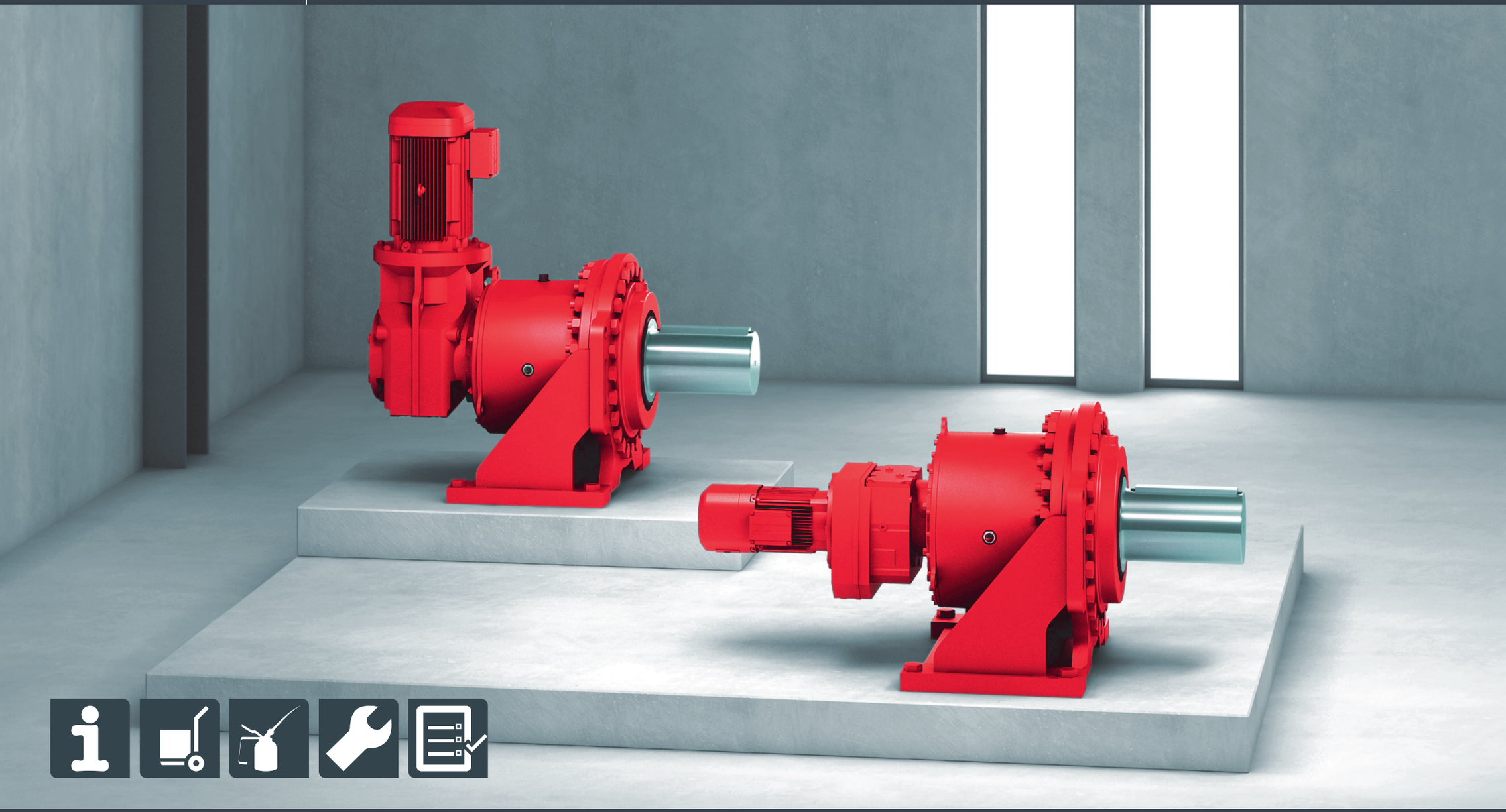
SEW-EURODRIVE Easy Guide

Edition 04/2025
31557481 / EN



Industrial Gear Units

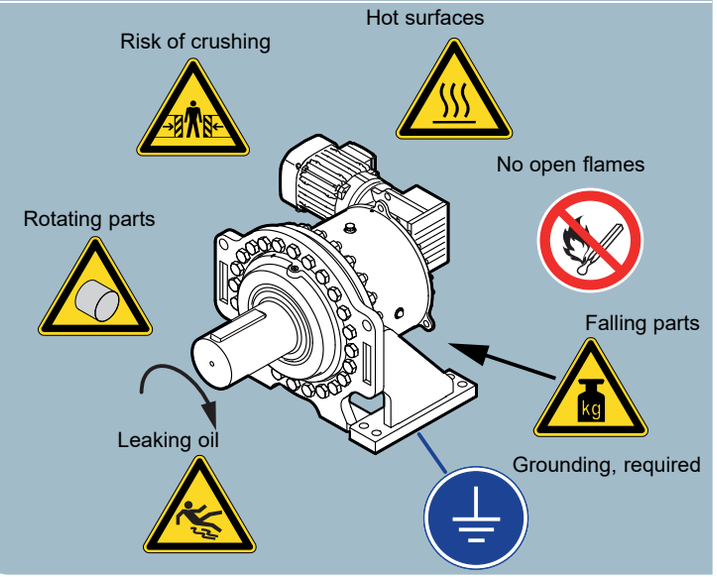
P.002 – P.102 Series Planetary Gearmotors

P.002 – P.102 industrial gear unit series

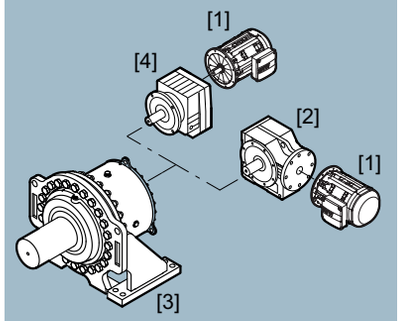
Gear unit structure

The displayed illustrations are examples.

1 Safety notes

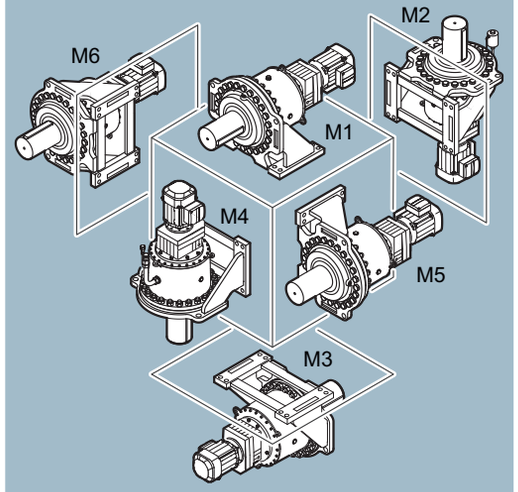


2 Gear unit designs

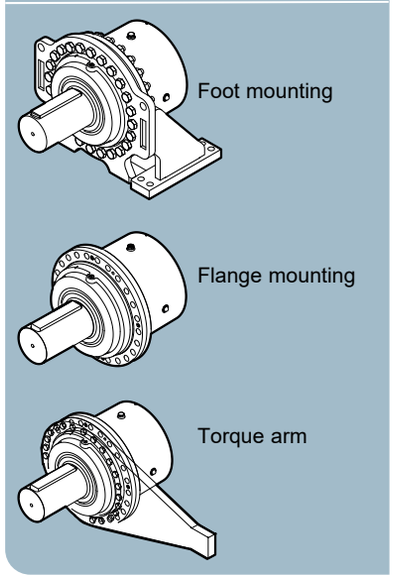


[1]	Motor
[2]	Helical-bevel gear units
[3]	Planetary gear units
[4]	Helical gear units

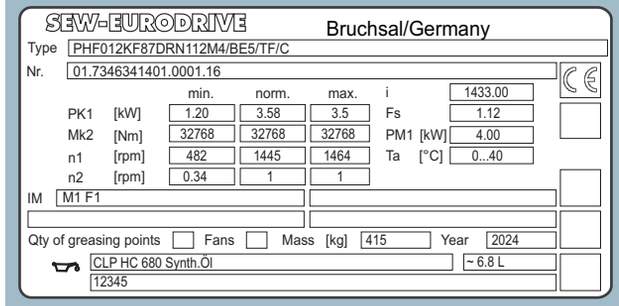
3 Mounting positions



4 Gear unit mounting



5 Nameplate for a planetary gear unit



Type	Type designation
No.	Production number
PK1	Operating power on the input shaft (HSS)
MK2	Gear unit output torque
n1	Input speed (HSS)
n2	Output speed (LSS)
i	Exact gear unit ratio
Fs	Service factor
PM	Nominal motor power
T_a	Deviation from the standard temperature range
IM	Mounting position and mounting surface
Greasing points	Number of greasing points
Fan	Fan
Mass	Gear unit weight
Year	Year of manufacture
	Oil type / Viscosity / Oil quantity
12345	Additional text, e.g. service number

6 Icons on the gear unit

- Oil dipstick
- Oil filling opening
- Oil drain opening
- Temperature sensor
- Breather
- Lubrication points
- Grease drain

7 Product safety label on the gear unit

- Hot surfaces
- Risk of burns due to hot gear unit oil
- Damage to the gear unit due to unscrewing the oil dipstick during operation.

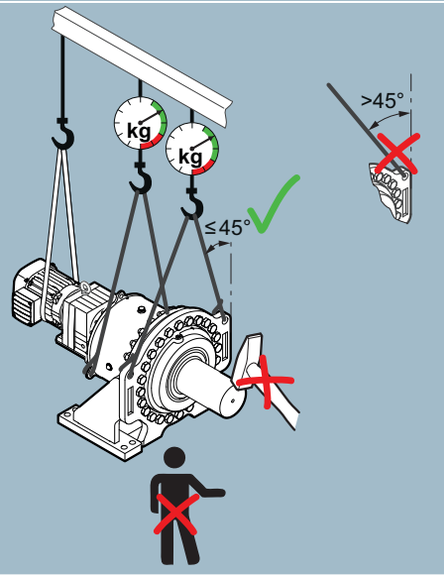
⚠ ATTENTION!
This document does not replace the detailed, applicable operating instructions.

P.002 – P.102 industrial gear unit series

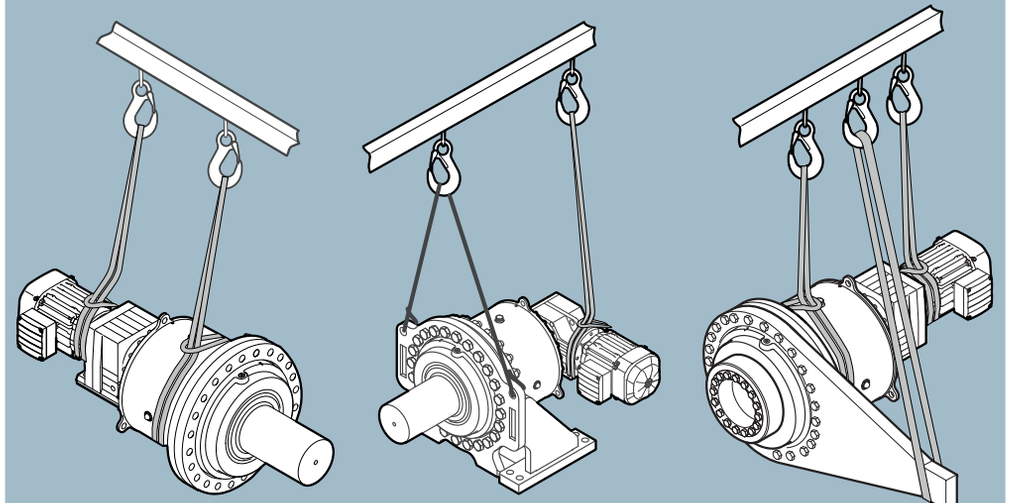
Lifting and moving/setting up

The displayed illustrations are examples.

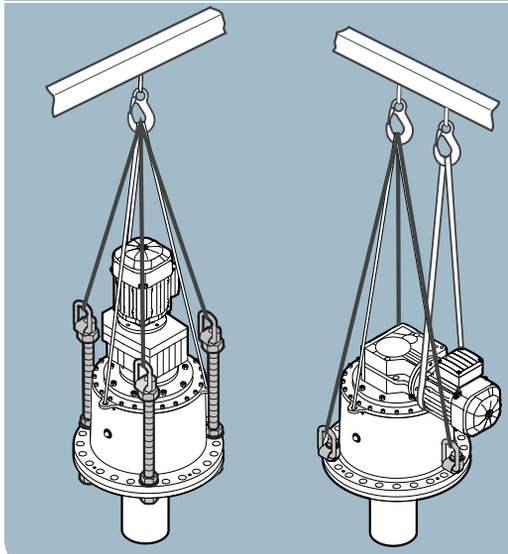
1 Transport Notes



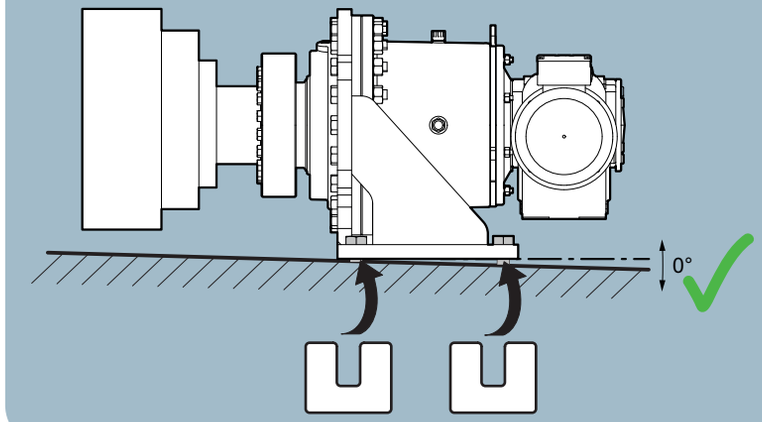
2 Horizontal transport



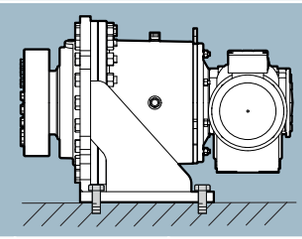
3 Vertical transport



4 Gear unit installation Notes



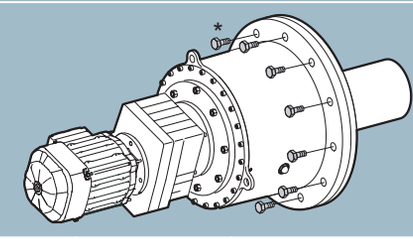
5 Gear unit installation Foot mounting



Size	Screws*	Tightening torque Nm ** Strength class 8.8
P.002 – P.022	M20	460
P.032	M24	795
P.042	M30	1590
P.052 – P.062	M36	2770
P.072 – P.082	M42	4410
P.092 – P.102	M48	6650

* Screws are not included in the scope of delivery.
** Friction coefficient μ = 0.14 – 0.24

6 Gear unit installation Flange mounting



Size	Screws*	Tightening torque Nm ** Strength class 10.9
P.002 – P.022	M20	555
P.032	M24	960
P.042 – P.052	M30	1910
P.062 – P.072	M36	3320
P.082 – P.102	M42	5310

* Screws are not included in the scope of delivery.
** Friction coefficient μ = 0.11

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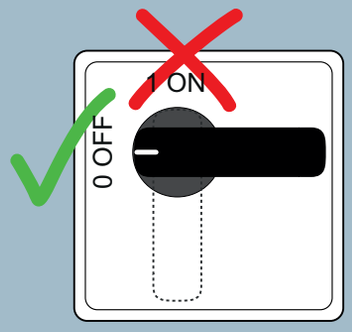
P.002 – P.102 industrial gear unit series

First filling prior to startup

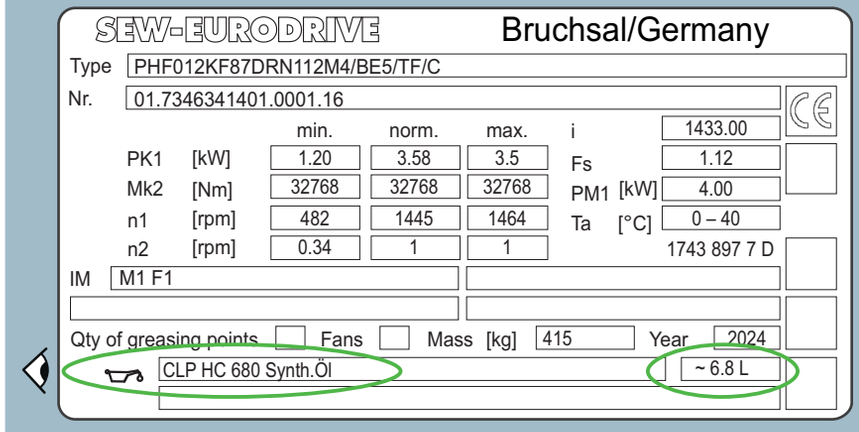
The displayed illustrations are examples.

1 Before you switch on

Before switching on the drive for the first time, you have to fill the gear unit with oil!

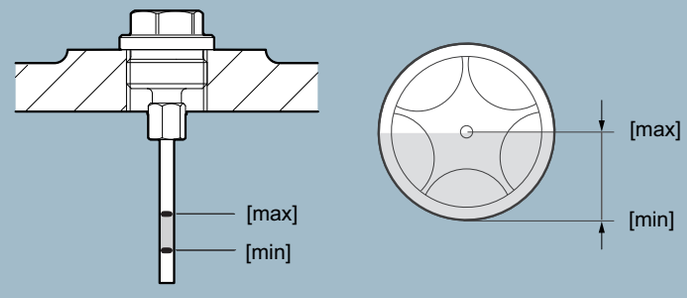


2 Oil type/oil quantity

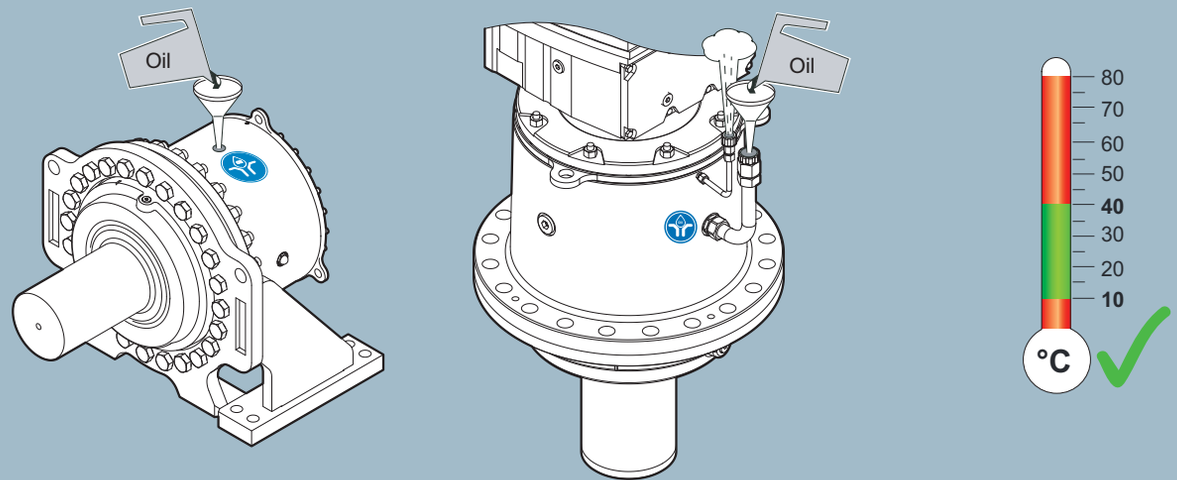


3 Check the oil level

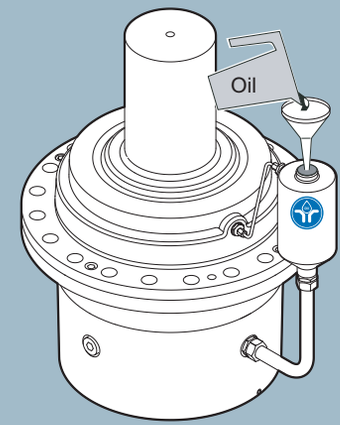
The oil quantity on the nameplate is an approximate value. Check the exact oil level using the oil dipstick or by checking the oil level glass.



4 Fill in the oil



5 Gear units with oil expansion tank



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Lubricant table

The displayed illustrations are examples.

1

Lubricant table

Required minimum oil temperature in °C	DIN (ISO) API	ISO,SAE NLGI	SEW EURODRIVE	Castrol	FUCHS	Mobil®	KLÜBER LUBRICATION	SINOPEC	TOTAL
-20	CLP Mineral oil	VG 150 *)	GearOil Base 150 E1 / US1 / CN1 / BR1	Optigear BM 150 Alpha SP 150	Renolin CLP 150 Plus Renolin High Gear 150	Mobilgear 600 XP 150	Klüberoil GEM 1-150 N	AP-SGO 150	
-15		VG 220	GearOil Base 220 E1 / US1 / CN1 / BR1	Optigear BM 220 Alpha SP 220	Renolin CLP 220 Plus Renolin High Gear 220	Mobilgear 600 XP 220	Klüberoil GEM 1-220 N	AP-SGO 220	Carter EP 220
-10		VG 320	GearOil Base 320 E1 / US1 / CN1 / BR1	Optigear BM 320 Alpha SP 320	Renolin CLP 320 Plus Renolin High Gear 320	Mobilgear 600 XP 320	Klüberoil GEM 1-320 N	AP-SGO 320	Carter EP 320
-5		VG 460	GearOil Base 460 E1 / US1 / CN1 / BR1	Optigear BM 460 Alpha SP 460	Renolin CLP 460 Plus Renolin High Gear 460	Mobilgear 600 XP 460	Klüberoil GEM 1-460 N	AP-SGO 460	Carter EP 460
0		VG 680	GearOil Base 680 E1 / US1 / CN1 / BR1	Optigear BM 680 Alpha SP 680	Renolin CLP 680 Plus Renolin High Gear 680	Mobilgear 600 XP 680	Klüberoil GEM 1-680 N	AP-SGO 460	Carter EP 680
+5		VG 1000		Optigear BM 1000					
-40	CLP HC Synthetic oil	VG 32				SHC 624			
-35		VG 68			Renolin Unisyn CLP 68	SHC 626	Klübersynth GEM 4-68 N		
-25		VG 150	GearOil Synth 150 E1	Alphasyn EP 150 Optigear Synthetic X 150	Renolin Unisyn CLP 150	SHC 629 SHC Gear 150	Klübersynth GEM 4-150 N		Carter SH 150
-20		VG 220	GearOil Synth 220 E1	Alphasyn EP 220 Optigear Synthetic X 220	Renolin Unisyn CLP 220	SHC 630 SHC Gear 220	Klübersynth GEM 4-220 N		Carter SH 220
-15		VG 320	GearOil Synth 320 E1	Alphasyn EP 320 Optigear Synthetic X 320	Renolin Unisyn CLP 320	SHC 632 SHC Gear 320	Klübersynth GEM 4-320 N		Carter SH 320
-10		VG 460	GearOil Synth 460 E1	Alphasyn EP 460 Optigear Synthetic X 460	Renolin Unisyn CLP 460	SHC 634 SHC Gear 460	Klübersynth GEM 4-460 N		Carter SH 460
-5		VG 680	GearOil Synth 680 E1	Optigear Synthetic X 680	Renolin Unisyn CLP 680	SHC 636 SHC Gear 680	Klübersynth GEM 4-680 N		Carter SH 680
0		VG 1000				SHC 639 SHC Gear 1000	Klübersynth EG 4-1000 N		
-35	CLP HC NSF H1 Food grade oil	VG 68		Optileb HY 68	Cassida Fluid HF 68		Klüberoil 4UH1-68 N		
-20		VG 220	GearOil Synth 220 H1 E1	Optileb GT 220	Cassida Fluid GL 220		Klüberoil 4UH1-220 N		
-15		VG 460	GearOil Synth 460 H1 E1	Optileb GT 460	Cassida Fluid GL 460		Klüberoil 4UH1-460 N		
-20	E Ester oil	VG 320			Plantogear 320 S		Klüber Bio EG2-320		

*) Only when service factor ≥ 1.3

Further information at www.sew-eurodrive.de/lubricants

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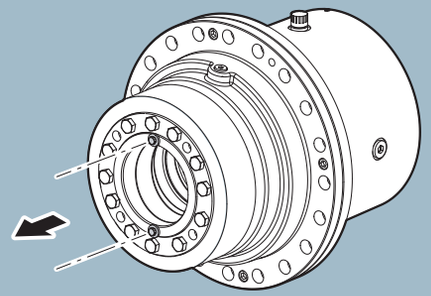
P.002 – P.102 industrial gear unit series

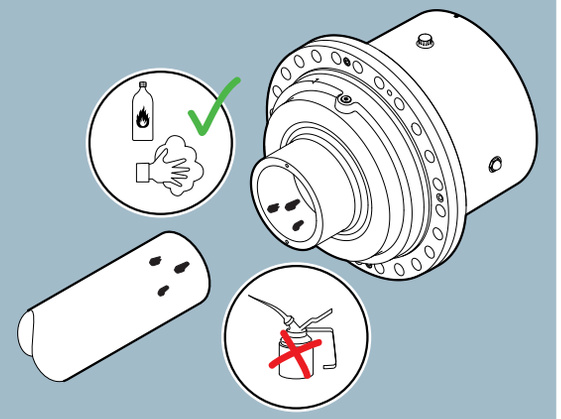
Assembly of shrink disk

The displayed illustrations are examples.

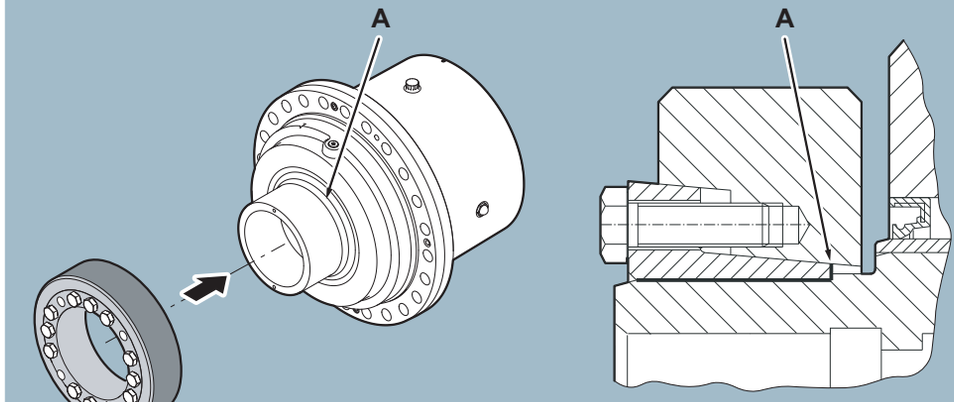
1 Removing locking screws



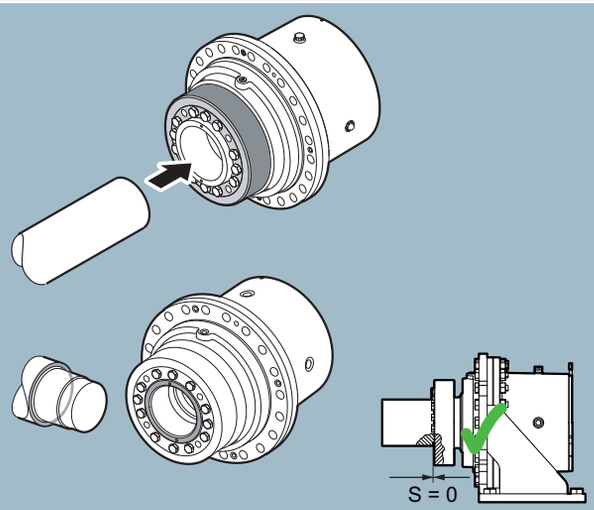
2 Removal/lubrication



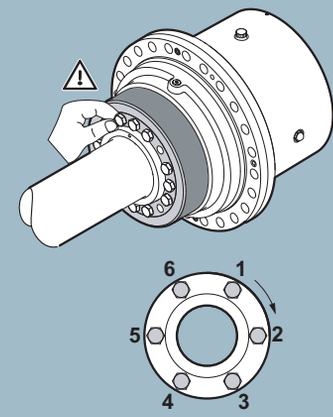
3 Pushing the shrink disk onto the shaft



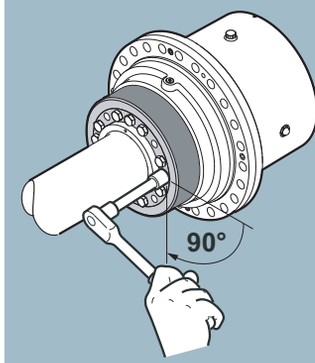
4 Pushing the gear unit onto the machine shaft

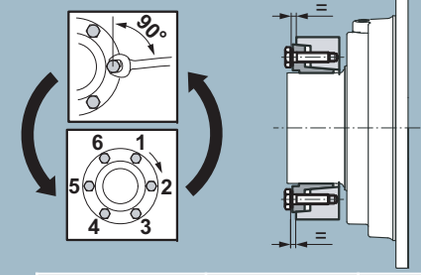


5 Manually tightening the locking screws



6 Tightening the locking screws using a tightening torque





Size	Screws	Tightening torque Nm ± 20%
P.002	M16	250
P.012 – P.022	M16	290
P.032 – P.052	M20	570
P.062 – P.082	M24	980
P.092 – P.102	M27	1450

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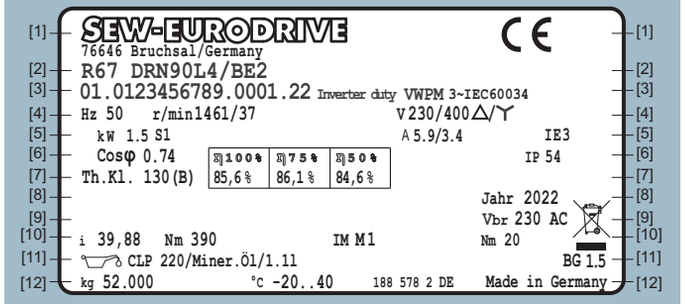
P.002 – P.102 industrial gear unit series

Primary gearmotor

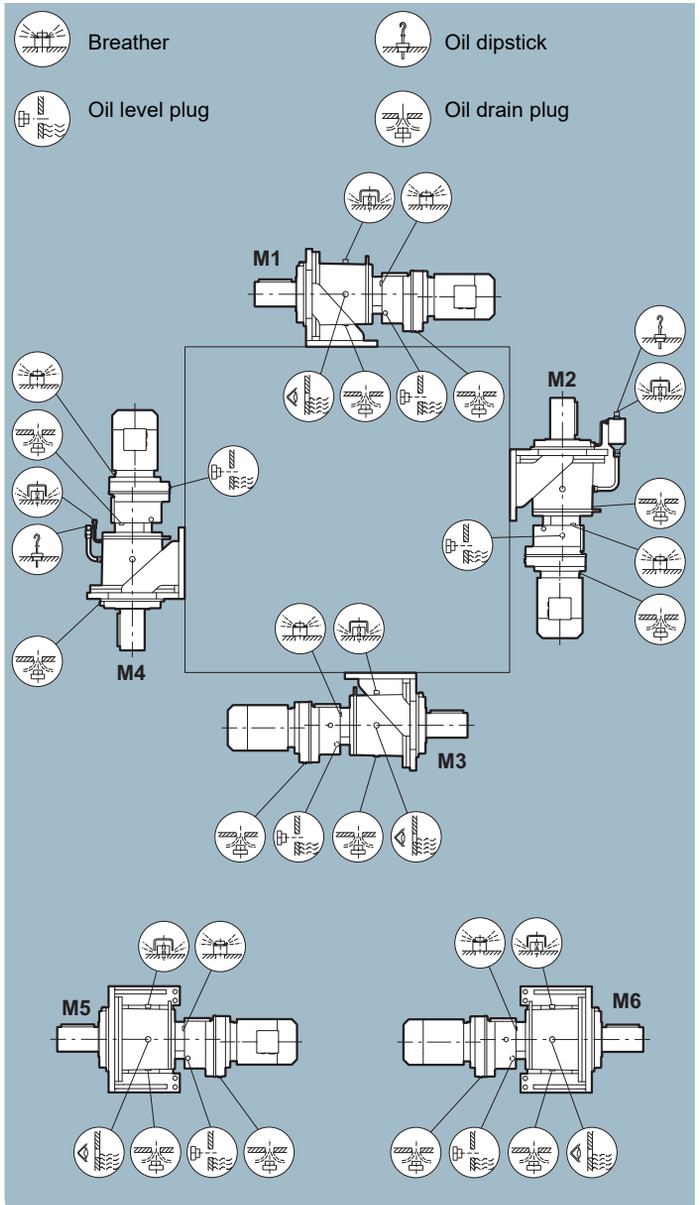
The displayed illustrations are examples.

1 Nameplate for a primary gearmotor

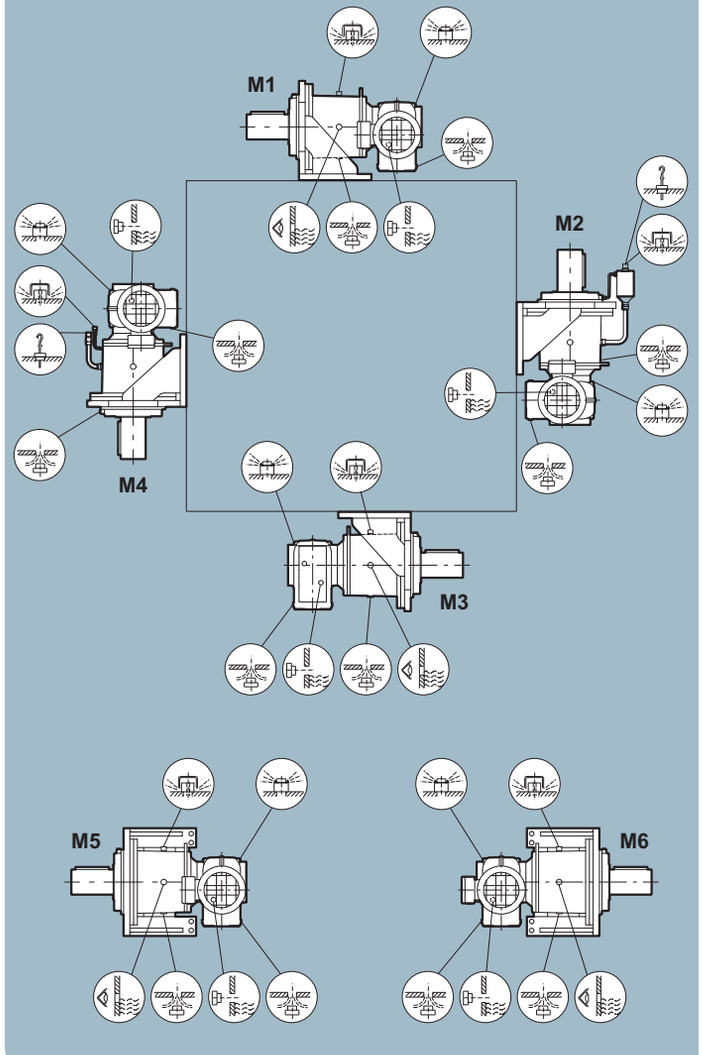


[1]	• Manufacturer, address, CE mark
[2]	• Type designation
[3]	• Serial number • Suitability for inverter operation • Number of phases and underlying rating and performance standard
[4]	• Rated frequency • Rated speed of the motor / speed of the gear unit output shaft • Nominal voltage
[5]	• Rated power and operating mode • Rated current • Energy efficiency class according to IEC 60034-30-1
[6]	• Power factor • Efficiency after capacity utilization of 100%, 75%, and 50% • Degree of protection in accordance with IEC 60034-5
[7]	• Thermal class
[8]	• Year of manufacture
[9]	• Brake voltage • Waste disposal according to WEEE Directive
[10]	• Gear unit ratio • Output torque • Mounting position • Nominal braking torque
[11]	• Oil type and oil fill volume • Brake control
[12]	• Gearmotor weight • Permitted ambient temperature range of the motor • Nameplate number • Country of manufacture

2 Mounting positions P.. RF..



3 Mounting positions P.. KF..



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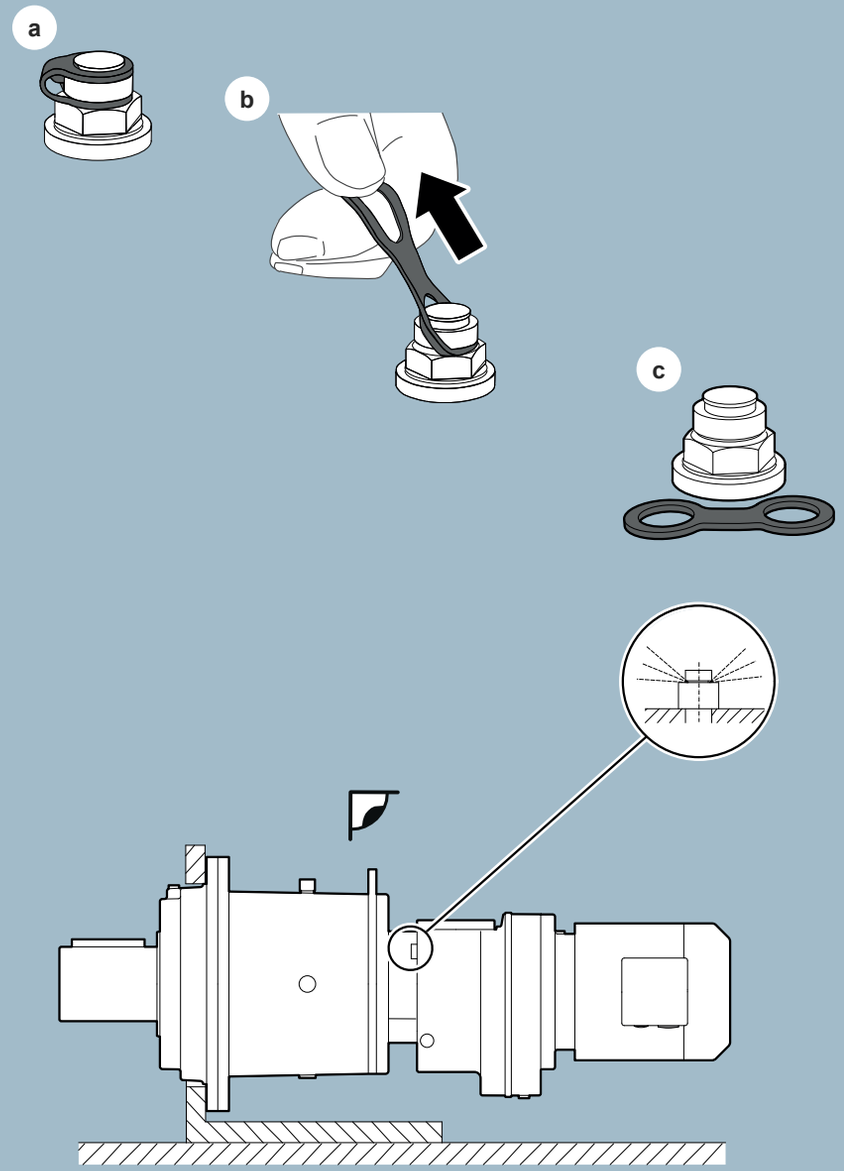
P.002 – P.102 industrial gear unit series

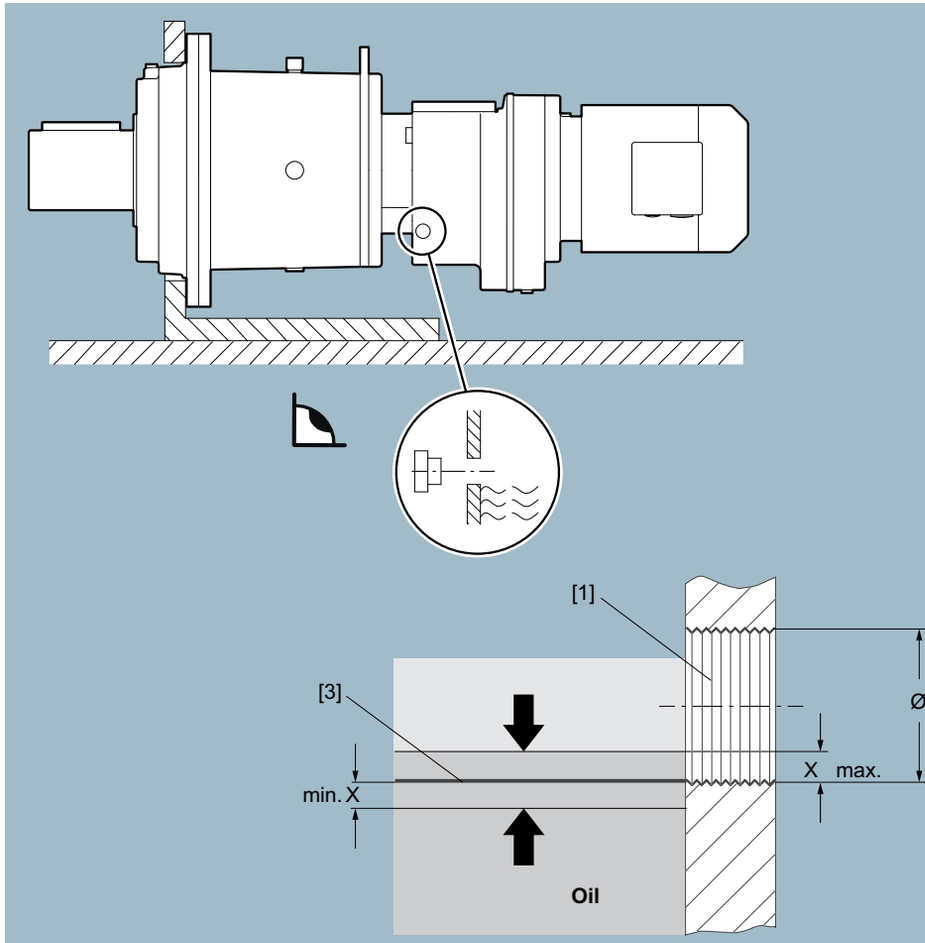
Primary gearmotor

The displayed illustrations are examples.

1 Activating the breather



2 Checking the oil level



Ø Oil level bore	Permitted oil level fluctuation x in mm
M10	1.5
M12 × 1.5	2
M22 × 1.5	3
M33 × 2	4
M42 × 2	5

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P.002 – P.102 industrial gear unit series

Startup

The displayed illustrations are examples.

1 Checks prior to startup

Checklist	Ok
The gear unit has not been damaged during transport.	
All transport protections hav been removed.	
All retaining screws are tightened to the specified torque.	
The correct oil level of the gear unit has been checked by means of the oil dipstick or oil sight glass.	
The gear unit and all electrical mount-on components are grounded.	
The shafts are aligned correctly.	
Rotating shafts and couplings are equipped with protective covers.	
For gear units with long-term protection: The screw plug has been replaced by a breather.	

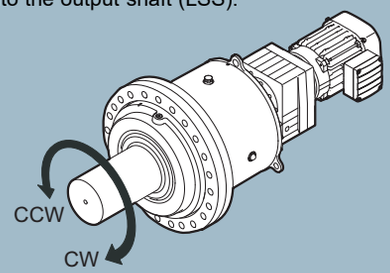
Checklist	Ok
When using a PT100 temperature sensor: The temperature sensor is connected and is working properly.	
.	

2 Startup Gear unit with backstop (option)

Checklist	Ok
The direction of rotation of the input shaft (HSS) matches the direction arrow on the input end.	
The direction of rotation of the output shaft (LSS) matches the direction arrow on the output end.	

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

- Clockwise rotation (CW)
- Counterclockwise rotation (CCW)



The permitted direction of rotation is indicated on the housing.

3 Inspection intervals

Time interval	What should I do?
Daily	• Check the housing temperature • Check gear unit noise
Monthly	• Checking the oil level • Check the gear unit for tightness
After 500 operating hours*	• First oil change after initial startup
Every 6 months	• Check the screw fittings and piping for tightness
Every 3000 operating hours	• Check the oil consistency • Fill in sealing grease
Depending on the operating conditions, every 12 months at the latest	• Check the breather • Check alignment of the shafts • Check retaining screws • Clean housing • Touch up or renew the surface/corrosion protection coating
Approx. 5000 operating hours**	• Change mineral oil
Approx. 10000 operating hours**	• Change synthetic oil

* Can be omitted under certain conditions. ** Depending on the operating conditions.

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P.002 – P.102 industrial gear unit series

Possible failures/remedy

The displayed illustrations are examples.

1

You can find support from the Service in your area at www.sew-eurodrive.com

Failure	Possible cause	Remedy
Unusual, regular running noise	Meshing/grinding noise: Bearing damage	Check the oil consistency, change bearing
	Thumping noise: Irregularities in the gearing	Contact SEW-EURODRIVE. For a better assessment of the failure, send an audio recording of the noise.
	Deformation of the housing during installation	Check the gear unit mounting for possible deformation and correct if necessary.
	Noise excitation due to lack of stiffness of the gear unit foundation	Reinforce the gear unit foundation
Unusual, irregular running noise	Foreign objects in the oil	Check the oil consistency
		Stop the drive, contact SEW-EURODRIVE
Unusual noises in the area of the gear unit mounting	Gear unit mounting has become loose	Tighten retaining screws and nuts with the specified torque.
		Replace damaged or defective retaining screws/nuts
Operating temperature too high	Too much oil	Check the oil level and correct, if necessary
	Oil is too old	Check when the oil was last changed; change the oil, if necessary.
	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	Insufficient oil	Check the oil level and correct, if necessary
	Oil is 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 at the cover plate, gear unit cover, or bearing cover	Seal broken at the cover plate, gear unit cover, or bearing cover	Tighten screws on the respective cover; monitor the gear unit. Contact SEW-EURODRIVE if oil is still leaking.
Oil leaking from the oil seal	Too much oil	Check the oil level and correct, if necessary
	Sealing lip of oil seal turned up	Vent the gear unit; monitor the gear unit. Contact SEW-EURODRIVE if oil is still leaking.
	Oil seal damaged/worn	Check the oil seals; replace, if necessary
Oil leaking from gear unit breather	Too much oil	Check the oil level and correct, if necessary
	Drive installed in incorrect mounting position	Install breather plug correctly and adjust the oil level
	Frequent cold starts (oil foams) and/or high oil level	Install oil expansion tank
Oil leaking – from the screw plug – from the oil drain valve	Seal not tight	Re-tighten the screw
	Pipe fittings loosened	Re-tighten the fitting and screw
Output shaft does not rotate even though the motor is running or the input shaft is rotated	The shaft-hub connection in gear unit is interrupted	Send the gear unit / gearmotor in for repair

The displayed illustrations are examples.

1 Important information

1.1 Safety notes

The following basic safety notes are intended to prevent personal injury 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.

1.2 General

Do not install or start up damaged products. Report any damage to the shipping company immediately. During operation, gear units can have movable or rotating parts or hot surfaces. All work related to transportation, storage, installation, assembly, connection, startup, maintenance, and repair may be performed only by qualified personnel, in strict observance of the comprehensive operating instructions. Improper removal of the required cover, improper use, or incorrect installation or operation may result in severe injury to persons or damage to property.

1.3 Target group

Any mechanical work may be performed only by trained specialists. Specialists within the meaning of these operating instructions are persons who are familiar with the structure, mechanical installation, troubleshooting, and maintenance of the product and who have training in the field of mechanics (e.g. as mechanics or mechatronics technicians) with a successful final examination.

Any electronic work may be performed only by an electrically skilled person with the appropriate training. Electrically skilled persons within the meaning of these operating instructions are persons who are familiar with the electrical installation, startup, troubleshooting, and maintenance of the product and who have training in the field of electrical engineering (e.g. as an electronics technician or mechatronics technician) with a successful final examination.

All work in the other areas of transportation, storage, operation, and waste disposal must be performed by persons who are trained appropriately.

All qualified personnel must have read and understood the comprehensive operating instructions and wear appropriate protective clothing.

1.4 Designated use

Industrial gear units are gear units driven by motors for industrial and commercial systems. Permitted speeds and power ratings must be observed in accordance with the technical data or nameplate. Implementing gear unit loads that deviate from the permitted values or operating the gear units in areas of application other than industrial and commercial systems are permitted only after consultation with SEW-EURODRIVE.

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

In compliance with the EC Machinery Directive 2006/42/EC, the industrial gear units of the P.002 – P.102 Series are components for installation in machinery and systems. In the scope of the EC Directive, you must not put the machinery into operation in the designated fashion until you have established that the end product complies with Machinery Directive 2006/42/EC.

1.5 Other applicable documentation

The following documentation and documents must also be observed:

- "P.002 – P.102 Series Planetary Gearmotors" operating instructions
- "Planetary Gearmotors P.002 – P.102 Series" catalog
- Order documents, e.g. dimension sheet, order confirmation, etc.
- "AC Motors" operating instructions, if necessary
- Operating instructions of the mounted components, if necessary

1.6 Safety symbols on the gear unit

The product safety symbols on the gear unit must be observed. Refer to the detailed operating instructions for the meaning of the product safety symbols.

1.7 Transport/storage

Observe the information for transport, storage, and proper handling in the detailed operating instructions. Climatic conditions must be observed in accordance with chapter "Storage and transport conditions".

1.8 Installation/assembly

Installation/assembly must be performed in accordance with the specifications in the corresponding documentation.

1.9 Startup

Startup must be performed in accordance with the specifications in the corresponding documentation.

⚠ **ATTENTION!**
This document does not replace the detailed, applicable operating instructions.

SEW-EURODRIVE
Driving the world

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