



SEW
EURODRIVE

Assembly and Operating Instructions



Industrial Gear Units
Planetary Gearmotors
P.. X1KP..



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1 General information

1.1 About the operating instructions

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, start up, and service the product.

The operating instructions must be legible and accessible at all times. Ensure that persons responsible for the machinery and its operation as well as persons who work on the device independently have read through the documentation carefully and understood it. If you are unclear about any of the information in this documentation or require further information, please contact SEW-EURODRIVE.

1.2 Structure of the safety notes

1.2.1 Meaning of signal words

The following table shows the grading and meaning of the signal words for safety notes.

Signal word	Meaning	Consequences if disregarded
▲ DANGER	Imminent hazard	Severe or fatal injuries
▲ WARNING	Possible dangerous situation	Severe or fatal injuries
▲ CAUTION	Possible dangerous situation	Minor injuries
NOTICE	Possible damage to property	Damage to the product or its environment
INFORMATION	Useful information or tip: Simplifies handling of the product.	

1.2.2 Structure of section-related safety notes

Section-related safety notes do not apply to a specific action but to several actions pertaining to one subject. The hazard symbols used either indicate a general hazard or a specific hazard.

This is the formal structure of a safety note for a specific section:



SIGNAL WORD

Type and source of hazard.






Possible consequence(s) if disregarded.

- Measure(s) to prevent the hazard.

Meaning of the hazard symbols

The hazard symbols in the safety notes have the following meaning:

Hazard symbol	Meaning
	General hazard

Hazard symbol	Meaning
	Warning of dangerous electrical voltage
	Warning of hot surfaces
	Warning of risk of crushing
	Warning of suspended load
	Warning of automatic restart

1.2.3 Structure of embedded safety notes

Embedded safety notes are directly integrated into the instructions just before the description of the dangerous action.

This is the formal structure of an embedded safety note:

▲ SIGNAL WORD Type and source of hazard. Possible consequence(s) if disregarded. Measure(s) to prevent the hazard.

1.3 Rights to claim under limited warranty

Read the information in this documentation. This is essential for fault-free operation and fulfillment of any rights to claim under limited warranty. Read the documentation before you start working with the product.

1.4 Exclusion of liability

Read the information in this documentation, otherwise safe operation is impossible. You must comply with the information contained in this documentation to achieve the specified product characteristics and performance features. SEW-EURODRIVE assumes no liability for injury to persons or damage to equipment or property resulting from non-observance of these operating instructions. In such cases, SEW-EURODRIVE assumes no liability for defects.

1.5 Copyright notice

© 2017 SEW-EURODRIVE. All rights reserved. Unauthorized reproduction, modification, distribution or any other use of the whole or any part of this documentation is strictly prohibited.

2 Safety notes

The following basic safety notes must be read carefully to prevent injury to persons and damage to property. The user must ensure that the basic safety notes are read and observed. Ensure that persons responsible for the machinery and its operation as well as persons who work on the unit independently have read through the documentation carefully and understood it. If you are unclear about any of the information in this documentation, or if you require further information, please contact SEW-EURODRIVE.

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



⚠ WARNING

During operation, the gear units can have movable or rotating parts and hot surfaces.

Severe or fatal injuries

- All work related to transportation, storage, installation, assembly, connection, startup, maintenance and repair may only be carried out by qualified personnel, in strict observance of:
 - The relevant detailed operating instructions
 - Warning and safety signs on the gear unit
 - 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
- Never install damaged products.
- Report any damage to the shipping company immediately.
- Removing covers without authorization, improper use or incorrect installation and operation may result in severe injuries to persons or damage to machinery.

Refer to the documentation for additional information.

2.3 Target group

Specialist for mechanical work	<p>Any mechanical work may only be performed by adequately qualified specialists. Specialists in the context of this documentation are persons familiar with the design, mechanical installation, troubleshooting, and maintenance of the product who possess the following qualifications:</p> <ul style="list-style-type: none"> • Qualification in the mechanical area in accordance with the national regulations • Familiarity with this documentation
Specialist for electrotechnical work	<p>Any electrotechnical work may only be performed by electrically skilled persons with a suitable education. Electrically skilled persons in the context of this documentation are persons familiar with electrical installation, startup, troubleshooting, and maintenance of the product who possess the following qualifications:</p> <ul style="list-style-type: none"> • Qualification in the electrotechnical area in accordance with the national regulations • Familiarity with this documentation
Instructed persons	<p>All work in the areas of transportation, storage, operation and waste disposal must be carried out by persons who are trained appropriately. The purpose of the instruction is that the persons are capable of performing the required tasks and work steps in a safe and correct manner.</p> <p>All qualified personnel must wear appropriate protective clothing.</p>

2.4 Designated use

The industrial gear units are gear units run by motors for industrial and commercial systems. The units may only be run at the speeds and powers shown in the technical data or on the nameplate. Implementing gear unit loads other than the permitted values or operating the gear units in areas of application other than industrial and commercial systems is only permitted after consultation with SEW-EURODRIVE.

Using these products in potentially explosive atmospheres is prohibited, unless specifically designated otherwise.

In compliance with the EC Machinery Directive 2006/42/EC, the industrial 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 designated fashion until you have established that the end product complies with Machinery Directive 2006/42/EC.

2.5 Other applicable documentation

The following documentation and documents should also be observed:

- When operating gearmotors, also observe the safety notes for motors and primary gear units in the accompanying operating instructions.
- Operating instructions of any attached options.
- Order-specific documents, such as dimension sheet and order confirmation
- P.002 - P.102 Series catalog

2.6 Safety symbols on the gear unit



⚠ CAUTION







Safety/caution signs and safety symbols can become dirty or illegible over time.

Risk of injury due to illegible symbols.

- Always make sure that safety, warning, and operating notes are legible.
- Replace damaged safety/caution signs and safety symbols.

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








Safety symbols	Meaning
	Indicates the oil filling location . Also serves as proper venting during the oil change.
	Indicates the oil drain .
	Indicates the position of the breather . Serves to avoid mistaking the oil measuring position for the venting position.
	Helps avoid errors caused by lack of understanding. Read the information in the operating instructions.
	Indicates the positions for relubrication and makes it easier to find the locations to be lubricated. Helps avoid bearing damage.
	Indicates the water supply and serves to locate the connection option.
	Indicates the water return and serves to locate the connection option.
	Indicates the oil supply and serves to locate the connection option.
	Indicates the oil return and serves to locate the connection option.
	For pivoted mounting positions, this symbol on the information sign indicates the mounting position of the gear unit for checking the oil .
















Safety symbols	Meaning
	Indicates the position of the temperature sensor/temperature switch .
	Indicates the grease drain plug and serves to locate the grease drain. Helps avoid bearing damage.
	Indicates the air outlet screw .
	Caution: Burns caused by hot surface.
	Caution: Removing the dipstick during operation may result in damage to the gear unit.
	Caution: Risk of burns due to hot gear oil.

After startup, you may remove the following labels from the gear unit.

2.7 Symbols on the dimension sheet

The symbols on the dimension sheet must be observed. They have the following meaning:

Symbols	Meaning
	Indicates the position of the oil dipstick .
	Indicates the position of the oil level glass .
	Indicates the position of the oil sight glass .
	Indicates the oil filling location .
	Indicates the oil drain .
	Indicates the position of the breather .
	Indicates the position of the relubrication points .

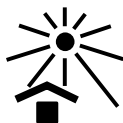
Symbols	Meaning
	Indicates the position of the relubrication points .
	Indicates the position of the relubrication points .
	Indicates the position of the grease outlet .
	Indicates the water inflow with connection dimensions.
	Indicates the water return with connection dimensions.
	Indicates the oil inflow .
	Indicates the oil return .
	Indicates the position of the magnetic screw plug .
	Indicates the position of the inspection cover .
	Indicates the position of the attachment points for transport .
	Indicates the position of the torque arm .
	Indicates the position of the operator's vibration sensor with connection dimensions.
	Indicates the position of the air outlet screw .
	Indicates the position of the oil heater .
	Indicates the oil level plug .

2.8 Symbols on the packaging

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



Fragile



Protect
from heat



Fasten
here



Hand hooks
prohibited



Up



Keep dry



Center of gravity

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2.9 Transport

2.9.1 General information



⚠ WARNING

Suspended loads can fall.

Severe or fatal injuries.

- Do not stand under the suspended load.
- Secure the danger zone.
- Use suitable, sufficiently rated and undamaged handling equipment.
- Consider the gear unit dimensions, the center of gravity and the weight that has to be moved when selecting lifting equipment or crane (see dimension drawing). The weight to be moved is the total weight of the drive package including mount-on components (not only the weight of the gear unit).



⚠ CAUTION

Risk of slipping of unsecured mount-on components, such as keys.

Potential risk of crushing due to falling parts.

- Secure the mount-on components.



⚠ CAUTION

Risk of slipping due to lubricant leaking from damaged seals.

Minor injuries.

- Check the gear unit and mount-on components for leaking lubricant.

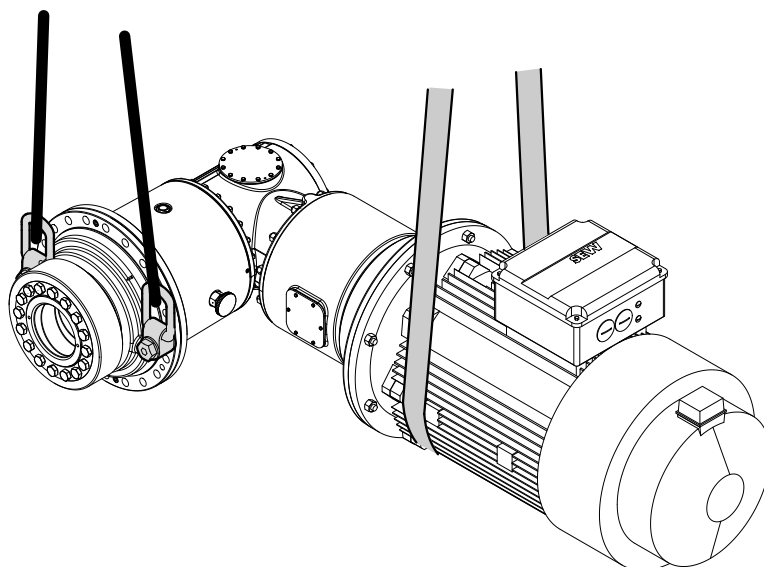
NOTICE

Improper transport can damage the gear unit.

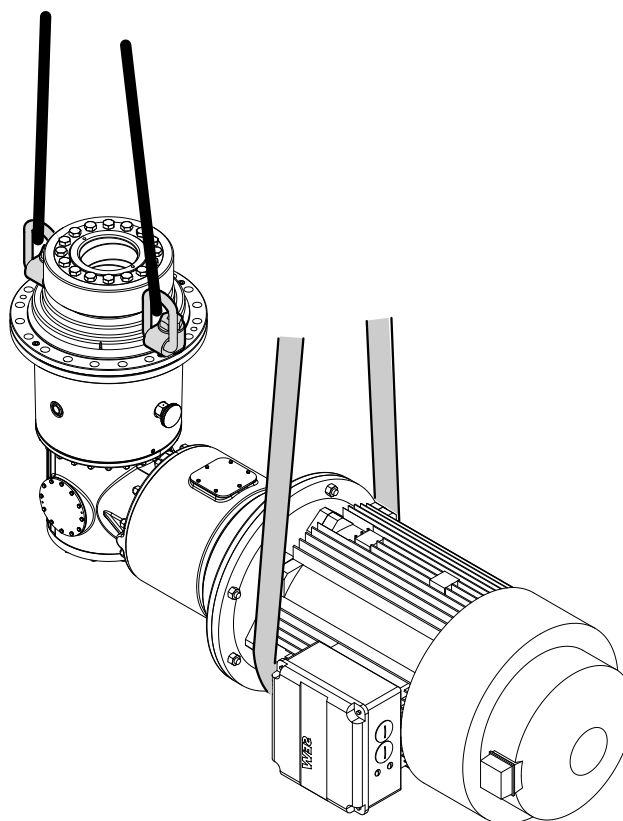
Possible damage to property.

- Observe the following notes.
- Inspect the shipment for damage as soon as you receive the delivery. Inform the shipping company immediately about any damage. It may be necessary to suspend startup.
- The weight of the gear unit (without oil) is indicated on the nameplate or on the dimension sheet. Observe the loads and specifications given there.
- If possible, transport the gear unit without oil fill. If this is not possible, note that the weight indicated on the nameplate refers only to the no-load weight of the gear unit, and replace the breather with a screw plug.
- The gear unit must be transported in a manner that prevents damage to the gear unit and to mount-on components. For example, impacts against exposed shaft ends can damage the gear unit.
- Use only the prescribed suspension points [1] to transport the gear unit (see order documents). The load suspensions of the motor or mount-on components are provided for stabilization purposes only.

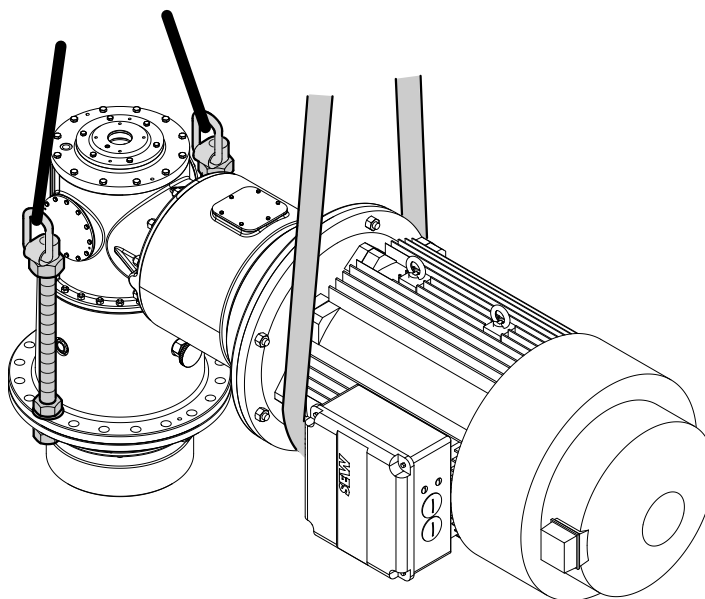
The following figures illustrate how to transport the gear unit.



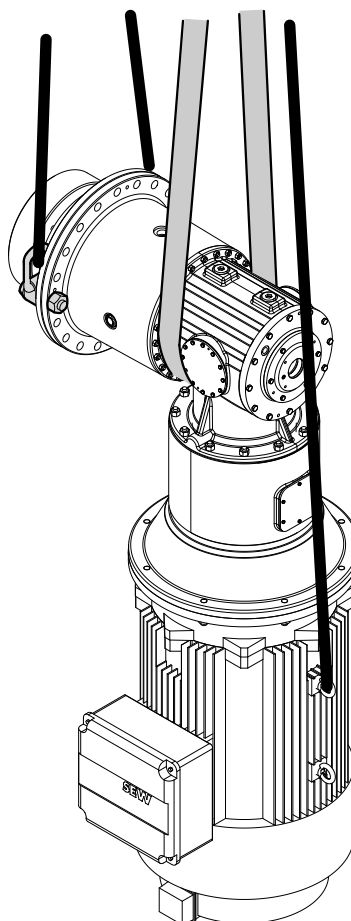
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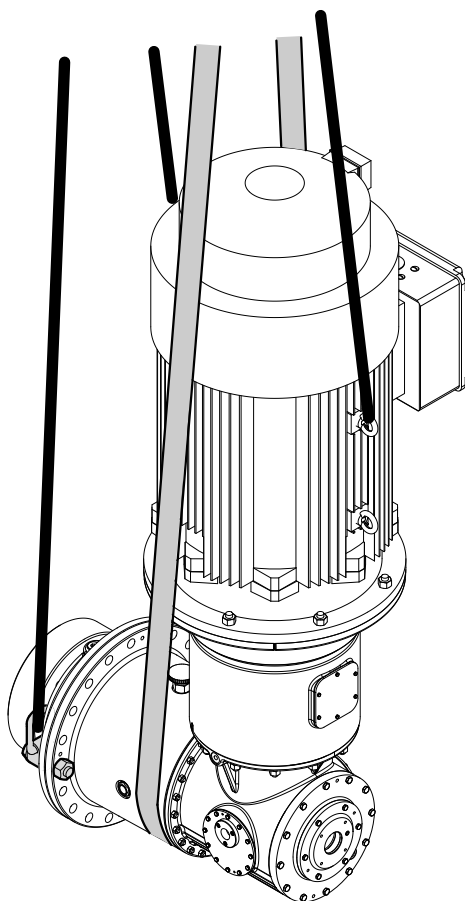
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2.10 Storage and transport conditions

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

2.10.1 Internal conservation

Standard corrosion protection

After the test run, the test oil fill is drained out of the gear unit. The remaining oil film protects the gear unit against corrosion for a limited period of time. If specified in the order, the gear unit can be delivered with oil. Refer to the order documents for more information.

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 is replaced by a screw plug and included in the gear unit delivery.

Corrosion protection with VCI anti-corrosion agent is not permitted for gear units that are operated with food grade lubricants. Contact SEW-EURODRIVE in such cases.

2.10.2 Exterior corrosion protection

The following measures are taken for exterior corrosion protection:

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

2.10.3 Packaging

Standard packaging

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

Use: Land transport

Long-term packaging

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

Use: Sea transport and/or for extended storage

2.10.4 Storage conditions

NOTICE

Improper storage may result in damages to the gear unit.

Possible damage to property.

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

INFORMATION

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

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

INFORMATION

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

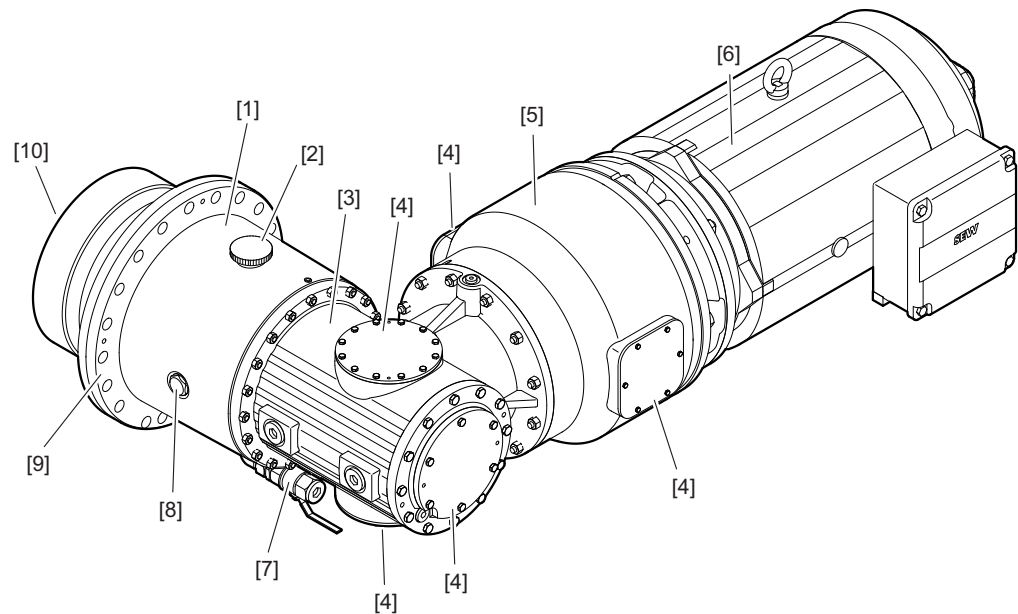
3 Gear unit structure

3.1 Overview of gear unit and mount-on components

The gear unit consists of a combination of:

- P.. planetary gear unit
- Primary gear unit: X1KP.. bevel-helical gear unit

The following figure shows an example of the gear unit with hollow shaft and shrink disk as well as the mount-on components.



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- | | |
|------------------------------|----------------------|
| [1] Planetary gear unit | [2] Breather |
| [3] Helical-bevel gear units | [4] Inspection cover |
| [5] Motor adapter | [6] Driving motor |
| [7] Oil drain valve (option) | [8] Oil sight glass |
| [9] Mounting flange | [10] Shrink disk |

INFORMATION

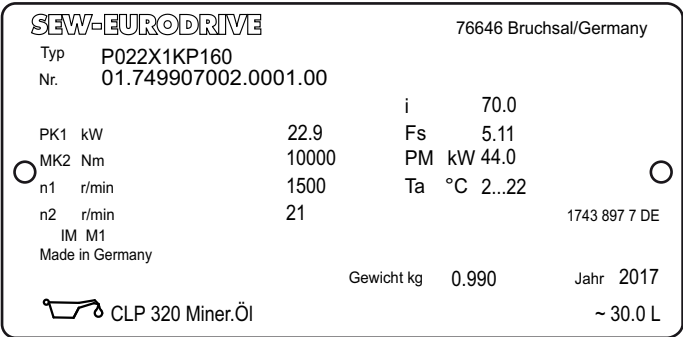


The planetary gear unit and the helical-bevel gear unit have a **common** oil chamber.


3.2 Nameplate and type designation

3.2.1 Nameplate

The following example shows the structure of the nameplate.



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Type		Type designation
No.		Serial number
P_{K1}	kW	Operating power on the input shaft (HSS)
M_{K2}	Nm	Gear unit output torque
n_1	rpm	Input speed (HSS)
n_2	rpm	Output speed (LSS)
i		Exact gear unit ratio
F_s		Service factor
P_M	kW	Nominal motor power
T_a	°C	Deviation from standard temperature range (–20 °C – +40 °C)
Weight	kg	Weight of the gear unit
		Oil grade and viscosity class/approx. Oil fill
Year		Year of manufacture
IM		Mounting position

3.2.2 Type designation

The gear unit type designation is structured as follows:

PHF072 X1KP220	
P..	P.. series planetary gear unit
PH..	Foot-mounted version, hollow shaft with shrink disc
PF..	Flange-mounted design, solid shaft
PHF..	Flange-mounted design, hollow shaft with shrink disc
072	Size
X1KP	X series helical-bevel gear unit
220	Size

3.2.3 Abbreviations for output shaft designs

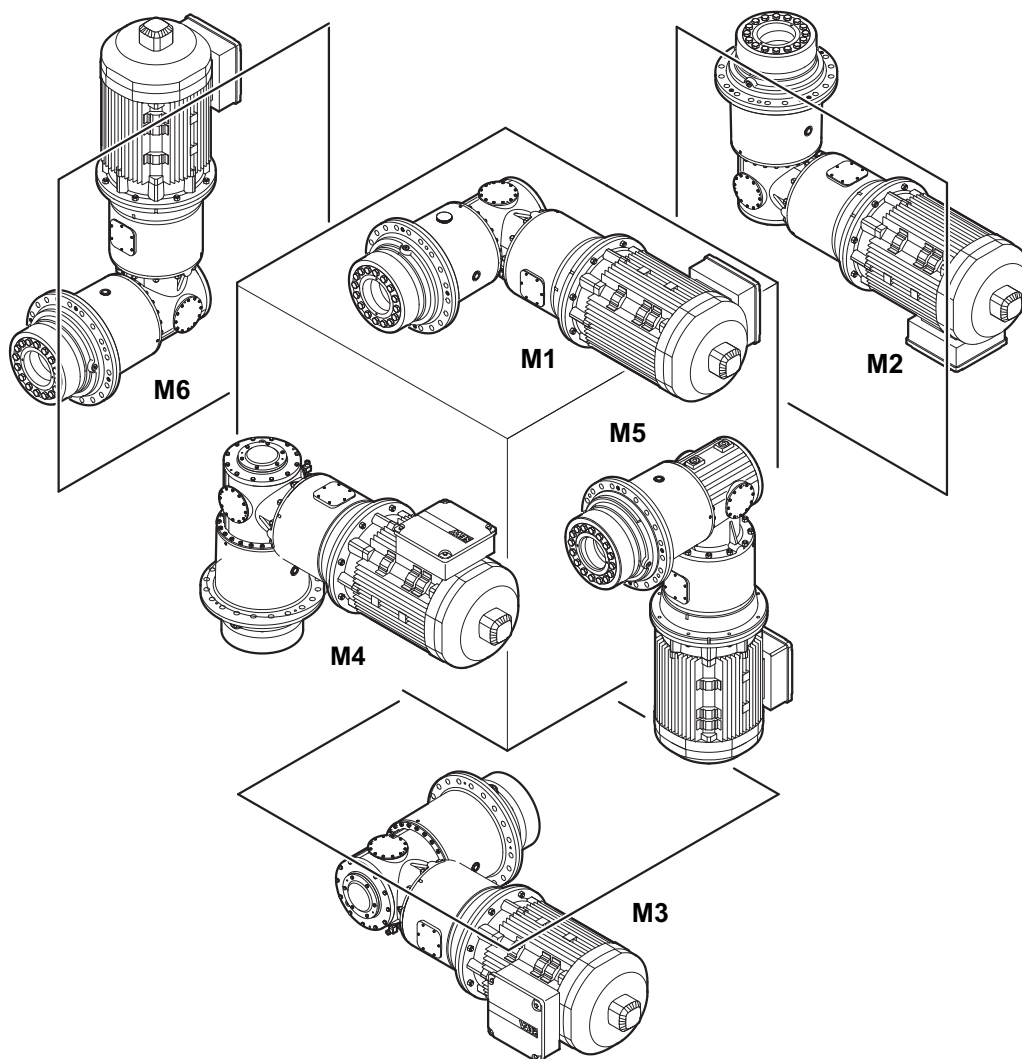
Gear unit design	Abbreviation	Meaning
Foot-mounted design (solid shaft)	P	<ul style="list-style-type: none"> • Solid shaft with key • Solid shaft with 2 keys (optional)
	PR	Solid shaft with key
	PL	Splined solid shaft
Flange-mounted design (solid shaft)	PF	<ul style="list-style-type: none"> • Solid shaft with key • Solid shaft with 2 keys (optional)
	PRF	Solid shaft with key
	PLF	Splined solid shaft
Foot-mounted design (hollow shaft)	PH	Hollow shaft with shrink disc
	PV	Splined hollow shaft
Flange-mounted design (hollow shaft)	PHF	Hollow shaft with shrink disc
	PVF	Splined hollow shaft

3.2.4 Additional features of gear units

Designation	
/T	With torque arm

3.3 Mounting position

The mounting position defines the spatial orientation of the gear unit housing and is designated **M1..M6**.



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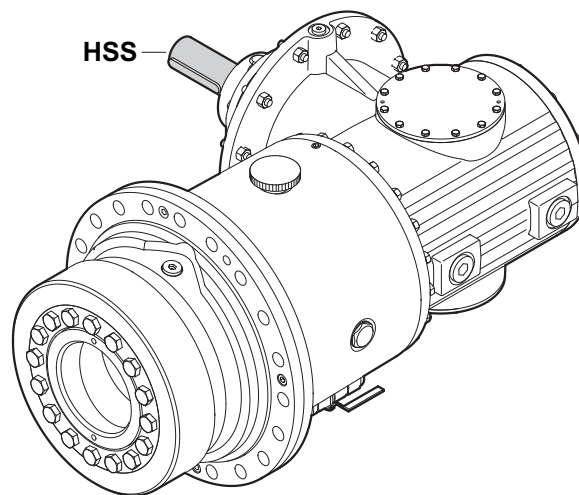
3.4 Input and output shafts

There are 2 types of shafts:

- High-speed shaft (**HSS**), usually an input shaft
- Low-speed shaft (**LSS**), usually an output shaft

3.4.1 Input shaft

The input shaft (HSS) is provided with a closed keyway according to DIN 6885/T1 and a center bore according to DIN 332. The matching key according to DIN 6885/T1 - form A is included in the scope of delivery.

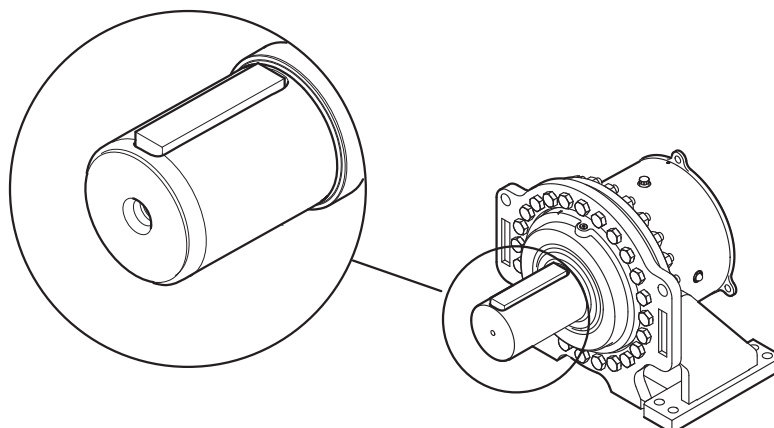


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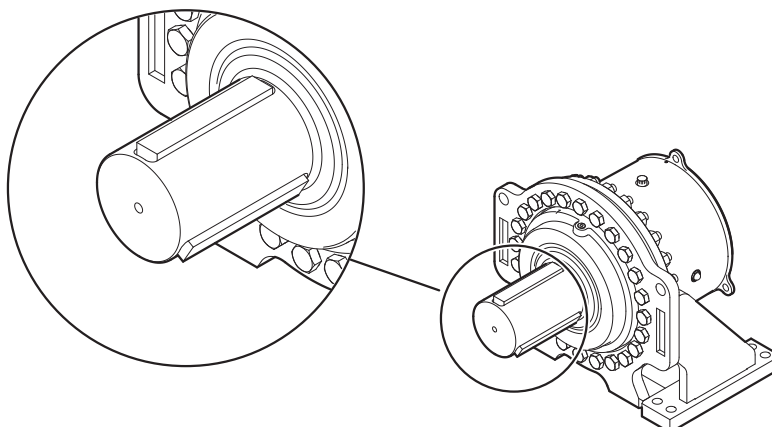
3.4.2 Output shaft

The (LSS) output shaft of the planetary gear unit can have the following design as standard:

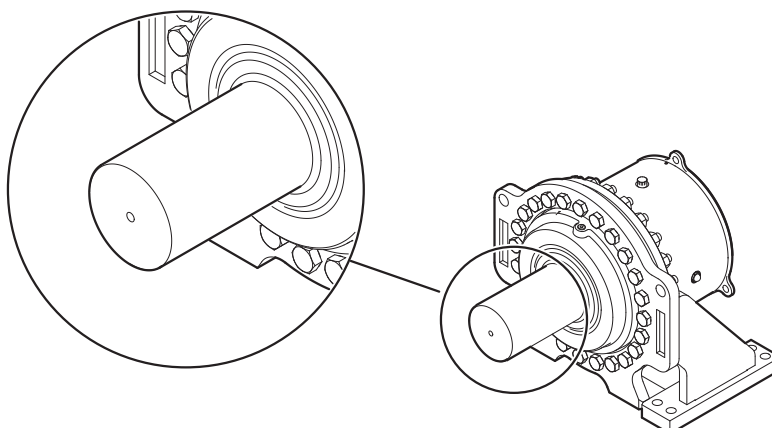
P.. solid shaft with key



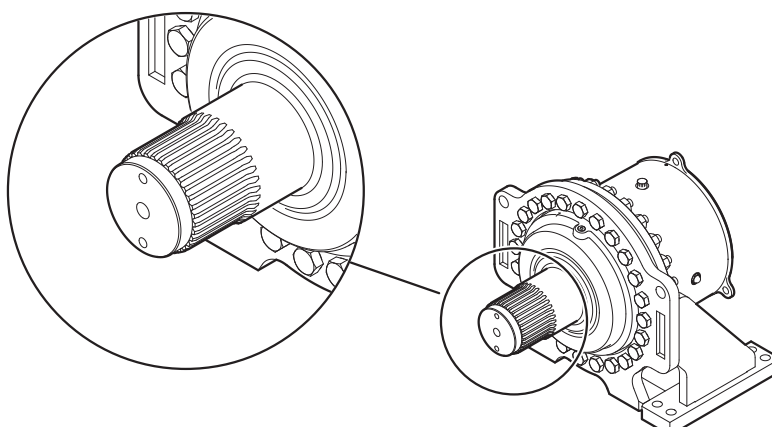
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P.. solid shaft with 2 keys

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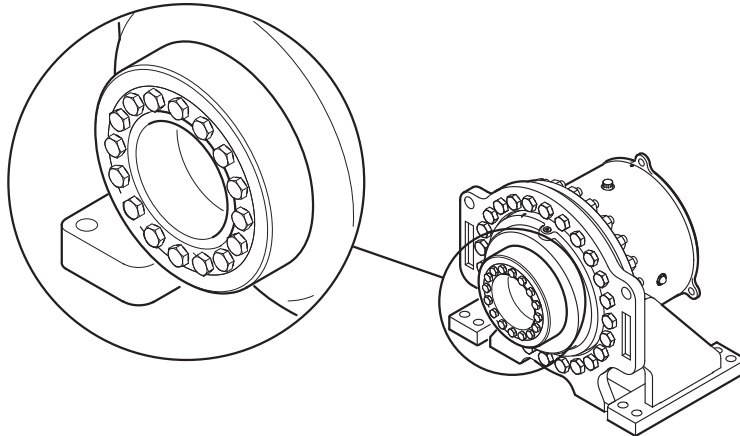
PR.. smooth solid shaft

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PL.. splined solid shaft

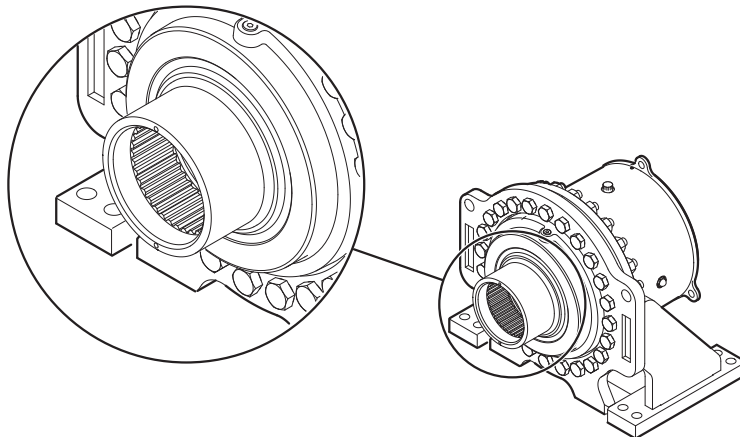
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PH.. hollow shaft with shrink disk



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PV.. splined hollow shaft



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3.5 Oil expansion tank /ET

The oil expansion tank is designed to compensate for oil volume variations in the system caused by temperature fluctuations. When the gear unit temperature increases, the oil expansion tank absorbs some of the increasing oil volume and feeds it back to the gear unit as the temperature goes down, which means the gear unit is always completely filled with oil.

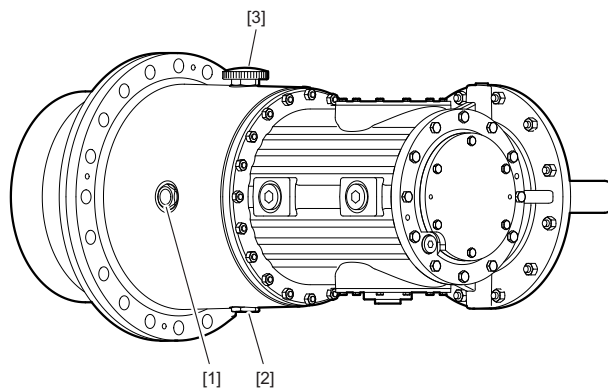
Based on the oil level specified by SEW-EURODRIVE, the oil expansion tank is designed to compensate the oil volume change within the permitted operating temperature range. A temperature decrease below the permitted temperature range causes the oil expansion tank to be completely emptied and air being sucked into the gear unit. This might result in insufficient lubrication and a malfunction of the gear unit. An increase above the permitted temperature range causes an overfilling of the expansion tank and oil might leak from the gear unit. During operation, any oil level above the level specified by SEW-EURODRIVE is permitted as long as there is oil in the expansion tank and the oil expansion tank does not overflow. During operation, the oil level must not be below the min. marking on the oil dipstick.

3.6 Types of lubrication

Depending on the mounting position of the planetary gear unit, two different standard lubrication variants are possible.

3.6.1 Splash lubrication for horizontal mounting positions: M1/M3

The gear unit is half filled with oil. Gearing and bearing parts that are not immersed in the oil bath are lubricated by splashing oil. The oil level is checked at the oil sight glass on the housing gear rim. The oil drain plug [2] can be replaced with an oil drain valve as an option. Oil is filled into the gear unit through the bore in which the breather [3] is installed. The breather [3] must be removed before you fill in oil.



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3.6.2 Bath lubrication for vertical mounting positions: M2/M4

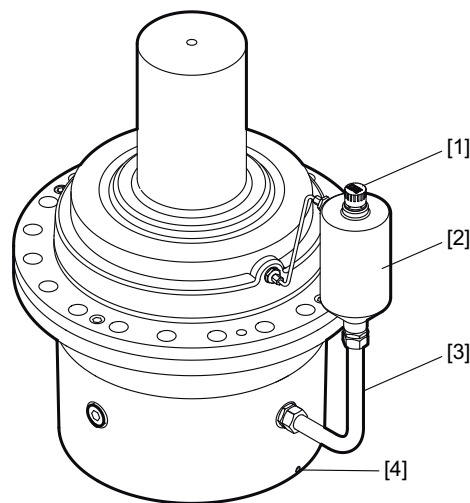
The gear unit is (almost completely) filled with oil. All tooth engagement or bearing points are immersed in the oil bath completely or partly.

Mounting position M2

Standard lubrication type with oil expansion tank:

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

Standard design:

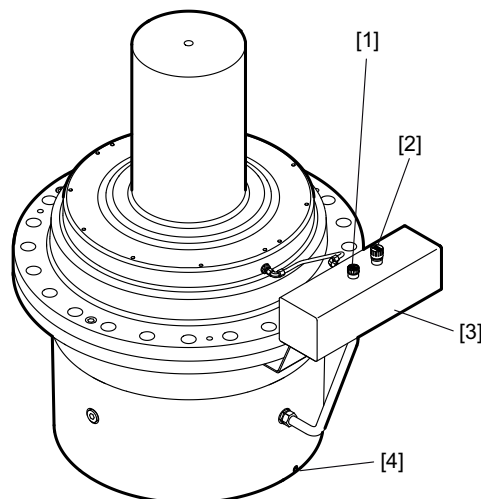


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- [1] Oil dipstick with breather
[2] Oil expansion tank

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

Optional design:



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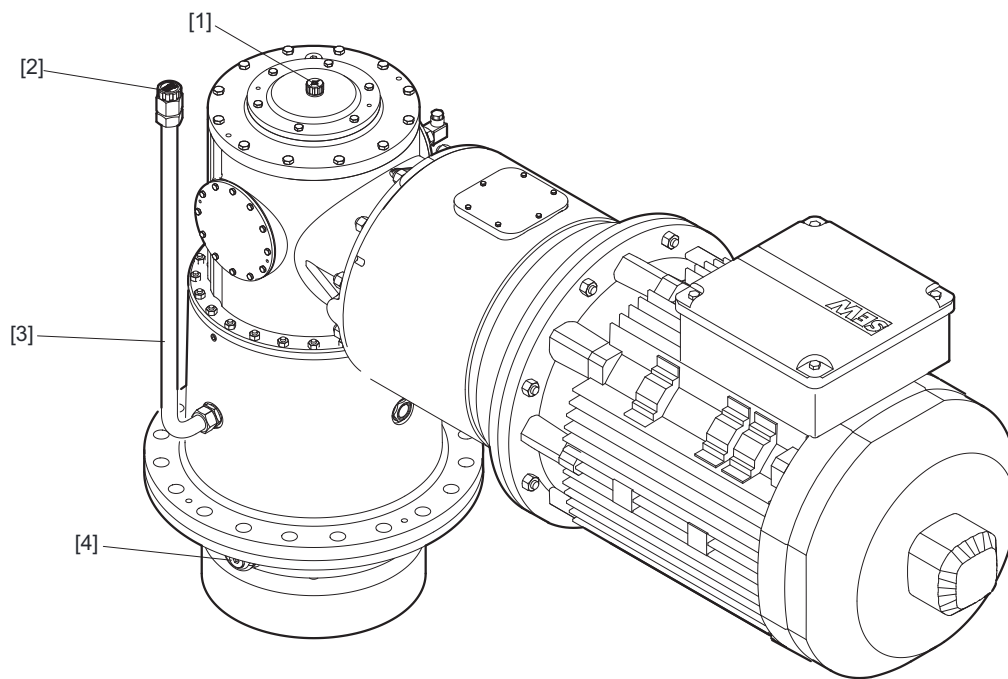
- [1] Oil dipstick
[2] Breather

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

Mounting position M4

Standard lubrication type without oil expansion tank:

- Oil level is checked using an oil dipstick
- Separate breather
- Oil is filled in via the riser pipe



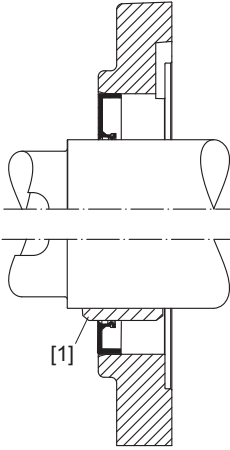
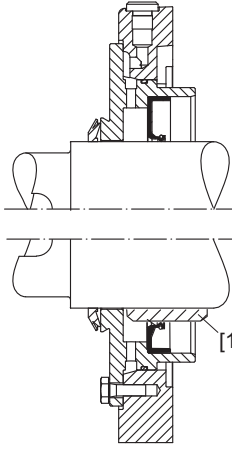
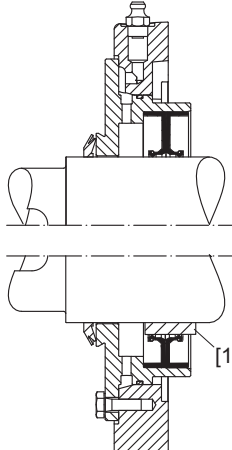
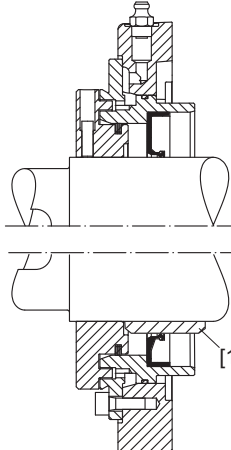
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- [1] Breather
[2] Oil dipstick

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

3.7 Sealing system

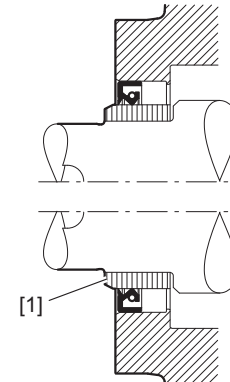
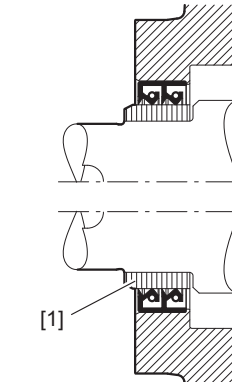
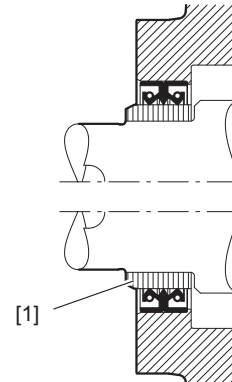
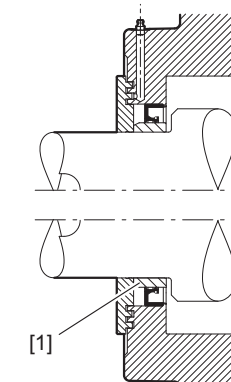
3.7.1 Input shaft

Standard	Dust-proof	Dust-proof Regreasable	Radial labyrinth seal (Taconite) Regreasable
Single oil seal with dust protection lip	Single oil seal with dust protection cover	Double oil seal with dust protection cover	Single oil seal with radial labyrinth seal.
• Normal environment	• Medium dust load with abrasive particles	• High dust load with abrasive particles	• Very high dust load with abrasive particles
			

[1] Optional with oil seal sleeve

3.7.2 Output shaft

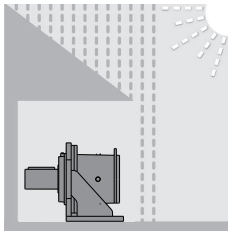
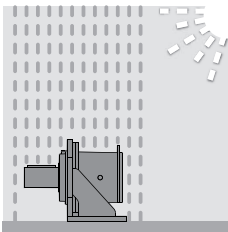
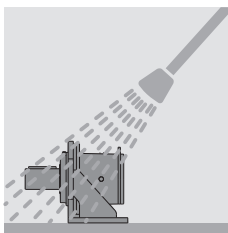
The following tables show the standard input sealing system for horizontal and vertical mounting positions.

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

3.8 Coating and surface protection systems

The following tables give an overview of coating and surface protection systems.

Used as surface protection under typical ambient conditions, corrosivity category DIN EN ISO 12944-2.

OS 1 low environmental pollution	
	Suited for environments prone to condensation and atmospheres with low humidity or contamination, such as outdoor applications under roof or with protection, unheated buildings where condensation can build up. According to corrosivity category: C2 (low)
Sample applications	<ul style="list-style-type: none"> • Systems in saw mills • Agitators and mixers
Condensation test ISO 6270	120 h
Salt spray test ISO 7253	–
OS 2 medium environmental pollution	
	Suited for environments with high humidity or moderate atmospheric contamination, such as applications outdoors subject to direct weathering. According to corrosivity category: C3 (moderate)
Sample applications	<ul style="list-style-type: none"> • Applications in gravel plants • Cableways
Condensation test ISO 6270	120 h
Salt spray test ISO 7253	240 h
OS 3 high environmental pollution	
	Suited for environments with high humidity and occasionally severe atmospheric and chemical contamination. Occasional acidic or caustic wet cleaning. Also for applications in coastal areas with moderate salt load. According to corrosivity category: C4 (high)
Sample applications	<ul style="list-style-type: none"> • Port cranes • Sewage treatment plants • Mining applications
Condensation test ISO 6270	240 h
Salt spray test ISO 7253	480 h



INFORMATION

- Standard top coat color RAL 7031, can deviate depending on the order, see order documents.
- Colors according to RAL –Yes
- Water and hand perspiration repelling rust preventive for external preservation applied to uncoated parts, shaft ends/flanges.
- Sheet metal parts (such as protection covers) are painted in RAL 1003 as standard.
- Higher quality surface protection systems are available on request.

3.9 Accessories**3.9.1 Visual oil level check**

As standard, planetary gear units in mounting position M1 and M3 are equipped with 2 oil sight glasses. For mounting position M5 and M6, the gear unit has 1 oil sight glass.

In the vertical mounting positions M2 and M4, the oil level check is performed using the oil dipstick.

3.9.2 Gear unit venting

A breather serves to prevent non-permitted pressure generated by heating during operation. The gear units are normally equipped with a breather with a filter mesh of 2 µm.

3.9.3 Oil drain

The gear unit is equipped with an oil drain plug as standard. An oil drain valve may be provided as option. This valve allows for a drain pipe to be easily attached when changing the gear unit oil.

4 Structure of options

4.1 Torque arm /T

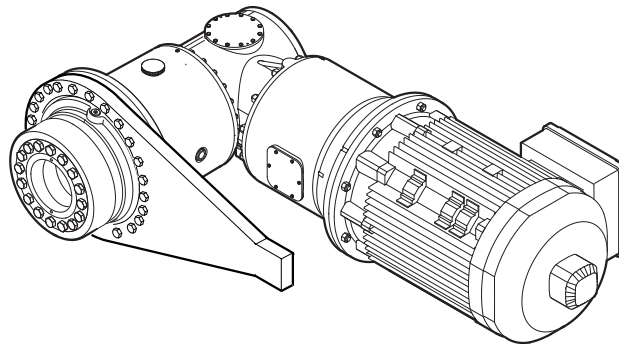
A torque arm is available to support the reaction torque of solid and hollow shaft gear units in the shaft-mounted design.

Depending on the load direction and type of the customer load bearing point, the reaction torque acts as a tensile or compressive force.

4.1.1 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 figure shows a sample structure of a planetary gearmotor with a torque arm on one side.



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4.2 Motor adapter /MA

Motor adapters [1] are available for mounting

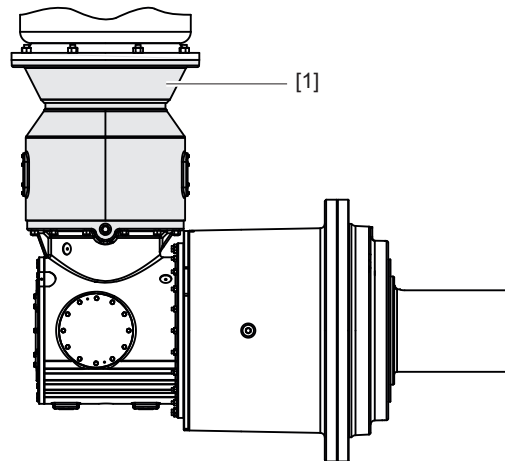
- **IEC (B5) motors** of sizes 100 to 355
- **NEMA ("C" face) motors** of sizes 182 – 449

INFORMATION



- The gear unit must be mounted in such a way that liquids cannot enter the motor adapter (HSS end) and accumulate there. Otherwise, the oil seal can be damaged, and subsequent damage can create a possible ignition source.
- An elastic claw coupling is included in the delivery.

The following figure shows an example of the motor adapter [1] connected to the gear unit:



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4.3 Temperature sensor/PT100

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

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

4.4 Temperature switch /TSK

The TSK temperature switch is used with oil supply systems for circulation cooling. It is provided with two fixed switching points (60 °C and 90 °C) for controlling and monitoring the system.

The temperature switch is integrated into the circuit of the oil supply system as follows:

- The cooling system is activated when the oil temperature reaches 60 °C.
- Warning signal or disconnection of the gear unit when the oil temperature exceeds 90 °C (usually a sign of malfunction in the oil supply system)

To guarantee a long service life and functioning under all conditions, it is recommended to use a relay in the power circuit instead of a direct connection through the temperature switch.

The temperature switch is located in the oil sump of the gear unit. The exact position depends on the gear unit design and shaft position.

4.5 Oil-air cooler for splash lubrication /OAC**INFORMATION**

For descriptions on the unit structure, refer to the addendum to the operating instructions "Oil-Air Cooler for Splash Lubrication /OAC".

4.6 Oil-air cooler for pressure lubrication /OAP**INFORMATION**

For descriptions on the unit structure, refer to the addendum to the operating instructions "Oil-Air Cooler for Pressure Lubrication /OAP".

4.7 Oil-water cooler for splash lubrication /OWC**INFORMATION**

For descriptions on the unit structure, refer to the addendum to the operating instructions "Oil-Water Cooler for Splash Lubrication /OWC".

4.8 Oil-water cooler for pressure lubrication /OWP**INFORMATION**

For descriptions on the unit structure, refer to the addendum to the operating instructions "Oil-Water Cooler for Pressure Lubrication /OWP".

5 Installation/assembly

5.1 Required tools/resources

Not included in the delivery:

- Set of wrenches
- Torque wrench
- Mounting device
- Compensation elements (washers, spacer rings), if necessary
- 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 mounting onto/removal from the machine shaft
- Fasteners for the gear unit base

5.2 Tolerances

5.2.1 Planetary gear unit

INFORMATION



Refer to the dimension sheet in your order documents for the tolerances of the interfaces for gear unit connection.

5.3 Important information

Read the following notes prior to installation/mounting.



⚠ WARNING

Risk of crushing if the drive starts up unintentionally.

Severe or fatal injuries.

- Work on the gear unit only when the machine is not in use. Secure the drive unit against unintentional power-up. Attach an information sign near the ON switch to warn that the gear unit is being worked on.



⚠ WARNING

A customer machine that is not appropriately secured can fall during gear unit installation or removal.

Severe or fatal injuries.

- Protect the operator's machine against unintentional movement when installing or removing the gear unit.
- Before releasing shaft connections, be sure that there are no active torsional moments present (tensions within the system).



⚠ WARNING

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

Serious injury.

- Let the gear unit cool down before you start working on it.
- Carefully remove the oil level plug and the oil drain plug.



⚠ CAUTION

Danger due to unsecured mount-on components, such as keys.

Possible injury to persons due to falling parts.

- Install appropriate protective devices.
- Secure the mount-on components.



⚠ CAUTION

Risk of slipping due to lubricant leaking from damaged seals.

Minor injuries.

- Check the gear unit and mount-on components for leaking lubricant.



⚠ CAUTION

Risk of injury due to protruding parts.

Minor injuries.

- Gear units and mount-on components must not protrude into footways.

NOTICE

Starting up the gear unit below the permitted ambient temperature may damage the unit.

Possible damage to property.

- Before startup, the oil must be heated up to the specified temperature.

NOTICE

Improper installation and assembly can damage the gear unit.

Possible damage to property.

- Observe the following notes.

- Strictly observe the safety notes in the individual chapters.
- Planetary gear units are delivered without oil fill as standard.
- The planetary gear unit and the helical-bevel gear unit have a common oil chamber.
- The most important technical data is provided on the nameplate.

Additional data relevant for operation is available in drawings, on the order confirmation or any order-specific documentation.

- Do not change the mounting position without prior consultation with SEW-EURODRIVE. The warranty will become void without prior consultation.

An oil expansion tank and/or an oil riser pipe are required if you change to a vertical mounting position. Adjust the lubricant fill quantities and the position of the breather accordingly.

- 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 at standstill. Secure the drive unit against unintentional power-up. Attach 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 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 stainless steel). Also fit the bolts with plastic washers. Always ground the gear unit housing.
- It is important that only authorized personnel is allowed to 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 protective devices, avoid heat build-up. The user must ensure that foreign objects do not impair the function of the gear unit (e.g. falling objects or coverings).
- Protect the gear unit from direct cold air currents. Condensation may cause water to accumulate in the oil.
- For gear units that are filled with oil at the factory, check to see that the breather is installed before you start up the gear unit.
- For use in damp areas or outdoors, the gear units can be supplied with a suitable painting. Repair any damage to the paint work (e.g. on the breather).

5.4 Prerequisites for installation

Check that the following conditions have been met:

- The information on the motor's nameplate must match the voltage supply system.
- The drive has not been damaged during transportation or storage.
- The ambient temperature matches the information in the order documents.
- No harmful oils, acids, gases, vapors, radiation etc. in the vicinity

NOTICE

Danger due to insufficiently cleaned flange surfaces.

Possible damage to property.

- Clean the output shafts and flange surfaces thoroughly to ensure they are free of anti-corrosion agents, contamination or similar. Use a standard solvent. Do not let the solvent come into contact with the sealing lips of the oil seals.
-

5.4.1 Extended storage

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

Replace the breather with a screw plug.

5.5 Gear units delivered without oil fill (standard)

Observe the notes in chapter "Important information" (→ 39).

5.5.1 General information

The gear unit is delivered without oil fill as standard.



⚠ WARNING

Risk of crushing if the drive starts up unintentionally.

Severe or fatal injuries.

- Work on the gear unit only when the machine is not in use. Secure the drive unit against unintentional power-up. Attach an information sign near the ON switch to warn that the gear unit is being worked on.

NOTICE

Improper oil filling may cause damage to the gear unit.

Possible damage to property.

- Observe the following notes.
- Fill the oil only when the gear unit is in the intended mounting position.
- Make sure the oil has ambient temperature when filling it into the gear unit.
- For gear units with external supply pipes, e.g. oil supply systems, establish the connections prior to filling the oil.
- Observe the additional notes depending on the lubrication type in the following chapters.
- Fill the gear unit with the oil grade and oil quantity specified on the nameplate. The oil quantity specified on the nameplate is an approximate quantity. The mark on the oil sight glass or oil dipstick is the decisive indicator of the correct oil quantity.
When additional attachments, e.g. an oil supply system, are mounted to the gear unit, the required oil fill quantity is higher. In this case, observe the respective operating instructions "Oil Supply System" by SEW-EURODRIVE. For further information, refer to chapter "Changing the oil" (→ 92).
- Check the oil level using the oil sight glass or oil dipstick. For additional information, refer to chapter "Checking the oil level" (→ 89).
- Use a filling filter to fill the oil into the gear unit (max. filter mesh 25 µm).

5.6 Gear units delivered with oil fill (option)

Observe the notes in chapter "Important information" (→ 39).

NOTICE

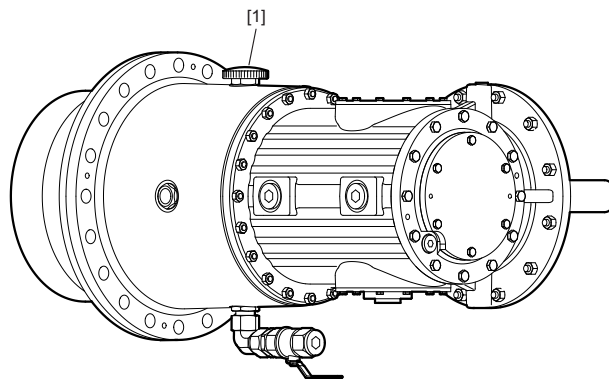
Improper startup can result in damage to the gear unit.

Possible damage to property.

- It is important that gear units with shaft end pump, motor pump or customer-installed cooling system are vented before taking them into operation the first time.

For gear units that are delivered with oil fill, the breather must be installed prior to startup. It is enclosed with the delivery.

The following figure serves as an example. The position of the breather is specified in the order documents.



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1. Remove the closing plug.
2. Insert the breather [1].
3. Check the oil level. Observe the information in chapter "Checking the oil level" (→ 89).

5.7 Installing the gear unit



⚠ WARNING

Danger due to insufficient attachment options on the part of the operator.

Severe or fatal injuries.

- Make sure that there are sufficient and suitable attachment options for the gear unit at the operator's machine before mounting the gear unit to the operator's machine.

NOTICE

An improper foundation may result in damage to the gear unit.

Possible damage to property.

- The foundation must be level and flat; the gear unit may not be deformed when the retaining screws are tightened. Irregularity of the surface must be leveled out appropriately.
- Observe the weight specified on the nameplate.

To ensure quick and successful mounting of a gear unit with foot mounting, the proper foundation should be selected and the mounting carefully planned in advance. Foundation drawings with all necessary construction and dimension details should be available.

To ensure quick and successful mounting of a gear unit with foot mounting, a suitable steel construction should be selected and the mounting carefully planned in advance. Foundation drawings with all necessary construction and dimension details should be available.

To prevent harmful vibrations and oscillations, ensure sufficient rigidity of the foundation or the steel construction during installation of the gear unit with foot or flange mounting. The foundation and steel construction must be dimensioned according to the weight and torque of the gear unit, 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 chapter "Gear unit mounting" (→ 45).

5.7.1 Foot-mounted gear units

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

Size	Screw/nut	Tightening torque screw/nut Strength class 8.8	Amount
		Nm	
P.012	M20	464	8
P.022			
P.032	M24	798	
P.042	M30	1597	
P.052	M36	2778	
P.062			
P.072	M42	3995	
P.082			
P.092	M48	6022	
P.102			

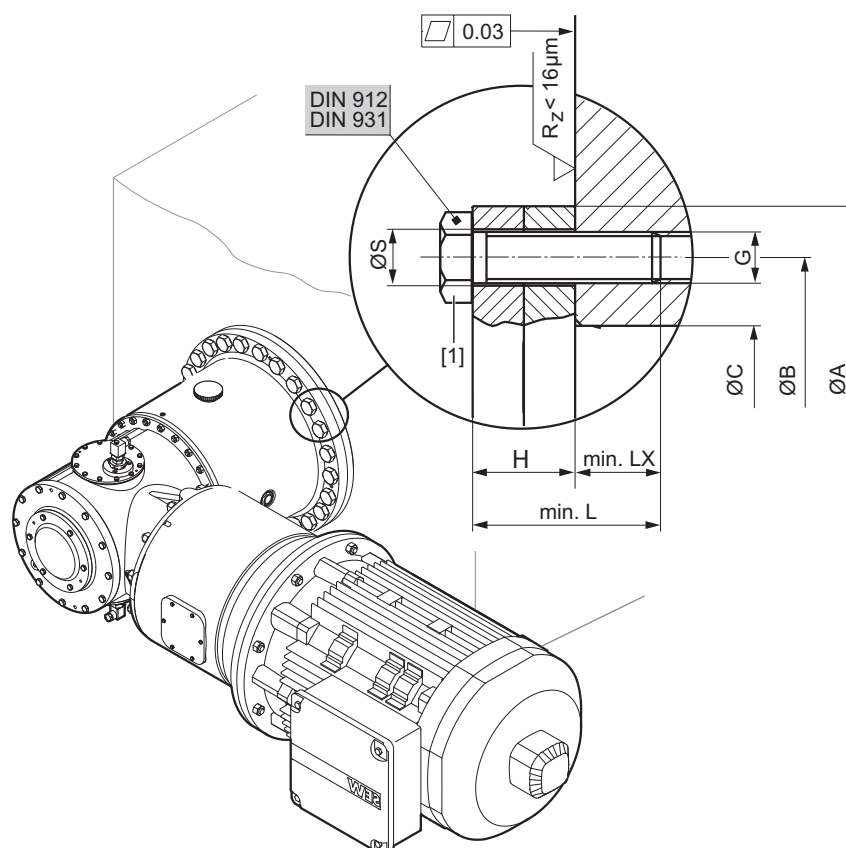
INFORMATION



Do not lubricate the bolts connection during assembly.

5.7.2 Flange-mounted gear units

The following figure shows an example of how flange-mounted gear units are installed. Retaining screws are not included in the scope of delivery.



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INFORMATION



The tightening torques listed in the following table are based on the friction coefficient for threads and mounting surface of $\mu = 0.14$.

Screws are not included in the delivery. Adjust the tightening torques to the new friction conditions.

Only use the following tools for the installation:

- Signal-generating torque wrench
- Motorized torque wrench with dynamic torque measuring
- Torque-controlled, gradual hydraulic tools

The following values in the table apply to steel constructions.

Size	Thread	Amount	Tightening torque	Dimensions in mm							Strength classes	Screws EN ISO
			Nm	Ø S	H	min. L	min. LX	Ø A	Ø B	Ø C		
P.012	M20	20	555	22	41.5	73.5	32	450	410	370 ₁₉	10.9	4017 4762
P.022	M20	24	555	22	48	84	36	500	460	410 ₁₉		
P.032	M24	20	960	26	50	84	34	560	510	460 ₁₉		
P.042	M30	20	1910	33	64	114	50	620	560	480 ₁₉		
P.052	M30	24	1910	33	64	114	50	650	590	530 ₁₉		
P.062	M36	24	3320	39	74	134	60	760	690	610 ₁₉		
P.072	M36	24	3320	39	84	144	60	840	770	690 ₁₉		
P.082	M42	24	5310	45	84	154	70	920	840	750 ₁₉		
P.092	M42	24	5310	45	90	160	70	950	870	800 ₁₉		
P.102	M42	24	5310	45	100	180	80	1050	960	850 ₁₉		

5.7.3 Tightening torques for retaining screws

Tighten the screws of gear unit mount-on parts and protection covers using the following tightening torque.

INFORMATION



The tightening torques do not apply to mounting types like torque arm, flange-mounted gear unit, hollow shaft with shrink disk etc. Those are described in the individual chapters.

Screw/nut	Tightening torque Strength class 8.8 Nm
M5	6,5
M6	11
M8	27
M10	54
M12	93

INFORMATION



Do not lubricate the bolts connection during assembly.

5.7.4 Aligning the shaft axis

⚠ WARNING



Shafts can break if the shaft axis is not aligned accurately.

Severe or fatal injuries.

- Refer to the separate operating instructions regarding the requirements of the coupling.

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 misalignment. When doing so, you should also consult the special operating instructions regarding the requirements of the couplings, for example.

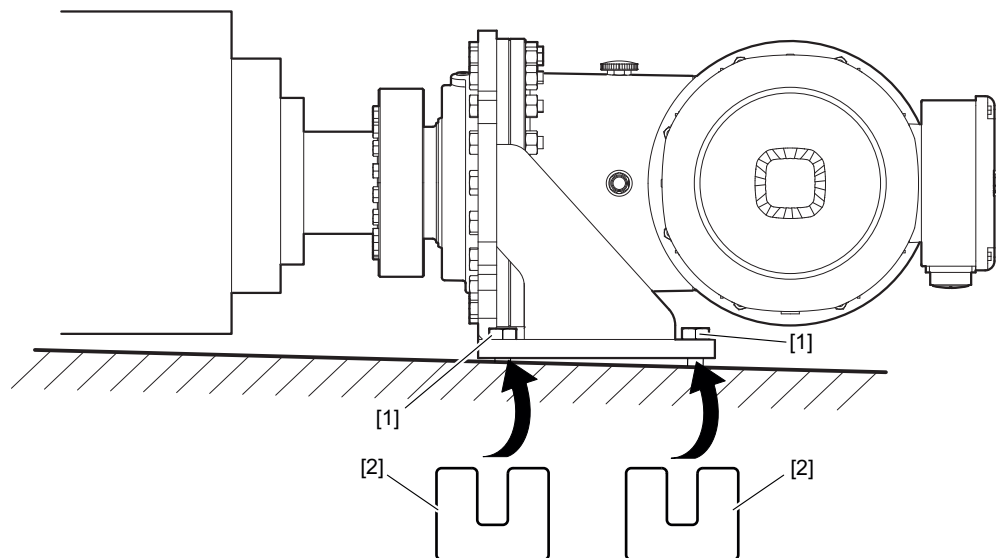
5.8 Gear units in foot-mounted design with rigid connection at the output shaft

In case of gear units with rigid connection between the machine shaft and the output shaft, improper installation may lead to constraining forces at the output shaft. As shaft misalignments cannot be compensated for rigid shaft connections, you have to properly compensate mounting tolerances while mounting the gear unit. Rigid shaft connections are:

- Output shaft as hollow shaft with shrink disk
- Output shaft as splined hollow shaft
- Output shaft with flange coupling with cylindrical interference fit /FC-S
- Output shaft with flange coupling with keyway /FC-K

Proceed as follows to mount the gear unit:

1. Mount the shaft connection at the output shaft as described in the following chapters.
2. If there is a gap between foundation and mounting surface of the gear unit foot, compensate with shims [2] before tightening the retaining screws [1] at the gear unit foot.
3. Tighten the retaining screws [1] at the gear unit foot. Observe the tightening torques in chapter "Foot-mounted gear units" (→ 45).



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NOTICE

Static overdetermination of the gear unit might result in damage to the gear unit.

Possible damage to property.

- Make sure the gear unit is not statically overdetermined. A statically overdetermined gear unit might result in damages to the gear unit.

5.9 Gear units with solid shaft

INFORMATION



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

5.9.1 Assembling the input and output components

NOTICE

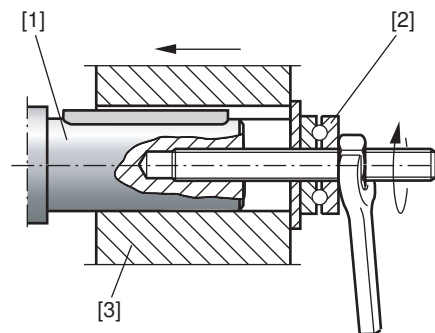
Bearings, housing or shaft may be damaged due to improper assembly.

Possible damage to property.

- Always use a mounting device for installing input and output elements. Use the threaded centering bore 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.
- If belt pulleys are used, make sure the belt is tensioned correctly in accordance with the manufacturer's instructions.

Installation with mounting device

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

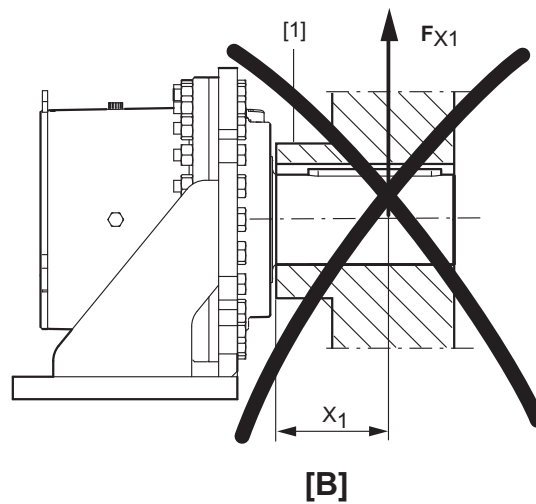
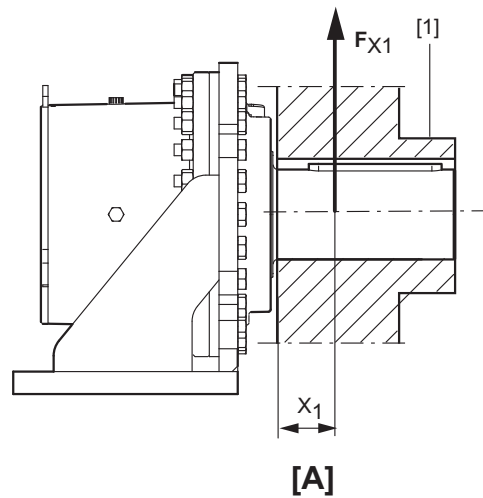


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- [1] Gear unit shaft end
- [2] Thrust bearing
- [3] Coupling hub

Avoid excessive overhung loads

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



- [1] Hub
- [A] Correct
- [B] Incorrect

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INFORMATION

Mounting is easier if you first apply lubricant containing MoS₂ to the output element and/or heat it up briefly (to 80 – 140° C).

5.10 Output shaft as hollow shaft with shrink disk**INFORMATION**

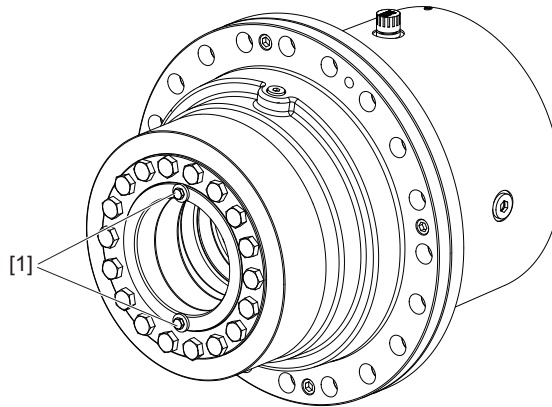
Ensure that the dimensions of the machine shaft correspond to the SEW-EURODRIVE specifications.

INFORMATION

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

INFORMATION

Note that the shrink disk is secured with 2 screws [1] on delivery. Remove the screws prior to assembly.

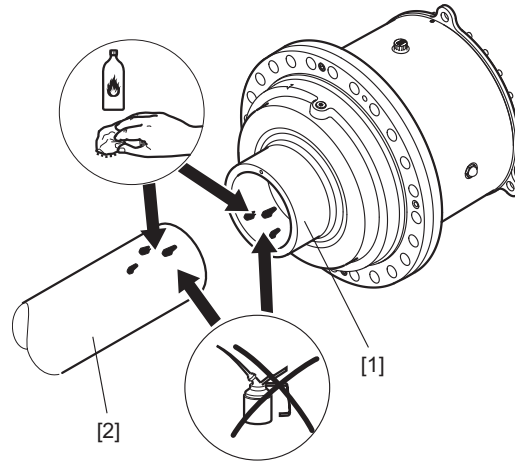


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5.10.1 Assembly

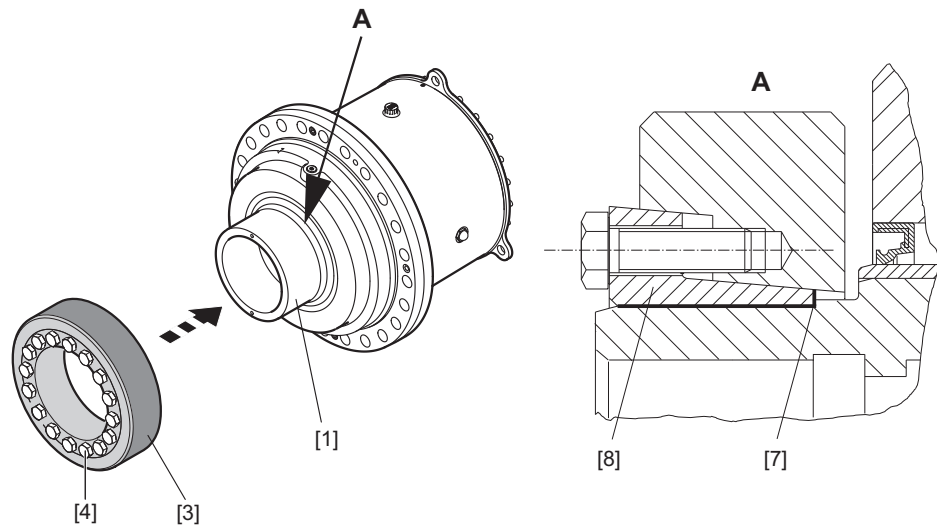
Observe the notes in chapter "Important information" (→ 39).

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



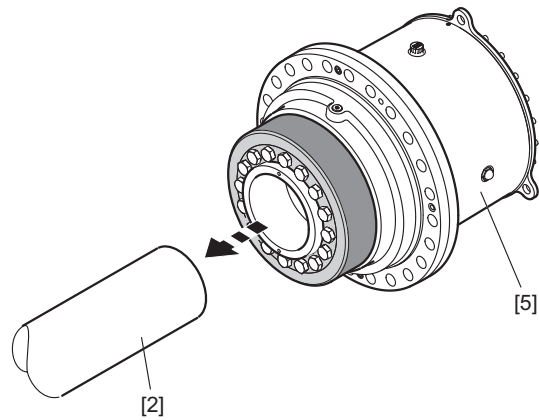
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2. **▲ CAUTION!** The loose shrink disk could slip. Risk of injury to persons and damage to property. Secure the shrink disk against slipping. Slide the shrink disk with untightened screws onto the hollow shaft [1] and position the inner ring of the shrink disk [8].
3. **NOTICE!** Tightening the locking screws [4] without installed machine shaft may result in the hollow shaft being deformed. Possible damage to property. Only tighten the locking screws [4] with the machine shaft [2] installed. Check the correct position of the shrink disk [3]. The shrink disk is positioned correctly when it is in contact with the shaft shoulder [7].



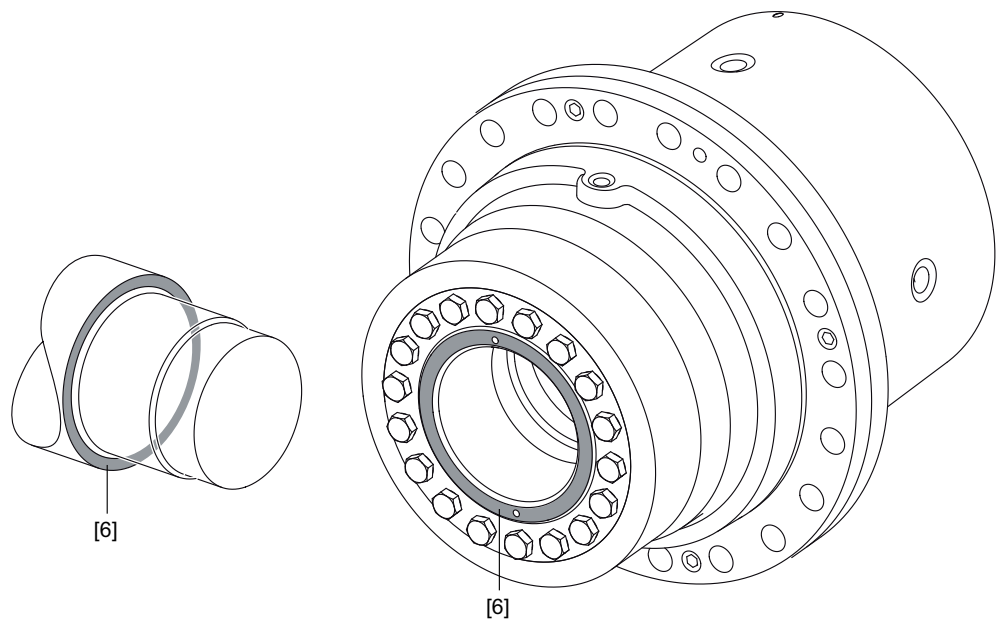
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4. Install the machine shaft [2], or push the gear unit [5] onto the machine shaft [2] to the stop. Carry out the individual installation steps slowly to allow the compressed air to escape around the outside of the shaft.



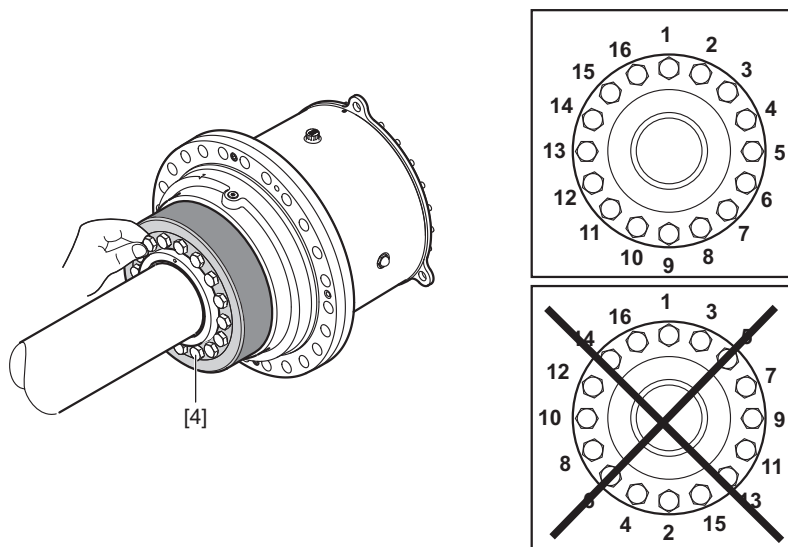
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5. To guarantee a complete torque transmission from the gear unit to the machine shaft, observe the following procedure during assembly. Push the gear unit onto the machine shaft until the contact surfaces [6] touch.



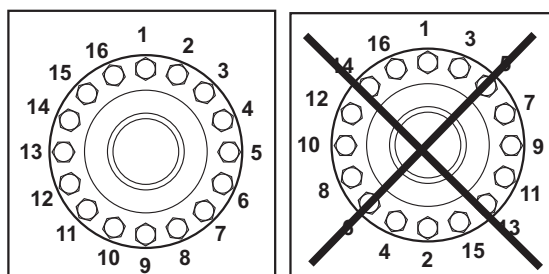
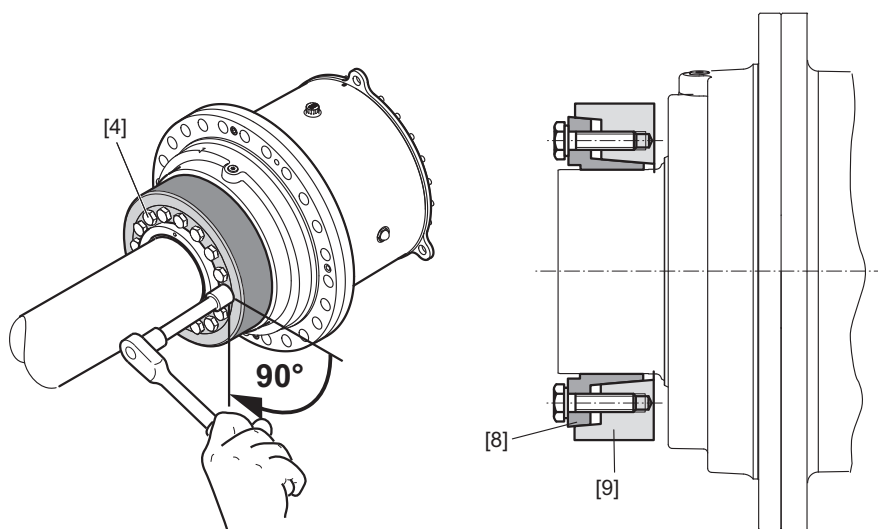
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6. First tighten the locking screws [4] manually. Then tighten all locking screws by working round equally (not in diametrically opposite sequence) in 1/4 turn increments.



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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.



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8. 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%
3181	P.012	M16	75500	290
	P.022	M16	95500	290
	P.032	M20	134000	570
	P.042	M20	194000	570
	P.052	M20	255000	570
	P.062	M24	405000	980
	P.072	M24	525000	980
	P.082	M24	720000	980
	P.092	M27	906000	1450
	P.102	M27	1160000	1450

INFORMATION



The front end surfaces of inner ring [8] and outer ring [9] need not necessarily be flush when the locking screws are tightened.

For gear units with hollow shaft with shrink disk, a protection cover may be installed as an option. The protection cover provides protection against touching the rotating output shaft.

⚠ CAUTION



Improper assembly of the protection cover may result in risk of injury due to rotating parts.

Possible injury to persons.

- After assembly, check to see that the protection cover is properly attached.

5.10.2 Removal



⚠ WARNING

Improper disassembly may cause the shrink disk and/or the gear unit to fall down.

Serious injury.

- Never completely unscrew the shrink disk locking screw.
- Secure the shrink disk and the gear unit against slipping.

NOTICE

Improper disassembly of the gear unit and machine shaft may damage bearings and other components.

Possible damage to property.

- You may only use the hollow shaft as a support for disassembly. Note that supporting on any other parts of the gear unit may damage the material.
- Shrink disks and corresponding parts of different gear units must not be swapped.

Observe the notes in chapter "Important information" (→ 39).

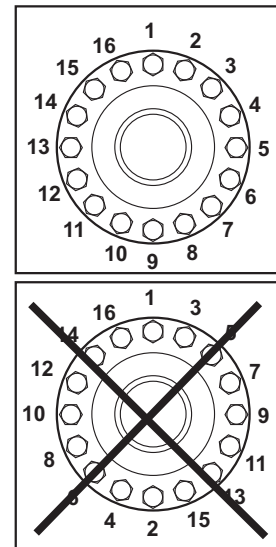
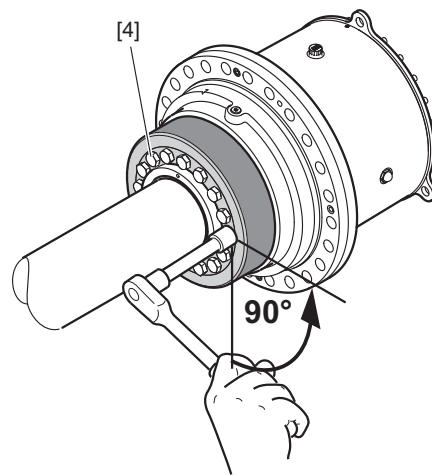
1. **NOTICE!** Improper loosening of the locking screws can lead to straining of the connecting surface. Possible damage to property.
Loosen the locking screws [4] by a quarter turn one after the other to avoid straining the connecting surface.

INFORMATION



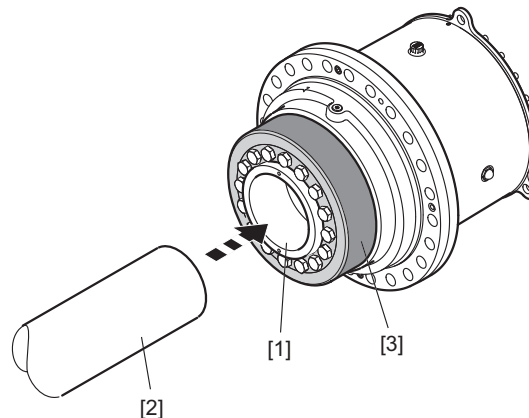
If the bevel (outer ring) [9] and the taper bushing (inner ring) [8] do not separate by themselves:

- Take the necessary number of locking screws and screw them evenly into the disassembly bores. Tighten the locking screws in several steps until the tapered bushing separates from the tapered ring.



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2. Remove the machine shaft [2] or pull the hub [1] off the machine shaft. If rust has formed on the shaft in front of the hub, you must remove the rust first.



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

5.10.3 Cleaning and lubrication

INFORMATION



You must perform the following steps carefully to ensure proper functioning of the shrink disk. Use only products that are comparable to the specified lubricant.

- If the tapered surfaces of the shrink disk are damaged, the shrink disk can no longer be used and must be replaced.
- Used shrink disks have to be disassembled and cleaned. The manufacturer has applied a solid lubricant to the tapered surfaces (for example Weicon "Anti-Seize"). Use "Anti-Seize" for regreasing undamaged tapered surfaces. Grease screw threads with Weicon "Anti-Seize".
- Use a solid lubricant with a friction coefficient of $\mu = 0.04$.

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

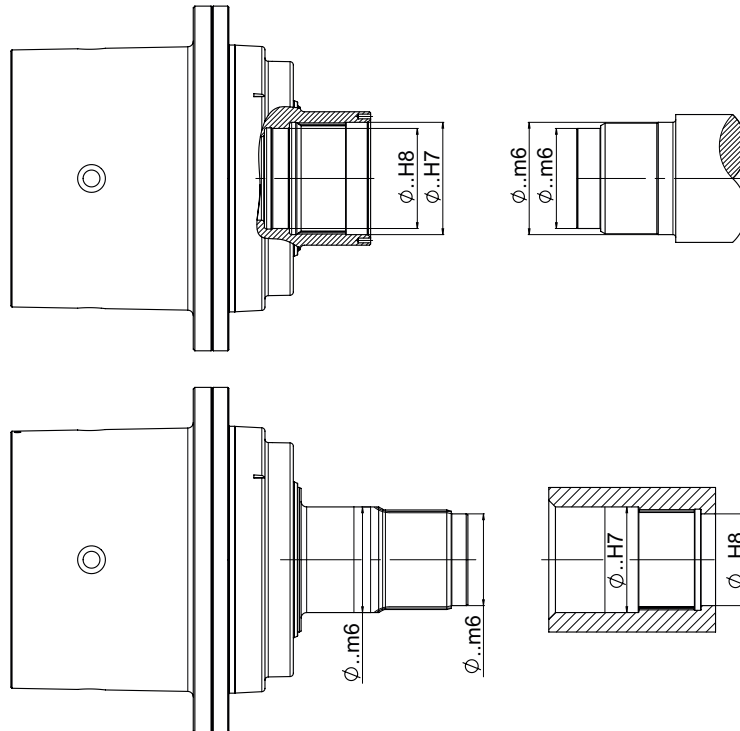
5.11 Gear unit with splining

5.11.1 Notes for mounting the gear unit



INFORMATION

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



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The specified tolerances for gear shaft and machine shaft correspond to the standard design. If requested by the customer, other tolerances of the gear shaft are possible.

NOTICE

Constraining forces can occur on the output shaft bearing due to the rigid connection between the machine shaft and the gear shaft. This may result in damages to the output shaft bearing and increased fretting corrosion in the connection between the machine shaft and the gear shaft.

Possible damage to property.

- The gear unit is usually foot or flange-mounted and used as bearing point when the machine shaft has no individual bearing or merely provides one bearing point. You have to provide for an accurate coaxial alignment with the bearing point.
- If the machine shaft has at least 2 bearing points, the gear unit should be connected merely to the machine shaft and supported with a torque arm. In order to prevent excess stress on the bearing, gear units with foot or flange mounting are to be avoided.

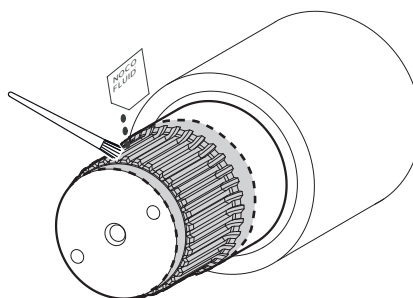
5.11.2 Mounting the gear unit onto the machine shaft**INFORMATION**

Make sure the dimensions of the machine shaft correspond to SEW-EURODRIVE specifications → see dimension sheet in your order documents.

Output shaft as a splined hollow shaft /..V

Observe the notes in chapter "Important information" (→ 39).

1. Apply some NOCO® fluid on the machine shaft around the centering seat and the splining.



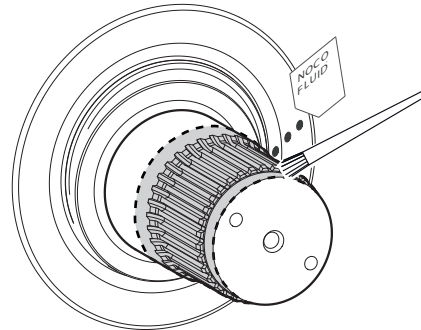
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2. Push the gear unit onto the machine shaft. The splining of the gear shaft must mesh with the splining of the machine shaft.
3. Make sure that the customer shaft is at the correct position in axial direction.

Output shaft as a splined solid shaft /..L

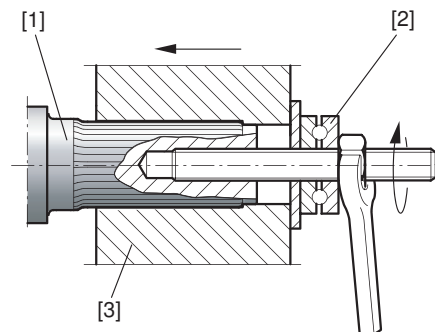
Observe the notes in chapter "Important information" (→ 39).

1. Apply some NOCO® fluid on the gear shaft around the centering seat and the splining.



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2. Push the gear unit onto the machine shaft. Use a mounting device, if necessary. The splining of the gear shaft must mesh with the splining of the machine shaft.



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- [1] Splined solid shaft
- [2] Thrust bearing
- [3] Coupling hub

3. Make sure that the customer shaft is at the correct position in axial direction.

5.11.3 Disassembling the gear unit from the machine shaft

NOTICE

Improper disassembly of the gear unit and machine shaft may damage bearings and other components.

Possible damage to property.

- You may only use the gear shaft as a support for disassembly. Note that supporting on any other parts of the gear unit may damage the material.

5.12 Torque arm

5.12.1 Notes on installation



⚠ WARNING

Insufficiently secured gear units can fall down during assembly/disassembly.

Severe or fatal injuries.

- Secure the gear unit during assembly/disassembly. Support the gear unit using appropriate tools.

NOTICE

Deforming the torque arm leads to constraining forces on the output shaft, which may negatively influence the service life of the output shaft bearings.

Possible damage to property.

- Do not deform the torque arm.

NOTICE

Strain on the torque arm might break the housing.

Possible damage to property.

- Adhere to the specified screw size, tightening torques and required screw strength.



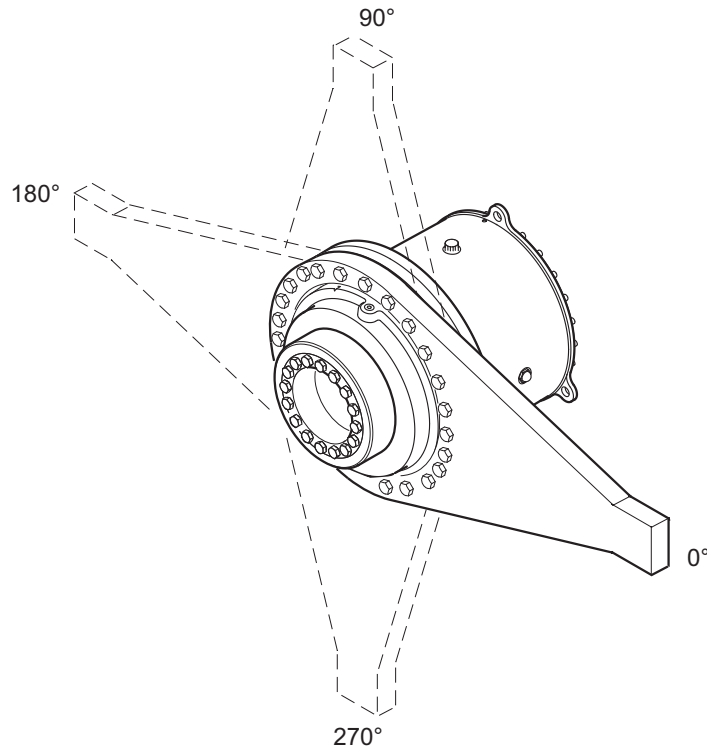
INFORMATION

- Retaining screws are included in the delivery.
- When using a shrink disk cover, install the torque arm before mounting the cover.

5.12.2 Single-sided torque arm (standard)

Installation situation

The torque arm can be installed at 0° to 360° in consideration of the order-specific configuration.



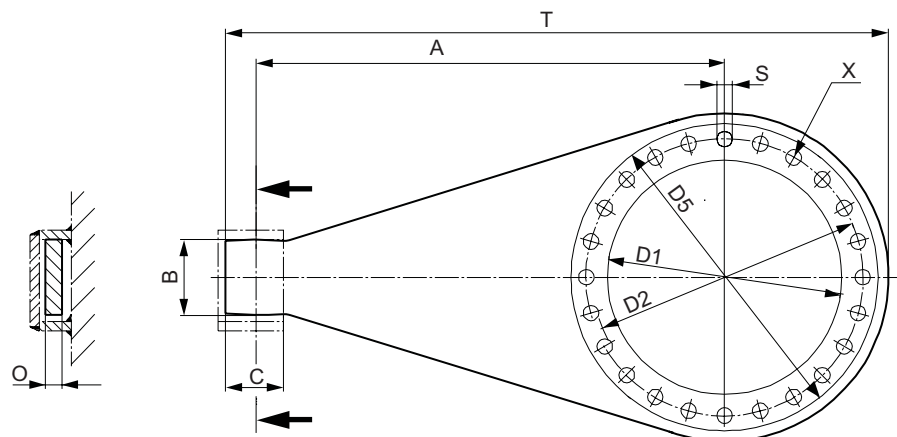
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The reactive force resulting from the gear unit torque is absorbed via the torque arm with lever arm A. The figure on the next page shows an example of a customer fixture in a welded structure. Two supporting plates are welded on the machine design with the suggested dimensions. 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.

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

Dimensions

The following figure shows a sample torque arm with dimensions.



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Size	Dimensions in mm								Amount	Mass
	A	B	C	D1	D2	O	S	T	X	kg
P.012	700	70	60	374	410	30	22	955	20	35
P.022	750	90	70	414	460	35	22	1035	24	48
P.032	800	110	90	464	510	35	26	1125	20	58
P.042	900	150	120	484	560	40	33	1270	20	93
P.052	1000	160	130	534	590	40	33	1390	24	102
P.062	1200	180	150	614	690	50	39	1655	24	183
P.072	1500	230	200	694	770	60	39	2020	24	317
P.082	1600	230	200	754	840	70	45	2160	24	420
P.092	1650	250	220	804	870	70	45	2235	24	440
P.102	1700	250	220	854	960	70	45	2335	24	510

INFORMATION



The torque arm seat must be sufficiently dimensioned by the user.

Tightening torques

INFORMATION



The tightening torques listed in the following table are based on the friction coefficient for threads and mounting surface of $\mu = 0.11$.

When you use other screws than the screws included in the delivery, the tightening torques must be adjusted to the new friction conditions.

Only use the following tools for the installation:

- Signal-generating torque wrench
- Motorized torque wrench with dynamic torque measuring
- Torque-controlled, gradual hydraulic tools

Size	Thread	Tightening torque	Strength class	DIN screws
		Nm		
P.012 – P.022	M20	555	10.9	DIN EN ISO 4017 DIN EN ISO 4762
P.032	M24	960		
P.042 – P.052	M30	1910		
P.062 – P.072	M36	3320		
P.082 – P.102	M42	5310		

5.13 Motor adapter /MA

5.13.1 Maximum permitted motor weight

Two criteria must be checked when mounting a motor onto the gear unit.

1. Maximum motor weight depending on gear unit design and mounting type
2. Maximum motor weight depending on motor adapter size

INFORMATION



The motor weight may not exceed either one of these criteria.

1. Maximum motor weight depending on gear unit design and mounting type

INFORMATION



Consequences

- The following tables apply only to stationary applications. For mobile applications (e.g. travel drives), contact SEW-EURODRIVE.
- Contact SEW-EURODRIVE in case of deviating mounting positions/mounting surfaces.

The following applies to all tables:

G_M = Motor weight

G_G = Gear unit weight

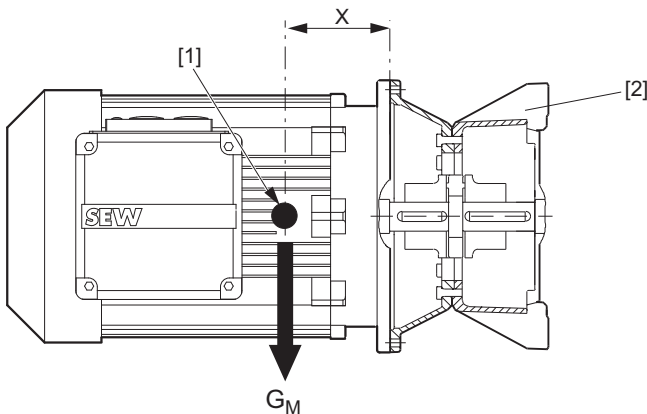
Mounting positions

Mounting positions M1/M2/M3/M4
Primary gear unit mounting position 0°/180°
$G_M \leq 1.75 G_G$

Mounting positions M5/M6
Primary gear unit mounting position 90°/270°
$G_M \leq 1.5 G_G$

2. Maximum motor weight depends on motor adapter size

The following maximum loads on the motor adapter must not be exceeded.



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[1] Center of gravity of the motor
[2] Motor adapter

X = Distance from the center of gravity
G_M = Weight of the mounted motor

INFORMATION



The table only applies to stationary applications. For mobile applications (e.g. travel drives), contact SEW-EURODRIVE.

Motor adapter		G _M	X
IEC	NEMA	kg	mm
200	324	280	340
225	326	400	420
250 / 280	364 - 405	820	480
315S-L	444 - 449	1450	680
315		2000	740
355		2500	740

The maximum permitted weight G_M must be linearly reduced if the centroidal distance X is increased. G_M cannot be increased if the centroidal distance is reduced.

5.13.2 Claw coupling

INFORMATION

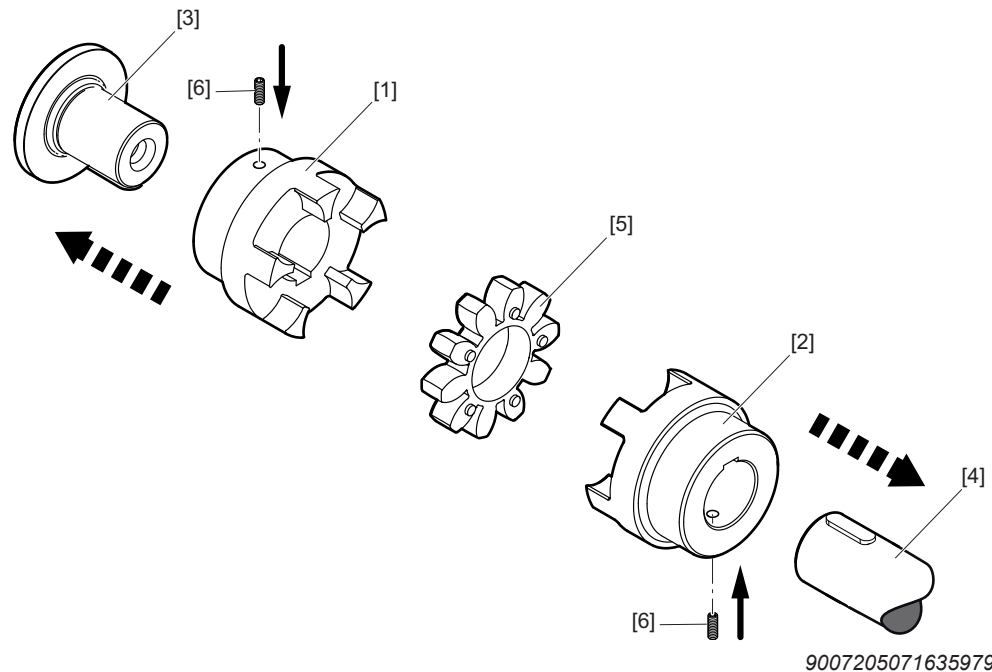


Observe the operating instructions of the respective coupling manufacturer.

ROTEX® coupling

Observe the notes in chapter "Important information" (→ 39).

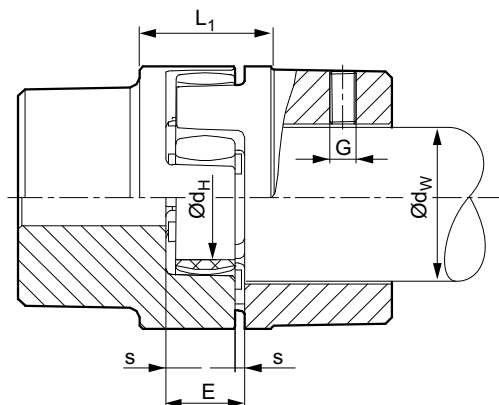
Mounting the coupling



1. **NOTICE!** Improper assembly can damage the coupling halves [1][2]. Possible damage to property. Heat the coupling half to about 80 °C to facilitate assembly. Mount the coupling halves [1][2] onto the input and output shafts [3][4].
2. Insert the spider [5] and the DZ elements into the claws of the input and output coupling halves [1][2].

3. **NOTICE!** Improper mounting may result in damage to the coupling. Possible damage to property. During assembly, it is essential to observe dimension E so that the spider remains axially flexible during operation. The dimension E is listed in the following table.

Push the gear unit/motor in axial direction until dimension **E** is reached. If the gear unit/motor has already been installed permanently, set dimension **E** by moving the coupling halves [1][2] axially on the input and output shafts [3][4].



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4. Secure the coupling halves by tightening the set screws [6].

Coupling size	Mounting dimensions			Set screw	
	E mm	s mm	d_H mm	G	Tightening torque Nm
14	13	1.5	10	M4	1.5
19	16	2	18	M5	2
24	18	2	27	M5	2
28	20	2.5	30	M8	10
38	24	3	38	M8	10
42	26	3	46	M8	10
48	28	3.5	51	M8	10
55	30	4	60	M10	17
65	35	4.5	68	M10	17
75	40	5	80	M10	17
90	45	5.5	100	M12	40
100	50	6	113	M12	40
110	55	6.5	127	M16	80
125	60	7	147	M16	80
140	65	7.5	165	M20	140
160	75	9	190	M20	140
180	85	10.5	220	M20	140

Displacement – Aligning the coupling

NOTICE

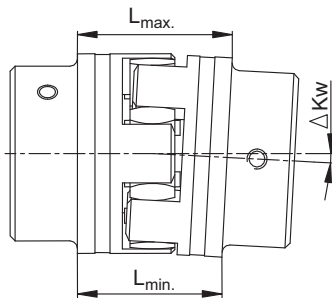
Improper mounting of the coupling may result in damage.

Possible damage to property.

- The shaft ends must be aligned accurately to ensure a long service life of the coupling. Strictly adhere to the displacement values specified in the following chapter. Exceeding these values will damage the coupling. Exact coupling alignment increases its service life.

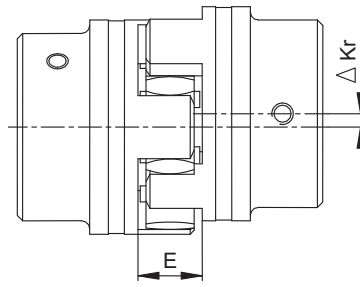
Observe:

- The displacement values specified in the table (see next page) are maximum values that must not occur simultaneously. If radial offset and angular offset occur at the same time, the permitted displacement values may only be used proportionately.
- Use dial indicator, linear or feeler gauge to check whether the permitted displacement values specified in the table (see next page) are adhered to.

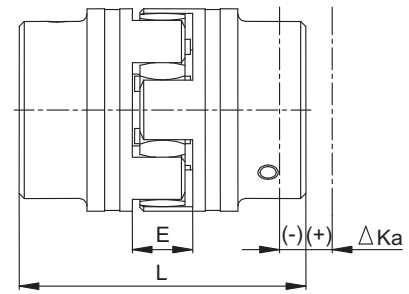


Angular misalignments

$$\Delta K_w = L_{1\max} - L_{1\min} \quad [\text{mm}]$$



Radial misalignments



Axial misalignments

$$L_{\max} = L + \Delta K_a \quad [\text{mm}]$$

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Example of specified displacement combinations (see diagram):

Example 1:

$$\Delta K_r = 30\%$$

$$\Delta K_w = 70\%$$

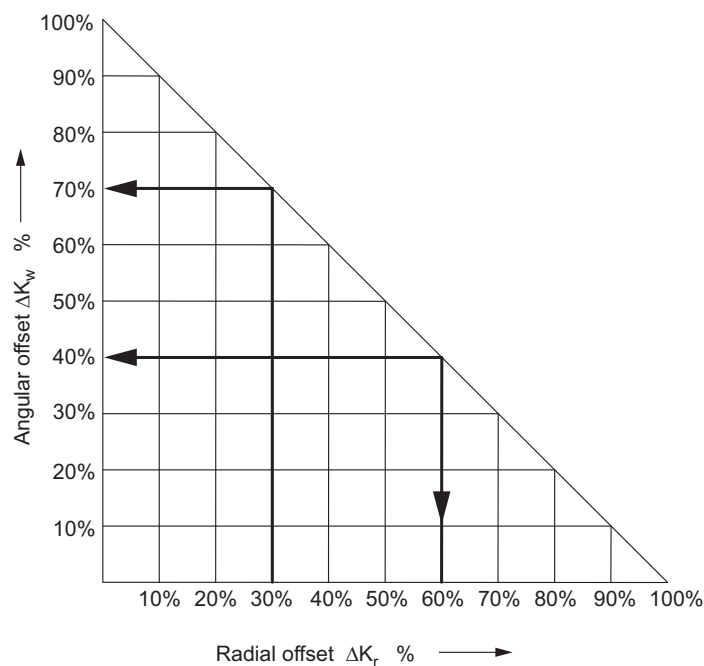
Example 2:

$$\Delta K_r = 60\%$$

$$\Delta K_w = 40\%$$

$$\Delta K_{\text{total}} = \Delta K_r + \Delta K_w \leq 100\%$$

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Displacement values

The following table shows the displacement values:

Coupling size	Max. axial displacement ΔK_a in mm		Max. radial misalignment ΔK_r in mm		Angular displacement ΔK_w for $n = 1500 \text{ min}^{-1}$		Angular displacement ΔK_w for $n = 3000 \text{ min}^{-1}$	
	(-)	(+)	1500 min^{-1}	3000 min^{-1}	Degree	mm	Degree	mm
14	-0.5	1.0	0.17	0.11	1.2	0.67	1.1	0.60
19	-0.5	1.2	0.20	0.13	1.2	0.82	1.1	0.70
24	-0.5	1.4	0.22	0.15	0.9	0.85	0.8	0.75
28	-0.7	1.5	0.25	0.17	0.9	1.05	0.8	0.85
38	-0.7	1.8	0.28	0.19	1.0	1.35	0.9	1.1
42	-1.0	2.0	0.32	0.21	1.0	1.7	0.9	1.4
48	-1.0	2.1	0.36	0.25	1.1	2.0	1.0	1.6
55	-1.0	2.2	0.38	0.26	1.1	2.3	1.0	2.0
65	-1.0	2.6	0.42	0.28	1.2	2.7	1.1	2.3
75	-1.5	3.0	0.48	0.32	1.2	3.3	1.1	2.9
90	-1.5	3.4	0.5	0.34	1.2	4.3	1.1	3.8
100	-1.5	3.8	0.52	0.36	1.2	4.8	1.1	4.2
110	-2.0	4.2	0.55	0.38	1.3	5.6	1.2	5.0
125	-2.0	4.6	0.6	—	1.3	6.5	—	—
140	-2.0	5.0	0.62	—	1.2	6.6	—	—
160	-2.5	5.7	0.64	—	1.2	7.6	—	—
180	-3.0	6.4	0.68	—	1.2	9.0	—	—

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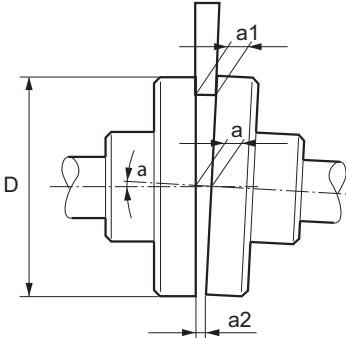
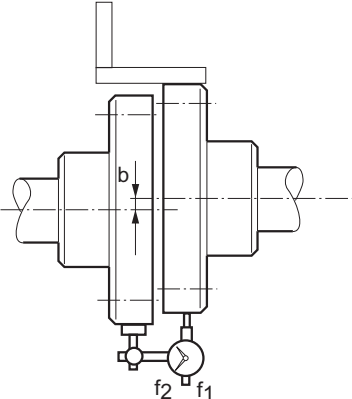
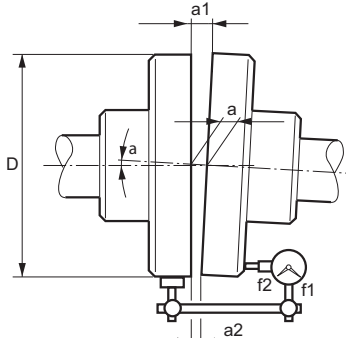
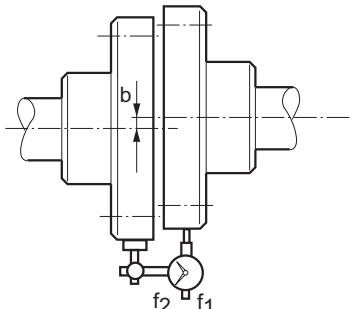
5.13.3 Measuring the mounting tolerances

INFORMATION



Observe the operating instructions of the applicable coupling manufacturer.

The following table shows methods for measuring the differing tolerances.

Measuring instruments	Angular offset	Axis offset
Feeler gauge	 <p>This method only achieves an accurate result when the deviation of the coupling faces is eliminated by turning both coupling halves by 180° and then calculating the average value from the difference ($a1 - a2$).</p>	 <p>The following illustration shows the measurement of axial misalignment using a straight-edge. Permissible values for eccentricity are usually so small that the best measurement results can be achieved with a micrometer dial. If you rotate one coupling half together with the micrometer dial and divide the deviation by two, the deviation displayed on the micrometer dial indicates the misalignment (dimension "b") that includes the axial misalignment of the other coupling half.</p>
Micrometer dial	 <p>899597451</p> <p>A prerequisite for this measuring method is that there is no axial play in the shaft bearings when the shafts rotate. If this condition is not fulfilled, the axial play between the faces of the coupling halves must be eliminated. As an alternative, you can use two micrometer dials positioned on the opposite sides of the coupling (to calculate the difference of the two micrometer dials when rotating the coupling).</p>	 <p>The following figure shows the how to measure axial misalignment using a more accurate measuring method, as described above. The coupling halves are rotated together without letting the point of the micrometer dial slide onto the measuring surface. The axial misalignment is obtained by dividing the deviation displayed on the micrometer dial (dimension "b").</p>

5.13.4 Attaching the motor to the motor adapter

Observe the notes in chapter "Important information" (→ 39).

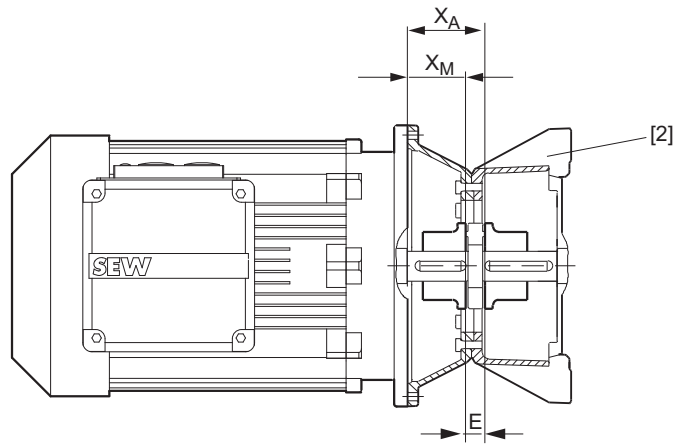
1. Clean the motor shaft and flange surfaces of the motor and the motor adapter. They must be dry and free of grease.

INFORMATION



To avoid contact corrosion, SEW-EURODRIVE recommends to apply NOCO® fluid to the motor shaft before mounting the coupling half.

2. Push the coupling half onto the motor shaft and position it. When doing this, observe the information in chapter "Claw coupling" (→ 67) and the figure below. The coupling size and type are indicated on the coupling.



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[1] Motor adapter

E Installation dimensions

XA Distance between the coupling and the motor adapter flange surface

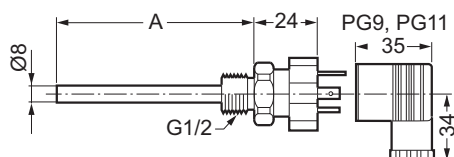
XM Distance between the coupling and the motor flange surface

$$\rightarrow XM = XA - E$$

3. Secure the coupling halves using the set screw.
4. Mount the motor onto the motor adapter, making sure that the claws of the coupling engage each other.

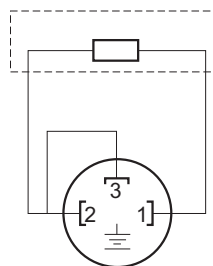
5.14 Temperature sensor /PT100

5.14.1 Dimensions



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5.14.2 Electrical connection



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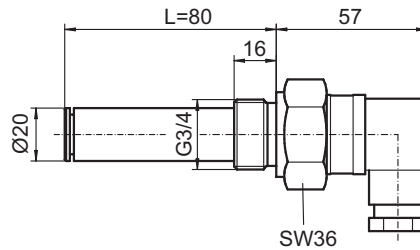
[1] [2] Resistor element connection

5.14.3 Technical data

- Design with thermowell and changeable measuring insert
- Sensor tolerance $K \pm (0.3 + 0.005 \times T)$, (corresponds to DIN IEC 751 class B),
T = Oil temperature °C
- Plug connector: DIN EN 175301-803 PG9 (IP65)
- The tightening torque for the retaining screw in the back of the plug connector for electrical connection is 0.25 Nm.

5.15 Temperature switch /TSK

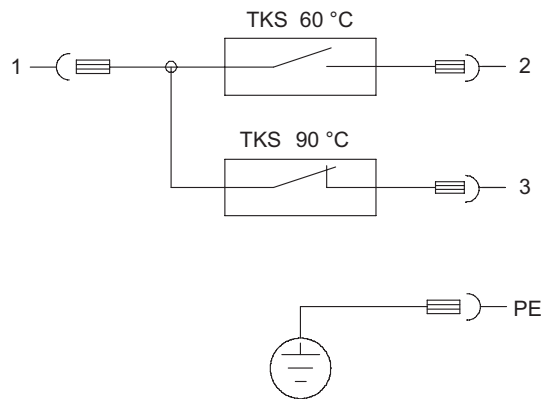
5.15.1 Dimensions



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5.15.2 Electrical connection

To guarantee a long service life and trouble-free functioning, we recommend that you use a relay in the power circuit instead of a direct connection through the temperature switch.



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[1][2] Switch 60 °C NO contact

[1][3] Switch 90 °C NC contact

PE Grounding terminal

5.15.3 Technical data

- Switching temperatures: 60 °C and 90 °C
- Contact capacity: 2 A – AC 240 V
- Plug connector: DIN EN 175301-803 PG11 (IP65)
- The tightening torque for the retaining screw in the back of the plug connector for electrical connection is 0.25 Nm.

5.16 Limit temperature for gear unit start

The minimum permitted ambient temperature/oil temperature for gear unit startup depends on the viscosity of the oil used and the lubrication type of the gear unit.

INFORMATION



- Before startup, it might be necessary to heat up the oil with an oil heater to the temperature specified under "Initial temperature". Observe the lubricant table in chapter "Permitted lubricants" (→ 96). For the design and dimensioning of the required oil heater, contact SEW-EURODRIVE.
- For the minimally permitted initial temperature for mineral and synthetic oil, refer to the chapter "Permitted lubricants" (→ 96).

5.17 Oil-air cooler for splash lubrication /OAC

Observe the notes in chapter "Important information" (→ 39).

INFORMATION



Before installation/assembly, first read the addendum to the operating instructions "Oil-Air Cooler for Splash Lubrication /OAC".

5.18 Oil-air cooler for pressure lubrication /OAP

Observe the notes in chapter "Important information" (→ 39).

INFORMATION



Before installation/assembly, first read the addendum to the operating instructions "Oil-Air Cooler for Pressure Lubrication /OAP".

5.19 Oil-water cooler for splash lubrication /OWC


Observe the notes in chapter "Important information" (→ 39).

INFORMATION



Before installation/assembly, first read the addendum to the operating instructions "Oil-Water Cooler with Motor Pump for Splash Lubrication /OWC".

5.20 Oil-water cooler for pressure lubrication /OWP

Observe the notes in chapter "Important information" (→  39).

INFORMATION

Before installation/assembly, first read the addendum to the operating instructions "Oil-Water Cooler for Pressure Lubrication /OWP".

6 Startup

6.1 Important notes

Read the following notes prior to startup.



⚠ WARNING

Danger due to freely accessible, rotating parts.

Severe or fatal injuries.

- Secure rotating components such as shafts, couplings, gears or belt drives using suitable protection covers.
- Ensure that installed protection covers are sufficiently attached.



⚠ WARNING

Risk of crushing if the drive starts up unintentionally.

Severe or fatal injuries.

- Work on the gear unit only when the machine is not in use. Secure the drive unit against unintentional power-up. Attach an information sign near the ON switch to warn that the gear unit is being worked on.



⚠ CAUTION

Danger due to unsecured mount-on components, e.g. keys.

Possible injury to persons due to falling parts.

- Install appropriate protective devices.
- Secure the mount-on components.



⚠ CAUTION

Danger due to lubricant leaking from damaged seals and the breather.

Minor injuries.

- Check the gear unit and mount-on components for leaking lubricant.
- The seals must not come in contact with cleaning agent as this may damage the seals.
- Protect the breather against damage.
- Make sure that there is not too much oil in the gear unit. If the oil level is too high and the temperature rises, lubricant may escape from the breather.


NOTICE

Improper startup may result in damage to the gear unit.

Possible damage to property.

- Observe the following notes.

- Before startup, check that the oil level is correct. The oil quantity specified on the nameplate is an approximate quantity. The required oil level depends on the respective marks on the oil sight glass.

Check the oil level again after a few operating hours, see chapter "Checking the oil level" (→  89).

- Check the thermal rating/heating for the following operating conditions:
 - High ambient temperatures (over 45 °C).
 - Mounting position M2/M4 and/or motor speed above 1800 min⁻¹.

Consult SEW-EURODRIVE.

- The most important technical data is provided on the nameplate. Additional data relevant for operation is available in drawings, on the order confirmation or any order-specific documentation.
- Remove transport protection prior to startup.
- After installing the gear unit, check to see that all retaining screws are tight.
- Make sure that the alignment 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.
- Make sure that the gear unit is grounded. Electrical mount-on components, such as motors, frequency inverters, etc. must be grounded separately.
- 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 (position → see order documents).
- Before you start up the unit, make sure that the monitoring devices are functioning properly.
- Adhere to the safety notes in the individual chapters.

6.2 Startup of gear units with long-term protection

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

6.2.1 Anti-corrosion agent

Clean the output shafts and flange surfaces thoroughly to ensure they are free of anti-corrosion agents, contamination or similar. Use a standard solvent.

NOTICE

If the sealing lips of the oil seal come in contact with solvents, the sealing lips can be damaged.

Possible damage to property.

- Do not let the solvent come into contact with the sealing lips.

6.2.2 Breather

Replace the screw plug at the location indicated on the gear unit with a breather (position → see order documents).

6.3 Run-in period

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

Note the following during the running-in phase:

- Verify the power values specified on the nameplate because their frequency is 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.

INFORMATION



For further information and troubleshooting measures, refer to the "Malfunctions" chapter.

6.4 Measuring surface and oil temperature

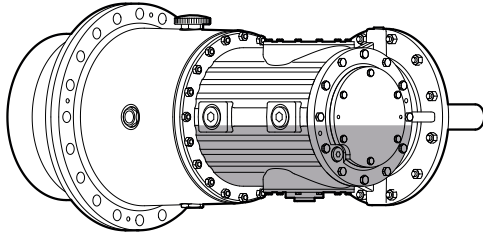
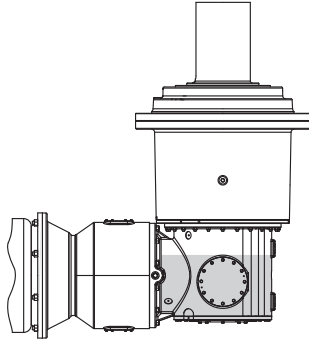
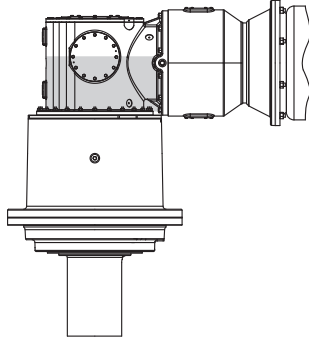
6.4.1 Measuring the surface temperature

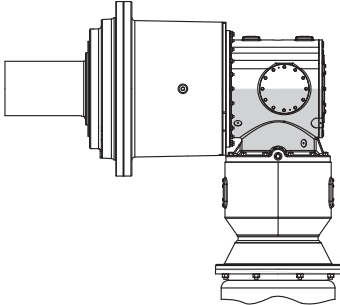
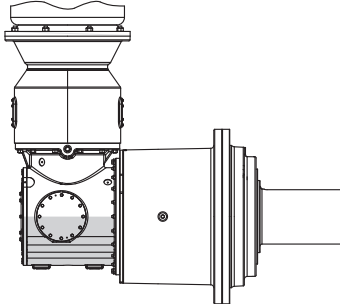
It is essential to measure the surface temperature at maximum load when starting up the gear unit.

The measurement can be made using standard thermometers. The surface temperature must be measured in a steady-state condition. The temperature must not exceed 100 °C.

Stop the drive immediately if the temperature is above this value. Contact SEW-EURODRIVE.

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

Mounting position	Measuring point of the surface temperature
M1/M3	
M2	
M4	

Mounting position	Measuring point of the surface temperature
M5	
M6	

6.4.2 Measuring the oil temperature

The oil temperature must be measured to determine the oil change intervals. See chapter "Lubricant change intervals" (→ 88) for a description. Measure the temperature in the gear unit areas described above. Add 10 K to the measured value. This value is the basis for the oil change intervals.

6.5 Gear unit shutdown / gear unit conservation



⚠ WARNING

Risk of crushing if the drive starts up unintentionally.

Severe or fatal injuries.

- Work on the gear unit only when the machine is not in use. Secure the drive unit against unintentional power-up. Attach an information sign near the ON switch to warn that the gear unit is being worked on.



INFORMATION

Gear units with water cooling system: disrupt the cooling water supply and drain the water from the cooling circuit. Gear units with oil supply system: Please contact SEW-EURODRIVE.

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.

6.5.1 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. Any existing oil may usually remain in the drive.
 - Replace the breather with a screw plug and close the gear unit so that it is air tight. Prior to startup, re-install the breather.
- **After longer gear unit operation:**
 - The oil might be contaminated (oil sludge, water, etc.) after long periods of operation. Therefore, drain the oil and thoroughly rinse the inside of the gear unit with new oil prior to conservation. Observe the information in chapter "Changing the oil" (→ 92) in the corresponding operating instructions. The inside of the gear unit can then be conserved as described above.



INFORMATION

For gear units with contactless sealing systems, contact 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 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 components and bearing points must be completely covered in oil.

Prior to startup, re-install the breather. Observe the information on the nameplate regarding the oil grade and oil quantity.

6.5.2 External corrosion protection

- Clean the respective surfaces.
- Grease the shaft near the sealing lip to separate the sealing lip of the oil seal and the anti-corrosion agent.
- 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).



INFORMATION

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

Observe the information in chapter "Storage and transport conditions" (→ 19) in the corresponding operating instructions. This chapter provides information on the possible storage periods in conjunction with adequate packaging – depending on the storage location.

6.6 Oil-air cooler for splash lubrication /OAC**INFORMATION**

Before startup, first read the addendum to the operating instructions "Oil-Air Cooler for Splash Lubrication /OAC".

6.7 Oil-air cooler for pressure lubrication /OAP**INFORMATION**

Before startup, first read the addendum to the operating instructions "Oil-Air Cooler for Pressure Lubrication /OAP".

6.8 Oil-water cooler for splash lubrication /OWC**INFORMATION**

Before startup, first read the addendum to the operating instructions "Oil-Water Cooler for Splash Lubrication /OWC".

6.9 Oil-water cooler for pressure lubrication /OWP**INFORMATION**

Before startup, first read the addendum to the operating instructions "Oil-Water Cooler for Pressure Lubrication /OWP".

7 Inspection/maintenance

7.1 Preliminary work regarding inspection and maintenance

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



⚠ WARNING

Risk of crushing if the drive starts up unintentionally.

Severe or fatal injuries.

- Work on the gear unit only when the machine is not in use. Secure the drive unit against unintentional power-up. Attach an information sign near the ON switch to warn that the gear unit is being worked on.



⚠ WARNING

A customer machine that is not appropriately secured can fall during gear unit installation or removal.

Severe or fatal injuries.

- Protect the operator's machine against unintentional movement when installing or removing the gear unit.
- Before releasing shaft connections, be sure that there are no active torsional moments present (tensions within the system).



⚠ WARNING

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

Serious injury.

- Let the gear unit cool down before you start working on it.
- Open oil-bearing parts only with great care, e.g. circulation lubrication pipes.

NOTICE

Filling in the wrong oil may result in significantly different lubricant characteristics.

Possible damage to property.

- Do not mix different synthetic lubricants and do not mix synthetic and mineral lubricants.

NOTICE

Improper maintenance may result in damage to the gear unit.

Possible damage to property.

- Observe the following notes.
- Strict adherence to the inspection and maintenance intervals is absolutely necessary to ensure safe working conditions.
- Use only original spare parts according to the delivered spare and wearing parts lists.
- If you remove an inspection cover, you must apply new sealing compound to the sealing surface. Otherwise, the sealing properties of the gear unit might be impaired. Consult SEW-EURODRIVE in this case.

- Prevent foreign particles from entering into the gear unit during maintenance and inspection work.
- Never clean the gear unit with a high-pressure cleaning device. If one is used, water may enter into the gear unit and the seals may be damaged.
- Replace any damaged seals.
- The gear unit must be cleaned in such a way that liquids cannot enter the motor adapter (HSS end) or the mounting flange (LSS end) and accumulate there.
- Perform safety and functional check following all maintenance and repair work.
- For third-party parts, such as cooling systems, observe the separate inspection and maintenance intervals of the manufacturer's documentation.
- Strictly observe the safety notes in the individual chapters.

7.2 Inspection and maintenance intervals

Time interval	What is to be done?
<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
<ul style="list-style-type: none"> Once a month 	<ul style="list-style-type: none"> Check the gear unit for signs of leakage Checking the oil level
<ul style="list-style-type: none"> After 500 operating hours 	<ul style="list-style-type: none"> First oil change after initial startup
<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
<ul style="list-style-type: none"> Depending on the operating conditions, at least every 6 months 	<ul style="list-style-type: none"> Fill regreasable sealing systems with grease
<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 breather, replace it if required Check the alignment of the input and output shaft
<ul style="list-style-type: none"> At least every 3 years depending on the operating conditions (see figure on next page) 	<ul style="list-style-type: none"> Change mineral oil
<ul style="list-style-type: none"> At least every 5 years depending on the operating conditions (see figure on next page) 	<ul style="list-style-type: none"> Change synthetic oil
<ul style="list-style-type: none"> Varying (depending on external factors) 	<ul style="list-style-type: none"> Touch up or renew the surfaces/anti-corrosion coating Check installed hose pipes Clean outer gear unit housing

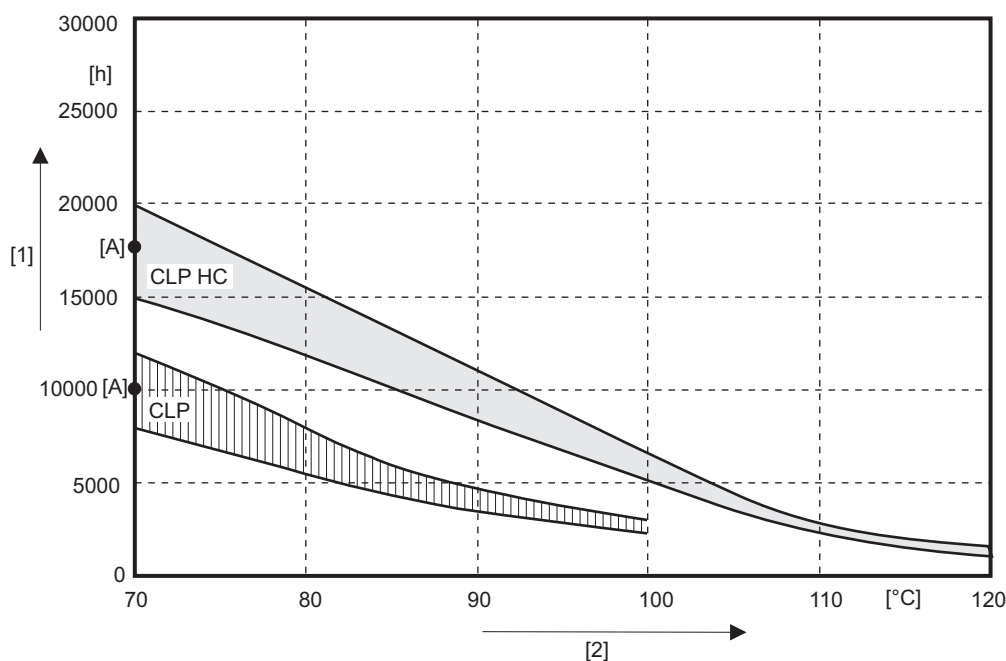
7.3 Lubricant change intervals

It might be necessary to change the oil more frequently when using special designs or under more severe/aggressive ambient conditions.

INFORMATION



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
- [A] Average value per oil type at 70 °C

INFORMATION



SEW-EURODRIVE recommends that the gear unit oil is analyzed regularly (see chapter "Checking the oil consistency" (→ 91)) to optimize the lubricant change intervals.

7.4 Checking the oil level

Note the following when checking the oil level.

7.4.1 General information



NOTICE

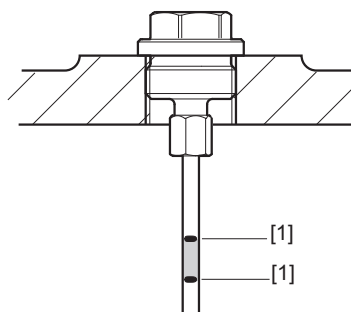
Improper checking of the oil level may result in damage to the gear unit.

Possible damage to property.

- Check the oil level only when the gear unit is cooled down to room temperature.
- Check the oil level again after a few operating hours.
- When the gear unit is equipped with an oil dipstick and an oil sight glass, refer to the oil dipstick for the correct oil level. The value of the oil sight glass is only a guide value.

7.4.2 Oil dipstick

Observe the notes in chapter "Preliminary work regarding inspection and maintenance" (→ 85).



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INFORMATION

For gear unit sizes P.002 – P.082 in mounting position M2 oil dipstick and breather are combined in one component. For gear unit sizes P.092 – P.102 in mounting position M2 as well as all other gear unit sizes in mounting position M4, oil dipstick and breather are separate.

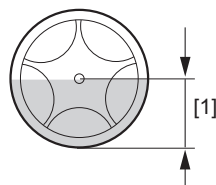
1. Unscrew the oil dipstick/oil dipstick with breather and remove it.
2. Clean the oil dipstick/oil dipstick with breather.
3. Re-insert the oil dipstick/oil dipstick with breather by turning it hand-tight into the gear unit up to the stop.
4. Remove the oil dipstick/oil dipstick with breather and check the oil level. The oil level must be between the markings [1].
5. Proceed as follows if the oil level is too low:
 - Open the oil fill plug.
 - Fill in oil of the same oil grade until the oil level is between the markings [1].
6. If you filled in too much oil, proceed as follows:
 - Place a suitable container underneath the oil drain plug.

- Remove the oil drain plug or open the oil drain valve.
 - Drain oil, until the oil level is between the markings [1].
 - Re-insert the oil drain plug or close the oil drain valve.
7. Screw in the oil fill plug.
 8. Screw in the oil dipstick/oil dipstick with breather.

7.4.3 Oil sight glass

Observe the notes in chapter "Preliminary work regarding inspection and maintenance" (→ 85).

1. Check the oil level on the oil sight glass as shown in the following figure.



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2. 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 [1].
 - Screw in the oil fill plug.

INFORMATION



The oil fill quantity must not exceed the upper edge of the oil sight glass.

7.5 Checking the oil consistency

Observe the notes in chapter "Preliminary work regarding inspection and maintenance" (→ 85).

Proceed as follows to check the oil consistency:

1. Start the gear unit for a short time for the oil to mix with suspended particles.
2. Determine the oil drain position and place a container underneath.
3. **▲ WARNING!** Risk of burns due to hot gear unit and hot gear unit oil. Serious injury. Let the gear unit cool down before you start working on it. Remove the oil level plug and oil drain plug carefully.
Open the oil drain carefully and drain some oil.
4. Close the oil drain valve.
5. Check the oil consistency:
 - Check the drained oil for appearance, color, and contamination.
 - If the oil sample is severely contaminated (e.g. water, color, dirt), consult a specialist to find out the cause.
 - For more detailed information on checking the oil for water content and viscosity, contact your lubricant manufacturer.

7.6 Changing the oil

7.6.1 Notes

Observe the following when changing the oil.



⚠ WARNING

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

Serious injury.

- Let the gear unit cool down before you start working on it.
- Carefully remove the oil level plug and the oil drain plug.

NOTICE

Improper oil change may result in damage to the gear unit.

Possible damage to property.

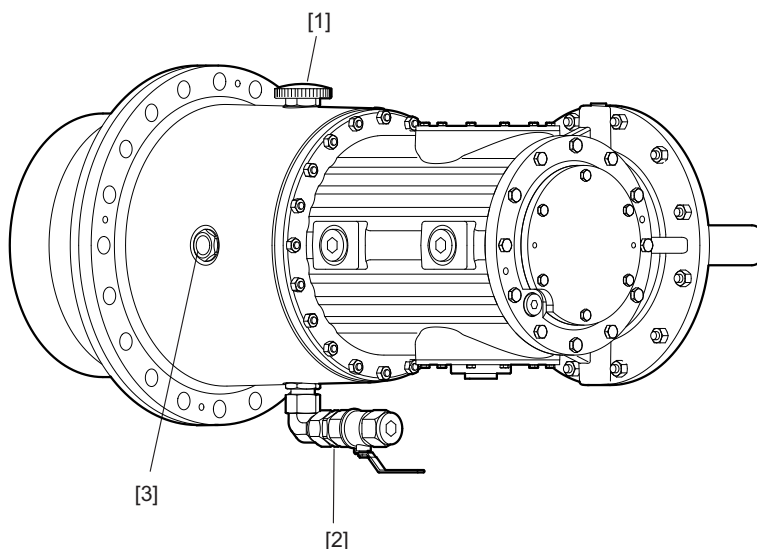
- Note the following information.
- Perform the oil change quickly after you have switched off the gear unit to prevent solids from settling. Drain the oil while it is still warm. Avoid oil temperatures well above 50 °C.
- Always fill the gear unit with the same oil grade as before. Mixing oils of different 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 lubricant table for information on the permitted oil of the various lubricant manufacturers.
- The oil grade and oil viscosity are listed on the nameplate of the gear unit. The oil quantity specified on the nameplate is an approximate quantity. The required oil quantity depends on the respective marks on the oil sight glass.
- When changing the oil, flush the gear unit interior thoroughly with oil to remove oil sludge, oil residue, and abrasion. Use the same oil grade for this purpose as for operating the gear unit. Fill in fresh oil only after all residues have been removed.
- For the position of the oil sight glass, oil drain plug and the breather, refer to the order documents.
- An oil level above the max marking might indicate that foreign liquids (e.g. water) have entered. An oil level below the min marking might indicate a leakage. Find out and eliminate the cause before you fill in new oil.
- Replace any damaged seals of the oil drain plug.
- Clean the magnetic oil drain plug, if applicable.
- Elements for controlling the oil level, oil drain, and oil fill opening are indicated on the gear unit by safety symbols.
- Use a filling filter to fill the oil into the gear unit (max. filter mesh 25 µm).
- Remove any dripping oil immediately with oil binding agent. Dispose of the used oil in accordance with applicable regulations.

7.6.2 Procedure

Observe the notes in chapter "Preliminary work regarding inspection and maintenance" (→ 85).

The gear units are equipped with an oil drain plug or optionally with an oil drain valve.

1. Place a suitable container underneath the oil drain [2].



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2. Open the oil drain [2].
3. Remove the breather [1].
4. Drain all the oil.
5. Close the oil drain [2] again.
6. Fill in new oil of the same grade through the oil fill opening [1].
 - Use a filling filter to fill the oil into the gear unit (max. filter mesh 25 µm).
 - Fill the oil according to the oil quantity specified on the nameplate. The oil quantity specified on the nameplate is an approximate value.
 - Check the correct oil level via the oil sight glass [3].
7. Screw in the breather [1].

INFORMATION



Remove any dripping oil immediately with oil binding agent.

7.7 Checking and cleaning the breather**NOTICE**

Improper cleaning of the breather may damage the gear unit.

Possible damage to property.

- Prevent foreign particles from entering into the gear unit when performing the following work.

Observe the notes in chapter "Preliminary work regarding inspection and maintenance" (→ 85).

1. Remove any deposits near the breather.
2. If the breather is clogged, replace it.

7.8 Oil-air cooler for splash lubrication /OAC

Observe the notes in chapter "Preliminary work regarding inspection and maintenance" (→ 85).

INFORMATION

Before inspection/maintenance, first read the addendum to the operating instructions "Oil-Air Cooler for Splash Lubrication /OAC".

7.9 Oil-air cooler for pressure lubrication /OAP

Observe the notes in chapter "Preliminary work regarding inspection and maintenance" (→ 85).

INFORMATION

Before inspection/maintenance, first read the addendum to the operating instructions "Oil-Air Cooler for Pressure Lubrication /OAP".

7.10 Oil-water cooler for splash lubrication /OWC

Observe the notes in chapter "Preliminary work regarding inspection and maintenance" (→ 85).

INFORMATION

Before inspection/maintenance, first read the addendum to the operating instructions "Oil-Water Cooler for Splash Lubrication /OWC".

7.11 Oil-water cooler for pressure lubrication /OWP

Observe the notes in chapter "Preliminary work regarding inspection and maintenance" (→ 85).



INFORMATION

Before inspection/maintenance, first read the addendum to the operating instructions "Oil-Water Cooler for Pressure Lubrication /OWP".

8 Permitted lubricants

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

8.1 Lubricant selection

Note the following when selecting the lubricants.


NOTICE

Selecting improper lubricants may damage the gear unit.

Possible damage to property.

- Observe the following notes.
- The oil viscosity and type (mineral/synthetic) to be used are determined by SEW-EURODRIVE specifically for each order. This information is noted in the order confirmation and on the gear unit's nameplate.
If other lubricants are used in the gear units and/or in other temperature ranges as those recommended, the right to claim under warranty will become invalid. Exceptions are application-specific approvals that have to be confirmed by SEW-EURODRIVE in written form.
The lubricant recommendation in the lubricant table in no way represents a guarantee regarding the quality of the lubricant delivered by each respective supplier. Each lubricant manufacturer is responsible for the quality of its product.
- Oils of the same viscosity class from different manufacturers do not have the same characteristics. In particular, the minimum permitted oil bath temperatures are manufacturer-specific. These temperatures are specified in the lubricant tables.
- The minimum permitted oil bath temperatures depend on the lubrication type used. These temperatures are specified in the lubricant tables. The values correspond to the maximum viscosity of the individual lubricants.
- The values specified in the lubricant tables apply as of the time of printing of this document. The data of the lubricants are subject to dynamic change on the part of the lubricant manufacturers. For up-to-date information about the lubricants, visit:
www.sew-eurodrive.de/lubricants
- Before startup, ensure that the planetary gear unit and the primary gear unit are filled with the correct oil grade and quantity. You can obtain the corresponding information from the gear unit nameplate and the lubricant table on the following page.
- As standard, planetary gear units and primary gear units have separate oil chambers. With separate oil chambers, the planetary gear unit is delivered without oil, the primary gear unit is delivered with oil.
- The lubricant fill quantity and viscosity of planetary gearmotors with common oil chamber depend only on the information on the nameplate of the planetary gear unit. Planetary gear units and primary gear units with a common oil chamber are delivered without oil fill as standard.
- Do not mix different synthetic lubricants and do not mix synthetic with mineral lubricants.
- Check the compatibility of the greases and oils used.
- Observe the safety notes in the individual chapters.

8.2 Structure of the tables and abbreviations





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

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[1] Viscosity class

[2] Lubricant type

Abbreviations

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

8.3 Explanation of the various lubricants

			[5]
[1]	-20		
[2]	-5	+65	[6]
[3]	+5		
[4]	xyz		
	SEW070040013		[7]

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

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

8.4 Lubricant tables

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

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

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

DIN (ISO) API	ISO, SAE NLGI	Castrol	FUCHS	Mobil®	KLÜBER LUBRICATION	Shell	TEXACO	TOTAL
CLP HC	VG 32 ¹⁾			-40 -30 -25 SHC 624 S0				
	VG 68 ¹⁾		-35 -20 -10 Renolin Unisyn CLP 68 S0	-40 -25 -15 +50 SHC 626 S0	-35 -20 -10 Klübersynth GEM 4-68 N S0	-40 -20 -10 Omala S4 GX 68 S0		
	VG 150 ¹⁾	-25 -10 0 Alphasyn EP 150 S0	-30 -10 +0 Renolin Unisyn CLP 150 S0	-35 -15 -5 +75 SHC 629 S0	-25 -10 0 Klübersynth GEM 4-150 N S0	-30 -10 0 Omala S4 GX 150 S0	-25 -10 0 Pinnacle EP 150 S0	-35 -15 -5 Carter SH 150 S0
	VG 220	-25 -5 +5 Alphasyn EP 220 S0	-25 -5 +5 Renolin Unisyn CLP 220 S0	-25 -5 0 +85 SHC 630 S0	-25 -5 +5 +85 Klübersynth GEM 4-220 N S0	-25 -5 +5 Omala S4 GX 220 S0	-25 -5 +5 Pinnacle EP 220 S0	-25 -5 +5 Carter SH 220 S0
VG 320		-20 0 +10 Alphasyn EP 320 S0	-20 0 +10 Renolin Unisyn CLP 320 S0	-20 0 +10 +95 SHC 632 S0	-20 0 +10 +95 Klübersynth GEM 4-320 N S0	-20 0 +10 Omala S4 GX 320 S0	-20 0 +10 Pinnacle EP 320 S0	-20 0 +10 Carter SH 320 S0
	VG 460	-15 +5 +15 Alphasyn EP 460 S0	-15 +5 +15 Renolin Unisyn CLP 460 S0	-15 +5 +15 +105 SHC 634 S0	-15 +5 +20 +105 Klübersynth GEM 4-460 N S0	-15 +5 +15 +105 Omala S4 GX 460 S0	-15 +5 +15 +100 Pinnacle EP 460 S0	-15 +5 +15 +100 Carter SH 460 S0
VG 680		-10 +10 +25 Optigear Synthetic X 680 S0	-10 +10 +25 Renolin Unisyn CLP 680 S0	-10 +10 +25 +110 SHC 636 S0	-10 +10 +25 +110 Klübersynth GEM 4-680 N S0	-10 +10 +25 +110 Omala S4 GX 680 S0	-10 +10 +25 +110 Pinnacle EP 680 S0	-10 +10 +25 +110 Carter SH 680 S0
	VG 1000			-10 +15 +30 +110 SHC 639 S0	0 +20 +30 +110 Klübersynth EG4-1000 S0			

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

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

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8.5 Lubricant fill quantities

The specified fill quantity is a guide value.



The mark on the oil sight glass or oil dipstick is the decisive indicator for the correct oil level.

Size	Mounting positions M1/M3
	Approx. oil quantity in l
PHF012 X1KP140	15
PHF022 X1KP140	20
PHF032 X1KP160	24
PHF042 X1KP160	30
PHF052 X1KP200	35
PHF062 X1KP200	47
PHF072 X1KP220	65
PHF082 X1KP220	83
PHF092 X1KP220	–
PHF102 X1KP220	–

The lubricant fill quantities for other mounting positions are determined specifically for each order. Contact SEW-EURODRIVE about this matter.

8.6 Sealing greases/rolling bearing greases

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

Area of operation	Manufacturer	Grease	Lower limit temperature °C
Standard	Fuchs	Renolit CX TOM 15 OEM¹⁾	-40
	BP	Energrease LS EP-2	-30
	Castrol	Longtime PD 2	-35
		Spheerol EPL 2	-20
	Klüber	Centoplex EP 2	-25
		Petamo GHY 133 N	-40
	Mobile	Moliux EP 2	-20
	Shell	Gadus S2 V220 2	-20
	Total	Multis EP 2	-20
	Bremer & Leguil	Cassida Grease GTS2 ¹⁾	-40
	Fuchs	Plantogel 2¹⁾	-40

1) Grease used by the factory should be preferred.

INFORMATION



- Do not mix permitted greases from different areas of application.
- If the lubricant used is not listed in the above table, you have to make sure that it is suitable for the intended application.

9 Malfunctions/remedy

9.1 Notes

Read the following notes before you proceed with troubleshooting.



⚠ WARNING

Risk of crushing if the drive starts up unintentionally.

Severe or fatal injuries.

- Work on the gear unit only when the machine is not in use. Secure the drive unit against unintentional power-up. Attach an information sign near the ON switch to warn that the gear unit is being worked on.



⚠ WARNING

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

Serious injury.

- Let the gear unit cool down before you start working on it.
- Carefully remove the oil level plug and the oil drain plug.

NOTICE

Improper handling of the gear unit and the motor may lead to damage.

Possible damage to property.

- Only qualified personnel is permitted to separate drive and motor and to carry out repair work on SEW drives.
- Contact SEW-EURODRIVE.

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 Possible malfunctions/remedy

Fault	Possible cause	Measure
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 generated by insufficient stiffness of the gear unit foundation 	<ul style="list-style-type: none"> Check oil consistency, change bearings Consult SEW-EURODRIVE Check the gear unit mounting for possible deformation and correct if necessary Reinforce the gear unit foundation
Unusual, irregular running noises	<ul style="list-style-type: none"> Foreign objects in the oil 	<ul style="list-style-type: none"> Checking the oil consistency Stop the drive, contact SEW-EURODRIVE
Unusual noise in the area where the gear unit is mounted	<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 too high Gear units with fan: Air intake opening/gear unit housing contaminated For gear units with built-in cooling: Cooling liquid flow rate too low; cooling liquid temperature too high; deposits in cooling system Malfunctions of the oil/air or oil-water cooling system Malfunction in the water cooling (water cooling cover, water cooling cartridge) 	<ul style="list-style-type: none"> Check oil level, correct if necessary Check when the oil was last changed; change the oil, if necessary Analyze the oil to determine the cause; take measures, if necessary; change the oil Protect the gear unit from external heat sources (e.g. provide shade) Check air intake openings, clean them if necessary; clean the gear unit housing Check the cooling liquid flow rate; check the entry temperature of the cooling liquid; clean the cooling system Observe the separate operating instructions for the oil-water and oil-air cooling system. Check the cooling water throughput and the entry temperature of the cooling water, clean the cooling system
Temperature at bearing points too high	<ul style="list-style-type: none"> Not enough oil Oil too old Bearing damaged 	<ul style="list-style-type: none"> Check oil level, correct if necessary Check when the oil was last changed; change the oil, if necessary Check the bearing and replace it if necessary. Contact SEW-EURODRIVE.

Fault	Possible cause	Measure
Oil leaking <ul style="list-style-type: none"> From cover plate From inspection cover From bearing cover From mounting flange 	<ul style="list-style-type: none"> Seal not tight at: <ul style="list-style-type: none"> Cover plate Inspection cover Bearing cover Mounting flange 	<ul style="list-style-type: none"> Tighten the bolts on the respective cover. Observe the gear unit. Contact SEW-EURODRIVE if oil is still leaking
Oil leaking <ul style="list-style-type: none"> At the gear unit breather 	<ul style="list-style-type: none"> Too much oil Drive not installed in proper mounting position Frequent cold starts (oil foaming) and/or high oil level 	<ul style="list-style-type: none"> Check oil level, correct if necessary Install gear unit breather correctly and adjust the oil level Install oil expansion tank
Oil leaking <ul style="list-style-type: none"> from the screw plug from the oil drain valve 	<ul style="list-style-type: none"> Seal not tight Fittings loosened 	<ul style="list-style-type: none"> Retighten screw Retighten the fitting and screw
Oil leaking ¹⁾ <ul style="list-style-type: none"> From oil seal 	<ul style="list-style-type: none"> Too much oil Sealing lip of the oil seal turned up Oil seal damaged/worn 	<ul style="list-style-type: none"> Check oil level, correct if necessary Vent the gear unit, observe the gear unit. Contact SEW-EURODRIVE if oil is still leaking. Check oil seals; replace if necessary
Malfunction in the oil-water or oil-air cooling system	<ul style="list-style-type: none"> Malfunction of the oil-water or oil-air cooling system 	<ul style="list-style-type: none"> Observe the separate operating instructions for the oil-water or oil-air cooling system.

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

9.4 Disposal

Dispose gear units in accordance with the regulations in force regarding respective materials:

- Steel scrap
 - Housing parts
 - Gears
 - Shafts
 - Rolling bearing
- Collect used oil and dispose of it according to the regulations in force.

Dispose of the motors in accordance with the material structure and the regulations in force:

- Iron
- Aluminum
- Copper
- Plastics
- Electronic parts
- Oil and grease (not mixed with solvents)

10 Address list

Algeria			
Sales	Algiers	REDUCOM Sarl 16, rue des Frères Zaghroune Bellevue 16200 El Harrach Alger	Tel. +213 21 8214-91 Fax +213 21 8222-84 http://www.reducom-dz.com info@reducom-dz.com
Argentina			
Assembly Sales	Buenos Aires	SEW EURODRIVE ARGENTINA S.A. Ruta Panamericana Km 37.5, Lote 35 (B1619IEA) Centro Industrial Garín Prov. de Buenos Aires	Tel. +54 3327 4572-84 Fax +54 3327 4572-21 http://www.sew-eurodrive.com.ar sewar@sew-eurodrive.com.ar
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	Vienna	SEW-EURODRIVE Ges.m.b.H. Richard-Strauss-Straße 24 1230 Wien	Tel. +43 1 617 55 00-0 Fax +43 1 617 55 00-30 http://www.sew-eurodrive.at sew@sew-eurodrive.at
Bangladesh			
Sales	Bangladesh	SEW-EURODRIVE INDIA PRIVATE LIMITED 345 DIT Road East Rampura Dhaka-1219, Bangladesh	Tel. +88 01729 097309 salesdhaka@seweurodrivebangladesh.com
Belarus			
Sales	Minsk	Foreign unitary production enterprise SEW- EURODRIVE Rybalko Str. 26 220033 Minsk	Tel. +375 17 298 47 56 / 298 47 58 Fax +375 17 298 47 54 http://www.sew.by sales@sew.by
Belgium			
Assembly Sales Service	Brussels	SEW-EURODRIVE n.v./s.a. Researchpark Haasrode 1060 Evenementenlaan 7 3001 Leuven	Tel. +32 16 386-311 Fax +32 16 386-336 http://www.sew-eurodrive.be info@sew-eurodrive.be
Service Competence Center	Industrial Gears	SEW-EURODRIVE n.v./s.a. Rue de Parc Industriel, 31 6900 Marche-en-Famenne	Tel. +32 84 219-878 Fax +32 84 219-879 http://www.sew-eurodrive.be service-IG@sew-eurodrive.be
Brazil			
Production Sales Service	São Paulo	SEW-EURODRIVE Brasil Ltda. Estrada Municipal José Rubim, 205 – Rodovia Santos Dumont Km 49 Indaiatuba – 13347-510 – SP	Tel. +55 19 3835-8000 sew@sew.com.br
Assembly Sales Service	Rio Claro	SEW-EURODRIVE Brasil Ltda. Rodovia Washington Luiz, Km 172 Condomínio Industrial Conpark Caixa Postal: 327 13501-600 – Rio Claro / SP	Tel. +55 19 3522-3100 Fax +55 19 3524-6653 montadora.rc@sew.com.br
	Joinville	SEW-EURODRIVE Brasil Ltda. Rua Dona Francisca, 12.346 – Pirabeiraba 89239-270 – Joinville / SC	Tel. +55 47 3027-6886 Fax +55 47 3027-6888 filial.sc@sew.com.br
Bulgaria			
Sales	Sofia	BEVER-DRIVE GmbH Bogdanovetz Str.1 1606 Sofia	Tel. +359 2 9151160 Fax +359 2 9151166 bever@bever.bg

Cameroon

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

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

Chile

Assembly Sales Service	Santiago de Chile	SEW-EURODRIVE CHILE LTDA Las Encinas 1295 Parque Industrial Valle Grande LAMP Santiago de Chile P.O. Box Casilla 23 Correo Quilicura - Santiago - Chile	Tel. +56 2 2757 7000 Fax +56 2 2757 7001 http://www.sew-eurodrive.cl ventas@sew-eurodrive.cl
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China

Production Assembly Sales Service	Tianjin	SEW-EURODRIVE (Tianjin) Co., Ltd. No. 78, 13th Avenue, TEDA Tianjin 300457	Tel. +86 22 25322612 Fax +86 22 25323273 http://www.sew-eurodrive.cn info@sew-eurodrive.cn
Assembly Sales Service	Suzhou	SEW-EURODRIVE (Suzhou) Co., Ltd. 333, Suhong Middle Road Suzhou Industrial Park Jiangsu Province, 215021	Tel. +86 512 62581781 Fax +86 512 62581783 suzhou@sew-eurodrive.cn
	Guangzhou	SEW-EURODRIVE (Guangzhou) Co., Ltd. No. 9, JunDa Road East Section of GETDD Guangzhou 510530	Tel. +86 20 82267890 Fax +86 20 82267922 guangzhou@sew-eurodrive.cn
	Shenyang	SEW-EURODRIVE (Shenyang) Co., Ltd. 10A-2, 6th Road Shenyang Economic Technological Development Area Shenyang, 110141	Tel. +86 24 25382538 Fax +86 24 25382580 shenyang@sew-eurodrive.cn
	Taiyuan	SEW-EURODRIVE (Taiyuan) Co., Ltd. No.3, HuaZhang Street, TaiYuan Economic & Technical Development Zone ShanXi, 030032	Tel. +86-351-7117520 Fax +86-351-7117522 taiyuan@sew-eurodrive.cn
	Wuhan	SEW-EURODRIVE (Wuhan) Co., Ltd. 10A-2, 6th Road No. 59, the 4th Quanli Road, WEDA 430056 Wuhan	Tel. +86 27 84478388 Fax +86 27 84478389 wuhan@sew-eurodrive.cn
	Xi'An	SEW-EURODRIVE (Xi'An) Co., Ltd. No. 12 Jinye 2nd Road Xi'An High-Technology Industrial Development Zone Xi'An 710065	Tel. +86 29 68686262 Fax +86 29 68686311 xian@sew-eurodrive.cn
Sales Service	Hong Kong	SEW-EURODRIVE LTD. Unit No. 801-806, 8th Floor Hong Leong Industrial Complex No. 4, Wang Kwong Road Kowloon, Hong Kong	Tel. +852 36902200 Fax +852 36902211 contact@sew-eurodrive.hk

Colombia			
Assembly Sales Service	Bogota	SEW-EURODRIVE COLOMBIA LTDA. Calle 17 No. 132-18 Interior 2 Bodega 6, Manzana B Santafé de Bogotá	Tel. +57 1 54750-50 Fax +57 1 54750-44 http://www.sew-eurodrive.com.co sew@sew-eurodrive.com.co
Croatia			
Sales Service	Zagreb	KOMPEKS d. o. o. Zeleni dol 10 10 000 Zagreb	Tel. +385 1 4613-158 Fax +385 1 4613-158 kompeks@inet.hr
Czech Republic			
Assembly Sales Service	Hostivice	SEW-EURODRIVE CZ s.r.o. Floriánova 2459 253 01 Hostivice	Tel. +420 255 709 601 Fax +420 235 350 613 http://www.sew-eurodrive.cz sew@sew-eurodrive.cz
	Drive Service Hotline / 24 Hour Service	+420 800 739 739 (800 SEW SEW)	Service Tel. +420 255 709 632 Fax +420 235 358 218 servis@sew-eurodrive.cz
Denmark			
Assembly Sales Service	Copenhagen	SEW-EURODRIVEA/S Geminivej 28-30 2670 Greve	Tel. +45 43 95 8500 Fax +45 43 9585-09 http://www.sew-eurodrive.dk sew@sew-eurodrive.dk
Egypt			
Sales Service	Cairo	Copam Egypt for Engineering & Agencies Building 10, Block 13005, First Industrial Zone, Obour City Cairo	Tel. +202 44812673 / 79 (7 lines) Fax +202 44812685 http://www.copam-egypt.com copam@copam-egypt.com
Estonia			
Sales	Tallin	ALAS-KUUL AS Reti tee 4 75301 Peetri küla, Rae vald, Harjumaa	Tel. +372 6593230 Fax +372 6593231 http://www.alas-kuul.ee veiko.soots@alas-kuul.ee
Finland			
Assembly Sales Service	Hollola	SEW-EURODRIVE OY Vesimäentie 4 15860 Hollola	Tel. +358 201 589-300 Fax +358 3 780-6211 http://www.sew-eurodrive.fi sew@sew.fi
Service	Hollola	SEW-EURODRIVE OY Keskikankaantie 21 15860 Hollola	Tel. +358 201 589-300 Fax +358 3 780-6211 http://www.sew-eurodrive.fi sew@sew.fi
Production Assembly	Karkkila	SEW Industrial Gears Oy Santasalonkatu 6, PL 8 03620 Karkkila, 03601 Karkkila	Tel. +358 201 589-300 Fax +358 201 589-310 http://www.sew-eurodrive.fi sew@sew.fi
France			
Production Sales Service	Hagenau	SEW-USOCOME 48-54 route de Soufflenheim B. P. 20185 67506 Haguenau Cedex	Tel. +33 3 88 73 67 00 Fax +33 3 88 73 66 00 http://www.usocom.com sew@usocom.com
Production	Forbach	SEW-USOCOME Zone industrielle Technopôle Forbach Sud B. P. 30269 57604 Forbach Cedex	Tel. +33 3 87 29 38 00
	Brumath	SEW-USOCOME 1 Rue de Bruxelles 67670 Mommenheim Cedex	Tel. +33 3 88 37 48 00
Assembly Sales Service	Bordeaux	SEW-USOCOME Parc d'activités de Magellan 62 avenue de Magellan – B. P. 182 33607 Pessac Cedex	Tel. +33 5 57 26 39 00 Fax +33 5 57 26 39 09

France

Lyon	SEW-USOCOME 75 rue Antoine Condorcet 38090 Vaulx-Milieu	Tel. +33 4 74 99 60 00 Fax +33 4 74 99 60 15
Nantes	SEW-USOCOME Parc d'activités de la forêt 4 rue des Fontenelles 44140 Le Bignon	Tel. +33 2 40 78 42 00 Fax +33 2 40 78 42 20
Paris	SEW-USOCOME Zone industrielle 2 rue Denis Papin 77390 Verneuil l'Étang	Tel. +33 1 64 42 40 80 Fax +33 1 64 42 40 88

Gabon

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

Headquarters Production Sales	Bruchsal	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 42 76646 Bruchsal	Tel. +49 7251 75-0 Fax +49 7251 75-1970 http://www.sew-eurodrive.de sew@sew-eurodrive.de
Production / Industrial Gears	Bruchsal	SEW-EURODRIVE GmbH & Co KG Christian-Pähr-Str. 10 76646 Bruchsal	Tel. +49 7251 75-0 Fax +49 7251 75-2970
Production	Graben	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 1 76676 Graben-Neudorf P.O. Box Postfach 1220 – D-76671 Graben-Neudorf	Tel. +49 7251 75-0 Fax +49 7251-2970
	Östringen	SEW-EURODRIVE GmbH & Co KG, Werk Östringen Franz-Gurk-Straße 2 76684 Östringen	Tel. +49 7253 9254-0 Fax +49 7253 9254-90 oestringen@sew-eurodrive.de
Service Competence Center	Mechanics / Mechatronics	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 1 76676 Graben-Neudorf	Tel. +49 7251 75-1710 Fax +49 7251 75-1711 scc-mechanik@sew-eurodrive.de
	Electronics	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 42 76646 Bruchsal	Tel. +49 7251 75-1780 Fax +49 7251 75-1769 scc-elektronik@sew-eurodrive.de
Drive Technology Center	North	SEW-EURODRIVE GmbH & Co KG Alte Ricklinger Straße 40-42 30823 Garbsen (Hannover)	Tel. +49 5137 8798-30 Fax +49 5137 8798-55 dtc-nord@sew-eurodrive.de
	East	SEW-EURODRIVE GmbH & Co KG Dankritzer Weg 1 08393 Meerane (Zwickau)	Tel. +49 3764 7606-0 Fax +49 3764 7606-30 dtc-ost@sew-eurodrive.de
	South	SEW-EURODRIVE GmbH & Co KG Domagkstraße 5 85551 Kirchheim (München)	Tel. +49 89 909552-10 Fax +49 89 909552-50 dtc-sued@sew-eurodrive.de
	West	SEW-EURODRIVE GmbH & Co KG Siemensstraße 1 40764 Langenfeld (Düsseldorf)	Tel. +49 2173 8507-30 Fax +49 2173 8507-55 dtc-west@sew-eurodrive.de
Drive Center	Berlin	SEW-EURODRIVE GmbH & Co KG Alexander-Meißner-Straße 44 12526 Berlin	Tel. +49 306331131-30 Fax +49 306331131-36 dc-berlin@sew-eurodrive.de
	Ludwigshafen	SEW-EURODRIVE GmbH & Co KG c/o BASF SE Gebäude W130 Raum 101 67056 Ludwigshafen	Tel. +49 7251 75 3759 Fax +49 7251 75 503759 dc-ludwigshafen@sew-eurodrive.de
	Saarland	SEW-EURODRIVE GmbH & Co KG Gottlieb-Daimler-Straße 4 66773 Schwalbach Saar – Hülzweiler	Tel. +49 6831 48946 10 Fax +49 6831 48946 13 dc-saarland@sew-eurodrive.de
	Ulm	SEW-EURODRIVE GmbH & Co KG Dieselstraße 18 89160 Dornstadt	Tel. +49 7348 9885-0 Fax +49 7348 9885-90 dc-ulm@sew-eurodrive.de

Germany			
	Würzburg	SEW-EURODRIVE GmbH & Co KG Nürnbergerstraße 118 97076 Würzburg-Lengfeld	Tel. +49 931 27886-60 Fax +49 931 27886-66 dc-wuerzburg@sew-eurodrive.de
Drive Service Hotline / 24 Hour Service			0 800 SEWHELP 0 800 7394357
Great Britain			
Assembly Sales Service	Normanton	SEW-EURODRIVE Ltd. DeVilliers Way Trident Park Normanton West Yorkshire WF6 1GX	Tel. +44 1924 893-855 Fax +44 1924 893-702 http://www.sew-eurodrive.co.uk info@sew-eurodrive.co.uk
Drive Service Hotline / 24 Hour Service			Tel. 01924 896911
Greece			
Sales	Athens	Christ. Boznos & Son S.A. 12, K. Mavromichali Street P.O. Box 80136 18545 Piraeus	Tel. +30 2 1042 251-34 Fax +30 2 1042 251-59 http://www.boznos.gr info@boznos.gr
Hungary			
Sales Service	Budapest	SEW-EURODRIVE Kft. Csillaghegyi út 13. 1037 Budapest	Tel. +36 1 437 06-58 Fax +36 1 437 06-50 http://www.sew-eurodrive.hu office@sew-eurodrive.hu
Iceland			
Sales	Reykjavik	Varma & Vélaverk ehf. Knarrarvogi 4 104 Reykjavik	Tel. +354 585 1070 Fax +354 585)1071 http://www.varmaverk.is vov@vov.is
India			
Registered Office Assembly Sales Service	Vadodara	SEW-EURODRIVE India Private Limited Plot No. 4, GIDC POR Ramangamdi • Vadodara - 391 243 Gujarat	Tel. +91 265 3045200 Fax +91 265 3045300 http://www.seweurodriveindia.com salesvadodara@seweurodriveindia.com
Assembly Sales Service	Chennai	SEW-EURODRIVE India Private Limited Plot No. K3/1, Sipcot Industrial Park Phase II Mambakkam Village Sriperumbudur - 602105 Kancheepuram Dist, Tamil Nadu	Tel. +91 44 37188888 Fax +91 44 37188811 saleschennai@seweurodriveindia.com
	Pune	SEW-EURODRIVE India Private Limited Plant: Plot No. D236/1, Chakan Industrial Area Phase- II, Warale, Tal- Khed, Pune-410501, Maharashtra	Tel. +91 21 35 628700 Fax +91 21 35 628715 salespune@seweurodriveindia.com
Indonesia			
Sales	Medan	PT. Serumpun Indah Lestari Jl.Pulau Solor no. 8, Kawasan Industri Medan II Medan 20252	Tel. +62 61 687 1221 Fax +62 61 6871429 / +62 61 6871458 / +62 61 30008041 sil@serumpunindah.com serumpunindah@yahoo.com http://www.serumpunindah.com
	Jakarta	PT. Cahaya Sukses Abadi Komplek Rukan Puri Mutiara Blok A no 99, Sunter Jakarta 14350	Tel. +62 21 65310599 Fax +62 21 65310600 csajkt@cbn.net.id
	Jakarta	PT. Agrindo Putra Lestari Jl.Pantai Indah Selatan, Komplek Sentra Industri Terpadu, Pantai indah Kapuk Tahap III, Blok E No. 27 Jakarta 14470	Tel. +62 21 2921-8899 Fax +62 21 2921-8988 aplindo@indosat.net.id http://www.aplindo.com

Indonesia			
	Surabaya	PT. TRIAGRI JAYA ABADI Jl. Sukosemolo No. 63, Galaxi Bumi Permai G6 No. 11 Surabaya 60111	Tel. +62 31 5990128 Fax +62 31 5962666 sales@triagri.co.id http://www.triagri.co.id
	Surabaya	CV. Multi Mas Jl. Raden Saleh 43A Kav. 18 Surabaya 60174	Tel. +62 31 5458589 Fax +62 31 5317220 sianhwa@sby.centrin.net.id http://www.cvmultimas.com
Ireland			
Sales Service	Dublin	Alpert Engineering Ltd. 48 Moyle Road Dublin Industrial Estate Glasnevin, Dublin 11	Tel. +353 1 830-6277 Fax +353 1 830-6458 http://www.alpert.ie info@alpert.ie
Israel			
Sales	Tel Aviv	Liraz Handasa Ltd. Ahofer Str 34B / 228 58858 Holon	Tel. +972 3 5599511 Fax +972 3 5599512 http://www.liraz-handasa.co.il office@liraz-handasa.co.il
Italy			
Assembly Sales Service	Milan	SEW-EURODRIVE di R. Blickle & Co.s.a.s. Via Bernini, 14 20020 Solaro (Milano)	Tel. +39 02 96 980229 Fax +39 02 96 980 999 http://www.sew-eurodrive.it milano@sew-eurodrive.it
Ivory Coast			
Sales	Abidjan	SEW-EURODRIVE SARL Ivory Coast Rue des Pêcheurs, Zone 3 26 BP 916 Abidjan 26	Tel. +225 21 21 81 05 Fax +225 21 25 30 47 info@sew-eurodrive.ci http://www.sew-eurodrive.ci
Japan			
Assembly Sales Service	Iwata	SEW-EURODRIVE JAPAN CO., LTD 250-1, Shimoman-no, Iwata Shizuoka 438-0818	Tel. +81 538 373811 Fax +81 538 373814 http://www.sew-eurodrive.co.jp sewjapan@sew-eurodrive.co.jp hamamatsu@sew-eurodrive.co.jp
Kazakhstan			
Sales	Almaty	SEW-EURODRIVE LLP 291-291A, Tole bi street 050031, Almaty	Tel. +7 (727) 350 5156 Fax +7 (727) 350 5156 http://www.sew-eurodrive.kz sew@sew-eurodrive.kz
	Tashkent	SEW-EURODRIVE LLP Representative office in Uzbekistan 96A, Sharaf Rashidov street, Tashkent, 100084	Tel. +998 71 2359411 Fax +998 71 2359412 http://www.sew-eurodrive.uz sew@sew-eurodrive.uz
	Ulaanbaatar	IM Trading LLC Narny zam street 62 Sukhbaatar district, Ulaanbaatar 14230	Tel. +976-77109997 Fax +976-77109997 imt@imt.mn
Kenya			
Sales	Nairobi	SEW-EURODRIVE Pty Ltd Transnational Plaza, 5th Floor Mama Ngina Street P.O. Box 8998-00100 Nairobi	Tel. +254 791 398840 http://www.sew-eurodrive.co.tz info@sew.co.tz
Latvia			
Sales	Riga	SIA Alas-Kuul Katlakalna 11C 1073 Riga	Tel. +371 6 7139253 Fax +371 6 7139386 http://www.alas-kuul.lv info@alas-kuul.com

Lebanon			
Sales (Lebanon)	Beirut	Gabriel Acar & Fils sarl B. P. 80484 Bourj Hammoud, Beirut	Tel. +961 1 510 532 Fax +961 1 494 971 ssacar@inco.com.lb
Sales (Jordan, Kuwait , Beirut Saudi Arabia, Syria)		Middle East Drives S.A.L. (offshore) Sin El Fil. B. P. 55-378 Beirut	Tel. +961 1 494 786 Fax +961 1 494 971 http://www.medrives.com info@medrives.com
Lithuania			
Sales	Alytus	UAB Irseva Statybininku 106C 63431 Alytus	Tel. +370 315 79204 Fax +370 315 56175 http://www.irseva.lt irmantas@irseva.lt
Luxembourg			
representation: Belgium			
Macedonia			
Sales	Skopje	Boznos DOOEL Dime Anicin 2A/7A 1000 Skopje	Tel. +389 23256553 Fax +389 23256554 http://www.boznos.mk
Malaysia			
Assembly Sales Service	Johor	SEW-EURODRIVE SDN BHD No. 95, Jalan Seroja 39, Taman Johor Jaya 81000 Johor Bahru, Johor West Malaysia	Tel. +60 7 3549409 Fax +60 7 3541404 sales@sew-eurodrive.com.my
Mexiko			
Assembly Sales Service	Quéretaro	SEW-EURODRIVE MEXICO S.A. de C.V. SEM-981118-M93 Tequisquiapan No. 102 Parque Industrial Quéretaro C.P. 76220 Querétaro, México	Tel. +52 442 1030-300 Fax +52 442 1030-301 http://www.sew-eurodrive.com.mx scmexico@sew-eurodrive.com.mx
Sales Service	Puebla	SEW-EURODRIVE MEXICO S.A. de C.V. Calzada Zavaleta No. 3922 Piso 2 Local 6 Col. Santa Cruz Buenavista C.P. 72154 Puebla, México	Tel. +52 (222) 221 248 http://www.sew-eurodrive.com.mx scmexico@sew-eurodrive.com.mx
Mongolia			
Technical Office	Ulaanbaatar	IM Trading LLC Narny zam street 62 Union building, Suite A-403-1 Sukhbaatar district, Ulaanbaatar 14230	Tel. +976-77109997 Tel. +976-99070395 Fax +976-77109997 http://imt.mn/ imt@imt.mn
Morocco			
Sales Service	Bouskoura	SEW-EURODRIVE Morocco Parc Industriel CFCIM, Lot 55 and 59 Bouskoura	Tel. +212 522 88 85 00 Fax +212 522 88 84 50 http://www.sew-eurodrive.ma sew@sew-eurodrive.ma
Namibia			
Sales	Swakopmund	DB Mining & Industrial Services Einstein Street Strauss Industrial Park Unit1 Swakopmund	Tel. +264 64 462 738 Fax +264 64 462 734 anton@dbminingnam.com
Netherlands			
Assembly Sales Service	Rotterdam	SEW-EURODRIVE B.V. Industrieweg 175 3044 AS Rotterdam Postbus 10085 3004 AB Rotterdam	Tel. +31 10 4463-700 Fax +31 10 4155-552 Service: 0800-SEWHELP http://www.sew-eurodrive.nl info@sew-eurodrive.nl

New Zealand			
Assembly Sales Service	Auckland	SEW-EURODRIVE NEW ZEALAND LTD. P.O. Box 58-428 82 Greenmount drive East Tamaki Auckland	Tel. +64 9 2745627 Fax +64 9 2740165 http://www.sew-eurodrive.co.nz sales@sew-eurodrive.co.nz
	Christchurch	SEW-EURODRIVE NEW ZEALAND LTD. 30 Lodestar Avenue, Wigram Christchurch	Tel. +64 3 384-6251 Fax +64 3 384-6455 sales@sew-eurodrive.co.nz
Nigeria			
Sales	Lagos	Greenpeg Nig. Ltd Plot 296A, Adeyemo Akapo Str. Omole GRA Ikeja Lagos-Nigeria	Tel. +234-701-821-9200-1 http://www.greenpegltd.com bolaji.adekunle@greenpegltd.com
Norway			
Assembly Sales Service	Moss	SEW-EURODRIVE A/S Solgaard skog 71 1599 Moss	Tel. +47 69 24 10 20 Fax +47 69 24 10 40 http://www.sew-eurodrive.no sew@sew-eurodrive.no
Pakistan			
Sales	Karachi	Industrial Power Drives Al-Fatah Chamber A/3, 1st Floor Central Com- mercial Area, Sultan Ahmed Shah Road, Block 7/8, Karachi	Tel. +92 21 452 9369 Fax +92-21-454 7365 seweurodrive@cyber.net.pk
Paraguay			
Sales	Fernando de la Mora	SEW-EURODRIVE PARAGUAY S.R.L De la Victoria 112, Esquina nueva Asunción Departamento Central Fernando de la Mora, Barrio Bernardino	Tel. +595 991 519695 Fax +595 21 3285539 sewpy@sew-eurodrive.com.py
Peru			
Assembly Sales Service	Lima	SEW EURODRIVE DEL PERU S.A.C. Los Calderos, 120-124 Urbanizacion Industrial Vulcano, ATE, Lima	Tel. +51 1 3495280 Fax +51 1 3493002 http://www.sew-eurodrive.com.pe sewperu@sew-eurodrive.com.pe
Philippines			
Sales	Makati	P.T. Cerna Corporation 4137 Ponte St., Brgy. Sta. Cruz Makati City 1205	Tel. +63 2 519 6214 Fax +63 2 890 2802 mech_drive_sys@ptcerna.com http://www.ptcerna.com
Poland			
Assembly Sales Service	Łódź	SEW-EURODRIVE Polska Sp.z.o.o. ul. Techniczna 5 92-518 Łódź	Tel. +48 42 293 00 00 Fax +48 42 293 00 49 http://www.sew-eurodrive.pl sew@sew-eurodrive.pl
	Service	Tel. +48 42 293 0030 Fax +48 42 293 0043	24 Hour Service Tel. +48 602 739 739 (+48 602 SEW SEW) serwis@sew-eurodrive.pl
Portugal			
Assembly Sales Service	Coimbra	SEW-EURODRIVE, LDA. Av. da Fonte Nova, n.º 86 3050-379 Mealhada	Tel. +351 231 20 9670 Fax +351 231 20 3685 http://www.sew-eurodrive.pt infosew@sew-eurodrive.pt
Romania			
Sales Service	Bucharest	Sialco Trading SRL str. Brazilia nr. 36 011783 Bucuresti	Tel. +40 21 230-1328 Fax +40 21 230-7170 sialco@sialco.ro
Russia			
Assembly Sales Service	St. Petersburg	ЗАО «СЕВ-ЕВРОДРАЙФ» а. я. 36 195220 Санкт-Петербург	Tel. +7 812 3332522 / +7 812 5357142 Fax +7 812 3332523 http://www.sew-eurodrive.ru sew@sew-eurodrive.ru

Sambia

representation: South Africa

Senegal

Sales	Dakar	SENEMECA Mécanique Générale Km 8, Route de Rufisque B.P. 3251, Dakar	Tel. +221 338 494 770 Fax +221 338 494 771 http://www.senemeca.com senemeca@senemeca.sn
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Serbia

Sales	Belgrade	DIPAR d.o.o. Ustanicka 128a PC Košum, IV floor 11000 Beograd	Tel. +381 11 347 3244 / +381 11 288 0393 Fax +381 11 347 1337 office@dipar.rs
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Singapore

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

Sales	Bratislava	SEW-Eurodrive SK s.r.o. Rybničná 40 831 06 Bratislava	Tel. +421 2 33595 202, 217, 201 Fax +421 2 33595 200 http://www.sew-eurodrive.sk sew@sew-eurodrive.sk
	Košice	SEW-Eurodrive SK s.r.o. Slovenská ulica 26 040 01 Košice	Tel. +421 55 671 2245 Fax +421 55 671 2254 Mobile +421 907 671 976 sew@sew-eurodrive.sk

Slovenia

Sales Service	Celje	Pakman - Pogonska Tehnika d.o.o. Ul. XIV. divizije 14 3000 Celje	Tel. +386 3 490 83-20 Fax +386 3 490 83-21 pakman@siol.net
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South Africa

Assembly Sales Service	Johannesburg	SEW-EURODRIVE (PROPRIETARY) LIMITED Eurodrive House Cnr. Adcock Ingram and Aerodrome Roads Aeroton Ext. 2 Johannesburg 2013 P.O.Box 90004 Bertsham 2013	Tel. +27 11 248-7000 Fax +27 11 248-7289 http://www.sew.co.za info@sew.co.za
	Cape Town	SEW-EURODRIVE (PROPRIETARY) LIMITED Rainbow Park Cnr. Racecourse & Omuramba Road Montague Gardens Cape Town P.O.Box 36556 Chempet 7442	Tel. +27 21 552-9820 Fax +27 21 552-9830 Telex 576 062 bgriffiths@sew.co.za
	Durban	SEW-EURODRIVE (PROPRIETARY) LIMITED 48 Prospect Road Isipingo Durban P.O. Box 10433, Ashwood 3605	Tel. +27 31 902 3815 Fax +27 31 902 3826 cdejager@sew.co.za
	Nelspruit	SEW-EURODRIVE (PROPRIETARY) LIMITED 7 Christie Crescent Vintonia P.O.Box 1942 Nelspruit 1200	Tel. +27 13 752-8007 Fax +27 13 752-8008 robermeyer@sew.co.za

South Korea

Assembly Sales Service	Ansan	SEW-EURODRIVE KOREA CO., LTD. 7, Dangjaengi-ro, Danwon-gu, Ansan-si, Gyeonggi-do, Zip 425-839	Tel. +82 31 492-8051 Fax +82 31 492-8056 http://www.sew-eurodrive.kr master.korea@sew-eurodrive.com
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South Korea

Busan	SEW-EURODRIVE KOREA CO., LTD. 28, Noksansandan 262-ro 50beon-gil, Gangseo-gu, Busan, Zip 618-820	Tel. +82 51 832-0204 Fax +82 51 832-0230
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Spain

Assembly Sales Service	Bilbao	SEW-EURODRIVE ESPAÑA, S.L. Parque Tecnológico, Edificio, 302 48170 Zamudio (Vizcaya)	Tel. +34 94 43184-70 http://www.sew-eurodrive.es sew.spain@sew-eurodrive.es
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Sri Lanka

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

Sales	Manzini	C G Trading Co. (Pty) Ltd PO Box 2960 Manzini M200	Tel. +268 2 518 6343 Fax +268 2 518 5033 engineering@cgtrading.co.sz
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Sweden

Assembly Sales Service	Jönköping	SEW-EURODRIVE AB Gnejsvägen 6-8 553 03 Jönköping Box 3100 S-550 03 Jönköping	Tel. +46 36 34 42 00 Fax +46 36 34 42 80 http://www.sew-eurodrive.se jonkoping@sew.se
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Switzerland

Assembly Sales Service	Basel	Alfred Imhof A.G. Jurastrasse 10 4142 Münchenstein bei Basel	Tel. +41 61 417 1717 Fax +41 61 417 1700 http://www.imhof-sew.ch info@imhof-sew.ch
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Taiwan

Sales	Taipei	Ting Shou Trading Co., Ltd. 6F-3, No. 267, Sec. 2 Tung Huw S. Road Taipei	Tel. +886 2 27383535 Fax +886 2 27368268 Telex 27 245 sewtwn@ms63.hinet.net http://www.tingshou.com.tw
	Nan Tou	Ting Shou Trading Co., Ltd. No. 55 Kung Yeh N. Road Industrial District Nan Tou 540	Tel. +886 49 255353 Fax +886 49 257878 sewtwn@ms63.hinet.net http://www.tingshou.com.tw

Tanzania

Sales	Daressalam	SEW-EURODRIVE PTY LIMITED TANZANIA Plot 52, Regent Estate PO Box 106274 Dar Es Salaam	Tel. +255 0 22 277 5780 Fax +255 0 22 277 5788 http://www.sew-eurodrive.co.tz info@sew.co.tz
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Thailand

Assembly Sales Service	Chonburi	SEW-EURODRIVE (Thailand) Ltd. 700/456, Moo.7, Donhuaroh Muang Chonburi 20000	Tel. +66 38 454281 Fax +66 38 454288 sewthailand@sew-eurodrive.com
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Tunisia

Sales	Tunis	T. M.S. Technic Marketing Service Zone Industrielle Mghira 2 Lot No. 39 2082 Fouchana	Tel. +216 79 40 88 77 Fax +216 79 40 88 66 http://www.tms.com.tn tms@tms.com.tn
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Turkey

Assembly Sales Service	Kocaeli-Gebze	SEW-EURODRIVE Hareket Sistemleri San. Ve TIC. Ltd. Sti Gebze Organize Sanayi Böl. 401 Sok No. 401 41480 Gebze Kocaeli	Tel. +90 262 9991000 04 Fax +90 262 9991009 http://www.sew-eurodrive.com.tr sew@sew-eurodrive.com.tr
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Ukraine			
Assembly Sales Service	Dnipropetrovsk	ООО «СЕВ-Евродрайв» ул. Рабочая, 23-В, офис 409 49008 Днеп	Tel. +380 56 370 3211 Fax +380 56 372 2078 http://www.sew-eurodrive.ua sew@sew-eurodrive.ua
Uruguay			
Assembly Sales	Montevideo	SEW-EURODRIVE Uruguay, S. A. Jose Serrato 3569 Esquina Corumbe CP 12000 Montevideo	Tel. +598 2 21181-89 Fax +598 2 21181-90 sewuy@sew-eurodrive.com.uy
USA			
Production Assembly Sales Service	Southeast Region	SEW-EURODRIVE INC. 1295 Old Spartanburg Highway P.O. Box 518 Lyman, S.C. 29365	Tel. +1 864 439-7537 Fax Sales +1 864 439-7830 Fax Production +1 864 439-9948 Fax Assembly +1 864 439-0566 Fax Confidential/HR +1 864 949-5557 http://www.seweurodrive.com cslyman@seweurodrive.com
Assembly Sales Service	Northeast Region	SEW-EURODRIVE INC. Pureland Ind. Complex 2107 High Hill Road, P.O. Box 481 Bridgeport, New Jersey 08014	Tel. +1 856 467-2277 Fax +1 856 845-3179 csbridgeport@seweurodrive.com
	Midwest Region	SEW-EURODRIVE INC. 2001 West Main Street Troy, Ohio 45373	Tel. +1 937 335-0036 Fax +1 937 332-0038 cstroy@seweurodrive.com
	Southwest Region	SEW-EURODRIVE INC. 3950 Platinum Way Dallas, Texas 75237	Tel. +1 214 330-4824 Fax +1 214 330-4724 csdallas@seweurodrive.com
	Western Region	SEW-EURODRIVE INC. 30599 San Antonio St. Hayward, CA 94544	Tel. +1 510 487-3560 Fax +1 510 487-6433 cshayward@seweurodrive.com
	Wellford	SEW-EURODRIVE INC. 148/150 Finch Rd. Wellford, S.C. 29385	Tel. +1 864 439-7537 Fax +1 864 661 1167 IGOrders@seweurodrive.com
Additional addresses for service provided on request!			
Uzbekistan			
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