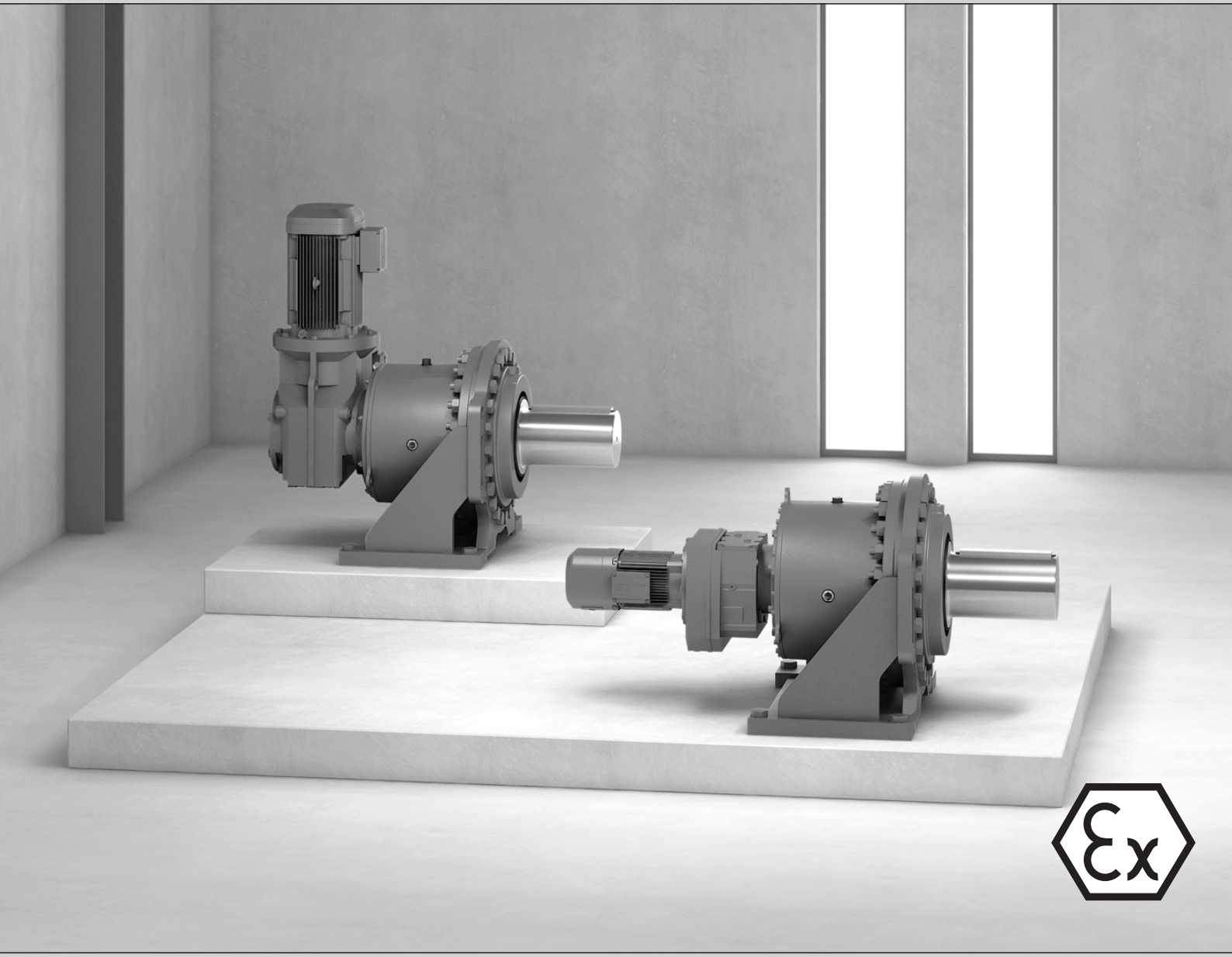
SEW EURODRIVE

Assembly and Operating Instructions



Explosion-Proof Industrial Gear Units

Planetary Gearmotor Sizes P.002 – P.102

Torque Classes from 24 kNm – 631 kNm

Edition 03/2018

24811335/EN

Table of contents

24811335/EN – 03/2018

24811335/EN – 03/2018

24811335/EN – 03/2018

1 General information

1.1 About this documentation

The current version of the documentation is the original.

This documentation is an integral part of the product. The documentation is written for all employees who assemble, install, start up, and service this product.

Make sure this documentation is accessible and legible. Ensure that persons responsible for the machinery and its operation as well as persons who work on the product 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, contact SEW-EURODRIVE.

1.2 Structure of the safety notes

1.2.1 Meaning of signal words

The following table shows the graduation 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 ON EXPLOSION PROTECTION	Important information about explosion protection	
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.

24811335/EN – 03/2018

Meaning of the hazard symbols

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

Hazard symbol	Meaning
	General hazard
	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.

24811335/EN – 03/2018

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

24811335/EN – 03/2018

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 EAC marking

On request, the explosion-proof gear units from SEW-EURODRIVE meet the requirements of the technical regulations of the Eurasian Economic customs union (Russia, Kazakhstan, Belarus, and Armenia). The EAC marking on the product certifies the conformity with the safety requirement of the Customs Union.

2.3 General information

INFORMATION

Explosive gas mixtures or concentrations of dust can lead to severe or fatal injuries in conjunction with hot, live, or moving parts of electrical machinery.

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

Never install or start up damaged products. Submit a complaint to the shipping company immediately in the event of damage.

Removing covers without authorization, improper use, or incorrect installation and operation may result in severe injuries to persons or damage to machinery.

All work related to transportation, storage, installation, assembly, connection, startup, operation, maintenance and repair may only be carried out by qualified specialists, in strict observance of:

- The relevant detailed operating instructions.
- The warning and safety signs on the gear unit and, if necessary, on the motor.
- 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.

24811335/EN – 03/2018

Refer to the documentation for more information.

2.4 Target group

Specialist for mechanical work

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:

- Qualification in the mechanical area in accordance with the national regulations
- Familiarity with this documentation

Specialist for electrotechnical work

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:

- Qualification in the electrotechnical area in accordance with the national regulations
- Familiarity with this documentation

Instructed persons

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.

All qualified personnel must wear appropriate protective clothing.

2.5 Designated use

The gear units are intended for industrial systems and may only be used in accordance with the information provided in SEW-EURODRIVE's technical documentation and the information given on the nameplate. They meet the requirements of the applicable standards and regulations and comply with the following directives and standards regarding explosion protection:

- Directive 2014/34/EU
- EN ISO 80079-36
- EN ISO 80079-37
- EN 60079-11

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.

24811335/EN – 03/2018

INFORMATION

It is essential that you observe the following information on explosion protection:

- A drive motor connected to the gear unit may only be operated under the conditions described in the chapter "Starting up industrial gear units in potentially explosive areas" (→ 🗎 119).
- Operate any motor connected to the gear unit on the frequency inverter only if the data on the gear unit nameplate is met.
- A motor mounted to a gear unit by means of an adapter or belt may only be operated if the data on the gear unit nameplate is met.
- Make sure that there are no aggressive substances in the vicinity that could damage the paint and seals.
- SEW-EURODRIVE delivers the gear units with a painting that complies with the requirements for preventing electrostatic charging according to EN ISO 80079-36. If you have to repaint a gear unit, you have to meet the requirements for preventing electrostatic charging according to EN ISO 80079-36.

2.6 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

2.7 Safety symbols on the gear unit

⚠ CAUTION

Safety symbols, nameplates, or information signs 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 symbols, nameplates, and information signs.

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

Safety symbol	Meaning
	Indicates the **oil dipstick**.
	Indicates the **oil sight glass**.

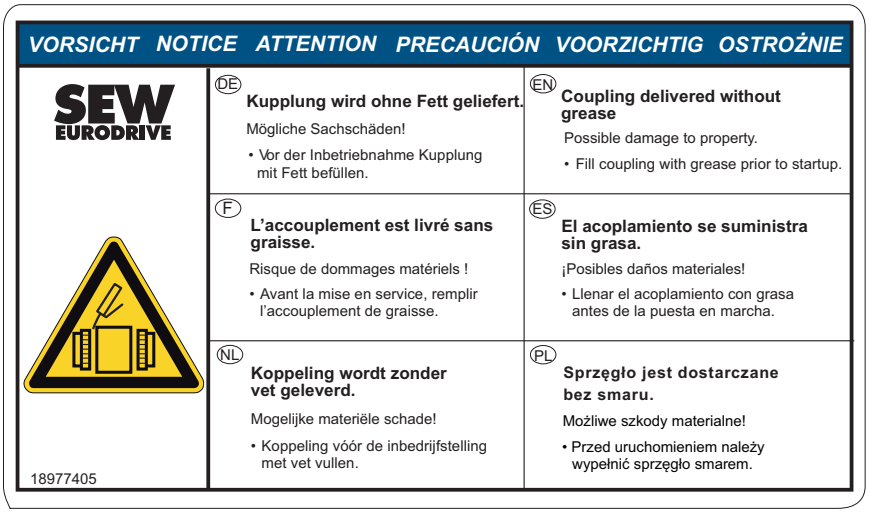
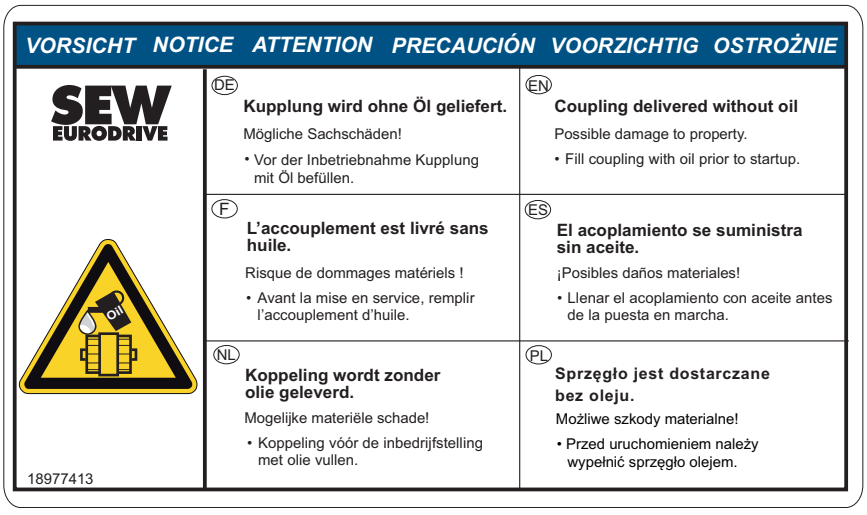
24811335/EN – 03/2018

Safety symbol	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.
	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.
	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.
	Helps avoid errors caused by lack of understanding. Read the information in the operating instructions.
	For pivoted mounting positions, this symbol on the information sign indicates the mounting position of the gear unit for **checking the oil**.
	Indicates the **bleeder screw**.
	Caution: Risk of burns caused by hot surface.

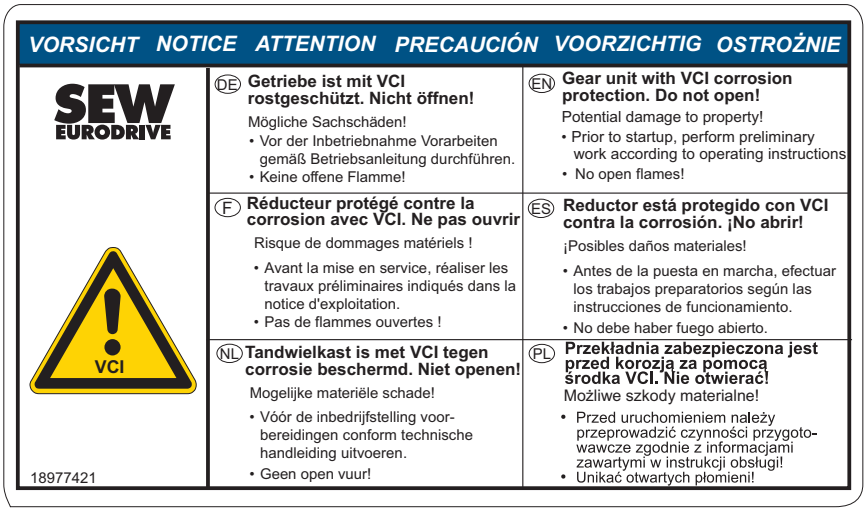
24811335/EN – 03/2018

Safety symbol	Meaning
	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.

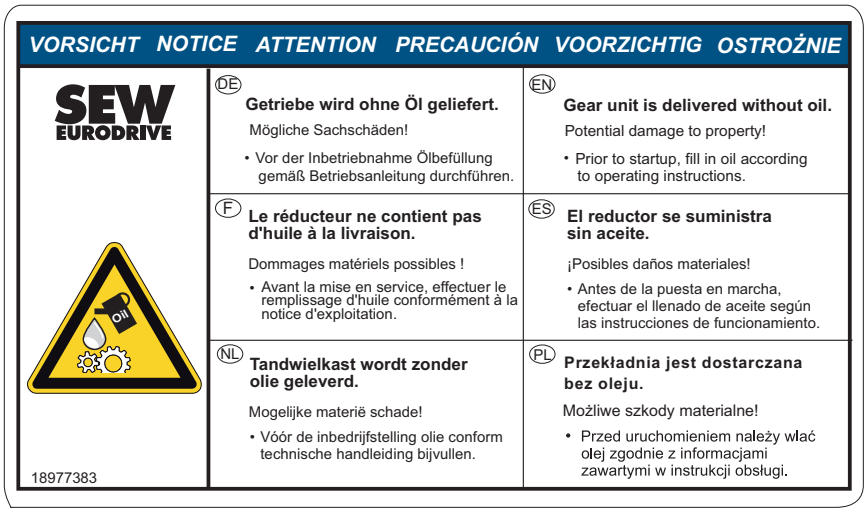
Meaning
The coupling is supplied without grease.  *9007204570573323*
The coupling is supplied without oil.  *9007204571876363*

Meaning
The gear unit is protected against corrosion with VCI.



9007204570575499

Gear unit is supplied without oil.



9007204570577675

24811335/EN – 03/2018

2.8 Symbols on the dimension sheet

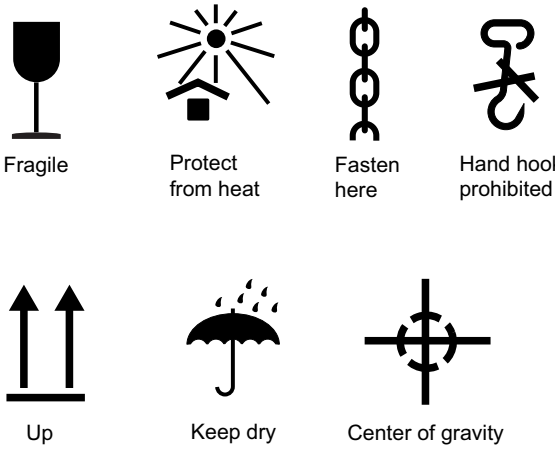
The safety symbols on the dimension sheet must be observed. They have the following meaning:

Safety symbol	Meaning
	Indicates the position of the **oil dipstick**.
	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(s) that need to be **relubricated**.
	Indicates the position of the **grease nipples** at the gear unit.
	Indicates the position of the **grease outlet**.
	Indicates the position of the **magnetic screw plug**.
	Indicates the position of the attachment points for **transport**.
	Indicates the position of the **oil heater**.
	Indicates the oil level plug.

24811335/EN – 03/2018

2.9 Symbols on the packaging

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



1811486091

24811335/EN – 03/2018

2.10 Transport

2.10.1 Notes on transport

Observe the following notes during transport.

⚠ 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).

⚠ WARNING

Lifted loads may fall over.

Severe or fatal injuries.

- Secure the gear unit against falling over during the lifting process.
- 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 order documents). 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

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.

24811335/EN – 03/2018

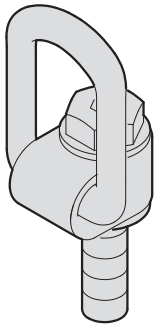
NOTICE

Improper transport can damage the gear unit.

Possible damage to property.

- Note the following information.

- 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 order documents. Observe the loads and regulations specified 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 figures on the following pages are exemplary.
- Observe that the eyebolt are screwed in completely and must be flush to the contact surface. The following type of rotating lifting eyebolt is suitable for gear unit transport.



16067910027

24811335/EN – 03/2018

2.10.2 Horizontal mounting positions (M1/M3/M5/M6)

Preliminary work for transport

Transport in the horizontal mounting positions (M1/M3/M5/M6) does not require preliminary work.

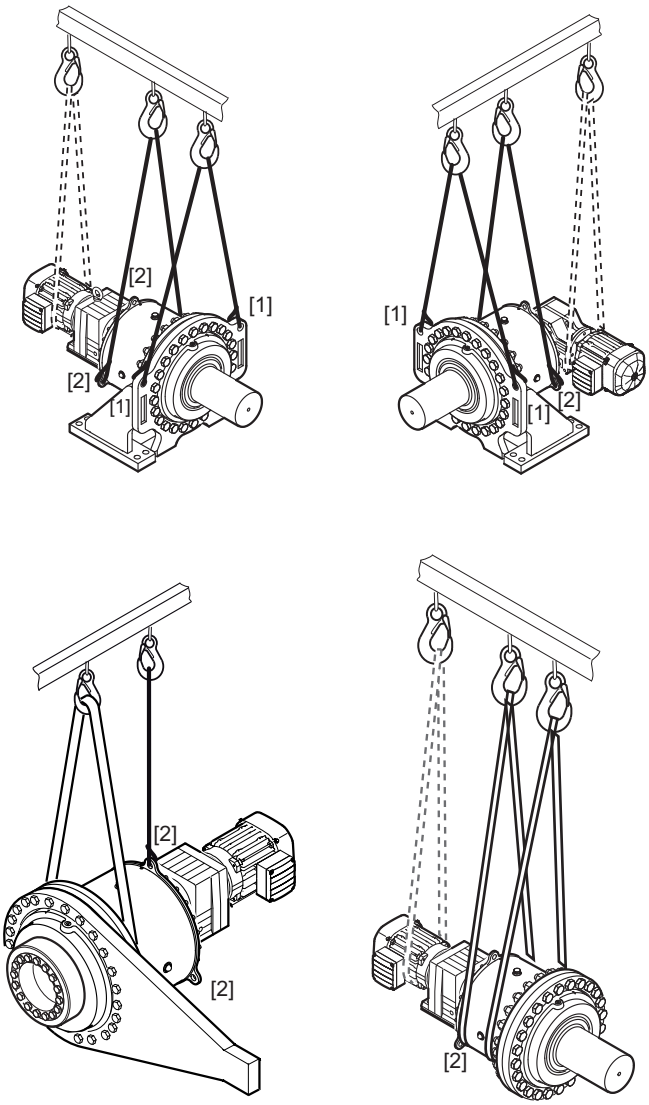
Transport

NOTICE

Danger due to improper transport protection.

Possible damage to property.

- The gear unit must not be attached using only the lifting eyes [2]. Always use the main attachment points [1] for transport.
- The tethers shown as dotted lines must only be used for stabilization purposes and do not replace the tethers attached to the attachment points.



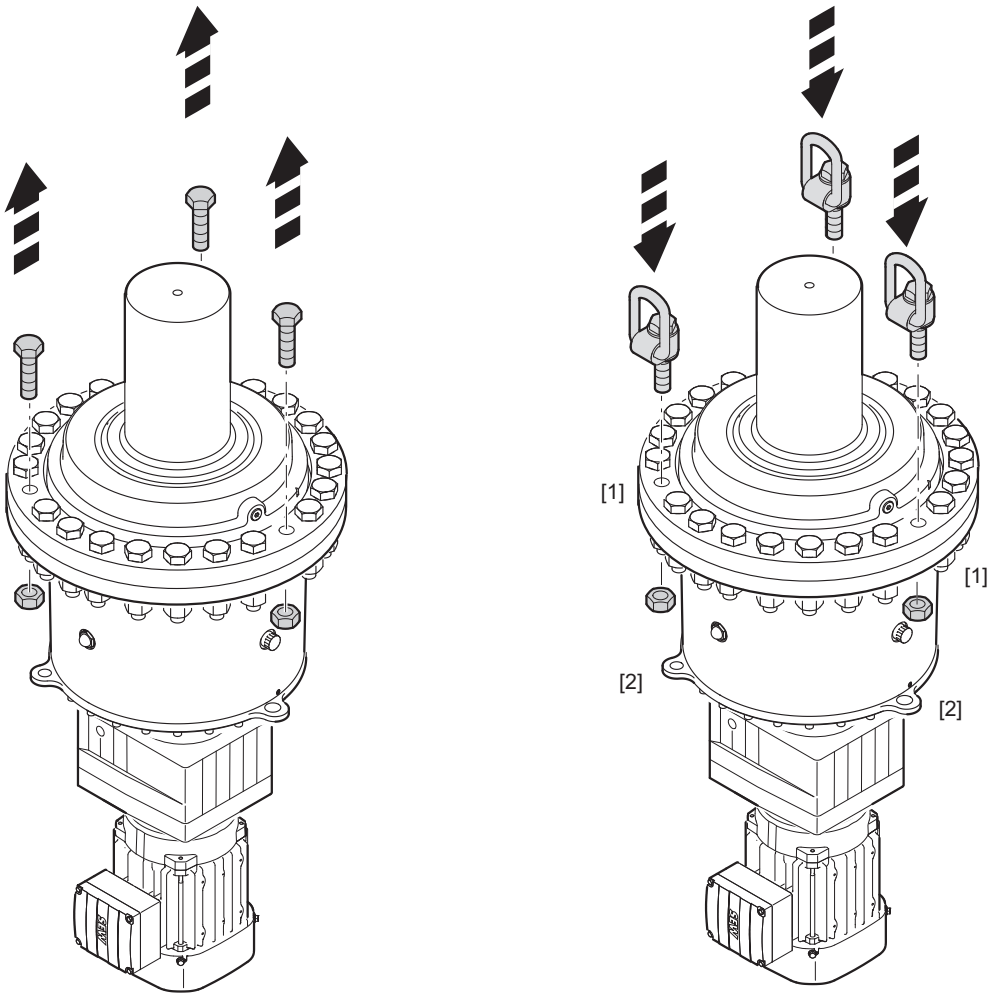
16410738955

2.10.3 Vertical mounting positions (M2/M4)

SEW-EURODRIVE recommends the following procedure.

Mounting position M2

Preliminary work for transport



16410720139

Observe the notes in chapter "Notes on transport" (→ 🗎 17).

1. Remove any 3 retaining screws at a distance of approx. 120° from the mounting flange.
2. Insert 3 lifting eyebolts in the through holes on the solid shaft side.
3. Screw one nut to each lifting eyebolt on the side of the primary gear unit. Tighten the nuts by hand.

24811335/EN – 03/2018

Transport

⚠ WARNING

Danger due to insufficient transport protection.

Severe or fatal injuries.

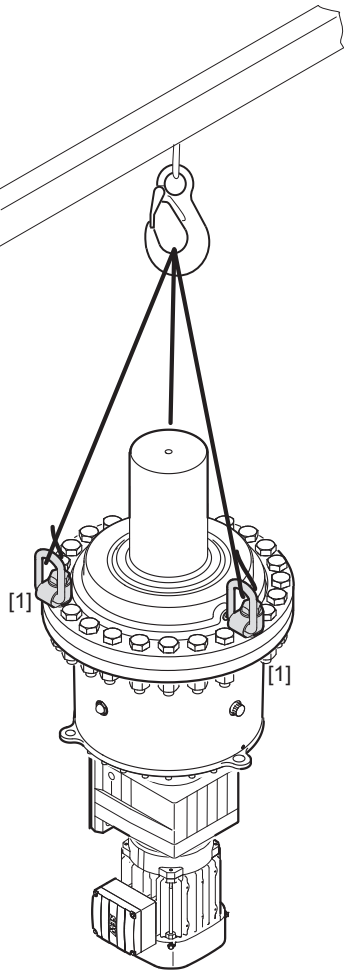
- Consider the center of gravity of the gear unit.
- Select the height of the attachment points in a way that guarantees stability of the gear unit during transport.

NOTICE

Danger due to improper transport protection.

Possible damage to property.

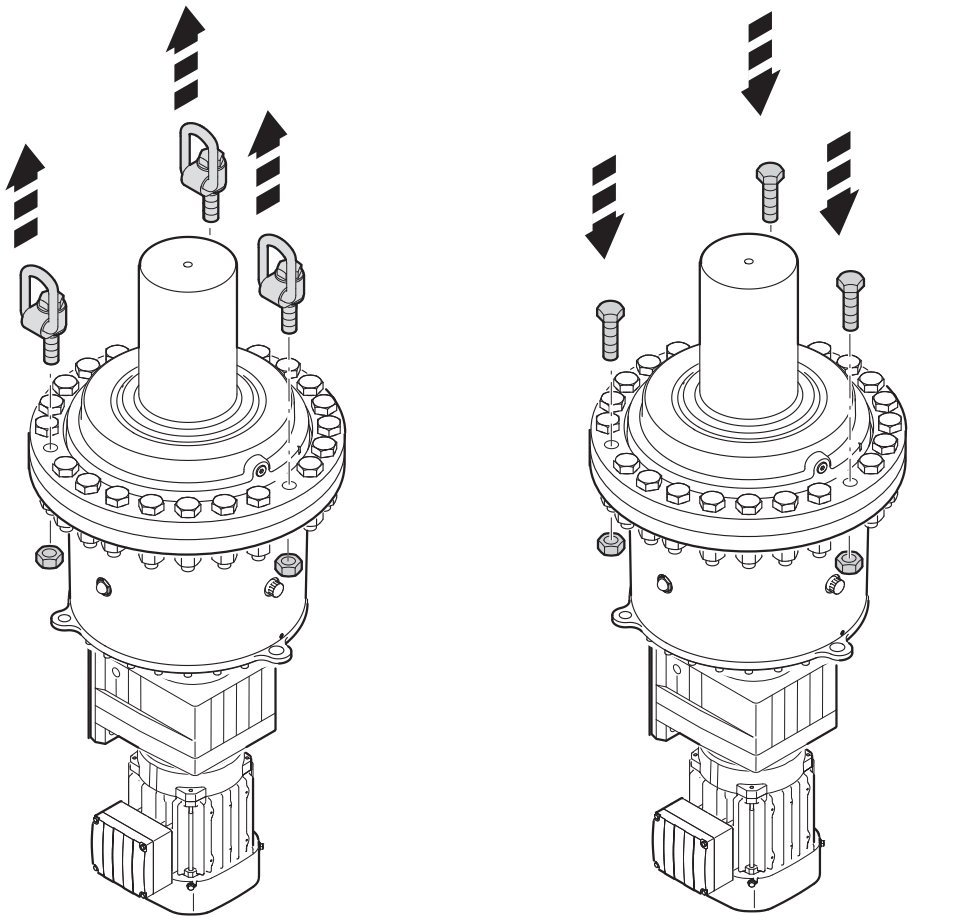
- Only use the main attachment points [1] for transport in mounting position M2.



16411031947

Work steps after transport

Perform the following tasks after transport.



16727603211

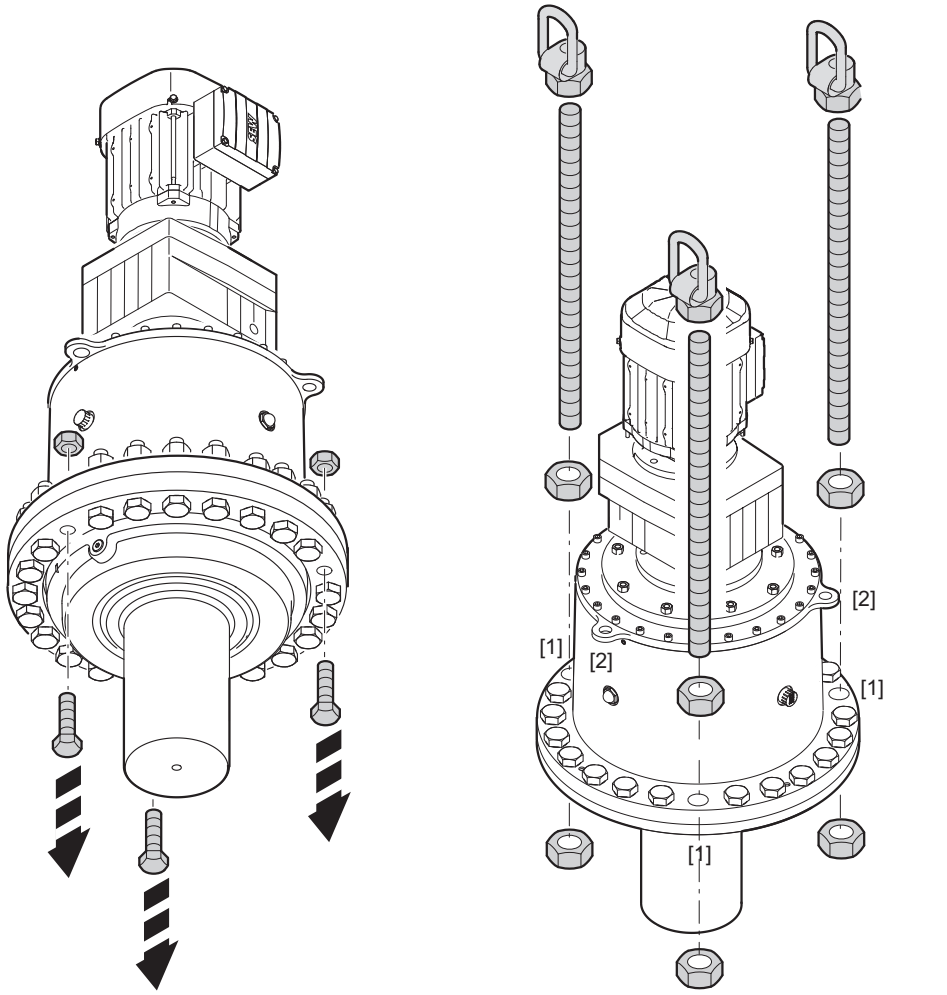
Observe the notes in chapter "Notes on transport" (→ 🗎 17).

1. Remove the 3 lifting eyebolts.
2. Screw the retaining screws back into the mounting flange. Observe the tightening torques in chapter "Flange-mounted gear units" (→ 🗎 98).

24811335/EN – 03/2018

Mounting position M4

Preliminary work for transport



16727550091

Observe the notes in chapter "Notes on transport" (→ 🗎 17).

1. Remove any 3 screws at a distance of approx. 120° from the mounting flange.
2. Screw a nut onto each threaded rod.
3. Insert the threaded rods in the through holes on the mounting flange.
4. Screw one nut to each threaded rod on the side of the solid shaft. Tighten the nut.
5. Tighten the nut on the side of the primary gear unit.
6. Screw one lifting eyebolt to each threaded rod.

INFORMATION

Please note:

Threaded rods are not included in the delivery.

Select sufficiently sized threaded rods to shift the gear unit center of gravity and stabilize the gear unit during transport.

Transport

⚠ WARNING

Danger due to insufficient transport protection.

Severe or fatal injuries.

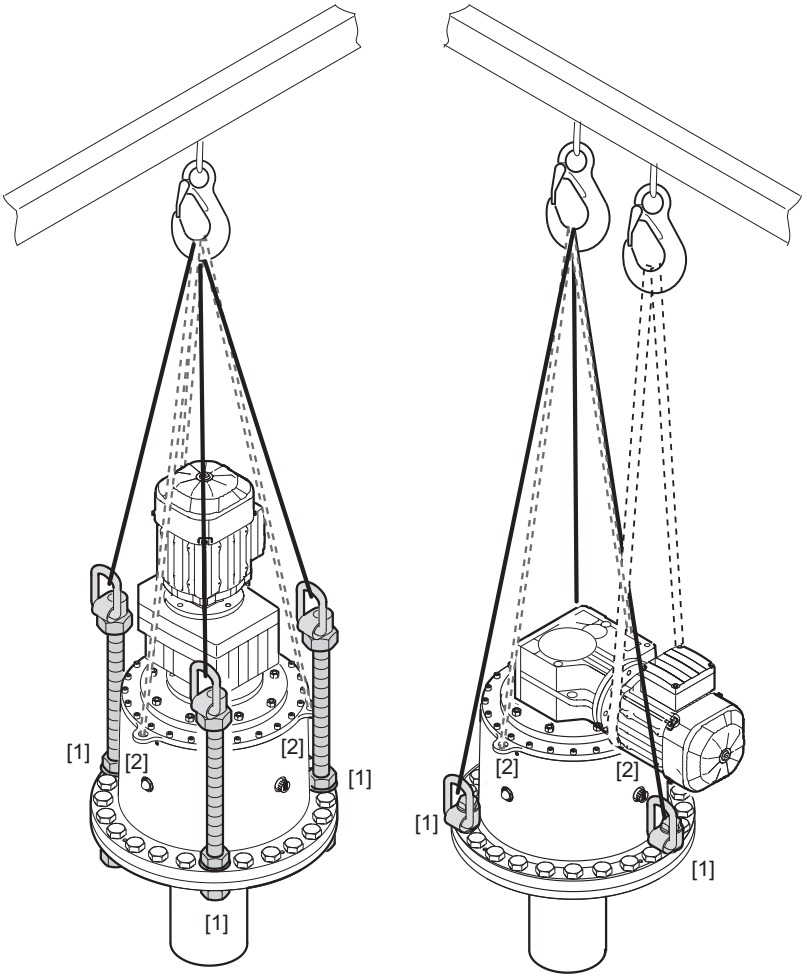
- Consider the center of gravity of the gear unit.
- Select the height of the attachment points in a way that guarantees stability of the gear unit during transport.

NOTICE

Danger due to improper transport protection.

Possible damage to property.

- The gear unit must not be attached using only the lifting eyes [2]. Always use the main attachment points [1] for transport.
- The tethers shown as dotted lines must only be used for stabilization purposes and do not replace the tethers attached to the attachment points.

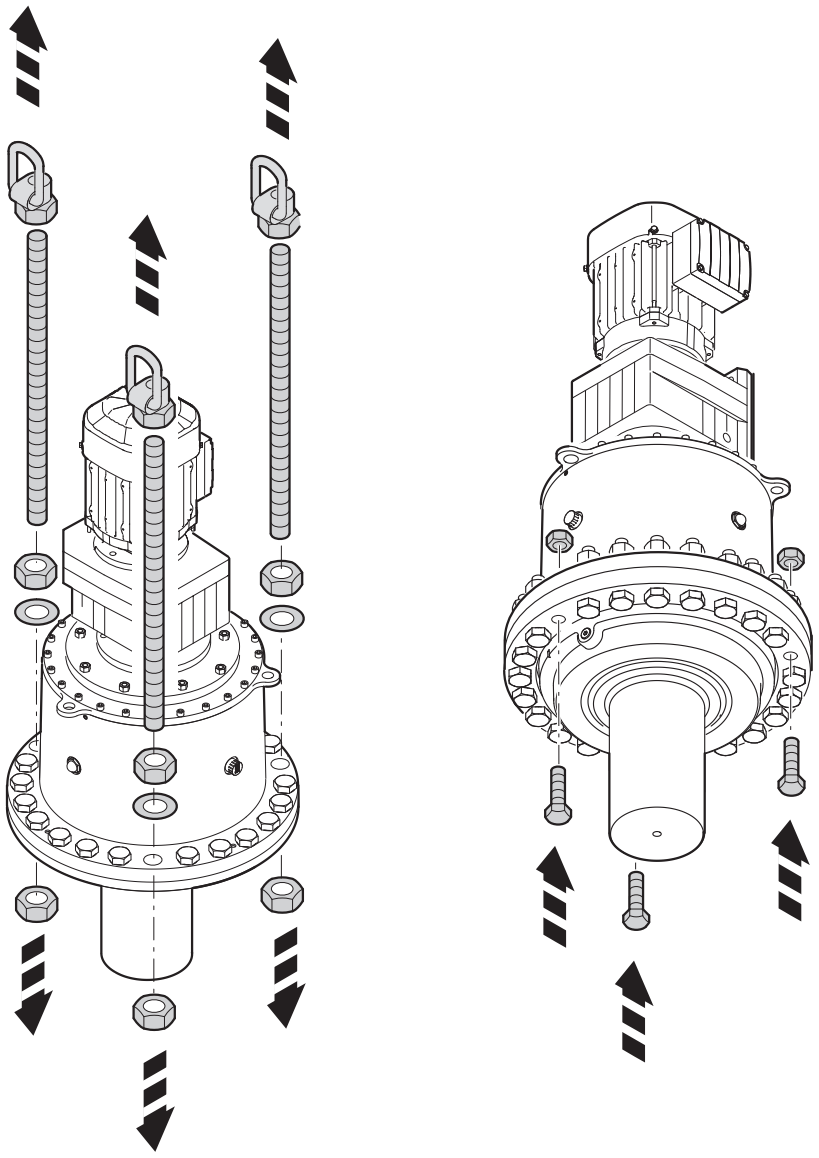


16926430603

24811335/EN – 03/2018

Work steps after transport

Perform the following tasks after transport.



16926663691

Observe the notes in chapter "Notes on transport" (→ 🗎 17).

1. Remove the 3 lifting eyebolts and threaded rods.
2. Screw the retaining screws back into the mounting flange. Observe the tightening torques in chapter "Flange-mounted gear units" (→ 🗎 98).

24811335/EN – 03/2018

2.11 Storage and transport conditions

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

2.11.1 Internal conservation

Standard corrosion protection

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

Long-term corrosion protection

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

2.11.2 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.

2.11.3 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

24811335/EN – 03/2018

2.11.4 Storage conditions

NOTICE

Improper storage may result in damages to the gear unit.

Possible damage to property.

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

INFORMATION

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

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

INFORMATION

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

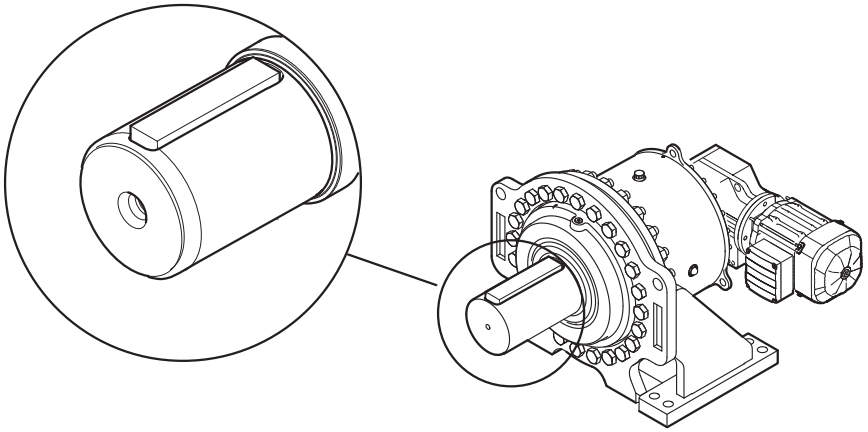
24811335/EN – 03/2018

3 Gear unit structure

3.1 Output shaft variants

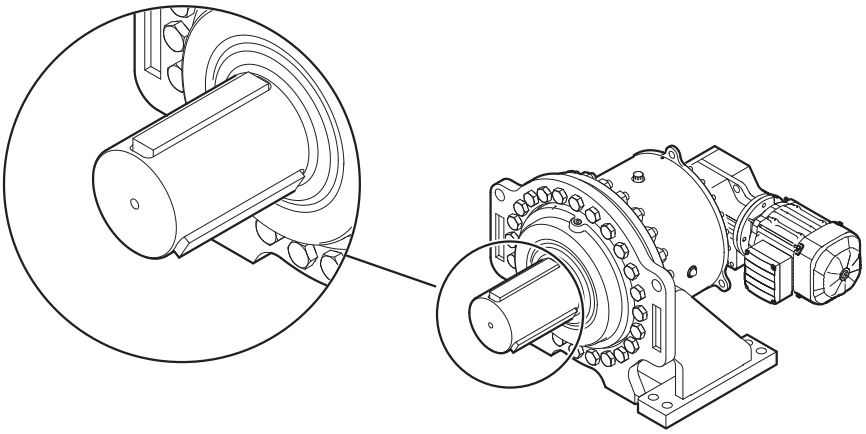
The output shaft [LSS] of the planetary gear unit can have the following design as standard:

3.1.1 P.. Solid shaft with key



9007205553361675

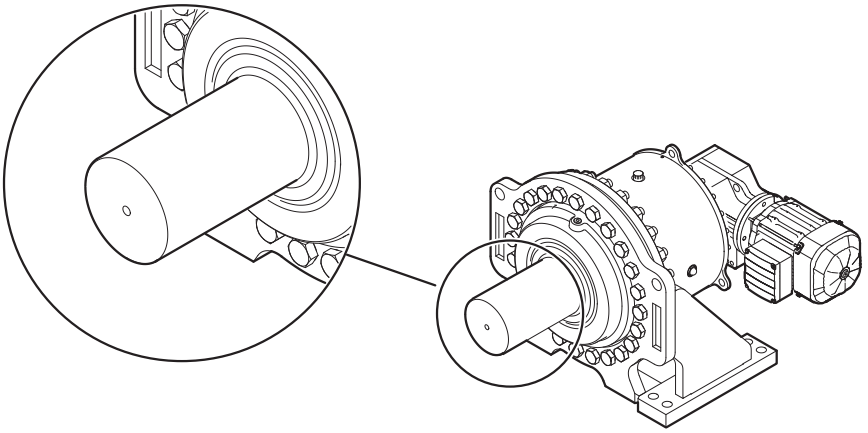
3.1.2 P.. Solid shaft with 2 keys



17863528331

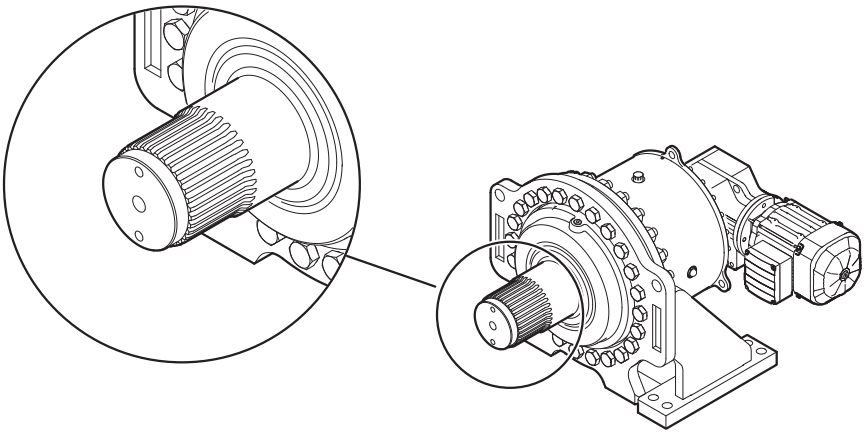
24811335/EN – 03/2018

3.1.3 PR.. Smooth solid shaft



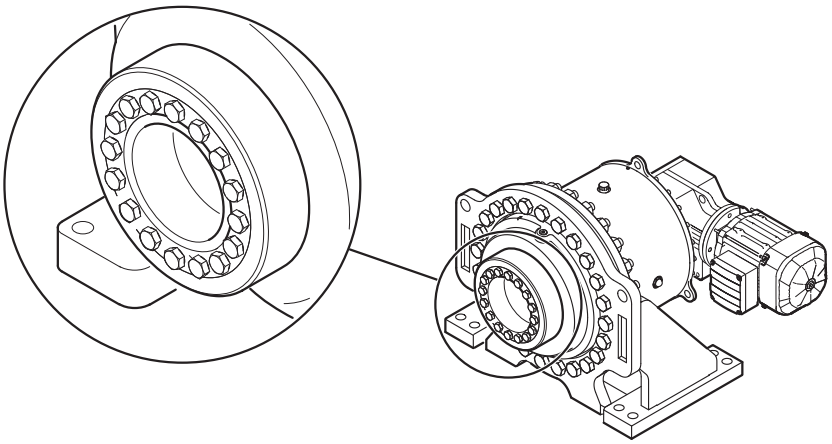
17863531659

3.1.4 PL.. Splined solid shaft



17863714187

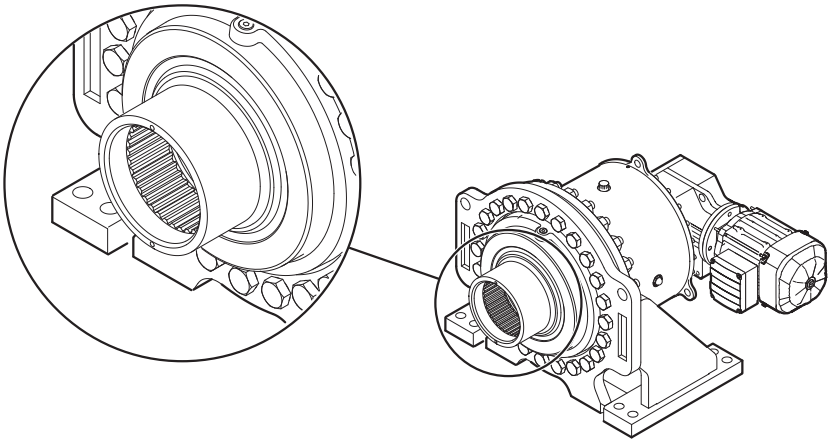
3.1.5 PH.. Hollow shaft with shrink disk



9007205553363339

24811335/EN – 03/2018

3.1.6 PV.. Splined hollow shaft



17863717515

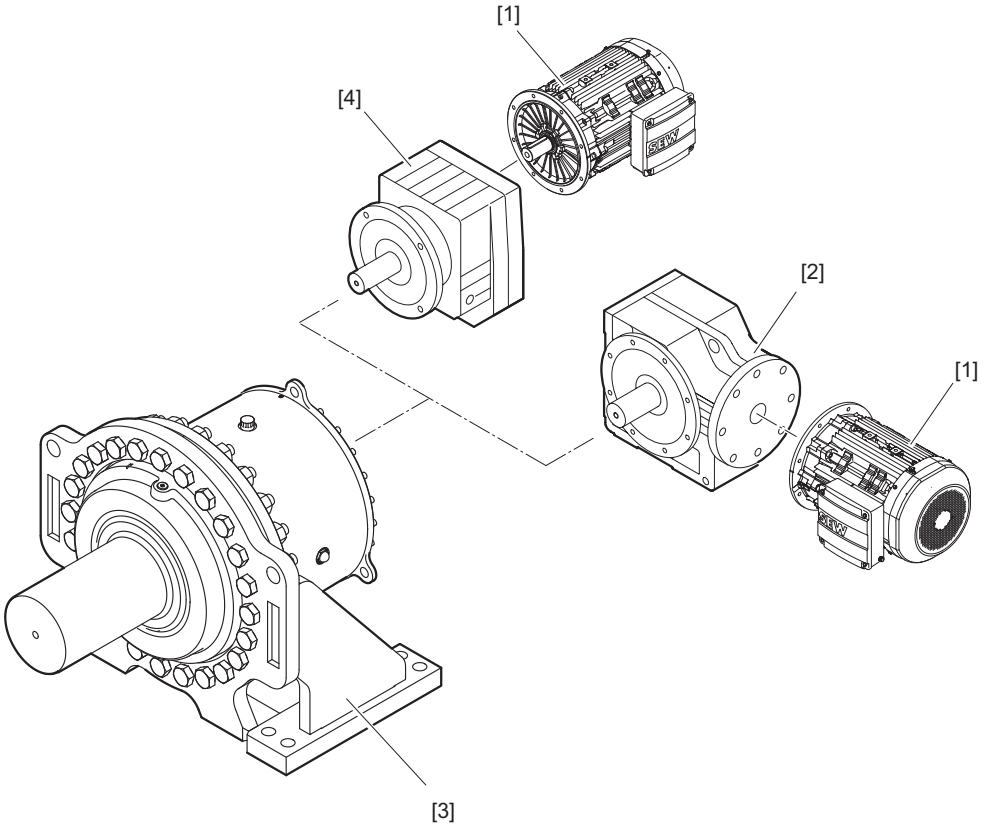
24811335/EN – 03/2018

3.2 Planetary gear unit with primary gear unit combination

The planetary gear units are a combination of

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

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



18014404759276299

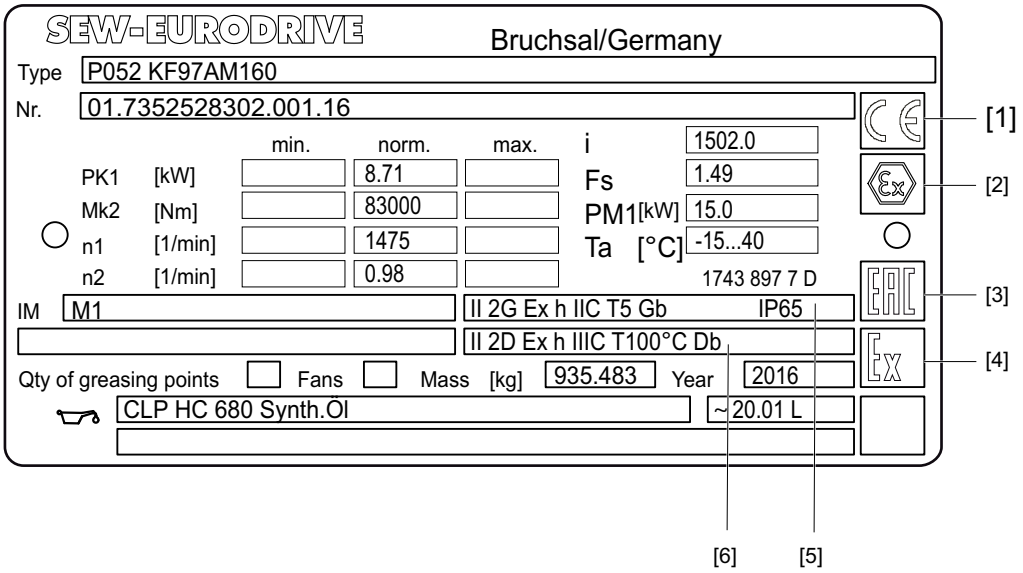
[1] Motor
[2] KF../K.. Bevel-helical gear unit (flange-mounted design)
[3] P.. Planetary gear unit
[4] RF.. Helical gear unit (flange-mounted design)

24811335/EN – 03/2018

3.3 Nameplate

3.3.1 Planetary gear units

The following example shows the structure of the nameplate.



9007218290189451

Type		Type designation
No.		Production number
PK1	kW	Operating power on the input shaft (HSS)
MK2	Nm	Gear unit output torque
n1	1/min	Input speed (HSS)
n2	1/min	Output speed (LSS)
norm.		Normal operating point
min.		Operating point at minimum speed
Max.		Operating point at maximum speed
i		Exact gear unit ratio
F_S		Service factor
PM1	kW	Nominal motor power
T_A	°C	Deviation from standard temperature range (−20 °C – +40 °C)
Mass	kg	Gear unit weight
Qty. of greasing points		Number of points that require regreasing
Fans		Number of installed fans
		Oil grade and viscosity class/oil quantity
Year		Year of manufacture
IM		Mounting position and mounting surface
[1]		CE symbol

24811335/EN – 03/2018

[2]		ATEX symbol
[3]		EAC symbol
[4]		Explosion protection mark
[5]		Indicates gas explosion protection with degree of protection
[6]		Indicates dust explosion protection

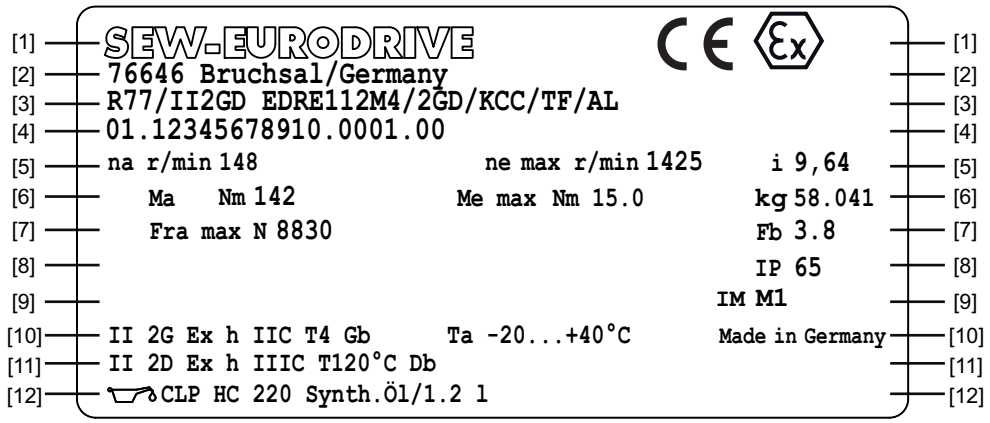
INFORMATION

In some cases, SEW gear units may only be operated in compliance with special measures. These cases are indicated by the special mark **"X"** on the nameplate (for example II2G Ex h IIC T5 Gb **X**). These special measures may be necessary for various reasons (e.g. only intermittent duty, etc.). The customer has been informed about the required special measures before the initial placing of the gear unit on the market. The customer is obliged to ensure compliance with these special measures. If the Ex identification on the nameplate includes the special mark "X", an additional addendum to the "P002 – P102 Series Explosion-Proof Planetary Gearmotors" operating instructions is created and provided. This addendum to the documentation describes the special measures.

24811335/EN – 03/2018

3.3.2 Gearmotor

The following figure gives an example of a nameplate of an explosion-proof gearmotor:



23009038475

[1] Company name, CE marking, ATEX marking
[2] Address
[3] Type designation of the gear unit, type designation of the motor
[4] Serial number
[5] Output speed, maximum input speed, gear ratio
[6] Output torque, maximum input torque, weight
[7] Maximum overhung load acting on the output shaft, service factor
[8] Degree of protection
[9] Mounting position
[10] Indicates gas explosion protection, ambient temperature, country of manufacture
[11] Indicates dust explosion protection
[12] Oil type, oil quantity

INFORMATION

For ATEX gearmotors, the nameplates of the motor and gear unit must be compared. When you compare the values (e.g. dust or ambient temperature) on the nameplates, the least common multiples determines the overall unit of motor and gear unit.

INFORMATION

In some applications, SEW-EURODRIVE gear units/gearmotors must only be operated in compliance with special measures. For these cases, there is a special indication on the nameplate **"II..X"**. For more information, refer to chapter Information on special indication X identification in the assembly and operating instructions "Explosion-Proof Gear Unit Series R..7, F..7, K..7, K..9, S..7, SPIROPLAN® W".

For a description of the gear unit design types and options, refer to the "Type designation" chapter in the assembly and operating instructions "Explosion-proof gear unit series R..7, F..7, K..7, K..9, S..7, SPIROPLAN® W".

24811335/EN – 03/2018

3.4 Type designations for gear units and options

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

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

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

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

24811335/EN – 03/2018

3.4.3 Additional features of gear units

Designation	
/T	With torque arm

3.4.4 Input shaft assembly

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

3.4.5 Adapters

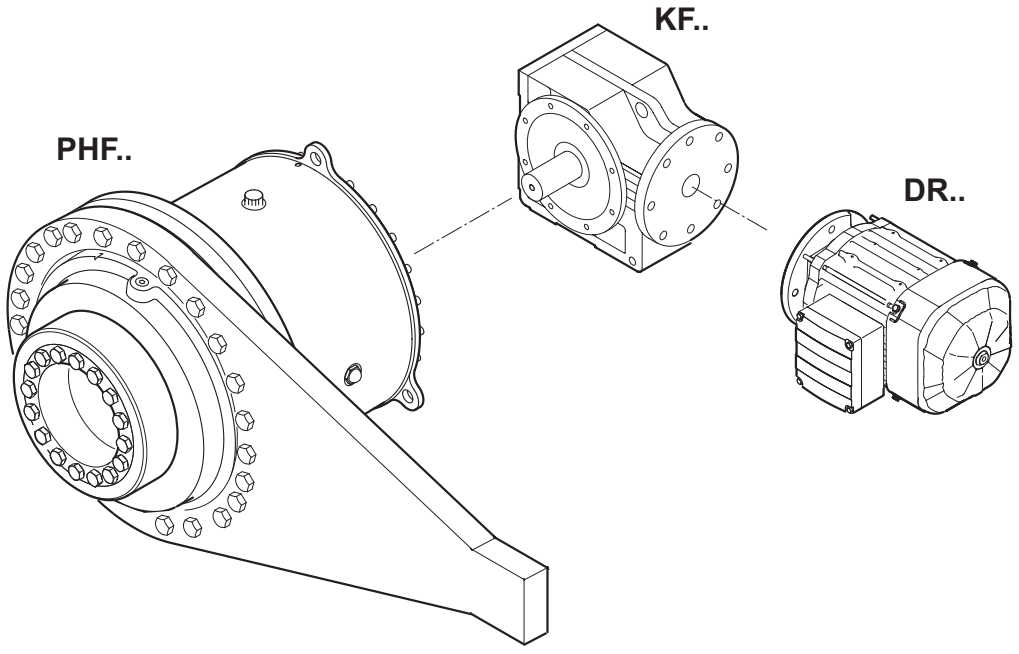
Designation	
AM	Adapter for mounting IEC/NEMA motors
AQ	Adapter for mounting servomotors
AT	Adapter with hydraulic centrifugal coupling
.../RS	and backstop
.../BM(G)	and disk brake
.../HF	With manual brake release, lockable
.../HR	With manual brake release with automatic re-engaging function

24811335/EN – 03/2018

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

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

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



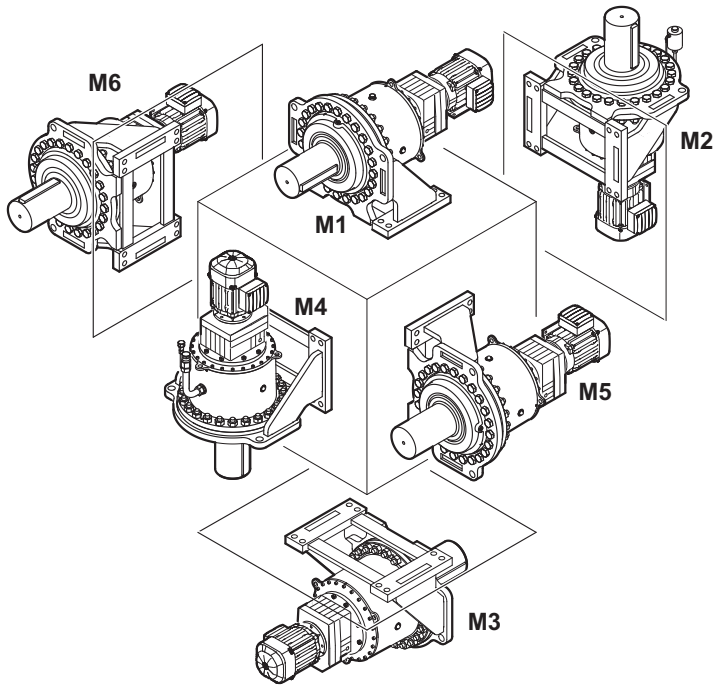
18014404889238539

24811335/EN – 03/2018

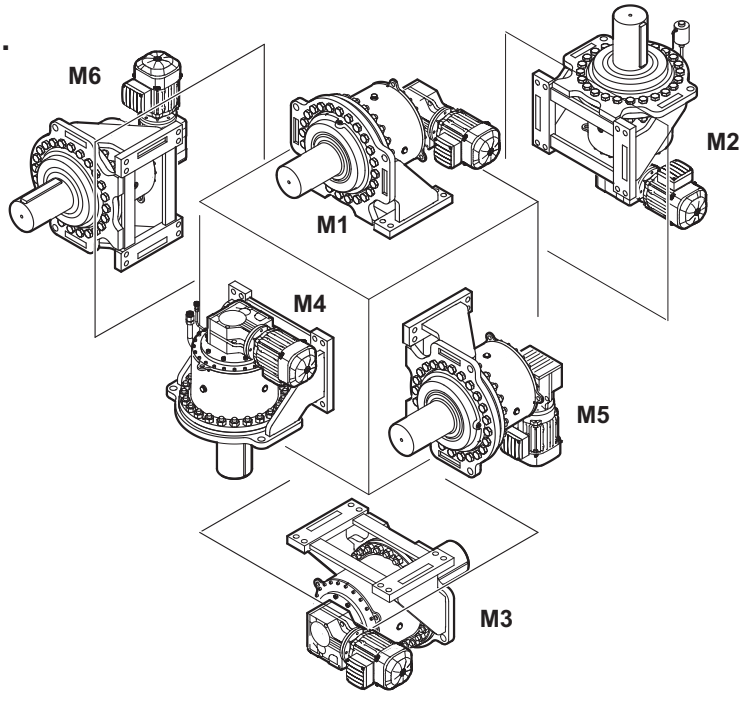
3.5 Mounting position

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

P..RF..



P..KF..



18014399537630603

24811335/EN – 03/2018

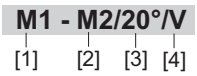
3.6 Pivoted mounting position: Fixed and variable mounting positions

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

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

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

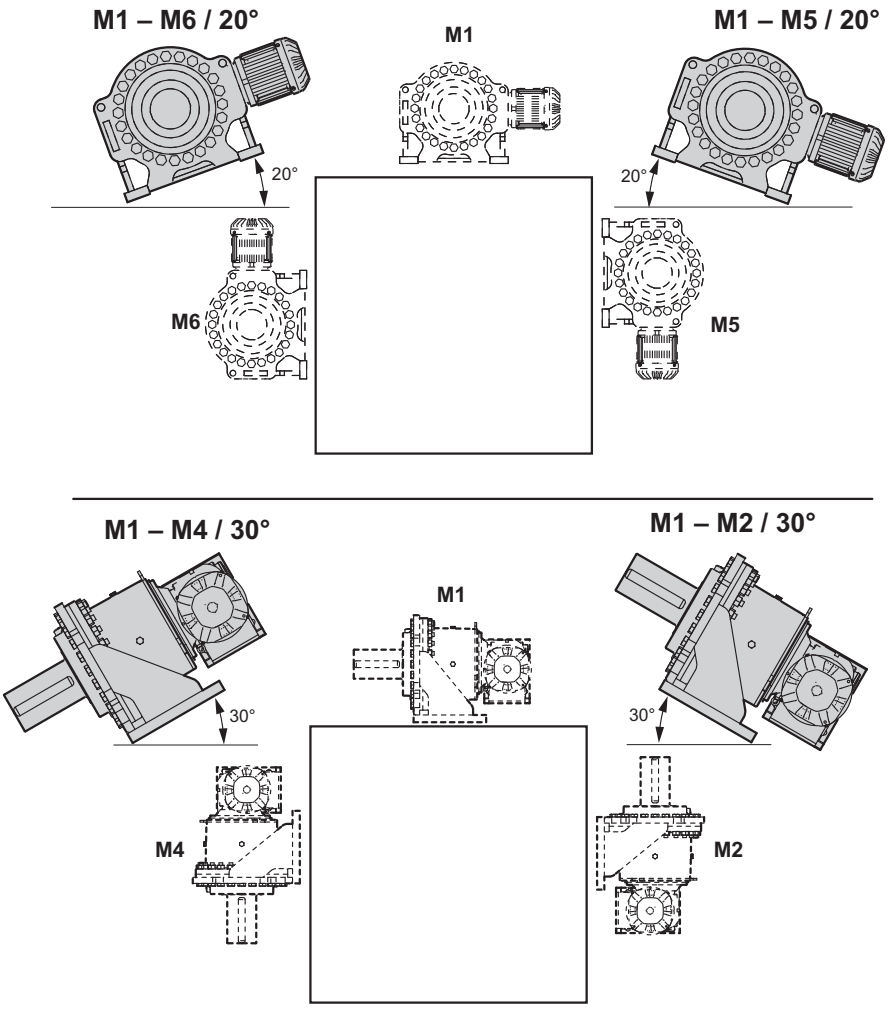
The designation of pivoted and variable mounting positions is set up as follows:



1811133707

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

The following figure shows examples:



9007200257525259

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

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

M1 - M2/20°/V - M4/20°/V - M5/30°/F

INFORMATION

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

3.7 Mounting positions of primary gear units

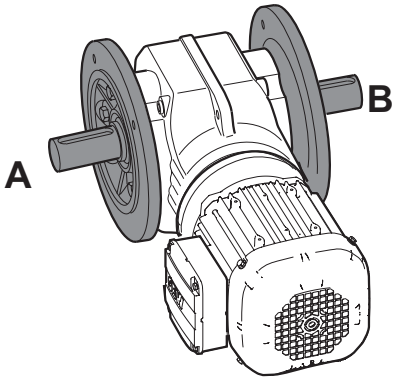
INFORMATION

In addition to the mounting position, the following information is specified for planetary gearmotors.

3.7.1 KF../K.. primary bevel gear unit

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

The position of the mounting flange on the **A** or **B** side is also defined.



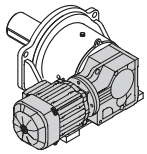
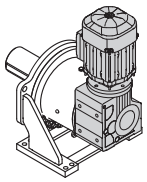
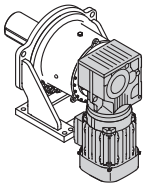
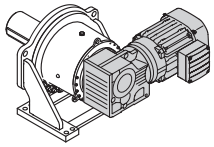
1043984907

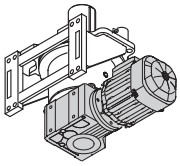
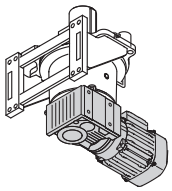
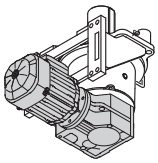
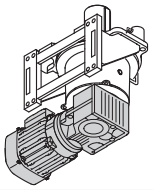
To reduce the churning losses in the primary gear unit to a minimum, SEW-EURODRIVE recommends that you choose one of the standard mounting positions shown below.

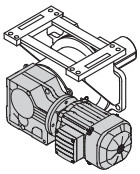
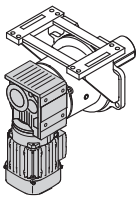
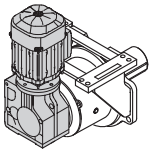
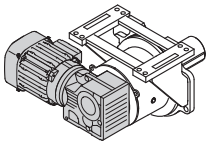
INFORMATION

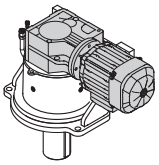
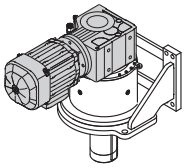
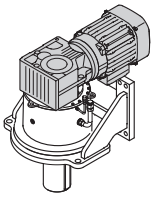
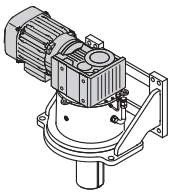
Contact SEW-EURODRIVE in case of deviating mounting conditions.

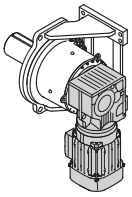
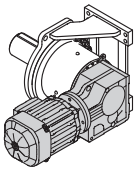
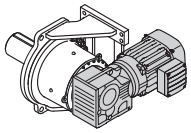
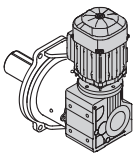
24811335/EN – 03/2018

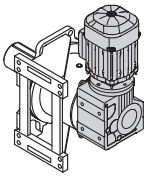
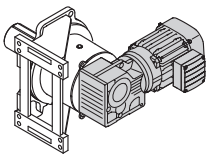
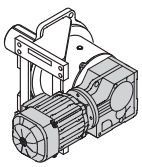
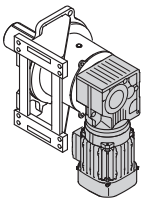
M1	
0° A	270° A
	
90° A	180° B
	

M2	
0° A	270° A
	
90° A	180° A
	

M3	
0° B	270° A
	
90° A	180° A
	

M4 [1]	
0° A	270° A
	
90° A	180° A
	

M5	
0° A	270° A
	
90° B	180° A
	

M6	
0° A	270° B
	
90° A	180° A
	

18014399553181195

Key	
M1/M2/M3/M4/M5/M6	= Mounting position of planetary gear unit
0°/90°/180°/270°	= Mounting position of primary bevel gear unit
A/B	= Position of the mounting flange at the primary bevel gear unit
1) Example position; the position of the piping deviates from the figure.	

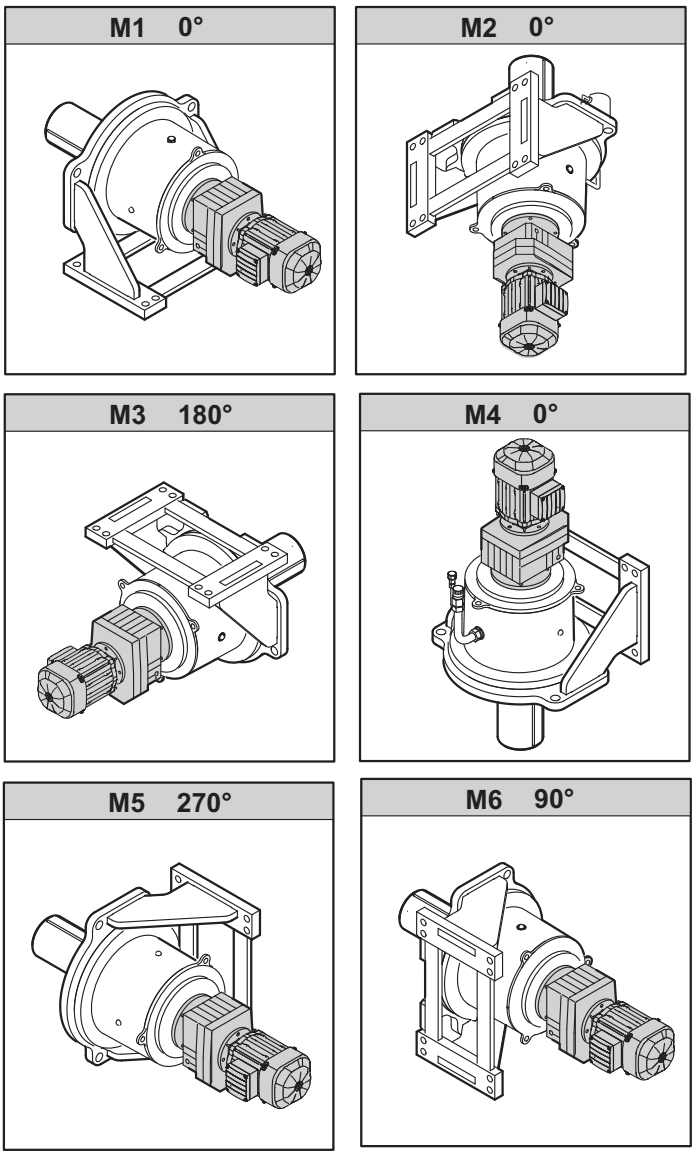
3.7.2 RF.. primary helical gear units

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

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

INFORMATION

Contact SEW-EURODRIVE in case of deviating mounting conditions.



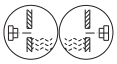
1043719691

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

24811335/EN – 03/2018

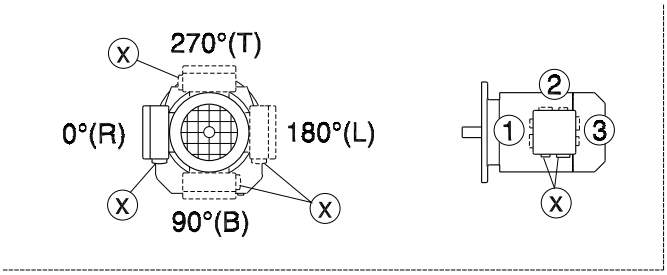
3.8 Mounting position sheets

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

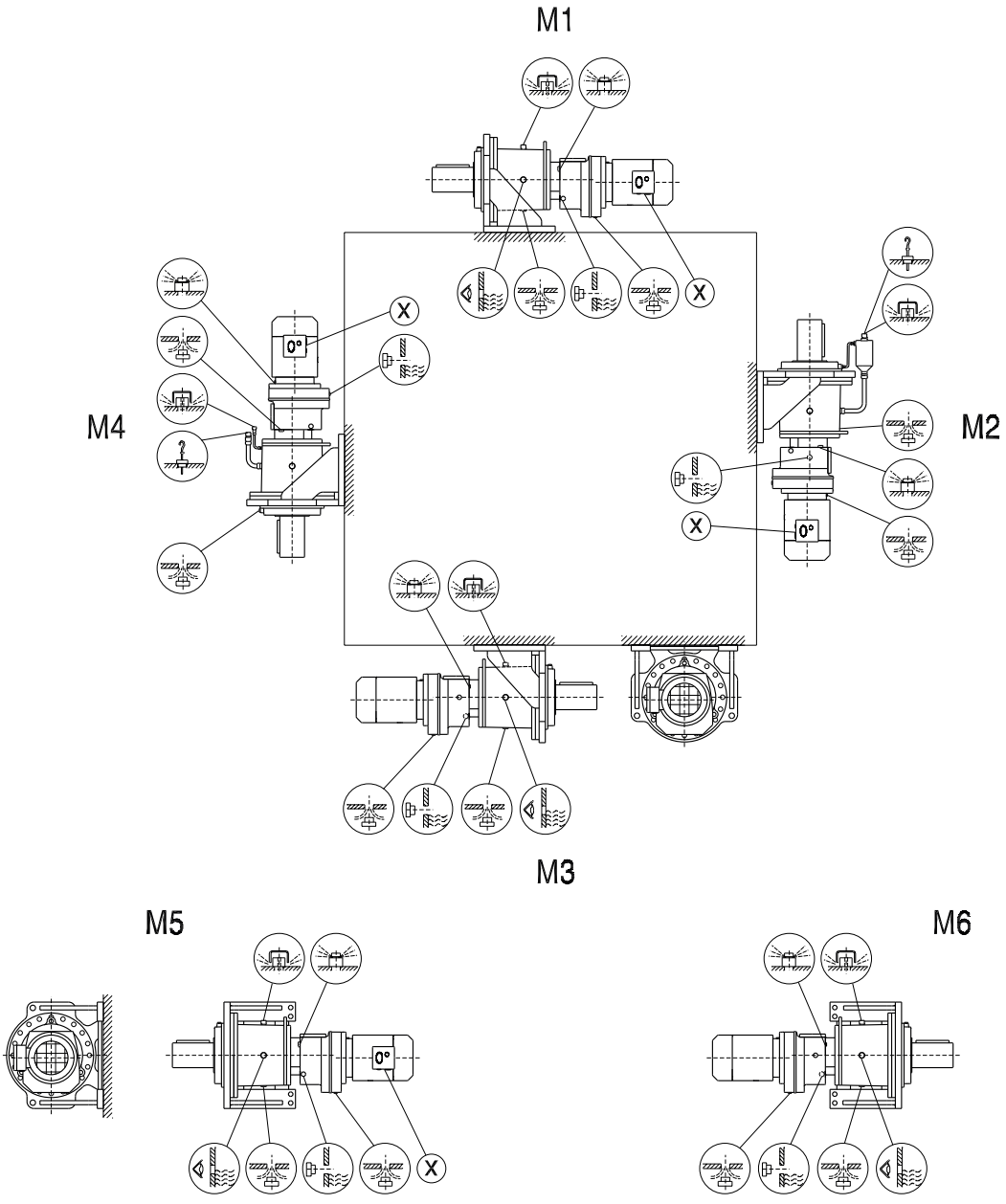
Symbol	Meaning
	Breather plug
	Oil level plug
	Oil drain plug
	Breather
	Oil dipstick
	Oil sight glass

24811335/EN – 03/2018

3.8.1 P..RF..

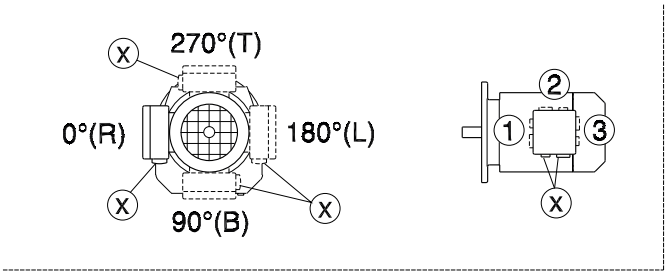


45 129 00 08

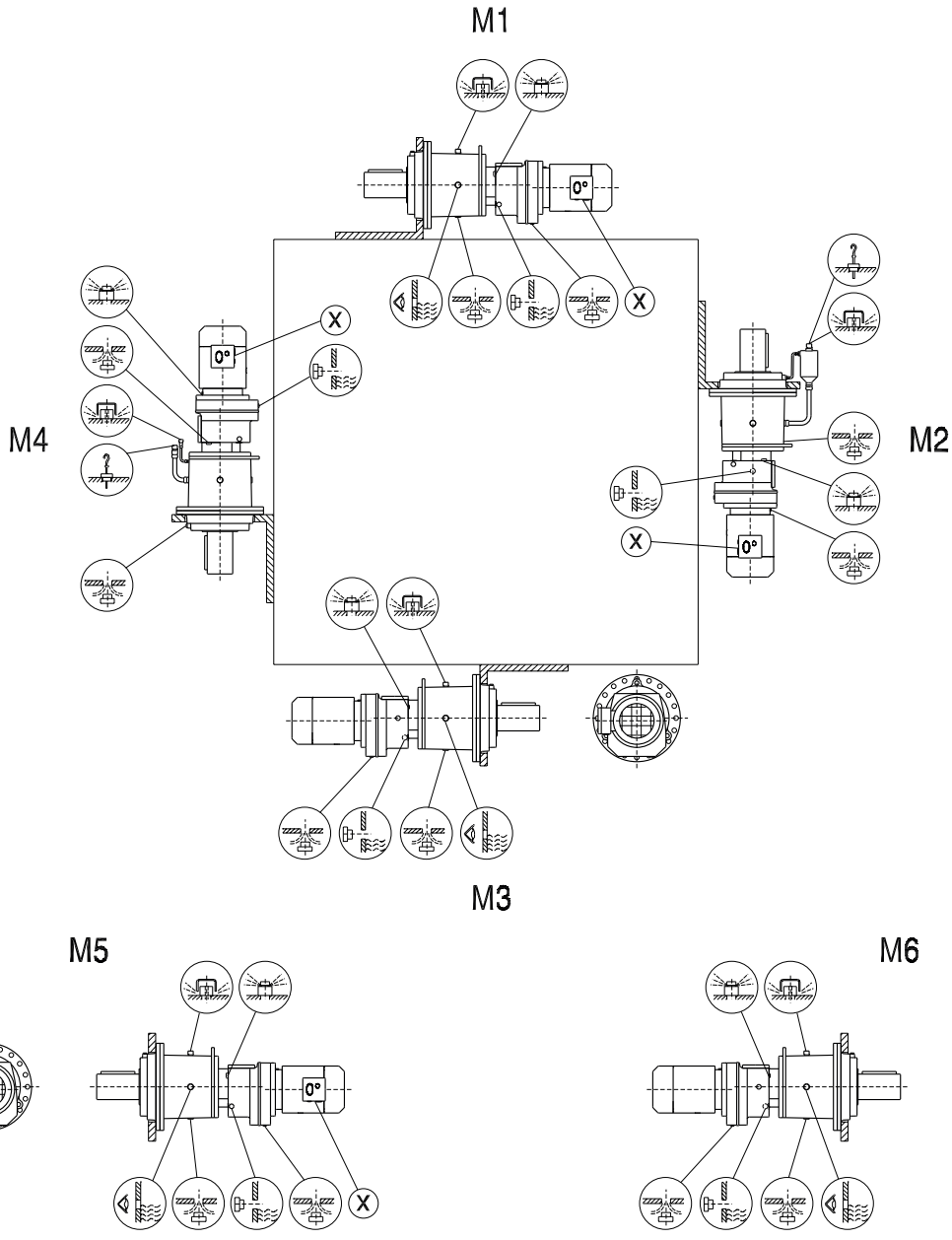


24811335/EN – 03/2018

3.8.2 PF..RF..

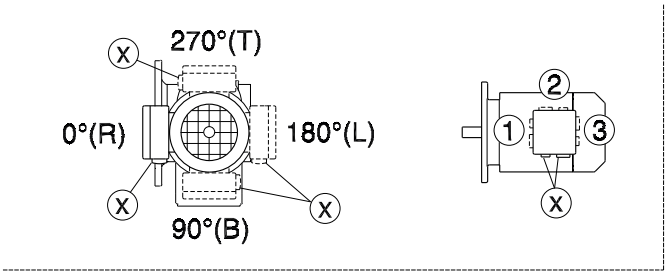


45 130 00 08

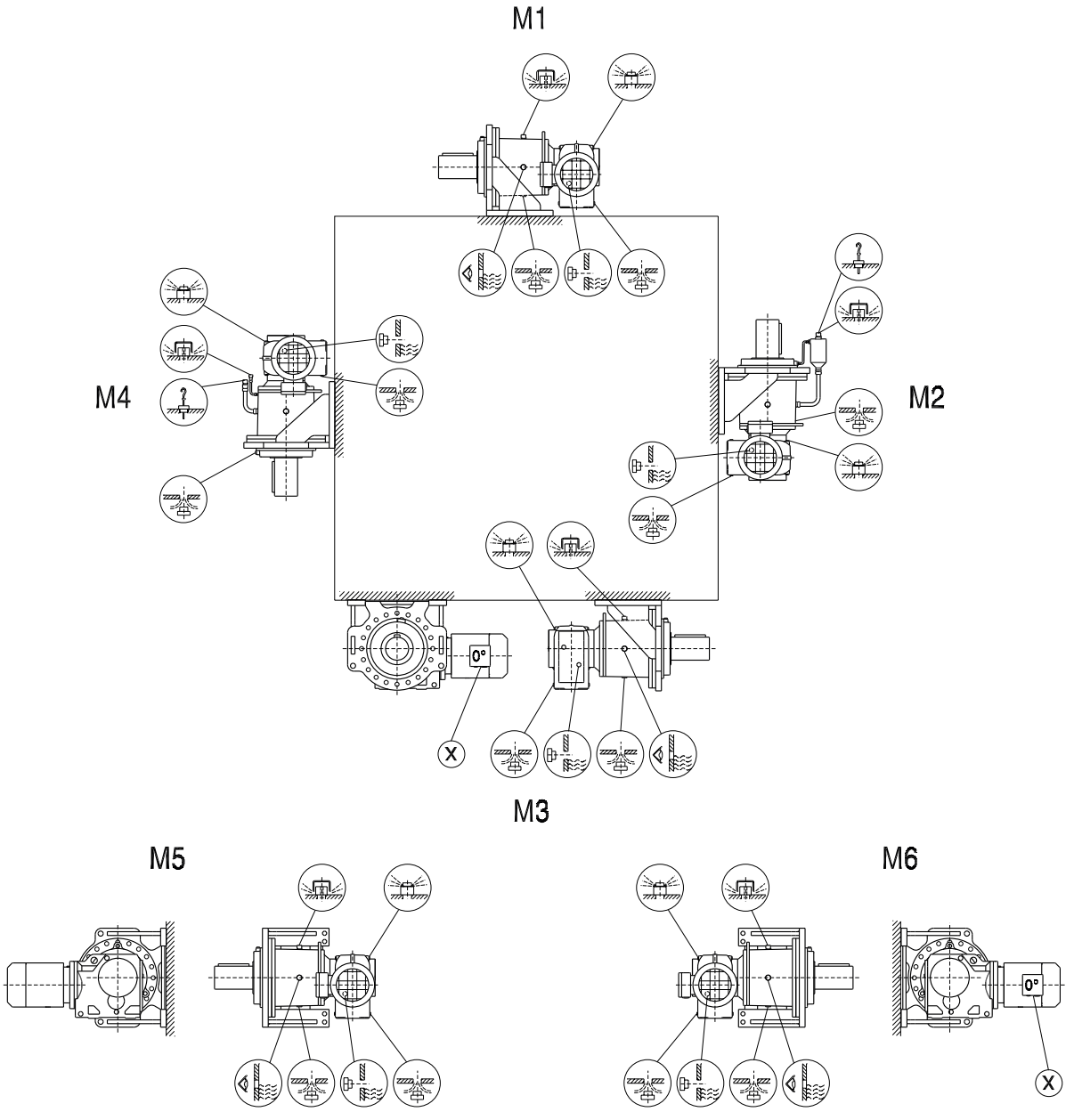


24811335/EN – 03/2018

3.8.3 P..KF../K..

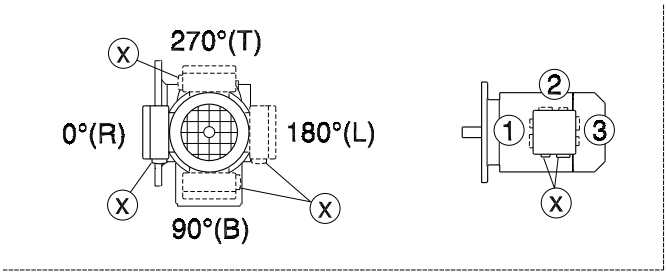


45 131 00 08

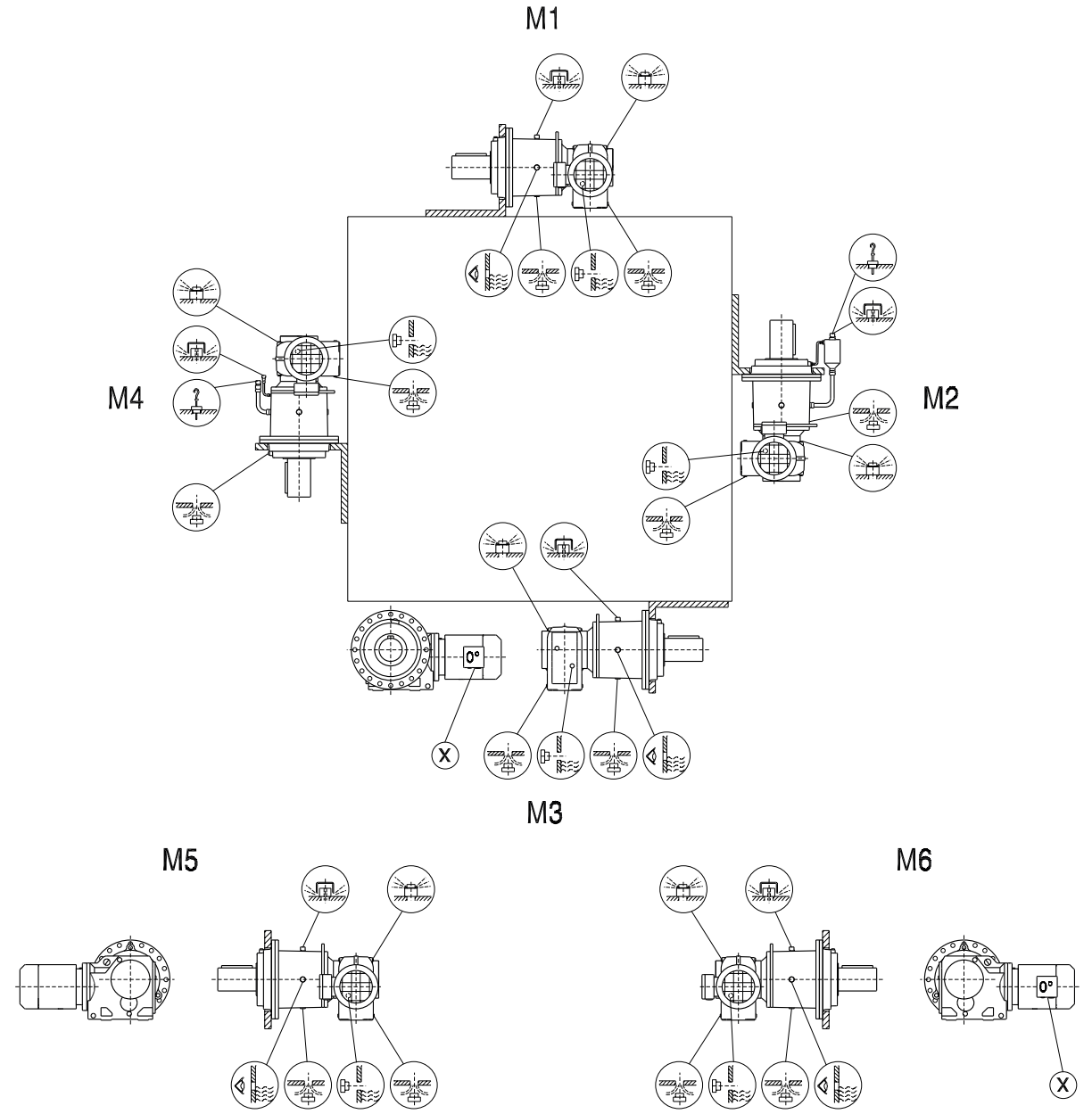


24811335/EN – 03/2018

3.8.4 PF.KF../K..



45 132 00 08



24811335/EN – 03/2018

3.9 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.

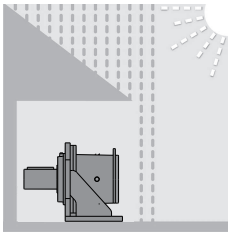
Based on the oil level specified by SEW-EURODRIVE, the oil expansion tank is designed to compensate the oil volume change within the permitted operating temperature range. A temperature decrease below the permitted temperature range causes the oil expansion tank to be completely emptied and air being 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.

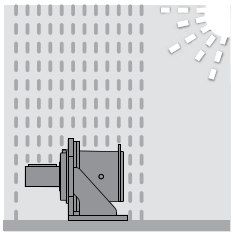
24811335/EN – 03/2018

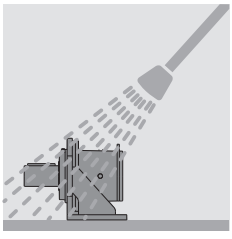
3.10 Coating and surface protection systems

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	• 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	• 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	• Port cranes • Sewage treatment plants • Mining applications
Condensation test ISO 6270	240 h
Salt spray test ISO 7253	480 h

24811335/EN – 03/2018

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.

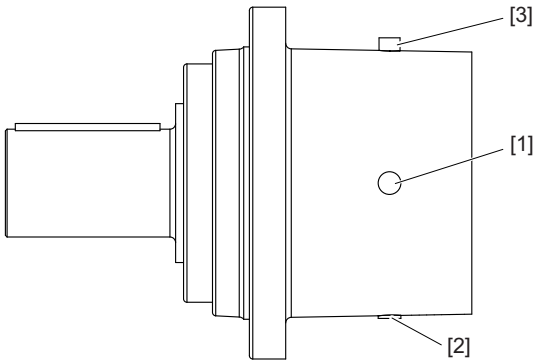
24811335/EN – 03/2018

3.11 Types of lubrication

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

3.11.1 Splash lubrication for horizontal mounting positions: M1/M3/M5/M6

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



9007215369642763

24811335/EN – 03/2018

3.11.2 Bath lubrication for vertical mounting positions: M2/M4

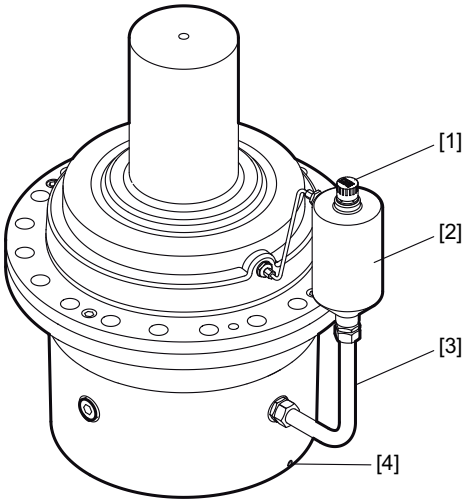
The gear unit is (almost completely) filled with oil. All tooth engagement or bearing points are immersed in the oil bath completely or partly.

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

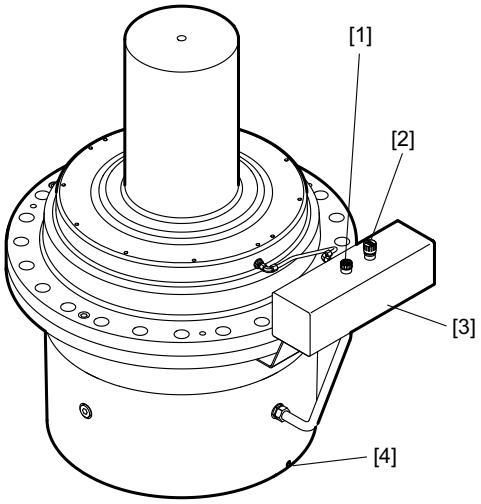
Sizes **P.002 – 082**:



18014402989780619

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

Sizes **P.092 – P.102**:



18014402998269195

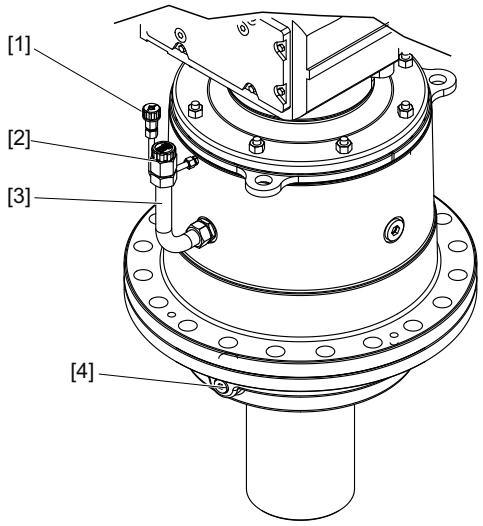
[1]	Oil dipstick	[3]	Oil expansion tank
[2]	Breather	[4]	Oil drain plug

24811335/EN – 03/2018

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



18014402999766283

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

24811335/EN – 03/2018

3.12 Accessories

3.12.1 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.

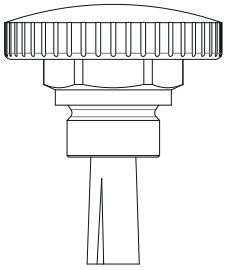
In the vertical mounting positions M2 and M4, the oil level check is performed using the oil dipstick.

3.12.2 Gear unit venting

The purpose of gear unit venting is to prevent that non-permitted pressure occurs from heating during operation. The gear units are normally equipped with a high-quality breather filter with a filter mesh of 2 µm.

INFORMATION

For planetary gear units with ATEX approval, the gear unit venting is made of metal.



23010356747

3.12.3 Oil drain

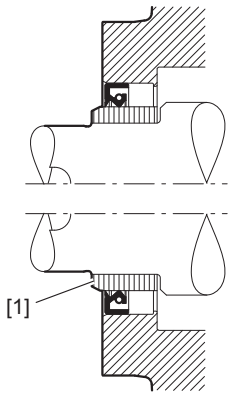
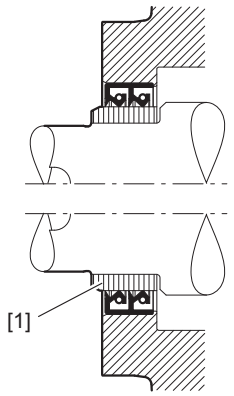
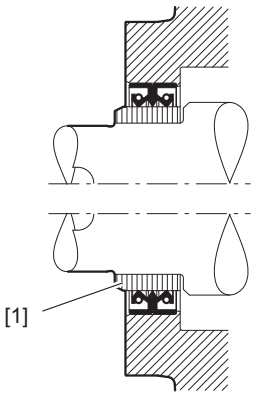
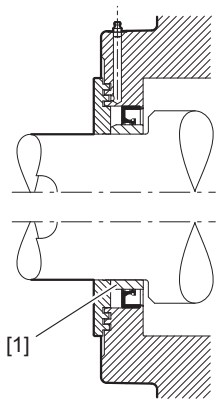
As standard, planetary gear units are equipped with an oil drain plug. As an alternative, magnetic oil drain plugs are available. For mounting positions M1, M3, M5, and M6, an oil drain valve is available as an option.

24811335/EN – 03/2018

3.13 Sealing system

3.13.1 Output shaft

The following table shows the output standard sealing system for horizontal and vertical mounting positions.

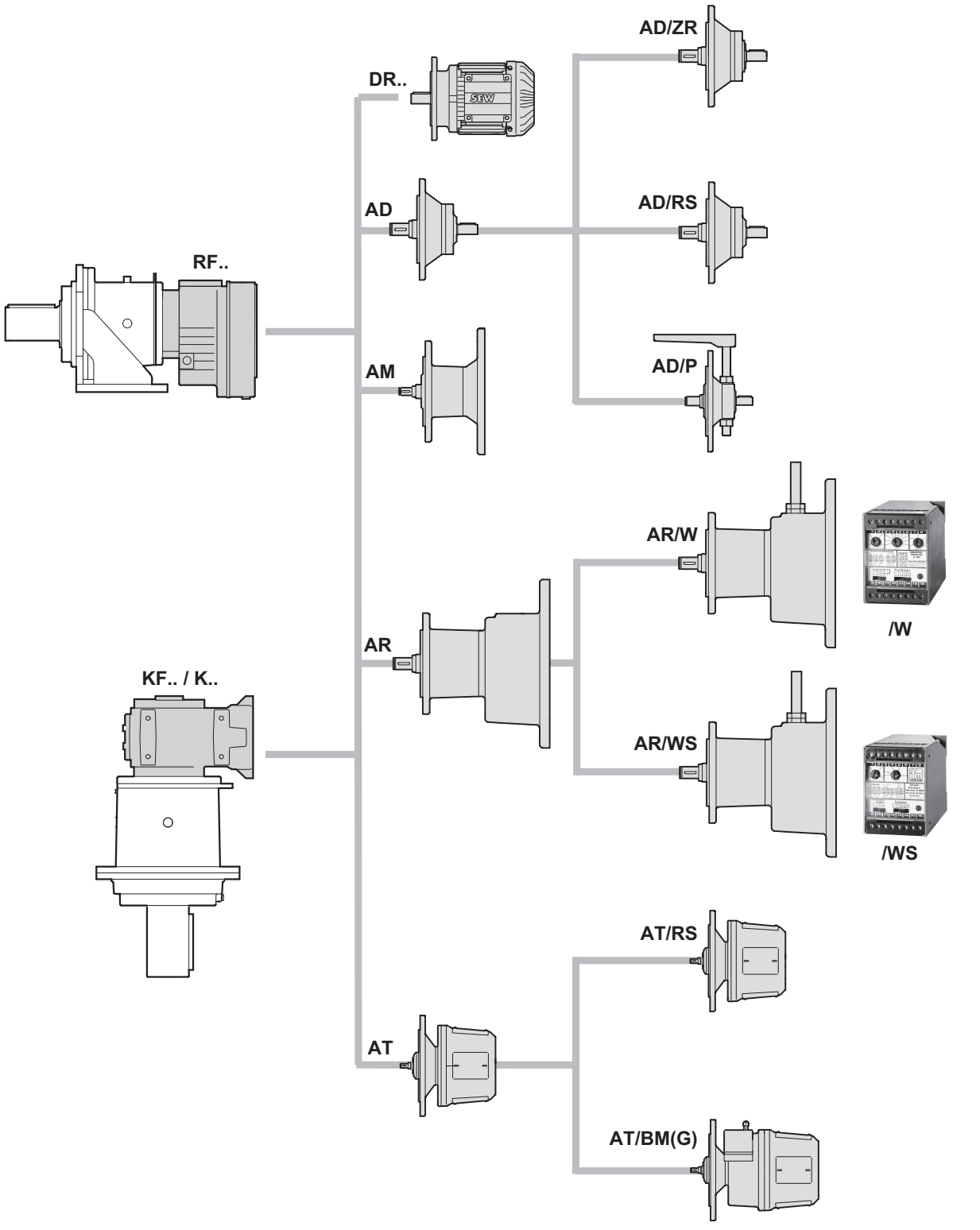
Standard for mounting positions M1/M3/M5/M6	Standard for mounting position M4 (optional for mounting positions M1/M3/M5/M6)	Standard for mounting position M2 (optional for mounting positions M1/M3/M5/M6)	Radial labyrinth seal Regreasable for mounting positions M1/M2/M3/M4/M5/M6
Single oil seal, inside 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
			

24811335/EN – 03/2018

4 Structure of options

4.1 Components on the input side

The following figure shows the components on the input side.



18014404808099979

24811335/EN – 03/2018

4.2 Torque arm /T

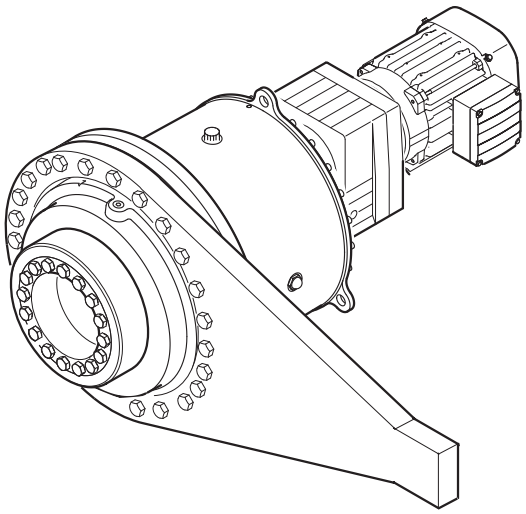
A torque arm is available to support the reaction torque of solid and hollow shaft gear units in the shaft-mounted design.

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

4.2.1 Single-sided torque arm

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

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



1138611211

4.3 Temperature sensor /PT100

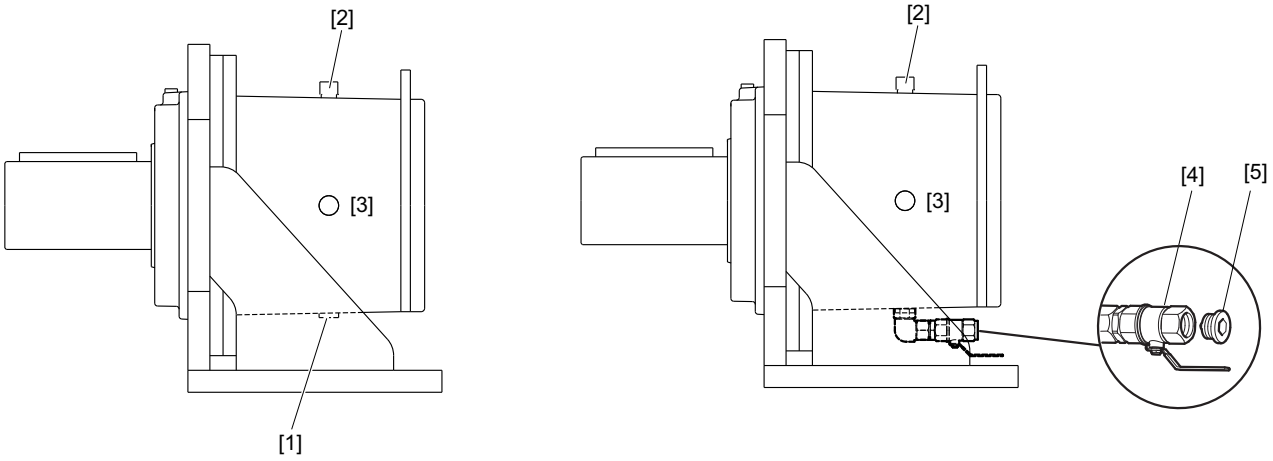
The PT100 temperature sensor can be used to measure the temperature of the gear unit oil.

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

24811335/EN – 03/2018

4.4 Oil drain

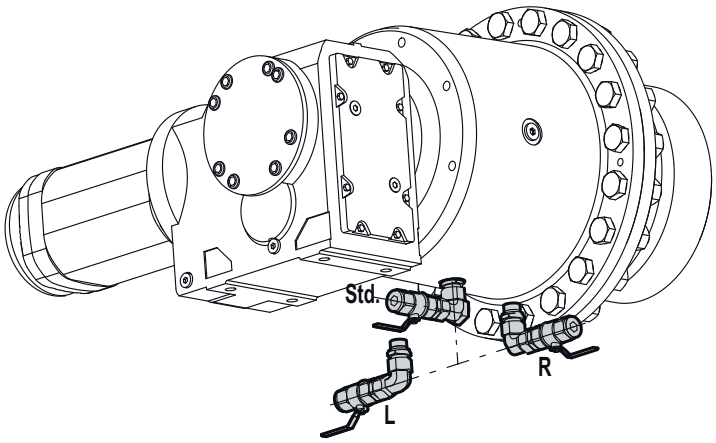
The gear unit is equipped with an oil drain plug [1] as standard. An oil drain valve [4] with screw plug [5] can optionally be added to mounting position M1, M3, M5, or M6. This valve allows for a drain pipe to be easily attached when changing the gear unit oil.



9007203492220043

4.4.1 Position of the oil drain valve

The following figure shows the installation options of the oil drain valve at the planetary gear unit.



13332917515

Std = Standard
R = Right
L = Left

NOTICE

The oil drain valve might be damaged if it is not sufficiently secured.

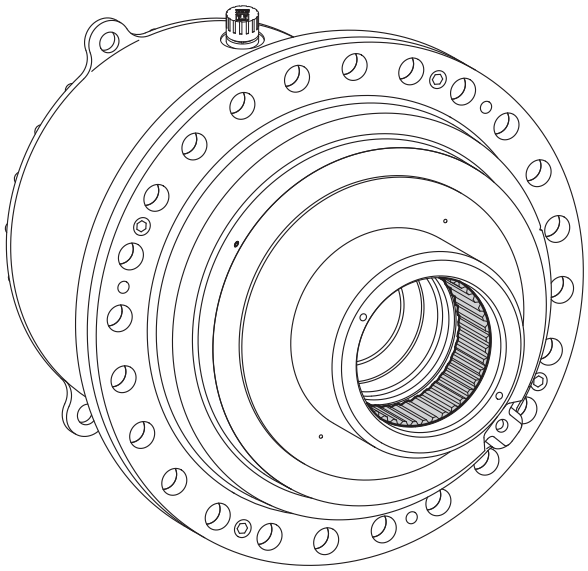
Possible damage to property.

- The oil drain valve must be additionally secured using a screw plug. At temperatures below -20 °C, the permeability of the valve might be limited.

24811335/EN – 03/2018

4.5 Output shaft as a splined hollow shaft /..V

The hollow shaft has splining according to DIN 5480. There is a centering in front of and behind the splined shaft for absorbing radial loads as well as for easier assembly of the output element.



15633041419

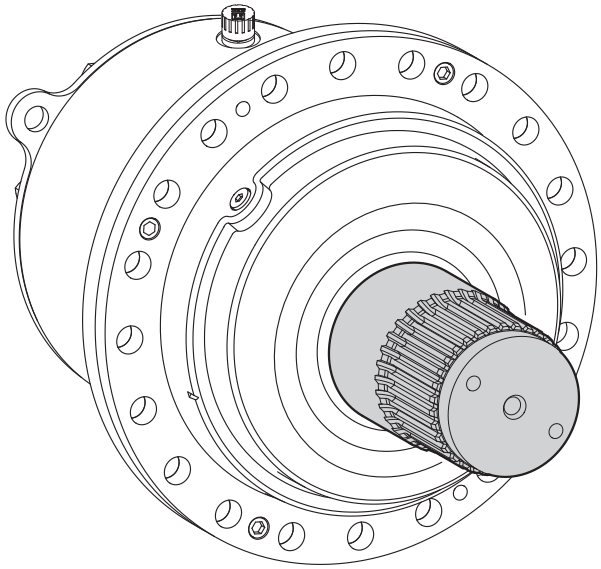
INFORMATION

Contact SEW-EURODRIVE regarding the permitted radial load.

24811335/EN – 03/2018

4.6 Output shaft as a splined solid shaft /..L

The solid shaft has splining according to DIN 5480. There is a centering in front of and behind the splined shaft for absorbing radial loads as well as for easier assembly of the output element. There are threads for mounting an end plate at the front of the shaft.



15633043851

INFORMATION

Contact SEW-EURODRIVE regarding the permitted radial load.

24811335/EN – 03/2018

5 Checklist

5.1 Before startup

This checklist provides an overview of the points that must be checked **before starting up** a gear unit in a potentially explosive area in accordance with Directive 2014/34/EU.

Check the following points before starting up a gear unit in a potentially explosive atmosphere	Check	Information in chapter ...
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 preclude startup. Remove any transport protection prior to startup.		2.9
Compare the data on the nameplate of the drive with the specifications for operation in a potentially explosive area on site: • Equipment group • Explosion protection category • Temperature class • Ambient temperature range		3.3, 3.4, and 6.12
Have arrangements been made to prevent explosive atmospheres, oils, acids, gases, vapors or radiation during installation of the gear unit?		6.4
Have measures been taken to ensure that the gear units are sufficiently ventilated and that they are not heated by an external heat source (e.g. the coupling)?		4 and 6
Check whether the mounting position corresponds to the specification on the gear unit nameplate. Please note: Contact SEW-EURODRIVE before you change the mounting position. Else the ATEX EU declaration of conformity may no longer be valid.		3.5
Does the current mounting position correspond to the specified mounting position for the oil level check? (Refer to the nameplate for the required mounting position.)		3.3
Does the oil level for this mounting position comply with the information on the gear unit nameplate?		8.4
Check for unobstructed access to all oil filling and oil drain plugs as well as the breather plugs and valves.		6.3
Do all installed drives and drive components have an ATEX EU declaration of conformity?		6
Check that the performance data and ambient conditions specified on the nameplate of the gear unit are not exceeded.		7.3
When installing a motor to the input shaft using a V-belt drive: • Does the belt have sufficient electrical leakage resistance (< 10^9 Ω) between input shaft and motor shaft? • Before installing a protection cover: Has the manufacturer of the protection cover performed a risk analysis to prove that no sources of ignition or combustion (e.g. risk of sparks due to grinding) can occur? (If you are not using the safety cover from SEW-EURODRIVE.)		6.3 and 6.12

24811335/EN – 03/2018

Check the following points before starting up a gear unit in a potentially explosive atmosphere	Check	Information in chapter ...
For motors operated on the supply system: • Check that the data specified on the nameplate of the gear unit and the motor corresponds to real conditions at the location where the drive is to be installed.		7.3
Check that oil level monitoring and oil heater have been set and connected properly.		8.4
General information on how to mount accessories: If the users change the gear unit after installing it into the system, they must re-assess the gear unit in terms of additional/new ignition sources.		3.12
In the event of the "extended storage" option, check if the loosely enclosed breather plug has been replaced by the respective screw plug (see dimension sheet for position) and if thread locking compound has been applied.		6.6

5.2 During startup

This checklist includes all activities that have to be performed **during startup** of a gear unit in a potentially explosive atmosphere according to Directive 2014/34/EU.

Check the following points during gear unit startup in a potentially explosive area	Check	Information in chapter ...
Measure the surface temperature after initial startup. Before measuring the surface temperature, operate the gear unit under load for about 3 hours.		3.3 and 6.13
Measure the oil temperature to determine the oil change intervals. Observe chapter Lubricant change intervals.		7.6

24811335/EN – 03/2018

6 Installation/assembly

6.1 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, such as NOCO® fluid from SEW-EURODRIVE → except for hollow shaft gear units with shrink disk
- For hollow-shaft gear units → aids for mounting onto/removal from the machine shaft
- Fastening parts for the gear unit base

6.2 Tolerances

Observe the following tolerances.

INFORMATION

Refer to the dimension sheet in your order documents for the tolerances of the interfaces (e.g. mounting flange) for gear unit connection.

6.2.1 Planetary gear units P..

Shaft ends			
Diameter tolerance according to DIN 748:	Ø	> 50 mm	→ ISO m6
Center bores:	Ø	120 – 210 mm	→ M20
	Ø	240 – 290 mm	→ M24

Mounting flange
Centering shoulder tolerance: ISO f9

6.2.2 Primary gear units RF../KF../K..

Shaft ends			
Diameter tolerance according to DIN 748:	Ø	≤ 50 mm	→ ISO k6
	Ø	> 50 mm	→ ISO m6
Centering bores according to DIN 332 D:	Ø	>85 – 130 mm	→ M24
	Ø	>130 – 180 mm[1)]	→ M30
Keys according to DIN 6885 (domed type)			

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

24811335/EN – 03/2018

6.3 Important notes

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

Danger due to mounting in impermissible mounting position.

Severe or fatal injuries.

- 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.
- Contact SEW-EURODRIVE before mounting the gear unit in another mounting position than the one permitted.

⚠ 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

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).

24811335/EN – 03/2018

⚠ WARNING

Danger due to installing impermissible components.

Severe or fatal injuries.

- Do not mount any impermissible components to the gear unit.
- Additional installation of invalid components or assemblies that impact on the functioning of the gear unit can invalidate the conformity.
- Additional installation of invalid components or assemblies can cause new ignition sources. Manufacturers must ensure that the machine/overall system complies with applicable regulations by performing their own ignition hazard analysis and their own compliance assessment method.
- Mounting impermissible components may lead to material failure at the gear unit. This may cause the gear unit to fall over or down.

⚠ WARNING

Danger due to using impermissible gear unit oil.

Severe or fatal injuries.

- Only use food-grade oils when the gear unit is used in the food industry.

⚠ 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

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.

24811335/EN – 03/2018

⚠ 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.
- 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.
- Planetary gear units are delivered without oil fill as standard.
- As standard, RF../KF../K.. primary gear units are with oil fill. Refer to the order documents for discrepancies.
- Note that planetary gear units and primary gear units have 2 separate oil chambers. Before startup, make sure that both gear units are filled with the correct oil fill quantity.
- In exceptional cases, planetary gear unit and primary gear unit can be delivered with a shared oil chamber. Refer to the order documents for further information. Note that with separate as well as with shared oil chambers, a nameplate is attached to the planetary gear unit and to the primary gear unit. The oil specifications on the nameplates must be added in case of a shared oil chamber.
- Note that the oil quantities on the nameplates are approximate values. The mark on the oil sight glass or oil dipstick is the decisive indicator of the correct oil quantity.
- 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.
- Work on the gear unit only when the machine is not in use. Secure the drive unit against unintentional power-up. Place an information sign near the ON switch to warn that the gear unit is being worked on.
- The oil level plug, oil drain plug, 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 high-grade steel). Also fit the bolts with plastic washers. Always ground the gear unit housing.

24811335/EN – 03/2018

- 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.
- Units installed outdoors must be protected from the sun. Suitable protection 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 the standard mounting positions, the breather on planetary gear units is mounted at the factory and activated if the gear unit is supplied without an oil fill. Check the correct mounting and the function of the breather.
- For planetary 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.
- The gear units are delivered with the ordered painting. Repair any damage to the paint work (e.g. on the breather).
- Do not modify the gear unit or the mount-on components without prior consultation of SEW-EURODRIVE.
- Adhere to the safety notes in the individual chapters.

INFORMATION

- Depending on the order, the gear unit can be delivered with or without oil. Observe the information on the nameplate.
- The electrical installation must comply with the standard EN 60079-14.
- The gear unit must be mounted in such a way that liquids cannot enter the motor adapter (HSS end) or the mounting flange (LSS end) and accumulate there. Otherwise, the oil seal can be damaged, and subsequent damage can create a possible ignition source.
- When touching up the surface coating, make sure that used coatings have a sufficiently low leakage resistance to avoid the risk of ignition due to electrostatic charge. Observe standard EN ISO 80079-36.
- Do not change the mounting position without prior consultation with SEW-EURODRIVE. Warranty as well as EU declaration of conformity will become void without prior consultation.
- Make sure that the gear unit housing is grounded. Electrical mount-on components, such as motors, frequency inverters, etc., must be grounded separately.
- Only electrically conductive belts may be used according to ISO 1813. These have to meet the requirements of EN 60695-11-10, category FV-0. Transmission elements should be balanced after fitting and must not give rise to any impermissible radial or axial forces (see the "Gearmotors" or "Explosion-Proof Drives" catalog for permitted values).
- Observe the information in chapter "Mechanical installation"/"Installing the gear unit" in the "Explosion-proof gear unit series R..7, F..7, K..7, K..9, S..7, SPIROPLAN® W" operating instructions.

24811335/EN – 03/2018

6.4 Prerequisites for assembly

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

INFORMATION

The drive must **not** be assembled in the following ambient conditions:

- Presence of explosive atmosphere
- Oils
- Acids
- Gases
- Vapors
- Radiation

INFORMATION

The ambient temperature must comply with the specifications on the nameplate. If the nameplate does not specify any ambient temperature range, contact SEW-EURODRIVE.

6.4.1 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.

24811335/EN – 03/2018

6.5 Oil expansion tank enclosed (option)

If the oil expansion tank has not already been installed at the factory, it must be installed before startup. The delivery includes the piping for installing the oil expansion tank. Install the oil expansion tank as follows depending on mounting position, size, and lubrication type.

6.5.1 Sizes P.002 – P.082 with bath lubrication in mounting position M2

⚠ CAUTION

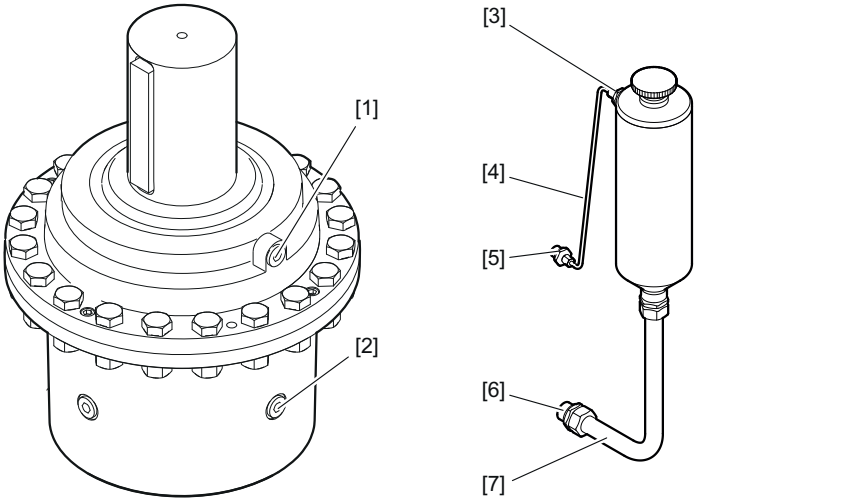
Risk of lubricant leaking from damaged seals.

Minor injuries.

- Check the pipe fittings for leaking oil before taking the gear unit into operation.

INFORMATION

The gear unit must not be filled with oil while installing the oil expansion tank. Before installing the oil expansion tank, drain the oil of gear units that are delivered with oil fill. Gear units delivered without oil fill, must be filled with oil after having installed the oil expansion tank.

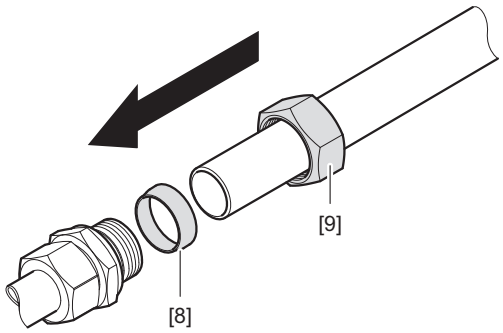


23326572299

1. Remove the two screw plugs from the connection bores [1] and [2] of the planetary gear unit.
2. Loosen the pipe fitting of the fittings [5] and [6] on the enclosed oil expansion tank.
3. Screw the pipe fitting [5] and [6] into the connection bores [1] and [2] on the planetary gear unit.

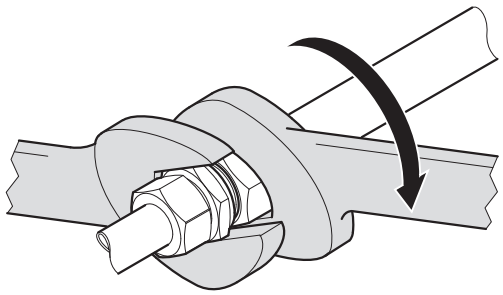
24811335/EN – 03/2018

4. Mount the piping [4] and [7] with cutting ring [8] and union nut [9] to the screwed-in pipe fitting [5] and [6].



23330723339

5. If necessary, loosen the screw fitting [3] to being able to position the piping more easily. Tighten the screw fitting [3] again.
6. Screw the two pipes [4] and [7] to the planetary gear unit using the pipe fitting [5] and [6]. When doing so, hold the pipe fitting [5] and [6] using a wrench and tighten the union nut with a wrench for approx. ¼ turn after you feel a resistance.



23330795147

24811335/EN – 03/2018

6.5.2 Sizes P.092 - P.102 with bath lubrication in mounting position M2

⚠ CAUTION

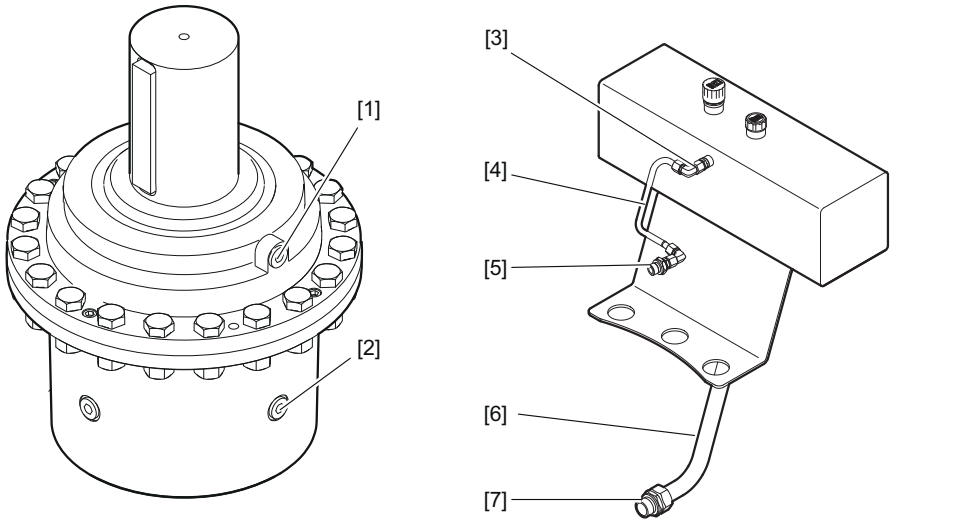
Risk of lubricant leaking from damaged seals.

Minor injuries.

- Check the pipe fittings for leaking oil before taking the gear unit into operation.

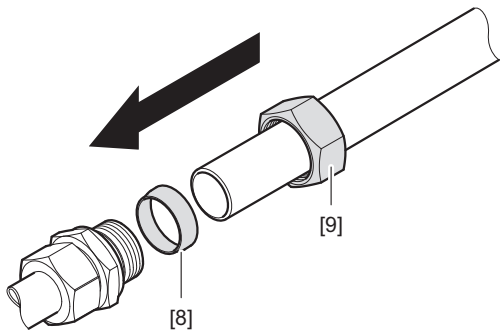
INFORMATION

The gear unit must not be filled with oil while installing the oil expansion tank. Before installing the oil expansion tank, drain the oil of gear units that are delivered with oil fill. Gear units delivered without oil fill, must be filled with oil after having installed the oil expansion tank.



23326574731

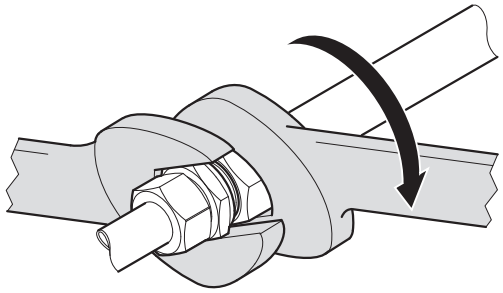
1. Remove the two screw plugs from the connection bores [1] and [2] of the planetary gear unit.
2. Loosen the pipe fitting of the fittings [5] and [7] on the enclosed oil expansion tank.
3. Screw the pipe fitting [5] and [7] into the connection bores [1] and [2] on the planetary gear unit.
4. Mount the piping [4] and [6] with cutting ring [8] and union nut [9] to the screwed-in pipe fitting [5] and [7].



23330723339

24811335/EN – 03/2018

5. If necessary, loosen the screw fitting [3] to being able to position the piping more easily. Tighten the screw fitting [3] again.
6. Screw the two pipes [4] and [6] to the planetary gear unit using the pipe fitting [5] and [7]. When doing so, hold the pipe fitting [5] and [7] using a wrench and tighten the union nut with a wrench for approx. ¼ turn after you feel a resistance.



23330795147

24811335/EN – 03/2018

6.6 Planetary gear units delivered without oil fill (standard)

Observe the notes in chapter "Important information" (→ 🗎 64).

Planetary gear units are delivered without oil fill as standard. Observe the following information:

⚠ 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.

- Note the following information.

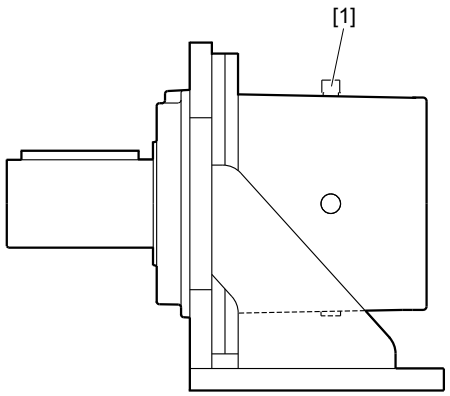
- Fill the oil only when the gear unit is in the intended mounting position.
- Make sure the oil has ambient temperature when filling it into the gear unit.
- Observe the additional notes depending on the lubrication type in the following chapters.
- Fill the gear unit with the oil grade and oil quantity 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 SEW-EURODRIVE operating instruction: Oil supply system. For more information, refer to chapter "Changing the oil of planetary gear units" (→ 🗎 134).
- Use a filling filter to fill the oil into the gear unit (max. filter mesh 25 µm).
- Check the oil level using the oil sight glass or oil dipstick. For additional information, refer to chapter "Checking the oil level of the planetary gear unit" (→ 🗎 130).

24811335/EN – 03/2018

6.7 Gear units delivered with oil fill (option)

If the gear unit is delivered with oil fill, you have to install the breather prior to startup. It is enclosed with the delivery.

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



18014402757284107

1. Remove the closing plug.
2. Insert the breather [1].
3. Check the oil level. Observe chapter "Checking the oil level at the planetary gear unit" (→ 🗎 130).

6.8 Limit temperature for gear unit start

Check if the gear unit/gearmotor is designed for the ambient temperature. For the application limits refer to the technical documentation, the nameplate or the lubricant table (see chapter "Permitted lubricants" (→ 🗎 142)).

NOTICE

Starting up the gear unit below the permitted minimum oil temperature may damage the unit.

Possible damage to property.

- Observe the specified start temperatures for gear unit startup.

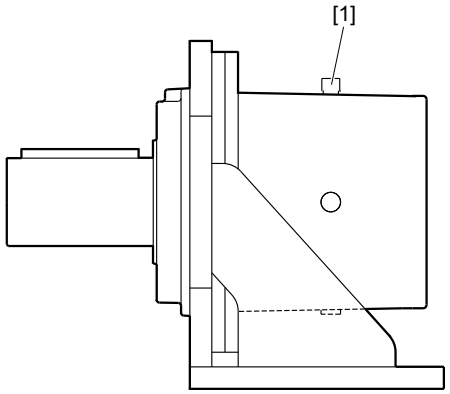
24811335/EN – 03/2018

6.9 Breather for planetary gear units

Observe the notes in chapter "Important information" (→ 🗎 64).

If the planetary gear unit is delivered with oil fill, you have to install the breather prior to startup. It is enclosed with the delivery.

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



18014402757284107

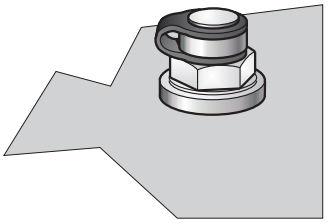
1. Remove the closing plug.
2. Insert the breather [1].
3. Check the oil level. Observe the information in chapter "Checking the oil level of the planetary gear unit" (→ 🗎 130).

24811335/EN – 03/2018

6.10 Breather for RF../KF../K... primary gear units

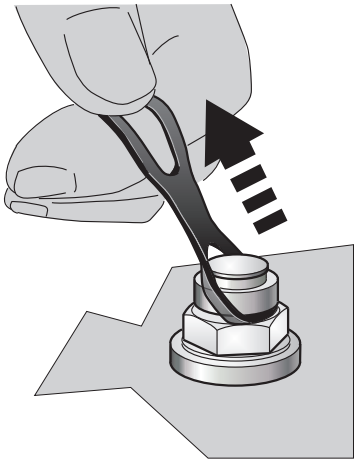
Check whether the breather is activated. If the breather has not been activated, you must remove the transport protection device from the breather before starting up the gear unit.

1. Breather with transport protection



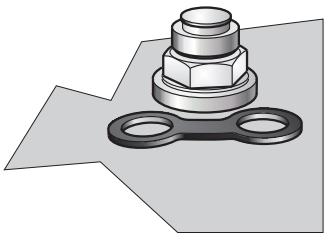
975574923

2. Remove the transport protection



211316875

3. Activated breather



211314699

24811335/EN – 03/2018

6.11 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.

INFORMATION

Processes that cause strong electrical charge due to fast moving particles on the coating must be excluded (e.g. due to fluid liquids and solids)!

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" (→ 🗎 78).

24811335/EN – 03/2018

6.11.1 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	Quantity
		Nm	
P.002	M20	464	8
P.012			
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 screw connection during installation.

6.11.2 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.

24811335/EN – 03/2018

6.11.3 Foot-mounted gear unit with RF.. /KF../K.. primary gear unit

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

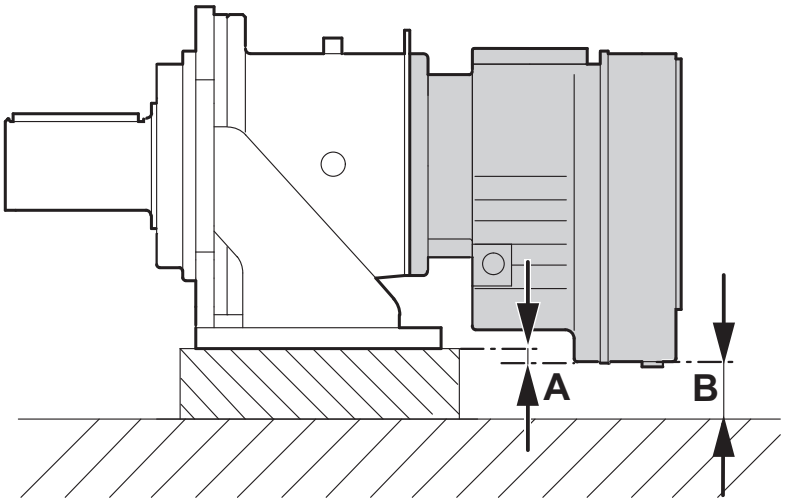
INFORMATION

Observe **Dimension A** for the following gear unit combinations. The customer base construction must be prepared accordingly.

In addition, you need enough room to perform an oil change. The customer has to specify a **dimension B** for this purpose.

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

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



9007202573959819

6.11.4 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.

6.12 Gear unit mounting in potentially-explosive atmospheres

INFORMATION

Make sure to observe the safety notes in chapter 2 when installing the gear unit in a potentially explosive atmosphere.

6.13 Gear units and gearmotors in category II2GD

INFORMATION

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

6.13.1 Temperature information

Limit values have been defined for gear units regarding surface temperature, oil bath temperature, and ambient temperature.

The limit values for the surface temperature are indicated on the nameplate in the Ex labeling for dust and gas.

The limit values for the ambient temperature are also specified on the nameplate.

The limit values for the oil bath temperature are indicated in the lubricant table depending on the oil in use.

Observe the descriptions in the following chapters.

Determine the lowest and highest limit value from the temperature ranges for surface and oil bath temperatures. Make sure that the gear unit is only operated within this temperature range.

Do the following to determine the temperature range permitted for operating the gear unit:

24811335/EN – 03/2018

Choose the lower value from the upper limits of surface temperature and oil bath temperature. This value is the upper limit value of the new operating temperature range.

Next, choose the higher value from the lower limits of surface temperature and oil bath temperature. This value is the lower limit value of the new operating temperature range.

Example:

Ex labeling gas: II 2G Ex h IIC **T5** Gb IP65

Ex labeling dust: II 2D Ex h IIIC **T100°C** Gb IP65

Oil in use: CLP HC 320 from Castrol

Temperature information	Limit values °C	
	Min.	Max.
Ambient temperature (standard)	-20	+40
Oil bath temperature (according to lubricant table)	-20	+90
Surface temperature (according to Ex labeling)	-	+100

Result:

Oil bath temperature and housing temperature must not exceed a maximum value of 90 °C and must not drop below a minimum value of -20 °C.

If these limit values are adhered to during operation, gear units may be operated in an ambient temperature range from -20 °C to +40 °C as standard.

If the max. or min. limit values are exceeded during operation, for example because the gear unit heats up, the gear unit must be stopped immediately.

Temperature class

The maximum surface temperature differs depending on power, speed, housing size, lubrication type, reduction ratio, mounting position, etc.

The maximum surface temperature results from the division into temperature classes. The temperature classes indicate the maximum surface temperature for potentially explosive gas atmospheres. The maximum surface temperature for potentially explosive dust atmospheres is indicated in the separate dust labeling.

- **Equipment of group II G**

  Equipment of group II G must be categorized in a temperature class from which the maximum surface temperature results, see the following table.

  For information on temperature classes and surface temperatures of the electrical and electromechanical equipment used, refer to the nameplate of the equipment and to the declaration of conformity according to directive 2014/34/EU.

Temperature class	Maximum surface temperature in °C
T1	450
T2	300
T3	200
T4	135
T5	100
T6	85

- **Equipment of group II D**

  Equipment of group II D must be clearly defined according to the actual maximum surface temperature. They are marked accordingly.

24811335/EN – 03/2018

Ambient temperature

The ambient temperatures permitted for gear units in categories II2D, II2G, II3D, and II3G deviate from the range of validity of the directive from -20 °C to +60 °C.

Gear units in categories II2D, II2G, II3D, and II3G may only be operated at ambient temperatures from -20 °C to +40 °C as standard. Deviations are allowed in individual cases and are indicated on the nameplate.

INFORMATION

Directive 2014/34/EU specifies a temperature range from -20 °C to +60 °C for the ambient temperature. Ambient temperatures that deviate from the normal range of validity of the directive are indicated on the nameplate. If the nameplate does not specify any ambient temperature range, contact SEW-EURODRIVE.

24811335/EN – 03/2018

Surface temperature

The maximum surface temperature of gear unit differs depending on power rating, speed, gear ratio, and mounting position.

The maximum permitted surface temperature results from the Ex classification on the nameplate. Other temperatures are only permitted after consultation with SEW-EURODRIVE.

To determine the temperature range for the drive at which the gear unit may be operated, you have to compare the information for the surface temperature (Ex classification) and the information for the oil bath temperature (lubricant table).

The surface temperature must not exceed the following values:

- The maximum permitted surface temperature according to the assigned temperature class (gas).
- The maximum surface temperature for dust (see Ex labeling on the nameplate).

The system operator must ensure that the accumulation of dust does not exceed a maximum thickness of 5 mm in accordance with EN 60079-17.

The surface temperature of the drive may deviate ≤ 70 K from the ambient temperature if the maximum surface temperatures of the "Ex classification or the oil bath temperature" (→ 🗎 80) are not exceeded. If the specified limit values are exceeded, switch off the drive immediately and contact SEW-EURODRIVE.

6.13.2 Degree of protection

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

6.13.3 Ambient conditions

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

6.13.4 Output power and torque

Ensure that the output torque, speed and permitted overhung and axial loads are maintained according to the data given on the nameplate.

6.13.5 Special designs

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

24811335/EN – 03/2018

6.14 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.

6.14.1 Mounting input and output components

NOTICE

Bearing, housings, or shafts may be damaged due to improper assembly.

Possible damage to property.

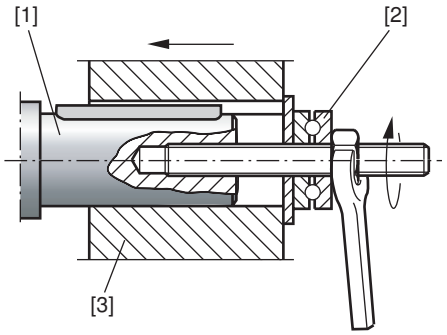
- Only use a mounting device for installing input and output elements. Use the center bore and the thread on the shaft end for positioning.
- Never force belt pulleys, couplings, pinions, etc. onto the shaft end by hitting them with a hammer. Doing so can damage bearings, housing, and shaft.
- Make sure the belt of belt pulleys is tensioned correctly in accordance with the manufacturer's specifications.

INFORMATION

Only drive components with corresponding ATEX approval are permitted, assuming that these components are covered by Directive 2014/34/EU.

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.



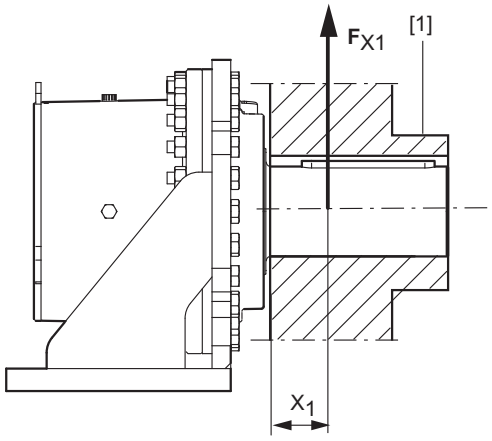
211368587

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

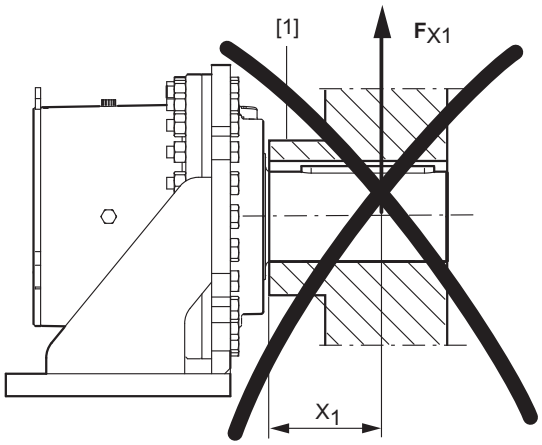
24811335/EN – 03/2018

Avoid excessive overhung loads

To avoid high overhung loads: Install gear wheels or chain sprockets according to figure **A** if possible.



[A]



[B]

1055550219

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

INFORMATION

Mounting is easier if you first apply lubricant containing MoS_2 to the output element and/or heat it up briefly (to 80 – 140° C).

6.15 Output shaft as hollow shaft with shrink disk

INFORMATION

Only drive components with corresponding ATEX approval are permitted, assuming that these components are covered by Directive 2014/34/EU.

INFORMATION

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

INFORMATION

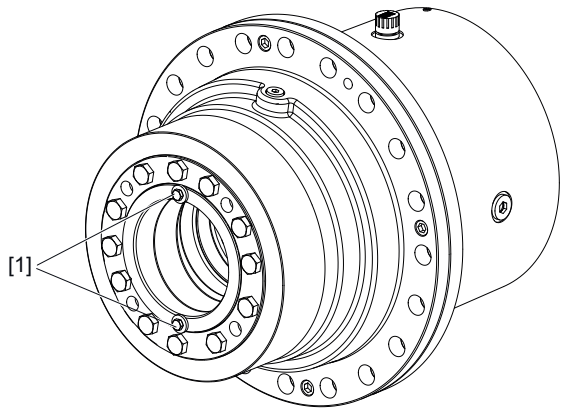
Ensure that the dimensions of the machine shaft correspond to the SEW-EURODRIVE specifications.

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.



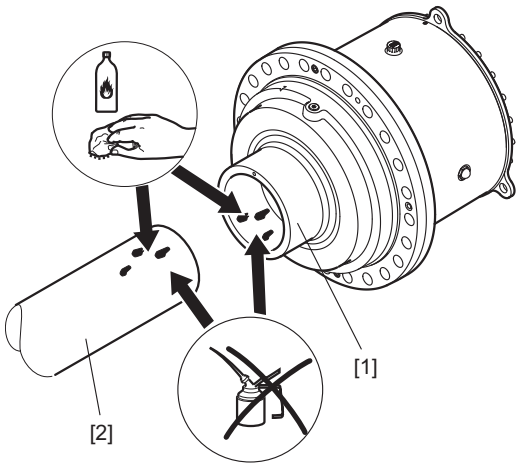
27021601203992459

24811335/EN – 03/2018

6.15.1 Mounting

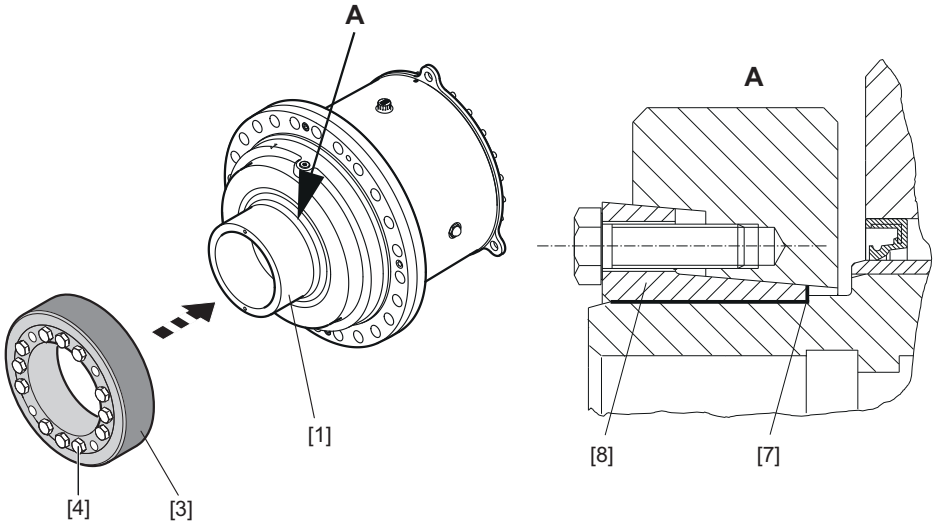
Observe the notes in chapter "Important information" (→ 🗎 64).

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.



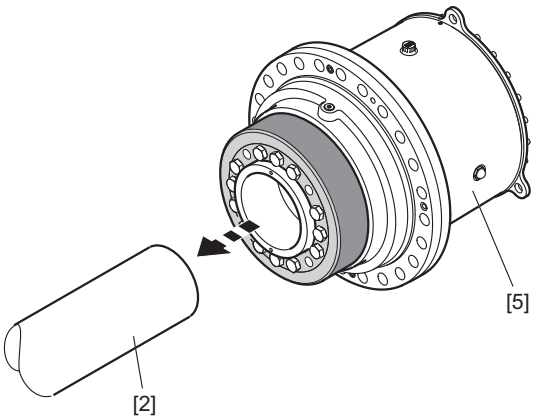
9007200307592459

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].



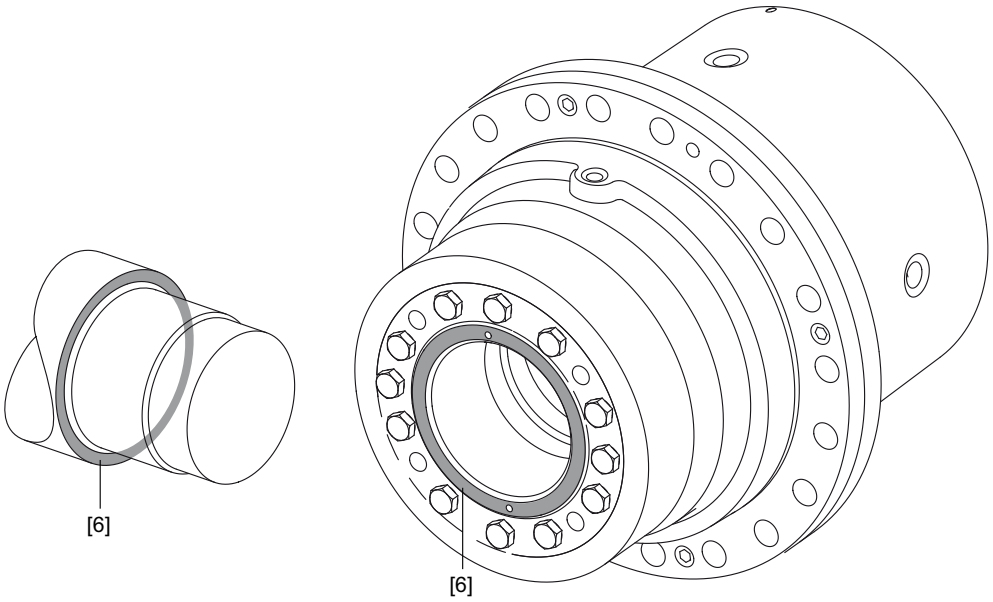
27021598817756043

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.



18014399563018251

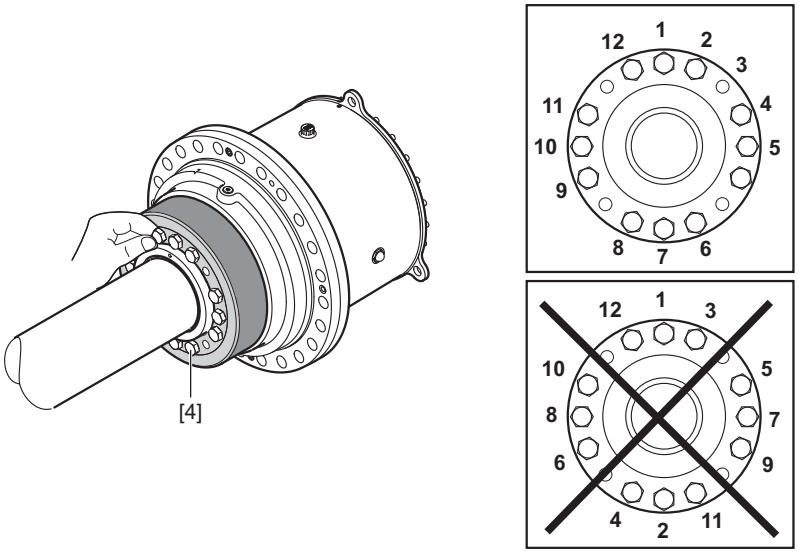
5. To guarantee a complete torque transmission from the gear unit to the machine shaft, observe the following procedure during assembly. Push the gear unit onto the machine shaft until the contact surfaces [6] touch.



9007217842556171

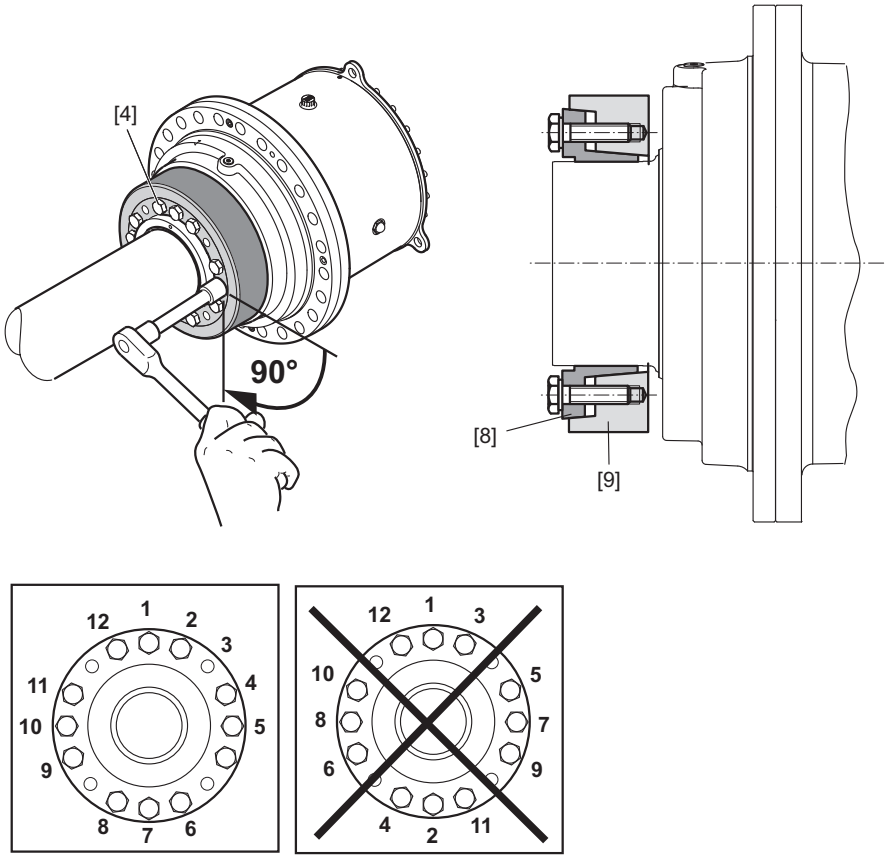
24811335/EN – 03/2018

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.



18014399563021451

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.



27021598817766283

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%
3191	P.002	M16	41000	250

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.

INFORMATION

If the SEW cover is not used, the system manufacturer undertakes to use appropriate accessories in line with EN ISO 80079-36 and EN ISO 80079-37 to prevent possible ignition sources between housing and shrink disk (e.g. friction due to high amount of built-up dirt).

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

24811335/EN – 03/2018

6.15.2 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

Removing the gear unit incorrectly from the 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.
- Remove the shrink disk properly. Never completely unscrew the retaining screws because the shrink disk might jump off and cause an injury.
- Shrink disks and corresponding parts of different gear units must not be swapped.

Observe the notes in chapter "Important information" (→ 🗎 64).

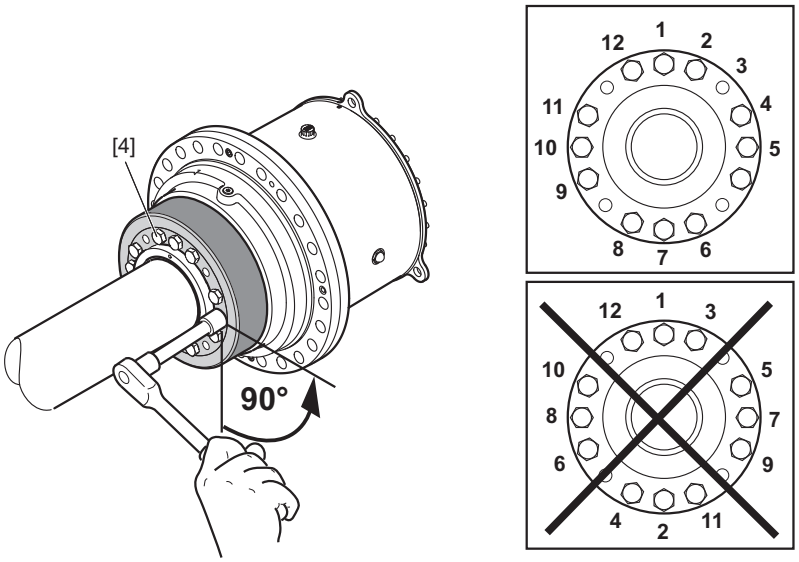
1. **NOTICE!** Improper loosening of the locking screws can lead to straining of the connecting surface. Possible damage to property.
   Loosen the locking screws [4] by a quarter turn one after the other to avoid straining the connecting surface.

INFORMATION

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

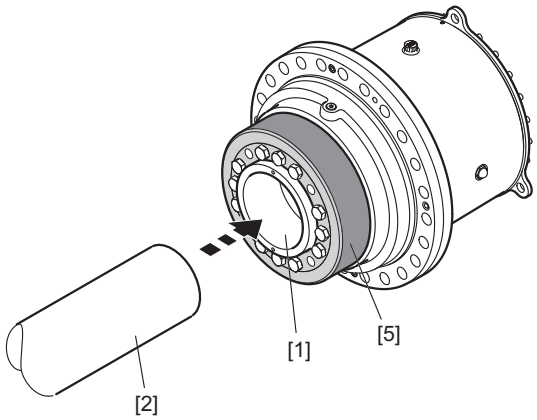
- Take the necessary number of locking screws and screw them evenly into the disassembly bores. Tighten the locking screws in several steps until the tapered bushing separates from the tapered ring.

24811335/EN – 03/2018



18014399566397195

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.



27021598821141387

3. ⚠ **WARNING!** The loose shrink disk could slip. Risk of injury to persons and damage to property. Secure the shrink disk against slipping.
Remove the shrink disk [3] from the hub [1].

24811335/EN – 03/2018

6.15.3 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 solid lubricant.

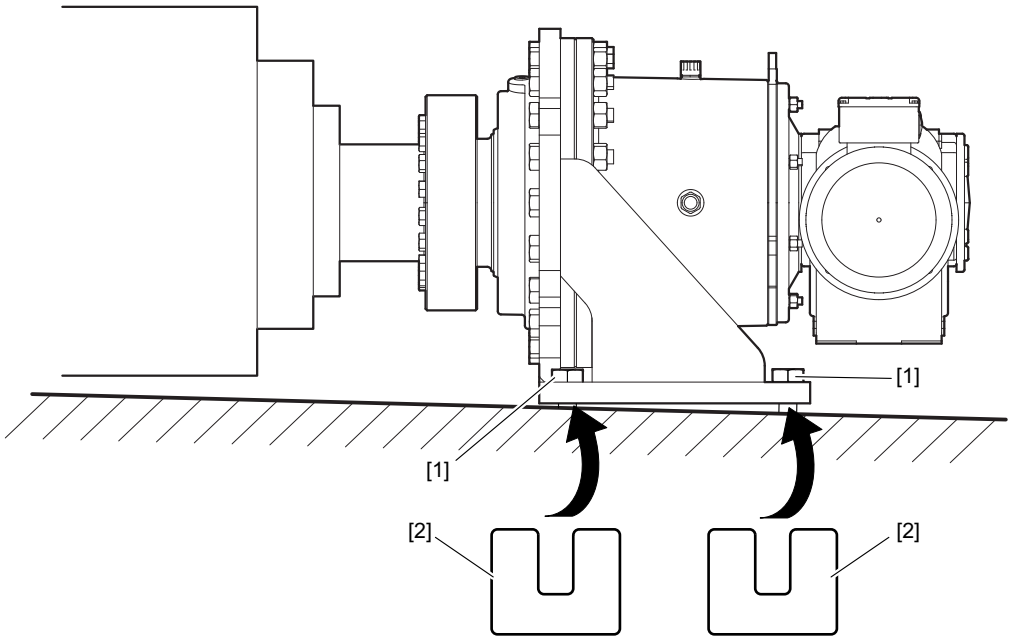
- If the tapered surfaces of the shrink disk are damaged, the shrink disk can no longer be used and must be replaced.
- Used shrink disks have to be disassembled and cleaned. The manufacturer has applied a solid lubricant to the tapered surfaces. Regrease undamaged tapered surfaces. Grease screw threads with solid lubricant.
- Use a solid lubricant with a friction factor of μ = 0.04.

Solid lubricant	Sold as
Weicon "Anti-Seize"	Spray or paste
Molykote 321 R (lube coat)	Spray
Molykote spray (powder spray)	Spray
Molykote G Rapid	Spray or paste
Aemasol MO 19R	Spray or paste
Molykombin UMFT 1	Spray
Unimoly P5	Powder

24811335/EN – 03/2018

6.16 Gear unit in foot-mounted design with hollow output shaft with shrink disk

1. Mount the hollow shaft with shrink disk onto the machine shaft as described in chapter "Output shaft as hollow shaft with shrink disk" (→ 🗎 86)".
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" (→ 🗎 78).



18570924299

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.

24811335/EN – 03/2018

6.17 Gear unit with splining

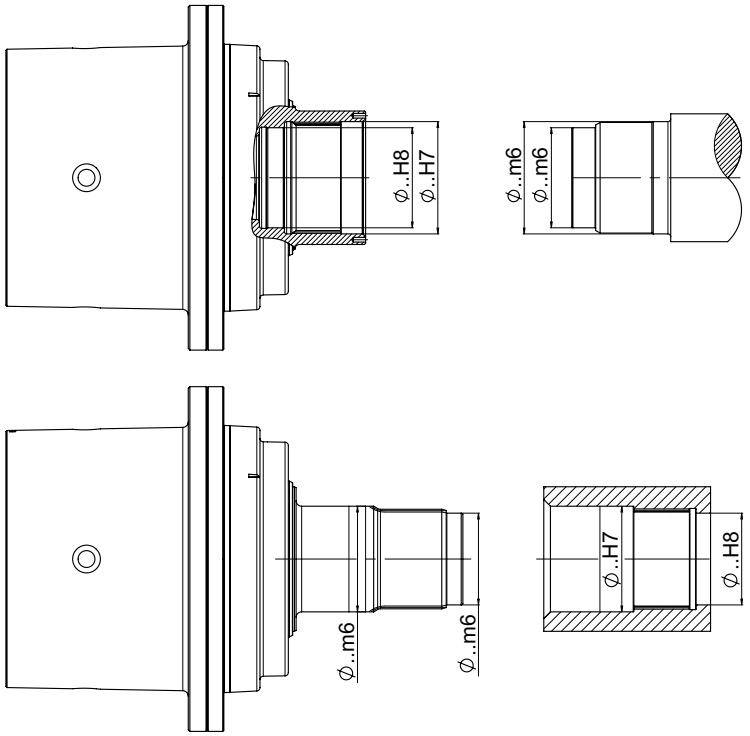
INFORMATION

Only drive components with corresponding ATEX approval are permitted, assuming that these components are covered by Directive 2014/34/EU.

6.17.1 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.



9007214912962443

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.

24811335/EN – 03/2018

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.

6.17.2 Mounting the gear unit onto the machine shaft

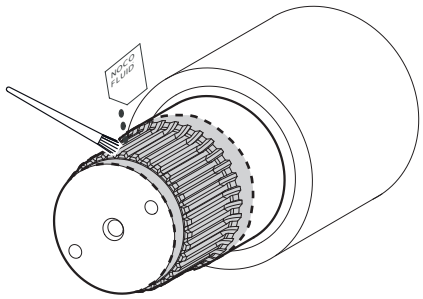
INFORMATION

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" (→ 🗎 64).

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



15633485323

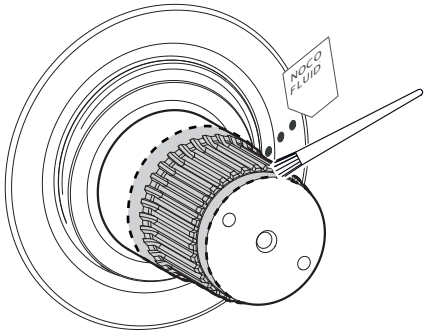
2. Push the gear unit onto the machine shaft. The splining of the gear shaft must mesh with the splining of the machine shaft.
3. Make sure that the customer shaft is at the correct position in axial direction.

24811335/EN – 03/2018

Output shaft as a splined solid shaft /..L

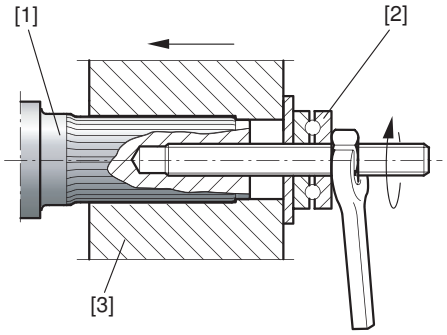
Observe the notes in chapter "Important information" (→ 🗎 64).

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



15634076939

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.



15637823371

[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.

6.17.3 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.

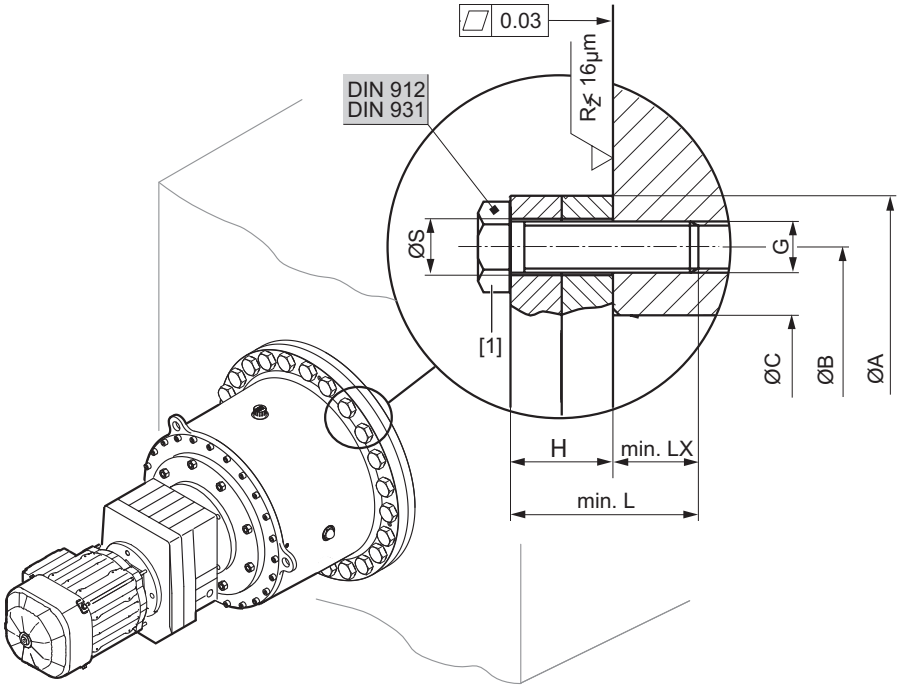
- You may only use the gear shaft as a support for disassembly. Note that supporting on any other parts of the gear unit may damage the material.

24811335/EN – 03/2018

6.18 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 delivery.



36028798078127243

INFORMATION

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

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

24811335/EN – 03/2018

The following values in the table apply to steel constructions.

Size	Thread	Quantity	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.002	M20	16	555	22	39.5	73.5	34	410	370	330_{f9}	10.9	4017 4762
P.012	M20	20	555	22	41.5	73.5	32	450	410	370_{f9}		
P.022	M20	24	555	22	48	84	36	500	460	410_{f9}		
P.032	M24	20	960	26	50	84	34	560	510	460_{f9}		
P.042	M30	20	1910	33	64	114	50	620	560	480_{f9}		
P.052	M30	24	1910	33	64	114	50	650	590	530_{f9}		
P.062	M36	24	3320	39	74	134	60	760	690	610_{f9}		
P.072	M36	24	3320	39	84	144	60	840	770	690_{f9}		
P.082	M42	24	5310	45	84	154	70	920	840	750_{f9}		
P.092	M42	24	5310	45	90	160	70	950	870	800_{f9}		
P.102	M42	24	5310	45	100	180	80	1050	960	850_{f9}		

6.19 AD input shaft assembly

For mounting input components, observer chapter "Mounting input and output components" (→ 🗎 84).

INFORMATION

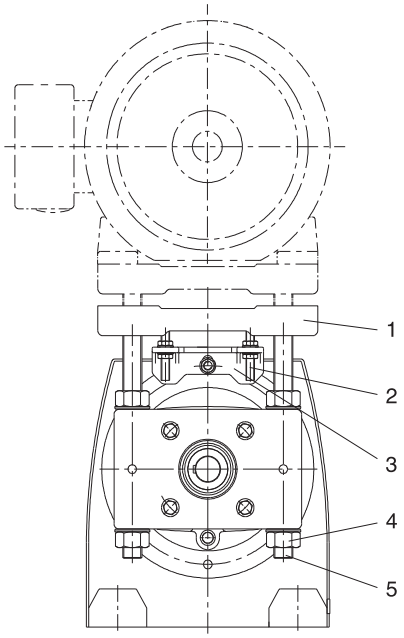
Only electrically conductive belts may be used according to ISO 1813.

- Before a protection cover can be installed, a hazard analysis must demonstrate that no sources of ignition (e.g. impact sparks from grinding) can occur. The manufacturer of the protection cover must perform the risk analysis.

24811335/EN – 03/2018

6.19.1 AD../P input shaft assembly with motor platform

Mounting the motor and adjusting the motor platform.



212119307

[1] Motor platform
[2] Stud bolt (only AD6/P/AD7/P)
[3] Support (only AD6/P/AD7/P)
[4] Nut
[5] Threaded column

Observe the notes in chapter "Important information" (→ 🗎 64).

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

6.19.2 Only AD6/P and AD7/P

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

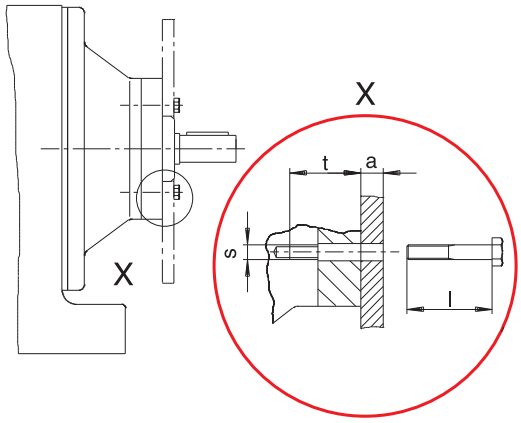
24811335/EN – 03/2018

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

Mounting components on the input shaft assembly with centering shoulder.

Observe the notes in chapter "Important information" (→ 🗎 64).

1. To fasten mount-on components to the cover with AD../ZR.. centering shoulder, use screws with appropriate length. The length l of the new screws is calculated as follows:



18014398721603467

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

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

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

Type	Screw-in depth t mm	Retaining thread s	Tightening torque T_A for connection screws of strength class 8.8 Nm
AD2/ZR	25.5	M8	27
AD3/ZR	31.5	M10	54
AD4/ZR	36	M12	93
AD5/ZR	44	M12	93
AD6/ZR	48.5	M16	230
AD7/ZR	49	M20	464
AD8/ZR	42	M12	93

24811335/EN – 03/2018

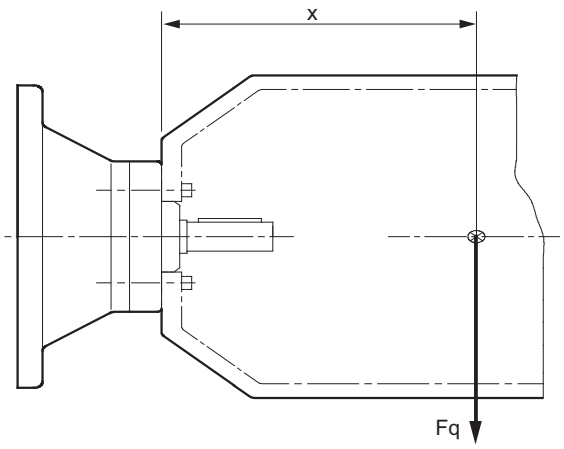
Permitted loads

NOTICE

Impermissibly high loads may occur when mounting a motor.

Possible damage to property.

- The load data specified in the following table are not to be exceeded.



1178977035

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

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

2) Diameter of the adapter output flange: 160 mm

24811335/EN – 03/2018

6.19.4 Cover with backstop AD../RS

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

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

NOTICE

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

Possible damage to property.

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

Type	Maximum locking torque of the backstop Nm	Minimum lift-off speed 1/min
AD2/RS	45	800
AD3/RS	200	670
AD4/RS	470	660
AD5/RS	630	550
AD6/RS	1430	600
AD7/RS	1430	600
AD8/RS	1430	600

24811335/EN – 03/2018

6.20 Torque arm

6.20.1 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

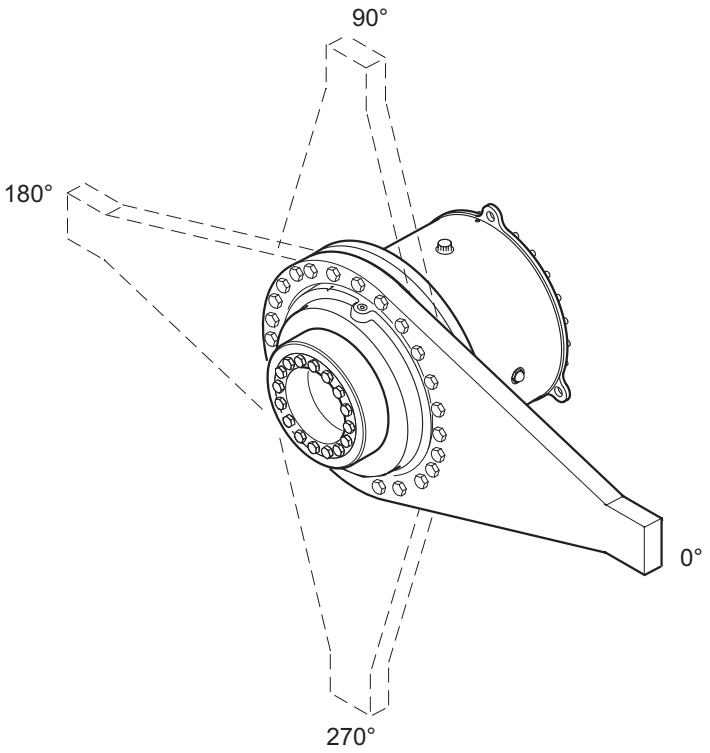
- Retaining screws are included in the delivery.
- When using a shrink disk cover, install the torque arm before mounting the cover.

24811335/EN – 03/2018

6.20.2 Single-sided torque arm (standard)

Installation situation

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



9007203491563787

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.

24811335/EN – 03/2018

Dimensions

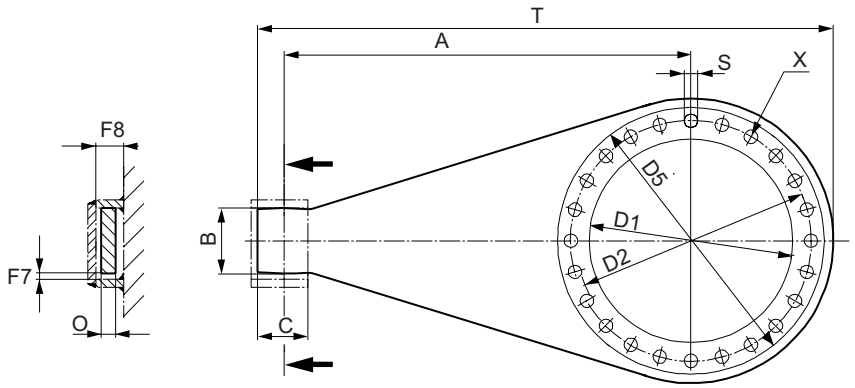
The following figure shows a sample torque arm with dimensions.

NOTICE

Mounting elements may be damaged by to high impacts.

Possible damage to property

- Limit the maximum clearance for the torque arm bearing according to F7 and F8 in the following table.



19817440779

Size	Dimensions in mm										Quantity	Mass
	A	B	C	D1	D2	O	F7	F8	S	T	X	kg
P.002	650	60	50	334	370	25	2	50	22	880	16	25
P.012	700	70	60	374	410	30	2	60	22	955	20	35
P.022	750	90	70	414	460	35	2	70	22	1035	24	48
P.032	800	110	90	464	510	35	2	70	26	1125	20	58
P.042	900	150	120	484	560	40	2	80	33	1270	20	93
P.052	1000	160	130	534	590	40	2	80	33	1390	24	102
P.062	1200	180	150	614	690	50	2	100	39	1655	24	183
P.072	1500	230	200	694	770	60	2	120	39	2020	24	317
P.082	1600	230	200	754	840	70	2	140	45	2160	24	420
P.092	1650	250	220	804	870	70	2	140	45	2235	24	440
P.102	1700	250	220	854	960	70	2	140	45	2335	24	510

INFORMATION

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

24811335/EN – 03/2018

Tightening torques

INFORMATION

The tightening torques listed in the following table are based on the friction coefficient for threads and mounting surface of μ = 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.002 – 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		

24811335/EN – 03/2018

6.21 Couplings

INFORMATION

The couplings must be marked for the use in potentially explosive areas.

Also adhere to the special operating instructions given by the respective coupling manufacturer.

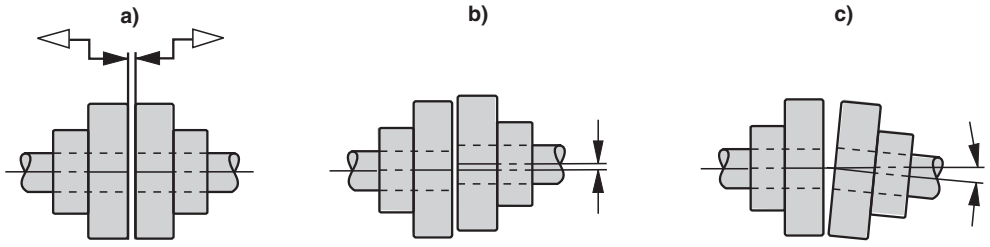
6.21.1 Mounting tolerances

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

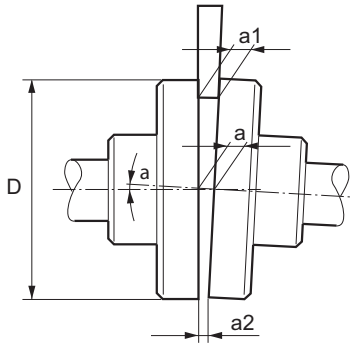
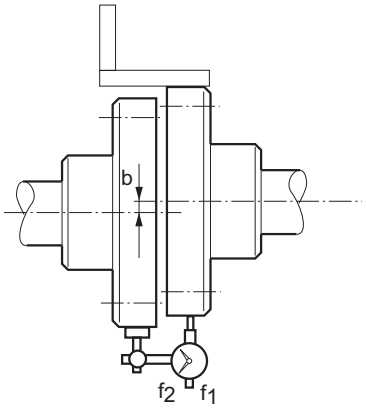
a) Axial misalignment

b) Radial misalignment

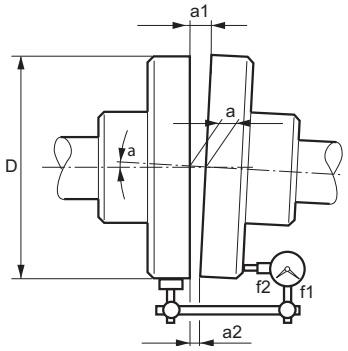
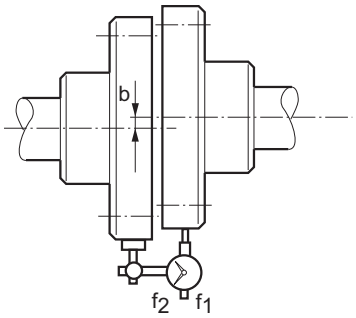
c) Angular misalignment



The following table shows various methods for measuring the differing tolerances.

Measuring instruments	Angular offset	Axis offset
Feeler gauge		
	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 mean value from the difference (a1 – a2).	The following figure shows the measurement of axial offset using a straight-edge. Permissible values for axial offset 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 dial indicator indicates the offset (dimension "b") that includes the axial offset of the other coupling half.

24811335/EN – 03/2018

Measuring instruments	Angular offset	Axis offset
Micrometer dial		
	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 dial indicators when rotating the coupling).	The following figure shows the how to measure axial offset using a more accurate measuring method, as described above. The coupling halves are rotated together without letting the point of the dial indicator slide onto the measuring surface. The axial offset is obtained by dividing the deviation displayed on the dial indicator (dimension "b").

6.22 Coupling of AM adapter

NOTICE

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

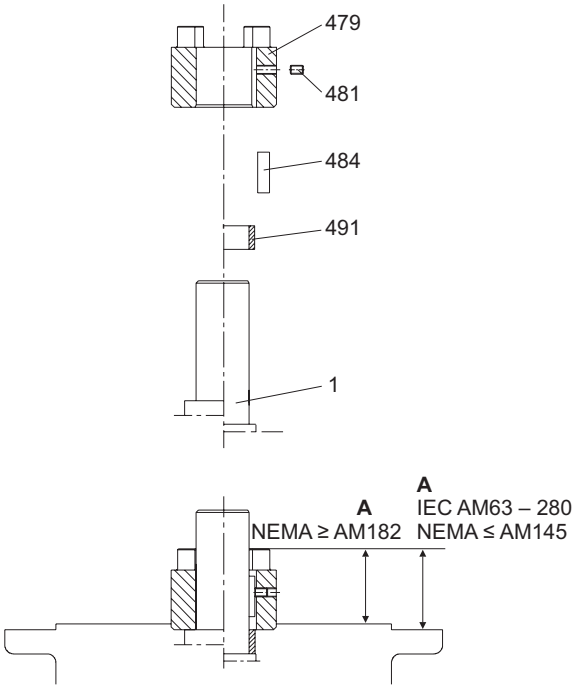
Possible damage to property.

- Seal adapter with anaerobic fluid seal.

INFORMATION

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

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



16189300235

[1] Motor shaft
[479] Coupling half
[481] Set screw
[484] Key
[491] Spacing ring

Observe the notes in chapter "Important information" (→ 🗎 64).

1. Clean the motor shaft and flange surfaces of the motor and the adapter.
2. Remove the key from the motor shaft and replace it with the supplied key [484] (not AM63 and AM250).
3. Heat the coupling half [479] to approx. 80 – 100 °C and push the coupling half onto the motor shaft. Position as follows:

- IEC adapter AM63 – 225 until stop at motor shaft shoulder.
- IEC adapter AM250 – 280 to dimension A
- NEMA adapter with spacer tube [491] to dimension A

4. Secure the key and coupling half using the setscrew [481] and tightening torque T_A according to the table on the motor shaft.
5. Check the dimension **A**.
6. Seal the contact surfaces between the adapter and motor using a suitable sealing compound.
7. Mount the motor on the adapter. Ensure that the coupling claws of the adapter shaft are engaged in the plastic cam ring.

IEC AM	63/71	80/90	100/112	132	160/180	200	225	250/280
A	24.5	31.5	41.5	54	76	78.5	93.5	139
T_A	1.5	1.5	4.8	4.8	10	17	17	17
Thread	M4	M4	M6	M6	M8	M10	M10	M10

NEMA AM	56	143/145	182/184	213 – 215	254/256	284/286	324/326	364/365
A	46	43	55	63.5	78.5	85.5	107	107

24811335/EN – 03/2018

NEMA AM	56	143/145	182/184	213 – 215	254/256	284/286	324/326	364/365
T_A	1.5	1.5	4.8	4.8	10	17	17	17
Thread	M4	M4	M6	M6	M8	M10	M10	M10

24811335/EN – 03/2018

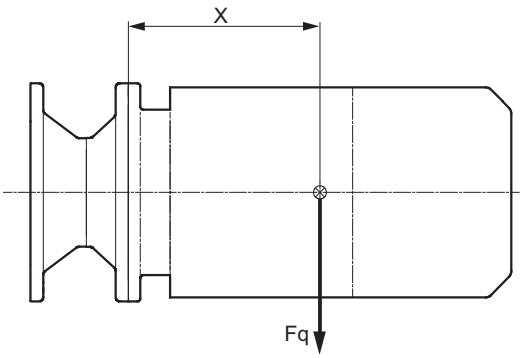
Permitted loads

NOTICE

Impermissibly high loads may occur when mounting a motor.

Possible damage to property.

- The load data specified in the following table are not to be exceeded.



1178689291

Adapter type			F_q [1] N	
IEC	NEMA	x [1] mm	IEC adapter	NEMA adapter
AM63/71	AM56	77	530	410
AM80/90	AM143/145	113	420	380
AM100/112	AM182/184	144	2000	1760
AM132 [2]	AM213/2152 [2]	186	1600	1250
AM132..	AM213/215		4700	3690
AM160/180	AM254/286	251	4600	4340
AM200/225	AM324-AM365	297	5600	5250
AM250/280	-	390	11200	-

1) The maximum permitted weight of the attached motor F_{qmax} must be reduced linearly as the center of gravity distance x increases. If this distance x is reduced, the maximum permitted weight F_{qmax} cannot be increased.

2) Diameter of the adapter output flange: 160 mm

24811335/EN – 03/2018

AM adapter with AM../RS backstop

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

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

NOTICE

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

Possible damage to property.

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

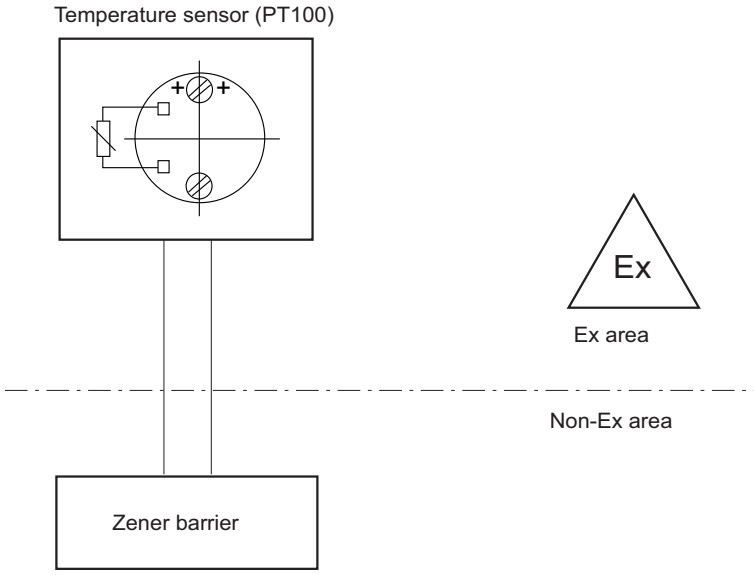
Type	Maximum locking torque of the backstop Nm	Minimum lift-off speed 1/min
AM80/90/RS, AM143/145/RS	45	800
AM100/112/RS, AM182/184/RS	200	670
AM132/RS, AM213/215/RS	470	660
AM160/180/RS, AM254/286/RS	630	550
AM200/225/RS, AM324-365/RS	1430	600

24811335/EN – 03/2018

6.23 Temperature sensor /PT100

INFORMATION

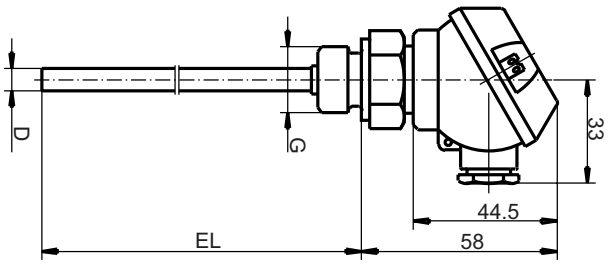
- To ensure intrinsically safe wiring, the temperature sensor must be used with a Zener barrier whose current consumption enables correct measuring operation.
- The Zener barrier must be located outside the potentially explosive atmosphere.
- The Zener barrier must be designed according to EN 60079-11 taking account of the minimum ignition energy (gas group); for dust at least IIB. The temperature sensor itself is a simple electrical device according to EN 60079-11 and does not require a separate Ex marking. The Zener barrier and the temperature sensor must be installed in compliance with EN 60079-14.



4430218251

24811335/EN – 03/2018

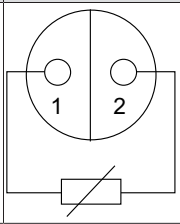
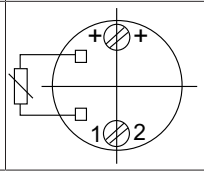
6.23.1 Technical data



4401813899

Field of application	For monitoring the oil temperature
Operating temperature	-50 °C to 400 °C
Thermowell diameter	Ø 7 mm
Installation length	100 mm
Process connection	G1/2 screw fitting
Measuring insert	1 x PT100 in double-wire circuit
Tolerance class according to DIN EN 60 751	Class B (standard)

6.23.2 Electrical connection

Connection type	Double-wire
Standard connector	
Connection socket	

[1] [2] Resistor element connection

24811335/EN – 03/2018

7 Startup

7.1 Important information

Read the following notes prior to startup.

⚠ 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

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

Danger due to using impermissible gear unit oil.

Severe or fatal injuries.

- Only use food-grade oils when the gear unit is used in the food industry.

⚠ 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.

24811335/EN – 03/2018

NOTICE

Improper startup may result in damage to the gear unit.

Possible damage to property.

- Note the following information.

- Before startup, always check to see that the oil level is correct. Refer to the unit's nameplate for lubricant fill quantities.

  Check the oil level again after a few operating hours, see chapter "Checking the oil level at the planetary gear unit" (→ 🗎 130).
- Planetary gear units are delivered without oil fill as standard.
- As standard, RF../KF../K.. primary gear units are with oil fill. Refer to the order documents for discrepancies.
- Note that planetary gear units and primary gear units have 2 separate oil chambers. Before startup, make sure that both gear units are filled with the correct oil fill quantity.
- In exceptional cases, planetary gear unit and primary gear unit can be delivered with a shared oil chamber. Refer to the order documents for further information. Note that with separate as well as with shared oil chambers, a nameplate is attached to the planetary gear unit and to the primary gear unit. The oil specifications on the nameplates must be added in case of a shared oil chamber.
- Fill the gear unit with the oil grade 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 the gear unit is equipped with an oil dipstick and an oil sight glass, refer to the oil dipstick for the correct oil level. For additional information, refer to chapter "Checking the oil level at the planetary gear unit" (→ 🗎 130) and chapter "Changing the oil at the planetary gear unit" (→ 🗎 134).

  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 SEW-EURODRIVE "Oil Supply System" operating instructions.
- 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 1/min.

  Contact SEW-EURODRIVE.
- The most important technical data is provided on the nameplate. Additional data relevant for operation is available in drawings, the order confirmation or any order-specific documentation.
- After having installed 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.
- If there are any oil drain valves, ensure that they cannot be opened unintentionally.
- Protect the oil sight glass against damage.
- Protect the gear unit from falling objects.
- Make sure that the gear unit is grounded. Electrical mount-on components, such as motors, frequency inverters, etc. must be grounded separately.

24811335/EN – 03/2018

- 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).
- Make sure that the monitoring devices (pressure switch, temperature switch etc.) are fully operational prior to and during startup.
- Observe the safety notes in the individual chapters.

7.1.1 Permitted external loads

During project planning, the drives are dimensioned according to the radial and axial loads described in the order confirmation.

INFORMATION

If the configured loads are exceeded during operation, the drive may be damaged and impermissibly high temperatures may occur.

The ATEX EU declaration of conformity and the guarantee no longer apply without prior consultation with SEW-EURODRIVE.

24811335/EN – 03/2018

7.2 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.

7.3 Starting up industrial gear units in potentially explosive areas

Note the following information.

INFORMATION

- Define measure to ensure that the values on the nameplate of the gear unit are not exceeded. It is essential that the gear unit is not overloaded. Make sure that the data specified on the nameplate of the gear unit corresponds to real conditions at the location where the drive is to be installed.
- If the project planning documents require the use of oil temperature monitoring, the gear unit may only be started up with an installed oil temperature monitor.
- Check the monitoring system for proper functioning prior to startup The shutdown temperature of the drive is specified in the delivered documents.
- Processes that cause strong electrical charge are not permitted.

7.3.1 Gear unit with frequency inverter and motor

INFORMATION

- Ensure that the motor is approved for operation with a frequency inverter.
- Ensure that the gear unit is designed for operation with a frequency inverter. The "min." and "max." specifications on the nameplate indicate if the gear unit is approved for operation with a frequency inverter.
- The parameters of the frequency inverter must be set to prevent an overload of the gear unit. The technical data for the gear unit can be found on the nameplate.

24811335/EN – 03/2018

7.4 Startup of gear units with long-term protection

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

7.4.1 Anti-corrosion agent

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.

7.4.2 Breather

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

24811335/EN – 03/2018

7.5 Backstop

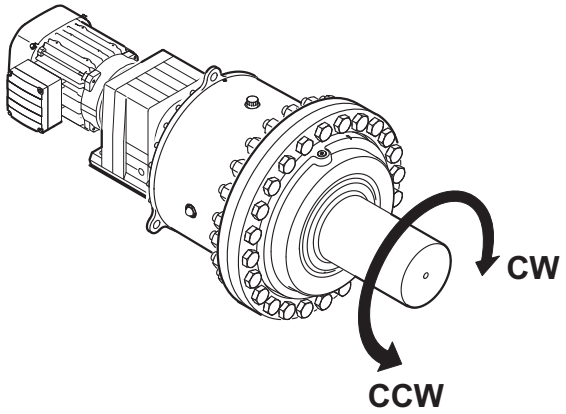
NOTICE

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

Possible damage to property.

- Do not start up the motor in the blocking direction. Before motor startup, make sure the current supply of the motor for the direction of rotation is connected accordingly.
- For control purposes, operation in blocking direction with half the gear unit output torque is permitted once.

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



18075770507

The direction of rotation is specified as viewed onto the output shaft (LSS):

- CW rotation
- CCW rotation

The permitted direction of rotation is indicated on the housing.

7.6 Measuring surface and oil temperature

7.6.1 Measuring the surface temperature

INFORMATION

Even slight changes in the ambient conditions (such as limited installation space) can have a significant impact on the temperature profile. For more information, refer to chapters "Temperature information" (→ 🗎 80) and "Permitted lubricants" (→ 🗎 142).

Ambient conditions (such as installation space) may not be changed without consultation of SEW-EURODRIVE.

Measure surface temperature and oil temperature to make sure that the "limit values permitted" (→ 🗎 80) for the drive are not exceeded. Determine the limit values for your drive and measure the surface temperature according to the inspection and maintenance intervals. Check the oil temperature by means of temperature monitoring.

24811335/EN – 03/2018

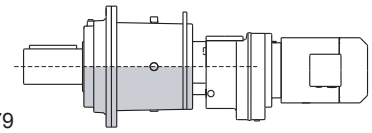
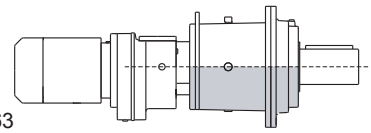
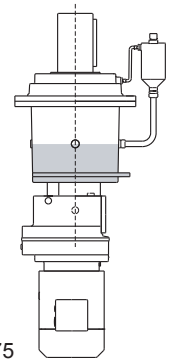
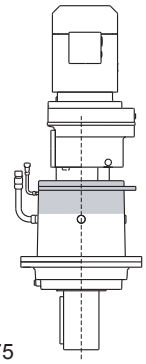
It is essential to measure the surface temperature at maximum load when starting up the gear unit.

The measurement can be made using standard thermometers. The surface temperature must be measured in a steady-state condition. The surface temperature must not exceed the maximum surface temperatures for gas and dust of the drive according to Ex classification.

INFORMATION

Stop the drive immediately if the temperature exceeds the limit value. Contact SEW-EURODRIVE.

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

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

24811335/EN – 03/2018

7.6.2 Measuring the oil temperature

The oil temperature must be measured to determine the oil change intervals. See chapter "Lubricant change intervals" (→ 🗎 129) for a description. Measure the temperature at the bottom of the gear unit. If the gear unit has an oil drain plug, measure the temperature on this screw. Add 10 K to the measured value. This value is the basis for the oil change intervals.

7.7 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.

7.7.1 Internal conservation

- **New or hardly used gear units:**
  - For internal conservation, SEW-EURODRIVE recommends the VCI conservation method.
  - Apply the required amount of VCI anti-corrosion agent to the inside of the gear unit (e.g. FUCHS LUBRITECH Anticorit VCI UNI IP-40, www.fuchs-lubritech.com). The amount depends on the free space inside the gear unit. Any existing oil may usually remain in the drive.

    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.
  - Replace the breather with a screw plug and close the gear unit so that it is air tight. The breather must be installed correctly again before startup.
- **After longer gear unit operation:**
  - As the oil might be contaminated (due to e.g. oil sludge, water, etc.) after longer operating periods, drain the oil and thoroughly rinse the inside of the gear unit with new oil prior to conservation. Observe the notes in chapter "Changing the oil" (→ 🗎 134). The inside of the gear unit can then be conserved as described above.

24811335/EN – 03/2018

INFORMATION

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

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

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

7.7.2 Exterior 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.

Also observe the information in chapter "Storage and transport conditions" (→ 🗎 26). This chapter provides information on the possible storage periods in conjunction with adequate packaging – depending on the storage location.

Refer to the chapter "Startup" (→ 🗎 116) before re-starting the gear unit.

24811335/EN – 03/2018

8 Inspection/maintenance

8.1 Preliminary work regarding inspection/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

Danger due to using impermissible gear unit oil.

Severe or fatal injuries.

- Only use food-grade oils when the gear unit is used in the food industry.

⚠ 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 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.

24811335/EN – 03/2018

⚠ CAUTION

Danger due to leakage of lubricant.

Injuries.

- Remove any dripping oil immediately with oil binding agent.

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.

INFORMATION

- Processes that cause strong electrical charge are not permitted. Do not use dry cotton cloth to clean the gear unit.
- Avoid dust accumulation of more than 5 mm.

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.
- Adhere to the tightening torques.
- Replace any damaged seals.
- For primary gearmotors, also observe the maintenance information for motor and primary gear unit in the "Gear Unit Series R..7, F..7, K..7, K..9, S..7, SPIROPLAN® W" operating instructions.
- For the position of the oil level plug, oil drain plug and breather, refer to the "mounting position sheets" (→ 🗎 43).
- Use only original spare parts according to the delivered spare and wearing parts lists.
- Prevent foreign particles from entering into the gear unit when performing the following work.
- Never clean the gear unit with a high-pressure cleaning system. Water might enter the gear unit and the seals might be damaged.
- Perform a safety check and functional check following all maintenance and repair work.
- Note that planetary gear units and primary gear units have 2 separate oil chambers. Before startup, make sure that both gear units are filled with the correct oil fill quantity.
- Adhere to the safety notes in the individual chapters.

24811335/EN – 03/2018

8.2 Inspection and maintenance intervals

8.2.1 P.. planetary gear unit

Time interval	What to do?
• **Daily**	• "Check the housing temperature/surface temperature" (→ 🖹 80) • Check for gear unit noise
• **Monthly**	• Check the gear unit for signs of leakage • Check the oil level
• **After 500 operating hours**	• First oil change after initial startup
• **Every 3000 operating hours, at least every 6 months**	• Check the oil consistency
• **Depending on the operating conditions, at least every 6 months**	• Fill regreasable sealing systems with grease
• **Depending on the operating conditions, at least every 12 months**	• Check whether retaining screws are tightly secured • Clean the oil filter, replace filter element if necessary • Check the breather, replace it if necessary • Check the alignment of the input and output shaft
• **Depending on the operating conditions, at the latest every 3 years**	• Change mineral oil
• **Depending on the operating conditions, at the latest every 5 years**	• Change synthetic oil
• **Varying (depending on external factors)**	• Touch up or renew the surfaces/anti-corrosion coating • Check installed hose pipes • Clean the outer gear unit housing

24811335/EN – 03/2018

8.2.2 RF../KF../K... primary gear unit

Frequency	What is to be done?
• **Every 3000 operating hours, at least every 6 months**	• Check oil and oil level • Check running noise for possible bearing damage • Visual inspection of the seals for leakage
• **Depending on the operating conditions, at the latest every 3 years** • **According to oil temperature**	• Change mineral oil
	• Replace rolling bearing grease (recommendation) • Replace oil seal (do not install it in the same track)
• **Depending on the operating conditions, at the latest every 5 years** • **According to oil temperature**	• Change synthetic oil
	• Replace rolling bearing grease (recommendation) • Replace oil seal (do not install it in the same track)
• **Varying (depending on external factors)**	• Touch up or renew the surfaces/anti-corrosion coating

8.2.3 AL/AM adapter

Frequency	What is to be done?
• **Every 3000 operating hours, at least every 6 months**	• Check rotational clearance • Visually check the elastic spider • Check running noise for possible bearing damage • Visually check the adapter for leakage
• **After 25000 - 30000 operating hours**	• Renew the rolling bearing grease • Replace oil seal (do not install it in the same track) • Change the elastic spider

8.2.4 Cover AD

Time interval	What to do?
• **Every 3000 operating hours, at least every 6 months**	• Check running noise for possible bearing damage • Visually check the adapter for leakage
• **After 25000 to 30000 operating hours**	• Renew the rolling bearing grease
	• Change the oil seal

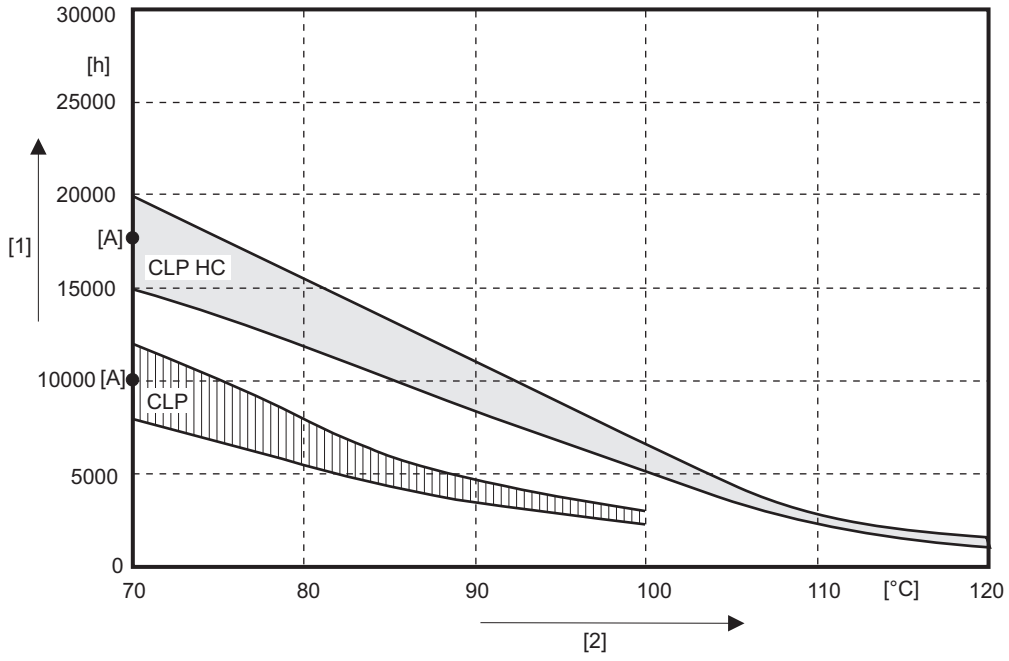
24811335/EN – 03/2018

8.3 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 figure corresponds to the PAO oils.



9007199665294731

[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" (→ 🗎 133) to optimize the lubricant change intervals.

24811335/EN – 03/2018

8.4 Checking the oil level at the planetary gear unit

Note the following when checking the oil level.

8.4.1 General information

NOTICE

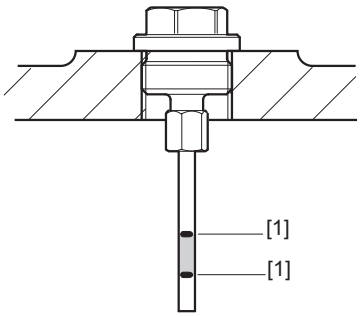
Improper checking of the oil level may result in damage to the gear unit.

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.
- If you want to check the oil level at the primary gear unit, observe the "Gear units of the R..7, F..7, K..7, K..9, S..7, SPIROPLAN® W Series" operating instructions.

8.4.2 Oil dipstick

Observe the notes in chapter "Preliminary work regarding inspection and maintenance" (→ 🗎 125).



27021598223908235

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:

24811335/EN – 03/2018

- 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:

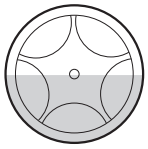
- Place a suitable container underneath the oil drain plug.
- Remove the oil drain plug or open the oil drain valve.
- Drain oil, until the oil level is between the markings [1].
- Re-insert the oil drain plug or close the oil drain valve.

7. Screw in the oil fill plug.
8. Screw in the oil dipstick/oil dipstick with breather.

8.4.3 Oil sight glass

Observe the notes in chapter "Preliminary work regarding inspection and maintenance" (→ 🗎 125).

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



27021598223909899

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

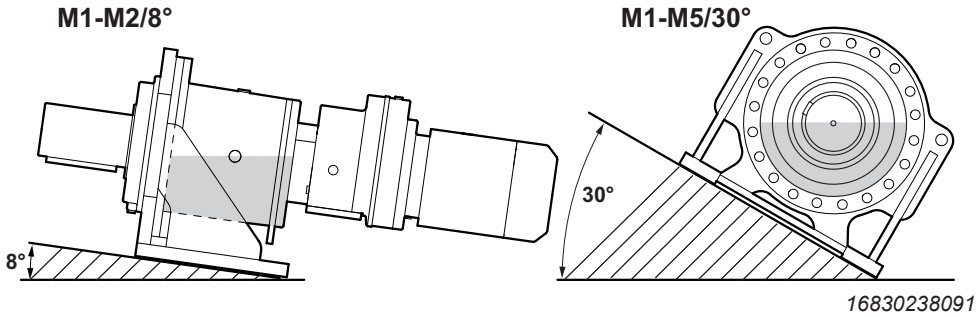
The oil fill quantity must not exceed the upper edge of the oil sight glass.

8.4.4 Notes on the procedure for fixed and variable pivoted mounting positions

Observe the information on the nameplate.

Fixed pivoted mounting positions

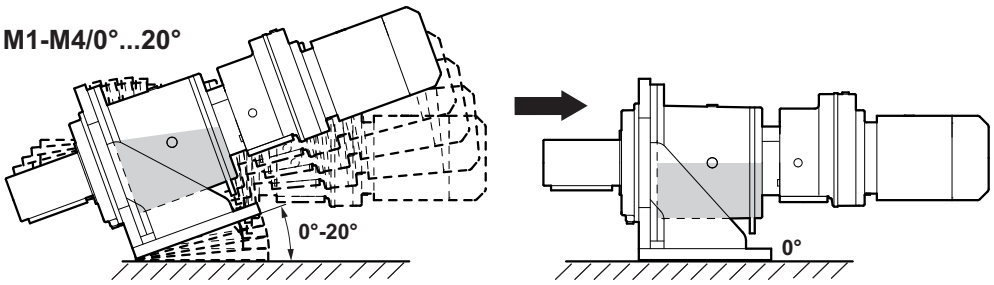
Check the oil level in the fixed, intended position.



16830238091

Variable pivoted mounting positions

Before checking the oil level of gear units with variable pivoted mounting position, position the gear unit in the mounting position defined in the order documents.



16830241803

24811335/EN – 03/2018

8.5 Checking the oil consistency

Observe the notes in chapter "Preliminary work regarding inspection and maintenance" (→ 🗎 125).

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.

24811335/EN – 03/2018

8.6 Changing the oil at planetary gear units

8.6.1 Important information

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.

- Observe the following information.

- Planetary gear units are delivered without oil fill as standard.
- As standard, RF../KF../K.. primary gear units are with oil fill. Refer to the order documents for discrepancies.
- Note that planetary gear units and primary gear units have 2 separate oil chambers. Before startup, make sure that both gear units are filled with the correct oil fill quantity.
- In exceptional cases, planetary gear unit and primary gear unit can be delivered with a shared oil chamber. Refer to the order documents for further information. Note that with separate as well as with shared oil chambers, a nameplate is attached to the planetary gear unit and to the primary gear unit. The oil specifications on the nameplates must be added in case of a shared oil chamber.
- The oil grade and oil viscosity are listed on the nameplate of the gear unit. Note that the oil quantities on the nameplates are approximate values. 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. Observe the operating instructions of the oil supply system.
- 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.
- Perform the oil change quickly after you have switched off the gear unit to prevent solids from settling. You should drain the oil while it is still warm. Avoid oil temperatures well above 50 °C.
- Remove the screw plug before draining the oil.
- Always fill the gear unit with the same oil grade as before. Mixing oils of different grades and/or manufacturers is not permitted. Synthetic oils in particular must not be mixed with mineral oils or other synthetic oils. When switching from mineral oil and/or when switching from synthetic oil of one basis to synthetic oil of another basis, thoroughly flush the gear unit with the new oil grade.

  Refer to the lubricant table for information on the permitted oil of the various lubricant manufacturers.

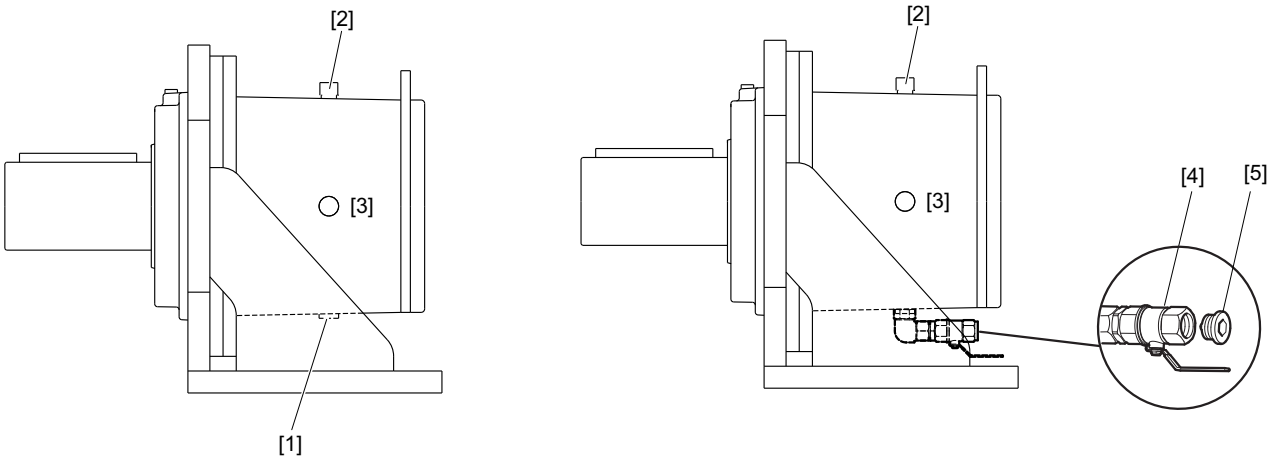
24811335/EN – 03/2018

- 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 you use to operate the gear unit. Fill in fresh oil only after all residues have been removed.
- For the position of the oil level plug, oil drain plug and the breather, refer to the order documents.
- If required, empty accessories e.g. filters and pipes.
- Replace any damaged gaskets of the oil drain plug.
- If present, clean the magnetic oil drain plug and the oil dipstick with magnet tip.
- Empty the oil-bearing system of gear units with circulation lubrication and oil supply systems according to the manufacturer's maintenance instructions.
- Elements for controlling the oil level, oil drain, and oil fill openings are indicated by safety symbols on the gear unit.
- 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.

24811335/EN – 03/2018

8.6.2 Procedure

Sizes P.002 - P.102 with splash lubrication in mounting positions M1/M3/M5/M6



9007203492220043

Observe the notes in chapter "Preliminary work regarding inspection and maintenance" (→ 🗎 125).

1. Place a suitable container underneath the oil drain plug [1].
2. Remove the oil drain plug [1]/screw plug [5].
3. Remove the oil fill plug or the breather [2]. With gear units that are not equipped with an oil fill plug due to their mounting position, the breather is used as oil filling hole.
4. Open the oil drain valve [4] if required.
5. Drain all of the oil.
6. Close the oil drain valve [4] if required.
7. Screw in the oil drain plug [1]/screw plug [5] again.
8. Fill in new oil of the same grade through the oil filling hole.

- Use a filling filter to fill the oil into the gear unit (max. filter mesh 25 µm).
- The oil quantity specified on the nameplate is an approximate quantity. The mark on the oil sight glass [3] or the oil dipstick is the decisive indicator of the correct oil quantity, see chapter "Checking the oil level of the planetary gear unit" (→ 🗎 130).

9. Insert the oil fill plug or the breather [2].

⚠ CAUTION

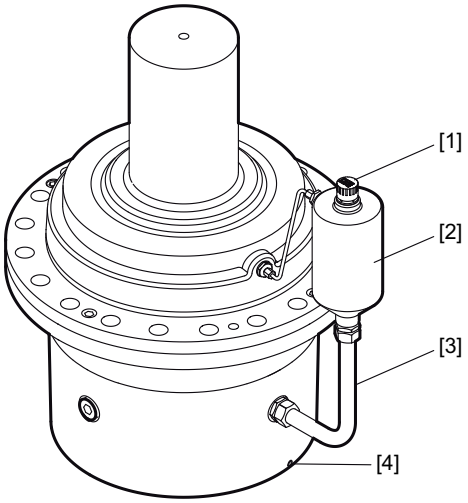
Danger due to leakage of lubricant.

Injuries.

- Remove any dripping oil immediately with oil binding agent.

24811335/EN – 03/2018

Sizes P.002 – P.082 with bath lubrication in mounting position M2



18014402989780619

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

Observe the notes in chapter "Preliminary work regarding inspection and maintenance" (→ 🗎 125).

1. Place a suitable container underneath the oil drain plug [4].
2. Remove the oil drain plug [4].
3. Remove the oil dipstick/breather [1].
4. Drain all of the oil.
5. Screw in the oil drain plug [4] again.
6. Fill in new oil of the same grade through the oil filling hole [1].

- Use a filling filter to fill the oil into the gear unit (max. filter mesh 25 µm).
- 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, see "Checking the oil level at the planetary gear unit" (→ 🗎 130).

7. Screw in the oil dipstick/breather [1].

⚠ CAUTION

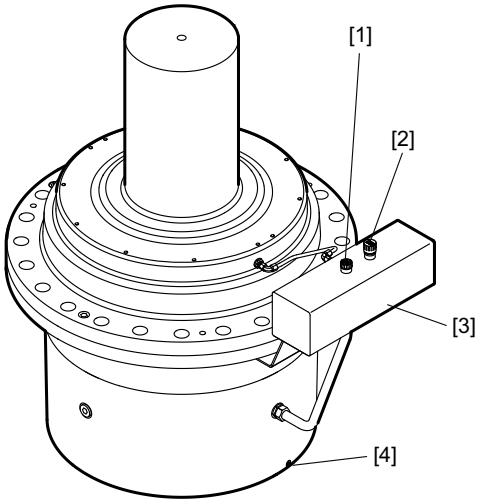
Danger due to leakage of lubricant.

Injuries.

- Remove any dripping oil immediately with oil binding agent.

24811335/EN – 03/2018

Sizes P.092 - P.102 with bath lubrication in mounting position M2



18014402998269195

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

Observe the notes in chapter "Preliminary work regarding inspection and maintenance" (→ 🗎 125).

1. Place a suitable container underneath the oil drain plug [4].
2. Remove the oil drain plug [4].
3. Remove the oil dipstick [1].
4. Drain all of the oil.
5. Screw in the oil drain plug [4] again.
6. Fill in new oil of the same grade through the oil filling hole [1].

- Use a filling filter to fill the oil into the gear unit (max. filter mesh 25 µm).
- 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, see "Checking the oil level at the planetary gear unit" (→ 🗎 130).

7. Screw in the oil dipstick [1].

⚠ CAUTION

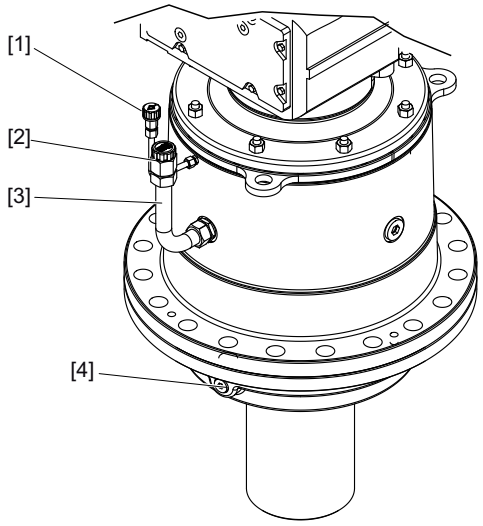
Danger due to leakage of lubricant.

Injuries.

- Remove any dripping oil immediately with oil binding agent.

24811335/EN – 03/2018

Sizes P.002 - P.102 with bath lubrication in mounting position M4



18014402999766283

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

Observe the notes in chapter "Preliminary work regarding inspection and maintenance" (→ 🗎 125).

1. Place a suitable container underneath the oil drain plug [4].
2. Remove the oil drain plug [4].
3. Remove the oil dipstick [2].
4. Drain all of the oil.
5. Screw in the oil drain plug [4] again.
6. Fill in new oil of the same grade through the oil filling hole [2].

- Use a filling filter to fill the oil into the gear unit (max. filter mesh 25 µm).
- 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, see "Checking the oil level at the planetary gear unit" (→ 🗎 130).

7. Screw in the oil dipstick [2].

⚠ CAUTION

Danger due to leakage of lubricant.

Injuries.

- Remove any dripping oil immediately with oil binding agent.

8.7 Refilling grease

⚠ WARNING

Risk of crushing due to rotating parts.

Severe or fatal injuries.

- Make sure to provide for sufficient safety measures for relubrication.

INFORMATION

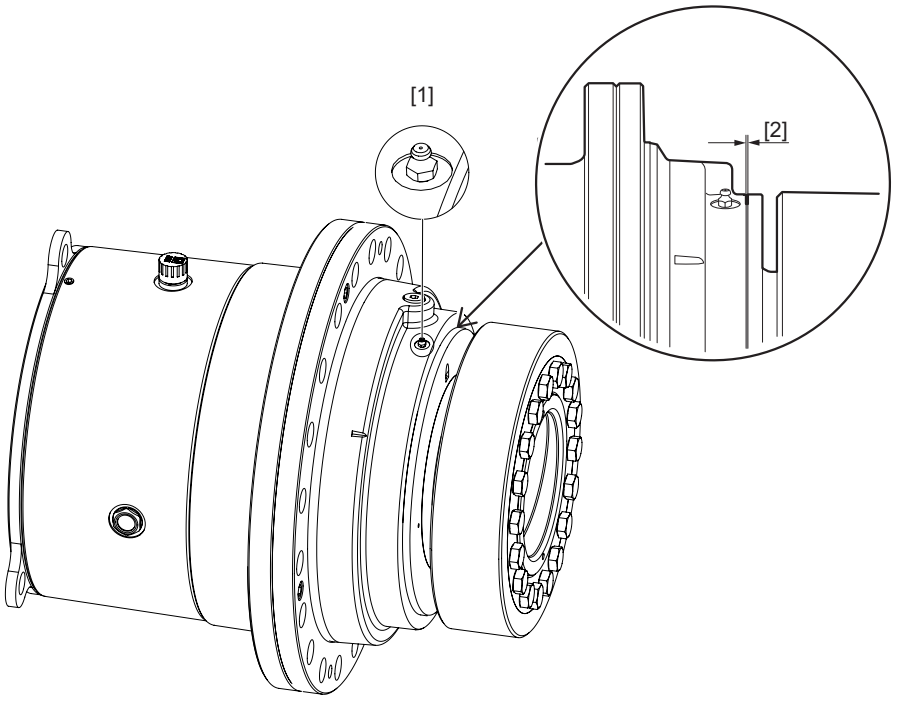
Make sure that the old grease cannot escape uncontrolled (preventing explosions, e.g. due to chemical reactions).

INFORMATION

Turn the shaft slowly when you relubricate the labyrinth seal. Doing so provides for a better grease distribution.

Observe the notes in chapter "Preliminary work regarding inspection and maintenance" (→ 🗎 125).

1. Use moderate pressure to force grease into each lubrication point [1] until grease leaks out of the sealing gap [2]. The grease must leak out evenly over the entire circumference of the sealing gap.



36028801254096907

INFORMATION

Immediately remove the old grease that leaked out. Old grease can leak out between labyrinth ring and output flange.

8.8 Checking and cleaning the breather

NOTICE

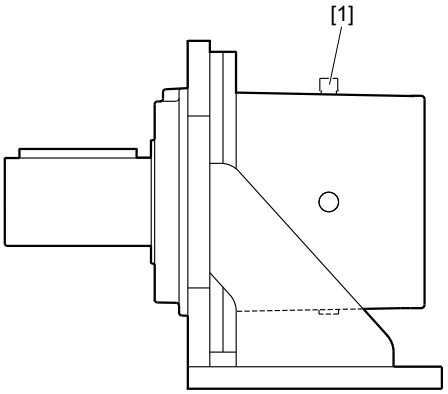
Improper cleaning may result in damages to the gear unit.

Possible damage to property.

- Prevent foreign objects from entering into the gear unit.

24811335/EN – 03/2018

Observe the notes in chapter "Preliminary work regarding inspection and maintenance" (→ 🗎 125).



18014402757284107

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

24811335/EN – 03/2018

9 Permitted lubricants

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

9.1 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:

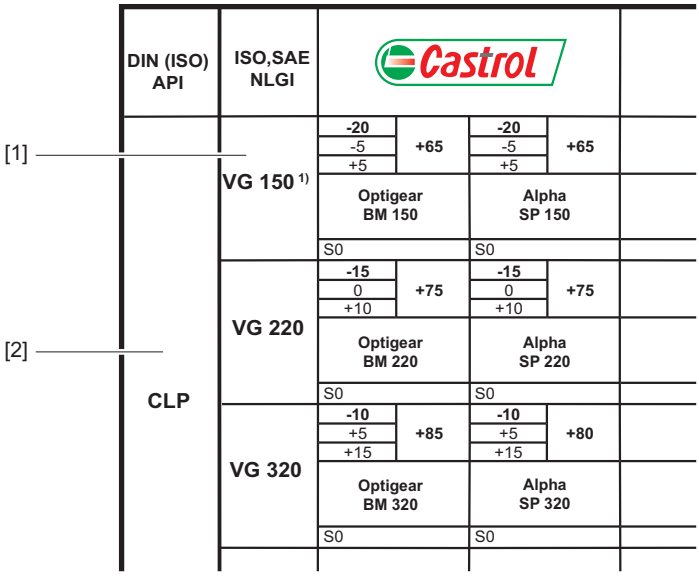
  www.sew-eurodrive.de/lubricants
- Before startup, ensure that the planetary gear unit and the primary gear unit are filled with the correct oil grade and quantity. You can obtain the corresponding information from the gear unit nameplate and the lubricant table on the following page.
- The lubricant 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 are delivered without oil fill as standard.
- Do not mix different synthetic lubricants and do not mix synthetic lubricants with mineral lubricants.
- Check the compatibility of the greases and oils used.
- Adhere to the safety notes in the individual chapters.

24811335/EN – 03/2018

INFORMATION

- Always contact SEW-EURODRIVE before changing the mounting position to a mounting position other than the one specified on the nameplate. Otherwise, the ATEX certification will become void.

9.2 Structure of the tables and abbreviations



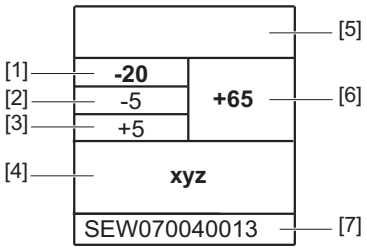
9007217174587531

[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 $F_s \geq 1.3$

9.3 Explanation of the various lubricants



18014416413363467

[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.

24811335/EN – 03/2018

9.4 Lubricant tables

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

DIN (ISO) API	ISO,SAE NLGI	Castrol				FUCHS				Mobil®				KLÜBER LUBRICATION				Shell				TEXACO				TOTAL			
CLP	VG 150 [1]	-20 -5 +5	+65	Optigear BM 150	S0	-20 -5 +5	+65	Alpha SP 150	S0	-20 -5 +5	+65	Renolin CLP 150 Plus	S0	-20 -5 +5	+65	Renolin HighGear 150	S0	-20 -5 +5	+65	Mobilgear 600 XP 150	SEW07003013	-20 -5 +5	+65	Klüberoil GEM 1-150 N	S0	-20 -5 +5	+65	Meropa 150	S0
	VG 220	-15 0 +10	+75	Optigear BM 220	S0	-15 0 +10	+75	Alpha SP 220	S0	-15 0 +10	+75	Renolin CLP 220 Plus	S0	-15 0 +10	+75	Renolin HighGear 220	S0	-15 0 +10	+75	Mobilgear 600 XP 220	SEW07003013	-15 0 +10	+75	Klüberoil GEM 1-220 N	S0	-15 0 +10	+75	Meropa 220	S0
	VG 320	-10 +5 +15	+85	Optigear BM 320	S0	-10 +5 +15	+80	Alpha SP 320	S0	-10 +5 +15	+80	Renolin CLP 320 Plus	S0	-10 +5 +15	+80	Renolin HighGear 320	S0	-10 +5 +15	+80	Mobilgear 600 XP 320	SEW07003013	-10 +5 +15	+80	Klüberoil GEM 1-320 N	S0	-10 +5 +15	+80	Meropa 320	S0
	VG 460	-5 +10 +20	+90	Optigear BM 460	S0	-5 +10 +20	+90	Alpha SP 460	S0	-5 +10 +20	+90	Renolin CLP 460 Plus	S0	-5 +10 +20	+90	Renolin HighGear 460	S0	-5 +10 +20	+90	Mobilgear 600 XP 460	SEW07003013	-5 +10 +20	+90	Klüberoil GEM 1-460 N	S0	-5 +10 +20	+90	Meropa 460	S0
	VG 680	0 +15 +25	+90	Optigear BM 680	S0	0 +15 +25	+90	Alpha SP 680	S0	0 +15 +25	+90	Renolin CLP 680 Plus	S0	0 +15 +25	+90	Renolin HighGear 680	S0	0 +15 +25	+90	Mobilgear 600 XP 680	SEW07003013	0 +15 +25	+90	Klüberoil GEM 1-680 N	S0	0 +15 +25	+90	Meropa 680	S0
	VG 1000	+5 +20 +30	+90	Optigear BM 1000	S0																								

17909291147

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

DIN (ISO) API	ISO,SAE NLGI	Castrol	FUCHS	Mobil®	KLÜBER LUBRICATION	Shell	TEXACO	TOTAL
CLP HC	VG 32 [1]			-40 -30 -25 +30 SHC 624				
	VG 68 [1]		-35 -20 -10 +50 Renolin Unisyn CLP 68	-40 -25 -15 +50 SHC 626	-35 -20 -10 +50 Klübersynth GEM 4-68 N	-40 -20 -10 +50 Omala S4 GX 68		
	VG 150 [1]	-25 -10 0 +70 Alphasyn EP 150	-30 -10 0 +70 Optigear Synthetic X 150	-30 -10 0 +75 SHC 629	-25 -10 0 70 Klübersynth GEM 4-150 N	-30 -10 0 +75 Omala S4 GX 150	-25 -10 0 +70 Pinnacle EP 150	-35 -15 -5 +75 Carter SH 150
	VG 220	-25 -5 +5 +80 Alphasyn EP 220	-25 -5 +5 +80 Optigear Synthetic X 220	-25 -5 0 +85 SHC 630	-25 -5 +5 +80 Klübersynth GEM 4-220 N	-25 -5 +5 +85 Omala S4 GX 220	-25 -5 +5 +80 Pinnacle EP 220	-25 -5 +5 +80 Carter SH 220
	VG 320	-20 0 +10 +90 Alphasyn EP 320	-20 0 +10 +90 Optigear Synthetic X 320	-20 0 +10 +95 SHC 632	-20 -5 +10 +95 Klübersynth GEM 4-320 N	-20 0 +10 +95 Omala S4 GX 320	-20 0 +10 +90 Pinnacle EP 320	-20 0 +10 +90 Carter SH 320
	VG 460	-15 +5 +15 +100 Alphasyn EP 460	-15 +5 +15 +100 Optigear Synthetic X 460	-15 +5 +15 +105 SHC 634	-15 +5 +20 +105 Klübersynth GEM 4-460 N	-15 +5 +15 +105 Omala S4 GX 460	-15 +5 +15 +100 Pinnacle EP 460	-15 +5 +15 +100 Carter SH 460
	VG 680		-10 +10 +25 +110 Optigear Synthetic X 680	-10 +10 +25 +110 SHC 636	-10 +10 +25 +110 Klübersynth GEM 4-680 N	-10 +10 +25 +110 Omala S4 GX 680		-10 +10 +25 +110 Carter SH 680
	VG 1000			-10 +15 +30 +110 SHC 639	0 +20 +30 +110 Klübersynth EG4-1000			
			-10 +10 +25 +110 Renolin Unisyn CLP 680	-5 +10 +25 +110 HighGear Synth 680				
			-15 0 +10 +90 Renolin Unisyn CLP 320	-10 +5 +20 +95 HighGear Synth 460				
			-20 0 +15 +85 HighGear Synth 320	-20 0 +15 +75 HighGear Synth 220				
			-25 -5 +5 +80 Renolin Unisyn CLP 220	-25 -10 +5 +85 SHC Gear 220	-25 -5 +5 +80 Klübersynth GEM 4-220 N	-25 -5 +5 +85 Omala S4 GX 220	-25 -5 +5 +80 Pinnacle EP 220	-25 -5 +5 +80 Carter SH 220
			-30 -10 +0 +70 Renolin Unisyn CLP 150	-30 -10 +5 +85 SHC Gear 150	-25 -10 0 +70 Klübersynth GEM 4-150 N	-30 -10 0 +75 Omala S4 GX 150	-25 -10 0 +70 Pinnacle EP 150	-35 -15 -5 +75 Carter SH 150
			-35 -15 -5 +75 Klübersynth GEM 4-100 N	-35 -15 -5 +75 SHC Gear 150	-35 -15 -5 +75 Klübersynth GEM 4-100 N	-35 -15 -5 +75 Omala S4 GX 100	-35 -15 -5 +75 Pinnacle EP 100	-35 -15 -5 +75 Carter SH 100
			-40 -30 -20 +50 Klübersynth GEM 4-46 N	-40 -30 -20 +50 SHC Gear 46	-40 -30 -20 +50 Klübersynth GEM 4-46 N	-40 -30 -20 +50 Omala S4 GX 46	-40 -30 -20 +50 Pinnacle EP 46	-40 -30 -20 +50 Carter SH 46

17909429899

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

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

17909424523

9.5 Lubricant fill quantities

Observe the notes in chapter "Lubricant selection" (→ 🗎 142).

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

Observe the following information:

INFORMATION

- The oil chambers of planetary gear unit and primary gear unit are separate as standard. In exceptional cases, planetary gear unit and primary gear unit can be delivered with a shared oil chamber. Refer to the order documents for further information.
- Planetary gear units are supplied without lubricant as standard.
- RF.., KF.., and K.. primary gear units are filled with lubricant at the factory depending on the mounting position.
- For pivoted mounting positions adhere to the lubricant fill quantity on the nameplates.
- The lubricant values und the nameplate are guide values. The required oil quantity depends on the respective marks on the oil sight glass or oil dipstick.

9.5.1 P.. planetary gear units

The oil level of planetary gear units is checked using the oil sight glass or oil dipstick.

The table below shows the lubricant fill quantities for planetary gear units.

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

24811335/EN – 03/2018

9.5.2 Primary gear units

Bevel (KF/K) primary gear units

INFORMATION

- The lubricant fill quantity depends on the mounting position of the planetary gear unit and the mounting position of the KF.. and K.. primary gearmotor.
- For notes on the mounting positions of KF.. and K.. primary gear units, see chapter "KF../K.. primary bevel gear unit" (→ 🗎 40).
- The oil level of primary gear units is checked using the oil level plug.

The table below shows the lubricant fill quantities.

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

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

Key:

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

24811335/EN – 03/2018

Helical (RF) primary gear units

INFORMATION

- The lubricant fill quantity depends on the mounting position of the planetary gear unit and the mounting position of the RF primary gear unit.
- For information on the mounting positions of the RF.. primary gear unit, refer to chapter "RF.. primary helical gear units" (→ 🗎 42)
- The oil level of primary gear units is checked using the oil level plug.

The table below shows the lubricant fill quantities.

Size	Fill quantities in liters					
	M1	M2	M3	M4	M5	M6
	0°	0°	180°	→0°	270°	90°
RF77	1.2	3.10	3.30	3.60	2.40	3.00
RF87	2.4	6.4	7.1	7.2	6.3	6.4
RF97	5.1	11.9	11.2	14.0	11.2	11.8
RF107	6.3	15.9	17.0	19.2	13.1	15.9
RF127	6.6	18.3	18.2	21.4	15.9	17.0
RF137	9.5	27.0	29.0	32.5	25.0	25.0
RF147	16.4	47.0	48.0	52.0	42.0	42.0
RF167	26.0	82.0	78.0	88.0	65.0	71.0

Legend:

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

24811335/EN – 03/2018

9.6 Sealing greases/bearing greases: Planetary gear unit

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 OEM**[1)]	-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
	Mobil	Moliux EP 2	-20
	Shell	Gadus S2 V220 2	-20
	Total	Multis EP 2	-20
	Bremer & Leguil	Cassida Grease GTS2[1)]	-40
	Fuchs	**Plantogel 2**[1)]	-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.

9.7 Sealing grease: RF../KF../K.. primary gear units and motors

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

	Ambient temperature	Manufacturer	Type
Gear unit rolling bearings	-40°C to +80°C	Fuchs	Renolit CX-TOM 15[1)]
	-40 °C to +80 °C	Klüber	Petamo GHY 133 N
	-40 °C to +40 °C	Bremer & Leguil	Cassida Grease GTS 2

24811335/EN – 03/2018

	-20 °C to +40 °C	Fuchs	Plantogel 2S

1) Bearing grease based on semi-synthetic base oil

INFORMATION

The following grease quantities are required:

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

24811335/EN – 03/2018

10 Malfunctions/remedy

10.1 Troubleshooting information

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 drives by SEW-EURODRIVE.
- Please contact the SEW-EURODRIVE Service.

10.2 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

24811335/EN – 03/2018

10.3 Malfunctions of P.. planetary gear units

Fault	Possible cause	Measure
Unusual, regular running noise	• Meshing/grinding noise: Bearing damage	• Check oil consistency, change bearings
	• Knocking noise: Irregularity in the gearing	• Consult SEW-EURODRIVE
	• Deformation of the housing upon tightening	• Check the gear unit mounting for possible deformation and correct if necessary
	• Noise generated by insufficient stiffness of the gear unit foundation	• Reinforce the gear unit foundation
Unusual, irregular running noises	• Foreign objects in the oil	• Check the oil consistency • Stop the drive, contact SEW-EURODRIVE
Unusual noise in the area where the gear unit is mounted	• Gear unit mounting has loosened	• Tighten retaining screws and nuts to the specified torque • Replace the damaged/defective retaining screws or nuts
Operating temperature too high	• Too much oil	• Check oil level, correct if necessary
	• Oil too old	• Check when the oil was last changed; change the oil, if necessary
	• The oil is heavily contaminated	• Analyze the oil to determine the cause; take measures, if necessary; change the oil
	• Ambient temperature too high	• Protect the gear unit from external heat sources (e.g. provide shade)
Temperature at bearing points too high	• Not enough oil	• Check oil level, correct if necessary
	• Oil too old	• Check when the oil was last changed; change the oil, if necessary
	• Bearing damaged	• Check the bearing and replace it if necessary. Contact SEW-EURODRIVE.
Oil leaking[1)] • From oil seal	• Too much oil	• Check oil level, correct if necessary
	• Sealing lip of the oil seal turned up	• Vent the gear unit, observe the gear unit. Contact SEW-EURODRIVE if oil is still leaking.
	• Oil seal damaged/worn	• Check oil seals; replace if necessary

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).

24811335/EN – 03/2018

10.4 Malfunctions of primary RF../KF../K.. primary gear units

Fault	Possible cause	Measure
Unusual, regular running noise	• Meshing/grinding noise: Bearing damage	• Check oil consistency, change bearings
	• Knocking noise: Irregularity in the gearing	• Consult SEW-EURODRIVE
	• Deformation of the housing upon tightening	• Check the gear unit mounting for possible deformation and correct if necessary
	• Noise generated by insufficient stiffness of the gear unit foundation	• Reinforce the gear unit foundation
Unusual, irregular running noises	• Foreign objects in the oil	• Check the oil consistency • Stop the drive, contact SEW-EURODRIVE
Oil leaking • From cover plate • From inspection cover • From bearing cover • From mounting flange	• Seal not tight at: – Cover plate – Inspection cover – Bearing cover – Mounting flange	• Tighten the bolts on the respective cover. Observe the gear unit. Contact SEW-EURODRIVE if oil is still leaking
Oil leaking[1)] • From oil seal	• Too much oil	• Check oil level, correct if necessary
	• Sealing lip of the oil seal turned up	• Vent the gear unit, observe the gear unit. Contact SEW-EURODRIVE if oil is still leaking.
	• Oil seal damaged/worn	• Check oil seals; replace if necessary
Oil leaking • At the gear unit breather	• Too much oil	• Check oil level, correct if necessary
	• Drive not installed in proper mounting position	• Install gear unit breather correctly and adjust the oil level
	• Frequent cold starts (oil foaming) and/or high oil level	• Install oil expansion tank
Output shaft does not turn although the motor is running or the input shaft is rotated.	• Shaft-hub connection in the gear unit interrupted.	• Send in the gear unit/gearmotor for repair.
Operating temperature at backstop too high, no blocking function	• Damaged/defective backstop	• Check the backstop, replace it if necessary • Contact SEW-EURODRIVE

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).

10.5 Malfunctions of AM/AL adapters

Fault	Possible cause	Measure
Unusual, regular running noise	• Meshing/grinding noise: Bearing damage	• Contact SEW-EURODRIVE.
Oil leaking.	• Seal defective	• Contact SEW-EURODRIVE.
Output shaft does not turn although the motor is running or the input shaft is rotated.	• Shaft-hub connection in the gear unit interrupted.	• Send in the gear unit/gearmotor for repair.
Change in running noise and/or vibrations	• Spider wear, short-term torque transmission through metal contact	• Change the spider.
	• Screws to secure hub axially are loose	• Tighten the screws
Premature wear of spider	• Contact with aggressive fluids/ oils; ozone influence; excessive ambient temperatures, etc. that can change the physical properties of the spider.	• Contact SEW-EURODRIVE.
	• Impermissibly high ambient/contact temperature for the spider; maximum permitted temperature: -20 °C to +80 °C.	• Contact SEW-EURODRIVE.
	• Overload	• Contact SEW-EURODRIVE.

24811335/EN – 03/2018

10.6 Motor malfunctions

Fault	Possible cause	Measure
Motor does not start up	Supply cable interrupted	Check connections, correct if necessary
	Brake does not release	See chapter "Brake malfunctions"
	Fuse blown	Replace fuse
	Motor protection tripped	Check motor protection for correct setting, correct fault if necessary
	Motor protection does not switch, error in control	Check motor protection control, correct error if necessary
Motor only starts with difficulty or does not start at all	Motor designed for delta connection but used in star connection	Correct the connection
	Voltage or frequency differs considerably from the setpoint, at least when switching on the motor	Provide better power supply system; check cross section of supply cable
Motor does not start in star connection, only in delta connection	Star connection does not provide sufficient torque	Switch on directly if delta inrush current is not too great; else, use a larger motor or a special design. Contact SEW-EURODRIVE.
	Contact fault on star/delta switch	Rectify fault
Incorrect direction of rotation	Motor connected incorrectly	Swap two phases
Motor hums and has high current consumption	Brake does not release	See chapter "Brake malfunctions"
	Winding defective	Send motor to specialist workshop for repair
	Rotor rubbing	
Fuses blow or motor protection trips immediately	Short circuit in the line	Eliminate short circuit
	Short circuit in the motor	Send motor to specialist workshop for repair
	Cables connected incorrectly	Correct the connection
	Ground fault on motor	Send motor to specialist workshop for repair
Severe speed loss under load	Overload	Measure the power, use larger motor or reduce load if necessary
	Voltage drops	Increase cross section of incoming cable

24811335/EN – 03/2018

Fault	Possible cause	Measure
Motor heats up excessively (measure temperature)	Overload	Measure the power, use larger motor or reduce load if necessary
	Insufficient cooling	Correct cooling air supply or clear cooling air passages, retrofit forced cooling fan if necessary
	Ambient temperature too high	Observe permitted temperature range
	Motor in delta connection instead of star connection as intended	Correct the connection
	Loose contact in incoming cable (one phase missing)	Tighten loose contact
	Fuse blown	Look for and rectify cause (see above); replace fuse
	The line voltage deviates from the rated motor voltage by more than 5%. A higher voltage has a particularly unfavorable effect in motors with a great number of poles since in these, the no-load current is already close to the rated current even when the voltage is normal.	Adjust motor to line voltage
	Nominal duty cycle (S1 to S10, DIN 57530) exceeded, e.g. caused by excessive starting frequency	Adjust the nominal duty cycle of the motor to the required operating conditions; consult a professional to determine the proper drive, if necessary
Excessively loud	Ball bearing compressed, dirty or damaged	Re-align motor, inspect ball bearing (→ chapter "Permitted ball bearing types"), grease if necessary (→ chapter "Lubricant table for rolling bearings of SEW motors"), replace
	Vibration of rotating parts	Rectify cause, possible imbalance
	Foreign objects in cooling air ducts	Clean cooling air ducts

24811335/EN – 03/2018

10.7 Brake malfunctions

Fault	Possible cause	Measure
Brake does not release	Incorrect voltage on brake control unit	Apply correct voltage
	Brake control unit failed	Install a new brake control system, check internal resistance and insulation of brake coil, check switchgear
	Max. permitted working air gap exceeded because brake lining worn down	Measure and set working air gap
	Voltage drop along supply cable > 10%	Ensure correct connection voltage; check cable cross section
	Inadequate cooling, brake overheats	Replace type BG brake rectifier with type BGE
	Brake coil has interturn short circuit or a short circuit to frame	Replace complete brake and brake control system (specialist workshop), check switchgear
	Rectifier defective	Replace the rectifier and brake coil
Motor does not brake	Working air gap not correct	Measure and set working air gap
	Brake lining worn	Replace entire brake disk
	Incorrect braking torque	Change the braking torque (→ chapter "Technical data") • by changing the type and number of brake springs • BG 05 brake: by installing the same brake coil body design as in the BMG 1 brake • BG 2 brake: by installing the same brake coil body design as in the BMG 4 brake
	BM(G) only: Working air gap so large that setting nuts come into contact	Set the working air gap
	BR03, BM(G) only: Manual brake release device not set correctly	Set the setting nuts correctly
Brake is applied with time lag	Brake is switched on AC voltage side	Switch on DC and AC voltage sides (e.g. BSR); observe wiring diagram
Noises in vicinity of brake	Gearing wear caused by jolting start-up	Check project planning
	Alternating torques due to incorrectly set frequency inverter	Check/correct setting of frequency inverter according to operating instructions

24811335/EN – 03/2018

10.8 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)

24811335/EN – 03/2018

11 Declaration of conformity

EU Declaration of Conformity

SEW EURODRIVE

Translation of the original text **900770215/EN**

SEW-EURODRIVE GmbH & Co. KG
Ernst-Blickle-Straße 42, D-76646 Bruchsal
declares under sole responsibility that the following products

Industrial gear units of the series	**X...100.. - X...320.. P..002.. - P..102.. P..042-X2K110 - P..102-X2K170**	
according to		
Category	**3G 3D**	
Designation	**Ex h IIC T4 Gc or Ex h IIC T4 Gc X or Ex h IIIC T120 °C Dc or Ex h IIIC T120 °C Dc X**	**15)**
in accordance with		
ATEX Directive	**2014/34/EU (L 96, 29.03.2014, 309-356)**	
Applied harmonized standards:	**EN ISO 80079-36:2016 EN ISO 80079-37:2016 EN 60529:1991/A1:2000/A2:2013**	

15) This classification of the temperature class / surface temperature is an example. The order-specific Ex identification can be found on the nameplate.

Bruchsal	**01.02.2018**		
Place	Date	Johann Soder Managing Director Technology	a) b)

a) Authorized representative for issuing this declaration on behalf of the manufacturer
b) Authorized representative for compiling the technical documents

24811335/EN – 03/2018

EU Declaration of Conformity

SEW EURODRIVE

Translation of the original text **900760215/EN**

SEW-EURODRIVE GmbH & Co. KG
Ernst-Blickle-Straße 42, D-76646 Bruchsal
declares under sole responsibility that the following products

industrial gear units of the series	**X...100.. - X...320.. P..002.. - P..102.. P..042-X2K110-P..102-X2K170**	
according to		
Category	**2G 2D**	
Designation	**Ex h IIC T4 Gb or Ex h IIC T4 Gb X or Ex h IIIC T120 °C Db or Ex h IIIC T120 °C Db X**	**15)**
in accordance with		
ATEX Directive	**2014/34/EU (L 96, 29.03.2014, 309-356)**	**2)**
Applied harmonized standards:	**EN ISO 80079-36:2016 EN ISO 80079-37:2016 EN 60529:1991/A1:2000/A2:2013**	

2) SEW-EURODRIVE lodges the documents required by 2014/34/EU, appendix VIII, with the notified body: FSA GmbH, EU ID no.: 0588

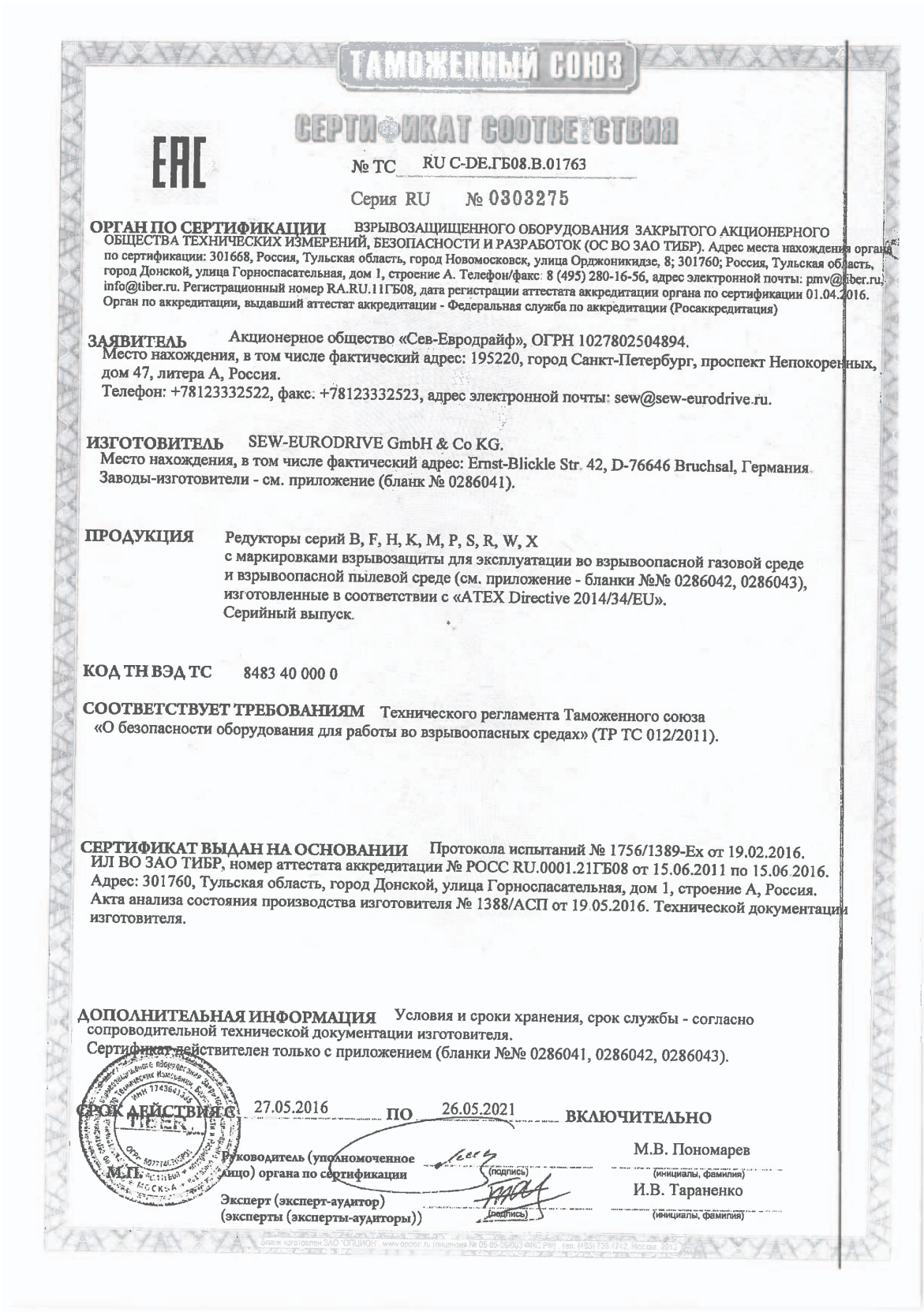
15) This classification of the temperature class / surface temperature is an example. The order-specific Ex identification can be found on the nameplate.

Bruchsal	**01.02.2018**	Johann Soder	
Place	Date	Managing Director Technology	a) b)

a) Authorized representative for issuing this declaration on behalf of the manufacturer
b) Authorized representative for compiling the technical documents

24811335/EN – 03/2018

12 Ex EAC certificates



ТАМОЖЕННЫЙ СОЮЗ

СЕРТИФИКАТ СООТВЕТСТВИЯ

EAC

№ ТС RU C-DE.ГБ08.В.01763

Серия RU № 0303275

ОРГАН ПО СЕРТИФИКАЦИИ ВЗРЫВОЗАЩИЩЕННОГО ОБОРУДОВАНИЯ ЗАКРЫТОГО АКЦИОНЕРНОГО ОБЩЕСТВА ТЕХНИЧЕСКИХ ИЗМЕРЕНИЙ, БЕЗОПАСНОСТИ И РАЗРАБОТОК (ОС ВО ЗАО ТИБР). Адрес места нахождения органа по сертификации: 301668, Россия, Тульская область, город Новомосковск, улица Орджоникидзе, 8; 301760; Россия, Тульская область, город Донской, улица Горноспасательная, дом 1, строение А. Телефон/факс: 8 (495) 280-16-56, адрес электронной почты: pmv@tiber.ru, info@tiber.ru. Регистрационный номер RA.RU.11ГБ08, дата регистрации аттестата аккредитации органа по сертификации 01.04.2016. Орган по аккредитации, выдавший аттестат аккредитации - Федеральная служба по аккредитации (Росаккредитация)

ЗАЯВИТЕЛЬ Акционерное общество «Сев-Евродрайф», ОГРН 1027802504894.
Место нахождения, в том числе фактический адрес: 195220, город Санкт-Петербург, проспект Непокоренных, дом 47, литера А, Россия.
Телефон: +78123332522, факс: +78123332523, адрес электронной почты: sew@sew-eurodrive.ru.

ИЗГОТОВИТЕЛЬ SEW-EURODRIVE GmbH & Co KG.
Место нахождения, в том числе фактический адрес: Ernst-Blickle Str. 42, D-76646 Bruchsal, Германия.
Заводы-изготовители - см. приложение (бланк № 0286041).

ПРОДУКЦИЯ Редукторы серий B, F, H, K, M, P, S, R, W, X
с маркировками взрывозащиты для эксплуатации во взрывоопасной газовой среде и взрывоопасной пылевой среде (см. приложение - бланки №№ 0286042, 0286043), изготовленные в соответствии с «ATEX Directive 2014/34/EU».
Серийный выпуск.

КОД ТН ВЭД ТС 8483 40 000 0

СООТВЕТСТВУЕТ ТРЕБОВАНИЯМ Технического регламента Таможенного союза «О безопасности оборудования для работы во взрывоопасных средах» (ТР ТС 012/2011).

СЕРТИФИКАТ ВЫДАН НА ОСНОВАНИИ Протокола испытаний № 1756/1389-Ex от 19.02.2016. ИЛ ВО ЗАО ТИБР, номер аттестата аккредитации № РОСС RU.0001.21ГБ08 от 15.06.2011 по 15.06.2016. Адрес: 301760, Тульская область, город Донской, улица Горноспасательная, дом 1, строение А, Россия. Акта анализа состояния производства изготовителя № 1388/АСП от 19.05.2016. Технической документации изготовителя.

ДОПОЛНИТЕЛЬНАЯ ИНФОРМАЦИЯ Условия и сроки хранения, срок службы - согласно сопроводительной технической документации изготовителя.
Сертификат действителен только с приложением (бланки №№ 0286041, 0286042, 0286043).

СРОК ДЕЙСТВИЯ С 27.05.2016 **ПО** 26.05.2021 **ВКЛЮЧИТЕЛЬНО**

М.П.

Руководитель (уполномоченное лицо) органа по сертификации (подпись) М.В. Пономарев (инициалы, фамилия)

Эксперт (эксперт-аудитор) (эксперты (эксперты-аудиторы)) (подпись) И.В. Тараненко (инициалы, фамилия)

Бланк изготовлен ЗАО "ОПЦИОН", www.oprion.ru, лицензия № 05-05-09/003 ФНС РФ, тел. (495) 726 4742, Москва, 2012

ТАМОЖЕННЫЙ СОЮЗ

СЕРТИФИКАТ СООТВЕТСТВИЯ

EAC

№ ТС RU C-DE.ГБ08.В.01762

Серия RU № 0303274

ОРГАН ПО СЕРТИФИКАЦИИ ВЗРЫВОЗАЩИЩЕННОГО ОБОРУДОВАНИЯ ЗАКРЫТОГО АКЦИОНЕРНОГО ОБЩЕСТВА ТЕХНИЧЕСКИХ ИЗМЕРЕНИЙ, БЕЗОПАСНОСТИ И РАЗРАБОТОК (ОС ВО ЗАО ТИБР). Адрес места нахождения органа по сертификации: 301668, Россия, Тульская область, город Новомосковск, улица Орджоникидзе, 8; 301760; Россия, Тульская область, город Донской, улица Горноспасательная, дом 1, строение А. Телефон/факс: 8 (495) 280-16-56, адрес электронной почты: pmv@tiber.ru, info@tiber.ru. Регистрационный номер RA.RU.11ГБ08, дата регистрации аттестата аккредитации органа по сертификации 01.04.2016. Орган по аккредитации, выдавший аттестат аккредитации - Федеральная служба по аккредитации (Росаккредитация)

ЗАЯВИТЕЛЬ Акционерное общество «Сев-Евродрайф», ОГРН 1027802504894.
Место нахождения, в том числе фактический адрес: 195220, город Санкт-Петербург, проспект Непокоренных, дом 47, литера А, Россия.
Телефон: +78123332522, факс: +78123332523, адрес электронной почты: sew@sew-eurodrive.ru.

ИЗГОТОВИТЕЛЬ SEW-EURODRIVE GmbH & Co KG.
Место нахождения, в том числе фактический адрес: Ernst-Blickle Str. 42, D-76646 Bruchsal, Германия.
Заводы-изготовители - см. приложение (бланк № 0286038).

ПРОДУКЦИЯ Электродвигатели переменного тока серий D, ED, C
с маркировками взрывозащиты для эксплуатации во взрывоопасной газовой среде и взрывоопасной пылевой среде (см. приложение - бланки №№ 0286039, 0286040), изготовленные в соответствии с «ATEX Directive 2014/34/EU».
Серийный выпуск.

КОД ТН ВЭД ТС 8501 51 000 0, 8501 52 200 0, 8501 52 300 0, 8501 52 900 0

СООТВЕТСТВУЕТ ТРЕБОВАНИЯМ Технического регламента Таможенного союза «О безопасности оборудования для работы во взрывоопасных средах» (ТР ТС 012/2011).

СЕРТИФИКАТ ВЫДАН НА ОСНОВАНИИ Протокола испытаний № 1755/1388-Ех от 19.02.2016. ИЛ ВО ЗАО ТИБР, номер аттестата аккредитации № РОСС RU.0001.21ГБ08 от 15.06.2011 по 15.06.2016. Адрес: 301760, Тульская область, город Донской, улица Горноспасательная, дом 1, строение А, Россия. Акта анализа состояния производства изготовителя № 1388/АСП от 19.05.2016. Технической документации изготовителя.

ДОПОЛНИТЕЛЬНАЯ ИНФОРМАЦИЯ Условия и сроки хранения, срок службы - согласно сопроводительной технической документации изготовителя.
Сертификат действителен только с приложением (бланки №№ 0286038, 0286039, 0286040).

СРОК ДЕЙСТВИЯ С 27.05.2016 **ПО** 26.05.2021 **ВКЛЮЧИТЕЛЬНО**

М.П.

Руководитель (уполномоченное лицо) органа по сертификации (подпись) М.В. Пономарев (инициалы, фамилия)

Эксперт (эксперт-аудитор) (эксперты (эксперты-аудиторы)) (подпись) И.В. Тараненко (инициалы, фамилия)

24811335/EN – 03/2018

13 Address list

Algeria			
Sales	Algiers	REDUCOM Sarl 16, rue des Frères Zaghnoune Bellevue 16200 El Harrach Alger	Tel. +213 21 8214-91 Fax +213 21 8222-84 http://www.reducom-dz.com info@reducom-dz.com
Argentina			
Assembly Sales	Buenos Aires	SEW EURODRIVE ARGENTINA S.A. Ruta Panamericana Km 37.5, Lote 35 (B1619IEA) Centro Industrial Garín Prov. de Buenos Aires	Tel. +54 3327 4572-84 Fax +54 3327 4572-21 http://www.sew-eurodrive.com.ar sewar@sew-eurodrive.com.ar
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 RybalkoStr. 26 220033 Minsk	Tel. +375 17 298 47 56 / 298 47 58 Fax +375 17 298 47 54 http://www.sew.by sales@sew.by
Belgium			
Assembly Sales Service	Brussels	SEW-EURODRIVE n.v./s.a. Researchpark Haasrode 1060 Evenementenlaan 7 3001 Leuven	Tel. +32 16 386-311 Fax +32 16 386-336 http://www.sew-eurodrive.be info@sew-eurodrive.be
Service Competence Center	Industrial Gears	SEW-EURODRIVE n.v./s.a. Rue de Parc Industriel, 31 6900 Marche-en-Famenne	Tel. +32 84 219-878 Fax +32 84 219-879 http://www.sew-eurodrive.be service-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

24811335/EN – 03/2018

Cameroon			
Sales	Douala	SEW-EURODRIVE S.A.R.L. Ancienne Route Bonabéri P.O. Box B.P 8674 Douala-Cameroun	Tel. +237 233 39 02 10 Fax +237 233 39 02 10 info@sew-eurodrive-cm
Canada			
Assembly Sales Service	Toronto	SEW-EURODRIVE CO. OF CANADA LTD. 210 Walker Drive Bramalea, ON L6T 3W1	Tel. +1 905 791-1553 Fax +1 905 791-2999 http://www.sew-eurodrive.ca l.watson@sew-eurodrive.ca
	Vancouver	SEW-EURODRIVE CO. OF CANADA LTD. Tilbury Industrial Park 7188 Honeyman Street Delta, BC V4G 1G1	Tel. +1 604 946-5535 Fax +1 604 946-2513 b.wake@sew-eurodrive.ca
	Montreal	SEW-EURODRIVE CO. OF CANADA LTD. 2555 Rue Leger Lasalle, PQ H8N 2V9	Tel. +1 514 367-1124 Fax +1 514 367-3677 a.peluso@sew-eurodrive.ca
Chile			
Assembly Sales Service	Santiago de Chile	SEW-EURODRIVE CHILE LTDA Las Encinas 1295 Parque Industrial Valle Grande LAMPA Santiago de Chile P.O. Box Casilla 23 Correo Quilicura - Santiago - Chile	Tel. +56 2 2757 7000 Fax +56 2 2757 7001 http://www.sew-eurodrive.cl ventas@sew-eurodrive.cl
China			
Production Assembly Sales Service	Tianjin	SEW-EURODRIVE (Tianjin) Co., Ltd. No. 78, 13th Avenue, TEDA Tianjin 300457	Tel. +86 22 25322612 Fax +86 22 25323273 http://www.sew-eurodrive.cn info@sew-eurodrive.cn
Assembly Sales Service	Suzhou	SEW-EURODRIVE (Suzhou) Co., Ltd. 333, Suhong Middle Road Suzhou Industrial Park Jiangsu Province, 215021	Tel. +86 512 62581781 Fax +86 512 62581783 suzhou@sew-eurodrive.cn
	Guangzhou	SEW-EURODRIVE (Guangzhou) Co., Ltd. No. 9, JunDa Road East Section of GETDD Guangzhou 510530	Tel. +86 20 82267890 Fax +86 20 82267922 guangzhou@sew-eurodrive.cn
	Shenyang	SEW-EURODRIVE (Shenyang) Co., Ltd. 10A-2, 6th Road Shenyang Economic Technological Development Area Shenyang, 110141	Tel. +86 24 25382538 Fax +86 24 25382580 shenyang@sew-eurodrive.cn
	Taiyuan	SEW-EURODRIVE (Taiyuan) Co,. Ltd. No.3, HuaZhang Street, TaiYuan Economic & Technical Development Zone ShanXi, 030032	Tel. +86-351-7117520 Fax +86-351-7117522 taiyuan@sew-eurodrive.cn
	Wuhan	SEW-EURODRIVE (Wuhan) Co., Ltd. 10A-2, 6th Road No. 59, the 4th Quanli Road, WEDA 430056 Wuhan	Tel. +86 27 84478388 Fax +86 27 84478389 wuhan@sew-eurodrive.cn
	Xi'An	SEW-EURODRIVE (Xi'An) Co., Ltd. No. 12 Jinye 2nd Road Xi'An High-Technology Industrial Development Zone Xi'An 710065	Tel. +86 29 68686262 Fax +86 29 68686311 xian@sew-eurodrive.cn
Sales Service	Hong Kong	SEW-EURODRIVE LTD. Unit No. 801-806, 8th Floor Hong Leong Industrial Complex No. 4, Wang Kwong Road Kowloon, Hong Kong	Tel. +852 36902200 Fax +852 36902211 contact@sew-eurodrive.hk

24811335/EN – 03/2018

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.usocome.com sew@usocome.com
Production	Forbach	SEW-USOCOME Zone industrielle Technopôle Forbach Sud B. P. 30269 57604 Forbach Cedex	Tel. +33 3 87 29 38 00
	Brumath	SEW-USOCOME 1 Rue de Bruxelles 67670 Mommenheim Cedex	Tel. +33 3 88 37 48 00
Assembly Sales Service	Bordeaux	SEW-USOCOME Parc d'activités de Magellan 62 avenue de Magellan – B. P. 182 33607 Pessac Cedex	Tel. +33 5 57 26 39 00 Fax +33 5 57 26 39 09

24811335/EN – 03/2018

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
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 Dänkritzer Weg 1 08393 Meerane (Zwickau)	Tel. +49 3764 7606-0 Fax +49 3764 7606-30 dtc-ost@sew-eurodrive.de
	South	SEW-EURODRIVE GmbH & Co KG Domagkstraße 5 85551 Kirchheim (München)	Tel. +49 89 909552-10 Fax +49 89 909552-50 dtc-sued@sew-eurodrive.de
	West	SEW-EURODRIVE GmbH & Co KG Siemensstraße 1 40764 Langenfeld (Düsseldorf)	Tel. +49 2173 8507-30 Fax +49 2173 8507-55 dtc-west@sew-eurodrive.de
Drive Center	Berlin	SEW-EURODRIVE GmbH & Co KG Alexander-Meißner-Straße 44 12526 Berlin	Tel. +49 306331131-30 Fax +49 306331131-36 dc-berlin@sew-eurodrive.de
	Ludwigshafen	SEW-EURODRIVE GmbH & Co KG c/o BASF SE Gebäude W130 Raum 101 67056 Ludwigshafen	Tel. +49 7251 75 3759 Fax +49 7251 75 503759 dc-ludwigshafen@sew-eurodrive.de
	Saarland	SEW-EURODRIVE GmbH & Co KG Gottlieb-Daimler-Straße 4 66773 Schwalbach Saar – Hülzweiler	Tel. +49 6831 48946 10 Fax +49 6831 48946 13 dc-saarland@sew-eurodrive.de
	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

24811335/EN – 03/2018

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. Csillaghegyí út 13. 1037 Budapest	Tel. +36 1 437 06-58 Fax +36 1 437 06-50 http://www.sew-eurodrive.hu office@sew-eurodrive.hu
Iceland			
Sales	Reykjavik	Varma & Vélaverk ehf. Knarrarvogi 4 104 Reykjavík	Tel. +354 585 1070 Fax +354 585)1071 http://www.varmaverk.is vov@vov.is
India			
Registered Office Assembly Sales Service	Vadodara	SEW-EURODRIVE India Private Limited Plot No. 4, GIDC POR Ramangamdi • Vadodara - 391 243 Gujarat	Tel. +91 265 3045200 Fax +91 265 3045300 http://www.seweurodriveindia.com salesvadodara@seweurodriveindia.com
Assembly Sales Service	Chennai	SEW-EURODRIVE India Private Limited Plot No. K3/1, Sipcot Industrial Park Phase II Mambakkam Village Sriperumbudur - 602105 Kancheepuram Dist, Tamil Nadu	Tel. +91 44 37188888 Fax +91 44 37188811 saleschennai@seweurodriveindia.com
	Pune	SEW-EURODRIVE India Private Limited Plant: Plot No. D236/1, Chakan Industrial Area Phase- II, Warale, Tal- Khed, Pune-410501, Maharashtra	Tel. +91 21 35 628700 Fax +91 21 35 628715 salespune@seweurodriveindia.com
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

24811335/EN – 03/2018

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	Alperton Engineering Ltd. 48 Moyle Road Dublin Industrial Estate Glasnevin, Dublin 11	Tel. +353 1 830-6277 Fax +353 1 830-6458 http://www.alperton.ie info@alperton.ie
Israel			
Sales	Tel Aviv	Liraz Handasa Ltd. Ahofer Str 34B / 228 58858 Holon	Tel. +972 3 5599511 Fax +972 3 5599512 http://www.liraz-handasa.co.il office@liraz-handasa.co.il
Italy			
Assembly Sales Service	Milan	SEW-EURODRIVE di R. Blickle & Co.s.a.s. Via Bernini,14 20020 Solaro (Milano)	Tel. +39 02 96 980229 Fax +39 02 96 980 999 http://www.sew-eurodrive.it milano@sew-eurodrive.it
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

24811335/EN – 03/2018

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

24811335/EN – 03/2018

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 Commercial Area, Sultan Ahmed Shah Road, Block 7/8, Karachi	Tel. +92 21 452 9369 Fax +92-21-454 7365 seweurodrive@cyber.net.pk
Paraguay			
Sales	Fernando de la Mora	SEW-EURODRIVE PARAGUAY S.R.L De la Victoria 112, Esquina nueva Asunción Departamento Central Fernando de la Mora, Barrio Bernardino	Tel. +595 991 519695 Fax +595 21 3285539 sewpy@sew-eurodrive.com.py
Peru			
Assembly Sales Service	Lima	SEW EURODRIVE DEL PERU S.A.C. Los Calderos, 120-124 Urbanizacion Industrial Vulcano, ATE, Lima	Tel. +51 1 3495280 Fax +51 1 3493002 http://www.sew-eurodrive.com.pe sewperu@sew-eurodrive.com.pe
Philippines			
Sales	Makati	P.T. Cerna Corporation 4137 Ponte St., Brgy. Sta. Cruz Makati City 1205	Tel. +63 2 519 6214 Fax +63 2 890 2802 mech_drive_sys@ptcerna.com http://www.ptcerna.com
Poland			
Assembly Sales Service	Łódź	SEW-EURODRIVE Polska Sp.z.o.o. ul. Techniczna 5 92-518 Łódź	Tel. +48 42 293 00 00 Fax +48 42 293 00 49 http://www.sew-eurodrive.pl sew@sew-eurodrive.pl
	Service	Tel. +48 42 293 0030 Fax +48 42 293 0043	24 Hour Service Tel. +48 602 739 739 (+48 602 SEW SEW) serwis@sew-eurodrive.pl
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

24811335/EN – 03/2018

Sambia			
representation: South Africa			
Senegal			
Sales	Dakar	SENEMECA Mécanique Générale Km 8, Route de Rufisque B.P. 3251, Dakar	Tel. +221 338 494 770 Fax +221 338 494 771 http://www.senemeca.com senemeca@senemeca.sn
Serbia			
Sales	Belgrade	DIPAR d.o.o. Ustanicka 128a PC Košum, IV floor 11000 Beograd	Tel. +381 11 347 3244 / +381 11 288 0393 Fax +381 11 347 1337 office@dipar.rs
Singapore			
Assembly Sales Service	Singapore	SEW-EURODRIVE PTE. LTD. No 9, Tuas Drive 2 Jurong Industrial Estate Singapore 638644	Tel. +65 68621701 Fax +65 68612827 http://www.sew-eurodrive.com.sg sewsingapore@sew-eurodrive.com
Slovakia			
Sales	Bratislava	SEW-Eurodrive SK s.r.o. Rybničná 40 831 06 Bratislava	Tel.+421 2 33595 202, 217, 201 Fax +421 2 33595 200 http://www.sew-eurodrive.sk sew@sew-eurodrive.sk
	Košice	SEW-Eurodrive SK s.r.o. Slovenská ulica 26 040 01 Košice	Tel. +421 55 671 2245 Fax +421 55 671 2254 Mobile +421 907 671 976 sew@sew-eurodrive.sk
Slovenia			
Sales Service	Celje	Pakman - Pogonska Tehnika d.o.o. UI. XIV. divizije 14 3000 Celje	Tel. +386 3 490 83-20 Fax +386 3 490 83-21 pakman@siol.net
South Africa			
Assembly Sales Service	Johannesburg	SEW-EURODRIVE (PROPRIETARY) LIMITED Eurodrive House Cnr. Adcock Ingram and Aerodrome Roads Aeroton Ext. 2 Johannesburg 2013 P.O.Box 90004 Bertsham 2013	Tel. +27 11 248-7000 Fax +27 11 248-7289 http://www.sew.co.za info@sew.co.za
	Cape Town	SEW-EURODRIVE (PROPRIETARY) LIMITED Rainbow Park Cnr. Racecourse & Omuramba Road Montague Gardens Cape Town P.O.Box 36556 Chempet 7442	Tel. +27 21 552-9820 Fax +27 21 552-9830 Telex 576 062 bgriffiths@sew.co.za
	Durban	SEW-EURODRIVE (PROPRIETARY) LIMITED 48 Prospecton Road Isipingo Durban P.O. Box 10433, Ashwood 3605	Tel. +27 31 902 3815 Fax +27 31 902 3826 cdejager@sew.co.za
	Nelspruit	SEW-EURODRIVE (PROPRIETARY) LIMITED 7 Christie Crescent Vintonia P.O.Box 1942 Nelspruit 1200	Tel. +27 13 752-8007 Fax +27 13 752-8008 robermeyer@sew.co.za
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

24811335/EN – 03/2018

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
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
Sri Lanka			
Sales	Colombo	SM International (Pte) Ltd 254, Galle Raod Colombo 4, Sri Lanka	Tel. +94 1 2584887 Fax +94 1 2582981
Swaziland			
Sales	Manzini	C G Trading Co. (Pty) Ltd PO Box 2960 Manzini M200	Tel. +268 2 518 6343 Fax +268 2 518 5033 engineering@cgtrading.co.sz
Sweden			
Assembly Sales Service	Jönköping	SEW-EURODRIVE AB Gnejsvägen 6-8 553 03 Jönköping Box 3100 S-550 03 Jönköping	Tel. +46 36 34 42 00 Fax +46 36 34 42 80 http://www.sew-eurodrive.se jonkoping@sew.se
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
Taiwan			
Sales	Taipei	Ting Shou Trading Co., Ltd. 6F-3, No. 267, Sec. 2 Tung Huw S. Road Taipei	Tel. +886 2 27383535 Fax +886 2 27368268 Telex 27 245 sewtwn@ms63.hinet.net http://www.tingshou.com.tw
	Nan Tou	Ting Shou Trading Co., Ltd. No. 55 Kung Yeh N. Road Industrial District Nan Tou 540	Tel. +886 49 255353 Fax +886 49 257878 sewtwn@ms63.hinet.net http://www.tingshou.com.tw
Tanzania			
Sales	Daressalam	SEW-EURODRIVE PTY LIMITED TANZANIA Plot 52, Regent Estate PO Box 106274 Dar Es Salaam	Tel. +255 0 22 277 5780 Fax +255 0 22 277 5788 http://www.sew-eurodrive.co.tz info@sew.co.tz
Thailand			
Assembly Sales Service	Chonburi	SEW-EURODRIVE (Thailand) Ltd. 700/456, Moo.7, Donhuaroh Muang Chonburi 20000	Tel. +66 38 454281 Fax +66 38 454288 sewthailand@sew-eurodrive.com
Tunisia			
Sales	Tunis	T. M.S. Technic Marketing Service Zone Industrielle Mghira 2 Lot No. 39 2082 Fouchana	Tel. +216 79 40 88 77 Fax +216 79 40 88 66 http://www.tms.com.tn tms@tms.com.tn
Turkey			
Assembly Sales Service	Kocaeli-Gebze	SEW-EURODRİVE Hareket Sistemleri San. Ve TIC. Ltd. Sti Gebze Organize Sanayi Böl. 400 Sok No. 401 41480 Gebze Kocaeli	Tel. +90 262 9991000 04 Fax +90 262 9991009 http://www.sew-eurodrive.com.tr sew@sew-eurodrive.com.tr

24811335/EN – 03/2018

Ukraine			
Assembly Sales Service	Dnipropetrovsk	ООО «СЕВ-Евродрайв» ул. Рабочая, 23-В, офис 409 49008 Днепр	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 Esqina Corumbe CP 12000 Montevideo	Tel. +598 2 21181-89 Fax +598 2 21181-90 sewuy@sew-eurodrive.com.uy
USA			
Production Assembly Sales Service	Southeast Region	SEW-EURODRIVE INC. 1295 Old Spartanburg Highway P.O. Box 518 Lyman, S.C. 29365	Tel. +1 864 439-7537 Fax Sales +1 864 439-7830 Fax Production +1 864 439-9948 Fax Assembly +1 864 439-0566 Fax Confidential/HR +1 864 949-5557 http://www.seweurodrive.com cslyman@seweurodrive.com
Assembly Sales Service	Northeast Region	SEW-EURODRIVE INC. Pureland Ind. Complex 2107 High Hill Road, P.O. Box 481 Bridgeport, New Jersey 08014	Tel. +1 856 467-2277 Fax +1 856 845-3179 csbridgeport@seweurodrive.com
	Midwest Region	SEW-EURODRIVE INC. 2001 West Main Street Troy, Ohio 45373	Tel. +1 937 335-0036 Fax +1 937 332-0038 cstroy@seweurodrive.com
	Southwest Region	SEW-EURODRIVE INC. 3950 Platinum Way Dallas, Texas 75237	Tel. +1 214 330-4824 Fax +1 214 330-4724 csdallas@seweurodrive.com
	Western Region	SEW-EURODRIVE INC. 30599 San Antonio St. Hayward, CA 94544	Tel. +1 510 487-3560 Fax +1 510 487-6433 cshayward@seweurodrive.com
	Wellford	SEW-EURODRIVE INC. 148/150 Finch Rd. Wellford, S.C. 29385	Tel. +1 864 439-7537 Fax +1 864 661 1167 IGOrders@seweurodrive.com
	Additional addresses for service provided on request!		
Uzbekistan			
Technical Office	Tashkent	SEW-EURODRIVE LLP Representative office in Uzbekistan 96A, Sharaf Rashidov street, Tashkent, 100084	Tel. +998 71 2359411 Fax +998 71 2359412 http://www.sew-eurodrive.uz sew@sew-eurodrive.uz
Vietnam			
Sales	Ho Chi Minh City	Nam Trung Co., Ltd Huế - South Vietnam / Construction Materials 250 Binh Duong Avenue, Thu Dau Mot Town, Binh Duong Province HCM office: 91 Tran Minh Quyen Street District 10, Ho Chi Minh City	Tel. +84 8 8301026 Fax +84 8 8392223 khanh-nguyen@namtrung.com.vn http://www.namtrung.com.vn
	Hanoi	MICO LTD Quảng Trị - North Vietnam / All sectors except Construction Materials 8th Floor, Ocean Park Building, 01 Dao Duy Anh St, Ha Noi, Viet Nam	Tel. +84 4 39386666 Fax +84 4 3938 6888 nam_ph@micogroup.com.vn http://www.micogroup.com.vn

24811335/EN – 03/2018

Index

24811335/EN – 03/18

L

M

N

O

P

R

S

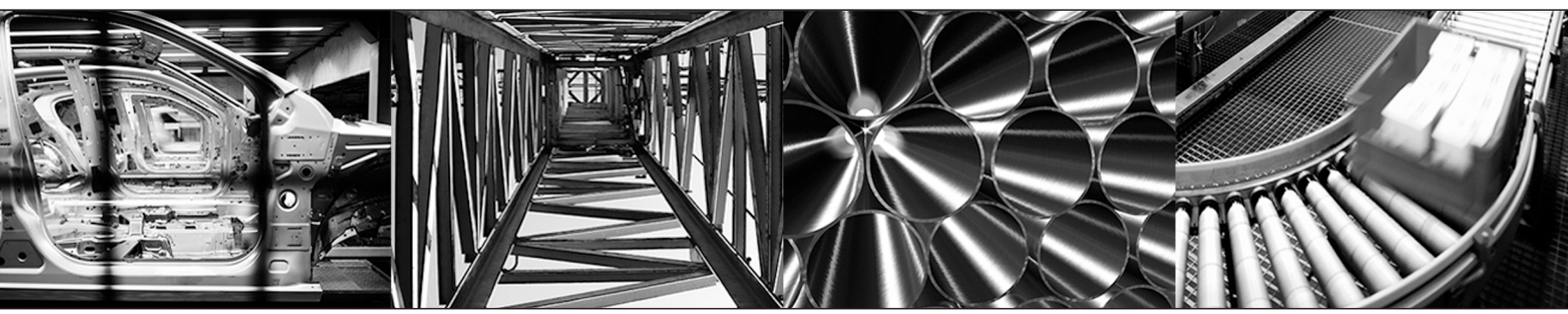
24811335/EN – 03/18

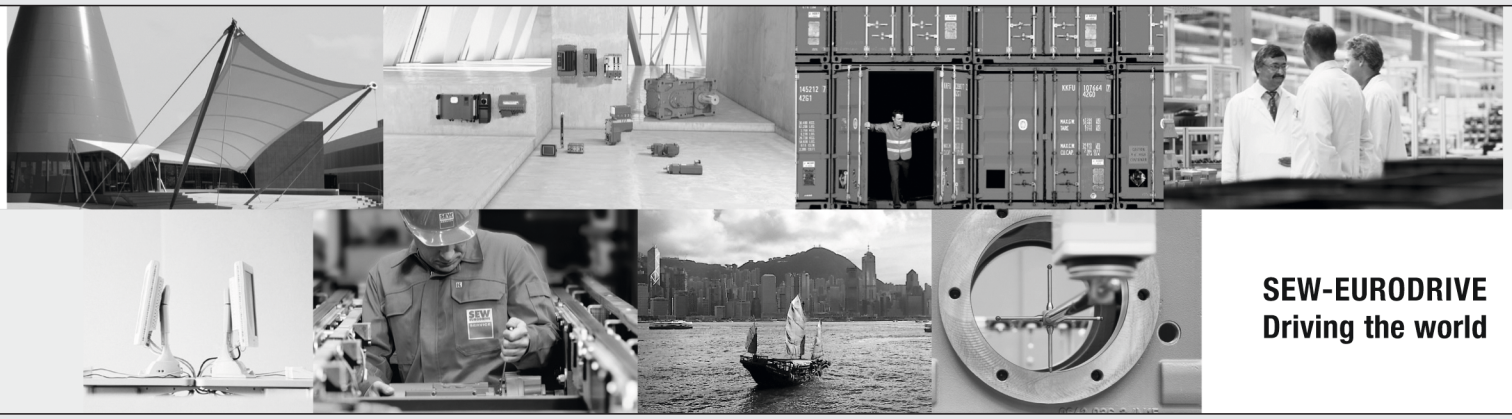
T

V

W

24811335/EN – 03/18





SEW-EURODRIVE
Driving the world

SEW-EURODRIVE GmbH & Co KG
Ernst-Blickle-Str. 42
76646 BRUCHSAL
GERMANY
Tel. +49 7251 75-0
Fax +49 7251 75-1970
sew@sew-eurodrive.com
➞ **www.sew-eurodrive.com**