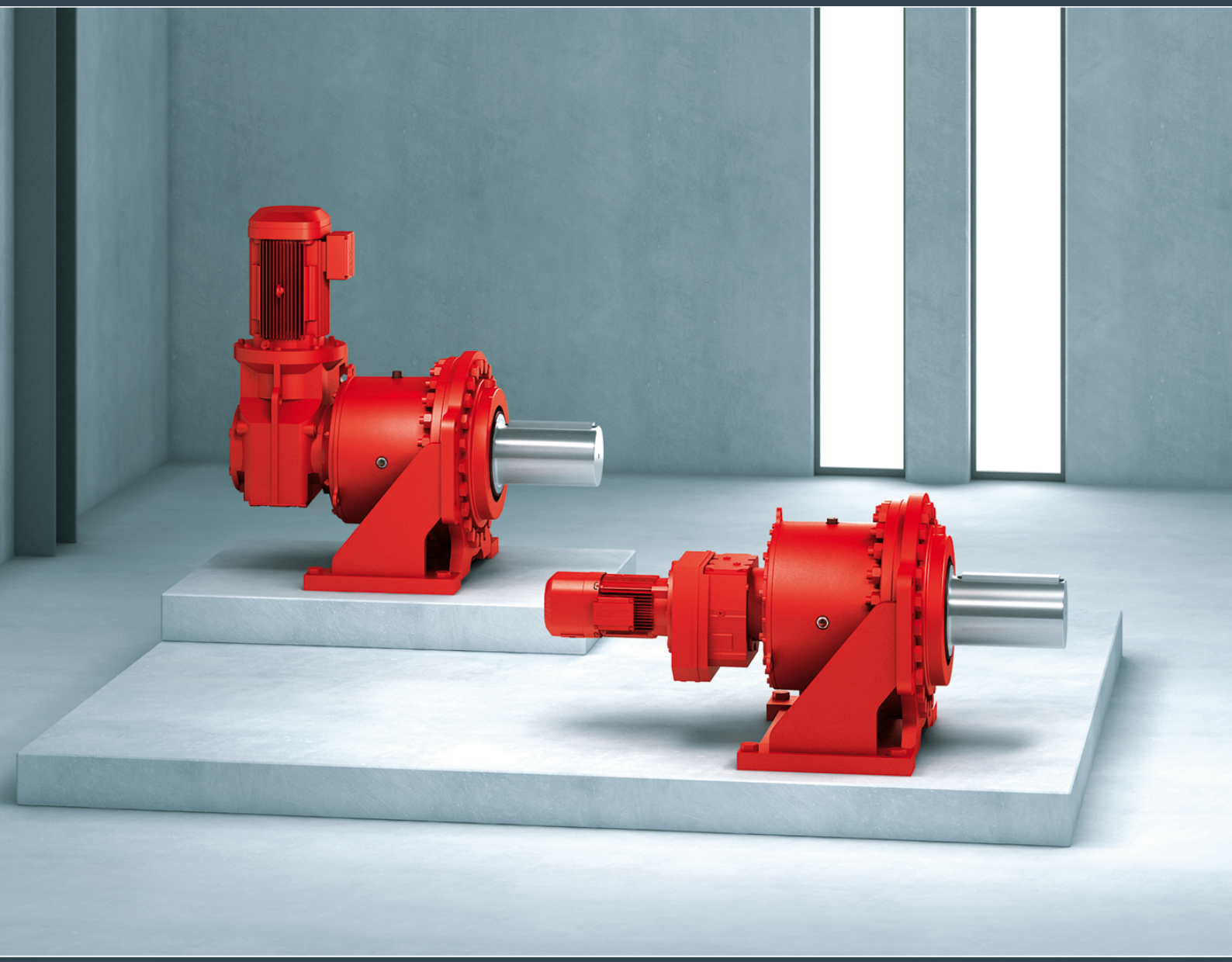
SEW EURODRIVE

Catalog



Industrial Gear Units

P.002 – P.102 Series Planetary Gearmotors

Torque Classes from 24 – 631 kNm

Edition 04/2015

21915180/EN



Table of contents

1 Introduction 5
1.1 The SEW-EURODRIVE group of companies 5
1.2 Products and systems from SEW-EURODRIVE 6
1.3 Product names and trademarks 9
1.4 Copyright 9

2 Product description and overview of types 10
2.1 Design features 11
2.2 Overview of advantages 11
2.3 Application areas 11
2.4 Customer-specific application solutions 12
2.5 General information 16
2.6 Sizes, torque ratings 18
2.7 Basic designs of planetary gearmotors 19
2.8 Type designations for gear units and options 23
2.9 Type designation 25
2.10 Nameplate 26
2.11 Coating and surface protection systems 29
2.12 Storage and transport conditions 30
2.13 DR.. series primary gearmotors 32
2.14 Sealing system 33
2.15 Lubrication types 33

3 Mounting positions 37
3.1 Standard mounting position 37
3.2 Pivoted mounting positions and variable mounting positions 38
3.3 Mounting position sheets 40

4 Important order information 45
4.1 For all gearmotors 45
4.2 Mounting positions of KF.. bevel-helical primary gear units 45
4.3 Mounting positions of RF.. primary helical gear units 47
4.4 Position of motor terminal box and cable entry 48
4.5 Torque arm 49
4.6 Output direction of rotation with backstop 50
4.7 Sample orders 51

5 Project planning for gear units 53
5.1 Additional documentation 53
5.2 Project planning procedure 53
5.3 Dimensioning example – project planning with defined service life 69
5.4 Dimensioning example – Project planning with infinite fatigue strength (gearing according to DIN 3990) 74

6 Permitted lubricants 78
6.1 Guidelines for lubricant selection 78
6.2 Structure of the tables and abbreviations 79
6.3 Explanation of the various lubricants 80

21915180/EN – 04/2015

6.4 Lubricant tables ... 81
6.5 Sealing greases / rolling bearing greases ... 84
6.6 Comments ... 84

7 Options ... 85
7.1 Torque arm ... 86
7.2 Temperature sensor PT100 ... 87

8 Design and operating notes ... 88
8.1 Output shaft as hollow shaft with shrink disk ... 88

9 Important information on selection tables and dimension drawings ... 89
9.1 Selection tables ... 89
9.2 Dimension sheets ... 89

10 P.RF.. helical planetary gearmotors ... 92
10.1 Guide to the dimension sheets ... 92
10.2 Selection tables ... 93
10.3 Dimension sheets [mm] ... 119
10.4 Oil expansion tank for mounting position M2 ... 179
10.5 Oil expansion tank for mounting position M4 ... 180
10.6 AM adapters for mounting of IEC motors ... 181
10.7 AM adapters for mounting of NEMA motors ... 183
10.8 AD input shaft assembly ... 185
10.9 AQA motor adapter ... 186

11 P..KF.. bevel planetary gearmotors ... 188
11.1 Guide to the dimension sheets ... 188
11.2 Selection tables ... 189
11.3 Dimension sheets [mm] ... 209
11.4 Oil expansion tank for mounting position M2 ... 269
11.5 Oil expansion tank for mounting position M2 ... 270
11.6 AM adapters for mounting of IEC motors ... 271
11.7 AM adapters for mounting of NEMA motors ... 273
11.8 AD input shaft assembly ... 275
11.9 AQA motor adapters ... 276

12 Additional dimension sheets ... 278
12.1 Output shaft with smooth shaft end ... 278
12.2 Output shaft with 2 keys ... 279
12.3 Protection cover for shrink disk ... 280

13 Address directory SEW-EURODRIVE ... 281

14 Appendix ... 301
14.1 Abbreviation key ... 301

Index ... 302

21915180/EN – 04/2015

1 Introduction

1.1 The SEW-EURODRIVE group of companies

1.1.1 Global presence

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

We are represented in the most important branches of industry all over the world: with 14 manufacturing plants and 79 Drive Technology Centers worldwide as well as our customer support, which we consider an integrative service that continues our commitment to outstanding quality.

1.1.2 Always the right drive

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

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

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

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

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

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

21915180/EN – 04/2015

1.1.3 Your ideal partner

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

1.2 Products and systems from SEW-EURODRIVE

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

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

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

Gearmotors and frequency inverters
Gear units / gearmotors
• 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 • ATEX-compliant gear units / gearmotors • ATEX-compliant variable-speed gear units / variable-speed gearmotors
Motors
• Asynchronous AC motors and brakemotors • Pole-changing AC motors and brakemotors • Energy-efficient motors • Explosion-proof AC motors and brakemotors • Torque motors • Single-phase motors / brakemotors • Asynchronous linear motors
Frequency inverters

21915180/EN – 04/2015

Gearmotors and frequency inverters
• MOVITRAC® frequency inverters
• MOVIDRIVE® drive inverters
• Control, technology, and communication options for inverters

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

Decentralized drive systems
Decentralized drives
• DRC.. electronic motor / MOVIGEAR® mechatronic drive system – DBC – Direct Binary Communication – DAC – Direct AS-Interface Communication – DSC – Direct SBus Communication – SNI – Single Line Network Installation
• MOVIMOT® gearmotors with integrated frequency inverter
• MOVIMOT® motors / brakemotors with integrated frequency inverter
• MOVI-SWITCH® gearmotors with integrated switching and protection function
• MOVI-SWITCH® motors / brakemotors with integrated switching and protection function
• Explosion-proof MOVIMOT® and MOVI-SWITCH® gearmotors
Communication and installation

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Decentralized drive systems
• Fieldbus interfaces • Field distributors for decentralized installation • MOVIFIT® product range – MOVIFIT® FDC for controlling MOVIGEAR® and DRC.. drive units – MOVIFIT® MC for controlling MOVIMOT® drives – MOVIFIT® SC with integrated electronic motor switch – MOVIFIT® FC with integrated frequency inverter • MOVIPRO® product range – MOVIPRO® SDC decentralized drive and positioning controller
Contactless energy transfer system
MOVITRANS® system • Stationary components for energy supply • Mobile components for energy consumption • Line cables and installation material
VARIOLUTION® and MAXOLUTION®
• VARIOLUTION® packages for high technical solution expertise in plants and machines • MAXOLUTION® systems for customer-specific system solutions and plants
Industrial gear units
• Helical gear units • Bevel-helical gear units • Planetary gear units
Products and systems covering several product groups
• Operator panels • MOVI-PLC® drive-based control system • Components of the type "functional safety" • Diagnostic units

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

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

Visit our website at

→ **www.sew-eurodrive.com**

The website provides comprehensive information and services.

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1.3 Product names and trademarks

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

1.4 Copyright

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2 Product description and overview of types

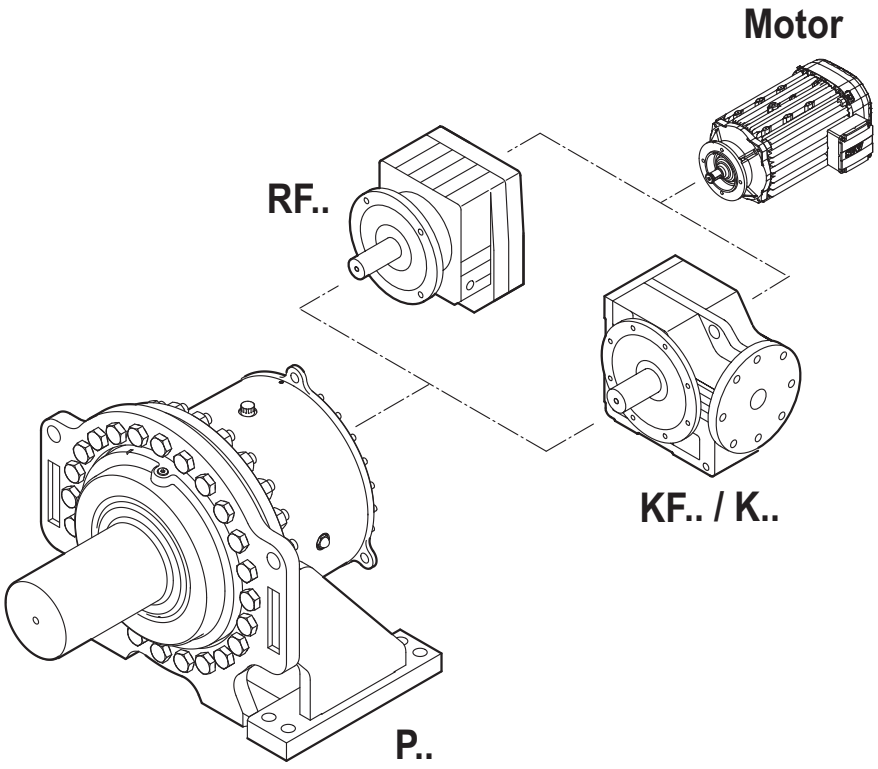
Planetary gearmotors are a combination of the following:

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

There are 11 sizes of planetary gear units with rated torques from 24 830 Nm to 631 300 Nm.

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

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



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P..	Planetary gear unit
RF..	Helical gear unit (flange-mounted)
KF.. / K..	Bevel-helical gear unit (flange-mounted)

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2.1 Design features

Planetary gear units ...

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

Primary gearmotors ...

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

2.2 Overview of advantages

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

2.3 Application areas

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

For example:

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

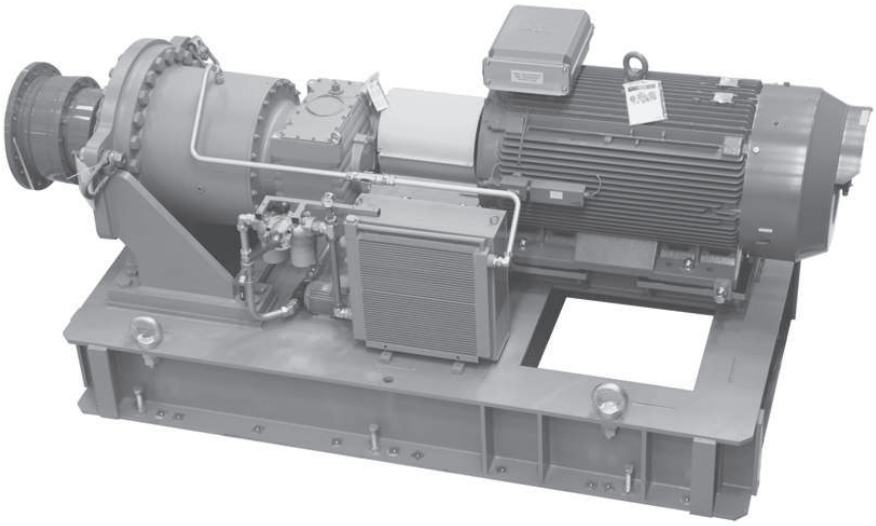
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2.4 Customer-specific application solutions

The following examples show application-specific solutions.

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

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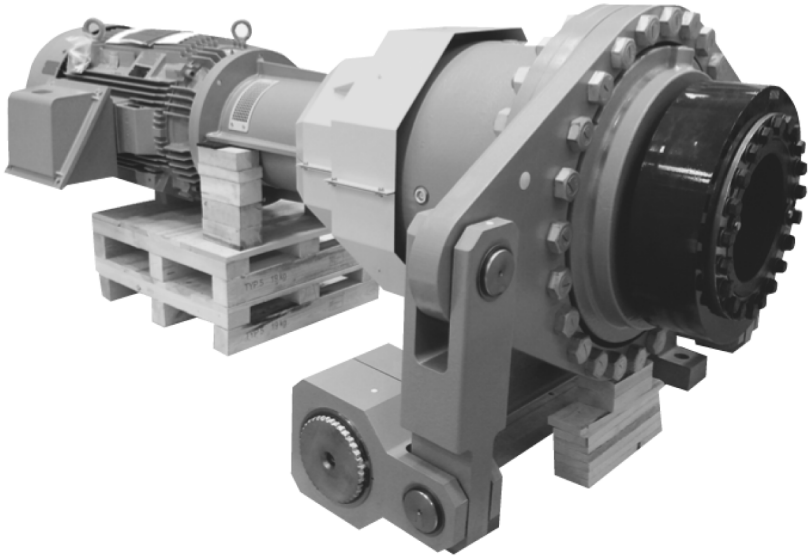
- SEW slewing gear drive: P.RF.. planetary gear unit with lantern pinion including pinion

21915180/EN – 04/2015

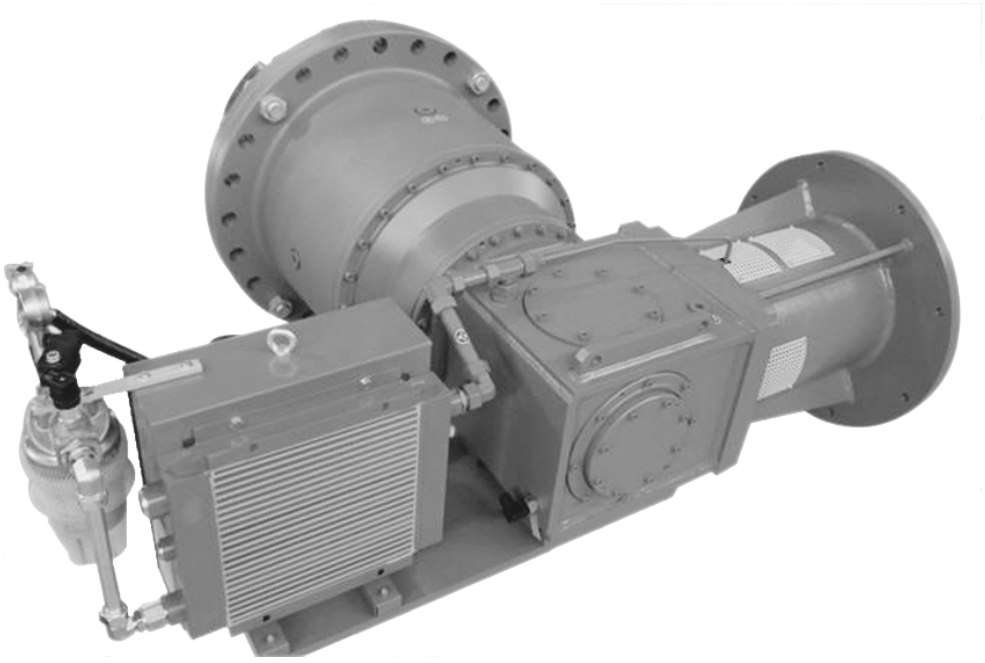


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- 3-stage planetary gear unit with:
  - Hollow shaft and shrink disk connection
  - Torque arm including torsion bar
  - Axial fan
  - Motor adapter with directly mounted motor



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



21915180/EN – 04/2015

2.5 General information

2.5.1 Important information

Note the following points:

INFORMATION

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

2.5.2 Power and torque

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

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

2.5.3 Speeds

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

2.5.4 Noise

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

2.5.5 Paint

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

21915180/EN – 04/2015

2.5.6 Weight information

INFORMATION

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

2.5.7 Air admission and accessibility

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

2.5.8 Primary gearmotor

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

2.5.9 Brakemotors

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

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

2.5.10 International markets

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

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

21915180/EN – 04/2015

2.6 Sizes, torque ratings

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

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

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

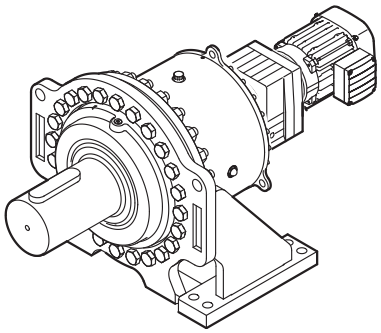
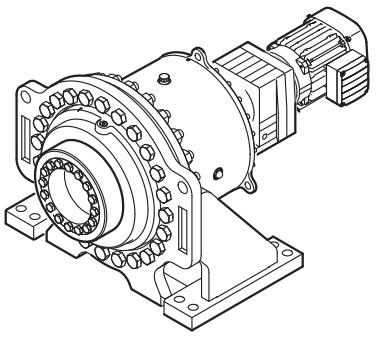
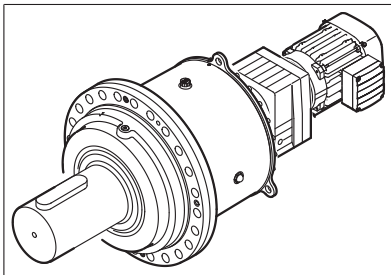
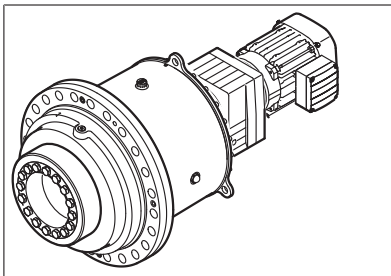
1) Gearing with infinite fatigue strength (referring to DIN 3990)

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2.7 Basic designs of planetary gearmotors

2.7.1 P..RF.. helical-planetary gearmotors

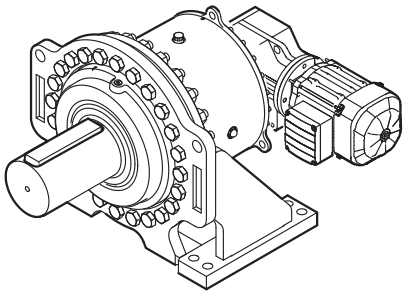
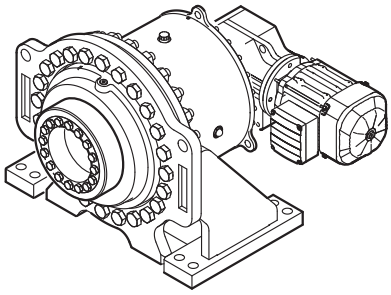
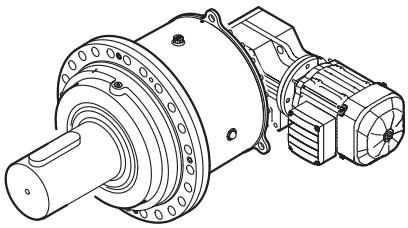
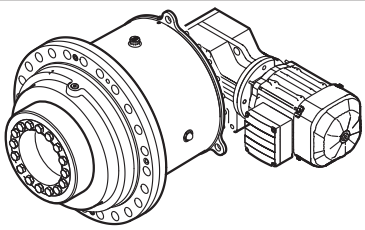
The following types of planetary gearmotors are available:

	**P..RF.. DR..** Foot-mounted helical-planetary gearmotor
	**PH..RF.. DR..** Foot-mounted helical planetary gearmotor with hollow shaft and shrink disk
	**PF..RF.. DR..** Flange-mounted helical-planetary gearmotor
	**PHF..RF.. DR..** Flange-mounted helical-planetary gearmotor with hollow shaft and shrink disk

21915180/EN – 04/2015

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

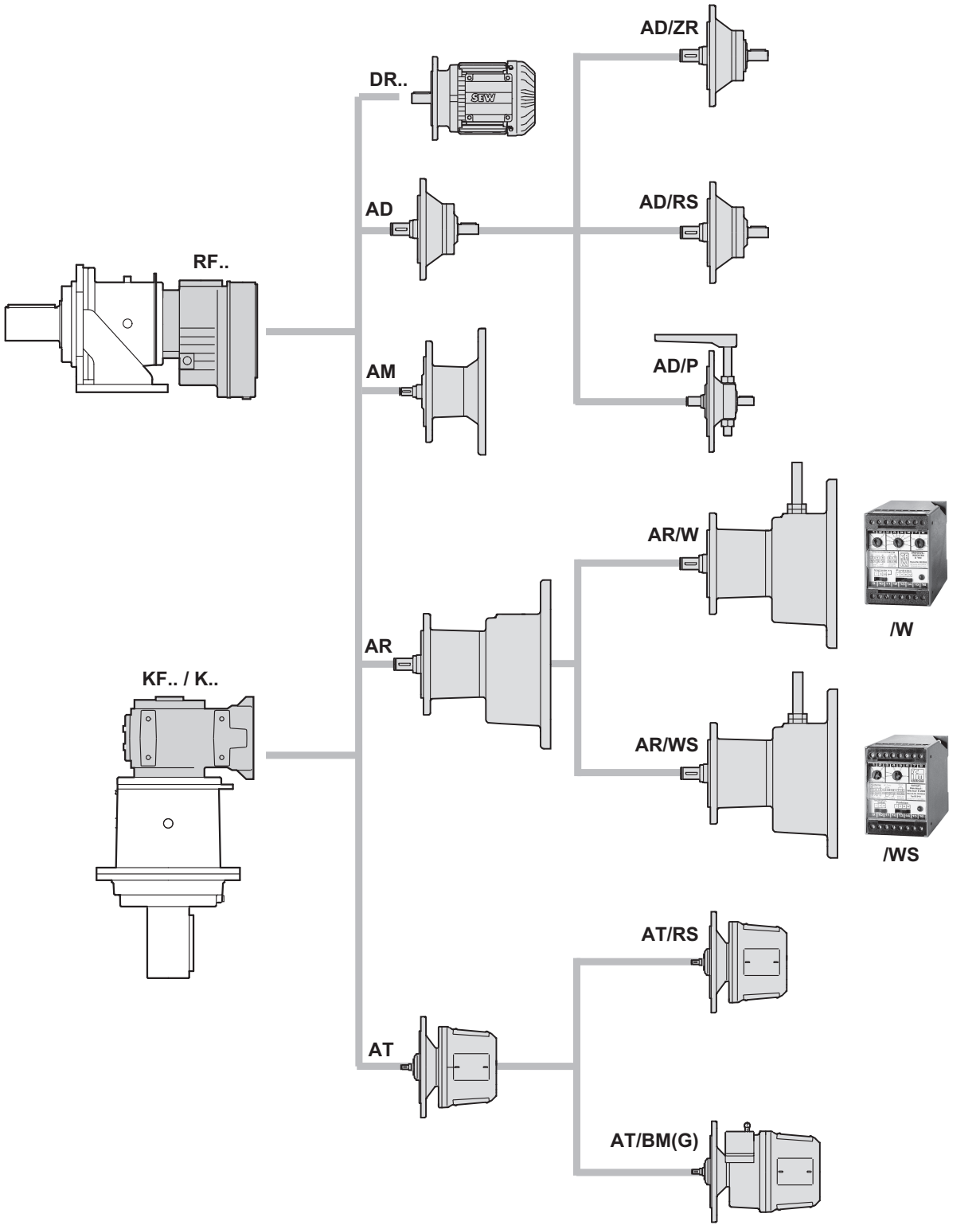
The following types of planetary gearmotors are available:

 *9007205553351307*	**P..KF.. DR.. / P..K.. DR..** Foot-mounted bevel-planetary gearmotor
 *9007205553352971*	**PH..KF.. DR.. / PH..K.. DR..** Foot-mounted bevel-planetary gearmotor with hollow shaft and shrink disk
	**PF..KF.. DR.. / PF..K.. DR..** Flange-mounted bevel-planetary gearmotor
	**PHF..KF.. DR.. / PHF..K.. DR..** Flange-mounted bevel-planetary gearmotor with hollow shaft and shrink disk

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2.7.3 Components on the input side

The following figure shows the components on the input side.

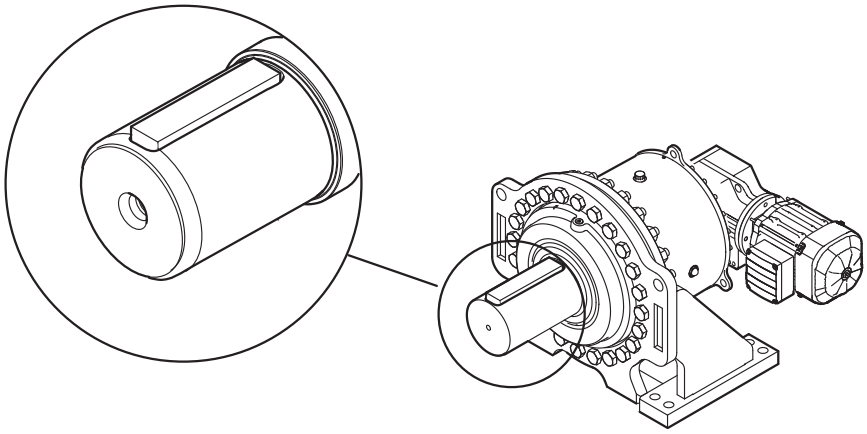


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2.7.4 Output shaft variants

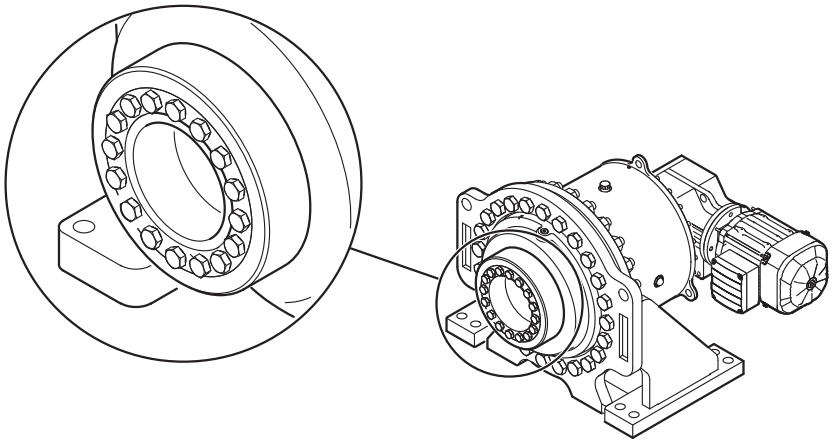
The [LSS] output shaft of the planetary gearmotor can have the following design as standard:

- Solid shaft with key



6298620683

- Hollow shaft with shrink disk



6298622347

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2.8 Type designations for gear units and options

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

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

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

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

2.8.3 Additional features of gear units

Designation	
/T	With torque arm

2.8.4 Input shaft assembly

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

21915180/EN – 04/2015

2.8.5 Adapters

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

21915180/EN – 04/2015

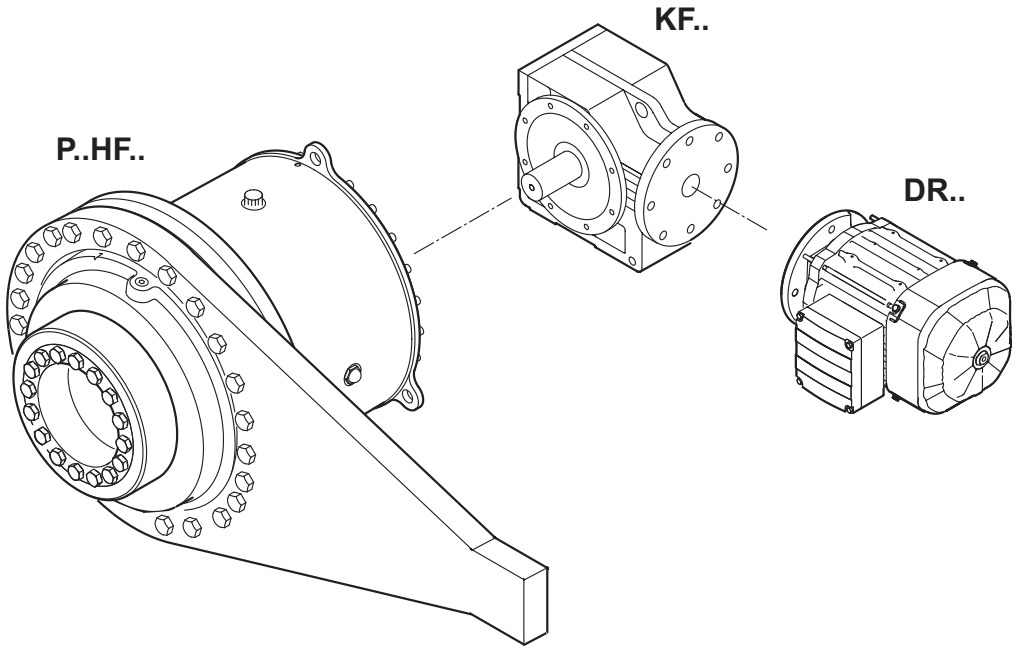
2.9 Type designation

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

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

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

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



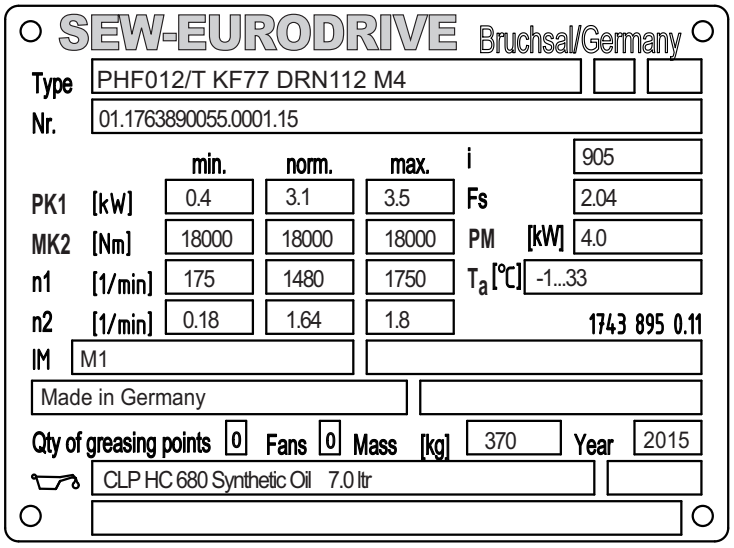
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21915180/EN – 04/2015

2.10 Nameplate

2.10.1 Planetary gear units

The following example shows the structure of the nameplate.



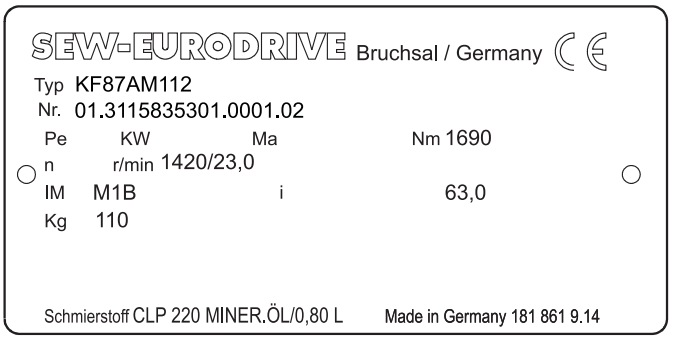
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Type		Type designation
Nr. 1		Manufacturing number
P_{K1}	[kW]	Operating power on the input shaft (HSS)
M_{K2}	[Nm]	Gear unit output torque
n_1	[1/min]	Input speed (HSS)
n_2	[1/min]	Output speed (LSS)
norm.		Normal operating point
min.		Operating point at minimum speed
max.		Operating point at maximum speed
i		Exact gear unit ratio
F_S		Service factor
F_{R1}	[N]	Actual overhung load on input shaft
F_{R2}	[N]	Actual overhung load on output shaft
F_{A1}	[N]	Actual axial load on input shaft
F_{A2}	[N]	Actual axial load on utput shaft
Mass	[kg]	Weight of the gear unit
Qty of greasing points		Number of regreasing points
Fans		Number of installed fans
		Oil grade and viscosity class / oil quantity
Year		Year of manufacture
IM		Mounting position and mounting surface

21915180/EN – 04/2015

2.10.2 KF.. primary gear units

The following example shows the structure of the nameplate.

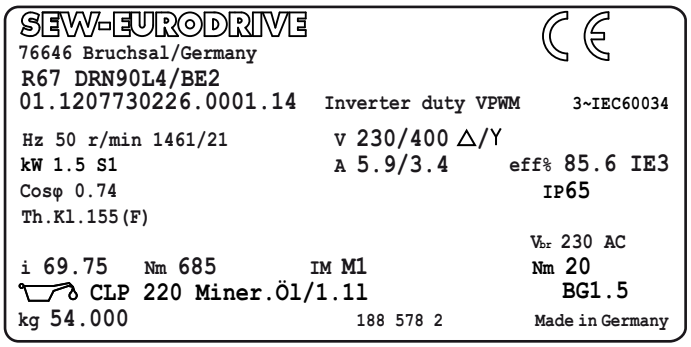


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Type		Type designation
Type		Type designation
No.		Serial number of primary gear unit
Pe	[kW]	Input power of the gear unit
Ma	[Nm]	Output speed
n	[r/min]	Input/output speed
IM		Mounting position
i		Gear ratio
Kg	[Kg]	Weight

2.10.3 Gearmotors

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



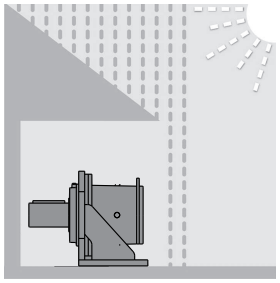
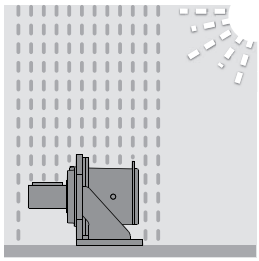
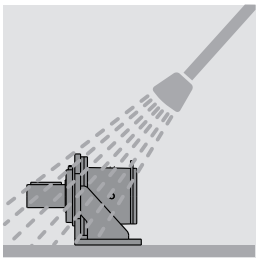
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Type	Type designation
Inverter duty VPWM	Suitability for inverter operation
Hz	Nominal frequency
kW	Nominal power / operating mode
cos φ	Power factor of the motor
Th.Kl.	Thermal class
i	Gear ratio
	Oil grade and viscosity class / oil quantity
kg	Weight of the primary gearmotor
1/min	Input/output speed
Nm	Output torque
kW	Input power of the gear unit
S1	Duty type
cos φ	Power factor of the motor
V	Supply voltage in delta/star connection
A	Nominal motor current in delta/star connection
eff%	IE class and nominal efficiency for motors included in the scope of the standard IEC 60034-30-1
IP	Degree of protection according to IEC 60034-5
Vbr	Nominal braking torque of the installed brake
Nm 20	Nominal braking torque of the installed brake
BG1.5	Brake control system

21915180/EN – 04/2015

2.11 Coating and surface protection systems

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

SEW design	OS 1 Low environmental pollution	OS 2 Medium environmental pollution	OS 3 High environmental pollution
Used as surface protection with typical ambient conditions Corrosivity categories DIN EN ISO 12944-2	 Suited for environments prone to condensation and atmospheres with low humidity or contamination, such as outdoor applications under roof or with protection, unheated buildings where condensation can build up. According to corrosivity category: C2 (low)	 Suited for environments with high humidity or moderate atmospheric contamination, such as applications outdoors subject to direct weathering. According to corrosivity category: C3 (moderate)	 Suitable for environments with high humidity and occasionally severe atmospheric and chemical contamination. Occasionally acidic or caustic wet cleaning. Also for applications in coastal areas with moderate salt load. According to corrosivity category: C4 (high)
Sample applications	• Systems in saw mills • Agitators and mixers	• Applications in gravel plants • Cable cars	• Port cranes • Sewage treatment plants • Mining applications
Condensation test ISO 6270	120 h	120 h	240 h
Salt spray test ISO 7253	–	240 h	480 h
Top coat color[1)]	RAL 7031	RAL 7031	RAL 7031
Color according to RAL	Yes	Yes	Yes
Uncoated parts, shaft end/ flanges	Water and hand perspiration repelling anticorrosion agent applied at the factory for external preservation		

1) Standard color

INFORMATION

Sheet metal parts (such as protection covers, fan guard) are painted in RAL 1003.

21915180/EN – 04/2015

2.12 Storage and transport conditions

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

2.12.1 Internal conservation

Standard corrosion protection

After the test run, 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 with a vapor phase inhibitor. The breather filter is replaced by a screw plug and enclosed with the gear unit.

2.12.2 Exterior corrosion protection

The following measures are taken for exterior corrosion protection:

- Anti-corrosion agent is applied to bare, non-painted functional surfaces of shafts, flanges, mounting and foot surfaces of the housing. Remove it only using an appropriate solvent that 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.



INFORMATION

- If the gear unit is stored longer than six months, regularly check the protective coating of unpainted areas as well as the paint coating. Areas in which the protective coating and/or painting has been damaged may have to be repainted.

2.12.3 Packaging

Standard packaging

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

Use: Transportation by land

Long-term packaging

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

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

21915180/EN – 04/2015

2.12.4 Storage conditions

INFORMATION

- During storage up to startup, the gear unit must be stored in a shock-free manner to prevent damage to the rolling bearing races.
- The output shaft must be rotated at least one full rotation every 6 months so that the position of the rolling elements in the bearings of the input and output shafts changes.
- The gear units are delivered without oil; 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 and enclosed at constant temperature and atmospheric humidity (5 °C < ϑ < 60 °C, < 50% relative humidity). No sudden temperature fluctuations. Controlled ventilation with filter (free from dust and dirt). No aggressive vapors, no shocks.	Max. 6 months with intact surface protection.
Long-term corrosion protection + standard packaging	Under roof and enclosed at constant temperature and atmospheric humidity (5 °C < ϑ < 60 °C, < 50% relative humidity). No sudden temperature fluctuations. Controlled ventilation with filter (free from dust and dirt). No aggressive vapors, no shocks.	Max. 3 years with regular inspection and checking for intactness.
Long-term corrosion protection + long-term packaging	With roof, protected against rain and shocks.	Max. 3 years with regular inspection and checking for intactness.

INFORMATION

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

21915180/EN – 04/2015

2.13 DR.. series primary gearmotors

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

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

IE3 motor standard: Premium Efficiency
• Extremely high levels of efficiency
• **DRN..**-type AC motors (energy-efficient motors)
• Aluminum die-cast rotor cage

Observe the following information:

INFORMATION

- As the auxiliary drive is typically not used for continuous duty, the motor is stamped with S2 duty cycle according to the intended use. This means that an IE1 motor can also be used in countries where an IE1 motor in S1 operation is no longer permitted due to efficiency regulations. Please contact SEW-EURODRIVE in such cases.
- The SEW website (www.sew-eurodrive.com) provides further information regarding the DR.. motor series. If you are unclear about any of the information in this documentation, or if you require further information, contact SEW-EURODRIVE.
- The DRN.. motor combinations with the planetary gear unit are listed in the selection tables, see chapter "P.RF.." (→ 🗎 92)." Helical planetary gearmotors" (→ 🗎 92) and "P.KF.. Bevel planetary gearmotors" (→ 🗎 188).
- For dimensions for the DRN.. motor series, refer to the dimension sheets, see chapters "P.RF.. dimension sheets" (→ 🗎 119) and "P.KF.. dimension sheets" (→ 🗎 209).

21915180/EN – 04/2015

2.14 Sealing system

2.14.1 Standard

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

2.14.2 Option

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

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

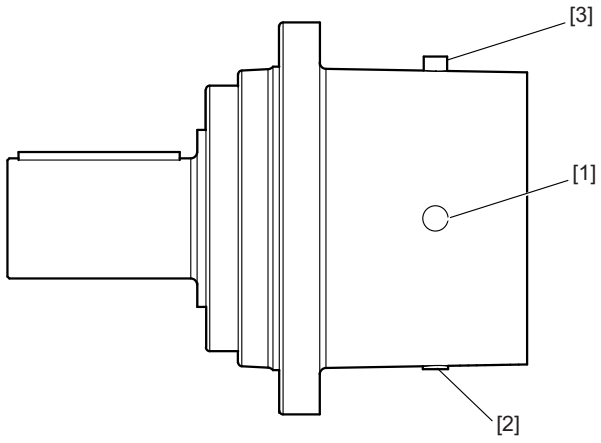
2.15 Lubrication types

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

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

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

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



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[1] Oil sight glass
[2] Oil drain plug
[3] Breather valve

21915180/EN – 04/2015

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

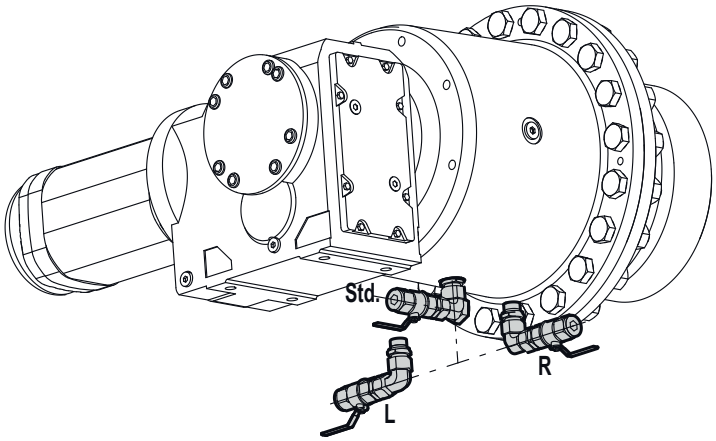
In addition to the standard oil drain plug, SEW-EURODRIVE offers the oil drain valve option. Observe the variants that are described below.

INFORMATION

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

Position of the oil drain valve

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

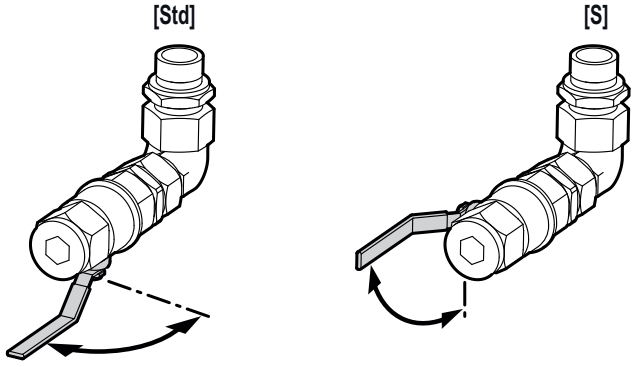


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Std = Standard
R = Right
L = Left

Position of the lever

The following figure shows the possible positions of the lever.



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Std = Standard
S = On the side

21915180/EN – 04/2015

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

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

INFORMATION

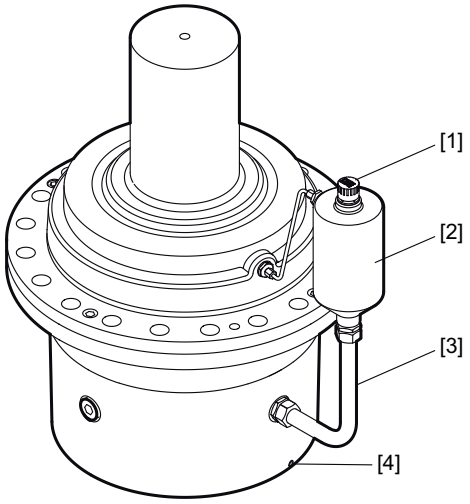
- Any deviations from the standard mounting positions, standard temperature ranges or standard primary gear units must be clarified with SEW-EURODRIVE first.
- If there is little space available for installing the oil expansion tank (M2 mounting position) or the oil riser pipes (M4 mounting positions),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

Mounting position M2

Gear units with oil expansion tank have the following characteristics:

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

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

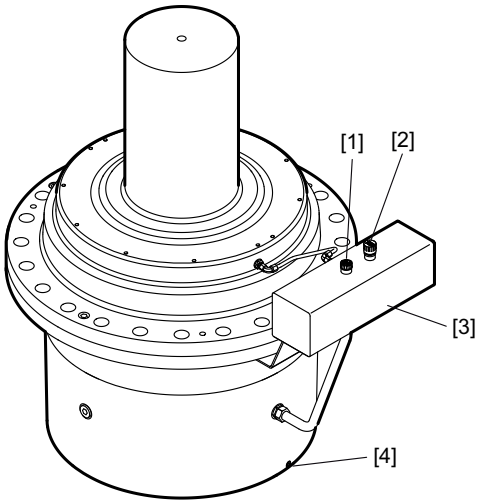


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[1] Oil dipstick with breather plug
[2] Oil expansion tank
[3] Riser pipe
[4] Oil drain plug

21915180/EN – 04/2015

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



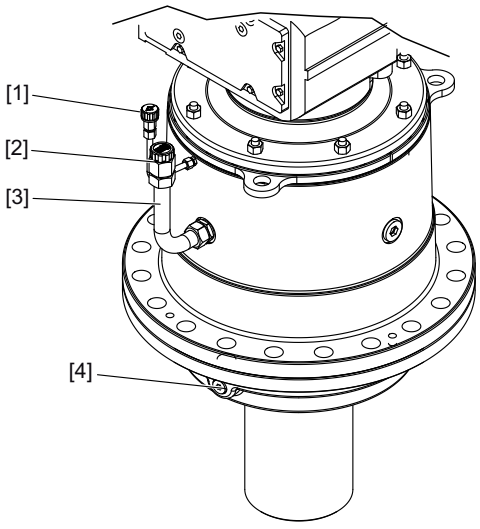
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[1]	Oil dipstick	[3]	Oil expansion tank
[2]	Breather plug	[4]	Oil drain plug

Mounting position M4

Gear units without oil expansion tank have the following characteristics:

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



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[1]	Breather valve	[3]	Riser pipe
[2]	Oil dipstick	[4]	Oil drain plug

21915180/EN – 04/2015

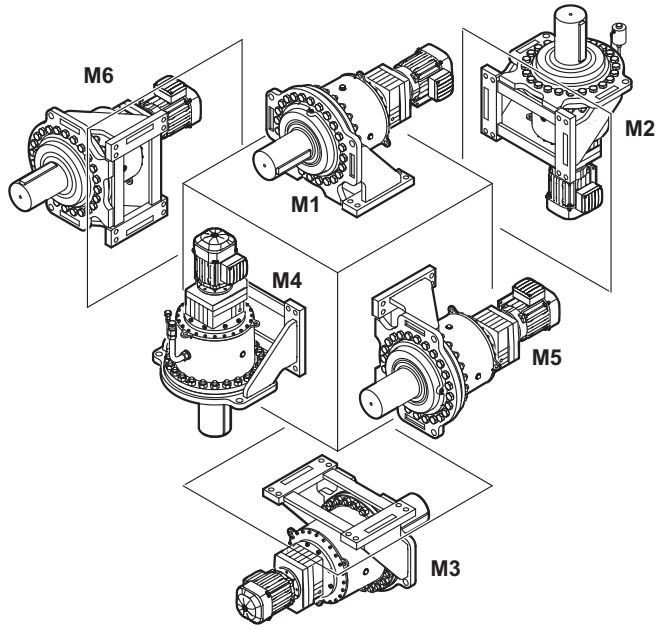
3 Mounting positions

3.1 Standard mounting position

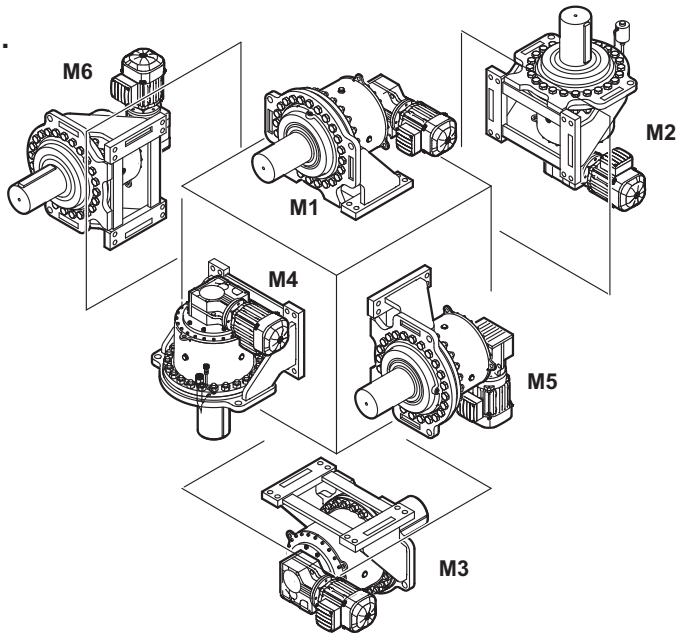
The mounting position defines the spatial orientation of the gear unit housing and is designated **M1...M6**. The mounting positions apply to planetary gear units with solid shafts and hollow shafts.

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

P..RF..



P..KF..



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3.2 Pivoted mounting positions and variable mounting positions

Mounting positions other than 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.

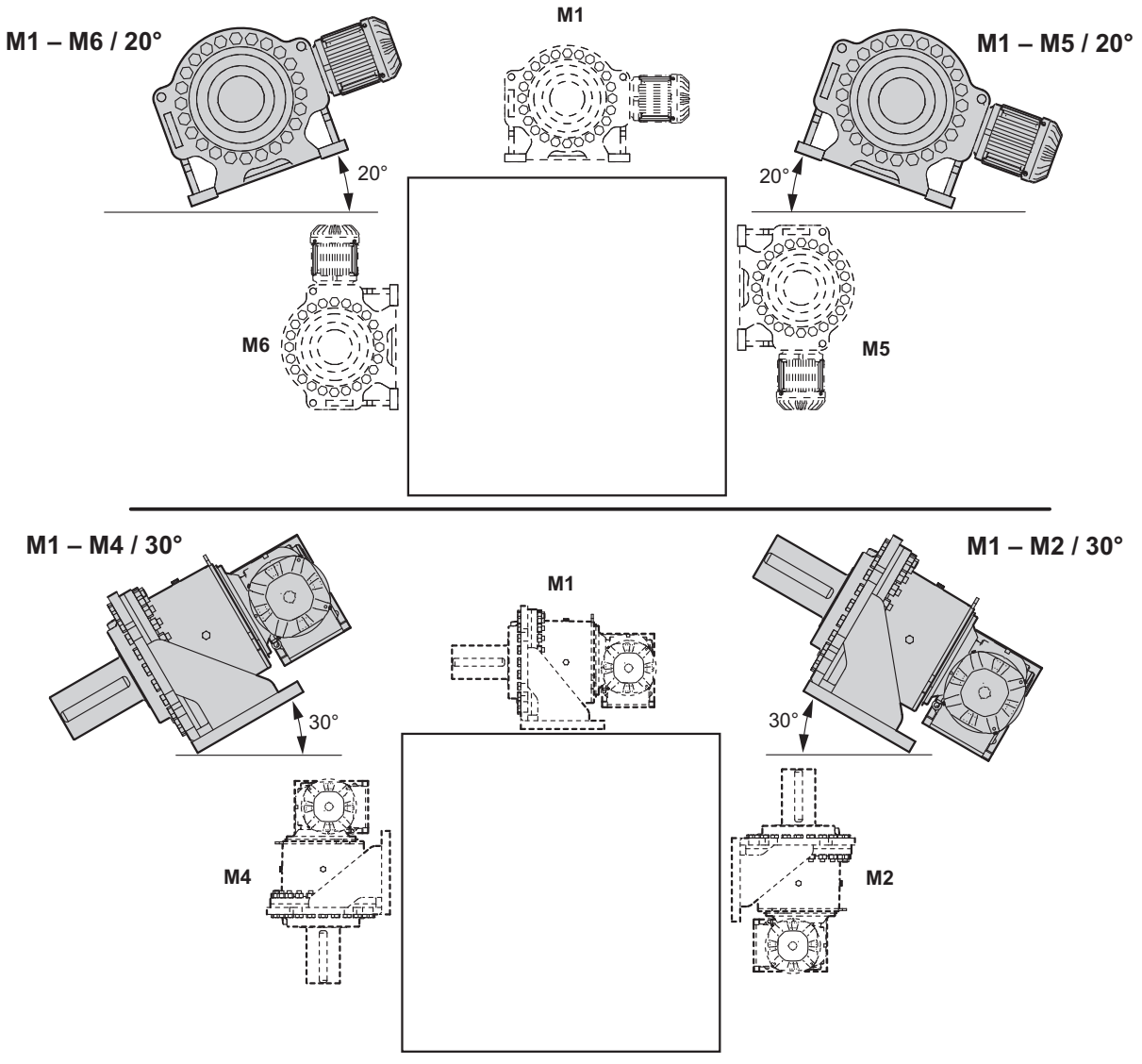
Gear units with variable mounting position can change the mounting position **variably** during operation within the specified range.

The designation is set up as follows:

M1 - M2/20°/V
[1] [2] [3] [4]

[1] Initial mounting position
[2] Required mounting position
[3] Pivoting angle
[4] F = Fixed final position; V = Variable final position

The following figure shows 4 examples:



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21915180/EN – 04/2015

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

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

M1 - M2/20°/V - M4/20°/V - M5/30°/F

INFORMATION

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

21915180/EN – 04/2015

3.3 Mounting position sheets

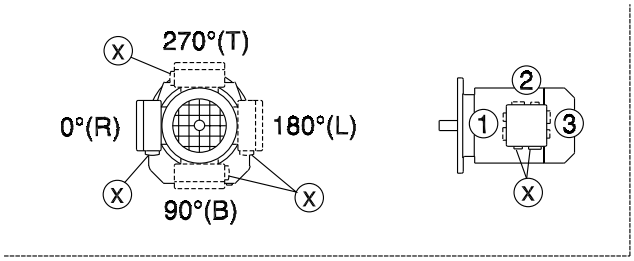
3.3.1 Key to the mounting position sheets

The table shows the symbols and their meanings for the mounting position sheets on the following pages:

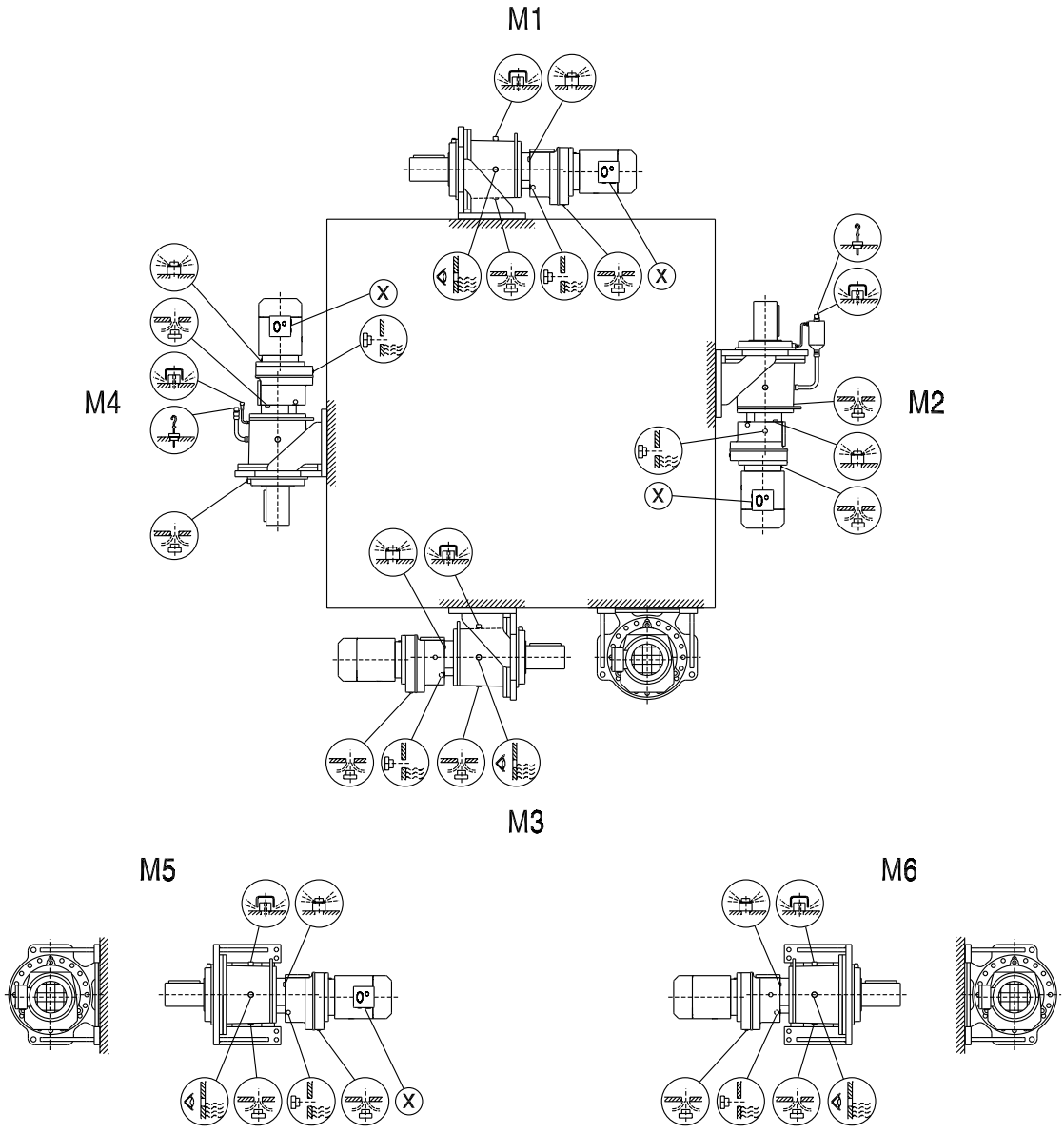
Symbol	Meaning
	Breather valve
	Oil level plug
	Oil drain plug
	Breather
	Oil dipstick
	Oil sight glass

21915180/EN – 04/2015

3.3.2 P..RF..

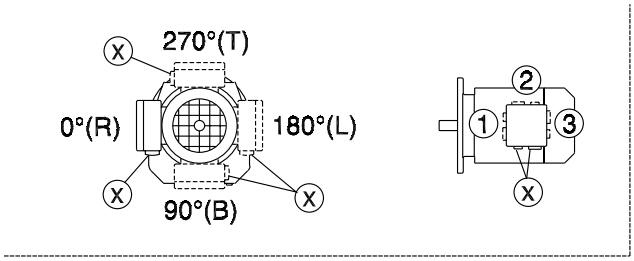


45 129 00 08

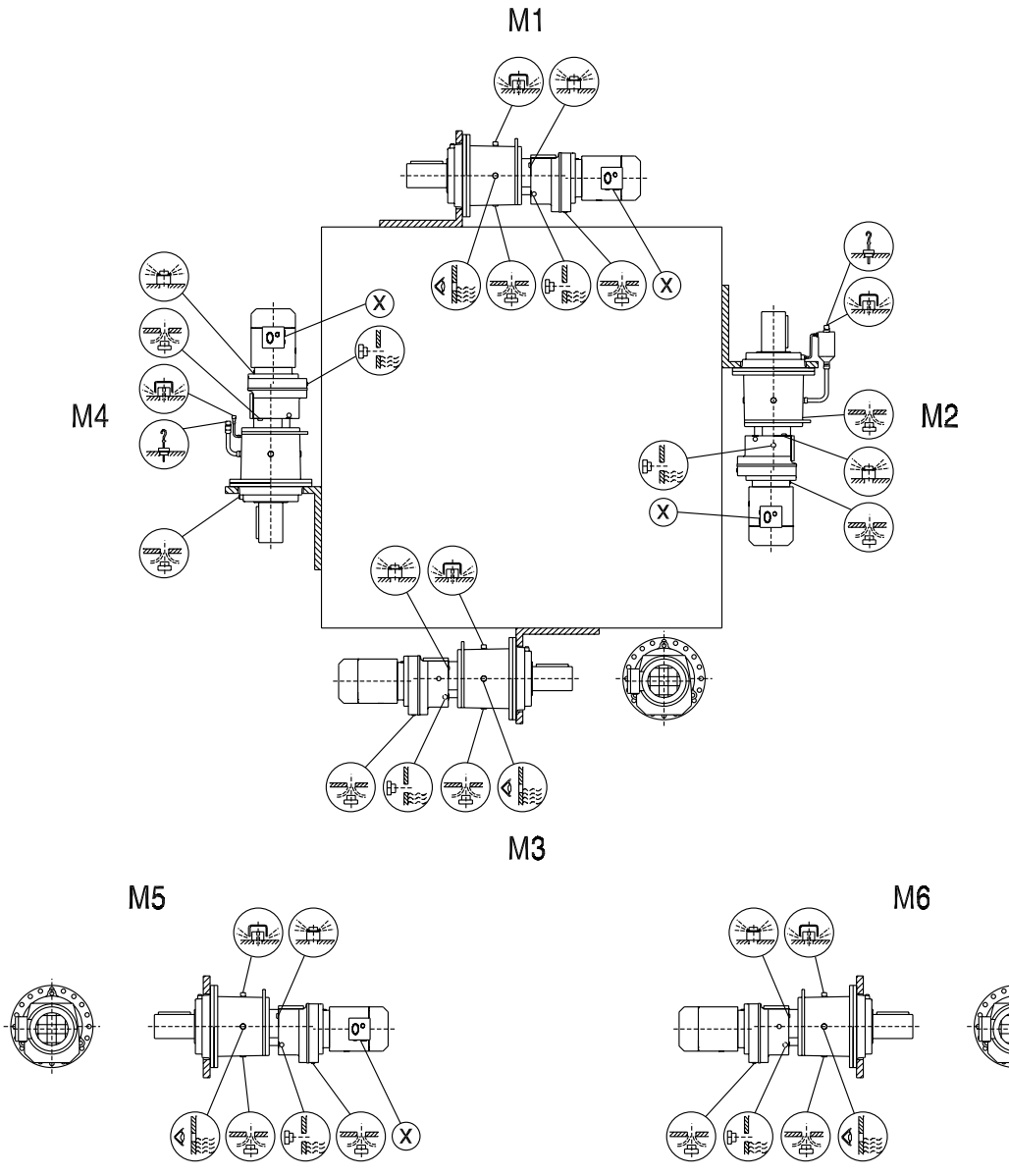


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3.3.3 PF..RF..



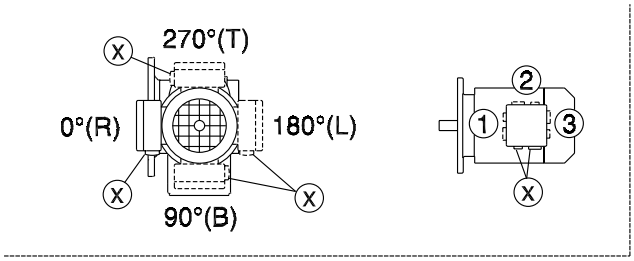
45 130 00 08



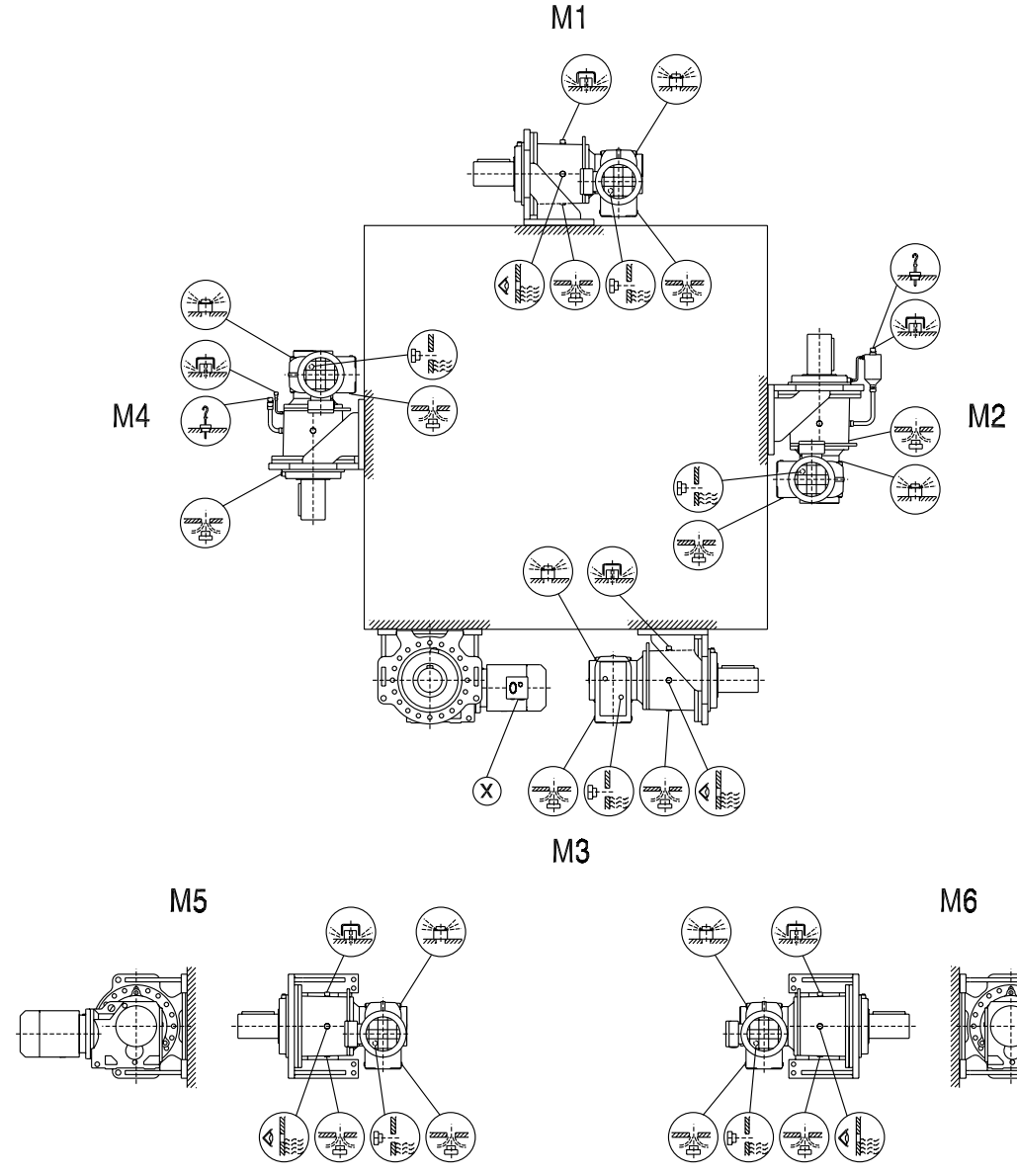
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21915180/EN – 04/2015

3.3.4 P..KF..

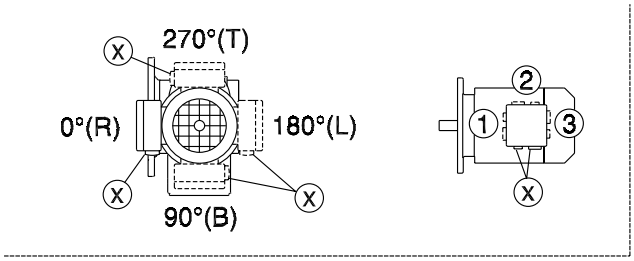


45 131 00 08

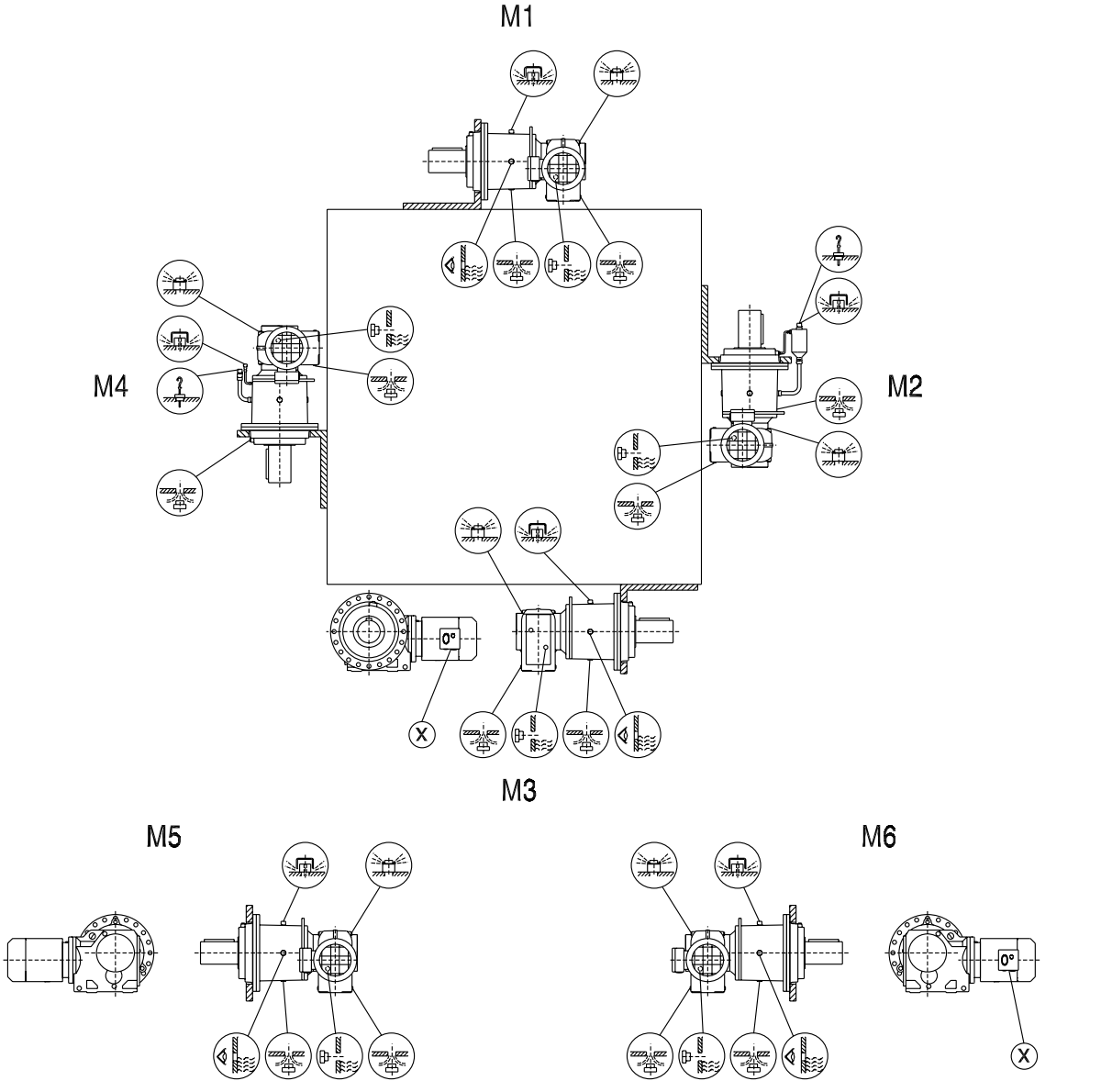


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3.3.5 PF..KF..



45 132 00 08



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21915180/EN – 04/2015

4 Important order information

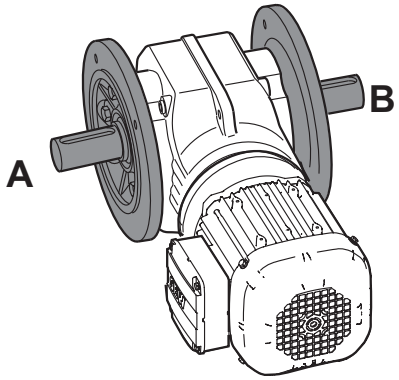
4.1 For all gearmotors

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.. bevel-helical primary gear units

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

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



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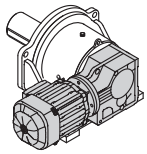
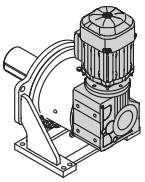
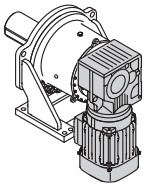
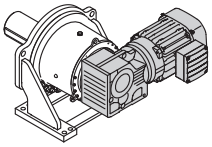
To reduce the churning losses in the primary gear unit to a minimum, SEW-EURODRIVE recommends that you choose one of the standard mounting positions shown below.

INFORMATION

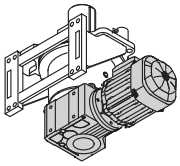
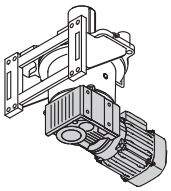
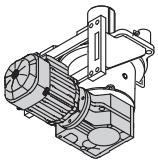
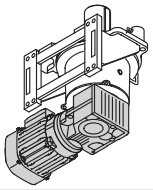
Contact SEW-EURODRIVE in case of deviating mounting conditions.

21915180/EN – 04/2015

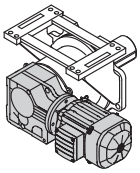
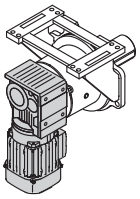
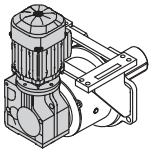
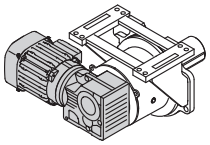
M1

0° A	270° A
	
90° A	**180° B**
	

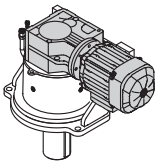
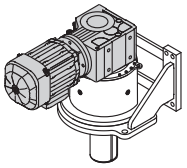
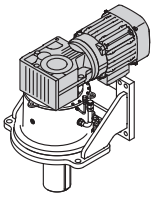
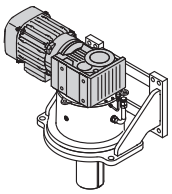
M2

0° A	270° A
	
90° A	**180° A**
	

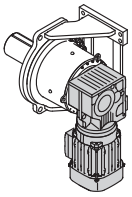
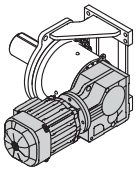
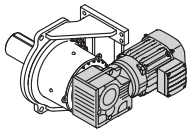
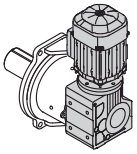
M3

0° B	270° A
	
90° A	**180° A**
	

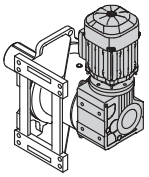
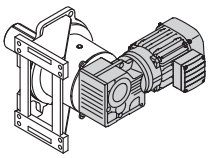
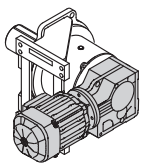
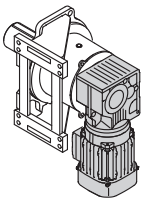
M4 [1)]

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

21915180/EN – 04/2015

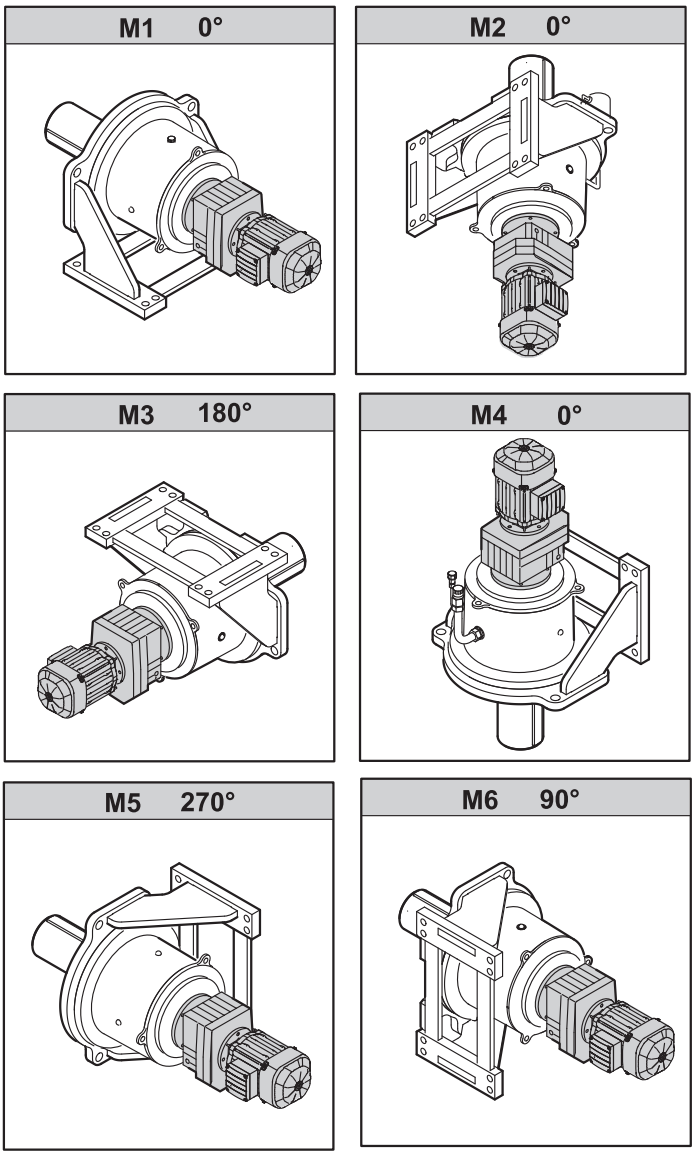
4.3 Mounting positions of RF.. primary helical gear units

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

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

INFORMATION

Contact SEW-EURODRIVE in case of deviating mounting conditions.



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M1 to M6 = Mounting positions of planetary gear units
0° to 270° = Mounting position of primary helical gear unit

21915180/EN – 04/2015

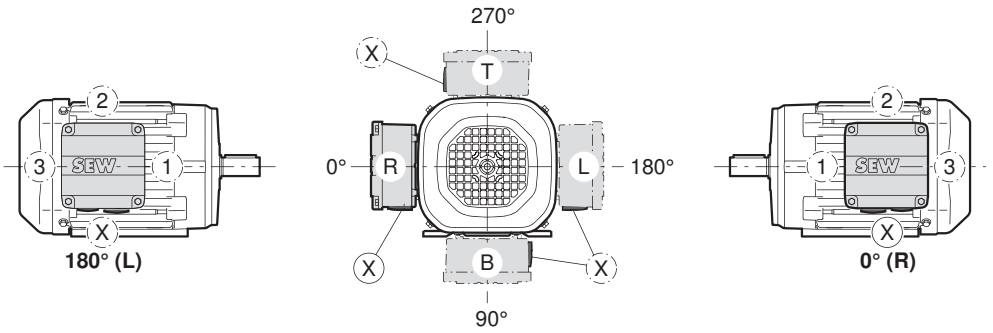
4.4 Position of motor terminal box and cable entry

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

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

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

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



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

INFORMATION

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

21915180/EN – 04/2015

4.5 Torque arm

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

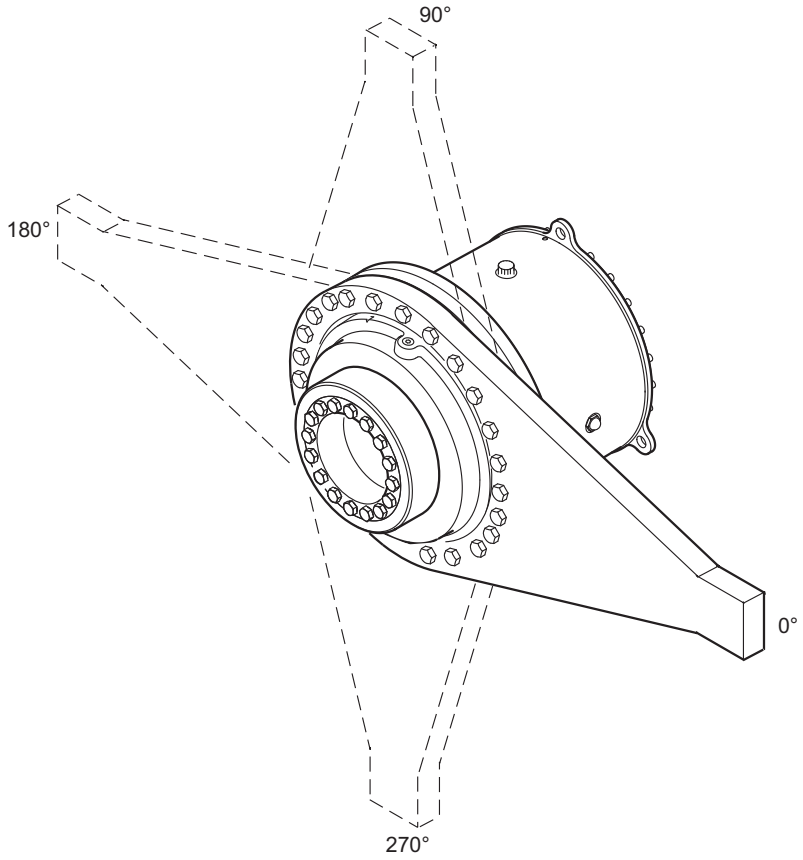
The retaining screws are included in the delivery.

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

INFORMATION

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

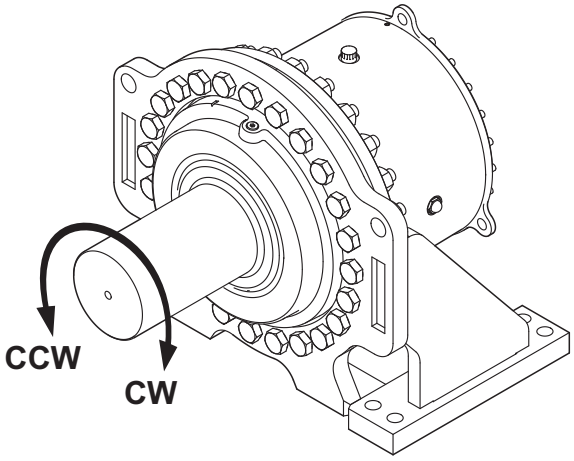
The following figure shows an example of the mounting position of the torque arm.



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4.6 Output direction of rotation with backstop

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



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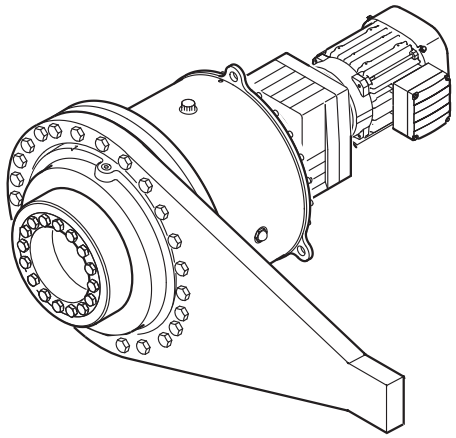
As viewed at the output shaft: Clockwise rotation **(CW)** = Rotating clockwise
Counterclockwise rotation **(CCW)** = Rotating counterclockwise

21915180/EN – 04/2015

4.7 Sample orders

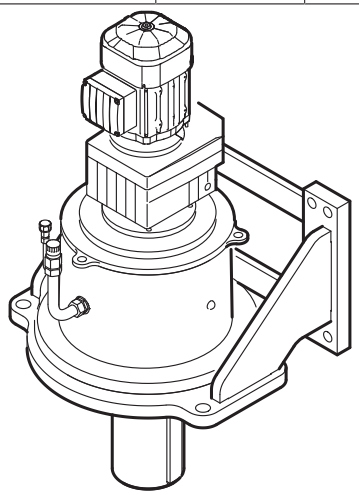
The following order examples show a combination of a planetary gear unit, a primary gear unit and a motor.

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



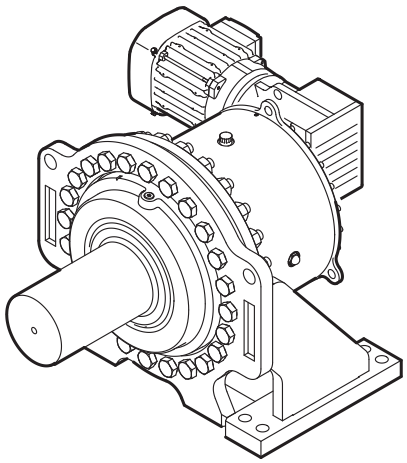
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Type	Mounting position of planetary gear unit	Mounting position					Additional feature
		Primary gear unit	Mounting flange	Terminal box	Cable entry	Torque arm	
P032 RF97DRN100L4	M4	0 °	–	0 °	X		



21915180/EN – 04/2015

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



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5 Project planning for gear units

5.1 Additional documentation

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

5.1.1 Drive Engineering – Practical Implementation

The publication "Drive Engineering – Practical Implementation – Drive Selection with SEW-EURODRIVE Gearmotors" features extensive information on characteristics, different 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

INFORMATION

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

21915180/EN – 04/2015

5.2.1 Step 1: Drive selection data

1.0 Machine on LSS (normally the driven machine)

Key: [...] = fill in values
[X] = make your selections by ☒

1.1 Field of application/industry [...]

1.2 Application [...]

1.3 Ambient temperature [°C] [...]

normal | min. | max.

1.4 Altitude [m] [...]

1.5 Installation [X]

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

1.6 Ambient conditions [X]

☐ normal ☐ corrosive
☐ dusty ☐ dry
☐ moist

2.0 Load characteristics

2.1 Required speed n_2 [min^{-1}] [...]

normal | min. | max.

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

normal | min. | max.

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

normal | min. | max.

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

per hour

2.5 Number of starts per hour [...]

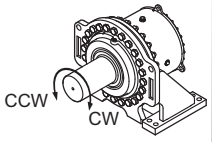
starts

2.6 Service life [X]

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

2.7 Rotation direction under load (LSS) [X]

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



2.8 Operating period/day [X]

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

2.9 Backstop required in gear unit [X]

☐ No
☐ Yes

2.10 Exact load cycle attached [X]

☐ No
☐ Yes

3.0 Machine on HSS (normally the drive machine)

3.1 Type: [X]

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

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

normal | min. | max.

3.3 Motor speed n_M [min^{-1}] [...]

normal | min. | max.

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

normal | min. | max.

3.5 Input speed n_1 [min^{-1}] [...]

normal | min. | max.

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

☐ IEC
☐ NEMA
Motor size (IEC- or NEMA code):

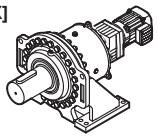
3.7 Mounting of motor [X] [...]

☐ B3
☐ B5
☐ V1
☐ other:

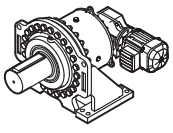
4.0 Gear unit requirements

4.1 Gear Unit Type [X]

☐ Helical gear unit P.. RF..



☐ Bevel-helical gear unit P..KF..



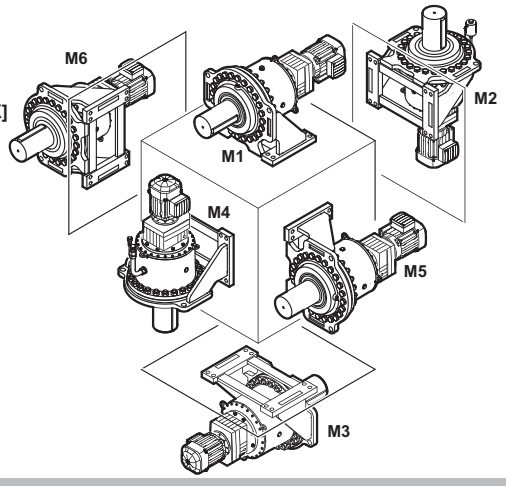
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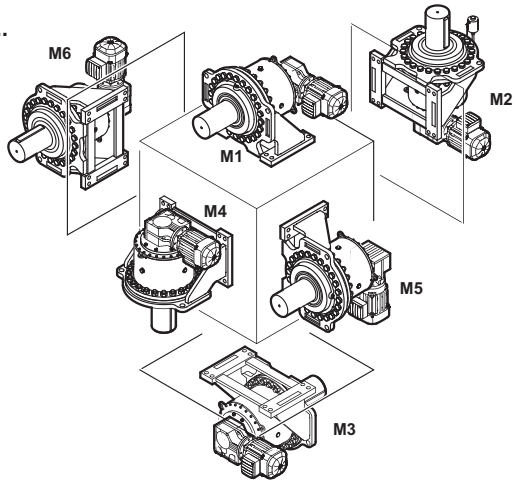
4.2 Mounting position [X]

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

P..RF..

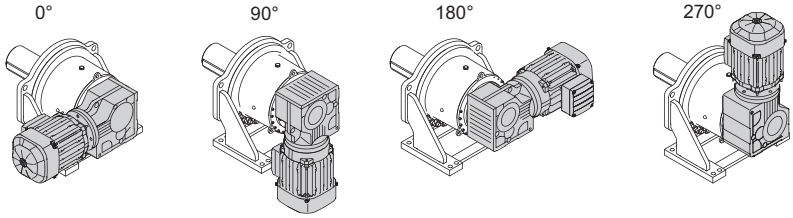


P..KF..



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

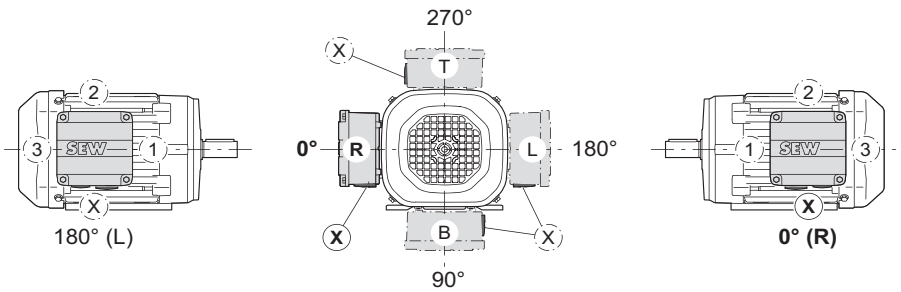
- ☐ 0°
- ☐ 90°
- ☐ 180°
- ☐ 270°



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

☐ In relation to motor power P_M / motor torque M_M

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

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

hours

4.8 Assembly of gear unit housing [X]

☐ Foot
☐ Flange
☐ Torque

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

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

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

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

LSS design (if with solid shaft)
☐ Solid shaft with keyway
☐ Solid shaft without keyway
☐ Solid shaft with splined hollow shaft DIN 5480
☐ Other

LSS design (if with hollow shaft)
☐ Hollow shaft with keyway
☐ Hollow shaft for shrink disk connection, including shrink disk
☐ Splined hollow shaft DIN 5480
☐ Other

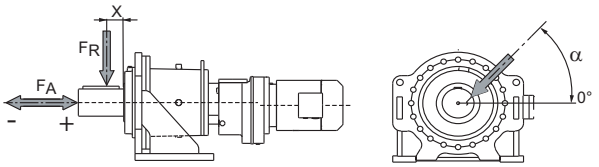
4.11 HSS connection to motor [X]

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

4.12 Machine shaft bearings

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

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



	normal	min.	max.
Axial force F_{A2} [N]			
Radial force F_{R2} [N]			
Distance from shaft shoulder X [mm]			

Application angle of radial force α [°]
or rotating ☐

4.15 Electric power 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

Explosion protection required: ☐ Yes ☐ No

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21915180/EN – 04/2015

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

Constant torque	$M_{K2} = \frac{P_{K1} \times 9550 \times \eta}{n_2}$ [Nm] Note: if P_{K1} is not known -> $P_{K1} = P_M$ M_{K2} = Required output torque [Nm] P_{K1} = Required operating power at HSS [kW] n_2 = Output speed (LSS) rpm
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.

5.2.3 Step 3: Selecting application factors

Application-specific service factor	$F_{S\,min}$
Peak load factor	F_F "" (→ 🗎 60)
Startup factor	F_{Start} "" (→ 🗎 60)
Service life factor	f_{LC} "" (→ 🗎 61)

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

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

Recommended values with reference to

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

are given in the following table.

INFORMATION

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

INFORMATION

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

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

1) Contact SEW-EURODRIVE

2) Contact SEW-EURODRIVE; dimensioning according to FEM1001

21915180/EN – 04/2015

Area of application	Type of application (driven machine)	Application-specific service factor $F_{S\ min}$ Operating period / day			
		Gearing with infinite fatigue strength (referring to DIN 3990)			Defined Service life
		< 3 h	3-10 h	> 10 h	
Metal production and processing	Winder	-	1.60	1.75	1.60
	Cutting rollers	1.55	1.75	2.00	1.55
	Table conveyors, single drives	1)	1)	1)	1)
	Table conveyors, group drives	1)	1)	1)	1)
	Table conveyors, reciprocating	1)	1)	1)	1)
	Wire drawing machines	1.35	1.50	1.75	1.35
	Rollers	1)	1)	1)	1)
Mills and drums	Cooling and drying drums	-	1.50	1.60	1.50
	Rotary kilns	-	-	2.00	2.00
	Ball mills	-	-	2.00	2.00
	Coal mills	-	1.50	1.75	1.50
Pulp and paper industry	Debarking drums and machines	1.55	1.80	-	1.55
	Rolls (pick-up, wire drive, wire suction)	-	1.80	2.00	1.80
	Drying cylinders (rolling bearings)	-	1.80	2.00	1.80
	Calenders (rolling bearings)	-	1.80	2.00	1.80
	Filters (pressure and vacuum)	-	1.80	2.00	1.80
	Beaters and chippers	1.55	1.75	2.00	1.55
	Jordan mills	-	1.50	1.75	1.50
	Presses (bark, felt, glue, suction)	-	-	1.75	1.75
	Reels	-	-	1.75	1.75
	Pulpers	1)	1)	1)	1)
	Washer filters	-	-	1.50	1.50
	Yankee cylinders (dryers)	1)	1)	1)	1)
Pumps	Centrifugal pumps	1.15	1.35	1.45	1.15
	Reciprocating pumps (single-cylinder)	1.35	1.50	1.80	1.35
	Reciprocating pumps (multi-cylinder)	1.20	1.40	1.50	1.20
	Screw pumps	-	1.25	1.50	1.25
	Rotary pumps (gear pump, vane pump)	-	-	1.25	1.25
Agitators and mixers	Agitators for liquids	1.00	1.25	1.50	1.00
	Agitators for liquids (variable density)	1.20	1.50	1.65	1.20
	Agitators for solids (non-uniform material)	1.40	1.60	1.70	1.40
	Agitators for solids (uniform material)	-	1.35	1.40	1.35
	Concrete mixers	-	1.50	1.50	1.50
Cable cars	Material ropeways	-	1.40	1.50	1.40
	Aerial tramways	-	1)	1)	1)
	Surface lifts	1)	1)	1)	1)
	Continuous aerial tramways	1)	1)	1)	1)
	Funicular railways	1)	1)	1)	1)
Fans	Heat exchangers	1.50	1.50	1.50	1.50
	Dry cooling towers	-	-	2.00	2.00
	Wet cooling towers	2.00	2.00	2.00	2.00
	Blowers (axial and radial)	1.50	1.50	1.50	1.50
Compressors	Reciprocating compressors	-	1.80	1.90	1.80
	Radial compressors	-	1.40	1.50	1.40
	Screw-type compressors	-	1.50	1.75	1.50

1) Contact SEW-EURODRIVE

Peak load factor – F_F

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

Planetary gear unit type/size	Peak load factor – F_F					
	Peak load frequency per hour					
	1...5	6...20	21...40	41...80	81...160	> 160
Output shaft as solid shaft P002...P102	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...P102	1.1	1.2	1.3	1.5	1.75	2.0

Startup factor – F_{start}

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

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

1) Depending on settings

21915180/EN – 04/2015

Service life factor – f_{LC}

For applications with defined service life

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

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f_{LC} = Service life factor
L_h = Required service life [h]
n_2 = Speed at output shaft [rpm]

For applications with infinite fatigue strength according to DIN 3990

$f_{LC} > 107.5$

5.2.4 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 load direction – 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

5.2.5 Step 5: Selecting the nominal gear unit torque M_{N2}

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

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

5.2.6 Step 6: Selecting the nominal motor power P_M

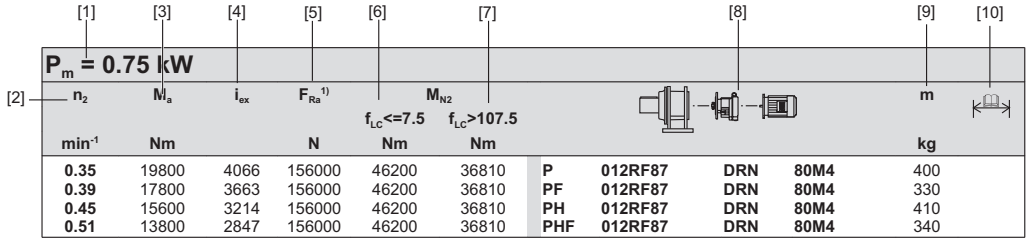
$$P_M \geq P_{K1} = \frac{P_{K2}}{\eta} \ [kW]$$

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

21915180/EN – 04/2015

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

The following figure shows the structure of the selection tables.



0.35	19800	4066	156000	46200	36810	**P**	**012RF87**	**DRN**	**80M4**	400
0.39	17800	3663	156000	46200	36810	**PF**	**012RF87**	**DRN**	**80M4**	330
0.45	15600	3214	156000	46200	36810	**PH**	**012RF87**	**DRN**	**80M4**	410
0.51	13800	2847	156000	46200	36810	**PHF**	**012RF87**	**DRN**	**80M4**	340

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

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

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

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

$$M_{K2\ per} = \frac{M_{N2\ Lim}}{F_F} \quad [kNm]$$

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

Calculating 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 nominal motor power [Nm]
F_{start} = Startup factor

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

Checking the gear unit selection:

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

5.2.9 Step 9: Checking external additional forces

Influences and dependencies:

The permitted additional forces depend on the following factors:

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

Determining the overhung load

If no overhung loads are specified, they can be determined by approximation as follows. 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 must be considered for various transmission elements.

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

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

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

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_{10h} (according to ISO 281).

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

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

Overhung load on output

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

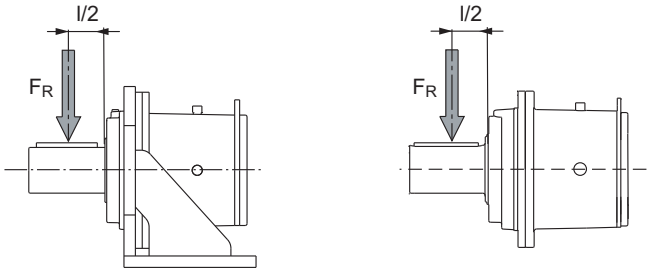
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Permitted overhung loads and axial loads on the input

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

Checking the permitted overhung load on the output

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



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

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

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

Calculating $F_{R\,perl}$ [N] for different output speeds n* (rpm) (project planning with infinite fatigue strength):

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

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

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

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

The values apply to force application to the center of the shaft end and an output speed of up to 10 rpm.

For project planning with defined service life:

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

Calculating $F_{R\,per}$ [N] for output speeds of n* > 10 rpm (project planning with defined service life):

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

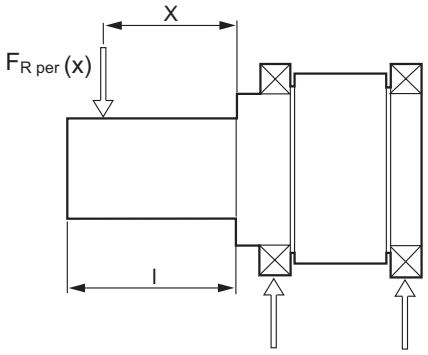
$F_{R\,per}{}^{*}$ = Permitted overhung load [N] for different output speed
$F_{R\,per}$ = Permitted overhung load [N], see previous table (defined service life)
$F_{R\,max}$ = Maximum overhung load [N], see previous table (defined service life)
n* = Deviating output speed [rpm]

Comment

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

However, if $F_{R\,per}{}^{*} > F_{R\,max}$, 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



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

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Calculating off-center force application:

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

b^*	= (b - l/2) + x [mm]
$F_{R\,per}(x)$	= Permitted overhung load [N] of the off-center force application
$F_{R\,per}$	= Permitted overhung load [N]
$F_{R\,max}$	= Maximum overhung load [N]

Comment

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

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

Permitted axial force

For applications with axial loads, consult SEW-EURODRIVE.

INFORMATION

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

5.2.10 Step 10: Checking the thermal rating/heating

INFORMATION

Contact SEW-EURODRIVE for the following operating conditions:

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

5.2.11 Step 11: Selecting the lubricant

Lubricants can be chosen according to the lubricant table.

Output speeds $n_2 < 1.0$ rpm:

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

21915180/EN – 04/2015

5.2.12 Step 12: Technical specifications

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

21915180/EN – 04/2015

5.3 Dimensioning example – project planning with defined service life

5.3.1 Step 1: Drive selection data

- Application: Belt conveyor
- Bevel-helical-planetary gear unit
- Hollow shaft with shrink disk and torque arm
- Required service life: 15 000 hours
- Required output speed n_2 = 1.5 min^{-1}
- Required operating power at LSS P_{K2} = 10.5 kW
- 4-pole motor / frequency inverter operation
- Input speed n_1 = 1440 min^{-1}
- Operating time: 12 hours per day
- Cyclic duration factor: 100% cdf, 10 starts per hour
- Direction of rotation under load: CW rotation
- Outdoors, dusty environment
- Ambient temperature = 0 °C...40 °C
- Installation altitude H = 10 m
- Horizontal mounting position
- No axial or radial forces acting on the output shaft

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

Operating torque on LSS

$$M_{K2} = \frac{P_{K2} \times 9\,550}{n_2} \text{ [Nm]}$$

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

$$M_{K2} = \frac{10.5 \text{ kW} \times 9\,550}{1.5 \text{ min}^{-1}} = 66\,850 \text{ Nm}$$

Required gear ratio

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

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

Efficiency:

η = 0.98

5.3.3 Step 3: Selecting the application factors $F_{S\,min}$, F_F, F_{Start}, f_{LC}

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

Application: Belt conveyors ≤ 100 kW

t = defined service life → $F_{S\,min}$ = 1,15

Peak load factor F_F

Hollow shaft with shrink disk

Load per hour = 6...20 → F_F = 1.2

Startup factor F_{start}

Motor in frequency inverter operation → F_{start} = 1.5

Service life factor f_{LC}

For applications with defined service life

$$f_{LC} = \frac{L_h \times n_2}{1\,000} = \frac{15\,000 \text{ h} \times 1.5 \text{ min}^{-1}}{1\,000} = 22.5$$

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

21915180/EN – 04/2015

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

Constant direction of the load – constant torque:

$M_{N2} \geq M_{K2} \times F_{S\,min}$ = 66 850 Nm × 1.15 = 76 878 Nm

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

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

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

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

→ Project planning with defined service life is possible

21915180/EN – 04/2015

5.3.6 Step 6: Selecting the motor power P_M

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

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

Motor selection → P_M = 11 [kW]

5.3.7 Step 7: Selecting the gearmotor combination

P_m = 11.0 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}						m
				f_{LC}<=7.5	f_{LC}>107.5					
min^{-1}	Nm		N	Nm	Nm					kg
1.4	76500	1095	213700	86800	69620					
1.5	67800	971	225600	86800	69620	**P**	**032KF97**	**DRN**	**160M4**	840
1.7	61300	878	233400	86800	69620	**PF**	**032KF97**	**DRN**	**160M4**	720
2.0	51900	744	243300	86800	69620	**PH**	**032KF97**	**DRN**	**160M4**	860
2.3	45400	650	249400	86800	69620	**PHF**	**032KF97**	**DRN**	**160M4**	740

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Selecting a combination:	PHF032 KF97 DRN160M4
Checking the output torque:	M_a = 67 800 Nm > M_{K2} = 66 850 Nm → ok
Exact gear ratio:	i_{ex} = 971 (required = 960 → ok)

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

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

$$M_{K2\ per} = \frac{M_{N2\ Lim}}{F_F} = \frac{139\ 240\ \text{Nm}}{1.2} = 116\ 033\ \text{Nm}$$

$M_{K2\ per}$ = Permitted peak output torque [Nm]
$M_{N2\ Lim}$ = limited nominal gear unit torque [Nm]
F_F = Peak load factor

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

$$M_{K2\ max} = M_a \times F_{Start} = 67\ 800\ \text{Nm} \times 1.5 = 101\ 700\ \text{Nm}$$

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

Checking the gear unit selection:

$M_{K2\ max} < M_{K2\ per}$ → OK

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

5.3.9 Step 9: Checking the external additional forces

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

5.3.10 Step 10: Checking the thermal rating/heating

The ambient temperature is below 45 °C

Horizontal mounting position

→ Thermal rating is OK

5.3.11 Step 11: Selecting the lubricant

As n_2 = 1.5 min^{-1} (n_2 > 1.0 min^{-1}), you can choose the lubricants according to the lubricant table.

5.3.12 Step 12: Technical specification

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

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

5.4.1 Step 1: Drive selection data

- Application: Apron feeders
- Bevel-helical planetary gear unit
- Hollow shaft with shrink disk and torque arm
- Required output speed n_2 = 1.5 min^{-1}
- Required operating power at LSS P_{K2} = 10 kW
- Motor 4-pole/50 Hz in star/delta connection
- Input speed n_1 = 1440 min^{-1}
- Operating time: 24 hours per 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

21915180/EN – 04/2015

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

Operating torque on LSS:

$$M_{K2} = \frac{P_{K2} \times 9\,550}{n_2} \text{ [Nm]}$$

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

$$M_{K2} = \frac{10 \text{ kW} \times 9\,550}{1.5 \text{ min}^{-1}} = 63\,667 \text{ Nm}$$

Required gear ratio:

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

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

Efficiency:

η = 0.98

5.4.3 Step 3: Selecting the application factors $F_{s\,min}$, F_F, F_{Start}

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

Application: Apron feeder t > 10 h → $F_{S\,min}$ = 1.5

Peak load factor F_F

Hollow shaft with shrink disk

Load per hour = 6...20 → F_F = 1.2

Start factor F_{start}

Motor in star/delta → F_{Start} = 1.3

t = Daily operating period

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

Constant direction of the load – constant torque:

$M_{N2} \geq M_{K2} \times F_{S\,min} = 63\,667 \text{ Nm} \times 1.5 = 95\,500 \text{ Nm}$

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

21915180/EN – 04/2015

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

PHF 042 → M_{N2} = 100170 [Nm]

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

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

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5.4.6 Step 6: Selecting the motor power P_M

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

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

Motor selection → P_M = 11 [kW]

5.4.7 Step 7: Selecting a gearmotor combination

P_m = 11.0 kW

n_2	M_a	i_{ex}	F_{Ra}[1]	M_{N2}							m
				f_{LC}<=7.5	f_{LC}>107.5						
min^{-1}	Nm		N	Nm	Nm						kg
1.2	84400	1209	310300	111000	100170	**P**	**042KF97**	**DRN**	**160M4**	1080
1.5	67800	971	323000	111000	100170	**PF**	**042KF97**	**DRN**	**160M4**	890
1.7	61300	878	323000	111000	100170	**PH**	**042KF97**	**DRN**	**160M4**	1090
						PHF	**042KF97**	**DRN**	**160M4**	900

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Selecting a combination: PHF042 KF97 DRN160M4
Checking the output torque: M_a = 67 800 Nm > M_{K2} = 63 667 Nm → ok
Exact gear ratio: i_{ex} = 971 (required = 960 → ok)

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

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

$$M_{K2\ per} = \frac{M_{N2\ Lim}}{F_F} = \frac{200\ 340\ Nm}{1.3} = 154\ 108\ Nm$$

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

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

$$M_{K2\ max} = M_a \times F_{Start} = 67\ 800\ Nm \times 1.5 = 101\ 700\ Nm$$

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

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

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

5.4.9 Step 9: Checking the external additional forces

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

5.4.10 Step 10: Checking the thermal rating/heating

The ambient temperature is below 45 °C

Horizontal mounting position

→ Thermal rating is OK

5.4.11 Step 11: Selecting the lubricant

As $n_2 = 1.5\ min^{-1}$ ($n_2 > 1.0\ min^{-1}$), you can choose the lubricants according to the lubricant table.

5.4.12 Step 12: Technical specification

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

21915180/EN – 04/2015

6 Permitted lubricants

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

INFORMATION

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

6.1 Guidelines for lubricant selection

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

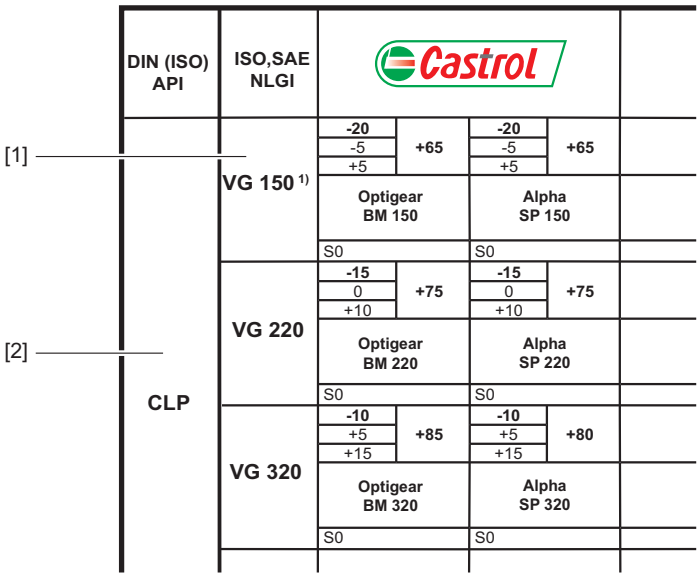
Generally it is possible to have the planetary gear unit delivered with oil.

INFORMATION

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

21915180/EN – 04/2015

6.2 Structure of the tables and abbreviations



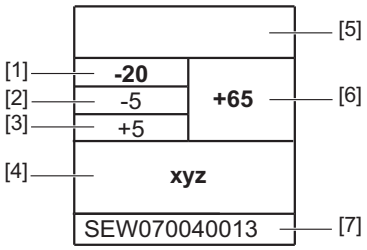
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[1] Viscosity class
[2] Lubricant type

Abbreviations

Icons	Designation
CLP	= Mineral oil
CLP HC	= Synthetic polyalphaolefin (PAO)
E	= Ester-based oil
▭	= Mineral lubricant
▬	= Synthetic lubricant
	= Lubricant for the food industry (**NSF H1**-compliant)
	= Biodegradable oil (lubricant for agriculture, forestry, and water management)
1)	= Lubricants may only be used if service factor $F_s \geq 1.3$

6.3 Explanation of the various lubricants



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

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

21915180/EN – 04/2015

6.4 Lubricant tables

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

DIN (ISO) API	ISO,SAE NLGI	Castrol				FUCHS			Mobil®			KLÜBER LUBRICATION			Shell			TEXACO			TOTAL		
CLP	VG 150 [1]	-20 -5 +5	Optigear BM 150	+65	-20 -5 +5	Renolin CLP 150 Plus	+65	-20 -5 +5	Mobilgear 600 XP 150	+65	-20 -5 +5	Klüberoil GEM 1-150 N	+65	-20 -5 +5			-20 -5 +5	Meropa 150	+65			
		S0			S0			S0	SEW070030013		S0			S0			S0					
	VG 220	-15 0 +10	Optigear BM 220	+75	-15 0 +10	Renolin CLP 220 Plus	+75	-15 0 +10	Mobilgear 600 XP 220	+75	-15 0 +10	Klüberoil GEM 1-220 N	+75	-15 0 +10	Shell Omala Oil F 220	+75	-15 0 +10	Meropa 220	+75	-15 0 +10	Carter EP 220	+75
		S0			S0			S0	SEW070030013		S0			S0			S0			S0		
	VG 320	-10 +5 +15	Optigear BM 320	+85	-10 +5 +15	Renolin CLP 320 Plus	+80	-10 +5 +15	Mobilgear 600 XP 320	+80	-10 +5 +15	Klüberoil GEM 1-320 N	+80	-10 +5 +15	Shell Omala Oil F 320	+80	-10 +5 +15	Meropa 320	+80	-10 +5 +15	Carter EP 320	+80
		S0			S0			S0	SEW070030013		S0			S0			S0			S0		
	VG 460	-5 +10 +20	Optigear BM 460	+90	-5 +10 +20	Renolin CLP 460 Plus	+90	-5 +10 +20	Mobilgear 600 XP 460	+90	-5 +10 +20	Klüberoil GEM 1-460 N	+90	-5 +10 +20	Shell Omala Oil F 460	+90	-5 +10 +20	Meropa 460	+90	-5 +10 +20	Carter EP 460	+90
		S0			S0			S0	SEW070030013		S0			S0			S0			S0		
	VG 680	0 +15 +25	Optigear BM 680	+90	0 +15 +25	Renolin CLP 680 Plus	+90	0 +15 +25	Mobilgear 600 XP 680	+90	0 +15 +25	Klüberoil GEM 1-680 N	+90	0 +15 +25			0 +15 +25	Meropa 680	+90	0 +15 +25	Carter EP 680	+90
		S0			S0			S0	SEW070030013		S0			S0			S0			S0		
	VG 1000	+5 +20 +30	Optigear BM 1000	+90																		
		S0																				

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DIN (ISO) API	ISO,SAE NLGI	Castrol	FUCHS	Mobil®	KLÜBER LUBRICATION	Shell	TEXACO	TOTAL
CLP HC	VG 32 [1]			-40 -30 -25 +30 SHC 624				
	VG 68 [1]		-35 -20 -10 +50 Renolin Unisyn CLP 68	-40 -25 -15 +50 SHC 626	-35 -20 -10 +50 Klübersynth GEM 4-68 N	-40 -20 -10 +50 Omala S4 GX 68		
	VG 150 [1]	-25 -10 0 +70 Alphasyn EP 150	-30 -10 0 +70 Optigear Synthetic X 150	-30 -10 0 +75 SHC 629	-25 -10 0 70 Klübersynth GEM 4-150 N	-30 -10 0 +75 Omala S4 GX 150	-25 -10 0 +70 Pinnacle EP 150	-35 -15 -5 +75 Carter SH 150
	VG 220	-25 -5 +5 +80 Alphasyn EP 220	-25 -5 +5 +80 Optigear Synthetic X 220	-25 -5 0 +85 SHC 630	-25 -5 +5 +80 Klübersynth GEM 4-220 N	-25 -5 +5 +85 Omala S4 GX 220	-25 -5 +5 +80 Pinnacle EP 220	-25 -5 +5 +80 Carter SH 220
	VG 320	-20 0 +10 +90 Alphasyn EP 320	-20 0 +10 +90 Optigear Synthetic X 320	-20 0 +10 +95 SHC 632	-20 0 +10 +95 Klübersynth GEM 4-320 N	-20 0 +10 +95 Omala S4 GX 320	-20 0 +10 +90 Pinnacle EP 320	-20 0 +10 +90 Carter SH 320
	VG 460	-15 +5 +15 +100 Alphasyn EP 460	-15 +5 +15 +100 Optigear Synthetic X 460	-15 +5 +15 +105 SHC 634	-15 +5 +20 +105 Klübersynth GEM 4-460 N	-15 +5 +15 +105 Omala S4 GX 460	-15 +5 +15 +100 Pinnacle EP 460	-15 +5 +15 +100 Carter SH 460
	VG 680		-10 +10 +25 +110 Optigear Synthetic X 680	-10 +10 +25 +110 SHC 636	-10 +10 +25 +110 Klübersynth GEM 4-680 N	-10 +10 +25 +110 Omala S4 GX 680		-10 +10 +25 +110 Carter SH 680
	VG 1000			-10 +15 +30 +110 SHC 639	0 +20 +30 +110 Klübersynth EG4-1000			

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21915180/EN – 04/2015

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DIN (ISO) API	ISO,SAE NLGI	bremer & leguil				Castrol				FUCHS				KLÜBER LUBRICATION			
CLP HC NSF H1	VG 68 [1]	-35 -20 -10	+45	Cassida Fluid HF 68	S0	-40 -25 -15	+45	Optileb HY 68	S0					-35 -20 -10	+45	Klüberoil 4UH1-68 N	S0
	VG 220 [1]	-20 -5 +5	+75	Cassida Fluid GL 220	S0	-25 -5 +5	+75	Optileb GT 220	S0					-25 -5 +5	+75	Klüberoil 4UH1-220 N	S0
	VG 460 [1]	-15 +5 +20	+90	Cassida Fluid GL 460	S0	-15 +5 +20	+95	Optileb GT 460	S0					-15 +5 +15	+95	Klüberoil 4UH1-460 N	S0
E	VG 460									-15 +5 +15	+95	Plantogear 460 S	S0	-15 +5 +15	+95	Klüberbio CA2-460	S0

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6.5 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.

Manufacturer	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

INFORMATION

If users wants to use another grease, they are responsible for obtaining a confirmation from the lubricant manufacturer or supplier approving that the chosen grease is suited for the intended application and that the grease properties meet at least the requirements of the greases listed in the table.

6.6 Comments

6.6.1 Planetary gearmotor with common oil chamber (special design)

INFORMATION

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

6.6.2 Selecting the viscosity when using mineral oil

INFORMATION

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

21915180/EN – 04/2015

7 Options

The following additional options are available. 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 hollow shaft according to DIN 5480
- Output shaft (LSS) sealing system
  - Labyrinth seal

21915180/EN – 04/2015

7.1 Torque arm

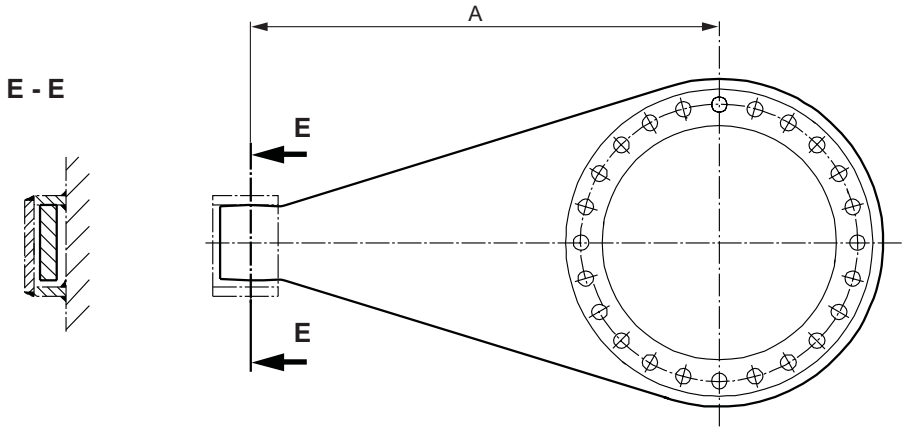
7.1.1 Single-sided torque arm

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

INFORMATION

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

The following figure shows an example of a torque arm.



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Weights

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

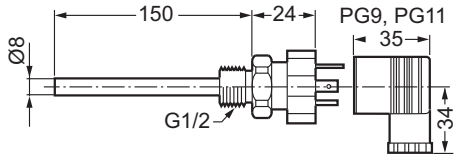
21915180/EN – 04/2015

7.2 Temperature sensor PT100

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

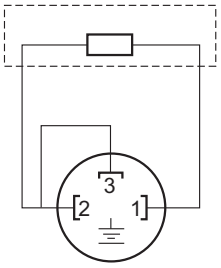
The temperature sensor is located in the oil sump of the gear unit. The exact position depends on the gear unit variant.

7.2.1 Dimensions



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7.2.2 Electrical connection



[1] / [2] Resistor element connection

7.2.3 Technical data

- Design with thermowell and changeable measuring insert
- Sensor tolerance [K] ± (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.

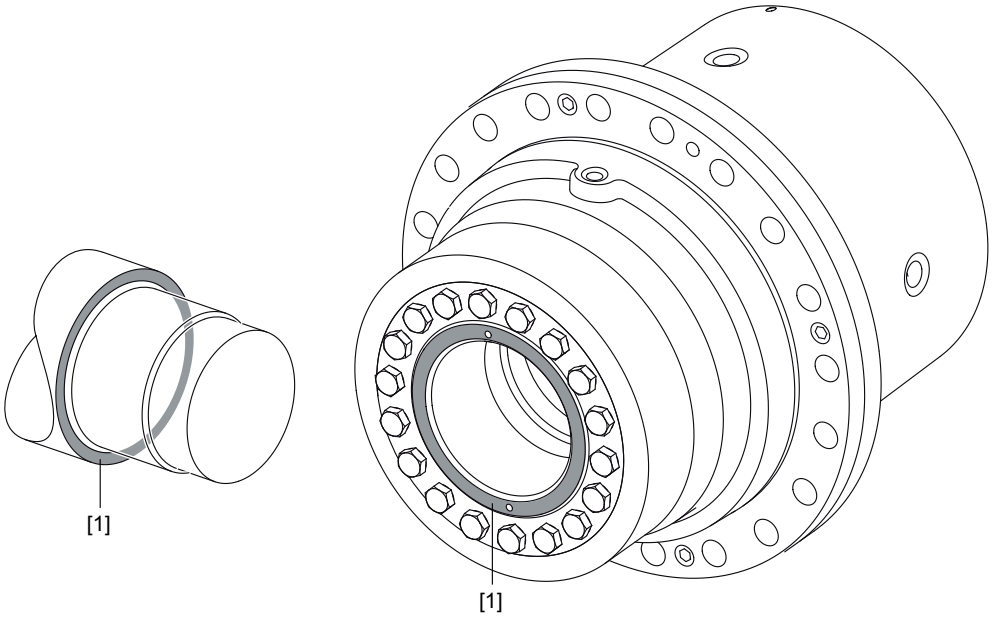
21915180/EN – 04/2015

8 Design and operating notes

8.1 Output shaft as hollow shaft with shrink disk

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

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



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21915180/EN – 04/2015

9 Important information on selection tables and dimension drawings

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

INFORMATION

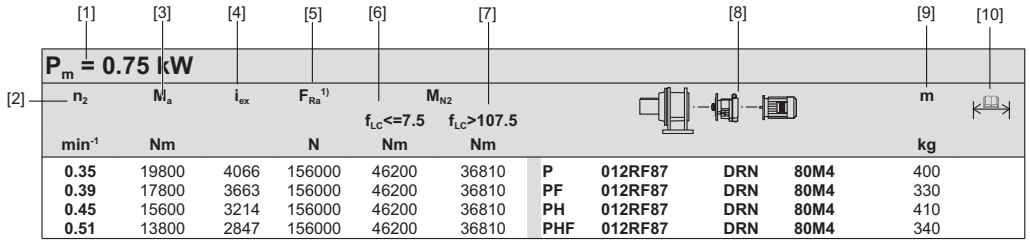
Unless specified otherwise, all dimensions are given in **mm**.

9.1 Selection tables

INFORMATION

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

The following figure shows the structure of the selection tables.



18014411689908491

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

9.2 Dimension sheets

9.2.1 Scope of delivery

= Standard parts supplied by SEW-EURODRIVE.

= Standard parts not supplied by SEW-EURODRIVE.

21915180/EN – 04/2015

9.2.2 Tolerances

Keys

Keys: according to DIN 6885 (domed type A)

Spline

Splined shaft according to DIN 5480

9.2.3 Foot-mounted design

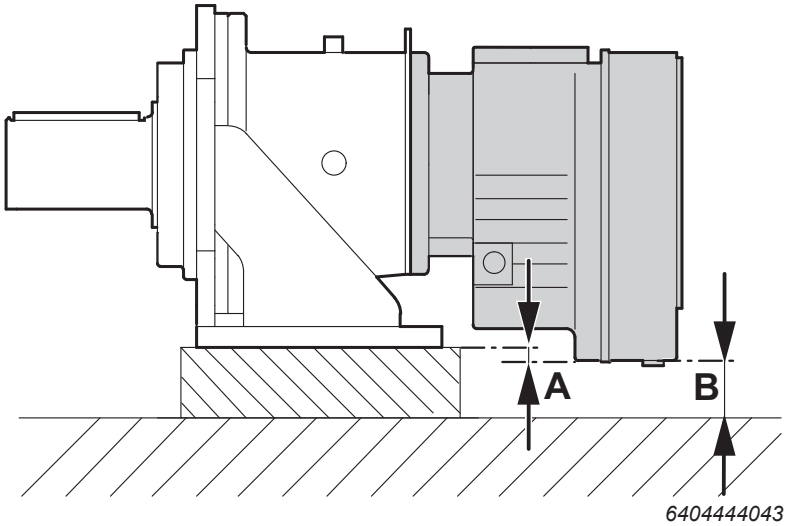
With the following combinations of foot-mounted planetary gear units with primary gear unit RF.. / KF.. / K.., the primary gear unit might protrude under the mounting surface.

INFORMATION

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

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

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



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21915180/EN – 04/2015

9.2.4 Oil expansion tank / oil riser pipe

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

9.2.5 Dimensions of motors and planetary gear units

Motor options

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

Special designs

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

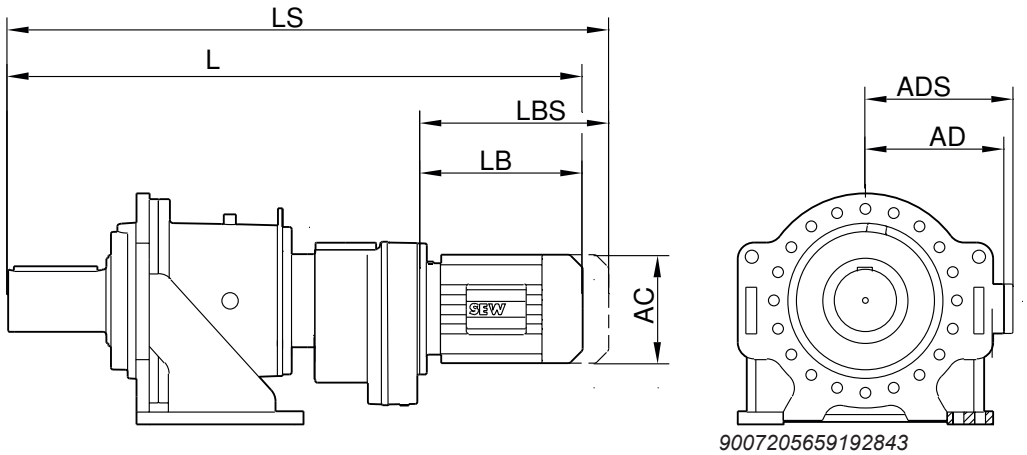
EN 50347

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

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

Dimension designations

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



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

21915180/EN – 04/2015

10 P.RF.. helical planetary gearmotors

10.1 Guide to the dimension sheets

10.1.1 P.. foot-mounted gear units

Size	M_{N2} [Nm]	Dimension sheets / page number						
		RF77	RF87	RF97	RF107	RF137	RF147	RF167
P002	24 830	120	122	124	126	–	–	–
P012	36 810	128	130	132	134	–	–	–
P022	51 190	–	136	138	140	142	-	–
P032	69 620	–	–	144	146	148	150	–
P042	100 170	–	–	–	152	154	156	–
P052	124 060	–	–	–	158	160	162	–
P062	185 660	–	–	–	–	164	166	–
P072	245 660	–	–	–	–	–	168	170
P082	359 400	–	–	–	–	–	172	174
P092	423 000	–	–	–	–	–	–	176
P102	500 000	–	–	–	–	–	–	178

10.1.2 PF.. flange-mounted gear units

Size	M_{N2} [Nm]	Dimension sheets / page number						
		RF77	RF87	RF97	RF107	RF137	RF147	RF167
PF002	24 830	121	123	125	127	–	–	–
PF012	36 810	129	131	133	135	–	–	–
PF022	51 190	–	137	139	141	143	–	–
PF032	69 620	–	–	145	147	149	151	–
PF042	100 170	–	–	–	153	155	157	–
PF052	124 060	–	–	–	159	161	163	–
PF062	185 660	–	–	–	–	165	167	–
PF072	245 660	–	–	–	–	–	169	171
PF082	359 400	–	–	–	–	–	173	175
PF092	423 000	–	–	–	–	–	–	177
PF102	500 000	–	–	–	–	–	–	179

10.1.3 Motor adapters

	Dimension sheets / page number						
	RF77	RF87	RF97	RF107	RF137	RF147	RF167
Adapter for mounting IEC motors P..RF..AM..	182	182	182	183	183	183	183
Adapter for mounting NEMA motors P..RF..AM..	184	184	184	185	185	185	185
Input shaft assembly P..RF..AD..	186	186	186	186	186	186	186
AQA motor adapter	187	187	188	188	188	188	–

21915180/EN – 04/2015

10.2 Selection tables

P_m = 0.75 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2} f_{LC}<=7.5	M_{N2} f_{LC}>107.5					m	
min^{-1}	Nm		N	Nm	Nm					kg	
0.35	19800	4066	156000	46200	36810	**P**	**012RF87**	**DRN**	**80M4**	400	130
0.39	17800	3663	156000	46200	36810	**PF**	**012RF87**	**DRN**	**80M4**	330	131
0.45	15600	3214	156000	46200	36810	**PH**	**012RF87**	**DRN**	**80M4**	410	130
0.51	13800	2847	156000	46200	36810	**PHF**	**012RF87**	**DRN**	**80M4**	340	131
0.45	15600	3209	156000	46200	31500	**P**	**012RF77**	**DRN**	**80M4**	370	128
0.48	14700	3030	156000	46200	31500	**PF**	**012RF77**	**DRN**	**80M4**	300	129
						PH	**012RF77**	**DRN**	**80M4**	385	128
						PHF	**012RF77**	**DRN**	**80M4**	315	129
0.36	19700	4051	122700	29200	24830	**P**	**002RF87**	**DRN**	**80M4**	320	122
0.39	17700	3649	123900	29200	24830	**PF**	**002RF87**	**DRN**	**80M4**	260	123
						PH	**002RF87**	**DRN**	**80M4**	320	122
						PHF	**002RF87**	**DRN**	**80M4**	265	123
0.45	15500	3197	124000	29200	24830						
0.48	14700	3018	124000	29200	24830						
0.56	12500	2570	124000	29200	24830	**P**	**002RF77**	**DRN**	**80M4**	290	120
0.64	10900	2254	124000	29200	24830	**PF**	**002RF77**	**DRN**	**80M4**	230	121
0.71	9910	2035	124000	29200	24830	**PH**	**002RF77**	**DRN**	**80M4**	295	120
0.80	8720	1790	124000	29200	24830	**PHF**	**002RF77**	**DRN**	**80M4**	235	121
0.85	8240	1691	124000	29200	24830						
1.0	7010	1439	124000	29200	24830						

P_m = 1.1 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2} f_{LC}<=7.5	M_{N2} f_{LC}>107.5					m	
min^{-1}	Nm		N	Nm	Nm					kg	
0.36	28700	4066	197000	64200	51190	**P**	**022RF87**	**DRN**	**90S4**	550	136
0.40	25900	3663	197000	64200	51190	**PF**	**022RF87**	**DRN**	**90S4**	450	137
						PH	**022RF87**	**DRN**	**90S4**	570	136
						PHF	**022RF87**	**DRN**	**90S4**	465	137
0.36	28700	4066	156000	46200	36810						
0.40	25900	3663	156000	46200	36810						
0.45	22700	3214	156000	46200	36810	**P**	**012RF87**	**DRN**	**90S4**	405	130
0.51	20100	2847	156000	46200	36810	**PF**	**012RF87**	**DRN**	**90S4**	335	131
0.58	17600	2498	156000	46200	36810	**PH**	**012RF87**	**DRN**	**90S4**	415	130
0.61	16700	2368	156000	46200	36810	**PHF**	**012RF87**	**DRN**	**90S4**	345	131
0.70	14600	2072	156000	46200	36810						
0.64	16000	2263	156000	46200	31500	**P**	**012RF77**	**DRN**	**90S4**	375	128
0.71	14400	2043	156000	46200	31500	**PF**	**012RF77**	**DRN**	**90S4**	305	129
						PH	**012RF77**	**DRN**	**90S4**	390	128
						PHF	**012RF77**	**DRN**	**90S4**	320	129
0.45	22600	3201	120800	29200	24830	**P**	**002RF87**	**DRN**	**90S4**	325	122
0.51	20000	2836	122500	29200	24830	**PF**	**002RF87**	**DRN**	**90S4**	265	123
0.58	17600	2489	124000	29200	24830	**PH**	**002RF87**	**DRN**	**90S4**	325	122
						PHF	**002RF87**	**DRN**	**90S4**	270	123
0.65	15900	2254	124000	29200	24830						
0.72	14300	2035	124000	29200	24830						
0.81	12600	1790	124000	29200	24830	**P**	**002RF77**	**DRN**	**90S4**	295	120
0.86	11900	1691	124000	29200	24830	**PF**	**002RF77**	**DRN**	**90S4**	235	121
1.0	10100	1439	124000	29200	24830	**PH**	**002RF77**	**DRN**	**90S4**	300	120
1.1	9250	1308	124000	29200	24830	**PHF**	**002RF77**	**DRN**	**90S4**	240	121
1.3	8010	1133	124000	29200	24830						
1.5	6970	986	124000	29200	24830						

21915180/EN – 04/2015

P_m = 1.5 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}						m	
				f_{LC}<=7.5	f_{LC}>107.5						
min^{-1}	Nm		N	Nm	Nm					kg	
0.36	38900	4058	197000	64200	51190	**P**	**022RF97**	**DRN**	**90L4**	610	138
0.40	34800	3628	197000	64200	51190	**PF**	**022RF97**	**DRN**	**90L4**	500	139
						PH	**022RF97**	**DRN**	**90L4**	620	138
						PHF	**022RF97**	**DRN**	**90L4**	520	139
0.45	30800	3214	197000	64200	51190	**P**	**022RF87**	**DRN**	**90L4**	550	136
0.51	27300	2847	197000	64200	51190	**PF**	**022RF87**	**DRN**	**90L4**	450	137
0.58	24000	2498	197000	64200	51190	**PH**	**022RF87**	**DRN**	**90L4**	570	136
						PHF	**022RF87**	**DRN**	**90L4**	465	137
0.36	38900	4058	156000	46200	36810	**P**	**012RF97**	**DRN**	**90L4**	460	132
						PF	**012RF97**	**DRN**	**90L4**	390	133
						PH	**012RF97**	**DRN**	**90L4**	475	132
						PHF	**012RF97**	**DRN**	**90L4**	405	133
0.40	35200	3663	156000	46200	36810						
0.45	30800	3214	156000	46200	36810						
0.51	27300	2847	156000	46200	36810	**P**	**012RF87**	**DRN**	**90L4**	405	130
0.58	24000	2498	156000	46200	36810	**PF**	**012RF87**	**DRN**	**90L4**	335	131
0.62	22700	2368	156000	46200	36810	**PH**	**012RF87**	**DRN**	**90L4**	420	130
0.71	19900	2072	156000	46200	36810	**PHF**	**012RF87**	**DRN**	**90L4**	350	131
0.78	17900	1867	156000	46200	36810						
0.89	15700	1637	156000	46200	36810						
0.86	16300	1697	156000	46200	31500	**P**	**012RF77**	**DRN**	**90L4**	375	128
1.0	13800	1445	156000	46200	31500	**PF**	**012RF77**	**DRN**	**90L4**	305	129
						PH	**012RF77**	**DRN**	**90L4**	390	128
						PHF	**012RF77**	**DRN**	**90L4**	320	129
0.62	22600	2358	120800	29200	24830	**P**	**002RF87**	**DRN**	**90L4**	325	122
0.71	19800	2064	122600	29200	24830	**PF**	**002RF87**	**DRN**	**90L4**	270	123
						PH	**002RF87**	**DRN**	**90L4**	330	122
						PHF	**002RF87**	**DRN**	**90L4**	270	123
0.82	17200	1790	124000	29200	24830						
0.86	16200	1691	124000	29200	24830	**P**	**002RF77**	**DRN**	**90L4**	295	120
1.0	13800	1439	124000	29200	24830	**PF**	**002RF77**	**DRN**	**90L4**	240	121
1.1	12500	1308	124000	29200	24830	**PH**	**002RF77**	**DRN**	**90L4**	300	120
1.3	10800	1133	124000	29200	24830	**PHF**	**002RF77**	**DRN**	**90L4**	245	121
1.5	9470	986	124000	29200	24830						
1.6	8770	913	124000	29200	24830	**P**	**002RF77**	**DRN**	**90L4**	295	120
1.7	8040	837	124000	29200	24830	**PF**	**002RF77**	**DRN**	**90L4**	240	121
2.0	7060	735	124000	29200	24830	**PH**	**002RF77**	**DRN**	**90L4**	300	120
						PHF	**002RF77**	**DRN**	**90L4**	240	121

P_m = 2.2 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}						m	
				f_{LC}<=7.5	f_{LC}>107.5						
min^{-1}	Nm		N	Nm	Nm					kg	
0.36	57100	4022	323000	111000	100170	**P**	**042RF107**	**DRN**	**100LS4**	990	152
0.40	51600	3637	323000	111000	100170	**PF**	**042RF107**	**DRN**	**100LS4**	800	153
						PH	**042RF107**	**DRN**	**100LS4**	990	152
						PHF	**042RF107**	**DRN**	**100LS4**	800	153
0.36	57100	4022	238100	86800	69620	**P**	**032RF107**	**DRN**	**100LS4**	740	146
0.40	51600	3637	243600	86800	69620	**PF**	**032RF107**	**DRN**	**100LS4**	620	147
0.47	43700	3082	250800	86800	69620	**PH**	**032RF107**	**DRN**	**100LS4**	760	146
0.51	40500	2859	252000	86800	69620	**PHF**	**032RF107**	**DRN**	**100LS4**	640	147
0.44	46300	3262	248600	86800	69620	**P**	**032RF97**	**DRN**	**100LS4**	690	144
0.57	36300	2558	252000	86800	69620	**PF**	**032RF97**	**DRN**	**100LS4**	570	145
						PH	**032RF97**	**DRN**	**100LS4**	710	144
						PHF	**032RF97**	**DRN**	**100LS4**	590	145
0.36	57600	4058	180500	64200	51190						
0.40	51500	3628	190300	64200	51190						
0.44	46300	3262	197000	64200	51190	**P**	**022RF97**	**DRN**	**100LS4**	610	138
0.51	40200	2831	197000	64200	51190	**PF**	**022RF97**	**DRN**	**100LS4**	510	139
0.57	36300	2558	197000	64200	51190	**PH**	**022RF97**	**DRN**	**100LS4**	630	138
0.62	33300	2351	197000	64200	51190	**PHF**	**022RF97**	**DRN**	**100LS4**	520	139
0.69	29600	2087	197000	64200	51190						

21915180/EN – 04/2015

P_m = 2.2 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}						m	
				f_{LC}<=7.5	f_{LC}>107.5						
min^{-1}	Nm		N	Nm	Nm					kg	
0.70	29400	2072	197000	64200	51190	**P**	**022RF87**	**DRN**	**100LS4**	560	136
						PF	**022RF87**	**DRN**	**100LS4**	455	137
						PH	**022RF87**	**DRN**	**100LS4**	570	136
						PHF	**022RF87**	**DRN**	**100LS4**	470	137
0.51	40200	2831	156000	46200	36810	**P**	**012RF97**	**DRN**	**100LS4**	465	132
0.69	29600	2087	156000	46200	36810	**PF**	**012RF97**	**DRN**	**100LS4**	395	133
						PH	**012RF97**	**DRN**	**100LS4**	475	132
						PHF	**012RF97**	**DRN**	**100LS4**	405	133
0.58	35400	2498	156000	46200	36810						
0.61	33600	2368	156000	46200	36810						
0.70	29400	2072	156000	46200	36810	**P**	**012RF87**	**DRN**	**100LS4**	410	130
0.78	26500	1867	156000	46200	36810	**PF**	**012RF87**	**DRN**	**100LS4**	340	131
0.89	23200	1637	156000	46200	36810	**PH**	**012RF87**	**DRN**	**100LS4**	425	130
1.0	20500	1445	156000	46200	36810	**PHF**	**012RF87**	**DRN**	**100LS4**	355	131
1.1	18100	1281	156000	46200	36810						
1.3	15500	1094	156000	46200	36810						
1.3	16100	1138	156000	46200	31500	**P**	**012RF77**	**DRN**	**100LS4**	380	128
1.5	14000	990	156000	46200	29900	**PF**	**012RF77**	**DRN**	**100LS4**	310	129
						PH	**012RF77**	**DRN**	**100LS4**	395	128
						PHF	**012RF77**	**DRN**	**100LS4**	325	129
0.89	23100	1631	120100	29200	24830	**P**	**002RF87**	**DRN**	**100LS4**	330	122
1.0	20400	1440	122300	29200	24830	**PF**	**002RF87**	**DRN**	**100LS4**	275	123
1.1	18100	1276	123700	29200	24830	**PH**	**002RF87**	**DRN**	**100LS4**	335	122
						PHF	**002RF87**	**DRN**	**100LS4**	275	123
1.3	16000	1133	124000	29200	24830	**P**	**002RF77**	**DRN**	**100LS4**	300	120
1.5	14000	986	124000	29200	24830	**PF**	**002RF77**	**DRN**	**100LS4**	245	121
						PH	**002RF77**	**DRN**	**100LS4**	305	120
						PHF	**002RF77**	**DRN**	**100LS4**	245	121
1.6	12900	913	124000	29200	24830						
1.7	11800	837	124000	29200	24830	**P**	**002RF77**	**DRN**	**100LS4**	300	120
2.0	10400	735	124000	29200	24830	**PF**	**002RF77**	**DRN**	**100LS4**	240	121
2.4	8650	610	124000	29200	24830	**PH**	**002RF77**	**DRN**	**100LS4**	305	120
2.6	7790	549	124000	29200	24830	**PHF**	**002RF77**	**DRN**	**100LS4**	245	121
3.0	6840	482	124000	29200	24830						

P_m = 3.0 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}						m	
				f_{LC}<=7.5	f_{LC}>107.5						
min^{-1}	Nm		N	Nm	Nm					kg	
0.36	77500	4022	364000	140600	124060	**P**	**052RF107**	**DRN**	**100L4**	1140	158
0.40	70100	3637	364000	140600	124060	**PF**	**052RF107**	**DRN**	**100L4**	940	159
						PH	**052RF107**	**DRN**	**100L4**	1130	158
						PHF	**052RF107**	**DRN**	**100L4**	930	159
0.36	77500	4022	316100	111000	100170						
0.40	70100	3637	321700	111000	100170	**P**	**042RF107**	**DRN**	**100L4**	990	152
0.47	59400	3082	323000	111000	100170	**PF**	**042RF107**	**DRN**	**100L4**	800	153
0.51	55100	2859	323000	111000	100170	**PH**	**042RF107**	**DRN**	**100L4**	1000	152
0.57	49600	2573	323000	111000	100170	**PHF**	**042RF107**	**DRN**	**100L4**	810	153
0.36	77500	4022	212200	86800	69620						
0.40	70100	3637	222600	86800	69620	**P**	**032RF107**	**DRN**	**100L4**	750	146
0.47	59400	3082	235500	86800	69620	**PF**	**032RF107**	**DRN**	**100L4**	630	147
0.51	55100	2859	240100	86800	69620	**PH**	**032RF107**	**DRN**	**100L4**	770	146
0.62	44900	2331	249800	86800	69620	**PHF**	**032RF107**	**DRN**	**100L4**	650	147
0.70	39800	2067	252000	86800	69620						
0.45	62900	3262	231600	86800	69620						
0.51	54600	2831	240700	86800	69620	**P**	**032RF97**	**DRN**	**100L4**	700	144
0.57	49300	2558	245800	86800	69620	**PF**	**032RF97**	**DRN**	**100L4**	580	145
0.62	45300	2351	249400	86800	69620	**PH**	**032RF97**	**DRN**	**100L4**	720	144
0.70	40200	2087	252000	86800	69620	**PHF**	**032RF97**	**DRN**	**100L4**	600	145
0.78	35900	1867	252000	86800	69620						

21915180/EN – 04/2015

P_m = 3.0 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}						m	
				f_{LC}<=7.5	f_{LC}>107.5						
min^{-1}	Nm		N	Nm	Nm					kg	
0.51	54600	2831	185500	64200	51190						
0.57	49300	2558	193500	64200	51190						
0.62	45300	2351	197000	64200	51190	**P**	**022RF97**	**DRN**	**100L4**	620	138
0.70	40200	2087	197000	64200	51190	**PF**	**022RF97**	**DRN**	**100L4**	520	139
0.78	35900	1867	197000	64200	51190	**PH**	**022RF97**	**DRN**	**100L4**	630	138
0.87	32300	1678	197000	64200	51190	**PHF**	**022RF97**	**DRN**	**100L4**	530	139
1.0	28000	1457	197000	64200	51190						
1.1	25100	1304	197000	64200	51190						
0.89	31500	1637	197000	64200	51190	**P**	**022RF87**	**DRN**	**100L4**	570	136
1.0	27800	1445	197000	64200	51190	**PF**	**022RF87**	**DRN**	**100L4**	465	137
						PH	**022RF87**	**DRN**	**100L4**	580	136
						PHF	**022RF87**	**DRN**	**100L4**	480	137
1.1	26000	1350	197000	64200	51190	**P**	**022RF87**	**DRN**	**100L4**	560	136
						PF	**022RF87**	**DRN**	**100L4**	460	137
						PH	**022RF87**	**DRN**	**100L4**	580	136
						PHF	**022RF87**	**DRN**	**100L4**	475	137
0.70	40200	2087	156000	46200	36810	**P**	**012RF97**	**DRN**	**100L4**	470	132
1.4	20800	1082	156000	46200	36810	**PF**	**012RF97**	**DRN**	**100L4**	400	133
						PH	**012RF97**	**DRN**	**100L4**	485	132
						PHF	**012RF97**	**DRN**	**100L4**	415	133
1.5	18900	982	156000	46200	36810	**P**	**012RF97**	**DRN**	**100L4**	465	132
						PF	**012RF97**	**DRN**	**100L4**	395	133
						PH	**012RF97**	**DRN**	**100L4**	480	132
						PHF	**012RF97**	**DRN**	**100L4**	410	133
0.78	36000	1867	156000	46200	36810	**P**	**012RF87**	**DRN**	**100L4**	420	130
0.89	31500	1637	156000	46200	36810	**PF**	**012RF87**	**DRN**	**100L4**	350	131
1.0	27800	1445	156000	46200	36810	**PH**	**012RF87**	**DRN**	**100L4**	430	130
1.1	24700	1281	156000	46200	36810	**PHF**	**012RF87**	**DRN**	**100L4**	360	131
1.2	23700	1232	156000	46200	36810						
1.3	21000	1092	156000	46200	36810	**P**	**012RF87**	**DRN**	**100L4**	415	130
1.6	17700	918	156000	46200	36810	**PF**	**012RF87**	**DRN**	**100L4**	345	131
1.7	16200	844	156000	46200	36810	**PH**	**012RF87**	**DRN**	**100L4**	430	130
1.9	14400	749	156000	46200	36810	**PHF**	**012RF87**	**DRN**	**100L4**	360	131
1.3	21000	1090	121900	29200	24830	**P**	**002RF87**	**DRN**	**100L4**	340	122
						PF	**002RF87**	**DRN**	**100L4**	280	123
						PH	**002RF87**	**DRN**	**100L4**	340	122
						PHF	**002RF87**	**DRN**	**100L4**	285	123
1.6	17600	914	124000	29200	24830	**P**	**002RF87**	**DRN**	**100L4**	335	122
2.2	12800	667	124000	29200	24830	**PF**	**002RF87**	**DRN**	**100L4**	280	123
						PH	**002RF87**	**DRN**	**100L4**	340	122
						PHF	**002RF87**	**DRN**	**100L4**	280	123
1.7	16100	837	124000	29200	24830						
2.0	14100	735	124000	29200	24830						
2.4	11700	610	124000	29200	24830	**P**	**002RF77**	**DRN**	**100L4**	305	120
2.6	10500	549	124000	29200	24830	**PF**	**002RF77**	**DRN**	**100L4**	250	121
3.0	9280	482	124000	29200	24830	**PH**	**002RF77**	**DRN**	**100L4**	310	120
3.4	8190	425	124000	29200	24830	**PHF**	**002RF77**	**DRN**	**100L4**	255	121
3.9	7260	377	124000	29200	24100						
4.3	6470	336	124000	29200	24100						

P_m = 4.0 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}						m	
				f_{LC}<=7.5	f_{LC}>107.5						
min^{-1}	Nm		N	Nm	Nm					kg	
0.51	73100	2859	364000	140600	124060	**P**	**052RF107**	**DRN**	**112M4**	1150	158
0.57	65800	2573	364000	140600	124060	**PF**	**052RF107**	**DRN**	**112M4**	950	159
						PH	**052RF107**	**DRN**	**112M4**	1140	158
						PHF	**052RF107**	**DRN**	**112M4**	940	159
0.36	102800	4022	292800	111000	100170	**P**	**042RF107**	**DRN**	**112M4**	1000	152
0.40	93000	3637	302600	111000	100170	**PF**	**042RF107**	**DRN**	**112M4**	810	153
0.71	52800	2067	323000	111000	100170	**PH**	**042RF107**	**DRN**	**112M4**	1010	152
0.78	47700	1869	323000	111000	100170	**PHF**	**042RF107**	**DRN**	**112M4**	820	153

21915180/EN – 04/2015

P_m = 4.0 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}						m	
				f_{LC}<=7.5	f_{LC}>107.5						
min^{-1}	Nm		N	Nm	Nm					kg	
0.47	78800	3082	210300	86800	69620	**P**	**032RF107**	**DRN**	**112M4**	760	146
0.51	73100	2859	218600	86800	69620	**PF**	**032RF107**	**DRN**	**112M4**	630	147
0.92	40500	1584	252000	86800	69620	**PH**	**032RF107**	**DRN**	**112M4**	780	146
						PHF	**032RF107**	**DRN**	**112M4**	660	147
0.57	65400	2558	228600	86800	69620	**P**	**032RF97**	**DRN**	**112M4**	710	144
0.87	42900	1678	251500	86800	69620	**PF**	**032RF97**	**DRN**	**112M4**	590	145
1.0	37200	1457	252000	86800	69620	**PH**	**032RF97**	**DRN**	**112M4**	730	144
						PHF	**032RF97**	**DRN**	**112M4**	610	145
1.2	30800	1207	197000	64200	51190	**P**	**022RF107**	**DRN**	**112M4**	670	140
						PF	**022RF107**	**DRN**	**112M4**	570	141
						PH	**022RF107**	**DRN**	**112M4**	680	140
						PHF	**022RF107**	**DRN**	**112M4**	580	141
0.62	60100	2351	176100	64200	51190						
0.70	53300	2087	187500	64200	51190	**P**	**022RF97**	**DRN**	**112M4**	630	138
0.78	47700	1867	195800	64200	51190	**PF**	**022RF97**	**DRN**	**112M4**	520	139
0.87	42900	1678	197000	64200	51190	**PH**	**022RF97**	**DRN**	**112M4**	640	138
1.1	33300	1304	197000	64200	51190	**PHF**	**022RF97**	**DRN**	**112M4**	540	139
1.4	27600	1082	197000	64200	51190						
1.5	25100	982	197000	64200	51190	**P**	**022RF97**	**DRN**	**112M4**	620	138
1.7	22400	878	197000	64200	51190	**PF**	**022RF97**	**DRN**	**112M4**	520	139
						PH	**022RF97**	**DRN**	**112M4**	640	138
						PHF	**022RF97**	**DRN**	**112M4**	540	139
1.2	31400	1232	197000	64200	51190	**P**	**022RF87**	**DRN**	**112M4**	570	136
1.3	27900	1092	197000	64200	51190	**PF**	**022RF87**	**DRN**	**112M4**	470	137
1.6	23400	918	197000	64200	51190	**PH**	**022RF87**	**DRN**	**112M4**	590	136
						PHF	**022RF87**	**DRN**	**112M4**	485	137
1.0	37200	1457	156000	46200	36810	**P**	**012RF97**	**DRN**	**112M4**	480	132
						PF	**012RF97**	**DRN**	**112M4**	410	133
						PH	**012RF97**	**DRN**	**112M4**	495	132
						PHF	**012RF97**	**DRN**	**112M4**	425	133
1.8	20200	790	156000	46200	36810	**P**	**012RF97**	**DRN**	**112M4**	475	132
2.0	18200	716	156000	46200	36810	**PF**	**012RF97**	**DRN**	**112M4**	405	133
2.3	16200	634	156000	46200	36810	**PH**	**012RF97**	**DRN**	**112M4**	490	132
						PHF	**012RF97**	**DRN**	**112M4**	420	133
1.1	32700	1281	156000	46200	36810	**P**	**012RF87**	**DRN**	**112M4**	425	130
1.3	27900	1094	156000	46200	36810	**PF**	**012RF87**	**DRN**	**112M4**	355	131
						PH	**012RF87**	**DRN**	**112M4**	440	130
						PHF	**012RF87**	**DRN**	**112M4**	370	131
1.7	21500	844	156000	46200	36810						
2.0	19100	749	156000	46200	36810	**P**	**012RF87**	**DRN**	**112M4**	425	130
2.2	17100	670	156000	46200	36810	**PF**	**012RF87**	**DRN**	**112M4**	355	131
2.4	15400	602	156000	46200	36810	**PH**	**012RF87**	**DRN**	**112M4**	440	130
2.8	13300	523	156000	46200	36810	**PHF**	**012RF87**	**DRN**	**112M4**	370	131
2.7	14000	551	156000	46200	27600	**P**	**012RF77**	**DRN**	**112M4**	395	128
						PF	**012RF77**	**DRN**	**112M4**	325	129
						PH	**012RF77**	**DRN**	**112M4**	410	128
						PHF	**012RF77**	**DRN**	**112M4**	340	129
1.6	23300	914	119800	29200	24830	**P**	**002RF87**	**DRN**	**112M4**	345	122
1.7	21400	841	121600	29200	24830	**PF**	**002RF87**	**DRN**	**112M4**	290	123
2.0	19000	746	123100	29200	24830	**PH**	**002RF87**	**DRN**	**112M4**	350	122
2.2	17000	667	124000	29200	24830	**PHF**	**002RF87**	**DRN**	**112M4**	290	123
2.4	15500	610	124000	29200	24830						
2.7	14000	549	124000	29200	24830						
3.0	12300	482	124000	29200	24830	**P**	**002RF77**	**DRN**	**112M4**	315	120
3.4	10800	425	124000	29200	24830	**PF**	**002RF77**	**DRN**	**112M4**	260	121
3.9	9630	377	124000	29200	24100	**PH**	**002RF77**	**DRN**	**112M4**	320	120
4.4	8580	336	124000	29200	24100	**PHF**	**002RF77**	**DRN**	**112M4**	260	121
4.8	7730	302	124000	29200	23300						
5.5	6780	265	124000	29200	22200						

21915180/EN – 04/2015

P_m = 5.5 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}						m	
				f_{LC}<=7.5	f_{LC}>107.5						
min^{-1}	Nm		N	Nm	Nm					kg	
0.36	142600	4049	467500	209100	185660	**P**	**062RF137**	**DRN**	**132S4**	1750	164
0.42	122600	3480	473000	209100	185660	**PF**	**062RF137**	**DRN**	**132S4**	1390	165
0.46	111800	3174	473000	209100	185660	**PH**	**062RF137**	**DRN**	**132S4**	1740	164
						PHF	**062RF137**	**DRN**	**132S4**	1380	165
0.36	142600	4049	340000	140600	124060	**P**	**052RF137**	**DRN**	**132S4**	1270	160
0.42	122600	3480	357500	140600	124060	**PF**	**052RF137**	**DRN**	**132S4**	1070	161
0.51	101500	2883	364000	140600	124060	**PH**	**052RF137**	**DRN**	**132S4**	1260	160
0.57	90100	2558	364000	140600	124060	**PHF**	**052RF137**	**DRN**	**132S4**	1060	161
0.51	100700	2859	364000	140600	124060	**P**	**052RF107**	**DRN**	**132S4**	1160	158
0.57	90600	2573	364000	140600	124060	**PF**	**052RF107**	**DRN**	**132S4**	960	159
						PH	**052RF107**	**DRN**	**132S4**	1150	158
						PHF	**052RF107**	**DRN**	**132S4**	950	159
0.46	111800	3174	282900	111000	100170	**P**	**042RF137**	**DRN**	**132S4**	1120	154
0.63	81700	2321	312600	111000	100170	**PF**	**042RF137**	**DRN**	**132S4**	930	155
						PH	**042RF137**	**DRN**	**132S4**	1130	154
						PHF	**042RF137**	**DRN**	**132S4**	940	155
0.51	100700	2859	295000	111000	100170						
0.57	90600	2573	304800	111000	100170	**P**	**042RF107**	**DRN**	**132S4**	1010	152
0.63	82100	2331	312300	111000	100170	**PF**	**042RF107**	**DRN**	**132S4**	820	153
0.71	72800	2067	319700	111000	100170	**PH**	**042RF107**	**DRN**	**132S4**	1020	152
0.78	65800	1869	323000	111000	100170	**PHF**	**042RF107**	**DRN**	**132S4**	830	153
0.63	82100	2331	205100	86800	69620	**P**	**032RF107**	**DRN**	**132S4**	770	146
0.71	72800	2067	219000	86800	69620	**PF**	**032RF107**	**DRN**	**132S4**	650	147
0.92	55800	1584	239400	86800	69620	**PH**	**032RF107**	**DRN**	**132S4**	790	146
1.1	48700	1383	246400	86800	69620	**PHF**	**032RF107**	**DRN**	**132S4**	670	147
1.2	42500	1207	251800	86800	69620	**P**	**032RF107**	**DRN**	**132S4**	760	146
						PF	**032RF107**	**DRN**	**132S4**	640	147
						PH	**032RF107**	**DRN**	**132S4**	780	146
						PHF	**032RF107**	**DRN**	**132S4**	660	147
0.78	65700	1867	228200	86800	69620	**P**	**032RF97**	**DRN**	**132S4**	720	144
0.87	59100	1678	235900	86800	69620	**PF**	**032RF97**	**DRN**	**132S4**	600	145
1.0	51300	1457	243900	86800	69620	**PH**	**032RF97**	**DRN**	**132S4**	740	144
1.4	38100	1082	252000	86800	69620	**PHF**	**032RF97**	**DRN**	**132S4**	620	145
1.2	44200	1257	250300	86800	69620	**P**	**032RF97**	**DRN**	**132S4**	720	144
						PF	**032RF97**	**DRN**	**132S4**	590	145
						PH	**032RF97**	**DRN**	**132S4**	740	144
						PHF	**032RF97**	**DRN**	**132S4**	620	145
0.87	59100	1678	177900	64200	51190	**P**	**022RF97**	**DRN**	**132S4**	640	138
1.0	51300	1457	190600	64200	51190	**PF**	**022RF97**	**DRN**	**132S4**	540	139
1.1	45900	1304	197000	64200	51190	**PH**	**022RF97**	**DRN**	**132S4**	650	138
						PHF	**022RF97**	**DRN**	**132S4**	550	139
1.5	34600	982	197000	64200	51190	**P**	**022RF97**	**DRN**	**132S4**	640	138
1.7	30900	878	197000	64200	51190	**PF**	**022RF97**	**DRN**	**132S4**	530	139
						PH	**022RF97**	**DRN**	**132S4**	650	138
						PHF	**022RF97**	**DRN**	**132S4**	550	139
1.6	32300	918	197000	64200	51190	**P**	**022RF87**	**DRN**	**132S4**	580	136
						PF	**022RF87**	**DRN**	**132S4**	485	137
						PH	**022RF87**	**DRN**	**132S4**	600	136
						PHF	**022RF87**	**DRN**	**132S4**	500	137
1.4	38100	1082	156000	46200	36810	**P**	**012RF97**	**DRN**	**132S4**	490	132
						PF	**012RF97**	**DRN**	**132S4**	420	133
						PH	**012RF97**	**DRN**	**132S4**	500	132
						PHF	**012RF97**	**DRN**	**132S4**	435	133
1.5	34600	982	156000	46200	36810	**P**	**012RF97**	**DRN**	**132S4**	485	132
1.8	27800	790	156000	46200	36810	**PF**	**012RF97**	**DRN**	**132S4**	415	133
2.0	25200	716	156000	46200	36810	**PH**	**012RF97**	**DRN**	**132S4**	500	132
2.3	22300	634	156000	46200	36810	**PHF**	**012RF97**	**DRN**	**132S4**	430	133
1.6	32300	918	156000	46200	36810						
1.7	29700	844	156000	46200	36810	**P**	**012RF87**	**DRN**	**132S4**	435	130
2.0	26400	749	156000	46200	36810	**PF**	**012RF87**	**DRN**	**132S4**	365	131
2.2	23600	670	156000	46200	36810	**PH**	**012RF87**	**DRN**	**132S4**	450	130
2.4	21200	602	156000	46200	36810	**PHF**	**012RF87**	**DRN**	**132S4**	380	131
2.8	18400	523	156000	46200	36810						

21915180/EN – 04/2015

P_m = 5.5 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}						m	
				f_{LC}<=7.5	f_{LC}>107.5						
min^{-1}	Nm		N	Nm	Nm					kg	
2.2	23500	667	119600	29200	24830						
2.4	21100	600	121800	29200	24830						
2.8	18300	521	123600	29200	24830						
3.1	16400	466	124000	29200	24830	**P**	**002RF87**	**DRN**	**132S4**	355	122
3.8	13600	387	124000	29200	24830	**PF**	**002RF87**	**DRN**	**132S4**	300	123
4.1	12500	357	124000	29200	24830	**PH**	**002RF87**	**DRN**	**132S4**	360	122
4.6	11300	321	124000	29200	24830	**PHF**	**002RF87**	**DRN**	**132S4**	305	123
5.2	9820	279	124000	29200	24830						
5.6	9160	260	124000	29200	24400						
6.3	8210	233	122000	29200	23500						
7.8	6630	188	114500	29200	12000	**P**	**002RF77**	**DRN**	**132S4**	330	120
8.7	5910	168	110600	29200	12000	**PF**	**002RF77**	**DRN**	**132S4**	270	121
						PH	**002RF77**	**DRN**	**132S4**	330	120
						PHF	**002RF77**	**DRN**	**132S4**	275	121

P_m = 7.5 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}						m	
				f_{LC}<=7.5	f_{LC}>107.5						
min^{-1}	Nm		N	Nm	Nm					kg	
0.42	166400	3480	452500	209100	185660						
0.46	151700	3174	462000	209100	185660	**P**	**062RF137**	**DRN**	**132M4**	1770	164
0.51	137800	2883	470300	209100	185660	**PF**	**062RF137**	**DRN**	**132M4**	1400	165
0.57	122300	2558	473000	209100	185660	**PH**	**062RF137**	**DRN**	**132M4**	1760	164
0.63	110900	2321	473000	209100	185660	**PHF**	**062RF137**	**DRN**	**132M4**	1390	165
0.51	137800	2883	344400	140600	124060	**P**	**052RF137**	**DRN**	**132M4**	1280	160
0.57	122300	2558	357800	140600	124060	**PF**	**052RF137**	**DRN**	**132M4**	1080	161
0.74	95400	1995	364000	140600	124060	**PH**	**052RF137**	**DRN**	**132M4**	1280	160
0.84	83200	1741	364000	140600	124060	**PHF**	**052RF137**	**DRN**	**132M4**	1080	161
0.79	89300	1869	364000	140600	124060	**P**	**052RF107**	**DRN**	**132M4**	1180	158
						PF	**052RF107**	**DRN**	**132M4**	980	159
						PH	**052RF107**	**DRN**	**132M4**	1170	158
						PHF	**052RF107**	**DRN**	**132M4**	970	159
0.63	110900	2321	283900	111000	100170	**P**	**042RF137**	**DRN**	**132M4**	1140	154
0.99	70600	1477	321400	111000	100170	**PF**	**042RF137**	**DRN**	**132M4**	950	155
						PH	**042RF137**	**DRN**	**132M4**	1140	154
						PHF	**042RF137**	**DRN**	**132M4**	950	155
0.71	98800	2067	297000	111000	100170	**P**	**042RF107**	**DRN**	**132M4**	1030	152
0.79	89300	1869	306000	111000	100170	**PF**	**042RF107**	**DRN**	**132M4**	840	153
0.93	75700	1584	317500	111000	100170	**PH**	**042RF107**	**DRN**	**132M4**	1040	152
1.1	66100	1383	323000	111000	100170	**PHF**	**042RF107**	**DRN**	**132M4**	850	153
1.2	57700	1207	323000	111000	100170	**P**	**042RF107**	**DRN**	**132M4**	1030	152
						PF	**042RF107**	**DRN**	**132M4**	840	153
						PH	**042RF107**	**DRN**	**132M4**	1030	152
						PHF	**042RF107**	**DRN**	**132M4**	840	153
0.93	75700	1584	214900	86800	69620	**P**	**032RF107**	**DRN**	**132M4**	790	146
1.1	66100	1383	227700	86800	69620	**PF**	**032RF107**	**DRN**	**132M4**	660	147
						PH	**032RF107**	**DRN**	**132M4**	810	146
						PHF	**032RF107**	**DRN**	**132M4**	690	147
1.4	51700	1082	243500	86800	69620	**P**	**032RF107**	**DRN**	**132M4**	780	146
1.5	46700	977	248200	86800	69620	**PF**	**032RF107**	**DRN**	**132M4**	660	147
						PH	**032RF107**	**DRN**	**132M4**	800	146
						PHF	**032RF107**	**DRN**	**132M4**	680	147
1.4	50900	1067	244300	86800	69620	**P**	**032RF97**	**DRN**	**132M4**	730	144
1.5	46900	982	248000	86800	69620	**PF**	**032RF97**	**DRN**	**132M4**	610	145
1.7	41900	878	252000	86800	69620	**PH**	**032RF97**	**DRN**	**132M4**	750	144
						PHF	**032RF97**	**DRN**	**132M4**	630	145
1.2	57700	1207	180300	64200	51190	**P**	**022RF107**	**DRN**	**132M4**	700	140
						PF	**022RF107**	**DRN**	**132M4**	600	141
						PH	**022RF107**	**DRN**	**132M4**	710	140
						PHF	**022RF107**	**DRN**	**132M4**	610	141

21915180/EN – 04/2015

P_m = 7.5 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}						m	
				f_{LC}<=7.5	f_{LC}>107.5						
min^{-1}	Nm		N	Nm	Nm					kg	
1.4	51700	1082	190000	64200	51190	**P**	**022RF97**	**DRN**	**132M4**	660	138
						PF	**022RF97**	**DRN**	**132M4**	550	139
						PH	**022RF97**	**DRN**	**132M4**	670	138
						PHF	**022RF97**	**DRN**	**132M4**	570	139
1.5	46900	982	196900	64200	51190						
1.7	41900	878	197000	64200	51190	**P**	**022RF97**	**DRN**	**132M4**	650	138
1.9	37700	790	197000	64200	51190	**PF**	**022RF97**	**DRN**	**132M4**	550	139
2.0	34200	716	197000	64200	51190	**PH**	**022RF97**	**DRN**	**132M4**	670	138
2.3	30300	634	197000	64200	51190	**PHF**	**022RF97**	**DRN**	**132M4**	570	139
1.9	37700	790	156000	46200	36810						
2.0	34200	716	156000	46200	36810	**P**	**012RF97**	**DRN**	**132M4**	510	132
2.3	30300	634	156000	46200	36810	**PF**	**012RF97**	**DRN**	**132M4**	435	133
2.6	27400	574	156000	46200	36810	**PH**	**012RF97**	**DRN**	**132M4**	520	132
3.0	23200	486	156000	46200	36810	**PHF**	**012RF97**	**DRN**	**132M4**	450	133
3.5	20300	425	156000	46200	36810						
2.4	28800	602	156000	46200	36810						
2.8	25000	523	156000	46200	36810	**P**	**012RF87**	**DRN**	**132M4**	455	130
3.1	22300	468	156000	46200	36810	**PF**	**012RF87**	**DRN**	**132M4**	385	131
3.8	18500	388	156000	46200	36810	**PH**	**012RF87**	**DRN**	**132M4**	470	130
4.1	17100	359	156000	46200	36810	**PHF**	**012RF87**	**DRN**	**132M4**	400	131
4.6	15400	322	156000	46200	36810						
3.2	22200	466	121000	29200	24830						
3.8	18400	387	123500	29200	24830						
4.1	17000	357	124000	29200	24830						
4.6	15300	321	124000	29200	24830						
5.3	13300	279	124000	29200	24830						
5.6	12400	260	124000	29200	24400	**P**	**002RF87**	**DRN**	**132M4**	375	122
6.3	11100	233	121800	29200	23500	**PF**	**002RF87**	**DRN**	**132M4**	315	123
7.6	9240	193	115200	29200	22500	**PH**	**002RF87**	**DRN**	**132M4**	380	122
8.2	8530	178	112500	29200	23100	**PHF**	**002RF87**	**DRN**	**132M4**	320	123
9.2	7670	161	108900	29200	22200						
11	6660	139	104400	29200	20400						
12	5960	125	101000	29200	19500						
14	4940	104	95500	29200	17400						

P_m = 9.2 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}						m	
				f_{LC}<=7.5	f_{LC}>107.5						
min^{-1}	Nm		N	Nm	Nm					kg	
0.41	211300	3608	850000	631300	500000	**P**	**102RF167**	**DRN**	**132L4**	4590	178
0.46	188000	3210	850000	631300	500000	**PF**	**102RF167**	**DRN**	**132L4**	3630	179
0.52	167100	2854	850000	631300	500000	**PH**	**102RF167**	**DRN**	**132L4**	4650	178
0.65	133000	2271	850000	631300	500000	**PHF**	**102RF167**	**DRN**	**132L4**	3690	179
0.40	214100	3656	720000	513900	423000						
0.45	190500	3253	720000	513900	423000	**P**	**092RF167**	**DRN**	**132L4**	3730	176
0.51	169300	2891	720000	513900	423000	**PF**	**092RF167**	**DRN**	**132L4**	3040	177
0.64	134700	2301	720000	513900	423000	**PH**	**092RF167**	**DRN**	**132L4**	3750	176
0.72	118900	2031	720000	513900	423000	**PHF**	**092RF167**	**DRN**	**132L4**	3050	177
0.81	105700	1805	720000	513900	423000	**P**	**092RF167**	**DRN**	**132L4**	3730	176
						PF	**092RF167**	**DRN**	**132L4**	3030	177
						PH	**092RF167**	**DRN**	**132L4**	3740	176
						PHF	**092RF167**	**DRN**	**132L4**	3040	177
0.35	243900	4165	523000	274600	245660	**P**	**072RF147**	**DRN**	**132L4**	2320	168
0.54	160800	2747	523000	274600	245660	**PF**	**072RF147**	**DRN**	**132L4**	1830	169
0.58	149400	2552	523000	274600	245660	**PH**	**072RF147**	**DRN**	**132L4**	2370	168
0.63	136300	2328	523000	274600	245660	**PHF**	**072RF147**	**DRN**	**132L4**	1880	169
0.40	217300	3711	412500	209100	185660	**P**	**062RF147**	**DRN**	**132L4**	1900	166
0.45	191800	3275	434000	209100	185660	**PF**	**062RF147**	**DRN**	**132L4**	1530	167
0.71	121500	2074	473000	209100	185660	**PH**	**062RF147**	**DRN**	**132L4**	1890	166
						PHF	**062RF147**	**DRN**	**132L4**	1520	167

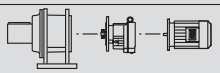
21915180/EN – 04/2015

P_m = 9.2 kW

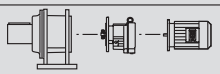
n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}							m	
				f_{LC}<=7.5	f_{LC}>107.5							
min^{-1}	Nm		N	Nm	Nm						kg	
0.51	168800	2883	450800	209100	185660	**P**	**062RF137**	**DRN**	**132L4**		1780	164
0.84	102000	1741	473000	209100	185660	**PF**	**062RF137**	**DRN**	**132L4**		1410	165
						PH	**062RF137**	**DRN**	**132L4**		1770	164
						PHF	**062RF137**	**DRN**	**132L4**		1400	165
0.57	149800	2558	333000	140600	124060	**P**	**052RF137**	**DRN**	**132L4**		1290	160
0.63	135900	2321	346100	140600	124060	**PF**	**052RF137**	**DRN**	**132L4**		1090	161
1.0	86500	1477	364000	140600	124060	**PH**	**052RF137**	**DRN**	**132L4**		1280	160
1.1	75600	1291	364000	140600	124060	**PHF**	**052RF137**	**DRN**	**132L4**		1080	161
1.1	81000	1383	364000	140600	124060	**P**	**052RF107**	**DRN**	**132L4**		1190	158
						PF	**052RF107**	**DRN**	**132L4**		990	159
						PH	**052RF107**	**DRN**	**132L4**		1180	158
						PHF	**052RF107**	**DRN**	**132L4**		980	159
1.2	70700	1207	364000	140600	124060	**P**	**052RF107**	**DRN**	**132L4**		1180	158
						PF	**052RF107**	**DRN**	**132L4**		980	159
						PH	**052RF107**	**DRN**	**132L4**		1170	158
						PHF	**052RF107**	**DRN**	**132L4**		970	159
0.74	116800	1995	277000	111000	100170	**P**	**042RF137**	**DRN**	**132L4**		1150	154
0.84	102000	1741	293700	111000	100170	**PF**	**042RF137**	**DRN**	**132L4**		960	155
1.4	63900	1092	323000	111000	100170	**PH**	**042RF137**	**DRN**	**132L4**		1150	154
						PHF	**042RF137**	**DRN**	**132L4**		960	155
0.93	92700	1584	302900	111000	100170	**P**	**042RF107**	**DRN**	**132L4**		1040	152
1.1	81000	1383	313200	111000	100170	**PF**	**042RF107**	**DRN**	**132L4**		850	153
						PH	**042RF107**	**DRN**	**132L4**		1040	152
						PHF	**042RF107**	**DRN**	**132L4**		850	153
1.4	63300	1082	323000	111000	100170	**P**	**042RF107**	**DRN**	**132L4**		1030	152
1.5	57200	977	323000	111000	100170	**PF**	**042RF107**	**DRN**	**132L4**		840	153
1.7	51900	887	323000	111000	100170	**PH**	**042RF107**	**DRN**	**132L4**		1040	152
						PHF	**042RF107**	**DRN**	**132L4**		850	153
1.2	70700	1207	221800	86800	69620	**P**	**032RF107**	**DRN**	**132L4**		790	146
1.4	63300	1082	231000	86800	69620	**PF**	**032RF107**	**DRN**	**132L4**		670	147
1.9	46100	787	248700	86800	69620	**PH**	**032RF107**	**DRN**	**132L4**		810	146
2.1	41800	714	252000	86800	69620	**PHF**	**032RF107**	**DRN**	**132L4**		690	147
2.0	41900	716	252000	86800	69620	**P**	**032RF97**	**DRN**	**132L4**		740	144
2.3	37100	634	252000	86800	69620	**PF**	**032RF97**	**DRN**	**132L4**		620	145
						PH	**032RF97**	**DRN**	**132L4**		760	144
						PHF	**032RF97**	**DRN**	**132L4**		640	145
2.4	35900	614	197000	64200	51190	**P**	**022RF107**	**DRN**	**132L4**		710	140
2.7	31300	536	197000	64200	51190	**PF**	**022RF107**	**DRN**	**132L4**		610	141
						PH	**022RF107**	**DRN**	**132L4**		720	140
						PHF	**022RF107**	**DRN**	**132L4**		620	141
1.5	57500	982	180700	64200	51190							
1.7	51400	878	190500	64200	51190	**P**	**022RF97**	**DRN**	**132L4**		660	138
1.9	46200	790	197000	64200	51190	**PF**	**022RF97**	**DRN**	**132L4**		560	139
2.0	41900	716	197000	64200	51190	**PH**	**022RF97**	**DRN**	**132L4**		680	138
2.6	33600	574	197000	64200	51190	**PHF**	**022RF97**	**DRN**	**132L4**		570	139
3.0	28400	486	197000	64200	51190							
3.8	22700	388	197000	64200	45300	**P**	**022RF87**	**DRN**	**132L4**		610	136
						PF	**022RF87**	**DRN**	**132L4**		510	137
						PH	**022RF87**	**DRN**	**132L4**		630	136
						PHF	**022RF87**	**DRN**	**132L4**		520	137
2.3	37100	634	156000	46200	36810							
2.6	33600	574	156000	46200	36810							
3.0	28400	486	156000	46200	36810	**P**	**012RF97**	**DRN**	**132L4**		510	132
3.5	24800	425	156000	46200	36810	**PF**	**012RF97**	**DRN**	**132L4**		445	133
4.0	21300	364	156000	46200	36810	**PH**	**012RF97**	**DRN**	**132L4**		530	132
4.5	19200	329	156000	46200	36810	**PHF**	**012RF97**	**DRN**	**132L4**		460	133
5.3	16300	279	156000	46200	36810							
4.1	21000	359	156000	46200	36810	**P**	**012RF87**	**DRN**	**132L4**		465	130
4.6	18800	322	156000	46200	36810	**PF**	**012RF87**	**DRN**	**132L4**		395	131
5.2	16300	280	156000	46200	36810	**PH**	**012RF87**	**DRN**	**132L4**		475	130
						PHF	**012RF87**	**DRN**	**132L4**		405	131

21915180/EN – 04/2015

P_m = 9.2 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}						m	
				f_{LC}<=7.5	f_{LC}>107.5						
min^{-1}	Nm		N	Nm	Nm					kg	
6.0	14200	243	123300	29200	24830	**P**	**002RF97**	**DRN**	**132L4**	435	124
						PF	**002RF97**	**DRN**	**132L4**	375	125
						PH	**002RF97**	**DRN**	**132L4**	440	124
						PHF	**002RF97**	**DRN**	**132L4**	380	125
3.8	22600	387	120800	29200	24830						
4.1	20900	357	121900	29200	24830						
4.6	18800	321	123300	29200	24830						
5.3	16300	279	124000	29200	24830						
5.9	14600	250	124000	29200	24830	**P**	**002RF87**	**DRN**	**132L4**	385	122
7.1	12100	207	117500	29200	24830	**PF**	**002RF87**	**DRN**	**132L4**	325	123
7.6	11300	193	115200	29200	22500	**PH**	**002RF87**	**DRN**	**132L4**	385	122
8.2	10400	178	112400	29200	23100	**PHF**	**002RF87**	**DRN**	**132L4**	330	123
9.2	9400	161	108900	29200	22200						
11	8160	139	104400	29200	20400						
12	7300	125	101000	29200	19500						
14	6060	104	95500	29200	17400						

P_m = 11.0 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}						m	
				f_{LC}<=7.5	f_{LC}>107.5						
min^{-1}	Nm		N	Nm	Nm					kg	
0.41	252200	3608	850000	631300	500000	**P**	**102RF167**	**DRN**	**160M4**	4620	178
0.46	224300	3210	850000	631300	500000	**PF**	**102RF167**	**DRN**	**160M4**	3660	179
0.52	199400	2854	850000	631300	500000	**PH**	**102RF167**	**DRN**	**160M4**	4680	178
0.65	158700	2271	850000	631300	500000	**PHF**	**102RF167**	**DRN**	**160M4**	3720	179
0.73	140000	2004	850000	631300	500000						
0.83	124400	1781	850000	631300	500000	**P**	**102RF167**	**DRN**	**160M4**	4610	178
						PF	**102RF167**	**DRN**	**160M4**	3660	179
						PH	**102RF167**	**DRN**	**160M4**	4670	178
						PHF	**102RF167**	**DRN**	**160M4**	3720	179
0.40	255500	3656	720000	513900	423000						
0.45	227300	3253	720000	513900	423000	**P**	**092RF167**	**DRN**	**160M4**	3760	176
0.51	202000	2891	720000	513900	423000	**PF**	**092RF167**	**DRN**	**160M4**	3070	177
0.64	160800	2301	720000	513900	423000	**PH**	**092RF167**	**DRN**	**160M4**	3780	176
0.73	141900	2031	720000	513900	423000	**PHF**	**092RF167**	**DRN**	**160M4**	3080	177
0.94	109400	1566	720000	513900	423000						
0.82	126100	1805	720000	513900	423000	**P**	**092RF167**	**DRN**	**160M4**	3760	176
						PF	**092RF167**	**DRN**	**160M4**	3060	177
						PH	**092RF167**	**DRN**	**160M4**	3770	176
						PHF	**092RF167**	**DRN**	**160M4**	3070	177
0.37	281900	4034	683000	397100	359400	**P**	**082RF167**	**DRN**	**160M4**	3270	174
0.42	244400	3497	683000	397100	359400	**PF**	**082RF167**	**DRN**	**160M4**	2620	175
						PH	**082RF167**	**DRN**	**160M4**	3260	174
						PHF	**082RF167**	**DRN**	**160M4**	2610	175
0.47	220700	3159	523000	274600	245660	**P**	**072RF167**	**DRN**	**160M4**	2610	170
						PF	**072RF167**	**DRN**	**160M4**	2120	171
						PH	**072RF167**	**DRN**	**160M4**	2660	170
						PHF	**072RF167**	**DRN**	**160M4**	2170	171
0.35	291000	4165	497300	274600	245660						
0.41	251800	3604	523000	274600	245660	**P**	**072RF147**	**DRN**	**160M4**	2350	168
0.46	222200	3180	523000	274600	245660	**PF**	**072RF147**	**DRN**	**160M4**	1860	169
0.54	191900	2747	523000	274600	245660	**PH**	**072RF147**	**DRN**	**160M4**	2400	168
0.58	178300	2552	523000	274600	245660	**PHF**	**072RF147**	**DRN**	**160M4**	1910	169
0.63	162600	2328	523000	274600	245660						
0.52	197600	2828	429300	209100	185660	**P**	**062RF147**	**DRN**	**160M4**	1930	166
0.71	144900	2074	466100	209100	185660	**PF**	**062RF147**	**DRN**	**160M4**	1560	167
						PH	**062RF147**	**DRN**	**160M4**	1920	166
						PHF	**062RF147**	**DRN**	**160M4**	1550	167
0.58	178700	2558	443800	209100	185660	**P**	**062RF137**	**DRN**	**160M4**	1810	164
0.63	162200	2321	455300	209100	185660	**PF**	**062RF137**	**DRN**	**160M4**	1440	165
0.74	139400	1995	469400	209100	185660	**PH**	**062RF137**	**DRN**	**160M4**	1800	164
0.85	121700	1741	473000	209100	185660	**PHF**	**062RF137**	**DRN**	**160M4**	1430	165

21915180/EN – 04/2015

P_m = 11.0 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}						m	
				f_{LC}<=7.5	f_{LC}>107.5						
min^{-1}	Nm		N	Nm	Nm					kg	
0.74	139400	1995	342900	140600	124060	**P**	**052RF137**	**DRN**	**160M4**	1320	160
0.85	121700	1741	358200	140600	124060	**PF**	**052RF137**	**DRN**	**160M4**	1120	161
1.0	103200	1477	364000	140600	124060	**PH**	**052RF137**	**DRN**	**160M4**	1320	160
1.1	90200	1291	364000	140600	124060	**PHF**	**052RF137**	**DRN**	**160M4**	1120	161
1.0	103200	1477	292400	111000	100170	**P**	**042RF137**	**DRN**	**160M4**	1180	154
1.4	76200	1092	317100	111000	100170	**PF**	**042RF137**	**DRN**	**160M4**	990	155
						PH	**042RF137**	**DRN**	**160M4**	1180	154
						PHF	**042RF137**	**DRN**	**160M4**	990	155
1.1	96600	1383	299100	111000	100170	**P**	**042RF107**	**DRN**	**160M4**	1070	152
						PF	**042RF107**	**DRN**	**160M4**	880	153
						PH	**042RF107**	**DRN**	**160M4**	1080	152
						PHF	**042RF107**	**DRN**	**160M4**	890	153
1.2	84300	1207	310400	111000	100170	**P**	**042RF107**	**DRN**	**160M4**	1070	152
1.4	75600	1082	317600	111000	100170	**PF**	**042RF107**	**DRN**	**160M4**	880	153
1.5	68200	977	323000	111000	100170	**PH**	**042RF107**	**DRN**	**160M4**	1070	152
1.7	62000	887	323000	111000	100170	**PHF**	**042RF107**	**DRN**	**160M4**	880	153
1.4	75600	1082	215000	86800	69620	**P**	**032RF107**	**DRN**	**160M4**	820	146
1.5	68200	977	225000	86800	69620	**PF**	**032RF107**	**DRN**	**160M4**	700	147
1.9	55000	787	240300	86800	69620	**PH**	**032RF107**	**DRN**	**160M4**	840	146
2.1	49900	714	245300	86800	69620	**PHF**	**032RF107**	**DRN**	**160M4**	720	147
1.7	61300	878	233400	86800	69620	**P**	**032RF97**	**DRN**	**160M4**	770	144
						PF	**032RF97**	**DRN**	**160M4**	650	145
						PH	**032RF97**	**DRN**	**160M4**	800	144
						PHF	**032RF97**	**DRN**	**160M4**	670	145
2.4	42900	614	197000	64200	51190	**P**	**022RF107**	**DRN**	**160M4**	740	140
2.8	37400	536	197000	64200	51190	**PF**	**022RF107**	**DRN**	**160M4**	640	141
						PH	**022RF107**	**DRN**	**160M4**	760	140
						PHF	**022RF107**	**DRN**	**160M4**	650	141
1.9	55200	790	184500	64200	51190						
2.1	50000	716	192600	64200	51190	**P**	**022RF97**	**DRN**	**160M4**	690	138
2.3	44300	634	197000	64200	51190	**PF**	**022RF97**	**DRN**	**160M4**	590	139
2.6	40000	574	197000	64200	51190	**PH**	**022RF97**	**DRN**	**160M4**	710	138
3.0	33900	486	197000	64200	51190	**PHF**	**022RF97**	**DRN**	**160M4**	610	139
2.6	40000	574	156000	46200	36810						
3.0	33900	486	156000	46200	36810						
3.5	29600	425	156000	46200	36810	**P**	**012RF97**	**DRN**	**160M4**	550	132
4.0	25400	364	156000	46200	36810	**PF**	**012RF97**	**DRN**	**160M4**	475	133
4.5	23000	329	156000	46200	36810	**PH**	**012RF97**	**DRN**	**160M4**	560	132
5.3	19500	279	156000	46200	36810	**PHF**	**012RF97**	**DRN**	**160M4**	490	133
6.0	17000	244	152400	46200	36810						
7.2	14200	204	144500	46200	36810						
3.8	27100	388	156000	46200	36810						
4.1	25000	359	156000	46200	36810	**P**	**012RF87**	**DRN**	**160M4**	495	130
4.6	22500	322	156000	46200	36810	**PF**	**012RF87**	**DRN**	**160M4**	425	131
5.3	19500	280	156000	46200	36810	**PH**	**012RF87**	**DRN**	**160M4**	510	130
5.9	17500	251	153700	46200	36810	**PHF**	**012RF87**	**DRN**	**160M4**	440	131
7.1	14500	208	145300	46200	34900						
4.6	22400	321	120900	29200	24830						
5.3	19400	279	122900	29200	24830						
5.9	17400	250	124000	29200	24830						
7.1	14400	207	117500	29200	24830	**P**	**002RF87**	**DRN**	**160M4**	415	122
7.6	13500	193	115100	29200	22500	**PF**	**002RF87**	**DRN**	**160M4**	355	123
8.2	12400	178	112400	29200	23100	**PH**	**002RF87**	**DRN**	**160M4**	420	122
9.2	11200	161	108800	29200	22200	**PHF**	**002RF87**	**DRN**	**160M4**	360	123
11	9730	139	104300	29200	20400						
12	8710	125	100900	29200	19500						
14	7230	104	95400	29200	17400						

21915180/EN – 04/2015

P_m = 15.0 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}						m	
				f_{LC}<=7.5	f_{LC}>107.5						
min^{-1}	Nm		N	Nm	Nm					kg	
0.41	343600	3608	850000	631300	500000						
0.46	305700	3210	850000	631300	500000						
0.52	271800	2854	850000	631300	500000	**P**	**102RF167**	**DRN**	**160L4**	4630	178
0.65	216200	2271	850000	631300	500000	**PF**	**102RF167**	**DRN**	**160L4**	3680	179
0.74	190800	2004	850000	631300	500000	**PH**	**102RF167**	**DRN**	**160L4**	4690	178
0.95	147200	1546	850000	631300	500000	**PHF**	**102RF167**	**DRN**	**160L4**	3740	179
1.1	126900	1332	850000	631300	500000						
0.83	169600	1781	850000	631300	500000	**P**	**102RF167**	**DRN**	**160L4**	4630	178
						PF	**102RF167**	**DRN**	**160L4**	3670	179
						PH	**102RF167**	**DRN**	**160L4**	4690	178
						PHF	**102RF167**	**DRN**	**160L4**	3730	179
0.40	348200	3656	720000	513900	423000						
0.45	309800	3253	720000	513900	423000						
0.51	275300	2891	720000	513900	423000	**P**	**092RF167**	**DRN**	**160L4**	3780	176
0.64	219100	2301	720000	513900	423000	**PF**	**092RF167**	**DRN**	**160L4**	3080	177
0.73	193300	2031	720000	513900	423000	**PH**	**092RF167**	**DRN**	**160L4**	3790	176
0.94	149100	1566	720000	513900	423000	**PHF**	**092RF167**	**DRN**	**160L4**	3090	177
1.1	128500	1350	720000	513900	423000						
0.82	171800	1805	720000	513900	423000	**P**	**092RF167**	**DRN**	**160L4**	3770	176
1.2	114700	1205	720000	513900	423000	**PF**	**092RF167**	**DRN**	**160L4**	3080	177
						PH	**092RF167**	**DRN**	**160L4**	3790	176
						PHF	**092RF167**	**DRN**	**160L4**	3090	177
0.37	384200	4034	631300	397100	359400						
0.42	333100	3497	676800	397100	359400	**P**	**082RF167**	**DRN**	**160L4**	3280	174
0.47	296400	3112	683000	397100	359400	**PF**	**082RF167**	**DRN**	**160L4**	2630	175
0.53	263400	2766	683000	397100	359400	**PH**	**082RF167**	**DRN**	**160L4**	3270	174
0.58	240900	2530	683000	397100	359400	**PHF**	**082RF167**	**DRN**	**160L4**	2620	175
0.64	218400	2293	683000	397100	359400	**P**	**082RF147**	**DRN**	**160L4**	3020	172
						PF	**082RF147**	**DRN**	**160L4**	2370	173
						PH	**082RF147**	**DRN**	**160L4**	3020	172
						PHF	**082RF147**	**DRN**	**160L4**	2370	173
0.47	300800	3159	485300	274600	245660	**P**	**072RF167**	**DRN**	**160L4**	2620	170
0.57	244500	2568	523000	274600	245660	**PF**	**072RF167**	**DRN**	**160L4**	2130	171
						PH	**072RF167**	**DRN**	**160L4**	2680	170
						PHF	**072RF167**	**DRN**	**160L4**	2190	171
0.54	261500	2747	523000	274600	245660						
0.58	243000	2552	523000	274600	245660	**P**	**072RF147**	**DRN**	**160L4**	2370	168
0.63	221600	2328	523000	274600	245660	**PF**	**072RF147**	**DRN**	**160L4**	1880	169
0.73	191800	2014	523000	274600	245660	**PH**	**072RF147**	**DRN**	**160L4**	2420	168
0.83	169200	1777	523000	274600	245660	**PHF**	**072RF147**	**DRN**	**160L4**	1930	169
0.71	197500	2074	429400	209100	185660						
0.81	174300	1830	447000	209100	185660	**P**	**062RF147**	**DRN**	**160L4**	1940	166
0.93	150500	1581	462700	209100	185660	**PF**	**062RF147**	**DRN**	**160L4**	1580	167
1.0	133100	1398	472900	209100	185660	**PH**	**062RF147**	**DRN**	**160L4**	1930	166
1.2	111900	1175	473000	209100	185660	**PHF**	**062RF147**	**DRN**	**160L4**	1570	167
0.85	165800	1741	452800	209100	185660	**P**	**062RF137**	**DRN**	**160L4**	1820	164
1.0	140600	1477	468700	209100	185660	**PF**	**062RF137**	**DRN**	**160L4**	1460	165
1.1	122900	1291	473000	209100	185660	**PH**	**062RF137**	**DRN**	**160L4**	1810	164
1.4	103900	1092	473000	209100	185660	**PHF**	**062RF137**	**DRN**	**160L4**	1450	165
1.3	110400	1160	473000	209100	185660	**P**	**062RF137**	**DRN**	**160L4**	1810	164
						PF	**062RF137**	**DRN**	**160L4**	1450	165
						PH	**062RF137**	**DRN**	**160L4**	1800	164
						PHF	**062RF137**	**DRN**	**160L4**	1440	165
1.0	140600	1477	341800	140600	124060	**P**	**052RF137**	**DRN**	**160L4**	1340	160
1.1	122900	1291	357200	140600	124060	**PF**	**052RF137**	**DRN**	**160L4**	1140	161
1.4	103900	1092	364000	140600	124060	**PH**	**052RF137**	**DRN**	**160L4**	1330	160
						PHF	**052RF137**	**DRN**	**160L4**	1130	161
1.6	90100	946	364000	140600	124060	**P**	**052RF137**	**DRN**	**160L4**	1330	160
1.7	82200	863	364000	140600	124060	**PF**	**052RF137**	**DRN**	**160L4**	1130	161
						PH	**052RF137**	**DRN**	**160L4**	1320	160
						PHF	**052RF137**	**DRN**	**160L4**	1120	161

21915180/EN – 04/2015

P_m = 15.0 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}						m	
				f_{LC}<=7.5	f_{LC}>107.5						
min^{-1}	Nm		N	Nm	Nm					kg	
1.4	103900	1092	291600	111000	100170	P	042RF137	DRN	160L4	1200	154
						PF	042RF137	DRN	160L4	1010	155
						PH	042RF137	DRN	160L4	1200	154
						PHF	042RF137	DRN	160L4	1010	155
1.6	90100	946	305300	111000	100170	P	042RF137	DRN	160L4	1190	154
1.7	82200	863	312300	111000	100170	PF	042RF137	DRN	160L4	1000	155
2.0	71100	747	321000	111000	100170	PH	042RF137	DRN	160L4	1190	154
						PHF	042RF137	DRN	160L4	1000	155
1.5	93000	977	302600	111000	100170						
1.7	84500	887	310300	111000	100170	P	042RF107	DRN	160L4	1080	152
1.9	74900	787	318100	111000	100170	PF	042RF107	DRN	160L4	890	153
2.1	68000	714	323000	111000	100170	PH	042RF107	DRN	160L4	1090	152
2.4	58400	614	323000	111000	100170	PHF	042RF107	DRN	160L4	900	153
1.9	74900	787	215900	86800	69620						
2.1	68000	714	225300	86800	69620	P	032RF107	DRN	160L4	840	146
2.4	58400	614	236600	86800	69620	PF	032RF107	DRN	160L4	710	147
2.8	51000	536	244200	86800	69620	PH	032RF107	DRN	160L4	860	146
3.2	43200	455	251200	86800	69620	PHF	032RF107	DRN	160L4	740	147
3.0	46300	486	248600	86800	69620	P	032RF97	DRN	160L4	790	144
						PF	032RF97	DRN	160L4	670	145
						PH	032RF97	DRN	160L4	810	144
						PHF	032RF97	DRN	160L4	690	145
2.4	58400	614	179000	64200	51190						
2.8	51000	536	191000	64200	51190	P	022RF107	DRN	160L4	760	140
3.2	43200	455	197000	64200	51190	PF	022RF107	DRN	160L4	650	141
3.7	37800	397	197000	64200	51190	PH	022RF107	DRN	160L4	770	140
4.4	31900	336	197000	64200	51190	PHF	022RF107	DRN	160L4	670	141
3.0	46300	486	197000	64200	51190						
3.5	40400	425	197000	64200	51190	P	022RF97	DRN	160L4	710	138
4.0	34600	364	197000	64200	51190	PF	022RF97	DRN	160L4	610	139
4.5	31300	329	197000	64200	51190	PH	022RF97	DRN	160L4	730	138
5.3	26500	279	197000	64200	51190	PHF	022RF97	DRN	160L4	620	139
3.5	40400	425	156000	46200	36810						
4.0	34600	364	156000	46200	36810						
4.5	31300	329	156000	46200	36810						
5.3	26500	279	156000	46200	36810						
6.0	23200	244	152400	46200	36810	P	012RF97	DRN	160L4	560	132
7.2	19400	204	144400	46200	36810	PF	012RF97	DRN	160L4	490	133
8.4	16800	177	138300	46200	36810	PH	012RF97	DRN	160L4	580	132
8.7	16000	169	136500	46200	36810	PHF	012RF97	DRN	160L4	510	133
10	13600	143	129900	46200	36810						
12	11900	125	124700	46200	36810						
14	9950	105	118200	46200	35000						
6.1	23100	243	120100	29200	24830						
7.3	19300	203	116800	29200	24830						
8.1	17200	181	112900	29200	24830						
8.4	16700	176	111800	29200	24830	P	002RF97	DRN	160L4	480	124
9.0	15600	164	109500	29200	24830	PF	002RF97	DRN	160L4	425	125
11	13200	139	104200	29200	24830	PH	002RF97	DRN	160L4	485	124
12	11500	121	100000	29200	24830	PHF	002RF97	DRN	160L4	430	125
15	9660	102	94800	29200	24830						
17	8360	88	90800	29200	24830						
14	9850	104	95400	29200	17400	P	002RF87	DRN	160L4	430	122
						PF	002RF87	DRN	160L4	375	123
						PH	002RF87	DRN	160L4	435	122
						PHF	002RF87	DRN	160L4	375	123

21915180/EN – 04/2015

P_m = 18.5 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}						m	
				f_{LC}<=7.5	f_{LC}>107.5						
min^{-1}	Nm		N	Nm	Nm					kg	
0.46	376100	3210	850000	631300	500000						
0.52	334300	2854	850000	631300	500000	**P**	**102RF167**	**DRN**	**180M4**	4660	178
0.65	266000	2271	850000	631300	500000	**PF**	**102RF167**	**DRN**	**180M4**	3700	179
0.74	234700	2004	850000	631300	500000	**PH**	**102RF167**	**DRN**	**180M4**	4720	178
0.96	181000	1546	850000	631300	500000	**PHF**	**102RF167**	**DRN**	**180M4**	3760	179
1.1	156000	1332	850000	631300	500000						
1.2	139300	1189	850000	631300	500000	**P**	**102RF167**	**DRN**	**180M4**	4650	178
						PF	**102RF167**	**DRN**	**180M4**	3700	179
						PH	**102RF167**	**DRN**	**180M4**	4710	178
						PHF	**102RF167**	**DRN**	**180M4**	3760	179
0.45	381000	3253	720000	513900	423000						
0.51	338700	2891	720000	513900	423000	**P**	**092RF167**	**DRN**	**180M4**	3800	176
0.64	269500	2301	720000	513900	423000	**PF**	**092RF167**	**DRN**	**180M4**	3110	177
0.73	237800	2031	720000	513900	423000	**PH**	**092RF167**	**DRN**	**180M4**	3820	176
0.94	183400	1566	720000	513900	423000	**PHF**	**092RF167**	**DRN**	**180M4**	3120	177
1.1	158100	1350	720000	513900	423000						
1.2	141100	1205	720000	513900	423000	**P**	**092RF167**	**DRN**	**180M4**	3800	176
1.5	112900	964	720000	513900	423000	**PF**	**092RF167**	**DRN**	**180M4**	3100	177
						PH	**092RF167**	**DRN**	**180M4**	3810	176
						PHF	**092RF167**	**DRN**	**180M4**	3110	177
0.42	409700	3497	605400	397100	359400						
0.47	364500	3112	649800	397100	359400						
0.53	324000	2766	682800	397100	359400	**P**	**082RF167**	**DRN**	**180M4**	3310	174
0.58	296300	2530	683000	397100	359400	**PF**	**082RF167**	**DRN**	**180M4**	2660	175
0.67	257800	2201	683000	397100	359400	**PH**	**082RF167**	**DRN**	**180M4**	3300	174
0.76	227500	1943	683000	397100	359400	**PHF**	**082RF167**	**DRN**	**180M4**	2650	175
0.88	197200	1684	683000	397100	359400						
0.64	268600	2293	683000	397100	359400	**P**	**082RF147**	**DRN**	**180M4**	3050	172
						PF	**082RF147**	**DRN**	**180M4**	2400	173
						PH	**082RF147**	**DRN**	**180M4**	3040	172
						PHF	**082RF147**	**DRN**	**180M4**	2390	173
0.58	300700	2568	485400	274600	245660	**P**	**072RF167**	**DRN**	**180M4**	2650	170
0.97	178100	1521	523000	274600	245660	**PF**	**072RF167**	**DRN**	**180M4**	2160	171
						PH	**072RF167**	**DRN**	**180M4**	2700	170
						PHF	**072RF167**	**DRN**	**180M4**	2210	171
0.64	272600	2328	518200	274600	245660						
0.73	235900	2014	523000	274600	245660	**P**	**072RF147**	**DRN**	**180M4**	2390	168
0.83	208200	1777	523000	274600	245660	**PF**	**072RF147**	**DRN**	**180M4**	1900	169
0.96	179800	1535	523000	274600	245660	**PH**	**072RF147**	**DRN**	**180M4**	2440	168
1.1	159000	1358	523000	274600	245660	**PHF**	**072RF147**	**DRN**	**180M4**	1950	169
1.3	133600	1141	523000	274600	245660						
0.81	214400	1830	415200	209100	185660						
0.94	185100	1581	439000	209100	185660	**P**	**062RF147**	**DRN**	**180M4**	1970	166
1.1	163700	1398	454200	209100	185660	**PF**	**062RF147**	**DRN**	**180M4**	1600	167
1.3	137600	1175	470400	209100	185660	**PH**	**062RF147**	**DRN**	**180M4**	1960	166
1.6	111100	949	473000	209100	185660	**PHF**	**062RF147**	**DRN**	**180M4**	1590	167
1.0	173000	1477	447900	209100	185660	**P**	**062RF137**	**DRN**	**180M4**	1850	164
1.1	151200	1291	462300	209100	185660	**PF**	**062RF137**	**DRN**	**180M4**	1480	165
1.4	127800	1092	473000	209100	185660	**PH**	**062RF137**	**DRN**	**180M4**	1840	164
						PHF	**062RF137**	**DRN**	**180M4**	1470	165
1.3	135800	1160	471400	209100	185660	**P**	**062RF137**	**DRN**	**180M4**	1840	164
1.6	110800	946	473000	209100	185660	**PF**	**062RF137**	**DRN**	**180M4**	1470	165
1.7	101100	863	473000	209100	185660	**PH**	**062RF137**	**DRN**	**180M4**	1830	164
						PHF	**062RF137**	**DRN**	**180M4**	1460	165
1.4	127800	1092	353200	140600	124060	**P**	**052RF137**	**DRN**	**180M4**	1360	160
						PF	**052RF137**	**DRN**	**180M4**	1160	161
						PH	**052RF137**	**DRN**	**180M4**	1360	160
						PHF	**052RF137**	**DRN**	**180M4**	1160	161
1.6	110800	946	364000	140600	124060	**P**	**052RF137**	**DRN**	**180M4**	1350	160
1.7	101100	863	364000	140600	124060	**PF**	**052RF137**	**DRN**	**180M4**	1150	161
2.0	87500	747	364000	140600	124060	**PH**	**052RF137**	**DRN**	**180M4**	1350	160
2.2	77200	659	364000	140600	124060	**PHF**	**052RF137**	**DRN**	**180M4**	1150	161

21915180/EN – 04/2015

P_m = 18.5 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}						m	
				f_{LC}<=7.5	f_{LC}>107.5						
min^{-1}	Nm		N	Nm	Nm					kg	
2.1	83600	714	364000	140600	124060	**P**	**052RF107**	**DRN**	**180M4**	1250	158
2.4	71900	614	364000	140600	124060	**PF**	**052RF107**	**DRN**	**180M4**	1050	159
						PH	**052RF107**	**DRN**	**180M4**	1240	158
						PHF	**052RF107**	**DRN**	**180M4**	1040	159
1.6	110800	946	284000	111000	100170	**P**	**042RF137**	**DRN**	**180M4**	1210	154
1.7	101100	863	294600	111000	100170	**PF**	**042RF137**	**DRN**	**180M4**	1020	155
2.0	87500	747	307700	111000	100170	**PH**	**042RF137**	**DRN**	**180M4**	1210	154
2.6	66600	569	323000	111000	100170	**PHF**	**042RF137**	**DRN**	**180M4**	1020	155
1.9	92200	787	303400	111000	100170						
2.1	83600	714	311000	111000	100170	**P**	**042RF107**	**DRN**	**180M4**	1100	152
2.4	71900	614	320400	111000	100170	**PF**	**042RF107**	**DRN**	**180M4**	910	153
2.8	62700	536	323000	111000	100170	**PH**	**042RF107**	**DRN**	**180M4**	1110	152
3.2	53200	455	323000	111000	100170	**PHF**	**042RF107**	**DRN**	**180M4**	920	153
2.4	71900	614	220200	86800	69620						
2.8	62700	536	231700	86800	69620	**P**	**032RF107**	**DRN**	**180M4**	860	146
3.2	53200	455	242000	86800	69620	**PF**	**032RF107**	**DRN**	**180M4**	740	147
3.7	46500	397	248400	86800	69620	**PH**	**032RF107**	**DRN**	**180M4**	880	146
4.4	39300	336	248600	86800	69620	**PHF**	**032RF107**	**DRN**	**180M4**	760	147
4.5	38500	329	247100	86800	69620	**P**	**032RF97**	**DRN**	**180M4**	810	144
5.3	32700	279	235200	86800	69620	**PF**	**032RF97**	**DRN**	**180M4**	690	145
						PH	**032RF97**	**DRN**	**180M4**	830	144
						PHF	**032RF97**	**DRN**	**180M4**	710	145
3.2	53200	455	187700	64200	51190						
3.7	46500	397	197000	64200	51190						
4.4	39300	336	197000	64200	51190	**P**	**022RF107**	**DRN**	**180M4**	780	140
4.8	36100	308	197000	64200	51190	**PF**	**022RF107**	**DRN**	**180M4**	680	141
5.6	30600	261	197000	64200	51190	**PH**	**022RF107**	**DRN**	**180M4**	790	140
6.5	26700	228	197000	64200	51190	**PHF**	**022RF107**	**DRN**	**180M4**	690	141
7.6	22600	193	197000	64200	51190						
4.1	42600	364	197000	64200	51190						
4.5	38500	329	197000	64200	51190						
5.3	32700	279	197000	64200	51190	**P**	**022RF97**	**DRN**	**180M4**	730	138
6.1	28500	244	197000	64200	51190	**PF**	**022RF97**	**DRN**	**180M4**	630	139
7.2	23800	204	197000	64200	51190	**PH**	**022RF97**	**DRN**	**180M4**	750	138
8.4	20600	177	197000	64200	51190	**PHF**	**022RF97**	**DRN**	**180M4**	650	139
8.8	19700	169	197000	64200	40000						
8.6	20100	172	137200	46200	36810	**P**	**012RF107**	**DRN**	**180M4**	630	134
9.4	18500	158	133700	46200	36810	**PF**	**012RF107**	**DRN**	**180M4**	560	135
11	15600	134	127200	46200	36810	**PH**	**012RF107**	**DRN**	**180M4**	640	134
13	13700	117	122200	46200	36810	**PHF**	**012RF107**	**DRN**	**180M4**	570	135
4.5	38500	329	156000	46200	36810						
5.3	32700	279	156000	46200	36810						
6.1	28500	244	152300	46200	36810						
7.2	23800	204	144300	46200	36810	**P**	**012RF97**	**DRN**	**180M4**	580	132
8.4	20600	177	138200	46200	36810	**PF**	**012RF97**	**DRN**	**180M4**	510	133
8.8	19700	169	136400	46200	36810	**PH**	**012RF97**	**DRN**	**180M4**	600	132
10	16700	143	129800	46200	36810	**PHF**	**012RF97**	**DRN**	**180M4**	530	133
12	14600	125	124600	46200	36810						
14	12200	105	118100	46200	35000						
16	10600	91	113100	46200	32100						
7.3	23700	203	116700	29200	24830						
8.4	20600	176	111800	29200	24830						
9.0	19200	164	109400	29200	24830	**P**	**002RF97**	**DRN**	**180M4**	500	124
11	16200	139	104100	29200	24830	**PF**	**002RF97**	**DRN**	**180M4**	445	125
12	14200	121	100000	29200	24830	**PH**	**002RF97**	**DRN**	**180M4**	510	124
15	11800	102	94800	29200	24830	**PHF**	**002RF97**	**DRN**	**180M4**	450	125
17	10200	88	90700	29200	24830						

21915180/EN – 04/2015

P_m = 22 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}						m	
				f_{LC}<=7.5	f_{LC}>107.5						
min^{-1}	Nm		N	Nm	Nm					kg	
0.46	447500	3210	850000	631300	500000						
0.52	397800	2854	850000	631300	500000	**P**	**102RF167**	**DRN**	**180L4**	4670	178
0.65	316500	2271	850000	631300	500000	**PF**	**102RF167**	**DRN**	**180L4**	3720	179
0.74	279300	2004	850000	631300	500000	**PH**	**102RF167**	**DRN**	**180L4**	4730	178
0.96	215500	1546	850000	631300	500000	**PHF**	**102RF167**	**DRN**	**180L4**	3780	179
1.1	185700	1332	850000	631300	500000						
1.2	165700	1189	850000	631300	500000	**P**	**102RF167**	**DRN**	**180L4**	4670	178
1.6	132600	951	850000	631300	500000	**PF**	**102RF167**	**DRN**	**180L4**	3710	179
						PH	**102RF167**	**DRN**	**180L4**	4730	178
						PHF	**102RF167**	**DRN**	**180L4**	3770	179
0.45	453400	3253	720000	513900	423000						
0.51	403000	2891	720000	513900	423000	**P**	**092RF167**	**DRN**	**180L4**	3820	176
0.64	320700	2301	720000	513900	423000	**PF**	**092RF167**	**DRN**	**180L4**	3120	177
0.73	283000	2031	720000	513900	423000	**PH**	**092RF167**	**DRN**	**180L4**	3830	176
0.94	218300	1566	720000	513900	423000	**PHF**	**092RF167**	**DRN**	**180L4**	3130	177
1.1	188100	1350	720000	513900	423000						
1.2	167900	1205	720000	513900	423000	**P**	**092RF167**	**DRN**	**180L4**	3810	176
1.5	134300	964	720000	513900	423000	**PF**	**092RF167**	**DRN**	**180L4**	3120	177
1.7	119400	857	720000	513900	423000	**PH**	**092RF167**	**DRN**	**180L4**	3830	176
2.0	104100	747	720000	513900	423000	**PHF**	**092RF167**	**DRN**	**180L4**	3130	177
0.53	385600	2766	630000	397100	359400						
0.58	352600	2530	660400	397100	359400						
0.67	306800	2201	683000	397100	359400	**P**	**082RF167**	**DRN**	**180L4**	3320	174
0.76	270800	1943	683000	397100	359400	**PF**	**082RF167**	**DRN**	**180L4**	2670	175
0.88	234700	1684	683000	397100	359400	**PH**	**082RF167**	**DRN**	**180L4**	3310	174
0.99	208800	1498	683000	397100	359400	**PHF**	**082RF167**	**DRN**	**180L4**	2660	175
1.1	180000	1291	683000	397100	359400						
0.64	319600	2293	683000	397100	359400						
0.84	244100	1751	683000	397100	359400	**P**	**082RF147**	**DRN**	**180L4**	3060	172
0.98	210800	1512	683000	397100	359400	**PF**	**082RF147**	**DRN**	**180L4**	2410	173
1.1	186400	1338	683000	397100	359400	**PH**	**082RF147**	**DRN**	**180L4**	3050	172
1.3	156700	1141	683000	397100	359400	**PHF**	**082RF147**	**DRN**	**180L4**	2400	173
0.97	212000	1521	523000	274600	245660	**P**	**072RF167**	**DRN**	**180L4**	2660	170
1.4	148400	1065	523000	274600	245660	**PF**	**072RF167**	**DRN**	**180L4**	2170	171
						PH	**072RF167**	**DRN**	**180L4**	2720	170
						PHF	**072RF167**	**DRN**	**180L4**	2230	171
0.73	280800	2014	509200	274600	245660						
0.83	247700	1777	523000	274600	245660	**P**	**072RF147**	**DRN**	**180L4**	2400	168
1.1	189200	1358	523000	274600	245660	**PF**	**072RF147**	**DRN**	**180L4**	1910	169
1.3	159000	1141	523000	274600	245660	**PH**	**072RF147**	**DRN**	**180L4**	2460	168
1.6	128400	922	523000	274600	245660	**PHF**	**072RF147**	**DRN**	**180L4**	1970	169
0.93	220300	1581	409800	209100	185660	**P**	**062RF147**	**DRN**	**180L4**	1980	166
1.1	194900	1398	431500	209100	185660	**PF**	**062RF147**	**DRN**	**180L4**	1620	167
1.3	163800	1175	454200	209100	185660	**PH**	**062RF147**	**DRN**	**180L4**	1970	166
1.6	132300	949	473000	209100	185660	**PHF**	**062RF147**	**DRN**	**180L4**	1610	167
1.8	111700	802	473000	209100	185660	**P**	**062RF147**	**DRN**	**180L4**	1970	166
						PF	**062RF147**	**DRN**	**180L4**	1600	167
						PH	**062RF147**	**DRN**	**180L4**	1960	166
						PHF	**062RF147**	**DRN**	**180L4**	1590	167
1.4	152100	1092	461700	209100	185660	**P**	**062RF137**	**DRN**	**180L4**	1860	164
						PF	**062RF137**	**DRN**	**180L4**	1500	165
						PH	**062RF137**	**DRN**	**180L4**	1850	164
						PHF	**062RF137**	**DRN**	**180L4**	1490	165
1.7	120300	863	473000	209100	185660	**P**	**062RF137**	**DRN**	**180L4**	1850	164
2.0	104100	747	473000	209100	185660	**PF**	**062RF137**	**DRN**	**180L4**	1490	165
2.2	91800	659	473000	209100	185660	**PH**	**062RF137**	**DRN**	**180L4**	1840	164
						PHF	**062RF137**	**DRN**	**180L4**	1480	165
1.6	131900	946	349700	140600	124060						
1.7	120300	863	359300	140600	124060	**P**	**052RF137**	**DRN**	**180L4**	1370	160
2.0	104100	747	364000	140600	124060	**PF**	**052RF137**	**DRN**	**180L4**	1170	161
2.2	91800	659	364000	140600	124060	**PH**	**052RF137**	**DRN**	**180L4**	1360	160
2.6	79300	569	364000	140600	124060	**PHF**	**052RF137**	**DRN**	**180L4**	1160	161
2.9	70100	503	364000	140600	124060						

21915180/EN – 04/2015

P_m = 22 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}							m	
				f_{LC}<=7.5	f_{LC}>107.5							
min^{-1}	Nm		N	Nm	Nm						kg	
2.8	74700	536	364000	140600	124060	**P**	**052RF107**	**DRN**	**180L4**		1260	158
3.2	63300	455	364000	140600	124060	**PF**	**052RF107**	**DRN**	**180L4**		1060	159
						PH	**052RF107**	**DRN**	**180L4**		1260	158
						PHF	**052RF107**	**DRN**	**180L4**		1060	159
2.0	104100	747	291500	111000	100170	**P**	**042RF137**	**DRN**	**180L4**		1220	154
2.6	79300	569	314600	111000	100170	**PF**	**042RF137**	**DRN**	**180L4**		1030	155
3.5	58900	423	323000	111000	100170	**PH**	**042RF137**	**DRN**	**180L4**		1230	154
						PHF	**042RF137**	**DRN**	**180L4**		1040	155
2.1	99500	714	296200	111000	100170							
2.4	85600	614	309400	111000	100170	**P**	**042RF107**	**DRN**	**180L4**		1120	152
2.8	74700	536	318300	111000	100170	**PF**	**042RF107**	**DRN**	**180L4**		930	153
3.2	63300	455	323000	111000	100170	**PH**	**042RF107**	**DRN**	**180L4**		1120	152
3.7	55300	397	323000	111000	100170	**PHF**	**042RF107**	**DRN**	**180L4**		930	153
2.8	74700	536	216300	86800	69620							
3.2	63300	455	231000	86800	69620							
3.7	55300	397	239900	86800	69620	**P**	**032RF107**	**DRN**	**180L4**		870	146
4.4	46800	336	248100	86800	69620	**PF**	**032RF107**	**DRN**	**180L4**		750	147
4.8	42900	308	242300	86800	69620	**PH**	**032RF107**	**DRN**	**180L4**		890	146
5.6	36400	261	230600	86800	69620	**PHF**	**032RF107**	**DRN**	**180L4**		770	147
6.5	31800	228	221500	86800	69620							
3.7	55300	397	184200	64200	51190							
4.4	46800	336	197000	64200	51190							
4.8	42900	308	197000	64200	51190	**P**	**022RF107**	**DRN**	**180L4**		790	140
5.6	36400	261	197000	64200	51190	**PF**	**022RF107**	**DRN**	**180L4**		690	141
6.5	31800	228	197000	64200	51190	**PH**	**022RF107**	**DRN**	**180L4**		810	140
7.6	26900	193	197000	64200	51190	**PHF**	**022RF107**	**DRN**	**180L4**		710	141
8.6	24000	172	197000	64200	51190							
9.4	22000	158	197000	64200	51190							
4.5	45900	329	197000	64200	51190							
5.3	38900	279	197000	64200	51190	**P**	**022RF97**	**DRN**	**180L4**		750	138
6.1	33900	244	197000	64200	51190	**PF**	**022RF97**	**DRN**	**180L4**		650	139
7.2	28400	204	197000	64200	51190	**PH**	**022RF97**	**DRN**	**180L4**		760	138
8.4	24600	177	197000	64200	51190	**PHF**	**022RF97**	**DRN**	**180L4**		660	139
8.6	24000	172	137200	46200	36810							
9.4	22000	158	133700	46200	36810	**P**	**012RF107**	**DRN**	**180L4**		640	134
11	18600	134	127300	46200	36810	**PF**	**012RF107**	**DRN**	**180L4**		570	135
13	16300	117	122200	46200	36810	**PH**	**012RF107**	**DRN**	**180L4**		660	134
15	13800	99	116200	46200	36810	**PHF**	**012RF107**	**DRN**	**180L4**		590	135
6.1	33900	244	152300	46200	36810							
7.2	28400	204	144400	46200	36810							
8.4	24600	177	138200	46200	36810	**P**	**012RF97**	**DRN**	**180L4**		600	132
8.8	23500	169	136400	46200	36810	**PF**	**012RF97**	**DRN**	**180L4**		530	133
10	19900	143	129800	46200	36810	**PH**	**012RF97**	**DRN**	**180L4**		610	132
12	17400	125	124600	46200	36810	**PHF**	**012RF97**	**DRN**	**180L4**		540	133
14	14500	105	118100	46200	35000							
16	12600	91	113100	46200	32100							
9.0	22800	164	109400	29200	24830							
11	19300	139	104100	29200	24830	**P**	**002RF97**	**DRN**	**180L4**		520	124
12	16900	121	100000	29200	24830	**PF**	**002RF97**	**DRN**	**180L4**		460	125
15	14100	102	94800	29200	24830	**PH**	**002RF97**	**DRN**	**180L4**		520	124
17	12200	88	90800	29200	24830	**PHF**	**002RF97**	**DRN**	**180L4**		465	125

P_m = 30 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}							m	
				f_{LC}<=7.5	f_{LC}>107.5							
min^{-1}	Nm		N	Nm	Nm						kg	
0.46	609000	3210	805700	631300	500000							
0.52	541400	2854	850000	631300	500000	**P**	**102RF167**	**DRN**	**200L4**		4780	178
0.65	430800	2271	850000	631300	500000	**PF**	**102RF167**	**DRN**	**200L4**		3830	179
0.74	380200	2004	850000	631300	500000	**PH**	**102RF167**	**DRN**	**200L4**		4840	178
0.96	293200	1546	850000	631300	500000	**PHF**	**102RF167**	**DRN**	**200L4**		3890	179
1.1	252700	1332	850000	631300	500000							

21915180/EN – 04/2015

P_m = 30 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}						m	
				f_{LC}<=7.5	f_{LC}>107.5						
min^{-1}	Nm		N	Nm	Nm					kg	
1.2	225500	1189	850000	631300	500000	**P**	**102RF167**	**DRN**	**200L4**	4770	178
1.6	180400	951	850000	631300	500000	**PF**	**102RF167**	**DRN**	**200L4**	3820	179
1.8	160500	846	850000	631300	500000	**PH**	**102RF167**	**DRN**	**200L4**	4840	178
2.0	139800	737	850000	631300	500000	**PHF**	**102RF167**	**DRN**	**200L4**	3880	179
2.2	124700	657	850000	631300	500000						
0.64	436500	2301	720000	513900	423000	**P**	**092RF167**	**DRN**	**200L4**	3930	176
0.73	385200	2031	720000	513900	423000	**PF**	**092RF167**	**DRN**	**200L4**	3230	177
0.94	297100	1566	720000	513900	423000	**PH**	**092RF167**	**DRN**	**200L4**	3940	176
1.1	256100	1350	720000	513900	423000	**PHF**	**092RF167**	**DRN**	**200L4**	3240	177
1.2	228500	1205	720000	513900	423000						
1.5	182800	964	720000	513900	423000	**P**	**092RF167**	**DRN**	**200L4**	3920	176
1.7	162600	857	720000	513900	423000	**PF**	**092RF167**	**DRN**	**200L4**	3220	177
2.0	141600	747	720000	513900	423000	**PH**	**092RF167**	**DRN**	**200L4**	3930	176
2.2	126400	666	720000	513900	423000	**PHF**	**092RF167**	**DRN**	**200L4**	3240	177
2.6	107700	568	720000	513900	423000						
0.67	417600	2201	597000	397100	359400						
0.76	368500	1943	646200	397100	359400	**P**	**082RF167**	**DRN**	**200L4**	3430	174
0.88	319500	1684	683000	397100	359400	**PF**	**082RF167**	**DRN**	**200L4**	2780	175
0.99	284200	1498	683000	397100	359400	**PH**	**082RF167**	**DRN**	**200L4**	3420	174
1.2	245000	1291	683000	397100	359400	**PHF**	**082RF167**	**DRN**	**200L4**	2770	175
1.4	199000	1049	683000	397100	359400						
0.97	288500	1521	500300	274600	245660	**P**	**072RF167**	**DRN**	**200L4**	2770	170
1.4	202000	1065	523000	274600	245660	**PF**	**072RF167**	**DRN**	**200L4**	2280	171
						PH	**072RF167**	**DRN**	**200L4**	2820	170
						PHF	**072RF167**	**DRN**	**200L4**	2330	171
1.1	257500	1358	523000	274600	245660	**P**	**072RF147**	**DRN**	**200L4**	2510	168
1.3	216400	1141	523000	274600	245660	**PF**	**072RF147**	**DRN**	**200L4**	2020	169
1.6	174800	922	523000	274600	245660	**PH**	**072RF147**	**DRN**	**200L4**	2570	168
						PHF	**072RF147**	**DRN**	**200L4**	2080	169
1.9	147700	779	523000	274600	245660	**P**	**072RF147**	**DRN**	**200L4**	2500	168
						PF	**072RF147**	**DRN**	**200L4**	2010	169
						PH	**072RF147**	**DRN**	**200L4**	2550	168
						PHF	**072RF147**	**DRN**	**200L4**	2060	169
1.6	180000	949	442900	209100	185660	**P**	**062RF147**	**DRN**	**200L4**	2090	166
						PF	**062RF147**	**DRN**	**200L4**	1730	167
						PH	**062RF147**	**DRN**	**200L4**	2080	166
						PHF	**062RF147**	**DRN**	**200L4**	1720	167
1.8	152100	802	461800	209100	185660	**P**	**062RF147**	**DRN**	**200L4**	2080	166
2.1	134200	708	472300	209100	185660	**PF**	**062RF147**	**DRN**	**200L4**	1710	167
2.4	116300	614	473000	209100	185660	**PH**	**062RF147**	**DRN**	**200L4**	2070	166
						PHF	**062RF147**	**DRN**	**200L4**	1700	167
1.7	163700	863	454300	209100	185660						
2.0	141700	747	468100	209100	185660	**P**	**062RF137**	**DRN**	**200L4**	1960	164
2.2	125000	659	473000	209100	185660	**PF**	**062RF137**	**DRN**	**200L4**	1600	165
2.6	107900	569	473000	209100	185660	**PH**	**062RF137**	**DRN**	**200L4**	1950	164
2.9	95500	503	473000	209100	185660	**PHF**	**062RF137**	**DRN**	**200L4**	1590	165
2.0	141700	747	340800	140600	124060						
2.2	125000	659	355500	140600	124060	**P**	**052RF137**	**DRN**	**200L4**	1480	160
2.6	107900	569	364000	140600	124060	**PF**	**052RF137**	**DRN**	**200L4**	1280	161
2.9	95500	503	364000	140600	124060	**PH**	**052RF137**	**DRN**	**200L4**	1470	160
3.5	80200	423	364000	140600	124060	**PHF**	**052RF137**	**DRN**	**200L4**	1270	161
2.6	107900	569	287300	111000	100170						
3.5	80200	423	313900	111000	100170	**P**	**042RF137**	**DRN**	**200L4**	1330	154
4.3	64800	342	308600	111000	100170	**PF**	**042RF137**	**DRN**	**200L4**	1140	155
5.0	56500	298	296100	111000	100170	**PH**	**042RF137**	**DRN**	**200L4**	1340	154
5.9	47400	250	281100	111000	100170	**PHF**	**042RF137**	**DRN**	**200L4**	1150	155
2.8	101600	536	294000	111000	100170						
3.3	86200	455	308800	111000	100170	**P**	**042RF107**	**DRN**	**200L4**	1230	152
3.7	75300	397	317800	111000	100170	**PF**	**042RF107**	**DRN**	**200L4**	1040	153
4.4	63700	336	306900	111000	100170	**PH**	**042RF107**	**DRN**	**200L4**	1230	152
4.8	58400	308	299200	111000	100170	**PHF**	**042RF107**	**DRN**	**200L4**	1040	153
5.7	49500	261	284800	111000	100170						

21915180/EN – 04/2015

P_m = 30 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2} f_{LC}<=7.5	M_{N2} f_{LC}>107.5					m	
min^{-1}	Nm		N	Nm	Nm					kg	
3.7	75300	397	215400	86800	69620						
4.4	63700	336	230600	86800	69620						
4.8	58400	308	236600	86800	69620						
5.7	49500	261	230500	86800	69620	**P**	**032RF107**	**DRN**	**200L4**	980	146
6.5	43300	228	221300	86800	69620	**PF**	**032RF107**	**DRN**	**200L4**	860	147
7.7	36600	193	210500	86800	69620	**PH**	**032RF107**	**DRN**	**200L4**	1000	146
8.6	32600	172	203400	86800	69620	**PHF**	**032RF107**	**DRN**	**200L4**	880	147
9.4	29900	158	198200	86800	58500						
11	25400	134	188600	86800	58500						
13	22200	117	181100	86800	58500						
15	18700	99	172300	86800	57100						
16	17100	91	167700	86800	32100	**P**	**032RF97**	**DRN**	**200L4**	940	144
						PF	**032RF97**	**DRN**	**200L4**	820	145
						PH	**032RF97**	**DRN**	**200L4**	960	144
						PHF	**032RF97**	**DRN**	**200L4**	840	145
4.8	58400	308	179000	64200	51190						
5.7	49500	261	193200	64200	51190	**P**	**022RF107**	**DRN**	**200L4**	900	140
6.5	43300	228	197000	64200	51190	**PF**	**022RF107**	**DRN**	**200L4**	800	141
7.7	36600	193	197000	64200	51190	**PH**	**022RF107**	**DRN**	**200L4**	920	140
8.6	32600	172	197000	64200	51190	**PHF**	**022RF107**	**DRN**	**200L4**	820	141
9.4	29900	158	197000	64200	51190						
8.6	32600	172	137200	46200	36810						
9.4	29900	158	133600	46200	36810	**P**	**012RF107**	**DRN**	**200L4**	750	134
11	25400	134	127200	46200	36810	**PF**	**012RF107**	**DRN**	**200L4**	680	135
13	22200	117	122100	46200	36810	**PH**	**012RF107**	**DRN**	**200L4**	770	134
15	18700	99	116200	46200	36810	**PHF**	**012RF107**	**DRN**	**200L4**	700	135
16	17100	91	113100	46200	32100	**P**	**012RF97**	**DRN**	**200L4**	710	132
						PF	**012RF97**	**DRN**	**200L4**	640	133
						PH	**012RF97**	**DRN**	**200L4**	720	132
						PHF	**012RF97**	**DRN**	**200L4**	650	133
11	24600	130	102100	29200	24830	**P**	**002RF107**	**DRN**	**200L4**	670	126
13	21500	114	98000	29200	24830	**PF**	**002RF107**	**DRN**	**200L4**	620	127
15	18200	96	93200	29200	24830	**PH**	**002RF107**	**DRN**	**200L4**	680	126
						PHF	**002RF107**	**DRN**	**200L4**	620	127
17	16600	88	90700	29200	24830	**P**	**002RF97**	**DRN**	**200L4**	630	124
						PF	**002RF97**	**DRN**	**200L4**	570	125
						PH	**002RF97**	**DRN**	**200L4**	630	124
						PHF	**002RF97**	**DRN**	**200L4**	570	125

P_m = 37 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2} f_{LC}<=7.5	M_{N2} f_{LC}>107.5					m	
min^{-1}	Nm		N	Nm	Nm					kg	
0.65	530600	2271	850000	631300	500000	**P**	**102RF167**	**DRN**	**225S4**	4810	178
0.74	468200	2004	850000	631300	500000	**PF**	**102RF167**	**DRN**	**225S4**	3860	179
0.96	361200	1546	850000	631300	500000	**PH**	**102RF167**	**DRN**	**225S4**	4870	178
1.1	311300	1332	850000	631300	500000	**PHF**	**102RF167**	**DRN**	**225S4**	3920	179
1.2	277800	1189	850000	631300	500000						
1.6	222200	951	850000	631300	500000	**P**	**102RF167**	**DRN**	**225S4**	4810	178
1.8	197600	846	850000	631300	500000	**PF**	**102RF167**	**DRN**	**225S4**	3850	179
2.0	172200	737	850000	631300	500000	**PH**	**102RF167**	**DRN**	**225S4**	4870	178
2.2	153600	657	850000	631300	500000	**PHF**	**102RF167**	**DRN**	**225S4**	3910	179
2.6	130900	561	850000	631300	500000						
0.73	474400	2031	707900	513900	423000	**P**	**092RF167**	**DRN**	**225S4**	3960	176
0.95	365900	1566	720000	513900	423000	**PF**	**092RF167**	**DRN**	**225S4**	3260	177
1.1	315400	1350	720000	513900	423000	**PH**	**092RF167**	**DRN**	**225S4**	3970	176
						PHF	**092RF167**	**DRN**	**225S4**	3270	177

21915180/EN – 04/2015

P_m = 37 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}						m	
				f_{LC}<=7.5	f_{LC}>107.5						
min^{-1}	Nm		N	Nm	Nm					kg	
1.2	281500	1205	720000	513900	423000						
1.5	225200	964	720000	513900	423000						
1.7	200200	857	720000	513900	423000	**P**	**092RF167**	**DRN**	**225S4**	3950	176
2.0	174400	747	720000	513900	423000	**PF**	**092RF167**	**DRN**	**225S4**	3250	177
2.2	155600	666	720000	513900	423000	**PH**	**092RF167**	**DRN**	**225S4**	3960	176
2.6	132600	568	720000	513900	423000	**PHF**	**092RF167**	**DRN**	**225S4**	3270	177
3.2	109900	470	720000	513900	423000						
0.88	393500	1684	622200	397100	359400						
0.99	350100	1498	662600	397100	359400	**P**	**082RF167**	**DRN**	**225S4**	3460	174
1.2	301700	1291	683000	397100	359400	**PF**	**082RF167**	**DRN**	**225S4**	2810	175
1.4	245200	1049	683000	397100	359400	**PH**	**082RF167**	**DRN**	**225S4**	3450	174
1.7	207900	890	683000	397100	359400	**PHF**	**082RF167**	**DRN**	**225S4**	2800	175
1.8	191600	820	683000	397100	359400	**P**	**082RF167**	**DRN**	**225S4**	3450	174
						PF	**082RF167**	**DRN**	**225S4**	2800	175
						PH	**082RF167**	**DRN**	**225S4**	3450	174
						PHF	**082RF167**	**DRN**	**225S4**	2800	175
1.4	248800	1065	523000	274600	245660	**P**	**072RF167**	**DRN**	**225S4**	2800	170
						PF	**072RF167**	**DRN**	**225S4**	2310	171
						PH	**072RF167**	**DRN**	**225S4**	2860	170
						PHF	**072RF167**	**DRN**	**225S4**	2360	171
1.6	215300	922	523000	274600	245660	**P**	**072RF147**	**DRN**	**225S4**	2550	168
						PF	**072RF147**	**DRN**	**225S4**	2050	169
						PH	**072RF147**	**DRN**	**225S4**	2600	168
						PHF	**072RF147**	**DRN**	**225S4**	2110	169
1.9	181900	779	523000	274600	245660	**P**	**072RF147**	**DRN**	**225S4**	2530	168
2.2	160500	687	523000	274600	245660	**PF**	**072RF147**	**DRN**	**225S4**	2040	169
						PH	**072RF147**	**DRN**	**225S4**	2590	168
						PHF	**072RF147**	**DRN**	**225S4**	2090	169
1.8	187300	802	437400	209100	185660	**P**	**062RF147**	**DRN**	**225S4**	2110	166
2.1	165300	708	453200	209100	185660	**PF**	**062RF147**	**DRN**	**225S4**	1750	167
2.4	143300	614	467100	209100	185660	**PH**	**062RF147**	**DRN**	**225S4**	2100	166
2.7	127500	546	473000	209100	185660	**PHF**	**062RF147**	**DRN**	**225S4**	1730	167
2.0	174500	747	446800	209100	185660						
2.2	154000	659	460600	209100	185660	**P**	**062RF137**	**DRN**	**225S4**	1990	164
2.6	133000	569	473000	209100	185660	**PF**	**062RF137**	**DRN**	**225S4**	1630	165
2.9	117600	503	473000	209100	185660	**PH**	**062RF137**	**DRN**	**225S4**	1980	164
3.5	98800	423	473000	209100	185660	**PHF**	**062RF137**	**DRN**	**225S4**	1620	165
2.6	133000	569	348800	140600	124060	**P**	**052RF137**	**DRN**	**225S4**	1510	160
2.9	117600	503	361500	140600	124060	**PF**	**052RF137**	**DRN**	**225S4**	1310	161
3.5	98800	423	364000	140600	124060	**PH**	**052RF137**	**DRN**	**225S4**	1500	160
4.3	79800	342	355600	140600	124060	**PHF**	**052RF137**	**DRN**	**225S4**	1300	161
3.5	98800	423	296900	111000	100170						
4.3	79800	342	308400	111000	100170	**P**	**042RF137**	**DRN**	**225S4**	1360	154
5.0	69500	298	295900	111000	100170	**PF**	**042RF137**	**DRN**	**225S4**	1170	155
5.9	58400	250	280900	111000	100170	**PH**	**042RF137**	**DRN**	**225S4**	1370	154
7.3	47200	202	263500	111000	100170	**PHF**	**042RF137**	**DRN**	**225S4**	1180	155
3.7	92800	397	302800	111000	100170	**P**	**042RF107**	**DRN**	**225S4**	1260	152
4.4	78500	336	306900	111000	100170	**PF**	**042RF107**	**DRN**	**225S4**	1070	153
						PH	**042RF107**	**DRN**	**225S4**	1260	152
						PHF	**042RF107**	**DRN**	**225S4**	1070	153
8.5	40900	175	204300	86800	69620	**P**	**032RF137**	**DRN**	**225S4**	1120	148
9.7	35600	153	196000	86800	69620	**PF**	**032RF137**	**DRN**	**225S4**	990	149
						PH	**032RF137**	**DRN**	**225S4**	1140	148
						PHF	**032RF137**	**DRN**	**225S4**	1020	149
4.4	78500	336	210800	86800	69620						
4.8	72000	308	220100	86800	69620						
5.7	61000	261	230400	86800	69620	**P**	**032RF107**	**DRN**	**225S4**	1010	146
6.5	53300	228	221200	86800	69620	**PF**	**032RF107**	**DRN**	**225S4**	890	147
7.7	45100	193	210400	86800	69620	**PH**	**032RF107**	**DRN**	**225S4**	1030	146
11	31300	134	188500	86800	58500	**PHF**	**032RF107**	**DRN**	**225S4**	910	147
13	27300	117	181100	86800	58500						
15	23100	99	172200	86800	57100						

21915180/EN – 04/2015

P_m = 37 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}							m	
				f_{LC}<=7.5	f_{LC}>107.5							
min^{-1}	Nm		N	Nm	Nm						kg	
7.7	45100	193	197000	64200	51190	**P**	**022RF107**	**DRN**	**225S4**		930	140
8.6	40200	172	197000	64200	51190	**PF**	**022RF107**	**DRN**	**225S4**		830	141
9.4	36900	158	197000	64200	51190	**PH**	**022RF107**	**DRN**	**225S4**		950	140
						PHF	**022RF107**	**DRN**	**225S4**		850	141
11	31300	134	127100	46200	36810	**P**	**012RF107**	**DRN**	**225S4**		790	134
13	27300	117	122100	46200	36810	**PF**	**012RF107**	**DRN**	**225S4**		720	135
15	23100	99	116100	46200	36810	**PH**	**012RF107**	**DRN**	**225S4**		800	134
						PHF	**012RF107**	**DRN**	**225S4**		730	135

P_m = 45 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}							m	
				f_{LC}<=7.5	f_{LC}>107.5							
min^{-1}	Nm		N	Nm	Nm						kg	
0.74	569500	2004	835500	631300	500000	**P**	**102RF167**	**DRN**	**225M4**		4810	178
0.96	439300	1546	850000	631300	500000	**PF**	**102RF167**	**DRN**	**225M4**		3860	179
1.1	378600	1332	850000	631300	500000	**PH**	**102RF167**	**DRN**	**225M4**		4870	178
						PHF	**102RF167**	**DRN**	**225M4**		3920	179
1.2	337900	1189	850000	631300	500000							
1.6	270300	951	850000	631300	500000							
1.8	240400	846	850000	631300	500000	**P**	**102RF167**	**DRN**	**225M4**		4810	178
2.0	209400	737	850000	631300	500000	**PF**	**102RF167**	**DRN**	**225M4**		3850	179
2.2	186800	657	850000	631300	500000	**PH**	**102RF167**	**DRN**	**225M4**		4870	178
2.6	159200	561	850000	631300	500000	**PHF**	**102RF167**	**DRN**	**225M4**		3910	179
3.2	131900	464	850000	631300	500000							
0.95	445000	1566	720000	513900	423000	**P**	**092RF167**	**DRN**	**225M4**		3960	176
1.1	383600	1350	720000	513900	423000	**PF**	**092RF167**	**DRN**	**225M4**		3260	177
						PH	**092RF167**	**DRN**	**225M4**		3970	176
						PHF	**092RF167**	**DRN**	**225M4**		3270	177
1.2	342300	1205	720000	513900	423000							
1.5	273900	964	720000	513900	423000							
1.7	243500	857	720000	513900	423000	**P**	**092RF167**	**DRN**	**225M4**		3950	176
2.0	212200	747	720000	513900	423000	**PF**	**092RF167**	**DRN**	**225M4**		3250	177
2.2	189300	666	720000	513900	423000	**PH**	**092RF167**	**DRN**	**225M4**		3960	176
2.6	161300	568	720000	513900	423000	**PHF**	**092RF167**	**DRN**	**225M4**		3270	177
3.2	133700	470	720000	513900	423000							
3.7	114100	402	720000	513900	423000							
1.2	367000	1291	647600	397100	359400	**P**	**082RF167**	**DRN**	**225M4**		3460	174
1.4	298200	1049	683000	397100	359400	**PF**	**082RF167**	**DRN**	**225M4**		2810	175
1.7	252900	890	683000	397100	359400	**PH**	**082RF167**	**DRN**	**225M4**		3450	174
						PHF	**082RF167**	**DRN**	**225M4**		2800	175
1.8	233000	820	683000	397100	359400	**P**	**082RF167**	**DRN**	**225M4**		3450	174
2.1	203000	714	683000	397100	359400	**PF**	**082RF167**	**DRN**	**225M4**		2800	175
2.3	181100	637	683000	397100	359400	**PH**	**082RF167**	**DRN**	**225M4**		3450	174
						PHF	**082RF167**	**DRN**	**225M4**		2800	175
1.6	261800	922	523000	274600	245660	**P**	**072RF147**	**DRN**	**225M4**		2550	168
						PF	**072RF147**	**DRN**	**225M4**		2050	169
						PH	**072RF147**	**DRN**	**225M4**		2600	168
						PHF	**072RF147**	**DRN**	**225M4**		2110	169
1.9	221200	779	523000	274600	245660	**P**	**072RF147**	**DRN**	**225M4**		2530	168
2.2	195200	687	523000	274600	245660	**PF**	**072RF147**	**DRN**	**225M4**		2040	169
2.8	150600	530	523000	274600	245660	**PH**	**072RF147**	**DRN**	**225M4**		2590	168
3.2	129800	457	523000	274600	245660	**PHF**	**072RF147**	**DRN**	**225M4**		2090	169
2.1	201000	708	426500	209100	185660							
2.4	174300	614	447000	209100	185660	**P**	**062RF147**	**DRN**	**225M4**		2110	166
2.7	155100	546	459900	209100	185660	**PF**	**062RF147**	**DRN**	**225M4**		1750	167
3.9	108600	382	459800	209100	185660	**PH**	**062RF147**	**DRN**	**225M4**		2100	166
4.6	92100	324	437700	209100	185660	**PHF**	**062RF147**	**DRN**	**225M4**		1730	167
5.2	80800	284	420900	209100	185660							
2.6	161700	569	455600	209100	185660	**P**	**062RF137**	**DRN**	**225M4**		1990	164
2.9	143000	503	467200	209100	185660	**PF**	**062RF137**	**DRN**	**225M4**		1630	165
3.5	120200	423	473000	209100	185660	**PH**	**062RF137**	**DRN**	**225M4**		1980	164
						PHF	**062RF137**	**DRN**	**225M4**		1620	165

21915180/EN – 04/2015

P_m = 45 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}						m	
				f_{LC}<=7.5	f_{LC}>107.5						
min^{-1}	Nm		N	Nm	Nm					kg	
6.4	65600	231	316400	140600	124060	**P**	**052RF147**	**DRN**	**225M4**	1630	162
						PF	**052RF147**	**DRN**	**225M4**	1430	163
						PH	**052RF147**	**DRN**	**225M4**	1620	162
						PHF	**052RF147**	**DRN**	**225M4**	1420	163
3.5	120200	423	359400	140600	124060	**P**	**052RF137**	**DRN**	**225M4**	1510	160
4.3	97100	342	355600	140600	124060	**PF**	**052RF137**	**DRN**	**225M4**	1310	161
						PH	**052RF137**	**DRN**	**225M4**	1500	160
						PHF	**052RF137**	**DRN**	**225M4**	1300	161
7.6	55700	196	261100	111000	100170	**P**	**042RF147**	**DRN**	**225M4**	1480	156
						PF	**042RF147**	**DRN**	**225M4**	1290	157
						PH	**042RF147**	**DRN**	**225M4**	1480	156
						PHF	**042RF147**	**DRN**	**225M4**	1290	157
4.3	97100	342	298700	111000	100170	**P**	**042RF137**	**DRN**	**225M4**	1360	154
5.0	84600	298	295900	111000	100170	**PF**	**042RF137**	**DRN**	**225M4**	1170	155
5.9	71100	250	280900	111000	100170	**PH**	**042RF137**	**DRN**	**225M4**	1370	154
7.3	57400	202	263500	111000	100170	**PHF**	**042RF137**	**DRN**	**225M4**	1180	155
5.9	71100	250	221300	86800	69620						
7.3	57400	202	213300	86800	69620	**P**	**032RF137**	**DRN**	**225M4**	1120	148
8.5	49700	175	204300	86800	69620	**PF**	**032RF137**	**DRN**	**225M4**	990	149
9.7	43300	153	196000	86800	69620	**PH**	**032RF137**	**DRN**	**225M4**	1140	148
12	36400	128	186100	86800	69620	**PHF**	**032RF137**	**DRN**	**225M4**	1020	149
14	29400	104	174600	86800	69620						
6.5	64900	228	221200	86800	69620	**P**	**032RF107**	**DRN**	**225M4**	1010	146
7.7	54900	193	210400	86800	69620	**PF**	**032RF107**	**DRN**	**225M4**	890	147
						PH	**032RF107**	**DRN**	**225M4**	1030	146
						PHF	**032RF107**	**DRN**	**225M4**	910	147
8.5	49700	175	192900	64200	51190	**P**	**022RF137**	**DRN**	**225M4**	1040	142
9.7	43300	153	197000	64200	51190	**PF**	**022RF137**	**DRN**	**225M4**	930	143
12	36400	128	197000	64200	51190	**PH**	**022RF137**	**DRN**	**225M4**	1050	142
						PHF	**022RF137**	**DRN**	**225M4**	950	143
13	33200	117	191700	64200	51190	**P**	**022RF107**	**DRN**	**225M4**	930	140
15	28100	99	182200	64200	51190	**PF**	**022RF107**	**DRN**	**225M4**	830	141
						PH	**022RF107**	**DRN**	**225M4**	950	140
						PHF	**022RF107**	**DRN**	**225M4**	850	141
13	33200	117	122100	46200	36810	**P**	**012RF107**	**DRN**	**225M4**	790	134
15	28100	99	116100	46200	36810	**PF**	**012RF107**	**DRN**	**225M4**	720	135
						PH	**012RF107**	**DRN**	**225M4**	800	134
						PHF	**012RF107**	**DRN**	**225M4**	730	135

P_m = 55 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}						m	
				f_{LC}<=7.5	f_{LC}>107.5						
min^{-1}	Nm		N	Nm	Nm					kg	
0.96	536900	1546	850000	631300	500000	**P**	**102RF167**	**DRN**	**250M4**	4960	178
1.1	462800	1332	850000	631300	500000	**PF**	**102RF167**	**DRN**	**250M4**	4010	179
						PH	**102RF167**	**DRN**	**250M4**	5020	178
						PHF	**102RF167**	**DRN**	**250M4**	4070	179
1.6	330400	951	850000	631300	500000						
1.8	293800	846	850000	631300	500000						
2.0	256000	737	850000	631300	500000	**P**	**102RF167**	**DRN**	**250M4**	4960	178
2.2	228400	657	850000	631300	500000	**PF**	**102RF167**	**DRN**	**250M4**	4000	179
2.6	194600	561	850000	631300	500000	**PH**	**102RF167**	**DRN**	**250M4**	5020	178
3.2	161300	464	850000	631300	500000	**PHF**	**102RF167**	**DRN**	**250M4**	4060	179
3.7	137600	396	850000	631300	500000						
1.1	468900	1350	713500	513900	423000	**P**	**092RF167**	**DRN**	**250M4**	4110	176
						PF	**092RF167**	**DRN**	**250M4**	3410	177
						PH	**092RF167**	**DRN**	**250M4**	4120	176
						PHF	**092RF167**	**DRN**	**250M4**	3420	177

21915180/EN – 04/2015

P_m = 55 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}							m	
				f_{LC}<=7.5	f_{LC}>107.5							
min^{-1}	Nm		N	Nm	Nm						kg	
1.5	334700	964	720000	513900	423000							
1.7	297700	857	720000	513900	423000							
2.0	259300	747	720000	513900	423000	**P**	**092RF167**	**DRN**	**250M4**		4100	176
2.2	231400	666	720000	513900	423000	**PF**	**092RF167**	**DRN**	**250M4**		3410	177
2.6	197200	568	720000	513900	423000	**PH**	**092RF167**	**DRN**	**250M4**		4120	176
3.2	163400	470	720000	513900	423000	**PHF**	**092RF167**	**DRN**	**250M4**		3420	177
3.7	139400	402	720000	513900	423000							
1.4	364400	1049	649900	397100	359400	**P**	**082RF167**	**DRN**	**250M4**		3610	174
1.7	309100	890	683000	397100	359400	**PF**	**082RF167**	**DRN**	**250M4**		2960	175
						PH	**082RF167**	**DRN**	**250M4**		3600	174
						PHF	**082RF167**	**DRN**	**250M4**		2950	175
1.8	284800	820	683000	397100	359400	**P**	**082RF167**	**DRN**	**250M4**		3600	174
2.1	248100	714	683000	397100	359400	**PF**	**082RF167**	**DRN**	**250M4**		2950	175
2.3	221400	637	683000	397100	359400	**PH**	**082RF167**	**DRN**	**250M4**		3600	174
2.7	188700	543	683000	397100	359400	**PHF**	**082RF167**	**DRN**	**250M4**		2950	175
2.5	203800	587	683000	397100	359400	**P**	**082RF147**	**DRN**	**250M4**		3340	172
2.8	181300	522	683000	397100	359400	**PF**	**082RF147**	**DRN**	**250M4**		2690	173
						PH	**082RF147**	**DRN**	**250M4**		3330	172
						PHF	**082RF147**	**DRN**	**250M4**		2680	173
1.9	270400	779	520600	274600	245660							
2.2	238600	687	523000	274600	245660	**P**	**072RF147**	**DRN**	**250M4**		2680	168
2.8	184000	530	523000	274600	245660	**PF**	**072RF147**	**DRN**	**250M4**		2190	169
3.2	158600	457	523000	274600	245660	**PH**	**072RF147**	**DRN**	**250M4**		2730	168
4.0	128900	371	523000	274600	245660	**PHF**	**072RF147**	**DRN**	**250M4**		2240	169
2.4	213000	614	416400	209100	185660							
2.7	189500	546	435700	209100	185660	**P**	**062RF147**	**DRN**	**250M4**		2260	166
3.9	132700	382	459800	209100	185660	**PF**	**062RF147**	**DRN**	**250M4**		1890	167
4.6	112500	324	437700	209100	185660	**PH**	**062RF147**	**DRN**	**250M4**		2250	166
5.2	98800	284	420900	209100	185660	**PHF**	**062RF147**	**DRN**	**250M4**		1880	167
6.4	80200	231	395500	209100	185660							
2.9	174800	503	446600	209100	185660	**P**	**062RF137**	**DRN**	**250M4**		2140	164
3.5	146900	423	464900	209100	185660	**PF**	**062RF137**	**DRN**	**250M4**		1780	165
4.3	118700	342	444600	209100	185660	**PH**	**062RF137**	**DRN**	**250M4**		2130	164
5.0	103400	298	426600	209100	185660	**PHF**	**062RF137**	**DRN**	**250M4**		1770	165
6.4	80200	231	316400	140600	124060	**P**	**052RF147**	**DRN**	**250M4**		1770	162
7.6	68000	196	301100	140600	124060	**PF**	**052RF147**	**DRN**	**250M4**		1570	163
						PH	**052RF147**	**DRN**	**250M4**		1770	162
						PHF	**052RF147**	**DRN**	**250M4**		1570	163
4.3	118700	342	355600	140600	124060							
5.0	103400	298	341300	140600	124060	**P**	**052RF137**	**DRN**	**250M4**		1660	160
5.9	86900	250	324000	140600	124060	**PF**	**052RF137**	**DRN**	**250M4**		1460	161
6.8	75300	217	310400	140600	124060	**PH**	**052RF137**	**DRN**	**250M4**		1650	160
7.3	70200	202	303900	140600	124060	**PHF**	**052RF137**	**DRN**	**250M4**		1450	161
7.6	68000	196	261100	111000	100170							
8.9	57700	166	248400	111000	100170	**P**	**042RF147**	**DRN**	**250M4**		1630	156
10	50600	146	238900	111000	100170	**PF**	**042RF147**	**DRN**	**250M4**		1440	157
13	41100	118	224500	111000	100170	**PH**	**042RF147**	**DRN**	**250M4**		1630	156
15	34800	101	213600	111000	100170	**PHF**	**042RF147**	**DRN**	**250M4**		1440	157
5.0	103400	298	292200	111000	100170							
5.9	86900	250	280900	111000	100170							
7.3	70200	202	263500	111000	100170	**P**	**042RF137**	**DRN**	**250M4**		1510	154
8.5	60800	175	252400	111000	100170	**PF**	**042RF137**	**DRN**	**250M4**		1320	155
9.7	53000	153	242200	111000	100170	**PH**	**042RF137**	**DRN**	**250M4**		1520	154
12	44500	128	229900	111000	100170	**PHF**	**042RF137**	**DRN**	**250M4**		1330	155
14	35900	104	215600	111000	90600							
8.5	60800	175	204300	86800	69620	**P**	**032RF137**	**DRN**	**250M4**		1270	148
9.7	53000	153	196000	86800	69620	**PF**	**032RF137**	**DRN**	**250M4**		1140	149
						PH	**032RF137**	**DRN**	**250M4**		1290	148
						PHF	**032RF137**	**DRN**	**250M4**		1170	149
12	44500	128	197000	64200	51190	**P**	**022RF137**	**DRN**	**250M4**		1190	142
14	35900	104	184800	64200	51190	**PF**	**022RF137**	**DRN**	**250M4**		1080	143
						PH	**022RF137**	**DRN**	**250M4**		1200	142
						PHF	**022RF137**	**DRN**	**250M4**		1100	143

21915180/EN – 04/2015

P_m = 75 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}						m	
				f_{LC}<=7.5	f_{LC}>107.5						
min^{-1}	Nm		N	Nm	Nm					kg	
1.6	450500	951	850000	631300	500000						
1.8	400700	846	850000	631300	500000						
2.0	349100	737	850000	631300	500000	**P**	**102RF167**	**DRN**	**280S4**	5010	178
2.2	311400	657	850000	631300	500000	**PF**	**102RF167**	**DRN**	**280S4**	4050	179
2.6	265400	561	850000	631300	500000	**PH**	**102RF167**	**DRN**	**280S4**	5070	178
3.2	219900	464	850000	631300	500000	**PHF**	**102RF167**	**DRN**	**280S4**	4110	179
3.7	187700	396	850000	631300	500000						
1.5	456500	964	720000	513900	423000						
1.7	405900	857	720000	513900	423000						
2.0	353600	747	720000	513900	423000	**P**	**092RF167**	**DRN**	**280S4**	4150	176
2.2	315500	666	720000	513900	423000	**PF**	**092RF167**	**DRN**	**280S4**	3450	177
2.6	268900	568	720000	513900	423000	**PH**	**092RF167**	**DRN**	**280S4**	4160	176
3.2	222800	470	720000	513900	423000	**PHF**	**092RF167**	**DRN**	**280S4**	3470	177
3.7	190200	402	720000	513900	423000						
2.1	338300	714	672600	397100	359400	**P**	**082RF167**	**DRN**	**280S4**	3650	174
2.3	301900	637	683000	397100	359400	**PF**	**082RF167**	**DRN**	**280S4**	3000	175
2.7	257300	543	683000	397100	359400	**PH**	**082RF167**	**DRN**	**280S4**	3650	174
						PHF	**082RF167**	**DRN**	**280S4**	3000	175
2.8	251000	530	523000	274600	245660	**P**	**072RF147**	**DRN**	**280S4**	2730	168
3.2	216300	457	523000	274600	245660	**PF**	**072RF147**	**DRN**	**280S4**	2240	169
4.0	175700	371	523000	274600	245660	**PH**	**072RF147**	**DRN**	**280S4**	2780	168
						PHF	**072RF147**	**DRN**	**280S4**	2290	169
3.9	181000	382	442100	209100	185660	**P**	**062RF147**	**DRN**	**280S4**	2310	166
4.6	153500	324	437700	209100	185660	**PF**	**062RF147**	**DRN**	**280S4**	1940	167
5.2	134700	284	420900	209100	185660	**PH**	**062RF147**	**DRN**	**280S4**	2300	166
6.4	109400	231	395500	209100	185660	**PHF**	**062RF147**	**DRN**	**280S4**	1930	167
6.4	109400	231	316400	140600	124060	**P**	**052RF147**	**DRN**	**280S4**	1820	162
7.6	92800	196	301100	140600	124060	**PF**	**052RF147**	**DRN**	**280S4**	1620	163
8.9	78700	166	286500	140600	124060	**PH**	**052RF147**	**DRN**	**280S4**	1820	162
						PHF	**052RF147**	**DRN**	**280S4**	1620	163
7.6	92800	196	261100	111000	100170						
8.9	78700	166	248400	111000	100170	**P**	**042RF147**	**DRN**	**280S4**	1680	156
10	69000	146	238900	111000	100170	**PF**	**042RF147**	**DRN**	**280S4**	1490	157
13	56100	118	224500	111000	100170	**PH**	**042RF147**	**DRN**	**280S4**	1680	156
15	47500	101	213600	111000	100170	**PHF**	**042RF147**	**DRN**	**280S4**	1490	157
10	69000	146	193400	86800	69620	**P**	**032RF147**	**DRN**	**280S4**	1430	150
13	56100	118	181700	86800	69620	**PF**	**032RF147**	**DRN**	**280S4**	1310	151
15	47500	101	172900	86800	69620	**PH**	**032RF147**	**DRN**	**280S4**	1450	150
						PHF	**032RF147**	**DRN**	**280S4**	1330	151

P_m = 90 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}						m	
				f_{LC}<=7.5	f_{LC}>107.5						
min^{-1}	Nm		N	Nm	Nm					kg	
1.6	541000	951	850000	631300	500000						
1.8	481100	846	850000	631300	500000						
2.0	419200	737	850000	631300	500000	**P**	**102RF167**	**DRN**	**280M4**	5120	178
2.2	374000	657	850000	631300	500000	**PF**	**102RF167**	**DRN**	**280M4**	4170	179
2.6	318800	561	850000	631300	500000	**PH**	**102RF167**	**DRN**	**280M4**	5180	178
3.2	264100	464	850000	631300	500000	**PHF**	**102RF167**	**DRN**	**280M4**	4230	179
3.7	225400	396	850000	631300	500000						
1.7	487500	857	694300	513900	423000						
2.0	424700	747	720000	513900	423000	**P**	**092RF167**	**DRN**	**280M4**	4270	176
2.2	378900	666	720000	513900	423000	**PF**	**092RF167**	**DRN**	**280M4**	3570	177
2.6	322900	568	720000	513900	423000	**PH**	**092RF167**	**DRN**	**280M4**	4280	176
3.2	267600	470	720000	513900	423000	**PHF**	**092RF167**	**DRN**	**280M4**	3580	177
3.7	228400	402	720000	513900	423000						
2.3	362500	637	651700	397100	359400	**P**	**082RF167**	**DRN**	**280M4**	3770	174
2.7	309000	543	683000	397100	359400	**PF**	**082RF167**	**DRN**	**280M4**	3120	175
						PH	**082RF167**	**DRN**	**280M4**	3760	174
						PHF	**082RF167**	**DRN**	**280M4**	3110	175

21915180/EN – 04/2015

P_m = 90 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}							m	
				f_{LC}<=7.5	f_{LC}>107.5							
min^{-1}	Nm		N	Nm	Nm						kg	
3.2	259800	457	523000	274600	245660	**P**	**072RF147**	**DRN**	**280M4**		2840	168
4.0	211100	371	523000	274600	245660	**PF**	**072RF147**	**DRN**	**280M4**		2350	169
						PH	**072RF147**	**DRN**	**280M4**		2900	168
						PHF	**072RF147**	**DRN**	**280M4**		2410	169
4.6	184300	324	437700	209100	185660	**P**	**062RF147**	**DRN**	**280M4**		2420	166
5.2	161700	284	420900	209100	185660	**PF**	**062RF147**	**DRN**	**280M4**		2060	167
6.4	131400	231	395500	209100	185660	**PH**	**062RF147**	**DRN**	**280M4**		2410	166
						PHF	**062RF147**	**DRN**	**280M4**		2050	167
7.6	111400	196	301100	140600	124060	**P**	**052RF147**	**DRN**	**280M4**		1940	162
						PF	**052RF147**	**DRN**	**280M4**		1740	163
						PH	**052RF147**	**DRN**	**280M4**		1930	162
						PHF	**052RF147**	**DRN**	**280M4**		1730	163
8.9	94500	166	248500	111000	100170	**P**	**042RF147**	**DRN**	**280M4**		1790	156
10	82900	146	238900	111000	100170	**PF**	**042RF147**	**DRN**	**280M4**		1600	157
12	67300	118	224500	111000	100170	**PH**	**042RF147**	**DRN**	**280M4**		1800	156
15	57100	101	213700	111000	100170	**PHF**	**042RF147**	**DRN**	**280M4**		1610	157
15	57100	101	173000	86800	69620	**P**	**032RF147**	**DRN**	**280M4**		1550	150
						PF	**032RF147**	**DRN**	**280M4**		1420	151
						PH	**032RF147**	**DRN**	**280M4**		1570	150
						PHF	**032RF147**	**DRN**	**280M4**		1450	151

P_m = 110 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}							m	
				f_{LC}<=7.5	f_{LC}>107.5							
min^{-1}	Nm		N	Nm	Nm						kg	
2.0	509900	737	850000	631300	500000	**P**	**102RF167**	**DRN**	**315S4**		5360	178
2.3	454900	657	850000	631300	500000	**PF**	**102RF167**	**DRN**	**315S4**		4410	179
2.6	387800	561	850000	631300	500000	**PH**	**102RF167**	**DRN**	**315S4**		5430	178
3.2	321300	464	850000	631300	500000	**PHF**	**102RF167**	**DRN**	**315S4**		4470	179
3.8	274200	396	850000	631300	500000							
2.0	516600	747	662000	513900	423000	**P**	**092RF167**	**DRN**	**315S4**		4510	176
2.2	460900	666	720000	513900	423000	**PF**	**092RF167**	**DRN**	**315S4**		3810	177
2.6	392900	568	720000	513900	423000	**PH**	**092RF167**	**DRN**	**315S4**		4520	176
3.2	325500	470	720000	513900	423000	**PHF**	**092RF167**	**DRN**	**315S4**		3830	177
3.7	277800	402	720000	513900	423000							

P_m = 132 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}							m	
				f_{LC}<=7.5	f_{LC}>107.5							
min^{-1}	Nm		N	Nm	Nm						kg	
2.0	611900	737	803400	631300	500000	**P**	**102RF167**	**DRN**	**315M4**		5390	178
2.3	545900	657	850000	631300	500000	**PF**	**102RF167**	**DRN**	**315M4**		4430	179
2.6	465300	561	850000	631300	500000	**PH**	**102RF167**	**DRN**	**315M4**		5450	178
3.2	385500	464	850000	631300	500000	**PHF**	**102RF167**	**DRN**	**315M4**		4490	179
3.8	329000	396	850000	631300	500000							
2.6	471500	568	710800	513900	423000	**P**	**092RF167**	**DRN**	**315M4**		4530	176
3.2	390600	470	720000	513900	423000	**PF**	**092RF167**	**DRN**	**315M4**		3830	177
3.7	333400	402	720000	513900	423000	**PH**	**092RF167**	**DRN**	**315M4**		4540	176
						PHF	**092RF167**	**DRN**	**315M4**		3850	177

P_m = 160 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}							m	
				f_{LC}<=7.5	f_{LC}>107.5							
min^{-1}	Nm		N	Nm	Nm						kg	
2.6	564800	561	838900	631300	500000	**P**	**102RF167**	**DRN**	**315L4**		5520	178
3.2	468000	464	850000	631300	500000	**PF**	**102RF167**	**DRN**	**315L4**		4560	179
3.8	399400	396	850000	631300	500000	**PH**	**102RF167**	**DRN**	**315L4**		5580	178
						PHF	**102RF167**	**DRN**	**315L4**		4620	179

21915180/EN – 04/2015

P_m = 160 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}							m	
				f_{LC}<=7.5	f_{LC}>107.5							
min^{-1}	Nm		N	Nm	Nm						kg	
3.2	474100	470	708100	513900	423000	**P**	**092RF167**	**DRN**	**315L4**		4660	176
3.7	404600	402	720000	513900	423000	**PF**	**092RF167**	**DRN**	**315L4**		3970	177
						PH	**092RF167**	**DRN**	**315L4**		4680	176
						PHF	**092RF167**	**DRN**	**315L4**		3980	177

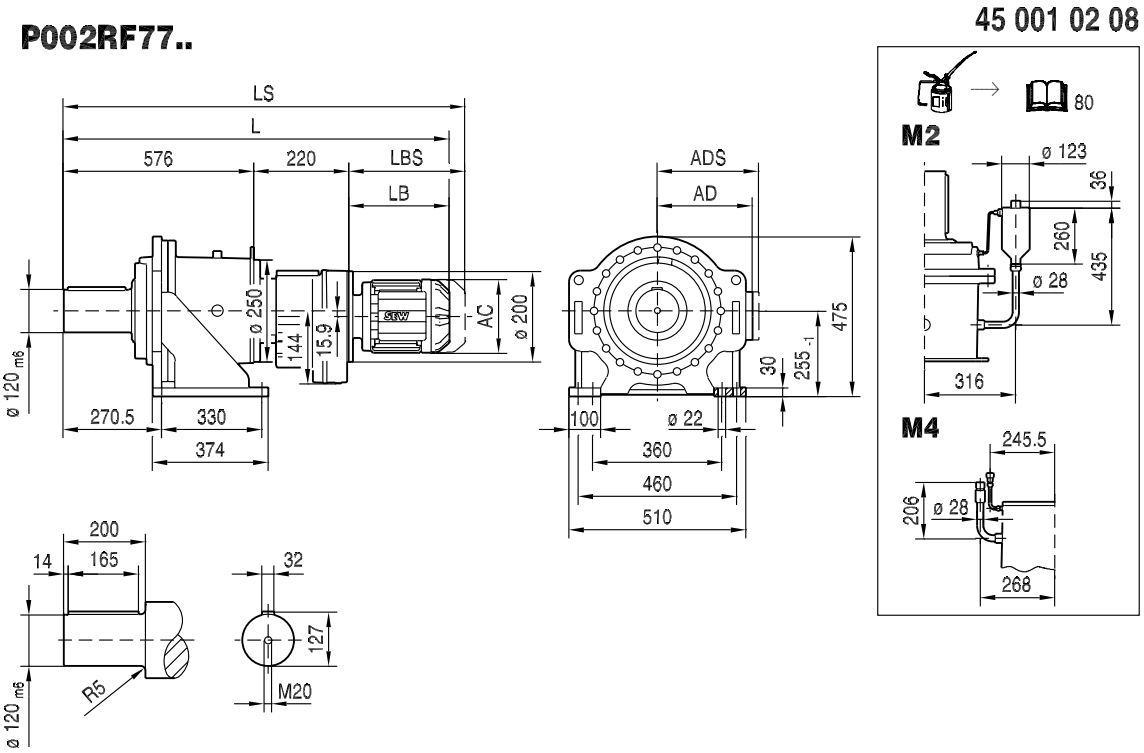
P_m = 200 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}							m	
				f_{LC}<=7.5	f_{LC}>107.5							
min^{-1}	Nm		N	Nm	Nm						kg	
3.2	583800	464	825000	631300	500000	**P**	**102RF167**	**DRN**	**315H4**		5630	178
3.8	498200	396	850000	631300	500000	**PF**	**102RF167**	**DRN**	**315H4**		4680	179
						PH	**102RF167**	**DRN**	**315H4**		5700	178
						PHF	**102RF167**	**DRN**	**315H4**		4740	179
3.7	504800	402	675400	513900	423000	**P**	**092RF167**	**DRN**	**315H4**		4780	176
						PF	**092RF167**	**DRN**	**315H4**		4080	177
						PH	**092RF167**	**DRN**	**315H4**		4790	176
						PHF	**092RF167**	**DRN**	**315H4**		4100	177

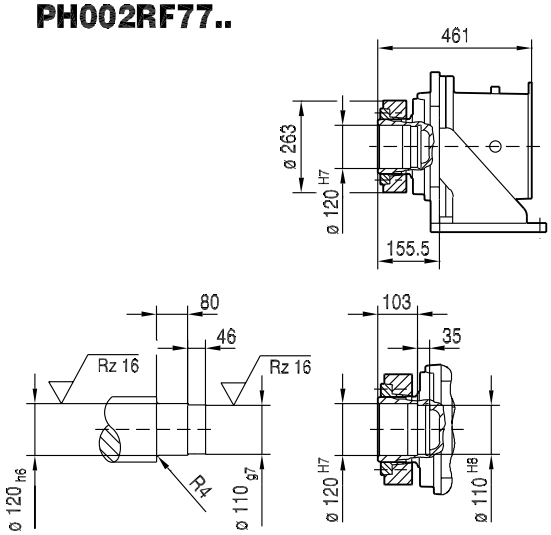
21915180/EN – 04/2015

10.3 Dimension sheets [mm]

P002RF77..



PH002RF77..

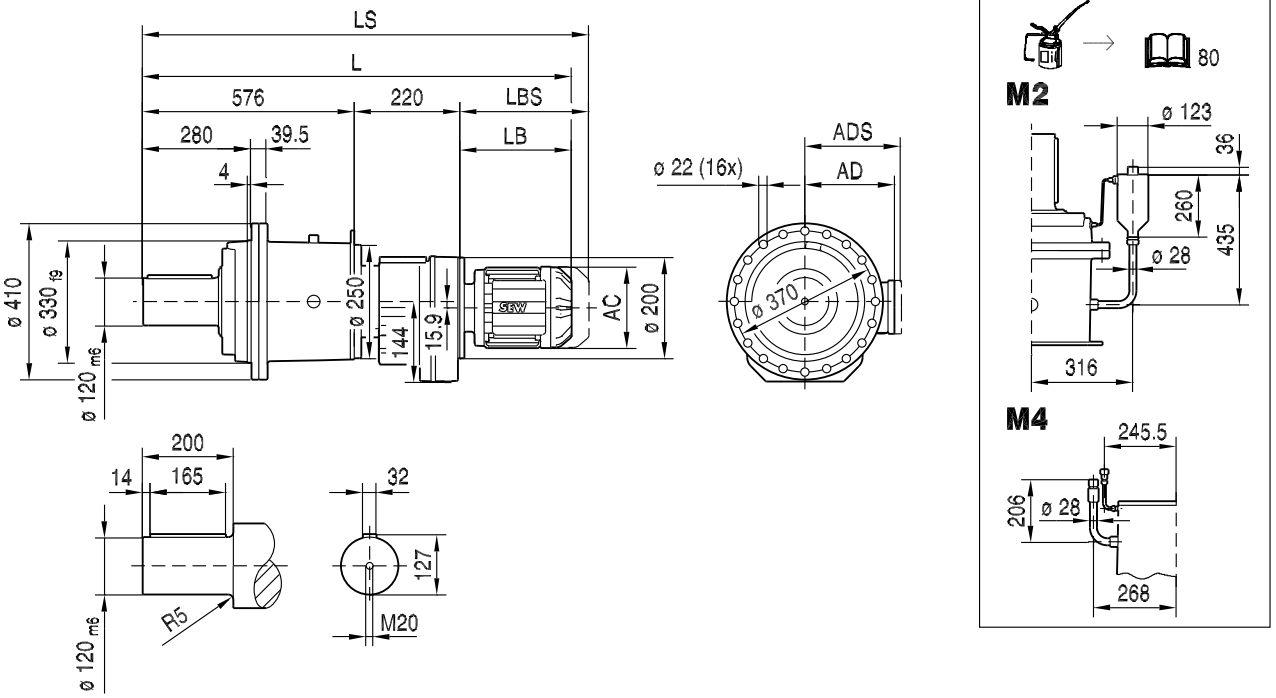


(→ 🗎 91)	DRN80M	DRN90S	DRN90L	DRN100LS	DRN100L	DRN112M	DRN132S	
AC	156	179	179	197	197	221	221	
AD	128	140	140	157	157	170	170	
ADS	139	150	150	158	158	172	172	
L	1064	1066	1098	1094	1144	1175	1225	
LS	1145	1159	1191	1188	1238	1287	1337	
LB	268	270	302	298	348	379	429	
LBS	349	363	395	392	442	491	541	

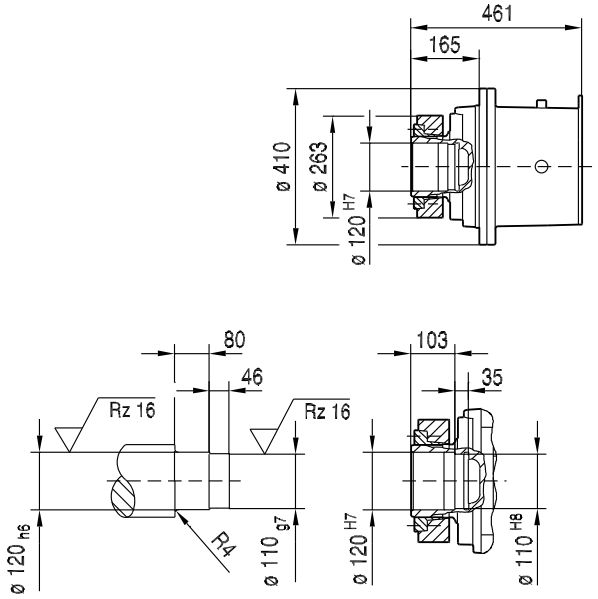
21915180/EN – 04/2015

PF002RF77..

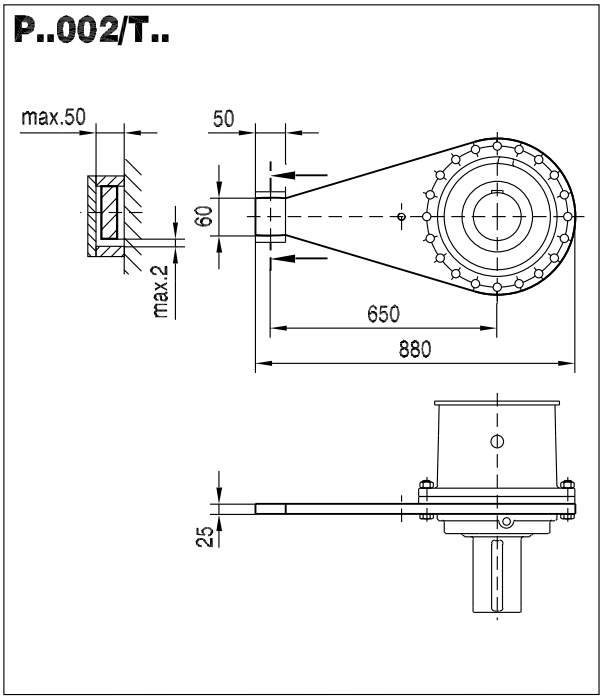
45 030 02 08



PHF002RF77..



P..002/T..

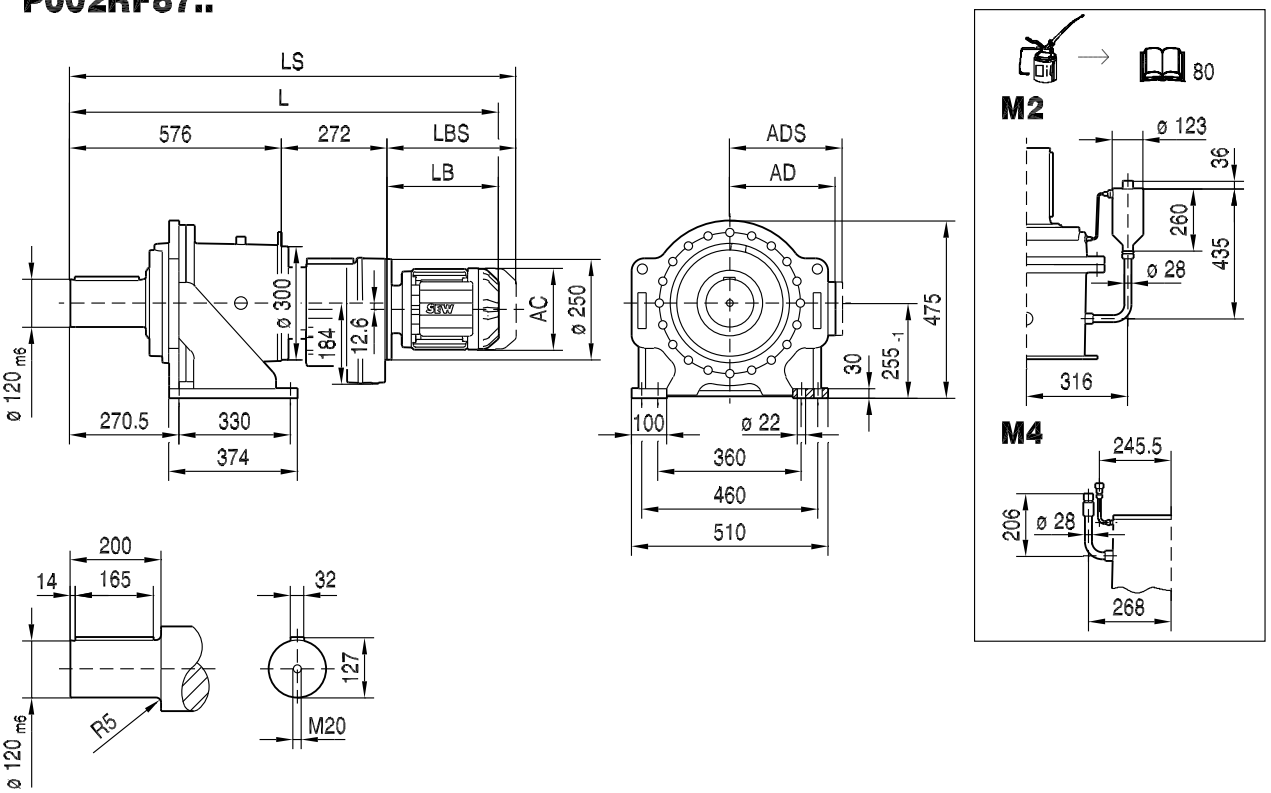


(→ 91)	DRN80M	DRN90S	DRN90L	DRN100LS	DRN100L	DRN112M	DRN132S	
AC	156	179	179	197	197	221	221	
AD	128	140	140	157	157	170	170	
ADS	139	150	150	158	158	172	172	
L	1064	1066	1098	1094	1144	1175	1225	
LS	1145	1159	1191	1188	1238	1287	1337	
LB	268	270	302	298	348	379	429	
LBS	349	363	395	392	442	491	541	

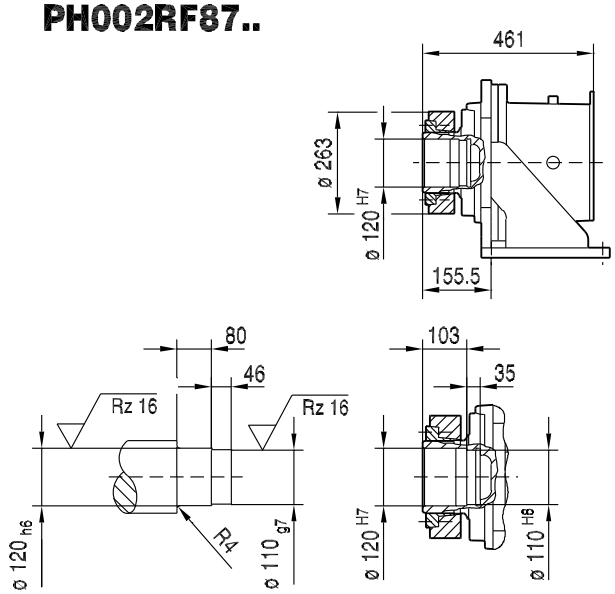
21915180/EN – 04/2015

P002RF87..

45 002 02 08



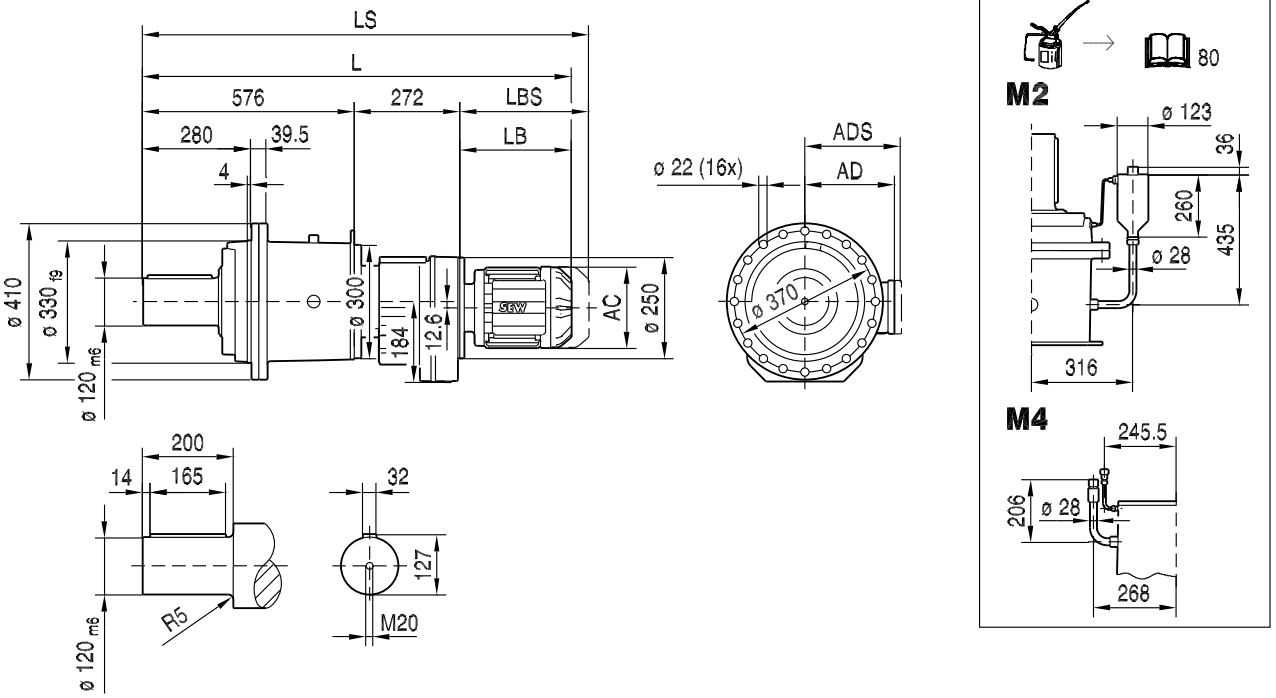
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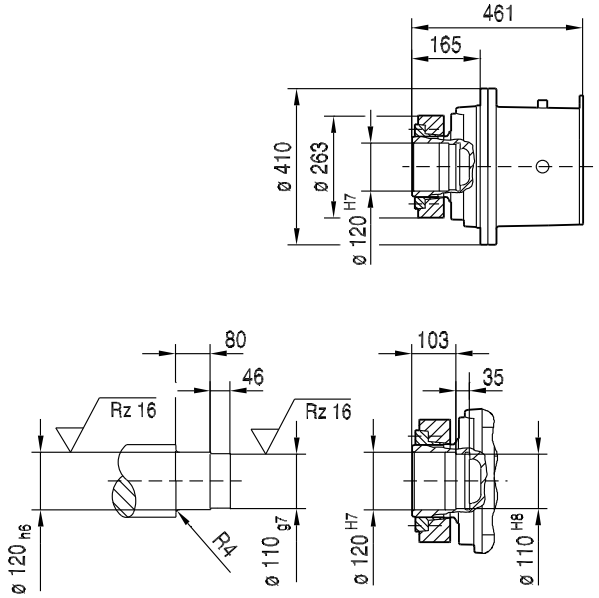
(→ 91)	DRN90S	DRN90L	DRN100LS	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L
AC	179	179	197	197	221	221	261	268	318	318
AD	140	140	157	157	170	170	228	228	253	253
ADS	150	150	158	158	172	172	228	228	253	253
L	1113	1145	1141	1191	1222	1272	1289	1314	1382	1382
LS	1206	1238	1235	1285	1334	1384	1428	1453	1571	1571
LB	265	297	293	343	374	424	441	466	534	534
LBS	358	390	387	437	486	536	580	605	723	723

PF002RF87..

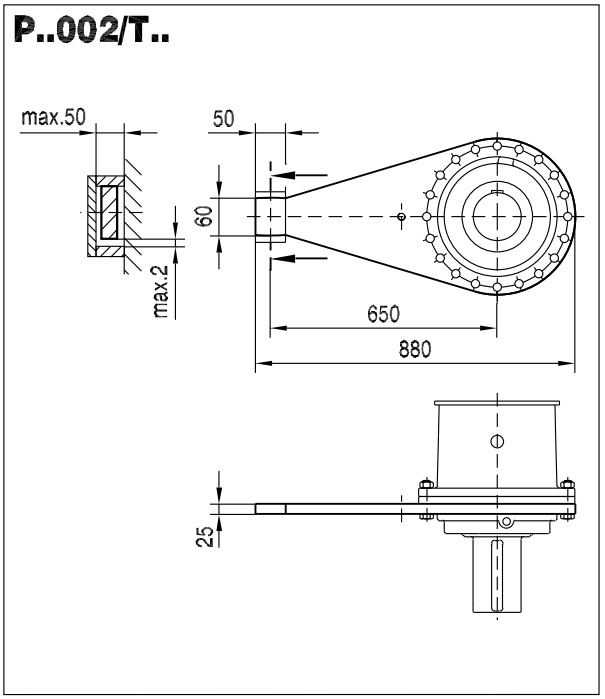
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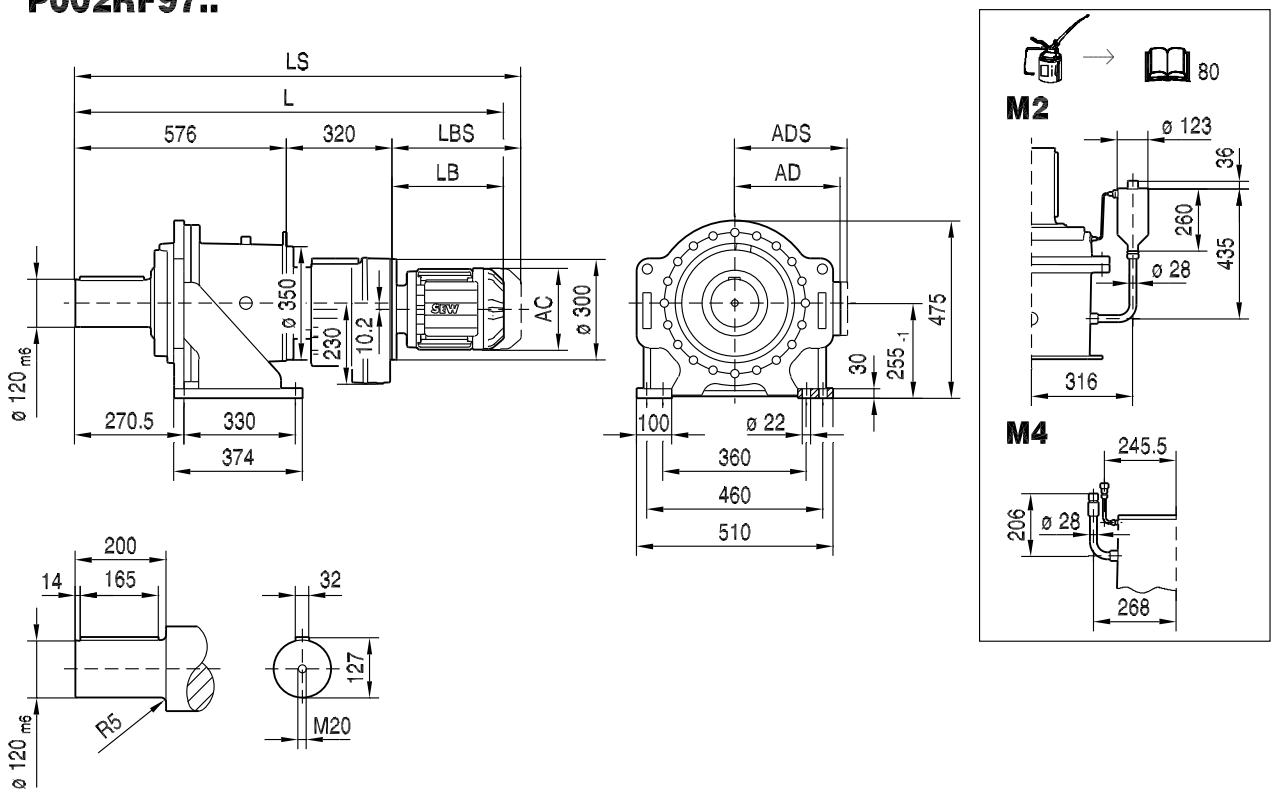


(→ 📄 91)	DRN90S	DRN90L	DRN100LS	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L
AC	179	179	197	197	221	221	261	268	318	318
AD	140	140	157	157	170	170	228	228	253	253
ADS	150	150	158	158	172	172	228	228	253	253
L	1113	1145	1141	1191	1222	1272	1289	1314	1382	1382
LS	1206	1238	1235	1285	1334	1384	1428	1453	1571	1571
LB	265	297	293	343	374	424	441	466	534	534
LBS	358	390	387	437	486	536	580	605	723	723

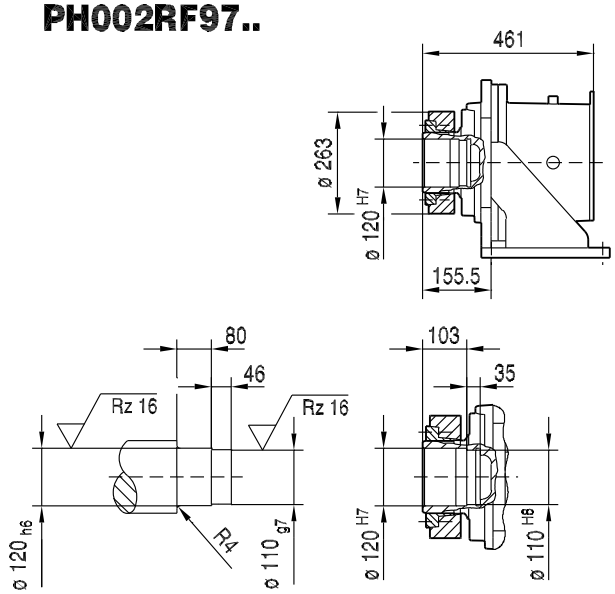
21915180/EN – 04/2015

P002RF97..

45 003 02 08



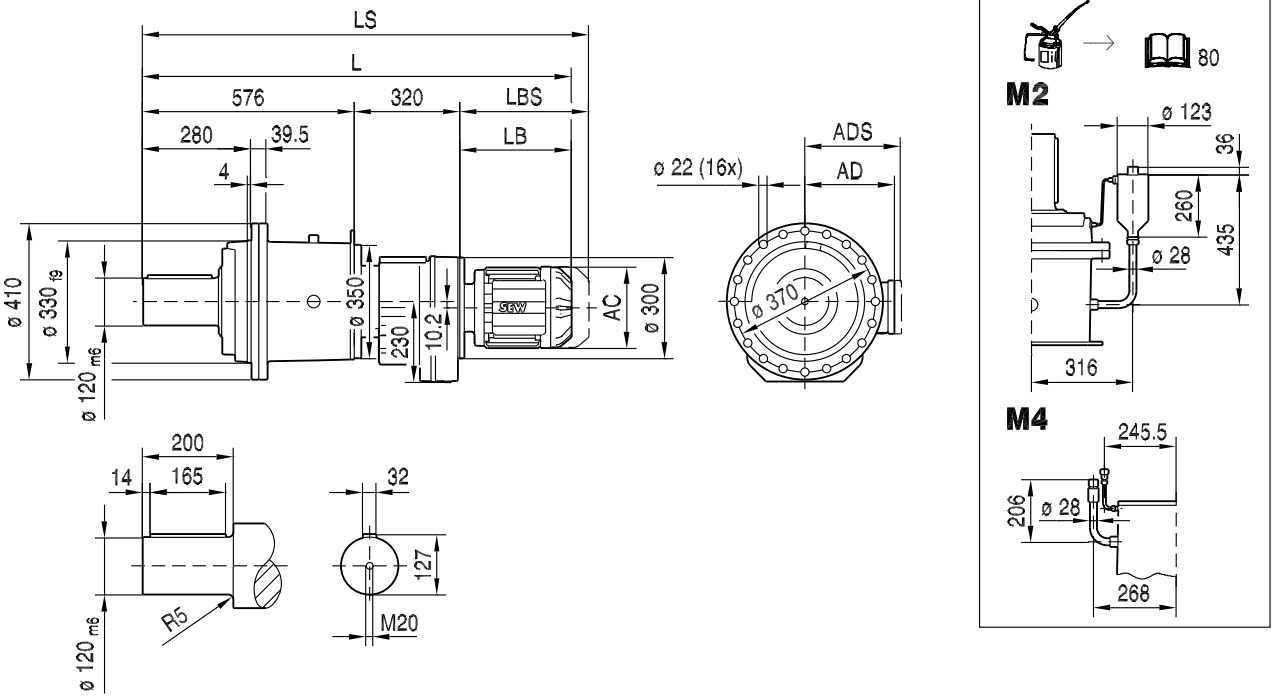
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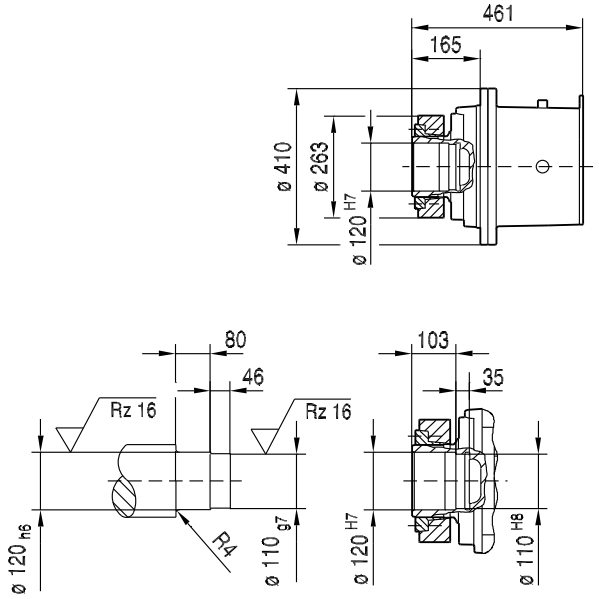
(→ 91)	DRN132L	DRN160L	DRN180M	DRN180L	DRN200L			
AC	268	318	357	357	394			
AD	228	253	268	268	306			
ADS	228	253	268	268	306			
L	1357	1425	1451	1451	1558			
LS	1496	1614	1640	1640	1763			
LB	461	529	555	555	662			
LBS	600	718	744	744	867			

PF002RF97..

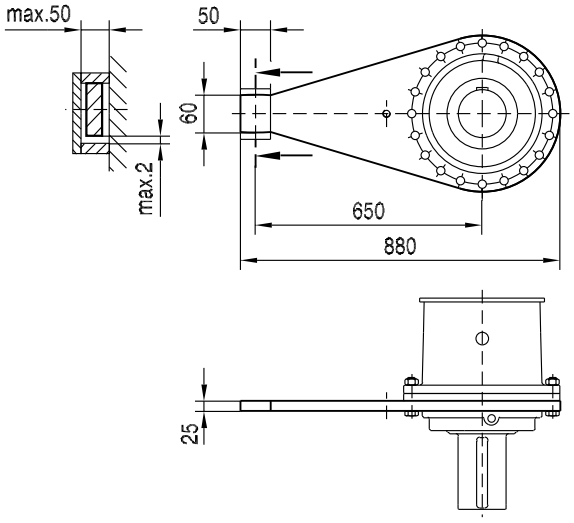
45 032 02 08



PHF002RF97..



P..002/T..

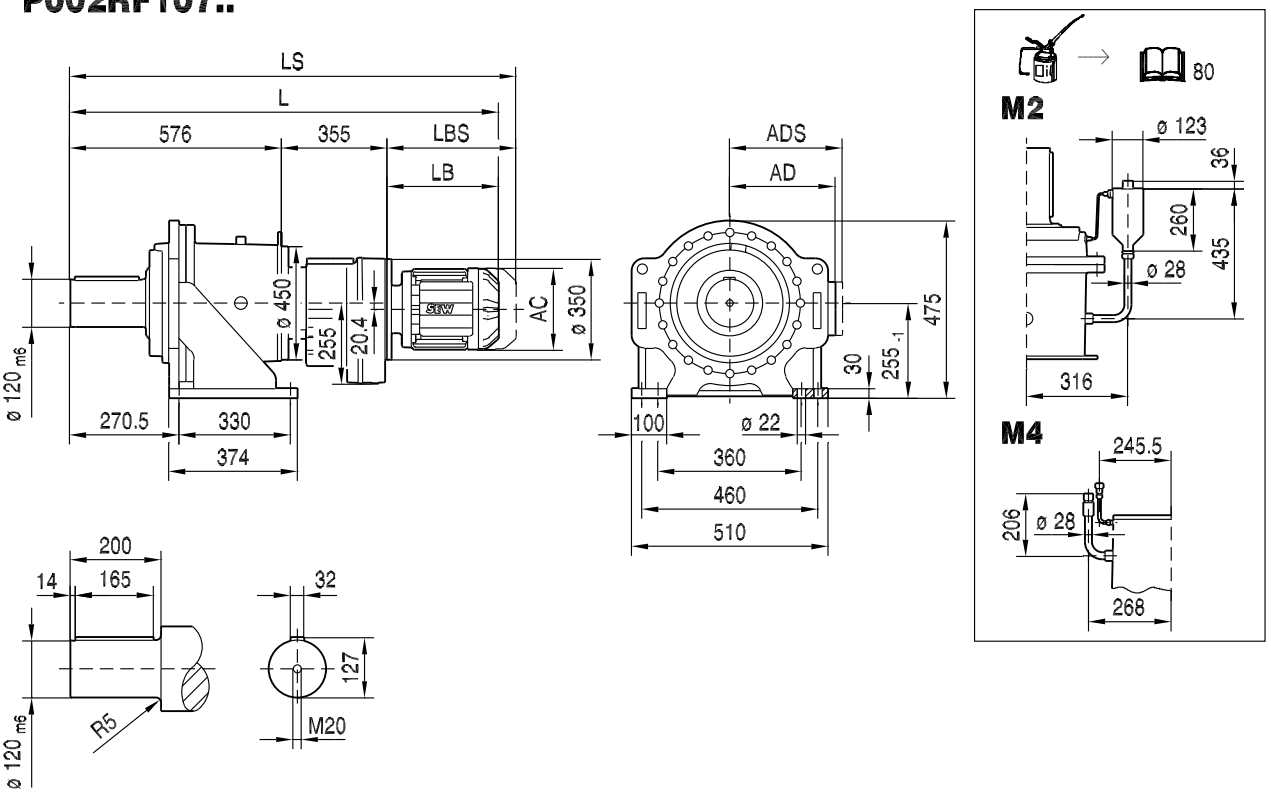


(→ 📄 91)	DRN132L	DRN160L	DRN180M	DRN180L	DRN200L			
AC	268	318	357	357	394			
AD	228	253	268	268	306			
ADS	228	253	268	268	306			
L	1357	1425	1451	1451	1558			
LS	1496	1614	1640	1640	1763			
LB	461	529	555	555	662			
LBS	600	718	744	744	867			

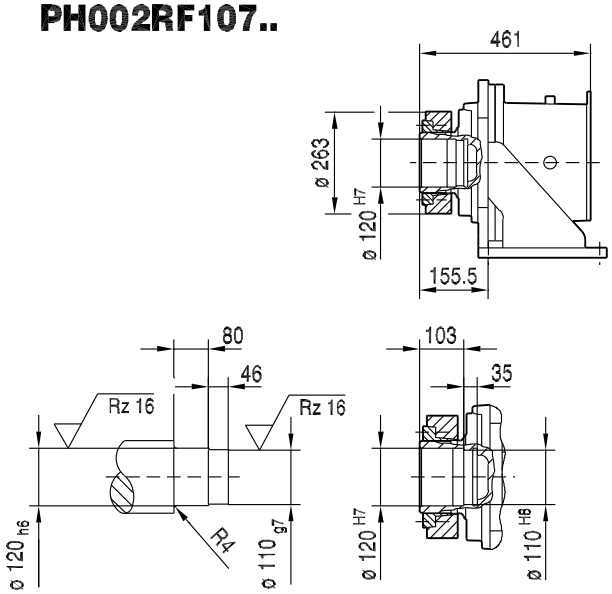
21915180/EN – 04/2015

P002RF107..

45 004 02 08



PH002RF107..

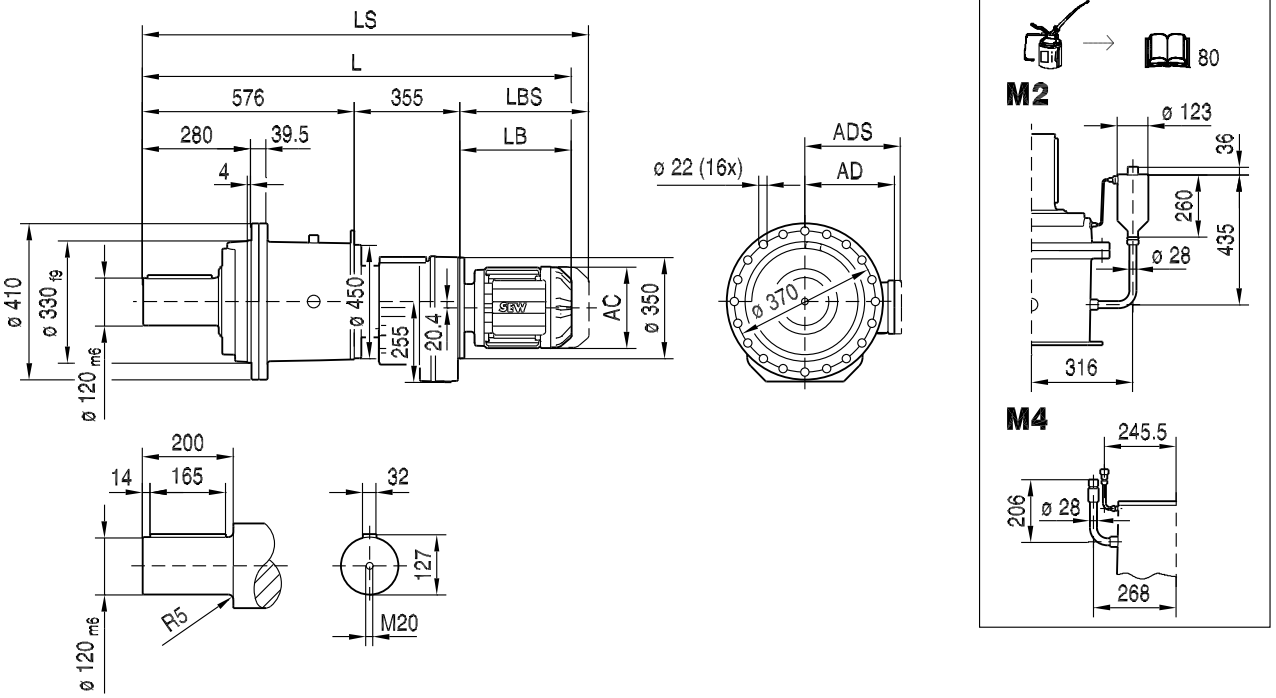


(→ 91)	DRN200L							
AC	394							
AD	306							
ADS	306							
L	1587							
LS	1792							
LB	656							
LBS	861							

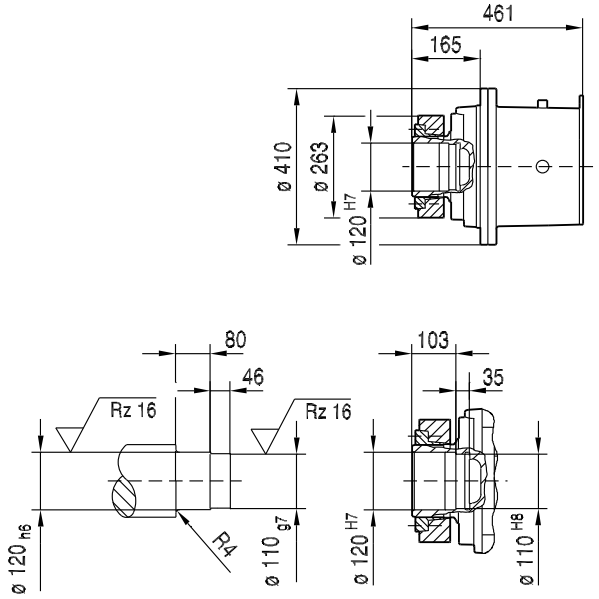
21915180/EN – 04/2015

PF002RF107..

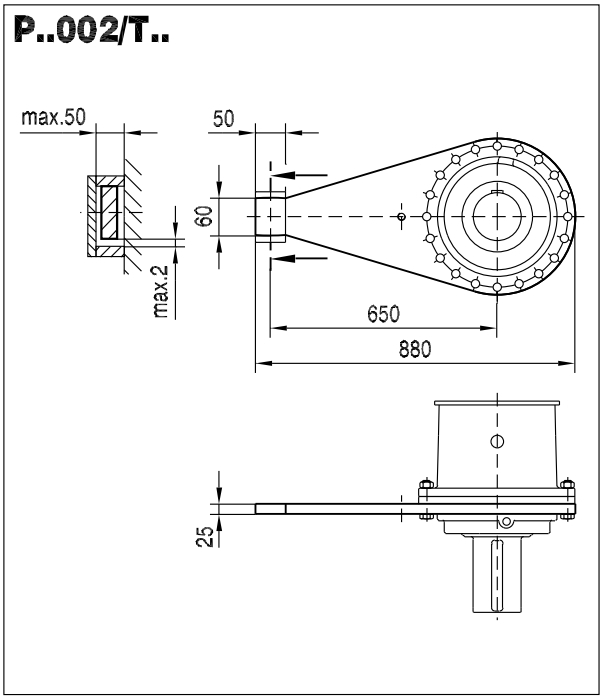
45 033 02 08



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P..002/T..

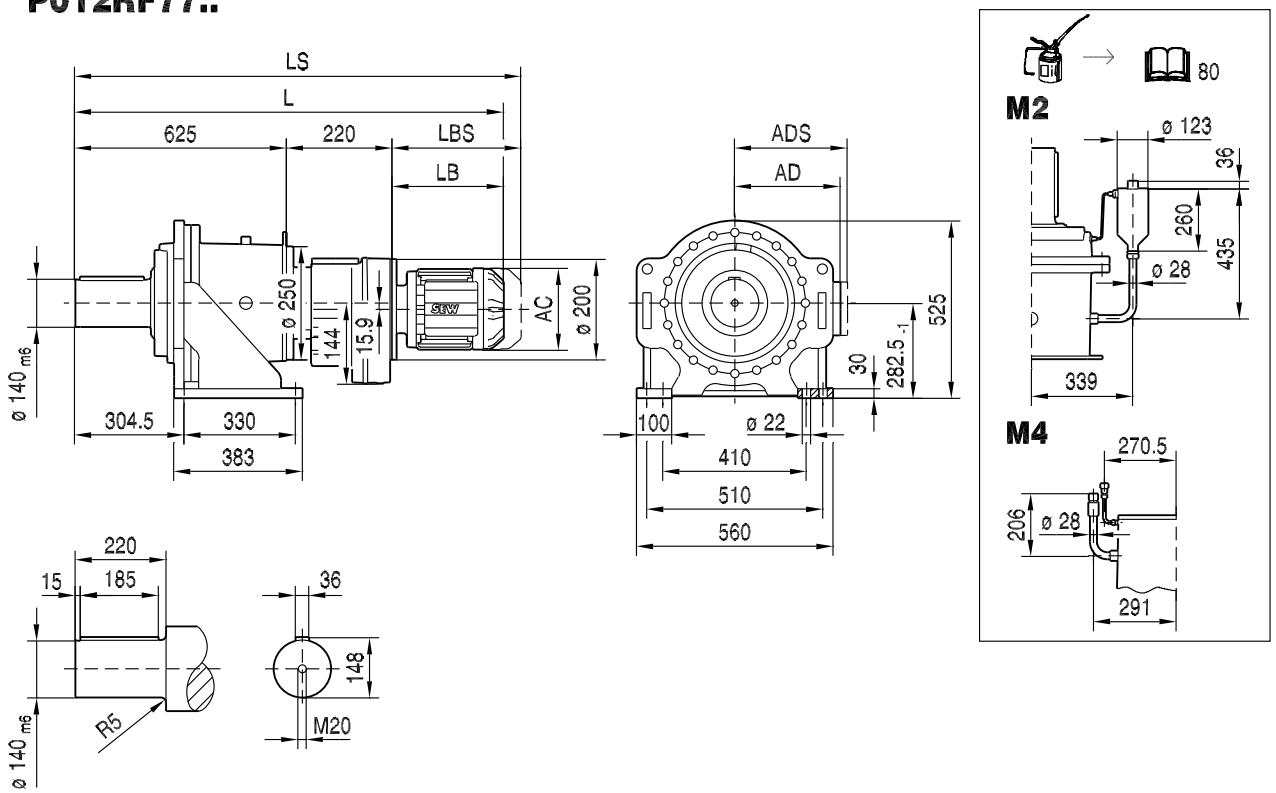


(→ 🗎 91)	DRN200L							
AC	394							
AD	306							
ADS	306							
L	1587							
LS	1792							
LB	656							
LBS	861							

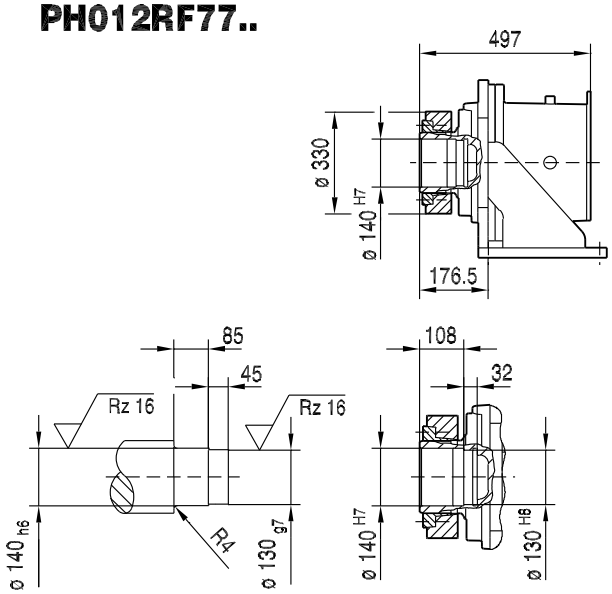
21915180/EN – 04/2015

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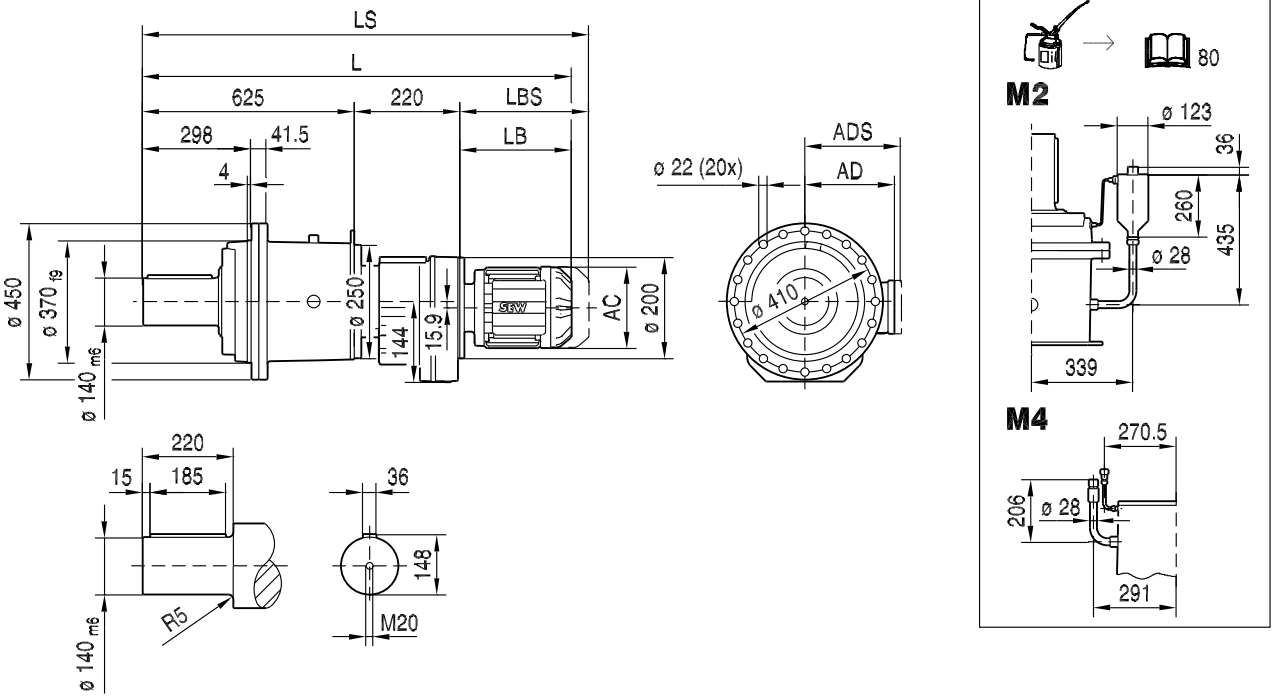
PH012RF77..



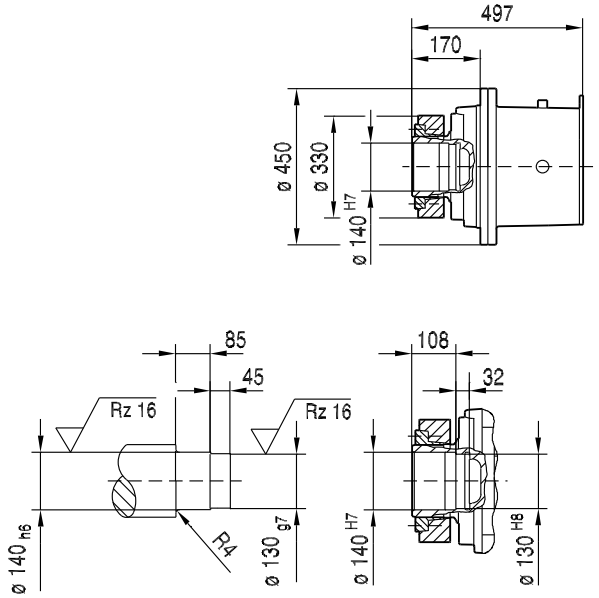
(→ 91)	DRN80M	DRN90S	DRN90L	DRN100LS	DRN112M			
AC	156	179	179	197	221			
AD	128	140	140	157	170			
ADS	139	150	150	158	172			
L	1113	1115	1147	1143	1224			
LS	1194	1208	1240	1237	1336			
LB	268	270	302	298	379			
LBS	349	363	395	392	491			

PF012RF77..

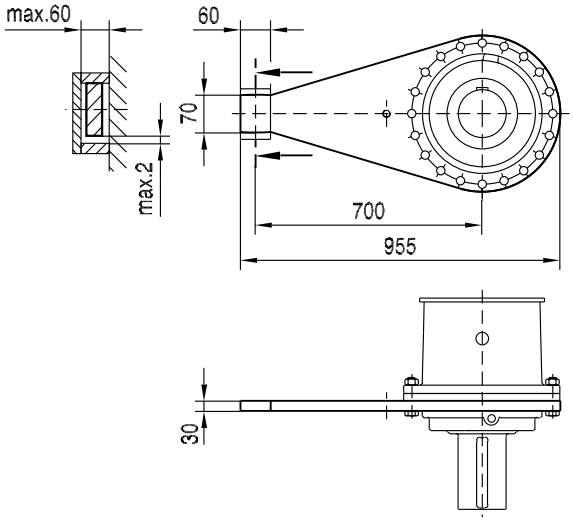
45 034 02 08



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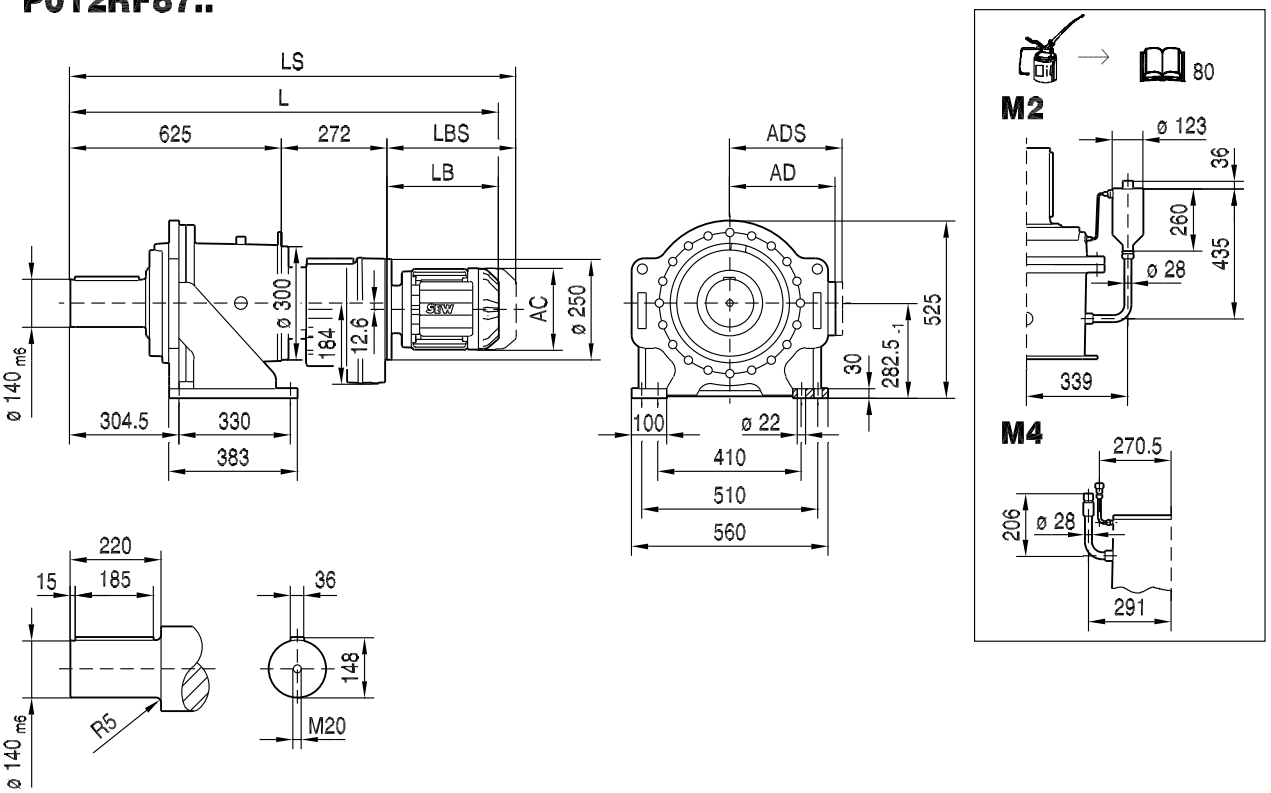


(→ 📄 91)	DRN80M	DRN90S	DRN90L	DRN100LS	DRN112M			
AC	156	179	179	197	221			
AD	128	140	140	157	170			
ADS	139	150	150	158	172			
L	1113	1115	1147	1143	1224			
LS	1194	1208	1240	1237	1336			
LB	268	270	302	298	379			
LBS	349	363	395	392	491			

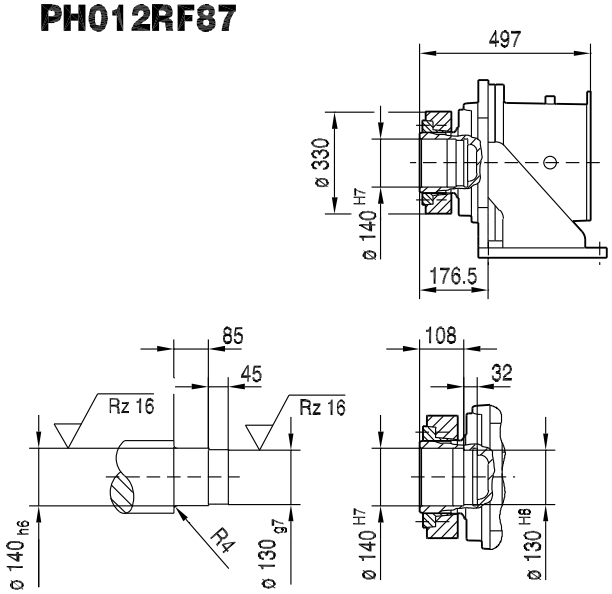
21915180/EN – 04/2015

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45 006 02 08



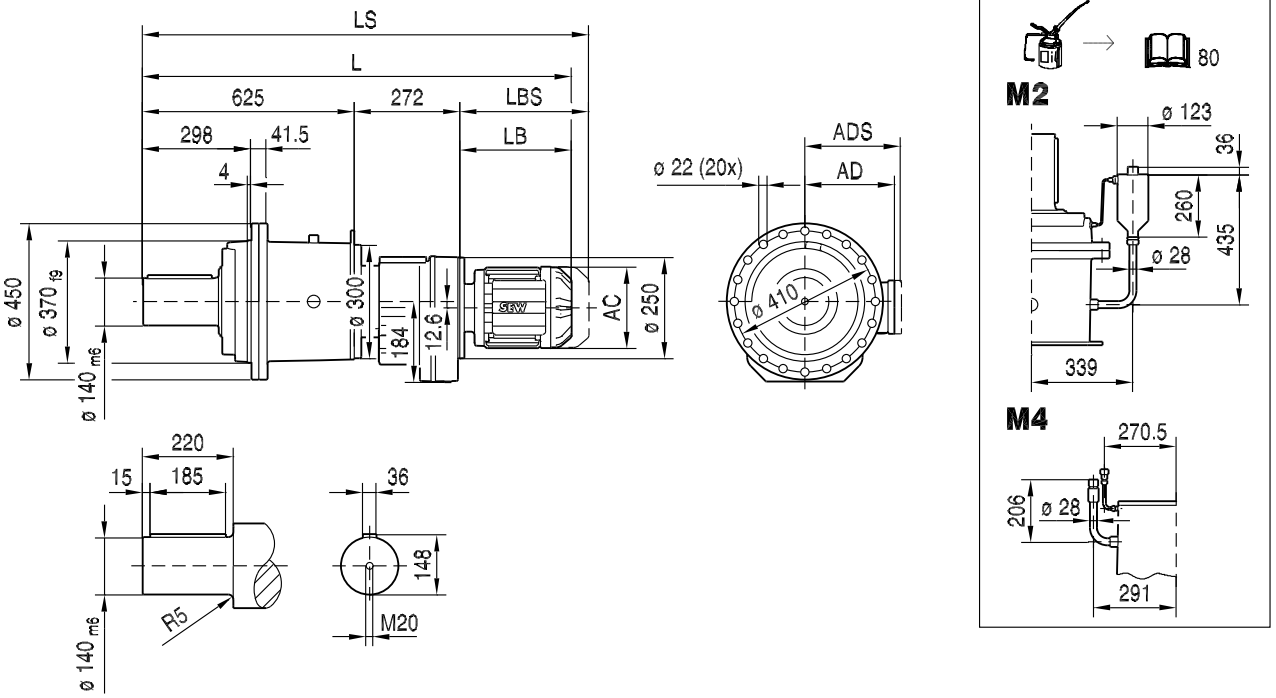
PH012RF87



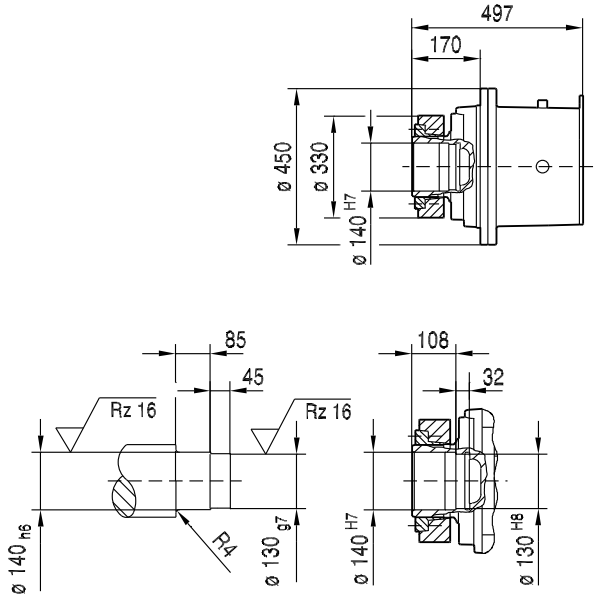
(→ 91)	DRN80M	DRN90S	DRN90L	DRN100LS	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M
AC	156	179	179	197	197	221	221	261	268	318
AD	128	140	140	157	157	170	170	228	228	253
ADS	139	150	150	158	158	172	172	228	228	253
L	1160	1162	1194	1190	1240	1271	1321	1338	1363	1431
LS	1241	1255	1287	1284	1334	1383	1433	1477	1502	1620
LB	263	265	297	293	343	374	424	441	466	534
LBS	344	358	390	387	437	486	536	580	605	723

PF012RF87..

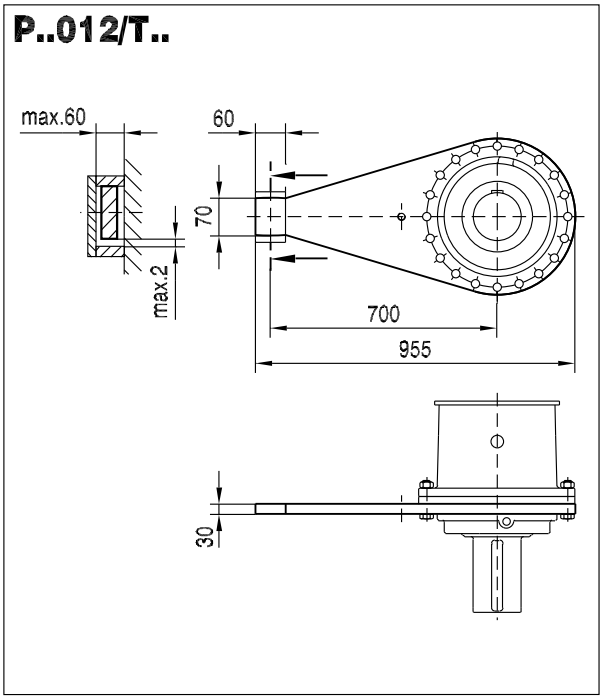
45 035 02 08



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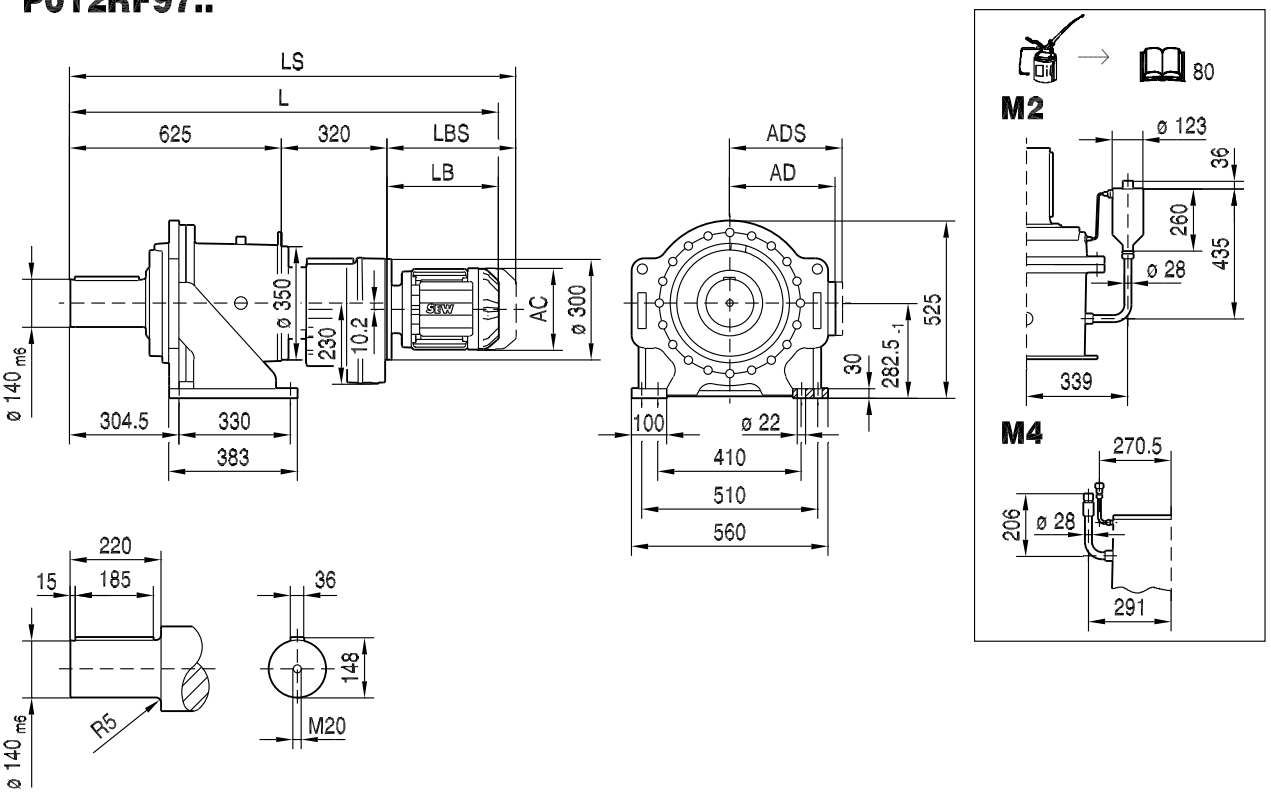


(→ 📄 91)	DRN80M	DRN90S	DRN90L	DRN100LS	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M
AC	156	179	179	197	197	221	221	261	268	318
AD	128	140	140	157	157	170	170	228	228	253
ADS	139	150	150	158	158	172	172	228	228	253
L	1160	1162	1194	1190	1240	1271	1321	1338	1363	1431
LS	1241	1255	1287	1284	1334	1383	1433	1477	1502	1620
LB	263	265	297	293	343	374	424	441	466	534
LBS	344	358	390	387	437	486	536	580	605	723

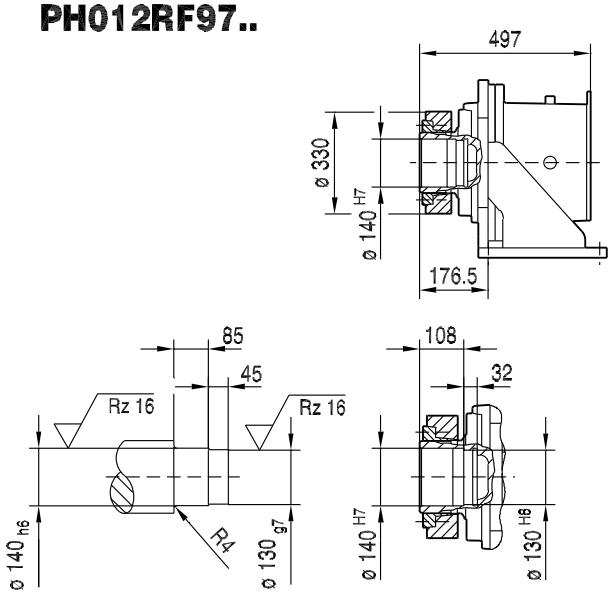
21915180/EN – 04/2015

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45 007 02 08



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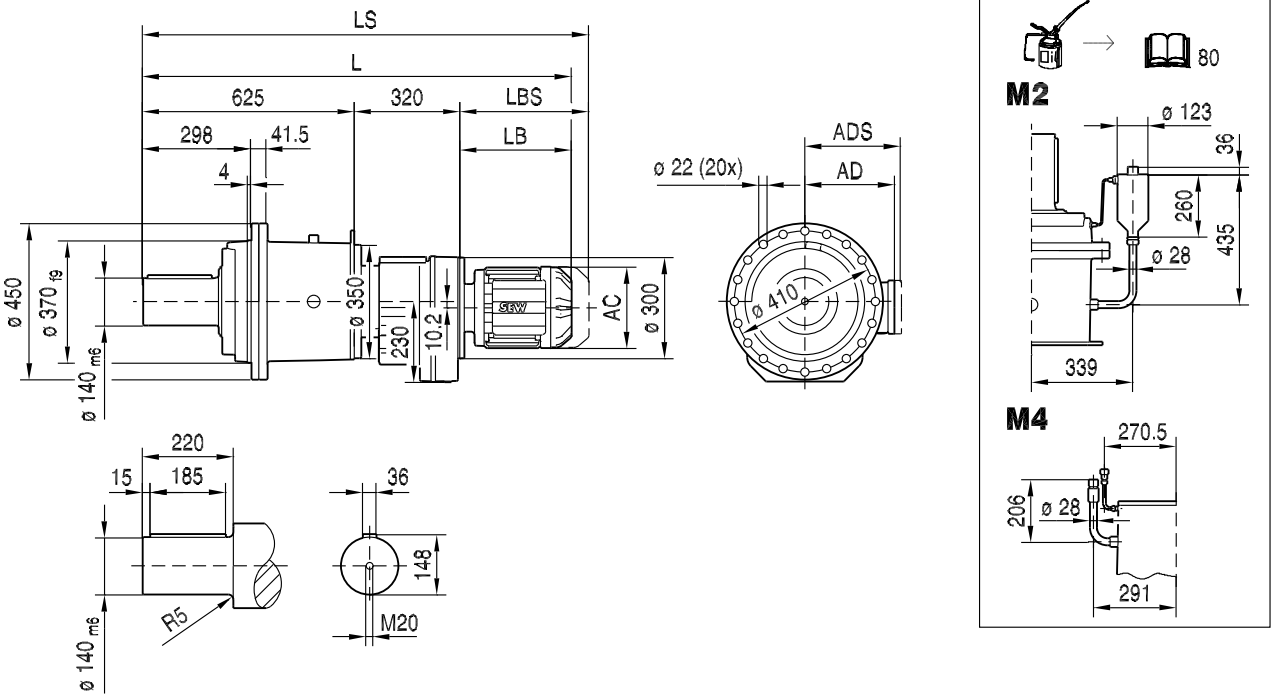


(→ 91)	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L
AC	197	221	221	261	268	318	318	357	357	394
AD	157	170	170	228	228	253	253	268	268	306
ADS	158	172	172	228	228	253	253	268	268	306
L	1283	1314	1364	1381	1406	1474	1474	1500	1500	1607
LS	1377	1426	1476	1520	1545	1663	1663	1689	1689	1812
LB	338	369	419	436	461	529	529	555	555	662
LBS	432	481	531	575	600	718	718	744	744	867

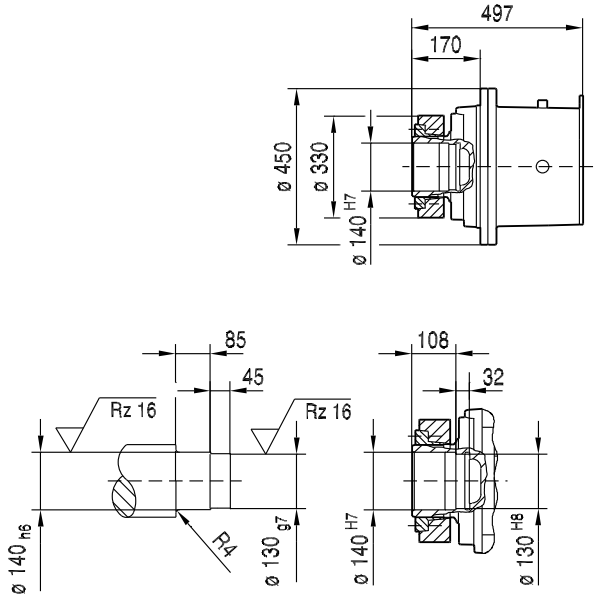
21915180/EN – 04/2015

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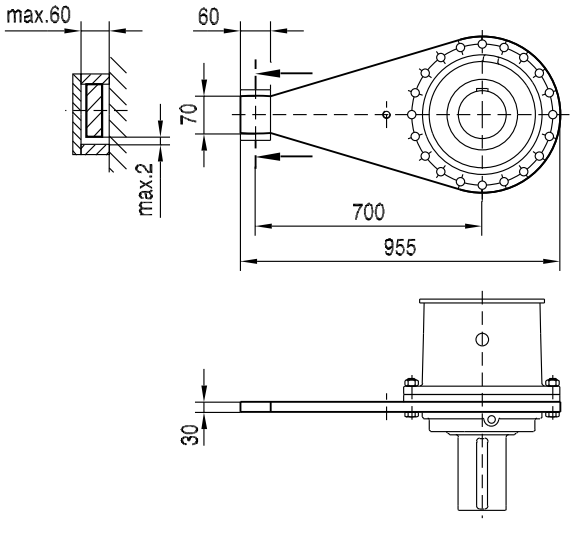
45 036 02 08



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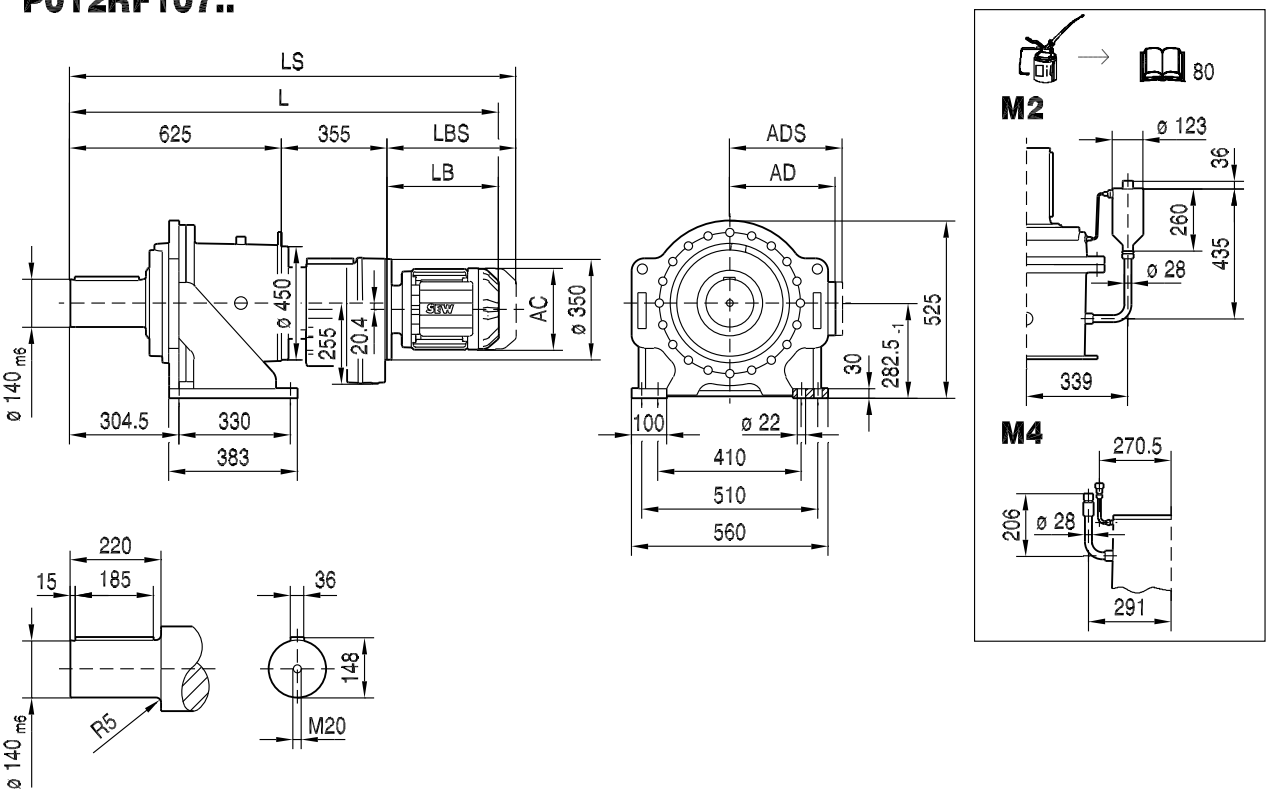


(→ 📄 91)	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L
AC	197	221	221	261	268	318	318	357	357	394
AD	157	170	170	228	228	253	253	268	268	306
ADS	158	172	172	228	228	253	253	268	268	306
L	1283	1314	1364	1381	1406	1474	1474	1500	1500	1607
LS	1377	1426	1476	1520	1545	1663	1663	1689	1689	1812
LB	338	369	419	436	461	529	529	555	555	662
LBS	432	481	531	575	600	718	718	744	744	867

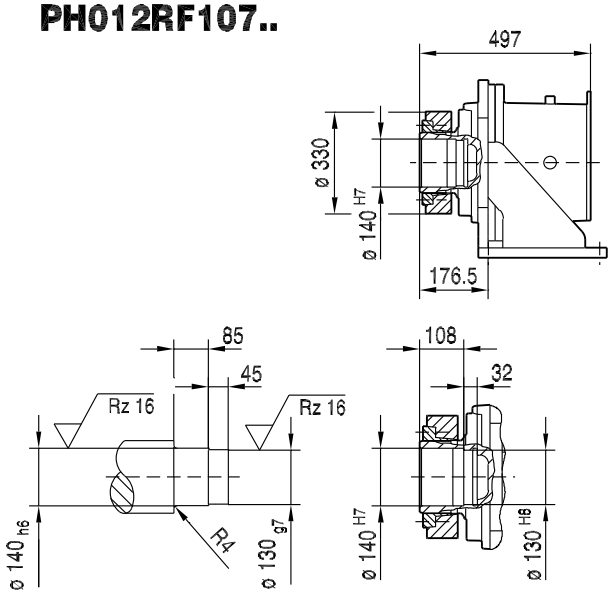
21915180/EN – 04/2015

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45 008 02 08



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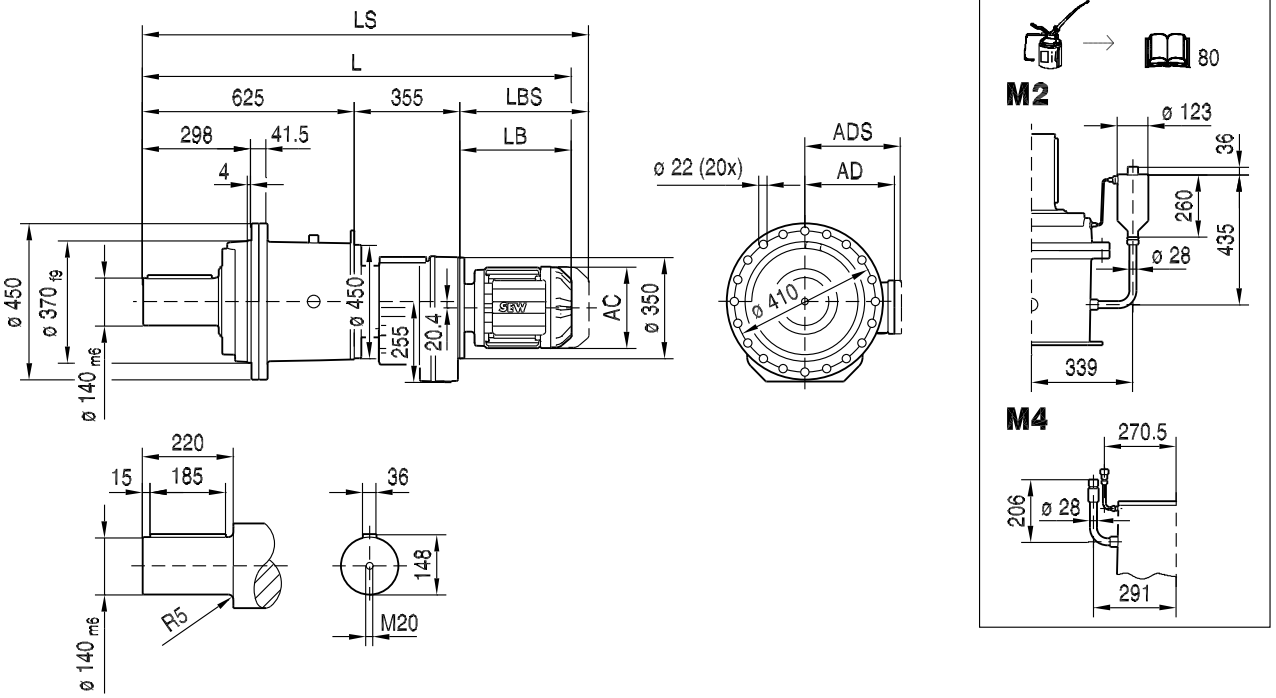


(→ 91)	DRN180M	DRN180L	DRN200L	DRN225				
AC	357	357	394	434				
AD	268	268	306	306				
ADS	268	268	306	306				
L	1529	1529	1636	1591				
LS	1718	1718	1841	1796				
LB	549	549	656	611				
LBS	738	738	861	816				

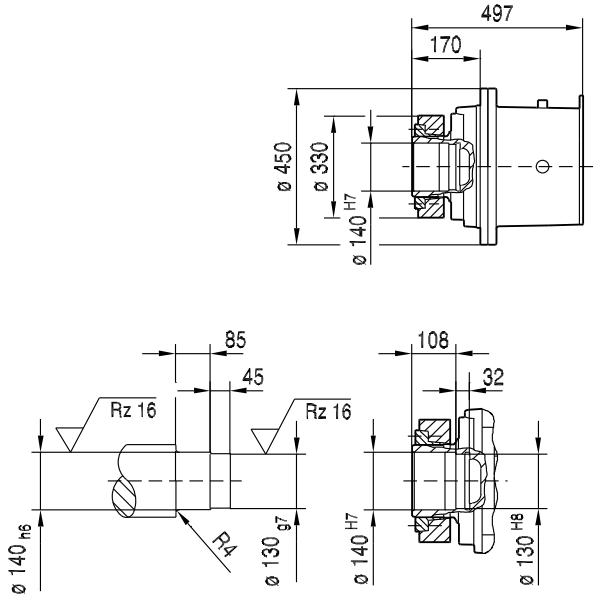
21915180/EN – 04/2015

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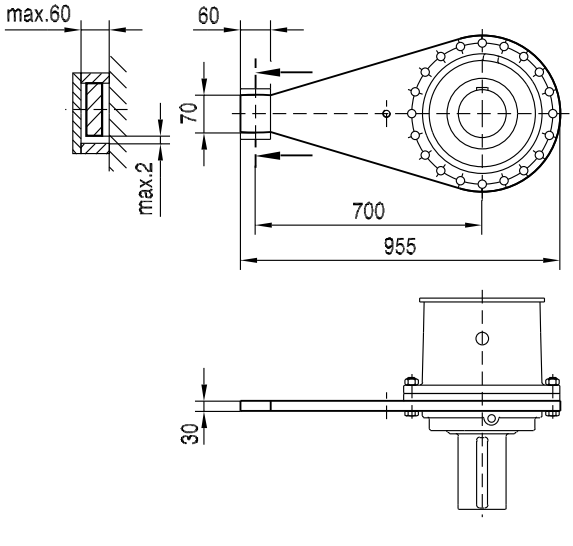
45 037 02 08



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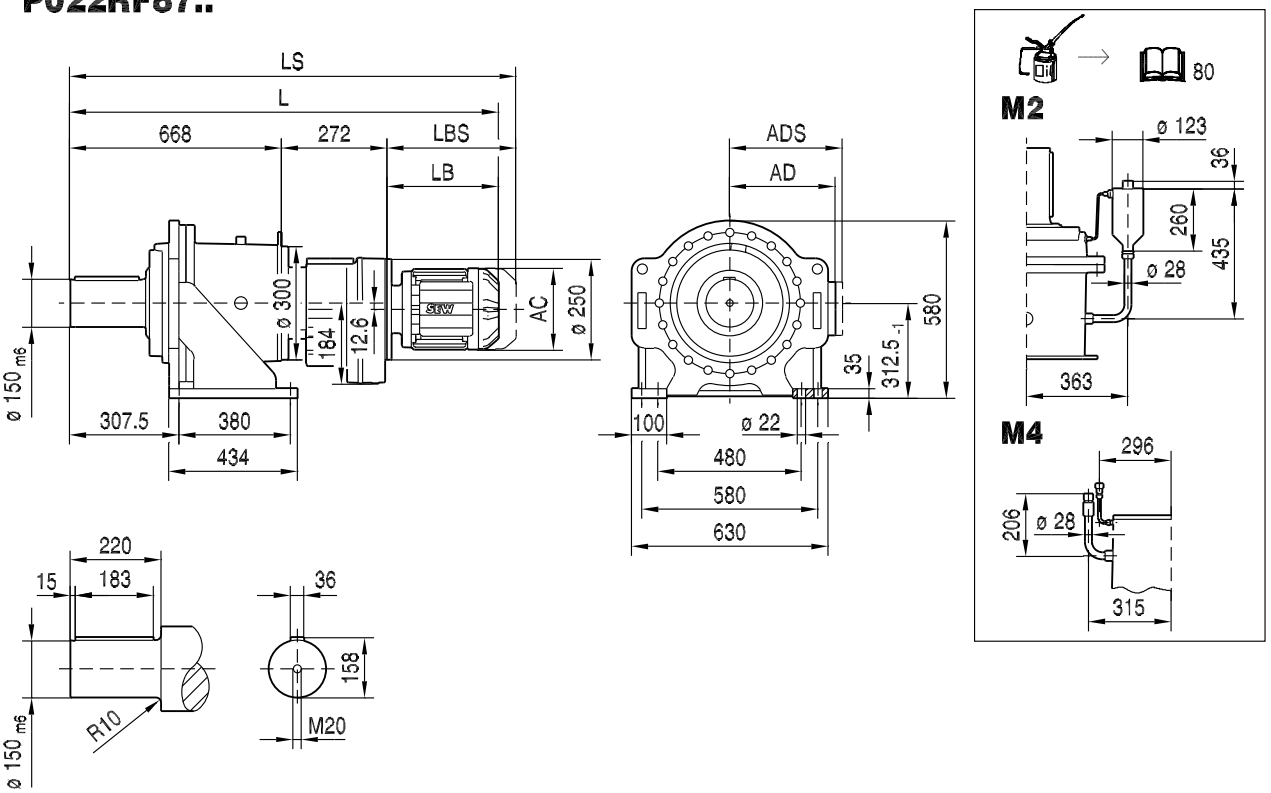


(→ 91)	DRN180M	DRN180L	DRN200L	DRN225				
AC	357	357	394	434				
AD	268	268	306	306				
ADS	268	268	306	306				
L	1529	1529	1636	1591				
LS	1718	1718	1841	1796				
LB	549	549	656	611				
LBS	738	738	861	816				

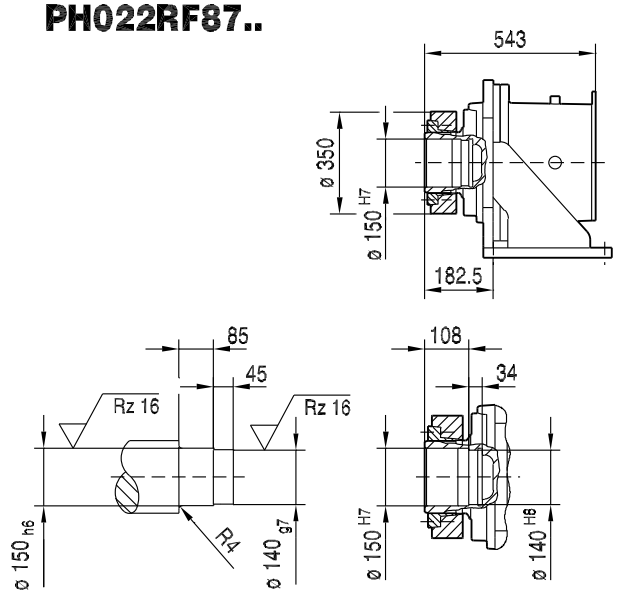
21915180/EN – 04/2015

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45 009 02 08



PH022RF87..

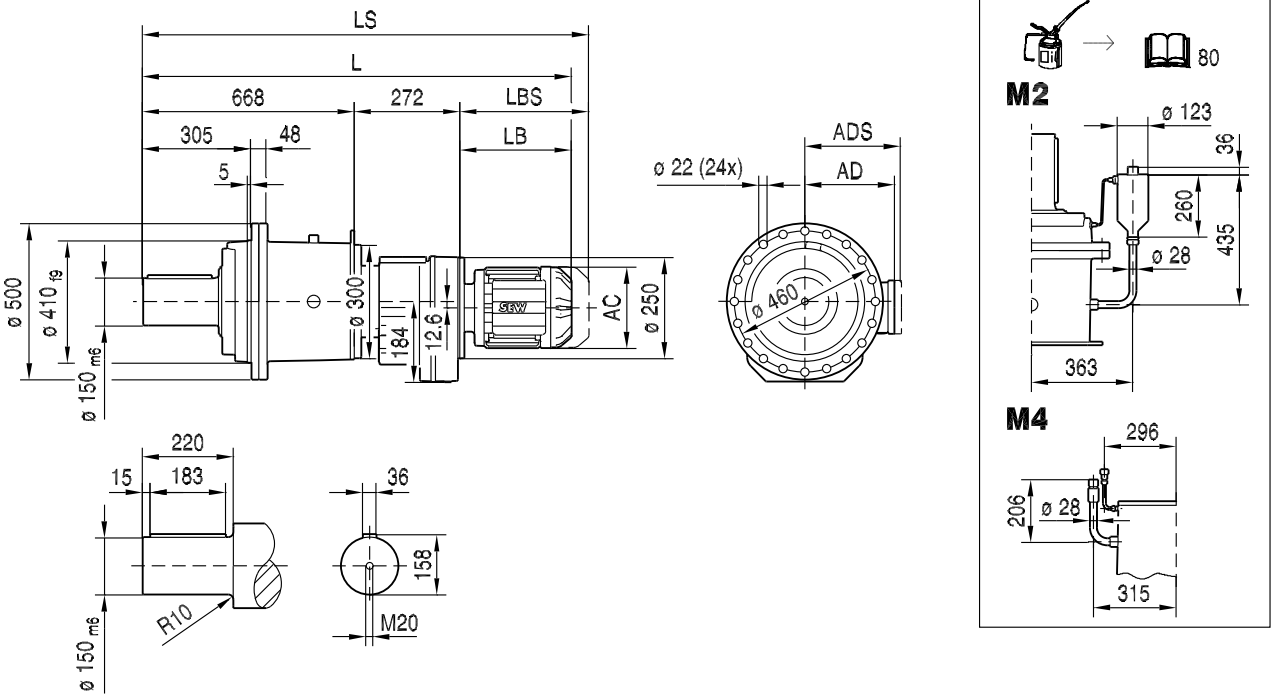


(→ 91)	DRN90S	DRN90L	DRN100LS	DRN100L	DRN112M	DRN132S	DRN132L	
AC	179	179	197	197	221	221	268	
AD	140	140	157	157	170	170	228	
ADS	150	150	158	158	172	172	228	
L	1205	1237	1233	1283	1314	1364	1406	
LS	1298	1330	1327	1377	1426	1476	1545	
LB	265	297	293	343	374	424	466	
LBS	358	390	387	437	486	536	605	

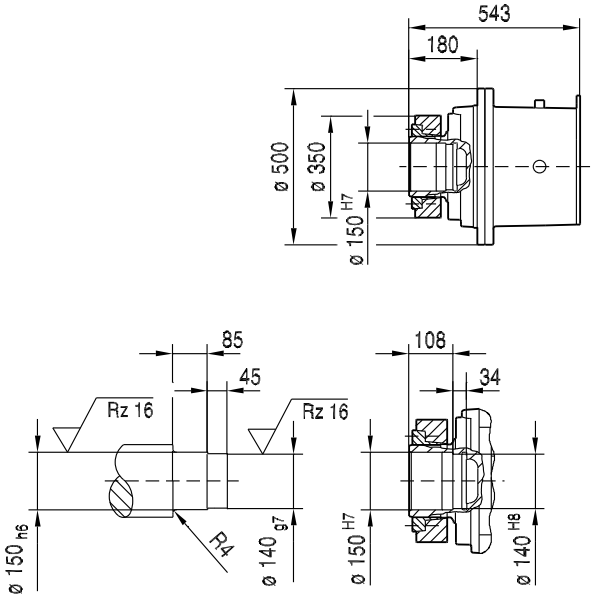
21915180/EN – 04/2015

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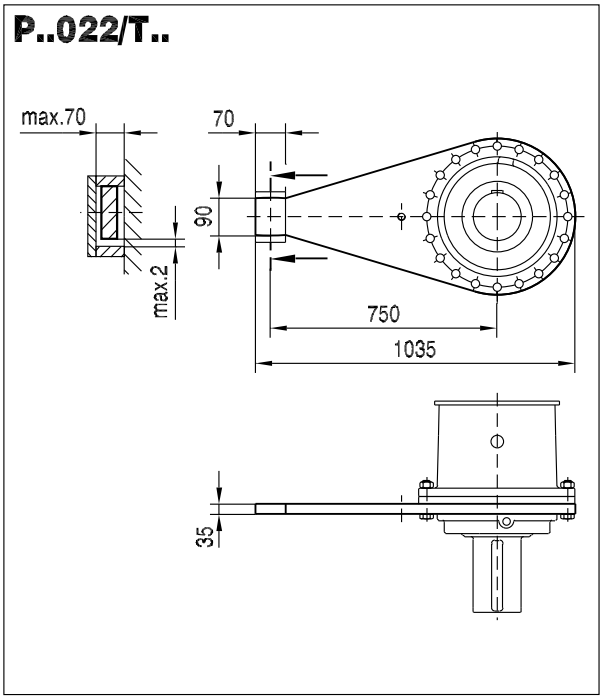
45 038 02 08



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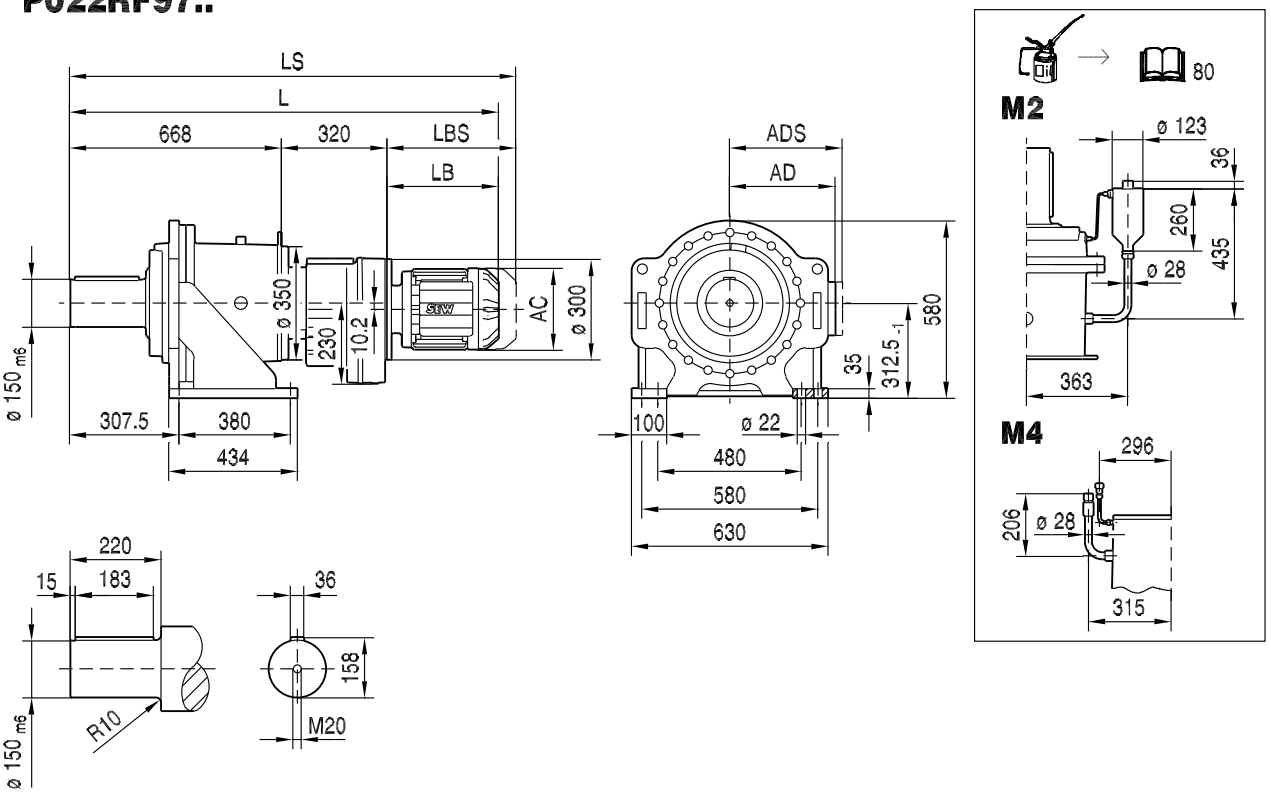


(→ 📄 91)	DRN90S	DRN90L	DRN100LS	DRN100L	DRN112M	DRN132S	DRN132L	
AC	179	179	197	197	221	221	268	
AD	140	140	157	157	170	170	228	
ADS	150	150	158	158	172	172	228	
L	1205	1237	1233	1283	1314	1364	1406	
LS	1298	1330	1327	1377	1426	1476	1545	
LB	265	297	293	343	374	424	466	
LBS	358	390	387	437	486	536	605	

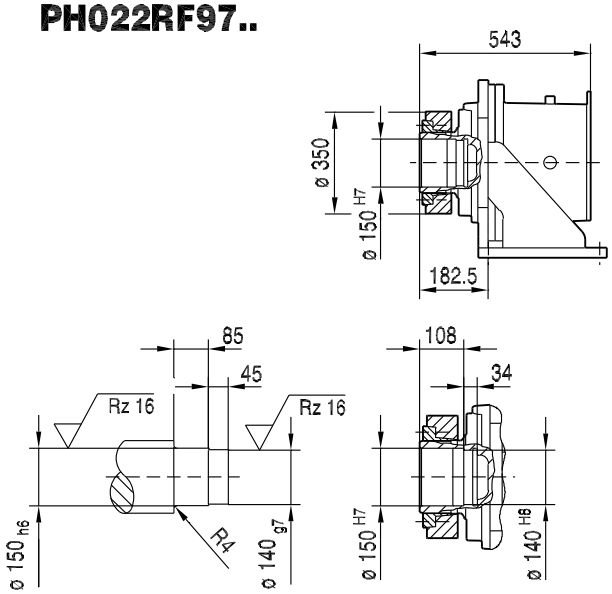
21915180/EN – 04/2015

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45 010 02 08



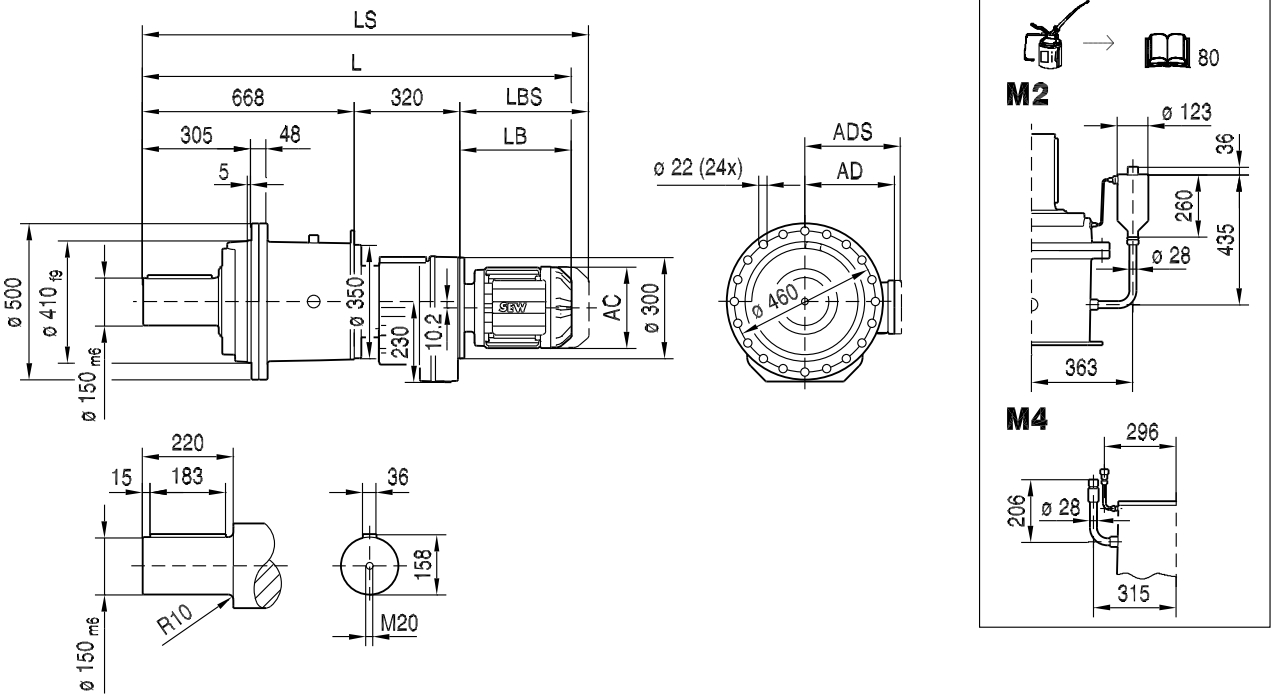
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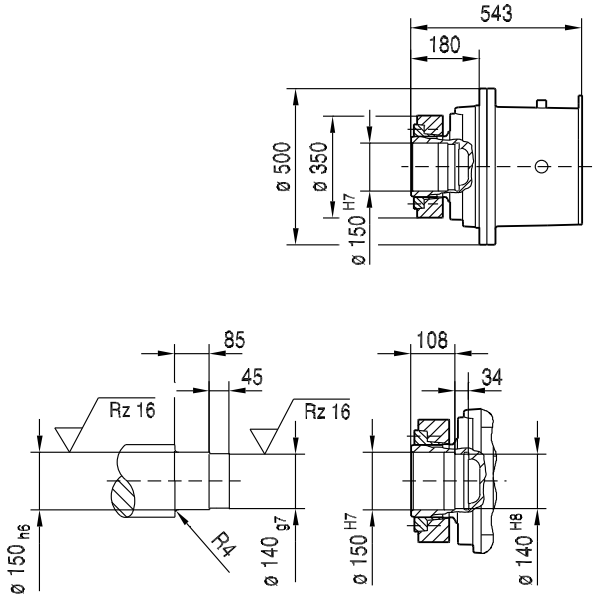
(→ 91)	DRN100LS	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180M	DRN180L
AC	197	197	221	221	261	268	318	318	357	357
AD	157	157	170	170	228	228	253	253	268	268
ADS	158	158	172	172	228	228	253	253	268	268
L	1276	1326	1357	1407	1424	1449	1517	1517	1543	1543
LS	1370	1420	1469	1519	1563	1588	1706	1706	1732	1732
LB	288	338	369	419	436	461	529	529	555	555
LBS	382	432	481	531	575	600	718	718	744	744

PF022RF97..

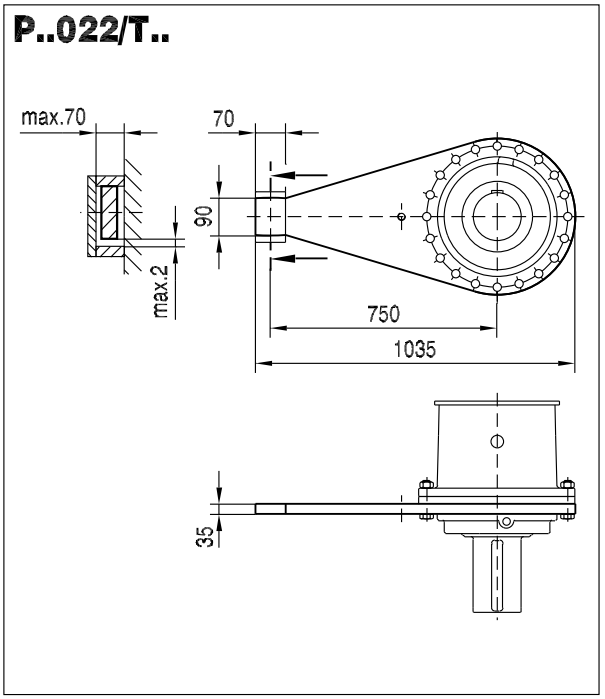
45 039 02 08



PHF022RF97..



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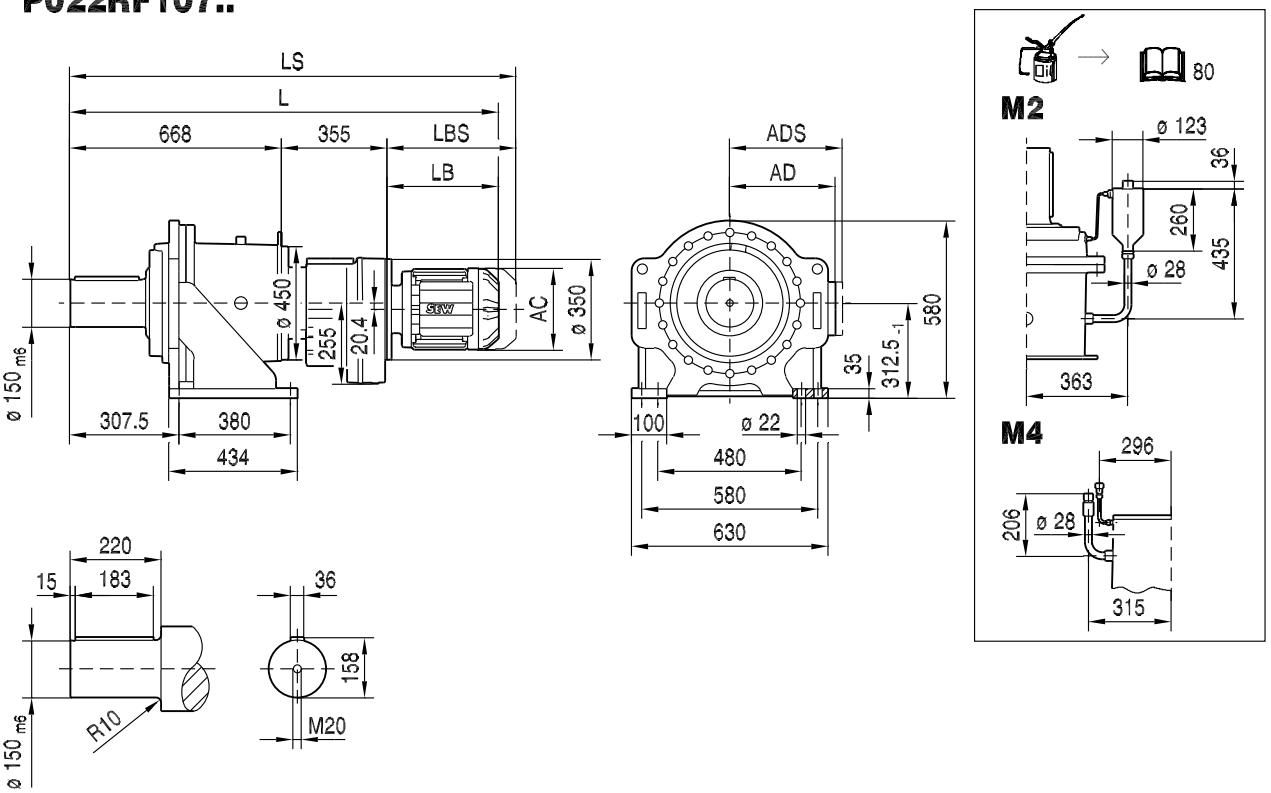


(→ 📄 91)	DRN100LS	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180M	DRN180L
AC	197	197	221	221	261	268	318	318	357	357
AD	157	157	170	170	228	228	253	253	268	268
ADS	158	158	172	172	228	228	253	253	268	268
L	1276	1326	1357	1407	1424	1449	1517	1517	1543	1543
LS	1370	1420	1469	1519	1563	1588	1706	1706	1732	1732
LB	288	338	369	419	436	461	529	529	555	555
LBS	382	432	481	531	575	600	718	718	744	744

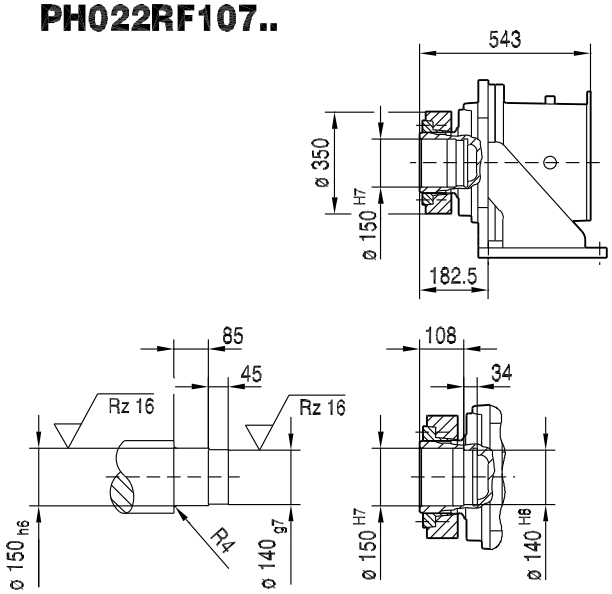
21915180/EN – 04/2015

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45 011 02 08



PH022RF107..

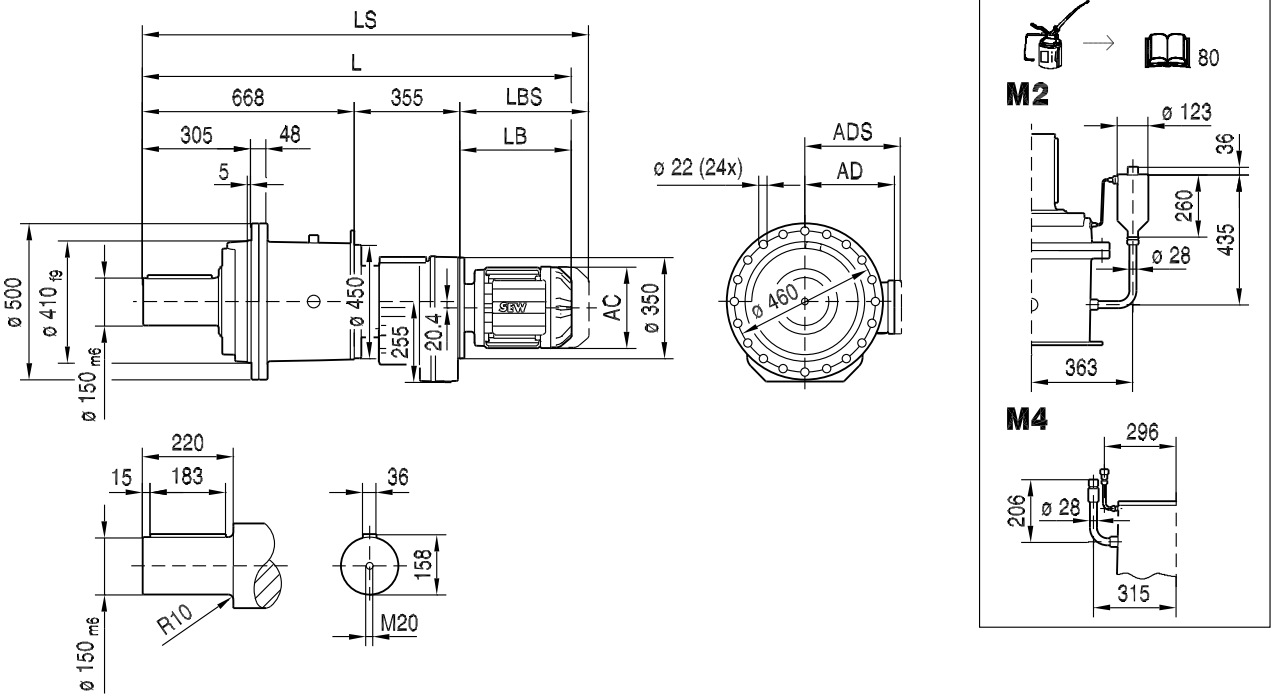


(→ 91)	DRN112M	DRN132M	DRN132L	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L	DRN225
AC	221	261	268	318	318	357	357	394	434
AD	170	228	228	253	253	268	268	306	306
ADS	172	228	228	253	253	268	268	306	306
L	1386	1453	1478	1546	1546	1572	1572	1679	1634
LS	1498	1592	1617	1735	1735	1761	1761	1884	1839
LB	363	430	455	523	523	549	549	656	611
LBS	475	569	594	712	712	738	738	861	816

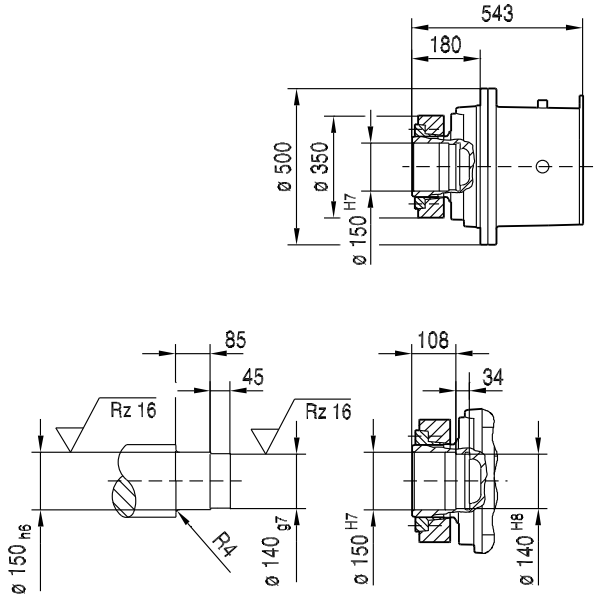
21915180/EN – 04/2015

45 040 02 08

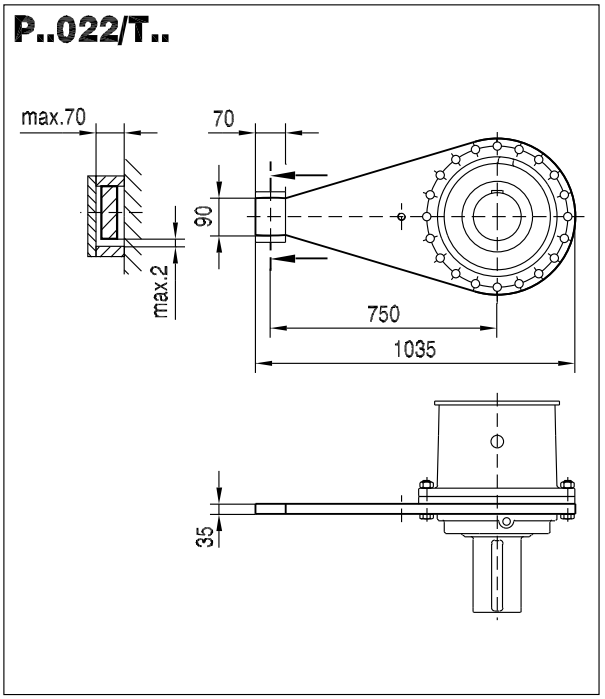
PF022RF107..



PHF022RF107..



P..022/T..

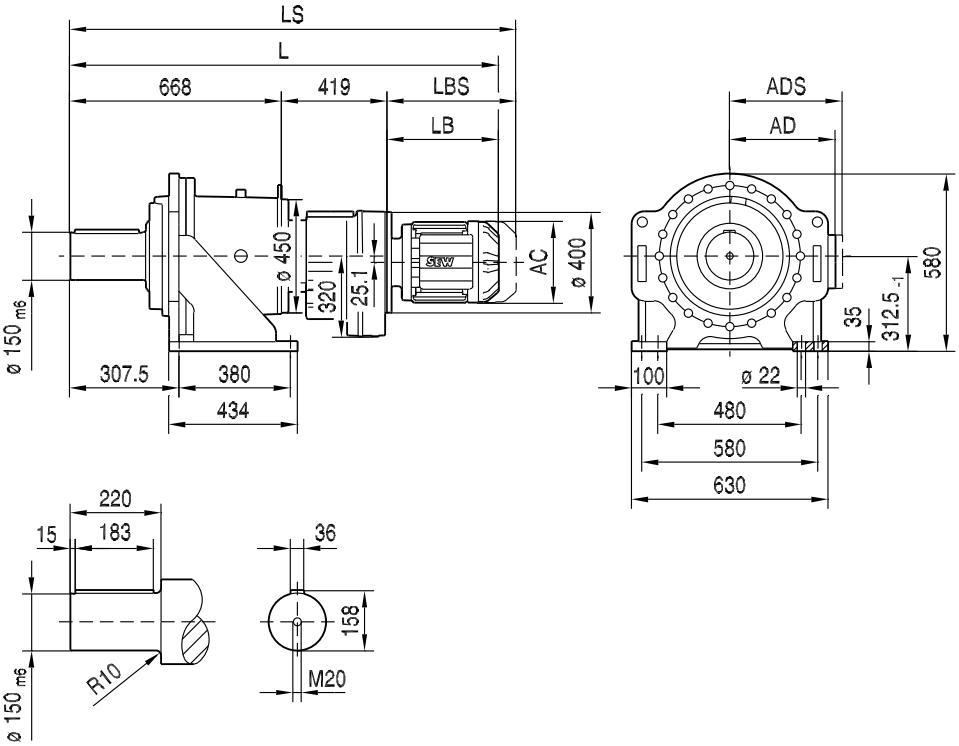


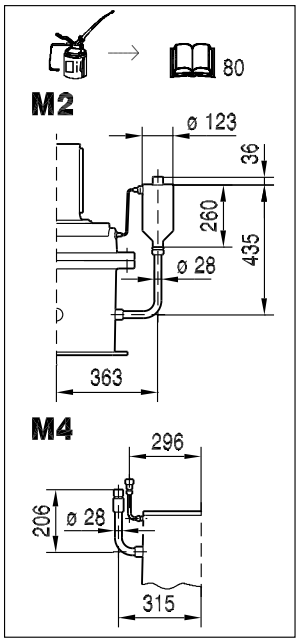
(→ 📄 91)	DRN112M	DRN132M	DRN132L	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L	DRN225
AC	221	261	268	318	318	357	357	394	434
AD	170	228	228	253	253	268	268	306	306
ADS	172	228	228	253	253	268	268	306	306
L	1386	1453	1478	1546	1546	1572	1572	1679	1634
LS	1498	1592	1617	1735	1735	1761	1761	1884	1839
LB	363	430	455	523	523	549	549	656	611
LBS	475	569	594	712	712	738	738	861	816

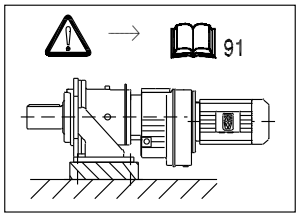
21915180/EN – 04/2015

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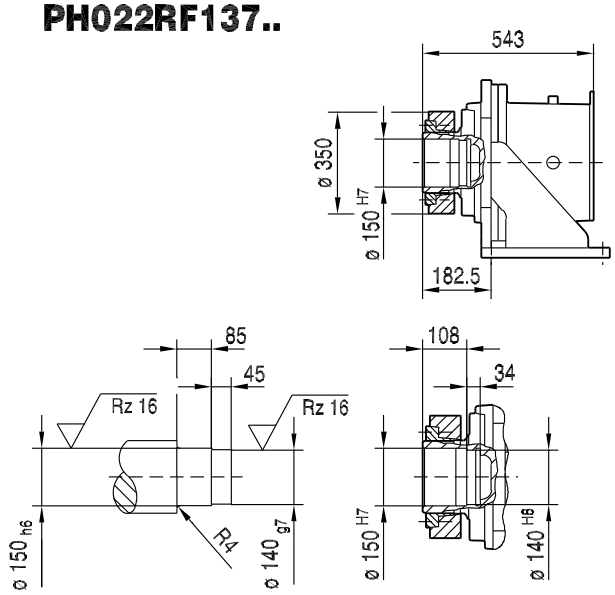
45 012 02 08







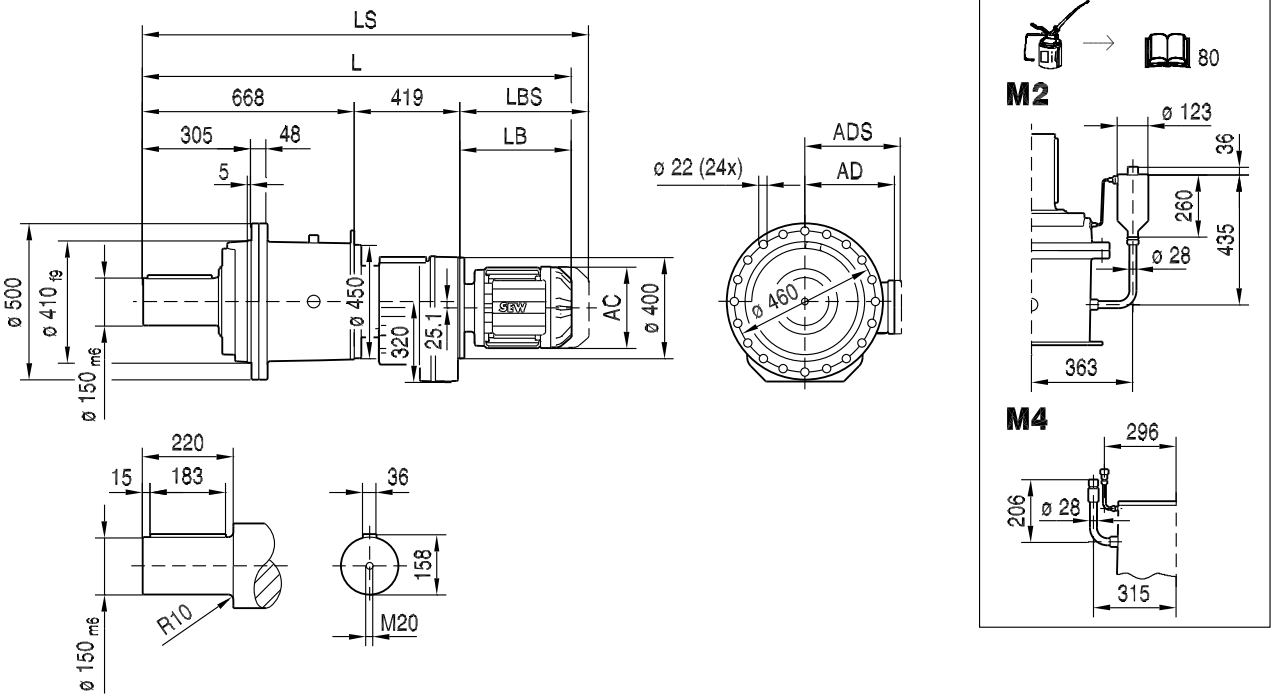
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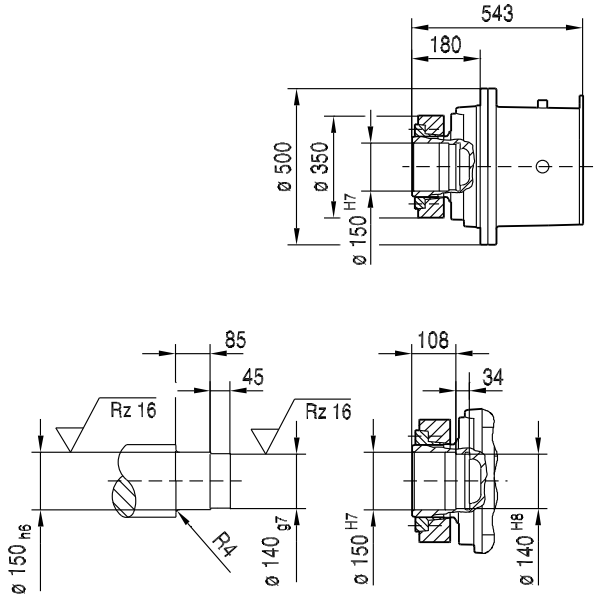
(→ 91)	DRN225	DRN250M						
AC	434	495						
AD	306	394						
ADS	306	394						
L	1691	1847						
LS	1896	2087						
LB	604	760						
LBS	809	1000						

PF022RF137..

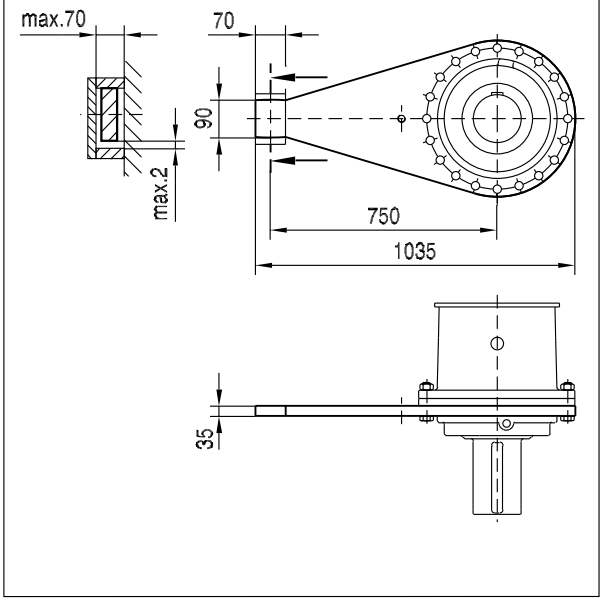
45 041 02 08



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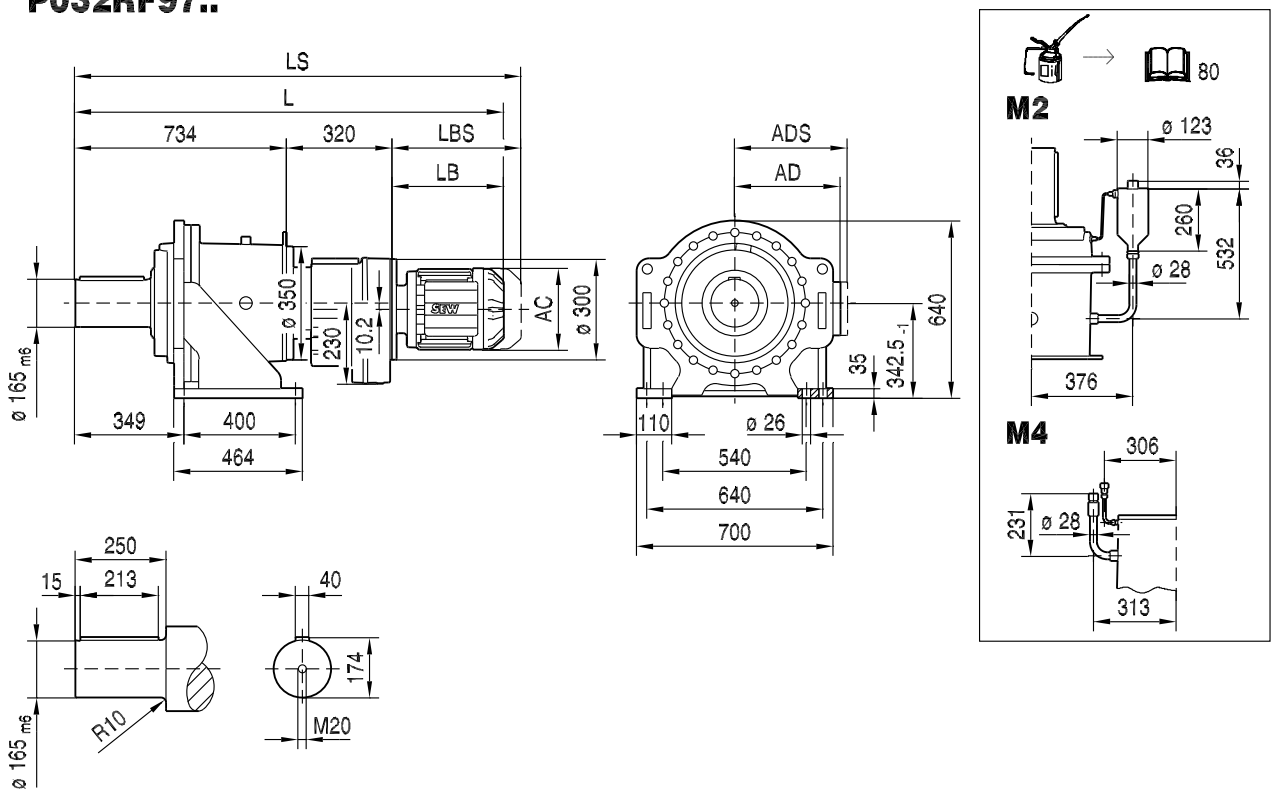


(→ 91)	DRN225	DRN250M						
AC	434	495						
AD	306	394						
ADS	306	394						
L	1691	1847						
LS	1896	2087						
LB	604	760						
LBS	809	1000						

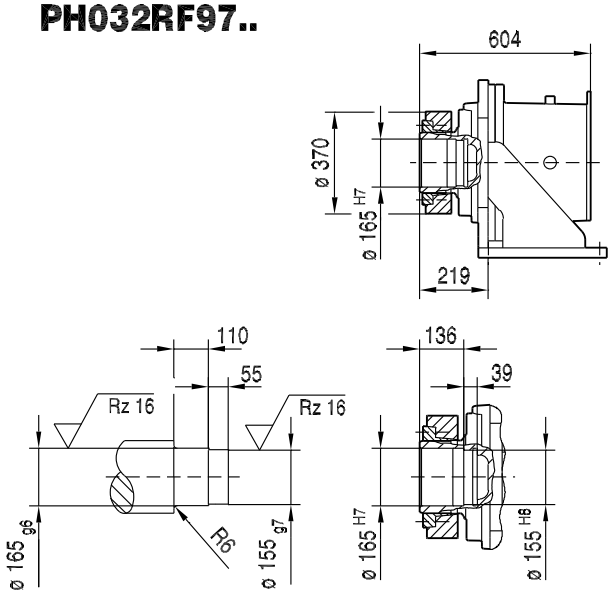
21915180/EN – 04/2015

P032RF97..

45 013 02 08



PH032RF97..

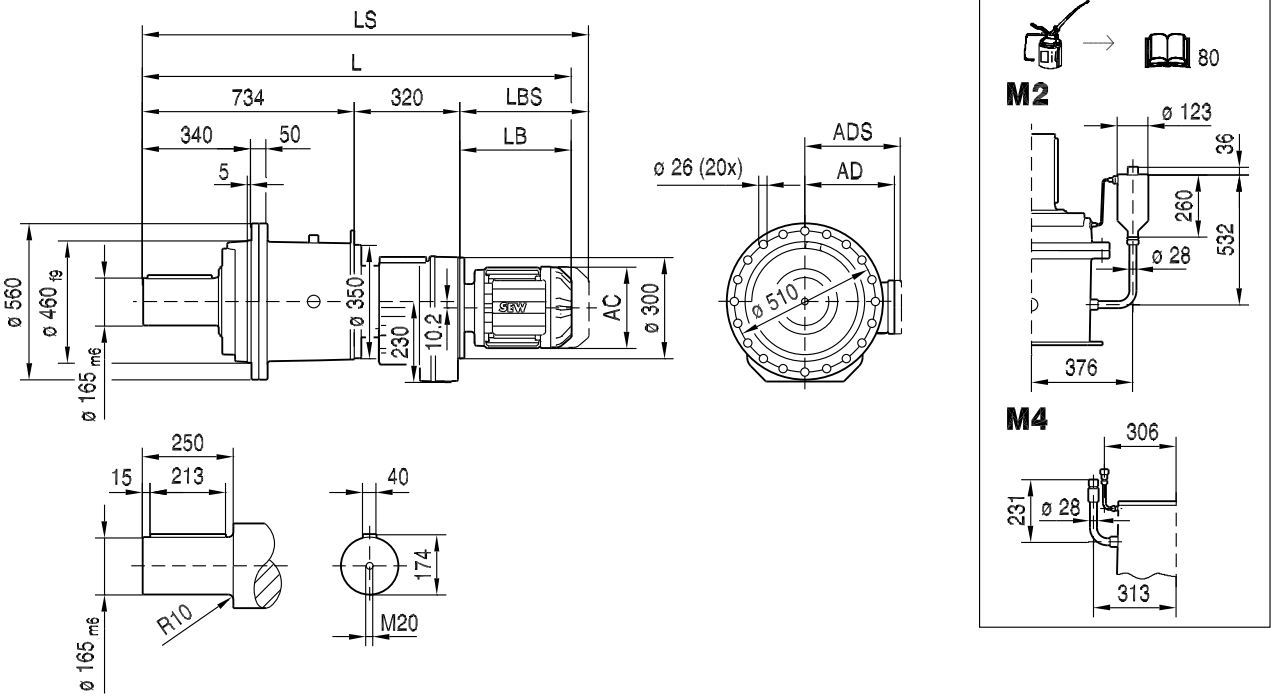


(→ 91)	DRN100LS	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180M	DRN200L
AC	197	197	221	221	261	268	318	318	357	394
AD	157	157	170	170	228	228	253	253	268	306
ADS	158	158	172	172	228	228	253	253	268	306
L	1342	1392	1423	1473	1490	1515	1583	1583	1609	1716
LS	1436	1486	1535	1585	1629	1654	1772	1772	1798	1921
LB	288	338	369	419	436	461	529	529	555	662
LBS	382	432	481	531	575	600	718	718	744	867

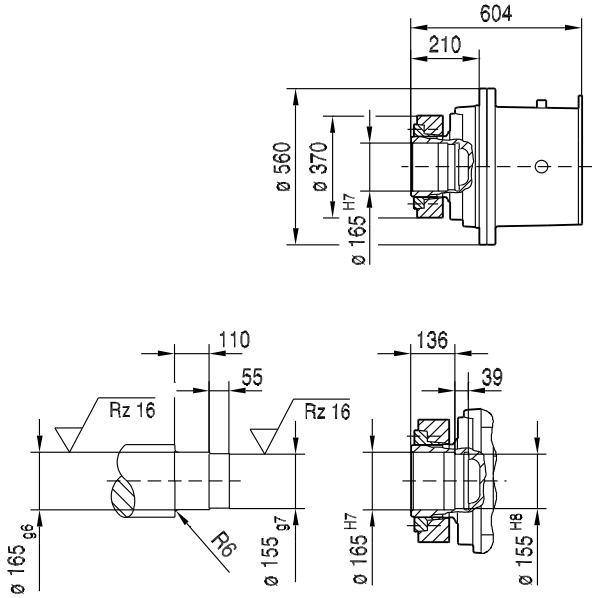
21915180/EN – 04/2015

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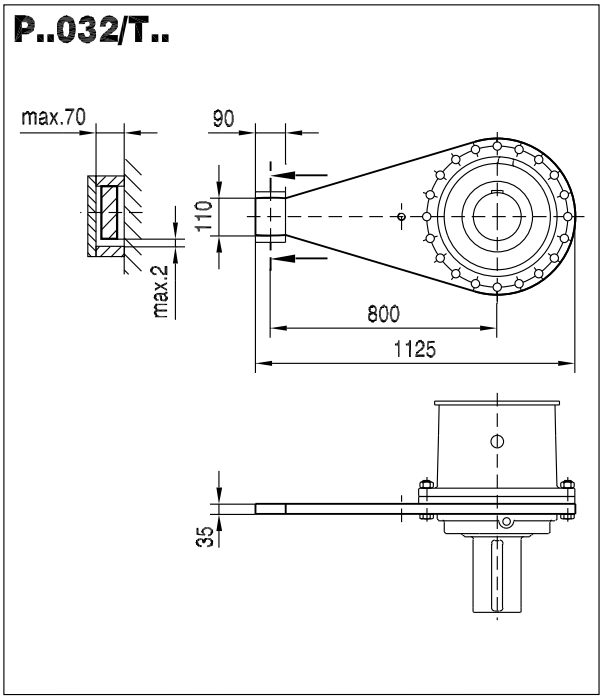
45 042 02 08



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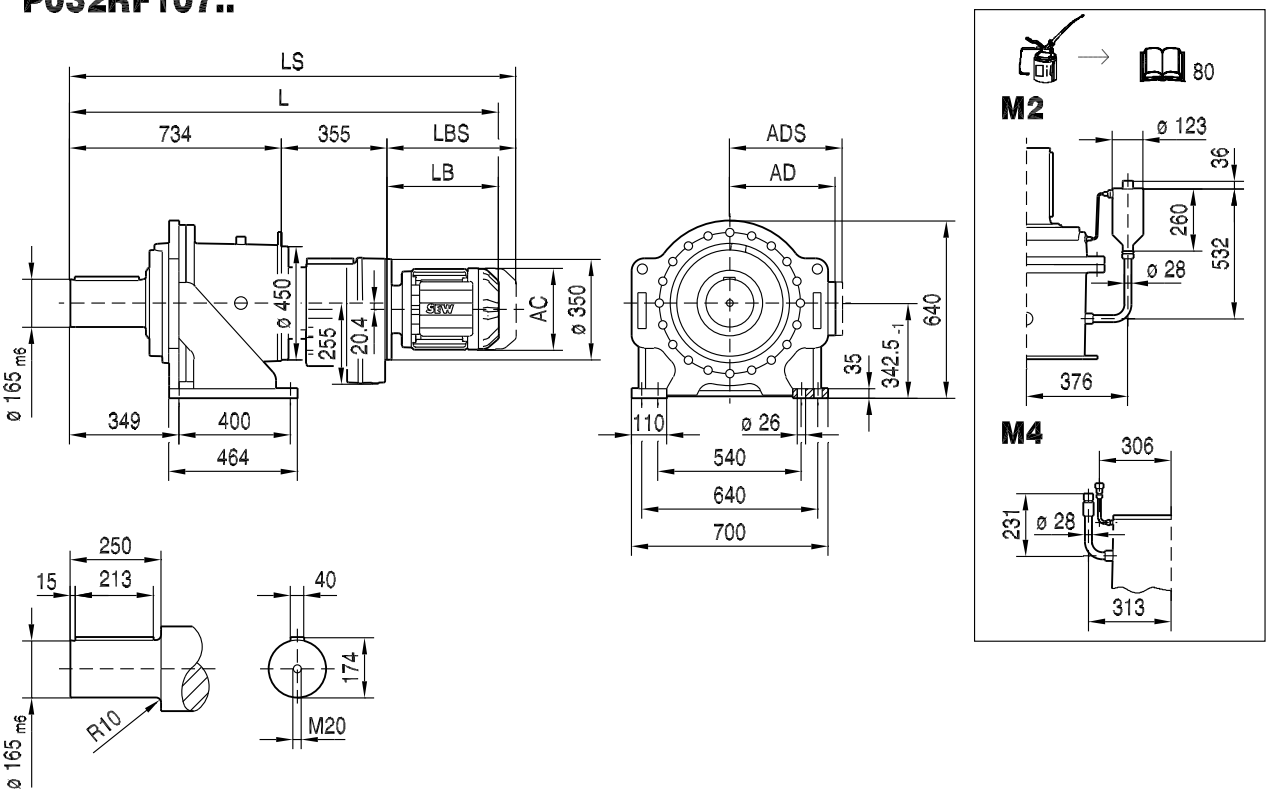


(→ 📄 91)	DRN100LS	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180M	DRN200L
AC	197	197	221	221	261	268	318	318	357	394
AD	157	157	170	170	228	228	253	253	268	306
ADS	158	158	172	172	228	228	253	253	268	306
L	1342	1392	1423	1473	1490	1515	1583	1583	1609	1716
LS	1436	1486	1535	1585	1629	1654	1772	1772	1798	1921
LB	288	338	369	419	436	461	529	529	555	662
LBS	382	432	481	531	575	600	718	718	744	867

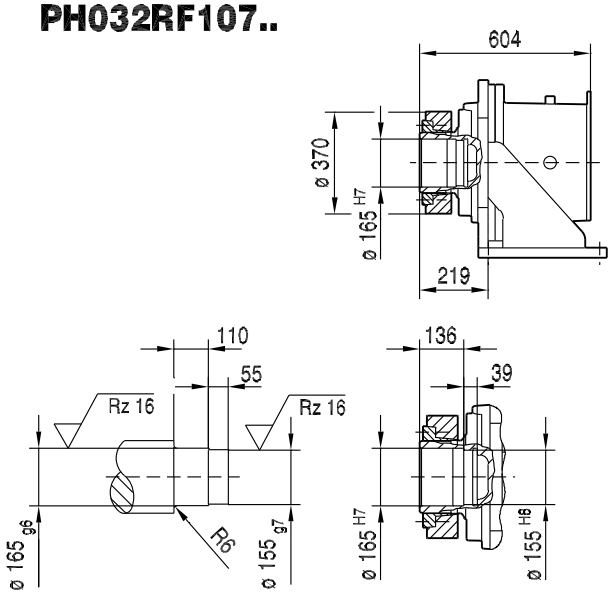
21915180/EN – 04/2015

P032RF107..

45 014 02 08



PH032RF107..

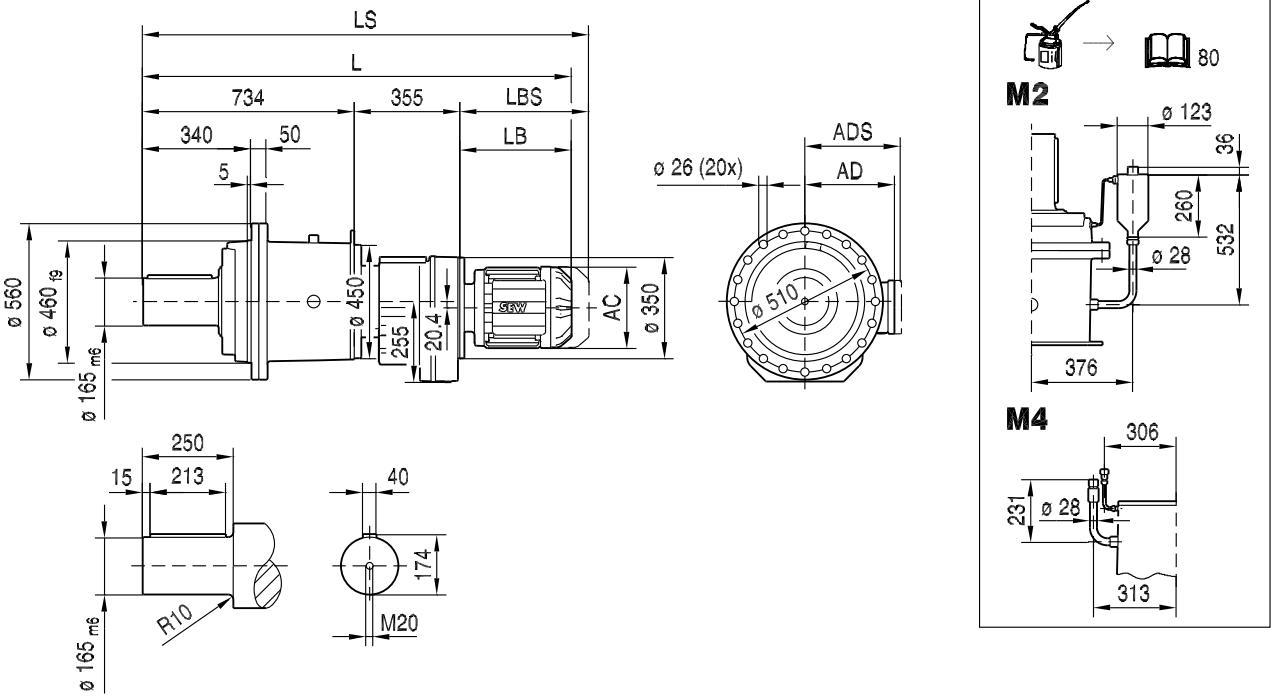


(→ 91)	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L	DRN225
AC	221	221	261	268	318	318	357	357	394	434
AD	170	170	228	228	253	253	268	268	306	306
ADS	172	172	228	228	253	253	268	268	306	306
L	1452	1502	1519	1544	1612	1612	1638	1638	1745	1700
LS	1564	1614	1658	1683	1801	1801	1827	1827	1950	1905
LB	363	413	430	455	523	523	549	549	656	611
LBS	475	525	569	594	712	712	738	738	861	816

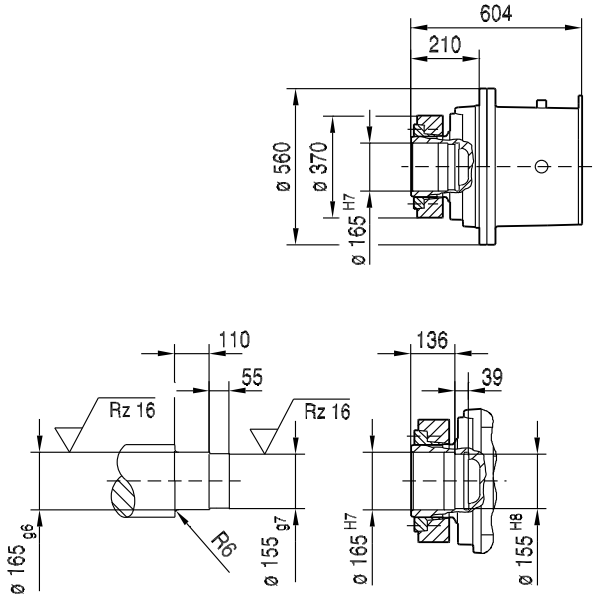
21915180/EN – 04/2015

45 043 02 08

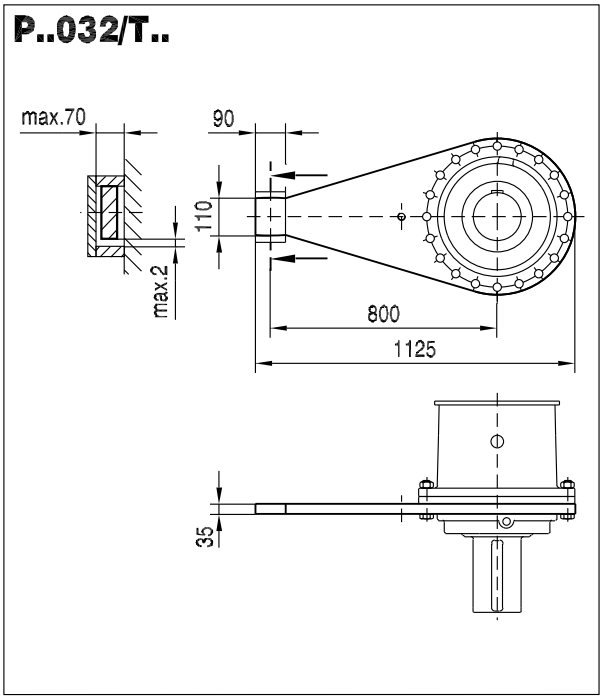
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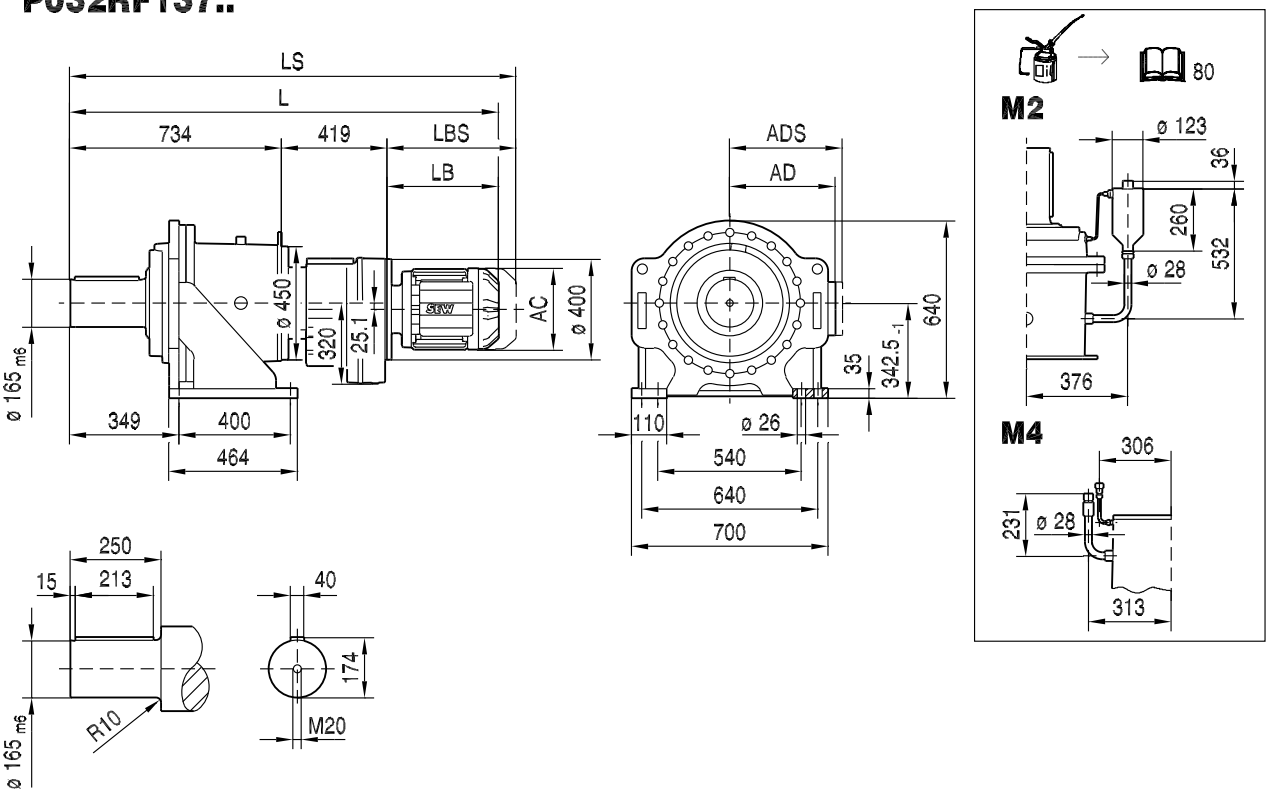


(→ 📄 91)	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L	DRN225
AC	221	221	261	268	318	318	357	357	394	434
AD	170	170	228	228	253	253	268	268	306	306
ADS	172	172	228	228	253	253	268	268	306	306
L	1452	1502	1519	1544	1612	1612	1638	1638	1745	1700
LS	1564	1614	1658	1683	1801	1801	1827	1827	1950	1905
LB	363	413	430	455	523	523	549	549	656	611
LBS	475	525	569	594	712	712	738	738	861	816

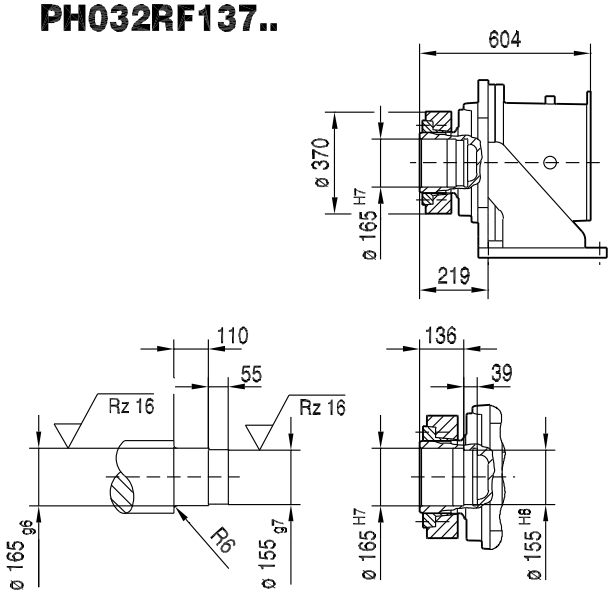
21915180/EN – 04/2015

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45 015 02 08



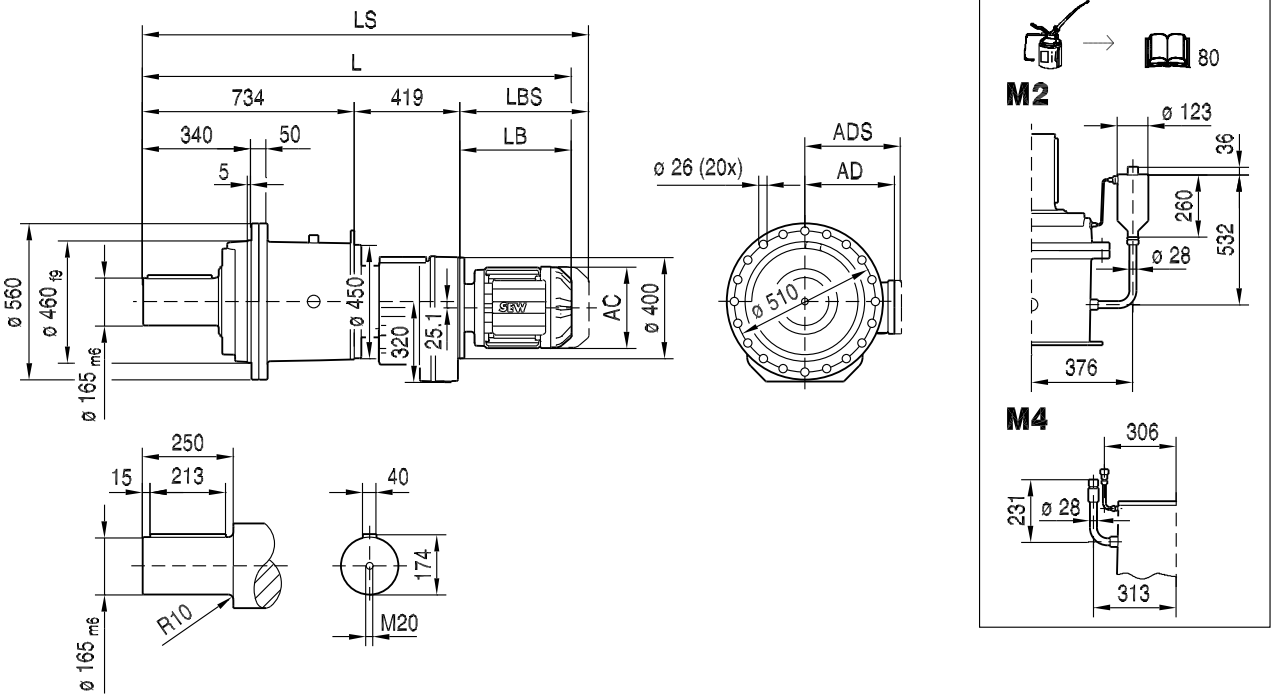
PH032RF137..



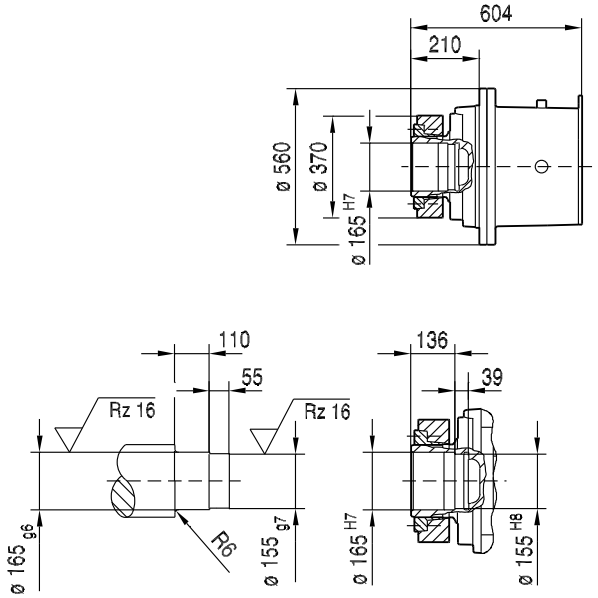
(→ 91)	DRN225	DRN250M						
AC	434	495						
AD	306	394						
ADS	306	394						
L	1757	1913						
LS	1962	2153						
LB	604	760						
LBS	809	1000						

PF032RF137..

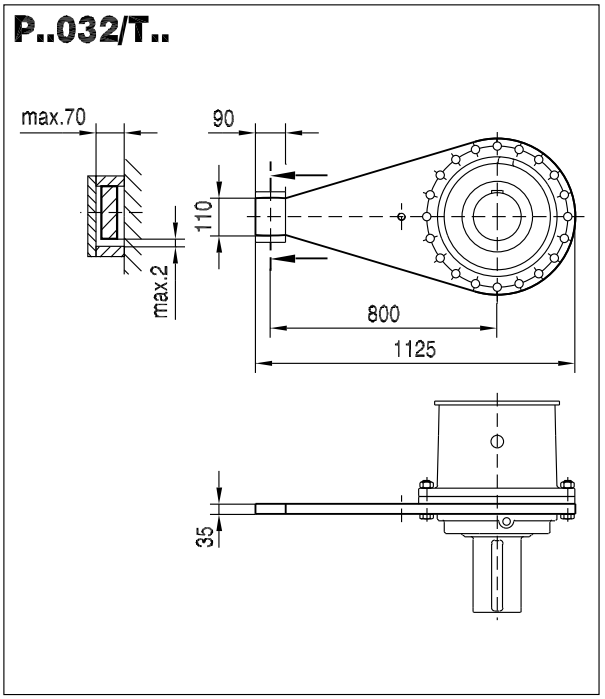
45 044 02 08



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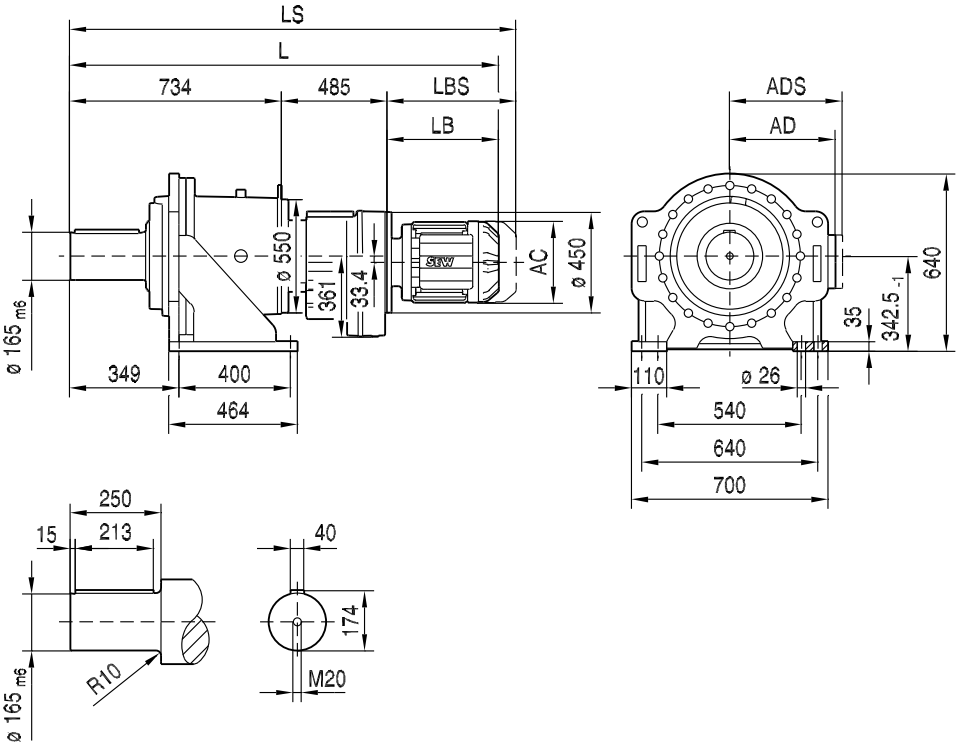


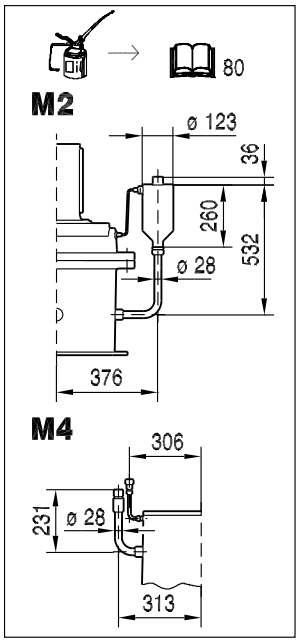
(→ 🗎 91)	DRN225	DRN250M						
AC	434	495						
AD	306	394						
ADS	306	394						
L	1757	1913						
LS	1962	2153						
LB	604	760						
LBS	809	1000						

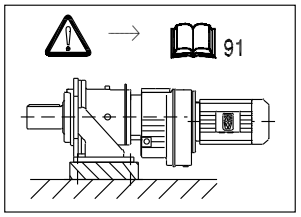
21915180/EN – 04/2015

P032RF147..

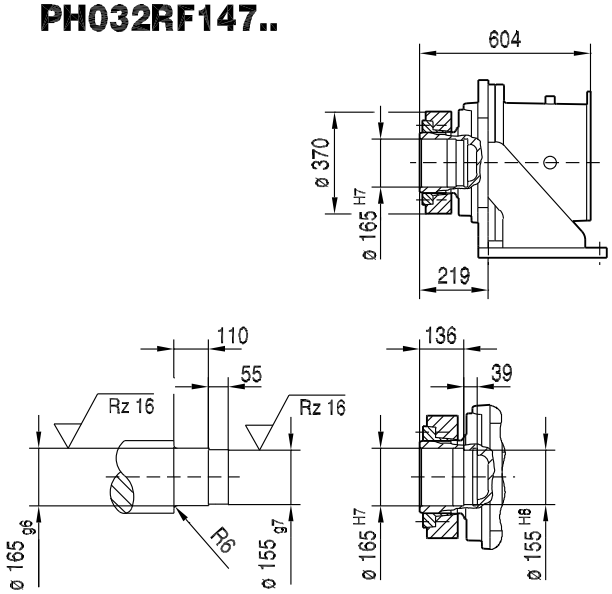
45 016 02 08







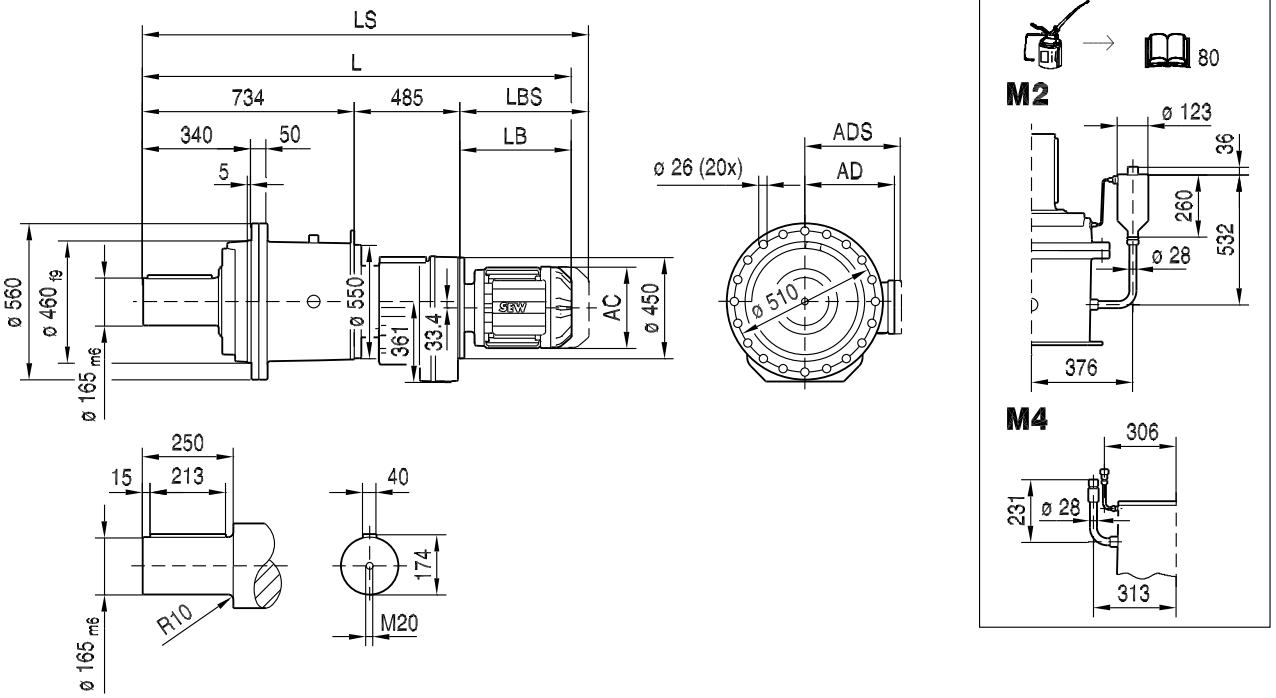
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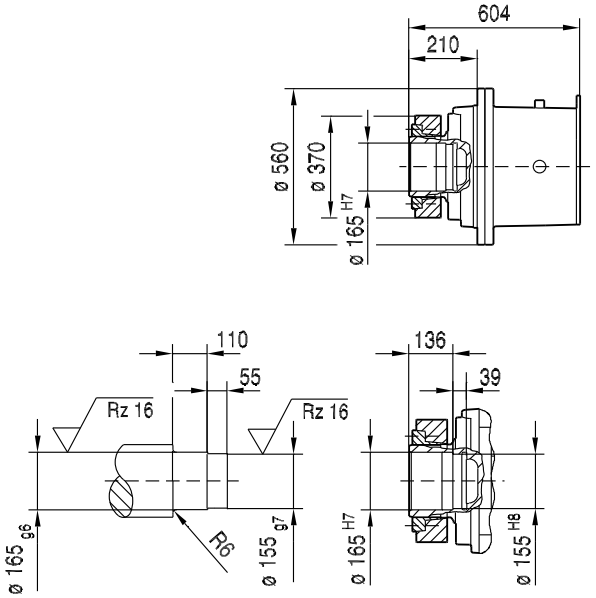
(→ 91)	DRN280M	DRN280S						
AC	495	495						
AD	394	394						
ADS	394	394						
L	2066	1971						
LS	2306	2211						
LB	847	752						
LBS	1087	992						

PF032RF147..

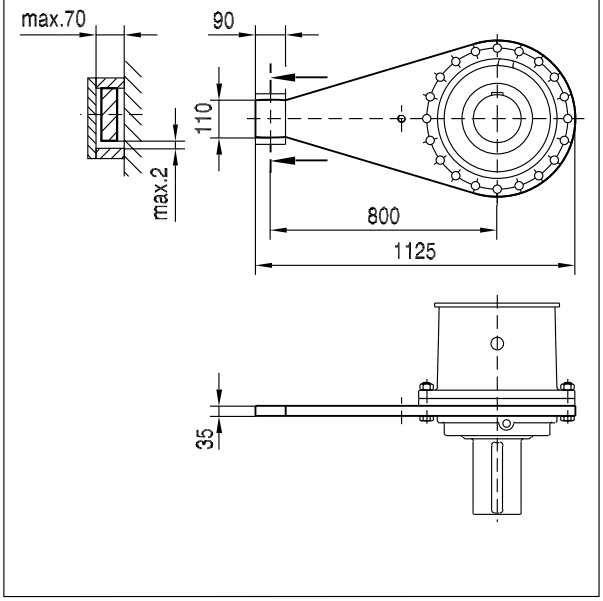
45 045 02 08



PHF032RF147..



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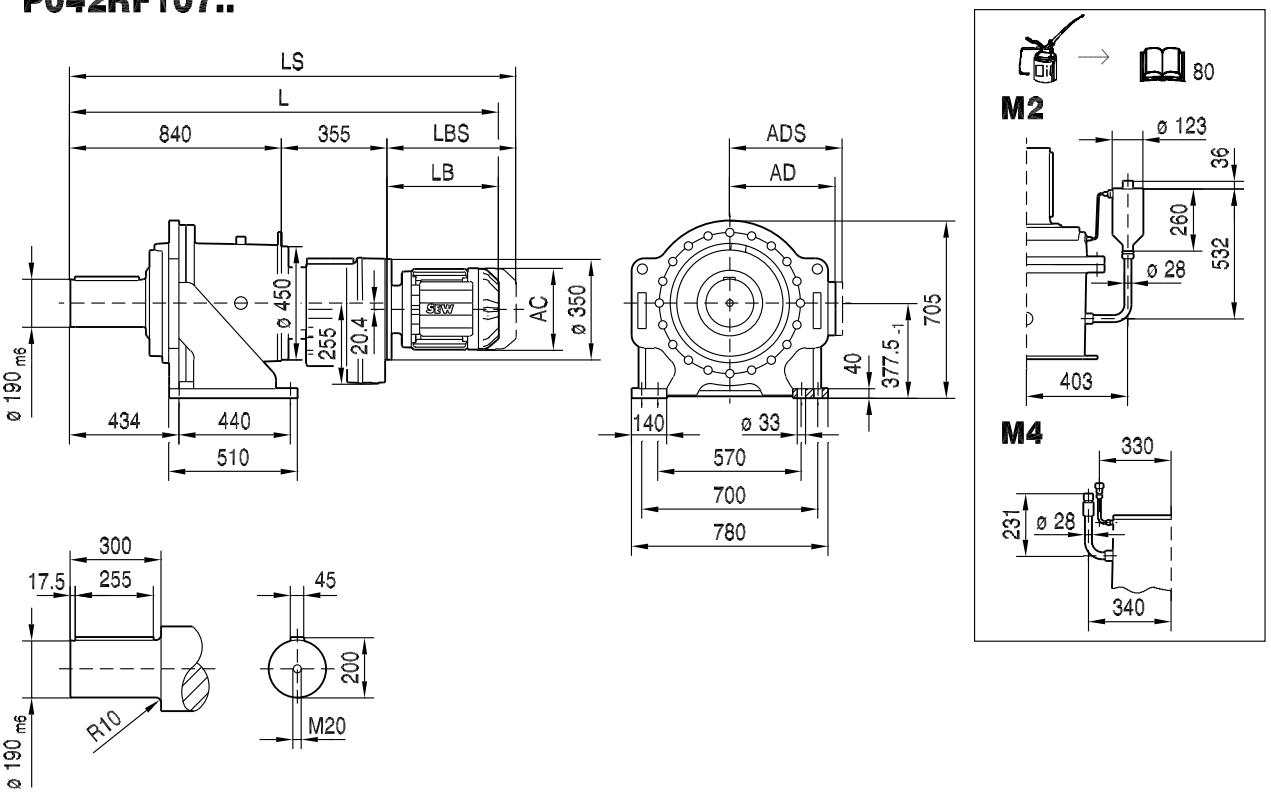


(→ 91)	DRN280M	DRN280S						
AC	495	495						
AD	394	394						
ADS	394	394						
L	2066	1971						
LS	2306	2211						
LB	847	752						
LBS	1087	992						

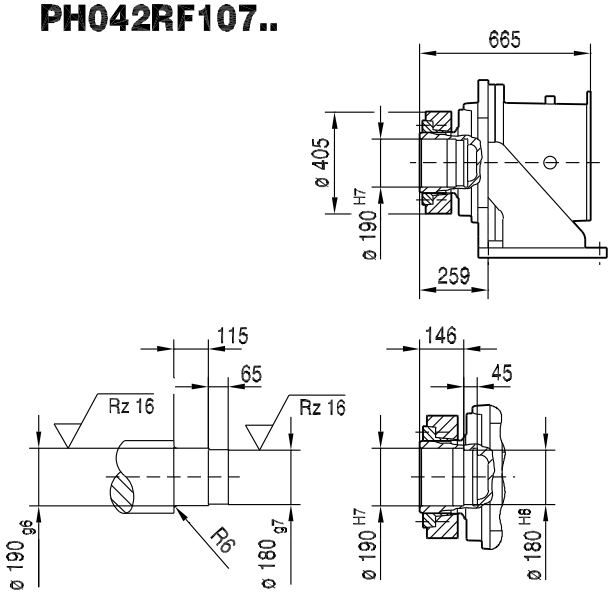
21915180/EN – 04/2015

P042RF107..

45 017 02 08



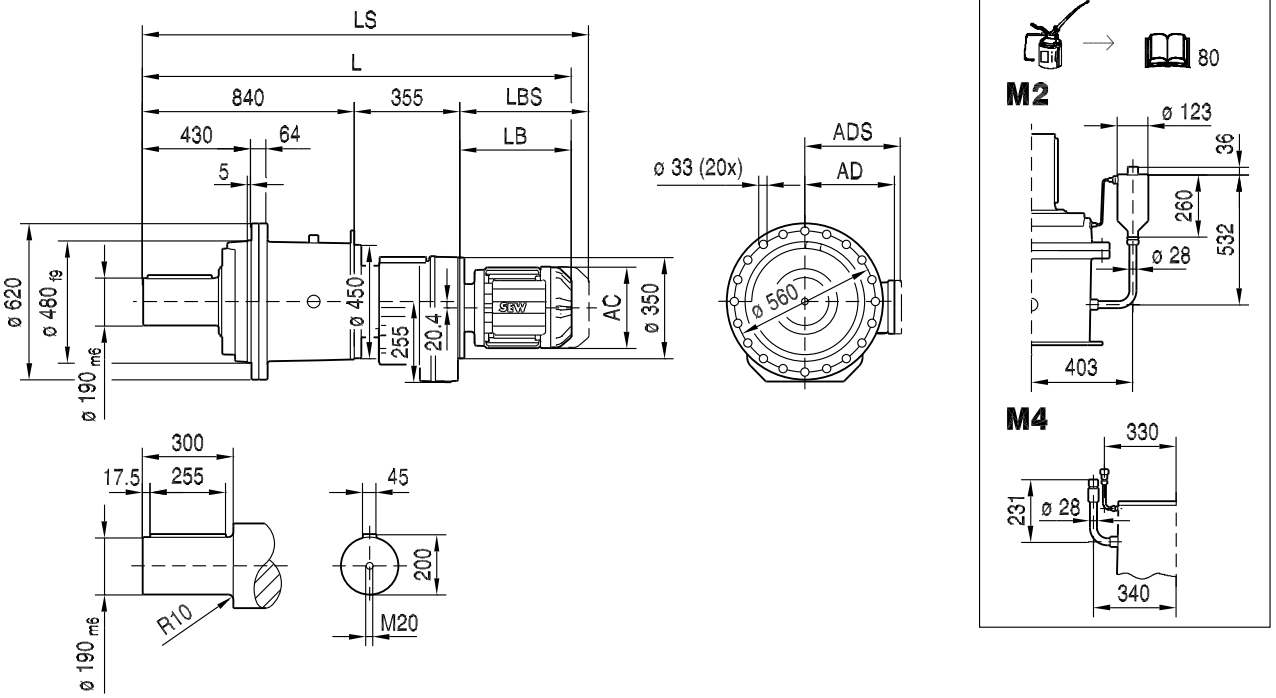
PH042RF107..



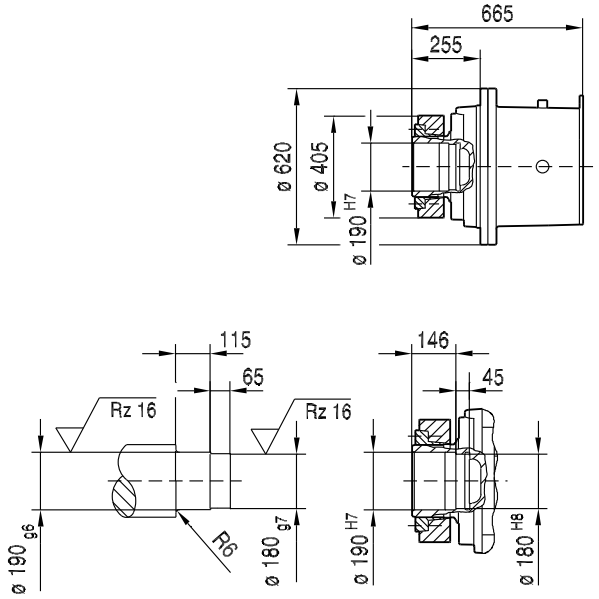
(→ 91)	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L	DRN225
AC	221	221	261	268	318	318	357	357	394	434
AD	170	170	228	228	253	253	268	268	306	306
ADS	172	172	228	228	253	253	268	268	306	306
L	1558	1608	1625	1650	1718	1718	1744	1744	1851	1806
LS	1670	1720	1764	1789	1907	1907	1933	1933	2056	2011
LB	363	413	430	455	523	523	549	549	656	611
LBS	475	525	569	594	712	712	738	738	861	816

PF042RF107..

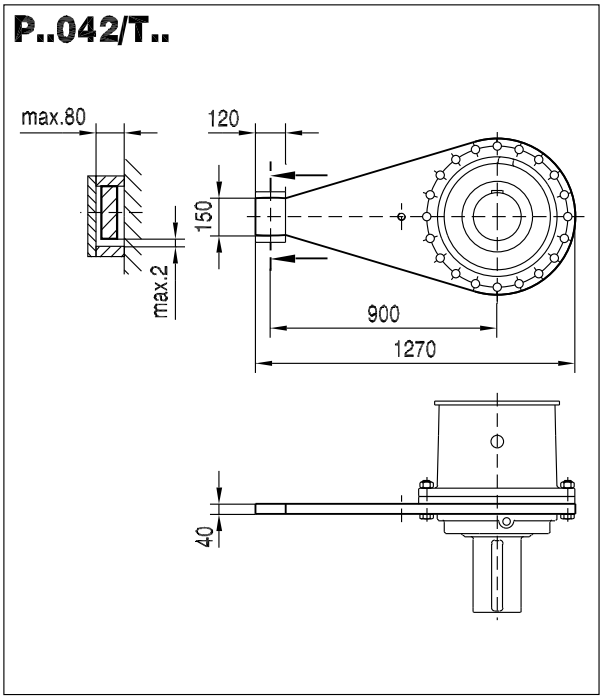
45 046 02 08



PHF042RF107..



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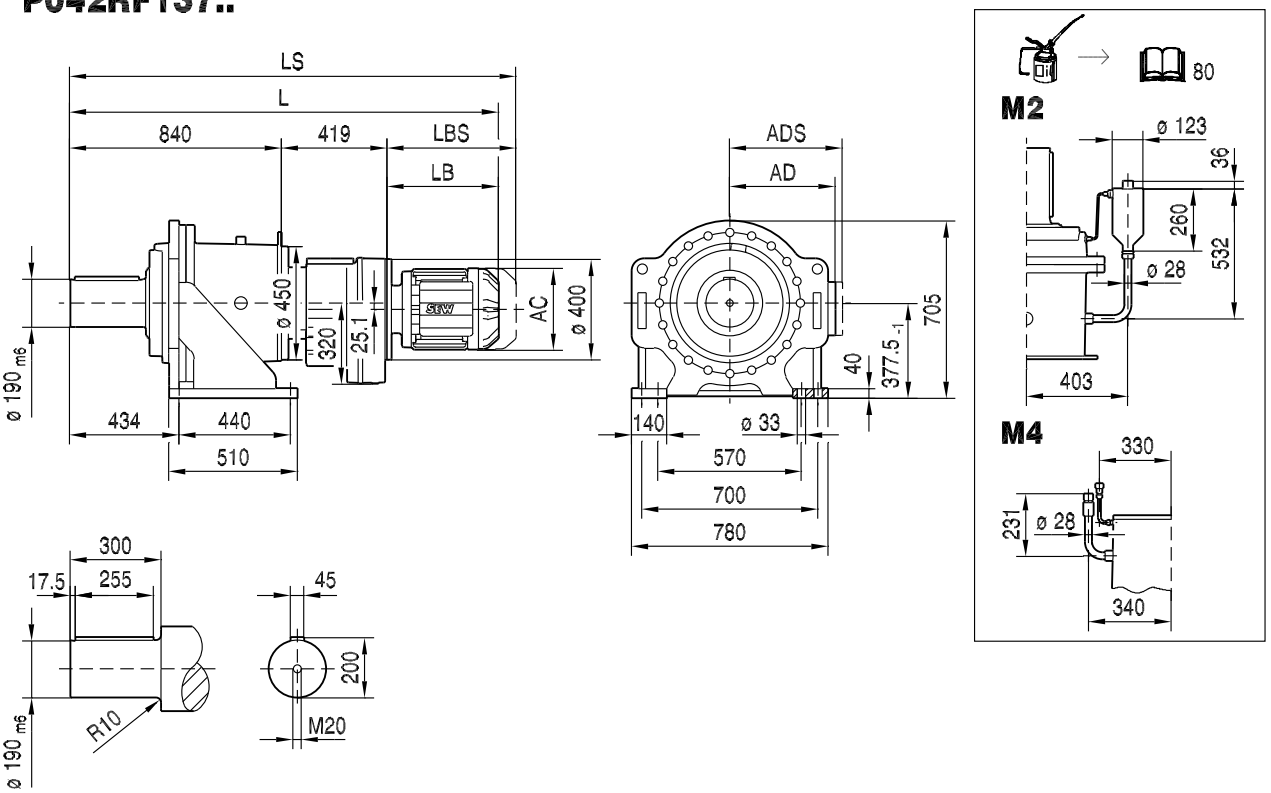


(→ 📄 91)	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L	DRN225
AC	221	221	261	268	318	318	357	357	394	434
AD	170	170	228	228	253	253	268	268	306	306
ADS	172	172	228	228	253	253	268	268	306	306
L	1558	1608	1625	1650	1718	1718	1744	1744	1851	1806
LS	1670	1720	1764	1789	1907	1907	1933	1933	2056	2011
LB	363	413	430	455	523	523	549	549	656	611
LBS	475	525	569	594	712	712	738	738	861	816

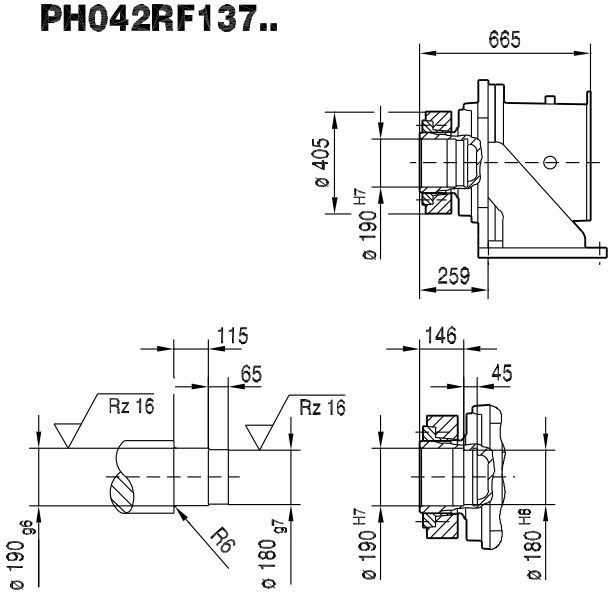
21915180/EN – 04/2015

P042RF137..

45 018 02 08



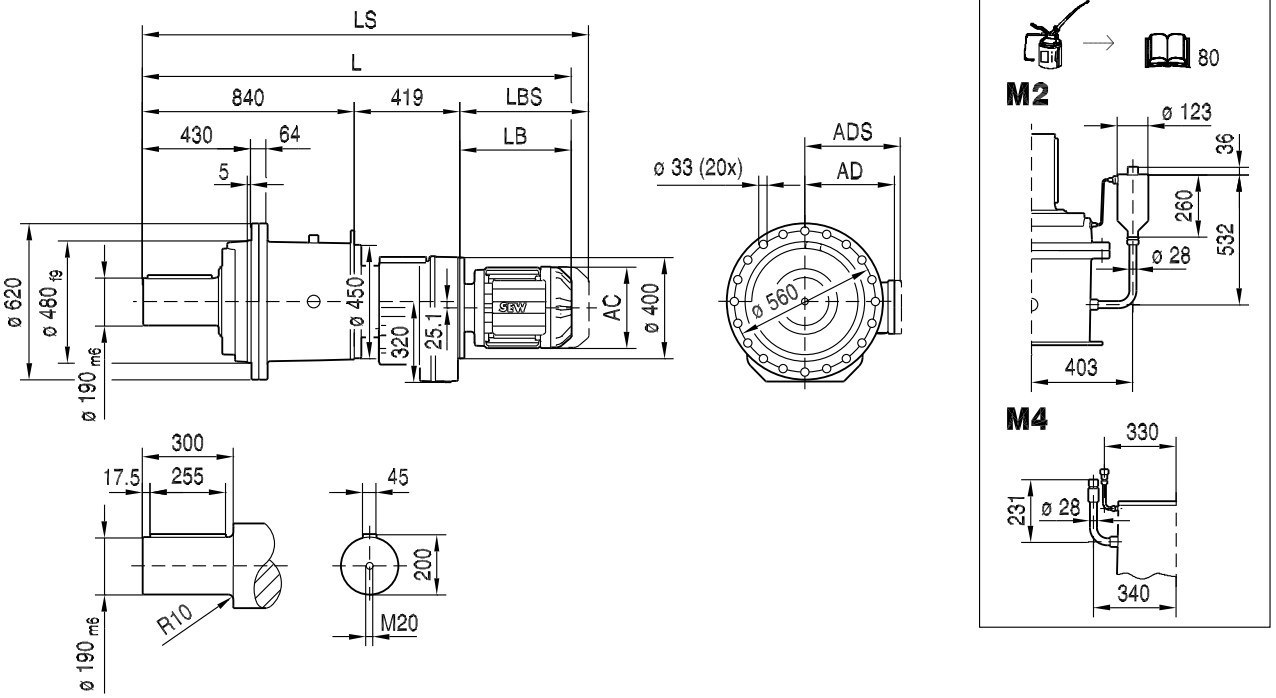
PH042RF137..



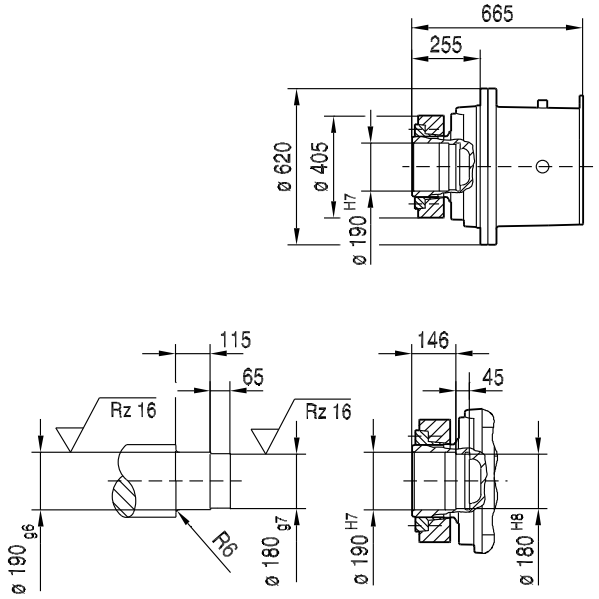
(→ 91)	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L	DRN225	DRN250M
AC	221	261	268	318	318	357	357	394	434	495
AD	170	228	228	253	253	268	268	306	306	394
ADS	172	228	228	253	253	268	268	306	306	394
L	1665	1682	1707	1775	1775	1801	1801	1908	1863	2019
LS	1777	1821	1846	1964	1964	1990	1990	2113	2068	2259
LB	406	423	448	516	516	542	542	649	604	760
LBS	518	562	587	705	705	731	731	854	809	1000

PF042RF137..

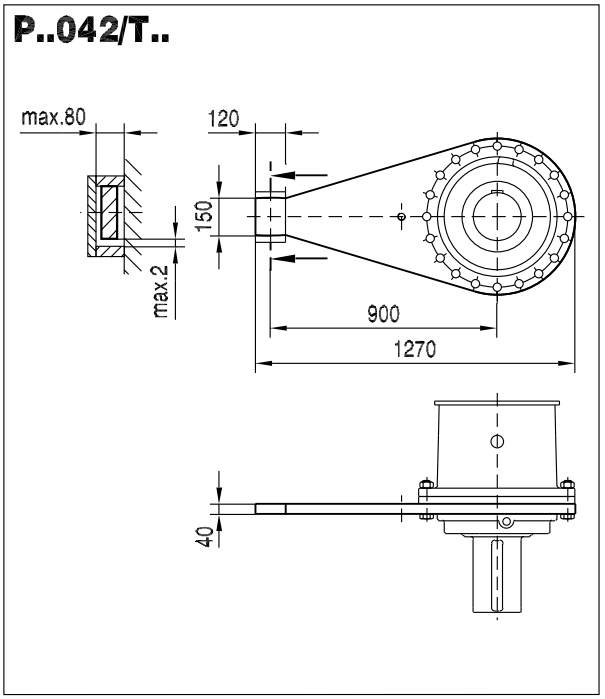
45 047 02 08



PHF042RF137..



P..042/T..

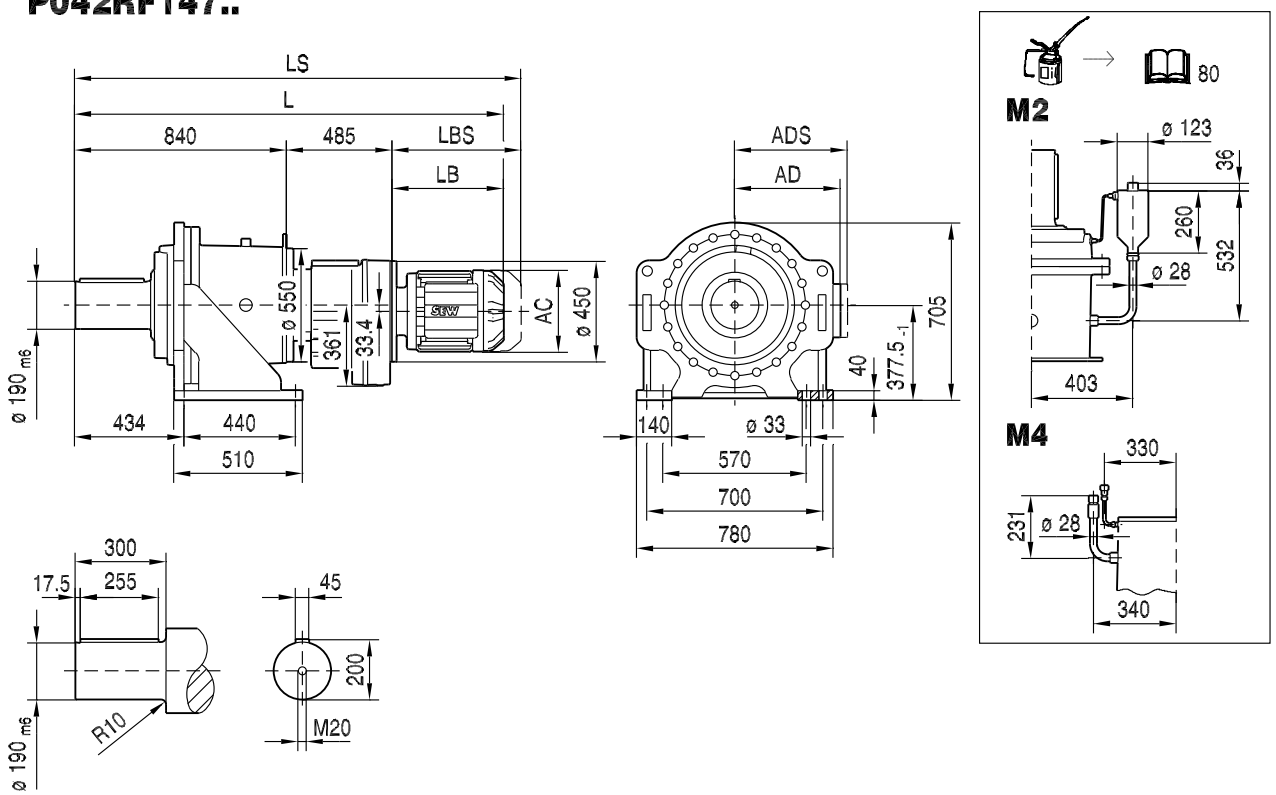


(→ 91)	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L	DRN225	DRN250M
AC	221	261	268	318	318	357	357	394	434	495
AD	170	228	228	253	253	268	268	306	306	394
ADS	172	228	228	253	253	268	268	306	306	394
L	1665	1682	1707	1775	1775	1801	1801	1908	1863	2019
LS	1777	1821	1846	1964	1964	1990	1990	2113	2068	2259
LB	406	423	448	516	516	542	542	649	604	760
LBS	518	562	587	705	705	731	731	854	809	1000

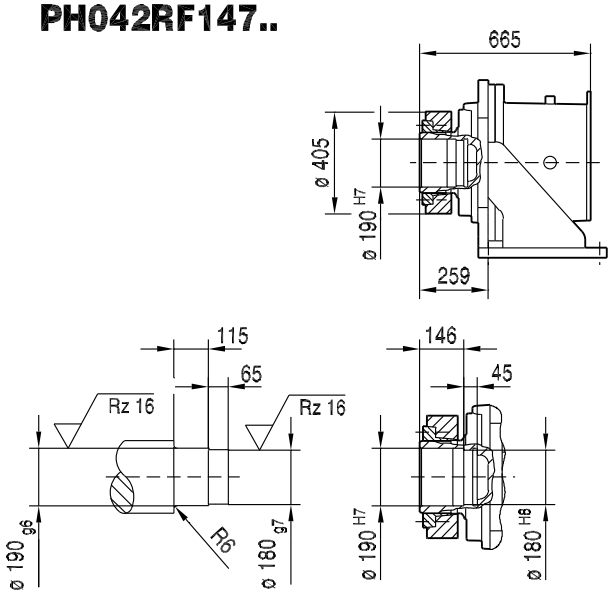
21915180/EN – 04/2015

P042RF147..

45 019 02 08



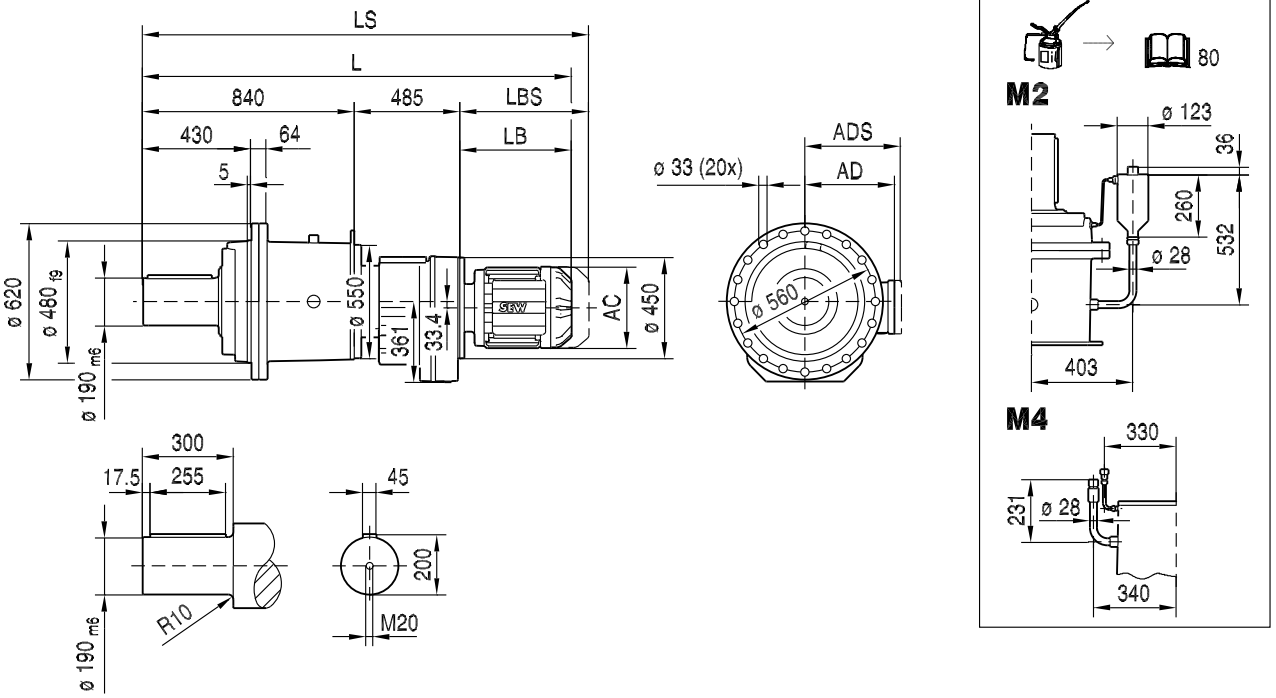
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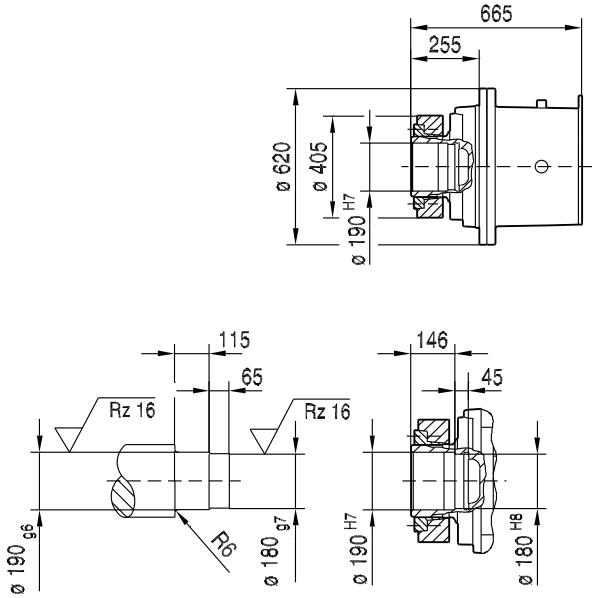
(→ 91)	DRN225	DRN250M	DRN280M	DRN280S				
AC	434	495	495	495				
AD	306	394	394	394				
ADS	306	394	394	394				
L	1921	2077	2172	2077				
LS	2126	2317	2412	2317				
LB	596	752	847	752				
LBS	801	992	1087	992				

PF042RF147..

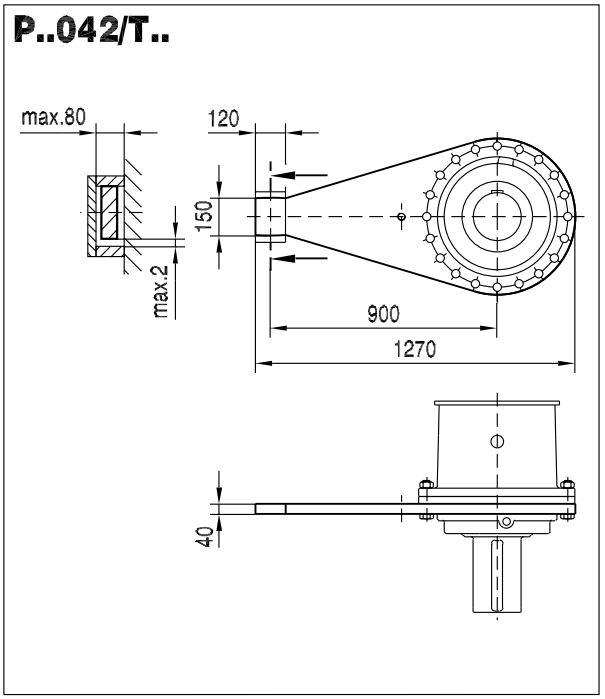
45 048 02 08



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P..042/T..

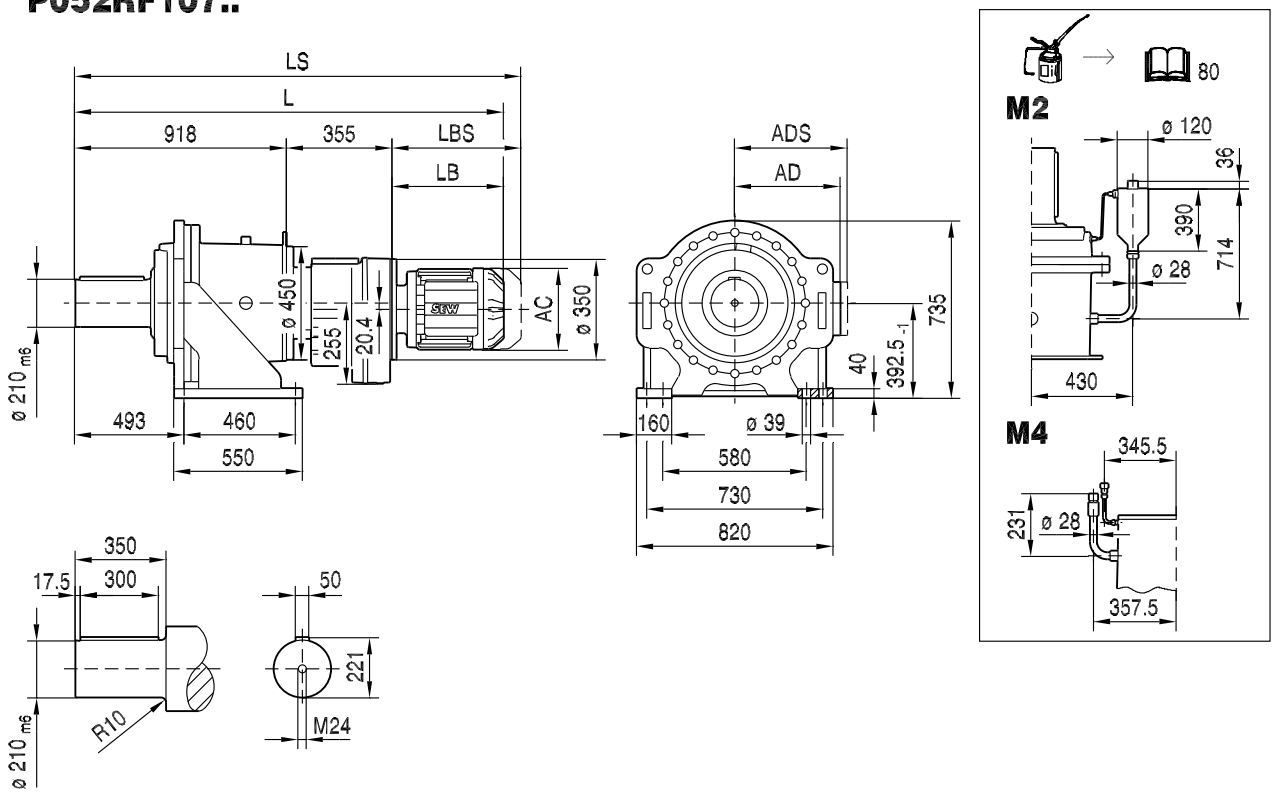


(→ 📄 91)	DRN225	DRN250M	DRN280M	DRN280S				
AC	434	495	495	495				
AD	306	394	394	394				
ADS	306	394	394	394				
L	1921	2077	2172	2077				
LS	2126	2317	2412	2317				
LB	596	752	847	752				
LBS	801	992	1087	992				

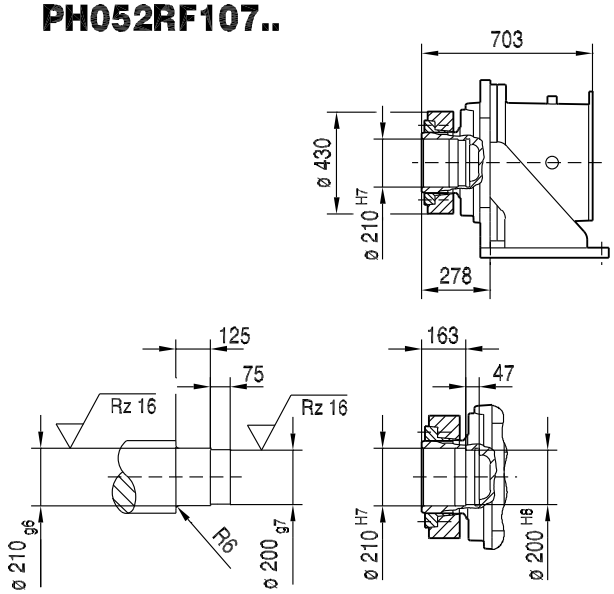
21915180/EN – 04/2015

P052RF107..

45 020 02 08



PH052RF107..

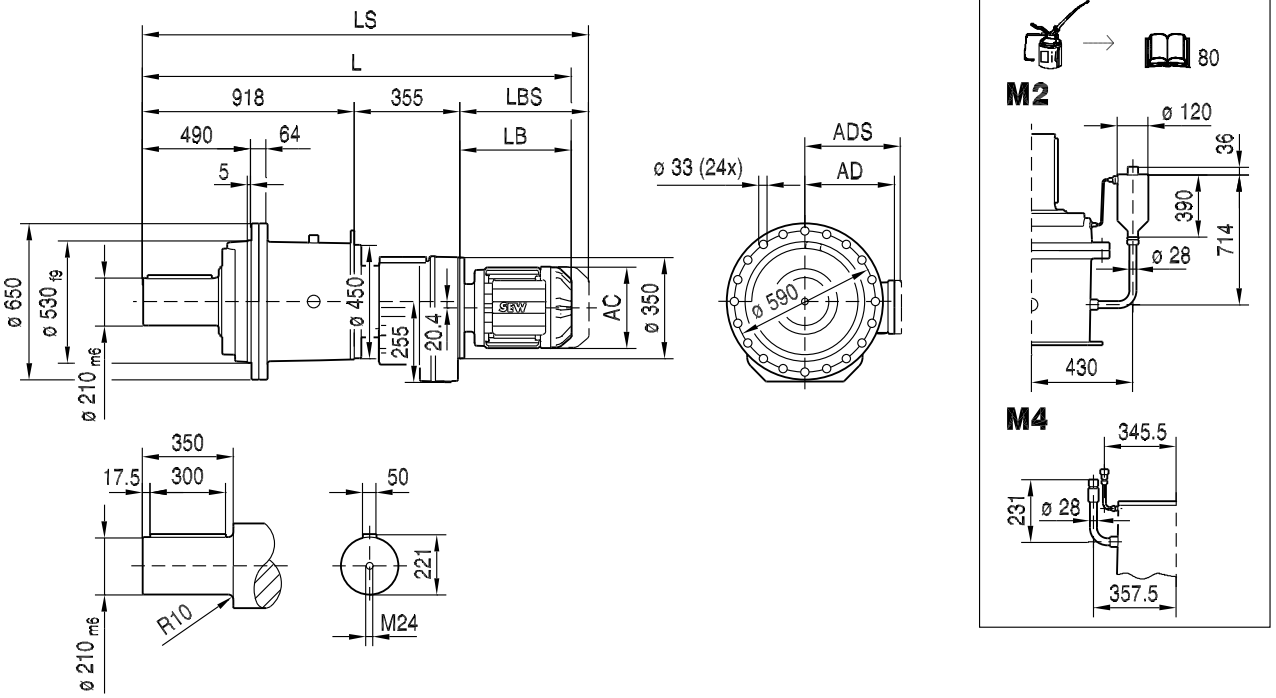


(→ 91)	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L	DRN180M	DRN180L	
AC	197	221	221	261	268	357	357	
AD	157	170	170	228	228	268	268	
ADS	158	172	172	228	228	268	268	
L	1605	1636	1686	1703	1728	1822	1822	
LS	1699	1748	1798	1842	1867	2011	2011	
LB	332	363	413	430	455	549	549	
LBS	426	475	525	569	594	738	738	

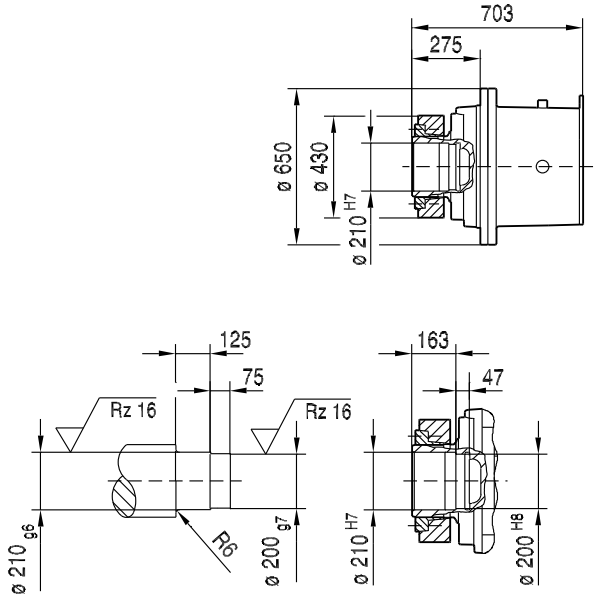
21915180/EN – 04/2015

45 049 02 08

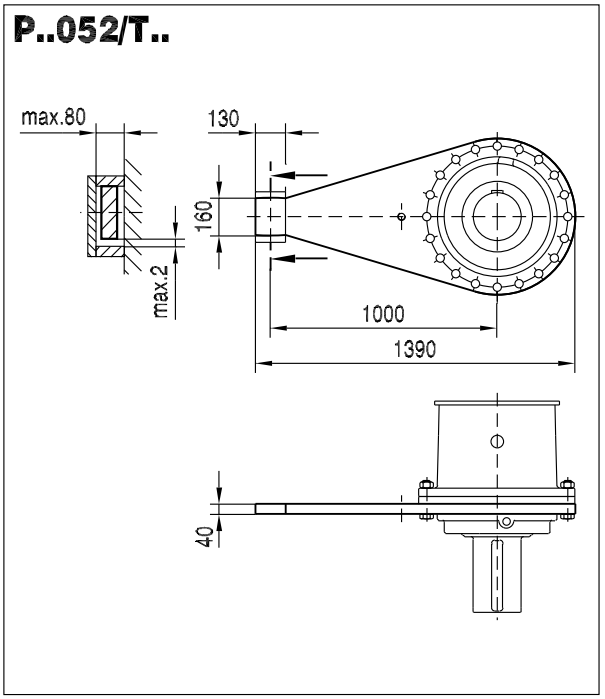
PF052RF107..



PHF052RF107..



P..052/T..

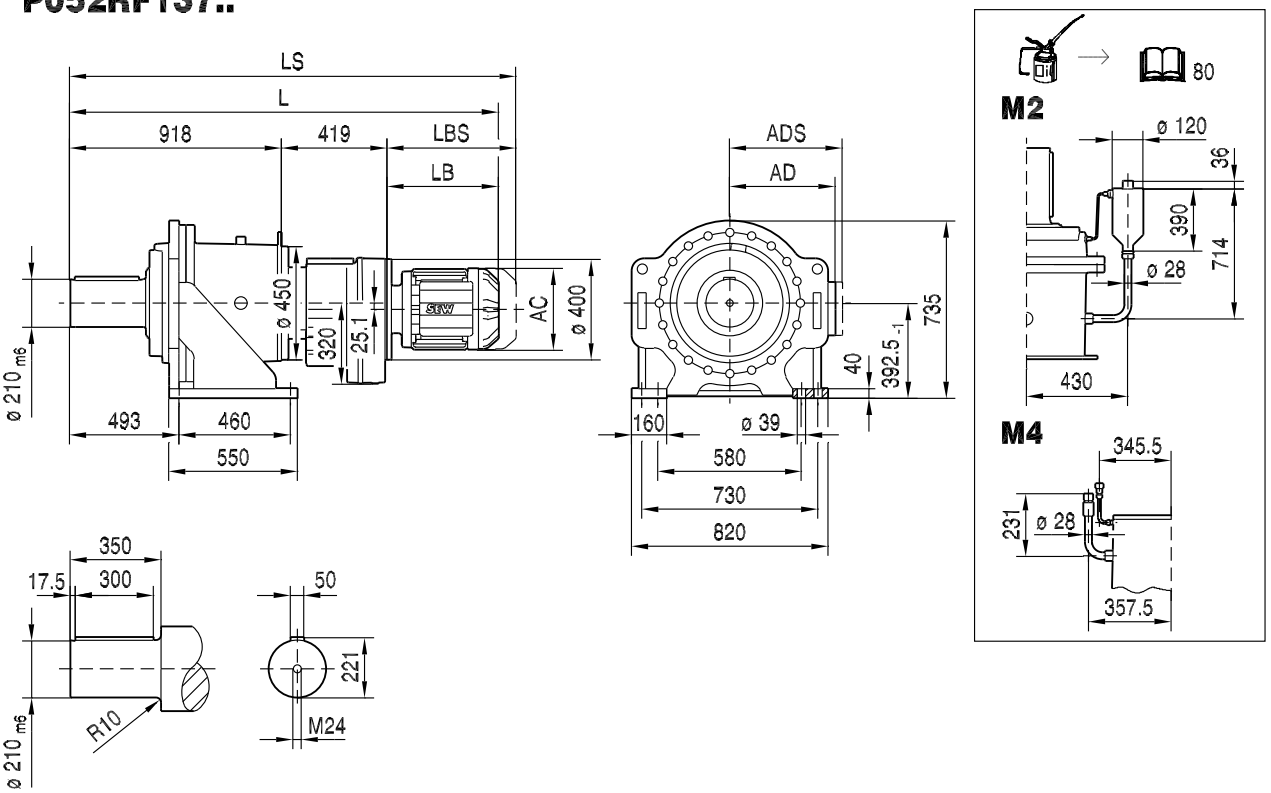


(→ 91)	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L	DRN180M	DRN180L	
AC	197	221	221	261	268	357	357	
AD	157	170	170	228	228	268	268	
ADS	158	172	172	228	228	268	268	
L	1605	1636	1686	1703	1728	1822	1822	
LS	1699	1748	1798	1842	1867	2011	2011	
LB	332	363	413	430	455	549	549	
LBS	426	475	525	569	594	738	738	

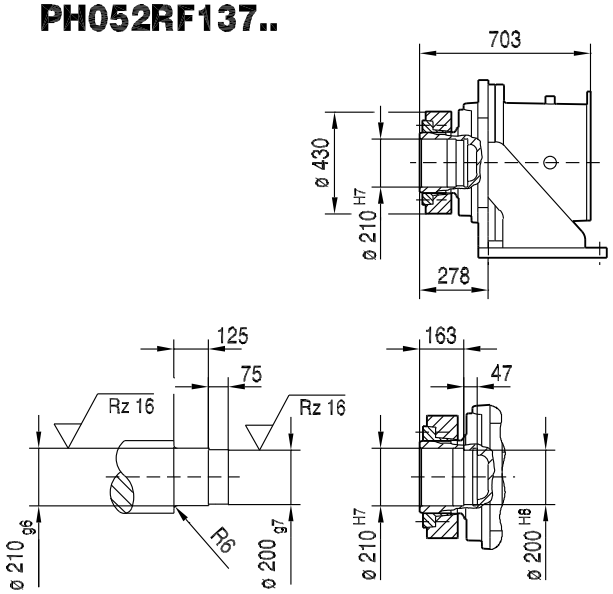
21915180/EN – 04/2015

P052RF137..

45 021 02 08



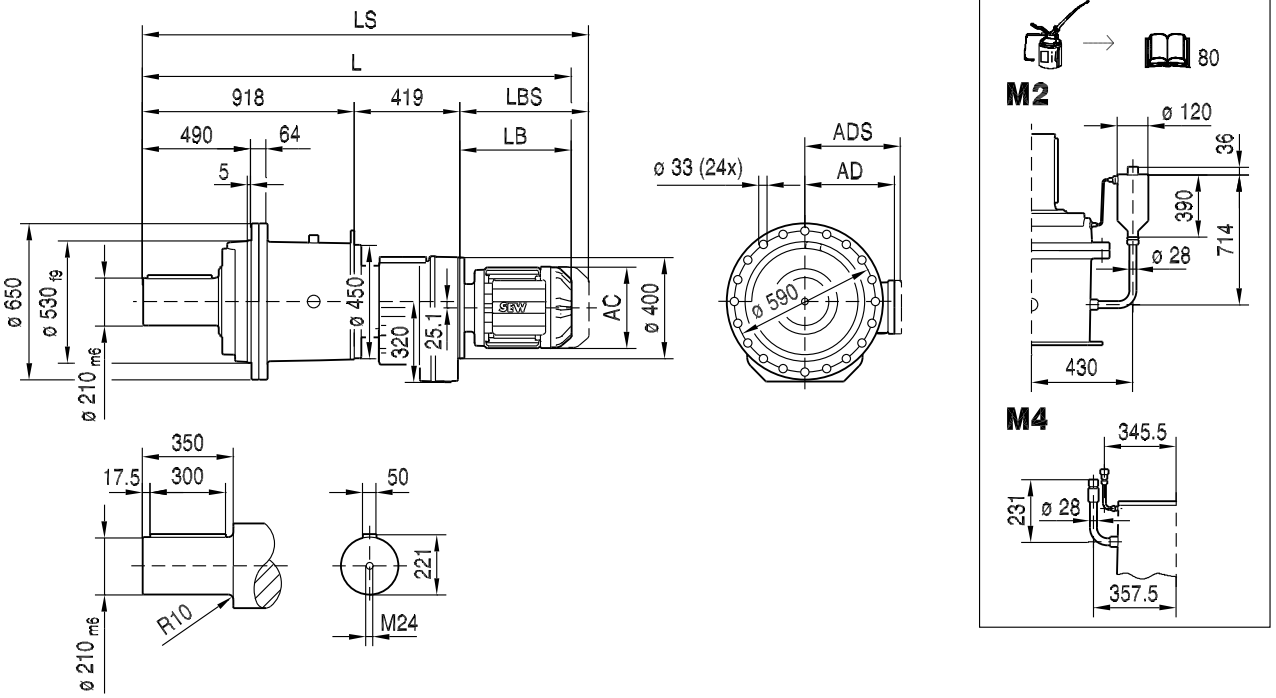
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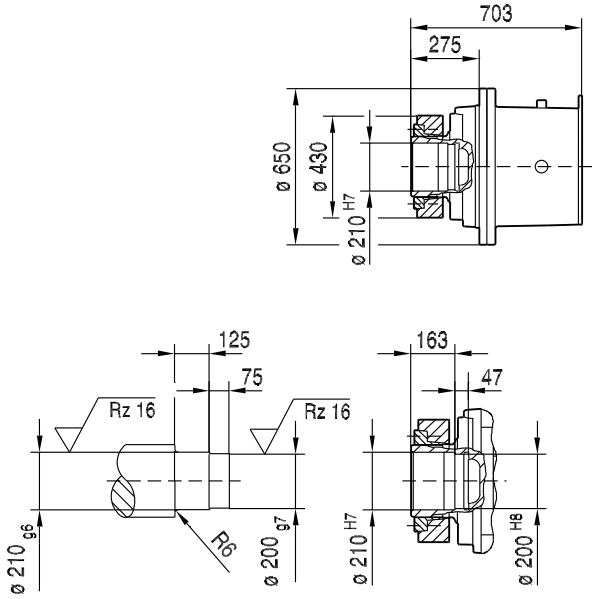
(→ 91)	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L	DRN225	DRN250M
AC	221	261	268	318	318	357	357	394	434	495
AD	170	228	228	253	253	268	268	306	306	394
ADS	172	228	228	253	253	268	268	306	306	394
L	1743	1760	1785	1853	1853	1879	1879	1986	1941	2097
LS	1855	1899	1924	2042	2042	2068	2068	2191	2146	2337
LB	406	423	448	516	516	542	542	649	604	760
LBS	518	562	587	705	705	731	731	854	809	1000

PF052RF137..

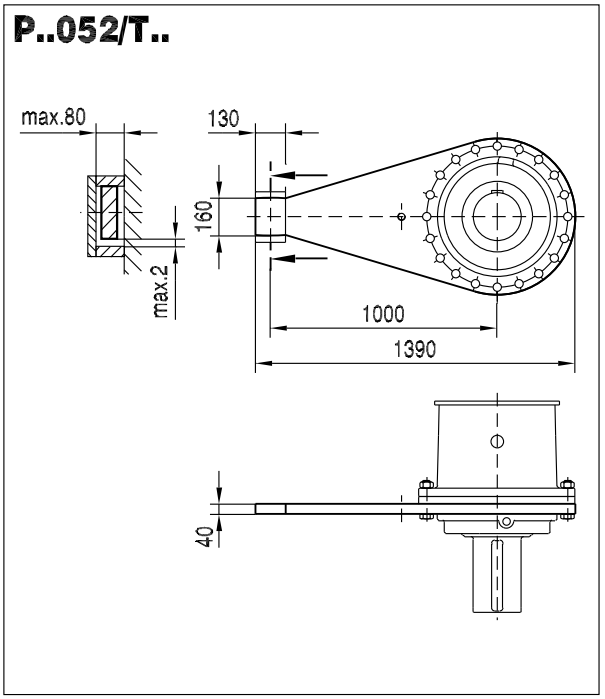
45 050 02 08



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P..052/T..

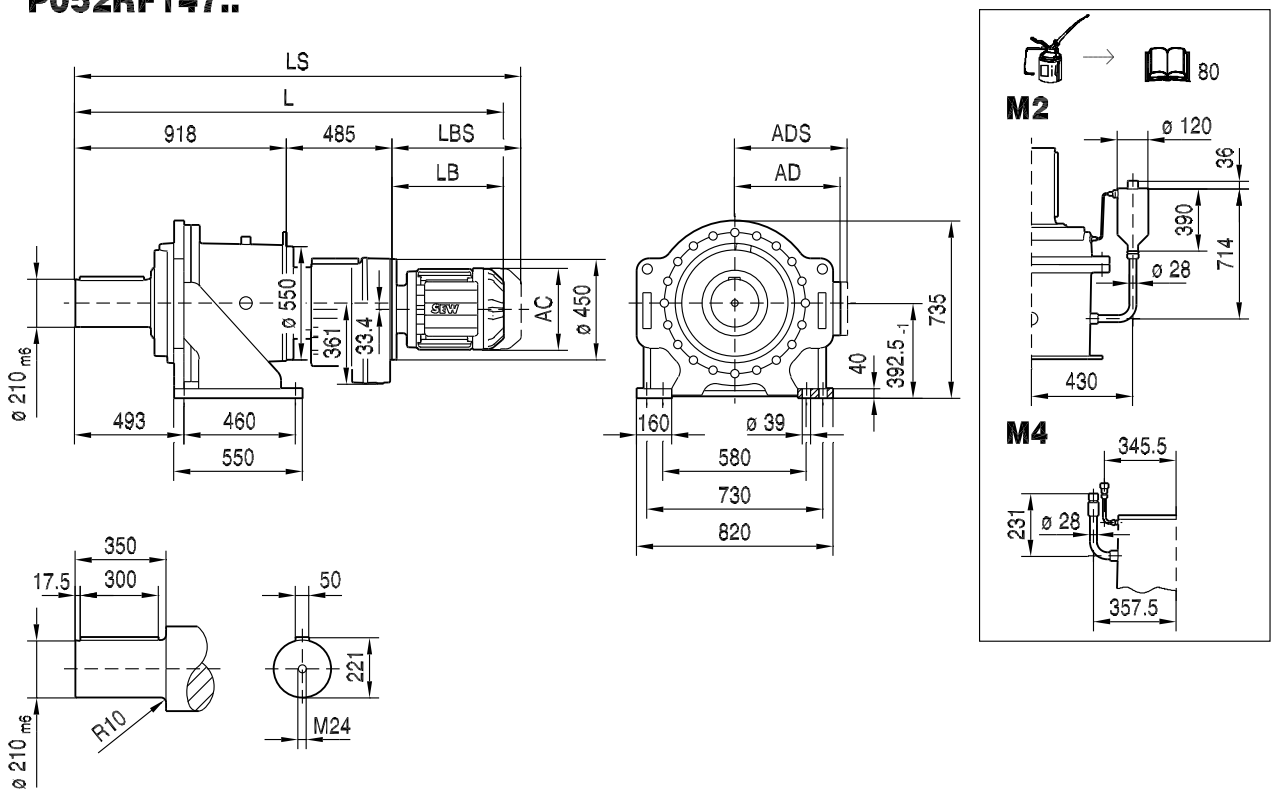


(→ 📄 91)	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L	DRN225	DRN250M
AC	221	261	268	318	318	357	357	394	434	495
AD	170	228	228	253	253	268	268	306	306	394
ADS	172	228	228	253	253	268	268	306	306	394
L	1743	1760	1785	1853	1853	1879	1879	1986	1941	2097
LS	1855	1899	1924	2042	2042	2068	2068	2191	2146	2337
LB	406	423	448	516	516	542	542	649	604	760
LBS	518	562	587	705	705	731	731	854	809	1000

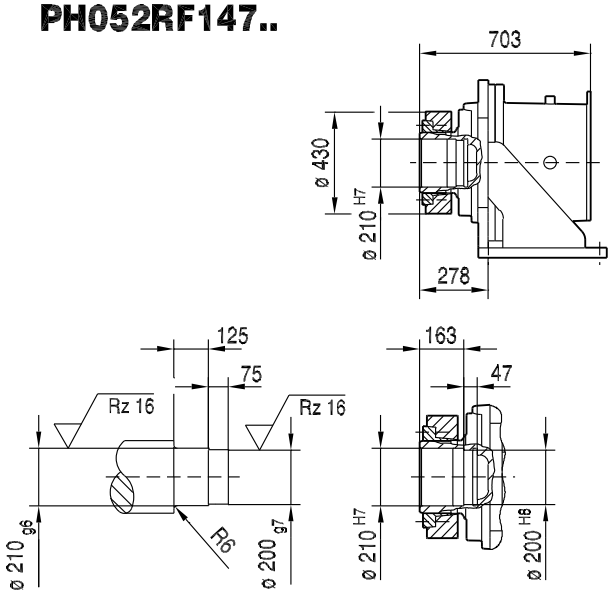
21915180/EN – 04/2015

P052RF147..

45 022 02 08



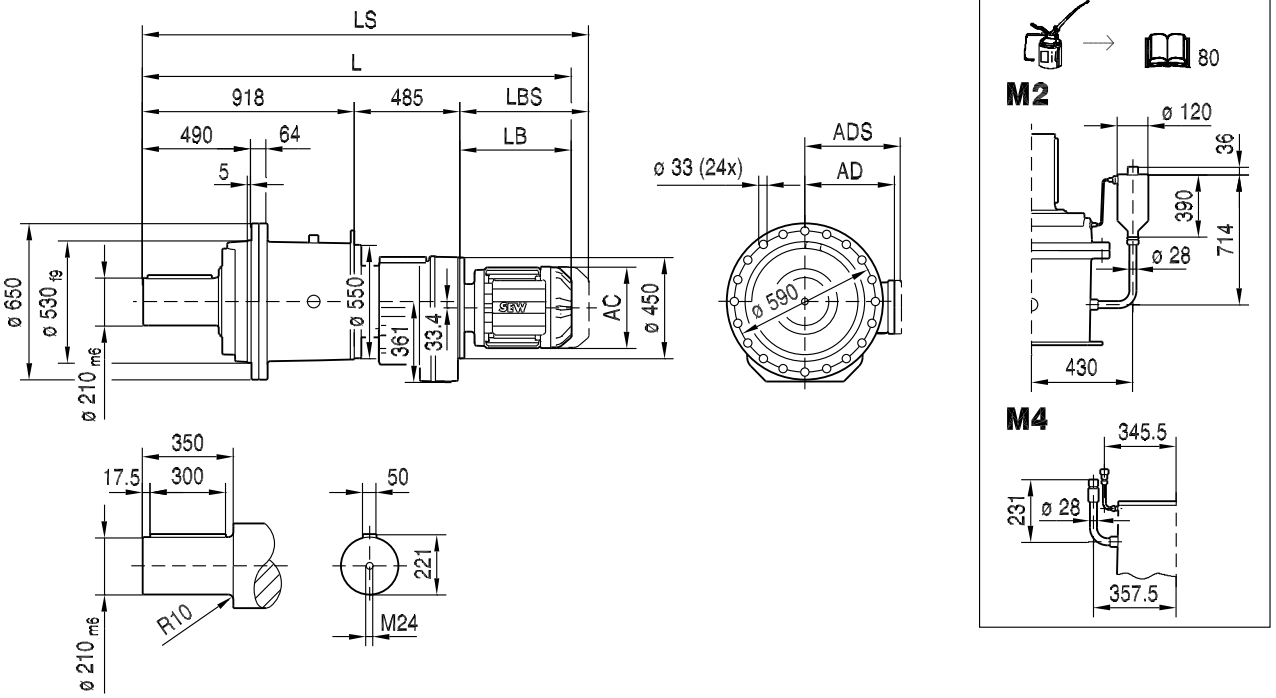
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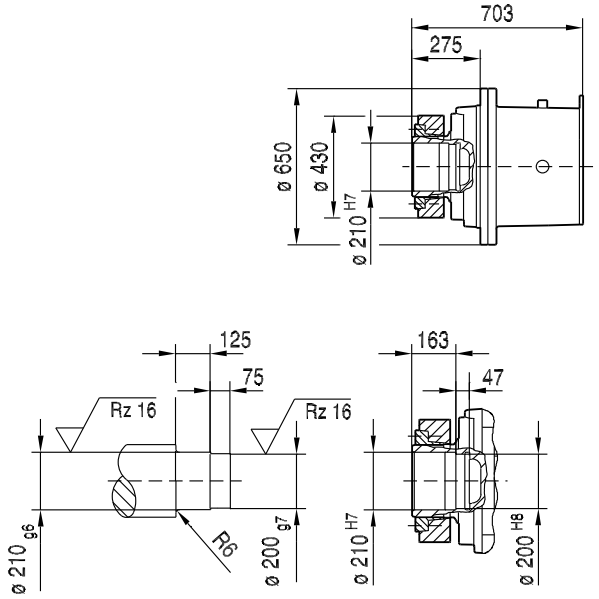
(→ 91)	DRN225	DRN250M	DRN280M	DRN280S				
AC	434	495	495	495				
AD	306	394	394	394				
ADS	306	394	394	394				
L	1999	2155	2250	2155				
LS	2204	2395	2490	2395				
LB	596	752	847	752				
LBS	801	992	1087	992				

PF052RF147..

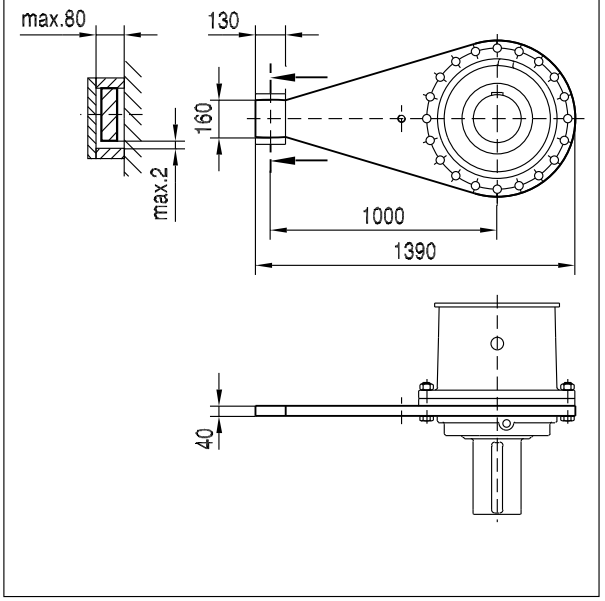
45 051 02 08



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P..052/T..

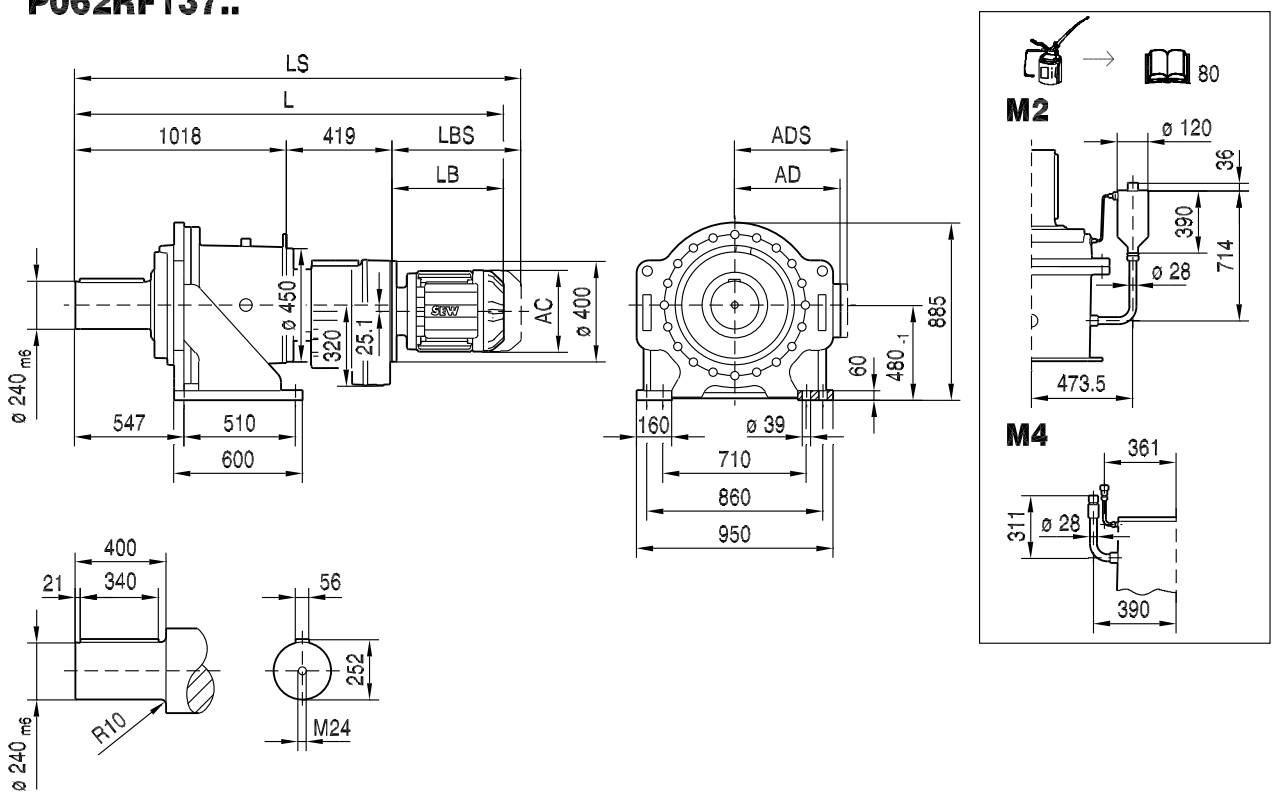


(→ 91)	DRN225	DRN250M	DRN280M	DRN280S				
AC	434	495	495	495				
AD	306	394	394	394				
ADS	306	394	394	394				
L	1999	2155	2250	2155				
LS	2204	2395	2490	2395				
LB	596	752	847	752				
LBS	801	992	1087	992				

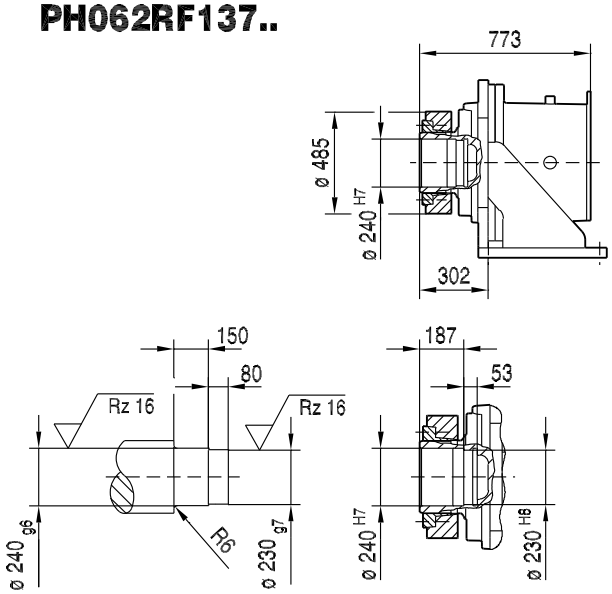
21915180/EN – 04/2015

P062RF137..

45 024 02 08



PH062RF137..

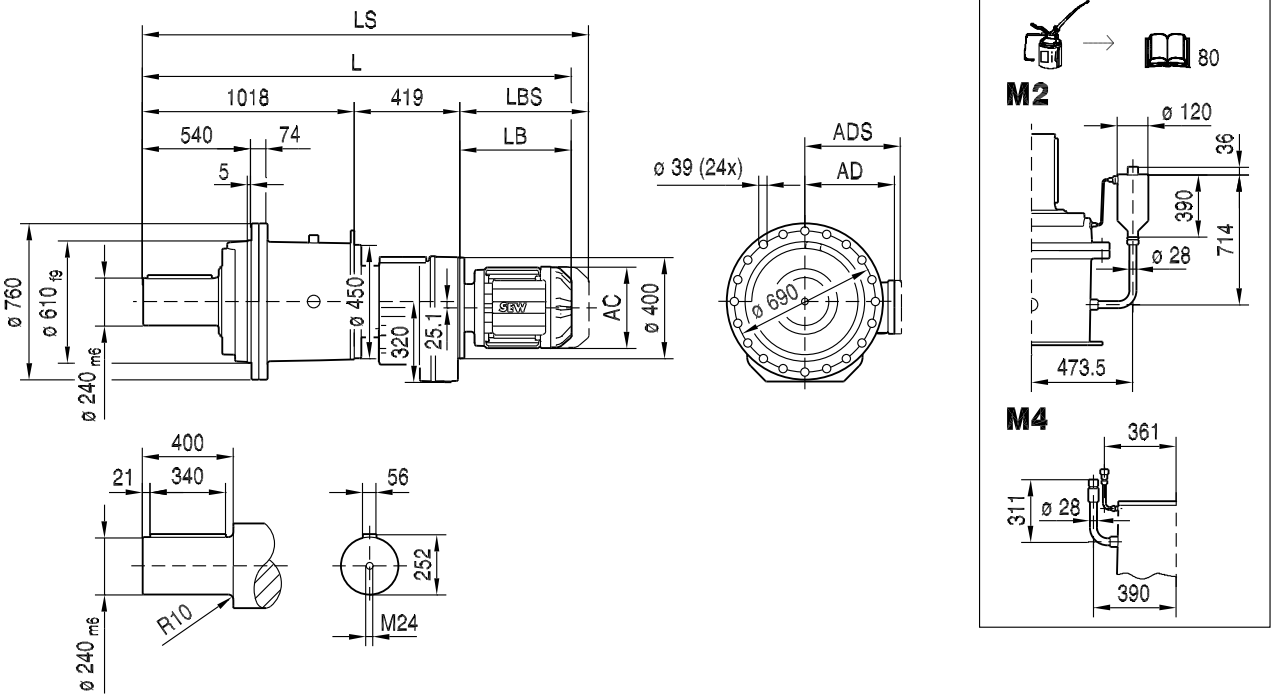


(→ 91)	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L	DRN225	DRN250M
AC	221	261	268	318	318	357	357	394	434	495
AD	170	228	228	253	253	268	268	306	306	394
ADS	172	228	228	253	253	268	268	306	306	394
L	1843	1860	1885	1953	1953	1979	1979	2086	2041	2197
LS	1955	1999	2024	2142	2142	2168	2168	2291	2246	2437
LB	406	423	448	516	516	542	542	649	604	760
LBS	518	562	587	705	705	731	731	854	809	1000

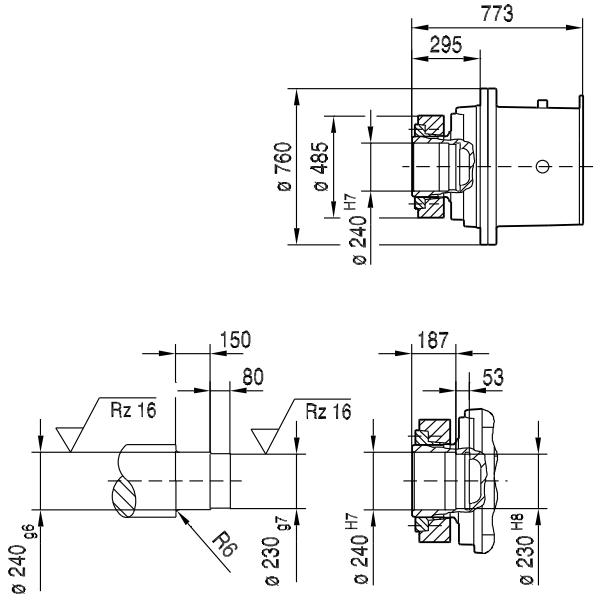
21915180/EN – 04/2015

PF062RF137..

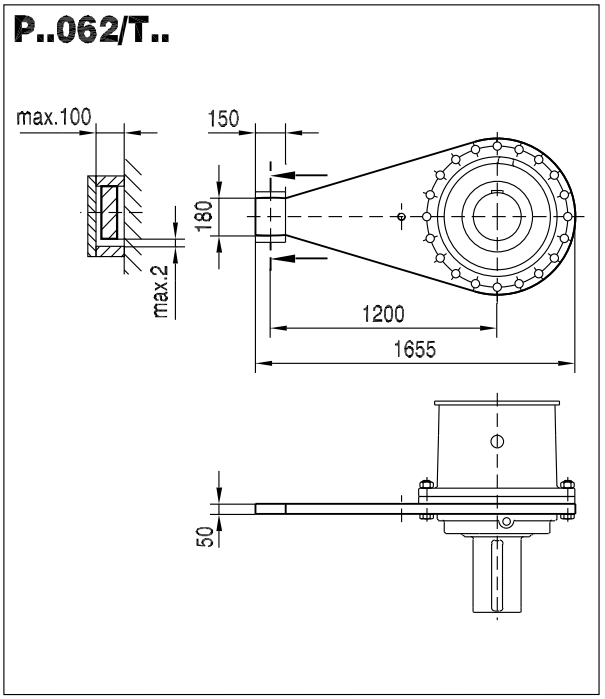
45 053 02 08



PHF062RF137..



P..062/T..

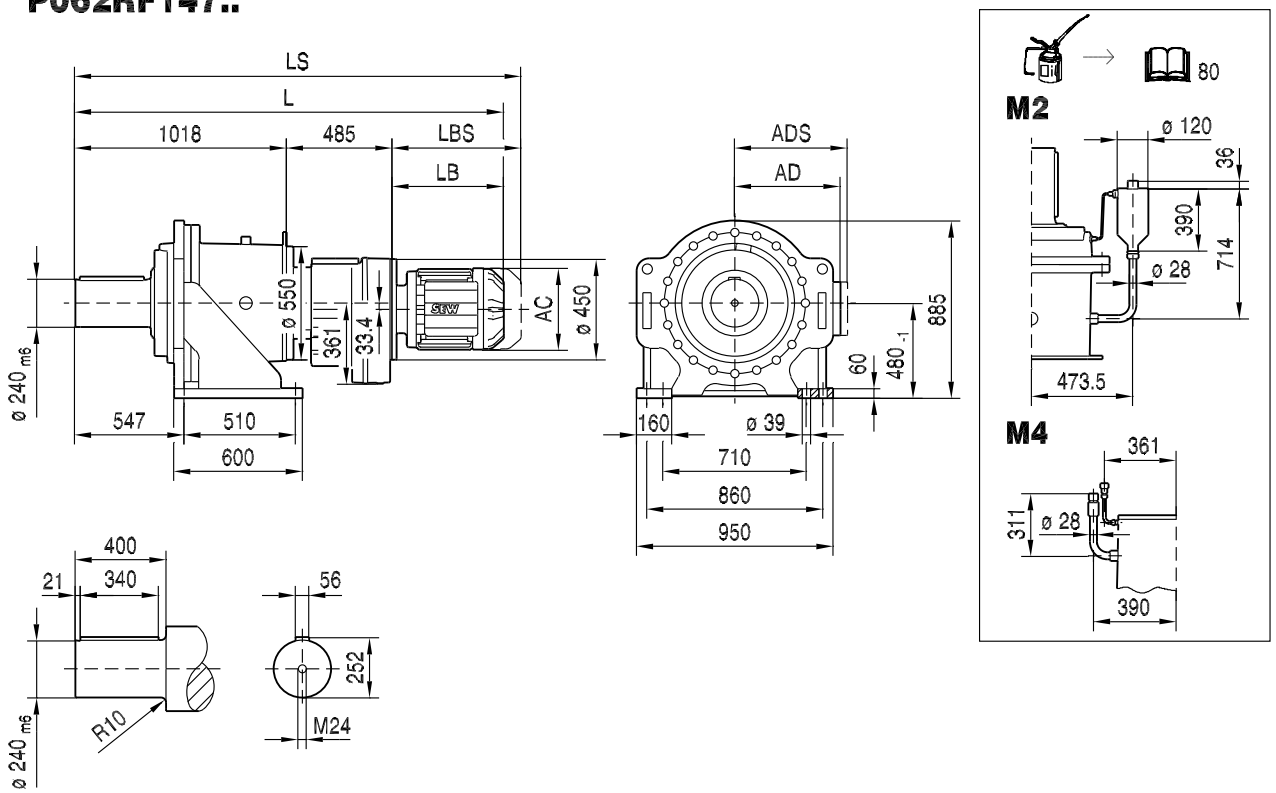


(→ 📄 91)	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L	DRN225	DRN250M
AC	221	261	268	318	318	357	357	394	434	495
AD	170	228	228	253	253	268	268	306	306	394
ADS	172	228	228	253	253	268	268	306	306	394
L	1843	1860	1885	1953	1953	1979	1979	2086	2041	2197
LS	1955	1999	2024	2142	2142	2168	2168	2291	2246	2437
LB	406	423	448	516	516	542	542	649	604	760
LBS	518	562	587	705	705	731	731	854	809	1000

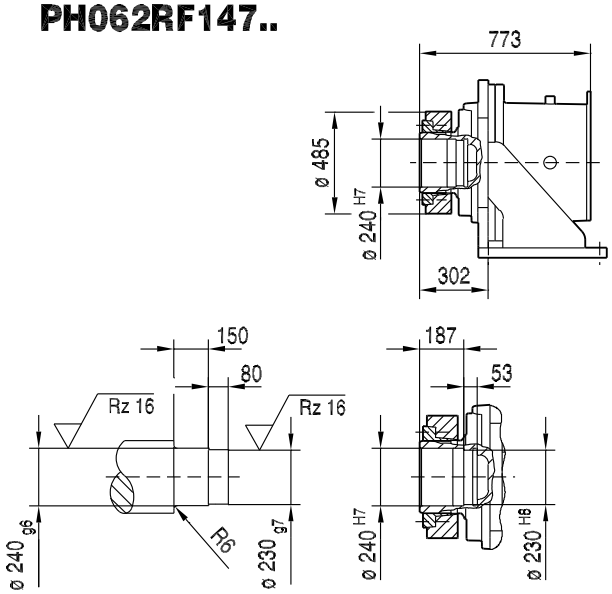
21915180/EN – 04/2015

P062RF147..

45 025 02 08



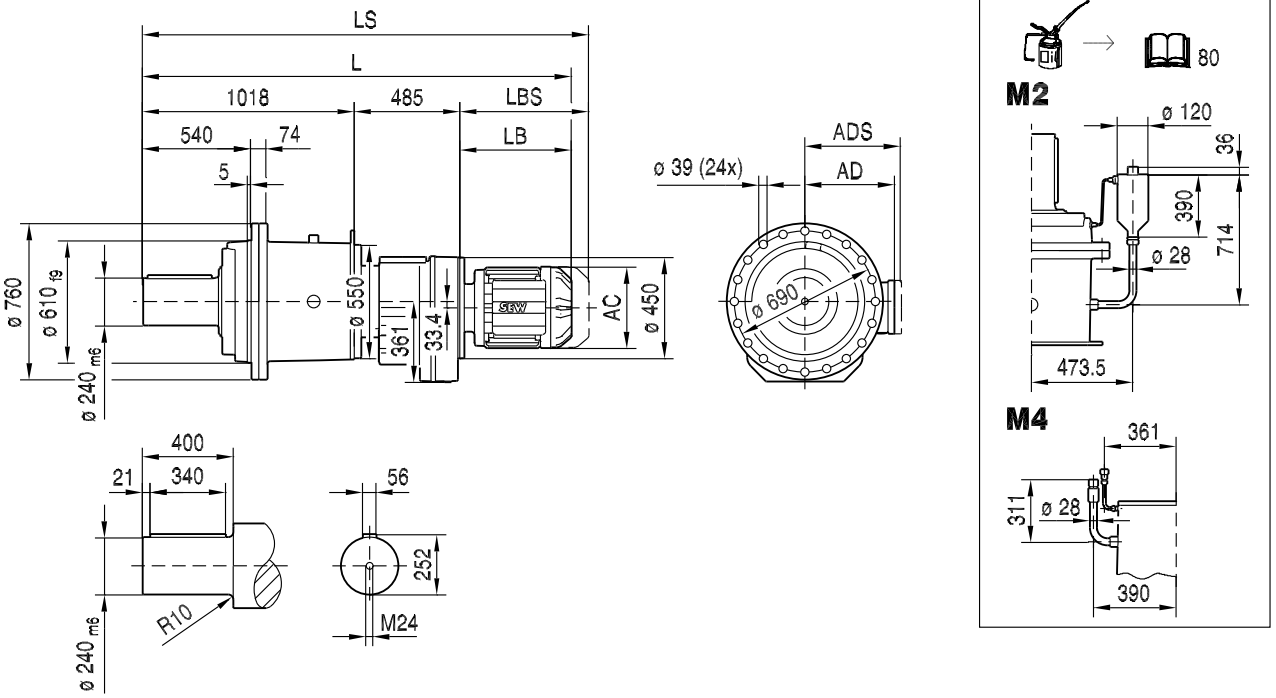
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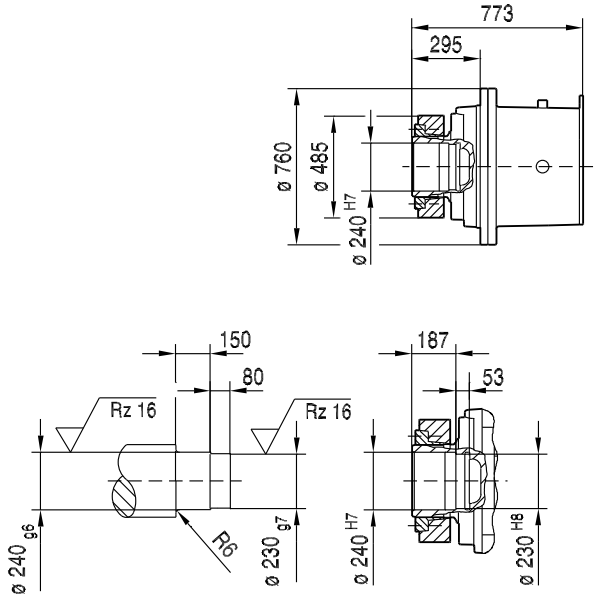
(→ 91)	DRN132L	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L	DRN225	DRN250M	DRN280M	DRN280S
AC	268	318	318	357	357	394	434	495	495	495
AD	228	253	253	268	268	306	306	394	394	394
ADS	228	253	253	268	268	306	306	394	394	394
L	1943	2011	2011	2037	2037	2144	2099	2255	2350	2255
LS	2082	2200	2200	2226	2226	2349	2304	2495	2590	2495
LB	440	508	508	534	534	641	596	752	847	752
LBS	579	697	697	723	723	846	801	992	1087	992

45 054 02 08

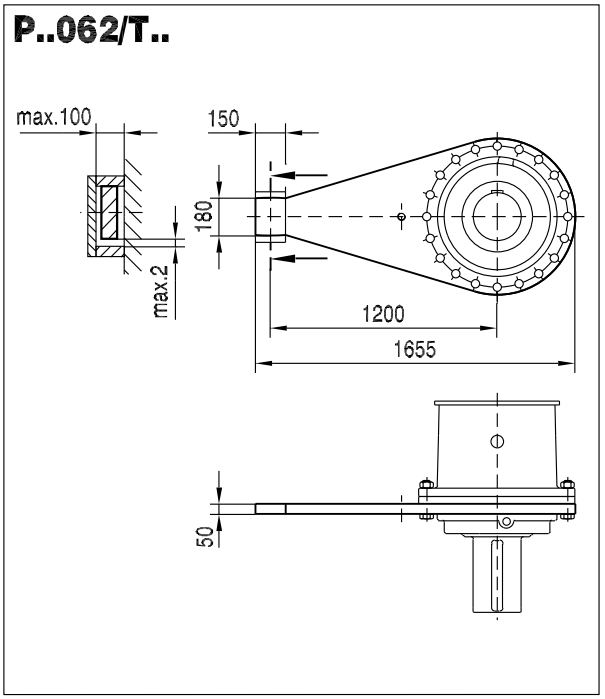
PF062RF147..



PHF062RF147..



P..062/T..

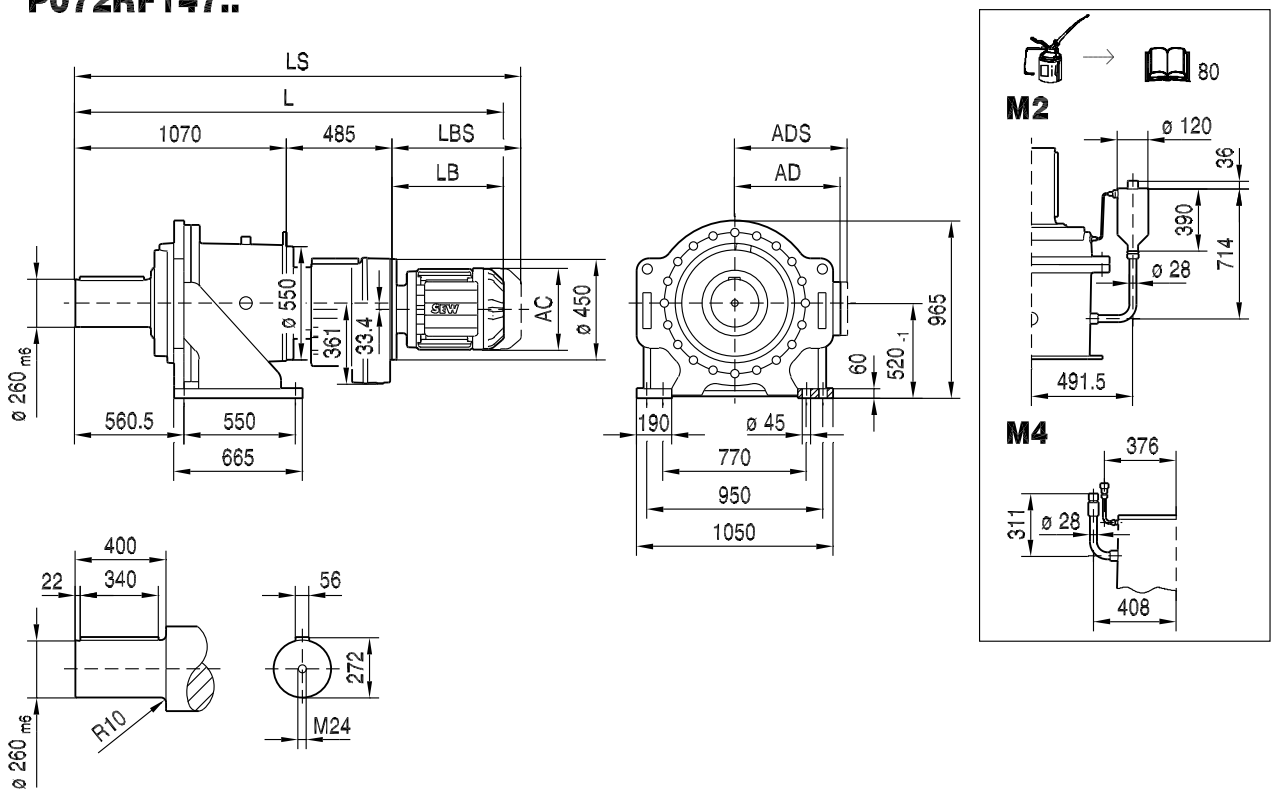


(→ 📄 91)	DRN132L	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L	DRN225	DRN250M	DRN280M	DRN280S
AC	268	318	318	357	357	394	434	495	495	495
AD	228	253	253	268	268	306	306	394	394	394
ADS	228	253	253	268	268	306	306	394	394	394
L	1943	2011	2011	2037	2037	2144	2099	2255	2350	2255
LS	2082	2200	2200	2226	2226	2349	2304	2495	2590	2495
LB	440	508	508	534	534	641	596	752	847	752
LBS	579	697	697	723	723	846	801	992	1087	992

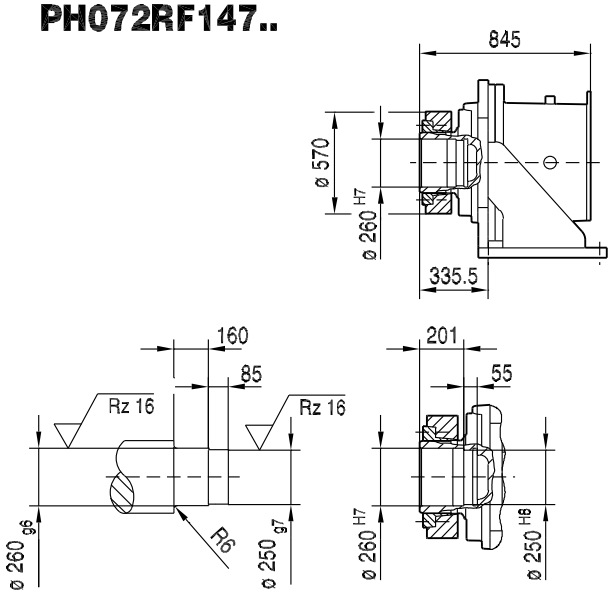
21915180/EN – 04/2015

P072RF147..

45 026 02 08



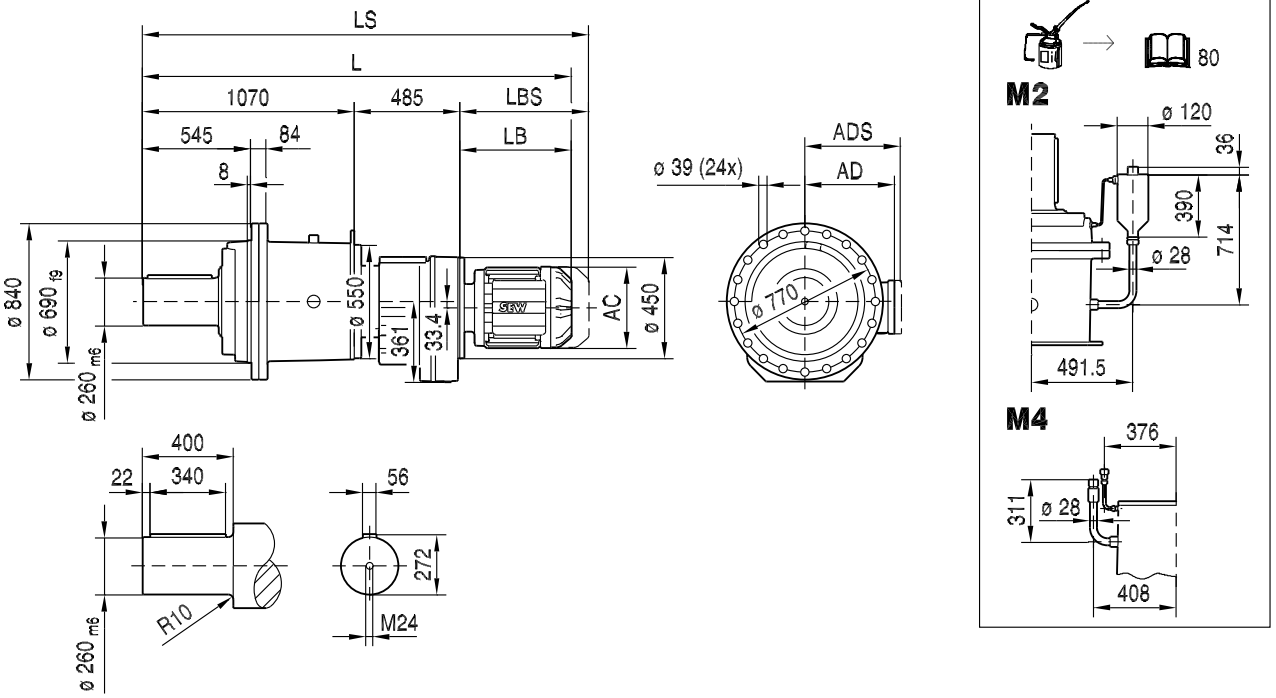
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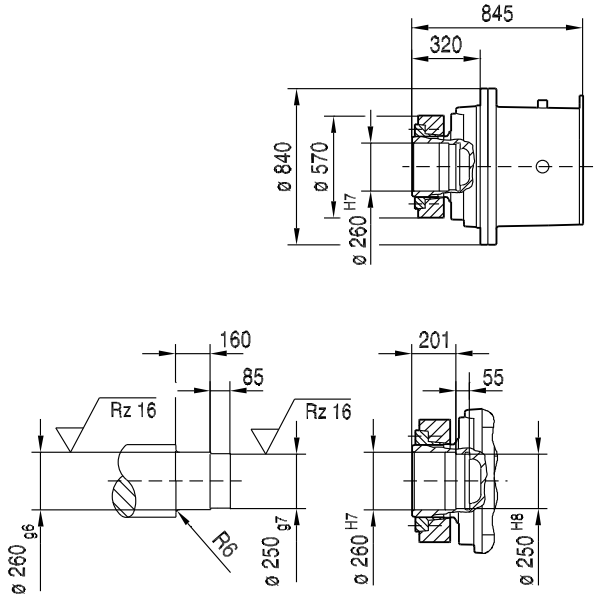
(→ 91)	DRN132L	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L	DRN225	DRN250M	DRN280M	DRN280S
AC	268	318	318	357	357	394	434	495	495	495
AD	228	253	253	268	268	306	306	394	394	394
ADS	228	253	253	268	268	306	306	394	394	394
L	1995	2063	2063	2089	2089	2196	2151	2307	2402	2307
LS	2134	2252	2252	2278	2278	2401	2356	2547	2642	2547
LB	440	508	508	534	534	641	596	752	847	752
LBS	579	697	697	723	723	846	801	992	1087	992

PF072RF147..

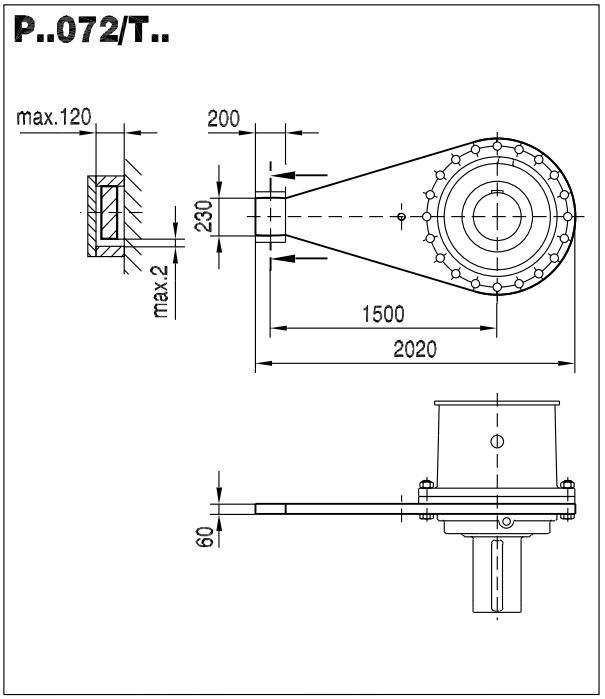
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PHF072RF147..



P..072/T..

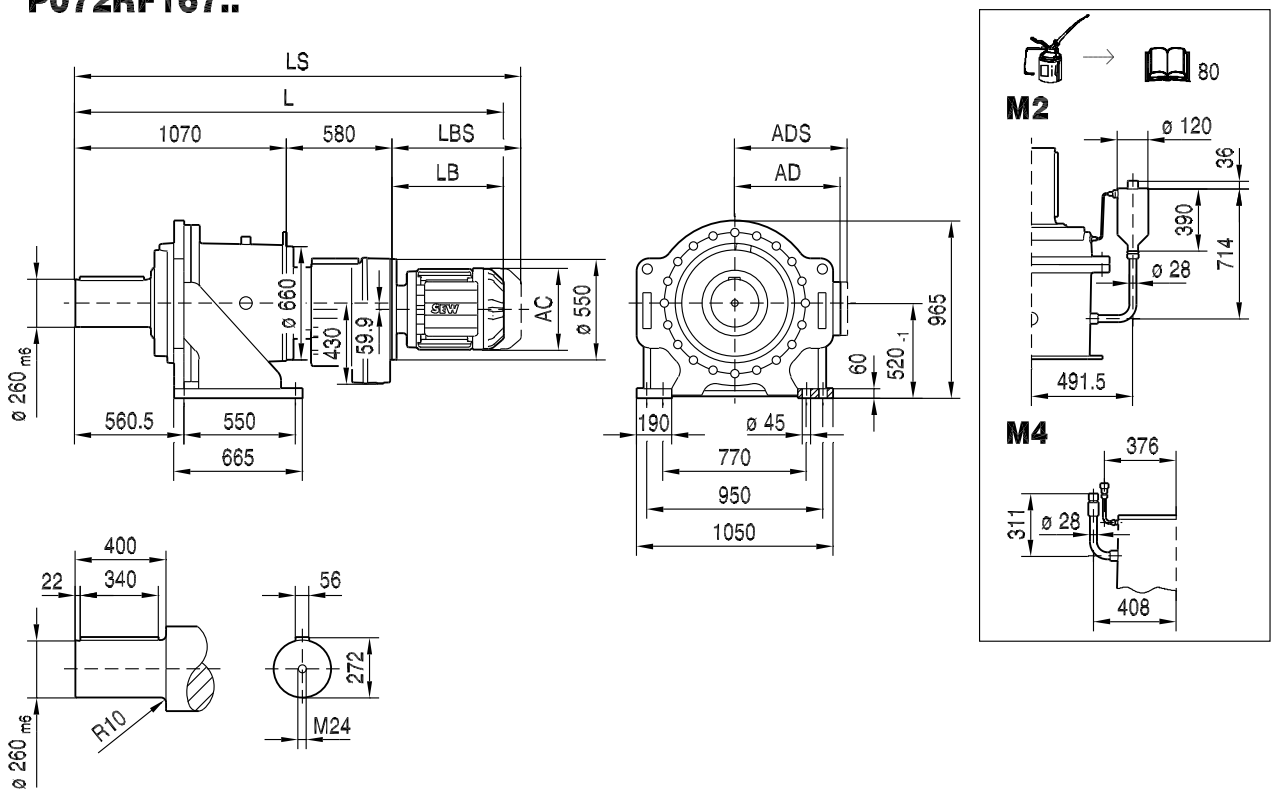


(→ 📄 91)	DRN132L	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L	DRN225	DRN250M	DRN280M	DRN280S
AC	268	318	318	357	357	394	434	495	495	495
AD	228	253	253	268	268	306	306	394	394	394
ADS	228	253	253	268	268	306	306	394	394	394
L	1995	2063	2063	2089	2089	2196	2151	2307	2402	2307
LS	2134	2252	2252	2278	2278	2401	2356	2547	2642	2547
LB	440	508	508	534	534	641	596	752	847	752
LBS	579	697	697	723	723	846	801	992	1087	992

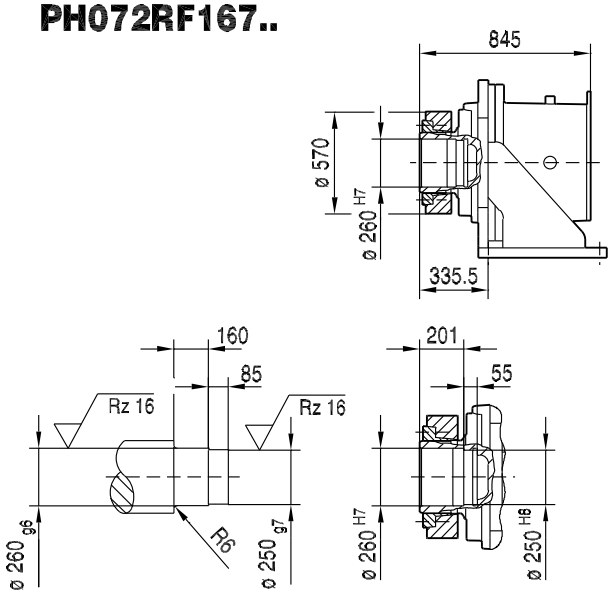
21915180/EN – 04/2015

P072RF167..

45 027 02 08



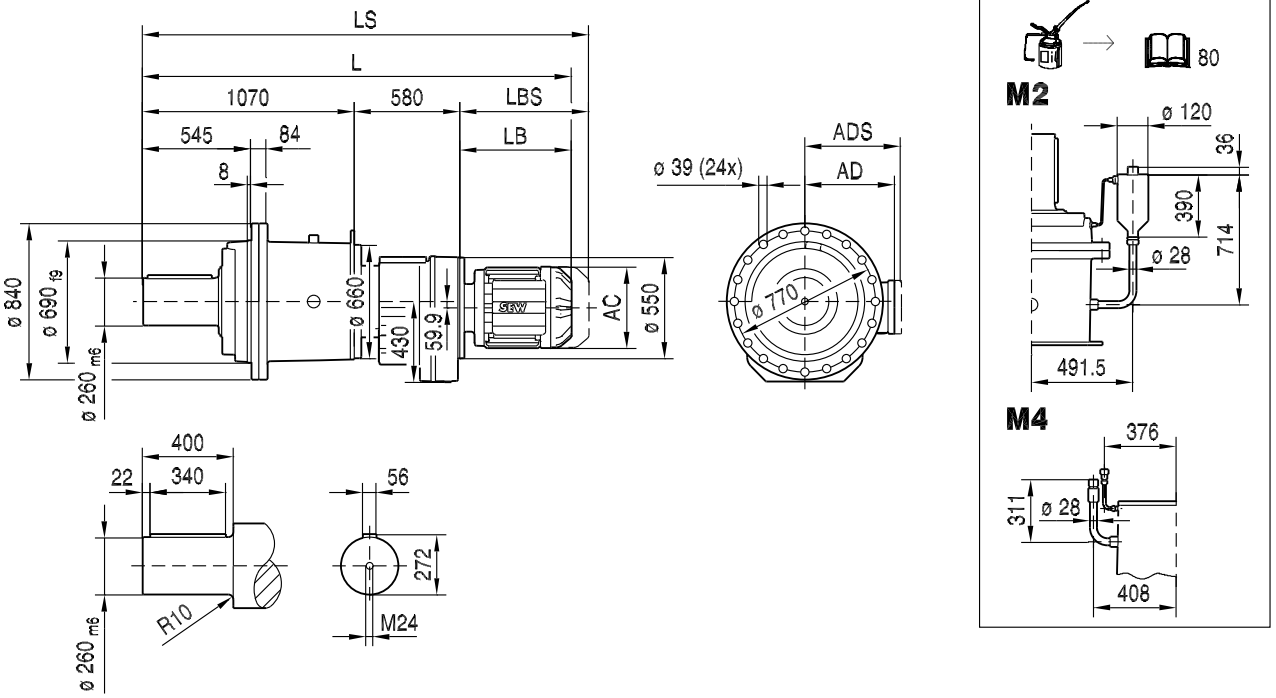
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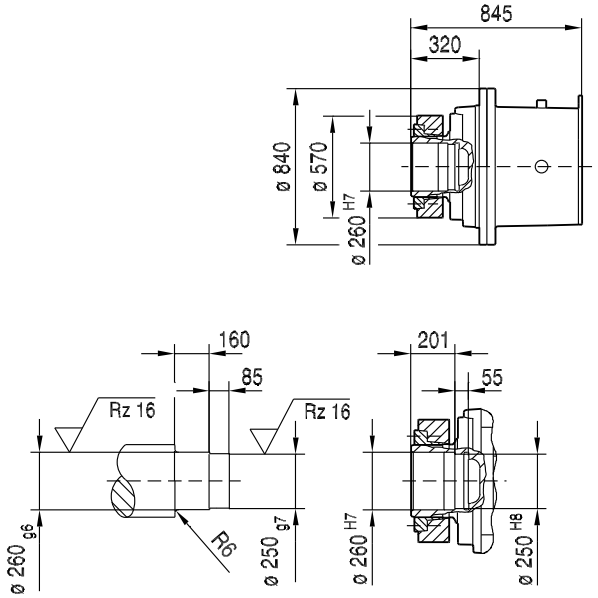
(→ 91)	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L	DRN225		
AC	318	318	357	357	394	434		
AD	253	253	268	268	306	306		
ADS	253	253	268	268	306	306		
L	2150	2150	2176	2176	2283	2238		
LS	2339	2339	2365	2365	2488	2443		
LB	500	500	526	526	633	588		
LBS	689	689	715	715	838	793		

PF072RF167..

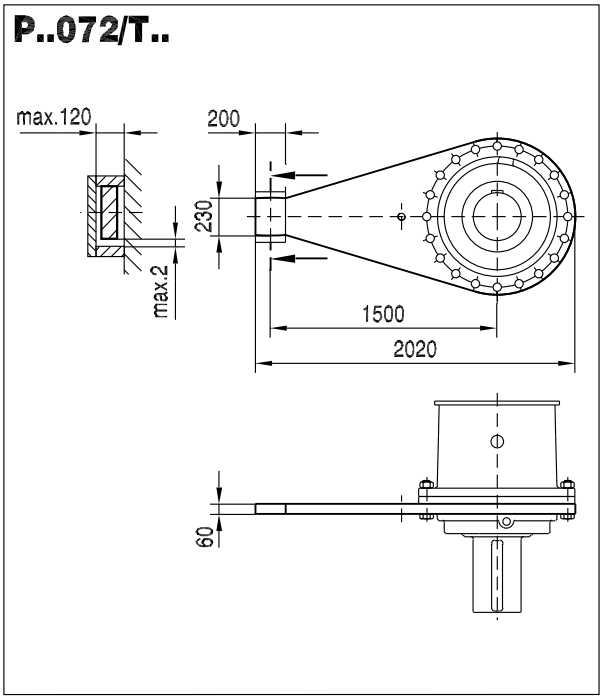
45 056 02 08



PHF072RF167..



P..072/T..

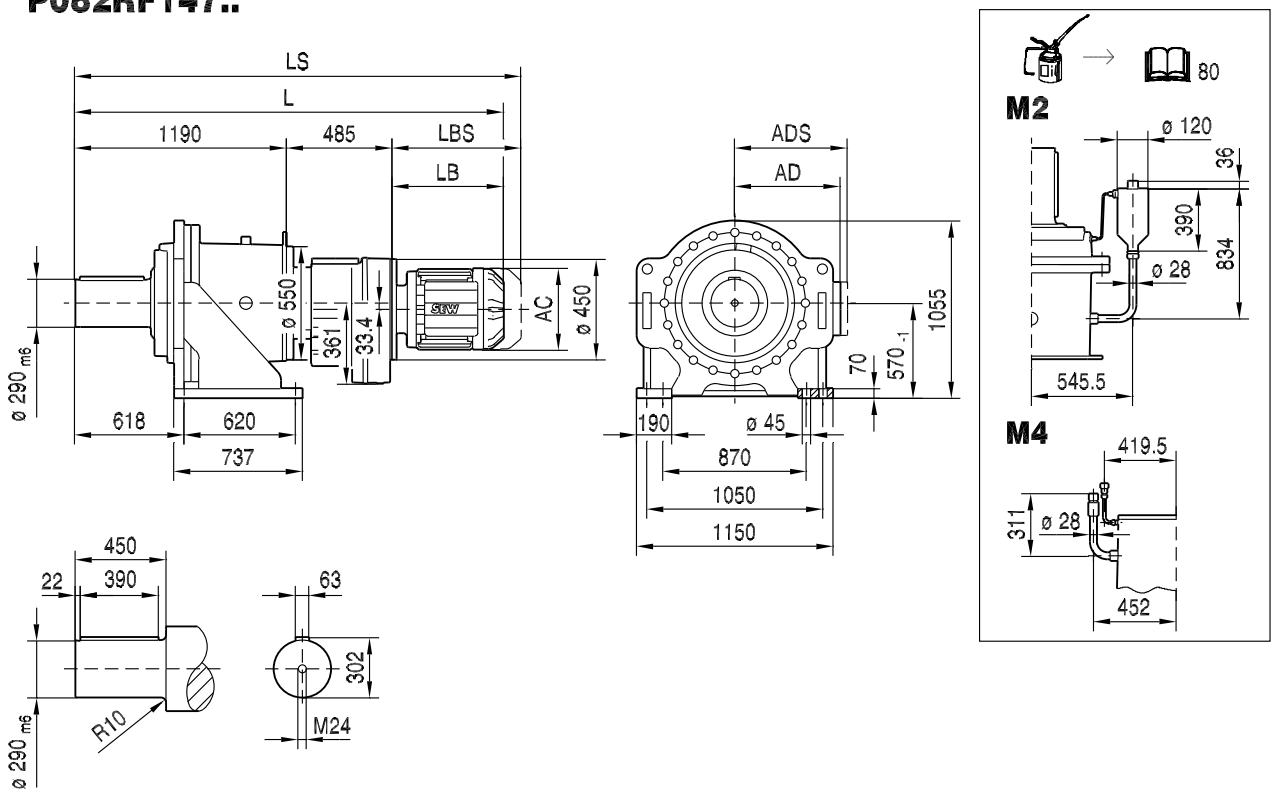


(→ 📄 91)	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L	DRN225		
AC	318	318	357	357	394	434		
AD	253	253	268	268	306	306		
ADS	253	253	268	268	306	306		
L	2150	2150	2176	2176	2283	2238		
LS	2339	2339	2365	2365	2488	2443		
LB	500	500	526	526	633	588		
LBS	689	689	715	715	838	793		

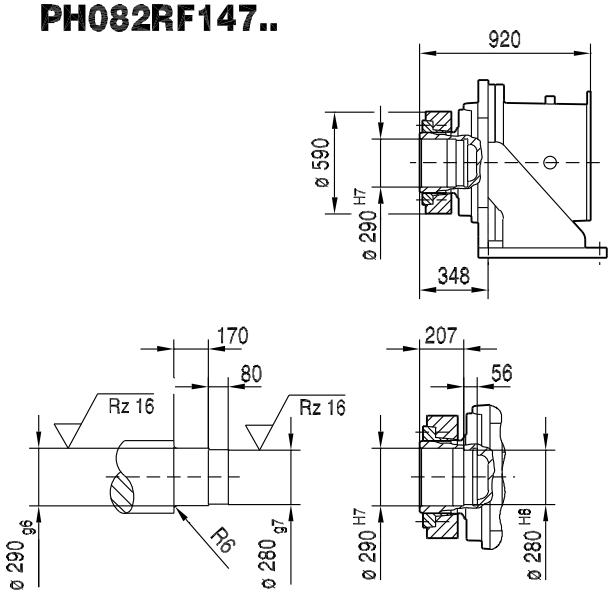
21915180/EN – 04/2015

P082RF147..

45 028 02 08



PH082RF147..

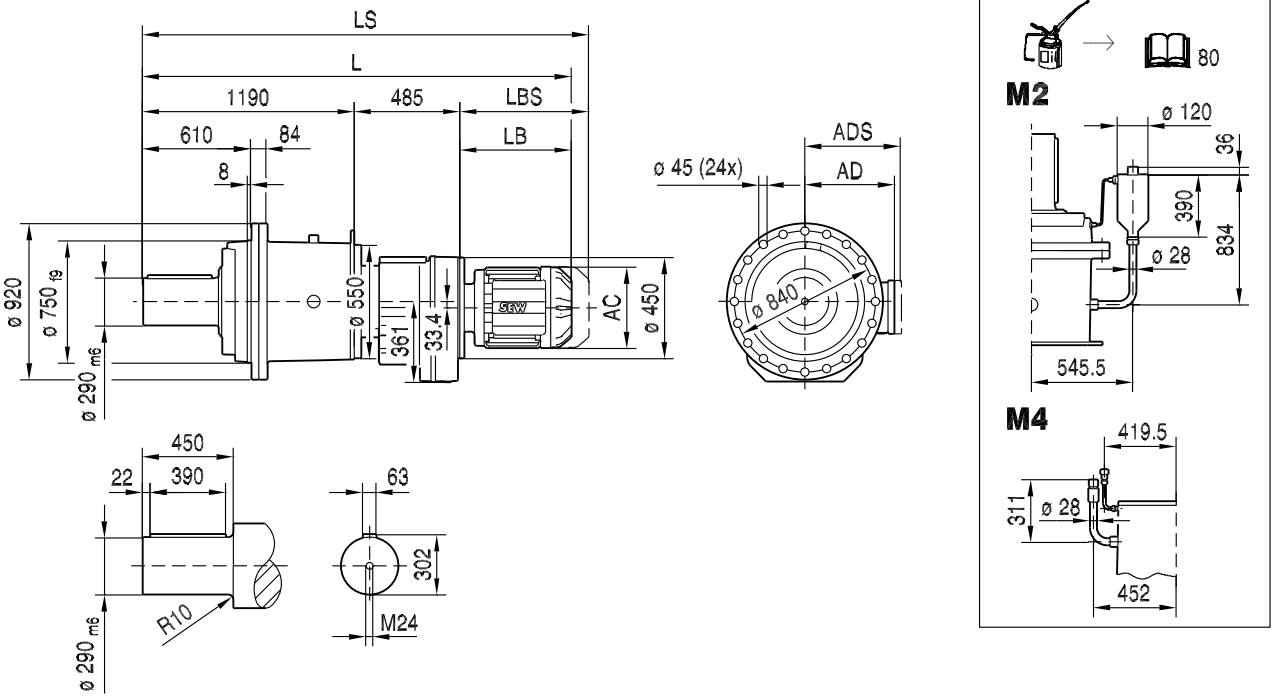


(→ 91)	DRN160L	DRN180M	DRN180L	DRN250M				
AC	318	357	357	495				
AD	253	268	268	394				
ADS	253	268	268	394				
L	2183	2209	2209	2427				
LS	2372	2398	2398	2667				
LB	508	534	534	752				
LBS	697	723	723	992				

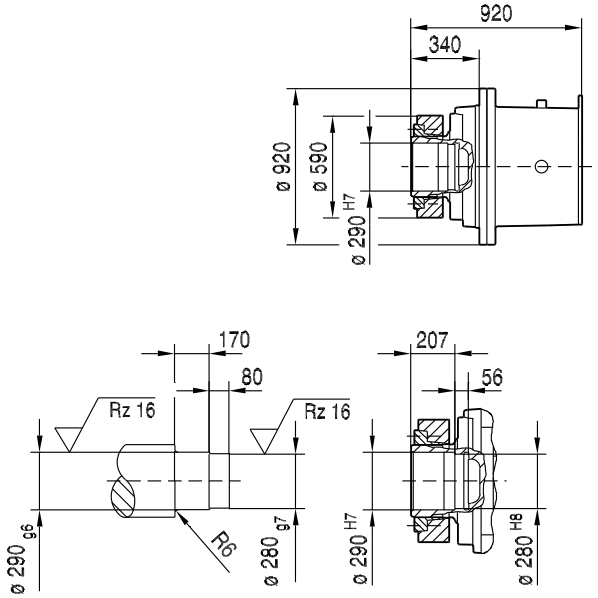
21915180/EN – 04/2015

PF082RF147..

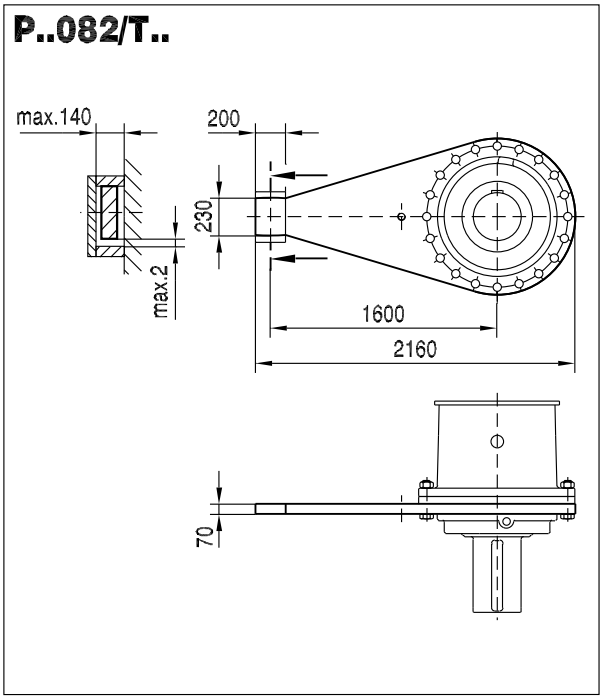
45 057 02 08



PHF082RF147..



P..082/T..

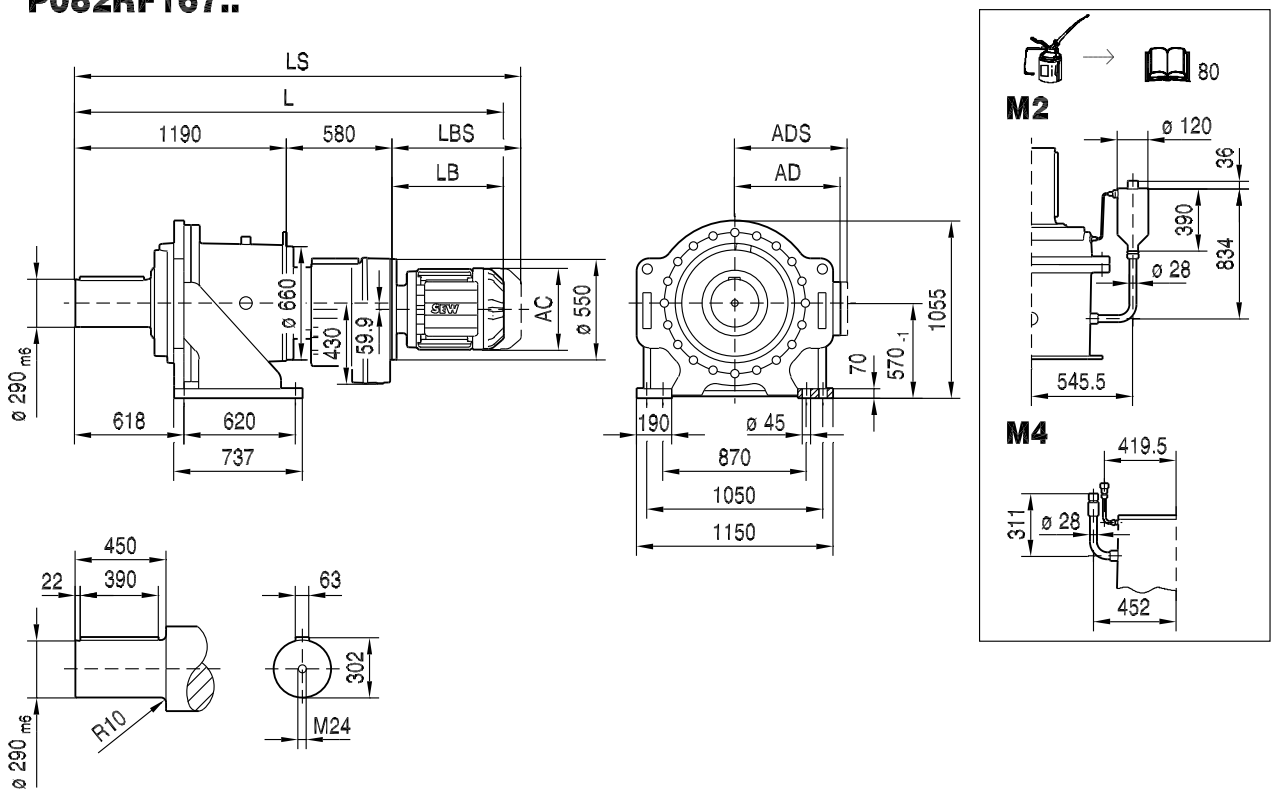


(→ 📄 91)	DRN160L	DRN180M	DRN180L	DRN250M				
AC	318	357	357	495				
AD	253	268	268	394				
ADS	253	268	268	394				
L	2183	2209	2209	2427				
LS	2372	2398	2398	2667				
LB	508	534	534	752				
LBS	697	723	723	992				

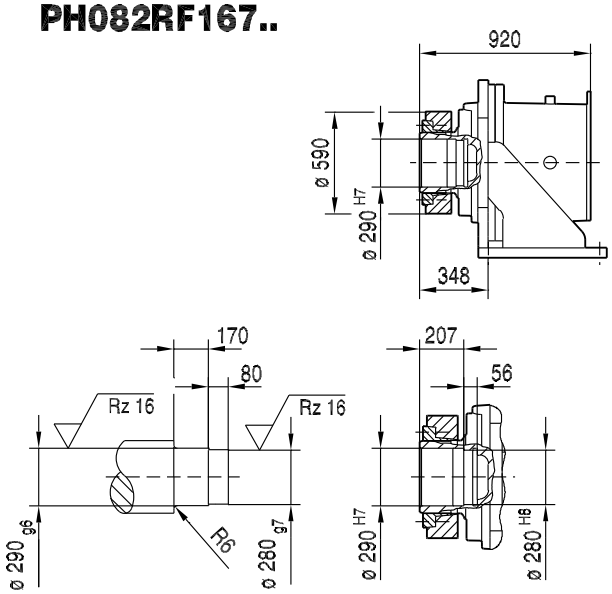
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P082RF167..

45 029 02 08



PH082RF167..

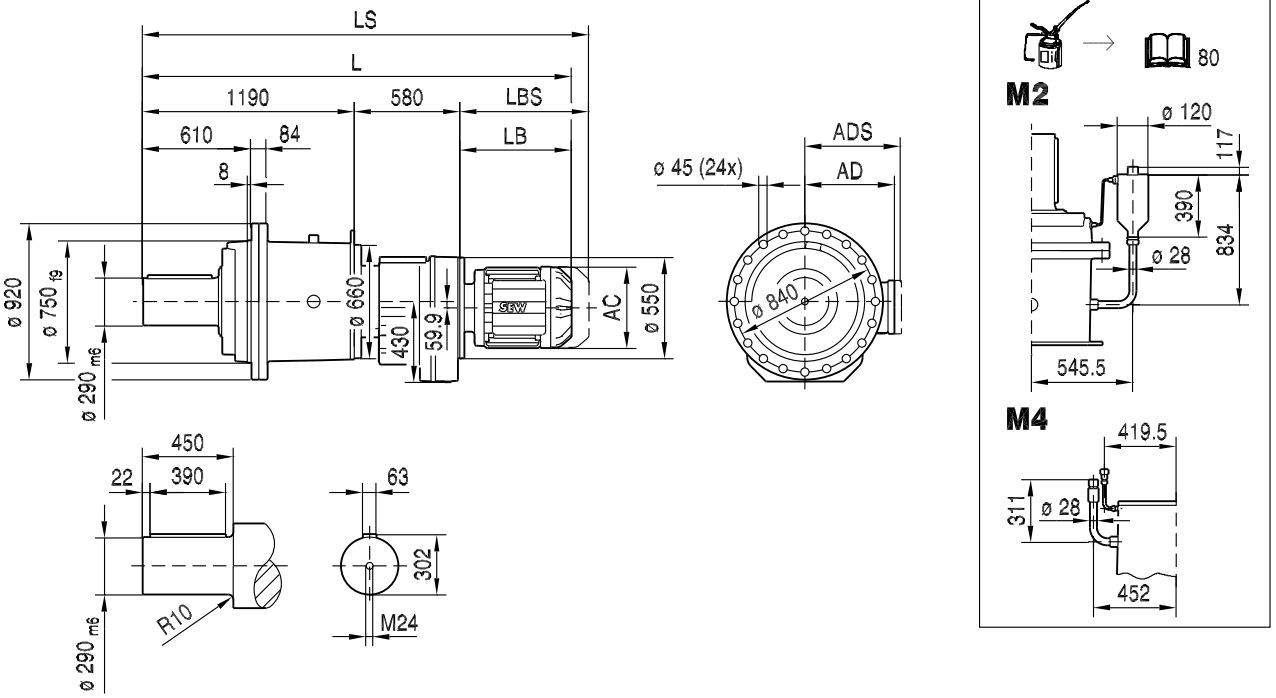


(→ 91)	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L	DRN225	DRN250M	DRN280M	DRN280S
AC	318	318	357	357	394	434	495	495	495
AD	253	253	268	268	306	306	394	394	394
ADS	253	253	268	268	306	306	394	394	394
L	2270	2270	2296	2296	2403	2358	2514	2609	2514
LS	2459	2459	2485	2485	2608	2563	2754	2849	2754
LB	500	500	526	526	633	588	744	839	744
LBS	689	689	715	715	838	793	984	1079	984

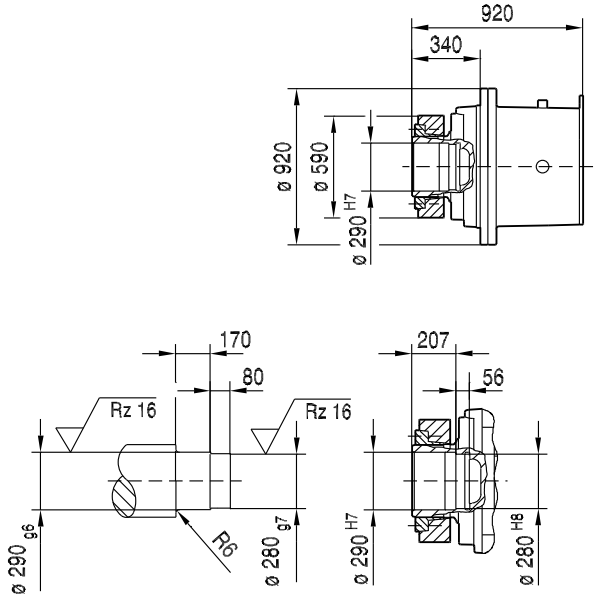
21915180/EN – 04/2015

PF082RF167..

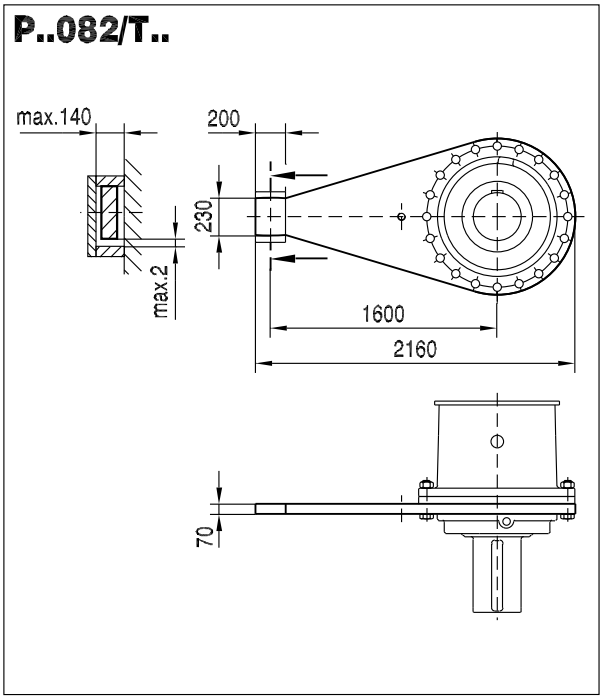
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PHF082RF167..



P..082/T..

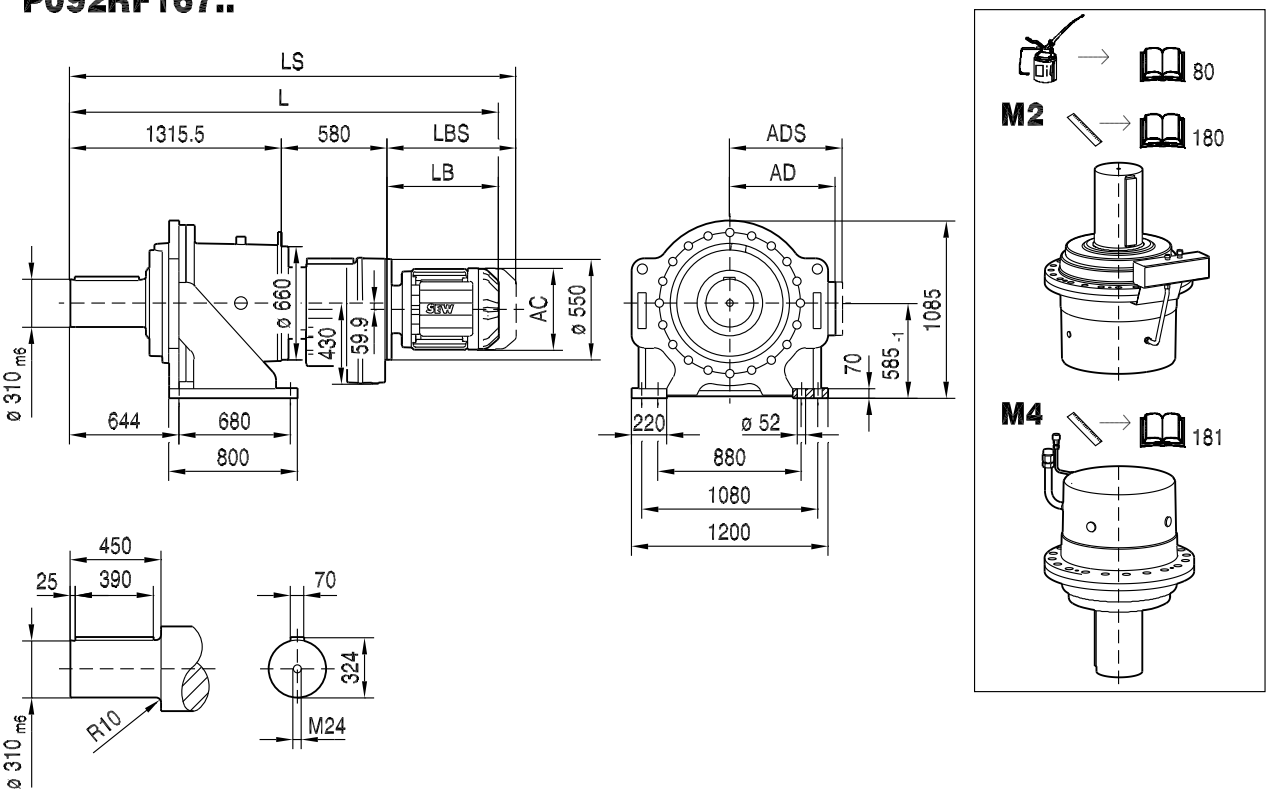


(→ 📄 91)	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L	DRN225	DRN250M	DRN280M	DRN280S
AC	318	318	357	357	394	434	495	495	495
AD	253	253	268	268	306	306	394	394	394
ADS	253	253	268	268	306	306	394	394	394
L	2270	2270	2296	2296	2403	2358	2514	2609	2514
LS	2459	2459	2485	2485	2608	2563	2754	2849	2754
LB	500	500	526	526	633	588	744	839	744
LBS	689	689	715	715	838	793	984	1079	984

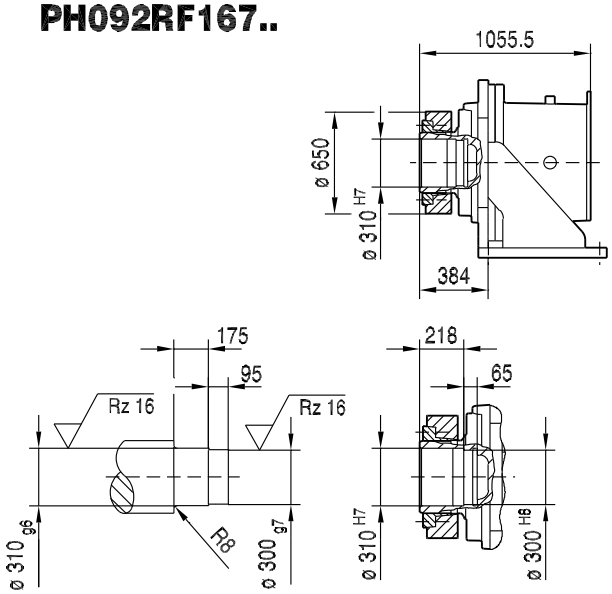
21915180/EN – 04/2015

P092RF167..

45 001 01 11



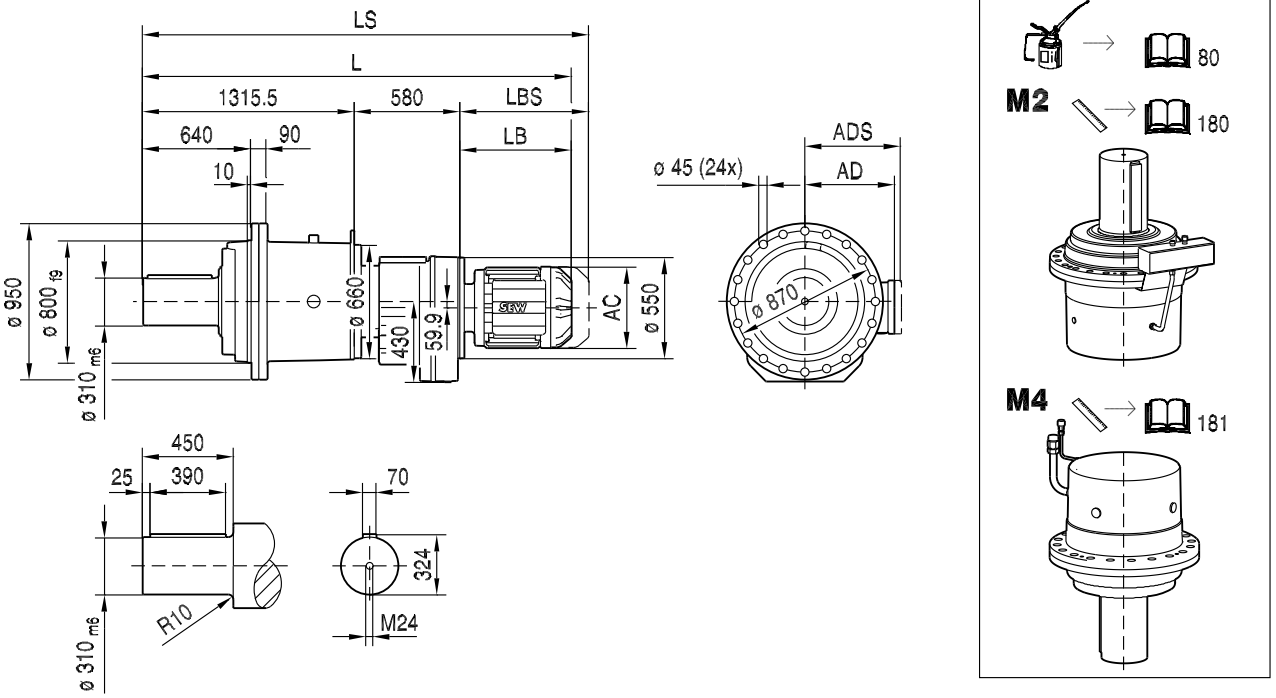
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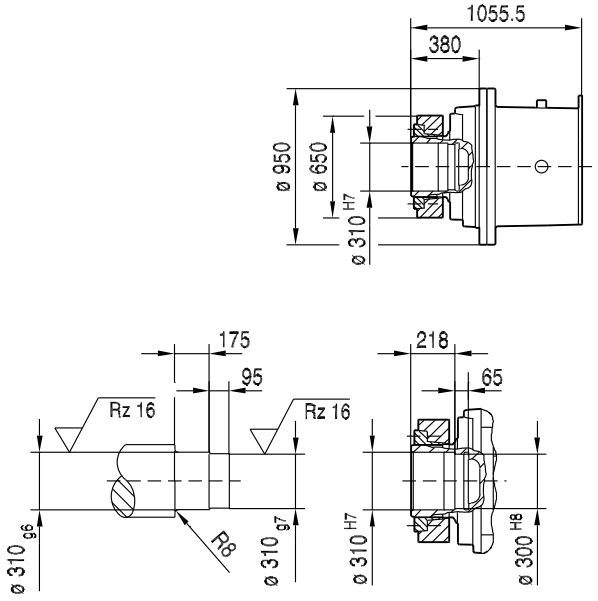
(→ 91)	DRN160L	DRN180M	DRN180L	DRN200L	DRN225	DRN250M	DRN280M	DRN280S	DRN315S	DRN315M-H
AC	318	357	357	394	434	495	495	495	624	624
AD	253	268	268	306	306	394	394	394	506	506
ADS	253	268	268	306	306	394	394	394	506	506
L	2396	2421	2421	2528	2483	2640	2735	2640	2837	2967
LS	2585	2610	2610	2733	2688	2880	2975	2880	3088	3218
LB	500	526	526	633	588	744	839	744	941	1071
LBS	689	715	715	838	793	984	1079	984	1192	1322

PF092RF167..

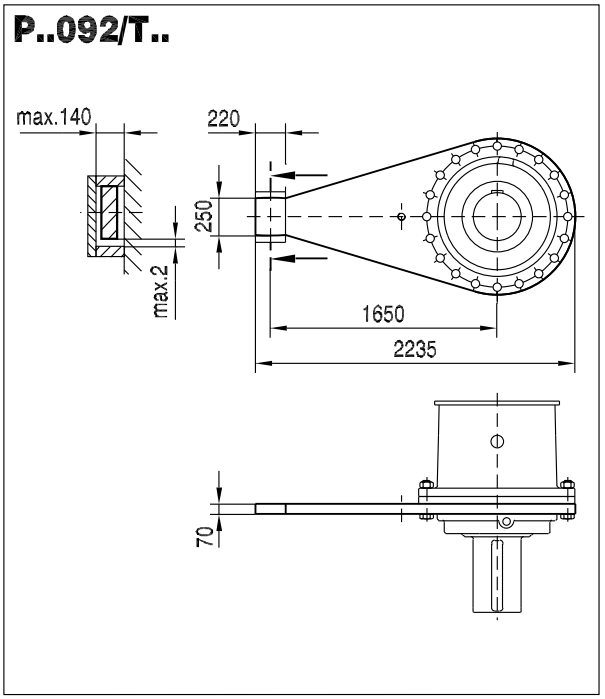
45 003 01 11



PHF092RF167..



P..092/T..

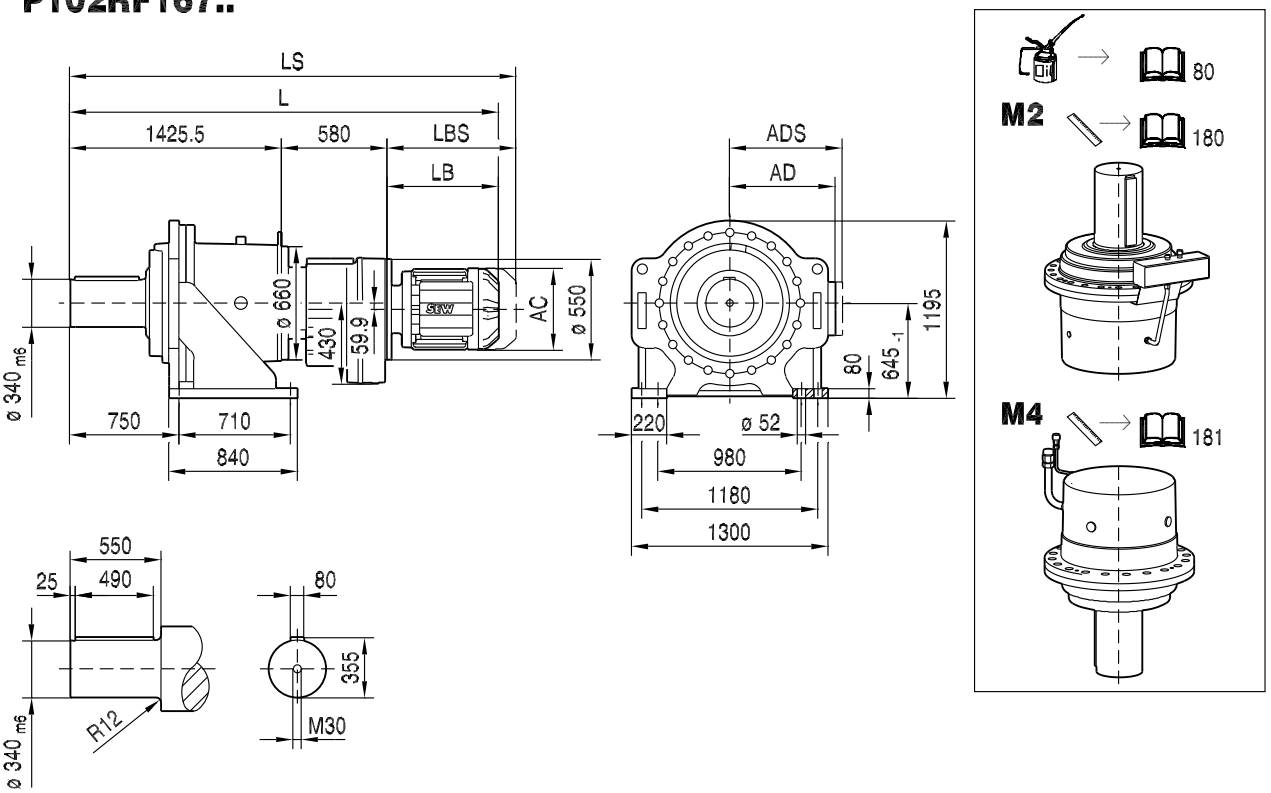


(→ 📄 91)	DRN160L	DRN180M	DRN180L	DRN200L	DRN225	DRN250M	DRN280M	DRN280S	DRN315S	DRN315M-H
AC	318	357	357	394	434	495	495	495	624	624
AD	253	268	268	306	306	394	394	394	506	506
ADS	253	268	268	306	306	394	394	394	506	506
L	2396	2421	2421	2528	2483	2640	2735	2640	2837	2967
LS	2585	2610	2610	2733	2688	2880	2975	2880	3088	3218
LB	500	526	526	633	588	744	839	744	941	1071
LBS	689	715	715	838	793	984	1079	984	1192	1322

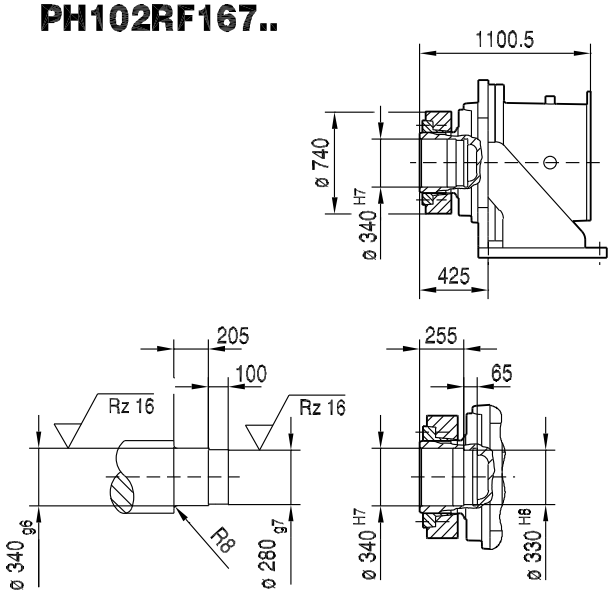
21915180/EN – 04/2015

P102RF167..

45 002 01 11



PH102RF167..

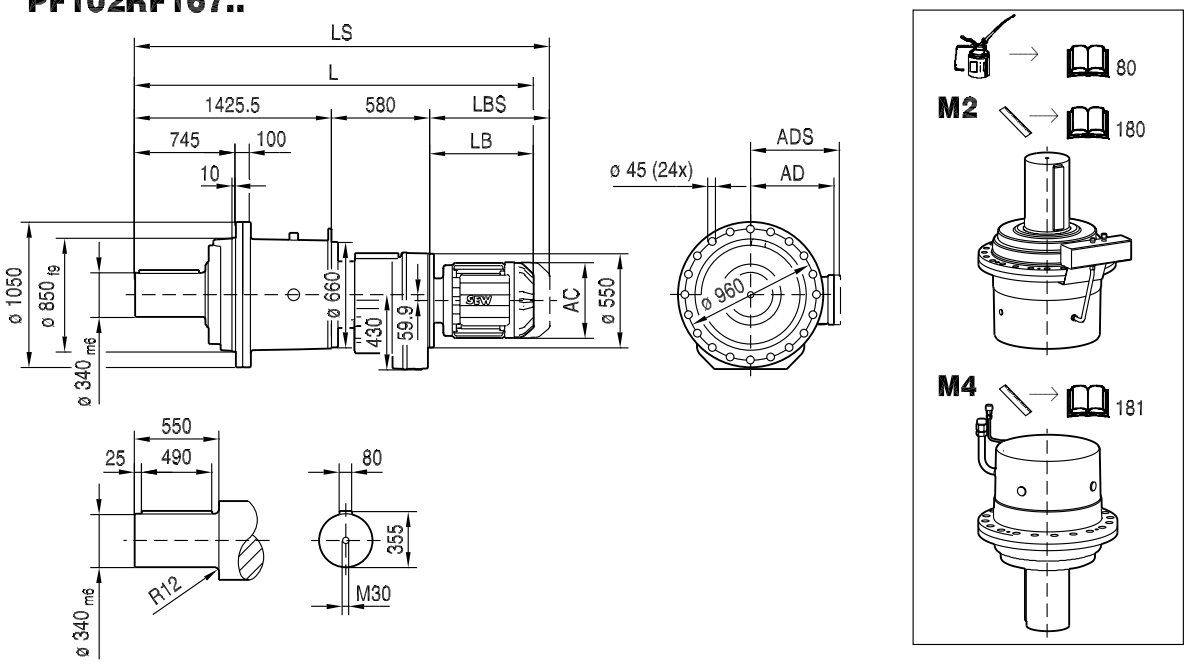


(→ 91)	DRN160L	DRN180M	DRN180L	DRN200L	DRN225	DRN250M	DRN280M	DRN280S	DRN315S	DRN315M-H
AC	318	357	357	394	434	495	495	495	624	624
AD	253	268	268	306	306	394	394	394	506	506
ADS	253	268	268	306	306	394	394	394	506	506
L	2506	2531	2531	2638	2593	2750	2845	2750	2947	3077
LS	2695	2720	2720	2843	2798	2990	3085	2990	3198	3328
LB	500	526	526	633	588	744	839	744	941	1071
LBS	689	715	715	838	793	984	1079	984	1192	1322

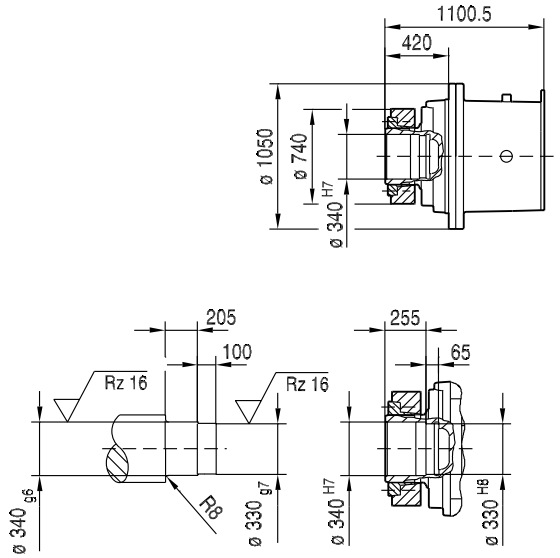
21915180/EN – 04/2015

PF102RF167..

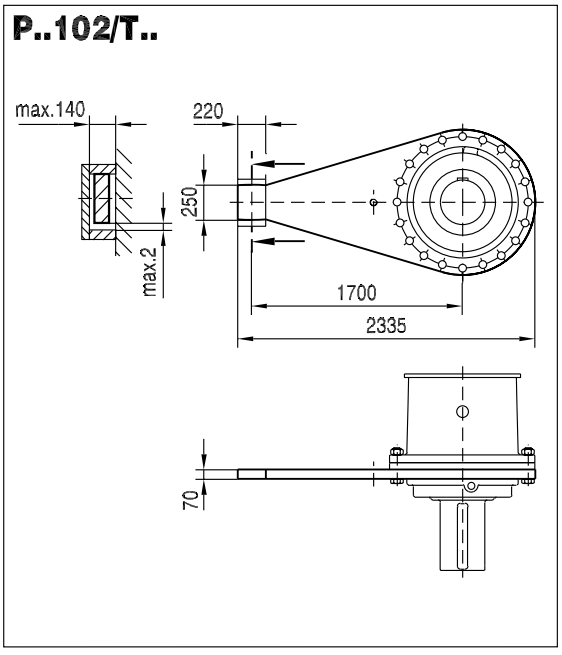
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PHF102RF167..



P..102/T..



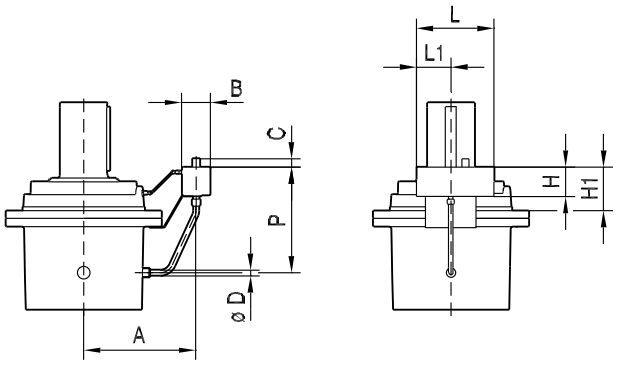
(→ 📄 91)	DRN160L	DRN180M	DRN180L	DRN200L	DRN225	DRN250M	DRN280M	DRN280S	DRN315S	DRN315M-H
AC	318	357	357	394	434	495	495	495	624	624
AD	253	268	268	306	306	394	394	394	506	506
ADS	253	268	268	306	306	394	394	394	506	506
L	2506	2531	2531	2638	2593	2750	2845	2750	2947	3077
LS	2695	2720	2720	2843	2798	2990	3085	2990	3198	3328
LB	500	526	526	633	588	744	839	744	941	1071
LBS	689	715	715	838	793	984	1079	984	1192	1322

21915180/EN – 04/2015

10.4 Oil expansion tank for mounting position M2

45 015 00 11

P/PH/PF/PHF
M2



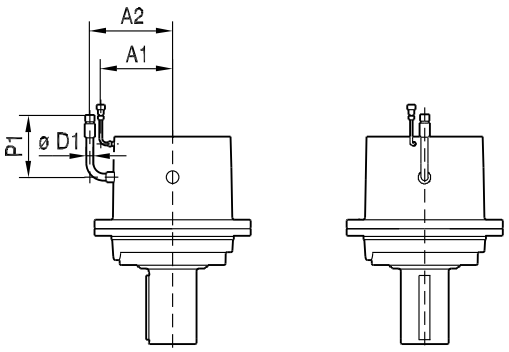
	A	B	C	Ø D	H	H1	L	L1	P
P.092	627.5	160	51	28	160	230	530	235	636.5
P.102	696.5	160	51	28	160	241	530	235	658.5

21915180/EN – 04/2015

10.5 Oil expansion tank for mounting position M4

45 016 00 11

P/PH/PF/PHF
M4



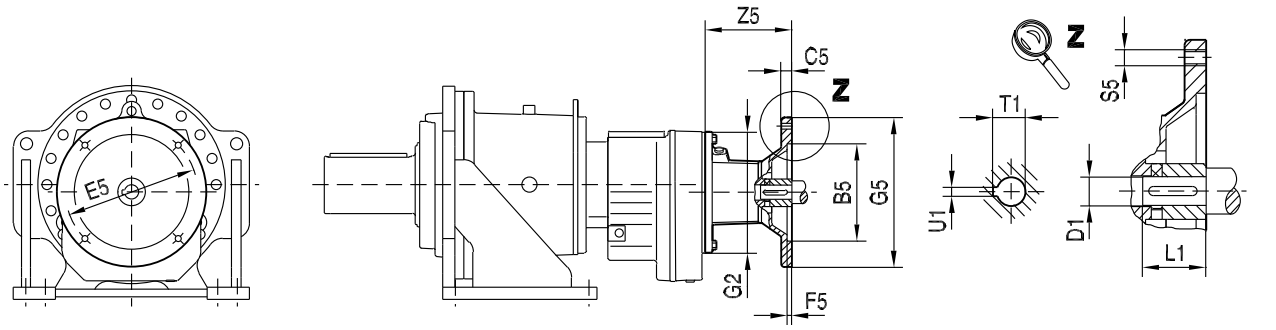
	A1	A2	Ø D1	P1
P.092	477	486	28	361
P.102	507	514	28	361

21915180/EN – 04/2015

10.6 AM adapters for mounting of IEC motors

P..RF..AM..

45 115 00 08



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

21915180/EN – 04/2015

45 116 00 08

P..RF..AM..

Fig.1

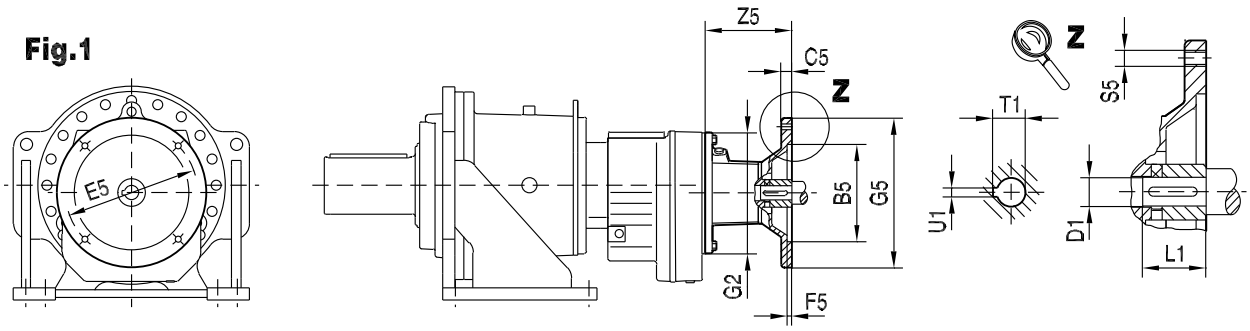


Fig.2

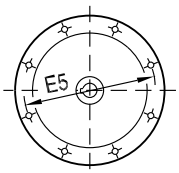
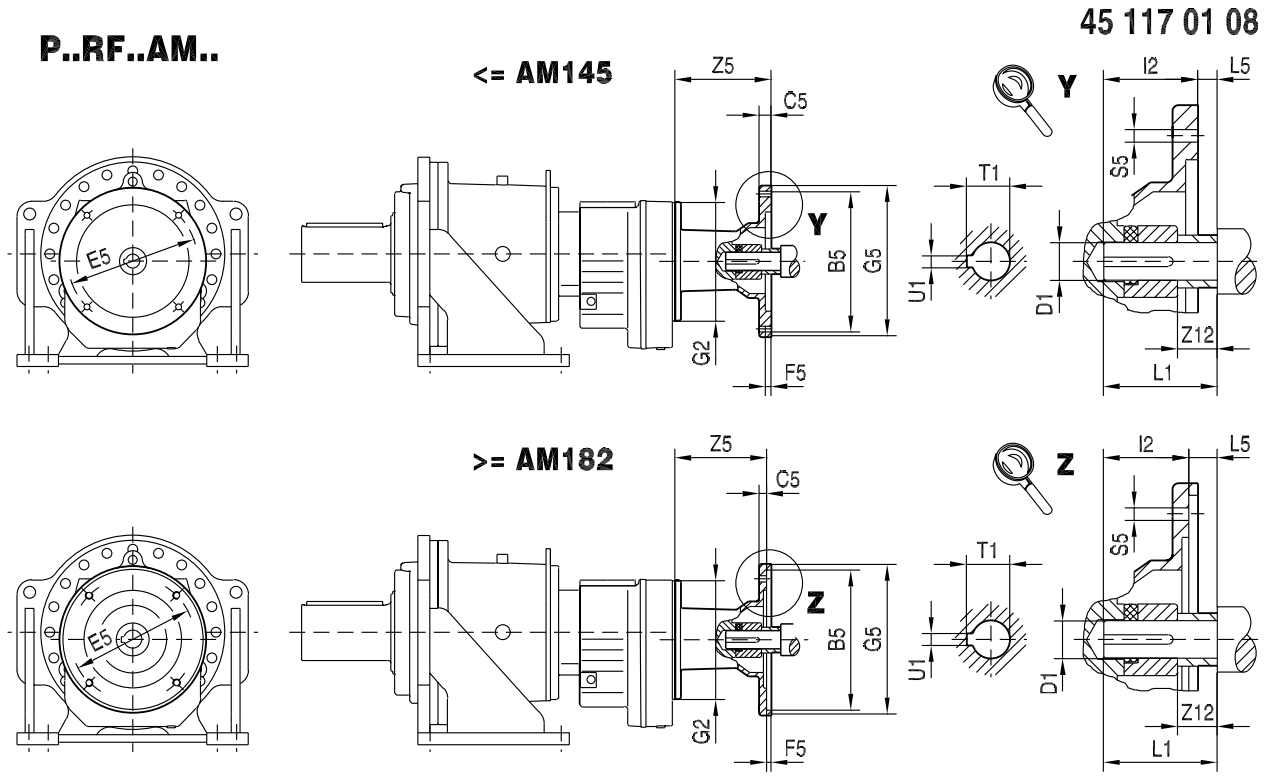


		Fig.	B5	C5	E5	F5	G2	G5	S5	Z5	D1	L1	T1	U1
P..RF107	AM100	1	180	15	215	5	350	250	M12	110	28	60	31.3	8
	AM112	1	180	15	215	5	350	250	M12	110	28	60	31.3	8
	AM132S/M	1	230	16	265	5	350	300	M12	163	38	80	41.3	10
	AM132ML	1	230	16	265	5	350	300	M12	163	38	80	41.3	10
	AM160	1	250	18	300	6	350	350	M16	221	42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

21915180/EN – 04/2015

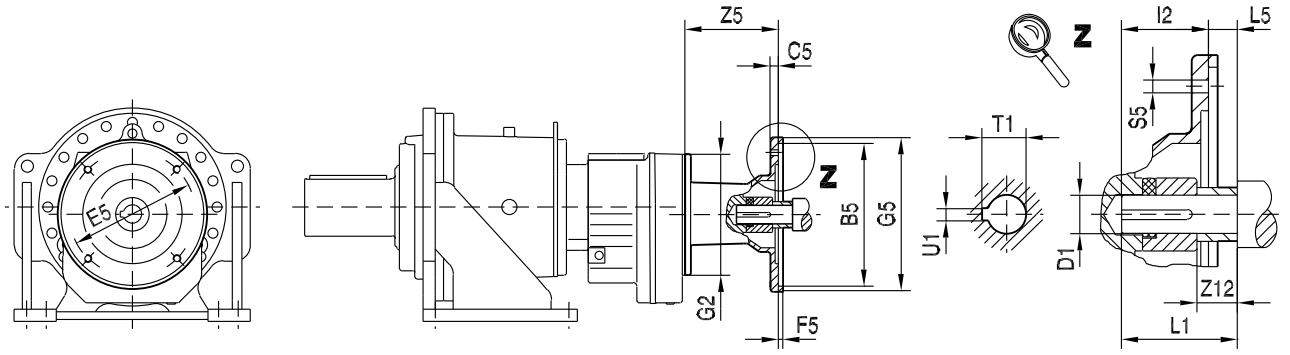
10.7 AM adapters for mounting of NEMA motors



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

45 118 01 08

P..RF..AM..



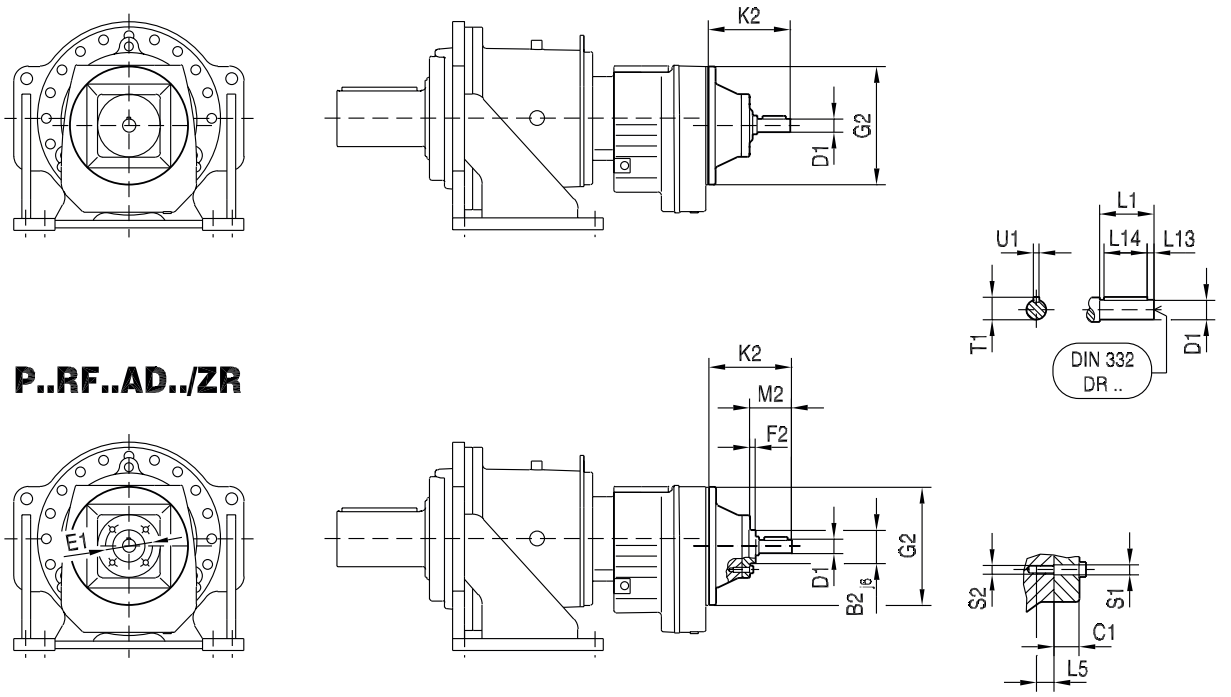
		B5	C5	E5	F5	G2	G5	I2	L5	S5	Z5	Z12	D1	L1	T1	U1
P..RF107	AM182	215.9	10	184	5	350	228	66.75	3	15	123.5	16.5	28.575	69	31.7	6.35
	AM184	215.9	10	184	5	350	228	66.75	3	15	123.5	16.5	28.575	69	31.7	6.35
	AM213/215	215.9	11	184	5	350	228	79.55	6.3	15	172.5	15.8	34.925	85	38.7	7.94
	AM254/256	215.9	12	184	5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

21915180/EN – 04/2015

10.8 AD input shaft assembly

P..RF..AD..

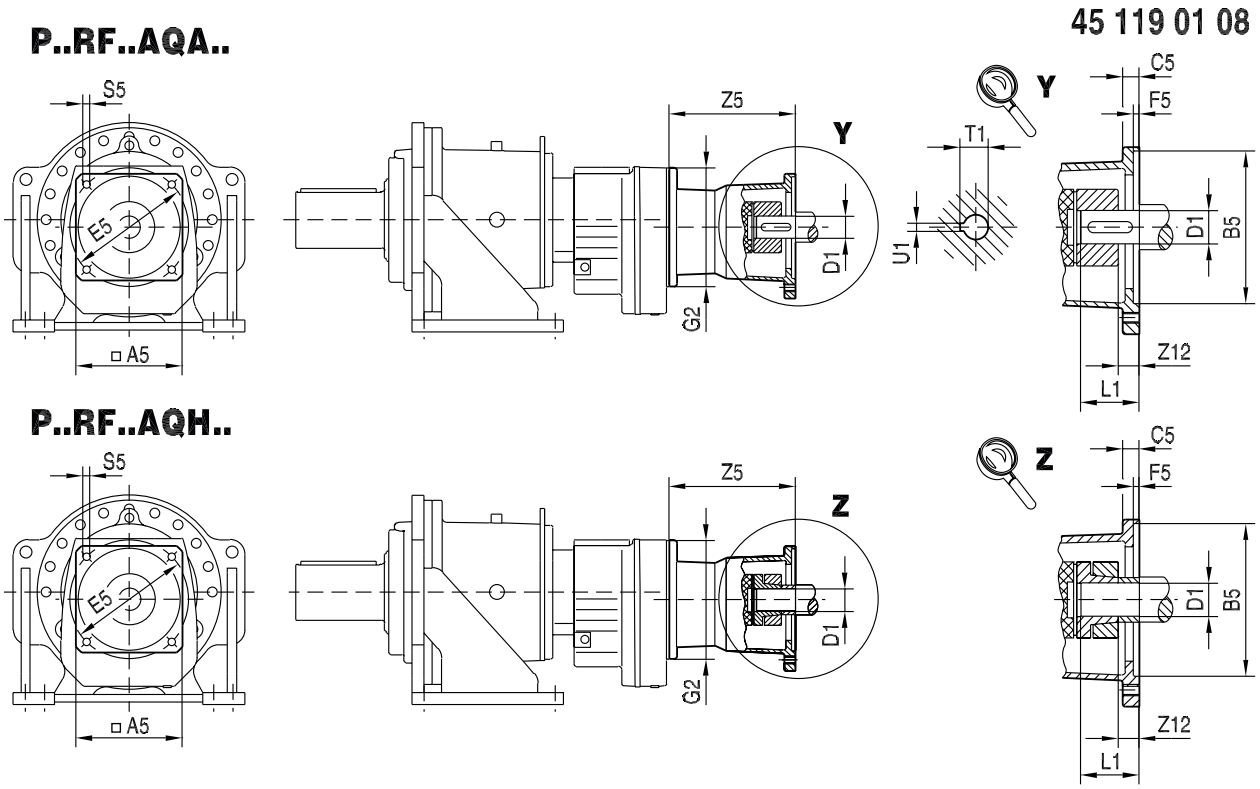
45 121 01 08



P..RF..AD../ZR

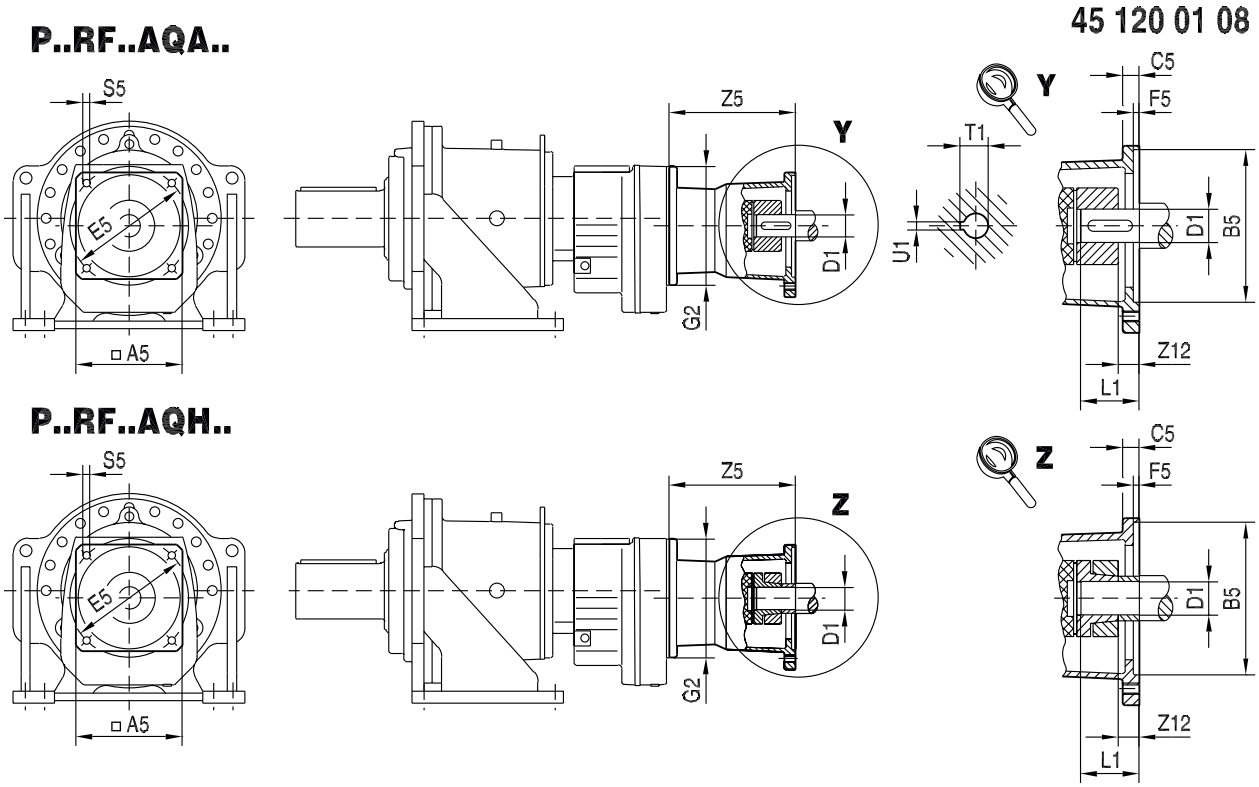
		B2	C1	E1	F2	G2	K2	L5	M2	S1	S2	D1	L1	L13	L14	T1	U1
P..RF77	AD2, AD2/ZR	55	13.5	80	8		116	12	50	9	M8	19	40	4	32	21.5	6
	AD3, AD3/ZR	70	15.5	105	8	200	151	16	60	11	M10	24	50	5	40	27	8
	AD4, AD4/ZR	100	16	130	13		224	20	95.5	13.5	M12	38	80	5	70	41	10
P..RF87	AD2, AD2/ZR	55	13.5	80	8		111	12	50	9	M8	19	40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

10.9 AQA motor adapter



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

21915180/EN – 04/2015



		A5	B5	C5	E5	F5	G2	S5	Z5	AQA Z12	AQH Z12	D1	L1	T1	AU1
P..RF97	AQ..140/1	140	110	15	165	5	300	M10	157	16	16	24	50	27.3	8
	AQ..140/2		130												
	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

21915180/EN – 04/2015

11 P..KF.. bevel planetary gearmotors

11.1 Guide to the dimension sheets

11.1.1 P.. foot-mounted gear units

Size	M_{N2} [Nm]	Dimension sheets / page number								
		KF67	KF77	KF87	KF97	KF107	KF127	KF157	K167	K187
P002	24 830	210	212	214	216	–	–	–	–	–
P012	36 810	–	218	220	222	224	–	–	–	–
P022	51 190	–	–	226	228	230	–	–	–	–
P032	69 620	–	–	232	234	236	238	–	–	–
P042	100 170	–	–	–	240	242	244	–	–	–
P052	12 4060	–	–	–	246	248	250	–	–	–
P062	185 660	–	–	–	–	252	254	–	–	–
P072	245 660	–	–	–	–	–	256	258	–	–
P082	359 400	–	–	–	–	–	–	260	–	–
P092	423 000	–	–	–	–	–	–	–	262	264
P102	500 000	–	–	–	–	–	–	–	266	268

11.1.2 PF.. flange-mounted gear units

Size	M_{N2} [Nm]	Dimension sheets / page number								
		KF67	KF77	KF87	KF97	KF107	KF127	KF157	K167	K187
PF002	24 830	211	213	215	217	–	–	–	–	–
PF012	36 810	–	219	221	223	225	–	–	–	–
PF022	51 190	–	–	227	229	231	–	–	–	–
PF032	69 620	–	–	233	235	237	239	–	–	–
PF042	100 170	–	–	–	241	243	245	–	–	–
PF052	124 060	–	–	–	247	249	251	–	–	–
PF062	185 660	–	–	–	–	253	255	–	-	–
PF072	245 660	–	–	–	–	–	257	259	–	–
PF082	359 400	–	–	–	–	–	–	261	–	–
PF092	423 000	–	–	–	–	–	–	–	263	265
PF102	500 000	–	–	–	–	–	–	–	267	269

11.1.3 Motor adapters

	Dimension sheets / page number							
	KF77	KF87	KF97	KF107	KF127	KF157	K167	K187
Adapter for mounting IEC motors P..KF..AM..	272	272	272	272	273	273	273	273
Adapter for mounting NEMA motors P..KF..AM..	274	274	274	275	275	275	275	275
Input shaft assembly P..KF..AD..	276	276	276	276	276	276	276	276
Motor adapter AQA	277	277	278	278	-	-	-	-

21915180/EN – 04/2015

11.2 Selection tables

P_m = 0.75 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2} f_{LC}<=7.5	M_{N2} f_{LC}>107.5					m	
min^{-1}	Nm		N	Nm	Nm					kg	
0.36	19600	4029	156000	46200	36810	**P**	**012KF87**	**DRN**	**80M4**	435	220
						PF	**012KF87**	**DRN**	**80M4**	365	221
						PH	**012KF87**	**DRN**	**80M4**	450	220
						PHF	**012KF87**	**DRN**	**80M4**	380	221
0.41	17000	3490	156000	46200	36810	**P**	**012KF77**	**DRN**	**80M4**	400	218
0.47	14900	3063	156000	46200	36810	**PF**	**012KF77**	**DRN**	**80M4**	330	219
						PH	**012KF77**	**DRN**	**80M4**	410	218
						PHF	**012KF77**	**DRN**	**80M4**	340	219
0.38	18400	3793	123500	29200	24830	**P**	**002KF77**	**DRN**	**80M4**	320	212
						PF	**002KF77**	**DRN**	**80M4**	260	213
						PH	**002KF77**	**DRN**	**80M4**	320	212
						PHF	**002KF77**	**DRN**	**80M4**	265	213
0.41	17100	3519	124000	29200	24830						
0.48	14500	2984	124000	29200	24830						
0.53	13100	2694	124000	29200	24830	**P**	**002KF67**	**DRN**	**80M4**	285	210
0.61	11500	2371	124000	29200	24830	**PF**	**002KF67**	**DRN**	**80M4**	230	211
0.64	10900	2238	124000	29200	24830	**PH**	**002KF67**	**DRN**	**80M4**	290	210
0.76	9290	1906	124000	29200	24830	**PHF**	**002KF67**	**DRN**	**80M4**	235	211
0.83	8440	1732	124000	29200	24830						
0.96	7310	1500	124000	29200	24830						

P_m = 1.1 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2} f_{LC}<=7.5	M_{N2} f_{LC}>107.5					m	
min^{-1}	Nm		N	Nm	Nm					kg	
0.36	28500	4029	197000	64200	51190	**P**	**022KF87**	**DRN**	**90S4**	590	226
0.43	23900	3387	197000	64200	51190	**PF**	**022KF87**	**DRN**	**90S4**	485	227
0.47	22000	3113	197000	64200	51190	**PH**	**022KF87**	**DRN**	**90S4**	600	226
						PHF	**022KF87**	**DRN**	**90S4**	500	227
0.36	28500	4029	156000	46200	36810	**P**	**012KF87**	**DRN**	**90S4**	440	220
0.53	19500	2764	156000	46200	36810	**PF**	**012KF87**	**DRN**	**90S4**	370	221
						PH	**012KF87**	**DRN**	**90S4**	455	220
						PHF	**012KF87**	**DRN**	**90S4**	385	221
0.38	26900	3807	156000	46200	36810						
0.42	24600	3490	156000	46200	36810						
0.48	21600	3063	156000	46200	36810	**P**	**012KF77**	**DRN**	**90S4**	405	218
0.57	17900	2540	156000	46200	36810	**PF**	**012KF77**	**DRN**	**90S4**	335	219
0.64	16100	2289	156000	46200	36810	**PH**	**012KF77**	**DRN**	**90S4**	415	218
0.72	14200	2008	156000	46200	36810	**PHF**	**012KF77**	**DRN**	**90S4**	345	219
0.82	12500	1772	156000	46200	36810						
0.48	21500	3051	121500	29200	24830	**P**	**002KF77**	**DRN**	**90S4**	325	212
0.50	20400	2891	122300	29200	24830	**PF**	**002KF77**	**DRN**	**90S4**	265	213
						PH	**002KF77**	**DRN**	**90S4**	325	212
						PHF	**002KF77**	**DRN**	**90S4**	270	213
0.61	16700	2371	124000	29200	24830						
0.65	15800	2238	124000	29200	24830						
0.76	13400	1906	124000	29200	24830						
0.84	12200	1732	124000	29200	24830	**P**	**002KF67**	**DRN**	**90S4**	295	210
0.97	10600	1500	124000	29200	24830	**PF**	**002KF67**	**DRN**	**90S4**	235	211
1.0	9840	1392	124000	29200	24830	**PH**	**002KF67**	**DRN**	**90S4**	295	210
1.2	8350	1181	124000	29200	24830	**PHF**	**002KF67**	**DRN**	**90S4**	240	211
1.4	7540	1066	124000	29200	24830						
1.6	6630	938	124000	29200	24830						

21915180/EN – 04/2015

P_m = 1.5 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2} f_{LC}<=7.5	M_{N2} f_{LC}>107.5					m	
min^{-1}	Nm		N	Nm	Nm					kg	
0.36	38700	4029	197000	64200	51190	**P**	**022KF87**	**DRN**	**90L4**	590	226
0.43	32500	3387	197000	64200	51190	**PF**	**022KF87**	**DRN**	**90L4**	490	227
0.47	29900	3113	197000	64200	51190	**PH**	**022KF87**	**DRN**	**90L4**	610	226
						PHF	**022KF87**	**DRN**	**90L4**	500	227
0.36	38700	4029	156000	46200	36810	**P**	**012KF87**	**DRN**	**90L4**	445	220
0.53	26500	2764	156000	46200	36810	**PF**	**012KF87**	**DRN**	**90L4**	375	221
						PH	**012KF87**	**DRN**	**90L4**	455	220
						PHF	**012KF87**	**DRN**	**90L4**	385	221
0.42	33500	3490	156000	46200	36810						
0.48	29400	3063	156000	46200	36810						
0.50	27800	2903	156000	46200	36810	**P**	**012KF77**	**DRN**	**90L4**	405	218
0.58	24400	2540	156000	46200	36810	**PF**	**012KF77**	**DRN**	**90L4**	335	219
0.64	21900	2289	156000	46200	36810	**PH**	**012KF77**	**DRN**	**90L4**	420	218
0.73	19200	2008	156000	46200	36810	**PHF**	**012KF77**	**DRN**	**90L4**	350	219
0.82	17000	1772	156000	46200	36810						
0.64	21900	2280	121300	29200	24830	**P**	**002KF77**	**DRN**	**90L4**	325	212
0.73	19200	2000	123000	29200	24830	**PF**	**002KF77**	**DRN**	**90L4**	270	213
						PH	**002KF77**	**DRN**	**90L4**	330	212
						PHF	**002KF77**	**DRN**	**90L4**	270	213
0.84	16600	1732	124000	29200	24830						
0.97	14400	1500	124000	29200	24830						
1.0	13300	1392	124000	29200	24830	**P**	**002KF67**	**DRN**	**90L4**	295	210
1.2	11300	1181	124000	29200	24830	**PF**	**002KF67**	**DRN**	**90L4**	240	211
1.4	10200	1066	124000	29200	24830	**PH**	**002KF67**	**DRN**	**90L4**	300	210
1.6	9000	938	124000	29200	24830	**PHF**	**002KF67**	**DRN**	**90L4**	245	211
1.6	8500	886	124000	29200	24830						
1.9	7240	754	124000	29200	24830						

P_m = 2.2 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2} f_{LC}<=7.5	M_{N2} f_{LC}>107.5					m	
min^{-1}	Nm		N	Nm	Nm					kg	
0.35	58500	4124	236500	86800	69620	**P**	**032KF97**	**DRN**	**100LS4**	750	234
0.38	53900	3797	241400	86800	69620	**PF**	**032KF97**	**DRN**	**100LS4**	630	235
						PH	**032KF97**	**DRN**	**100LS4**	770	234
						PHF	**032KF97**	**DRN**	**100LS4**	650	235
0.36	57200	4029	181200	64200	51190						
0.43	48000	3387	195300	64200	51190	**P**	**022KF87**	**DRN**	**100LS4**	600	226
0.47	44200	3113	197000	64200	51190	**PF**	**022KF87**	**DRN**	**100LS4**	495	227
0.52	39200	2764	197000	64200	51190	**PH**	**022KF87**	**DRN**	**100LS4**	610	226
0.59	35000	2471	197000	64200	51190	**PHF**	**022KF87**	**DRN**	**100LS4**	510	227
0.52	39200	2764	156000	46200	36810						
0.65	31500	2222	156000	46200	36810	**P**	**012KF87**	**DRN**	**100LS4**	450	220
0.75	27300	1929	156000	46200	36810	**PF**	**012KF87**	**DRN**	**100LS4**	380	221
0.84	24500	1727	156000	46200	36810	**PH**	**012KF87**	**DRN**	**100LS4**	460	220
1.0	20300	1433	156000	46200	36810	**PHF**	**012KF87**	**DRN**	**100LS4**	390	221
0.57	36000	2540	156000	46200	36810						
0.63	32500	2289	156000	46200	36810	**P**	**012KF77**	**DRN**	**100LS4**	410	218
0.72	28500	2008	156000	46200	36810	**PF**	**012KF77**	**DRN**	**100LS4**	340	219
0.82	25100	1772	156000	46200	36810	**PH**	**012KF77**	**DRN**	**100LS4**	425	218
1.0	19600	1381	156000	46200	36810	**PHF**	**012KF77**	**DRN**	**100LS4**	355	219
0.93	22200	1565	121100	29200	24830	**P**	**002KF77**	**DRN**	**100LS4**	330	212
1.0	19500	1376	122800	29200	24830	**PF**	**002KF77**	**DRN**	**100LS4**	275	213
						PH	**002KF77**	**DRN**	**100LS4**	335	212
						PHF	**002KF77**	**DRN**	**100LS4**	275	213

21915180/EN – 04/2015

P_m = 2.2 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2} f_{LC}<=7.5	M_{N2} f_{LC}>107.5					m	
min^{-1}	Nm		N	Nm	Nm					kg	
1.2	16700	1181	124000	29200	24830						
1.4	15100	1066	124000	29200	24830						
1.6	13300	938	124000	29200	24830						
1.6	12500	886	124000	29200	24830	**P**	**002KF67**	**DRN**	**100LS4**	300	210
1.9	10700	754	124000	29200	24830	**PF**	**002KF67**	**DRN**	**100LS4**	240	211
2.1	9720	685	124000	29200	24830	**PH**	**002KF67**	**DRN**	**100LS4**	305	210
2.4	8420	594	124000	29200	24830	**PHF**	**002KF67**	**DRN**	**100LS4**	245	211
2.8	7330	517	124000	29200	24830						
3.0	6920	488	124000	29200	20200						

P_m = 3.0 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2} f_{LC}<=7.5	M_{N2} f_{LC}>107.5					m	
min^{-1}	Nm		N	Nm	Nm					kg	
0.35	79500	4124	314500	111000	100170	**P**	**042KF97**	**DRN**	**100L4**	1010	240
0.38	73200	3797	319400	111000	100170	**PF**	**042KF97**	**DRN**	**100L4**	820	241
0.43	65400	3394	323000	111000	100170	**PH**	**042KF97**	**DRN**	**100L4**	1010	240
						PHF	**042KF97**	**DRN**	**100L4**	820	241
0.35	79500	4124	209200	86800	69620	**P**	**032KF97**	**DRN**	**100L4**	760	234
0.38	73200	3797	218400	86800	69620	**PF**	**032KF97**	**DRN**	**100L4**	640	235
0.53	53300	2767	241900	86800	69620	**PH**	**032KF97**	**DRN**	**100L4**	780	234
						PHF	**032KF97**	**DRN**	**100L4**	660	235
0.59	47600	2471	247400	86800	69620	**P**	**032KF87**	**DRN**	**100L4**	680	232
						PF	**032KF87**	**DRN**	**100L4**	560	233
						PH	**032KF87**	**DRN**	**100L4**	700	232
						PHF	**032KF87**	**DRN**	**100L4**	580	233
0.47	60000	3113	176200	64200	51190						
0.53	53300	2764	187600	64200	51190	**P**	**022KF87**	**DRN**	**100L4**	600	226
0.59	47600	2471	195900	64200	51190	**PF**	**022KF87**	**DRN**	**100L4**	500	227
0.66	42800	2222	197000	64200	51190	**PH**	**022KF87**	**DRN**	**100L4**	620	226
0.75	37100	1929	197000	64200	51190	**PHF**	**022KF87**	**DRN**	**100L4**	520	227
0.66	42800	2222	156000	46200	36810	**P**	**012KF87**	**DRN**	**100L4**	455	220
0.75	37100	1929	156000	46200	36810	**PF**	**012KF87**	**DRN**	**100L4**	385	221
0.84	33300	1727	156000	46200	36810	**PH**	**012KF87**	**DRN**	**100L4**	470	220
1.0	27600	1433	156000	46200	36810	**PHF**	**012KF87**	**DRN**	**100L4**	400	221
1.0	26600	1381	156000	46200	36810						
1.2	23300	1212	156000	46200	36810	**P**	**012KF77**	**DRN**	**100L4**	420	218
1.3	22100	1148	156000	46200	36810	**PF**	**012KF77**	**DRN**	**100L4**	350	219
1.4	19300	1005	156000	46200	36810	**PH**	**012KF77**	**DRN**	**100L4**	430	218
1.6	17400	905	156000	46200	36810	**PHF**	**012KF77**	**DRN**	**100L4**	360	219
1.2	23200	1207	119900	29200	24830	**P**	**002KF77**	**DRN**	**100L4**	340	212
1.3	22000	1144	121200	29200	24830	**PF**	**002KF77**	**DRN**	**100L4**	280	213
1.4	19300	1001	123000	29200	24830	**PH**	**002KF77**	**DRN**	**100L4**	340	212
						PHF	**002KF77**	**DRN**	**100L4**	285	213
1.6	17000	886	124000	29200	24830						
1.9	14500	754	124000	29200	24830						
2.1	13200	685	124000	29200	24830	**P**	**002KF67**	**DRN**	**100L4**	310	210
2.4	11400	594	124000	29200	24830	**PF**	**002KF67**	**DRN**	**100L4**	250	211
2.8	9950	517	124000	29200	24830	**PH**	**002KF67**	**DRN**	**100L4**	310	210
3.0	9400	488	124000	29200	20200	**PHF**	**002KF67**	**DRN**	**100L4**	255	211
3.5	8000	415	124000	29200	19100						
3.9	7270	378	124000	29200	18300						

P_m = 4.0 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2} f_{LC}<=7.5	M_{N2} f_{LC}>107.5					m	
min^{-1}	Nm		N	Nm	Nm					kg	
0.37	101000	3952	364000	140600	124060	**P**	**052KF107**	**DRN**	**112M4**	1270	248
0.41	91200	3568	364000	140600	124060	**PF**	**052KF107**	**DRN**	**112M4**	1070	249
						PH	**052KF107**	**DRN**	**112M4**	1260	248
						PHF	**052KF107**	**DRN**	**112M4**	1060	249

21915180/EN – 04/2015

P_m = 4.0 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}							m	
				f_{LC}<=7.5	f_{LC}>107.5							
min^{-1}	Nm		N	Nm	Nm						kg	
0.45	82800	3241	311700	111000	100170	**P**	**042KF107**	**DRN**	**112M4**		1130	242
						PF	**042KF107**	**DRN**	**112M4**		940	243
						PH	**042KF107**	**DRN**	**112M4**		1130	242
						PHF	**042KF107**	**DRN**	**112M4**		940	243
0.35	105400	4124	290000	111000	100170							
0.39	97100	3797	298700	111000	100170	**P**	**042KF97**	**DRN**	**112M4**		1010	240
0.43	86800	3394	308300	111000	100170	**PF**	**042KF97**	**DRN**	**112M4**		820	241
0.53	70700	2767	321300	111000	100170	**PH**	**042KF97**	**DRN**	**112M4**		1020	240
0.60	62700	2454	323000	111000	100170	**PHF**	**042KF97**	**DRN**	**112M4**		830	241
0.53	70700	2767	221800	86800	69620	**P**	**032KF97**	**DRN**	**112M4**		770	234
0.66	56700	2218	238500	86800	69620	**PF**	**032KF97**	**DRN**	**112M4**		650	235
0.78	48000	1880	247000	86800	69620	**PH**	**032KF97**	**DRN**	**112M4**		790	234
						PHF	**032KF97**	**DRN**	**112M4**		670	235
0.59	63200	2471	231200	86800	69620	**P**	**032KF87**	**DRN**	**112M4**		690	232
						PF	**032KF87**	**DRN**	**112M4**		570	233
						PH	**032KF87**	**DRN**	**112M4**		710	232
						PHF	**032KF87**	**DRN**	**112M4**		590	233
0.66	56800	2222	181900	64200	51190							
0.76	49300	1929	193600	64200	51190	**P**	**022KF87**	**DRN**	**112M4**		610	226
0.85	44100	1727	197000	64200	51190	**PF**	**022KF87**	**DRN**	**112M4**		510	227
1.0	36600	1433	197000	64200	51190	**PH**	**022KF87**	**DRN**	**112M4**		630	226
1.2	31400	1231	197000	64200	51190	**PHF**	**022KF87**	**DRN**	**112M4**		520	227
0.85	44100	1727	156000	46200	36810	**P**	**012KF87**	**DRN**	**112M4**		465	220
1.0	36600	1433	156000	46200	36810	**PF**	**012KF87**	**DRN**	**112M4**		395	221
1.3	27900	1094	156000	46200	36810	**PH**	**012KF87**	**DRN**	**112M4**		480	220
						PHF	**012KF87**	**DRN**	**112M4**		410	221
1.2	30900	1212	156000	46200	36810							
1.3	29300	1148	156000	46200	36810							
1.5	25600	1005	156000	46200	36810	**P**	**012KF77**	**DRN**	**112M4**		425	218
1.6	23100	905	156000	46200	36810	**PF**	**012KF77**	**DRN**	**112M4**		355	219
1.8	20300	794	156000	46200	36810	**PH**	**012KF77**	**DRN**	**112M4**		440	218
2.1	17900	701	156000	46200	36810	**PHF**	**012KF77**	**DRN**	**112M4**		370	219
2.4	15800	621	156000	46200	36810							
2.8	13500	530	156000	46200	36810							
1.6	23000	902	120200	29200	24830	**P**	**002KF77**	**DRN**	**112M4**		345	212
1.8	20200	791	122400	29200	24830	**PF**	**002KF77**	**DRN**	**112M4**		290	213
2.1	17800	698	123800	29200	24830	**PH**	**002KF77**	**DRN**	**112M4**		350	212
2.4	15800	619	124000	29200	24830	**PHF**	**002KF77**	**DRN**	**112M4**		295	213
2.8	13200	517	124000	29200	24830							
3.0	12400	488	124000	29200	20200	**P**	**002KF67**	**DRN**	**112M4**		315	210
3.5	10600	415	124000	29200	19100	**PF**	**002KF67**	**DRN**	**112M4**		260	211
3.9	9650	378	124000	29200	18300	**PH**	**002KF67**	**DRN**	**112M4**		320	210
4.5	8360	327	124000	29200	16800	**PHF**	**002KF67**	**DRN**	**112M4**		265	211
5.2	7270	284	124000	29200	16000							

P_m = 5.5 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}							m	
				f_{LC}<=7.5	f_{LC}>107.5							
min^{-1}	Nm		N	Nm	Nm						kg	
0.41	125700	3568	473000	209100	185660	**P**	**062KF107**	**DRN**	**132S4**		1770	252
0.45	114100	3241	473000	209100	185660	**PF**	**062KF107**	**DRN**	**132S4**		1400	253
						PH	**062KF107**	**DRN**	**132S4**		1760	252
						PHF	**062KF107**	**DRN**	**132S4**		1390	253
0.37	139200	3952	343100	140600	124060	**P**	**052KF107**	**DRN**	**132S4**		1280	248
0.41	125700	3568	355000	140600	124060	**PF**	**052KF107**	**DRN**	**132S4**		1080	249
0.51	101300	2876	364000	140600	124060	**PH**	**052KF107**	**DRN**	**132S4**		1280	248
0.56	91900	2610	364000	140600	124060	**PHF**	**052KF107**	**DRN**	**132S4**		1080	249
0.45	114100	3241	280200	111000	100170	**P**	**042KF107**	**DRN**	**132S4**		1140	242
0.65	79000	2243	314900	111000	100170	**PF**	**042KF107**	**DRN**	**132S4**		950	243
0.75	68900	1958	322600	111000	100170	**PH**	**042KF107**	**DRN**	**132S4**		1140	242
						PHF	**042KF107**	**DRN**	**132S4**		950	243

21915180/EN – 04/2015

P_m = 5.5 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}						m	
				f_{LC}<=7.5	f_{LC}>107.5						
min^{-1}	Nm		N	Nm	Nm					kg	
0.53	97500	2767	298300	111000	100170	**P**	**042KF97**	**DRN**	**132S4**	1030	240
0.60	86400	2454	308600	111000	100170	**PF**	**042KF97**	**DRN**	**132S4**	840	241
0.78	66200	1880	323000	111000	100170	**PH**	**042KF97**	**DRN**	**132S4**	1030	240
						PHF	**042KF97**	**DRN**	**132S4**	840	241
0.66	78100	2218	211300	86800	69620	**P**	**032KF97**	**DRN**	**132S4**	780	234
0.78	66200	1880	227600	86800	69620	**PF**	**032KF97**	**DRN**	**132S4**	660	235
0.89	57800	1643	237300	86800	69620	**PH**	**032KF97**	**DRN**	**132S4**	800	234
0.97	52900	1503	242400	86800	69620	**PHF**	**032KF97**	**DRN**	**132S4**	680	235
1.2	43300	1231	251100	86800	69620	**P**	**032KF87**	**DRN**	**132S4**	700	232
						PF	**032KF87**	**DRN**	**132S4**	580	233
						PH	**032KF87**	**DRN**	**132S4**	720	232
						PHF	**032KF87**	**DRN**	**132S4**	600	233
0.85	60800	1727	174800	64200	51190						
1.0	50400	1433	191900	64200	51190	**P**	**022KF87**	**DRN**	**132S4**	620	226
1.2	43300	1231	197000	64200	51190	**PF**	**022KF87**	**DRN**	**132S4**	520	227
1.3	38500	1094	197000	64200	51190	**PH**	**022KF87**	**DRN**	**132S4**	640	226
1.5	34400	978	197000	64200	51190	**PHF**	**022KF87**	**DRN**	**132S4**	540	227
1.7	30900	879	197000	64200	51190						
1.3	38500	1094	156000	46200	36810	**P**	**012KF87**	**DRN**	**132S4**	475	220
1.9	26800	763	156000	46200	36810	**PF**	**012KF87**	**DRN**	**132S4**	405	221
						PH	**012KF87**	**DRN**	**132S4**	490	220
						PHF	**012KF87**	**DRN**	**132S4**	420	221
1.4	35400	1005	156000	46200	36810						
1.6	31800	905	156000	46200	36810						
1.8	27900	794	156000	46200	36810	**P**	**012KF77**	**DRN**	**132S4**	440	218
2.1	24600	701	156000	46200	36810	**PF**	**012KF77**	**DRN**	**132S4**	370	219
2.4	21800	621	156000	46200	36810	**PH**	**012KF77**	**DRN**	**132S4**	450	218
2.8	18600	530	156000	46200	36810	**PHF**	**012KF77**	**DRN**	**132S4**	380	219
3.4	14900	425	156000	46200	36810						
2.4	21800	619	121400	29200	24830						
2.8	18600	528	123400	29200	24830						
3.0	17000	483	124000	29200	24830						
3.4	14900	424	124000	29200	24830						
3.9	13100	374	124000	29200	24830	**P**	**002KF77**	**DRN**	**132S4**	360	212
4.4	11600	331	124000	29200	24830	**PF**	**002KF77**	**DRN**	**132S4**	300	213
5.5	9300	264	124000	29200	24830	**PH**	**002KF77**	**DRN**	**132S4**	360	212
6.1	8490	241	123300	29200	19100	**PHF**	**002KF77**	**DRN**	**132S4**	305	213
6.9	7450	212	118600	29200	18900						
7.8	6570	187	114200	29200	17900						
8.8	5830	166	110100	29200	17000						
10	4980	141	105000	29200	15600						

P_m = 7.5 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}						m	
				f_{LC}<=7.5	f_{LC}>107.5						
min^{-1}	Nm		N	Nm	Nm					kg	
0.43	163700	3425	523000	274600	245660	**P**	**072KF127**	**DRN**	**132M4**	2400	256
0.54	129200	2703	523000	274600	245660	**PF**	**072KF127**	**DRN**	**132M4**	1910	257
0.62	114000	2385	523000	274600	245660	**PH**	**072KF127**	**DRN**	**132M4**	2460	256
						PHF	**072KF127**	**DRN**	**132M4**	1970	257
0.34	206600	4322	421900	209100	185660	**P**	**062KF127**	**DRN**	**132M4**	1980	254
0.60	117400	2456	473000	209100	185660	**PF**	**062KF127**	**DRN**	**132M4**	1620	255
0.69	101400	2121	473000	209100	185660	**PH**	**062KF127**	**DRN**	**132M4**	1970	254
0.78	89700	1876	473000	209100	185660	**PHF**	**062KF127**	**DRN**	**132M4**	1610	255
0.41	170600	3568	449600	209100	185660	**P**	**062KF107**	**DRN**	**132M4**	1790	252
0.45	154900	3241	460000	209100	185660	**PF**	**062KF107**	**DRN**	**132M4**	1420	253
0.65	107200	2243	473000	209100	185660	**PH**	**062KF107**	**DRN**	**132M4**	1770	252
0.88	79400	1661	473000	209100	185660	**PHF**	**062KF107**	**DRN**	**132M4**	1410	253
0.51	137500	2876	344700	140600	124060	**P**	**052KF107**	**DRN**	**132M4**	1300	248
0.56	124700	2610	355700	140600	124060	**PF**	**052KF107**	**DRN**	**132M4**	1100	249
0.75	93600	1958	364000	140600	124060	**PH**	**052KF107**	**DRN**	**132M4**	1290	248
1.0	69400	1452	364000	140600	124060	**PHF**	**052KF107**	**DRN**	**132M4**	1090	249

P_m = 7.5 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}						m	
				f_{LC}<=7.5	f_{LC}>107.5						
min^{-1}	Nm		N	Nm	Nm					kg	
1.3	52300	1095	364000	140600	124060	**P**	**052KF97**	**DRN**	**132M4**	1190	246
1.5	46400	971	364000	140600	124060	**PF**	**052KF97**	**DRN**	**132M4**	990	247
						PH	**052KF97**	**DRN**	**132M4**	1180	246
						PHF	**052KF97**	**DRN**	**132M4**	980	247
0.65	107200	2243	288100	111000	100170	**P**	**042KF107**	**DRN**	**132M4**	1160	242
0.75	93600	1958	302100	111000	100170	**PF**	**042KF107**	**DRN**	**132M4**	970	243
1.0	69400	1452	322300	111000	100170	**PH**	**042KF107**	**DRN**	**132M4**	1160	242
1.3	54300	1138	323000	111000	100170	**PHF**	**042KF107**	**DRN**	**132M4**	970	243
0.78	89900	1880	305500	111000	100170	**P**	**042KF97**	**DRN**	**132M4**	1040	240
1.2	57700	1209	323000	111000	100170	**PF**	**042KF97**	**DRN**	**132M4**	850	241
1.5	46400	971	323000	111000	100170	**PH**	**042KF97**	**DRN**	**132M4**	1050	240
1.7	41900	878	323000	111000	100170	**PHF**	**042KF97**	**DRN**	**132M4**	860	241
0.89	78500	1643	210700	86800	69620						
0.98	71800	1503	220300	86800	69620	**P**	**032KF97**	**DRN**	**132M4**	800	234
1.5	46400	971	248500	86800	69620	**PF**	**032KF97**	**DRN**	**132M4**	680	235
1.7	41900	878	252000	86800	69620	**PH**	**032KF97**	**DRN**	**132M4**	820	234
2.0	35500	744	252000	86800	69620	**PHF**	**032KF97**	**DRN**	**132M4**	700	235
2.3	31000	650	252000	86800	69620						
1.2	58800	1231	236200	86800	69620						
1.9	36400	763	252000	86800	69620	**P**	**032KF87**	**DRN**	**132M4**	720	232
2.2	32600	683	252000	86800	69620	**PF**	**032KF87**	**DRN**	**132M4**	600	233
2.3	30000	628	252000	86800	69200	**PH**	**032KF87**	**DRN**	**132M4**	740	232
2.6	27000	567	252000	86800	69620	**PHF**	**032KF87**	**DRN**	**132M4**	620	233
2.7	25900	543	197000	64200	51190	**P**	**022KF97**	**DRN**	**132M4**	720	228
3.1	22400	470	197000	64200	51190	**PF**	**022KF97**	**DRN**	**132M4**	610	229
						PH	**022KF97**	**DRN**	**132M4**	730	228
						PHF	**022KF97**	**DRN**	**132M4**	630	229
1.3	52200	1094	189200	64200	51190						
1.5	46700	978	197000	64200	51190						
1.7	42000	879	197000	64200	51190	**P**	**022KF87**	**DRN**	**132M4**	640	226
2.2	32600	683	197000	64200	51190	**PF**	**022KF87**	**DRN**	**132M4**	540	227
2.3	30000	628	197000	64200	51190	**PH**	**022KF87**	**DRN**	**132M4**	660	226
3.0	23500	493	197000	64200	51190	**PHF**	**022KF87**	**DRN**	**132M4**	550	227
3.4	20900	438	197000	64200	51190						
3.6	19500	408	156000	46200	36810	**P**	**012KF97**	**DRN**	**132M4**	570	222
4.3	16300	342	156000	46200	36810	**PF**	**012KF97**	**DRN**	**132M4**	500	223
5.3	13300	279	156000	46200	36810	**PH**	**012KF97**	**DRN**	**132M4**	580	222
						PHF	**012KF97**	**DRN**	**132M4**	510	223
1.9	36400	763	156000	46200	36810						
3.0	23500	493	156000	46200	36810	**P**	**012KF87**	**DRN**	**132M4**	495	220
3.7	18700	392	156000	46200	36810	**PF**	**012KF87**	**DRN**	**132M4**	425	221
4.5	15500	325	156000	46200	36810	**PH**	**012KF87**	**DRN**	**132M4**	510	220
5.0	13800	291	156000	46200	36810	**PHF**	**012KF87**	**DRN**	**132M4**	435	221
2.1	33500	701	156000	46200	36810	**P**	**012KF77**	**DRN**	**132M4**	455	218
2.4	29700	621	156000	46200	36810	**PF**	**012KF77**	**DRN**	**132M4**	385	219
2.8	25300	530	156000	46200	36810	**PH**	**012KF77**	**DRN**	**132M4**	470	218
						PHF	**012KF77**	**DRN**	**132M4**	400	219
3.5	20200	424	122400	29200	24830						
3.9	17800	374	123800	29200	24830						
4.4	15800	331	124000	29200	24830						
5.2	13500	283	124000	29200	24830	**P**	**002KF77**	**DRN**	**132M4**	375	212
5.6	12600	264	124000	29200	24830	**PF**	**002KF77**	**DRN**	**132M4**	320	213
6.9	10100	212	118400	29200	18900	**PH**	**002KF77**	**DRN**	**132M4**	380	212
7.9	8920	187	114000	29200	17900	**PHF**	**002KF77**	**DRN**	**132M4**	320	213
8.9	7910	166	110000	29200	17000						
10	6750	141	104900	29200	15600						

21915180/EN – 04/2015

P_m = 9.2 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}							m	
				f_{LC}<=7.5	f_{LC}>107.5							
min^{-1}	Nm		N	Nm	Nm						kg	
0.43	199200	3402	850000	631300	500000	**P**	**102KF167**	**DRN**	**132L4**		5090	266
0.56	154400	2636	850000	631300	500000	**PF**	**102KF167**	**DRN**	**132L4**		4130	267
0.63	137700	2352	850000	631300	500000	**PH**	**102KF167**	**DRN**	**132L4**		5150	266
						PHF	**102KF167**	**DRN**	**132L4**		4190	267
0.43	201900	3447	720000	513900	423000							
0.48	179500	3065	720000	513900	423000							
0.54	159000	2715	720000	513900	423000	**P**	**092KF167**	**DRN**	**132L4**		4240	262
0.62	139500	2383	720000	513900	423000	**PF**	**092KF167**	**DRN**	**132L4**		3540	263
0.67	129300	2209	720000	513900	423000	**PH**	**092KF167**	**DRN**	**132L4**		4250	262
0.72	118900	2031	720000	513900	423000	**PHF**	**092KF167**	**DRN**	**132L4**		3550	263
0.83	103400	1767	720000	513900	423000							
0.35	245800	4198	523000	274600	245660							
0.43	200500	3425	523000	274600	245660	**P**	**072KF127**	**DRN**	**132L4**		2410	256
0.47	182900	3123	523000	274600	245660	**PF**	**072KF127**	**DRN**	**132L4**		1920	257
0.54	158300	2703	523000	274600	245660	**PH**	**072KF127**	**DRN**	**132L4**		2470	256
0.62	139600	2385	523000	274600	245660	**PHF**	**072KF127**	**DRN**	**132L4**		1980	257
0.42	206500	3526	422000	209100	185660							
0.46	188300	3216	436600	209100	185660	**P**	**062KF127**	**DRN**	**132L4**		1990	254
0.60	143800	2456	466800	209100	185660	**PF**	**062KF127**	**DRN**	**132L4**		1630	255
0.69	124200	2121	473000	209100	185660	**PH**	**062KF127**	**DRN**	**132L4**		1980	254
0.78	109800	1876	473000	209100	185660	**PHF**	**062KF127**	**DRN**	**132L4**		1620	255
0.51	168400	2876	451100	209100	185660							
0.56	152800	2610	461300	209100	185660	**P**	**062KF107**	**DRN**	**132L4**		1790	252
0.66	131300	2243	473000	209100	185660	**PF**	**062KF107**	**DRN**	**132L4**		1430	253
0.75	114600	1958	473000	209100	185660	**PH**	**062KF107**	**DRN**	**132L4**		1780	252
0.89	97200	1661	473000	209100	185660	**PHF**	**062KF107**	**DRN**	**132L4**		1420	253
1.0	85000	1452	473000	209100	185660							
0.66	131300	2243	350200	140600	124060	**P**	**052KF107**	**DRN**	**132L4**		1310	248
0.75	114600	1958	363700	140600	124060	**PF**	**052KF107**	**DRN**	**132L4**		1110	249
1.0	85000	1452	364000	140600	124060	**PH**	**052KF107**	**DRN**	**132L4**		1300	248
1.2	71800	1227	364000	140600	124060	**PHF**	**052KF107**	**DRN**	**132L4**		1100	249
1.1	78600	1343	364000	140600	124060	**P**	**052KF97**	**DRN**	**132L4**		1200	246
1.2	70700	1209	364000	140600	124060	**PF**	**052KF97**	**DRN**	**132L4**		1000	247
						PH	**052KF97**	**DRN**	**132L4**		1190	246
						PHF	**052KF97**	**DRN**	**132L4**		990	247
0.75	114600	1958	279600	111000	100170	**P**	**042KF107**	**DRN**	**132L4**		1160	242
0.89	97200	1661	298500	111000	100170	**PF**	**042KF107**	**DRN**	**132L4**		970	243
1.0	85000	1452	309900	111000	100170	**PH**	**042KF107**	**DRN**	**132L4**		1170	242
1.3	66600	1138	323000	111000	100170	**PHF**	**042KF107**	**DRN**	**132L4**		980	243
0.98	87900	1503	307200	111000	100170							
1.2	70700	1209	321300	111000	100170	**P**	**042KF97**	**DRN**	**132L4**		1050	240
1.3	64100	1095	323000	111000	100170	**PF**	**042KF97**	**DRN**	**132L4**		860	241
1.5	56800	971	323000	111000	100170	**PH**	**042KF97**	**DRN**	**132L4**		1060	240
1.7	51400	878	323000	111000	100170	**PHF**	**042KF97**	**DRN**	**132L4**		870	241
1.2	70700	1209	221700	86800	69620							
1.3	64100	1095	230200	86800	69620	**P**	**032KF97**	**DRN**	**132L4**		800	234
1.5	56800	971	238300	86800	69620	**PF**	**032KF97**	**DRN**	**132L4**		680	235
1.7	51400	878	243900	86800	69620	**PH**	**032KF97**	**DRN**	**132L4**		830	234
2.0	43500	744	250900	86800	69620	**PHF**	**032KF97**	**DRN**	**132L4**		700	235
2.3	38000	650	252000	86800	69620							
2.3	36700	628	252000	86800	69200	**P**	**032KF87**	**DRN**	**132L4**		730	232
2.6	33100	567	252000	86800	69620	**PF**	**032KF87**	**DRN**	**132L4**		610	233
						PH	**032KF87**	**DRN**	**132L4**		750	232
						PHF	**032KF87**	**DRN**	**132L4**		630	233
2.7	31800	543	197000	64200	51190	**P**	**022KF97**	**DRN**	**132L4**		720	228
3.1	27500	470	197000	64200	51190	**PF**	**022KF97**	**DRN**	**132L4**		620	229
						PH	**022KF97**	**DRN**	**132L4**		740	228
						PHF	**022KF97**	**DRN**	**132L4**		640	229

21915180/EN – 04/2015

P_m = 9.2 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}						m	
				f_{LC}<=7.5	f_{LC}>107.5						
min^{-1}	Nm		N	Nm	Nm					kg	
1.5	57200	978	181100	64200	51190						
1.7	51400	879	190400	64200	51190	**P**	**022KF87**	**DRN**	**132L4**	650	226
1.9	44600	763	197000	64200	51190	**PF**	**022KF87**	**DRN**	**132L4**	550	227
2.2	40000	683	197000	64200	51190	**PH**	**022KF87**	**DRN**	**132L4**	660	226
2.3	36700	628	197000	64200	51190	**PHF**	**022KF87**	**DRN**	**132L4**	560	227
3.0	28800	493	197000	64200	51190						
3.4	25600	438	197000	64200	51190						
3.6	23900	408	156000	46200	36810	**P**	**012KF97**	**DRN**	**132L4**	580	222
4.3	20000	342	156000	46200	36810	**PF**	**012KF97**	**DRN**	**132L4**	510	223
5.3	16300	279	156000	46200	36810	**PH**	**012KF97**	**DRN**	**132L4**	590	222
						PHF	**012KF97**	**DRN**	**132L4**	520	223
2.2	40000	683	156000	46200	36810						
2.3	36700	628	156000	46200	36810						
2.6	33100	567	156000	46200	36810	**P**	**012KF87**	**DRN**	**132L4**	500	220
3.0	28800	493	156000	46200	36810	**PF**	**012KF87**	**DRN**	**132L4**	430	221
3.4	25600	438	156000	46200	36810	**PH**	**012KF87**	**DRN**	**132L4**	520	220
3.8	22900	392	156000	46200	36810	**PHF**	**012KF87**	**DRN**	**132L4**	445	221
4.5	19000	325	156000	46200	36810						
5.1	17000	291	156000	46200	36810						
3.8	22800	391	120500	29200	24830						
4.5	18900	324	123200	29200	24830						
5.2	16500	282	124000	29200	24830	**P**	**002KF87**	**DRN**	**132L4**	420	214
6.0	14300	245	123700	29200	24830	**PF**	**002KF87**	**DRN**	**132L4**	365	215
6.7	12700	218	119400	29200	24830	**PH**	**002KF87**	**DRN**	**132L4**	425	214
7.5	11400	195	115500	29200	24830	**PHF**	**002KF87**	**DRN**	**132L4**	365	215
9.1	9480	162	109200	29200	24830						
10	8270	141	104800	29200	15600	**P**	**002KF77**	**DRN**	**132L4**	385	212
						PF	**002KF77**	**DRN**	**132L4**	325	213
						PH	**002KF77**	**DRN**	**132L4**	390	212
						PHF	**002KF77**	**DRN**	**132L4**	330	213

P_m = 11.0 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}						m	
				f_{LC}<=7.5	f_{LC}>107.5						
min^{-1}	Nm		N	Nm	Nm					kg	
0.43	237700	3402	850000	631300	500000	**P**	**102KF167**	**DRN**	**160M4**	5120	266
0.56	184200	2636	850000	631300	500000	**PF**	**102KF167**	**DRN**	**160M4**	4160	267
0.63	164300	2352	850000	631300	500000	**PH**	**102KF167**	**DRN**	**160M4**	5180	266
0.73	140100	2005	850000	631300	500000	**PHF**	**102KF167**	**DRN**	**160M4**	4220	267
0.48	214200	3065	720000	513900	423000						
0.54	189700	2715	720000	513900	423000	**P**	**092KF167**	**DRN**	**160M4**	4270	262
0.62	166500	2383	720000	513900	423000	**PF**	**092KF167**	**DRN**	**160M4**	3570	263
0.67	154300	2209	720000	513900	423000	**PH**	**092KF167**	**DRN**	**160M4**	4280	262
0.73	141900	2031	720000	513900	423000	**PHF**	**092KF167**	**DRN**	**160M4**	3580	263
0.83	123400	1767	720000	513900	423000						
0.39	262900	3761	683000	397100	359400	**P**	**082KF157**	**DRN**	**160M4**	3390	260
0.43	240400	3440	683000	397100	359400	**PF**	**082KF157**	**DRN**	**160M4**	2740	261
						PH	**082KF157**	**DRN**	**160M4**	3390	260
						PHF	**082KF157**	**DRN**	**160M4**	2740	261
0.39	266800	3818	523000	274600	245660	**P**	**072KF157**	**DRN**	**160M4**	2740	258
0.48	212300	3038	523000	274600	245660	**PF**	**072KF157**	**DRN**	**160M4**	2240	259
						PH	**072KF157**	**DRN**	**160M4**	2790	258
						PHF	**072KF157**	**DRN**	**160M4**	2300	259
0.43	239300	3425	523000	274600	245660	**P**	**072KF127**	**DRN**	**160M4**	2440	256
0.47	218200	3123	523000	274600	245660	**PF**	**072KF127**	**DRN**	**160M4**	1950	257
0.54	188900	2703	523000	274600	245660	**PH**	**072KF127**	**DRN**	**160M4**	2500	256
0.62	166600	2385	523000	274600	245660	**PHF**	**072KF127**	**DRN**	**160M4**	2010	257
0.46	224700	3216	405700	209100	185660						
0.53	194500	2783	431800	209100	185660	**P**	**062KF127**	**DRN**	**160M4**	2020	254
0.60	171600	2456	448900	209100	185660	**PF**	**062KF127**	**DRN**	**160M4**	1660	255
0.69	148200	2121	464100	209100	185660	**PH**	**062KF127**	**DRN**	**160M4**	2010	254
0.79	131100	1876	473000	209100	185660	**PHF**	**062KF127**	**DRN**	**160M4**	1650	255

21915180/EN – 04/2015

P_m = 11.0 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}						m	
				f_{LC}<=7.5	f_{LC}>107.5						
min^{-1}	Nm		N	Nm	Nm					kg	
0.66	156700	2243	458800	209100	185660	**P**	**062KF107**	**DRN**	**160M4**	1830	252
0.75	136800	1958	470900	209100	185660	**PF**	**062KF107**	**DRN**	**160M4**	1460	253
0.89	116000	1661	473000	209100	185660	**PH**	**062KF107**	**DRN**	**160M4**	1820	252
						PHF	**062KF107**	**DRN**	**160M4**	1450	253
0.75	136800	1958	345300	140600	124060	**P**	**052KF107**	**DRN**	**160M4**	1340	248
1.0	101400	1452	364000	140600	124060	**PF**	**052KF107**	**DRN**	**160M4**	1140	249
1.2	85700	1227	364000	140600	124060	**PH**	**052KF107**	**DRN**	**160M4**	1330	248
						PHF	**052KF107**	**DRN**	**160M4**	1130	249
0.89	116000	1661	277900	111000	100170	**P**	**042KF107**	**DRN**	**160M4**	1200	242
1.0	101400	1452	294300	111000	100170	**PF**	**042KF107**	**DRN**	**160M4**	1010	243
1.3	79400	1138	314500	111000	100170	**PH**	**042KF107**	**DRN**	**160M4**	1200	242
						PHF	**042KF107**	**DRN**	**160M4**	1010	243
1.2	84400	1209	310300	111000	100170	**P**	**042KF97**	**DRN**	**160M4**	1080	240
1.5	67800	971	323000	111000	100170	**PF**	**042KF97**	**DRN**	**160M4**	890	241
1.7	61300	878	323000	111000	100170	**PH**	**042KF97**	**DRN**	**160M4**	1090	240
						PHF	**042KF97**	**DRN**	**160M4**	900	241
1.4	76500	1095	213700	86800	69620						
1.5	67800	971	225600	86800	69620	**P**	**032KF97**	**DRN**	**160M4**	840	234
1.7	61300	878	233400	86800	69620	**PF**	**032KF97**	**DRN**	**160M4**	720	235
2.0	51900	744	243300	86800	69620	**PH**	**032KF97**	**DRN**	**160M4**	860	234
2.3	45400	650	249400	86800	69620	**PHF**	**032KF97**	**DRN**	**160M4**	740	235
2.7	37900	543	197000	64200	51190	**P**	**022KF97**	**DRN**	**160M4**	760	228
3.1	32800	470	197000	64200	51190	**PF**	**022KF97**	**DRN**	**160M4**	660	229
						PH	**022KF97**	**DRN**	**160M4**	770	228
						PHF	**022KF97**	**DRN**	**160M4**	670	229
1.9	53300	763	187600	64200	51190						
2.2	47700	683	195800	64200	51190						
2.4	43800	628	197000	64200	51190	**P**	**022KF87**	**DRN**	**160M4**	680	226
2.6	39600	567	197000	64200	51190	**PF**	**022KF87**	**DRN**	**160M4**	580	227
3.0	34400	493	197000	64200	51190	**PH**	**022KF87**	**DRN**	**160M4**	700	226
3.4	30600	438	197000	64200	51190	**PHF**	**022KF87**	**DRN**	**160M4**	590	227
3.8	27400	392	197000	64200	51190						
3.6	28500	408	156000	46200	36810	**P**	**012KF97**	**DRN**	**160M4**	610	222
4.3	23800	342	156000	46200	36810	**PF**	**012KF97**	**DRN**	**160M4**	540	223
5.3	19400	279	156000	46200	36810	**PH**	**012KF97**	**DRN**	**160M4**	620	222
						PHF	**012KF97**	**DRN**	**160M4**	550	223
2.6	39600	567	156000	46200	36810						
3.0	34400	493	156000	46200	36810						
3.4	30600	438	156000	46200	36810	**P**	**012KF87**	**DRN**	**160M4**	530	220
3.8	27400	392	156000	46200	36810	**PF**	**012KF87**	**DRN**	**160M4**	465	221
4.5	22700	325	156000	46200	36810	**PH**	**012KF87**	**DRN**	**160M4**	550	220
5.2	19700	283	156000	46200	36810	**PHF**	**012KF87**	**DRN**	**160M4**	480	221
6.6	15600	225	148700	46200	29500						
4.6	22600	324	120800	29200	24830						
5.2	19700	282	122700	29200	24830	**P**	**002KF87**	**DRN**	**160M4**	455	214
7.6	13600	195	115400	29200	24830	**PF**	**002KF87**	**DRN**	**160M4**	395	215
9.1	11300	162	109100	29200	24830	**PH**	**002KF87**	**DRN**	**160M4**	460	214
10	9840	141	104600	29200	24800	**PHF**	**002KF87**	**DRN**	**160M4**	400	215

P_m = 15.0 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}						m	
				f_{LC}<=7.5	f_{LC}>107.5						
min^{-1}	Nm		N	Nm	Nm					kg	
0.41	340000	3570	850000	631300	500000	**P**	**102KF187**	**DRN**	**160L4**	5760	268
0.51	273300	2870	850000	631300	500000	**PF**	**102KF187**	**DRN**	**160L4**	4810	269
						PH	**102KF187**	**DRN**	**160L4**	5830	268
						PHF	**102KF187**	**DRN**	**160L4**	4870	269
0.63	224000	2352	850000	631300	500000	**P**	**102KF167**	**DRN**	**160L4**	5130	266
0.74	190900	2005	850000	631300	500000	**PF**	**102KF167**	**DRN**	**160L4**	4180	267
						PH	**102KF167**	**DRN**	**160L4**	5200	266
						PHF	**102KF167**	**DRN**	**160L4**	4240	267

P_m = 15.0 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}						m	
				f_{LC}<=7.5	f_{LC}>107.5						
min^{-1}	Nm		N	Nm	Nm					kg	
0.41	344500	3617	720000	513900	423000	**P**	**092KF187**	**DRN**	**160L4**	4910	264
0.51	276900	2908	720000	513900	423000	**PF**	**092KF187**	**DRN**	**160L4**	4210	265
0.57	248400	2608	720000	513900	423000	**PH**	**092KF187**	**DRN**	**160L4**	4920	264
0.65	215600	2264	720000	513900	423000	**PHF**	**092KF187**	**DRN**	**160L4**	4230	265
0.67	210300	2209	720000	513900	423000						
0.73	193400	2031	720000	513900	423000	**P**	**092KF167**	**DRN**	**160L4**	4280	262
0.83	168200	1767	720000	513900	423000	**PF**	**092KF167**	**DRN**	**160L4**	3580	263
1.2	120400	1265	720000	513900	423000	**PH**	**092KF167**	**DRN**	**160L4**	4290	262
1.2	116300	1221	720000	513900	423000	**PHF**	**092KF167**	**DRN**	**160L4**	3600	263
1.3	107500	1129	720000	513900	423000						
0.39	358200	3761	655500	397100	359400	**P**	**082KF157**	**DRN**	**160L4**	3410	260
0.43	327600	3440	680400	397100	359400	**PF**	**082KF157**	**DRN**	**160L4**	2760	261
0.64	218100	2290	683000	397100	359400	**PH**	**082KF157**	**DRN**	**160L4**	3400	260
0.72	194000	2038	683000	397100	359400	**PHF**	**082KF157**	**DRN**	**160L4**	2750	261
0.49	289300	3038	499200	274600	245660	**P**	**072KF157**	**DRN**	**160L4**	2750	258
						PF	**072KF157**	**DRN**	**160L4**	2260	259
						PH	**072KF157**	**DRN**	**160L4**	2800	258
						PHF	**072KF157**	**DRN**	**160L4**	2310	259
0.55	257400	2703	523000	274600	245660						
0.62	227100	2385	523000	274600	245660	**P**	**072KF127**	**DRN**	**160L4**	2460	256
0.72	196100	2060	523000	274600	245660	**PF**	**072KF127**	**DRN**	**160L4**	1970	257
0.81	173500	1822	523000	274600	245660	**PH**	**072KF127**	**DRN**	**160L4**	2510	256
0.96	145800	1531	523000	274600	245660	**PHF**	**072KF127**	**DRN**	**160L4**	2020	257
1.1	131400	1381	523000	274600	245660						
0.69	202000	2121	425800	209100	185660						
0.79	178600	1876	443800	209100	185660	**P**	**062KF127**	**DRN**	**160L4**	2040	254
0.93	150100	1577	463000	209100	185660	**PF**	**062KF127**	**DRN**	**160L4**	1670	255
1.0	135400	1422	471700	209100	185660	**PH**	**062KF127**	**DRN**	**160L4**	2030	254
1.2	117100	1231	473000	209100	185660	**PHF**	**062KF127**	**DRN**	**160L4**	1660	255
0.89	158100	1661	457900	209100	185660						
1.0	138200	1452	470100	209100	185660	**P**	**062KF107**	**DRN**	**160L4**	1840	252
1.2	116800	1227	473000	209100	185660	**PF**	**062KF107**	**DRN**	**160L4**	1480	253
1.3	108300	1138	473000	209100	185660	**PH**	**062KF107**	**DRN**	**160L4**	1830	252
1.4	98300	1033	473000	209100	185660	**PHF**	**062KF107**	**DRN**	**160L4**	1470	253
1.0	138200	1452	344100	140600	124060						
1.2	116800	1227	362000	140600	124060	**P**	**052KF107**	**DRN**	**160L4**	1360	248
1.4	98300	1033	364000	140600	124060	**PF**	**052KF107**	**DRN**	**160L4**	1160	249
1.7	84400	887	364000	140600	124060	**PH**	**052KF107**	**DRN**	**160L4**	1350	248
1.9	73700	774	364000	140600	124060	**PHF**	**052KF107**	**DRN**	**160L4**	1150	249
1.7	83500	878	364000	140600	124060	**P**	**052KF97**	**DRN**	**160L4**	1240	246
2.0	70800	744	364000	140600	124060	**PF**	**052KF97**	**DRN**	**160L4**	1040	247
						PH	**052KF97**	**DRN**	**160L4**	1240	246
						PHF	**052KF97**	**DRN**	**160L4**	1040	247
1.3	108300	1138	286900	111000	100170	**P**	**042KF107**	**DRN**	**160L4**	1210	242
						PF	**042KF107**	**DRN**	**160L4**	1020	243
						PH	**042KF107**	**DRN**	**160L4**	1220	242
						PHF	**042KF107**	**DRN**	**160L4**	1030	243
1.5	92400	971	303200	111000	100170						
1.7	83500	878	311100	111000	100170	**P**	**042KF97**	**DRN**	**160L4**	1100	240
2.0	70800	744	321200	111000	100170	**PF**	**042KF97**	**DRN**	**160L4**	910	241
2.3	61800	650	323000	111000	100170	**PH**	**042KF97**	**DRN**	**160L4**	1100	240
2.7	51700	543	323000	111000	100170	**PHF**	**042KF97**	**DRN**	**160L4**	910	241
2.0	70800	744	221700	86800	69620						
2.3	61800	650	232800	86800	69620	**P**	**032KF97**	**DRN**	**160L4**	850	234
2.7	51700	543	243500	86800	69620	**PF**	**032KF97**	**DRN**	**160L4**	730	235
3.1	44800	470	249900	86800	69620	**PH**	**032KF97**	**DRN**	**160L4**	870	234
3.6	38800	408	252000	86800	69620	**PHF**	**032KF97**	**DRN**	**160L4**	750	235
2.7	51700	543	190000	64200	51190						
3.1	44800	470	197000	64200	51190						
3.6	38800	408	197000	64200	51190	**P**	**022KF97**	**DRN**	**160L4**	770	228
4.3	32500	342	197000	64200	51190	**PF**	**022KF97**	**DRN**	**160L4**	670	229
4.4	31700	333	197000	64200	51190	**PH**	**022KF97**	**DRN**	**160L4**	790	228
5.3	26500	279	197000	64200	51190	**PHF**	**022KF97**	**DRN**	**160L4**	690	229
6.1	22900	241	197000	64200	51190						

21915180/EN – 04/2015

P_m = 15.0 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2} f_{LC}<=7.5	M_{N2} f_{LC}>107.5					m	
min^{-1}	Nm		N	Nm	Nm					kg	
3.6	38800	408	156000	46200	36810						
4.3	32500	342	156000	46200	36810	**P**	**012KF97**	**DRN**	**160L4**	620	222
5.3	26500	279	156000	46200	36810	**PF**	**012KF97**	**DRN**	**160L4**	550	223
6.1	22900	241	151900	46200	36810	**PH**	**012KF97**	**DRN**	**160L4**	640	222
7.0	19900	209	145600	46200	36810	**PHF**	**012KF97**	**DRN**	**160L4**	570	223
8.4	16600	175	138000	46200	36810						
6.3	22300	234	121000	29200	24830	**P**	**002KF97**	**DRN**	**160L4**	540	216
7.2	19300	203	116800	29200	24830	**PF**	**002KF97**	**DRN**	**160L4**	485	217
						PH	**002KF97**	**DRN**	**160L4**	550	216
						PHF	**002KF97**	**DRN**	**160L4**	490	217
9.1	15400	162	109100	29200	24830	**P**	**002KF87**	**DRN**	**160L4**	470	214
10	13400	141	104600	29200	24800	**PF**	**002KF87**	**DRN**	**160L4**	410	215
						PH	**002KF87**	**DRN**	**160L4**	475	214
						PHF	**002KF87**	**DRN**	**160L4**	415	215

P_m = 18.5 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2} f_{LC}<=7.5	M_{N2} f_{LC}>107.5					m	
min^{-1}	Nm		N	Nm	Nm					kg	
0.41	418200	3570	850000	631300	500000	**P**	**102KF187**	**DRN**	**180M4**	5790	268
0.51	336200	2870	850000	631300	500000	**PF**	**102KF187**	**DRN**	**180M4**	4830	269
0.57	301500	2574	850000	631300	500000	**PH**	**102KF187**	**DRN**	**180M4**	5850	268
0.66	261800	2235	850000	631300	500000	**PHF**	**102KF187**	**DRN**	**180M4**	4890	269
0.74	234800	2005	850000	631300	500000	**P**	**102KF167**	**DRN**	**180M4**	5160	266
0.89	194500	1661	850000	631300	500000	**PF**	**102KF167**	**DRN**	**180M4**	4200	267
1.2	146200	1249	850000	631300	500000	**PH**	**102KF167**	**DRN**	**180M4**	5220	266
1.3	130500	1114	850000	631300	500000	**PHF**	**102KF167**	**DRN**	**180M4**	4260	267
0.41	423700	3617	720000	513900	423000						
0.51	340600	2908	720000	513900	423000	**P**	**092KF187**	**DRN**	**180M4**	4940	264
0.57	305500	2608	720000	513900	423000	**PF**	**092KF187**	**DRN**	**180M4**	4240	265
0.65	265200	2264	720000	513900	423000	**PH**	**092KF187**	**DRN**	**180M4**	4950	264
0.72	240600	2054	720000	513900	423000	**PHF**	**092KF187**	**DRN**	**180M4**	4250	265
0.84	206900	1767	720000	513900	423000						
0.88	197100	1683	720000	513900	423000						
1.2	148200	1265	720000	513900	423000	**P**	**092KF167**	**DRN**	**180M4**	4310	262
1.2	143000	1221	720000	513900	423000	**PF**	**092KF167**	**DRN**	**180M4**	3610	263
1.3	132200	1129	720000	513900	423000	**PH**	**092KF167**	**DRN**	**180M4**	4320	262
1.4	121900	1041	720000	513900	423000	**PHF**	**092KF167**	**DRN**	**180M4**	3620	263
1.5	112700	962	720000	513900	423000						
0.43	403000	3440	612500	397100	359400						
0.49	350600	2993	662200	397100	359400	**P**	**082KF157**	**DRN**	**180M4**	3430	260
0.56	309400	2641	683000	397100	359400	**PF**	**082KF157**	**DRN**	**180M4**	2780	261
0.65	268200	2290	683000	397100	359400	**PH**	**082KF157**	**DRN**	**180M4**	3420	260
0.73	238700	2038	683000	397100	359400	**PHF**	**082KF157**	**DRN**	**180M4**	2770	261
0.64	272300	2325	518600	274600	245660	**P**	**072KF157**	**DRN**	**180M4**	2770	258
						PF	**072KF157**	**DRN**	**180M4**	2280	259
						PH	**072KF157**	**DRN**	**180M4**	2830	258
						PHF	**072KF157**	**DRN**	**180M4**	2340	259
0.72	241200	2060	523000	274600	245660	**P**	**072KF127**	**DRN**	**180M4**	2480	256
0.81	213400	1822	523000	274600	245660	**PF**	**072KF127**	**DRN**	**180M4**	1990	257
0.97	179300	1531	523000	274600	245660	**PH**	**072KF127**	**DRN**	**180M4**	2540	256
1.1	161700	1381	523000	274600	245660	**PHF**	**072KF127**	**DRN**	**180M4**	2040	257
0.79	219700	1876	410300	209100	185660	**P**	**062KF127**	**DRN**	**180M4**	2060	254
0.94	184700	1577	439400	209100	185660	**PF**	**062KF127**	**DRN**	**180M4**	1700	255
1.0	166500	1422	452400	209100	185660	**PH**	**062KF127**	**DRN**	**180M4**	2050	254
1.2	144100	1231	466600	209100	185660	**PHF**	**062KF127**	**DRN**	**180M4**	1680	255
1.2	143700	1227	466800	209100	185660	**P**	**062KF107**	**DRN**	**180M4**	1860	252
1.3	133200	1138	472900	209100	185660	**PF**	**062KF107**	**DRN**	**180M4**	1500	253
1.4	120900	1033	473000	209100	185660	**PH**	**062KF107**	**DRN**	**180M4**	1850	252
						PHF	**062KF107**	**DRN**	**180M4**	1490	253

21915180/EN – 04/2015

P_m = 18.5 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}							m	
				f_{LC}<=7.5	f_{LC}>107.5							
min^{-1}	Nm		N	Nm	Nm						kg	
1.3	133200	1138	348500	140600	124060	**P**	**052KF107**	**DRN**	**180M4**		1380	248
1.4	120900	1033	358900	140600	124060	**PF**	**052KF107**	**DRN**	**180M4**		1180	249
1.7	103900	887	364000	140600	124060	**PH**	**052KF107**	**DRN**	**180M4**		1370	248
1.9	90700	774	364000	140600	124060	**PHF**	**052KF107**	**DRN**	**180M4**		1170	249
1.7	103900	887	291700	111000	100170	**P**	**042KF107**	**DRN**	**180M4**		1230	242
						PF	**042KF107**	**DRN**	**180M4**		1040	243
						PH	**042KF107**	**DRN**	**180M4**		1240	242
						PHF	**042KF107**	**DRN**	**180M4**		1050	243
2.0	87100	744	308000	111000	100170	**P**	**042KF97**	**DRN**	**180M4**		1120	240
2.3	76100	650	317200	111000	100170	**PF**	**042KF97**	**DRN**	**180M4**		930	241
2.7	63600	543	323000	111000	100170	**PH**	**042KF97**	**DRN**	**180M4**		1130	240
						PHF	**042KF97**	**DRN**	**180M4**		940	241
2.3	76100	650	214300	86800	69620	**P**	**032KF97**	**DRN**	**180M4**		880	234
2.7	63600	543	230700	86800	69620	**PF**	**032KF97**	**DRN**	**180M4**		750	235
3.1	55100	470	240200	86800	69620	**PH**	**032KF97**	**DRN**	**180M4**		900	234
3.6	47800	408	247200	86800	69620	**PHF**	**032KF97**	**DRN**	**180M4**		780	235
3.1	55100	470	184700	64200	51190							
3.6	47800	408	195600	64200	51190	**P**	**022KF97**	**DRN**	**180M4**		800	228
4.3	40000	342	197000	64200	51190	**PF**	**022KF97**	**DRN**	**180M4**		690	229
4.4	39000	333	197000	64200	51190	**PH**	**022KF97**	**DRN**	**180M4**		810	228
5.3	32600	279	197000	64200	51190	**PHF**	**022KF97**	**DRN**	**180M4**		710	229
6.1	28200	241	197000	64200	51190							
4.3	40000	342	156000	46200	36810							
4.4	39000	333	156000	46200	36810	**P**	**012KF97**	**DRN**	**180M4**		650	222
5.3	32600	279	156000	46200	36810	**PF**	**012KF97**	**DRN**	**180M4**		580	223
6.1	28200	241	151800	46200	36810	**PH**	**012KF97**	**DRN**	**180M4**		660	222
7.1	24500	209	145500	46200	36810	**PHF**	**012KF97**	**DRN**	**180M4**		590	223
8.4	20500	175	137900	46200	36810							
7.3	23800	203	116700	29200	24830	**P**	**002KF97**	**DRN**	**180M4**		570	216
8.7	19900	170	110600	29200	24830	**PF**	**002KF97**	**DRN**	**180M4**		510	217
						PH	**002KF97**	**DRN**	**180M4**		570	216
						PHF	**002KF97**	**DRN**	**180M4**		510	217

P_m = 22 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}							m	
				f_{LC}<=7.5	f_{LC}>107.5							
min^{-1}	Nm		N	Nm	Nm						kg	
0.41	497700	3570	850000	631300	500000	**P**	**102KF187**	**DRN**	**180L4**		5800	268
0.51	400100	2870	850000	631300	500000	**PF**	**102KF187**	**DRN**	**180L4**		4850	269
0.57	358800	2574	850000	631300	500000	**PH**	**102KF187**	**DRN**	**180L4**		5870	268
0.66	311500	2235	850000	631300	500000	**PHF**	**102KF187**	**DRN**	**180L4**		4910	269
0.73	282700	2028	850000	631300	500000							
0.89	231500	1661	850000	631300	500000	**P**	**102KF167**	**DRN**	**180L4**		5170	266
1.2	174000	1249	850000	631300	500000	**PF**	**102KF167**	**DRN**	**180L4**		4220	267
1.3	155300	1114	850000	631300	500000	**PH**	**102KF167**	**DRN**	**180L4**		5240	266
1.6	132300	949	850000	631300	500000	**PHF**	**102KF167**	**DRN**	**180L4**		4280	267
0.41	504200	3617	676100	513900	423000							
0.51	405300	2908	720000	513900	423000	**P**	**092KF187**	**DRN**	**180L4**		4950	264
0.57	363500	2608	720000	513900	423000	**PF**	**092KF187**	**DRN**	**180L4**		4250	265
0.65	315600	2264	720000	513900	423000	**PH**	**092KF187**	**DRN**	**180L4**		4960	264
0.72	286400	2054	720000	513900	423000	**PHF**	**092KF187**	**DRN**	**180L4**		4270	265
0.83	246700	1770	720000	513900	423000							
1.2	176300	1265	720000	513900	423000							
1.2	170200	1221	720000	513900	423000	**P**	**092KF167**	**DRN**	**180L4**		4320	262
1.3	157300	1129	720000	513900	423000	**PF**	**092KF167**	**DRN**	**180L4**		3620	263
1.4	145100	1041	720000	513900	423000	**PH**	**092KF167**	**DRN**	**180L4**		4330	262
1.5	134100	962	720000	513900	423000	**PHF**	**092KF167**	**DRN**	**180L4**		3640	263
1.7	120200	863	720000	513900	423000							
1.8	111100	797	720000	513900	423000							

21915180/EN – 04/2015

P_m = 22 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}						m	
				f_{LC}<=7.5	f_{LC}>107.5						
min^{-1}	Nm		N	Nm	Nm					kg	
0.56	368200	2641	646500	397100	359400	**P**	**082KF157**	**DRN**	**180L4**	3450	260
0.64	319200	2290	683000	397100	359400	**PF**	**082KF157**	**DRN**	**180L4**	2800	261
0.72	284000	2038	683000	397100	359400	**PH**	**082KF157**	**DRN**	**180L4**	3440	260
0.84	244800	1756	683000	397100	359400	**PHF**	**082KF157**	**DRN**	**180L4**	2790	261
1.0	198900	1427	683000	397100	359400						
0.71	288300	2068	500500	274600	245660	**P**	**072KF157**	**DRN**	**180L4**	2790	258
1.0	201900	1449	523000	274600	245660	**PF**	**072KF157**	**DRN**	**180L4**	2300	259
						PH	**072KF157**	**DRN**	**180L4**	2840	258
						PHF	**072KF157**	**DRN**	**180L4**	2350	259
0.81	253900	1822	523000	274600	245660						
1.1	192400	1381	523000	274600	245660	**P**	**072KF127**	**DRN**	**180L4**	2500	256
1.2	166500	1195	523000	274600	245660	**PF**	**072KF127**	**DRN**	**180L4**	2010	257
1.4	146900	1055	523000	274600	245660	**PH**	**072KF127**	**DRN**	**180L4**	2550	256
1.6	126900	911	523000	274600	245660	**PHF**	**072KF127**	**DRN**	**180L4**	2060	257
0.94	219800	1577	410300	209100	185660						
1.0	198200	1422	428900	209100	185660						
1.2	171500	1231	448900	209100	185660	**P**	**062KF127**	**DRN**	**180L4**	2080	254
1.4	151300	1086	462200	209100	185660	**PF**	**062KF127**	**DRN**	**180L4**	1710	255
1.6	130700	938	473000	209100	185660	**PH**	**062KF127**	**DRN**	**180L4**	2060	254
1.8	115600	830	473000	209100	185660	**PHF**	**062KF127**	**DRN**	**180L4**	1700	255
2.1	97100	697	473000	209100	185660						
1.3	158500	1138	457700	209100	185660						
1.4	143800	1033	466800	209100	185660	**P**	**062KF107**	**DRN**	**180L4**	1880	252
1.7	123600	887	473000	209100	185660	**PF**	**062KF107**	**DRN**	**180L4**	1520	253
1.9	107900	774	473000	209100	185660	**PH**	**062KF107**	**DRN**	**180L4**	1870	252
2.2	91500	657	473000	209100	185660	**PHF**	**062KF107**	**DRN**	**180L4**	1500	253
2.6	80000	574	473000	209100	185660						
2.6	78400	563	364000	140600	124060	**P**	**052KF127**	**DRN**	**180L4**	1590	250
3.0	69900	502	364000	140600	124060	**PF**	**052KF127**	**DRN**	**180L4**	1390	251
						PH	**052KF127**	**DRN**	**180L4**	1580	250
						PHF	**052KF127**	**DRN**	**180L4**	1380	251
1.7	123600	887	356600	140600	124060	**P**	**052KF107**	**DRN**	**180L4**	1400	248
2.2	91500	657	364000	140600	124060	**PF**	**052KF107**	**DRN**	**180L4**	1200	249
						PH	**052KF107**	**DRN**	**180L4**	1390	248
						PHF	**052KF107**	**DRN**	**180L4**	1190	249
2.7	75700	543	364000	140600	124060	**P**	**052KF97**	**DRN**	**180L4**	1280	246
3.1	65500	470	364000	140600	124060	**PF**	**052KF97**	**DRN**	**180L4**	1080	247
						PH	**052KF97**	**DRN**	**180L4**	1270	246
						PHF	**052KF97**	**DRN**	**180L4**	1070	247
3.5	58700	421	323000	111000	100170	**P**	**042KF127**	**DRN**	**180L4**	1450	244
						PF	**042KF127**	**DRN**	**180L4**	1260	245
						PH	**042KF127**	**DRN**	**180L4**	1450	244
						PHF	**042KF127**	**DRN**	**180L4**	1260	245
1.9	107900	774	287300	111000	100170						
2.6	80000	574	314100	111000	100170	**P**	**042KF107**	**DRN**	**180L4**	1250	242
2.8	73400	527	319300	111000	100170	**PF**	**042KF107**	**DRN**	**180L4**	1060	243
3.2	64100	460	323000	111000	100170	**PH**	**042KF107**	**DRN**	**180L4**	1250	242
3.8	54300	390	321200	111000	100170	**PHF**	**042KF107**	**DRN**	**180L4**	1060	243
2.3	90500	650	304900	111000	100170	**P**	**042KF97**	**DRN**	**180L4**	1140	240
3.6	56900	408	323000	111000	100170	**PF**	**042KF97**	**DRN**	**180L4**	950	241
4.3	47600	342	308800	111000	100170	**PH**	**042KF97**	**DRN**	**180L4**	1140	240
						PHF	**042KF97**	**DRN**	**180L4**	950	241
5.1	40200	289	237500	86800	69620	**P**	**032KF127**	**DRN**	**180L4**	1200	238
5.8	35800	257	229400	86800	69620	**PF**	**032KF127**	**DRN**	**180L4**	1080	239
						PH	**032KF127**	**DRN**	**180L4**	1220	238
						PHF	**032KF127**	**DRN**	**180L4**	1100	239
3.8	54300	390	240900	86800	69620	**P**	**032KF107**	**DRN**	**180L4**	1000	236
4.3	47500	341	247500	86800	69620	**PF**	**032KF107**	**DRN**	**180L4**	880	237
5.0	41000	294	239000	86800	69620	**PH**	**032KF107**	**DRN**	**180L4**	1020	236
5.5	37600	270	232900	86800	69620	**PHF**	**032KF107**	**DRN**	**180L4**	900	237
2.7	75700	543	214800	86800	69620	**P**	**032KF97**	**DRN**	**180L4**	890	234
3.1	65500	470	228400	86800	69620	**PF**	**032KF97**	**DRN**	**180L4**	770	235
5.3	38800	279	235100	86800	69620	**PH**	**032KF97**	**DRN**	**180L4**	910	234
6.1	33600	241	225100	86800	69620	**PHF**	**032KF97**	**DRN**	**180L4**	790	235

21915180/EN – 04/2015

P_m = 22 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}						m	
				f_{LC}<=7.5	f_{LC}>107.5						
min^{-1}	Nm		N	Nm	Nm					kg	
6.3	32800	236	197000	64200	51190	**P**	**022KF107**	**DRN**	**180L4**	920	230
7.4	27800	200	197000	64200	51190	**PF**	**022KF107**	**DRN**	**180L4**	820	231
8.4	24300	175	197000	64200	51190	**PH**	**022KF107**	**DRN**	**180L4**	940	230
						PHF	**022KF107**	**DRN**	**180L4**	840	231
3.6	56900	408	181700	64200	51190						
4.3	47600	342	196000	64200	51190	**P**	**022KF97**	**DRN**	**180L4**	810	228
4.4	46400	333	197000	64200	51190	**PF**	**022KF97**	**DRN**	**180L4**	710	229
5.3	38800	279	197000	64200	51190	**PH**	**022KF97**	**DRN**	**180L4**	830	228
7.1	29100	209	197000	64200	51190	**PHF**	**022KF97**	**DRN**	**180L4**	720	229
8.4	24400	175	197000	64200	51190						
6.1	33600	241	151800	46200	36810	**P**	**012KF97**	**DRN**	**180L4**	660	222
7.1	29100	209	145500	46200	36810	**PF**	**012KF97**	**DRN**	**180L4**	590	223
8.4	24400	175	137900	46200	36810	**PH**	**012KF97**	**DRN**	**180L4**	680	222
						PHF	**012KF97**	**DRN**	**180L4**	610	223

P_m = 30 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}						m	
				f_{LC}<=7.5	f_{LC}>107.5						
min^{-1}	Nm		N	Nm	Nm					kg	
0.52	544400	2870	850000	631300	500000						
0.57	488300	2574	850000	631300	500000	**P**	**102KF187**	**DRN**	**200L4**	5910	268
0.66	424000	2235	850000	631300	500000	**PF**	**102KF187**	**DRN**	**200L4**	4960	269
0.73	384700	2028	850000	631300	500000	**PH**	**102KF187**	**DRN**	**200L4**	5970	268
0.85	331400	1747	850000	631300	500000	**PHF**	**102KF187**	**DRN**	**200L4**	5020	269
1.0	278500	1468	850000	631300	500000						
1.2	236800	1249	850000	631300	500000						
1.3	211300	1114	850000	631300	500000	**P**	**102KF167**	**DRN**	**200L4**	5280	266
1.6	180100	949	850000	631300	500000	**PF**	**102KF167**	**DRN**	**200L4**	4330	267
1.9	149200	787	850000	631300	500000	**PH**	**102KF167**	**DRN**	**200L4**	5340	266
2.2	127300	671	850000	631300	500000	**PHF**	**102KF167**	**DRN**	**200L4**	4390	267
0.57	494700	2608	686500	513900	423000						
0.65	429600	2264	720000	513900	423000	**P**	**092KF187**	**DRN**	**200L4**	5060	264
0.72	389700	2054	720000	513900	423000	**PF**	**092KF187**	**DRN**	**200L4**	4360	265
0.84	335700	1770	720000	513900	423000	**PH**	**092KF187**	**DRN**	**200L4**	5070	264
1.0	282100	1487	720000	513900	423000	**PHF**	**092KF187**	**DRN**	**200L4**	4370	265
1.2	244300	1288	720000	513900	423000						
1.4	197500	1041	720000	513900	423000						
1.5	182500	962	720000	513900	423000						
1.7	163600	863	720000	513900	423000	**P**	**092KF167**	**DRN**	**200L4**	4430	262
1.9	151200	797	720000	513900	423000	**PF**	**092KF167**	**DRN**	**200L4**	3730	263
2.0	139600	736	720000	513900	423000	**PH**	**092KF167**	**DRN**	**200L4**	4440	262
2.2	129000	680	720000	513900	423000	**PHF**	**092KF167**	**DRN**	**200L4**	3740	263
2.3	123000	649	720000	513900	423000						
2.6	109700	579	720000	513900	423000						
0.73	386500	2038	629100	397100	359400						
0.84	333200	1756	676700	397100	359400	**P**	**082KF157**	**DRN**	**200L4**	3550	260
1.0	270700	1427	683000	397100	359400	**PF**	**082KF157**	**DRN**	**200L4**	2900	261
1.3	222900	1175	683000	397100	359400	**PH**	**082KF157**	**DRN**	**200L4**	3550	260
1.4	196700	1037	683000	397100	359400	**PHF**	**082KF157**	**DRN**	**200L4**	2900	261
1.0	274700	1449	515900	274600	245660	**P**	**072KF157**	**DRN**	**200L4**	2900	258
						PF	**072KF157**	**DRN**	**200L4**	2410	259
						PH	**072KF157**	**DRN**	**200L4**	2950	258
						PHF	**072KF157**	**DRN**	**200L4**	2460	259
1.1	261900	1381	523000	274600	245660						
1.2	226600	1195	523000	274600	245660	**P**	**072KF127**	**DRN**	**200L4**	2610	256
1.4	200000	1055	523000	274600	245660	**PF**	**072KF127**	**DRN**	**200L4**	2120	257
1.6	172700	911	523000	274600	245660	**PH**	**072KF127**	**DRN**	**200L4**	2660	256
1.8	152700	806	523000	274600	245660	**PHF**	**072KF127**	**DRN**	**200L4**	2170	257
1.4	205900	1086	422500	209100	185660						
1.6	177800	938	444400	209100	185660	**P**	**062KF127**	**DRN**	**200L4**	2180	254
1.8	157300	830	458400	209100	185660	**PF**	**062KF127**	**DRN**	**200L4**	1820	255
2.1	132200	697	473000	209100	185660	**PH**	**062KF127**	**DRN**	**200L4**	2170	254
2.6	106800	563	473000	209100	185660	**PHF**	**062KF127**	**DRN**	**200L4**	1810	255

21915180/EN – 04/2015

P_m = 30 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}							m	
				f_{LC}<=7.5	f_{LC}>107.5							
min^{-1}	Nm		N	Nm	Nm						kg	
1.7	168300	887	451200	209100	185660	**P**	**062KF107**	**DRN**	**200L4**		1990	252
1.9	146900	774	465000	209100	185660	**PF**	**062KF107**	**DRN**	**200L4**		1620	253
						PH	**062KF107**	**DRN**	**200L4**		1980	252
						PHF	**062KF107**	**DRN**	**200L4**		1610	253
2.6	106800	563	364000	140600	124060	**P**	**052KF127**	**DRN**	**200L4**		1700	250
3.0	95100	502	364000	140600	124060	**PF**	**052KF127**	**DRN**	**200L4**		1500	251
3.5	79900	421	364000	140600	124060	**PH**	**052KF127**	**DRN**	**200L4**		1690	250
						PHF	**052KF127**	**DRN**	**200L4**		1490	251
2.2	124600	657	355900	140600	124060	**P**	**052KF107**	**DRN**	**200L4**		1500	248
3.8	73900	390	364000	140600	124060	**PF**	**052KF107**	**DRN**	**200L4**		1300	249
						PH	**052KF107**	**DRN**	**200L4**		1500	248
						PHF	**052KF107**	**DRN**	**200L4**		1300	249
3.5	79900	421	314100	111000	100170	**P**	**042KF127**	**DRN**	**200L4**		1550	244
4.4	64500	341	308200	111000	100170	**PF**	**042KF127**	**DRN**	**200L4**		1360	245
						PH	**042KF127**	**DRN**	**200L4**		1560	244
						PHF	**042KF127**	**DRN**	**200L4**		1370	245
2.6	108900	574	286200	111000	100170							
2.8	99900	527	295800	111000	100170	**P**	**042KF107**	**DRN**	**200L4**		1360	242
3.2	87200	460	307900	111000	100170	**PF**	**042KF107**	**DRN**	**200L4**		1170	243
3.8	73900	390	318900	111000	100170	**PH**	**042KF107**	**DRN**	**200L4**		1360	242
4.3	64600	341	308400	111000	100170	**PHF**	**042KF107**	**DRN**	**200L4**		1170	243
5.1	54700	289	237400	86800	69620	**P**	**032KF127**	**DRN**	**200L4**		1310	238
5.8	48700	257	229300	86800	69620	**PF**	**032KF127**	**DRN**	**200L4**		1190	239
						PH	**032KF127**	**DRN**	**200L4**		1330	238
						PHF	**032KF127**	**DRN**	**200L4**		1210	239
3.8	73900	390	217300	86800	69620							
4.3	64600	341	229500	86800	69620	**P**	**032KF107**	**DRN**	**200L4**		1110	236
5.0	55800	294	238800	86800	69620	**PF**	**032KF107**	**DRN**	**200L4**		990	237
5.5	51200	270	232800	86800	69620	**PH**	**032KF107**	**DRN**	**200L4**		1130	236
6.3	44700	236	223400	86800	69620	**PHF**	**032KF107**	**DRN**	**200L4**		1010	237
5.3	52800	279	235000	86800	69620	**P**	**032KF97**	**DRN**	**200L4**		1000	234
6.1	45700	241	224900	86800	69620	**PF**	**032KF97**	**DRN**	**200L4**		880	235
8.4	33200	175	204400	86800	52400	**PH**	**032KF97**	**DRN**	**200L4**		1020	234
						PHF	**032KF97**	**DRN**	**200L4**		900	235
6.3	44700	236	197000	64200	51190	**P**	**022KF107**	**DRN**	**200L4**		1030	230
7.4	37900	200	197000	64200	51190	**PF**	**022KF107**	**DRN**	**200L4**		930	231
8.5	33100	175	197000	64200	51190	**PH**	**022KF107**	**DRN**	**200L4**		1050	230
						PHF	**022KF107**	**DRN**	**200L4**		950	231
6.1	45700	241	197000	64200	51190	**P**	**022KF97**	**DRN**	**200L4**		920	228
8.4	33200	175	197000	64200	51190	**PF**	**022KF97**	**DRN**	**200L4**		820	229
						PH	**022KF97**	**DRN**	**200L4**		930	228
						PHF	**022KF97**	**DRN**	**200L4**		830	229
8.5	33100	175	137700	46200	36810	**P**	**012KF107**	**DRN**	**200L4**		880	224
						PF	**012KF107**	**DRN**	**200L4**		810	225
						PH	**012KF107**	**DRN**	**200L4**		900	224
						PHF	**012KF107**	**DRN**	**200L4**		830	225
8.4	33200	175	137800	46200	36810	**P**	**012KF97**	**DRN**	**200L4**		770	222
						PF	**012KF97**	**DRN**	**200L4**		700	223
						PH	**012KF97**	**DRN**	**200L4**		790	222
						PHF	**012KF97**	**DRN**	**200L4**		720	223

P_m = 37 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}							m	
				f_{LC}<=7.5	f_{LC}>107.5							
min^{-1}	Nm		N	Nm	Nm						kg	
0.58	601500	2574	811600	631300	500000							
0.66	522200	2235	850000	631300	500000	**P**	**102KF187**	**DRN**	**225S4**		5940	268
0.73	473800	2028	850000	631300	500000	**PF**	**102KF187**	**DRN**	**225S4**		4990	269
0.85	408100	1747	850000	631300	500000	**PH**	**102KF187**	**DRN**	**225S4**		6000	268
1.0	343000	1468	850000	631300	500000	**PHF**	**102KF187**	**DRN**	**225S4**		5050	269
1.2	297000	1271	850000	631300	500000							

P_m = 37 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}						m	
				f_{LC}<=7.5	f_{LC}>107.5						
min^{-1}	Nm		N	Nm	Nm					kg	
1.6	221800	949	850000	631300	500000	**P**	**102KF167**	**DRN**	**225S4**	5310	266
1.9	183800	787	850000	631300	500000	**PF**	**102KF167**	**DRN**	**225S4**	4360	267
2.2	156900	671	850000	631300	500000	**PH**	**102KF167**	**DRN**	**225S4**	5370	266
						PHF	**102KF167**	**DRN**	**225S4**	4420	267
0.65	529100	2264	647200	513900	423000						
0.72	480000	2054	702100	513900	423000						
0.84	413500	1770	720000	513900	423000	**P**	**092KF187**	**DRN**	**225S4**	5090	264
1.0	347500	1487	720000	513900	423000	**PF**	**092KF187**	**DRN**	**225S4**	4390	265
1.2	300900	1288	720000	513900	423000	**PH**	**092KF187**	**DRN**	**225S4**	5100	264
1.4	250700	1073	720000	513900	423000	**PHF**	**092KF187**	**DRN**	**225S4**	4400	265
1.6	213800	915	720000	513900	423000						
1.7	201500	863	720000	513900	423000						
1.9	186200	797	720000	513900	423000						
2.0	172000	736	720000	513900	423000	**P**	**092KF167**	**DRN**	**225S4**	4460	262
2.2	158900	680	720000	513900	423000	**PF**	**092KF167**	**DRN**	**225S4**	3760	263
2.3	151500	649	720000	513900	423000	**PH**	**092KF167**	**DRN**	**225S4**	4470	262
2.6	135100	579	720000	513900	423000	**PHF**	**092KF167**	**DRN**	**225S4**	3770	263
3.0	115200	493	720000	513900	423000						
0.84	410300	1756	604800	397100	359400						
1.0	333400	1427	676600	397100	359400	**P**	**082KF157**	**DRN**	**225S4**	3590	260
1.3	274500	1175	683000	397100	359400	**PF**	**082KF157**	**DRN**	**225S4**	2940	261
1.4	242200	1037	683000	397100	359400	**PH**	**082KF157**	**DRN**	**225S4**	3580	260
1.6	210000	899	683000	397100	359400	**PHF**	**082KF157**	**DRN**	**225S4**	2930	261
1.2	279100	1195	511000	274600	245660						
1.4	246300	1055	523000	274600	245660	**P**	**072KF127**	**DRN**	**225S4**	2640	256
1.6	212700	911	523000	274600	245660	**PF**	**072KF127**	**DRN**	**225S4**	2150	257
1.8	188100	806	523000	274600	245660	**PH**	**072KF127**	**DRN**	**225S4**	2690	256
2.2	158100	677	523000	274600	245660	**PHF**	**072KF127**	**DRN**	**225S4**	2200	257
1.8	193700	830	432400	209100	185660						
2.1	162800	697	454800	209100	185660	**P**	**062KF127**	**DRN**	**225S4**	2220	254
2.6	131500	563	473000	209100	185660	**PF**	**062KF127**	**DRN**	**225S4**	1850	255
3.0	117100	502	473000	209100	185660	**PH**	**062KF127**	**DRN**	**225S4**	2200	254
3.5	98400	421	473000	209100	185660	**PHF**	**062KF127**	**DRN**	**225S4**	1840	255
2.6	131500	563	350000	140600	124060	**P**	**052KF127**	**DRN**	**225S4**	1730	250
3.0	117100	502	361800	140600	124060	**PF**	**052KF127**	**DRN**	**225S4**	1530	251
3.5	98400	421	364000	140600	124060	**PH**	**052KF127**	**DRN**	**225S4**	1720	250
4.4	79500	341	355400	140600	124060	**PHF**	**052KF127**	**DRN**	**225S4**	1520	251
3.8	91100	390	364000	140600	124060	**P**	**052KF107**	**DRN**	**225S4**	1540	248
4.4	79600	341	355400	140600	124060	**PF**	**052KF107**	**DRN**	**225S4**	1340	249
						PH	**052KF107**	**DRN**	**225S4**	1530	248
						PHF	**052KF107**	**DRN**	**225S4**	1330	249
3.5	98400	421	297300	111000	100170	**P**	**042KF127**	**DRN**	**225S4**	1590	244
4.4	79500	341	308200	111000	100170	**PF**	**042KF127**	**DRN**	**225S4**	1400	245
						PH	**042KF127**	**DRN**	**225S4**	1590	244
						PHF	**042KF127**	**DRN**	**225S4**	1400	245
3.8	91100	390	304400	111000	100170	**P**	**042KF107**	**DRN**	**225S4**	1390	242
4.4	79600	341	308200	111000	100170	**PF**	**042KF107**	**DRN**	**225S4**	1200	243
						PH	**042KF107**	**DRN**	**225S4**	1390	242
						PHF	**042KF107**	**DRN**	**225S4**	1200	243
5.1	67400	289	226100	86800	69620	**P**	**032KF127**	**DRN**	**225S4**	1340	238
5.8	60000	257	229200	86800	69620	**PF**	**032KF127**	**DRN**	**225S4**	1220	239
						PH	**032KF127**	**DRN**	**225S4**	1360	238
						PHF	**032KF127**	**DRN**	**225S4**	1240	239
4.4	79600	341	209000	86800	69620	**P**	**032KF107**	**DRN**	**225S4**	1140	236
5.0	68700	294	224400	86800	69620	**PF**	**032KF107**	**DRN**	**225S4**	1020	237
7.4	46700	200	212600	86800	69620	**PH**	**032KF107**	**DRN**	**225S4**	1160	236
8.5	40800	175	204200	86800	69620	**PHF**	**032KF107**	**DRN**	**225S4**	1040	237
7.4	46700	200	197000	64200	51190	**P**	**022KF107**	**DRN**	**225S4**	1060	230
8.5	40800	175	197000	64200	51190	**PF**	**022KF107**	**DRN**	**225S4**	960	231
						PH	**022KF107**	**DRN**	**225S4**	1080	230
						PHF	**022KF107**	**DRN**	**225S4**	980	231

21915180/EN – 04/2015

P_m = 45 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}						m	
				f_{LC}<=7.5	f_{LC}>107.5						
min^{-1}	Nm		N	Nm	Nm					kg	
0.73	576300	2028	830600	631300	500000						
0.85	496400	1747	850000	631300	500000	**P**	**102KF187**	**DRN**	**225M4**	5940	268
1.0	417200	1468	850000	631300	500000	**PF**	**102KF187**	**DRN**	**225M4**	4990	269
1.2	361200	1271	850000	631300	500000	**PH**	**102KF187**	**DRN**	**225M4**	6000	268
1.4	301000	1059	850000	631300	500000	**PHF**	**102KF187**	**DRN**	**225M4**	5050	269
1.6	256600	903	850000	631300	500000						
1.9	223500	787	850000	631300	500000	**P**	**102KF167**	**DRN**	**225M4**	5310	266
2.2	190800	671	850000	631300	500000	**PF**	**102KF167**	**DRN**	**225M4**	4360	267
						PH	**102KF167**	**DRN**	**225M4**	5370	266
						PHF	**102KF167**	**DRN**	**225M4**	4420	267
0.84	502900	1770	677500	513900	423000						
1.0	422700	1487	720000	513900	423000	**P**	**092KF187**	**DRN**	**225M4**	5090	264
1.2	365900	1288	720000	513900	423000	**PF**	**092KF187**	**DRN**	**225M4**	4390	265
1.4	304900	1073	720000	513900	423000	**PH**	**092KF187**	**DRN**	**225M4**	5100	264
1.6	260000	915	720000	513900	423000	**PHF**	**092KF187**	**DRN**	**225M4**	4400	265
1.9	220400	776	720000	513900	423000						
2.2	193300	680	720000	513900	423000						
2.3	184200	649	720000	513900	423000	**P**	**092KF167**	**DRN**	**225M4**	4460	262
2.6	164400	579	720000	513900	423000	**PF**	**092KF167**	**DRN**	**225M4**	3760	263
3.0	140100	493	720000	513900	423000	**PH**	**092KF167**	**DRN**	**225M4**	4470	262
3.6	116100	409	720000	513900	423000	**PHF**	**092KF167**	**DRN**	**225M4**	3770	263
1.3	333900	1175	676300	397100	359400						
1.4	294600	1037	683000	397100	359400	**P**	**082KF157**	**DRN**	**225M4**	3590	260
1.6	255400	899	683000	397100	359400	**PF**	**082KF157**	**DRN**	**225M4**	2940	261
1.8	227200	800	683000	397100	359400	**PH**	**082KF157**	**DRN**	**225M4**	3580	260
2.2	195900	689	683000	397100	359400	**PHF**	**082KF157**	**DRN**	**225M4**	2930	261
2.6	161500	568	523000	274600	245660	**P**	**072KF157**	**DRN**	**225M4**	2930	258
3.1	137000	482	523000	274600	245660	**PF**	**072KF157**	**DRN**	**225M4**	2440	259
						PH	**072KF157**	**DRN**	**225M4**	2980	258
						PHF	**072KF157**	**DRN**	**225M4**	2490	259
1.6	258700	911	523000	274600	245660						
1.8	228800	806	523000	274600	245660	**P**	**072KF127**	**DRN**	**225M4**	2640	256
2.2	192300	677	523000	274600	245660	**PF**	**072KF127**	**DRN**	**225M4**	2150	257
2.7	155300	547	523000	274600	245660	**PH**	**072KF127**	**DRN**	**225M4**	2690	256
3.0	138300	487	523000	274600	245660	**PHF**	**072KF127**	**DRN**	**225M4**	2200	257
3.6	116300	409	523000	274600	245660						
2.1	198000	697	429000	209100	185660						
2.6	159900	563	456700	209100	185660	**P**	**062KF127**	**DRN**	**225M4**	2220	254
3.0	142500	502	467600	209100	185660	**PF**	**062KF127**	**DRN**	**225M4**	1850	255
3.5	119700	421	473000	209100	185660	**PH**	**062KF127**	**DRN**	**225M4**	2200	254
4.4	96700	341	444300	209100	185660	**PHF**	**062KF127**	**DRN**	**225M4**	1840	255
3.0	142500	502	340100	140600	124060	**P**	**052KF127**	**DRN**	**225M4**	1730	250
3.5	119700	421	359800	140600	124060	**PF**	**052KF127**	**DRN**	**225M4**	1530	251
4.4	96700	341	355400	140600	124060	**PH**	**052KF127**	**DRN**	**225M4**	1720	250
						PHF	**052KF127**	**DRN**	**225M4**	1520	251
4.4	96700	341	299000	111000	100170	**P**	**042KF127**	**DRN**	**225M4**	1590	244
5.1	82000	289	293100	111000	100170	**PF**	**042KF127**	**DRN**	**225M4**	1400	245
5.8	73000	257	283100	111000	100170	**PH**	**042KF127**	**DRN**	**225M4**	1590	244
						PHF	**042KF127**	**DRN**	**225M4**	1400	245
6.9	61300	216	217600	86800	69620	**P**	**032KF127**	**DRN**	**225M4**	1340	238
8.5	49500	175	204100	86800	69620	**PF**	**032KF127**	**DRN**	**225M4**	1220	239
						PH	**032KF127**	**DRN**	**225M4**	1360	238
						PHF	**032KF127**	**DRN**	**225M4**	1240	239

21915180/EN – 04/2015

P_m = 55 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}						m	
				f_{LC}<=7.5	f_{LC}>107.5						
min^{-1}	Nm		N	Nm	Nm					kg	
0.85	606700	1747	807500	631300	500000						
1.0	509900	1468	850000	631300	500000	**P**	**102KF187**	**DRN**	**250M4**	6090	268
1.2	441500	1271	850000	631300	500000	**PF**	**102KF187**	**DRN**	**250M4**	5140	269
1.4	367900	1059	850000	631300	500000	**PH**	**102KF187**	**DRN**	**250M4**	6150	268
1.6	313700	903	850000	631300	500000	**PHF**	**102KF187**	**DRN**	**250M4**	5200	269
1.9	265900	766	850000	631300	500000						
2.2	233200	671	850000	631300	500000	**P**	**102KF167**	**DRN**	**250M4**	5460	266
						PF	**102KF167**	**DRN**	**250M4**	4510	267
						PH	**102KF167**	**DRN**	**250M4**	5520	266
						PHF	**102KF167**	**DRN**	**250M4**	4570	267
1.0	516600	1487	662000	513900	423000						
1.2	447300	1288	720000	513900	423000	**P**	**092KF187**	**DRN**	**250M4**	5240	264
1.4	372700	1073	720000	513900	423000	**PF**	**092KF187**	**DRN**	**250M4**	4540	265
1.6	317800	915	720000	513900	423000	**PH**	**092KF187**	**DRN**	**250M4**	5250	264
1.9	269400	776	720000	513900	423000	**PHF**	**092KF187**	**DRN**	**250M4**	4550	265
2.2	232000	668	720000	513900	423000						
2.6	200900	579	720000	513900	423000	**P**	**092KF167**	**DRN**	**250M4**	4610	262
3.0	171200	493	720000	513900	423000	**PF**	**092KF167**	**DRN**	**250M4**	3910	263
3.6	141900	409	720000	513900	423000	**PH**	**092KF167**	**DRN**	**250M4**	4620	262
4.2	121100	349	720000	513900	423000	**PHF**	**092KF167**	**DRN**	**250M4**	3920	263
1.3	408100	1175	607200	397100	359400						
1.4	360100	1037	653800	397100	359400	**P**	**082KF157**	**DRN**	**250M4**	3740	260
1.6	312200	899	683000	397100	359400	**PF**	**082KF157**	**DRN**	**250M4**	3090	261
1.8	277700	800	683000	397100	359400	**PH**	**082KF157**	**DRN**	**250M4**	3730	260
2.2	239400	689	683000	397100	359400	**PHF**	**082KF157**	**DRN**	**250M4**	3080	261
2.6	197400	568	523000	274600	245660	**P**	**072KF157**	**DRN**	**250M4**	3080	258
3.1	167400	482	523000	274600	245660	**PF**	**072KF157**	**DRN**	**250M4**	2590	259
						PH	**072KF157**	**DRN**	**250M4**	3130	258
						PHF	**072KF157**	**DRN**	**250M4**	2640	259
1.8	279700	806	510400	274600	245660	**P**	**072KF127**	**DRN**	**250M4**	2790	256
2.2	235000	677	523000	274600	245660	**PF**	**072KF127**	**DRN**	**250M4**	2300	257
3.0	169100	487	523000	274600	245660	**PH**	**072KF127**	**DRN**	**250M4**	2840	256
3.6	142100	409	523000	274600	245660	**PHF**	**072KF127**	**DRN**	**250M4**	2350	257
2.6	195500	563	431000	209100	185660	**P**	**062KF127**	**DRN**	**250M4**	2360	254
3.0	174100	502	447100	209100	185660	**PF**	**062KF127**	**DRN**	**250M4**	2000	255
3.5	146300	421	465300	209100	185660	**PH**	**062KF127**	**DRN**	**250M4**	2350	254
4.4	118200	341	444300	209100	185660	**PHF**	**062KF127**	**DRN**	**250M4**	1990	255
4.4	118200	341	355400	140600	124060	**P**	**052KF127**	**DRN**	**250M4**	1880	250
5.1	100200	289	338000	140600	124060	**PF**	**052KF127**	**DRN**	**250M4**	1680	251
						PH	**052KF127**	**DRN**	**250M4**	1870	250
						PHF	**052KF127**	**DRN**	**250M4**	1670	251
5.8	89200	257	283100	111000	100170	**P**	**042KF127**	**DRN**	**250M4**	1740	244
6.9	75000	216	268800	111000	100170	**PF**	**042KF127**	**DRN**	**250M4**	1550	245
8.5	60600	175	252100	111000	100170	**PH**	**042KF127**	**DRN**	**250M4**	1740	244
						PHF	**042KF127**	**DRN**	**250M4**	1550	245
8.5	60600	175	204100	86800	69620	**P**	**032KF127**	**DRN**	**250M4**	1490	238
						PF	**032KF127**	**DRN**	**250M4**	1370	239
						PH	**032KF127**	**DRN**	**250M4**	1510	238
						PHF	**032KF127**	**DRN**	**250M4**	1390	239

P_m = 75 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}						m	
				f_{LC}<=7.5	f_{LC}>107.5						
min^{-1}	Nm		N	Nm	Nm					kg	
1.2	602000	1271	811200	631300	500000						
1.4	501700	1059	850000	631300	500000	**P**	**102KF187**	**DRN**	**280S4**	6140	268
1.6	427700	903	850000	631300	500000	**PF**	**102KF187**	**DRN**	**280S4**	5190	269
1.9	362600	766	850000	631300	500000	**PH**	**102KF187**	**DRN**	**280S4**	6200	268
2.2	312300	660	850000	631300	500000	**PHF**	**102KF187**	**DRN**	**280S4**	5250	269
2.7	262500	554	850000	631300	500000						

21915180/EN – 04/2015

P_m = 75 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}						m	
				f_{LC}<=7.5	f_{LC}>107.5						
min^{-1}	Nm		N	Nm	Nm					kg	
1.4	508300	1073	671500	513900	423000						
1.6	433400	915	720000	513900	423000	**P**	**092KF187**	**DRN**	**280S4**	5290	264
1.9	367400	776	720000	513900	423000	**PF**	**092KF187**	**DRN**	**280S4**	4590	265
2.2	316400	668	720000	513900	423000	**PH**	**092KF187**	**DRN**	**280S4**	5300	264
2.6	265900	561	720000	513900	423000	**PHF**	**092KF187**	**DRN**	**280S4**	4600	265
3.0	230200	486	720000	513900	423000						
3.6	193500	409	720000	513900	423000	**P**	**092KF167**	**DRN**	**280S4**	4660	262
4.2	165100	349	720000	513900	423000	**PF**	**092KF167**	**DRN**	**280S4**	3960	263
						PH	**092KF167**	**DRN**	**280S4**	4670	262
						PHF	**092KF167**	**DRN**	**280S4**	3970	263
1.8	378800	800	636600	397100	359400	**P**	**082KF157**	**DRN**	**280S4**	3790	260
2.2	326500	689	681200	397100	359400	**PF**	**082KF157**	**DRN**	**280S4**	3140	261
						PH	**082KF157**	**DRN**	**280S4**	3780	260
						PHF	**082KF157**	**DRN**	**280S4**	3130	261
2.6	269200	568	521900	274600	245660						
3.1	228300	482	523000	274600	245660	**P**	**072KF157**	**DRN**	**280S4**	3130	258
3.5	202200	429	523000	274600	245660	**PF**	**072KF157**	**DRN**	**280S4**	2640	259
4.0	174300	369	523000	274600	245660	**PH**	**072KF157**	**DRN**	**280S4**	3180	258
5.0	141600	300	494900	274600	245660	**PHF**	**072KF157**	**DRN**	**280S4**	2690	259
5.8	120100	254	471000	274600	245660						
4.4	161200	341	444300	209100	185660	**P**	**062KF127**	**DRN**	**280S4**	2410	254
						PF	**062KF127**	**DRN**	**280S4**	2050	255
						PH	**062KF127**	**DRN**	**280S4**	2400	254
						PHF	**062KF127**	**DRN**	**280S4**	2040	255
8.5	82600	175	290800	140600	124060	**P**	**052KF127**	**DRN**	**280S4**	1930	250
						PF	**052KF127**	**DRN**	**280S4**	1730	251
						PH	**052KF127**	**DRN**	**280S4**	1920	250
						PHF	**052KF127**	**DRN**	**280S4**	1720	251
8.5	82600	175	252100	111000	100170	**P**	**042KF127**	**DRN**	**280S4**	1780	244
						PF	**042KF127**	**DRN**	**280S4**	1600	245
						PH	**042KF127**	**DRN**	**280S4**	1790	244
						PHF	**042KF127**	**DRN**	**280S4**	1600	245

P_m = 90 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2}						m	
				f_{LC}<=7.5	f_{LC}>107.5						
min^{-1}	Nm		N	Nm	Nm					kg	
1.4	602400	1059	810800	631300	500000						
1.6	513600	903	850000	631300	500000	**P**	**102KF187**	**DRN**	**280M4**	6260	268
1.9	435400	766	850000	631300	500000	**PF**	**102KF187**	**DRN**	**280M4**	5300	269
2.2	375100	660	850000	631300	500000	**PH**	**102KF187**	**DRN**	**280M4**	6320	268
2.7	315200	554	850000	631300	500000	**PHF**	**102KF187**	**DRN**	**280M4**	5360	269
3.1	272900	480	850000	631300	500000						
1.6	520400	915	657600	513900	423000						
1.9	441100	776	720000	513900	423000	**P**	**092KF187**	**DRN**	**280M4**	5400	264
2.2	380000	668	720000	513900	423000	**PF**	**092KF187**	**DRN**	**280M4**	4710	265
2.6	319400	561	720000	513900	423000	**PH**	**092KF187**	**DRN**	**280M4**	5420	264
3.0	276500	486	720000	513900	423000	**PHF**	**092KF187**	**DRN**	**280M4**	4720	265
3.7	230400	405	720000	513900	423000						
4.2	198300	349	720000	513900	423000	**P**	**092KF167**	**DRN**	**280M4**	4770	262
						PF	**092KF167**	**DRN**	**280M4**	4080	263
						PH	**092KF167**	**DRN**	**280M4**	4790	262
						PHF	**092KF167**	**DRN**	**280M4**	4090	263

21915180/EN – 04/2015

P_m = 110 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2} f_{LC}<=7.5	M_{N2} f_{LC}>107.5					m	
min^{-1}	Nm		N	Nm	Nm					kg	
1.6	624800	903	793000	631300	500000						
1.9	529700	766	850000	631300	500000	**P**	**102KF187**	**DRN**	**315S4**	6500	268
2.3	456300	660	850000	631300	500000	**PF**	**102KF187**	**DRN**	**315S4**	5550	269
2.7	383400	554	850000	631300	500000	**PH**	**102KF187**	**DRN**	**315S4**	6560	268
3.1	332000	480	850000	631300	500000	**PHF**	**102KF187**	**DRN**	**315S4**	5610	269
3.7	276700	400	850000	631300	500000						
2.2	462300	668	720000	513900	423000						
2.6	388500	561	720000	513900	423000	**P**	**092KF187**	**DRN**	**315S4**	5650	264
3.1	336400	486	720000	513900	423000	**PF**	**092KF187**	**DRN**	**315S4**	4950	265
3.7	280300	405	720000	513900	423000	**PH**	**092KF187**	**DRN**	**315S4**	5660	264
4.3	239000	345	720000	513900	423000	**PHF**	**092KF187**	**DRN**	**315S4**	4960	265

P_m = 132 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2} f_{LC}<=7.5	M_{N2} f_{LC}>107.5					m	
min^{-1}	Nm		N	Nm	Nm					kg	
2.3	547500	660	850000	631300	500000						
2.7	460100	554	850000	631300	500000	**P**	**102KF187**	**DRN**	**315M4**	6520	268
3.1	398400	480	850000	631300	500000	**PF**	**102KF187**	**DRN**	**315M4**	5570	269
3.7	332000	400	850000	631300	500000	**PH**	**102KF187**	**DRN**	**315M4**	6580	268
4.4	283100	341	850000	631300	500000	**PHF**	**102KF187**	**DRN**	**315M4**	5630	269
2.6	466200	561	716100	513900	423000	**P**	**092KF187**	**DRN**	**315M4**	5670	264
3.1	403600	486	720000	513900	423000	**PF**	**092KF187**	**DRN**	**315M4**	4970	265
3.7	336400	405	720000	513900	423000	**PH**	**092KF187**	**DRN**	**315M4**	5680	264
4.3	286800	345	720000	513900	423000	**PHF**	**092KF187**	**DRN**	**315M4**	4980	265

P_m = 160 kW

n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2} f_{LC}<=7.5	M_{N2} f_{LC}>107.5					m	
min^{-1}	Nm		N	Nm	Nm					kg	
2.7	558500	554	843300	631300	500000	**P**	**102KF187**	**DRN**	**315L4**	6650	268
3.1	483600	480	850000	631300	500000	**PF**	**102KF187**	**DRN**	**315L4**	5700	269
3.7	403000	400	850000	631300	500000	**PH**	**102KF187**	**DRN**	**315L4**	6710	268
4.4	343600	341	850000	631300	500000	**PHF**	**102KF187**	**DRN**	**315L4**	5760	269
3.1	489900	486	691700	513900	423000	**P**	**092KF187**	**DRN**	**315L4**	5800	264
3.7	408300	405	720000	513900	423000	**PF**	**092KF187**	**DRN**	**315L4**	5100	265
4.3	348100	345	720000	513900	423000	**PH**	**092KF187**	**DRN**	**315L4**	5810	264
						PHF	**092KF187**	**DRN**	**315L4**	5110	265

P_m = 200 kW

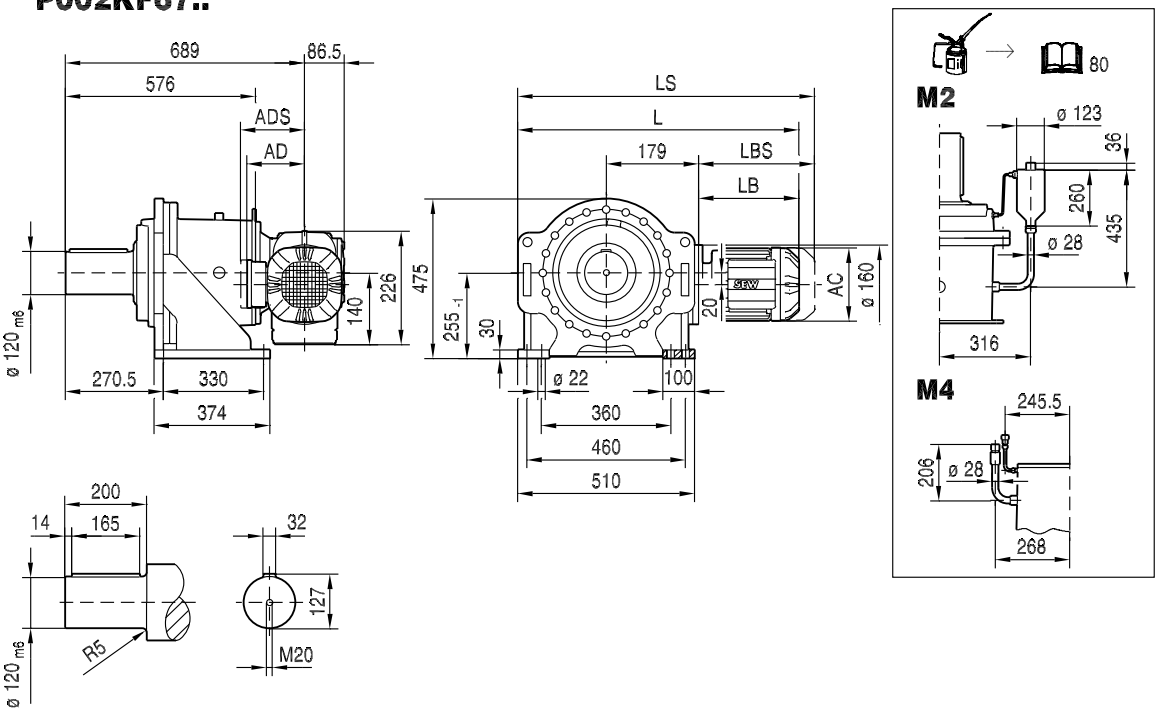
n_2	M_a	i_{ex}	F_{Ra} [1]	M_{N2} f_{LC}<=7.5	M_{N2} f_{LC}>107.5					m	
min^{-1}	Nm		N	Nm	Nm					kg	
3.1	603300	480	810200	631300	500000	**P**	**102KF187**	**DRN**	**315H4**	6770	268
3.7	502700	400	850000	631300	500000	**PF**	**102KF187**	**DRN**	**315H4**	5820	269
4.4	428600	341	850000	631300	500000	**PH**	**102KF187**	**DRN**	**315H4**	6830	268
						PHF	**102KF187**	**DRN**	**315H4**	5880	269
3.7	509300	405	670300	513900	423000	**P**	**092KF187**	**DRN**	**315H4**	5920	264
4.3	434300	345	720000	513900	423000	**PF**	**092KF187**	**DRN**	**315H4**	5220	265
						PH	**092KF187**	**DRN**	**315H4**	5930	264
						PHF	**092KF187**	**DRN**	**315H4**	5230	265

21915180/EN – 04/2015

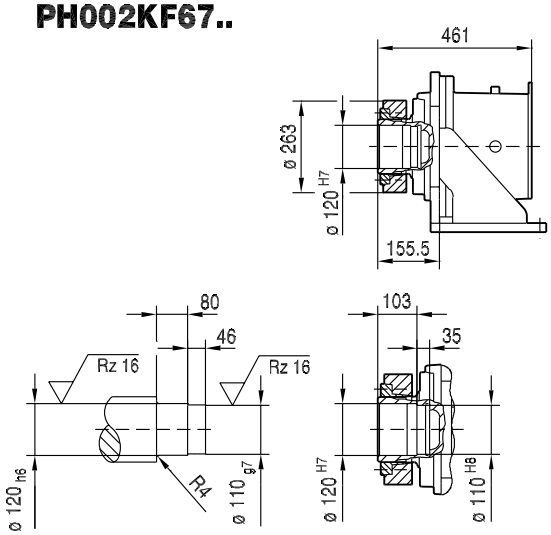
11.3 Dimension sheets [mm]

P002KF67..

45 059 02 08



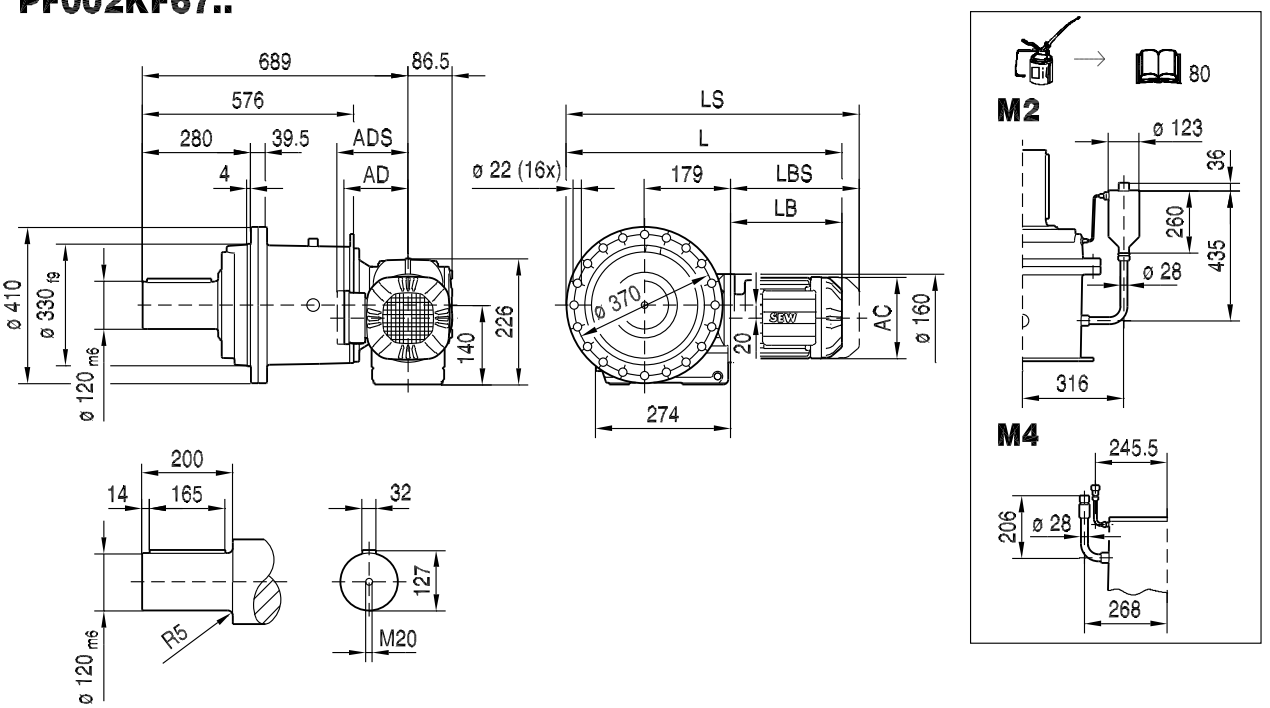
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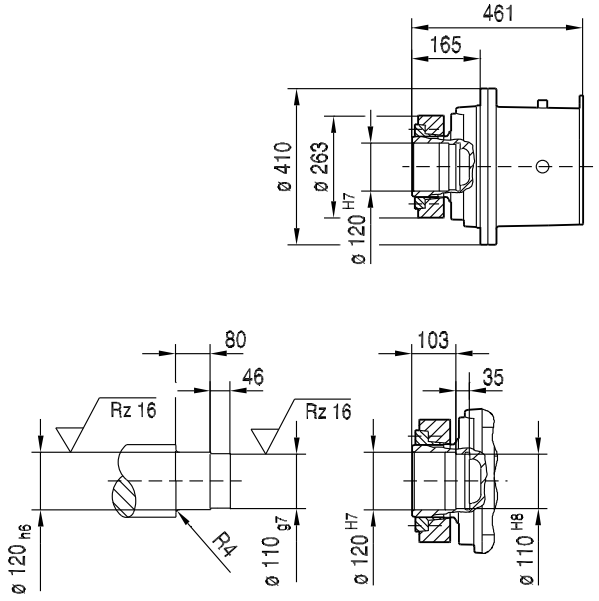
(→ 🗎 91)	DRN80M	DRN90S	DRN90L	DRN100LS	DRN100L	DRN112M		
AC	156	179	179	197	197	221		
AD	128	140	140	157	157	170		
ADS	139	150	150	158	158	172		
L	709	711	743	739	789	820		
LS	790	804	836	833	883	932		
LB	275	277	309	305	355	386		
LBS	356	370	402	399	449	498		

PF002KF67..

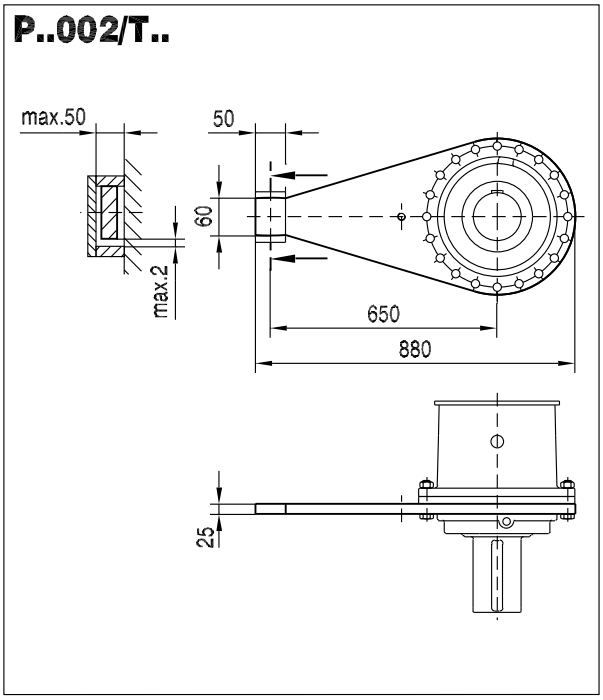
45 087 02 08



PHF002KF67..



P..002/T..

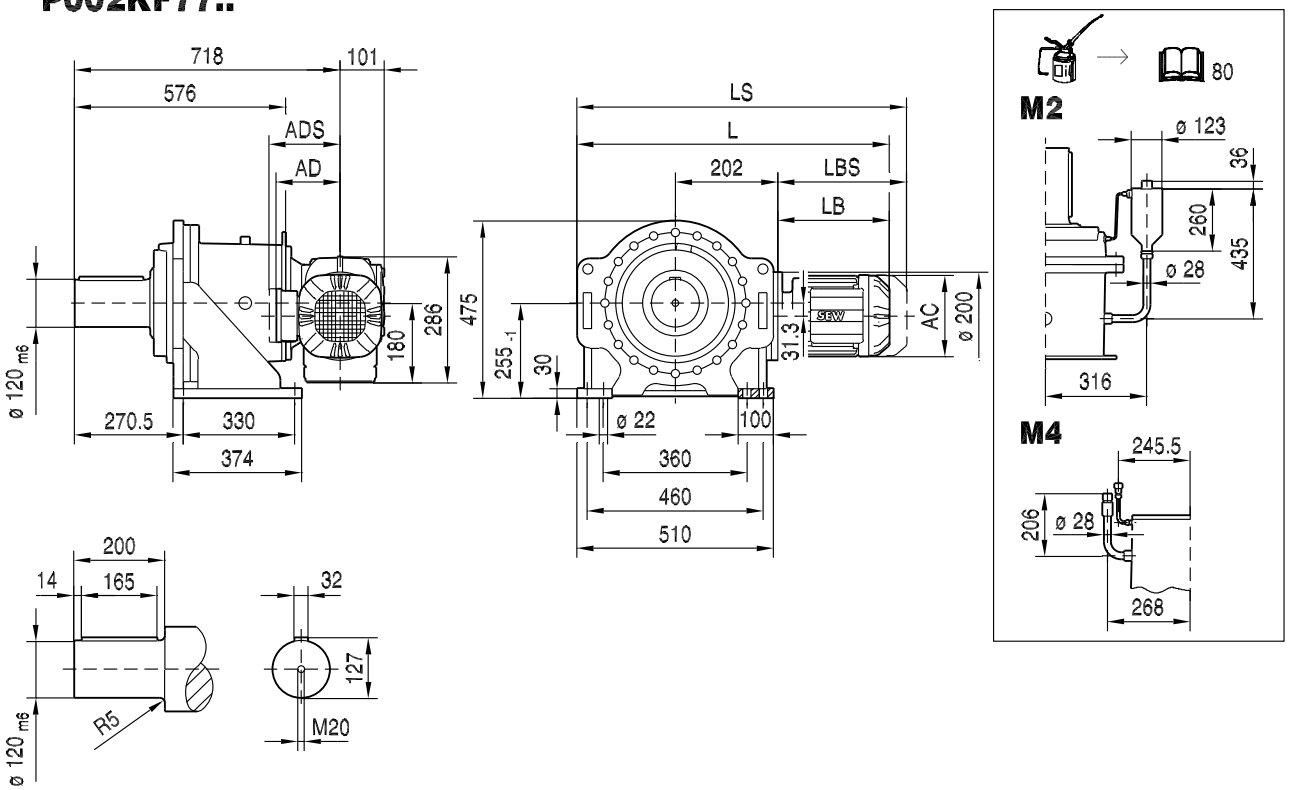


(→ 91)	DRN80M	DRN90S	DRN90L	DRN100LS	DRN100L	DRN112M		
AC	156	179	179	197	197	221		
AD	128	140	140	157	157	170		
ADS	139	150	150	158	158	172		
L	659	661	693	689	739	770		
LS	740	754	786	783	833	882		
LB	275	277	309	305	355	386		
LBS	356	370	402	399	449	498		

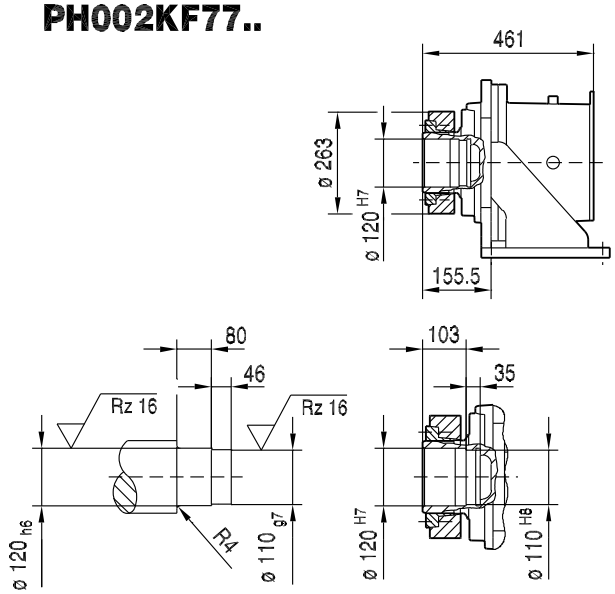
21915180/EN – 04/2015

P002KF77..

45 060 02 08



PH002KF77..

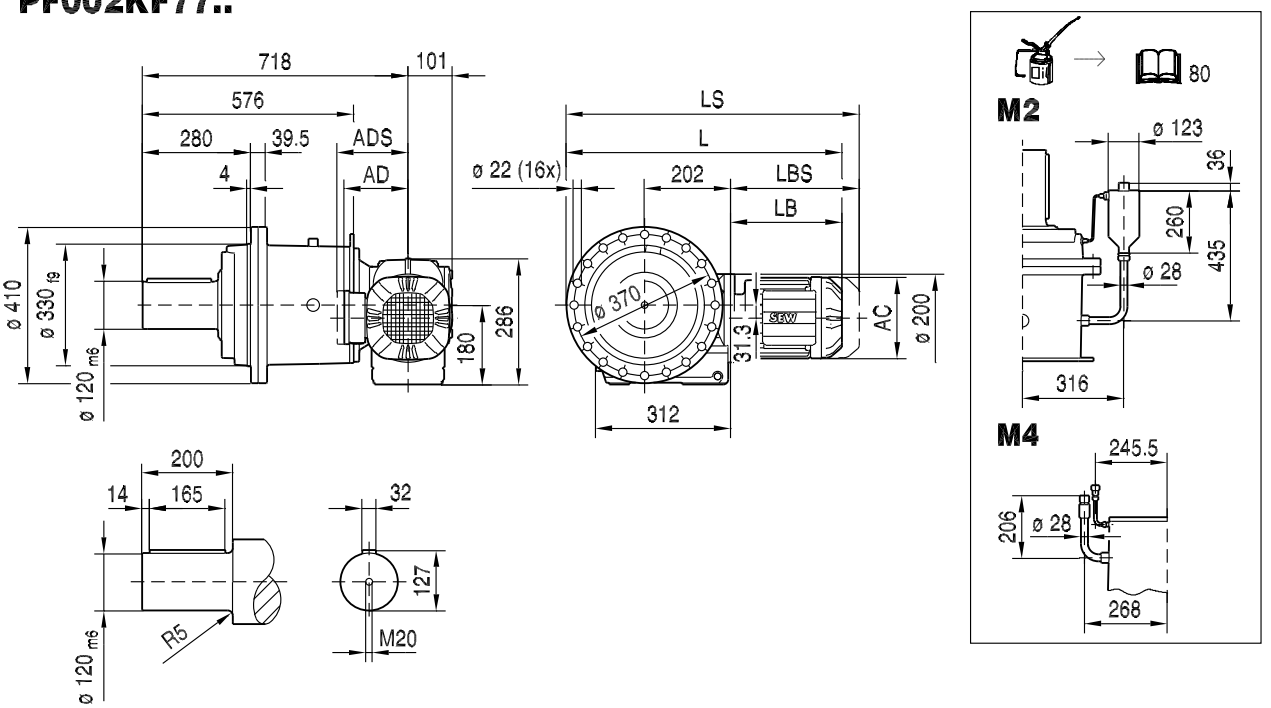


(→ 91)	DRN80M	DRN90S	DRN90L	DRN100LS	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L
AC	156	179	179	197	197	221	221	261	268
AD	128	140	140	157	157	170	170	228	228
ADS	139	150	150	158	158	172	172	228	228
L	725	727	759	755	805	836	886	903	928
LS	806	820	852	849	899	948	998	1042	1067
LB	268	270	302	298	348	379	429	446	471
LBS	349	363	395	392	442	491	541	585	610

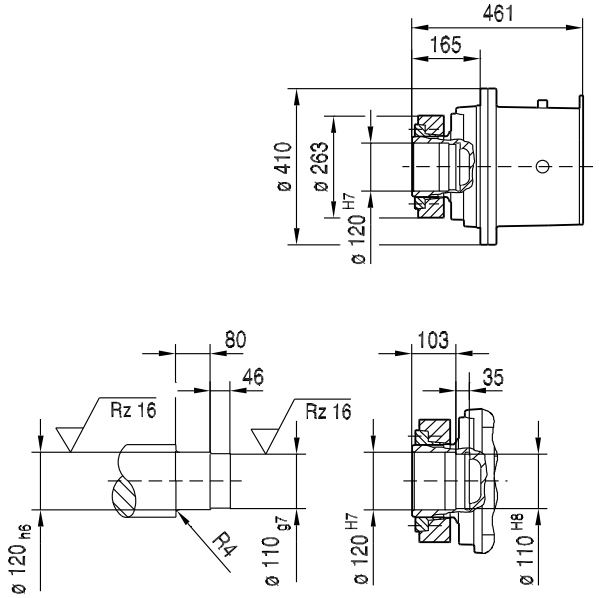
21915180/EN – 04/2015

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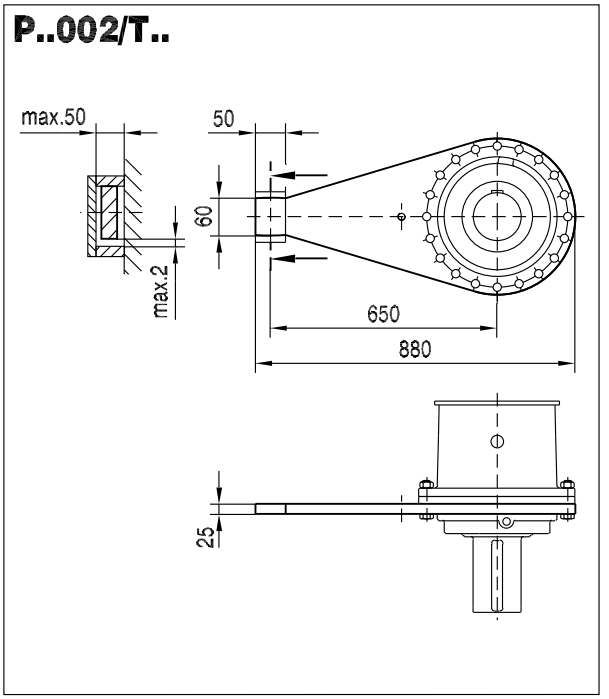
45 088 02 08



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P..002/T..

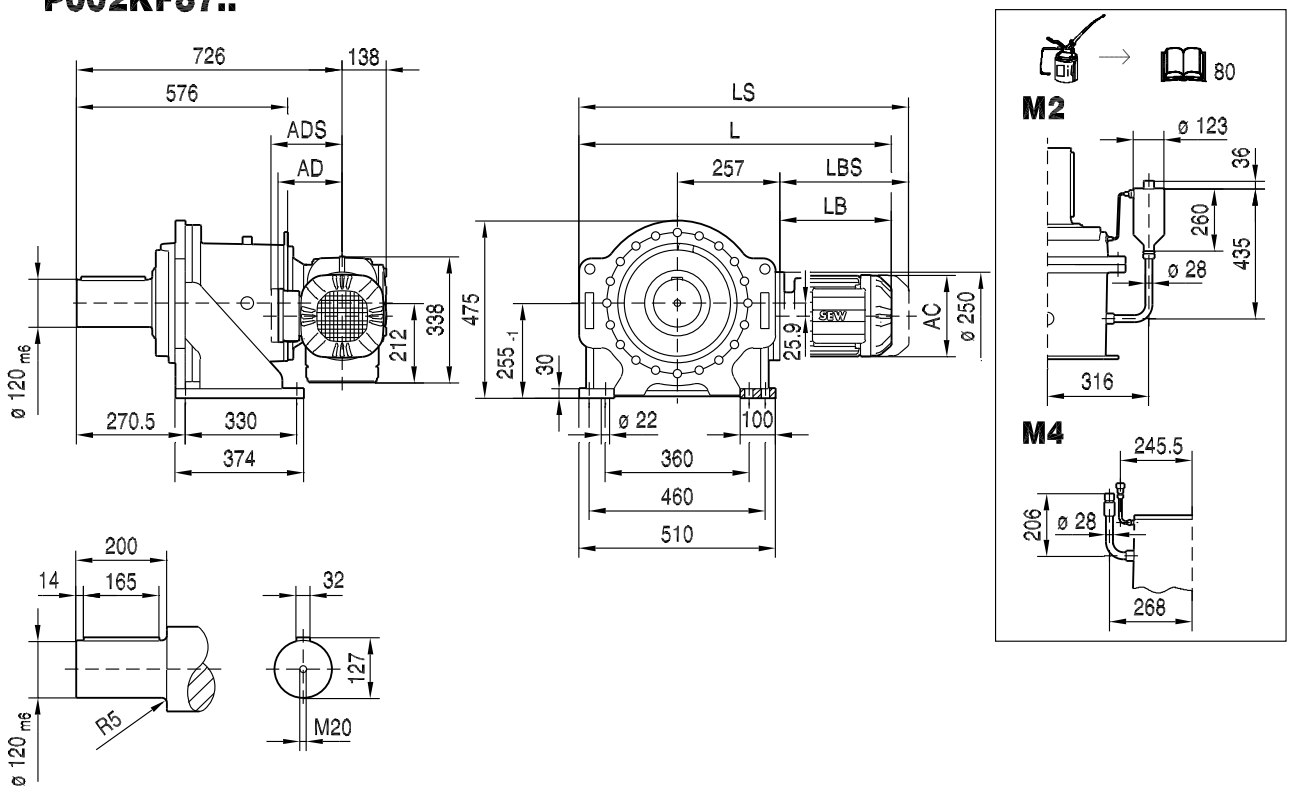


(→ 91)	DRN80M	DRN90S	DRN90L	DRN100LS	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L
AC	156	179	179	197	197	221	221	261	268
AD	128	140	140	157	157	170	170	228	228
ADS	139	150	150	158	158	172	172	228	228
L	675	677	709	705	755	786	836	853	878
LS	756	770	802	799	849	898	948	992	1017
LB	268	270	302	298	348	379	429	446	471
LBS	349	363	395	392	442	491	541	585	610

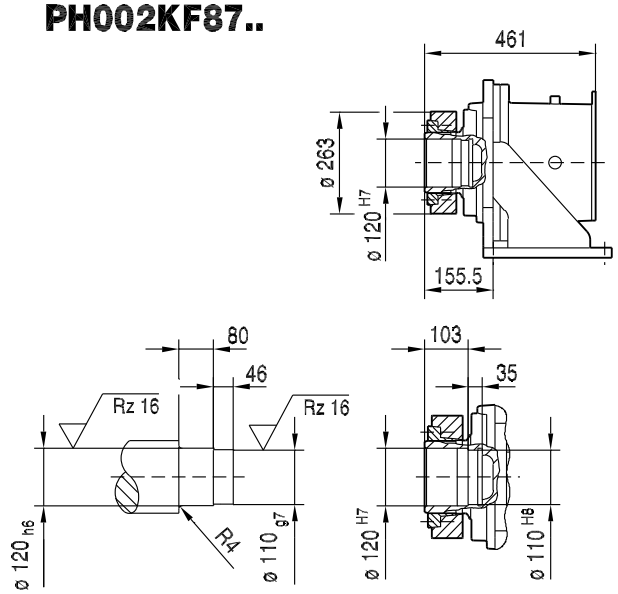
21915180/EN – 04/2015

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45 061 02 08



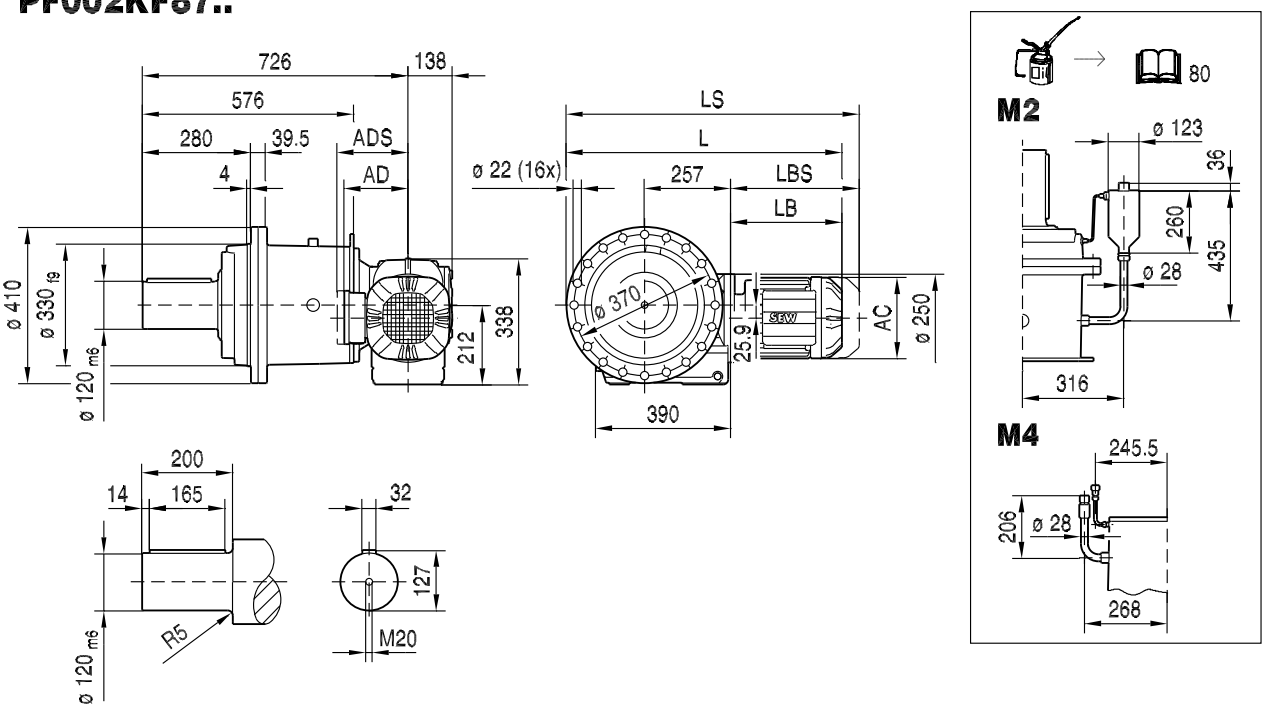
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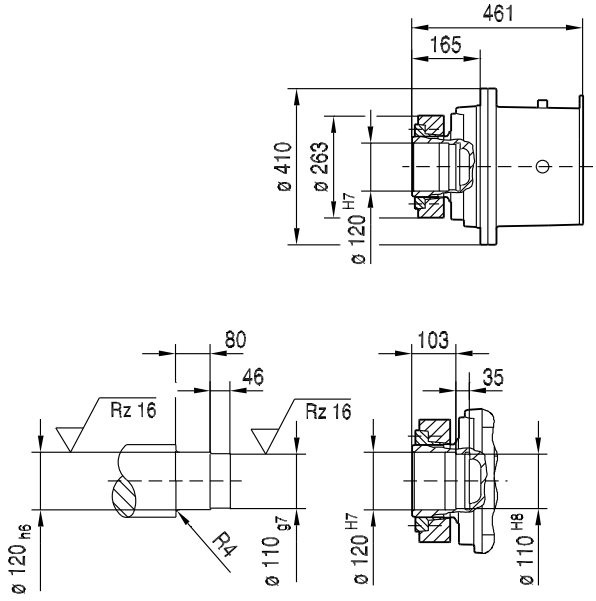
(→ 91)	DRN132L	DRN160M	DRN160L					
AC	268	318	318					
AD	228	253	253					
ADS	228	253	253					
L	978	1046	1046					
LS	1117	1235	1235					
LB	466	534	534					
LBS	605	723	723					

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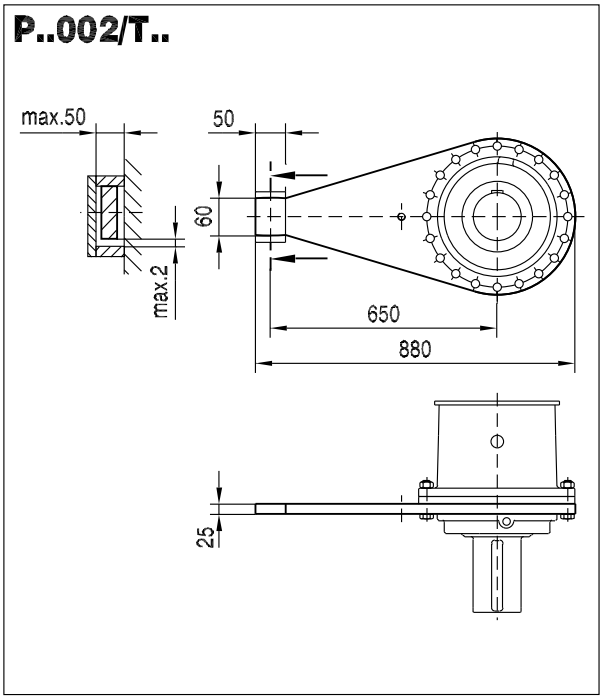
45 089 02 08



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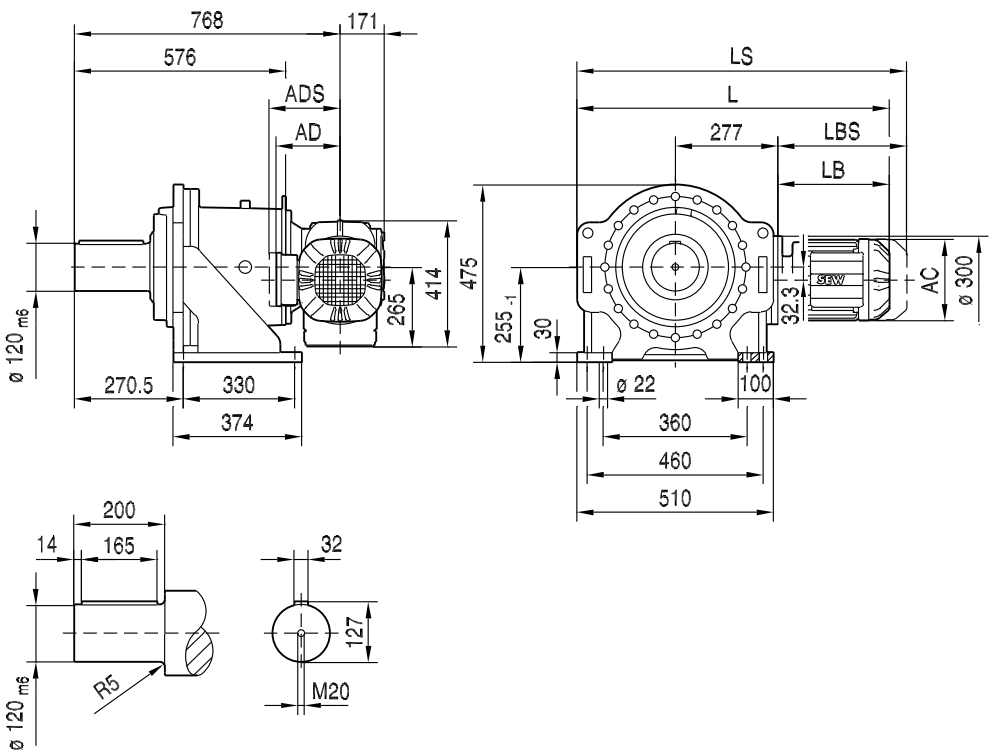


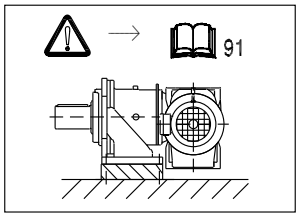
(→ 91)	DRN132L	DRN160M	DRN160L					
AC	268	318	318					
AD	228	253	253					
ADS	228	253	253					
L	928	996	996					
LS	1067	1185	1185					
LB	466	534	534					
LBS	605	723	723					

21915180/EN – 04/2015

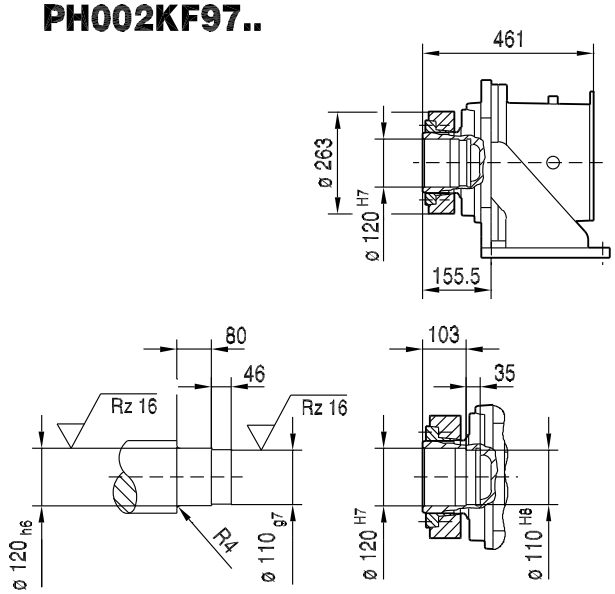
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45 062 02 08





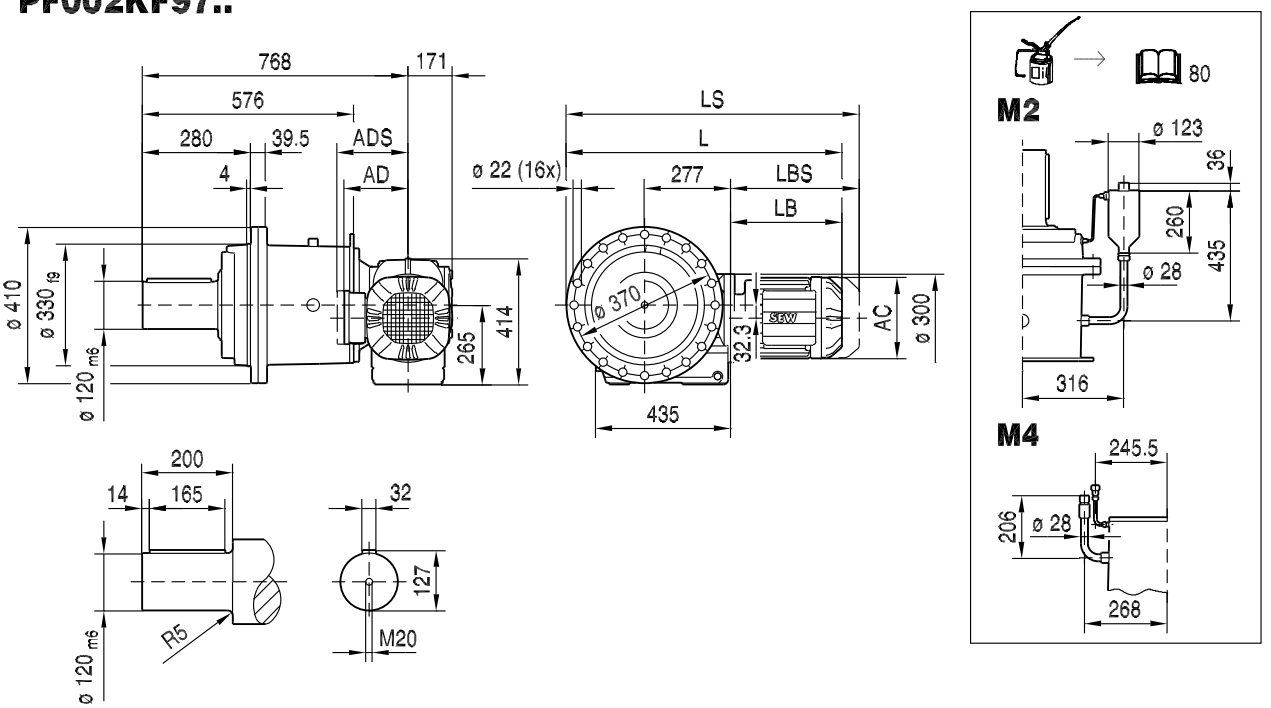
PH002KF97..



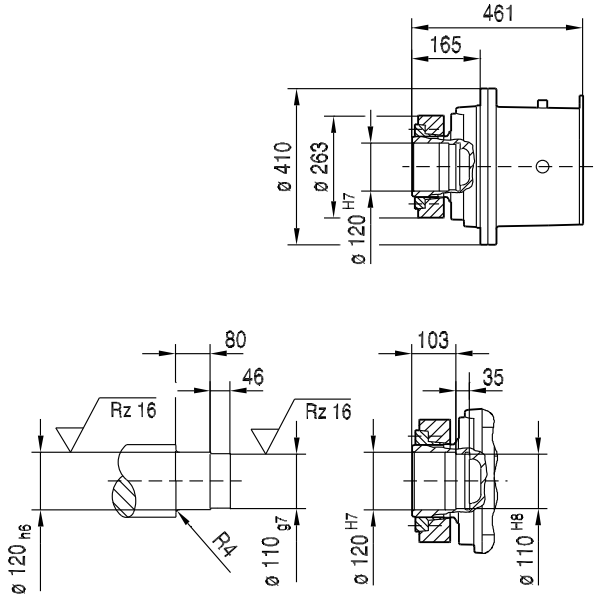
(→ 91)	DRN160L	DRN180M						
AC	318	357						
AD	253	268						
ADS	253	268						
L	1061	1087						
LS	1250	1276						
LB	529	555						
LBS	718	744						

PF002KF97..

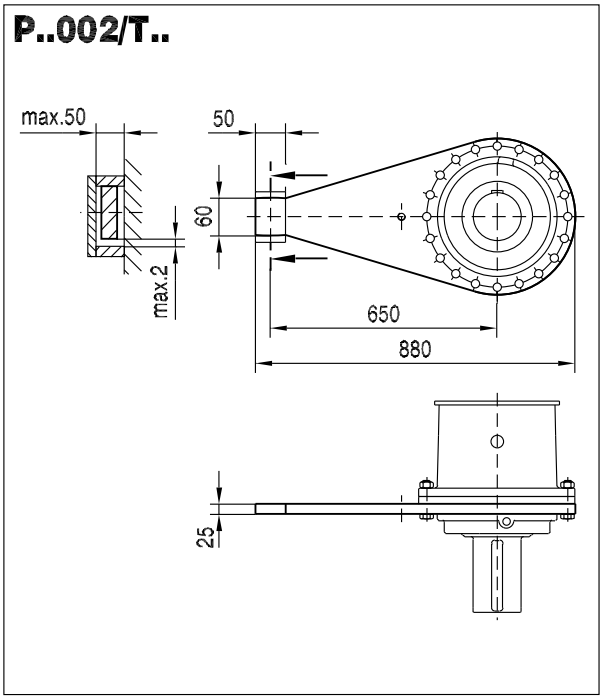
45 090 02 08



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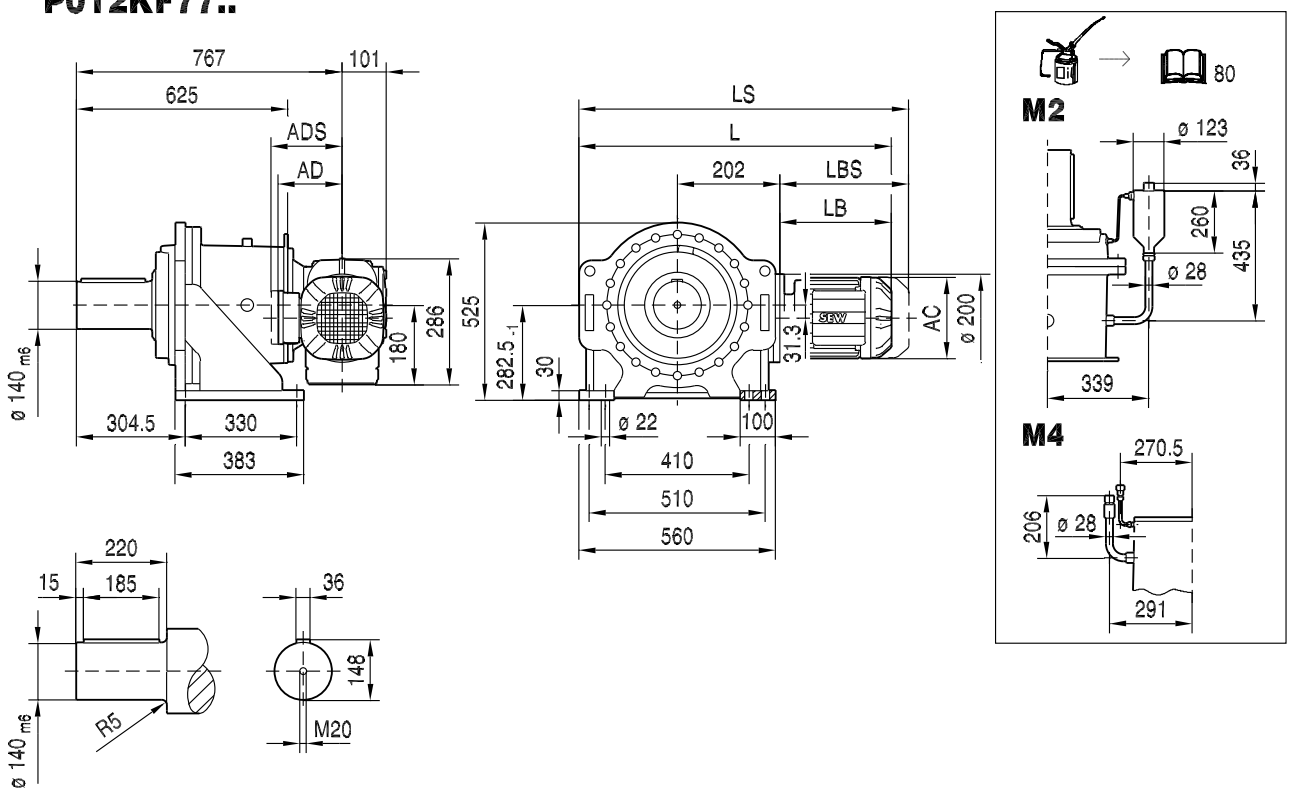


(→ 📄 91)	DRN160L	DRN180M						
AC	318	357						
AD	253	268						
ADS	253	268						
L	1011	1037						
LS	1200	1226						
LB	529	555						
LBS	718	744						

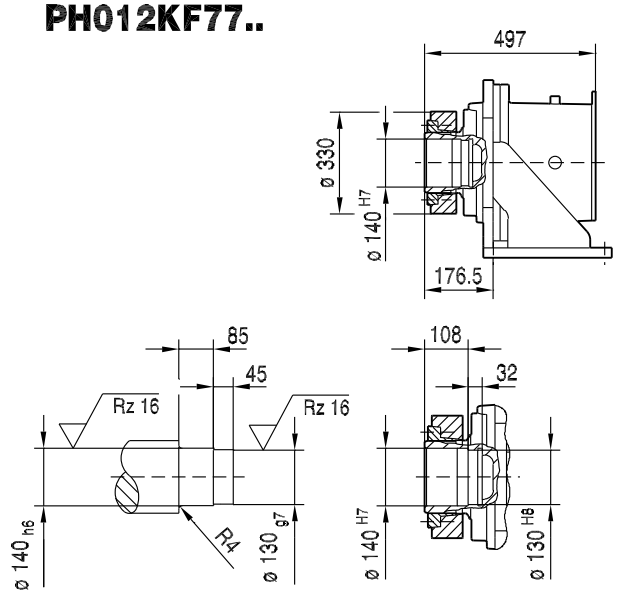
21915180/EN – 04/2015

P012KF77..

45 063 02 08



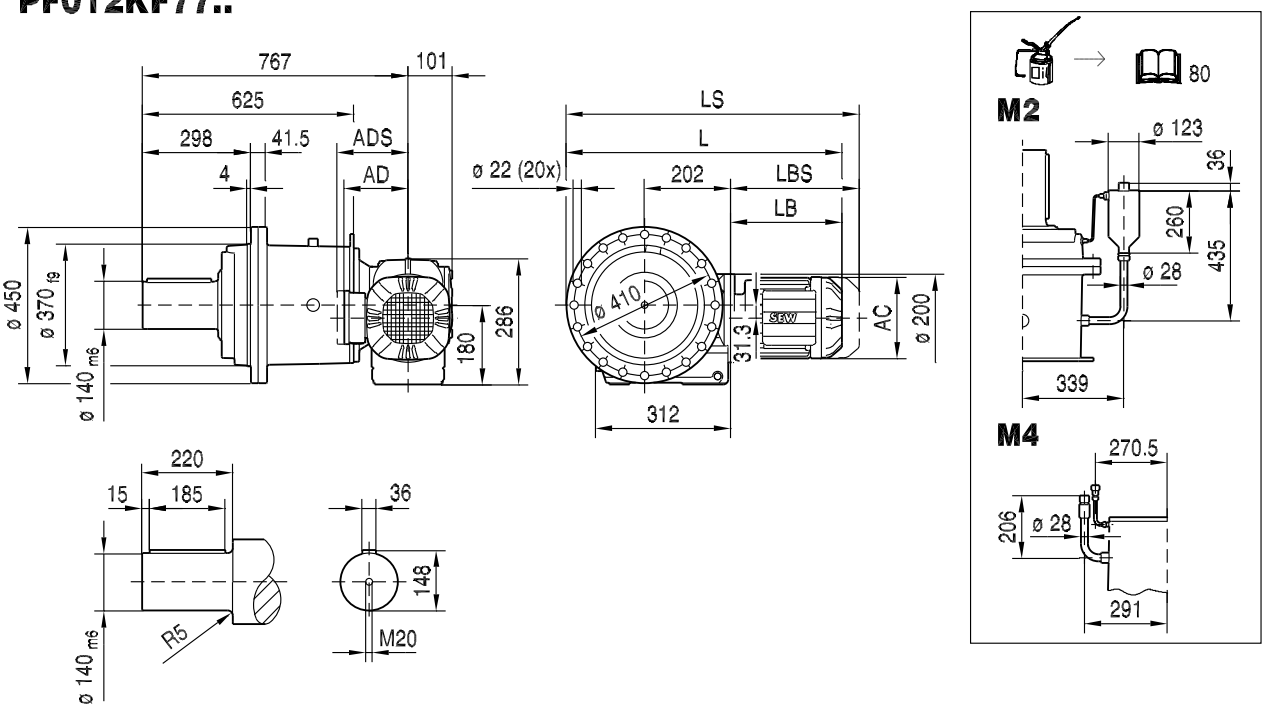
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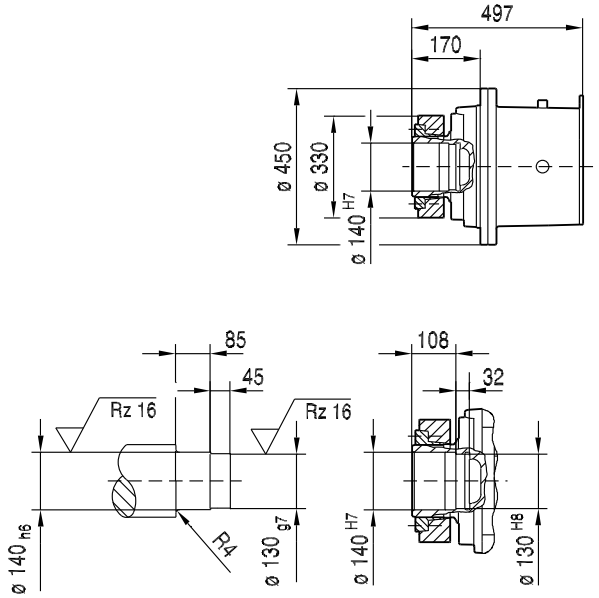
(→ 91)	DRN80M	DRN90S	DRN90L	DRN100LS	DRN100L	DRN112M	DRN132S	DRN132M
AC	156	179	179	197	197	221	221	261
AD	128	140	140	157	157	170	170	228
ADS	139	150	150	158	158	172	172	228
L	750	752	784	780	830	861	911	928
LS	831	845	877	874	924	973	1023	1067
LB	268	270	302	298	348	379	429	446
LBS	349	363	395	392	442	491	541	585

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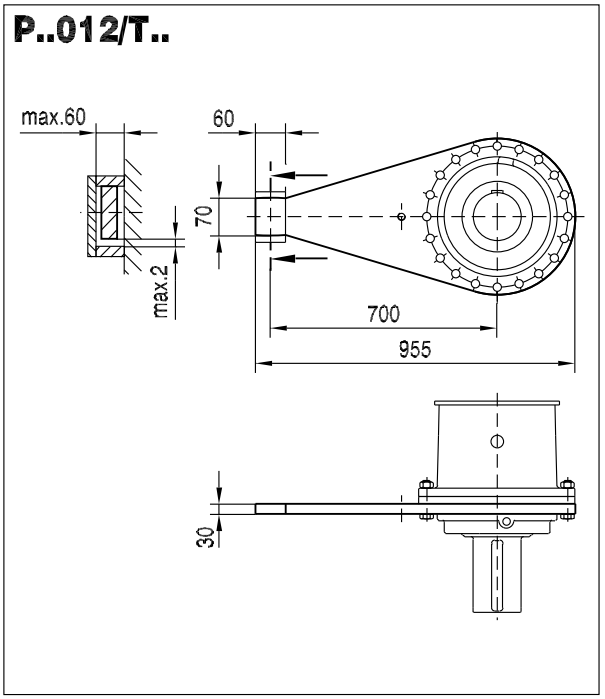
45 091 02 08



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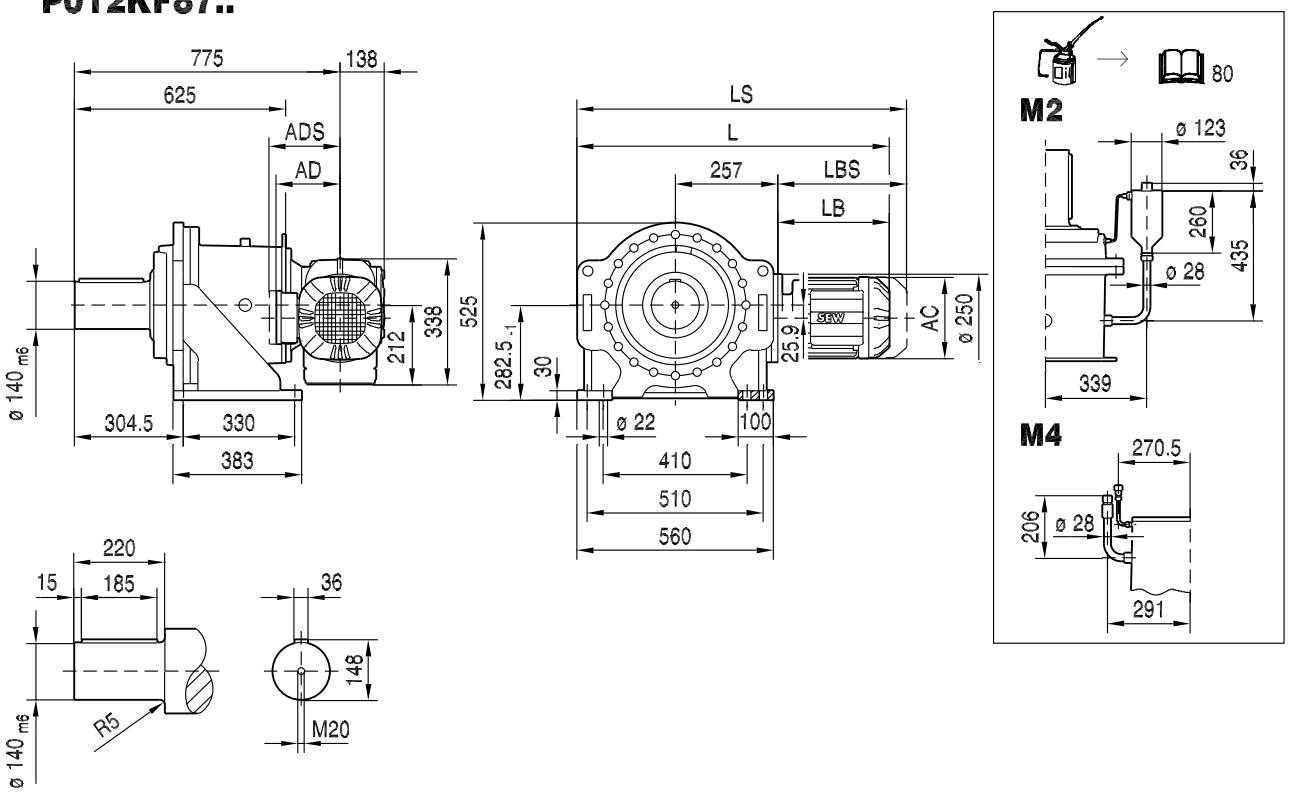


(→ 📄 91)	DRN80M	DRN90S	DRN90L	DRN100LS	DRN100L	DRN112M	DRN132S	DRN132M
AC	156	179	179	197	197	221	221	261
AD	128	140	140	157	157	170	170	228
ADS	139	150	150	158	158	172	172	228
L	695	697	729	725	775	806	856	873
LS	776	790	822	819	869	918	968	1012
LB	268	270	302	298	348	379	429	446
LBS	349	363	395	392	442	491	541	585

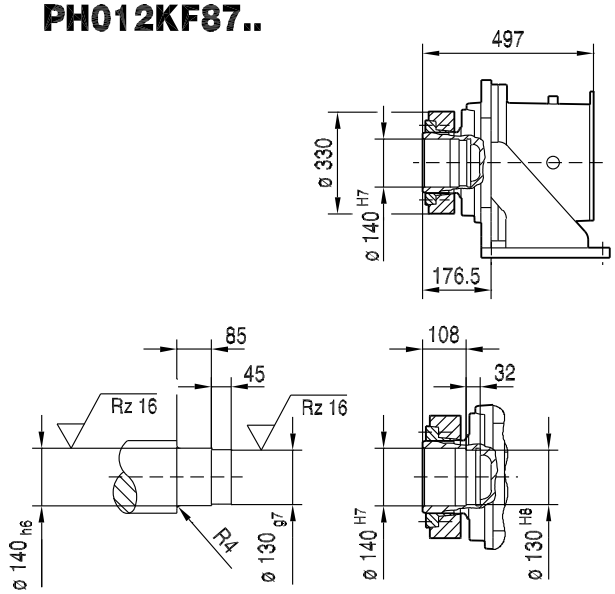
21915180/EN – 04/2015

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45 064 02 08



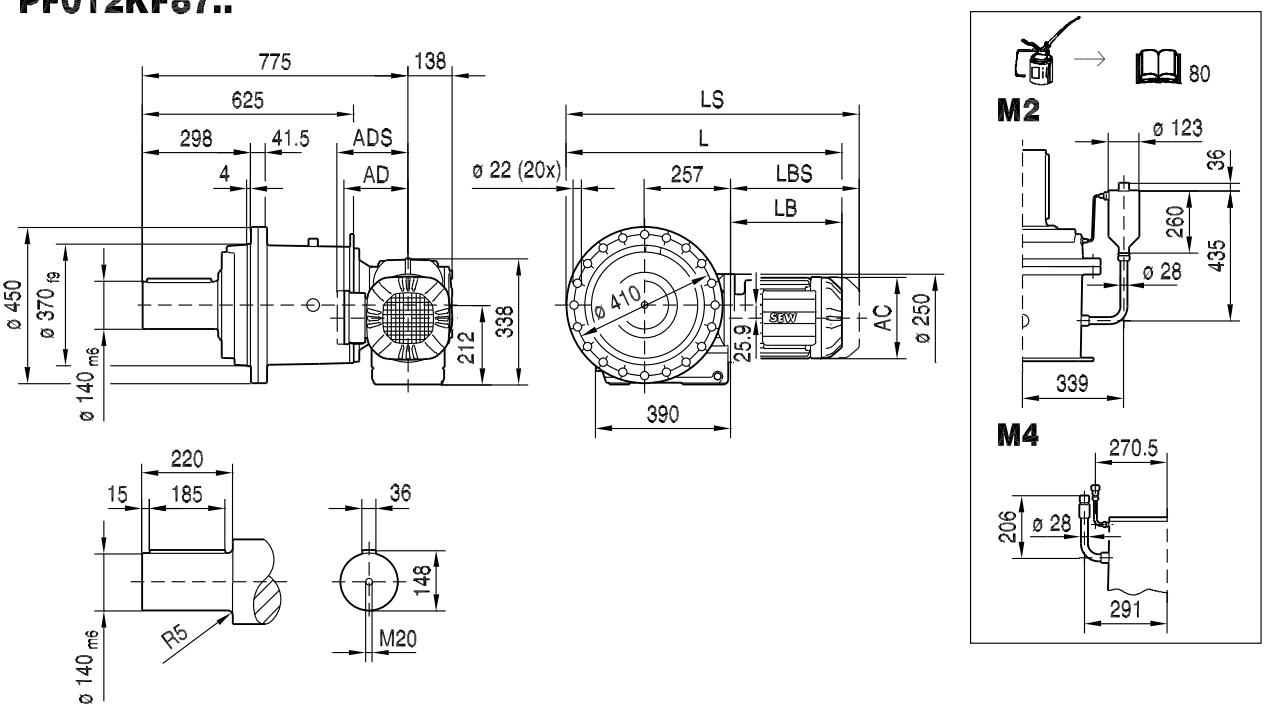
PH012KF87..



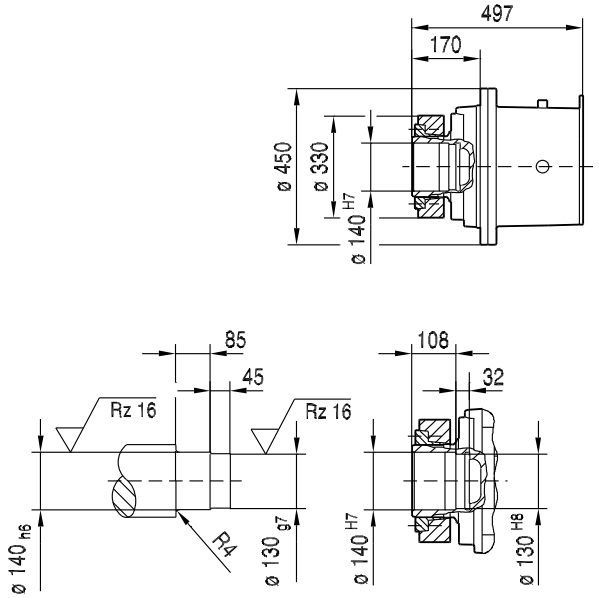
(→ 91)	DRN80M	DRN90S	DRN90L	DRN100LS	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M
AC	156	179	179	197	197	221	221	261	268	318
AD	128	140	140	157	157	170	170	228	228	253
ADS	139	150	150	158	158	172	172	228	228	253
L	800	802	834	830	880	911	961	978	1003	1071
LS	881	895	927	924	974	1023	1073	1117	1142	1260
LB	263	265	297	293	343	374	424	441	466	534
LBS	344	358	390	387	437	486	536	580	605	723

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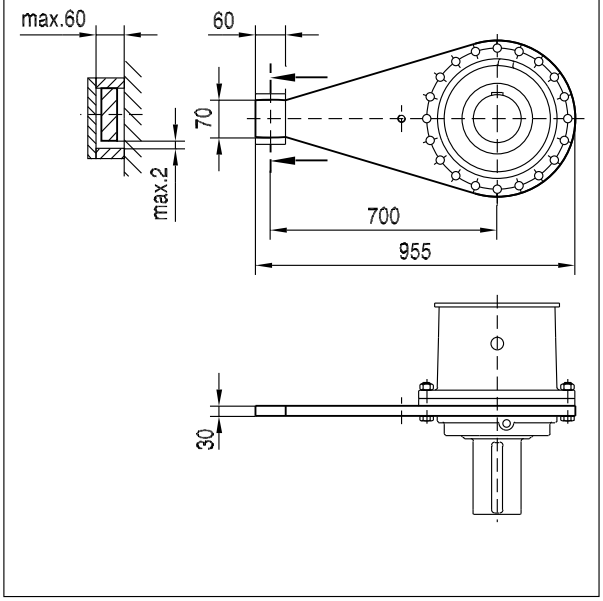
45 092 02 08



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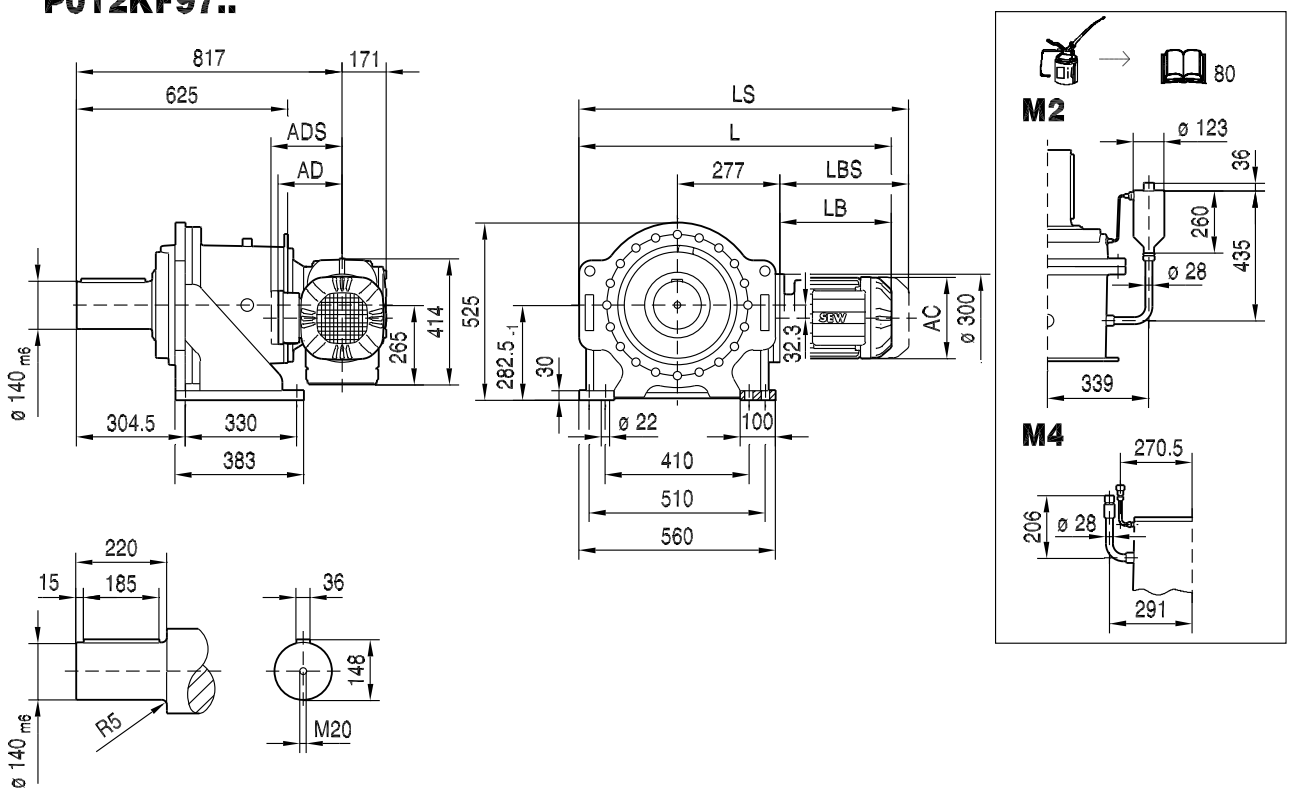


(→ 📄 91)	DRN80M	DRN90S	DRN90L	DRN100LS	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M
AC	156	179	179	197	197	221	221	261	268	318
AD	128	140	140	157	157	170	170	228	228	253
ADS	139	150	150	158	158	172	172	228	228	253
L	745	747	779	775	825	856	906	923	948	1016
LS	826	840	872	869	919	968	1018	1062	1087	1205
LB	263	265	297	293	343	374	424	441	466	534
LBS	344	358	390	387	437	486	536	580	605	723

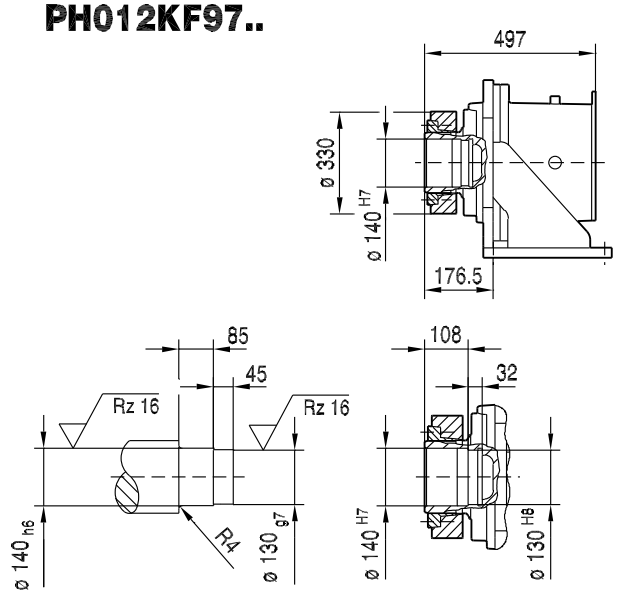
21915180/EN – 04/2015

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45 065 02 08



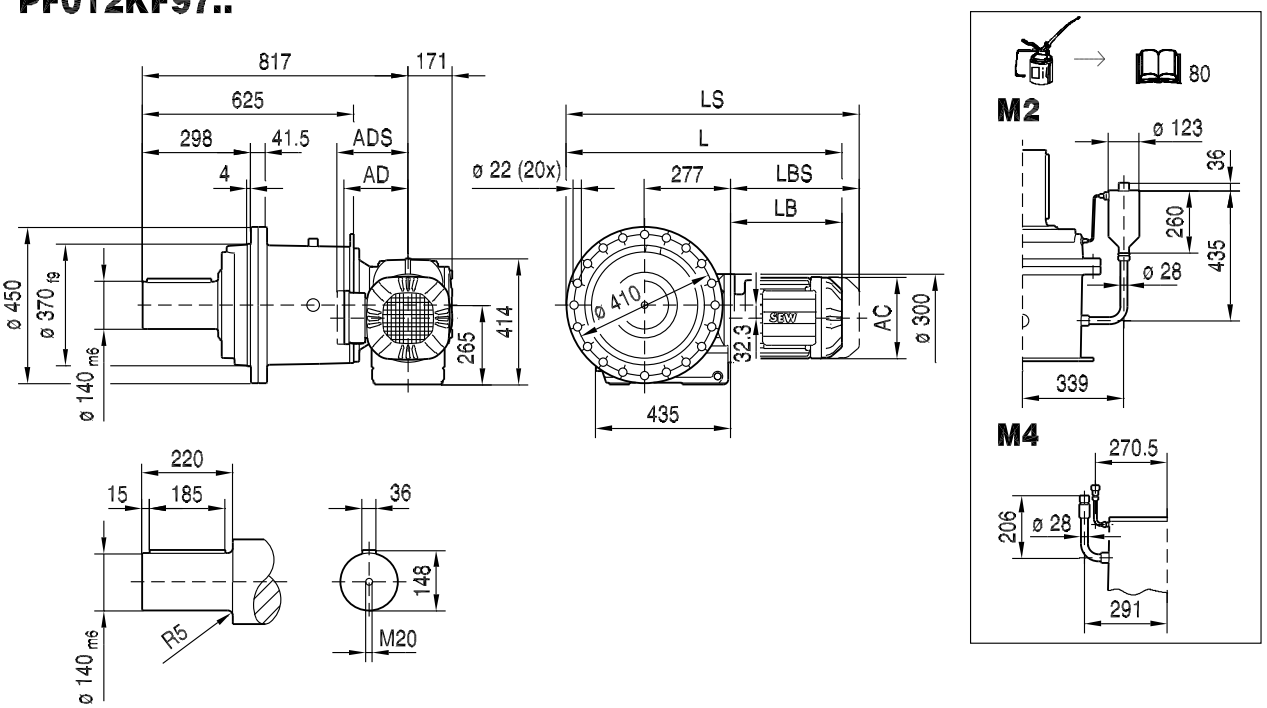
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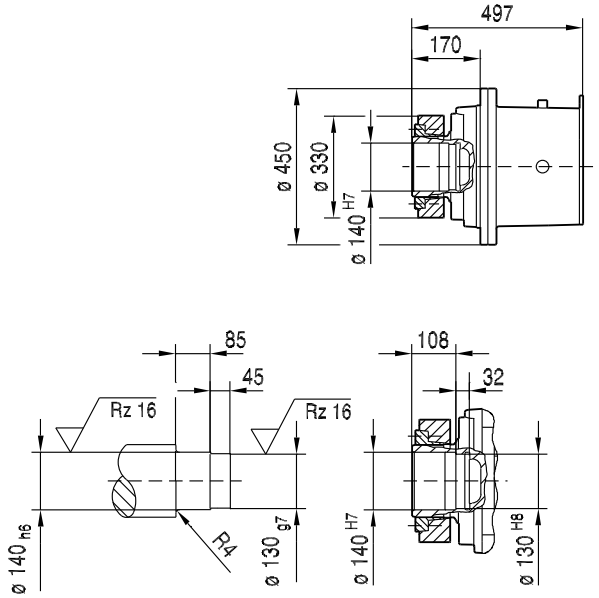
(→ 91)	DRN132M	DRN132L	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L	
AC	261	268	318	318	357	357	394	
AD	228	228	253	253	268	268	306	
ADS	228	228	253	253	268	268	306	
L	993	1018	1086	1086	1112	1112	1219	
LS	1132	1157	1275	1275	1301	1301	1424	
LB	436	461	529	529	555	555	662	
LBS	575	600	718	718	744	744	867	

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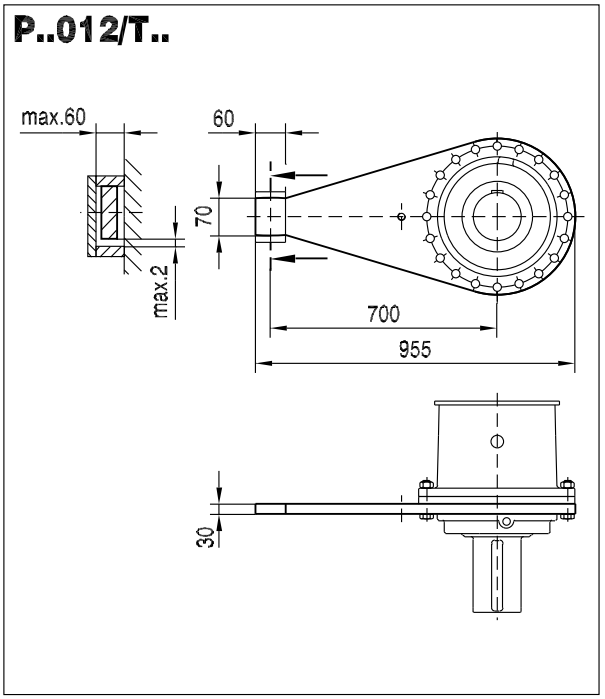
45 093 02 08



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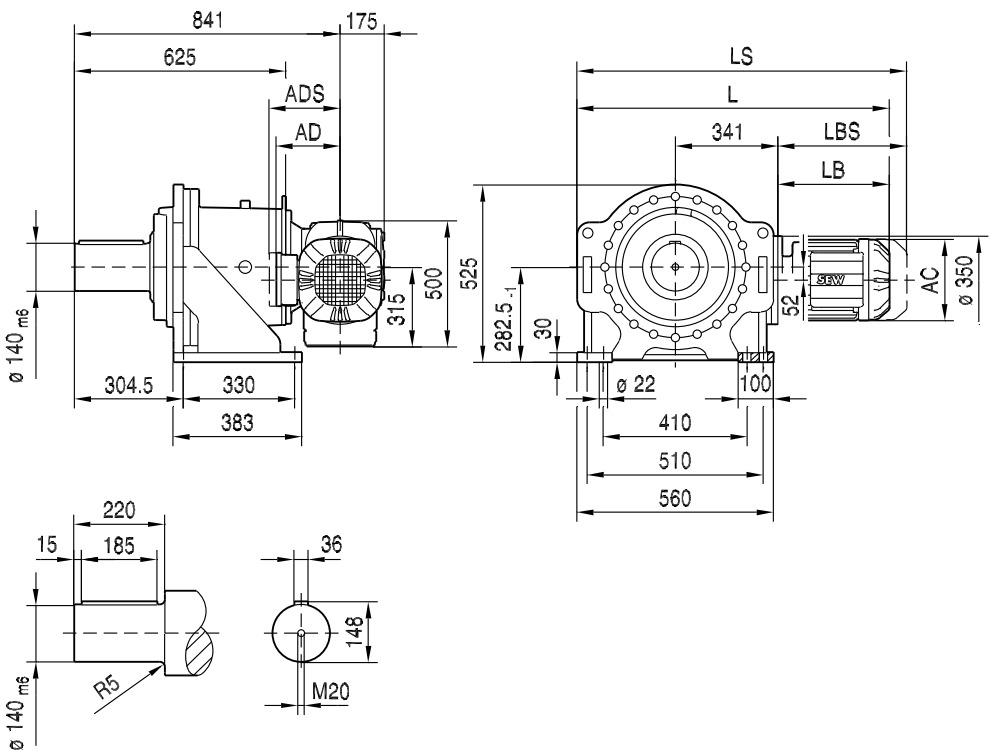


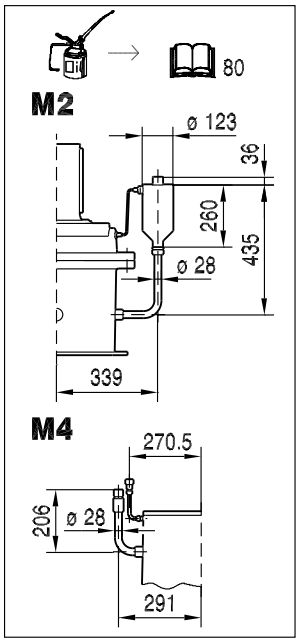
(→ 📄 91)	DRN132M	DRN132L	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L	
AC	261	268	318	318	357	357	394	
AD	228	228	253	253	268	268	306	
ADS	228	228	253	253	268	268	306	
L	938	963	1031	1031	1057	1057	1164	
LS	1077	1102	1220	1220	1246	1246	1369	
LB	436	461	529	529	555	555	662	
LBS	575	600	718	718	744	744	867	

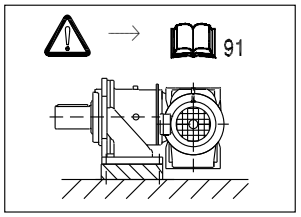
21915180/EN – 04/2015

P012KF107..

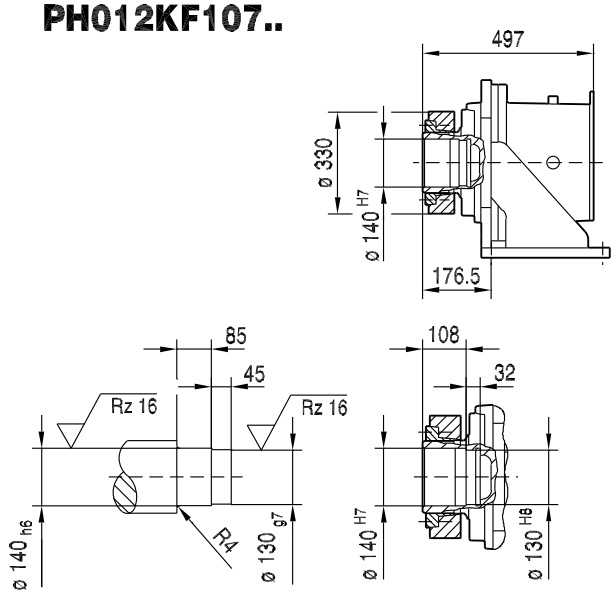
45 066 02 08







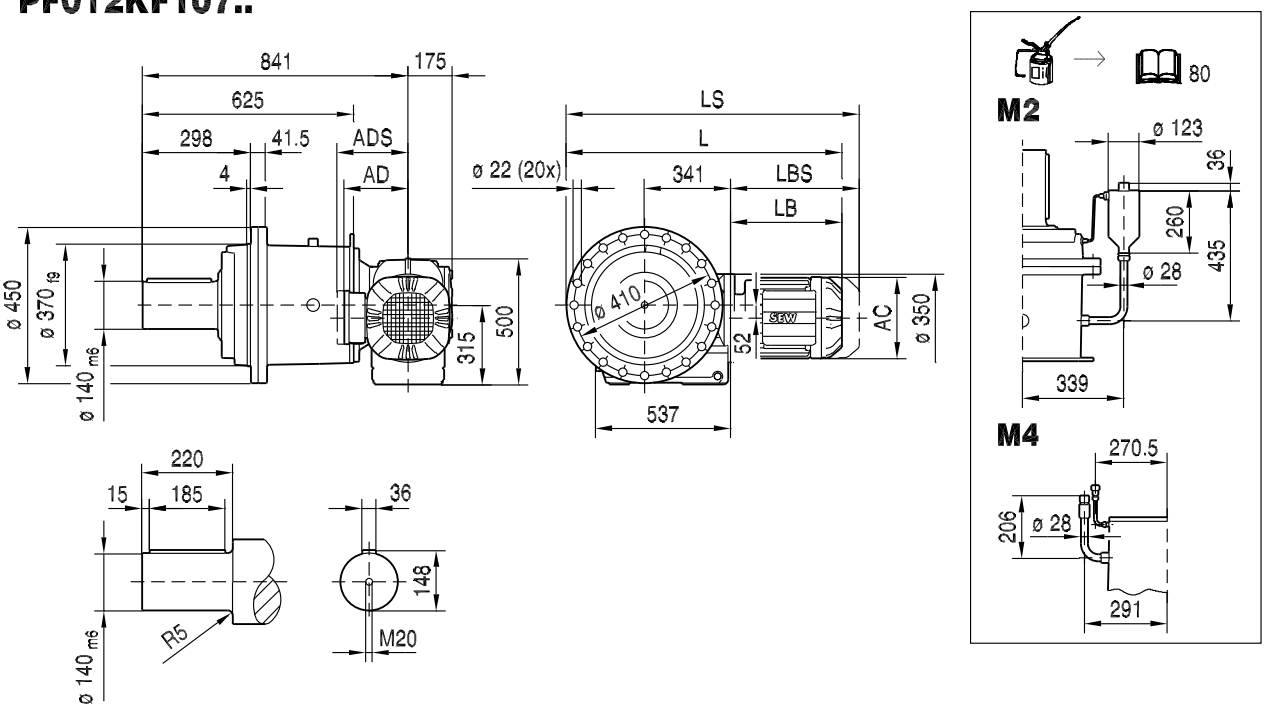
PH012KF107..



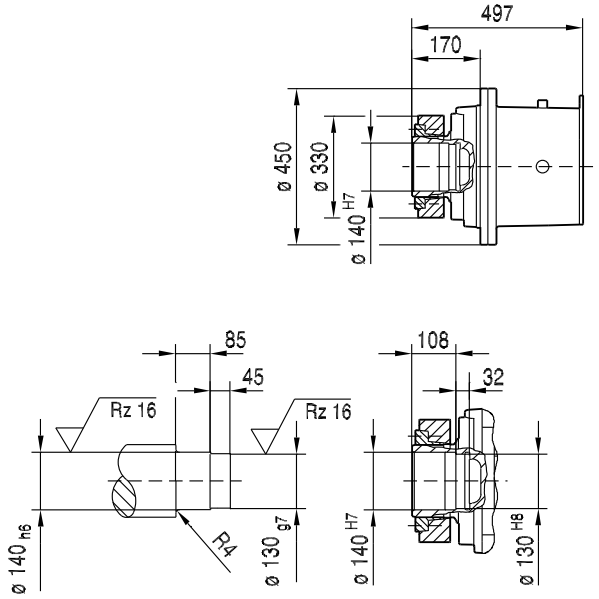
(→ 91)	DRN200L							
AC	394							
AD	306							
ADS	306							
L	1277							
LS	1482							
LB	656							
LBS	861							

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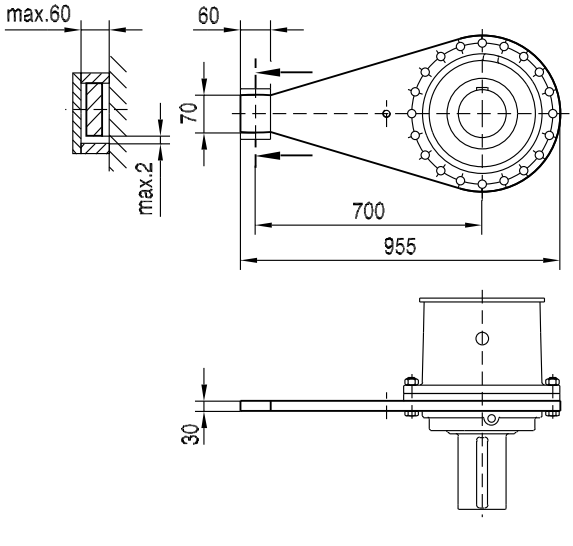
45 094 02 08



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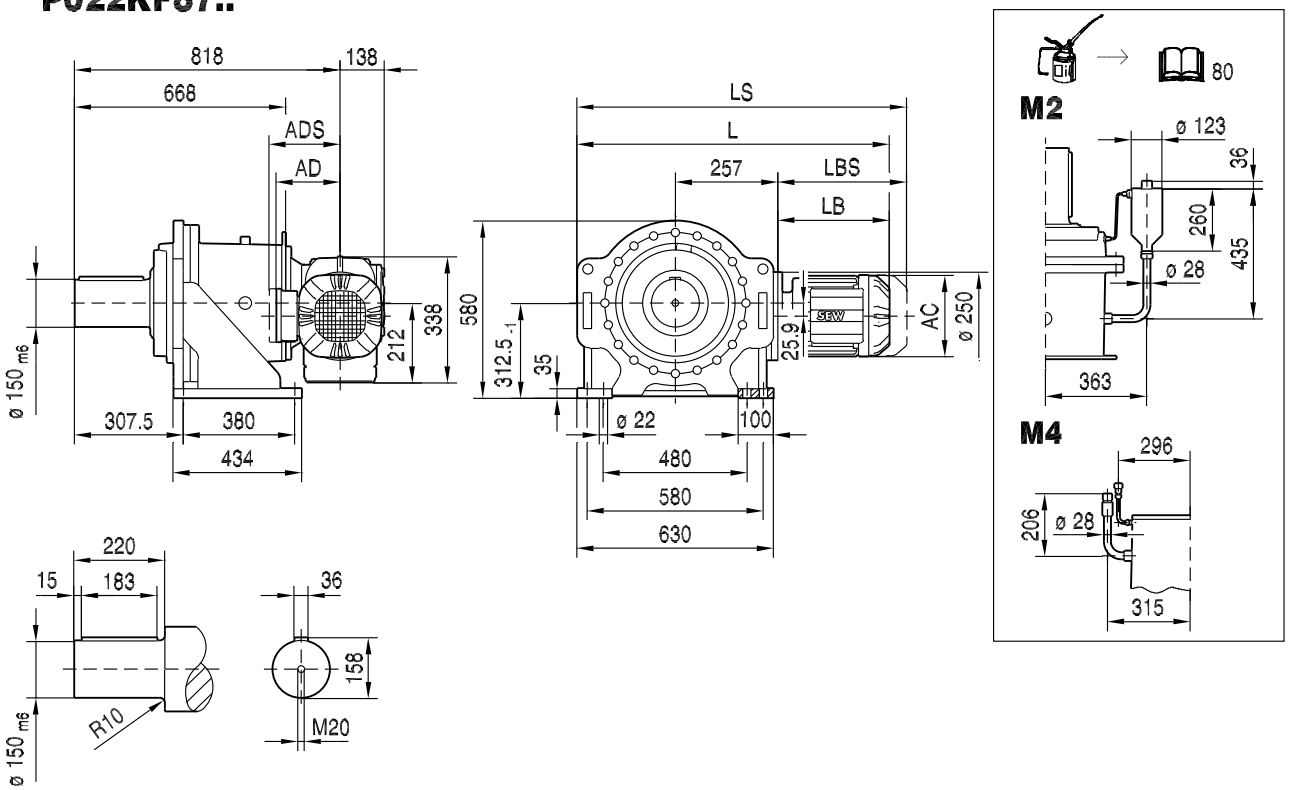


(→ 91)	DRN200L							
AC	394							
AD	306							
ADS	306							
L	1222							
LS	1427							
LB	656							
LBS	861							

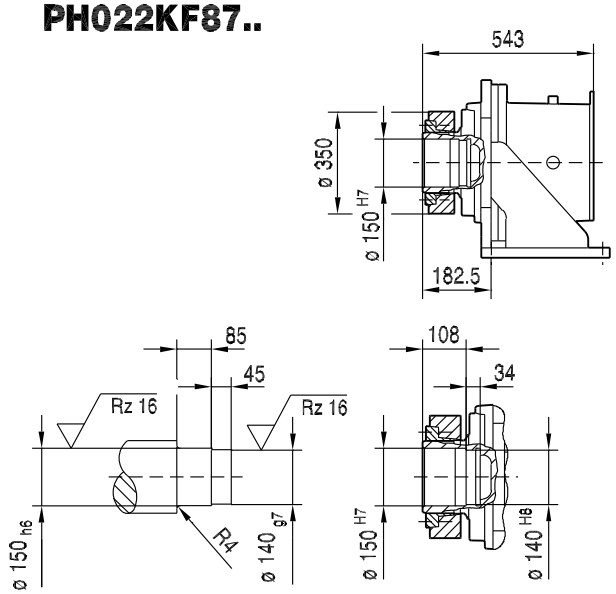
21915180/EN – 04/2015

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45 067 02 08



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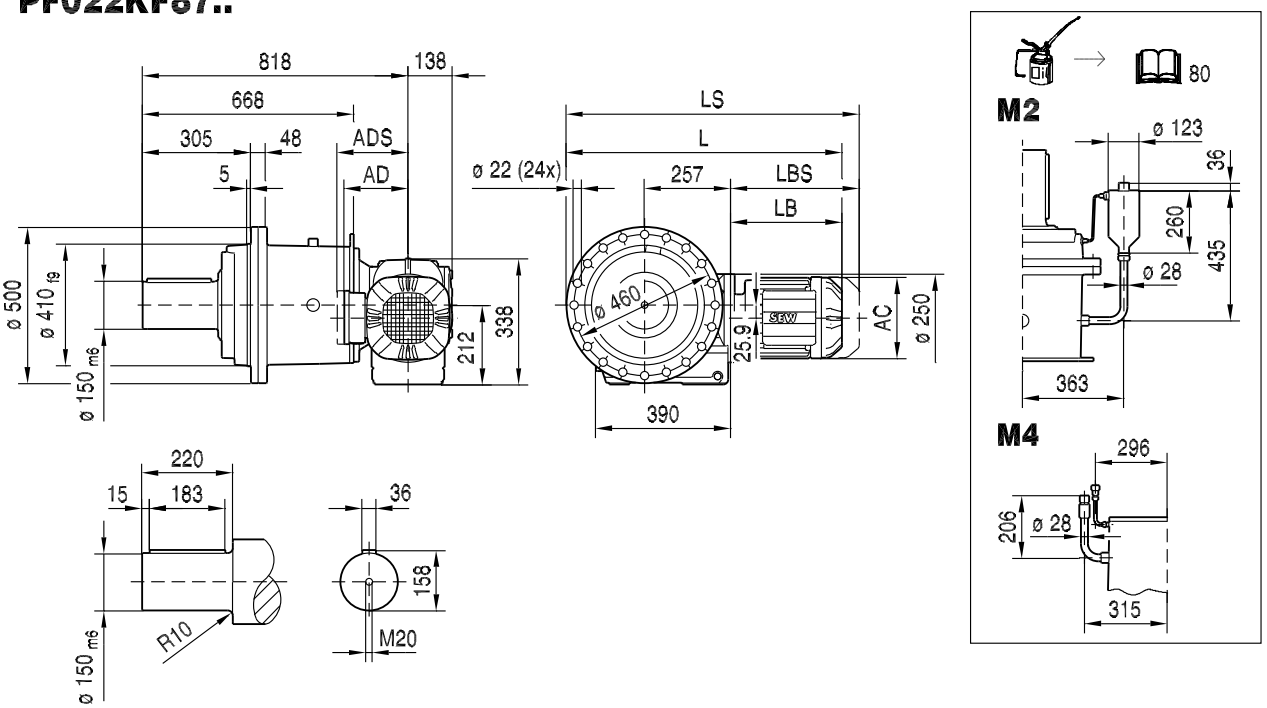


(→ 91)	DRN90S	DRN90L	DRN100LS	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M
AC	179	179	197	197	221	221	261	268	318
AD	140	140	157	157	170	170	228	228	253
ADS	150	150	158	158	172	172	228	228	253
L	837	869	865	915	946	996	1013	1038	1106
LS	930	962	959	1009	1058	1108	1152	1177	1295
LB	265	297	293	343	374	424	441	466	534
LBS	358	390	387	437	486	536	580	605	723

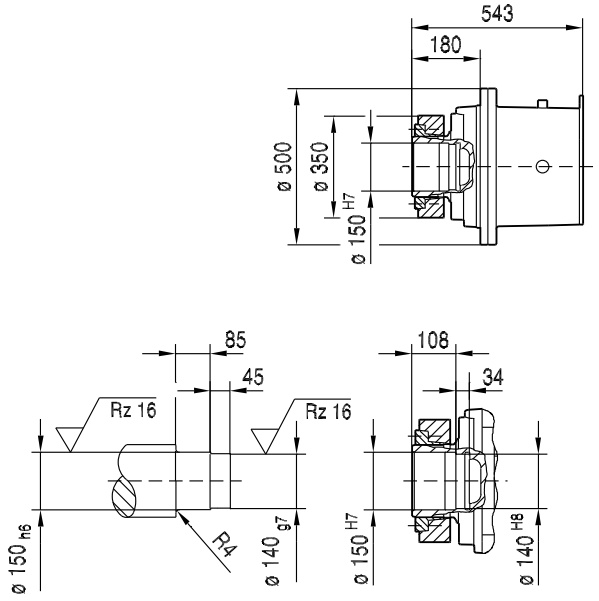
21915180/EN – 04/2015

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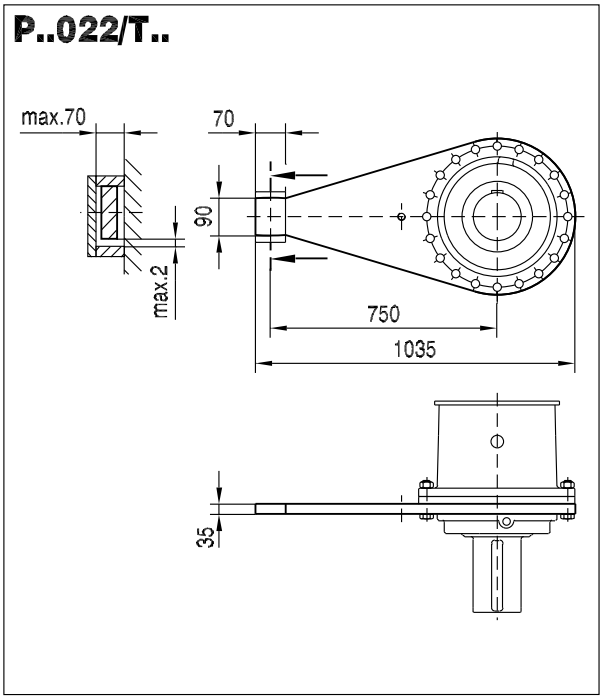
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P..022/T..

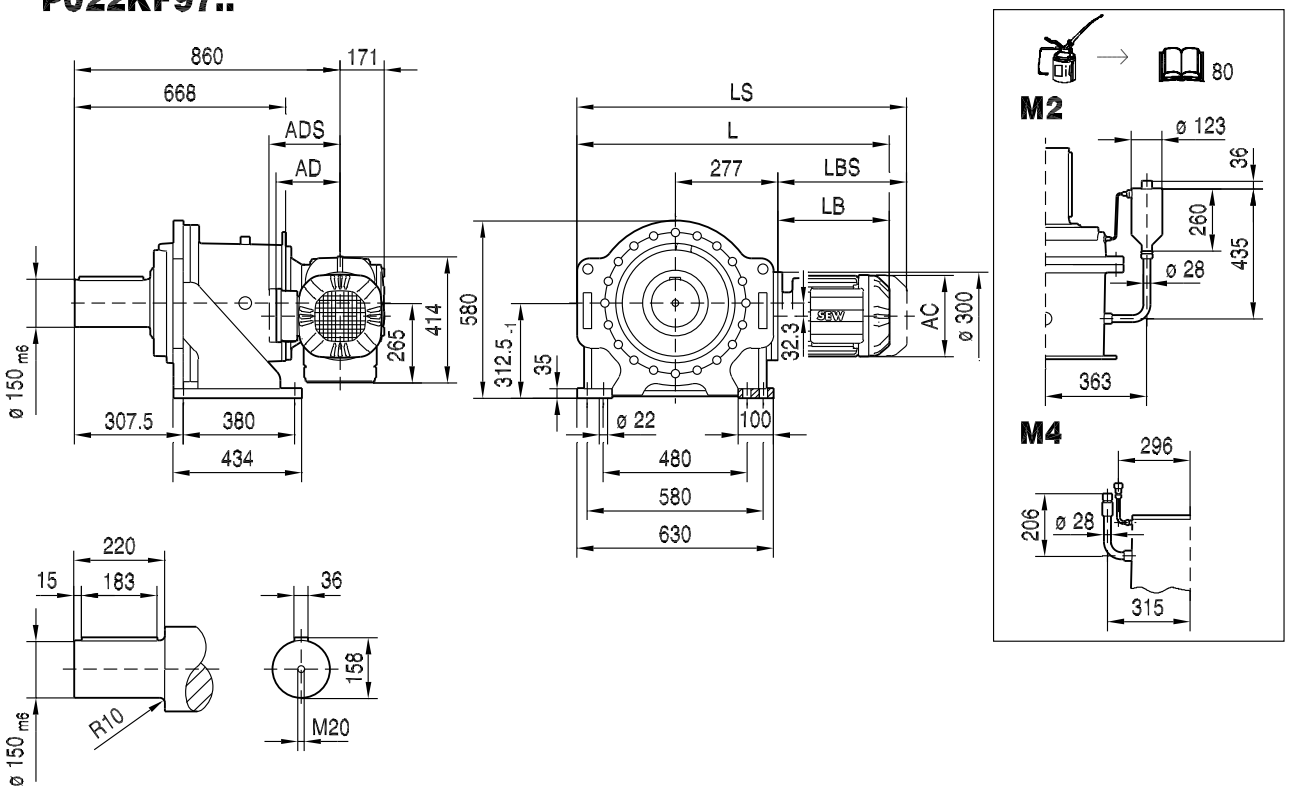


(→ 📄 91)	DRN90S	DRN90L	DRN100LS	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M
AC	179	179	197	197	221	221	261	268	318
AD	140	140	157	157	170	170	228	228	253
ADS	150	150	158	158	172	172	228	228	253
L	772	804	800	850	881	931	948	973	1041
LS	865	897	894	944	993	1043	1087	1112	1230
LB	265	297	293	343	374	424	441	466	534
LBS	358	390	387	437	486	536	580	605	723

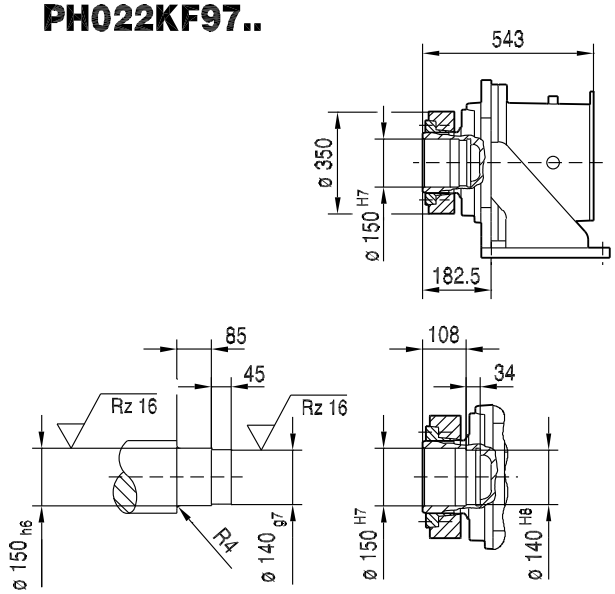
21915180/EN – 04/2015

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45 068 02 08



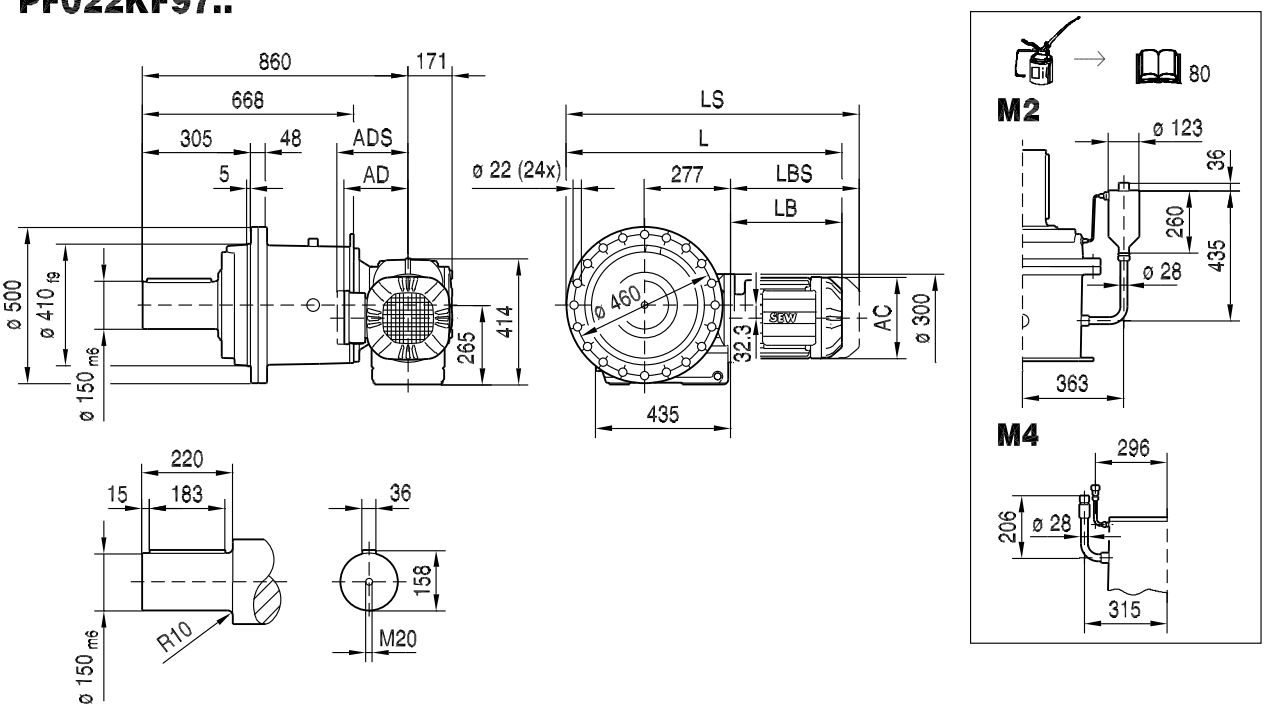
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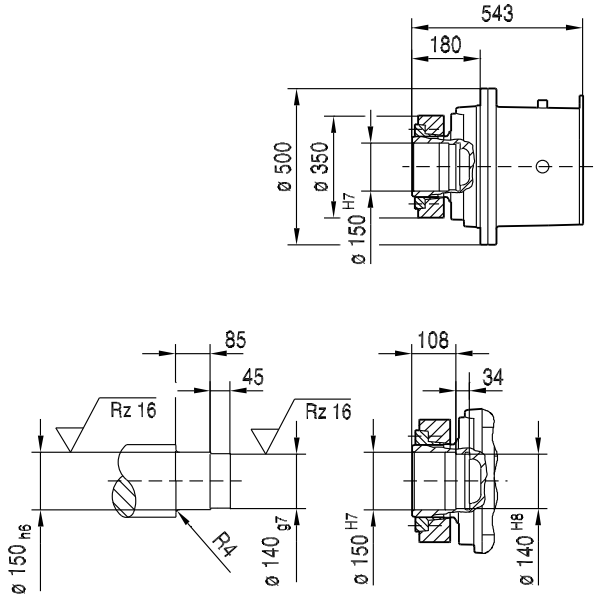
(→ 91)	DRN132M	DRN132L	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L	
AC	261	268	318	318	357	357	394	
AD	228	228	253	253	268	268	306	
ADS	228	228	253	253	268	268	306	
L	1028	1053	1121	1121	1147	1147	1254	
LS	1167	1192	1310	1310	1336	1336	1459	
LB	436	461	529	529	555	555	662	
LBS	575	600	718	718	744	744	867	

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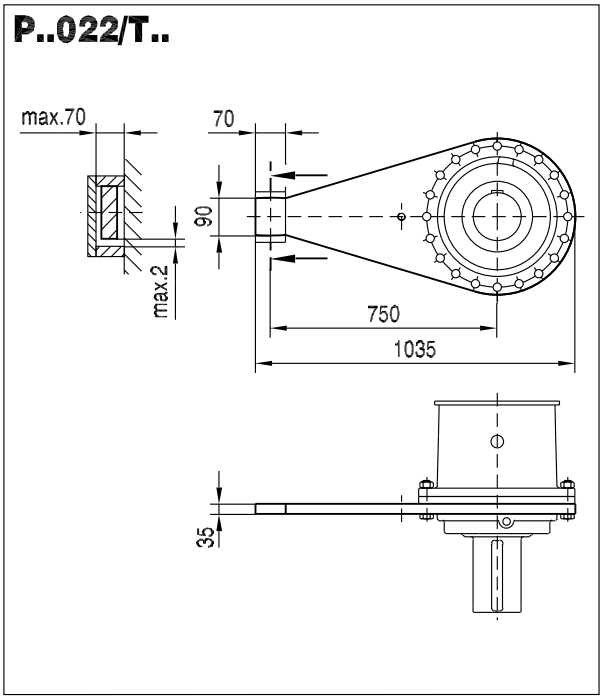
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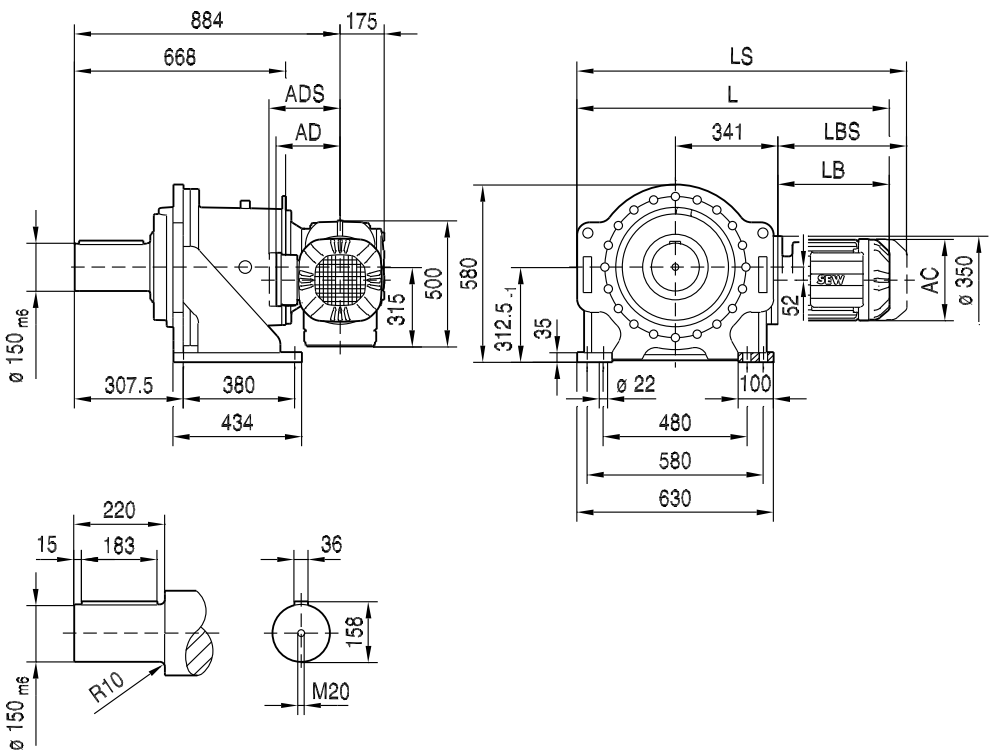


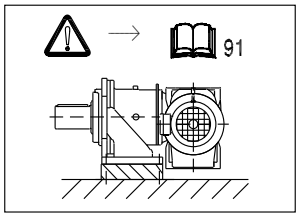
(→ 📄 91)	DRN132M	DRN132L	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L	
AC	261	268	318	318	357	357	394	
AD	228	228	253	253	268	268	306	
ADS	228	228	253	253	268	268	306	
L	963	988	1056	1056	1082	1082	1189	
LS	1102	1127	1245	1245	1271	1271	1394	
LB	436	461	529	529	555	555	662	
LBS	575	600	718	718	744	744	867	

21915180/EN – 04/2015

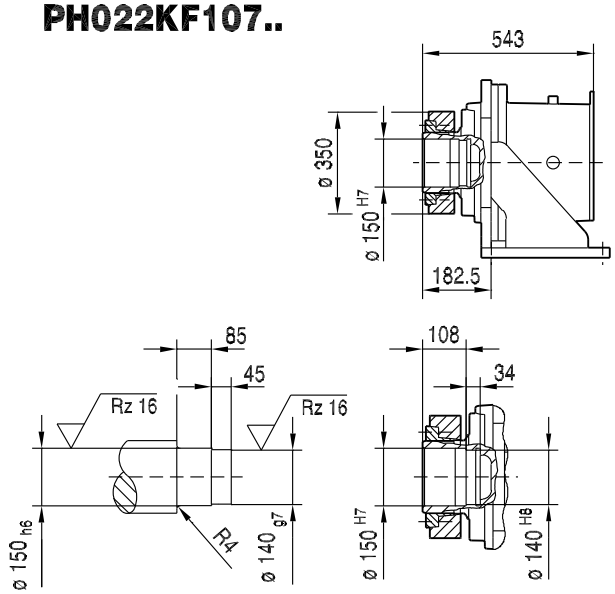
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45 069 02 08





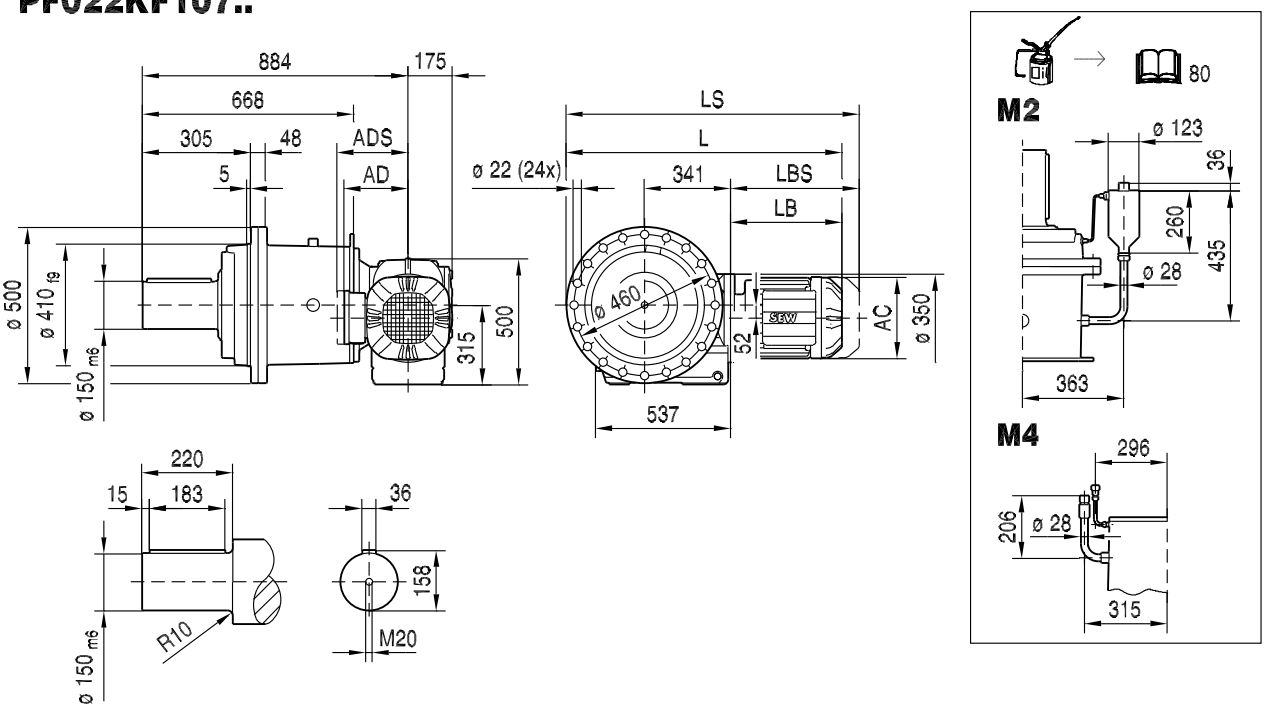
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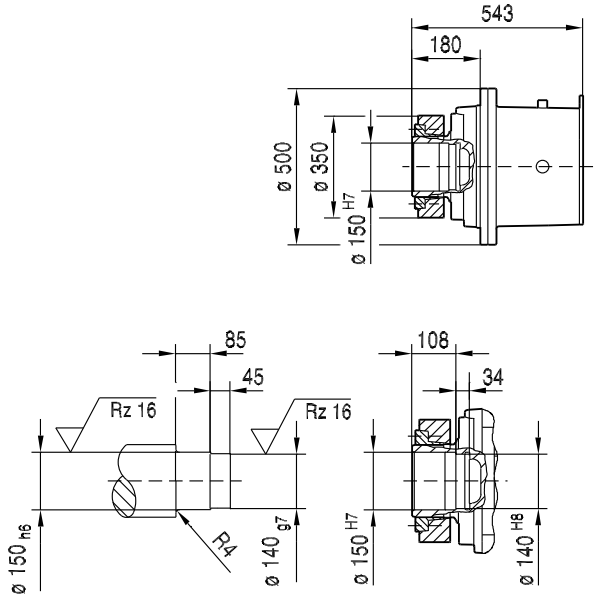
(→ 91)	DRN180L	DRN200L	DRN225					
AC	357	394	434					
AD	268	306	306					
ADS	268	306	306					
L	1205	1312	1267					
LS	1394	1517	1472					
LB	549	656	611					
LBS	738	861	816					

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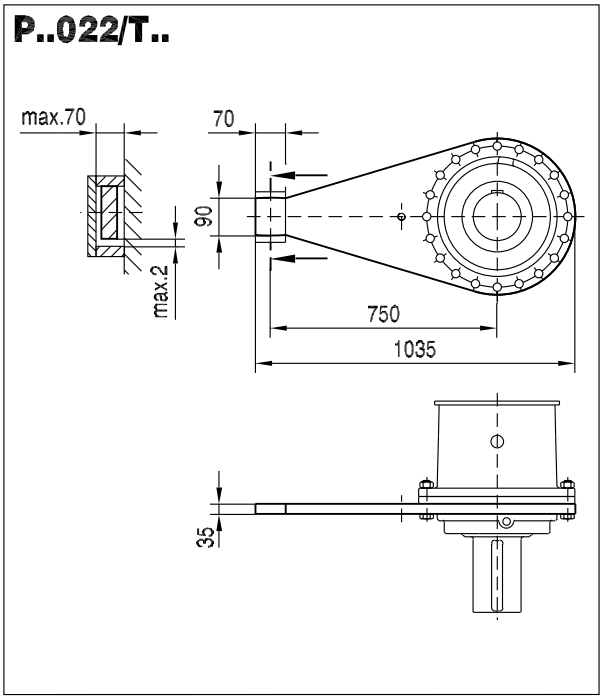
45 097 02 08



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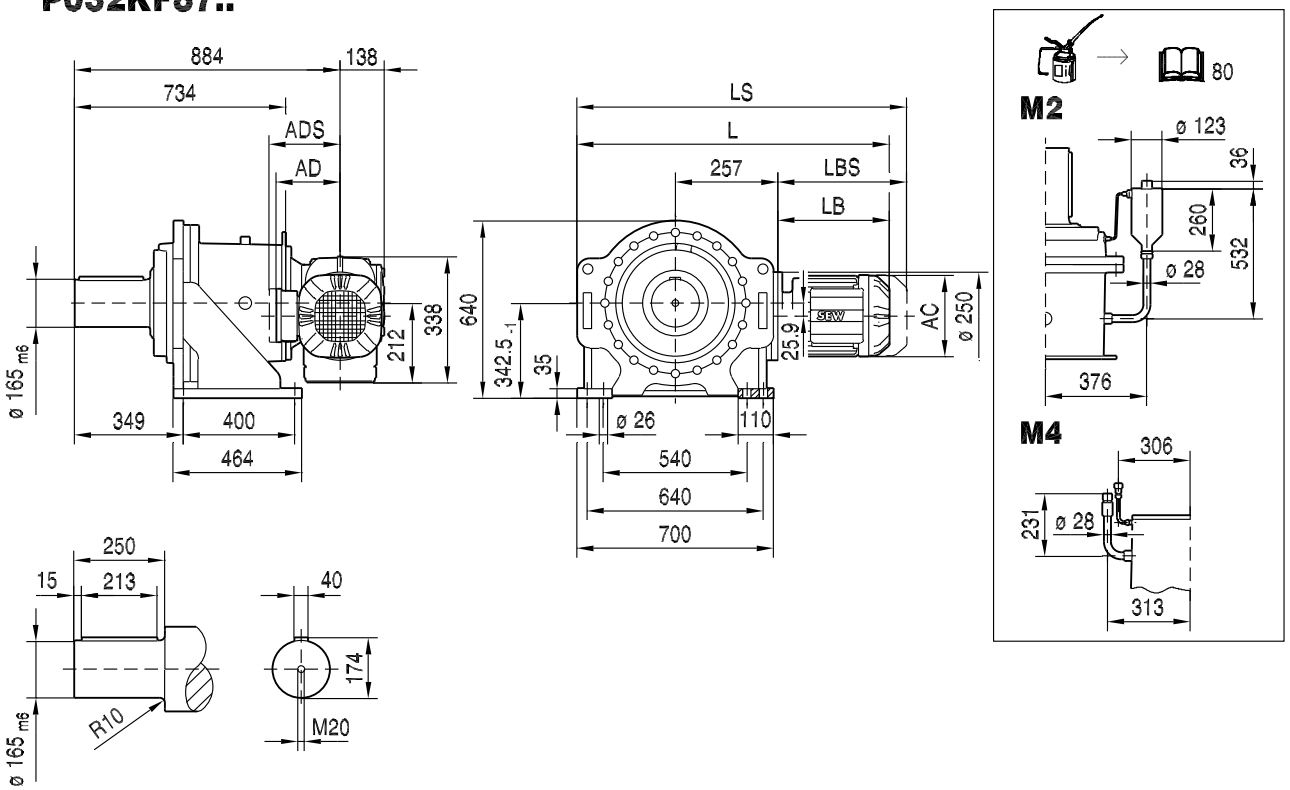


(→ 📄 91)	DRN180L	DRN200L	DRN225					
AC	357	394	434					
AD	268	306	306					
ADS	268	306	306					
L	1140	1247	1202					
LS	1329	1452	1407					
LB	549	656	611					
LBS	738	861	816					

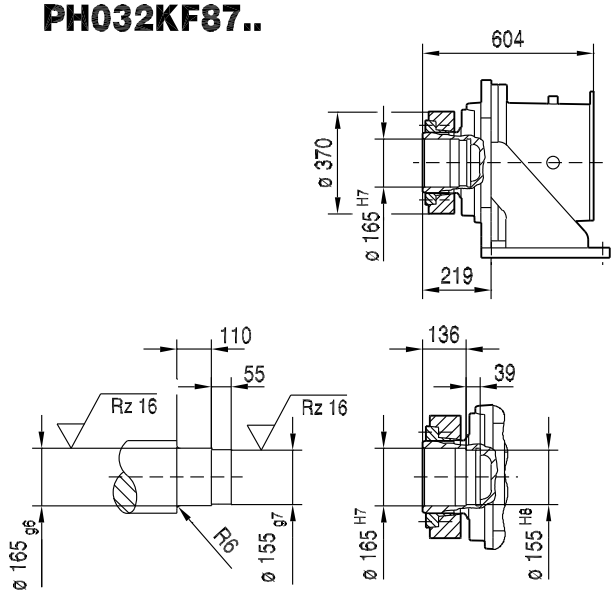
21915180/EN – 04/2015

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45 070 02 08



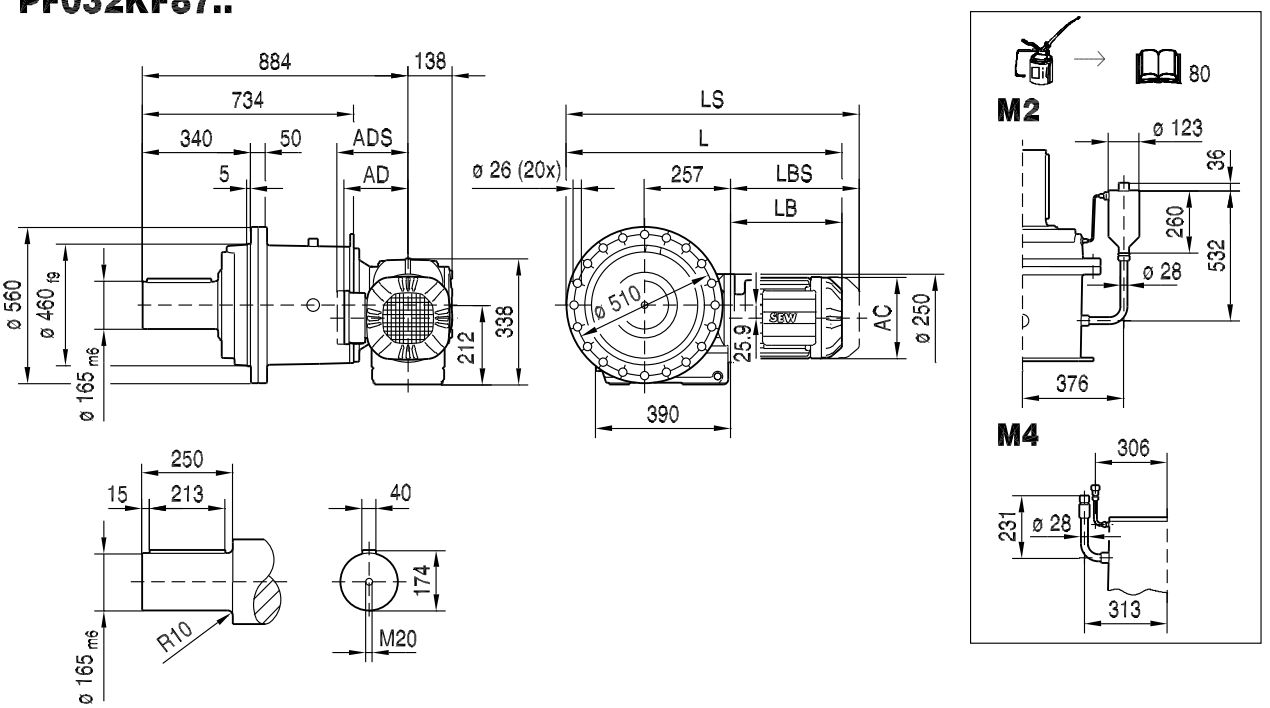
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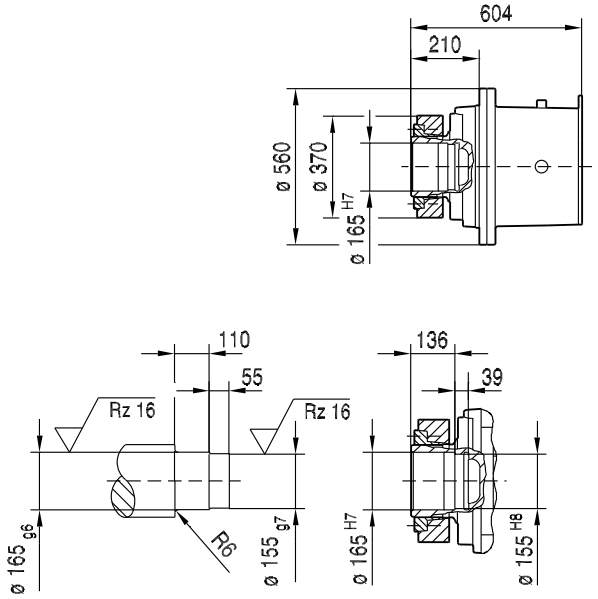
(→ 91)	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L			
AC	197	221	221	261	268			
AD	157	170	170	228	228			
ADS	158	172	172	228	228			
L	950	981	1031	1048	1073			
LS	1044	1093	1143	1187	1212			
LB	343	374	424	441	466			
LBS	437	486	536	580	605			

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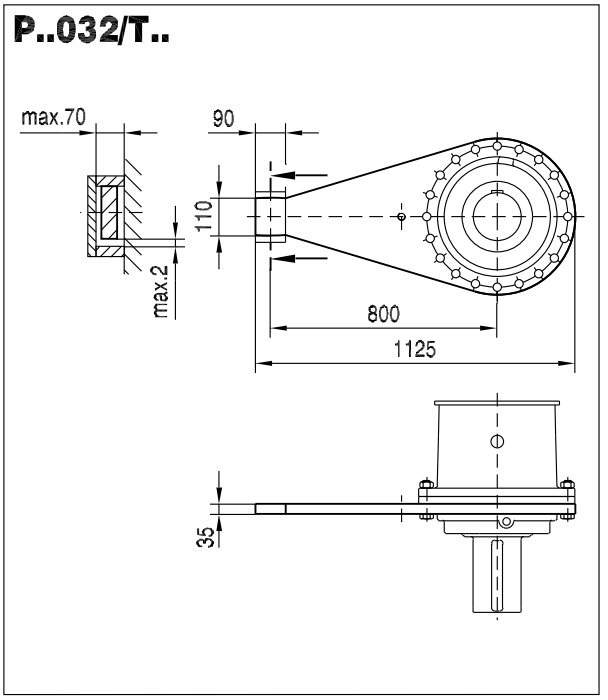
45 098 02 08



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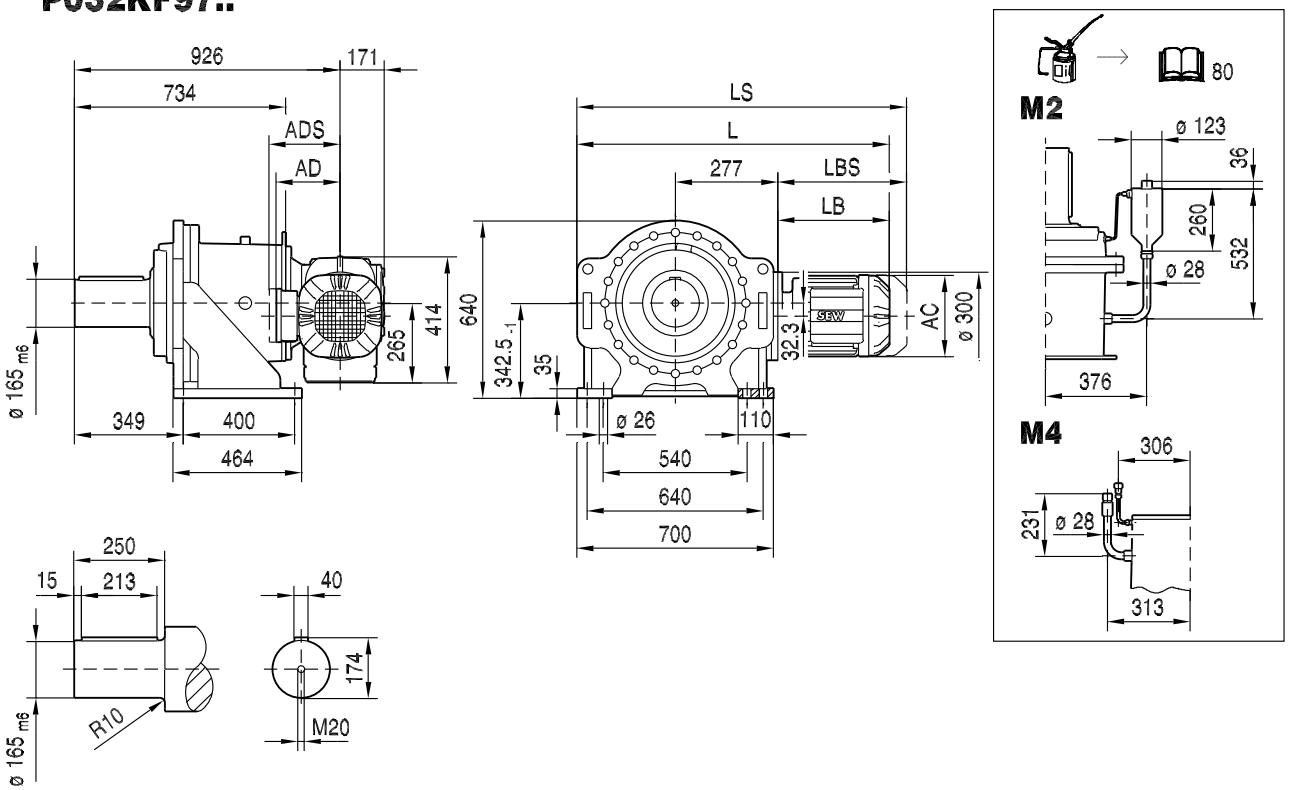


(→ 91)	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L			
AC	197	221	221	261	268			
AD	157	170	170	228	228			
ADS	158	172	172	228	228			
L	880	911	961	978	1003			
LS	974	1023	1073	1117	1142			
LB	343	374	424	441	466			
LBS	437	486	536	580	605			

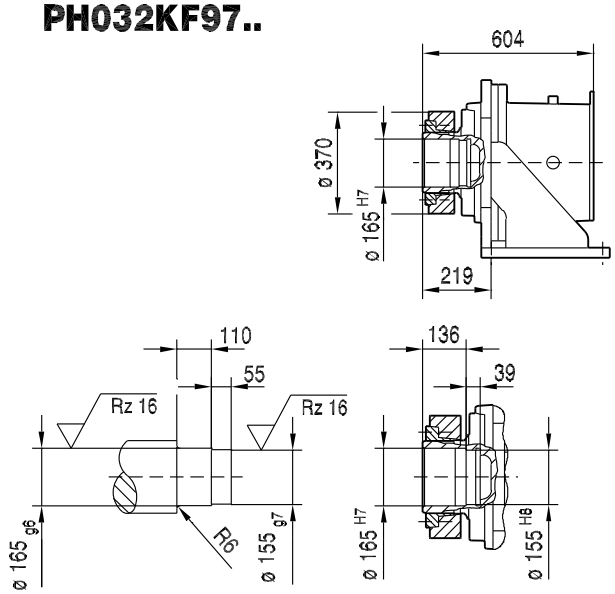
21915180/EN – 04/2015

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45 071 02 08



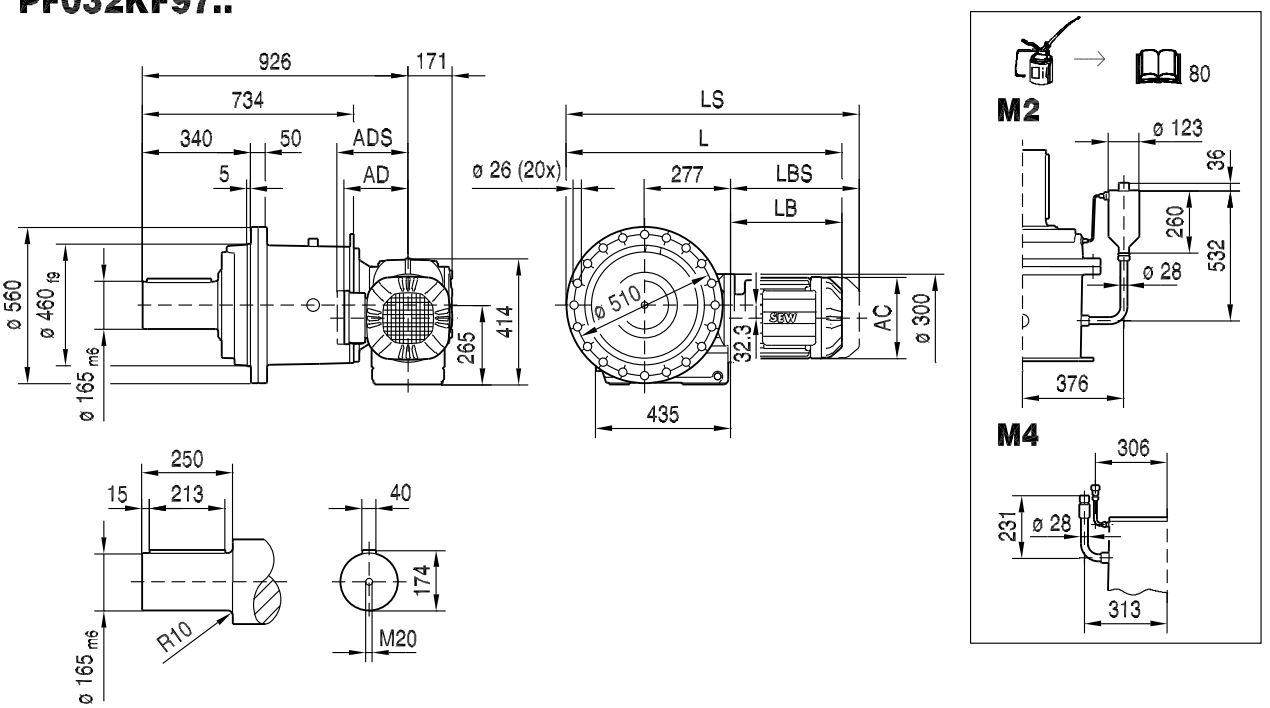
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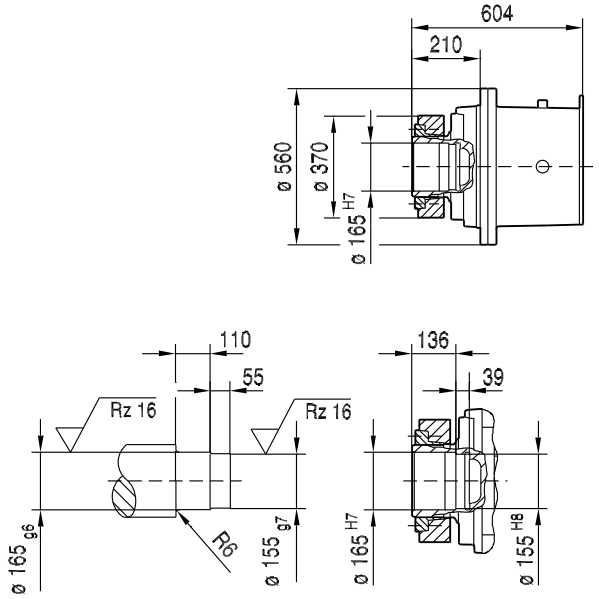
(→ 91)	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L
AC	197	221	221	261	268	318	318	357	357	394
AD	157	170	170	228	228	253	253	268	268	306
ADS	158	172	172	228	228	253	253	268	268	306
L	965	996	1046	1063	1088	1156	1156	1182	1182	1289
LS	1059	1108	1158	1202	1227	1345	1345	1371	1371	1494
LB	338	369	419	436	461	529	529	555	555	662
LBS	432	481	531	575	600	718	718	744	744	867

PF032KF97..

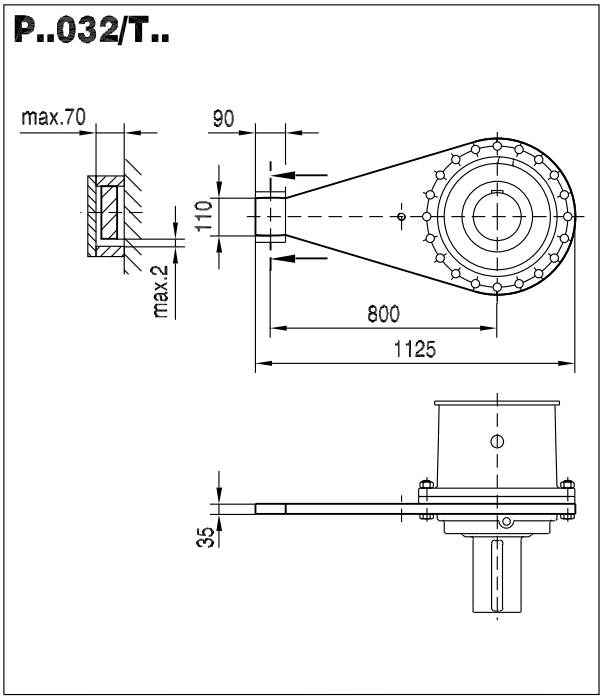
45 099 02 08



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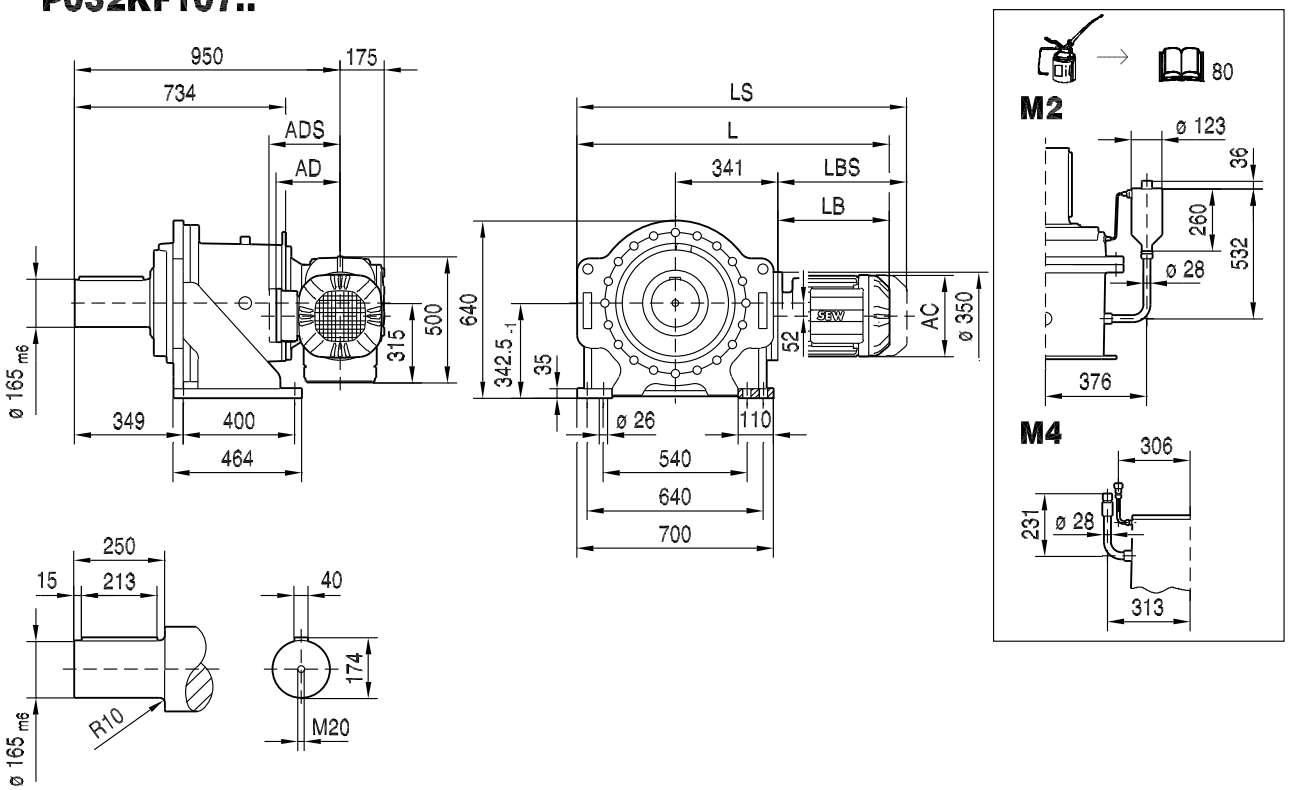


(→ 📄 91)	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L
AC	197	221	221	261	268	318	318	357	357	394
AD	157	170	170	228	228	253	253	268	268	306
ADS	158	172	172	228	228	253	253	268	268	306
L	895	926	976	993	1018	1086	1086	1112	1112	1219
LS	989	1038	1088	1132	1157	1275	1275	1301	1301	1424
LB	338	369	419	436	461	529	529	555	555	662
LBS	432	481	531	575	600	718	718	744	744	867

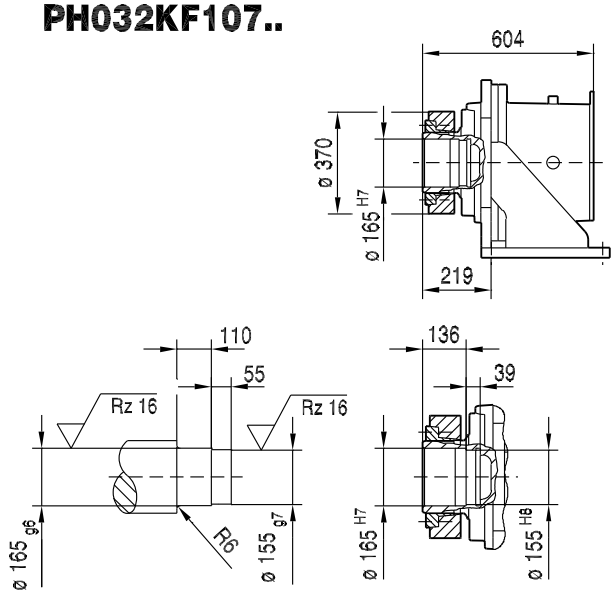
21915180/EN – 04/2015

P032KF107..

45 072 02 08



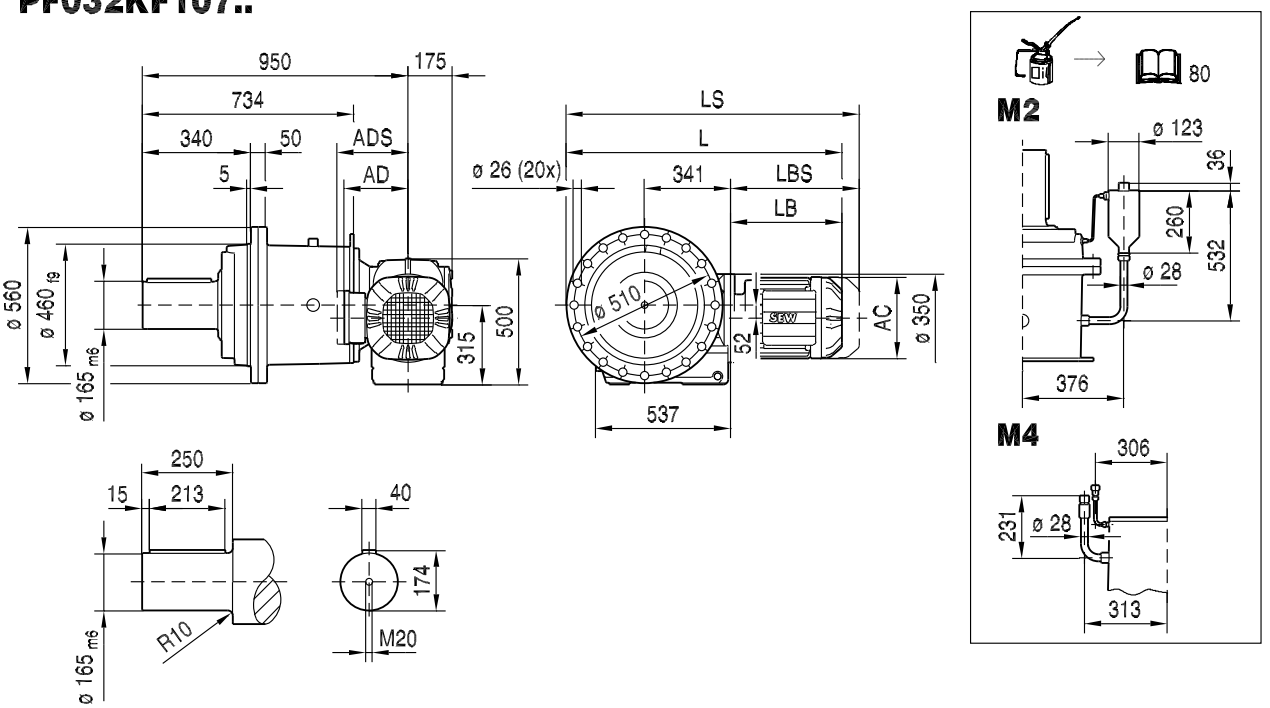
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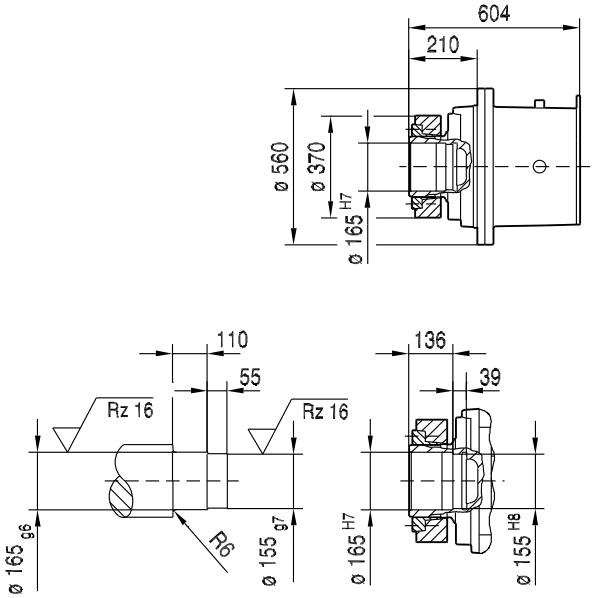
(→ 📄 91)	DRN180L	DRN200L	DRN225					
AC	357	394	434					
AD	268	306	306					
ADS	268	306	306					
L	1240	1347	1302					
LS	1429	1552	1507					
LB	549	656	611					
LBS	738	861	816					

PF032KF107..

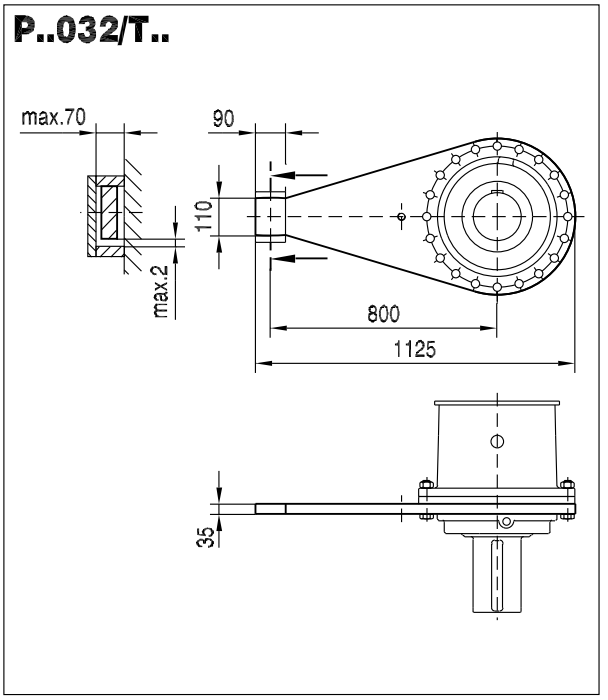
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P..032/T..

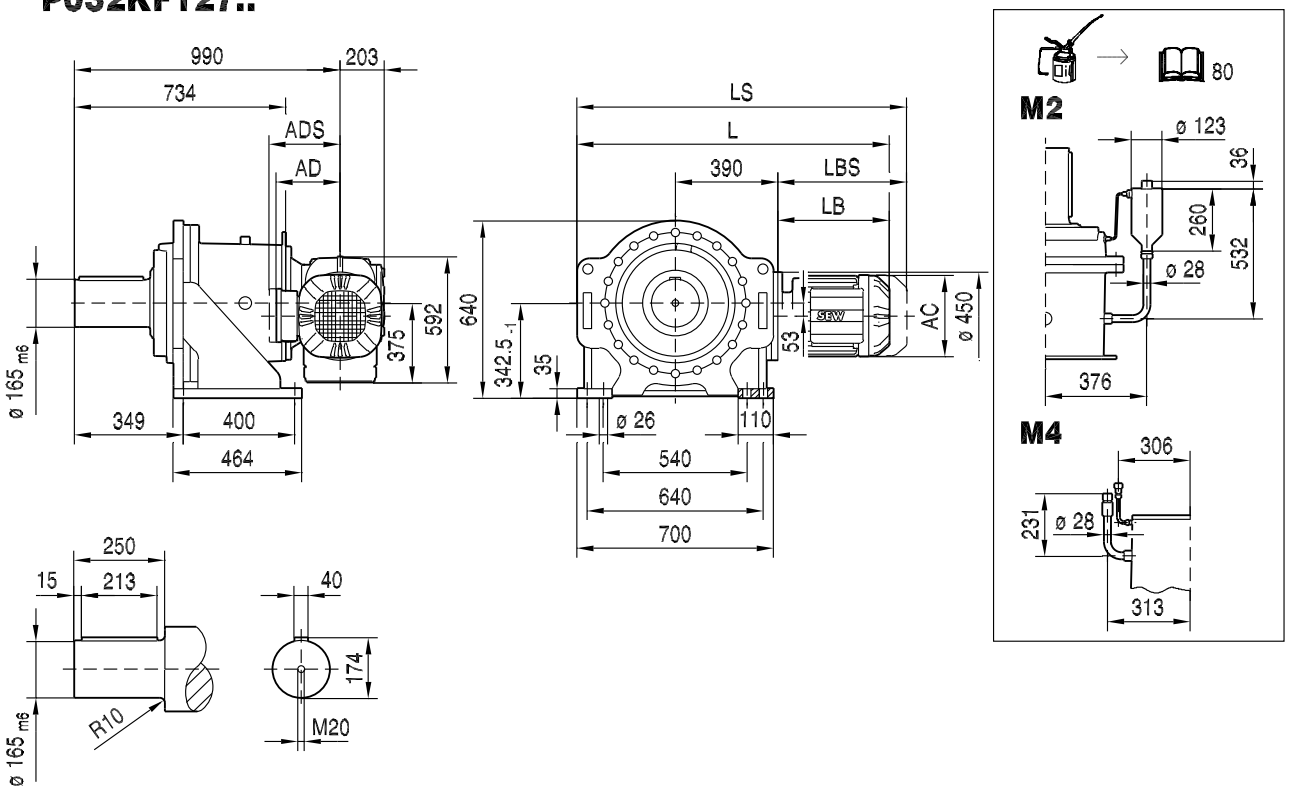


(→ 91)	DRN180L	DRN200L	DRN225					
AC	357	394	434					
AD	268	306	306					
ADS	268	306	306					
L	1170	1277	1232					
LS	1359	1482	1437					
LB	549	656	611					
LBS	738	861	816					

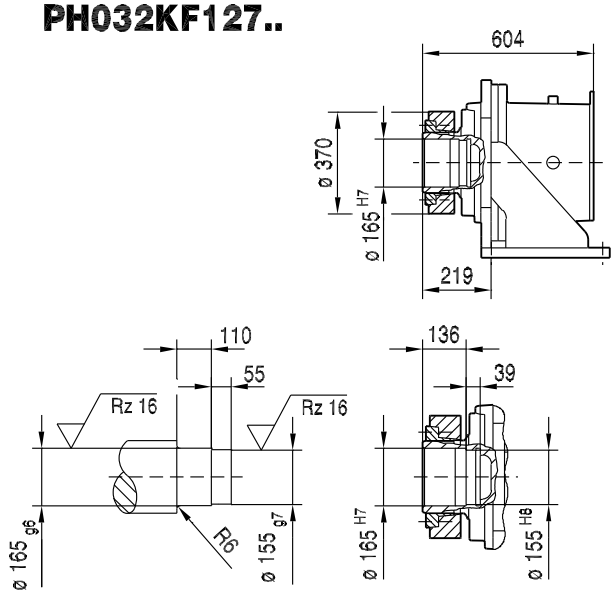
21915180/EN – 04/2015

P032KF127..

45 073 02 08



PH032KF127..

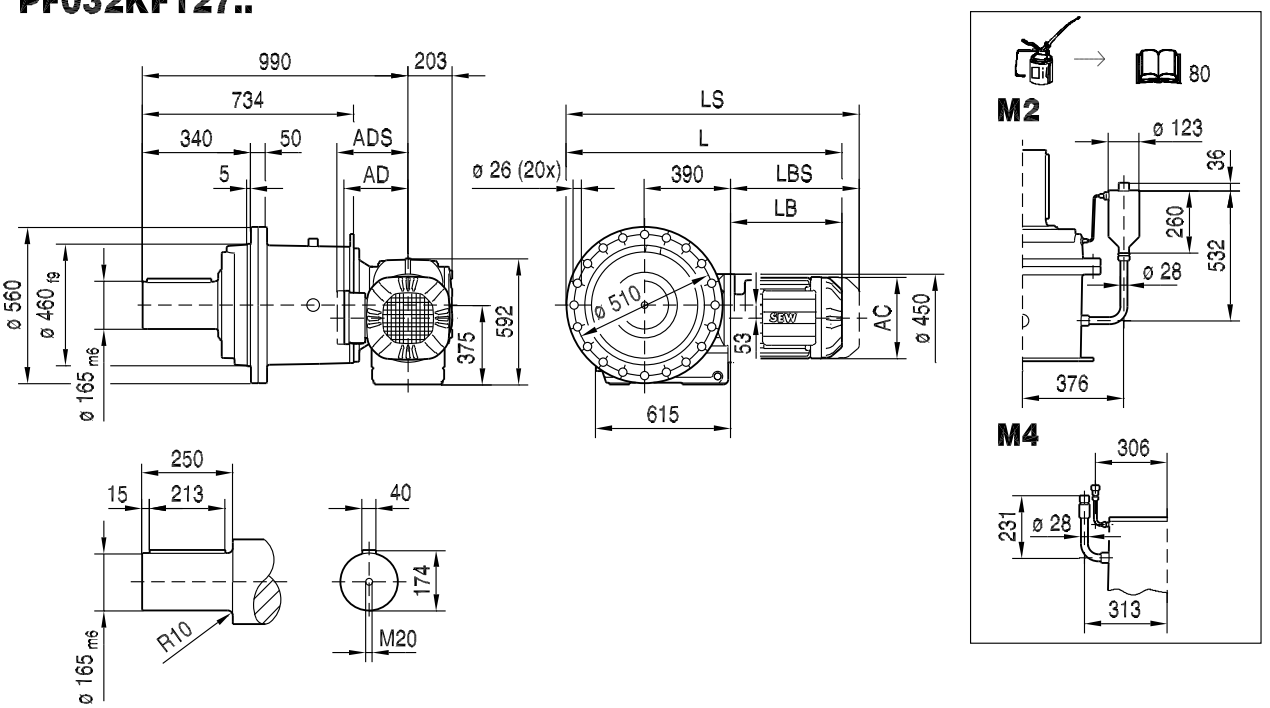


(→ 91)	DRN180L	DRN200L	DRN225	DRN250M				
AC	357	394	434	495				
AD	268	306	306	394				
ADS	268	306	306	394				
L	1274	1381	1336	1492				
LS	1463	1586	1541	1732				
LB	534	641	596	752				
LBS	723	846	801	992				

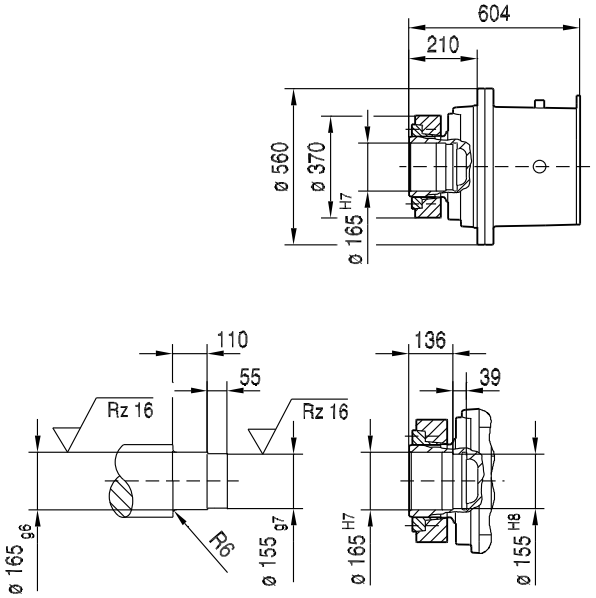
21915180/EN – 04/2015

PF032KF127..

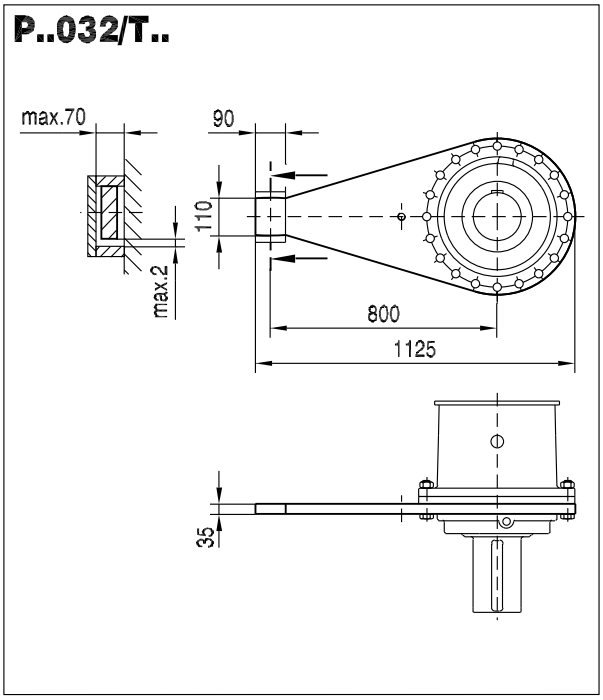
45 101 02 08



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P..032/T..

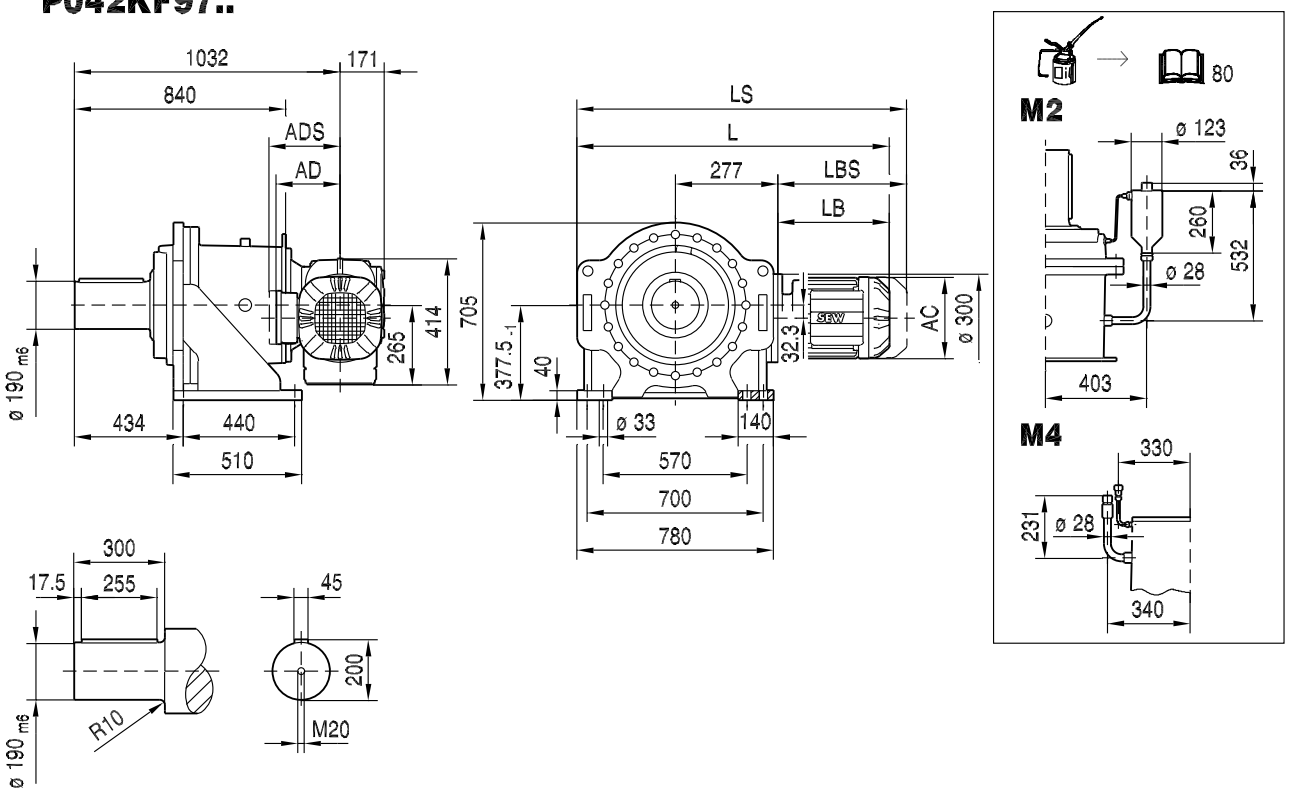


(→ 📄 91)	DRN180L	DRN200L	DRN225	DRN250M				
AC	357	394	434	495				
AD	268	306	306	394				
ADS	268	306	306	394				
L	1204	1311	1266	1422				
LS	1393	1516	1471	1662				
LB	534	641	596	752				
LBS	723	846	801	992				

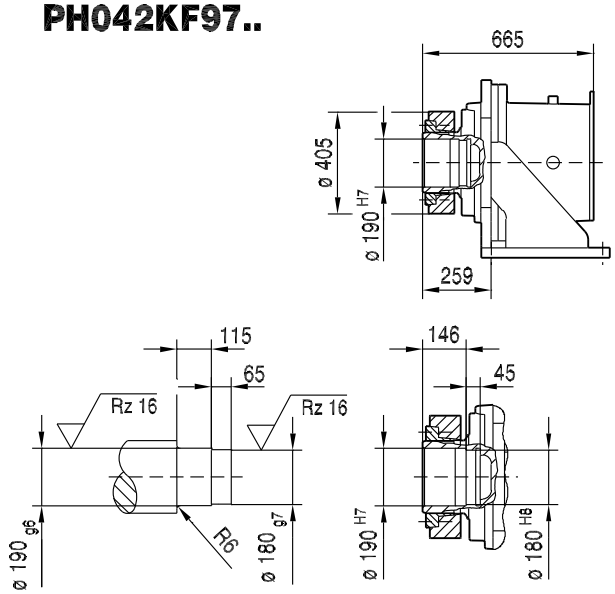
21915180/EN – 04/2015

P042KF97..

45 074 02 08



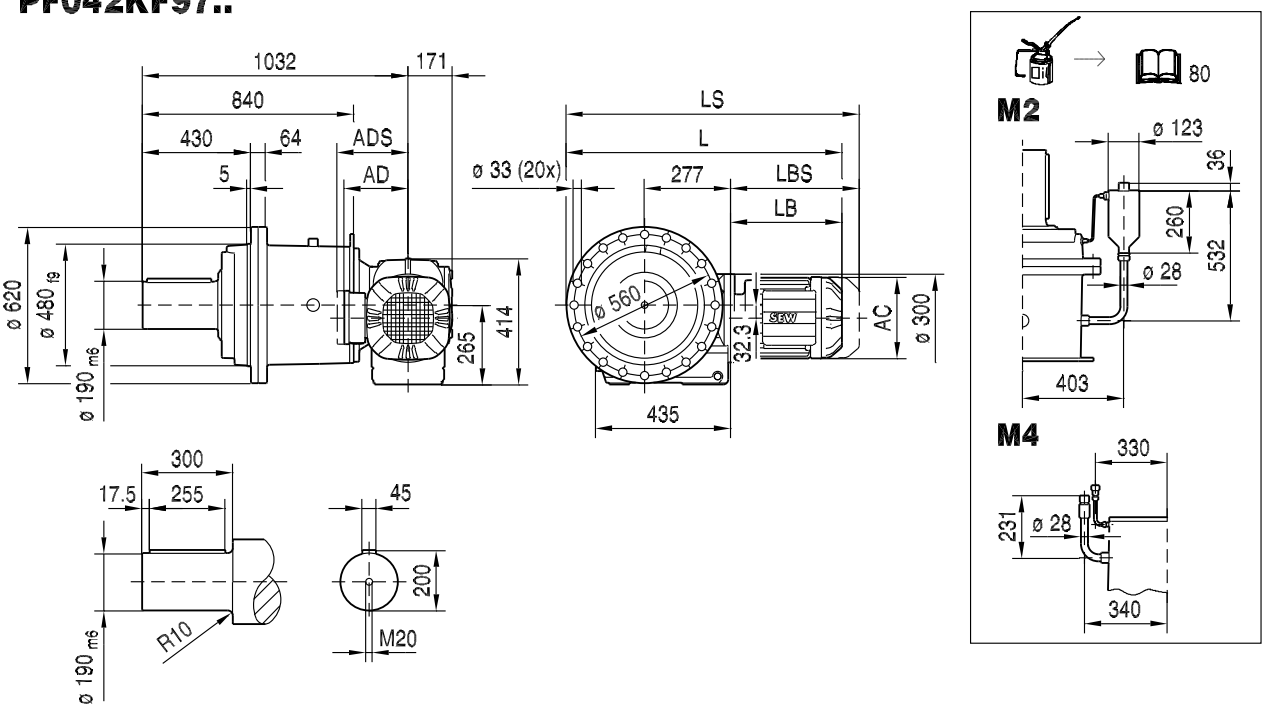
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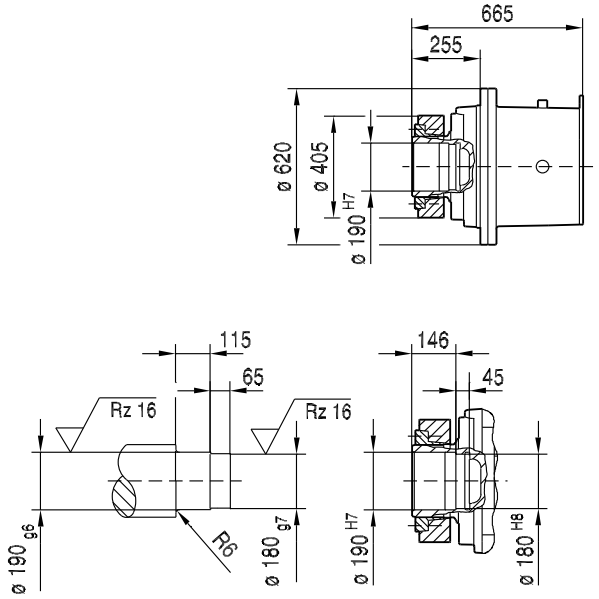
(→ 91)	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180M	DRN180L
AC	197	221	221	261	268	318	318	357	357
AD	157	170	170	228	228	253	253	268	268
ADS	158	172	172	228	228	253	253	268	268
L	1005	1036	1086	1103	1128	1196	1196	1222	1222
LS	1099	1148	1198	1242	1267	1385	1385	1411	1411
LB	338	369	419	436	461	529	529	555	555
LBS	432	481	531	575	600	718	718	744	744

PF042KF97..

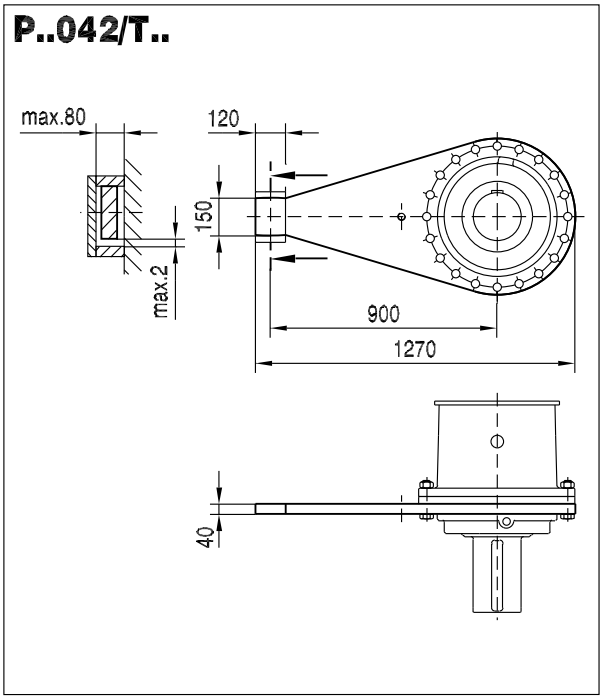
45 102 02 08



PHF042KF97..



P..042/T..

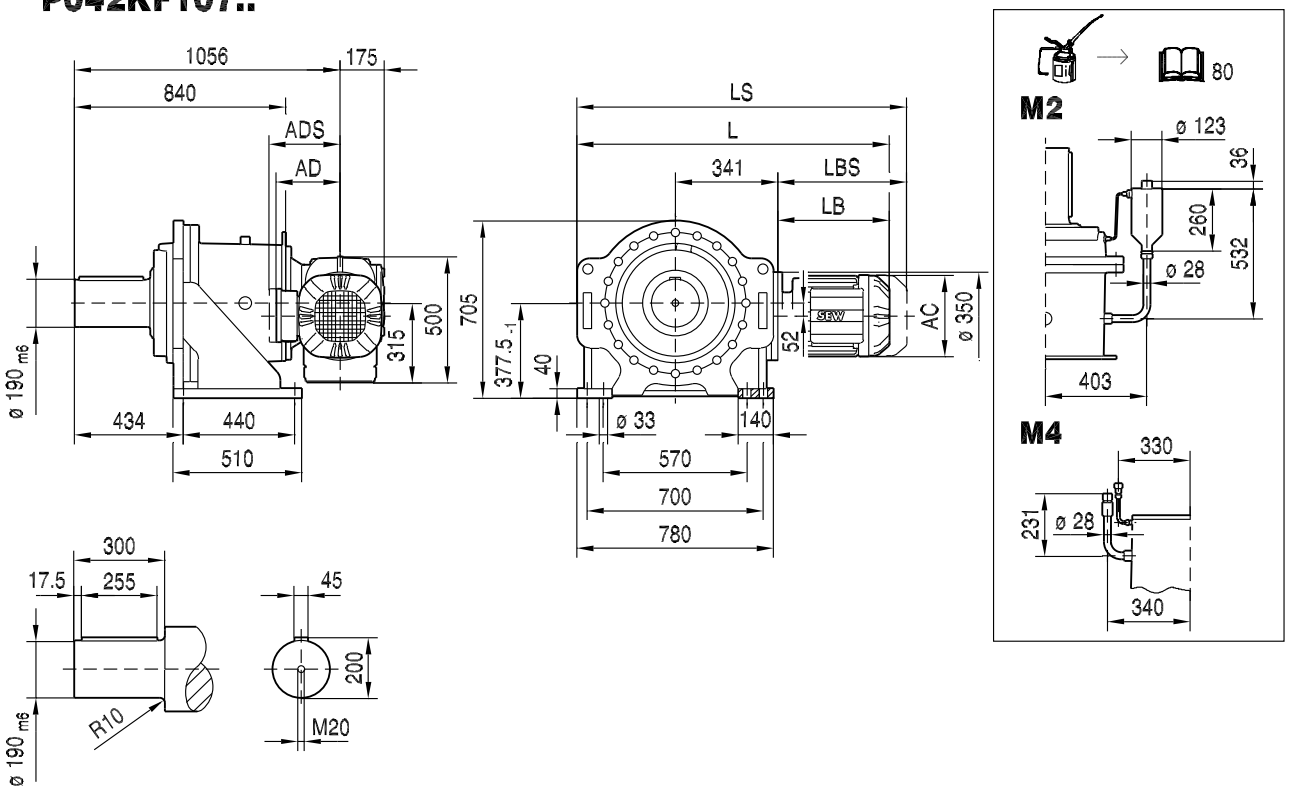


(→ 91)	DRN100L	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180M	DRN180L
AC	197	221	221	261	268	318	318	357	357
AD	157	170	170	228	228	253	253	268	268
ADS	158	172	172	228	228	253	253	268	268
L	925	956	1006	1023	1048	1116	1116	1142	1142
LS	1019	1068	1118	1162	1187	1305	1305	1331	1331
LB	338	369	419	436	461	529	529	555	555
LBS	432	481	531	575	600	718	718	744	744

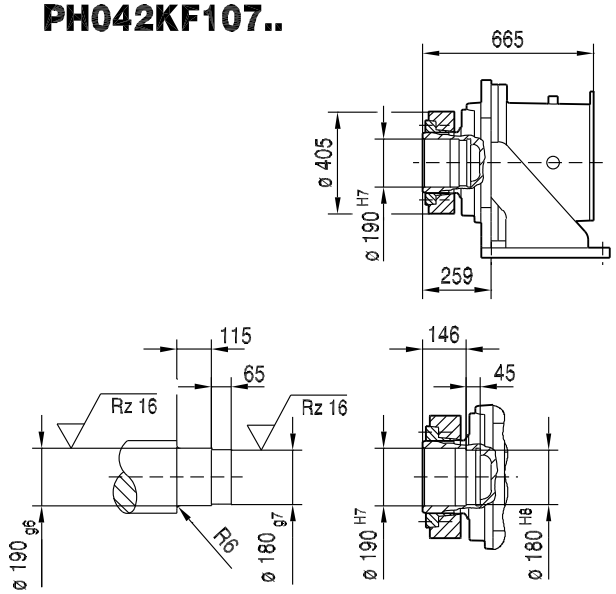
21915180/EN – 04/2015

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45 075 02 08



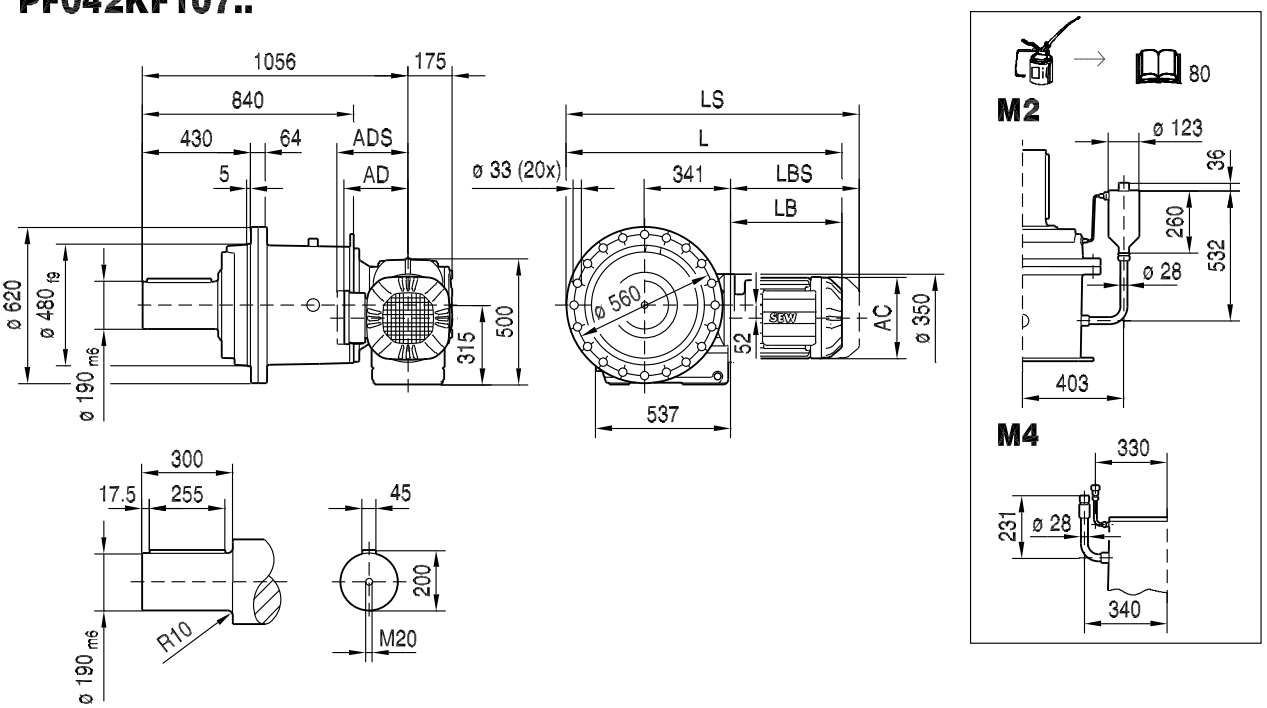
PH042KF107..



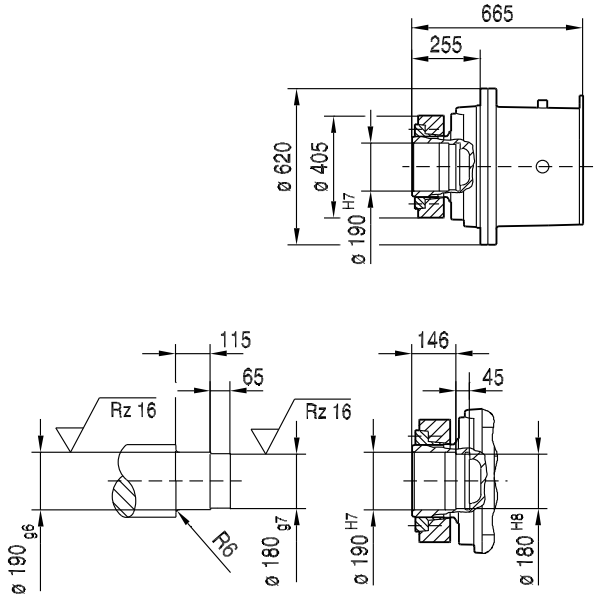
(→ 91)	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L	DRN225
AC	221	221	261	268	318	318	357	357	394	434
AD	170	170	228	228	253	253	268	268	306	306
ADS	172	172	228	228	253	253	268	268	306	306
L	1094	1144	1161	1186	1254	1254	1280	1280	1387	1342
LS	1206	1256	1300	1325	1443	1443	1469	1469	1592	1547
LB	363	413	430	455	523	523	549	549	656	611
LBS	475	525	569	594	712	712	738	738	861	816

PF042KF107..

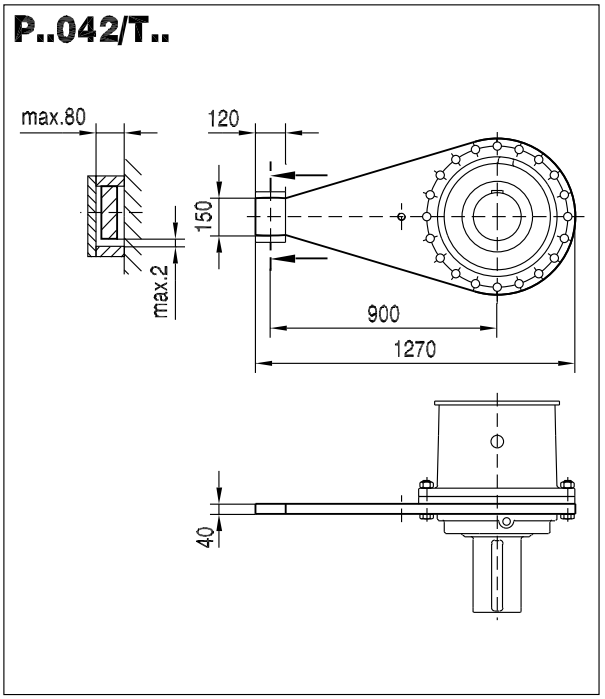
45 103 02 08



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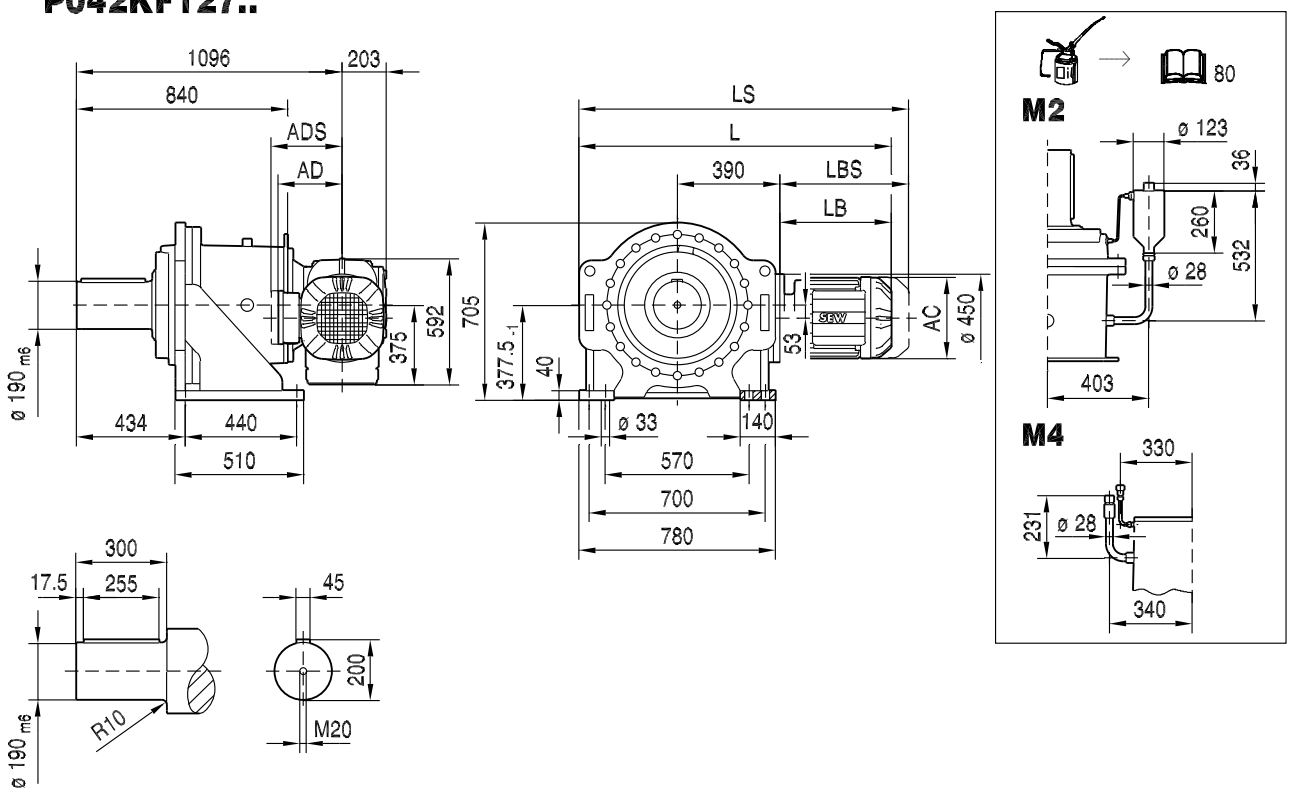


(→ 🗎 91)	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L	DRN225
AC	221	221	261	268	318	318	357	357	394	434
AD	170	170	228	228	253	253	268	268	306	306
ADS	172	172	228	228	253	253	268	268	306	306
L	1014	1064	1081	1106	1174	1174	1200	1200	1307	1262
LS	1126	1176	1220	1245	1363	1363	1389	1389	1512	1467
LB	363	413	430	455	523	523	549	549	656	611
LBS	475	525	569	594	712	712	738	738	861	816

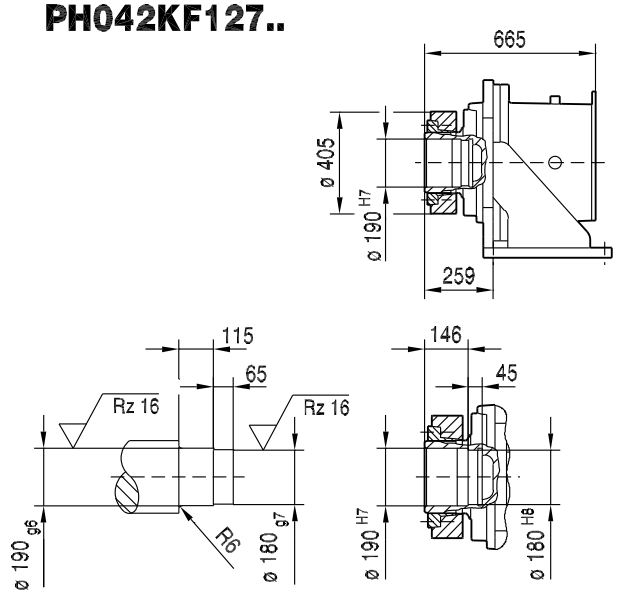
21915180/EN – 04/2015

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45 076 02 08



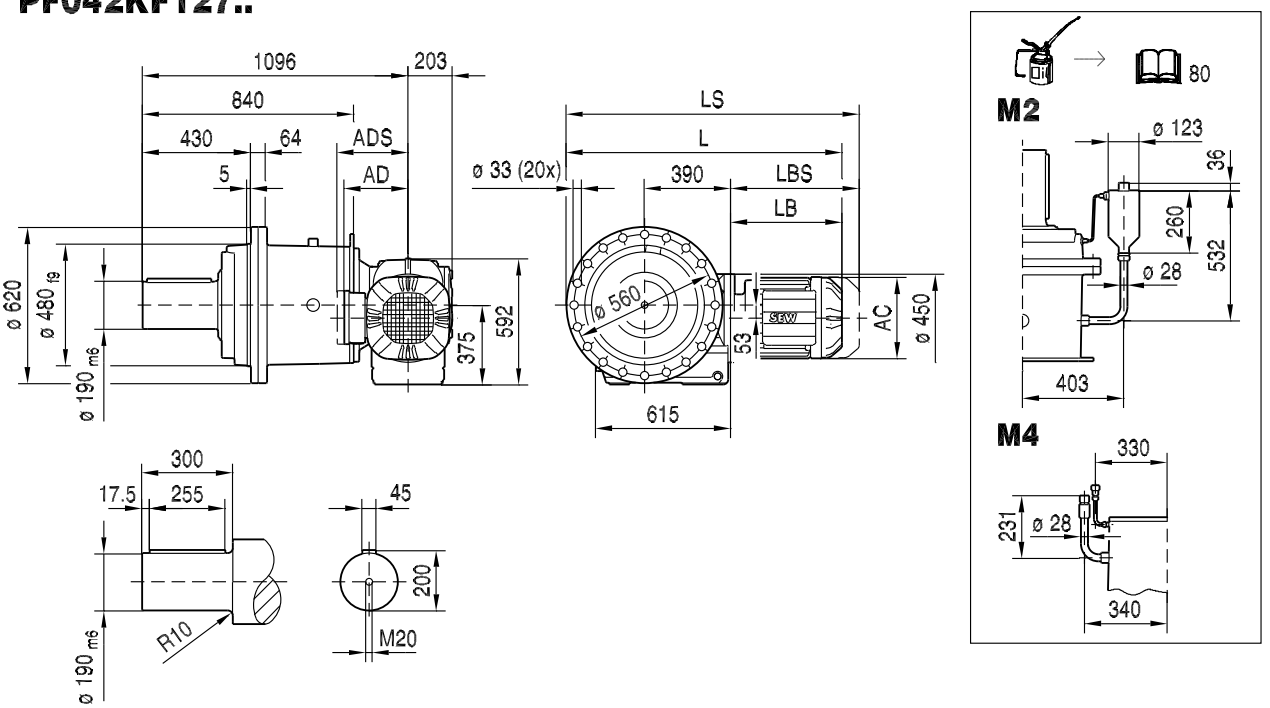
PH042KF127..



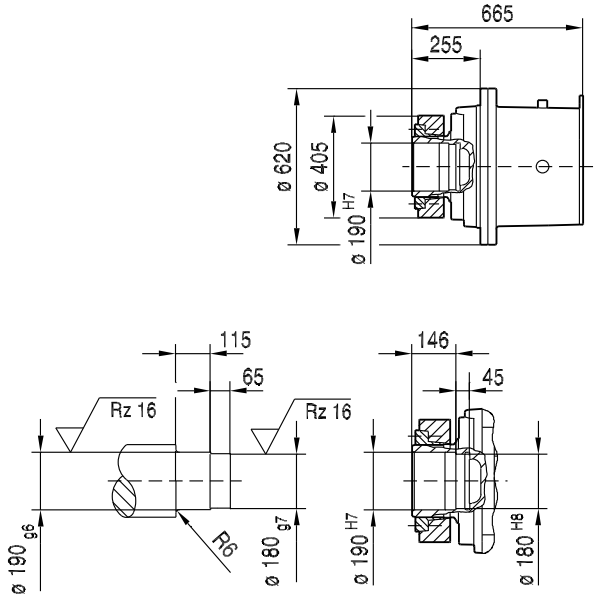
(→ 91)	DRN180L	DRN200L	DRN225	DRN250M	DRN280S			
AC	357	394	434	495	495			
AD	268	306	306	394	394			
ADS	268	306	306	394	394			
L	1314	1421	1376	1532	1532			
LS	1503	1626	1581	1772	1772			
LB	534	641	596	752	752			
LBS	723	846	801	992	992			

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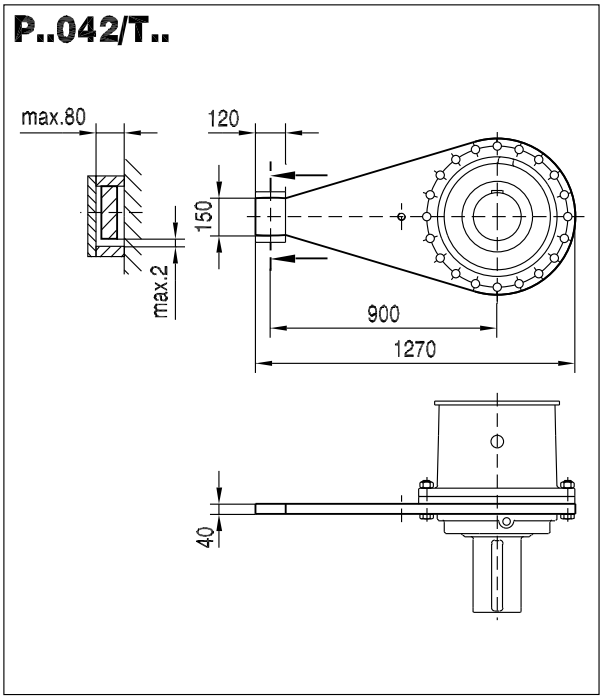
45 104 02 08



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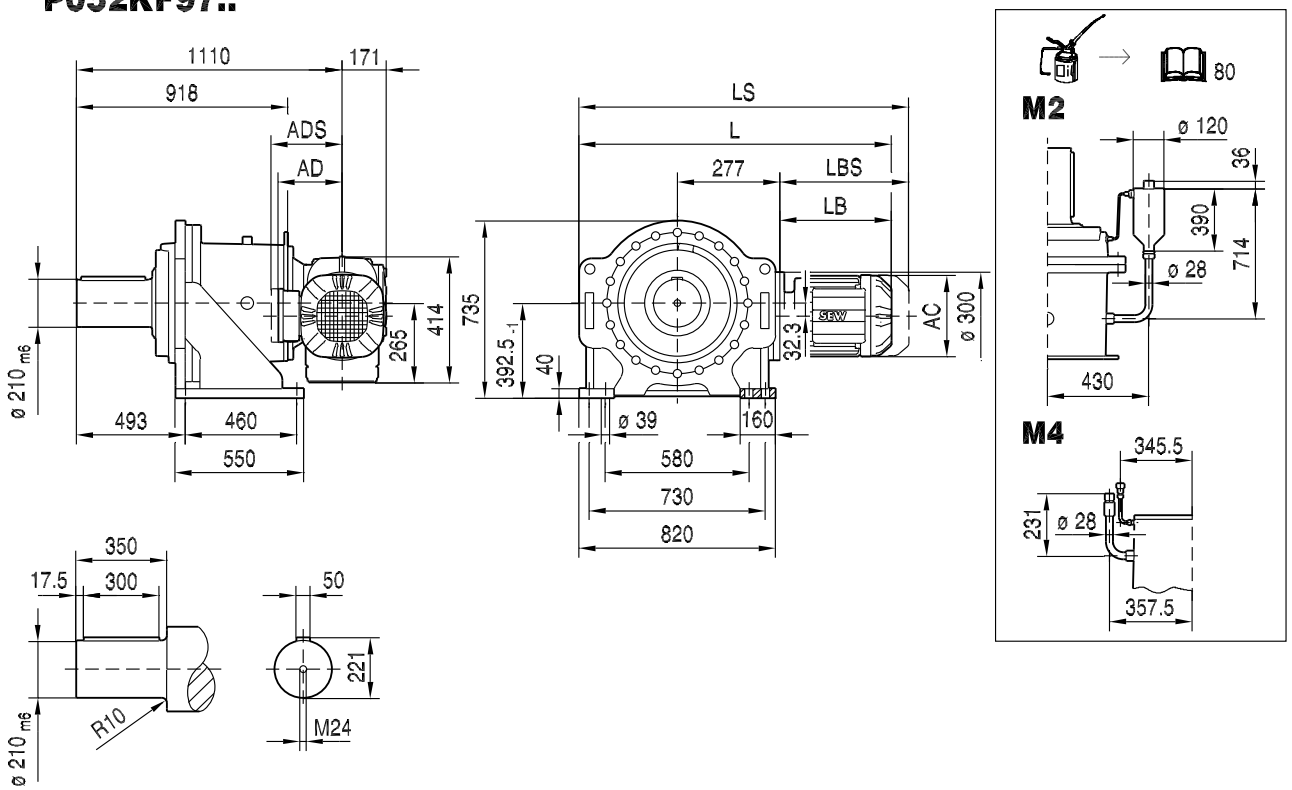


(→ 91)	DRN180L	DRN200L	DRN225	DRN250M	DRN280S			
AC	357	394	434	495	495			
AD	268	306	306	394	394			
ADS	268	306	306	394	394			
L	1234	1341	1296	1452	1452			
LS	1423	1546	1501	1692	1692			
LB	534	641	596	752	752			
LBS	723	846	801	992	992			

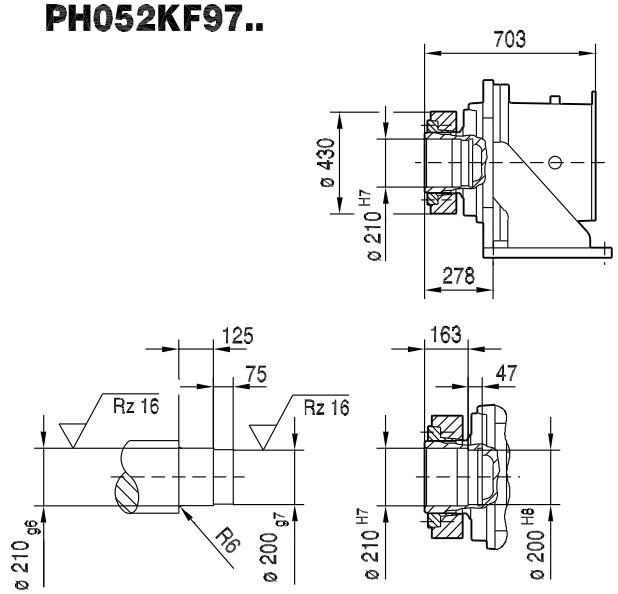
21915180/EN – 04/2015

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45 077 02 08



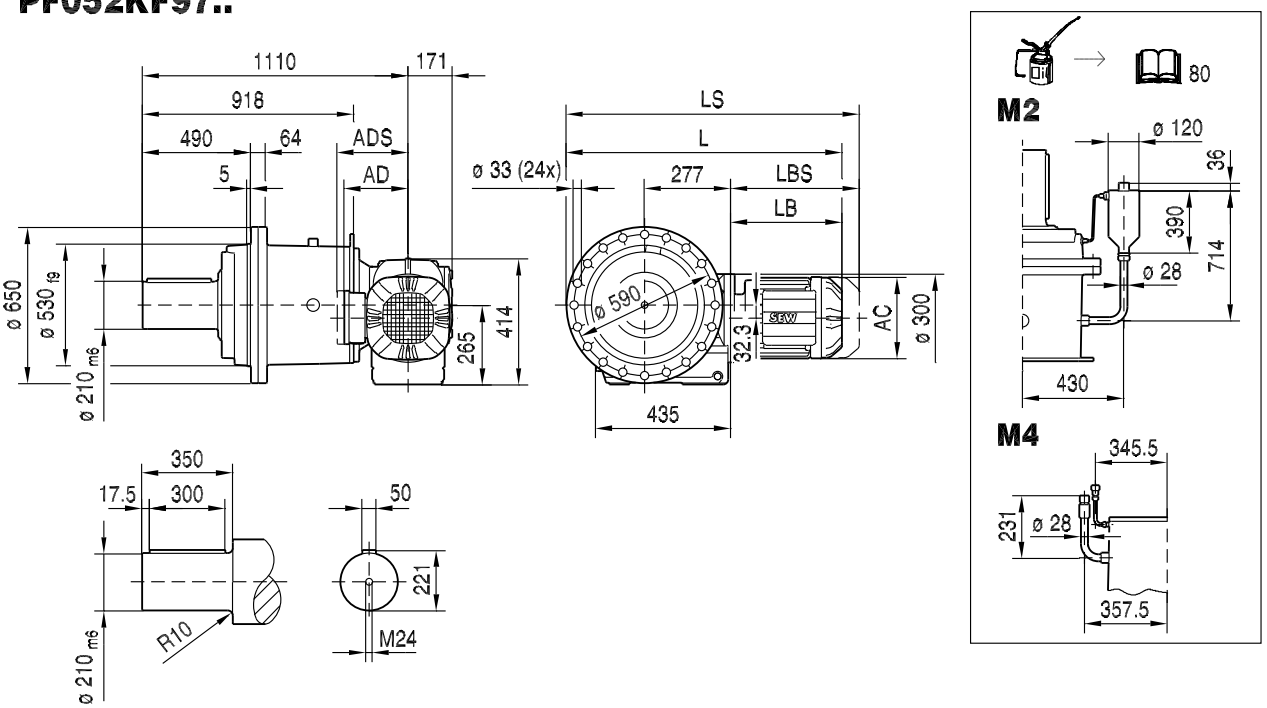
PH052KF97..



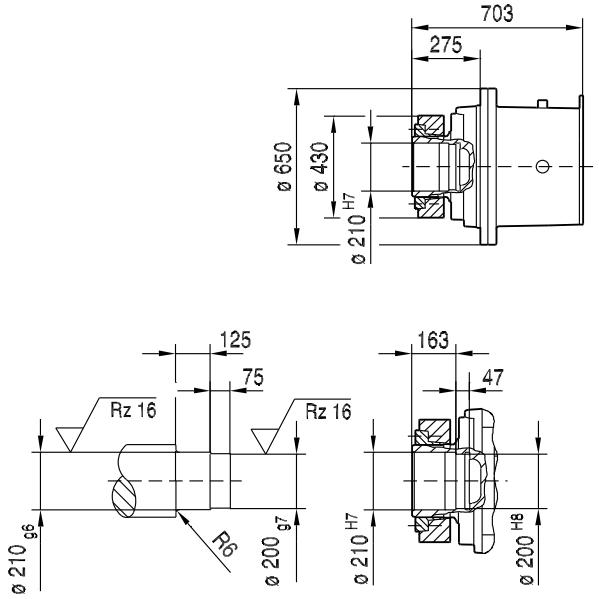
(→ 91)	DRN132M	DRN132L	DRN160L	DRN180L				
AC	261	268	318	357				
AD	228	228	253	268				
ADS	228	228	253	268				
L	1123	1148	1216	1242				
LS	1262	1287	1405	1431				
LB	436	461	529	555				
LBS	575	600	718	744				

PF052KF97..

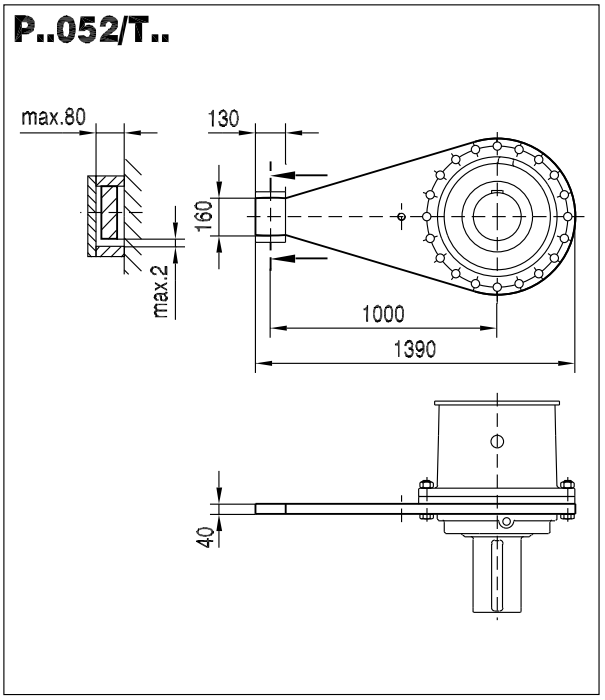
45 105 02 08



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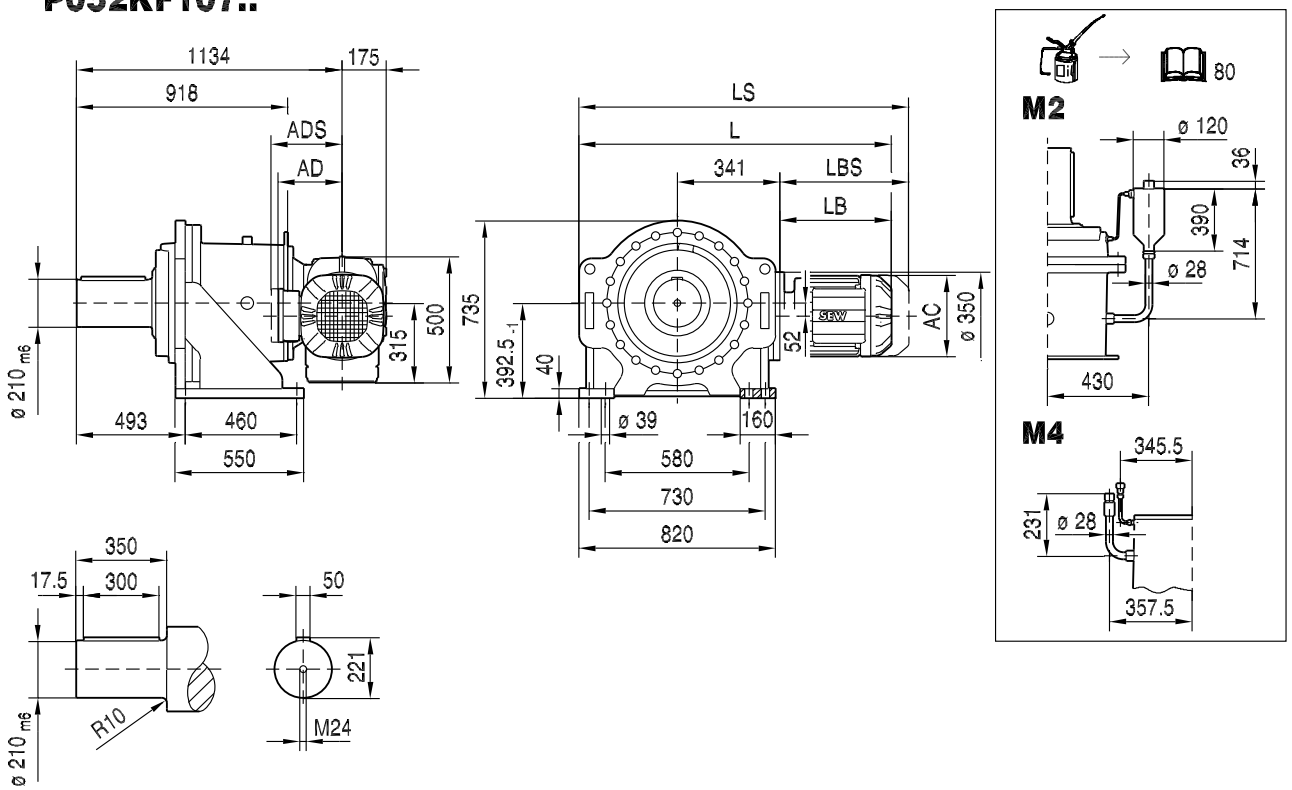


(→ 91)	DRN132M	DRN132L	DRN160L	DRN180L				
AC	261	268	318	357				
AD	228	228	253	268				
ADS	228	228	253	268				
L	1038	1063	1131	1157				
LS	1177	1202	1320	1346				
LB	436	461	529	555				
LBS	575	600	718	744				

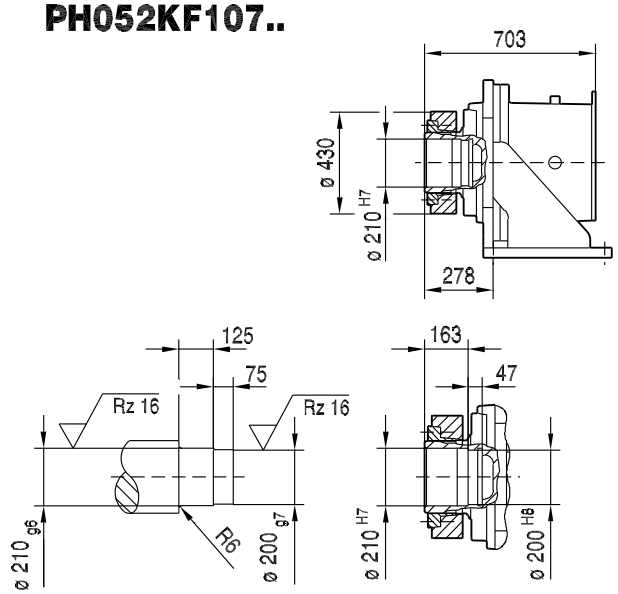
21915180/EN – 04/2015

P052KF107..

45 078 02 08



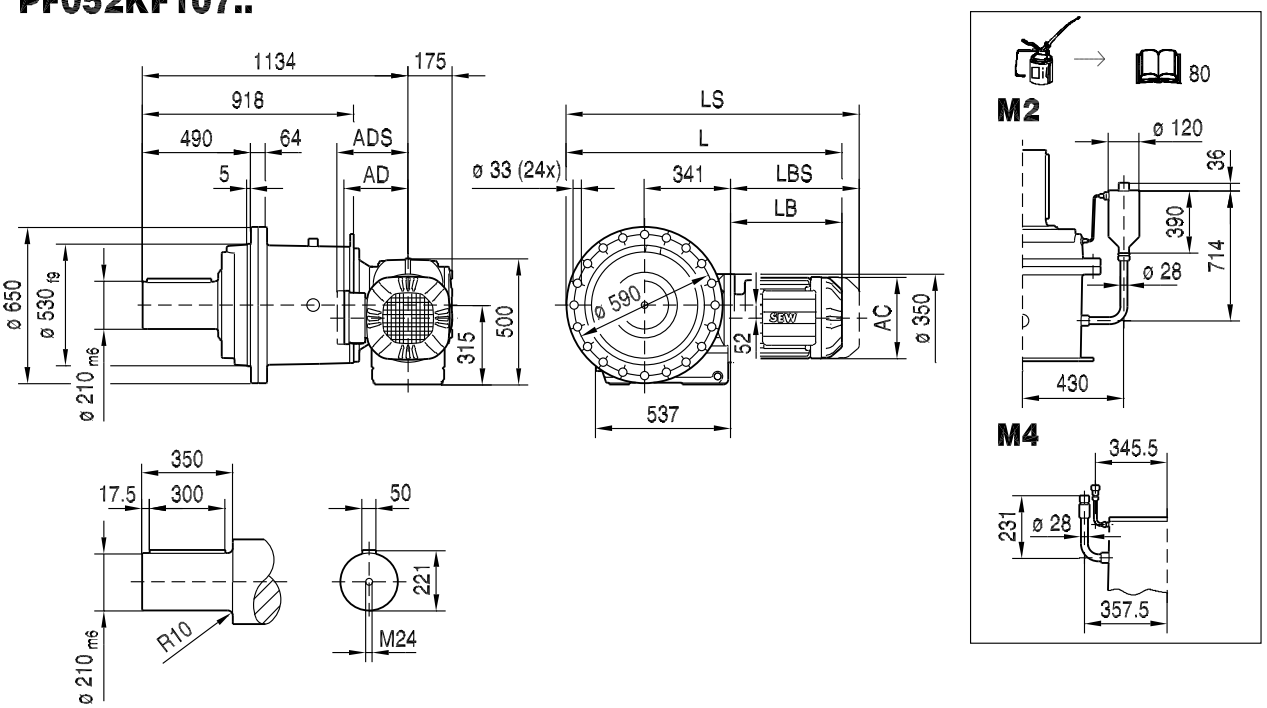
PH052KF107..



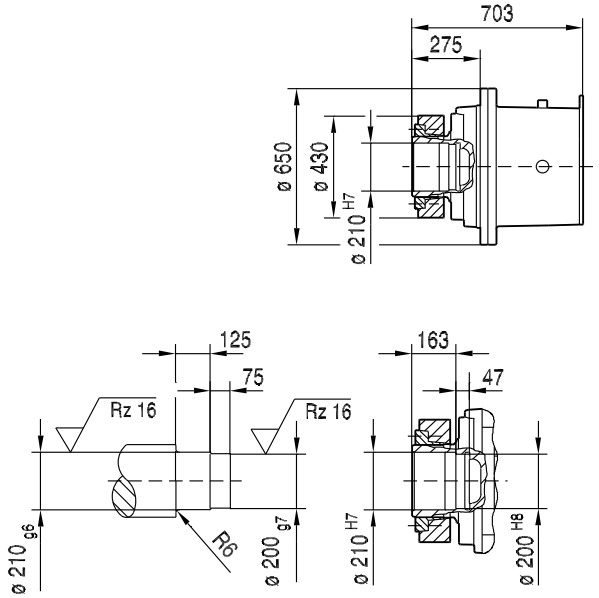
(→ 91)	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L	DRN225
AC	221	221	261	268	318	318	357	357	394	434
AD	170	170	228	228	253	253	268	268	306	306
ADS	172	172	228	228	253	253	268	268	306	306
L	1114	1164	1181	1206	1274	1274	1300	1300	1407	1362
LS	1226	1276	1320	1345	1463	1463	1489	1489	1612	1567
LB	363	413	430	455	523	523	549	549	656	611
LBS	475	525	569	594	712	712	738	738	861	816

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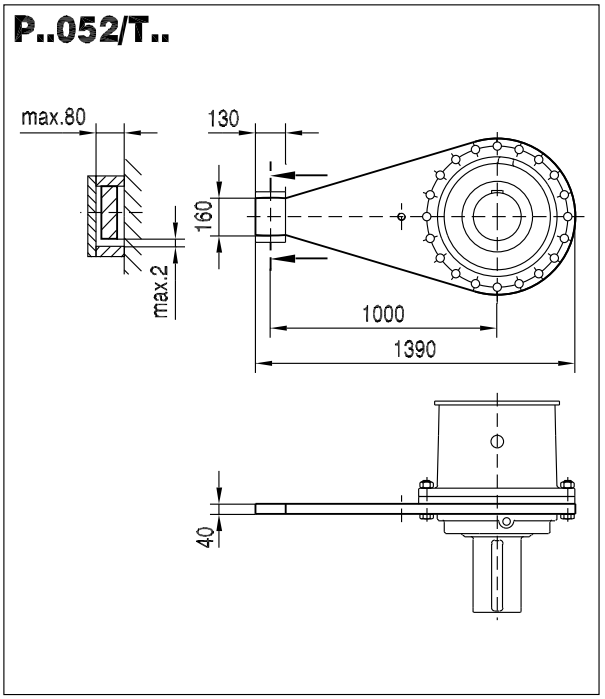
45 106 02 08



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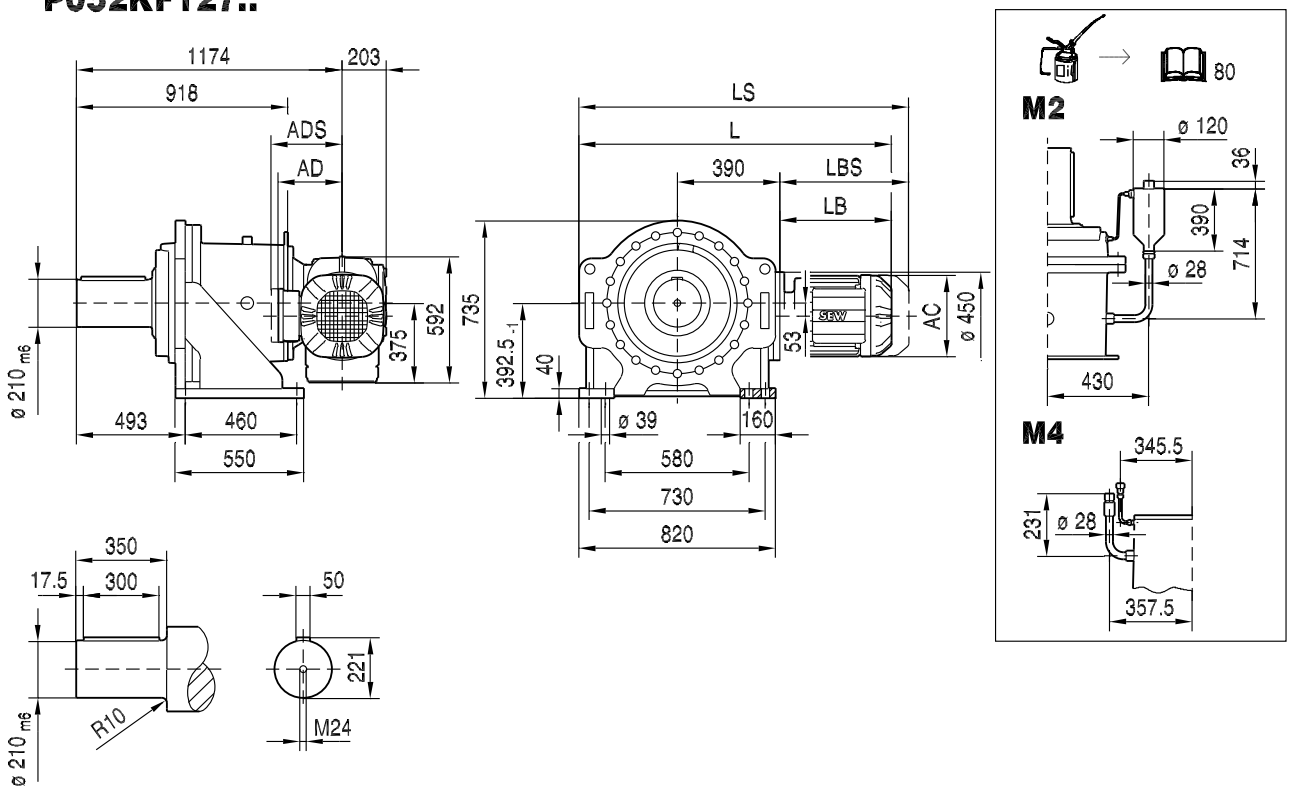


(→ 📄 91)	DRN112M	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L	DRN225
AC	221	221	261	268	318	318	357	357	394	434
AD	170	170	228	228	253	253	268	268	306	306
ADS	172	172	228	228	253	253	268	268	306	306
L	1029	1079	1096	1121	1189	1189	1215	1215	1322	1277
LS	1141	1191	1235	1260	1378	1378	1404	1404	1527	1482
LB	363	413	430	455	523	523	549	549	656	611
LBS	475	525	569	594	712	712	738	738	861	816

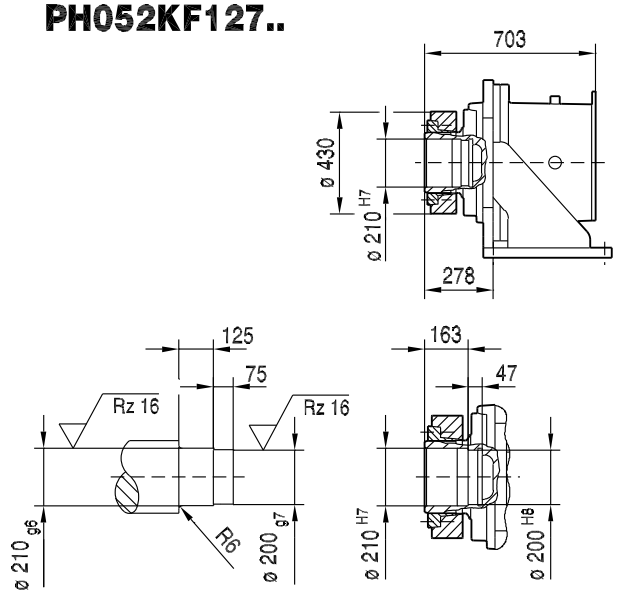
21915180/EN – 04/2015

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45 079 02 08



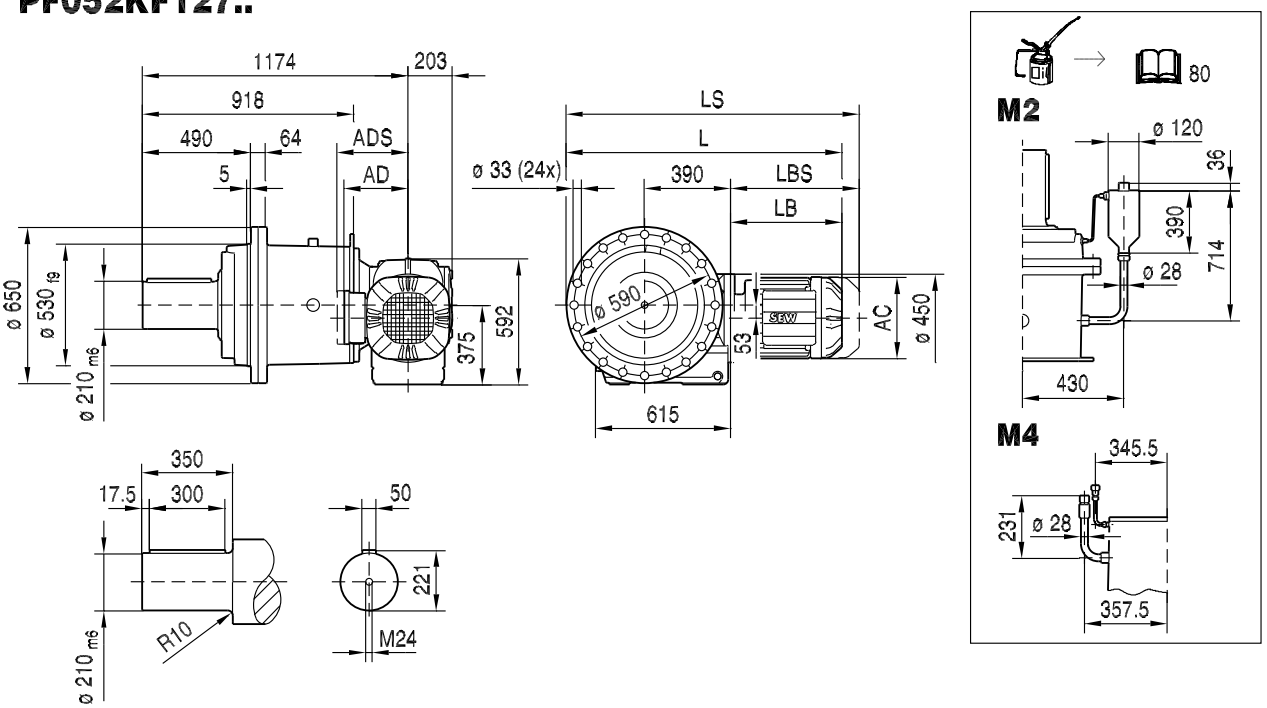
PH052KF127..



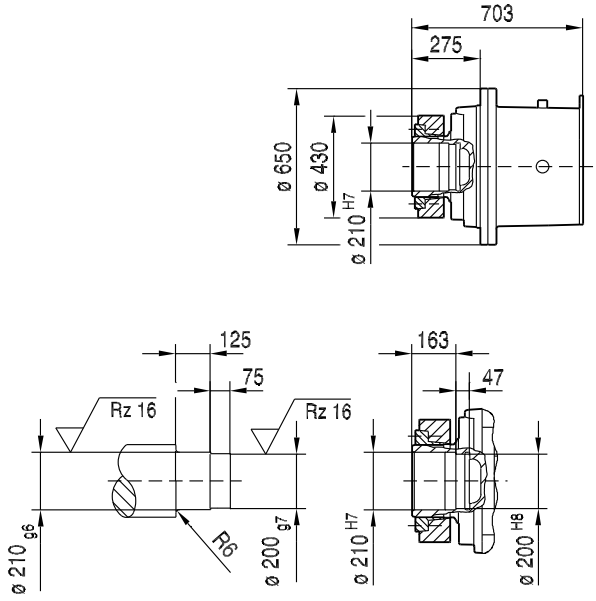
(→ 91)	DRN180L	DRN200L	DRN225	DRN250M	DRN280S			
AC	357	394	434	495	495			
AD	268	306	306	394	394			
ADS	268	306	306	394	394			
L	1334	1441	1396	1552	1552			
LS	1523	1646	1601	1792	1792			
LB	534	641	596	752	752			
LBS	723	846	801	992	992			

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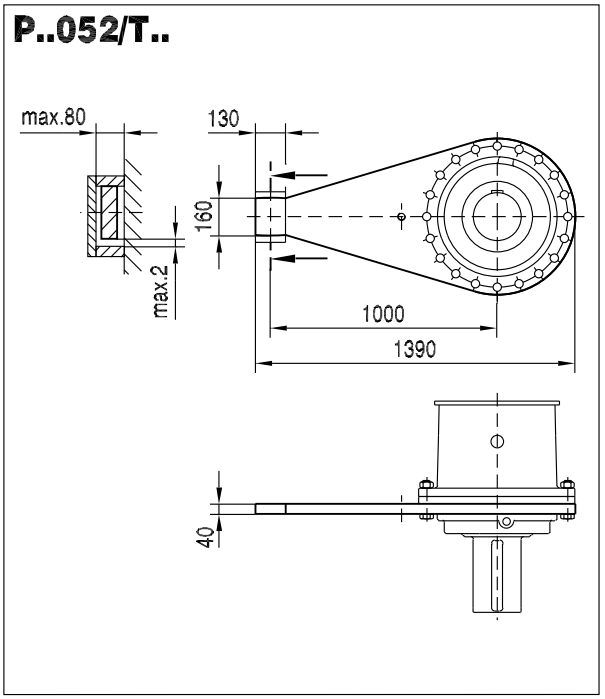
45 107 02 08



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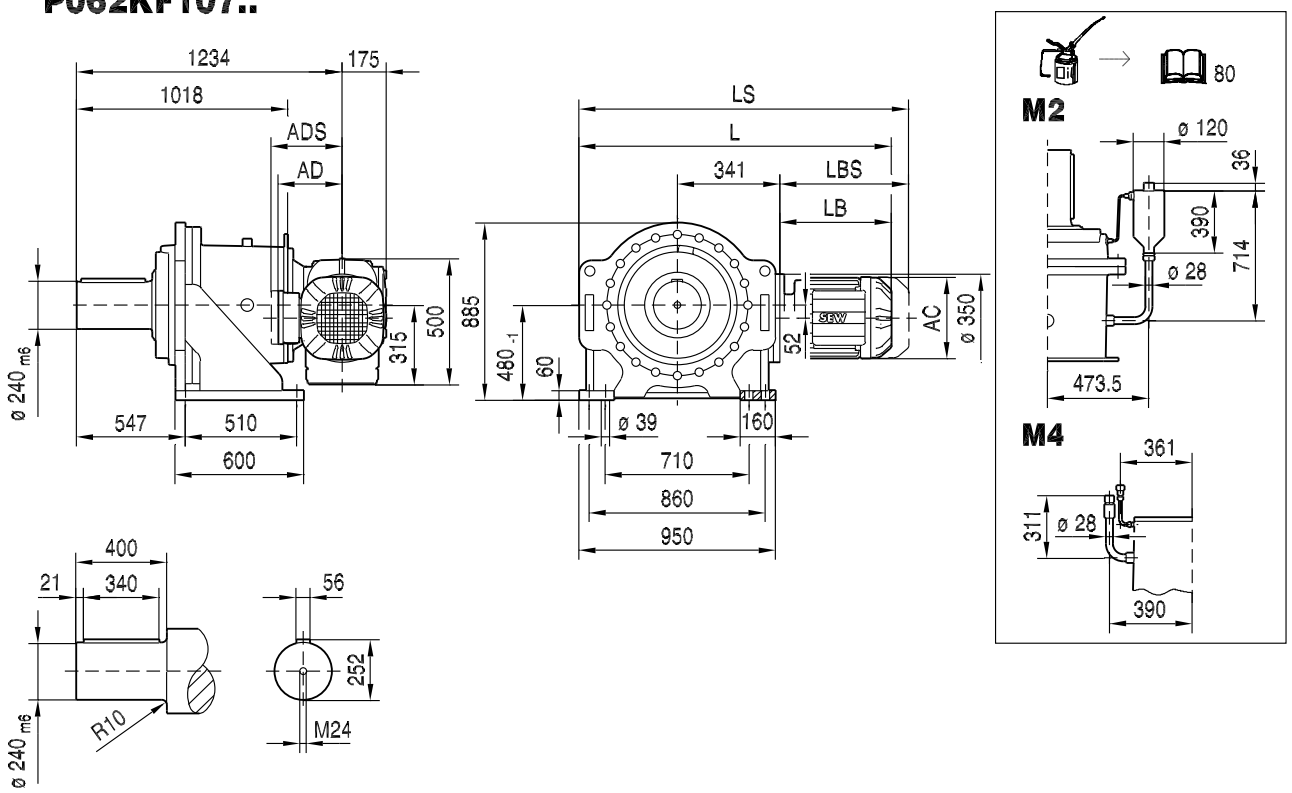


(→ 📄 91)	DRN180L	DRN200L	DRN225	DRN250M	DRN280S			
AC	357	394	434	495	495			
AD	268	306	306	394	394			
ADS	268	306	306	394	394			
L	1249	1356	1311	1467	1467			
LS	1438	1561	1516	1707	1707			
LB	534	641	596	752	752			
LBS	723	846	801	992	992			

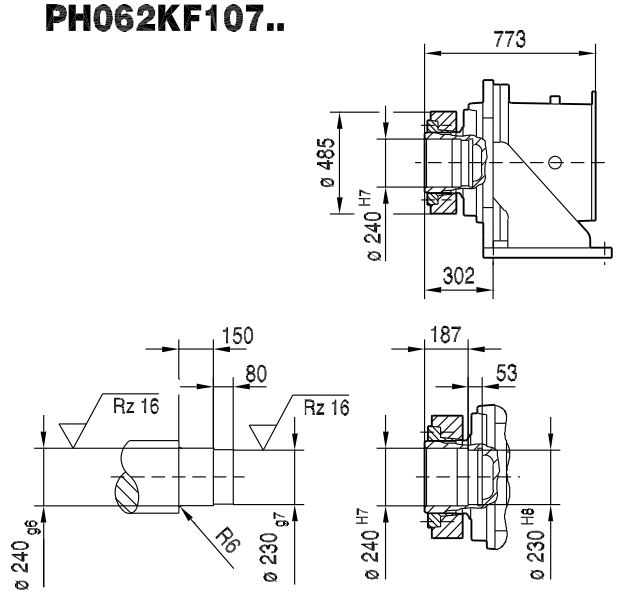
21915180/EN – 04/2015

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45 081 02 08



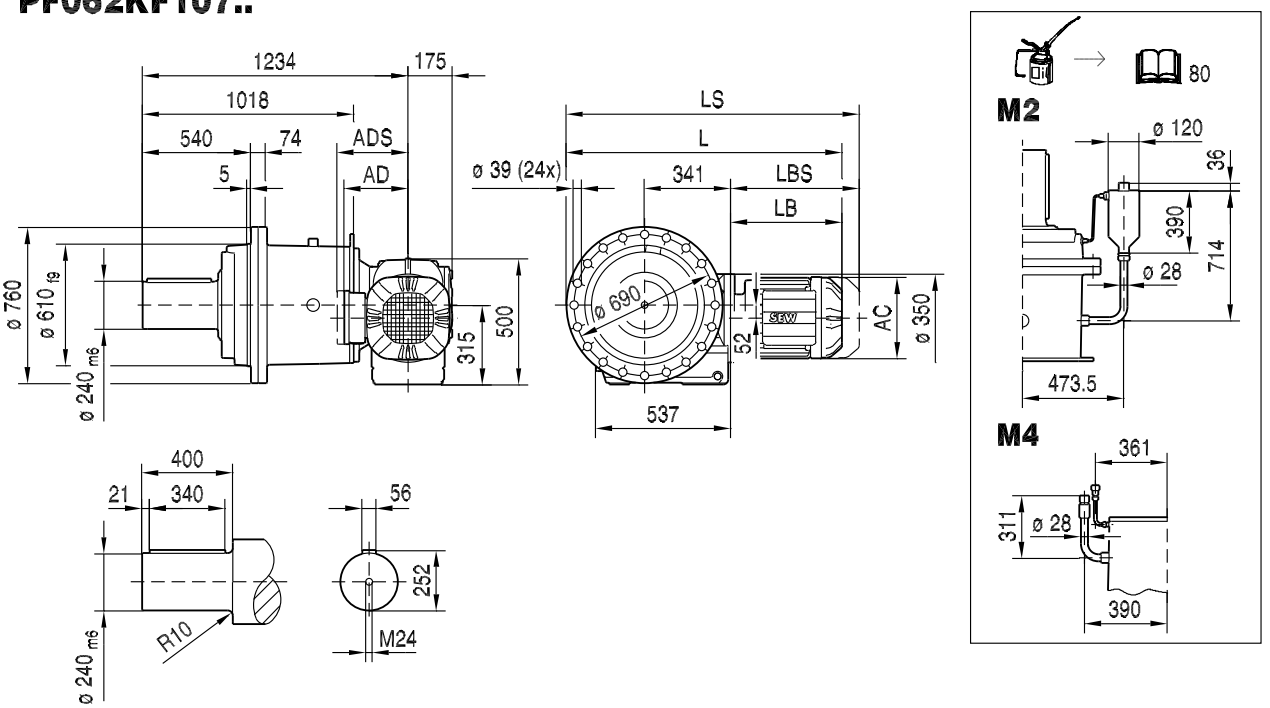
PH062KF107..



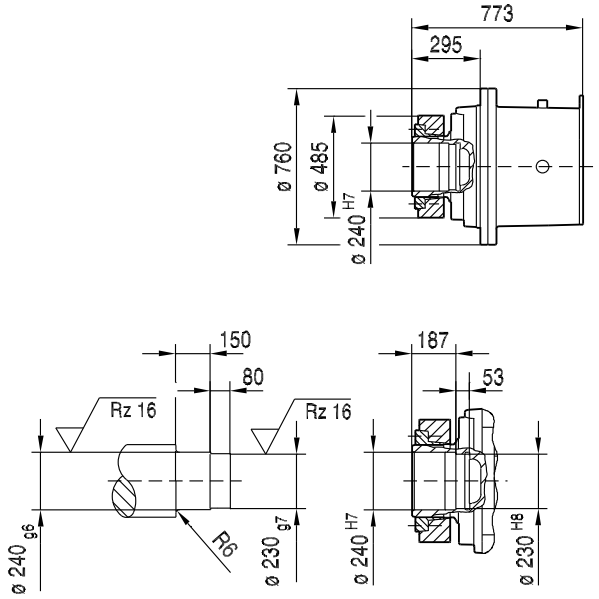
(→ 91)	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L
AC	221	261	268	318	318	357	357	394
AD	170	228	228	253	253	268	268	306
ADS	172	228	228	253	253	268	268	306
L	1229	1246	1271	1339	1339	1365	1365	1472
LS	1341	1385	1410	1528	1528	1554	1554	1677
LB	413	430	455	523	523	549	549	656
LBS	525	569	594	712	712	738	738	861

PF062KF107..

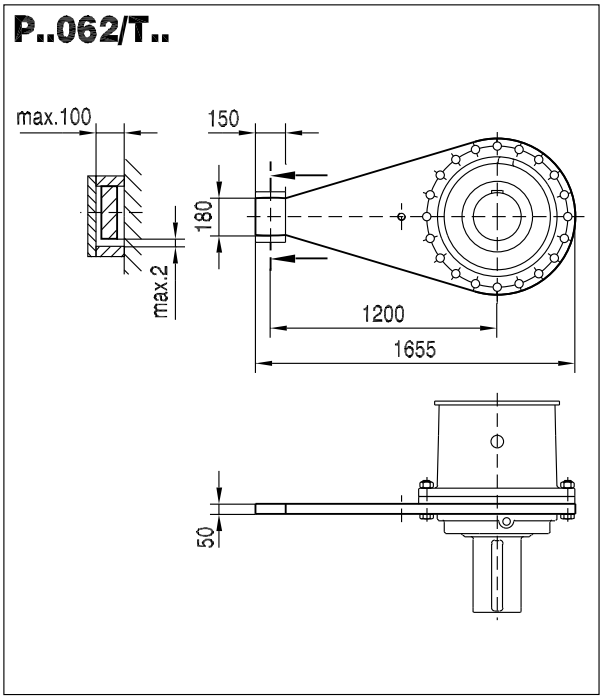
45 109 02 08



PHF062KF107..



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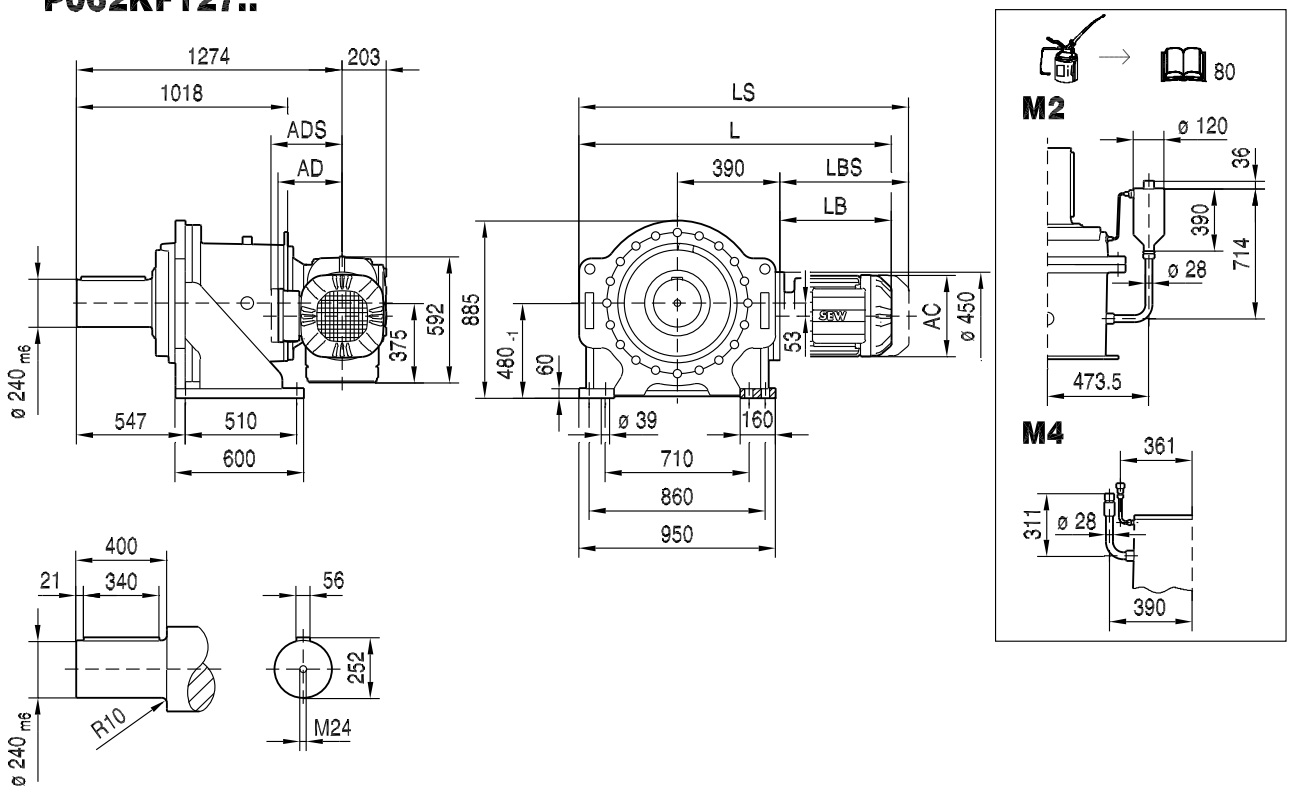


(→ 📄 91)	DRN132S	DRN132M	DRN132L	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L
AC	221	261	268	318	318	357	357	394
AD	170	228	228	253	253	268	268	306
ADS	172	228	228	253	253	268	268	306
L	1134	1151	1176	1244	1244	1270	1270	1377
LS	1246	1290	1315	1433	1433	1459	1459	1582
LB	413	430	455	523	523	549	549	656
LBS	525	569	594	712	712	738	738	861

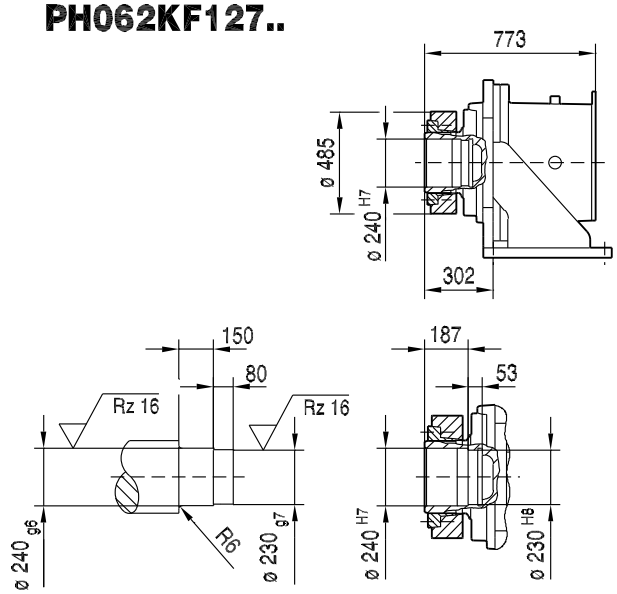
21915180/EN – 04/2015

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45 082 02 08



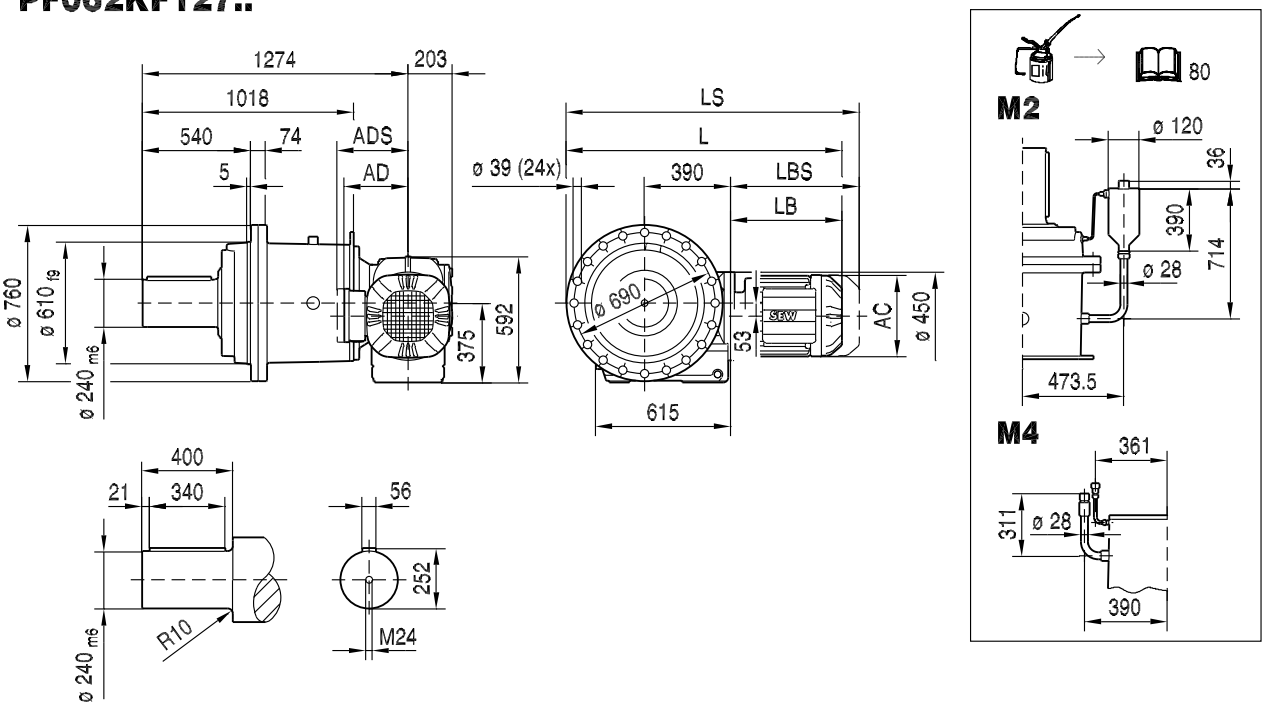
PH062KF127..



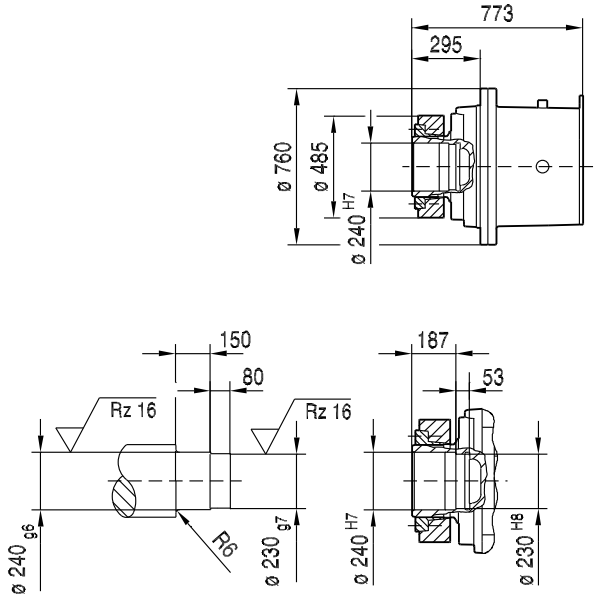
(→ 91)	DRN132M	DRN132L	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L	DRN225	DRN250M	DRN280S
AC	261	268	318	318	357	357	394	434	495	495
AD	228	228	253	253	268	268	306	306	394	394
ADS	228	228	253	253	268	268	306	306	394	394
L	1280	1305	1373	1373	1399	1399	1506	1461	1617	1617
LS	1419	1444	1562	1562	1588	1588	1711	1666	1857	1857
LB	415	440	508	508	534	534	641	596	752	752
LBS	554	579	697	697	723	723	846	801	992	992

PF062KF127..

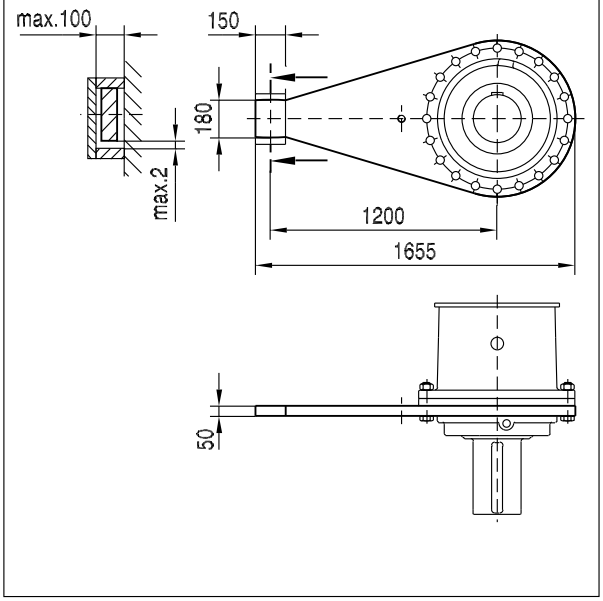
45 110 02 08



PHF062KF127..



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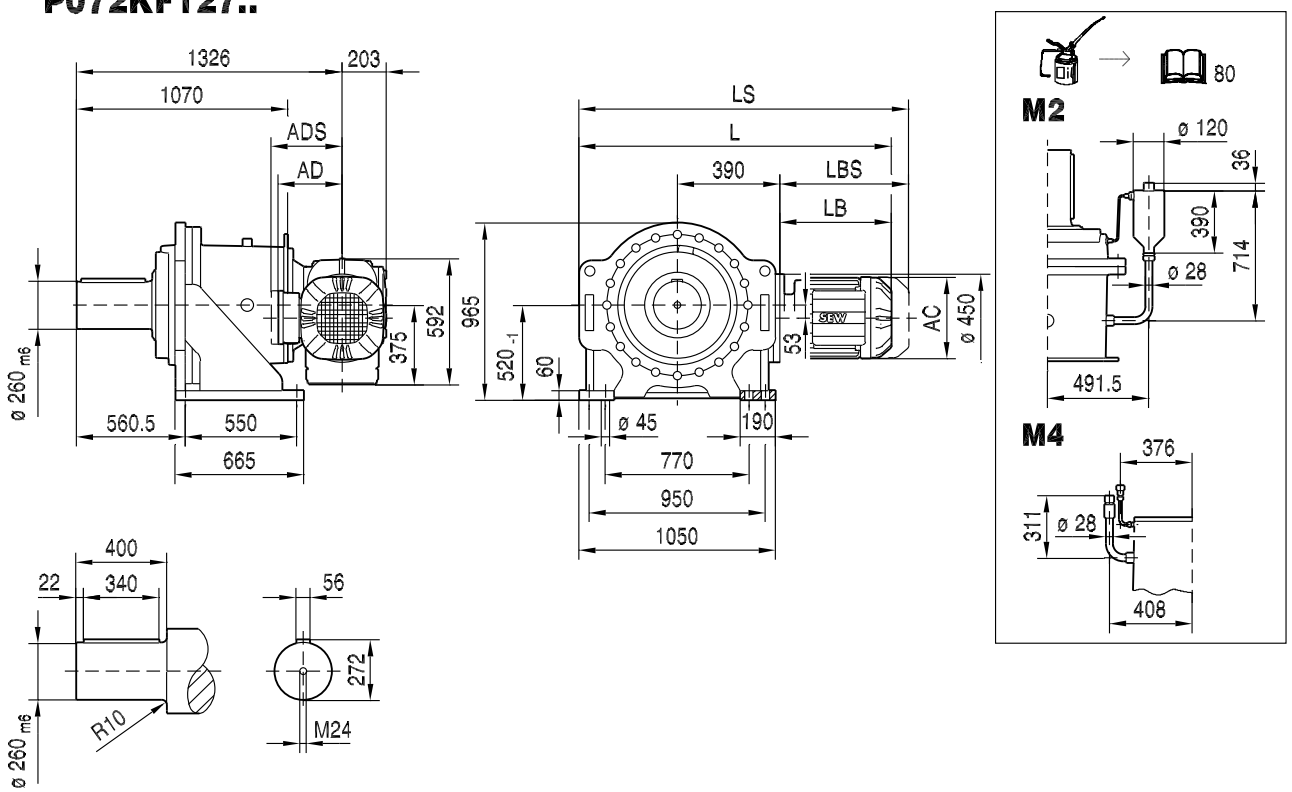


(→ 📄 91)	DRN132M	DRN132L	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L	DRN225	DRN250M	DRN280S
AC	261	268	318	318	357	357	394	434	495	495
AD	228	228	253	253	268	268	306	306	394	394
ADS	228	228	253	253	268	268	306	306	394	394
L	1185	1210	1278	1278	1304	1304	1411	1366	1522	1522
LS	1324	1349	1467	1467	1493	1493	1616	1571	1762	1762
LB	415	440	508	508	534	534	641	596	752	752
LBS	554	579	697	697	723	723	846	801	992	992

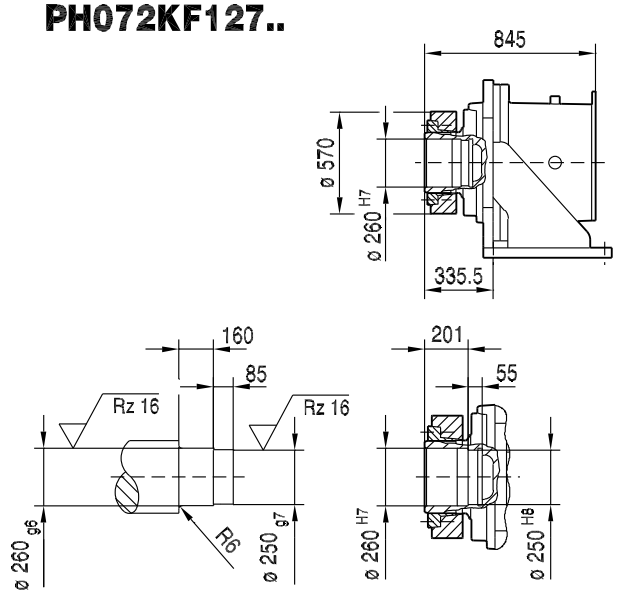
21915180/EN – 04/2015

P072KF127..

45 084 02 08



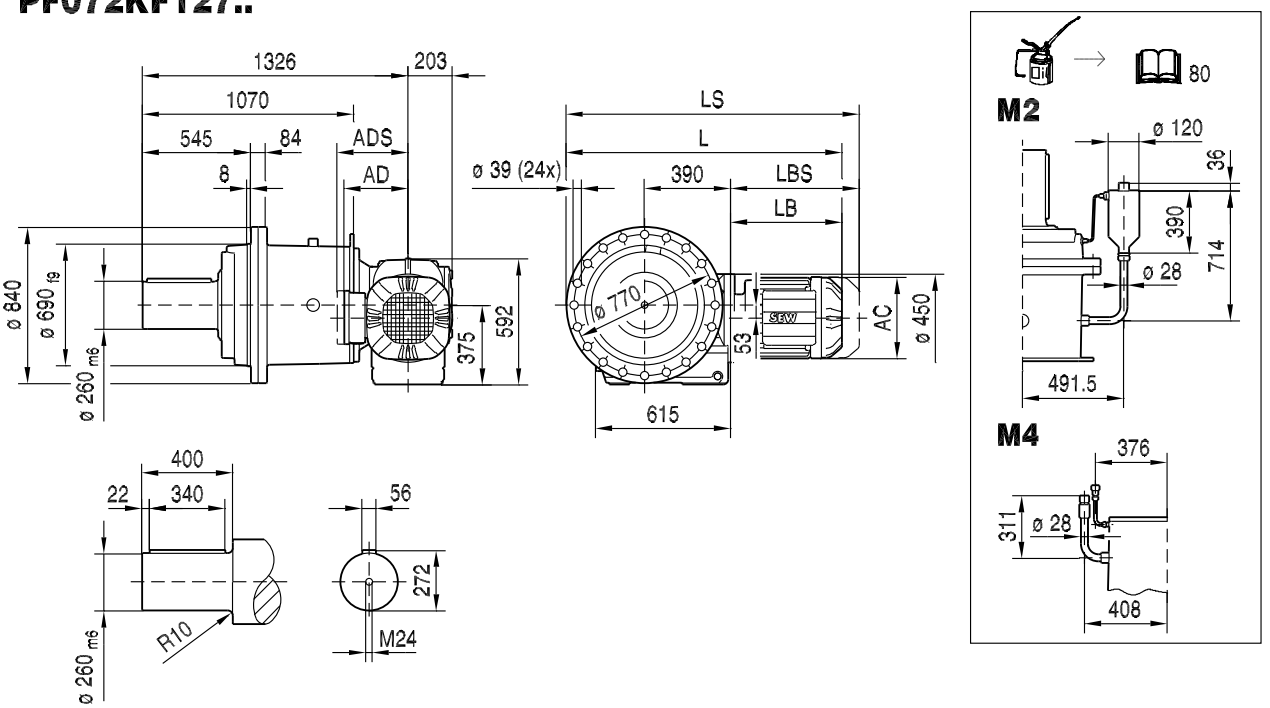
PH072KF127..



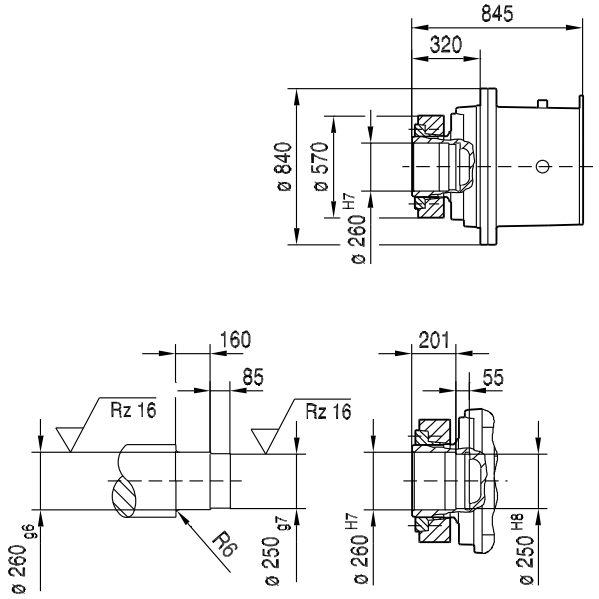
(→ 91)	DRN132M	DRN132L	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L	DRN225	DRN250M
AC	261	268	318	318	357	357	394	434	495
AD	228	228	253	253	268	268	306	306	394
ADS	228	228	253	253	268	268	306	306	394
L	1330	1355	1423	1423	1449	1449	1556	1511	1667
LS	1469	1494	1612	1612	1638	1638	1761	1716	1907
LB	415	440	508	508	534	534	641	596	752
LBS	554	579	697	697	723	723	846	801	992

PF072KF127..

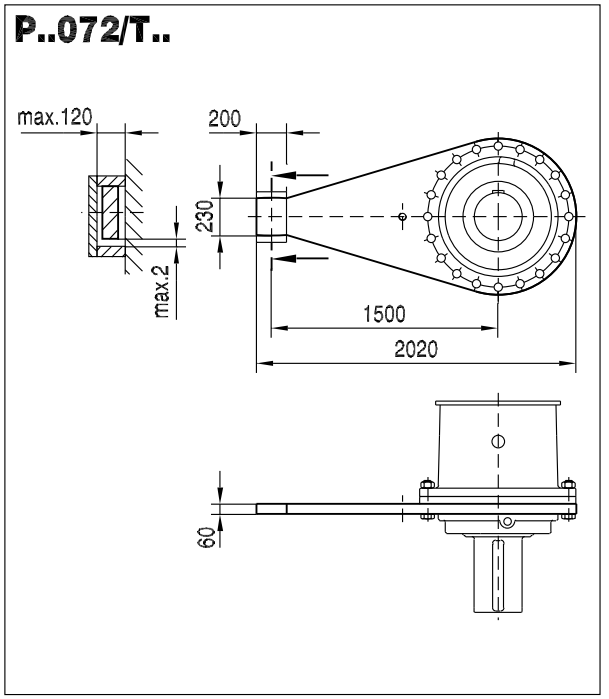
45 112 02 08



PHF072KF127..



P..072/T..

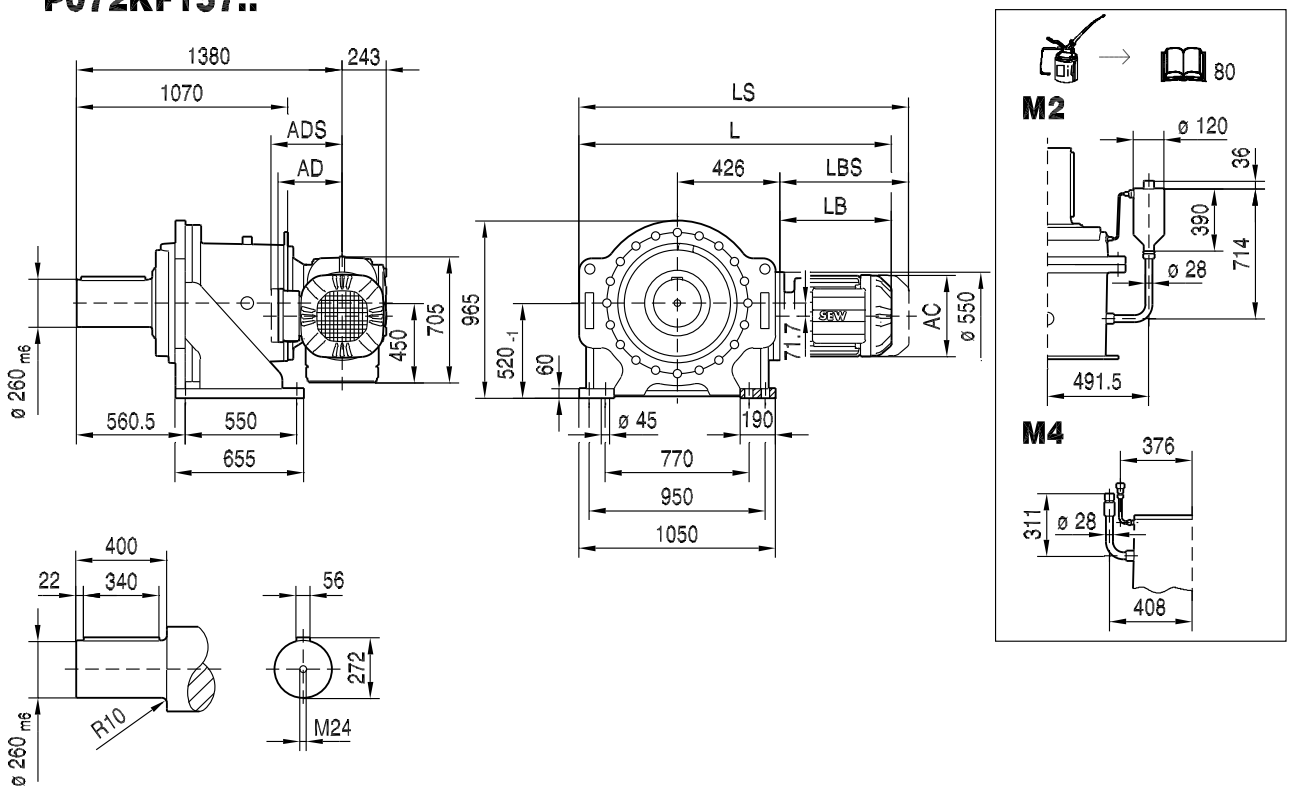


(→ 📄 91)	DRN132M	DRN132L	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L	DRN225	DRN250M
AC	261	268	318	318	357	357	394	434	495
AD	228	228	253	253	268	268	306	306	394
ADS	228	228	253	253	268	268	306	306	394
L	1225	1250	1318	1318	1344	1344	1451	1406	1562
LS	1364	1389	1507	1507	1533	1533	1656	1611	1802
LB	415	440	508	508	534	534	641	596	752
LBS	554	579	697	697	723	723	846	801	992

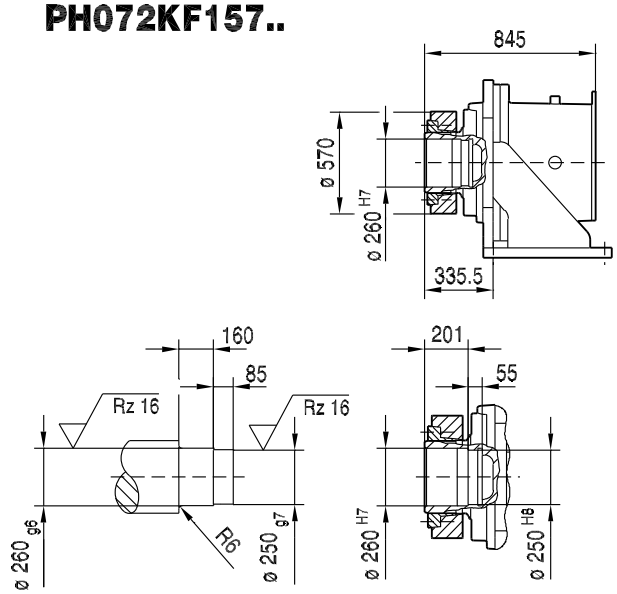
21915180/EN – 04/2015

P072KF157..

45 085 02 08



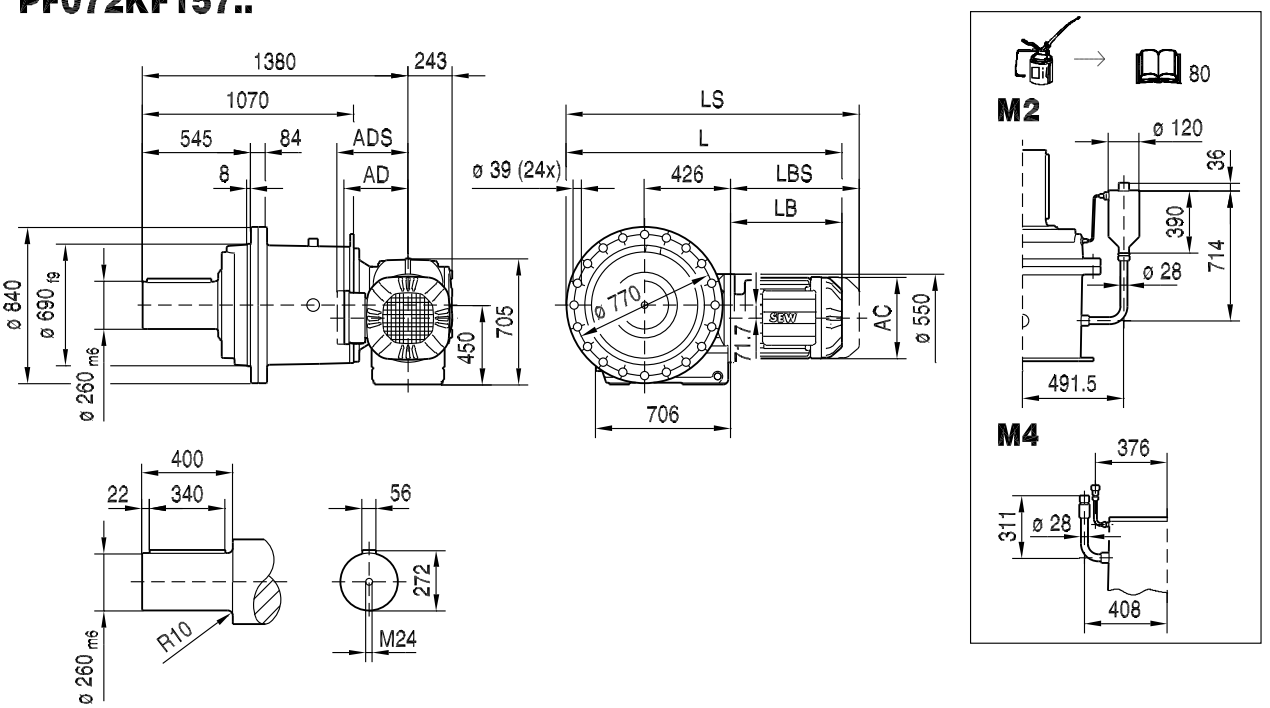
PH072KF157..



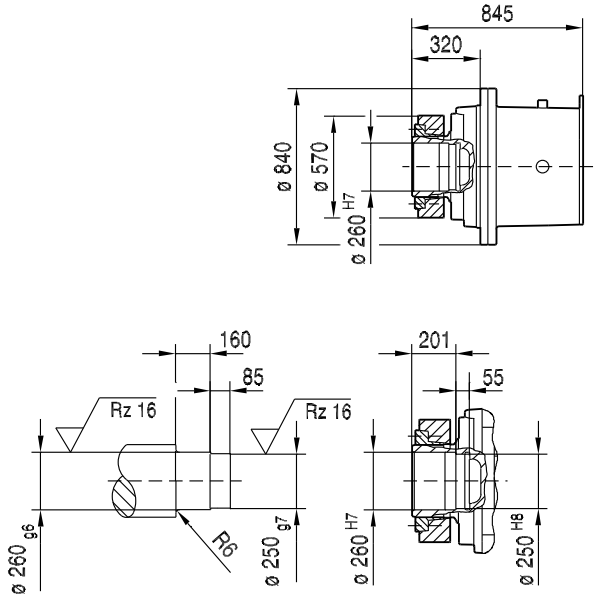
(→ 91)	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L	DRN225	DRN250M	DRN280S
AC	318	318	357	357	394	434	495	495
AD	253	253	268	268	306	306	394	394
ADS	253	253	268	268	306	306	394	394
L	1451	1451	1477	1477	1584	1539	1695	1695
LS	1640	1640	1666	1666	1789	1744	1935	1935
LB	500	500	526	526	633	588	744	744
LBS	689	689	715	715	838	793	984	984

PF072KF157..

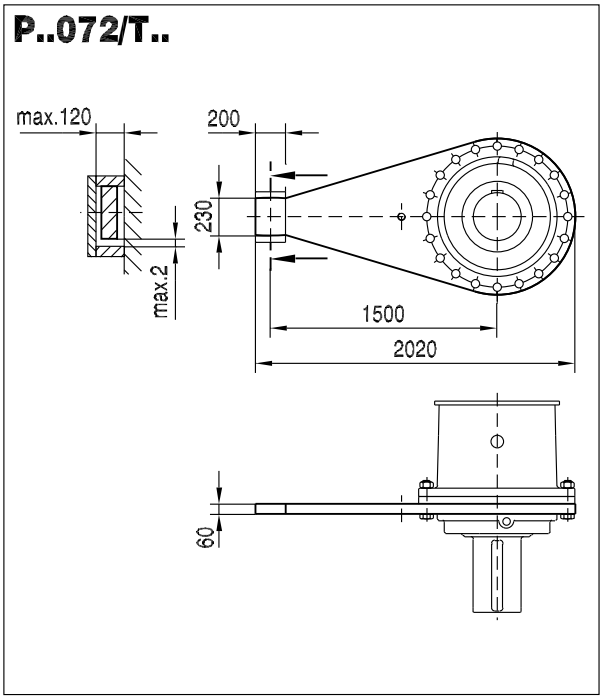
45 113 02 08



PHF072KF157..



P..072/T..

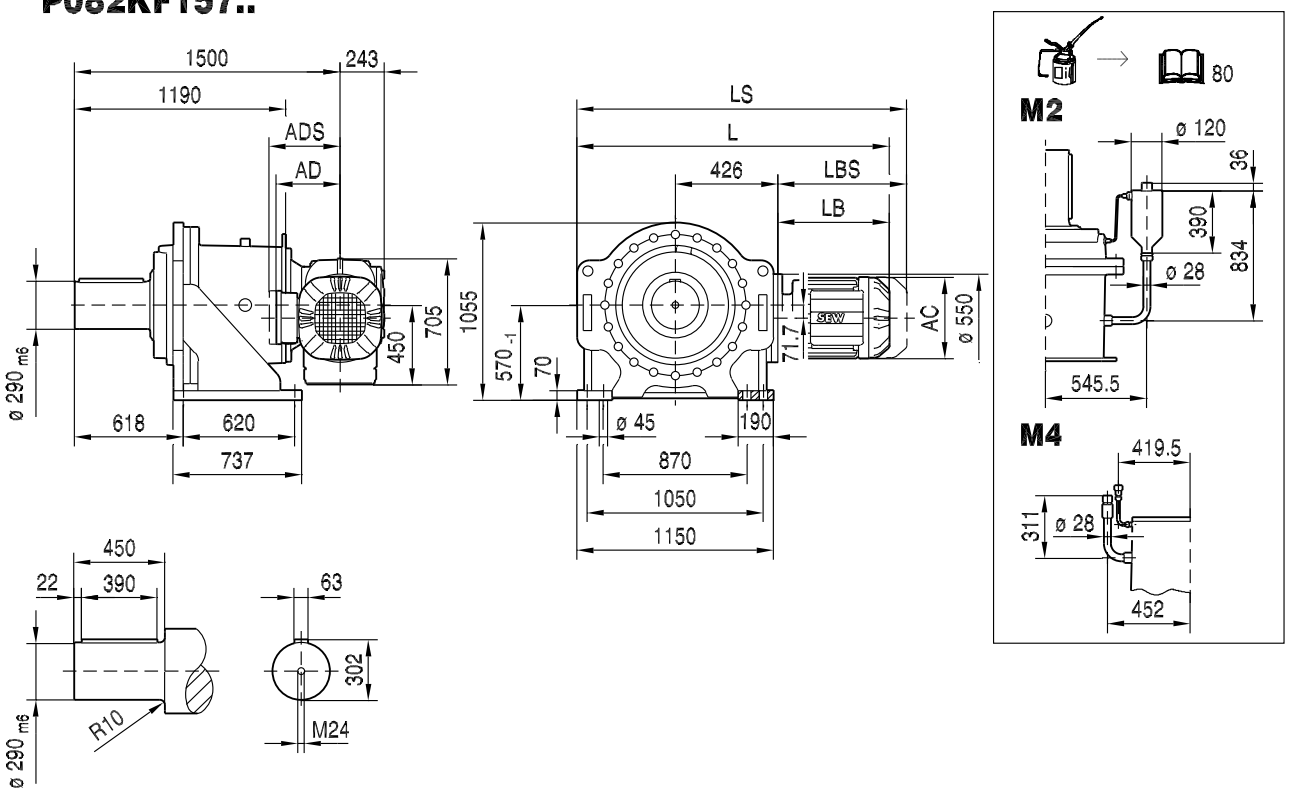


(→ 📄 91)	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L	DRN225	DRN250M	DRN280S
AC	318	318	357	357	394	434	495	495
AD	253	253	268	268	306	306	394	394
ADS	253	253	268	268	306	306	394	394
L	1346	1346	1372	1372	1479	1434	1590	1590
LS	1535	1535	1561	1561	1684	1639	1830	1830
LB	500	500	526	526	633	588	744	744
LBS	689	689	715	715	838	793	984	984

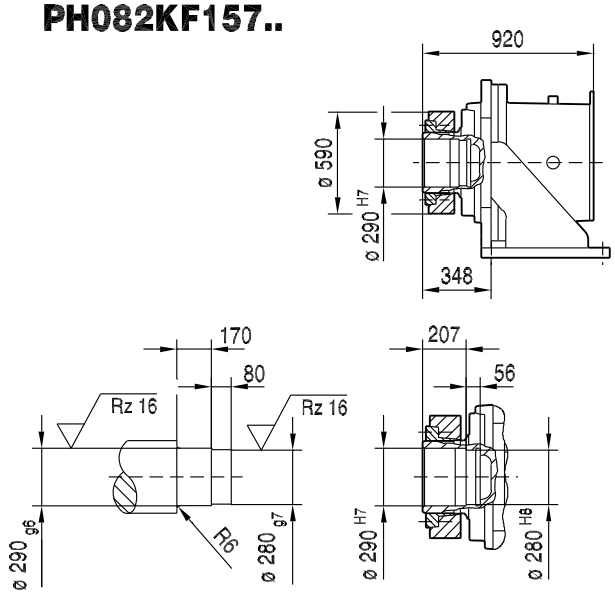
21915180/EN – 04/2015

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45 086 02 08



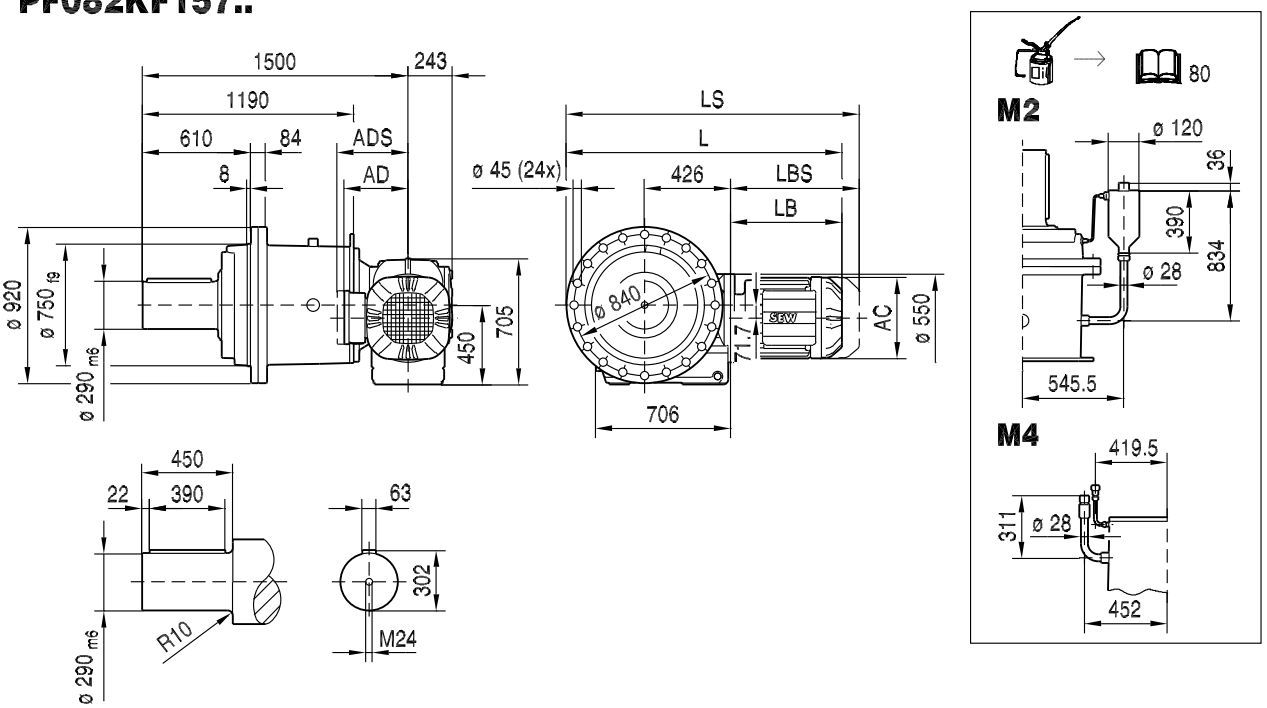
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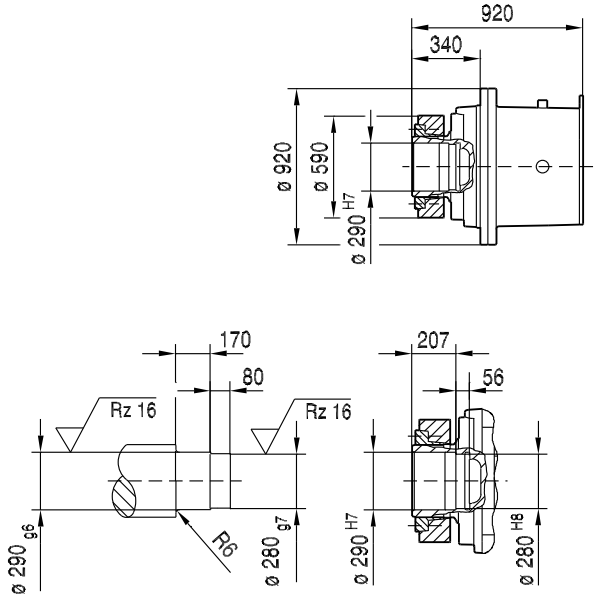
(→ 91)	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L	DRN225	DRN250M	DRN280S
AC	318	318	357	357	394	434	495	495
AD	253	253	268	268	306	306	394	394
ADS	253	253	268	268	306	306	394	394
L	1501	1501	1527	1527	1634	1589	1745	1745
LS	1690	1690	1716	1716	1839	1794	1985	1985
LB	500	500	526	526	633	588	744	744
LBS	689	689	715	715	838	793	984	984

PF082KF157..

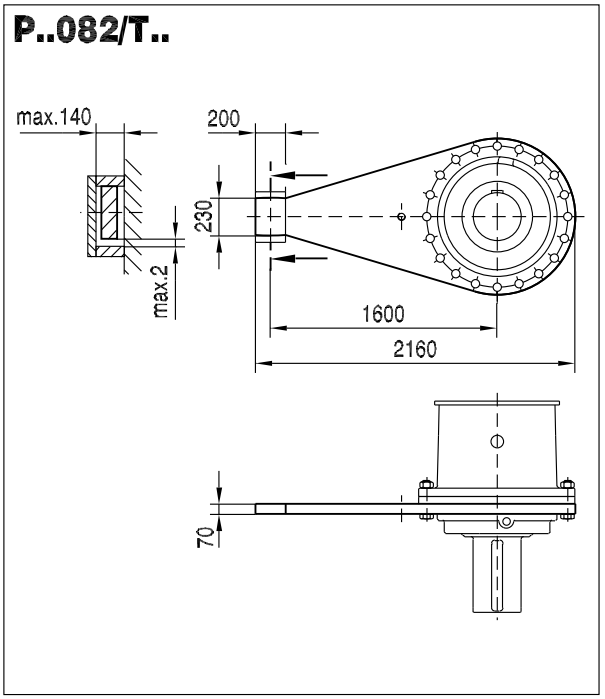
45 114 02 08



PHF082KF157..



P..082/T..

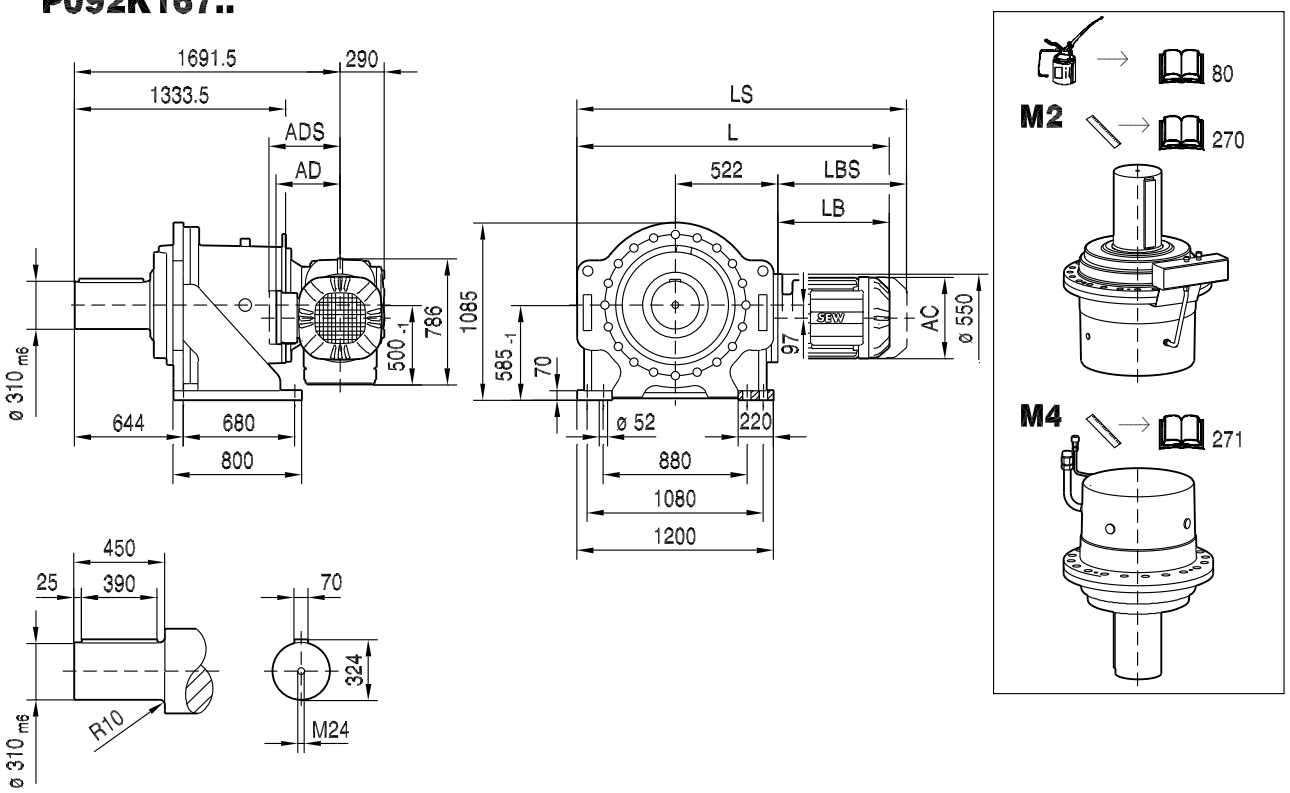


(→ 🗎 91)	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L	DRN225	DRN250M	DRN280S
AC	318	318	357	357	394	434	495	495
AD	253	253	268	268	306	306	394	394
ADS	253	253	268	268	306	306	394	394
L	1386	1386	1412	1412	1519	1474	1630	1630
LS	1575	1575	1601	1601	1724	1679	1870	1870
LB	500	500	526	526	633	588	744	744
LBS	689	689	715	715	838	793	984	984

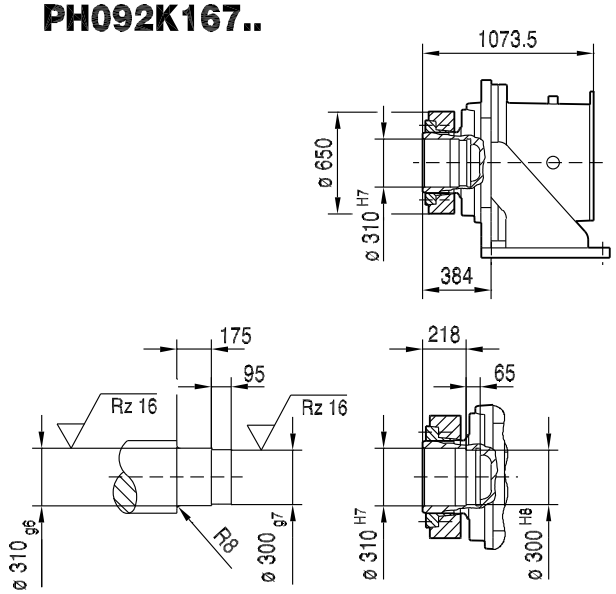
21915180/EN – 04/2015

P092K167..

45 006 01 11



PH092K167..

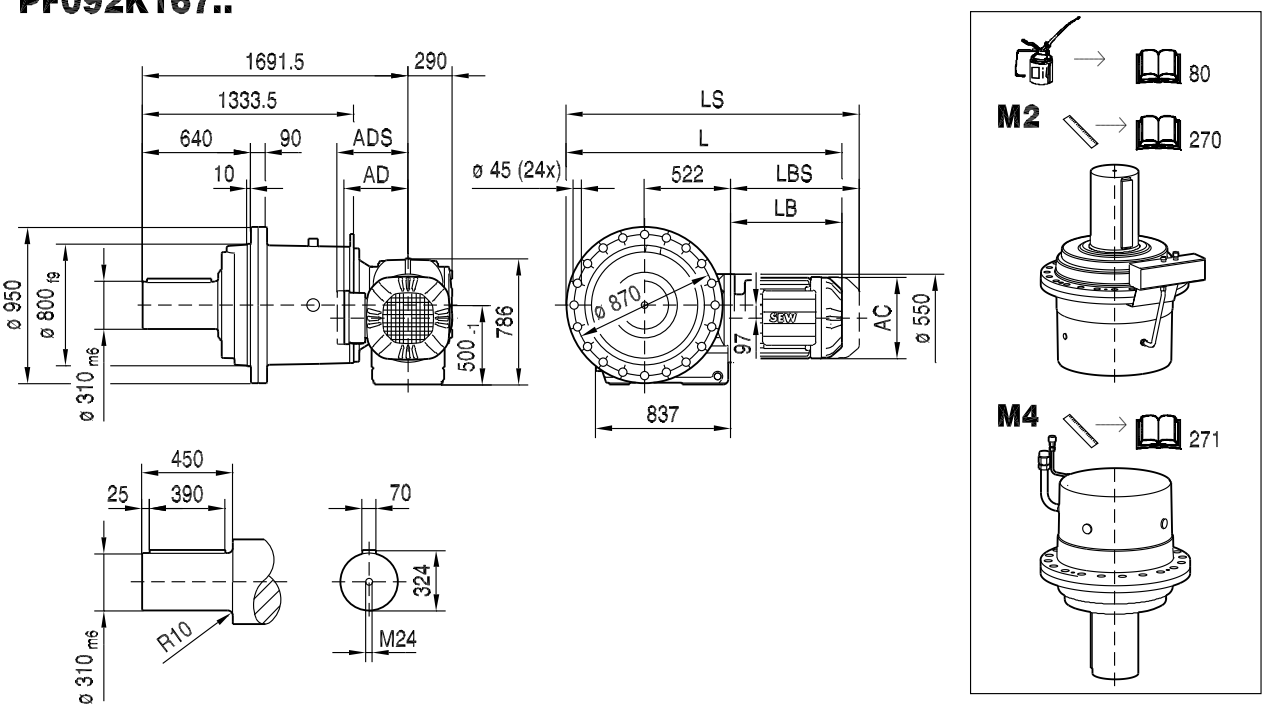


(→ 📄 91)	DRN132L	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L	DRN225	DRN250M	DRN280M	DRN280S
AC	268	318	318	357	357	394	434	495	495	495
AD	228	253	253	268	268	306	306	394	394	394
ADS	228	253	253	268	268	306	306	394	394	394
L	1554	1622	1622	1648	1648	1755	1710	1866	1961	1866
LS	1693	1811	1811	1837	1837	1960	1915	2106	2201	2106
LB	432	500	500	526	526	633	588	744	839	744
LBS	571	689	689	715	715	838	793	984	1079	984

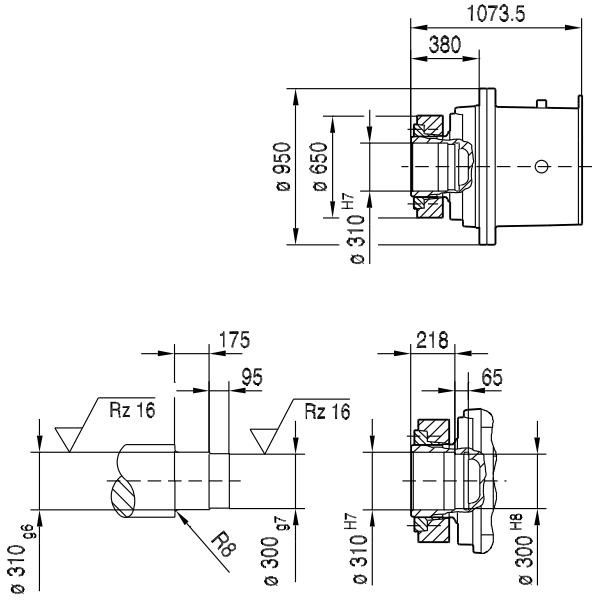
21915180/EN – 04/2015

PF092K167..

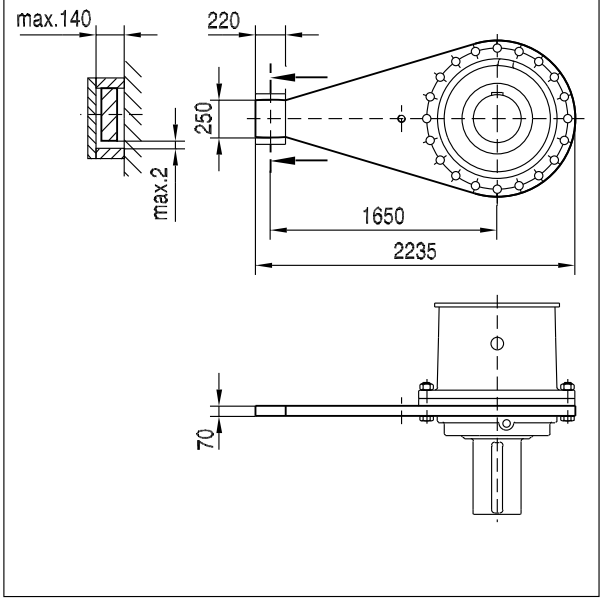
45 011 01 11



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P..092/T..

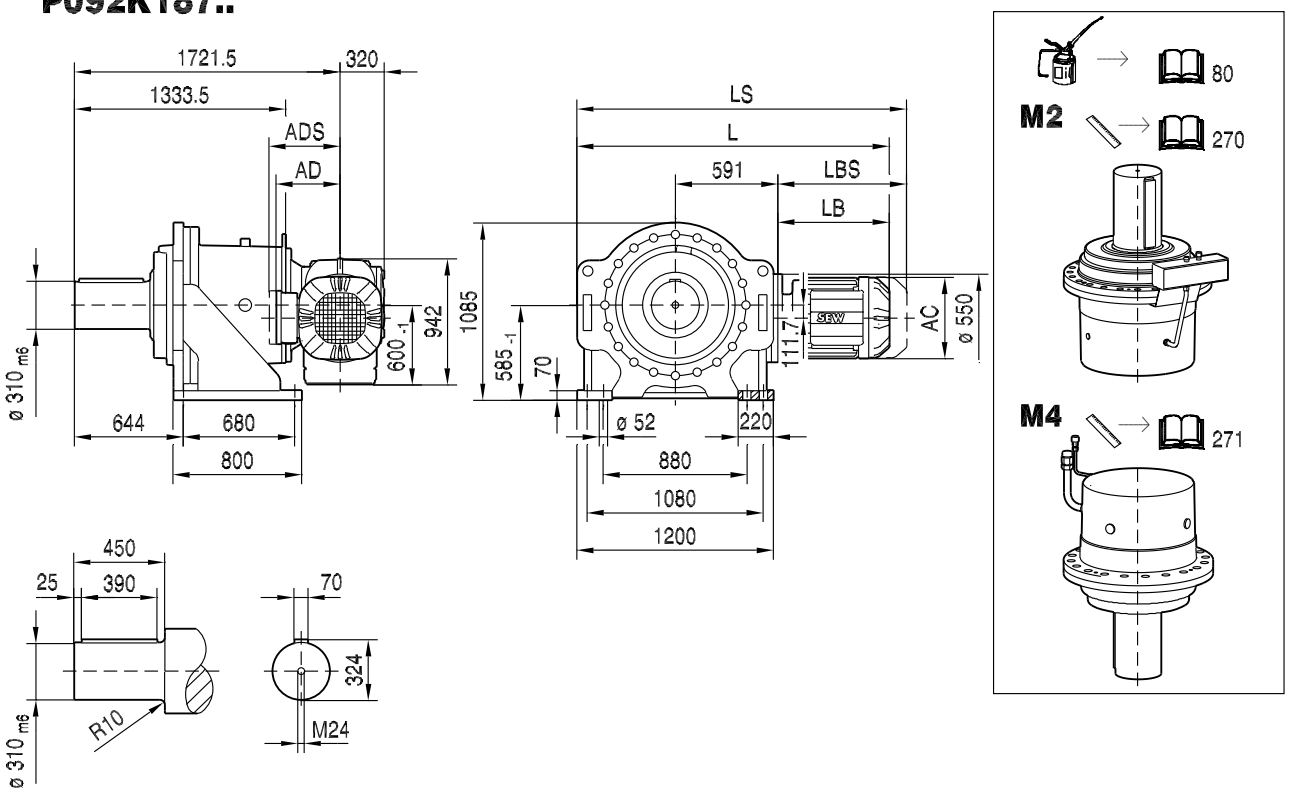


(→ 📄 91)	DRN132L	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L	DRN225	DRN250M	DRN280M	DRN280S
AC	268	318	318	357	357	394	434	495	495	495
AD	228	253	253	268	268	306	306	394	394	394
ADS	228	253	253	268	268	306	306	394	394	394
L	1429	1497	1497	1523	1523	1630	1585	1741	1836	1741
LS	1568	1686	1686	1712	1712	1835	1790	1981	2076	1981
LB	432	500	500	526	526	633	588	744	839	744
LBS	571	689	689	715	715	838	793	984	1079	984

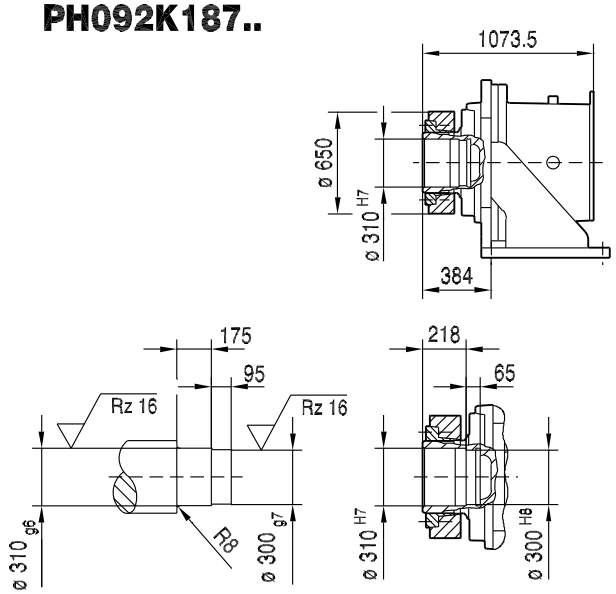
21915180/EN – 04/2015

P092K187..

45 007 01 11



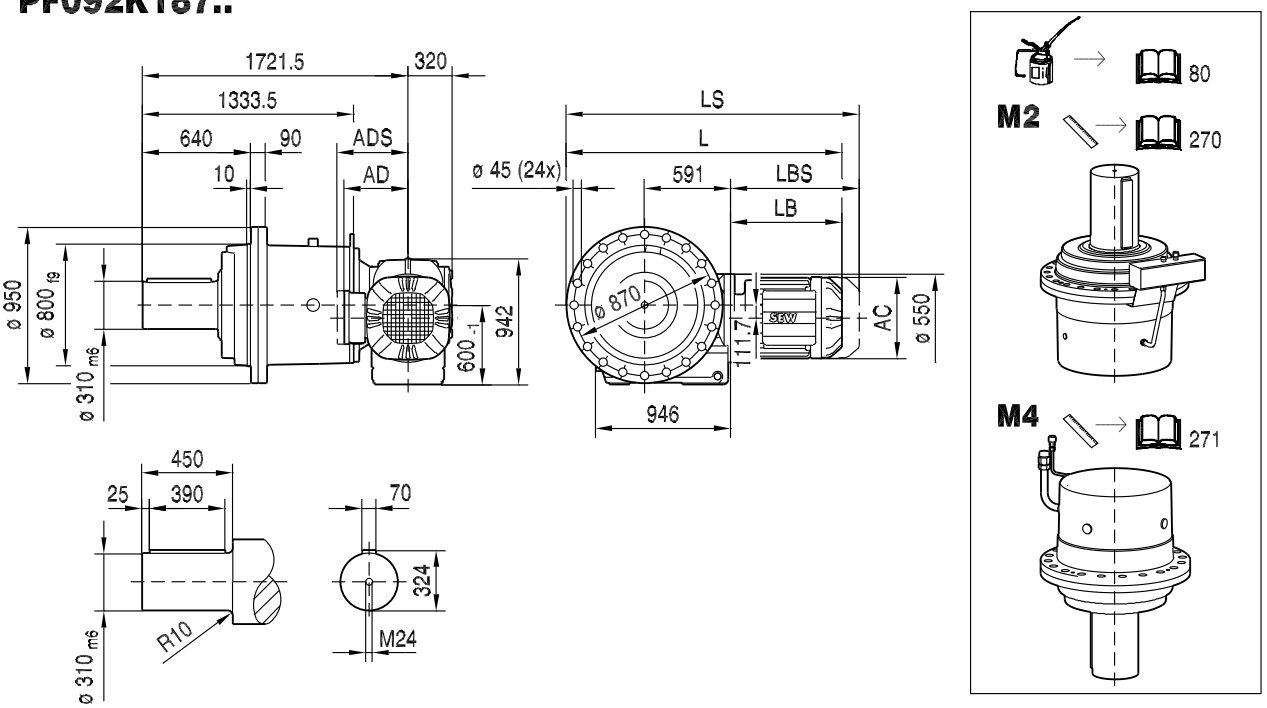
PH092K187..



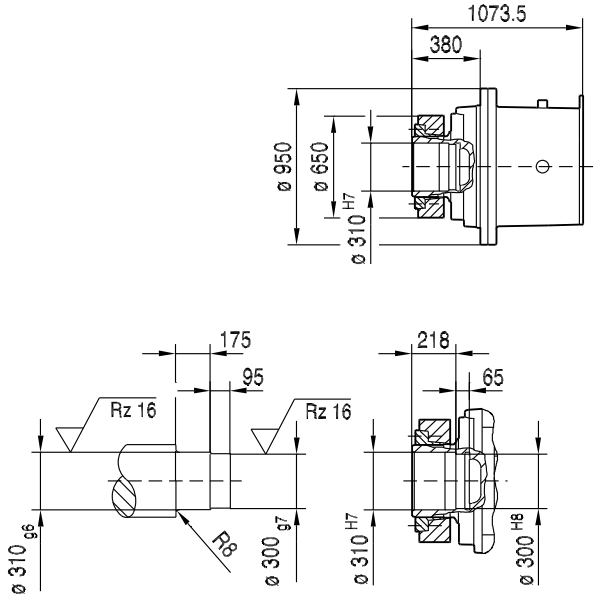
(→ 📄 91)	DRN160L	DRN180M	DRN180L	DRN200L	DRN225	DRN250M	DRN280M	DRN280S	DRN315S	DRN315M-H
AC	318	357	357	394	434	495	495	495	624	624
AD	253	268	268	306	306	394	394	394	506	506
ADS	253	268	268	306	306	394	394	394	506	506
L	1691	1717	1717	1824	1779	1935	2030	1935	2132	2262
LS	1880	1906	1906	2029	1984	2175	2270	2175	2383	2513
LB	500	526	526	633	588	744	839	744	941	1071
LBS	689	715	715	838	793	984	1079	984	1192	1322

PF092K187..

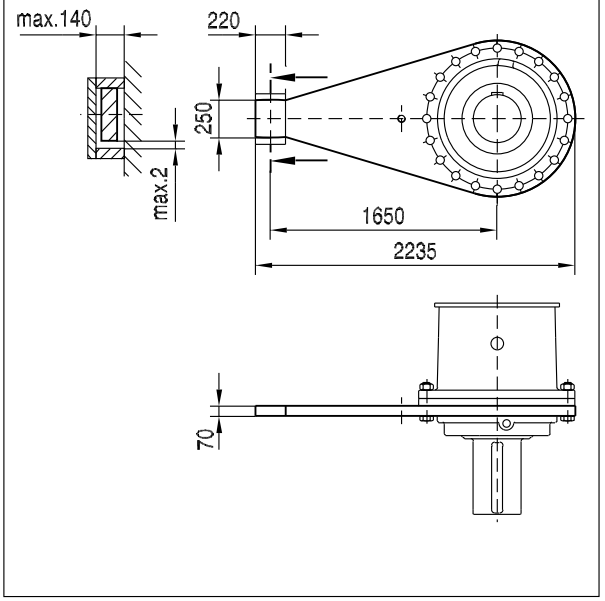
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P..092/T..

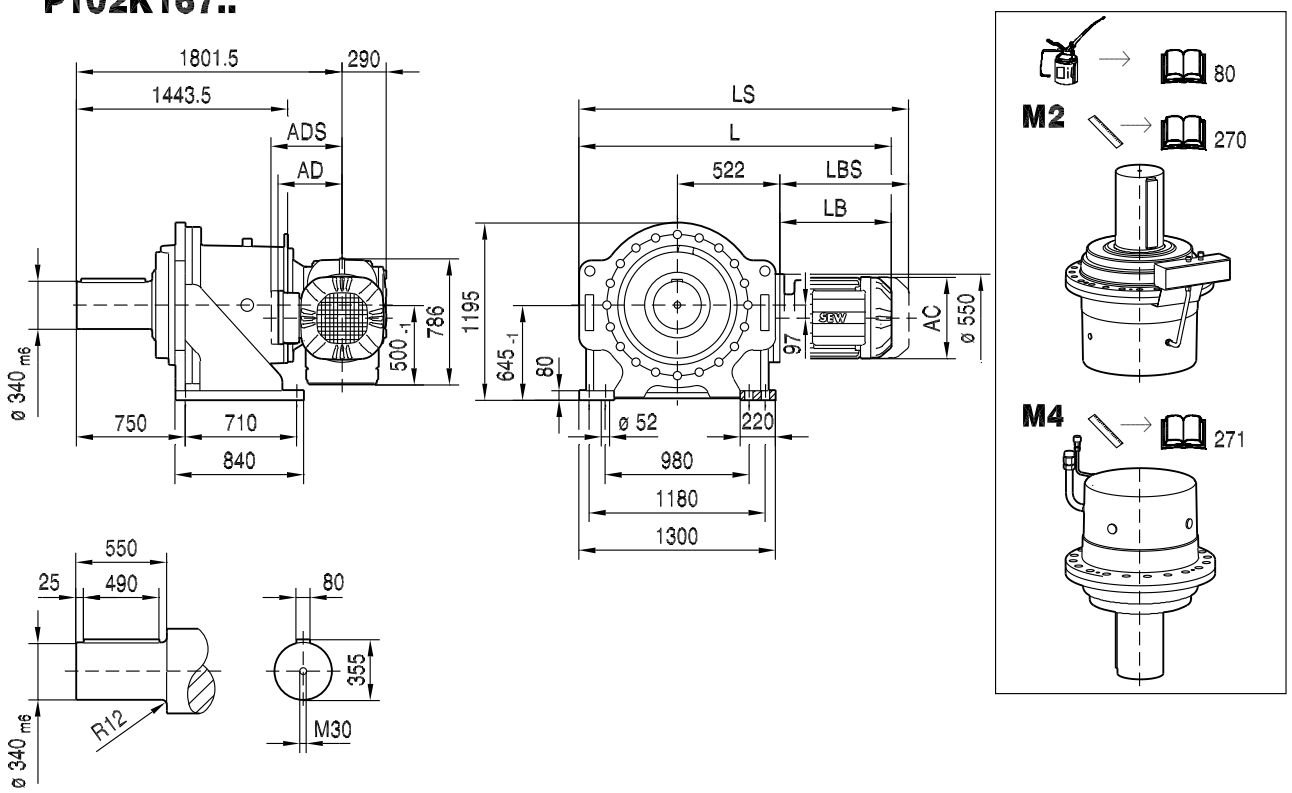


(→ 📄 91)	DRN160L	DRN180M	DRN180L	DRN200L	DRN225	DRN250M	DRN280M	DRN280S	DRN315S	DRN315M-H
AC	318	357	357	394	434	495	495	495	624	624
AD	253	268	268	306	306	394	394	394	506	506
ADS	253	268	268	306	306	394	394	394	506	506
L	1566	1592	1592	1699	1654	1810	1905	1810	2007	2137
LS	1755	1781	1781	1904	1859	2050	2145	2050	2258	2388
LB	500	526	526	633	588	744	839	744	941	1071
LBS	689	715	715	838	793	984	1079	984	1192	1322

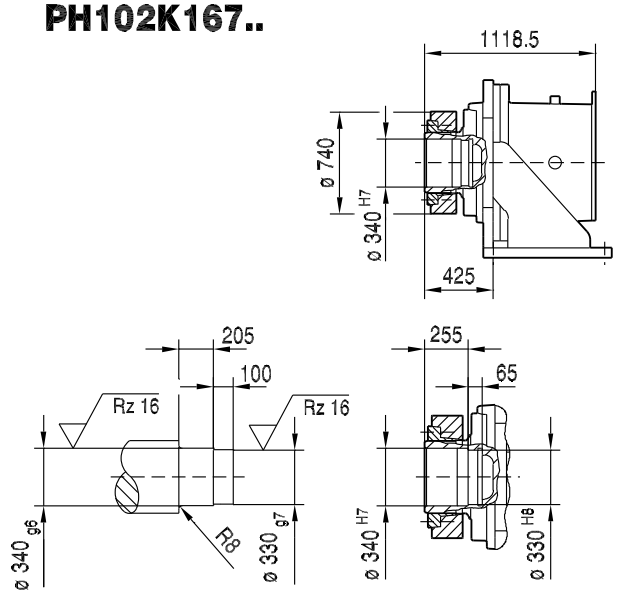
21915180/EN – 04/2015

P102K167..

45 008 01 11



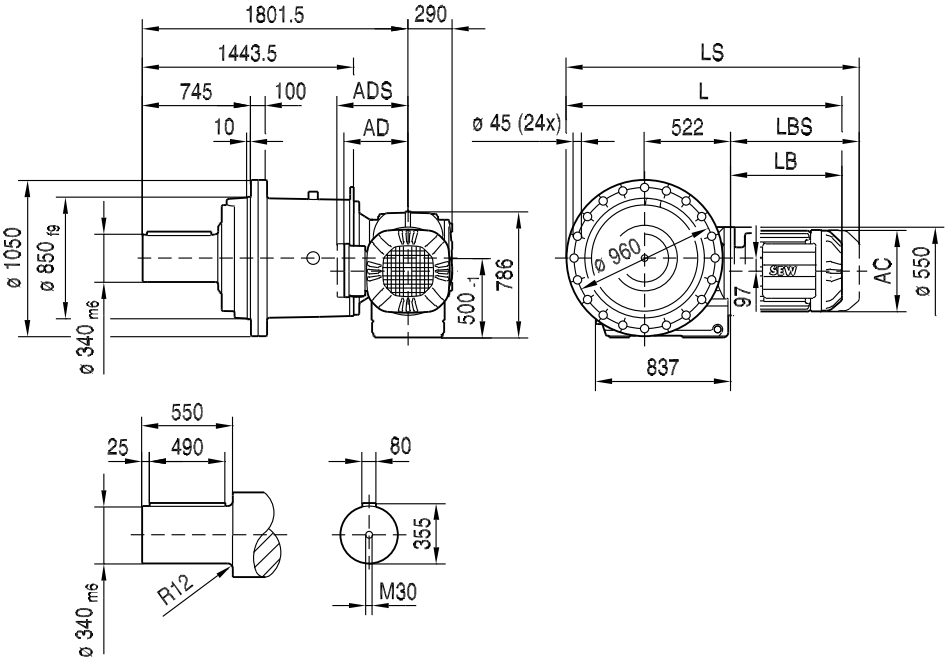
PH102K167..

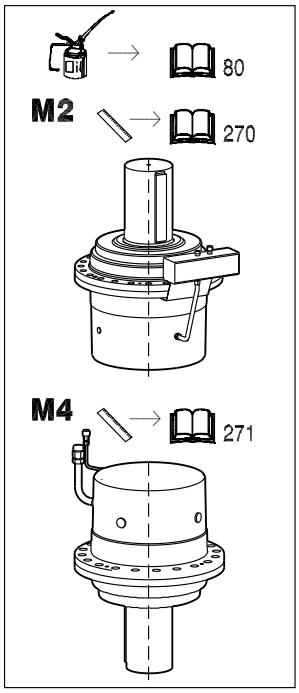


(→ 📄 91)	DRN132L	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L	DRN225	DRN250M
AC	268	318	318	357	357	394	434	495
AD	228	253	253	268	268	306	306	394
ADS	228	253	253	268	268	306	306	394
L	1604	1672	1672	1698	1698	1805	1760	1916
LS	1743	1861	1861	1887	1887	2010	1965	2156
LB	432	500	500	526	526	633	588	744
LBS	571	689	689	715	715	838	793	984

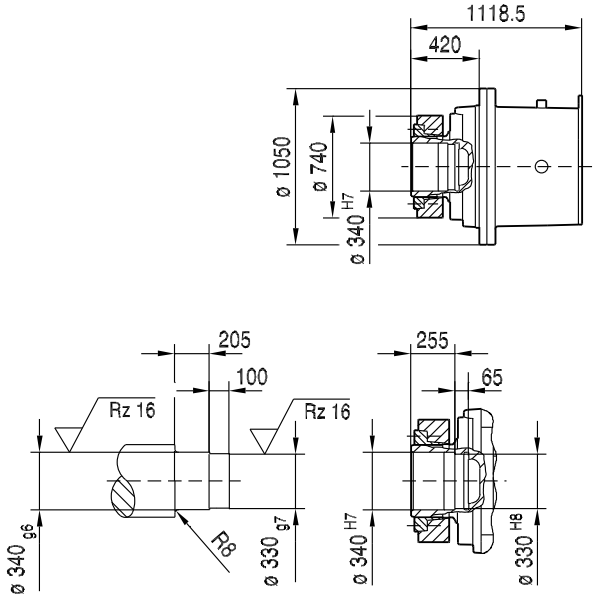
PF102K167..

45 013 01 11

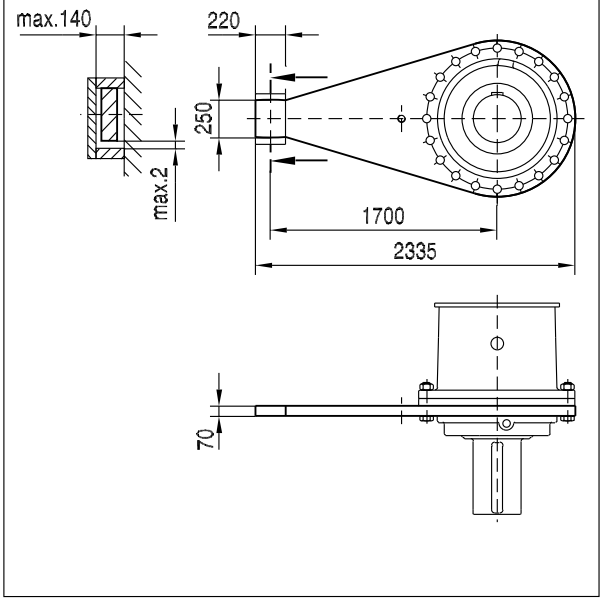




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P..102/T..

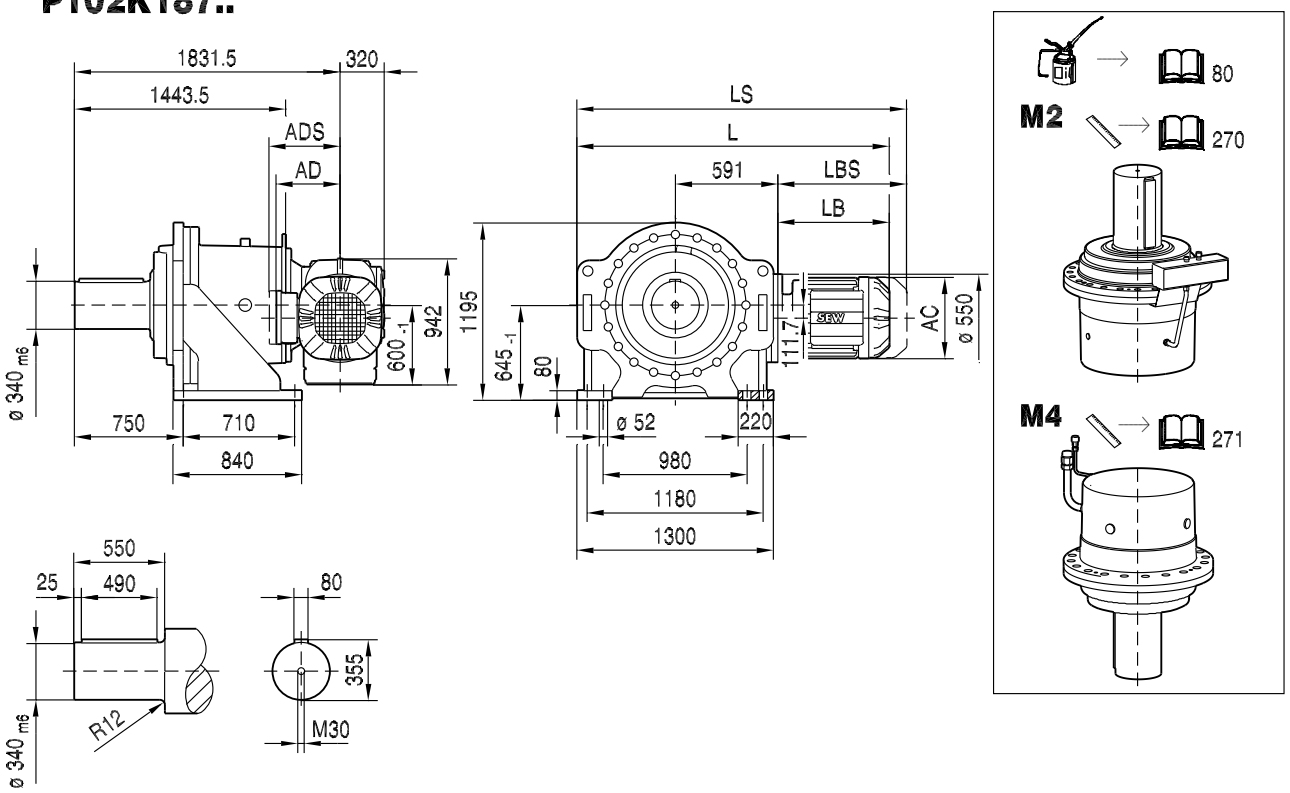


(→ 91)	DRN132L	DRN160M	DRN160L	DRN180M	DRN180L	DRN200L	DRN225	DRN250M
AC	268	318	318	357	357	394	434	495
AD	228	253	253	268	268	306	306	394
ADS	228	253	253	268	268	306	306	394
L	1479	1547	1547	1573	1573	1680	1635	1791
LS	1618	1736	1736	1762	1762	1885	1840	2031
LB	432	500	500	526	526	633	588	744
LBS	571	689	689	715	715	838	793	984

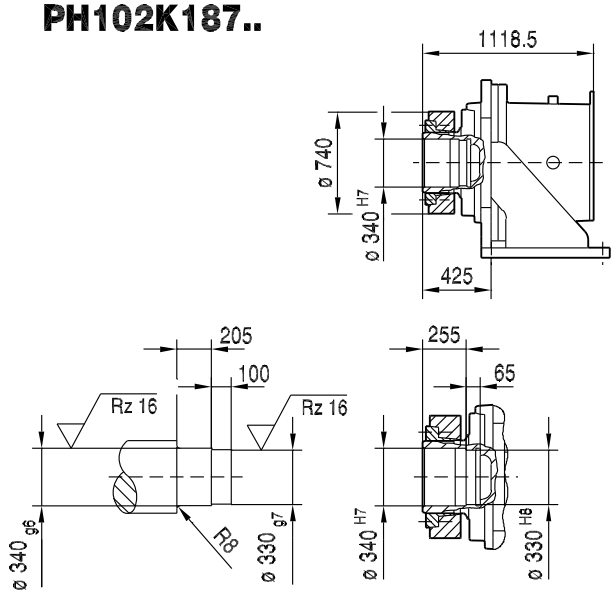
21915180/EN – 04/2015

P102K187..

45 009 01 11



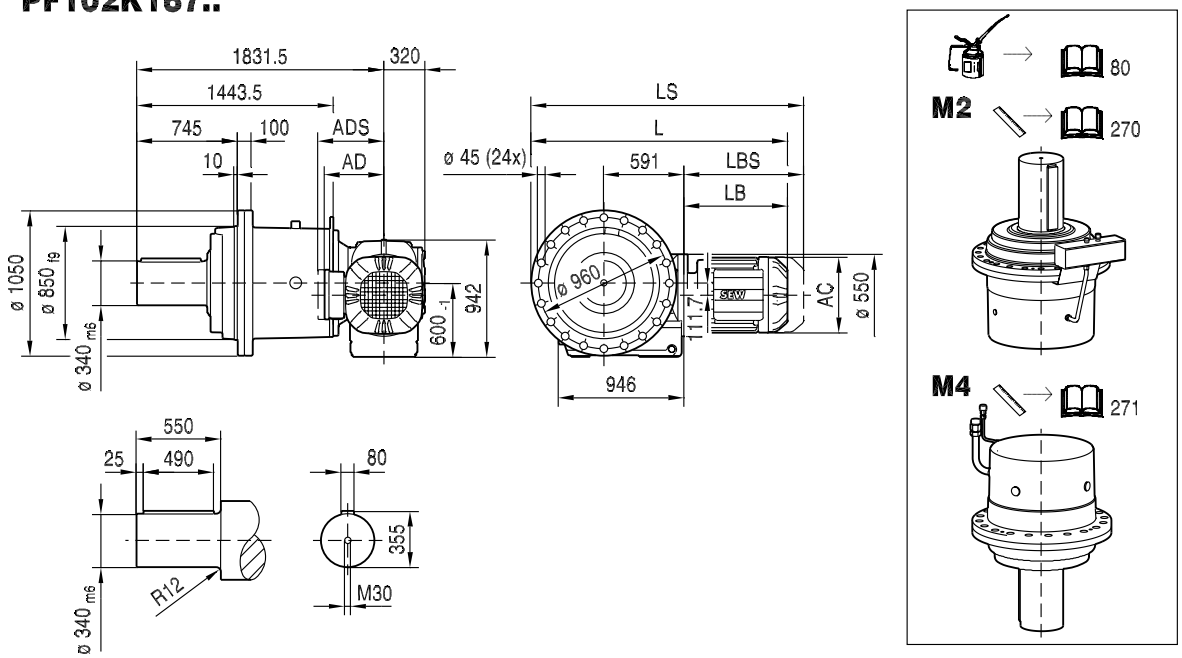
PH102K187..



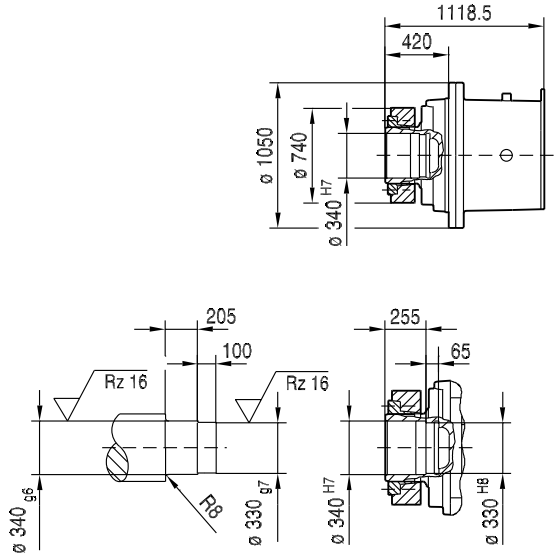
(→ 91)	DRN160L	DRN180M	DRN180L	DRN200L	DRN225	DRN250M	DRN280M	DRN280S	DRN315S	DRN315M-H
AC	318	357	357	394	434	495	495	495	624	624
AD	253	268	268	306	306	394	394	394	506	506
ADS	253	268	268	306	306	394	394	394	506	506
L	1741	1767	1767	1874	1829	1985	2080	1985	2182	2312
LS	1930	1956	1956	2079	2034	2225	2320	2225	2433	2563
LB	500	526	526	633	588	744	839	744	941	1071
LBS	689	715	715	838	793	984	1079	984	1192	1322

PF102K187..

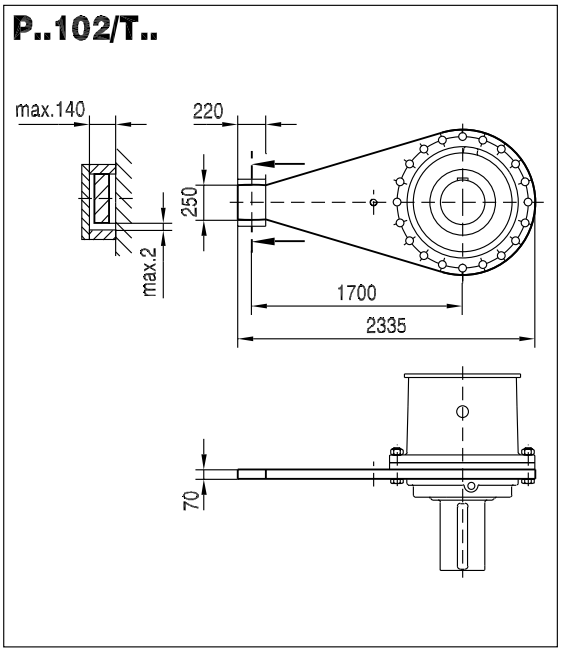
45 014 01 11



PHF102K187..



P..102/T..



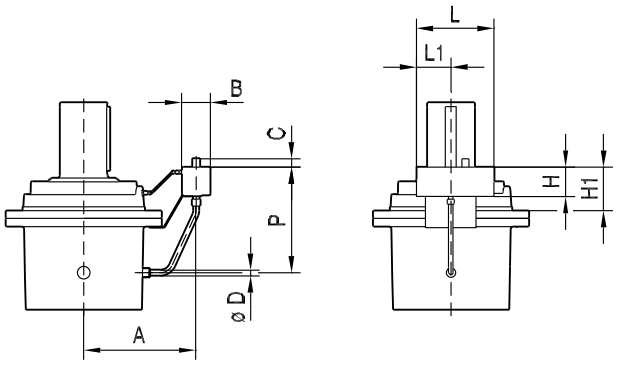
(→ 📄 91)	DRN160L	DRN180M	DRN180L	DRN200L	DRN225	DRN250M	DRN280M	DRN280S	DRN315S	DRN315M-H
AC	318	357	357	394	434	495	495	495	624	624
AD	253	268	268	306	306	394	394	394	506	506
ADS	253	268	268	306	306	394	394	394	506	506
L	1616	1642	1642	1749	1704	1860	1955	1860	2057	2187
LS	1805	1831	1831	1954	1909	2100	2195	2100	2308	2438
LB	500	526	526	633	588	744	839	744	941	1071
LBS	689	715	715	838	793	984	1079	984	1192	1322

21915180/EN – 04/2015

11.4 Oil expansion tank for mounting position M2

45 015 00 11

P/PH/PF/PHF
M2



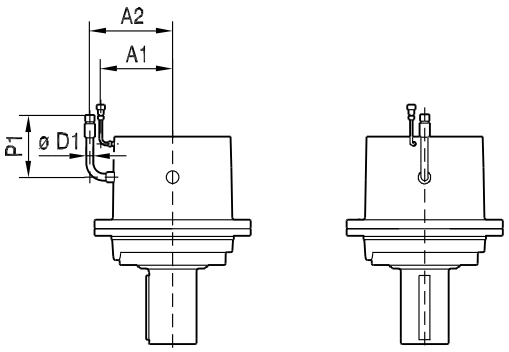
	A	B	C	Ø D	H	H1	L	L1	P
P.092	627.5	160	51	28	160	230	530	235	636.5
P.102	696.5	160	51	28	160	241	530	235	658.5

21915180/EN – 04/2015

11.5 Oil expansion tank for mounting position M2

45 016 00 11

P/PH/PF/PHF
M4



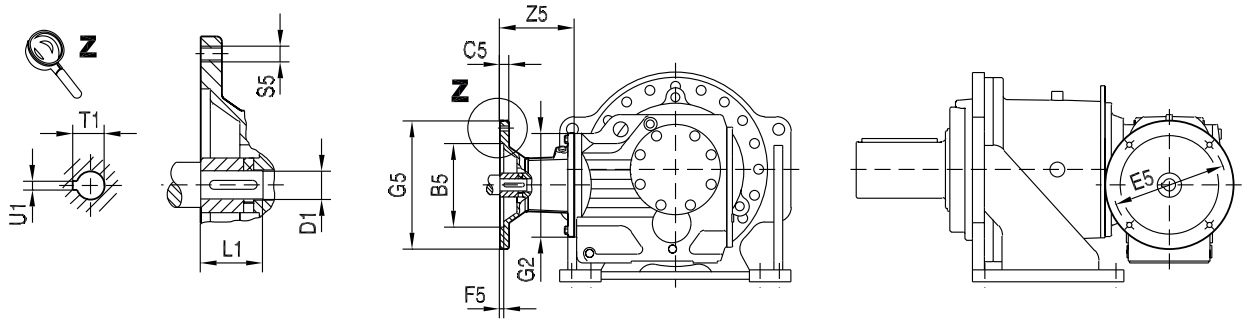
	A1	A2	Ø D1	P1
P.092	477	486	28	361
P.102	507	514	28	361

21915180/EN – 04/2015

11.6 AM adapters for mounting of 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..KF107	AM100	1	180	15	215	5	350	250	M12	110	28	60	31.3
	AM112												
	AM132S/M		230	16	265			300		163	38	80	41.3
	AM132ML												
	AM160		250	18	300	6		350	M16	221	42	110	45.3
	AM180										48		51.8
	AM200		300	20	350	7		400		262	55		59.3

21915180/EN – 04/2015

45 123 00 08

P..KF..AM..

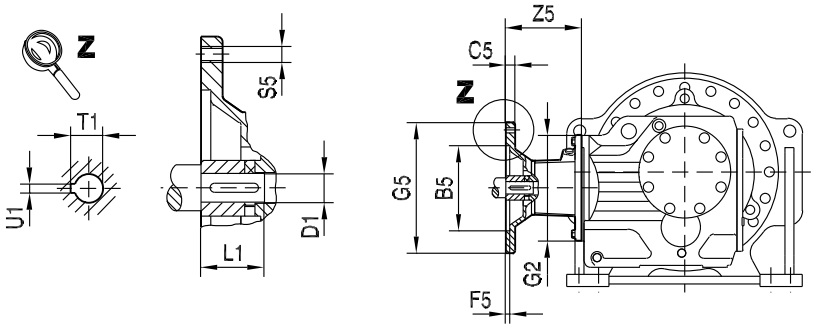


Fig.1

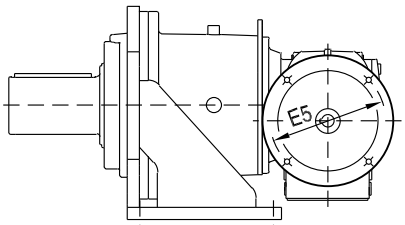


Fig.2

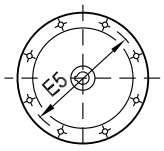
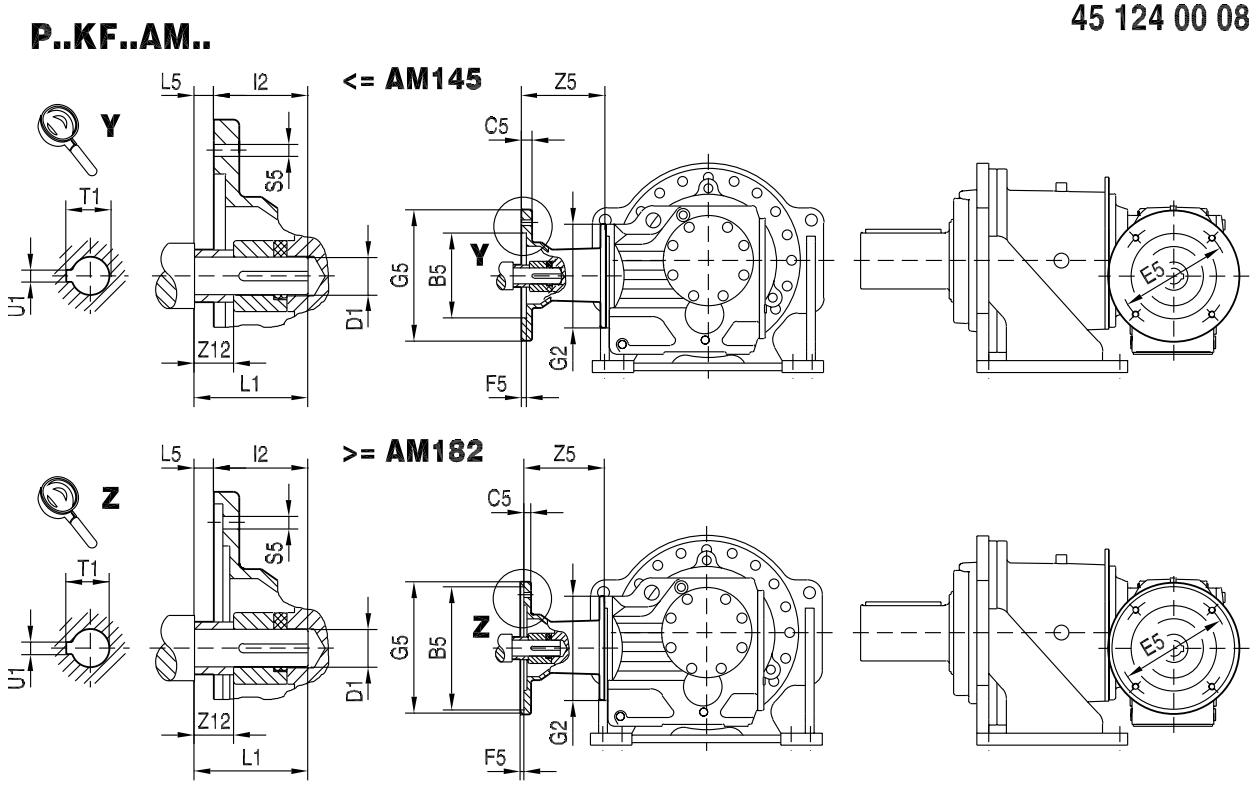


		Fig.	B5	C5	E5	F5	G2	G5	S5	Z5	D1	L1	T1	U1
P..KF127	AM132S/M	1	230	16	265	5	450	300	M12	148	38	80	41.3	10
	AM132ML													
	AM160		250	18	300	6		350	M16	206	42	110	45.3	12
	AM180										48		51.8	14
	AM200		300	20	350	7		400		247	55		59.3	16
	AM225	2	350	22	400			450		262	60	140	64.4	18
	AM250		450	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
P..K167	AM160	1	250	18	300	6.0	550	350	M16	198	0	42	110	45.3
	AM180									198	0	48		51.8
	AM200		300	20	350	7.0		400		239	0	55		59.3
	AM225	2	350	22	400			450		254	0	60	140	64.4
	AM250		450	25	500			550		328	19	65		69.4
	AM280											75		79.9
P..K187	AM160	1	250	18	300	6.0	550	350	M16	198	0	42	110	45.3
	AM180					6.0		350		198		48		51.8
	AM200		300	20	350	7.0		400		239		55		59.3
	AM225	2	350	22	400			450		254		60	140	64.4
	AM250		450	25	500			550		328	19	65	140	69.4
	AM280									328	19	75	140	79.9

21915180/EN – 04/2015

11.7 AM adapters for mounting of NEMA motors

45 124 00 08

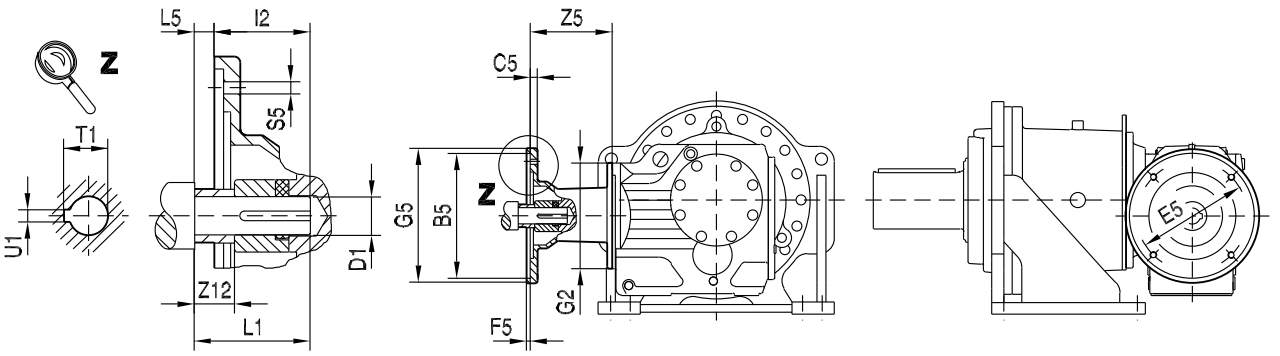


		B5	C5	E5	F5	G2	G5	I2	L5	S5	Z5	Z12	D1	L1	T1	U1
P..KF77	AM56	114.3	11	149.2	4.5	200	170	52.55	-4.8	10.5	81	16.5	15.875	47	18.1	4.76
	AM143		12					54.1	3		103.5	14.5	22.225	57	24.7	
	AM145															
	AM182	215.9	10	184	5		228	66.75	3	15	139.5	16.5	28.575	69	31.7	6.35
	AM184															
	AM213/215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

21915180/EN – 04/2015

P..KF..AM..

45 125 00 08



		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 **P..K167** **P..K187**	AM254/256	215.9	12	184	5	550	228	79.55	6.3	15	200	9	41.275	101	45.8	9.53
	AM284/286	266.7	15	228.6	5		286	95.3	6.3	15	207	15.8	47.625	117	53.4	12.7
	AM324/326	317.5	17	279.4	5		356	111.05	6.3	17.5	267	34.8	53.975	133	60	12.7
	AM364/365							127.05					60.325	149	67.6	15.875

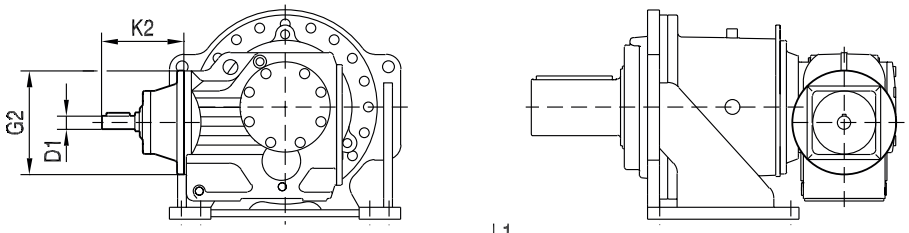
21915180/EN – 04/2015

SEW EURODRIVE

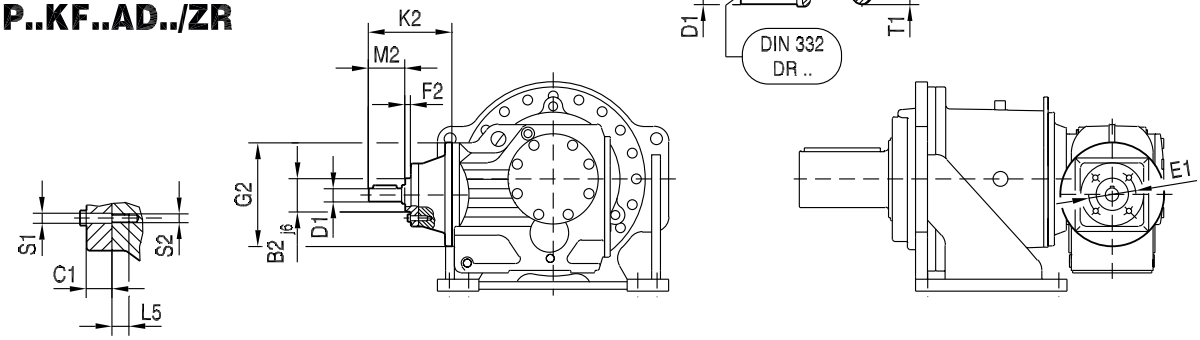
11.8 AD input shaft assembly

P..KF..AD..

46 128 01 08



P..KF..AD../ZR

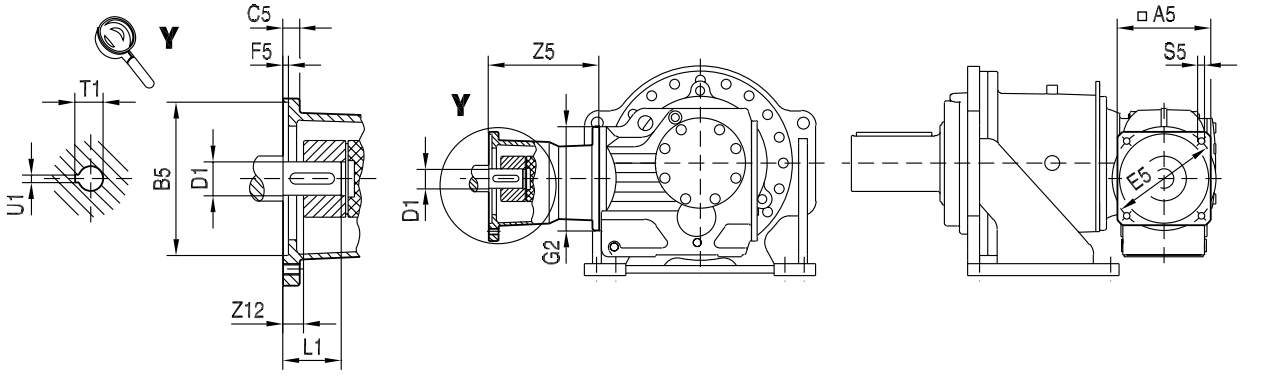


		B2	C1	E1	F2	G2	K2	L5	M2	S1	S2	D1	L1	L13	L14	T1	U1
P..KF77	AD2 , AD2/ZR	55	13.5	80	8	200	116	12	50	9	M8	19	40	4	32	21.5	6
	AD3 , AD3/ZR	70	15.5	105	8		151	16	60	11	M10	24	50	5	40	27	8
	AD4 , AD4/ZR	100	16	130	13		224	20	95.5	13.5	M12	38	80	5	70	41	10
P..KF87	AD2 , AD2/ZR	55	13.5	80	8	250	111	12	50	9	M8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

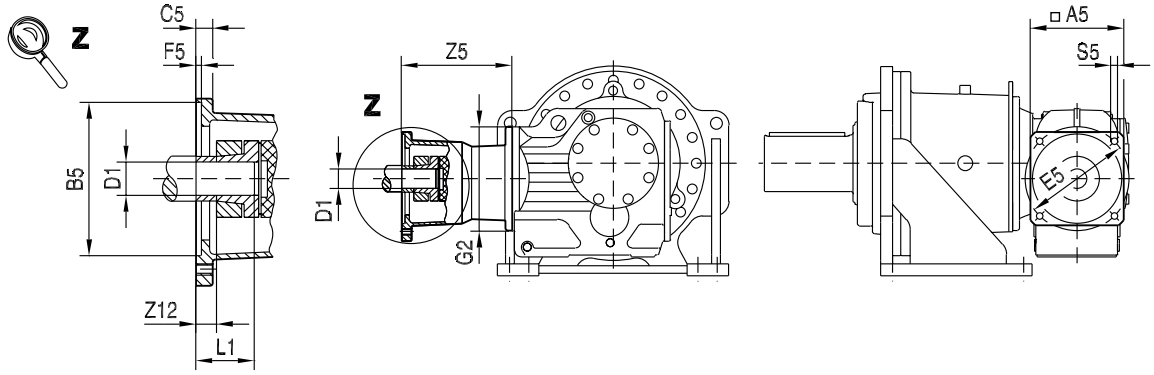
11.9 AQA motor adapters

46 126 01 08

P..KF..AQA..



P..KF..AQH..

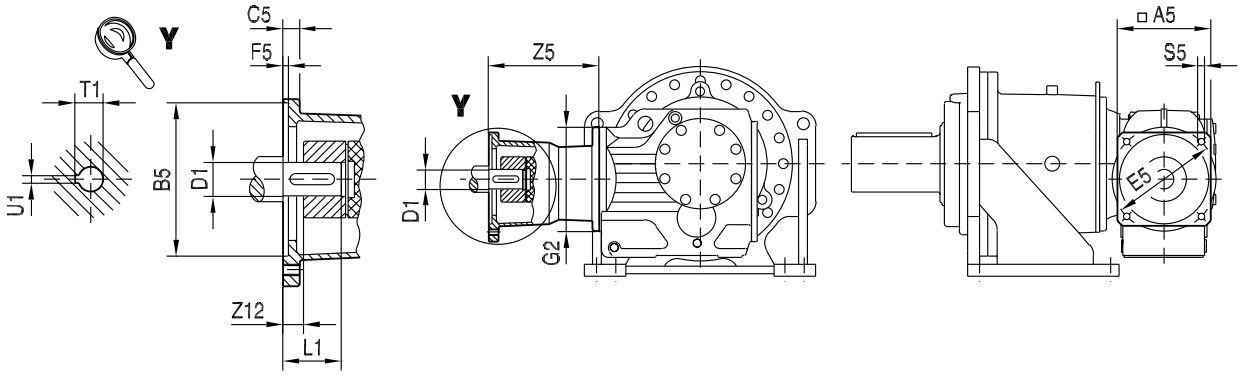


		A5	B5	C5	E5	F5	G2	S5	Z5	AQA Z12	AQH Z12	D1	L1	T1	U1
P..KF77	AQ..80/1	82	60	8	75	3.5	200	M5	92	5.5	5.5	11	23	12.8	4
	AQ..80/2	82	60	8	75	3.5	200	M5	92	5.5	5.5	14	30	16.3	5
	AQ..80/3	82	50	8	95	3	200	M6	92	5.5	5.5	14	30		5
	AQ..100/1	100	80	10	100	4	200	M6	116	0	0	14	30	16.3	5
	AQ..100/2	100	95	12	115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

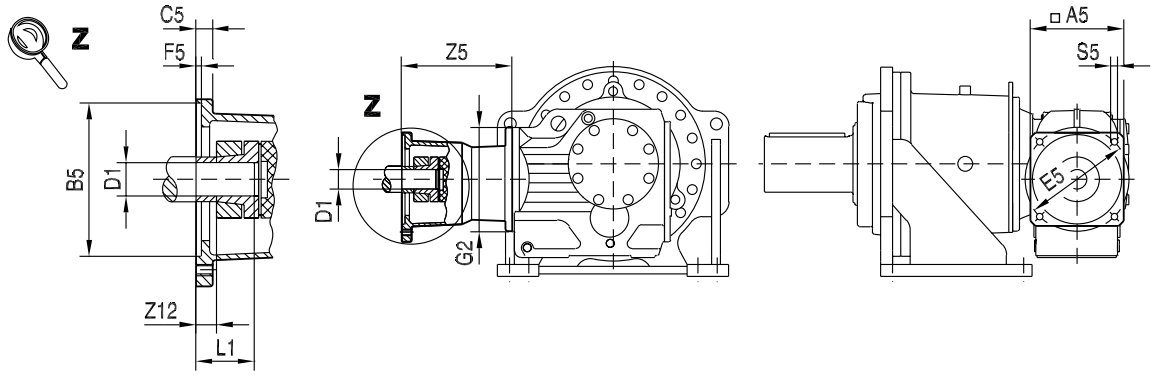
21915180/EN – 04/2015

46 127 01 08

P..KF..AQA..



P..KF..AQH..



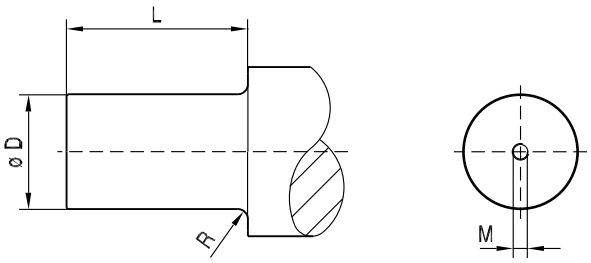
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P..KF97	AQ..140/1	140	110	15	165	5	300	M10	157	21	16	24	50	27.3	8
	AQ..140/2	140	130	15	165	5	300	M10	157	21	16	24	50	27.3	8
	AQ..140/3	140	130	15	165	5	300	M10	170	24	22	32	60	35.3	10
	AQ..190/1	190	130	16	215	5	300	M12	215.5	26	24	32	60	35.3	10
	AQ..190/2	190	180	16	215	5	300	M12	215.5	26	24	32	60	35.3	10
	AQ..190/3	190	180	16	215	5	300	M12	239.5	39	34	38	80	41.3	10
P..KF107	AQ..140/1	140	110	15	165	5	350	M10	151	21	16	24	50	27.3	8
	AQ..140/2	140	130	15	165	5	350	M10	151	21	16	24	50	27.3	8
	AQ..140/3	140	130	15	165	5	350	M10	164	24	22	32	60	35.3	10
	AQ..190/1	190	130	16	215	5	350	M12	209.5	26	24	32	60	35.3	10
	AQ..190/2	190	180	16	215	5	350	M12	209.5	26	24	32	60	35.3	10
	AQ..190/3	190	180	16	215	5	350	M12	233.5	39	34	38	80	41.3	10

21915180/EN – 04/2015

12 Additional dimension sheets

12.1 Output shaft with smooth shaft end

45 003 00 14

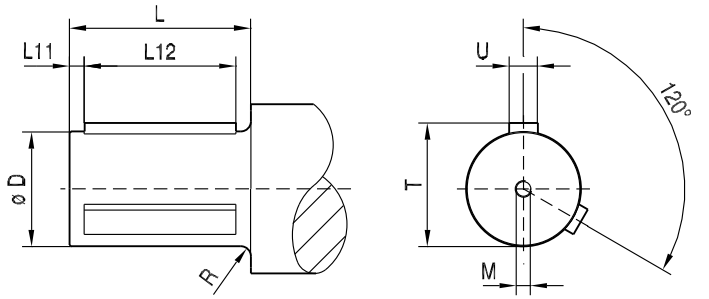


	Ø D	L	M	R
P.002	120_{v6}	200	M20	5
P.012	140_{v6}	220	M20	5
P.022	150_{v6}	220	M20	10
P.032	165_{v6}	250	M20	10
P.042	190_{v6}	300	M20	10
P.052	210_{v6}	350	M24	10
P.062	240_{v6}	400	M24	10
P.072	260_{v6}	400	M24	10
P.082	290_{v6}	450	M24	10
P.092	310_{v6}	450	M24	10
P.102	340_{v6}	550	M30	12

21915180/EN – 04/2015

12.2 Output shaft with 2 keys

45 002 00 14

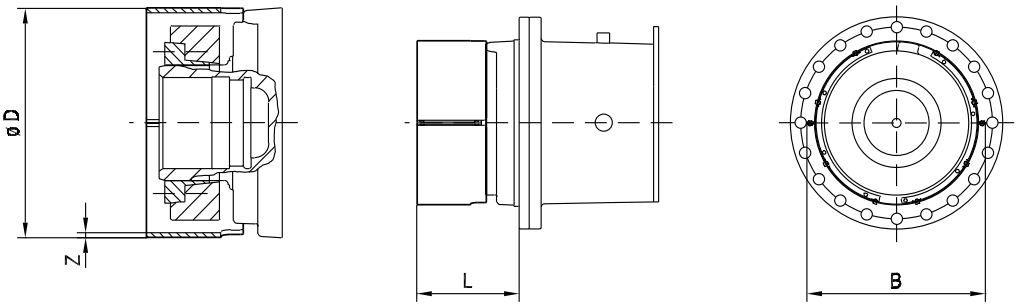


	Ø D	L11	L12	L	T	U	M	R
P.002	120_{m6}	14	165	200	127	32	M20	5
P.012	140_{m6}	15	185	220	148	36	M20	5
P.022	150_{m6}	15	183	220	158	36	M20	10
P032	165_{m6}	15	213	250	174	40	M20	10
P.042	190_{m6}	17,5	255	300	200	45	M20	10
P.052	210_{m6}	17,5	300	350	221	50	M24	10
P.062	240_{m6}	21	340	400	252	56	M24	10
P.072	260_{m6}	22	340	400	272	56	M24	10
P.082	290_{m6}	22	390	450	302	63	M24	10
P.092	310_{m6}	25	390	450	324	70	M24	10
P.102	340_{m6}	25	490	550	355	80	M30	12

21915180/EN – 04/2015

12.3 Protection cover for shrink disk

45 133 00 08



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

21915180/EN – 04/2015

13 Address directory SEW-EURODRIVE

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

21915180/EN – 04/2015

	Graz	SEW-EURODRIVE Ges.m.b.H. Grabenstraße 231 8045 Graz	Tel. +43 316 685 756-0 Fax +43 316 685 756-20 tb-graz@sew-eurodrive.at
	Dornbirn	SEW-EURODRIVE Ges.m.b.H. Lustenauerstraße 27/1 6850 Dornbirn	Tel. +43 5572 3725 99-0 Fax +43 5572 3725 99-20 tb-dornbirn@sew-eurodrive.at
Bangladesh			
Sales	Bangladesh	SEW-EURODRIVE INDIA PRIVATE LIMITED 345 DIT Road East Rampura Dhaka-1219, Bangladesh	Tel. +88 01729 097309 salesdhaka@seweurodrivebangladesh.com
Belarus			
Sales	Minsk	Foreign unitary production enterprise SEW-EURODRIVE RybalkoStr. 26 220033 Minsk	Tel. +375 17 298 47 56 / 298 47 58 Fax +375 17 298 47 54 http://www.sew.by sales@sew.by
Belgium			
Assembly Sales Service	Brussels	SEW-EURODRIVE n.v./s.a. Researchpark Haasrode 1060 Evenementenlaan 7 3001 Leuven	Tel. +32 16 386-311 Fax +32 16 386-336 http://www.sew-eurodrive.be info@sew-eurodrive.be
Service Competence Center	Industrial Gears	SEW-EURODRIVE n.v./s.a. Rue de Parc Industriel, 31 6900 Marche-en-Famenne	Tel. +32 84 219-878 Fax +32 84 219-879 http://www.sew-eurodrive.be service-wallonie@sew-eurodrive.be
Brazil			
Production Sales Service	São Paulo	SEW-EURODRIVE Brasil Ltda. Estrada Municipal José Rubim, 205 – Rodovia Santos Dumont Km 49 Indaiatuba – 13347-510 – SP	Tel. +55 19 3835-8000 sew@sew.com.br
Assembly Sales Service	Rio Claro	SEW-EURODRIVE Brasil Ltda. Rodovia Washington Luiz, Km 172 Condomínio Industrial Conpark Caixa Postal: 327 13501-600 – Rio Claro / SP	Tel. +55 19 3522-3100 Fax +55 19 3524-6653 montadora.rc@sew.com.br
	Joinville	SEW-EURODRIVE Brasil Ltda. Rua Dona Francisca, 12.346 – Pirabeiraba 89239-270 – Joinville / SC	Tel. +55 47 3027-6886 Fax +55 47 3027-6888 filial.sc@sew.com.br
Bulgaria			
Sales	Sofia	BEVER-DRIVE GmbH Bogdanovetz Str.1 1606 Sofia	Tel. +359 2 9151160 Fax +359 2 9151166 bever@bever.bg
Cameroon			
Sales	Douala	SEW-EURODRIVE S.A.R.L. Ancienne Route Bonabéri P.O. Box B.P 8674 Douala-Cameroun	Tel. +237 233 39 02 10 Fax +237 233 39 02 10 info@sew-eurodrive-cm
Canada			
Assembly Sales Service	Toronto	SEW-EURODRIVE CO. OF CANADA LTD. 210 Walker Drive Bramalea, ON L6T 3W1	Tel. +1 905 791-1553 Fax +1 905 791-2999 http://www.sew-eurodrive.ca l.watson@sew-eurodrive.ca
	Vancouver	SEW-EURODRIVE CO. OF CANADA LTD. Tilbury Industrial Park 7188 Honeyman Street Delta, BC V4G 1G1	Tel. +1 604 946-5535 Fax +1 604 946-2513 b.wake@sew-eurodrive.ca
	Montreal	SEW-EURODRIVE CO. OF CANADA LTD. 2555 Rue Leger Lasalle, PQ H8N 2V9	Tel. +1 514 367-1124 Fax +1 514 367-3677 a.peluso@sew-eurodrive.ca

21915180/EN – 04/2015

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

21915180/EN – 04/2015

Assembly Service	Plzeň	SEW-EURODRIVE CZ s.r.o. Areal KRPA a.s. Zahradni 173/2 326 00 Plzeň	Tel. +420 378 775 320 Fax +420 377 970 710 sew@sew-eurodrive.cz
Technical Offices	Brno	SEW-EURODRIVE CZ s.r.o. Křenová 52 60200 Brno	Tel. +420 543 254 174 Fax +420 543 256 845 ilona.cermakova@sew-eurodrive.cz
	Hradec Králové	SEW-EURODRIVE CZ s.r.o. Čechova 498 50202 Hradec Králové	Tel. +420 495 510 141 Fax +420 495 521 313 miroslav.moravec@sew-eurodrive.cz
	Ostrava	SEW-EURODRIVE CZ s.r.o. Studentská 6202/17 708 00 Ostrava-Poruba	Tel. +420 597 329 044 david.kenkus@sew-eurodrive.cz
	Klatovy	SEW-EURODRIVE CZ s.r.o. Vídeňská 841 33901 Klatovy	Tel. +420 376 331 634 Fax +420 376 331 634 viktor.kubernat@sew-eurodrive.cz
Service	Horní Moštěnice	SEW-EURODRIVE CZ s.r.o. Nám.Dr.M.Tyrše 14/64 751 17 Horní Moštěnice	Tel. +420 581 224 374 Fax +420 581 224 374 servis@sew-eurodrive.cz
Denmark			
Assembly Sales Service	Copenhagen	SEW-EURODRIVEA/S Geminivej 28-30 2670 Greve	Tel. +45 43 95 8500 Fax +45 43 9585-09 http://www.sew-eurodrive.dk sew@sew-eurodrive.dk
Egypt			
Sales Service	Cairo	Copam Egypt for Engineering & Agencies Building 10, Block 13005, First Industrial Zone, Obour City Cairo	Tel. +202 44812673 / 79 (7 lines) Fax +202 44812685 http://www.copam-egypt.com copam@copam-egypt.com
Estonia			
Sales	Tallin	ALAS-KUUL AS Reti tee 4 75301 Peetri küla, Rae vald, Harjumaa	Tel. +372 6593230 Fax +372 6593231 http://www.alas-kuul.ee veiko.soots@alas-kuul.ee
Finland			
Assembly Sales Service	Hollola	SEW-EURODRIVE OY Vesimäentie 4 15860 Hollola	Tel. +358 201 589-300 Fax +358 3 780-6211 http://www.sew-eurodrive.fi sew@sew.fi
Service	Hollola	SEW-EURODRIVE OY Keskikankaantie 21 15860 Hollola	Tel. +358 201 589-300 Fax +358 3 780-6211 http://www.sew-eurodrive.fi sew@sew.fi
Production Assembly	Karkkila	SEW Industrial Gears Oy Santasalonkatu 6, PL 8 03620 Karkkila, 03601 Karkkila	Tel. +358 201 589-300 Fax +358 201 589-310 http://www.sew-eurodrive.fi sew@sew.fi
Technical Offices	Helsinki	SEW-EURODRIVE OY Luutnantintie 5 00410 Helsinki	Tel. +358 201 589-300 sew@sew.fi
	Oulu	SEW Industrial Gears Oy Paulaharjuntie 22 90530 Oulu	Tel. +358 201 589 300 sew@sew.fi
	Vaasa	SEW Industrial Gears Oy Asemakatu 7 65100 Vaasa	Tel. +358 201 589-300 sew@sew.fi
	Kuopio	SEW Industrial Gears Oy Leväsentie 23 70780 Kuopio	Tel. +358 201 589-300 sew@sew.fi
	Tampere	SEW Industrial Gears Oy Hermiankatu 3 A 33720 Tampere	Tel. +358 201 589-300 sew@sew.fi

21915180/EN – 04/2015

	Kotka	SEW Industrial Gears Oy Heikinkatu 7 48100 Kotka	Tel. +358 201 589 300 sew@sew.fi
France			
Production Sales Service	Hagenau	SEW-USOCOME 48-54 route de Soufflenheim B. P. 20185 67506 Haguenau Cedex	Tel. +33 3 88 73 67 00 Fax +33 3 88 73 66 00 http://www.usocome.com sew@usocome.com
Production	Forbach	SEW-USOCOME Zone industrielle Technopôle Forbach Sud B. P. 30269 57604 Forbach Cedex	Tel. +33 3 87 29 38 00
	Brumath	SEW-USOCOME 1 Rue de Bruxelles 67670 Mommenheim Cedex	Tel. +33 3 88 37 48 00
Assembly Sales Service	Bordeaux	SEW-USOCOME Parc d'activités de Magellan 62 avenue de Magellan – B. P. 182 33607 Pessac Cedex	Tel. +33 5 57 26 39 00 Fax +33 5 57 26 39 09
	Lyon	SEW-USOCOME 75 rue Antoine Condorcet 38090 Vaulx-Milieu	Tel. +33 4 74 99 60 00 Fax +33 4 74 99 60 15
	Nantes	SEW-USOCOME Parc d'activités de la forêt 4 rue des Fontenelles 44140 Le Bignon	Tel. +33 2 40 78 42 00 Fax +33 2 40 78 42 20
	Paris	SEW-USOCOME Zone industrielle 2 rue Denis Papin 77390 Verneuil l'Étang	Tel. +33 1 64 42 40 80 Fax +33 1 64 42 40 88
Technical Offices	Alsace	SEW-USOCOME	Tel. +33 3 89 74 51 62 Fax +33 3 89 76 58 71
	Aquitaine / Charentes	SEW-USOCOME	Tel. +33 5 57 26 39 08 Fax +33 5 57 26 39 09
	Auvergne / Limousin	SEW-USOCOME	Tel. +33 5 55 20 12 10 Fax +33 5 55 20 12 11
	Lower Normandie	SEW-USOCOME	Tel. +33 2 31 37 92 86 Fax +33 2 31 74 68 15
	Brittany	SEW-USOCOME	Tel. +33 2 40 78 42 04 Fax +33 2 40 78 42 20
	Burgundy	SEW-USOCOME	Tel. +33 3 85 49 92 18 Fax +33 3 85 49 92 19
	Centre / Poitou	SEW-USOCOME	Tel. +33 2 40 78 42 11 Fax +33 2 40 78 42 20
	Champagne-Ardenne	SEW-USOCOME	Tel. +33 3 25 79 63 24 Fax +33 3 25 79 63 25
	Franche-Comté	SEW-USOCOME	Tel. +33 3 84 68 57 71 Fax +33 3 84 68 57 95
	Île-de-France East / Aisne	SEW-USOCOME	Tel. +33 3 23 62 81 24 Fax +33 3 23 62 81 44
	Île-de-France North / Picardie	SEW-USOCOME	Tel. +33 1 41 05 92 74 Fax +33 1 41 05 92 75
	Île-de-France South	SEW-USOCOME	Tel. +33 1 60 81 10 56 Fax +33 1 60 81 10 57
	Lorraine / Alsace North	SEW-USOCOME	Tel. +33 3 83 96 28 04 Fax +33 3 83 96 28 07
	Midi-Pyrénées / Roussillon	SEW-USOCOME	Tel. +33 5 61 08 15 85 Fax +33 5 61 08 16 44
	Nord-Pas-de-Calais	SEW-USOCOME	Tel. +33 3 21 10 86 86 Fax +33 3 21 10 86 87

21915180/EN – 04/2015

	Paris / Île-de-France West	SEW-USOCOME	Tel. +33 1 30 90 89 86 Fax +33 1 30 90 93 15
	Pays de la Loire	SEW-USOCOME	Tel. +33 2 40 78 42 03 Fax +33 2 40 78 42 20
	Provence-Alpes-Côte d'Azur	SEW-USOCOME	Tel. +33 4 91 18 00 11 Fax +33 4 91 18 00 12
	Rhône-Alpes East	SEW-USOCOME	Tel. +33 4 75 05 65 95 Fax +33 4 75 05 65 96
	Rhône-Alpes North	SEW-USOCOME	Tel. +33 4 74 99 60 03 Fax +33 4 74 99 60 15
	Rhône-Alpes West	SEW-USOCOME	Tel. +33 4 74 99 60 04 Fax +33 4 74 99 60 15
Gabon			
Sales	Libreville	SEW-EURODRIVE SARL 183, Rue 5.033.C, Lalala à droite P.O. Box 15682 Libreville	Tel. +241 03 28 81 55 +241 06 54 81 33 http://www.sew-eurodrive.cm sew@sew-eurodrive.cm
Germany			
Headquarters Production Sales	Bruchsal	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 42 76646 Bruchsal P.O. Box Postfach 3023 – D-76642 Bruchsal	Tel. +49 7251 75-0 Fax +49 7251 75-1970 http://www.sew-eurodrive.de sew@sew-eurodrive.de
Production / Industrial Gears	Bruchsal	SEW-EURODRIVE GmbH & Co KG Christian-Pähr-Str. 10 76646 Bruchsal	Tel. +49 7251 75-0 Fax +49 7251 75-2970
Production	Graben	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 1 76676 Graben-Neudorf P.O. Box Postfach 1220 – D-76671 Graben-Neudorf	Tel. +49 7251 75-0 Fax +49 7251-2970
	Östringen	SEW-EURODRIVE GmbH & Co KG, Werk Östringen Franz-Gurk-Straße 2 76684 Östringen	Tel. +49 7253 9254-0 Fax +49 7253 9254-90 oestringen@sew-eurodrive.de
Service Competence Center	Mechanics / Mechatronics	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 1 76676 Graben-Neudorf	Tel. +49 7251 75-1710 Fax +49 7251 75-1711 scc-mechanik@sew-eurodrive.de
	Electronics	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 42 76646 Bruchsal	Tel. +49 7251 75-1780 Fax +49 7251 75-1769 scc-elektronik@sew-eurodrive.de
Drive Technology Center	North	SEW-EURODRIVE GmbH & Co KG Alte Ricklinger Straße 40-42 30823 Garbsen (Hannover)	Tel. +49 5137 8798-30 Fax +49 5137 8798-55 dtc-nord@sew-eurodrive.de
	East	SEW-EURODRIVE GmbH & Co KG Dänkritzer Weg 1 08393 Meerane (Zwickau)	Tel. +49 3764 7606-0 Fax +49 3764 7606-30 dtc-ost@sew-eurodrive.de
	South	SEW-EURODRIVE GmbH & Co KG Domagkstraße 5 85551 Kirchheim (München)	Tel. +49 89 909552-10 Fax +49 89 909552-50 dtc-sued@sew-eurodrive.de
	West	SEW-EURODRIVE GmbH & Co KG Siemensstraße 1 40764 Langenfeld (Düsseldorf)	Tel. +49 2173 8507-30 Fax +49 2173 8507-55 dtc-west@sew-eurodrive.de
Drive Center	Berlin	SEW-EURODRIVE GmbH & Co KG Alexander-Meißner-Straße 44 12526 Berlin	Tel. +49 306331131-30 Fax +49 306331131-36 dc-berlin@sew-eurodrive.de
	Ludwigshafen	SEW-EURODRIVE GmbH & Co KG c/o BASF SE Gebäude W130 Raum 101 67056 Ludwigshafen	Tel. +49 7251 75 3759 Fax +49 7251 75 503759 dc-ludwigshafen@sew-eurodrive.de
	Saarland	SEW-EURODRIVE GmbH & Co KG Gottlieb-Daimler-Straße 4 66773 Schwalbach Saar – Hülzweiler	Tel. +49 6831 48946 10 Fax +49 6831 48946 13 dc-saarland@sew-eurodrive.de

21915180/EN – 04/2015

Germany			
	Ulm	SEW-EURODRIVE GmbH & Co KG Dieselstraße 18 89160 Dornstadt	Tel. +49 7348 9885-0 Fax +49 7348 9885-90 dc-ulm@sew-eurodrive.de
	Würzburg	SEW-EURODRIVE GmbH & Co KG Nürnbergerstraße 118 97076 Würzburg-Lengfeld	Tel. +49 931 27886-60 Fax +49 931 27886-66 dc-wuerzburg@sew-eurodrive.de
Drive Service Hotline / 24 Hour Service			0 800 SEWHELP 0 800 7394357
Technical Offices	Augsburg	SEW-EURODRIVE GmbH & Co KG August-Wessels-Straße 27 86156 Augsburg	Tel. +49 821 22779-10 Fax +49 821 22779-50 tb-augsburg@sew-eurodrive.de
	Lake Constance	SEW-EURODRIVE GmbH & Co KG Dornierstraße 4 88677 Markdorf	Tel. +49 7544 96590-90 Fax +49 7544 96590-99 tb-bodensee@sew-eurodrive.de
	Bremen	SEW-EURODRIVE GmbH & Co KG Bornstr.19 ... 22 28195 Bremen	Tel. +49 421 33918-10 Fax +49 421 33918-22 tb-bremen@sew-eurodrive.de
	Dortmund	SEW-EURODRIVE GmbH & Co KG Hildastraße 8 44145 Dortmund	Tel. +49 231 229028-10 Fax +49 231 229028-20 tb-dortmund@sew-eurodrive.de
	Dresden	SEW-EURODRIVE GmbH & Co KG Hauptstraße 32 01445 Radebeul	Tel. +49 351 26338-0 Fax +49 351 26338-38 tb-dresden@sew-eurodrive.de
	Erfurt	SEW-EURODRIVE GmbH & Co KG Dubliner Straße 12 99091 Erfurt	Tel. +49 361 21709-70 Fax +49 361 21709-79 tb-erfurt@sew-eurodrive.de
	Güstrow	SEW-EURODRIVE GmbH & Co KG Glasewitzer Chaussee 33 B 18273 Güstrow P.O. Box Postfach 1216 – D-18262 Güstrow	Tel. +49 3843 8557-80 Fax +49 3843 8557-88 tb-guestrow@sew-eurodrive.de
	Hamburg	SEW-EURODRIVE GmbH & Co KG Bramfelder Straße 119 22305 Hamburg	Tel. +49 40 298109-60 Fax +49 40 298109-70 tb-hamburg@sew-eurodrive.de
	Hannover / Garbsen	SEW-EURODRIVE GmbH & Co KG Alte Ricklinger Str.40-42 30823 Garbsen P.O. Box Postfach 1104 53 – D-30804 Garbsen	Tel. +49 5137 8798-10 Fax +49 5137 8798-50 tb-hannover@sew-eurodrive.de
	Heilbronn	SEW-EURODRIVE GmbH & Co KG Zeppelinstraße 7 74357 Bönnigheim	Tel. +49 7143 8738-0 Fax +49 7143 8738-25 tb-heilbronn@sew-eurodrive.de
	Herford	SEW-EURODRIVE GmbH & Co KG Goebenstraße 3 – 7 32052 Herford	Tel. +49 5221 9141-0 Fax +49 5221 9141-20 tb-herford@sew-eurodrive.de
	Karlsruhe	SEW-EURODRIVE GmbH & Co KG Ettlinger Weg 2 76467 Bietigheim P.O. Box Postfach 43 – D-76463 Bietigheim	Tel. +49 7245 9190-10 Fax +49 7245 9190-20 tb-karlsruhe@sew-eurodrive.de
	Kassel	SEW-EURODRIVE GmbH & Co KG Sonnenweg 3 34260 Kaufungen	Tel. +49 561 95144-80 Fax +49 561 95144-90 tb-kassel@sew-eurodrive.de
	Koblenz	SEW-EURODRIVE GmbH & Co KG Bahnstraße 17a 56743 Mendig	Tel. +49 2652 9713-30 Fax +49 2652 9713-40 tb-koblenz@sew-eurodrive.de
	Lahr	SEW-EURODRIVE GmbH & Co KG Europastraße 3/1 77933 Lahr / Schwarzwald	Tel. +49 7821 90999-60 Fax +49 7821 90999-79 tb-lahr@sew-eurodrive.de
	Langenfeld	SEW-EURODRIVE GmbH & Co KG Siemensstraße 1 40764 Langenfeld	Tel. +49 2173 8507-10 Fax +49 2173 8507-50 tb-langenfeld@sew-eurodrive.de
	Magdeburg	SEW-EURODRIVE GmbH & Co KG Breiteweg 53 39179 Barleben	Tel. +49 39203 7577-1 Fax +49 39203 7577-9 tb-magdeburg@sew-eurodrive.de

21915180/EN – 04/2015

	Mannheim	SEW-EURODRIVE GmbH & Co KG Besselstraße 26 68219 Mannheim	Tel. +49 621 71683-10 Fax +49 621 71683-22 tb-mannheim@sew-eurodrive.de
	München	SEW-EURODRIVE GmbH & Co KG Domagkstraße 5 85551 Kirchheim	Tel. +49 89 90955-110 Fax +49 89 90955-150 tb-muenchen@sew-eurodrive.de
	Münster	SEW-EURODRIVE GmbH & Co KG Hafenplatz 4 48155 Münster	Tel. +49 251 41475-11 Fax +49 251 41475-50 tb-muenster@sew-eurodrive.de
	Nuremberg	SEW-EURODRIVE GmbH & Co KG Lina-Ammon-Straße 22 90471 Nürnberg	Tel. +49 911 98884-50 Fax +49 911 98884-60 tb-nuernberg@sew-eurodrive.de
	Regensburg	SEW-EURODRIVE GmbH & Co KG Im Gewerbepark A15 93059 Regensburg	Tel. +49 941 46668-68 Fax +49 941 46668-66 tb-regensburg@sew-eurodrive.de
	Rhine-Main	SEW-EURODRIVE GmbH & Co KG Niederstedter Weg 5 61348 Bad Homburg	Tel. +49 6172 9617-0 Fax +49 6172 9617-50 tb-rheinmain@sew-eurodrive.de
	Stuttgart	SEW-EURODRIVE GmbH & Co KG Friedrich-List-Straße 46 70771 Leinfelden-Echterdingen	Tel. +49 711 16072-0 Fax +49 711 16072-72 tb-stuttgart@sew-eurodrive.de
	Zwickau / Meerane	SEW-EURODRIVE GmbH & Co KG Dänkritzer Weg1 08393 Meerane	Tel. +49 3764 7606-0 Fax +49 3764 7606-20 tb-zwickau@sew-eurodrive.de
Great Britain			
Assembly Sales Service	Normanton	SEW-EURODRIVE Ltd. DeVilliers Way Trident Park Normanton West Yorkshire WF6 1GX	Tel. +44 1924 893-855 Fax +44 1924 893-702 http://www.sew-eurodrive.co.uk info@sew-eurodrive.co.uk
	Drive Service Hotline / 24 Hour Service		Tel. 01924 896911
Service Competence Center	Southern England	SEW-EURODRIVE Ltd. Unit 41 Easter Park Benyon Road Silchester Reading Berkshire RG7 2PQ	Tel. +44 1189 701-699 Fax +44 1189 701-021
Technical Offices	Midlands	SEW-EURODRIVE Ltd. 5 Sugar Brook court Aston Road Bromsgrove Worcs. B60 3EX	Tel. +44 1527 877-319 Fax +44 1527 575-245
	Scotland	SEW-EURODRIVE Ltd. No 37 Enterprise House Springkerse Business Park Stirling FK7 7UF	Tel. +44 17 8647-8730 Fax +44 17 8645-0223
	Northern Ireland	Heyn Engineering (NI) Ltd. 1 Corry Place, Belfast, BT3 9AH	Tel. +44 02890350022 Fax +44 02890350012 http://www.heyn.co.uk info@heyn.co.uk
Greece			
Sales	Athens	Christ. Boznos & Son S.A. 12, K. Mavromichali Street P.O. Box 80136 18545 Piraeus	Tel. +30 2 1042 251-34 Fax +30 2 1042 251-59 http://www.boznos.gr info@boznos.gr
Technical Office	Thessaloniki	Christ. Boznos & Son S.A. Asklipiou 26 562 24 Evosmos, Thessaloniki	Tel. +30 2 310 7054-00 Fax +30 2 310 7055-15 info@boznos.gr

21915180/EN – 04/2015

Hungary			
Sales Service	Budapest	SEW-EURODRIVE Kft. Csillaghegyí út 13. 1037 Budapest	Tel. +36 1 437 06-58 Fax +36 1 437 06-50 http://www.sew-eurodrive.hu office@sew-eurodrive.hu
Iceland			
Sales	Reykjavik	Varma & Vélaverk ehf. Knarrarvogi 4 104 Reykjavík	Tel. +354 585 1070 Fax +354 585)1071 http://www.varmaverk.is vov@vov.is
India			
Registered Office Assembly Sales Service	Vadodara	SEW-EURODRIVE India Private Limited Plot No. 4, GIDC POR Ramangamdi • Vadodara - 391 243 Gujarat	Tel. +91 265 3045200 Fax +91 265 3045300 http://www.seweurodriveindia.com salesvadodara@seweurodriveindia.com
Assembly Sales Service	Chennai	SEW-EURODRIVE India Private Limited Plot No. K3/1, Sipcot Industrial Park Phase II Mambakkam Village Sriperumbudur - 602105 Kancheepuram Dist, Tamil Nadu	Tel. +91 44 37188888 Fax +91 44 37188811 saleschennai@seweurodriveindia.com
	Pune	SEW-EURODRIVE India Private Limited Plant: Plot No. D236/1, Chakan Industrial Area Phase- II, Warale, Tal- Khed, Pune-410501, Maharashtra	Tel. +91 21 35 628700 Fax +91 21 35 628715 salespune@seweurodriveindia.com
Technical Offices	Ahmedabad	SEW-EURODRIVE India Private Limited 306, Shaan office complex, Behind Sakar-IV, Ellisebridge, Ashram Road Ahmedabad – 380006, Gujarat	Tel. +91 79 40072067 / 68 Fax +91 79 40072069 salesahmedabad@seweurodriveindia.com
	Aurangabad	SEW-EURODRIVE India Private Limited Flat.No.403 , Prism Appt. The Venus Housing Society. Beed Bypass Road, Behind Nishant Park Hotel, Aurangabad – 431003, Maharashtra.	Tel. +91 86000 12333 salesaurangabad@seweurodriveindia.com
	Bangalore	SEW-EURODRIVE India Private Limited Sy.no:41-P3, Peenya1, Phase 1A, Peenya Village, Yeswanthapura Hobli, Bangalore North Taluk, Bangalore - 560058, Karnataka	Tel. +91 80 28370664 Fax +91 80 28370665 salesbangalore@seweurodriveindia.com
	Bangalore	SEW-EURODRIVE India Private Limited # C-104, 3rd Block, KSSIDC Complex, Electronic City. Bangalore – 560100, Karnataka	Tel. +91 80 28522662 / 28522663 salesbangalore@seweurodriveindia.com
	Bangladesch	SEW-EURODRIVE India Private Limited Genetic Udayanchal, House-96 (6th Floor), Road-23/A, Block-B, Banani, Dhaka-1213, Bangladesh	Tel. +88 01729 097309 salesdhaka@seweurodrivebangladesh.com
	Bellary	SEW-EURODRIVE India Private Limited Door no-56/279 Ward No-15, Sindhigi compound, Near Raghavendra talkies, Bellary-583101, Karnataka	Tel. +91 77609 88668 salesbellary@seweurodriveindia.com
	Chandigarh	SEW-EURODRIVE India Private Limited # 72, Type- 4, Power Colony, Chandigarh - Rupnagar Highway Rupnagar - 140001, Punjab	Tel. +91 81462 67606 saleschandigarh@seweurodriveindia.com
	Chennai	SEW-EURODRIVE India Private Limited 2nd Floor, Josmans Complex, No. 5, McNichols Road, Chetpet Chennai - 600031, Tamil Nadu	Tel. +91 44 42849812 / 13 / 14 / 15 Fax +91 44 42849816 saleschennai@seweurodriveindia.com
	Kochi	SEW-EURODRIVE India Private Limited House No: 30/1168 A Kaniyampuzha Road Vyttila Post Office Cochin – 682019, Kerala	Tel. +91 98951 30375 salescochin@seweurodriveindia.com

21915180/EN – 04/2015

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

21915180/EN – 04/2015

	Navi Mumbai	SEW-EURODRIVE India Private Limited No.202, Shivam Yeshoram Plot No. 262/257, Sector 19 Kopar Khairane, Navi Mumbai - 400 709, Maharashtra	Tel. +91 99677 21324 salesmumbai@seweurodriveindia.com
	Pondicherry	SEW-EURODRIVE India Private Limited Plot No 1, Flat No S2, Shubhamangala Apartment, 14th Cross Extension, Krishna Nagar, Pondicherry 605008	Tel. +91 9840971370 salespondicherry@seweurodriveindia.com
	Pune	SEW-EURODRIVE India Private Limited Plot No. 7,"Shri Shantadurga Niwas" Shivaji Co –operative Housing Society Ltd., Behind J.W. Marriot. Off Senapati Bapat Marg. Pune –411 016, Maharashtra	Tel. +91 20 25635466 / 467 salespune@seweurodriveindia.com
	Pune	SEW-EURODRIVE India Private Limited Jai Tulajabhavani Complex. Office No:- 15 First Floor, Opp. Century Enka Company, MIDC Bhosari , Pune 411 026	Tel. +91 20-65118890 / 91 Fax +91 20 25380721 salespune@seweurodriveindia.com
	Raipur	SEW-EURODRIVE India Private Limited A-42, Ashoka Millenium Complex, Ring Road-1, Raipur 492 001 - Chhattisgarh	Tel. +91 771 4090765 Fax +91 771 4090765 salesraipur@seweurodriveindia.com
	Ranchi	SEW-EURODRIVE India Private Limited 1D- Shail Madhuri Apartment, Near Kokar Pool, H.B Road, Kokar Ranchi - 834001, Jharkhand.	Tel. +91 82946 30772 salesranchi@seweurodriveindia.com
	Tiruchirappalli	SEW-EURODRIVE India Private Limited 12B, Indira Gandhi Street, K.K Nagar Trichy-620 021, Tamilnadu	Tel. +91 97899 79855 salestrichy@seweurodriveindia.com
	Vadodara	SEW-EURODRIVE India Private Limited Unit No. 301, Savorite Bldg, Plot No. 143, Vinayak Society, off old Padra Road, Vadodara - 390 007, Gujarat	Tel. +91 265 2325258 / 6560482 salesvadodara@seweurodriveindia.com
	Vizag	SEW-EURODRIVE India Private Limited D.No.7-13-50/1, Near Padmaja hospital, Ramalayam street, Chittinaidu colony,Old gajuwaka, Visakhapatnam – 530026, Andhra Pradesh	Tel. +91 99895 01748 salesvizag@seweurodriveindia.com
Indonesia			
Sales	Medan	PT. Serumpun Indah Lestari Jl.Pulau Solor no. 8, Kawasan Industri Medan II Medan 20252	Tel. +62 61 687 1221 Fax +62 61 6871429 / +62 61 6871458 / +62 61 30008041 sil@serumpunindah.com serumpunindah@yahoo.com http://www.serumpunindah.com
	Jakarta	PT. Cahaya Sukses Abadi Komplek Rukan Puri Mutiara Blok A no 99, Sunter Jakarta 14350	Tel. +62 21 65310599 Fax +62 21 65310600 csajkt@cbn.net.id
	Jakarta	PT. Agrindo Putra Lestari JL.Pantai Indah Selatan, Komplek Sentra Industri Terpadu, Pantai indah Kapuk Tahap III, Blok E No. 27 Jakarta 14470	Tel. +62 21 2921-8899 Fax +62 21 2921-8988 aplindo@indosat.net.id http://www.aplindo.com
	Surabaya	PT. TRIAGRI JAYA ABADI Jl. Sukosemolo No. 63, Galaxi Bumi Permai G6 No. 11 Surabaya 60111	Tel. +62 31 5990128 Fax +62 31 5962666 sales@triagri.co.id http://www.triagri.co.id
	Surabaya	CV. Multi Mas Jl. Raden Saleh 43A Kav. 18 Surabaya 60174	Tel. +62 31 5458589 Fax +62 31 5317220 sianhwa@sby.centrin.net.id http://www.cvmultimas.com

21915180/EN – 04/2015

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

21915180/EN – 04/2015

	Tashkent	SEW-EURODRIVE LLP Representative office in Uzbekistan 96A, Sharaf Rashidov street, Tashkent, 100084	Tel. +998 71 2359411 Fax +998 71 2359412 http://www.sew-eurodrive.uz sew@sew-eurodrive.uz
	Ulaanbaatar	IM Trading LLC Narny zam street 62 Sukhbaatar district, Ulaanbaatar 14230	Tel. +976-77109997 Fax +976-77109997 imt@imt.mn
Technical Offices	Karagandy	SEW-EURODRIVE LLP 82, Molokov Street 100004, Karagandy	Tel. +7 (7212) 955 956 Fax +7 (7212) 955 956 karagandy@sew-eurodrive.kz
	Oskemen	SEW-EURODRIVE LLP 181/3, Abai avenue, 070005, Oskemen	Tel. +7 (7212) 913 748 Fax +7 (7212) 913 748 oskemen@sew-eurodrive.kz
Kenya			
Sales	Nairobi	SEW-EURODRIVE Pty Ltd Transnational Plaza, 5th Floor Mama Ngina Street P.O. Box 8998-00100 Nairobi	Tel. +254 791 398840 http://www.sew-eurodrive.co.tz info@sew.co.tz
Latvia			
Sales	Riga	SIA Alas-Kuul Katlakalna 11C 1073 Riga	Tel. +371 6 7139253 Fax +371 6 7139386 http://www.alas-kuul.lv info@alas-kuul.com
Lebanon			
Sales (Lebanon)	Beirut	Gabriel Acar & Fils sarl B. P. 80484 Bourj Hammoud, Beirut	Tel. +961 1 510 532 Fax +961 1 494 971 ssacar@inco.com.lb
Sales (Jordan, Kuwait , Saudi Arabia, Syria)	Beirut	Middle East Drives S.A.L. (offshore) Sin El Fil. B. P. 55-378 Beirut	Tel. +961 1 494 786 Fax +961 1 494 971 http://www.medrives.com info@medrives.com
Lithuania			
Sales	Alytus	UAB Irseva Statybininku 106C 63431 Alytus	Tel. +370 315 79204 Fax +370 315 56175 http://www.irseva.lt irmantas@irseva.lt
Luxembourg			
representation: Belgium			
Macedonia			
Sales	Skopje	Boznos DOOEL Dime Anicin 2A/7A 1000 Skopje	Tel. +389 23256553 Fax +389 23256554 http://www.boznos.mk
Malaysia			
Assembly Sales Service	Johor	SEW-EURODRIVE SDN BHD No. 95, Jalan Seroja 39, Taman Johor Jaya 81000 Johor Bahru, Johor West Malaysia	Tel. +60 7 3549409 Fax +60 7 3541404 sales@sew-eurodrive.com.my
Technical Offices	Kuala Lumpur	SEW-EURODRIVE SDN BHD No. 2, Jalan Anggerik Mokara 31/46 Kota Kemuning Seksyen 31 40460 Shah Alam Selangor Darul Ehsan West Malaysia	Tel. +60 3 51229633 Fax +60 3 51229622 sewsa@sew-eurodrive.com.my
	Penang	SEW-EURODRIVE SDN BHD No. 38, Jalan Bawal Kimsar Garden 13700 Prai, Penang West Malaysia	Tel. +60 4 3999349 Fax +60 4 3999348 sewpg@sew-eurodrive.com.my

21915180/EN – 04/2015

	Kuching	SEW-EURODRIVE SDN BHD No. 69, Lot 10899 1st Floor, Jalan Tun Jugah 93350 Kuching Sarawak East Malaysia	Tel. +60 82 572780 Fax +60 82 571780 sewswk@sew-eurodrive.com.my
	Kota Kinabalu	SEW-EURODRIVE SDN BHD East Malaysia	Tel. +60 19 7539395 sales@sew-eurodrive.com.my
	Ipoh	SEW-EURODRIVE SDN BHD West Malaysia	Tel. +60 19 7177366 sewsa@sew-eurodrive.com.my
Mexiko			
Assembly Sales Service	Quéretaro	SEW-EURODRIVE MEXICO S.A. de C.V. SEM-981118-M93 Tequisquiapan No. 102 Parque Industrial Quéretaro C.P. 76220 Querétaro, México	Tel. +52 442 1030-300 Fax +52 442 1030-301 http://www.sew-eurodrive.com.mx scmexico@seweurodrive.com.mx
Sales Service	Puebla	SEW-EURODRIVE MEXICO S.A. de C.V. Calzada Zavaleta No. 3922 Piso 2 Local 6 Col. Santa Cruz Buenavista C.P. 72154 Puebla, México	Tel. +52 (222) 221 248 http://www.sew-eurodrive.com.mx scmexico@seweurodrive.com.mx
Mongolia			
Technical Office	Ulaanbaatar	IM Trading LLC Narny zam street 62 Union building, Suite A-403-1 Sukhbaatar district, Ulaanbaatar 14230	Tel. +976-77109997 Tel. +976-99070395 Fax +976-77109997 http://imt.mn/ imt@imt.mn
Morocco			
Sales Service	Bouskoura	SEW-EURODRIVE Morocco Parc Industriel CFCIM, Lot 55 and 59 Bouskoura	Tel. +212 522 88 85 00 Fax +212 522 88 84 50 http://www.sew-eurodrive.ma sew@sew-eurodrive.ma
Namibia			
Sales	Swakopmund	DB Mining & Industrial Services Einstein Street Strauss Industrial Park Unit1 Swakopmund	Tel. +264 64 462 738 Fax +264 64 462 734 anton@dbminingnam.com
Netherlands			
Assembly Sales Service	Rotterdam	SEW-EURODRIVE B.V. Industrieweg 175 3044 AS Rotterdam Postbus 10085 3004 AB Rotterdam	Tel. +31 10 4463-700 Fax +31 10 4155-552 Service: 0800-SEWHELP http://www.sew-eurodrive.nl info@sew-eurodrive.nl
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. 30 Lodestar Avenue, Wigram 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
Nigeria			
Sales	Lagos	Greenpeg Nig. Ltd Plot 296A, Adeyemo Akapo Str. Omole GRA Ikeja Lagos-Nigeria	Tel. +234-701-821-9200-1 http://www.greenpegltd.com bolaji.adekunle@greenpegltd.com

21915180/EN – 04/2015

Norway			
Assembly Sales Service	Moss	SEW-EURODRIVE A/S Solgaard skog 71 1599 Moss	Tel. +47 69 24 10 20 Fax +47 69 24 10 40 http://www.sew-eurodrive.no sew@sew-eurodrive.no
Pakistan			
Sales	Karachi	Industrial Power Drives Al-Fatah Chamber A/3, 1st Floor Central Commercial Area, Sultan Ahmed Shah Road, Block 7/8, Karachi	Tel. +92 21 452 9369 Fax +92-21-454 7365 seweurodrive@cyber.net.pk
Paraguay			
Sales	Fernando de la Mora	SEW-EURODRIVE PARAGUAY S.R.L De la Victoria 112, Esquina nueva Asunción Departamento Central Fernando de la Mora, Barrio Bernardino	Tel. +595 991 519695 Fax +595 21 3285539 sewpy@sew-eurodrive.com.py
Peru			
Assembly Sales Service	Lima	SEW EURODRIVE DEL PERU 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			
Sales	Makati	P.T. Cerna Corporation 4137 Ponte St., Brgy. Sta. Cruz Makati City 1205	Tel. +63 2 519 6214 Fax +63 2 890 2802 mech_drive_sys@ptcerna.com http://www.ptcerna.com
Poland			
Assembly Sales Service	Łódź	SEW-EURODRIVE Polska Sp.z.o.o. ul. Techniczna 5 92-518 Łódź	Tel. +48 42 293 00 00 Fax +48 42 293 00 49 http://www.sew-eurodrive.pl sew@sew-eurodrive.pl
	Service	Tel. +48 42 293 0030 Fax +48 42 293 0043	24 Hour Service Tel. +48 602 739 739 (+48 602 SEW SEW) serwis@sew-eurodrive.pl
Technical Offices	Tychy	SEW-EURODRIVE Polska Sp.z.o.o. ul. Strzelecka 66 43-109 Tychy	Tel. +48 32 32 32 610 Fax +48 32 32 32 648
	Bydgoszcz	SEW-EURODRIVE Polska Sp.z.o.o. ul. Fordońska 246 85-766 Bydgoszcz	Tel.+48 52 567 30 00 Fax +48 52 567 30 09
	Gdansk	SEW-EURODRIVE Polska Sp.z.o.o. ul. Galaktyczna 30A 80-299 Gdańsk	Tel. +48 58 762 70 00 Fax +48 58 762 70 09
	Posen	SEW-EURODRIVE Polska Sp.z.o.o. ul. Wschodnia 62-080 Swadzim k. Poznania	Tel. +48 61 6465500 Fax +48 61 6465519
	Radom	SEW-EURODRIVE Polska Sp.z.o.o. ul. Słowackiego 84 26-600 Radom	Tel. +48 48 679 47 00 Fax +48 48 679 47 09
	Rzeszów	SEW-EURODRIVE Polska Sp.z.o.o. ul. Armii Krajowej 80 35-307 Rzeszów	Tel. +48 17 784 27 00 Fax +48 17 784 27 09
Portugal			
Assembly Sales Service	Coimbra	SEW-EURODRIVE, LDA. Av. da Fonte Nova, n.º 86 3050-379 Mealhada	Tel. +351 231 20 9670 Fax +351 231 20 3685 http://www.sew-eurodrive.pt infosew@sew-eurodrive.pt
Service Competence Center	Lisbon	SEW-EURODRIVE, LDA. Núcleo Empresarial I de São Julião do Tojal Rua de Entremuros, 54 Fracção I 2660-533 São Julião do Tojal	Tel. +351 21 958-0198 Fax +351 21 958-0245 esc.lisboa@sew-eurodrive.pt

21915180/EN – 04/2015

Technical Office	Porto	SEW-EURODRIVE, LDA. Rua Monte da Bela, N.º 191, Fração X 4445-294 Ermesinde	Tel. +351 229 350 383 / +351 932 559 110 Fax +351 229 350 384 esc.porto@sew-eurodrive.pt
Romania			
Sales Service	Bucharest	Sialco Trading SRL str. Brazilia nr. 36 011783 Bucuresti	Tel. +40 21 230-1328 Fax +40 21 230-7170 sialco@sialco.ro
Russia			
Assembly Sales Service	St. Petersburg	ЗАО «СЕВ-ЕВРОДРАЙФ» a. я. 36 195220 Санкт-Петербург	Tel. +7 812 3332522 / +7 812 5357142 Fax +7 812 3332523 http://www.sew-eurodrive.ru sew@sew-eurodrive.ru
Technical Offices	Ekaterinburg	ЗАО «СЕВ-ЕВРОДРАЙФ» Kominterna Str. 16 Office 614 620078 Ekaterinburg	Tel. +7 343 310 3977 Fax +7 343 310 3978 eso@sew-eurodrive.ru
	Irkutsk	ЗАО «СЕВ-ЕВРОДРАЙФ» 5-Armii Str., 31 664011 Irkutsk	Tel. +7 3952 25 5880 Fax +7 3952 25 5881 iso@sew-eurodrive.ru
	Moscow	ЗАО «СЕВ-ЕВРОДРАЙФ» Malaja Semjonowskaja Str. д. 9, корпус 2 107023 Moskau	Tel. +7 495 9337090 Fax +7 495 9337094 mso@sew-eurodrive.ru
	Novosibirsk	ЗАО «СЕВ-ЕВРОДРАЙФ» pr. K Marksa 30 630087 Novosibirsk	Tel. +7 383 3350200 Fax +7 383 3462544 nso@sew-eurodrive.ru
	Perm	ЗАО «СЕВ-ЕВРОДРАЙФ» Stakhanovskaya str., 45 Office 512 614066 Perm	Tel. +7 342 2219494 Fax +7 342 2219444 pso@sew-eurodrive.ru
	Togliatti	ЗАО «СЕВ-ЕВРОДРАЙФ» Sportivnaya Str. 4B, office 2 Samarskaya obl. 445057 Togliatti	Tel. +7 8482 710529 Fax +7 8482 810590 tso@sew-eurodrive.ru
Sambia			
representation: South Africa.			
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 http://www.senemeca.com senemeca@senemeca.sn
Serbia			
Sales	Belgrade	DIPAR d.o.o. Ustanicka 128a PC Košum, IV floor 11000 Beograd	Tel. +381 11 347 3244 / +381 11 288 0393 Fax +381 11 347 1337 office@dipar.rs
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 40 831 06 Bratislava	Tel.+421 2 33595 202, 217, 201 Fax +421 2 33595 200 http://www.sew-eurodrive.sk sew@sew-eurodrive.sk
	Košice	SEW-Eurodrive SK s.r.o. Slovenská ulica 26 040 01 Košice	Tel. +421 55 671 2245 Fax +421 55 671 2254 Mobile +421 907 671 976 sew@sew-eurodrive.sk

21915180/EN – 04/2015

Slovenia			
Sales Service	Celje	Pakman - Pogonska Tehnika d.o.o. Ul. XIV. divizije 14 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 11 248-7289 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	Tel. +27 21 552-9820 Fax +27 21 552-9830 Telex 576 062 bgriffiths@sew.co.za
	Durban	SEW-EURODRIVE (PROPRIETARY) LIMITED 48 Prospecton Road Isipingo Durban P.O. Box 10433, Ashwood 3605	Tel. +27 31 902 3815 Fax +27 31 902 3826 cdejager@sew.co.za
	Nelspruit	SEW-EURODRIVE (PROPRIETARY) LIMITED 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 Office	Port Elizabeth	SEW-EURODRIVE (PROPRIETARY) LIMITED 8 Ruan Access Park Old Cape Road Greenbushes 6000 Port Elizabeth	Tel. +27 41 3722246 Fax +27 41 3722247 http://www.sew.co.za fsieberhagen@sew-co-za
South Korea			
Assembly Sales Service	Ansan	SEW-EURODRIVE KOREA CO., LTD. 7, Dangjaengi-ro, Danwon-gu, Ansan-si, Gyeonggi-do, Zip 425-839	Tel. +82 31 492-8051 Fax +82 31 492-8056 http://www.sew-eurodrive.kr master.korea@sew-eurodrive.com
	Busan	SEW-EURODRIVE KOREA CO., LTD. 28, Noksansandan 262-ro 50beon-gil, Gangseo-gu, Busan, Zip 618-820	Tel. +82 51 832-0204 Fax +82 51 832-0230
Technical Offices	Daegu	SEW-EURODRIVE KOREA CO., LTD. No.303 Sungan officetel, 1834, Dalgubeol-daero, Dalseo-gu, Daegu, Zip 704-712	Tel. +82 53 650-7111 Fax +82 53 650-7112
	Daejeon	SEW-EURODRIVE KOREA CO., LTD. No.302 Hongin officetel, 28, Daehak-ro, Yuseong-gu, Daejeon, Zip 305-710	Tel. +82 42 828-6461 Fax +82 42 828-6463
	Gwangju	SEW-EURODRIVE KOREA CO., LTD. 5fl., Hyundai B/D B, 40, Bungmun-daero, Buk-gu, Gwangju, Zip 500-855	Tel. +82 62 511-9172 Fax +82 62 511-9174
	Seoul	SEW-EURODRIVE KOREA CO., LTD. No.1804 Ace Hiend Tower 8th, 84, Gasan digital 1-ro, Geumcheon-gu, Seoul, Zip 153-797	Tel. +82 2 862-8051 Fax +82 2 862-8199
Spain			
Assembly Sales Service	Bilbao	SEW-EURODRIVE ESPAÑA, S.L. Parque Tecnológico, Edificio, 302 48170 Zamudio (Vizcaya)	Tel. +34 94 43184-70 Fax +34 94 43184-71 http://www.sew-eurodrive.es sew.spain@sew-eurodrive.es

21915180/EN – 04/2015

Technical Offices	Barcelona	SEW-EURODRIVE ESPAÑA, S.L. Avda. Francesc Macià, 60 – Planta 16, porta 1 Eix Macià – "Torre Milenium" 08208 Sabadell (Barcelona)	Tel. +34 93 7162200 Fax +34 93 7233007
	Madrid	SEW-EURODRIVE ESPAÑA, S.L. Gran Via. 48-2° A-D 28220 Majadahonda (Madrid)	Tel. +34 91 6342250 Fax +34 91 6340899
	Seville	MEB Pólogono Calonge, C/A Nave 2 - C 41.077 Sevilla	Tel. +34 954 356 361 Fax +34 954 356 274 mebsa.sevilla@mebsa.com
	Valencia	MEB Músico Andreu i Piqueres, 4 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
Swaziland			
Sales	Manzini	C G Trading Co. (Pty) Ltd PO Box 2960 Manzini M200	Tel. +268 2 518 6343 Fax +268 2 518 5033 engineering@cgtrading.co.sz
Sweden			
Assembly Sales Service	Jönköping	SEW-EURODRIVE AB Gnejsvägen 6-8 553 03 Jönköping Box 3100 S-550 03 Jönköping	Tel. +46 36 34 42 00 Fax +46 36 34 42 80 http://www.sew-eurodrive.se jonkoping@sew.se
Sales	Gothemburg	SEW-EURODRIVE AB Gustaf Werners gata 8 421 32 Västra Frölunda	Tel. +46 31 709 68 80 Fax +46 31 709 68 93 goteborg@sew.se
	Stockholm	SEW-EURODRIVE AB Björkholmsvägen 10 141 46 Huddinge	Tel. +46 8 449 86 80 Fax +46 8 449 86 93 stockholm@sew.se
	Malmö	SEW-EURODRIVE AB Borrgatan 5 211 24 Malmö	Tel. +46 40 680 64 80 Fax +46 40 680 64 93 malmo@sew.se
	Skellefteå	SEW-EURODRIVE AB Trädgårdsgatan 8 931 31 Skellefteå	Tel. +46 910 71 53 80 Fax +46 910 71 53 93 skelleftea@sew.se
Switzerland			
Assembly Sales Service	Basel	Alfred Imhof A.G. Jurastrasse 10 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	Patrice Salvi Rue des Ormes 10 2300 La Chaux-de-Fonds	Tel. +41 61 417 17 81 Fax +41 61 417 17 00
	Bern / Solothurn	Rudolf Bühler Muntersweg 5 2540 Grenchen	Tel. +41 32 652 2339 Fax +41 32 652 2331
	Central Switzerland, Aargau	Armin Pfister Stierenweid 4950 Huttwil, BE	Tel. +41 62 962 54 55 Fax +41 62 962 54 56
	Zürich, Ticino	Gian-Michele Muletta Fischerstrasse 61 8132 Egg bei Zürich	Tel. +41 44 994 81 15 Fax +41 44 994 81 16
	Lake Constance and East Switzerland	Markus Künzle Eichweg 4 9403 Goldach	Tel. +41 71 845 2808 Fax +41 71 845 2809

21915180/EN – 04/2015

Taiwan			
Sales	Taipei	Ting Shou Trading Co., Ltd. 6F-3, No. 267, Sec. 2 Tung Huw S. Road Taipei	Tel. +886 2 27383535 Fax +886 2 27368268 Telex 27 245 sewtwn@ms63.hinet.net http://www.tingshou.com.tw
	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 sewtwn@ms63.hinet.net http://www.tingshou.com.tw
Tanzania			
Sales	Daressalam	SEW-EURODRIVE PTY LIMITED TANZANIA Plot 52, Regent Estate PO Box 106274 Dar Es Salaam	Tel. +255 0 22 277 5780 Fax +255 0 22 277 5788 http://www.sew-eurodrive.co.tz info@sew.co.tz
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
	Hat Yai	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
	Khon Kaen	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 sewthailand@sew-eurodrive.com
Tunisia			
Sales	Tunis	T. M.S. Technic Marketing Service Zone Industrielle Mghira 2 Lot No. 39 2082 Fouchana	Tel. +216 79 40 88 77 Fax +216 79 40 88 66 http://www.tms.com.tn tms@tms.com.tn
Turkey			
Assembly Sales Service	Kocaeli-Gebze	SEW-EURODRİVE Hareket Sistemleri San. Ve TIC. Ltd. Sti Gebze Organize Sanayi Böl. 400 Sok No. 401 41480 Gebze Kocaeli	Tel. +90 262 9991000 04 Fax +90 262 9991009 http://www.sew-eurodrive.com.tr sew@sew-eurodrive.com.tr
Technical Offices	Adana	SEW-EURODRİVE Hareket	Tel. +90 533 491 81 77 / +90 542 660 34 89 Fax +90 262 999 10 09
	Ankara	SEW-EURODRİVE Hareket Sistemleri San. Ve TIC. Ltd. Sti 1368.Cadde Eminel İşmerkezi No: 18/68 İvogsan / Ankara	Tel. +90 312 385 33 90 Fax +90 312 385 32 58
	Bursa	SEW-EURODRİVE Hareket Sistemleri San. Ve TIC. Ltd. Sti Üçevler Mah. Bayraktepe Sok. Akay İş Merkezi Kat:3 No: 7/6 Nilüfer / Bursa	Tel. +90 224 443 45 60 Fax +90 224 443 45 58
	Istanbul	SEW-EURODRİVE Hareket Sistemleri San. Ve TIC. Ltd. Sti Tekstilkent Ticaret Merkezi B-13 Blok No:70 Esenler / İstanbul	Tel. +90 262 9991000 04 Fax +90 262 9991009

21915180/EN – 04/2015

	Izmir	SEW-EURODRİVE Hareket Sistemleri San. Ve TIC. Ltd. Sti 1203/11 Sok. No. 4/614 Kara Hasan Atlı İş Merkezi Kat :6 Yenişehir / İzmir	Tel. +90 232 469 62 64 Fax +90 232 433 61 05
Ukraine			
Assembly Sales Service	Dnipropetrovsk	ООО «СЕВ-Евродрайв» ул. Рабочая, 23-В, офис 409 49008 Днепропетровск	Tel. +380 56 370 3211 Fax +380 56 372 2078 http://www.sew-eurodrive.ua sew@sew-eurodrive.ua
Sales	Kiev	ООО «СЕВ-Евродрайв» ул. С.Олейника, 21 02068 Киев	Tel. +380 44 503 95 77 Fax +380 44 503 95 78 kso@sew-eurodrive.ua
	Ivano- Frankivsk	ООО «СЕВ-Евродрайв» ул. Независимости, 4, оф.303 76000 Ивано-Франковск	Tel. +380 342 725 190 Fax +380 342 725 191 ifso@sew-eurodrive.ua
Uruguay			
Assembly Sales	Montevideo	SEW-EURODRIVE Uruguay, S. A. Jose Serrato 3569 Esqina Corumbe CP 12000 Montevideo	Tel. +598 2 21181-89 Fax +598 2 21181-90 sewuy@sew-eurodrive.com.uy
USA			
Production Assembly Sales Service	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 Production +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 +1 937 332-0038 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
	Wellford	SEW-EURODRIVE INC. 148/150 Finch Rd. Wellford, S.C. 29385	IGLogistics@seweurodrive.com
	Additional addresses for service provided on request!		
Uzbekistan			
Technical Office	Tashkent	SEW-EURODRIVE LLP Representative office in Uzbekistan 96A, Sharaf Rashidov street, Tashkent, 100084	Tel. +998 71 2359411 Fax +998 71 2359412 http://www.sew-eurodrive.uz sew@sew-eurodrive.uz
Vietnam			
Sales	Ho Chi Minh City	Nam Trung Co., Ltd Huế - South Vietnam / Construction Materials 250 Binh Duong Avenue, Thu Dau Mot Town, Binh Duong Province HCM office: 91 Tran Minh Quyen Street District 10, Ho Chi Minh City	Tel. +84 8 8301026 Fax +84 8 8392223 khanh-nguyen@namtrung.com.vn http://www.namtrung.com.vn
	Hanoi	MICO LTD Quảng Trị - North Vietnam / All sectors except Construction Materials 8th Floor, Ocean Park Building, 01 Dao Duy Anh St, Ha Noi, Viet Nam	Tel. +84 4 39386666 Fax +84 4 3938 6888 nam_ph@micogroup.com.vn http://www.micogroup.com.vn

21915180/EN – 04/2015

14 Appendix

14.1 Abbreviation key

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

21915180/EN – 04/2015

Index

A

AD input shaft assembly 185, 275
Additional feature, type designation 23
AM adapters for IEC motors 181, 271
AM adapters for NEMA motors 183, 273
Application solutions 12
AQA motor adapter 186
AQA motor adapters 276
ARAL 84
Area of application 11

B

Backstop 50
Bearing greases 84
BP 84
Brakemotors 17

C

Cable entry 48
CASTROL 84
Churning losses 57
Coating systems 29
Components on the input end 21

D

Defined service life 69
Design features 11
Dimension sheets, note 89
Dimensioning 54
Direction of rotation with backstop 50
DRN 32

E

Efficiency 57
Exterior corrosion protection 30

F

Foot-mounted design, installation notes 90

G

General information 16
Grease 84
Guide to dimension sheets P.KF.. 188
Guide to dimension sheets P.RF.. 92
Guidelines for oil selection 78

H

Hollow shaft with shrink disk 22, 88

I

Input shaft assemblies, type designation 23
Inspection cover 21
Installation position KF.. 45
Installation position RF.. 47
Internal conservation 30

K

Keys 90

L

Long-term protection 30
Lubricant selection 78

M

Mobil 84
Motor dimensions 91
Motor options 91
Motor terminal box 48
Motor, dimensions 91
Mounting position 37
Mounting position sheets 40

N

Nameplate 26
Noise 16

O

Oil bath lubrication 35
Oil drain valve 34
Oil expansion tank 35, 91
Oil riser pipe 91
Oil selection 78
Operating torque 57
Options 23
Order information 45
OS1, OS2, OS3 29
Output shaft variants 22
Overview of advantages 11

P

Packaging 30

21915180/EN – 04/15

SEW EURODRIVE

Painting 16, 29
Peak load factor 60
Primary gearmotor 17
Product description, general information 16
Product groups 6
Product names 9
Project planning example 69, 74
Project planning for gear units
Permitted overhung load 64
Project planning procedure 53
Protection cover for shrink disk 280

R

Riser pipe 36

S

Sample orders 51
Selection tables, structure 89
Service factor, application-specific 57
SEW-EURODRIVE
Group of companies 5
SEW-EURODRIVE
Products 6
Systems 6
Solid shaft with key 22
Splash lubrication 33
Standard protection 30
Startup factor 60
Storage conditions 31

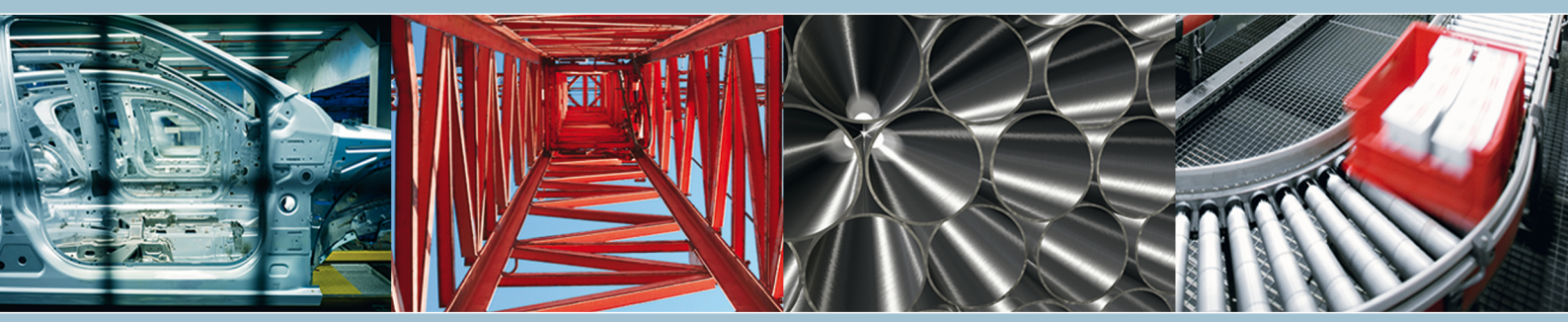
T

Technical data 18
Temperature sensor PT100 87
Tolerances 90
Torque arm 49
Trademarks 9
Type designation 23, 25

V

Variants 19

21915180/EN – 04/15





SEW-EURODRIVE
Driving the world

SEW-EURODRIVE GmbH & Co KG
P.O. Box 3023
76642 BRUCHSAL
GERMANY
Phone +49 7251 75-0
Fax +49 7251 75-1970
sew@sew-eurodrive.com
→ www.sew-eurodrive.com