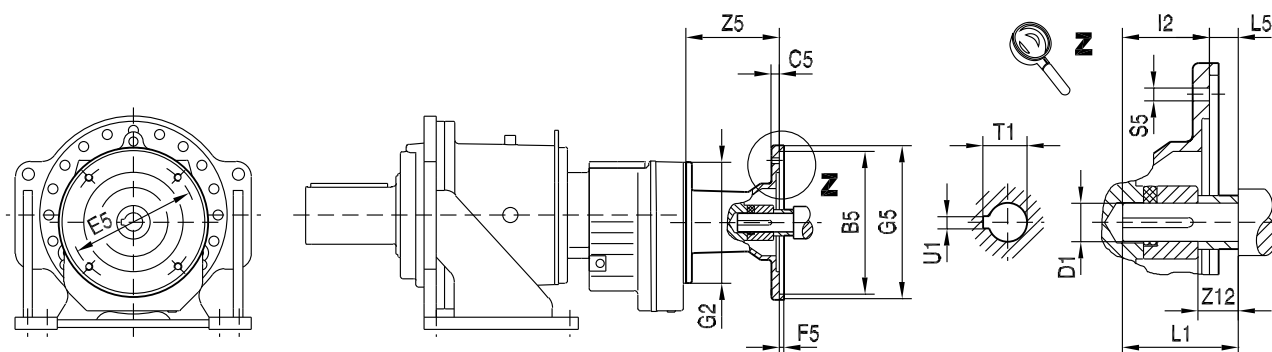


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		B5	C5	E5	F5	G2	G5	I2	L5	S5	Z5	Z12	D1	L1	T1	U1
P..RF77	AM56	114.3	11	149.2	4.5	200	170	52.55	-4.8	10.5	81	16.5	15.875	47	18.1	4.77
	AM143	114.3	12	149.2	4.5	200	170	54.1	3	10.5	103.5	14.5	22.225	57	24.7	4.77
	AM145	114.3	12	149.2	4.5	200	170	54.1	3	10.5	103.5	14.5	22.225	57	24.7	4.77
	AM182	215.9	10	184	5	200	228	66.75	3	15	139.5	16.5	28.575	69	31.7	6.35
	AM184	215.9	10	184	5	200	228	66.75	3	15	139.5	16.5	28.575	69	31.7	6.35
	AM213/215	215.9	11	184	5	200	228	79.55	6.3	15	188.5	15.8	34.925	85	38.7	7.94
P..RF87	AM143	114.3	12	149.2	4.5	250	170	54.1	3	10.5	98.5	14.5	22.225	57	24.7	4.77
	AM145	114.3	12	149.2	4.5	250	170	54.1	3	10.5	98.5	14.5	22.225	57	24.7	4.77
	AM182	215.9	10	184	5	250	228	66.75	3	15	134.5	16.5	28.575	69	31.7	6.35
	AM184	215.9	10	184	5	250	228	66.75	3	15	134.5	16.5	28.575	69	31.7	6.35
	AM213/215	215.9	11	184	5	250	228	79.55	6.3	15	183.5	15.8	34.925	85	38.7	7.94
	AM254/256	215.9	12	184	5	250	228	95.3	6.3	15	234	9	41.275	101	45.8	9.53
	AM284/286	266.7	15	228.6	5	250	286	111.05	6.3	15	241	15.8	47.625	117	53.4	12.7
P..RF97	AM182	215.9	10	184	5	300	228	66.75	3	15	129.5	16.5	28.575	69	24.7	6.35
	AM184	215.9	10	184	5	300	228	66.75	3	15	129.5	16.5	28.575	69	24.7	6.35
	AM213/215	215.9	11	184	5	300	228	79.55	6.3	15	178.5	15.8	34.925	85	38.7	7.94
	AM254/256	215.9	12	184	5	300	228	95.3	6.3	15	229	9	41.275	101	45.8	9.53
	AM284/286	266.7	20	228.6	5	300	286	111.05	6.3	15	236	15.8	47.625	117	53.4	12.7
	AM324/326	317.5	17	279.4	5	300	356	127.05	6.3	17.5	296	34.8	53.975	133	60	12.7
	AM364/365	317.5	17	279.4		300	356	143.05	6.3	17.5	296	34.8	60.325	149	67.6	15.875

45 118 01 08

P..RF..AM..

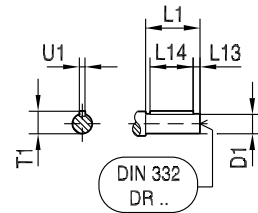
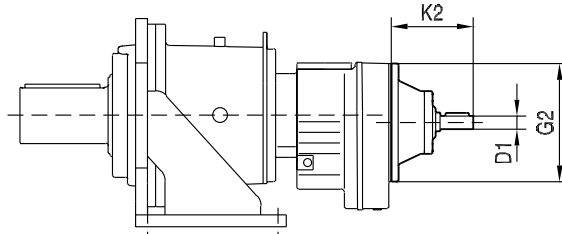
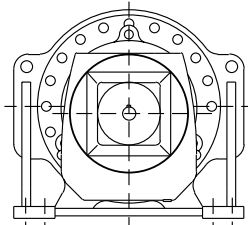


		B5	C5	E5	F5	G2	G5	I2	L5	S5	Z5	Z12	D1	L1	T1	U1
P..RF107	AM182	215.9	10	184	5	350	228	66.75	3	15	123.5	16.5	28.575	69	31.7	6.35
	AM184	215.9	10	184	5	350	228	66.75	3	15	123.5	16.5	28.575	69	31.7	6.35
	AM213/215	215.9	11	184	5	350	228	79.55	6.3	15	172.5	15.8	34.925	85	38.7	7.94
	AM254/256	215.9	12	184	5	350	228	95.3	6.3	15	223	9	41.275	101	45.8	9.53
	AM284/286	266.7	15	228.6	5	350	286	111.05	6.3	15	230	15.8	47.625	117	53.4	12.7
	AM324/326	317.5	17	279.4	5	350	356	127.05	6.3	17.5	290	34.8	53.975	133	60	12.7
	AM364/365	317.5	17	279.4	5	350	356	143.05	6.3	17.5	290	34.8	60.325	149	67.6	15.875
P..RF137	AM213/215	215.9	11	184	5	400	228	79.55	6.3	15	165.5	15.8	34.925	85	38.7	7.94
	AM254/256	215.9	12	184	5	400	228	95.3	6.3	15	216	9	41.275	101	45.8	9.53
	AM284/286	266.7	15	228.6	5	400	286	111.05	6.3	15	223	15.8	47.625	117	53.4	12.7
	AM324/326	317.5	17	279.4	5	400	356	127.05	6.3	17.5	283	34.8	53.975	133	60	12.7
	AM364/365	317.5	17	279.4	5	400	356	143.05	6.3	17.5	283	34.8	60.325	149	67.6	15.875
P..RF147	AM213/215	215.9	11	184	5	450	228	79.55	6.3	15	157.5	15.8	34.925	85	38.7	7.94
	AM254/256	215.9	12	184	5	450	228	95.3	6.3	15	208	9	41.275	101	45.8	9.53
	AM284/286	266.7	15	228.6	5	450	286	111.05	6.3	15	215	15.8	47.625	117	53.4	12.7
	AM324/326	317.5	17	279.4	5	450	356	127.05	6.3	17.5	275	34.8	53.975	133	60	12.7
	AM364/365	317.5	17	279.4		450	356	143.05	6.3	17.5	275	34.8	60.325	149	67.6	15.875
P..RF167	AM254/256	215.9	12	184	5	550	228	95.3	6.3	15	200	9	41.275	101	45.8	9.53
	AM284/286	266.7	15	228.6	5	550	286	111.05	6.3	15	207	15.8	47.625	117	53.4	12.7
	AM324/326	317.5	17	279.4	5	550	356	127.05	6.3	17.5	267	34.8	53.975	133	60	12.7
	AM364/365	317.5	17	279.4		550	356	143.05	6.3	17.5	267	34.8	60.325	149	67.6	15.875

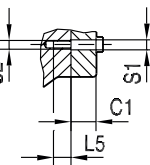
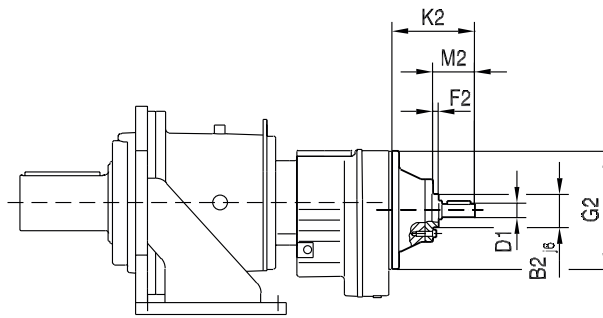
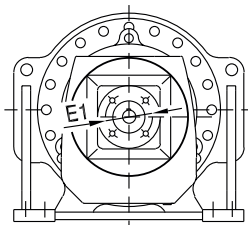
10.8 AD input shaft assembly

P..RF..AD..

45 121 01 08



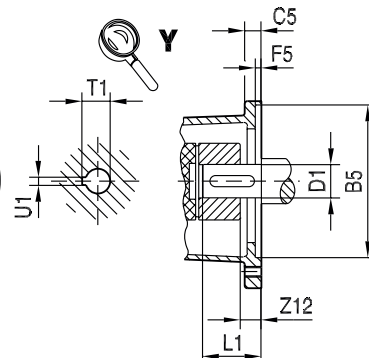
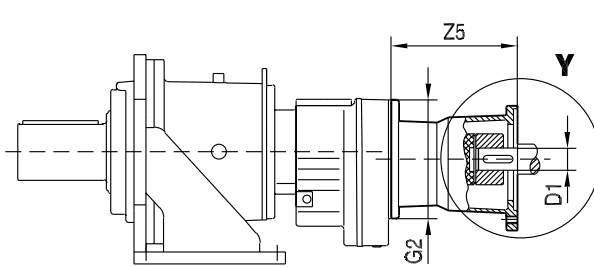
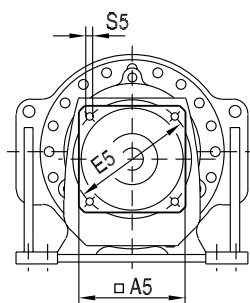
P..RF..AD../ZR



		B2	C1	E1	F2	G2	K2	L5	M2	S1	S2	D1	L1	L13	L14	T1	U1
P..RF77	AD2, AD2/ZR	55	13.5	80	8	200	116	12	50	9	M8	19	40	4	32	21.5	6
	AD3, AD3/ZR	70	15.5	105	8		151	16	60	11	M10	24	50	5	40	27	8
	AD4, AD4/ZR	100	16	130	13		224	20	95.5	13.5	M12	38	80	5	70	41	10
P..RF87	AD2, AD2/ZR	55	13.5	80	8	250	111	12	50	9	M8	19	40	4	32	21.5	6
	AD3, AD3/ZR	70	15.5	105	8		156	16	60	11	M10	28	60	5	50	31	8
	AD4, AD4/ZR	100	16	130	13		219	20	95.5	13.5	M12	38	80	5	70	41	10
P..RF97	AD5, AD5/ZR	120	24	180	11	300	292	20	126	13.5	M12	42	110	10	70	45	12
	AD3, AD3/ZR	70	15.5	105	8		151	16	60	11	M10	28	60	5	50	31	8
	AD4, AD4/ZR	100	16	130	13		214	20	95.5	13.5	M12	38	80	5	70	41	10
P..RF107	AD5, AD5/ZR	120	24	180	11	350	287	20	126	13.5	M12	42	110	10	70	45	12
	AD6, AD6/ZR	130	22.5	200	11		327	26	130.5	17.5	M16	48	110	10	80	51.5	14
	AD3, AD3/ZR	70	15.5	105	8		145	16	60	11	M10	28	60	5	50	31	8
P..RF137	AD4, AD4/ZR	100	16	130	13	400	208	20	95.5	13.5	M12	38	80	5	70	41	10
	AD5, AD5/ZR	120	24	180	11		281	20	126	13.5	M12	42	110	10	70	45	12
	AD6, AD6/ZR	130	22.5	200	11		321	26	130.5	17.5	M16	48	110	10	80	51.5	14
P..RF147	AD7, AD7/ZR	125	19	190	13	450	308	30	133	22	M20	55	110	10	90	59	16
	AD4, AD4/ZR	100	16	130	13		201	20	95.5	13.5	M12	38	80	5	70	41	10
	AD5, AD5/ZR	120	24	180	11		274	20	126	13.5	M12	42	110	10	70	45	12
P..RF167	AD6, AD6/ZR	130	22.5	200	11	550	314	26	130.5	17.5	M16	48	110	10	80	51.5	14
	AD7, AD7/ZR	125	19	190	13		308	30	133	22	M20	55	110	10	90	59	16
	AD8, AD8/ZR	120	22.5	210	5		383	19.5	155	13.5	M12	70	140	15	110	74.5	20
P..RF167	AD5, AD5/ZR	120	24	180	11	550	258	20	126	13.5	M12	42	110	10	70	45	12
	AD6, AD6/ZR	130	22.5	200	11		298	26	130.5	17.5	M16	48	110	10	80	51.5	14
	AD7, AD7/ZR	125	19	190	13		292	30	133	22	M20	55	110	10	90	59	16
	AD8, AD8/ZR	120	22.5	210	5		374	19.5	155	13.5	M12	70	140	15	110	74.5	20

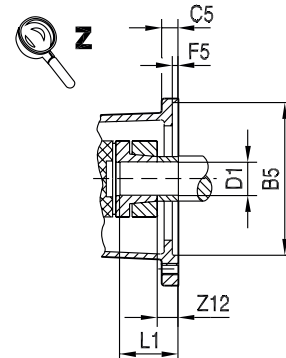
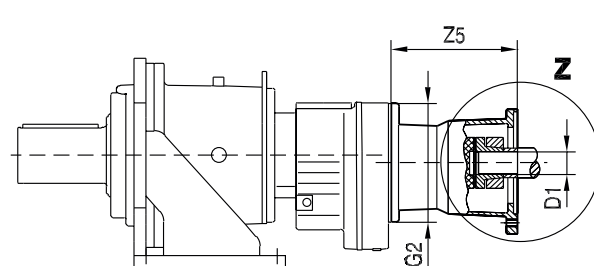
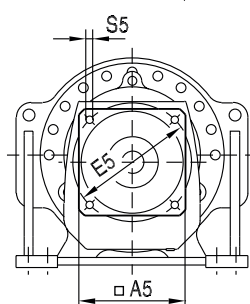
10.9 AQA motor adapter

P..RF..AQA..



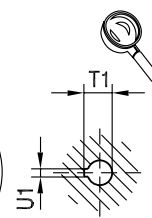
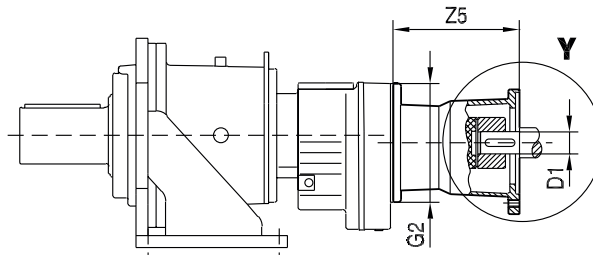
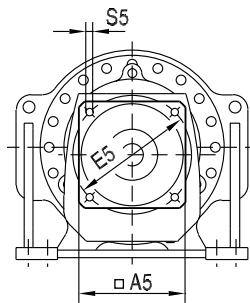
45 119 01 08

P..RF..AQH..

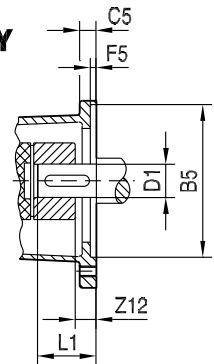


		A5	B5	C5	E5	F5	G2	S5	Z5	AQA Z12	AQH Z12	D1	L1	T1	U1
P..RF77	AQ..80/1	82	60	8	75	3.5	200	M5	92	5.5	5.5	11	23	12.8	4
	AQ..80/2	82	60	8	75	3.5	200	M5	92	5.5	5.5	14	30	16.3	5
	AQ..80/3	82	50	8	95	3	200	M6	92	5.5	5.5	14	30	16.3	5
	AQ..100/1	100	80	10	100	4	200	M6	116	0	0	14	30	16.3	5
	AQ..100/2	100	95	12	115	4	200	M8	116	0	0	14	30	16.3	5
	AQ..100/3	100	80	10	100	4	200	M6	130	2	14	19	40	21.8	6
	AQ..100/4	100	95	12	115	4	200	M8	130	2	14	19	40	21.8	6
	AQ..115/1	115	95	12	130	5	200	M8	139	11	23	19	40	21.8	6
	AQ..115/2	115	110	12	130	5	200	M8	139	11	23	19	40	21.8	6
	AQ..115/3	115	110	12	130	5	200	M8	139	16	16	24	50	27.3	8
	AQ..140/1	140	110	15	165	5	200	M10	167	16	16	24	50	27.3	8
	AQ..140/2	140	130	15	165	5	200	M10	167	16	16	24	50	27.3	8
	AQ..140/3	140	130	15	165	5	200	M10	180	22	22	32	60	35.3	10
	AQ..190/1	190	130	16	215	5	200	M12	225.5	24	24	32	60	35.3	10
P..RF87	AQ..190/2	190	180	16	215	5	200	M12	225.5	24	24	32	60	35.3	10
	AQ..190/3	190	180	16	215	5	200	M12	249.5	34	34	38	80	41.3	10
	AQ..100/1	100	80	10	100	4	250	M6	111	0	0	14	30	16.3	5
	AQ..100/2	100	95	12	115	4	250	M8	111	0	0	14	30	16.3	5
	AQ..100/3	100	80	10	100	4	250	M6	125	2	14	19	40	21.8	6
	AQ..100/4	100	95	12	115	4	250	M8	125	2	14	19	40	21.8	6
	AQ..115/1	115	95	12	130	5	250	M8	134	11	23	19	40	21.8	6
	AQ..115/2	115	110	12	130	5	250	M8	134	11	23	19	40	21.8	6
	AQ..115/3	115	110	12	130	5	250	M8	134	16	16	24	50	27.3	8
	AQ..140/1	140	110	15	165	5	250	M10	162	16	16	24	50	27.3	8
	AQ..140/2	140	130	15	165	5	250	M10	162	16	16	24	50	27.3	8
	AQ..140/3	140	130	15	165	5	250	M10	175	22	22	32	60	35.3	10
	AQ..190/1	190	130	16	215	5	250	M12	220.5	24	24	32	60	35.3	10
	AQ..190/2	190	180	16	215	5	250	M12	220.5	24	24	32	60	35.3	10
	AQ..190/3	190	180	16	215	5	250	M12	244.5	34	34	38	80	41.3	10

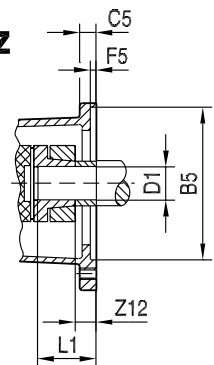
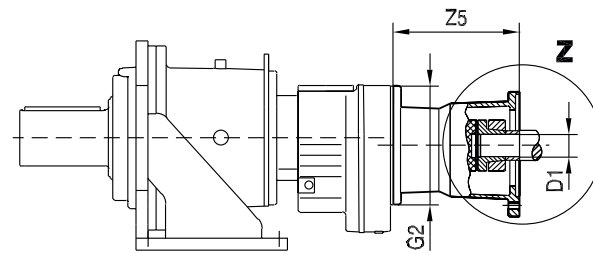
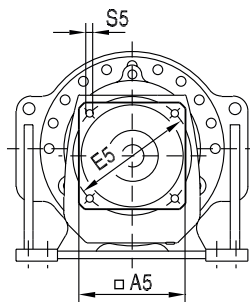
P..RF..AQA..



45 120 01 08



P..RF..AQH..



10

		A5	B5	C5	E5	F5	G2	S5	Z5	AQA Z12	AQH Z12	D1	L1	T1	AU1	
P..RF97	AQ..140/1	140	110	15	165	5	300	M10	157	16	16	24	50	27.3	8	
	AQ..140/2		130						170	22	22	32	60	35.3	10	
	AQ..140/3	190	130	16	215	5		M12	215.5	24	24	32	60	35.3	10	
	AQ..190/2		180						239.5	34	34	38	80	41.3	10	
	AQ..190/3															
P..RF107	AQ..140/1	140	110	15	165	5		350	M10	151	16	16	24	50	27.3	8
	AQ..140/2		130				164			22	22	32	60	35.3	10	
	AQ..140/3	190	130	16	215	5	M12		209.5	24	24	32	60	35.3	10	
	AQ..190/2		180						233.5	34	34	38	80	41.3	10	
	AQ..190/3															
P..RF137	AQ..190/1	190	130	16	215	5	400		M12	202.5	24	25	32	60	35.3	10
	AQ..190/2		180					226.5		34	34	38	80	41.3	10	
	AQ..190/3															
P..RF147	AQ..190/1	190	130	16	215	5		450	M12	194.5	24	24	32	60	35.3	10
	AQ..190/2		180							218.5	34	34	38	80	41.3	10
	AQ..190/3															

11 P..KF.. bevel planetary gearmotors

11.1 Guide to the dimension sheets

11.1.1 P.. foot-mounted gear units

Size	Dimension sheet/page number								
	KF67	KF77	KF87	KF97	KF107	KF127	KF157	K167	K187
P002	224	226	228	230	-	-	-	-	-
P012	-	232	234	236	238	-	-	-	-
P022	-	-	240	242	244	-	-	-	-
P032	-	-	246	248	250	252	-	-	-
P042	-	-	-	254	256	258	-	-	-
P052	-	-	-	260	262	264	-	-	-
P062	-	-	-	-	266	268	-	-	-
P072	-	-	-	-	-	270	272	-	-
P082	-	-	-	-	-	-	274	-	-
P092	-	-	-	-	-	-	276	278	280
P102	-	-	-	-	-	-	-	282	284

11.1.2 PF.. flange-mounted gear units

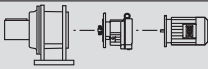
Size	Dimension sheet/page number								
	KF67	KF77	KF87	KF97	KF107	KF127	KF157	K167	K187
PF002	225	227	229	231	-	-	-	-	-
PF012	-	233	235	237	239	-	-	-	-
PF022	-	-	241	243	245	-	-	-	-
PF032	-	-	247	249	251	253	-	-	-
PF042	-	-	-	255	257	259	-	-	-
PF052	-	-	-	261	263	265	-	-	-
PF062	-	-	-	-	267	269	-	-	-
PF072	-	-	-	-	-	271	273	-	-
PF082	-	-	-	-	-	-	275	-	-
PF092	-	-	-	-	-	-	277	279	281
PF102	-	-	-	-	-	-	-	283	285

11.1.3 Motor adapter

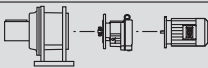
	Dimension sheet/page number							
	KF77	KF87	KF97	KF107	KF127	KF157	K167	K187
Adapter for mounting IEC motors P..KF..AM..	288	288	288	289	289	289	289	290
Adapter for mounting NEMA motors P..KF..AM..	291	291	291	292	292	292	292	292
Input shaft assembly P..KF..AD..	293	293	293	293	293	293	293	293
AQA motor adapter	294	294	295	295	-	-	-	-

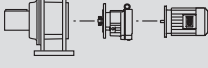
11.2 Selection tables K..

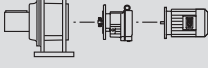
P_m = 0.75 kW

n ₂ min ⁻¹	M _a Nm	i _{ex}	F _{Ra} ¹⁾ N	M _{N2}						m	
				f _{LC} ≤ 7.5 Nm	f _{LC} > 107.5 Nm					kg	
0.36	19600	4029	156000	46200	36810	P	012KF87	DRN	80M4	435	234
						PF	012KF87	DRN	80M4	365	235
						PH	012KF87	DRN	80M4	450	234
						PHF	012KF87	DRN	80M4	380	235
0.41	17000	3490	156000	46200	36810	P	012KF77	DRN	80M4	400	232
0.47	14900	3063	156000	46200	36810	PF	012KF77	DRN	80M4	330	233
						PH	012KF77	DRN	80M4	410	232
						PHF	012KF77	DRN	80M4	340	233
0.38	18400	3793	123500	29200	24830	P	002KF77	DRN	80M4	320	226
						PF	002KF77	DRN	80M4	260	227
						PH	002KF77	DRN	80M4	320	226
						PHF	002KF77	DRN	80M4	265	227
0.41	17100	3519	124000	-	24830						
0.48	14500	2984	124000	-	24830						
0.53	13100	2694	124000	-	24830	P	002KF67	DRN	80M4	285	224
0.61	11500	2371	124000	-	24830	PF	002KF67	DRN	80M4	230	225
0.64	10900	2238	124000	-	24830	PH	002KF67	DRN	80M4	290	224
0.76	9290	1906	124000	-	24830	PHF	002KF67	DRN	80M4	235	225
0.83	8440	1732	124000	-	24830						
0.96	7310	1500	124000	-	24830						

P_m = 1.1 kW

n ₂ min ⁻¹	M _a Nm	i _{ex}	F _{Ra} ¹⁾ N	M _{N2}						m	
				f _{LC} ≤ 7.5 Nm	f _{LC} > 107.5 Nm					kg	
0.36	28500	4029	197000	-	51190	P	022KF87	DRN	90S4	590	240
0.43	23900	3387	197000	-	51190	PF	022KF87	DRN	90S4	485	241
0.47	22000	3113	197000	-	51190	PH	022KF87	DRN	90S4	600	240
						PHF	022KF87	DRN	90S4	500	241
0.36	28500	4029	156000	46200	36810	P	012KF87	DRN	90S4	440	234
0.53	19500	2764	156000	46200	36810	PF	012KF87	DRN	90S4	370	235
						PH	012KF87	DRN	90S4	455	234
						PHF	012KF87	DRN	90S4	385	235
0.38	26900	3807	156000	46200	36810						
0.42	24600	3490	156000	46200	36810	P	012KF77	DRN	90S4	405	232
0.48	21600	3063	156000	46200	36810	PF	012KF77	DRN	90S4	335	233
0.57	17900	2540	156000	46200	36810	PH	012KF77	DRN	90S4	415	232
0.64	16100	2289	156000	46200	36810	PHF	012KF77	DRN	90S4	345	233
0.72	14200	2008	156000	46200	36810						
0.82	12500	1772	156000	46200	36810						
0.38	26800	3793	114600	29200	24830	P	002KF77	DRN	90S4	325	226
0.48	21500	3051	121500	29200	24830	PF	002KF77	DRN	90S4	265	227
0.50	20400	2891	122300	29200	24830	PH	002KF77	DRN	90S4	325	226
						PHF	002KF77	DRN	90S4	270	227
0.61	16700	2371	124000	-	24830						
0.65	15800	2238	124000	-	24830	P	002KF67	DRN	90S4	295	224
0.76	13400	1906	124000	-	24830	PF	002KF67	DRN	90S4	235	225
0.84	12200	1732	124000	-	24830	PH	002KF67	DRN	90S4	295	224
0.97	10600	1500	124000	-	24830	PHF	002KF67	DRN	90S4	240	225
1.1	9840	1392	124000	-	24830						
1.2	8350	1181	124000	-	24830						
1.4	7540	1066	124000	-	24830						
1.6	6630	938	124000	-	24830						

P_m = 1.5 kW										
n_2	M_a	i_{ex}	$F_{Ra}^{1)}$	M_{N2}						m
min^{-1}	Nm		N	$f_{LC} \leq 7.5$ Nm	$f_{LC} > 107.5$ Nm					kg
0.36	38700	4029	197000	-	51190	P	022KF87	DRN	90L4	590 240
0.43	32500	3387	197000	-	51190	PF	022KF87	DRN	90L4	490 241
0.47	29900	3113	197000	-	51190	PH	022KF87	DRN	90L4	610 240
						PHF	022KF87	DRN	90L4	500 241
0.36	38700	4029	156000	46200	36810	P	012KF87	DRN	90L4	445 234
0.53	26500	2764	156000	46200	36810	PF	012KF87	DRN	90L4	375 235
						PH	012KF87	DRN	90L4	455 234
						PHF	012KF87	DRN	90L4	385 235
0.42	33500	3490	156000	46200	36810					
0.48	29400	3063	156000	46200	36810	P	012KF77	DRN	90L4	405 232
0.50	27800	2903	156000	46200	36810	PF	012KF77	DRN	90L4	335 233
0.58	24400	2540	156000	46200	36810	PH	012KF77	DRN	90L4	420 232
0.64	21900	2289	156000	46200	36810	PHF	012KF77	DRN	90L4	350 233
0.73	19200	2008	156000	46200	36810					
0.82	17000	1772	156000	46200	36810					
0.51	27700	2891	113100	29200	24830	P	002KF77	DRN	90L4	325 226
0.64	21900	2280	121300	29200	24830	PF	002KF77	DRN	90L4	270 227
0.73	19200	2000	123000	29200	24830	PH	002KF77	DRN	90L4	330 226
						PHF	002KF77	DRN	90L4	270 227
0.84	16600	1732	124000	-	24830					
0.97	14400	1500	124000	-	24830					
1.1	13300	1392	124000	-	24830	P	002KF67	DRN	90L4	295 224
1.2	11300	1181	124000	-	24830	PF	002KF67	DRN	90L4	240 225
1.4	10200	1066	124000	-	24830	PH	002KF67	DRN	90L4	300 224
1.6	9000	938	124000	-	24830	PHF	002KF67	DRN	90L4	245 225
1.6	8500	886	124000	-	24830					
1.9	7240	754	124000	-	24830					

P_m = 2.2 kW										
n_2	M_a	i_{ex}	$F_{Ra}^{1)}$	M_{N2}						m
min^{-1}	Nm		N	$f_{LC} \leq 7.5$ Nm	$f_{LC} > 107.5$ Nm					kg
0.35	58500	4124	236500	86800	69620	P	032KF97	DRN	100LS4	750 248
0.38	53900	3797	241400	86800	69620	PF	032KF97	DRN	100LS4	630 249
						PH	032KF97	DRN	100LS4	770 248
						PHF	032KF97	DRN	100LS4	650 249
0.36	57200	4029	181200	-	51190	P	022KF87	DRN	100LS4	600 240
0.43	48000	3387	195300	-	51190	PF	022KF87	DRN	100LS4	495 241
0.47	44200	3113	197000	-	51190	PH	022KF87	DRN	100LS4	610 240
0.52	39200	2764	197000	-	51190	PHF	022KF87	DRN	100LS4	510 241
0.59	35000	2471	197000	-	51190					
0.52	39200	2764	156000	46200	36810	P	012KF87	DRN	100LS4	450 234
0.65	31500	2222	156000	46200	36810	PF	012KF87	DRN	100LS4	380 235
0.75	27300	1929	156000	46200	36810	PH	012KF87	DRN	100LS4	460 234
0.84	24500	1727	156000	46200	36810	PHF	012KF87	DRN	100LS4	390 235
1.0	20300	1433	156000	46200	36810					
0.47	43400	3063	156000	46200	36810					
0.50	41200	2903	156000	46200	36810	P	012KF77	DRN	100LS4	410 232
0.57	36000	2540	156000	46200	36810	PF	012KF77	DRN	100LS4	340 233
0.63	32500	2289	156000	46200	36810	PH	012KF77	DRN	100LS4	425 232
0.72	28500	2008	156000	46200	36810	PHF	012KF77	DRN	100LS4	355 233
0.82	25100	1772	156000	46200	36810					
1.1	19600	1381	156000	46200	36810					
0.73	28300	2000	112000	29200	24830	P	002KF77	DRN	100LS4	330 226
0.93	22200	1565	121100	29200	24830	PF	002KF77	DRN	100LS4	275 227
1.1	19500	1376	122800	29200	24830	PH	002KF77	DRN	100LS4	335 226
						PHF	002KF77	DRN	100LS4	275 227

P_m = 2.2 kW

n ₂	M _a	i _{ex}	F _{Ra} ¹⁾	M _{N2}						m	
min ⁻¹	Nm		N	f _{LC} ≤ 7.5 Nm	f _{LC} > 107.5 Nm					kg	
1.2	16700	1181	124000	-	24830						
1.4	15100	1066	124000	-	24830						
1.6	13300	938	124000	-	24830						
1.6	12500	886	124000	-	24830	P	002KF67	DRN	100LS4	300	224
1.9	10700	754	124000	-	24830	PF	002KF67	DRN	100LS4	240	225
2.1	9720	685	124000	-	24830	PH	002KF67	DRN	100LS4	305	224
2.4	8420	594	124000	-	24830	PHF	002KF67	DRN	100LS4	245	225
2.8	7330	517	124000	-	24830						
3.0	6920	488	124000	-	20200						

P_m = 3.0 kW

n ₂	M _a	i _{ex}	F _{Ra} ¹⁾	M _{N2}						m	
min ⁻¹	Nm		N	f _{LC} ≤ 7.5 Nm	f _{LC} > 107.5 Nm					kg	
0.35	79500	4124	314500	-	100170	P	042KF97	DRN	100L4	1010	254
0.38	73200	3797	319400	-	100170	PF	042KF97	DRN	100L4	820	255
0.43	65400	3394	323000	-	100170	PH	042KF97	DRN	100L4	1010	254
						PHF	042KF97	DRN	100L4	820	255
0.35	79500	4124	209200	86800	69620	P	032KF97	DRN	100L4	760	248
0.38	73200	3797	218400	86800	69620	PF	032KF97	DRN	100L4	640	249
0.53	53300	2767	241900	86800	69620	PH	032KF97	DRN	100L4	780	248
						PHF	032KF97	DRN	100L4	660	249
0.59	47600	2471	247400	-	69620	P	032KF87	DRN	100L4	680	246
						PF	032KF87	DRN	100L4	560	247
						PH	032KF87	DRN	100L4	700	246
						PHF	032KF87	DRN	100L4	580	247
0.47	60000	3113	176200	-	51190	P	022KF87	DRN	100L4	600	240
0.53	53300	2764	187600	-	51190	PF	022KF87	DRN	100L4	500	241
0.59	47600	2471	195900	-	51190	PH	022KF87	DRN	100L4	620	240
0.66	42800	2222	197000	-	51190	PHF	022KF87	DRN	100L4	520	241
0.75	37100	1929	197000	-	51190						
0.66	42800	2222	156000	46200	36810	P	012KF87	DRN	100L4	455	234
0.75	37100	1929	156000	46200	36810	PF	012KF87	DRN	100L4	385	235
0.84	33300	1727	156000	46200	36810	PH	012KF87	DRN	100L4	470	234
1.0	27600	1433	156000	46200	36810	PHF	012KF87	DRN	100L4	400	235
0.64	44100	2289	156000	46200	36810						
0.73	38700	2008	156000	46200	36810	P	012KF77	DRN	100L4	420	232
1.1	26600	1381	156000	46200	36810	PF	012KF77	DRN	100L4	350	233
1.2	23300	1212	156000	46200	36810	PH	012KF77	DRN	100L4	430	232
1.3	22100	1148	156000	46200	36810	PHF	012KF77	DRN	100L4	360	233
1.4	19300	1005	156000	46200	36810						
1.6	17400	905	156000	46200	36810						
1.1	26500	1376	115100	29200	24830	P	002KF77	DRN	100L4	340	226
1.2	23200	1207	119900	29200	24830	PF	002KF77	DRN	100L4	280	227
1.3	22000	1144	121200	29200	24830	PH	002KF77	DRN	100L4	340	226
1.4	19300	1001	123000	29200	24830	PHF	002KF77	DRN	100L4	285	227
1.6	17000	886	124000	-	24830						
1.9	14500	754	124000	-	24830	P	002KF67	DRN	100L4	310	224
2.1	13200	685	124000	-	24830	PF	002KF67	DRN	100L4	250	225
2.5	11400	594	124000	-	24830	PH	002KF67	DRN	100L4	310	224
2.8	9950	517	124000	-	24830	PHF	002KF67	DRN	100L4	255	225
3.0	9400	488	124000	-	20200						
3.5	8000	415	124000	-	19100						
3.9	7270	378	124000	-	18300						

P_m = 4.0 kW

n ₂ min ⁻¹	M _a Nm	i _{ex}	F _{Ra} ¹⁾ N	M _{N2}							m kg	
				f _{LC} ≤ 7.5 Nm	f _{LC} > 107.5 Nm							
0.37	101000	3952	364000	140600	124060	P	052KF107	DRN	112M4	1270	262	
0.41	91200	3568	364000	140600	124060	PF	052KF107	DRN	112M4	1070	263	
						PH	052KF107	DRN	112M4	1260	262	
						PHF	052KF107	DRN	112M4	1060	263	
0.45	82800	3241	311700	111000	100170	P	042KF107	DRN	112M4	1130	256	
						PF	042KF107	DRN	112M4	940	257	
						PH	042KF107	DRN	112M4	1130	256	
						PHF	042KF107	DRN	112M4	940	257	
0.35	105400	4124	290000	-	100170	P	042KF97	DRN	112M4	1010	254	
0.39	97100	3797	298700	-	100170	PF	042KF97	DRN	112M4	820	255	
0.43	86800	3394	308300	-	100170	PH	042KF97	DRN	112M4	1020	254	
0.53	70700	2767	321300	-	100170	PHF	042KF97	DRN	112M4	830	255	
0.60	62700	2454	323000	111000	100170							
0.53	70700	2767	221800	86800	69620	P	032KF97	DRN	112M4	770	248	
0.66	56700	2218	238500	86800	69620	PF	032KF97	DRN	112M4	650	249	
0.78	48000	1880	247000	86800	69620	PH	032KF97	DRN	112M4	790	248	
						PHF	032KF97	DRN	112M4	670	249	
0.59	63200	2471	231200	-	69620	P	032KF87	DRN	112M4	690	246	
						PF	032KF87	DRN	112M4	570	247	
						PH	032KF87	DRN	112M4	710	246	
						PHF	032KF87	DRN	112M4	590	247	
0.66	56800	2222	181900	-	51190	P	022KF87	DRN	112M4	610	240	
0.76	49300	1929	193600	-	51190	PF	022KF87	DRN	112M4	510	241	
0.85	44100	1727	197000	-	51190	PH	022KF87	DRN	112M4	630	240	
1.0	36600	1433	197000	-	51190	PHF	022KF87	DRN	112M4	520	241	
1.2	31400	1231	197000	-	51190							
0.85	44100	1727	156000	46200	36810	P	012KF87	DRN	112M4	465	234	
1.0	36600	1433	156000	46200	36810	PF	012KF87	DRN	112M4	395	235	
1.3	27900	1094	156000	46200	36810	PH	012KF87	DRN	112M4	480	234	
						PHF	012KF87	DRN	112M4	410	235	
0.83	45300	1772	156000	46200	36810							
1.2	30900	1212	156000	46200	36810							
1.3	29300	1148	156000	46200	36810							
1.5	25600	1005	156000	46200	36810	P	012KF77	DRN	112M4	425	232	
1.6	23100	905	156000	46200	36810	PF	012KF77	DRN	112M4	355	233	
1.8	20300	794	156000	46200	36810	PH	012KF77	DRN	112M4	440	232	
2.1	17900	701	156000	46200	36810	PHF	012KF77	DRN	112M4	370	233	
2.4	15800	621	156000	46200	36810							
2.8	13500	530	156000	46200	36810							
1.5	25500	1001	116500	29200	24830	P	002KF77	DRN	112M4	345	226	
1.6	23000	902	120200	29200	24830	PF	002KF77	DRN	112M4	290	227	
1.9	20200	791	122400	29200	24830	PH	002KF77	DRN	112M4	350	226	
2.1	17800	698	123800	29200	24830	PHF	002KF77	DRN	112M4	295	227	
2.4	15800	619	124000	29200	24830							
2.8	13200	517	124000	-	24830							
3.0	12400	488	124000	-	20200	P	002KF67	DRN	112M4	315	224	
3.5	10600	415	124000	-	19100	PF	002KF67	DRN	112M4	260	225	
3.9	9650	378	124000	-	18300	PH	002KF67	DRN	112M4	320	224	
4.5	8360	327	124000	-	16800	PHF	002KF67	DRN	112M4	265	225	
5.2	7270	284	124000	-	16000							

P_m = 5.5 kW

n ₂ min ⁻¹	M _a Nm	i _{ex}	F _{Ra} ¹⁾ N	M _{N2}							m kg	
				f _{LC} ≤ 7.5 Nm	f _{LC} > 107.5 Nm							
0.41	125700	3568	473000	-	185660	P	062KF107	DRN	132S4	1770	266	
0.45	114100	3241	473000	-	185660	PF	062KF107	DRN	132S4	1400	267	
						PH	062KF107	DRN	132S4	1760	266	
						PHF	062KF107	DRN	132S4	1390	267	

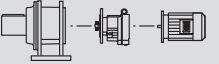
P_m = 5.5 kW

n ₂ min ⁻¹	M _a Nm	i _{ex}	F _{Ra} ¹⁾ N	M _{N2}							m kg	
				f _{LC} ≤ 7.5 Nm	f _{LC} > 107.5 Nm							
0.37	139200	3952	343100	140600	124060	P	052KF107	DRN	132S4	1280	262	
0.41	125700	3568	355000	140600	124060	PF	052KF107	DRN	132S4	1080	263	
0.51	101300	2876	364000	140600	124060	PH	052KF107	DRN	132S4	1280	262	
0.56	91900	2610	364000	140600	124060	PHF	052KF107	DRN	132S4	1080	263	
0.45	114100	3241	280200	111000	100170	P	042KF107	DRN	132S4	1140	256	
0.65	79000	2243	314900	111000	100170	PF	042KF107	DRN	132S4	950	257	
0.75	68900	1958	322600	111000	100170	PH	042KF107	DRN	132S4	1140	256	
						PHF	042KF107	DRN	132S4	950	257	
0.53	97500	2767	298300	-	100170	P	042KF97	DRN	132S4	1030	254	
0.60	86400	2454	308600	111000	100170	PF	042KF97	DRN	132S4	840	255	
0.78	66200	1880	323000	111000	100170	PH	042KF97	DRN	132S4	1030	254	
						PHF	042KF97	DRN	132S4	840	255	
0.66	78100	2218	211300	86800	69620	P	032KF97	DRN	132S4	780	248	
0.78	66200	1880	227600	86800	69620	PF	032KF97	DRN	132S4	660	249	
0.89	57800	1643	237300	86800	69620	PH	032KF97	DRN	132S4	800	248	
0.97	52900	1503	242400	86800	69620	PHF	032KF97	DRN	132S4	680	249	
1.2	43300	1231	251100	-	69620	P	032KF87	DRN	132S4	700	246	
						PF	032KF87	DRN	132S4	580	247	
						PH	032KF87	DRN	132S4	720	246	
						PHF	032KF87	DRN	132S4	600	247	
0.85	60800	1727	174800	-	51190	P	022KF87	DRN	132S4	620	240	
1.0	50400	1433	191900	-	51190	PF	022KF87	DRN	132S4	520	241	
1.2	43300	1231	197000	-	51190	PH	022KF87	DRN	132S4	640	240	
1.3	38500	1094	197000	-	51190	PHF	022KF87	DRN	132S4	540	241	
1.5	34400	978	197000	-	51190							
1.7	30900	879	197000	-	51190							
1.3	38500	1094	156000	46200	36810	P	012KF87	DRN	132S4	475	234	
1.9	26800	763	156000	46200	36810	PF	012KF87	DRN	132S4	405	235	
						PH	012KF87	DRN	132S4	490	234	
						PHF	012KF87	DRN	132S4	420	235	
1.2	42600	1212	156000	46200	36810							
1.3	40400	1148	156000	46200	36810							
1.4	35400	1005	156000	46200	36810	P	012KF77	DRN	132S4	440	232	
1.6	31800	905	156000	46200	36810	PF	012KF77	DRN	132S4	370	233	
1.8	27900	794	156000	46200	36810	PH	012KF77	DRN	132S4	450	232	
2.1	24600	701	156000	46200	36810	PHF	012KF77	DRN	132S4	380	233	
2.4	21800	621	156000	46200	36810							
2.8	18600	530	156000	46200	36810							
3.4	14900	425	156000	-	36810							
1.9	27800	791	112900	29200	24830							
2.4	21800	619	121400	29200	24830							
2.8	18600	528	123400	29200	24830							
3.0	17000	483	124000	29200	24830							
3.5	14900	424	124000	29200	24830							
3.9	13100	374	124000	29200	24830	P	002KF77	DRN	132S4	360	226	
4.4	11600	331	124000	29200	24830	PF	002KF77	DRN	132S4	300	227	
5.5	9300	264	124000	-	24830	PH	002KF77	DRN	132S4	360	226	
6.1	8490	241	123300	-	19100	PHF	002KF77	DRN	132S4	305	227	
6.9	7450	212	118600	-	18900							
7.8	6570	187	114200	-	17900							
8.8	5830	166	110100	-	17000							
10	4980	141	105000	-	15600							

P_m = 7.5 kW

n ₂ min ⁻¹	M _a Nm	i _{ex}	F _{Ra} ¹⁾ N	M _{N2}							m kg	
				f _{LC} ≤ 7.5 Nm	f _{LC} > 107.5 Nm							
0.43	163700	3425	523000	274600	245660	P	072KF127	DRN	132M4	2400	270	
0.54	129200	2703	523000	274600	245660	PF	072KF127	DRN	132M4	1910	271	
0.62	114000	2385	523000	274600	245660	PH	072KF127	DRN	132M4	2460	270	
						PHF	072KF127	DRN	132M4	1970	271	

P_m = 7.5 kW

n ₂	M _a	i _{ex}	F _{Ra} ¹⁾	M _{N2}						m	
				f _{LC} ≤7.5	f _{LC} >107.5						
min ⁻¹	Nm		N	Nm	Nm					kg	
0.34	206600	4322	421900	209100	185660	P	062KF127	DRN	132M4	1980	268
0.60	117400	2456	473000	209100	185660	PF	062KF127	DRN	132M4	1620	269
0.69	101400	2121	473000	209100	185660	PH	062KF127	DRN	132M4	1970	268
0.78	89700	1876	473000	209100	185660	PHF	062KF127	DRN	132M4	1610	269
0.41	170600	3568	449600	-	185660	P	062KF107	DRN	132M4	1790	266
0.45	154900	3241	460000	-	185660	PF	062KF107	DRN	132M4	1420	267
0.65	107200	2243	473000	-	185660	PH	062KF107	DRN	132M4	1770	266
0.88	79400	1661	473000	-	185660	PHF	062KF107	DRN	132M4	1410	267
0.51	137500	2876	344700	140600	124060	P	052KF107	DRN	132M4	1300	262
0.56	124700	2610	355700	140600	124060	PF	052KF107	DRN	132M4	1100	263
0.75	93600	1958	364000	140600	124060	PH	052KF107	DRN	132M4	1290	262
1.0	69400	1452	364000	140600	124060	PHF	052KF107	DRN	132M4	1090	263
1.3	52300	1095	364000	140600	124060	P	052KF97	DRN	132M4	1190	260
1.5	46400	971	364000	140600	124060	PF	052KF97	DRN	132M4	990	261
						PH	052KF97	DRN	132M4	1180	260
						PHF	052KF97	DRN	132M4	980	261
0.65	107200	2243	288100	111000	100170	P	042KF107	DRN	132M4	1160	256
0.75	93600	1958	302100	111000	100170	PF	042KF107	DRN	132M4	970	257
1.0	69400	1452	322300	111000	100170	PH	042KF107	DRN	132M4	1160	256
1.3	54300	1138	323000	111000	100170	PHF	042KF107	DRN	132M4	970	257
0.78	89900	1880	305500	111000	100170	P	042KF97	DRN	132M4	1040	254
1.2	57700	1209	323000	111000	100170	PF	042KF97	DRN	132M4	850	255
1.5	46400	971	323000	111000	100170	PH	042KF97	DRN	132M4	1050	254
1.7	41900	878	323000	111000	100170	PHF	042KF97	DRN	132M4	860	255
0.89	78500	1643	210700	86800	69620						
0.98	71800	1503	220300	86800	69620	P	032KF97	DRN	132M4	800	248
1.5	46400	971	248500	86800	69620	PF	032KF97	DRN	132M4	680	249
1.7	41900	878	252000	86800	69620	PH	032KF97	DRN	132M4	820	248
2.0	35500	744	252000	86800	69620	PHF	032KF97	DRN	132M4	700	249
2.3	31000	650	252000	86800	69620						
1.2	58800	1231	236200	-	69620	P	032KF87	DRN	132M4	720	246
1.9	36400	763	252000	-	69620	PF	032KF87	DRN	132M4	600	247
2.1	32600	683	252000	-	69620	PH	032KF87	DRN	132M4	740	246
2.3	30000	628	252000	-	69200	PHF	032KF87	DRN	132M4	620	247
2.6	27000	567	252000	-	69620						
2.7	25900	543	197000	64200	51190	P	022KF97	DRN	132M4	720	242
3.1	22400	470	197000	64200	51190	PF	022KF97	DRN	132M4	610	243
						PH	022KF97	DRN	132M4	730	242
						PHF	022KF97	DRN	132M4	630	243
1.3	52200	1094	189200	-	51190						
1.5	46700	978	197000	-	51190	P	022KF87	DRN	132M4	640	240
1.7	42000	879	197000	-	51190	PF	022KF87	DRN	132M4	540	241
2.1	32600	683	197000	64200	51190	PH	022KF87	DRN	132M4	660	240
2.3	30000	628	197000	-	51190	PHF	022KF87	DRN	132M4	550	241
3.0	23500	493	197000	64200	51190						
3.4	20900	438	197000	64200	51190						
3.6	19500	408	156000	46200	36810	P	012KF97	DRN	132M4	570	236
4.3	16300	342	156000	46200	36810	PF	012KF97	DRN	132M4	500	237
5.3	13300	279	156000	46200	36810	PH	012KF97	DRN	132M4	580	236
						PHF	012KF97	DRN	132M4	510	237
1.9	36400	763	156000	46200	36810	P	012KF87	DRN	132M4	495	234
3.0	23500	493	156000	46200	36810	PF	012KF87	DRN	132M4	425	235
3.7	18700	392	156000	46200	36810	PH	012KF87	DRN	132M4	510	234
4.5	15500	325	156000	46200	36810	PHF	012KF87	DRN	132M4	435	235
5.0	13800	291	156000	46200	36810						
1.6	43200	905	156000	46200	36810	P	012KF77	DRN	132M4	455	232
1.9	37900	794	156000	46200	36810	PF	012KF77	DRN	132M4	385	233
2.1	33500	701	156000	46200	36810	PH	012KF77	DRN	132M4	470	232
2.4	29700	621	156000	46200	36810	PHF	012KF77	DRN	132M4	400	233
2.8	25300	530	156000	46200	36810						

P_m = 7.5 kW

n ₂	M _a	i _{ex}	F _{Ra} ¹⁾	M _{N2}						m	
min ⁻¹	Nm		N	f _{LC} ≤ 7.5 Nm	f _{LC} > 107.5 Nm					kg	
2.8	25200	528	117000	29200	24830						
3.5	20200	424	122400	29200	24830						
3.9	17800	374	123800	29200	24830						
4.4	15800	331	124000	29200	24830	P	002KF77	DRN	132M4	375	226
5.2	13500	283	124000	29200	24830	PF	002KF77	DRN	132M4	320	227
5.6	12600	264	124000	-	24830	PH	002KF77	DRN	132M4	380	226
6.9	10100	212	118400	-	18900	PHF	002KF77	DRN	132M4	320	227
7.9	8920	187	114000	-	17900						
8.9	7910	166	110000	-	17000						
10	6750	141	104900	-	15600						

P_m = 9.2 kW

n ₂	M _a	i _{ex}	F _{Ra} ¹⁾	M _{N2}						m	
min ⁻¹	Nm		N	f _{LC} ≤ 7.5 Nm	f _{LC} > 107.5 Nm					kg	
0.43	199200	3402	850000	631300	500000	P	102KF167	DRN	132L4	5090	282
0.56	154400	2636	850000	631300	500000	PF	102KF167	DRN	132L4	4130	283
0.63	137700	2352	850000	631300	500000	PH	102KF167	DRN	132L4	5150	282
						PHF	102KF167	DRN	132L4	4190	283
0.43	201900	3447	720000	513900	423000						
0.48	179500	3065	720000	513900	423000	P	092KF167	DRN	132L4	4240	278
0.54	159000	2715	720000	513900	423000	PF	092KF167	DRN	132L4	3540	279
0.62	139500	2383	720000	513900	423000	PH	092KF167	DRN	132L4	4250	278
0.67	129300	2209	720000	513900	423000	PHF	092KF167	DRN	132L4	3550	279
0.72	118900	2031	720000	513900	423000						
0.83	103400	1767	720000	513900	423000						
0.35	245800	4198	523000	274600	245660	P	072KF127	DRN	132L4	2410	270
0.43	200500	3425	523000	274600	245660	PF	072KF127	DRN	132L4	1920	271
0.47	182900	3123	523000	274600	245660	PH	072KF127	DRN	132L4	2470	270
0.54	158300	2703	523000	274600	245660	PHF	072KF127	DRN	132L4	1980	271
0.62	139600	2385	523000	274600	245660						
0.42	206500	3526	422000	209100	185660	P	062KF127	DRN	132L4	1990	268
0.46	188300	3216	436600	209100	185660	PF	062KF127	DRN	132L4	1630	269
0.60	143800	2456	466800	209100	185660	PH	062KF127	DRN	132L4	1980	268
0.69	124200	2121	473000	209100	185660	PHF	062KF127	DRN	132L4	1620	269
0.78	109800	1876	473000	209100	185660						
0.51	168400	2876	451100	-	185660	P	062KF107	DRN	132L4	1790	266
0.56	152800	2610	461300	-	185660	PF	062KF107	DRN	132L4	1430	267
0.66	131300	2243	473000	-	185660	PH	062KF107	DRN	132L4	1780	266
0.75	114600	1958	473000	-	185660	PHF	062KF107	DRN	132L4	1420	267
0.89	97200	1661	473000	-	185660						
1.0	85000	1452	473000	-	185660						
0.66	131300	2243	350200	140600	124060	P	052KF107	DRN	132L4	1310	262
0.75	114600	1958	363700	140600	124060	PF	052KF107	DRN	132L4	1110	263
1.0	85000	1452	364000	140600	124060	PH	052KF107	DRN	132L4	1300	262
1.2	71800	1227	364000	140600	124060	PHF	052KF107	DRN	132L4	1100	263
1.1	78600	1343	364000	140600	124060	P	052KF97	DRN	132L4	1200	260
1.2	70700	1209	364000	140600	124060	PF	052KF97	DRN	132L4	1000	261
						PH	052KF97	DRN	132L4	1190	260
						PHF	052KF97	DRN	132L4	990	261
0.75	114600	1958	279600	111000	100170	P	042KF107	DRN	132L4	1160	256
0.89	97200	1661	298500	111000	100170	PF	042KF107	DRN	132L4	970	257
1.0	85000	1452	309900	111000	100170	PH	042KF107	DRN	132L4	1170	256
1.3	66600	1138	323000	111000	100170	PHF	042KF107	DRN	132L4	980	257
0.78	110100	1880	284800	111000	100170						
0.98	87900	1503	307200	111000	100170	P	042KF97	DRN	132L4	1050	254
1.2	70700	1209	321300	111000	100170	PF	042KF97	DRN	132L4	860	255
1.3	64100	1095	323000	111000	100170	PH	042KF97	DRN	132L4	1060	254
1.5	56800	971	323000	111000	100170	PHF	042KF97	DRN	132L4	870	255
1.7	51400	878	323000	111000	100170						

P_m = 9.2 kW

n ₂ min ⁻¹	M _a Nm	i _{ex}	F _{Ra} ¹⁾ N	M _{N2}							m kg	
				f _{LC} ≤ 7.5 Nm	f _{LC} > 107.5 Nm							
1.2	70700	1209	221700	86800	69620	P	032KF97	DRN	132L4	800	248	
1.3	64100	1095	230200	86800	69620	PF	032KF97	DRN	132L4	680	249	
1.5	56800	971	238300	86800	69620	PH	032KF97	DRN	132L4	830	248	
1.7	51400	878	243900	86800	69620	PHF	032KF97	DRN	132L4	700	249	
2.0	43500	744	250900	86800	69620							
2.3	38000	650	252000	86800	69620							
2.3	36700	628	252000	-	69200	P	032KF87	DRN	132L4	730	246	
2.6	33100	567	252000	-	69620	PF	032KF87	DRN	132L4	610	247	
						PH	032KF87	DRN	132L4	750	246	
						PHF	032KF87	DRN	132L4	630	247	
2.7	31800	543	197000	64200	51190	P	022KF97	DRN	132L4	720	242	
3.1	27500	470	197000	64200	51190	PF	022KF97	DRN	132L4	620	243	
						PH	022KF97	DRN	132L4	740	242	
						PHF	022KF97	DRN	132L4	640	243	
1.5	57200	978	181100	-	51190							
1.7	51400	879	190400	-	51190	P	022KF87	DRN	132L4	650	240	
1.9	44600	763	197000	64200	51190	PF	022KF87	DRN	132L4	550	241	
2.1	40000	683	197000	64200	51190	PH	022KF87	DRN	132L4	660	240	
2.3	36700	628	197000	-	51190	PHF	022KF87	DRN	132L4	560	241	
3.0	28800	493	197000	64200	51190							
3.4	25600	438	197000	64200	51190							
3.6	23900	408	156000	46200	36810	P	012KF97	DRN	132L4	580	236	
4.3	20000	342	156000	46200	36810	PF	012KF97	DRN	132L4	510	237	
5.3	16300	279	156000	46200	36810	PH	012KF97	DRN	132L4	590	236	
						PHF	012KF97	DRN	132L4	520	237	
1.9	44600	763	156000	46200	36810							
2.1	40000	683	156000	46200	36810	P	012KF87	DRN	132L4	500	234	
2.3	36700	628	156000	46200	36810	PF	012KF87	DRN	132L4	430	235	
2.6	33100	567	156000	46200	36810	PH	012KF87	DRN	132L4	520	234	
3.0	28800	493	156000	46200	36810	PHF	012KF87	DRN	132L4	445	235	
3.4	25600	438	156000	46200	36810							
3.8	22900	392	156000	46200	36810							
4.5	19000	325	156000	46200	36810							
5.1	17000	291	156000	46200	36810							
2.1	41000	701	156000	46200	36810	P	012KF77	DRN	132L4	465	232	
						PF	012KF77	DRN	132L4	395	233	
						PH	012KF77	DRN	132L4	480	232	
						PHF	012KF77	DRN	132L4	410	233	
3.8	22800	391	120500	29200	24830							
4.5	18900	324	123200	29200	24830	P	002KF87	DRN	132L4	420	228	
5.2	16500	282	124000	29200	24830	PF	002KF87	DRN	132L4	365	229	
6.0	14300	245	123700	29200	24830	PH	002KF87	DRN	132L4	425	228	
6.7	12700	218	119400	29200	24830	PHF	002KF87	DRN	132L4	365	229	
7.5	11400	195	115500	29200	24830							
9.1	9480	162	109200	29200	24830							
3.0	28200	483	112200	29200	24830	P	002KF77	DRN	132L4	385	226	
10	8270	141	104800	-	15600	PF	002KF77	DRN	132L4	325	227	
						PH	002KF77	DRN	132L4	390	226	
						PHF	002KF77	DRN	132L4	330	227	

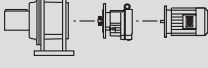
P_m = 11.0 kW

n ₂ min ⁻¹	M _a Nm	i _{ex}	F _{Ra} ¹⁾ N	M _{N2}							m kg	
				f _{LC} ≤ 7.5 Nm	f _{LC} > 107.5 Nm							
0.43	237700	3402	850000	631300	500000	P	102KF167	DRN	160M4	5120	282	
0.56	184200	2636	850000	631300	500000	PF	102KF167	DRN	160M4	4160	283	
0.63	164300	2352	850000	631300	500000	PH	102KF167	DRN	160M4	5180	282	
0.73	140100	2005	850000	631300	500000	PHF	102KF167	DRN	160M4	4220	283	

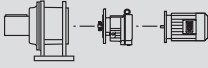
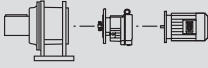
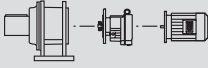
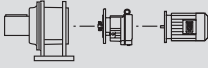
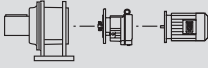
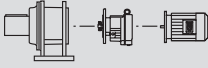
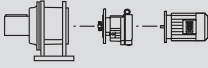
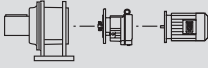
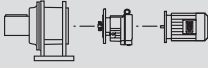
P_m = 11.0 kW

n ₂ min ⁻¹	M _a Nm	i _{ex}	F _{Ra} ¹⁾ N	M _{N2}						m kg	
				f _{LC} ≤ 7.5 Nm	f _{LC} > 107.5 Nm						
0.48	214200	3065	720000	513900	423000	P	092KF167	DRN	160M4	4270	278
0.54	189700	2715	720000	513900	423000	PF	092KF167	DRN	160M4	3570	279
0.62	166500	2383	720000	513900	423000	PH	092KF167	DRN	160M4	4280	278
0.67	154300	2209	720000	513900	423000	PHF	092KF167	DRN	160M4	3580	279
0.73	141900	2031	720000	513900	423000						
0.83	123400	1767	720000	513900	423000						
0.39	262900	3761	683000	397100	359400	P	082KF157	DRN	160M4	3390	274
0.43	240400	3440	683000	397100	359400	PF	082KF157	DRN	160M4	2740	275
						PH	082KF157	DRN	160M4	3390	274
						PHF	082KF157	DRN	160M4	2740	275
0.39	266800	3818	523000	274600	245660	P	072KF157	DRN	160M4	2740	272
0.48	212300	3038	523000	274600	245660	PF	072KF157	DRN	160M4	2240	273
						PH	072KF157	DRN	160M4	2790	272
						PHF	072KF157	DRN	160M4	2300	273
0.43	239300	3425	523000	274600	245660	P	072KF127	DRN	160M4	2440	270
0.47	218200	3123	523000	274600	245660	PF	072KF127	DRN	160M4	1950	271
0.54	188900	2703	523000	274600	245660	PH	072KF127	DRN	160M4	2500	270
0.62	166600	2385	523000	274600	245660	PHF	072KF127	DRN	160M4	2010	271
0.46	224700	3216	405700	209100	185660	P	062KF127	DRN	160M4	2020	268
0.53	194500	2783	431800	209100	185660	PF	062KF127	DRN	160M4	1660	269
0.60	171600	2456	448900	209100	185660	PH	062KF127	DRN	160M4	2010	268
0.69	148200	2121	464100	209100	185660	PHF	062KF127	DRN	160M4	1650	269
0.79	131100	1876	473000	209100	185660						
0.66	156700	2243	458800	-	185660	P	062KF107	DRN	160M4	1830	266
0.75	136800	1958	470900	-	185660	PF	062KF107	DRN	160M4	1460	267
0.89	116000	1661	473000	-	185660	PH	062KF107	DRN	160M4	1820	266
						PHF	062KF107	DRN	160M4	1450	267
0.75	136800	1958	345300	140600	124060	P	052KF107	DRN	160M4	1340	262
1.0	101400	1452	364000	140600	124060	PF	052KF107	DRN	160M4	1140	263
1.2	85700	1227	364000	140600	124060	PH	052KF107	DRN	160M4	1330	262
						PHF	052KF107	DRN	160M4	1130	263
0.89	116000	1661	277900	111000	100170	P	042KF107	DRN	160M4	1200	256
1.0	101400	1452	294300	111000	100170	PF	042KF107	DRN	160M4	1010	257
1.3	79400	1138	314500	111000	100170	PH	042KF107	DRN	160M4	1200	256
						PHF	042KF107	DRN	160M4	1010	257
0.98	104900	1503	290500	111000	100170	P	042KF97	DRN	160M4	1080	254
1.2	84400	1209	310300	111000	100170	PF	042KF97	DRN	160M4	890	255
1.5	67800	971	323000	111000	100170	PH	042KF97	DRN	160M4	1090	254
1.7	61300	878	323000	111000	100170	PHF	042KF97	DRN	160M4	900	255
1.2	84400	1209	201300	86800	69620	P	032KF97	DRN	160M4	840	248
1.4	76500	1095	213700	86800	69620	PF	032KF97	DRN	160M4	720	249
1.5	67800	971	225600	86800	69620	PH	032KF97	DRN	160M4	860	248
1.7	61300	878	233400	86800	69620	PHF	032KF97	DRN	160M4	740	249
2.0	51900	744	243300	86800	69620						
2.3	45400	650	249400	86800	69620						
2.7	37900	543	197000	64200	51190	P	022KF97	DRN	160M4	760	242
3.1	32800	470	197000	64200	51190	PF	022KF97	DRN	160M4	660	243
						PH	022KF97	DRN	160M4	770	242
						PHF	022KF97	DRN	160M4	670	243
1.9	53300	763	187600	64200	51190	P	022KF87	DRN	160M4	680	240
2.2	47700	683	195800	64200	51190	PF	022KF87	DRN	160M4	580	241
2.4	43800	628	197000	-	51190	PH	022KF87	DRN	160M4	700	240
2.6	39600	567	197000	64200	51190	PHF	022KF87	DRN	160M4	590	241
3.0	34400	493	197000	64200	51190						
3.4	30600	438	197000	64200	51190						
3.8	27400	392	197000	-	51190						
3.6	28500	408	156000	46200	36810	P	012KF97	DRN	160M4	610	236
4.3	23800	342	156000	46200	36810	PF	012KF97	DRN	160M4	540	237
5.3	19400	279	156000	46200	36810	PH	012KF97	DRN	160M4	620	236
						PHF	012KF97	DRN	160M4	550	237

P_m = 11.0 kW

n ₂ min ⁻¹	M _a Nm	i _{ex}	F _{Ra} ¹⁾ N	M _{N2}							m kg	
				f _{LC} ≤ 7.5 Nm	f _{LC} > 107.5 Nm							
2.4	43800	628	156000	46200	36810							
2.6	39600	567	156000	46200	36810							
3.0	34400	493	156000	46200	36810							
3.4	30600	438	156000	46200	36810							
3.8	27400	392	156000	46200	36810							
4.5	22700	325	156000	46200	36810							
5.2	19700	283	156000	46200	36810							
6.6	15600	225	148700	-	29500							
2.4	43400	621	156000	46200	36810	P	012KF77	DRN	160M4	495	232	
2.8	37000	530	156000	46200	36810	PF	012KF77	DRN	160M4	425	233	
						PH	012KF77	DRN	160M4	510	232	
						PHF	012KF77	DRN	160M4	440	233	
3.8	27300	391	113900	29200	24830	P	002KF87	DRN	160M4	455	228	
4.5	22600	324	120800	29200	24830	PF	002KF87	DRN	160M4	395	229	
5.2	19700	282	122700	29200	24830	PH	002KF87	DRN	160M4	460	228	
7.5	13600	195	115400	29200	24830	PHF	002KF87	DRN	160M4	400	229	
9.1	11300	162	109100	29200	24830							
10	9840	141	104600	29200	24800							
3.9	26100	374	115700	29200	24830	P	002KF77	DRN	160M4	415	226	
						PF	002KF77	DRN	160M4	360	227	
						PH	002KF77	DRN	160M4	420	226	
						PHF	002KF77	DRN	160M4	360	227	

P_m = 15.0 kW

n ₂ min ⁻¹	M _a Nm	i _{ex}	F _{Ra} ¹⁾ N	M _{N2}							m kg	
				f _{LC} ≤ 7.5 Nm	f _{LC} > 107.5 Nm							
0.41	340000	3570	850000	631300	500000	P	102KF187	DRN	160L4	5760	284	
0.51	273300	2870	850000	631300	500000	PF	102KF187	DRN	160L4	4810	285	
						PH	102KF187	DRN	160L4	5830	284	
						PHF	102KF187	DRN	160L4	4870	285	
0.63	224000	2352	850000	631300	500000	P	102KF167	DRN	160L4	5130	282	
0.74	190900	2005	850000	631300	500000	PF	102KF167	DRN	160L4	4180	283	
						PH	102KF167	DRN	160L4	5200	282	
						PHF	102KF167	DRN	160L4	4240	283	
0.41	344500	3617	720000	513900	423000	P	092KF187	DRN	160L4	4910	280	
0.51	276900	2908	720000	513900	423000	PF	092KF187	DRN	160L4	4210	281	
0.57	248400	2608	720000	513900	423000	PH	092KF187	DRN	160L4	4920	280	
0.65	215600	2264	720000	513900	423000	PHF	092KF187	DRN	160L4	4230	281	
0.67	210300	2209	720000	513900	423000	P	092KF167	DRN	160L4	4280	278	
0.73	193400	2031	720000	513900	423000	PF	092KF167	DRN	160L4	3580	279	
0.83	168200	1767	720000	513900	423000	PH	092KF167	DRN	160L4	4290	278	
1.2	120400	1265	720000	513900	423000	PHF	092KF167	DRN	160L4	3600	279	
1.2	116300	1221	720000	513900	423000							
1.3	107500	1129	720000	513900	423000							
0.39	358200	3761	655500	397100	359400	P	082KF157	DRN	160L4	3410	274	
0.43	327600	3440	680400	397100	359400	PF	082KF157	DRN	160L4	2760	275	
0.64	218100	2290	683000	397100	359400	PH	082KF157	DRN	160L4	3400	274	
0.72	194000	2038	683000	397100	359400	PHF	082KF157	DRN	160L4	2750	275	
0.49	289300	3038	499200	274600	245660	P	072KF157	DRN	160L4	2750	272	
						PF	072KF157	DRN	160L4	2260	273	
						PH	072KF157	DRN	160L4	2800	272	
						PHF	072KF157	DRN	160L4	2310	273	
0.55	257400	2703	523000	274600	245660	P	072KF127	DRN	160L4	2460	270	
0.62	227100	2385	523000	274600	245660	PF	072KF127	DRN	160L4	1970	271	
0.72	196100	2060	523000	274600	245660	PH	072KF127	DRN	160L4	2510	270	
0.81	173500	1822	523000	274600	245660	PHF	072KF127	DRN	160L4	2020	271	
0.96	145800	1531	523000	274600	245660							
1.1	131400	1381	523000	274600	245660							

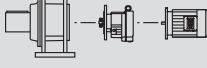
P_m = 15.0 kW

n ₂	M _a	i _{ex}	F _{Ra} ¹⁾	M _{N2}						m						
				f _{LC} <=7.5	f _{LC} >107.5											
min ⁻¹	Nm		N	Nm	Nm					kg						
0.69	202000	2121	425800	209100	185660	P PF PH PHF	062KF127	DRN	160L4	2040	268					
0.79	178600	1876	443800	209100	185660		062KF127	DRN	160L4	1670	269					
0.93	150100	1577	463000	209100	185660		062KF127	DRN	160L4	2030	268					
1.0	135400	1422	471700	209100	185660		062KF127	DRN	160L4	1660	269					
1.2	117100	1231	473000	209100	185660											
0.89	158100	1661	457900	-	185660	P PF PH PHF	062KF107	DRN	160L4	1840	266					
1.0	138200	1452	470100	-	185660		062KF107	DRN	160L4	1480	267					
1.2	116800	1227	473000	209100	185660		062KF107	DRN	160L4	1830	266					
1.3	108300	1138	473000	209100	185660		062KF107	DRN	160L4	1470	267					
1.4	98300	1033	473000	209100	185660											
1.0	138200	1452	344100	140600	124060	P PF PH PHF	052KF107	DRN	160L4	1360	262					
1.2	116800	1227	362000	140600	124060		052KF107	DRN	160L4	1160	263					
1.4	98300	1033	364000	140600	124060		052KF107	DRN	160L4	1350	262					
1.7	84400	887	364000	140600	124060		052KF107	DRN	160L4	1150	263					
1.9	73700	774	364000	140600	124060											
1.1	127800	1343	353200	140600	124060	P PF PH PHF	052KF97	DRN	160L4	1240	260					
1.7	83500	878	364000	140600	124060		052KF97	DRN	160L4	1040	261					
2.0	70800	744	364000	140600	124060		052KF97	DRN	160L4	1240	260					
							052KF97	DRN	160L4	1040	261					
1.3	108300	1138	286900	111000	100170	P PF PH PHF	042KF107	DRN	160L4	1210	256					
							042KF107	DRN	160L4	1020	257					
							042KF107	DRN	160L4	1220	256					
							042KF107	DRN	160L4	1030	257					
1.4	104200	1095	291300	111000	100170	P PF PH PHF	042KF97	DRN	160L4	1100	254					
1.5	92400	971	303200	111000	100170											
1.7	83500	878	311100	111000	100170											
2.0	70800	744	321200	111000	100170											
2.3	61800	650	323000	111000	100170											
2.7	51700	543	323000	111000	100170											
1.7	83500	878	202800	86800	69620	P PF PH PHF	032KF97	DRN	160L4	850	248					
2.0	70800	744	221700	86800	69620											
2.3	61800	650	232800	86800	69620											
2.7	51700	543	243500	86800	69620											
3.1	44800	470	249900	86800	69620											
3.6	38800	408	252000	-	69620											
2.7	51700	543	190000	64200	51190	P PF PH PHF	022KF97	DRN	160L4	770	242					
3.1	44800	470	197000	64200	51190											
3.6	38800	408	197000	64200	51190											
4.3	32500	342	197000	64200	51190											
4.4	31700	333	197000	64200	51190											
5.3	26500	279	197000	64200	51190											
6.1	22900	241	197000	64200	51190											
2.6	53900	567	186500	64200	51190	P PF PH PHF	022KF87	DRN	160L4	700	240					
												022KF87	DRN	160L4	600	241
												022KF87	DRN	160L4	710	240
												022KF87	DRN	160L4	610	241
3.6	38800	408	156000	46200	36810	P PF PH PHF	012KF97	DRN	160L4	620	236					
4.3	32500	342	156000	46200	36810											
5.3	26500	279	156000	46200	36810											
6.1	22900	241	151900	46200	36810											
7.0	19900	209	145600	46200	36810											
8.4	16600	175	138000	46200	36810											
3.4	41700	438	156000	46200	36810	P PF PH PHF	012KF87	DRN	160L4	550	234					
3.8	37300	392	156000	46200	36810											
												012KF87	DRN	160L4	480	235
												012KF87	DRN	160L4	560	234
												012KF87	DRN	160L4	495	235
6.3	22300	234	121000	29200	24830	P PF PH PHF	002KF97	DRN	160L4	540	230					
7.2	19300	203	116800	29200	24830											
												002KF97	DRN	160L4	485	231
												002KF97	DRN	160L4	550	230
												002KF97	DRN	160L4	490	231
5.2	26800	282	114600	29200	24830	P PF PH PHF	002KF87	DRN	160L4	470	228					
9.1	15400	162	109100	29200	24830											
10	13400	141	104600	29200	24800											
												002KF87	DRN	160L4	410	229
												002KF87	DRN	160L4	475	228
						002KF87	DRN	160L4	415	229						

P_m = 15.0 kW

m											
n ₂	M _a	i _{ex}	F _{Ra} ¹⁾	M _{N2}						m	
min ⁻¹	Nm		N	f _{LC} ≤7.5	f _{LC} >107.5					kg	
				Nm	Nm						
5.2	26900	283	114400	29200	24830	P	002KF77	DRN	160L4	430	226
						PF	002KF77	DRN	160L4	375	227
						PH	002KF77	DRN	160L4	435	226
						PHF	002KF77	DRN	160L4	380	227

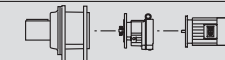
P_m = 18.5 kW

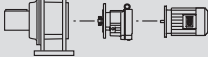
n ₂	M _a	i _{ex}	F _{Ra} ¹⁾	M _{N2}						m	
				f _{LC} <=7.5	f _{LC} >107.5						
min ⁻¹	Nm		N	Nm	Nm					kg	
0.41	418200	3570	850000	631300	500000	P	102KF187	DRN	180M4	5790	284
0.51	336200	2870	850000	631300	500000	PF	102KF187	DRN	180M4	4830	285
0.57	301500	2574	850000	631300	500000	PH	102KF187	DRN	180M4	5850	284
0.66	261800	2235	850000	631300	500000	PHF	102KF187	DRN	180M4	4890	285
0.74	234800	2005	850000	631300	500000	P	102KF167	DRN	180M4	5160	282
0.89	194500	1661	850000	631300	500000	PF	102KF167	DRN	180M4	4200	283
1.2	146200	1249	850000	631300	500000	PH	102KF167	DRN	180M4	5220	282
1.3	130500	1114	850000	631300	500000	PHF	102KF167	DRN	180M4	4260	283
0.41	423700	3617	720000	513900	423000	P	092KF187	DRN	180M4	4940	280
0.51	340600	2908	720000	513900	423000	PF	092KF187	DRN	180M4	4240	281
0.57	305500	2608	720000	513900	423000	PH	092KF187	DRN	180M4	4950	280
0.65	265200	2264	720000	513900	423000	PHF	092KF187	DRN	180M4	4250	281
0.72	240600	2054	720000	513900	423000						
0.84	206900	1767	720000	513900	423000						
0.88	197100	1683	720000	513900	423000	P	092KF167	DRN	180M4	4310	278
1.2	148200	1265	720000	513900	423000	PF	092KF167	DRN	180M4	3610	279
1.2	143000	1221	720000	513900	423000	PH	092KF167	DRN	180M4	4320	278
1.3	132200	1129	720000	513900	423000	PHF	092KF167	DRN	180M4	3620	279
1.4	121900	1041	720000	513900	423000						
1.5	112700	962	720000	513900	423000						
0.38	460600	3932	720000	513900	423000	P	092KF157	DRN	180M4	3930	276
						PF	092KF157	DRN	180M4	3230	277
						PH	092KF157	DRN	180M4	3940	276
						PHF	092KF157	DRN	180M4	3240	277
0.43	403000	3440	612500	397100	359400	P	082KF157	DRN	180M4	3430	274
0.49	350600	2993	662200	397100	359400	PF	082KF157	DRN	180M4	2780	275
0.56	309400	2641	683000	397100	359400	PH	082KF157	DRN	180M4	3420	274
0.65	268200	2290	683000	397100	359400	PHF	082KF157	DRN	180M4	2770	275
0.73	238700	2038	683000	397100	359400						
0.64	272300	2325	518600	274600	245660	P	072KF157	DRN	180M4	2770	272
						PF	072KF157	DRN	180M4	2280	273
						PH	072KF157	DRN	180M4	2830	272
						PHF	072KF157	DRN	180M4	2340	273
0.72	241200	2060	523000	274600	245660	P	072KF127	DRN	180M4	2480	270
0.81	213400	1822	523000	274600	245660	PF	072KF127	DRN	180M4	1990	271
0.97	179300	1531	523000	274600	245660	PH	072KF127	DRN	180M4	2540	270
1.1	161700	1381	523000	274600	245660	PHF	072KF127	DRN	180M4	2040	271
0.79	219700	1876	410300	209100	185660	P	062KF127	DRN	180M4	2060	268
0.94	184700	1577	439400	209100	185660	PF	062KF127	DRN	180M4	1700	269
1.0	166500	1422	452400	209100	185660	PH	062KF127	DRN	180M4	2050	268
1.2	144100	1231	466600	209100	185660	PHF	062KF127	DRN	180M4	1680	269
1.2	143700	1227	466800	209100	185660	P	062KF107	DRN	180M4	1860	266
1.3	133200	1138	472900	209100	185660	PF	062KF107	DRN	180M4	1500	267
1.4	120900	1033	473000	209100	185660	PH	062KF107	DRN	180M4	1850	266
						PHF	062KF107	DRN	180M4	1490	267
1.3	133200	1138	348500	140600	124060	P	052KF107	DRN	180M4	1380	262
1.4	120900	1033	358900	140600	124060	PF	052KF107	DRN	180M4	1180	263
1.7	103900	887	364000	140600	124060	PH	052KF107	DRN	180M4	1370	262
1.9	90700	774	364000	140600	124060	PHF	052KF107	DRN	180M4	1170	263
1.4	128200	1095	352900	140600	124060	P	052KF97	DRN	180M4	1270	260
						PF	052KF97	DRN	180M4	1070	261
						PH	052KF97	DRN	180M4	1260	260
						PHF	052KF97	DRN	180M4	1060	261

P_m = 18.5 kW

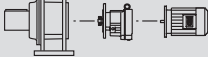
m	n ₂	M _a	i _{ex}	F _{Ra} ¹⁾	M _{N2}						m		
					f _{LC} ≤7.5	f _{LC} >107.5							
	min ⁻¹	Nm		N	Nm	Nm						kg	
1.7	103900	887	291700	111000	100170	P	042KF107	DRN	180M4	1230	256		
						PF	042KF107	DRN	180M4	1040	257		
						PH	042KF107	DRN	180M4	1240	256		
						PHF	042KF107	DRN	180M4	1050	257		
1.7	102800	878	292900	111000	100170	P	042KF97	DRN	180M4	1120	254		
2.0	87100	744	308000	111000	100170	PF	042KF97	DRN	180M4	930	255		
2.3	76100	650	317200	111000	100170	PH	042KF97	DRN	180M4	1130	254		
2.7	63600	543	323000	111000	100170	PHF	042KF97	DRN	180M4	940	255		
2.3	76100	650	214300	86800	69620	P	032KF97	DRN	180M4	880	248		
2.7	63600	543	230700	86800	69620	PF	032KF97	DRN	180M4	750	249		
3.1	55100	470	240200	86800	69620	PH	032KF97	DRN	180M4	900	248		
3.6	47800	408	247200	-	69620	PHF	032KF97	DRN	180M4	780	249		
2.7	63600	543	169400	64200	51190	P PF PH PHF	022KF97	DRN	180M4	800	242		
3.1	55100	470	184700	64200	51190								
3.6	47800	408	195600	64200	51190								
4.3	40000	342	197000	64200	51190								
4.4	39000	333	197000	64200	51190								
5.3	32600	279	197000	64200	51190								
6.1	28200	241	197000	64200	51190								
3.0	57700	493	180300	64200	51190	P	022KF87	DRN	180M4	720	240		
						PF	022KF87	DRN	180M4	620	241		
						PH	022KF87	DRN	180M4	730	240		
						PHF	022KF87	DRN	180M4	630	241		
4.3	40000	342	156000	46200	36810	P PF PH PHF	012KF97	DRN	180M4	650	236		
4.4	39000	333	156000	46200	36810								
5.3	32600	279	156000	46200	36810								
6.1	28200	241	151800	46200	36810								
7.1	24500	209	145500	46200	36810								
8.4	20500	175	137900	46200	36810								
3.8	45900	392	156000	46200	36810	P	012KF87	DRN	180M4	570	234		
4.5	38100	325	156000	46200	36810	PF	012KF87	DRN	180M4	500	235		
						PH	012KF87	DRN	180M4	590	234		
						PHF	012KF87	DRN	180M4	520	235		
6.3	27400	234	113700	29200	24830	P	002KF97	DRN	180M4	570	230		
7.3	23800	203	116700	29200	24830	PF	002KF97	DRN	180M4	510	231		
8.7	19900	170	110600	29200	24830	PH	002KF97	DRN	180M4	570	230		
						PHF	002KF97	DRN	180M4	510	231		
6.0	28700	245	111500	29200	24830	P	002KF87	DRN	180M4	490	228		
6.8	25500	218	116600	29200	24830	PF	002KF87	DRN	180M4	435	229		
						PH	002KF87	DRN	180M4	495	228		
						PHF	002KF87	DRN	180M4	435	229		

P_m = 22 kW

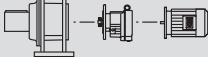
n ₂	M _a	i _{ex}	F _{Ra} ¹⁾	M _{N2}						m	
				f _{LC} <=7.5	f _{LC} >107.5						
min ⁻¹	Nm		N	Nm	Nm					kg	
0.41	497700	3570	850000	631300	500000	P PF PH PHF	102KF187	DRN	180L4	5800	284
0.51	400100	2870	850000	631300	500000					4850	285
0.57	358800	2574	850000	631300	500000					5870	284
0.66	311500	2235	850000	631300	500000					4910	285
0.73	282700	2028	850000	631300	500000						
0.89	231500	1661	850000	631300	500000	P PF PH PHF	102KF167	DRN	180L4	5170	282
1.2	174000	1249	850000	631300	500000					4220	283
1.3	155300	1114	850000	631300	500000					5240	282
1.6	132300	949	850000	631300	500000					4280	283
0.41	504200	3617	676100	513900	423000	P PF PH PHF	092KF187	DRN	180L4	4950	280
0.51	405300	2908	720000	513900	423000					4250	281
0.57	363500	2608	720000	513900	423000					4960	280
0.65	315600	2264	720000	513900	423000					4270	281
0.72	286400	2054	720000	513900	423000						
0.83	246700	1770	720000	513900	423000						

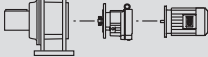
P_m = 22 kW										
n ₂	M _a	i _{ex}	F _{Ra} ¹⁾	M _{N2}						m
min ⁻¹	Nm		N	f _{LC} ≤ 7.5 Nm	f _{LC} > 107.5 Nm					kg
0.43	480500	3447	701600	513900	423000					
0.48	427300	3065	720000	513900	423000					
1.2	176300	1265	720000	513900	423000	P	092KF167	DRN	180L4	4320 278
1.2	170200	1221	720000	513900	423000	PF	092KF167	DRN	180L4	3620 279
1.3	157300	1129	720000	513900	423000	PH	092KF167	DRN	180L4	4330 278
1.4	145100	1041	720000	513900	423000	PHF	092KF167	DRN	180L4	3640 279
1.5	134100	962	720000	513900	423000					
1.7	120200	863	720000	513900	423000					
1.9	111100	797	720000	513900	423000					
0.41	501200	3595	679400	513900	423000	P	092KF157	DRN	180L4	3950 276
0.47	436100	3129	720000	513900	423000	PF	092KF157	DRN	180L4	3250 277
						PH	092KF157	DRN	180L4	3960 276
						PHF	092KF157	DRN	180L4	3260 277
0.56	368200	2641	646500	397100	359400	P	082KF157	DRN	180L4	3450 274
0.64	319200	2290	683000	397100	359400	PF	082KF157	DRN	180L4	2800 275
0.72	284000	2038	683000	397100	359400	PH	082KF157	DRN	180L4	3440 274
0.84	244800	1756	683000	397100	359400	PHF	082KF157	DRN	180L4	2790 275
1.0	198900	1427	683000	397100	359400					
0.71	288300	2068	500500	274600	245660	P	072KF157	DRN	180L4	2790 272
1.0	201900	1449	523000	274600	245660	PF	072KF157	DRN	180L4	2300 273
						PH	072KF157	DRN	180L4	2840 272
						PHF	072KF157	DRN	180L4	2350 273
0.81	253900	1822	523000	274600	245660	P	072KF127	DRN	180L4	2500 270
1.1	192400	1381	523000	274600	245660	PF	072KF127	DRN	180L4	2010 271
1.2	166500	1195	523000	274600	245660	PH	072KF127	DRN	180L4	2550 270
1.4	146900	1055	523000	274600	245660	PHF	072KF127	DRN	180L4	2060 271
1.6	126900	911	523000	274600	245660					
0.94	219800	1577	410300	209100	185660					
1.0	198200	1422	428900	209100	185660	P	062KF127	DRN	180L4	2080 268
1.2	171500	1231	448900	209100	185660	PF	062KF127	DRN	180L4	1710 269
1.4	151300	1086	462200	209100	185660	PH	062KF127	DRN	180L4	2060 268
1.6	130700	938	473000	209100	185660	PHF	062KF127	DRN	180L4	1700 269
1.8	115600	830	473000	209100	185660					
2.1	97100	697	473000	209100	185660					
1.3	158500	1138	457700	209100	185660					
1.4	143800	1033	466800	209100	185660	P	062KF107	DRN	180L4	1880 266
1.7	123600	887	473000	209100	185660	PF	062KF107	DRN	180L4	1520 267
1.9	107900	774	473000	209100	185660	PH	062KF107	DRN	180L4	1870 266
2.2	91500	657	473000	209100	185660	PHF	062KF107	DRN	180L4	1500 267
2.6	80000	574	473000	209100	185660					
2.6	78400	563	364000	140600	124060	P	052KF127	DRN	180L4	1590 264
3.0	69900	502	364000	140600	124060	PF	052KF127	DRN	180L4	1390 265
						PH	052KF127	DRN	180L4	1580 264
						PHF	052KF127	DRN	180L4	1380 265
1.7	123600	887	356600	140600	124060	P	052KF107	DRN	180L4	1400 262
2.2	91500	657	364000	140600	124060	PF	052KF107	DRN	180L4	1200 263
						PH	052KF107	DRN	180L4	1390 262
						PHF	052KF107	DRN	180L4	1190 263
1.5	135300	971	346700	140600	124060	P	052KF97	DRN	180L4	1280 260
2.7	75700	543	364000	140600	124060	PF	052KF97	DRN	180L4	1080 261
3.1	65500	470	364000	140600	124060	PH	052KF97	DRN	180L4	1270 260
						PHF	052KF97	DRN	180L4	1070 261
3.5	58700	421	323000	111000	100170	P	042KF127	DRN	180L4	1450 258
						PF	042KF127	DRN	180L4	1260 259
						PH	042KF127	DRN	180L4	1450 258
						PHF	042KF127	DRN	180L4	1260 259
1.9	107900	774	287300	111000	100170	P	042KF107	DRN	180L4	1250 256
2.6	80000	574	314100	111000	100170	PF	042KF107	DRN	180L4	1060 257
2.8	73400	527	319300	111000	100170	PH	042KF107	DRN	180L4	1250 256
3.2	64100	460	323000	111000	100170	PHF	042KF107	DRN	180L4	1060 257
3.8	54300	390	321200	111000	100170					

P_m = 22 kW

n ₂ min ⁻¹	M _a Nm	i _{ex}	F _{Ra} ¹⁾ N	M _{N2}						m	
				f _{LC} ≤ 7.5 Nm	f _{LC} > 107.5 Nm					kg	
2.0	103600	744	291900	111000	100170	P	042KF97	DRN	180L4	1140	254
2.3	90500	650	304900	111000	100170	PF	042KF97	DRN	180L4	950	255
3.6	56900	408	323000	-	100170	PH	042KF97	DRN	180L4	1140	254
4.3	47600	342	308800	-	100170	PHF	042KF97	DRN	180L4	950	255
5.1	40200	289	237500	86800	69620	P	032KF127	DRN	180L4	1200	252
5.8	35800	257	229400	86800	69620	PF	032KF127	DRN	180L4	1080	253
						PH	032KF127	DRN	180L4	1220	252
						PHF	032KF127	DRN	180L4	1100	253
3.8	54300	390	240900	86800	69620	P	032KF107	DRN	180L4	1000	250
4.3	47500	341	247500	86800	69620	PF	032KF107	DRN	180L4	880	251
5.0	41000	294	239000	86800	69620	PH	032KF107	DRN	180L4	1020	250
5.5	37600	270	232900	-	69620	PHF	032KF107	DRN	180L4	900	251
2.7	75700	543	214800	86800	69620	P	032KF97	DRN	180L4	890	248
3.1	65500	470	228400	86800	69620	PF	032KF97	DRN	180L4	770	249
5.3	38800	279	235100	-	69620	PH	032KF97	DRN	180L4	910	248
6.1	33600	241	225100	-	69620	PHF	032KF97	DRN	180L4	790	249
6.3	32800	236	197000	64200	51190	P	022KF107	DRN	180L4	920	244
7.4	27800	200	197000	64200	51190	PF	022KF107	DRN	180L4	820	245
8.4	24300	175	197000	64200	51190	PH	022KF107	DRN	180L4	940	244
						PHF	022KF107	DRN	180L4	840	245
3.6	56900	408	181700	64200	51190	P	022KF97	DRN	180L4	810	242
4.3	47600	342	196000	64200	51190	PF	022KF97	DRN	180L4	710	243
4.4	46400	333	197000	64200	51190	PH	022KF97	DRN	180L4	830	242
5.3	38800	279	197000	64200	51190	PHF	022KF97	DRN	180L4	720	243
7.1	29100	209	197000	-	51190						
8.4	24400	175	197000	64200	51190						
3.4	61000	438	174400	64200	51190	P	022KF87	DRN	180L4	730	240
						PF	022KF87	DRN	180L4	630	241
						PH	022KF87	DRN	180L4	750	240
						PHF	022KF87	DRN	180L4	650	241
5.3	38800	279	156000	46200	36810	P	012KF97	DRN	180L4	660	236
6.1	33600	241	151800	46200	36810	PF	012KF97	DRN	180L4	590	237
7.1	29100	209	145500	46200	36810	PH	012KF97	DRN	180L4	680	236
8.4	24400	175	137900	46200	36810	PHF	012KF97	DRN	180L4	610	237
4.5	45300	325	156000	46200	36810	P	012KF87	DRN	180L4	590	234
5.1	40400	291	156000	46200	36810	PF	012KF87	DRN	180L4	520	235
5.2	39400	283	156000	46200	36810	PH	012KF87	DRN	180L4	600	234
						PHF	012KF87	DRN	180L4	530	235
7.3	28300	203	112100	29200	24830	P	002KF97	DRN	180L4	580	230
						PF	002KF97	DRN	180L4	520	231
						PH	002KF97	DRN	180L4	590	230
						PHF	002KF97	DRN	180L4	530	231
7.6	27200	195	114000	29200	24830	P	002KF87	DRN	180L4	510	228
						PF	002KF87	DRN	180L4	450	229
						PH	002KF87	DRN	180L4	510	228
						PHF	002KF87	DRN	180L4	455	229

P_m = 30 kW

n ₂ min ⁻¹	M _a Nm	i _{ex}	F _{Ra} ¹⁾ N	M _{N2}						m	
				f _{LC} ≤ 7.5 Nm	f _{LC} > 107.5 Nm					kg	
0.52	544400	2870	850000	631300	500000						
0.57	488300	2574	850000	631300	500000	P	102KF187	DRN	200L4	5910	284
0.66	424000	2235	850000	631300	500000	PF	102KF187	DRN	200L4	4960	285
0.73	384700	2028	850000	631300	500000	PH	102KF187	DRN	200L4	5970	284
0.85	331400	1747	850000	631300	500000	PHF	102KF187	DRN	200L4	5020	285
1.0	278500	1468	850000	631300	500000						
1.2	236800	1249	850000	631300	500000	P	102KF167	DRN	200L4	5280	282
1.3	211300	1114	850000	631300	500000	PF	102KF167	DRN	200L4	4330	283
1.6	180100	949	850000	631300	500000	PH	102KF167	DRN	200L4	5340	282
1.9	149200	787	850000	631300	500000	PHF	102KF167	DRN	200L4	4390	283
2.2	127300	671	850000	631300	500000						

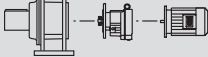
P_m = 30 kW											
n₂	M_a	i_{ex}	F_{Ra}¹⁾	M_{N2}						m	
min⁻¹	Nm		N	f_{LC} ≤ 7.5	f_{LC} > 107.5					kg	
0.57	494700	2608	686500	513900	423000	P	092KF187	DRN	200L4	5060	280
0.65	429600	2264	720000	513900	423000	PF	092KF187	DRN	200L4	4360	281
0.72	389700	2054	720000	513900	423000	PH	092KF187	DRN	200L4	5070	280
0.84	335700	1770	720000	513900	423000	PHF	092KF187	DRN	200L4	4370	281
1.0	282100	1487	720000	513900	423000						
1.1	244300	1288	720000	513900	423000						
0.62	452000	2383	720000	513900	423000						
1.4	197500	1041	720000	513900	423000						
1.5	182500	962	720000	513900	423000	P	092KF167	DRN	200L4	4430	278
1.7	163600	863	720000	513900	423000	PF	092KF167	DRN	200L4	3730	279
1.9	151200	797	720000	513900	423000	PH	092KF167	DRN	200L4	4440	278
2.0	139600	736	720000	513900	423000	PHF	092KF167	DRN	200L4	3740	279
2.2	129000	680	720000	513900	423000						
2.3	123000	649	720000	513900	423000						
2.6	109700	579	720000	513900	423000						
0.62	454100	2394	720000	513900	423000	P	092KF157	DRN	200L4	4050	276
						PF	092KF157	DRN	200L4	3360	277
						PH	092KF157	DRN	200L4	4070	276
						PHF	092KF157	DRN	200L4	3370	277
0.73	386500	2038	629100	397100	359400	P	082KF157	DRN	200L4	3550	274
0.84	333200	1756	676700	397100	359400	PF	082KF157	DRN	200L4	2900	275
1.0	270700	1427	683000	397100	359400	PH	082KF157	DRN	200L4	3550	274
1.3	222900	1175	683000	397100	359400	PHF	082KF157	DRN	200L4	2900	275
1.4	196700	1037	683000	397100	359400						
1.0	274700	1449	515900	274600	245660	P	072KF157	DRN	200L4	2900	272
						PF	072KF157	DRN	200L4	2410	273
						PH	072KF157	DRN	200L4	2950	272
						PHF	072KF157	DRN	200L4	2460	273
1.1	261900	1381	523000	274600	245660	P	072KF127	DRN	200L4	2610	270
1.2	226600	1195	523000	274600	245660	PF	072KF127	DRN	200L4	2120	271
1.4	200000	1055	523000	274600	245660	PH	072KF127	DRN	200L4	2660	270
1.6	172700	911	523000	274600	245660	PHF	072KF127	DRN	200L4	2170	271
1.8	152700	806	523000	274600	245660						
1.4	205900	1086	422500	209100	185660	P	062KF127	DRN	200L4	2180	268
1.6	177800	938	444400	209100	185660	PF	062KF127	DRN	200L4	1820	269
1.8	157300	830	458400	209100	185660	PH	062KF127	DRN	200L4	2170	268
2.1	132200	697	473000	209100	185660	PHF	062KF127	DRN	200L4	1810	269
2.6	106800	563	473000	209100	185660						
1.4	195800	1033	430800	209100	185660	P	062KF107	DRN	200L4	1990	266
1.7	168300	887	451200	209100	185660	PF	062KF107	DRN	200L4	1620	267
1.9	146900	774	465000	209100	185660	PH	062KF107	DRN	200L4	1980	266
						PHF	062KF107	DRN	200L4	1610	267
2.6	106800	563	364000	140600	124060	P	052KF127	DRN	200L4	1700	264
3.0	95100	502	364000	140600	124060	PF	052KF127	DRN	200L4	1500	265
3.5	79900	421	364000	140600	124060	PH	052KF127	DRN	200L4	1690	264
						PHF	052KF127	DRN	200L4	1490	265
2.2	124600	657	355900	140600	124060	P	052KF107	DRN	200L4	1500	262
3.8	73900	390	364000	140600	124060	PF	052KF107	DRN	200L4	1300	263
						PH	052KF107	DRN	200L4	1500	262
						PHF	052KF107	DRN	200L4	1300	263
3.5	79900	421	314100	111000	100170	P	042KF127	DRN	200L4	1550	258
4.3	64500	341	308200	111000	100170	PF	042KF127	DRN	200L4	1360	259
						PH	042KF127	DRN	200L4	1560	258
						PHF	042KF127	DRN	200L4	1370	259
2.6	108900	574	286200	111000	100170	P	042KF107	DRN	200L4	1360	256
2.8	99900	527	295800	111000	100170	PF	042KF107	DRN	200L4	1170	257
3.2	87200	460	307900	111000	100170	PH	042KF107	DRN	200L4	1360	256
3.8	73900	390	318900	111000	100170	PHF	042KF107	DRN	200L4	1170	257
4.3	64600	341	308400	111000	100170						
2.7	103000	543	292600	111000	100170	P	042KF97	DRN	200L4	1250	254
						PF	042KF97	DRN	200L4	1060	255
						PH	042KF97	DRN	200L4	1250	254
						PHF	042KF97	DRN	200L4	1060	255

P_m = 30 kW

m											
n ₂	M _a	i _{ex}	F _{Ra} ¹⁾	M _{N2}						m	
				f _{LC} ≤ 7.5	f _{LC} > 107.5						
min ⁻¹	Nm		N	Nm	Nm	kg					
5.1	54700	289	237400	86800	69620	P	032KF127	DRN	200L4	1310	252
5.8	48700	257	229300	86800	69620	PF	032KF127	DRN	200L4	1190	253
						PH	032KF127	DRN	200L4	1330	252
						PHF	032KF127	DRN	200L4	1210	253
3.8	73900	390	217300	86800	69620	P	032KF107	DRN	200L4	1110	250
4.3	64600	341	229500	86800	69620	PF	032KF107	DRN	200L4	990	251
5.0	55800	294	238800	86800	69620	PH	032KF107	DRN	200L4	1130	250
5.5	51200	270	232800	-	69620	PHF	032KF107	DRN	200L4	1010	251
6.3	44700	236	223400	-	69620						
5.3	52800	279	235000	-	69620	P	032KF97	DRN	200L4	1000	248
6.1	45700	241	224900	-	69620	PF	032KF97	DRN	200L4	880	249
8.4	33200	175	204400	86800	52400	PH	032KF97	DRN	200L4	1020	248
						PHF	032KF97	DRN	200L4	900	249
6.3	44700	236	197000	64200	51190	P	022KF107	DRN	200L4	1030	244
7.4	37900	200	197000	64200	51190	PF	022KF107	DRN	200L4	930	245
8.5	33100	175	197000	64200	51190	PH	022KF107	DRN	200L4	1050	244
						PHF	022KF107	DRN	200L4	950	245
4.4	63100	333	170300	64200	51190	P	022KF97	DRN	200L4	920	242
5.3	52800	279	188300	64200	51190	PF	022KF97	DRN	200L4	820	243
6.1	45700	241	197000	64200	51190	PH	022KF97	DRN	200L4	930	242
8.4	33200	175	197000	64200	51190	PHF	022KF97	DRN	200L4	830	243
8.5	33100	175	137700	46200	36810	P	012KF107	DRN	200L4	880	238
						PF	012KF107	DRN	200L4	810	239
						PH	012KF107	DRN	200L4	900	238
						PHF	012KF107	DRN	200L4	830	239
6.1	45700	241	151700	46200	36810	P	012KF97	DRN	200L4	770	236
7.1	39700	209	145400	46200	36810	PF	012KF97	DRN	200L4	700	237
8.4	33200	175	137800	46200	36810	PH	012KF97	DRN	200L4	790	236
						PHF	012KF97	DRN	200L4	720	237
11	26700	141	104500	29200	24800	P	002KF87	DRN	200L4	610	228
						PF	002KF87	DRN	200L4	560	229
						PH	002KF87	DRN	200L4	620	228
						PHF	002KF87	DRN	200L4	560	229

P_m = 37 kW

n ₂	M _a	i _{ex}	F _{Ra} ¹⁾	M _{N2}						m	
				f _{LC} <=7.5	f _{LC} >107.5						
min ⁻¹	Nm		N	Nm	Nm					kg	
0.58	601500	2574	811600	631300	500000	P PF PH PHF	102KF187	DRN	225S4	5940	284
0.66	522200	2235	850000	631300	500000						
0.73	473800	2028	850000	631300	500000						
0.85	408100	1747	850000	631300	500000						
1.0	343000	1468	850000	631300	500000						
1.2	297000	1271	850000	631300	500000						
0.56	615900	2636	800200	631300	500000	P PF PH PHF	102KF167	DRN	225S4	5310	282
0.63	549500	2352	849600	631300	500000						
1.6	221800	949	850000	631300	500000						
1.9	183800	787	850000	631300	500000						
2.2	156900	671	850000	631300	500000						
0.65	529100	2264	647200	513900	423000						
0.72	480000	2054	702100	513900	423000						
0.84	413500	1770	720000	513900	423000						
1.0	347500	1487	720000	513900	423000						
1.1	300900	1288	720000	513900	423000						
1.4	250700	1073	720000	513900	423000						
1.6	213800	915	720000	513900	423000						

P_m = 37 kW											
n₂	M_a	i_{ex}	F_{Ra}¹⁾	M_{N2}						m	
min⁻¹	Nm		N	f_{LC} ≤ 7.5	f_{LC} > 107.5					kg	
0.73	474500	2031	707700	513900	423000	P	092KF167	DRN	225S4	4460	278
1.7	201500	863	720000	513900	423000					3760	279
1.9	186200	797	720000	513900	423000					4470	278
2.0	172000	736	720000	513900	423000					3770	279
2.2	158900	680	720000	513900	423000						
2.3	151500	649	720000	513900	423000						
2.6	135100	579	720000	513900	423000						
3.0	115200	493	720000	513900	423000						
0.70	497600	2130	683400	513900	423000	P	092KF157	DRN	225S4	4080	276
0.81	428900	1836	720000	513900	423000	PF	092KF157	DRN	225S4	3390	277
						PH	092KF157	DRN	225S4	4100	276
						PHF	092KF157	DRN	225S4	3400	277
0.84	410300	1756	604800	397100	359400	P	082KF157	DRN	225S4	3590	274
1.0	333400	1427	676600	397100	359400	PF	082KF157	DRN	225S4	2940	275
1.3	274500	1175	683000	397100	359400	PH	082KF157	DRN	225S4	3580	274
1.4	242200	1037	683000	397100	359400	PHF	082KF157	DRN	225S4	2930	275
1.6	210000	899	683000	397100	359400						
1.2	279100	1195	511000	274600	245660	P	072KF127	DRN	225S4	2640	270
1.4	246300	1055	523000	274600	245660	PF	072KF127	DRN	225S4	2150	271
1.6	212700	911	523000	274600	245660	PH	072KF127	DRN	225S4	2690	270
1.8	188100	806	523000	274600	245660	PHF	072KF127	DRN	225S4	2200	271
2.2	158100	677	523000	274600	245660						
1.8	193700	830	432400	209100	185660	P	062KF127	DRN	225S4	2220	268
2.1	162800	697	454800	209100	185660	PF	062KF127	DRN	225S4	1850	269
2.6	131500	563	473000	209100	185660	PH	062KF127	DRN	225S4	2200	268
3.0	117100	502	473000	209100	185660	PHF	062KF127	DRN	225S4	1840	269
3.5	98400	421	473000	209100	185660						
1.7	207300	887	421300	209100	185660	P	062KF107	DRN	225S4	2020	266
						PF	062KF107	DRN	225S4	1660	267
						PH	062KF107	DRN	225S4	2010	266
						PHF	062KF107	DRN	225S4	1640	267
2.6	131500	563	350000	140600	124060	P	052KF127	DRN	225S4	1730	264
3.0	117100	502	361800	140600	124060	PF	052KF127	DRN	225S4	1530	265
3.5	98400	421	364000	140600	124060	PH	052KF127	DRN	225S4	1720	264
4.3	79500	341	355400	140600	124060	PHF	052KF127	DRN	225S4	1520	265
3.8	91100	390	364000	140600	124060	P	052KF107	DRN	225S4	1540	262
4.3	79600	341	355400	140600	124060	PF	052KF107	DRN	225S4	1340	263
						PH	052KF107	DRN	225S4	1530	262
						PHF	052KF107	DRN	225S4	1330	263
2.7	126900	543	353900	140600	124060	P	052KF97	DRN	225S4	1420	260
						PF	052KF97	DRN	225S4	1220	261
						PH	052KF97	DRN	225S4	1410	260
						PHF	052KF97	DRN	225S4	1210	261
3.5	98400	421	297300	111000	100170	P	042KF127	DRN	225S4	1590	258
4.3	79500	341	308200	111000	100170	PF	042KF127	DRN	225S4	1400	259
						PH	042KF127	DRN	225S4	1590	258
						PHF	042KF127	DRN	225S4	1400	259
3.2	107400	460	287900	111000	100170	P	042KF107	DRN	225S4	1390	256
3.8	91100	390	304400	111000	100170	PF	042KF107	DRN	225S4	1200	257
4.3	79600	341	308200	111000	100170	PH	042KF107	DRN	225S4	1390	256
						PHF	042KF107	DRN	225S4	1200	257
5.1	67400	289	226100	86800	69620	P	032KF127	DRN	225S4	1340	252
5.8	60000	257	229200	86800	69620	PF	032KF127	DRN	225S4	1220	253
						PH	032KF127	DRN	225S4	1360	252
						PHF	032KF127	DRN	225S4	1240	253
4.3	79600	341	209000	86800	69620	P	032KF107	DRN	225S4	1140	250
5.0	68700	294	224400	86800	69620	PF	032KF107	DRN	225S4	1020	251
7.4	46700	200	212600	-	69620	PH	032KF107	DRN	225S4	1160	250
8.5	40800	175	204200	86800	69620	PHF	032KF107	DRN	225S4	1040	251
6.3	55000	236	184800	64200	51190	P	022KF107	DRN	225S4	1060	244
7.4	46700	200	197000	64200	51190	PF	022KF107	DRN	225S4	960	245
8.5	40800	175	197000	64200	51190	PH	022KF107	DRN	225S4	1080	244
						PHF	022KF107	DRN	225S4	980	245

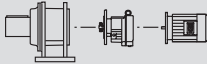
P_m = 37 kW										
n ₂	M _a	i _{ex}	F _{Ra} ¹⁾	M _{N2}						m
min ⁻¹	Nm		N	f _{LC} ≤ 7.5 Nm	f _{LC} > 107.5 Nm					kg
6.2	56300	241	182700	64200	51190	P	022KF97	DRN	225S4	950 242
						PF	022KF97	DRN	225S4	850 243
						PH	022KF97	DRN	225S4	970 242
						PHF	022KF97	DRN	225S4	860 243
8.5	40800	175	137700	46200	36810	P	012KF107	DRN	225S4	920 238
						PF	012KF107	DRN	225S4	850 239
						PH	012KF107	DRN	225S4	930 238
						PHF	012KF107	DRN	225S4	860 239
8.5	40900	175	137800	46200	36810	P	012KF97	DRN	225S4	800 236
						PF	012KF97	DRN	225S4	730 237
						PH	012KF97	DRN	225S4	820 236
						PHF	012KF97	DRN	225S4	750 237

P_m = 45 kW										
n ₂	M _a	i _{ex}	F _{Ra} ¹⁾	M _{N2}						m
min ⁻¹	Nm		N	f _{LC} ≤ 7.5 Nm	f _{LC} > 107.5 Nm					kg
0.73	576300	2028	830600	631300	500000					
0.85	496400	1747	850000	631300	500000	P	102KF187	DRN	225M4	5940 284
1.0	417200	1468	850000	631300	500000	PF	102KF187	DRN	225M4	4990 285
1.2	361200	1271	850000	631300	500000	PH	102KF187	DRN	225M4	6000 284
1.4	301000	1059	850000	631300	500000	PHF	102KF187	DRN	225M4	5050 285
1.6	256600	903	850000	631300	500000					
0.74	569600	2005	835400	631300	500000	P	102KF167	DRN	225M4	5310 282
1.9	223500	787	850000	631300	500000	PF	102KF167	DRN	225M4	4360 283
2.2	190800	671	850000	631300	500000	PH	102KF167	DRN	225M4	5370 282
						PHF	102KF167	DRN	225M4	4420 283
0.84	502900	1770	677500	513900	423000					
1.0	422700	1487	720000	513900	423000	P	092KF187	DRN	225M4	5090 280
1.1	365900	1288	720000	513900	423000	PF	092KF187	DRN	225M4	4390 281
1.4	304900	1073	720000	513900	423000	PH	092KF187	DRN	225M4	5100 280
1.6	260000	915	720000	513900	423000	PHF	092KF187	DRN	225M4	4400 281
1.9	220400	776	720000	513900	423000					
0.84	502100	1767	678400	513900	423000					
0.88	478200	1683	704000	513900	423000	P	092KF167	DRN	225M4	4460 278
2.2	193300	680	720000	513900	423000	PF	092KF167	DRN	225M4	3760 279
2.3	184200	649	720000	513900	423000	PH	092KF167	DRN	225M4	4470 278
2.6	164400	579	720000	513900	423000	PHF	092KF167	DRN	225M4	3770 279
3.0	140100	493	720000	513900	423000					
3.6	116100	409	720000	513900	423000					
1.3	333900	1175	676300	397100	359400	P	082KF157	DRN	225M4	3590 274
1.4	294600	1037	683000	397100	359400	PF	082KF157	DRN	225M4	2940 275
1.6	255400	899	683000	397100	359400	PH	082KF157	DRN	225M4	3580 274
1.9	227200	800	683000	397100	359400	PHF	082KF157	DRN	225M4	2930 275
2.1	195900	689	683000	397100	359400					
2.6	161500	568	523000	274600	245660	P	072KF157	DRN	225M4	2930 272
3.1	137000	482	523000	274600	245660	PF	072KF157	DRN	225M4	2440 273
						PH	072KF157	DRN	225M4	2980 272
						PHF	072KF157	DRN	225M4	2490 273
1.6	258700	911	523000	274600	245660					
1.8	228800	806	523000	274600	245660	P	072KF127	DRN	225M4	2640 270
2.2	192300	677	523000	274600	245660	PF	072KF127	DRN	225M4	2150 271
2.7	155300	547	523000	274600	245660	PH	072KF127	DRN	225M4	2690 270
3.0	138300	487	523000	-	245660	PHF	072KF127	DRN	225M4	2200 271
3.6	116300	409	523000	-	245660					
2.1	198000	697	429000	209100	185660	P	062KF127	DRN	225M4	2220 268
2.6	159900	563	456700	209100	185660	PF	062KF127	DRN	225M4	1850 269
3.0	142500	502	467600	209100	185660	PH	062KF127	DRN	225M4	2200 268
3.5	119700	421	473000	209100	185660	PHF	062KF127	DRN	225M4	1840 269
4.3	96700	341	444300	209100	185660					

P_m = 45 kW

n ₂	M _a	i _{ex}	F _{Ra} ¹⁾	M _{N2}						m	
				f _{LC} ≤7.5	f _{LC} >107.5						
min ⁻¹	Nm		N	Nm	Nm					kg	
2.3	186600	657	437900	209100	185660	P	062KF107	DRN	225M4	2020	266
						PF	062KF107	DRN	225M4	1660	267
						PH	062KF107	DRN	225M4	2010	266
						PHF	062KF107	DRN	225M4	1640	267
3.0	142500	502	340100	140600	124060	P	052KF127	DRN	225M4	1730	264
3.5	119700	421	359800	140600	124060	PF	052KF127	DRN	225M4	1530	265
4.3	96700	341	355400	140600	124060	PH	052KF127	DRN	225M4	1720	264
						PHF	052KF127	DRN	225M4	1520	265
4.3	96700	341	299000	111000	100170	P	042KF127	DRN	225M4	1590	258
5.1	82000	289	293100	111000	100170	PF	042KF127	DRN	225M4	1400	259
5.8	73000	257	283100	111000	100170	PH	042KF127	DRN	225M4	1590	258
						PHF	042KF127	DRN	225M4	1400	259
3.8	110800	390	284100	111000	100170	P	042KF107	DRN	225M4	1390	256
						PF	042KF107	DRN	225M4	1200	257
						PH	042KF107	DRN	225M4	1390	256
						PHF	042KF107	DRN	225M4	1200	257
5.1	82000	289	205300	86800	69620	P	032KF127	DRN	225M4	1340	252
5.8	73000	257	218600	86800	69620	PF	032KF127	DRN	225M4	1220	253
6.9	61300	216	217600	86800	69620	PH	032KF127	DRN	225M4	1360	252
8.5	49500	175	204100	86800	69620	PHF	032KF127	DRN	225M4	1240	253
5.0	83600	294	202700	86800	69620	P	032KF107	DRN	225M4	1140	250
						PF	032KF107	DRN	225M4	1020	251
						PH	032KF107	DRN	225M4	1160	250
						PHF	032KF107	DRN	225M4	1040	251
7.4	56800	200	181900	64200	51190	P	022KF107	DRN	225M4	1060	244
						PF	022KF107	DRN	225M4	960	245
						PH	022KF107	DRN	225M4	1080	244
						PHF	022KF107	DRN	225M4	980	245

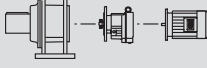
P_m = 55 kW

n ₂	M _a	i _{ex}	F _{Ra} ¹⁾	M _{N2}						m	
				f _{LC} ≤7.5	f _{LC} >107.5						
min ⁻¹	Nm		N	Nm	Nm					kg	
0.85	606700	1747	807500	631300	500000						
1.0	509900	1468	850000	631300	500000	P	102KF187	DRN	250M4	6090	284
1.2	441500	1271	850000	631300	500000	PF	102KF187	DRN	250M4	5140	285
1.4	367900	1059	850000	631300	500000	PH	102KF187	DRN	250M4	6150	284
1.6	313700	903	850000	631300	500000	PHF	102KF187	DRN	250M4	5200	285
1.9	265900	766	850000	631300	500000						
0.89	576900	1661	830100	631300	500000	P	102KF167	DRN	250M4	5460	282
2.2	233200	671	850000	631300	500000	PF	102KF167	DRN	250M4	4510	283
						PH	102KF167	DRN	250M4	5520	282
						PHF	102KF167	DRN	250M4	4570	283
1.0	516600	1487	662000	513900	423000						
1.1	447300	1288	720000	513900	423000	P	092KF187	DRN	250M4	5240	280
1.4	372700	1073	720000	513900	423000	PF	092KF187	DRN	250M4	4540	281
1.6	317800	915	720000	513900	423000	PH	092KF187	DRN	250M4	5250	280
1.9	269400	776	720000	513900	423000	PHF	092KF187	DRN	250M4	4550	281
2.2	232000	668	720000	513900	423000						
1.0	498800	1436	682100	513900	423000						
1.2	439400	1265	720000	513900	423000	P	092KF167	DRN	250M4	4610	278
2.6	200900	579	720000	513900	423000	PF	092KF167	DRN	250M4	3910	279
3.0	171200	493	720000	513900	423000	PH	092KF167	DRN	250M4	4620	278
3.6	141900	409	720000	513900	423000	PHF	092KF167	DRN	250M4	3920	279
4.2	121100	349	720000	513900	423000						
1.2	426500	1228	720000	513900	423000	P	092KF157	DRN	250M4	4240	276
						PF	092KF157	DRN	250M4	3540	277
						PH	092KF157	DRN	250M4	4250	276
						PHF	092KF157	DRN	250M4	3550	277

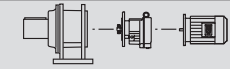
P_m = 55 kW											
n₂	M_a	i_{ex}	F_{Ra}¹⁾	M_{N2}						m	
min⁻¹	Nm		N	f_{LC} ≤ 7.5	f_{LC} > 107.5					kg	
				Nm	Nm						
1.3	408100	1175	607200	397100	359400	P	082KF157	DRN	250M4	3740	274
1.4	360100	1037	653800	397100	359400	PF	082KF157	DRN	250M4	3090	275
1.6	312200	899	683000	397100	359400	PH	082KF157	DRN	250M4	3730	274
1.9	277700	800	683000	397100	359400	PHF	082KF157	DRN	250M4	3080	275
2.1	239400	689	683000	397100	359400						
2.6	197400	568	523000	274600	245660	P	072KF157	DRN	250M4	3080	272
3.1	167400	482	523000	274600	245660	PF	072KF157	DRN	250M4	2590	273
						PH	072KF157	DRN	250M4	3130	272
						PHF	072KF157	DRN	250M4	2640	273
1.8	279700	806	510400	274600	245660	P	072KF127	DRN	250M4	2790	270
2.2	235000	677	523000	274600	245660	PF	072KF127	DRN	250M4	2300	271
3.0	169100	487	523000	-	245660	PH	072KF127	DRN	250M4	2840	270
3.6	142100	409	523000	-	245660	PHF	072KF127	DRN	250M4	2350	271
2.6	195500	563	431000	209100	185660	P	062KF127	DRN	250M4	2360	268
3.0	174100	502	447100	209100	185660	PF	062KF127	DRN	250M4	2000	269
3.5	146300	421	465300	209100	185660	PH	062KF127	DRN	250M4	2350	268
4.3	118200	341	444300	209100	185660	PHF	062KF127	DRN	250M4	1990	269
2.6	199400	574	427900	209100	185660	P	062KF107	DRN	250M4	2170	266
						PF	062KF107	DRN	250M4	1800	267
						PH	062KF107	DRN	250M4	2160	266
						PHF	062KF107	DRN	250M4	1790	267
4.3	118200	341	355400	140600	124060	P	052KF127	DRN	250M4	1880	264
5.1	100200	289	338000	140600	124060	PF	052KF127	DRN	250M4	1680	265
						PH	052KF127	DRN	250M4	1870	264
						PHF	052KF127	DRN	250M4	1670	265
3.8	135400	390	346600	140600	124060	P	052KF107	DRN	250M4	1680	262
						PF	052KF107	DRN	250M4	1480	263
						PH	052KF107	DRN	250M4	1680	262
						PHF	052KF107	DRN	250M4	1480	263
5.8	89200	257	283100	111000	100170	P	042KF127	DRN	250M4	1740	258
6.9	75000	216	268800	111000	100170	PF	042KF127	DRN	250M4	1550	259
8.5	60600	175	252100	111000	100170	PH	042KF127	DRN	250M4	1740	258
						PHF	042KF127	DRN	250M4	1550	259
6.9	75000	216	215900	86800	69620	P	032KF127	DRN	250M4	1490	252
8.5	60600	175	204100	86800	69620	PF	032KF127	DRN	250M4	1370	253
						PH	032KF127	DRN	250M4	1510	252
						PHF	032KF127	DRN	250M4	1390	253
8.5	60700	175	175000	64200	51190	P	022KF107	DRN	250M4	1210	244
						PF	022KF107	DRN	250M4	1110	245
						PH	022KF107	DRN	250M4	1230	244
						PHF	022KF107	DRN	250M4	1130	245

P_m = 75 kW											
n₂	M_a	i_{ex}	F_{Ra}¹⁾	M_{N2}						m	
min⁻¹	Nm		N	f_{LC} ≤ 7.5	f_{LC} > 107.5					kg	
				Nm	Nm						
1.2	602000	1271	811200	631300	500000	P	102KF187	DRN	280S4	6140	284
1.4	501700	1059	850000	631300	500000	PF	102KF187	DRN	280S4	5190	285
1.6	427700	903	850000	631300	500000	PH	102KF187	DRN	280S4	6200	284
1.9	362600	766	850000	631300	500000	PHF	102KF187	DRN	280S4	5250	285
2.2	312300	660	850000	631300	500000						
2.7	262500	554	850000	631300	500000						
1.2	591400	1249	819300	631300	500000	P	102KF167	DRN	280S4	5510	282
1.3	527600	1114	850000	631300	500000	PF	102KF167	DRN	280S4	4560	283
						PH	102KF167	DRN	280S4	5570	282
						PHF	102KF167	DRN	280S4	4620	283
1.4	508300	1073	671500	513900	423000	P	092KF187	DRN	280S4	5290	280
1.6	433400	915	720000	513900	423000	PF	092KF187	DRN	280S4	4590	281
1.9	367400	776	720000	513900	423000	PH	092KF187	DRN	280S4	5300	280
2.2	316400	668	720000	513900	423000	PHF	092KF187	DRN	280S4	4600	281
2.6	265900	561	720000	513900	423000						
3.0	230200	486	720000	513900	423000						

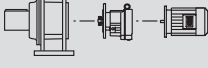
P_m = 75 kW

n ₂	M _a	i _{ex}	F _{Ra} ¹⁾	M _{N2}						m	
				f _{LC} ≤ 7.5	f _{LC} > 107.5						
min ⁻¹	Nm		N	Nm	Nm					kg	
1.4	493100	1041	688300	513900	423000	P	092KF167	DRN	280S4	4660	278
1.5	455600	962	720000	513900	423000	PF	092KF167	DRN	280S4	3960	279
3.6	193500	409	720000	513900	423000	PH	092KF167	DRN	280S4	4670	278
4.2	165100	349	720000	513900	423000	PHF	092KF167	DRN	280S4	3970	279
1.4	513300	1084	665800	513900	423000	P	092KF157	DRN	280S4	4290	276
1.6	445000	940	720000	513900	423000	PF	092KF157	DRN	280S4	3590	277
						PH	092KF157	DRN	280S4	4300	276
						PHF	092KF157	DRN	280S4	3600	277
1.9	378800	800	636600	397100	359400	P	082KF157	DRN	280S4	3790	274
2.1	326500	689	681200	397100	359400	PF	082KF157	DRN	280S4	3140	275
						PH	082KF157	DRN	280S4	3780	274
						PHF	082KF157	DRN	280S4	3130	275
2.6	269200	568	521900	274600	245660						
3.1	228300	482	523000	274600	245660	P	072KF157	DRN	280S4	3130	272
3.5	202200	429	523000	274600	245660	PF	072KF157	DRN	280S4	2640	273
4.0	174300	369	523000	274600	245660	PH	072KF157	DRN	280S4	3180	272
5.0	141600	300	494900	274600	245660	PHF	072KF157	DRN	280S4	2690	273
5.8	120100	254	471000	274600	245660						
2.7	258900	547	523000	274600	245660	P	072KF127	DRN	280S4	2840	270
						PF	072KF127	DRN	280S4	2350	271
						PH	072KF127	DRN	280S4	2890	270
						PHF	072KF127	DRN	280S4	2400	271
3.5	199600	421	427700	209100	185660	P	062KF127	DRN	280S4	2410	268
4.3	161200	341	444300	209100	185660	PF	062KF127	DRN	280S4	2050	269
						PH	062KF127	DRN	280S4	2400	268
						PHF	062KF127	DRN	280S4	2040	269
5.1	136600	289	338000	140600	124060	P	052KF127	DRN	280S4	1930	264
8.5	82600	175	290800	140600	124060	PF	052KF127	DRN	280S4	1730	265
						PH	052KF127	DRN	280S4	1920	264
						PHF	052KF127	DRN	280S4	1720	265
6.9	102300	216	268800	111000	100170	P	042KF127	DRN	280S4	1780	258
8.5	82600	175	252100	111000	100170	PF	042KF127	DRN	280S4	1600	259
						PH	042KF127	DRN	280S4	1790	258
						PHF	042KF127	DRN	280S4	1600	259
8.5	82600	175	204100	86800	69620	P	032KF127	DRN	280S4	1540	252
						PF	032KF127	DRN	280S4	1420	253
						PH	032KF127	DRN	280S4	1560	252
						PHF	032KF127	DRN	280S4	1440	253

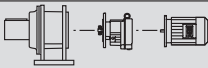
P_m = 90 kW

n ₂	M _a	i _{ex}	F _{Ra} ¹⁾	M _{N2}						m	
				f _{LC} ≤7.5	f _{LC} >107.5						
min ⁻¹	Nm		N	Nm	Nm					kg	
1.4	602400	1059	810800	631300	500000	P PF PH PHF	102KF187	DRN	280M4	6260	284
1.6	513600	903	850000	631300	500000					5300	285
1.9	435400	766	850000	631300	500000					6320	284
2.2	375100	660	850000	631300	500000					5360	285
2.7	315200	554	850000	631300	500000						
3.1	272900	480	850000	631300	500000						
1.6	540000	949	850000	631300	500000	P	102KF167	DRN	280M4	5630	282
						PF	102KF167	DRN	280M4	4670	283
						PH	102KF167	DRN	280M4	5690	282
						PHF	102KF167	DRN	280M4	4730	283
1.6	520400	915	657600	513900	423000	P	092KF187	DRN	280M4	5400	280
1.9	441100	776	720000	513900	423000	PF	092KF187	DRN	280M4	4710	281
2.2	380000	668	720000	513900	423000	PH	092KF187	DRN	280M4	5420	280
2.6	319400	561	720000	513900	423000	PHF	092KF187	DRN	280M4	4720	281
3.0	276500	486	720000	513900	423000						
3.7	230400	405	720000	513900	423000						

P_m = 90 kW

n ₂ min ⁻¹	M _a Nm	i _{ex}	F _{Ra} ¹⁾ N	M _{N2}						m	
				f _{LC} ≤ 7.5 Nm	f _{LC} > 107.5 Nm					kg	
1.7	490600	863	691000	513900	423000	P	092KF167	DRN	280M4	4770	278
1.9	453300	797	720000	513900	423000	PF	092KF167	DRN	280M4	4080	279
4.2	198300	349	720000	513900	423000	PH	092KF167	DRN	280M4	4790	278
						PHF	092KF167	DRN	280M4	4090	279
1.8	475400	836	706800	513900	423000	P	092KF157	DRN	280M4	4400	276
						PF	092KF157	DRN	280M4	3700	277
						PH	092KF157	DRN	280M4	4410	276
						PHF	092KF157	DRN	280M4	3710	277
2.1	392000	689	623600	397100	359400	P	082KF157	DRN	280M4	3900	274
						PF	082KF157	DRN	280M4	3250	275
						PH	082KF157	DRN	280M4	3890	274
						PHF	082KF157	DRN	280M4	3240	275
3.1	274200	482	516500	274600	245660	P	072KF157	DRN	280M4	3240	272
						PF	072KF157	DRN	280M4	2750	273
						PH	072KF157	DRN	280M4	3300	272
						PHF	072KF157	DRN	280M4	2810	273
4.3	193600	341	432600	209100	185660	P	062KF127	DRN	280M4	2530	268
						PF	062KF127	DRN	280M4	2160	269
						PH	062KF127	DRN	280M4	2520	268
						PHF	062KF127	DRN	280M4	2150	269

P_m = 110 kW

n ₂ min ⁻¹	M _a Nm	i _{ex}	F _{Ra} ¹⁾ N	M _{N2}						m	
				f _{LC} ≤ 7.5 Nm	f _{LC} > 107.5 Nm					kg	
1.6	624800	903	793000	631300	500000	P	102KF187	DRN	315S4	6500	284
1.9	529700	766	850000	631300	500000	PF	102KF187	DRN	315S4	5550	285
2.3	456300	660	850000	631300	500000	PH	102KF187	DRN	315S4	6560	284
2.7	383400	554	850000	631300	500000	PHF	102KF187	DRN	315S4	5610	285
3.1	332000	480	850000	631300	500000						
3.7	276700	400	850000	631300	500000						
1.9	544300	787	850000	631300	500000	P	102KF167	DRN	315S4	5870	282
						PF	102KF167	DRN	315S4	4920	283
						PH	102KF167	DRN	315S4	5930	282
						PHF	102KF167	DRN	315S4	4980	283
2.2	462300	668	720000	513900	423000	P	092KF187	DRN	315S4	5650	280
2.6	388500	561	720000	513900	423000	PF	092KF187	DRN	315S4	4950	281
3.1	336400	486	720000	513900	423000	PH	092KF187	DRN	315S4	5660	280
3.7	280300	405	720000	513900	423000	PHF	092KF187	DRN	315S4	4960	281
4.3	239000	345	720000	513900	423000						
2.0	509300	736	670300	513900	423000	P	092KF167	DRN	315S4	5020	278
2.2	470700	680	711700	513900	423000	PF	092KF167	DRN	315S4	4320	279
2.3	448600	649	720000	513900	423000	PH	092KF167	DRN	315S4	5030	278
						PHF	092KF167	DRN	315S4	4330	279
2.1	498500	721	682400	513900	423000	P	092KF157	DRN	315S4	4640	276
						PF	092KF157	DRN	315S4	3950	277
						PH	092KF157	DRN	315S4	4660	276
						PHF	092KF157	DRN	315S4	3960	277
4.0	254700	369	523000	274600	245660	P	072KF157	DRN	315S4	3490	272
						PF	072KF157	DRN	315S4	3000	273
						PH	072KF157	DRN	315S4	3540	272
						PHF	072KF157	DRN	315S4	3050	273

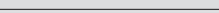
P_m = 132 kW

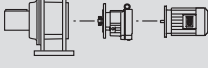
m	n ₂	M _a	i _{ex}	F _{Ra} ¹⁾	M _{N2}						m	
					f _{LC} ≤7.5	f _{LC} >107.5						
	min ⁻¹	Nm		N	Nm	Nm					kg	
102KF187	2.3	547500	660	850000	631300	500000	P	102KF187	DRN	315M4	6520	284
	2.7	460100	554	850000	631300	500000	PF	102KF187	DRN	315M4	5570	285
	3.1	398400	480	850000	631300	500000	PH	102KF187	DRN	315M4	6580	284
	3.7	332000	400	850000	631300	500000	PHF	102KF187	DRN	315M4	5630	285
	4.4	283100	341	850000	631300	500000						
102KF167	2.2	557500	671	844100	631300	500000	P	102KF167	DRN	315M4	5890	282
							PF	102KF167	DRN	315M4	4940	283
							PH	102KF167	DRN	315M4	5950	282
							PHF	102KF167	DRN	315M4	5000	283
092KF187	2.6	466200	561	716100	513900	423000	P	092KF187	DRN	315M4	5670	280
	3.1	403600	486	720000	513900	423000	PF	092KF187	DRN	315M4	4970	281
	3.7	336400	405	720000	513900	423000	PH	092KF187	DRN	315M4	5680	280
	4.3	286800	345	720000	513900	423000	PHF	092KF187	DRN	315M4	4980	281
092KF167	2.6	480300	579	701800	513900	423000	P	092KF167	DRN	315M4	5040	278
							PF	092KF167	DRN	315M4	4340	279
							PH	092KF167	DRN	315M4	5050	278
							PHF	092KF167	DRN	315M4	4350	279
092KF157	2.5	486000	585	695800	513900	423000	P	092KF157	DRN	315M4	4660	276
							PF	092KF157	DRN	315M4	3970	277
							PH	092KF157	DRN	315M4	4680	276
							PHF	092KF157	DRN	315M4	3980	277
072KF157	5.0	248300	300	494300	274600	245660	P	072KF157	DRN	315M4	3510	272
							PF	072KF157	DRN	315M4	3020	273
							PH	072KF157	DRN	315M4	3560	272
							PHF	072KF157	DRN	315M4	3070	273

P_m = 160 kW

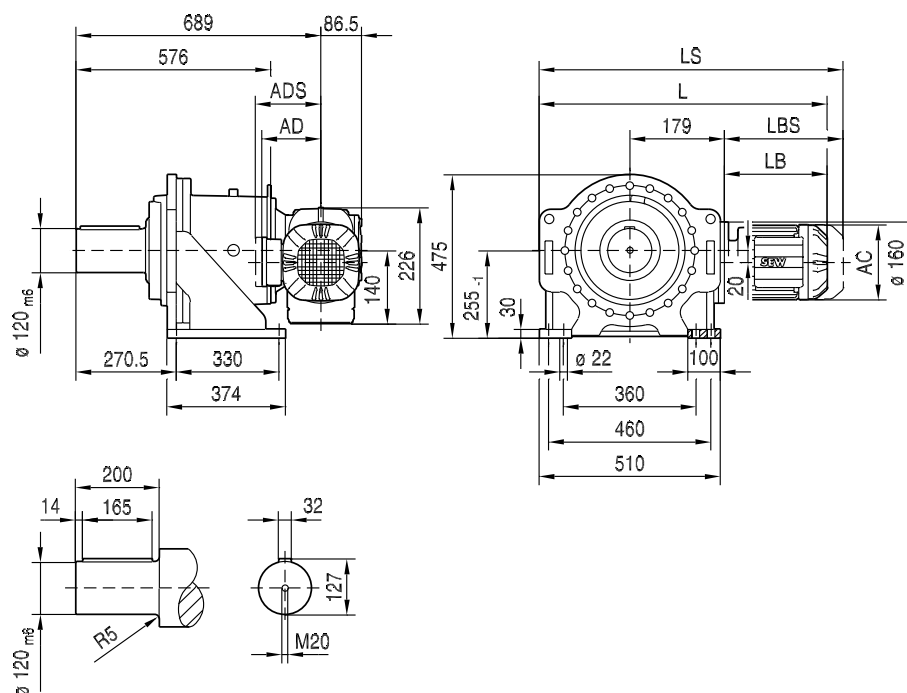
n_2	M_a	i_{ex}	$F_{Ra}^{1)}$	M_{N2}						m	
				$f_{LC} \leq 7.5$	$f_{LC} > 107.5$						
min^{-1}	Nm		N	Nm	Nm	kg					
2.7	558500	554	843300	631300	500000	P	102KF187	DRN	315L4	6650	284
3.1	483600	480	850000	631300	500000	PF	102KF187	DRN	315L4	5700	285
3.7	403000	400	850000	631300	500000	PH	102KF187	DRN	315L4	6710	284
4.4	343600	341	850000	631300	500000	PHF	102KF187	DRN	315L4	5760	285
3.1	489900	486	691700	513900	423000	P	092KF187	DRN	315L4	5800	280
3.7	408300	405	720000	513900	423000	PF	092KF187	DRN	315L4	5100	281
4.3	348100	345	720000	513900	423000	PH	092KF187	DRN	315L4	5810	280
						PHF	092KF187	DRN	315L4	5110	281
3.0	496900	493	684100	513900	423000	P	092KF167	DRN	315L4	5170	278
						PF	092KF167	DRN	315L4	4470	279
						PH	092KF167	DRN	315L4	5180	278
						PHF	092KF167	DRN	315L4	4480	279
3.0	500300	496	680400	513900	423000	P	092KF157	DRN	315L4	4800	276
						PF	092KF157	DRN	315L4	4100	277
						PH	092KF157	DRN	315L4	4810	276
						PHF	092KF157	DRN	315L4	4110	277
5.9	255600	254	470500	274600	245660	P	072KF157	DRN	315L4	3640	272
						PF	072KF157	DRN	315L4	3150	273
						PH	072KF157	DRN	315L4	3690	272
						PHF	072KF157	DRN	315L4	3200	273

P_m = 200 kW

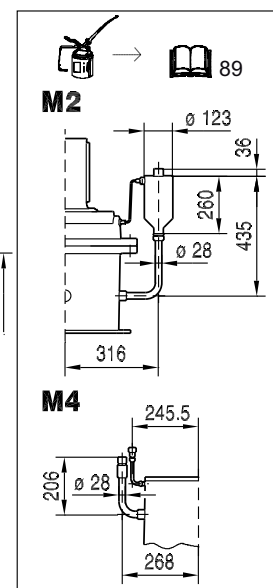
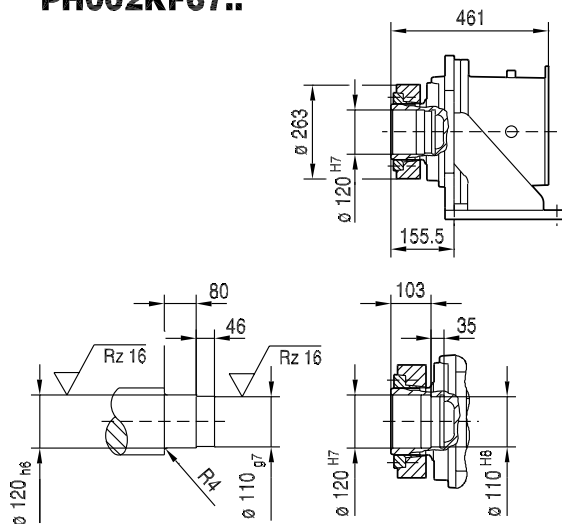
n ₂	M _a	i _{ex}	F _{Ra} ¹⁾	M _{N2}						m	
				f _{LC} ≤7.5	f _{LC} >107.5						
min ⁻¹	Nm		N	Nm	Nm					kg	
3.1	603300	480	810200	631300	500000	P	102KF187	DRN	315H4	6770	284
3.7	502700	400	850000	631300	500000	PF	102KF187	DRN	315H4	5820	285
4.4	428600	341	850000	631300	500000	PH	102KF187	DRN	315H4	6830	284
						PHF	102KF187	DRN	315H4	5880	285

P_m = 200 kW											
n₂	M_a	i_{ex}	F_{Ra}¹⁾	M_{N2}						m	
min⁻¹	Nm		N	f_{LC} ≤ 7.5	f_{LC} > 107.5					kg	
3.7	509300	405	670300	513900	423000	P	092KF187	DRN	315H4	5920	280
4.3	434300	345	720000	513900	423000	PF	092KF187	DRN	315H4	5220	281
						PH	092KF187	DRN	315H4	5930	280
						PHF	092KF187	DRN	315H4	5230	281
3.6	513600	409	665400	513900	423000	P	092KF167	DRN	315H4	5290	278
4.3	438400	349	720000	513900	423000	PF	092KF167	DRN	315H4	4590	279
						PH	092KF167	DRN	315H4	5300	278
						PHF	092KF167	DRN	315H4	4600	279

11.3 Dimension sheets [mm]

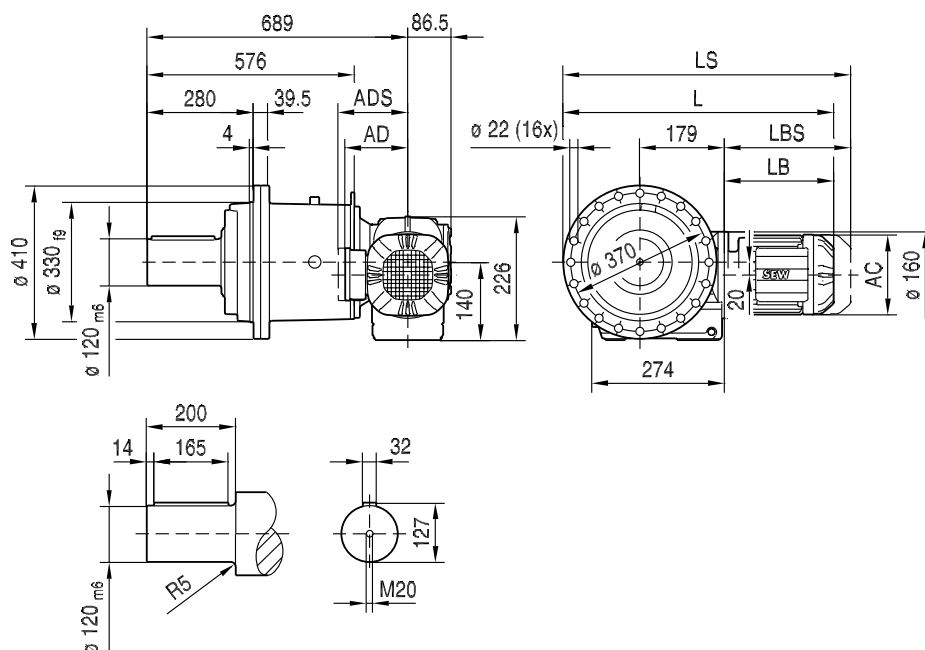
P002KF67..

45 069 00 15

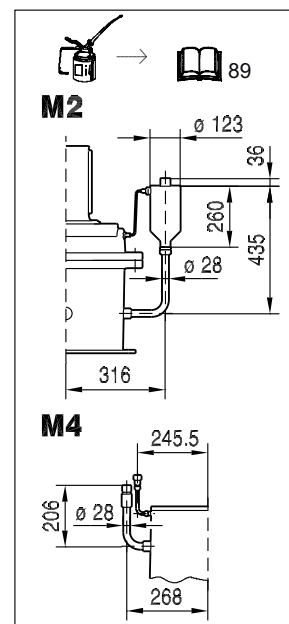
**PH002KF67..**

(→ 99)	DR63..	DR71S	DR71M	DRN80M	DRN90S	DRN90L	DRN100LS	DRN100L	DRN112M	DRN132S	DRN132M
AC	132	139	139	156	179	179	197	197	221	221	261
AD	105	119	119	128	140	140	157	157	170	170	228
ADS	105	129	129	139	150	150	158	158	172	172	228
L	619	630	655	709	711	743	739	789	820	874	892
LS	674	698	723	790	804	836	833	883	932	986	1030
LB	185	196	221	275	277	309	305	355	386	440	458
LBS	240	264	289	356	370	402	399	449	498	552	596

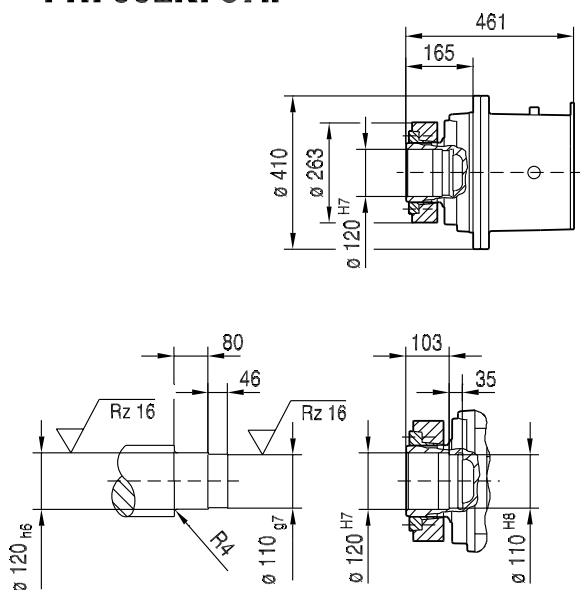
PF002KF67..



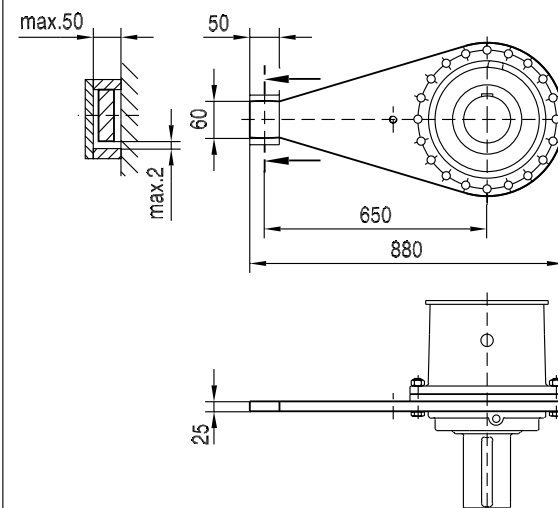
45 070 00 15



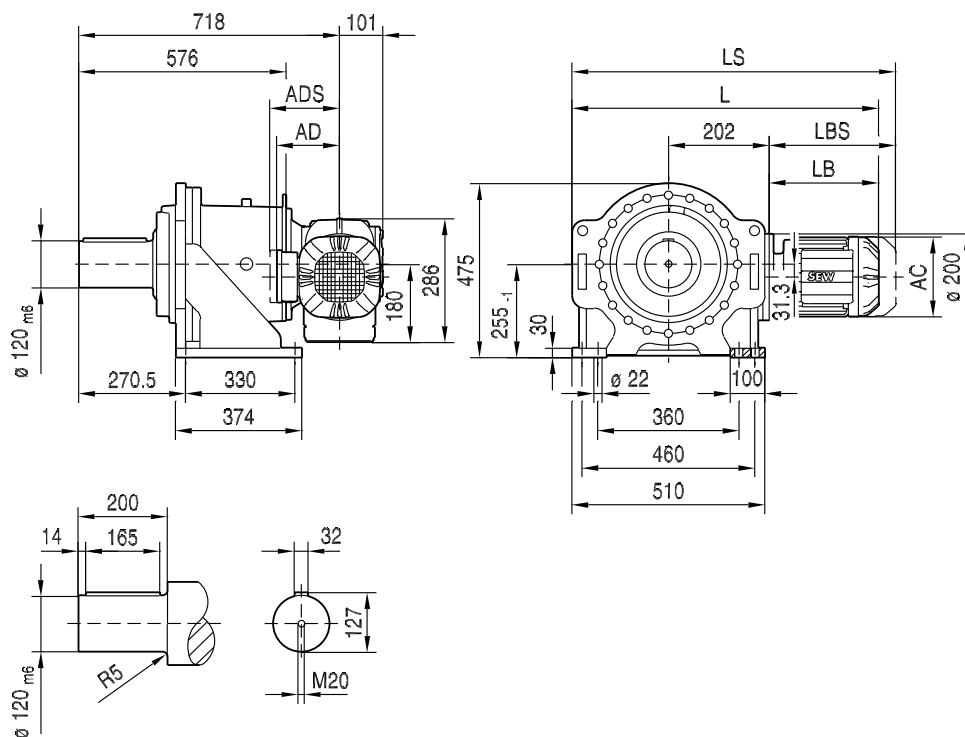
PHF002KF67..



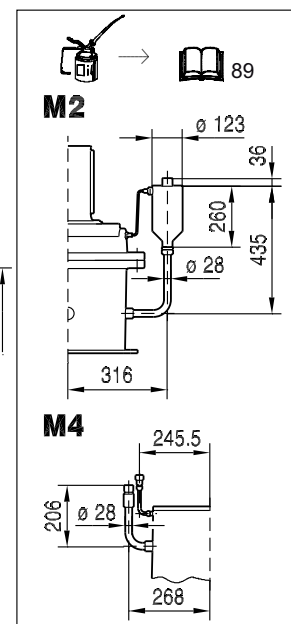
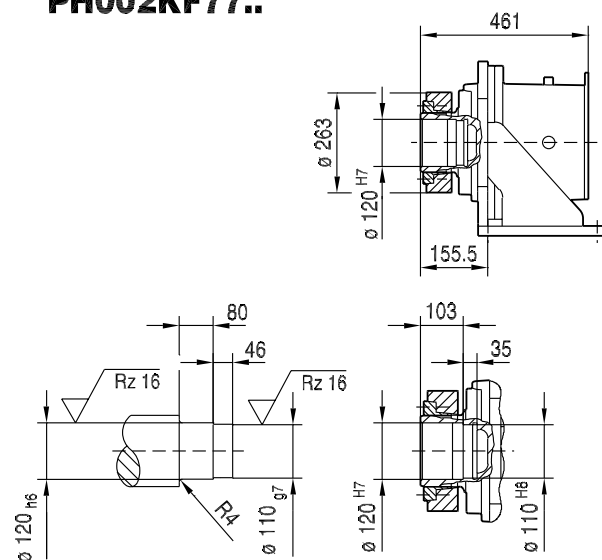
P..002/T..



(→ 99)	DR63..	DR71S	DR71M	DRN80M	DRN90S	DRN90L	DRN100LS	DRN100L	DRN112M	DRN132S	DRN132M
AC	132	139	139	156	179	179	197	197	221	221	261
AD	105	119	119	128	140	140	157	157	170	170	228
ADS	105	129	129	139	150	150	158	158	172	172	228
L	569	580	605	659	661	693	689	739	770	824	842
LS	624	648	673	740	754	786	783	833	882	936	980
LB	185	196	221	275	277	309	305	355	386	440	458
LBS	240	264	289	356	370	402	399	449	498	552	596

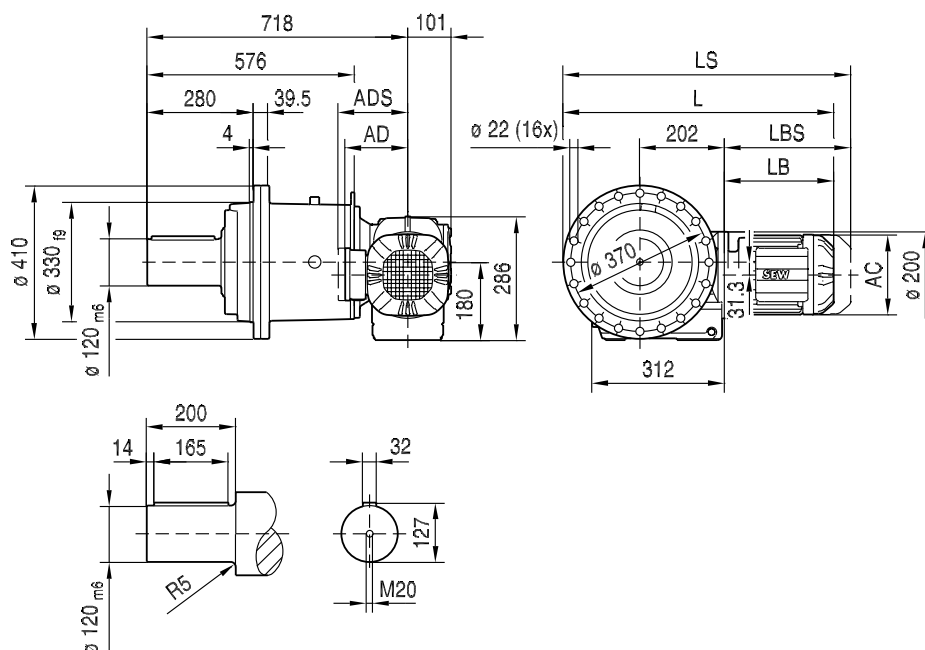
P002KF77..

45 071 00 15

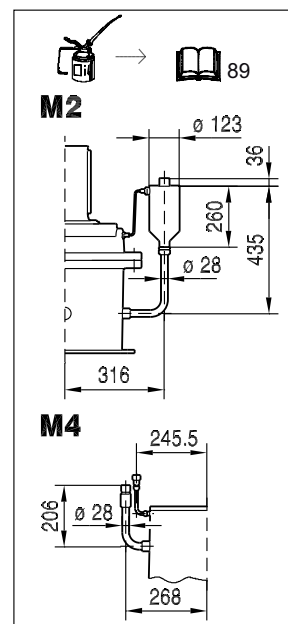
**PH002KF77..**

(→ 99)	DRN90S	DRN90L	DRN100LS	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L
AC	179	179	197	197	221	221	261	261	314	314
AD	140	140	157	157	170	170	228	228	253	253
ADS	150	150	158	158	172	172	228	228	253	253
L	727	759	755	805	836	886	904	930	996	996
LS	820	852	849	899	948	998	1042	1067	1185	1185
LB	270	302	298	348	379	429	447	473	539	539
LBS	363	395	392	442	491	541	585	610	728	728

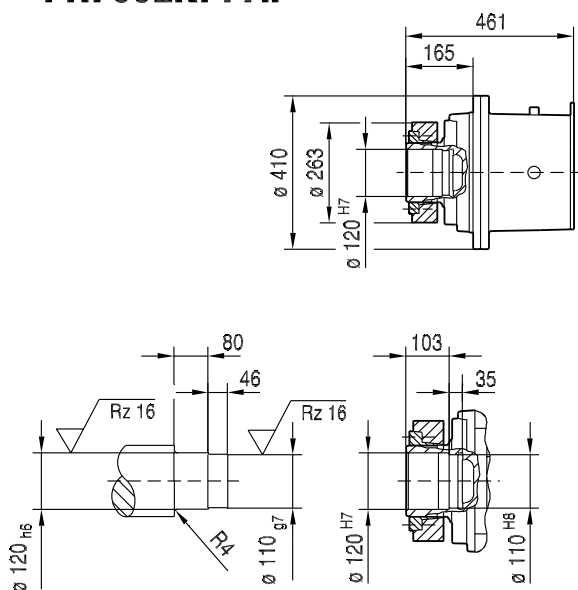
PF002KF77..



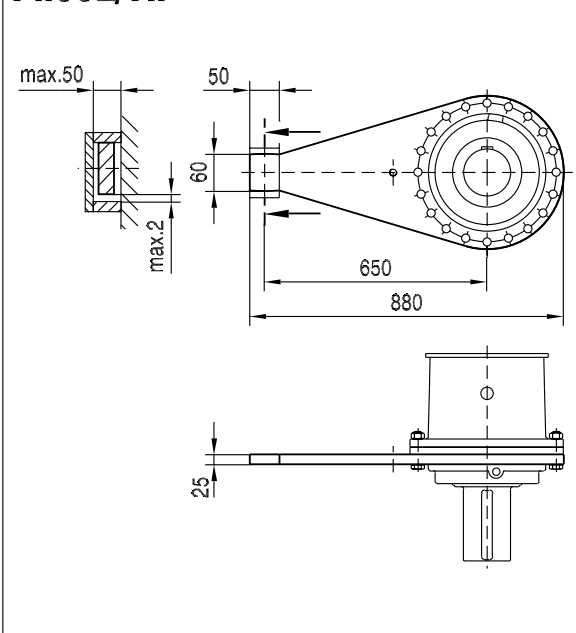
45 072 00 15



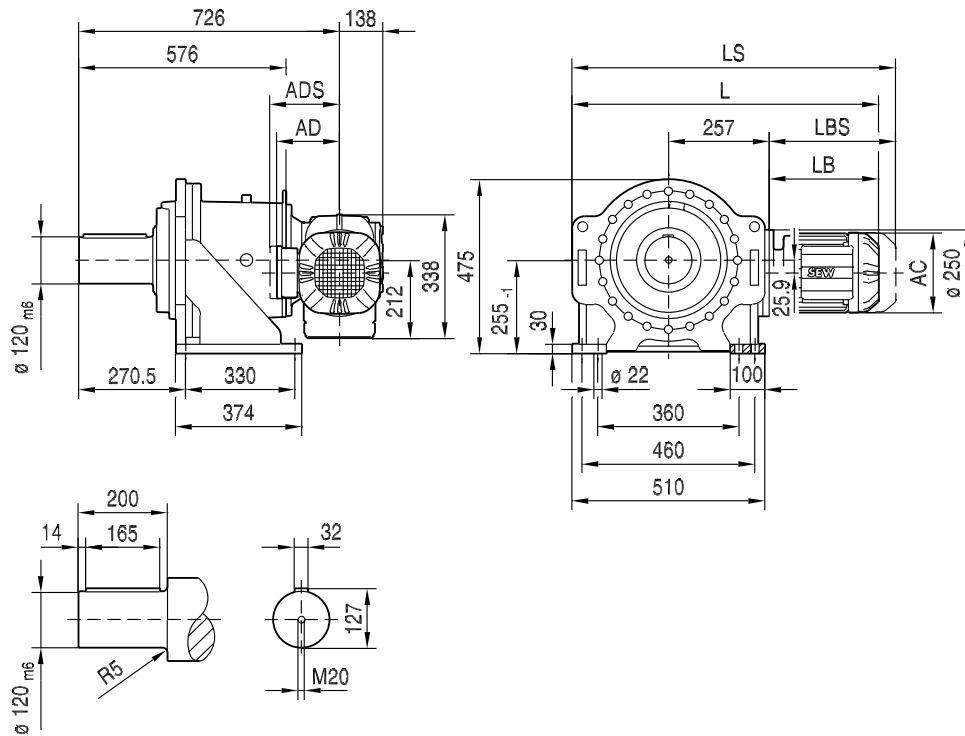
PHF002KF77..



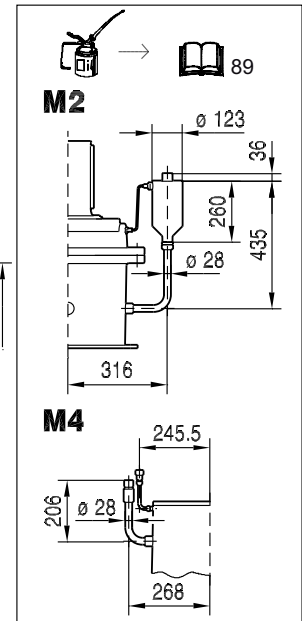
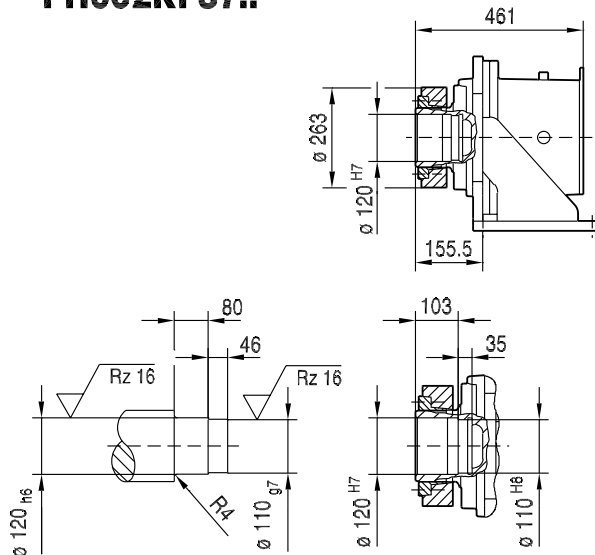
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(→ 📄 99)	DRN90S	DRN90L	DRN100LS	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L
AC	179	179	197	197	221	221	261	261	314	314
AD	140	140	157	157	170	170	228	228	253	253
ADS	150	150	158	158	172	172	228	228	253	253
L	677	709	705	755	786	836	854	880	946	946
LS	770	802	799	849	898	948	992	1017	1135	1135
LB	270	302	298	348	379	429	447	473	539	539
LBS	363	395	392	442	491	541	585	610	728	728

P002KF87..

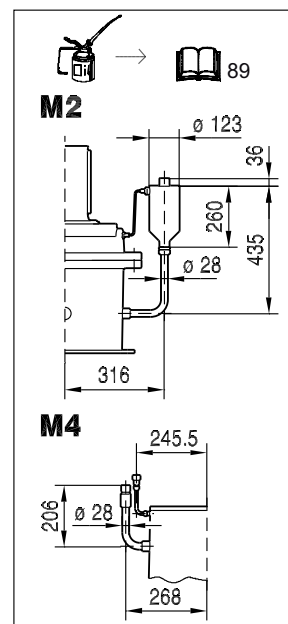
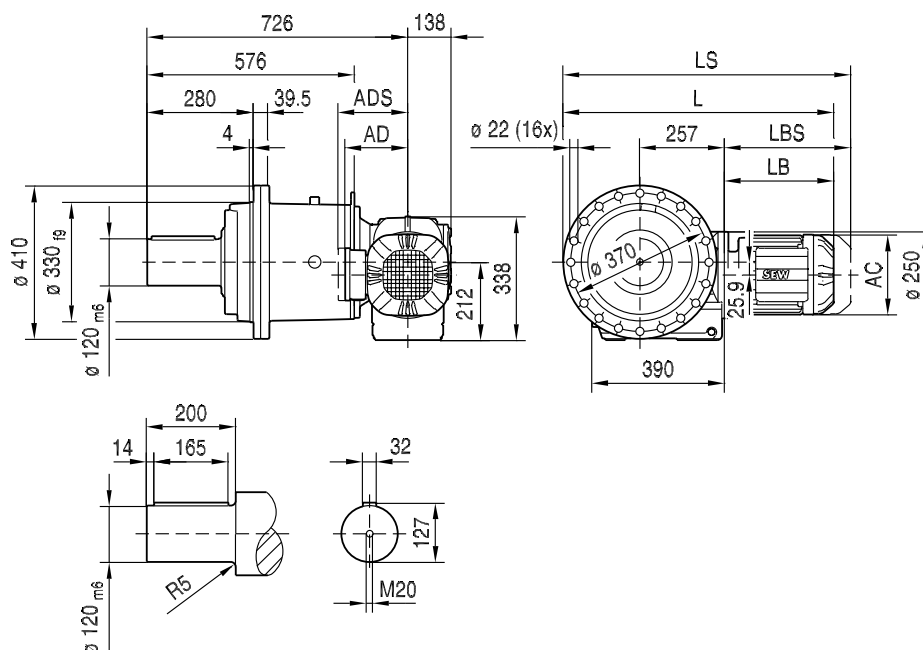
45 073 00 15

**PH002KF87..**

(→ 99)	DRN100LS	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L
AC	197	197	221	221	261	261	314	314	357	394
AD	157	157	170	170	228	228	253	253	268	283
ADS	158	158	172	172	228	228	253	253	268	283
L	805	855	886	936	954	980	1046	1046	1069	1179
LS	899	949	998	1048	1092	1117	1235	1235	1258	1384
LB	293	343	374	424	442	468	534	534	557	667
LBS	387	437	486	536	580	605	723	723	746	872

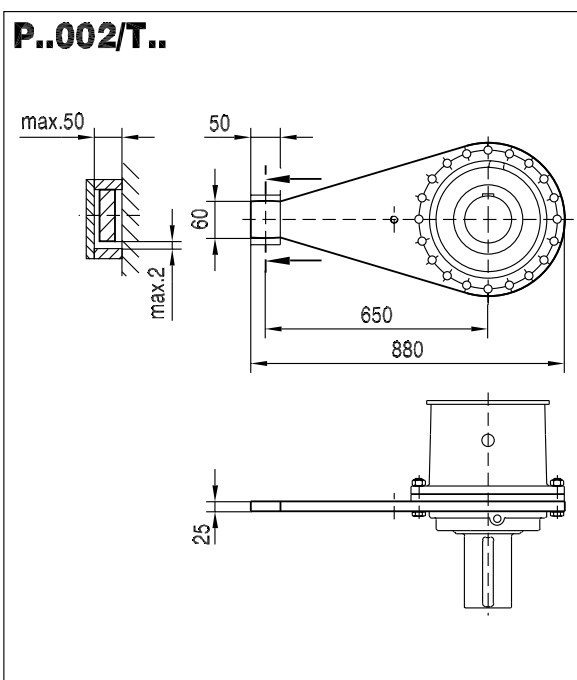
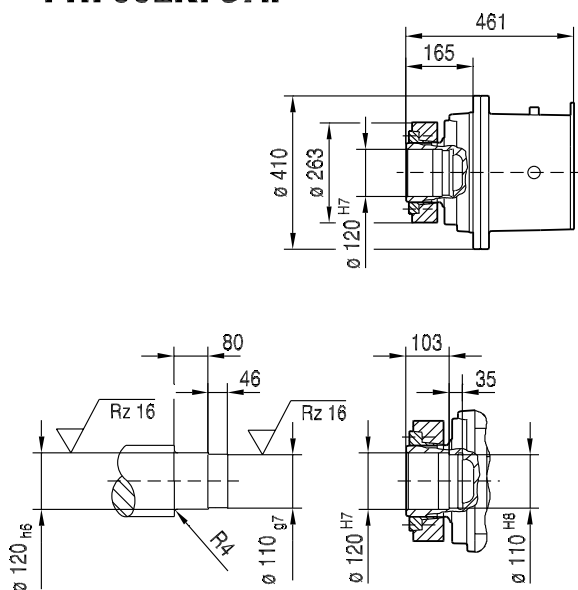
PF002KF87..

45 074 00 15



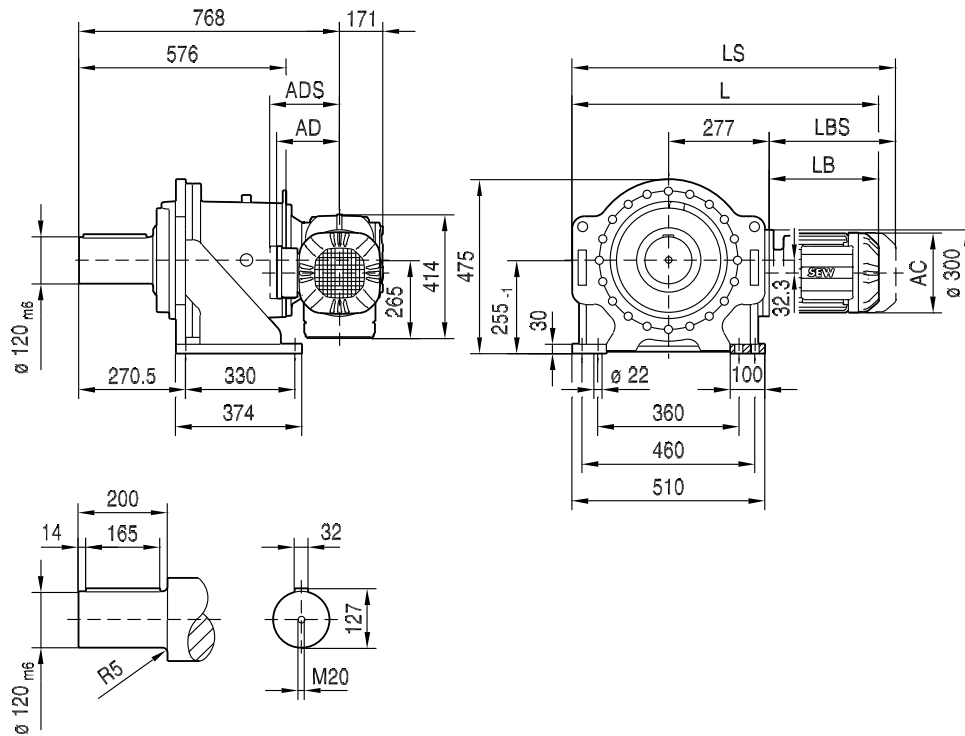
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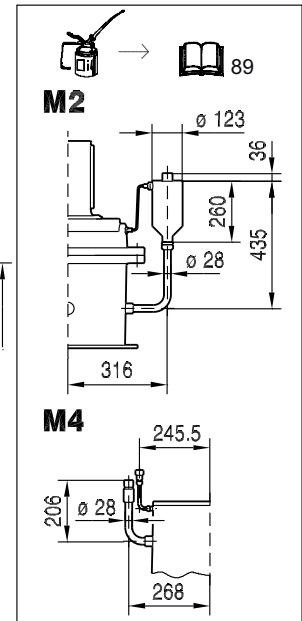
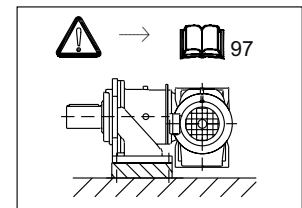
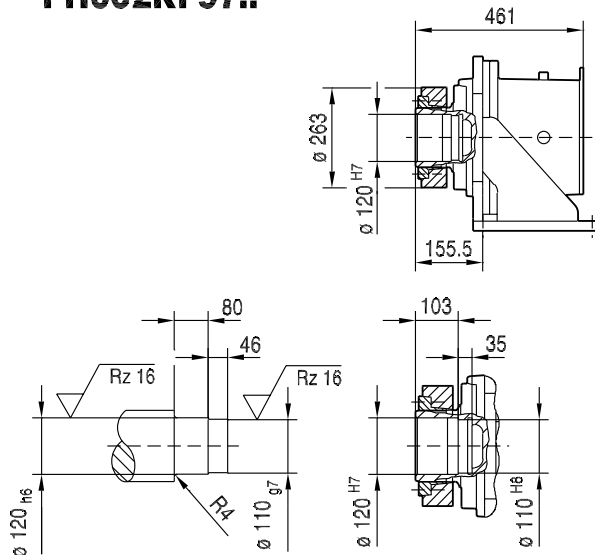


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(→ 99)	DRN100LS	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L
AC	197	197	221	221	261	261	314	314	357	394
AD	157	157	170	170	228	228	253	253	268	283
ADS	158	158	172	172	228	228	253	253	268	283
L	755	805	836	886	904	930	996	996	1019	1129
LS	849	899	948	998	1042	1067	1185	1185	1208	1334
LB	293	343	374	424	442	468	534	534	557	667
LBS	387	437	486	536	580	605	723	723	746	872

P002KF97..

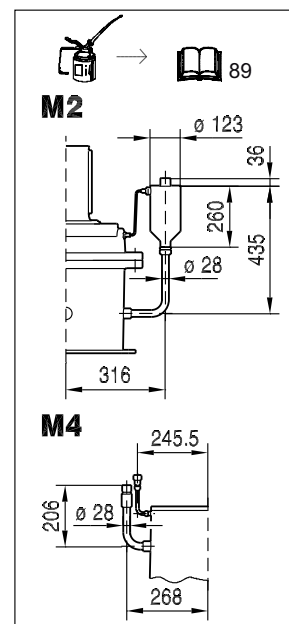
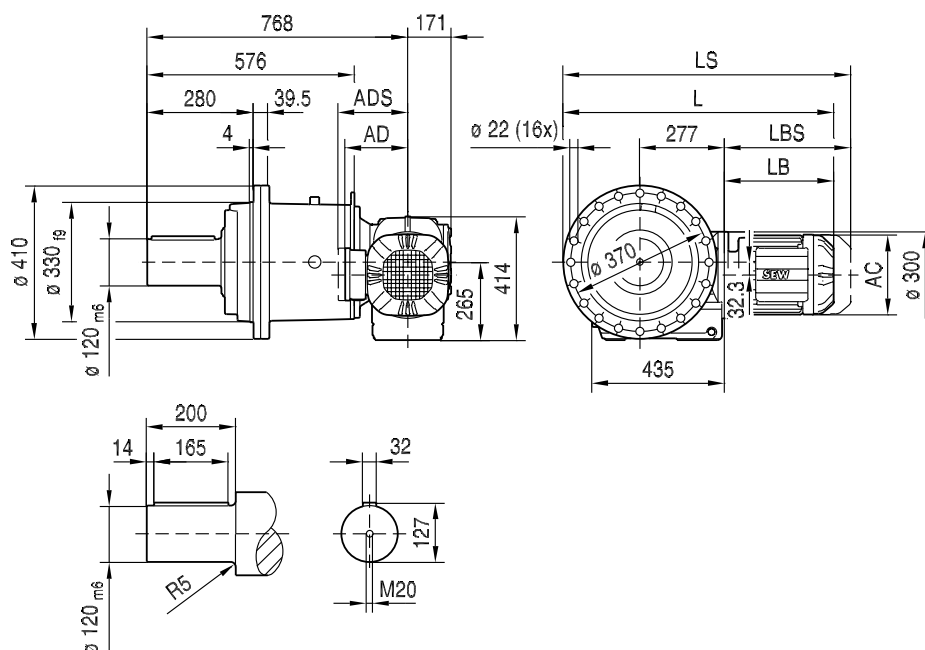
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**PH002KF97..**

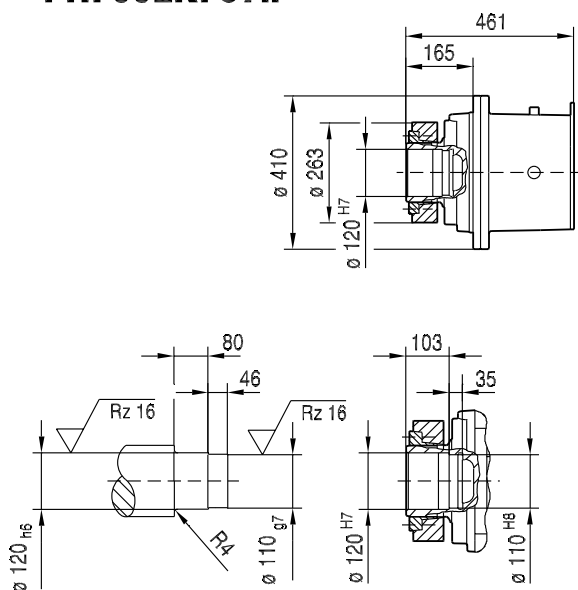
(→ 99)	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..
AC	221	261	261	314	314	357	394	434
AD	170	228	228	253	253	268	283	305
ADS	172	228	228	253	253	268	283	305
L	951	969	995	1061	1061	1084	1194	1168
LS	1063	1107	1132	1250	1250	1273	1399	1373
LB	419	437	463	529	529	552	662	636
LBS	531	575	600	718	718	741	867	841

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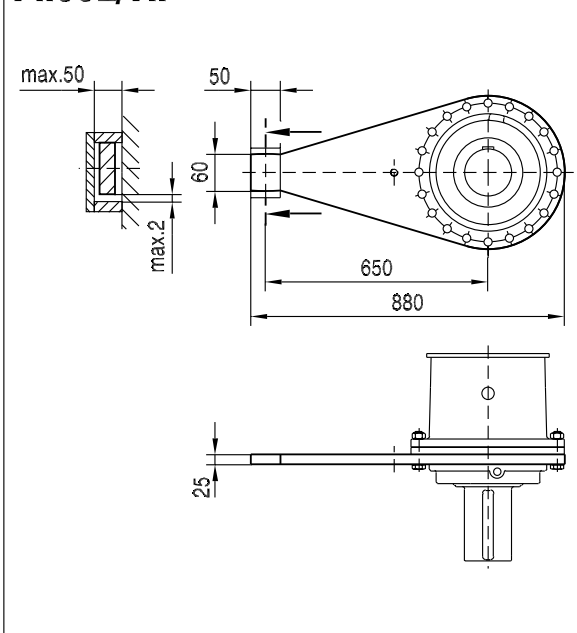
45 076 00 15



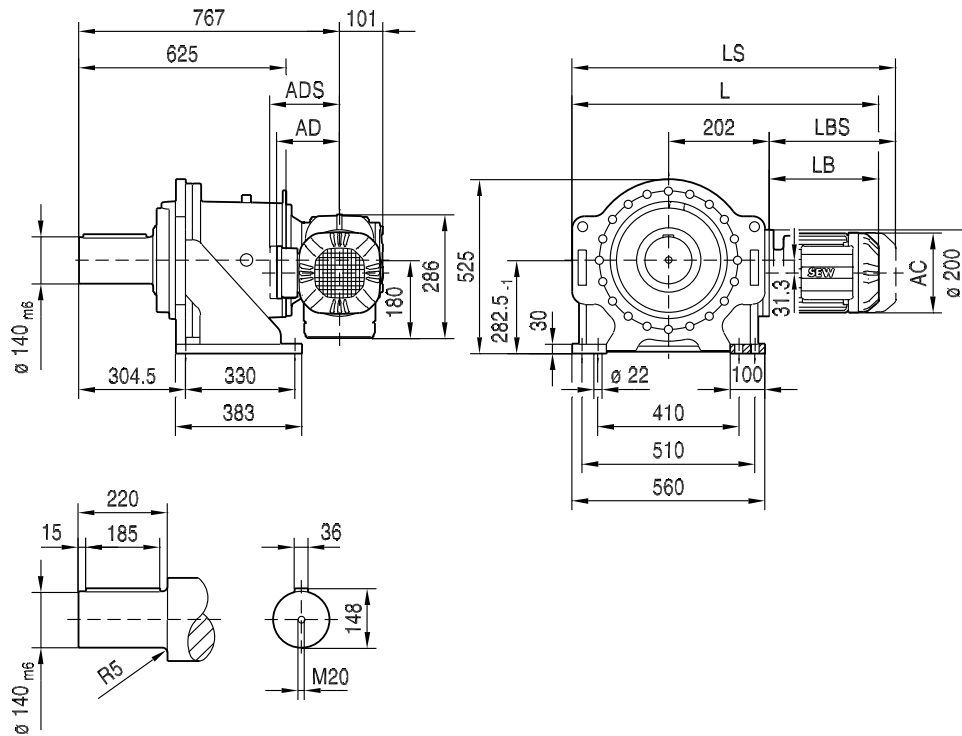
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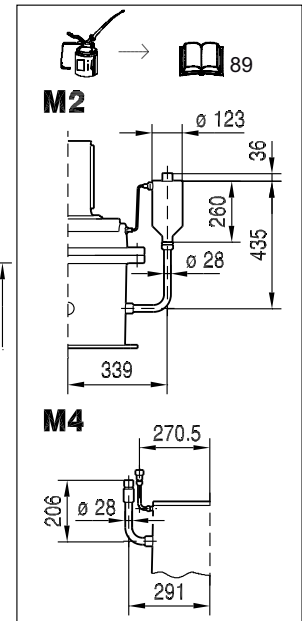
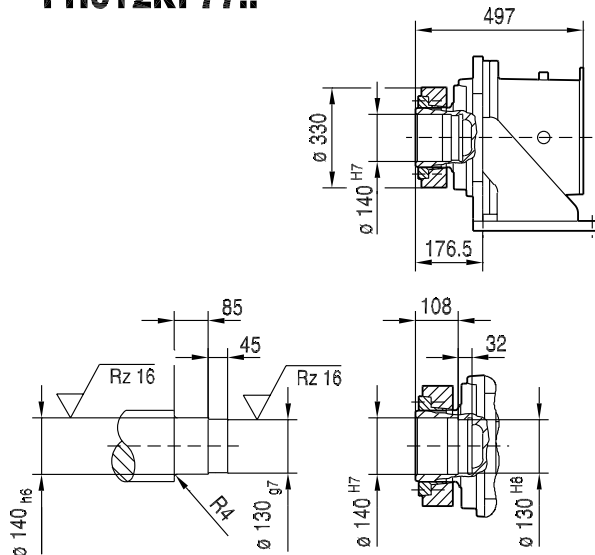
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(→ 📄 99)	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..
AC	221	261	261	314	314	357	394	434
AD	170	228	228	253	253	268	283	305
ADS	172	228	228	253	253	268	283	305
L	901	919	945	1011	1011	1034	1144	1118
LS	1013	1057	1082	1200	1200	1223	1349	1323
LB	419	437	463	529	529	552	662	636
LBS	531	575	600	718	718	741	867	841

P012KF77..

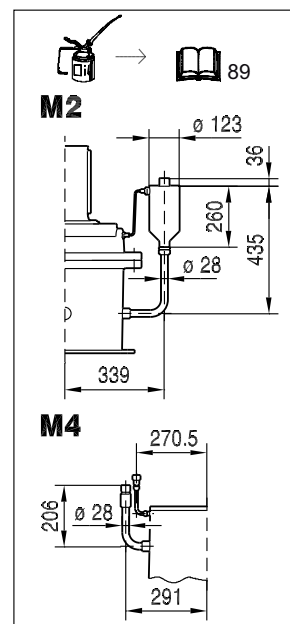
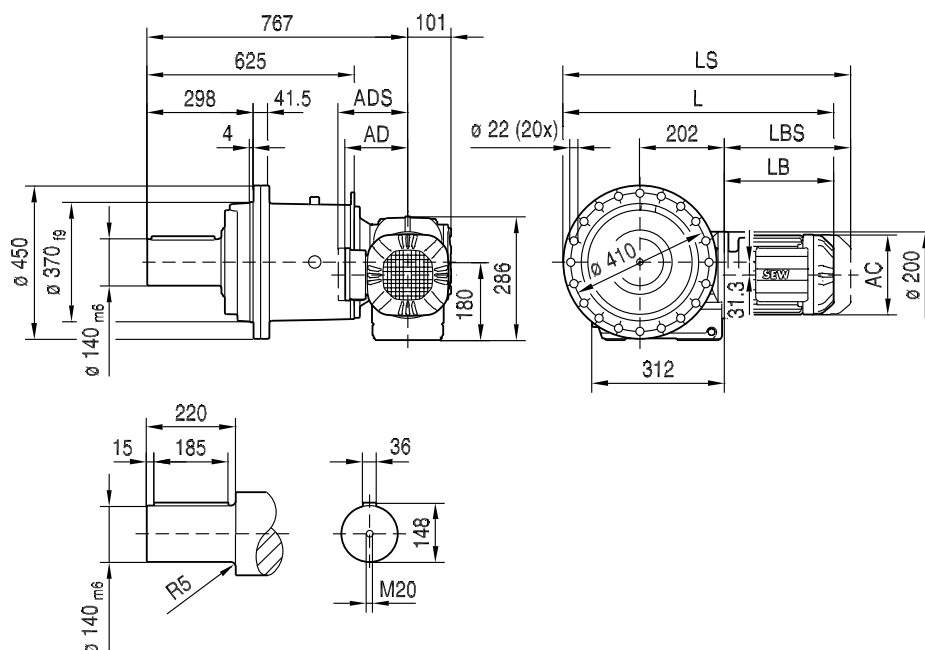
45 077 00 15

**PH012KF77..**

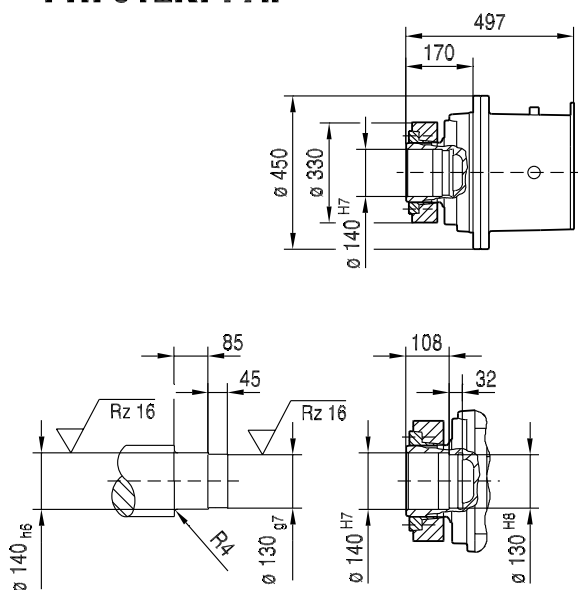
(→ 99)	DRN90S	DRN90L	DRN100LS	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L
AC	179	179	197	197	221	221	261	261	314	314
AD	140	140	157	157	170	170	228	228	253	253
ADS	150	150	158	158	172	172	228	228	253	253
L	752	784	780	830	861	911	929	955	1021	1021
LS	845	877	874	924	973	1023	1067	1092	1210	1210
LB	270	302	298	348	379	429	447	473	539	539
LBS	363	395	392	442	491	541	585	610	728	728

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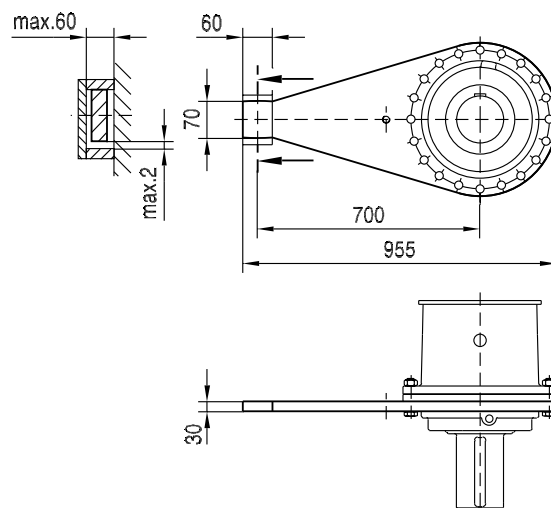
45 078 00 15



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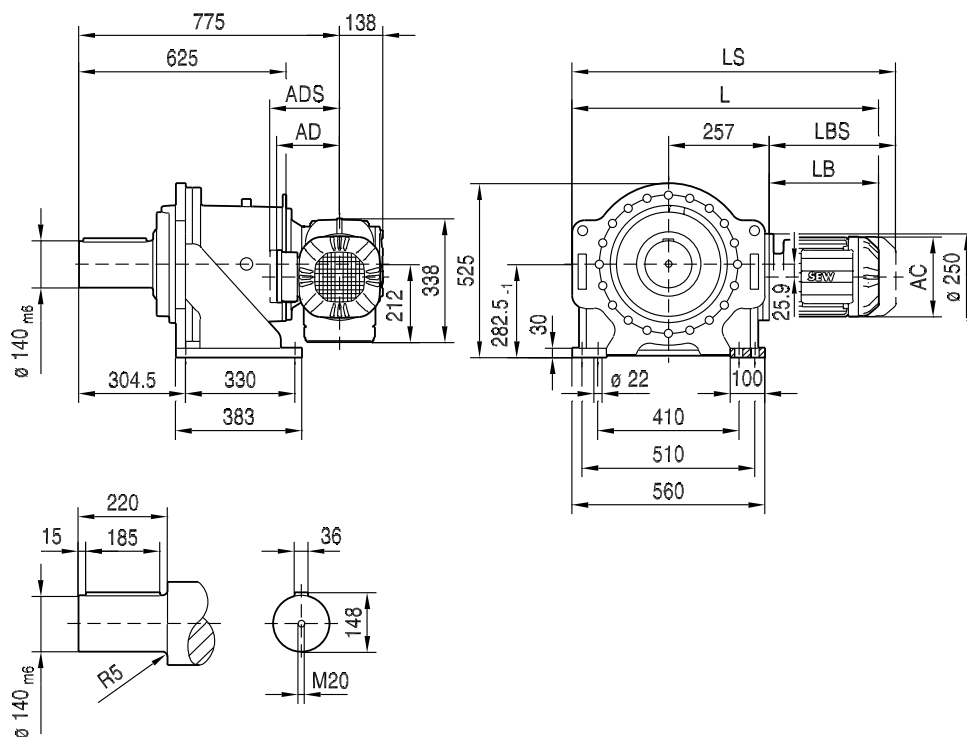


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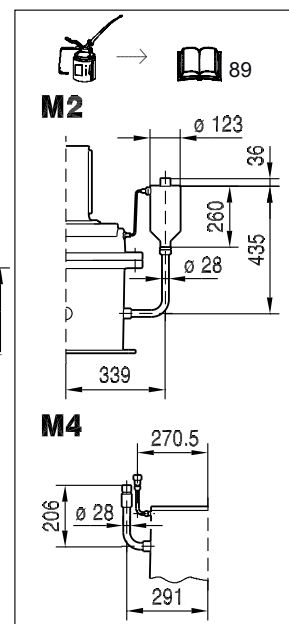
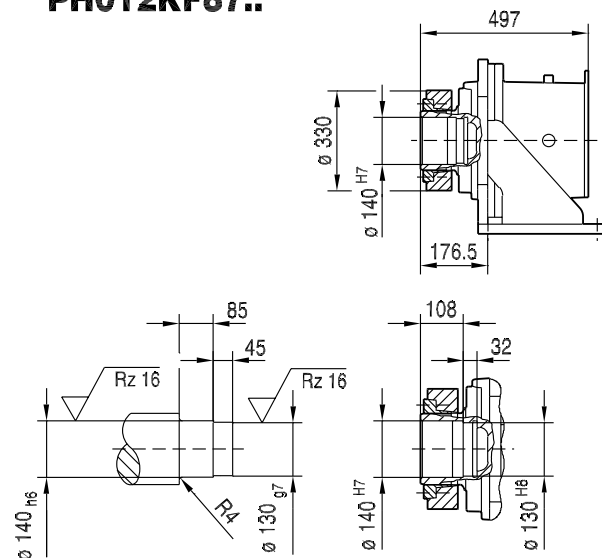


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(→ 99)	DRN90S	DRN90L	DRN100LS	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L
AC	179	179	197	197	221	221	261	261	314	314
AD	140	140	157	157	170	170	228	228	253	253
ADS	150	150	158	158	172	172	228	228	253	253
L	697	729	725	775	806	856	874	900	966	966
LS	790	822	819	869	918	968	1012	1037	1155	1155
LB	270	302	298	348	379	429	447	473	539	539
LBS	363	395	392	442	491	541	585	610	728	728

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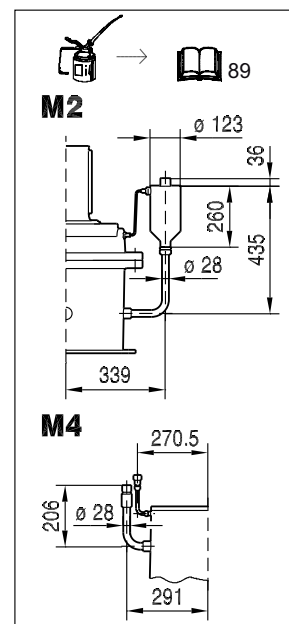
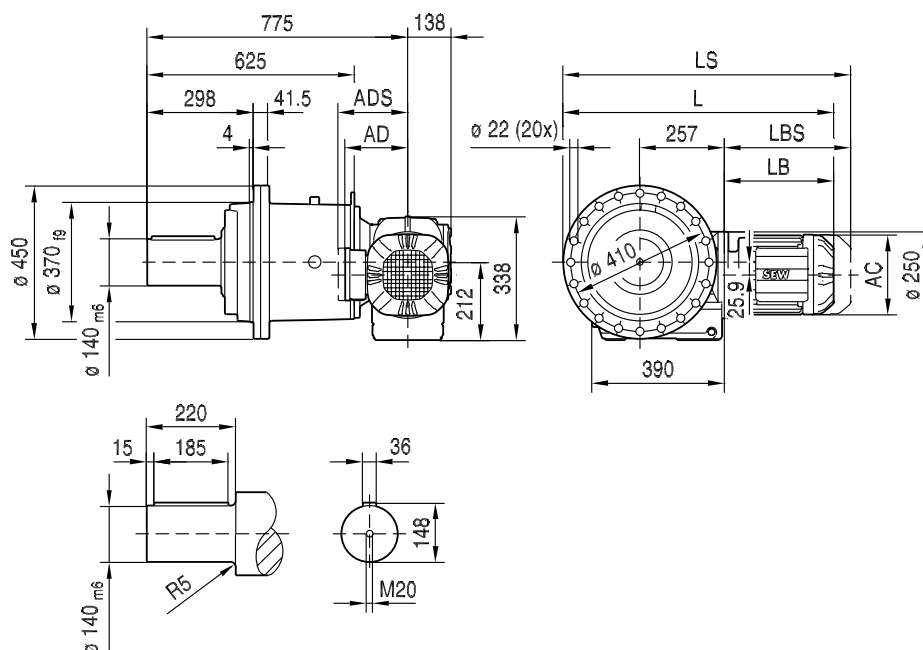
45 079 00 15

**PH012KF87..**

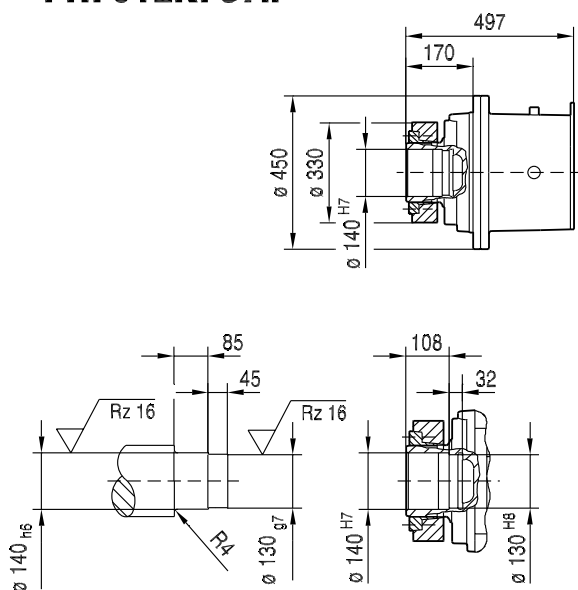
(→ 99)	DRN100LS	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L
AC	197	197	221	221	261	261	314	314	357	394
AD	157	157	170	170	228	228	253	253	268	283
ADS	158	158	172	172	228	228	253	253	268	283
L	830	880	911	961	979	1005	1071	1071	1094	1204
LS	924	974	1023	1073	1117	1142	1260	1260	1283	1409
LB	293	343	374	424	442	468	534	534	557	667
LBS	387	437	486	536	580	605	723	723	746	872

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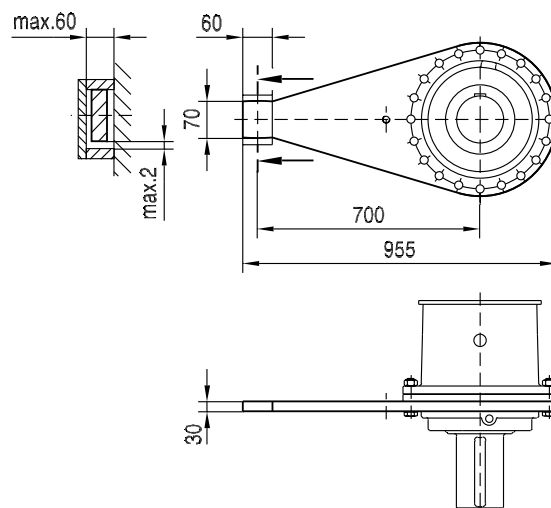
45 080 00 15



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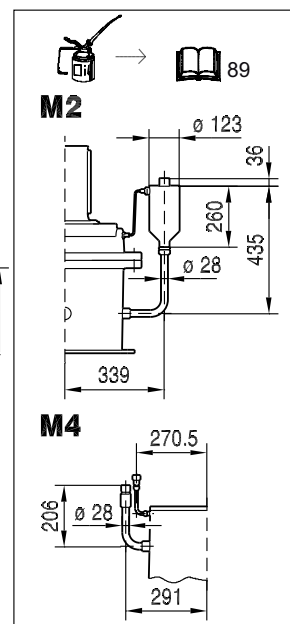


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(→ 99)	DRN100LS	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L
AC	197	197	221	221	261	261	314	314	357	394
AD	157	157	170	170	228	228	253	253	268	283
ADS	158	158	172	172	228	228	253	253	268	283
L	775	825	856	906	924	950	1016	1016	1039	1149
LS	869	919	968	1018	1062	1087	1205	1205	1228	1354
LB	293	343	374	424	442	468	534	534	557	667
LBS	387	437	486	536	580	605	723	723	746	872

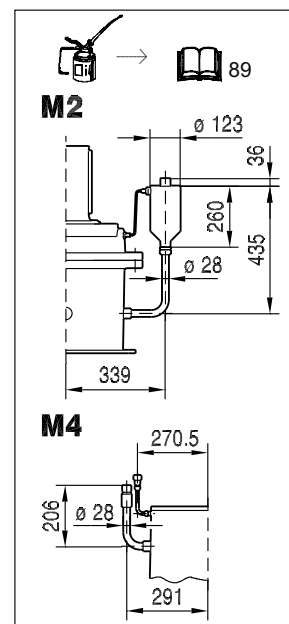
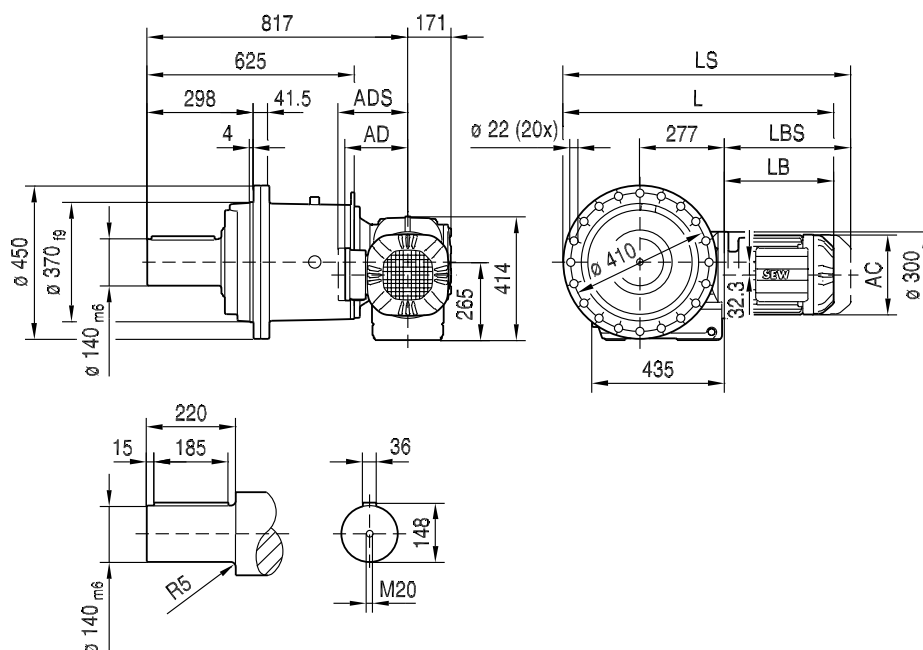
45 081 00 15



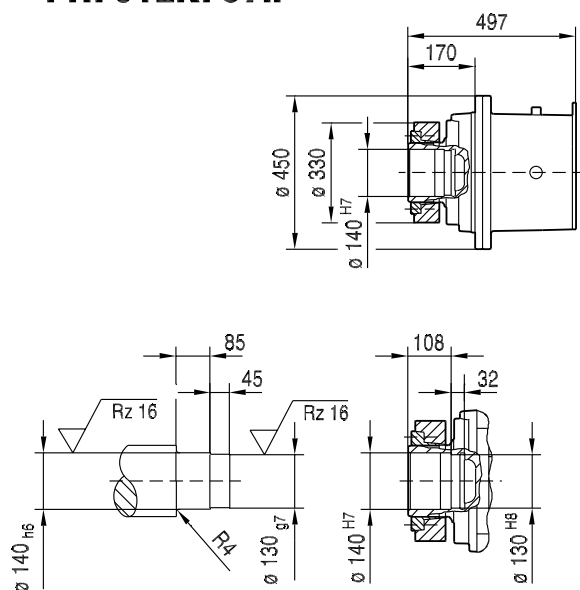
(→ 99)	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..
AC	221	261	261	314	314	357	394	434
AD	170	228	228	253	253	268	283	305
ADS	172	228	228	253	253	268	283	305
L	976	994	1020	1086	1086	1109	1219	1193
LS	1088	1132	1157	1275	1275	1298	1424	1398
LB	419	437	463	529	529	552	662	636
LBS	531	575	600	718	718	741	867	841

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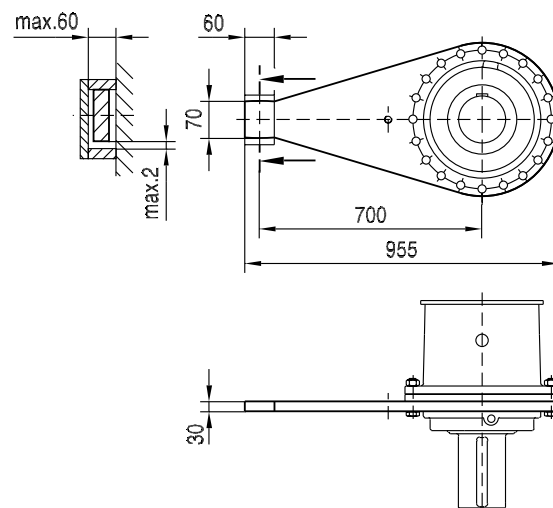
45 082 00 15



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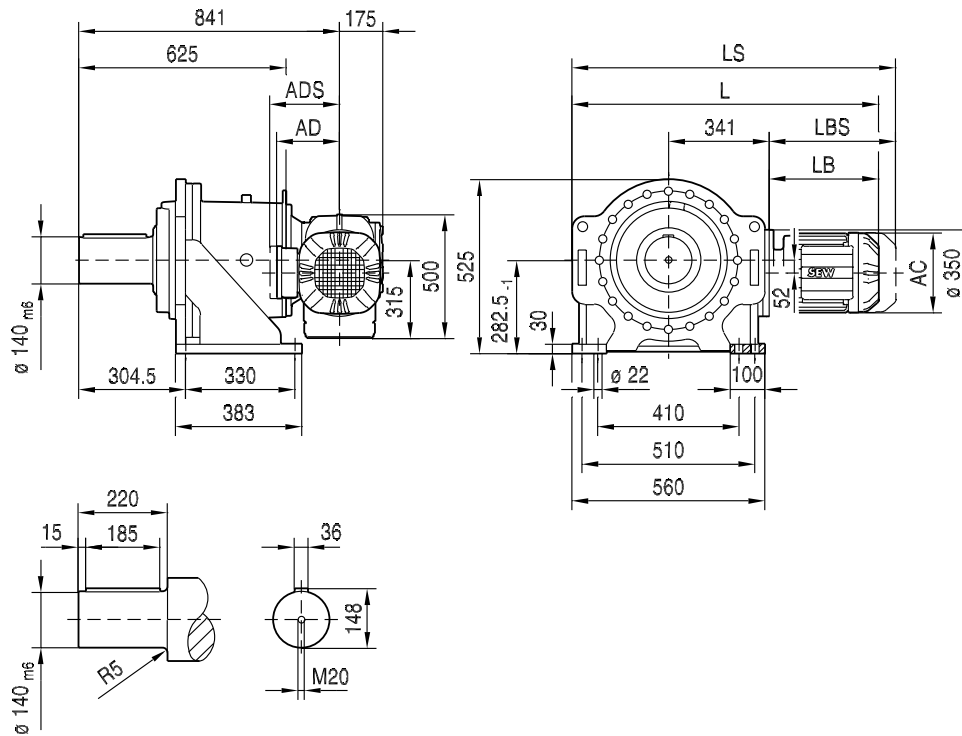


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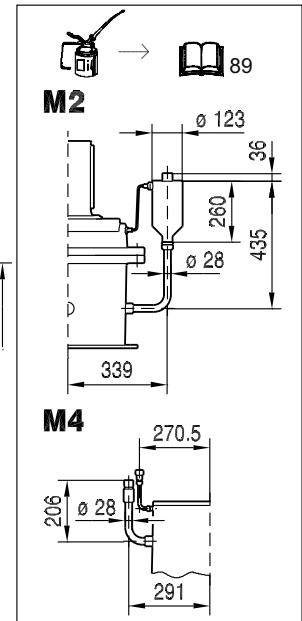
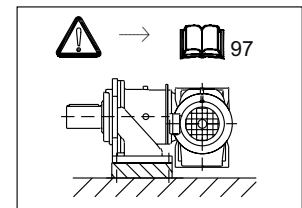
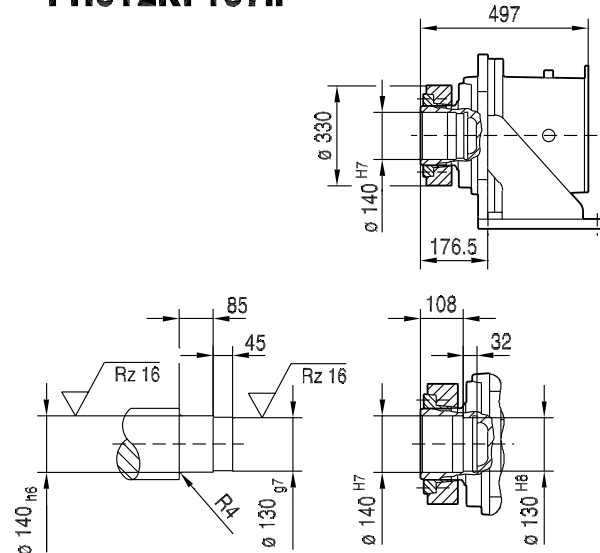


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(→ 99)	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..
AC	221	261	261	314	314	357	394	434
AD	170	228	228	253	253	268	283	305
ADS	172	228	228	253	253	268	283	305
L	921	939	965	1031	1031	1054	1164	1138
LS	1033	1077	1102	1220	1220	1243	1369	1343
LB	419	437	463	529	529	552	662	636
LBS	531	575	600	718	718	741	867	841

P012KF107..

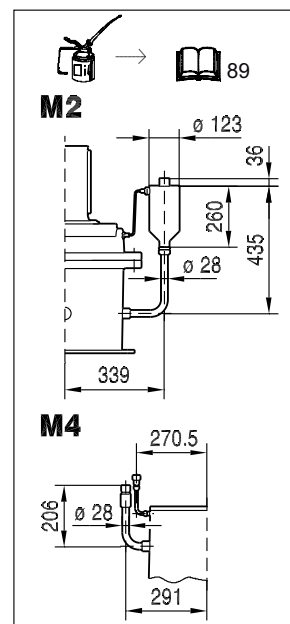
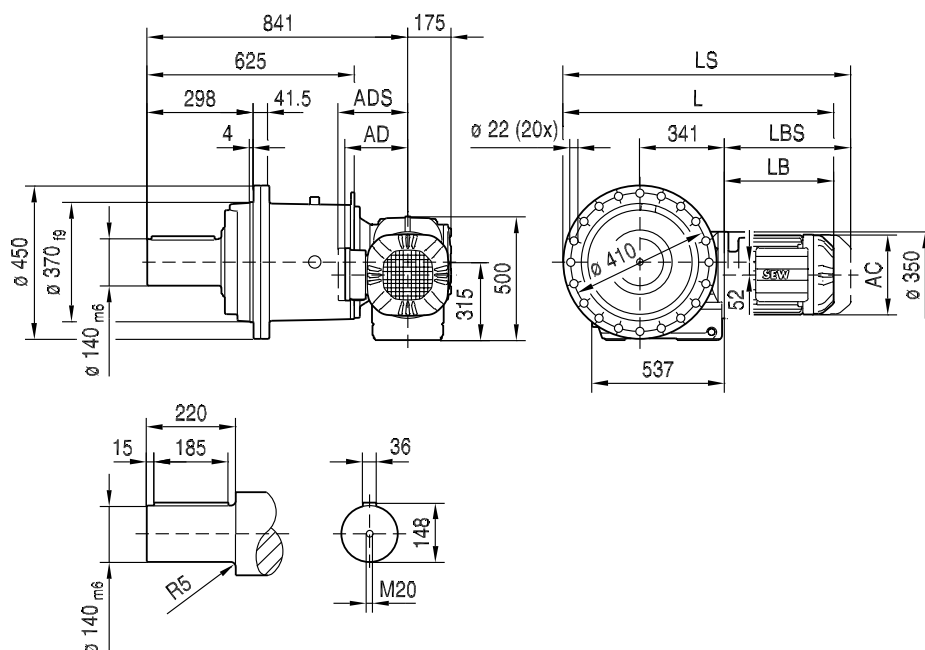
45 083 00 15

**PH012KF107..**

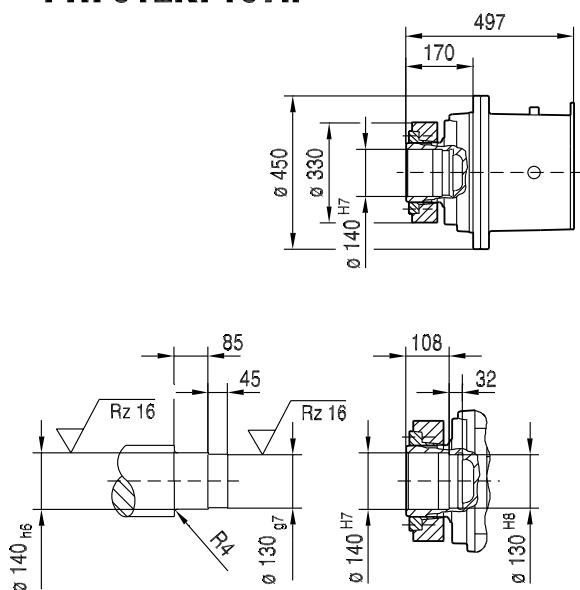
(→ 99)	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M
AC	221	261	261	314	314	357	394	434	495
AD	170	228	228	253	253	268	283	305	394
ADS	172	228	228	253	253	268	283	305	394
L	1034	1052	1078	1144	1144	1167	1277	1251	1388
LS	1146	1190	1215	1333	1333	1356	1482	1456	1628
LB	413	431	457	523	523	546	656	630	767
LBS	525	569	594	712	712	735	861	835	1007

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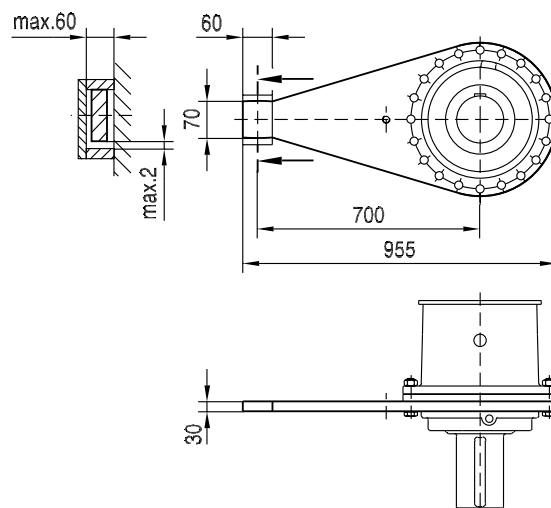
45 084 00 15



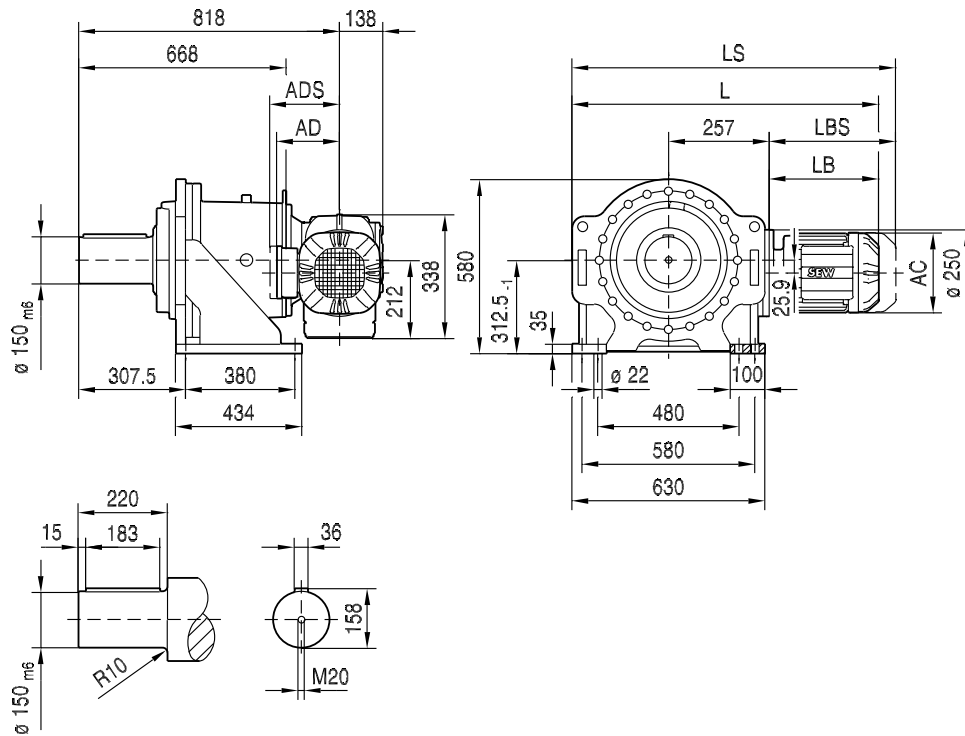
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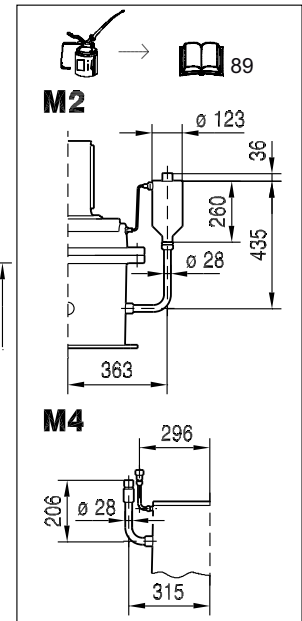
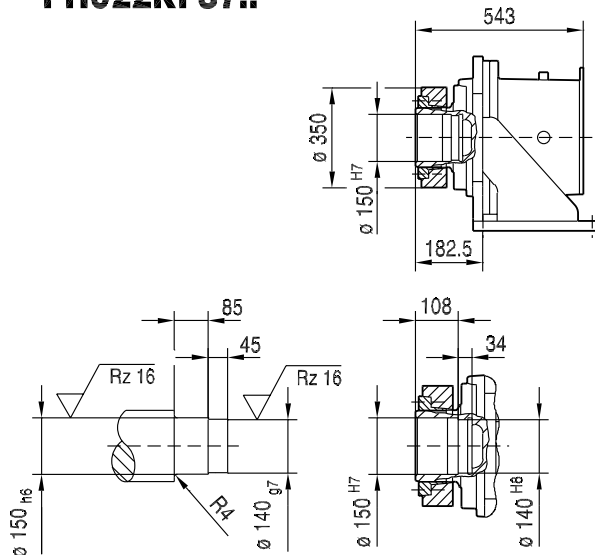
P..012/T..



(→ 📄 99)	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M
AC	221	261	261	314	314	357	394	434	495
AD	170	228	228	253	253	268	283	305	394
ADS	172	228	228	253	253	268	283	305	394
L	979	997	1023	1089	1089	1112	1222	1196	1333
LS	1091	1135	1160	1278	1278	1301	1427	1401	1573
LB	413	431	457	523	523	546	656	630	767
LBS	525	569	594	712	712	735	861	835	1007

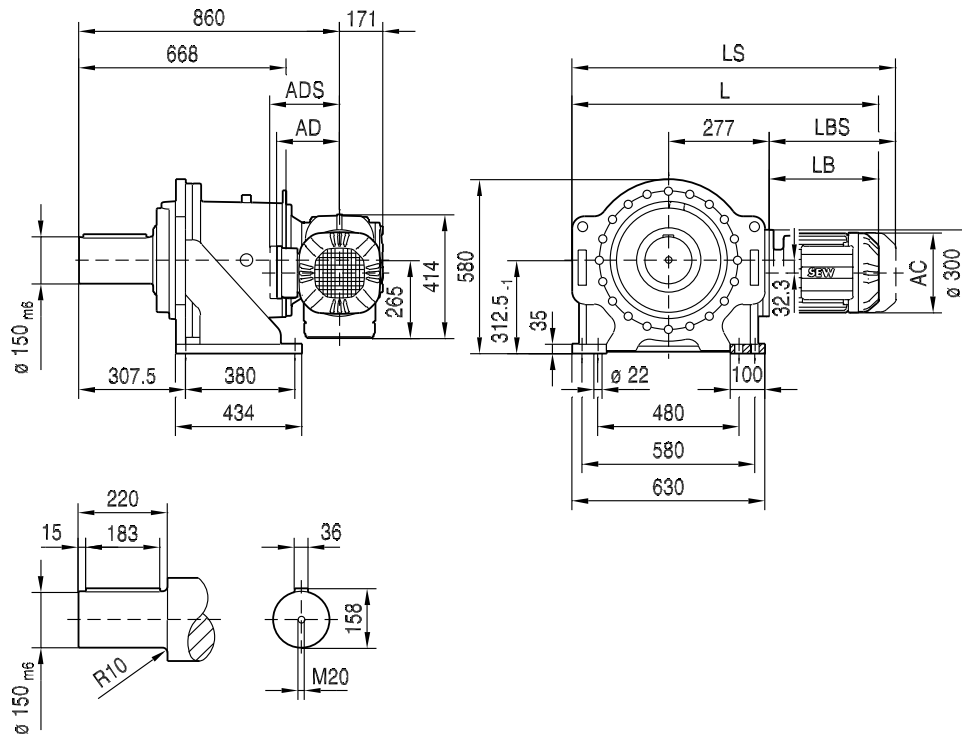
P022KF87..

45 085 00 15

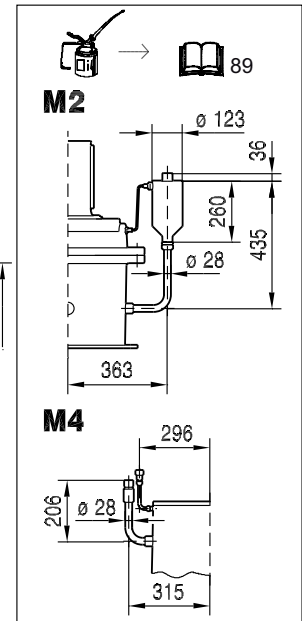
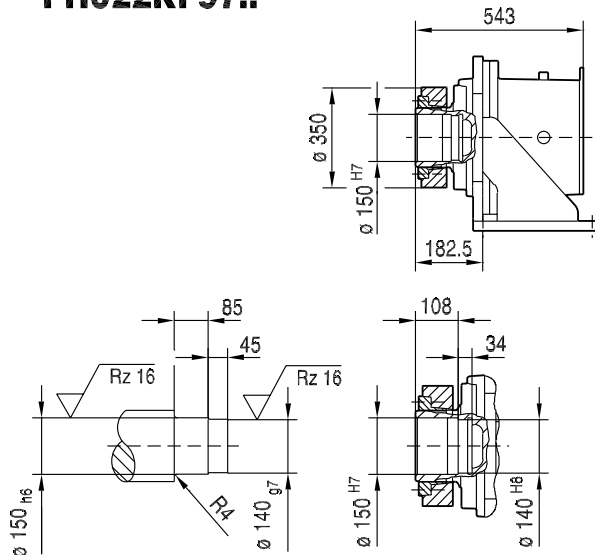
**PH022KF87..**

(→ 99)	DRN100LS	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L
AC	197	197	221	221	261	261	314	314	357	394
AD	157	157	170	170	228	228	253	253	268	283
ADS	158	158	172	172	228	228	253	253	268	283
L	865	915	946	996	1014	1040	1106	1106	1129	1239
LS	959	1009	1058	1108	1152	1177	1295	1295	1318	1444
LB	293	343	374	424	442	468	534	534	557	667
LBS	387	437	486	536	580	605	723	723	746	872

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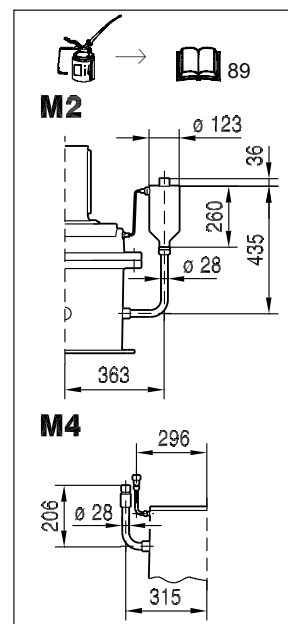
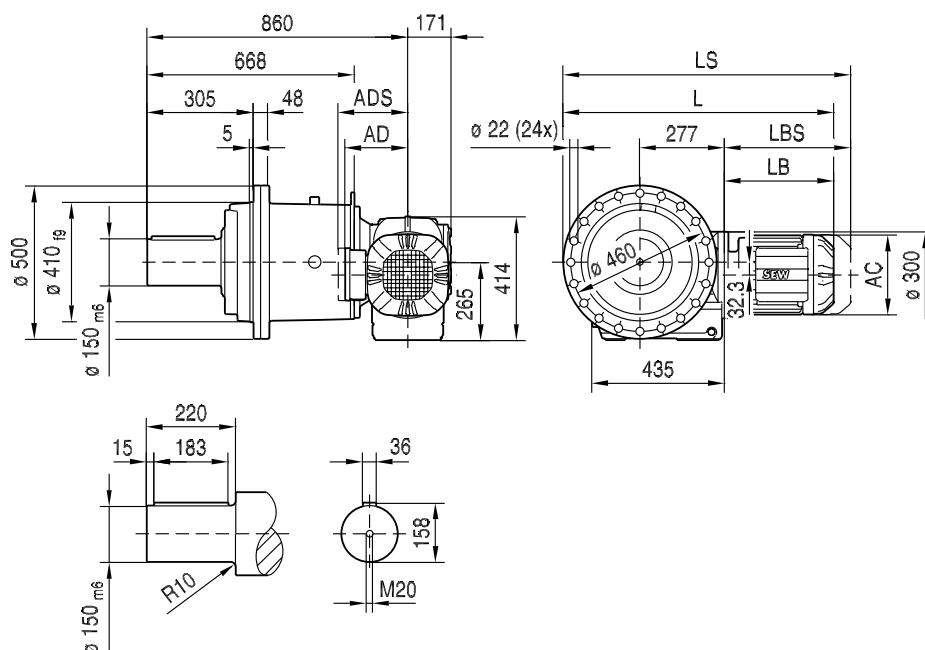
45 087 00 15

**PH022KF97..**

(→ 99)	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..
AC	221	261	261	314	314	357	394	434
AD	170	228	228	253	253	268	283	305
ADS	172	228	228	253	253	268	283	305
L	1011	1029	1055	1121	1121	1144	1254	1228
LS	1123	1167	1192	1310	1310	1333	1459	1433
LB	419	437	463	529	529	552	662	636
LBS	531	575	600	718	718	741	867	841

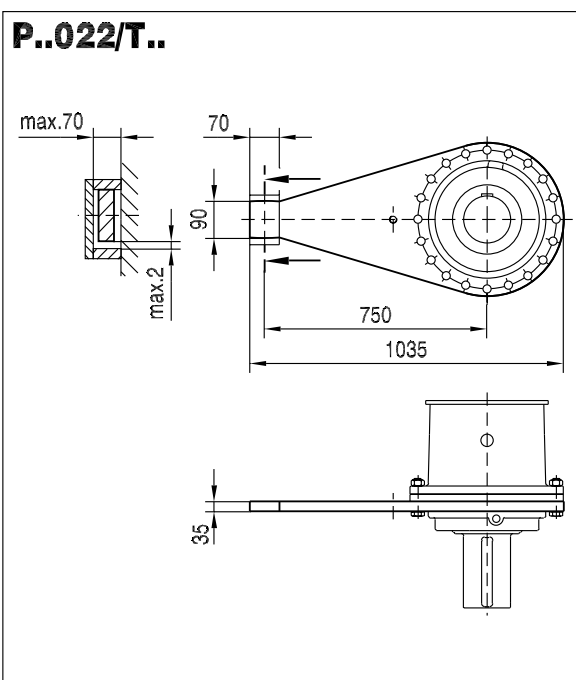
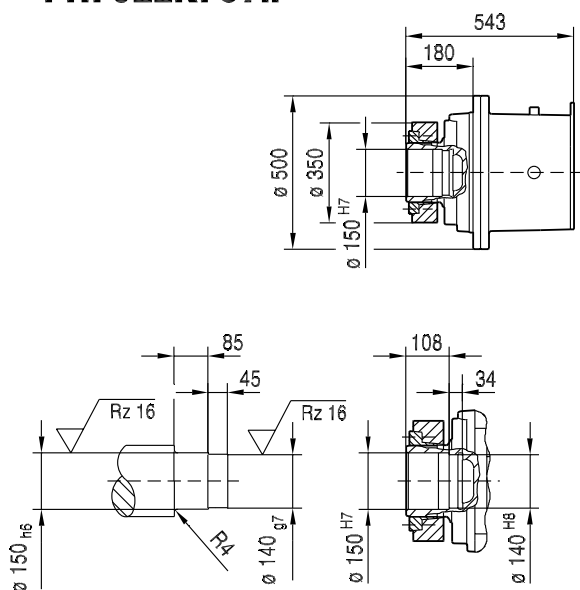
PF022KF97..

45 088 00 15



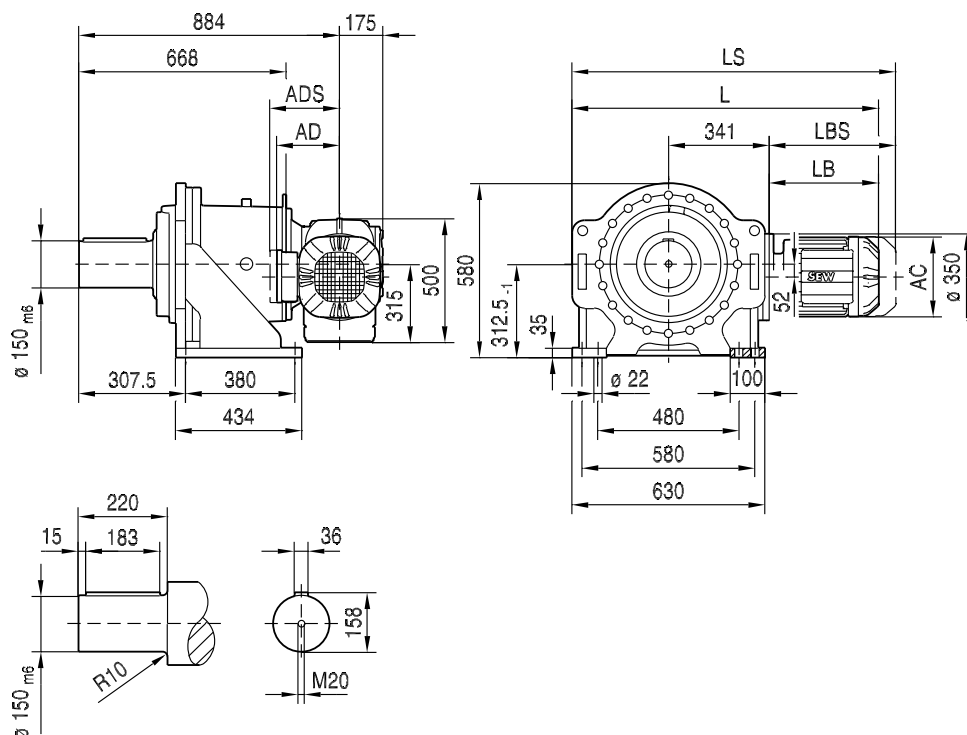
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P..022/T..

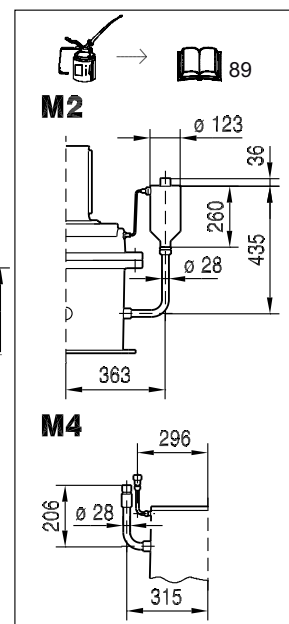
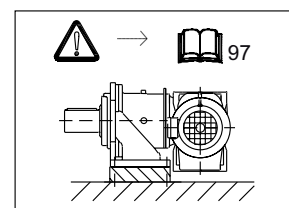
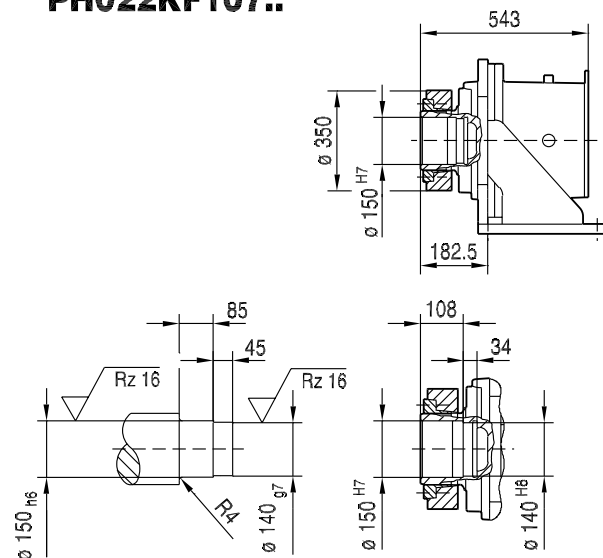


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(→ 99)	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..
AC	221	261	261	314	314	357	394	434
AD	170	228	228	253	253	268	283	305
ADS	172	228	228	253	253	268	283	305
L	946	964	990	1056	1056	1079	1189	1163
LS	1058	1102	1127	1245	1245	1268	1394	1368
LB	419	437	463	529	529	552	662	636
LBS	531	575	600	718	718	741	867	841

P022KF107..

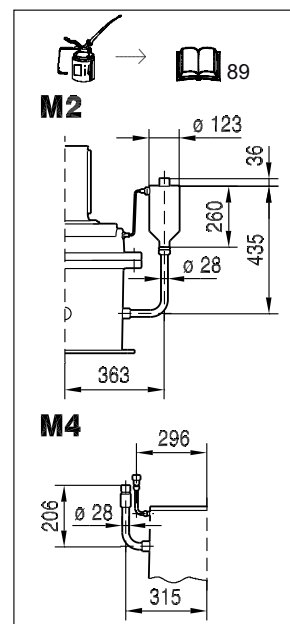
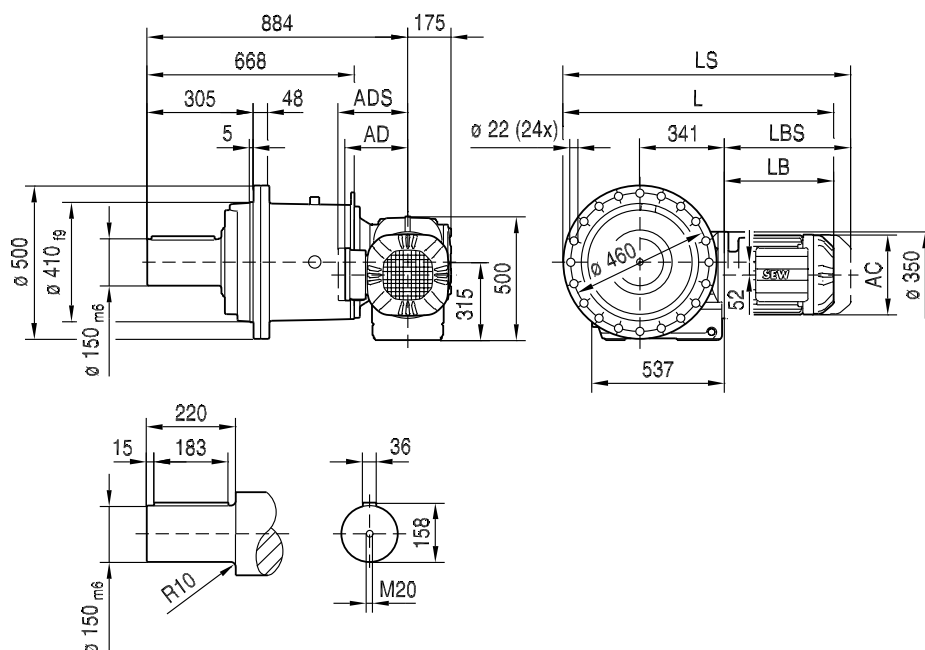
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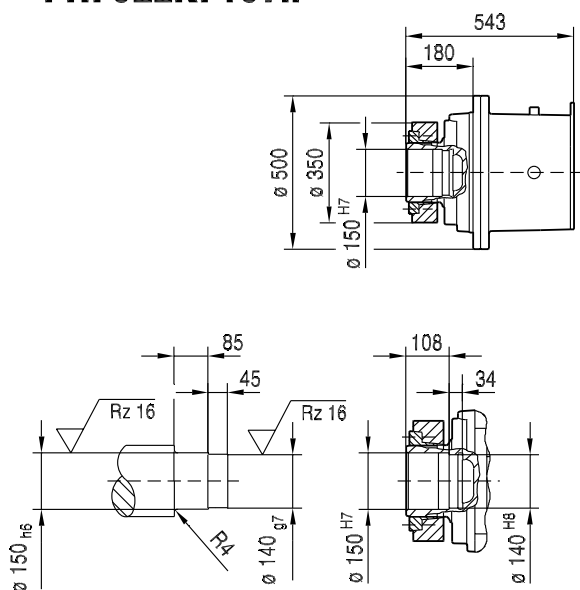
(→ 99)	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M
AC	221	261	261	314	314	357	394	434	495
AD	170	228	228	253	253	268	283	305	394
ADS	172	228	228	253	253	268	283	305	394
L	1069	1087	1113	1179	1179	1202	1312	1286	1423
LS	1181	1225	1250	1368	1368	1391	1517	1491	1663
LB	413	431	457	523	523	546	656	630	767
LBS	525	569	594	712	712	735	861	835	1007

PF022KF107..

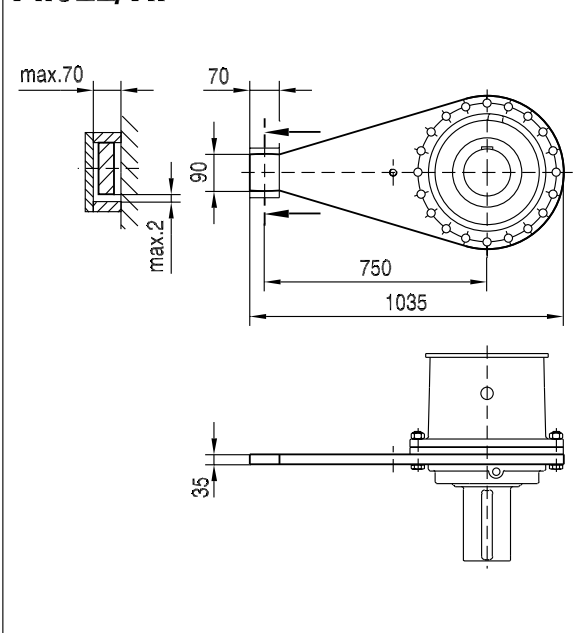
45 090 00 15



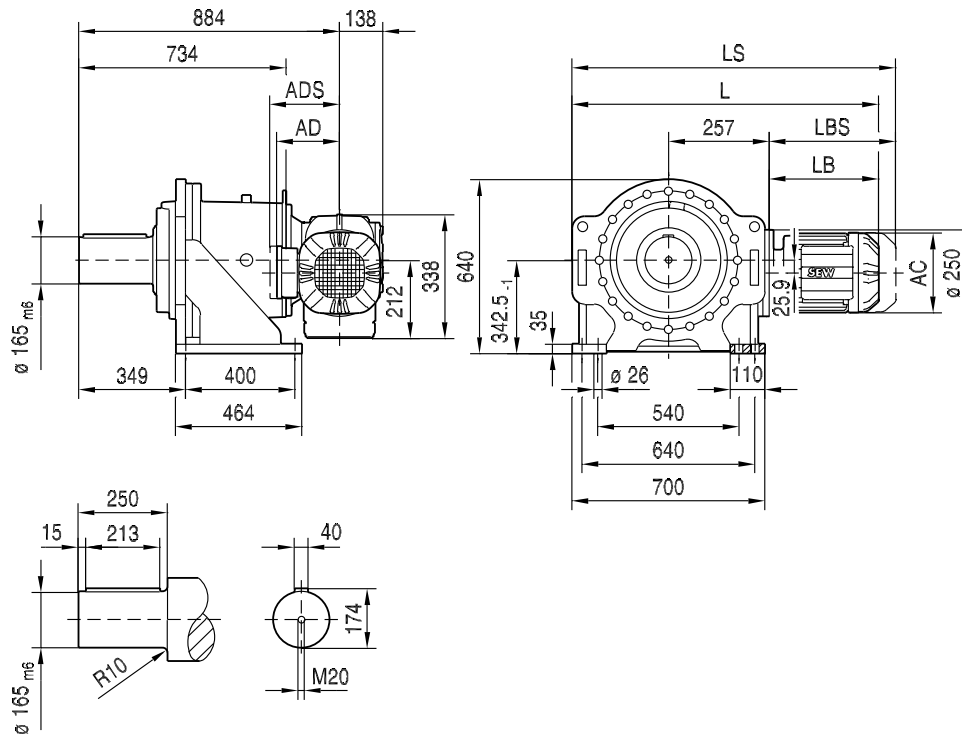
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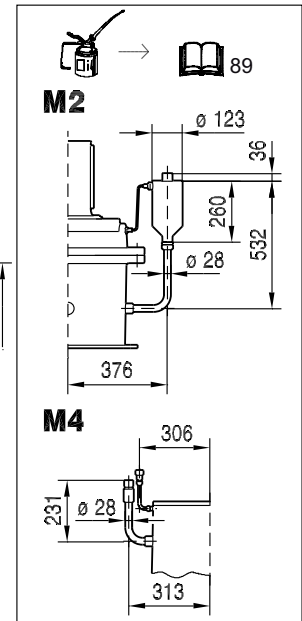
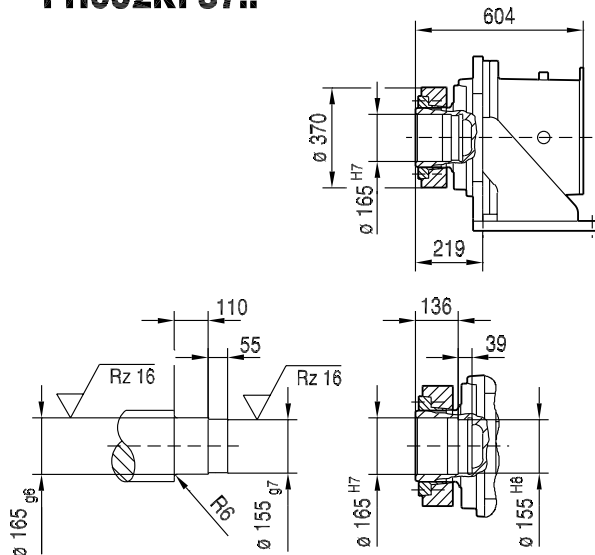
P..022/T..



(→ 📄 99)	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M
AC	221	261	261	314	314	357	394	434	495
AD	170	228	228	253	253	268	283	305	394
ADS	172	228	228	253	253	268	283	305	394
L	1004	1022	1048	1114	1114	1137	1247	1221	1358
LS	1116	1160	1185	1303	1303	1326	1452	1426	1598
LB	413	431	457	523	523	546	656	630	767
LBS	525	569	594	712	712	735	861	835	1007

P032KF87..

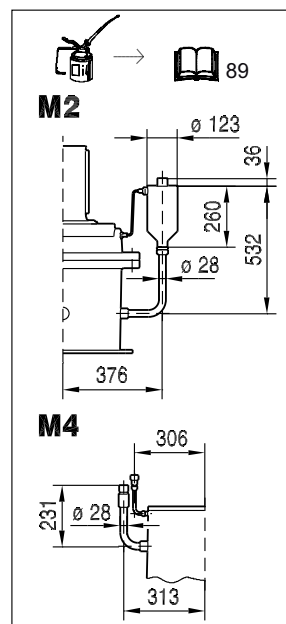
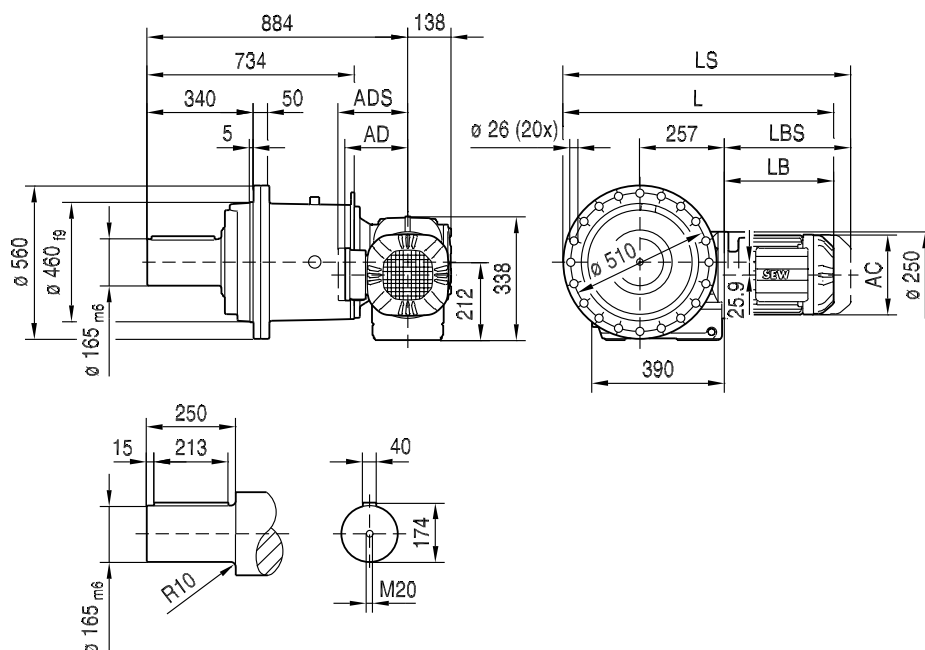
45 091 00 15

**PH032KF87..**

(→ 99)	DRN100LS	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L
AC	197	197	221	221	261	261	314	314	357	394
AD	157	157	170	170	228	228	253	253	268	283
ADS	158	158	172	172	228	228	253	253	268	283
L	900	950	981	1031	1049	1075	1141	1141	1164	1274
LS	994	1044	1093	1143	1187	1212	1330	1330	1353	1479
LB	293	343	374	424	442	468	534	534	557	667
LBS	387	437	486	536	580	605	723	723	746	872

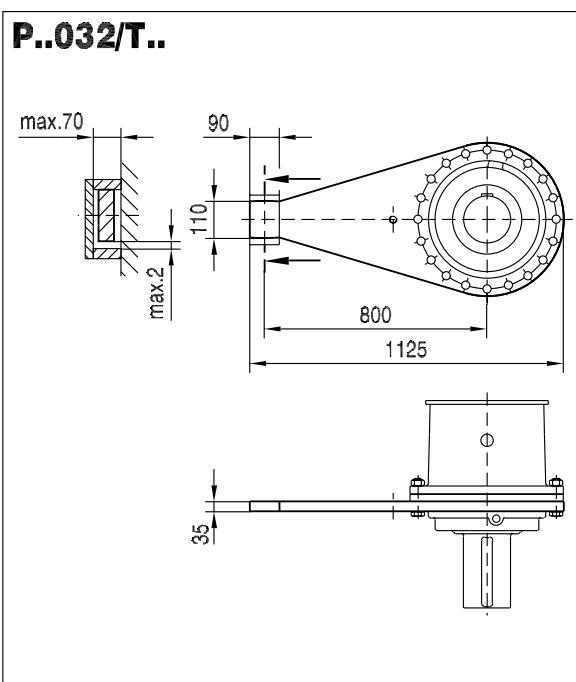
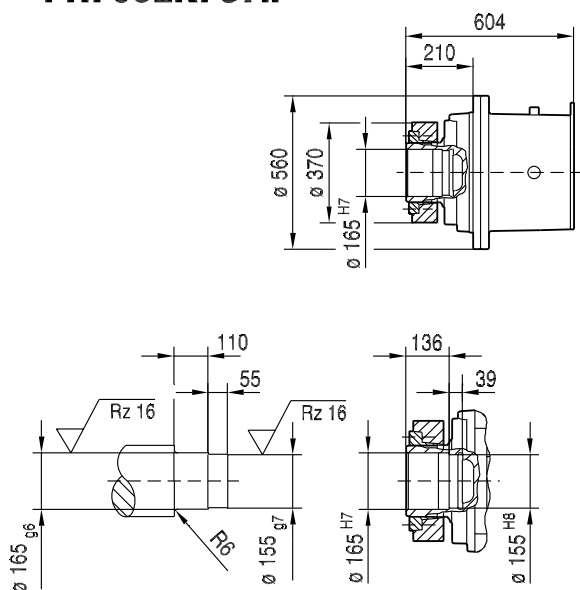
PF032KF87..

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PHF032KF87..

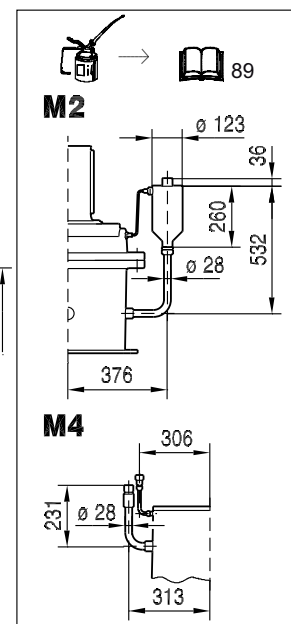
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(→ 99)	DRN100LS	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L
AC	197	197	221	221	261	261	314	314	357	394
AD	157	157	170	170	228	228	253	253	268	283
ADS	158	158	172	172	228	228	253	253	268	283
L	830	880	911	961	979	1005	1071	1071	1094	1204
LS	924	974	1023	1073	1117	1142	1260	1260	1283	1409
LB	293	343	374	424	442	468	534	534	557	667
LBS	387	437	486	536	580	605	723	723	746	872

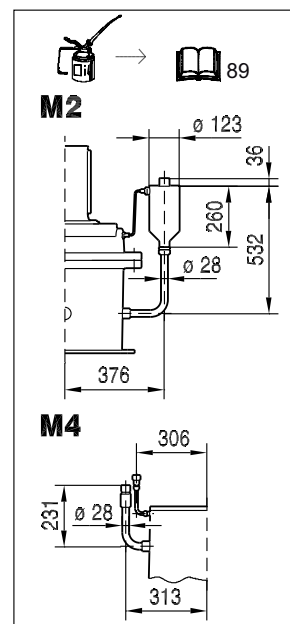
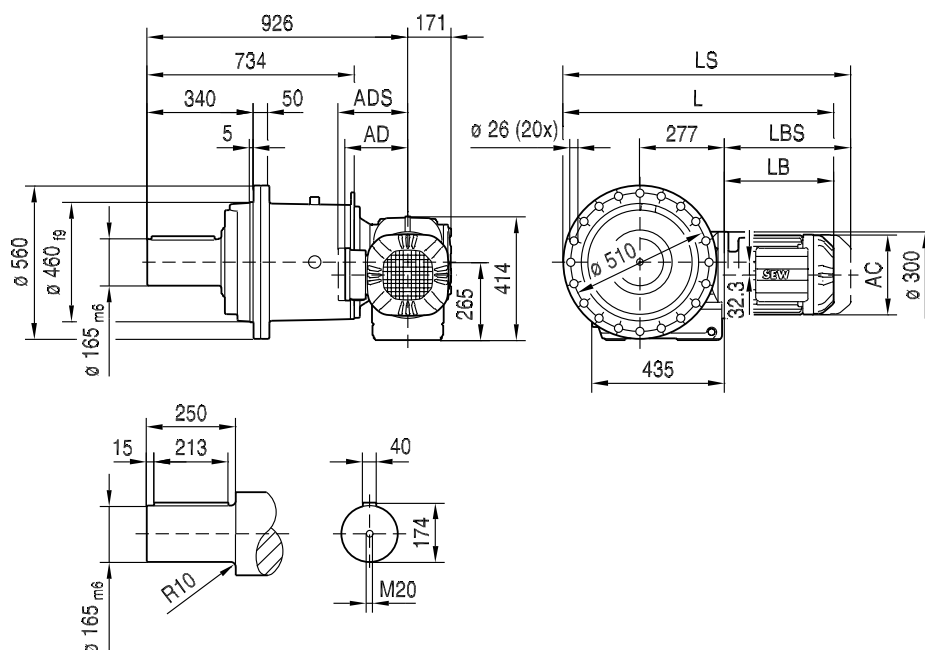
45 093 00 15



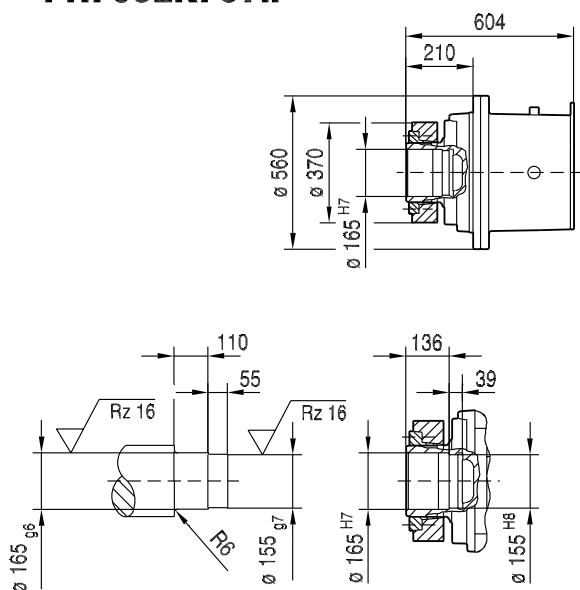
(→ 99)	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..
AC	197	221	221	261	261	314	314	357	394	434
AD	157	170	170	228	228	253	253	268	283	305
ADS	158	172	172	228	228	253	253	268	283	305
L	965	996	1046	1064	1090	1156	1156	1179	1289	1263
LS	1059	1108	1158	1202	1227	1345	1345	1368	1494	1468
LB	338	369	419	437	463	529	529	552	662	636
LBS	432	481	531	575	600	718	718	741	867	841

PF032KF97..

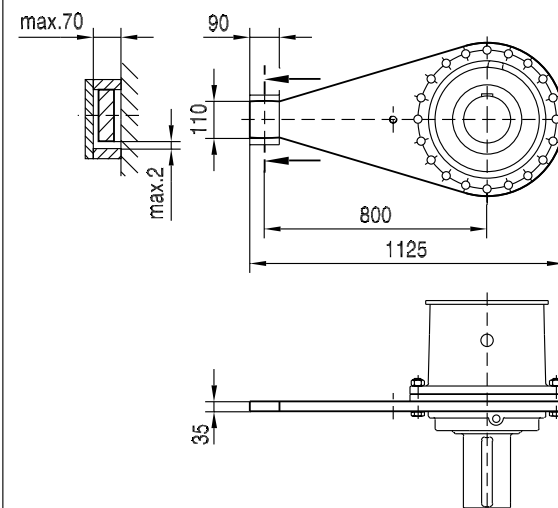
45 094 00 15



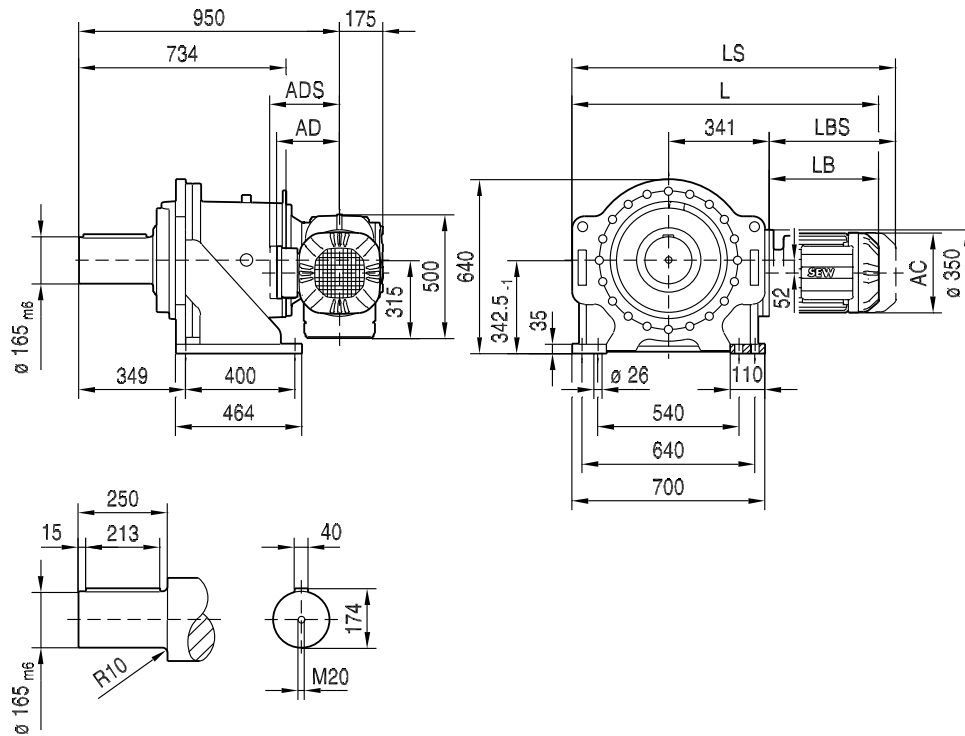
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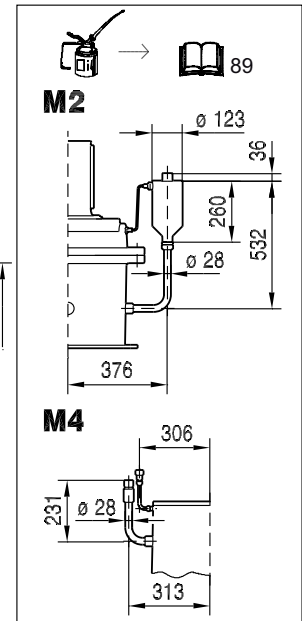
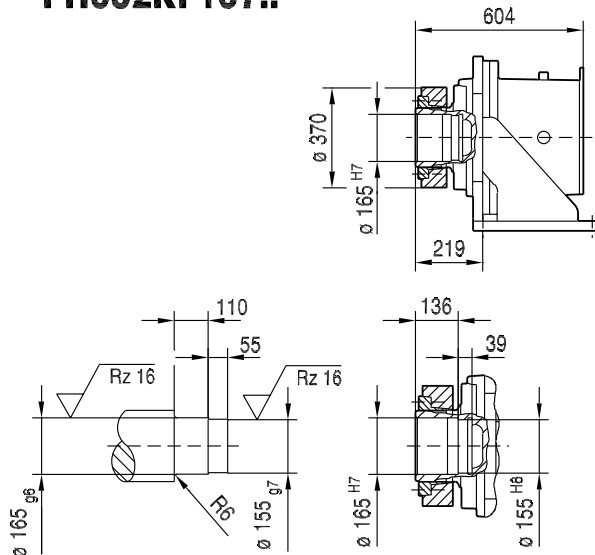
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(→ 📄 99)	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..
AC	197	221	221	261	261	314	314	357	394	434
AD	157	170	170	228	228	253	253	268	283	305
ADS	158	172	172	228	228	253	253	268	283	305
L	895	926	976	994	1020	1086	1086	1109	1219	1193
LS	989	1038	1088	1132	1157	1275	1275	1298	1424	1398
LB	338	369	419	437	463	529	529	552	662	636
LBS	432	481	531	575	600	718	718	741	867	841

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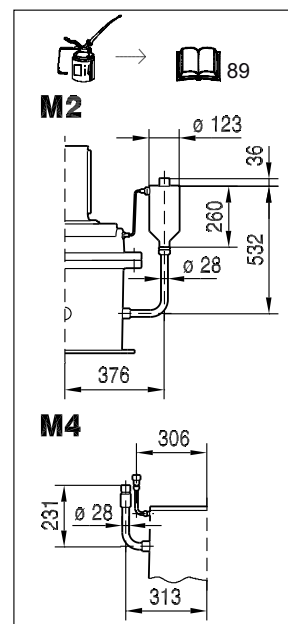
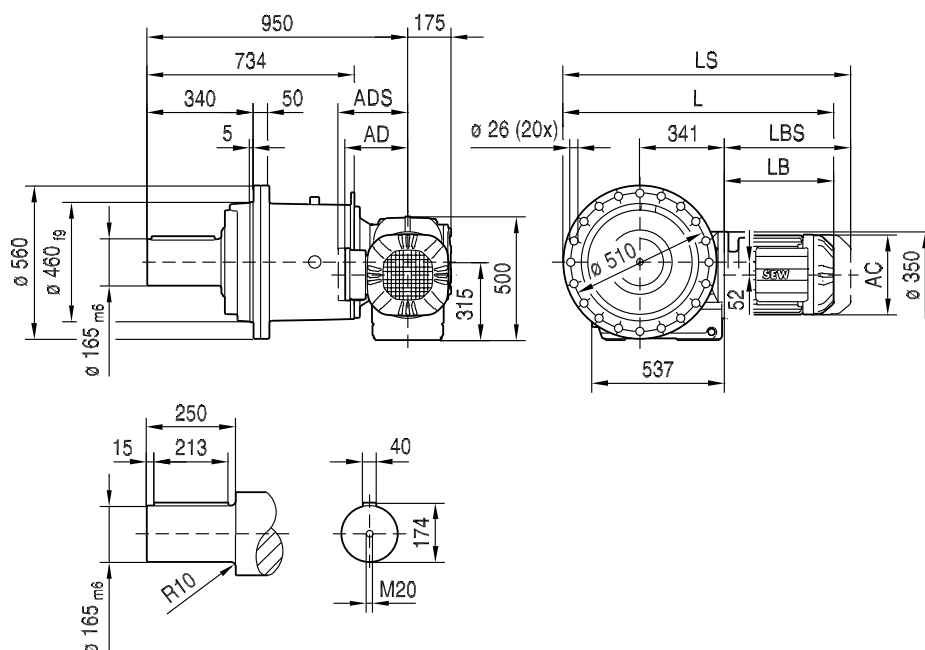
45 095 00 15

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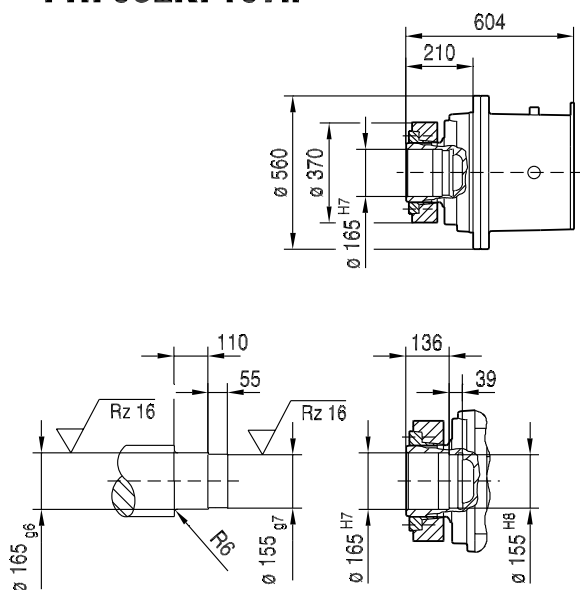
(→ 99)	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M
AC	221	221	261	261	314	314	357	394	434	495
AD	170	170	228	228	253	253	268	283	305	394
ADS	172	172	228	228	253	253	268	283	305	394
L	1054	1104	1122	1148	1214	1214	1237	1347	1321	1458
LS	1166	1216	1260	1285	1403	1403	1426	1552	1526	1698
LB	363	413	431	457	523	523	546	656	630	767
LBS	475	525	569	594	712	712	735	861	835	1007

PF032KF107..

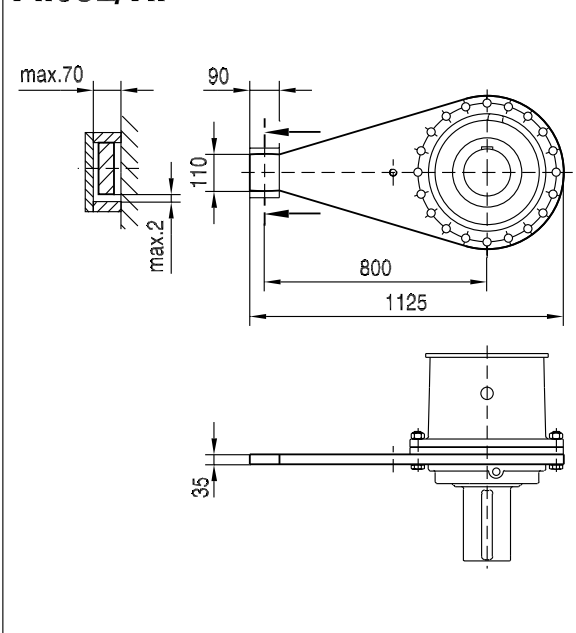
45 096 00 15



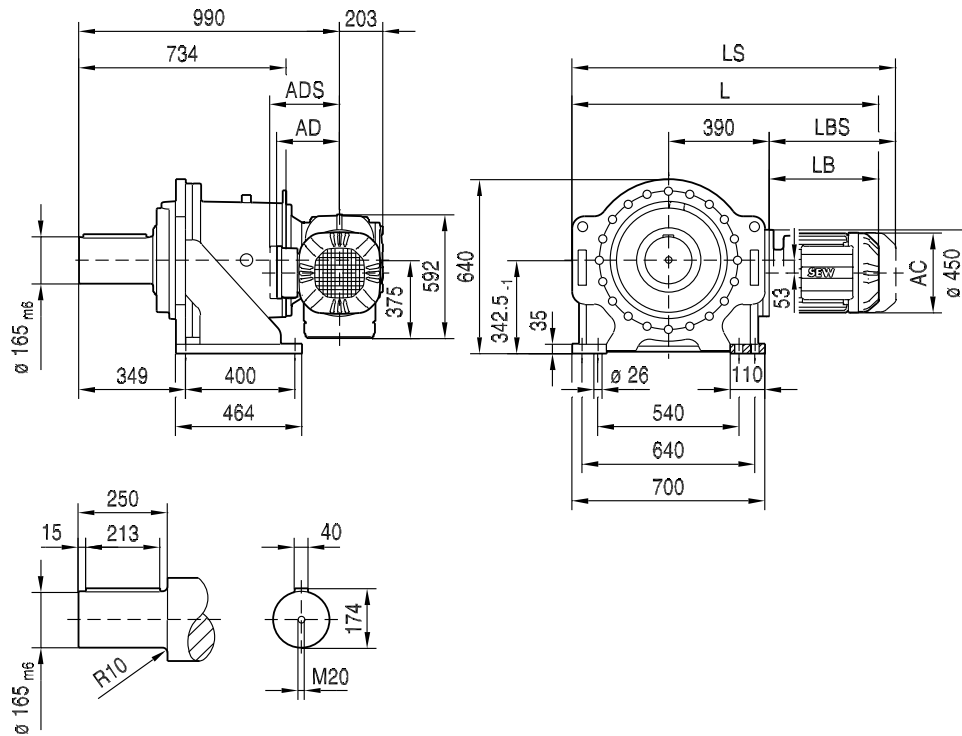
PHF032KF107..



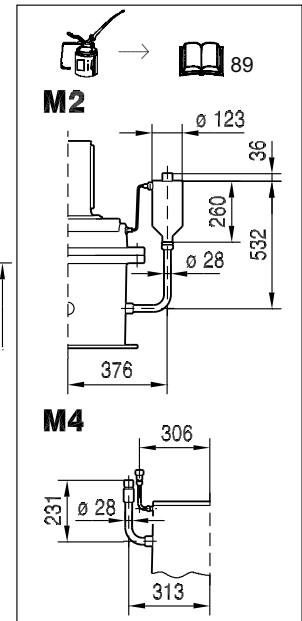
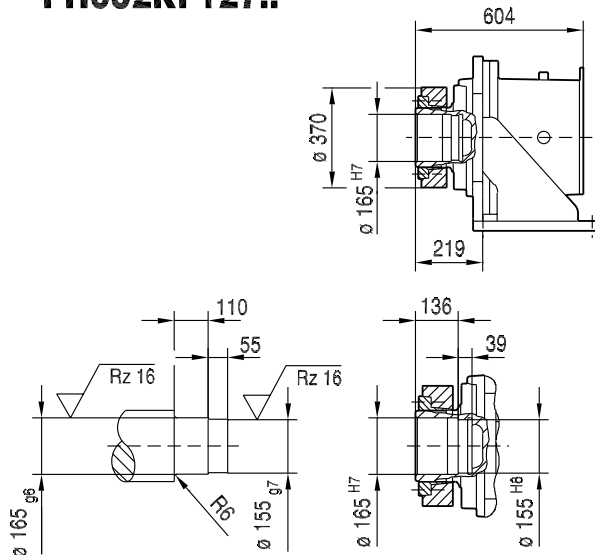
P..032/T..



(→ 99)	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M
AC	221	221	261	261	314	314	357	394	434	495
AD	170	170	228	228	253	253	268	283	305	394
ADS	172	172	228	228	253	253	268	283	305	394
L	984	1034	1052	1078	1144	1144	1167	1277	1251	1388
LS	1096	1146	1190	1215	1333	1333	1356	1482	1456	1628
LB	363	413	431	457	523	523	546	656	630	767
LBS	475	525	569	594	712	712	735	861	835	1007

P032KF127..

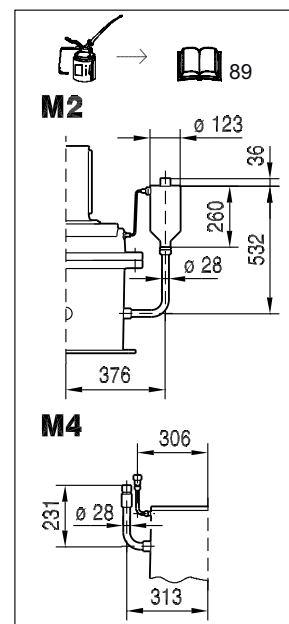
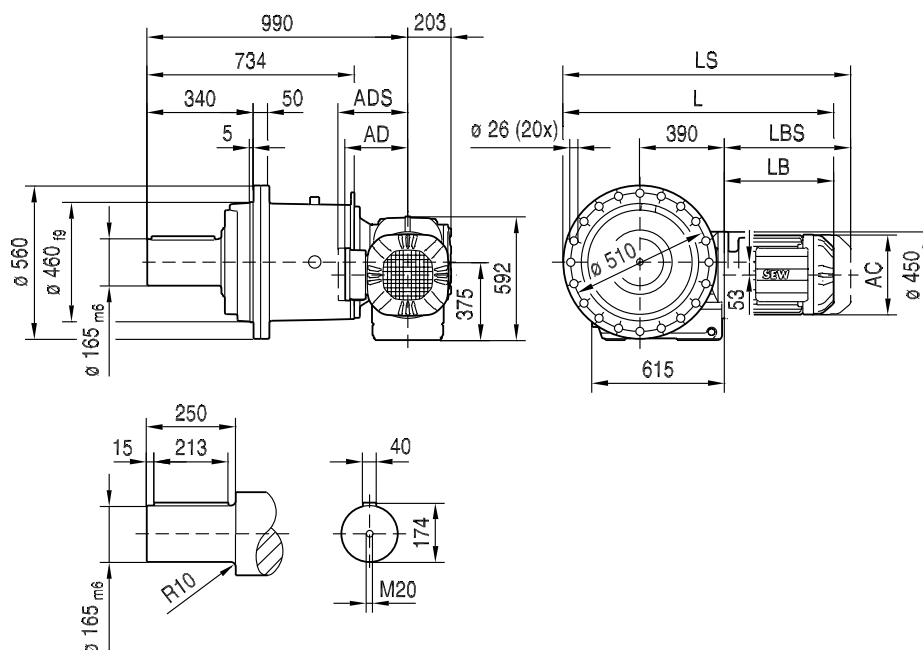
45 097 00 15

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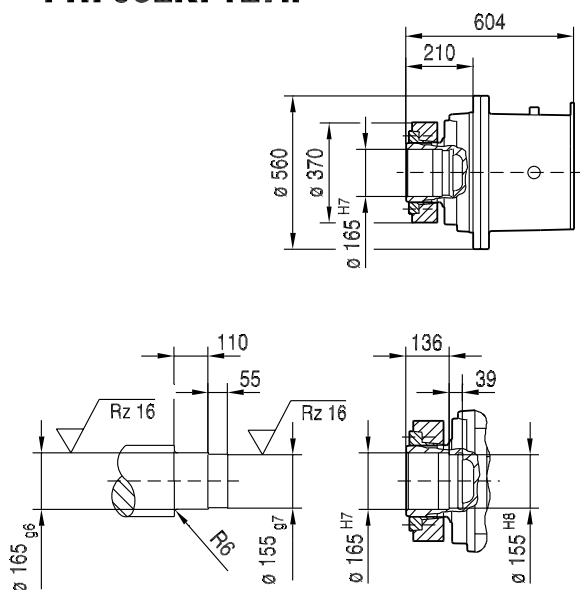
(→ 99)	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M	DRN280S	DRN280M	DRN315S-M
AC	261	314	314	357	394	434	495	495	495	624
AD	228	253	253	268	283	305	394	394	394	506
ADS	228	253	253	268	283	305	394	394	394	506
L	1182	1248	1248	1271	1381	1355	1492	1492	1587	1689
LS	1319	1437	1437	1460	1586	1560	1732	1732	1827	1940
LB	442	508	508	531	641	615	752	752	847	949
LBS	579	697	697	720	846	820	992	992	1087	1200

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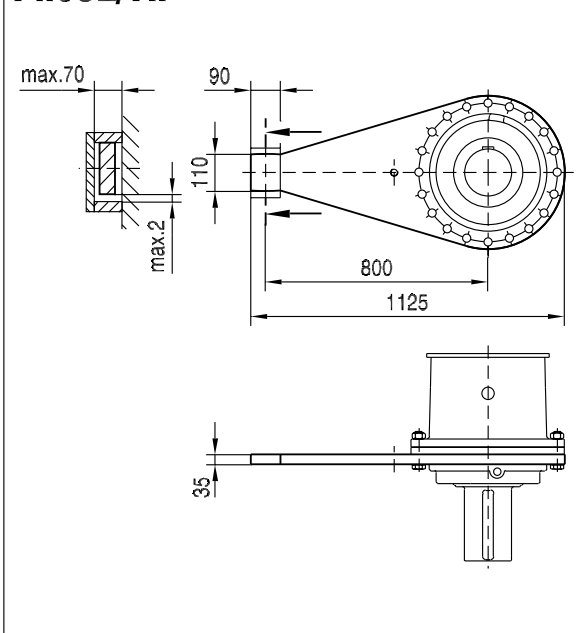
45 098 00 15



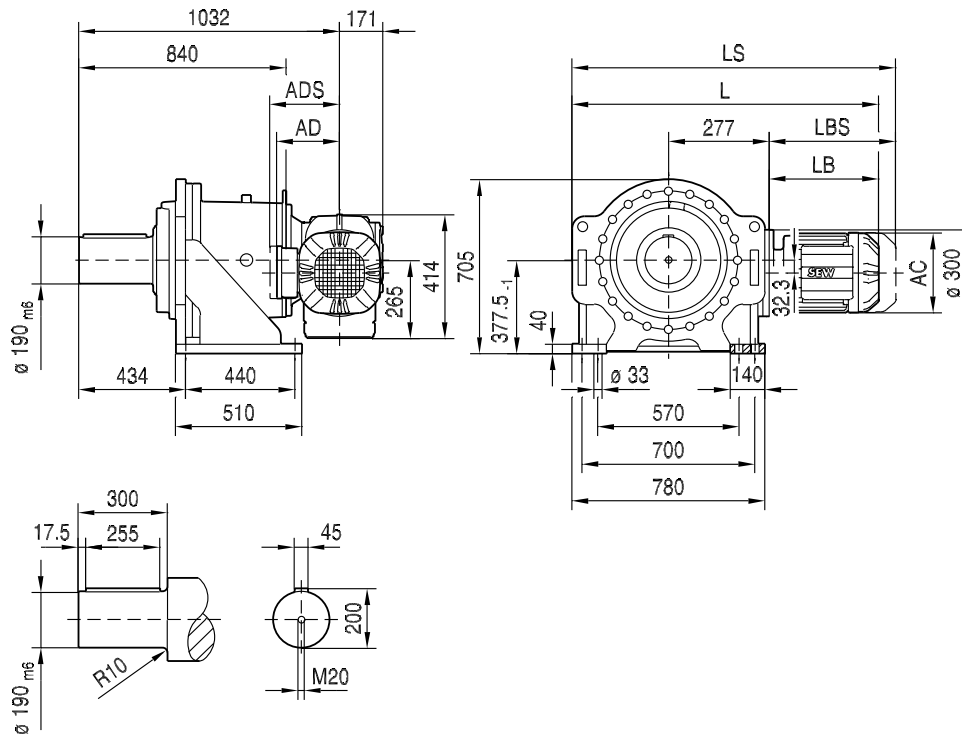
PHF032KF127..



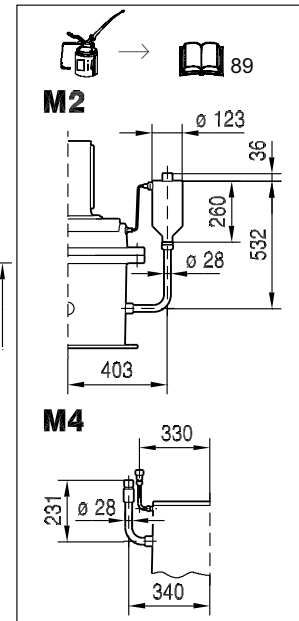
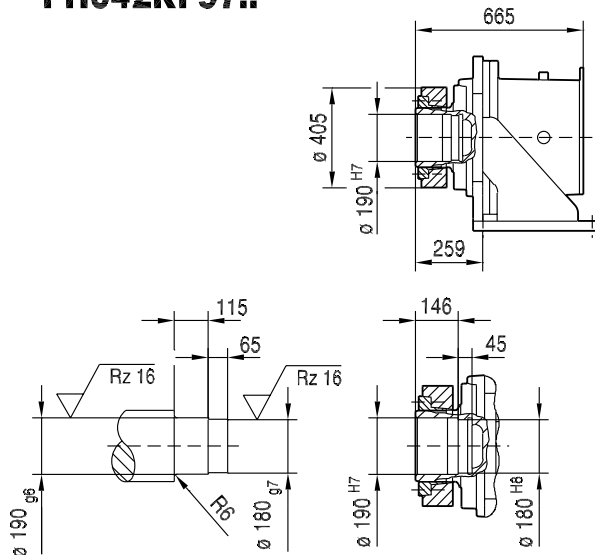
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(→ 📄 99)	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M	DRN280S	DRN280M	DRN315S-M
AC	261	314	314	357	394	434	495	495	495	624
AD	228	253	253	268	283	305	394	394	394	506
ADS	228	253	253	268	283	305	394	394	394	506
L	1112	1178	1178	1201	1311	1285	1422	1422	1517	1619
LS	1249	1367	1367	1390	1516	1490	1662	1662	1757	1870
LB	442	508	508	531	641	615	752	752	847	949
LBS	579	697	697	720	846	820	992	992	1087	1200

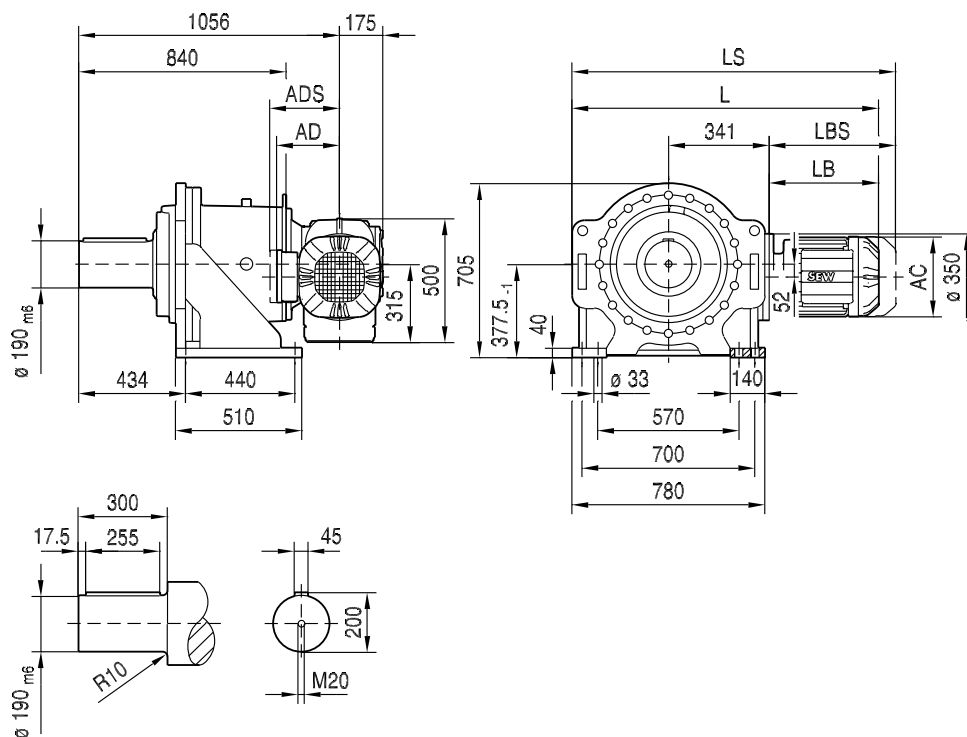
P042KF97..

45 099 00 15

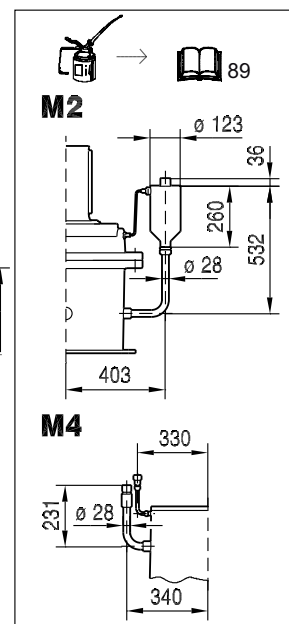
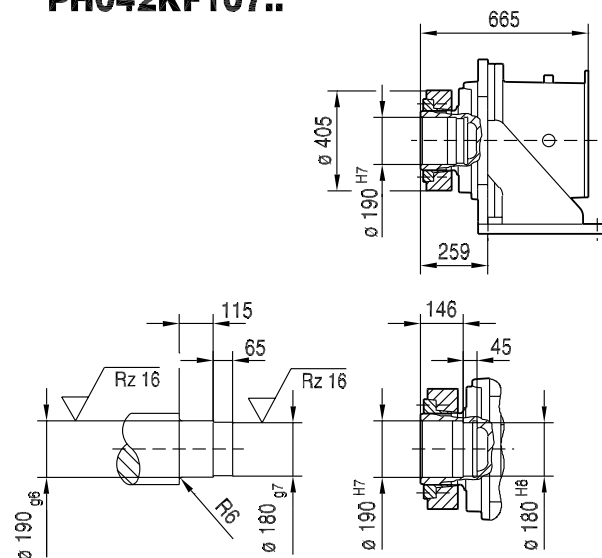
**PH042KF97..**

(→ 99)	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..
AC	197	221	221	261	261	314	314	357	394	434
AD	157	170	170	228	228	253	253	268	283	305
ADS	158	172	172	228	228	253	253	268	283	305
L	1005	1036	1086	1104	1130	1196	1196	1219	1329	1303
LS	1099	1148	1198	1242	1267	1385	1385	1408	1534	1508
LB	338	369	419	437	463	529	529	552	662	636
LBS	432	481	531	575	600	718	718	741	867	841

(→ 99)	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..
AC	197	221	221	261	261	314	314	357	394	434
AD	157	170	170	228	228	253	253	268	283	305
ADS	158	172	172	228	228	253	253	268	283	305
L	925	956	1006	1024	1050	1116	1116	1139	1249	1223
LS	1019	1068	1118	1162	1187	1305	1305	1328	1454	1428
LB	338	369	419	437	463	529	529	552	662	636
LBS	432	481	531	575	600	718	718	741	867	841

P042KF107..

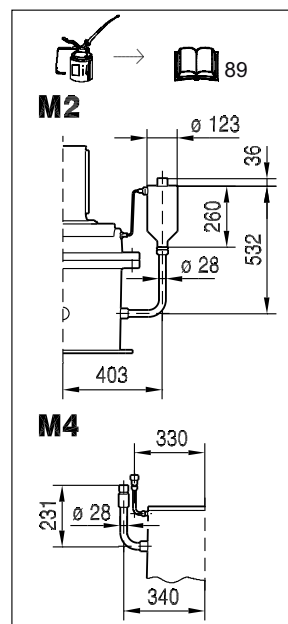
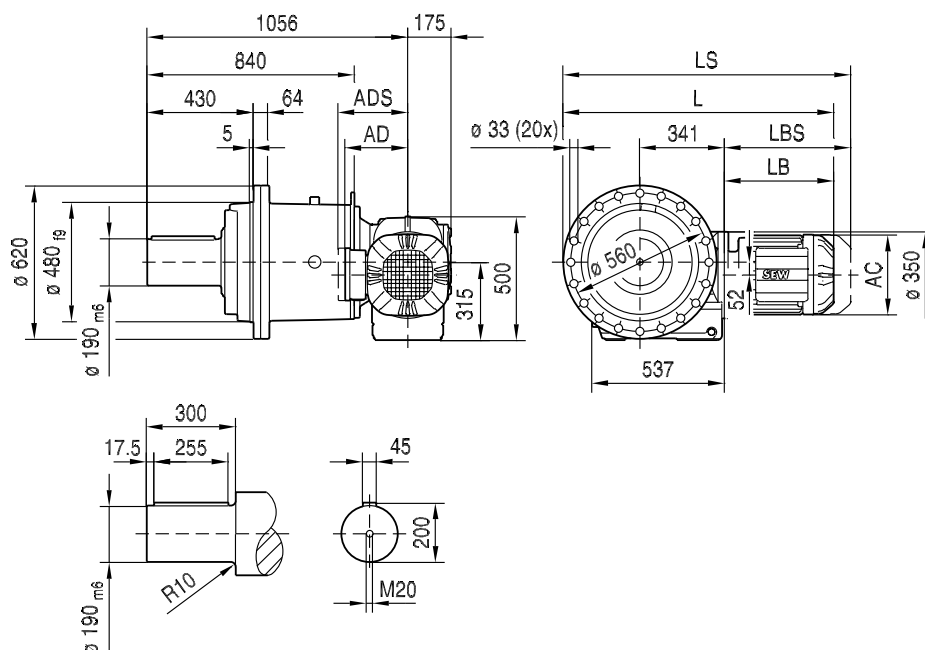
45 101 00 15

**PH042KF107..**

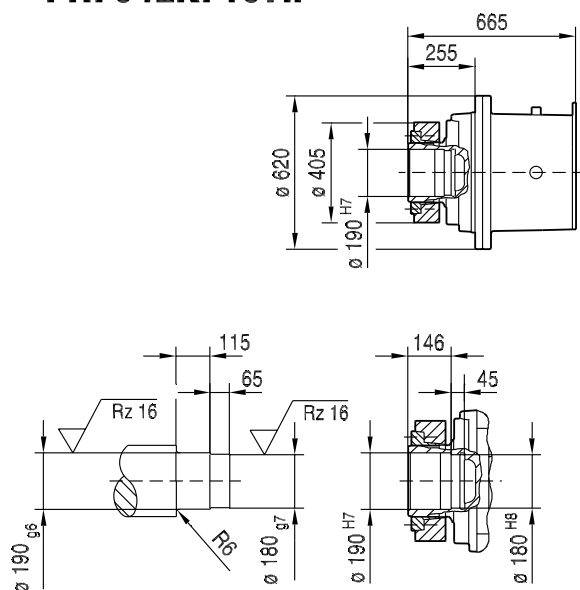
(→ 99)	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M
AC	221	221	261	261	314	314	357	394	434	495
AD	170	170	228	228	253	253	268	283	305	394
ADS	172	172	228	228	253	253	268	283	305	394
L	1094	1144	1162	1188	1254	1254	1277	1387	1361	1498
LS	1206	1256	1300	1325	1443	1443	1466	1592	1566	1738
LB	363	413	431	457	523	523	546	656	630	767
LBS	475	525	569	594	712	712	735	861	835	1007

PF042KF107..

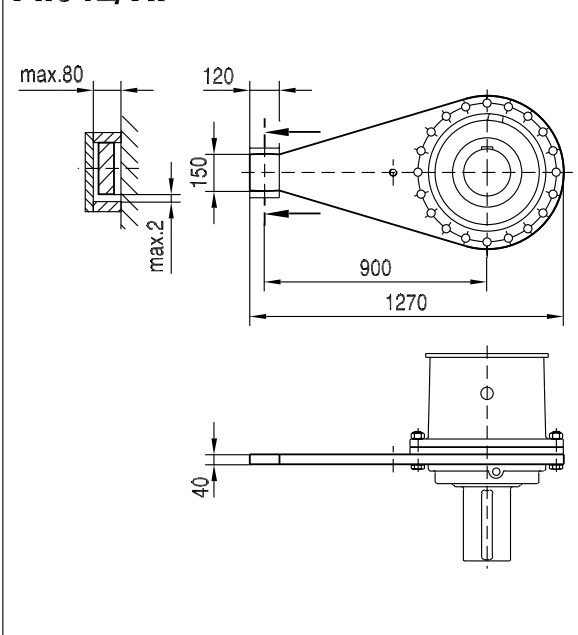
45 102 00 15



PHF042KF107..

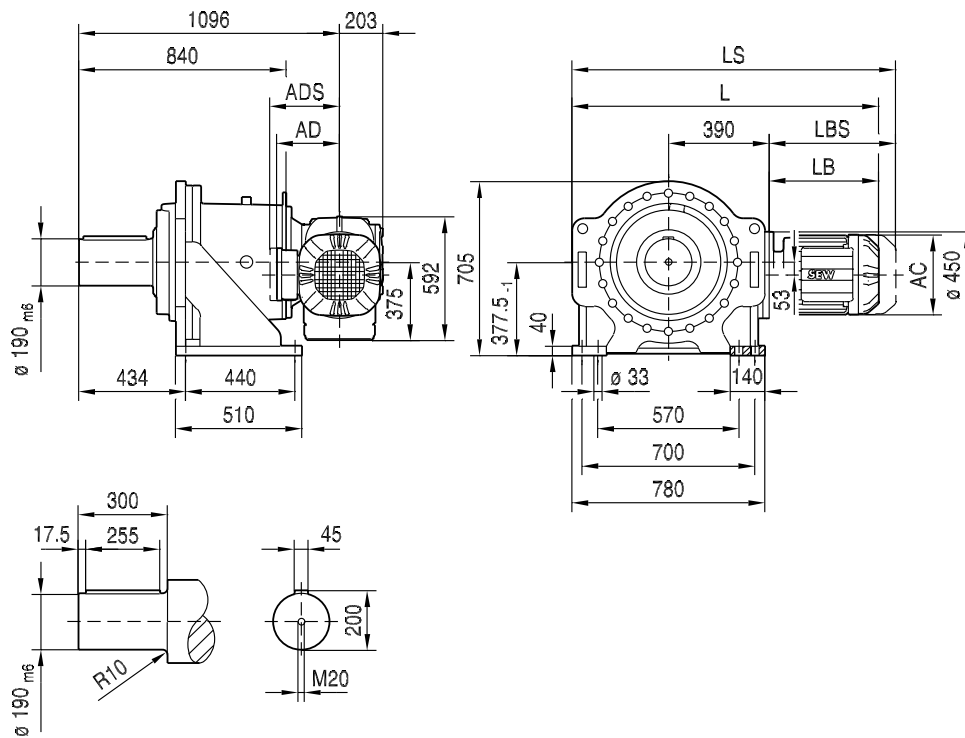


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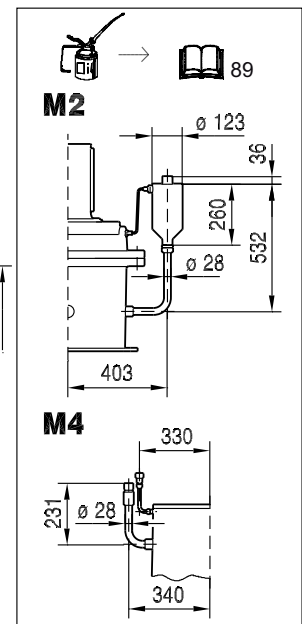
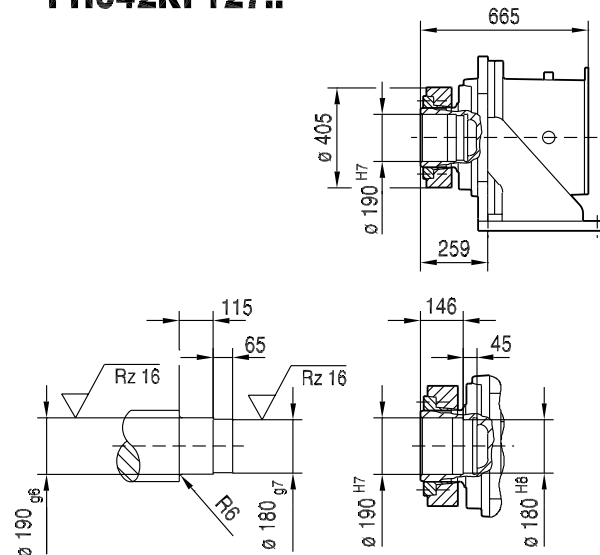


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(→ 99)	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M
AC	221	221	261	261	314	314	357	394	434	495
AD	170	170	228	228	253	253	268	283	305	394
ADS	172	172	228	228	253	253	268	283	305	394
L	1014	1064	1082	1108	1174	1174	1197	1307	1281	1418
LS	1126	1176	1220	1245	1363	1363	1386	1512	1486	1658
LB	363	413	431	457	523	523	546	656	630	767
LBS	475	525	569	594	712	712	735	861	835	1007

P042KF127..

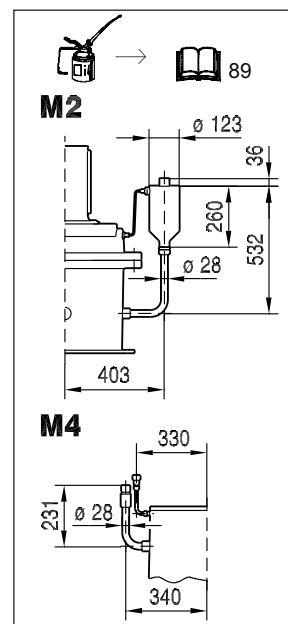
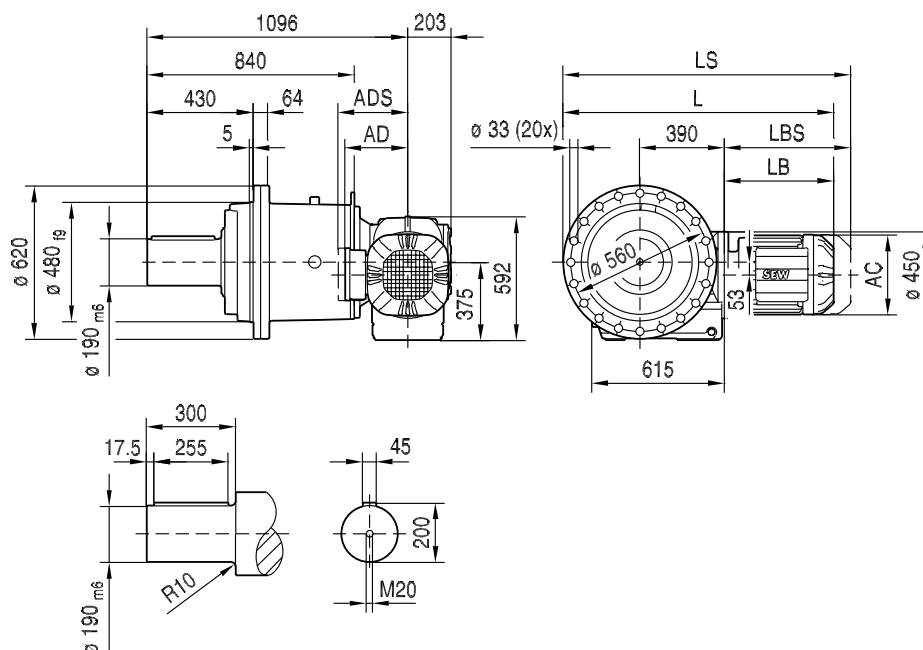
45 103 00 15

**PH042KF127..**

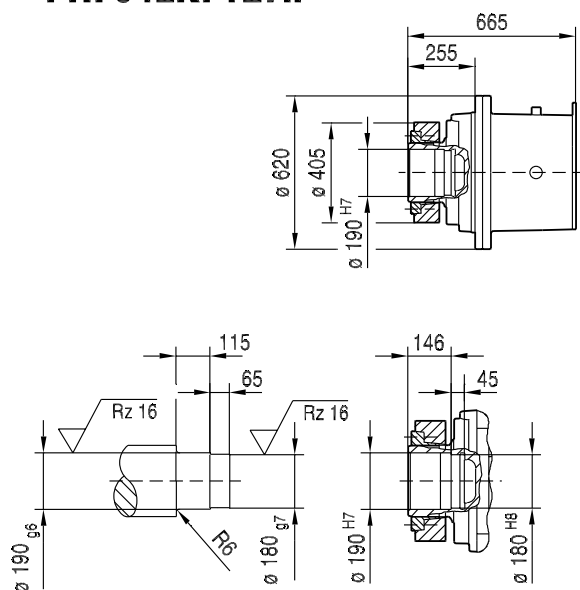
(→ 99)	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M	DRN280S	DRN280M	DRN315S-M
AC	261	314	314	357	394	434	495	495	495	624
AD	228	253	253	268	283	305	394	394	394	506
ADS	228	253	253	268	283	305	394	394	394	506
L	1222	1288	1288	1311	1421	1395	1532	1532	1627	1729
LS	1359	1477	1477	1500	1626	1600	1772	1772	1867	1980
LB	442	508	508	531	641	615	752	752	847	949
LBS	579	697	697	720	846	820	992	992	1087	1200

PF042KF127..

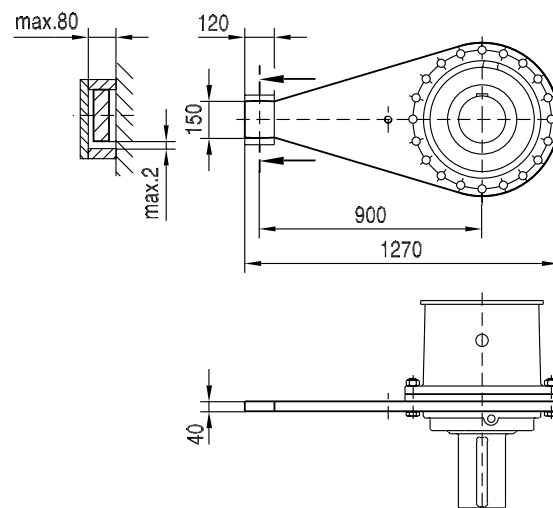
45 104 00 15



PHF042KF127..



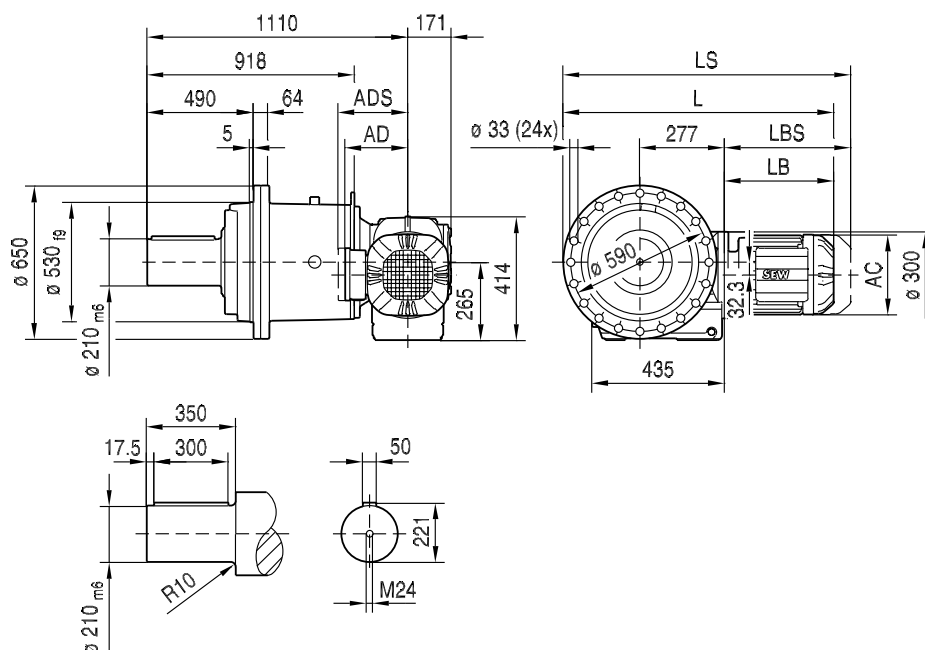
P..042/T..



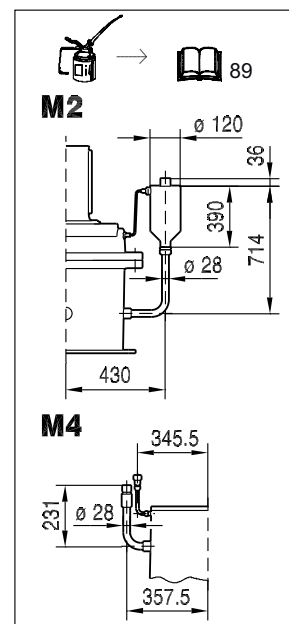
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(→ 99)	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M	DRN280S	DRN280M	DRN315S-M
AC	261	314	314	357	394	434	495	495	495	624
AD	228	253	253	268	283	305	394	394	394	506
ADS	228	253	253	268	283	305	394	394	394	506
L	1142	1208	1208	1231	1341	1315	1452	1452	1547	1649
LS	1279	1397	1397	1420	1546	1520	1692	1692	1787	1900
LB	442	508	508	531	641	615	752	752	847	949
LBS	579	697	697	720	846	820	992	992	1087	1200

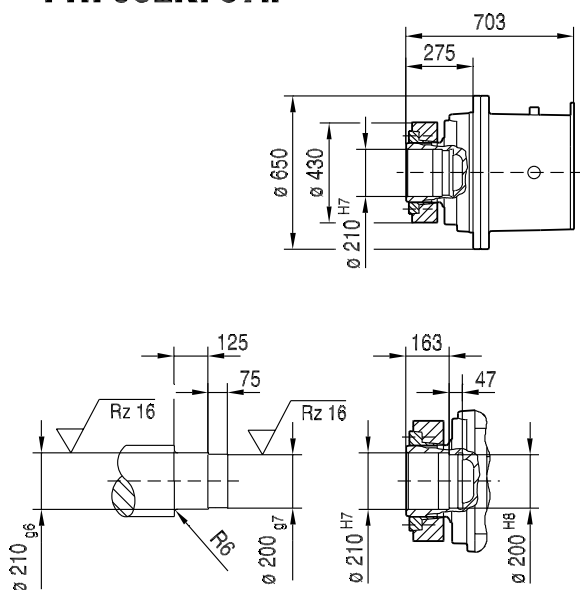
PF052KF97..



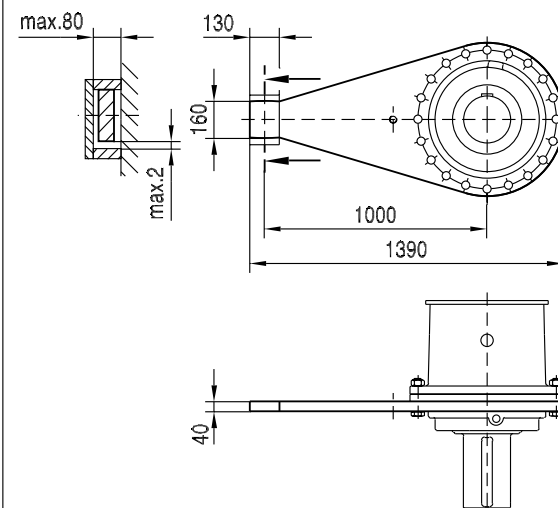
45 106 00 15



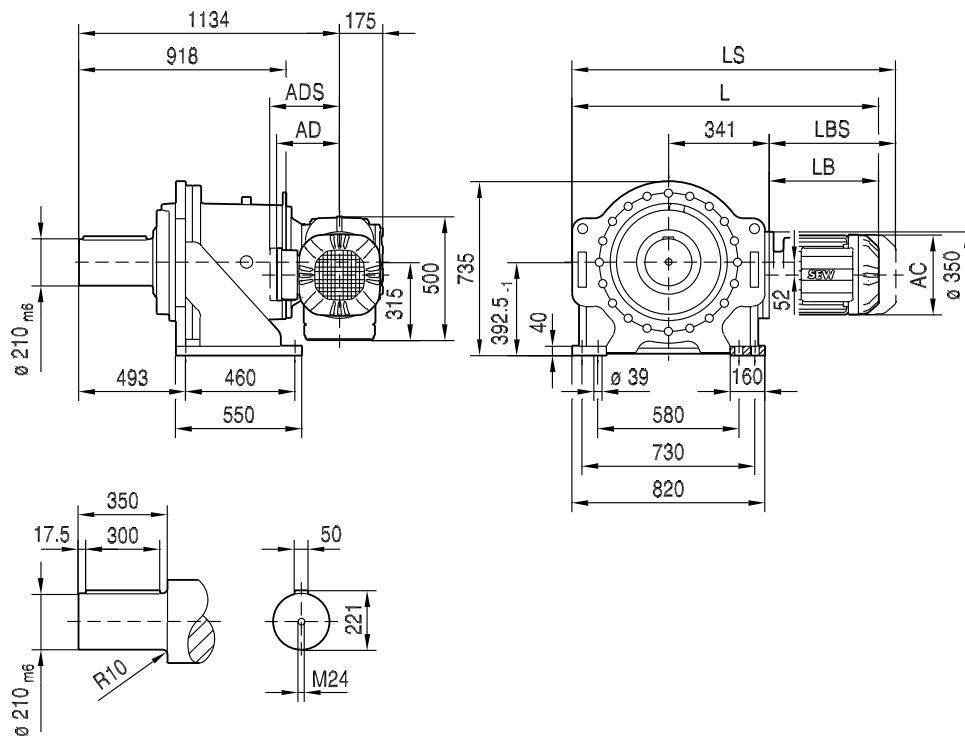
PHF052KF97..



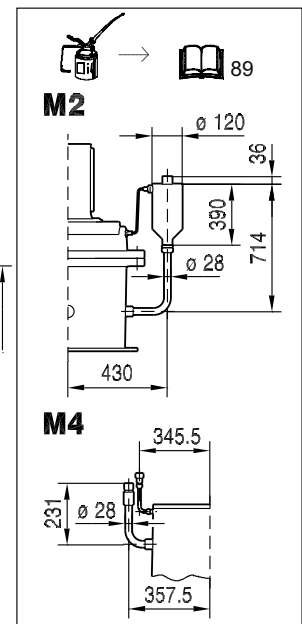
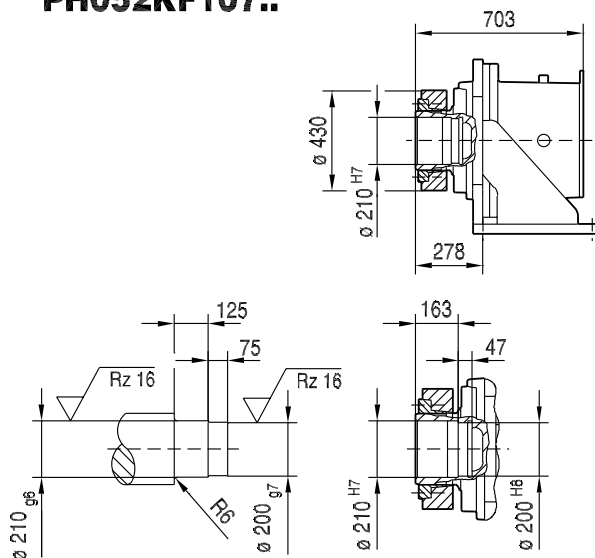
P..052/T..



(→ 📄 99)	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..
AC	197	221	221	261	261	314	314	357	394	434
AD	157	170	170	228	228	253	253	268	283	305
ADS	158	172	172	228	228	253	253	268	283	305
L	940	971	1021	1039	1065	1131	1131	1154	1264	1238
LS	1034	1083	1133	1177	1202	1320	1320	1343	1469	1443
LB	338	369	419	437	463	529	529	552	662	636
LBS	432	481	531	575	600	718	718	741	867	841

P052KF107..

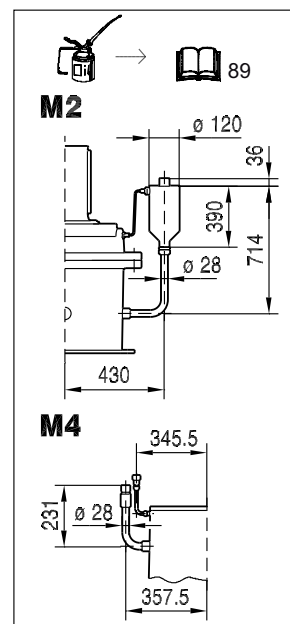
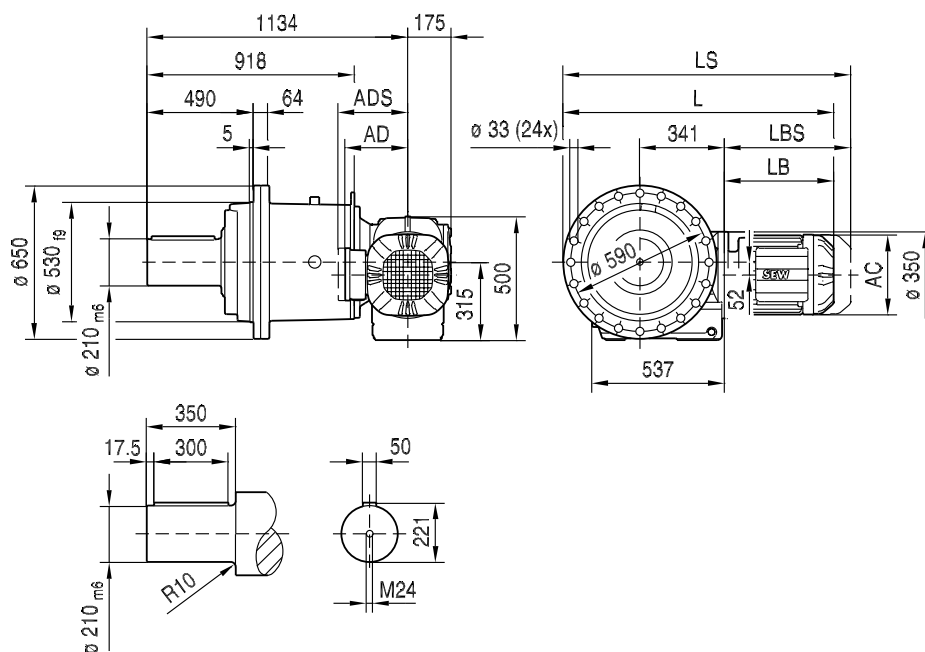
45 107 00 15

**PH052KF107..**

(→ 99)	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M
AC	221	221	261	261	314	314	357	394	434	495
AD	170	170	228	228	253	253	268	283	305	394
ADS	172	172	228	228	253	253	268	283	305	394
L	1114	1164	1182	1208	1274	1274	1297	1407	1381	1518
LS	1226	1276	1320	1345	1463	1463	1486	1612	1586	1758
LB	363	413	431	457	523	523	546	656	630	767
LBS	475	525	569	594	712	712	735	861	835	1007

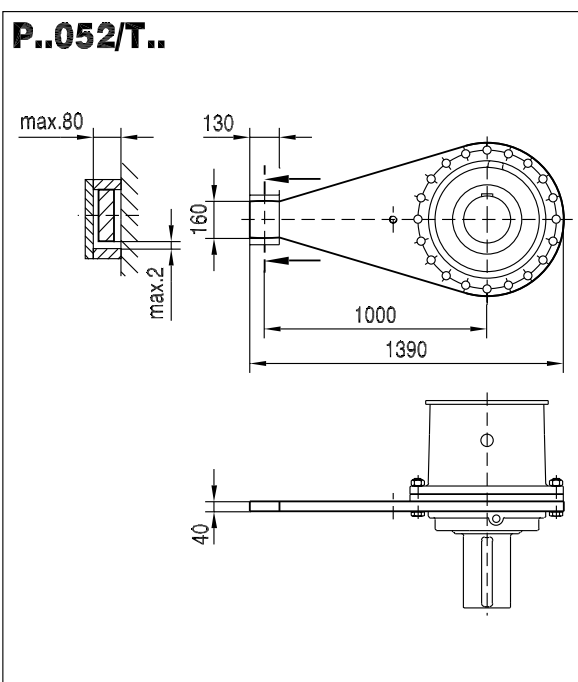
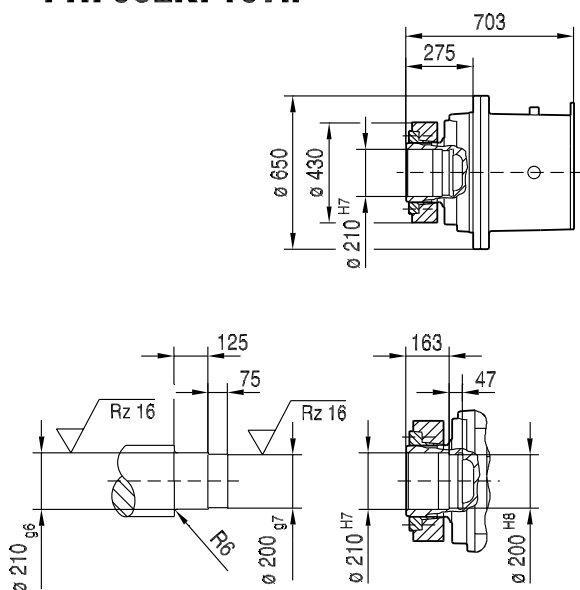
PF052KF107..

45 108 00 15



PHF052KF107..

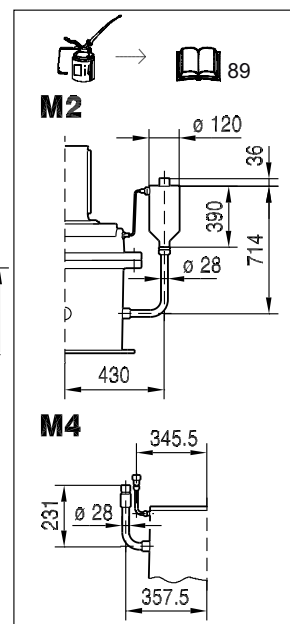
P..052/T..



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(→ 99)	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M
AC	221	221	261	261	314	314	357	394	434	495
AD	170	170	228	228	253	253	268	283	305	394
ADS	172	172	228	228	253	253	268	283	305	394
L	1029	1079	1097	1123	1189	1189	1212	1322	1296	1433
LS	1141	1191	1235	1260	1378	1378	1401	1527	1501	1673
LB	363	413	431	457	523	523	546	656	630	767
LBS	475	525	569	594	712	712	735	861	835	1007

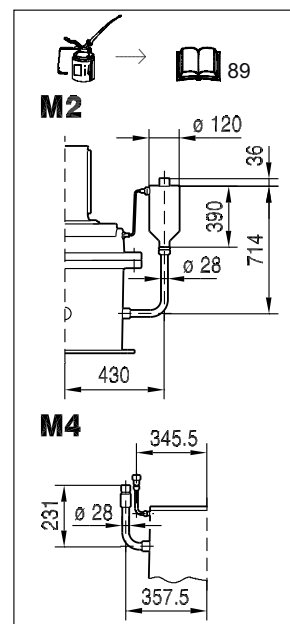
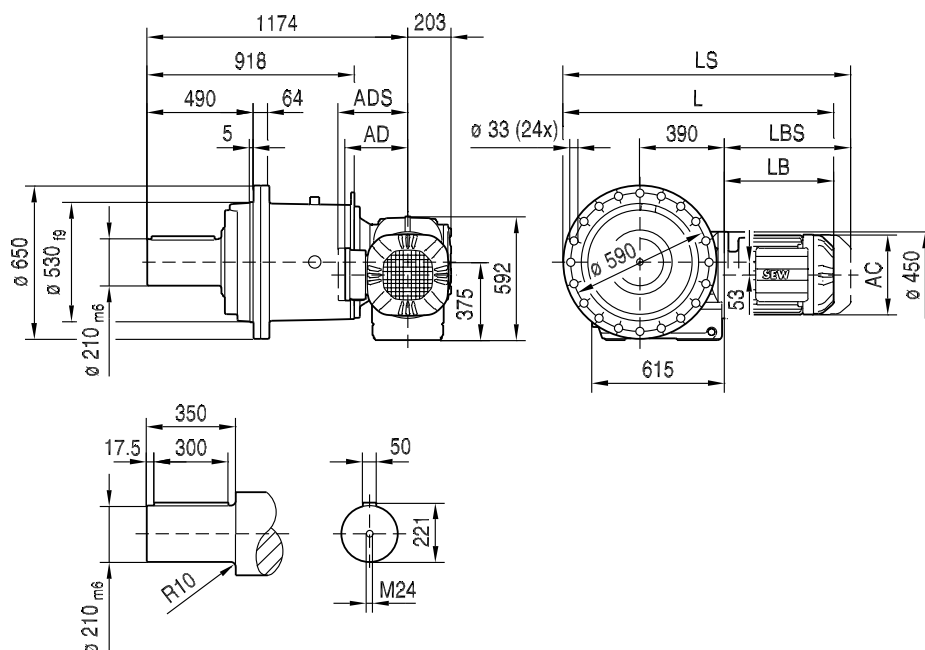
45 109 00 15



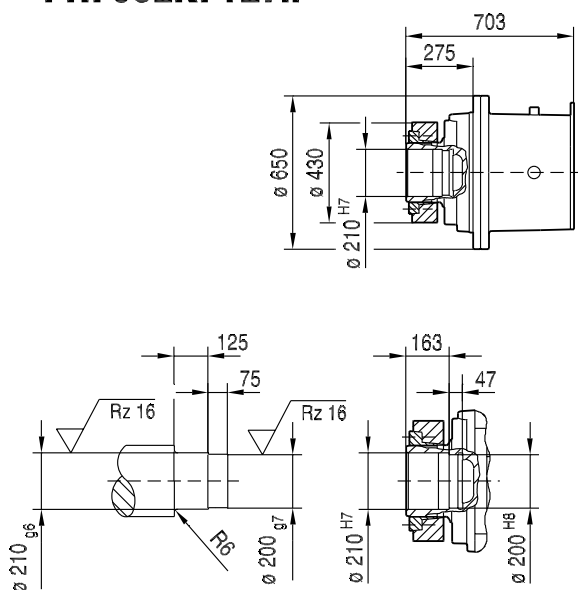
(→ 99)	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M	DRN280S	DRN280M	DRN315S-M
AC	261	314	314	357	394	434	495	495	495	624
AD	228	253	253	268	283	305	394	394	394	506
ADS	228	253	253	268	283	305	394	394	394	506
L	1242	1308	1308	1331	1441	1415	1552	1552	1647	1749
LS	1379	1497	1497	1520	1646	1620	1792	1792	1887	2000
LB	442	508	508	531	641	615	752	752	847	949
LBS	579	697	697	720	846	820	992	992	1087	1200

PF052KF127..

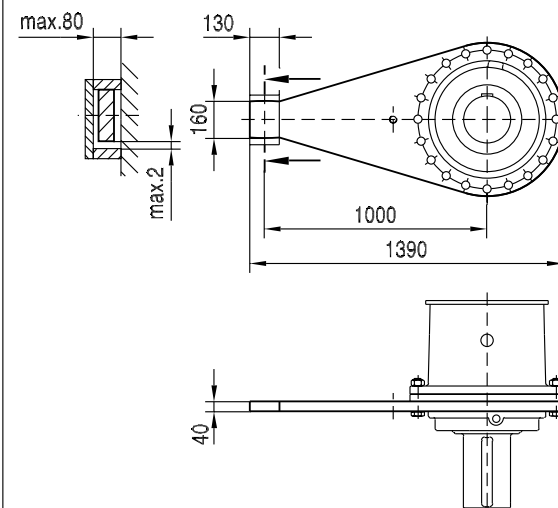
45 110 00 15



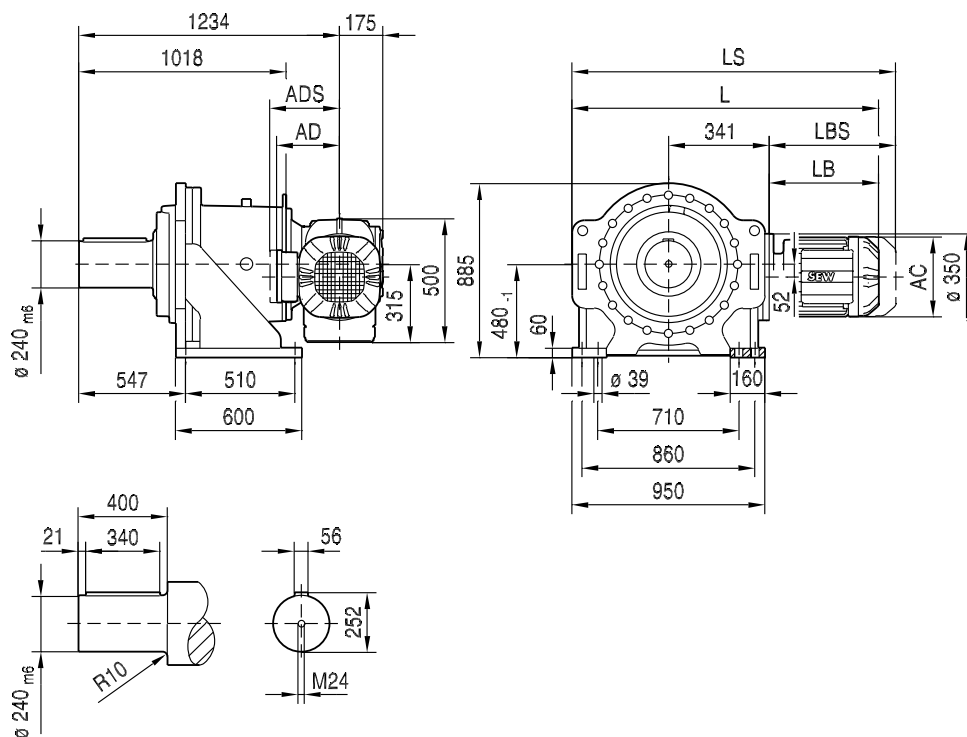
PHF052KF127..



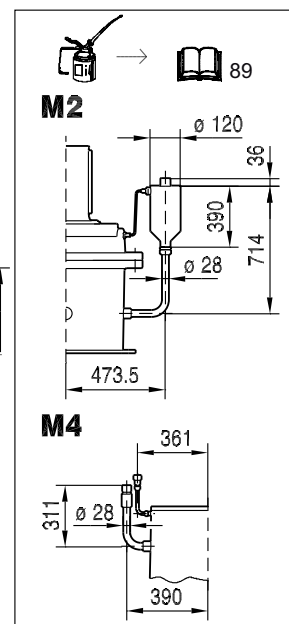
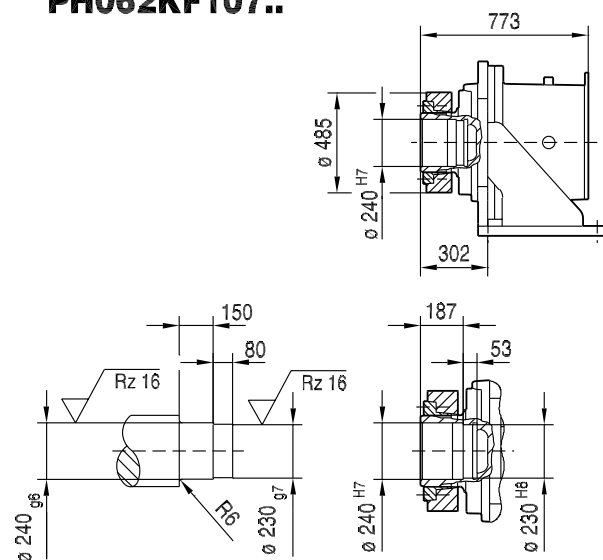
P..052/T..



(→ 99)	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M	DRN280S	DRN280M	DRN315S-M
AC	261	314	314	357	394	434	495	495	495	624
AD	228	253	253	268	283	305	394	394	394	506
ADS	228	253	253	268	283	305	394	394	394	506
L	1157	1223	1223	1246	1356	1330	1467	1467	1562	1664
LS	1294	1412	1412	1435	1561	1535	1707	1707	1802	1915
LB	442	508	508	531	641	615	752	752	847	949
LBS	579	697	697	720	846	820	992	992	1087	1200

P062KF107..

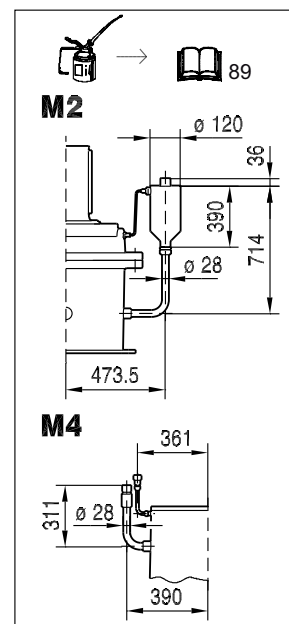
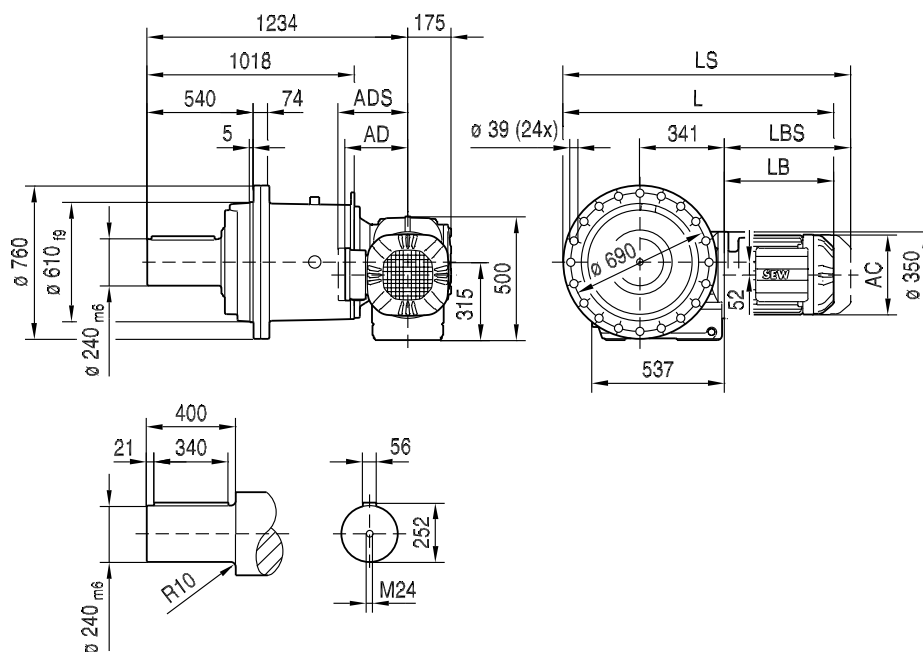
45 111 00 15

**PH062KF107..**

(→ 99)	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M
AC	221	221	261	261	314	314	357	394	434	495
AD	170	170	228	228	253	253	268	283	305	394
ADS	172	172	228	228	253	253	268	283	305	394
L	1179	1229	1247	1273	1339	1339	1362	1472	1446	1583
LS	1291	1341	1385	1410	1528	1528	1551	1677	1651	1823
LB	363	413	431	457	523	523	546	656	630	767
LBS	475	525	569	594	712	712	735	861	835	1007

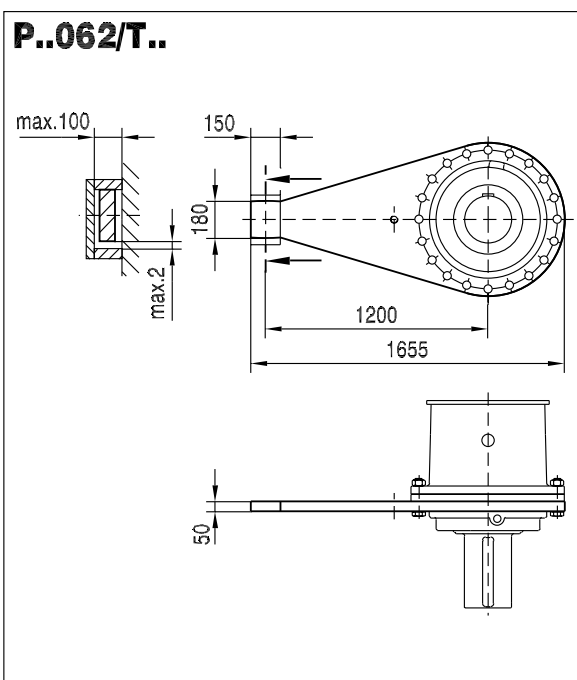
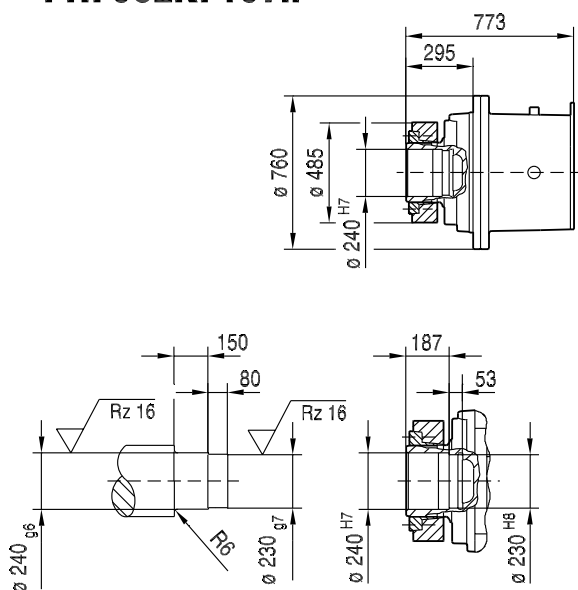
PF062KF107..

45 112 00 15



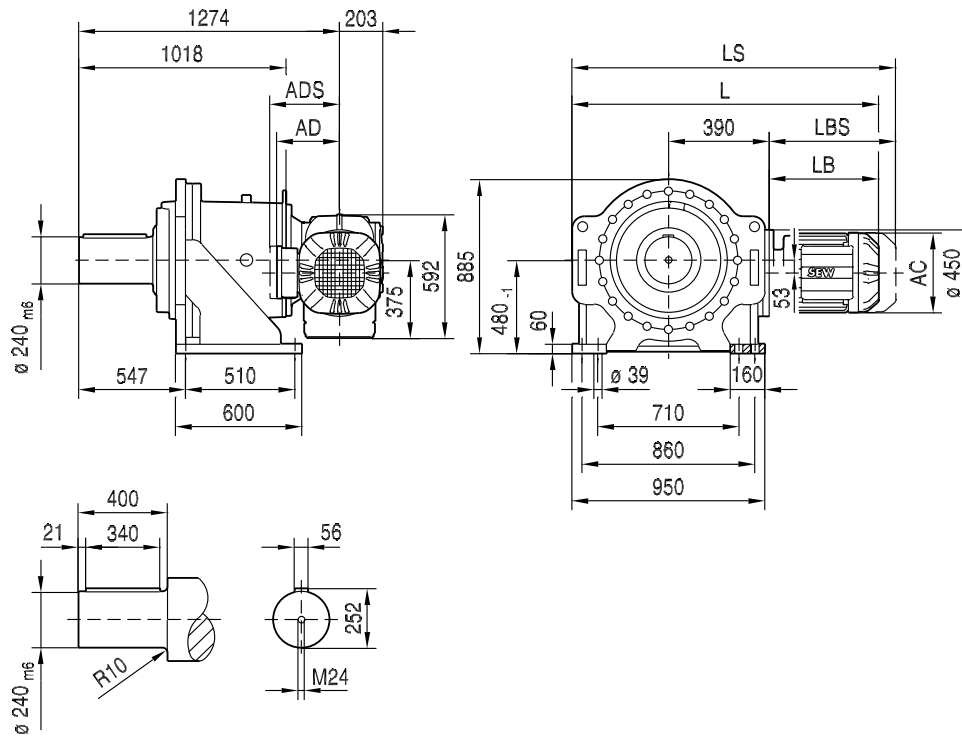
PHF062KF107..

P..062/T..

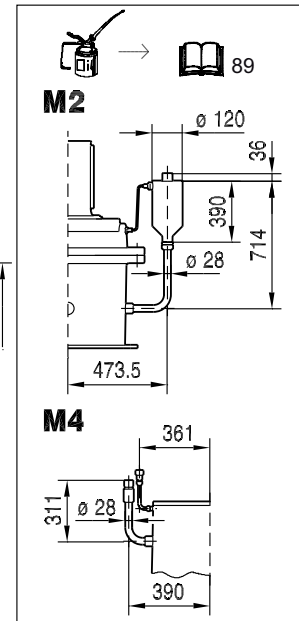
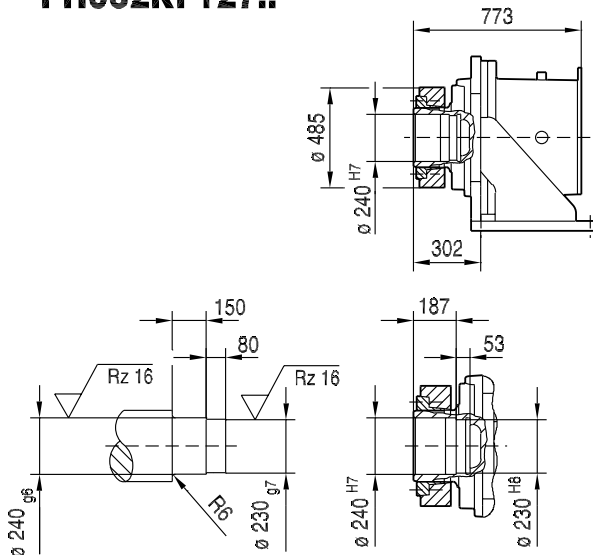


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(→ 99)	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M
AC	221	221	261	261	314	314	357	394	434	495
AD	170	170	228	228	253	253	268	283	305	394
ADS	172	172	228	228	253	253	268	283	305	394
L	1084	1134	1152	1178	1244	1244	1267	1377	1351	1488
LS	1196	1246	1290	1315	1433	1433	1456	1582	1556	1728
LB	363	413	431	457	523	523	546	656	630	767
LBS	475	525	569	594	712	712	735	861	835	1007

P062KF127..

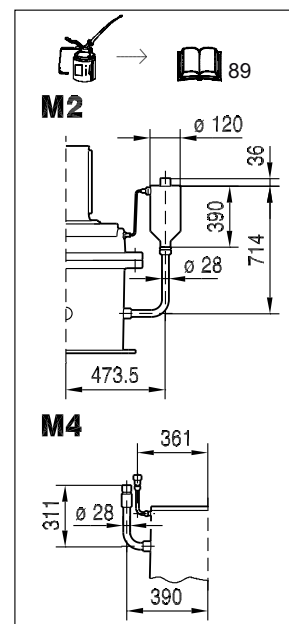
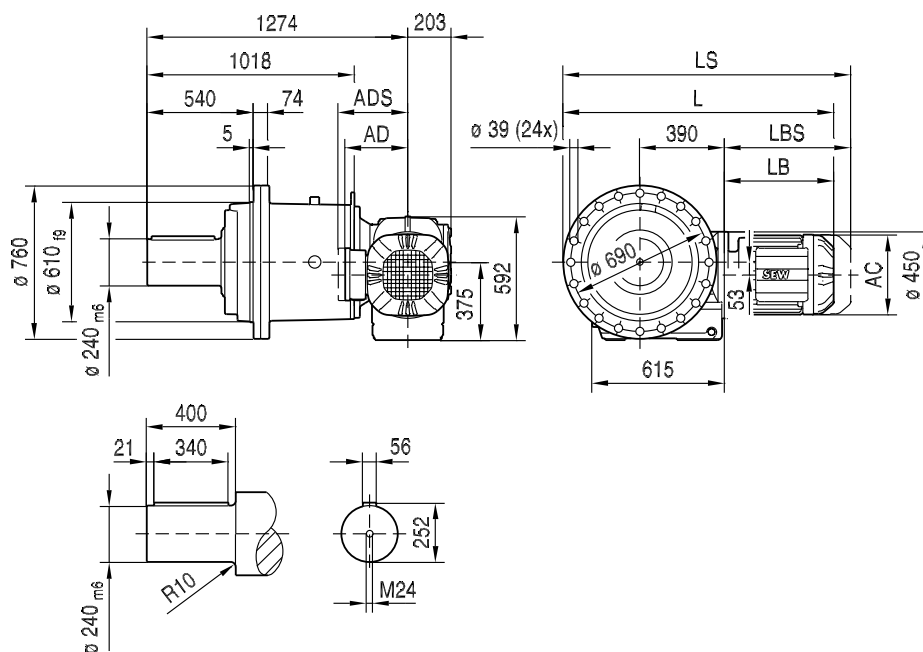
45 113 00 15

**PH062KF127..**

(→ 99)	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M	DRN280S	DRN280M	DRN315S-M
AC	261	314	314	357	394	434	495	495	495	624
AD	228	253	253	268	283	305	394	394	394	506
ADS	228	253	253	268	283	305	394	394	394	506
L	1307	1373	1373	1396	1506	1480	1617	1617	1712	1814
LS	1444	1562	1562	1585	1711	1685	1857	1857	1952	2065
LB	442	508	508	531	641	615	752	752	847	949
LBS	579	697	697	720	846	820	992	992	1087	1200

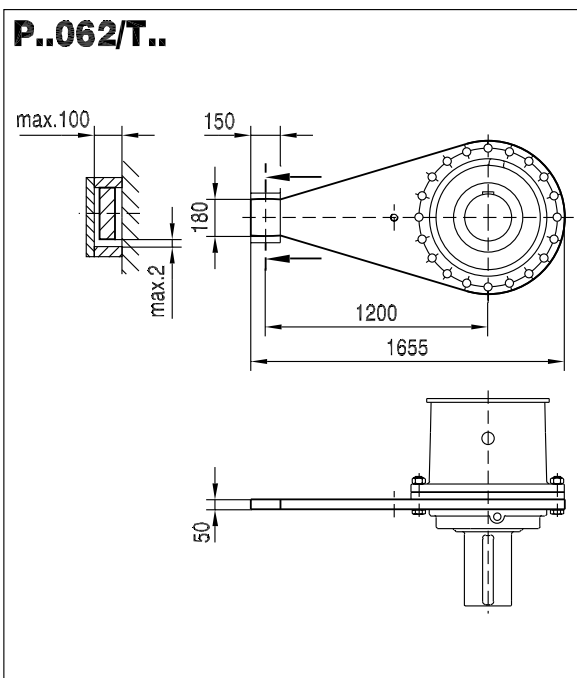
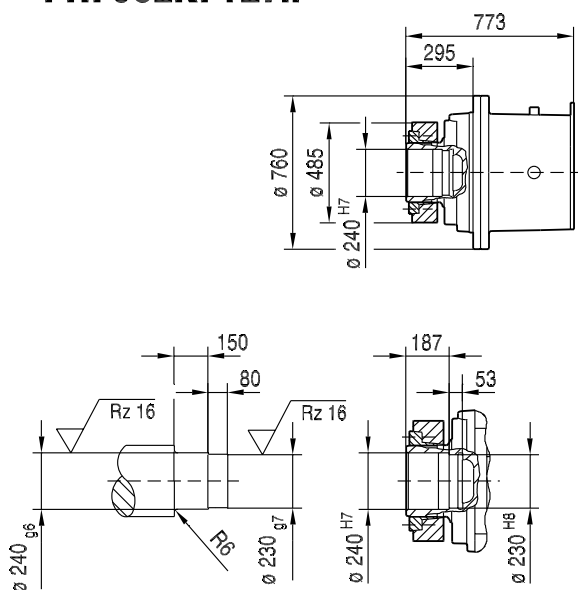
PF062KF127..

45 114 00 15



PHF062KF127..

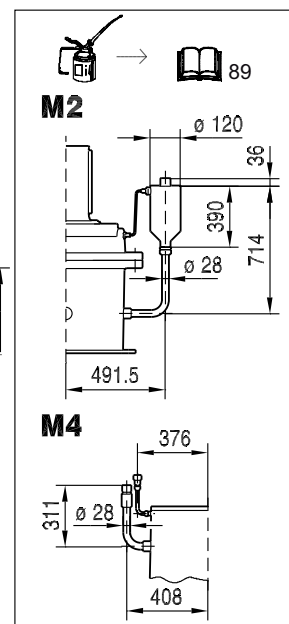
P..062/T..



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(→ 99)	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M	DRN280S	DRN280M	DRN315S-M
AC	261	314	314	357	394	434	495	495	495	624
AD	228	253	253	268	283	305	394	394	394	506
ADS	228	253	253	268	283	305	394	394	394	506
L	1212	1278	1278	1301	1411	1385	1522	1522	1617	1719
LS	1349	1467	1467	1490	1616	1590	1762	1762	1857	1970
LB	442	508	508	531	641	615	752	752	847	949
LBS	579	697	697	720	846	820	992	992	1087	1200

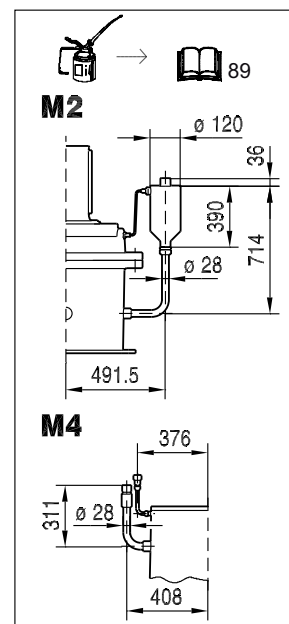
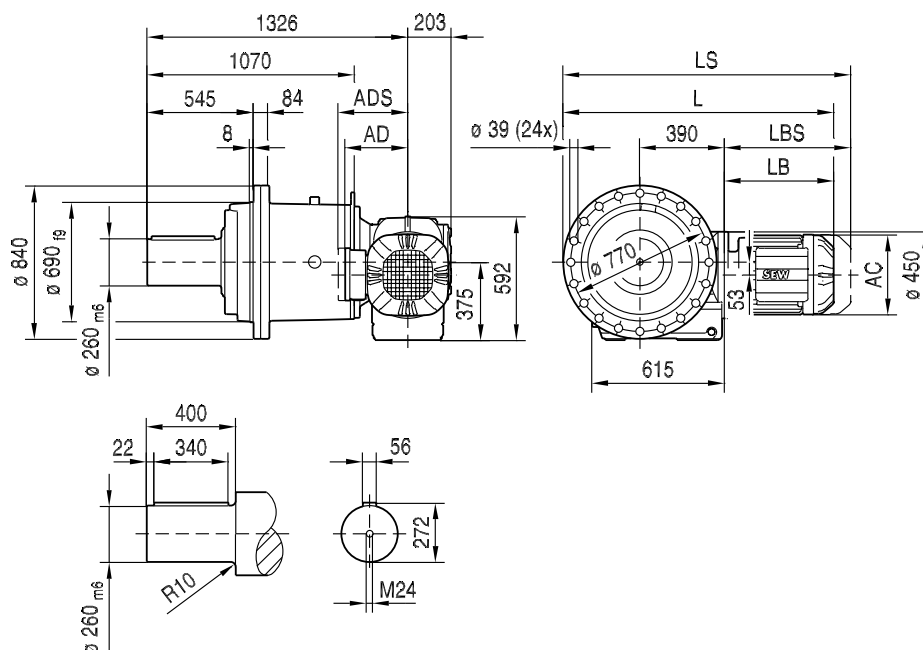
45 115 00 15



(→ 99)	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M	DRN280S	DRN280M	DRN315S-M
AC	261	314	314	357	394	434	495	495	495	624
AD	228	253	253	268	283	305	394	394	394	506
ADS	228	253	253	268	283	305	394	394	394	506
L	1357	1423	1423	1446	1556	1530	1667	1667	1762	1864
LS	1494	1612	1612	1635	1761	1735	1907	1907	2002	2115
LB	442	508	508	531	641	615	752	752	847	949
LBS	579	697	697	720	846	820	992	992	1087	1200

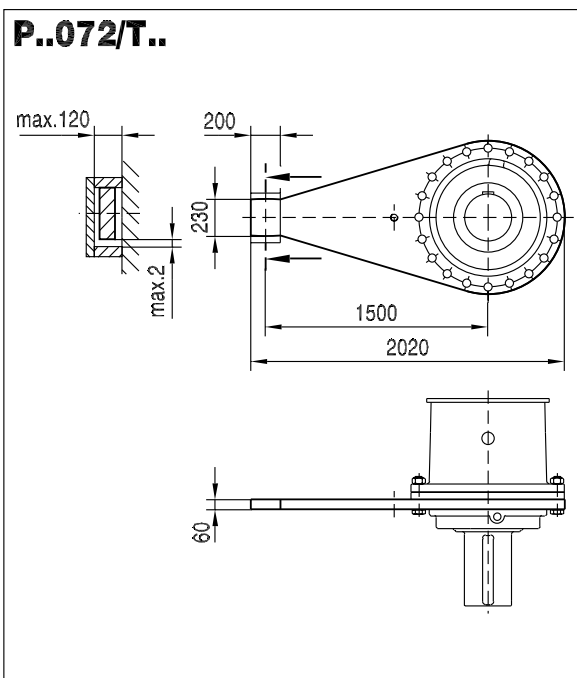
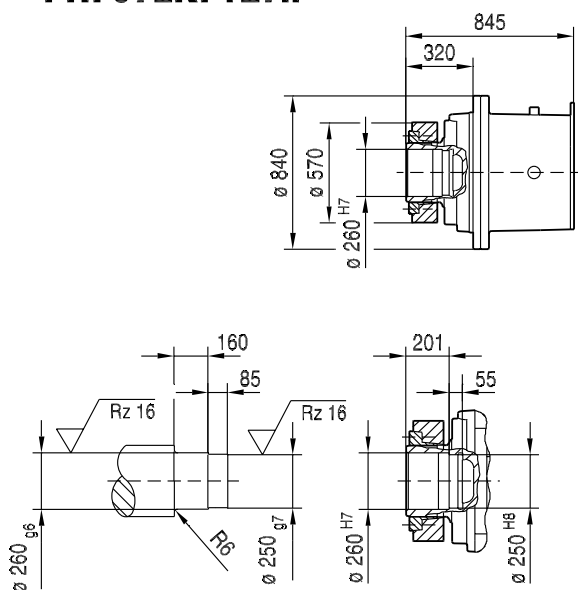
PF072KF127..

45 116 00 15



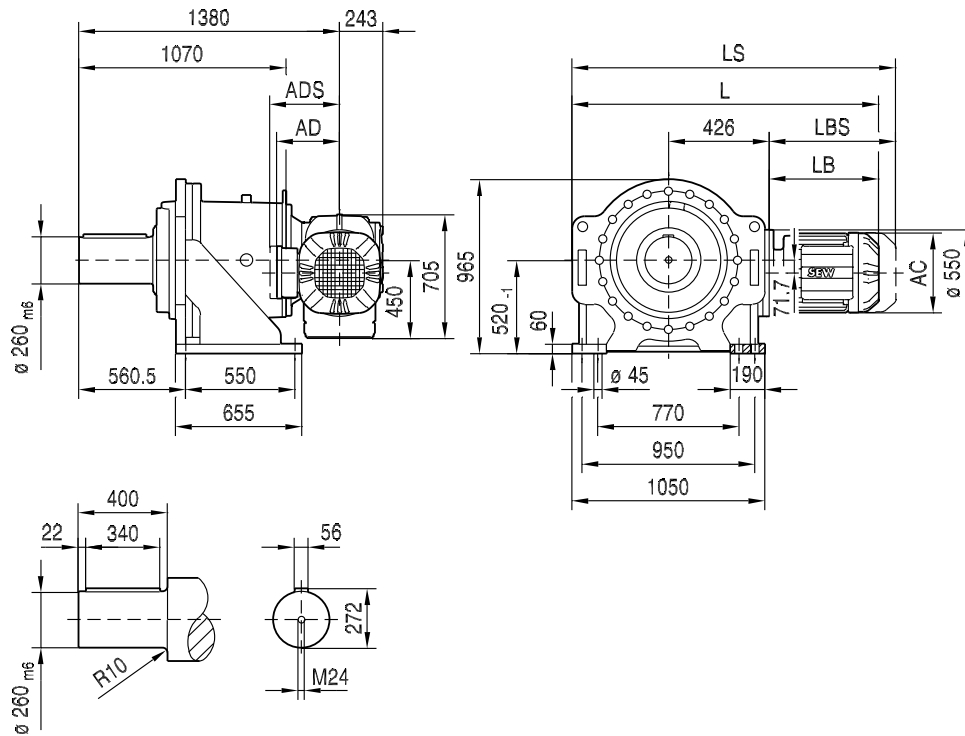
PHF072KF127..

P..072/T..

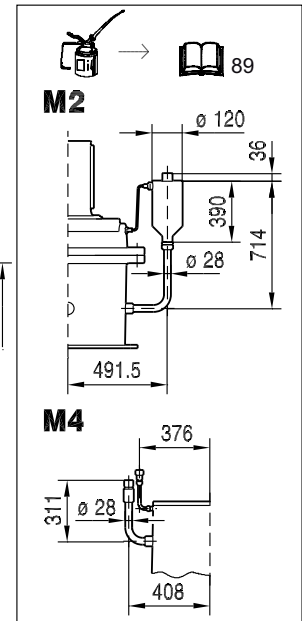
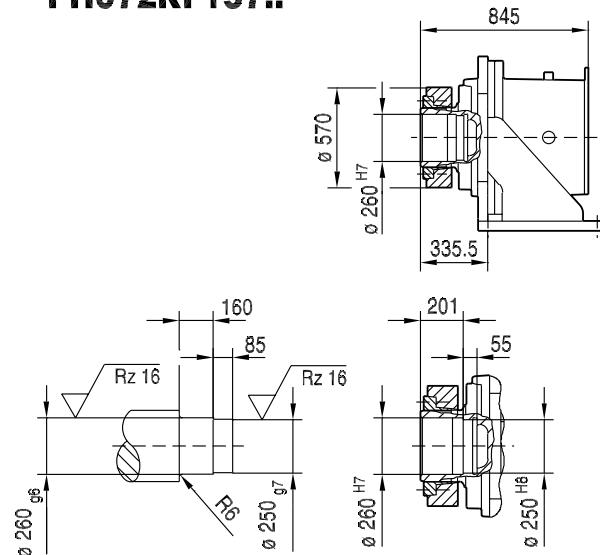


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(→ 99)	DRN132L	DRN160M	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M	DRN280S	DRN280M	DRN315S-M
AC	261	314	314	357	394	434	495	495	495	624
AD	228	253	253	268	283	305	394	394	394	506
ADS	228	253	253	268	283	305	394	394	394	506
L	1252	1318	1318	1341	1451	1425	1562	1562	1657	1759
LS	1389	1507	1507	1530	1656	1630	1802	1802	1897	2010
LB	442	508	508	531	641	615	752	752	847	949
LBS	579	697	697	720	846	820	992	992	1087	1200

P072KF157..

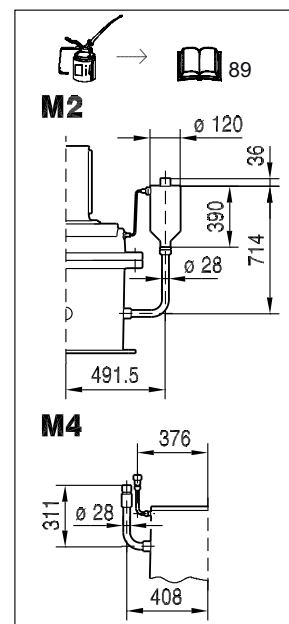
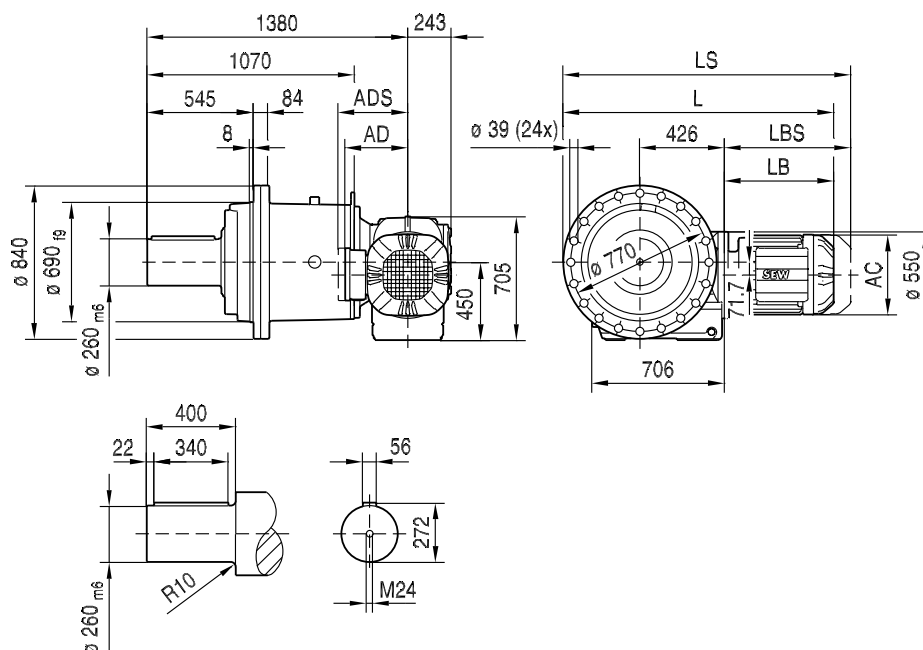
45 117 00 15

**PH072KF157..**

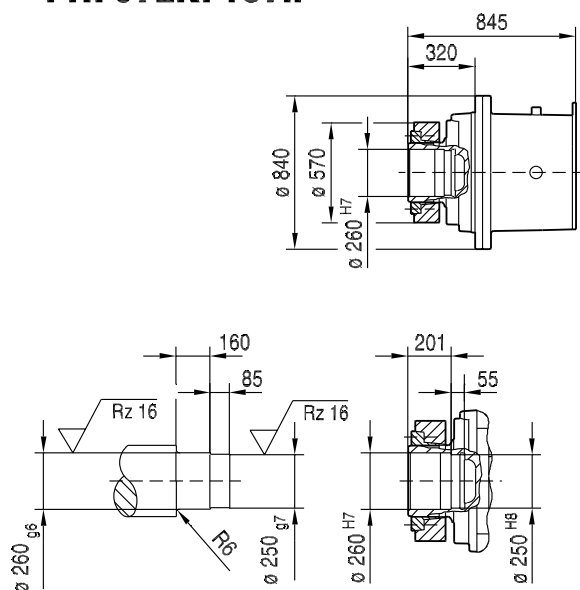
(→ 99)	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M	DRN280S	DRN280M	DRN315S-M	DRN315ME-H
AC	314	357	394	434	495	495	495	624	624
AD	253	268	283	305	394	394	394	506	506
ADS	253	268	283	305	394	394	394	506	506
L	1451	1474	1584	1558	1695	1695	1790	1892	2022
LS	1640	1663	1789	1763	1935	1935	2030	2143	2273
LB	500	523	633	607	744	744	839	941	1071
LBS	689	712	838	812	984	984	1079	1192	1322

PF072KF157..

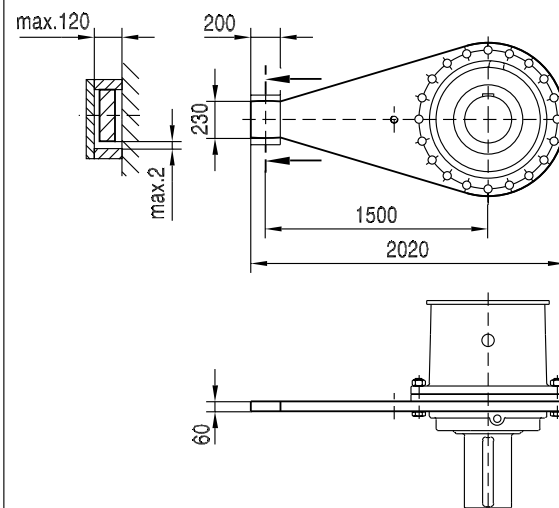
45 118 00 15



PHF072KF157..

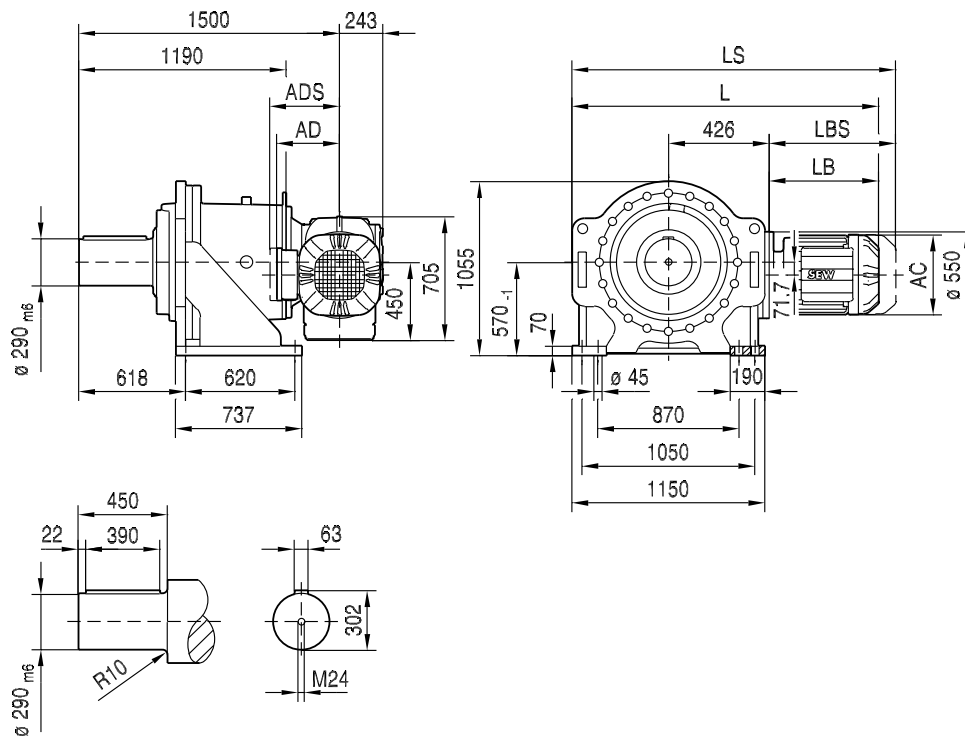


P..072/T..

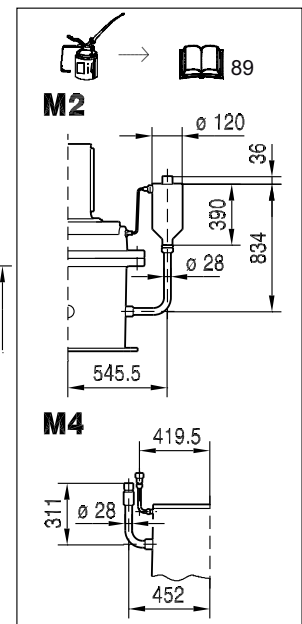
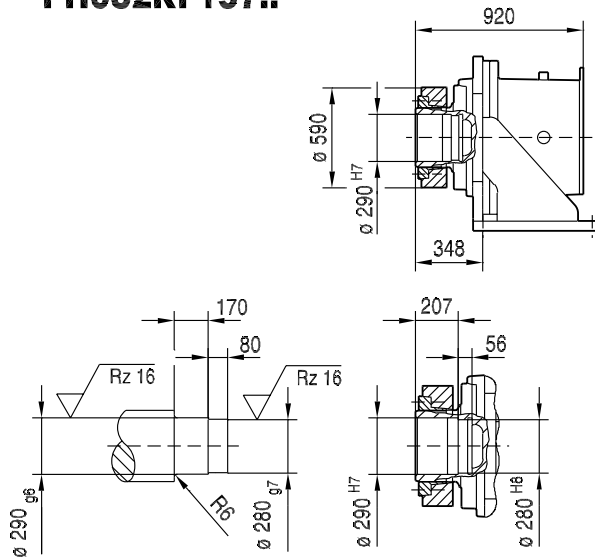


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(→ 99)	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M	DRN280S	DRN280M	DRN315S-M	DRN315ME-H
AC	314	357	394	434	495	495	495	624	624
AD	253	268	283	305	394	394	394	506	506
ADS	253	268	283	305	394	394	394	506	506
L	1346	1369	1479	1453	1590	1590	1685	1787	1917
LS	1535	1558	1684	1658	1830	1830	1925	2038	2168
LB	500	523	633	607	744	744	839	941	1071
LBS	689	712	838	812	984	984	1079	1192	1322

P082KF157..

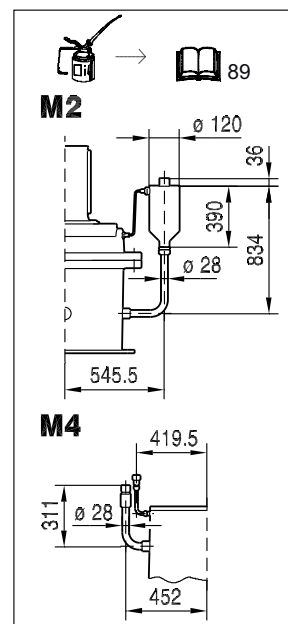
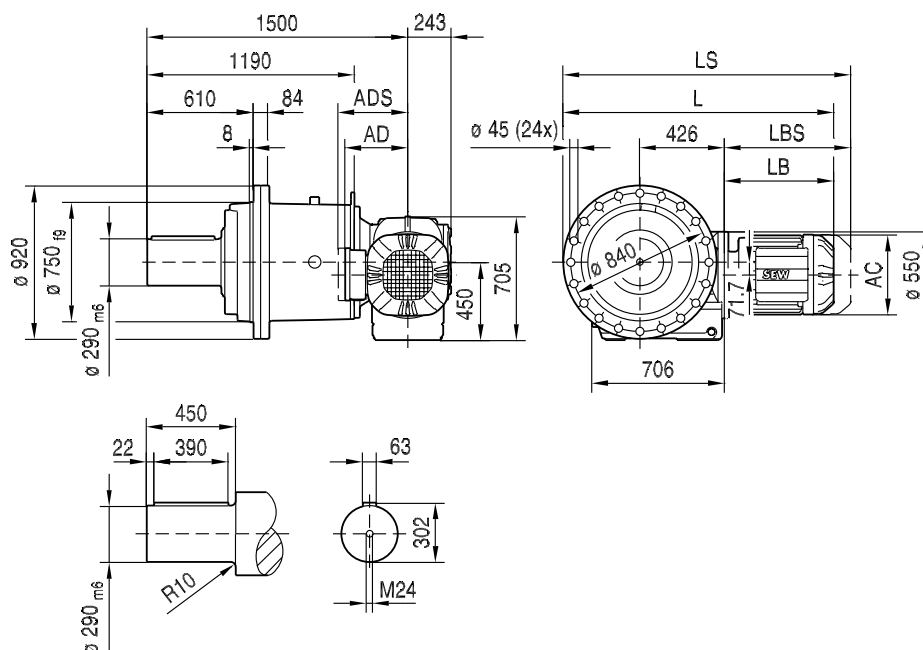
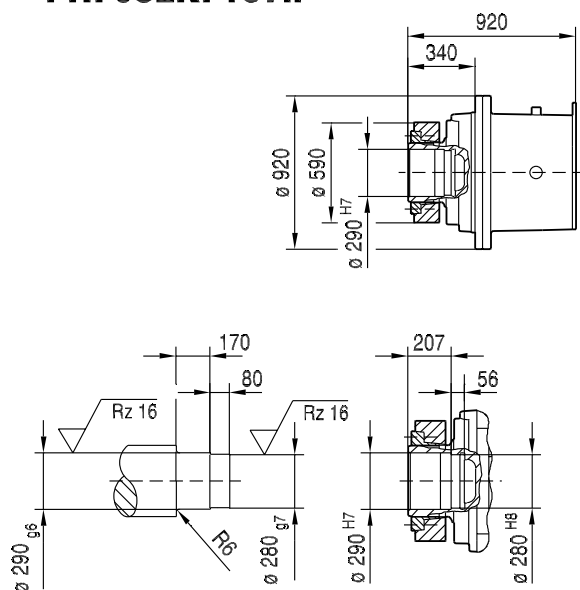
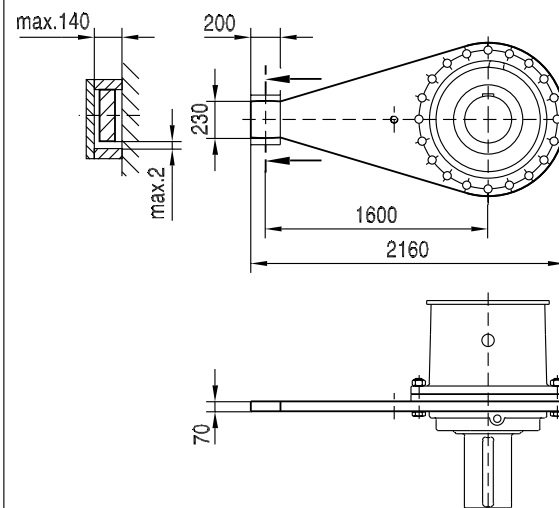
45 119 00 15

**PH082KF157..**

(→ 99)	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M	DRN280S	DRN280M	DRN315S-M	DRN315ME-H
AC	314	357	394	434	495	495	495	624	624
AD	253	268	283	305	394	394	394	506	506
ADS	253	268	283	305	394	394	394	506	506
L	1501	1524	1634	1608	1745	1745	1840	1942	2072
LS	1690	1713	1839	1813	1985	1985	2080	2193	2323
LB	500	523	633	607	744	744	839	941	1071
LBS	689	712	838	812	984	984	1079	1192	1322

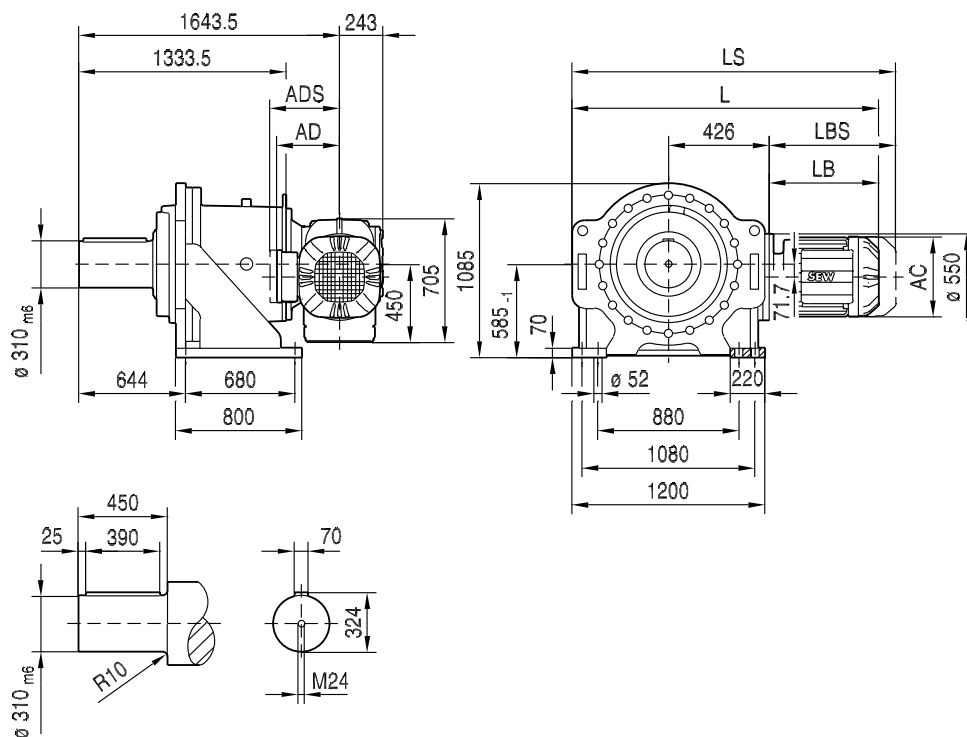
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45 120 00 15

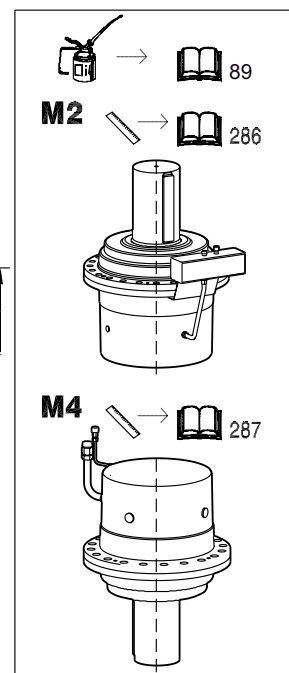
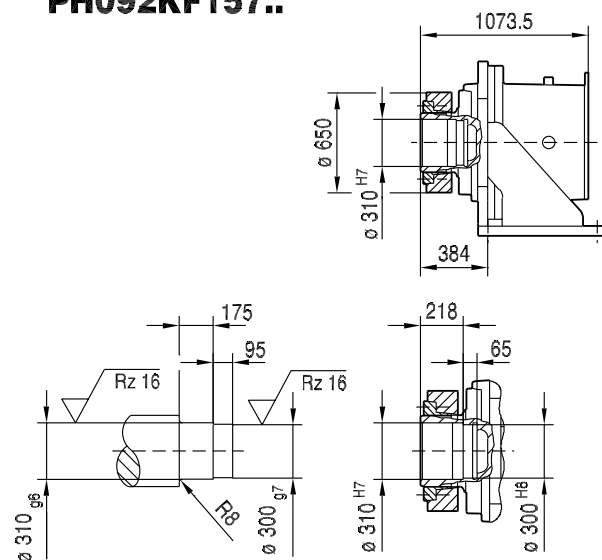
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(→ 99)	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M	DRN280S	DRN280M	DRN315S-M	DRN315ME-H
AC	314	357	394	434	495	495	495	624	624
AD	253	268	283	305	394	394	394	506	506
ADS	253	268	283	305	394	394	394	506	506
L	1386	1409	1519	1493	1630	1630	1725	1827	1957
LS	1575	1598	1724	1698	1870	1870	1965	2078	2208
LB	500	523	633	607	744	744	839	941	1071
LBS	689	712	838	812	984	984	1079	1192	1322

P092KF157..

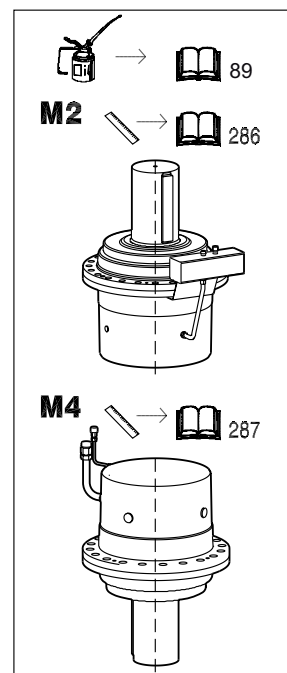
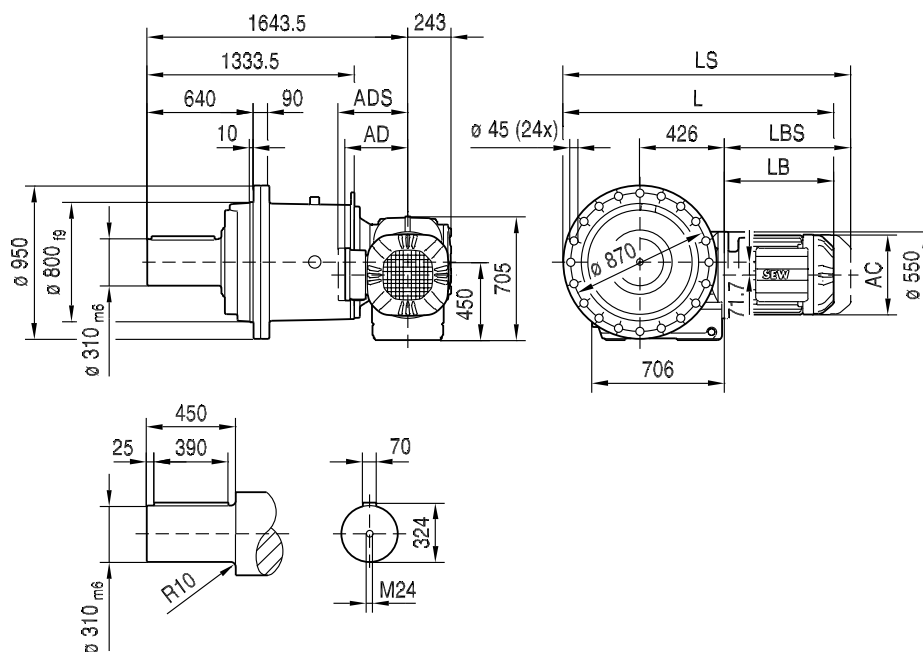
45 008 00 16

**PH092KF157..**

(→ 99)	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M	DRN280S	DRN280M	DRN315S-M	DRN315ME-H
AC	314	357	394	434	495	495	495	624	624
AD	253	268	283	305	394	394	394	506	506
ADS	253	268	283	305	394	394	394	506	506
L	1526	1549	1659	1633	1770	1770	1865	1967	2097
LS	1715	1738	1864	1838	2010	2010	2105	2218	2348
LB	500	523	633	607	744	744	839	941	1071
LBS	689	712	838	812	984	984	1079	1192	1322

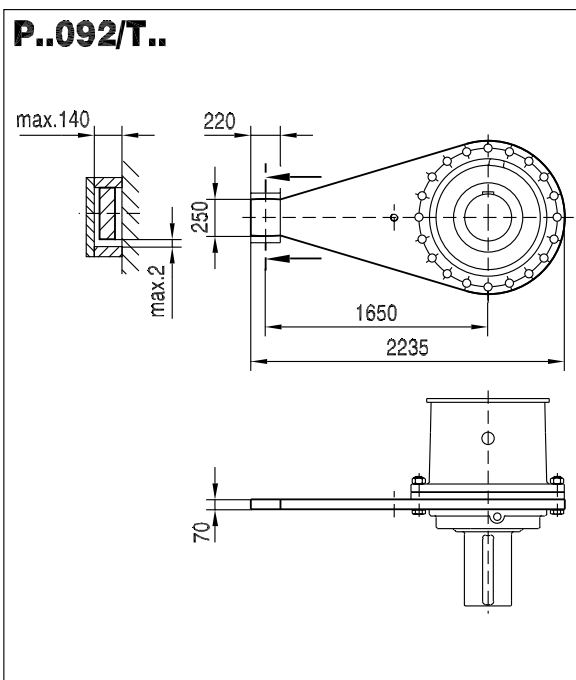
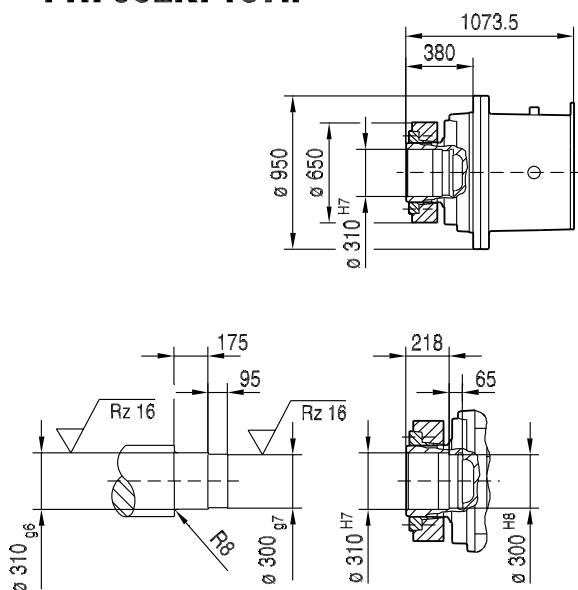
PF092KF157..

45 009 00 16



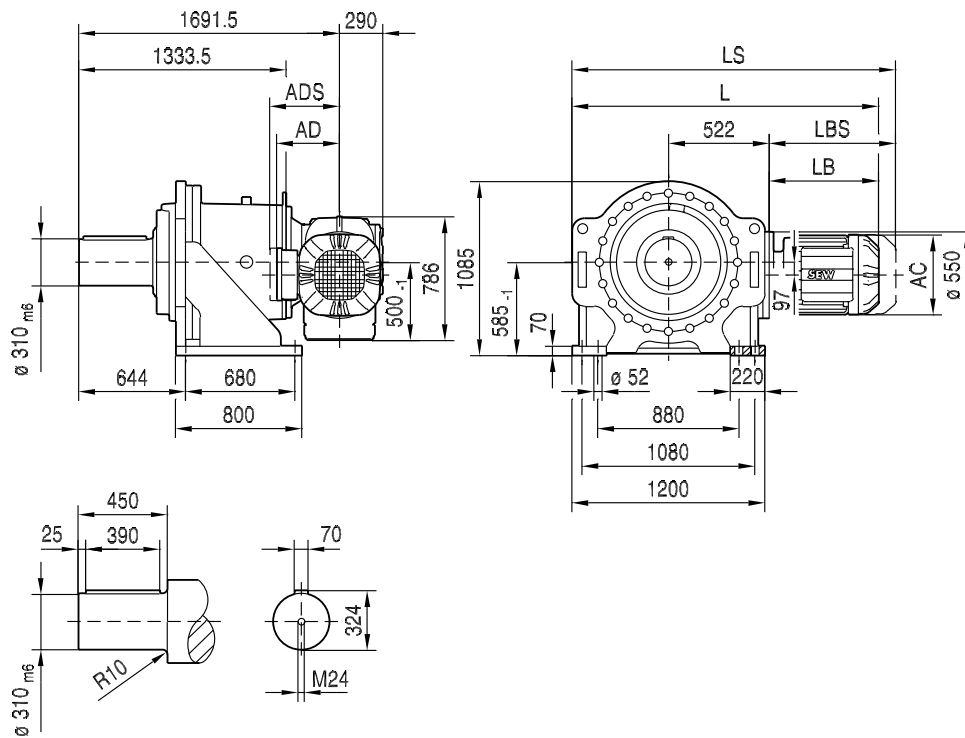
PHF092KF157..

P..092/T..

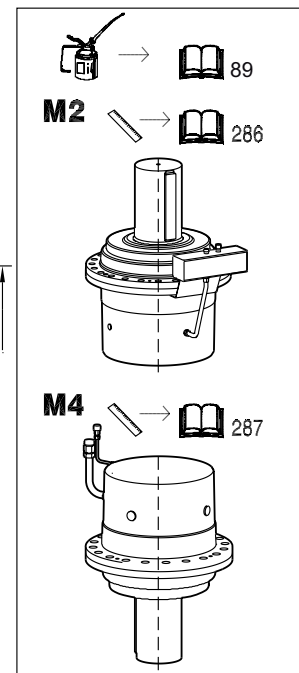
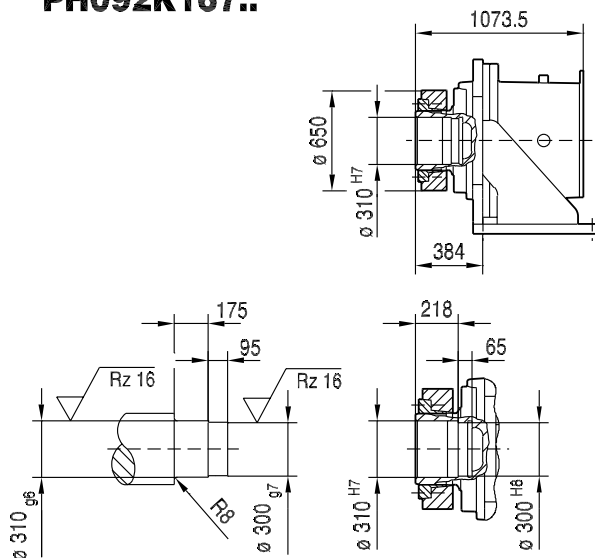


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(→ 99)	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M	DRN280S	DRN280M	DRN315S-M	DRN315ME-H
AC	314	357	394	434	495	495	495	624	624
AD	253	268	283	305	394	394	394	506	506
ADS	253	268	283	305	394	394	394	506	506
L	1401	1424	1534	1508	1645	1645	1740	1842	1972
LS	1590	1613	1739	1713	1885	1885	1980	2093	2223
LB	500	523	633	607	744	744	839	941	1071
LBS	689	712	838	812	984	984	1079	1192	1322

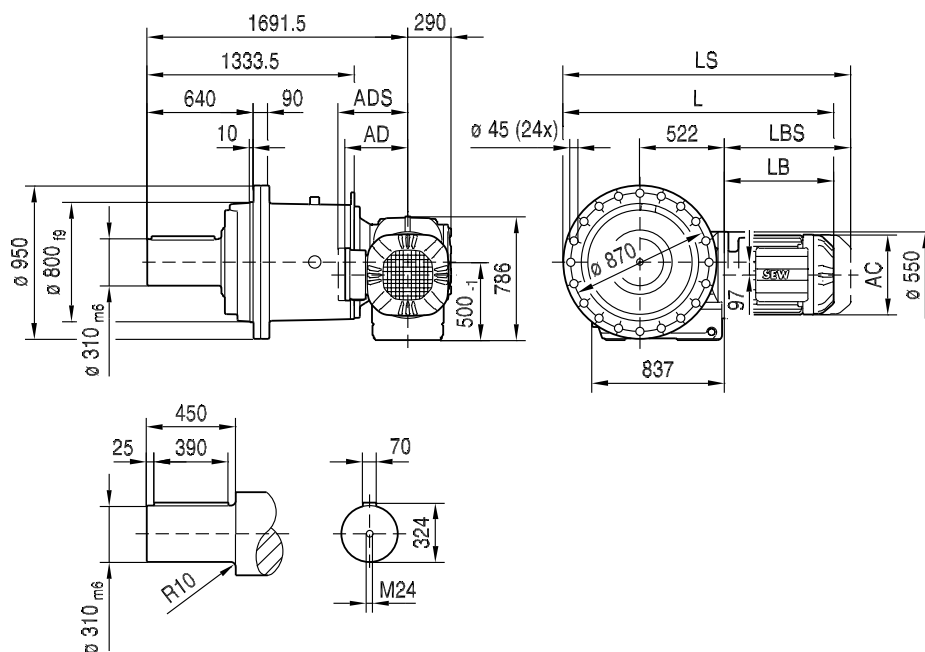
P092K167..

45 121 00 15

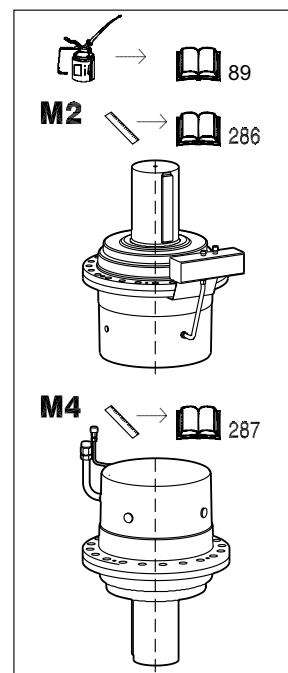
**PH092K167..**

(→ 99)	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M	DRN280S	DRN280M	DRN315S-M	DRN315ME-H
AC	314	357	394	434	495	495	495	624	624
AD	253	268	283	305	394	394	394	506	506
ADS	253	268	283	305	394	394	394	506	506
L	1622	1645	1755	1729	1866	1866	1961	2063	2193
LS	1811	1834	1960	1934	2106	2106	2201	2314	2444
LB	500	523	633	607	744	744	839	941	1071
LBS	689	712	838	812	984	984	1079	1192	1322

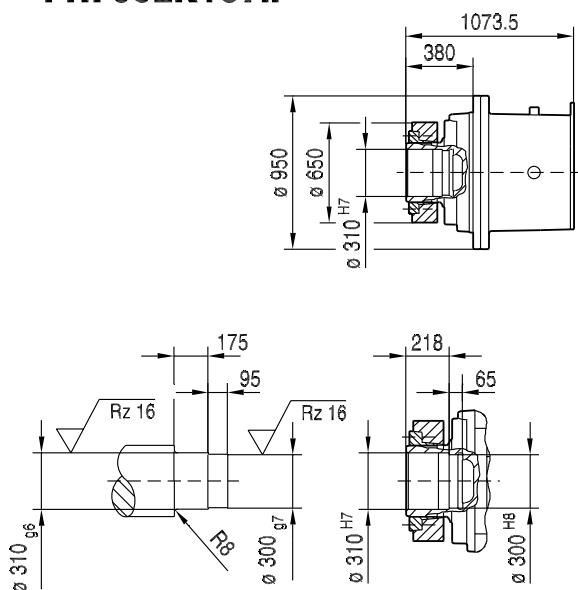
PF092K167..



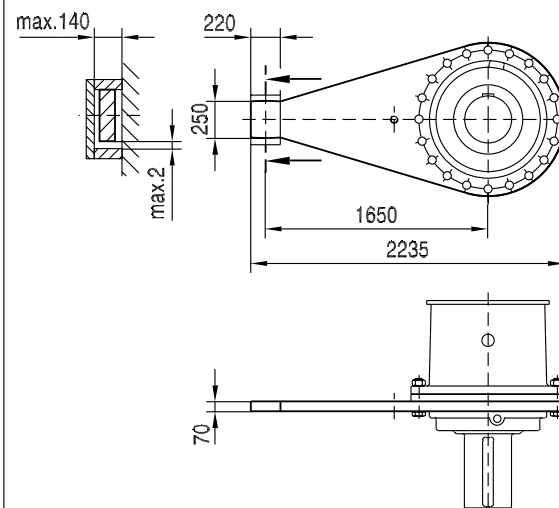
45 122 00 15



PHF092K167..

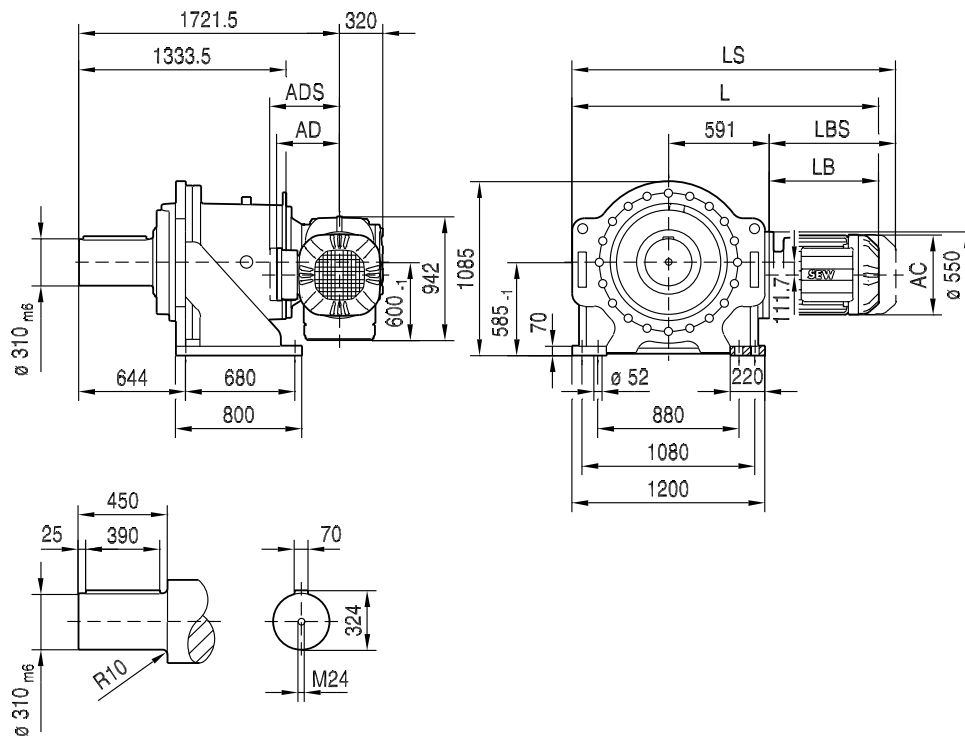


P..092/T..

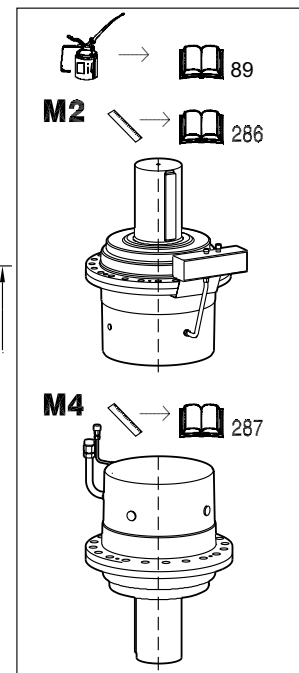
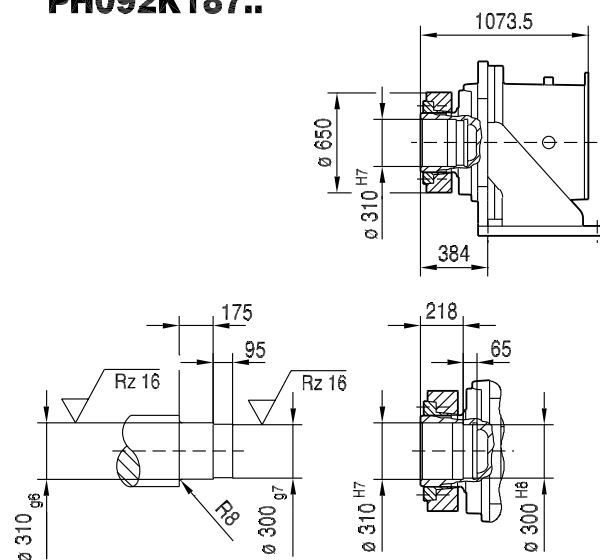


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(→ 99)	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M	DRN280S	DRN280M	DRN315S-M	DRN315ME-H
AC	314	357	394	434	495	495	495	624	624
AD	253	268	283	305	394	394	394	506	506
ADS	253	268	283	305	394	394	394	506	506
L	1497	1520	1630	1604	1741	1741	1836	1938	2068
LS	1686	1709	1835	1809	1981	1981	2076	2189	2319
LB	500	523	633	607	744	744	839	941	1071
LBS	689	712	838	812	984	984	1079	1192	1322

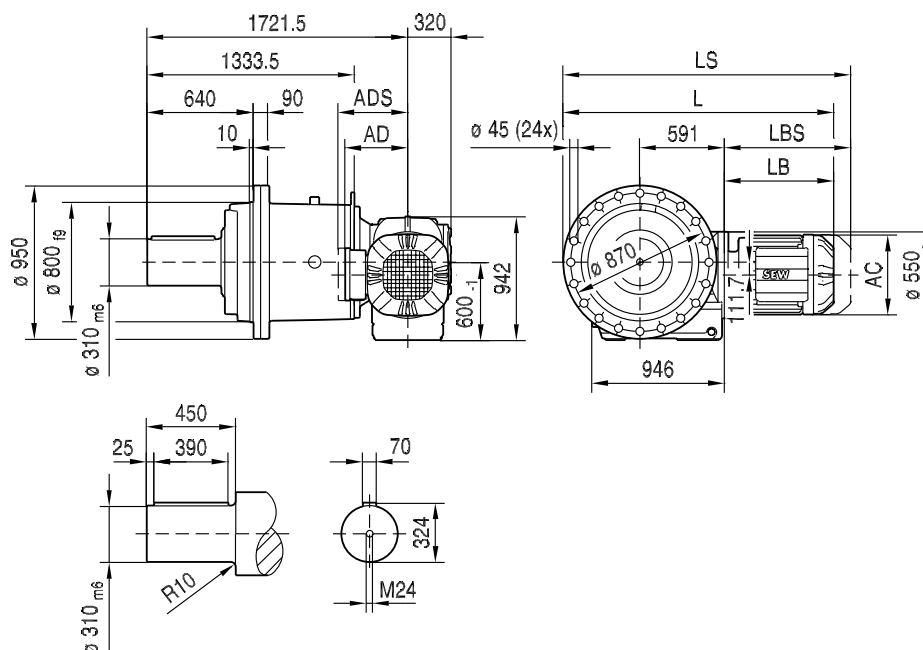
P092K187..

45 123 00 15

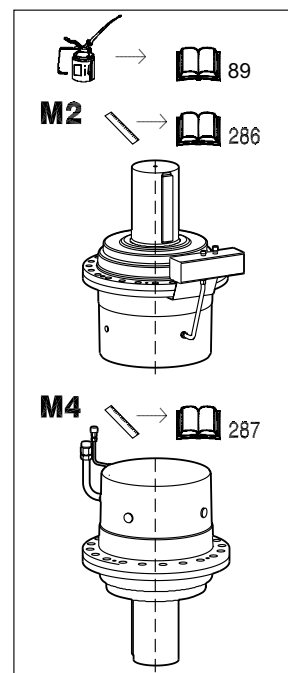
**PH092K187..**

(→ 99)	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M	DRN280S	DRN280M	DRN315S-M	DRN315ME-H
AC	314	357	394	434	495	495	495	624	624
AD	253	268	283	305	394	394	394	506	506
ADS	253	268	283	305	394	394	394	506	506
L	1691	1714	1824	1798	1935	1935	2030	2132	2262
LS	1880	1903	2029	2003	2175	2175	2270	2383	2513
LB	500	523	633	607	744	744	839	941	1071
LBS	689	712	838	812	984	984	1079	1192	1322

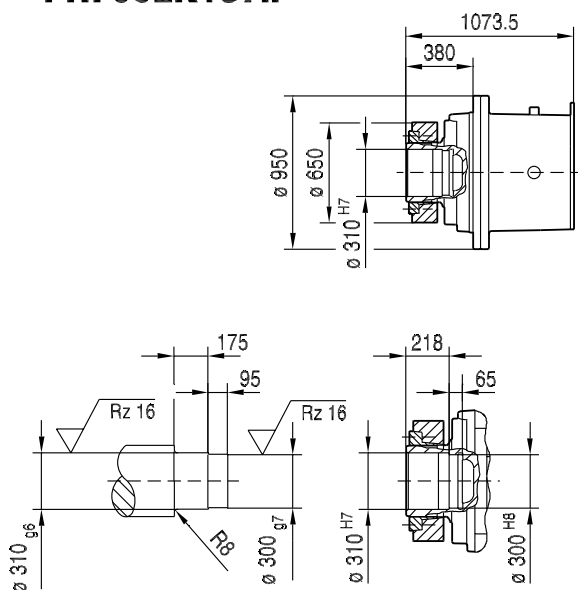
PF092K187..



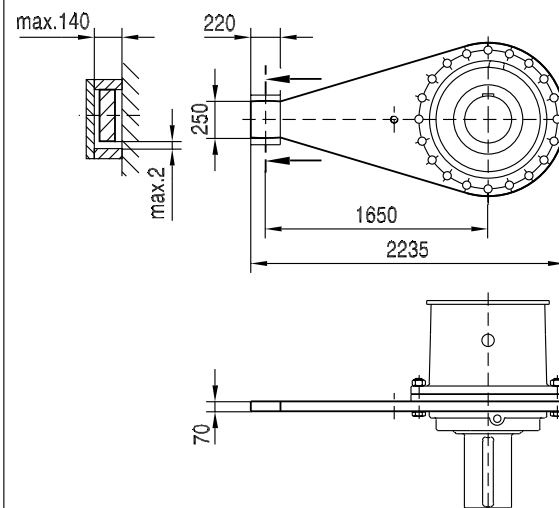
45 124 00 15



PHF092K187..

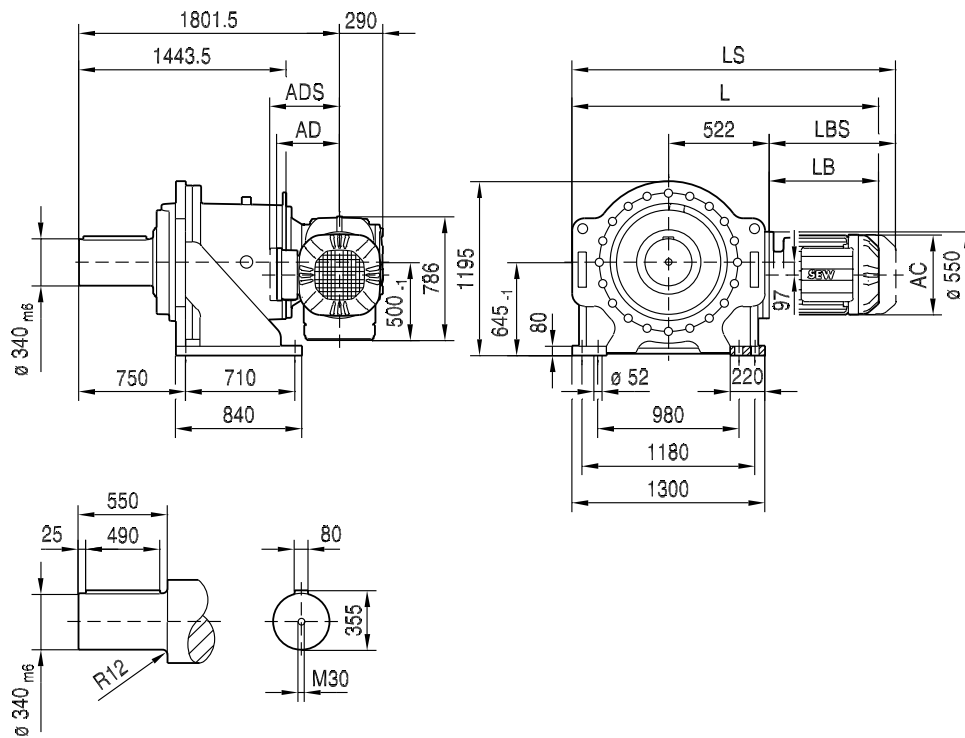


P..092/T..

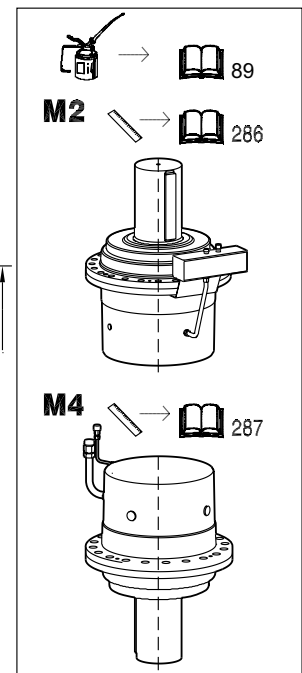
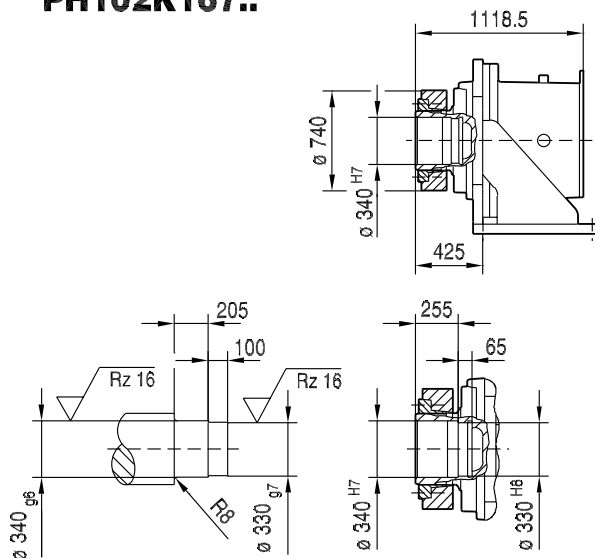


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(→ 99)	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M	DRN280S	DRN280M	DRN315S-M	DRN315ME-H
AC	314	357	394	434	495	495	495	624	624
AD	253	268	283	305	394	394	394	506	506
ADS	253	268	283	305	394	394	394	506	506
L	1566	1589	1699	1673	1810	1810	1905	2007	2137
LS	1755	1778	1904	1878	2050	2050	2145	2258	2388
LB	500	523	633	607	744	744	839	941	1071
LBS	689	712	838	812	984	984	1079	1192	1322

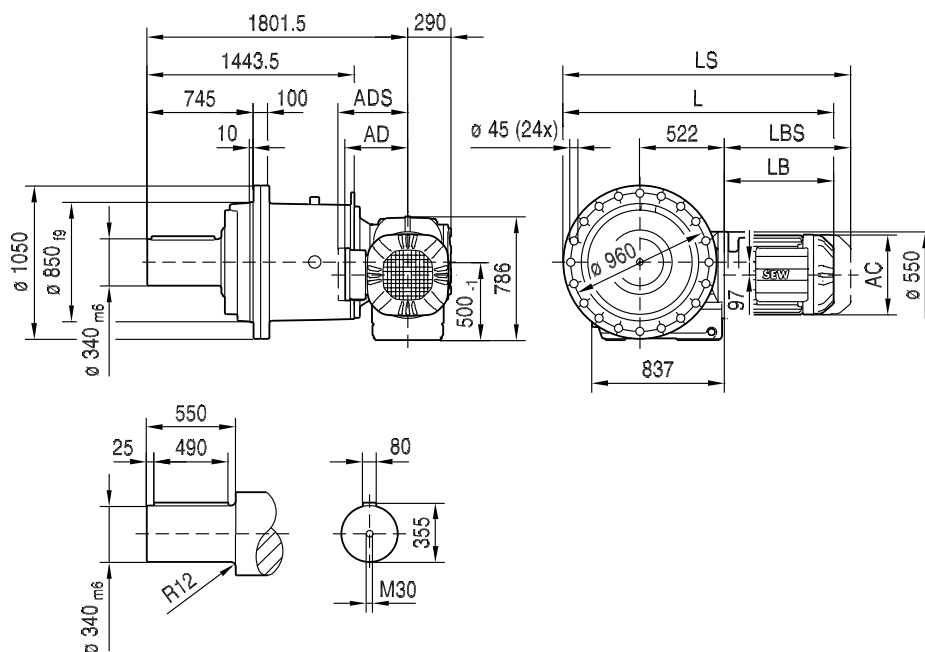
P102K167..

45 125 00 15

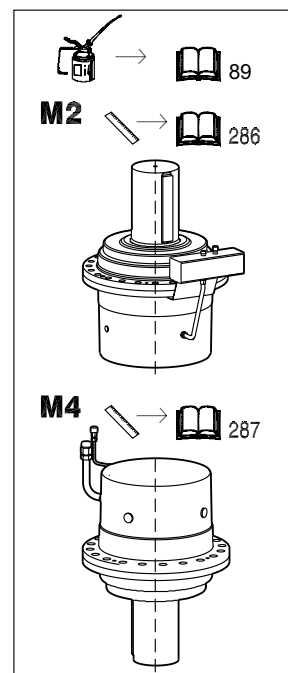
**PH102K167..**

(→ 99)	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M	DRN280S	DRN280M	DRN315S-M	DRN315ME-H
AC	314	357	394	434	495	495	495	624	624
AD	253	268	283	305	394	394	394	506	506
ADS	253	268	283	305	394	394	394	506	506
L	1672	1695	1805	1779	1916	1916	2011	2113	2243
LS	1861	1884	2010	1984	2156	2156	2251	2364	2494
LB	500	523	633	607	744	744	839	941	1071
LBS	689	712	838	812	984	984	1079	1192	1322

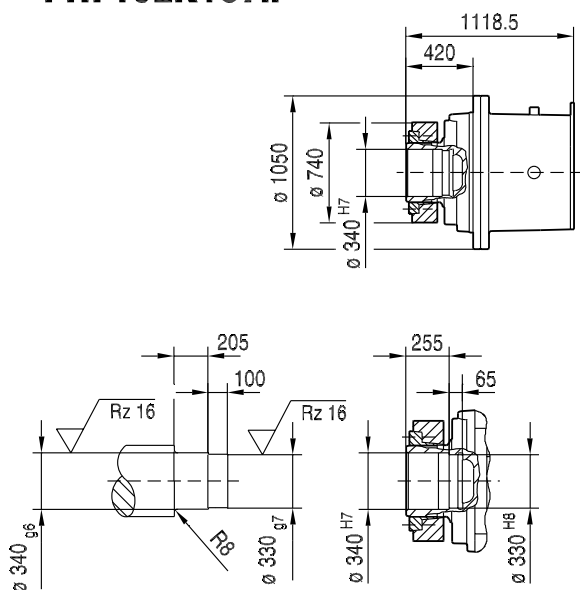
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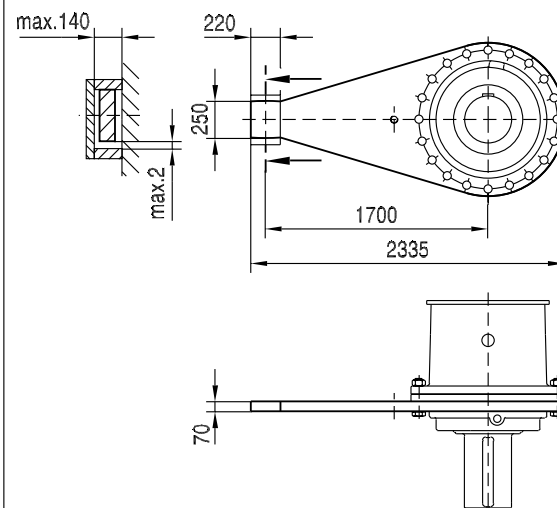
45 126 00 15



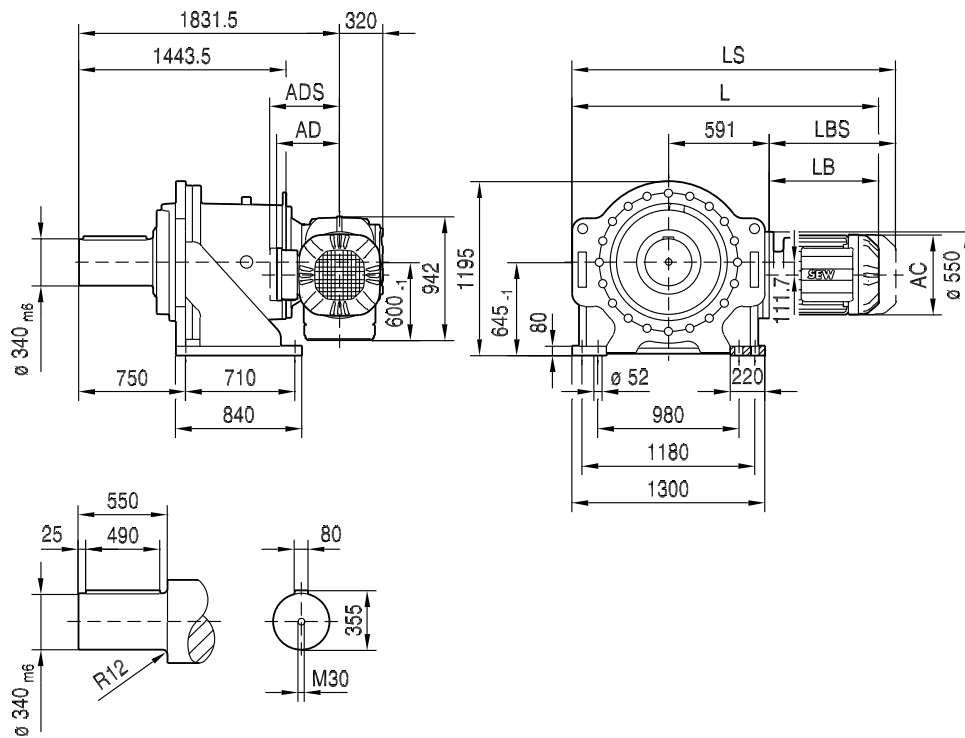
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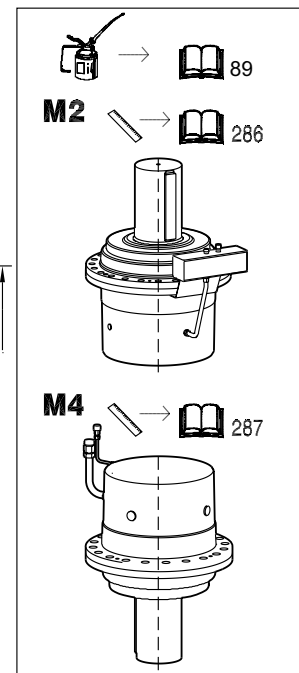
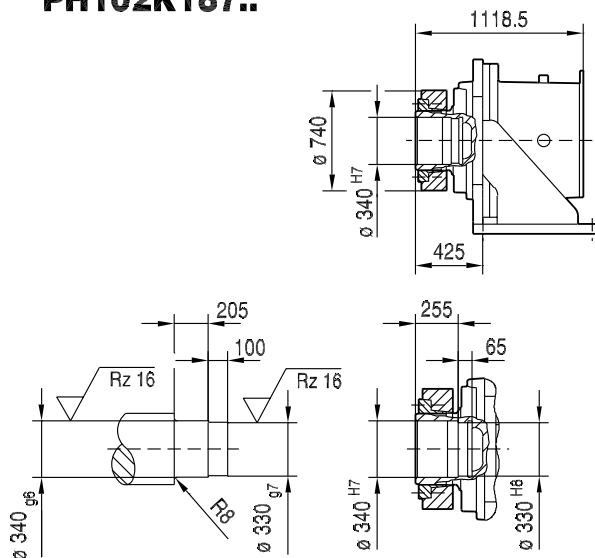
P..102/T..



(→ 99)	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M	DRN280S	DRN280M	DRN315S-M	DRN315ME-H
AC	314	357	394	434	495	495	495	624	624
AD	253	268	283	305	394	394	394	506	506
ADS	253	268	283	305	394	394	394	506	506
L	1547	1570	1680	1654	1791	1791	1886	1988	2118
LS	1736	1759	1885	1859	2031	2031	2126	2239	2369
LB	500	523	633	607	744	744	839	941	1071
LBS	689	712	838	812	984	984	1079	1192	1322

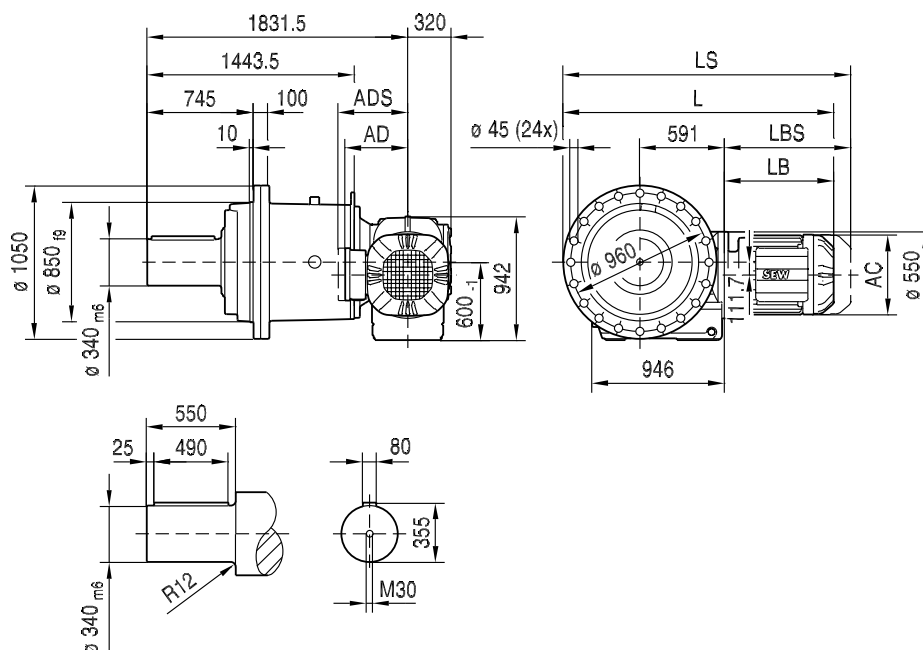
P102K187..

45 127 00 15

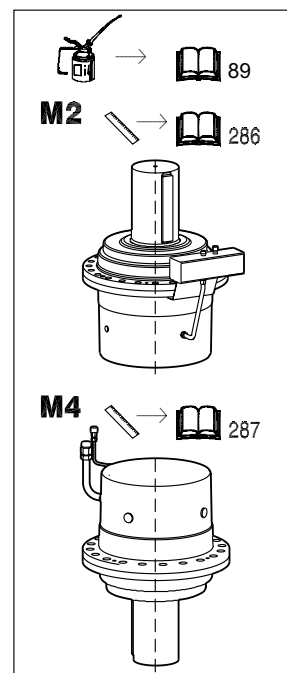
**PH102K187..**

(→ 99)	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M	DRN280S	DRN280M	DRN315S-M	DRN315ME-H
AC	314	357	394	434	495	495	495	624	624
AD	253	268	283	305	394	394	394	506	506
ADS	253	268	283	305	394	394	394	506	506
L	1741	1764	1874	1848	1985	1985	2080	2182	2312
LS	1930	1953	2079	2053	2225	2225	2320	2433	2563
LB	500	523	633	607	744	744	839	941	1071
LBS	689	712	838	812	984	984	1079	1192	1322

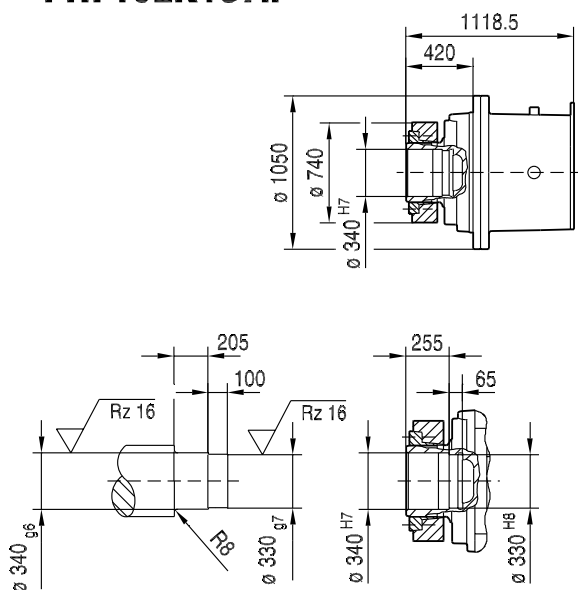
PF102K187..



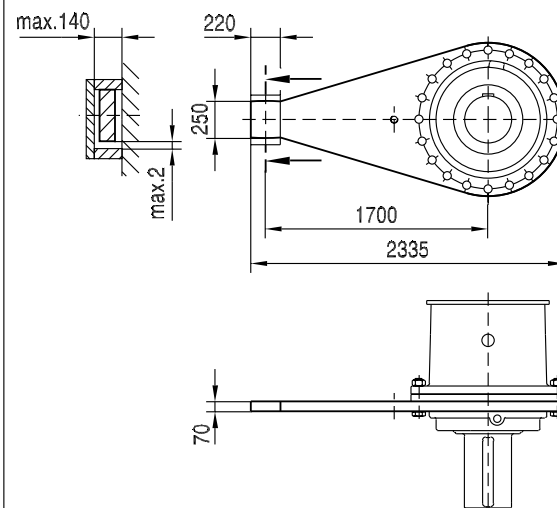
45 128 00 15



PHF102K187..



P..102/T..



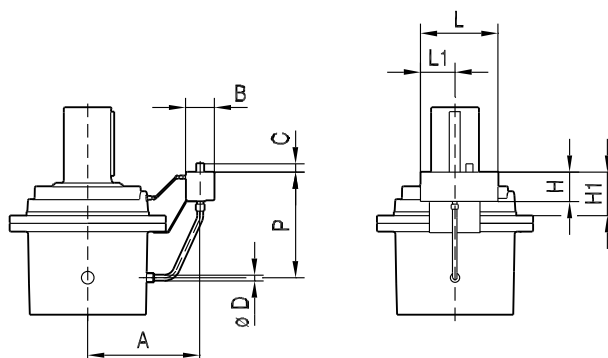
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(→ 99)	DRN160L	DRN180..	DRN200L	DRN225..	DRN250M	DRN280S	DRN280M	DRN315S-M	DRN315ME-H
AC	314	357	394	434	495	495	495	624	624
AD	253	268	283	305	394	394	394	506	506
ADS	253	268	283	305	394	394	394	506	506
L	1616	1639	1749	1723	1860	1860	1955	2057	2187
LS	1805	1828	1954	1928	2100	2100	2195	2308	2438
LB	500	523	633	607	744	744	839	941	1071
LBS	689	712	838	812	984	984	1079	1192	1322

11.4 Oil expansion tank for mounting position M2

45 015 00 11

P/PH/PF/PHF
M2

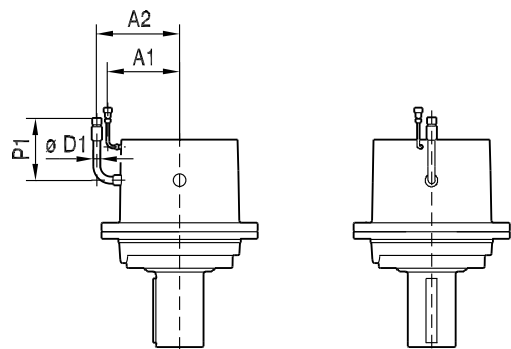


	A	B	C	Ø D	H	H1	L	L1	P
P.092	627.5	160	51	28	160	230	530	235	636.5
P.102	696.5	160	51	28	160	241	530	235	658.5

11.5 Oil expansion tank for mounting position M4

P/PH/PF/PHF
M4

45 016 00 11



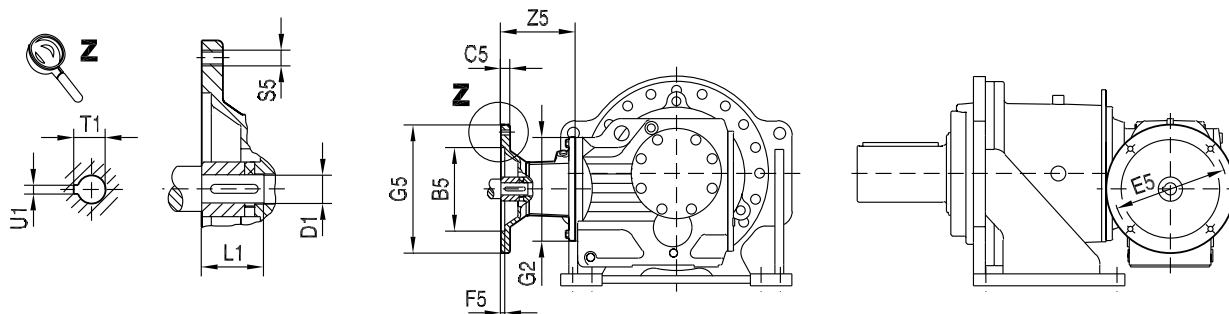
11

	A1	A2	Ø D1	P1
P.092	477	486	28	361
P.102	507	514	28	361

11.6 AM adapter for mounting IEC motors

45 122 00 08

P..KF..AM..



		B5	C5	E5	F5	G2	G5	S5	Z5	D1	L1	T1	U1
P..KF77	AM63	95	10	115	3.5	200	140	M8	60	11	23	12.8	4
	AM71	110		130			160			14	30	16.3	5
	AM80	130	12	165	4.5		200	M10	92	19	40	21.8	6
	AM90									24	50	27.3	8
	AM100	180	15	215	5		250	M12	126	28	60	31.3	8
	AM112												
	AM132S/M	230	16	265	300		179	38	80	41.3	10		
	AM132ML												
P..KF87	AM80	130	12	165	4.5	250	200	M10	87	19	40	21.8	6
	AM90									24	50	27.3	8
	AM100	180	15	215	5		250	M12	121	28	60	31.3	8
	AM112												
	AM132S/M	230	16	265	300		174	38	80	41.3	10		
	AM132ML												
	AM160	250	18	300	6		350	M16	232	42	110	45.3	12
	AM180									48		51.8	14
P..KF97	AM100	180	15	215	5	300	250	M12	116	28	60	31.3	8
	AM112												
	AM132S/M	230	16	265	300		169	38	80	41.3	10		
	AM132ML												
	AM160	250	18	300	6		350	M16	227	42	110	45.3	12
	AM180									48		51.8	14
	AM200	300	20	350	7		400	268	55	59.3	16		

45 123 00 08

P..KF..AM..

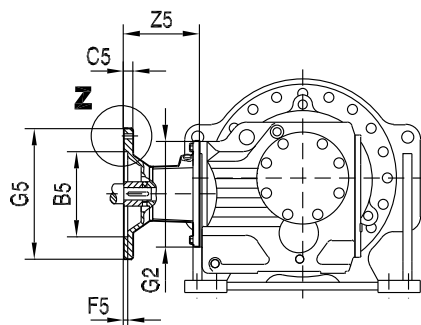
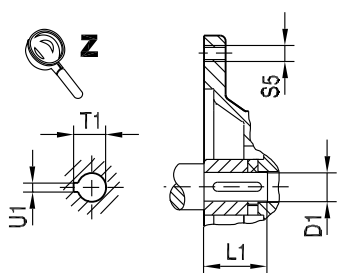


Fig.1

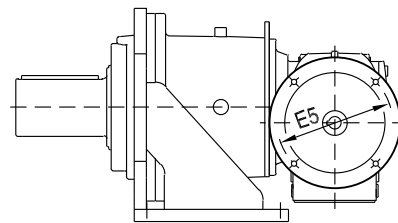


Fig.2



11

		Fig.	B5	C5	E5	F5	G2	G5	S5	Z5	D1	L1	T1	U1	
P..KF107	AM100	1	180	15	215	5	350	250	M12	110	28	60	31.3	8	
	AM112		230	16	265			300		M16	221	42	110	45.3	12
	AM132S/M					48			51.8			14			
	AM132ML					250			18		300	6		400	262
	AM160														
	AM180														
	AM200														
P..KF127	AM132S/M	1	230	16	265	5	450	300	M12	148	38	80	41.3	10	
	AM132ML		250	18	300	6		350	M16	206	42	110	45.3	12	
	AM160										48		51.8	14	
	AM180									247	55		59.3	16	
	AM200	2	300	20	350	7		400		550	336	60	140	64.4	18
	AM225		350	22	400			262				65		69.4	
	AM250		450	25	500		75	79.9				20			
	AM280														
P..KF157	AM160	1	250	18	300	6	550	350	M16	198	42	110	45.3	12	
	AM180		300	20	350	7		400		239	48		51.8	14	
	AM200														450
	AM225	2	350	22	400	550		550		328	60	140	64.4	18	
	AM250		450	25	500						65		69.4		
	AM280														75
	P..K167		AM160	1	250		18		300		6.0		550		350
AM180		300	20		350	7.0	400	239	0	55	64.4				
AM200												450		0	60
AM225		2	350	22	400	550	550	328	0	140	79.9	18			
AM250			450	25	500				19		75	79.9			
AM280															

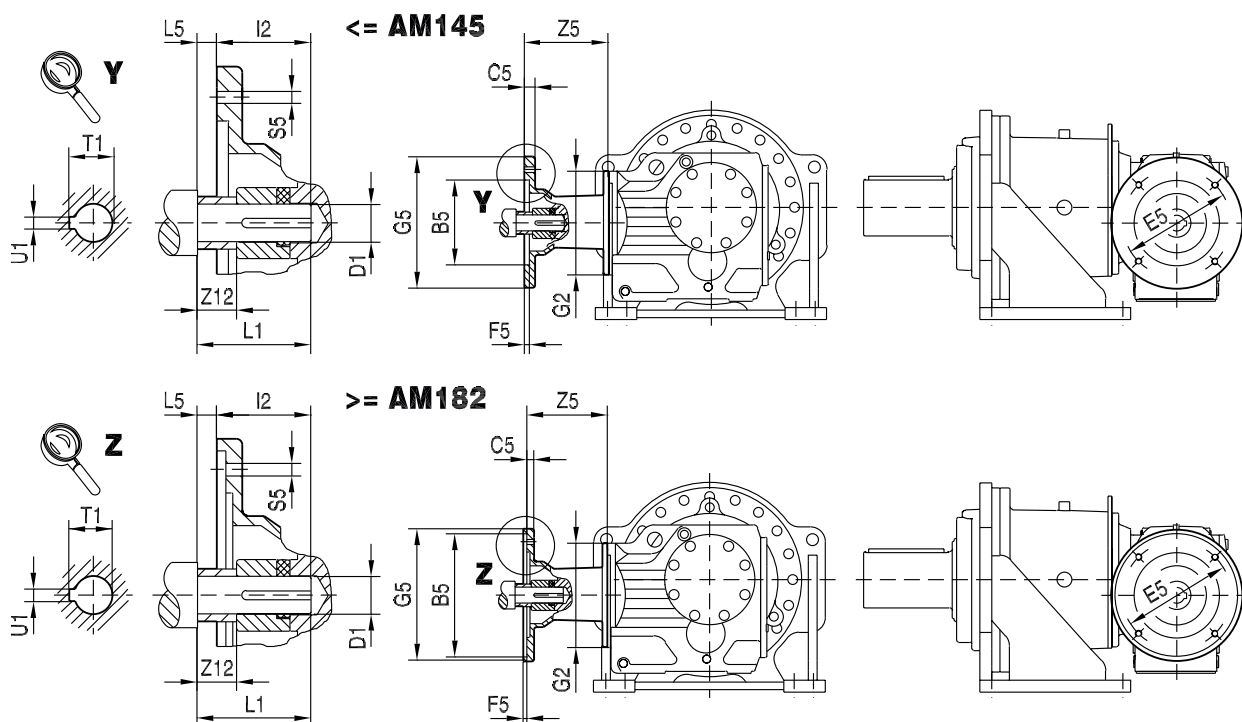
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		Fig.	B5	C5	E5	F5	G2	G5	S5	Z5	D1	L1	T1	U1										
P..K187	AM160	1	250	18	300	6.0	550	350	M16	198	0	42	110	45.3										
	AM180					6.0		350		198		48		51.8										
	AM200					300		20		350		239		55	59.3									
	AM225	2	350	22	400	7.0		450		M16	254	19	65	140	69.4									
	AM250															450	25	500	550	328	19	75	140	79.9
	AM280																							

11.7 AM adapters for mounting of NEMA motors

45 124 00 08

P..KF..AM..

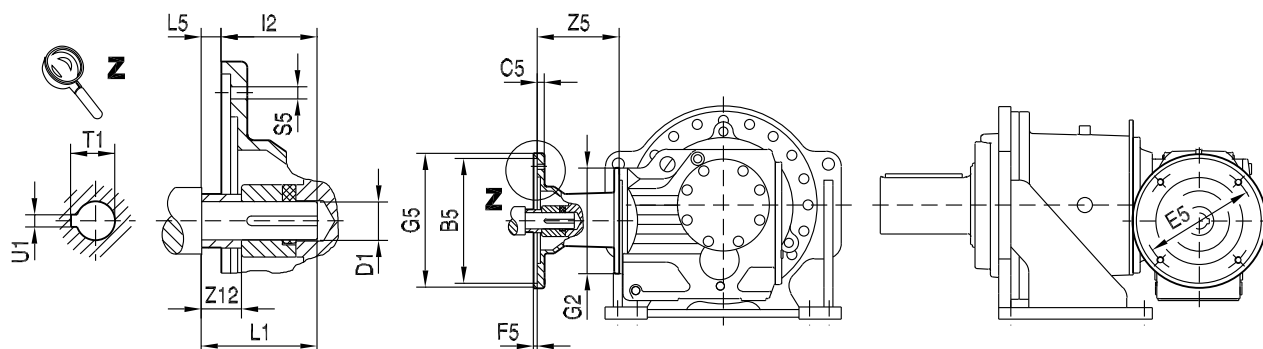


11

		B5	C5	E5	F5	G2	G5	I2	L5	S5	Z5	Z12	D1	L1	T1	U1
P..KF77	AM56	114.3	11	149.2	4.5	200	170	52.55	-4.8	10.5	81	16.5	15.875	47	18.1	4.76
	AM143		12					54.1	3		103.5	14.5	22.225	57	24.7	
	AM145															
	AM182	215.9	10	184	5		228	66.75	3	15	139.5	16.5	28.575	69	31.7	6.35
	AM184															
	AM213/215		11					79.55	6.3		188.5	15.8	34.925	85	38.7	7.94
P..KF87	AM143	114.3	12	149.2	4.5	250	170	54.1	3	10.5	98.5	14.5	22.225	57	24.7	4.76
	AM145															
	AM182	215.9	10	184	5		228	66.75	3	15	134.5	16.5	28.575	69	31.7	6.35
	AM184															
	AM213/215		11					79.55	6.3		183.5	15.8	34.925	85	38.7	7.94
	AM254/256		12					95.3	6.3		234	9	41.275	101	45.8	9.53
P..KF97	AM284/286	266.7	15	228.6	5	300	286	111.05	6.3	15	241	15.8	47.625	117	53.4	12.7
	AM182	215.9	10	184	5		228	66.75	3	15	129.5	16.5	28.575	69	31.7	6.35
	AM184															
	AM213/215		11					79.55	6.3		178.5	15.8	34.925	85	38.7	7.94
	AM254/256		12					95.3	6.3		229	9	41.275	101	45.8	9.53
	AM284/286	266.7	20	228.6	5		286	111.05	6.3	15	236	15.8	47.625	117	53.4	12.7
	AM324/326	317.5	17	279.4	5		356	127.05	6.3	17.5	296	34.8	53.975	133	60	12.7
	AM364/365							143.05					60.325	149	67.6	15.875

45 125 00 08

P..KF..AM..



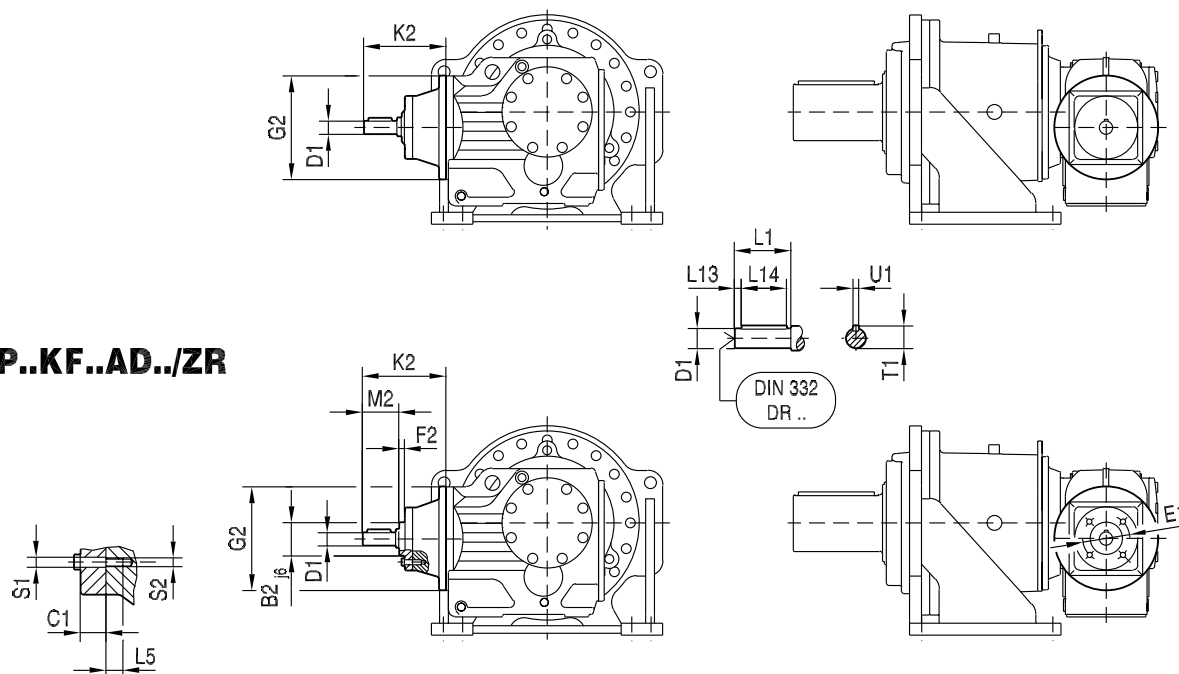
		B5	C5	E5	F5	G2	G5	I2	L5	S5	Z5	Z12	D1	L1	T1	U1
P..KF107	AM182	215.9	10	184	5	350	228	66.85	3	15	123.5	16.5	28.575	69	31.7	6.35
	AM184															
	AM213/215		11					79.55	6.3			172.5	15.8			
	AM254/256		12					95.3	6.3			223	9			
	AM284/286	266.7	15	228.6	5		286	111.05	6.3	15	230	15.8	47.625	117	53.4	12.7
	AM324/326	317.5	17	279.4	5		356	127.05	6.3	17.5	290	34.8	53.975	133	60	12.7
	AM364/365							143.05					60.325	149	67.6	15.875
P..KF127	AM213/215	215.9	11	184	5	450	228	79.55	6.3	15	157.5	15.8	34.925	85	38.7	7.94
	AM254/256		12					95.3	6.3							
	AM284/286	266.7	15	228.6	5		286	111.05	6.3	15	215	15.8	47.625	117	53.4	12.7
	AM324/326	317.5	17	279.4	5		356	127.05	6.3	17.5	275	34.8	53.975	133	60	12.7
	AM364/365							143.05					60.325	149	67.6	15.875
P..KF157 P..K167 P..K187	AM254/256	215.9	12	184	5	550	228	79.55	6.3	15	200	9	41.275	101	45.8	9.53
	AM284/286	266.7	15	228.6	5		286	95.3	6.3	15	207	15.8	47.625	117	53.4	12.7
	AM324/326	317.5	17	279.4	5		356	111.05	6.3	17.5	267	34.8	53.975	133	60	12.7
	AM364/365							127.05					60.325	149	67.6	15.875

11.8 AD input shaft assembly

P..KF..AD..

46 128 01 08

P..KF..AD../ZR



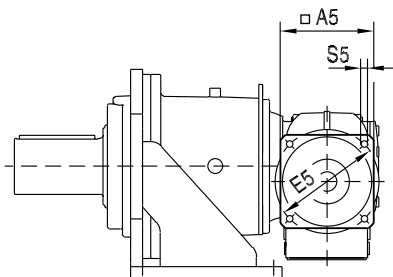
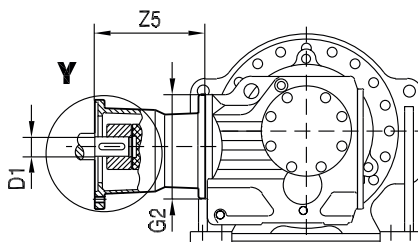
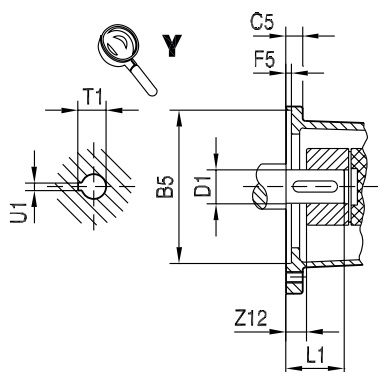
11

		B2	C1	E1	F2	G2	K2	L5	M2	S1	S2	D1	L1	L13	L14	T1	U1
P..KF77	AD2 , AD2/ZR	55	13.5	80	8	200	116	12	50	9	M8	19	40	4	32	21.5	6
	AD3 , AD3/ZR	70	15.5	105	8		151	16	60	11	M10	24	50	5	40	27	8
	AD4 , AD4/ZR	100	16	130	13		224	20	95.5	13.5	M12	38	80	5	70	41	10
P..KF87	AD2 , AD2/ZR	55	13.5	80	8	250	111	12	50	9	M8	19	40	4	32	21.5	6
	AD3 , AD3/ZR	70	15.5	105	8		156	16	60	11	M10	28	60	5	50	31	8
	AD4 , AD4/ZR	100	16	130	13		219	20	95.5	13.5	M12	38	80	5	70	41	10
	AD5 , AD5/ZR	120	24	180	11		292	20	126	13.5	M12	42	110	10	70	45	12
P..KF97	AD3 , AD3/ZR	70	15.5	105	8	300	151	16	60	11	M10	28	60	5	50	31	8
	AD4 , AD4/ZR	100	16	130	13		214	20	95.5	13.5	M12	38	80	5	70	41	10
	AD5 , AD5/ZR	120	24	180	11		287	20	126	13.5	M12	42	110	10	70	45	12
	AD6 , AD6/ZR	130	22.5	200	11		327	26	130.5	17.5	M16	48	110	10	80	51.5	14
P..KF107	AD3 , AD3/ZR	70	15.5	105	8	350	145	16	60	11	M10	28	60	5	50	31	8
	AD4 , AD4/ZR	100	16	130	13		208	20	95.5	13.5	M12	38	80	5	70	41	10
	AD5 , AD5/ZR	120	24	180	11		281	20	126	13.5	M12	42	110	10	70	45	12
	AD6 , AD6/ZR	130	22.5	200	11		321	26	130.5	17.5	M16	48	110	10	80	51.5	14
P..KF127	AD4 , AD4/ZR	100	16	130	13	450	193	20	95.5	13.5	M12	38	80	5	70	41	10
	AD5 , AD5/ZR	120	24	180	11		266	20	126	13.5	M12	42	110	10	70	45	12
	AD6 , AD6/ZR	130	22.5	200	11		306	26	130.5	17.5	M16	48	110	10	80	51.5	14
	AD7 , AD7/ZR	125	19	190	13		300	30	133	22	M20	55	110	10	90	59	16
	AD8 , AD8/ZR	120	22.5	210	5		383	19.5	155	13.5	M12	70	140	15	110	74.5	20
P..KF127	AD5 , AD5/ZR	120	24	180	11	550	258	20	126	13.5	M12	42	110	10	70	45	12
	AD6 , AD6/ZR	130	22.5	200	11		298	26	130.5	17.5	M16	48	110	10	80	51.5	14
	AD7 , AD7/ZR	125	19	190	13		292	30	133	22	M20	55	110	10	90	59	16
	AD8 , AD8/ZR	120	22.5	210	5		374	19.5	155	13.5	M12	70	140	15	110	74.5	20
K..157 K..167 K..187	AD5 , AD5/ZR	120	24	180	11	550	258	20	126	13.5	M12	42	110	10	70	45	12
	AD6 , AD6/ZR	130	22.5	200	11		298	26	130.5	17.5	M16	48	110	10	80	51.5	14
	AD7 , AD7/ZR	125	19	190	13		292	30	133	22	M20	55	110	10	90	59	16
	AD8 , AD8/ZR	120	22.5	210	5		374	19.5	155	13.5	M12	70	140	15	110	74.5	20

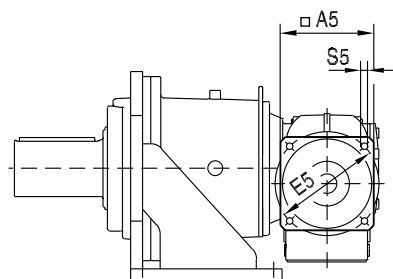
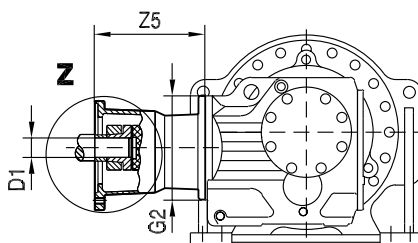
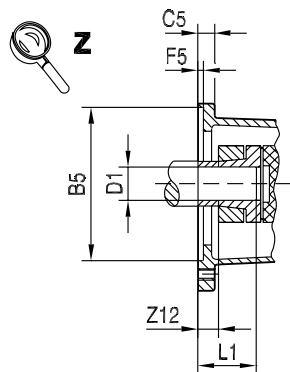
11.9 AQA motor adapters

46 126 01 08

P..KF..AQA..



P..KF..AQH..

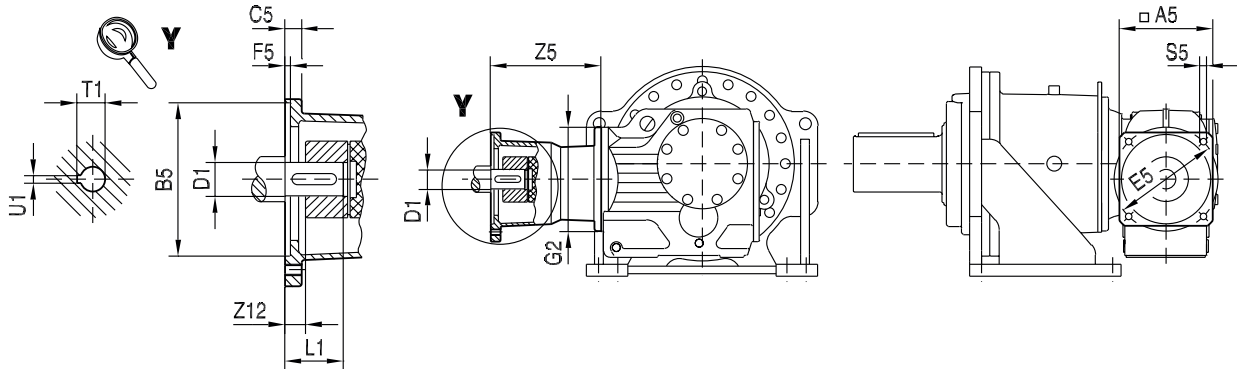


		A5	B5	C5	E5	F5	G2	S5	Z5	AQA Z12	AQH Z12	D1	L1	T1	U1
P..KF77	AQ..80/1	82	60	8	75	3.5	200	M5	92	5.5	5.5	11	23	12.8	4
	AQ..80/2	82	60	8	75	3.5	200	M5	92	5.5	5.5	14	30	16.3	5
	AQ..80/3	82	50	8	95	3	200	M6	92	5.5	5.5	14	30	16.3	5
	AQ..100/1	100	80	10	100	4	200	M6	116	0	0	14	30	16.3	5
	AQ..100/2	100	95	12	115	4	200	M8	116	0	0	14	30	16.3	5
	AQ..100/3	100	80	10	100	4	200	M6	130	2	14	19	40	21.8	6
	AQ..100/4	100	95	12	115	4	200	M8	130	2	14	19	40	21.8	6
	AQ..115/1	115	95	12	130	5	200	M8	139	11	23	19	40	21.8	6
	AQ..115/2	115	110	12	130	5	200	M8	139	11	23	19	40	21.8	6
	AQ..115/3	115	110	12	130	5	200	M8	139	16	16	24	50	27.3	8
	AQ..140/1	140	110	15	165	5	200	M10	167	16	16	24	50	27.3	8
	AQ..140/2	140	130	15	165	5	200	M10	167	16	16	24	50	27.3	8
	AQ..140/3	140	130	15	165	5	200	M10	180	22	22	32	60	35.3	10
	AQ..190/1	190	130	16	215	5	200	M12	225.5	24	24	32	60	35.3	10
	AQ..190/2	190	180	16	215	5	200	M12	225.5	24	24	32	60	35.3	10
	AQ..190/3	190	180	16	215	5	200	M12	249.5	34	34	38	80	41.3	10
P..KF87	AQ..100/1	100	80	10	100	4	250	M6	111	0	0	14	30	16.3	5
	AQ..100/2	100	95	12	115	4	250	M8	111	0	0	14	30	16.3	5
	AQ..100/3	100	80	10	100	4	250	M6	125	2	14	19	40	21.8	6
	AQ..100/4	100	95	12	115	4	250	M8	125	2	14	19	40	21.8	6
	AQ..115/1	115	95	12	130	5	250	M8	134	11	23	19	40	21.8	6
	AQ..115/2	115	110	12	130	5	250	M8	134	11	23	19	40	21.8	6
	AQ..115/3	115	110	12	130	5	250	M8	134	16	16	24	50	27.3	8
	AQ..140/1	140	110	15	165	5	250	M10	162	16	16	24	50	27.3	8
	AQ..140/2	140	130	15	165	5	250	M10	162	16	16	24	50	27.3	8
	AQ..140/3	140	130	15	165	5	250	M10	175	22	22	32	60	35.3	10
	AQ..190/1	190	130	16	215	5	250	M12	220.5	24	24	32	60	35.3	10
	AQ..190/2	190	180	16	215	5	250	M12	220.5	24	24	32	60	35.3	10
	AQ..190/3	190	180	16	215	5	250	M12	244.5	34	34	38	80	41.3	10

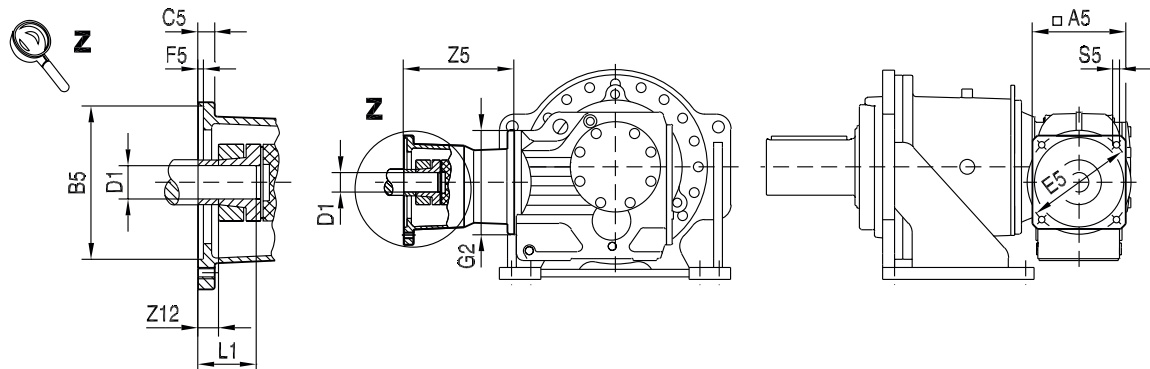
23056126/EN – 11/2016

46 127 01 08

P..KF..AQA..



P..KF..AQH..



11

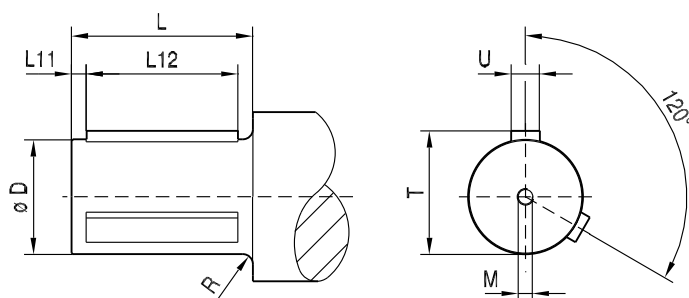
		A5	B5	C5	E5	F5	G2	S5	Z5	AQA Z12	AQH Z12	D1	L1	T1	AU1
P..KF97	AQ..140/1	140	110	15	165	5	300	M10	157	21	16	24	50	27.3	8
	AQ..140/2	140	130	15	165	5	300	M10	157	21	16	24	50	27.3	8
	AQ..140/3	140	130	15	165	5	300	M10	170	24	22	32	60	35.3	10
	AQ..190/1	190	130	16	215	5	300	M12	215.5	26	24	32	60	35.3	10
	AQ..190/2	190	180	16	215	5	300	M12	215.5	26	24	32	60	35.3	10
	AQ..190/3	190	180	16	215	5	300	M12	239.5	39	34	38	80	41.3	10
P..KF107	AQ..140/1	140	110	15	165	5	350	M10	151	21	16	24	50	27.3	8
	AQ..140/2	140	130	15	165	5	350	M10	151	21	16	24	50	27.3	8
	AQ..140/3	140	130	15	165	5	350	M10	164	24	22	32	60	35.3	10
	AQ..190/1	190	130	16	215	5	350	M12	209.5	26	24	32	60	35.3	10
	AQ..190/2	190	180	16	215	5	350	M12	209.5	26	24	32	60	35.3	10
	AQ..190/3	190	180	16	215	5	350	M12	233.5	39	34	38	80	41.3	10

12 Additional dimension sheets

12.1 Output shaft

12.1.1 P.. Solid shaft with 2 keys

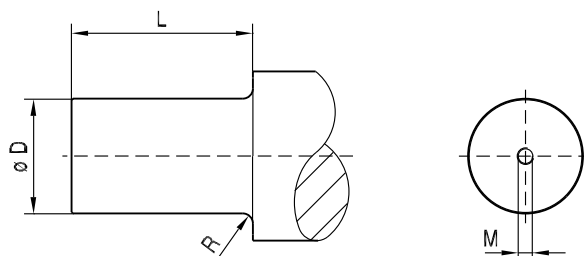
45 002 00 14



	Ø D	L11	L12	L	T	V	M	R
P.002	120 _{m6}	14	165	200	127	32	M20	5
P.012	140 _{m6}	15	185	220	148	36	M20	5
P.022	150 _{m6}	15	183	220	158	36	M20	10
P.032	165 _{m6}	15	213	250	174	40	M20	10
P.042	190 _{m6}	17.5	255	300	200	45	M20	10
P.052	210 _{m6}	17.5	300	350	221	50	M24	10
P.062	240 _{m6}	21	340	400	252	56	M24	10
P.072	260 _{m6}	22	340	400	272	56	M24	10
P.082	290 _{m6}	22	390	450	302	63	M24	10
P.092	310 _{m6}	25	390	450	324	70	M24	10
P.102	340 _{m6}	25	490	550	355	80	M30	12

12.1.2 PR.. Smooth solid shaft

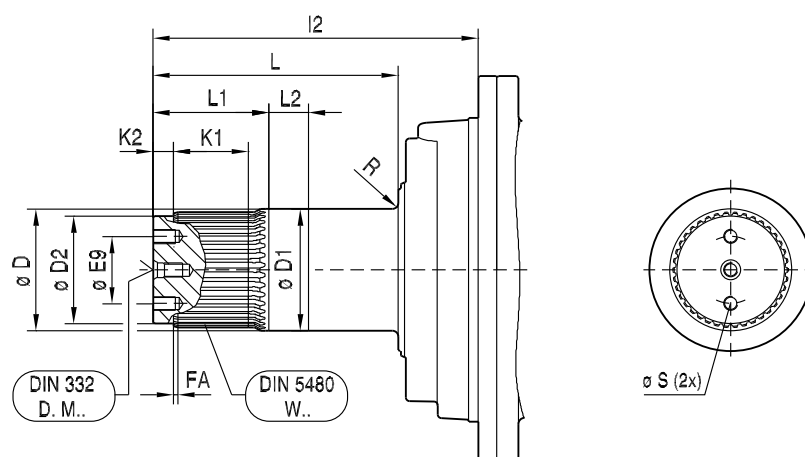
45 003 00 14



	Ø D	L	M	R
P.002	120 _{v6}	200	M20	5
P.012	140 _{v6}	220	M20	5
P.022	150 _{v6}	220	M20	10
P.032	165 _{v6}	250	M20	10
P.042	190 _{v6}	300	M20	10
P.052	210 _{v6}	350	M24	10
P.062	240 _{v6}	400	M24	10
P.072	260 _{v6}	400	M24	10
P.082	290 _{v6}	450	M24	10
P.092	310 _{v6}	450	M24	10
P.102	340 _{v6}	550	M30	12

12.1.3 PL.. Splined solid shaft

45 002 00 16



18553858827

DIN 5480 - Solid shaft														
	Ø D1	Ø D2	L2	K2	L	l2	L1	K1	R	Ø E9	DIN 332 D.M..	Ø S (2x)	FA	DIN 5480-W..
PLF.002	120 _{m6}	95 _{m6}	20	20	200	280	135	80	5	-	M20	-	8	110x5x30x20x8f
PLF.012	140 _{m6}	115 _{m6}	25	25	220	298	145	85	5	-	M20	-	8	130x5x30x24x8f
PLF.022	150 _{m6}	125 _{m6}	25	25	220	305	155	95	10	-	M20	-	8	140x5x30x26x8f
PLF.032	165 _{m6}	145 _{m6}	25	25	250	340	157	100	10	90	M20	M20	8	160x5x30x30x8f
PLF.042	190 _{m6}	165 _{m6}	30	30	300	430	175	110	10	125	M20	M20	8	180x5x30x34x8f
PLF.052	210 _{m6}	185 _{m6}	35	35	350	490	180	110	10	140	M24	M24	8	200x5x30x38x8f
PLF.062	240 _{m6}	205 _{m6}	35	35	400	540	210	130	10	160	M24	M24	8	220x5x30x42x8f
PLF.072	260 _{m6}	235 _{m6}	40	40	400	545	215	135	10	160	M24	M24	8	250x5x30x48x8f
PLF.082	290 _{m6}	265 _{m6}	40	40	450	610	235	155	10	190	M24	M24	8	280x5x30x54x8f
PLF.092	310 _{m6}	280 _{m6}	45	45	450	640	245	160	10	220	M24	M24	8	300x5x30x58x8f
PLF.102	340 _{m6}	300 _{m6}	50	50	550	745	265	167	12	235	M30	M30	8	320x5x30x62x8f

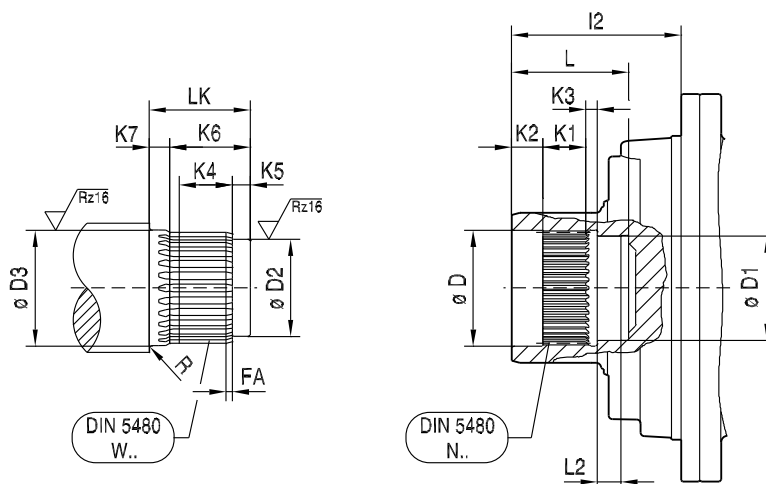
INFORMATION



For applications with overhung loads, contact SEW-EURODRIVE.

12.1.4 PV.. Splined hollow shaft

45 001 00 16



18553855499

DIN 5480 - Hollow shaft									
	Ø D	Ø D1	K2	L2	L	I2	K1	K3	DIN 5480-N..
PVF.002	132 ^{H7}	110 ^{H7}	35	20	138	165	50	18	130x5x30x24x9H
PVF.012	152 ^{H7}	130 ^{H7}	35	20	140	170	54	19	150x5x30x28x9H
PVF.022	162 ^{H7}	140 ^{H7}	35	20	152.5	180	65	19.5	160x5x30x30x9H
PVF.032	182 ^{H7}	155 ^{H7}	45	25	175	210	70	20	180x5x30x34x9H
PVF.042	202 ^{H7}	180 ^{H7}	45	30	191	255	80	21	200x5x30x38x9H
PVF.052	222 ^{H7}	200 ^{H7}	55	35	210	275	82	23	220x5x30x42x9H
PVF.062	252 ^{H7}	230 ^{H7}	60	35	240	295	95	32	250x5x30x48x9H
PVF.072	282 ^{H7}	250 ^{H7}	60	37	256	320	98	43	280x5x30x54x9H
PVF.082	302 ^{H7}	280 ^{H7}	60	38	263	340	125	22	300x5x30x58x9H
PVF.092	322 ^{H7}	300 ^{H7}	70	40	283	380	130	23	320x5x30x62x9H
PVF.102	362 ^{H7}	330 ^{H7}	90	45	320	420	125	40	360x8x30x44x9H

Recommendations for customer shaft										
	ØD3	ØD2	K7	K5	LK	K6	K4	R	FA	DIN 5480-W..
PVF.002	132 _{m6}	110 _{m6}	24	30	125	101	62	3	8x30°	130x5x30x24x8f
PVF.012	152 _{m6}	130 _{m6}	24	31	130	106	66	3	8x30°	150x5x30x28x8f
PVF.022	162 _{m6}	140 _{m6}	24	31.5	141.5	117.5	77	3	8x30°	160x5x30x30x8f
PVF.032	182 _{m6}	155 _{m6}	34	37	162	128	82	5	8x30°	180x5x30x34x8f
PVF.042	202 _{m6}	180 _{m6}	34	43	178	144	92	5	8x30°	200x5x30x38x8f
PVF.052	222 _{m6}	200 _{m6}	44	50	197	153	94	5	8x30°	220x5x30x42x8f
PVF.062	252 _{m6}	230 _{m6}	49	59	224	175	107	5	8x30°	250x5x30x48x8f
PVF.072	282 _{m6}	250 _{m6}	49	72	240	191	110	6	8x30°	280x5x30x54x8f
PVF.082	302 _{m6}	280 _{m6}	49	52	247	198	137	6	8x30°	300x5x30x58x8f
PVF.092	322 _{m6}	300 _{m6}	59.5	55	265	205.5	142	8	8x30°	320x5x30x62x8f
PVF.102	362 _{m6}	330 _{m6}	77	75	302	225	139	8	10x30°	360x8x30x44x8f

INFORMATION

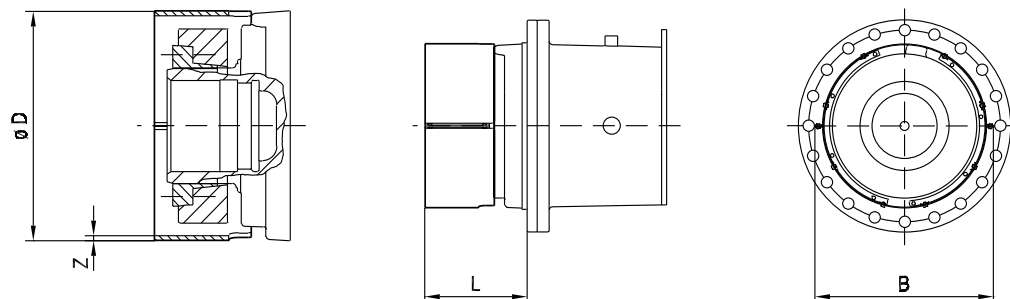


For applications with overhung loads, contact SEW-EURODRIVE.

Consequences

12.2 Protection cover for shrink disk

45 133 00 08



	B	Ø D	L	Z
P.002	350	307	176	2
P.012	396	353	182.5	2
P.022	452	409	193	2
P.032	472	429	224.5	2
P.042	522	479	269	2
P.052	566	523	293	2
P.062	636	593	312	2
P.072	712	669	335.5	2
P.082	776	733	360	2
P.092	734	684	399.5	2
P.102	824	774	435.5	2

13 Address directory SEW-EURODRIVE

Algeria			
Sales	Algiers	REDUCOM Sarl 16, rue des Frères Zaghroune Bellevue 16200 El Harrach Alger	Tel. +213 21 8214-91 Fax +213 21 8222-84 http://www.reducom-dz.com info@reducom-dz.com
Argentina			
Assembly Sales	Buenos Aires	SEW EURODRIVE ARGENTINA S.A. Ruta Panamericana Km 37.5, Lote 35 (B1619IEA) Centro Industrial Garín Prov. de Buenos Aires	Tel. +54 3327 4572-84 Fax +54 3327 4572-21 http://www.sew-eurodrive.com.ar sewar@sew-eurodrive.com.ar
	Córdoba	SEW EURODRIVE ARGENTINA S.A. Ruta Nacional 19, Manzana 97, Lote 5 (X5125) Malvinas Argentinas Prov. de Córdoba	Tel. +54 351-490-0010 http://www.sew-eurodrive.com.ar sewcor@sew-eurodrive.com.ar
	Santa Fe	SEW EURODRIVE ARGENTINA S.A. Ruta Prov. 21 Km 7, Lote 41 Parque Industrial Alvear (2126) Gral. Alvear Prov. de Santa Fe	Tel. +54 341-317-7277 http://www.sew-eurodrive.com.ar sewsfe@sew-eurodrive.com.ar
Service	Mendoza	SEW EURODRIVE ARGENTINA S.A. Francisco Gabrielli (ex Urquiza) 2060-Zona Industrial- Guaymallen- CP 5521	Tel. +54 261-4214150 http://www.sew-eurodrive.com.ar sewmen@sew-eurodrive.com.ar
Technical Offices	Tucumán	SEW EURODRIVE ARGENTINA S.A. Balcarce 609 (T4000IAM) S.M. de Tucumán Prov. de Tucumán	Tel. +54 381-400-4569 http://www.sew-eurodrive.com.ar sewtuc@sew-eurodrive.com.ar
	Bahía Blanca	SEW EURODRIVE ARGENTINA S.A. O'Higgins 95, 1er Piso A (B8000IVA) Bahía Blanca Prov. de Buenos Aires	Tel. +54 291-451-7345 http://www.sew-eurodrive.com.ar sewbb@sew-eurodrive.com.ar
	Neuquén	SEW EURODRIVE ARGENTINA S.A.	Tel. +549 299 588 7950 http://www.sew-eurodrive.com.ar sewnqn@sew-eurodrive.com.ar
Australia			
Assembly Sales Service	Melbourne	SEW-EURODRIVE PTY. LTD. 27 Beverage Drive Tullamarine, Victoria 3043	Tel. +61 3 9933-1000 Fax +61 3 9933-1003 http://www.sew-eurodrive.com.au enquires@sew-eurodrive.com.au
	Sydney	SEW-EURODRIVE PTY. LTD. 9, Sleigh Place, Wetherill Park New South Wales, 2164	Tel. +61 2 9725-9900 Fax +61 2 9725-9905 enquires@sew-eurodrive.com.au
Sales Service	Adelaide	SEW-EURODRIVE PTY. LTD. 9C Park Way Mawson Lakes, SA 5095	Tel. +61 8 8161 4000 Fax +61 8 8161 4002 enquires@sew-eurodrive.com.au
	Brisbane	SEW-EURODRIVE PTY. LTD. 1 /34 Collinsvale St Rocklea, Queensland, 4106	Tel. +61 7 3276 5100 Fax +61 7 3276 5102 enquires@sew-eurodrive.com.au
	Perth	SEW-EURODRIVE PTY. LTD. 10 Colin Jamieson Drive Welshpool, WA 6106	Tel. +61 8 9251-4900 Fax +61 8 9251-4903 enquires@sew-eurodrive.com.au
Sales	Townsville	SEW-EURODRIVE PTY. LTD. 12 Leyland Street Garbutt, QLD 4814	Tel. +61 7 4779 4333 Fax +61 7 4779 5333 enquires@sew-eurodrive.com.au
Austria			
Assembly Sales Service	Vienna	SEW-EURODRIVE Ges.m.b.H. Richard-Strauss-Straße 24 1230 Wien	Tel. +43 1 617 55 00-0 Fax +43 1 617 55 00-30 http://www.sew-eurodrive.at sew@sew-eurodrive.at
Technical Offices	Linz	SEW-EURODRIVE Ges.m.b.H. Jaxstraße 2-4 4020 Linz	Tel. +43 732 655 109-0 Fax +43 732 655 109-20 tb-linz@sew-eurodrive.at

Graz	SEW-EURODRIVE Ges.m.b.H. Grabenstraße 231 8045 Graz	Tel. +43 316 685 756-0 Fax +43 316 685 756-20 tb-graz@sew-eurodrive.at
Dornbirn	SEW-EURODRIVE Ges.m.b.H. Lustenauerstraße 27/1 6850 Dornbirn	Tel. +43 5572 3725 99-0 Fax +43 5572 3725 99-20 tb-dornbirn@sew-eurodrive.at

Bangladesh

Sales	Bangladesh	SEW-EURODRIVE INDIA PRIVATE LIMITED 345 DIT Road East Rampura Dhaka-1219, Bangladesh	Tel. +88 01729 097309 salesdhaka@seweurodrivebangladesh.com
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Belarus

Sales	Minsk	Foreign unitary production enterprise SEW-EURODRIVE RybalkoStr. 26 220033 Minsk	Tel. +375 17 298 47 56 / 298 47 58 Fax +375 17 298 47 54 http://www.sew.by sales@sew.by
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Belgium

Assembly Sales Service	Brussels	SEW-EURODRIVE n.v./s.a. Researchpark Haasrode 1060 Evenementenlaan 7 3001 Leuven	Tel. +32 16 386-311 Fax +32 16 386-336 http://www.sew-eurodrive.be info@sew-eurodrive.be
Service Competence Center	Industrial Gears	SEW-EURODRIVE n.v./s.a. Rue de Parc Industriel, 31 6900 Marche-en-Famenne	Tel. +32 84 219-878 Fax +32 84 219-879 http://www.sew-eurodrive.be service-IG@sew-eurodrive.be

Brazil

Production Sales Service	São Paulo	SEW-EURODRIVE Brasil Ltda. Estrada Municipal José Rubim, 205 – Rodovia Santos Dumont Km 49 Indaiatuba – 13347-510 – SP	Tel. +55 19 3835-8000 sew@sew.com.br
Assembly Sales Service	Rio Claro	SEW-EURODRIVE Brasil Ltda. Rodovia Washington Luiz, Km 172 Condomínio Industrial Conpark Caixa Postal: 327 13501-600 – Rio Claro / SP	Tel. +55 19 3522-3100 Fax +55 19 3524-6653 montadora.rc@sew.com.br
	Joinville	SEW-EURODRIVE Brasil Ltda. Rua Dona Francisca, 12.346 – Pirabeiraba 89239-270 – Joinville / SC	Tel. +55 47 3027-6886 Fax +55 47 3027-6888 filial.sc@sew.com.br

Bulgaria

Sales	Sofia	BEVER-DRIVE GmbH Bogdanovetz Str.1 1606 Sofia	Tel. +359 2 9151160 Fax +359 2 9151166 bever@bever.bg
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Cameroon

Sales	Douala	SEW-EURODRIVE S.A.R.L. Ancienne Route Bonabéri P.O. Box B.P 8674 Douala-Cameroun	Tel. +237 233 39 02 10 Fax +237 233 39 02 10 info@sew-eurodrive-cm
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Canada

Assembly Sales Service	Toronto	SEW-EURODRIVE CO. OF CANADA LTD. 210 Walker Drive Bramalea, ON L6T 3W1	Tel. +1 905 791-1553 Fax +1 905 791-2999 http://www.sew-eurodrive.ca l.watson@sew-eurodrive.ca
	Vancouver	SEW-EURODRIVE CO. OF CANADA LTD. Tilbury Industrial Park 7188 Honeyman Street Delta, BC V4G 1G1	Tel. +1 604 946-5535 Fax +1 604 946-2513 b.wake@sew-eurodrive.ca
	Montreal	SEW-EURODRIVE CO. OF CANADA LTD. 2555 Rue Leger Lasalle, PQ H8N 2V9	Tel. +1 514 367-1124 Fax +1 514 367-3677 a.peluso@sew-eurodrive.ca

Chile			
Assembly Sales Service	Santiago de Chile	SEW-EURODRIVE CHILE LTDA Las Encinas 1295 Parque Industrial Valle Grande LAMP Santiago de Chile P.O. Box Casilla 23 Correo Quilicura - Santiago - Chile	Tel. +56 2 2757 7000 Fax +56 2 2757 7001 http://www.sew-eurodrive.cl ventas@sew-eurodrive.cl
China			
Production Assembly Sales Service	Tianjin	SEW-EURODRIVE (Tianjin) Co., Ltd. No. 78, 13th Avenue, TEDA Tianjin 300457	Tel. +86 22 25322612 Fax +86 22 25323273 http://www.sew-eurodrive.cn info@sew-eurodrive.cn
Assembly Sales Service	Suzhou	SEW-EURODRIVE (Suzhou) Co., Ltd. 333, Suhong Middle Road Suzhou Industrial Park Jiangsu Province, 215021	Tel. +86 512 62581781 Fax +86 512 62581783 suzhou@sew-eurodrive.cn
	Guangzhou	SEW-EURODRIVE (Guangzhou) Co., Ltd. No. 9, JunDa Road East Section of GETDD Guangzhou 510530	Tel. +86 20 82267890 Fax +86 20 82267922 guangzhou@sew-eurodrive.cn
	Shenyang	SEW-EURODRIVE (Shenyang) Co., Ltd. 10A-2, 6th Road Shenyang Economic Technological Development Area Shenyang, 110141	Tel. +86 24 25382538 Fax +86 24 25382580 shenyang@sew-eurodrive.cn
	Taiyuan	SEW-EURODRIVE (Taiyuan) Co., Ltd. No.3, HuaZhang Street, TaiYuan Economic & Technical Development Zone ShanXi, 030032	Tel. +86-351-7117520 Fax +86-351-7117522 taiyuan@sew-eurodrive.cn
	Wuhan	SEW-EURODRIVE (Wuhan) Co., Ltd. 10A-2, 6th Road No. 59, the 4th Quanli Road, WEDA 430056 Wuhan	Tel. +86 27 84478388 Fax +86 27 84478389 wuhan@sew-eurodrive.cn
	Xi'An	SEW-EURODRIVE (Xi'An) Co., Ltd. No. 12 Jinye 2nd Road Xi'An High-Technology Industrial Development Zone Xi'An 710065	Tel. +86 29 68686262 Fax +86 29 68686311 xian@sew-eurodrive.cn
Sales Service	Hong Kong	SEW-EURODRIVE LTD. Unit No. 801-806, 8th Floor Hong Leong Industrial Complex No. 4, Wang Kwong Road Kowloon, Hong Kong	Tel. +852 36902200 Fax +852 36902211 contact@sew-eurodrive.hk
Colombia			
Assembly Sales Service	Bogota	SEW-EURODRIVE COLOMBIA LTDA. Calle 17 No. 132-18 Interior 2 Bodega 6, Manzana B Santafé de Bogotá	Tel. +57 1 54750-50 Fax +57 1 54750-44 http://www.sew-eurodrive.com.co sew@sew-eurodrive.com.co
Croatia			
Sales Service	Zagreb	KOMPEKS d. o. o. Zeleni dol 10 10 000 Zagreb	Tel. +385 1 4613-158 Fax +385 1 4613-158 kompeks@inet.hr
Czech Republic			
Assembly Sales Service	Hostivice	SEW-EURODRIVE CZ s.r.o. Floriánova 2459 253 01 Hostivice	Tel. +420 255 709 601 Fax +420 235 350 613 http://www.sew-eurodrive.cz sew@sew-eurodrive.cz
	Drive Service Hotline / 24 Hour Service	+420 800 739 739 (800 SEW SEW)	Service Tel. +420 255 709 632 Fax +420 235 358 218 servis@sew-eurodrive.cz

Assembly Service	Plzeň	SEW-EURODRIVE CZ s.r.o. Areal KRPA a.s. Zahradní 173/2 326 00 Plzeň	Tel. +420 378 775 320 Fax +420 377 970 710 sew@sew-eurodrive.cz
Technical Offices	Brno	SEW-EURODRIVE CZ s.r.o. Křenová 52 60200 Brno	Tel. +420 543 254 174 Fax +420 543 256 845 ilona.cermakova@sew-eurodrive.cz
	Hradec Králové	SEW-EURODRIVE CZ s.r.o. Čechova 498 50202 Hradec Králové	Tel. +420 495 510 141 Fax +420 495 521 313 miroslav.moravec@sew-eurodrive.cz
	Ostrava	SEW-EURODRIVE CZ s.r.o. Studentská 6202/17 708 00 Ostrava-Poruba	Tel. +420 597 329 044 david.kenkus@sew-eurodrive.cz
	Klatovy	SEW-EURODRIVE CZ s.r.o. Videňská 841 33901 Klatovy	Tel. +420 376 331 634 Fax +420 376 331 634 viktor.kubernat@sew-eurodrive.cz
Service	Přerov	SEW-EURODRIVE CZ s.r.o. Areál STS Přerov a.s. ul. 9. května 2452 750 02 Přerov I – Město	Tel. +420 581 224 374 Fax +420 581 224 374 servis@sew-eurodrive.cz

Denmark

Assembly Sales Service	Copenhagen	SEW-EURODRIVE A/S Geminivej 28-30 2670 Greve	Tel. +45 43 95 8500 Fax +45 43 9585-09 http://www.sew-eurodrive.dk sew@sew-eurodrive.dk
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Egypt

Sales Service	Cairo	Copam Egypt for Engineering & Agencies Building 10, Block 13005, First Industrial Zone, Obour City Cairo	Tel. +202 44812673 / 79 (7 lines) Fax +202 44812685 http://www.copam-egypt.com copam@copam-egypt.com
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Estonia

Sales	Tallin	ALAS-KUUL AS Reti tee 4 75301 Peetri küla, Rae vald, Harjumaa	Tel. +372 6593230 Fax +372 6593231 http://www.alas-kuul.ee veiko.soots@alas-kuul.ee
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Finland

Assembly Sales Service	Hollola	SEW-EURODRIVE OY Vesimäentie 4 15860 Hollola	Tel. +358 201 589-300 Fax +358 3 780-6211 http://www.sew-eurodrive.fi sew@sew.fi
Service	Hollola	SEW-EURODRIVE OY Keskikankaantie 21 15860 Hollola	Tel. +358 201 589-300 Fax +358 3 780-6211 http://www.sew-eurodrive.fi sew@sew.fi
Production Assembly	Karkkila	SEW Industrial Gears Oy Santasalonkatu 6, PL 8 03620 Karkkila, 03601 Karkkila	Tel. +358 201 589-300 Fax +358 201 589-310 http://www.sew-eurodrive.fi sew@sew.fi
Technical Offices	Helsinki	SEW-EURODRIVE OY Luutnantintie 5 00410 Helsinki	Tel. +358 201 589-300 sew@sew.fi
	Oulu	SEW Industrial Gears Oy Paulaharjuntie 22 90530 Oulu	Tel. +358 201 589 300 sew@sew.fi
	Vaasa	SEW Industrial Gears Oy Asemakatu 7 65100 Vaasa	Tel. +358 201 589-300 sew@sew.fi
	Kuopio	SEW Industrial Gears Oy Leväsentie 23 70780 Kuopio	Tel. +358 201 589-300 sew@sew.fi
	Tampere	SEW Industrial Gears Oy Hermiankatu 3 A 33720 Tampere	Tel. +358 201 589-300 sew@sew.fi

Kotka	SEW Industrial Gears Oy Heikinkatu 7 48100 Kotka	Tel. +358 201 589 300 sew@sew.fi
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France

Production Sales Service	Hagenau	SEW-USOCOME 48-54 route de Soufflenheim B. P. 20185 67506 Haguenau Cedex	Tel. +33 3 88 73 67 00 Fax +33 3 88 73 66 00 http://www.usocome.com sew@usocome.com
Production	Forbach	SEW-USOCOME Zone industrielle Technopôle Forbach Sud B. P. 30269 57604 Forbach Cedex	Tel. +33 3 87 29 38 00
	Brumath	SEW-USOCOME 1 Rue de Bruxelles 67670 Mommenheim Cedex	Tel. +33 3 88 37 48 00
Assembly Sales Service	Bordeaux	SEW-USOCOME Parc d'activités de Magellan 62 avenue de Magellan – B. P. 182 33607 Pessac Cedex	Tel. +33 5 57 26 39 00 Fax +33 5 57 26 39 09
	Lyon	SEW-USOCOME 75 rue Antoine Condorcet 38090 Vaulx-Milieu	Tel. +33 4 74 99 60 00 Fax +33 4 74 99 60 15
	Nantes	SEW-USOCOME Parc d'activités de la forêt 4 rue des Fontenelles 44140 Le Bignon	Tel. +33 2 40 78 42 00 Fax +33 2 40 78 42 20
	Paris	SEW-USOCOME Zone industrielle 2 rue Denis Papin 77390 Verneuil l'Étang	Tel. +33 1 64 42 40 80 Fax +33 1 64 42 40 88
Technical Offices	Alsace	SEW-USOCOME	Tel. +33 3 89 74 51 62 Fax +33 3 89 76 58 71
	Aquitaine / Charentes	SEW-USOCOME	Tel. +33 5 57 26 39 08 Fax +33 5 57 26 39 09
	Auvergne / Limousin	SEW-USOCOME	Tel. +33 5 55 20 12 10 Fax +33 5 55 20 12 11
	Lower Nor- mandie	SEW-USOCOME	Tel. +33 2 31 37 92 86 Fax +33 2 31 74 68 15
	Brittany	SEW-USOCOME	Tel. +33 2 40 78 42 04 Fax +33 2 40 78 42 20
	Burgundy	SEW-USOCOME	Tel. +33 3 85 49 92 18 Fax +33 3 85 49 92 19
	Centre / Poitou	SEW-USOCOME	Tel. +33 2 40 78 42 11 Fax +33 2 40 78 42 20
	Champagne- Ardenne	SEW-USOCOME	Tel. +33 3 25 79 63 24 Fax +33 3 25 79 63 25
	Franche- Comté	SEW-USOCOME	Tel. +33 3 84 68 57 71 Fax +33 3 84 68 57 95
	Île-de-France East / Aisne	SEW-USOCOME	Tel. +33 3 23 62 81 24 Fax +33 3 23 62 81 44
	Île-de-France North / Pi- cardie	SEW-USOCOME	Tel. +33 1 41 05 92 74 Fax +33 1 41 05 92 75
	Île-de-France South	SEW-USOCOME	Tel. +33 1 60 81 10 56 Fax +33 1 60 81 10 57
	Lorraine / Alsace North	SEW-USOCOME	Tel. +33 3 83 96 28 04 Fax +33 3 83 96 28 07
	Midi- Pyrénées / Roussillon	SEW-USOCOME	Tel. +33 5 61 08 15 85 Fax +33 5 61 08 16 44
	Nord-Pas-de- Calais	SEW-USOCOME	Tel. +33 3 21 10 86 86 Fax +33 3 21 10 86 87

Paris / Île-de-France West	SEW-USOCOME	Tel. +33 1 30 90 89 86 Fax +33 1 30 90 93 15
Pays de la Loire	SEW-USOCOME	Tel. +33 2 40 78 42 03 Fax +33 2 40 78 42 20
Provence-Alpes-Côte d'Azur	SEW-USOCOME	Tel. +33 4 91 18 00 11 Fax +33 4 91 18 00 12
Rhône-Alpes East	SEW-USOCOME	Tel. +33 4 75 05 65 95 Fax +33 4 75 05 65 96
Rhône-Alpes North	SEW-USOCOME	Tel. +33 4 74 99 60 03 Fax +33 4 74 99 60 15
Rhône-Alpes West	SEW-USOCOME	Tel. +33 4 74 99 60 04 Fax +33 4 74 99 60 15

Gabon

Sales	Libreville	SEW-EURODRIVE SARL 183, Rue 5.033.C, Lalala à droite P.O. Box 15682 Libreville	Tel. +241 03 28 81 55 +241 06 54 81 33 http://www.sew-eurodrive.cm sew@sew-eurodrive.cm
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Germany

Headquarters Production Sales	Bruchsal	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 42 76646 Bruchsal P.O. Box Postfach 3023 – D-76642 Bruchsal	Tel. +49 7251 75-0 Fax +49 7251 75-1970 http://www.sew-eurodrive.de sew@sew-eurodrive.de
Production / Industrial Gears	Bruchsal	SEW-EURODRIVE GmbH & Co KG Christian-Pähr-Str. 10 76646 Bruchsal	Tel. +49 7251 75-0 Fax +49 7251 75-2970
Production	Graben	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 1 76676 Graben-Neudorf P.O. Box Postfach 1220 – D-76671 Graben-Neudorf	Tel. +49 7251 75-0 Fax +49 7251-2970
	Östringen	SEW-EURODRIVE GmbH & Co KG, Werk Östringen Franz-Gurk-Straße 2 76684 Östringen	Tel. +49 7253 9254-0 Fax +49 7253 9254-90 oestringen@sew-eurodrive.de
Service Competence Center	Mechanics / Mechatronics	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 1 76676 Graben-Neudorf	Tel. +49 7251 75-1710 Fax +49 7251 75-1711 scc-mechanik@sew-eurodrive.de
	Electronics	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 42 76646 Bruchsal	Tel. +49 7251 75-1780 Fax +49 7251 75-1769 scc-elektronik@sew-eurodrive.de
Drive Technology Center	North	SEW-EURODRIVE GmbH & Co KG Alte Ricklinger Straße 40-42 30823 Garbsen (Hannover)	Tel. +49 5137 8798-30 Fax +49 5137 8798-55 dtc-nord@sew-eurodrive.de
	East	SEW-EURODRIVE GmbH & Co KG Dänkritzter Weg 1 08393 Meerane (Zwickau)	Tel. +49 3764 7606-0 Fax +49 3764 7606-30 dtc-ost@sew-eurodrive.de
	South	SEW-EURODRIVE GmbH & Co KG Domagkstraße 5 85551 Kirchheim (München)	Tel. +49 89 909552-10 Fax +49 89 909552-50 dtc-sued@sew-eurodrive.de
	West	SEW-EURODRIVE GmbH & Co KG Siemensstraße 1 40764 Langenfeld (Düsseldorf)	Tel. +49 2173 8507-30 Fax +49 2173 8507-55 dtc-west@sew-eurodrive.de
Drive Center	Berlin	SEW-EURODRIVE GmbH & Co KG Alexander-Meißner-Straße 44 12526 Berlin	Tel. +49 306331131-30 Fax +49 306331131-36 dc-berlin@sew-eurodrive.de
	Ludwigshafen	SEW-EURODRIVE GmbH & Co KG c/o BASF SE Gebäude W130 Raum 101 67056 Ludwigshafen	Tel. +49 7251 75 3759 Fax +49 7251 75 503759 dc-ludwigshafen@sew-eurodrive.de
	Saarland	SEW-EURODRIVE GmbH & Co KG Gottlieb-Daimler-Straße 4 66773 Schwalbach Saar – Hülzweiler	Tel. +49 6831 48946 10 Fax +49 6831 48946 13 dc-saarland@sew-eurodrive.de

Germany			
	Ulm	SEW-EURODRIVE GmbH & Co KG Dieselstraße 18 89160 Dornstadt	Tel. +49 7348 9885-0 Fax +49 7348 9885-90 dc-ulm@sew-eurodrive.de
	Würzburg	SEW-EURODRIVE GmbH & Co KG Nürnbergerstraße 118 97076 Würzburg-Lengfeld	Tel. +49 931 27886-60 Fax +49 931 27886-66 dc-wuerzburg@sew-eurodrive.de
Drive Service Hotline / 24 Hour Service			0 800 SEWHELP 0 800 7394357
Technical Offices	Augsburg	SEW-EURODRIVE GmbH & Co KG August-Wessels-Straße 27 86156 Augsburg	Tel. +49 821 22779-10 Fax +49 821 22779-50 tb-augsburg@sew-eurodrive.de
	Lake Constance	SEW-EURODRIVE GmbH & Co KG Dornierstraße 4 88677 Markdorf	Tel. +49 7544 96590-90 Fax +49 7544 96590-99 tb-bodensee@sew-eurodrive.de
	Bremen	SEW-EURODRIVE GmbH & Co KG Bornstr.19 ... 22 28195 Bremen	Tel. +49 421 33918-10 Fax +49 421 33918-22 tb-bremen@sew-eurodrive.de
	Dortmund	SEW-EURODRIVE GmbH & Co KG Hildastraße 8 44145 Dortmund	Tel. +49 231 229028-10 Fax +49 231 229028-20 tb-dortmund@sew-eurodrive.de
	Dresden	SEW-EURODRIVE GmbH & Co KG Hauptstraße 32 01445 Radebeul	Tel. +49 351 26338-0 Fax +49 351 26338-38 tb-dresden@sew-eurodrive.de
	Erfurt	SEW-EURODRIVE GmbH & Co KG Dubliner Straße 12 99091 Erfurt	Tel. +49 361 21709-70 Fax +49 361 21709-79 tb-erfurt@sew-eurodrive.de
	Güstrow	SEW-EURODRIVE GmbH & Co KG Glasewitzer Chaussee 33 B 18273 Güstrow P.O. Box Postfach 1216 – D-18262 Güstrow	Tel. +49 3843 8557-80 Fax +49 3843 8557-88 tb-guestrow@sew-eurodrive.de
	Hamburg	SEW-EURODRIVE GmbH & Co KG Bramfelder Straße 119 22305 Hamburg	Tel. +49 40 298109-60 Fax +49 40 298109-70 tb-hamburg@sew-eurodrive.de
	Hannover / Garbsen	SEW-EURODRIVE GmbH & Co KG Alte Ricklinger Str.40-42 30823 Garbsen	Tel. +49 5137 8798-10 Fax +49 5137 8798-50 tb-hannover@sew-eurodrive.de
	Heilbronn	SEW-EURODRIVE GmbH & Co KG Zeppelinstraße 7 74357 Bönningheim	Tel. +49 7143 8738-0 Fax +49 7143 8738-25 tb-heilbronn@sew-eurodrive.de
	Herford	SEW-EURODRIVE GmbH & Co KG Goebenstraße 3 – 7 32052 Herford	Tel. +49 5221 9141-0 Fax +49 5221 9141-20 tb-herford@sew-eurodrive.de
	Karlsruhe	SEW-EURODRIVE GmbH & Co KG Ettlinger Weg 2 76467 Bietigheim P.O. Box Postfach 43 – D-76463 Bietigheim	Tel. +49 7245 9190-10 Fax +49 7245 9190-20 tb-karlsruhe@sew-eurodrive.de
	Kassel	SEW-EURODRIVE GmbH & Co KG Sonnenweg 3 34260 Kaufungen	Tel. +49 561 95144-80 Fax +49 561 95144-90 tb-kassel@sew-eurodrive.de
	Koblenz	SEW-EURODRIVE GmbH & Co KG Bahnstraße 17a 56743 Mendig	Tel. +49 2652 9713-30 Fax +49 2652 9713-40 tb-koblenz@sew-eurodrive.de
	Lahr	SEW-EURODRIVE GmbH & Co KG Europastraße 3/1 77933 Lahr / Schwarzwald	Tel. +49 7821 90999-60 Fax +49 7821 90999-79 tb-lahr@sew-eurodrive.de
	Langenfeld	SEW-EURODRIVE GmbH & Co KG Siemensstraße 1 40764 Langenfeld	Tel. +49 2173 8507-10 Fax +49 2173 8507-50 tb-langenfeld@sew-eurodrive.de
	Magdeburg	SEW-EURODRIVE GmbH & Co KG Breiteweg 53 39179 Barleben	Tel. +49 39203 7577-1 Fax +49 39203 7577-9 tb-magdeburg@sew-eurodrive.de

Mannheim	SEW-EURODRIVE GmbH & Co KG Besselstraße 26 68219 Mannheim	Tel. +49 621 71683-10 Fax +49 621 71683-22 tb-mannheim@sew-eurodrive.de
München	SEW-EURODRIVE GmbH & Co KG Domagkstraße 5 85551 Kirchheim	Tel. +49 89 90955-110 Fax +49 89 90955-150 tb-muenchen@sew-eurodrive.de
Münster	SEW-EURODRIVE GmbH & Co KG Hafenplatz 4 48155 Münster	Tel. +49 251 41475-11 Fax +49 251 41475-50 tb-muenster@sew-eurodrive.de
Nuremberg	SEW-EURODRIVE GmbH & Co KG Lina-Ammon-Straße 22 90471 Nürnberg	Tel. +49 911 98884-50 Fax +49 911 98884-60 tb-nuernberg@sew-eurodrive.de
Regensburg	SEW-EURODRIVE GmbH & Co KG Im Gewerbepark A15 93059 Regensburg	Tel. +49 941 46668-68 Fax +49 941 46668-66 tb-regensburg@sew-eurodrive.de
Rhine-Main	SEW-EURODRIVE GmbH & Co KG Niederstedter Weg 5 61348 Bad Homburg	Tel. +49 6172 9617-0 Fax +49 6172 9617-50 tb-rheinmain@sew-eurodrive.de
Stuttgart	SEW-EURODRIVE GmbH & Co KG Friedrich-List-Straße 46 70771 Leinfelden-Echterdingen	Tel. +49 711 16072-0 Fax +49 711 16072-72 tb-stuttgart@sew-eurodrive.de
Zwickau / Meerane	SEW-EURODRIVE GmbH & Co KG Dankritzer Weg1 08393 Meerane	Tel. +49 3764 7606-0 Fax +49 3764 7606-20 tb-zwickau@sew-eurodrive.de

Great Britain

Assembly Sales Service	Normanton	SEW-EURODRIVE Ltd. DeVilliers Way Trident Park Normanton West Yorkshire WF6 1GX	Tel. +44 1924 893-855 Fax +44 1924 893-702 http://www.sew-eurodrive.co.uk info@sew-eurodrive.co.uk
	Drive Service Hotline / 24 Hour Service		Tel. 01924 896911
Service Competence Center	Southern Eng- land	SEW-EURODRIVE Ltd. Unit 41 Easter Park Benyon Road Silchester Reading Berkshire RG7 2PQ	Tel. +44 1189 701-699 Fax +44 1189 701-021
Technical Offices	Midlands	SEW-EURODRIVE Ltd. 5 Sugar Brook court Aston Road Bromsgrove Worcs. B60 3EX	Tel. +44 1527 877-319 Fax +44 1527 575-245
	Scotland	SEW-EURODRIVE Ltd. No 37 Enterprise House Springkerse Business Park Stirling FK7 7UF	Tel. +44 17 8647-8730 Fax +44 17 8645-0223
	Northern Ire- land	Heyn Engineering (NI) Ltd. 1 Corry Place, Belfast, BT3 9AH	Tel. +44 02890350022 Fax +44 02890350012 http://www.heyne.co.uk info@heyne.co.uk

Greece

Sales	Athens	Christ. Boznos & Son S.A. 12, K. Mavromichali Street P.O. Box 80136 18545 Piraeus	Tel. +30 2 1042 251-34 Fax +30 2 1042 251-59 http://www.boznos.gr info@boznos.gr
Technical Office	Thessaloniki	Christ. Boznos & Son S.A. Asklipiou 26 562 24 Evosmos, Thessaloniki	Tel. +30 2 310 7054-00 Fax +30 2 310 7055-15 info@boznos.gr

Hungary			
Sales Service	Budapest	SEW-EURODRIVE Kft. Csillaghegyi út 13. 1037 Budapest	Tel. +36 1 437 06-58 Fax +36 1 437 06-50 http://www.sew-eurodrive.hu office@sew-eurodrive.hu
Iceland			
Sales	Reykjavik	Varma & Vélaverk ehf. Knarrarvogi 4 104 Reykjavik	Tel. +354 585 1070 Fax +354 585)1071 http://www.varmaverk.is vov@vov.is
India			
Registered Office Assembly Sales Service	Vadodara	SEW-EURODRIVE India Private Limited Plot No. 4, GIDC POR Ramangamdi • Vadodara - 391 243 Gujarat	Tel. +91 265 3045200 Fax +91 265 3045300 http://www.seweurodriveindia.com salesvadodara@seweurodriveindia.com
Assembly Sales Service	Chennai	SEW-EURODRIVE India Private Limited Plot No. K3/1, Sipcot Industrial Park Phase II Mambakkam Village Sriperumbudur - 602105 Kancheepuram Dist, Tamil Nadu	Tel. +91 44 37188888 Fax +91 44 37188811 saleschennai@seweurodriveindia.com
	Pune	SEW-EURODRIVE India Private Limited Plant: Plot No. D236/1, Chakan Industrial Area Phase- II, Warale, Tal- Khed, Pune-410501, Maharashtra	Tel. +91 21 35 628700 Fax +91 21 35 628715 salespune@seweurodriveindia.com
Technical Offices	Ahmedabad	SEW-EURODRIVE India Private Limited 306, Shaan office complex, Behind Sakar-IV, Ellisebridge, Ashram Road Ahmedabad – 380006, Gujarat	Tel. +91 79 40072067 / 68 Fax +91 79 40072069 salesahmedabad@seweurodriveindia.com
	Aurangabad	SEW-EURODRIVE India Private Limited Flat.No.403 , Prism Appt. The Venus Housing Society. Beed Bypass Road, Behind Nishant Park Hotel, Aurangabad – 431003, Maharashtra.	Tel. +91 86000 12333 salesaurangabad@seweurodriveindia.com
	Bangalore	SEW-EURODRIVE India Private Limited Sy.no:41-P3, Peenya1, Phase 1A, Peenya Vil- lage, Yeswanthapura Hobli, Bangalore North Taluk, Bangalore - 560058, Karnataka	Tel. +91 80 28370664 Fax +91 80 28370665 salesbangalore@seweurodriveindia.com
	Bangalore	SEW-EURODRIVE India Private Limited # C-104, 3rd Block, KSSIDC Complex, Electronic City. Bangalore – 560100, Karnataka	Tel. +91 80 28522662 / 28522663 salesbangalore@seweurodriveindia.com
	Bangladesh	SEW-EURODRIVE India Private Limited Genetic Udayanchal, House-96 (6th Floor), Road-23/A, Block-B, Banani, Dhaka-1213, Bangladesh	Tel. +88 01729 097309 salesdhaka@seweurodrivebangladesh.com
	Bellary	SEW-EURODRIVE India Private Limited Door no-56/279 Ward No-15, Sindhigi compound, Near Raghavendra talkies, Bellary-583101, Karnataka	Tel. +91 77609 88668 salesbellary@seweurodriveindia.com
	Chandigarh	SEW-EURODRIVE India Private Limited #699, Type -3, Power Colony, Chandigarh - Rupnagar Highway Rupnagar - 140001, Punjab	Tel. +91 81462 67606 saleschandigarh@seweurodriveindia.com
	Chennai	SEW-EURODRIVE India Private Limited 2nd Floor, Josmans Complex, No. 5, McNichols Road, Chetpet Chennai - 600031, Tamil Nadu	Tel. +91 44 42849812 / 13 / 14 / 15 Fax +91 44 42849816 saleschennai@seweurodriveindia.com
	Kochi	SEW-EURODRIVE India Private Limited House No: 30/1168 A Kaniyampuzha Road Vyttila Post Office Cochin – 682019, Kerala	Tel. +91 98951 30375 salescochin@seweurodriveindia.com

Coimbatore	SEW-EURODRIVE India Private Limited 687/2, Sri Sakthivel Towers (Near Deepam Hospital) Trichy Road, Ramanathapuram Coimbatore - 641 045, Tamil Nadu	Tel. +91 422 2322420 Fax +91 422 2323988 salescoimbatore@seweurodriveindia.com
Cuttack	SEW-EURODRIVE India Private Limited Plot No.: F/56, Chandaka Industrial Estate, P.O.- K I I T, Bhubaneswar – 751024. Orissa	Tel. +91 9937446333 salescuttack@seweurodriveindia.com
Faridabad	SEW-EURODRIVE India Private Limited H.No.: -1172 ,Sector-9 , Near St Anthony School Faridabad 121006	Tel. +91 99580 09275 salesfaridabad@seweurodriveindia.com
Gandhidham	SEW-EURODRIVE India Private Limited TCX-S-28, FF, Ward 12/A, Gandhidham - 370201, Kutch - Gujarat	Tel. +91 81282 36850 salesgandhidham@seweurodriveindia.com
Gandhinagar	SEW-EURODRIVE India Private Limited Office No. 304, Siddhraj Zavod, Between Kh-0 & G-0 Circle, Sarkhej Gandhinagar Highway, Sargasan, Gandhinagar – 382423	Tel. +91 787 8601656 salesgandhinagar@seweurodriveindia.com
Gurgaon	SEW-EURODRIVE India Private Limited 136, Hope Appartment, Sec. 15, Part – II, Jharsa Road, Near Reliance Fresh, Gurgaon-122001, Haryana	Tel. +91 99588 78855 salesgurgaon@seweurodriveindia.com
Hyderabad	SEW-EURODRIVE India Private Limited 408, 4th Floor, Meridian Place Green Park Road, Amerpet Hyderabad - 500016, Telangana	Tel. +91 40 23414698 Fax +91 40 23413884 saleshyderabad@seweurodriveindia.com
Indore	SEW-EURODRIVE India Private Limited 103, Abhishek Avenue, Slide-4, Sch. No. 78, Indore - 452010, Madhya Pradesh	Tel. +91 97524 12068 salesindore@seweurodriveindia.com
Jamshedpur	SEW-EURODRIVE India Private Limited Flat No :- S1 "Kashi Kunj", h. No. 60, New Rani Kudar Road No - 3, P.O. + P.S. - Kadma Jamshedpur - 831005, Jharkhand	Tel. +91 99341 23671 salesjamshedpur@seweurodriveindia.com
Kolhapur	SEW-EURODRIVE India Private Limited C/O. Mr.S.V.Pawar.461/37, Abhideep Resid- ency, Opp-Shriram Petrol Pump, Kasaba Bawada, Kolhapur - 416 122, Maharashtra	Tel. +91 86000 20846 saleskolhapur@seweurodriveindia.com
Kolkata	SEW-EURODRIVE India Private Limited 2nd floor, Room No. 35 Chowringhee Court 55, Chowringhee Road Kolkata - 700 071, West Bengal	Tel. +91 33 22827457 Fax +91 33 22894204 saleskolkata@seweurodriveindia.com
Lucknow	SEW-EURODRIVE India Private Limited 69, Shiv Vihar Colony Vikas Nagar – Sector 5 Lucknow - 226022, Uttar Pradesh	Tel. +91 97936 27333 saleslucknow@seweurodriveindia.com
Mumbai	SEW-EURODRIVE India Private Limited 312 A, 3rd Floor, Acme Plaza, J.B. Nagar, Andheri Kurla Road, Andheri (E) Mumbai - 400059, Maharashtra	Tel. +91 22 28348440 Fax +91 22 28217858 salesmumbai@seweurodriveindia.com
Nagpur	SEW-EURODRIVE India Private Limited Plot No 49, New Kailash Nager, Samta colony, Nagpur-440027, Maharashtra	Tel. +91 95610 89525 salesnagpur@seweurodriveindia.com
Nashik	SEW-EURODRIVE India Private Limited 107, "YOG" Bungalow, Mahatma Nagar, Trimbak Road, Nashik – 422 007, Maharashtra	Tel. +91 96657 52978 salesnashik@seweurodriveindia.com
New Delhi	SEW-EURODRIVE India Private Limited # B-206 DLF Towers-B District Centre Jasola New Delhi -110044	Tel. +91 11 26944551 Fax +91 11 26944467 salesdelhi@seweurodriveindia.com

Navi Mumbai	SEW-EURODRIVE India Private Limited No.202, Shivam Yeshoram Plot No. 262/257, Sector 19 Kopar Khairane, Navi Mumbai - 400 709, Maharashtra	Tel. +91 99677 21324 salesmumbai@seweurodriveindia.com
Pondicherry	SEW-EURODRIVE India Private Limited Plot No 1, Flat No S2, Shubhamangala Apartment, 14th Cross Extension, Krishna Nagar, Pondicherry 605008	Tel. +91 9840971370 salespondicherry@seweurodriveindia.com
Pune	SEW-EURODRIVE India Private Limited Plot No. 7, "Shri Shantadurga Niwas" Shivaji Co-operative Housing Society Ltd., Behind J.W. Marriot. Off Senapati Bapat Marg. Pune -411 016, Maharashtra	Tel. +91 20 25635466 / 467 salespune@seweurodriveindia.com
Pune	SEW-EURODRIVE India Private Limited Jai Tulajabhavani Complex. Office No:- 15 First Floor, Opp. Century Enka Company, MIDC Bhosari, Pune 411 026	Tel. +91 20-65118890 / 91 Fax +91 20 25380721 salespune@seweurodriveindia.com
Raipur	SEW-EURODRIVE India Private Limited A-42, Ashoka Millenium Complex, Ring Road-1, Raipur 492 001 - Chhattisgarh	Tel. +91 771 4090765 Fax +91 771 4090765 salesraipur@seweurodriveindia.com
Ranchi	SEW-EURODRIVE India Private Limited 1D- Shail Madhuri Apartment, Near Kokar Pool, H.B Road, Kokar Ranchi - 834001, Jharkhand.	Tel. +91 82946 30772 salesranchi@seweurodriveindia.com
Tiruchirappalli	SEW-EURODRIVE India Private Limited Plot No.24, Door No.64A Rajaram Salai, K.K Nagar Trichy-620 021, Tamilnadu	Tel. +91 97899 79855 salestrichy@seweurodriveindia.com
Vadodara	SEW-EURODRIVE India Private Limited Unit No. 301, Savorite Bldg, Plot No. 143, Vinayak Society, off old Padra Road, Vadodara - 390 007, Gujarat	Tel. +91 265 2325258 / 6560482 salesvadodara@seweurodriveindia.com
Vizag	SEW-EURODRIVE India Private Limited D.No.7-13-50/1, Near Padmaja hospital, Ramalayam street, Chittinaidu colony, Old gajuwaka, Visakhapatnam - 530026, Andhra Pradesh	Tel. +91 99895 01748 salesvizag@seweurodriveindia.com

Indonesia

Sales	Medan	PT. Serumpun Indah Lestari Jl.Pulau Solor no. 8, Kawasan Industri Medan II Medan 20252	Tel. +62 61 687 1221 Fax +62 61 6871429 / +62 61 6871458 / +62 61 30008041 sil@serumpunindah.com serumpunindah@yahoo.com http://www.serumpunindah.com
	Jakarta	PT. Cahaya Sukses Abadi Komplek Rukan Puri Mutiara Blok A no 99, Sunter Jakarta 14350	Tel. +62 21 65310599 Fax +62 21 65310600 csajkt@cbn.net.id
	Jakarta	PT. Agrindo Putra Lestari Jl.Pantai Indah Selatan, Komplek Sentra Industri Terpadu, Pantai indah Kapuk Tahap III, Blok E No. 27 Jakarta 14470	Tel. +62 21 2921-8899 Fax +62 21 2921-8988 aplindo@indosat.net.id http://www.aplindo.com
	Surabaya	PT. TRIAGRI JAYA ABADI Jl. Sukosemolo No. 63, Galaxi Bumi Permai G6 No. 11 Surabaya 60111	Tel. +62 31 5990128 Fax +62 31 5962666 sales@triagri.co.id http://www.triagri.co.id
	Surabaya	CV. Multi Mas Jl. Raden Saleh 43A Kav. 18 Surabaya 60174	Tel. +62 31 5458589 Fax +62 31 5317220 sianhwa@sby.centrin.net.id http://www.cvmultimas.com

Ireland			
Sales Service	Dublin	Alperton Engineering Ltd. 48 Moyle Road Dublin Industrial Estate Glasnevin, Dublin 11	Tel. +353 1 830-6277 Fax +353 1 830-6458 http://www.alperton.ie info@alperton.ie
Israel			
Sales	Tel Aviv	Liraz Handasa Ltd. Ahofer Str 34B / 228 58858 Holon	Tel. +972 3 5599511 Fax +972 3 5599512 http://www.liraz-handasa.co.il office@liraz-handasa.co.il
Italy			
Assembly Sales Service	Milan	SEW-EURODRIVE di R. Blickle & Co.s.a.s. Via Bernini, 14 20020 Solaro (Milano)	Tel. +39 02 96 980229 Fax +39 02 96 980 999 http://www.sew-eurodrive.it milano@sew-eurodrive.it
Drive Center	Bologna	SEW-EURODRIVE di R. Blickle & Co.s.a.s. Via della Grafica, 47 40064 Ozzano dell'Emilia (Bo)	Tel. +39 051 65-23-801 Fax +39 02 96 980 499 bologna@sew-eurodrive.it
	Caserta	SEW-EURODRIVE di R. Blickle & Co.s.a.s. Viale Carlo III Km. 23,300 81020 S. Nicola la Strada (Caserta)	Tel. +39 0823 219011 Fax +39 02 96 980 599 caserta@sew-eurodrive.it
	Pescara	SEW-EURODRIVE di R. Blickle & Co.s.a.s. Viale Europa, 132 65010 Villa Raspa di Spoltore (PE)	Tel. +39 085 41-59-427 Fax +39 02 96 980 699 pescara@sew-eurodrive.it
	Turin	SEW-EURODRIVE di R. Blickle & Co.s.a.s. Filiale Torino c.so Unione Sovietica 612/15 - int. C 10135 Torino	Tel. +39 011 3473780 Fax +39 02 96 980 799 torino@sew-eurodrive.it
	Verona	SEW-EURODRIVE di R. Blickle & Co.s.a.s. Via Antonio Meucci, 5 37042 - Caldiero (VR)	Tel. +39 045 89-239-11 Fax +39 02 96 980 814 verona@sew-eurodrive.it
Ivory Coast			
Sales	Abidjan	SEW-EURODRIVE SARL Ivory Coast Rue des Pêcheurs, Zone 3 26 BP 916 Abidjan 26	Tel. +225 21 21 81 05 Fax +225 21 25 30 47 info@sew-eurodrive.ci http://www.sew-eurodrive.ci
Japan			
Assembly Sales Service	Iwata	SEW-EURODRIVE JAPAN CO., LTD 250-1, Shimoman-no, Iwata Shizuoka 438-0818	Tel. +81 538 373811 Fax +81 538 373814 http://www.sew-eurodrive.co.jp sewjapan@sew-eurodrive.co.jp hamamatsu@sew-eurodrive.co.jp
Technical Offices	Fukuoka	SEW-EURODRIVE JAPAN CO., LTD C-go, 5th-floor, Yakuin-Hiruzu-Bldg. 1-5-11, Yakuin, Chuo-ku Fukuoka, 810-0022	Tel. +81 92 713-6955 Fax +81 92 713-6860 fukuoka@sew-eurodrive.co.jp
	Kyoto	SEW-EURODRIVE JAPAN CO., LTD Kyoto Operation Center 9-1-11 Seikadai, Seika-cho, Souraku-gun, Kyoto 619-0238	Tel. +81 774 98-2750 Fax +81 774 93-2100 sewjapan@sew-eurodrive.co.jp
	Osaka	SEW-EURODRIVE JAPAN CO., LTD Higobashi Shimizu Bldg. 10th floor 1-3-7 Tosabori, Nishi-ku Osaka, 550-0001	Tel. +81 6 6444--8330 Fax +81 6 6444--8338 osaka@sew-eurodrive.co.jp
	Tokio	SEW-EURODRIVE JAPAN CO., LTD Renai Partire Shiodome 5th floor 2-18-3 Higashi-Shinbashi, Minato-Ku, Tokyo 105-0021	Tel. +81 3 3239-0469 Fax +81 3 3239-0943 tokyo@sew-eurodrive.co.jp
Kazakhstan			
Sales	Almaty	SEW-EURODRIVE LLP 291-291A, Tole bi street 050031, Almaty	Tel. +7 (727) 350 5156 Fax +7 (727) 350 5156 http://www.sew-eurodrive.kz sew@sew-eurodrive.kz

	Tashkent	SEW-EURODRIVE LLP Representative office in Uzbekistan 96A, Sharaf Rashidov street, Tashkent, 100084	Tel. +998 71 2359411 Fax +998 71 2359412 http://www.sew-eurodrive.uz sew@sew-eurodrive.uz
	Ulaanbaatar	IM Trading LLC Naryn zam street 62 Sukhbaatar district, Ulaanbaatar 14230	Tel. +976-77109997 Fax +976-77109997 imt@imt.mn
Technical Offices	Karagandy	SEW-EURODRIVE LLP 82, Molokov Street 100004, Karagandy	Tel. +7 (7212) 955 956 Fax +7 (7212) 955 956 karagandy@sew-eurodrive.kz
	Oskemen	SEW-EURODRIVE LLP 181/3, Abai avenue, 070005, Oskemen	Tel. +7 (7212) 913 748 Fax +7 (7212) 913 748 oskemen@sew-eurodrive.kz

Kenya

Sales	Nairobi	SEW-EURODRIVE Pty Ltd Transnational Plaza, 5th Floor Mama Ngina Street P.O. Box 8998-00100 Nairobi	Tel. +254 791 398840 http://www.sew-eurodrive.co.tz info@sew.co.tz
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Latvia

Sales	Riga	SIA Alas-Kuul Katlakalna 11C 1073 Riga	Tel. +371 6 7139253 Fax +371 6 7139386 http://www.alas-kuul.lv info@alas-kuul.com
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Lebanon

Sales (Lebanon)	Beirut	Gabriel Acar & Fils sarl B. P. 80484 Bourj Hammoud, Beirut	Tel. +961 1 510 532 Fax +961 1 494 971 ssacar@inco.com.lb
Sales (Jordan, Kuwait , Beirut Saudi Arabia, Syria)		Middle East Drives S.A.L. (offshore) Sin El Fil. B. P. 55-378 Beirut	Tel. +961 1 494 786 Fax +961 1 494 971 http://www.medrives.com info@medrives.com

Lithuania

Sales	Alytus	UAB Irseva Statybininku 106C 63431 Alytus	Tel. +370 315 79204 Fax +370 315 56175 http://www.irseva.lt irmantas@irseva.lt
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Luxembourg

representation: Belgium

Macedonia

Sales	Skopje	Boznos DOOEL Dime Anicin 2A/7A 1000 Skopje	Tel. +389 23256553 Fax +389 23256554 http://www.boznos.mk
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Malaysia

Assembly Sales Service	Johor	SEW-EURODRIVE SDN BHD No. 95, Jalan Seroja 39, Taman Johor Jaya 81000 Johor Bahru, Johor West Malaysia	Tel. +60 7 3549409 Fax +60 7 3541404 sales@sew-eurodrive.com.my
Technical Offices	Kuala Lumpur	SEW-EURODRIVE SDN BHD No. 2, Jalan Anggerik Mokara 31/46 Kota Kemuning Seksyen 31 40460 Shah Alam Selangor Darul Ehsan West Malaysia	Tel. +60 3 51229633 Fax +60 3 51229622 sewsa@sew-eurodrive.com.my
	Penang	SEW-EURODRIVE SDN BHD No. 38, Jalan Bawal Kimsar Garden 13700 Prai, Penang West Malaysia	Tel. +60 4 3999349 Fax +60 4 3999348 sewpg@sew-eurodrive.com.my

Kuching	SEW-EURODRIVE SDN BHD No. 69, Lot 10899 1st Floor, Jalan Tun Jugah 93350 Kuching Sarawak East Malaysia	Tel. +60 82 572780 Fax +60 82 571780 sewswk@sew-eurodrive.com.my
Kota Kinabalu	SEW-EURODRIVE SDN BHD East Malaysia	Tel. +60 19 7539395 sales@sew-eurodrive.com.my
Ipoh	SEW-EURODRIVE SDN BHD West Malaysia	Tel. +60 19 7177366 sewsa@sew-eurodrive.com.my

Mexiko

Assembly Sales Service	Quéretaro	SEW-EURODRIVE MEXICO S.A. de C.V. SEM-981118-M93 Tequisquiapan No. 102 Parque Industrial Quéretaro C.P. 76220 Querétaro, México	Tel. +52 442 1030-300 Fax +52 442 1030-301 http://www.sew-eurodrive.com.mx scmexico@seweurodrive.com.mx
Sales Service	Puebla	SEW-EURODRIVE MEXICO S.A. de C.V. Calzada Zavaleta No. 3922 Piso 2 Local 6 Col. Santa Cruz Buenavista C.P. 72154 Puebla, México	Tel. +52 (222) 221 248 http://www.sew-eurodrive.com.mx scmexico@seweurodrive.com.mx

Mongolia

Technical Office	Ulaanbaatar	IM Trading LLC Naryn zam street 62 Union building, Suite A-403-1 Sukhbaatar district, Ulaanbaatar 14230	Tel. +976-77109997 Tel. +976-99070395 Fax +976-77109997 http://imt.mn/ imt@imt.mn
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Morocco

Sales Service	Bouskoura	SEW-EURODRIVE Morocco Parc Industriel CFCIM, Lot 55 and 59 Bouskoura	Tel. +212 522 88 85 00 Fax +212 522 88 84 50 http://www.sew-eurodrive.ma sew@sew-eurodrive.ma
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Namibia

Sales	Swakopmund	DB Mining & Industrial Services Einstein Street Strauss Industrial Park Unit1 Swakopmund	Tel. +264 64 462 738 Fax +264 64 462 734 anton@dbminingnam.com
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Netherlands

Assembly Sales Service	Rotterdam	SEW-EURODRIVE B.V. Industrieweg 175 3044 AS Rotterdam Postbus 10085 3004 AB Rotterdam	Tel. +31 10 4463-700 Fax +31 10 4155-552 Service: 0800-SEWHELP http://www.sew-eurodrive.nl info@sew-eurodrive.nl
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New Zealand

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Sambia

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	Southwest Region	SEW-EURODRIVE INC. 3950 Platinum Way Dallas, Texas 75237	Tel. +1 214 330-4824 Fax +1 214 330-4724 csdallas@seweurodrive.com
	Western Region	SEW-EURODRIVE INC. 30599 San Antonio St. Hayward, CA 94544	Tel. +1 510 487-3560 Fax +1 510 487-6433 cshayward@seweurodrive.com
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Vietnam

Sales	Ho Chi Minh City	Nam Trung Co., Ltd Huế - South Vietnam / Construction Materials 250 Binh Duong Avenue, Thu Dau Mot Town, Binh Duong Province HCM office: 91 Tran Minh Quyen Street District 10, Ho Chi Minh City	Tel. +84 8 8301026 Fax +84 8 8392223 khanh-nguyen@namtrung.com.vn http://www.namtrung.com.vn
	Hanoi	MICO LTD Quảng Trị - North Vietnam / All sectors except Construction Materials 8th Floor, Ocean Park Building, 01 Dao Duy Anh St, Ha Noi, Viet Nam	Tel. +84 4 39386666 Fax +84 4 3938 6888 nam_ph@micogroup.com.vn http://www.micogroup.com.vn

14 Appendix

14.1 Abbreviation key

d_0	Mean diameter of the installed transmission element	mm
F_{A1}	Axial load on HSS	N
F_{A2}	Axial load on LSS	N
F_F	Peak load factor	–
F_R	Overhung load	N
$F_{R\ per}$	Permitted overhung load	N
$F_{R\ max}$	Maximum overhung load	N
F_{Start}	Start factor	–
$F_{S\ min}$	Application-specific service factor	–
F_s	Service factor = $MN2 / MK2 = PN1 / PK1$	–
f_z	Transmission element factor	–
η	Efficiency	–
H	Installation altitude above sea level	m
HSS	High-speed gear shaft (usually input shaft)	–
i	Gear ratio	–
i_{ex}	Exact gear unit ratio	–
IP...	Degree of protection of electrical instruments	–
$L_{h\ min}$	Required minimum bearing life of the gear unit	h
LSS	Low-speed gear shaft (usually output shaft)	–
M_a	Output torque in relation to motor power	Nm
M_{K1}	Input torque (= operating torque on HSS)	Nm
$M_{K1\ max}$	Peak input torque (= peak operating torque on HSS)	Nm
M_{K2}	Output torque (= operating torque on LSS)	Nm
$M_{K2\ max}$	Peak output torque (= peak operating torque on LSS)	Nm
$M_{K2\ per}$	Permitted peak output torque	Nm
M_M	Nominal motor torque	Nm
M_{N2}	Nominal gear unit torque	Nm
n_1	Input speed	rpm
n_2	Output speed	rpm
n_M	Motor speed	rpm
P_{K1}	Operating power on HSS	kW
$P_{K1\ max}$	Peak operating power on HSS	kW
$P_{K1\ per}$	Permitted peak operating power on HSS	kW
P_{K2}	Operating power on LSS	kW
P_M	Nominal motor power	kW
P_{N1}	Nominal gear unit power (referring to HSS)	kW
t	Time under load within a cycle	s

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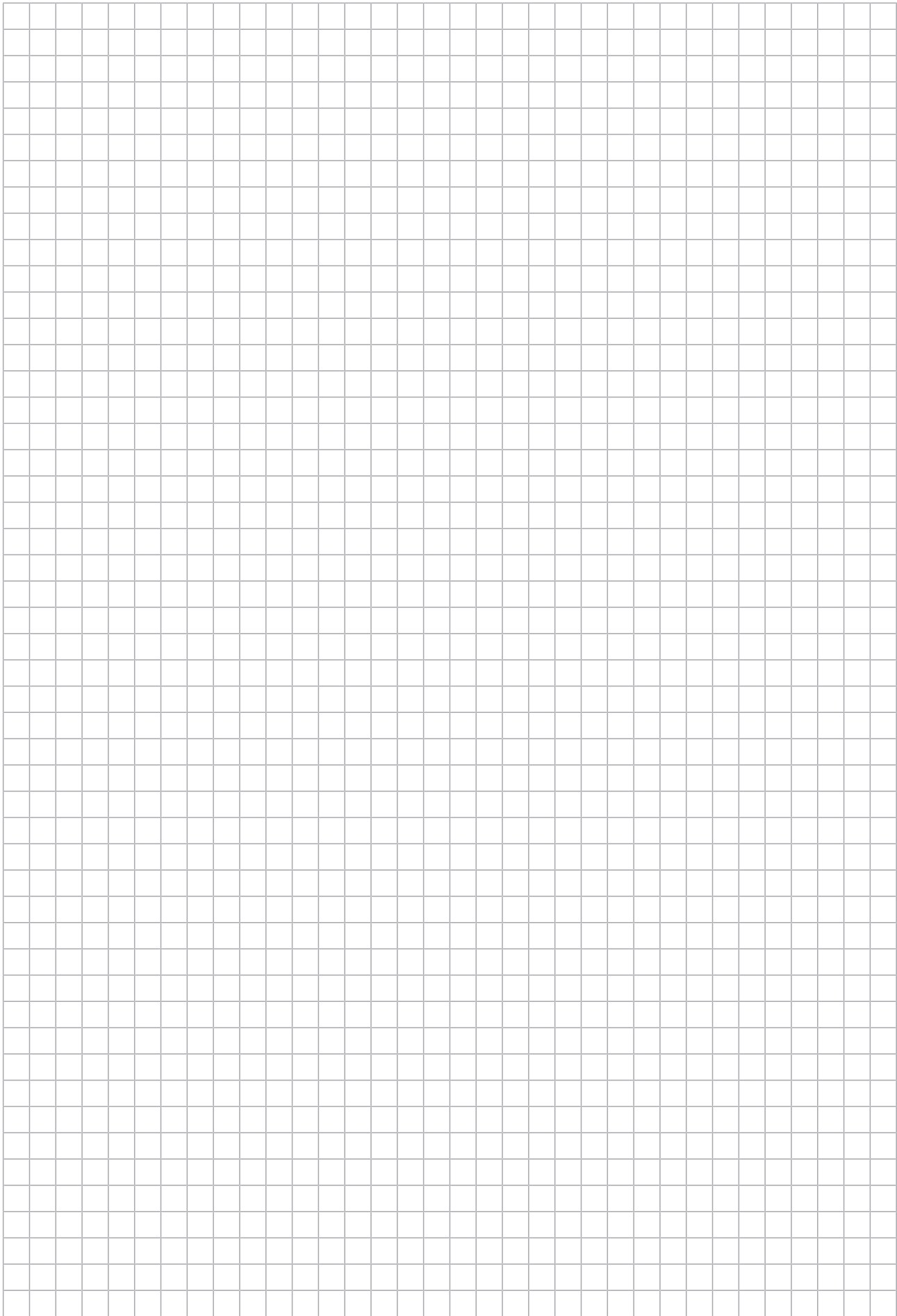
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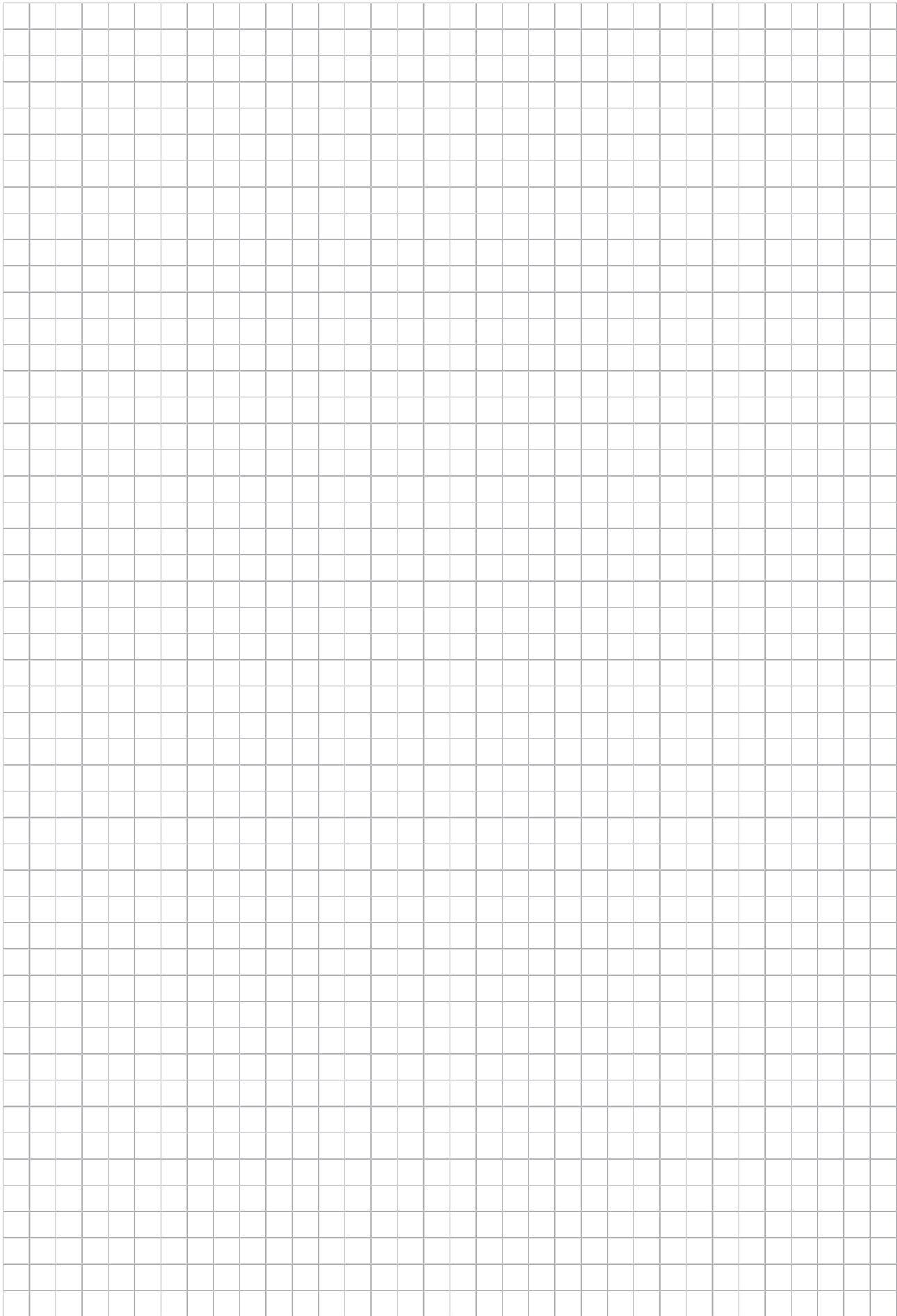
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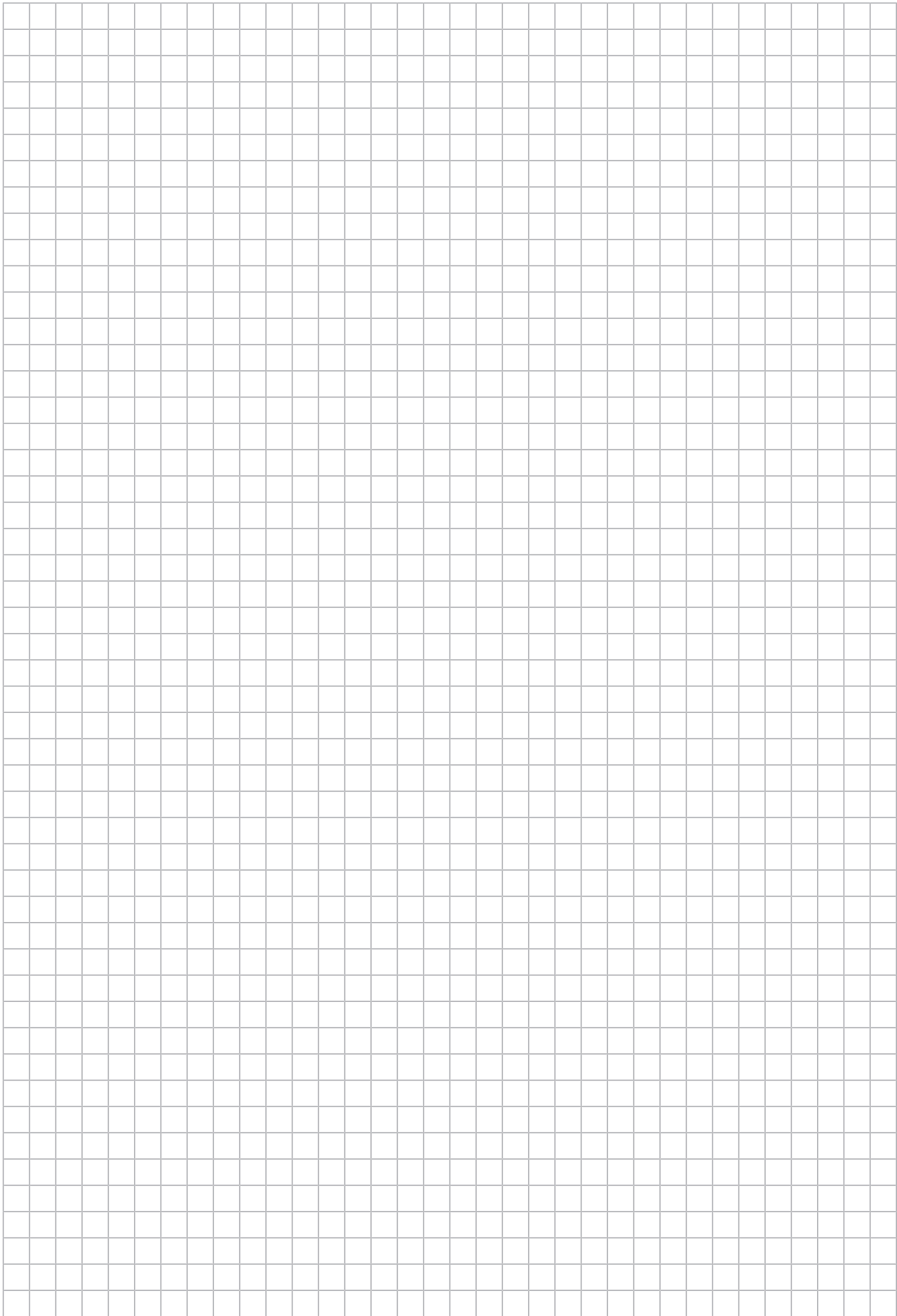
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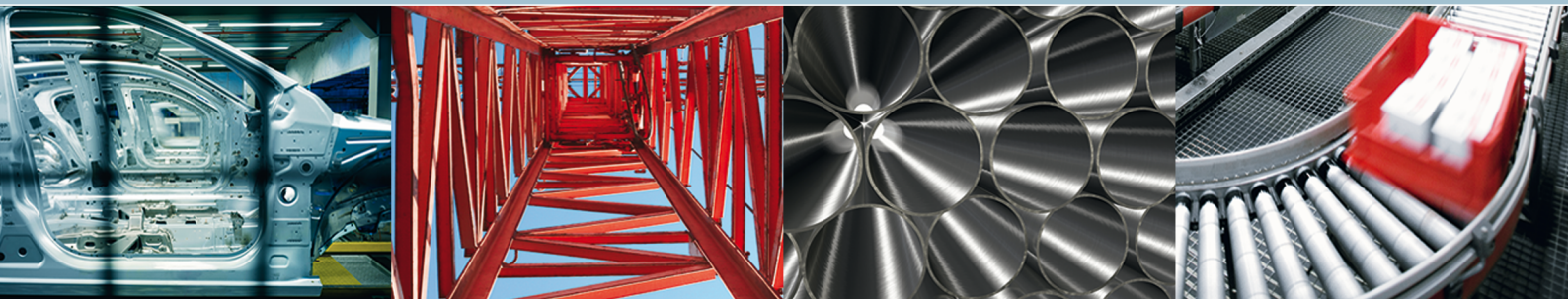
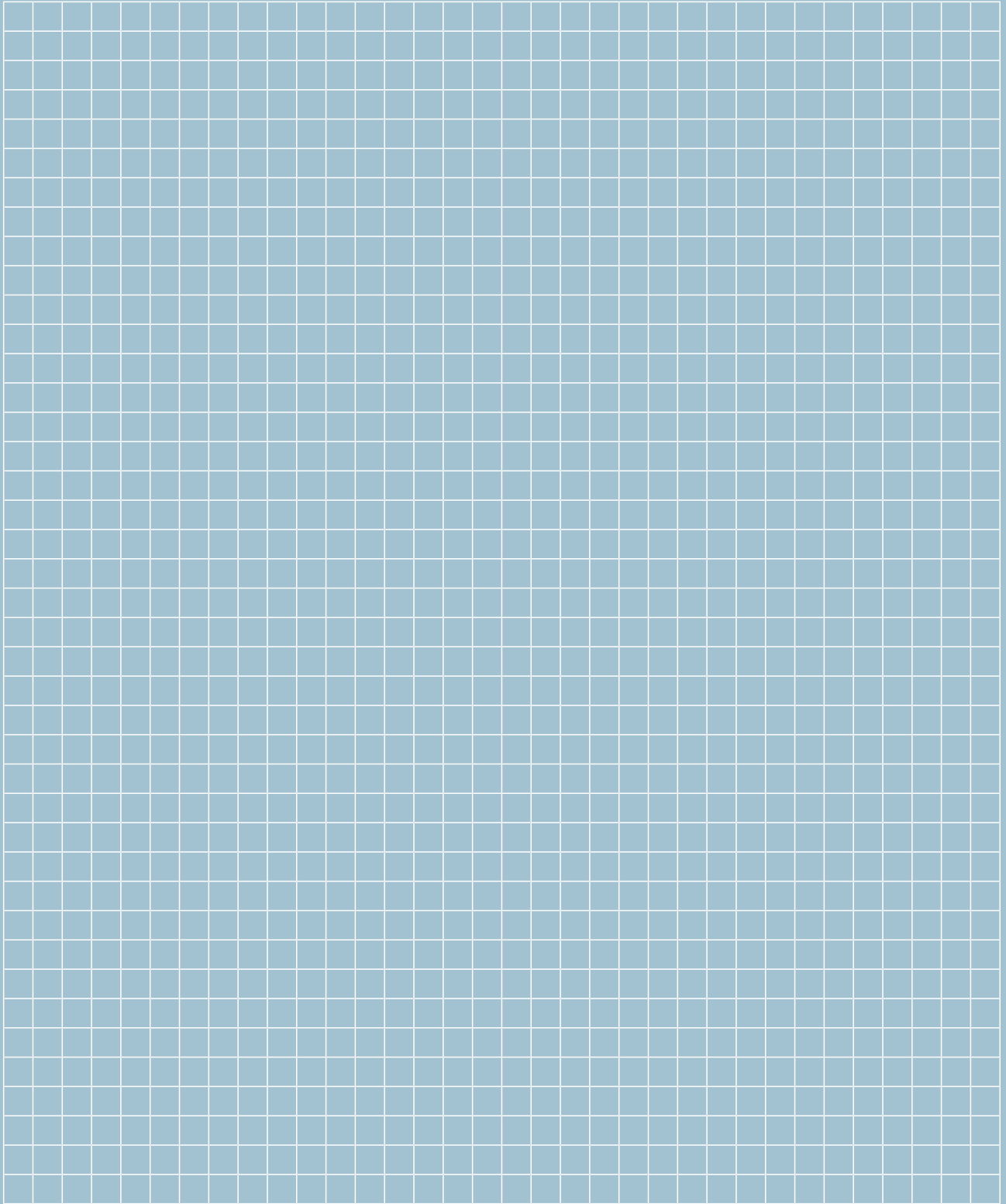
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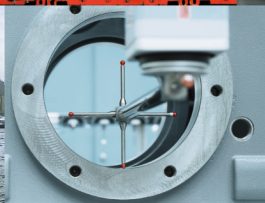
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