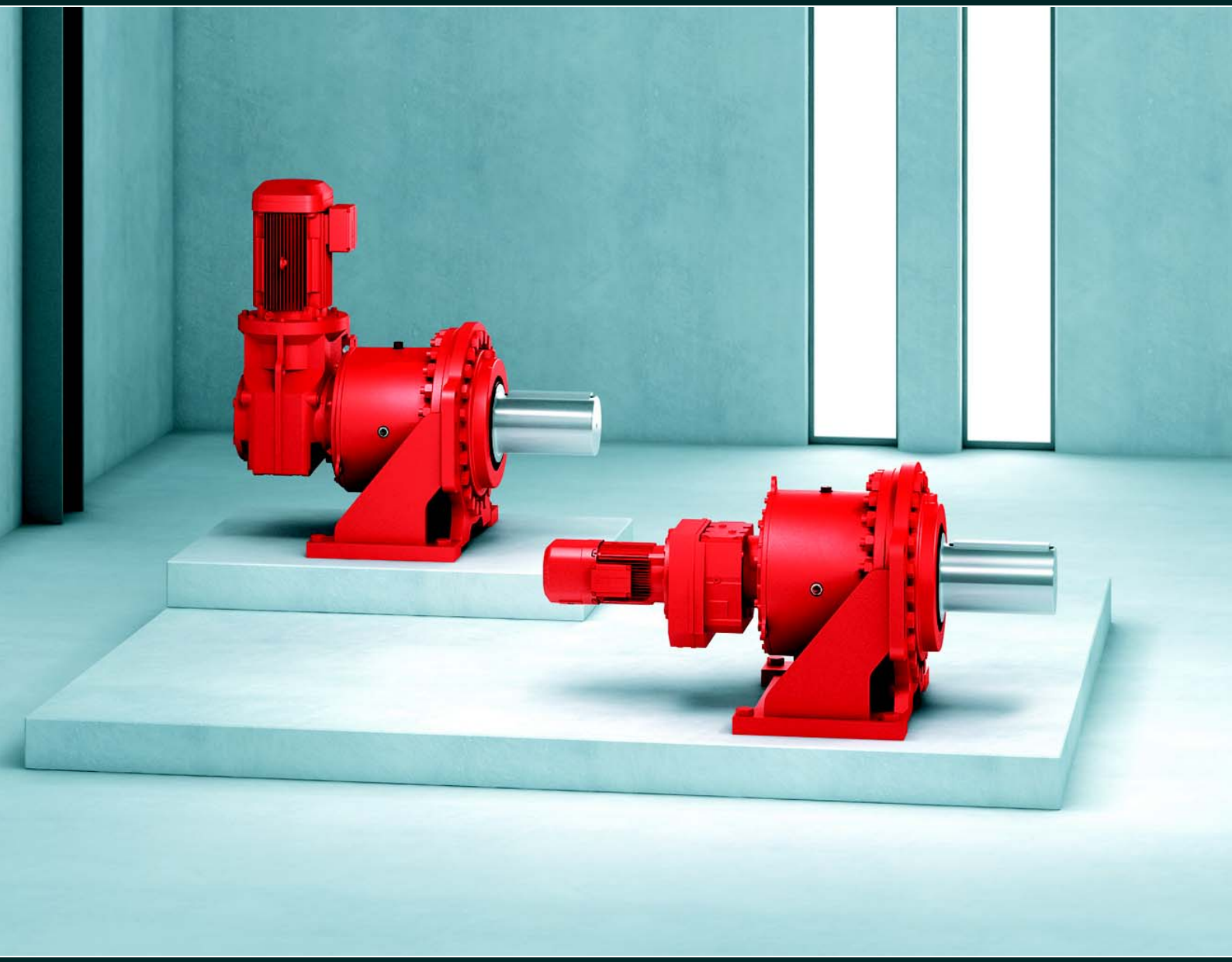
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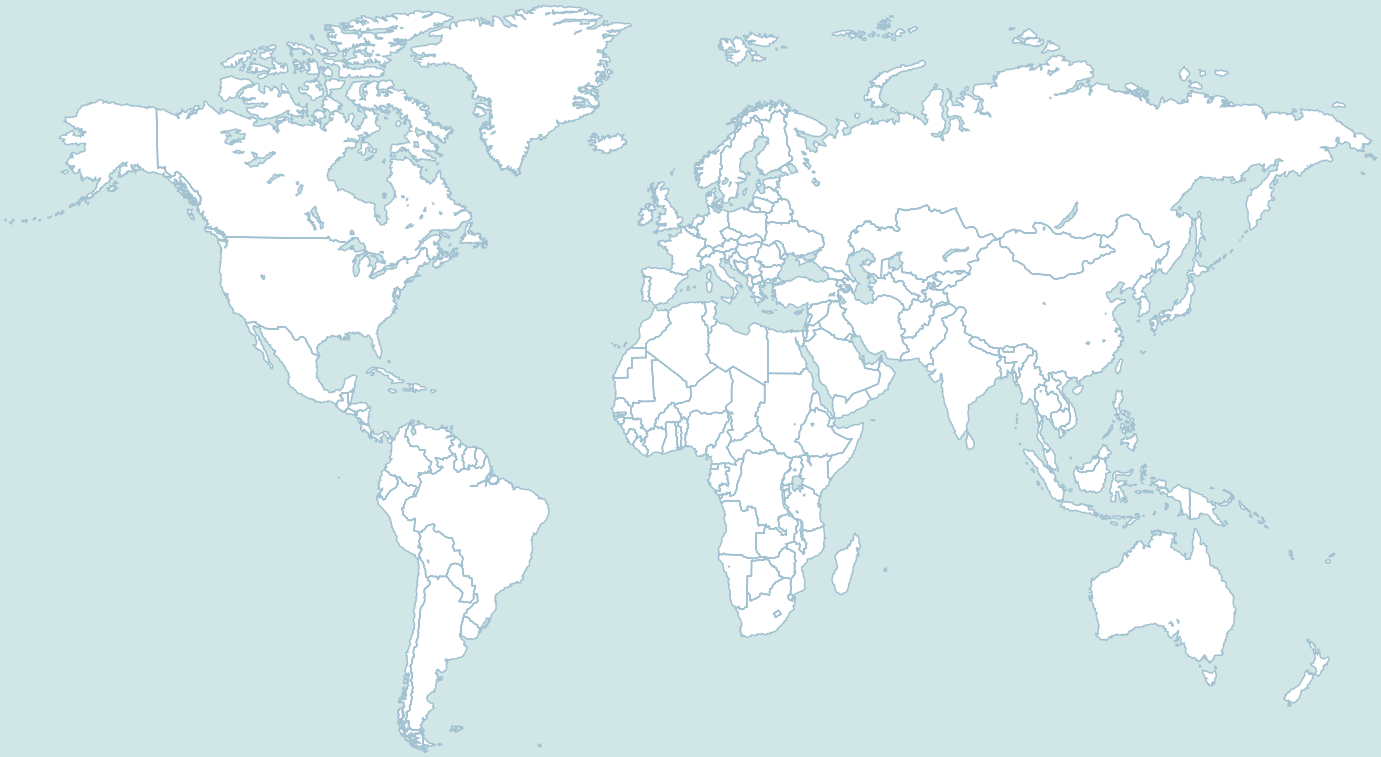
Catalog



Industrial Gear Units
Planetary Gearmotors
P002 - 082 Series

Edition 09/2009

16780817 / EN










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1 Introduction

1.1 The SEW-EURODRIVE Group of Companies

Global presence

Driving the world with innovative drive solutions for all branches and for every application. Products and systems from SEW-EURODRIVE are used in a multitude of applications worldwide. 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 in terms of both functionality and investment.

We are represented in the most important branches of industry all over the world: with 12 manufacturing plants, 66 assembly plants in 46 countries and our comprehensive range of services, which we consider an integrative service that continues our commitment to outstanding quality.

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, space available and the ambient conditions. Gear units and gearmotors offering a unique and finely tuned performance range and the best economic prerequisites to face your drive challenges.

The gearmotors are electronically empowered by MOVITRAC® frequency inverters, MOVIDRIVE® inverters and MOVIAXIS® multi-axis servo inverters, a combination that blends perfectly with the existing SEW-EURODRIVE program. As in the case for mechanical systems, the development, production and assembly is also carried out completely by SEW-EURODRIVE. In combination with our drive electronics, these drives will 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 provide precision and dynamics. From single-axis or multi-axis applications all the way to synchronized process sequences, servo drive systems by SEW-EURODRIVE offer a flexible and customized implementation of your application.

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 hybrid cables have been designed specifically to ensure cost-effective solutions, independent of the philosophy behind or the size of the system. The latest developments from SEW-EURODRIVE: MOVITRANS® - system components for contactless energy transfer, MOVIPRO® - decentralized drive controllers and MOVIFIT® - the new decentralized intelligence.

Power, quality and sturdy design combined in one standard product: With high torque levels, industrial gear units from SEW-EURODRIVE realize major movements. The modular concept will once again provide optimum adaptation of industrial gear units to meet a wide range of different applications.

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 applications in all branches of industries and applications.

1.2 Products and systems from SEW-EURODRIVE

The products and systems from SEW-EURODRIVE are divided into 4 product groups. These 4 product groups are:

1. Gearmotors and frequency inverters
2. Servo drive systems
3. Decentralized drive systems
4. Industrial gear units

Products and systems used in several group applications are listed in a separate group "Products and systems covering several product groups". Consult the following tables to locate the products and systems included in the respective product group:

1. 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/helical-bevel gearmotors • Helical-worm gear units/helical-worm gearmotors • Spiroplan® right-angle gearmotors • Drives for electrified monorail systems • Geared torque motors • Pole-changing gearmotors • Variable speed gear units/variable speed gearmotors • Aseptic gearmotors • Gear units/gearmotors to ATEX standard • Variable speed gear units/variable speed gearmotors to ATEX standard	• 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 • MOVIDRIVE® inverters • Control, technology and communication options for inverters

2. Servo drive systems		
Servo gear units/servo gearmotors	**Servomotors**	**Servo drive inverters/servo inverters**
• Low backlash planetary servo gear units /planetary gearmotors • Low backlash helical-bevel servo gear units/helical-bevel 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 inverters • MOVIAXIS® multi-axis servo inverters • Control, technology and communication options for servo drive inverters and servo inverters

3. Decentralized drive systems		
Decentralized drives	**Communication and installation**	**Contactless energy transfer**
• MOVIMOT® gearmotors with integrated frequency inverter • MOVIMOT® motors/brakemotors with integrated frequency inverter • MOVI-SWITCH® gearmotors with integrated switching and protection function • 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®-MC to control MOVIMOT® drives – MOVIFIT®-SC with integrated electronic motor switch – MOVIFIT®-FC with integrated frequency inverter	• MOVITRANS® system – Stationary components for energy supply – Mobile components for energy consumption – Line cables and installation material

4. Industrial gear units		
Helical and bevel-helical gear units • X series • MC series • ML series	Helical and bevel-helical planetary gear units • P series (also as planetary gearmotors) • PMC series	Drive packages • Application solutions with - Swing base - Gearmotors - Motors - Couplings - Drum and disk brakes - Lubrication systems for conveyor drives, bucket elevators, crushers, agitators, cooling towers, crane systems and much more

Products and systems covering several product groups
• Operator terminals • MOVI-PLC® drive-based control system

In addition to products and systems, SEW-EURODRIVE offers a comprehensive range of services. These are, for example:

- Technical consulting
- Application software
- Seminars and training
- Extensive technical documentation
- International customer service

Visit our homepage at

→ **www.sew-eurodrive.com**

The website provides comprehensive information and services.

1.3 Copyright

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2 Product Description and Overview of Types

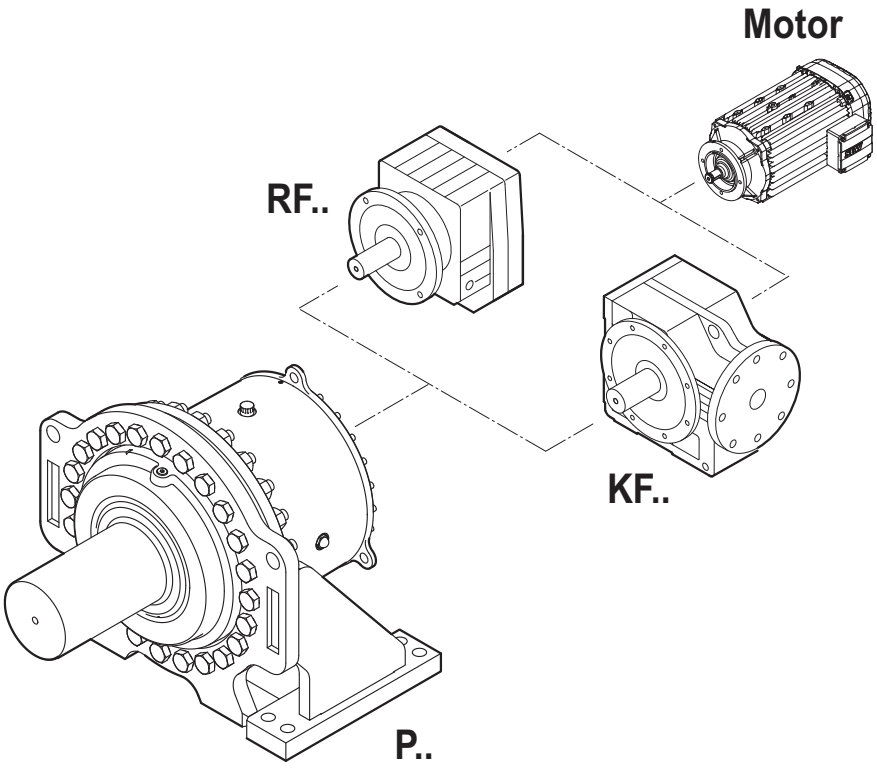
Planetary gearmotors are a combination of

- Planetary gear unit P.. final stage
- Primary gear unit RF.. or KF..
- Mount-on components: Motor, coupling, adapter and backstop

There are 9 sizes of planetary gear units with rated torques from 24,830 Nm to 359,400 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.



64404ADE

P.. Planetary gear unit

RF.. Helical gear unit (flange-mounted)

KF.. Bevel gear unit (flange-mounted)

2.1 Design features

Planetary gear unit

- Can transmit a high torque
- Are very compact
- Offer high torsional rigidity

Primary gearmotors ...

- Offer a large variance on the input side
- Are variable in their reduction gear ratio
- Can be combined with the planetary gear unit in helical or bevel designs

2.1.1 Overview of the advantages

- Perfectly matching 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

2.1.2 Application area

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
- In the food industry

2.2 General notes

2.2.1 Structure of the safety notes

The safety notes in this catalog are designed as follows:

Pictogram	Signal word	Meaning
	**STOP**	Possible damage to property
	**TIP**	Useful information or tip. Simplifies the handling of the drive system.

2.2.2 Important information

Note the following points:



STOP

- The illustrations in the catalog are examples and are not binding.
- The specified fill quantities are non-binding guidelines. Use the marks on the oil dipstick or oil sight glass to determine the oil level.
- Read and follow the operating instructions carefully before startup.
- The planetary gear units are ready for operation when delivered, but are not filled with oil.
- Oil viscosity and grade must comply with those specified on the nameplate.
- The weights shown are non-binding average values.
- 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.

2.2.3 Power and torque

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

2.2.4 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.

2.2.5 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.

2.2.6 Coating

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

2.2.7 Weight

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

2.2.8 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. Please also refer to the notes in the motor dimension sheets.

2.2.9 Primary gearmotor

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

2.2.10 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. You will either receive a manual lever with automatic reset or an adjustable setscrew for this purpose. The brake is controlled by a control element that is either installed in the motor wiring space or the control cabinet.

A characteristic feature of the brakes is their very short design. The brake bearing 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.

2.2.11 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.

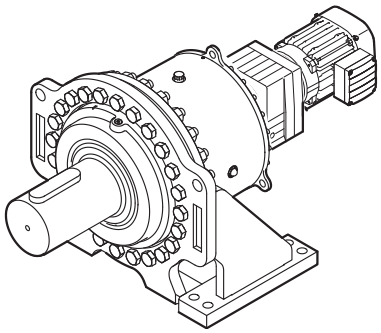
2.3 Overview of technical data

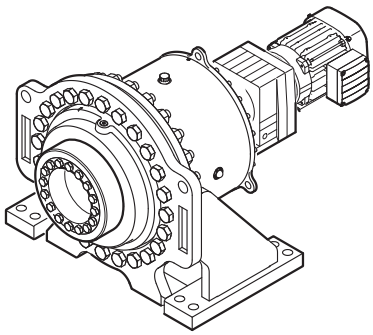
Size	M_{N2} [Nm]
P002	24830
P012	36810
P022	51190
P032	69620
P042	100170
P052	124060
P062	185660
P072	245660
P082	359400

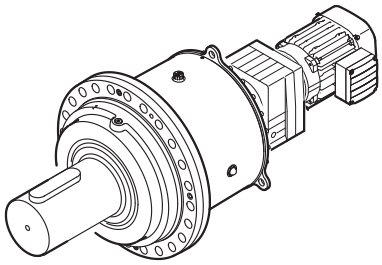
2.4 Basic design variants of the planetary gearmotors

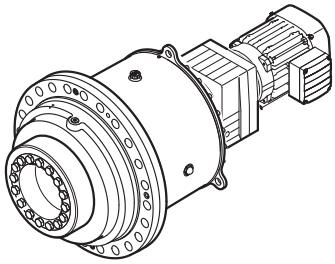
2.4.1 Helical planetary gearmotors

Helical planetary gearmotors are available in the following design:

P..RF.. DRS	
 64110AXX	Foot-mounted helical planetary gearmotor

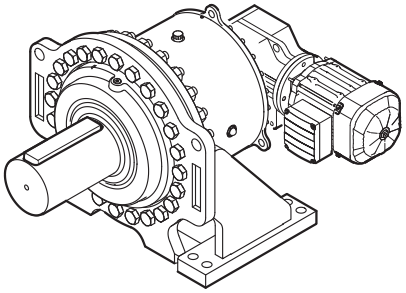
PH..RF.. DRS	
 64111AXX	Foot-mounted helical planetary gearmotor with hollow shaft and shrink disk

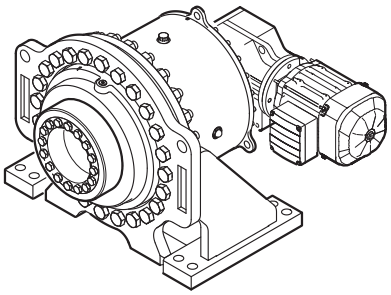
PF..RF.. DRS	
 64112AXX	Flange-mounted helical planetary gearmotor

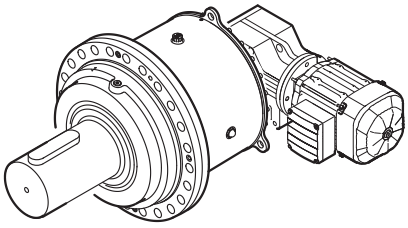
PHF..RF.. DRS	
 64113AXX	Flange-mounted helical planetary gearmotor with hollow shaft and shrink disk

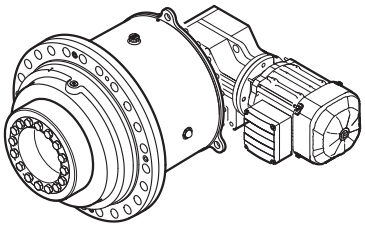
2.4.2 Bevel planetary gearmotors

Bevel planetary gearmotors are available in the following design:

P..KF.. DRS	
 64114AXX	Foot-mounted bevel planetary gearmotor

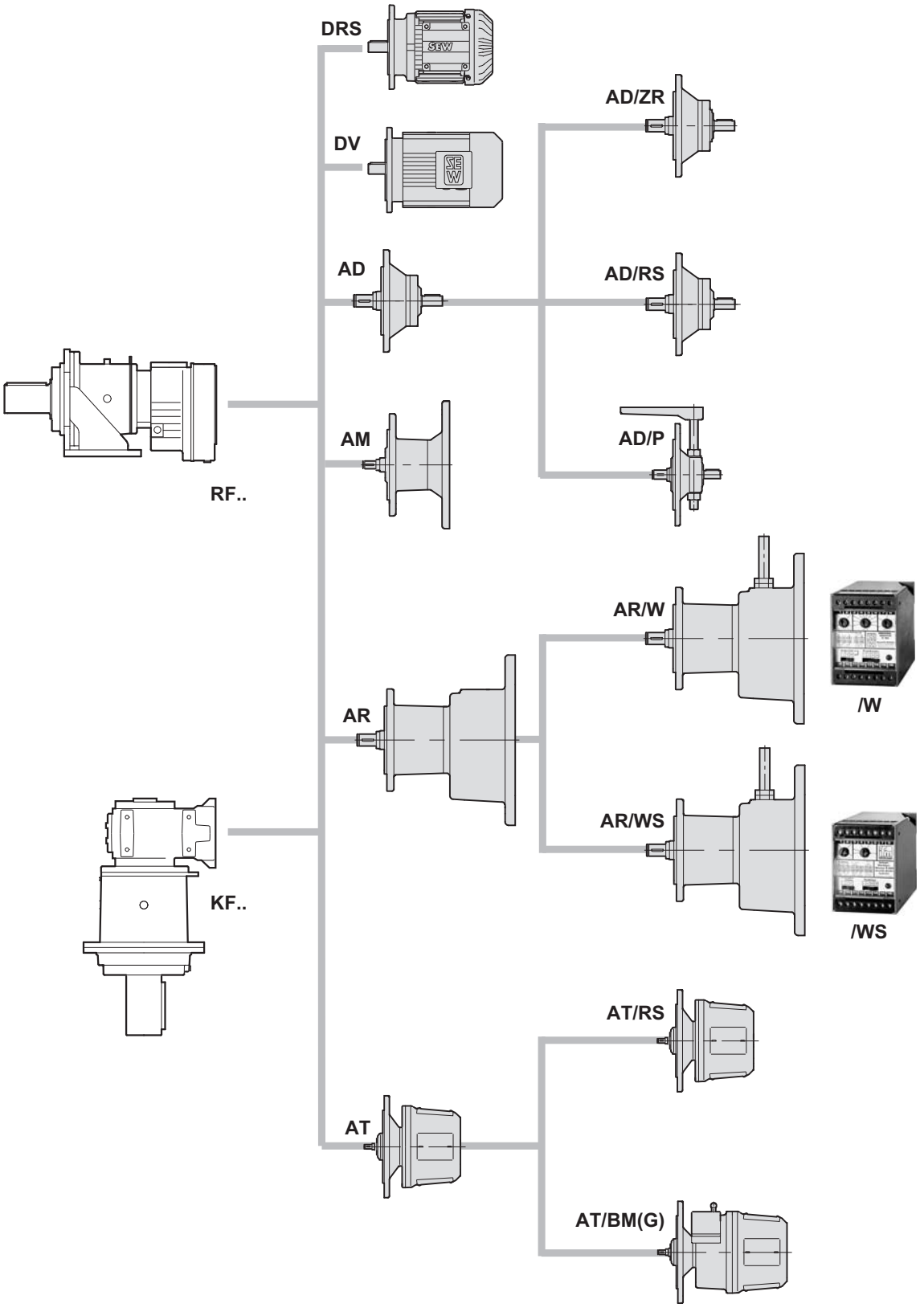
PH..KF.. DRS	
 64107AXX	Foot-mounted bevel planetary gearmotor with hollow shaft and shrink disk

PF..KF.. DRS	
 64108AXX	Flange-mounted bevel planetary gearmotor

PHF..KF.. DRS	
 64109AXX	Flange-mounted bevel planetary gearmotor with hollow shaft and shrink disk

2.4.3 Components on the input side

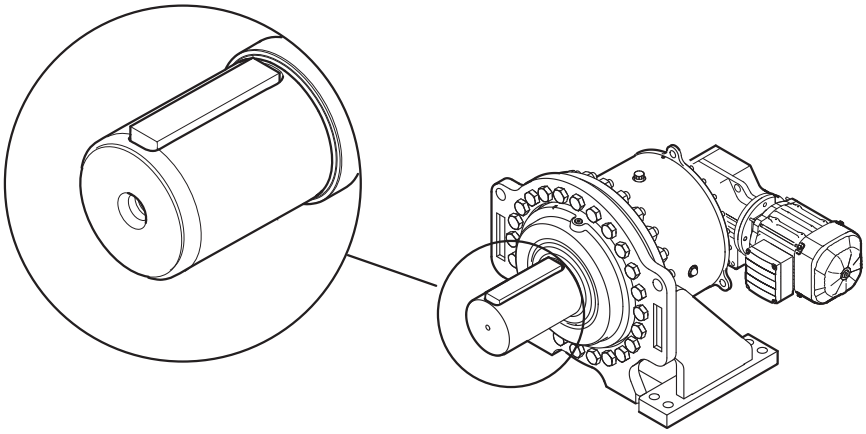
The following figure shows the components on the input end.



2.4.4 Output shaft variants

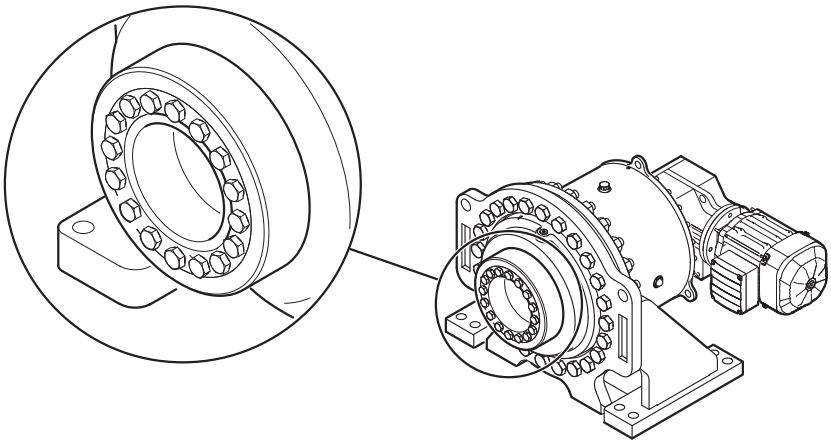
The output shaft [LSS] of the planetary gearmotor can have the following design as standard:

- Solid shaft with key



64115AXX

- Hollow shaft with shrink disk



64116AXX

2.5 Unit designations for gear units and options

2.5.1 Helical planetary gear unit

Designation	
P..RF..	Foot-mounted, solid shaft
PH..RF..	Foot-mounted, hollow shaft with shrink disk
PF..RF..	Flange-mounted, solid shaft
PHF..RF..	Flange-mounted, hollow shaft with shrink disk

2.5.2 Bevel planetary gear unit

Designation	
P..KF..	Foot-mounted, solid shaft
PH..KF..	Foot-mounted, hollow shaft with shrink disk
PF..KF..	Flange-mounted, solid shaft
PHF..KF..	Flange-mounted, hollow shaft with shrink disk

2.5.3 Additional features of gear units

Designation	
/T	With torque arm

2.5.4 Input shaft assembly

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

2.5.5 Adapter

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

2.6 Unit designation

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

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

P	H	F	032	KF	97	DRS	160M4

- 160M4: Size + pole number
- DRS: Series

Motor

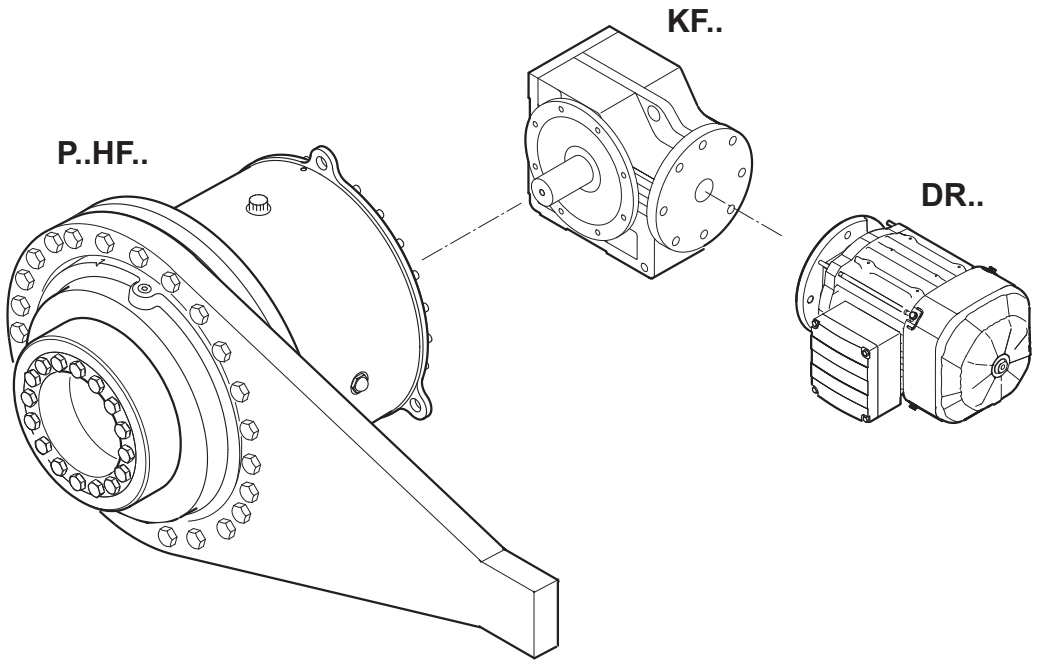
- 97: Size
- KF: Series

Primary gear unit

- 032: Size
- F: Flange-mounted design
- H: Hollow shaft for shrink disk

Planetary gear unit

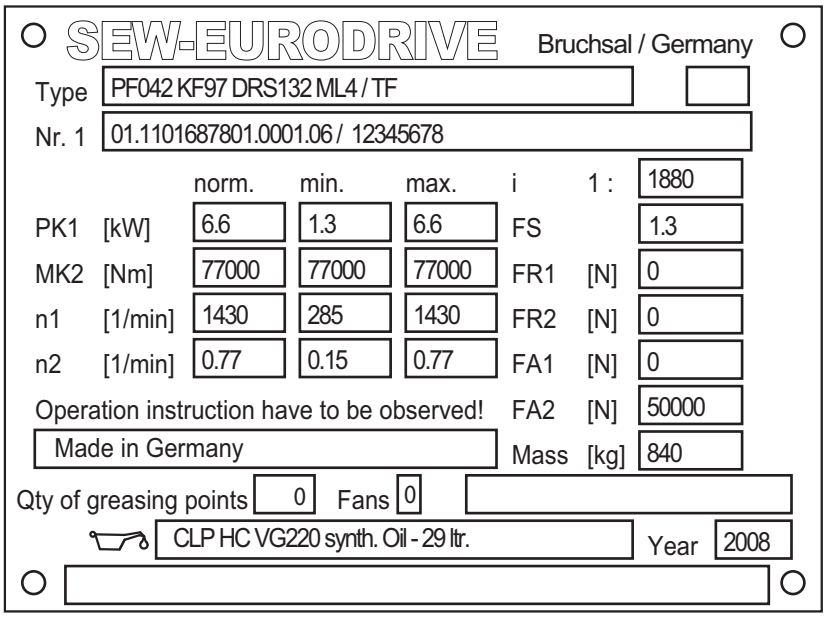
- P: Gear unit type



64117AXX

2.7 Nameplate

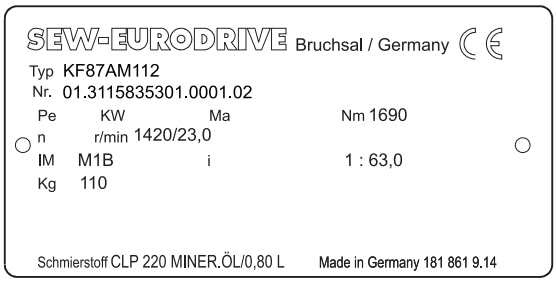
Example: Planetary gear unit nameplate



63654AXX

Type		Unit designation
No. 1		Serial number
P_{K1}	[kW]	Operating power on the input shaft (HSS)
M_{K2}	[Nm]	Gear unit output torque
n_1	[min^{-1}]	Input speed (HSS)
n_2	[min^{-1}]	Output speed (LSS)
norm.		Standard operating point
min.		Operating point at minimum speed
max.		Operating point at maximum speed
i		Exact gear unit reduction ratio
F_S		Service factor
F_{R1}	[N]	Actual overhung load acting on the input shaft
F_{R2}	[N]	Actual overhung load acting on the output shaft
F_{A1}	[N]	Actual axial load acting on the input shaft
F_{A2}	[N]	Actual axial load acting on the output shaft
Mass	[kg]	Weight of the gear unit
Number of greasing points		Number of relubrication points
Fans		Number of installed fans
		Oil grade and viscosity class / oil volume
Year		Year of construction

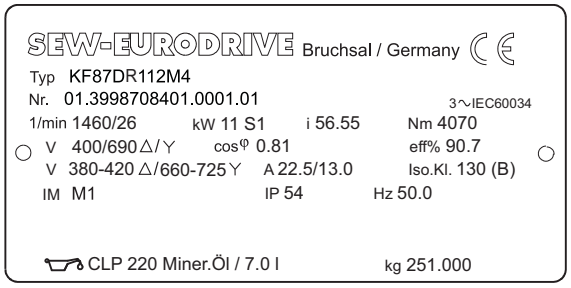
Example: KF.. primary gear unit



05831AEN

Type		Unit designation
No.		Serial number of primary gear unit
Pe	[kW]	Input power of the gear unit
Ma	[Nm]	Output torque
n	[min^{-1}]	Input/output speed
IM		Mounting position
i		Transmission ratio
Kg	[Kg]	Weight

Example: RF../KF.. primary gear unit as gearmotor



64244AXX

Type		Unit designation
No.		Serial number of primary gearmotor
i		Transmission ratio
1/min	[min^{-1}]	Input/output speed
Nm	[Nm]	Output torque
kW	[kW]	Input power of the gear unit
S1		Operating mode
cos φ		Power factor of the motor
V	[V]	Supply voltage in delta/star connection
A	[A]	Rated motor current in delta/star connection
Hz	[Hz]	Mains frequency
IM		Mounting position
kg	[kg]	Weight of the primary gearmotor
IP		Degree of protection of the motor
Brake V	[V]	Brake connection voltage
Nm	[Nm]	braking torque
		Oil grade and viscosity class / oil volume

2.8 Corrosion and surface protection

2.8.1 General information

SEW-EURODRIVE offers various optional protective measures for operation of motors and gearmotors under special ambient conditions.

The protective measures comprise two groups:

- Corrosion protection KS for motors
- Surface protection OS for motors and gear units

For motors, optimum protection is offered by a combination of corrosion protection KS and surface protection OS.

2.8.2 Corrosion protection KS

KS corrosion protection for motors comprises the following measures:

- All retaining screws are made of stainless steel for daily operation.
- The nameplates are made from stainless steel.
- A top coating is applied to various motor parts.
- The flange contact surfaces and shaft ends are treated with a temporary anti-corrosion agent.
- Additional measures for brakemotors.

A sticker labeled "KORROSIONSSCHUTZ" (corrosion protection) on the fan guard indicates special treatment has been applied.

TIP

Motors with a forced cooling fan and motors with a spread shaft encoder (ES..) cannot be supplied with corrosion protection KS.

2.8.3 OS Surface protection

Instead of standard surface protection, motors and gear units are optionally available with OS1, OS2 or OS3 surface protection.

Surface protection	Build-up of coats	Coat thickness [µm]	Suitable for
Standard	1 x Dip primer 1 x Two-component top coat	About 60	• Normal ambient conditions • Relative humidity below 90 % • Max. surface temperature 120 °C • Corrosivity category C1[1)]
OS1	1 x Dip primer 1 x Two-pack base coat 1 x Two-pack top coat	About 120-150	• Low environmental impact • Relative humidity max. 95 % • Max. surface temperature 120 °C • Corrosivity category C2[1)]
OS2	1 x Dip primer 2 x Two-pack base coat 1 x Two-pack top coat	About 170-210	• Medium environmental impact • Relative humidity up to 100 % • Max. surface temperature 120 °C • Corrosivity category C3[1)]
OS3	1 x Dip primer 2 x Two-pack base coat 2 x Two-pack top coat	About 220-270	• High environmental impact • Relative humidity up to 100 % • Max. surface temperature 120 °C • Corrosivity category C4[1)]

1) In accordance with DIN EN ISO 12 944-2

Output shafts and machined metal surfaces are tectylized corresponding to the storage conditions.

2.9 Storage and transport conditions

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

2.9.1 Internal corrosion protection

Standard corrosion protection

After the test run, the test oil fill is drained out of the gear unit. The remaining oil film protects the gear unit against corrosion for a limited period of time.

Long-term corrosion protection

After the test run, the test oil fill is drained out of the gear unit and the interior space is filled will a vapor phase inhibitor. The breather filter is replaced by a screw plug and enclosed with the gear unit.

2.9.2 Exterior corrosion protection

In general, the following measures are taken for exterior corrosion protection:

- Corrosion protection is applied to bare, non-painted functional surfaces of shafts, flanges, mounting and foot surfaces on the gear unit. Remove it only using an appropriate solvent which is not harmful to 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.

	**STOP** • If the gear unit is stored longer than 6 months, you must check the protective coating of unpainted areas as well as the paint regularly. Areas in which the protective coating and/or paint has been damaged may have to be repainted.

2.9.3 Packaging

Standard packaging

The gear unit is delivered on a pallet without cover.

Application: Land transport

Long-term packaging

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

Application: Sea transport and/or for long-term storage

2.9.4 Storage conditions

	**STOP**
	• During storage up to startup, the gear unit must be stored in a shock-free manner in order to prevent damage to the anti-friction bearing races. • The output shaft must be rotated at least one full rotation every six months so that the position of the roller elements in the bearings of the input and output shafts changes.

	**TIP**
	The gear units are delivered without an oil fill; different protection systems are required depending on the storage period and storage conditions as shown in the table below.

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

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

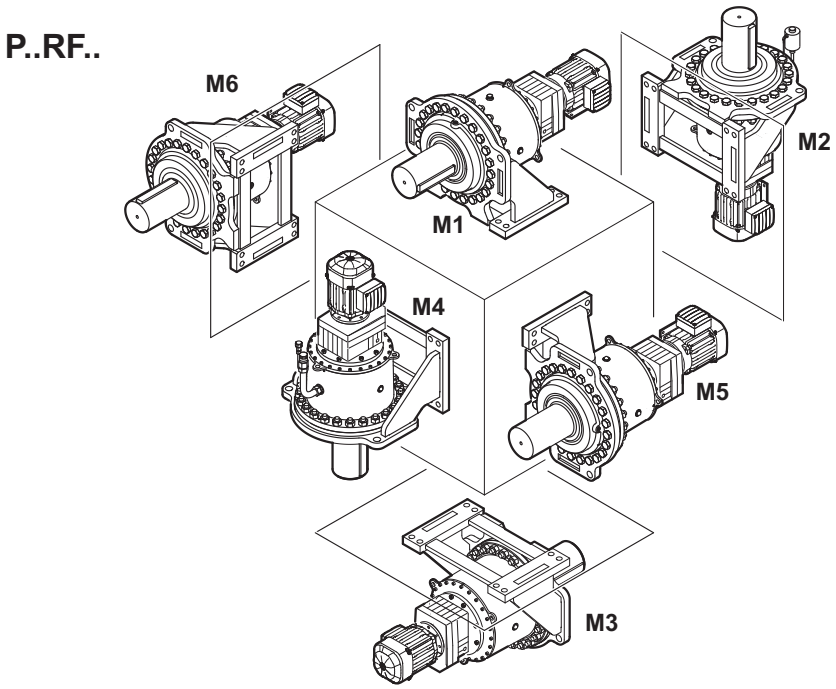
3 Mounting Positions

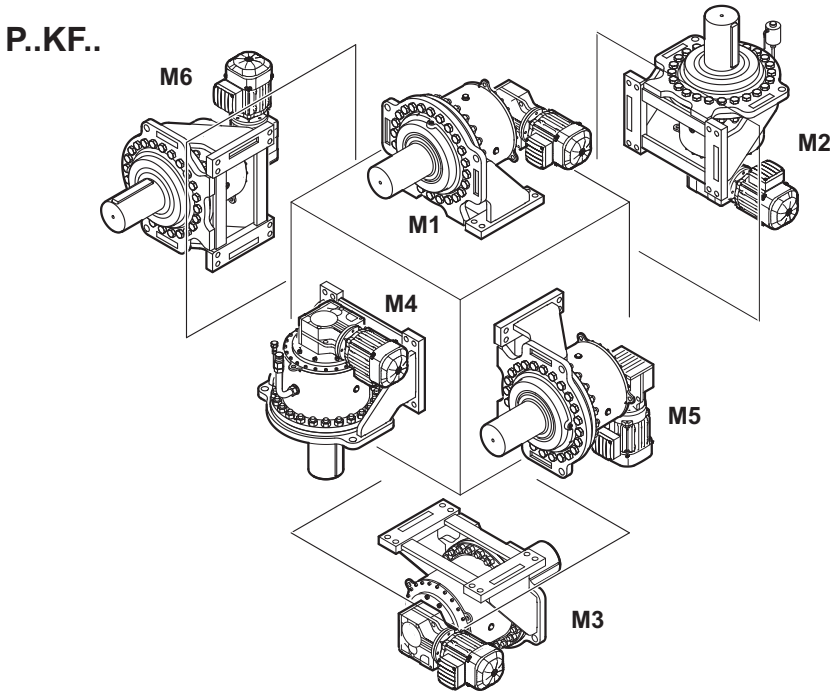
3.1 Standard mounting position

3.1.1 Definition

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 hollows shafts.

For mounting position M2, an oil expansion tank is necessary. Mounting position M4 requires a rising pipe. For dimensions, refer to the dimension sheets in sections 10.2 and 11.2.





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3.2 Pivoted mounting positions and variable mounting positions

Mounting positions differing from standard mounting positions are referred to as pivoted or variable mounting positions.

Gear units with pivoted mounting position have a **fixed** mounting position that differs from the standard.

Gear units with variable mounting position can change the mounting position **variably** within the specified range.

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

M1 - M2/20°/V

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

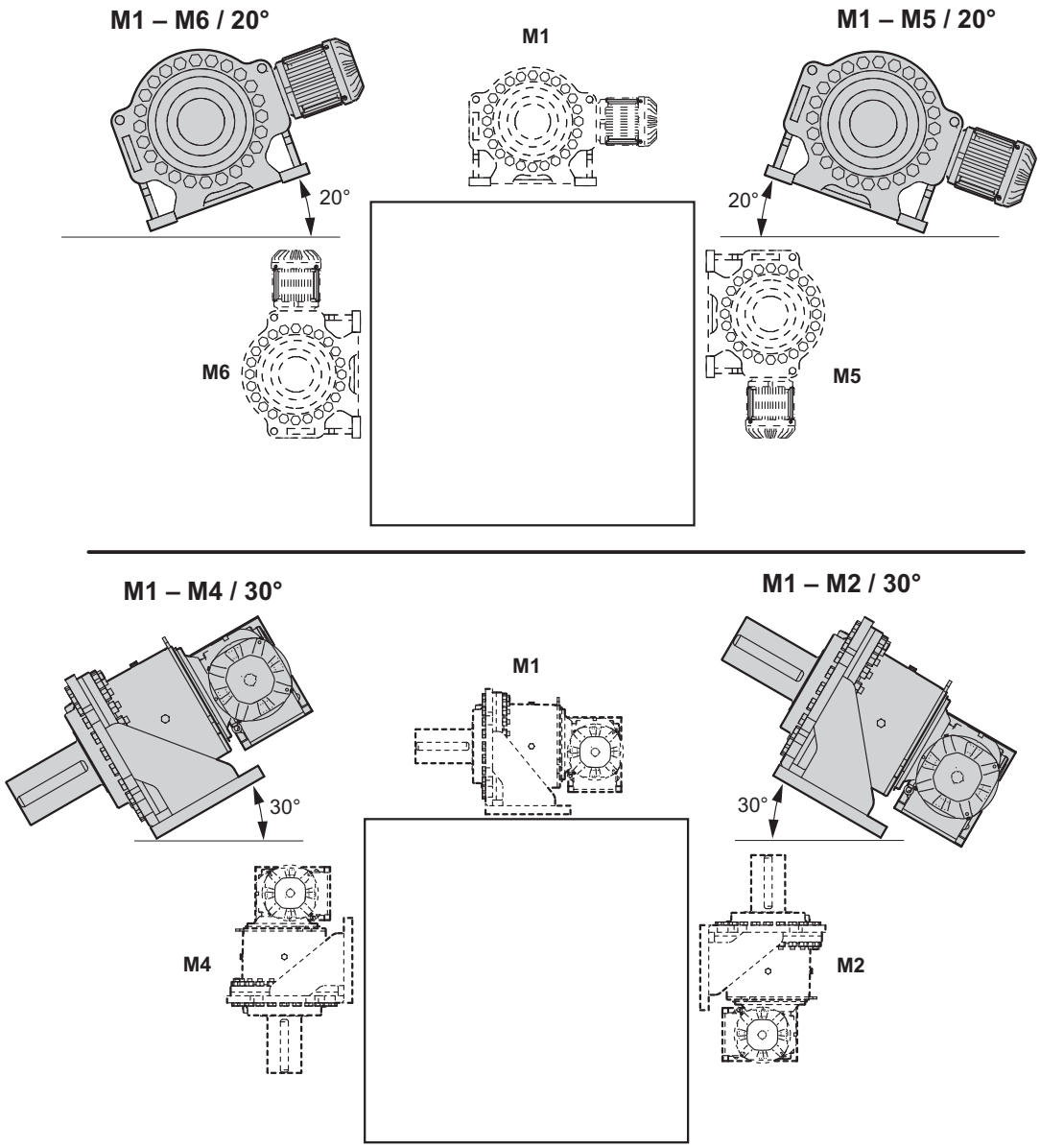
[1] Initial mounting position

[2] Desired mounting position

[3] Pivoting angle

[4] F = Fixed final position; V = Variable final position

The following figure shows 4 examples:



All final positions have to be specified if the mounting position of the gear unit deviates from standard mounting positions in several directions. Combinations of fixed and variable final positions are possible.

Example of a gear unit that based on M1 is tilted by ±20° around the drive shaft during operation and is mounted in a fixed 30° angle around the longitudinal axis:

M1 - M2/20°/V - M4/20°/V - M5/30°/F

	TIP
	Pivoted and variable mounting positions may involve restrictions concerning accessories and technical data. Also, delivery times might be longer. Consult SEW-EURODRIVE.

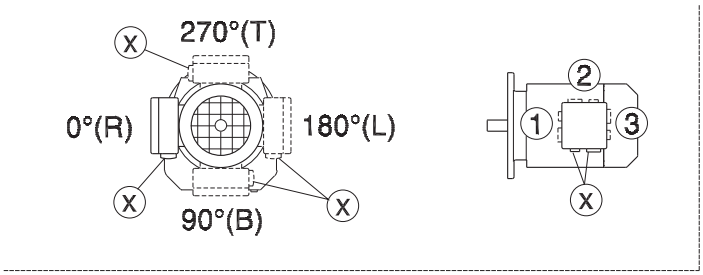
3.3 Mounting position sheets

3.3.1 Key to the mounting position sheets

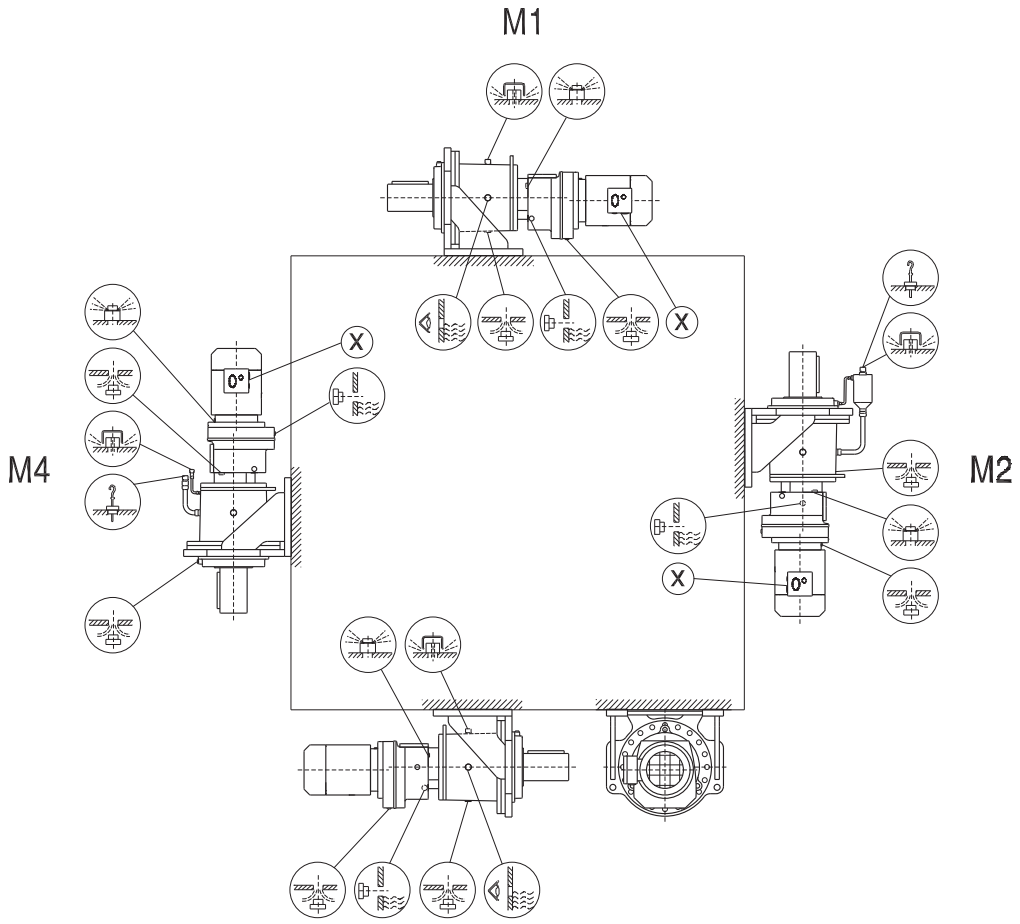
The following table shows the symbols used in the mounting position sheets and what they mean:

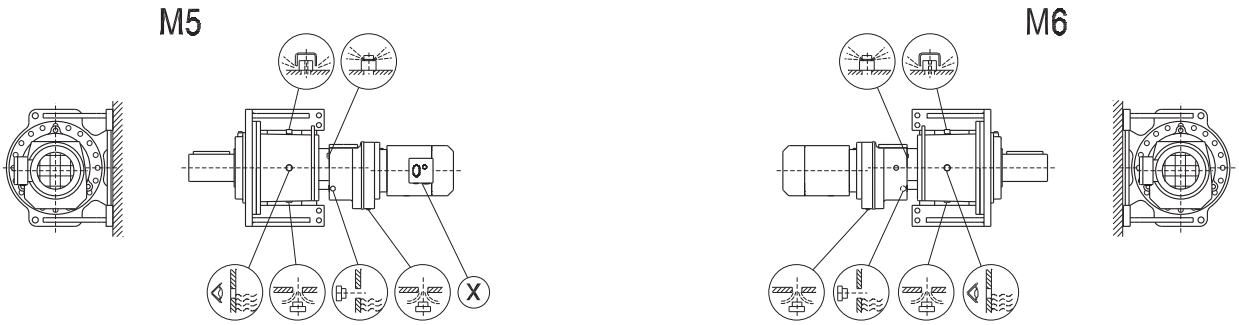
Symbol	Meaning
	Breather valve
	Oil level plug
	Oil drain plug
	Breather
	Oil dipstick
	Oil sight glass

3.3.2 P..RF..

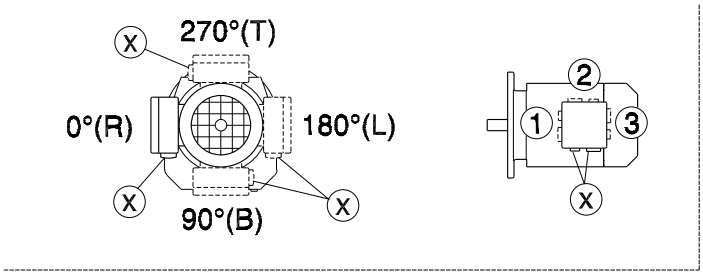


45 129 00 08

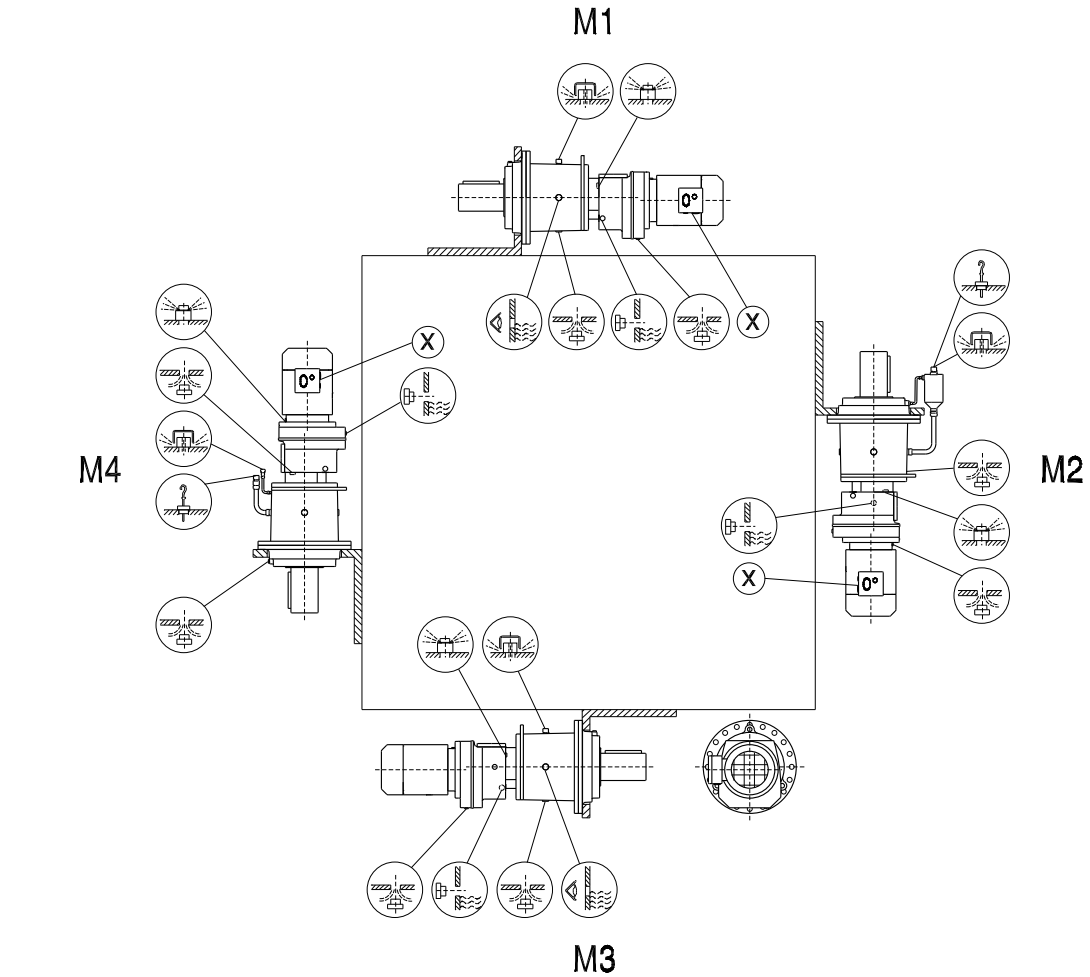


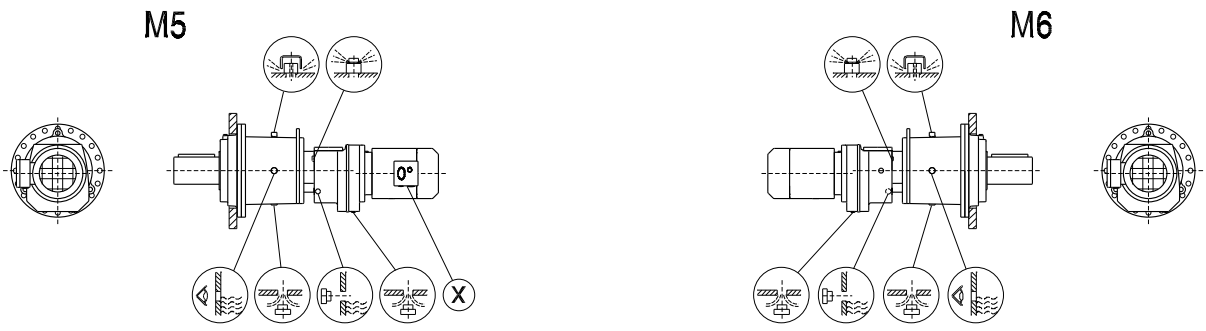


3.3.3 PF..RF..

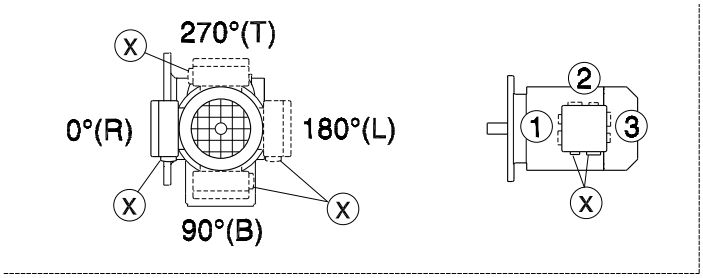


45 130 00 08

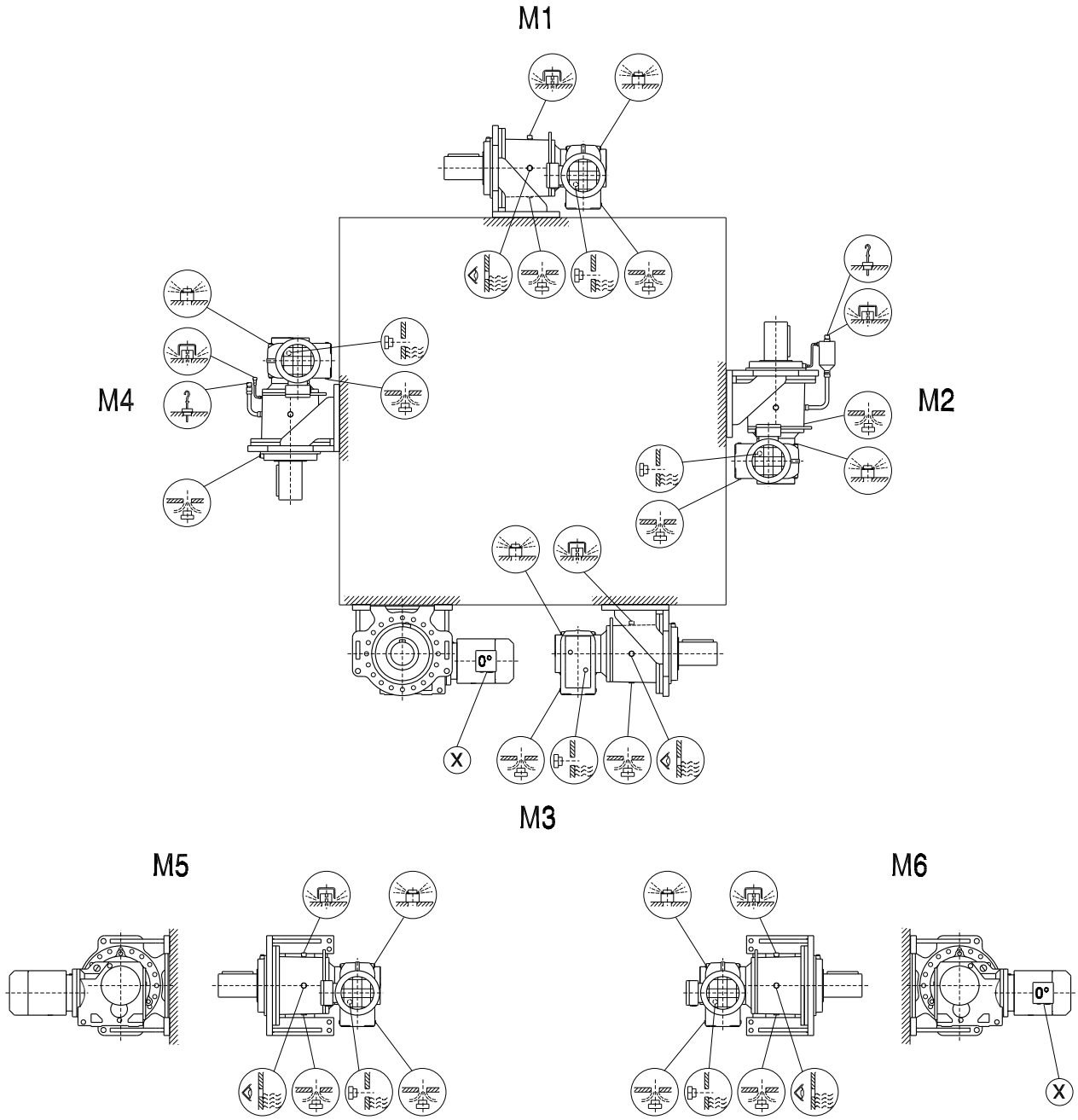




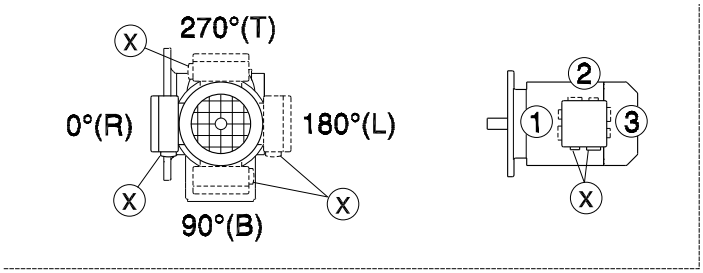
3.3.4 P..KF..



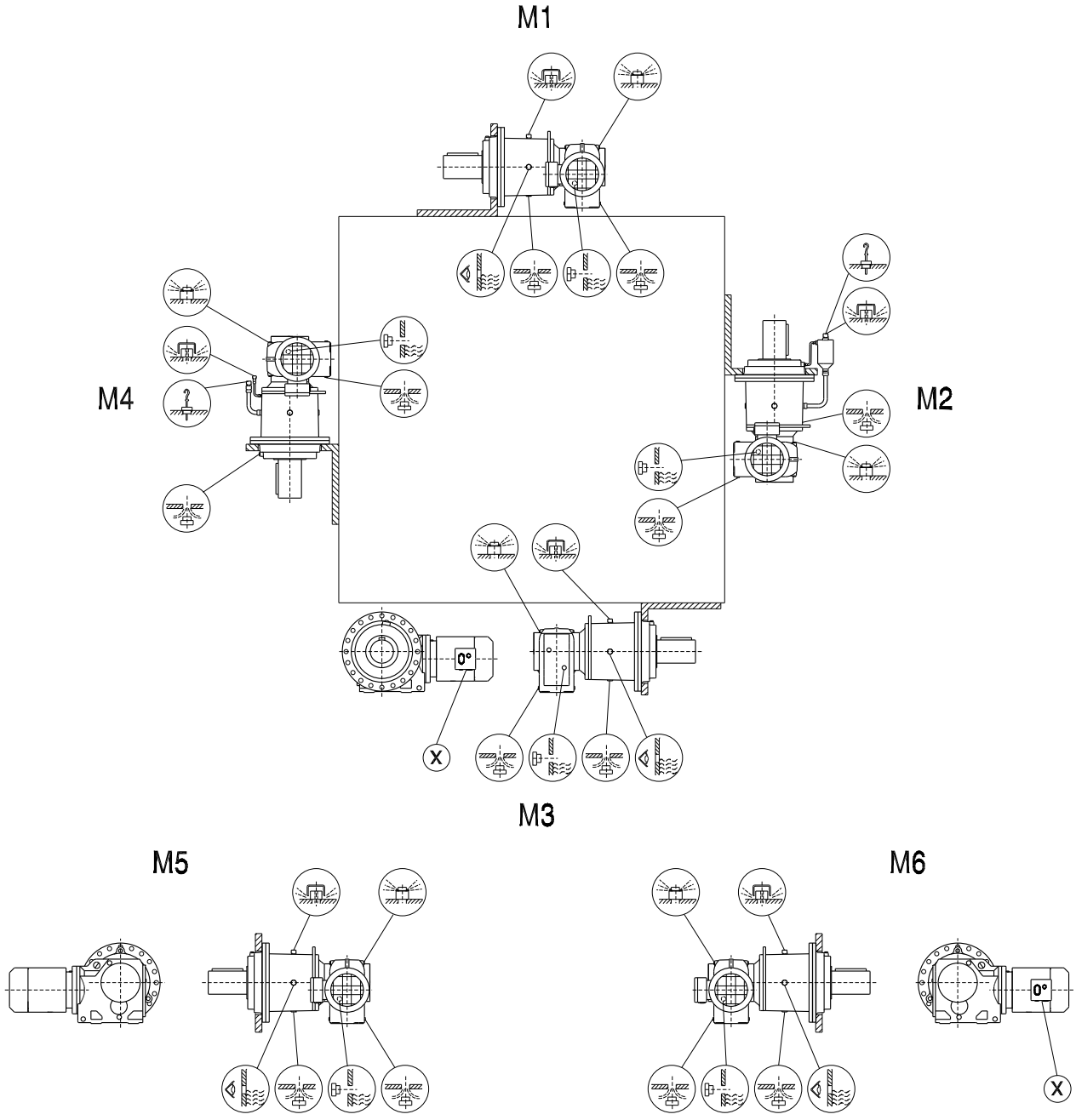
45 131 00 08



3.3.5 PF..KF..



45 132 00 08



4 Important Order Information

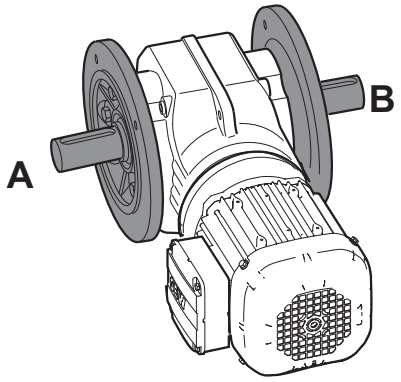
4.1 For all gearmotors

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

4.2 Mounting positions of KF.. primary bevel gear units

For the primary bevel gear units KF.., positions **0°**, **90°**, **180°** or **270°** are fixed.

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

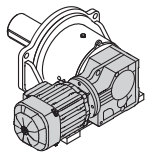
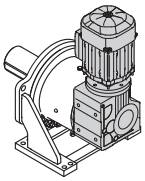
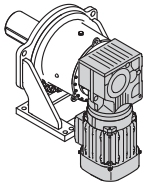
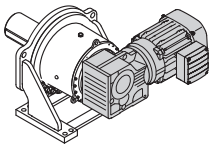


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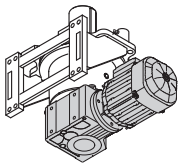
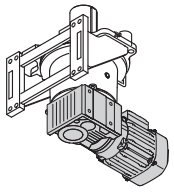
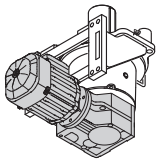
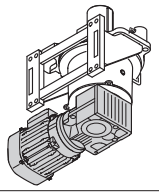
To reduce the churning losses in the primary gear unit to a minimum, SEW-EURODRIVE recommends to choose from the standard mounting positions displayed below.

STOP	**STOP**
	Contact SEW-EURODRIVE in case of deviating mounting conditions.

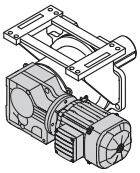
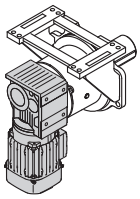
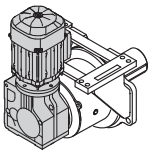
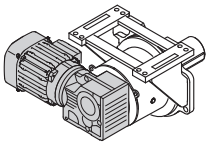
M1

0° A	270° A
	
90° A	**180° B**
	

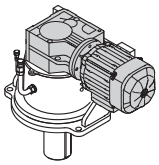
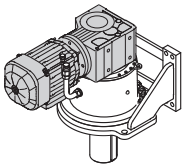
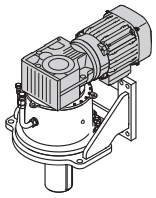
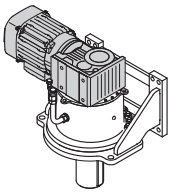
M2

0° A	270° A
	
90° A	**180° A**
	

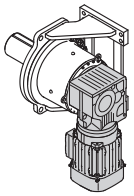
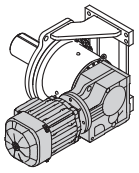
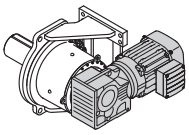
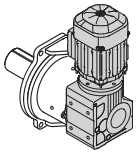
M3

0° B	270° A
	
90° A	**180° A**
	

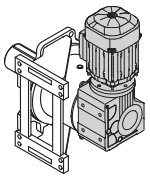
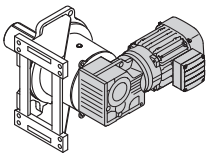
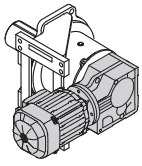
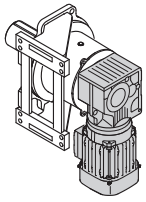
M4

0° A	270° A
	
90° A	**180° A**
	

M5

0° A	270° A
	
90° B	**180° A**
	

M6

0° A	270° B
	
90° A	**180° A**
	

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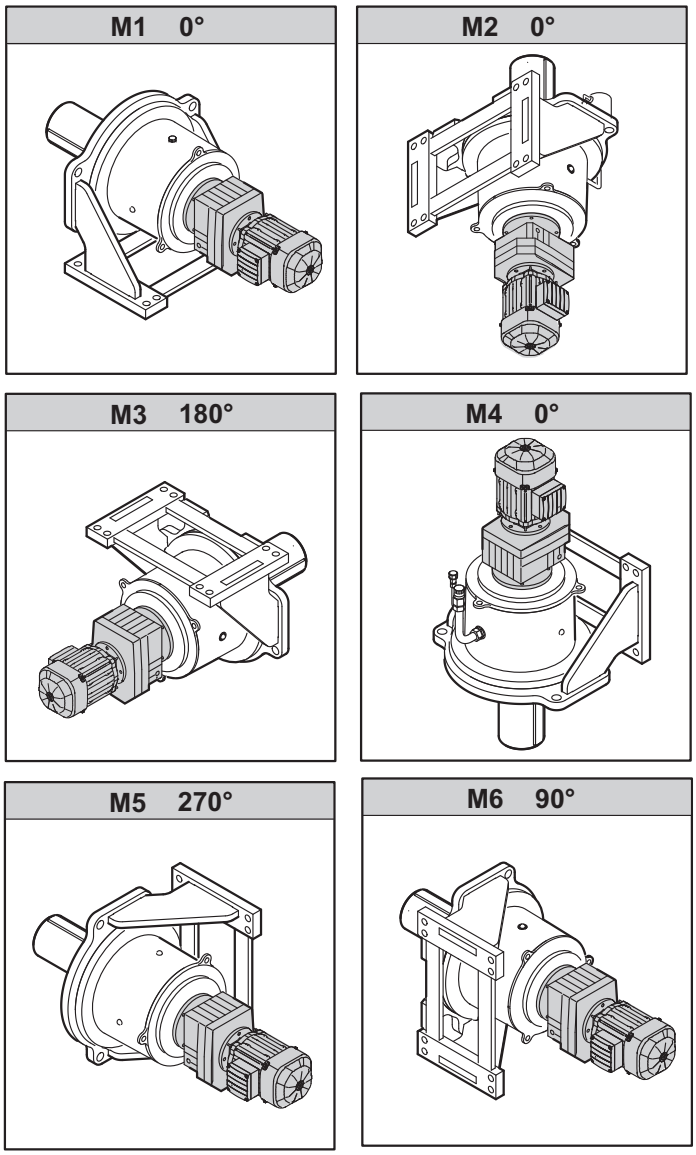
Key	
M1 / M2 / M3 / M4 / M5 / M6	= Mounting position of planetary gear unit
0° / 90° / 180° / 270°	= Mounting position of primary bevel gear unit
A / B	= Position of the mounting flange at the primary bevel gear unit

4.3 Mounting positions of RF.. primary helical gear units

For the primary helical gear units RF.., positions **0°**, **90°**, **180°** or **270°** are fixed.

To reduce the churning losses in the primary gear unit to a minimum, SEW-EURODRIVE recommends to choose from the standard mounting positions displayed below.

STOP	**STOP**
	Contact SEW-EURODRIVE in case of deviating mounting conditions.



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Key	
M1 / M2 / M3 / M4 / M5 / M6	= Mounting position of planetary gear unit
0° / 90° / 180° / 270°	= Mounting position of primary helical gear unit

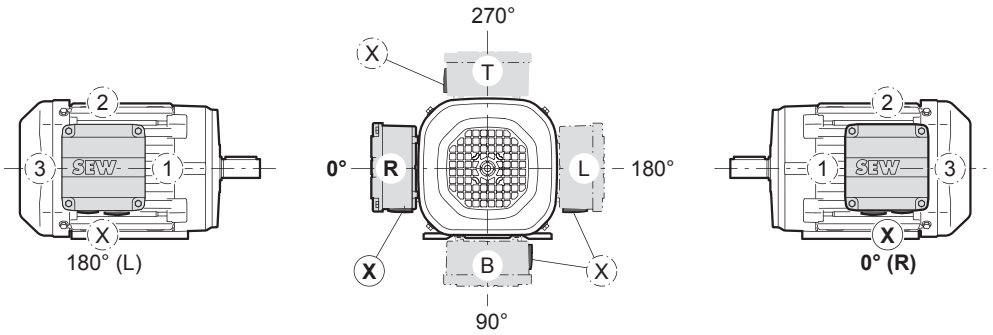
4.4 Position of the motor terminal box and the cable entry

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 for terminal box positions will have to be used in 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). The previous designation is retained for gearmotors. 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. The possibilities are "X" (= standard position), "1", "2" or "3" (see following figure).



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Unless indicated otherwise, you will receive the terminal box type 0° (R) with "X" cable entry.

	TIP
	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

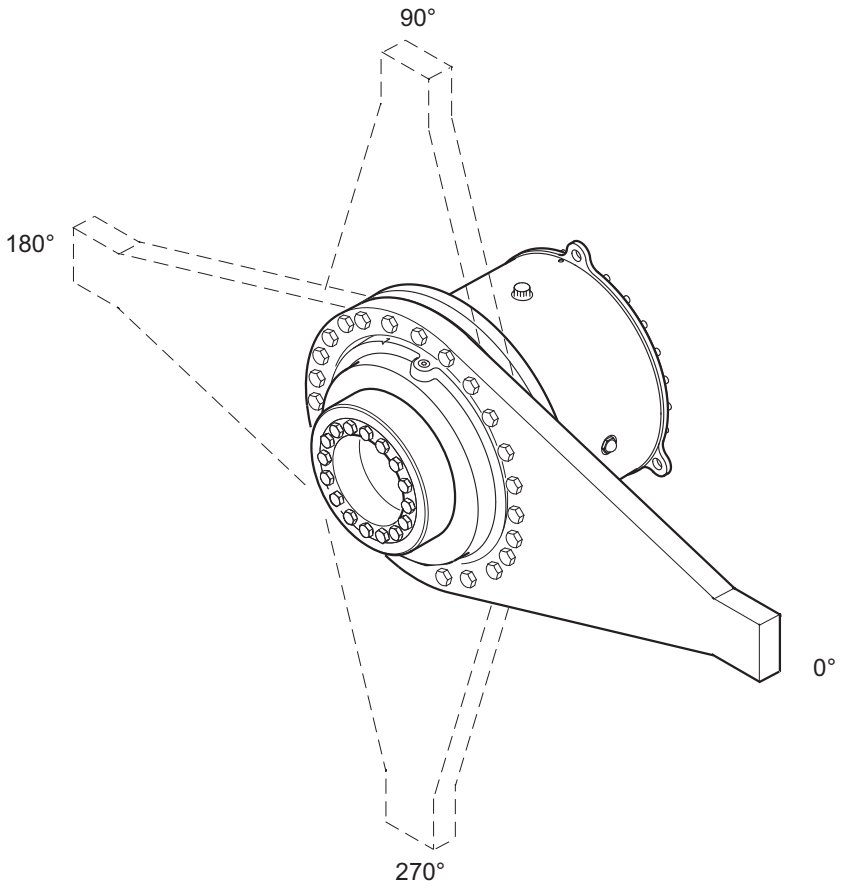
The torque arm can be enclosed in the delivery or can be mounted according to customer requirements.

The retaining screws are included in the scope of delivery.

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

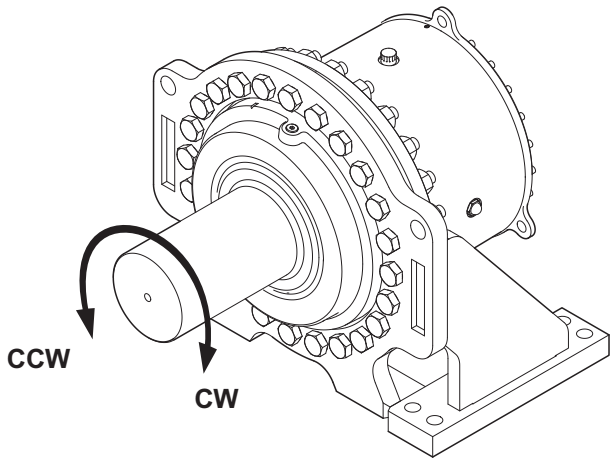
	TIP
	Different mounting positions are possible depending on the angle division (number of retaining screws).

The following figure shows a sample mounting position and combination of a planetary gear unit and a torque arm.



4.6 Output direction of rotation of drives with backstop

The required direction of rotation of the output shaft must be specified when ordering planetary gear units. The direction of rotation is specified as viewed onto the output shaft.



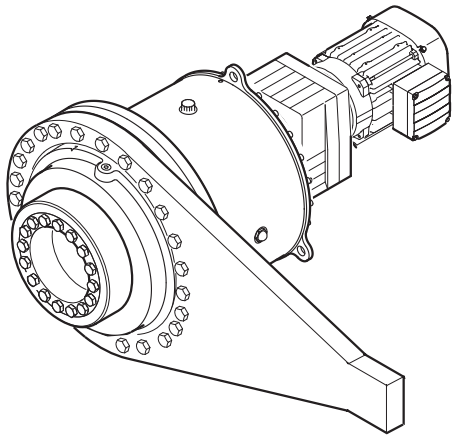
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As viewed at the output shaft:	Clockwise **(CW)** = Rotating clockwise Counterclockwise **(CCW)** = Rotating counterclockwise

4.7 Sample orders

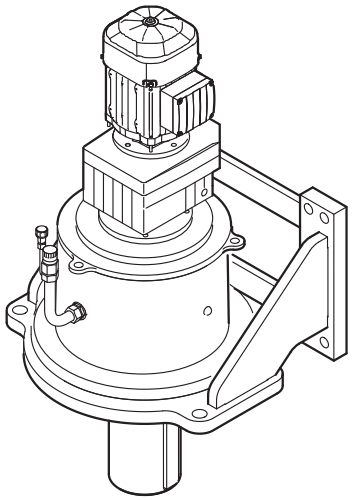
The following order examples show a combination of a planetary gear unit, a primary gear unit and a motor.

Type	Mounting position of planetary gear unit	Mounting position					Additional type
		Primary gear unit	Mounting flange	Terminal box	Cable entry	Torque arm	
PHF042/T RF107DRS160L4	M1	0°	-	0°	X	0°	LSS labyrinth seal



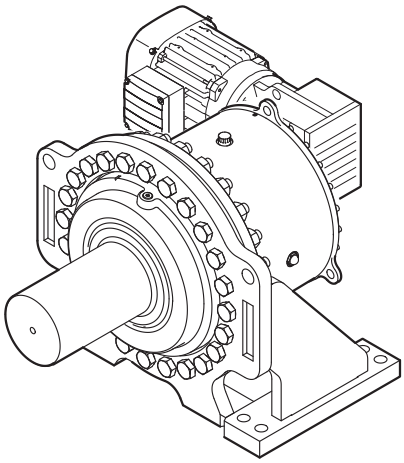
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Type	Mounting position of planetary gear unit	Mounting position					Additional type
		Primary gear unit	Mounting flange	Terminal box	Cable entry	Torque arm	
P032 RF97DRS200L4	M4	0°	-	0°	X	-	



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Type	Mounting position of planetary gear unit	Mounting position					Additional type
		Primary gear unit	Mounting flange	Terminal box	Cable entry	Torque arm	
P082 KF157DRS160L4	M1	180°	B	180°	X	-	



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5 Guidelines for Gear Unit Selection

5.1 Additional documentation

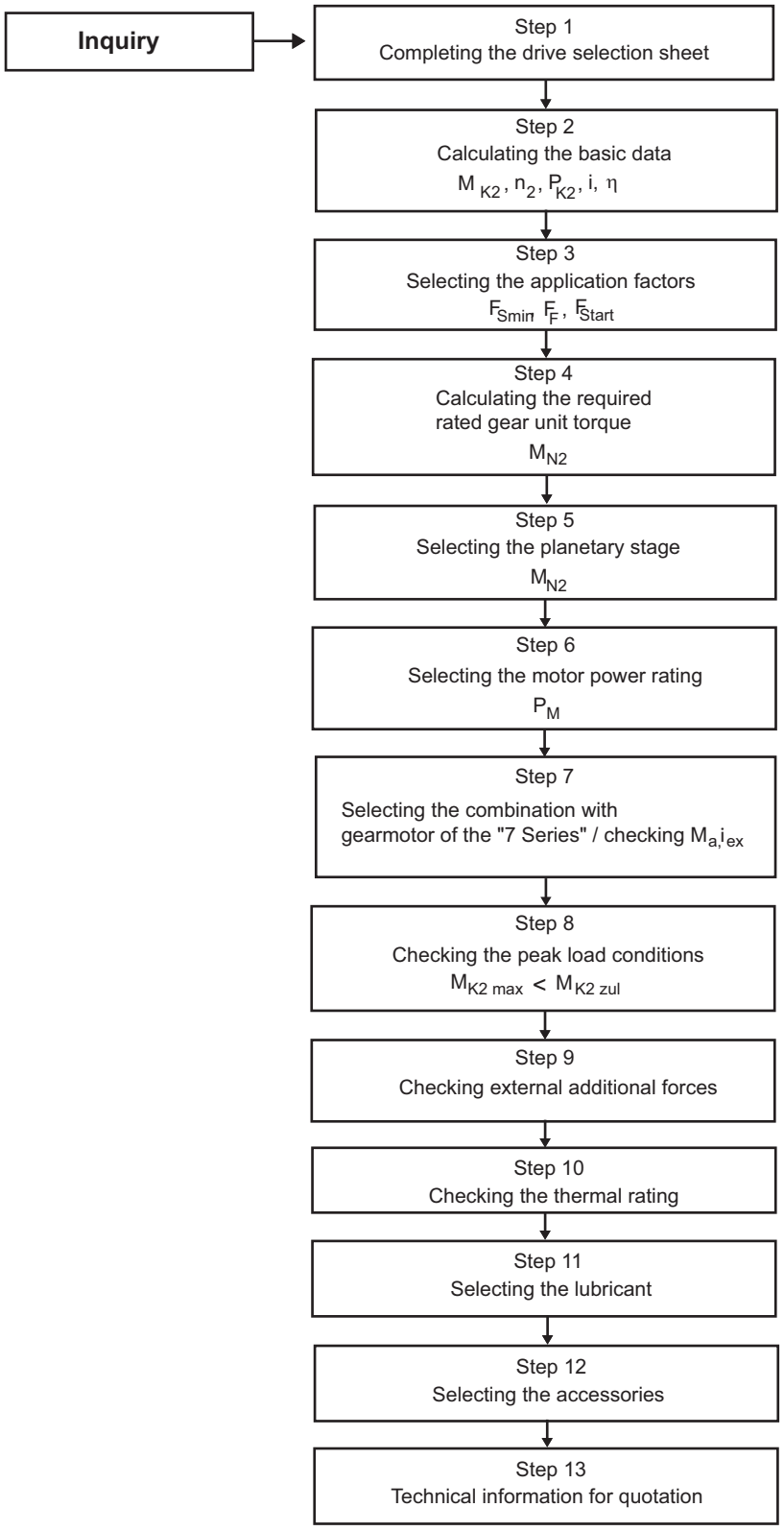
In addition to the information in this catalog, SEW-EURODRIVE offers extensive documentation covering the entire topic of electrical drive engineering. This is primarily documentation from the "Drive Engineering Practical Implementation" series. You can order the current documentation from SEW-EURODRIVE.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

Drive Engineering – Practical Implementation

The publication "Drive Engineering Practical Implementation – Drive Selection with SEW-EURODRIVE Gearmotors" features extensive information on characteristics, differentiating features and application areas of SEW 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

The following flow diagram illustrates the project planning procedure for a planetary gear unit.



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Step 1: Drive selection data:

1.0 Machine on LSS (normally the driven machine)

Legend: [...] = 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 ($v \geq 3$ m/s)

1.6 Ambient conditions [X]

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

2.0 Load characteristics

2.1 Required speed n_2 [1/min] [...]

normal	min.	max.

2.2 Input power P_{K1} [kW] [...]

normal	min.	max.

2.3 Output torque M_{K2} [kNm] [...]

normal	min.	max.

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

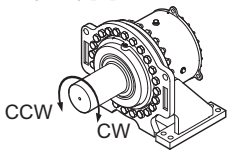
per hour

2.5 Number of starts per hour [...]

starts

2.6 Rotation direction under load (LSS) [X]

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



2.7 Operating period/day [X]

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

2.8 Backstop required in gear unit [X]

- ☐ No
- ☐ Yes

2.9 Exact load cycle attached [X]

- ☐ No
- ☐ Yes

3.0 Machine on HSS (normally the driving 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 [kW] [...]

normal	min.	max.

3.4 Motor torque M_M [kNm] [...]

normal	min.	max.

3.5 Input speed n_1 [1/min] [...]

normal	min.	max.

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

- ☐ IEC
- ☐ NEMA

Motor size (IEC- or NEMA code):

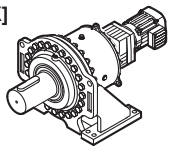
3.7 Mounting of motor [X] [...]

- ☐ B3
- ☐ B5
- ☐ V1
- ☐ other:

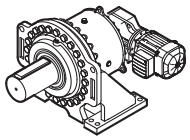
4.0 Gear unit requirements

4.1 Gear Unit Type [X]

☐ Inline P.. RF..



☐ Right-Angle P..KF..

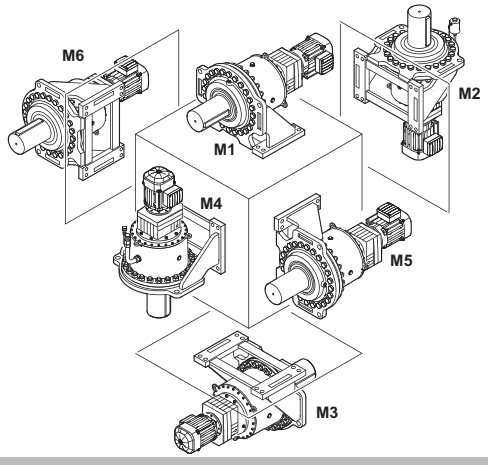


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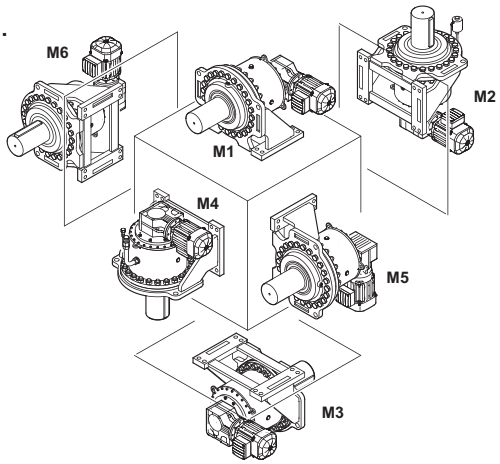
4.2 Mounting position [X]

- ☐ M1
- ☐ M2
- ☐ M3
- ☐ M4
- ☐ M5
- ☐ M6

P..RF..

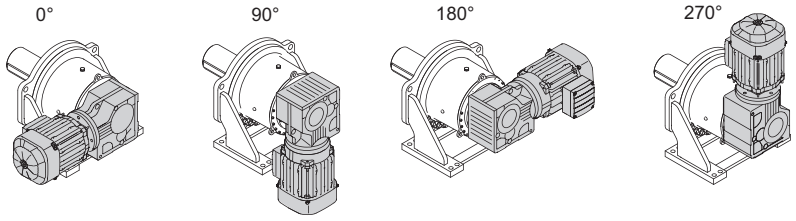


P..KF..



4.3 Mounting positions for primary stage RF/KF gearmotors [X]

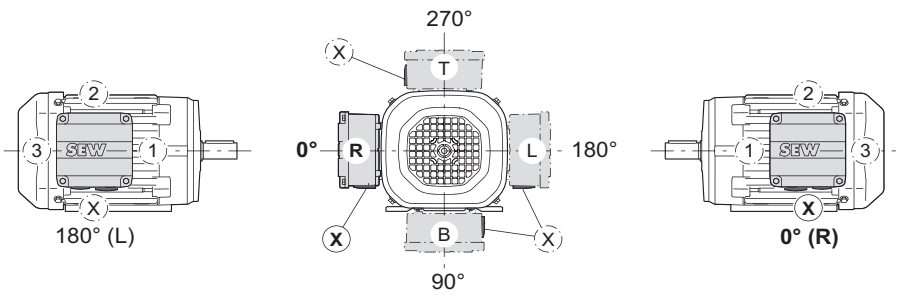
- ☐ 0°
- ☐ 90°
- ☐ 180°
- ☐ 270°



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 Service factor requirements $F_{S\ min.}$ [X] [...]

☐ On motor power P_M/ motor torque M_M

☐ On operating power at LSS P_{K2} / operating torque at LSS M_{K2}

4.7 Required bearing 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 coupling (claw or pin type)

☐ Flexible coupling

☐ Rigid flange coupling

☐ Barrel coupling

☐ Chain sprocket

☐ Pinion

☐ Hollow shaft - torque arm

☐ Hollow shaft - foot-mounted

☐ Hollow shaft - flange-mounted

☐ Other

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

LSS design (if solid shaft)

☐ Solid shaft with key

☐ Solid shaft without keyway

☐ Solid shaft with spline DIN 5480

☐ Other

LSS connection (if hollow shaft)

☐ Hollow shaft with keyway

☐ Hollow shaft for shrink disk connection, shrink disk included

☐ Hollow shaft with spline DIN 5480

☐ Other

4.11 HSS connection to motor [X]

☐ Customer installation (foundation base frame)

☐ Motor adapter with elastic coupling

☐ Swing base/base frame

☐ Motor bracket with V-belt drive

☐ Motor scoop

☐ Other, see sketch

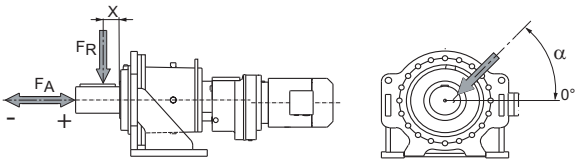
4.12 Machine shaft bearing

☐ 2 bearings, gear unit only transmits torque

☐ 1 bearing opposite to gear unit, gear unit acts as bearing support

☐ 1 bearing next to gear unit, gear unit acts as bearing support

4.13 Loads on LSS [X] [...]



	normal	min.	max.
Axial load F_{A2} [N]			
Radial load F_{R2} [N]			
Distance from shaft shoulderX [mm]			

Application angle of radial load α [°]

or rotating ☐

4.15 Electrical supply [X] [...]

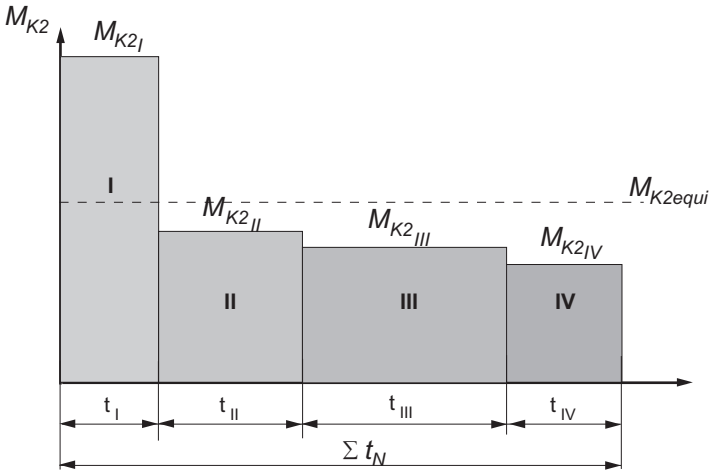
	AC 3-phase	AC 1-phase	DC		
Line voltage V_{line}	☐	☐	☐	V	HZ
Auxiliary voltage V_{aux}	☐	☐	☐	V	HZ

Degree of protection IP

Explosions protection required ☐ Yes ☐ No

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Step 2: Calculating the basic data – M_{K2}, n_2, i, η

Constant torque	$M_{K2} = \frac{P_{K1} \times 9550 \times \eta}{n_2}$ [Nm] Comment: If P_{K1} is not known -> $P_{K1} = P_M$ M_{K2} = Required output torque [Nm] P_{K1} = Required operating power on HSS [kW] n_2 = Output speed (LSS) [rpm]
Equivalent torque with load spectrum and constant speed n_2	$M_{K2equiv} = \sqrt[6.6]{(M_{K2_I})^{6.6} \times \frac{t_I}{\Sigma t_N} + (M_{K2_{II}})^{6.6} \times \frac{t_{II}}{\Sigma t_N} + ... (M_{K2_n})^{6.6} \times \frac{t_n}{\Sigma t_N}}$ The following figure shows a load example:  M_{K2} = Operating torque on LSS [Nm] $\frac{t_I}{\Sigma t_N}$ .... $\frac{t_I}{\Sigma t_N}$ = Time slice of the load I, II,...n = Types of load
Gear ratio	$i = \frac{n_1}{n_2}$ n_1 = Input speed (HSS) rpm n_2 = Output speed (LSS) rpm
Efficiency η	η = f (i; 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 reference value of 98% is used.

Step 3: Selecting the application factors

Application-specific service factor	$F_{S\ min}$ see page 45
Peak load factor	F_F see page 47
Startup factor	F_{Start} see page 47

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

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

Recommended values with reference to

- field of application
- type of driven machine
- operating time/day

are given in the following table.

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

	**STOP**
	In the event of deviations from the typical load behavior, please consult SEW-EURODRIVE.

Field of application	Type of application (Driven machine)	Application-specific service factor $F_{S\ min}$ operating period / day		
		< 3 h	3-10 h	> 10 h
Waste water treatment	Impeller areator	-	1.80	2.00
	Thickeners	1.15	1.25	1.50
	Vacuum filters	1.15	1.30	1.50
	Collectors	1.15	1.25	1.50
	Screw pump	-	1.30	1.50
	Brush areators	-	-	2.00
Mining	Crushers	1.55	1.75	2.00
	Screens and shakers	1.55	1.75	2.00
	Slewing drives	-	1.55	1.80
	Bucket wheel excavators	1)	1)	1)
Energy	Frequency inverter	-	1.80	2.00
	Water wheels (low speed)	-	-	1.70
	Water turbines	-	-	1)
Conveyors	Bucket conveyors	-	1.40	1.50
	Vertical conveyors - other	-	1.50	1.80
	Belt conveyors ≤ 100 kW	1.15	1.25	1.40
	Belt conveyors > 100 kW	1.15	1.30	1.50
	Apron feeders	-	1.25	1.50
	Screw feeders	1.15	1.25	1.50
	Shakers, screens	1.55	1.75	2.00
	Escalators	1.25	1.25	1.50
	Passenger lifts	1)	1)	1)
Rubber and plastic industry	Extruders (plastic)	-	1.40	1.60
	Extruders (rubber)	-	1.50	1.80
	Rubber rollers (two in a row)	1.55	1.75	2.00
	Rubber rollers (three in a row)	-	1.50	1.75
	Warming mills	1.35	1.50	1.75
	Calenders	-	1.65	1.65
	Mills	1.55	1.75	2.00
	Mixing mills	1)	1)	1)
	Slab rollers	1.55	1.75	2.00
	Refiners	1.55	1.75	2.00
	Tire machines	1)	1)	1)
Timber industry	Timber industry	1)	1)	1)
Cranes systems	Cranes and hoists	2)	2)	2)
Food industry	Crushers and mills	-	-	1.75
	Beet slicers	-	1.25	1.50
	Drying drums	-	1.25	1.50
Metal production and processing	Winders	-	1.60	1.75
	Slitters	1.55	1.75	2.00
	Table conveyors, individual drives	1)	1)	1)
	Table conveyors, group drives	1)	1)	1)
	Table conveyors, reciprocating	1)	1)	1)
	Wire drawing machines	1.35	1.50	1.75
	Rollers	1)	1)	1)

Field of application	Type of application (Driven machine)	Application-specific service factor $F_{S\ min}$ operating period / day		
		< 3 h	3-10 h	> 10 h
Mills and drums	Cooling and drying drums	-	1.50	1.60
	Rotary kilns	-	-	2.00
	Ball mills	-	-	2.00
	Coal mills	-	1.50	1.75
Pulp and paper industry	Debarking drums and machines	1.55	1.80	-
	Rolls (pick-up, wire drive, wire suction)	-	1.80	2.00
	Drying cylinders (anti-friction bearings)	-	1.80	2.00
	Calenders (anti-friction bearings)	-	1.80	2.00
	Filters (pressure and vacuum)	-	1.80	2.00
	Beaters and chippers	1.55	1.75	2.00
	Jordan mills	-	1.50	1.75
	Presses (bark, felt, glue, suction)	-	-	1.75
	Reels	-	-	1.75
	Pulpers	1)	1)	1)
	Washer filters	-	-	1.50
	Yankee cylinders (dryers)	1)	1)	1)
Pump	Centrifugal pumps	1.15	1.35	1.45
	Reciprocating pumps (single-cylinder)	1.35	1.50	1.80
	Reciprocating pumps (multi-cylinder)	1.20	1.40	1.50
	Screw pumps	-	1.25	1.50
	Rotary pumps (gear type, vane)	-	-	1.25
Agitators and mixers	Agitators for liquids	1.00	1.25	1.50
	Agitators for liquids (variable density)	1.20	1.50	1.65
	Agitators for solids (non-uniform material)	1.40	1.60	1.70
	Agitators for solids (uniform material)	-	1.35	1.40
	Concrete mixers	-	1.50	1.50
Cableways	Material ropeways	-	1.40	1.50
	Aerial tramways		1)	1)
	Surface lifts	1)	1)	1)
	Continuous aerial tramways	1)	1)	1)
	Funicular railways	1)	1)	1)
Fans	Heat exchangers	1.50	1.50	1.50
	Dry cooling towers	-	-	2.00
	Wet cooling towers	2.00	2.00	2.00
	Blowers (axial and radial)	1.50	1.50	1.50
Compressors	Reciprocating compressors	-	1.80	1.90
	Radial compressors	-	1.40	1.50
	Screw-type compressors	-	1.50	1.75

1) Consult SEW-EURODRIVE

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

Peak load factor - F_F

The peak load factor F_F takes considers the overload capacity of the gearing and the rotating parts.

Planetary gear unit type/size	Peak factor F_F					
	Frequency of peak load per hour					
	1...5	6...20	21...40	41...80	81...160	> 160
Output shaft as solid shaft P002...P082	1	1.2	1.3	1.5	1.75	2.0
Hollow shaft with shrink disk connection P002	1.25	1.25	1.3	1.5	1.75	2.0
Hollow shaft with shrink disk connection P012...P082	1.1	1.2	1.3	1.5	1.75	2.0

Start factor - F_{Start}

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

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

1) Dependent on setting

Step 4: Calculating 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 [Nm]
M_{K2} = Operating torque at LSS [Nm]
$F_{S\,min}$ = Application-specific service factor

Reversing direction of load - constant torque:

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

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

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

The selection is based on M_{N2} according to the table.

Size	M_{N2} [Nm]
P002	24830
P012	36810
P022	51190
P032	69620
P042	100170
P052	124060
P062	185660
P072	245660
P082	359400

Step 6: Selecting the nominal motor power P_M

$$P_M \geq P_{K1} = \frac{P_{K2}}{\eta} \; [kW]$$

P_M = Nominal motor power [kW]
P_{K1} = Operating power on HSS [kW]
P_{K2} = Operating power on LSS [kW]
η = Efficiency

Step 7: Selecting the combination with gearmotor

Exact gear unit reduction ratio i_{ex}

Check M_a

[1]

P_M [kW]	n_2 [min^{-1}]	M_a [Nm]	i_{ex}	F_{Ra} [N]	M_{N2} [Nm]					m [kg]
0.75	**0.44**	16200	3197	124000	24830					
	0.46	15300	3018	124000	24830					
	0.54	13000	2570	124000	24830	**P**	**002RF77**	**DRS**	**80S4**	285
	0.62	11400	2254	124000	24830	**PF**	**002RF77**	**DRS**	**80S4**	230
	0.69	10300	2035	124000	24830	**PH**	**002RF77**	**DRS**	**80S4**	290
	0.78	9070	1790	124000	24830	**PHF**	**002RF77**	**DRS**	**80S4**	230
	0.83	8560	1691	124000	24830					
	0.97	7290	1439	124000	24830					
	[2]	[3]	[2]							

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[1] see P_M and planetary stage
[2] see Gearmotor selection / n_2 / gear unit ratio i_{ex}
[3] see $M_a > M_{K2}$

Step 8: Checking the peak load conditions – $M_{K2\ zul}$; M_{K2max}

Permitted peak output torque $M_{K2\ zul}$:

$$M_{K2\ zul} = \frac{2 \times M_{N2}}{F_F} \quad [kNm]$$

$M_{K2\ zul}$ = Permitted peak output torque [Nm]
M_{N2} = Nominal gear unit torque [Nm]
F_F = Peak load factor

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

$$M_{K2\ max} = M_a \times F_{Start}^{*} \quad [Nm]$$

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

* If F_{start} is not specified, take account of the start factors according to the table on page 47.

Check the gear unit selection:

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

Step 9: Check the 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 life
- Direction of the axial load (from or towards gear unit)
- Application angle of the radial force (rotating or at a specific position)
- Point of force application
- Ratio between radial and axial force
- Gear unit mounting

Determining overhung load

An important factor for determining the resulting overhung load is the type of transmission element mounted to the shaft end. The following transmission element factors f_Z have to be considered for various transmission elements.

Transmission element	Transmission element factor f_Z	Comments
Gears	1.15	< 17 teeth
Chain sprockets	1.40	< 13 teeth
Chain sprockets	1.25	< 20 teeth
Narrow V-belt pulleys	1.75	Influence of the pre-tensioning force
Flat-belt pulleys	2.50	Influence of the pre-tensioning force
Toothed belt pulleys	1.50	Influence of the pre-tensioning force

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

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

F_R = Overhung load [N]

M_d = Torque [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_{H10} (according to ISO 281).

For special operating conditions, the permitted overhung loads can be determined with regard to the modified service life L_{na} on request.

Permitted overhung loads on the output

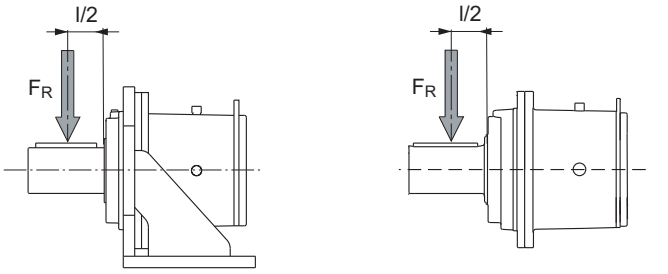
The permitted overhung loads $F_{R\,zul}$ for solid shaft gear units can be calculated exactly. The force values relate to the force application in the middle of the shaft end for solid shafts and to the gear unit flange contact point for hollow shafts. In planetary gear units, the force application 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 forces 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 $F_{R\ zul} \geq F_R$.



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Permitted overhung loads for solid shafts:

The values apply to force application to the middle of the shaft end and an output speed of n = 10 rpm.

P.. series	002	012	022	032	042	052	062	072	082
$F_{R\ zul}$ [N]	96000	134000	183000	194000	249000	280000	364000	403000	526000

Calculating $F_{R\ zul}$ [N] for different output speeds n (rpm)*

$$F_{R\ zul} = F_{R\ zul} \times \left(\frac{10}{n^*}\right)^{\left(\frac{1}{3.33}\right)} \leq F_{R\ max} \quad [N]$$

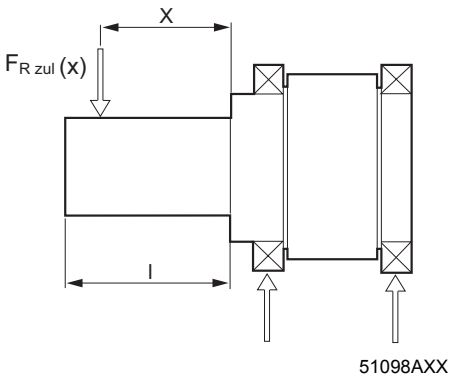
$F_{R\ zul}^*$ = Permitted overhung load [N] for different output speed
$F_{R\ zul}$ = Permitted overhung load [N]
$F_{R\ max}$ = Maximum overhung load [N] (see following table)
n* = Different output speed [rpm]

P.. series	002	012	022	032	042	052	062	072	082
$F_{R\ max}$ [N]	124000	156000	197000	252000	323000	364000	473000	523000	683000

Comment

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

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



Size	$F_{R\ zul}$ [N]	a	b	l
P002	96000	173	163	200
P012	134000	188.5	176	220
P022	183000	211	179	220
P032	194000	231.5	194	250
P042	249000	268	229	300
P052	280000	283	260	350
P062	364000	308	287	400
P072	403000	334	291	400
P082	526000	376	321	450

Calculating the off-center force application:

$$F_{R\ zul}\ (X) = F_{R\ zul} \times \frac{(a + b)}{(a + b^*)} \leq F_{R\ max}\ [N]$$

b* = (b - l/2) + x [mm]

$F_{R\ zul}(x)$ = Permitted overhung load [N] of the off-center force application

$F_{R\ zul}$ = Permitted overhung load [N]

$F_{R\ max}$ = Maximum overhung load [N]

Comment

$F_R \leq F_{R\ zul}\ (x) \leq F_{R\ max}$

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

Permitted axial force

The permitted axial force is 20% of the effective radial force.

STOP

- Please consult SEW-EURODRIVE if you use the PH.. variant subject to overhung loads, or the PHF.. variant with flange mounting.
- Please contact SEW-EURODRIVE if a purely axial force is applied.

Step 10: Checking the thermal rating/heating

STOP	**STOP**
	For the following operating conditions: • High ambient temperatures (over 45 °C) • Vertical mounting position and/or motor speed over 1800 rpm please contact SEW-EURODRIVE.

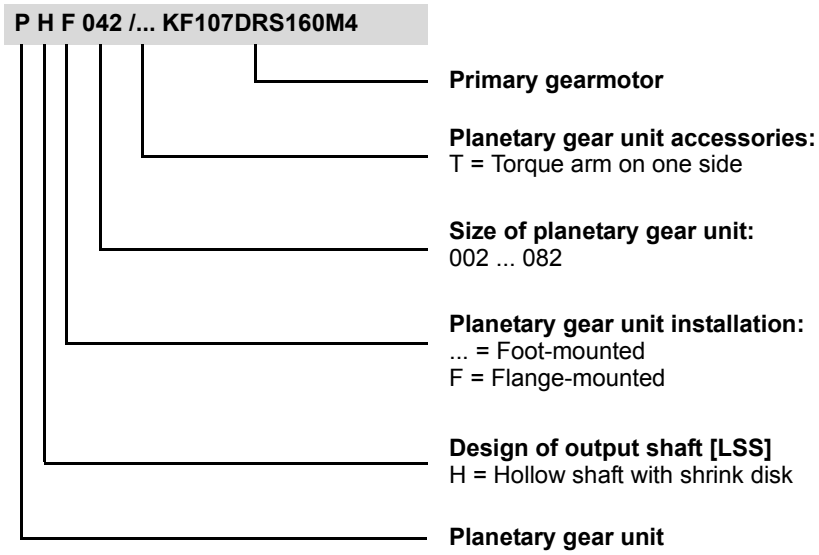
Step 11: Selecting the lubricant

Lubricants can be chosen according to the lubricant table (see section 6.2).

Output speeds $n_2 < 1.0\ min^{-1}$:

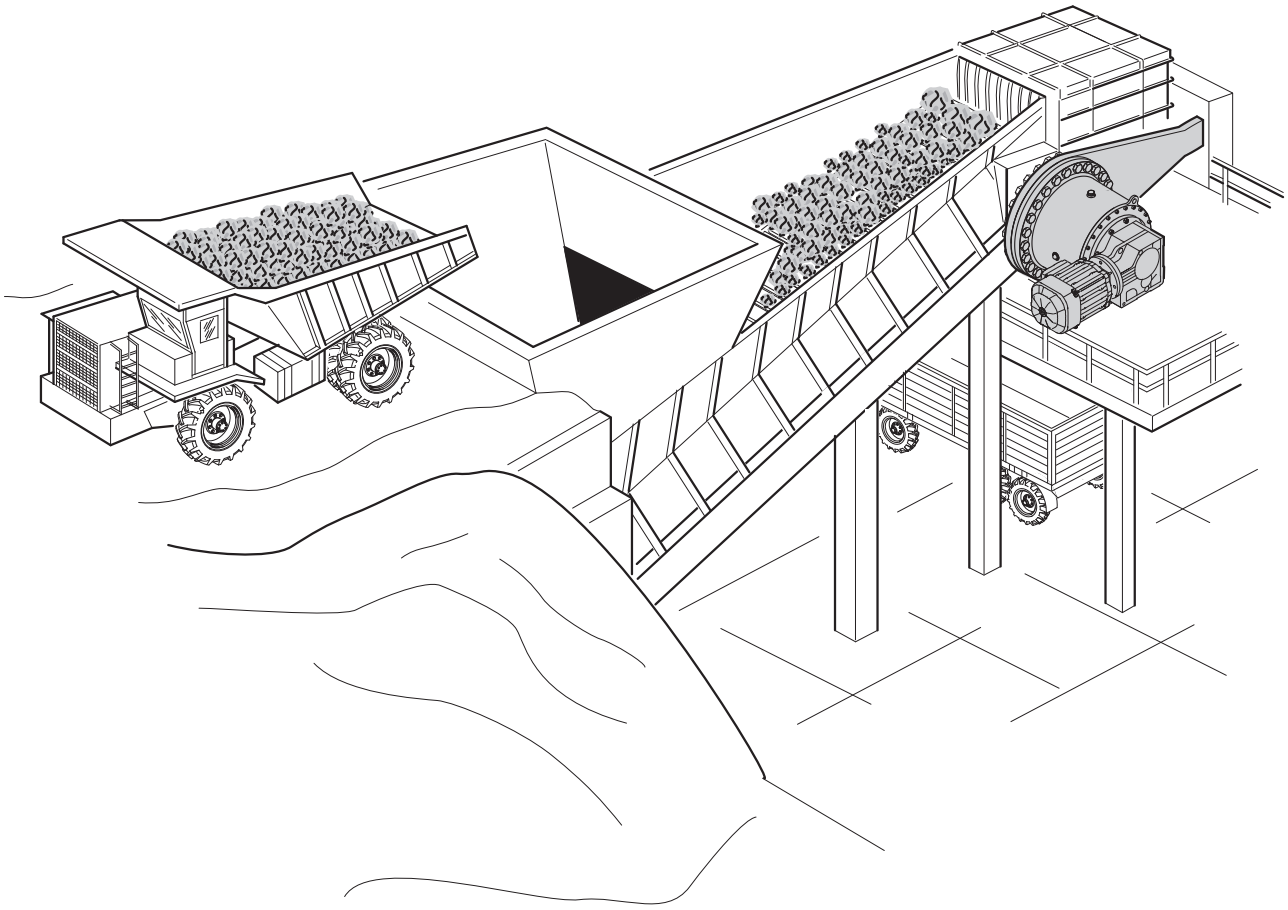
We recommend using MOBIL SHC XMP 460 synthetic lubricant in conjunction with Viton oil seals to ensure lubricating properties at low output speeds.

Step 12: Technical specification



5.3 Dimensioning example

Step 1: Drive selection data



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- Application: Apron feeders
- Bevel-helical planetary gear unit
- Hollow shaft with shrink disk and torque arm
- Required output speed n_2 = 1.5 rpm:
- Required output power at LSS P_{K2} = 10 kW
- Motor 4-pole/50 Hz in star/delta connection
- Operating time: 24 hours a day
- Cyclic duration factor: 100 % cdf, 10 starts per hour
- Outdoors, dusty environment
- Ambient temperature = 0 °C...40 °C
- Installation altitude H = 10 m
- No axial or radial forces acting on the output shaft

Step 2: Calculating the basic data M_{K2}, i, η

Output torque on LSS:

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

M_{K2} = Operating torque at LSS [Nm]
P_{K2} = Operating power on LSS [kW]
n_2 = Output speed (LSS) [rpm]

$$M_{K2} = \frac{10 \times 9550}{1.5} = 63667 \text{ Nm}$$

Required reduction ratio:

$$i = \frac{n_1}{n_2} = \frac{1440}{1.5} = 960$$

n_1 = Input speed (HSS) [rpm]
n_2 = Output speed (LSS) [rpm]

Efficiency:

η = 0.98 (see page 45)

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 h → $F_{S\ min}$ = 1.5 (page 45)

Peak load factor F_F

Hollow shaft with shrink disk

Load per hour = 1...5 → F_F = 1.2 (page 47)

Start factor F_{start}

Motor in star/delta → F_{start} = 1.3 (table on page 47)

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 x 1.5 = 95500 Nm

M_{N2} = Nominal torque [Nm]
M_{k2} = Operating torque at LSS [Nm]
$F_{S\ min}$ = Application-specific service factor

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

PHF 042 → M_{N2} = 100170 [Nm]

Size	M_{N2} [Nm]
P002	24830
P012	36810
P022	51190
P032	69620
P042	100170
P052	124060
P062	185660
P072	245660
P082	359400

Step 6: Selecting the motor power P_M

$$P_M \geq P_{K1} = \frac{P_{k2}}{\eta} = \frac{10}{0.98} = 10.2 \text{ [kW]}$$

P_M = Nominal motor power [kW]
P_{K2} = Operating power on LSS [kW]

Motor selection → P_M = 11 [kW]

Step 7: Selecting the combination with gearmotor

P_M [kW]	n_2 [min^{-1}]	M_a [Nm]	i_{ex}	F_{Ra} [N]	M_{N2} [Nm]					m [kg]
11.0	**1.2**	86100	1209	308900	100170	**P**	**042KF97**	**DRS**	**160M4**	1050
	1.5	69100	971	322500	100170	**PF**	**042KF97**	**DRS**	**160M4**	860
						PH	**042KF97**	**DRS**	**160M4**	1060
[1]	[2]	[3]	[4]				[1]			

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[1+2] Selecting a combination: PHF042 KF97 DRS160M4

[3] Checking the output torque: M_a = 69100 Nm > M_{K2} = 56026 Nm → ok

[4] Exact gear ratio: i_{ex} = 971 (required = 960 → ok)

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

Permitted peak output torque $M_{K2\ zul}$:

$$M_{K2\ zul} = \frac{2 \times M_{N2}}{F_F} = \frac{2 \times 100170}{1.2} = 166950\ \text{Nm}$$

$M_{K2\ zul}$ = Permitted peak output torque [Nm]
M_{N2} = Nominal gear unit torque [Nm]
F_F = Peak load factor

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

$$M_{K2\ max} = M_a \times F_{Start} = 69100 \times 1.3\ [\text{Nm}] = 89830\ [\text{Nm}]$$

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

$M_{K2\ max} < M_{K2\ zul} \rightarrow$ OK

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

Step 9: Check the external additional forces

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

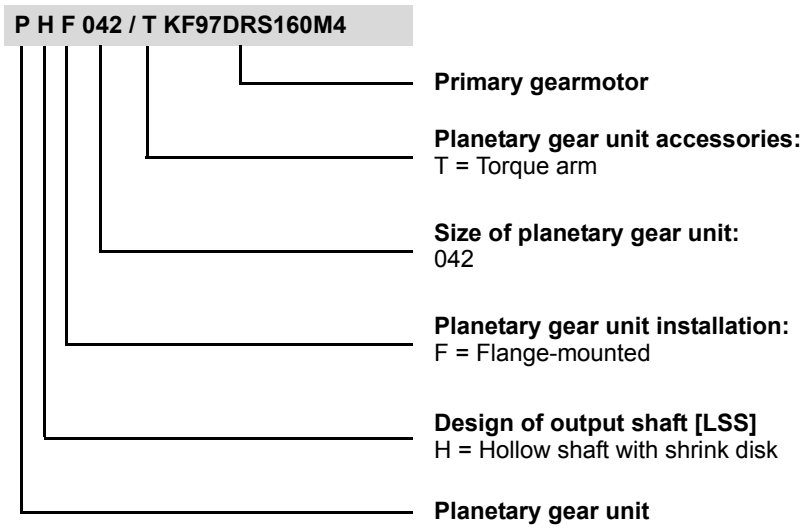
Step 10: Checking the thermal rating/heating

The ambient temperature is below 45 °C
Horizontal mounting position
→ Thermal limit rating OK

Step 11: Selecting the lubricant:

As n_2 = 1.5 rpm (n_2 > 1.0 rpm), you can choose the lubricants according to the lubricant table (see section 6.2.4).

Step 12: Technical specification:



With labyrinth seal on the output shaft

6 Lubricants

6.1 Guidelines for lubricant selection

Unless a special arrangement is made, SEW-EURODRIVE delivers the planetary gear unit without an oil fill and the primary gear unit with an oil fill.

	**STOP**
	• The oil viscosity and type (mineral/synthetic) that are 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 greases and oils used.

6.2 Lubricant tables

6.2.1 General information

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

6.2.2 Key to the lubricant table

Abbreviations, meaning of shading and notes:

CLP = Mineral oil

CLP HC = Synthetic polyalphaolefin

= Synthetic lubricant (= synthetic-based anti-friction bearing grease)

= Mineral lubricant (= mineral-based anti-friction bearing grease)



1) = Ambient temperature

2) Pay attention to critical starting behavior at low temperatures



Lubricant for the food industry (food grade oil)



Biodegradable oil (lubricant for agriculture, forestry, and fisheries)

6.2.3 Notes on the lubricant table



STOP

- The temperature ranges are to be considered guide values. The decisive factor is the viscosity information on the nameplate.
- Contact SEW-EURODRIVE if you operate the unit under extreme conditions, such as cold, heat, or there are changes to the operating conditions since project planning.
- Adhere to the oil information on the nameplate of the primary gear unit.

  If there is no oil information on the nameplate of the primary gear unit, you can use the oils specified in the operating instructions.

6.2.4 Lubricant table

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| | | |

6.3 Lubricant fill quantity

The specified fill quantities are **recommended values**. The precise values vary depending on the number of stages and gear ratios. Check the oil level in a planetary gear unit at the oil sight glass or oil dipstick, and in a primary gear unit at the oil level plug.

STOP	**STOP**
	• The oil chambers of both gear units are separate. • Planetary gear units are supplied without lubricant. • RF.. and KF.. gear units are filled with lubricant at the factory depending on the mounting position. • In case of a pivoted mounting position, refer to the oil fill quantity specified on the nameplate.

The following tables show recommended values for lubricant fill quantities depending on the mounting position:

6.3.1 Planetary gear unit

Size	Fill quantity in liters					
	M1	M2	M3	M4	M5	M6
P002	4	7	4	7	4	4
P012	6	11	6	11	6	6
P022	8	14	8	14	8	8
P032	11	20	11	20	11	11
P042	15	29	15	29	15	15
P052	20	38	20	38	20	20
P062	25	48	25	48	25	25
P072	30	58	30	58	30	30
P082	40	83	40	83	40	40

6.3.2 Primary helical (RF-) gear units

	Fill quantity in liters					
	M1	M2	M3	M4	M5	M6
Size	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

Key	
M1 / M2 / M3 / M4 / M5 / M6	= Mounting position of planetary gear unit
0° / 90° / 180° / 270°	= Mounting position of primary helical gear unit

6.3.3 Primary bevel (KF-) gear units

The lubricant fill quantity depends on the mounting position of the planetary gear unit and the mounting position of the KF primary gearmotor.

Mounting position of the KF primary gearmotor **0°, 90°, 180°, 270°** see section "Mounting positions".

	Fill quantity in liters											
	M1				M2				M3			
Size	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	7.0	14.7	7.0	21.5	16.5	16.5	16.5	16.5	7.0	21.5	7.0	14.7
KF107	10.0	21.8	10.0	35.1	25.2	25.2	25.2	25.2	10.0	35.1	10.0	21.8
KF127	21.0	41.5	21.0	55.0	41.0	41.0	41.0	41.0	21.0	55.0	21.0	41.5
KF157	31.0	66	31.0	92.0	62.0	62.0	62.0	62.0	31.0	92.0	31.0	66.0
	Fill quantity in liters											
	M4				M5				M6			
Size	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	7.0	21.5	7.0	14.7	7.0
KF107	25.2	25.2	25.2	25.2	21.8	10.0	35.1	10.0	35.1	10.0	21.8	10.0
KF127	41.0	41.0	41.0	41.0	41.5	21.0	55.0	21.0	55.0	21.0	41.5	21.0
KF157	62.0	62.0	62.0	62.0	66.0	31.0	92.0	31.0	92.0	31.0	66.0	31.0

Key	
M1 / M2 / M3 / M4 / M5 / M6	= Mounting position of planetary gear unit
0° / 90° / 180° / 270°	= Mounting position of primary bevel gear unit
A / B	= Position of the mounting flange at the primary bevel gear unit

6.4 Sealing greases/rolling bearing greases

The following overview shows the greases recommended by SEW-EURODRIVE.

They are recommended for operating temperatures from –20 °C to 100 °C.

Vendor	Grease
ARAL	ARALUB HLP 2
BP	Energrease LS-EPS
Castrol	Spheerol EPL2
Fuchs	Renolit CX TOM 15 OEM
Klüber	Centoplex EP2
Kuwait	Q8 Rembrandt EP2
Mobil	Mobilux EP 2
Shell	Alvania EP2
Texaco	Mulifak EP 2
Total	Multis EP 2

HINWEIS

If operators want to use a grease not listed here, they are responsible for obtaining confirmation from the lubricant manufacturer or supplier that the selected grease is suitable for the intended application and that the properties of the lubricant meet the requirements of the greases listed in our table at the least.

6.5 Comments

6.5.1 Planetary gearmotor with shared oil space (special design)

STOP

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.

6.5.2 Selecting the viscosity when using mineral oil

STOP

If surface temperatures exceed 110 °C, contact SEW-EURODRIVE.

7 Options

The following additional options are available. Please contact SEW-EURODRIVE if you need them.

- ATEX version
- Double-sided torque arm
- Output shaft types
  - Solid shaft design
    - Two keys
    - Smooth shaft (no key)
    - Splined shaft according to DIN 5480
  - Hollow shaft version
    - Splined shaft according to DIN 5480
    - Protective cover for shrink disk
- Output shaft (LSS) sealing system
  - Labyrinth seal

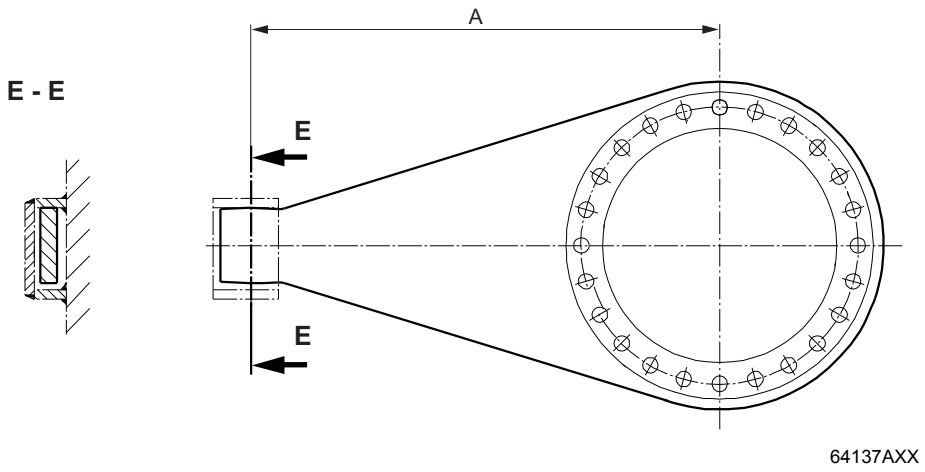
7.1 Torque arm

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 figure shows an example for a welded fixture 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 fixture 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.

	TIP
	See secs. 10.2 and 11.2 for detailed dimensions of the torque arm.

The following figure shows a sample torque arm.



Weights

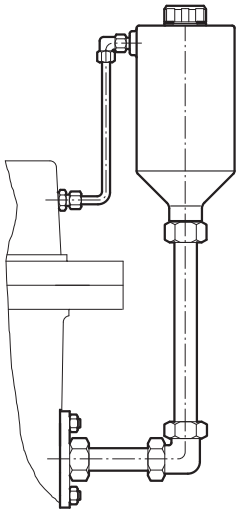
Size	Weight [kg]
P002	25
P012	25
P022	48
P032	58
P042	93
P052	102
P062	183
P072	317
P082	420

7.2 *Oil expansion tank/oil riser pipe*

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.

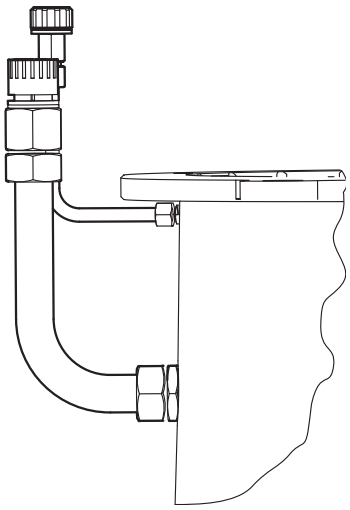
	TIP
	See secs. 10 and 11 for detailed dimensions of the oil expansion tank/oil riser pipe.

7.2.1 Oil expansion tank for mounting position M2



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7.2.2 Oil riser pipe for mounting position M4



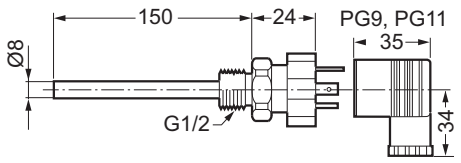
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7.3 PT100 temperature sensor

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

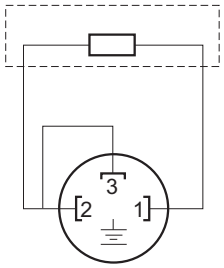
The temperature sensor is located in the gear unit's oil sump. The exact position depends on the gear unit variant.

7.3.1 Dimensions



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7.3.2 Electrical connection



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[1] / [2] Connection resistor element

7.3.3 Technical data

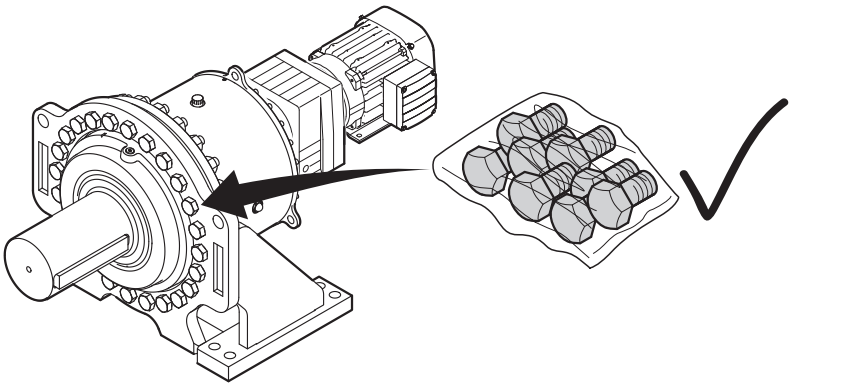
- Design with thermometer pocket and changeable measuring bit
- Sensor tolerance [K] ± (0.3 + 0.005 x T), (corresponds to DIN IEC 751 class B),
  T = oil temperature [°C]
- Plug connector DIN 43650 PG9 (IP65)
- The tightening torque for the retaining screw in the back of the plug connector for electrical connection is 0.25 Nm.

8 Design and Operating Notes

8.1 General notes

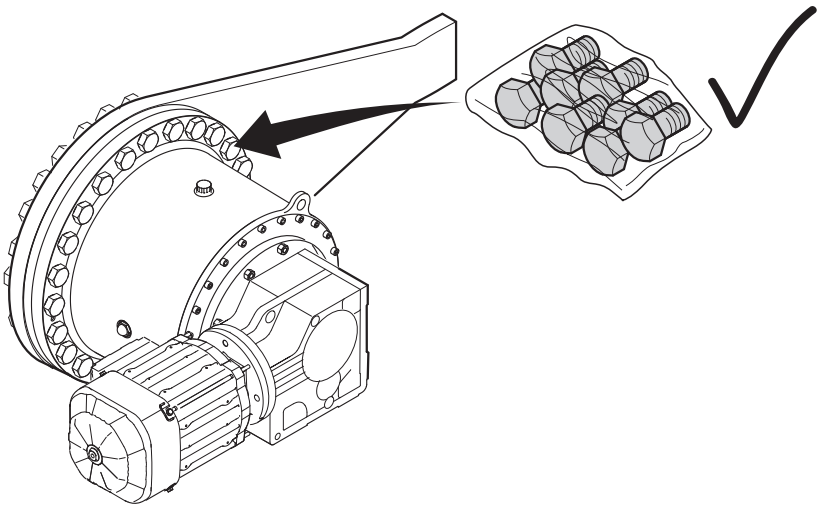
Connection screws are **included** in the scope of delivery of the following gear unit variants:

- Foot-mounted gear units



65987AXX

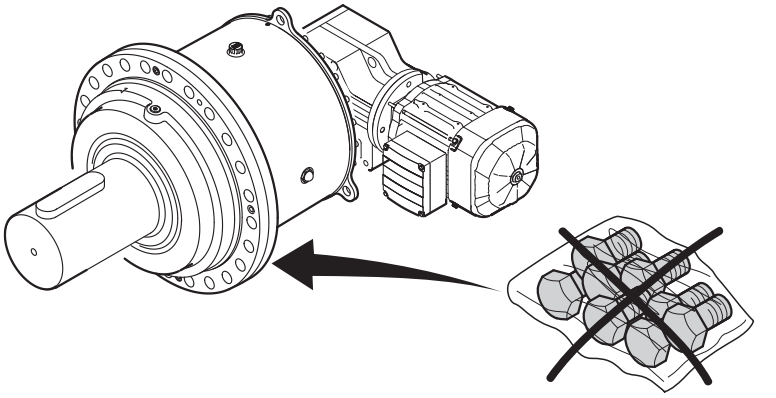
- Gear units with torque arm



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Not included in the scope of delivery:

- Set of wrenches
- Torque wrench
- Mounting device
- Compensation elements (shims, spacing rings)
- Fixing devices for input and output elements
- Lubricant (e.g. NOCO® fluid from SEW-EURODRIVE)
- Aids for assembly/disassembly onto the machine shaft
- Securing components for the gear unit base
- For flange-mounted gear units, no connection screws are supplied..



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8.2 Dimensioning the machine shaft for hollow shaft gear units

The material of the machine shaft as well as the keyed connection should be dimensioned by the customer according to the loads that will occur. The shaft material should have a yield point of at least 320 N/mm².

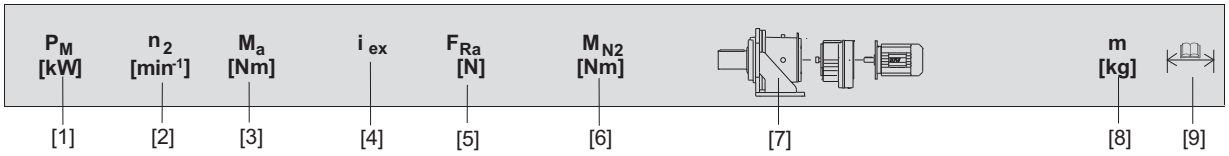
	TIP
	Detailed guidelines regarding the design of the machine shaft are found in the data sheets.

9 Important Information about Tables and Dimension Sheets

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

9.1 Structure of the selection table

The following figure shows the structure of the selection tables in chapters 10.1 and 11.1.



64150AXX

[1] Rated motor power
[2] Output speed
[3] Output torque in relation to motor power
[4] Gear unit ratio
[5] Permitted radial force at LSS center
[6] Nominal gear unit torque
[7] Gear unit type
[8] Weight
[9] Dimension sheet page number

9.2 Notes on 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

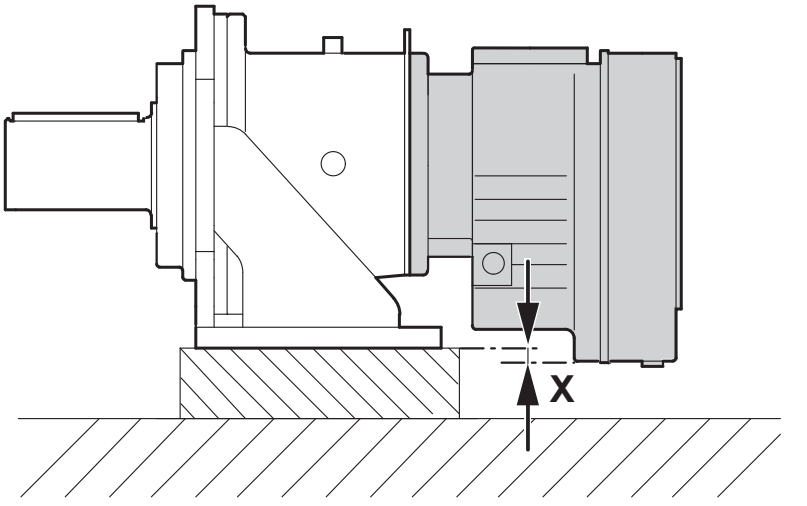
Keys Keys: In accordance with DIN 6885 (domed type A)

9.2.3 Foot-mounted variants

In case of the following combinations of foot-mounted planetary gear units with KF../RF.. primary gear units, the primary gear unit can be lower than the mounting surface. The gear unit must be bolstered by the dimension **X** before mounting.

Size	KF..	X [mm]
P002	97	10
P012	107	32.5
P022	107	2.5

Size	RF..	X [mm]
P022	137	7.5
P032	147	18.5



64765AXX

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 and 11 are guide values. Please contact SEW-EURODRIVE if there is little space available for installing.

9.2.5 Dimensions for motors and planetary gear units

Motor options

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

Special designs

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

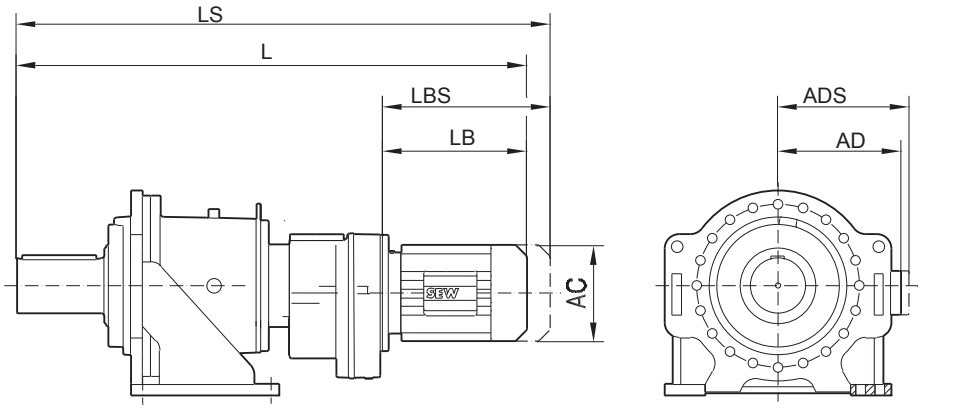
EN 50347

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

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

Dimension designations

The following is an overview of the planetary gearmotor dimension designations:



64238AXX

L = Total length
LS = Total length of planetary gearmotor including brake
LB = Length of motor
LBS = Length of brakemotor
AC = Diameter of motor
AD = Center of motor shaft to top part of terminal box
ADS = Center of brakemotor shaft to top part of terminal box

10 Helical Planetary Gearmotors P.RF..

10.1 Dimension sheet guide

10.1.1 Foot-mounted P.. gear units

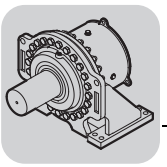
Size	M_{N2} [Nm]	Foot-mounted P.. gear units						
		Dimension sheets						
		RF77	RF87	RF97	RF107	RF137	RF147	RF167
		Page number						
P002	24830	94	96	98	100	-	-	-
P012	36810	102	104	106	108	-	-	-
P022	51190	-	110	112	114	116	-	-
P032	69620	-	-	118	120	122	124	-
P042	100170	-	-	-	126	128	130	-
P052	124060	-	-	-	132	134	136	-
P062	185660	-	-	-	-	138	140	-
P072	245660	-	-	-	-	-	142	144
P082	359400	-	-	-	-	-	146	148

10.1.2 Flange-mounted PF.. gear units

Size	M_{N2} [Nm]	Flange-mounted PF.. gear units						
		Dimension sheets						
		RF77	RF87	RF97	RF107	RF137	RF147	RF167
		Page number						
PF002	24830	95	97	99	101	-	-	-
PF012	36810	103	105	107	109	-	-	-
PF022	51190	-	111	113	115	117	-	-
PF032	69620	-	-	119	121	123	125	-
PF042	100170	-	-	-	127	129	131	-
PF052	124060	-	-	-	133	135	137	-
PF062	185660	-	-	-	-	139	141	-
PF072	245660	-	-	-	-	-	143	145
PF082	359400	-	-	-	-	-	147	149

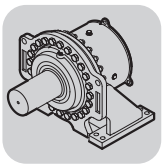
10.1.3 Motor adapter

Motor adapter	Dimension sheets						
	RF77	RF87	RF97	RF107	RF137	RF147	RF167
	Page number						
Adapter for mounting IEC motors P..RF..AM..	150	150	150	151	151	151	151
Adapter for mounting NEMA motors P..RF..AM..	152	152	152	153	153	153	153
Input shaft assembly P..RF..AD..	154	154	154	154	154	154	154
Motor adapter AQA	155	155	156	156	156	156	-

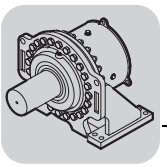


10.2 Selection tables [kW]

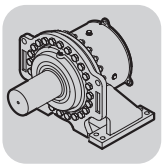
P_M [kW]	n_2 [min^{-1}]	M_a [Nm]	i_{ex}	F_{Ra} [N]	M_{N2} [Nm]					m [kg]	
0.75	**0.34**	20300	4066	156000	36810	**P**	**012RF87**	**DRS**	**80S4**	395	104
	0.38	18300	3663	156000	36810	**PF**	**012RF87**	**DRS**	**80S4**	325	105
	0.44	16100	3214	156000	36810	**PH**	**012RF87**	**DRS**	**80S4**	410	104
	0.49	14200	2847	156000	36810	**PHF**	**012RF87**	**DRS**	**80S4**	340	105
	0.44	16000	3209	156000	31500	**P**	**012RF77**	**DRS**	**80S4**	365	102
	0.46	15100	3030	156000	31500	**PF**	**012RF77**	**DRS**	**80S4**	295	103
						PH	**012RF77**	**DRS**	**80S4**	380	102
						PHF	**012RF77**	**DRS**	**80S4**	310	103
	0.35	20300	4051	123800	24830	**P**	**002RF87**	**DRS**	**80S4**	315	96
	0.38	18200	3649	124000	24830	**PF**	**002RF87**	**DRS**	**80S4**	255	97
						PH	**002RF87**	**DRS**	**80S4**	320	96
						PHF	**002RF87**	**DRS**	**80S4**	260	97
	0.44	16000	3197	124000	24830						
	0.46	15100	3018	124000	24830						
	0.54	12800	2570	124000	24830	**P**	**002RF77**	**DRS**	**80S4**	285	94
	0.62	11300	2254	124000	24830	**PF**	**002RF77**	**DRS**	**80S4**	230	95
	0.69	10200	2035	124000	24830	**PH**	**002RF77**	**DRS**	**80S4**	290	94
	0.78	8970	1790	124000	24830	**PHF**	**002RF77**	**DRS**	**80S4**	230	95
	0.83	8470	1691	124000	24830						
	0.97	7210	1439	124000	24830						
1.1	**0.35**	29600	4066	197000	51190	**P**	**022RF87**	**DRS**	**80M4**	550	110
	0.38	26700	3663	197000	51190	**PF**	**022RF87**	**DRS**	**80M4**	445	111
						PH	**022RF87**	**DRS**	**80M4**	560	110
						PHF	**022RF87**	**DRS**	**80M4**	460	111
	0.35	29600	4066	156000	36810						
	0.38	26700	3663	156000	36810						
	0.44	23400	3214	156000	36810	**P**	**012RF87**	**DRS**	**80M4**	400	104
	0.50	20700	2847	156000	36810	**PF**	**012RF87**	**DRS**	**80M4**	330	105
	0.56	18200	2498	156000	36810	**PH**	**012RF87**	**DRS**	**80M4**	410	104
	0.60	17200	2368	156000	36810	**PHF**	**012RF87**	**DRS**	**80M4**	340	105
	0.68	15100	2072	156000	36810						
	0.62	16500	2263	156000	31500	**P**	**012RF77**	**DRS**	**80M4**	370	102
	0.69	14900	2043	156000	31500	**PF**	**012RF77**	**DRS**	**80M4**	300	103
						PH	**012RF77**	**DRS**	**80M4**	385	102
						PHF	**012RF77**	**DRS**	**80M4**	315	103
	0.44	23300	3201	119800	24830	**P**	**002RF87**	**DRS**	**80M4**	320	96
	0.50	20700	2836	123300	24830	**PF**	**002RF87**	**DRS**	**80M4**	260	97
	0.57	18100	2489	124000	24830	**PH**	**002RF87**	**DRS**	**80M4**	320	96
						PHF	**002RF87**	**DRS**	**80M4**	265	97
	0.63	16400	2254	124000	24830						
	0.69	14800	2035	124000	24830						
	0.79	13000	1790	124000	24830	**P**	**002RF77**	**DRS**	**80M4**	290	94
	0.83	12300	1691	124000	24830	**PF**	**002RF77**	**DRS**	**80M4**	230	95
	0.98	10500	1439	124000	24830	**PH**	**002RF77**	**DRS**	**80M4**	295	94
	1.1	9550	1308	124000	24830	**PHF**	**002RF77**	**DRS**	**80M4**	235	95
	1.2	8270	1133	124000	24830						
	1.4	7200	986	124000	24830						
1.5	**0.34**	40800	4058	197000	51190	**P**	**022RF97**	**DRS**	**90M4**	600	112
	0.38	36500	3628	197000	51190	**PF**	**022RF97**	**DRS**	**90M4**	500	113
						PH	**022RF97**	**DRS**	**90M4**	620	112
						PHF	**022RF97**	**DRS**	**90M4**	520	113
	0.43	32300	3214	197000	51190	**P**	**022RF87**	**DRS**	**90M4**	550	110
	0.49	28600	2847	197000	51190	**PF**	**022RF87**	**DRS**	**90M4**	450	111
	0.56	25100	2498	197000	51190	**PH**	**022RF87**	**DRS**	**90M4**	570	110
						PHF	**022RF87**	**DRS**	**90M4**	465	111
	0.34	40800	4058	156000	36810	**P**	**012RF97**	**DRS**	**90M4**	455	106
						PF	**012RF97**	**DRS**	**90M4**	385	107
						PH	**012RF97**	**DRS**	**90M4**	470	106
						PHF	**012RF97**	**DRS**	**90M4**	400	107



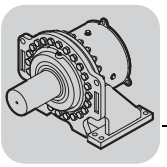
P_M [kW]	n_2 [min^{-1}]	M_a [Nm]	i_{ex}	F_{Ra} [N]	M_{N2} [Nm]					m [kg]	
1.5	**0.38**	36800	3663	156000	36810						
	0.43	32300	3214	156000	36810						
	0.49	28600	2847	156000	36810	**P**	**012RF87**	**DRS**	**90M4**	400	104
	0.56	25100	2498	156000	36810	**PF**	**012RF87**	**DRS**	**90M4**	330	105
	0.59	23800	2368	156000	36810	**PH**	**012RF87**	**DRS**	**90M4**	415	104
	0.67	20800	2072	156000	36810	**PHF**	**012RF87**	**DRS**	**90M4**	345	105
	0.75	18700	1867	156000	36810						
	0.85	16400	1637	156000	36810						
	0.82	17000	1697	156000	31500	**P**	**012RF77**	**DRS**	**90M4**	375	102
	0.97	14500	1445	156000	31500	**PF**	**012RF77**	**DRS**	**90M4**	305	103
						PH	**012RF77**	**DRS**	**90M4**	385	102
						PHF	**012RF77**	**DRS**	**90M4**	315	103
	0.59	23700	2358	119300	24830	**P**	**002RF87**	**DRS**	**90M4**	320	96
	0.68	20700	2064	123200	24830	**PF**	**002RF87**	**DRS**	**90M4**	265	97
						PH	**002RF87**	**DRS**	**90M4**	325	96
						PHF	**002RF87**	**DRS**	**90M4**	270	97
	0.78	18000	1790	124000	24830						
	0.83	17000	1691	124000	24830	**P**	**002RF77**	**DRS**	**90M4**	295	94
	0.97	14400	1439	124000	24830	**PF**	**002RF77**	**DRS**	**90M4**	235	95
	1.1	13100	1308	124000	24830	**PH**	**002RF77**	**DRS**	**90M4**	295	94
	1.2	11400	1133	124000	24830	**PHF**	**002RF77**	**DRS**	**90M4**	240	95
	1.4	9920	986	124000	24830						
	1.5	9190	913	124000	24830	**P**	**002RF77**	**DRS**	**90M4**	290	94
	1.7	8420	837	124000	24830	**PF**	**002RF77**	**DRS**	**90M4**	235	95
	1.9	7390	735	124000	24830	**PH**	**002RF77**	**DRS**	**90M4**	295	94
						PHF	**002RF77**	**DRS**	**90M4**	235	95
2.2	**0.35**	59100	4022	323000	100170	**P**	**042RF107**	**DRS**	**90L4**	980	126
	0.38	53400	3637	323000	100170	**PF**	**042RF107**	**DRS**	**90L4**	790	127
						PH	**042RF107**	**DRS**	**90L4**	990	126
						PHF	**042RF107**	**DRS**	**90L4**	800	127
	0.35	59100	4022	235800	69620	**P**	**032RF107**	**DRS**	**90L4**	740	120
	0.38	53400	3637	241800	69620	**PF**	**032RF107**	**DRS**	**90L4**	610	121
	0.45	45300	3082	249400	69620	**PH**	**032RF107**	**DRS**	**90L4**	760	120
	0.49	42000	2859	252000	69620	**PHF**	**032RF107**	**DRS**	**90L4**	640	121
	0.43	47900	3262	247100	69620	**P**	**032RF97**	**DRS**	**90L4**	690	118
	0.55	37600	2558	252000	69620	**PF**	**032RF97**	**DRS**	**90L4**	560	119
						PH	**032RF97**	**DRS**	**90L4**	710	118
						PHF	**032RF97**	**DRS**	**90L4**	590	119
	0.34	59600	4058	176900	51190						
	0.39	53300	3628	187500	51190						
	0.43	47900	3262	195400	51190	**P**	**022RF97**	**DRS**	**90L4**	610	112
	0.49	41600	2831	197000	51190	**PF**	**022RF97**	**DRS**	**90L4**	500	113
	0.55	37600	2558	197000	51190	**PH**	**022RF97**	**DRS**	**90L4**	620	112
	0.60	34500	2351	197000	51190	**PHF**	**022RF97**	**DRS**	**90L4**	520	113
	0.67	30700	2087	197000	51190						
	0.68	30400	2072	197000	51190	**P**	**022RF87**	**DRS**	**90L4**	550	110
						PF	**022RF87**	**DRS**	**90L4**	450	111
						PH	**022RF87**	**DRS**	**90L4**	570	110
						PHF	**022RF87**	**DRS**	**90L4**	465	111
	0.49	41600	2831	156000	36810	**P**	**012RF97**	**DRS**	**90L4**	455	106
	0.67	30700	2087	156000	36810	**PF**	**012RF97**	**DRS**	**90L4**	385	107
						PH	**012RF97**	**DRS**	**90L4**	470	106
						PHF	**012RF97**	**DRS**	**90L4**	400	107
	0.56	36700	2498	156000	36810						
	0.59	34800	2368	156000	36810						
	0.68	30400	2072	156000	36810	**P**	**012RF87**	**DRS**	**90L4**	405	104
	0.75	27400	1867	156000	36810	**PF**	**012RF87**	**DRS**	**90L4**	335	105
	0.85	24000	1637	156000	36810	**PH**	**012RF87**	**DRS**	**90L4**	420	104
	0.97	21200	1445	156000	36810	**PHF**	**012RF87**	**DRS**	**90L4**	350	105
	1.1	18800	1281	156000	36810						
	1.3	16000	1094	156000	36810						
	1.2	16700	1138	156000	31500	**P**	**012RF77**	**DRS**	**90L4**	375	102
	1.4	14500	990	156000	29900	**PF**	**012RF77**	**DRS**	**90L4**	305	103
						PH	**012RF77**	**DRS**	**90L4**	390	102
						PHF	**012RF77**	**DRS**	**90L4**	320	103



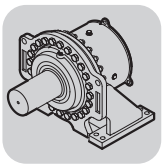
P_M [kW]	n_2 [min^{-1}]	M_a [Nm]	i_{ex}	F_{Ra} [N]	M_{N2} [Nm]					m [kg]	
2.2	**0.86**	23900	1631	118900	24830	**P**	**002RF87**	**DRS**	**90L4**	325	96
	0.97	21100	1440	122700	24830	**PF**	**002RF87**	**DRS**	**90L4**	265	97
	1.1	18700	1276	124000	24830	**PH**	**002RF87**	**DRS**	**90L4**	330	96
						PHF	**002RF87**	**DRS**	**90L4**	270	97
	1.2	16600	1133	124000	24830	**P**	**002RF77**	**DRS**	**90L4**	295	94
	1.4	14500	986	124000	24830	**PF**	**002RF77**	**DRS**	**90L4**	235	95
						PH	**002RF77**	**DRS**	**90L4**	300	94
						PHF	**002RF77**	**DRS**	**90L4**	240	95
	1.5	13400	913	124000	24830						
	1.7	12300	837	124000	24830	**P**	**002RF77**	**DRS**	**90L4**	295	94
	1.9	10800	735	124000	24830	**PF**	**002RF77**	**DRS**	**90L4**	235	95
	2.3	8960	610	124000	24830	**PH**	**002RF77**	**DRS**	**90L4**	300	94
	2.6	8070	549	124000	24830	**PHF**	**002RF77**	**DRS**	**90L4**	240	95
	2.9	7080	482	124000	24830						
3.0	**0.35**	80600	4022	364000	124060	**P**	**052RF107**	**DRS**	**100M4**	1130	132
	0.38	72900	3637	364000	124060	**PF**	**052RF107**	**DRS**	**100M4**	930	133
						PH	**052RF107**	**DRS**	**100M4**	1120	132
						PHF	**052RF107**	**DRS**	**100M4**	920	133
	0.35	80600	4022	313500	100170						
	0.38	72900	3637	319600	100170	**P**	**042RF107**	**DRS**	**100M4**	990	126
	0.45	61800	3082	323000	100170	**PF**	**042RF107**	**DRS**	**100M4**	800	127
	0.49	57300	2859	323000	100170	**PH**	**042RF107**	**DRS**	**100M4**	990	126
	0.54	51600	2573	323000	100170	**PHF**	**042RF107**	**DRS**	**100M4**	800	127
	0.35	80600	4022	207400	69620						
	0.38	72900	3637	218800	69620	**P**	**032RF107**	**DRS**	**100M4**	740	120
	0.45	61800	3082	232800	69620	**PF**	**032RF107**	**DRS**	**100M4**	620	121
	0.49	57300	2859	237800	69620	**PH**	**032RF107**	**DRS**	**100M4**	760	120
	0.60	46700	2331	248200	69620	**PHF**	**032RF107**	**DRS**	**100M4**	640	121
	0.68	41400	2067	252000	69620						
	0.43	65400	3262	228600	69620						
	0.49	56700	2831	238400	69620	**P**	**032RF97**	**DRS**	**100M4**	690	118
	0.55	51300	2558	244000	69620	**PF**	**032RF97**	**DRS**	**100M4**	570	119
	0.60	47100	2351	247800	69620	**PH**	**032RF97**	**DRS**	**100M4**	710	118
	0.67	41800	2087	252000	69620	**PHF**	**032RF97**	**DRS**	**100M4**	590	119
	0.75	37400	1867	252000	69620						
	0.49	56700	2831	181900	51190						
	0.55	51300	2558	190600	51190						
	0.60	47100	2351	196600	51190	**P**	**022RF97**	**DRS**	**100M4**	610	112
	0.67	41800	2087	197000	51190	**PF**	**022RF97**	**DRS**	**100M4**	510	113
	0.75	37400	1867	197000	51190	**PH**	**022RF97**	**DRS**	**100M4**	620	112
	0.83	33600	1678	197000	51190	**PHF**	**022RF97**	**DRS**	**100M4**	520	113
	0.96	29200	1457	197000	51190						
	1.1	26100	1304	197000	51190						
	0.85	32800	1637	197000	51190	**P**	**022RF87**	**DRS**	**100M4**	560	110
	0.97	28900	1445	197000	51190	**PF**	**022RF87**	**DRS**	**100M4**	455	111
						PH	**022RF87**	**DRS**	**100M4**	570	110
						PHF	**022RF87**	**DRS**	**100M4**	470	111
	1.0	27000	1350	197000	51190	**P**	**022RF87**	**DRS**	**100M4**	560	110
						PF	**022RF87**	**DRS**	**100M4**	455	111
						PH	**022RF87**	**DRS**	**100M4**	570	110
						PHF	**022RF87**	**DRS**	**100M4**	470	111
	0.67	41800	2087	156000	36810	**P**	**012RF97**	**DRS**	**100M4**	460	106
	1.3	21700	1082	156000	36810	**PF**	**012RF97**	**DRS**	**100M4**	390	107
						PH	**012RF97**	**DRS**	**100M4**	475	106
						PHF	**012RF97**	**DRS**	**100M4**	405	107
	1.4	19600	982	156000	36810	**P**	**012RF97**	**DRS**	**100M4**	460	106
						PF	**012RF97**	**DRS**	**100M4**	390	107
						PH	**012RF97**	**DRS**	**100M4**	475	106
						PHF	**012RF97**	**DRS**	**100M4**	405	107
	0.75	37400	1867	156000	36810	**P**	**012RF87**	**DRS**	**100M4**	410	104
	0.85	32800	1637	156000	36810	**PF**	**012RF87**	**DRS**	**100M4**	340	105
	0.97	28900	1445	156000	36810	**PH**	**012RF87**	**DRS**	**100M4**	425	104
	1.1	25600	1281	156000	36810	**PHF**	**012RF87**	**DRS**	**100M4**	355	105
	1.1	24700	1232	156000	36810						
	1.3	21900	1092	156000	36810	**P**	**012RF87**	**DRS**	**100M4**	410	104
	1.5	18400	918	156000	36810	**PF**	**012RF87**	**DRS**	**100M4**	340	105
	1.7	16900	844	156000	36810	**PH**	**012RF87**	**DRS**	**100M4**	420	104
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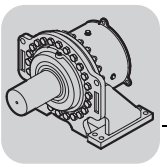
P_M [kW]	n_2 [min^{-1}]	M_a [Nm]	i_{ex}	F_{Ra} [N]	M_{N2} [Nm]					m [kg]	
3.0	**1.3**	21800	1090	121800	24830	**P**	**002RF87**	**DRS**	**100M4**	330	96
						PF	**002RF87**	**DRS**	**100M4**	270	97
						PH	**002RF87**	**DRS**	**100M4**	335	96
						PHF	**002RF87**	**DRS**	**100M4**	275	97
	1.5	18300	914	124000	24830	**P**	**002RF87**	**DRS**	**100M4**	330	96
	2.1	13300	667	124000	24830	**PF**	**002RF87**	**DRS**	**100M4**	270	97
						PH	**002RF87**	**DRS**	**100M4**	330	96
						PHF	**002RF87**	**DRS**	**100M4**	275	97
	1.7	16700	837	124000	24830						
	1.9	14700	735	124000	24830						
	2.3	12200	610	124000	24830	**P**	**002RF77**	**DRS**	**100M4**	300	94
	2.6	11000	549	124000	24830	**PF**	**002RF77**	**DRS**	**100M4**	240	95
	2.9	9660	482	124000	24830	**PH**	**002RF77**	**DRS**	**100M4**	305	94
	3.3	8520	425	124000	24830	**PHF**	**002RF77**	**DRS**	**100M4**	245	95
	3.7	7550	377	124000	24100						
	4.2	6730	336	124000	24100						
4.0	**0.51**	74000	2859	364000	124060	**P**	**052RF107**	**DRS**	**100LC4**	1140	132
	0.56	66600	2573	364000	124060	**PF**	**052RF107**	**DRS**	**100LC4**	940	133
						PH	**052RF107**	**DRS**	**100LC4**	1130	132
						PHF	**052RF107**	**DRS**	**100LC4**	930	133
	0.36	104200	4022	291400	100170	**P**	**042RF107**	**DRS**	**100LC4**	990	126
	0.40	94200	3637	301500	100170	**PF**	**042RF107**	**DRS**	**100LC4**	800	127
	0.70	53500	2067	323000	100170	**PH**	**042RF107**	**DRS**	**100LC4**	1000	126
	0.77	48400	1869	323000	100170	**PHF**	**042RF107**	**DRS**	**100LC4**	810	127
	0.47	79800	3082	208700	69620	**P**	**032RF107**	**DRS**	**100LC4**	750	120
	0.51	74000	2859	217200	69620	**PF**	**032RF107**	**DRS**	**100LC4**	620	121
	0.91	41000	1584	252000	69620	**PH**	**032RF107**	**DRS**	**100LC4**	770	120
						PHF	**032RF107**	**DRS**	**100LC4**	650	121
	0.56	66200	2558	227500	69620	**P**	**032RF97**	**DRS**	**100LC4**	690	118
	0.86	43400	1678	251000	69620	**PF**	**032RF97**	**DRS**	**100LC4**	570	119
	0.99	37700	1457	252000	69620	**PH**	**032RF97**	**DRS**	**100LC4**	720	118
						PHF	**032RF97**	**DRS**	**100LC4**	590	119
	1.2	31200	1207	197000	51190	**P**	**022RF107**	**DRS**	**100LC4**	660	114
						PF	**022RF107**	**DRS**	**100LC4**	560	115
						PH	**022RF107**	**DRS**	**100LC4**	670	114
						PHF	**022RF107**	**DRS**	**100LC4**	570	115
	0.61	60900	2351	174600	51190						
	0.69	54000	2087	186300	51190	**P**	**022RF97**	**DRS**	**100LC4**	610	112
	0.77	48300	1867	194900	51190	**PF**	**022RF97**	**DRS**	**100LC4**	510	113
	0.86	43400	1678	197000	51190	**PH**	**022RF97**	**DRS**	**100LC4**	630	112
	1.1	33700	1304	197000	51190	**PHF**	**022RF97**	**DRS**	**100LC4**	530	113
	1.3	28000	1082	197000	51190						
	1.5	25400	982	197000	51190	**P**	**022RF97**	**DRS**	**100LC4**	610	112
	1.6	22700	878	197000	51190	**PF**	**022RF97**	**DRS**	**100LC4**	510	113
						PH	**022RF97**	**DRS**	**100LC4**	630	112
						PHF	**022RF97**	**DRS**	**100LC4**	520	113
	1.2	31900	1232	197000	51190	**P**	**022RF87**	**DRS**	**100LC4**	560	110
	1.3	28300	1092	197000	51190	**PF**	**022RF87**	**DRS**	**100LC4**	460	111
	1.6	23700	918	197000	51190	**PH**	**022RF87**	**DRS**	**100LC4**	580	110
						PHF	**022RF87**	**DRS**	**100LC4**	475	111
	0.99	37700	1457	156000	36810	**P**	**012RF97**	**DRS**	**100LC4**	465	106
						PF	**012RF97**	**DRS**	**100LC4**	395	107
						PH	**012RF97**	**DRS**	**100LC4**	480	106
						PHF	**012RF97**	**DRS**	**100LC4**	410	107
	1.8	20400	790	156000	36810	**P**	**012RF97**	**DRS**	**100LC4**	465	106
	2.0	18500	716	156000	36810	**PF**	**012RF97**	**DRS**	**100LC4**	395	107
	2.3	16400	634	156000	36810	**PH**	**012RF97**	**DRS**	**100LC4**	480	106
						PHF	**012RF97**	**DRS**	**100LC4**	410	107
	1.1	33100	1281	156000	36810	**P**	**012RF87**	**DRS**	**100LC4**	415	104
	1.3	28300	1094	156000	36810	**PF**	**012RF87**	**DRS**	**100LC4**	345	105
						PH	**012RF87**	**DRS**	**100LC4**	430	104
						PHF	**012RF87**	**DRS**	**100LC4**	360	105
	1.7	21800	844	156000	36810						
	1.9	19400	749	156000	36810	**P**	**012RF87**	**DRS**	**100LC4**	415	104
	2.2	17300	670	156000	36810	**PF**	**012RF87**	**DRS**	**100LC4**	345	105
	2.4	15600	602	156000	36810	**PH**	**012RF87**	**DRS**	**100LC4**	425	104
	2.8	13500	523	156000	36810	**PHF**	**012RF87**	**DRS**	**100LC4**	355	105



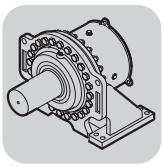
P_M [kW]	n_2 [min^{-1}]	M_a [Nm]	i_{ex}	F_{Ra} [N]	M_{N2} [Nm]					m [kg]	
4.0	**2.6**	14200	551	156000	27600	**P**	**012RF77**	**DRS**	**100LC4**	385	102
						PF	**012RF77**	**DRS**	**100LC4**	315	103
						PH	**012RF77**	**DRS**	**100LC4**	400	102
						PHF	**012RF77**	**DRS**	**100LC4**	330	103
	1.6	23700	914	119300	24830	**P**	**002RF87**	**DRS**	**100LC4**	335	96
	1.7	21700	841	121900	24830	**PF**	**002RF87**	**DRS**	**100LC4**	275	97
	1.9	19300	746	124000	24830	**PH**	**002RF87**	**DRS**	**100LC4**	335	96
	2.2	17200	667	124000	24830	**PHF**	**002RF87**	**DRS**	**100LC4**	280	97
	2.4	15700	610	124000	24830						
	2.6	14200	549	124000	24830						
	3.0	12400	482	124000	24830	**P**	**002RF77**	**DRS**	**100LC4**	305	94
	3.4	11000	425	124000	24830	**PF**	**002RF77**	**DRS**	**100LC4**	245	95
	3.8	9760	377	124000	24100	**PH**	**002RF77**	**DRS**	**100LC4**	310	94
	4.3	8700	336	124000	24100	**PHF**	**002RF77**	**DRS**	**100LC4**	250	95
	4.8	7830	302	124000	23300						
	5.4	6870	265	124000	22200						
5.5	**0.36**	144200	4049	466600	185660	**P**	**062RF137**	**DRS**	**132S4**	1740	138
	0.42	123900	3480	473000	185660	**PF**	**062RF137**	**DRS**	**132S4**	1380	139
	0.46	113000	3174	473000	185660	**PH**	**062RF137**	**DRS**	**132S4**	1730	138
						PHF	**062RF137**	**DRS**	**132S4**	1370	139
	0.36	144200	4049	324800	124060	**P**	**052RF137**	**DRS**	**132S4**	1260	134
	0.42	123900	3480	347000	124060	**PF**	**052RF137**	**DRS**	**132S4**	1060	135
	0.50	102700	2883	364000	124060	**PH**	**052RF137**	**DRS**	**132S4**	1250	134
	0.56	91100	2558	364000	124060	**PHF**	**052RF137**	**DRS**	**132S4**	1050	135
	0.51	101800	2859	364000	124060	**P**	**052RF107**	**DRS**	**132S4**	1150	132
	0.56	91600	2573	364000	124060	**PF**	**052RF107**	**DRS**	**132S4**	950	133
						PH	**052RF107**	**DRS**	**132S4**	1140	132
						PHF	**052RF107**	**DRS**	**132S4**	940	133
	0.46	113000	3174	281500	100170	**P**	**042RF137**	**DRS**	**132S4**	1110	128
	0.62	82700	2321	311800	100170	**PF**	**042RF137**	**DRS**	**132S4**	920	129
						PH	**042RF137**	**DRS**	**132S4**	1120	128
						PHF	**042RF137**	**DRS**	**132S4**	930	129
	0.51	101800	2859	293800	100170						
	0.56	91600	2573	303900	100170	**P**	**042RF107**	**DRS**	**132S4**	1000	126
	0.62	83000	2331	311600	100170	**PF**	**042RF107**	**DRS**	**132S4**	810	127
	0.70	73600	2067	319100	100170	**PH**	**042RF107**	**DRS**	**132S4**	1010	126
	0.77	66500	1869	323000	100170	**PHF**	**042RF107**	**DRS**	**132S4**	820	127
	0.62	83000	2331	203600	69620	**P**	**032RF107**	**DRS**	**132S4**	760	120
	0.70	73600	2067	217800	69620	**PF**	**032RF107**	**DRS**	**132S4**	640	121
	0.91	56400	1584	238800	69620	**PH**	**032RF107**	**DRS**	**132S4**	780	120
	1.0	49200	1383	245900	69620	**PHF**	**032RF107**	**DRS**	**132S4**	660	121
	1.2	43000	1207	251400	69620	**P**	**032RF107**	**DRS**	**132S4**	750	120
						PF	**032RF107**	**DRS**	**132S4**	630	121
						PH	**032RF107**	**DRS**	**132S4**	770	120
						PHF	**032RF107**	**DRS**	**132S4**	650	121
	0.77	66500	1867	227200	69620	**P**	**032RF97**	**DRS**	**132S4**	710	118
	0.86	59700	1678	235100	69620	**PF**	**032RF97**	**DRS**	**132S4**	590	119
	0.99	51800	1457	243400	69620	**PH**	**032RF97**	**DRS**	**132S4**	730	118
	1.3	38500	1082	252000	69620	**PHF**	**032RF97**	**DRS**	**132S4**	610	119
	1.2	44700	1257	249900	69620	**P**	**032RF97**	**DRS**	**132S4**	700	118
						PF	**032RF97**	**DRS**	**132S4**	580	119
						PH	**032RF97**	**DRS**	**132S4**	730	118
						PHF	**032RF97**	**DRS**	**132S4**	600	119
	0.86	59700	1678	176700	51190	**P**	**022RF97**	**DRS**	**132S4**	630	112
	0.99	51800	1457	189800	51190	**PF**	**022RF97**	**DRS**	**132S4**	530	113
	1.1	46400	1304	197000	51190	**PH**	**022RF97**	**DRS**	**132S4**	640	112
						PHF	**022RF97**	**DRS**	**132S4**	540	113
	1.5	34900	982	197000	51190	**P**	**022RF97**	**DRS**	**132S4**	620	112
	1.6	31200	878	197000	51190	**PF**	**022RF97**	**DRS**	**132S4**	520	113
						PH	**022RF97**	**DRS**	**132S4**	640	112
						PHF	**022RF97**	**DRS**	**132S4**	540	113
	1.6	32700	918	197000	51190	**P**	**022RF87**	**DRS**	**132S4**	570	110
						PF	**022RF87**	**DRS**	**132S4**	470	111
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						PHF	**022RF87**	**DRS**	**132S4**	485	111



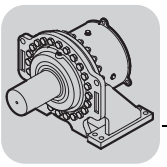
P_M [kW]	n_2 [min^{-1}]	M_a [Nm]	i_{ex}	F_{Ra} [N]	M_{N2} [Nm]					m [kg]	
5.5	**1.3**	38500	1082	156000	36810	**P**	**012RF97**	**DRS**	**132S4**	480	106
						PF	**012RF97**	**DRS**	**132S4**	410	107
						PH	**012RF97**	**DRS**	**132S4**	495	106
						PHF	**012RF97**	**DRS**	**132S4**	425	107
	1.5	34900	982	156000	36810	**P**	**012RF97**	**DRS**	**132S4**	475	106
	1.8	28100	790	156000	36810	**PF**	**012RF97**	**DRS**	**132S4**	405	107
	2.0	25400	716	156000	36810	**PH**	**012RF97**	**DRS**	**132S4**	490	106
	2.3	22600	634	156000	36810	**PHF**	**012RF97**	**DRS**	**132S4**	420	107
	1.6	32700	918	156000	36810						
	1.7	30000	844	156000	36810	**P**	**012RF87**	**DRS**	**132S4**	425	104
	1.9	26600	749	156000	36810	**PF**	**012RF87**	**DRS**	**132S4**	355	105
	2.2	23800	670	156000	36810	**PH**	**012RF87**	**DRS**	**132S4**	440	104
	2.4	21400	602	156000	36810	**PHF**	**012RF87**	**DRS**	**132S4**	370	105
	2.8	18600	523	156000	36810						
	2.2	23700	667	119200	24830						
	2.4	21300	600	122400	24830						
	2.8	18500	521	124000	24830						
	3.1	16600	466	124000	24830	**P**	**002RF87**	**DRS**	**132S4**	345	96
	3.7	13700	387	124000	24830	**PF**	**002RF87**	**DRS**	**132S4**	290	97
	4.0	12700	357	124000	24830	**PH**	**002RF87**	**DRS**	**132S4**	350	96
	4.5	11400	321	124000	24830	**PHF**	**002RF87**	**DRS**	**132S4**	290	97
	5.2	9930	279	124000	24830						
	5.6	9270	260	124000	24400						
	6.2	8300	233	122400	23500						
	7.7	6700	188	114900	12000	**P**	**002RF77**	**DRS**	**132S4**	315	94
	8.6	5970	168	110900	12000	**PF**	**002RF77**	**DRS**	**132S4**	260	95
						PH	**002RF77**	**DRS**	**132S4**	320	94
						PHF	**002RF77**	**DRS**	**132S4**	265	95
7.5	**0.42**	169000	3480	450600	185660						
	0.46	154200	3174	460400	185660	**P**	**062RF137**	**DRS**	**132M4**	1760	138
	0.50	140000	2883	469000	185660	**PF**	**062RF137**	**DRS**	**132M4**	1390	139
	0.56	124200	2558	473000	185660	**PH**	**062RF137**	**DRS**	**132M4**	1740	138
	0.62	112700	2321	473000	185660	**PHF**	**062RF137**	**DRS**	**132M4**	1380	139
	0.50	140000	2883	329700	124060	**P**	**052RF137**	**DRS**	**132M4**	1270	134
	0.56	124200	2558	346700	124060	**PF**	**052RF137**	**DRS**	**132M4**	1070	135
	0.72	96900	1995	364000	124060	**PH**	**052RF137**	**DRS**	**132M4**	1260	134
	0.83	84600	1741	364000	124060	**PHF**	**052RF137**	**DRS**	**132M4**	1060	135
	0.77	90700	1869	364000	124060	**P**	**052RF107**	**DRS**	**132M4**	1160	132
						PF	**052RF107**	**DRS**	**132M4**	960	133
						PH	**052RF107**	**DRS**	**132M4**	1150	132
						PHF	**052RF107**	**DRS**	**132M4**	950	133
	0.62	112700	2321	281800	100170	**P**	**042RF137**	**DRS**	**132M4**	1130	128
	0.98	71700	1477	320500	100170	**PF**	**042RF137**	**DRS**	**132M4**	940	129
						PH	**042RF137**	**DRS**	**132M4**	1130	128
						PHF	**042RF137**	**DRS**	**132M4**	940	129
	0.70	100400	2067	295300	100170	**P**	**042RF107**	**DRS**	**132M4**	1020	126
	0.77	90700	1869	304700	100170	**PF**	**042RF107**	**DRS**	**132M4**	830	127
	0.91	76900	1584	316600	100170	**PH**	**042RF107**	**DRS**	**132M4**	1020	126
	1.0	67200	1383	323000	100170	**PHF**	**042RF107**	**DRS**	**132M4**	830	127
	1.2	58600	1207	323000	100170	**P**	**042RF107**	**DRS**	**132M4**	1010	126
						PF	**042RF107**	**DRS**	**132M4**	820	127
						PH	**042RF107**	**DRS**	**132M4**	1010	126
						PHF	**042RF107**	**DRS**	**132M4**	820	127
	0.91	76900	1584	213100	69620	**P**	**032RF107**	**DRS**	**132M4**	770	120
	1.0	67200	1383	226400	69620	**PF**	**032RF107**	**DRS**	**132M4**	650	121
						PH	**032RF107**	**DRS**	**132M4**	790	120
						PHF	**032RF107**	**DRS**	**132M4**	670	121
	1.3	52500	1082	242700	69620	**P**	**032RF107**	**DRS**	**132M4**	760	120
	1.5	47400	977	247500	69620	**PF**	**032RF107**	**DRS**	**132M4**	640	121
						PH	**032RF107**	**DRS**	**132M4**	780	120
						PHF	**032RF107**	**DRS**	**132M4**	660	121
	1.4	51800	1067	243500	69620	**P**	**032RF97**	**DRS**	**132M4**	720	118
	1.5	47700	982	247300	69620	**PF**	**032RF97**	**DRS**	**132M4**	600	119
	1.6	42600	878	251700	69620	**PH**	**032RF97**	**DRS**	**132M4**	740	118
						PHF	**032RF97**	**DRS**	**132M4**	620	119



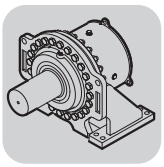
P_M [kW]	n_2 [min^{-1}]	M_a [Nm]	i_{ex}	F_{Ra} [N]	M_{N2} [Nm]					m [kg]	
7.5	**1.2**	58600	1207	178700	51190	**P**	**022RF107**	**DRS**	**132M4**	680	114
						PF	**022RF107**	**DRS**	**132M4**	580	115
						PH	**022RF107**	**DRS**	**132M4**	700	114
						PHF	**022RF107**	**DRS**	**132M4**	600	115
	1.3	52500	1082	188700	51190	**P**	**022RF97**	**DRS**	**132M4**	640	112
						PF	**022RF97**	**DRS**	**132M4**	540	113
						PH	**022RF97**	**DRS**	**132M4**	660	112
						PHF	**022RF97**	**DRS**	**132M4**	550	113
	1.5	47700	982	195800	51190						
	1.6	42600	878	197000	51190	**P**	**022RF97**	**DRS**	**132M4**	640	112
	1.8	38300	790	197000	51190	**PF**	**022RF97**	**DRS**	**132M4**	540	113
	2.0	34700	716	197000	51190	**PH**	**022RF97**	**DRS**	**132M4**	650	112
	2.3	30800	634	197000	51190	**PHF**	**022RF97**	**DRS**	**132M4**	550	113
	1.8	38300	790	156000	36810						
	2.0	34700	716	156000	36810	**P**	**012RF97**	**DRS**	**132M4**	490	106
	2.3	30800	634	156000	36810	**PF**	**012RF97**	**DRS**	**132M4**	420	107
	2.5	27800	574	156000	36810	**PH**	**012RF97**	**DRS**	**132M4**	500	106
	3.0	23600	486	156000	36810	**PHF**	**012RF97**	**DRS**	**132M4**	435	107
	3.4	20600	425	156000	36810						
	2.4	29200	602	156000	36810						
	2.8	25400	523	156000	36810	**P**	**012RF87**	**DRS**	**132M4**	440	104
	3.1	22700	468	156000	36810	**PF**	**012RF87**	**DRS**	**132M4**	370	105
	3.7	18800	388	156000	36810	**PH**	**012RF87**	**DRS**	**132M4**	455	104
	4.0	17400	359	156000	36810	**PHF**	**012RF87**	**DRS**	**132M4**	385	105
	4.5	15600	322	156000	36810						
	3.1	22600	466	120800	24830						
	3.7	18700	387	124000	24830						
	4.0	17300	357	124000	24830						
	4.5	15600	321	124000	24830						
	5.2	13500	279	124000	24830						
	5.6	12600	260	124000	24400	**P**	**002RF87**	**DRS**	**132M4**	360	96
	6.2	11300	233	122400	23500	**PF**	**002RF87**	**DRS**	**132M4**	300	97
	7.5	9390	193	115800	22500	**PH**	**002RF87**	**DRS**	**132M4**	365	96
	8.1	8670	178	113000	23100	**PHF**	**002RF87**	**DRS**	**132M4**	305	97
	9.0	7790	161	109500	22200						
	10	6760	139	104900	20400						
	12	6060	125	101500	19500						
	14	5020	104	96000	17400						
9.2	**0.35**	244700	4165	523000	245660	**P**	**072RF147**	**DRS**	**132MC4**	2300	142
	0.53	161300	2747	523000	245660	**PF**	**072RF147**	**DRS**	**132MC4**	1810	143
	0.57	149900	2552	523000	245660	**PH**	**072RF147**	**DRS**	**132MC4**	2360	142
	0.63	136700	2328	523000	245660	**PHF**	**072RF147**	**DRS**	**132MC4**	1870	143
	0.39	218100	3711	411800	185660	**P**	**062RF147**	**DRS**	**132MC4**	1880	140
	0.45	192400	3275	433400	185660	**PF**	**062RF147**	**DRS**	**132MC4**	1520	141
	0.71	121900	2074	473000	185660	**PH**	**062RF147**	**DRS**	**132MC4**	1870	140
						PHF	**062RF147**	**DRS**	**132MC4**	1510	141
	0.51	169400	2883	450400	185660	**P**	**062RF137**	**DRS**	**132MC4**	1760	138
	0.84	102300	1741	473000	185660	**PF**	**062RF137**	**DRS**	**132MC4**	1390	139
						PH	**062RF137**	**DRS**	**132MC4**	1750	138
						PHF	**062RF137**	**DRS**	**132MC4**	1380	139
	0.57	150300	2558	317200	124060	**P**	**052RF137**	**DRS**	**132MC4**	1270	134
	0.63	136400	2321	333800	124060	**PF**	**052RF137**	**DRS**	**132MC4**	1070	135
	0.99	86800	1477	364000	124060	**PH**	**052RF137**	**DRS**	**132MC4**	1270	134
	1.1	75800	1291	364000	124060	**PHF**	**052RF137**	**DRS**	**132MC4**	1070	135
	1.1	81300	1383	364000	124060	**P**	**052RF107**	**DRS**	**132MC4**	1160	132
						PF	**052RF107**	**DRS**	**132MC4**	960	133
						PH	**052RF107**	**DRS**	**132MC4**	1160	132
						PHF	**052RF107**	**DRS**	**132MC4**	960	133
	1.2	70900	1207	364000	124060	**P**	**052RF107**	**DRS**	**132MC4**	1160	132
						PF	**052RF107**	**DRS**	**132MC4**	960	133
						PH	**052RF107**	**DRS**	**132MC4**	1150	132
						PHF	**052RF107**	**DRS**	**132MC4**	950	133
	0.73	117200	1995	276400	100170	**P**	**042RF137**	**DRS**	**132MC4**	1130	128
	0.84	102300	1741	293300	100170	**PF**	**042RF137**	**DRS**	**132MC4**	940	129
	1.3	64100	1092	323000	100170	**PH**	**042RF137**	**DRS**	**132MC4**	1130	128
						PHF	**042RF137**	**DRS**	**132MC4**	940	129



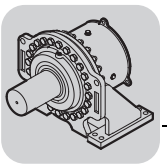
P_M [kW]	n_2 [min^{-1}]	M_a [Nm]	i_{ex}	F_{Ra} [N]	M_{N2} [Nm]					m [kg]	
9.2	**0.92**	93100	1584	302500	100170	**P**	**042RF107**	**DRS**	**132MC4**	1020	126
	1.1	81300	1383	313000	100170	**PF**	**042RF107**	**DRS**	**132MC4**	830	127
						PH	**042RF107**	**DRS**	**132MC4**	1020	126
						PHF	**042RF107**	**DRS**	**132MC4**	830	127
	1.4	63600	1082	323000	100170	**P**	**042RF107**	**DRS**	**132MC4**	1010	126
	1.5	57400	977	323000	100170	**PF**	**042RF107**	**DRS**	**132MC4**	820	127
	1.6	52100	887	323000	100170	**PH**	**042RF107**	**DRS**	**132MC4**	1020	126
						PHF	**042RF107**	**DRS**	**132MC4**	830	127
	1.2	70900	1207	221500	69620	**P**	**032RF107**	**DRS**	**132MC4**	770	120
	1.4	63600	1082	230800	69620	**PF**	**032RF107**	**DRS**	**132MC4**	650	121
	1.9	46200	787	248600	69620	**PH**	**032RF107**	**DRS**	**132MC4**	790	120
	2.0	41900	714	252000	69620	**PHF**	**032RF107**	**DRS**	**132MC4**	670	121
	2.0	42000	716	252000	69620	**P**	**032RF97**	**DRS**	**132MC4**	720	118
	2.3	37300	634	252000	69620	**PF**	**032RF97**	**DRS**	**132MC4**	600	119
						PH	**032RF97**	**DRS**	**132MC4**	740	118
						PHF	**032RF97**	**DRS**	**132MC4**	620	119
	2.4	36000	614	197000	51190	**P**	**022RF107**	**DRS**	**132MC4**	690	114
	2.7	31500	536	197000	51190	**PF**	**022RF107**	**DRS**	**132MC4**	580	115
						PH	**022RF107**	**DRS**	**132MC4**	700	114
						PHF	**022RF107**	**DRS**	**132MC4**	600	115
	1.5	57700	982	180300	51190						
	1.7	51500	878	190200	51190	**P**	**022RF97**	**DRS**	**132MC4**	640	112
	1.8	46400	790	197000	51190	**PF**	**022RF97**	**DRS**	**132MC4**	540	113
	2.0	42000	716	197000	51190	**PH**	**022RF97**	**DRS**	**132MC4**	660	112
	2.6	33700	574	197000	51190	**PHF**	**022RF97**	**DRS**	**132MC4**	550	113
	3.0	28500	486	197000	51190						
	3.8	22800	388	197000	45300	**P**	**022RF87**	**DRS**	**132MC4**	590	110
						PF	**022RF87**	**DRS**	**132MC4**	490	111
						PH	**022RF87**	**DRS**	**132MC4**	610	110
						PHF	**022RF87**	**DRS**	**132MC4**	500	111
	2.3	37300	634	156000	36810						
	2.6	33700	574	156000	36810						
	3.0	28500	486	156000	36810	**P**	**012RF97**	**DRS**	**132MC4**	495	106
	3.4	24900	425	156000	36810	**PF**	**012RF97**	**DRS**	**132MC4**	425	107
	4.0	21400	364	156000	36810	**PH**	**012RF97**	**DRS**	**132MC4**	510	106
	4.4	19300	329	156000	36810	**PHF**	**012RF97**	**DRS**	**132MC4**	435	107
	5.2	16400	279	156000	36810						
	4.1	21000	359	156000	36810	**P**	**012RF87**	**DRS**	**132MC4**	445	104
	4.5	18900	322	156000	36810	**PF**	**012RF87**	**DRS**	**132MC4**	375	105
	5.2	16400	280	156000	36810	**PH**	**012RF87**	**DRS**	**132MC4**	455	104
						PHF	**012RF87**	**DRS**	**132MC4**	385	105
	6.0	14200	243	123400	24830	**P**	**002RF97**	**DRS**	**132MC4**	415	98
						PF	**002RF97**	**DRS**	**132MC4**	355	99
						PH	**002RF97**	**DRS**	**132MC4**	415	98
						PHF	**002RF97**	**DRS**	**132MC4**	360	99
	3.8	22700	387	120600	24830						
	4.1	21000	357	122900	24830						
	4.6	18800	321	124000	24830						
	5.2	16300	279	124000	24830						
	5.9	14600	250	124000	24830	**P**	**002RF87**	**DRS**	**132MC4**	365	96
	7.1	12100	207	117700	24830	**PF**	**002RF87**	**DRS**	**132MC4**	305	97
	7.6	11300	193	115300	22500	**PH**	**002RF87**	**DRS**	**132MC4**	365	96
	8.2	10400	178	112500	23100	**PHF**	**002RF87**	**DRS**	**132MC4**	310	97
	9.1	9430	161	109000	22200						
	11	8180	139	104500	20400						
	12	7330	125	101100	19500						
	14	6080	104	95600	17400						
11.0	**0.36**	284400	4034	683000	359400	**P**	**082RF167**	**DRS**	**160M4**	3240	148
	0.42	246600	3497	683000	359400	**PF**	**082RF167**	**DRS**	**160M4**	2590	149
						PH	**082RF167**	**DRS**	**160M4**	3230	148
						PHF	**082RF167**	**DRS**	**160M4**	2580	149
	0.46	222600	3159	523000	245660	**P**	**072RF167**	**DRS**	**160M4**	2580	144
						PF	**072RF167**	**DRS**	**160M4**	2090	145
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						PHF	**072RF167**	**DRS**	**160M4**	2140	145



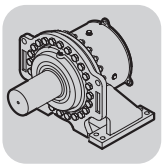
P_M [kW]	n_2 [min^{-1}]	M_a [Nm]	i_{ex}	F_{Ra} [N]	M_{N2} [Nm]					m [kg]	
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	0.41	254000	3604	523000	245660	**P**	**072RF147**	**DRS**	**160M4**	2320	142
	0.46	224100	3180	523000	245660	**PF**	**072RF147**	**DRS**	**160M4**	1830	143
	0.53	193600	2747	523000	245660	**PH**	**072RF147**	**DRS**	**160M4**	2370	142
	0.57	179900	2552	523000	245660	**PHF**	**072RF147**	**DRS**	**160M4**	1880	143
	0.63	164000	2328	523000	245660						
	0.52	199400	2828	427900	185660	**P**	**062RF147**	**DRS**	**160M4**	1900	140
	0.70	146200	2074	465300	185660	**PF**	**062RF147**	**DRS**	**160M4**	1530	141
						PH	**062RF147**	**DRS**	**160M4**	1890	140
						PHF	**062RF147**	**DRS**	**160M4**	1520	141
	0.57	180400	2558	442600	185660	**P**	**062RF137**	**DRS**	**160M4**	1780	138
	0.63	163700	2321	454300	185660	**PF**	**062RF137**	**DRS**	**160M4**	1410	139
	0.73	140700	1995	468600	185660	**PH**	**062RF137**	**DRS**	**160M4**	1770	138
	0.84	122800	1741	473000	185660	**PHF**	**062RF137**	**DRS**	**160M4**	1400	139
	0.73	140700	1995	328900	124060	**P**	**052RF137**	**DRS**	**160M4**	1290	134
	0.84	122800	1741	348200	124060	**PF**	**052RF137**	**DRS**	**160M4**	1090	135
	0.99	104100	1477	364000	124060	**PH**	**052RF137**	**DRS**	**160M4**	1280	134
	1.1	91000	1291	364000	124060	**PHF**	**052RF137**	**DRS**	**160M4**	1090	135
	0.99	104100	1477	291400	100170	**P**	**042RF137**	**DRS**	**160M4**	1150	128
	1.3	76900	1092	316500	100170	**PF**	**042RF137**	**DRS**	**160M4**	960	129
						PH	**042RF137**	**DRS**	**160M4**	1150	128
						PHF	**042RF137**	**DRS**	**160M4**	960	129
	1.1	97500	1383	298200	100170	**P**	**042RF107**	**DRS**	**160M4**	1040	126
						PF	**042RF107**	**DRS**	**160M4**	850	127
						PH	**042RF107**	**DRS**	**160M4**	1050	126
						PHF	**042RF107**	**DRS**	**160M4**	860	127
	1.2	85100	1207	309800	100170	**P**	**042RF107**	**DRS**	**160M4**	1030	126
	1.4	76300	1082	317100	100170	**PF**	**042RF107**	**DRS**	**160M4**	840	127
	1.5	68800	977	322600	100170	**PH**	**042RF107**	**DRS**	**160M4**	1040	126
	1.6	62500	887	323000	100170	**PHF**	**042RF107**	**DRS**	**160M4**	850	127
	1.4	76300	1082	214000	69620	**P**	**032RF107**	**DRS**	**160M4**	790	120
	1.5	68800	977	224200	69620	**PF**	**032RF107**	**DRS**	**160M4**	670	121
	1.8	55500	787	239700	69620	**PH**	**032RF107**	**DRS**	**160M4**	810	120
	2.0	50300	714	244800	69620	**PHF**	**032RF107**	**DRS**	**160M4**	690	121
	1.7	61900	878	232800	69620	**P**	**032RF97**	**DRS**	**160M4**	740	118
						PF	**032RF97**	**DRS**	**160M4**	620	119
						PH	**032RF97**	**DRS**	**160M4**	760	118
						PHF	**032RF97**	**DRS**	**160M4**	640	119
	2.4	43300	614	197000	51190	**P**	**022RF107**	**DRS**	**160M4**	710	114
	2.7	37700	536	197000	51190	**PF**	**022RF107**	**DRS**	**160M4**	610	115
						PH	**022RF107**	**DRS**	**160M4**	720	114
						PHF	**022RF107**	**DRS**	**160M4**	620	115
	1.8	55700	790	183700	51190						
	2.0	50400	716	191900	51190	**P**	**022RF97**	**DRS**	**160M4**	660	112
	2.3	44700	634	197000	51190	**PF**	**022RF97**	**DRS**	**160M4**	560	113
	2.5	40400	574	197000	51190	**PH**	**022RF97**	**DRS**	**160M4**	680	112
	3.0	34200	486	197000	51190	**PHF**	**022RF97**	**DRS**	**160M4**	580	113
	2.5	40400	574	156000	36810						
	3.0	34200	486	156000	36810						
	3.4	29900	425	156000	36810	**P**	**012RF97**	**DRS**	**160M4**	510	106
	4.0	25600	364	156000	36810	**PF**	**012RF97**	**DRS**	**160M4**	445	107
	4.4	23200	329	156000	36810	**PH**	**012RF97**	**DRS**	**160M4**	530	106
	5.2	19600	279	156000	36810	**PHF**	**012RF97**	**DRS**	**160M4**	460	107
	6.0	17100	244	156000	36810						
	7.2	14300	204	156000	36810						
	3.8	27300	388	156000	36810						
	4.1	25200	359	156000	36810	**P**	**012RF87**	**DRS**	**160M4**	465	104
	4.5	22700	322	156000	36810	**PF**	**012RF87**	**DRS**	**160M4**	395	105
	5.2	19700	280	156000	36810	**PH**	**012RF87**	**DRS**	**160M4**	475	104
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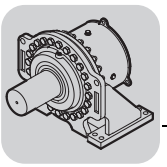
P_M [kW]	n_2 [min^{-1}]	M_a [Nm]	i_{ex}	F_{Ra} [N]	M_{N2} [Nm]					m [kg]	
11.0	**4.5**	22600	321	120800	24830						
	5.2	19600	279	124000	24830						
	5.8	17600	250	124000	24830						
	7.0	14600	207	117800	24830	**P**	**002RF87**	**DRS**	**160M4**	385	96
	7.6	13600	193	115400	22500	**PF**	**002RF87**	**DRS**	**160M4**	325	97
	8.2	12500	178	112700	23100	**PH**	**002RF87**	**DRS**	**160M4**	385	96
	9.1	11300	161	109100	22200	**PHF**	**002RF87**	**DRS**	**160M4**	330	97
	10	9820	139	104600	20400						
	12	8790	125	101200	19500						
	14	7290	104	95700	17400						
15.0	**0.36**	385200	4034	618300	359400	**P**	**082RF167**	**DRS**	**160MC4**	3240	148
	0.42	334000	3497	664500	359400	**PF**	**082RF167**	**DRS**	**160MC4**	2590	149
	0.47	297100	3112	683000	359400	**PH**	**082RF167**	**DRS**	**160MC4**	3230	148
	0.53	264100	2766	683000	359400	**PHF**	**082RF167**	**DRS**	**160MC4**	2580	149
	0.58	241500	2530	683000	359400						
	0.64	218900	2293	683000	359400	**P**	**082RF147**	**DRS**	**160MC4**	2980	146
						PF	**082RF147**	**DRS**	**160MC4**	2330	147
						PH	**082RF147**	**DRS**	**160MC4**	2970	146
						PHF	**082RF147**	**DRS**	**160MC4**	2320	147
	0.47	301600	3159	500900	245660	**P**	**072RF167**	**DRS**	**160MC4**	2580	144
	0.57	245100	2568	523000	245660	**PF**	**072RF167**	**DRS**	**160MC4**	2090	145
						PH	**072RF167**	**DRS**	**160MC4**	2640	144
						PHF	**072RF167**	**DRS**	**160MC4**	2150	145
	0.54	262200	2747	523000	245660						
	0.58	243600	2552	523000	245660	**P**	**072RF147**	**DRS**	**160MC4**	2320	142
	0.63	222200	2328	523000	245660	**PF**	**072RF147**	**DRS**	**160MC4**	1830	143
	0.73	192300	2014	523000	245660	**PH**	**072RF147**	**DRS**	**160MC4**	2380	142
	0.83	169700	1777	523000	245660	**PHF**	**072RF147**	**DRS**	**160MC4**	1890	143
	0.71	198100	2074	428900	185660						
	0.80	174800	1830	446600	185660	**P**	**062RF147**	**DRS**	**160MC4**	1900	140
	0.93	150900	1581	462500	185660	**PF**	**062RF147**	**DRS**	**160MC4**	1540	141
	1.0	133500	1398	472700	185660	**PH**	**062RF147**	**DRS**	**160MC4**	1890	140
	1.2	112200	1175	473000	185660	**PHF**	**062RF147**	**DRS**	**160MC4**	1530	141
	0.84	166300	1741	452500	185660	**P**	**062RF137**	**DRS**	**160MC4**	1780	138
	0.99	141000	1477	468400	185660	**PF**	**062RF137**	**DRS**	**160MC4**	1420	139
	1.1	123300	1291	473000	185660	**PH**	**062RF137**	**DRS**	**160MC4**	1770	138
	1.4	104200	1092	473000	185660	**PHF**	**062RF137**	**DRS**	**160MC4**	1410	139
	1.3	110800	1160	473000	185660	**P**	**062RF137**	**DRS**	**160MC4**	1770	138
						PF	**062RF137**	**DRS**	**160MC4**	1410	139
						PH	**062RF137**	**DRS**	**160MC4**	1760	138
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	0.99	141000	1477	328500	124060	**P**	**052RF137**	**DRS**	**160MC4**	1300	134
	1.1	123300	1291	347700	124060	**PF**	**052RF137**	**DRS**	**160MC4**	1100	135
	1.4	104200	1092	364000	124060	**PH**	**052RF137**	**DRS**	**160MC4**	1290	134
						PHF	**052RF137**	**DRS**	**160MC4**	1090	135
	1.6	90300	946	364000	124060	**P**	**052RF137**	**DRS**	**160MC4**	1290	134
	1.7	82400	863	364000	124060	**PF**	**052RF137**	**DRS**	**160MC4**	1090	135
						PH	**052RF137**	**DRS**	**160MC4**	1280	134
						PHF	**052RF137**	**DRS**	**160MC4**	1080	135
	1.4	104200	1092	291300	100170	**P**	**042RF137**	**DRS**	**160MC4**	1150	128
						PF	**042RF137**	**DRS**	**160MC4**	960	129
						PH	**042RF137**	**DRS**	**160MC4**	1160	128
						PHF	**042RF137**	**DRS**	**160MC4**	970	129
	1.6	90300	946	305100	100170	**P**	**042RF137**	**DRS**	**160MC4**	1140	128
	1.7	82400	863	312100	100170	**PF**	**042RF137**	**DRS**	**160MC4**	950	129
	2.0	71300	747	320900	100170	**PH**	**042RF137**	**DRS**	**160MC4**	1150	128
						PHF	**042RF137**	**DRS**	**160MC4**	960	129
	1.5	93300	977	302300	100170						
	1.7	84700	887	310100	100170	**P**	**042RF107**	**DRS**	**160MC4**	1040	126
	1.9	75100	787	317900	100170	**PF**	**042RF107**	**DRS**	**160MC4**	850	127
	2.1	68200	714	323000	100170	**PH**	**042RF107**	**DRS**	**160MC4**	1040	126
	2.4	58600	614	323000	100170	**PHF**	**042RF107**	**DRS**	**160MC4**	850	127
	1.9	75100	787	215600	69620						
	2.1	68200	714	225100	69620	**P**	**032RF107**	**DRS**	**160MC4**	790	120
	2.4	58600	614	236400	69620	**PF**	**032RF107**	**DRS**	**160MC4**	670	121
	2.7	51100	536	244100	69620	**PH**	**032RF107**	**DRS**	**160MC4**	810	120
	3.2	43400	455	251000	69620	**PHF**	**032RF107**	**DRS**	**160MC4**	690	121



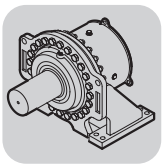
P_M [kW]	n_2 [min^{-1}]	M_a [Nm]	i_{ex}	F_{Ra} [N]	M_{N2} [Nm]					m [kg]	
15.0	**3.0**	46400	486	248400	69620	**P**	**032RF97**	**DRS**	**160MC4**	750	118
						PF	**032RF97**	**DRS**	**160MC4**	630	119
						PH	**032RF97**	**DRS**	**160MC4**	770	118
						PHF	**032RF97**	**DRS**	**160MC4**	650	119
	2.4	58600	614	178700	51190						
	2.7	51100	536	190800	51190	**P**	**022RF107**	**DRS**	**160MC4**	710	114
	3.2	43400	455	197000	51190	**PF**	**022RF107**	**DRS**	**160MC4**	610	115
	3.7	37900	397	197000	51190	**PH**	**022RF107**	**DRS**	**160MC4**	730	114
	4.4	32000	336	197000	51190	**PHF**	**022RF107**	**DRS**	**160MC4**	630	115
	3.0	46400	486	197000	51190						
	3.5	40500	425	197000	51190	**P**	**022RF97**	**DRS**	**160MC4**	670	112
	4.0	34700	364	197000	51190	**PF**	**022RF97**	**DRS**	**160MC4**	560	113
	4.5	31400	329	197000	51190	**PH**	**022RF97**	**DRS**	**160MC4**	680	112
	5.3	26600	279	197000	51190	**PHF**	**022RF97**	**DRS**	**160MC4**	580	113
	3.5	40500	425	156000	36810						
	4.0	34700	364	156000	36810						
	4.5	31400	329	156000	36810						
	5.3	26600	279	156000	36810						
	6.0	23200	244	156000	36810	**P**	**012RF97**	**DRS**	**160MC4**	520	106
	7.2	19400	204	156000	36810	**PF**	**012RF97**	**DRS**	**160MC4**	450	107
	8.3	16800	177	156000	36810	**PH**	**012RF97**	**DRS**	**160MC4**	530	106
	8.7	16100	169	156000	36810	**PHF**	**012RF97**	**DRS**	**160MC4**	465	107
	10	13600	143	150900	36810						
	12	11900	125	144900	36810						
	14	9980	105	137400	35000						
	6.0	23100	243	120000	24830						
	7.2	19400	203	116900	24830						
	8.1	17300	181	112900	24830						
	8.4	16700	176	111900	24830	**P**	**002RF97**	**DRS**	**160MC4**	440	98
	9.0	15600	164	109600	24830	**PF**	**002RF97**	**DRS**	**160MC4**	380	99
	11	13200	139	104300	24830	**PH**	**002RF97**	**DRS**	**160MC4**	445	98
	12	11500	121	100100	24830	**PHF**	**002RF97**	**DRS**	**160MC4**	385	99
	14	9690	102	94900	24830						
	17	8390	88	90900	24830						
	14	9880	104	95500	17400	**P**	**002RF87**	**DRS**	**160MC4**	390	96
						PF	**002RF87**	**DRS**	**160MC4**	330	97
						PH	**002RF87**	**DRS**	**160MC4**	390	96
						PHF	**002RF87**	**DRS**	**160MC4**	335	97
18.5	**0.42**	413300	3497	589300	359400						
	0.47	367700	3112	635000	359400						
	0.53	326900	2766	670200	359400	**P**	**082RF167**	**DRS**	**180M4**	3280	148
	0.58	298900	2530	683000	359400	**PF**	**082RF167**	**DRS**	**180M4**	2630	149
	0.67	260100	2201	683000	359400	**PH**	**082RF167**	**DRS**	**180M4**	3280	148
	0.75	229500	1943	683000	359400	**PHF**	**082RF167**	**DRS**	**180M4**	2630	149
	0.87	199000	1684	683000	359400						
	0.64	271000	2293	683000	359400	**P**	**082RF147**	**DRS**	**180M4**	3020	146
						PF	**082RF147**	**DRS**	**180M4**	2380	147
						PH	**082RF147**	**DRS**	**180M4**	3020	146
						PHF	**082RF147**	**DRS**	**180M4**	2370	147
	0.57	303400	2568	499100	245660	**P**	**072RF167**	**DRS**	**180M4**	2630	144
	0.96	179700	1521	523000	245660	**PF**	**072RF167**	**DRS**	**180M4**	2140	145
						PH	**072RF167**	**DRS**	**180M4**	2680	144
						PHF	**072RF167**	**DRS**	**180M4**	2190	145
	0.63	275000	2328	523000	245660						
	0.73	238000	2014	523000	245660	**P**	**072RF147**	**DRS**	**180M4**	2370	142
	0.82	210000	1777	523000	245660	**PF**	**072RF147**	**DRS**	**180M4**	1880	143
	0.95	181300	1535	523000	245660	**PH**	**072RF147**	**DRS**	**180M4**	2420	142
	1.1	160400	1358	523000	245660	**PHF**	**072RF147**	**DRS**	**180M4**	1930	143
	1.3	134800	1141	523000	245660						
	0.80	216300	1830	413400	185660						
	0.93	186800	1581	437800	185660	**P**	**062RF147**	**DRS**	**180M4**	1940	140
	1.0	165200	1398	453200	185660	**PF**	**062RF147**	**DRS**	**180M4**	1580	141
	1.2	138800	1175	469700	185660	**PH**	**062RF147**	**DRS**	**180M4**	1930	140
	1.5	112100	949	473000	185660	**PHF**	**062RF147**	**DRS**	**180M4**	1570	141
	0.99	174600	1477	446800	185660	**P**	**062RF137**	**DRS**	**180M4**	1820	138
	1.1	152600	1291	461400	185660	**PF**	**062RF137**	**DRS**	**180M4**	1460	139
	1.3	129000	1092	473000	185660	**PH**	**062RF137**	**DRS**	**180M4**	1810	138
						PHF	**062RF137**	**DRS**	**180M4**	1450	139



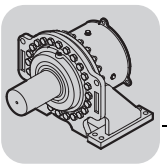
P_M [kW]	n_2 [min^{-1}]	M_a [Nm]	i_{ex}	F_{Ra} [N]	M_{N2} [Nm]					m [kg]	
18.5	**1.3**	137100	1160	470700	185660	**P**	**062RF137**	**DRS**	**180M4**	1820	138
	1.6	111800	946	473000	185660	**PF**	**062RF137**	**DRS**	**180M4**	1450	139
	1.7	102000	863	473000	185660	**PH**	**062RF137**	**DRS**	**180M4**	1800	138
						PHF	**062RF137**	**DRS**	**180M4**	1440	139
	1.3	129000	1092	341800	124060	**P**	**052RF137**	**DRS**	**180M4**	1340	134
						PF	**052RF137**	**DRS**	**180M4**	1140	135
						PH	**052RF137**	**DRS**	**180M4**	1330	134
						PHF	**052RF137**	**DRS**	**180M4**	1130	135
	1.6	111800	946	358600	124060	**P**	**052RF137**	**DRS**	**180M4**	1330	134
	1.7	102000	863	364000	124060	**PF**	**052RF137**	**DRS**	**180M4**	1130	135
	2.0	88200	747	364000	124060	**PH**	**052RF137**	**DRS**	**180M4**	1320	134
	2.2	77900	659	364000	124060	**PHF**	**052RF137**	**DRS**	**180M4**	1120	135
	2.0	84400	714	364000	124060	**P**	**052RF107**	**DRS**	**180M4**	1230	132
	2.4	72500	614	364000	124060	**PF**	**052RF107**	**DRS**	**180M4**	1030	133
						PH	**052RF107**	**DRS**	**180M4**	1220	132
						PHF	**052RF107**	**DRS**	**180M4**	1020	133
	1.6	111800	946	282900	100170	**P**	**042RF137**	**DRS**	**180M4**	1190	128
	1.7	102000	863	293700	100170	**PF**	**042RF137**	**DRS**	**180M4**	1000	129
	2.0	88200	747	307000	100170	**PH**	**042RF137**	**DRS**	**180M4**	1190	128
	2.6	67200	569	323000	100170	**PHF**	**042RF137**	**DRS**	**180M4**	1000	129
	1.9	93000	787	302600	100170						
	2.0	84400	714	310400	100170	**P**	**042RF107**	**DRS**	**180M4**	1080	126
	2.4	72500	614	319900	100170	**PF**	**042RF107**	**DRS**	**180M4**	890	127
	2.7	63300	536	323000	100170	**PH**	**042RF107**	**DRS**	**180M4**	1090	126
	3.2	53700	455	323000	100170	**PHF**	**042RF107**	**DRS**	**180M4**	900	127
	2.4	72500	614	219300	69620						
	2.7	63300	536	231100	69620	**P**	**032RF107**	**DRS**	**180M4**	840	120
	3.2	53700	455	241600	69620	**PF**	**032RF107**	**DRS**	**180M4**	720	121
	3.7	46900	397	248000	69620	**PH**	**032RF107**	**DRS**	**180M4**	860	120
	4.4	39700	336	249300	69620	**PHF**	**032RF107**	**DRS**	**180M4**	740	121
	4.4	38900	329	247800	69620	**P**	**032RF97**	**DRS**	**180M4**	790	118
	5.2	32900	279	235800	69620	**PF**	**032RF97**	**DRS**	**180M4**	670	119
						PH	**032RF97**	**DRS**	**180M4**	810	118
						PHF	**032RF97**	**DRS**	**180M4**	690	119
	3.2	53700	455	186900	51190						
	3.7	46900	397	196800	51190						
	4.4	39700	336	197000	51190	**P**	**022RF107**	**DRS**	**180M4**	760	114
	4.8	36400	308	197000	51190	**PF**	**022RF107**	**DRS**	**180M4**	660	115
	5.6	30900	261	197000	51190	**PH**	**022RF107**	**DRS**	**180M4**	770	114
	6.4	27000	228	197000	51190	**PHF**	**022RF107**	**DRS**	**180M4**	670	115
	7.6	22800	193	197000	51190						
	4.0	43000	364	197000	51190						
	4.4	38900	329	197000	51190						
	5.2	32900	279	197000	51190	**P**	**022RF97**	**DRS**	**180M4**	710	112
	6.0	28800	244	197000	51190	**PF**	**022RF97**	**DRS**	**180M4**	610	113
	7.2	24100	204	197000	51190	**PH**	**022RF97**	**DRS**	**180M4**	730	112
	8.3	20800	177	197000	51190	**PHF**	**022RF97**	**DRS**	**180M4**	620	113
	8.7	19900	169	197000	40000						
	8.5	20300	172	156000	36810	**P**	**012RF107**	**DRS**	**180M4**	610	108
	9.3	18600	158	155600	36810	**PF**	**012RF107**	**DRS**	**180M4**	540	109
	11	15800	134	148100	36810	**PH**	**012RF107**	**DRS**	**180M4**	620	108
	13	13800	117	142300	36810	**PHF**	**012RF107**	**DRS**	**180M4**	550	109
	4.4	38900	329	156000	36810						
	5.2	32900	279	156000	36810						
	6.0	28800	244	156000	36810						
	7.2	24100	204	156000	36810	**P**	**012RF97**	**DRS**	**180M4**	560	106
	8.3	20800	177	156000	36810	**PF**	**012RF97**	**DRS**	**180M4**	495	107
	8.7	19900	169	156000	36810	**PH**	**012RF97**	**DRS**	**180M4**	580	106
	10	16900	143	151100	36810	**PHF**	**012RF97**	**DRS**	**180M4**	510	107
	12	14700	125	145100	36810						
	14	12300	105	137500	35000						
	16	10600	91	131700	32100						
	7.2	24000	203	117000	24830						
	8.3	20700	176	112000	24830						
	8.9	19300	164	109700	24830	**P**	**002RF97**	**DRS**	**180M4**	485	98
	11	16400	139	104400	24830	**PF**	**002RF97**	**DRS**	**180M4**	425	99
	12	14300	121	100200	24830	**PH**	**002RF97**	**DRS**	**180M4**	485	98
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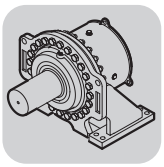
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	0.58	355500	2530	646100	359400						
	0.67	309300	2201	683000	359400	**P**	**082RF167**	**DRS**	**180L4**	3290	148
	0.75	273000	1943	683000	359400	**PF**	**082RF167**	**DRS**	**180L4**	2640	149
	0.87	236600	1684	683000	359400	**PH**	**082RF167**	**DRS**	**180L4**	3290	148
	0.98	210500	1498	683000	359400	**PHF**	**082RF167**	**DRS**	**180L4**	2640	149
	1.1	181500	1291	683000	359400						
	0.64	322200	2293	673900	359400						
	0.84	246100	1751	683000	359400	**P**	**082RF147**	**DRS**	**180L4**	3040	146
	0.97	212500	1512	683000	359400	**PF**	**082RF147**	**DRS**	**180L4**	2390	147
	1.1	187900	1338	683000	359400	**PH**	**082RF147**	**DRS**	**180L4**	3030	146
	1.3	157900	1141	683000	359400	**PHF**	**082RF147**	**DRS**	**180L4**	2380	147
	0.96	213700	1521	523000	245660	**P**	**072RF167**	**DRS**	**180L4**	2640	144
	1.4	149600	1065	523000	245660	**PF**	**072RF167**	**DRS**	**180L4**	2150	145
						PH	**072RF167**	**DRS**	**180L4**	2690	144
						PHF	**072RF167**	**DRS**	**180L4**	2200	145
	0.73	283000	2014	518600	245660						
	0.82	249700	1777	523000	245660	**P**	**072RF147**	**DRS**	**180L4**	2380	142
	1.1	190700	1358	523000	245660	**PF**	**072RF147**	**DRS**	**180L4**	1890	143
	1.3	160300	1141	523000	245660	**PH**	**072RF147**	**DRS**	**180L4**	2430	142
	1.6	129500	922	523000	245660	**PHF**	**072RF147**	**DRS**	**180L4**	1940	143
	0.93	222200	1581	408100	185660	**P**	**062RF147**	**DRS**	**180L4**	1960	140
	1.0	196500	1398	430200	185660	**PF**	**062RF147**	**DRS**	**180L4**	1590	141
	1.2	165100	1175	453300	185660	**PH**	**062RF147**	**DRS**	**180L4**	1940	140
	1.5	133400	949	472800	185660	**PHF**	**062RF147**	**DRS**	**180L4**	1580	141
	1.8	112700	802	473000	185660	**P**	**062RF147**	**DRS**	**180L4**	1940	140
						PF	**062RF147**	**DRS**	**180L4**	1580	141
						PH	**062RF147**	**DRS**	**180L4**	1930	140
						PHF	**062RF147**	**DRS**	**180L4**	1570	141
	1.3	153400	1092	460900	185660	**P**	**062RF137**	**DRS**	**180L4**	1840	138
						PF	**062RF137**	**DRS**	**180L4**	1470	139
						PH	**062RF137**	**DRS**	**180L4**	1820	138
						PHF	**062RF137**	**DRS**	**180L4**	1460	139
	1.7	121300	863	473000	185660	**P**	**062RF137**	**DRS**	**180L4**	1830	138
	2.0	105000	747	473000	185660	**PF**	**062RF137**	**DRS**	**180L4**	1460	139
	2.2	92600	659	473000	185660	**PH**	**062RF137**	**DRS**	**180L4**	1820	138
						PHF	**062RF137**	**DRS**	**180L4**	1450	139
	1.6	133000	946	337600	124060						
	1.7	121300	863	349700	124060	**P**	**052RF137**	**DRS**	**180L4**	1340	134
	2.0	105000	747	364000	124060	**PF**	**052RF137**	**DRS**	**180L4**	1140	135
	2.2	92600	659	364000	124060	**PH**	**052RF137**	**DRS**	**180L4**	1330	134
	2.6	80000	569	364000	124060	**PHF**	**052RF137**	**DRS**	**180L4**	1130	135
	2.9	70700	503	364000	124060						
	2.7	75300	536	364000	124060	**P**	**052RF107**	**DRS**	**180L4**	1240	132
	3.2	63900	455	364000	124060	**PF**	**052RF107**	**DRS**	**180L4**	1040	133
						PH	**052RF107**	**DRS**	**180L4**	1230	132
						PHF	**052RF107**	**DRS**	**180L4**	1030	133
	2.0	105000	747	290500	100170	**P**	**042RF137**	**DRS**	**180L4**	1200	128
	2.6	80000	569	314100	100170	**PF**	**042RF137**	**DRS**	**180L4**	1010	129
	3.5	59400	423	323000	100170	**PH**	**042RF137**	**DRS**	**180L4**	1200	128
						PHF	**042RF137**	**DRS**	**180L4**	1010	129
	2.0	100400	714	295300	100170						
	2.4	86300	614	308700	100170	**P**	**042RF107**	**DRS**	**180L4**	1100	126
	2.7	75300	536	317800	100170	**PF**	**042RF107**	**DRS**	**180L4**	910	127
	3.2	63900	455	323000	100170	**PH**	**042RF107**	**DRS**	**180L4**	1100	126
	3.7	55800	397	323000	100170	**PHF**	**042RF107**	**DRS**	**180L4**	910	127
	2.7	75300	536	215400	69620						
	3.2	63900	455	230400	69620						
	3.7	55800	397	239400	69620	**P**	**032RF107**	**DRS**	**180L4**	850	120
	4.4	47200	336	247800	69620	**PF**	**032RF107**	**DRS**	**180L4**	730	121
	4.8	43300	308	242900	69620	**PH**	**032RF107**	**DRS**	**180L4**	870	120
	5.6	36700	261	231200	69620	**PHF**	**032RF107**	**DRS**	**180L4**	750	121
	6.4	32100	228	222100	69620						



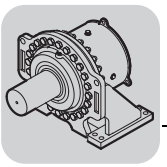
P_M [kW]	n_2 [min^{-1}]	M_a [Nm]	i_{ex}	F_{Ra} [N]	M_{N2} [Nm]					m [kg]	
22	**3.7**	55800	397	183500	51190						
	4.4	47200	336	196500	51190						
	4.8	43300	308	197000	51190	**P**	**022RF107**	**DRS**	**180L4**	770	114
	5.6	36700	261	197000	51190	**PF**	**022RF107**	**DRS**	**180L4**	670	115
	6.4	32100	228	197000	51190	**PH**	**022RF107**	**DRS**	**180L4**	780	114
	7.6	27100	193	197000	51190	**PHF**	**022RF107**	**DRS**	**180L4**	680	115
	8.5	24200	172	197000	51190						
	9.3	22200	158	197000	51190						
	4.4	46200	329	197000	51190						
	5.2	39200	279	197000	51190	**P**	**022RF97**	**DRS**	**180L4**	720	112
	6.0	34200	244	197000	51190	**PF**	**022RF97**	**DRS**	**180L4**	620	113
	7.2	28600	204	197000	51190	**PH**	**022RF97**	**DRS**	**180L4**	740	112
	8.3	24800	177	197000	51190	**PHF**	**022RF97**	**DRS**	**180L4**	640	113
	8.5	24200	172	156000	36810						
	9.3	22200	158	155600	36810	**P**	**012RF107**	**DRS**	**180L4**	620	108
	11	18800	134	148100	36810	**PF**	**012RF107**	**DRS**	**180L4**	550	109
	13	16400	117	142300	36810	**PH**	**012RF107**	**DRS**	**180L4**	630	108
	15	13900	99	135300	36810	**PHF**	**012RF107**	**DRS**	**180L4**	560	109
	6.0	34200	244	156000	36810						
	7.2	28600	204	156000	36810						
	8.3	24800	177	156000	36810	**P**	**012RF97**	**DRS**	**180L4**	570	106
	8.7	23700	169	156000	36810	**PF**	**012RF97**	**DRS**	**180L4**	500	107
	10	20100	143	151100	36810	**PH**	**012RF97**	**DRS**	**180L4**	590	106
	12	17500	125	145100	36810	**PHF**	**012RF97**	**DRS**	**180L4**	520	107
	14	14600	105	137500	35000						
	16	12700	91	131700	32100						
	8.9	23000	164	109700	24830						
	11	19500	139	104400	24830	**P**	**002RF97**	**DRS**	**180L4**	495	98
	12	17000	121	100200	24830	**PF**	**002RF97**	**DRS**	**180L4**	435	99
	14	14200	102	95000	24830	**PH**	**002RF97**	**DRS**	**180L4**	500	98
	17	12300	88	91000	24830	**PHF**	**002RF97**	**DRS**	**180L4**	440	99
30	**0.67**	420400	2201	581600	359400						
	0.76	371000	1943	632000	359400	**P**	**082RF167**	**DRS**	**180LC4**	3300	148
	0.87	321600	1684	674400	359400	**PF**	**082RF167**	**DRS**	**180LC4**	2660	149
	0.98	286100	1498	683000	359400	**PH**	**082RF167**	**DRS**	**180LC4**	3300	148
	1.1	246600	1291	683000	359400	**PHF**	**082RF167**	**DRS**	**180LC4**	2650	149
	1.4	200400	1049	683000	359400						
	0.97	290400	1521	511700	245660	**P**	**072RF167**	**DRS**	**180LC4**	2650	144
	1.4	203400	1065	523000	245660	**PF**	**072RF167**	**DRS**	**180LC4**	2160	145
						PH	**072RF167**	**DRS**	**180LC4**	2700	144
						PHF	**072RF167**	**DRS**	**180LC4**	2210	145
	1.1	259200	1358	523000	245660	**P**	**072RF147**	**DRS**	**180LC4**	2390	142
	1.3	217900	1141	523000	245660	**PF**	**072RF147**	**DRS**	**180LC4**	1900	143
	1.6	175900	922	523000	245660	**PH**	**072RF147**	**DRS**	**180LC4**	2440	142
						PHF	**072RF147**	**DRS**	**180LC4**	1950	143
	1.9	148600	779	523000	245660	**P**	**072RF147**	**DRS**	**180LC4**	2380	142
						PF	**072RF147**	**DRS**	**180LC4**	1890	143
						PH	**072RF147**	**DRS**	**180LC4**	2430	142
						PHF	**072RF147**	**DRS**	**180LC4**	1940	143
	1.6	181300	949	441900	185660	**P**	**062RF147**	**DRS**	**180LC4**	1970	140
						PF	**062RF147**	**DRS**	**180LC4**	1600	141
						PH	**062RF147**	**DRS**	**180LC4**	1960	140
						PHF	**062RF147**	**DRS**	**180LC4**	1590	141
	1.8	153100	802	461100	185660	**P**	**062RF147**	**DRS**	**180LC4**	1960	140
	2.1	135100	708	471800	185660	**PF**	**062RF147**	**DRS**	**180LC4**	1590	141
	2.4	117100	614	473000	185660	**PH**	**062RF147**	**DRS**	**180LC4**	1940	140
						PHF	**062RF147**	**DRS**	**180LC4**	1580	141
	1.7	164800	863	453500	185660						
	2.0	142600	747	467500	185660	**P**	**062RF137**	**DRS**	**180LC4**	1840	138
	2.2	125900	659	473000	185660	**PF**	**062RF137**	**DRS**	**180LC4**	1470	139
	2.6	108700	569	473000	185660	**PH**	**062RF137**	**DRS**	**180LC4**	1830	138
	2.9	96100	503	473000	185660	**PHF**	**062RF137**	**DRS**	**180LC4**	1460	139
	2.0	142600	747	326600	124060						
	2.2	125900	659	345100	124060	**P**	**052RF137**	**DRS**	**180LC4**	1350	134
	2.6	108700	569	361300	124060	**PF**	**052RF137**	**DRS**	**180LC4**	1150	135
	2.9	96100	503	364000	124060	**PH**	**052RF137**	**DRS**	**180LC4**	1350	134
	3.5	80800	423	364000	124060	**PHF**	**052RF137**	**DRS**	**180LC4**	1150	135



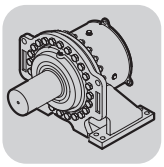
P_M [kW]	n_2 [min^{-1}]	M_a [Nm]	i_{ex}	F_{Ra} [N]	M_{N2} [Nm]					m [kg]	
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	3.5	80800	423	313400	100170	**PF**	**042RF137**	**DRS**	**180LC4**	1020	129
	4.3	65200	342	309200	100170	**PH**	**042RF137**	**DRS**	**180LC4**	1210	128
	4.9	56800	298	296600	100170	**PHF**	**042RF137**	**DRS**	**180LC4**	1020	129
	5.9	47800	250	281700	100170						
	2.7	102300	536	293300	100170						
	3.2	86800	455	308300	100170	**P**	**042RF107**	**DRS**	**180LC4**	1110	126
	3.7	75900	397	317400	100170	**PF**	**042RF107**	**DRS**	**180LC4**	920	127
	4.4	64100	336	307700	100170	**PH**	**042RF107**	**DRS**	**180LC4**	1110	126
	4.8	58800	308	299800	100170	**PHF**	**042RF107**	**DRS**	**180LC4**	920	127
	5.6	49900	261	285400	100170						
	3.7	75900	397	214600	69620						
	4.4	64100	336	230100	69620						
	4.8	58800	308	236200	69620						
	5.6	49900	261	231000	69620						
	6.4	43600	228	221900	69620	**P**	**032RF107**	**DRS**	**180LC4**	860	120
	7.6	36900	193	210900	69620	**PF**	**032RF107**	**DRS**	**180LC4**	740	121
	8.5	32800	172	203700	69620	**PH**	**032RF107**	**DRS**	**180LC4**	880	120
	9.3	30100	158	198600	58500	**PHF**	**032RF107**	**DRS**	**180LC4**	760	121
	11	25500	134	189000	58500						
	13	22300	117	181500	58500						
	15	18900	99	172600	57100						
	16	17200	91	168000	32100	**P**	**032RF97**	**DRS**	**180LC4**	810	118
						PF	**032RF97**	**DRS**	**180LC4**	690	119
						PH	**032RF97**	**DRS**	**180LC4**	840	118
						PHF	**032RF97**	**DRS**	**180LC4**	710	119
	4.8	58800	308	178300	51190						
	5.6	49900	261	192700	51190	**P**	**022RF107**	**DRS**	**180LC4**	780	114
	6.4	43600	228	197000	51190	**PF**	**022RF107**	**DRS**	**180LC4**	680	115
	7.6	36900	193	197000	51190	**PH**	**022RF107**	**DRS**	**180LC4**	790	114
	8.5	32800	172	197000	51190	**PHF**	**022RF107**	**DRS**	**180LC4**	690	115
	9.3	30100	158	197000	51190						
	8.5	32800	172	156000	36810						
	9.3	30100	158	155500	36810	**P**	**012RF107**	**DRS**	**180LC4**	630	108
	11	25500	134	148000	36810	**PF**	**012RF107**	**DRS**	**180LC4**	560	109
	13	22300	117	142100	36810	**PH**	**012RF107**	**DRS**	**180LC4**	650	108
	15	18900	99	135100	36810	**PHF**	**012RF107**	**DRS**	**180LC4**	580	109
	16	17200	91	131500	32100	**P**	**012RF97**	**DRS**	**180LC4**	590	106
						PF	**012RF97**	**DRS**	**180LC4**	520	107
						PH	**012RF97**	**DRS**	**180LC4**	600	106
						PHF	**012RF97**	**DRS**	**180LC4**	530	107
	11	24800	130	102200	24830	**P**	**002RF107**	**DRS**	**180LC4**	550	100
	13	21700	114	98200	24830	**PF**	**002RF107**	**DRS**	**180LC4**	495	101
	15	18300	96	93400	24830	**PH**	**002RF107**	**DRS**	**180LC4**	560	100
						PHF	**002RF107**	**DRS**	**180LC4**	500	101
	17	16700	88	90900	24830	**P**	**002RF97**	**DRS**	**180LC4**	510	98
						PF	**002RF97**	**DRS**	**180LC4**	450	99
						PH	**002RF97**	**DRS**	**180LC4**	510	98
						PHF	**002RF97**	**DRS**	**180LC4**	450	99
37	**0.88**	395300	1684	608300	359400						
	0.98	351700	1498	649400	359400	**P**	**082RF167**	**DRS**	**225S4**	3430	148
	1.1	303200	1291	683000	359400	**PF**	**082RF167**	**DRS**	**225S4**	2780	149
	1.4	246300	1049	683000	359400	**PH**	**082RF167**	**DRS**	**225S4**	3430	148
	1.7	208900	890	683000	359400	**PHF**	**082RF167**	**DRS**	**225S4**	2780	149
	1.8	192500	820	683000	359400	**P**	**082RF167**	**DRS**	**225S4**	3430	148
						PF	**082RF167**	**DRS**	**225S4**	2780	149
						PH	**082RF167**	**DRS**	**225S4**	3420	148
						PHF	**082RF167**	**DRS**	**225S4**	2770	149
	1.4	250000	1065	523000	245660	**P**	**072RF167**	**DRS**	**225S4**	2780	144
						PF	**072RF167**	**DRS**	**225S4**	2280	145
						PH	**072RF167**	**DRS**	**225S4**	2830	144
						PHF	**072RF167**	**DRS**	**225S4**	2340	145
	1.6	216300	922	523000	245660	**P**	**072RF147**	**DRS**	**225S4**	2520	142
						PF	**072RF147**	**DRS**	**225S4**	2030	143
						PH	**072RF147**	**DRS**	**225S4**	2570	142
						PHF	**072RF147**	**DRS**	**225S4**	2080	143



P_M [kW]	n_2 [min^{-1}]	M_a [Nm]	i_{ex}	F_{Ra} [N]	M_{N2} [Nm]					m [kg]	
37	**1.9**	182700	779	523000	245660	**P**	**072RF147**	**DRS**	**225S4**	2500	142
	2.2	161200	687	523000	245660	**PF**	**072RF147**	**DRS**	**225S4**	2010	143
						PH	**072RF147**	**DRS**	**225S4**	2560	142
						PHF	**072RF147**	**DRS**	**225S4**	2070	143
	1.8	188200	802	436700	185660	**P**	**062RF147**	**DRS**	**225S4**	2080	140
	2.1	166100	708	452600	185660	**PF**	**062RF147**	**DRS**	**225S4**	1720	141
	2.4	144000	614	466700	185660	**PH**	**062RF147**	**DRS**	**225S4**	2070	140
	2.7	128100	546	473000	185660	**PHF**	**062RF147**	**DRS**	**225S4**	1710	141
	2.0	175300	747	446200	185660						
	2.2	154700	659	460100	185660	**P**	**062RF137**	**DRS**	**225S4**	1960	138
	2.6	133600	569	472700	185660	**PF**	**062RF137**	**DRS**	**225S4**	1600	139
	2.9	118200	503	473000	185660	**PH**	**062RF137**	**DRS**	**225S4**	1950	138
	3.5	99300	423	473000	185660	**PHF**	**062RF137**	**DRS**	**225S4**	1590	139
	2.6	133600	569	336900	124060	**P**	**052RF137**	**DRS**	**225S4**	1480	134
	2.9	118200	503	352700	124060	**PF**	**052RF137**	**DRS**	**225S4**	1280	135
	3.5	99300	423	364000	124060	**PH**	**052RF137**	**DRS**	**225S4**	1470	134
	4.3	80200	342	356100	124060	**PHF**	**052RF137**	**DRS**	**225S4**	1270	135
	3.5	99300	423	296400	100170						
	4.3	80200	342	308800	100170	**P**	**042RF137**	**DRS**	**225S4**	1340	128
	5.0	69900	298	296400	100170	**PF**	**042RF137**	**DRS**	**225S4**	1150	129
	5.9	58700	250	281400	100170	**PH**	**042RF137**	**DRS**	**225S4**	1340	128
	7.3	47400	202	263800	100170	**PHF**	**042RF137**	**DRS**	**225S4**	1150	129
	3.7	93200	397	302400	100170	**P**	**042RF107**	**DRS**	**225S4**	1230	126
	4.4	78800	336	307300	100170	**PF**	**042RF107**	**DRS**	**225S4**	1040	127
						PH	**042RF107**	**DRS**	**225S4**	1240	126
						PHF	**042RF107**	**DRS**	**225S4**	1050	127
	8.4	41100	175	204600	69620	**P**	**032RF137**	**DRS**	**225S4**	1090	122
	9.7	35800	153	196400	69620	**PF**	**032RF137**	**DRS**	**225S4**	970	123
						PH	**032RF137**	**DRS**	**225S4**	1110	122
						PHF	**032RF137**	**DRS**	**225S4**	990	123
	4.4	78800	336	210200	69620						
	4.8	72300	308	219600	69620						
	5.6	61300	261	230700	69620	**P**	**032RF107**	**DRS**	**225S4**	990	120
	6.4	53600	228	221600	69620	**PF**	**032RF107**	**DRS**	**225S4**	860	121
	7.6	45300	193	210800	69620	**PH**	**032RF107**	**DRS**	**225S4**	1010	120
	11	31400	134	188800	58500	**PHF**	**032RF107**	**DRS**	**225S4**	890	121
	13	27400	117	181300	58500						
	15	23200	99	172400	57100						
	7.6	45300	193	197000	51190	**P**	**022RF107**	**DRS**	**225S4**	910	114
	8.6	40400	172	197000	51190	**PF**	**022RF107**	**DRS**	**225S4**	800	115
	9.3	37000	158	197000	51190	**PH**	**022RF107**	**DRS**	**225S4**	920	114
						PHF	**022RF107**	**DRS**	**225S4**	820	115
	11	31400	134	147800	36810	**P**	**012RF107**	**DRS**	**225S4**	760	108
	13	27400	117	142000	36810	**PF**	**012RF107**	**DRS**	**225S4**	690	109
	15	23200	99	135000	36810	**PH**	**012RF107**	**DRS**	**225S4**	770	108
						PHF	**012RF107**	**DRS**	**225S4**	700	109
45	**1.2**	367500	1291	635300	359400	**P**	**082RF167**	**DRS**	**225M4**	3450	148
	1.4	298600	1049	683000	359400	**PF**	**082RF167**	**DRS**	**225M4**	2800	149
	1.7	253200	890	683000	359400	**PH**	**082RF167**	**DRS**	**225M4**	3450	148
						PHF	**082RF167**	**DRS**	**225M4**	2800	149
	1.8	233300	820	683000	359400	**P**	**082RF167**	**DRS**	**225M4**	3450	148
	2.1	203200	714	683000	359400	**PF**	**082RF167**	**DRS**	**225M4**	2800	149
	2.3	181300	637	683000	359400	**PH**	**082RF167**	**DRS**	**225M4**	3440	148
						PHF	**082RF167**	**DRS**	**225M4**	2790	149
	1.6	262200	922	523000	245660	**P**	**072RF147**	**DRS**	**225M4**	2540	142
						PF	**072RF147**	**DRS**	**225M4**	2050	143
						PH	**072RF147**	**DRS**	**225M4**	2590	142
						PHF	**072RF147**	**DRS**	**225M4**	2100	143
	1.9	221500	779	523000	245660	**P**	**072RF147**	**DRS**	**225M4**	2520	142
	2.2	195400	687	523000	245660	**PF**	**072RF147**	**DRS**	**225M4**	2030	143
	2.8	150700	530	523000	245660	**PH**	**072RF147**	**DRS**	**225M4**	2580	142
	3.2	129900	457	523000	245660	**PHF**	**072RF147**	**DRS**	**225M4**	2090	143
	2.1	201300	708	426300	185660						
	2.4	174500	614	446800	185660	**P**	**062RF147**	**DRS**	**225M4**	2100	140
	2.7	155300	546	459700	185660	**PF**	**062RF147**	**DRS**	**225M4**	1740	141
	3.9	108700	382	473000	185660	**PH**	**062RF147**	**DRS**	**225M4**	2090	140
	4.6	92200	324	468800	185660	**PHF**	**062RF147**	**DRS**	**225M4**	1730	141
	5.2	80900	284	450600	185660						



P_M [kW]	n_2 [min^{-1}]	M_a [Nm]	i_{ex}	F_{Ra} [N]	M_{N2} [Nm]					m [kg]	
45	**2.6**	162000	569	455400	185660	**P**	**062RF137**	**DRS**	**225M4**	1980	138
	2.9	143200	503	467100	185660	**PF**	**062RF137**	**DRS**	**225M4**	1620	139
	3.5	120400	423	473000	185660	**PH**	**062RF137**	**DRS**	**225M4**	1970	138
						PHF	**062RF137**	**DRS**	**225M4**	1610	139
	6.4	65700	231	316500	124060	**P**	**052RF147**	**DRS**	**225M4**	1620	136
						PF	**052RF147**	**DRS**	**225M4**	1420	137
						PH	**052RF147**	**DRS**	**225M4**	1610	136
						PHF	**052RF147**	**DRS**	**225M4**	1410	137
	3.5	120400	423	350500	124060	**P**	**052RF137**	**DRS**	**225M4**	1500	134
	4.3	97200	342	355900	124060	**PF**	**052RF137**	**DRS**	**225M4**	1300	135
						PH	**052RF137**	**DRS**	**225M4**	1490	134
						PHF	**052RF137**	**DRS**	**225M4**	1290	135
	7.6	55700	196	261200	100170	**P**	**042RF147**	**DRS**	**225M4**	1470	130
						PF	**042RF147**	**DRS**	**225M4**	1280	131
						PH	**042RF147**	**DRS**	**225M4**	1480	130
						PHF	**042RF147**	**DRS**	**225M4**	1290	131
	4.3	97200	342	298500	100170	**P**	**042RF137**	**DRS**	**225M4**	1360	128
	5.0	84700	298	296100	100170	**PF**	**042RF137**	**DRS**	**225M4**	1170	129
	5.9	71200	250	281100	100170	**PH**	**042RF137**	**DRS**	**225M4**	1360	128
	7.3	57500	202	263600	100170	**PHF**	**042RF137**	**DRS**	**225M4**	1170	129
	5.9	71200	250	221100	69620						
	7.3	57500	202	213400	69620	**P**	**032RF137**	**DRS**	**225M4**	1110	122
	8.4	49800	175	204400	69620	**PF**	**032RF137**	**DRS**	**225M4**	990	123
	9.7	43400	153	196200	69620	**PH**	**032RF137**	**DRS**	**225M4**	1130	122
	12	36500	128	186200	69620	**PHF**	**032RF137**	**DRS**	**225M4**	1010	123
	14	29400	104	174600	69620						
	6.5	65000	228	221300	69620	**P**	**032RF107**	**DRS**	**225M4**	1010	120
	7.7	54900	193	210500	69620	**PF**	**032RF107**	**DRS**	**225M4**	890	121
						PH	**032RF107**	**DRS**	**225M4**	1030	120
						PHF	**032RF107**	**DRS**	**225M4**	910	121
	8.4	49800	175	192800	51190	**P**	**022RF137**	**DRS**	**225M4**	1030	116
	9.7	43400	153	197000	51190	**PF**	**022RF137**	**DRS**	**225M4**	930	117
	12	36500	128	197000	51190	**PH**	**022RF137**	**DRS**	**225M4**	1040	116
						PHF	**022RF137**	**DRS**	**225M4**	940	117
	13	33300	117	191700	51190	**P**	**022RF107**	**DRS**	**225M4**	930	114
	15	28100	99	182400	51190	**PF**	**022RF107**	**DRS**	**225M4**	820	115
						PH	**022RF107**	**DRS**	**225M4**	940	114
						PHF	**022RF107**	**DRS**	**225M4**	840	115
	13	33300	117	141800	36810	**P**	**012RF107**	**DRS**	**225M4**	780	108
	15	28100	99	134900	36810	**PF**	**012RF107**	**DRS**	**225M4**	710	109
						PH	**012RF107**	**DRS**	**225M4**	790	108
						PHF	**012RF107**	**DRS**	**225M4**	720	109
55	**1.4**	364900	1049	637600	359400	**P**	**082RF167**	**DRS**	**225MC4**	3480	148
	1.7	309500	890	683000	359400	**PF**	**082RF167**	**DRS**	**225MC4**	2820	149
						PH	**082RF167**	**DRS**	**225MC4**	3470	148
						PHF	**082RF167**	**DRS**	**225MC4**	2820	149
	1.8	285200	820	683000	359400	**P**	**082RF167**	**DRS**	**225MC4**	3470	148
	2.1	248400	714	683000	359400	**PF**	**082RF167**	**DRS**	**225MC4**	2820	149
	2.3	221600	637	683000	359400	**PH**	**082RF167**	**DRS**	**225MC4**	3460	148
	2.7	188900	543	683000	359400	**PHF**	**082RF167**	**DRS**	**225MC4**	2810	149
	2.5	204100	587	683000	359400	**P**	**082RF147**	**DRS**	**225MC4**	3200	146
	2.8	181600	522	683000	359400	**PF**	**082RF147**	**DRS**	**225MC4**	2550	147
						PH	**082RF147**	**DRS**	**225MC4**	3200	146
						PHF	**082RF147**	**DRS**	**225MC4**	2550	147
	1.9	270700	779	523000	245660						
	2.2	238900	687	523000	245660	**P**	**072RF147**	**DRS**	**225MC4**	2550	142
	2.8	184300	530	523000	245660	**PF**	**072RF147**	**DRS**	**225MC4**	2060	143
	3.2	158800	457	523000	245660	**PH**	**072RF147**	**DRS**	**225MC4**	2600	142
	4.0	129000	371	523000	245660	**PHF**	**072RF147**	**DRS**	**225MC4**	2110	143
	2.4	213300	614	416100	185660						
	2.7	189800	546	435500	185660	**P**	**062RF147**	**DRS**	**225MC4**	2120	140
	3.9	132900	382	473000	185660	**PF**	**062RF147**	**DRS**	**225MC4**	1760	141
	4.6	112700	324	468800	185660	**PH**	**062RF147**	**DRS**	**225MC4**	2110	140
	5.2	98900	284	450600	185660	**PHF**	**062RF147**	**DRS**	**225MC4**	1750	141
	6.4	80300	231	423400	185660						

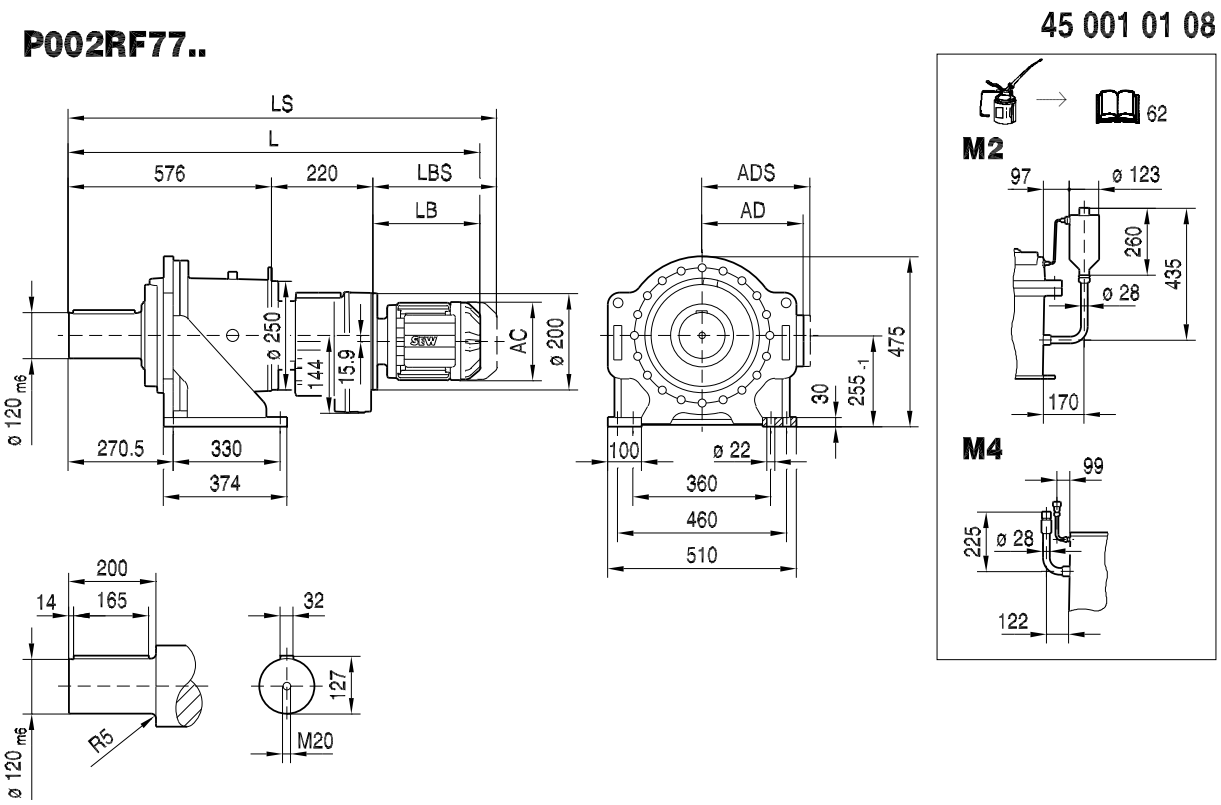


P_M [kW]	n_2 [min^{-1}]	M_a [Nm]	i_{ex}	F_{Ra} [N]	M_{N2} [Nm]					m [kg]	
55	**2.9**	175100	503	446400	185660	**P**	**062RF137**	**DRS**	**225MC4**	2010	138
	3.5	147100	423	464800	185660	**PF**	**062RF137**	**DRS**	**225MC4**	1640	139
	4.3	118800	342	473000	185660	**PH**	**062RF137**	**DRS**	**225MC4**	2000	138
	5.0	103500	298	456800	185660	**PHF**	**062RF137**	**DRS**	**225MC4**	1630	139
	6.4	80300	231	316500	124060	**P**	**052RF147**	**DRS**	**225MC4**	1640	136
	7.6	68100	196	301200	124060	**PF**	**052RF147**	**DRS**	**225MC4**	1440	137
						PH	**052RF147**	**DRS**	**225MC4**	1630	136
						PHF	**052RF147**	**DRS**	**225MC4**	1430	137
	4.3	118800	342	352000	124060						
	5.0	103500	298	341500	124060	**P**	**052RF137**	**DRS**	**225MC4**	1520	134
	5.9	87000	250	324200	124060	**PF**	**052RF137**	**DRS**	**225MC4**	1320	135
	6.8	75400	217	310500	124060	**PH**	**052RF137**	**DRS**	**225MC4**	1510	134
	7.3	70300	202	304000	124060	**PHF**	**052RF137**	**DRS**	**225MC4**	1310	135
	7.6	68100	196	261200	100170						
	8.9	57700	166	248500	100170	**P**	**042RF147**	**DRS**	**225MC4**	1490	130
	10	50700	146	239000	100170	**PF**	**042RF147**	**DRS**	**225MC4**	1300	131
	12	41200	118	224600	100170	**PH**	**042RF147**	**DRS**	**225MC4**	1500	130
	15	34900	101	213700	100170	**PHF**	**042RF147**	**DRS**	**225MC4**	1310	131
	5.0	103500	298	292000	100170						
	5.9	87000	250	281100	100170						
	7.3	70300	202	263600	100170	**P**	**042RF137**	**DRS**	**225MC4**	1380	128
	8.4	60900	175	252500	100170	**PF**	**042RF137**	**DRS**	**225MC4**	1190	129
	9.7	53100	153	242300	100170	**PH**	**042RF137**	**DRS**	**225MC4**	1380	128
	12	44600	128	230000	100170	**PHF**	**042RF137**	**DRS**	**225MC4**	1190	129
	14	36000	104	215700	90600						
	8.4	60900	175	204400	69620	**P**	**032RF137**	**DRS**	**225MC4**	1130	122
	9.7	53100	153	196200	69620	**PF**	**032RF137**	**DRS**	**225MC4**	1010	123
						PH	**032RF137**	**DRS**	**225MC4**	1150	122
						PHF	**032RF137**	**DRS**	**225MC4**	1030	123
	12	44600	128	197000	51190	**P**	**022RF137**	**DRS**	**225MC4**	1050	116
	14	36000	104	184800	51190	**PF**	**022RF137**	**DRS**	**225MC4**	950	117
						PH	**022RF137**	**DRS**	**225MC4**	1070	116
						PHF	**022RF137**	**DRS**	**225MC4**	960	117
75	**2.1**	338800	714	660500	359400	**P**	**082RF167**	**DV**	**280S4**	3720	148
	2.3	302300	637	683000	359400	**PF**	**082RF167**	**DV**	**280S4**	3070	149
	2.7	257600	543	683000	359400	**PH**	**082RF167**	**DV**	**280S4**	3710	148
						PHF	**082RF167**	**DV**	**280S4**	3060	149
	2.8	251300	530	523000	245660	**P**	**072RF147**	**DV**	**280S4**	2800	142
	3.2	216600	457	523000	245660	**PF**	**072RF147**	**DV**	**280S4**	2310	143
	4.0	176000	371	523000	245660	**PH**	**072RF147**	**DV**	**280S4**	2850	142
						PHF	**072RF147**	**DV**	**280S4**	2360	143
	3.9	181300	382	441900	185660	**P**	**062RF147**	**DV**	**280S4**	2380	140
	4.6	153700	324	460700	185660	**PF**	**062RF147**	**DV**	**280S4**	2010	141
	5.2	134900	284	450600	185660	**PH**	**062RF147**	**DV**	**280S4**	2360	140
	6.4	109600	231	423400	185660	**PHF**	**062RF147**	**DV**	**280S4**	2000	141
	6.4	109600	231	316500	124060	**P**	**052RF147**	**DV**	**280S4**	1890	136
	7.6	92900	196	301200	124060	**PF**	**052RF147**	**DV**	**280S4**	1690	137
	8.9	78800	166	286600	124060	**PH**	**052RF147**	**DV**	**280S4**	1880	136
						PHF	**052RF147**	**DV**	**280S4**	1680	137
	7.6	92900	196	261200	100170						
	8.9	78800	166	248500	100170	**P**	**042RF147**	**DV**	**280S4**	1750	130
	10	69100	146	239000	100170	**PF**	**042RF147**	**DV**	**280S4**	1560	131
	12	56100	118	224600	100170	**PH**	**042RF147**	**DV**	**280S4**	1750	130
	15	47600	101	213700	100170	**PHF**	**042RF147**	**DV**	**280S4**	1560	131
	10	69100	146	193500	69620	**P**	**032RF147**	**DV**	**280S4**	1500	124
	12	56100	118	181800	69620	**PF**	**032RF147**	**DV**	**280S4**	1380	125
	15	47600	101	173000	69620	**PH**	**032RF147**	**DV**	**280S4**	1520	124
						PHF	**032RF147**	**DV**	**280S4**	1400	125
90	**2.3**	362700	637	639600	359400	**P**	**082RF167**	**DV**	**280M4**	3720	148
	2.7	309200	543	683000	359400	**PF**	**082RF167**	**DV**	**280M4**	3070	149
						PH	**082RF167**	**DV**	**280M4**	3720	148
						PHF	**082RF167**	**DV**	**280M4**	3070	149
	3.2	259900	457	523000	245660	**P**	**072RF147**	**DV**	**280M4**	2800	142
	4.0	211200	371	523000	245660	**PF**	**072RF147**	**DV**	**280M4**	2310	143
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						PHF	**072RF147**	**DV**	**280M4**	2360	143

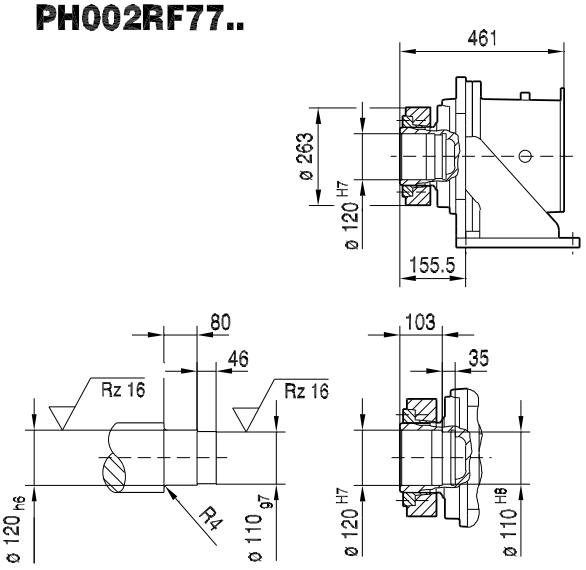
P_M [kW]	n_2 [min^{-1}]	M_a [Nm]	i_{ex}	F_{Ra} [N]	M_{N2} [Nm]					m [kg]	
90	**4.6**	184500	324	439500	185660	**P**	**062RF147**	**DV**	**280M4**	2380	140
	5.2	161900	284	450600	185660	**PF**	**062RF147**	**DV**	**280M4**	2020	141
	6.4	131500	231	423400	185660	**PH**	**062RF147**	**DV**	**280M4**	2370	140
						PHF	**062RF147**	**DV**	**280M4**	2000	141
	7.6	111500	196	301200	124060	**P**	**052RF147**	**DV**	**280M4**	1900	136
						PF	**052RF147**	**DV**	**280M4**	1700	137
						PH	**052RF147**	**DV**	**280M4**	1890	136
						PHF	**052RF147**	**DV**	**280M4**	1690	137
	8.9	94500	166	248500	100170	**P**	**042RF147**	**DV**	**280M4**	1750	130
	10	82900	146	239000	100170	**PF**	**042RF147**	**DV**	**280M4**	1560	131
	12	67400	118	224600	100170	**PH**	**042RF147**	**DV**	**280M4**	1750	130
	15	57100	101	213700	100170	**PHF**	**042RF147**	**DV**	**280M4**	1560	131
	15	57100	101	173000	69620	**P**	**032RF147**	**DV**	**280M4**	1500	124
						PF	**032RF147**	**DV**	**280M4**	1380	125
						PH	**032RF147**	**DV**	**280M4**	1520	124
						PHF	**032RF147**	**DV**	**280M4**	1400	125

10.3 Dimension sheets [mm]

P002RF77..



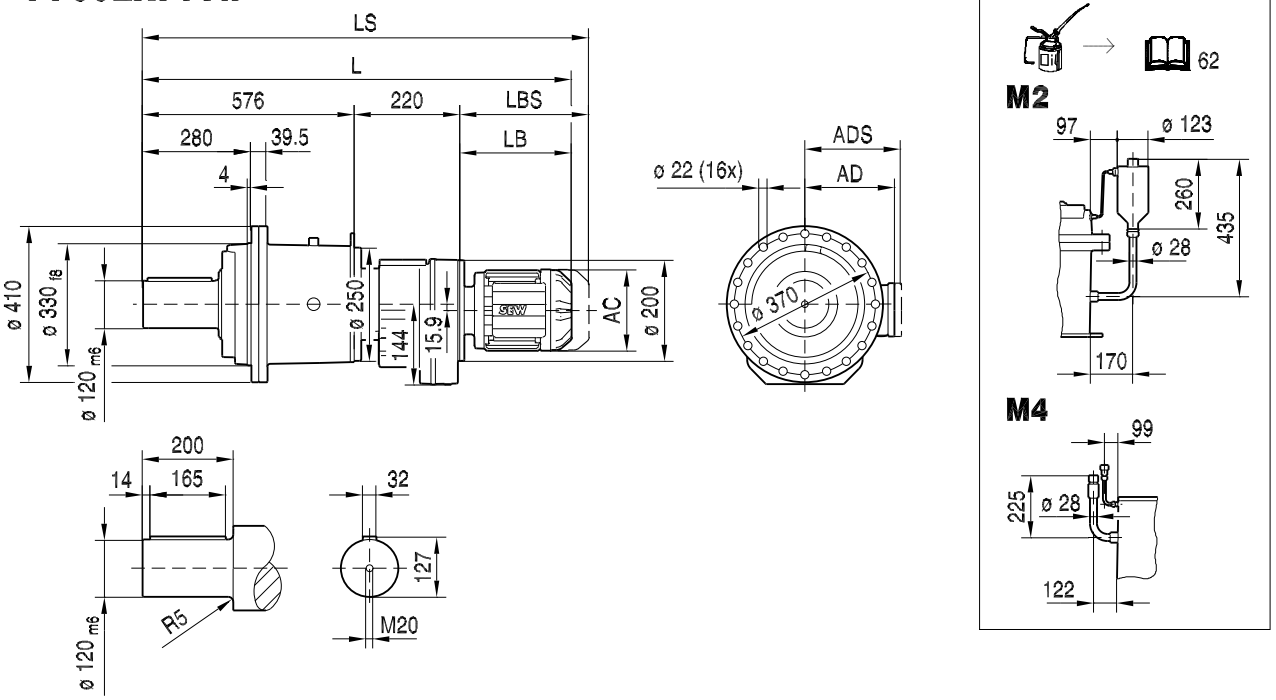
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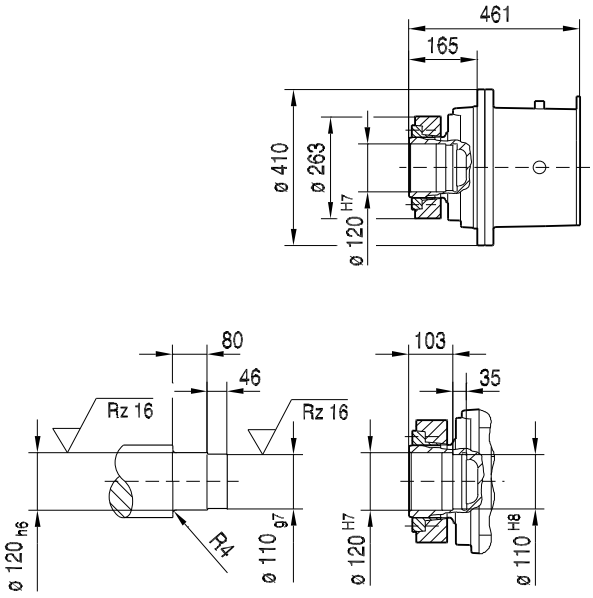
(→ 73)	DR80S	DR80M	DR90M	DR90L	DR100M	DR100L/LC	DR132S	
AC	156	156	179	179	197	197	221	
AD	128	128	140	140	157	157	170	
ADS	139	139	150	150	158	158	172	
L	1019	1050	1052	1072	1102	1132	1175	
LS	1100	1131	1145	1165	1195	1225	1287	
LB	223	254	256	276	306	336	379	
LBS	304	335	349	369	399	429	491	

PF002RF77..

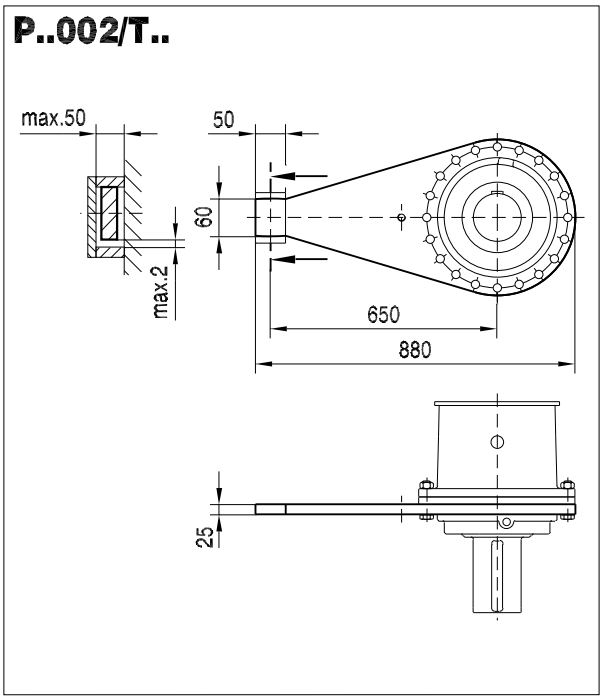
45 030 01 08



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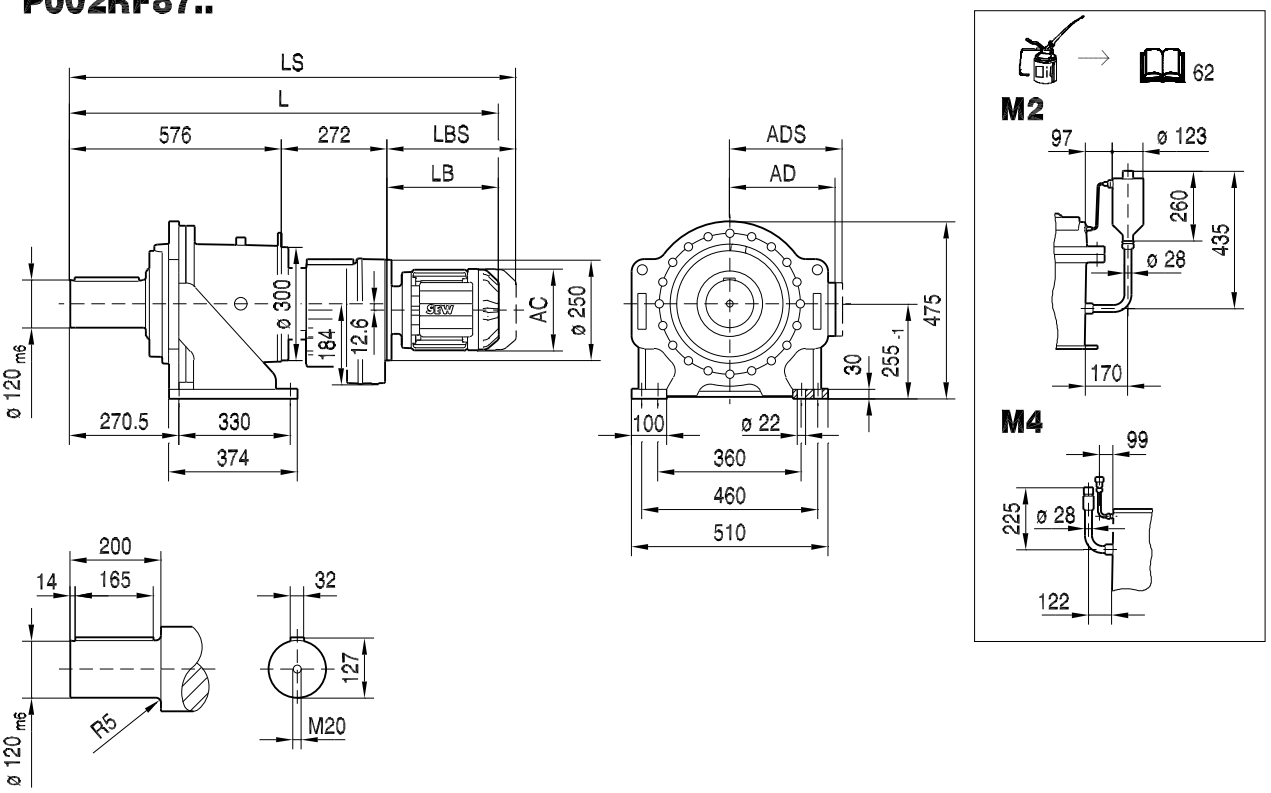
P..002/T..



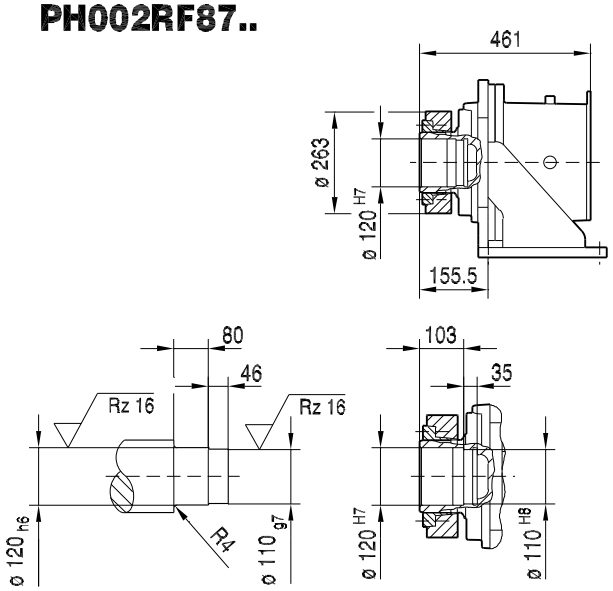
(→ 73)	DR80S	DR80M	DR90M	DR90L	DR100M	DR100L/LC	DR132S	
AC	156	156	179	179	197	197	221	
AD	128	128	140	140	157	157	170	
ADS	139	139	150	150	158	158	172	
L	1019	1050	1052	1072	1102	1132	1175	
LS	1100	1131	1145	1165	1195	1225	1287	
LB	223	254	256	276	306	336	379	
LBS	304	335	349	369	399	429	491	

P002RF87..

45 002 01 08



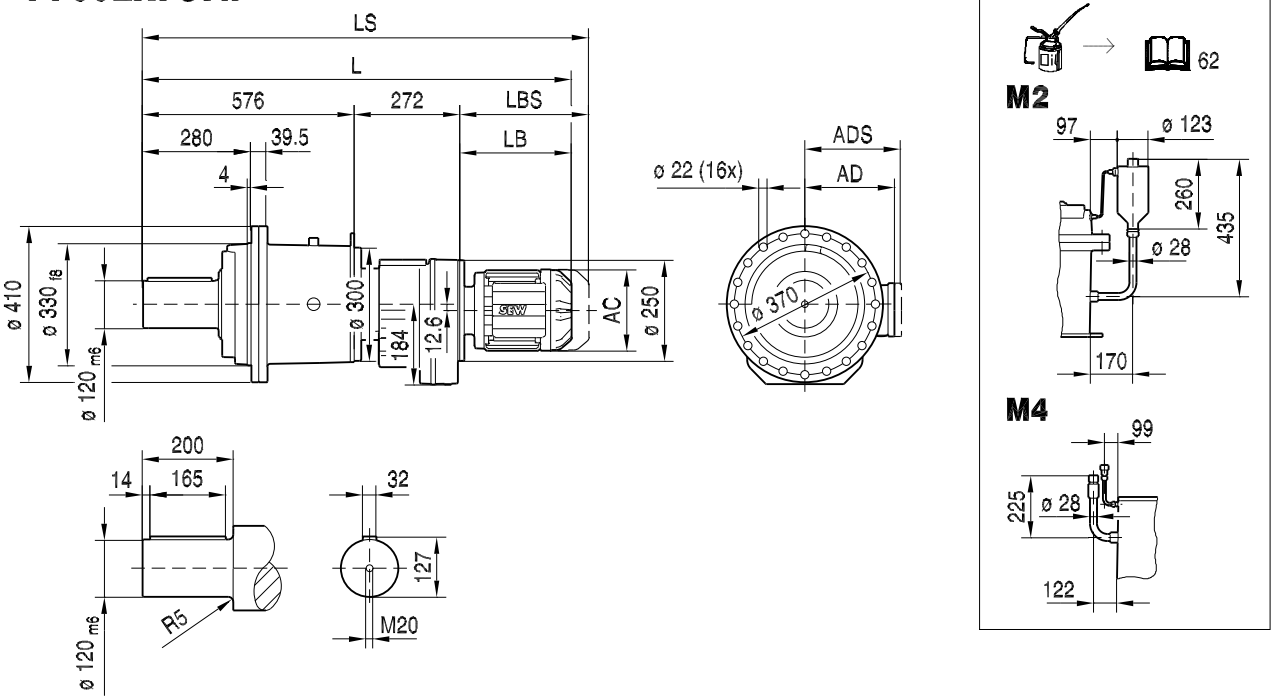
PH002RF87..



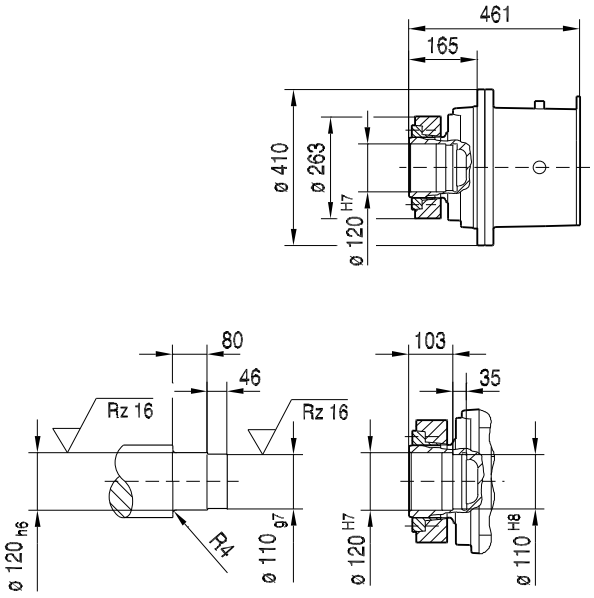
(→ 📖 73)	DR80S	DR80M	DR90M	DR90L	DR100M	DR100L/LC	DR132S	DR132M/MC	DR160..
AC	156	156	179	179	197	197	221	221	270
AD	128	128	140	140	157	157	170	170	228
ADS	139	139	150	150	158	158	172	172	228
L	1066	1097	1099	1119	1149	1179	1222	1272	1313
LS	1147	1178	1192	1212	1242	1272	1334	1384	1450
LB	218	249	251	271	301	331	374	424	465
LBS	299	330	344	364	394	424	486	536	602

PF002RF87..

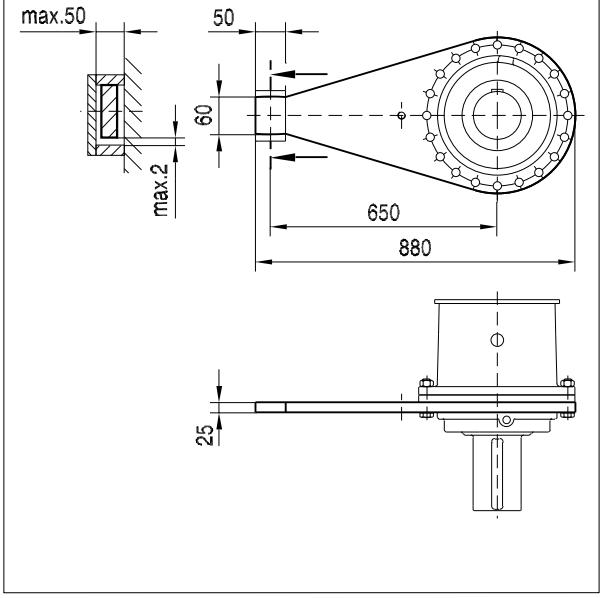
45 031 01 08



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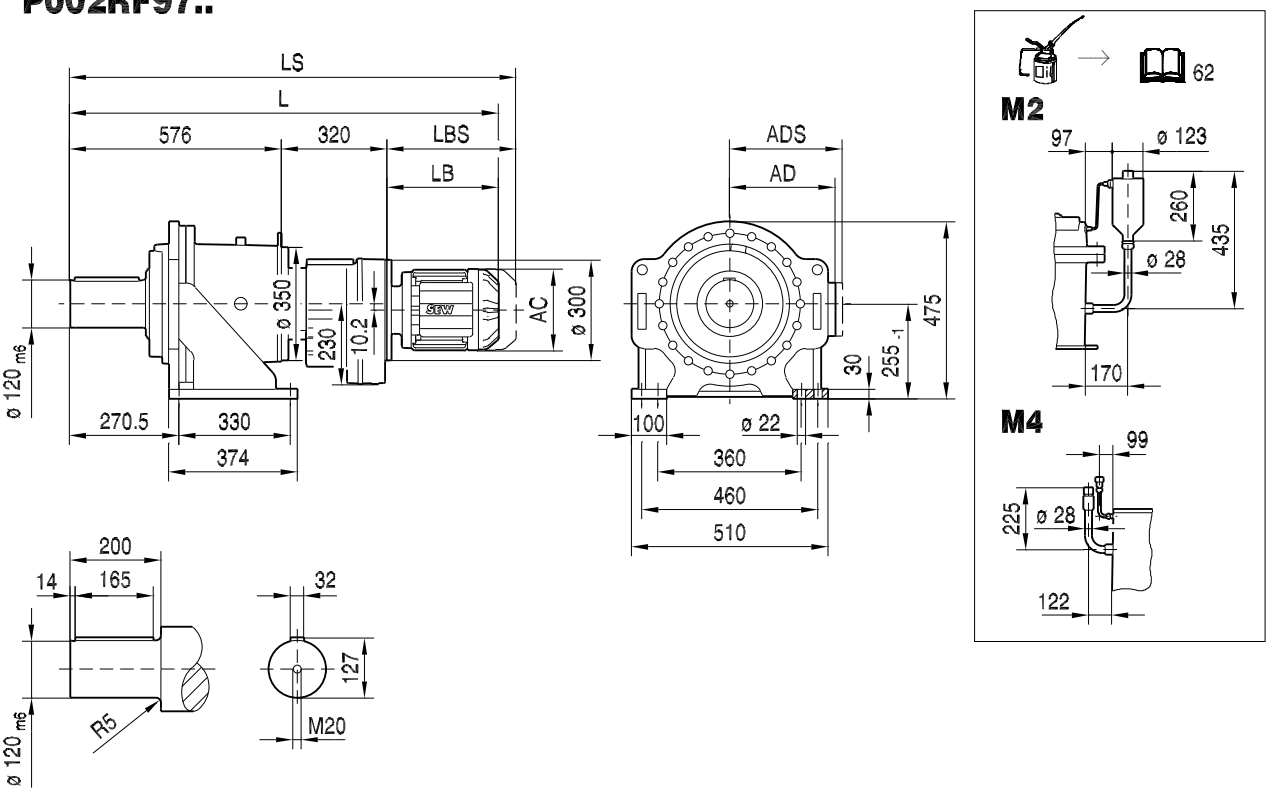
P..002/T..



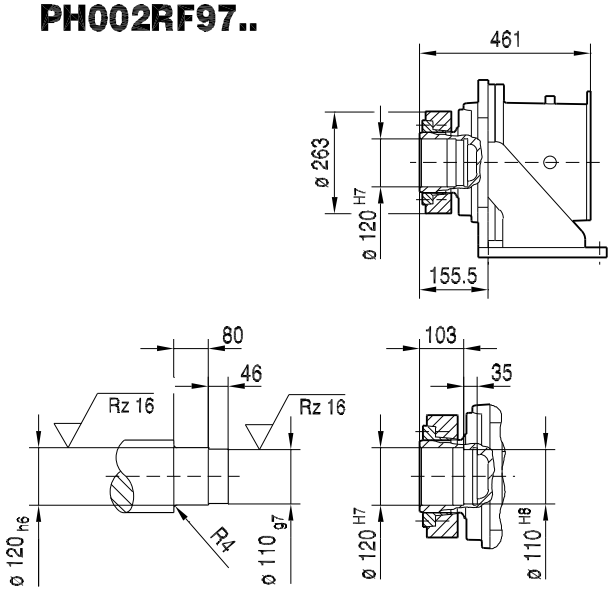
(→ 73)	DR80S	DR80M	DR90M	DR90L	DR100M	DR100L/LC	DR132S	DR132M/MC	DR160..
AC	156	156	179	179	197	197	221	221	270
AD	128	128	140	140	157	157	170	170	228
ADS	139	139	150	150	158	158	172	172	228
L	1066	1097	1099	1119	1149	1179	1222	1272	1313
LS	1147	1178	1192	1212	1242	1272	1334	1384	1450
LB	218	249	251	271	301	331	374	424	465
LBS	299	330	344	364	394	424	486	536	602

P002RF97..

45 003 01 08



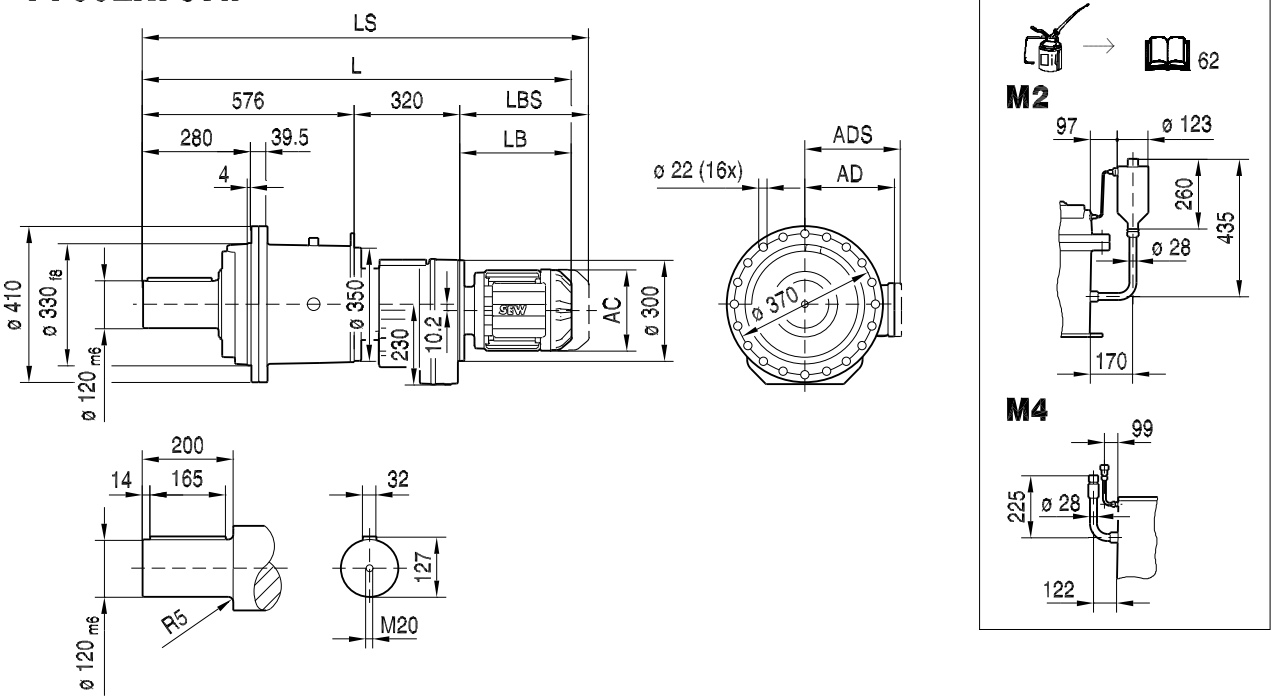
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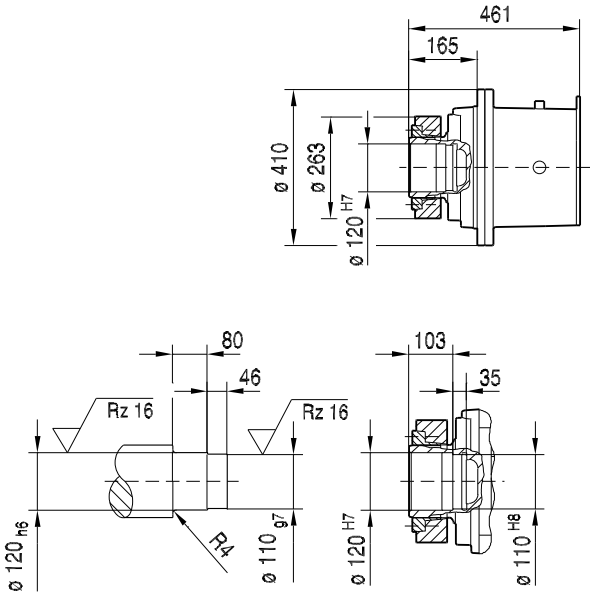
(→ 📖 73)	DR132M/MC	DR160..	DR180S/M	DR180L/LC				
AC	221	270	316	316				
AD	170	228	253	253				
ADS	172	228	253	253				
L	1315	1356	1425	1485				
LS	1427	1493	1614	1674				
LB	419	460	529	589				
LBS	531	597	718	778				

PF002RF97..

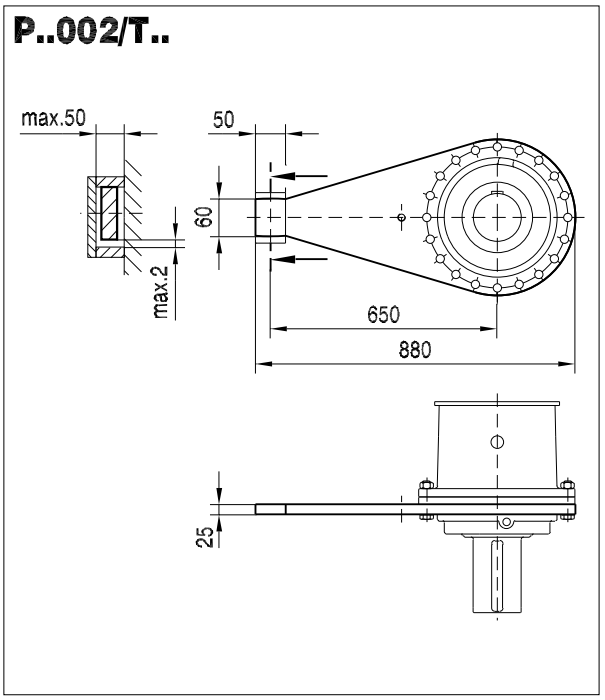
45 032 01 08



PHF002RF97..



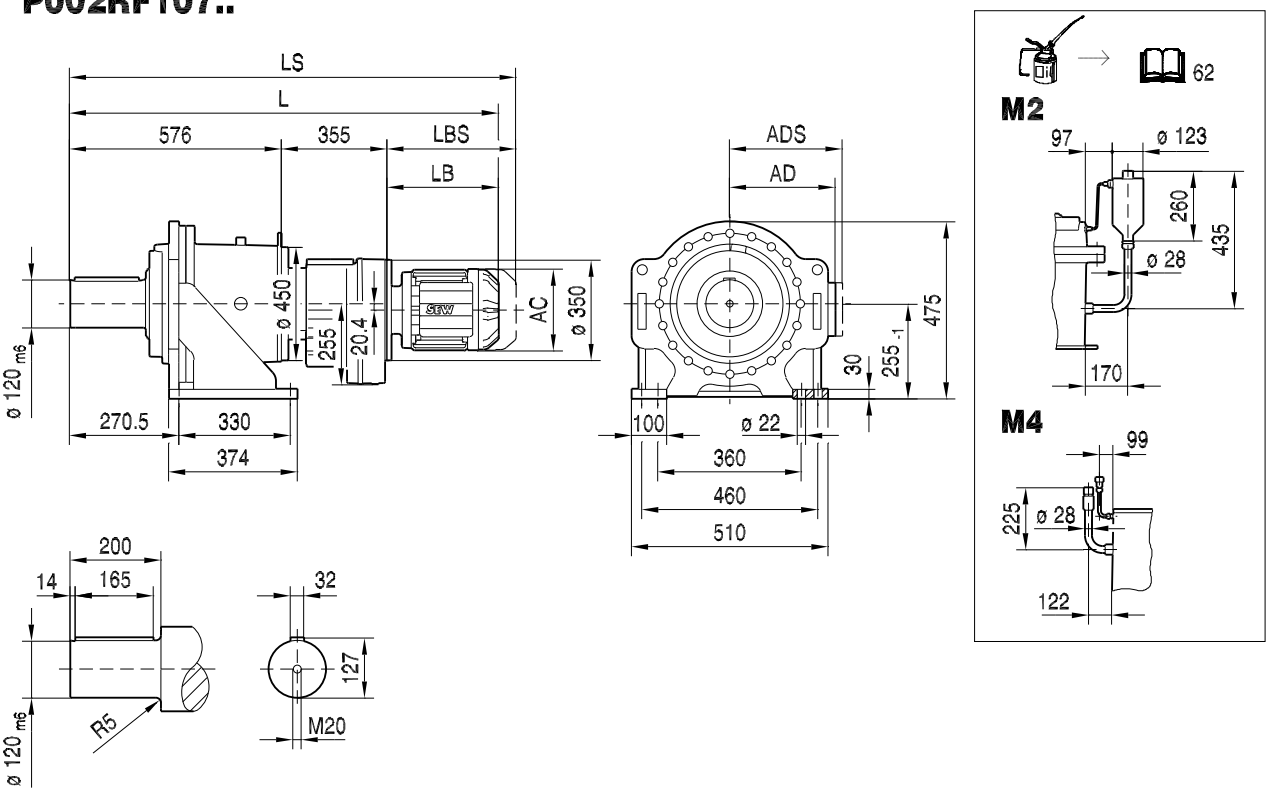
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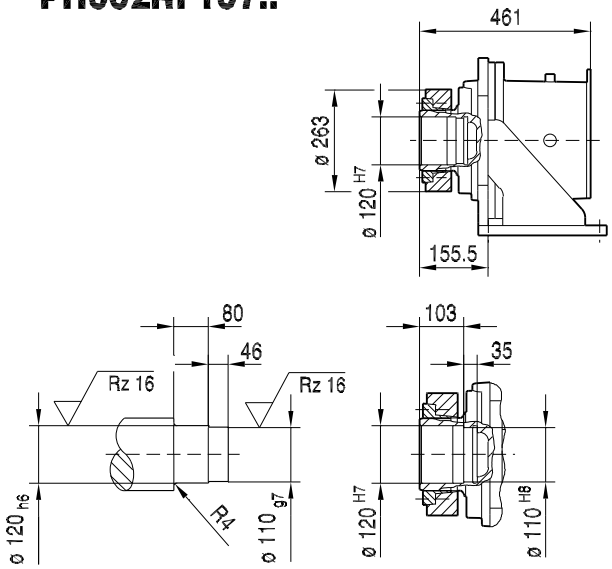
(→ 73)	DR132M/MC	DR160..	DR180S/M	DR180L/LC				
AC	221	270	316	316				
AD	170	228	253	253				
ADS	172	228	253	253				
L	1315	1356	1425	1485				
LS	1427	1493	1614	1674				
LB	419	460	529	589				
LBS	531	597	718	778				

P002RF107..

45 004 01 08



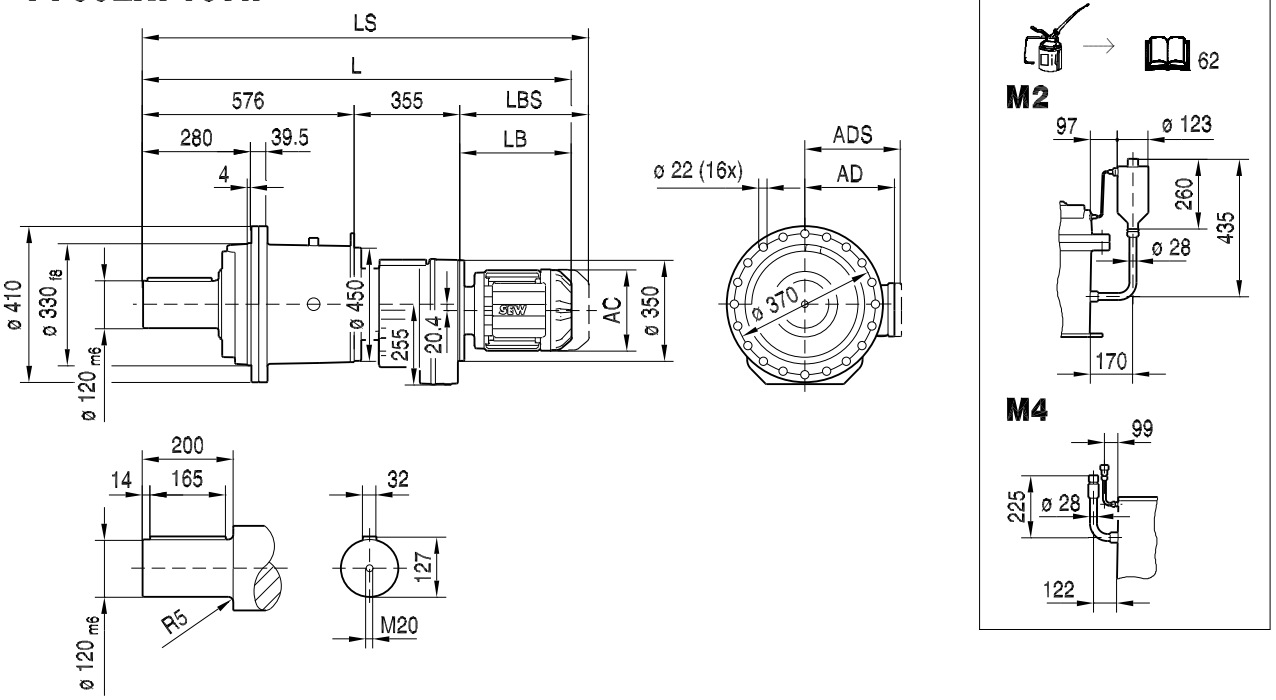
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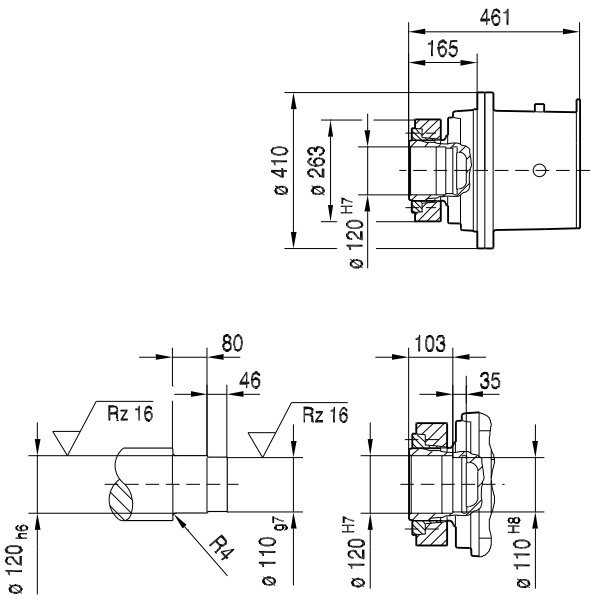
(→ 📖 73)	DR180L/LC							
AC	316							
AD	253							
ADS	253							
L	1514							
LS	1703							
LB	583							
LBS	772							

PF002RF107..

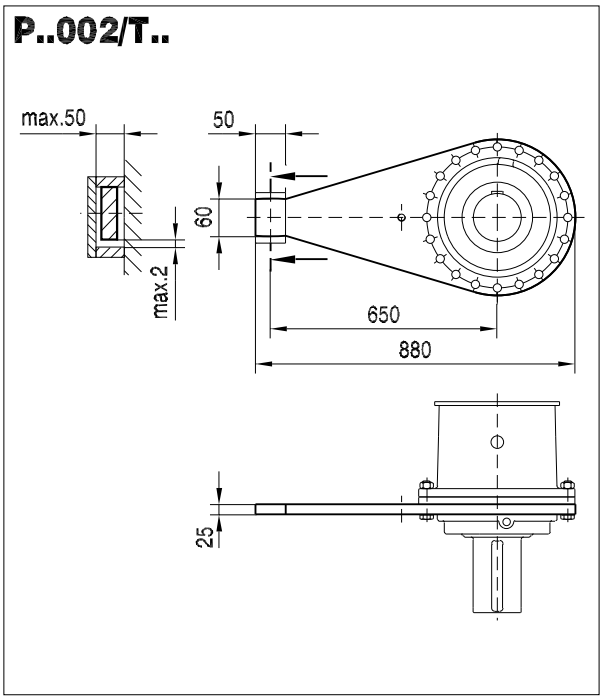
45 033 01 08



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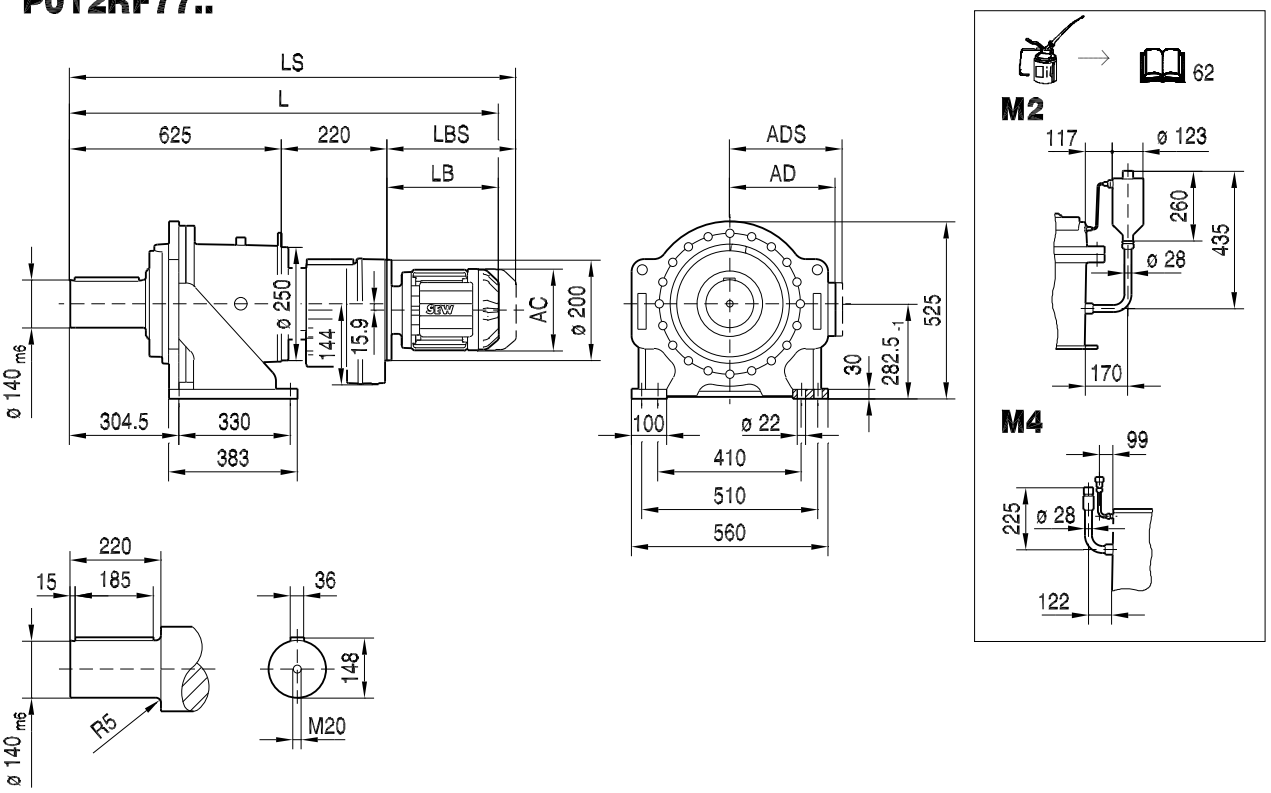
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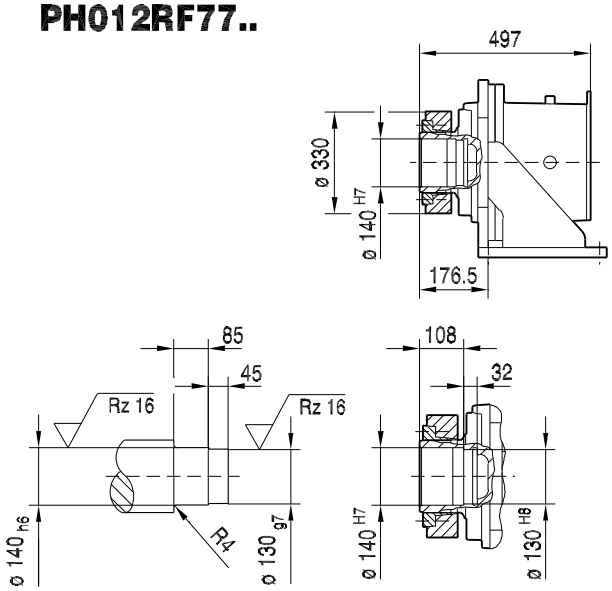
(→ 73)	DR180L/LC							
AC	316							
AD	253							
ADS	253							
L	1514							
LS	1703							
LB	583							
LBS	772							

P012RF77..

45 005 01 08



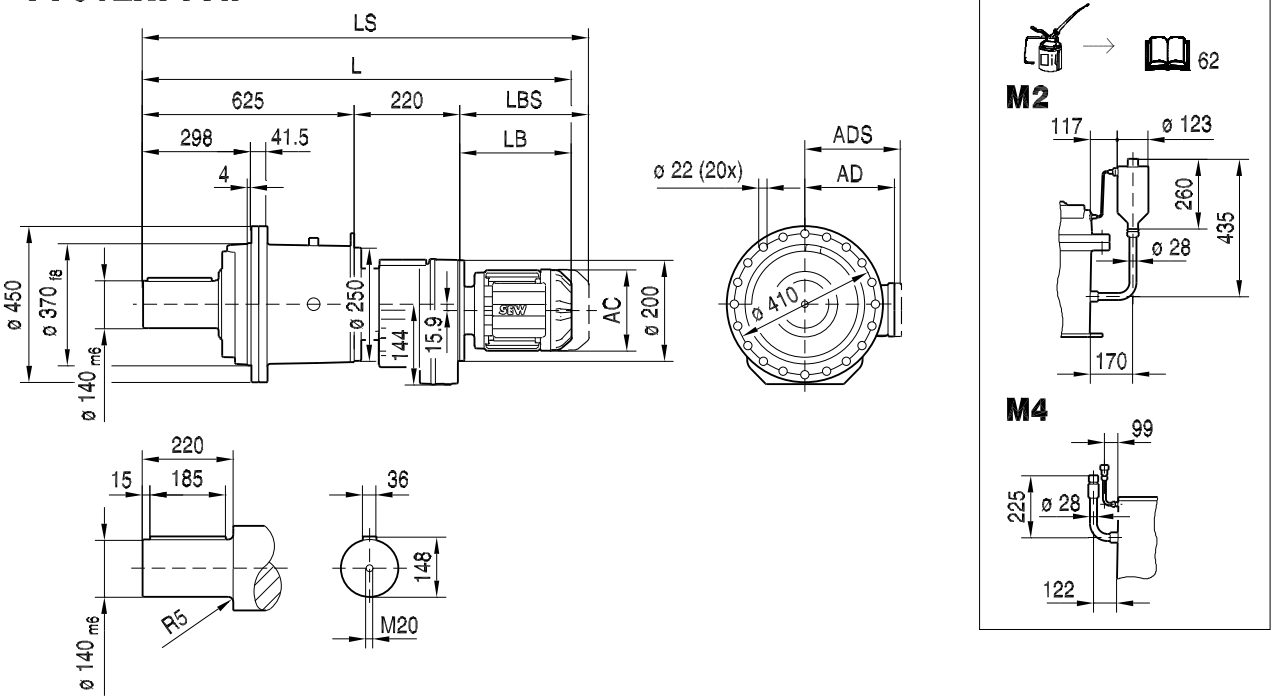
PH012RF77..



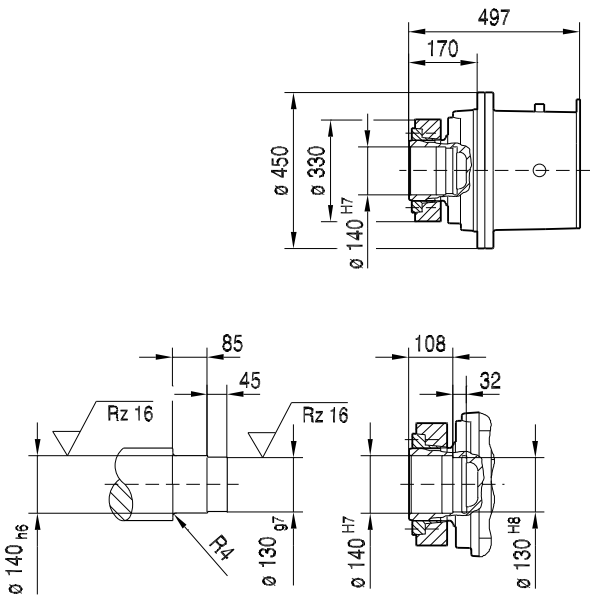
(→ 📖 73)	DR80S	DR80M	DR90M	DR90L	DR100L/LC			
AC	156	156	179	179	197			
AD	128	128	140	140	157			
ADS	139	139	150	150	158			
L	1068	1099	1101	1121	1181			
LS	1149	1180	1194	1214	1274			
LB	223	254	256	276	336			
LBS	304	335	349	369	429			

PF012RF77..

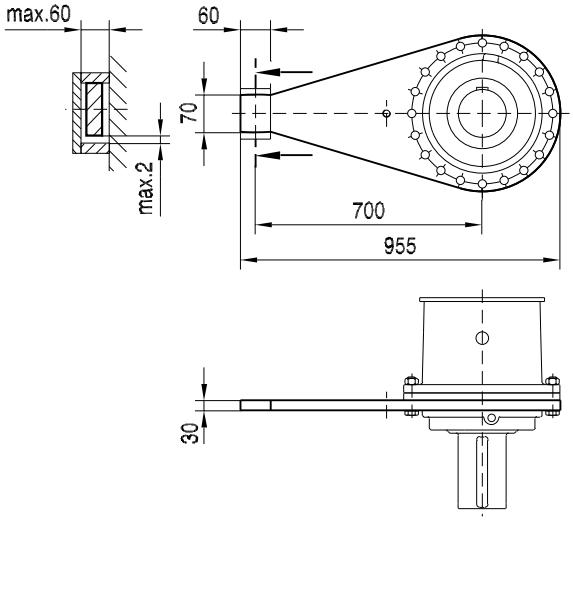
45 034 01 08



PHF012RF77..



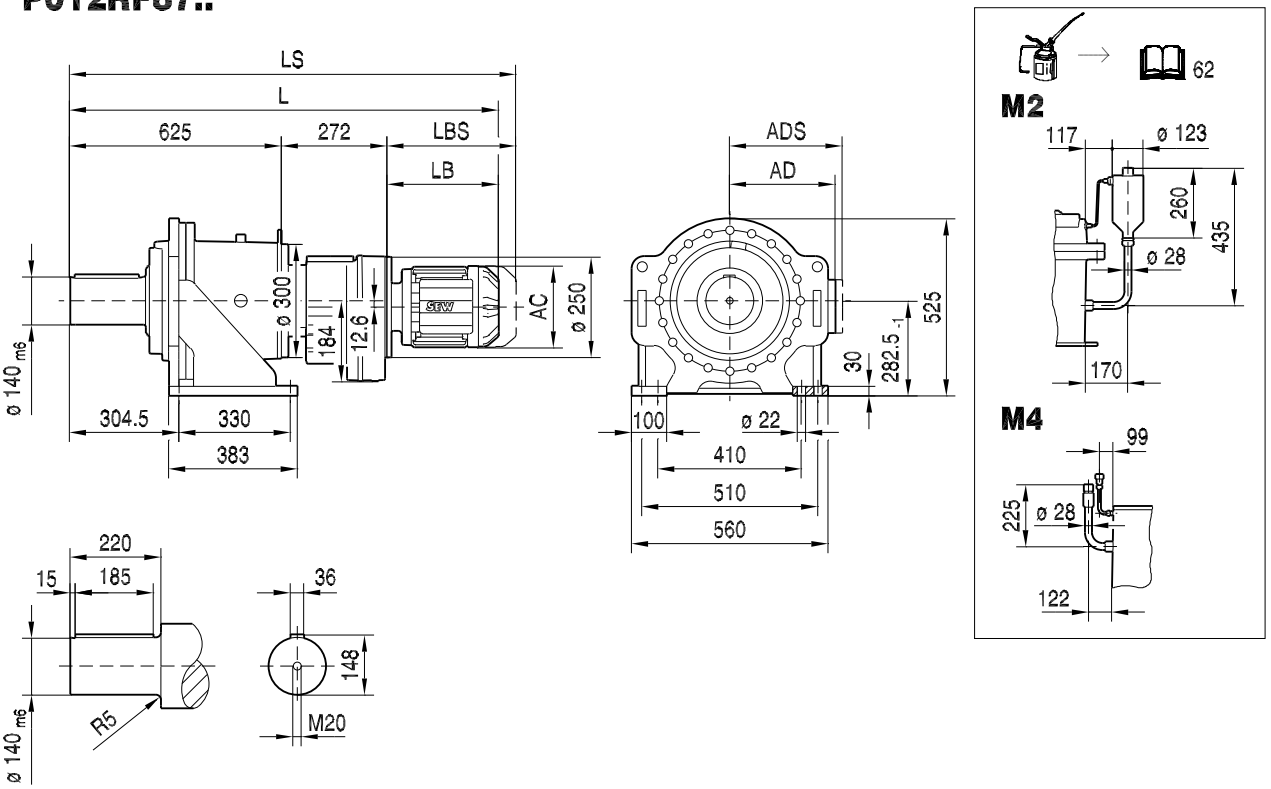
P..012/T..



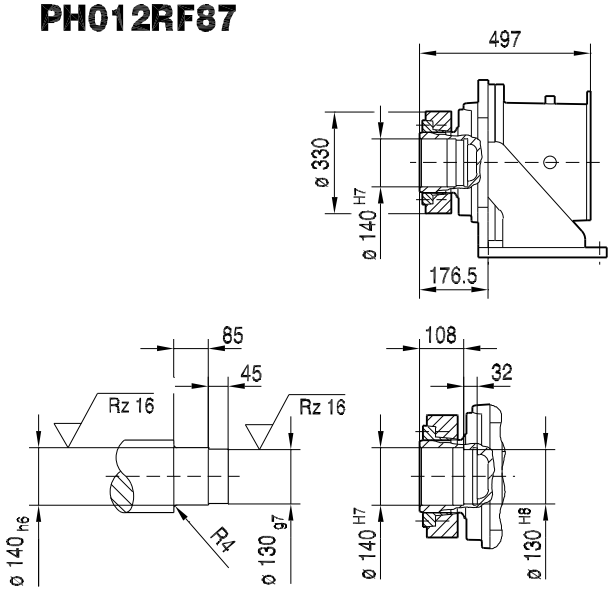
(→ 73)	DR80S	DR80M	DR90M	DR90L	DR100L/LC			
AC	156	156	179	179	197			
AD	128	128	140	140	157			
ADS	139	139	150	150	158			
L	1068	1099	1101	1121	1181			
LS	1149	1180	1194	1214	1274			
LB	223	254	256	276	336			
LBS	304	335	349	369	429			

P012RF87..

45 006 01 08



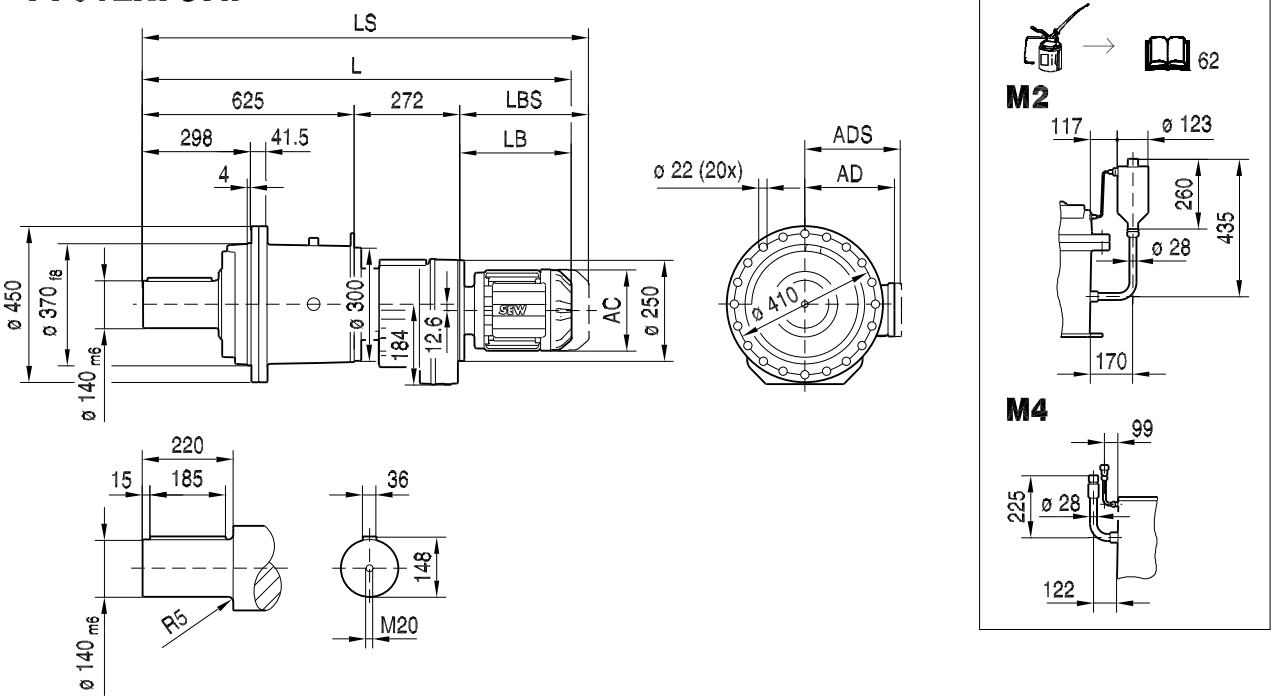
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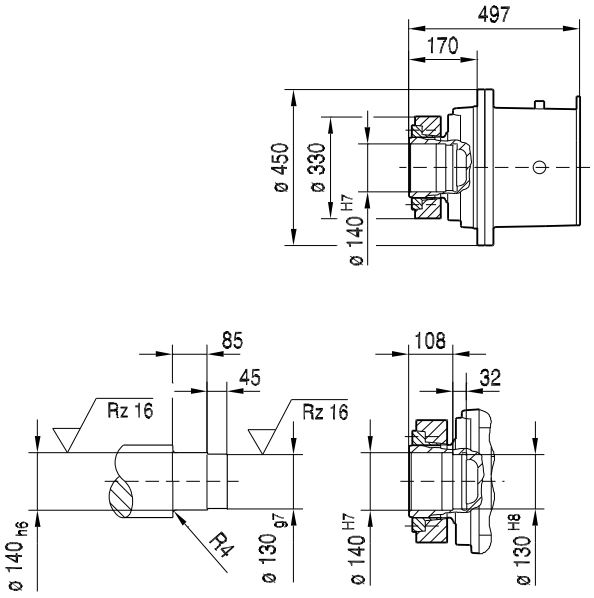
(→ 73)	DR80S	DR80M	DR90M	DR90L	DR100M	DR100L/LC	DR132S	DR132M/MC	DR160..
AC	156	156	179	179	197	197	221	221	270
AD	128	128	140	140	157	157	170	170	228
ADS	139	139	150	150	158	158	172	172	228
L	1115	1146	1148	1168	1198	1228	1271	1321	1362
LS	1196	1227	1241	1261	1291	1321	1383	1433	1499
LB	218	249	251	271	301	331	374	424	465
LBS	299	330	344	364	394	424	486	536	602

PF012RF87..

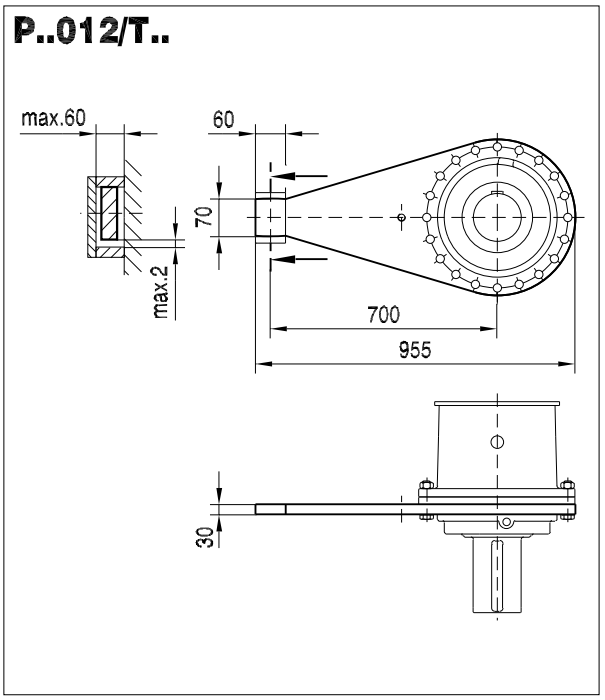
45 035 01 08



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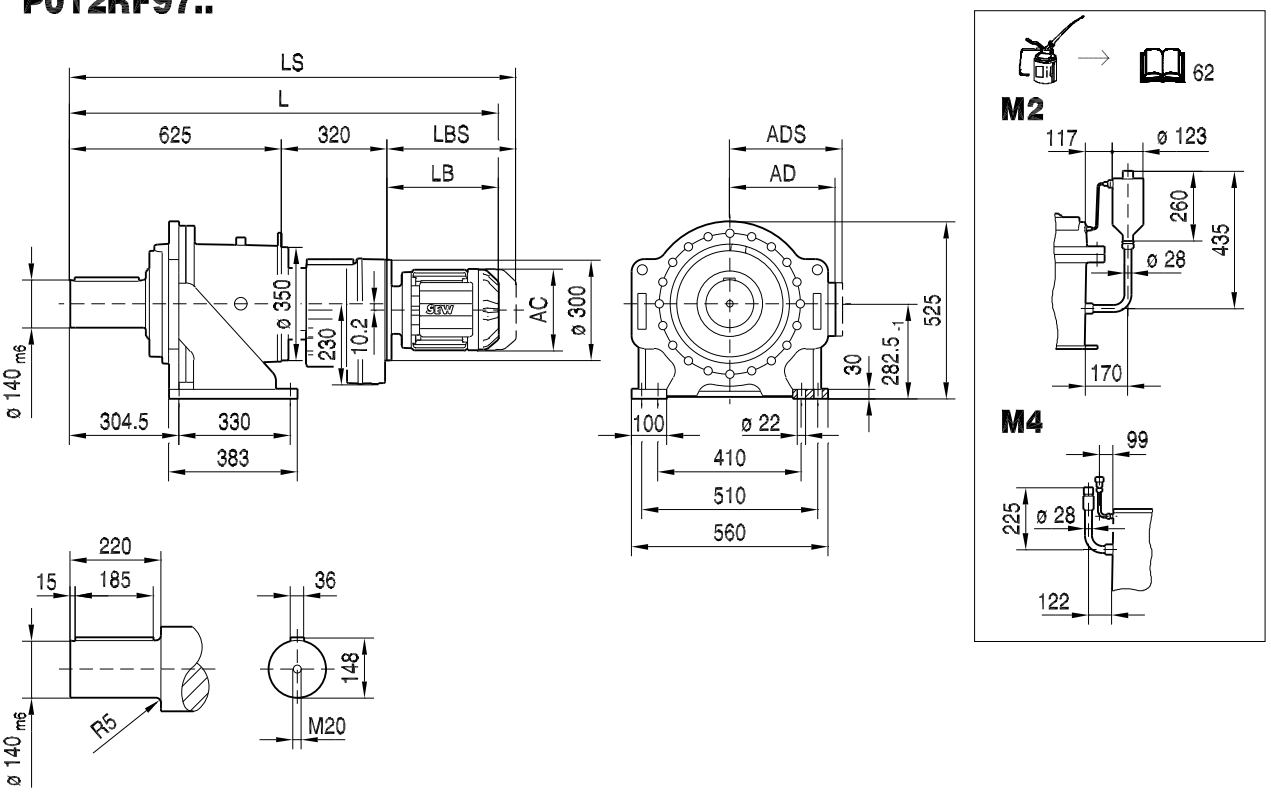
P..012/T..



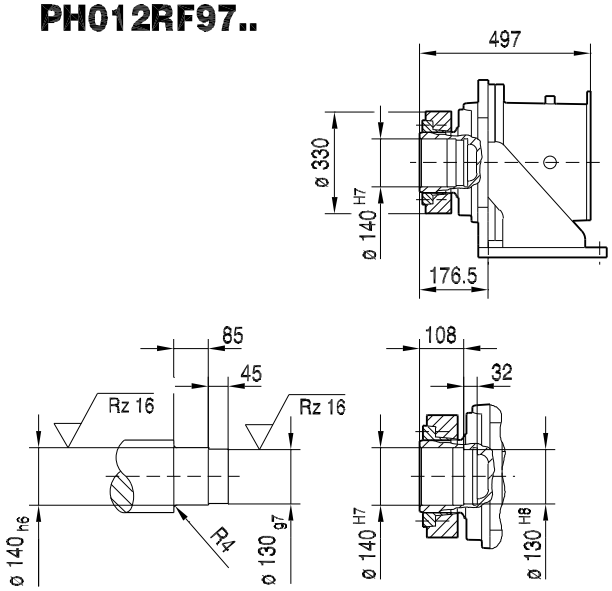
(→ 73)	DR80S	DR80M	DR90M	DR90L	DR100M	DR100L/LC	DR132S	DR132M/MC	DR160..
AC	156	156	179	179	197	197	221	221	270
AD	128	128	140	140	157	157	170	170	228
ADS	139	139	150	150	158	158	172	172	228
L	1115	1146	1148	1168	1198	1228	1271	1321	1362
LS	1196	1227	1241	1261	1291	1321	1383	1433	1499
LB	218	249	251	271	301	331	374	424	465
LBS	299	330	344	364	394	424	486	536	602

P012RF97..

45 007 01 08



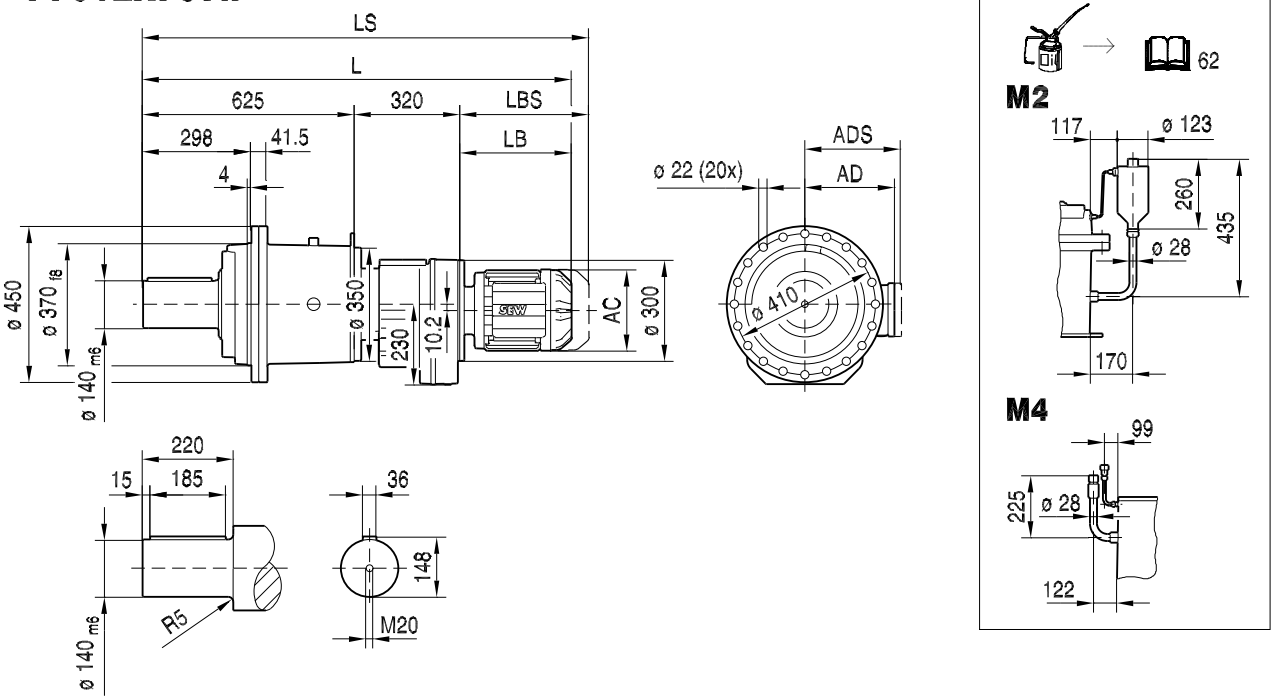
PH012RF97..



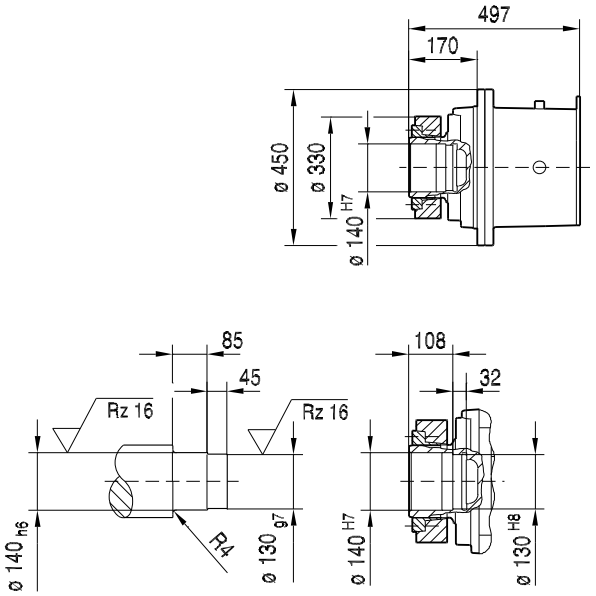
(→ 📖 73)	DR90M	DR90L	DR100M	DR100L/LC	DR132S	DR132M/MC	DR160..	DR180S/M	DR180L/LC
AC	179	179	197	197	221	221	270	316	316
AD	140	140	157	157	170	170	228	253	253
ADS	150	150	158	158	172	172	228	253	253
L	1191	1211	1241	1271	1314	1364	1405	1474	1534
LS	1284	1304	1334	1364	1426	1476	1542	1663	1723
LB	246	266	296	326	369	419	460	529	589
LBS	339	359	389	419	481	531	597	718	778

PF012RF97..

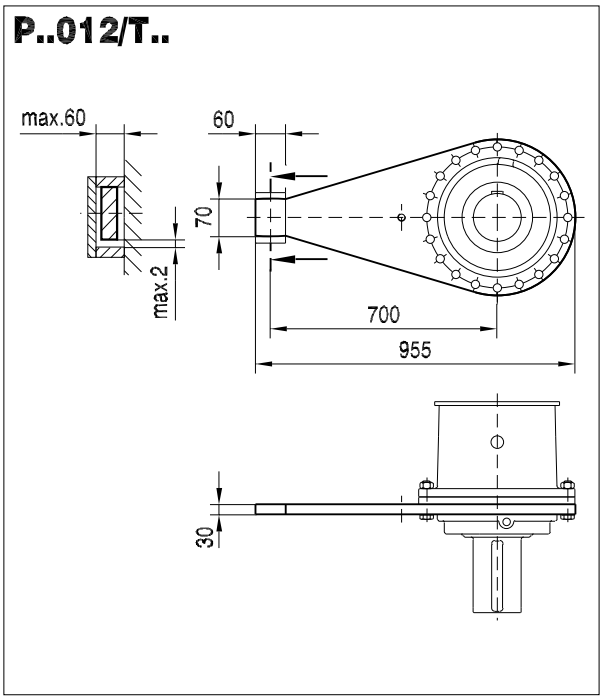
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PHF012RF97..



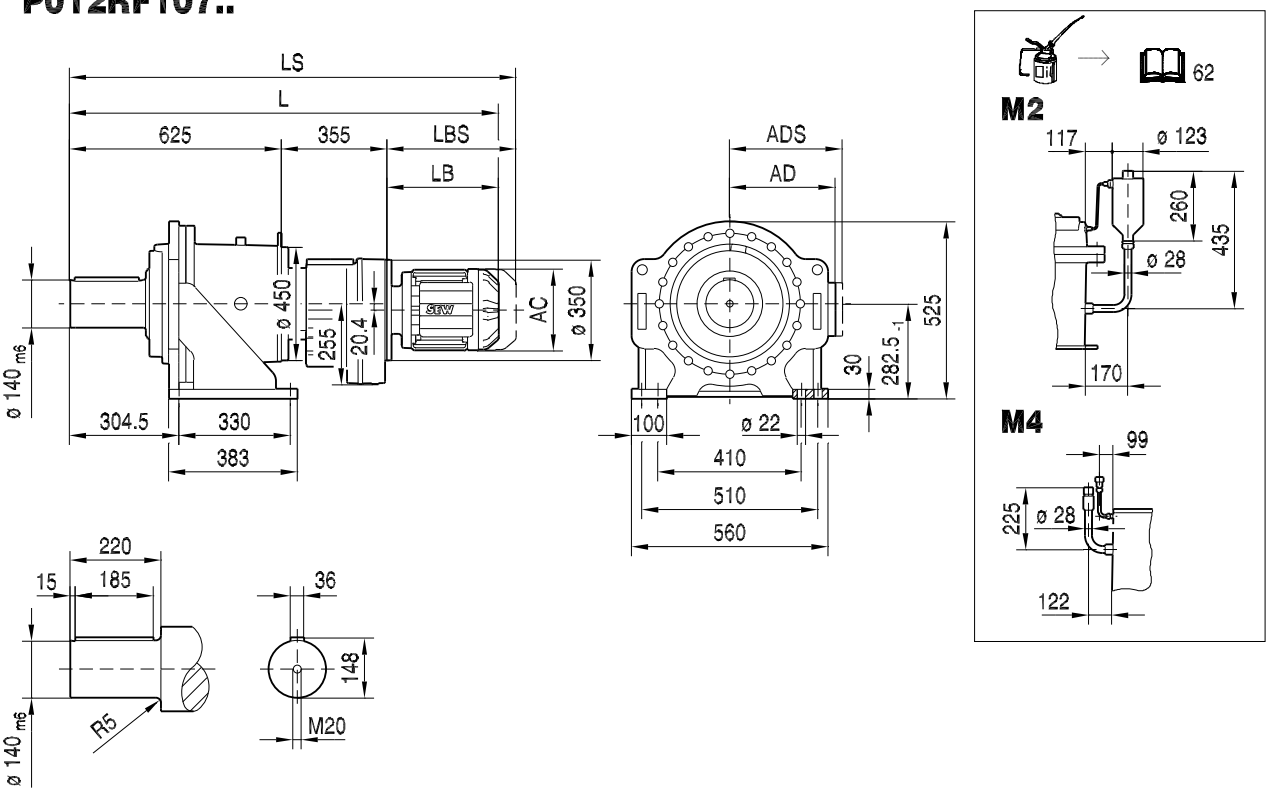
P..012/T..



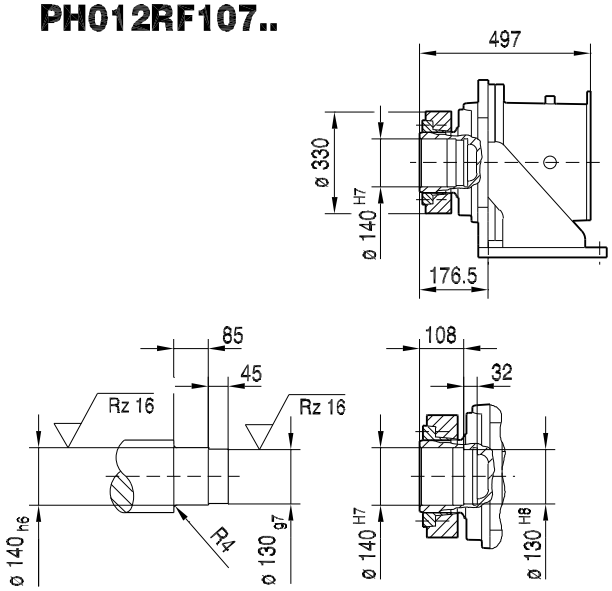
(→ 73)	DR90M	DR90L	DR100M	DR100L/LC	DR132S	DR132M/MC	DR160..	DR180S/M	DR180L/LC
AC	179	179	197	197	221	221	270	316	316
AD	140	140	157	157	170	170	228	253	253
ADS	150	150	158	158	172	172	228	253	253
L	1191	1211	1241	1271	1314	1364	1405	1474	1534
LS	1284	1304	1334	1364	1426	1476	1542	1663	1723
LB	246	266	296	326	369	419	460	529	589
LBS	339	359	389	419	481	531	597	718	778

P012RF107..

45 008 01 08



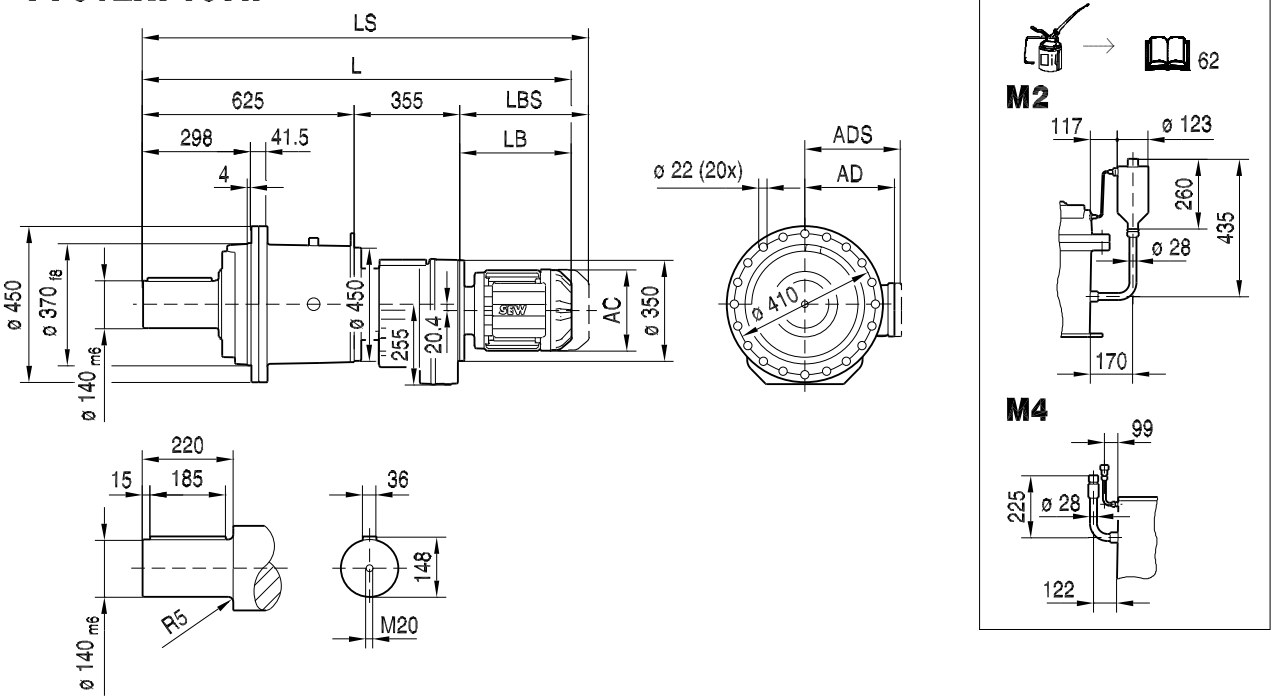
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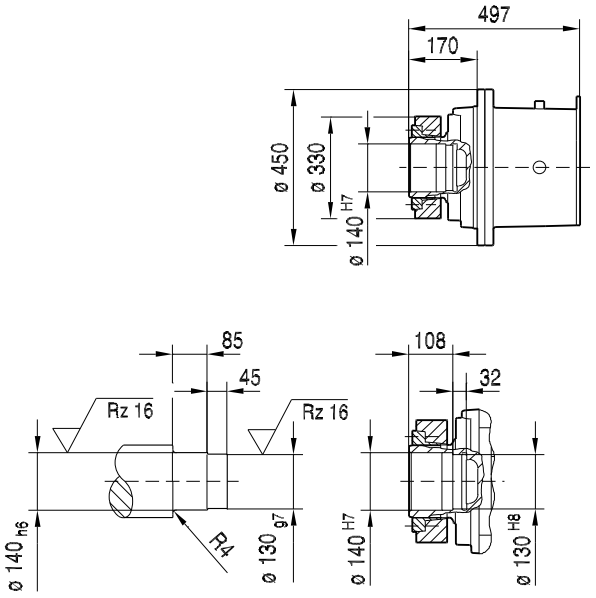
(→ 📖 73)	DR180S/M	DR180L/LC	DR225S	DR225M/MC				
AC	316	316	394	394				
AD	253	253	283	283				
ADS	253	253	283	283				
L	1503	1563	1636	1686				
LS	1692	1752	1841	1891				
LB	523	583	656	706				
LBS	712	772	861	911				

PF012RF107..

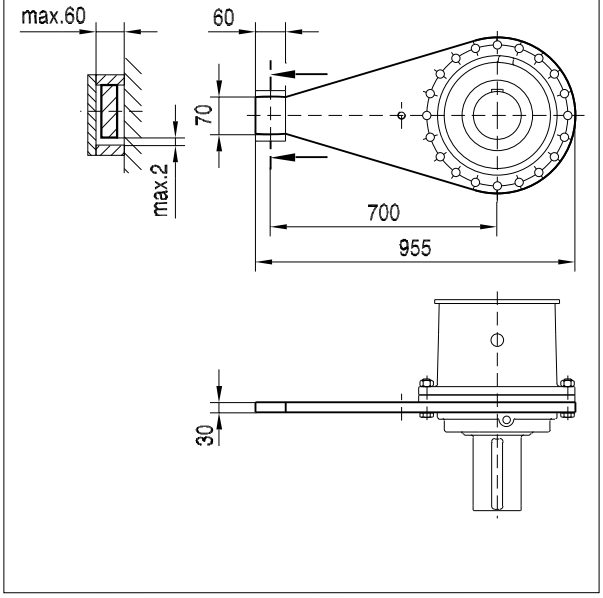
45 037 01 08



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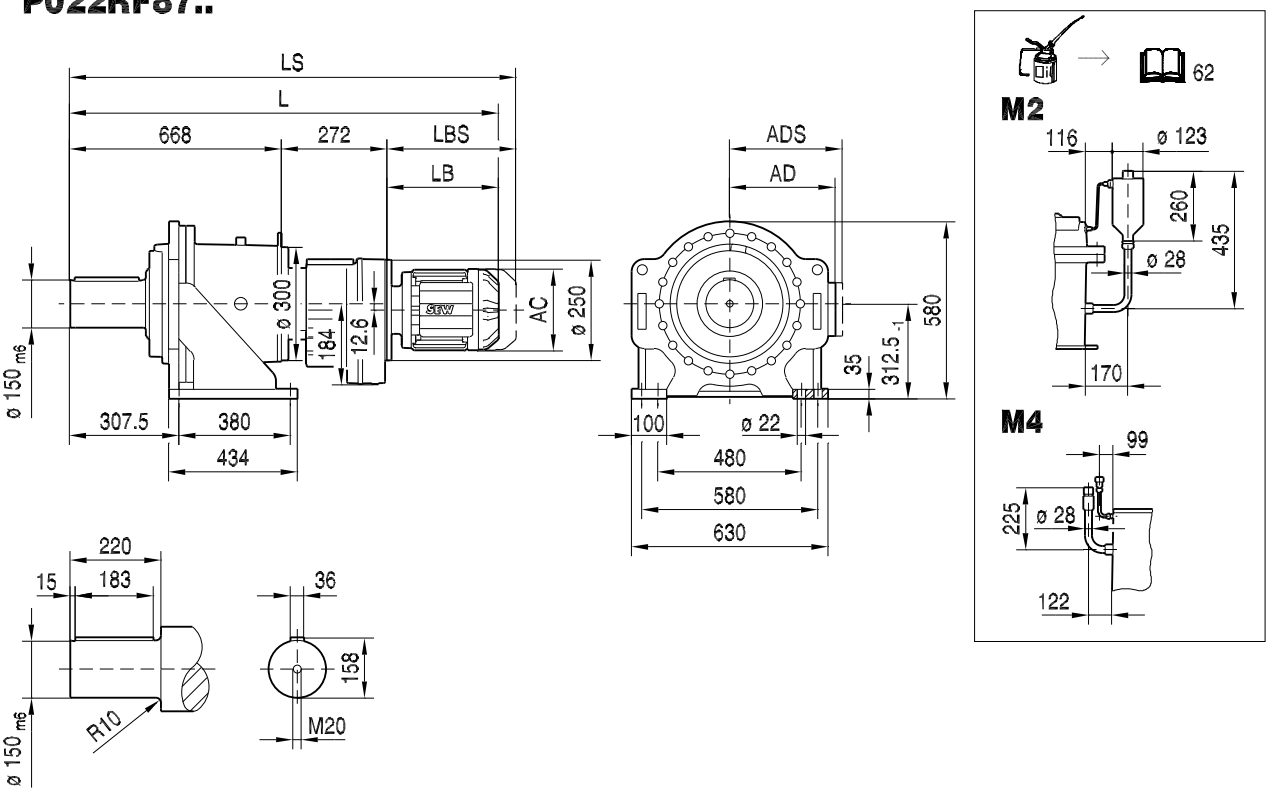
P..012/T..



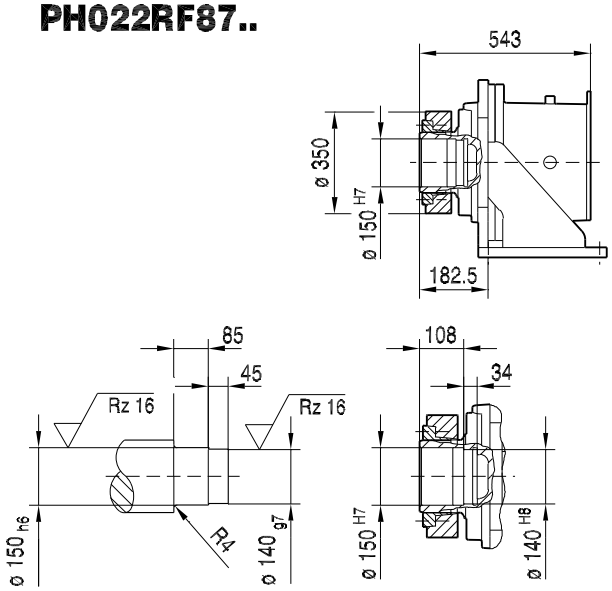
(→ 73)	DR180S/M	DR180L/LC	DR225S	DR225M/MC				
AC	316	316	394	394				
AD	253	253	283	283				
ADS	253	253	283	283				
L	1503	1563	1636	1686				
LS	1692	1752	1841	1891				
LB	523	583	656	706				
LBS	712	772	861	911				

P022RF87..

45 009 01 08



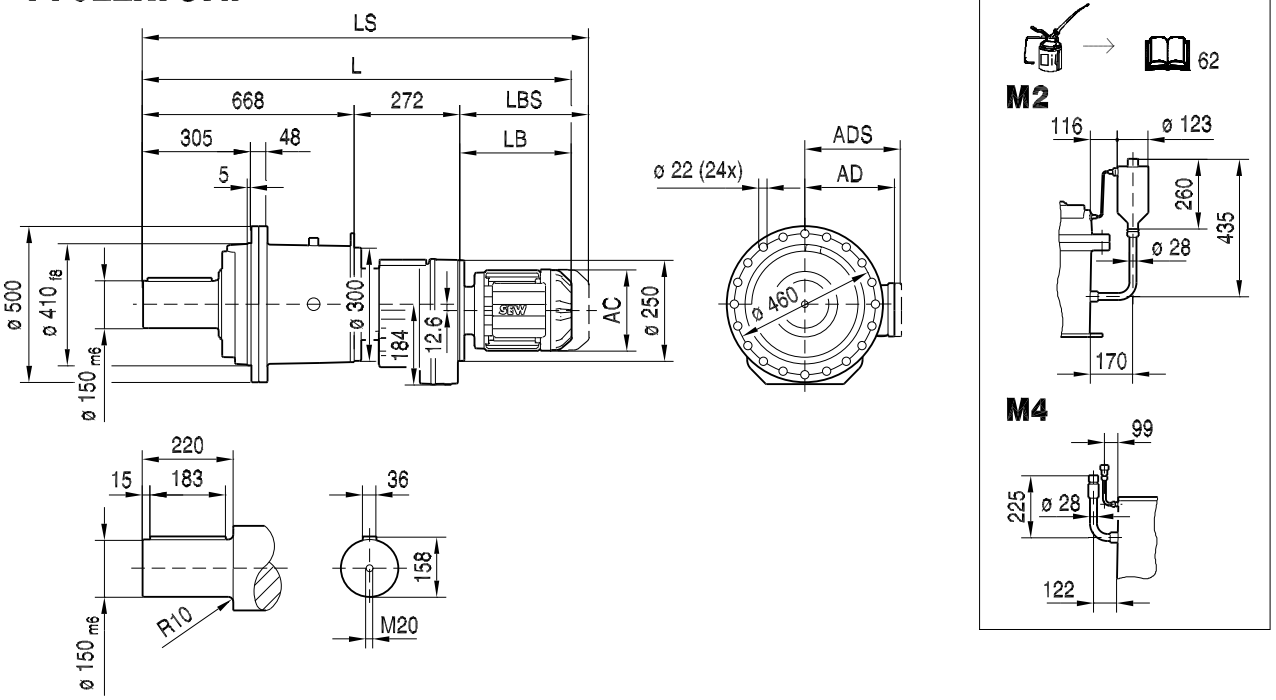
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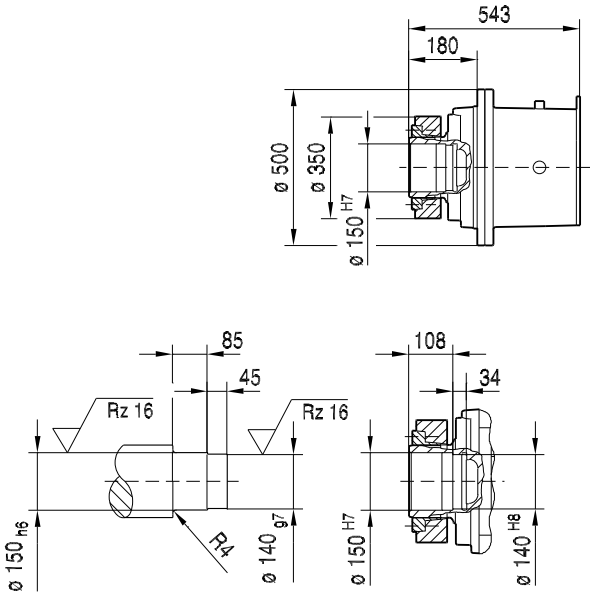
(→ 📖 73)	DR80M	DR90M	DR90L	DR100M	DR100L/LC	DR132S	DR132M/MC	
AC	156	179	179	197	197	221	221	
AD	128	140	140	157	157	170	170	
ADS	139	150	150	158	158	172	172	
L	1189	1191	1211	1241	1271	1314	1364	
LS	1270	1284	1304	1334	1364	1426	1476	
LB	249	251	271	301	331	374	424	
LBS	330	344	364	394	424	486	536	

PF022RF87..

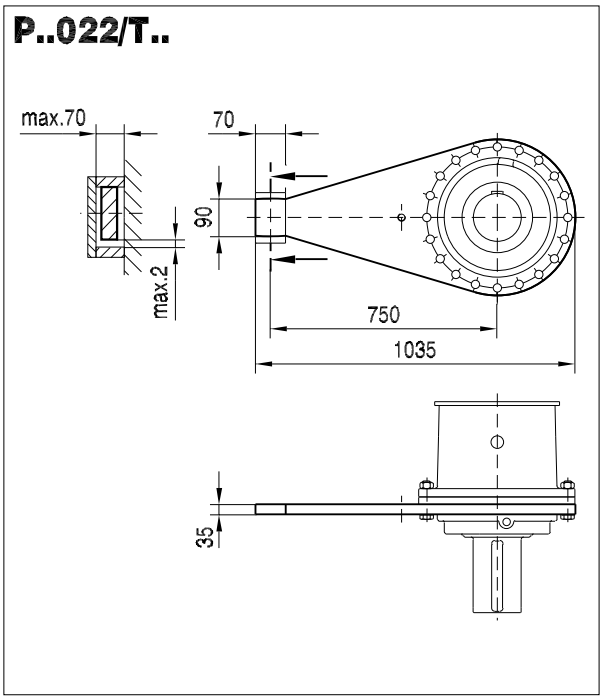
45 038 01 08



PHF022RF87..



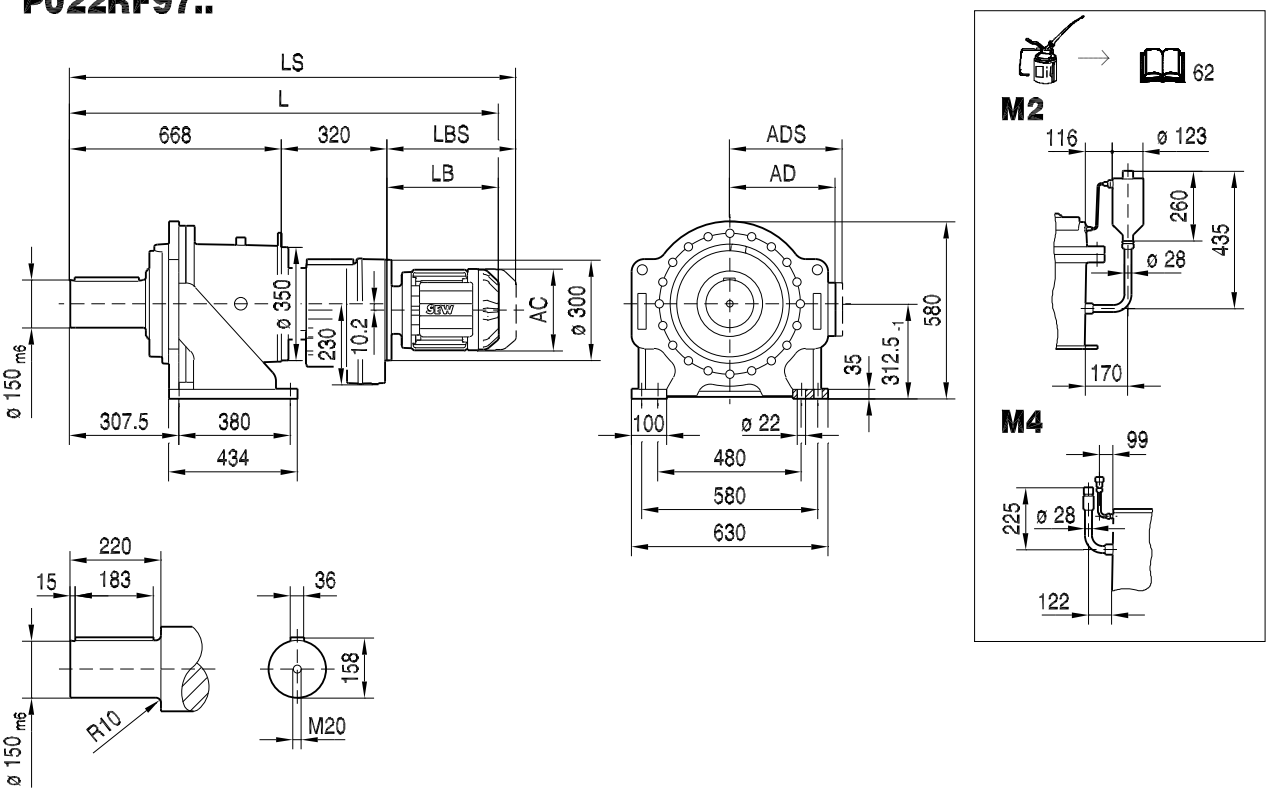
P..022/T..



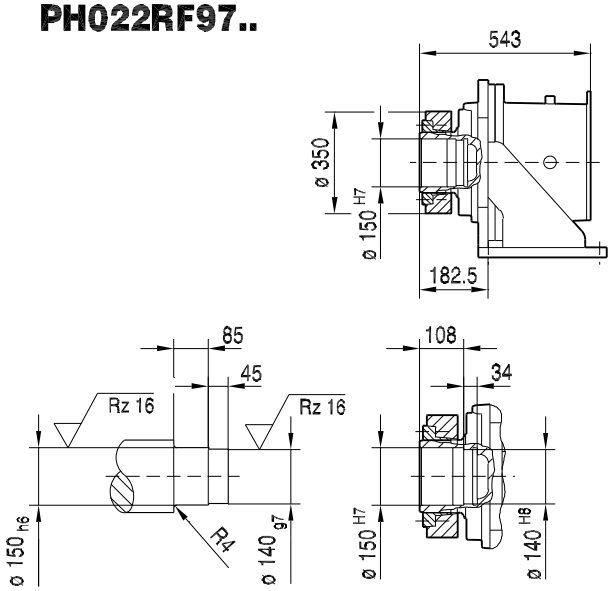
(→ 73)	DR80M	DR90M	DR90L	DR100M	DR100L/LC	DR132S	DR132M/MC	
AC	156	179	179	197	197	221	221	
AD	128	140	140	157	157	170	170	
ADS	139	150	150	158	158	172	172	
L	1189	1191	1211	1241	1271	1314	1364	
LS	1270	1284	1304	1334	1364	1426	1476	
LB	249	251	271	301	331	374	424	
LBS	330	344	364	394	424	486	536	

P022RF97..

45 010 01 08



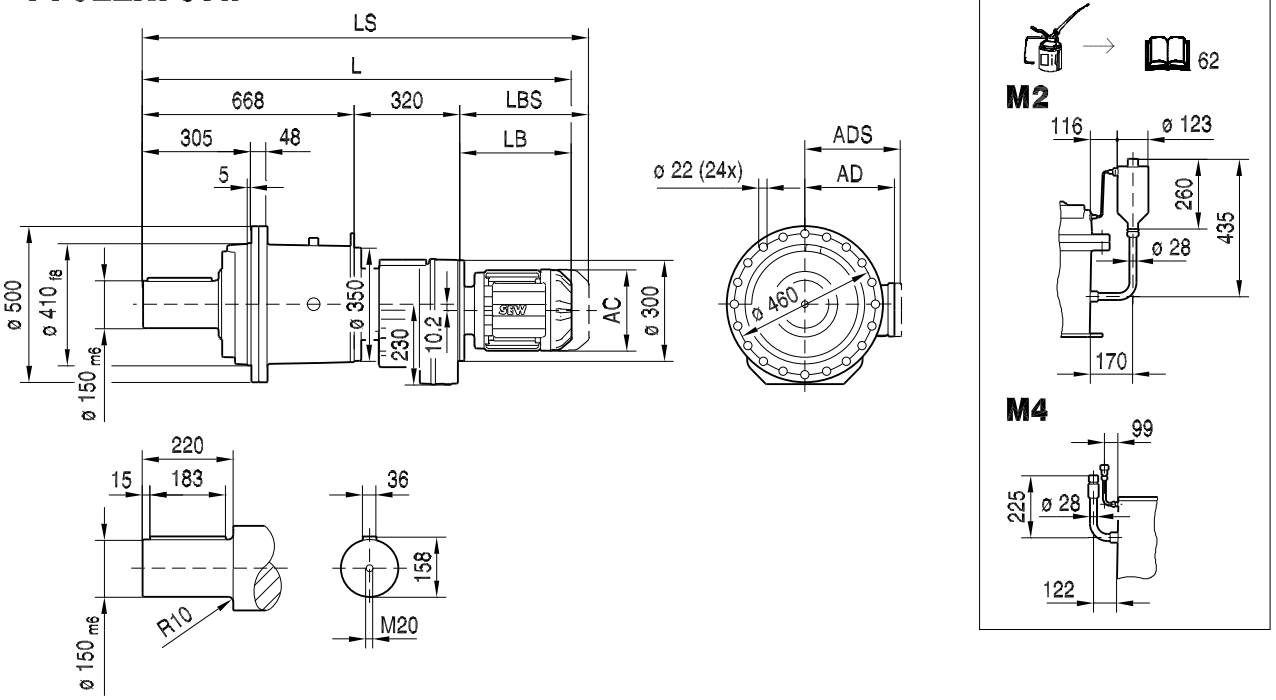
PH022RF97..



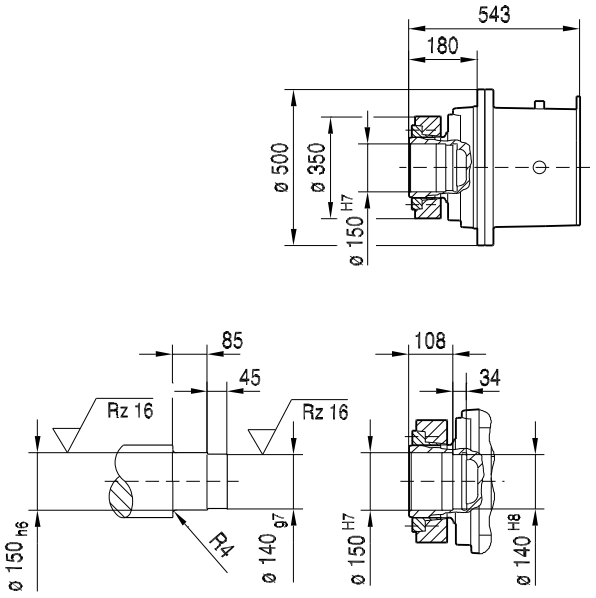
(→ 73)	DR90M	DR90L	DR100M	DR100L/LC	DR132S	DR132M/MC	DR160..	DR180S/M	DR180L/LC
AC	179	179	197	197	221	221	270	316	316
AD	140	140	157	157	170	170	228	253	253
ADS	150	150	158	158	172	172	228	253	253
L	1234	1254	1284	1314	1357	1407	1448	1517	1577
LS	1327	1347	1377	1407	1469	1519	1585	1706	1766
LB	246	266	296	326	369	419	460	529	589
LBS	339	359	389	419	481	531	597	718	778

PF022RF97..

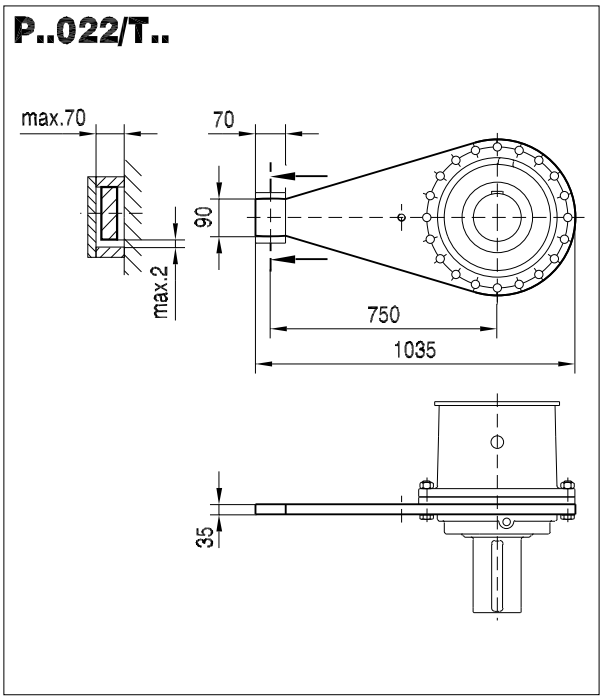
45 039 01 08



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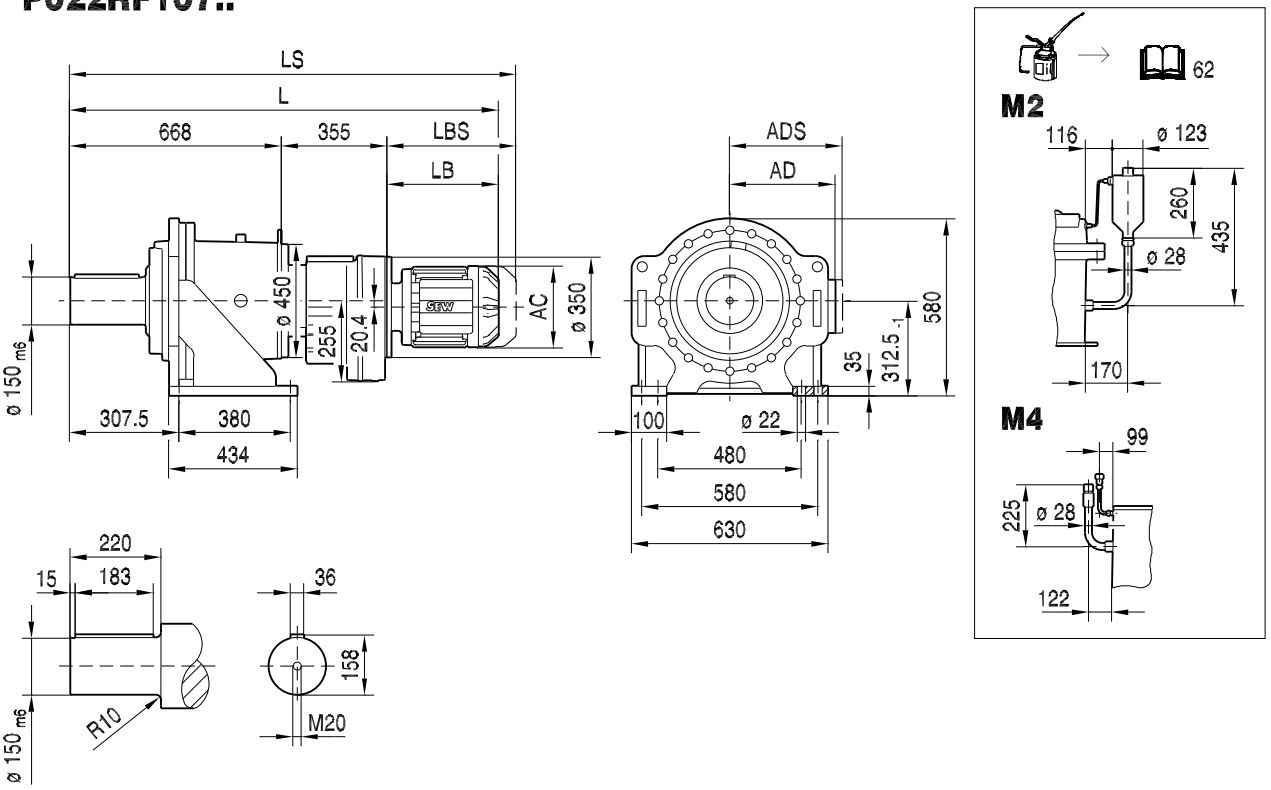
P..022/T..



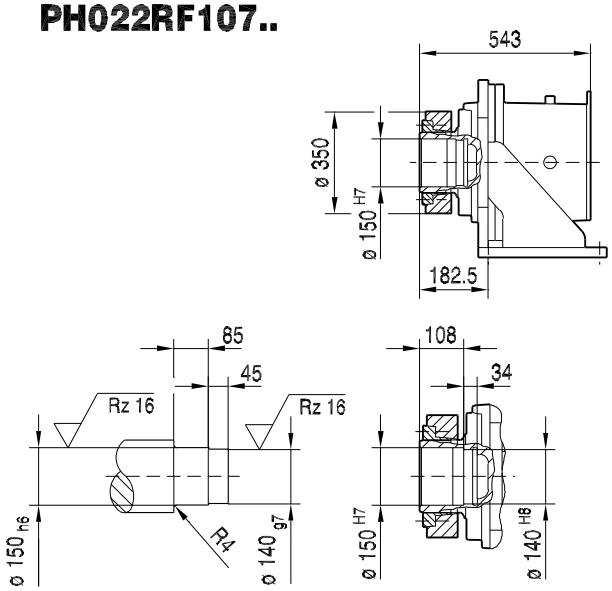
(→ 73)	DR90M	DR90L	DR100M	DR100L/LC	DR132S	DR132M/MC	DR160..	DR180S/M	DR180L/LC
AC	179	179	197	197	221	221	270	316	316
AD	140	140	157	157	170	170	228	253	253
ADS	150	150	158	158	172	172	228	253	253
L	1234	1254	1284	1314	1357	1407	1448	1517	1577
LS	1327	1347	1377	1407	1469	1519	1585	1706	1766
LB	246	266	296	326	369	419	460	529	589
LBS	339	359	389	419	481	531	597	718	778

P022RF107..

45 011 01 08



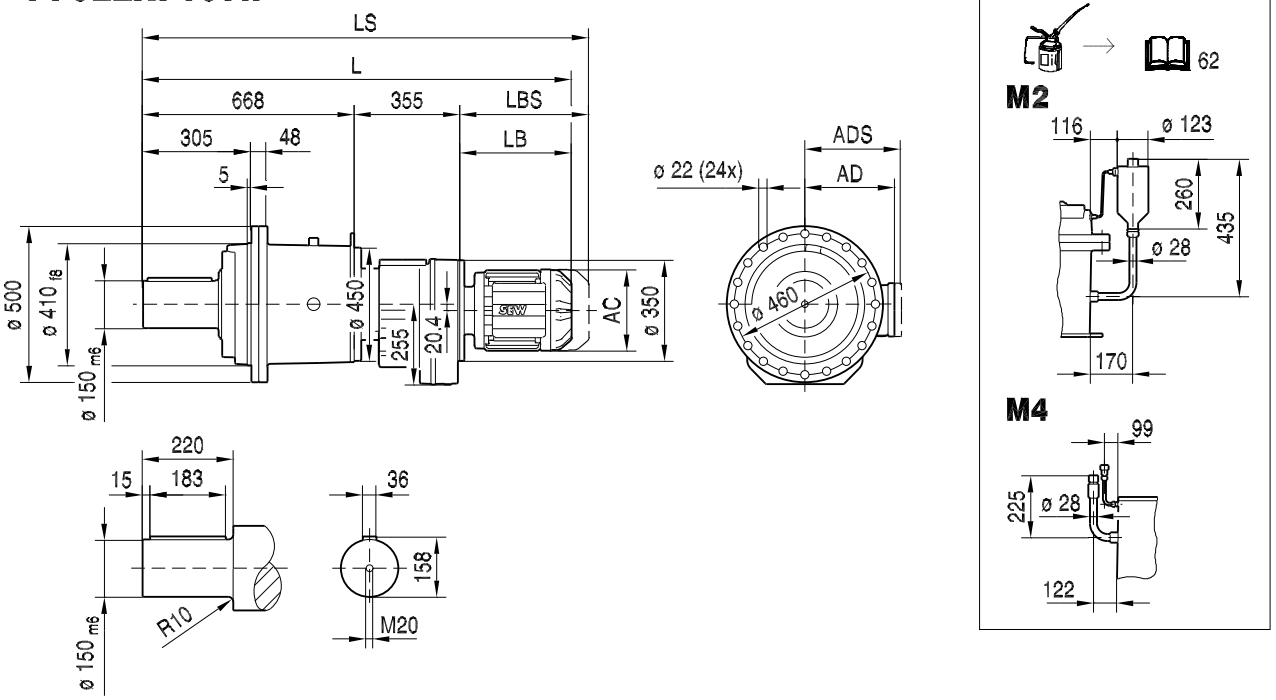
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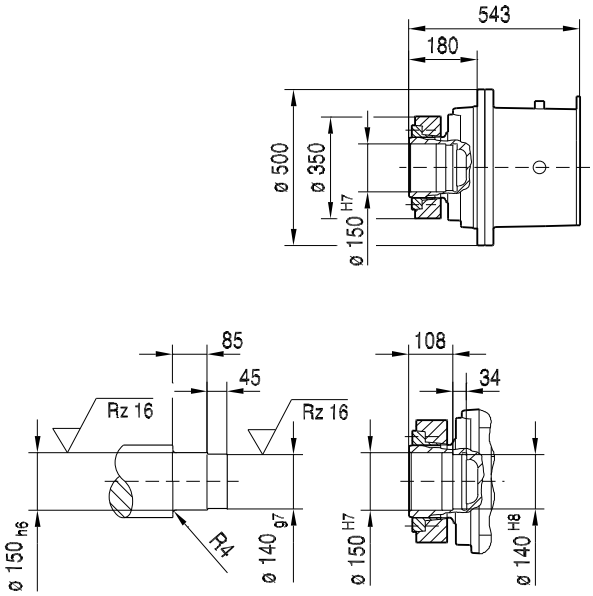
(→ 📖 73)	DR100L/LC	DR132M/MC	DR160..	DR180S/M	DR180L/LC	DR225S	DR225M/MC	
AC	197	221	270	316	316	394	394	
AD	157	170	228	253	253	283	283	
ADS	158	172	228	253	253	283	283	
L	1343	1436	1477	1546	1606	1679	1729	
LS	1436	1548	1614	1735	1795	1884	1934	
LB	320	413	454	523	583	656	706	
LBS	413	525	591	712	772	861	911	

PF022RF107..

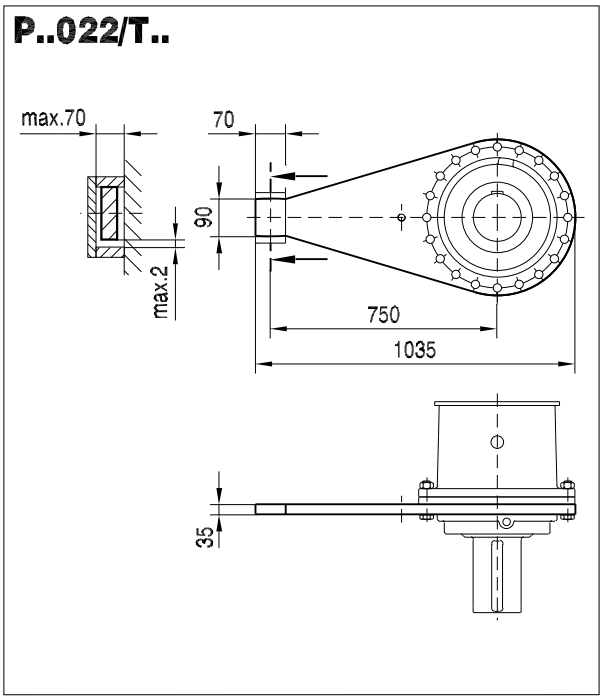
45 040 01 08



PHF022RF107..



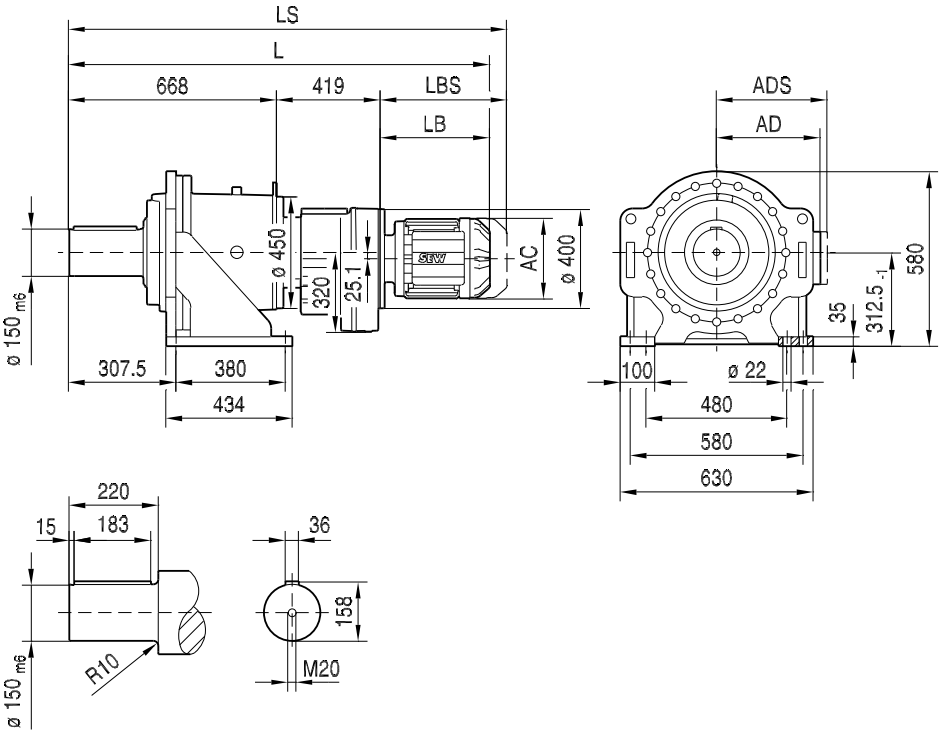
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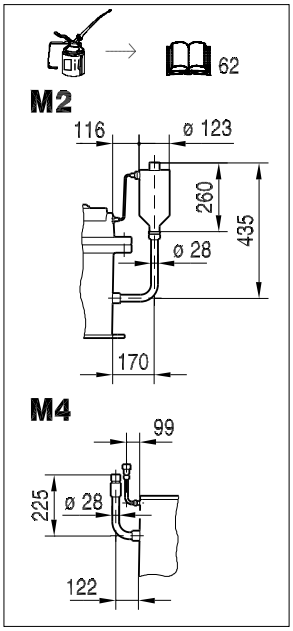


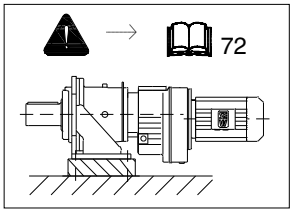
(→ 73)	DR100L/LC	DR132M/MC	DR160..	DR180S/M	DR180L/LC	DR225S	DR225M/MC	
AC	197	221	270	316	316	394	394	
AD	157	170	228	253	253	283	283	
ADS	158	172	228	253	253	283	283	
L	1343	1436	1477	1546	1606	1679	1729	
LS	1436	1548	1614	1735	1795	1884	1934	
LB	320	413	454	523	583	656	706	
LBS	413	525	591	712	772	861	911	

45 012 01 08

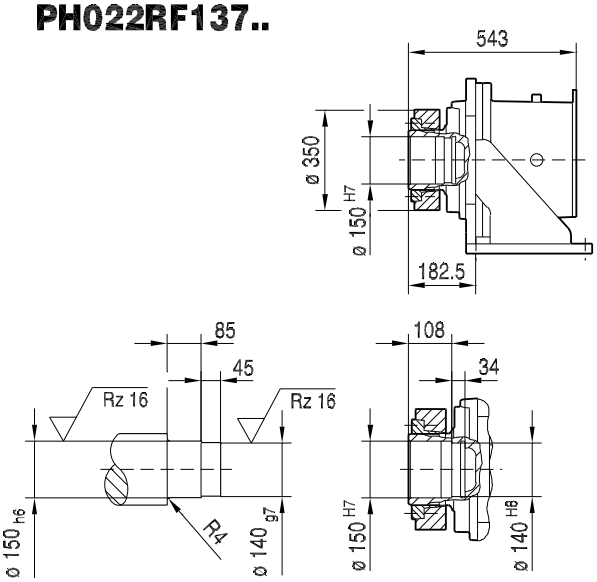
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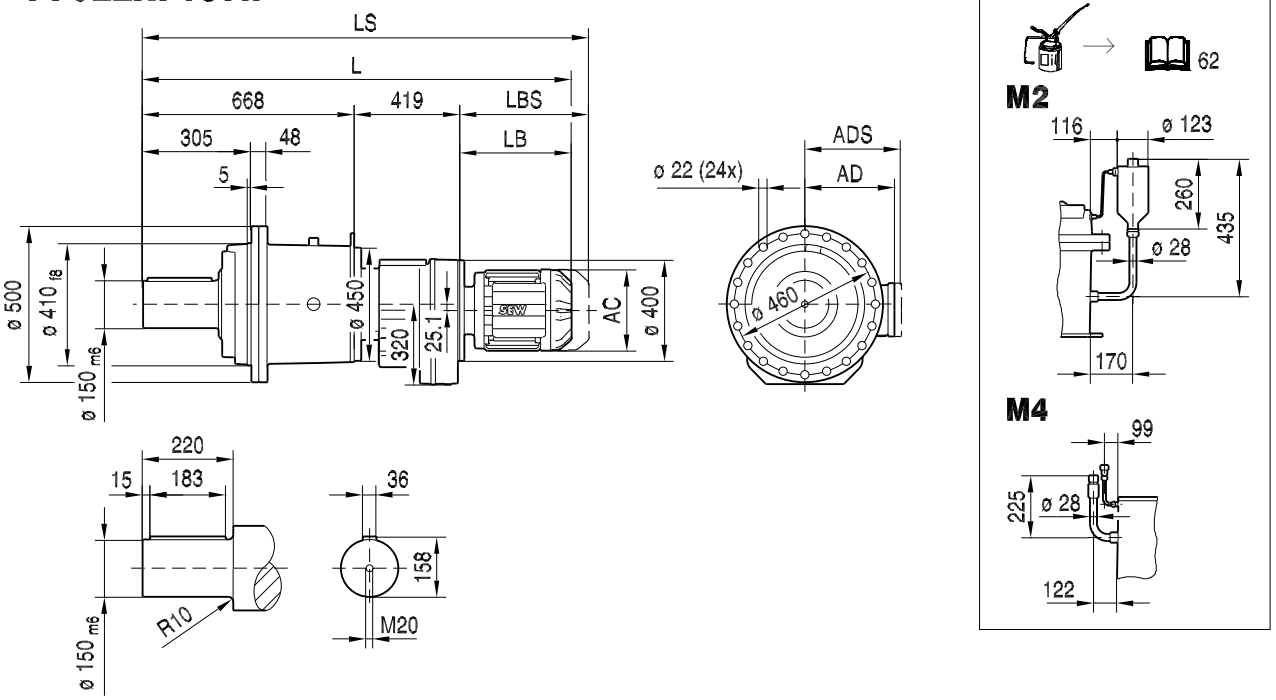
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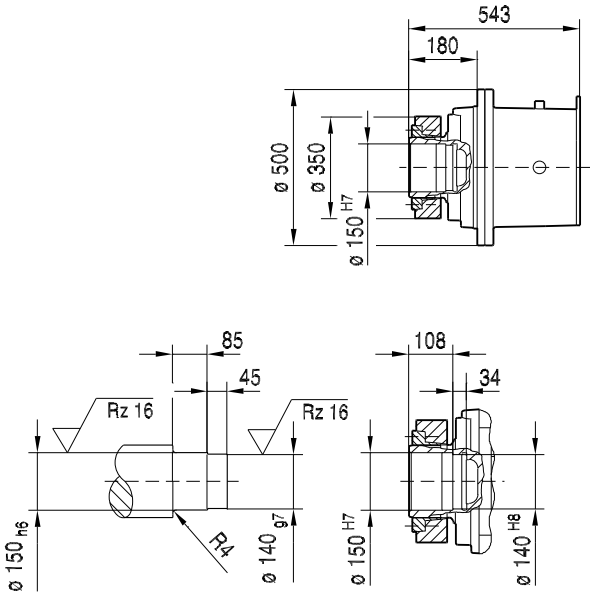
(→ 73)	DR225M/MC							
AC	394							
AD	283							
ADS	283							
L	1786							
LS	1991							
LB	699							
LBS	904							

PF022RF137..

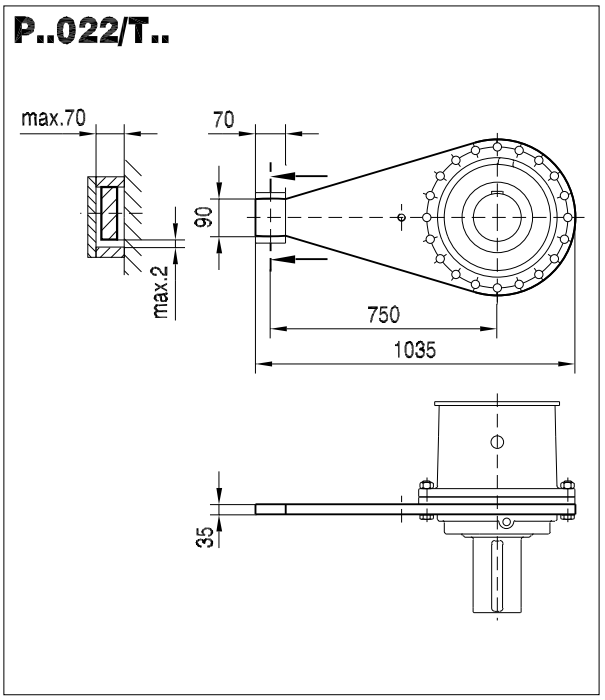
45 041 01 08



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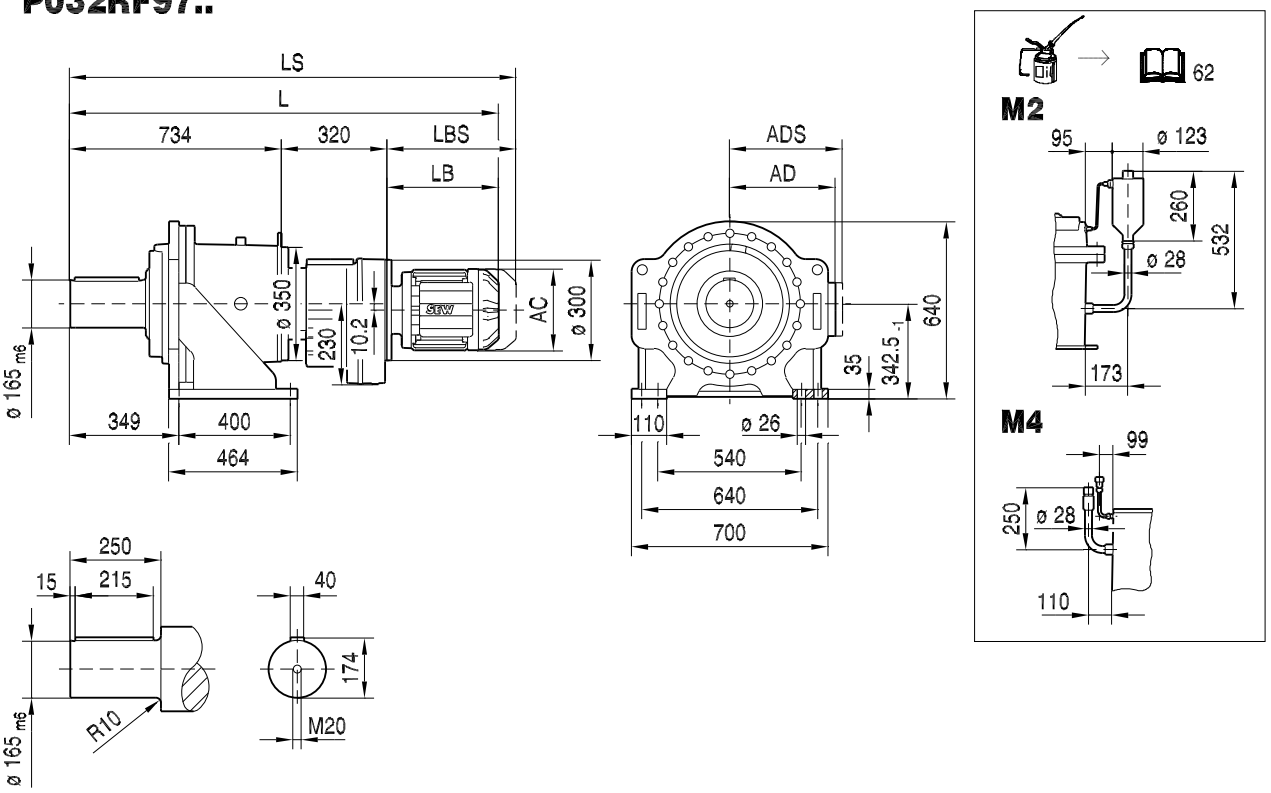
P..022/T..



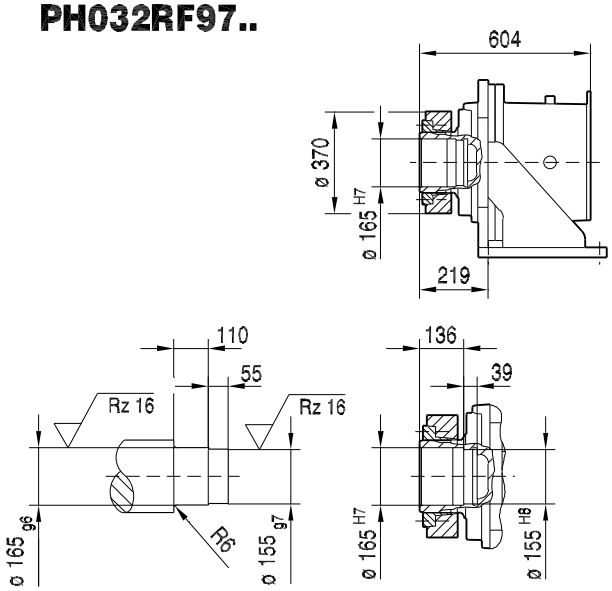
(→ 73)	DR225M/MC							
AC	394							
AD	283							
ADS	283							
L	1786							
LS	1991							
LB	699							
LBS	904							

P032RF97..

45 013 01 08



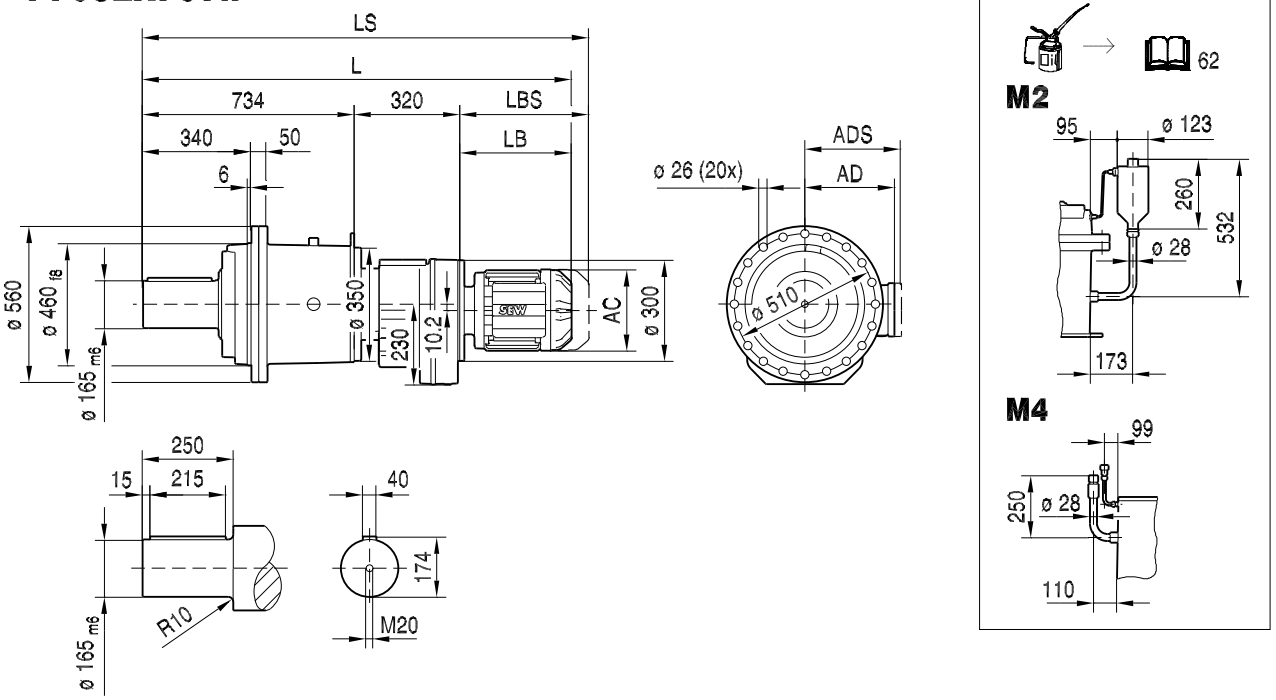
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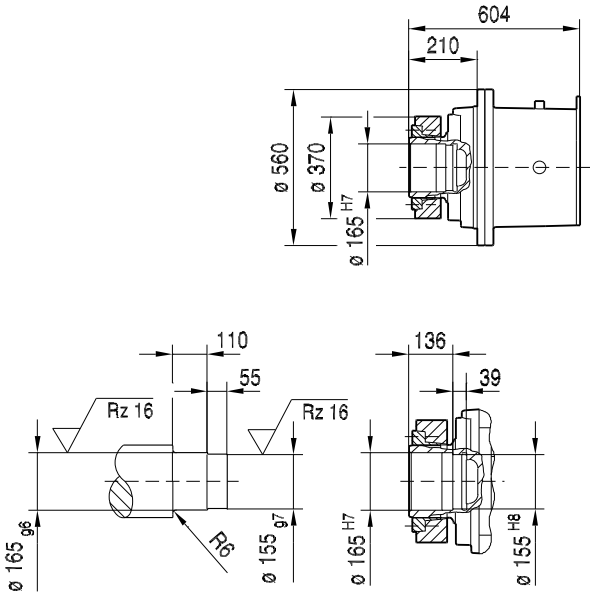
(→ 73)	DR90L	DR100M	DR100L/LC	DR132S	DR132M/MC	DR160..	DR180S/M	DR180L/LC
AC	179	197	197	221	221	270	316	316
AD	140	157	157	170	170	228	253	253
ADS	150	158	158	172	172	228	253	253
L	1320	1350	1380	1423	1473	1514	1583	1643
LS	1413	1443	1473	1535	1585	1651	1772	1832
LB	266	296	326	369	419	460	529	589
LBS	359	389	419	481	531	597	718	778

PF032RF97..

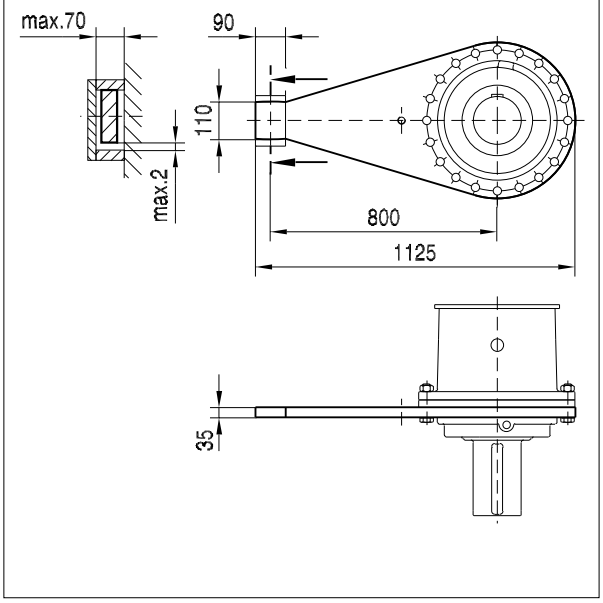
45 042 01 08



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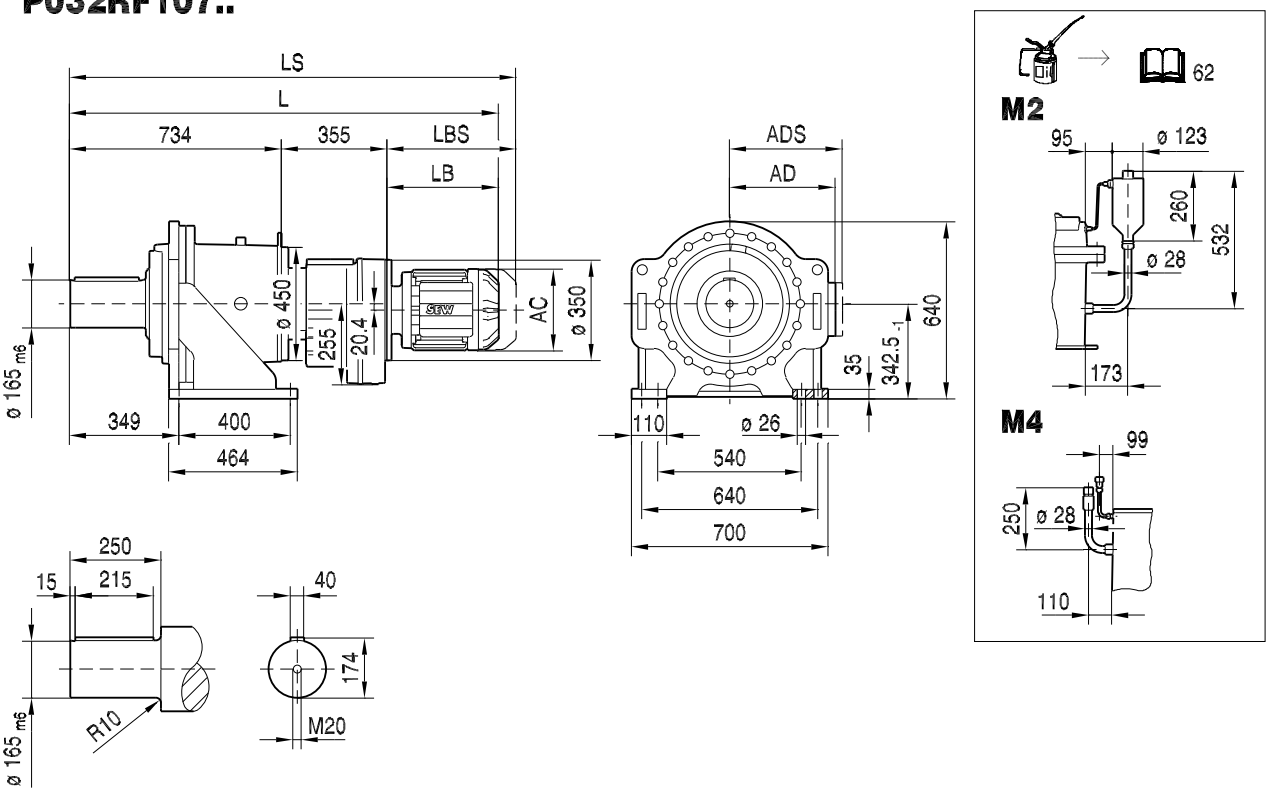
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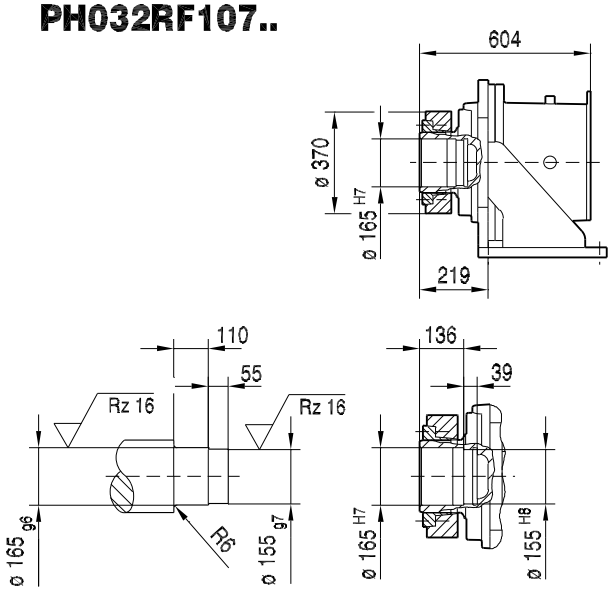
(→ 73)	DR90L	DR100M	DR100L/LC	DR132S	DR132M/MC	DR160..	DR180S/M	DR180L/LC
AC	179	197	197	221	221	270	316	316
AD	140	157	157	170	170	228	253	253
ADS	150	158	158	172	172	228	253	253
L	1320	1350	1380	1423	1473	1514	1583	1643
LS	1413	1443	1473	1535	1585	1651	1772	1832
LB	266	296	326	369	419	460	529	589
LBS	359	389	419	481	531	597	718	778

P032RF107..

45 014 01 08



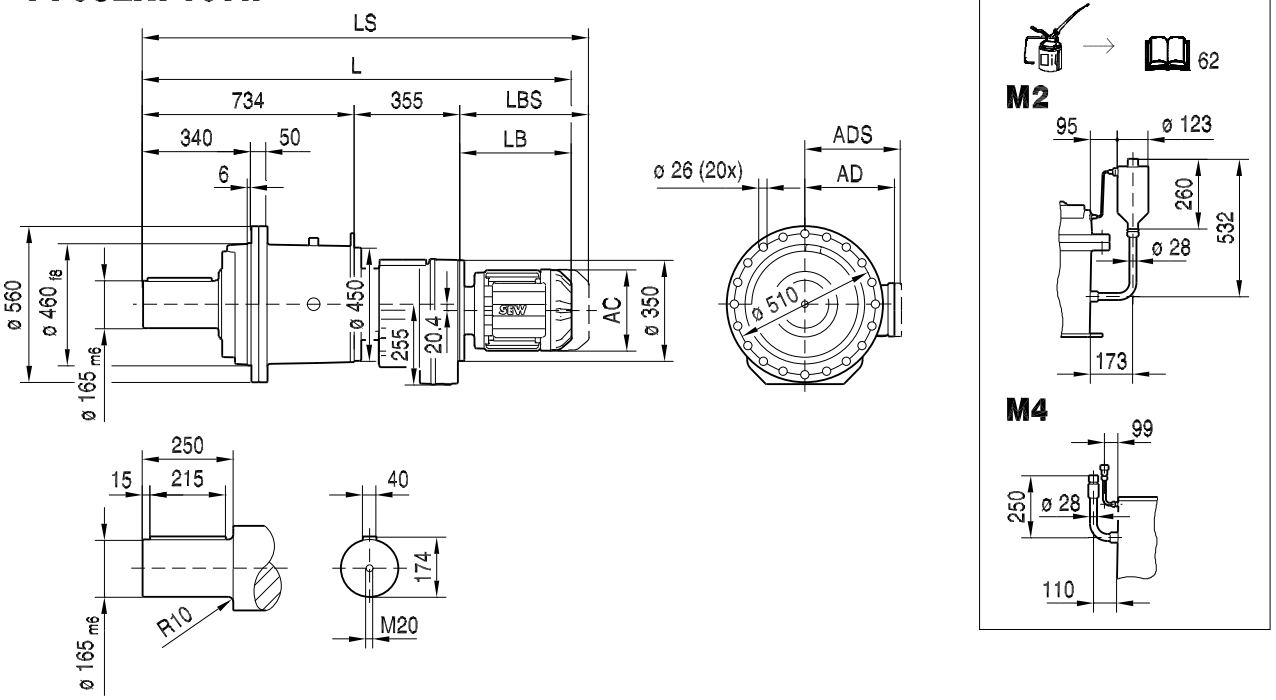
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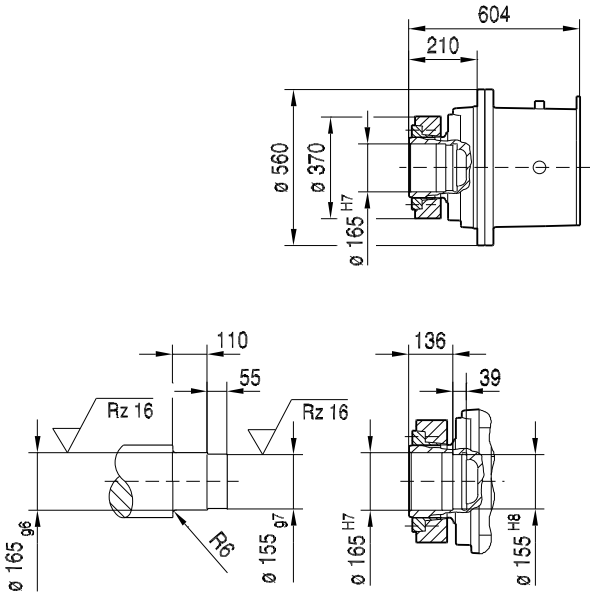
(→ 📖 73)	DR90L	DR100M	DR100L/LC	DR132S	DR132M/MC	DR160..	DR180S/M	DR180L/LC	DR225S	DR225M/MC
AC	179	197	197	221	221	270	316	316	394	394
AD	140	157	157	170	170	228	253	253	283	283
ADS	150	158	158	172	172	228	253	253	283	283
L	1349	1379	1409	1452	1502	1543	1612	1672	1745	1795
LS	1442	1472	1502	1564	1614	1680	1801	1861	1950	2000
LB	260	290	320	363	413	454	523	583	656	706
LBS	353	383	413	475	525	591	712	772	861	911

PF032RF107..

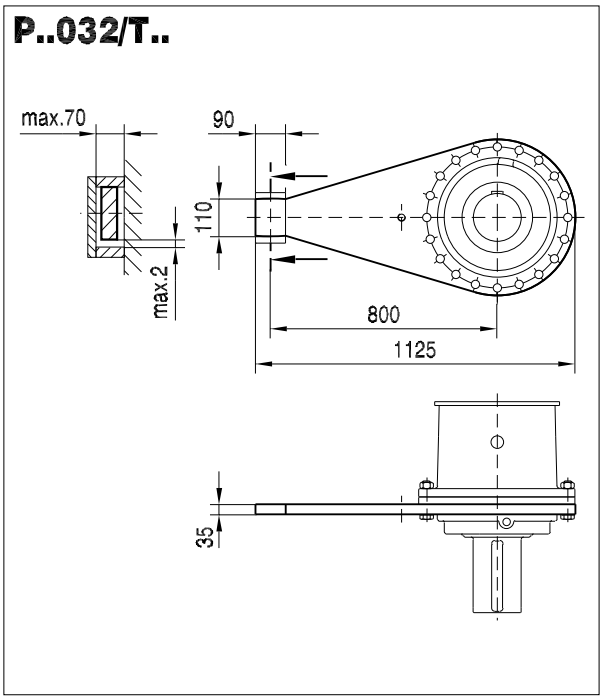
45 043 01 08



PHF032RF107..



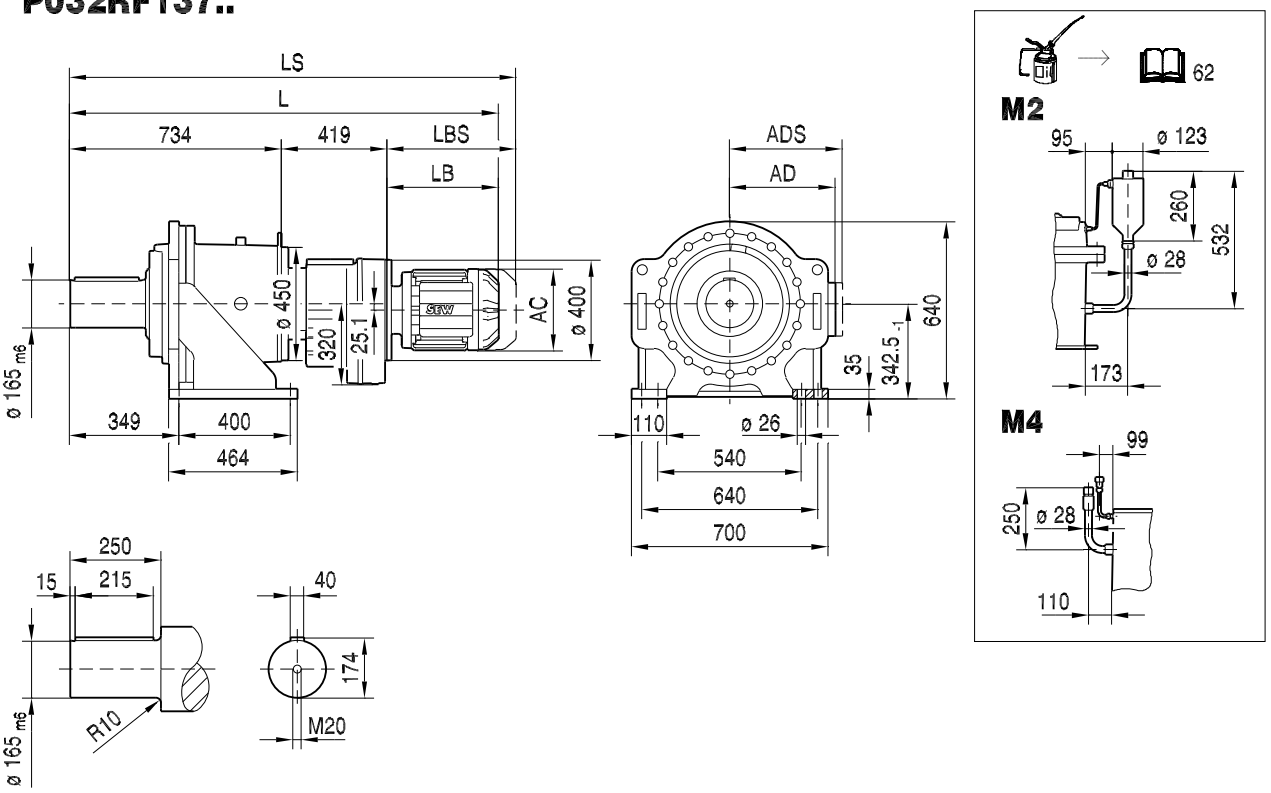
P..032/T..



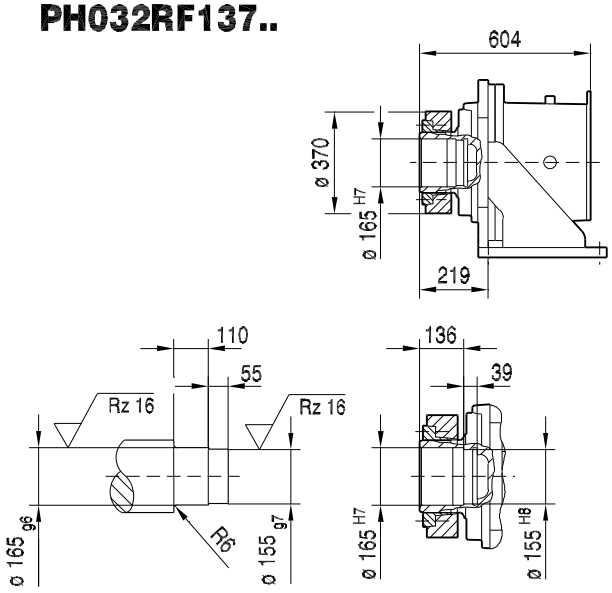
(→ 73)	DR90L	DR100M	DR100L/LC	DR132S	DR132M/MC	DR160..	DR180S/M	DR180L/LC	DR225S	DR225M/MC
AC	179	197	197	221	221	270	316	316	394	394
AD	140	157	157	170	170	228	253	253	283	283
ADS	150	158	158	172	172	228	253	253	283	283
L	1349	1379	1409	1452	1502	1543	1612	1672	1745	1795
LS	1442	1472	1502	1564	1614	1680	1801	1861	1950	2000
LB	260	290	320	363	413	454	523	583	656	706
LBS	353	383	413	475	525	591	712	772	861	911

P032RF137..

45 015 01 08



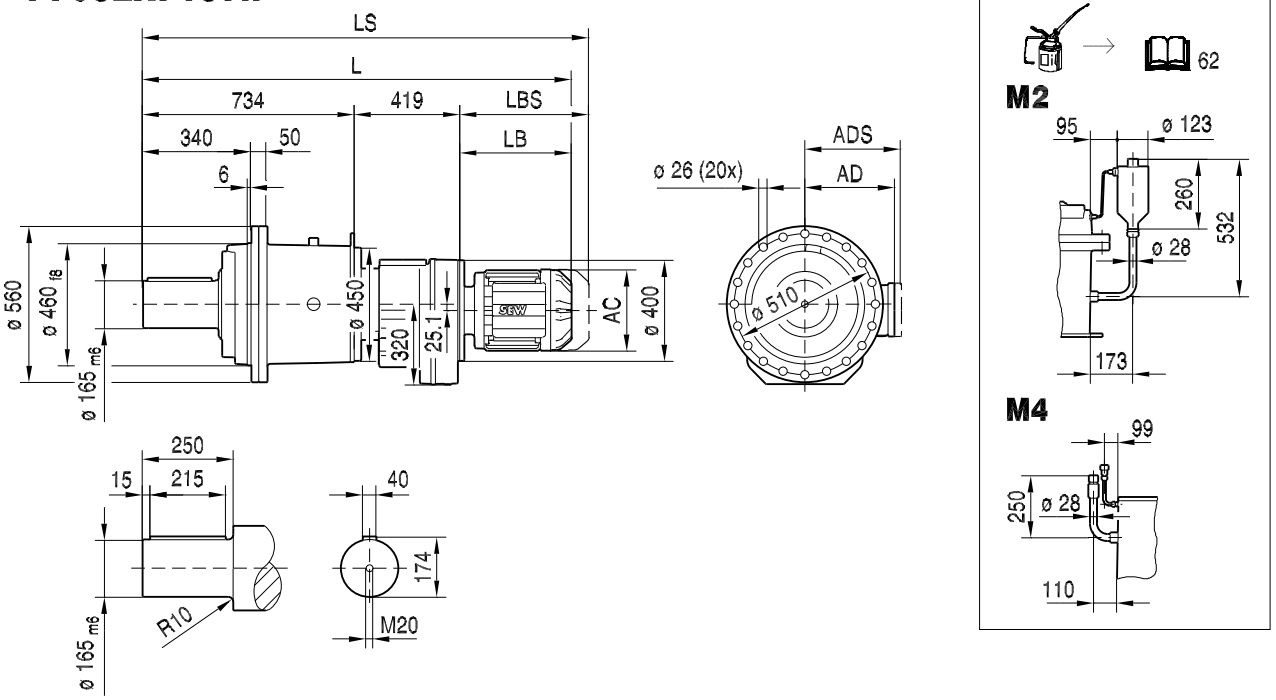
PH032RF137..



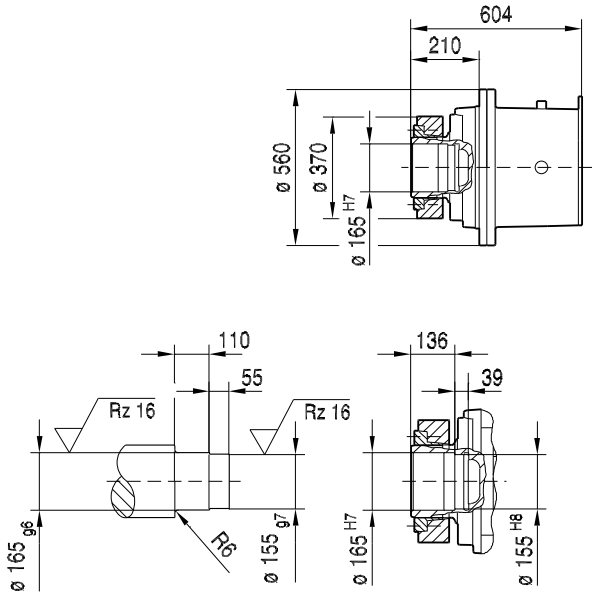
(→ 📖 73)	DR225S	DR225M/MC						
AC	394	394						
AD	283	283						
ADS	283	283						
L	1802	1852						
LS	2007	2057						
LB	649	699						
LBS	854	904						

PF032RF137..

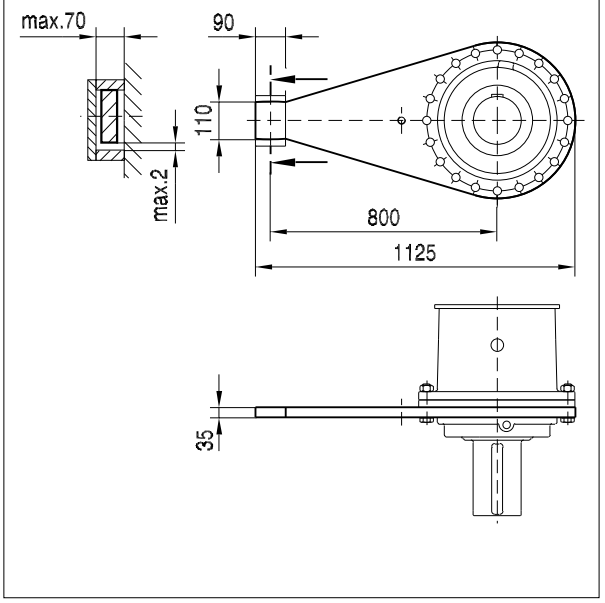
45 044 01 08



PHF032RF137..



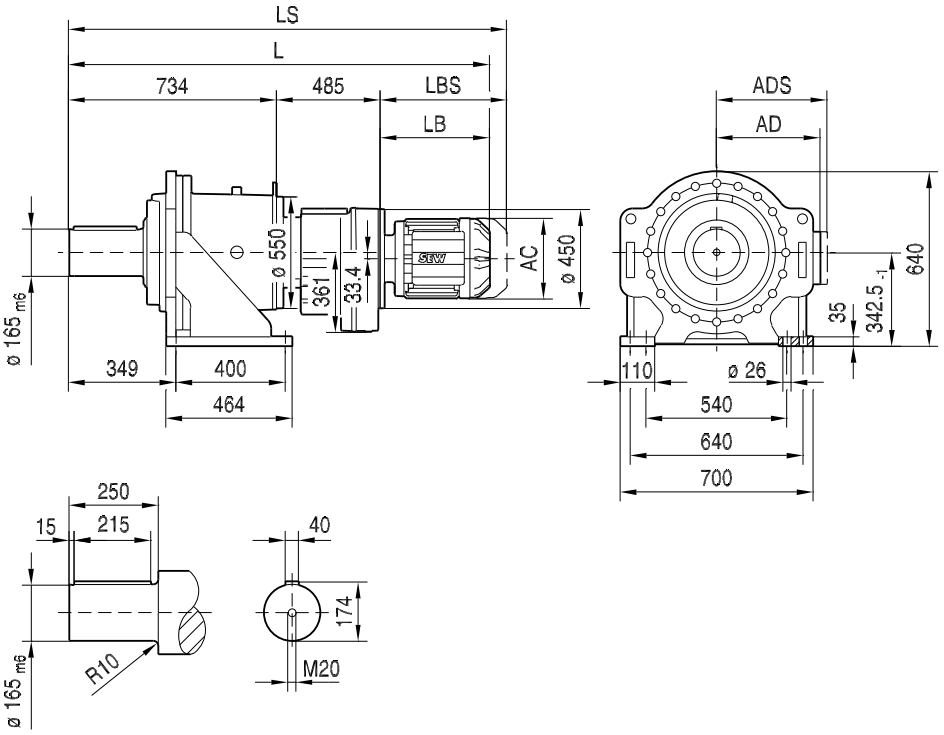
P..032/T..

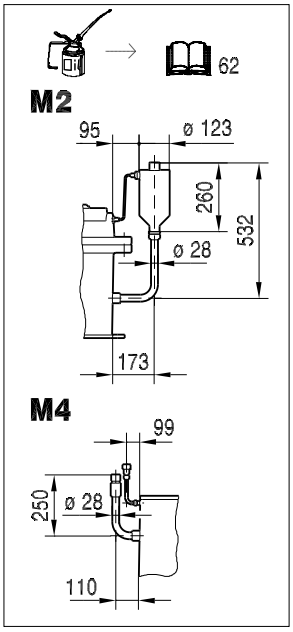


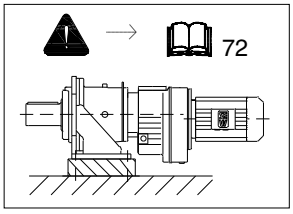
(→ 73)	DR225S	DR225M/MC						
AC	394	394						
AD	283	283						
ADS	283	283						
L	1802	1852						
LS	2007	2057						
LB	649	699						
LBS	854	904						

45 016 01 08

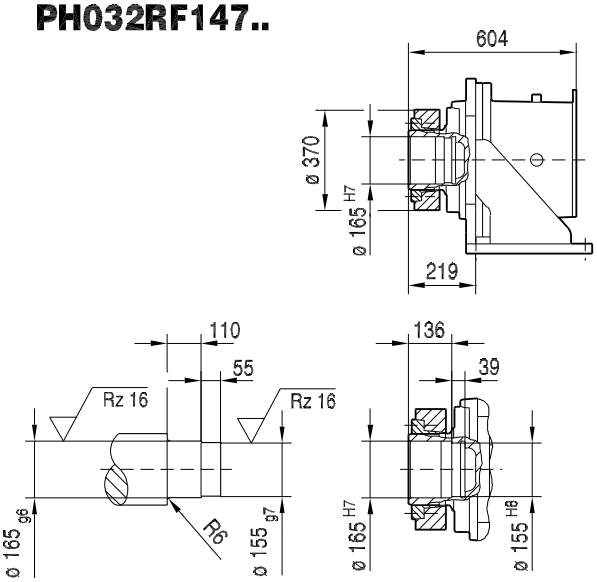
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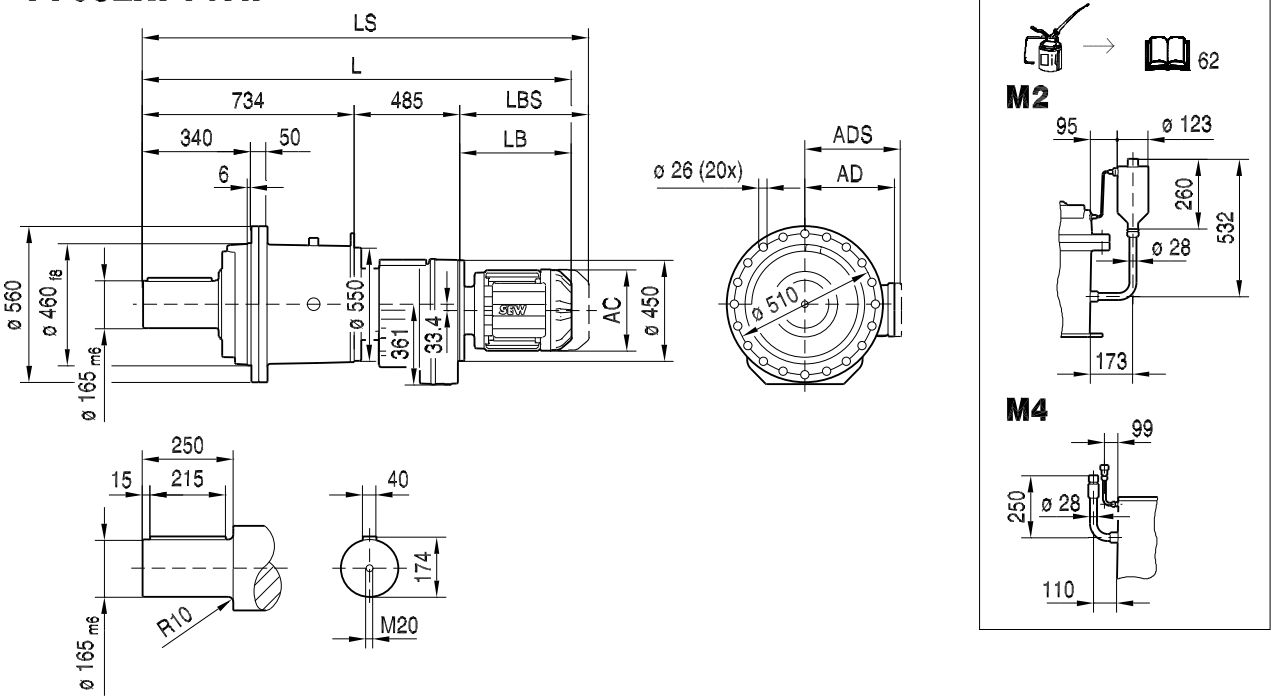
PH032RF147..



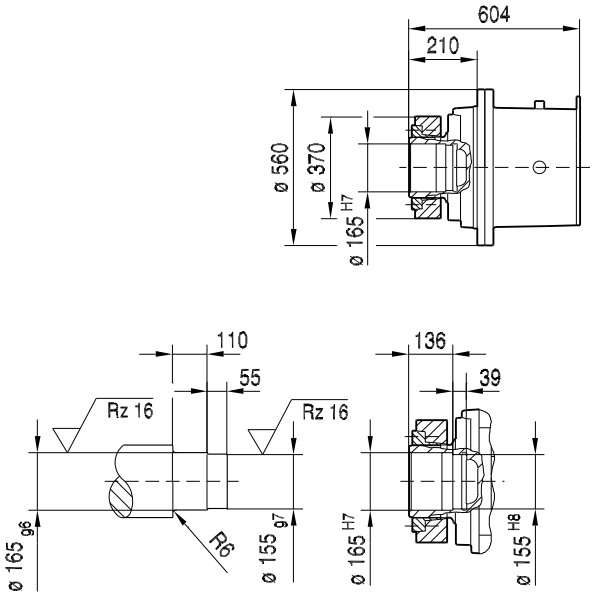
(→ 73)	DV280..							
AC	510							
AD	397							
ADS	397							
L	1999							
LS	2184							
LB	780							
LBS	965							

PF032RF147..

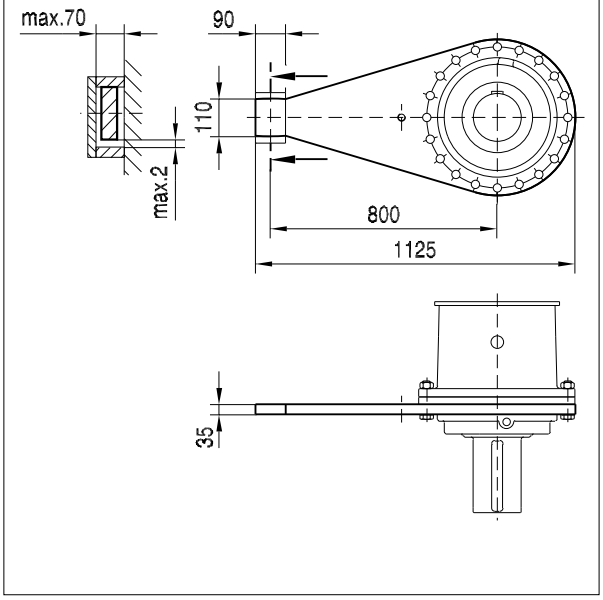
45 045 01 08



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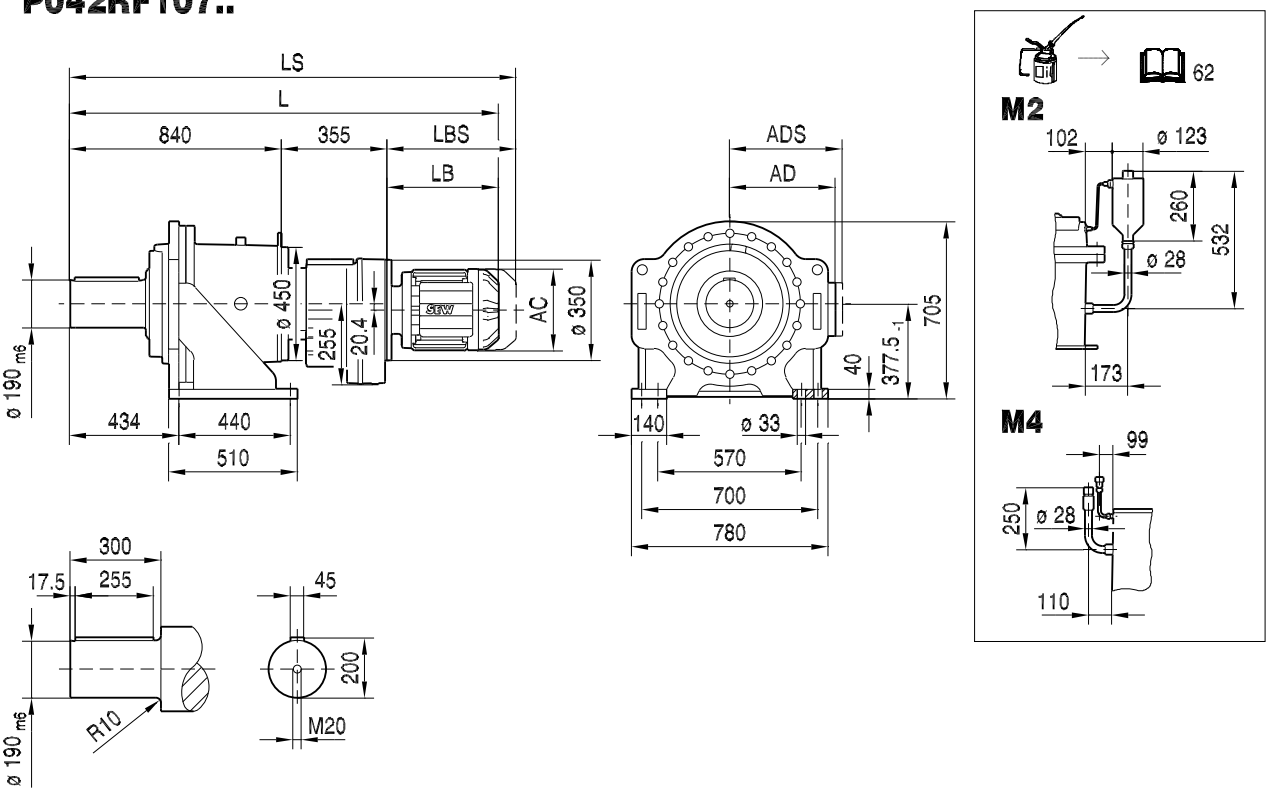
P..032/T..



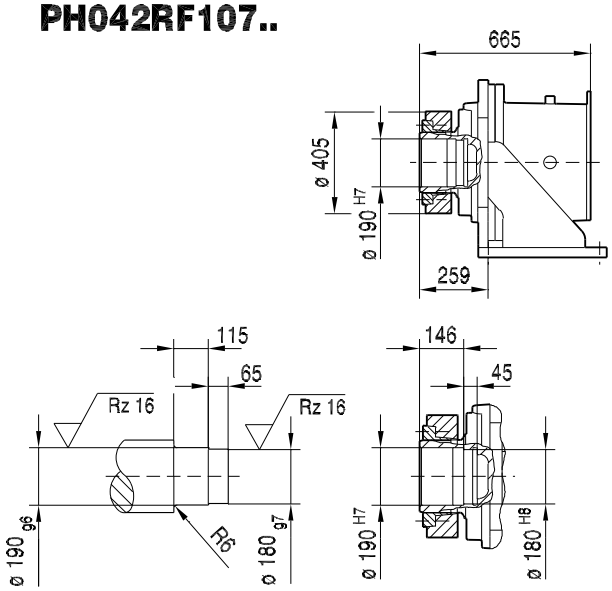
(→ 73)	DV280..							
AC	510							
AD	397							
ADS	397							
L	1999							
LS	2184							
LB	780							
LBS	965							

P042RF107..

45 017 01 08



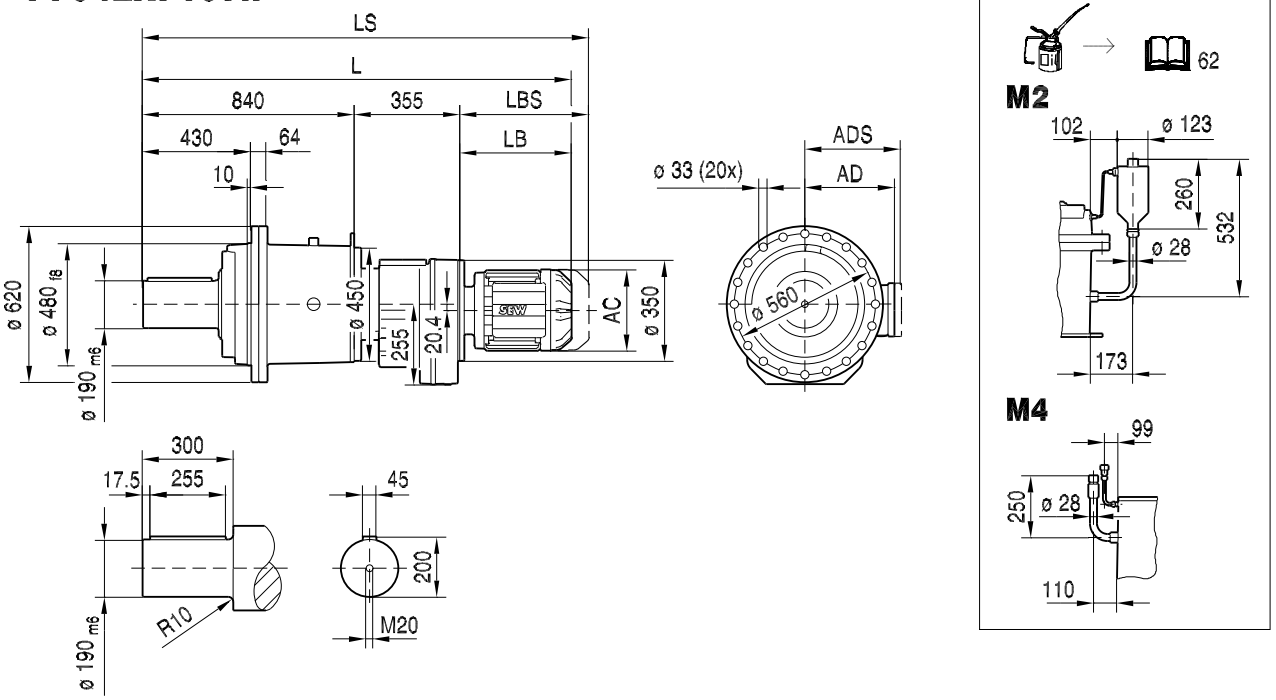
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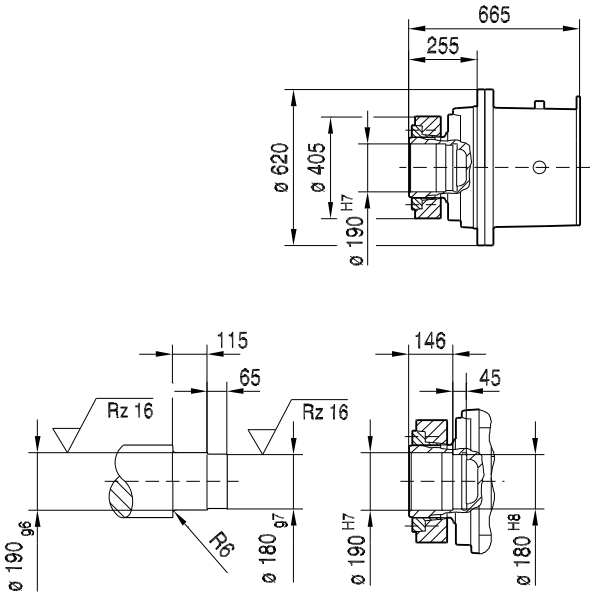
(→ 📖 73)	DR90L	DR100M	DR100L/LC	DR132S	DR132M/MC	DR160..	DR180S/M	DR180L/LC	DR225S
AC	179	197	197	221	221	270	316	316	394
AD	140	157	157	170	170	228	253	253	283
ADS	150	158	158	172	172	228	253	253	283
L	1455	1485	1515	1558	1608	1649	1718	1778	1851
LS	1548	1578	1608	1670	1720	1786	1907	1967	2056
LB	260	290	320	363	413	454	523	583	656
LBS	353	383	413	475	525	591	712	772	861

PF042RF107..

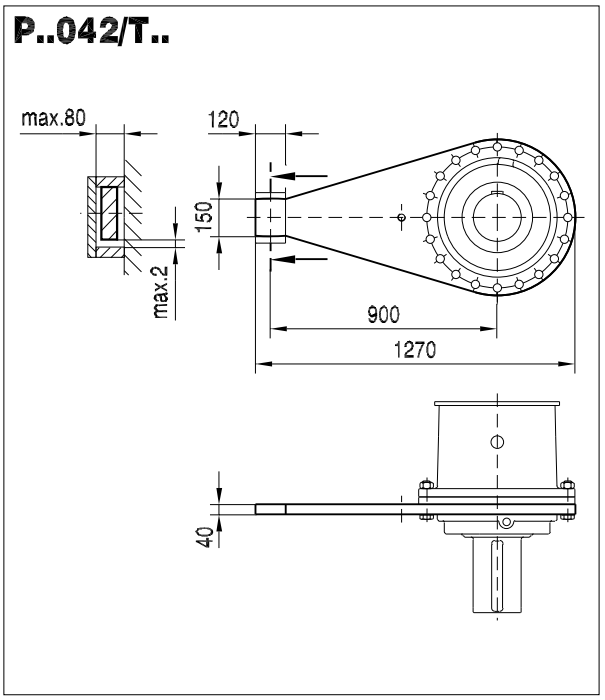
45 046 01 08



PHF042RF107..



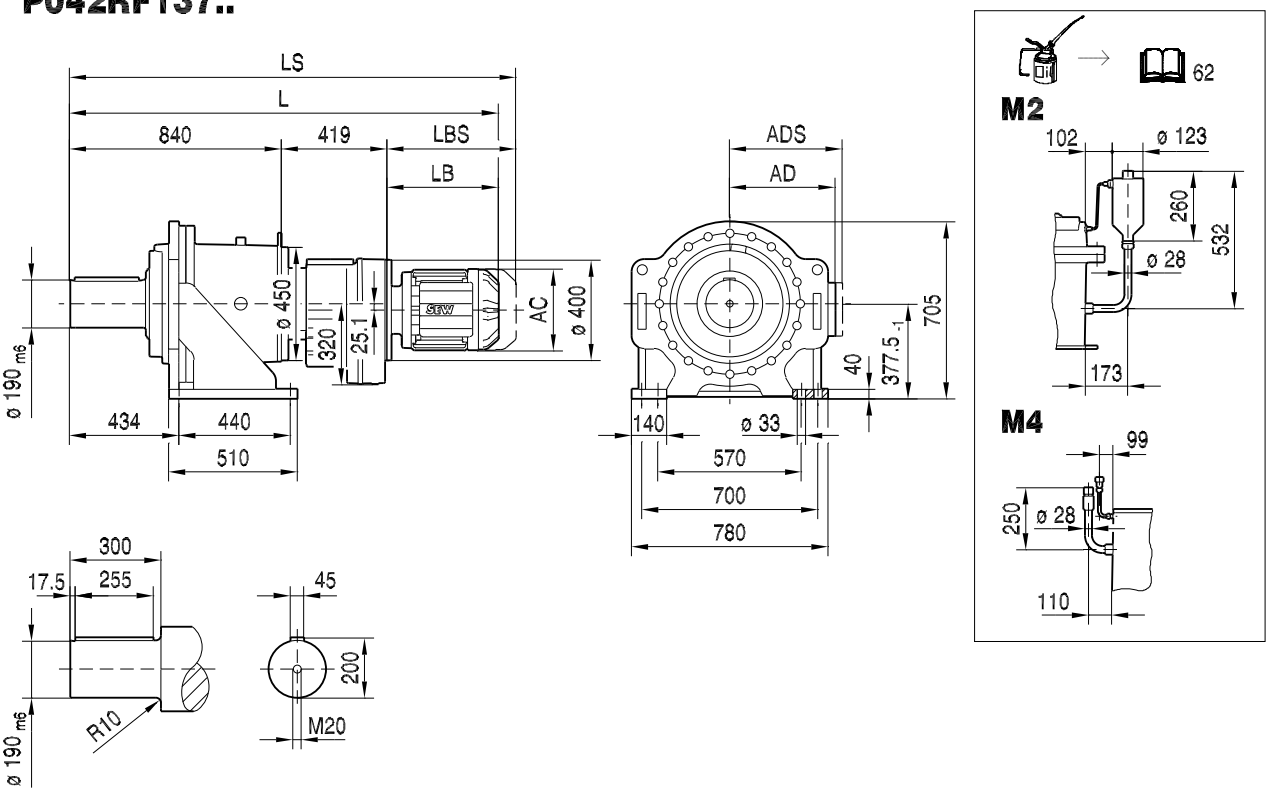
P..042/T..



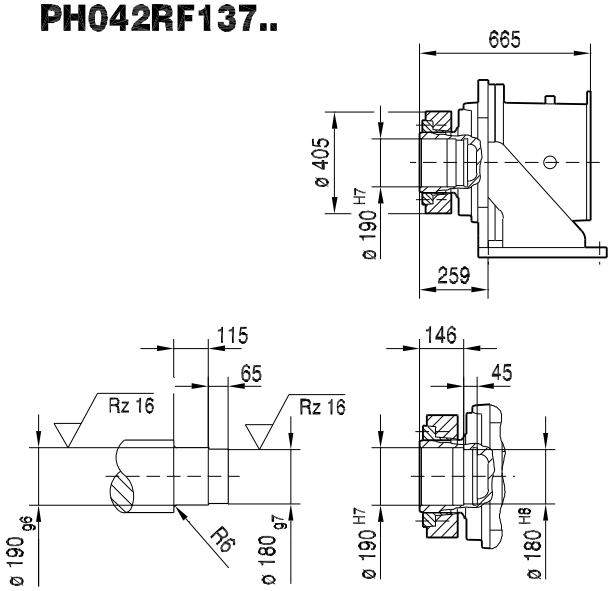
(→ 73)	DR90L	DR100M	DR100L/LC	DR132S	DR132M/MC	DR160..	DR180S/M	DR180L/LC	DR225S
AC	179	197	197	221	221	270	316	316	394
AD	140	157	157	170	170	228	253	253	283
ADS	150	158	158	172	172	228	253	253	283
L	1455	1485	1515	1558	1608	1649	1718	1778	1851
LS	1548	1578	1608	1670	1720	1786	1907	1967	2056
LB	260	290	320	363	413	454	523	583	656
LBS	353	383	413	475	525	591	712	772	861

P042RF137..

45 018 01 08



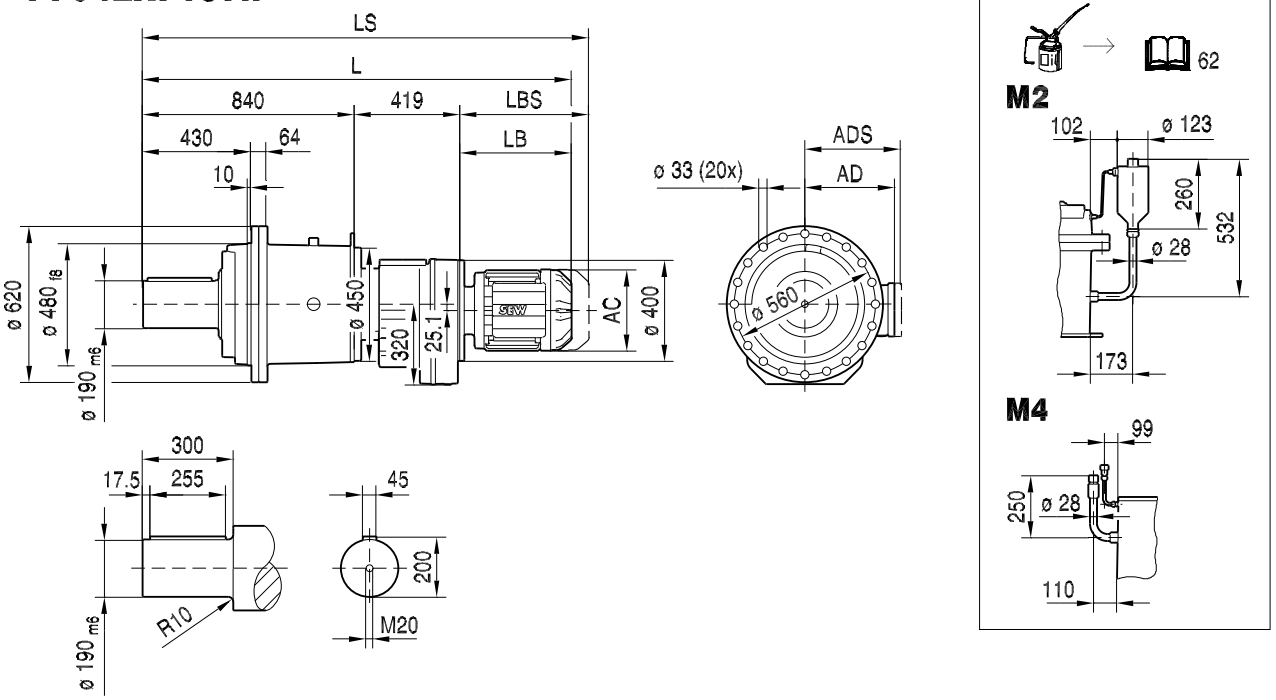
PH042RF137..



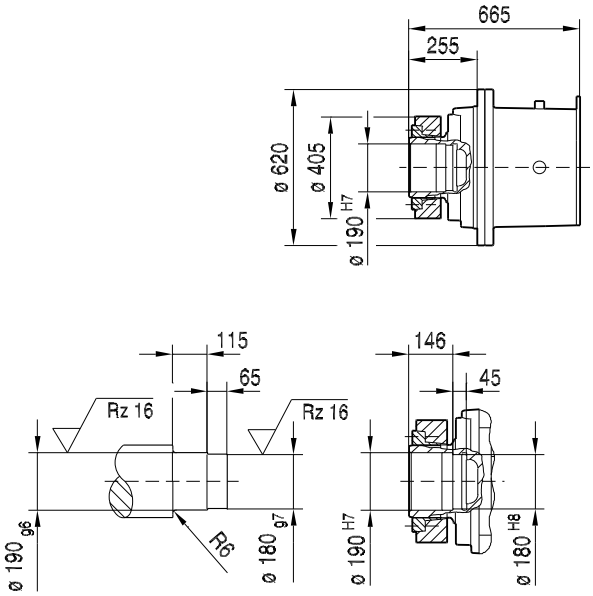
(→ 73)	DR132S	DR132M/MC	DR160..	DR180S/M	DR180L/LC	DR225S	DR225M/MC	
AC	221	221	270	316	316	394	394	
AD	170	170	228	253	253	283	283	
ADS	172	172	228	253	253	283	283	
L	1615	1665	1706	1775	1835	1908	1958	
LS	1727	1777	1843	1964	2024	2113	2163	
LB	356	406	447	516	576	649	699	
LBS	468	518	584	705	765	854	904	

PF042RF137..

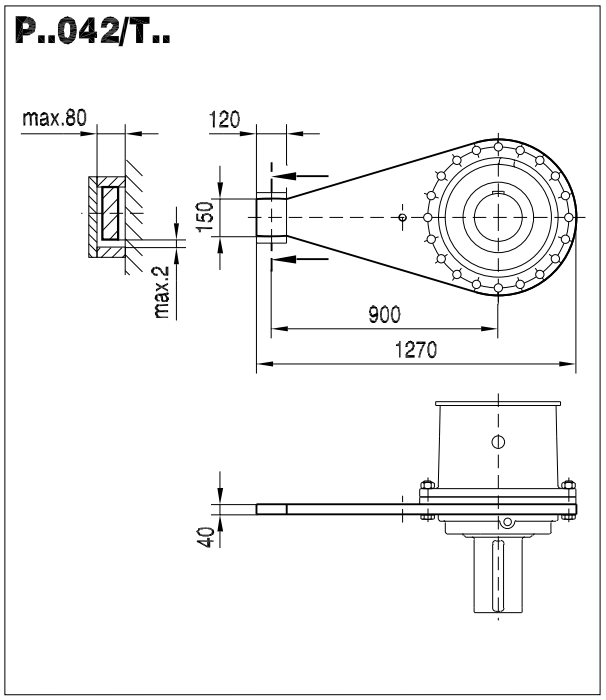
45 047 01 08



PHF042RF137..



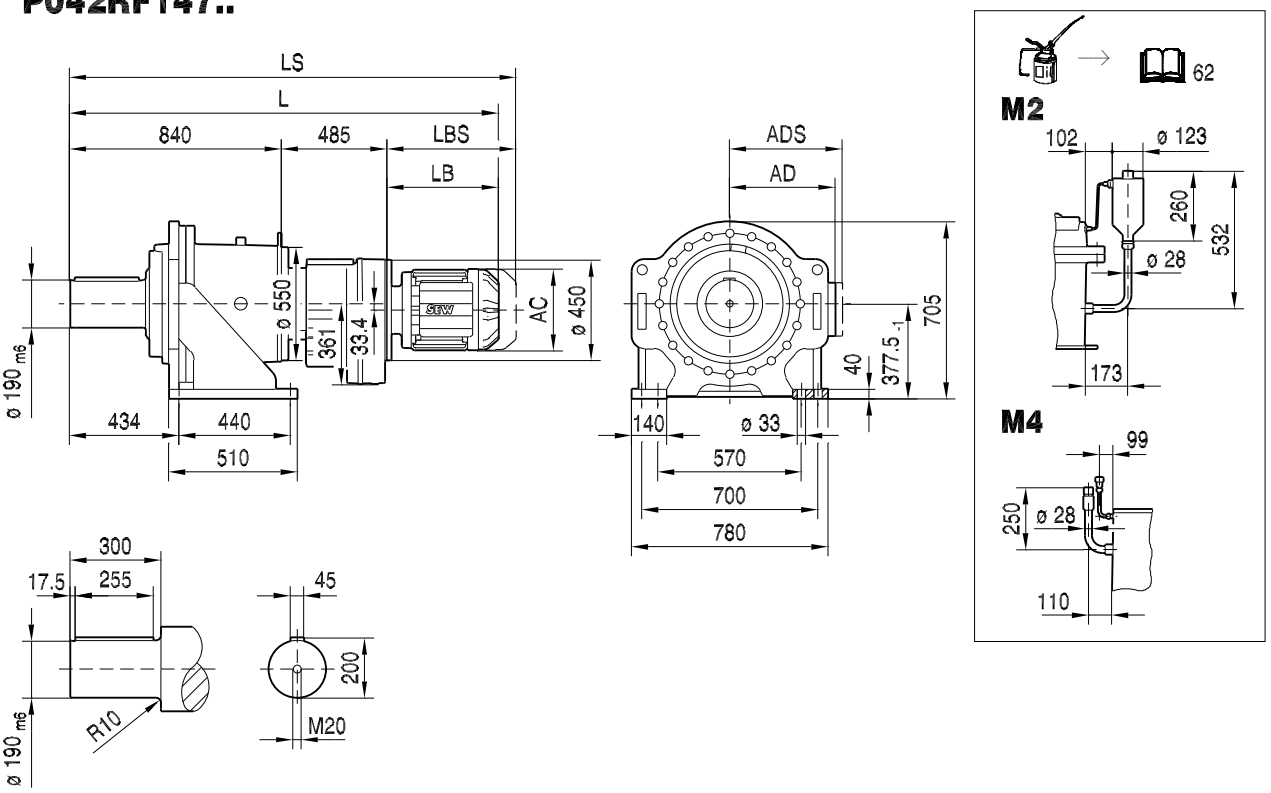
P..042/T..



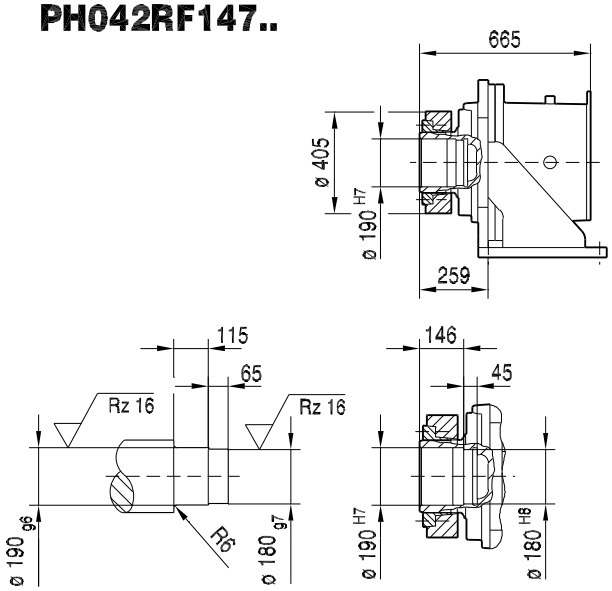
(→ 73)	DR132S	DR132M/MC	DR160..	DR180S/M	DR180L/LC	DR225S	DR225M/MC	
AC	221	221	270	316	316	394	394	
AD	170	170	228	253	253	283	283	
ADS	172	172	228	253	253	283	283	
L	1615	1665	1706	1775	1835	1908	1958	
LS	1727	1777	1843	1964	2024	2113	2163	
LB	356	406	447	516	576	649	699	
LBS	468	518	584	705	765	854	904	

P042RF147..

45 019 01 08



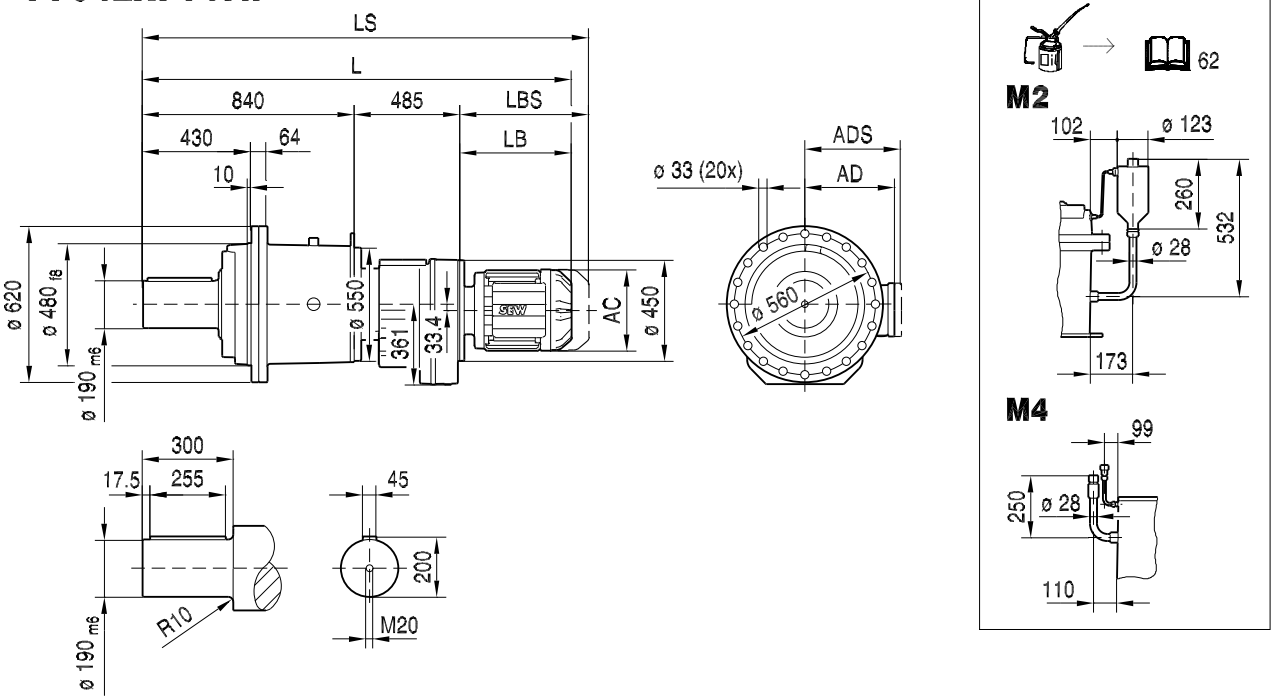
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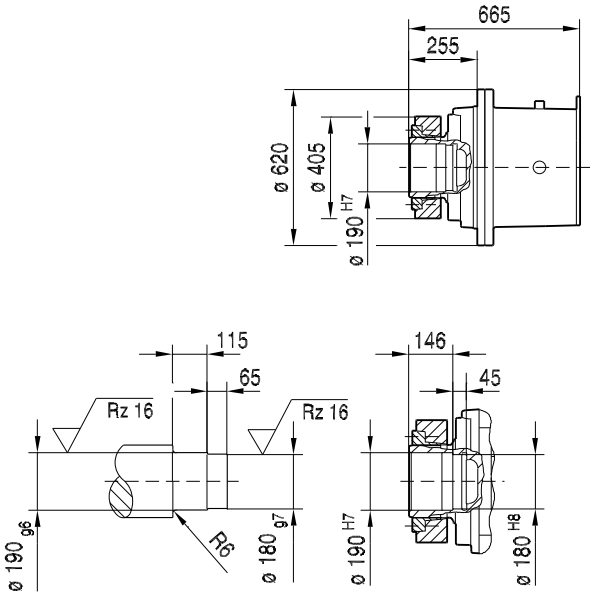
(→ 📖 73)	DR225M/MC	DV280..						
AC	394	510						
AD	283	397						
ADS	283	397						
L	2016	2105						
LS	2221	2290						
LB	691	780						
LBS	896	965						

PF042RF147..

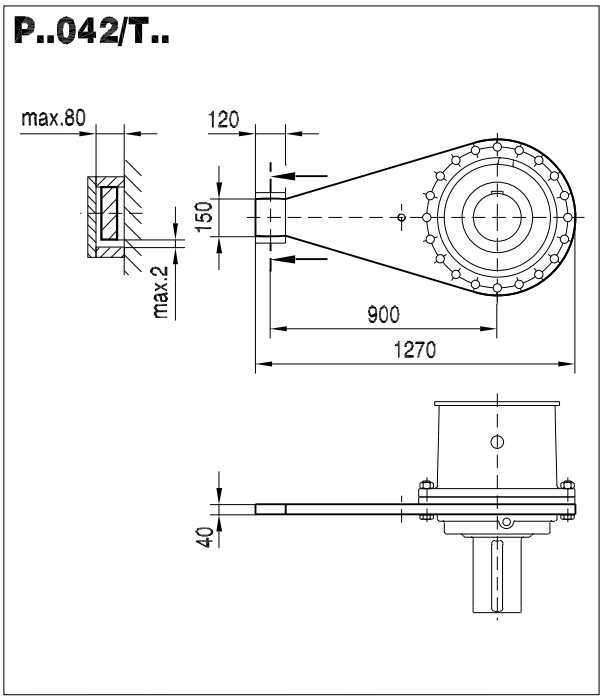
45 048 01 08



PHF042RF147..



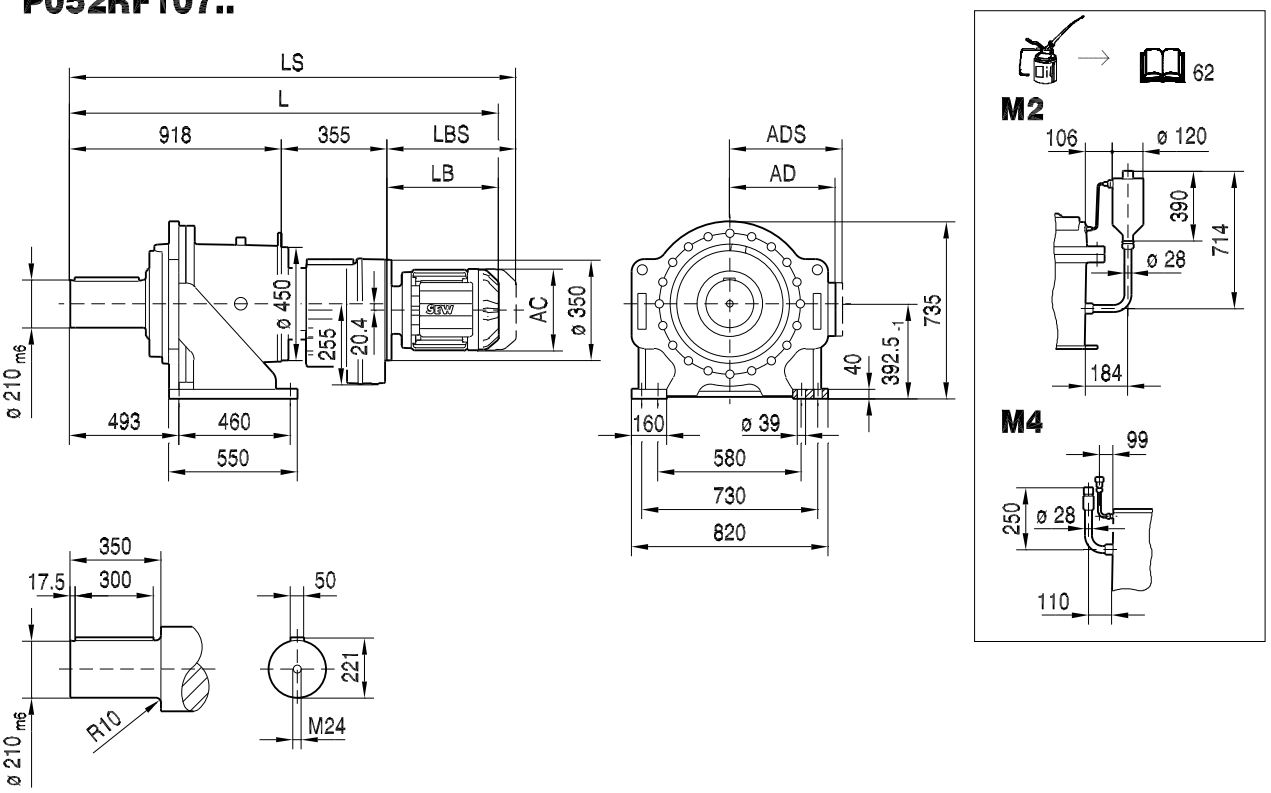
P..042/T..



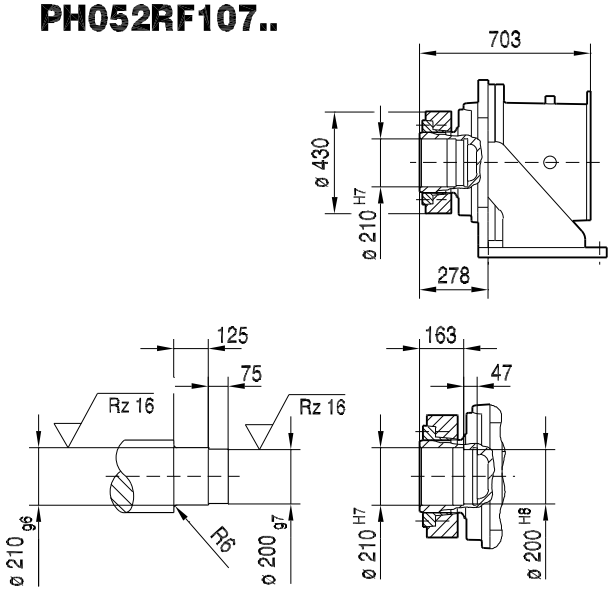
(→ 73)	DR225M/MC	DV280..						
AC	394	510						
AD	283	397						
ADS	283	397						
L	2016	2105						
LS	2221	2290						
LB	691	780						
LBS	896	965						

P052RF107..

45 020 01 08



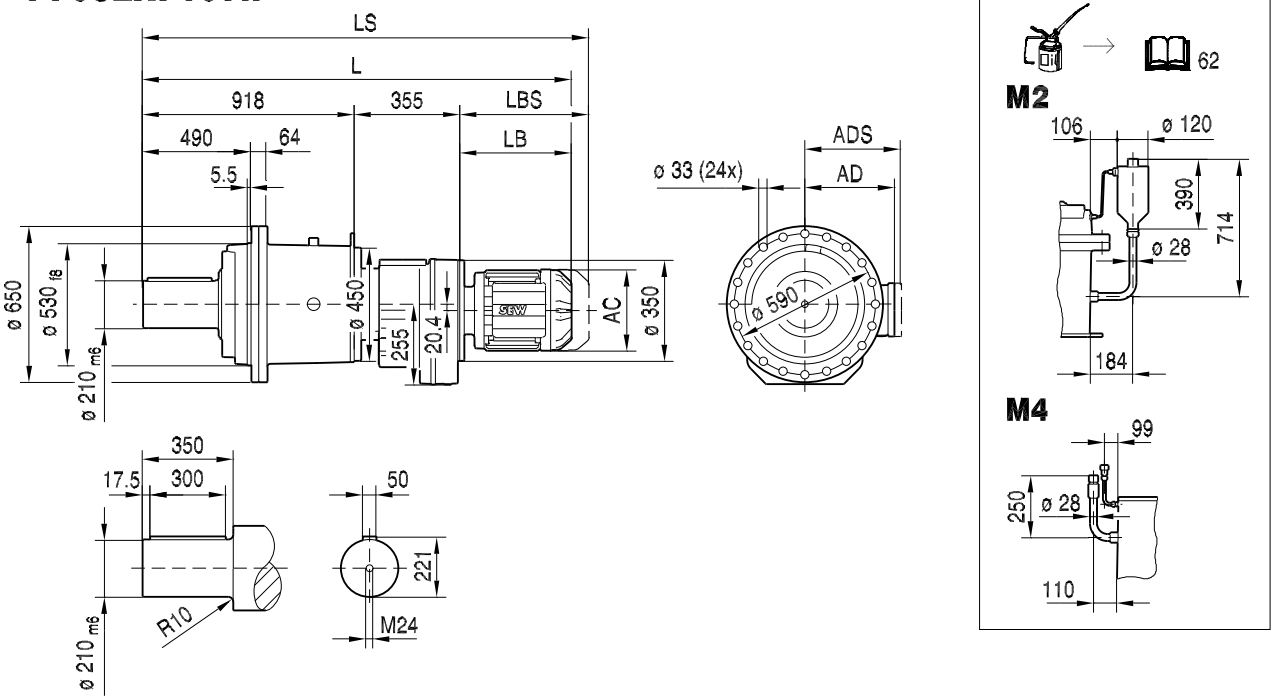
PH052RF107..



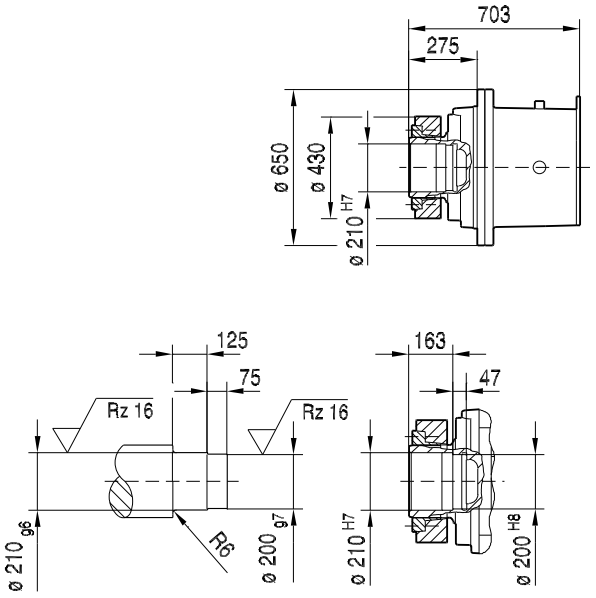
(→ 📖 73)	DR100M	DR100L/LC	DR132S	DR132M/MC	DR180S/M	DR180L/LC		
AC	197	197	221	221	316	316		
AD	157	157	170	170	253	253		
ADS	158	158	172	172	253	253		
L	1563	1593	1636	1686	1796	1856		
LS	1656	1686	1748	1798	1985	2045		
LB	290	320	363	413	523	583		
LBS	383	413	475	525	712	772		

PF052RF107..

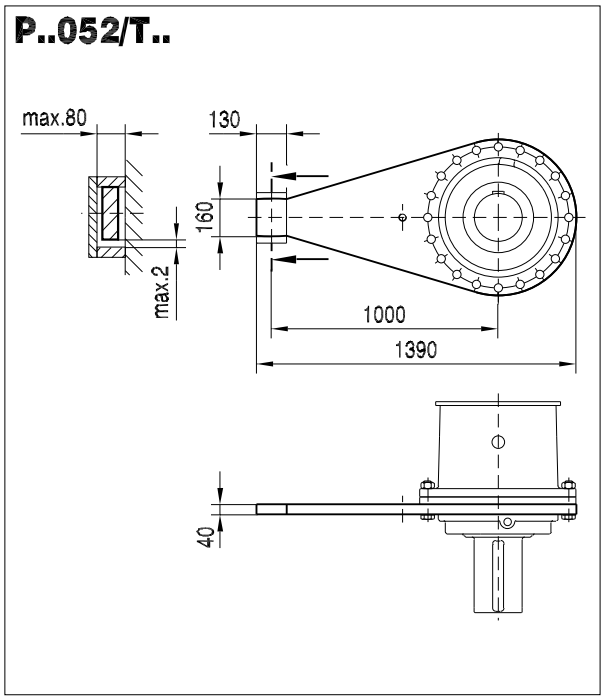
45 049 01 08



PHF052RF107..



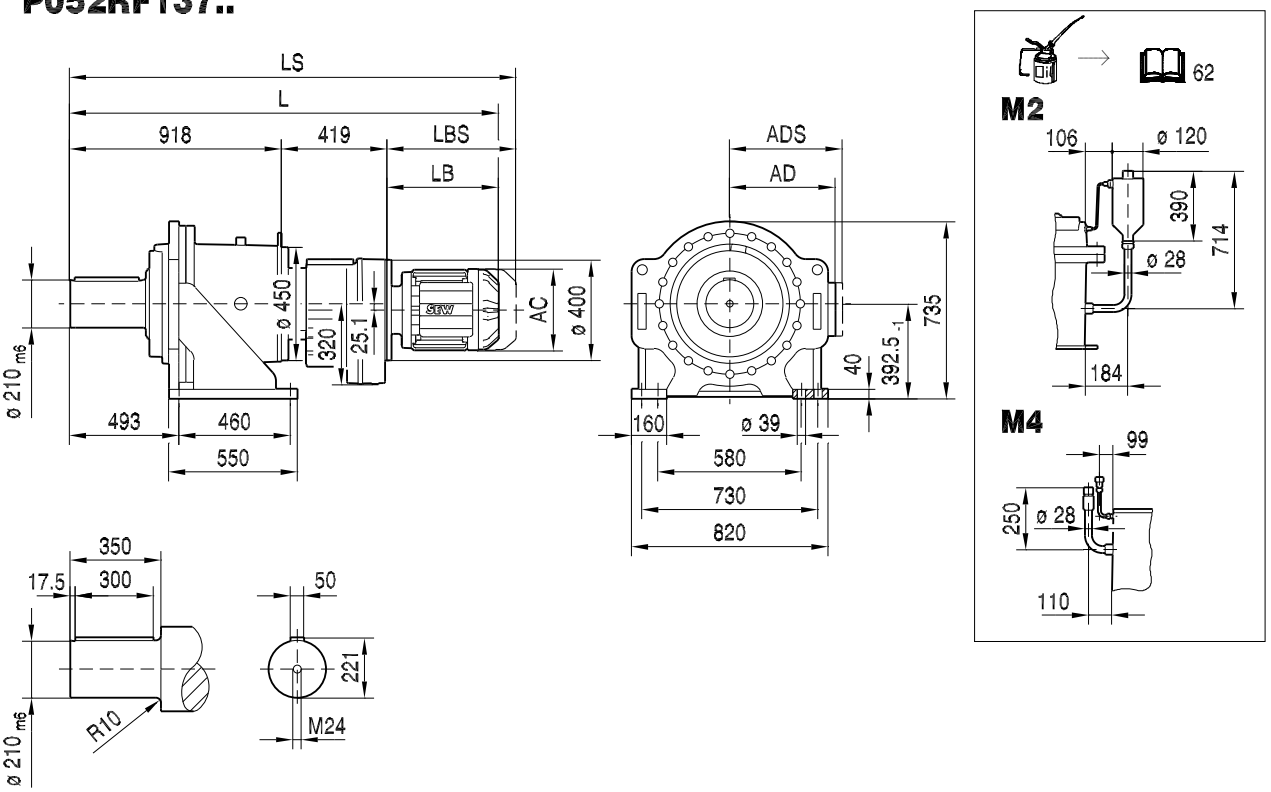
P..052/T..



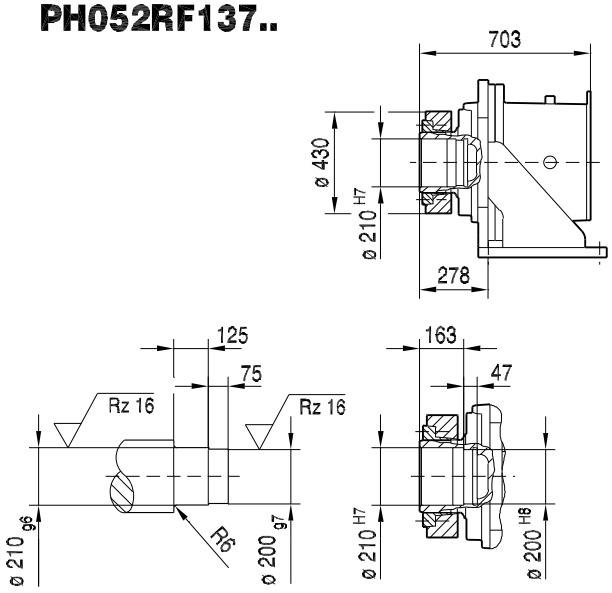
(→ 73)	DR100M	DR100L/LC	DR132S	DR132M/MC	DR180S/M	DR180L/LC		
AC	197	197	221	221	316	316		
AD	157	157	170	170	253	253		
ADS	158	158	172	172	253	253		
L	1563	1593	1636	1686	1796	1856		
LS	1656	1686	1748	1798	1985	2045		
LB	290	320	363	413	523	583		
LBS	383	413	475	525	712	772		

P052RF137..

45 021 01 08



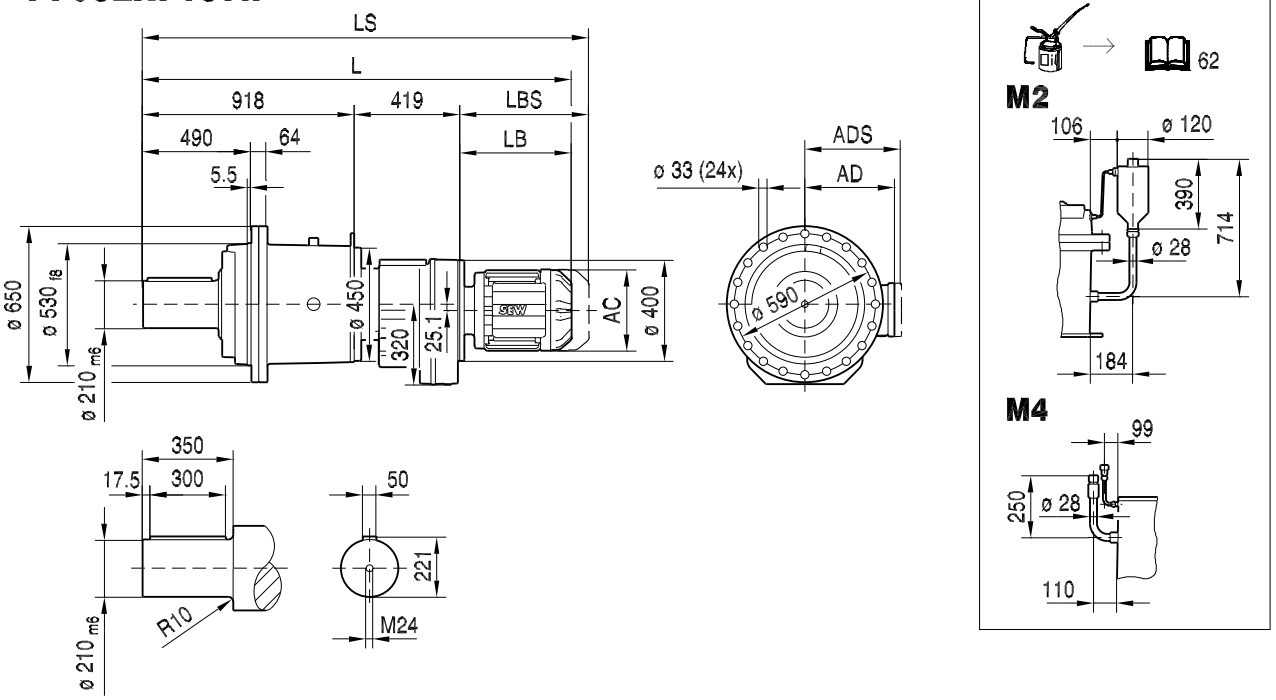
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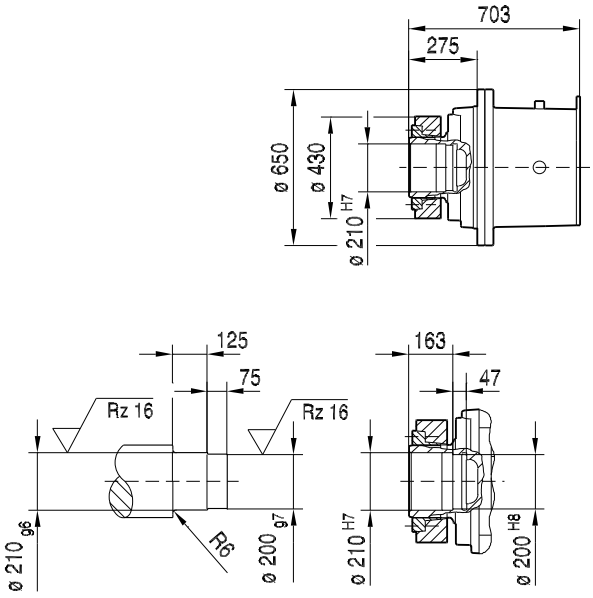
(→ 📖 73)	DR132S	DR132M/MC	DR160..	DR180S/M	DR180L/LC	DR225S	DR225M/MC	
AC	221	221	270	316	316	394	394	
AD	170	170	228	253	253	283	283	
ADS	172	172	228	253	253	283	283	
L	1693	1743	1784	1853	1913	1986	2036	
LS	1805	1855	1921	2042	2102	2191	2241	
LB	356	406	447	516	576	649	699	
LBS	468	518	584	705	765	854	904	

PF052RF137..

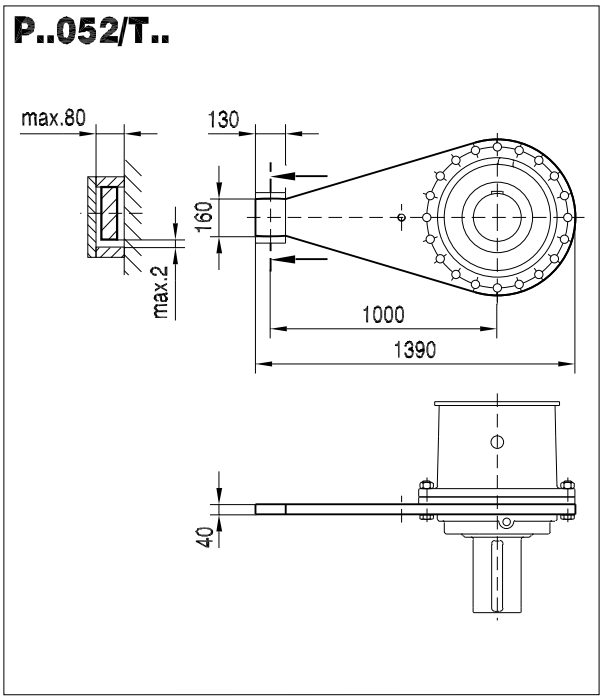
45 050 01 08



PHF052RF137..



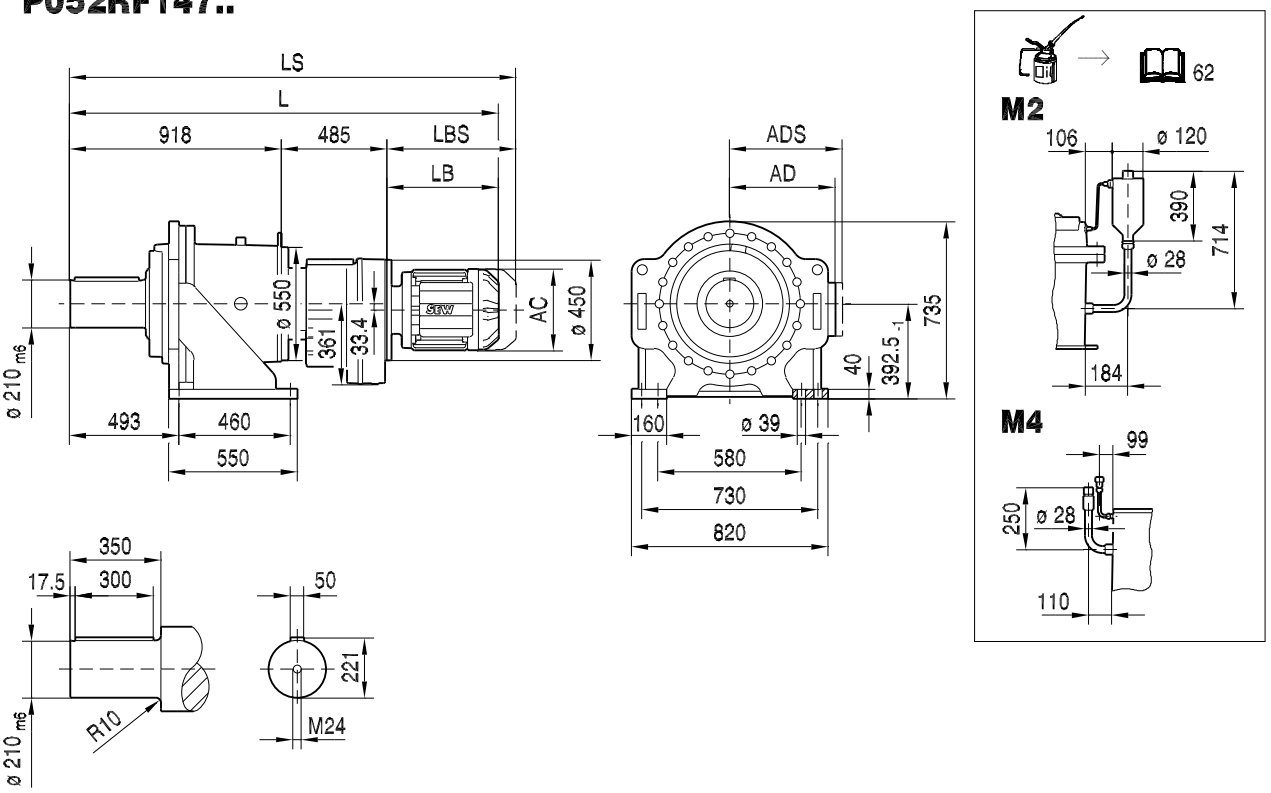
P..052/T..



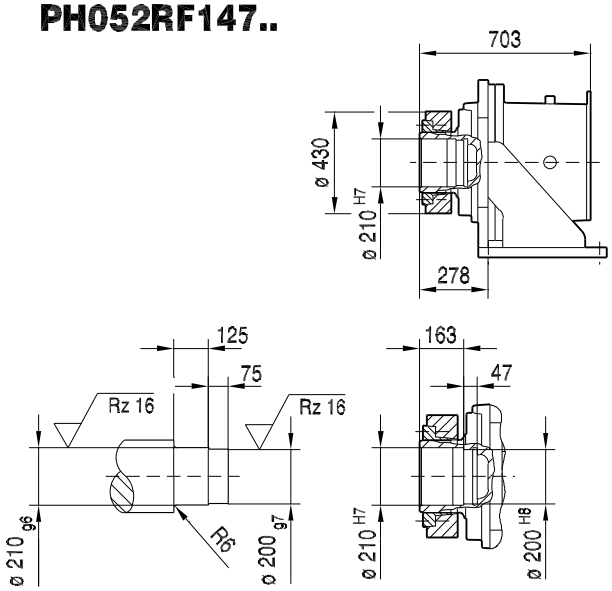
(→ 73)	DR132S	DR132M/MC	DR160..	DR180S/M	DR180L/LC	DR225S	DR225M/MC	
AC	221	221	270	316	316	394	394	
AD	170	170	228	253	253	283	283	
ADS	172	172	228	253	253	283	283	
L	1693	1743	1784	1853	1913	1986	2036	
LS	1805	1855	1921	2042	2102	2191	2241	
LB	356	406	447	516	576	649	699	
LBS	468	518	584	705	765	854	904	

P052RF147..

45 022 01 08



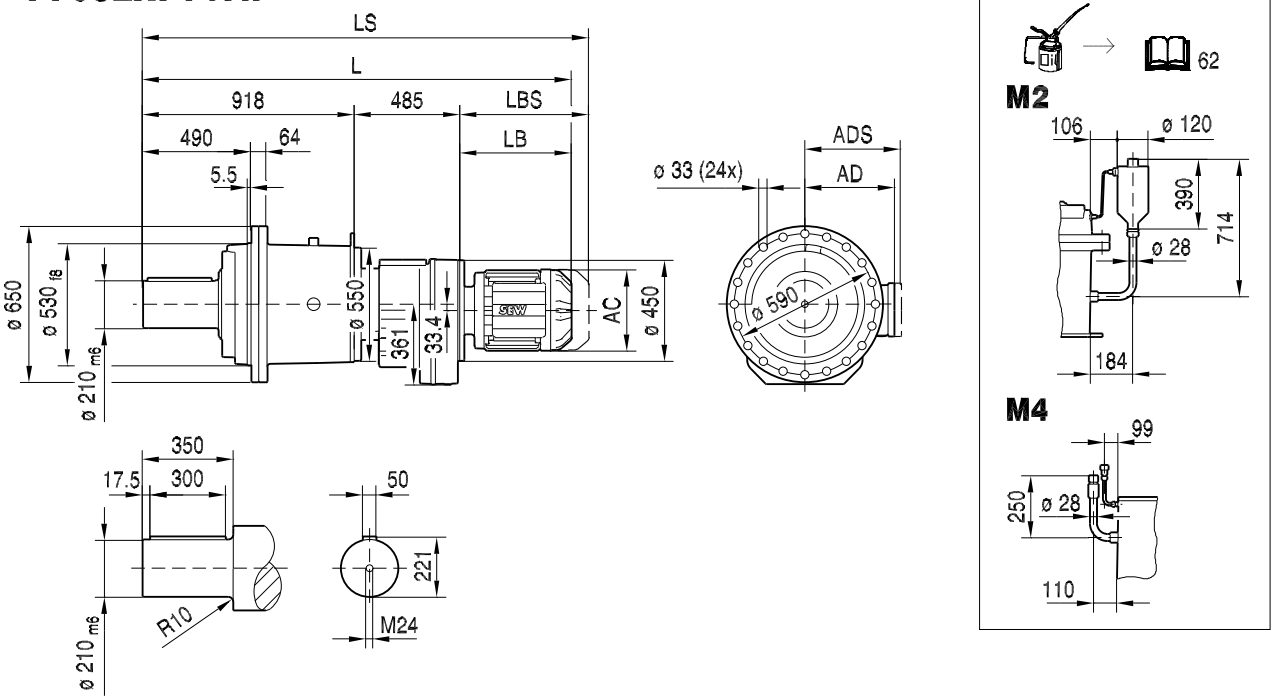
PH052RF147..



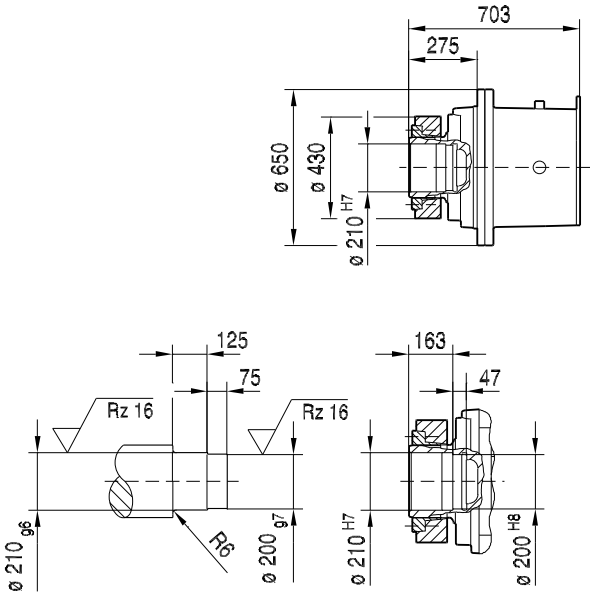
(→ 📖 73)	DR225M/MC	DV280..						
AC	394	510						
AD	283	397						
ADS	283	397						
L	2094	2183						
LS	2299	2368						
LB	691	780						
LBS	896	965						

PF052RF147..

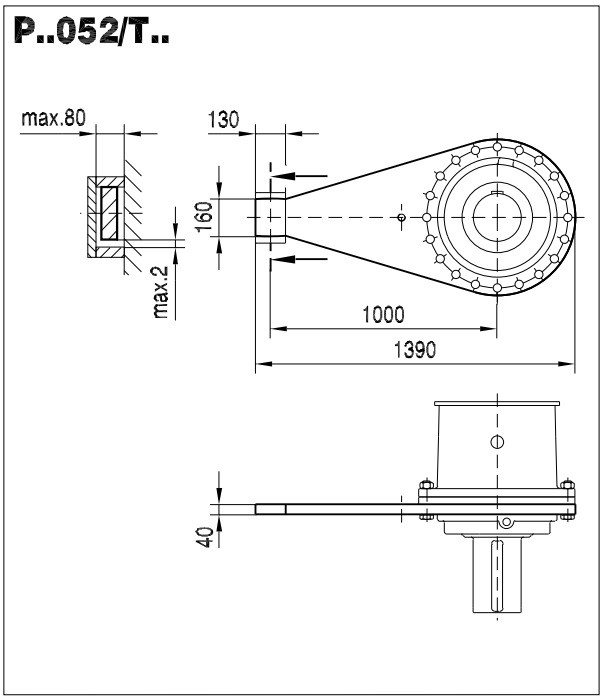
45 051 01 08



PHF052RF147..



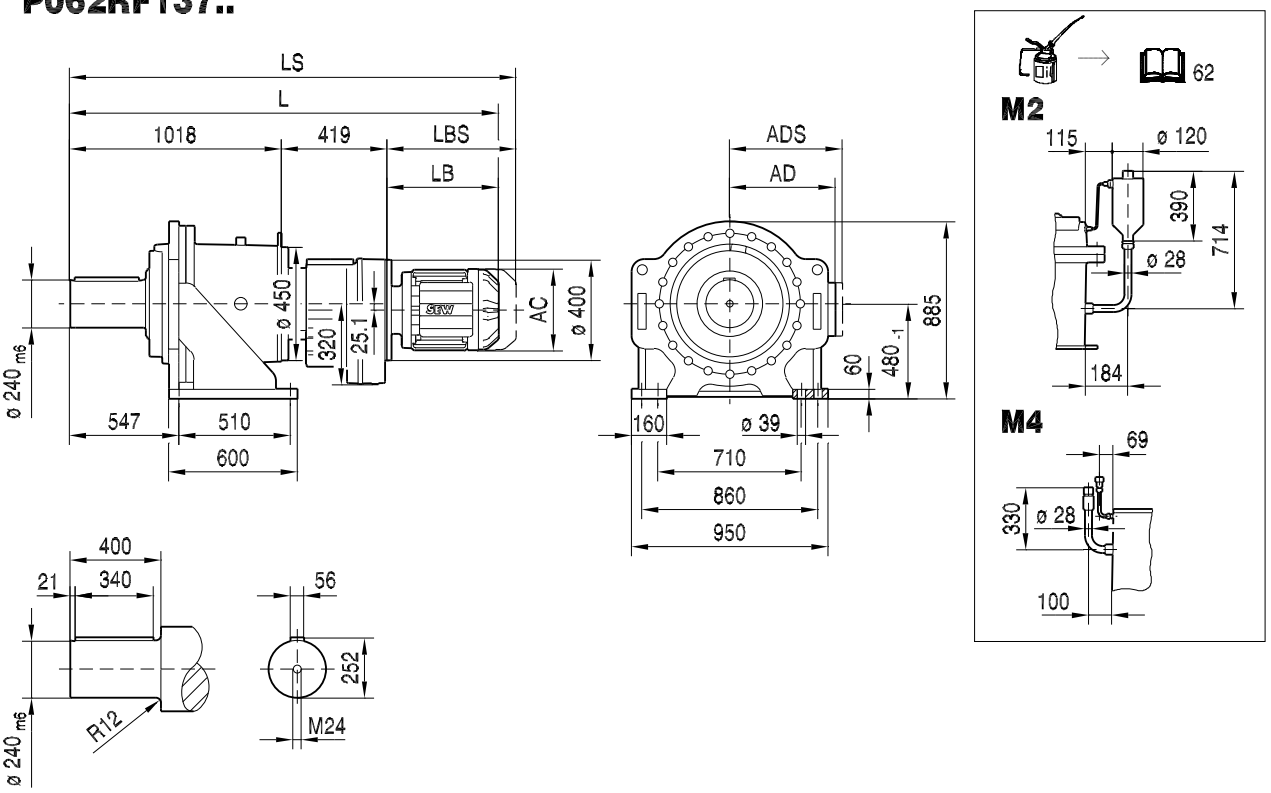
P..052/T..



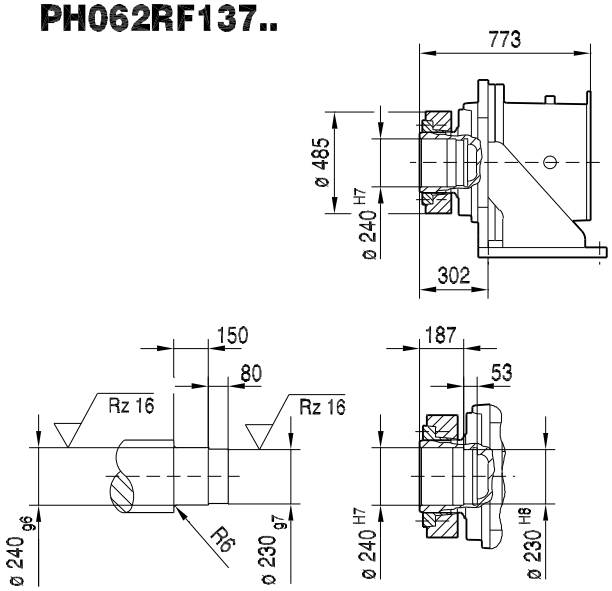
(→ 73)	DR225M/MC	DV280..						
AC	394	510						
AD	283	397						
ADS	283	397						
L	2094	2183						
LS	2299	2368						
LB	691	780						
LBS	896	965						

P062RF137..

45 024 01 08



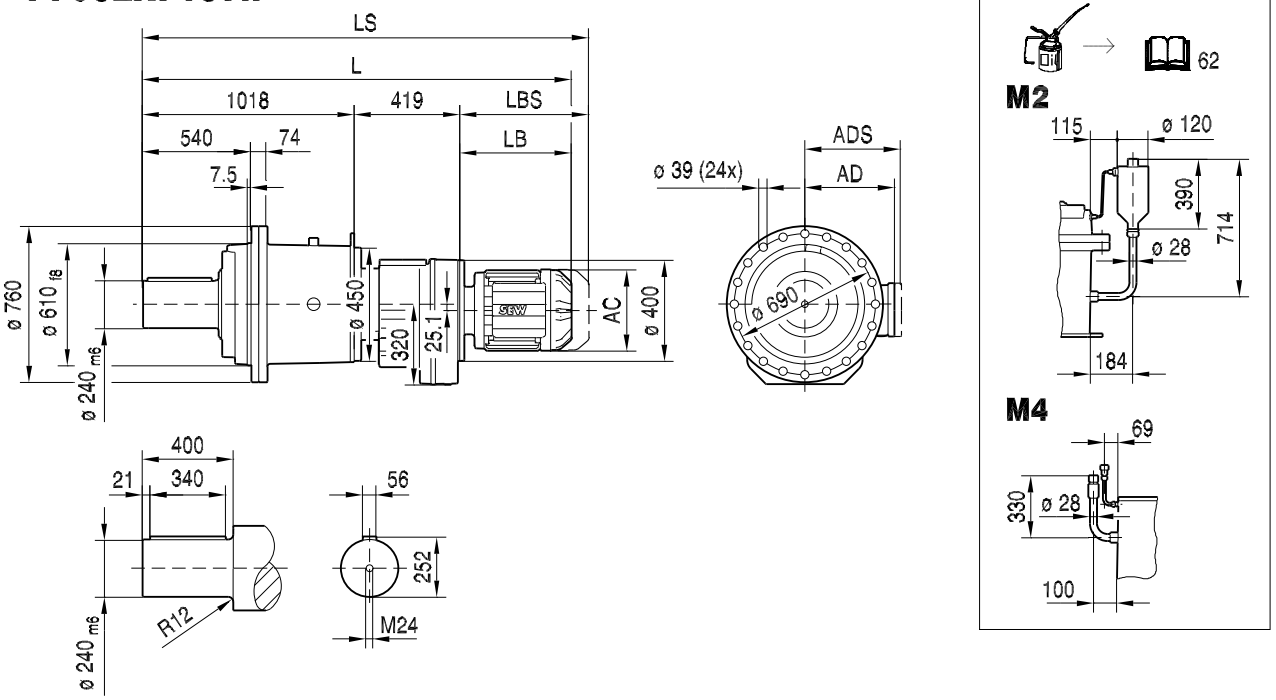
PH062RF137..



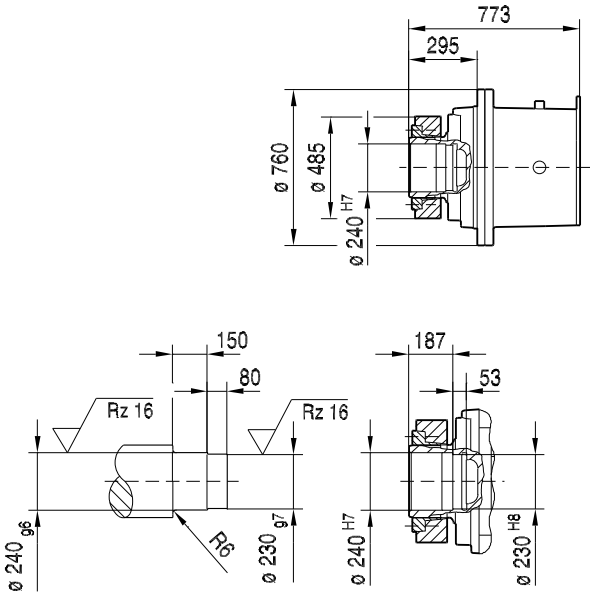
(→ 73)	DR132S	DR132M/MC	DR160..	DR180S/M	DR180L/LC	DR225S	DR225M/MC	
AC	221	221	270	316	316	394	394	
AD	170	170	228	253	253	283	283	
ADS	172	172	228	253	253	283	283	
L	1793	1843	1884	1953	2013	2086	2136	
LS	1905	1955	2021	2142	2202	2291	2341	
LB	356	406	447	516	576	649	699	
LBS	468	518	584	705	765	854	904	

PF062RF137..

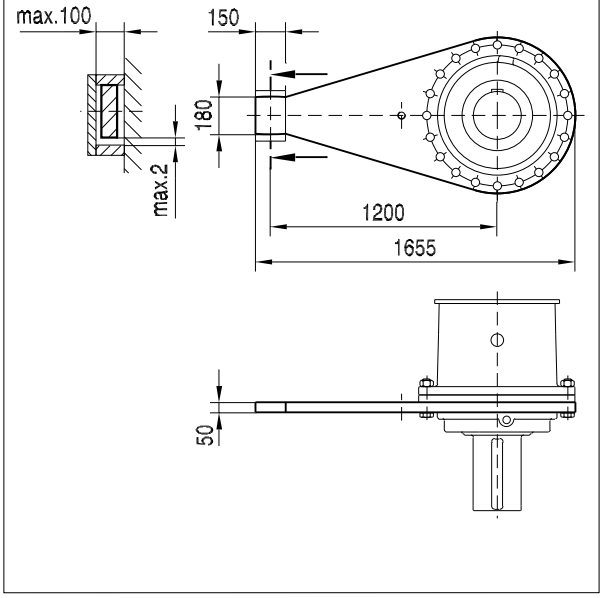
45 053 01 08



PHF062RF137..



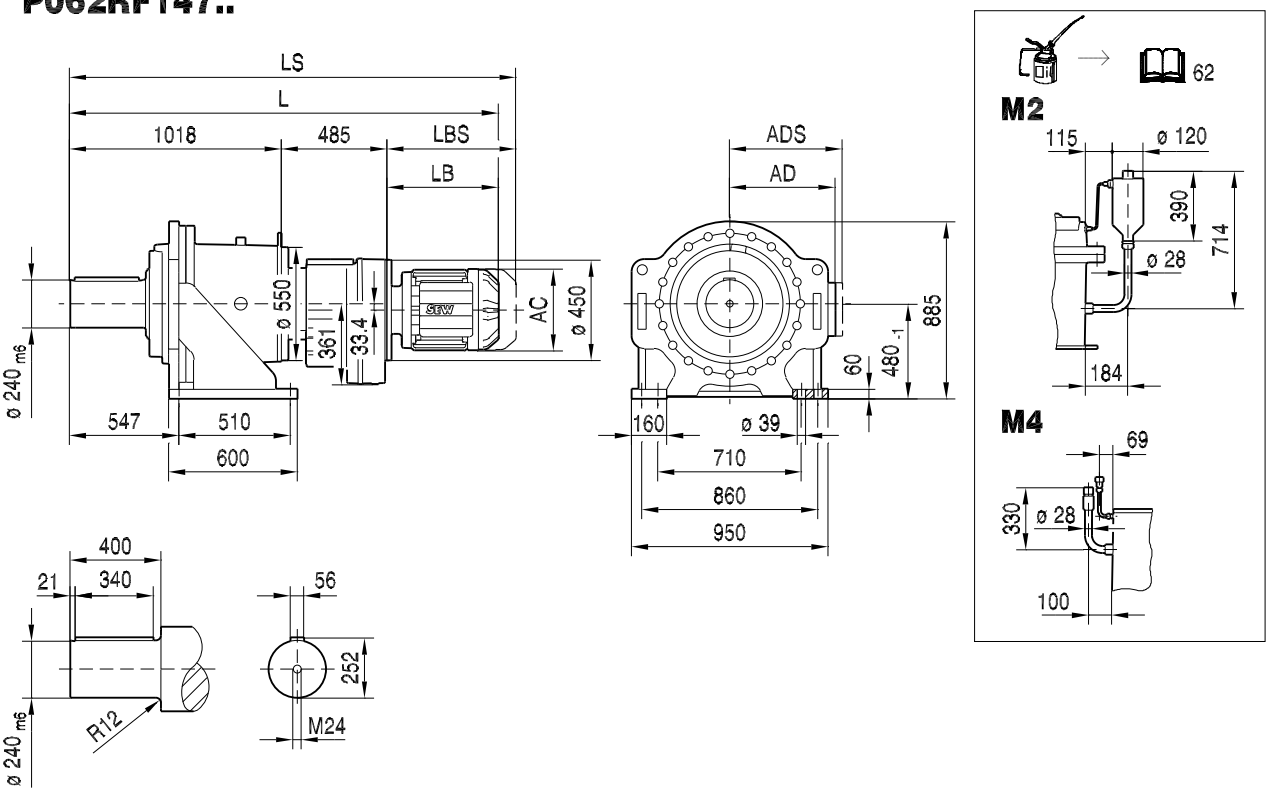
P..062/T..



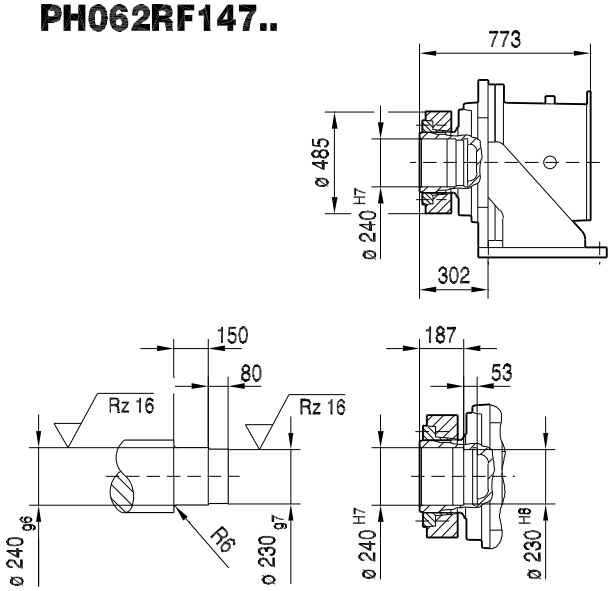
(→ 73)	DR132S	DR132M/MC	DR160..	DR180S/M	DR180L/LC	DR225S	DR225M/MC	
AC	221	221	270	316	316	394	394	
AD	170	170	228	253	253	283	283	
ADS	172	172	228	253	253	283	283	
L	1793	1843	1884	1953	2013	2086	2136	
LS	1905	1955	2021	2142	2202	2291	2341	
LB	356	406	447	516	576	649	699	
LBS	468	518	584	705	765	854	904	

P062RF147..

45 025 01 08



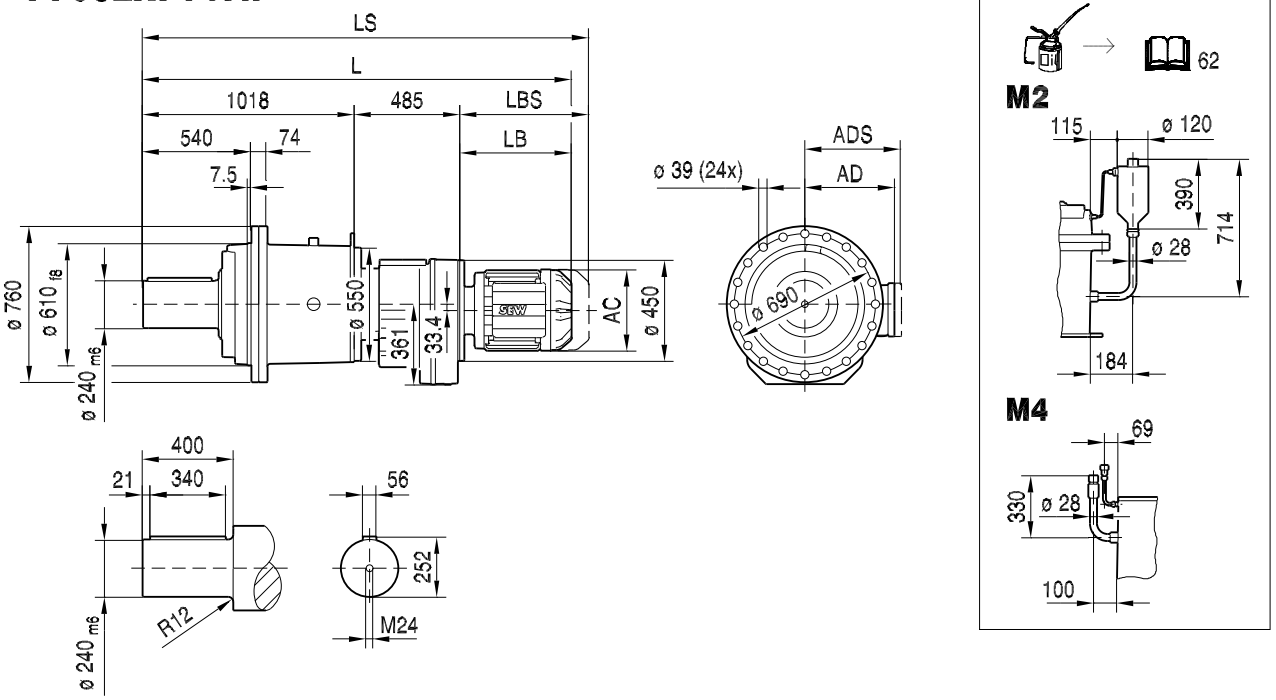
PH062RF147..



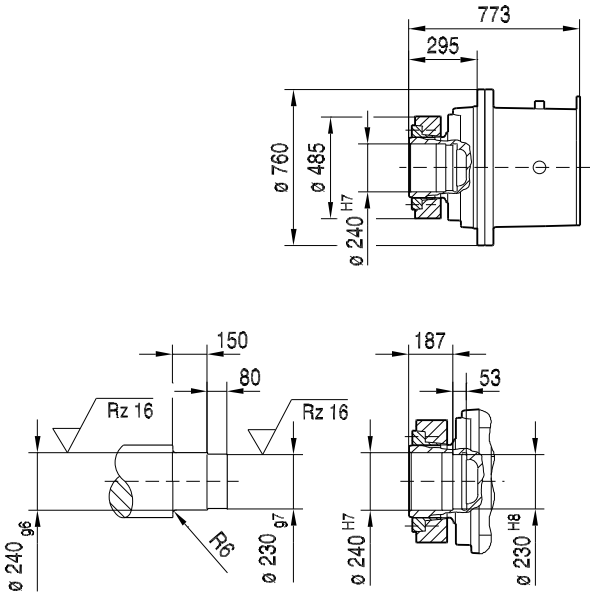
(→ 73)	DR132M/MC	DR160..	DR180S/M	DR180L/LC	DR225S	DR225M/MC	DV280..	
AC	221	270	316	316	394	394	510	
AD	170	228	253	253	283	283	397	
ADS	172	228	253	253	283	283	397	
L	1901	1942	2011	2071	2144	2194	2283	
LS	2013	2079	2200	2260	2349	2399	2468	
LB	398	439	508	568	641	691	780	
LBS	510	576	697	757	846	896	965	

PF062RF147..

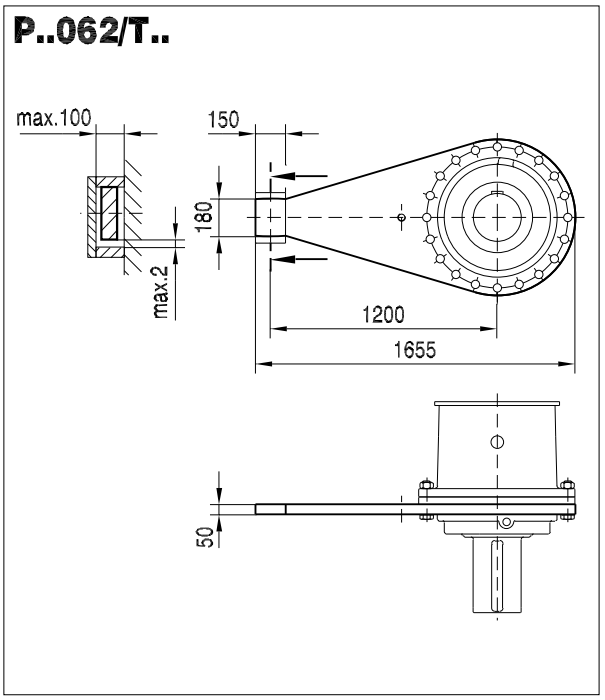
45 054 01 08



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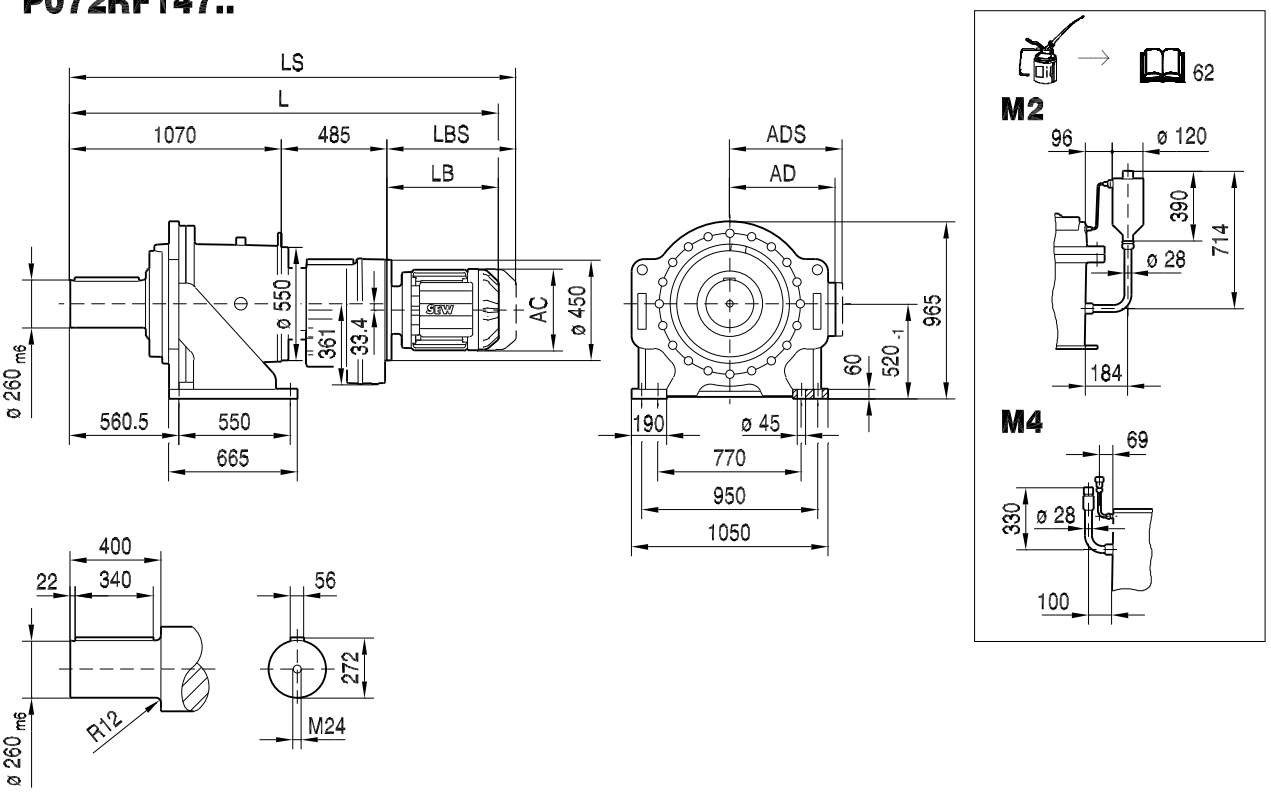
P..062/T..



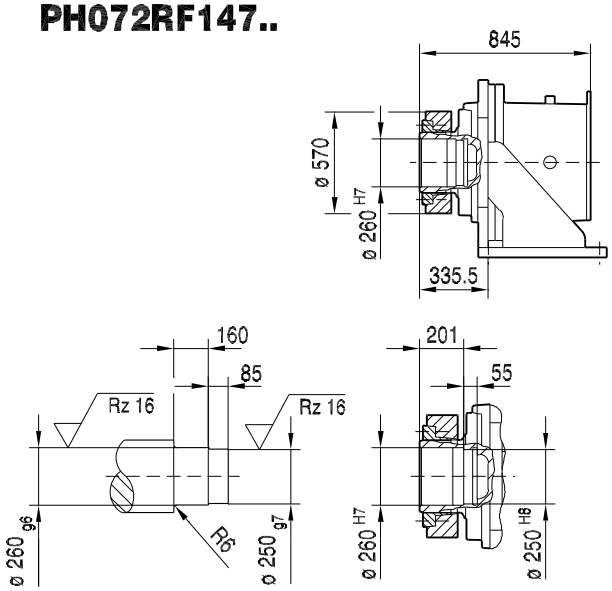
(→ 73)	DR132M/MC	DR160..	DR180S/M	DR180L/LC	DR225S	DR225M/MC	DV280..	
AC	221	270	316	316	394	394	510	
AD	170	228	253	253	283	283	397	
ADS	172	228	253	253	283	283	397	
L	1901	1942	2011	2071	2144	2194	2283	
LS	2013	2079	2200	2260	2349	2399	2468	
LB	398	439	508	568	641	691	780	
LBS	510	576	697	757	846	896	965	

P072RF147..

45 026 01 08



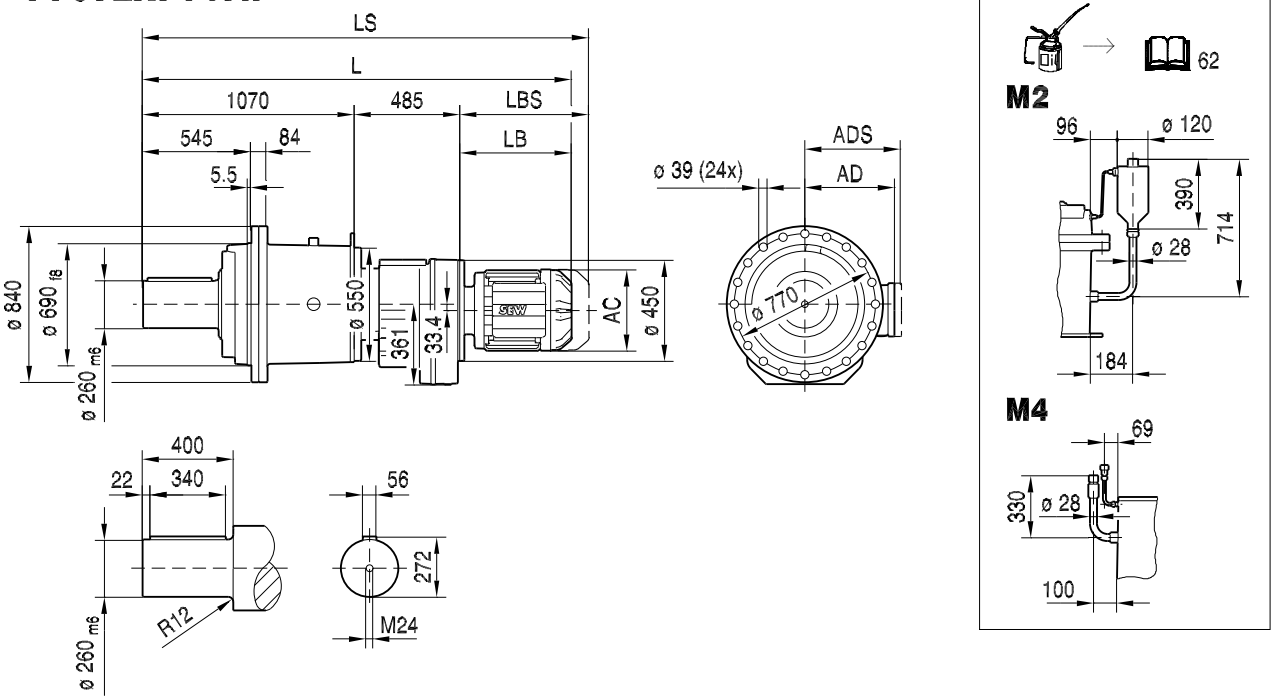
PH072RF147..



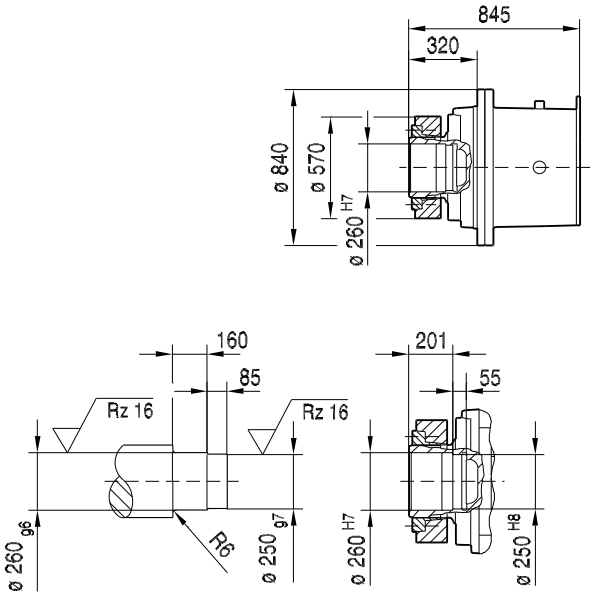
(→ 73)	DR132M/MC	DR160..	DR180S/M	DR180L/LC	DR225S	DR225M/MC	DV280..	
AC	221	270	316	316	394	394	510	
AD	170	228	253	253	283	283	397	
ADS	172	228	253	253	283	283	397	
L	1953	1994	2063	2123	2196	2246	2335	
LS	2065	2131	2252	2312	2401	2451	2520	
LB	398	439	508	568	641	691	780	
LBS	510	576	697	757	846	896	965	

PF072RF147..

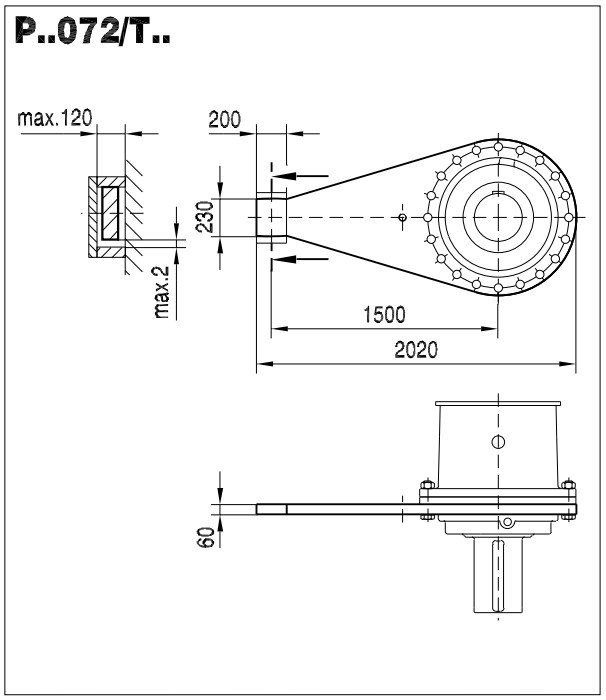
45 055 01 08



PHF072RF147..



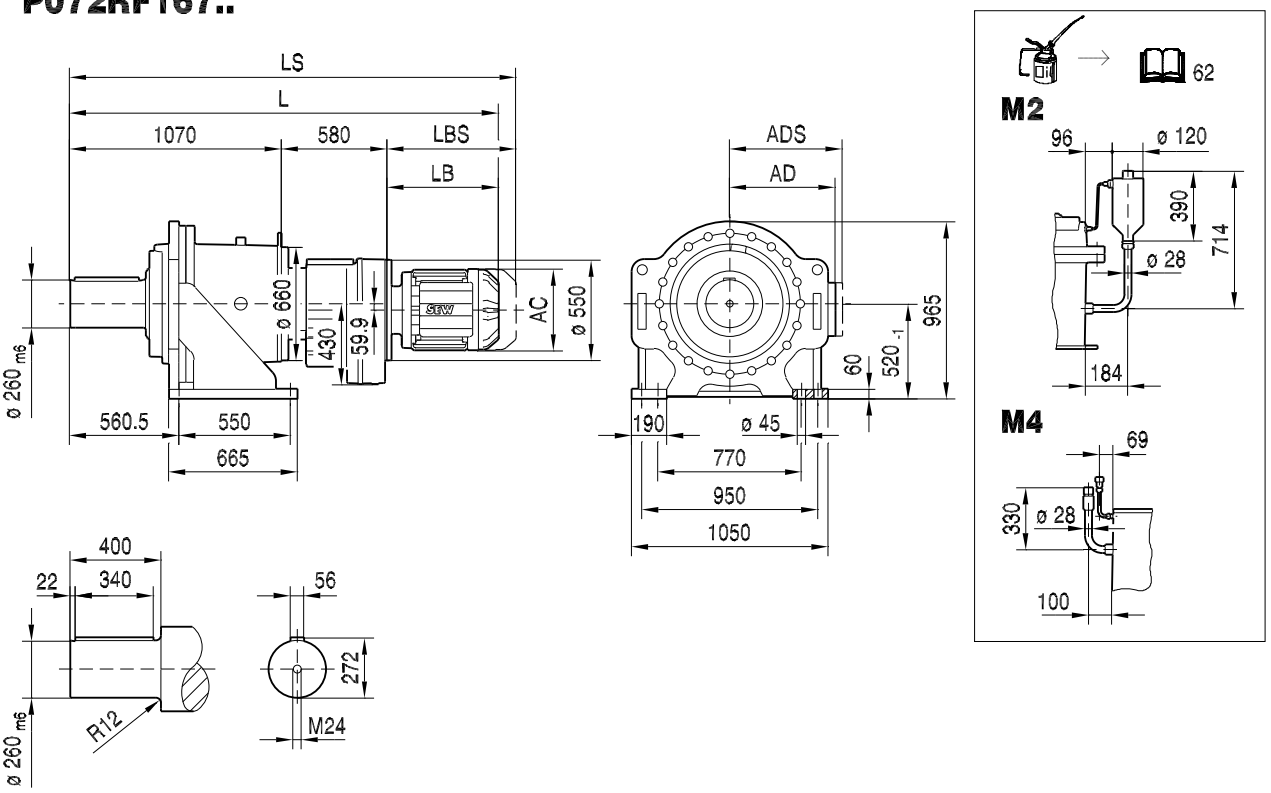
P..072/T..



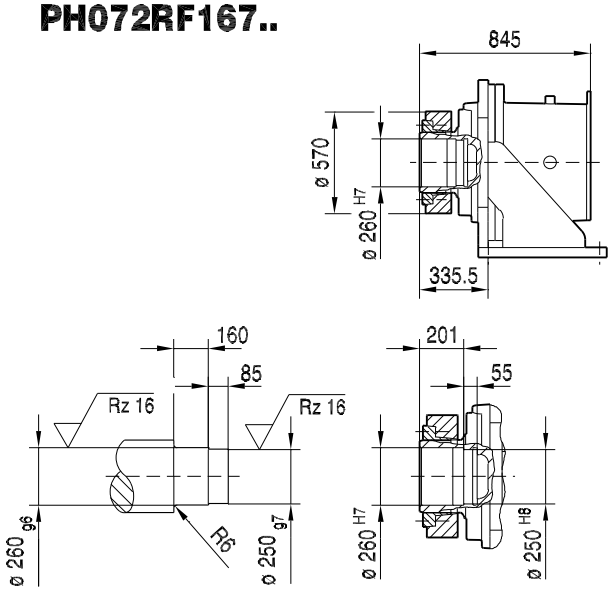
(→ 73)	DR132M/MC	DR160..	DR180S/M	DR180L/LC	DR225S	DR225M/MC	DV280..	
AC	221	270	316	316	394	394	510	
AD	170	228	253	253	283	283	397	
ADS	172	228	253	253	283	283	397	
L	1953	1994	2063	2123	2196	2246	2335	
LS	2065	2131	2252	2312	2401	2451	2520	
LB	398	439	508	568	641	691	780	
LBS	510	576	697	757	846	896	965	

P072RF167..

45 027 01 08



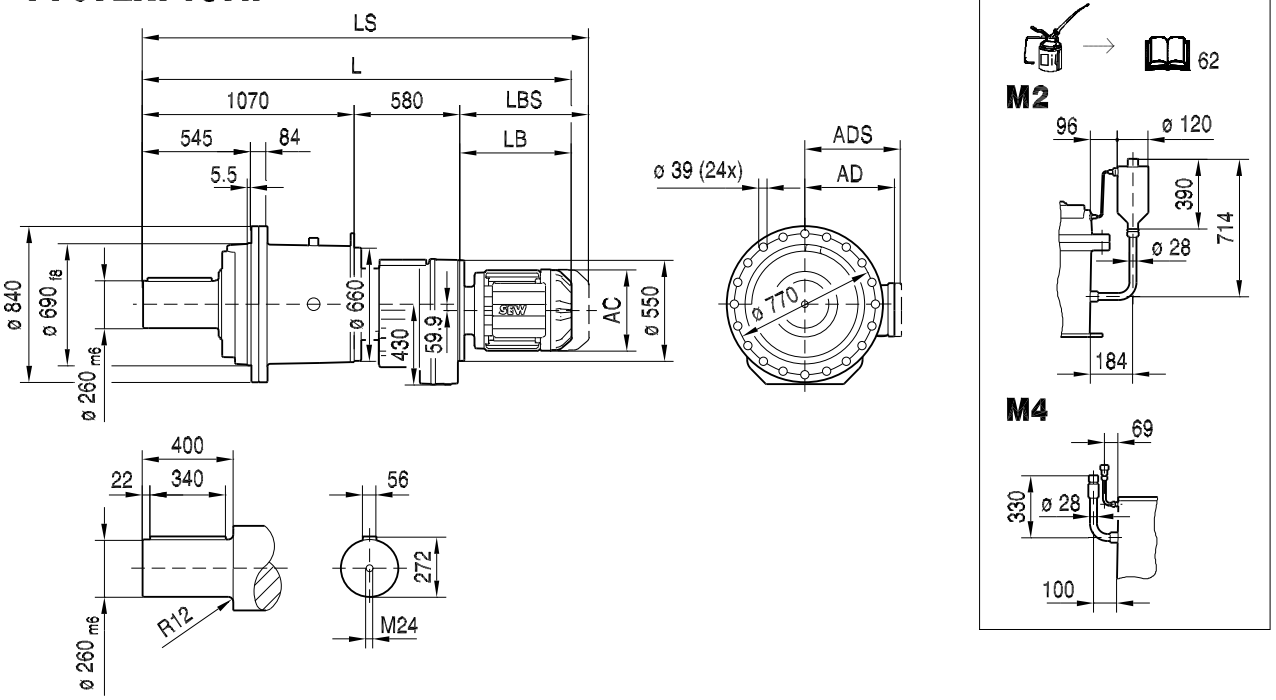
PH072RF167..



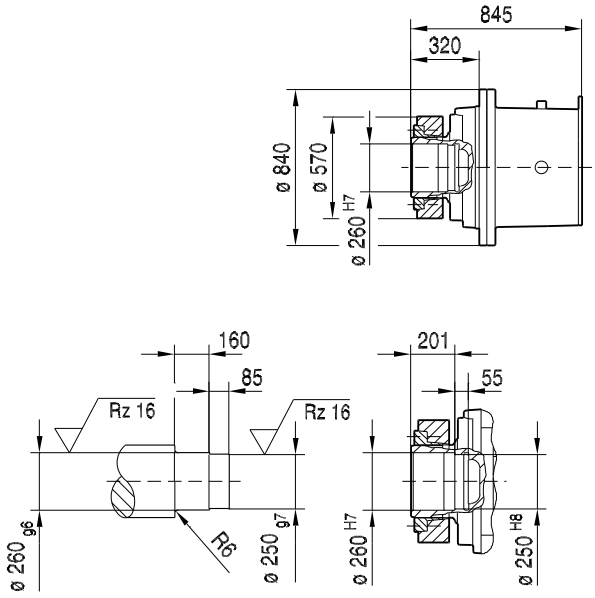
(→ 73)	DR160..	DR180S/M	DR180L/LC	DR225S				
AC	270	316	316	394				
AD	228	253	253	283				
ADS	228	253	253	283				
L	2081	2150	2210	2283				
LS	2218	2339	2399	2488				
LB	431	500	560	633				
LBS	568	689	749	838				

PF072RF167..

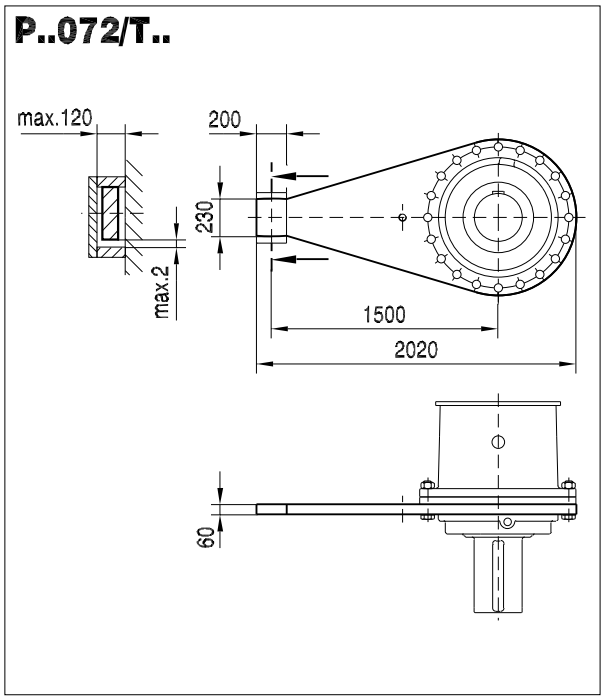
45 056 01 08



PHF072RF167..



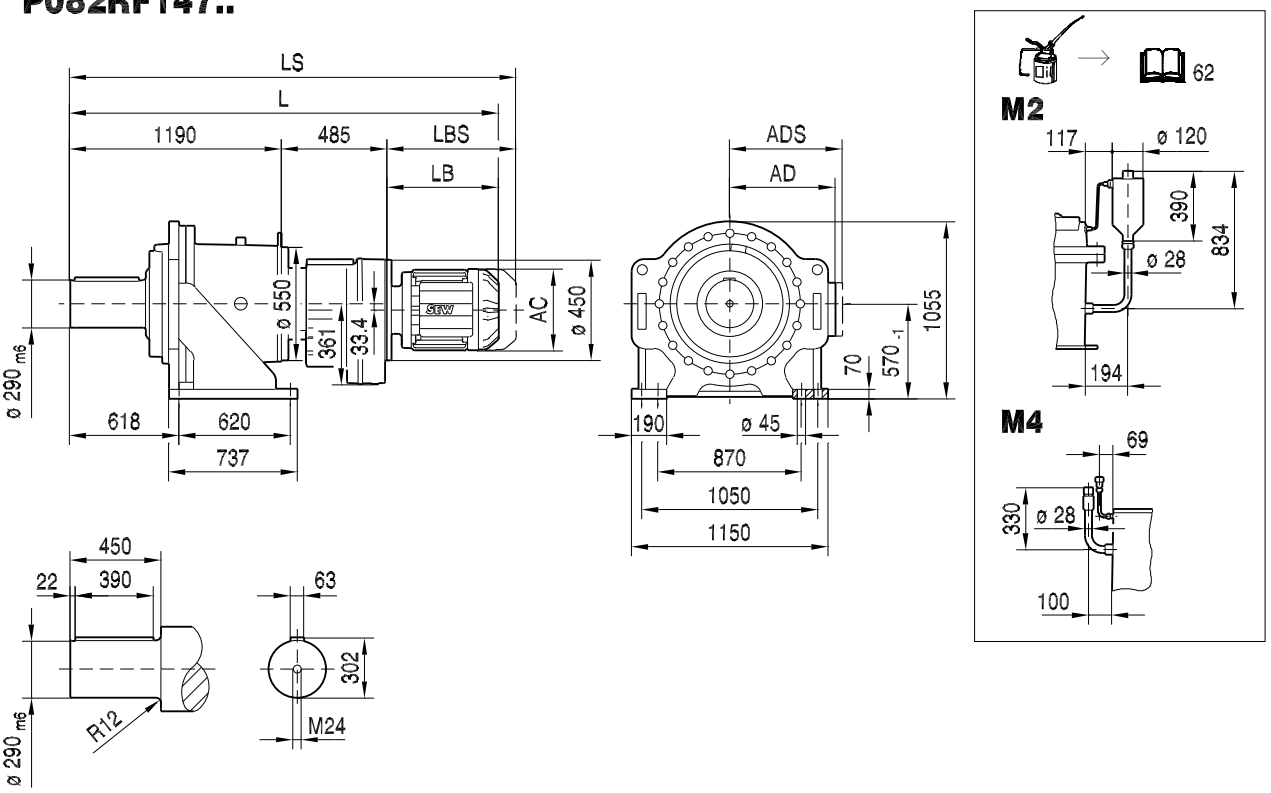
P..072/T..



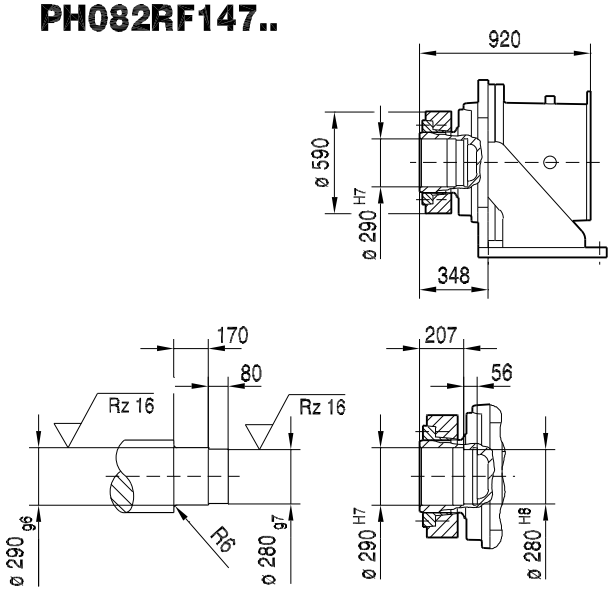
(→ 73)	DR160..	DR180S/M	DR180L/LC	DR225S				
AC	270	316	316	394				
AD	228	253	253	283				
ADS	228	253	253	283				
L	2081	2150	2210	2283				
LS	2218	2339	2399	2488				
LB	431	500	560	633				
LBS	568	689	749	838				

P082RF147..

45 028 01 08



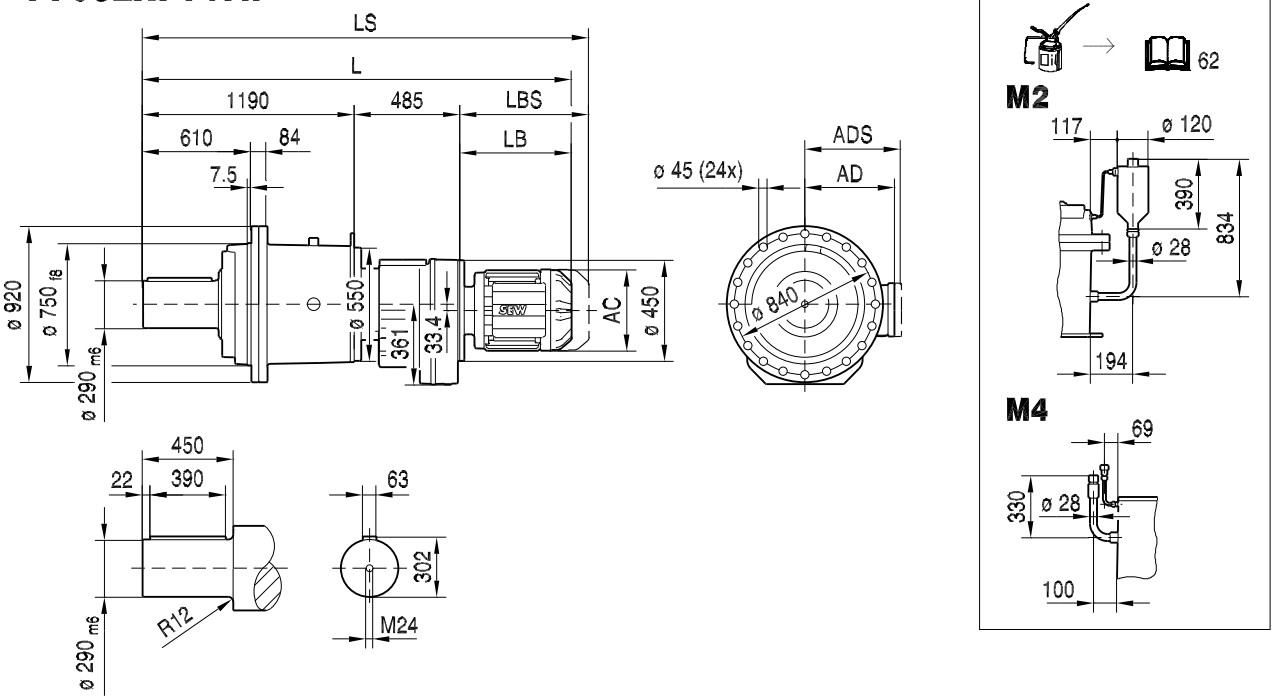
PH082RF147..



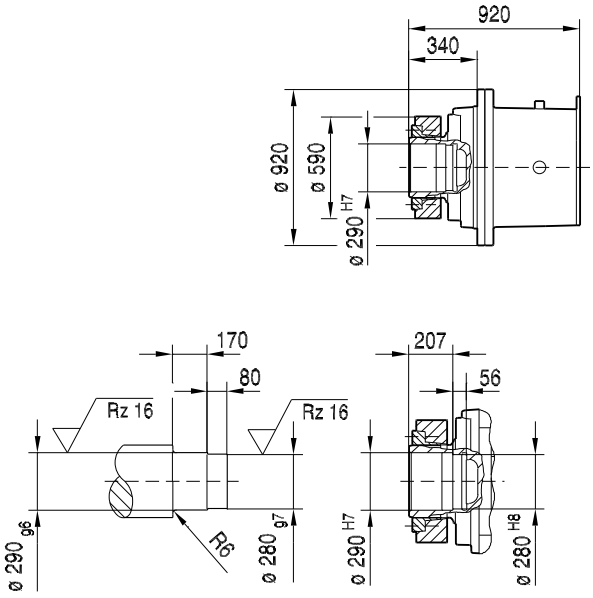
(→ 73)	DR160..	DR180S/M	DR180L/LC					
AC	270	316	316					
AD	228	253	253					
ADS	228	253	253					
L	2114	2183	2243					
LS	2251	2372	2432					
LB	439	508	568					
LBS	576	697	757					

PF082RF147..

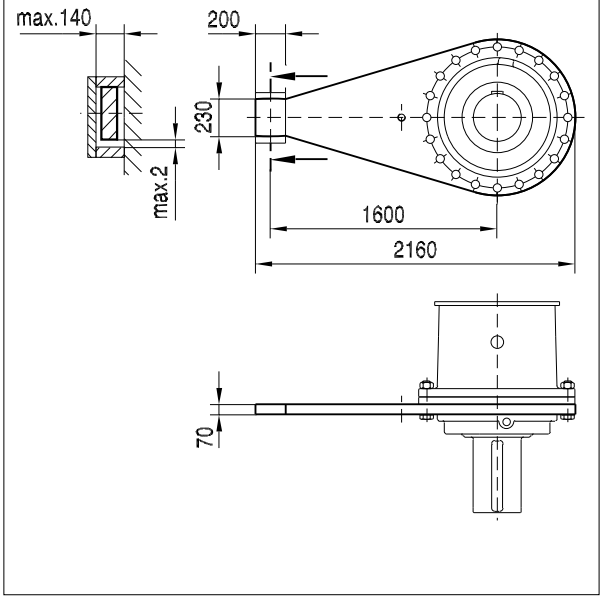
45 057 01 08



PHF082RF147..



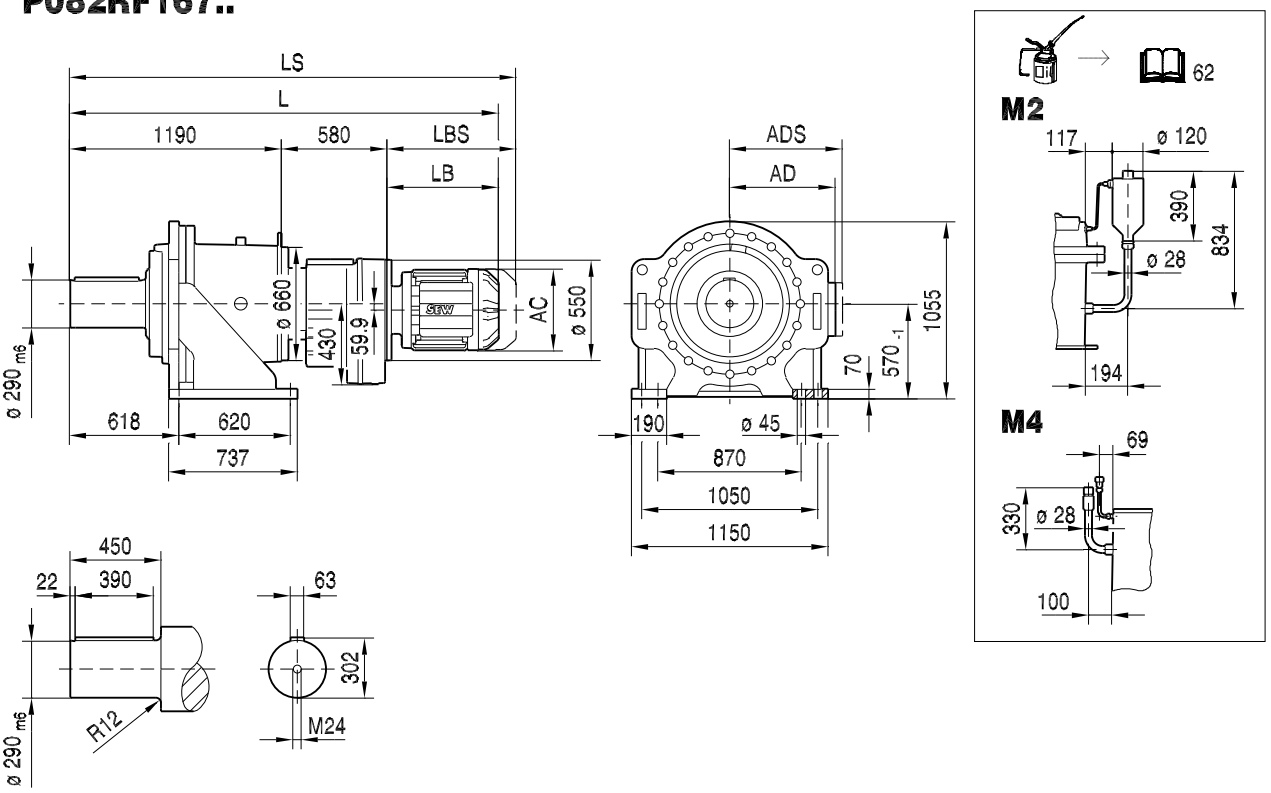
P..082/T..



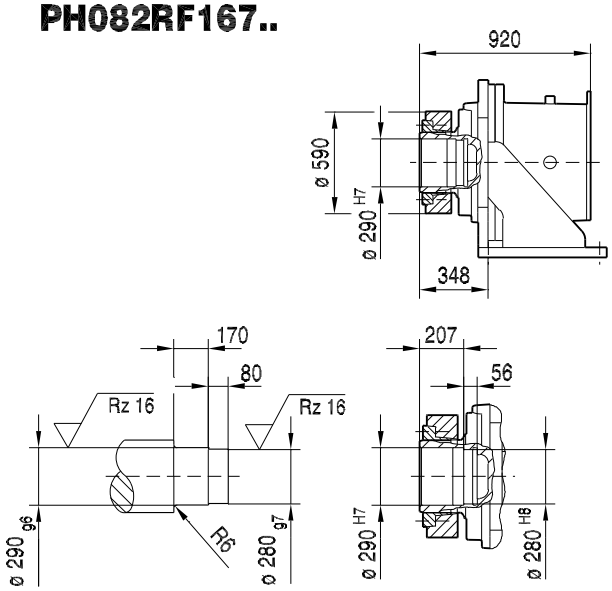
(→ 73)	DR160..	DR180S/M	DR180L/LC					
AC	270	316	316					
AD	228	253	253					
ADS	228	253	253					
L	2114	2183	2243					
LS	2251	2372	2432					
LB	439	508	568					
LBS	576	697	757					

P082RF167..

45 029 01 08



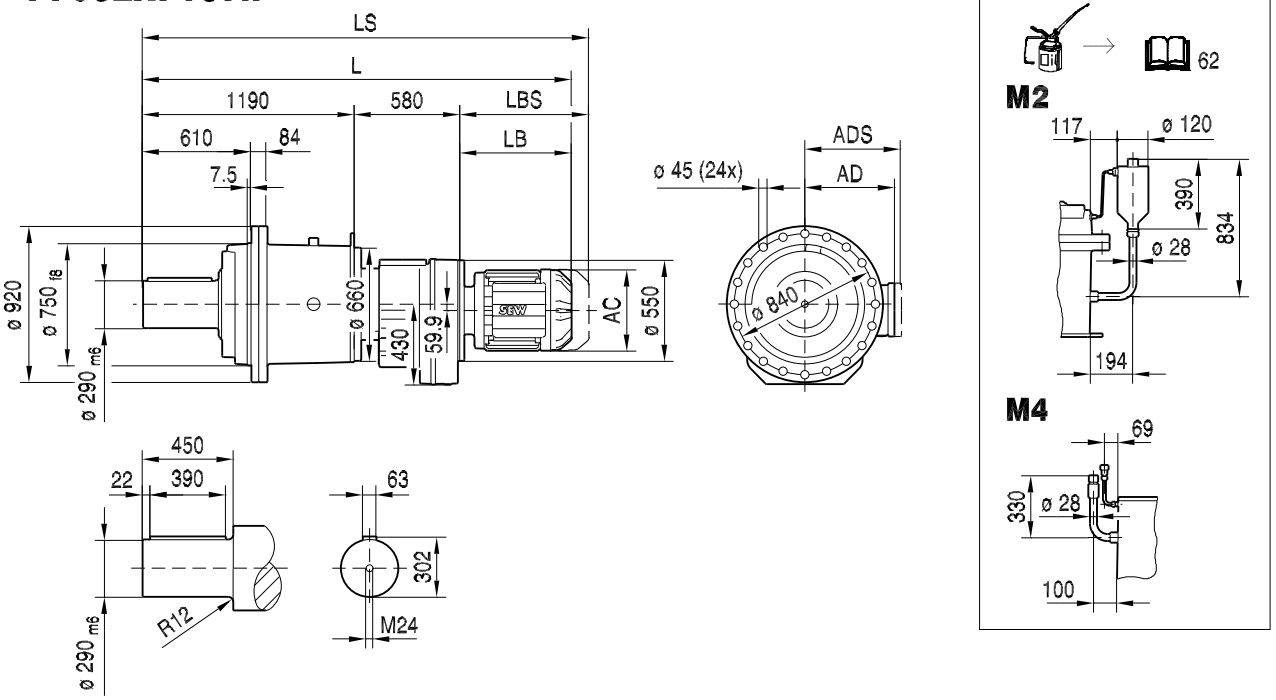
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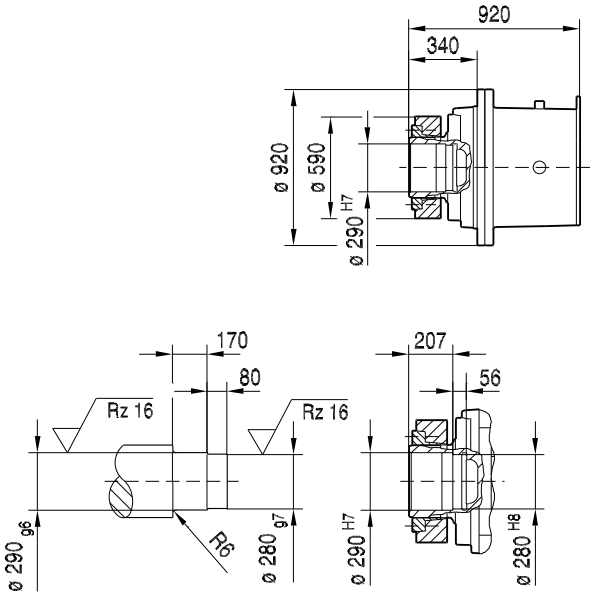
(→ 73)	DR160..	DR180S/M	DR180L/LC	DR225S	DR225M/MC	DV280..		
AC	270	316	316	394	394	510		
AD	228	253	253	283	283	397		
ADS	228	253	253	283	283	397		
L	2201	2270	2330	2403	2453	2541		
LS	2338	2459	2519	2608	2658	2726		
LB	431	500	560	633	683	771		
LBS	568	689	749	838	888	956		

PF082RF167..

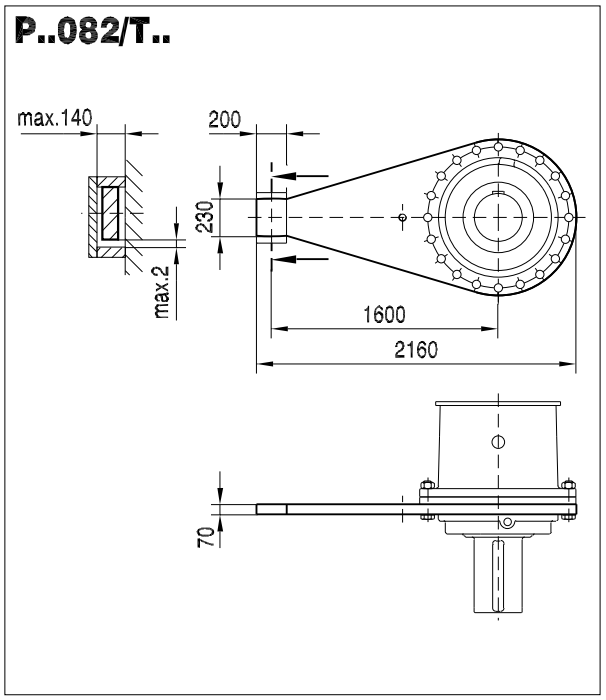
45 058 01 08



PHF082RF167..



P..082/T..

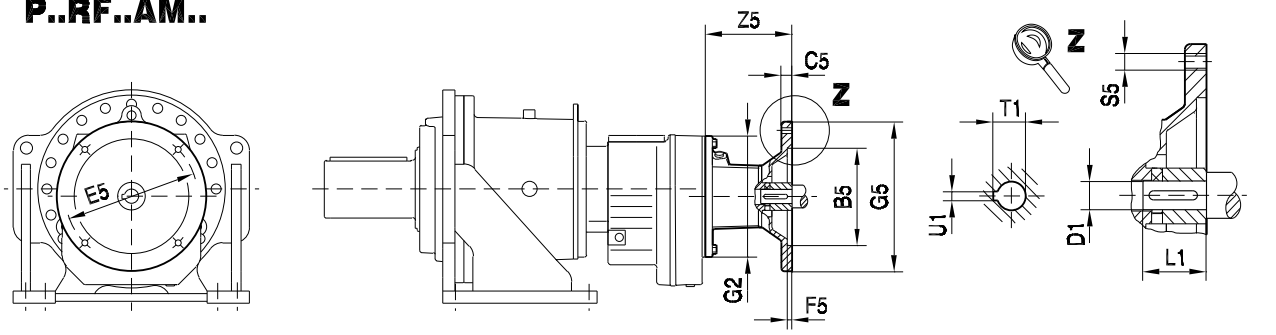


(→ 73)	DR160..	DR180S/M	DR180L/LC	DR225S	DR225M/MC	DV280..		
AC	270	316	316	394	394	510		
AD	228	253	253	283	283	397		
ADS	228	253	253	283	283	397		
L	2201	2270	2330	2403	2453	2541		
LS	2338	2459	2519	2608	2658	2726		
LB	431	500	560	633	683	771		
LBS	568	689	749	838	888	956		

10.4 Adapter for mounting IEC motors

45 115 00 08

P..RF..AM..



		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		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..RF87	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..RF97	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

45 116 00 08

P..RF..AM..

Fig.1

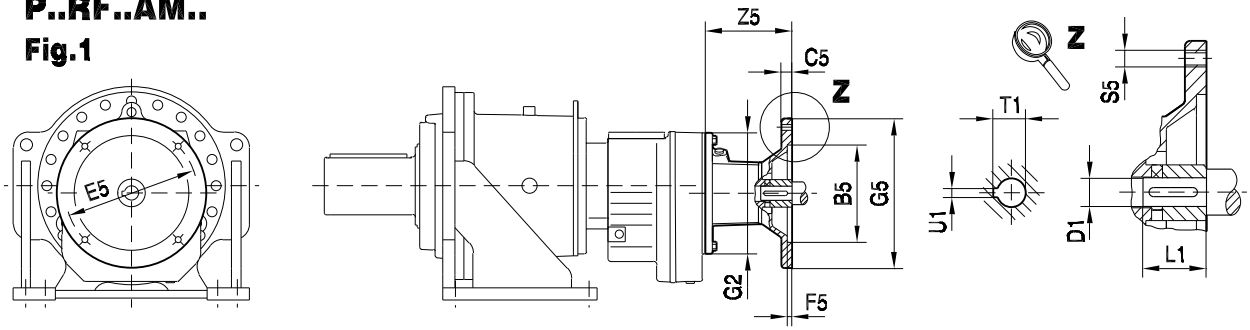


Fig.2

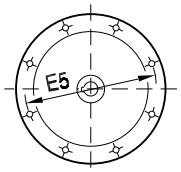


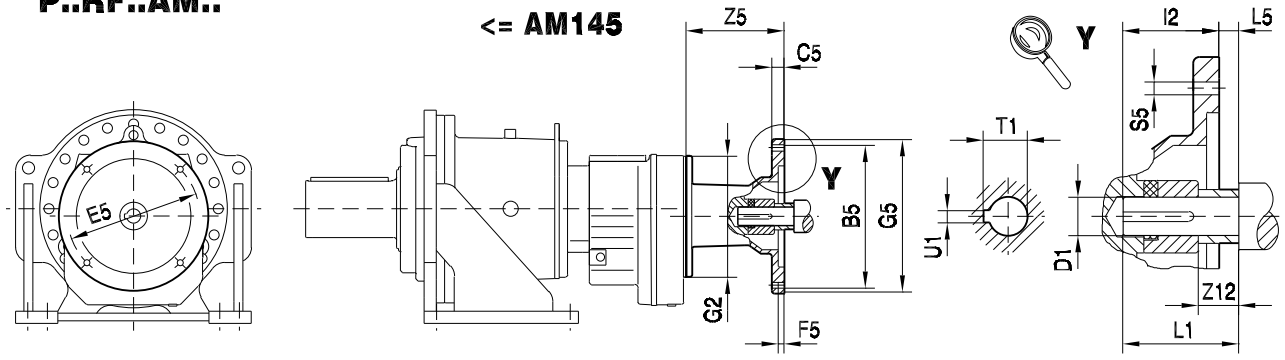
		Fig.	B5	C5	E5	F5	G2	G5	S5	Z5	D1	L1	T1	U1
P..RF107	AM100	1	180	15	215	5	350	250	M12	110	28	60	31.3	8
	AM112													
	AM132S/M		230	16	265			300		163	38	80	41.3	10
	AM132ML													
	AM160		250	18	300	6		350	M16	221	42	110	45.3	12
	AM180										48		51.8	14
	AM200		300	20	350	7		400		262	55	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

10.5 Adapter for mounting NEMA motors

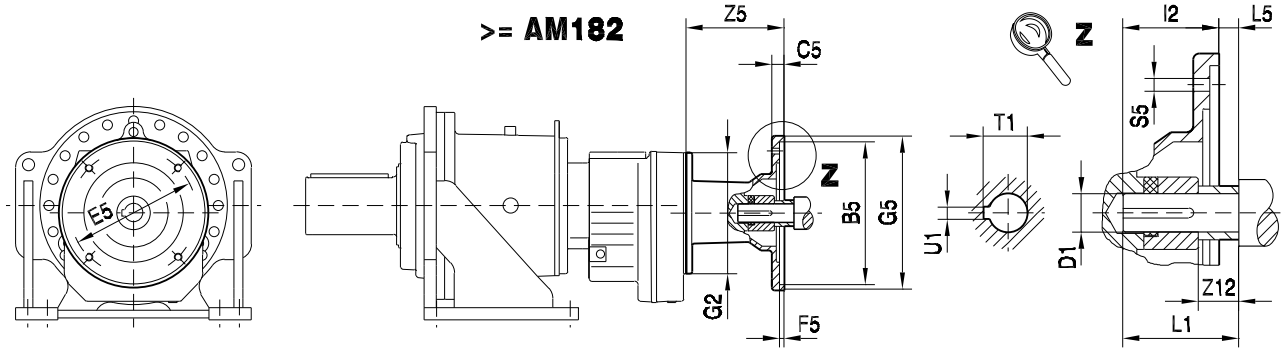
45 117 00 08

P..RF..AM..

<= AM145



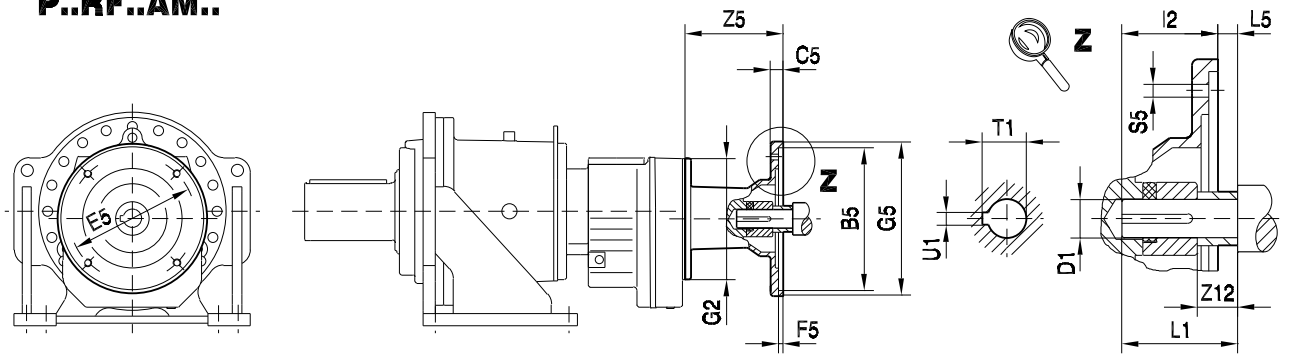
>= AM182



		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	4.76
	AM143		12					54.1	3		103.5	14.5	22.225	57	24.7	
	AM145															
	AM182	215.9	10	184	5		228	66.85	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..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	4.76
	AM145															
	AM182	215.9	10	184	5		228	66.85	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
	AM284/286	266.7	15	228.6	5		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	66.85	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

P..RF..AM..

45 118 00 08

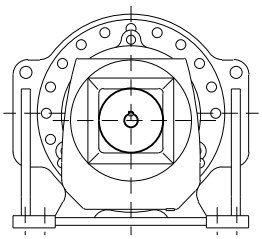


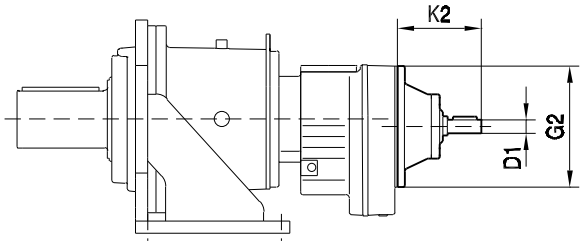
		B5	C5	E5	F5	G2	G5	I2	L5	S5	Z5	Z12	D1	L1	T1	U1
	AM182		10					66.85	3		123.5	16.5	28.575	69	31.7	6.35
	AM184	215.9		184	5		228			15						
	AM213/215		11					79.55	6.3		172.5	15.8	34.925	85	38.7	7.94
P..RF107	**AM254/256**		12			350		95.3	6.3		223	9	41.275	101	45.8	9.53
	AM284/286	266.7	15	228.6	5		286	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
	AM213/215	215.9	11	184	5		228	79.55	6.3	15	165.5	15.8	34.925	85	38.7	7.94
	AM254/256		12					95.3	6.3		216	9	41.275	101	45.8	9.53
P..RF137	**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		356	127.05	6.3	17.5	283	34.8	53.975	133	60	12.7
	AM364/365							143.05					60.325	149	67.6	15.875
	AM213/215	215.9	11	184	5		228	79.55	6.3	15	157.5	15.8	34.925	85	38.7	7.94
	AM254/256		12					95.3	6.3		208	9	41.275	101	45.8	9.53
P..RF147	**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		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
	AM254/256	215.9	12	184	5		228	95.3	6.3	15	200	9	41.275	101	45.8	9.53
	AM284/286	266.7	15	228.6	5		286	111.05	6.3	15	207	15.8	47.625	117	53.4	12.7
P..RF167	**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							143.05					60.325	149	67.6	15.875

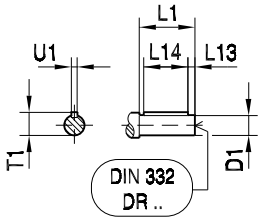
10.6 Input shaft assembly AD

45 121 00 08

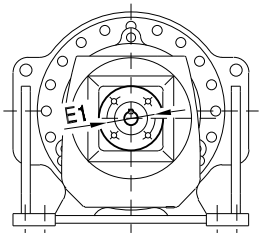
P..RF..AD..

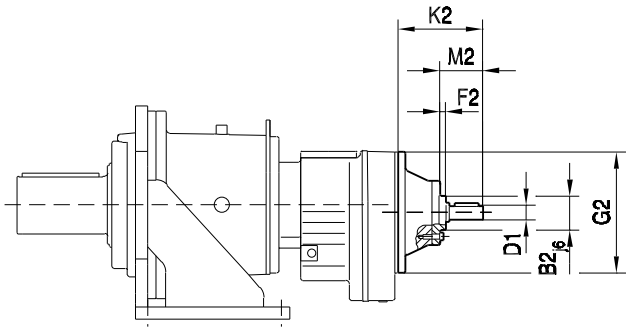


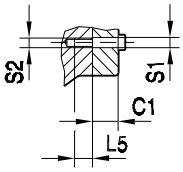




P..RF..AD../ZR

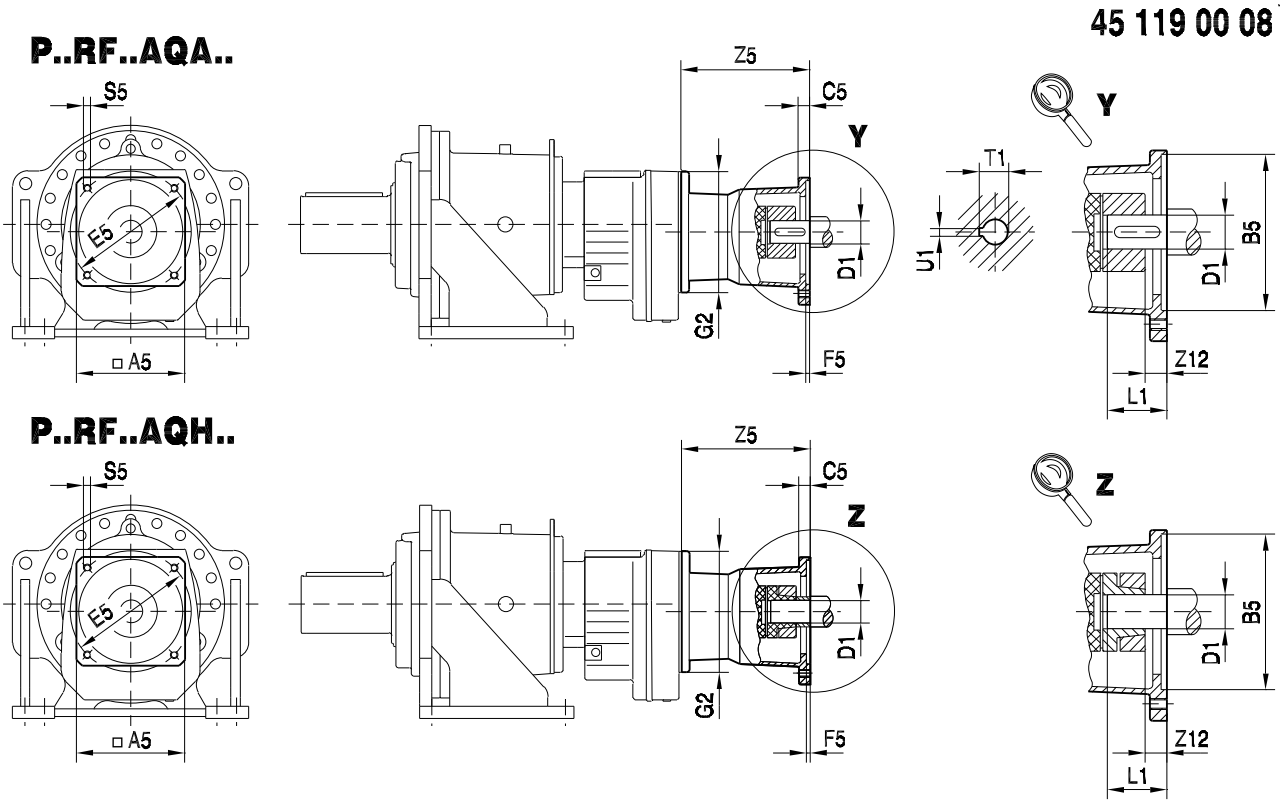




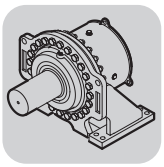


		B2	C1	E1	F2	G2	K2	L5	M2	S1	S2	D1	L1	L13	L14	T1	U1
P..RF77	AD2 , AD2/ZR	55	13.5	80	8	200	116	12	50	9	M8	19	40	4	32	21.5	6
	AD3 , AD3/ZR	70	15.5	105	8		151	16	60	11	M10	24	50	5	40	27	8
	AD4 , AD4/ZR	100	16	130	13		224	20	95.5	13.5	M12	38	80	5	70	41	10
P..RF87	AD2 , AD2/ZR	55	13.5	80	8	250	111	12	50	9	M8	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
	AD5 , AD5/ZR	120	24	180	11		292	20	126	13.5	M12	42	110	10	70	45	12
P..RF97	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..RF107	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..RF137	AD4 , AD4/ZR	100	16	130	13	400	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
	AD6 , AD6/ZR	130	22.5	200	11		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
P..RF147	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..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

10.7 Motor adapter AQA

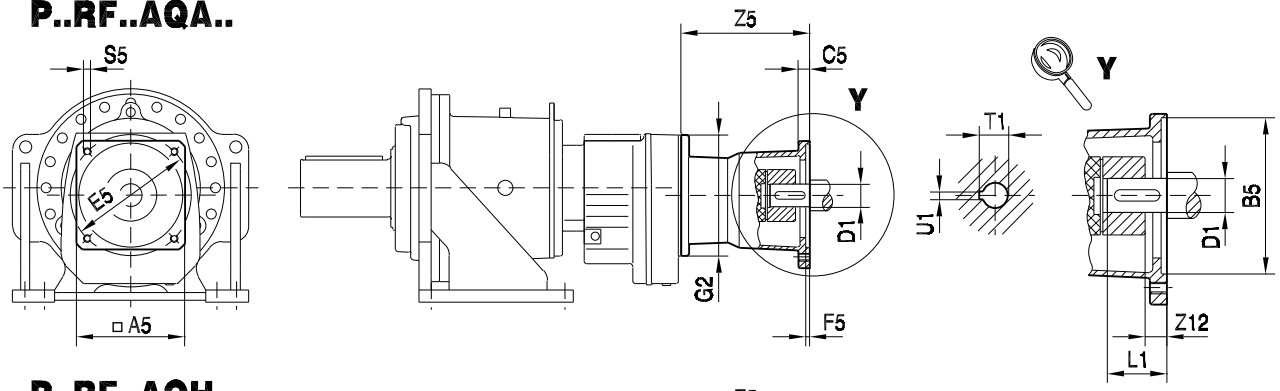


		A5	B5	C5	E5	F5	G2	S5	Z5	AQA Z12	AQH Z12	D1	L1	AQA T1	AQA U1
P..RF77	AQ..80/1	82	60	8	75	3.5	200	M5	92	5.5	5.5	11	23	12.8	4
	AQ..80/2											14	30	16.3	5
	AQ..80/3		50		95	3		M6							
	AQ..100/1	100	80	10	100	4		M6	116	0	0	14	30	16.3	5
	AQ..100/2		95	12	115			M8							
	AQ..100/3		80	10	100			M6	130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

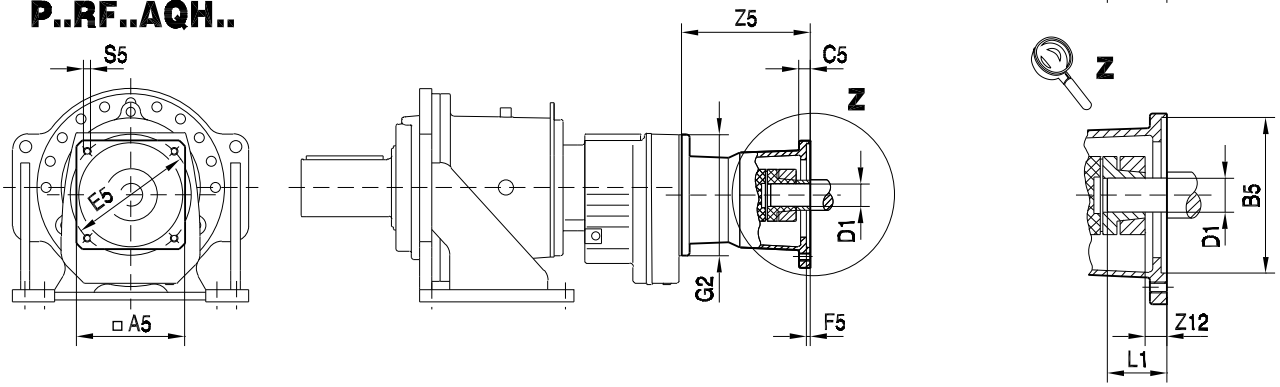


45 120 00 08

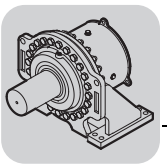
P..RF..AQA..



P..RF..AQH..



		A5	B5	C5	E5	F5	G2	S5	Z5	AQA Z12	AQH Z12	D1	L1	AQA T1	AQA U1
P..RF97	AQ..140/1	140	110	15	165	5	300	M10	157	16	16	24	50	27.3	8
	AQ..140/2		130												
	AQ..140/3								170	22	22	32	60	35.3	10
	AQ..190/1	190	130	16	215	5		M12	215.5	24	24	32	60	35.3	10
	AQ..190/2		180												
	AQ..190/3								239.5	34	34	38	80	41.3	10
P..RF107	AQ..140/1	140	110	15	165	5	350	M10	151	16	16	24	50	27.3	8
	AQ..140/2		130												
	AQ..140/3								164	22	22	32	60	35.3	10
	AQ..190/1	190	130	16	215	5		M12	209.5	24	24	32	60	35.3	10
	AQ..190/2		180												
	AQ..190/3								233.5	34	34	38	80	41.3	10
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												
	AQ..190/3								226.5	34	34	38	80	41.3	10
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												
	AQ..190/3								218.5	34	34	38	80	41.3	10



11 Bevel Planetary Gearmotors P.KF..

11.1 Dimension sheet guide

11.1.1 Foot-mounted P.. gear units

Size	M_{N2} [Nm]	Foot-mounted P.. gear units						
		Dimension sheets						
		KF67	KF77	KF87	KF97	KF107	KF127	KF157
	Page number 📖							
P002	24830	172	174	176	178	-	-	-
P012	36810	-	180	184	184	186	-	-
P022	51190	-	-	188	190	192	-	-
P032	69620	-	-	194	196	198	200	-
P042	100170	-	-	-	202	204	206	-
P052	124060	-	-	-	208	210	212	-
P062	185660	-	-	-	-	214	216	-
P072	245660	-	-	-	-	218	220	222
P082	359400	-	-	-	-	-	-	224

11.1.2 Flange-mounted PF.. gear units

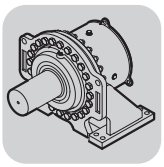
Size	M_{N2} [Nm]	Flange-mounted PF.. gear units						
		Dimension sheets						
		KF67	KF77	KF87	KF97	KF107	KF127	KF157
	Page number 📖							
PF002	24830	173	175	177	179		-	-
PF012	36810	-	181	183	185	187	-	-
PF022	51190	-	-	189	191	193	-	-
PF032	69620	-	-	195	197	199	201	-
PF042	100170	-	-	-	203	205	207	-
PF052	124060	-	-	-	209	211	213	-
PF062	185660	-	-	-	-	215	217	-
PF072	245660	-	-	-	-	219	221	223
PF082	359400	-	-	-	-	-	-	225

11.1.3 Motor adapter

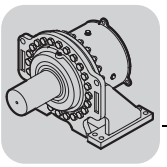
Motoradapter	Dimension sheets					
	KF77	KF87	KF97	KF107	KF127	KF157
	Page number 📖					
Adapter for mounting IEC motors P..RF..AM..	226	226	226	227	227	227
Adapter for mounting-NEMA motors P..RF..AM..	228	228	228	229	229	229
Input shaft assembly P..RF..AD..	230	230	230	230	230	-

11.2 Selection tables [kW]]

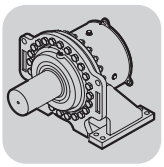
P_M [kW]	n_2 [min^{-1}]	M_a [Nm]	i_{ex}	F_{Ra} [N]	M_{N2} [Nm]					m [kg]	
0.75	**0.35**	20200	4029	156000	36810	**P**	**012KF87**	**DRS**	**80S4**	430	182
						PF	**012KF87**	**DRS**	**80S4**	360	183
						PH	**012KF87**	**DRS**	**80S4**	445	182
						PHF	**012KF87**	**DRS**	**80S4**	375	183
	0.40	17500	3490	156000	36810	**P**	**012KF77**	**DRS**	**80S4**	395	180
	0.46	15300	3063	156000	36810	**PF**	**012KF77**	**DRS**	**80S4**	325	181
						PH	**012KF77**	**DRS**	**80S4**	410	180
						PHF	**012KF77**	**DRS**	**80S4**	340	181
	0.37	19000	3793	124000	24830	**P**	**002KF77**	**DRS**	**80S4**	315	174
						PF	**002KF77**	**DRS**	**80S4**	260	175
						PH	**002KF77**	**DRS**	**80S4**	320	174
						PHF	**002KF77**	**DRS**	**80S4**	260	175
	0.40	17600	3519	124000	24830						
	0.47	14900	2984	124000	24830						
	0.52	13500	2694	124000	24830	**P**	**002KF67**	**DRS**	**80S4**	285	172
	0.59	11800	2371	124000	24830	**PF**	**002KF67**	**DRS**	**80S4**	225	173
	0.63	11200	2238	124000	24830	**PH**	**002KF67**	**DRS**	**80S4**	290	172
	0.73	9550	1906	124000	24830	**PHF**	**002KF67**	**DRS**	**80S4**	230	173
	0.81	8680	1732	124000	24830						
	0.93	7520	1500	124000	24830						
1.1	**0.35**	29400	4029	197000	51190	**P**	**022KF87**	**DRS**	**80M4**	580	188
	0.42	24700	3387	197000	51190	**PF**	**022KF87**	**DRS**	**80M4**	480	189
	0.45	22700	3113	197000	51190	**PH**	**022KF87**	**DRS**	**80M4**	600	188
						PHF	**022KF87**	**DRS**	**80M4**	495	189
	0.35	29400	4029	156000	36810	**P**	**012KF87**	**DRS**	**80M4**	435	182
	0.51	20100	2764	156000	36810	**PF**	**012KF87**	**DRS**	**80M4**	365	183
						PH	**012KF87**	**DRS**	**80M4**	450	182
						PHF	**012KF87**	**DRS**	**80M4**	380	183
	0.37	27800	3807	156000	36810						
	0.40	25400	3490	156000	36810						
	0.46	22300	3063	156000	36810	**P**	**012KF77**	**DRS**	**80M4**	400	180
	0.55	18500	2540	156000	36810	**PF**	**012KF77**	**DRS**	**80M4**	330	181
	0.62	16700	2289	156000	36810	**PH**	**012KF77**	**DRS**	**80M4**	415	180
	0.70	14600	2008	156000	36810	**PHF**	**012KF77**	**DRS**	**80M4**	345	181
	0.80	12900	1772	156000	36810						
	0.46	22200	3051	121300	24830	**P**	**002KF77**	**DRS**	**80M4**	320	174
	0.49	21100	2891	122800	24830	**PF**	**002KF77**	**DRS**	**80M4**	260	175
						PH	**002KF77**	**DRS**	**80M4**	325	174
						PHF	**002KF77**	**DRS**	**80M4**	265	175
	0.59	17300	2371	124000	24830						
	0.63	16300	2238	124000	24830						
	0.74	13900	1906	124000	24830						
	0.81	12600	1732	124000	24830	**P**	**002KF67**	**DRS**	**80M4**	285	172
	0.94	10900	1500	124000	24830	**PF**	**002KF67**	**DRS**	**80M4**	230	173
	1.0	10100	1392	124000	24830	**PH**	**002KF67**	**DRS**	**80M4**	290	172
	1.2	8620	1181	124000	24830	**PHF**	**002KF67**	**DRS**	**80M4**	235	173
	1.3	7780	1066	124000	24830						
	1.5	6840	938	124000	24830						
1.5	**0.35**	40500	4029	197000	51190	**P**	**022KF87**	**DRS**	**90M4**	590	188
	0.41	34000	3387	197000	51190	**PF**	**022KF87**	**DRS**	**90M4**	485	189
	0.45	31300	3113	197000	51190	**PH**	**022KF87**	**DRS**	**90M4**	600	188
						PHF	**022KF87**	**DRS**	**90M4**	500	189
	0.35	40500	4029	156000	36810	**P**	**012KF87**	**DRS**	**90M4**	440	182
	0.50	27800	2764	156000	36810	**PF**	**012KF87**	**DRS**	**90M4**	370	183
						PH	**012KF87**	**DRS**	**90M4**	455	182
						PHF	**012KF87**	**DRS**	**90M4**	385	183
	0.40	35100	3490	156000	36810						
	0.46	30800	3063	156000	36810						
	0.48	29200	2903	156000	36810	**P**	**012KF77**	**DRS**	**90M4**	400	180
	0.55	25500	2540	156000	36810	**PF**	**012KF77**	**DRS**	**90M4**	330	181
	0.61	23000	2289	156000	36810	**PH**	**012KF77**	**DRS**	**90M4**	415	180
	0.69	20200	2008	156000	36810	**PHF**	**012KF77**	**DRS**	**90M4**	345	181
	0.79	17800	1772	156000	36810						



P_M [kW]	n_2 [min^{-1}]	M_a [Nm]	i_{ex}	F_{Ra} [N]	M_{N2} [Nm]					m [kg]	
1.5	**0.61**	22900	2280	120400	24830	**P**	**002KF77**	**DRS**	**90M4**	320	174
	0.70	20100	2000	124000	24830	**PF**	**002KF77**	**DRS**	**90M4**	265	175
						PH	**002KF77**	**DRS**	**90M4**	325	174
						PHF	**002KF77**	**DRS**	**90M4**	270	175
	0.81	17400	1732	124000	24830						
	0.93	15100	1500	124000	24830						
	1.0	14000	1392	124000	24830	**P**	**002KF67**	**DRS**	**90M4**	290	172
	1.2	11800	1181	124000	24830	**PF**	**002KF67**	**DRS**	**90M4**	235	173
	1.3	10700	1066	124000	24830	**PH**	**002KF67**	**DRS**	**90M4**	295	172
	1.5	9430	938	124000	24830	**PHF**	**002KF67**	**DRS**	**90M4**	240	173
	1.6	8910	886	124000	24830						
	1.8	7580	754	124000	24830						
2.2	**0.34**	60600	4124	234200	69620	**P**	**032KF97**	**DRS**	**90L4**	740	196
	0.37	55800	3797	239400	69620	**PF**	**032KF97**	**DRS**	**90L4**	620	197
						PH	**032KF97**	**DRS**	**90L4**	770	196
						PHF	**032KF97**	**DRS**	**90L4**	640	197
	0.35	59200	4029	177600	51190						
	0.41	49800	3387	192800	51190	**P**	**022KF87**	**DRS**	**90L4**	590	188
	0.45	45700	3113	197000	51190	**PF**	**022KF87**	**DRS**	**90L4**	490	189
	0.51	40600	2764	197000	51190	**PH**	**022KF87**	**DRS**	**90L4**	610	188
	0.57	36300	2471	197000	51190	**PHF**	**022KF87**	**DRS**	**90L4**	500	189
	0.51	40600	2764	156000	36810						
	0.63	32600	2222	156000	36810	**P**	**012KF87**	**DRS**	**90L4**	440	182
	0.73	28300	1929	156000	36810	**PF**	**012KF87**	**DRS**	**90L4**	370	183
	0.81	25400	1727	156000	36810	**PH**	**012KF87**	**DRS**	**90L4**	455	182
	0.98	21000	1433	156000	36810	**PHF**	**012KF87**	**DRS**	**90L4**	385	183
	0.55	37300	2540	156000	36810						
	0.61	33600	2289	156000	36810	**P**	**012KF77**	**DRS**	**90L4**	405	180
	0.70	29500	2008	156000	36810	**PF**	**012KF77**	**DRS**	**90L4**	335	181
	0.79	26000	1772	156000	36810	**PH**	**012KF77**	**DRS**	**90L4**	420	180
	1.0	20300	1381	156000	36810	**PHF**	**012KF77**	**DRS**	**90L4**	350	181
	0.89	23000	1565	120300	24830	**P**	**002KF77**	**DRS**	**90L4**	325	174
	1.0	20200	1376	123900	24830	**PF**	**002KF77**	**DRS**	**90L4**	265	175
						PH	**002KF77**	**DRS**	**90L4**	330	174
						PHF	**002KF77**	**DRS**	**90L4**	270	175
	1.2	17300	1181	124000	24830						
	1.3	15600	1066	124000	24830						
	1.5	13700	938	124000	24830						
	1.6	13000	886	124000	24830	**P**	**002KF67**	**DRS**	**90L4**	295	172
	1.9	11000	754	124000	24830	**PF**	**002KF67**	**DRS**	**90L4**	235	173
	2.0	10000	685	124000	24830	**PH**	**002KF67**	**DRS**	**90L4**	300	172
	2.4	8720	594	124000	24830	**PHF**	**002KF67**	**DRS**	**90L4**	240	173
	2.7	7590	517	124000	24830						
	2.9	7170	488	124000	20200						
3.0	**0.34**	82700	4124	311800	100170	**P**	**042KF97**	**DRS**	**100M4**	1000	202
	0.37	76100	3797	317200	100170	**PF**	**042KF97**	**DRS**	**100M4**	810	203
	0.41	68000	3394	323000	100170	**PH**	**042KF97**	**DRS**	**100M4**	1000	202
						PHF	**042KF97**	**DRS**	**100M4**	810	203
	0.34	82700	4124	204100	69620	**P**	**032KF97**	**DRS**	**100M4**	750	196
	0.37	76100	3797	214200	69620	**PF**	**032KF97**	**DRS**	**100M4**	630	197
	0.51	55500	2767	239800	69620	**PH**	**032KF97**	**DRS**	**100M4**	770	196
						PHF	**032KF97**	**DRS**	**100M4**	650	197
	0.57	49500	2471	245600	69620	**P**	**032KF87**	**DRS**	**100M4**	670	194
						PF	**032KF87**	**DRS**	**100M4**	550	195
						PH	**032KF87**	**DRS**	**100M4**	700	194
						PHF	**032KF87**	**DRS**	**100M4**	570	195
	0.45	62400	3113	171800	51190						
	0.51	55400	2764	184200	51190	**P**	**022KF87**	**DRS**	**100M4**	590	188
	0.57	49500	2471	193200	51190	**PF**	**022KF87**	**DRS**	**100M4**	495	189
	0.63	44500	2222	197000	51190	**PH**	**022KF87**	**DRS**	**100M4**	610	188
	0.73	38600	1929	197000	51190	**PHF**	**022KF87**	**DRS**	**100M4**	510	189
	0.63	44500	2222	156000	36810	**P**	**012KF87**	**DRS**	**100M4**	445	182
	0.73	38600	1929	156000	36810	**PF**	**012KF87**	**DRS**	**100M4**	375	183
	0.81	34600	1727	156000	36810	**PH**	**012KF87**	**DRS**	**100M4**	460	182
	0.98	28700	1433	156000	36810	**PHF**	**012KF87**	**DRS**	**100M4**	390	183



P_M [kW]	n_2 [min^{-1}]	M_a [Nm]	i_{ex}	F_{Ra} [N]	M_{N2} [Nm]					m [kg]	
3.0	**1.0**	27600	1381	156000	36810	**P**	**012KF77**	**DRS**	**100M4**	410	180
	1.2	24300	1212	156000	36810	**PF**	**012KF77**	**DRS**	**100M4**	340	181
	1.2	23000	1148	156000	36810	**PH**	**012KF77**	**DRS**	**100M4**	425	180
	1.4	20100	1005	156000	36810	**PHF**	**012KF77**	**DRS**	**100M4**	355	181
	1.6	18100	905	156000	36810						
	1.2	24200	1207	118600	24830	**P**	**002KF77**	**DRS**	**100M4**	330	174
	1.2	22900	1144	120400	24830	**PF**	**002KF77**	**DRS**	**100M4**	270	175
	1.4	20000	1001	124000	24830	**PH**	**002KF77**	**DRS**	**100M4**	335	174
						PHF	**002KF77**	**DRS**	**100M4**	275	175
	1.6	17700	886	124000	24830						
	1.9	15100	754	124000	24830						
	2.0	13700	685	124000	24830	**P**	**002KF67**	**DRS**	**100M4**	300	172
	2.4	11900	594	124000	24830	**PF**	**002KF67**	**DRS**	**100M4**	240	173
	2.7	10300	517	124000	24830	**PH**	**002KF67**	**DRS**	**100M4**	305	172
	2.9	9780	488	124000	20200	**PHF**	**002KF67**	**DRS**	**100M4**	245	173
	3.4	8330	415	124000	19100						
	3.7	7570	378	124000	18300						
4.0	**0.37**	102400	3952	364000	124060	**P**	**052KF107**	**DRS**	**100LC4**	1260	210
	0.40	92400	3568	364000	124060	**PF**	**052KF107**	**DRS**	**100LC4**	1060	211
						PH	**052KF107**	**DRS**	**100LC4**	1250	210
						PHF	**052KF107**	**DRS**	**100LC4**	1050	211
	0.45	83900	3241	310800	100170	**P**	**042KF107**	**DRS**	**100LC4**	1120	204
						PF	**042KF107**	**DRS**	**100LC4**	930	205
						PH	**042KF107**	**DRS**	**100LC4**	1120	204
						PHF	**042KF107**	**DRS**	**100LC4**	930	205
	0.35	106800	4124	288500	100170						
	0.38	98400	3797	297400	100170	**P**	**042KF97**	**DRS**	**100LC4**	1000	202
	0.43	87900	3394	307300	100170	**PF**	**042KF97**	**DRS**	**100LC4**	810	203
	0.52	71700	2767	320600	100170	**PH**	**042KF97**	**DRS**	**100LC4**	1010	202
	0.59	63500	2454	323000	100170	**PHF**	**042KF97**	**DRS**	**100LC4**	820	203
	0.52	71700	2767	220500	69620	**P**	**032KF97**	**DRS**	**100LC4**	750	196
	0.65	57400	2218	237700	69620	**PF**	**032KF97**	**DRS**	**100LC4**	630	197
	0.77	48700	1880	246400	69620	**PH**	**032KF97**	**DRS**	**100LC4**	780	196
						PHF	**032KF97**	**DRS**	**100LC4**	650	197
	0.58	64000	2471	230200	69620	**P**	**032KF87**	**DRS**	**100LC4**	680	194
						PF	**032KF87**	**DRS**	**100LC4**	560	195
						PH	**032KF87**	**DRS**	**100LC4**	700	194
						PHF	**032KF87**	**DRS**	**100LC4**	580	195
	0.65	57500	2222	180600	51190						
	0.75	49900	1929	192600	51190	**P**	**022KF87**	**DRS**	**100LC4**	600	188
	0.84	44700	1727	197000	51190	**PF**	**022KF87**	**DRS**	**100LC4**	500	189
	1.0	37100	1433	197000	51190	**PH**	**022KF87**	**DRS**	**100LC4**	610	188
	1.2	31900	1231	197000	51190	**PHF**	**022KF87**	**DRS**	**100LC4**	510	189
	0.84	44700	1727	156000	36810	**P**	**012KF87**	**DRS**	**100LC4**	450	182
	1.0	37100	1433	156000	36810	**PF**	**012KF87**	**DRS**	**100LC4**	380	183
	1.3	28300	1094	156000	36810	**PH**	**012KF87**	**DRS**	**100LC4**	465	182
						PHF	**012KF87**	**DRS**	**100LC4**	395	183
	1.2	31300	1212	156000	36810						
	1.3	29700	1148	156000	36810						
	1.4	26000	1005	156000	36810	**P**	**012KF77**	**DRS**	**100LC4**	415	180
	1.6	23400	905	156000	36810	**PF**	**012KF77**	**DRS**	**100LC4**	345	181
	1.8	20500	794	156000	36810	**PH**	**012KF77**	**DRS**	**100LC4**	430	180
	2.1	18100	701	156000	36810	**PHF**	**012KF77**	**DRS**	**100LC4**	360	181
	2.3	16000	621	156000	36810						
	2.7	13700	530	156000	36810						
	1.6	23300	902	119800	24830	**P**	**002KF77**	**DRS**	**100LC4**	335	174
	1.8	20400	791	123500	24830	**PF**	**002KF77**	**DRS**	**100LC4**	275	175
	2.1	18000	698	124000	24830	**PH**	**002KF77**	**DRS**	**100LC4**	340	174
	2.3	16000	619	124000	24830	**PHF**	**002KF77**	**DRS**	**100LC4**	280	175
	2.8	13300	517	124000	24830						
	3.0	12600	488	124000	20200	**P**	**002KF67**	**DRS**	**100LC4**	305	172
	3.5	10700	415	124000	19100	**PF**	**002KF67**	**DRS**	**100LC4**	245	173
	3.8	9780	378	124000	18300	**PH**	**002KF67**	**DRS**	**100LC4**	310	172
	4.4	8470	327	124000	16800	**PHF**	**002KF67**	**DRS**	**100LC4**	250	173
	5.1	7370	284	124000	16000						

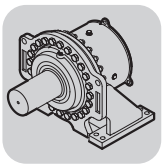


Bevel Planetary Gearmotors P.KF..

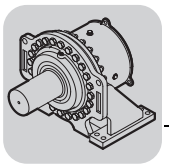
Selection tables [kW]]

P_M [kW]	n_2 [min^{-1}]	M_a [Nm]	i_{ex}	F_{Ra} [N]	M_{N2} [Nm]					m [kg]	
5.5	**0.40**	127100	3568	473000	185660	**P**	**062KF107**	**DRS**	**132S4**	1760	214
	0.45	115400	3241	473000	185660	**PF**	**062KF107**	**DRS**	**132S4**	1390	215
						PH	**062KF107**	**DRS**	**132S4**	1750	214
						PHF	**062KF107**	**DRS**	**132S4**	1380	215
	0.37	140800	3952	328800	124060	**P**	**052KF107**	**DRS**	**132S4**	1270	210
	0.40	127100	3568	343800	124060	**PF**	**052KF107**	**DRS**	**132S4**	1070	211
	0.50	102400	2876	364000	124060	**PH**	**052KF107**	**DRS**	**132S4**	1260	210
	0.55	92900	2610	364000	124060	**PHF**	**052KF107**	**DRS**	**132S4**	1060	211
	0.45	115400	3241	278600	100170	**P**	**042KF107**	**DRS**	**132S4**	1130	204
	0.64	79900	2243	314200	100170	**PF**	**042KF107**	**DRS**	**132S4**	940	205
	0.74	69700	1958	322000	100170	**PH**	**042KF107**	**DRS**	**132S4**	1130	204
						PHF	**042KF107**	**DRS**	**132S4**	940	205
	0.52	98500	2767	297200	100170	**P**	**042KF97**	**DRS**	**132S4**	1010	202
	0.59	87400	2454	307700	100170	**PF**	**042KF97**	**DRS**	**132S4**	820	203
	0.77	66900	1880	323000	100170	**PH**	**042KF97**	**DRS**	**132S4**	1020	202
						PHF	**042KF97**	**DRS**	**132S4**	830	203
	0.65	79000	2218	209900	69620	**P**	**032KF97**	**DRS**	**132S4**	770	196
	0.77	66900	1880	226600	69620	**PF**	**032KF97**	**DRS**	**132S4**	650	197
	0.88	58500	1643	236600	69620	**PH**	**032KF97**	**DRS**	**132S4**	790	196
	0.96	53500	1503	241800	69620	**PHF**	**032KF97**	**DRS**	**132S4**	670	197
	1.2	43800	1231	250700	69620	**P**	**032KF87**	**DRS**	**132S4**	690	194
						PF	**032KF87**	**DRS**	**132S4**	570	195
						PH	**032KF87**	**DRS**	**132S4**	710	194
						PHF	**032KF87**	**DRS**	**132S4**	590	195
	0.84	61500	1727	173500	51190						
	1.0	51000	1433	191000	51190	**P**	**022KF87**	**DRS**	**132S4**	610	188
	1.2	43800	1231	197000	51190	**PF**	**022KF87**	**DRS**	**132S4**	510	189
	1.3	38900	1094	197000	51190	**PH**	**022KF87**	**DRS**	**132S4**	630	188
	1.5	34800	978	197000	51190	**PHF**	**022KF87**	**DRS**	**132S4**	530	189
	1.6	31300	879	197000	51190						
	1.3	38900	1094	156000	36810	**P**	**012KF87**	**DRS**	**132S4**	465	182
	1.9	27100	763	156000	36810	**PF**	**012KF87**	**DRS**	**132S4**	395	183
						PH	**012KF87**	**DRS**	**132S4**	480	182
						PHF	**012KF87**	**DRS**	**132S4**	410	183
	1.4	35800	1005	156000	36810						
	1.6	32200	905	156000	36810						
	1.8	28200	794	156000	36810	**P**	**012KF77**	**DRS**	**132S4**	430	180
	2.1	24900	701	156000	36810	**PF**	**012KF77**	**DRS**	**132S4**	360	181
	2.3	22100	621	156000	36810	**PH**	**012KF77**	**DRS**	**132S4**	440	180
	2.7	18900	530	156000	36810	**PHF**	**012KF77**	**DRS**	**132S4**	370	181
	3.4	15100	425	156000	36810						
	2.3	22000	619	121600	24830						
	2.7	18800	528	124000	24830						
	3.0	17200	483	124000	24830						
	3.4	15000	424	124000	24830						
	3.9	13300	374	124000	24830	**P**	**002KF77**	**DRS**	**132S4**	350	174
	4.4	11800	331	124000	24830	**PF**	**002KF77**	**DRS**	**132S4**	290	175
	5.5	9400	264	124000	24830	**PH**	**002KF77**	**DRS**	**132S4**	350	174
	6.0	8590	241	123700	19100	**PHF**	**002KF77**	**DRS**	**132S4**	295	175
	6.8	7530	212	118900	18900						
	7.7	6650	187	114500	17900						
	8.7	5890	166	110500	17000						
	10	5030	141	105400	15600						
7.5	**0.42**	166300	3425	523000	245660	**P**	**072KF127**	**DRS**	**132M4**	2390	220
	0.53	131200	2703	523000	245660	**PF**	**072KF127**	**DRS**	**132M4**	1900	221
	0.61	115800	2385	523000	245660	**PH**	**072KF127**	**DRS**	**132M4**	2450	220
						PHF	**072KF127**	**DRS**	**132M4**	1960	221
	0.57	123000	2534	523000	245660	**P**	**072KF107**	**DRS**	**132M4**	2190	218
	0.66	105700	2178	523000	245660	**PF**	**072KF107**	**DRS**	**132M4**	1700	219
	0.76	92300	1901	523000	245660	**PH**	**072KF107**	**DRS**	**132M4**	2250	218
						PHF	**072KF107**	**DRS**	**132M4**	1750	219
	0.33	210000	4322	419000	185660	**P**	**062KF127**	**DRS**	**132M4**	1970	216
	0.59	119300	2456	473000	185660	**PF**	**062KF127**	**DRS**	**132M4**	1610	217
	0.68	103000	2121	473000	185660	**PH**	**062KF127**	**DRS**	**132M4**	1960	216
	0.77	91100	1876	473000	185660	**PHF**	**062KF127**	**DRS**	**132M4**	1600	217

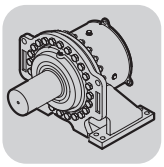
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7.5	**0.40**	173300	3568	447700	185660	**P**	**062KF107**	**DRS**	**132M4**	1770	214
	0.45	157400	3241	458400	185660	**PF**	**062KF107**	**DRS**	**132M4**	1410	215
	0.64	108900	2243	473000	185660	**PH**	**062KF107**	**DRS**	**132M4**	1760	214
	0.87	80600	1661	473000	185660	**PHF**	**062KF107**	**DRS**	**132M4**	1390	215
	0.50	139700	2876	330100	124060	**P**	**052KF107**	**DRS**	**132M4**	1290	210
	0.55	126700	2610	344200	124060	**PF**	**052KF107**	**DRS**	**132M4**	1090	211
	0.74	95100	1958	364000	124060	**PH**	**052KF107**	**DRS**	**132M4**	1280	210
	1.0	70500	1452	364000	124060	**PHF**	**052KF107**	**DRS**	**132M4**	1080	211
	1.3	53100	1095	364000	124060	**P**	**052KF97**	**DRS**	**132M4**	1170	208
	1.5	47100	971	364000	124060	**PF**	**052KF97**	**DRS**	**132M4**	970	209
						PH	**052KF97**	**DRS**	**132M4**	1160	208
						PHF	**052KF97**	**DRS**	**132M4**	960	209
	0.64	108900	2243	286200	100170	**P**	**042KF107**	**DRS**	**132M4**	1140	204
	0.74	95100	1958	300600	100170	**PF**	**042KF107**	**DRS**	**132M4**	950	205
	1.0	70500	1452	321500	100170	**PH**	**042KF107**	**DRS**	**132M4**	1140	204
	1.3	55200	1138	323000	100170	**PHF**	**042KF107**	**DRS**	**132M4**	950	205
	0.77	91300	1880	304200	100170	**P**	**042KF97**	**DRS**	**132M4**	1030	202
	1.2	58700	1209	323000	100170	**PF**	**042KF97**	**DRS**	**132M4**	840	203
	1.5	47100	971	323000	100170	**PH**	**042KF97**	**DRS**	**132M4**	1030	202
	1.6	42600	878	323000	100170	**PHF**	**042KF97**	**DRS**	**132M4**	840	203
	0.88	79800	1643	208800	69620						
	0.96	72900	1503	218800	69620	**P**	**032KF97**	**DRS**	**132M4**	780	196
	1.5	47100	971	247800	69620	**PF**	**032KF97**	**DRS**	**132M4**	660	197
	1.6	42600	878	251700	69620	**PH**	**032KF97**	**DRS**	**132M4**	800	196
	1.9	36100	744	252000	69620	**PHF**	**032KF97**	**DRS**	**132M4**	680	197
	2.2	31500	650	252000	69620						
	1.2	59800	1231	235100	69620						
	1.9	37000	763	252000	69620	**P**	**032KF87**	**DRS**	**132M4**	710	194
	2.1	33100	683	252000	69620	**PF**	**032KF87**	**DRS**	**132M4**	590	195
	2.3	30400	628	252000	69200	**PH**	**032KF87**	**DRS**	**132M4**	730	194
	2.6	27500	567	252000	69620	**PHF**	**032KF87**	**DRS**	**132M4**	610	195
	2.7	26300	543	197000	51190	**P**	**022KF97**	**DRS**	**132M4**	700	190
	3.1	22800	470	197000	51190	**PF**	**022KF97**	**DRS**	**132M4**	600	191
						PH	**022KF97**	**DRS**	**132M4**	720	190
						PHF	**022KF97**	**DRS**	**132M4**	610	191
	1.3	53100	1094	187900	51190						
	1.5	47400	978	196100	51190						
	1.6	42700	879	197000	51190	**P**	**022KF87**	**DRS**	**132M4**	630	188
	2.1	33100	683	197000	51190	**PF**	**022KF87**	**DRS**	**132M4**	520	189
	2.3	30400	628	197000	51190	**PH**	**022KF87**	**DRS**	**132M4**	640	188
	2.9	23900	493	197000	51190	**PHF**	**022KF87**	**DRS**	**132M4**	540	189
	3.3	21200	438	197000	51190						
	3.5	19800	408	156000	36810	**P**	**012KF97**	**DRS**	**132M4**	550	184
	4.2	16500	342	156000	36810	**PF**	**012KF97**	**DRS**	**132M4**	485	185
	5.2	13500	279	156000	36810	**PH**	**012KF97**	**DRS**	**132M4**	570	184
						PHF	**012KF97**	**DRS**	**132M4**	495	185
	1.9	37000	763	156000	36810						
	2.9	23900	493	156000	36810	**P**	**012KF87**	**DRS**	**132M4**	480	182
	3.7	19000	392	156000	36810	**PF**	**012KF87**	**DRS**	**132M4**	410	183
	4.4	15800	325	156000	36810	**PH**	**012KF87**	**DRS**	**132M4**	490	182
	5.0	14100	291	156000	36810	**PHF**	**012KF87**	**DRS**	**132M4**	420	183
	2.1	34000	701	156000	36810	**P**	**012KF77**	**DRS**	**132M4**	440	180
	2.3	30100	621	156000	36810	**PF**	**012KF77**	**DRS**	**132M4**	370	181
	2.7	25700	530	156000	36810	**PH**	**012KF77**	**DRS**	**132M4**	455	180
						PHF	**012KF77**	**DRS**	**132M4**	385	181
	3.4	20500	424	123400	24830						
	3.9	18100	374	124000	24830						
	4.4	16000	331	124000	24830						
	5.1	13700	283	124000	24830	**P**	**002KF77**	**DRS**	**132M4**	360	174
	5.5	12800	264	124000	24830	**PF**	**002KF77**	**DRS**	**132M4**	305	175
	6.8	10200	212	118900	18900	**PH**	**002KF77**	**DRS**	**132M4**	365	174
	7.7	9070	187	114500	17900	**PHF**	**002KF77**	**DRS**	**132M4**	305	175
	8.7	8040	166	110500	17000						
	10	6860	141	105400	15600						



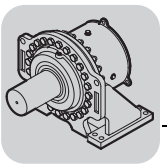
P_M [kW]	n_2 [min^{-1}]	M_a [Nm]	i_{ex}	F_{Ra} [N]	M_{N2} [Nm]					m [kg]	
9.2	**0.35**	246600	4198	523000	245660	**P**	**072KF127**	**DRS**	**132MC4**	2400	220
	0.43	201200	3425	523000	245660	**PF**	**072KF127**	**DRS**	**132MC4**	1910	221
	0.47	183500	3123	523000	245660	**PH**	**072KF127**	**DRS**	**132MC4**	2450	220
	0.54	158800	2703	523000	245660	**PHF**	**072KF127**	**DRS**	**132MC4**	1960	221
	0.61	140100	2385	523000	245660						
	0.42	207300	3526	421300	185660						
	0.46	189000	3216	436100	185660	**P**	**062KF127**	**DRS**	**132MC4**	1970	216
	0.60	144300	2456	466500	185660	**PF**	**062KF127**	**DRS**	**132MC4**	1610	217
	0.69	124600	2121	473000	185660	**PH**	**062KF127**	**DRS**	**132MC4**	1960	216
	0.78	110200	1876	473000	185660	**PHF**	**062KF127**	**DRS**	**132MC4**	1600	217
	0.51	169000	2876	450700	185660						
	0.56	153300	2610	461000	185660	**P**	**062KF107**	**DRS**	**132MC4**	1770	214
	0.65	131800	2243	473000	185660	**PF**	**062KF107**	**DRS**	**132MC4**	1410	215
	0.75	115000	1958	473000	185660	**PH**	**062KF107**	**DRS**	**132MC4**	1760	214
	0.88	97600	1661	473000	185660	**PHF**	**062KF107**	**DRS**	**132MC4**	1400	215
	1.0	85300	1452	473000	185660						
	0.65	131800	2243	338800	124060	**P**	**052KF107**	**DRS**	**132MC4**	1290	210
	0.75	115000	1958	355600	124060	**PF**	**052KF107**	**DRS**	**132MC4**	1090	211
	1.0	85300	1452	364000	124060	**PH**	**052KF107**	**DRS**	**132MC4**	1280	210
	1.2	72100	1227	364000	124060	**PHF**	**052KF107**	**DRS**	**132MC4**	1080	211
	1.1	78900	1343	364000	124060	**P**	**052KF97**	**DRS**	**132MC4**	1170	208
	1.2	71000	1209	364000	124060	**PF**	**052KF97**	**DRS**	**132MC4**	980	209
						PH	**052KF97**	**DRS**	**132MC4**	1170	208
						PHF	**052KF97**	**DRS**	**132MC4**	970	209
	0.75	115000	1958	279100	100170	**P**	**042KF107**	**DRS**	**132MC4**	1140	204
	0.88	97600	1661	298200	100170	**PF**	**042KF107**	**DRS**	**132MC4**	950	205
	1.0	85300	1452	309600	100170	**PH**	**042KF107**	**DRS**	**132MC4**	1150	204
	1.3	66800	1138	323000	100170	**PHF**	**042KF107**	**DRS**	**132MC4**	960	205
	0.98	88300	1503	307000	100170						
	1.2	71000	1209	321100	100170	**P**	**042KF97**	**DRS**	**132MC4**	1030	202
	1.3	64300	1095	323000	100170	**PF**	**042KF97**	**DRS**	**132MC4**	840	203
	1.5	57000	971	323000	100170	**PH**	**042KF97**	**DRS**	**132MC4**	1030	202
	1.7	51500	878	323000	100170	**PHF**	**042KF97**	**DRS**	**132MC4**	840	203
	1.2	71000	1209	221400	69620						
	1.3	64300	1095	229900	69620	**P**	**032KF97**	**DRS**	**132MC4**	780	196
	1.5	57000	971	238100	69620	**PF**	**032KF97**	**DRS**	**132MC4**	660	197
	1.7	51500	878	243700	69620	**PH**	**032KF97**	**DRS**	**132MC4**	800	196
	2.0	43700	744	250800	69620	**PHF**	**032KF97**	**DRS**	**132MC4**	680	197
	2.2	38100	650	252000	69620						
	2.3	36800	628	252000	69200	**P**	**032KF87**	**DRS**	**132MC4**	710	194
	2.6	33300	567	252000	69620	**PF**	**032KF87**	**DRS**	**132MC4**	590	195
						PH	**032KF87**	**DRS**	**132MC4**	730	194
						PHF	**032KF87**	**DRS**	**132MC4**	610	195
	2.7	31900	543	197000	51190	**P**	**022KF97**	**DRS**	**132MC4**	700	190
	3.1	27600	470	197000	51190	**PF**	**022KF97**	**DRS**	**132MC4**	600	191
						PH	**022KF97**	**DRS**	**132MC4**	720	190
						PHF	**022KF97**	**DRS**	**132MC4**	620	191
	1.5	57400	978	180800	51190						
	1.7	51600	879	190100	51190						
	1.9	44800	763	197000	51190	**P**	**022KF87**	**DRS**	**132MC4**	630	188
	2.1	40100	683	197000	51190	**PF**	**022KF87**	**DRS**	**132MC4**	530	189
	2.3	36800	628	197000	51190	**PH**	**022KF87**	**DRS**	**132MC4**	640	188
	3.0	28900	493	197000	51190	**PHF**	**022KF87**	**DRS**	**132MC4**	540	189
	3.3	25700	438	197000	51190						
	3.6	24000	408	156000	36810	**P**	**012KF97**	**DRS**	**132MC4**	560	184
	4.3	20000	342	156000	36810	**PF**	**012KF97**	**DRS**	**132MC4**	485	185
	5.3	16300	279	156000	36810	**PH**	**012KF97**	**DRS**	**132MC4**	570	184
						PHF	**012KF97**	**DRS**	**132MC4**	500	185
	2.1	40100	683	156000	36810						
	2.3	36800	628	156000	36810						
	2.6	33300	567	156000	36810	**P**	**012KF87**	**DRS**	**132MC4**	480	182
	3.0	28900	493	156000	36810	**PF**	**012KF87**	**DRS**	**132MC4**	410	183
	3.3	25700	438	156000	36810	**PH**	**012KF87**	**DRS**	**132MC4**	495	182
	3.7	23000	392	156000	36810	**PHF**	**012KF87**	**DRS**	**132MC4**	425	183
	4.5	19100	325	156000	36810						
	5.0	17000	291	156000	36810						



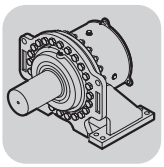
P_M [kW]	n_2 [min^{-1}]	M_a [Nm]	i_{ex}	F_{Ra} [N]	M_{N2} [Nm]					m [kg]	
9.2	**3.8**	22900	391	120300	24830						
	4.5	19000	324	124000	24830						
	5.2	16500	282	124000	24830	**P**	**002KF87**	**DRS**	**132MC4**	400	176
	6.0	14400	245	123800	24830	**PF**	**002KF87**	**DRS**	**132MC4**	345	177
	6.7	12800	218	119500	24830	**PH**	**002KF87**	**DRS**	**132MC4**	405	176
	7.5	11400	195	115600	24830	**PHF**	**002KF87**	**DRS**	**132MC4**	345	177
	9.0	9510	162	109300	24830						
	10	8300	141	104900	15600	**P**	**002KF77**	**DRS**	**132MC4**	365	174
						PF	**002KF77**	**DRS**	**132MC4**	305	175
						PH	**002KF77**	**DRS**	**132MC4**	370	174
						PHF	**002KF77**	**DRS**	**132MC4**	310	175
11.0	**0.39**	265200	3761	683000	359400	**P**	**082KF157**	**DRS**	**160M4**	3360	224
	0.42	242500	3440	683000	359400	**PF**	**082KF157**	**DRS**	**160M4**	2710	225
						PH	**082KF157**	**DRS**	**160M4**	3360	224
						PHF	**082KF157**	**DRS**	**160M4**	2700	225
	0.38	269100	3818	523000	245660	**P**	**072KF157**	**DRS**	**160M4**	2700	222
	0.48	214200	3038	523000	245660	**PF**	**072KF157**	**DRS**	**160M4**	2210	223
						PH	**072KF157**	**DRS**	**160M4**	2760	222
						PHF	**072KF157**	**DRS**	**160M4**	2270	223
	0.43	241400	3425	523000	245660	**P**	**072KF127**	**DRS**	**160M4**	2410	220
	0.47	220100	3123	523000	245660	**PF**	**072KF127**	**DRS**	**160M4**	1920	221
	0.54	190500	2703	523000	245660	**PH**	**072KF127**	**DRS**	**160M4**	2470	220
	0.61	168100	2385	523000	245660	**PHF**	**072KF127**	**DRS**	**160M4**	1970	221
	0.45	226800	3216	403800	185660						
	0.52	196300	2783	430400	185660	**P**	**062KF127**	**DRS**	**160M4**	1990	216
	0.59	173200	2456	447800	185660	**PF**	**062KF127**	**DRS**	**160M4**	1630	217
	0.69	149500	2121	463300	185660	**PH**	**062KF127**	**DRS**	**160M4**	1980	216
	0.78	132300	1876	473000	185660	**PHF**	**062KF127**	**DRS**	**160M4**	1610	217
	0.65	158100	2243	457900	185660	**P**	**062KF107**	**DRS**	**160M4**	1790	214
	0.75	138000	1958	470200	185660	**PF**	**062KF107**	**DRS**	**160M4**	1430	215
	0.88	117100	1661	473000	185660	**PH**	**062KF107**	**DRS**	**160M4**	1780	214
						PHF	**062KF107**	**DRS**	**160M4**	1420	215
	0.75	138000	1958	332000	124060	**P**	**052KF107**	**DRS**	**160M4**	1310	210
	1.0	102300	1452	364000	124060	**PF**	**052KF107**	**DRS**	**160M4**	1110	211
	1.2	86500	1227	364000	124060	**PH**	**052KF107**	**DRS**	**160M4**	1300	210
						PHF	**052KF107**	**DRS**	**160M4**	1100	211
	0.88	117100	1661	276700	100170	**P**	**042KF107**	**DRS**	**160M4**	1170	204
	1.0	102300	1452	293300	100170	**PF**	**042KF107**	**DRS**	**160M4**	980	205
	1.3	80200	1138	313900	100170	**PH**	**042KF107**	**DRS**	**160M4**	1170	204
						PHF	**042KF107**	**DRS**	**160M4**	980	205
	1.2	85200	1209	309700	100170	**P**	**042KF97**	**DRS**	**160M4**	1050	202
	1.5	68400	971	323000	100170	**PF**	**042KF97**	**DRS**	**160M4**	860	203
	1.7	61800	878	323000	100170	**PH**	**042KF97**	**DRS**	**160M4**	1060	202
						PHF	**042KF97**	**DRS**	**160M4**	870	203
	1.3	77100	1095	212700	69620						
	1.5	68400	971	224800	69620	**P**	**032KF97**	**DRS**	**160M4**	800	196
	1.7	61800	878	232800	69620	**PF**	**032KF97**	**DRS**	**160M4**	680	197
	2.0	52400	744	242800	69620	**PH**	**032KF97**	**DRS**	**160M4**	830	196
	2.2	45800	650	249000	69620	**PHF**	**032KF97**	**DRS**	**160M4**	700	197
	2.7	38300	543	197000	51190	**P**	**022KF97**	**DRS**	**160M4**	720	190
	3.1	33100	470	197000	51190	**PF**	**022KF97**	**DRS**	**160M4**	620	191
						PH	**022KF97**	**DRS**	**160M4**	740	190
						PHF	**022KF97**	**DRS**	**160M4**	640	191
	1.9	53800	763	186800	51190						
	2.1	48100	683	195200	51190						
	2.3	44200	628	197000	51190	**P**	**022KF87**	**DRS**	**160M4**	650	188
	2.6	39900	567	197000	51190	**PF**	**022KF87**	**DRS**	**160M4**	550	189
	3.0	34700	493	197000	51190	**PH**	**022KF87**	**DRS**	**160M4**	660	188
	3.3	30800	438	197000	51190	**PHF**	**022KF87**	**DRS**	**160M4**	560	189
	3.7	27600	392	197000	51190						
	3.6	28800	408	156000	36810	**P**	**012KF97**	**DRS**	**160M4**	580	184
	4.3	24000	342	156000	36810	**PF**	**012KF97**	**DRS**	**160M4**	510	185
	5.2	19600	279	156000	36810	**PH**	**012KF97**	**DRS**	**160M4**	590	184
						PHF	**012KF97**	**DRS**	**160M4**	520	185



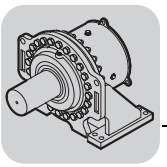
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	3.0	34700	493	156000	36810						
	3.3	30800	438	156000	36810	**P**	**012KF87**	**DRS**	**160M4**	500	182
	3.7	27600	392	156000	36810	**PF**	**012KF87**	**DRS**	**160M4**	430	183
	4.5	22900	325	156000	36810	**PH**	**012KF87**	**DRS**	**160M4**	520	182
	5.2	19900	283	156000	36810	**PHF**	**012KF87**	**DRS**	**160M4**	445	183
	6.5	15800	225	156000	29500						
	4.5	22800	324	120500	24830						
	5.2	19800	282	124000	24830	**P**	**002KF87**	**DRS**	**160M4**	420	176
	7.5	13700	195	115700	24830	**PF**	**002KF87**	**DRS**	**160M4**	365	177
	9.0	11400	162	109400	24830	**PH**	**002KF87**	**DRS**	**160M4**	425	176
	10	9920	141	104900	24800	**PHF**	**002KF87**	**DRS**	**160M4**	370	177
15.0	**0.39**	359200	3761	642800	359400	**P**	**082KF157**	**DRS**	**160MC4**	3370	224
	0.43	328500	3440	668900	359400	**PF**	**082KF157**	**DRS**	**160MC4**	2720	225
	0.64	218700	2290	683000	359400	**PH**	**082KF157**	**DRS**	**160MC4**	3360	224
	0.72	194500	2038	683000	359400	**PHF**	**082KF157**	**DRS**	**160MC4**	2710	225
	0.48	290100	3038	512000	245660	**P**	**072KF157**	**DRS**	**160MC4**	2710	222
						PF	**072KF157**	**DRS**	**160MC4**	2220	223
						PH	**072KF157**	**DRS**	**160MC4**	2760	222
						PHF	**072KF157**	**DRS**	**160MC4**	2270	223
	0.54	258000	2703	523000	245660						
	0.62	227700	2385	523000	245660	**P**	**072KF127**	**DRS**	**160MC4**	2420	220
	0.71	196600	2060	523000	245660	**PF**	**072KF127**	**DRS**	**160MC4**	1930	221
	0.81	173900	1822	523000	245660	**PH**	**072KF127**	**DRS**	**160MC4**	2470	220
	0.96	146100	1531	523000	245660	**PHF**	**072KF127**	**DRS**	**160MC4**	1980	221
	1.1	131800	1381	523000	245660						
	0.69	202600	2121	425300	185660						
	0.78	179200	1876	443500	185660	**P**	**062KF127**	**DRS**	**160MC4**	1990	216
	0.93	150600	1577	462700	185660	**PF**	**062KF127**	**DRS**	**160MC4**	1630	217
	1.0	135800	1422	471500	185660	**PH**	**062KF127**	**DRS**	**160MC4**	1980	216
	1.2	117500	1231	473000	185660	**PHF**	**062KF127**	**DRS**	**160MC4**	1620	217
	0.89	158600	1661	457600	185660						
	1.0	138600	1452	469800	185660	**P**	**062KF107**	**DRS**	**160MC4**	1800	214
	1.2	117200	1227	473000	185660	**PF**	**062KF107**	**DRS**	**160MC4**	1440	215
	1.3	108600	1138	473000	185660	**PH**	**062KF107**	**DRS**	**160MC4**	1790	214
	1.4	98500	1033	473000	185660	**PHF**	**062KF107**	**DRS**	**160MC4**	1420	215
	1.0	138600	1452	331300	124060						
	1.2	117200	1227	353600	124060	**P**	**052KF107**	**DRS**	**160MC4**	1320	210
	1.4	98500	1033	364000	124060	**PF**	**052KF107**	**DRS**	**160MC4**	1120	211
	1.7	84700	887	364000	124060	**PH**	**052KF107**	**DRS**	**160MC4**	1310	210
	1.9	73900	774	364000	124060	**PHF**	**052KF107**	**DRS**	**160MC4**	1110	211
	1.7	83800	878	364000	124060	**P**	**052KF97**	**DRS**	**160MC4**	1200	208
	2.0	71000	744	364000	124060	**PF**	**052KF97**	**DRS**	**160MC4**	1000	209
						PH	**052KF97**	**DRS**	**160MC4**	1190	208
						PHF	**052KF97**	**DRS**	**160MC4**	990	209
	1.3	108600	1138	286500	100170	**P**	**042KF107**	**DRS**	**160MC4**	1170	204
						PF	**042KF107**	**DRS**	**160MC4**	980	205
						PH	**042KF107**	**DRS**	**160MC4**	1170	204
						PHF	**042KF107**	**DRS**	**160MC4**	980	205
	1.5	92700	971	302900	100170						
	1.7	83800	878	310900	100170	**P**	**042KF97**	**DRS**	**160MC4**	1060	202
	2.0	71000	744	321100	100170	**PF**	**042KF97**	**DRS**	**160MC4**	870	203
	2.3	62000	650	323000	100170	**PH**	**042KF97**	**DRS**	**160MC4**	1060	202
	2.7	51800	543	323000	100170	**PHF**	**042KF97**	**DRS**	**160MC4**	870	203
	2.0	71000	744	221400	69620						
	2.3	62000	650	232600	69620	**P**	**032KF97**	**DRS**	**160MC4**	810	196
	2.7	51800	543	243400	69620	**PF**	**032KF97**	**DRS**	**160MC4**	690	197
	3.1	44900	470	249800	69620	**PH**	**032KF97**	**DRS**	**160MC4**	830	196
	3.6	39000	408	252000	69620	**PHF**	**032KF97**	**DRS**	**160MC4**	710	197
	2.7	51800	543	189800	51190						
	3.1	44900	470	197000	51190						
	3.6	39000	408	197000	51190	**P**	**022KF97**	**DRS**	**160MC4**	730	190
	4.3	32600	342	197000	51190	**PF**	**022KF97**	**DRS**	**160MC4**	630	191
	4.4	31800	333	197000	51190	**PH**	**022KF97**	**DRS**	**160MC4**	740	190
	5.3	26600	279	197000	51190	**PHF**	**022KF97**	**DRS**	**160MC4**	640	191
	6.1	23000	241	197000	51190						



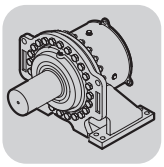
P_M [kW]	n_2 [min^{-1}]	M_a [Nm]	i_{ex}	F_{Ra} [N]	M_{N2} [Nm]					m [kg]	
15.0	**3.6**	39000	408	156000	36810						
	4.3	32600	342	156000	36810	**P**	**012KF97**	**DRS**	**160MC4**	580	184
	5.3	26600	279	156000	36810	**PF**	**012KF97**	**DRS**	**160MC4**	510	185
	6.1	23000	241	156000	36810	**PH**	**012KF97**	**DRS**	**160MC4**	600	184
	7.0	19900	209	156000	36810	**PHF**	**012KF97**	**DRS**	**160MC4**	530	185
	8.4	16700	175	156000	36810						
	6.3	22300	234	121200	24830	**P**	**002KF97**	**DRS**	**160MC4**	500	178
	7.2	19400	203	116900	24830	**PF**	**002KF97**	**DRS**	**160MC4**	445	179
						PH	**002KF97**	**DRS**	**160MC4**	510	178
						PHF	**002KF97**	**DRS**	**160MC4**	450	179
	9.1	15400	162	109200	24830	**P**	**002KF87**	**DRS**	**160MC4**	425	176
	10	13400	141	104700	24800	**PF**	**002KF87**	**DRS**	**160MC4**	370	177
						PH	**002KF87**	**DRS**	**160MC4**	430	176
						PHF	**002KF87**	**DRS**	**160MC4**	375	177
18.5	**0.43**	406500	3440	596600	359400						
	0.49	353700	2993	647700	359400	**P**	**082KF157**	**DRS**	**180M4**	3410	224
	0.55	312200	2641	681800	359400	**PF**	**082KF157**	**DRS**	**180M4**	2760	225
	0.64	270600	2290	683000	359400	**PH**	**082KF157**	**DRS**	**180M4**	3400	224
	0.72	240800	2038	683000	359400	**PHF**	**082KF157**	**DRS**	**180M4**	2750	225
	0.63	274600	2325	523000	245660	**P**	**072KF157**	**DRS**	**180M4**	2750	222
						PF	**072KF157**	**DRS**	**180M4**	2260	223
						PH	**072KF157**	**DRS**	**180M4**	2800	222
						PHF	**072KF157**	**DRS**	**180M4**	2310	223
	0.71	243300	2060	523000	245660	**P**	**072KF127**	**DRS**	**180M4**	2460	220
	0.80	215200	1822	523000	245660	**PF**	**072KF127**	**DRS**	**180M4**	1970	221
	0.96	180900	1531	523000	245660	**PH**	**072KF127**	**DRS**	**180M4**	2510	220
	1.1	163100	1381	523000	245660	**PHF**	**072KF127**	**DRS**	**180M4**	2020	221
	0.78	221700	1876	408500	185660	**P**	**062KF127**	**DRS**	**180M4**	2040	216
	0.93	186300	1577	438100	185660	**PF**	**062KF127**	**DRS**	**180M4**	1670	217
	1.0	168000	1422	451300	185660	**PH**	**062KF127**	**DRS**	**180M4**	2030	216
	1.2	145400	1231	465800	185660	**PHF**	**062KF127**	**DRS**	**180M4**	1660	217
	1.2	145000	1227	466100	185660	**P**	**062KF107**	**DRS**	**180M4**	1840	214
	1.3	134400	1138	472200	185660	**PF**	**062KF107**	**DRS**	**180M4**	1480	215
	1.4	122000	1033	473000	185660	**PH**	**062KF107**	**DRS**	**180M4**	1830	214
						PHF	**062KF107**	**DRS**	**180M4**	1470	215
	1.3	134400	1138	336000	124060	**P**	**052KF107**	**DRS**	**180M4**	1360	210
	1.4	122000	1033	349000	124060	**PF**	**052KF107**	**DRS**	**180M4**	1160	211
	1.6	104800	887	364000	124060	**PH**	**052KF107**	**DRS**	**180M4**	1350	210
	1.9	91500	774	364000	124060	**PHF**	**052KF107**	**DRS**	**180M4**	1150	211
	1.6	104800	887	290700	100170	**P**	**042KF107**	**DRS**	**180M4**	1220	204
						PF	**042KF107**	**DRS**	**180M4**	1030	205
						PH	**042KF107**	**DRS**	**180M4**	1220	204
						PHF	**042KF107**	**DRS**	**180M4**	1030	205
	2.0	87900	744	307300	100170	**P**	**042KF97**	**DRS**	**180M4**	1100	202
	2.2	76700	650	316700	100170	**PF**	**042KF97**	**DRS**	**180M4**	910	203
	2.7	64200	543	323000	100170	**PH**	**042KF97**	**DRS**	**180M4**	1100	202
						PHF	**042KF97**	**DRS**	**180M4**	910	203
	2.2	76700	650	213300	69620	**P**	**032KF97**	**DRS**	**180M4**	850	196
	2.7	64200	543	230000	69620	**PF**	**032KF97**	**DRS**	**180M4**	730	197
	3.1	55600	470	239700	69620	**PH**	**032KF97**	**DRS**	**180M4**	870	196
	3.6	48200	408	246800	69620	**PHF**	**032KF97**	**DRS**	**180M4**	750	197
	3.1	55600	470	183900	51190						
	3.6	48200	408	195000	51190	**P**	**022KF97**	**DRS**	**180M4**	770	190
	4.3	40300	342	197000	51190	**PF**	**022KF97**	**DRS**	**180M4**	670	191
	4.4	39300	333	197000	51190	**PH**	**022KF97**	**DRS**	**180M4**	790	190
	5.3	32900	279	197000	51190	**PHF**	**022KF97**	**DRS**	**180M4**	690	191
	6.1	28500	241	197000	51190						
	4.3	40300	342	156000	36810						
	4.4	39300	333	156000	36810	**P**	**012KF97**	**DRS**	**180M4**	630	184
	5.3	32900	279	156000	36810	**PF**	**012KF97**	**DRS**	**180M4**	560	185
	6.1	28500	241	156000	36810	**PH**	**012KF97**	**DRS**	**180M4**	640	184
	7.0	24700	209	156000	36810	**PHF**	**012KF97**	**DRS**	**180M4**	570	185
	8.4	20600	175	156000	36810						
	7.2	24000	203	117000	24830	**P**	**002KF97**	**DRS**	**180M4**	550	178
	8.6	20000	170	110900	24830	**PF**	**002KF97**	**DRS**	**180M4**	490	179
						PH	**002KF97**	**DRS**	**180M4**	550	178
						PHF	**002KF97**	**DRS**	**180M4**	490	179



P_M [kW]	n_2 [min^{-1}]	M_a [Nm]	i_{ex}	F_{Ra} [N]	M_{N2} [Nm]					m [kg]	
22	**0.55**	371200	2641	631800	359400	**P**	**082KF157**	**DRS**	**180L4**	3420	224
	0.64	321800	2290	674300	359400	**PF**	**082KF157**	**DRS**	**180L4**	2770	225
	0.72	286300	2038	683000	359400	**PH**	**082KF157**	**DRS**	**180L4**	3410	224
	0.83	246800	1756	683000	359400	**PHF**	**082KF157**	**DRS**	**180L4**	2760	225
	1.0	200500	1427	683000	359400						
	0.71	290600	2068	511500	245660	**P**	**072KF157**	**DRS**	**180L4**	2760	222
	1.0	203500	1449	523000	245660	**PF**	**072KF157**	**DRS**	**180L4**	2270	223
						PH	**072KF157**	**DRS**	**180L4**	2820	222
						PHF	**072KF157**	**DRS**	**180L4**	2320	223
	0.80	256000	1822	523000	245660						
	1.1	194000	1381	523000	245660	**P**	**072KF127**	**DRS**	**180L4**	2470	220
	1.2	167900	1195	523000	245660	**PF**	**072KF127**	**DRS**	**180L4**	1980	221
	1.4	148100	1055	523000	245660	**PH**	**072KF127**	**DRS**	**180L4**	2520	220
	1.6	127900	911	523000	245660	**PHF**	**072KF127**	**DRS**	**180L4**	2030	221
	0.93	221600	1577	408700	185660						
	1.0	199800	1422	427500	185660						
	1.2	172900	1231	447900	185660	**P**	**062KF127**	**DRS**	**180L4**	2050	216
	1.4	152600	1086	461400	185660	**PF**	**062KF127**	**DRS**	**180L4**	1680	217
	1.6	131800	938	473000	185660	**PH**	**062KF127**	**DRS**	**180L4**	2040	216
	1.8	116500	830	473000	185660	**PHF**	**062KF127**	**DRS**	**180L4**	1670	217
	2.1	97900	697	473000	185660						
	1.3	159800	1138	456800	185660						
	1.4	145000	1033	466100	185660	**P**	**062KF107**	**DRS**	**180L4**	1860	214
	1.6	124700	887	473000	185660	**PF**	**062KF107**	**DRS**	**180L4**	1490	215
	1.9	108800	774	473000	185660	**PH**	**062KF107**	**DRS**	**180L4**	1840	214
	2.2	92300	657	473000	185660	**PHF**	**062KF107**	**DRS**	**180L4**	1480	215
	2.6	80600	574	473000	185660						
	2.6	79100	563	364000	124060	**P**	**052KF127**	**DRS**	**180L4**	1560	212
	2.9	70400	502	364000	124060	**PF**	**052KF127**	**DRS**	**180L4**	1360	213
						PH	**052KF127**	**DRS**	**180L4**	1560	212
						PHF	**052KF127**	**DRS**	**180L4**	1360	213
	1.6	124700	887	346300	124060	**P**	**052KF107**	**DRS**	**180L4**	1370	210
	2.2	92300	657	364000	124060	**PF**	**052KF107**	**DRS**	**180L4**	1170	211
						PH	**052KF107**	**DRS**	**180L4**	1360	210
						PHF	**052KF107**	**DRS**	**180L4**	1160	211
	2.7	76300	543	364000	124060	**P**	**052KF97**	**DRS**	**180L4**	1260	208
	3.1	66100	470	364000	124060	**PF**	**052KF97**	**DRS**	**180L4**	1060	209
						PH	**052KF97**	**DRS**	**180L4**	1250	208
						PHF	**052KF97**	**DRS**	**180L4**	1050	209
	3.5	59200	421	323000	100170	**P**	**042KF127**	**DRS**	**180L4**	1420	206
						PF	**042KF127**	**DRS**	**180L4**	1230	207
						PH	**042KF127**	**DRS**	**180L4**	1420	206
						PHF	**042KF127**	**DRS**	**180L4**	1230	207
	1.9	108800	774	286300	100170						
	2.6	80600	574	313500	100170	**P**	**042KF107**	**DRS**	**180L4**	1230	204
	2.8	74000	527	318800	100170	**PF**	**042KF107**	**DRS**	**180L4**	1040	205
	3.2	64600	460	323000	100170	**PH**	**042KF107**	**DRS**	**180L4**	1230	204
	3.8	54800	390	321900	100170	**PHF**	**042KF107**	**DRS**	**180L4**	1040	205
	2.2	91300	650	304200	100170	**P**	**042KF97**	**DRS**	**180L4**	1110	202
	3.6	57400	408	323000	100170	**PF**	**042KF97**	**DRS**	**180L4**	920	203
	4.3	48000	342	309400	100170	**PH**	**042KF97**	**DRS**	**180L4**	1120	202
						PHF	**042KF97**	**DRS**	**180L4**	930	203
	5.1	40500	289	238100	69620	**P**	**032KF127**	**DRS**	**180L4**	1170	200
	5.7	36100	257	230000	69620	**PF**	**032KF127**	**DRS**	**180L4**	1050	201
						PH	**032KF127**	**DRS**	**180L4**	1190	200
						PHF	**032KF127**	**DRS**	**180L4**	1070	201
	3.8	54800	390	240500	69620	**P**	**032KF107**	**DRS**	**180L4**	980	198
	4.3	47900	341	247100	69620	**PF**	**032KF107**	**DRS**	**180L4**	860	199
	5.0	41300	294	239500	69620	**PH**	**032KF107**	**DRS**	**180L4**	1000	198
	5.4	37900	270	233500	69620	**PHF**	**032KF107**	**DRS**	**180L4**	880	199
	2.7	76300	543	213900	69620	**P**	**032KF97**	**DRS**	**180L4**	860	196
	3.1	66100	470	227700	69620	**PF**	**032KF97**	**DRS**	**180L4**	740	197
	5.3	39100	279	235600	69620	**PH**	**032KF97**	**DRS**	**180L4**	890	196
	6.1	33800	241	225700	69620	**PHF**	**032KF97**	**DRS**	**180L4**	760	197
	6.2	33100	236	197000	51190	**P**	**022KF107**	**DRS**	**180L4**	900	192
	7.3	28100	200	197000	51190	**PF**	**022KF107**	**DRS**	**180L4**	800	193
	8.4	24500	175	197000	51190	**PH**	**022KF107**	**DRS**	**180L4**	910	192
						PHF	**022KF107**	**DRS**	**180L4**	810	193



P_M [kW]	n_2 [min^{-1}]	M_a [Nm]	i_{ex}	F_{Ra} [N]	M_{N2} [Nm]					m [kg]	
22	**3.6**	57400	408	180900	51190						
	4.3	48000	342	195400	51190	**P**	**022KF97**	**DRS**	**180L4**	780	190
	4.4	46800	333	197000	51190	**PF**	**022KF97**	**DRS**	**180L4**	680	191
	5.3	39100	279	197000	51190	**PH**	**022KF97**	**DRS**	**180L4**	800	190
	7.0	29400	209	197000	51190	**PHF**	**022KF97**	**DRS**	**180L4**	700	191
	8.4	24600	175	197000	51190						
	6.1	33800	241	156000	36810	**P**	**012KF97**	**DRS**	**180L4**	640	184
	7.0	29400	209	156000	36810	**PF**	**012KF97**	**DRS**	**180L4**	570	185
	8.4	24600	175	156000	36810	**PH**	**012KF97**	**DRS**	**180L4**	650	184
						PHF	**012KF97**	**DRS**	**180L4**	580	185
30	**0.72**	389100	2038	614500	359400						
	0.84	335400	1756	663300	359400	**P**	**082KF157**	**DRS**	**180LC4**	3430	224
	1.0	272500	1427	683000	359400	**PF**	**082KF157**	**DRS**	**180LC4**	2780	225
	1.2	224400	1175	683000	359400	**PH**	**082KF157**	**DRS**	**180LC4**	3420	224
	1.4	198000	1037	683000	359400	**PHF**	**082KF157**	**DRS**	**180LC4**	2770	225
	1.0	276600	1449	523000	245660	**P**	**072KF157**	**DRS**	**180LC4**	2770	222
						PF	**072KF157**	**DRS**	**180LC4**	2280	223
						PH	**072KF157**	**DRS**	**180LC4**	2830	222
						PHF	**072KF157**	**DRS**	**180LC4**	2340	223
	1.1	263600	1381	523000	245660						
	1.2	228100	1195	523000	245660	**P**	**072KF127**	**DRS**	**180LC4**	2480	220
	1.4	201300	1055	523000	245660	**PF**	**072KF127**	**DRS**	**180LC4**	1990	221
	1.6	173800	911	523000	245660	**PH**	**072KF127**	**DRS**	**180LC4**	2540	220
	1.8	153800	806	523000	245660	**PHF**	**072KF127**	**DRS**	**180LC4**	2050	221
	1.4	207400	1086	421200	185660						
	1.6	179100	938	443500	185660	**P**	**062KF127**	**DRS**	**180LC4**	2060	216
	1.8	158400	830	457700	185660	**PF**	**062KF127**	**DRS**	**180LC4**	1700	217
	2.1	133100	697	472900	185660	**PH**	**062KF127**	**DRS**	**180LC4**	2050	216
	2.6	107500	563	473000	185660	**PHF**	**062KF127**	**DRS**	**180LC4**	1690	217
	1.7	169400	887	450400	185660	**P**	**062KF107**	**DRS**	**180LC4**	1870	214
	1.9	147900	774	464300	185660	**PF**	**062KF107**	**DRS**	**180LC4**	1500	215
						PH	**062KF107**	**DRS**	**180LC4**	1860	214
						PHF	**062KF107**	**DRS**	**180LC4**	1490	215
	2.6	107500	563	362400	124060	**P**	**052KF127**	**DRS**	**180LC4**	1580	212
	2.9	95800	502	364000	124060	**PF**	**052KF127**	**DRS**	**180LC4**	1380	213
	3.5	80500	421	364000	124060	**PH**	**052KF127**	**DRS**	**180LC4**	1570	212
						PHF	**052KF127**	**DRS**	**180LC4**	1370	213
	2.2	125400	657	345500	124060	**P**	**052KF107**	**DRS**	**180LC4**	1380	210
	3.8	74500	390	364000	124060	**PF**	**052KF107**	**DRS**	**180LC4**	1180	211
						PH	**052KF107**	**DRS**	**180LC4**	1370	210
						PHF	**052KF107**	**DRS**	**180LC4**	1170	211
	3.5	80500	421	313700	100170	**P**	**042KF127**	**DRS**	**180LC4**	1430	206
	4.3	65000	341	308800	100170	**PF**	**042KF127**	**DRS**	**180LC4**	1240	207
						PH	**042KF127**	**DRS**	**180LC4**	1440	206
						PHF	**042KF127**	**DRS**	**180LC4**	1250	207
	2.6	109600	574	285400	100170						
	2.8	100600	527	295100	100170	**P**	**042KF107**	**DRS**	**180LC4**	1240	204
	3.2	87800	460	307400	100170	**PF**	**042KF107**	**DRS**	**180LC4**	1050	205
	3.8	74500	390	318500	100170	**PH**	**042KF107**	**DRS**	**180LC4**	1240	204
	4.3	65100	341	309000	100170	**PHF**	**042KF107**	**DRS**	**180LC4**	1050	205
	5.1	55100	289	238000	69620	**P**	**032KF127**	**DRS**	**180LC4**	1180	200
	5.7	49100	257	229800	69620	**PF**	**032KF127**	**DRS**	**180LC4**	1060	201
						PH	**032KF127**	**DRS**	**180LC4**	1210	200
						PHF	**032KF127**	**DRS**	**180LC4**	1090	201
	3.8	74500	390	216600	69620						
	4.3	65100	341	228900	69620	**P**	**032KF107**	**DRS**	**180LC4**	990	198
	5.0	56200	294	239000	69620	**PF**	**032KF107**	**DRS**	**180LC4**	870	199
	5.4	51500	270	233300	69620	**PH**	**032KF107**	**DRS**	**180LC4**	1010	198
	6.2	45000	236	223900	69620	**PHF**	**032KF107**	**DRS**	**180LC4**	890	199
	5.3	53200	279	235400	69620	**P**	**032KF97**	**DRS**	**180LC4**	880	196
	6.1	46000	241	225400	69620	**PF**	**032KF97**	**DRS**	**180LC4**	760	197
	8.4	33400	175	204800	52400	**PH**	**032KF97**	**DRS**	**180LC4**	900	196
						PHF	**032KF97**	**DRS**	**180LC4**	780	197
	6.2	45000	236	197000	51190	**P**	**022KF107**	**DRS**	**180LC4**	910	192
	7.4	38100	200	197000	51190	**PF**	**022KF107**	**DRS**	**180LC4**	810	193
	8.4	33300	175	197000	51190	**PH**	**022KF107**	**DRS**	**180LC4**	930	192
						PHF	**022KF107**	**DRS**	**180LC4**	820	193

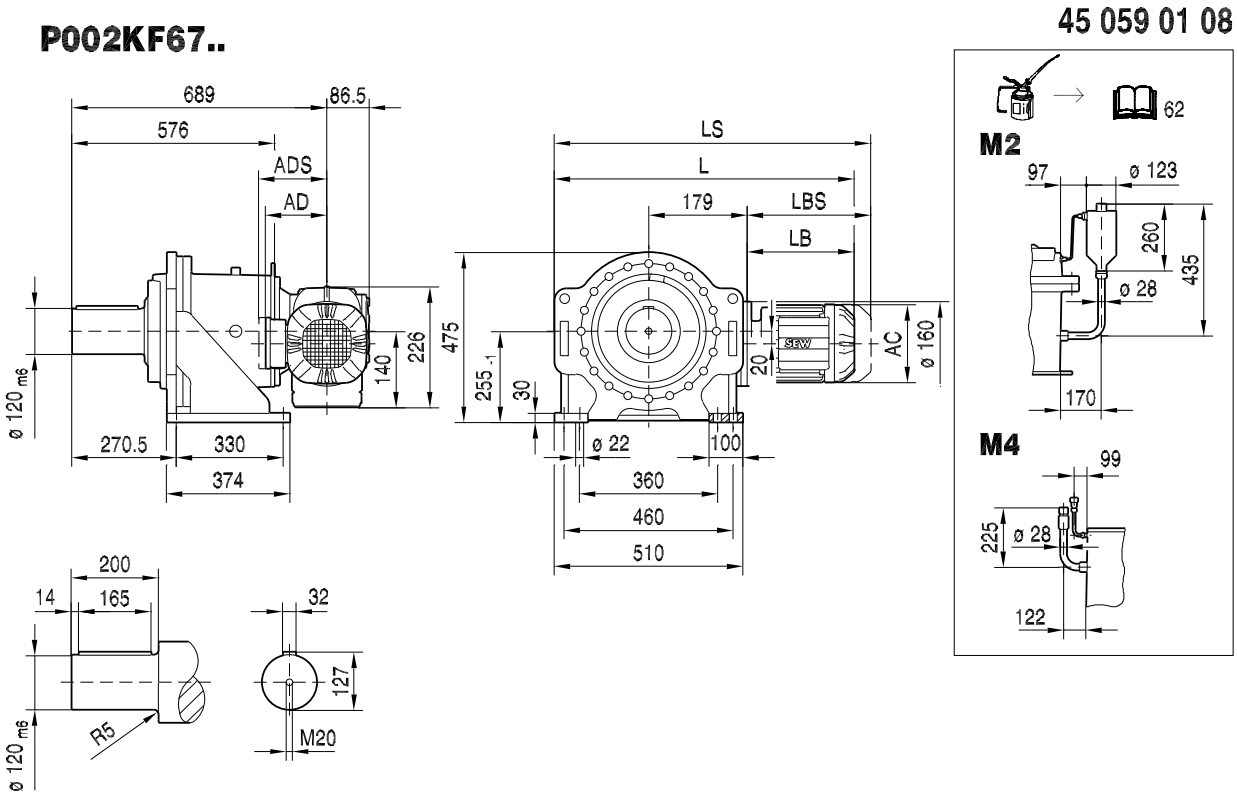


P_M [kW]	n_2 [min^{-1}]	M_a [Nm]	i_{ex}	F_{Ra} [N]	M_{N2} [Nm]					m [kg]	
30	**6.1**	46000	241	197000	51190	**P**	**022KF97**	**DRS**	**180LC4**	800	190
	8.4	33400	175	197000	51190	**PF**	**022KF97**	**DRS**	**180LC4**	690	191
						PH	**022KF97**	**DRS**	**180LC4**	810	190
						PHF	**022KF97**	**DRS**	**180LC4**	710	191
	8.4	33300	175	156000	36810	**P**	**012KF107**	**DRS**	**180LC4**	760	186
						PF	**012KF107**	**DRS**	**180LC4**	690	187
						PH	**012KF107**	**DRS**	**180LC4**	780	186
						PHF	**012KF107**	**DRS**	**180LC4**	710	187
	8.4	33400	175	156000	36810	**P**	**012KF97**	**DRS**	**180LC4**	650	184
						PF	**012KF97**	**DRS**	**180LC4**	580	185
						PH	**012KF97**	**DRS**	**180LC4**	660	184
						PHF	**012KF97**	**DRS**	**180LC4**	590	185
37	**0.84**	412300	1756	590500	359400						
	1.0	335000	1427	663600	359400	**P**	**082KF157**	**DRS**	**225S4**	3560	224
	1.3	275800	1175	683000	359400	**PF**	**082KF157**	**DRS**	**225S4**	2910	225
	1.4	243400	1037	683000	359400	**PH**	**082KF157**	**DRS**	**225S4**	3550	224
	1.6	211000	899	683000	359400	**PHF**	**082KF157**	**DRS**	**225S4**	2900	225
	1.2	280400	1195	521000	245660						
	1.4	247400	1055	523000	245660	**P**	**072KF127**	**DRS**	**225S4**	2610	220
	1.6	213700	911	523000	245660	**PF**	**072KF127**	**DRS**	**225S4**	2120	221
	1.8	189000	806	523000	245660	**PH**	**072KF127**	**DRS**	**225S4**	2660	220
	2.2	158800	677	523000	245660	**PHF**	**072KF127**	**DRS**	**225S4**	2170	221
	1.8	194700	830	431700	185660						
	2.1	163600	697	454300	185660	**P**	**062KF127**	**DRS**	**225S4**	2190	216
	2.6	132100	563	473000	185660	**PF**	**062KF127**	**DRS**	**225S4**	1820	217
	2.9	117700	502	473000	185660	**PH**	**062KF127**	**DRS**	**225S4**	2180	216
	3.5	98900	421	473000	185660	**PHF**	**062KF127**	**DRS**	**225S4**	1810	217
	2.6	132100	563	338500	124060	**P**	**052KF127**	**DRS**	**225S4**	1700	212
	2.9	117700	502	353100	124060	**PF**	**052KF127**	**DRS**	**225S4**	1500	213
	3.5	98900	421	364000	124060	**PH**	**052KF127**	**DRS**	**225S4**	1700	212
	4.3	79900	341	355900	124060	**PHF**	**052KF127**	**DRS**	**225S4**	1500	213
	3.8	91500	390	364000	124060	**P**	**052KF107**	**DRS**	**225S4**	1510	210
	4.3	80000	341	355900	124060	**PF**	**052KF107**	**DRS**	**225S4**	1310	211
						PH	**052KF107**	**DRS**	**225S4**	1500	210
						PHF	**052KF107**	**DRS**	**225S4**	1300	211
	3.5	98900	421	296800	100170	**P**	**042KF127**	**DRS**	**225S4**	1560	206
	4.3	79900	341	308600	100170	**PF**	**042KF127**	**DRS**	**225S4**	1370	207
						PH	**042KF127**	**DRS**	**225S4**	1560	206
						PHF	**042KF127**	**DRS**	**225S4**	1370	207
	3.8	91500	390	304000	100170	**P**	**042KF107**	**DRS**	**225S4**	1360	204
	4.3	80000	341	308600	100170	**PF**	**042KF107**	**DRS**	**225S4**	1170	205
						PH	**042KF107**	**DRS**	**225S4**	1370	204
						PHF	**042KF107**	**DRS**	**225S4**	1180	205
	5.1	67700	289	225700	69620	**P**	**032KF127**	**DRS**	**225S4**	1310	200
	5.7	60300	257	229500	69620	**PF**	**032KF127**	**DRS**	**225S4**	1190	201
						PH	**032KF127**	**DRS**	**225S4**	1330	200
						PHF	**032KF127**	**DRS**	**225S4**	1210	201
	4.3	80000	341	208400	69620	**P**	**032KF107**	**DRS**	**225S4**	1120	198
	5.0	69000	294	224000	69620	**PF**	**032KF107**	**DRS**	**225S4**	1000	199
	7.4	46900	200	212900	69620	**PH**	**032KF107**	**DRS**	**225S4**	1140	198
	8.4	41000	175	204500	69620	**PHF**	**032KF107**	**DRS**	**225S4**	1020	199
	7.4	46900	200	196900	51190	**P**	**022KF107**	**DRS**	**225S4**	1040	192
	8.4	41000	175	197000	51190	**PF**	**022KF107**	**DRS**	**225S4**	930	193
						PH	**022KF107**	**DRS**	**225S4**	1050	192
						PHF	**022KF107**	**DRS**	**225S4**	950	193
45	**1.3**	334300	1175	664200	359400						
	1.4	295000	1037	683000	359400	**P**	**082KF157**	**DRS**	**225M4**	3580	224
	1.6	255700	899	683000	359400	**PF**	**082KF157**	**DRS**	**225M4**	2930	225
	1.8	227500	800	683000	359400	**PH**	**082KF157**	**DRS**	**225M4**	3570	224
	2.2	196100	689	683000	359400	**PHF**	**082KF157**	**DRS**	**225M4**	2920	225
	2.6	161700	568	523000	245660	**P**	**072KF157**	**DRS**	**225M4**	2920	222
	3.1	137100	482	523000	245660	**PF**	**072KF157**	**DRS**	**225M4**	2430	223
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						PHF	**072KF157**	**DRS**	**225M4**	2480	223

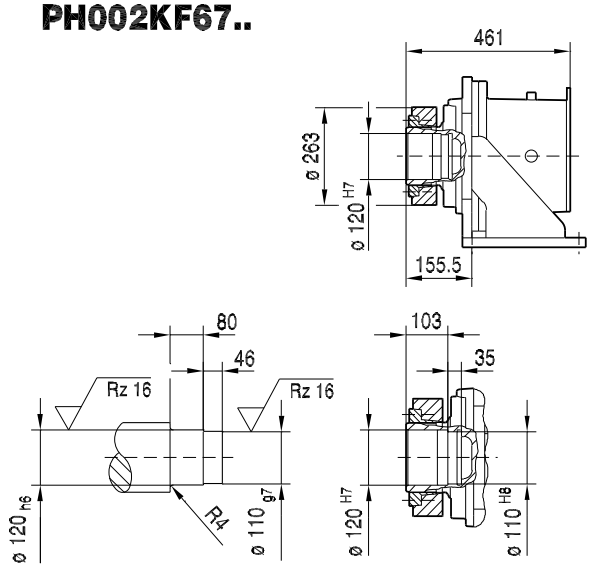
P_M [kW]	n_2 [min^{-1}]	M_a [Nm]	i_{ex}	F_{Ra} [N]	M_{N2} [Nm]					m [kg]	
45	**1.6**	259000	911	523000	245660						
	1.8	229100	806	523000	245660	**P**	**072KF127**	**DRS**	**225M4**	2630	220
	2.2	192500	677	523000	245660	**PF**	**072KF127**	**DRS**	**225M4**	2140	221
	2.7	155500	547	523000	245660	**PH**	**072KF127**	**DRS**	**225M4**	2680	220
	3.0	138500	487	523000	245660	**PHF**	**072KF127**	**DRS**	**225M4**	2190	221
	3.6	116400	409	523000	245660						
	2.1	198300	697	428700	185660						
	2.6	160200	563	456600	185660	**P**	**062KF127**	**DRS**	**225M4**	2210	216
	3.0	142700	502	467500	185660	**PF**	**062KF127**	**DRS**	**225M4**	1840	217
	3.5	119900	421	473000	185660	**PH**	**062KF127**	**DRS**	**225M4**	2200	216
	4.4	96800	341	473000	185660	**PHF**	**062KF127**	**DRS**	**225M4**	1830	217
	3.0	142700	502	326600	124060	**P**	**052KF127**	**DRS**	**225M4**	1720	212
	3.5	119900	421	351000	124060	**PF**	**052KF127**	**DRS**	**225M4**	1520	213
	4.4	96800	341	355400	124060	**PH**	**052KF127**	**DRS**	**225M4**	1720	212
						PHF	**052KF127**	**DRS**	**225M4**	1520	213
	4.4	96800	341	298900	100170	**P**	**042KF127**	**DRS**	**225M4**	1580	206
	5.1	82100	289	293300	100170	**PF**	**042KF127**	**DRS**	**225M4**	1390	207
	5.8	73100	257	283300	100170	**PH**	**042KF127**	**DRS**	**225M4**	1580	206
						PHF	**042KF127**	**DRS**	**225M4**	1390	207
	6.8	61400	216	217700	69620	**P**	**032KF127**	**DRS**	**225M4**	1330	200
	8.5	49600	175	204200	69620	**PF**	**032KF127**	**DRS**	**225M4**	1210	201
						PH	**032KF127**	**DRS**	**225M4**	1350	200
						PHF	**032KF127**	**DRS**	**225M4**	1230	201
55	**1.3**	408600	1175	594500	359400						
	1.4	360600	1037	641600	359400	**P**	**082KF157**	**DRS**	**225MC4**	3600	224
	1.6	312600	899	681400	359400	**PF**	**082KF157**	**DRS**	**225MC4**	2950	225
	1.8	278100	800	683000	359400	**PH**	**082KF157**	**DRS**	**225MC4**	3590	224
	2.2	239700	689	683000	359400	**PHF**	**082KF157**	**DRS**	**225MC4**	2940	225
	2.6	197600	568	523000	245660	**P**	**072KF157**	**DRS**	**225MC4**	2940	222
	3.1	167600	482	523000	245660	**PF**	**072KF157**	**DRS**	**225MC4**	2450	223
						PH	**072KF157**	**DRS**	**225MC4**	3000	222
						PHF	**072KF157**	**DRS**	**225MC4**	2510	223
	1.8	280000	806	521300	245660	**P**	**072KF127**	**DRS**	**225MC4**	2650	220
	2.2	235300	677	523000	245660	**PF**	**072KF127**	**DRS**	**225MC4**	2160	221
	3.0	169300	487	523000	245660	**PH**	**072KF127**	**DRS**	**225MC4**	2700	220
	3.6	142300	409	523000	245660	**PHF**	**072KF127**	**DRS**	**225MC4**	2210	221
	2.6	195800	563	430800	185660	**P**	**062KF127**	**DRS**	**225MC4**	2230	216
	3.0	174400	502	446900	185660	**PF**	**062KF127**	**DRS**	**225MC4**	1860	217
	3.5	146600	421	465100	185660	**PH**	**062KF127**	**DRS**	**225MC4**	2220	216
	4.4	118400	341	473000	185660	**PHF**	**062KF127**	**DRS**	**225MC4**	1850	217
	4.4	118400	341	352500	124060	**P**	**052KF127**	**DRS**	**225MC4**	1740	212
	5.1	100300	289	338200	124060	**PF**	**052KF127**	**DRS**	**225MC4**	1540	213
						PH	**052KF127**	**DRS**	**225MC4**	1740	212
						PHF	**052KF127**	**DRS**	**225MC4**	1540	213
	5.8	89400	257	283300	100170	**P**	**042KF127**	**DRS**	**225MC4**	1600	206
	6.8	75100	216	268900	100170	**PF**	**042KF127**	**DRS**	**225MC4**	1410	207
	8.5	60600	175	252200	100170	**PH**	**042KF127**	**DRS**	**225MC4**	1600	206
						PHF	**042KF127**	**DRS**	**225MC4**	1410	207
	8.5	60600	175	204200	69620	**P**	**032KF127**	**DRS**	**225MC4**	1350	200
						PF	**032KF127**	**DRS**	**225MC4**	1230	201
						PH	**032KF127**	**DRS**	**225MC4**	1370	200
						PHF	**032KF127**	**DRS**	**225MC4**	1250	201
75	**1.8**	379300	800	624200	359400	**P**	**082KF157**	**DV**	**280S4**	3850	224
	2.2	326900	689	670200	359400	**PF**	**082KF157**	**DV**	**280S4**	3200	225
						PH	**082KF157**	**DV**	**280S4**	3850	224
						PHF	**082KF157**	**DV**	**280S4**	3200	225
	2.6	269500	568	523000	245660						
	3.1	228600	482	523000	245660	**P**	**072KF157**	**DV**	**280S4**	3200	222
	3.5	202500	429	523000	245660	**PF**	**072KF157**	**DV**	**280S4**	2700	223
	4.0	174600	369	523000	245660	**PH**	**072KF157**	**DV**	**280S4**	3250	222
	5.0	141800	300	494900	245660	**PHF**	**072KF157**	**DV**	**280S4**	2760	223
	5.8	120300	254	471200	245660						
	4.4	161400	341	455800	185660	**P**	**062KF127**	**DV**	**280S4**	2480	216
						PF	**062KF127**	**DV**	**280S4**	2120	217
						PH	**062KF127**	**DV**	**280S4**	2470	216
						PHF	**062KF127**	**DV**	**280S4**	2110	217
	8.5	82700	175	290900	124060	**P**	**052KF127**	**DV**	**280S4**	2000	212
						PF	**052KF127**	**DV**	**280S4**	1800	213
						PH	**052KF127**	**DV**	**280S4**	1990	212
						PHF	**052KF127**	**DV**	**280S4**	1790	213
	8.5	82700	175	252200	100170	**P**	**042KF127**	**DV**	**280S4**	1850	206
						PF	**042KF127**	**DV**	**280S4**	1660	207
						PH	**042KF127**	**DV**	**280S4**	1860	206
						PHF	**042KF127**	**DV**	**280S4**	1670	207

11.3 Dimensions sheets [mm]

P002KF67..



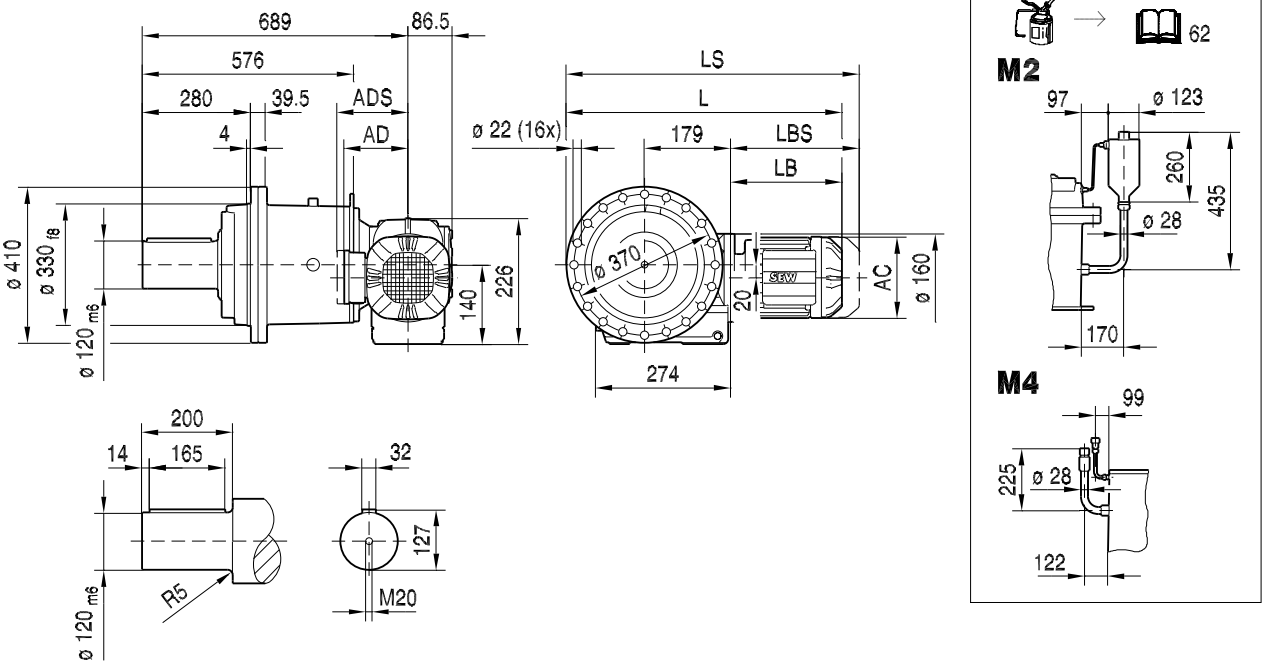
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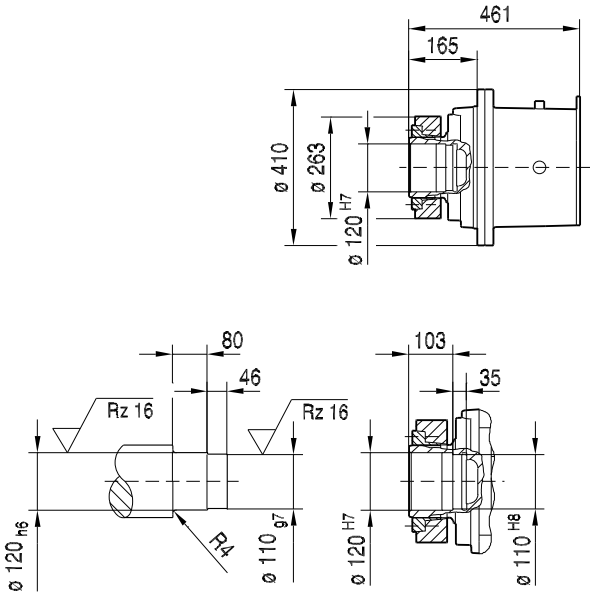
(→ 73)	DR80S	DR80M	DR90M	DR90L	DR100M	DR100L/LC		
AC	156	156	179	179	197	197		
AD	128	128	140	140	157	157		
ADS	139	139	150	150	158	158		
L	677	708	710	730	760	790		
LS	758	789	803	823	853	883		
LB	230	261	263	283	313	343		
LBS	311	342	356	376	406	436		

PF002KF67..

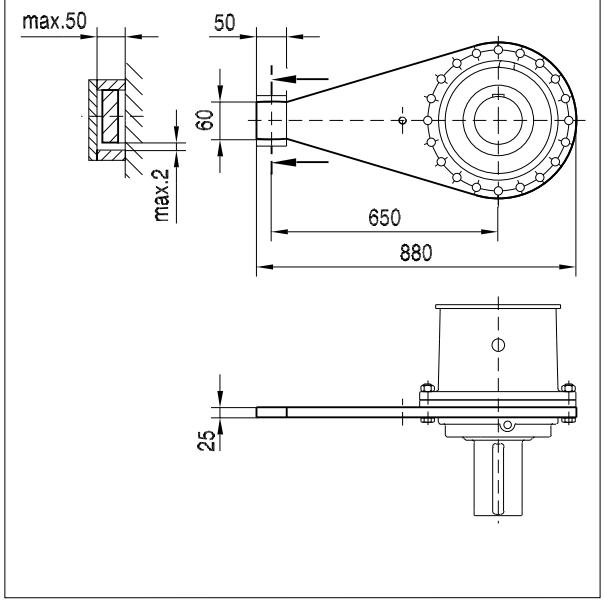
45 087 01 08



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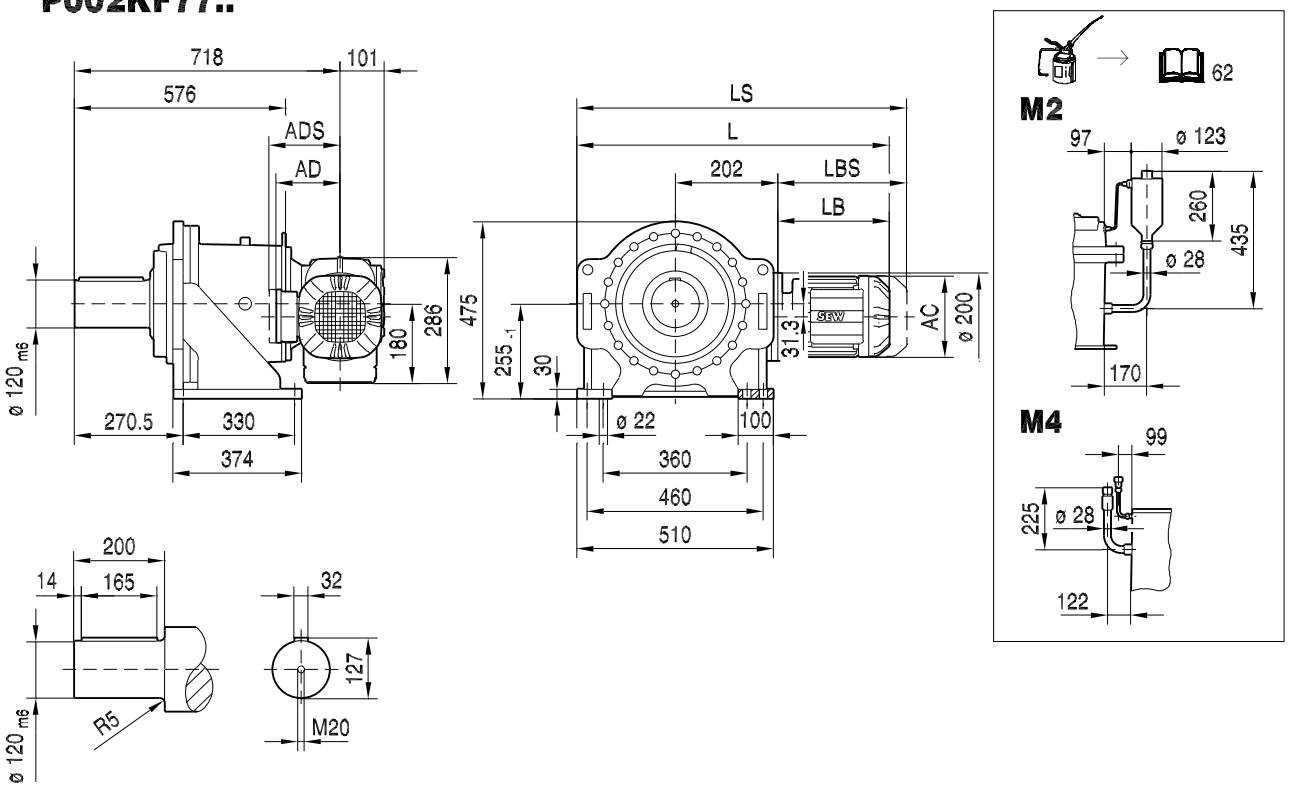
P..002/T..



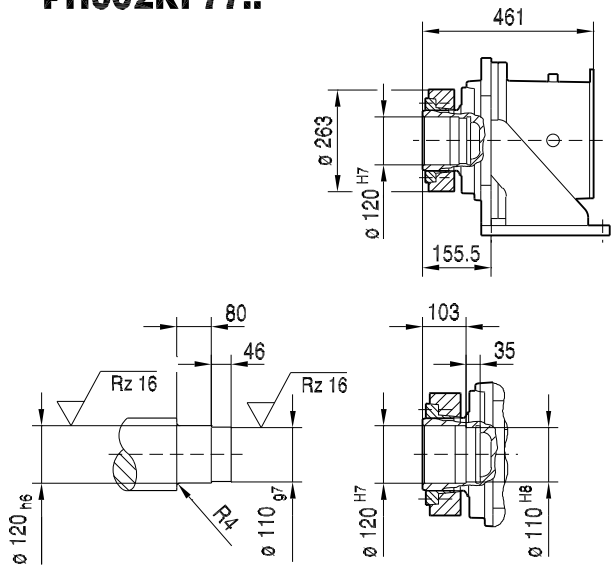
(→ 73)	DR80S	DR80M	DR90M	DR90L	DR100M	DR100L/LC		
AC	156	156	179	179	197	197		
AD	128	128	140	140	157	157		
ADS	139	139	150	150	158	158		
L	608	639	641	661	691	721		
LS	689	720	734	754	784	814		
LB	230	261	263	283	313	343		
LBS	311	342	356	376	406	436		

P002KF77..

45 060 01 08



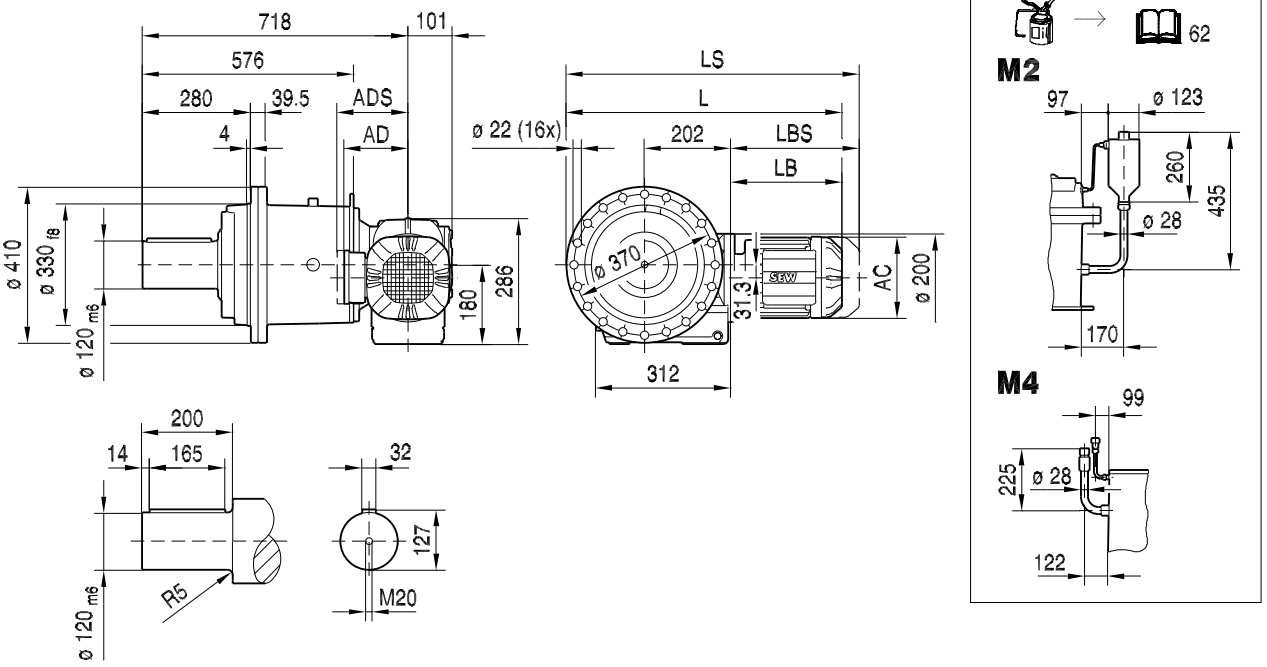
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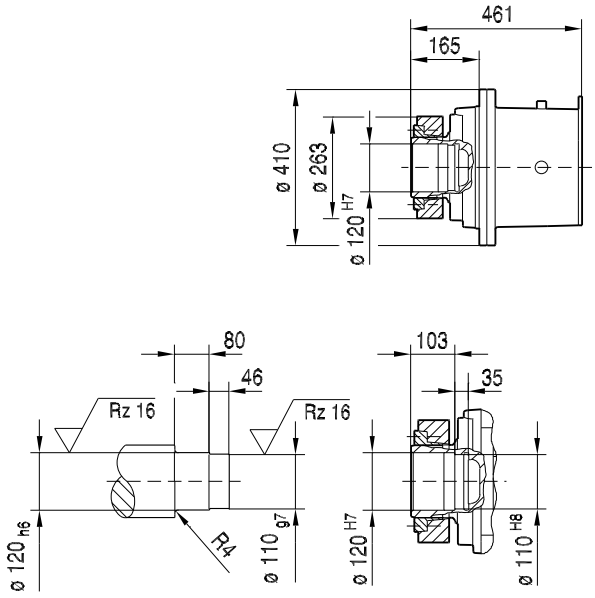
(→ 📖 73)	DR80S	DR80M	DR90M	DR90L	DR100M	DR100L/LC	DR132S	DR132M/MC
AC	156	156	179	179	197	197	221	221
AD	128	128	140	140	157	157	170	170
ADS	139	139	150	150	158	158	172	172
L	693	724	726	746	776	806	849	899
LS	774	805	819	839	869	899	961	1011
LB	223	254	256	276	306	336	379	429
LBS	304	335	349	369	399	429	491	541

PF002KF77..

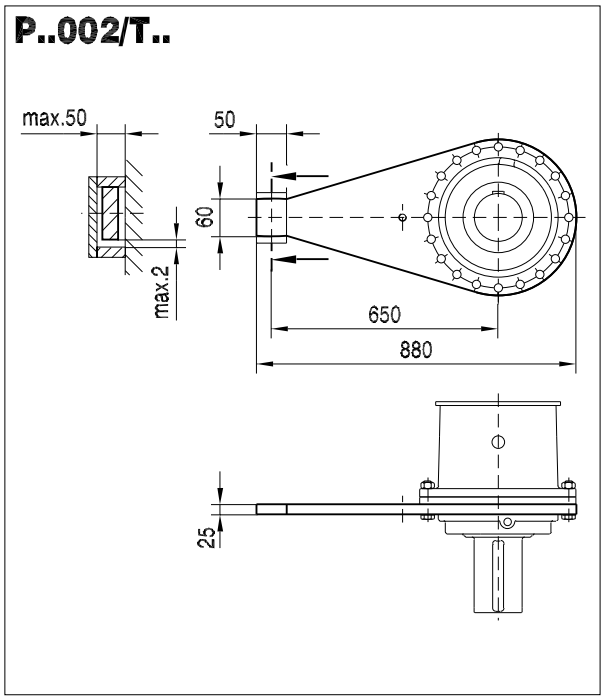
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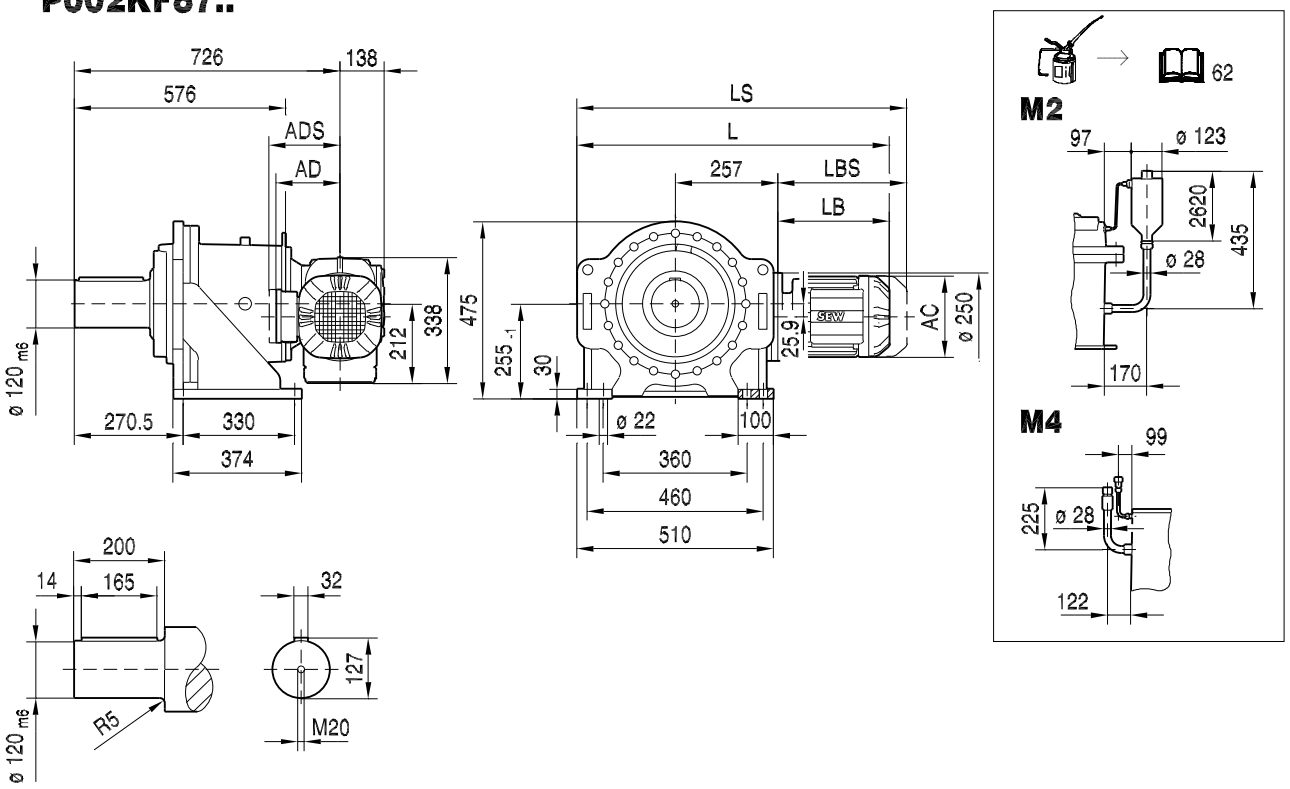
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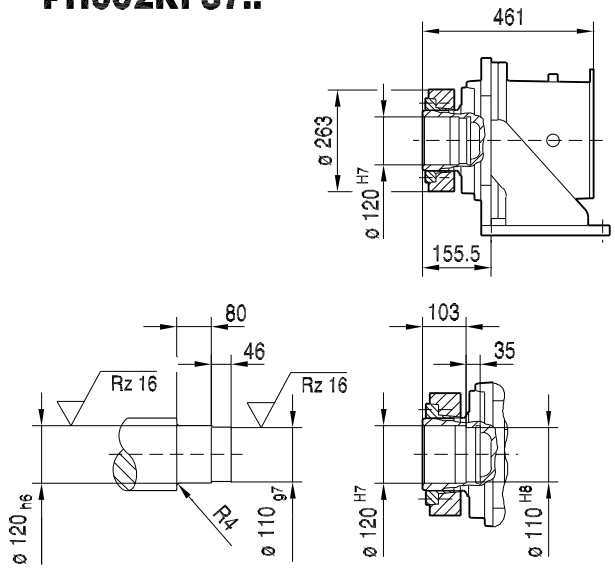
(→ 📖 73)	DR80S	DR80M	DR90M	DR90L	DR100M	DR100L/LC	DR132S	DR132M/MC
AC	156	156	179	179	197	197	221	221
AD	128	128	140	140	157	157	170	170
ADS	139	139	150	150	158	158	172	172
L	624	655	657	677	707	737	780	830
LS	705	736	750	770	800	830	892	942
LB	223	254	256	276	306	336	379	429
LBS	304	335	349	369	399	429	491	541

P002KF87..

45 061 01 08



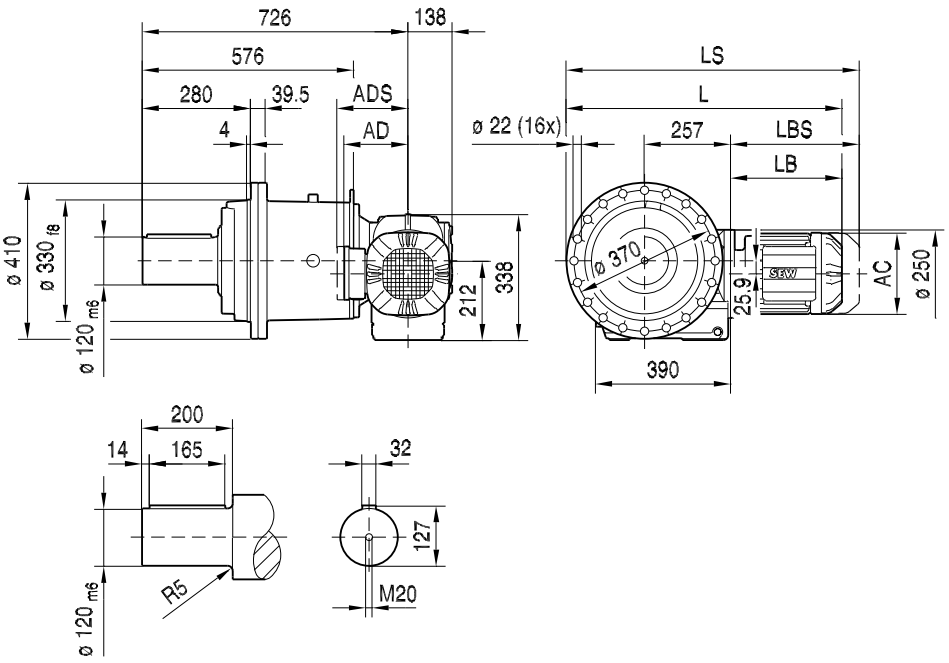
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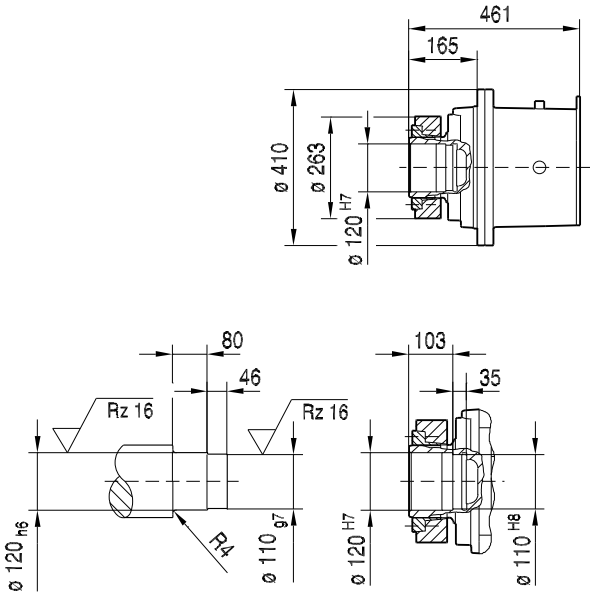
(→ 📖 73)	DR132M/MC	DR160..						
AC	221	270						
AD	170	228						
ADS	172	228						
L	949	990						
LS	1061	1127						
LB	424	465						
LBS	536	602						

PF002KF87..

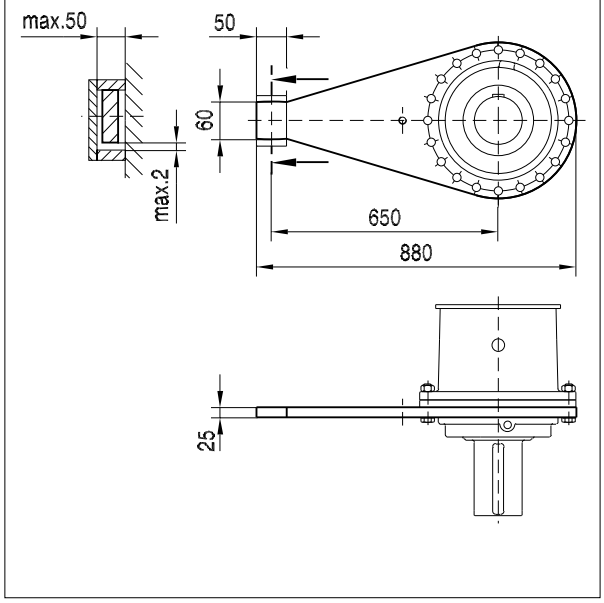
45 089 01 08



PHF002KF87..



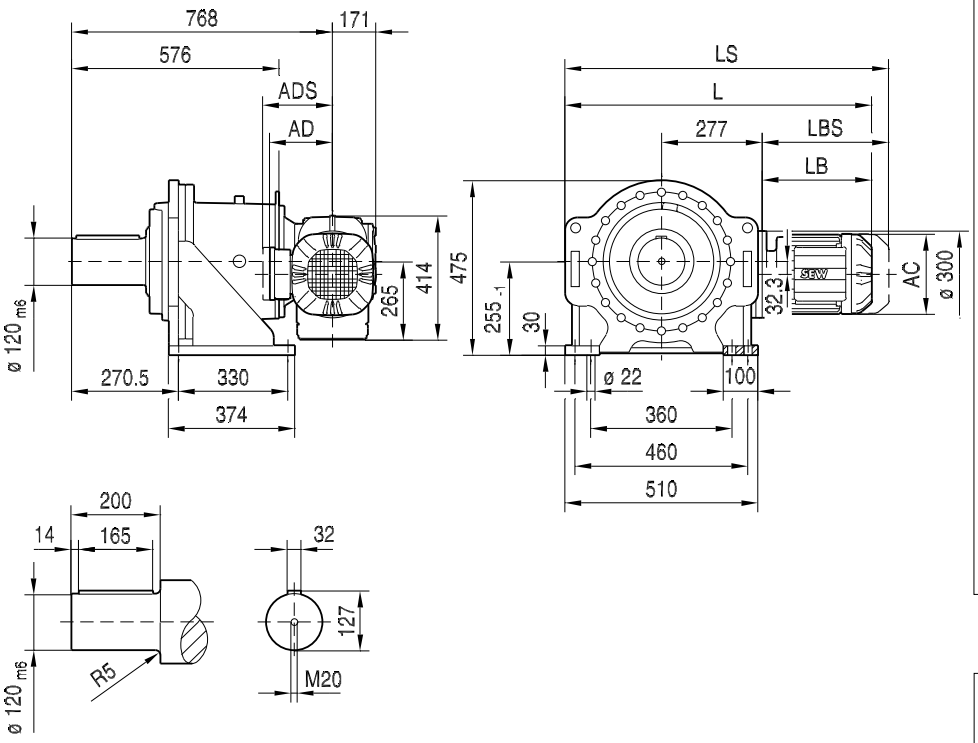
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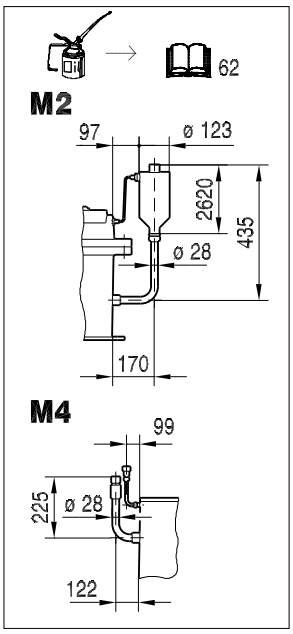


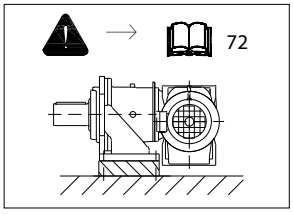
(→ 73)	DR132M/MC	DR160..						
AC	221	270						
AD	170	228						
ADS	172	228						
L	880	921						
LS	992	1058						
LB	424	465						
LBS	536	602						

45 062 01 08

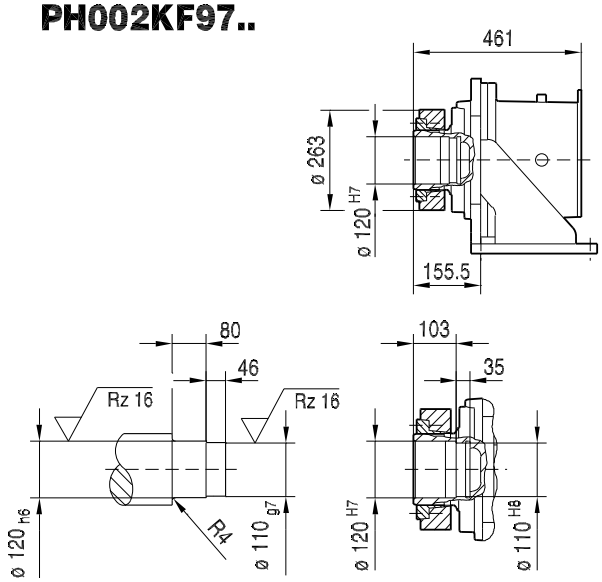
P002KF97..







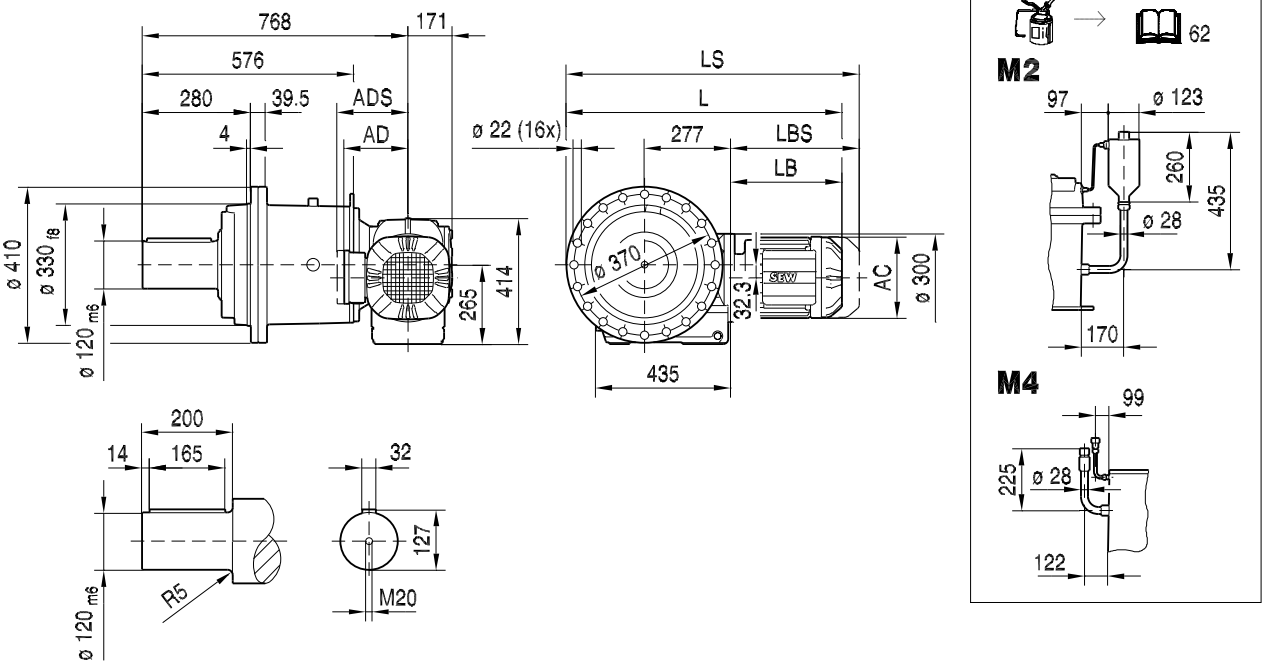
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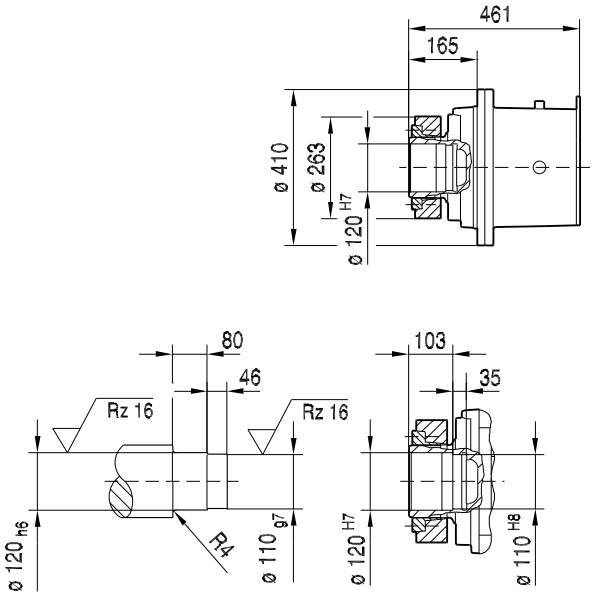
(→ 73)	DR160..	DR180S/M						
AC	270	316						
AD	228	253						
ADS	228	253						
L	1005	1074						
LS	1142	1263						
LB	460	529						
LBS	597	718						

PF002KF97..

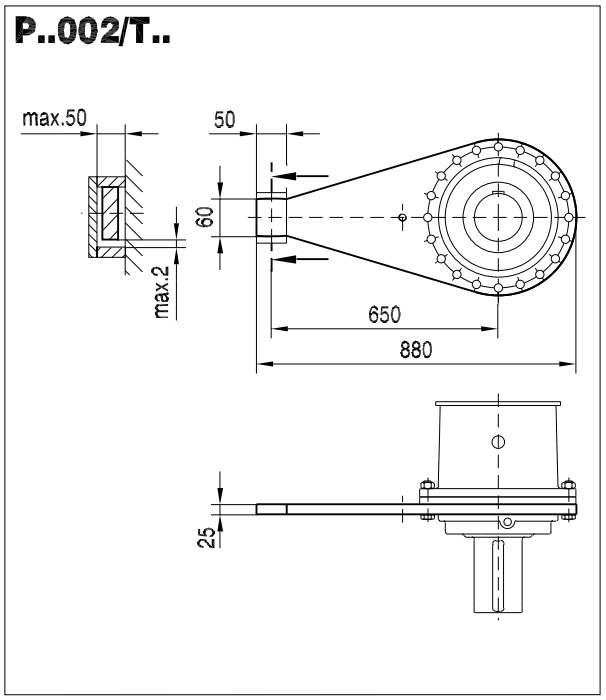
45 090 01 08



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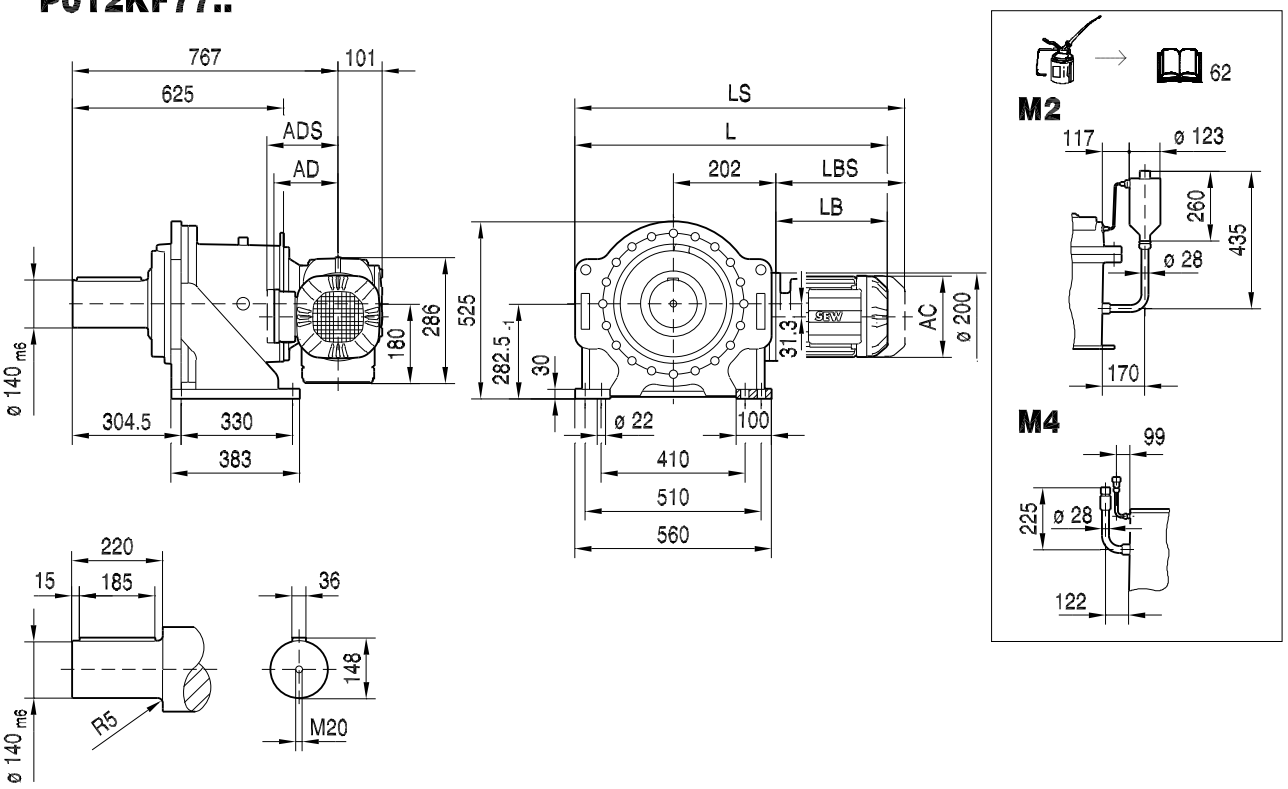
P..002/T..



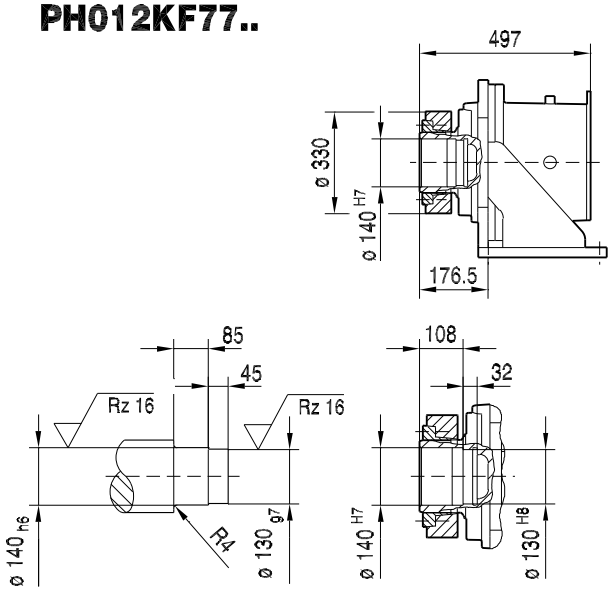
(→ 73)	DR160..	DR180S/M						
AC	270	316						
AD	228	253						
ADS	228	253						
L	936	1005						
LS	1073	1194						
LB	460	529						
LBS	597	718						

P012KF77..

45 063 01 08



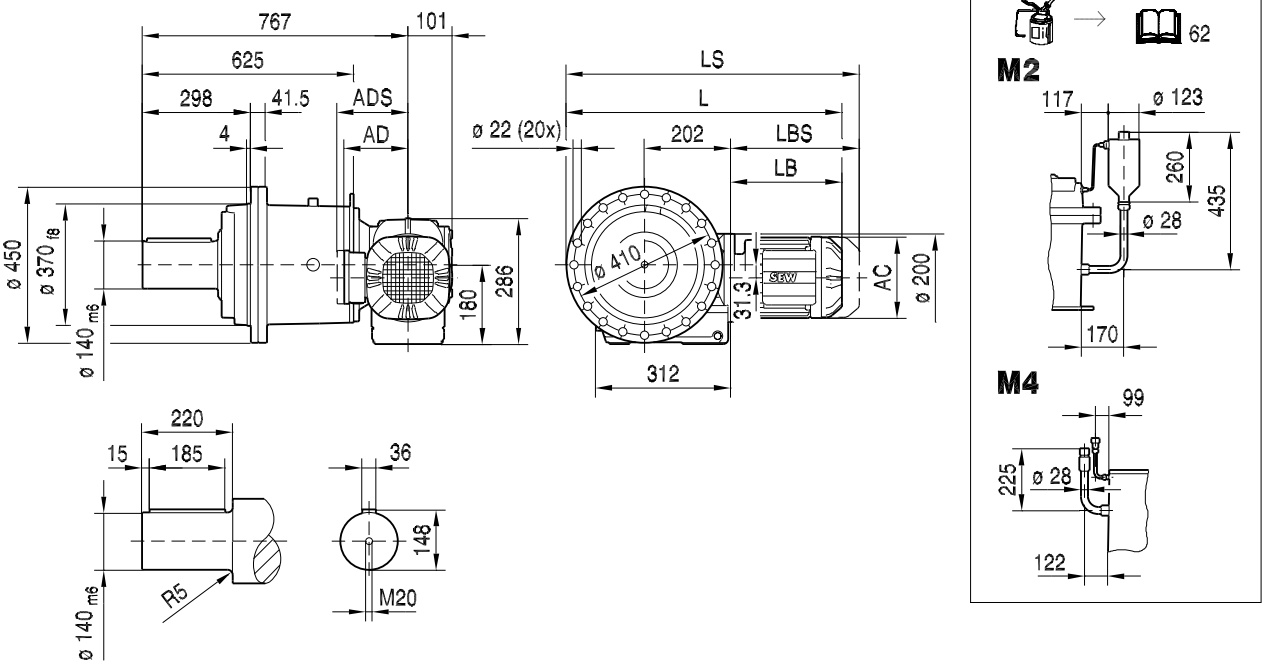
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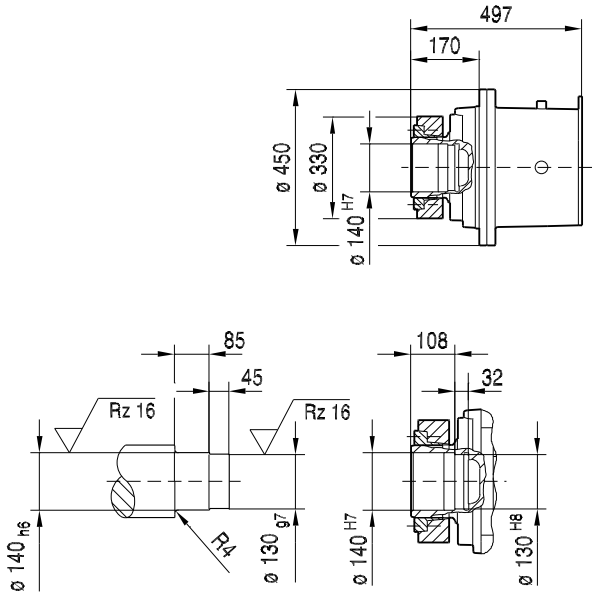
(→ 73)	DR80S	DR80M	DR90M	DR90L	DR100M	DR100L/LC	DR132S	DR132M/MC
AC	156	156	179	179	197	197	221	221
AD	128	128	140	140	157	157	170	170
ADS	139	139	150	150	158	158	172	172
L	721	752	754	774	804	834	877	927
LS	802	833	847	867	897	927	989	1039
LB	223	254	256	276	306	336	379	429
LBS	304	335	349	369	399	429	491	541

PF012KF77..

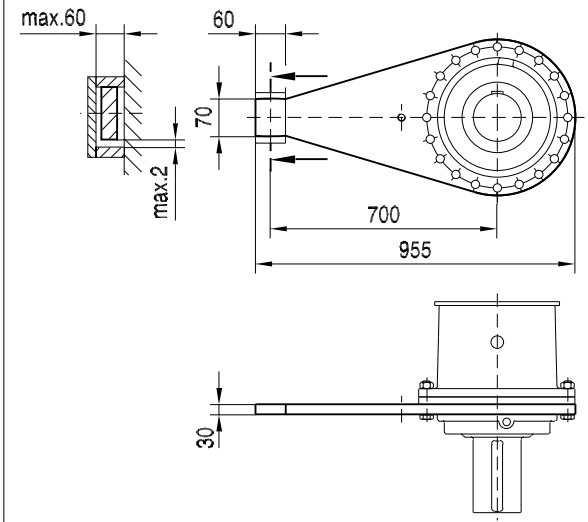
45 091 01 08



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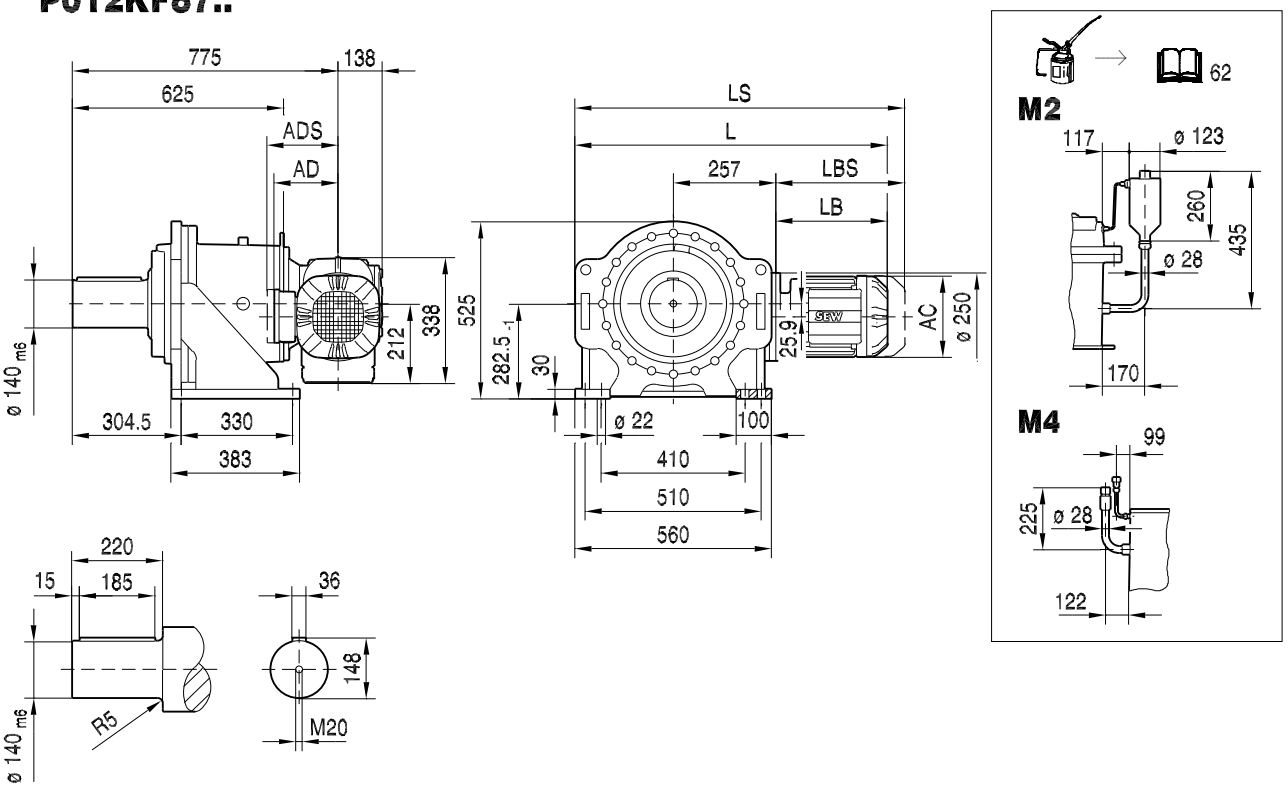
P..012/T..



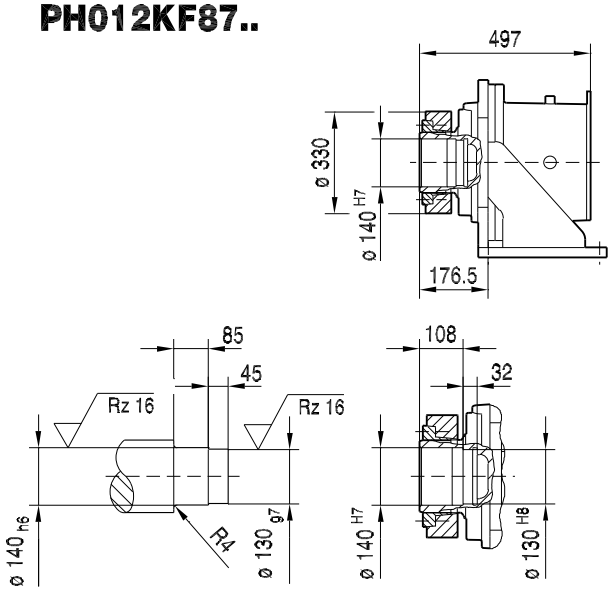
(→ 73)	DR80S	DR80M	DR90M	DR90L	DR100M	DR100L/LC	DR132S	DR132M/MC
AC	156	156	179	179	197	197	221	221
AD	128	128	140	140	157	157	170	170
ADS	139	139	150	150	158	158	172	172
L	650	681	683	703	733	763	806	856
LS	731	762	776	796	826	856	918	968
LB	223	254	256	276	306	336	379	429
LBS	304	335	349	369	399	429	491	541

P012KF87..

45 064 01 08



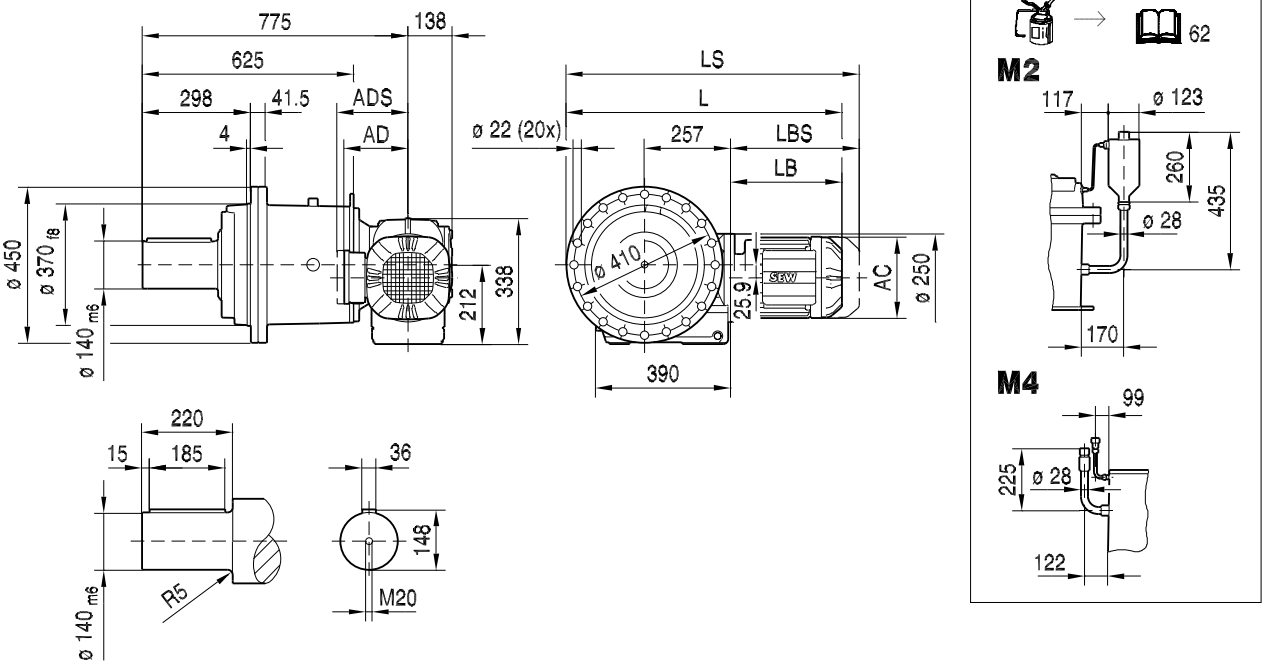
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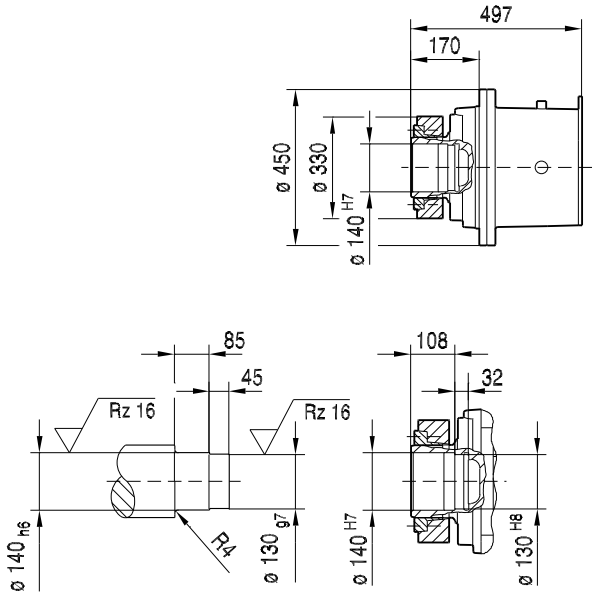
(→ 73)	DR80S	DR80M	DR90M	DR90L	DR100M	DR100L/LC	DR132S	DR132M/MC	DR160..
AC	156	156	179	179	197	197	221	221	270
AD	128	128	140	140	157	157	170	170	228
ADS	139	139	150	150	158	158	172	172	228
L	771	802	804	824	854	884	927	977	1018
LS	852	883	897	917	947	977	1039	1089	1155
LB	218	249	251	271	301	331	374	424	465
LBS	299	330	344	364	394	424	486	536	602

PF012KF87..

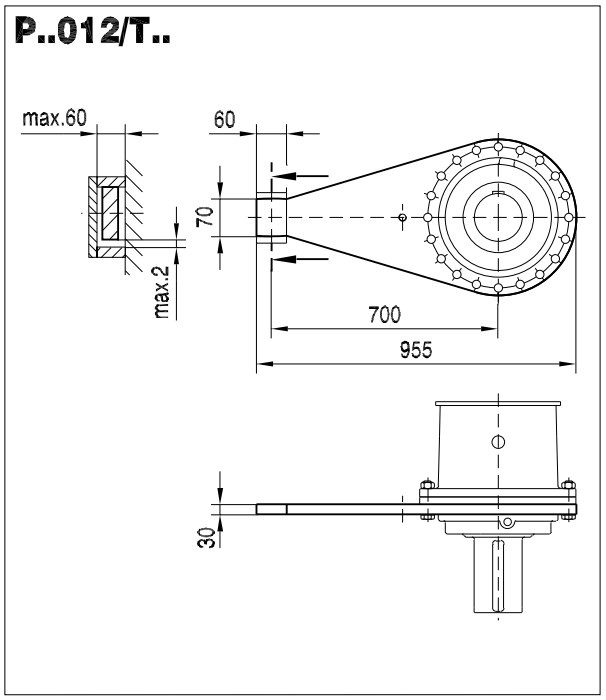
45 092 01 08



PHF012KF87..



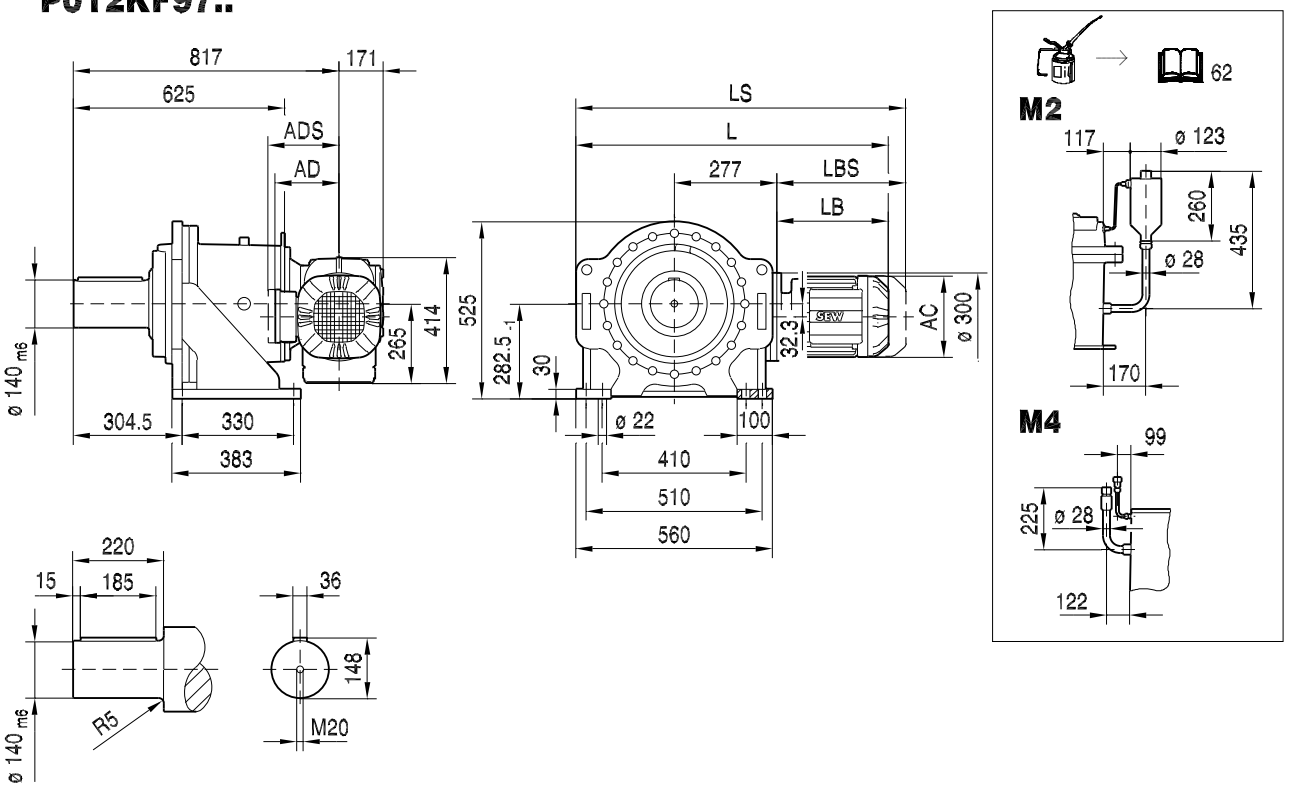
P..012/T..



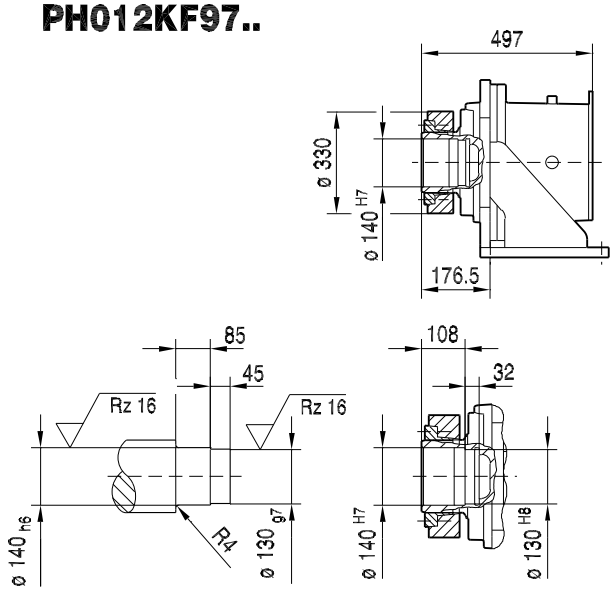
(→ 73)	DR80S	DR80M	DR90M	DR90L	DR100M	DR100L/LC	DR132S	DR132M/MC	DR160..
AC	156	156	179	179	197	197	221	221	270
AD	128	128	140	140	157	157	170	170	228
ADS	139	139	150	150	158	158	172	172	228
L	700	731	733	753	783	813	856	906	947
LS	781	812	826	846	876	906	968	1018	1084
LB	218	249	251	271	301	331	374	424	465
LBS	299	330	344	364	394	424	486	536	602

P012KF97..

45 065 01 08



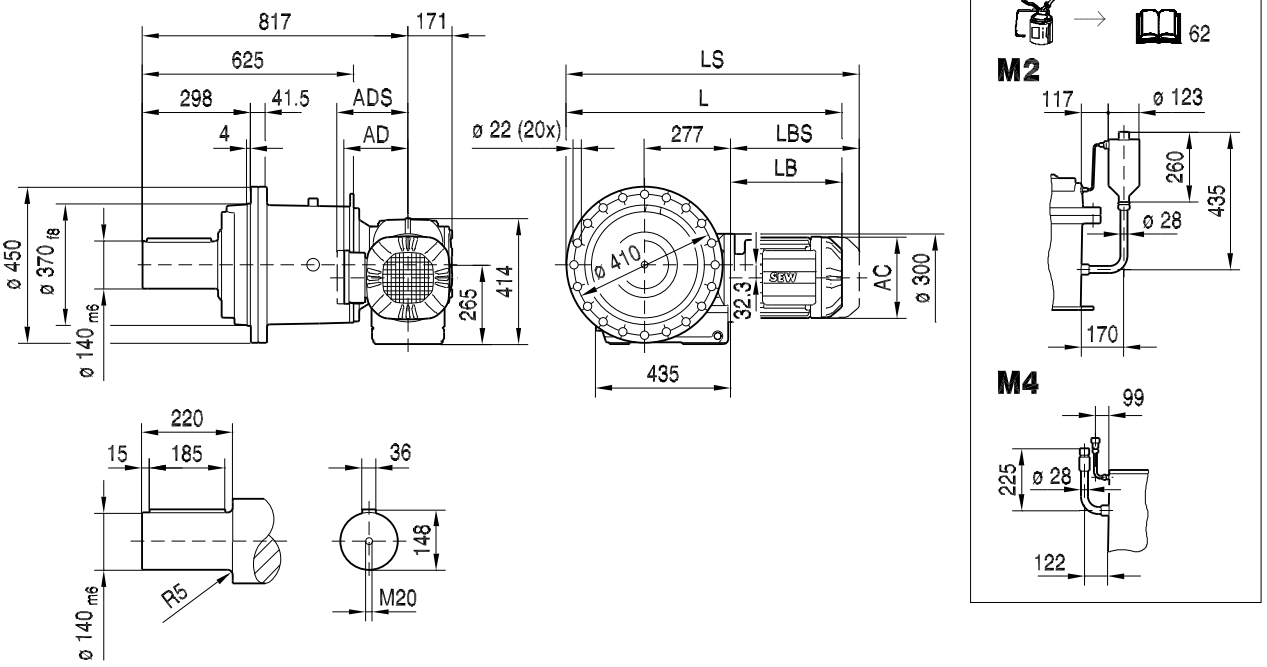
PH012KF97..



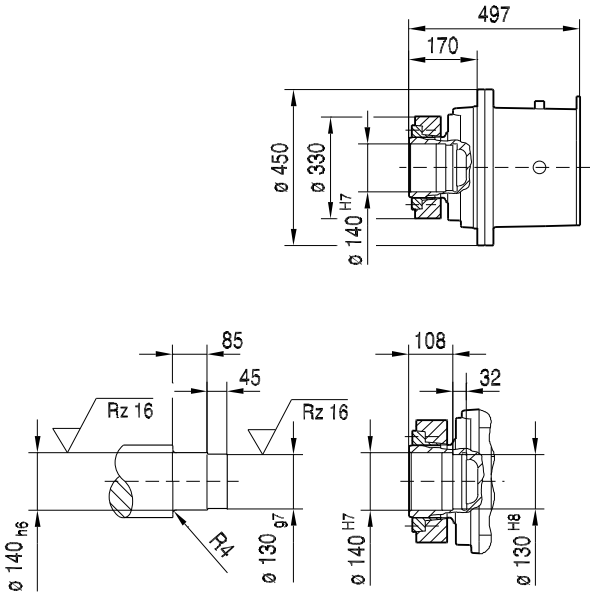
(→ 73)	DR132M/MC	DR160..	DR180S/M	DR180L/LC				
AC	221	270	316	316				
AD	170	228	253	253				
ADS	172	228	253	253				
L	992	1033	1102	1162				
LS	1104	1170	1291	1351				
LB	419	460	529	589				
LBS	531	597	718	778				

PF012KF97..

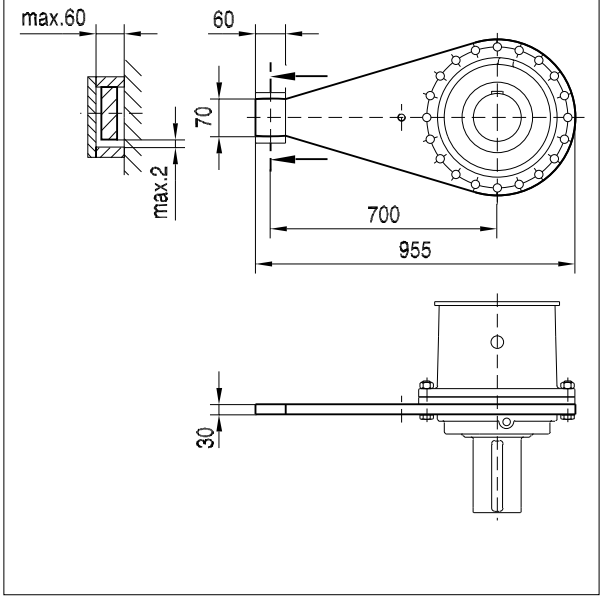
45 093 01 08



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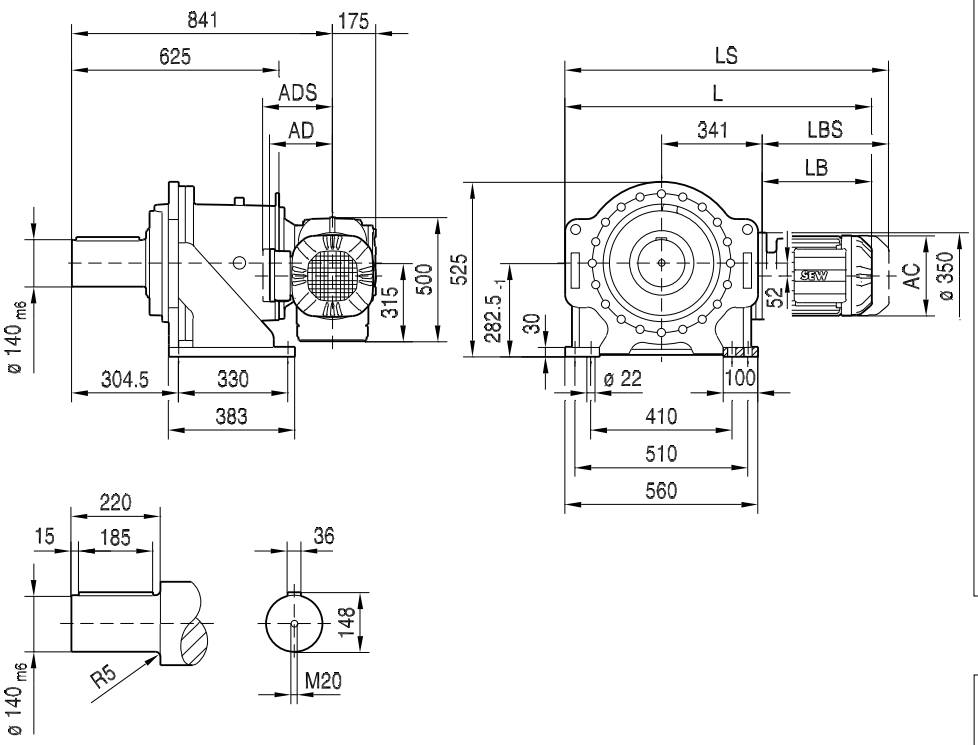
P..012/T..

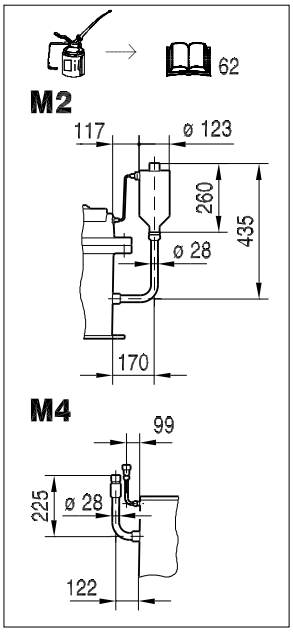


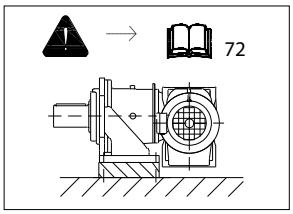
(→ 73)	DR132M/MC	DR160..	DR180S/M	DR180L/LC				
AC	221	270	316	316				
AD	170	228	253	253				
ADS	172	228	253	253				
L	921	962	1031	1091				
LS	1033	1099	1220	1280				
LB	419	460	529	589				
LBS	531	597	718	778				

P012KF107..

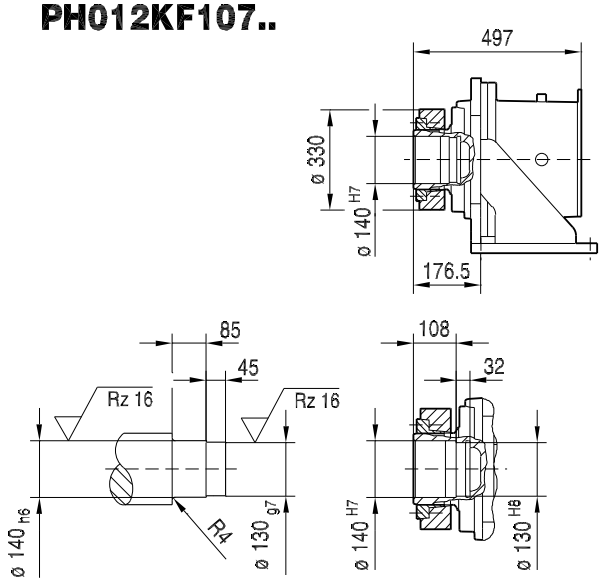
45 066 01 08







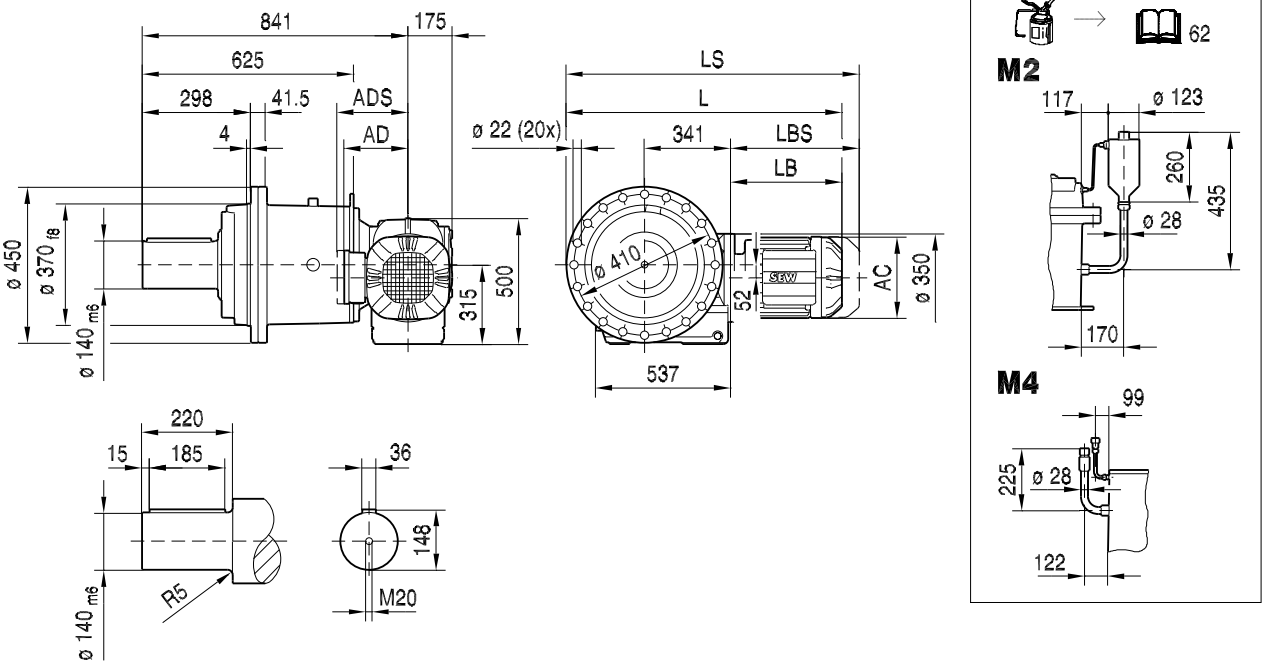
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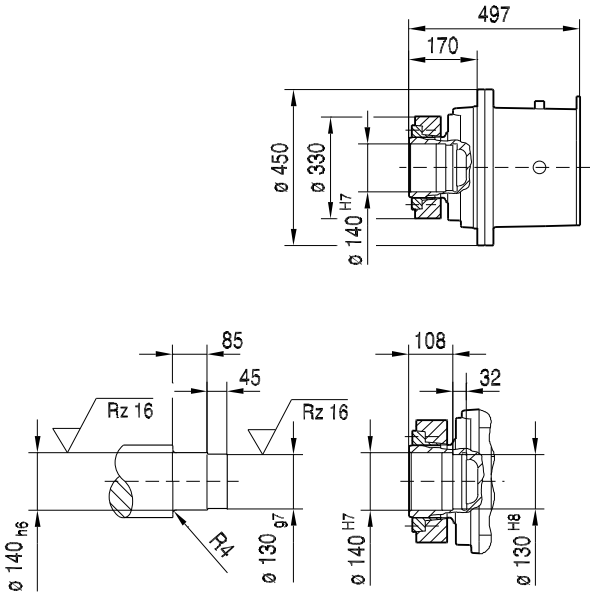
(→ 73)	DR180L/LC							
AC	316							
AD	253							
ADS	253							
L	1220							
LS	1409							
LB	583							
LBS	772							

PF012KF107..

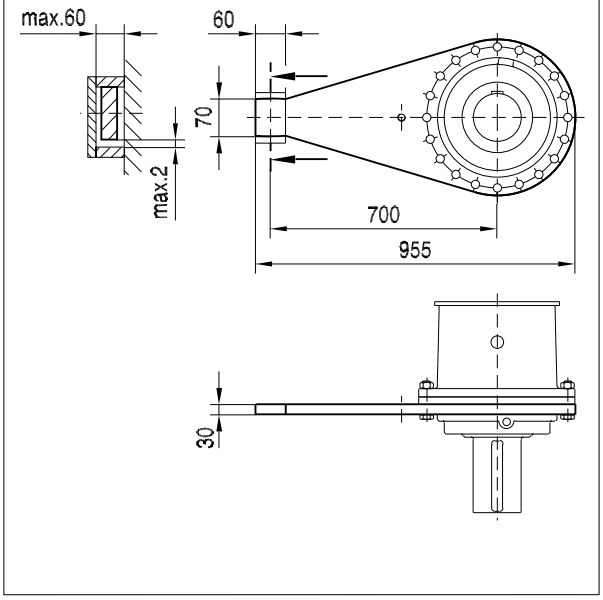
45 094 01 08



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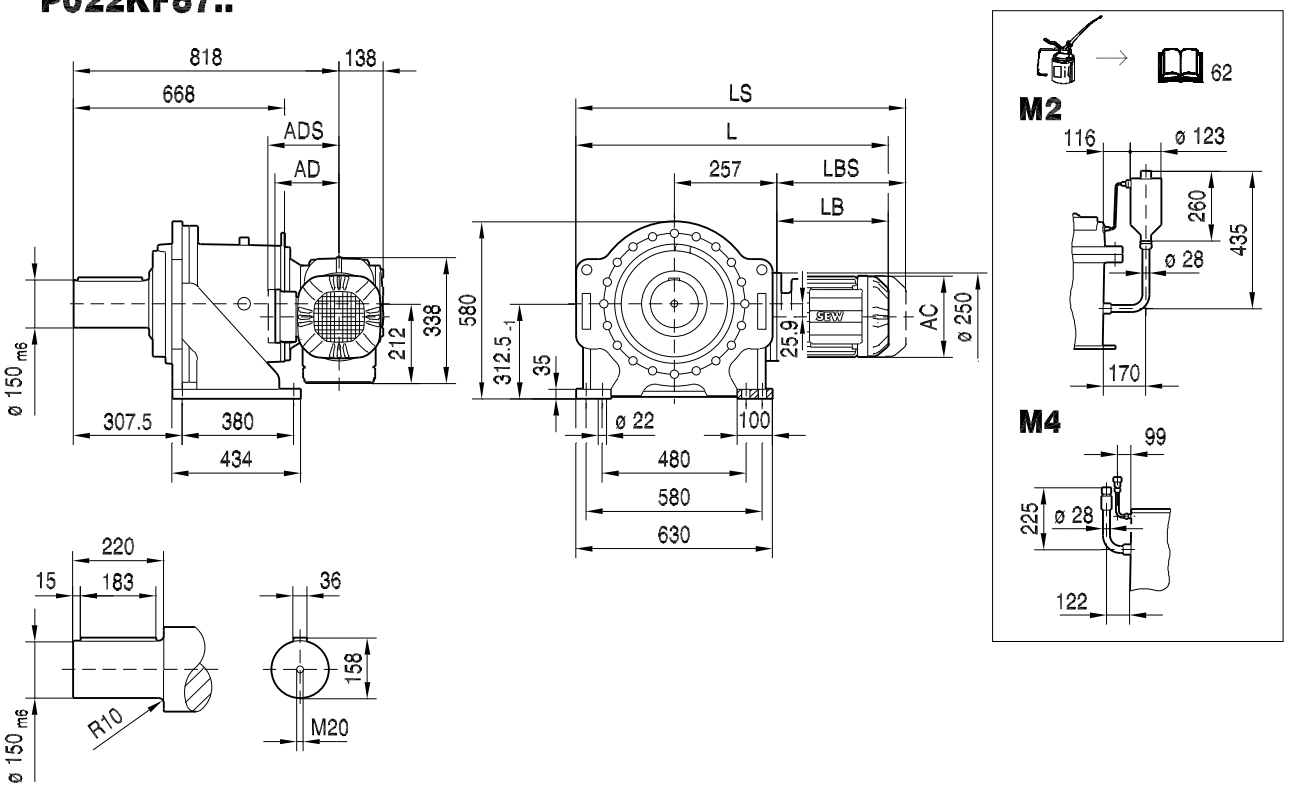
P..012/T..



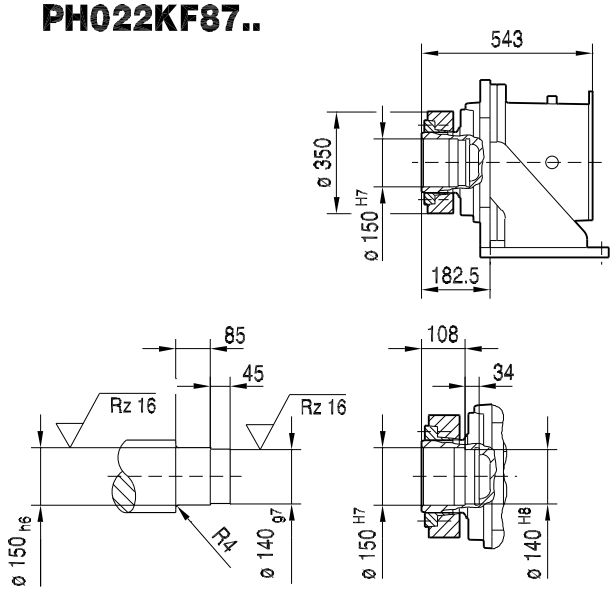
(→ 73)	DR180L/LC							
AC	316							
AD	253							
ADS	253							
L	1149							
LS	1338							
LB	583							
LBS	772							

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45 067 01 08



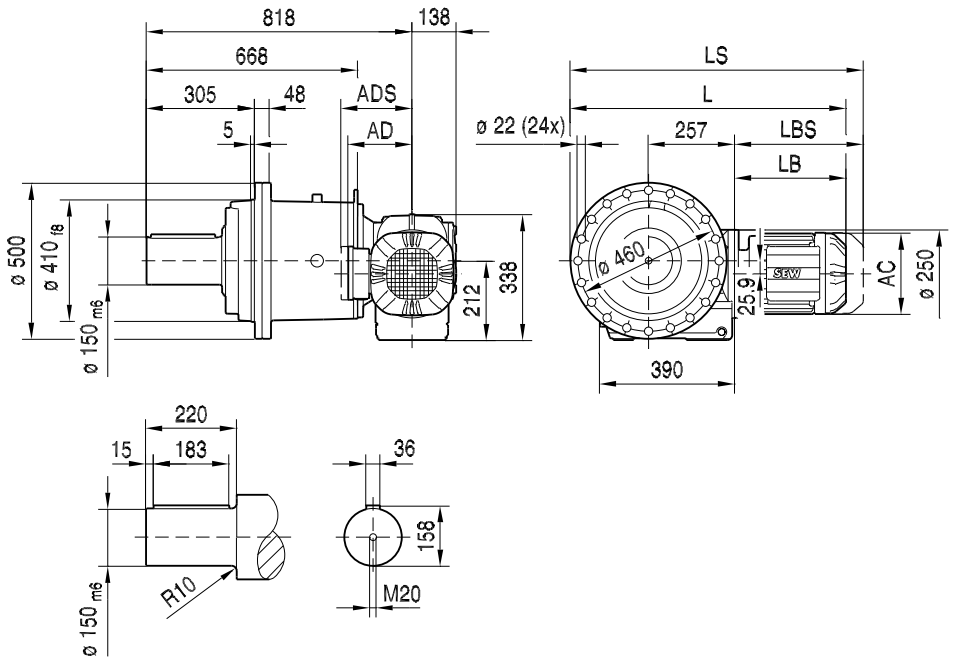
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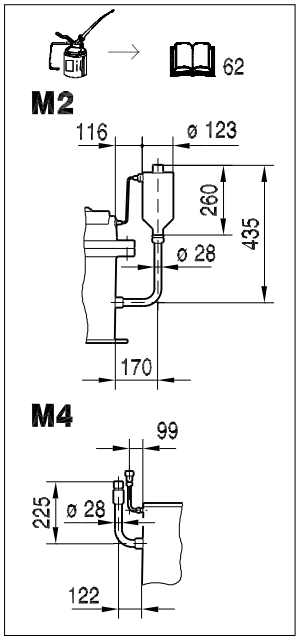


(→ 📖 73)	DR80M	DR90M	DR90L	DR100M	DR100L/LC	DR132S	DR132M/MC	DR160..
AC	156	179	179	197	197	221	221	270
AD	128	140	140	157	157	170	170	228
ADS	139	150	150	158	158	172	172	228
L	829	831	851	881	911	954	1004	1045
LS	910	924	944	974	1004	1066	1116	1182
LB	249	251	271	301	331	374	424	465
LBS	330	344	364	394	424	486	536	602

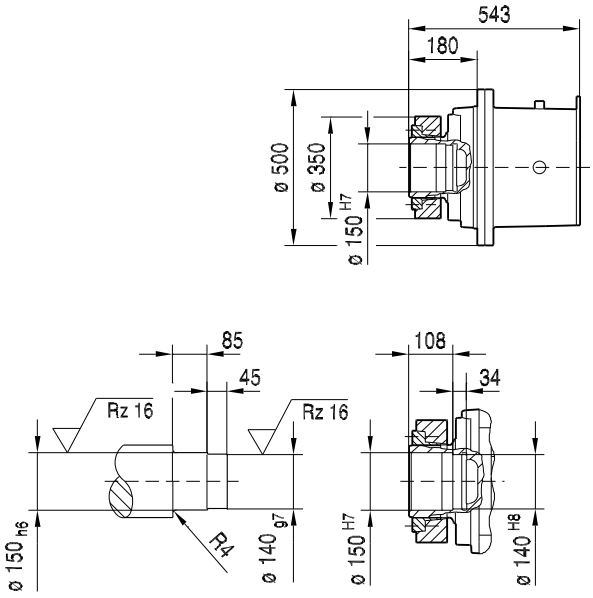
PF022KF87..

45 095 01 08

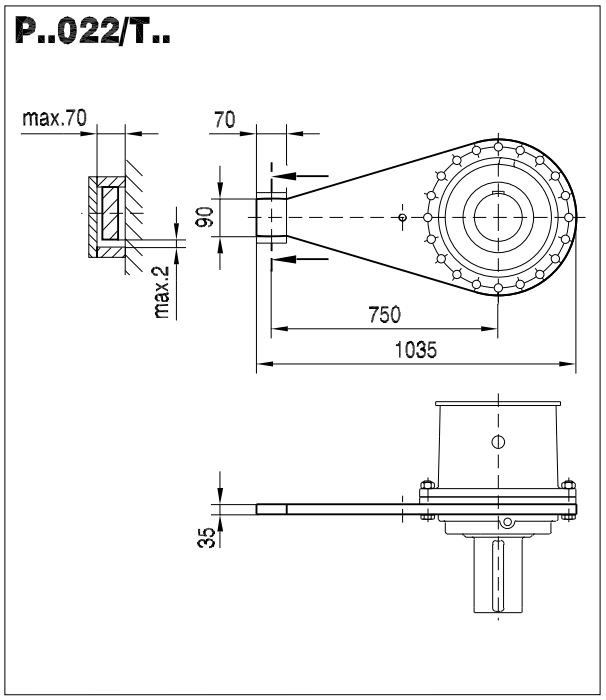




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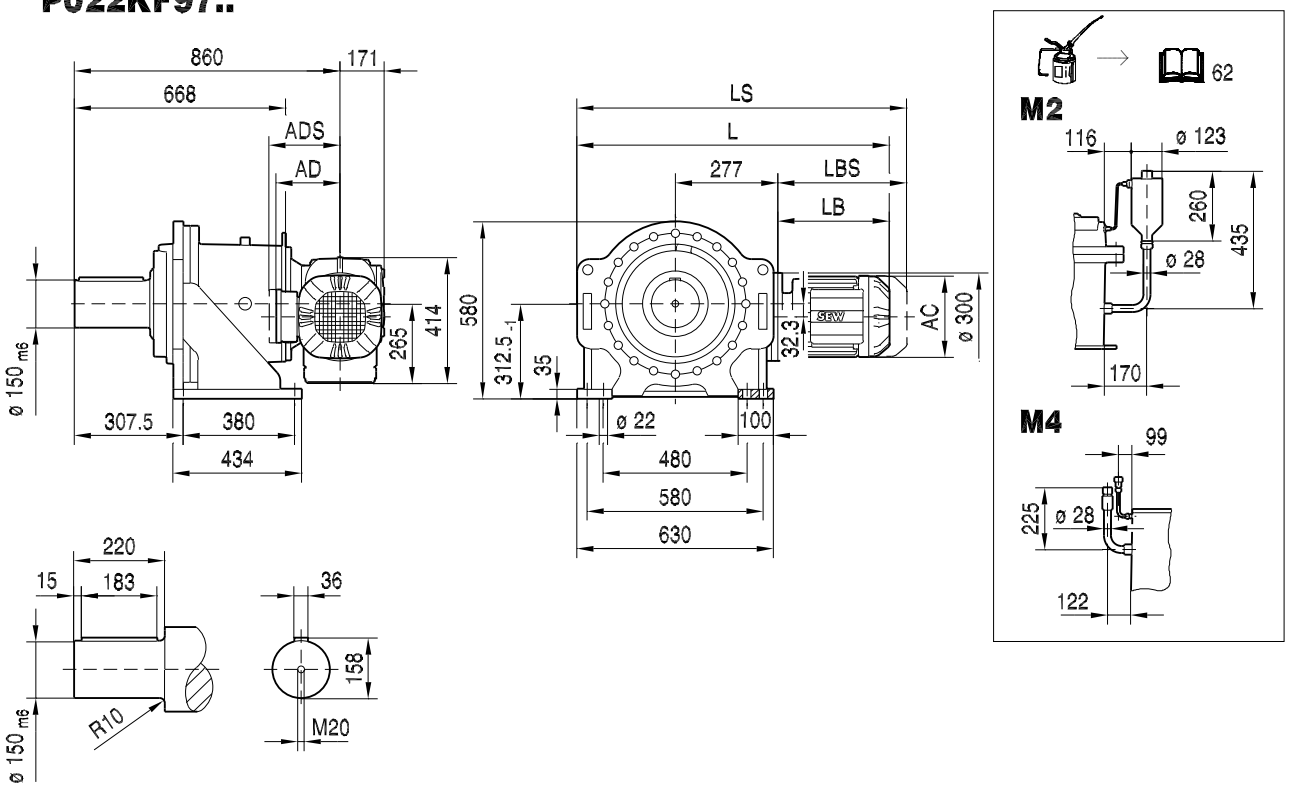
P..022/T..



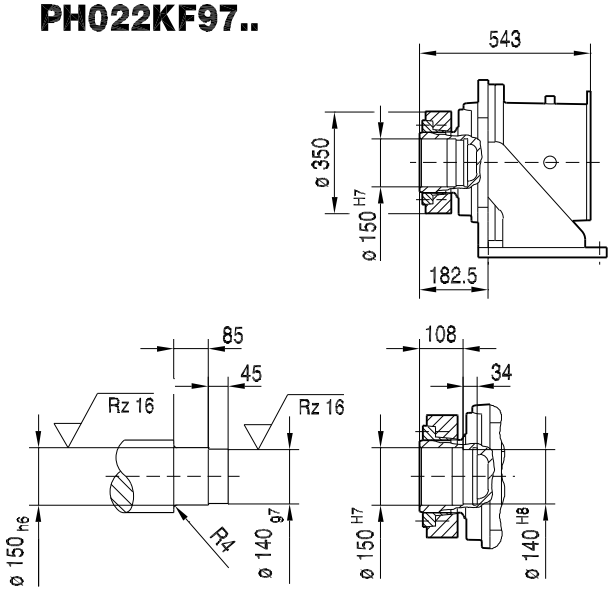
(→ 73)	DR80M	DR90M	DR90L	DR100M	DR100L/LC	DR132S	DR132M/MC	DR160..
AC	156	179	179	197	197	221	221	270
AD	128	140	140	157	157	170	170	228
ADS	139	150	150	158	158	172	172	228
L	756	758	778	808	838	881	931	972
LS	837	851	871	901	931	993	1043	1109
LB	249	251	271	301	331	374	424	465
LBS	330	344	364	394	424	486	536	602

P022KF97..

45 068 01 08



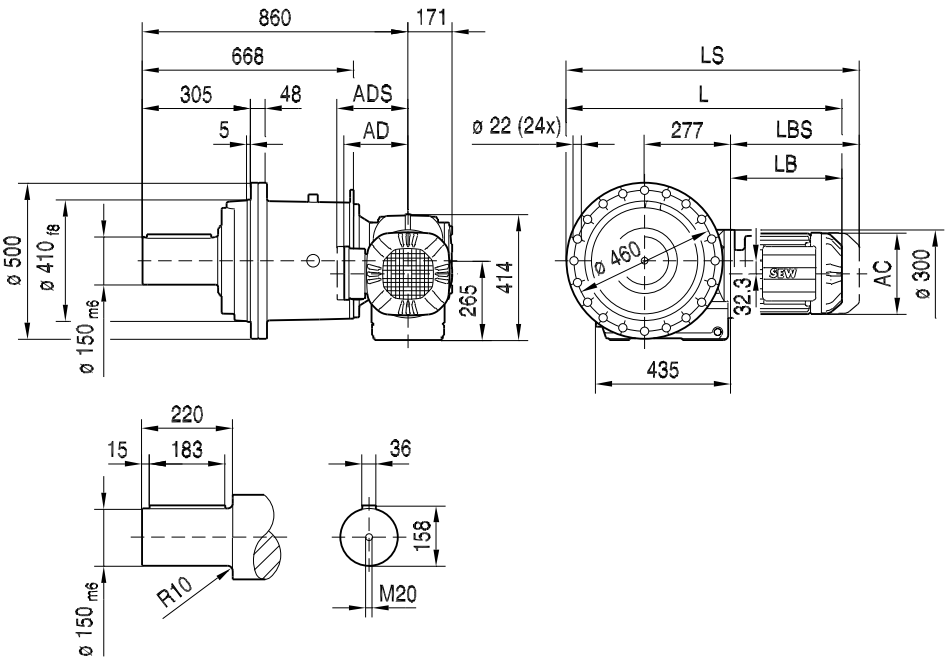
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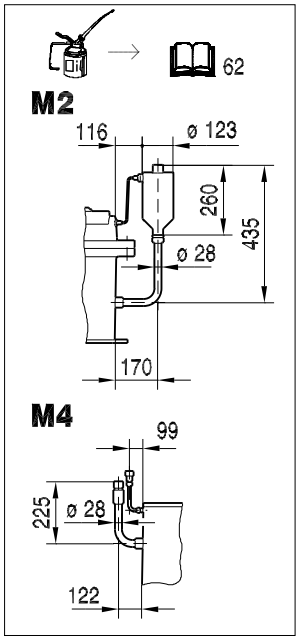


(→ 73)	DR132M/MC	DR160..	DR180S/M	DR180L/LC				
AC	221	270	316	316				
AD	170	228	253	253				
ADS	172	228	253	253				
L	1019	1060	1129	1189				
LS	1131	1197	1318	1378				
LB	419	460	529	589				
LBS	531	597	718	778				

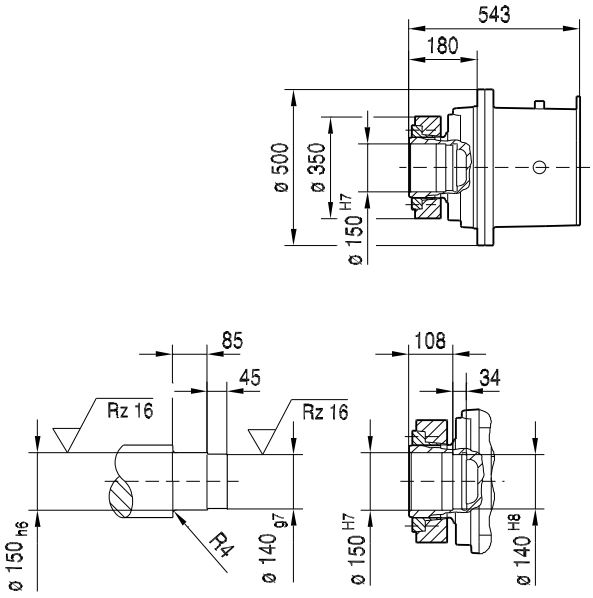
PF022KF97..

45 096 01 08

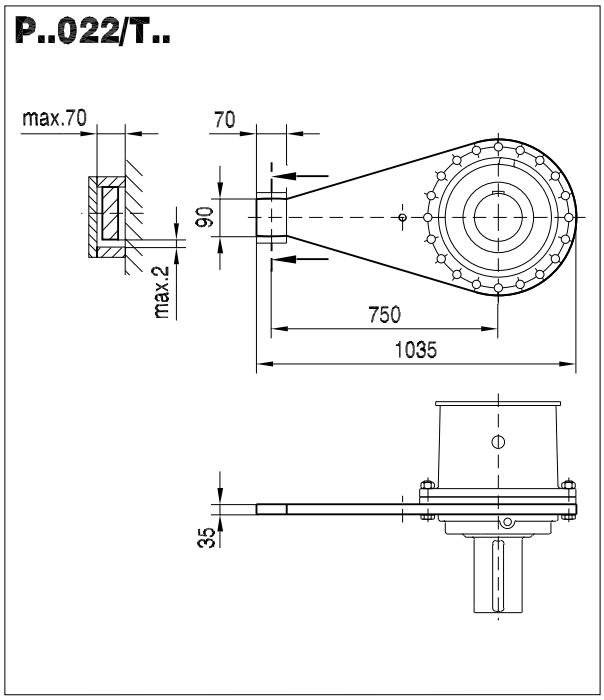




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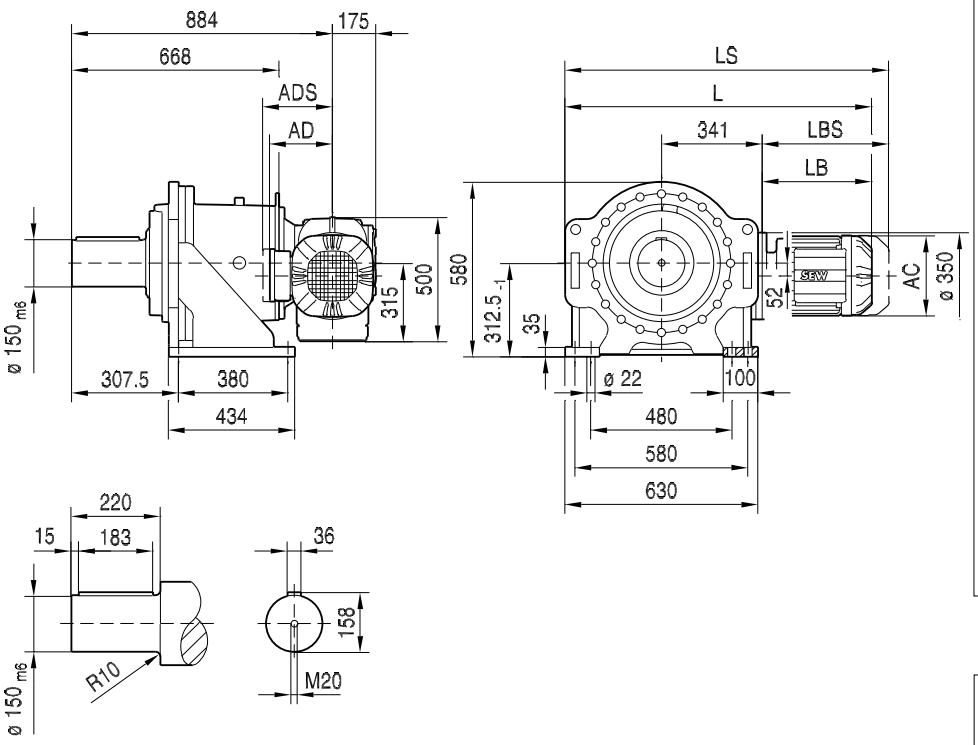
P..022/T..

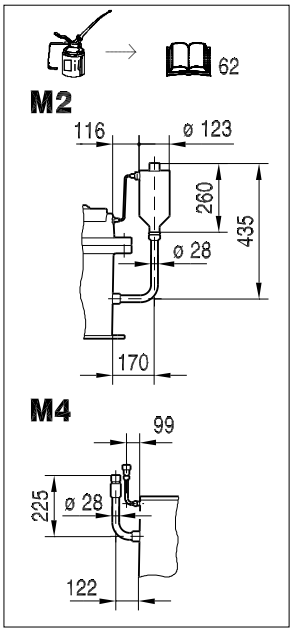


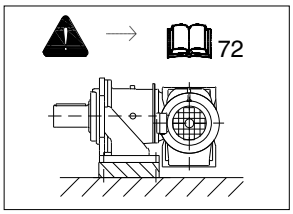
(→ 73)	DR132M/MC	DR160..	DR180S/M	DR180L/LC				
AC	221	270	316	316				
AD	170	228	253	253				
ADS	172	228	253	253				
L	946	987	1056	1116				
LS	1058	1124	1245	1305				
LB	419	460	529	589				
LBS	531	597	718	778				

45 069 01 08

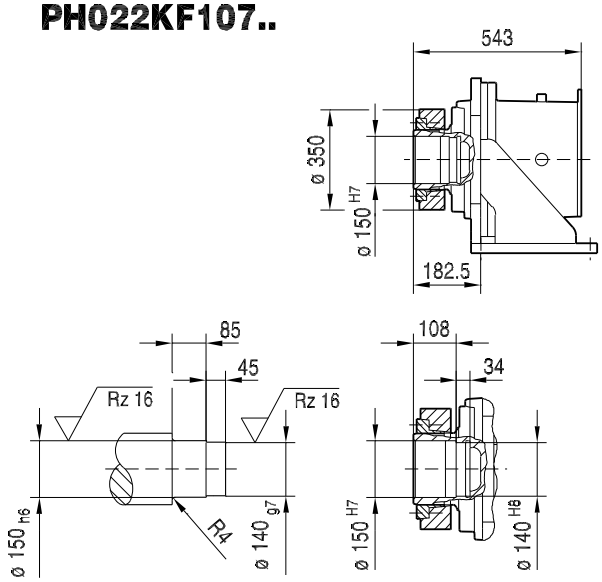
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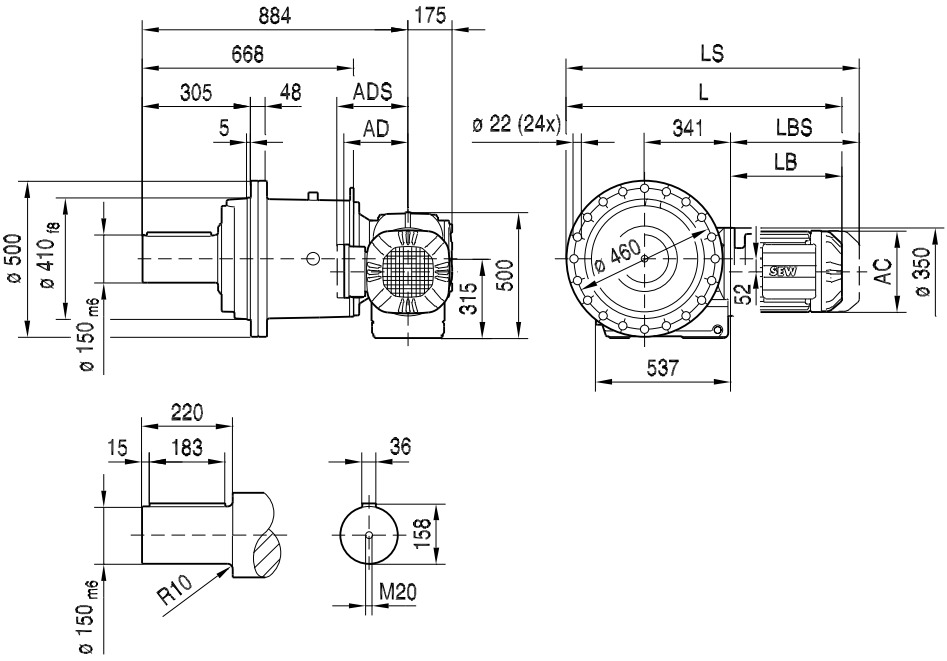
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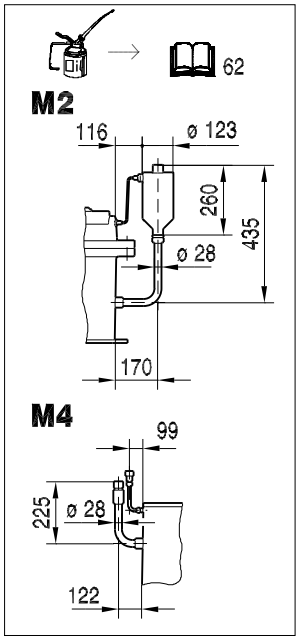


(→ 73)	DR180L/LC	DR225S						
AC	316	394						
AD	253	283						
ADS	253	283						
L	1247	1320						
LS	1436	1525						
LB	583	656						
LBS	772	861						

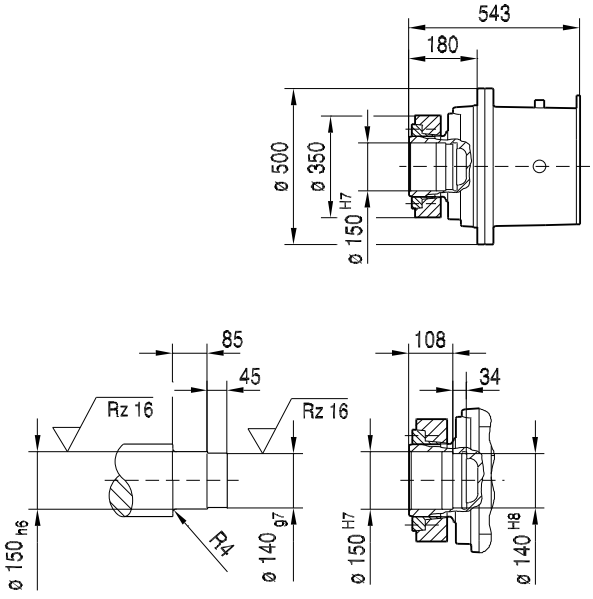
PF022KF107..

45 097 01 08

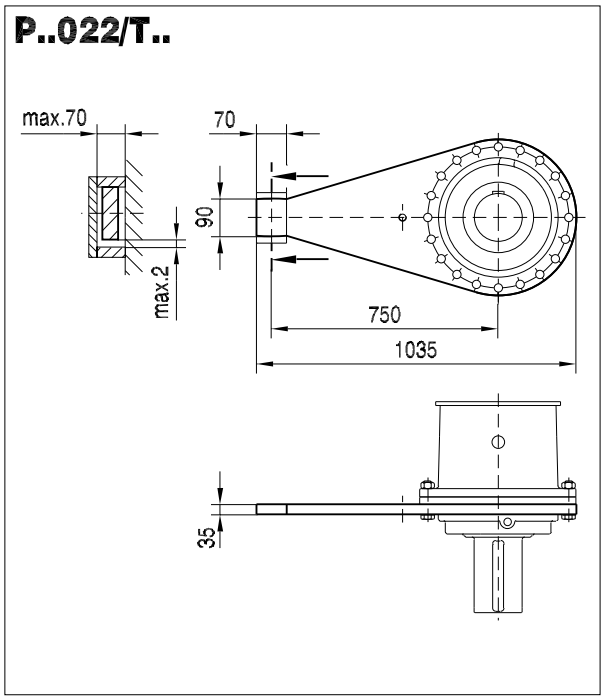




PHF022KF107..



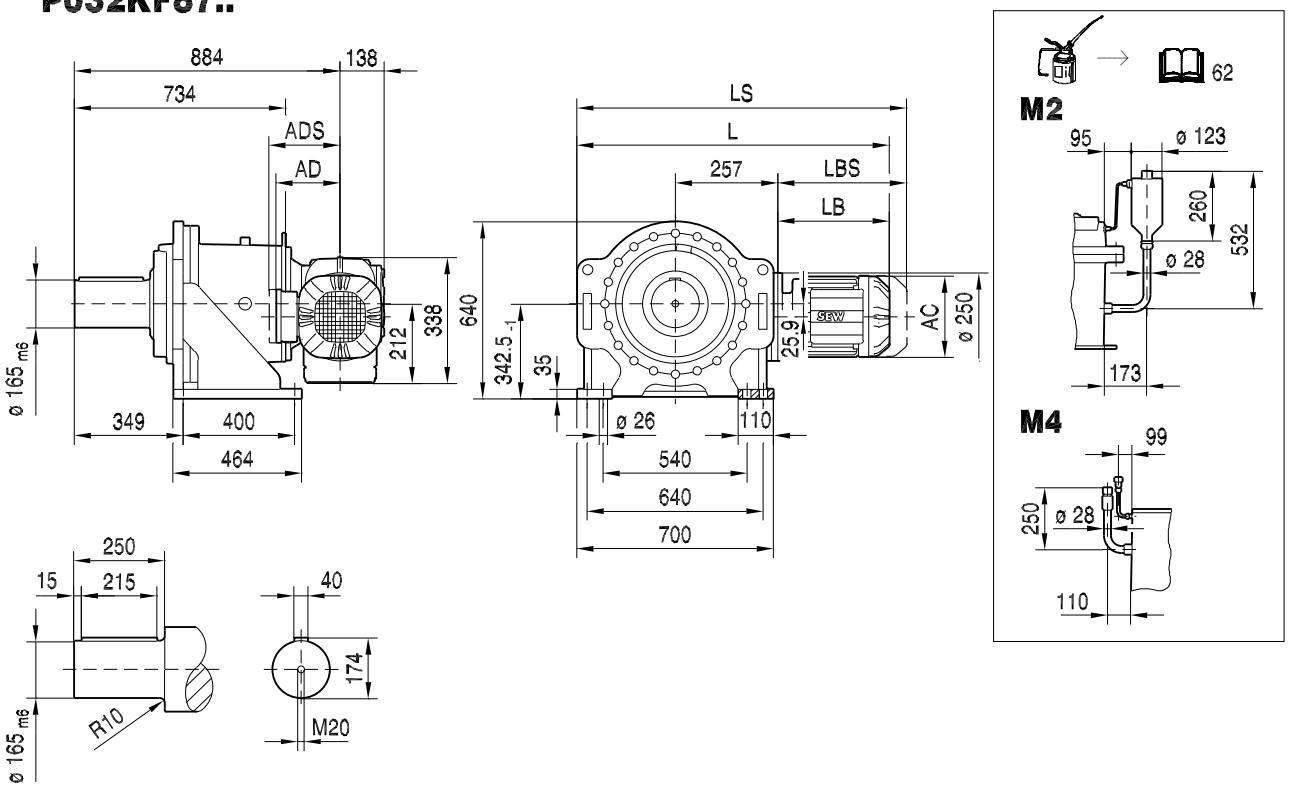
P..022/T..



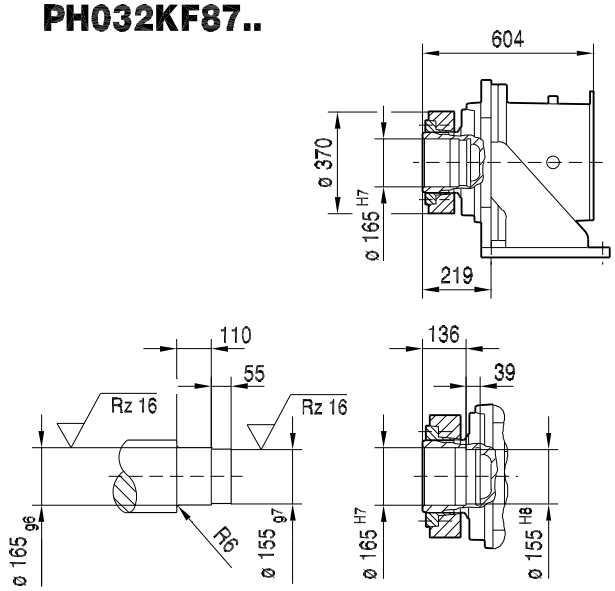
(→ 73)	DR180L/LC	DR225S						
AC	316	394						
AD	253	283						
ADS	253	283						
L	1174	1247						
LS	1363	1452						
LB	583	656						
LBS	772	861						

P032KF87..

45 070 01 08



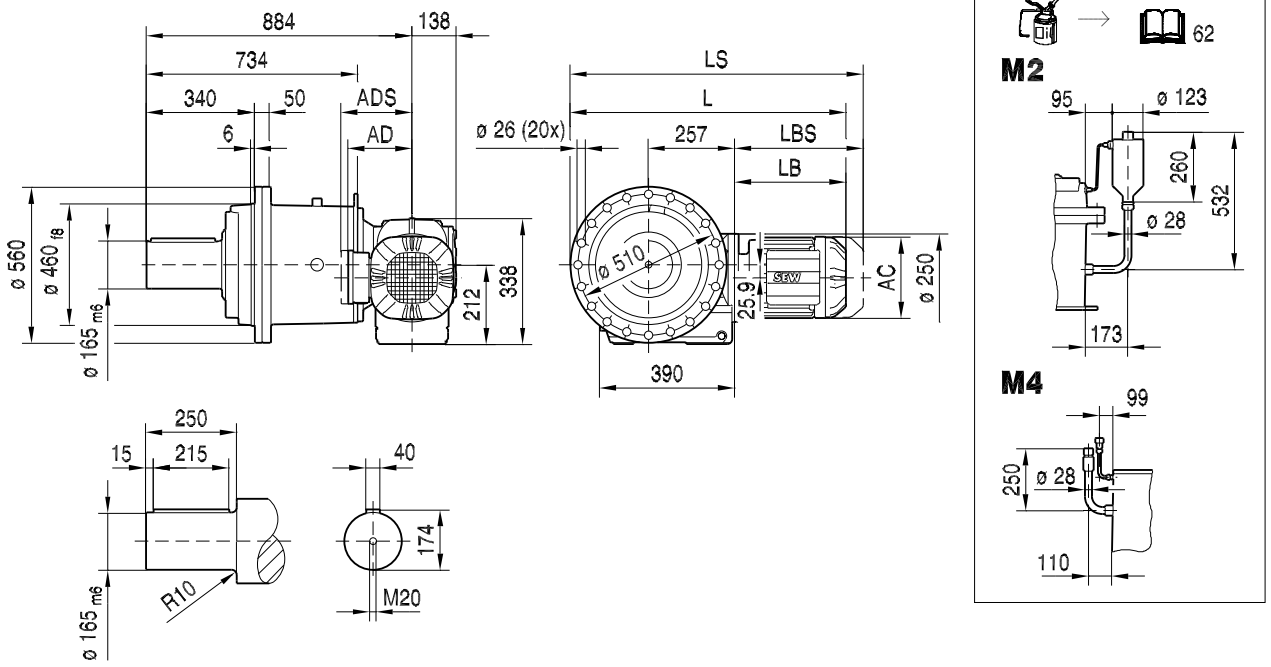
PH032KF87..



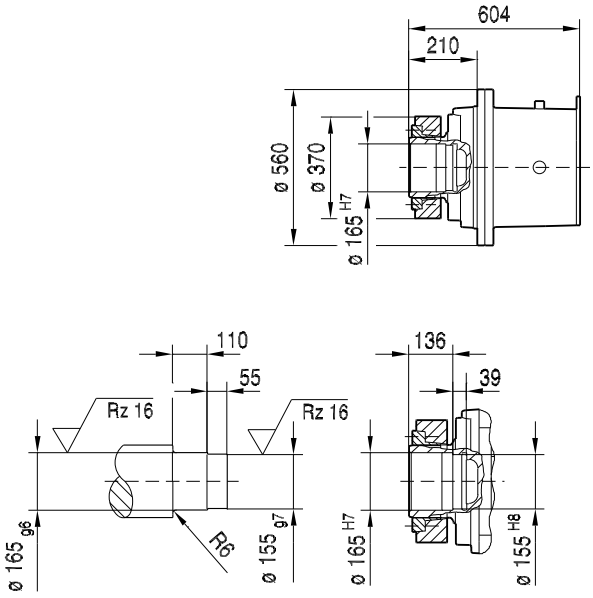
(→ 73)	DR100M	DR100L/LC	DR132S	DR132M/MC				
AC	197	197	221	221				
AD	157	157	170	170				
ADS	158	158	172	172				
L	927	957	1000	1050				
LS	1020	1050	1112	1162				
LB	301	331	374	424				
LBS	394	424	486	536				

PF032KF87..

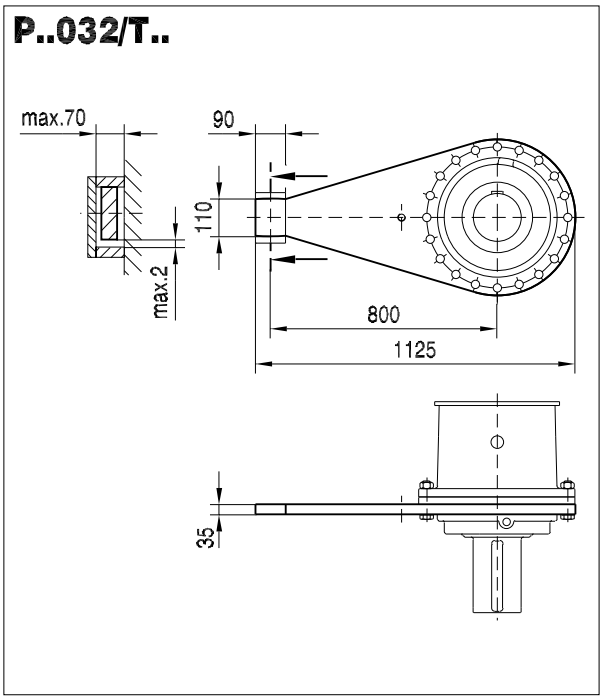
45 098 01 08



PHF032KF87..



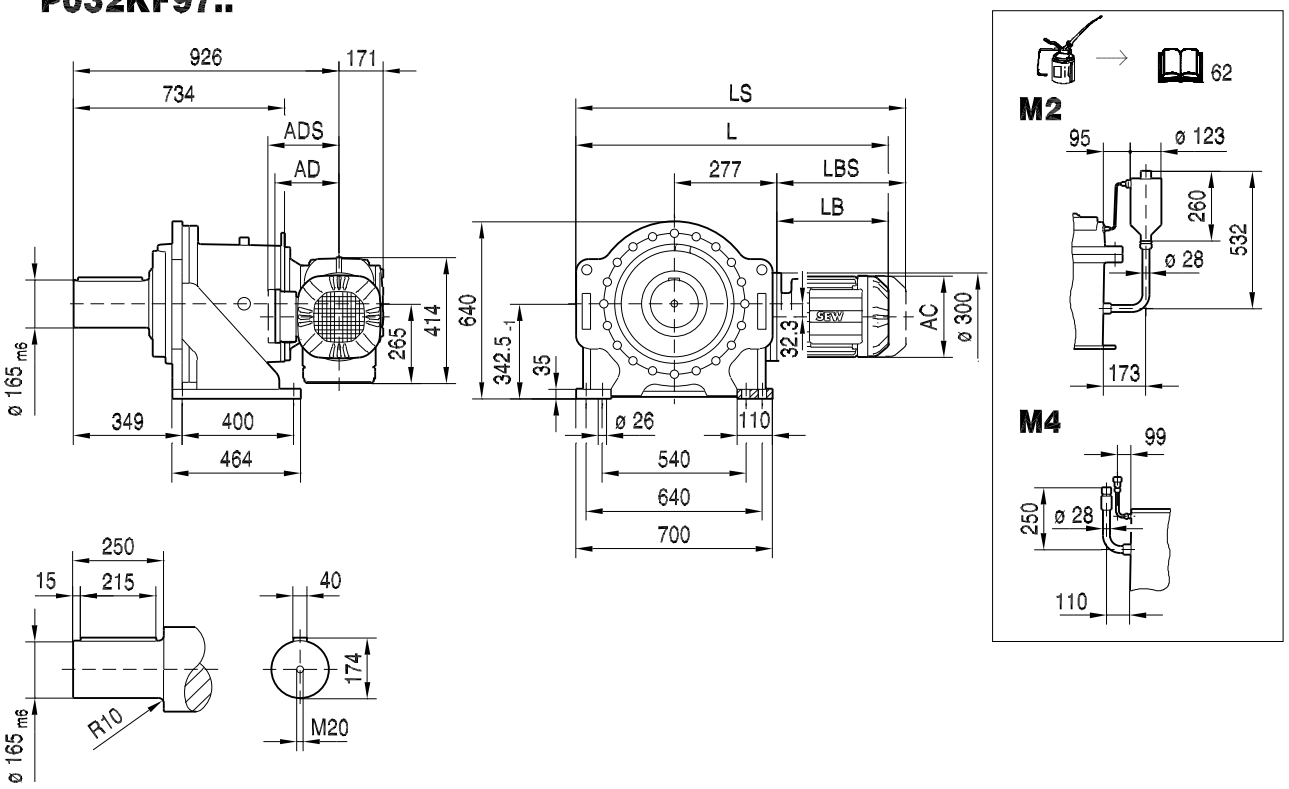
P..032/T..



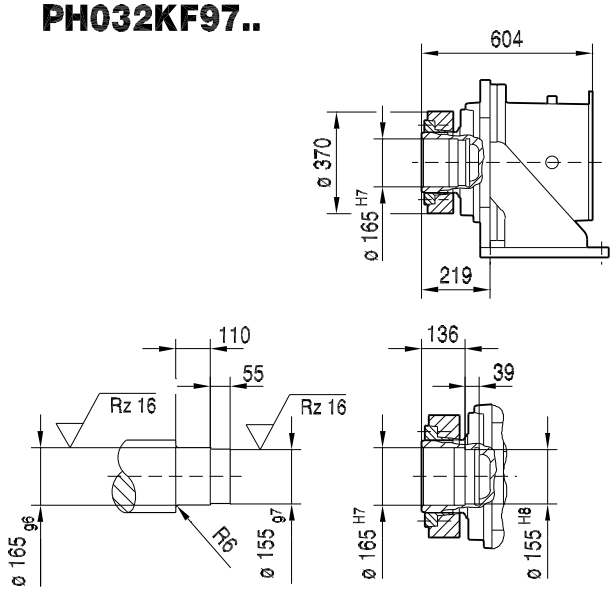
(→ 73)	DR100M	DR100L/LC	DR132S	DR132M/MC				
AC	197	197	221	221				
AD	157	157	170	170				
ADS	158	158	172	172				
L	838	868	911	961				
LS	931	961	1023	1073				
LB	301	331	374	424				
LBS	394	424	486	536				

P032KF97..

45 071 01 08



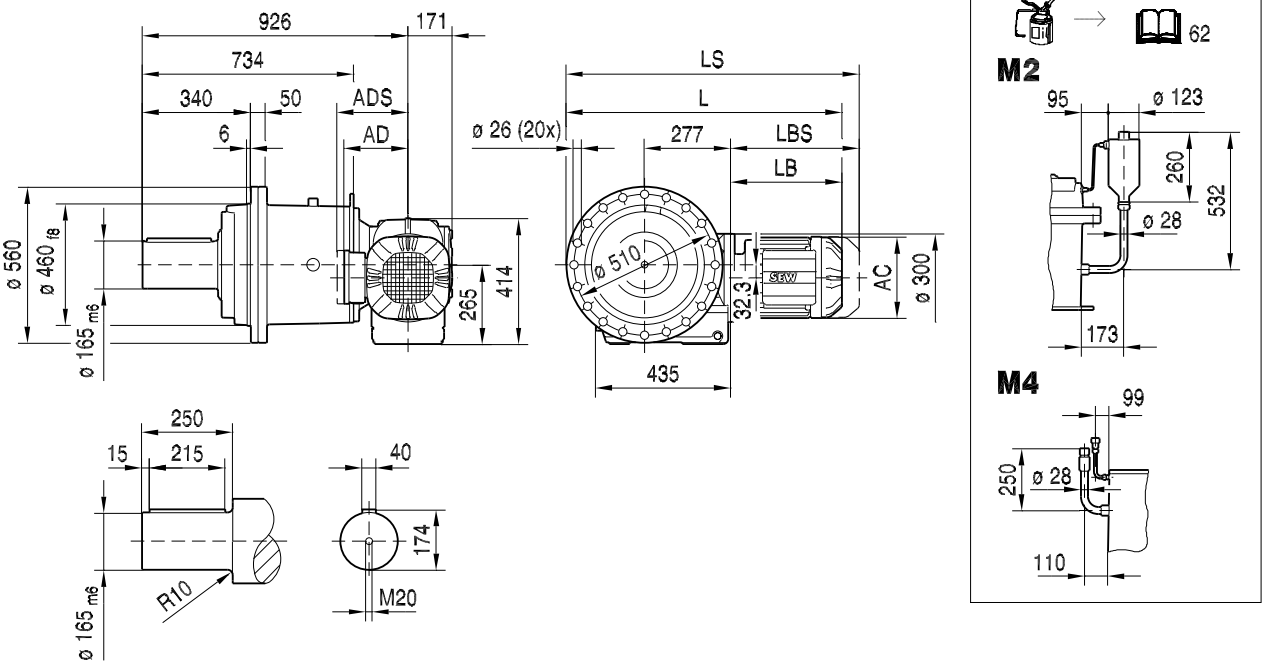
PH032KF97..



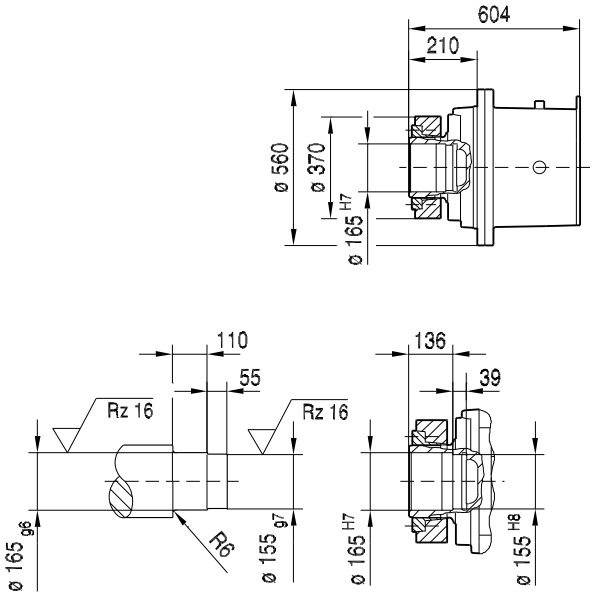
(→ 📖 73)	DR90L	DR100M	DR100L/LC	DR132S	DR132M/MC	DR160..	DR180S/M	DR180L/LC
AC	179	197	197	221	221	270	316	316
AD	140	157	157	170	170	228	253	253
ADS	150	158	158	172	172	228	253	253
L	912	942	972	1015	1065	1106	1175	1235
LS	1005	1035	1065	1127	1177	1243	1364	1424
LB	266	296	326	369	419	460	529	589
LBS	359	389	419	481	531	597	718	778

PF032KF97..

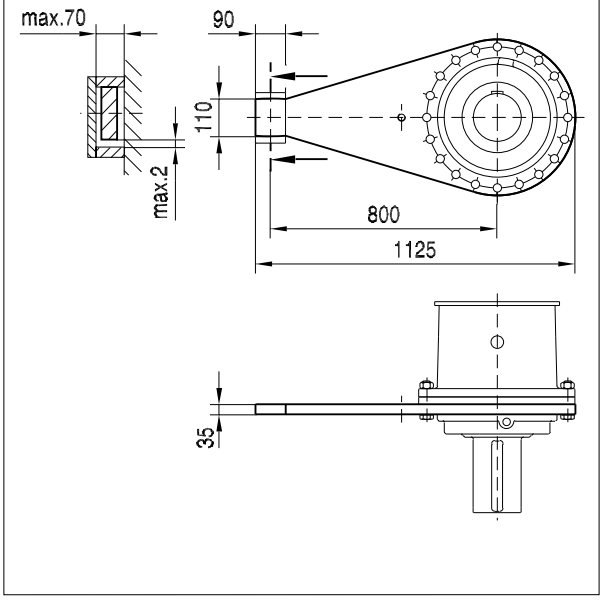
45 099 01 08



PHF032KF97..



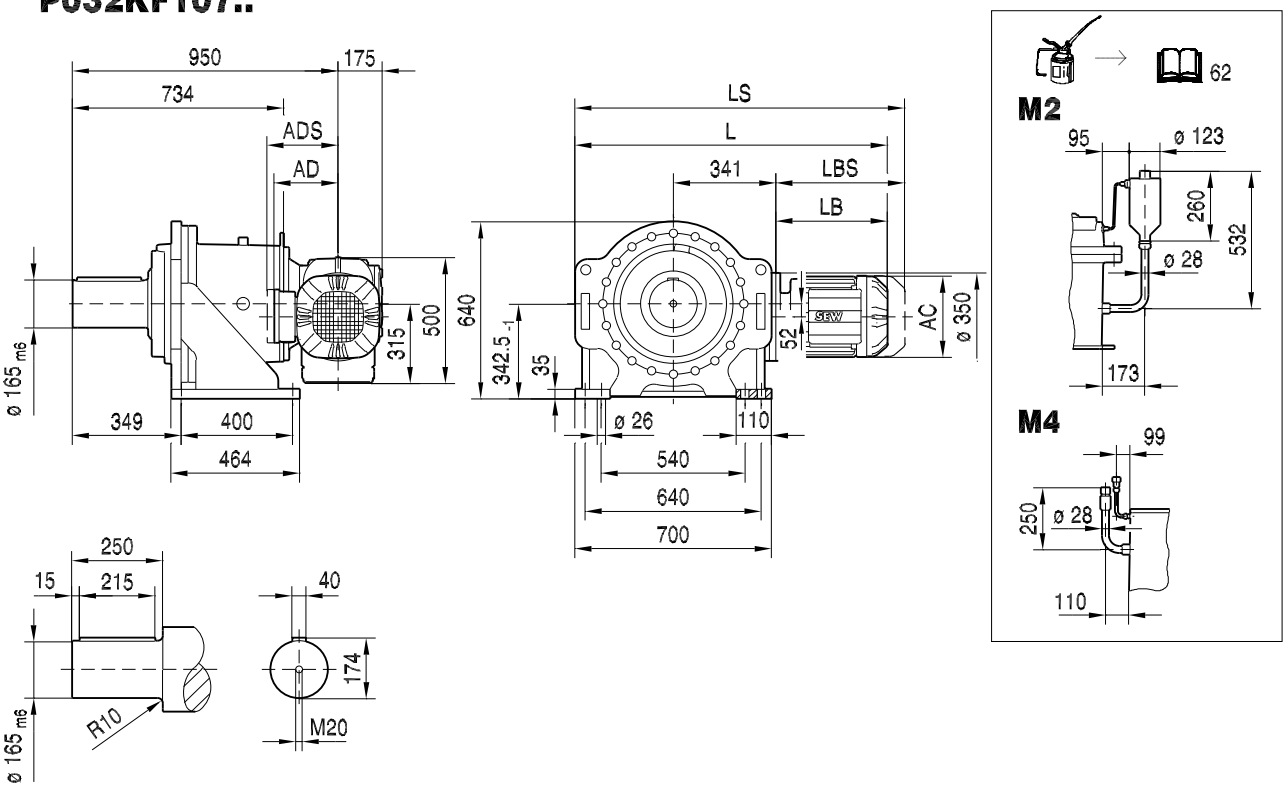
P..032/T..



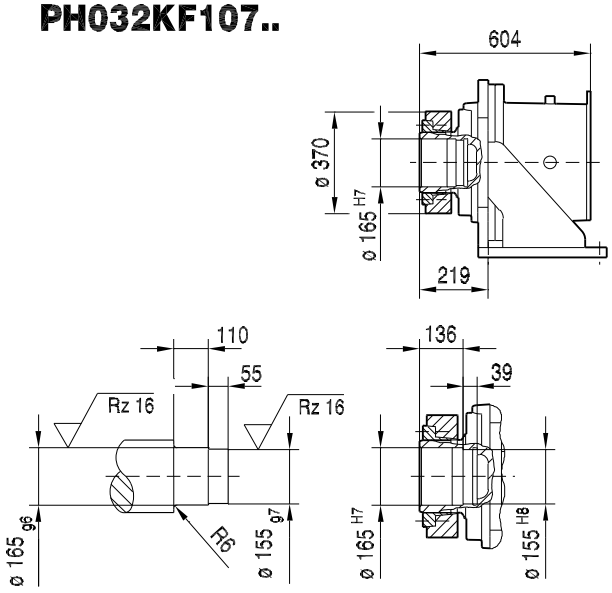
(→ 73)	DR90L	DR100M	DR100L/LC	DR132S	DR132M/MC	DR160..	DR180S/M	DR180L/LC
AC	179	197	197	221	221	270	316	316
AD	140	157	157	170	170	228	253	253
ADS	150	158	158	172	172	228	253	253
L	823	853	883	926	976	1017	1086	1146
LS	916	946	976	1038	1088	1154	1275	1335
LB	266	296	326	369	419	460	529	589
LBS	359	389	419	481	531	597	718	778

P032KF107..

45 072 01 08



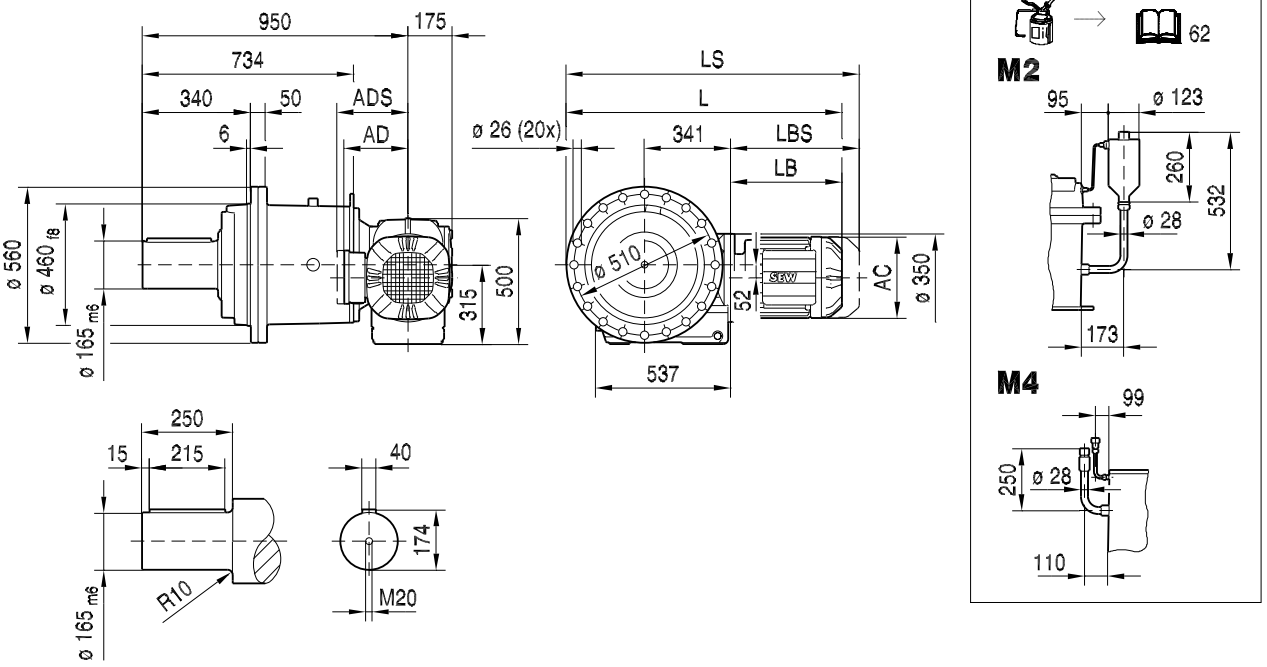
PH032KF107..



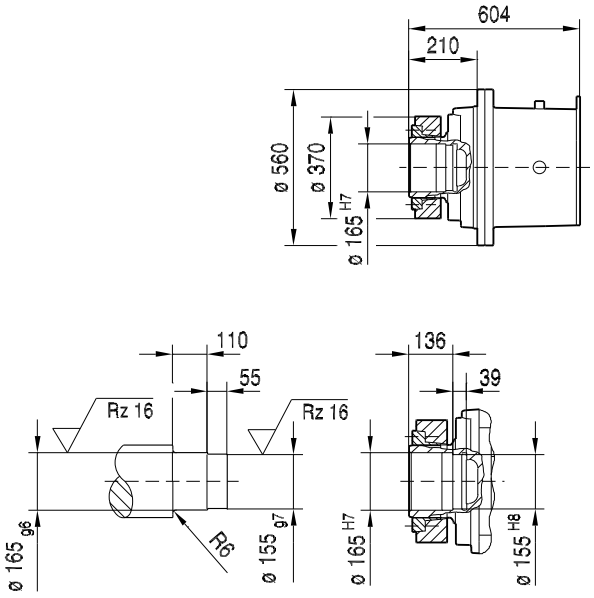
(→ 73)	DR180L/LC	DR225S						
AC	316	394						
AD	253	283						
ADS	253	283						
L	1293	1366						
LS	1482	1571						
LB	583	656						
LBS	772	861						

PF032KF107..

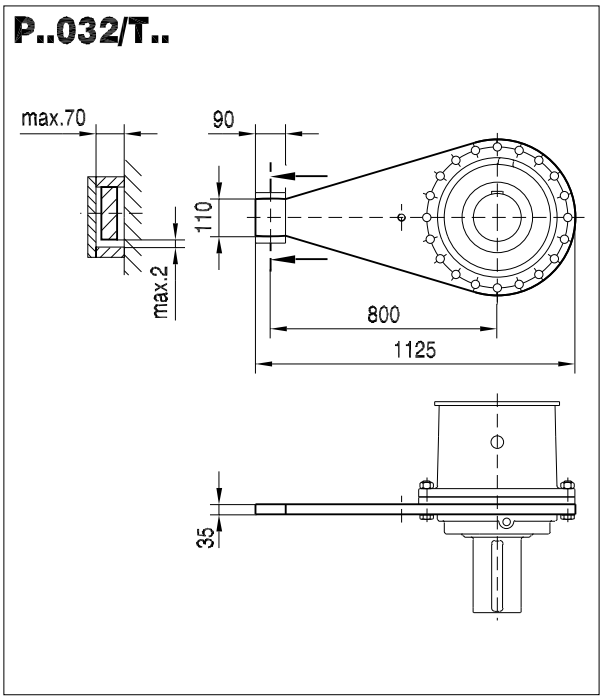
45 100 01 08



PHF032KF107..



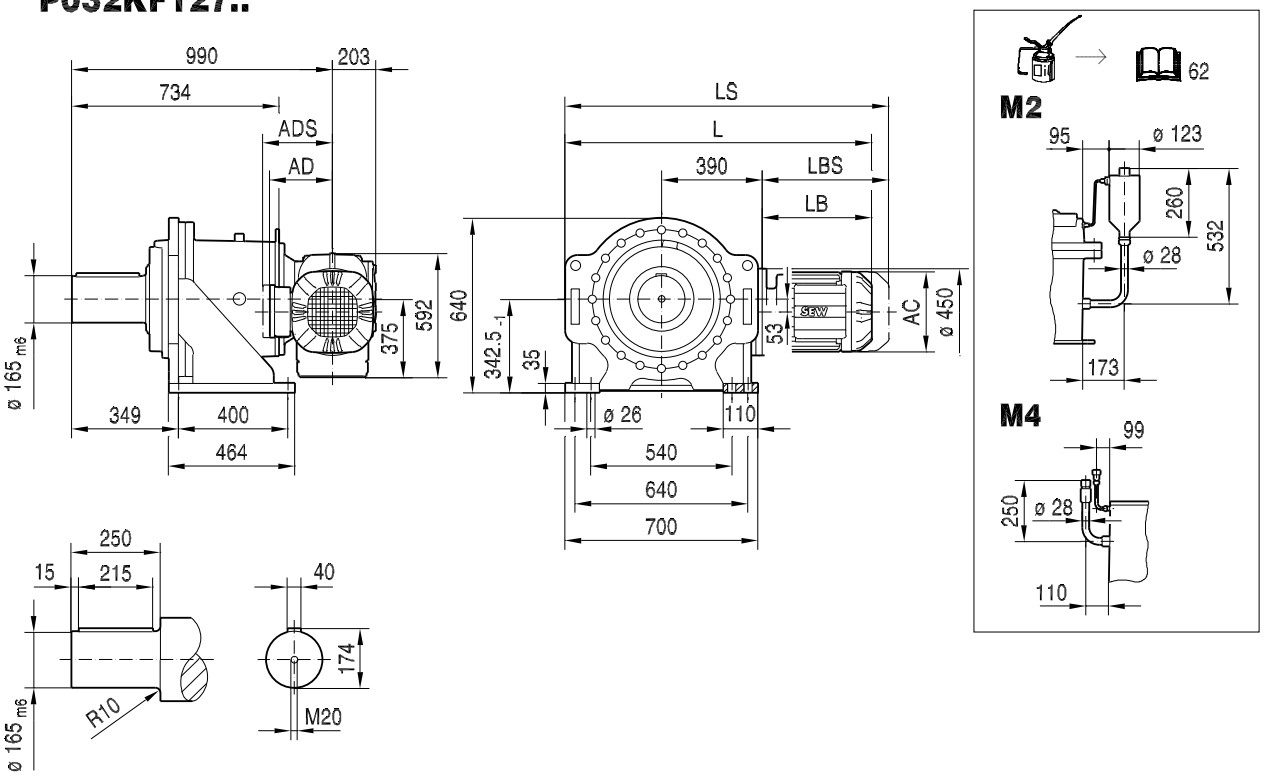
P..032/T..



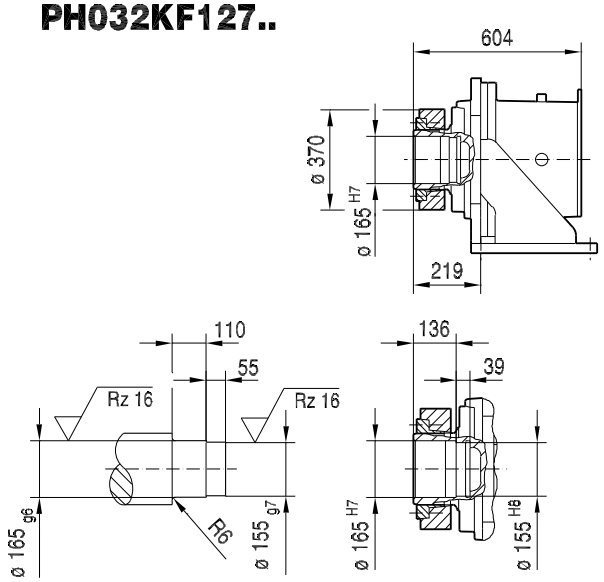
(→ 73)	DR180L/LC	DR225S						
AC	316	394						
AD	253	283						
ADS	253	283						
L	1204	1277						
LS	1393	1482						
LB	583	656						
LBS	772	861						

P032KF127..

45 073 01 08



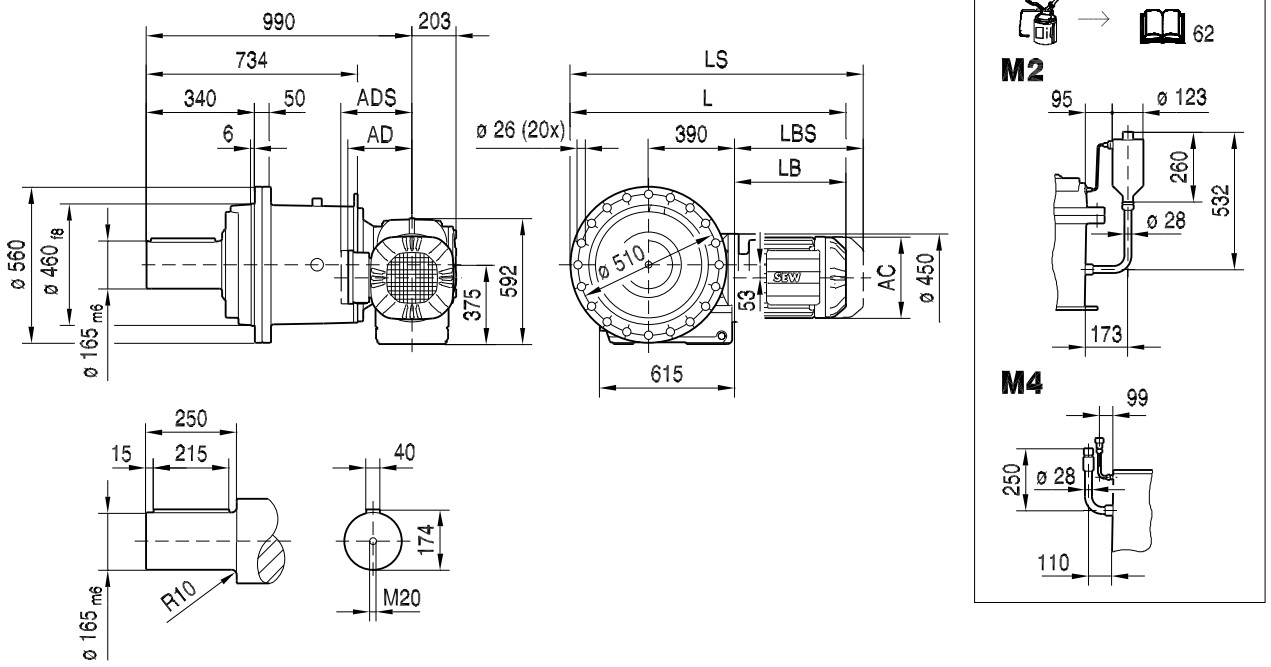
PH032KF127..



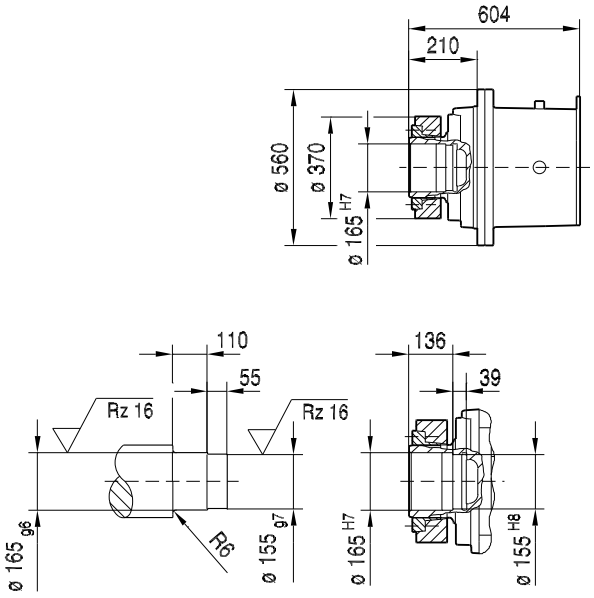
(→ 📖 73)	DR180L/LC	DR225S	DR225M/MC					
AC	316	394	394					
AD	253	283	283					
ADS	253	283	283					
L	1327	1400	1450					
LS	1516	1605	1655					
LB	568	641	691					
LBS	757	846	896					

PF032KF127..

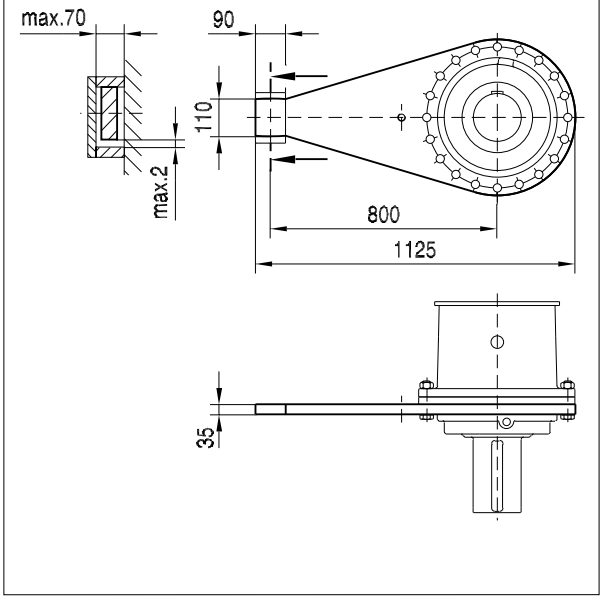
45 101 01 08



PHF032KF127..



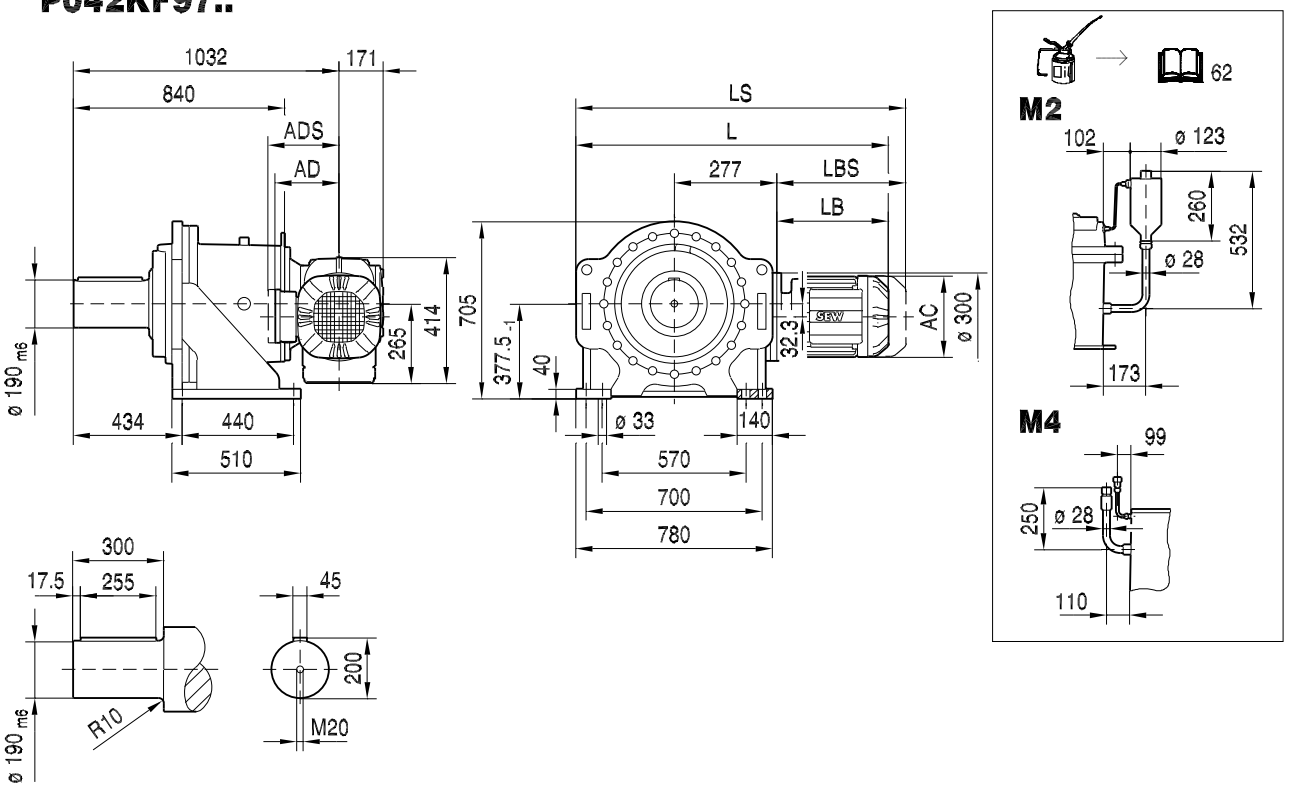
P..032/T..



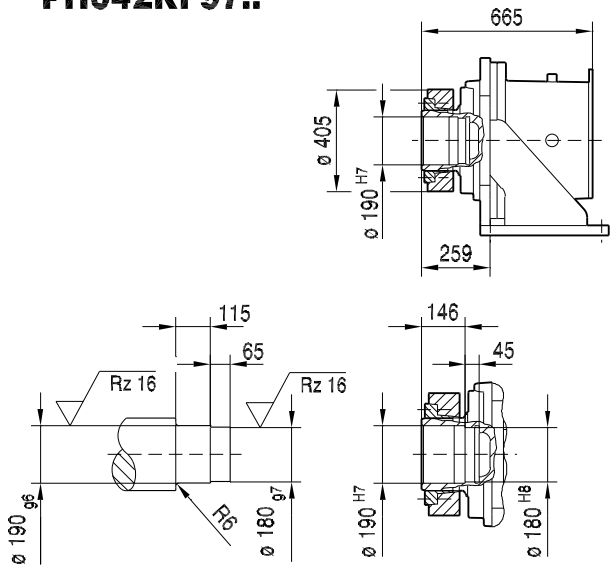
(→ 73)	DR180L/LC	DR225S	DR225M/MC					
AC	316	394	394					
AD	253	283	283					
ADS	253	283	283					
L	1238	1311	1361					
LS	1427	1516	1566					
LB	568	641	691					
LBS	757	846	896					

P042KF97..

45 074 01 08



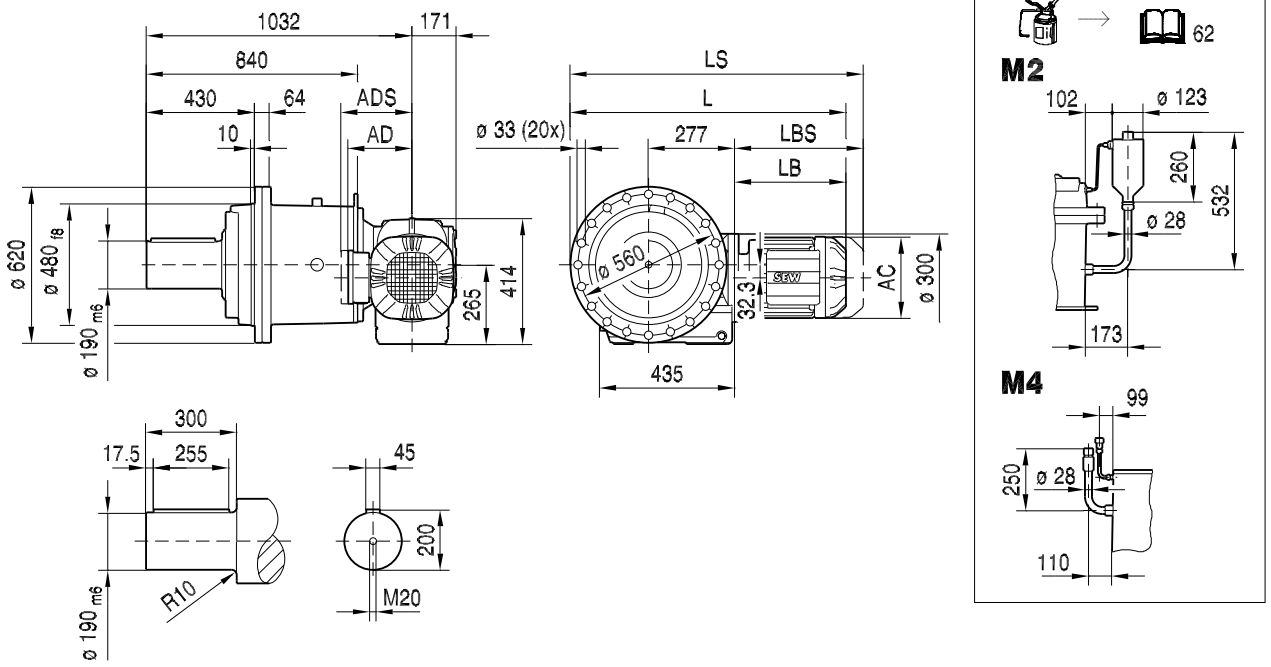
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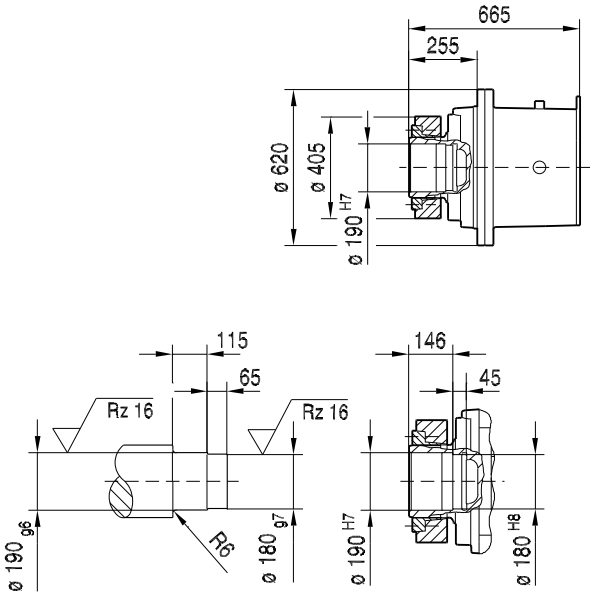
(→ 73)	DR100M	DR100L/LC	DR132S	DR132M/MC	DR160..	DR180S/M	DR180L/LC	
AC	197	197	221	221	270	316	316	
AD	157	157	170	170	228	253	253	
ADS	158	158	172	172	228	253	253	
L	973	1003	1046	1096	1137	1206	1266	
LS	1066	1096	1158	1208	1274	1395	1455	
LB	296	326	369	419	460	529	589	
LBS	389	419	481	531	597	718	778	

PF042KF97..

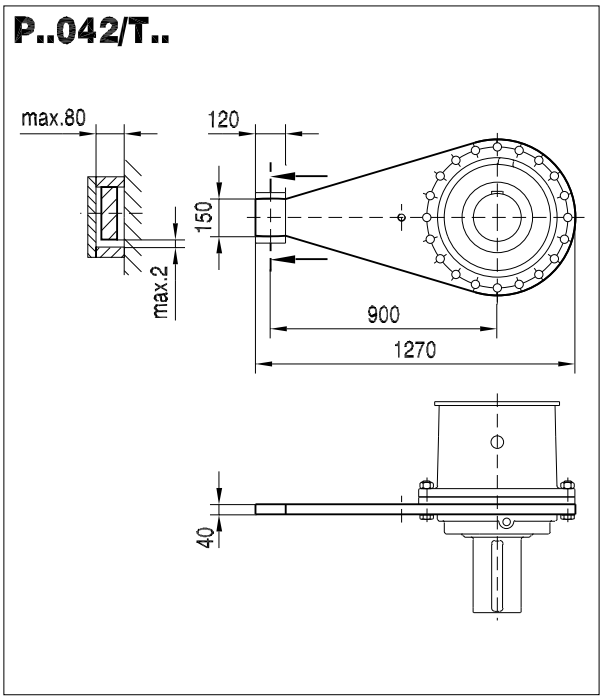
45 102 01 08



PHF042KF97..



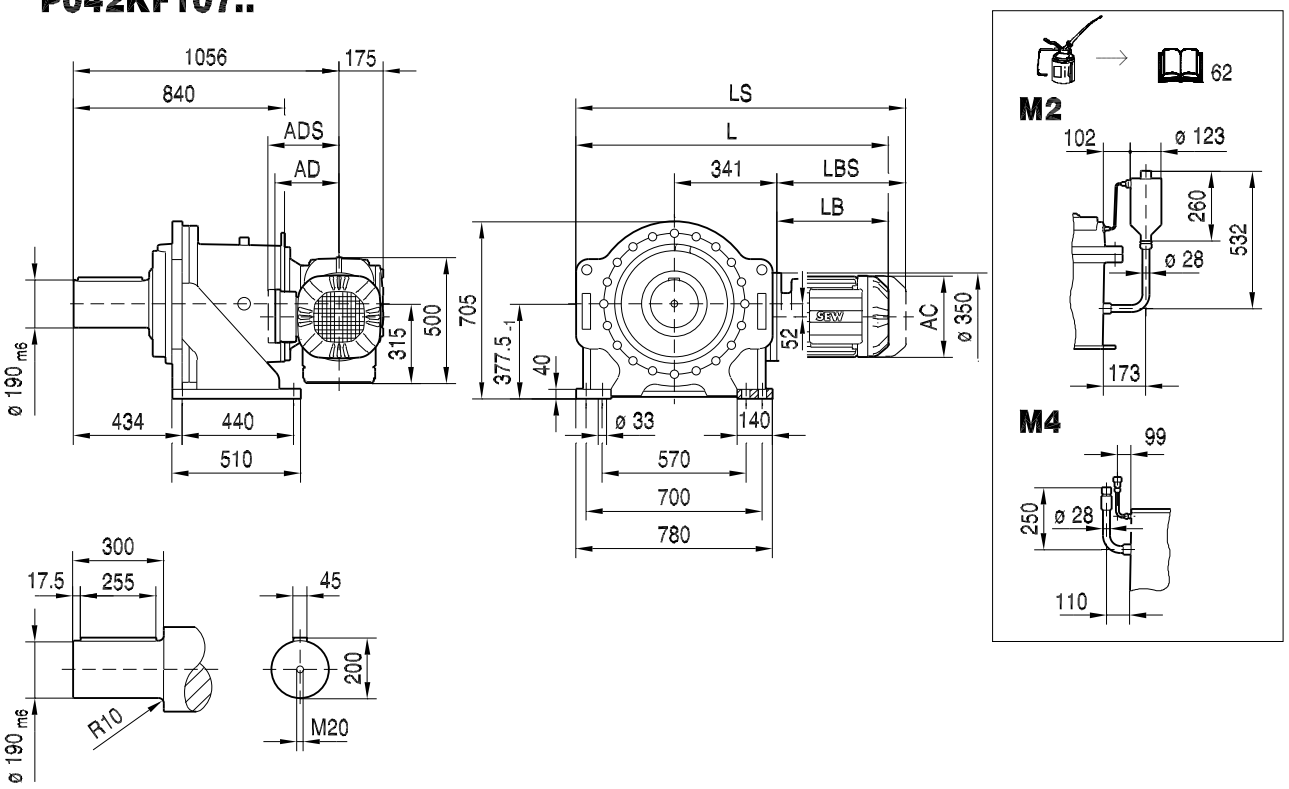
P..042/T..



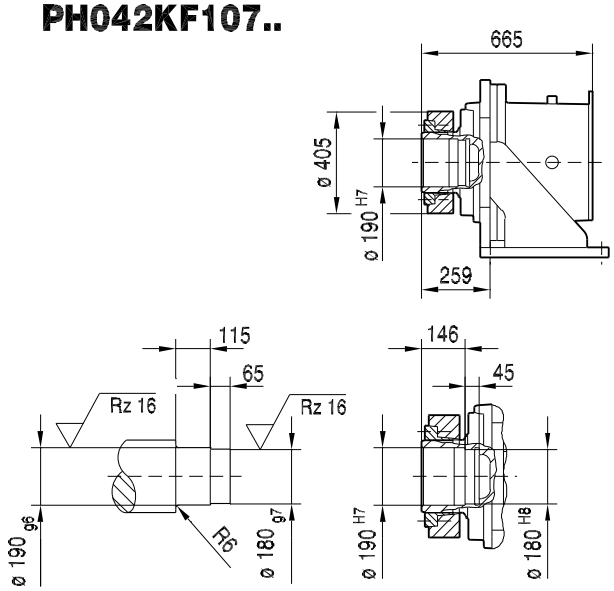
(→ 73)	DR100M	DR100L/LC	DR132S	DR132M/MC	DR160..	DR180S/M	DR180L/LC	
AC	197	197	221	221	270	316	316	
AD	157	157	170	170	228	253	253	
ADS	158	158	172	172	228	253	253	
L	883	913	956	1006	1047	1116	1176	
LS	976	1006	1068	1118	1184	1305	1365	
LB	296	326	369	419	460	529	589	
LBS	389	419	481	531	597	718	778	

P042KF107..

45 075 01 08



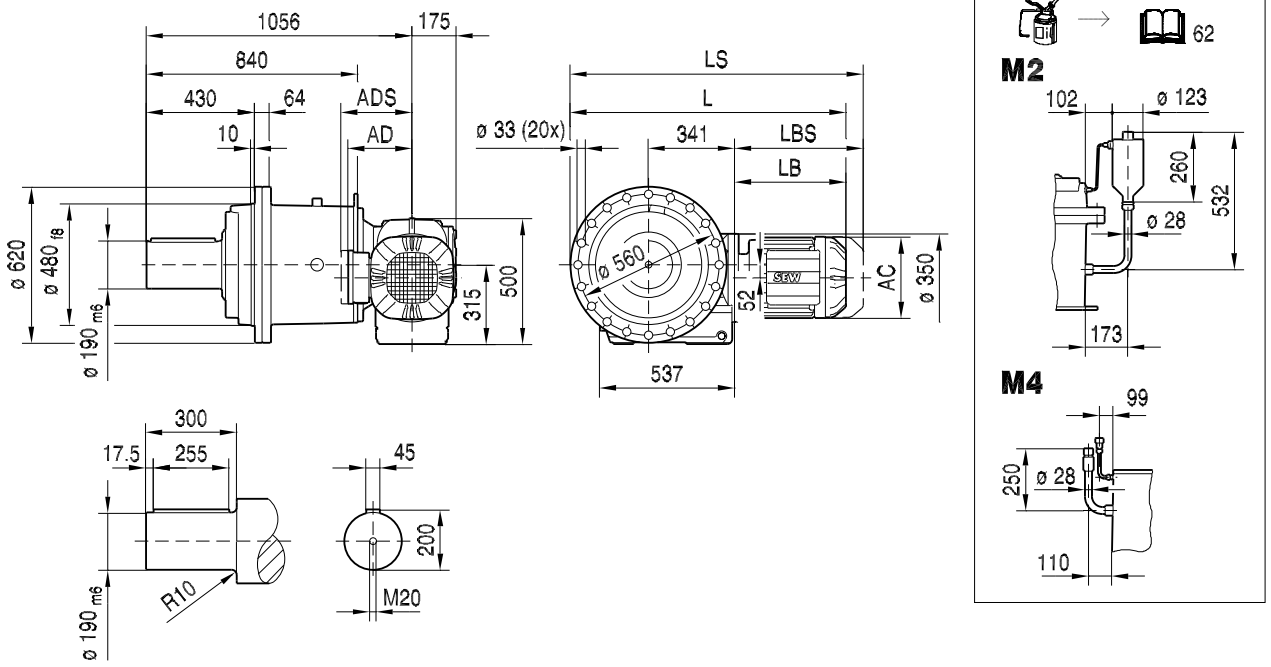
PH042KF107..



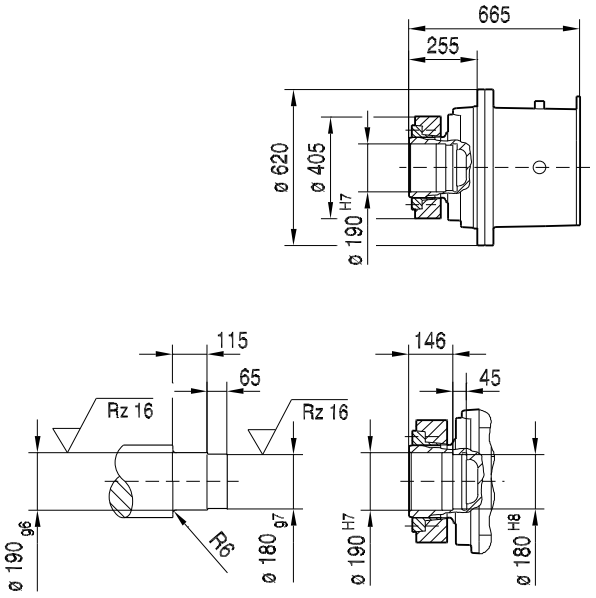
(→ 73)	DR100L/LC	DR132S	DR132M/MC	DR160..	DR180S/M	DR180L/LC	DR225S	
AC	197	221	221	270	316	316	394	
AD	157	170	170	228	253	253	283	
ADS	158	172	172	228	253	253	283	
L	1061	1104	1154	1195	1264	1324	1397	
LS	1154	1216	1266	1332	1453	1513	1602	
LB	320	363	413	454	523	583	656	
LBS	413	475	525	591	712	772	861	

PF042KF107..

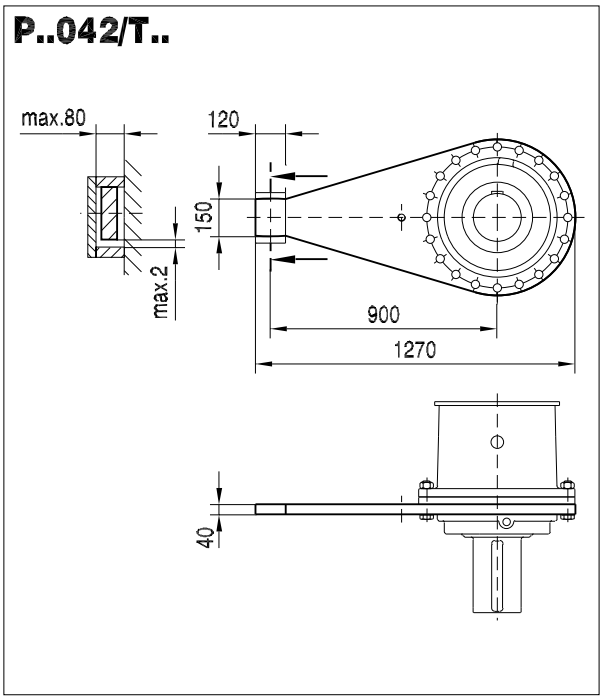
45 103 01 08



PHF042KF107..



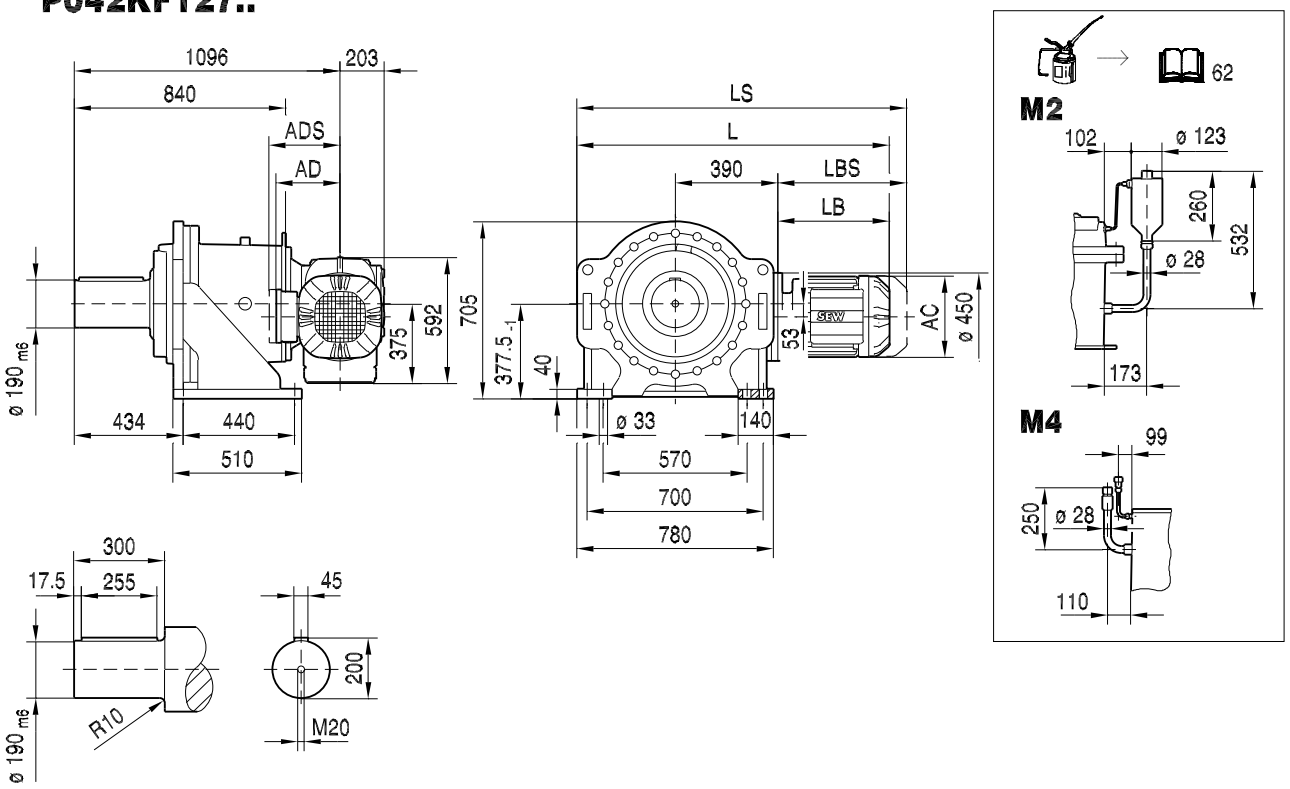
P..042/T..



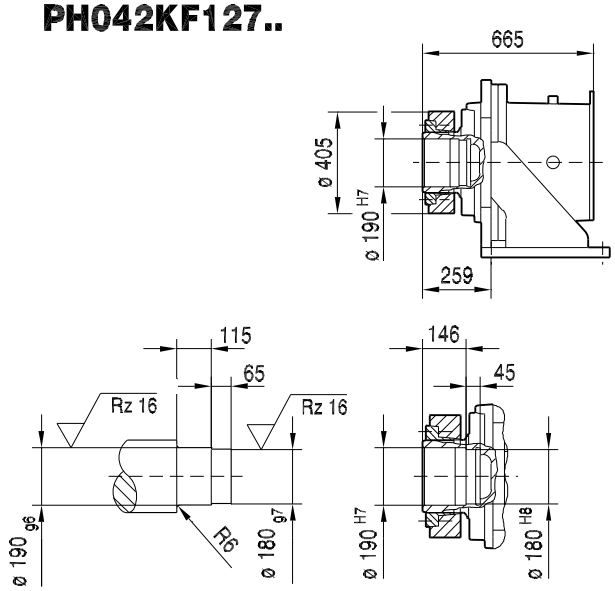
(→ 73)	DR100L/LC	DR132S	DR132M/MC	DR160..	DR180S/M	DR180L/LC	DR225S	
AC	197	221	221	270	316	316	394	
AD	157	170	170	228	253	253	283	
ADS	158	172	172	228	253	253	283	
L	971	1014	1064	1105	1174	1234	1307	
LS	1064	1126	1176	1242	1363	1423	1512	
LB	320	363	413	454	523	583	656	
LBS	413	475	525	591	712	772	861	

P042KF127..

45 076 01 08



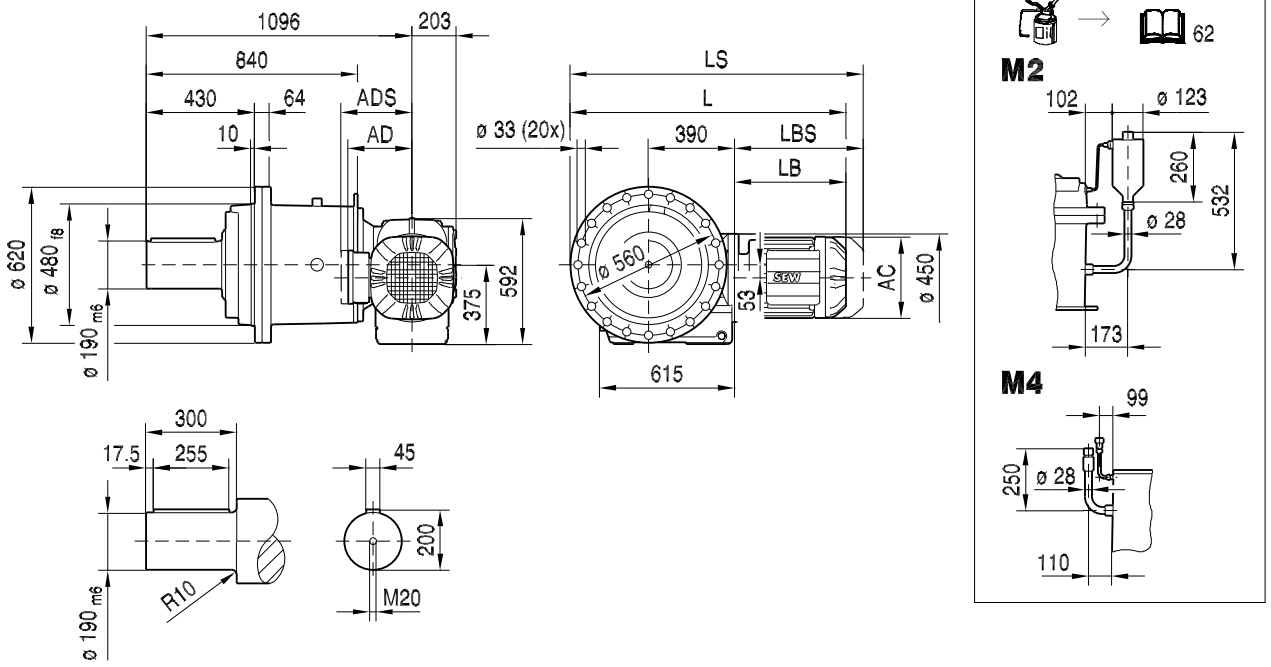
PH042KF127..



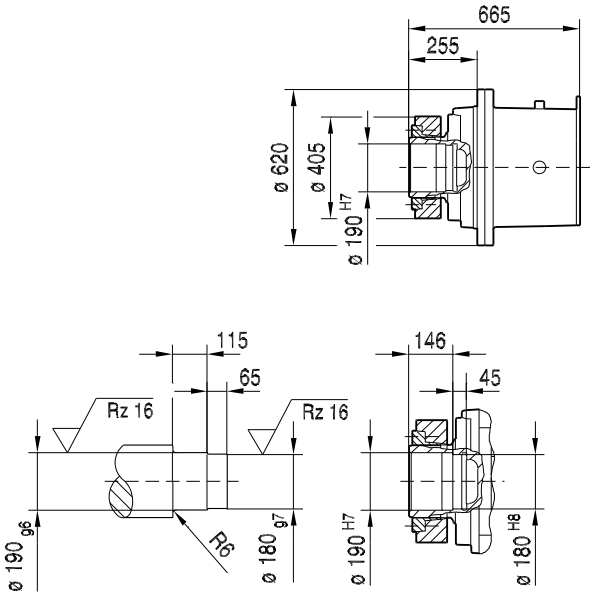
(→ 📖 73)	DR180L/LC	DR225S	DR225M/MC	DV280..				
AC	316	394	394	510				
AD	253	283	283	397				
ADS	253	283	283	397				
L	1358	1431	1481	1570				
LS	1547	1636	1686	1755				
LB	568	641	691	780				
LBS	757	846	896	965				

PF042KF127..

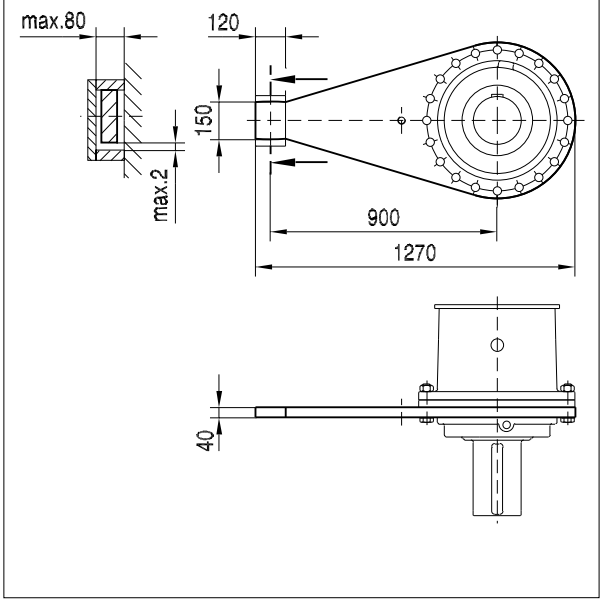
45 104 01 08



PHF042KF127..



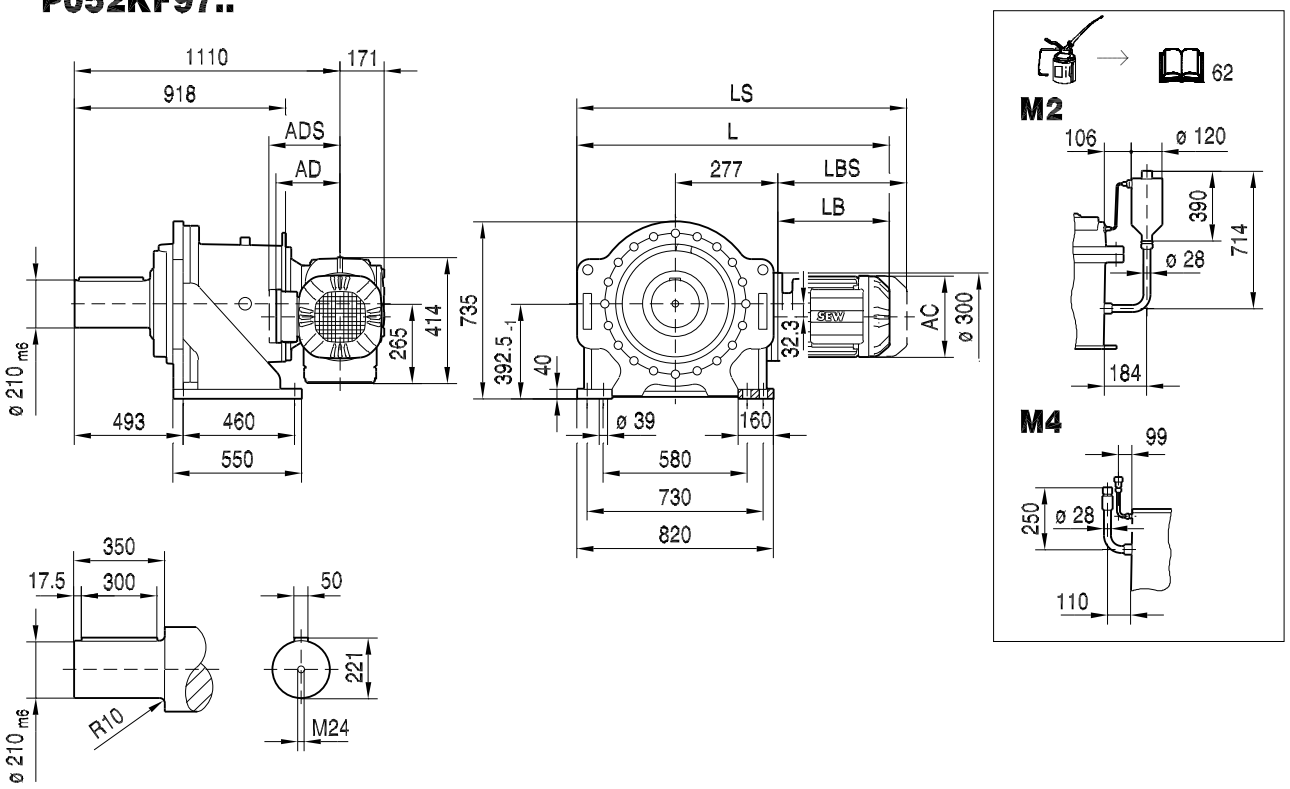
P..042/T..



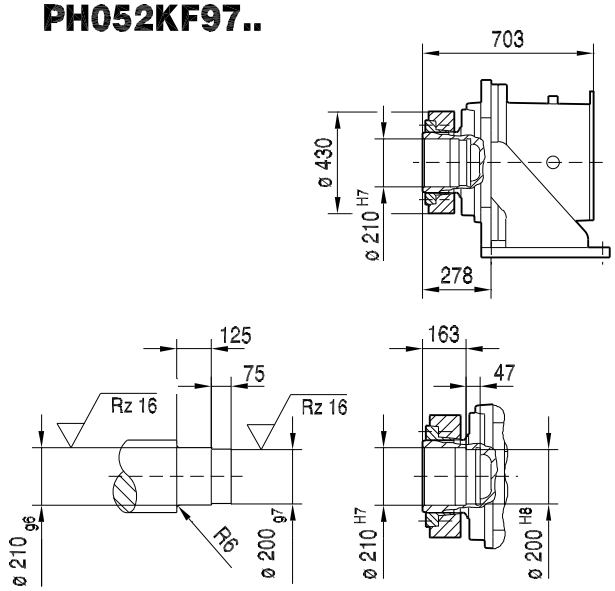
(→ 73)	DR180L/LC	DR225S	DR225M/MC	DV280..				
AC	316	394	394	510				
AD	253	283	283	397				
ADS	253	283	283	397				
L	1268	1341	1391	1480				
LS	1457	1546	1596	1665				
LB	568	641	691	780				
LBS	757	846	896	965				

P052KF97..

45 077 01 08



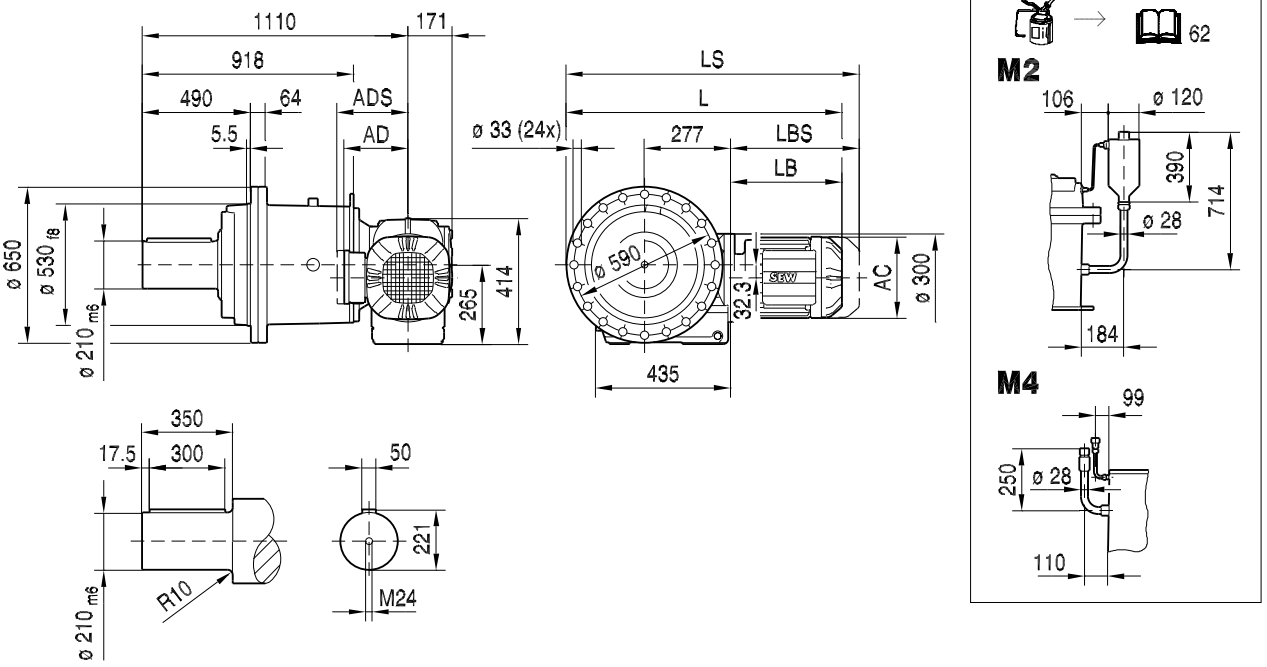
PH052KF97..



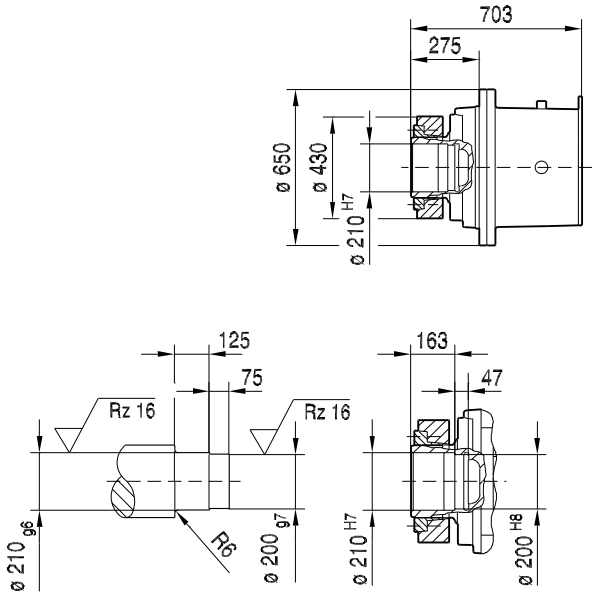
(→ 73)	DR132M/MC	DR160..	DR180L/LC					
AC	221	270	316					
AD	170	228	253					
ADS	172	228	253					
L	1122	1163	1292					
LS	1234	1300	1481					
LB	419	460	589					
LBS	531	597	778					

PF052KF97..

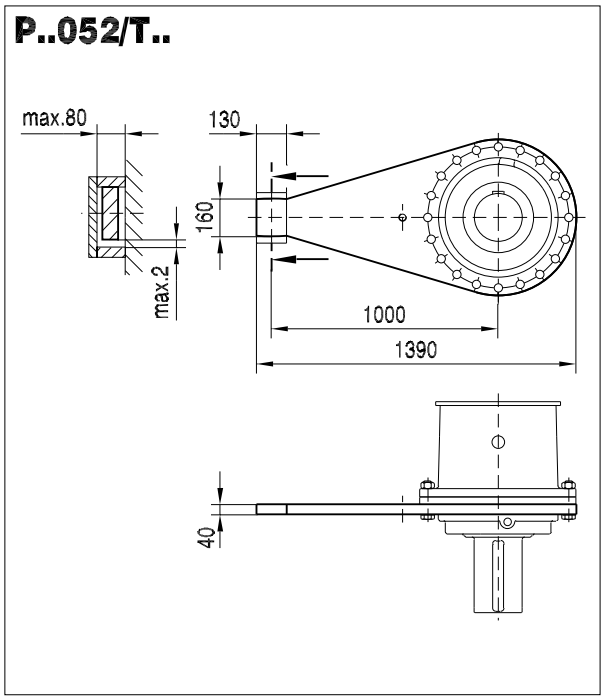
45 105 01 08



PHF052KF97..



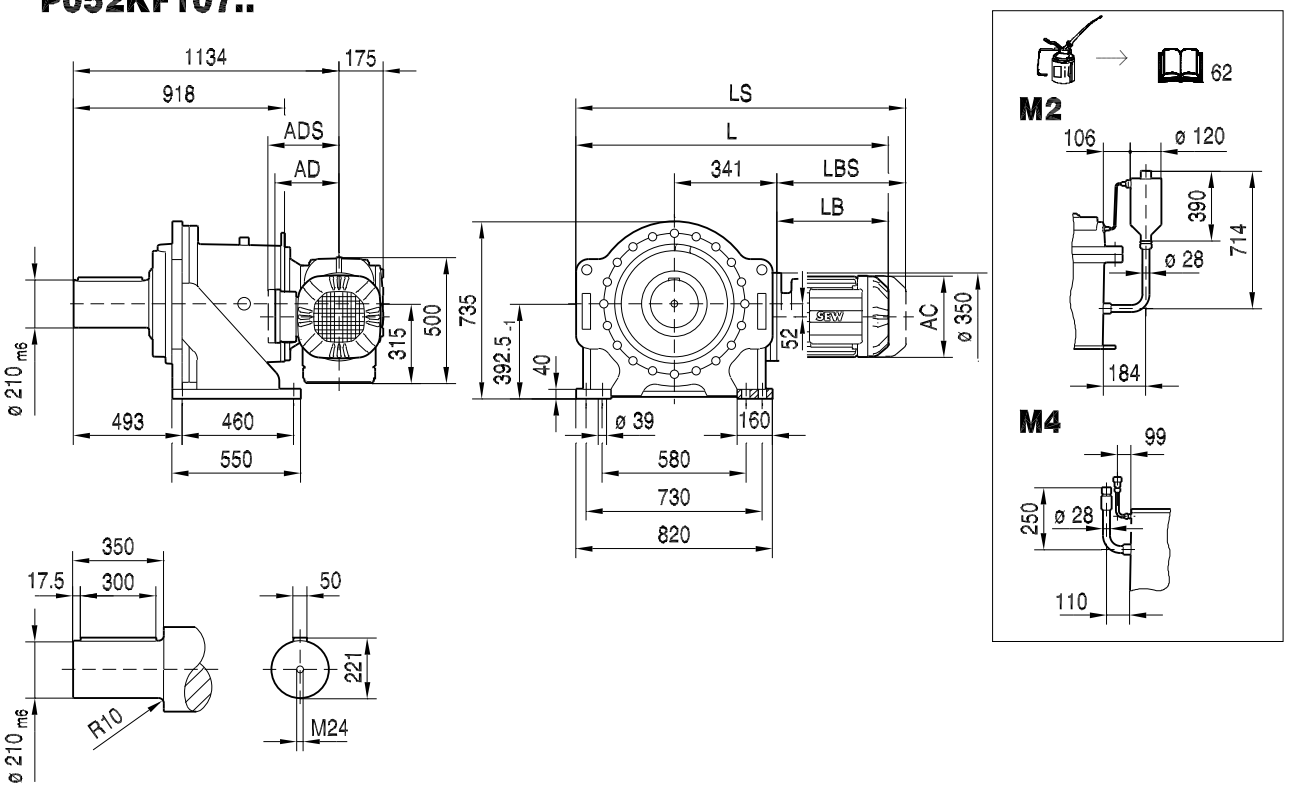
P..052/T..



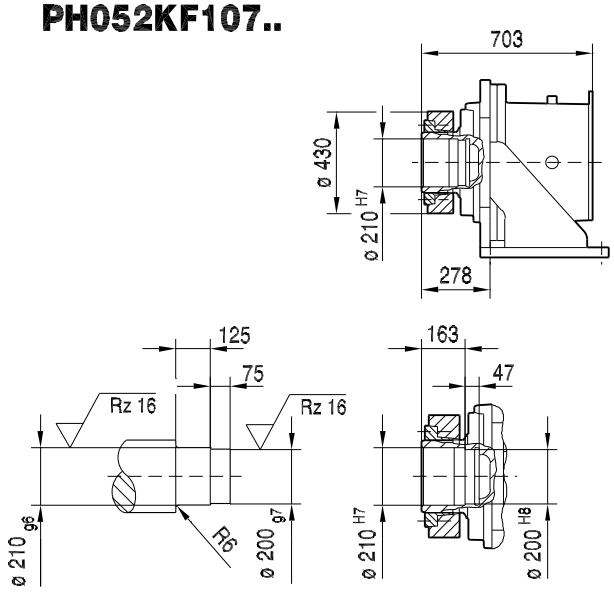
(→ 73)	DR132M/MC	DR160..	DR180L/LC					
AC	221	270	316					
AD	170	228	253					
ADS	172	228	253					
L	1021	1062	1191					
LS	1133	1199	1380					
LB	419	460	589					
LBS	531	597	778					

P052KF107..

45 078 01 08



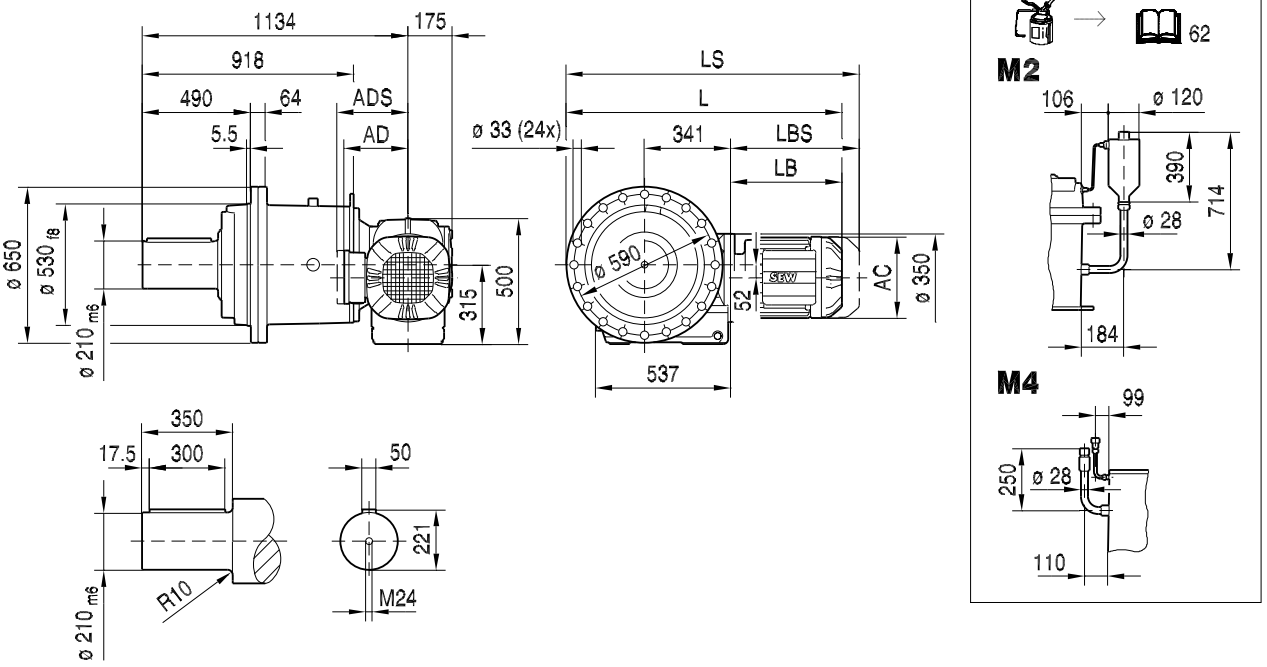
PH052KF107..



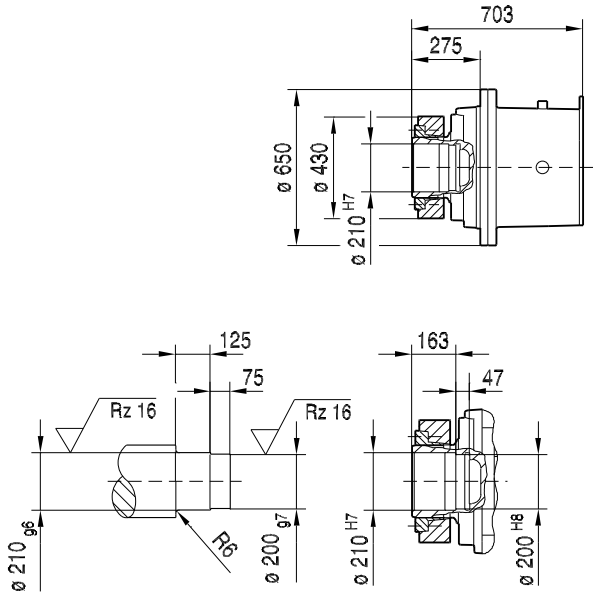
(→ 📖 73)	DR100L/LC	DR132S	DR132M/MC	DR160..	DR180S/M	DR180L/LC	DR225S	
AC	197	221	221	270	316	316	394	
AD	157	170	170	228	253	253	283	
ADS	158	172	172	228	253	253	283	
L	1087	1130	1180	1221	1290	1350	1423	
LS	1180	1242	1292	1358	1479	1539	1628	
LB	320	363	413	454	523	583	656	
LBS	413	475	525	591	712	772	861	

PF052KF107..

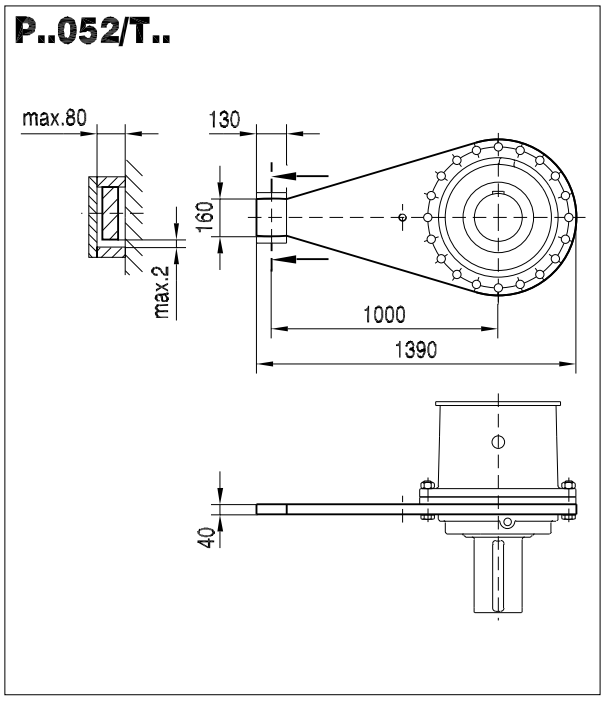
45 106 01 08



PHF052KF107..



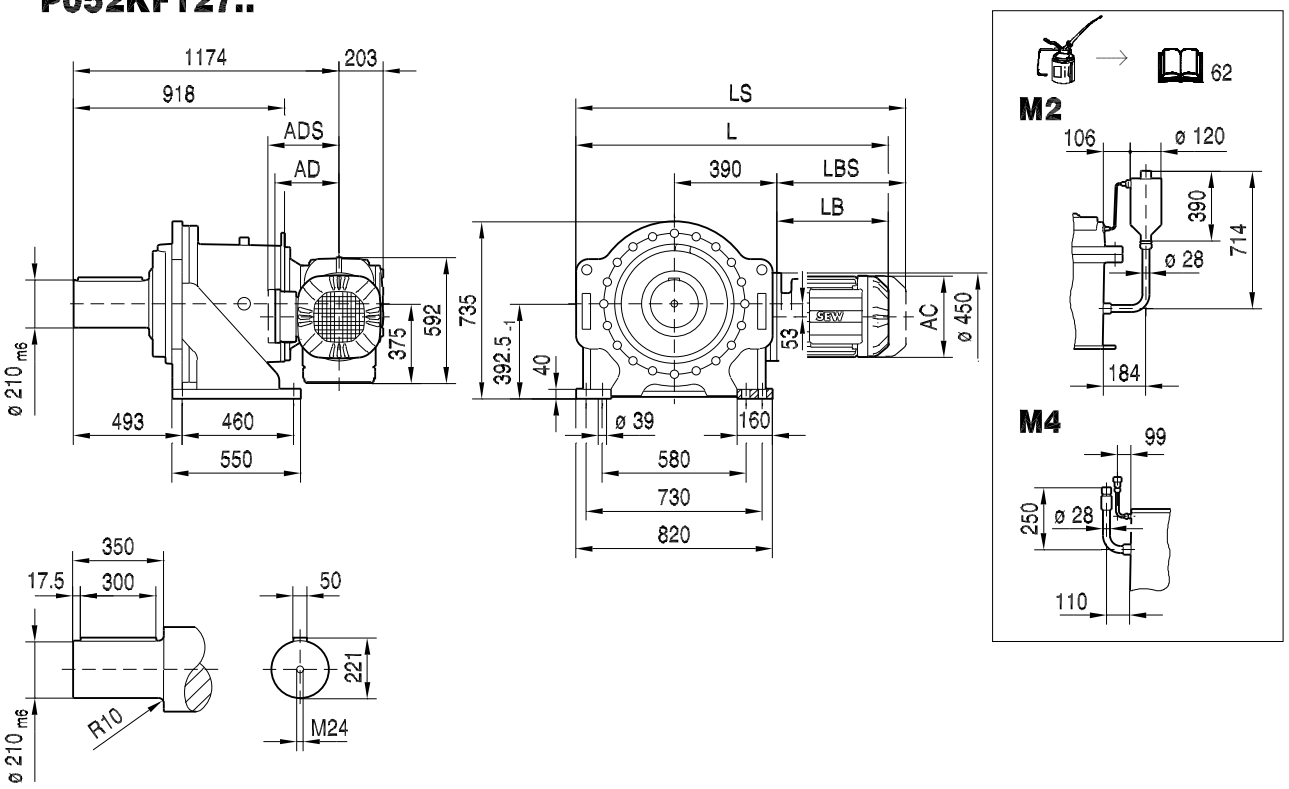
P..052/T..



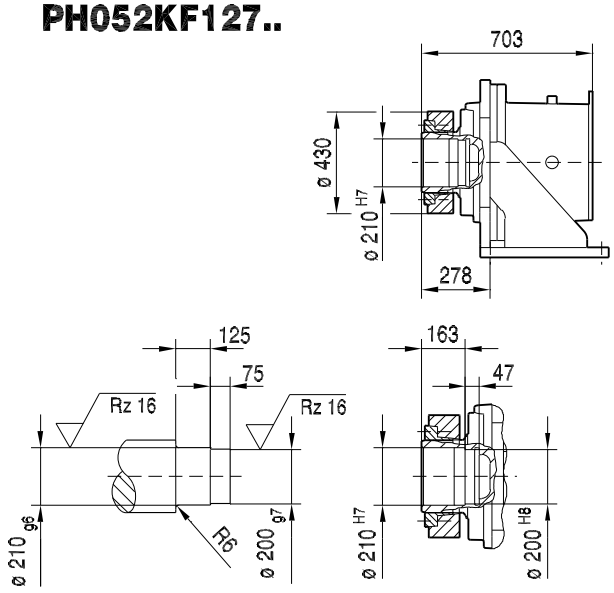
(→ 73)	DR100L/LC	DR132S	DR132M/MC	DR160..	DR180S/M	DR180L/LC	DR225S	
AC	197	221	221	270	316	316	394	
AD	157	170	170	228	253	253	283	
ADS	158	172	172	228	253	253	283	
L	986	1029	1079	1120	1189	1249	1322	
LS	1079	1141	1191	1257	1378	1438	1527	
LB	320	363	413	454	523	583	656	
LBS	413	475	525	591	712	772	861	

P052KF127..

45 079 01 08



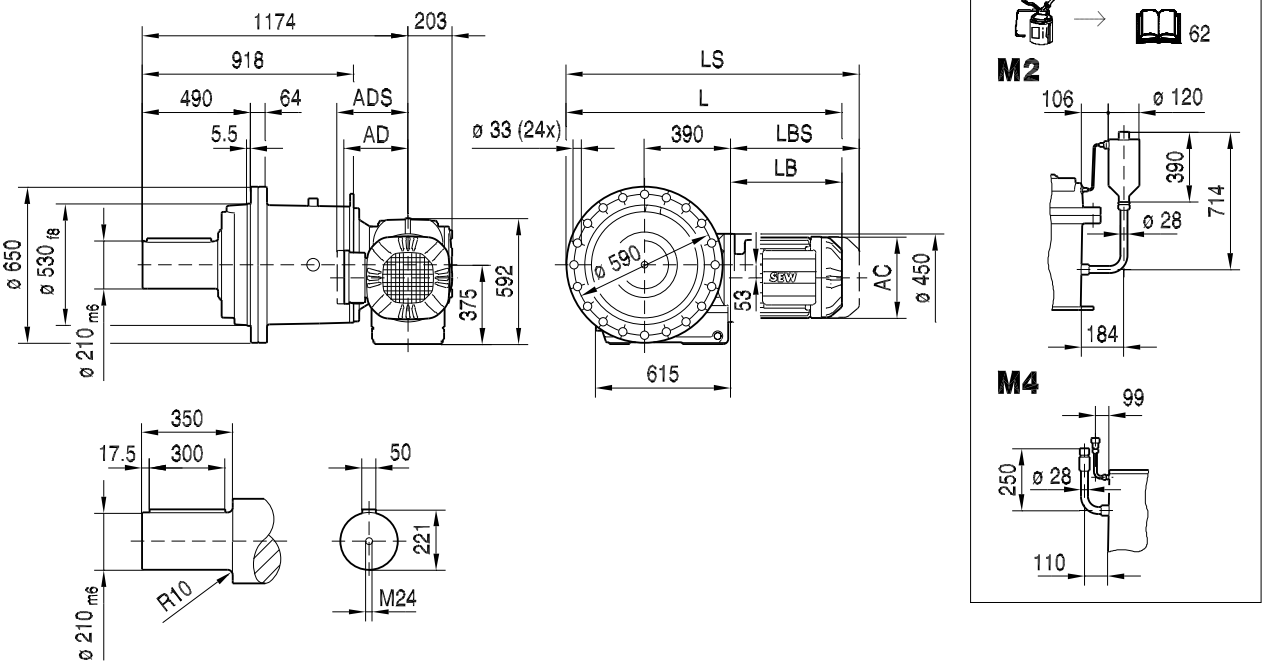
PH052KF127..



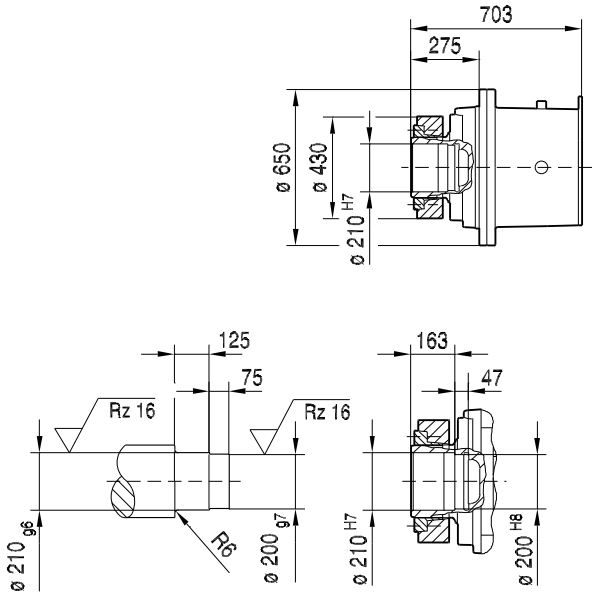
(→ 73)	DR180L/LC	DR225S	DR225M/MC	DV280..				
AC	316	394	394	510				
AD	253	283	283	397				
ADS	253	283	283	397				
L	1384	1457	1507	1596				
LS	1573	1662	1712	1781				
LB	568	641	691	780				
LBS	757	846	896	965				

PF052KF127..

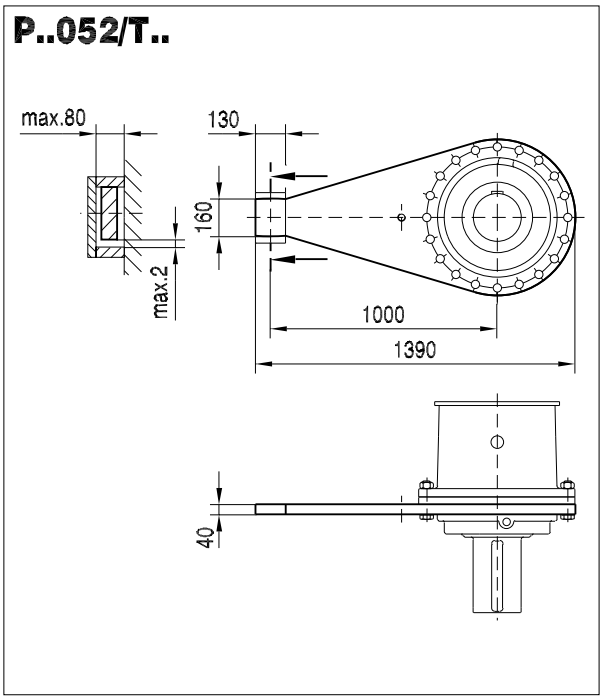
45 107 01 08



PHF052KF127..



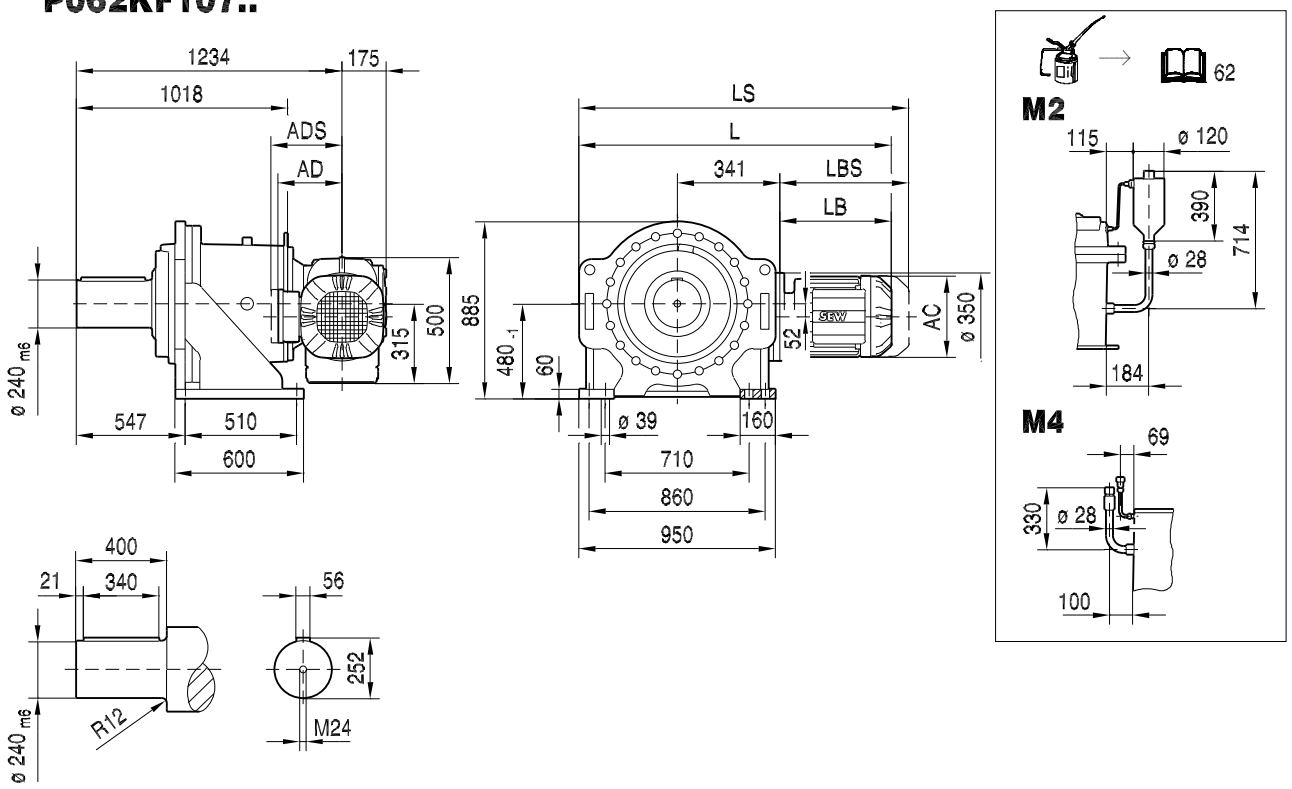
P..052/T..



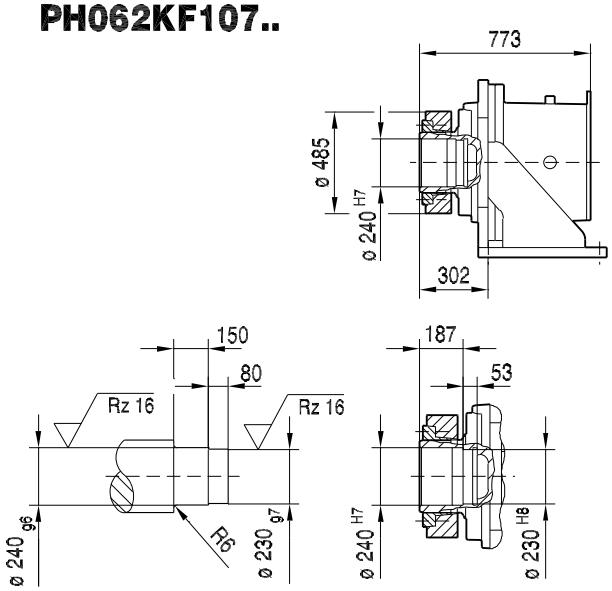
(→ 73)	DR180L/LC	DR225S	DR225M/MC	DV280..				
AC	316	394	394	510				
AD	253	283	283	397				
ADS	253	283	283	397				
L	1283	1356	1406	1495				
LS	1472	1561	1611	1680				
LB	568	641	691	780				
LBS	757	846	896	965				

P062KF107..

45 081 01 08



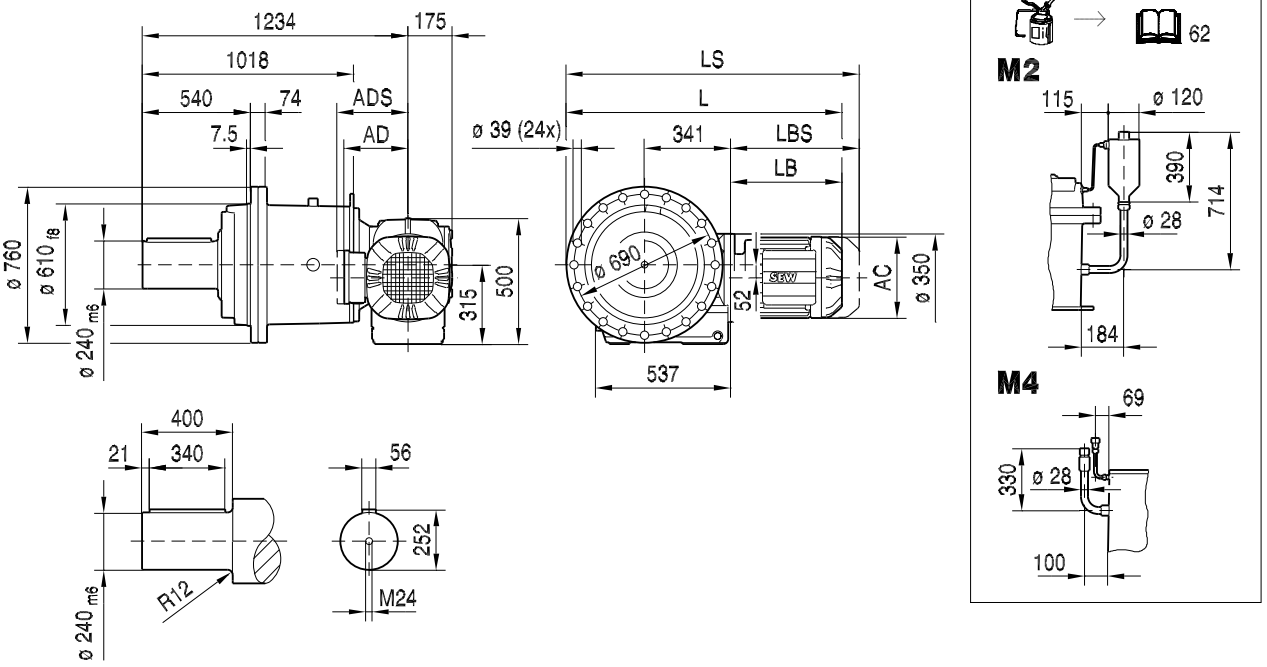
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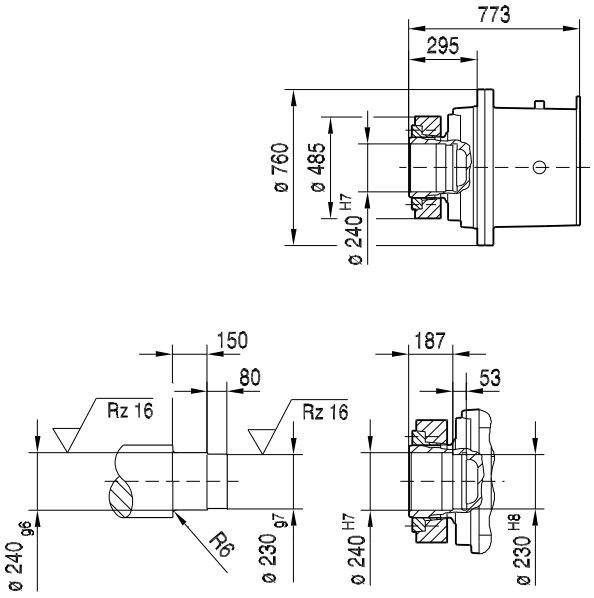
(→ 73)	DR132S	DR132M/MC	DR160..	DR180S/M	DR180L/LC			
AC	221	221	270	316	316			
AD	170	170	228	253	253			
ADS	172	172	228	253	253			
L	1179	1229	1270	1339	1399			
LS	1291	1341	1407	1528	1588			
LB	363	413	454	523	583			
LBS	475	525	591	712	772			

PF062KF107..

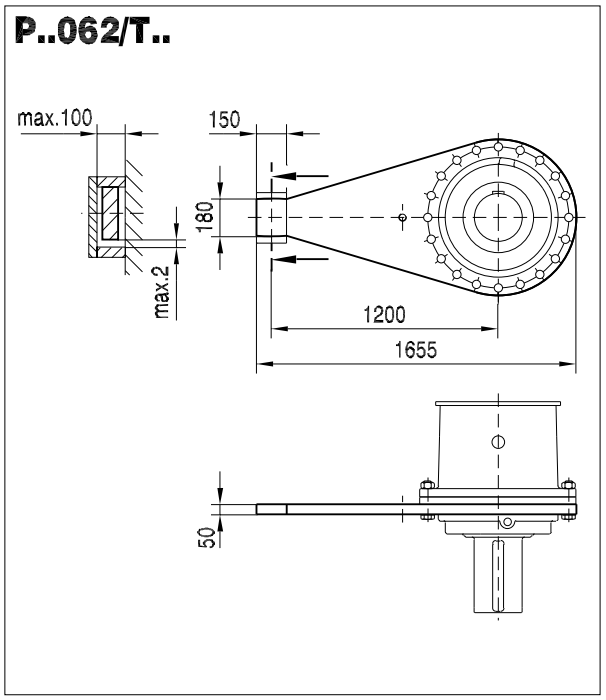
45 109 01 08



PHF062KF107..



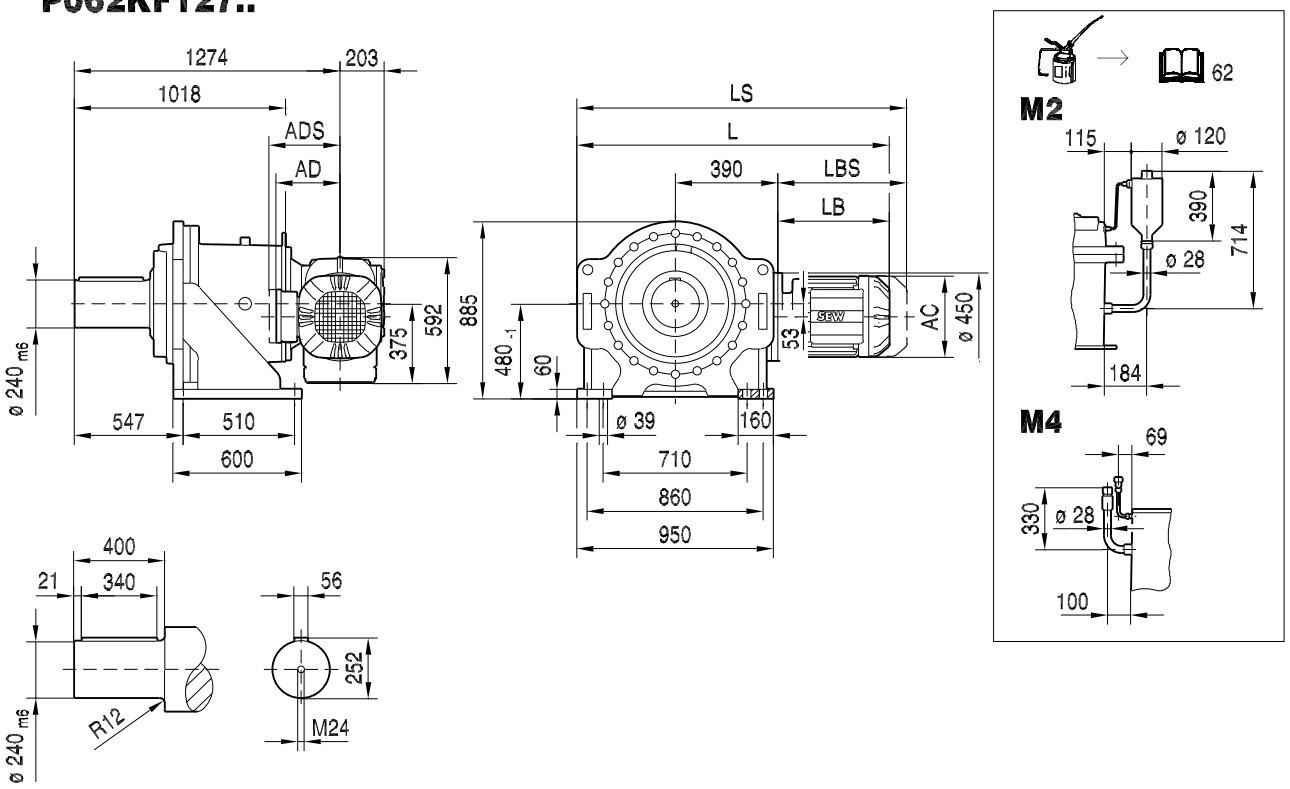
P..062/T..



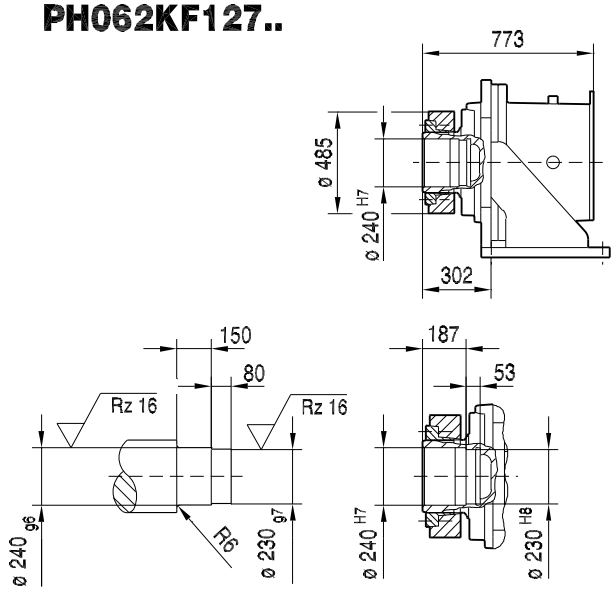
(→ 73)	DR132S	DR132M/MC	DR160..	DR180S/M	DR180L/LC			
AC	221	221	270	316	316			
AD	170	170	228	253	253			
ADS	172	172	228	253	253			
L	1084	1134	1175	1244	1304			
LS	1196	1246	1312	1433	1493			
LB	363	413	454	523	583			
LBS	475	525	591	712	772			

P062KF127..

45 082 01 08



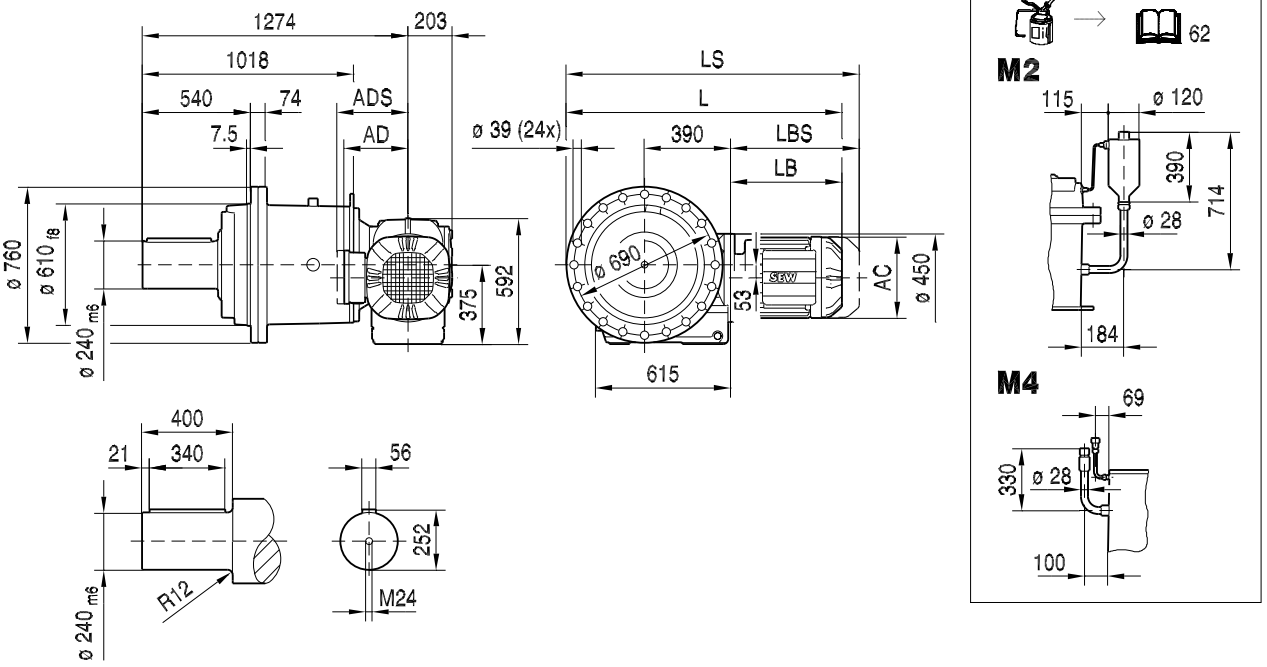
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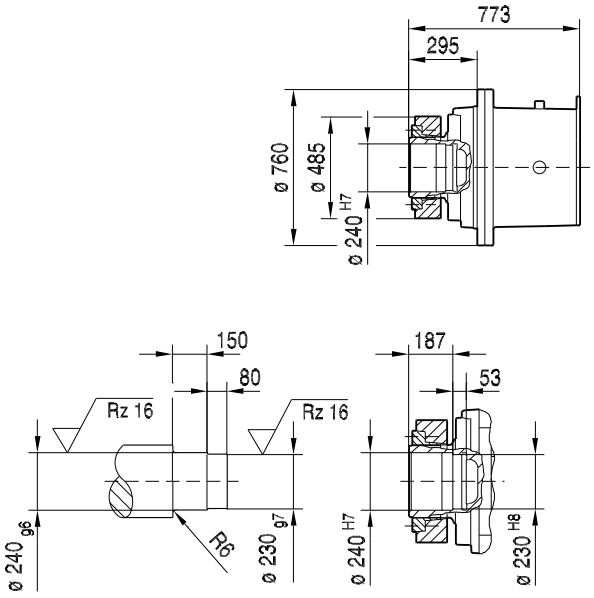
(→ 73)	DR132M/MC	DR160..	DR180S/M	DR180L/LC	DR225S	DR225M/MC	DV280..	
AC	221	270	316	316	394	394	510	
AD	170	228	253	253	283	283	397	
ADS	172	228	253	253	283	283	397	
L	1263	1304	1373	1433	1506	1556	1645	
LS	1375	1441	1562	1622	1711	1761	1830	
LB	398	439	508	568	641	691	780	
LBS	510	576	697	757	846	896	965	

PF062KF127..

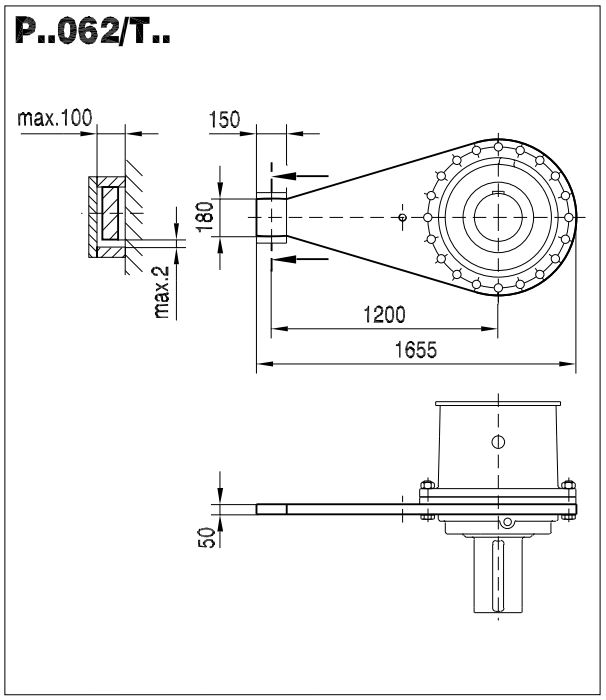
45 110 01 08



PHF062KF127..



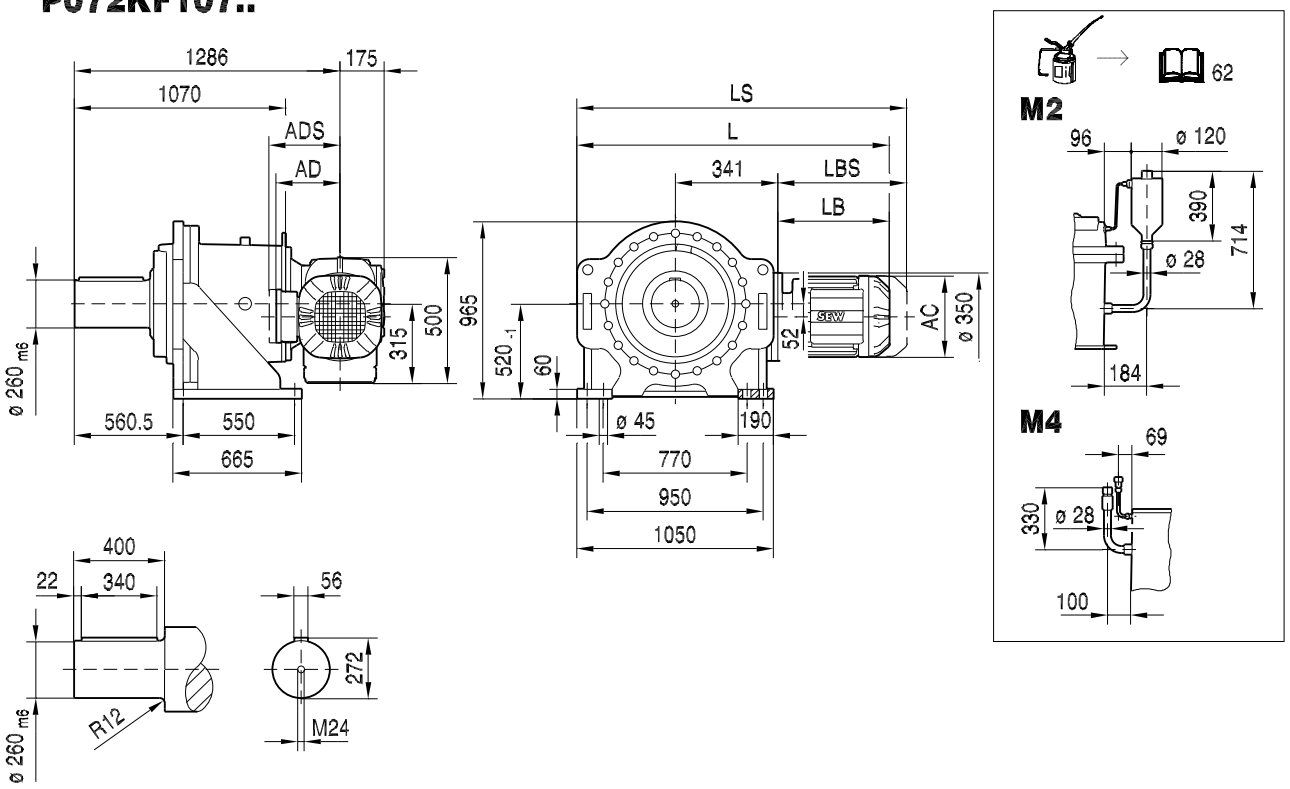
P..062/T..



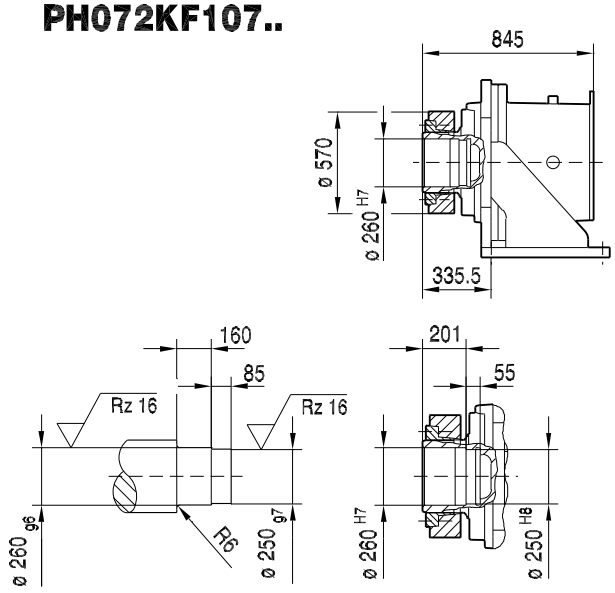
(→ 73)	DR132M/MC	DR160..	DR180S/M	DR180L/LC	DR225S	DR225M/MC	DV280..	
AC	221	270	316	316	394	394	510	
AD	170	228	253	253	283	283	397	
ADS	172	228	253	253	283	283	397	
L	1168	1209	1278	1338	1411	1461	1550	
LS	1280	1346	1467	1527	1616	1666	1735	
LB	398	439	508	568	641	691	780	
LBS	510	576	697	757	846	896	965	

P072KF107..

45 083 01 08



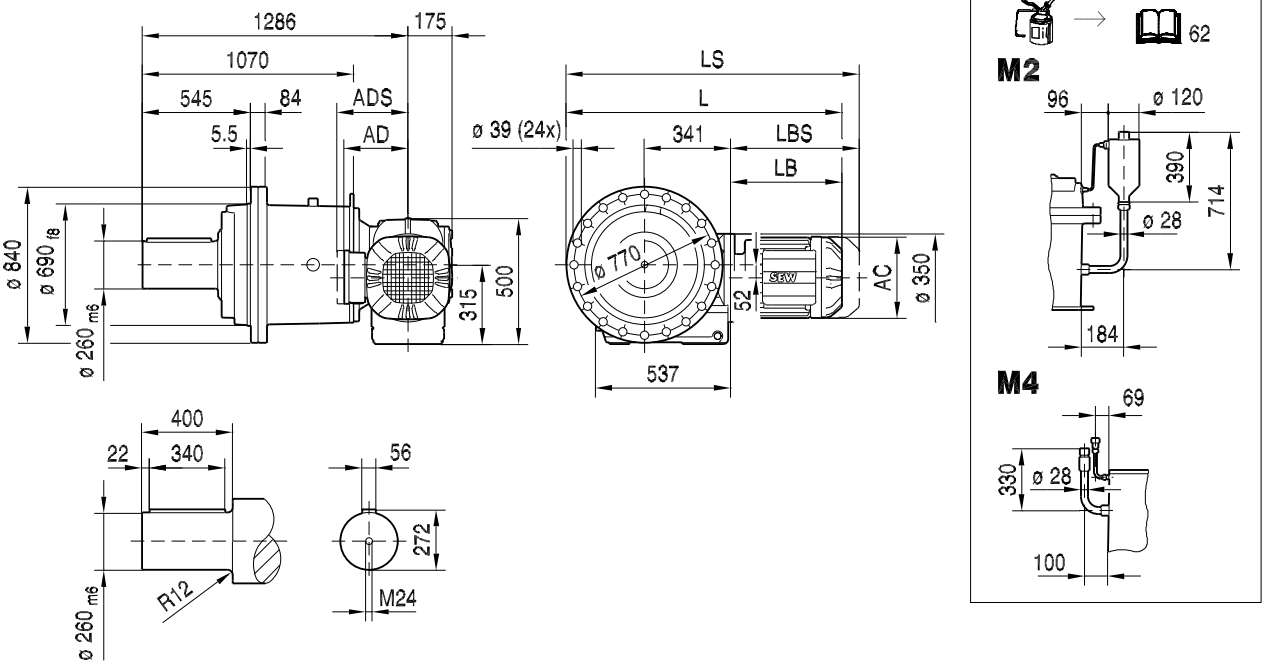
PH072KF107..



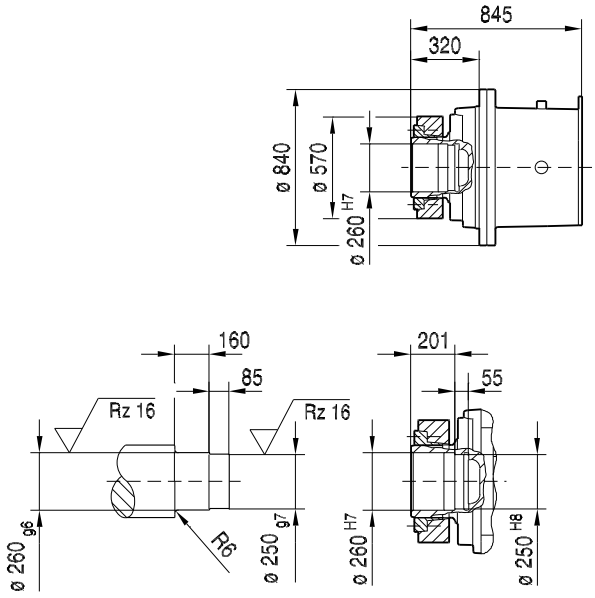
(→ 📖 73)	DR132M/MC							
AC	221							
AD	170							
ADS	172							
L	1297							
LS	1409							
LB	413							
LBS	525							

PF072KF107..

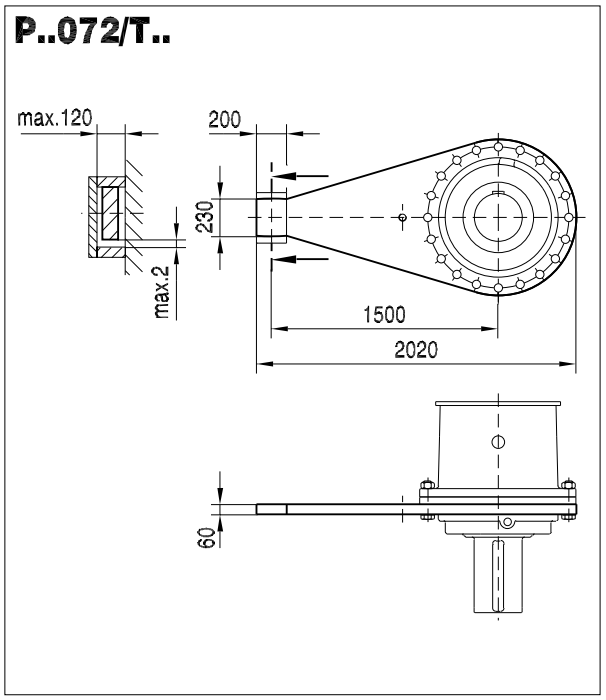
45 111 01 08



PHF072KF107..



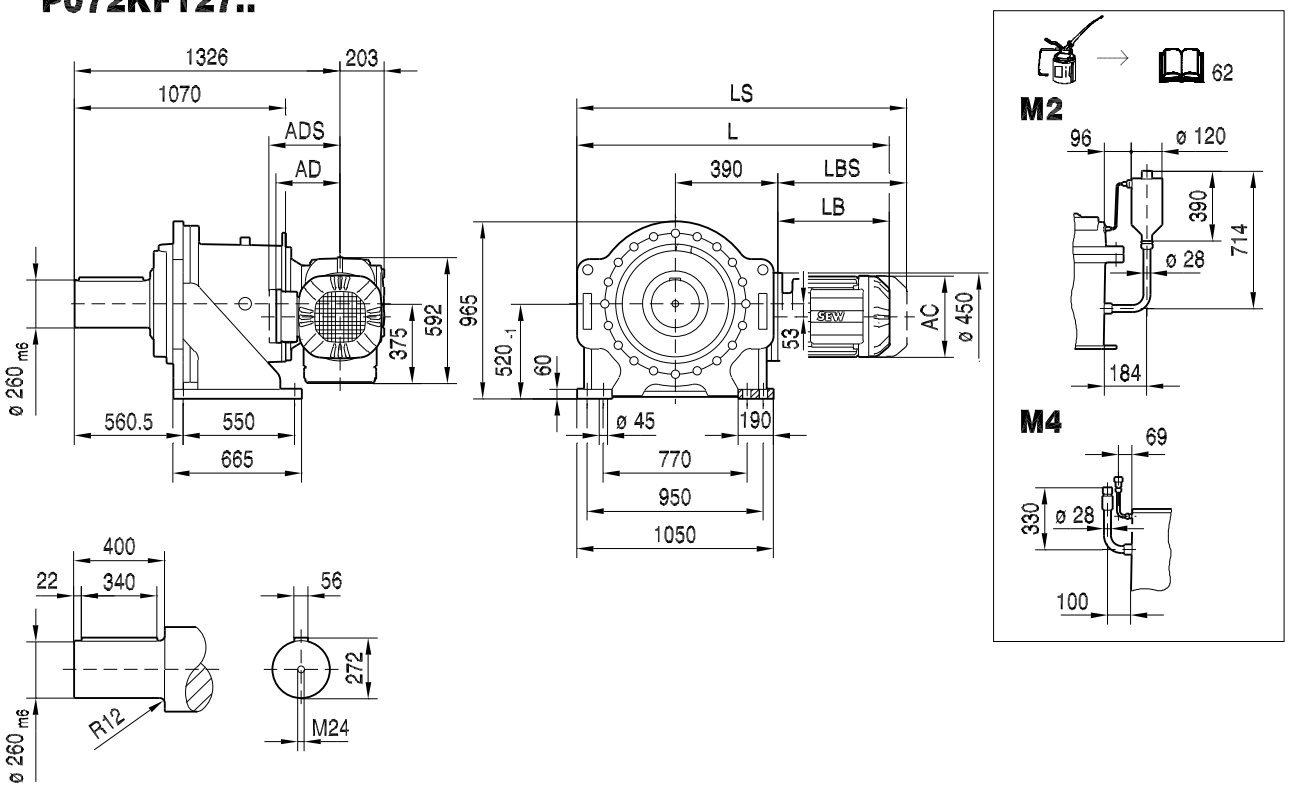
P..072/T..



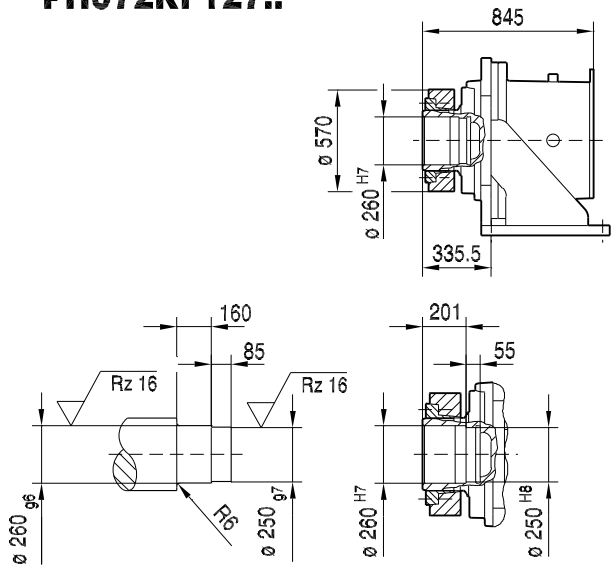
(→ 73)	DR132M/MC							
AC	221							
AD	170							
ADS	172							
L	1174							
LS	1286							
LB	413							
LBS	525							

P072KF127..

45 084 01 08



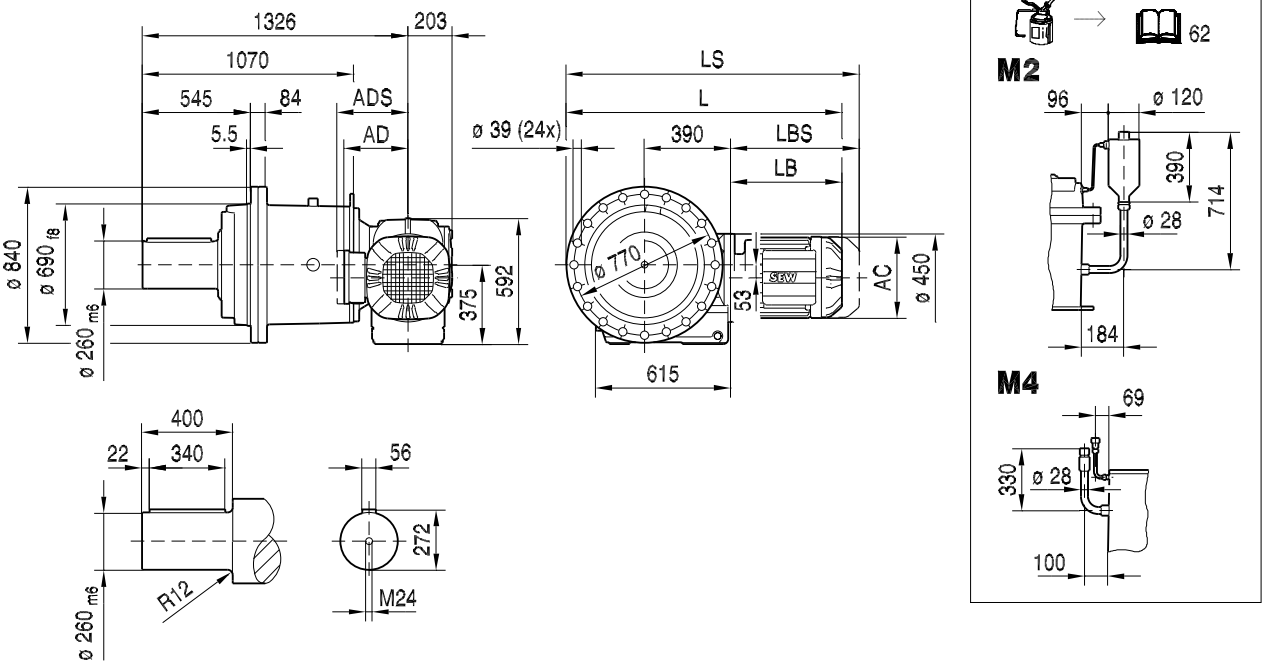
PH072KF127..



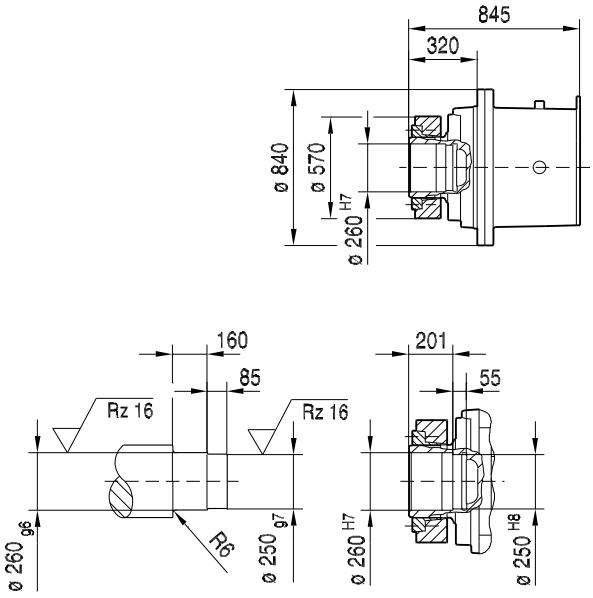
(→ 73)	DR132M/MC	DR160..	DR180S/M	DR180L/LC	DR225S	DR225M/MC		
AC	221	270	316	316	394	394		
AD	170	228	253	253	283	283		
ADS	172	228	253	253	283	283		
L	1331	1372	1441	1501	1574	1624		
LS	1443	1509	1630	1690	1779	1829		
LB	398	439	508	568	641	691		
LBS	510	576	697	757	846	896		

PF072KF127..

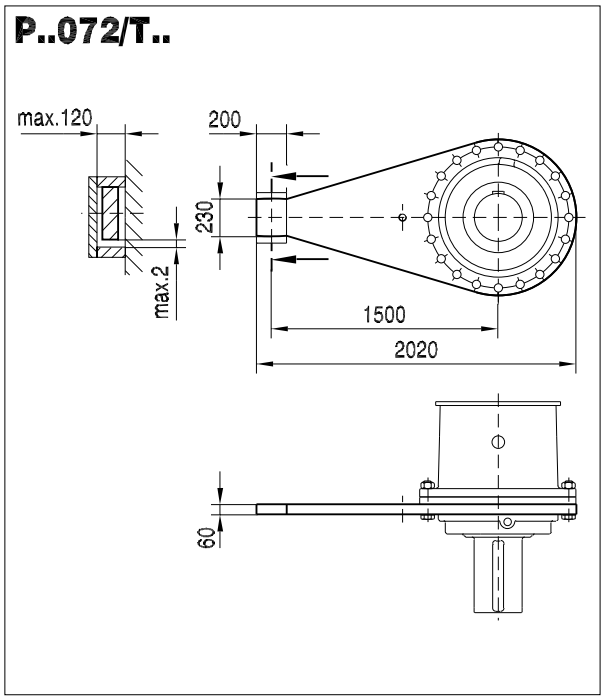
45 112 01 08



PHF072KF127..



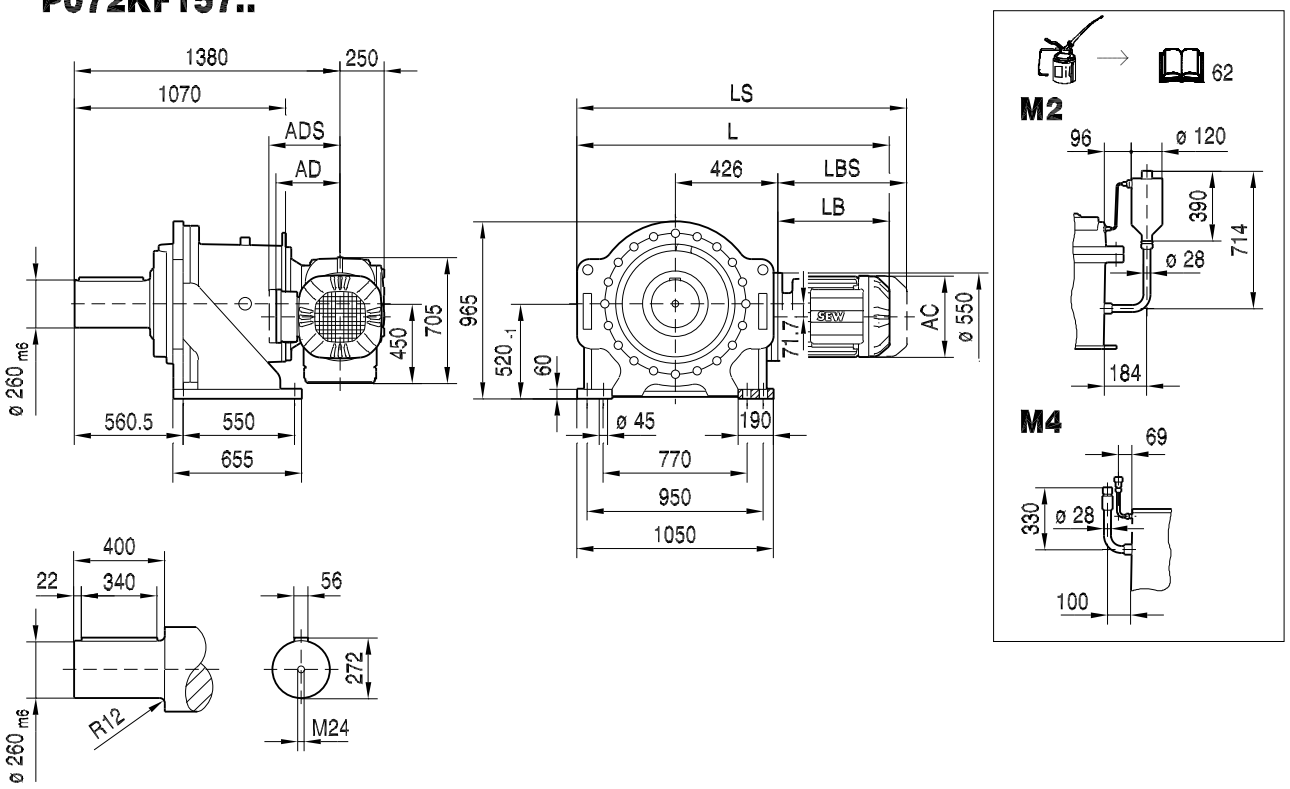
P..072/T..



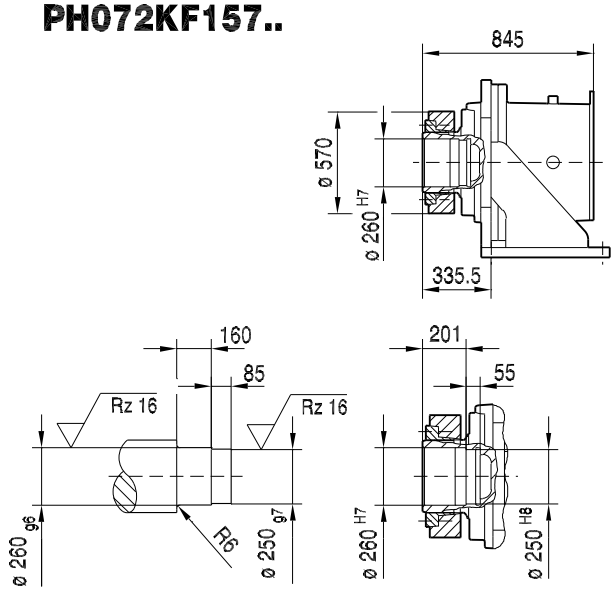
(→ 73)	DR132M/MC	DR160..	DR180S/M	DR180L/LC	DR225S	DR225M/MC		
AC	221	270	316	316	394	394		
AD	170	228	253	253	283	283		
ADS	172	228	253	253	283	283		
L	1208	1249	1318	1378	1451	1501		
LS	1320	1386	1507	1567	1656	1706		
LB	398	439	508	568	641	691		
LBS	510	576	697	757	846	896		

P072KF157..

45 085 01 08



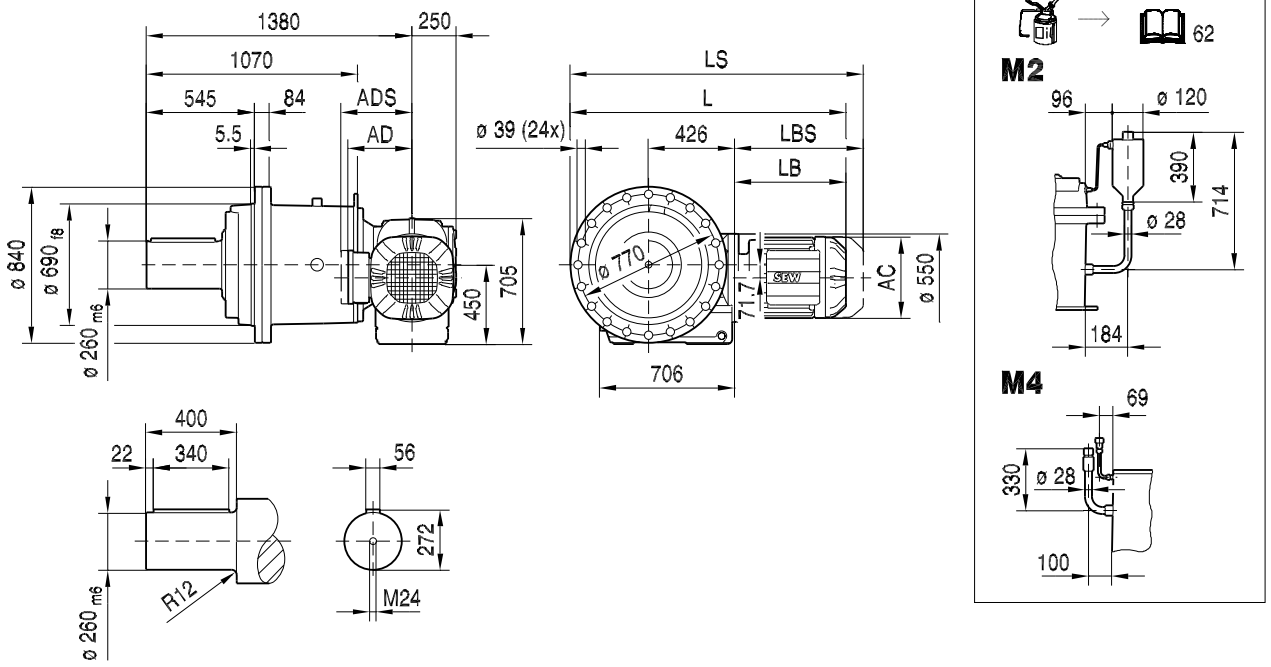
PH072KF157..



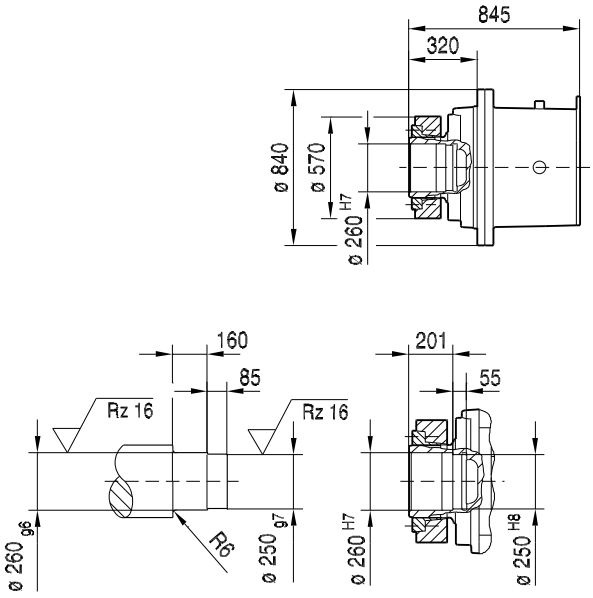
(→ 📖 73)	DR160..	DR180S/M	DR180L/LC	DR225M/MC	DV280..			
AC	270	316	316	394	510			
AD	228	253	253	283	397			
ADS	228	253	253	283	397			
L	1400	1469	1529	1652	1740			
LS	1537	1658	1718	1857	1925			
LB	431	500	560	683	771			
LBS	568	689	749	888	956			

PF072KF157..

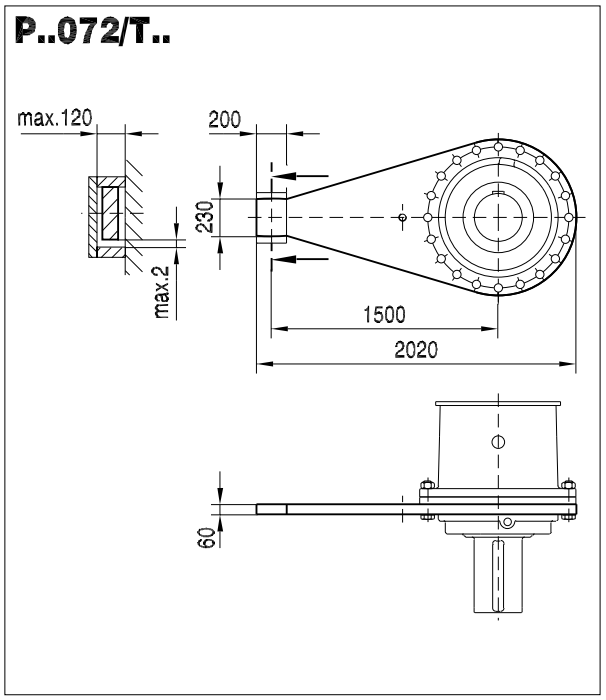
45 113 01 08



PHF072KF157..



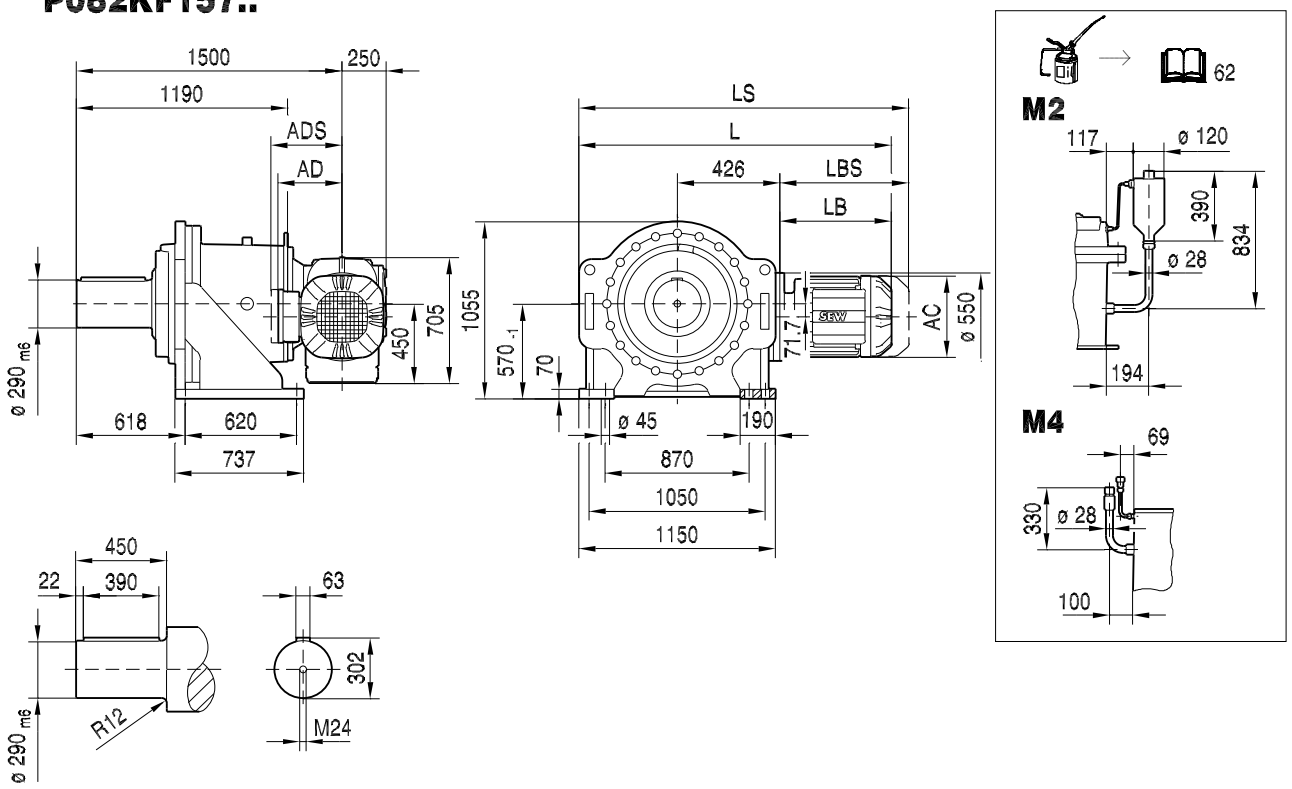
P..072/T..



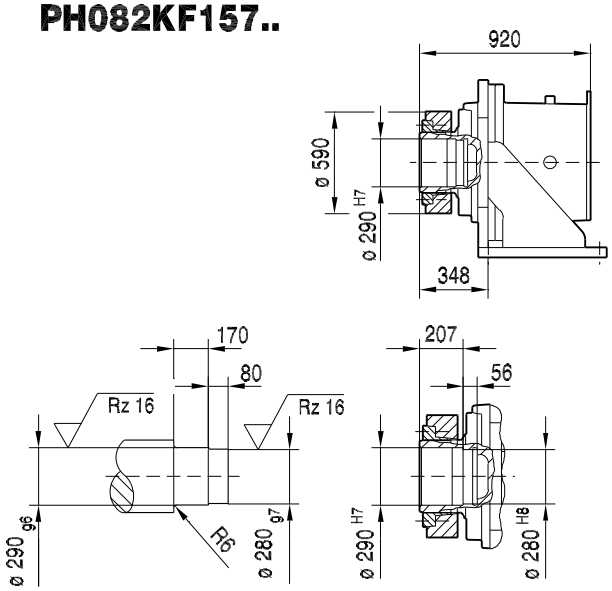
(→ 73)	DR160..	DR180S/M	DR180L/LC	DR225M/MC	DV280..			
AC	270	316	316	394	510			
AD	228	253	253	283	397			
ADS	228	253	253	283	397			
L	1277	1346	1406	1529	1617			
LS	1414	1535	1595	1734	1802			
LB	431	500	560	683	771			
LBS	568	689	749	888	956			

P082KF157..

45 086 01 08



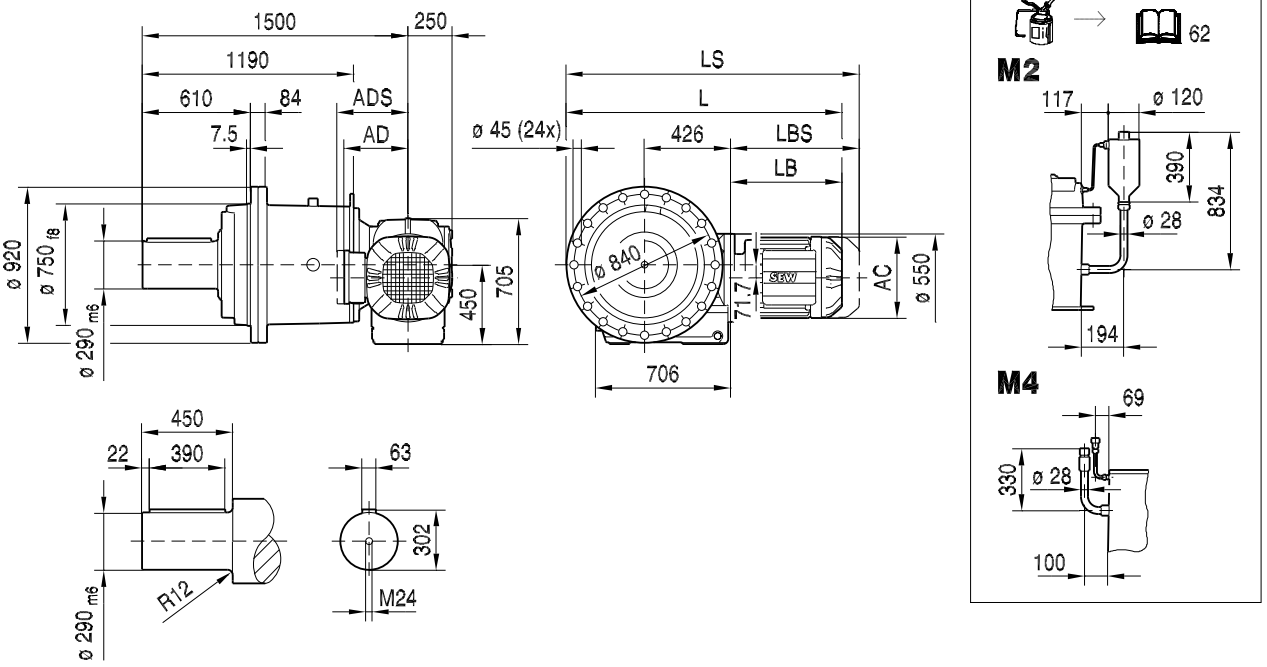
PH082KF157..



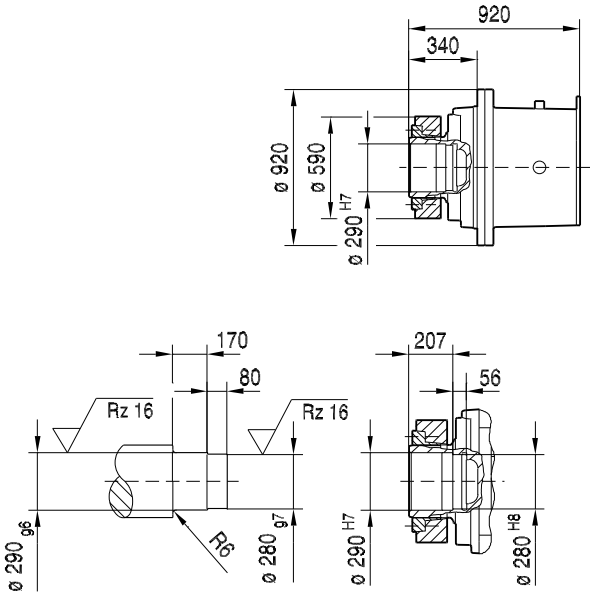
(→ 73)	DR160..	DR180S/M	DR180L/LC	DR225S	DR225M/MC	DV280..		
AC	270	316	316	394	394	510		
AD	228	253	253	283	283	397		
ADS	228	253	253	283	283	397		
L	1442	1511	1571	1644	1694	1782		
LS	1579	1700	1760	1849	1899	1967		
LB	431	500	560	633	683	771		
LBS	568	689	749	838	888	956		

PF082KF157..

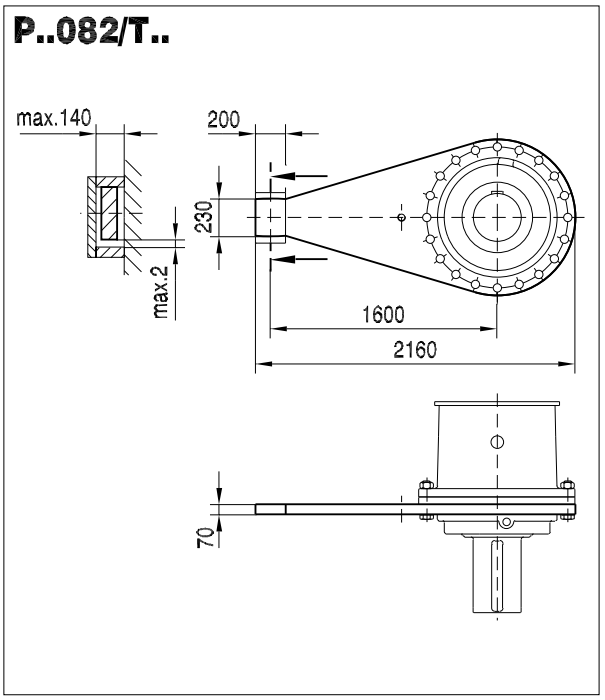
45 114 01 08



PHF082KF157..



P..082/T..

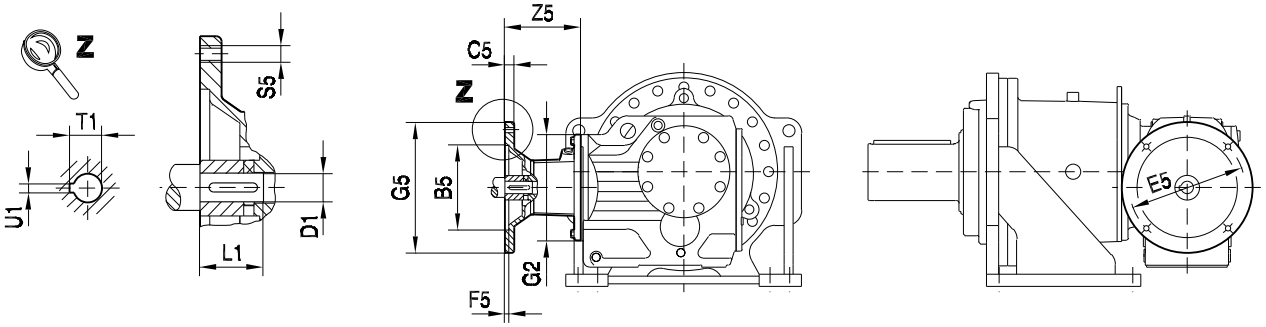


(→ 73)	DR160..	DR180S/M	DR180L/LC	DR225S	DR225M/MC	DV280..		
AC	270	316	316	394	394	510		
AD	228	253	253	283	283	397		
ADS	228	253	253	283	283	397		
L	1317	1386	1446	1519	1569	1657		
LS	1454	1575	1635	1724	1774	1842		
LB	431	500	560	633	683	771		
LBS	568	689	749	838	888	956		

11.4 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

P..KF..AM..

45 123 00 08

Fig.1

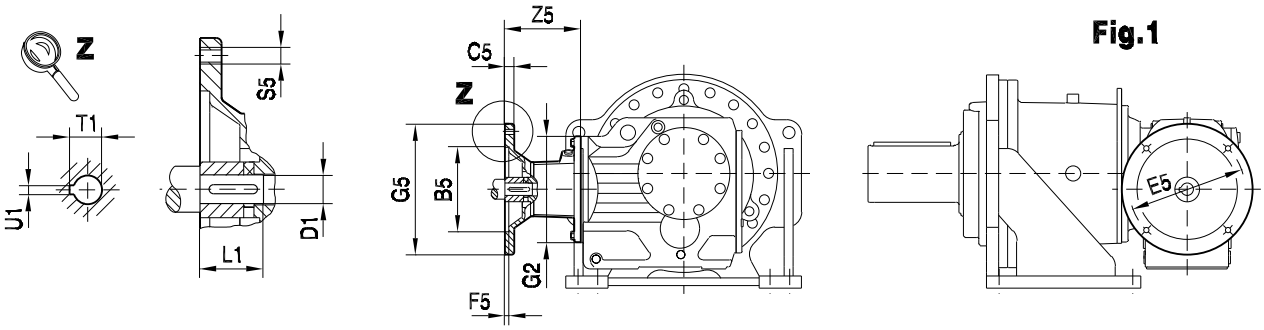


Fig.2

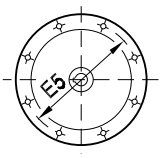
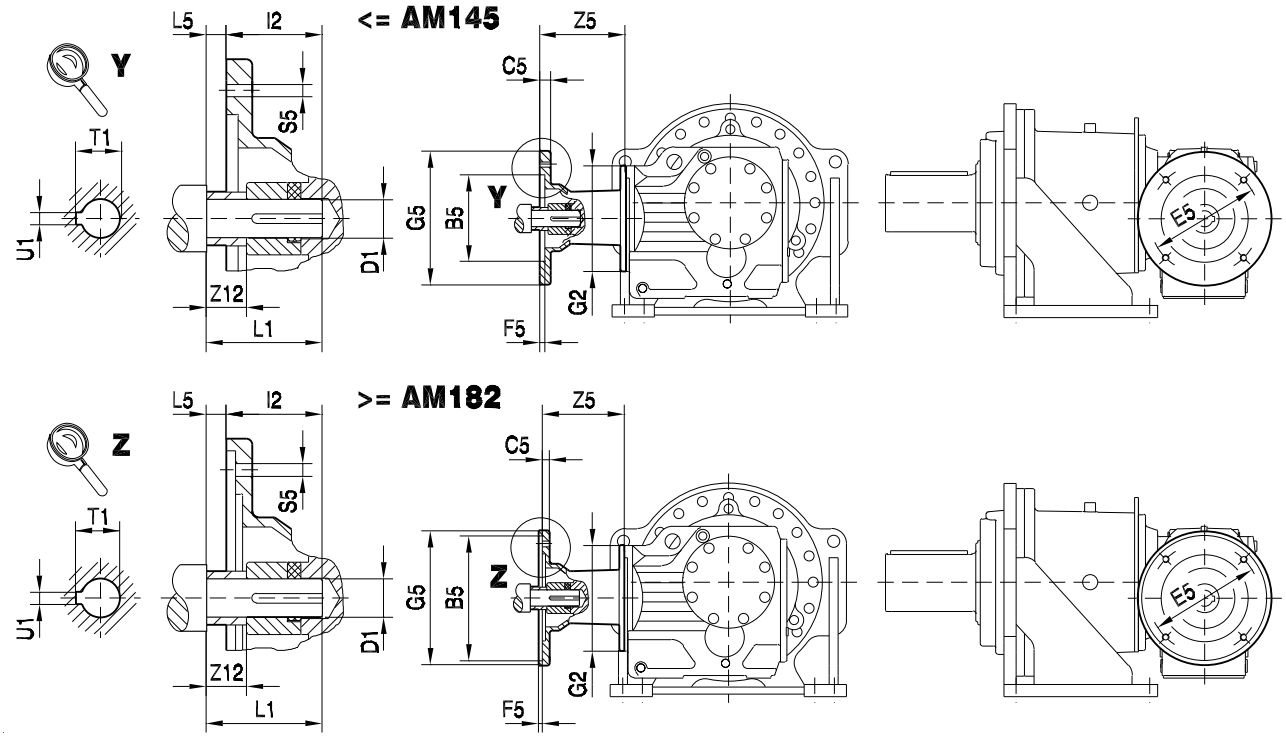


		Fig.	B5	C5	E5	F5	G2	G5	S5	Z5	D1	L1	T1	U1
P..KF107	**AM100**	1	180	15	215	5	350	250	M12	110	28	60	31.3	8
	AM112													
	AM132S/M		230	16	265			300		163	38	80	41.3	10
	AM132ML													
	AM160		250	18	300	6		350	M16	221	42	110	45.3	12
	AM180										48		51.8	14
	AM200		300	20	350	7		400		262	55		59.3	16
	AM225	2	350	22	400			450		277	60	140	64.4	18
P..KF127	**AM132S/M**	1	230	16	265	5	450	300	M12	148	38	80	41.3	10
	AM132ML													
	AM160		250	18	300	6		350	M16	206	42	110	45.3	12
	AM180										48		51.8	14
	AM200		300	20	350	7		400		247	55		59.3	16
	AM225	2	350	22	400			450		262	60	140	64.4	18
	AM250		450	25	500			550		336	65		69.4	
	AM280										75		79.9	20
P..KF157	**AM160**	1	250	18	300	6	550	350	M16	198	42	110	45.3	12
	AM180										48		51.8	14
	AM200		300	20	350	7		400		239	55		59.3	16
	AM225	2	350	22	400			450		254	60	140	64.4	18
	AM250		450	25	500			550		328	65		69.4	
	AM280										75		79.9	20

11.5 Adapter for mounting NEMA motors

45 124 00 08

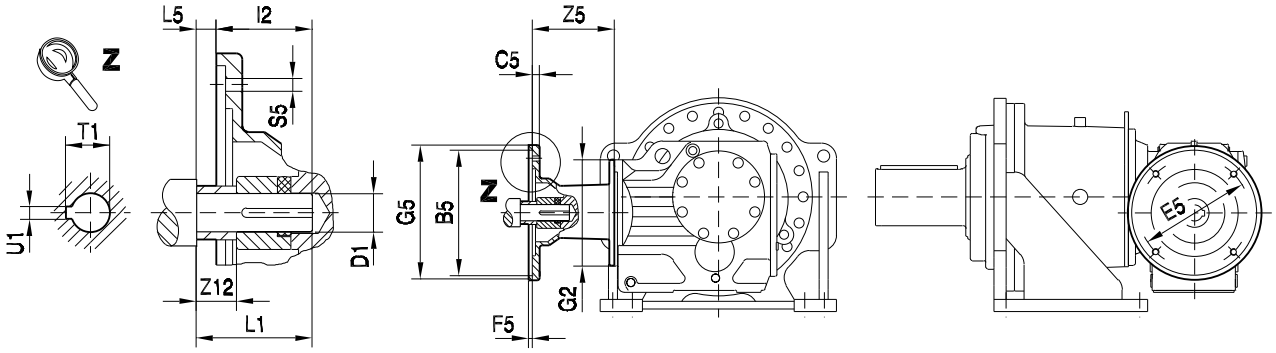
P..KF..AM..



		B5	C5	E5	F5	G2	G5	l2	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	66.85	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	66.85	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
	AM284/286	266.7	15	228.6	5		286	111.05	6.3	15	241	15.8	47.625	117	53.4	12.7
P..KF97	AM182	215.9	10	184	5	300	228	66.85	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

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P..KF..AM..

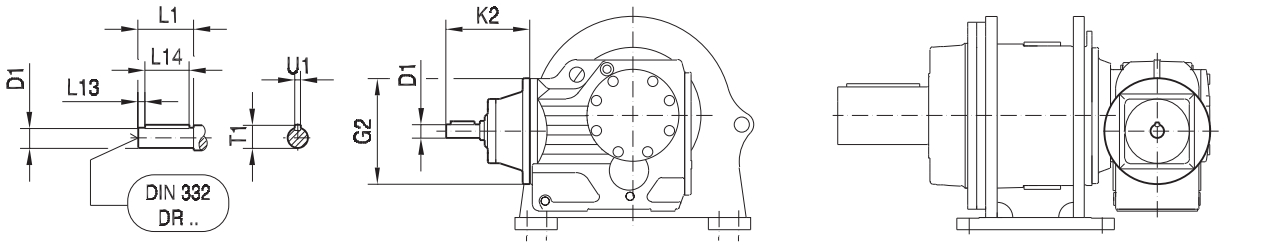


		B5	C5	E5	F5	G2	G5	I2	L5	S5	Z5	Z12	D1	L1	T1	U1
P..KF107	AM182	215.9	10	184	5	350	228	66.85	3	15	123.5	16.5	28.575	69	31.7	6.35
	AM184															
	AM213/215		11					79.55	6.3		172.5	15.8	34.925	85	38.7	7.94
	AM254/256		12					95.3	6.3		223	9	41.275	101	45.8	9.53
	AM284/286	266.7	15	228.6	5		286	111.05	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		208	9	41.275	101	45.8	9.53
	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	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

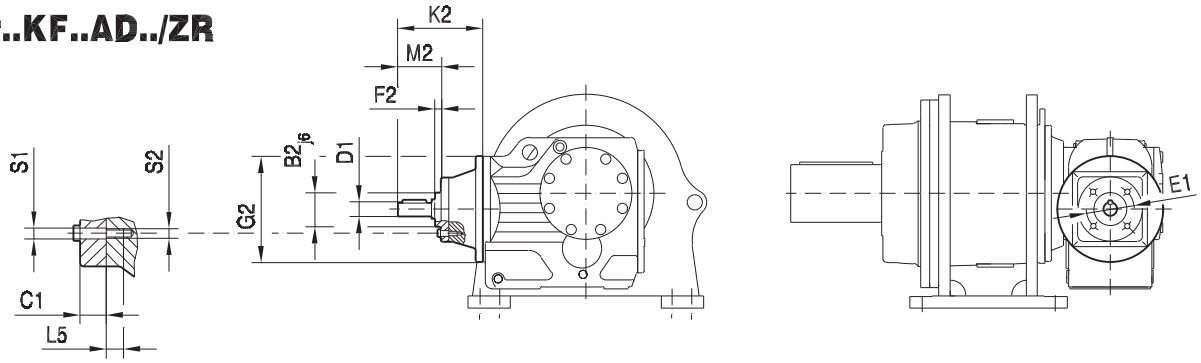
11.6 Input shaft assembly AD

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P..KF..AD..



P..KF..AD../ZR

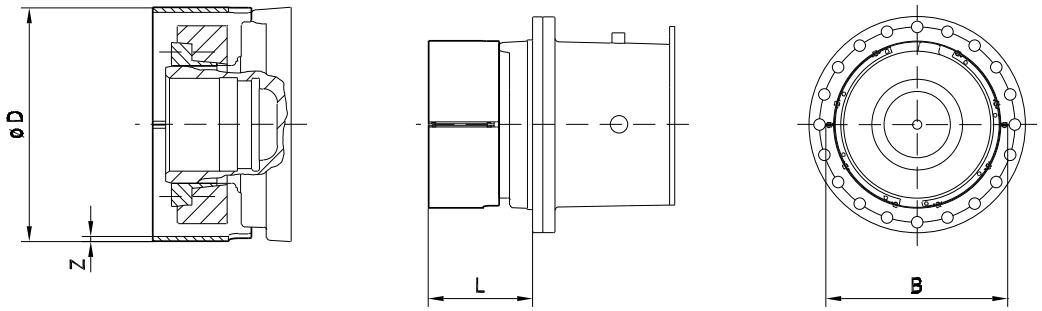


		B2	C1	E1	F2	G2	K2	L5	M2	S1	S2	D1	L1	L13	L14	T1	U1
P..KF77	AD2 , AD2/ZR	55	13.5	80	8	200	116	12	50	9	M8	19	40	4	32	21.5	6
	AD3 , AD3/ZR	70	15.5	105	8		151	16	60	11	M10	24	50	5	40	27	8
	AD4 , AD4/ZR	100	16	130	13		224	20	95.5	13.5	M12	38	80	5	70	41	10
P..KF87	AD2 , AD2/ZR	55	13.5	80	8	250	111	12	50	9	M8	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

12 Additional Dimension Sheets

12.1 Protective cover for shrink disk

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	B	ø D	L	Z
P002	350	307	176	2
P012	396	353	182.5	2
P022	452	409	193	2
P032	472	429	224.5	2
P042	522	479	269	2
P052	566	523	293	2
P062	636	593	312	2
P072	712	669	335.5	2
P082	776	733	360	2



13 Appendix

13.1 Abbreviation key

d_0	Mean diameter of mounted transmission element	mm
F_{A1}	Axial force at HSS	N
F_{A2}	Axial force at LSS	N
F_F	Peak load factor	-
F_R	Overhung load	N
$F_{R\ zul}$	Permitted overhung load	N
$F_{R\ max}$	Maximum overhung load	N
F_{Start}	Startup factor	-
$F_{S\ min}$	Application-specific service factor	-
F_S	Service factor = M_{N2} / M_{K2} = P_{N1} / P_{K1}	-
f_z	Transmission element factor	-
η	Efficiency	-
H	Installation altitude above sea level	m
HSS	High speed shaft (usually input shaft)	-
i	Gear ratio	-
i_{ex}	Exact gear ratio	-
IP...	Degree of protection of electrical equipment	-
$L_{h\ min.}$	Required minimum service life of the gear unit bearings	h
LSS	Low speed shaft (usually output shaft)	-
M_a	Output torque based on motor power	Nm
M_{K1}	Input torque (= operating torque at HSS)	Nm
$M_{K1\ max}$	Peak input torque (= peak operating torque at HSS)	Nm
M_{K2}	Output torque (= operating torqe at LSS)	Nm
$M_{K2\ max}$	Peak output torque (= peak operating torque at LSS)	Nm
$M_{K2\ zul}$	Permitted peak output torque	Nm
M_M	Nominal motor torque	Nm
M_{N2}	Nominal gear unit torque	Nm
n_1	Input speed	1/min
n_2	Output speed	1/min
n_M	Motor speed	1/min
P_{K1}	Operating power at HSS	kW
$P_{K1\ max}$	Peak operating power at HSS	kW
$P_{K1\ zul}$	Permitted peak operating power at HSS	kW
P_{K2}	Operating power at LSS	kW
P_M	Nominal motor power	kW
P_{N1}	Nominal gear unit power (based on HSS)	kW
t	Load period during one cycle	sec.

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	Paris Ouest	SEW-USOCOME 42 avenue Jean Jaurès F-78580 Maule	Tel. +33 1 30 90 89 86 Fax +33 1 30 90 93 15
	Paris Picardie	SEW-USOCOME 25 bis, rue Kléber F-92300 Levallois Perret	Tel. +33 1 41 05 92 74 Fax +33 1 41 05 92 75
	Paris Sud	SEW-USOCOME 6. chemin des Bergers Lieu-dit Marchais F-91410 Roinville sous Dourdan	Tel. +33 1 60 81 10 56 Fax +33 1 60 81 10 57
	Provence	SEW-USOCOME Résidence Les Hespérides Bât. B2 67, boulevard des Alpes F-13012 Marseille	Tel. +33 4 91 18 00 11 Fax +33 4 91 18 00 12
	Pyrénées	SEW-USOCOME 179, route de Grazac F-31190 Caujac	Tel. +33 5 61 08 15 85 Fax +33 5 61 08 16 44
	Sud-Atlantique	SEW-USOCOME 12, rue des Pinsons F-44120 Vertou	Tel. +33 2 40 80 32 23 Fax +33 2 40 80 32 13

Algeria			
Sales	**Alger**	Réducom 16, rue des Frères Zaghnoun Bellevue El-Harrach 16200 Alger	Tel. +213 21 8222-84 Fax +213 21 8222-84 reducom_sew@yahoo.fr

Argentina			
Assembly **Sales** **Service**	**Buenos Aires**	SEW EURODRIVE ARGENTINA S.A. Centro Industrial Garin, Lote 35 Ruta Panamericana Km 37,5 1619 Garin	Tel. +54 3327 4572-84 Fax +54 3327 4572-21 sewar@sew-eurodrive.com.ar http://www.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 3272-7900 Fax +61 7 3272-7901 enquires@sew-eurodrive.com.au
	Perth	SEW-EURODRIVE PTY. LTD. 105 Robinson Avenue Belmont, W.A. 6104	Tel. +61 8 9478-2688 Fax +61 8 9277-7572 enquires@sew-eurodrive.com.au
Technical Office	**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**	**Wien**	SEW-EURODRIVE Ges.m.b.H. Richard-Strauss-Strasse 24 A-1230 Wien	Tel. +43 1 617 55 00-0 Fax +43 1 617 55 00-30 http://sew-eurodrive.at sew@sew-eurodrive.at
Technical Offices	**Linz**	SEW-EURODRIVE Ges.m.b.H. Reuchlinstr. 6/3 A-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 A-8045 Graz	Tel. +43 316 685 756-0 Fax +43 316 685 755 tb-graz@sew-eurodrive.at
	Dornbirn	SEW-EURODRIVE Ges.m.b.H. Lustenauerstraße 27/1 A-6850 Dornbirn	Tel. +43 5572 3725 99-0 Fax +43 5572 3725 99-20 tb-dornbirn@sew-eurodrive.at

Bangladesh			
Sales	**Dhaka**	Jainex Industrial and Engineering Ltd B 12 Apon Nibash East Nasirabad Bangladesh	Tel. +880 1713103502 Fax +880 31 613041 jainexbd@onlinectg.net

Belarus			
Sales	**Minsk**	SEW-EURODRIVE BY RybalkoStr. 26 BY-220033 Minsk	Tel.+375 (17) 298 38 50 Fax +375 (17) 29838 50 sales@sew.by

Belgium			
Assembly **Sales** **Service**	**Brüssel**	**SEW Caron-Vector** Avenue Eiffel 5 B-1300 Wavre	Tel. +32 10 231-311 Fax +32 10 231-336 http://www.sew-eurodrive.be info@caron-vector.be
Service Competence Center	**Industrial Gears**	**SEW Caron-Vector** Rue de Parc Industriel, 31 BE-6900 Marche-en-Famenne	Tel. +32 84 219-878 Fax +32 84 219-879 http://www.sew-eurodrive.be service-wallonie@sew-eurodrive.be
	Antwerp	**SEW Caron-Vector** Glasstraat, 19 BE-2170 Merksem	Tel. +32 3 64 19 333 Fax +32 3 64 19 336 http://www.sew-eurodrive.be service-antwerpen@sew-eurodrive.be

Brazil			
Production **Sales** **Service**	**Sao Paulo**	SEW-EURODRIVE Brasil Ltda. Avenida Amâncio Gaiolli, 152 - Rodovia Presidente Dutra Km 208 Guarulhos - 07251-250 - SP SAT - SEW ATENDE - 0800 7700496	Tel. +55 11 2489-9133 Fax +55 11 2480-3328 http://www.sew-eurodrive.com.br sew@sew.com.br
	Additional addresses for service in Brazil provided on request!		

Bulgaria			
Sales	**Sofia**	BEVER-DRIVE GmbH Bogdanovetz Str.1 BG-1606 Sofia	Tel. +359 2 9151160 Fax +359 2 9151166 bever@fastbg.net

Cameroon			
Sales	**Douala**	Electro-Services Rue Drouot Akwa B.P. 2024 Douala	Tel. +237 33 431137 Fax +237 33 431137

Canada			
Assembly **Sales** **Service**	**Toronto**	SEW-EURODRIVE CO. OF CANADA LTD. 210 Walker Drive Bramalea, Ontario L6T3W1	Tel. +1 905 791-1553 Fax +1 905 791-2999 http://www.sew-eurodrive.ca marketing@sew-eurodrive.ca
	Vancouver	SEW-EURODRIVE CO. OF CANADA LTD. 7188 Honeyman Street Delta. B.C. V4G 1 E2	Tel. +1 604 946-5535 Fax +1 604 946-2513 marketing@sew-eurodrive.ca
	Montreal	SEW-EURODRIVE CO. OF CANADA LTD. 2555 Rue Leger LaSalle, Quebec H8N 2V9	Tel. +1 514 367-1124 Fax +1 514 367-3677 marketing@sew-eurodrive.ca
	Additional addresses for service in Canada provided on request!		

Chile			
Assembly **Sales** **Service**	**Santiago de Chile**	SEW-EURODRIVE CHILE LTDA. Las Encinas 1295 Parque Industrial Valle Grande LAMPA RCH-Santiago de Chile P.O. Box Casilla 23 Correo Quilicura - Santiago - Chile	Tel. +56 2 75770-00 Fax +56 2 75770-01 http://www.sew-eurodrive.cl ventas@sew-eurodrive.cl

China			
Production **Assembly** **Sales** **Service**	**Tianjin**	SEW-EURODRIVE (Tianjin) Co., Ltd. No. 46, 7th Avenue, TEDA Tianjin 300457	Tel. +86 22 25322612 Fax +86 22 25322611 info@sew-eurodrive.cn http://www.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 82267891 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
	Wuhan	SEW-EURODRIVE (Wuhan) Co., Ltd. 10A-2, 6th Road No. 59, the 4th Quanli Road, WEDA 430056 Wuhan	Tel. +86 27 84478398 Fax +86 27 84478388

Colombia			
Assembly **Sales** **Service**	**Bogotá**	SEW-EURODRIVE COLOMBIA LTDA. Calle 22 No. 132-60 Bodega 6, Manzana B Santafé de Bogotá	Tel. +57 1 54750-50 Fax +57 1 54750-44 http://www.sew-eurodrive.com.co sewcol@sew-eurodrive.com.co

Croatia			
Sales **Service**	**Zagreb**	KOMPEKS d. o. o. PIT Erdödy 4 II HR 10 000 Zagreb	Tel. +385 1 4613-158 Fax +385 1 4613-158 kompeks@inet.hr

Czech Republic			
Sales	**Praha**	SEW-EURODRIVE CZ S.R.O. Business Centrum Praha Lužná 591 CZ-16000 Praha 6 - Vokovice	Tel. +420 255 709 601 Fax +420 220 121 237 http://www.sew-eurodrive.cz sew@sew-eurodrive.cz
Technical Offices	**Brno**	SEW-EURODRIVE CZ S.R.O. Křenová 52 CZ -60200 Brno	Tel. +420 543 256 151 +420 543 256 163 Fax +420 543 256 845
	Hradec Králové	SEW-EURODRIVE CZ S.R.O. Čechova 498 CZ-50202 Hradec Králové	Tel. +420 495 510 141 Fax +420 495 521 313
	Plzeň	SEW-EURODRIVE CZ S.R.O. Areal KRPA a.s. Zahradni 173/2 CZ-32600 Plzeň	Tel. +420 378 775 300 Fax +420 377 970 710
	Klatovy	SEW-EURODRIVE CZ S.R.O. Technická kancelář Klatovy Domažlická 800 CZ-33901 Klatovy	Tel. +420 376 310 729 Fax +420 376 310 725

Denmark			
Assembly **Sales** **Service**	**Kopenhagen**	SEW-EURODRIVEA/S Geminivej 28-30 DK-2670 Greve	Tel. +45 43 9585-00 Fax +45 43 9585-09 http://www.sew-eurodrive.dk sew@sew-eurodrive.dk



Egypt			
Sales **Service**	**Cairo**	Copam Egypt for Engineering & Agencies 33 El Hegaz ST, Heliopolis, Cairo	Tel. +20 2 22566-299 + 1 23143088 Fax +20 2 22594-757 http://www.copam-egypt.com/ copam@datum.com.eg
Service	**Sharjah**	Copam Middle East (FZC) Sharjah Airport International Free Zone P.O. Box 120709 Sharjah **United Arabian Emirates**	Tel. +971 6 5578-488 Fax +971 6 5578-499 copam_me@eim.ae

Estonia			
Sales	**Tallin**	ALAS-KUUL AS Reti tee 4 EE-75301 Peetri küla, Rae vald, Harjumaa	Tel. +372 6593230 Fax +372 6593231 veiko.soots@alas-kuul.ee

Finland			
Assembly **Sales** **Service**	**Lahti**	SEW-EURODRIVE OY Vesimäentie 4 FIN-15860 Hollola 2	Tel. +358 201 589-300 Fax +358 3 780-6211 sew@sew.fi http://www.sew-eurodrive.fi
Technical Offices	**Helsinki**	SEW-EURODRIVE OY Luutnantintie 5 FIN-00410 Helsinki	Tel. +358 201 589-300 Fax + 358 9 5666-311 sew@sew.fi
	Vaasa	SEW-EURODRIVE OY Hietasaarenkatu 18 FIN-65100 Vaasa	Tel. +358 201 589-300 Fax +358 6 3127-470 sew@sew.fi
	Rovaniemi	SEW-EURODRIVE OY Valtakatu 4 A FIN-96100 Rovaniemi	Tel. +358 201 589-300 Fax +358 201 589-239 sew@sew.fi
Production **Assembly** **Service**	**Karkkila**	SEW Industrial Gears Oy Valurinkatu 6, PL 8 FI-03600 Karkkila, 03601 Karkkila	Tel. +358 201 589-300 Fax +358 201 589-310 sew@sew.fi http://www.sew-eurodrive.fi

Gabon			
Sales	**Libreville**	ESG Electro Services Gabun Feu Rouge Lalala 1889 Libreville Gabun	Tel. +241 741059 Fax +241 741059

Great Britain			
Assembly **Sales** **Service**	**Normanton**	SEW-EURODRIVE Ltd. Beckbridge Industrial Estate P.O. Box No.1 GB-Normanton, West- Yorkshire WF6 1QR	Tel. +44 1924 893-855 Fax +44 1924 893-702 http://www.sew-eurodrive.co.uk info@sew-eurodrive.co.uk
Technical Offices	**London**	SEW-EURODRIVE Ltd. 764 Finchely Road, Temple Fortune GB-London N.W.11 7TH	Tel. +44 20 8458-8949 Fax +44 20 8458-7417
	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. Scottish Office No 37 Enterprise House Springkerse Business Park GB-Stirling FK7 7UF Scotland	Tel. +44 17 8647-8730 Fax +44 17 8645-0223

Greece			
Sales **Service**	**Athen**	Christ. Boznos & Son S.A. 12, Mavromichali Street P.O. Box 80136, GR-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

Hong Kong			
Assembly **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

Hungary			
Sales **Service**	**Budapest**	SEW-EURODRIVE Kft. H-1037 Budapest Kunigunda u. 18	Tel. +36 1 437 06-58 Fax +36 1 437 06-50 office@sew-eurodrive.hu

Iceland			
Sales	**Reykjavik**	Vélaverk ehf. Bolholti 8, 3h. IS - 105 Reykjavik	Tel. +354 568 3536 Fax +354 568 3537 velaverk@velaverk.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 2831086 Fax +91 265 2831087 http://www.seweurodriveindia.com sales@seweurodriveindia.com subodh.ladwa@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 c.v.shivkumar@seweurodriveindia.com
Technical Offices	**Bengaluru**	SEW-EURODRIVE India Private Limited 308, Prestige Centre Point 7, Edward Road Bengaluru - 560052 - Karnataka	Tel. +91 80 22266565 Fax +91 80 22266569 salesbang@seweurodriveindia.com ganesh@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 saleskal@seweurodriveindia.com a.j.biswas@seweurodriveindia.com
	Chandigarh	SEW EURODRIVE India Private Limited Sujit Kumar Mishra H.No.5464/3 Modern Housing Complex Manimajra Chandigarh -160101	Tel. +91 9878469579 Fax +91 1722738664 saleschand@seweurodriveindia.com
	Chennai	SEW-EURODRIVE India Private Limited 2nd Floor, Josmans Complex, No. 5, McNichols Road, Chetpet Chennai - 600031 - Tamil Nadu	Tel. +91 44 42849813 Fax +91 44 42849816 saleschen@seweurodriveindia.com c.v.shivkumar@seweurodriveindia.com



India			
	Coimbatore	SEW-EURODRIVE India Private Limited Office No 60 Arpee Centre (Opp Annapoorna Hotel) 420 N, NSR Road, Saibaba Colony Coimbatore 641 0111 - Tamil Nadu	Tel. +91 422 2455420 Fax +91 422 2443988 salescmb@seweurodriveindia.com p.selvakumar@seweurodriveindia.com
	Cuttack	SEW-EURODRIVE India Private Limited Plot No.- 1764, Nuasahi, Nayapalli Bhubaneswar-12 Orissa	Tel. +91 9937446333 manoranjan.sahoo@seweurodriveindia.com
	Madgaon	SEW-EURODRIVE India Private Limited Flat No.-G1, Shivas-Laxmi Prasad Co-Operative Housing Society, Padmanarayan Estate, Near Jivottaam Math, Gagole Madgao, Goa - 403 602	samrat.chakravorty@seweurodriveindia.com
	Hyderabad	SEW-EURODRIVE India Private Limited 408, 4th Floor, Meridian Place Green Park Road Amerpeet Hyderabad - 500016 - Andhra Pradesh	Tel. +91 40 23414698 Fax +91 40 23413884 saleshyd@seweurodriveindia.com ma.choudary@seweurodriveindia.com
	Jamshedpur	SEW-EURODRIVE India Private Limited Flat No.: B/2, B.S. Apartment Road No.: 4, Contractor's area, Bistupur Jamshedpur 831 001 - Chhattisgarh	Tel. +91 9934123671 siddaratha.mishra@seweurodriveindia.com
	Lucknow	SEW-EURODRIVE India Private Limited 69, Shiv Vihar Colony Vikas Nagar-5 Lucknow 226022 - Uttar Pradesh	Tel. +91 9793627333 amit.nigam@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 p.s.ray@seweurodriveindia.com
	New Delhi	SEW-EURODRIVE India Private Limited 418-419, Suneja Tower-1 District Centre, Janak Puri New Delhi 110 058	Tel. +91 11 25544111 Fax +91 11 25544113 salesdelhi@seweurodriveindia.com vikram.juneja@seweurodriveindia.com
	Pune	SEW-EURODRIVE India Private Limited Office No. 2 & 7, First Floor, Triveni Apartment Model Colony, Gokhale Road Pune 411016 - Maharashtra	Tel. +91 20 25671751 Fax +91 20 25661668 salespune@seweurodriveindia.com praveen.hosur@seweurodriveindia.com
	Raipur	SEW-EURODRIVE India Private Limited Flat No-0-102, First Floor Satyam Appt., Golchha Park Nr Mining Office, Ring Road-1 Raipur 492 001 - Chhattisgarh	Tel. +91 9893290624 sutanu.sarkar@seweurodriveindia.com

Indonesia			
Technical Office	**Jakarta**	SEW-EURODRIVE Pte Ltd. Jakarta Liaison Office, Menara Graha Kencana Jl. Perjuangan No. 88, LT 3 B, Kebun Jeruk, Jakarta 11530, Indonesia	Tel. +62 21 5359066 Fax +62 21 5363686 Service Hotline: +65 61000 739 sew@cbn.net.id

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 info@alperton.ie http://www.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**	**Milano**	SEW-EURODRIVE di R. Blickle & Co.s.a.s. Via Bernini,14 I-20020 Solaro (Milano)	Tel. +39 02 96 9801 Fax +39 02 96 799781 http://www.sew-eurodrive.it sewit@sew-eurodrive.it
Technical Offices	**Bologna**	SEW-EURODRIVE di R. Blickle & Co.s.a.s. Via della Grafica, 47 I-40064 Ozzano dell'Emilia (Bo)	Tel. +39 051 65-23-801 Fax +39 051 796-595
	Caserta	SEW-EURODRIVE di R. Blickle & Co.s.a.s. Viale Carlo III Km. 23,300 I-81020 S. Nicola la Strada (Caserta)	Tel. +39 0823 219011 Fax +39 0823 421414
	Pescara	SEW-EURODRIVE di R. Blickle & Co.s.a.s. Viale Europa,132 I-65010 Villa Raspa di Spoltore (PE)	Tel. +39 085 41-59-427 Fax +39 085 41-59-643
	Torino	SEW-EURODRIVE di R. Blickle & Co.s.a.s. Filiale Torino c.so Unione Sovietica 612/15 - int. C I-10135 Torino	Tel. +39 011 3473780 Fax +39 011 3473783
	Verona	SEW-EURODRIVE di R. Blickle & Co.s.a.s. Via P. Sgulmero, 27/A I-37132 Verona	Tel. +39 045 89-239-11 Fax +39 045 97-6079

Ivory Coast			
Sales	**Abidjan**	SICA Ste industrielle et commerciale pour l'Afrique 165, Bld de Marseille B.P. 2323, Abidjan 08	Tel. +225 2579-44 Fax +225 2584-36

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
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 sewkyushu@jasmine.ocn.ne.jp
	Osaka	SEW-EURODRIVE JAPAN CO., LTD. B-Space EIRAI Bldg., 3rd Floor 1-6-9 Kyoumachibori, Nishi-ku, Osaka, 550-0003	Tel. +81 6 6444--8330 Fax +81 6 6444--8338 sewosaka@crocus.ocn.ne.jp
	Tokyo	SEW-EURODRIVE JAPAN CO., LTD. Izumi-Bldg. 5 F 3-2-15 Misaki-cho Chiyoda-ku, Tokyo 101-0061	Tel. +81 3 3239-0469 Fax +81 3 3239-0943 sewtokyo@basil.ocn.ne.jp



Korea			
Assembly **Sales** **Service**	**Ansan-City**	SEW-EURODRIVE KOREA CO., LTD. B 601-4, Banweol Industrial Estate 1048-4, Shingil-Dong Ansan 425-120	Tel. +82 31 492-8051 Fax +82 31 492-8056 http://www.sew-korea.co.kr master@sew-korea.co.kr
	Busan	SEW-EURODRIVE KOREA Co., Ltd. No. 1720 - 11, Songjeong - dong Gangseo-ku Busan 618-270	Tel. +82 51 832-0204 Fax +82 51 832-0230 master@sew-korea.co.kr
Technical Offices	**Daegu**	SEW-EURODRIVE KOREA Co., Ltd. No.1108 Sungan officetel 87-36, Duryu 2-dong, Dalseo-ku Daegu 704-712	Tel. +82 53 650-7111 Fax +82 53 650-7112
	DaeJeon	SEW-EURODRIVE KOREA Co., Ltd. No. 1502, Hongin officetel 536-9, Bongmyung-dong, Yusung-ku Daejeon 305-301	Tel. +82 42 828-6461 Fax +82 42 828-6463
	Kwangju	SEW-EURODRIVE KOREA Co., Ltd. 4fl., Dae-Myeong B/D 96-16 Unam-dong, Buk-ku Kwangju 500-170	Tel. +82 62 511-9172 Fax +82 62 511-9174
	Seoul	SEW-EURODRIVE KOREA Co., Ltd. No.504 Sunkyung officetel 106-4 Kuro 6-dong, Kuro-ku Seoul 152-054	Tel. +82 2 862-8051 Fax +82 2 862-8199

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

Lebanon			
Sales	**Beirut**	Gabriel Acar & Fils sarl B. P. 80484 Bourj Hammoud, Beirut	Tel. +961 1 4947-86 +961 1 4982-72 +961 3 2745-39 Fax +961 1 4949-71 ssacar@inco.com.lb

Lithuania			
Sales	**Alytus**	UAB Irseva Naujoji 19 LT-62175 Alytus	Tel. +370 315 79204 Fax +370 315 56175 info@irseva.lt http://www.sew-eurodrive.lt

Luxembourg			
Assembly **Sales** **Service**	**Brüssel**	CARON-VECTOR S.A. Avenue Eiffel 5 B-1300 Wavre	Tel. +32 10 231-311 Fax +32 10 231-336 http://www.sew-eurodrive.lu info@caron-vector.be

Malaysia			
Assembly **Sales** **Service**	**Johore**	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

Malaysia			
Technical Offices	**Kota Kinabalu**	SEW-EURODRIVE Sdn Bhd (Kota Kinabalu Branch) Lot No. 2,1st Floor, Inanam Baru Phase III, Miles 5.1 /2, Jalan Tuaran, Inanam 89350 Kota Kinabalu Sabah, Malaysia	Tel. +60 88 424792 Fax +60 88 424807
	Kuala Lumpur	SEW-EURODRIVE Sdn. Bhd. No. 2, Jalan Anggerik Mokara 31/46 Kota Kemuning Seksyen 31 40460 Shah Alam Selangor Darul Ehsan	Tel. +60 3 5229633 Fax +60 3 5229622 sewpjy@po.jaring.my
	Kuching	SEW-EURODRIVE Sdn. Bhd. Lot 268, Section 9 KTLD Lorong 9, Jalan Satok 93400 Kuching, Sarawak East Malaysia	Tel. +60 82 232380 Fax +60 82 242380
	Penang	SEW-EURODRIVE Sdn. Bhd. No. 38, Jalan Bawal Kimsar Garden 13700 Prai, Penang	Tel. +60 4 3999349 Fax +60 4 3999348 seweurodrive@po.jaring.my

Mauritania			
Sales	**Zouérate**	AFRICOM - SARL En Face Marché Dumez P.B. 88 Zouérate	Tel. +222 54 40134 Fax +222 54 40538 cybertiris@mauritel.mr

Mexico			
Assembly **Sales** **Service**	**Quéretaro**	SEW-EURODRIVE MEXICO SA DE CV SEM-981118-M93 Tequisquiapan No. 102 Parque Industrial Quéretaro C.P. 76220 Quéretaro, México	Tel. +52 442 1030-300 Fax +52 442 1030-301 http://www.sew-eurodrive.com.mx scmexico@seweurodrive.com.mx

Morocco			
Sales	**Casablanca**	Afit 5, rue Emir Abdelkader MA 20300 Casablanca	Tel. +212 22618372 Fax +212 22618351 ali.alami@premium.net.ma

Netherlands			
Assembly **Sales** **Service**	**Rotterdam**	VECTOR Aandrijftechniek B.V. Industrieweg 175 NL-3044 AS Rotterdam Postbus 10085 NL-3004 AB Rotterdam	Tel. +31 10 4463-700 Fax +31 10 4155-552 http://www.vector.nu info@vector.nu

New Zealand			
Assembly **Sales** **Service**	**Auckland**	SEW-EURODRIVE NEW ZEALAND LTD. P.O. Box 58-428 82 Greenmount drive East Tamaki Auckland	Tel. +64 9 2745627 Fax +64 9 2740165 http://www.sew-eurodrive.co.nz sales@sew-eurodrive.co.nz
	Christchurch	SEW-EURODRIVE NEW ZEALAND LTD. 10 Settlers Crescent, Ferrymead Christchurch	Tel. +64 3 384-6251 Fax +64 3 384-6455 sales@sew-eurodrive.co.nz
Technical Office	**Palmerston North**	SEW-EURODRIVE NEW ZEALAND LTD. C/-Grant Shearman, RD 5, Aronui Road Palmerston North	Tel. +64 6 355-2165 Fax +64 6 355-2316 sales@sew-eurodrive.co.nz

Norway			
Assembly **Sales** **Service**	**Moss**	SEW-EURODRIVE A/S Solgaard skog 71 N-1599 Moss	Tel. +47 69 24 10 20 Fax +47 69 24 10 40 http://www.sew-eurodrive.no sew@sew-eurodrive.no

Peru			
Assembly **Sales** **Service**	**Lima**	SEW DEL PERU MOTORES REDUCTORES S.A.C. Los Calderos, 120-124 Urbanizacion Industrial Vulcano, ATE, Lima	Tel. +51 1 3495280 Fax +51 1 3493002 http://www.sew-eurodrive.com.pe sewperu@sew-eurodrive.com.pe

Philippines			
Technical Office	**Manila**	SEW-EURODRIVE Pte Ltd Manila Liaison Office Suite 110, Ground Floor Comfoods Building Senator Gil Puyat Avenue 1200 Makati City	Tel. +63 2 894275254 Fax +63 2 8942744 sewmla@i-next.net

Poland			
Assembly **Sales** **Service**	**Lodz**	SEW-EURODRIVE Polska Sp.z.o.o. ul. Techniczna 5 PL-92-518 Łódź	Tel. +48 42 676 53 00 Fax +48 42 676 53 45 http://www.sew-eurodrive.pl sew@sew-eurodrive.pl
		24 Hour Service	Tel. +48 602 739 739 (+48 602 SEW SEW) sewis@sew-eurodrive.pl
Technical Office	**Tychy**	SEW-EURODRIVE Polska Sp.z.o.o. ul. Nad Jeziorem 87 PL-43-100 Tychy	Tel. +48 32 32 32 610 Fax +48 32 32 32 649
	Bydgoszcz	SEW-EURODRIVE Polska Sp.z.o.o. ul. Fordońska 246 PL-85-959 Bydgoszcz	Tel. +48 52 3606590 Fax +48 52 3606591
	Poznan	SEW-EURODRIVE Polska Sp.z.o.o. ul. Romana Maya 1 PL-61-371 Poznań	Tel. +48 61 8741640 Fax +48 61 8741641
	Szczecinek	SEW-EURODRIVE Polska Sp.z.o.o. ul. Mickiewicza 2 pok. 36 PL-78-400 Szczecinek	Tel. +48 94 3728820 Fax +48 94 3728821

Portugal			
Assembly **Sales** **Service**	**Coimbra**	SEW-EURODRIVE, LDA. Apartado 15 P-3050-901 Mealhada	Tel. +351 231 20 9670 Fax +351 231 20 3685 http://www.sew-eurodrive.pt infosew@sew-eurodrive.pt
Technical Offices	**Lisboa**	SEW-EURODRIVE, LDA. Núcleo Empresarial I de São Julião do Tojal Rua de Entremuros, 54 Fracção I P-2660-533 São Julião do Tojal	Tel. +351 21 958-0198 Fax +351 21 958-0245 esc.lisboa@sew-eurodrive.pt
	Porto	SEW-EURODRIVE, LDA. Av. 25 de Abril, 68 4440-502 Valongo	Tel. +351 229 350 383 Fax +351 229 350 384 MobilTel. +351 9 32559110 esc.porto@sew-eurodrive.pt

Romania			
Sales **Service**	**Bucureşti**	Sialco Trading SRL str. Madrid nr.4 011785 Bucuresti	Tel. +40 21 230-1328 Fax +40 21 230-7170 sialco@sialco.ro

Russia			
Assembly **Sales** **Service**	**St. Petersburg**	ZAO SEW-EURODRIVE P.O. Box 36 195220 St. Petersburg Russia	Tel. +7 812 3332522 +7 812 5357142 Fax +7 812 3332523 http://www.sew-eurodrive.ru sew@sew-eurodrive.ru
Technical Office	**Yekaterinburg**	ZAO SEW-EURODRIVE Kominterna Str. 16 Office 614 RUS-620078 Ekaterinburg	Tel. +7 343 310 3977 Fax +7 343 310 3978 eso@sew-eurodrive.ru
	Irkutsk	ZAO SEW-EURODRIVE 5-Armii Str., 31 RUS-664011 Irkutsk	Tel. +7 3952 25 5880 Fax +7 3952 25 5881 iso@sew-eurodrive.ru
	Moskau	ZAO SEW-EURODRIVE RUS-107023 Moskau	Tel. +7 495 9337090 Fax +7 495 9337094 mso@sew-eurodrive.ru
	Novosibirsk	ZAO SEW-EURODRIVE pr. K Marksa, d.30 RUS-630087 Novosibirsk	Tel. +7 383 3350200 Fax +7 383 3462544 nso@sew-eurodrive.ru
	Togliatti	ZAO SEW-EURODRIVE Sportivnaya Str. 4B, office 2 Samarskaya obl. RUS-445057 Togliatti	Tel. +7 8482 710529 Fax +7 8482 810590

Senegal			
Sales	**Dakar**	SENEMECA Mécanique Générale Km 8, Route de Rufisque B.P. 3251, Dakar	Tel. +221 338 494 770 Fax +221 338 494 771 senemeca@sentoo.sn

Serbia			
Sales	**Beograd**	DIPAR d.o.o. Ustanicka 128a PC Košum, IV floor SCG-11000 Beograd	Tel. +381 11 347 3244 / +381 11 288 0393 Fax +381 11 347 1337 office@dipar.co.yu

Singapore			
Assembly **Sales** **Service**	**Singapore**	SEW-EURODRIVE PTE. LTD. No 9, Tuas Drive 2 Jurong Industrial Estate Singapore 638644	Tel. +65 68621701 Fax +65 68612827 http://www.sew-eurodrive.com.sg sewsingapore@sew-eurodrive.com

Slovakia			
Sales	**Bratislava**	SEW-Eurodrive SK s.r.o. Rybničná 40 SK-831 06 Bratislava	Tel. +421 2 33595 202 Fax +421 2 33595 200 sew@sew-eurodrive.sk http://www.sew-eurodrive.sk
	Žilina	SEW-Eurodrive SK s.r.o. Industry Park - PChZ ulica M.R.Štefánika 71 SK-010 01 Žilina	Tel. +421 41 700 2513 Fax +421 41 700 2514 sew@sew-eurodrive.sk
	Banská Bystrica	SEW-Eurodrive SK s.r.o. Rudlovská cesta 85 SK-974 11 Banská Bystrica	Tel. +421 48 414 6564 Fax +421 48 414 6566 sew@sew-eurodrive.sk



Slovakia			
	Košice	SEW-Eurodrive SK s.r.o. Slovenská ulica 26 SK-040 01 Košice	Tel. +421 55 671 2245 Fax +421 55 671 2254 sew@sew-eurodrive.sk

Slovenia			
Sales **Service**	**Celje**	Pakman - Pogonska Tehnika d.o.o. UI. XIV. divizije 14 SLO - 3000 Celje	Tel. +386 3 490 83-20 Fax +386 3 490 83-21 pakman@siol.net

South Africa			
Assembly **Sales** **Service**	**Johannesburg**	SEW-EURODRIVE (PROPRIETARY) LIMITED Eurodrive House Cnr. Adcock Ingram and Aerodrome Roads Aeroton Ext. 2 Johannesburg 2013 P.O.Box 90004 Bertsham 2013	Tel. +27 11 248-7000 Fax +27 11 494-3104 http://www.sew.co.za info@sew.co.za
	Cape Town	SEW-EURODRIVE (PROPRIETARY) LIMITED Rainbow Park Cnr. Racecourse & Omuramba Road Montague Gardens Cape Town P.O.Box 36556 Chempet 7442 Cape Town	Tel. +27 21 552-9820 Fax +27 21 552-9830 Telex 576 062 cfoster@sew.co.za
	Durban	SEW-EURODRIVE (PROPRIETARY) LIMITED 2 Monaco Place Pinetown Durban P.O. Box 10433, Ashwood 3605	Tel. +27 31 700-3451 Fax +27 31 700-3847 cdejager@sew.co.za
	Nelspruit	SEW-EURODRIVE (PTY) LTD. 7 Christie Crescent Vintonia P.O.Box 1942 Nelspruit 1200	Tel. +27 13 752-8007 Fax +27 13 752-8008 robermeyer@sew.co.za
Technical Offices	**Port Elizabeth**	SEW-EURODRIVE PTY LTD. 8 Ruan Access Park Old Cape Road Greenbushes 6000 Port Elizabeth	Tel. +27 41 3722246 Fax +27 41 3722247 dtait@sew.co.za
	Richards Bay	SEW-EURODRIVE PTY LTD. 103 Bulion Blvd Richards Bay P.O. Box 458 Richards Bay, 3900	Tel. +27 35 797-3805 Fax +27 35 797-3819 jswart@sew.co.za

Spain			
Assembly **Sales** **Service**	**Bilbao**	SEW-EURODRIVE ESPAÑA, S.L. Parque Tecnológico, Edificio, 302 E-48170 Zamudio (Vizcaya)	Tel. +34 94 43184-70 Fax +34 94 43184-71 http://www.sew-eurodrive.es sew.spain@sew-eurodrive.es
Technical Offices	**Barcelona**	Delegación Barcelona Avenida Francesc Maciá 40-44 Oficina 4.2 E-08208 Sabadell (Barcelona)	Tel. +34 93 7162200 Fax +34 93 7233007
	Lugo	Delegación Noroeste Apartado, 1003 E-27080 Lugo	Tel. +34 639 403348 Fax +34 982 202934

Spain			
	Madrid	Delegación Madrid Gran Via. 48-2° A-D E-28220 Majadahonda (Madrid)	Tel. +34 91 6342250 Fax +34 91 6340899
	Seville	MEB Pólogono Calonge, C/A Nave 2 - C E-41.077 Sevilla	Tel. +34 954 356 361 Fax +34 954 356 274 mebsa.sevilla@mebsa.com
	Valencia	MEB Músico Andreu i Piqueres, 4 E-46.900 Torrente (Valencia)	Tel. +34 961 565 493 Fax +34 961 566 688 mebsa.valencia@mebsa.com

Sri Lanka			
Sales	**Colombo**	SM International (Pte) Ltd 254, Galle Raod Colombo 4, Sri Lanka	Tel. +94 1 2584887 Fax +94 1 2582981

Sweden			
Assembly **Sales** **Service**	**Jönköping**	SEW-EURODRIVE AB Gnejsvägen 6-8 S-55303 Jönköping Box 3100 S-55003 Jönköping	Tel. +46 36 3442 00 Fax +46 36 3442 80 http://www.sew-eurodrive.se jonkoping@sew.se
Sales	**Göteborg**	SEW-EURODRIVE AB Gustaf Werners gata 8 S-42132 Västra Frölunda	Tel. +46 31 70968 80 Fax +46 31 70968 93 goteborg@sew.se
	Stockholm	SEW-EURODRIVE AB Björkholmsvägen 10 S-14146 Huddinge	Tel. +46 8 44986 80 Fax +46 8 44986 93 stockholm@sew.se
	Malmö	SEW-EURODRIVE AB Borrgatan 5 S-21124 Malmö	Tel. +46 40 68064 80 Fax +46 40 68064 93 malmo@sew.se
	Skellefteå	SEW-EURODRIVE AB Trädgårdsgatan 8 S-93131 Skellefteå	Tel. +46 910 7153 80 Fax +46 910 7153 93 skelleftea@sew.se

Switzerland			
Assembly **Sales** **Service**	**Basel**	Alfred Imhof A.G. Jurastrasse 10 CH-4142 Münchenstein bei Basel	Tel. +41 61 417 1717 Fax +41 61 417 1700 http://www.imhof-sew.ch info@imhof-sew.ch
Technical Offices	**Rhaetian Switzerland**	André Gerber Es Perreyres CH-1436 Chamblon	Tel. +41 24 445 3850 Fax +41 24 445 4887
	Bern / Solothurn	Rudolf Bühler Muntersweg 5 CH-2540 Grenchen	Tel. +41 32 652 2339 Fax +41 32 652 2331
	Central Switzerland and Ticino	Beat Lütolf Baumacher 11 CH-6244 Nebikon	Tel. +41 62 756 4780 Fax +41 62 756 4786
	Central Switzerland, Aargau	Armin Pfister Stierenweid CH-4950 Huttwill, BE	Tel. +41 62 962 54 55 Fax +41 62 962 54 56
	Zürich, Ticino	Gian-Michele Muletta Fischerstrasse 61 CH-8132 Egg bei Zürich	Tel. +41 44 994 81 15 Fax +41 44 994 81 16
	Bodensee and East Switzerland	Markus Künzle Eichweg 4 CH-9403 Goldach	Tel. +41 71 845 2808 Fax +41 71 845 2809

Taiwan (R.O.C.)			
Sales	**Nan Tou**	Ting Shou Trading Co., Ltd. No. 55 Kung Yeh N. Road Industrial District Nan Tou 540	Tel. +886 49 255353 Fax +886 49 257878
	Taipei	Ting Shou Trading Co., Ltd. 6F-3, No. 267, Sec. 2 Tung Hwa South Road, Taipei	Tel. +886 2 27383535 Fax +886 2 27368268 Telex 27 245 sewtwn@ms63.hinet.net

Thailand			
Assembly **Sales** **Service**	**Chonburi**	SEW-EURODRIVE (Thailand) Ltd. 700/456, Moo.7, Donhuaroh Muang Chonburi 20000	Tel. +66 38 454281 Fax +66 38 454288 sewthailand@sew-eurodrive.com
Technical Offices	**Bangkok**	SEW-EURODRIVE (Thailand) Ltd. 6th floor, TPS Building 1023, Phattanakarn Road Suanluang Bangkok,10250	Tel. +66 2 7178149 Fax +66 2 7178152 sewthailand@sew-eurodrive.com
	Hadyai	SEW-EURODRIVE (Thailand) Ltd. Hadyai Country Home Condominium 59/101 Soi.17/1 Rachas-Utid Road. Hadyai, Songkhla 90110	Tel. +66 74 359441 Fax +66 74 359442 sewthailand@sew-eurodrive.com
	Khonkaen	SEW-EURODRIVE (Thailand) Ltd. 4th Floor, Kaow-U-HA MOTOR Bldg, 359/2, Mitraphab Road. Muang District Khonkaen 40000	Tel. +66 43 225745 Fax +66 43 324871 sew-thailand@sew-eurodrive.com

Tunisia			
Sales	**Tunis**	T. M.S. Technic Marketing Service Zone Industrielle Mghira 2 Lot No. 39 2082 Fouchana	Tel. +216 71 4340-64 + 71 4320-29 Fax +216 71 4329-76 tms@tms.com.tn

Turkey			
Assembly **Sales** **Service**	**Istanbul**	SEW-EURODRIVE Hareket Sistemleri San. ve Tic. Ltd. Sti. Bagdat Cad. Koruma Cikmazi No. 3 TR-34846 Maltepe ISTANBUL	Tel. +90 216 4419164, 3838014, 3738015 Fax +90 216 3055867 http://www.sew-eurodrive.com.tr sew@sew-eurodrive.com.tr
Technical Offices	**Adana**	SEW-EURODRIVE Hareket Sistemleri San. ve Tic. Ltd. Sti. Kizilay Caddesi 8 Sokak No 6 Daðtekin Is Merkezi Kat 4 Daire 2 TR-01170 SEYHAN / ADANA	Tel. +90 322 359 94 15 Fax +90 322 359 94 16
	Ankara	SEW-EURODRIVE Hareket Sistemleri San. ve Tic. Ltd. Sti. Özcelik Is Merkezi, 14. Sok, No. 4/42 TR-06370 Ostim/Ankara	Tel. +90 312 3853390 / +90 312 3544715 / +90 312 3546109 Fax +90 312 3853258
	Bursa	SEW-EURODRIVE Hareket Sistemleri San. ve Tic. Ltd. Sti. Besevler Küçük Sanayi Parkoop Parçacilar Sitesi 48. Sokak No. 47 TR Nilüfer/Bursa	Tel. +90 224 443 4556 Fax +90 224 443 4558

Turkey			
	Izmir	SEW-EURODRIVE Hareket Sistemleri San. ve Tic. Ltd. Sti. 1203/11 Sok. No. 4/613 Hasan Atli Is Merkezi TR-35110 Yenisehir-Izmir	Tel. +90 232 4696264 Fax +90 232 4336105

Ukraine			
Sales **Service**	**Dnepropetrovsk**	SEW-EURODRIVE Str. Rabochaja 23-B, Office 409 49008 Dnepropetrovsk	Tel. +380 56 370 3211 Fax +380 56 372 2078 http://www.sew-eurodrive.ua sew@sew-eurodrive.ua
Sales	**Kiev**	SEW-EURODRIVE GmbH S. Oleynika str. 21 02068 Kiev	Tel. +380 44 503 95 77 Fax +380 44 503 95 78 kso@sew-eurodrive.ua
	Donetsk	SEW-EURODRIVE GmbH 25th anniversary of RKKA av. 1-B, of. 805 Donetsk 83000	Tel. +380 62 38 80 545 Fax +380 62 38 80 533 dso@sew-eurodrive.ua

Uruguay			
Sales	**Montevideo**	SEW-EURODRIVE Uruguay, S. A. German Barbato 1526 CP 11200 Montevideo	Tel. +598 2 90181-89 Fax +598 2 90181-88 sewuy@sew-eurodrive.com.uy

USA			
Production **Assembly** **Sales** **Service** **Corporate Offices**	**Southeast Region**	SEW-EURODRIVE INC. 1295 Old Spartanburg Highway P.O. Box 518 Lyman, S.C. 29365	Tel. +1 864 439-7537 Fax Sales +1 864 439-7830 Fax Manufacturing +1 864 439-9948 Fax Assembly +1 864 439-0566 Fax Confidential/HR +1 864 949-5557 http://www.seweurodrive.com cslyman@seweurodrive.com
Assembly **Sales** **Service**	**Northeast Region**	SEW-EURODRIVE INC. Pureland Ind. Complex 2107 High Hill Road, P.O. Box 481 Bridgeport, New Jersey 08014	Tel. +1 856 467-2277 Fax +1 856 845-3179 csbridgeport@seweurodrive.com
	Midwest Region	SEW-EURODRIVE INC. 2001 West Main Street Troy, Ohio 45373	Tel. +1 937 335-0036 Fax +1 937 440-3799 cstroy@seweurodrive.com
	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
	Additional addresses for service in the USA provided on request!		

Venezuela			
Assembly **Sales** **Service**	**Valencia**	SEW-EURODRIVE Venezuela S.A. Av. Norte Sur No. 3, Galpon 84-319 Zona Industrial Municipal Norte Valencia, Estado Carabobo	Tel. +58 241 832-9804 Fax +58 241 838-6275 http://www.sew-eurodrive.com.ve ventas@sew-eurodrive.com.ve sewfinanzas@cantv.net












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