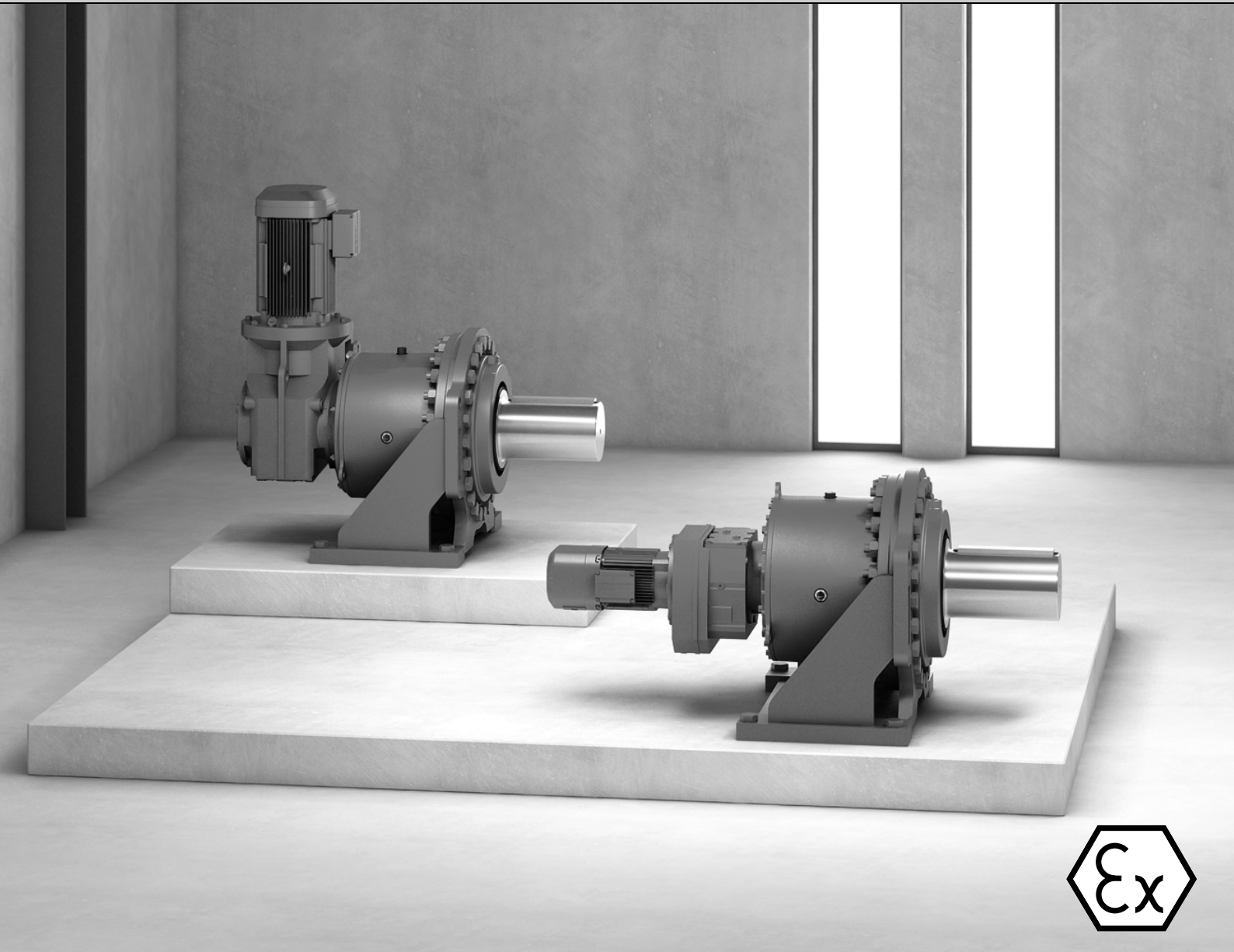


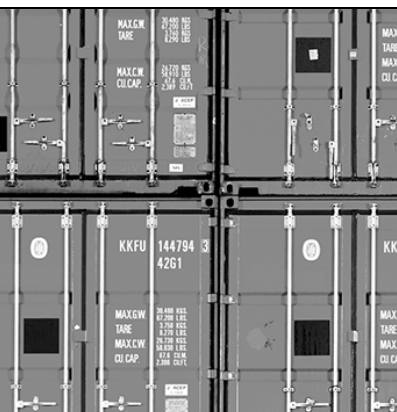


SEW
EURODRIVE

Operating Instructions



Explosion-Proof Industrial Gear Units:
Planetary Gearmotors
P002 – 082 Series





Content

1	Important Information	5
1.1	How to use the operating instructions	5
1.2	Structure of the safety notes	5
1.3	Rights to claim under warranty	6
1.4	Exclusion of liability	6
1.5	Copyright.....	6
2	Safety Notes	7
2.1	Preliminary remark.....	7
2.2	General information	7
2.3	Designated use	7
2.4	Other applicable documentation	8
2.5	Target group	8
2.6	Disposal	8
2.7	Safety symbols on the gear unit.....	9
2.8	Transport.....	10
2.9	Storage and transport conditions	12
3	Gear Unit Design	14
3.1	Combination of planetary gear unit with primary gear unit.....	14
3.2	Nameplate and unit designation	15
3.3	Mounting position.....	19
3.4	Mounting position sheets	20
3.5	Mounting positions of the primary gear units	25
3.6	Pivoted mounting position and variable mounting positions	28
4	Design of Options and Additional Features	30
4.1	Input components	30
4.2	Torque arm	31
4.3	PT100 temperature sensor	31
4.4	Oil expansion tank / oil riser pipe	32
5	Checklist	33
5.1	Before startup	33
5.2	During startup	33
6	Installation/Assembly	34
6.1	Required tools/resources	34
6.2	Tolerances	34
6.3	Notes on installation/mounting	35
6.4	Preliminary work	37
6.5	Installing the gear unit.....	38
6.6	Installation of gear units in a potentially explosive atmosphere	41
6.7	Gear units and gearmotors in category II2GD	41
6.8	Oil filling	43
6.9	Gear units with solid shaft.....	44
6.10	Gear unit mounting for foot-mounted units	46
6.11	Gear unit mounting for flange-mounted units.....	47



Content

6.12	Torque arms for hollow shaft gear units	48
6.13	Hollow shaft and shrink disk	50
6.14	Shrink disk cover	56
6.15	Coupling of AM adapter	57
6.16	AD input shaft assembly	61
6.17	PT100 temperature sensor	65
7	Startup	67
7.1	Important notes on startup	67
7.2	Run-in period	68
7.3	Starting up industrial gear units in potentially explosive areas	68
7.4	Startup of gear units with long-term protection	69
7.5	Gear units with backstop	70
7.6	Measuring the surface and oil temperature	71
7.7	Gear unit shutdown/conservation	73
8	Inspection/Maintenance	75
8.1	Preliminary work regarding inspection/maintenance	75
8.2	Inspection and maintenance intervals	76
8.3	Lubricant change intervals	78
8.4	Checking the oil level	79
8.5	Checking the oil consistency	80
8.6	Changing the oil	81
8.7	Checking and cleaning the breather plug	83
8.8	Refilling grease	83
9	Malfunctions	84
9.1	Notes on malfunctions	84
9.2	Customer service	84
9.3	Malfunctions of P.. planetary gear units	85
9.4	Malfunctions of RF/KF primary gear units	86
9.5	Adapter AM/AL malfunctions	86
9.6	Malfunctions of the motor	87
9.7	DR/DV brake faults	88
10	Lubricants	89
10.1	Lubricant selection	89
10.2	Permitted lubricants	90
10.3	Lubricant fill quantities	93
11	Declaration of Conformity	95
12	Address List	96
	Index	105



1 Important Information

1.1 How to use the operating instructions

The operating instructions are an integral part of the product and contain important information for operation and service. The operating instructions are written for all employees who assemble, install, startup, and service this product.

The operating instructions must be legible and accessible at all times. Make sure that staff responsible for the plant and its operation, as well as persons who work independently on the unit, have read the operating instructions carefully and understood them. If you are unclear about any of the information in this documentation, or if you require further information, contact SEW-EURODRIVE.

1.2 Structure of the safety notes

The safety notes in these operating instructions are designed as follows:

Pictogram 	SIGNAL WORD
	Type and source of danger. Possible consequence(s) if the safety notes are disregarded. • Measure(s) to prevent the danger.

Pictogram	Signal word	Meaning	Consequences if disregarded
Example: General danger	DANGER	Imminent danger	Severe or fatal injuries
 Specific danger, e.g. electric shock	WARNING	Possible dangerous situation	Severe or fatal injuries
	CAUTION	Possible dangerous situation	Minor injuries
	NOTICE	Possible damage to property	Damage to the drive system or its environment
	NOTE ON EXPLOSION PROTECTION	Important note on explosion protection	Suspension of explosion protection and resulting hazards
	TIP	Useful information or tip. Simplifies the handling of the drive system.	



Important Information

Rights to claim under warranty

1.3 Rights to claim under warranty

A requirement of fault-free operation and fulfillment of any rights to claim under limited warranty is that you adhere to the information in the operating instructions. Therefore, read the operating instructions before you start working with the unit

1.4 Exclusion of liability

You must comply with the information contained in these operating instructions to ensure safe operation of the P002 – P082 series planetary gear units and to achieve the specified product characteristics and performance requirements. SEW-EURODRIVE does not assume liability for injury to persons or damage to equipment or property resulting from non-observance of these operating instructions. In such cases, any liability for defects is excluded.

1.5 Copyright

© <2009> – SEW-EURODRIVE. All rights reserved.

Unauthorized duplication, modification, distribution or any other use of the whole or any part of this documentation is strictly prohibited.



2 Safety Notes

2.1 Preliminary remark

The following safety notes are primarily concerned with the use of gear units. If using gearmotors, also refer to the safety notes for motors in the corresponding operating instructions.

Also observe the supplementary safety notes in the individual sections of these operating instructions.

2.2 General information

	<p>NOTE ON EXPLOSION PROTECTION</p>
	<p>Never install or start up damaged products. Submit a complaint to the shipping company immediately in the event of damage.</p> <p>Explosive gas mixtures or concentrations of dust can lead to severe or fatal injuries in conjunction with hot, live and moving parts of electrical machinery.</p> <p>All work related to transportation, storage, setup/mounting, connection, startup, maintenance and repair may only be carried out by qualified personnel, in strict observation of:</p> <ul style="list-style-type: none"> • The relevant detailed operating instructions • The warning and safety signs on the motor/gearmotor • All other project planning documents, operating instructions and wiring diagrams related to the drive • The specific regulations and requirements for the system • The national/regional regulations governing safety and the prevention of accidents <p>Removing covers without authorization, improper use as well as incorrect installation or operation may result in severe injuries to persons or damage to property.</p> <p>Refer to the documentation for additional information.</p>

2.3 Designated use

The designated use refers to the procedure specified in the operating instructions.

P002 – 082 series planetary gear units are gear units driven by motors for industrial and commercial systems. Gear unit utilizations other than those specified and areas of application other than industrial and commercial systems can only be used after consultation with SEW-EURODRIVE.

For the purpose of EC Machinery Directive 98/37/EC, the planetary gear units are components for installation in machinery and systems. In the scope of the EC directive, you must not take the machinery into operation in the proper fashion until you have established that the end product complies with Machinery Directive 98/37/EC.



2.4 Other applicable documentation

The following publications and documents have to be observed as well:

- When using gearmotors, also observe the safety notes for motors and primary gear units in the accompanying operating instructions.
- Operating instructions of any attached options

2.5 Target group

Any mechanical work may only be performed by adequately qualified personnel. Qualified personnel in this context are persons who are familiar with the setup, mechanical installation, trouble shooting and maintenance for this product. Further, they are qualified as follows:

- Training in mechanical engineering, e.g. as a mechanic or mechatronics technician (final examinations must have been passed).
- They are familiar with these operating instructions.

Any electronic work may only be performed by adequately qualified electricians. Qualified electricians in this context are persons who are familiar with the electronic installation, startup, trouble shooting and maintenance for this product. Further, they are qualified as follows:

- Training in electrical engineering, e.g. as an electrician or mechatronics technician (final examinations must have been passed).
- They are familiar with these operating instructions.

All work in further areas of transportation, storage, operation and waste disposal may be carried out only by persons who are trained appropriately.
















2.6 Disposal

- Housing parts, gears, shafts and roller bearings of the gear units must be disposed of as steel scrap. This also applies to gray-cast iron parts if there is no separate collection.
- Collect waste oil and dispose of it according to the regulations in force.



2.7 Safety symbols on the gear unit

The symbols on the gear unit must be observed. They have the following meaning:

Symbol	Meaning
	Oil fill plug
	Oil drain
	Oil level glass
	Oil dipstick
	Inspection opening
	Breather plug
	Flat grease nipple
	Taper grease nipple
	Air outlet screw
	Water inflow
	Water return
	Direction of rotation
	Delivery state
	Hot surface
	Extended storage



2.8 Transport

2.8.1 Notes on transport

	DANGER
	<p>Suspended loads can fall. Severe or fatal injuries.</p> <ul style="list-style-type: none"> • The gear unit must be transported in a manner that prevents injuries to persons. • Secure the danger zone. • Stay away from beneath the gear unit during transport.

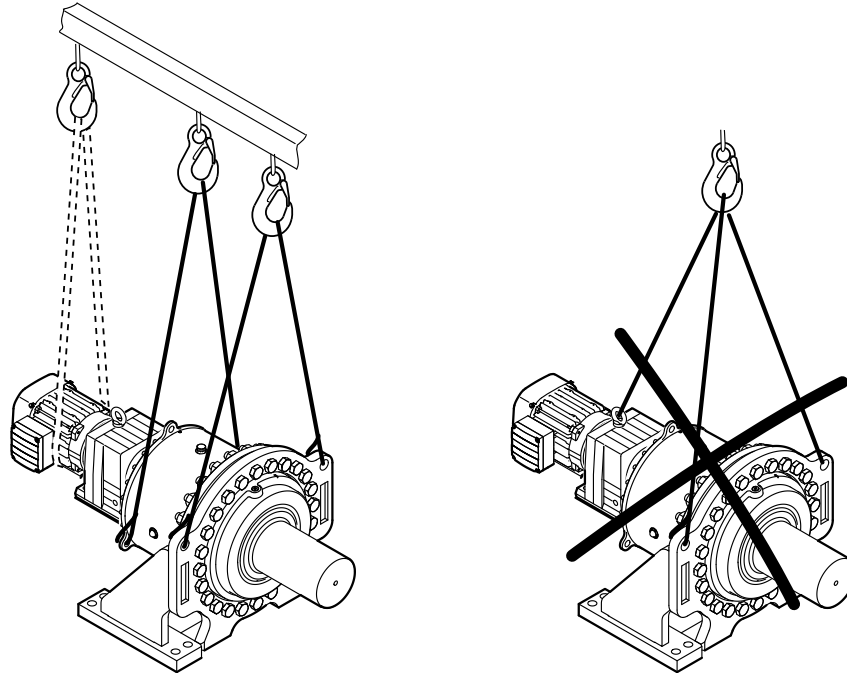
	NOTICE
	<p>Improper transport may result in damages to the gear unit. Possible damage to property!</p> <ul style="list-style-type: none"> • Note the following:

- Inspect the shipment for any damage that may have occurred in transit as soon as you receive the delivery. Inform the shipping company immediately. It may be necessary to preclude startup.
- The weight of the gear unit is indicated on the nameplate or the dimension sheet. Observe the loads and specifications given on the nameplate.
- Use suitable, sufficiently rated handling equipment if necessary.
- The gear unit must be transported in a manner that prevents damage to the gear unit. For example, impacts against exposed shaft ends can damage the gear unit.
- Planetary gear units and planetary gearmotors are suspended from the transport points marked in the drawings below. Transport straps (indicated with broken lines in the following figures) help balancing and supporting the planetary gear unit.
- Remove securing devices used for transportation prior to startup.



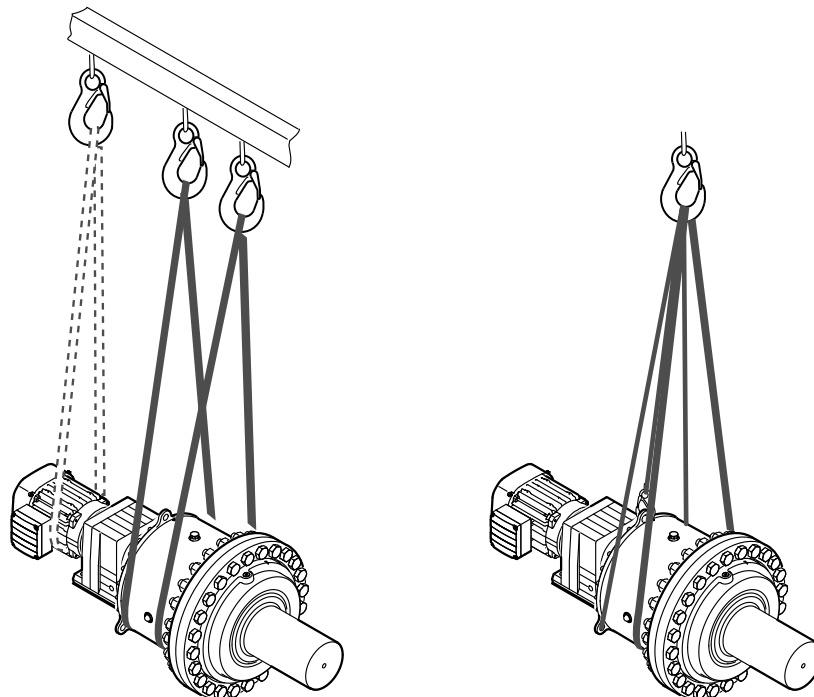
2.8.2 Foot-mounted planetary gear unit

The following figure shows an example of how to transport a foot-mounted planetary gear unit.



2.8.3 Flange-mounted planetary gear unit

The following figure shows an example of how to transport a flange-mounted planetary gear unit.





2.9 Storage and transport conditions

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

2.9.1 Internal corrosion protection

Standard corrosion protection

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

Long-term corrosion protection:

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

2.9.2 Exterior corrosion protection

The following measures are generally taken for exterior corrosion protection:

- Corrosion protection is applied to bare, non-painted functional surfaces of shafts, flanges, mounting and foot surfaces on the gear unit. Remove it only using an appropriate solvent which is not harmful to the oil seal.
- Small spare parts and loose pieces, such as bolts, nuts, etc., are packed in corrosion protection plastic bags (VCI corrosion protection bags).
- Threaded holes and blind holes are covered by plastic plugs.



TIP

- If the gear unit elevator drive is stored longer than six months, you must check the protective coating of unpainted areas as well as the paint coating regularly. Areas with protective coating and/or paint that has been removed may have to be repainted.

2.9.3 Packaging

Standard packaging

The gear unit is delivered on a pallet without cover.

Application: Land transport

Long-term packaging

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

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



2.9.4 Storage conditions

	NOTICE
	<p>Improper storage may result in damages to the gear unit.</p> <p>Possible damage to property!</p> <ul style="list-style-type: none"> • During storage up to startup, the gear unit must be stored in a shock-free manner in order to prevent damage to the anti-friction bearing races. • The output shaft must be rotated at least one full rotation every six months so that the position of the roller elements in the bearings of the input and output shafts changes.

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

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

	TIP
	<p>If stored in tropical zones, provide for sufficient protection against insect damage. Contact SEW-EURODRIVE for differing specifications.</p>



Gear Unit Design

Combination of planetary gear unit with primary gear unit

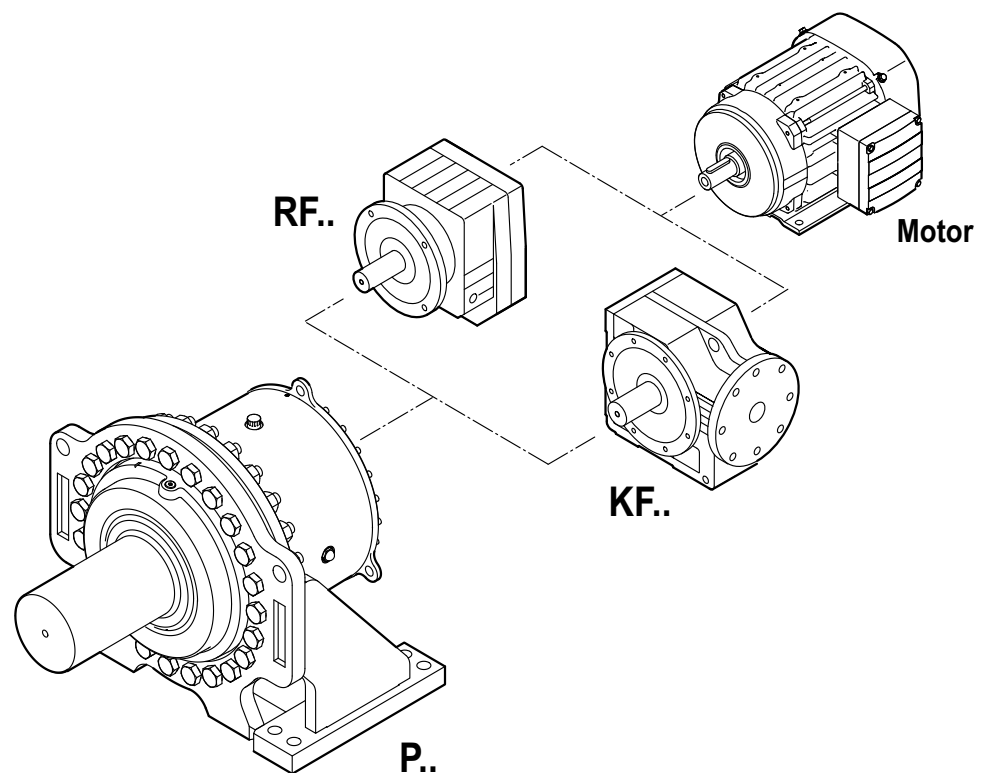
3 Gear Unit Design

3.1 Combination of planetary gear unit with primary gear unit

The planetary gear units are a combination of

1. P.. planetary gear units Output stage
2. Primary gear unit RF.. or KF..
3. Mount-on components: Motor, coupling, adapter and backstop

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



1044069259

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



3.2 Nameplate and unit designation

3.2.1 Planetary gear units

Sample nameplate

SEW-EURODRIVE		Bruchsal / Germany	
Type	PF042 KF97 DRS132 ML4 / TF		
Nr. 1	01.1101687801.0001.06 / 12345678		
	norm.	min.	max.
PK1 [kW]	6.6	1.3	6.6
MK2 [Nm]	77000	77000	77000
n1 [1/min]	1430	285	1430
n2 [1/min]	0.77	0.15	0.77
			i 1 : 1880
			FS 1.3
			FR1 [N] 0
			FR2 [N] 0
			FA1 [N] 0
			FA2 [N] 50000
Operation instruction have to be observed!		Mass [kg] 840	
Made in Germany			
Qty of greasing points	0	Fans	0
II2GD c, k T4/120 °C IP65			
CLP HC VG220 synth. Oil - 29 ltr.		Year 2008	
IM: M1-F1 // Tu=0 ... 40 °C // EUCode0588			

1539302155

Type		Unit designation
No. 1		Serial number
P_{K1}	[kW]	Operating power on the input shaft (HSS)
M_{K2}	[Nm]	Gear unit output torque
n₁	[rpm]	Input speed (HSS)
n₂	[rpm]	Output speed (LSS)
norm.		Standard operating point
min.		Operating point at minimum speed
max		Operating point at maximum speed
i		Exact gear unit reduction ratio
F_S		Service factor
F_{R1}	[N]	Actual overhung load acting on the input shaft
F_{R2}	[N]	Actual overhung load acting on the output shaft
F_{A1}	[N]	Actual axial load acting on the input shaft
F_{A2}	[N]	Actual axial load acting on the output shaft
Mass	[kg]	Weight of the gear unit
Number of greasing points		Number of relubrication points
Fans		Number of installed fans
		Oil grade and viscosity class/oil quantity
Year		Year of construction
IM		Mounting position and mounting surface

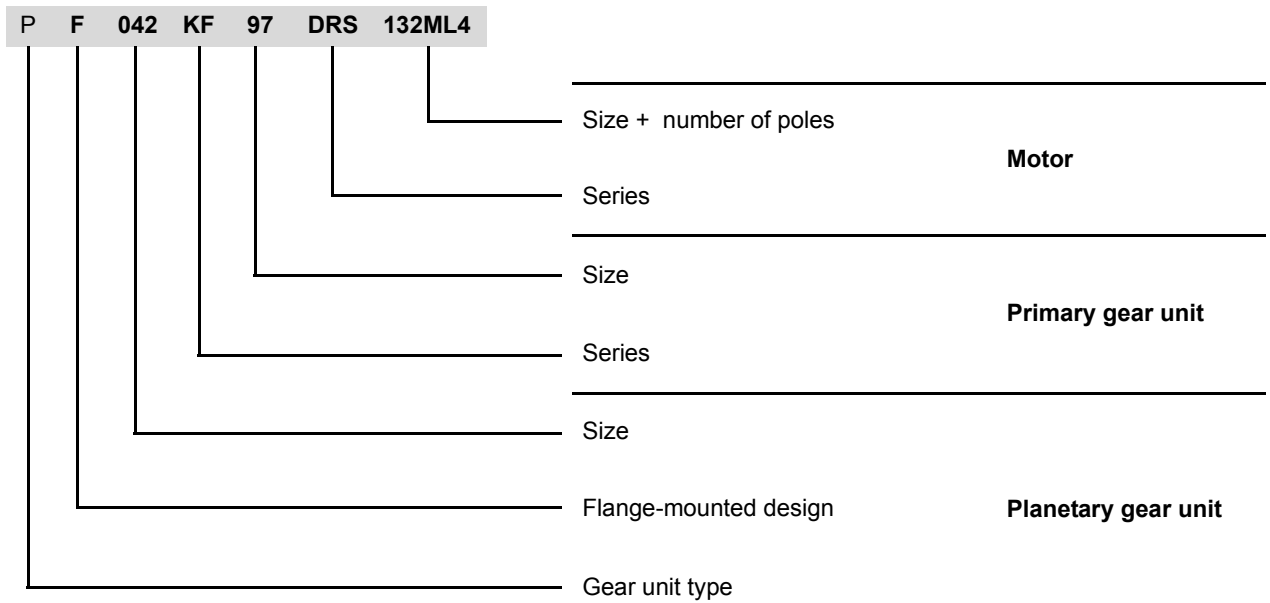


NOTE ON EXPLOSION PROTECTION

In some cases, SEW gear units must only be operated in compliance with special measures. These cases are indicated by an "X" on the nameplate (in the text field, e.g. II2GD c, k T4/120 °C X IP65). These special measures may be necessary due to various reasons (e.g. intermittent operation only, etc.). The customer has been informed about the required special measures on the initial distribution of the gear unit. The customer is obliged to ensure the compliance with these special measures.



Sample unit designation





3.2.2 Primary gear unit

Sample nameplate

SEW - Eurodrive				<input type="checkbox"/>	<input type="checkbox"/>
76646 Bruchsal/Germany					
RF47/A/II2GD				IM1	M1
n_a [r/min]	40	n_e max [r/min]	1380	f _B	3,1
M_a [Nm]	89	M_e max [Nm]	2,6	kg	13,4
F_{Ra} max [N]	5313	F_{Re} max [N]			34,73
FSA GmbH, EU Code 0588		IP		65	
RF47/A/II2GD		Made in Germany			
CLP HC 220 Synth. Öl / 0,65l		0641 543 1			

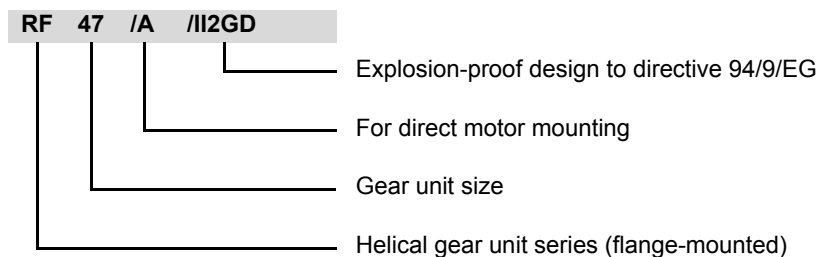
210927627

f_b		Service factor
F_{Ra} max	[N]	Maximum overhung load on the output side
F_{Re} max	[N]	Maximum overhung load on the input side (with input shaft assembly AD)
i		Gear unit reduction ratio
IM		Mounting position
IP..		Degree of protection
n_e max	[rpm]	Maximum input speed
n_a	[rpm]	Output speed
M_{emax}	[Nm]	Maximum input torque
M_a	[Nm]	Output torque
M_R	[Nm]	Slip torque when using an AR adapter
M_{RS}	[Nm]	Locking torque of the backstop

Unit designation

	TIP
	<p>For a detailed overview of unit designations and additional information, refer to the following publications:</p> <ul style="list-style-type: none"> • "Gear Units" catalog • "Gearmotors" catalog • "Explosion-proof drives" catalog

Example: Helical gear unit, category II2GD





3.2.3 Primary gear unit with motor

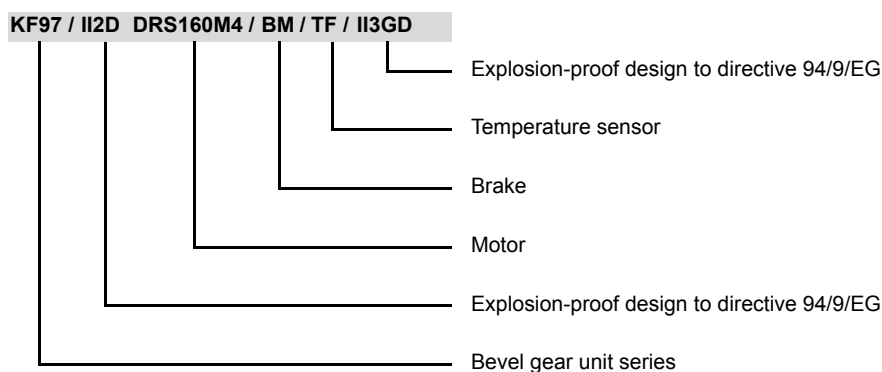
Sample nameplate

SEW-EURODRIVE							
76646 Bruchsal/Germany				3~IEC60034			
KF97/II2D DRS160M4/BM/TF/II3GD				cos φ 0.83			
01.12077302.09.0001.08				Jahr 2008			
r/min 1440 / 34				Hz 50.0			
kW 11 S1							
○ V 400 / 690 Δ /Y		A 22.5/13.0		○			
IM M1A		Iso.Kl. B		II3D Ex tD A22 IP54 T120°C			
i 41.87		°C -20...+40		IP 54		II3G Ex nA II T3	
V _{BR} 400 AC		Nm 150		BME 1.5		kg 271	
CLP HC 220 Synth.Öl / 7.0 l				Made in Germany			

1545908491

rpm	[rpm]	Input/output speed
kW	[kW]	Input power of the gear unit
S1		Operating mode
V	[V]	Supply voltage for delta/star connection
IM		Mounting position
i		Transmission ratio
cos φ		Power factor of the motor
Year		Year of construction
Hz	[Hz]	Line frequency
A	[A]	Rated motor current in delta/star connection
Iso.Kl.B		Insulating material class B
°C		ambient temperature
IP		Degree of protection of the motor
V_{BR}		Brake voltage
Nm	[Nm]	Output torque
BME	[V]	Brake control system
		Oil grade and viscosity class/oil quantity

Sample unit designation

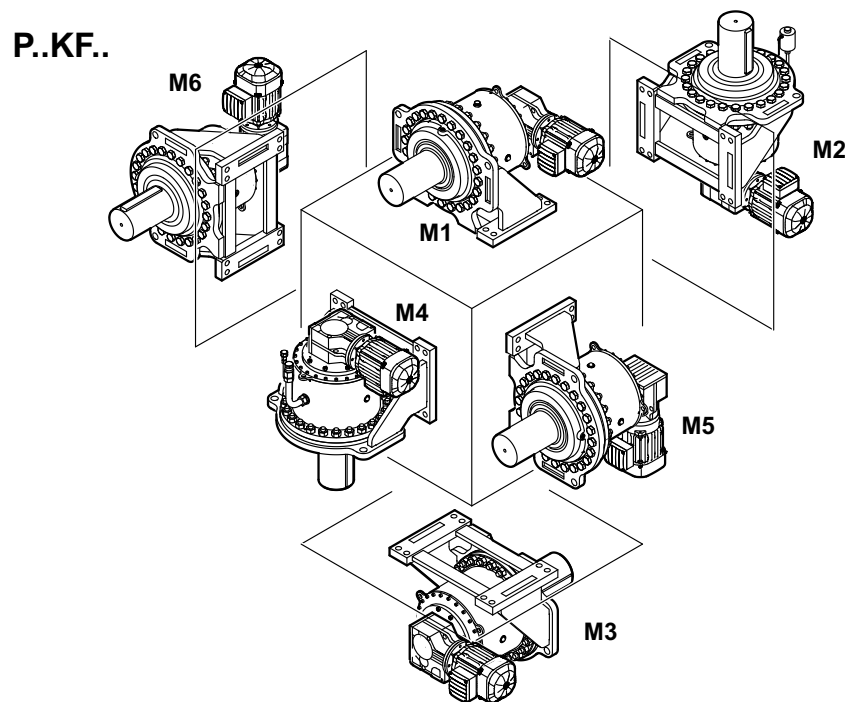
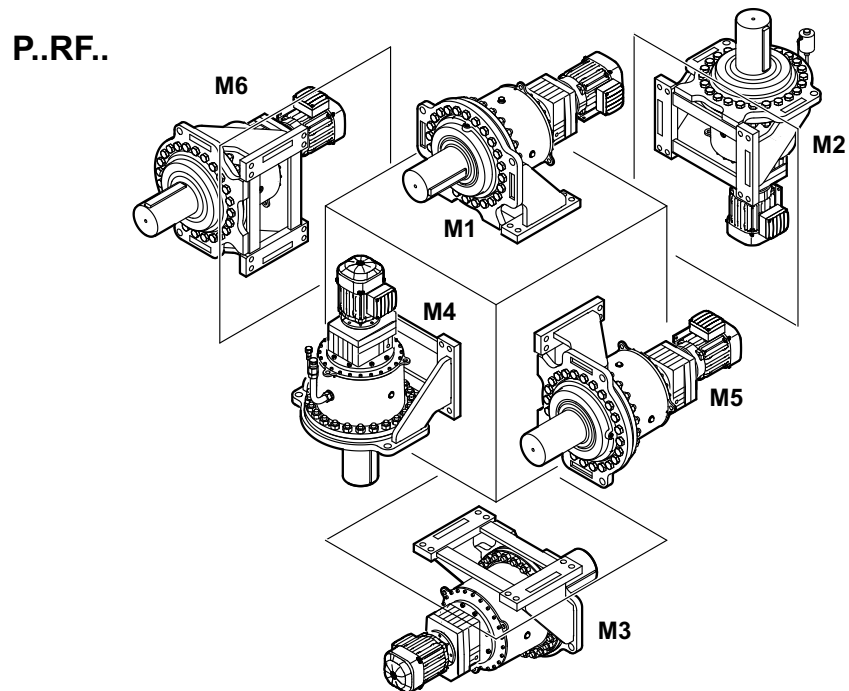




3.3 Mounting position

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.


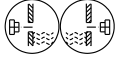






1028148619



3.4 Mounting position sheets

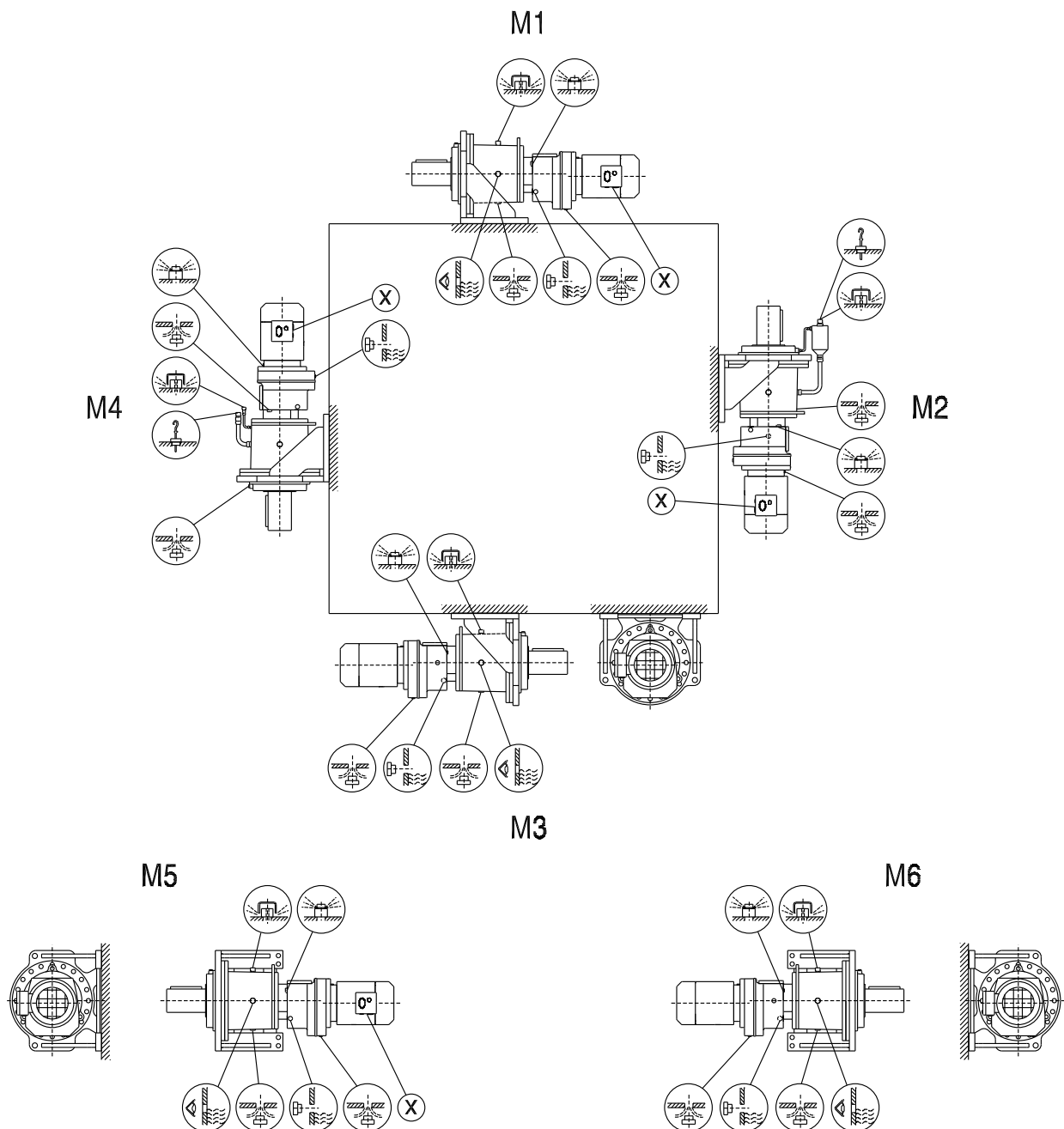
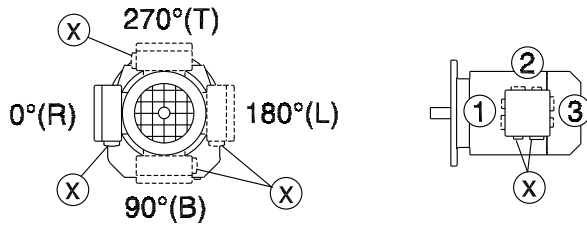
The following table shows the symbols used in the mounting position sheets and their meaning:

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



3.4.1 P..RF..

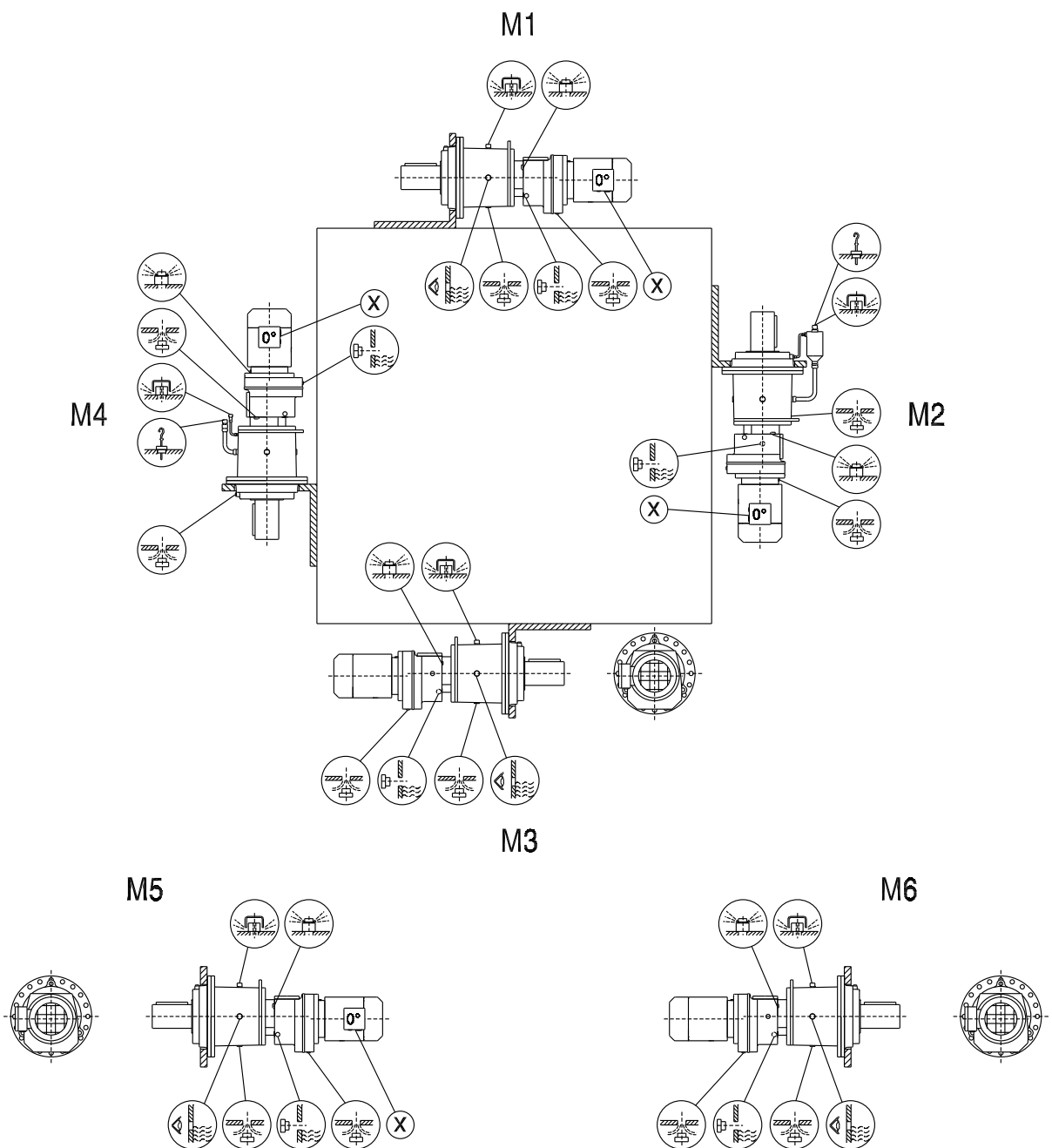
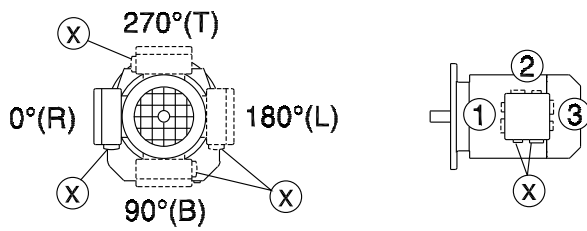
45 129 00 08





3.4.2 PF..RF..

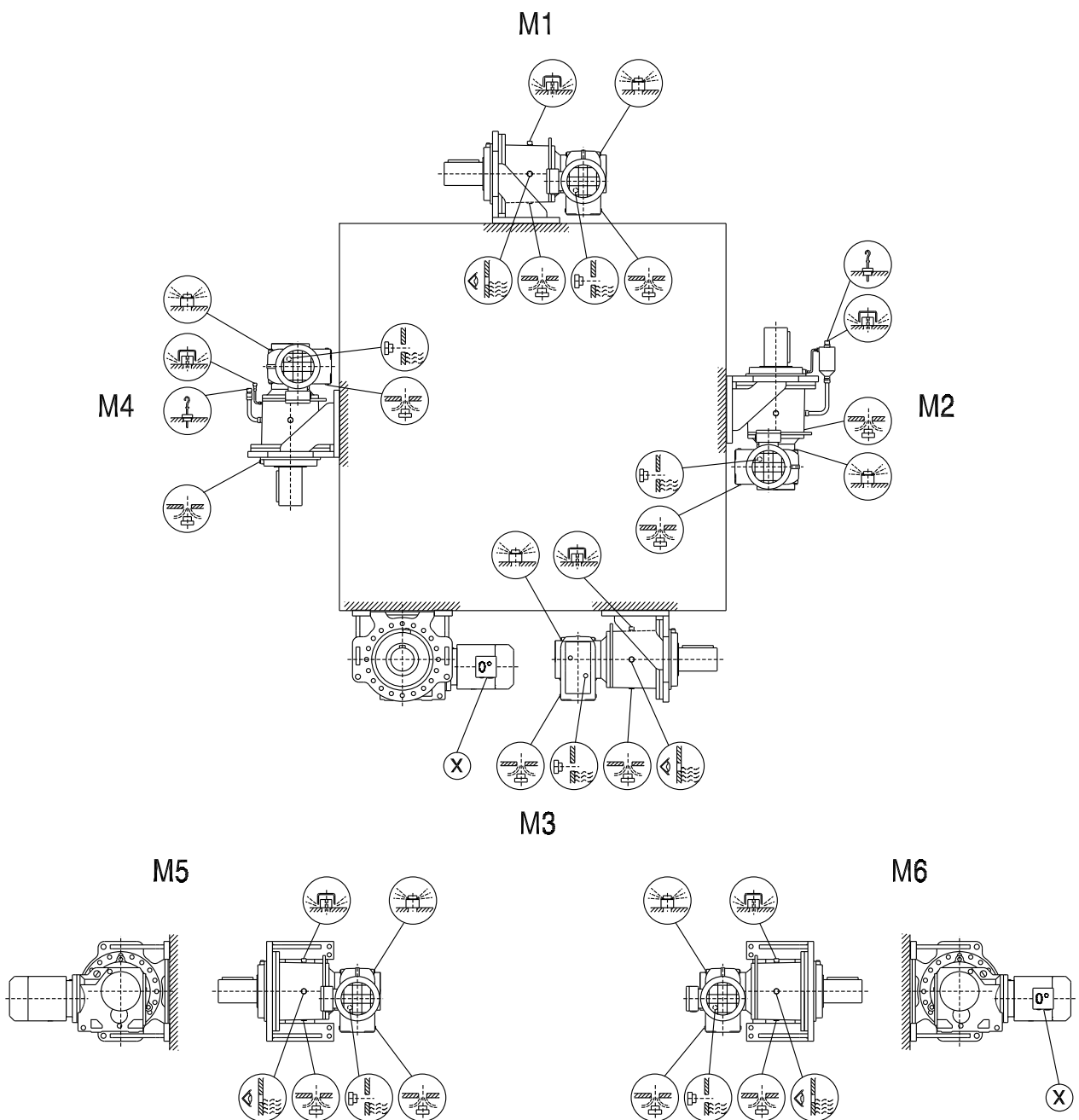
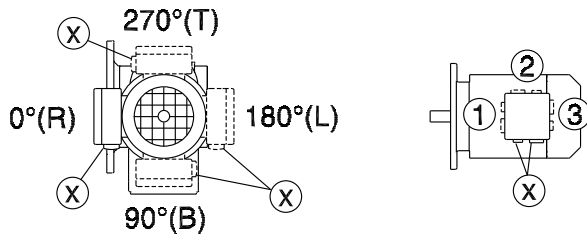
45 130 00 08





3.4.3 P..KF..

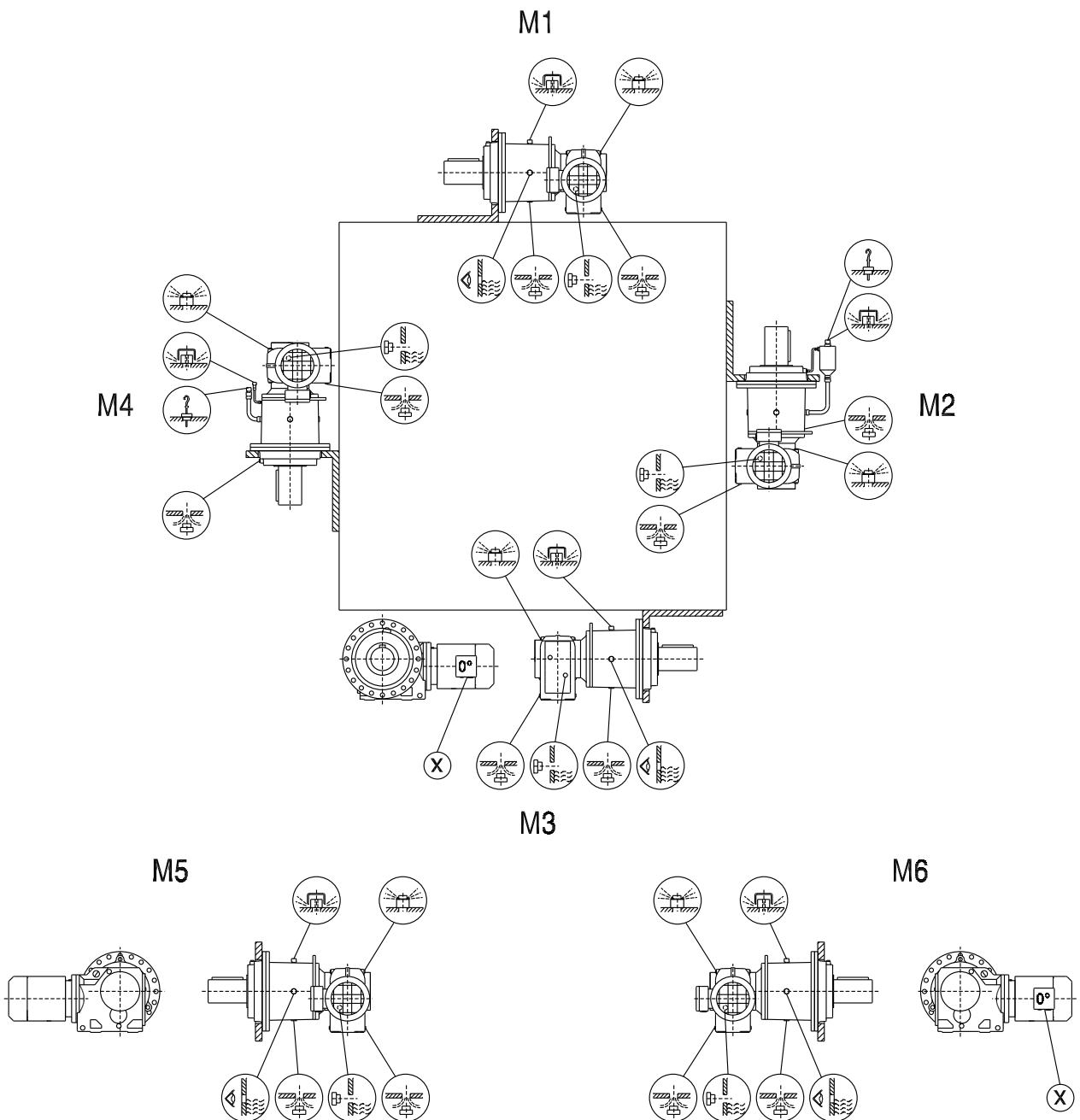
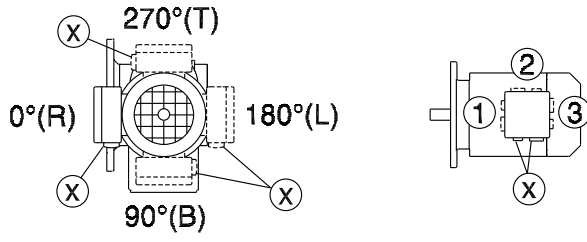
45 131 00 08






3.4.4 PF.KF..

45 132 00 08



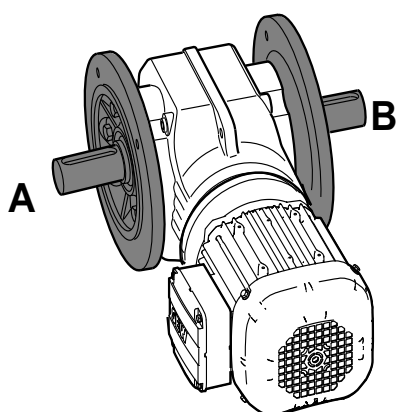


3.5 Mounting positions of the primary gear units

	TIP
	In addition to the mounting position, the following information is specified for the planetary gear motors.


3.5.1 KF.. primary bevel gear unit

For the primary bevel gear units KF..., positions **0°**, **90°**, **180°** or **270°** are fixed.
The position of the mounting flange on the **A** or **B** side is also defined.



1043984907

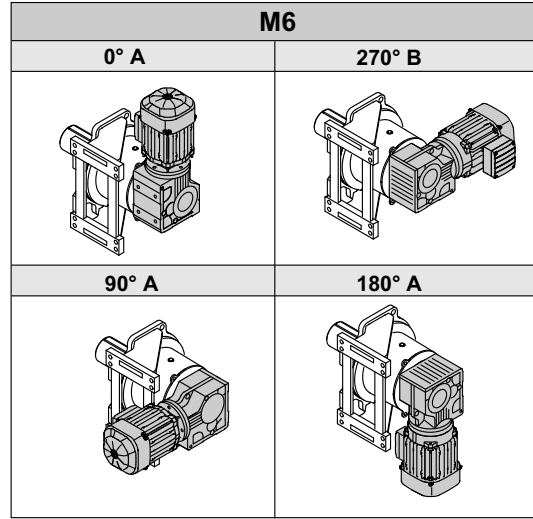
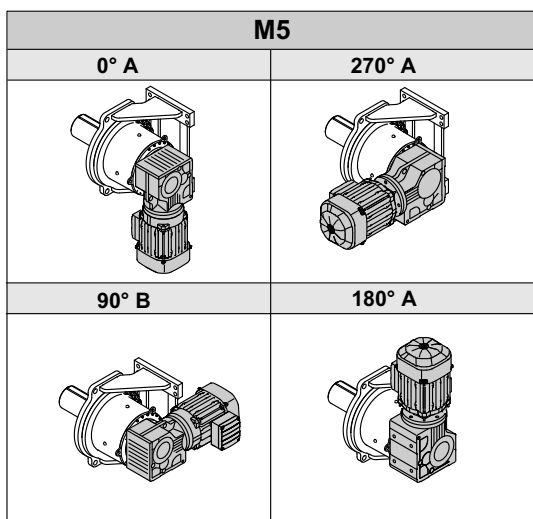
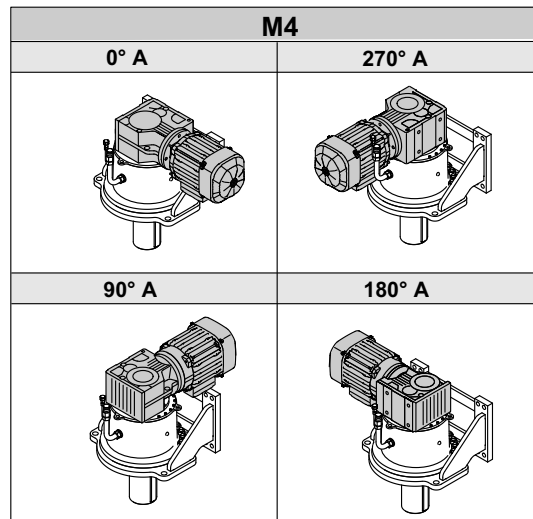
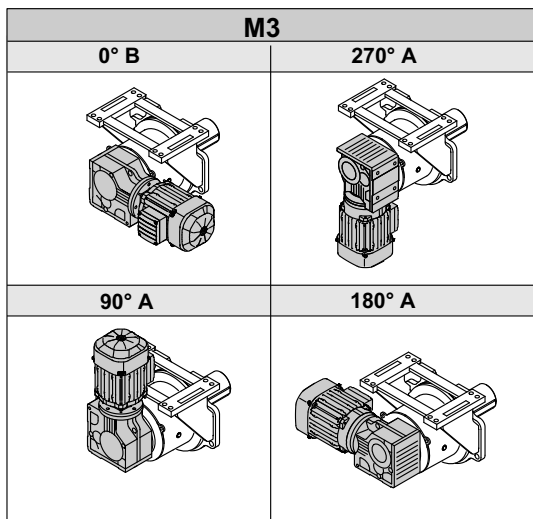
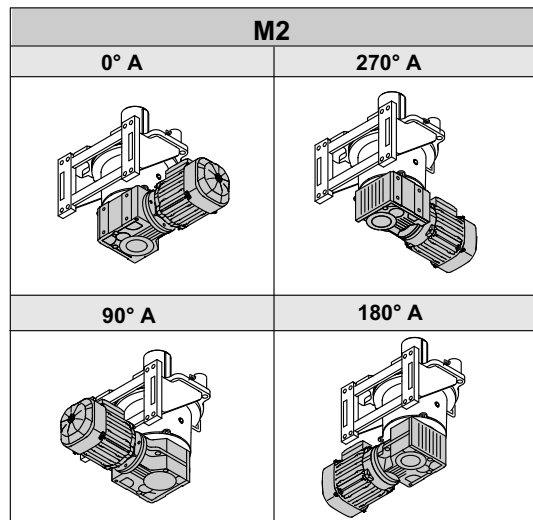
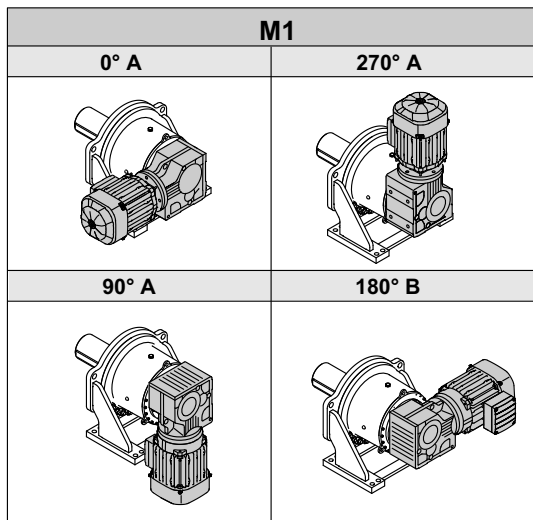
To reduce the churning losses in the primary gear unit to a minimum, SEW-EURODRIVE recommends to choose from the standard mounting positions displayed below.

	TIP
	Contact SEW-EURODRIVE in case of deviating mounting conditions.



Gear Unit Design

Mounting positions of the primary gear units



1043699211

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

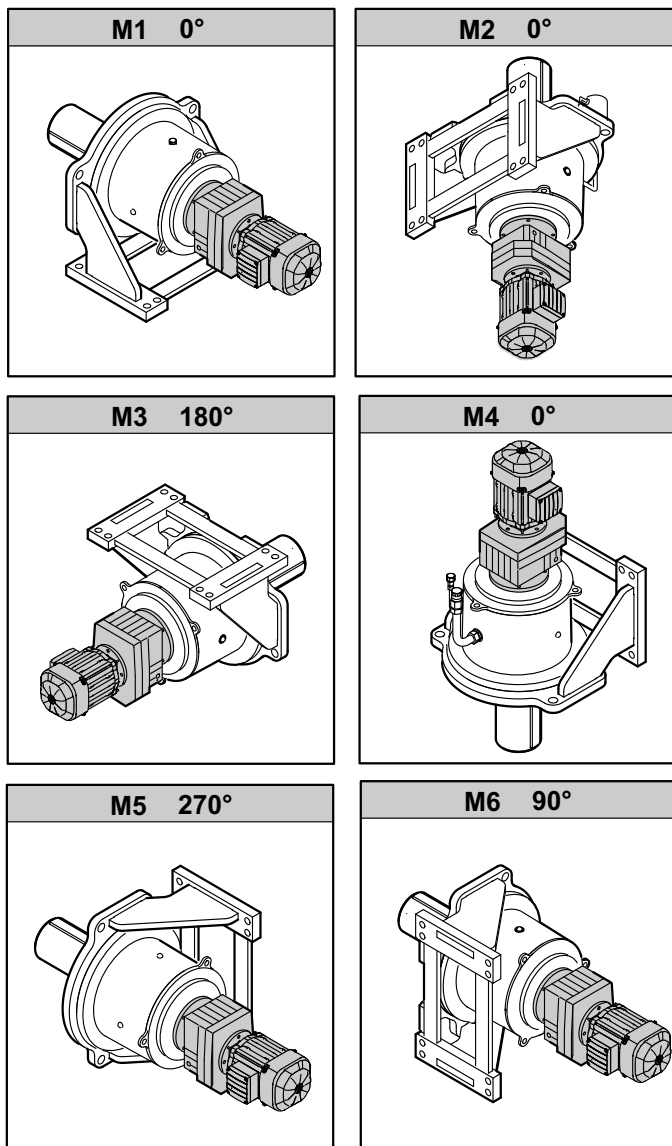


3.5.2 RF.. primary helical gear unit

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

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

	TIP
Contact SEW-EURODRIVE in case of deviating mounting positions.	



1043719691

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



3.6 Pivoted mounting position and variable mounting positions

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

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

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

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

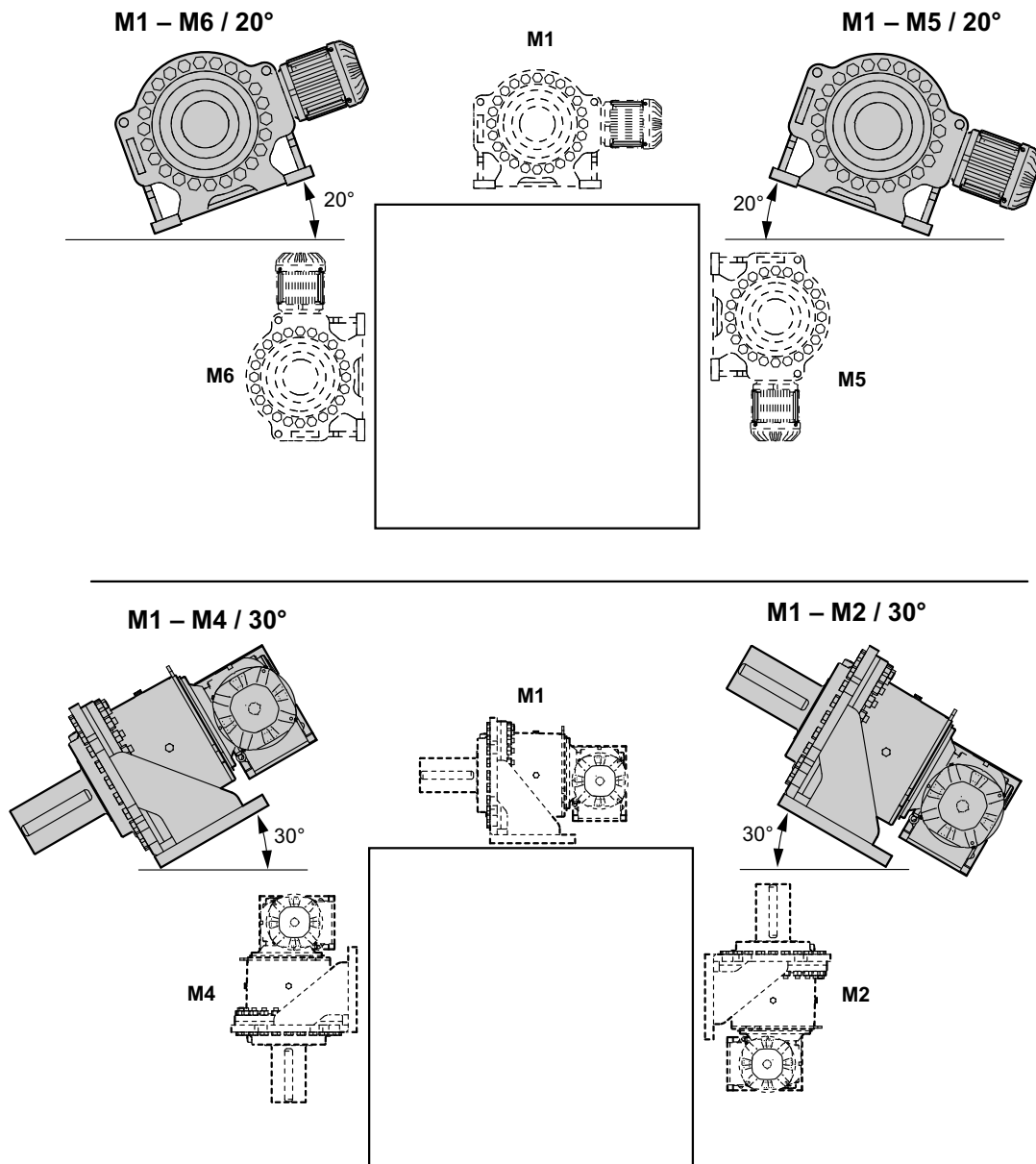
M1 - M2/20°/V

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

[1] Initial mounting position [3] Pivoting angle

[2] Desired mounting position [4] F = Fixed final position; V = Variable final position

The following figure shows examples:



1002784267



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

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

M1 - M2/20°/V - M4/20°/V - M5/30°/F

**TIP**

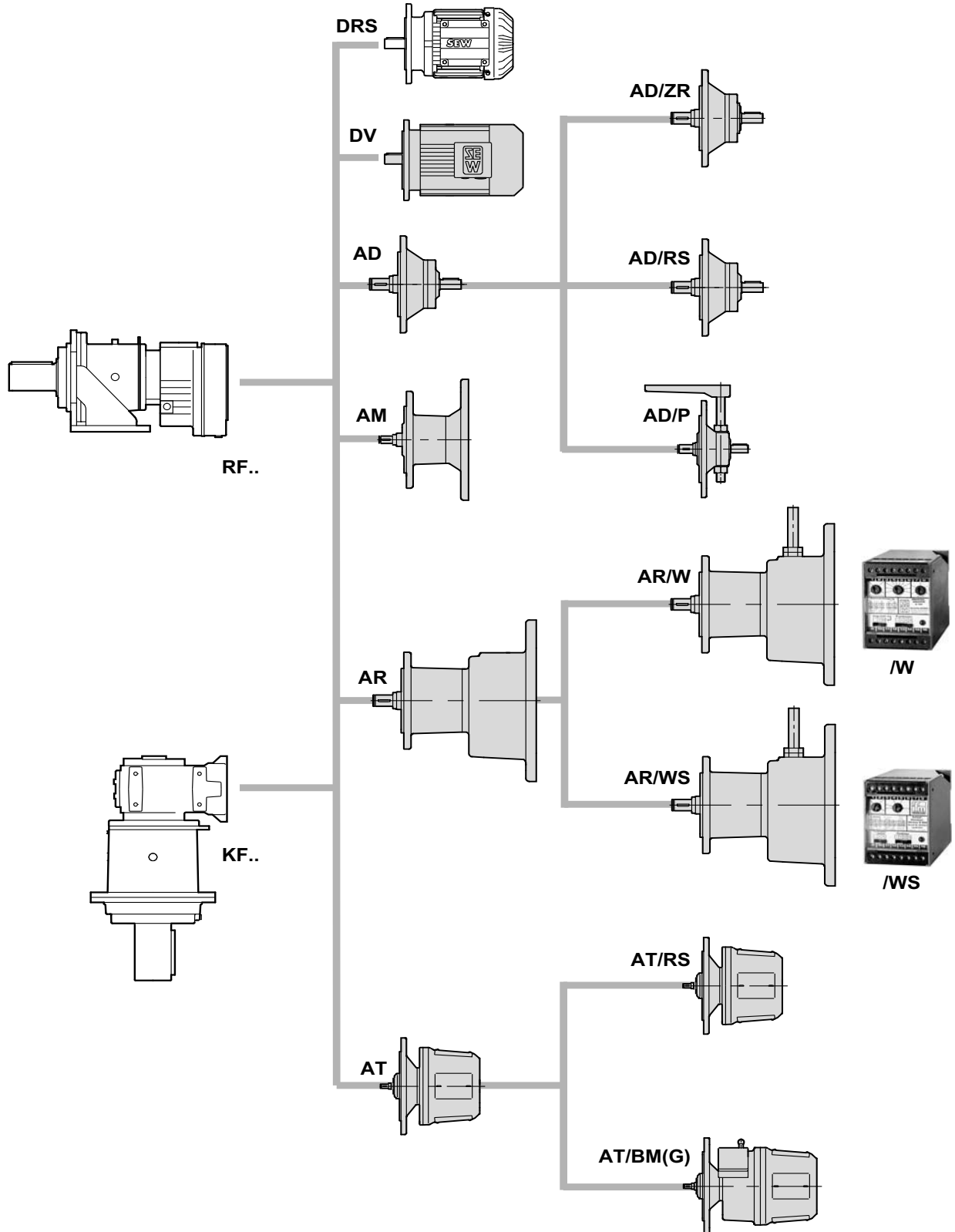
Pivoted and variable mounting positions may involve restrictions concerning accessories and technical data. Also, delivery times might be longer. Consult SEW-EURODRIVE.



4 Design of Options and Additional Features

4.1 Input components

The following figure shows an overview of the components on the the input side.





4.2 Torque arm

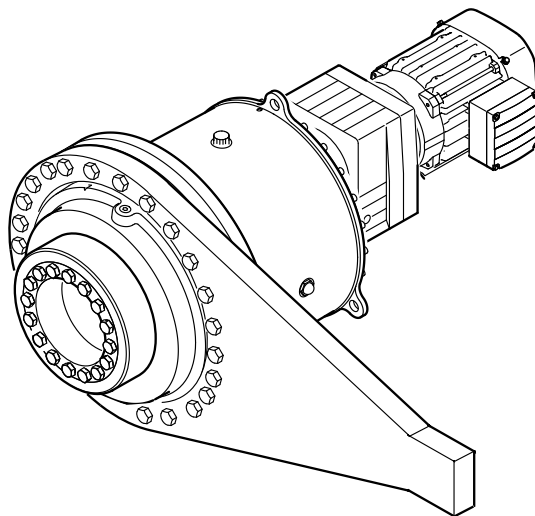
A torque arm is available to support the reaction torque of solid and hollow shaft gear units in the shaft-mounted version.

The torque arm can bear tensile stress as well as thrust loads.

4.2.1 Single-sided torque arm

The torque arm is enclosed in the delivery or can be mounted according to customer requirements. The retaining screws are included in the scope of delivery.

The following figure shows a sample combination of a planetary gearmotor with a torque arm on one side.



1138611211

4.3 PT100 temperature sensor

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

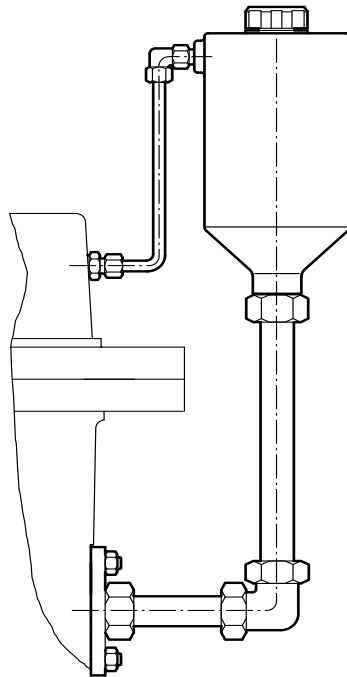
The temperature sensor is located in the gear unit's oil sump. The exact position depends on the gear unit variant.



4.4 Oil expansion tank / oil riser pipe

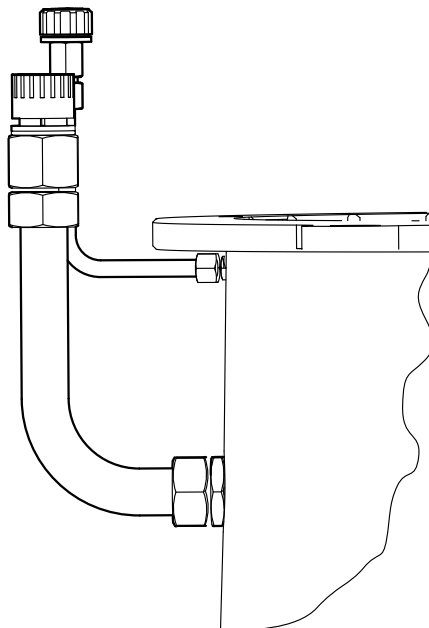
If there is little space available for installing the oil expansion tank (M2 mounting position) or the oil riser pipes (M4 mounting positions), you can request an order-specific dimension drawing from SEW-EURODRIVE.

4.4.1 Oil expansion tank for mounting position M2



1055542539

4.4.2 Oil riser pipe for mounting position M4



1124404619



5 Checklist

5.1 Before startup

This checklist contains an overview of all of the points that must be checked **before startup** of a gear unit in a potentially explosive area in accordance with Directive 94/9/EC.

Check the following points before starting up a gear unit in a potentially explosive area	Check	Information in section ...
Inspect the shipment for any damage that may have occurred in transit as soon as you receive the delivery. Inform the shipping company immediately. Startup may have to be precluded. Remove transportation safety fixtures prior to startup.		2.8
Compare the data on the nameplate of the drive with the specifications for operation in a potentially explosive area on location: <ul style="list-style-type: none"> • Equipment group • Explosion protection category • Explosion protection zone • Temperature class • Maximum surface temperature 		3.2 and 6.7
Have arrangements been made to prevent explosive atmospheres, oils, acids, gases, vapors or radiation during installation of the gear unit?		6.4
Does the ambient temperature comply with the specifications (nameplate and order confirmation)?		6.7
Have measures been taken to ensure that the gear units are sufficiently ventilated and that they are not heated by an external heat source (e.g. the coupling)? The cooling air may not exceed a temperature of 40 °C.		6.7
Does the mounting position correspond to the specification on the nameplate? Please note: Contact SEW-EURODRIVE before you change the mounting position. Otherwise, the ATEX certification may no longer be valid.		3.3
Does the oil level for this mounting position comply with the information on the nameplate?		8.4
Do you have ready access to all oil filling and oil drain screws as well as the breather valves?		3.4 and 6.6
Do all installed drives and drive components have ATEX certification?		6
Have you checked that the values on the nameplate of the gear unit are not exceeded?		7.6
When installing a motor to the input shaft using a V-belt drive: <ul style="list-style-type: none"> • Does the belt have sufficient attenuation resistance ($< 10^9 \Omega$) between the input shaft and the motor shaft? • Before installing a protective cover: Has the manufacturer of the protective cover performed a risk analysis to prove that no sources of ignition or combustion (e.g. risk of sparks from grinding) can occur? (If you are not using the protective cover from SEW-EURODRIVE). 		6.3 and 6.9
For motors operated on the supply system: <ul style="list-style-type: none"> • Check that the data specified on the nameplate of the gear unit and the motor corresponds to real conditions at the location where the drive is to be installed. 		7.6

5.2 During startup

This checklist includes all activities that will have to be executed **during startup** of a gear unit according to Directive 94/9/EC for operation in potentially explosive atmospheres.

Check the following points during gear unit start up in a potentially explosive area	Check	Information in section ...
Measure the surface temperature after approx. 6 hours. The temperature may not differ from the ambient temperature by more than 50 K. If the value is > 50 K, switch the drive off immediately and contact SEW-EURODRIVE.		7.6
Measure the oil temperature. Base the oil change intervals on this value (see section 7.6.2).		7.6



6 Installation/Assembly

6.1 Required tools/resources

Not included in the scope of delivery:

- Set of wrenches
- Torque wrench
- Mounting device
- Compensation elements (shims, spacing rings)
- Fasteners for input and output elements
- Lubricant (e.g. NOCO[®] fluid from SEW-EURODRIVE) → except for hollow shaft gear units
- For hollow shaft gear units → aids for assembly/disassembly onto the machine shaft
- Securing components for the gear unit base

6.2 Tolerances

6.2.1 P.. planetary gear units

Shaft ends Diameter tolerance in accordance with DIN 748:
 $\varnothing > 50 \text{ mm} \rightarrow \text{ISO m6}$

Center bores:

- $\varnothing 120 \dots 210 \text{ mm} \rightarrow \text{M20}$
- $\varnothing 240 \dots 290 \text{ mm} \rightarrow \text{M24}$

Mounting flange Centering shoulder tolerance: ISO f8

6.2.2 RF../KF.. primary gear unit

Shaft ends Diameter tolerance in accordance with DIN 748:
 $\varnothing \leq 50 \text{ mm} \rightarrow \text{ISO k6}$
 $\varnothing > 50 \text{ mm} \rightarrow \text{ISO m6}$

Center bores to DIN 332 D:

- $\varnothing > 85 \dots 130 \text{ mm} \rightarrow \text{M24}$
- $\varnothing > 130 \dots 180 \text{ mm}^{1)} \rightarrow \text{M30}$


1) Dimensions not according to DIN 332; the thread depth including the counterbore is at least twice that of the rated thread diameter

Keys according to DIN 6885 (domed type)

Mounting flange Centering shoulder tolerance: ISO f7



6.3 Notes on installation/mounting

	NOTICE
	<p>Improper installation/mounting may result in damages to the gear unit.</p> <p>Possible damage to property!</p> <ul style="list-style-type: none"> • Note the following:

- Strictly observe the safety notes in the individual chapters.
- The planetary gear units are delivered without oil fill.
- RF../KF.. primary gear units have a lubricant fill in accordance with their mounting position.
- The oil chambers of both gear units are separate. Exceptions are specifically identified as such.
- The most important technical data is included on the nameplate. Additional data relevant for operation is available in drawings, order confirmations or any order-specific documentation.
- Install/mount the gear unit only in the specified mounting position on a level, vibration-damping, and torsionally rigid support structure. Do not twist housing legs and mounting flanges against each other!
- Work on the gear unit only when the machine is not in use. Secure the drive unit against unintentional power-up. Place an information sign near the ON switch to warn that the gear unit is being worked on.
- The plugs for checking and draining oil and the breather valves must be freely accessible.
- Use plastic inserts (2 to 3 mm thick) if there is a risk of electrochemical corrosion between the gear unit and the driven machine (connection between different metals such as cast iron and high-grade steel). Also fit the bolts with plastic washers. Always ground each gear unit housing separately.
- Only authorized personnel may assemble gear head units with motors and adapters. Contact SEW-EURODRIVE.
- Do not weld anywhere on the drive. Do not use the drive as a ground point for welding work. Welding may destroy gearing parts and bearings.
- Protect rotating drive parts, such as couplings, gears, or belt drives using suitable devices that protect from contact.
- Units installed outdoors must be protected from the sun. Suitable protective devices are required, such as covers or roofs. When using these, avoid heat accumulation. The operator must ensure that foreign objects do not impair the function of the gear unit (e.g., by falling objects or coverings).
- Protect the gear unit from direct cold air currents. Condensation may cause water to accumulate in the oil.



- For the standard mounting positions, the breather valve on planetary gear units is mounted at the factory and activated if the gear unit is supplied without an oil fill. Check the correct mounting and the function of the breather valve.
- Gear units are supplied with a coating suitable for use in damp areas or in the open air. Repair any damage to the paint work (e.g. on the breather valve).



NOTE ON EXPLOSION PROTECTION


- The gear units are usually delivered without oil. Refer to the information on the nameplate.
- The mounting position may only be changed after consultation with SEW-EURODRIVE. Warranty as well as ATEX approval will become void without prior consultation.
- Customers may not use their own spacers in addition.
- Make sure that the gear unit housing is grounded. Electrical mount-on components, such as motors, frequency inverters, etc., must be grounded separately.
- Use belts with sufficient electrical bleeder resistance $< 10^9 \Omega$ only.
 - These have to meet the requirements set forth in IEC 60695-11-10, category FV-0.
 - Power transmission elements should be balanced after fitting and must not give rise to any impermissible radial or axial forces (see the "Gearmotors" or "Explosion-Proof Drives" catalog for permitted values).
- Follow the instructions in the sections "Mechanical installation" / "Installing the gear unit"



6.4 Preliminary work

Check that the following conditions have been met:

- The information on the motor's nameplate matches the voltage supply system.
- You must clean the output shafts and flange surfaces thoroughly to ensure they are free of anti-corrosion agents, contamination or similar. Use a commercially available solvent. Do not expose the sealing lips of the oil seals to the solvent – damage to the material.
- The drive has not been damaged during transportation or storage.
- Ambient temperature according to the nameplate.

	NOTE ON EXPLOSION PROTECTION
	<ul style="list-style-type: none"> • The drive must not be assembled in the following ambient conditions: <ul style="list-style-type: none"> – Potentially explosive area – Oils – Acids – Gases – Vapors – Radiation

6.4.1 Extended storage

Note: The service life of the lubricant in the bearings is reduced if the unit is stored for ≥ 1 year (only applies to bearings with grease lubrication).

Exchange the screw plug with the enclosed breather filter.



6.5 Installing the gear unit

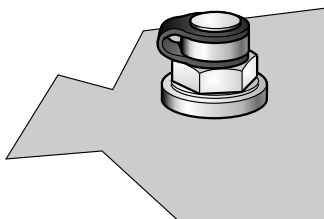

NOTE ON EXPLOSION PROTECTION

Processes producing strong charges due to quickly moving particles on the coating are not to be undertaken (e.g. due to flowing liquids and solids).

6.5.1 Breather valve with RF../KF.. primary gear unit

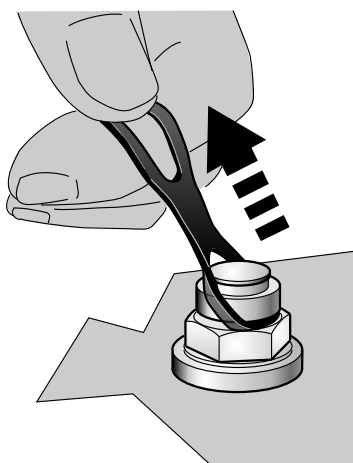
Check whether the breather valve is activated. If the breather valve has not been activated, you must remove the transport fixture from the breather valve before starting up the gear unit!

1. Breather valve with transport fixture



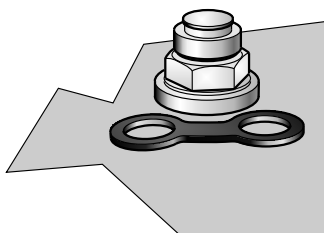
211319051

2. Remove the transport fixture



211316875

3. Activated breather valve



211314699

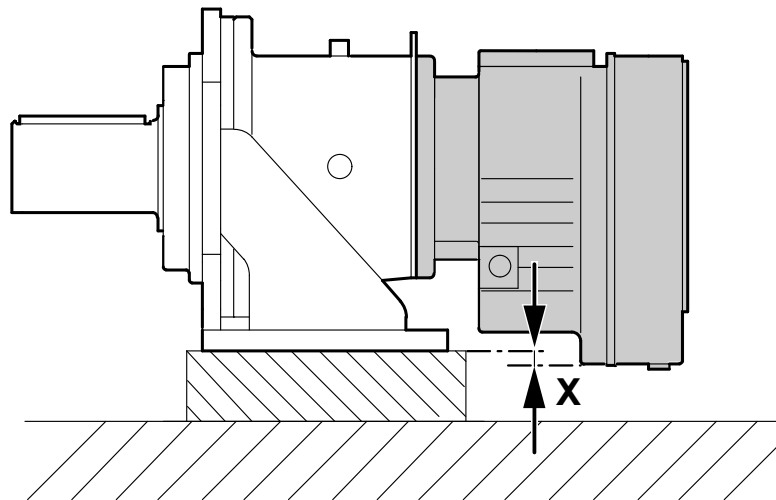


6.5.2 Foot-mounting with RF../KF.. primary gear unit

In case of the following combinations of foot-mounted planetary gear units with KF../RF.. primary gear units, the primary gear unit can be lower than the mounting surface.

Bolster the gear unit by the dimension **X** before mounting it.

	Size/combinations		Dimension X
	RF..	KF..	
P002	-	97	10
P012	-	107	32.5
P022	-	107	2.5
P022	137	-	7.5
P032	147	-	18.5



1747365003



6.5.3 Foundation

To ensure quick and successful mounting, the type of foundation should be correctly selected and the mounting carefully planned in advance. Foundation drawings with all necessary construction and dimension details should be available.

To avoid harmful vibrations and oscillations, adequate rigidity must be ensured when mounting the gear unit on a steel construction. The foundation must be dimensioned according to weight and torque of the gear unit by taking into account the forces acting on the gear unit.

Tighten retaining screws or nuts to the specified torque. Use the screws and tightening torques specified in section 6.3.

	NOTICE
	<p>An improper foundation may result in damages to the gear unit.</p> <p>Possible damage to property!</p> <ul style="list-style-type: none"> • The foundation must be level and flat, the gear unit may not be deformed when the retaining screws are tightened.

6.5.4 Aligning the shaft axis

	DANGER
	<p>Shafts may break if shaft axes are not aligned exactly.</p> <p>Severe or fatal injuries.</p> <ul style="list-style-type: none"> • Refer to the separate operation instructions regarding the requirements of the couplings.

The service life of the shafts, bearings and couplings depends on the precision of the alignment of the shaft axes with each other.


Always try to achieve zero deviation. When doing so, you should also consult the special operating instructions regarding the requirements of the couplings, for example.

6.5.5 Painting the gear unit


	NOTICE
	<p>Breather valves and oil seals may be damaged during the painting or re-painting process.</p> <p>Potential damage to property.</p> <ul style="list-style-type: none"> • Thoroughly cover the breather valves and the sealing lip of the oil seals with strips prior to the painting process. • Remove the strips after the process.



6.6 Installation of gear units in a potentially explosive atmosphere


	NOTE ON EXPLOSION PROTECTION
	Make sure to observe the safety notes listed in section 2 when installing the gear unit in a potentially explosive atmosphere!

6.7 Gear units and gearmotors in category II2GD

	NOTE ON EXPLOSION PROTECTION
	Explosion-proof planetary gear units meet the construction requirements for group II, category 2G or 3G (potentially explosive gas atmospheres) and 2D or 3D (potentially explosive dust atmospheres). These gear units are intended for use in zones 1 and 21 or zones 2 and 22.

6.7.1 Ambient temperature

Gear units in category II2D, II2G, II3D and II3G may be operated at ambient temperatures of $-20\text{ }^{\circ}\text{C}$ to $+40\text{ }^{\circ}\text{C}$ only.

	NOTE ON EXPLOSION PROTECTION
	Any ambient temperatures deviating from this range have to be listed on the nameplate.

6.7.2 Temperature class

Gear units in categories II2G and II3G (potentially explosive gas atmosphere) are approved for temperature classes T3 to T6 depending on their speed, reduction ratio, and mounting position. The category and temperature class of the gear unit is indicated on the nameplate.

6.7.3 Surface temperature

The maximum surface temperature of gear units in categories II2D and II3D is $120\text{ }^{\circ}\text{C}$ or $140\text{ }^{\circ}\text{C}$, depending on the speed, gear unit reduction ratio and mounting position. Higher surface temperatures are only permitted after consultation with SEW-EURODRIVE. The category and maximum surface temperature must be indicated on the nameplate. The system operator must ensure that the accumulation of dust does not exceed a maximum thickness of 5 mm in accordance with EN 50281-1-2. Dust build-up between the shrink disk and the cover must be prevented.

**6.7.4 Degree of protection**

The IP number on the nameplate indicates the degree of protection.

6.7.5 Ambient conditions

Provide for sufficient ventilation for the gear units and prevent external heat generation (e.g. via couplings).

6.7.6 Output power and output torque

Output torque, speeds, and permitted radial and axial forces must be in accordance with the specifications on the nameplate.




6.7.7 Special designs

Special designs (e.g. modified output shaft) may only be operated in potentially explosive atmospheres after prior approval by SEW-EURODRIVE.



6.8 Oil filling

Observe the general notes on the oil filling process.

	<p>! DANGER</p> <p>Risk of crushing if the drive starts up unintentionally. Severe or fatal injuries.</p> <ul style="list-style-type: none"> • De-energize the motor before you start working on the unit. • Secure the motor against unintended power-up.
	<p>NOTICE</p> <p>Improper oil filling may result in damages to the gear unit. Possible damage to property!</p> <ul style="list-style-type: none"> • Note the following:
	<p>NOTE ON EXPLOSION PROTECTION</p> <ul style="list-style-type: none"> • The plugs for checking and draining oil and the breather valves must be freely accessible. • Check the correct oil fill specified for the relevant mounting position prior to startup. (Data on the nameplate).

- Carry out the oil filling process with the gear unit in the intended mounting position.
- Make sure that the oil has room temperature for the filling process.
- For gear units with external supply pipes, e.g oil/air cooler, establish the connections prior to the filling process.
- Observe the additional notes depending on the lubrication type in the following sections.



6.9 Gear units with solid shaft

6.9.1 Mounting input and output components

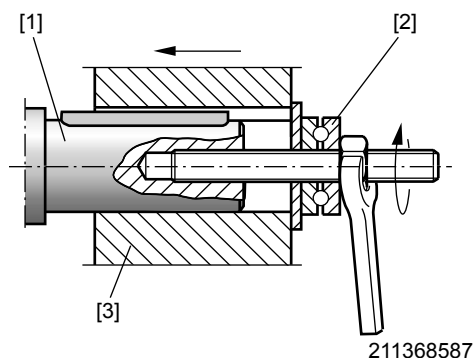
	NOTICE
	<p>Bearing, hosing or shaft may be damaged due to improper assembly.</p> <p>Possible damage to property!</p> <ul style="list-style-type: none"> • Only use a mounting device for installing input and output elements. Use the center bore and the thread on the shaft end for positioning. • Never force belt pulleys, couplings, pinions, etc. onto the shaft end by hitting them with a hammer. This may damage the bearing, the housing and the shaft. • In the case of belt pulleys, make sure the belt is tensioned correctly in accordance with the manufacturer's instructions.

	NOTE ON EXPLOSION PROTECTION
	<p>Only use input and output elements with ATEX certification, if these are subject to Directive 94/9/EC.</p>

	NOTE ON EXPLOSION PROTECTION
	<p>If the nameplate lists $F_{a2} = 0 \text{ N}$, you must ensure correct installation and designated use to prevent axial loads on the gear unit. Otherwise, the gear unit might heat up excessively.</p>

Assembly with mounting device

The following figure shows a mounting device for installing couplings or hubs on gear unit or motor shaft ends. Should you be able to tighten the screw without any problems, you may not need the thrust bearing on the mounting device.

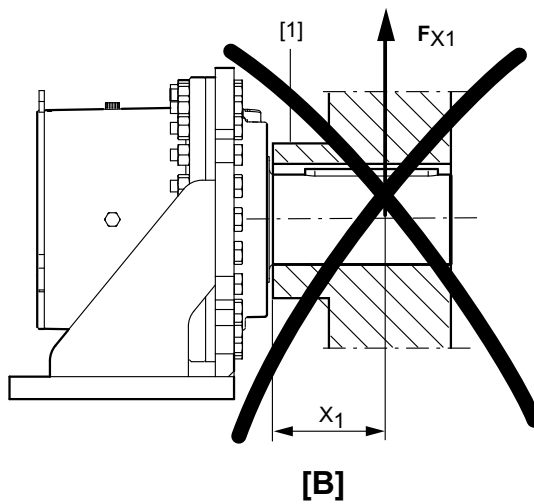
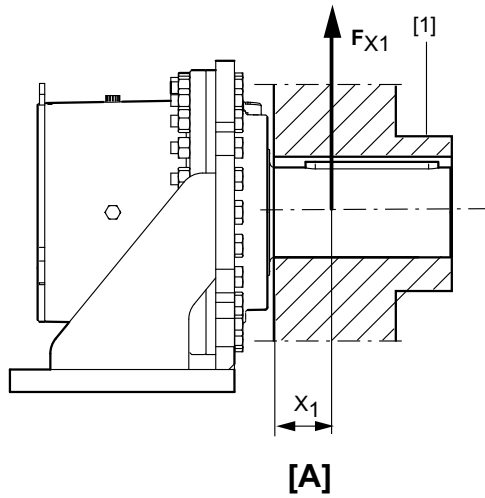


- [1] Gear shaft end
- [2] Thrust bearing
- [3] Coupling hub



Avoid excessive overhung loads

Avoid high overhung loads by: Installing the gear or chain sprocket according to figure A if possible.



105550219

- [1] Hub
- [A] unfavorable
- [B] correct



TIP

Mounting is easier if you first apply lubricant to the output element or heat it up briefly (to 80 ... 140 °C).



6.9.2 Coupling mounting

**⚠ CAUTION!**

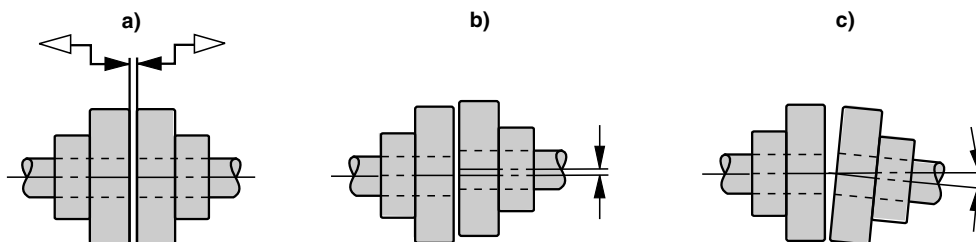
Input and output components such as belt pulleys, couplings etc. are in fast motion during operation.

Risk of jamming and crushing.

- Cover input and output components with a touch guard.

Adjust the following misalignments according to the coupling manufacturer's specifications when mounting couplings.

- Maximum and minimum clearance
- Axial offset
- Angular offset



211395595

6.10 Gear unit mounting for foot-mounted units

The following table shows the thread sizes and the tightening torques of the individual gear unit sizes.

Size	Screw/nut	Quantity	Tightening torque screw / nut Strength class 8.8 [Nm]
P002	M20	8	410
P012	M20		
P022	M20		
P032	M24		710
P042	M30		1450
P052	M36		2500
P062	M36		4000
P072	M42		4000
P082	M42		4000

**TIP**

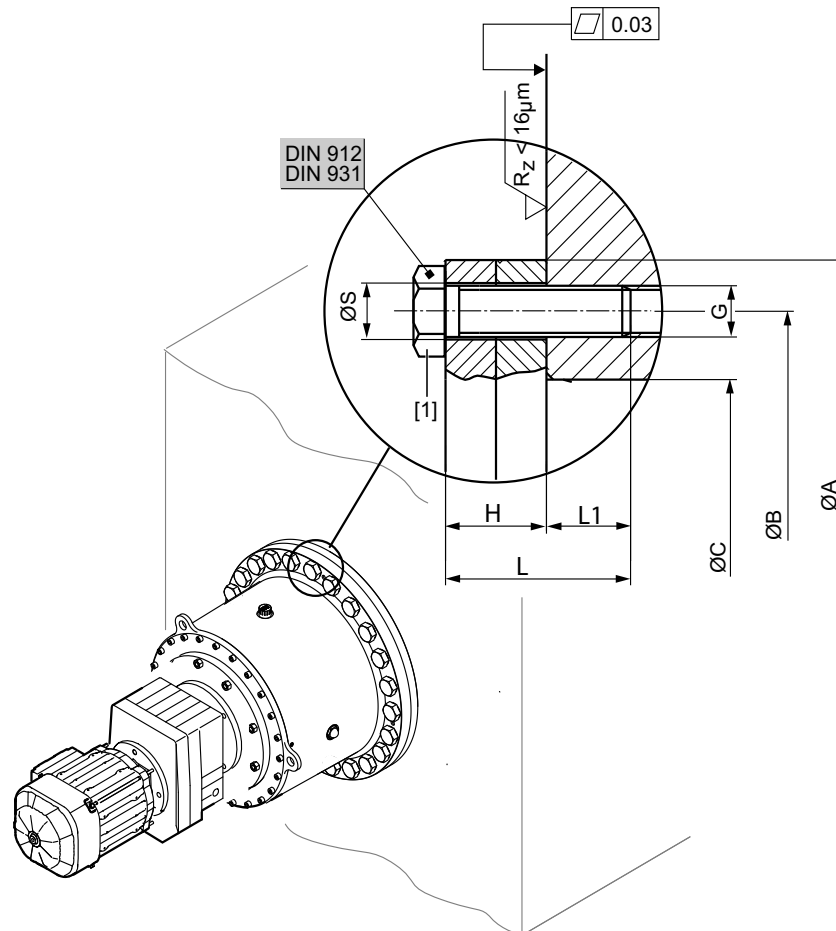
The bolts must not be lubricated during assembly.



6.11 Gear unit mounting for flange-mounted units

When mounting the gear unit to the torque arm and/or machine frame, secure the screws [1] additionally by using Loctite® 640.

The following figure shows an example of how flange-mounted gear units are installed.



Size	Thread	Quantity	Tightening torque [Nm] ± 20 %	Dimensions in [mm]							Strength classes	DIN screws
				Ø S	H	L	L1	Ø A	Ø B	Ø C		
P002	M20	16	579	22	39.5	73.5	34	410	370	330 f8	10.9	DIN EN ISO 4017 DIN EN ISO 4762
P012	M20	20	579	22	41.5	73.5	32	450	410	370 f8		
P022	M20	24	579	22	48	84	36	500	460	410 f8		
P032	M24	20	1000	26	50	84	34	560	510	460 f8		
P042	M30	20	2011	33	64	114	50	620	560	480 f8		
P052	M30	24	2011	33	64	114	50	650	590	530 f8		
P062	M36	24	3492	39	74	134	60	760	690	610 f8		
P072	M36	24	3492	39	84	144	60	840	770	690 f8		
P082	M42	24	3492	45	84	154	70	920	840	750 f8		



6.12 Torque arms for hollow shaft gear units



NOTICE

Improper assembling may result in damages to the gear unit.

Possible damage to property!

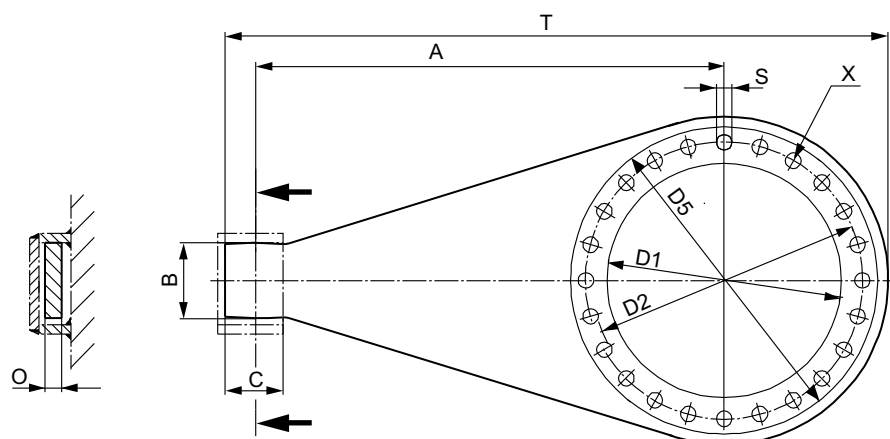
- Do not place torque arms under strain during installation.

6.12.1 Single-sided torque arm (standard)

The reactive force due to the gear unit torque is absorbed via the torque arm with lever arm A. The illustration shows an example for absorption in a welded construction with design dimensions. Two supporting plates are welded with the suggested dimensions on the machine design. Once the gear unit has been mounted, a connecting cover plate is welded onto the two supporting plates. The force of the gear unit torque acts on the support, divided by the length of the lever arm A. The reaction force also acts on the gear unit and machine shafts.

Dimensions

The following figure shows a sample torque arm.



1143100811

Size	Dimensions in [mm]							Quantity	Weight [Kg]	
	A	B	C	D1	D2	O	S			T
P002	650	60	50	334	370	25	22	880	16	25
P012	700	70	60	374	410	30	22	955	20	35
P022	750	90	70	414	460	35	22	1035	24	48
P032	800	110	90	464	510	35	26	1125	20	58
P042	900	150	120	484	560	40	33	1270	20	93
P052	1000	160	130	534	590	40	33	1390	24	102
P062	1200	180	150	614	690	50	39	1655	24	183
P072	1500	230	200	694	770	60	39	2020	24	317
P082	1600	230	200	754	840	70	45	2160	24	420



Tightening torques

Size	Thread	Quantity	Tightening torque [Nm] ± 20 %	Strength classes	DIN screws
P002	M20	16	579	10.9	DIN EN ISO 4017 DIN EN ISO 4762
P012	M20	20	579		
P022	M20	24	579		
P032	M24	20	1000		
P042	M30	20	2011		
P052	M30	24	2011		
P062	M36	24	3492		
P072	M36	24	3492		
P082	M42	24	3492		



6.13 Hollow shaft and shrink disk



NOTE ON EXPLOSION PROTECTION

Only drive components with ATEX certification are permitted, assuming that these components are covered by Directive 94/9/EC.

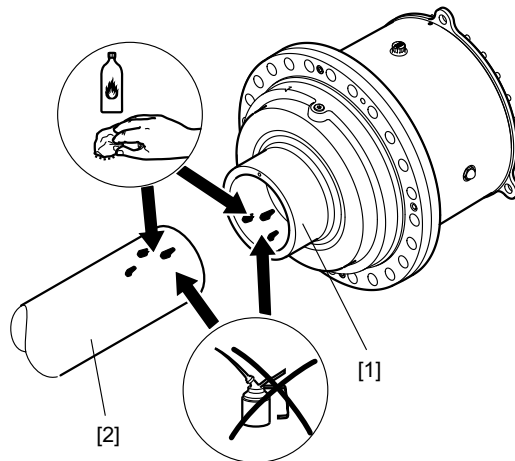


NOTE ON EXPLOSION PROTECTION

If the nameplate lists $F_{a2} = 0$ N, you must ensure correct installation and designated use to prevent axial loads on the gear unit. Otherwise, the gear unit might heat up excessively.

6.13.1 Mounting

1. Before installing the shrink disk, clean and degrease the hub [1] and the machine shaft [2]. This is a very important factor for the reliability of torque transmission.



1052851467

2. Ensure that the dimensions of the machine shafts [2] correspond to SEW specifications.
3. Slide the loose shrink disk [3] onto the hub [1].



4. Check the correct position of the shrink disk [3]. The shrink disk is positioned correctly when it is in contact with the shaft shoulder [8].

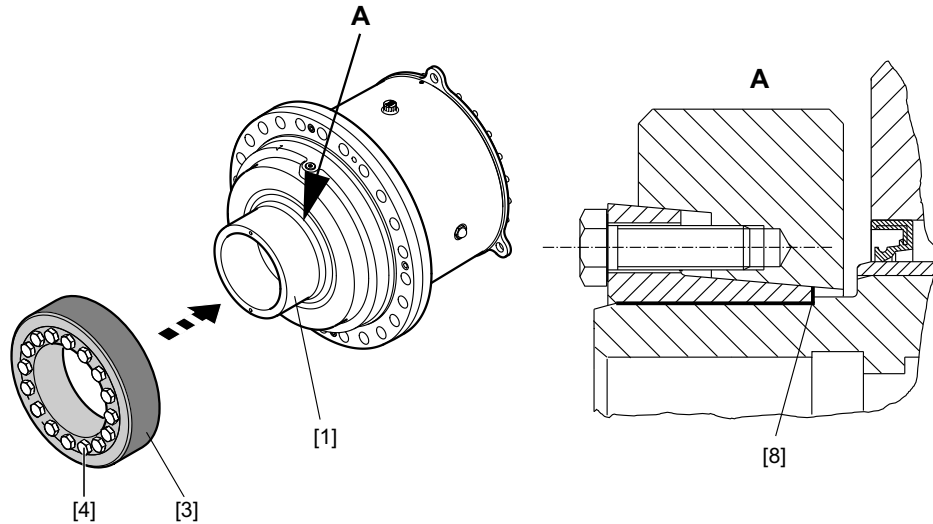


NOTICE

Tightening the screws [4] without installed shaft may result in the hollow shaft being deformed.

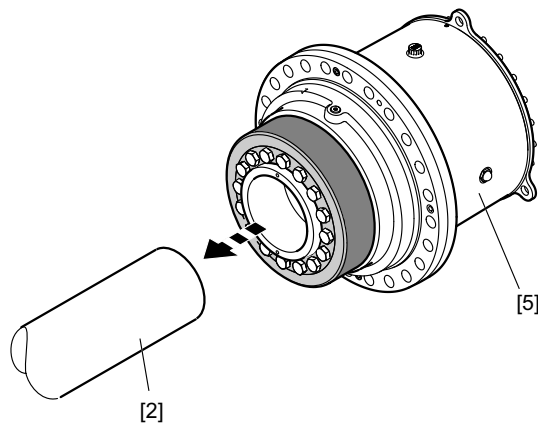
Possible damage to property!

- Tighten the locking screws [4] when the machine shaft [2] is installed.



1053533067

5. Install the machine shaft [2] or slide the gear unit [5] to a stop on the machine shaft [2]. Perform the mounting sequence slowly to allow the compressed air to escape around the outside of the shaft.



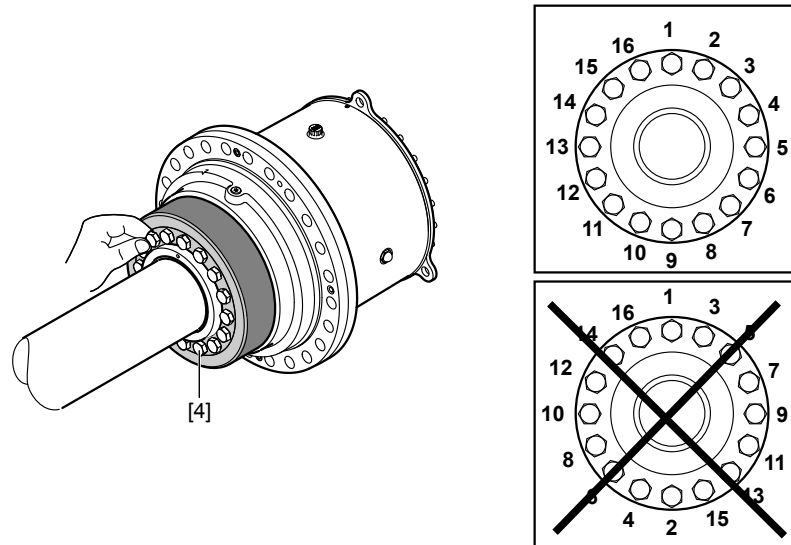
1053536267



Installation/Assembly

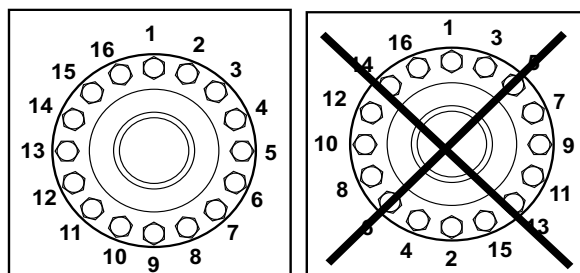
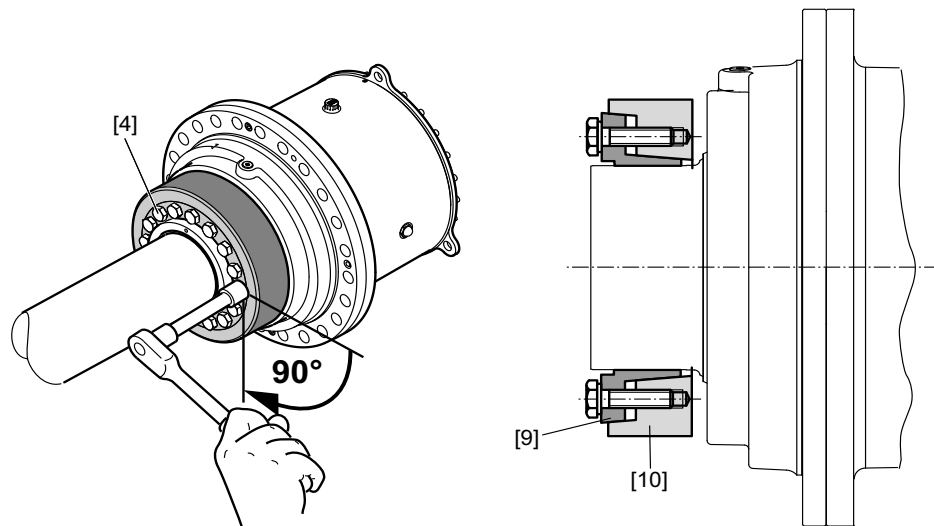
Hollow shaft and shrink disk

6. Tighten the locking screws [4] manually first. Tighten all locking screws by working round equally (not in diametrically opposite sequence) in 1/4 turn increments.



1053539467

7. Observe the tightening torque in the table below. Tighten the locking screws [4] by continuing to work round in 1/4 turns until you reach the tightening torque. Additionally, you can visually check to see that the front lateral surfaces are aligned to the inner [9] and outer [10].



1053543307



Verify the type details on your shrink disk and choose the tightening torque.

Shrink disk type	Size	Screws	Rated torque [Nm]	Tightening torque [Nm] ± 20 %
3191	P002	M16	41000	250
3181	P012	M16	75500	290
	P022	M16	95500	290
	P032	M20	134000	570
	P042	M20	194000	570
	P052	M20	255000	570
	P062	M24	405000	980
	P072	M24	525000	980
	P082	M24	720000	980



NOTE ON EXPLOSION PROTECTION

If the SEW cover is not used, the OEM undertakes to use appropriate accessories in line with DIN EN 13463 to prevent possible ignition sources between housing and shrink disk (e.g. friction due to high amount of built-up dirt).

If special maintenance work is necessary for this, it must be described in the operating instructions corresponding to the machine or components.



6.13.2 Removal



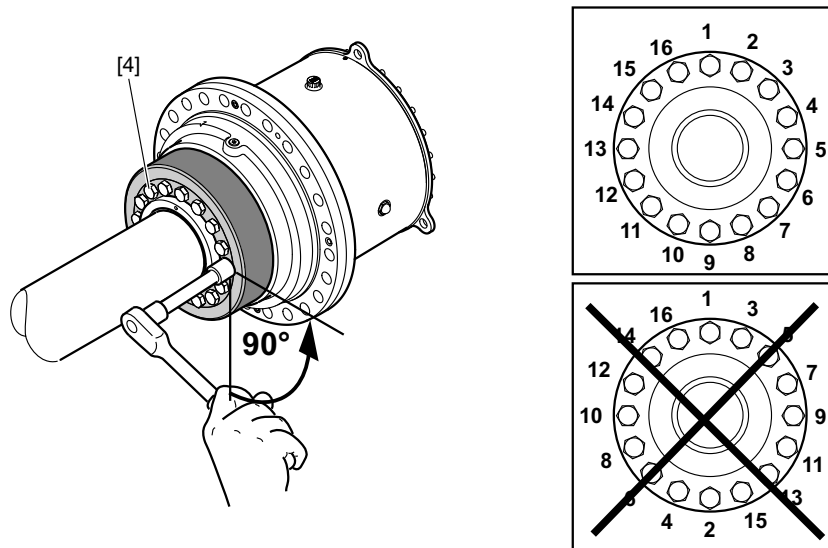
⚠ CAUTION

Risk of jamming and crushing due to improper removal of heavy components.

Risk of injury

- Remove the shrink disk correctly. Never completely unscrew the retaining screws because the shrink disk might jump off and cause an accident.
- Shrink disks and corresponding parts of different gear units must not be swapped.

1. Loosen the locking screws [4], working around in 1/4 turns for each screws.



1056915211

If the inner and outer ring do not loosen from each other, unscrew as many locking screws [4] as there are forcing threads and screw these equally into the forcing threads until the tapered bushing is pushed out of the tapered ring.



⚠ CAUTION

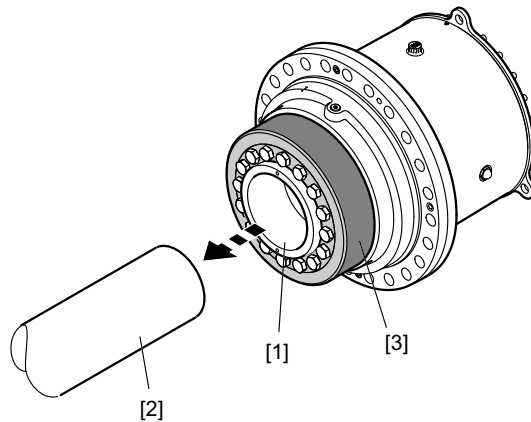
The outer ring of the shrink disk can jump off when it is removed incorrectly.

Risk of injury

- Under no circumstances should more locking screws [4] be unscrewed than there are forcing threads present.



- Remove the machine shaft [2] or pull the hub [1] off the customer shaft (first, remove any corrosion, which may have formed between the hub and the shaft end).



1056918411

- Remove the shrink disk [3] from the hub [1].

6.13.3 Cleaning and lubrication



NOTICE

Improper cleaning and lubrication may result in damages to the shrink disk.

Possible damage to property!

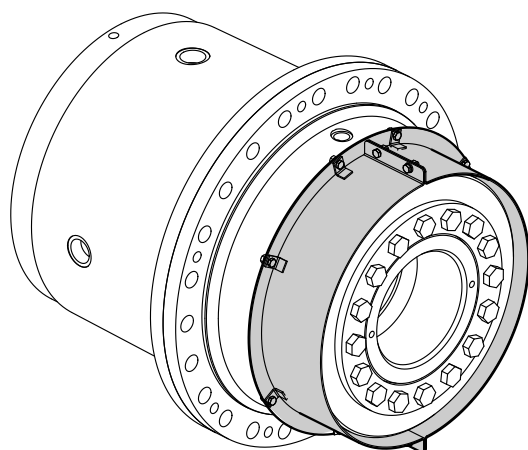
- You must perform the following steps carefully in order to ensure that the shrink disk functions perfectly. Use only products that are comparable to the lubricant that is given.

- If the tapered surfaces of the shrink disk are damaged, the shrink disk can no longer be used and must be replaced.
- Do not disassemble and regrease the removed shrink disk before installing it again. Only clean the shrink disk if it is contaminated.
- Next, regrease only the inner sliding surfaces of the shrink disk.
- Use a solid lubricant with a friction factor of $\mu = 0.04$.

Lubricant	Form
Molykote 321 R (lube coat)	Spray
Molykote spray (powder spray)	Spray
Molykote G Rapid	Spray or paste
Aemasol MO 19R	Spray or paste
Molykombin UMFT 1	Spray
Unimoly P5	Powder

**6.14 Shrink disk cover****NOTE ON EXPLOSION PROTECTION**

When aligning the cover, ensure concentricity between the bore of the side parts and the motor shaft/gear unit shaft.




1582901515

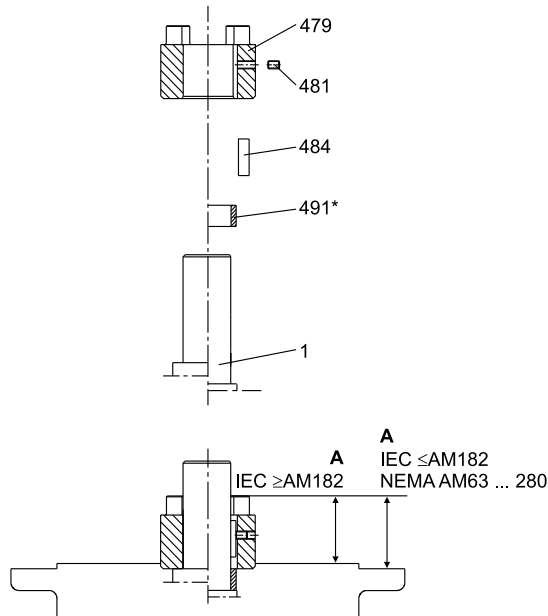
1. Remove the plastic plug on the gearcase.
2. Use the delivered screws to secure the cover to the gearcase.



6.15 Coupling of AM adapter

	NOTE ON EXPLOSION PROTECTION
	You must not use distance bushings as an assembly tool!

6.15.1 IEC adapter AM63 – 280 / NEMA adapter AM56 – 365



212099979

- [1] Motor shaft
- [479] Coupling half
- [481] Setscrew
- [484] Key
- [491] Spacer

1. Clean the motor shaft and the flange surfaces of the motor and the adapter.
2. Remove the key from the motor shaft and replace it with the supplied key [484] (not AM63 and AM250).
3. Heat the coupling half [479] to approx. 80 – 100 °C and push the coupling half onto the motor shaft. Position as follows:
 - IEC adapter AM63 – 225 until stop at motor shaft shoulder.
 - IEC adapter AM250 – 280 to dimension **A**.
 - NEMA adapter with spacer tube [491] to dimension **A**.
4. Secure the key and coupling half using the setscrew [481] and tightening torque T_A according to the table on the motor shaft.



Installation/Assembly

Coupling of AM adapter

5. Check the dimension **A**.
6. Seal the contact surfaces between the adapter and motor using a suitable sealing compound.
7. Mount the motor on the adapter. Ensure that the coupling claw of the adapter shaft is engaged in the plastic cam ring.

IEC AM	63 / 71	80 / 90	100 / 112	132	160 / 180	200	225	250 / 280
A	24.5	31.5	41.5	54	76	78.5	93.5	139
T_A	1.5	1.5	4.8	4.8	10	17	17	17
Thread	M4	M4	M6	M6	M8	M10	M10	M10
NEMA AM	56	143 / 145	182 / 184	213 / 215	254 / 256	284 / 286	324 / 326	364 / 365
A	46	43	55	63.5	78.5	85.5	107	107
T_A	1.5	1.5	4.8	4.8	10	17	17	17
Thread	M4	M4	M6	M6	M8	M10	M10	M10



TIP

To avoid contact corrosion, we recommend applying NOCO[®] Fluid to the motor shaft before mounting the coupling half.



NOTICE


Dampness might enter the adapter when mounting a motor to the adapter.

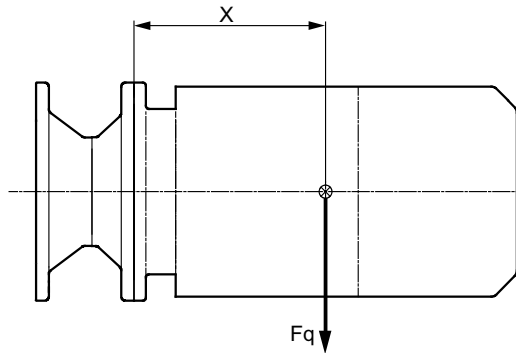
Potential damage to property

- Seal adapter with anaerobic fluid seal



Permitted loads

	NOTICE
	<p>Impermissibly high loads may occur when mounting a motor. Potential damage to property</p> <ul style="list-style-type: none"> The load data specified in the following table are not to be exceeded.



1178689291

Adapter type		x ¹⁾ [mm]	F _q ¹⁾ [N]	
IEC	NEMA		IEC adapter	NEMA adapter
AM63/71	AM56	77	530	410
AM80/90	AM143/145	113	420	380
AM100/112	AM182/184	144	2000	1760
AM132 ²⁾	AM213/215 ²⁾	186	1600	1250
AM132..	AM213/215		4700	3690
AM160/180	AM254/286	251	4600	4340
AM200/225	AM324-AM365	297	5600	5250
AM250/280	-	390	11200	-

- 1) The maximum permitted weight of the attached motor F_{qmax} must be reduced linearly as the center of gravity distance x increases. If this distance is reduced, the maximum permitted weight F_{qmax} cannot be increased.
- 2) Diameter of the adapter output flange: 160 mm



Installation/Assembly

Coupling of AM adapter

AM../RS adapter
AM with backstop

Check the direction of rotation of the drive prior to assembly or startup. Please inform the SEW-EURODRIVE service in the case of incorrect direction of rotation.

The backstop is maintenance-free in operation, and does not require any further maintenance work. Backstops have a minimum lift-off speed depending on the size (see following table).



CAUTION!

If the actual speed level is below the minimum lift-off speed level, the backstops are subject to wear, and the resulting friction causes the temperature to increase.

Potential damage to property!


- In rated operation, the lift-off speeds must not drop below the minimum values.
- During startup or braking, the lift-off speeds may drop below the minimum levels.

Type	Maximum locking torque of backstop [Nm]	Minimum lift-off speed [rpm]
AM80/90/RS, AM143/145/RS	45	800
AM100/112/RS, AM182/184/RS	200	670
AM132/RS, AM213/215/RS	470	660
AM160/180/RS, AM254/286/RS	630	550
AM200/225/RS, AM324-365/RS	1430	600



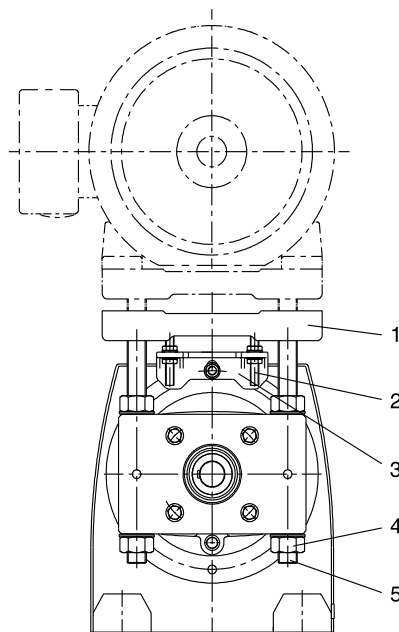
6.16 AD input shaft assembly

Observe chapter "Mounting input and output components" (see page 44) when installing input components.

	NOTE ON EXPLOSION PROTECTION
	<p>Use belts with sufficient electrical bleeder resistor ($< 10^9 \Omega$).</p> <ul style="list-style-type: none"> • Before a protection cover can be installed, a risk analysis must demonstrate that no sources of ignition (e.g. impact sparks from grinding) can occur. The manufacturer of the protection cover must perform the risk analysis.

6.16.1 Cover with motor mounting platform AD.. / P

Mounting the motor and adjusting the motor mounting platform.



- [1] Motor mounting platform
- [2] Stud bolt (only AD6/P / AD7/P)
- [3] Support (only AD6/P / AD7/P)

- [4] Nut
- [5] Threaded column

1. Set the motor mounting platform to the required mounting position by evenly tightening the adjusting nuts. Remove the lifting eyebolt from helical gear units in order to achieve the lowest adjustment position. Touch up any damage to the paint work.
2. Align the motor on the motor mounting platform (shaft ends must be in alignment) and secure it.
3. Mount the input elements on the input shaft end and the motor shaft, line them up with one another and correct the motor position again, if necessary.
4. Put on the traction elements (V-belt, chain, etc.) and apply a preload by evenly adjusting the motor mounting platform. Do not stress the motor mounting platform and the columns against each other when doing this.
5. Tighten all the nuts not used for adjustment in order to fix the threaded columns.



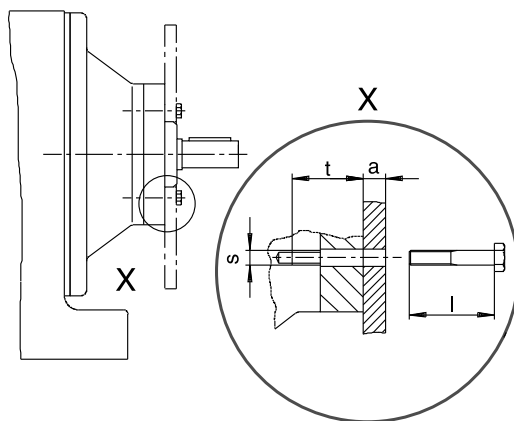
6.16.2 Only AD6/P and AD7/P

Unscrew the nuts on the stud bolts before adjustment to allow the stud bolts to move axially in the support without restriction. Do not tighten the nuts until the final adjustment position has been reached. Do not adjust the motor mounting platform using the support.

6.16.3 AD../ZR input shaft assembly with centering shoulder

Mounting applications on the input shaft assembly with centering shoulder.

1. Retaining bolts of a suitable length must be used to secure the application. The length l of the new bolts is calculated as follows:



212121483

- [l] $t+a$
 [t] Screw-in depth (see table)
 [a] Thickness of the application
 [s] Retaining thread (see table)

Round down the calculated screw length to the next smaller standard length.

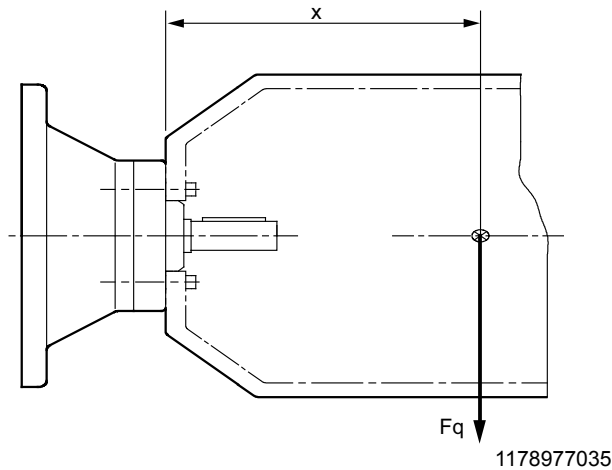
2. Remove the retaining screws from the centering shoulder.
3. Clean the contact surface and the centering shoulder.
4. Clean the threads of the new bolts and apply a bolt locking compound (e.g. Loctite® 243) to the first few threads.
5. Attach the application to the centering shoulder and tighten the retaining screws with the specified tightening torque T_A (see table).

Type	Screw-in depth t [mm]	Retaining thread s	Tightening torque T_A for connection screws of strength class 8.8 [Nm]
AD2/ZR	25,5	M8	25
AD3/ZR	31,5	M10	48
AD4/ZR	36	M12	86
AD5/ZR	44	M12	86
AD6/ZR	48,5	M16	210
AD7/ZR	49	M20	410
AD8/ZR	42	M12	86



Permitted loads

	CAUTION!
	<p>Impermissibly high loads may occur when mounting a motor. Potential damage to property!</p> <ul style="list-style-type: none"> The load data specified in the following table are not to be exceeded.



Type	$x^{1)}$ [mm]	$F_q^{1)}$ [N]
AD2/ZR	193	330
AD3/ZR	274	1400
AD4/ZR ²⁾	361	1120
AD4/ZR		3300
AD5/ZR	487	3200
AD6/ZR	567	3900
AD7/ZR	663	10000
AD8/ZR	516	4300

- 1) Maximum load values for connection screws of strength class 8.8. The maximum permitted weight of the attached motor F_{qmax} must be reduced linearly as the center of gravity distance x increases. When this distance is reduced, F_{qmax} cannot be increased.
- 2) Diameter of the adapter output flange: 160 mm



6.16.4 AD../RS input shaft assembly with backstop

Check the direction of rotation of the drive prior to assembly or startup. Inform the SEW-EURODRIVE service in the case of incorrect direction of rotation.

The backstop is maintenance-free in operation, and does not require any further maintenance work. Backstops have a minimum lift-off speed depending on the size (see following table).



NOTICE

If the actual speed level is below the minimum lift-off speed level, the backstops are subject to wear, and the resulting friction causes the temperature to increase.


Possible damage to property!

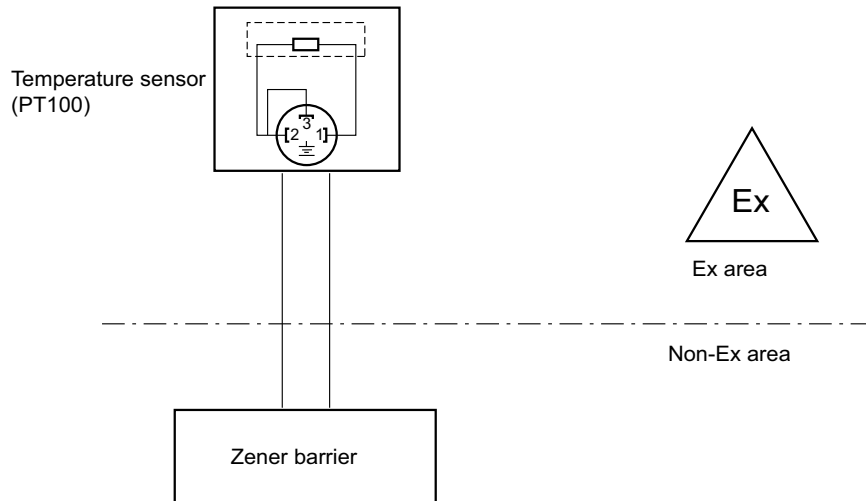
- In rated operation, the lift-off speeds must not drop below the minimum values.
- During startup or braking, the lift-off speeds may drop below the minimum levels.

Type	Maximum locking torque backstop [Nm]	Minimum lift-off speed [rpm]
AD2/RS	45	800
AD3/RS	200	670
AD4/RS	470	660
AD5/RS	630	550
AD6/RS	1430	600
AD7/RS	1430	600
AD8/RS	1430	600



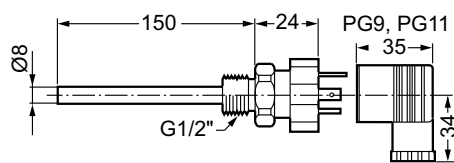
6.17 PT100 temperature sensor

	NOTE ON EXPLOSION PROTECTION
	<p>To ensure intrinsically safe wiring, the temperature sensor must be used with a Zener barrier whose current consumption enables correct measuring operation.</p> <p>The Zener barrier must be located outside the potentially explosive atmosphere.</p>



615255435

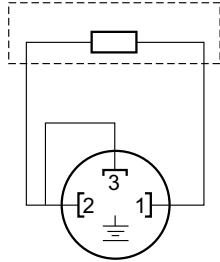
6.17.1 Dimensions



359154443



6.17.2 Electrical connection



359158539


6.17.3 Technical data

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



7 Startup

7.1 Important notes on startup

	NOTICE
	<p>Improper startup may result in damages to the gear unit.</p> <p>Possible damage to property!</p> <ul style="list-style-type: none"> • Note the following:

- RF../KF.. primary gear units are normally delivered with oil fill. Refer to the order documents for discrepancies.
- Check the thermal rating/heating for the following operating conditions:
 - High ambient temperatures (above 45 °C)
 - Mounting position M2/M4 and/or motor speed above 1800 rpm
 Contact SEW-EURODRIVE.
- The most important technical data is included on the nameplate. Additional data relevant for operation is available in drawings, order confirmations or any order-specific documentation.
- Before startup, check that the oil level is correct. Refer to the unit's nameplate for the lubricant volumes.
- After the gear unit has been installed, ensure that all retaining screws are tight.
- Make sure that the orientation has not changed after tightening the mounting elements.
- It is essential that there is no open fire or risk of sparks when working on the gear unit.
- Ensure that rotating shafts as well as couplings are equipped with suitable protective covers.
- If there are any oil drain valves, ensure that they cannot be opened unintentionally.
- If an oil sight glass is used, ensure that it is protected against damage.
- Protect the gear unit from falling objects.
- For gear units with long-term protection: Replace the screw plug at the location indicated on the gear unit with a breather plug (position → see order documents).
- Make sure that the monitoring devices are functioning before you start up the unit.
- Strictly observe the safety notes in the individual chapters.



7.2 Run-in period

SEW-EURODRIVE recommends running-in the gear unit as the first phase of startup. -Increase load and revolutions up to maximum level in 2 to 3 steps. The run-in phase takes approx. 10 hours.

Note the following during the running-in phase:

- Verify the power values specified on the nameplate at startup because their level and frequency may be a decisive factor for the service life of the gear unit.
- Does the gear unit run smoothly?
- Are there vibrations or unusual running noises?
- Are there signs of leakage (lubricants) on the gear unit?
- Check to be sure that the additional devices (such as oil pump, cooler, etc.) are functioning properly.

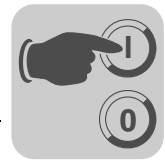
	TIP
	For detailed information and troubleshooting, refer to the "Malfunctions" (see page 84) chapter.

7.3 Starting up industrial gear units in potentially explosive areas

	NOTE ON EXPLOSION PROTECTION
	Define measures to ensure that the values indicated on the nameplate are not exceeded. Never overload the gear unit. Ensure that the data on the nameplate of the gear unit fulfill the actual conditions on site.

7.3.1 Gear unit with frequency inverter and motor

	NOTE ON EXPLOSION PROTECTION
	<ul style="list-style-type: none"> • Ensure that the gear unit is approved for operation with the frequency inverter (nameplate). • The parameters of the frequency inverter must be set to prevent an overload of the gear unit. You will find the technical data for the gear unit on the nameplate.



7.4 Startup of gear units with long-term protection

Adhere to the following points for gear units with long-term protection:

7.4.1 Anti-corrosion agent


You must clean the output shafts and flange surfaces thoroughly to ensure they are free of anti-corrosion agents, contamination or similar. Use a commercially available solvent. Do not expose the sealing lips of the oil seals to the solvent – damage to the material.

7.4.2 Oil level

Since the planetary gear units with "long-term protection" are delivered complete with oil, the correct oil volume and oil level should be checked before startup.

→ Correct the oil level to the appropriate fill level.

7.4.3 Breather filter

	NOTE ON EXPLOSION PROTECTION
	Only metallic breather filters may be used.

Replace the screw plug with the provided breather filter.



7.5 Gear units with backstop

The backstop is integrated in the AD../RS input shaft assembly. The purpose of it is to prevent undesirable reverse rotation. During operation, the backstop permits rotation in one specified direction of rotation only.

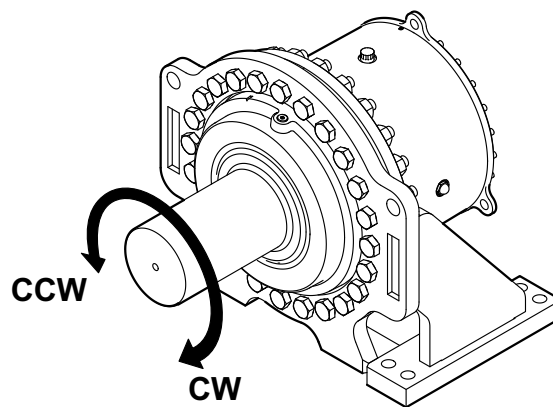


NOTICE

Operating the motor in the blocking direction could destroy the backstop.

Possible damage to property!

- Do not start up the motor in the blocking direction. Be sure that the motor power supply is correctly attached so that the motor rotates in the required direction.
- The backstop can be operated in blocking direction with half the output torque once for control purposes.

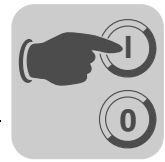


1044634507

The direction of rotation is determined with a view to the output shaft (LSS).

- Clockwise (CW)
- Counterclockwise (CCW)

The permitted direction of rotation is indicated on the housing.



7.6 Measuring the surface and oil temperature

7.6.1 Measuring the surface temperature

	<p>NOTE ON EXPLOSION PROTECTION</p>
	<p>The nameplate data on maximum surface temperature is based on measurements made under standard environmental and startup conditions. Even slight changes in these conditions (such as limited installation space) can have a significant impact on the temperature profile.</p>

It is essential to measure the surface temperature under maximum load when starting up the gear unit.

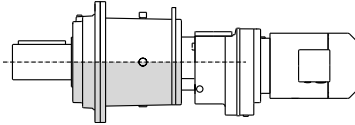
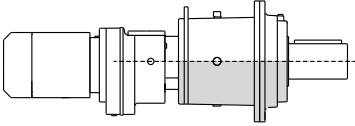
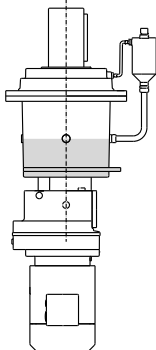
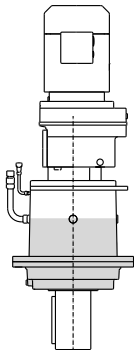
The measurement can be made using commercially available thermometers. The surface temperature must be measured in a steady state condition. It may not exceed 100 °C.

	<p>NOTE ON EXPLOSION PROTECTION</p>
	<p>Stop the drive immediately if the temperature is above this value. Contact SEW-EURODRIVE</p>

The measuring of the surface temperature depends on the mounting position of the planetary gear unit. The area marked in gray shows where the surface temperature of the gear unit must be measured.

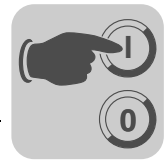


Startup Measuring the surface and oil temperature


Mounting position	Measuring point of the surface temperature
M1	 1407712779
M3 M5 M6	 1407716363
M2	 1407720075
M4	 1407761675

7.6.2 Measuring the oil temperature

Oil temperatures must be measured to determine the oil change intervals. See chapter "Lubricant change intervals" (see page 78) for a description. Measure the temperature at the bottom of the gear unit. If the gear unit has an oil drain plug, measure the temperature on this plug. Add 10 K to the measured value. This value is the basis for the oil change intervals.



7.7 Gear unit shutdown/conservation

	<p>! DANGER</p>
	<p>Risk of crushing if the drive starts up unintentionally. Severe or fatal injuries.</p> <ul style="list-style-type: none"> • De-energize the motor before you start working on the unit. • Secure the motor against unintended power-up.

Additional conservation measures are required if the gear unit is to be shut-down for a longer period. Depending on the location, the ambient conditions, and the lubrication state, even a few weeks of downtime might require conservation measures.

7.7.1 Internal conservation

- **New or hardly used gear units:**
 - For internal conservation, SEW-EURODRIVE recommends the VCI conservation method.
 - Apply the required amount of VCI anti-corrosion agent to the inside of the gear unit (e.g. FUCHS LUBRITECH Anticorit VCI UNI IP-40, www.fuchs-lubritech.com). The amount depends on the free space inside the gear unit. Usually any existing oil may remain in the drive.
 - Replace the breather filter with a screw plug and close the gear unit so that it is air tight. The breather filter must be installed correctly again before startup.

- **After longer use:**
 - As, after longer operating periods, the oil might be contaminated (oil sludge, water, etc.), drain the oil and thoroughly rinse the inside of the gear unit with new oil prior to conservation. Observe the information in section "Changing the oil" in the corresponding operating instructions. Then the inside of the gear unit may be conserved as described above.



TIP

For gear units with contactless sealing systems, consult SEW-EURODRIVE.

For gear units without contactless sealing systems, you may also use the oil type indicated on the nameplate to perform the conservation. In this case, the gear unit must be completely filled with clean oil. Replace the breather filter with a screw plug and fill in the oil from the highest point of the gear unit. In order to provide for sufficient conservation, all the gearing and bearing components must be completely covered in oil.

The breather filter must be installed correctly again before startup. Use the grade and amount of oil specified on the nameplate.

7.7.2 External conservation

- Clean the respective surfaces
- Grease the shaft near the sealing lip to separate the sealing lip of the oil seal and the corrosion protectant.
- Apply a wax-based protective coating to shaft ends and unpainted surfaces as external corrosion protection (e.g. Herm Hölterhoff Hölterol MF 1424, www.hoelterhoff.de).



TIP

Consult with the respective supplier regarding the compatibility with the oil that is used and the length of corrosion protection for your particular gear unit version.

Observe the information in section "Storage and transport conditions" in the corresponding operating instructions. This section provides information on the possible storage periods in conjunction with adequate packaging – depending on the storage location.

Prior to re-startup, observe section "Startup" in the corresponding operating instructions.



8 Inspection/Maintenance

8.1 Preliminary work regarding inspection/maintenance

Observe the following notes before you start with the inspection/maintenance work.

	<p>⚠ DANGER</p> <p>Risk of crushing if the drive starts up unintentionally.</p> <p>Severe or fatal injuries.</p> <ul style="list-style-type: none"> • De-energize the motor before you start working on the unit. • Secure the motor against unintended power-up.
	<p>⚠ WARNING</p> <p>Danger of burns due to hot gear unit and hot gear unit oil.</p> <p>Fatal injuries.</p> <ul style="list-style-type: none"> • Let the gear unit cool down before you start working on it. • Only remove the oil level and oil drain plug very carefully.
	<p>NOTICE</p> <p>Filling in the wrong oil may result in significantly different lubricant characteristics.</p> <p>Potential damage to property</p> <ul style="list-style-type: none"> • Do not mix different synthetic lubricants and do not mix synthetic with mineral lubricants.
	<p>NOTICE</p> <p>Improper maintenance may result in damages to the gear unit.</p> <p>Possible damage to property!</p> <ul style="list-style-type: none"> • Note the following:
	<p>NOTE ON EXPLOSION PROTECTION</p> <p>Strict adherence to the inspection and maintenance intervals is absolutely necessary to ensure safe working conditions and explosion protection.</p>

- Observe the tightening torques.
- When using primary gearmotors, also observe the maintenance notes for motors and primary gear units in the accompanying operating instructions.
- For the position of the oil level plug, oil drain plug and the breather valve, refer to the mounting position sheets. see chapter "Mounting positions" (see page 19).
- Use only original spare parts according to the delivered spare and wearing parts lists.



Inspection/Maintenance

Inspection and maintenance intervals

- Before releasing shaft connections, be sure that there are no active torsional moments present (tensions within the system).
- Prevent foreign bodies from entering into the gear unit during the following work.
- Do not clean the gear unit with a high-pressure cleaning system. If one is used, water may enter into the gear unit and the seals may be damaged.
- Perform safety and function tests following all maintenance and repair work.
- Strictly observe the safety notes in the individual chapters.

8.2 Inspection and maintenance intervals

8.2.1 P.. planetary gear units

Time interval	Required maintenance/inspection steps
<ul style="list-style-type: none"> • Daily 	<ul style="list-style-type: none"> • Check the housing temperature: <ul style="list-style-type: none"> • With mineral oil: max. 90 °C • With synthetic oil: max. 100 °C • Check gear unit noise • Check for dust build-up (on free surfaces < 5 mm, no dust build-up permitted in gaps, e.g. shrink disk/cover)
<ul style="list-style-type: none"> • Monthly 	<ul style="list-style-type: none"> • Check gear unit for signs of leakage • Checking the oil level (section 8.4)
<ul style="list-style-type: none"> • After 500 hours of operation 	<ul style="list-style-type: none"> • First oil change after initial startup (section 8.6)
<ul style="list-style-type: none"> • Every 3000 operating hours, at least every 6 months 	<ul style="list-style-type: none"> • Check the oil consistency (section 8.5) • Fill regreasable sealing systems with grease (section 8.8).
<ul style="list-style-type: none"> • Depending on the operating conditions, at least every 12 months 	<ul style="list-style-type: none"> • Check whether retaining screws are tightly secured • Check the condition of the oil/water cooling system • Clean oil filter, replace filter element if necessary • Checking the breather plug, replacing it if required (section 8.7) • Check the alignment of the input and output shaft (chapter 6.6)
<ul style="list-style-type: none"> • Depending on the operating conditions (see chapter 7.3), every 3 years at the latest. 	<ul style="list-style-type: none"> • Change the mineral oil • Replace oil seal (do not install it in the same track)
<ul style="list-style-type: none"> • Depending on the operating conditions (see chapter 7.3), every 5 years at the latest. 	<ul style="list-style-type: none"> • Change synthetic oil • Replace oil seal (do not install it in the same track)
<ul style="list-style-type: none"> • Varying (depending on external factors) 	<ul style="list-style-type: none"> • Touch up or renew the surfaces/anticorrosion coating



8.2.2 RF/KF primary gear unit

Time interval	Required maintenance/inspection steps
<ul style="list-style-type: none"> Every 3000 operating hours, at least every 6 months 	<ul style="list-style-type: none"> Check oil and oil level Check running noise for possible bearing damage Visually check the seals for leakage
<ul style="list-style-type: none"> Depending on the operating conditions, every 3 years at the latest According to oil temperature 	<ul style="list-style-type: none"> Change mineral oil Replace anti-friction bearing grease (recommendation) Replace oil seal (do not install it in the same track)
<ul style="list-style-type: none"> Depending on the operating conditions, every 5 years at the latest According to oil temperature 	<ul style="list-style-type: none"> Change synthetic oil Replace anti-friction bearing grease (recommendation) Replace oil seal (do not install it in the same track)
<ul style="list-style-type: none"> Varying (depending on external factors) 	<ul style="list-style-type: none"> Touch up or renew the surfaces/anticorrosion coating

8.2.3 AL/AM adapter

Time interval	Required maintenance/inspection steps
<ul style="list-style-type: none"> Every 3000 operating hours, at least every 6 months 	<ul style="list-style-type: none"> Check torsional play Visually check the elastic annular gear Check running noise for possible bearing damage Visually check the adapter for leakage
<ul style="list-style-type: none"> After 25,000 – 30,000 hours of operation 	<ul style="list-style-type: none"> Renew the anti-friction bearing grease Replace oil seal (do not install it in the same track) Change the elastic annular gear

8.2.4 AD input shaft assembly

Time interval	Required maintenance/inspection steps
<ul style="list-style-type: none"> Every 3000 operating hours, at least every 6 months 	<ul style="list-style-type: none"> Check running noise for possible bearing damage Visually check the adapter for leakage
<ul style="list-style-type: none"> After 25,000 – 30,000 hours of operation 	<ul style="list-style-type: none"> Renew the anti-friction bearing grease Replacing the oil seal



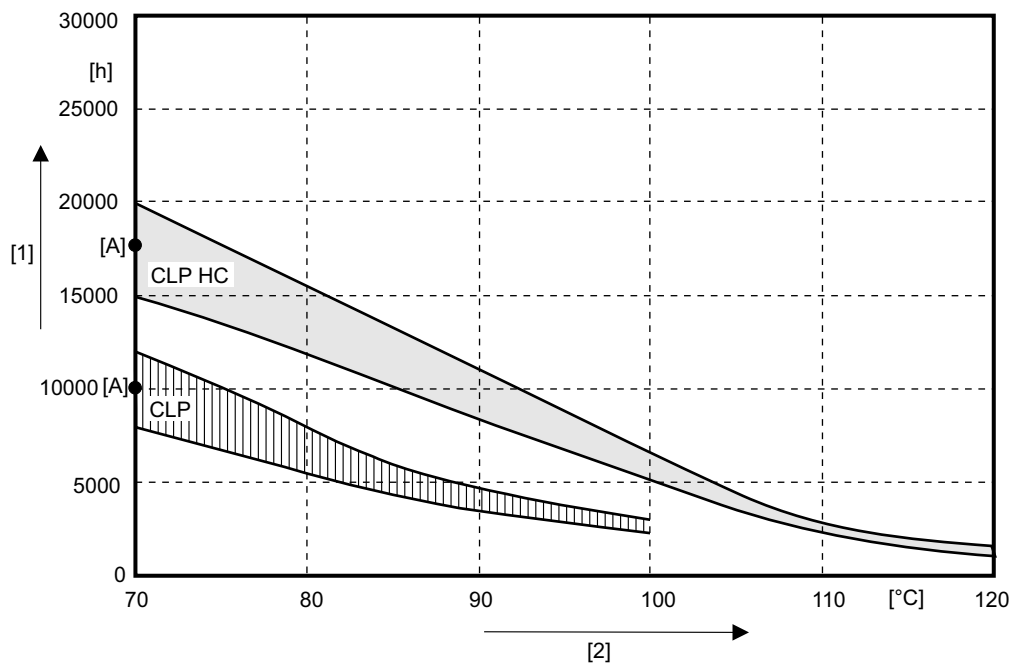
8.3 Lubricant change intervals

Change the oil more frequently when using special designs subject to more severe/aggressive ambient conditions.



TIP

Mineral CLP lubricants and synthetic polyalphaolefin-based (PAO) lubricants are used for lubrication. The synthetic lubricant CLP HC (according to DIN 51502) shown in the following illustration corresponds to the PAO oils.



[1] Operating hours

[2] Sustained oil bath temperature

● Average value per oil type at 70 °C



TIP

In order to optimize the lubrication change intervals, SEW-EURODRIVE recommends that the gear unit oil be analyzed regularly (see section 8.5).



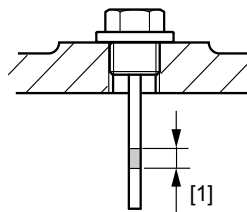
8.4 Checking the oil level

Note the following:

i	TIP
	Do not check the oil level when the gear unit warm.
i	TIP
	<p>Check the oil level for standard mounting positions and pivoted mounting positions with the gear unit in the final mounting position.</p> <p>For variable mounting positions have the gear unit in the initial mounting position prior to the oil level check and observe the information provided on the drive and in the order-specific documentation.</p>

8.4.1 Gear units with oil dipstick

1. Observe the notes in section "Preliminary work regarding inspection/maintenance" (see page 75).
2. Unscrew the oil dipstick and remove it.
3. Clean the oil dipstick and re-insert it by turning it hand-tight into the gear unit up to the stop.
4. Remove the oil dipstick and check the oil level.



460483852

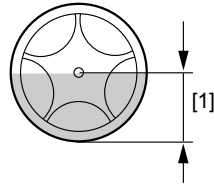
[1] The oil level must be within this range

5. Proceed as follows if the oil level is too low:
 - Open the oil fill plug.
 - Fill in new oil of the same type via the oil fill plug up to the mark.
 - Screw in the oil fill plug.
6. Re-insert the oil dipstick.



8.4.2 Gear unit with oil sight glass

1. Observe the notes in section "Preliminary work regarding inspection/maintenance" (see page 75).
2. Check the oil level according to the following figure.



460483980

[1] The oil level must be within this range

3. Proceed as follows if the oil level is too low:
 - Open the oil fill plug.
 - Fill in new oil of the same type via the oil fill plug up to the mark.
 - Screw in the oil fill plug.


8.5 Checking the oil consistency

1. Observe the notes in section "Preliminary work regarding inspection/maintenance" (see page 75).
2. Determine the position of the oil drain plug and place a container underneath.
3. Unscrew the oil drain plug slowly and take an oil sample.
4. Re-insert the oil drain plug.
5. Check the oil consistency:
 - For more detailed information on checking the oil for water content and viscosity, contact your lubricant manufacturer.
 - If you can see that the oil is heavily contaminated, change the oil even if this is outside of the specified oil change intervals.



8.6 Changing the oil

8.6.1 Notes

	NOTICE
	<p>Improper oil change may result in damages to the gear unit.</p> <p>Possible damage to property!</p> <ul style="list-style-type: none"> • Note the following: <ul style="list-style-type: none"> • Do always refill the gear unit with the grade of oil that was used before. Mixing oils of different grades and/or manufacturers is not permitted. Especially synthetic oils may not be mixed with mineral oils or other synthetic oils. Flush the gear unit with the new oil grade thoroughly when switching from mineral oil and/or when switching from synthetic oil of one basis to synthetic oil of a different basis. • Refer to the lubrication table in section 10.2 to determine which oils from the various lubricant manufacturers can be used. • Information such as the oil grade, oil viscosity and required oil quantity is listed on the nameplate of the gear unit. The oil quantity specified on the nameplate is an approximate quantity. The mark on the oil sight glass or stick is the decisive indicator of the correct oil level. • Only change the oil when the gear unit is warm. • When changing the oil, flush the gear unit interior thoroughly with oil to remove oil sludge, oil residue, and abrasion products. Use the same grade of oil that is used to operate the gear unit. Fill with fresh oil only after all residues have been removed. • For the position of the oil level plug, oil drain plug and the breather valve, refer to the order documents. • Dispose of the used oil in accordance with applicable regulations.



8.6.2 Procedure



⚠ WARNING

Danger of burns due to hot gear unit and hot gear unit oil.

Fatal injuries.

- Let the gear unit cool down before you start working on it.
- However, the gear unit must still be warm otherwise the high viscosity of excessively cold oil will make it harder to drain the oil correctly.

1. Observe the notes in section "Preliminary work regarding inspection/maintenance" (see page 75).
2. Place a container underneath the oil drain plug.
3. Remove the oil drain plug.
4. Remove the oil fill plug or the breather valve.

If a gear unit has no oil fill plug depending on the mounting position, the breather valve is used as oil filling hole.
5. Drain all the oil.
6. Re-insert the oil drain plug.
7. Fill in new oil of the same grade via the oil filling hole.
 - Use a funnel to fill the oil (filter mesh max. 25 µm).
 - Fill the oil according to the quantity specified on the nameplate. The oil quantity specified on the nameplate is an approximate value.
 - Check whether the oil level is correct using the oil sight glass/oil dipstick.
 - When using an external oil/air or oil/water cooling system, observe the separate operating instructions.
8. Screw in the oil fill plug or the breather valve.




TIP

Any dripping oil must be removed immediately with an oil binding agent.



8.7 Checking and cleaning the breather plug


	NOTICE
	Improper cleaning may result in damages to the gear unit. Possible damage to property! • Prevent foreign objects from entering into the gear unit.

1. Remove any deposits located near the breather filters.
2. Replace clogged breather filters with new ones.

8.8 Refilling grease

Regreasable sealing systems may be refilled with lithium-soap grease (see section 10.4). Use moderate pressure to force grease into each lubrication point until new grease leaks out of the sealing gap.

Used grease, including contaminants and sand, is thus pressed out of the sealing gap.

	NOTE ON EXPLOSION PROTECTION
	Make sure that the old grease cannot escape uncontrolled (preventing explosions, e.g. chemical reactions).



9 Malfunctions

9.1 Notes on malfunctions

Observe the following notes before you start to determine the reason for the malfunction.

	! DANGER
	<p>Risk of crushing if the drive starts up unintentionally.</p> <p>Severe or fatal injuries.</p> <ul style="list-style-type: none"> • De-energize the motor before you start working on the unit. • Secure the motor against unintended power-up.

	! WARNING
	<p>Danger of burns due to hot gear unit and hot gear unit oil.</p> <p>Fatal injuries.</p> <ul style="list-style-type: none"> • Let the gear unit cool down before you start working on it.

	NOTICE
	<p>Improper handling of the gear unit and the motor may lead to damages.</p> <p>Possible damage to property!</p> <ul style="list-style-type: none"> • Any repair work on SEW drives may be performed by qualified personnel only. • Only qualified personnel is permitted to separate drive and motor. • Consult SEW-EURODRIVE customer service.

9.2 Customer service

Please have the following information available if you require customer service assistance:

- Complete nameplate data
- Type and extent of the problem
- Time the problem occurred and any accompanying circumstances
- Assumed cause
- A digital photograph if possible



9.3 Malfunctions of P.. planetary gear units

Malfunction	Possible cause	Remedy
Unusual, regular running noise	<ul style="list-style-type: none"> Meshing/grinding noise: Bearing damage Knocking noise: Irregularity in the gearing Deformation of the housing upon tightening Noise generation caused by insufficient rigidity of the gear unit foundation 	<ul style="list-style-type: none"> Check oil consistency (see chapter 8.5), replace bearings Contact customer service Check the gear unit mounting for possible deformation and correct if needed Reinforce the gear unit foundation
Unusual, irregular running noise	<ul style="list-style-type: none"> Foreign objects in the oil 	<ul style="list-style-type: none"> Check the oil consistency (see section 8.5) Stop the drive, contact customer service
Unusual noise in the area of the gear unit mounting	<ul style="list-style-type: none"> Gear unit mounting has loosened 	<ul style="list-style-type: none"> Tighten retaining screws and nuts to the specified torque Replace the damaged/defective retaining screws or nuts
Operating temperature too high	<ul style="list-style-type: none"> Too much oil Oil too old The oil is heavily contaminated Ambient temperature is too high 	<ul style="list-style-type: none"> Check the oil level, correct if necessary (see section 8.4) Check when the oil was last changed; change the oil if necessary (see chapter 8.6) Protect from external heat sources (e.g. provide shade) Change the oil (see section 8.6)
Bearing point temperatures too high	<ul style="list-style-type: none"> Not enough oil Oil too old Bearing damaged 	<ul style="list-style-type: none"> Check the oil level, correct if necessary (see section 8.4) Check when the oil was last changed; change the oil if necessary (see chapter 8.6) Check bearing and replace if necessary, contact customer service
Oil leaking¹⁾	<ul style="list-style-type: none"> Gasket on the gear unit is not tight Sealing lip of the oil seal turned up Oil seal damaged/worn Too much oil Drive installed in incorrect mounting position Frequent cold starts (oil foams) and/or high oil level 	<ul style="list-style-type: none"> Vent the gear unit, observe the gear unit. If oil still leaks: -Contact customer service Check oil seals; replace if necessary Contact customer service Check oil level (see chapter 8.4) Install the breather plug correctly

1) During the run-in phase (24-hour run time), it is normal for (small amounts of) oil/grease to leak from the oil seal (see also DIN 3761).



Malfunctions

Malfunctions of RF/KF primary gear units

9.4 Malfunctions of RF/KF primary gear units

Malfunction	Possible cause	Remedy
Unusual, regular running noise	Meshing/grinding noise: Bearing damage	Check the oil → replace the bearing
	Knocking noise: Irregularity in the gearing	Contact customer service
Unusual, irregular running noise	Foreign objects in the oil	<ul style="list-style-type: none"> • Checking the oil • Stop the drive, contact customer service
Oil leaking ¹⁾ <ul style="list-style-type: none"> • From inspection cover • From the motor flange • From the motor oil seal • From the gear unit flange • From the output end oil seal 	Rubber seal on the inspection cover leaking	Tighten the screws on the gear cover plate and observe the gear unit. If oil still leaks: Contact customer service
	Seal defective	Contact customer service
	Gear unit not ventilated	Vent gear unit
Oil leaking from breather valve	Too much oil	Correct the oil level
	Drive operated in incorrect mounting position	<ul style="list-style-type: none"> • Install the breather valve correctly • Correcting the oil level
	Frequent cold starts (oil foams) and/or high oil level.	Use an oil expansion tank
Output shaft does not turn although the motor is running or the input shaft is rotated	Connection between shaft and hub in gear unit interrupted	Send in the gear unit/gearmotor for repair.
Operating temperature at backstop too high	<ul style="list-style-type: none"> • Damaged/defective backstop 	<ul style="list-style-type: none"> • Check backstop; replace if necessary • Contact customer service
No blocking function		

1) Short-term oil / grease leakage at the oil seal is possible in the run-in phase (48 hours running time).

9.5 Adapter AM/AL malfunctions

Malfunction	Possible cause	Remedy
Unusual, regular running noise	Meshing/grinding noise: Bearing damage	Contact SEW-EURODRIVE customer service
Oil leaking	Seal defective	Contact SEW-EURODRIVE customer service
Output shaft does not turn although the motor is running or the input shaft is rotated	Connection between shaft and hub in gear unit interrupted	Send in gear unit to SEW-EURODRIVE for repair
Change in running noise and/or vibrations	Annular gear wear, short-term torque transfer through metal contact	Change the annular gear
	Bolts to secure hub axially are loose	Tighten the screws
Premature wear in annular gear	<ul style="list-style-type: none"> • Contact with aggressive fluids / oils; ozone influence; too high ambient temperatures etc, which can cause a change in the physical properties of the annular gear. • Impermissibly high ambient/contact temperature for the annular gear; maximum permitted temperature: -20 °C to +80 °C • Overload 	Contact SEW-EURODRIVE customer service



9.6 Malfunctions of the motor

Malfunction	Possible cause	Remedy
Motor does not start up	Supply cable interrupted	Check connections, correct if necessary
	Brake does not release	→ see the motor operating instructions
	Fuse has blown	Replace fuse
	Motor protection has triggered	Check motor protection for correct setting, correct fault if necessary
	Motor protection does not switch, error in control	Check motor protection control, correct error if necessary
Motor only starts with difficulty or does not start at all	Motor designed for delta connection but used in star connection	Correct connection
	Voltage or frequency deviate considerably from setpoint, at least while being switched on	Provide better power supply system; check cross section of supply cable
Motor does not start in star connection, only in delta connection	Star connection does not provide sufficient torque	Switch on directly if delta inrush current is not too great; else, use a larger motor or a special design (contact SEW-EURODRIVE)
	Contact fault on star/delta switch	Rectify fault
Incorrect direction of rotation	Motor connected incorrectly	Swap over two phases
Motor hums and has high current consumption	Brake does not release	→ see the motor operating instructions
	Winding defective	Send motor to specialist workshop for repair
	Rotor rubbing	
Fuses blow or motor protection trips immediately	Short circuit in line	Repair short circuit
	Short circuit in motor	Send motor to specialist workshop for repair
	Lines connected incorrectly	Correct connection
	Ground fault on motor	Send motor to specialist workshop for repair
Severe speed loss under load	Overload	Measure power, use larger motor or reduce load if necessary
	Voltage drops	Increase cross section of incoming cable
Motor heats up excessively (measure temperature)	Overload	Measure power, use larger motor or reduce load if necessary
	Insufficient cooling	Correct cooling air supply or clear cooling air passages, retrofit forced cooling fan if necessary
	Ambient temperature is too high	Comply with permitted temperature range
	Motor in delta connection instead of star connection as provided for	Correct connection
	Loose contact in supply cable (one phase missing)	Rectify loose contact
	Fuse has blown	Look for and rectify cause (see above); replace fuse
	Mains voltage deviates from the rated motor voltage by more than 5 %. A higher voltage has a particularly unfavorable effect in motors with a low-speed winding since in these, the no-load current is already close to the rated current even when the voltage is normal.	Adjust motor to supply voltage.
	Rated operation type (S1 to S10, DIN 57530) exceeded, e.g. through excessive starting frequency	Adjust the rated operating mode of the motor to the required operating conditions; consult a professional to determine the correct drive if necessary
Excessively loud	Ball bearing compressed, dirty or damaged	Re-align motor, inspect ball bearing, re-grease, if necessary, replace
	Vibration of rotating parts	Rectify cause, possible imbalance
	Foreign bodies in cooling air passages	Clean the cooling air passages




9.7 DR/DV brake faults


Malfunction	Possible cause	Remedy
Brake does not release	Incorrect voltage on brake control unit	Apply correct voltage
	Brake control unit failed	Install a new brake control system, check internal resistance and insulation of brake coil, check switchgear
	Max. permitted working air gap exceeded because brake lining worn down.	Measure and set working air gap
	Voltage drop on supply cable > 10%	Ensure correct connection voltage; check cable cross section
	Inadequate cooling, brake overheats	Replace type BG brake rectifier with type BGE
	Brake coil has interturn short circuit or a short circuit to frame	Replace complete brake and brake control system (specialist workshop), check switchgear
	Rectifier defective	Replace the rectifier and brake coil
Motor does not brake	Working air gap not correct	Measure and set working air gap
	Brake lining worn down	Replace entire brake disk
	Incorrect braking torque.	Change the braking torque (→ see motor operating instructions) <ul style="list-style-type: none"> • By the type and number of brake springs • Brake BMG 05: by installing the same brake coil body design as in brake BMG 1 • Brake BMG 2: by installing the same brake coil body design as in brake BMG 4
	BM(G) only: Working air gap so large that setting nuts come into contact.	Setting the working air gap
	BR03, BM(G) only: Manual brake release device not set correctly	Set the setting nuts correctly
Brake is applied with time lag	Brake is switched on AC voltage side	Switch on DC and AC voltage sides (e.g. BSR); refer to wiring diagram
Noises in vicinity of brake	Gearing wear caused by jolting startup	Check project planning
		-> see motor operating instructions



10 Lubricants

10.1 Lubricant selection

	NOTE ON EXPLOSION PROTECTION
	Contact SEW-EURODRIVE before changing the mounting position. Otherwise, the ATEX certification is not valid.

	NOTICE
	<p>Selecting improper lubricants may damage the gear unit.</p> <p>Possible damage to property!</p> <ul style="list-style-type: none"> • Note the following:

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

You must contact SEW-EURODRIVE in case of a deviation from this specification.

This lubricant recommendation in chapter "Lubricant table" (see page 91) 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 page.
- The lubricant fill quantity and viscosity with planetary geared motors with shared oil chamber depends only on the information on the nameplate of the planetary gear unit. Planetary gear units and the primary gear units are delivered without oil fill.
- Do not mix different synthetic lubricants and do not mix synthetic with mineral lubricants.



10.2 Permitted lubricants

10.2.1 General information

The lubricant table on the following page shows the permitted lubricants for gear units. Refer to the following legend for the lubricant table.

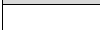
10.2.2 Key to the lubricant table


Abbreviations, meaning of shading and notes:

CLP = Mineral oil

CLP HC = Synthetic polyalphaolefin

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

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

 1) = Ambient temperature

2) Pay attention to critical starting behavior at low temperatures



Lubricant for the food industry (food grade oil)



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

10.2.3 Notes on the lubricant table



NOTICE

Selecting improper lubricants may damage the gear unit.

Possible damage to property!

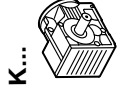
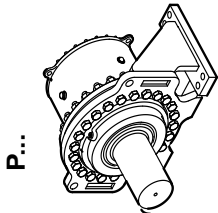
- The temperature ranges are to be considered guide values. The decisive factor is the viscosity information on the nameplate.
- Contact SEW-EURODRIVE if you operate the unit under extreme conditions, such as cold, heat, or there are changes to the operating conditions since project planning.



10.2.4 Lubricant table

47 049 02 05

			ISO VG class	Mobil®	Shell	KLÜBER	ARAL	bp	TEJACO	FUCHS	Q8	Castrol	TOTAL
	-10	CLP	VG 320	Mobilgear XMP 320 Mobilgear 600XP 320	Shell Omala F320	KLÜBER GEM 1-320N	Degol BG 320 Plus	BP Energol GR-XF 320	Meropa 320	Renolin CLP320 Renolin CLP320Plus Renolin High Gear 320	Goya NT 320	Alpha SP 320 Optigear-BM 320 Tribol 1100/320	Carter EP 320
	-5	CLP	VG 460	Mobilgear XMP 460 Mobilgear 600XP 460	Shell Omala F460	KLÜBER GEM 1-460N	Degol BG 460 Plus	BP Energol GR-XF 460	Meropa 460	Renolin CLP460 Renolin CLP460Plus Renolin High Gear 460	Goya NT 460	Alpha SP 460 Optigear-BM 460 Tribol 1100/460	Carter EP 460
	0	CLP	VG 680	Mobilgear XMP 680 Mobilgear 600XP 680	Shell Omala F680	KLÜBER GEM 1-680N		BP Energol GR-XF 680	Meropa 680	Renolin CLP680 Renolin CLP680Plus Renolin High Gear 680	Goya NT 680	Alpha SP 680 Optigear-BM 680 Tribol 1100/680	Carter EP 680
	+30	CLP	VG 220	Mobilgear XMP 220 Mobilgear 600XP 220	Shell Omala F220	KLÜBER GEM1-220N	Degol BG 220 Plus	BP Energol GR-XF 220	Meropa 220	Renolin Unisyn CLP 220 Renolin High Gear synth 220	Goya NT 220	Alpha SP 220 Optigear-BM 220 Tribol 1100/220	Carter EP 220
	+20	CLP	VG150	Mobilgear XMP 150 Mobilgear 600XP 150	Shell Omala F150	KLÜBER GEM 1-150N	Degol BG 150 Plus	BP Energol GR-XF 150	Meropa 150	Renolin CLP 150 Renolin High Gear synth 150	Goya NT 150	Alpha SP 150 Optigear-BM 150 Tribol 1100/150	
	+40	CLP HC	VG 320	Mobilgear SHC XMP320 Mobil SHC 632	Shell Omala Oil HD 320	KLÜBER GEM4-320N	Degol PAS 320	BP Energol EP-XF 320	Pinnacle WM 320	Renolin Unisyn CLP 320 Renolin High Gear synth 320	ELGreco 320	Optigear Synthetic X 320 Alphasyn EP 320 Tribol 1510/ 320 Tribol 1710/ 320	Carter SH 320
	+50	CLP HC	VG 460	Mobilgear SHC XMP460 Mobil SHC 634	Shell Omala Oil HD 460	KLÜBER GEM4-460N		BP Energol EP-XF 460	Pinnacle WM 460	Renolin Unisyn CLP 460 Renolin High Gear synth 460	ELGreco 460	Optigear Synthetic X 460 Alphasyn EP 460 Tribol 1510/ 460 Tribol 1710/ 460	Carter SH 460
	+60	CLP HC	VG 680	Mobilgear SHC XMP680 Mobil SHC 636	Shell Omala Oil HD 680	KLÜBER GEM4-680N			Pinnacle WM 680	Renolin Unisyn CLP 680 Renolin High Gear synth 680	ELGreco 680	Optigear Synthetic X 680 Tribol 1510/ 680	Carter SH 680
	+30	CLP HC	VG 220	Mobilgear SHC XMP220	Shell Omala Oil HD 220	KLÜBER GEM 4-220N	Degol PAS 220	BP Energol EP-XF 220	Pinnacle WM 220	Renolin Unisyn CLP 220	ELGreco 220	Optigear Synthetic X 220 Alphasyn EP 220 Tribol 1510/ 220 Tribol 1710/ 220	Carter SH 220
	+20	CLP HC	VG 150	Mobilgear SHC XMP150		KLÜBER GEM 4-150N	Degol PAS 150	BP Energol EP-XF 150	Pinnacle WM 150	Renolin Unisyn CLP 150	ELGreco 150	Optigear Synthetic X 150 Alphasyn EP 150 Tribol 1510/ 150 Tribol 1710/ 150	Carter SH 150
	+40	CLP HC	VG 460		Shell Cassida Fluid GL 460	KLÜbersynth UH1 6-460				Geralyn SF 460		Optileb GT 460	
	+40	E	VG 460		Shell Naturelle Gear Fluid EP 460	KLÜbersynth UH1 6-460				Plantogear 460 S			





1200251787



10.2.5 Sealing grease

The anti-friction bearings in RF/KF primary gear units and motors are given a factory-fill with the greases listed below. SEW-EURODRIVE recommends regreasing anti-friction bearings with a grease fill at the same time as changing the oil. Observe the separate operating instructions for RF/KF primary gear units and motors.

	Ambient temperature	Manufacturer	Type
Gear unit anti-friction bearings	-40 °C ... +80 °C	Fuchs	Renolit CX-TOM 15
	-30 °C ... +40 °C	Castrol	Obeen F82
	-20 °C ... +40 °C	Aral	Aralube BAB EP2



TIP

The following grease quantities are required:

- For fast-running bearings (gear unit input end): Fill the cavities between the rolling elements one-third full with grease.
- For slow-running bearings (gear unit input side): Fill the cavities between the rolling elements two-thirds full with grease.



10.3 Lubricant fill quantities

The specified fill quantities are **recommended values**. The precise values vary depending on the number of stages and gear ratios.

Check the oil level in a planetary gear unit at the oil sight glass or the dipstick and in a primary gear unit at the oil level screw.



TIP

In case of a pivoted mounting position, refer to the oil fill quantity specified on the nameplate.

10.3.1 Planetary gear unit

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

10.3.2 Primary helical (RF-) gear units

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

For notes on the mounting positions of RF primary gear units, refer to section 3.4.2.

Delivery of the RF primary gear unit with oil fill.

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

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



10.3.3 Primary bevel (KF-) gear units

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

For notes on the mounting positions of KF primary gear units, refer to section 3.4.1.

Delivery of the KF primary gear unit with oil fill.

Size	Fill quantity in liters											
	M1				M2				M3			
	0° A	90° A	180° B	270° A	0° A	90° A	180° A	270° A	0° B	90° A	180° A	270° A
KF67	1.1	2.4	1.1	3.7	2.7	2.7	2.7	2.7	1.1	3.7	1.1	2.4
KF77	2.1	4.1	2.1	5.9	4.5	4.5	4.5	4.5	2.1	5.9	2.1	4.1
KF87	3.7	8.2	3.7	11.9	8.4	8.4	8.4	8.4	3.7	11.9	3.7	8.2
KF97	7.0	14.7	7.0	21.5	16.5	16.5	16.5	16.5	7.0	21.5	7.0	14.7
KF107	10.0	21.8	10.0	35.1	25.2	25.2	25.2	25.2	10.0	35.1	10.0	21.8
KF127	21.0	41.5	21.0	55.0	41.0	41.0	41.0	41.0	21.0	55.0	21.0	41.5
KF157	31.0	66	31.0	92.0	62.0	62.0	62.0	62.0	31.0	92.0	31.0	66.0

Size	Fill quantity in liters											
	M4				M5				M6			
	0° A	90° A	180° B	270° A	0° A	90° B	180° A	270° A	0° B	90° A	180° A	270° B
KF67	2.7	2.7	2.7	2.7	2.4	1.1	3.7	1.1	3.7	1.1	2.4	1.1
KF77	4.5	4.5	4.5	4.5	4.1	2.1	5.9	2.1	5.9	2.1	4.1	2.1
KF87	8.4	8.4	8.4	8.4	8.2	3.7	11.9	3.7	11.9	3.7	8.2	3.7
KF97	15.7	15.7	15.7	15.7	14.7	7.0	21.5	7.0	21.5	7.0	14.7	7.0
KF107	25.2	25.2	25.2	25.2	21.8	10.0	35.1	10.0	35.1	10.0	21.8	10.0
KF127	41.0	41.0	41.0	41.0	41.5	21.0	55.0	21.0	55.0	21.0	41.5	21.0
KF157	62.0	62.0	62.0	62.0	66.0	31.0	92.0	31.0	92.0	31.0	66.0	31.0

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



11 Declaration of Conformity

EG-Konformitätserklärung

EC Declaration of Conformity
Déclaration CE de conformité

SEW
EURODRIVE

Nr./No./N° 900560009

im Sinne der Richtlinie 94/9/EG, Anhang VIII
according to Directive 94/9/EC, Appendix VIII
au sens de la directive 94/9/CE, Annexe VIII

SEW EURODRIVE GmbH & Co KG
Ernst-Blickle-Straße 42, D-76646 Bruchsal

erklärt in alleiniger Verantwortung die Konformität der folgenden Produkte
declares under sole responsibility conformity of the following products
déclare, sous sa seule responsabilité, que les produits suivants

Industriegetriebe der Baureihen:
Industrial gear units of the series:
Réducteurs industriels des séries :

P002 -P082

Kategorie:
category: / Catégories :
mit der
with the / respectent la

II 2GD

Richtlinie
Directive / Directive

94/9 EG
94/9 EC / 94/9/CE

angewandte harmonisierte Normen:
Applied harmonized standards: / Normes harmonisées appliquées :

EN 1127-1:2007
EN 13463-1:2001
EN 13463-5:2003
EN 13463-8:2003
EN 60529:2000

SEW-EURODRIVE hinterlegt die gemäß 94/9EG, Anhang VIII geforderten
Unterlagen bei benannter Stelle: FSA GmbH, EU - Kennnummer: 0588

SEW-EURODRIVE will archive the documents required according to 94/9/EC,
Appendix VIII at the following location: FSA GmbH, EU Code 0588

SEW-EURODRIVE tient à disposition la documentation spécifiée dans la directive
94/9/CE, annexe VIII pour consultation à l'endroit désigné : FSA GmbH, code UE
0588

Ort/Datum
Place/date / Lieu et date

Geschäftsführer Vertrieb und Marketing
Managing Director Sales and Marketing
Directeur général international commercial et marketing

Bruchsal, 15.05.09

H. Sondermann



12 Address List

Germany			
Headquarters Production Sales	Bruchsal	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 42 D-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
Service Competence Center	Central	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 1 D-76676 Graben-Neudorf	Tel. +49 7251 75-1710 Fax +49 7251 75-1711 sc-mitte@sew-eurodrive.de
	North	SEW-EURODRIVE GmbH & Co KG Alte Ricklinger Straße 40-42 D-30823 Garbsen (near Hannover)	Tel. +49 5137 8798-30 Fax +49 5137 8798-55 sc-nord@sew-eurodrive.de
	East	SEW-EURODRIVE GmbH & Co KG Dänkritzter Weg 1 D-08393 Meerane (near Zwickau)	Tel. +49 3764 7606-0 Fax +49 3764 7606-30 sc-ost@sew-eurodrive.de
	South	SEW-EURODRIVE GmbH & Co KG Domagkstraße 5 D-85551 Kirchheim (near München)	Tel. +49 89 909552-10 Fax +49 89 909552-50 sc-sued@sew-eurodrive.de
	West	SEW-EURODRIVE GmbH & Co KG Siemensstraße 1 D-40764 Langenfeld (near Düsseldorf)	Tel. +49 2173 8507-30 Fax +49 2173 8507-55 sc-west@sew-eurodrive.de
	Electronics	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 42 D-76646 Bruchsal	Tel. +49 7251 75-1780 Fax +49 7251 75-1769 sc-elektronik@sew-eurodrive.de
	Drive Service Hotline / 24 Hour Service		
Additional addresses for service in Germany provided on request!			

France			
Production Sales Service	Haguenau	SEW-USOCOME 48-54, route de Soufflenheim B. P. 20185 F-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-EUROCOME Zone Industrielle Technopôle Forbach Sud B. P. 30269 F-57604 Forbach Cedex	Tel. +33 3 87 29 38 00
Assembly Sales Service	Bordeaux	SEW-USOCOME Parc d'activités de Magellan 62, avenue de Magellan - B. P. 182 F-33607 Pessac Cedex	Tel. +33 5 57 26 39 00 Fax +33 5 57 26 39 09
	Lyon	SEW-USOCOME Parc d'Affaires Roosevelt Rue Jacques Tati F-69120 Vaulx en Velin	Tel. +33 4 72 15 37 00 Fax +33 4 72 15 37 15
	Paris	SEW-USOCOME Zone industrielle 2, rue Denis Papin F-77390 Verneuil l'Etang	Tel. +33 1 64 42 40 80 Fax +33 1 64 42 40 88
Additional addresses for service in France provided on request!			



Algeria			
Sales	Alger	Réducom 16, rue des Frères Zagnoun Bellevue El-Harrach 16200 Alger	Tel. +213 21 8222-84 Fax +213 21 8222-84 reducom_sew@yahoo.fr
Argentina			
Assembly Sales Service	Buenos Aires	SEW EURODRIVE ARGENTINA S.A. Centro Industrial Garin, Lote 35 Ruta Panamericana Km 37,5 1619 Garin	Tel. +54 3327 4572-84 Fax +54 3327 4572-21 sewar@sew-eurodrive.com.ar http://www.sew-eurodrive.com.ar
Australia			
Assembly Sales Service	Melbourne	SEW-EURODRIVE PTY. LTD. 27 Beverage Drive Tullamarine, Victoria 3043	Tel. +61 3 9933-1000 Fax +61 3 9933-1003 http://www.sew-eurodrive.com.au enquires@sew-eurodrive.com.au
	Sydney	SEW-EURODRIVE PTY. LTD. 9, Sleigh Place, Wetherill Park New South Wales, 2164	Tel. +61 2 9725-9900 Fax +61 2 9725-9905 enquires@sew-eurodrive.com.au
Austria			
Assembly Sales Service	Wien	SEW-EURODRIVE Ges.m.b.H. Richard-Strauss-Strasse 24 A-1230 Wien	Tel. +43 1 617 55 00-0 Fax +43 1 617 55 00-30 http://sew-eurodrive.at sew@sew-eurodrive.at
Belarus			
Sales	Minsk	SEW-EURODRIVE BY RybalkoStr. 26 BY-220033 Minsk	Tel. +375 (17) 298 38 50 Fax +375 (17) 29838 50 sales@sew.by
Belgium			
Assembly Sales Service	Brüssel	SEW Caron-Vector Avenue Eiffel 5 B-1300 Wavre	Tel. +32 10 231-311 Fax +32 10 231-336 http://www.sew-eurodrive.be info@caron-vector.be
Service Competence Center	Industrial Gears	SEW Caron-Vector Rue de Parc Industriel, 31 BE-6900 Marche-en-Famenne	Tel. +32 84 219-878 Fax +32 84 219-879 http://www.sew-eurodrive.be service-wallonie@sew-eurodrive.be
	Antwerp	SEW Caron-Vector Glasstraat, 19 BE-2170 Merksem	Tel. +32 3 64 19 333 Fax +32 3 64 19 336 http://www.sew-eurodrive.be service-antwerpen@sew-eurodrive.be
Brazil			
Production Sales Service	Sao Paulo	SEW-EURODRIVE Brasil Ltda. Avenida Amâncio Gaiolli, 152 - Rodovia Presidente Dutra Km 208 Guarulhos - 07251-250 - SP SAT - SEW ATENDE - 0800 7700496	Tel. +55 11 2489-9133 Fax +55 11 2480-3328 http://www.sew-eurodrive.com.br sew@sew.com.br
Additional addresses for service in Brazil provided on request!			
Bulgaria			
Sales	Sofia	BEVER-DRIVE GmbH Bogdanovetz Str.1 BG-1606 Sofia	Tel. +359 2 9151160 Fax +359 2 9151166 bever@fastbg.net



Cameroon			
Sales	Douala	Electro-Services Rue Drouot Akwa B.P. 2024 Douala	Tel. +237 33 431137 Fax +237 33 431137
Canada			
Assembly Sales Service	Toronto	SEW-EURODRIVE CO. OF CANADA LTD. 210 Walker Drive Bramalea, Ontario L6T3W1	Tel. +1 905 791-1553 Fax +1 905 791-2999 http://www.sew-eurodrive.ca marketing@sew-eurodrive.ca
	Vancouver	SEW-EURODRIVE CO. OF CANADA LTD. 7188 Honeyman Street Delta. B.C. V4G 1 E2	Tel. +1 604 946-5535 Fax +1 604 946-2513 marketing@sew-eurodrive.ca
	Montreal	SEW-EURODRIVE CO. OF CANADA LTD. 2555 Rue Leger LaSalle, Quebec H8N 2V9	Tel. +1 514 367-1124 Fax +1 514 367-3677 marketing@sew-eurodrive.ca
Additional addresses for service in Canada provided on request!			
Chile			
Assembly Sales Service	Santiago de Chile	SEW-EURODRIVE CHILE LTDA. Las Encinas 1295 Parque Industrial Valle Grande LAMP RCH-Santiago de Chile P.O. Box Casilla 23 Correo Quilicura - Santiago - Chile	Tel. +56 2 75770-00 Fax +56 2 75770-01 http://www.sew-eurodrive.cl ventas@sew-eurodrive.cl
China			
Production Assembly Sales Service	Tianjin	SEW-EURODRIVE (Tianjin) Co., Ltd. No. 46, 7th Avenue, TEDA Tianjin 300457	Tel. +86 22 25322612 Fax +86 22 25322611 info@sew-eurodrive.cn http://www.sew-eurodrive.cn
Assembly Sales Service	Suzhou	SEW-EURODRIVE (Suzhou) Co., Ltd. 333, Suhong Middle Road Suzhou Industrial Park Jiangsu Province, 215021	Tel. +86 512 62581781 Fax +86 512 62581783 suzhou@sew-eurodrive.cn
	Guangzhou	SEW-EURODRIVE (Guangzhou) Co., Ltd. No. 9, JunDa Road East Section of GETDD Guangzhou 510530	Tel. +86 20 82267890 Fax +86 20 82267891 guangzhou@sew-eurodrive.cn
	Shenyang	SEW-EURODRIVE (Shenyang) Co., Ltd. 10A-2, 6th Road Shenyang Economic Technological Development Area Shenyang, 110141	Tel. +86 24 25382538 Fax +86 24 25382580 shenyang@sew-eurodrive.cn
	Wuhan	SEW-EURODRIVE (Wuhan) Co., Ltd. 10A-2, 6th Road No. 59, the 4th Quanli Road, WEDA 430056 Wuhan	Tel. +86 27 84478398 Fax +86 27 84478388
Additional addresses for service in China provided on request!			
Colombia			
Assembly Sales Service	Bogotá	SEW-EURODRIVE COLOMBIA LTDA. Calle 22 No. 132-60 Bodega 6, Manzana B Santafé de Bogotá	Tel. +57 1 54750-50 Fax +57 1 54750-44 http://www.sew-eurodrive.com.co carlos.gomez@sew.eurodrive.com.co



Croatia			
Sales Service	Zagreb	KOMPEKS d. o. o. PIT Erdödy 4 II HR 10 000 Zagreb	Tel. +385 1 4613-158 Fax +385 1 4613-158 kompeks@inet.hr
Czech Republic			
Sales	Praha	SEW-EURODRIVE CZ S.R.O. Business Centrum Praha Lužná 591 CZ-16000 Praha 6 - Vokovice	Tel. +420 255 709 601 Fax +420 220 121 237 http://www.sew-eurodrive.cz sew@sew-eurodrive.cz
Denmark			
Assembly Sales Service	Kopenhagen	SEW-EURODRIVEA/S Geminivej 28-30 DK-2670 Greve	Tel. +45 43 9585-00 Fax +45 43 9585-09 http://www.sew-eurodrive.dk sew@sew-eurodrive.dk
Egypt			
Sales Service	Cairo	Copam Egypt for Engineering & Agencies 33 El Hegaz ST, Heliopolis, Cairo	Tel. +20 2 22566-299 + 1 23143088 Fax +20 2 22594-757 http://www.copam-egypt.com/ copam@datum.com.eg
Estonia			
Sales	Tallin	ALAS-KUUL AS Reti tee 4 EE-75301 Peetri küla, Rae vald, Harjumaa	Tel. +372 6593230 Fax +372 6593231 veiko.soots@alas-kuul.ee
Finland			
Assembly Sales Service	Lahti	SEW-EURODRIVE OY Vesimäentie 4 FIN-15860 Hollola 2	Tel. +358 201 589-300 Fax +358 3 780-6211 sew@sew.fi http://www.sew-eurodrive.fi
Production Assembly Service	Karkkila	SEW Industrial Gears Oy Valurinkatu 6 FIN-03600 Karkkila	Tel. +358 201 589-300 Fax +358 201 589-310 sew@sew.fi http://www.sew-eurodrive.fi
Gabon			
Sales	Libreville	Electro-Services B.P. 1889 Libreville	Tel. +241 7340-11 Fax +241 7340-12
Great Britain			
Assembly Sales Service	Normanton	SEW-EURODRIVE Ltd. Beckbridge Industrial Estate P.O. Box No.1 GB-Normanton, West- Yorkshire WF6 1QR	Tel. +44 1924 893-855 Fax +44 1924 893-702 http://www.sew-eurodrive.co.uk info@sew-eurodrive.co.uk
Greece			
Sales Service	Athen	Christ. Boznos & Son S.A. 12, Mavromichali Street P.O. Box 80136, GR-18545 Piraeus	Tel. +30 2 1042 251-34 Fax +30 2 1042 251-59 http://www.boznos.gr info@boznos.gr



Hong Kong			
Assembly	Hong Kong	SEW-EURODRIVE LTD.	Tel. +852 36902200
Sales		Unit No. 801-806, 8th Floor	Fax +852 36902211
Service		Hong Leong Industrial Complex No. 4, Wang Kwong Road Kowloon, Hong Kong	contact@sew-eurodrive.hk
Hungary			
Sales	Budapest	SEW-EURODRIVE Kft.	Tel. +36 1 437 06-58
Service		H-1037 Budapest Kunigunda u. 18	Fax +36 1 437 06-50 office@sew-eurodrive.hu
India			
Assembly	Vadodara	SEW-EURODRIVE India Private Limited	Tel. +91 265 2831086
Sales		Plot No. 4, GIDC	Fax +91 265 2831087
Service		POR Ramangamdi • Vadodara - 391 243 Gujarat	http://www.seweurodriveindia.com sales@seweurodriveindia.com subodh.ladwa@seweurodriveindia.com
Ireland			
Sales	Dublin	Alperton Engineering Ltd.	Tel. +353 1 830-6277
Service		48 Moyle Road Dublin Industrial Estate Glasnevin, Dublin 11	Fax +353 1 830-6458 info@alperton.ie http://www.alperton.ie
Israel			
Sales	Tel-Aviv	Liraz Handasa Ltd.	Tel. +972 3 5599511
		Ahofer Str 34B / 228 58858 Holon	Fax +972 3 5599512 http://www.liraz-handasa.co.il office@liraz-handasa.co.il
Italy			
Assembly	Milano	SEW-EURODRIVE di R. Blicke & Co.s.a.s.	Tel. +39 02 96 9801
Sales		Via Bernini,14	Fax +39 02 96 799781
Service		I-20020 Solaro (Milano)	http://www.sew-eurodrive.it sewit@sew-eurodrive.it
Ivory Coast			
Sales	Abidjan	SICA	Tel. +225 2579-44
		Ste industrielle et commerciale pour l'Afrique 165, Bld de Marseille B.P. 2323, Abidjan 08	Fax +225 2584-36
Japan			
Assembly	Iwata	SEW-EURODRIVE JAPAN CO., LTD	Tel. +81 538 373811
Sales		250-1, Shimoman-no,	Fax +81 538 373814
Service		Iwata Shizuoka 438-0818	http://www.sew-eurodrive.co.jp sewjapan@sew-eurodrive.co.jp
Korea			
Assembly	Ansan-City	SEW-EURODRIVE KOREA CO., LTD.	Tel. +82 31 492-8051
Sales		B 601-4, Banweol Industrial Estate	Fax +82 31 492-8056
Service		1048-4, Shingil-Dong Ansan 425-120	http://www.sew-korea.co.kr master@sew-korea.co.kr
	Busan	SEW-EURODRIVE KOREA Co., Ltd.	Tel. +82 51 832-0204
		No. 1720 - 11, Songjeong - dong Gangseo-ku Busan 618-270	Fax +82 51 832-0230 master@sew-korea.co.kr



Latvia			
Sales	Riga	SIA Alas-Kuul Katlakalna 11C LV-1073 Riga	Tel. +371 7139253 Fax +371 7139386 http://www.alas-kuul.com info@alas-kuul.com
Lebanon			
Sales	Beirut	Gabriel Acar & Fils sarl B. P. 80484 Bourj Hammoud, Beirut	Tel. +961 1 4947-86 +961 1 4982-72 +961 3 2745-39 Fax +961 1 4949-71 ssacar@inco.com.lb
Lithuania			
Sales	Alytus	UAB Irseva Naujoji 19 LT-62175 Alytus	Tel. +370 315 79204 Fax +370 315 56175 info@irseva.lt http://www.sew-eurodrive.lt
Luxembourg			
Assembly Sales Service	Brüssel	CARON-VECTOR S.A. Avenue Eiffel 5 B-1300 Wavre	Tel. +32 10 231-311 Fax +32 10 231-336 http://www.sew-eurodrive.lu info@caron-vector.be
Malaysia			
Assembly Sales Service	Johore	SEW-EURODRIVE SDN BHD No. 95, Jalan Seroja 39, Taman Johor Jaya 81000 Johor Bahru, Johor West Malaysia	Tel. +60 7 3549409 Fax +60 7 3541404 sales@sew-eurodrive.com.my
Mexico			
Assembly Sales Service	Quéretaro	SEW-EURODRIVE MEXICO SA DE CV SEM-981118-M93 Tequisquiapan No. 102 Parque Industrial Quéretaro C.P. 76220 Quéretaro, México	Tel. +52 442 1030-300 Fax +52 442 1030-301 http://www.sew-eurodrive.com.mx scmexico@seweurodrive.com.mx
Morocco			
Sales	Casablanca	Afit 5, rue Emir Abdelkader MA 20300 Casablanca	Tel. +212 22618372 Fax +212 22618351 ali.alami@premium.net.ma
Netherlands			
Assembly Sales Service	Rotterdam	VECTOR Aandrijftechniek B.V. Industrieweg 175 NL-3044 AS Rotterdam Postbus 10085 NL-3004 AB Rotterdam	Tel. +31 10 4463-700 Fax +31 10 4155-552 http://www.vector.nu info@vector.nu
New Zealand			
Assembly Sales Service	Auckland	SEW-EURODRIVE NEW ZEALAND LTD. P.O. Box 58-428 82 Greenmount drive East Tamaki Auckland	Tel. +64 9 2745627 Fax +64 9 2740165 http://www.sew-eurodrive.co.nz sales@sew-eurodrive.co.nz
	Christchurch	SEW-EURODRIVE NEW ZEALAND LTD. 10 Settlers Crescent, Ferrymead Christchurch	Tel. +64 3 384-6251 Fax +64 3 384-6455 sales@sew-eurodrive.co.nz



Norway			
Assembly	Moss	SEW-EURODRIVE A/S	Tel. +47 69 24 10 20
Sales		Solgaard skog 71	Fax +47 69 24 10 40
Service		N-1599 Moss	http://www.sew-eurodrive.no sew@sew-eurodrive.no
Peru			
Assembly	Lima	SEW DEL PERU MOTORES REDUCTORES	Tel. +51 1 3495280
Sales		S.A.C.	Fax +51 1 3493002
Service		Los Calderos, 120-124 Urbanizacion Industrial Vulcano, ATE, Lima	http://www.sew-eurodrive.com.pe sewperu@sew-eurodrive.com.pe
Poland			
Assembly	Lodz	SEW-EURODRIVE Polska Sp.z.o.o.	Tel. +48 42 67710-90
Sales		ul. Techniczna 5	Fax +48 42 67710-99
Service		PL-92-518 Łódź	http://www.sew-eurodrive.pl sew@sew-eurodrive.pl
		24 Hour Service	Tel. +48 602 739 739 (+48 602 SEW SEW) sewis@sew-eurodrive.pl
Portugal			
Assembly	Coimbra	SEW-EURODRIVE, LDA.	Tel. +351 231 20 9670
Sales		Apartado 15	Fax +351 231 20 3685
Service		P-3050-901 Mealhada	http://www.sew-eurodrive.pt infosew@sew-eurodrive.pt
Romania			
Sales	București	Sialco Trading SRL	Tel. +40 21 230-1328
Service		str. Madrid nr.4 011785 Bucuresti	Fax +40 21 230-7170 sialco@sialco.ro
Russia			
Assembly	St. Petersburg	ZAO SEW-EURODRIVE	Tel. +7 812 3332522 +7 812 5357142
Sales		P.O. Box 36	Fax +7 812 3332523
Service		195220 St. Petersburg Russia	http://www.sew-eurodrive.ru sew@sew-eurodrive.ru
Senegal			
Sales	Dakar	SENEMECA	Tel. +221 338 494 770
		Mécanique Générale	Fax +221 338 494 771
		Km 8, Route de Rufisque	senemeca@sentoo.sn
		B.P. 3251, Dakar	
Serbia			
Sales	Beograd	DIPAR d.o.o.	Tel. +381 11 347 3244 / +381 11 288 0393
		Ustanicka 128a	Fax +381 11 347 1337
		PC Košum, IV floor	office@dipar.co.yu
		SCG-11000 Beograd	
Singapore			
Assembly	Singapore	SEW-EURODRIVE PTE. LTD.	Tel. +65 68621701
Sales		No 9, Tuas Drive 2	Fax +65 68612827
Service		Jurong Industrial Estate	http://www.sew-eurodrive.com.sg sewsingapore@sew-eurodrive.com
		Singapore 638644	



Slovakia			
Sales	Bratislava	SEW-Eurodrive SK s.r.o. Rybničná 40 SK-831 06 Bratislava	Tel. +421 2 33595 202 Fax +421 2 33595 200 sew@sew-eurodrive.sk http://www.sew-eurodrive.sk
	Žilina	SEW-Eurodrive SK s.r.o. Industry Park - PChZ ulica M.R.Štefánika 71 SK-010 01 Žilina	Tel. +421 41 700 2513 Fax +421 41 700 2514 sew@sew-eurodrive.sk
	Banská Bystrica	SEW-Eurodrive SK s.r.o. Rudlovska cesta 85 SK-974 11 Banská Bystrica	Tel. +421 48 414 6564 Fax +421 48 414 6566 sew@sew-eurodrive.sk
	Košice	SEW-Eurodrive SK s.r.o. Slovenská ulica 26 SK-040 01 Košice	Tel. +421 55 671 2245 Fax +421 55 671 2254 sew@sew-eurodrive.sk
Slovenia			
Sales Service	Celje	Pakman - Pogonska Tehnika d.o.o. Ul. XIV. divizije 14 SLO - 3000 Celje	Tel. +386 3 490 83-20 Fax +386 3 490 83-21 pakman@siol.net
South Africa			
Assembly Sales Service	Johannesburg	SEW-EURODRIVE (PROPRIETARY) LIMITED Eurodrive House Cnr. Adcock Ingram and Aerodrome Roads Aeroton Ext. 2 Johannesburg 2013 P.O.Box 90004 Bertsham 2013	Tel. +27 11 248-7000 Fax +27 11 494-3104 http://www.sew.co.za info@sew.co.za
	Cape Town	SEW-EURODRIVE (PROPRIETARY) LIMITED Rainbow Park Cnr. Racecourse & Omuramba Road Montague Gardens Cape Town P.O.Box 36556 Chempet 7442 Cape Town	Tel. +27 21 552-9820 Fax +27 21 552-9830 Telex 576 062 cfoster@sew.co.za
	Durban	SEW-EURODRIVE (PROPRIETARY) LIMITED 2 Monaceo Place Pinetown Durban P.O. Box 10433, Ashwood 3605	Tel. +27 31 700-3451 Fax +27 31 700-3847 hengela@sew.co.za
Spain			
Assembly Sales Service	Bilbao	SEW-EURODRIVE ESPAÑA, S.L. Parque Tecnológico, Edificio, 302 E-48170 Zamudio (Vizcaya)	Tel. +34 94 43184-70 Fax +34 94 43184-71 http://www.sew-eurodrive.es sew.spain@sew-eurodrive.es
Sweden			
Assembly Sales Service	Jönköping	SEW-EURODRIVE AB Gnejsvägen 6-8 S-55303 Jönköping Box 3100 S-55003 Jönköping	Tel. +46 36 3442 00 Fax +46 36 3442 80 http://www.sew-eurodrive.se info@sew-eurodrive.se



Switzerland			
Assembly	Basel	Alfred Imhof A.G.	Tel. +41 61 417 1717
Sales		Jurastrasse 10	Fax +41 61 417 1700
Service		CH-4142 Münchenstein bei Basel	http://www.imhof-sew.ch info@imhof-sew.ch
Thailand			
Assembly	Chonburi	SEW-EURODRIVE (Thailand) Ltd.	Tel. +66 38 454281
Sales		700/456, Moo.7, Donhuaroh	Fax +66 38 454288
Service		Muang Chonburi 20000	sewthailand@sew-eurodrive.com
Tunisia			
Sales	Tunis	T. M.S. Technic Marketing Service	Tel. +216 71 4340-64 + 71 4320-29
		Zone Industrielle Mghira 2	Fax +216 71 4329-76
		Lot No. 39	tms@tms.com.tn
		2082 Fouchana	
Turkey			
Assembly	Istanbul	SEW-EURODRIVE	Tel. +90 216 4419164, 3838014,
Sales		Hareket Sistemleri San. ve Tic. Ltd. Sti.	3738015
Service		Bagdat Cad. Koruma Cikmazi No. 3	Fax +90 216 3055867
		TR-34846 Maltepe ISTANBUL	http://www.sew-eurodrive.com.tr sew@sew-eurodrive.com.tr
Ukraine			
Sales	Dnepropetrovsk	SEW-EURODRIVE	Tel. +380 56 370 3211
Service		Str. Rabochaja 23-B, Office 409	Fax +380 56 372 2078
		49008 Dnepropetrovsk	http://www.sew-eurodrive.ua sew@sew-eurodrive.ua
USA			
Production	Southeast	SEW-EURODRIVE INC.	Tel. +1 864 439-7537
Assembly	Region	1295 Old Spartanburg Highway	Fax Sales +1 864 439-7830
Sales		P.O. Box 518	Fax Manufacturing +1 864 439-9948
Service		Lyman, S.C. 29365	Fax Assembly +1 864 439-0566
Cooperate Offices			Fax Confidential/HR +1 864 949-5557 http://www.seweurodrive.com cslyman@seweurodrive.com
Assembly	Northeast	SEW-EURODRIVE INC.	Tel. +1 856 467-2277
Sales	Region	Pureland Ind. Complex	Fax +1 856 845-3179
Service		2107 High Hill Road, P.O. Box 481	csbridgeport@seweurodrive.com
		Bridgeport, New Jersey 08014	
	Midwest Region	SEW-EURODRIVE INC.	Tel. +1 937 335-0036
		2001 West Main Street	Fax +1 937 440-3799
		Troy, Ohio 45373	cstroy@seweurodrive.com
	Southwest	SEW-EURODRIVE INC.	Tel. +1 214 330-4824
	Region	3950 Platinum Way	Fax +1 214 330-4724
		Dallas, Texas 75237	csdallas@seweurodrive.com
	Western Region	SEW-EURODRIVE INC.	Tel. +1 510 487-3560
		30599 San Antonio St.	Fax +1 510 487-6433
		Hayward, CA 94544	cshayward@seweurodrive.com
Additional addresses for service in the USA provided on request!			
Venezuela			
Assembly	Valencia	SEW-EURODRIVE Venezuela S.A.	Tel. +58 241 832-9804
Sales		Av. Norte Sur No. 3, Galpon 84-319	Fax +58 241 838-6275
Service		Zona Industrial Municipal Norte	http://www.sew-eurodrive.com.ve ventas@sew-eurodrive.com.ve sewfinanzas@cantv.net
		Valencia, Estado Carabobo	



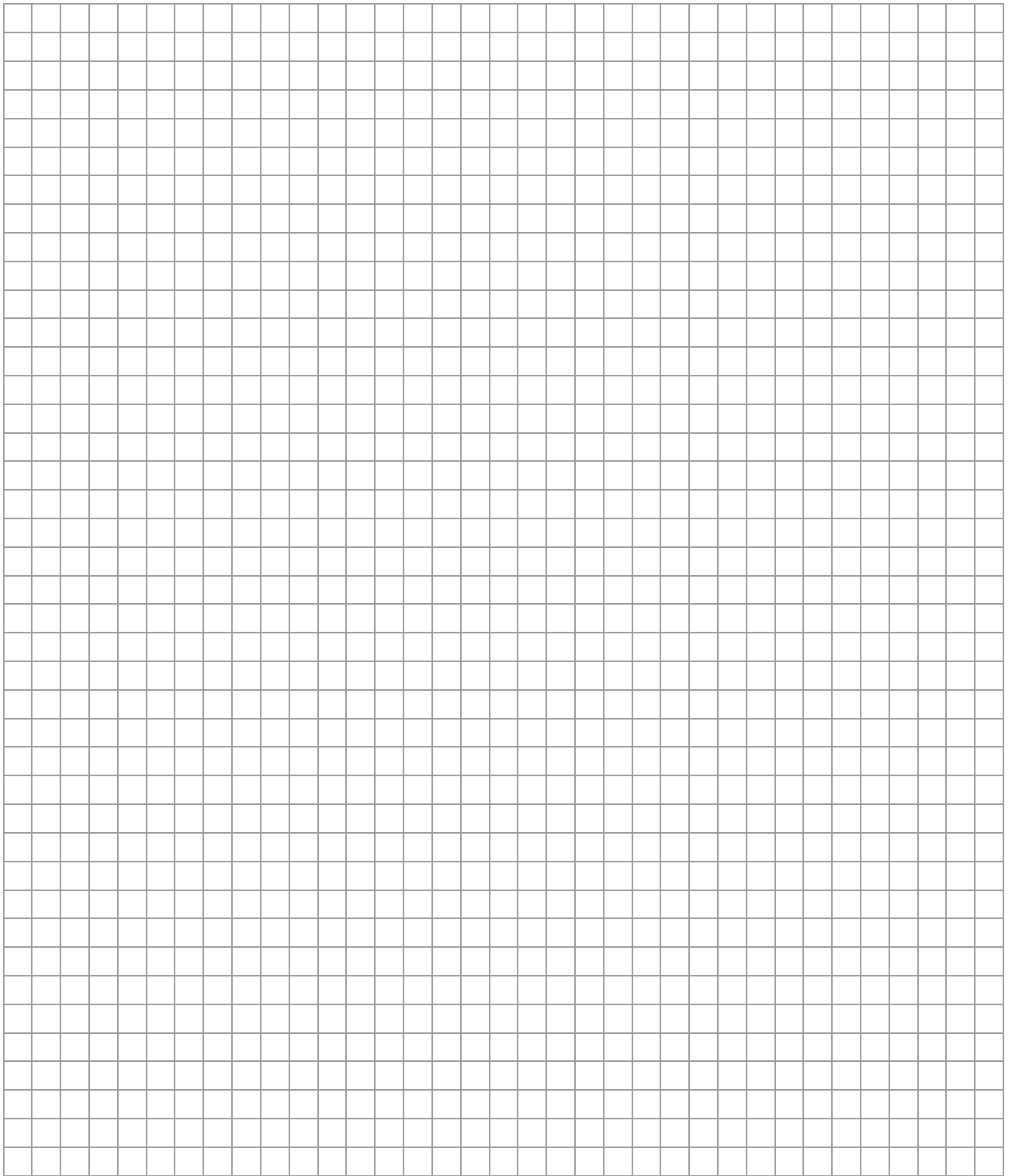
Index

A		G	
AD adapter	30	Gear unit design	14, 17
AD input shaft assembly	61	Gear unit mounting	46
Adapter AL/AM	77	Gear unit painting	40
Adapter AM with backstop AM./RS	60	Gear unit shutdown	73
Additional features	30	Gear units with solid shaft	44
Aligning the shaft axis	40		
AM adapter	30	H	
Ambient conditions	37	Hollow shaft	50
AR adapter	30	Hollow shaft gear units with torque arm	48
AT adapter	30		
B		I	
Backstop	70	IEC adapter AM63 - 280	57
Belt pulley	44	Input components	30
Breather valve	35, 38	Input shaft assembly AD	61, 77
		Input shaft assembly with backstop AD./RS	64
C		Input shaft assembly with centering shoulder AD./ZR	62
Centering shoulder tolerance	34	Inspection	75
Changing the oil	81	Inspection intervals	76
Checking and cleaning the breather plug	83	Installation	34
Checking the oil consistency	80	Installation notes	35
Checking the oil level	79	Installing the gear unit	38
Churning losses	25	Internal corrosion protection	12
Combination of planetary and primary gear units ..	14		
Copyright	6	L	
Corrosion	35	Lubricant change intervals	78
Coupling	46	Lubricant fill quantities	93
Coupling of AM adapter	57	Lubricant table for planetary gear units	91
Customer service	84	Lubricants	89
D		M	
Diameter tolerance	34	Maintenance	75
Disposal	8	Maintenance intervals	76
E		Malfunctons	84
Exclusion of liability	6	Mounting	34
Exterior corrosion protection	12	Mounting input components	44
		Mounting notes	35
F		Mounting of couplings	46
Faults	84	Mounting output components	44
Flange-mounted units	47	Mounting position	19
Foot-mounted units	46		
Foundation	40		



Index

Mounting position sheets	20	T	
Key	20	Tightening torque for gear unit mounting	46
PF..KF	24	Tightening torques for torque arms	48
PF..RF	22	Tolerances	34
P..KF	23	Tools	34
P..RF	21	Torque arm	31, 48
Mounting positions of the primary gear units	25	Transport	10
M1...M6	19	Transport conditions	12
 		Transport damage	10
N			
Nameplate	15		
NEMA adapter AM56 - 365	57		
O			
Oil change	81		
Oil expansion tank	32		
Oil riser pip	32		
Oil seals	37		
Oil temperature	71		
Options	30		
P			
Packaging	12		
Painting the gear unit	40		
Pictograms	9		
Pinion	44		
Pivoted mounting position	28		
Preliminary work	37		
Protection devices	35		
PT100	31		
PT100 temperature sensor	31, 65		
R			
Refilling grease	83		
Removing the shrink disk	54		
Run-in period	68		
S			
Sealing grease	92		
Sealing lips	37		
Shaft axis	40		
Shrink disk	50		
Solid shaft	44		
Startup	67		
Stickers on the gear unit	9		
Storage conditions	12, 13		
Surface temperature	71		
Symbols on the gear unit	9		





SEW-EURODRIVE
Driving the world

SEW
EURODRIVE

SEW-EURODRIVE GmbH & Co KG
P.O. Box 3023
D-76642 Bruchsal/Germany
Phone +49 7251 75-0
Fax +49 7251 75-1970
sew@sew-eurodrive.com

→ www.sew-eurodrive.com