



SEW
EURODRIVE

Operating Instructions



Drive Unit

MOVIGEAR® classic

MGF..-DSM-C



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1 General information

1.1 Structure of the safety notes

1.1.1 Meaning of signal words

The following table shows the graduation and meaning of the signal words in the safety notes.

Signal word	Meaning	Consequences if not observed
▲ DANGER	Imminent danger	Death or severe injuries
▲ WARNING	Possibly dangerous situation	Death or severe injuries
▲ CAUTION	Possibly dangerous situation	Minor injuries
NOTICE	Possible damage to property	Damage to the product or its environment
INFORMATION	Useful information or tip: Simplifies handling of the product.	

1.1.2 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

2 MOVIGEAR® classic safety notes

2.1 Target group

Specialist for mechanical work	Any mechanical work may be performed only by adequately qualified specialists. Specialists in the context of this documentation are persons who are familiar with the design, mechanical installation, troubleshooting, and maintenance of the product, and who possess the following qualifications: • Qualifications in the field of mechanics in accordance with the national regulations • Familiarity with this documentation
Specialist for electrotechnical work	Any electrotechnical work may be performed only by electrically skilled persons with a suitable education. Electrically skilled persons in the context of this documentation are persons who are familiar with electrical installation, startup, troubleshooting, and maintenance of the product, and who possess the following qualifications: • Qualifications in the field of electrical engineering in accordance with the national regulations • Familiarity with this documentation
Instructed persons	All work in the areas of transport, storage, installation, operation and waste disposal may only be carried out by persons who are trained and instructed appropriately. These instructions must enable the persons to carry out the required activities and work steps safely and in accordance with regulations.

2.2 Designated use

The product is intended for installation in electrical systems or machines.

In case of installation in electrical systems or machines, startup of the product is prohibited until it is determined that the machine meets the requirements stipulated in the local laws and directives. For Europe, Machinery Directive 2006/42/EC as well as the EMC Directive 2014/30/EU apply. Observe EN 60204-1 (Safety of machinery - electrical equipment of machines). The product meets the requirements stipulated in the Low Voltage Directive 2014/35/EU.

The standards given in the declaration of conformity apply to the product.

Technical data and information on the connection conditions are provided on the nameplate and in chapter "Technical data" in the documentation. Always comply with the data and conditions.

Unintended or improper use of the product may result in severe injury to persons and damage to property.

Do not use the product as a climbing aid.

2.2.1 Lifting applications

The product may not be used for lifting applications or on slopes.

2.2.2 Restrictions of use

The following applications are prohibited unless the device is explicitly designed for such use:

- Use in potentially explosive areas.
- Use in areas exposed to harmful oils, acids, gases, vapors, dust, and radiation.
- Operation in applications with impermissibly high mechanical vibration and shock loads in excess of the regulations stipulated in EN 61800-5-1.
- Use at an elevation of more than 4000 m above sea level

2.3 Transportation

Inspect the shipment for damage as soon as you receive the delivery. Inform the shipping company immediately about any damage. If the product or the packaging is damaged, do not assemble, install, connect, or start up the product. If the packaging is damaged, the product itself may also be damaged.

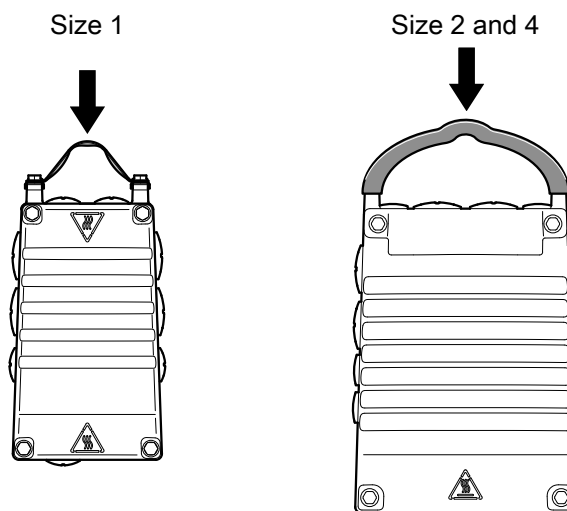
Observe the following notes when transporting the device:

- Ensure that the product is not subject to mechanical impact.
- Do not attach any additional loads.

If necessary, use suitable, adequately dimensioned transport aids.

Observe the notes on the climatic conditions in accordance with chapter "Technical data" in the corresponding product manual.

The following figure shows the positions of the handle:



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Remove the handle before connecting the PE cable, see chapter "Notes on PE connection" (→ 51).

Store the handle for future service work, see chapter "Service" > "Device replacement".

2.4 Creating a safe working environment

2.4.1 Performing work on the product safely

Defective or damaged product

Never install defective or damaged products. Observe the following information to avoid injuries or damage:

- Before installation, check the product for external damage and replace a damaged product.

Use of hazardous substances, lubricants, adhesives

Observe the following information to avoid poisoning or fire hazards:

- Observe the safety data sheets of the used hazardous substances, lubricants and adhesives.
- Wear safety gloves.

Hot surfaces

The surfaces of the product can become very hot during operation. Observe the following information to avoid burns:

- Let the product and its accessories cool down before touching it.
- Do not touch any surfaces of the product during operation, except for the control elements.
- Observe the information signs and product safety labels on the product.

Falling load

Observe the following information to avoid death or severe injury due to falling loads:

- Do not stand under the load.
- Secure the area where loads can fall down.
- Use personal protective equipment (such as helmet and safety shoes).
- Use a suitable lifting tool (chain hoist, forklift) and transport protection.

Rotating parts

When working on the product, there may be a risk of exposed rotating parts and uncontrolled movement of the components. Observe the following information to avoid body parts getting crushed or pulled in:

- Switch off the product before you start working on it.
- Observe all technical data of the product.
- Do not reach into the hazard zone.
- Observe the 5 safety rules.

Sharp edges

Observe the following information to avoid cuts caused by sharp or non-deburred cutting edges:

- Wear safety gloves.

2.4.2 Performing electrical work safely

Observe the following information to perform electrical work safely:

Electrical work may only be performed by an electrically skilled person or an electronically instructed person under the supervision of an electrically skilled person.

The fact that the operation or display elements are no longer illuminated does not indicate that the product has been disconnected from the supply system and no longer carries any voltage.

Dangerous voltage

When the system is switched on, dangerous voltages are present at all power connections as well as any cables and terminals that are connected. This also applies even when the product is inhibited and the motor is in an idle state. Observe the following information to avoid the risk of electric shock:

- Do not touch any exposed live parts (e.g. male contacts, connectors, terminals).
- Secure all open live components with a touch guard.
- Ensure that the connection boxes are closed and screwed down before applying the supply voltage.
- Before applying the supply voltage, make sure that all required covers are mounted.
- Secure the output shaft against rotation when working without touch guard.

Danger due to electric arc

An electric arc may occur when plug-in connections are disconnected or connected while voltage is applied (e.g. connection between drive and control). In order to avoid damaging electrical components, observe the following information:

- Do not disconnect power connections during operation.
- Do not connect power connections during operation.
- Ensure that the product is de-energized before disconnecting and connecting the plug-in connections.

Dangerous voltage

Voltage from charged capacitors can still be present in live product components or power connections after disconnecting from the supply voltage. Observe the following information:

- Observe the following waiting periods before performing electrical work and after disconnecting the supply voltage: **5 minutes**.
- Ensure that the unit is de-energized.
- Observe the information signs and product safety labels on the product.

2.5 Installation/assembly

Ensure that the product is installed and cooled in accordance with the regulations in the documentation.

Protect the product from excessive mechanical strain. The product and its mounted components must not protrude into the path of persons or vehicles. Ensure that no components are deformed or no insulation spaces are modified, particularly during transportation. Electrical components must not be mechanically damaged or destroyed.

Observe the notes in chapter "Mechanical installation" in the documentation.

2.6 Protective separation

The product meets all requirements for protective separation of power and electronics connections in accordance with IEC 61800-5-1. The connected signal circuits must meet requirements according to SELV (**S**afety **E**xtra **L**ow **V**oltage) or PELV (**P**rotective **E**xtra **L**ow **V**oltage) to ensure protective separation. The installation must meet the requirements for protective separation.

In order to avoid exceeding the permitted contact voltages in SELV or PELV power circuits in the event of a fault, continuous equipotential bonding is required in the vicinity of these power circuits. If this is not possible, other protective measures must be taken. These protective measures are described in IEC 61800-5-1.

2.7 Electrical installation

The preventive measures and protection devices must comply with the applicable regulations (e.g. EN 60204-1 or EN 61800-5-1).

2.7.1 Stationary application

Necessary preventive measure for the product is:

Type of power transmission	Preventive measure
Inverter operation	Ground connection

2.7.2 Regenerative operation

The drive is operated as a generator due to the kinetic energy of the system/machine. Before opening the connection box, secure the output shaft against rotation.

2.8 Startup/operation

Observe the safety notes in chapters "Startup" and "Operation" in the associated product manual.

Depending on the degree of protection, products may have live, uninsulated, and sometimes moving or rotating parts as well as hot surfaces during operation.

Never plug or unplug connectors while they are energized.

When the system is switched on, dangerous voltages are present on all voltage-controlled product parts as well as any cables and terminals that are connected. This also applies even when the product is inhibited and the motor is in an idle state. Do not touch the components during operation.

Mechanical blocking or internal protective functions of the product can cause a motor standstill. Removing the cause of this problem or performing a reset can result in the machine or the system re-starting on its own. First, disconnect the product from the supply system before you start troubleshooting.

Risk of burns: The surface temperature of the product can exceed 60 °C during operation. Do not touch the product during operation. Let the product cool down before touching it.

2.9 Magnetic fields

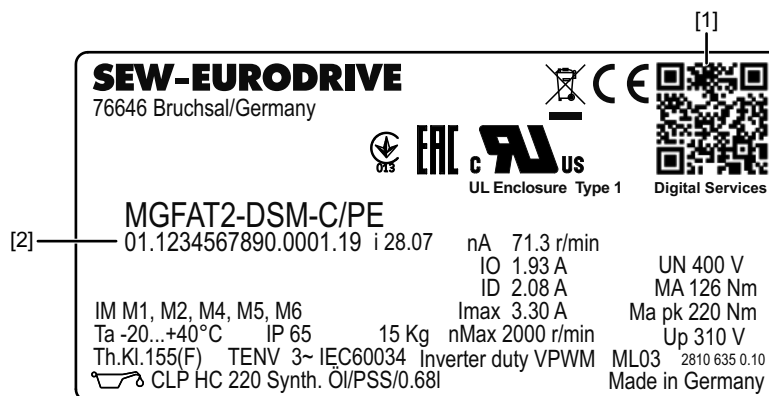
The device contains permanent magnets that create strong magnetic fields even when de-energized. These fields can lead to malfunctions in active medical implants. Persons with such implants must stay away from the device.

3 Device structure

3.1 Example nameplate and type designation of the drive unit

3.1.1 Nameplate of MOVIGEAR® classic

The following figure shows an example of a drive unit nameplate. The format of the type designation can be found in chapter "Type designation ...".



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- [1]  Product label with QR code. The QR code can be scanned. You will be redirected to the digital services of SEW-EURODRIVE. There, you have access to product-specific data, documents, and further services. In the "Documentation" > "Data and documents" area, the product manual of the device with further information is available.
- [2] Unique serial number

3.1.2 Type designation of MOVIGEAR® classic

The following table shows the type designation of the drive unit.

MG	Product family MG = MOVIGEAR®
F	Gear unit type F = Parallel-shaft helical gear unit
A	Shaft design A = Shaft-mounted gear unit (hollow shaft with key) T = TorqLOC® hollow shaft mounting system
T	Housing mounting type T = Drive with torque arm S = Housing with threads for mounting a torque arm
2	Size 1 = Torque class 100 Nm 2 = Torque class 200 Nm 4 = Torque class 400 Nm
–	
DSM	MOVIGEAR® variant DSM = Drive unit without electronics
–	
C	MOVIGEAR® version
/	
PE	MOVIGEAR® option XT = Increased torque (only in conjunction with size 4) DI = Digital interface (MOVILINK® DDI) AZ1Z = Multi-turn encoder with MOVILINK® DDI connection KH1 = Connector for standard (brake) motor KD1 = Connector for motors with digital interface (MOVILINK® DDI) PE = Pressure compensation fitting electronics PG = Integrated pressure compensation gear unit WA = Wet-area design (HCP200/HCP200F)

3.2 Markings

The following table shows an example of the markings on the nameplate.

	CE marking to state compliance with European Directives, (see EU declaration of conformity or EU declaration of incorporation).
	Products and accessories may fall within the scope of the country-specific transposition of the WEEE Directive. Dispose of the product and its accessories in accordance with the national regulations of your country.
	The cUR mark states the UL approval for this component.
	The UKCA mark indicates compliance with British directives (see UK declaration of conformity or UK declaration of incorporation).
	EAC mark (EurAsian Conformity) Confirms compliance with the technical regulations of the economic and customs union of Russia, Belarus, Kazakhstan, Armenia.
	The UA.TR mark declares conformity with the technical regulations of Ukraine.

4 Mechanical installation

4.1 Installation notes

Perform the following steps before installation:

1. **▲ WARNING!** Electric shock caused by dangerous voltages in the connection box. Severe or fatal injuries.
De-energize the device. Pay attention to the 5 safety rules in chapter "Carrying out electrical work safely".
2. Secure the output shaft of permanently excited motors against rotation. You thereby avoid an electric shock from the regenerative operation during the rotation of the shaft.
3. Equip the input and output elements (e.g. customer shaft with contact shoulder or clamping ring, shrink disk) with a touch guard. You will also avoid injuries caused by rapid movements of the output elements.
4. Before releasing shaft connections, make sure that there are no active torsional moments present (tensions within the system).
5. **▲ WARNING!** Danger due to installation of the drive unit without torque arm. Severe or fatal injuries.
Only mount the drive units to the system structure together with a torque arm. Installation without a torque arm is not permitted.

4.2 Tolerances for torque ratings

Adhere to the specified tightening torques with a tolerance of +/- 10%.

4.3 Installation requirements

Check that the following conditions have been met:

- The information on the drive unit's nameplate must match the voltage supply system.
- The drive unit is undamaged (no damage caused by shipping or storage).
- Ambient temperature according to the product manual, nameplate and lubricant table in chapter "Lubricants".
- The drive unit must not be installed in the following ambient conditions:
 - Potentially explosive atmosphere
 - Oils
 - Acids
 - Gases
 - Vapors
 - Radiation
- For special designs: The drive unit is designed in accordance with the actual ambient conditions.

- Clean the output shafts and flange surfaces thoroughly to ensure that they are free of anti-corrosion agents, contamination or similar. Use a commercially available solvent. Do not expose the sealing lips of the oil seals to the solvent – damage to the material.
- When the drive is installed in abrasive ambient conditions, protect the output end oil seals against wear.

4.4 Setting up the drive unit

4.4.1 Notes

Note the following points when you assemble the drive unit:

- Before setting up the drive unit, perform the steps according to chapter "Installation notes" (→ 15).
- Only mount the drive unit to the system structure together with a torque arm. Installation without a torque arm is not permitted.
- Thoroughly remove any anti-corrosion agent from the shaft end. Use a commercially available solvent. Do not allow the solvent to penetrate the bearings and sealing rings as this could damage the material.
- Align the motor carefully to avoid placing any unacceptable strain on the motor shafts
- Do not jolt or hammer the shaft end.
- Ensure sufficient clearance around the unit to allow for adequate cooling air supply. Warm outlet air of other units must not affect the cooling.
- Use suitable cable glands for the supply leads (use reducing adapters if necessary).
- Seal the cable bushing properly.
- Thoroughly clean the sealing surfaces of the cover before reassembly.
- If the corrosion protection coating is damaged, restore the coating.
- Check whether the degree of protection specified in the operating instructions and on the nameplate is permitted in the ambient conditions on site.

4.4.2 Changing the mounting position

Observe the following information when you operate the drive unit in a mounting position other than indicated in the order:

- Mounting position M3 is only available in combination with the option "integrated pressure compensation /PG".

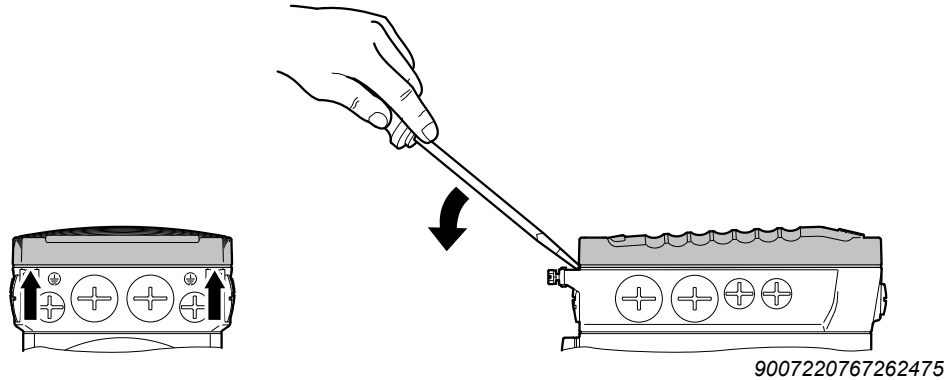
Observe the addendum "MOVIGEAR® drive unit type MGF...-C – "Wet-area design /WA" and "Integrated pressure compensation in the gear unit /PG" options".

- Adjust the position of the breather valve.
- If present, adjust the position of the pressure compensation fitting.

4.4.3 Removing the cover

Remove the cover as follows:

1. Let the device cool down sufficiently before touching it.
2. Loosen the screws of the cover.
3. Lever the cover off the connection box as shown in the following figure. In doing so, observe the intended positions on the figure.



4. **NOTICE!** Loss of the guaranteed degree of protection. Possible damage to property.
When the cover is removed from the connection box, the wiring space must be protected from humidity, dust or foreign particles.

4.4.4 Installation in damp areas or in the open

Drive units are supplied in corrosion-resistant design for use in damp areas or in the open. Repair any damage to the paint work if necessary.

4.4.5 Derating depending on the installation altitude

Refer to the product manual, chapter "Technical data" > "Power-reducing factors".

4.4.6 Painting the drive unit

If necessary, paint the drive unit as follows:

1. Perform the steps according to chapter "Installation notes".
2. Clean the surface of the drive unit.
⇒ Make sure that the surface of the drive unit is free of grease.
3. **NOTICE!** Breather valves and oil seals might be damaged when painting or re-painting. Damage to property.
Thoroughly cover the breather valves and sealing lip of the oil seals with strips.
4. Paint the drive unit.
5. Remove the designation strips.

4.4.7 Gear unit venting

Drive units with installed breather valve

Except for the mounting position M3, SEW-EURODRIVE delivers all drive units ordered for a specific mounting position with a breather valve that is activated and installed according to the specific mounting position.

Drive units with separately included breather valve

Mounting position M3

For the use of drive units in mounting position M3, you are not permitted to mount the enclosed breather valve on the drive unit.

For drive units in mounting position M3, only use the variant with integrated pressure compensation (/PG option). For more information, refer to the addendum "MOVIGEAR® drive unit type MGF...-C – "Wet-area design /WA" and "Integrated pressure compensation in the gear unit /PG" options".

The MGF..1-DSM-C drive unit can be operated in M3 mounting position without breather valve and without any restrictions. The option "/PG" is not available for this size.

Mounting positions M1, M2, M4, M5, M6

SEW-EURODRIVE delivers drive units ordered for universal operation in mounting position M1, M2, M4, M5, M6 with an enclosed breather valve.

In this case, the breather valve is delivered in the hollow shaft of the drive unit. Before startup, replace the highest oil screw plug with the provided breather valve.

Mounting position MU

Information regarding the universal mounting position MU can be found in the product manual > chapter "Mounting positions".

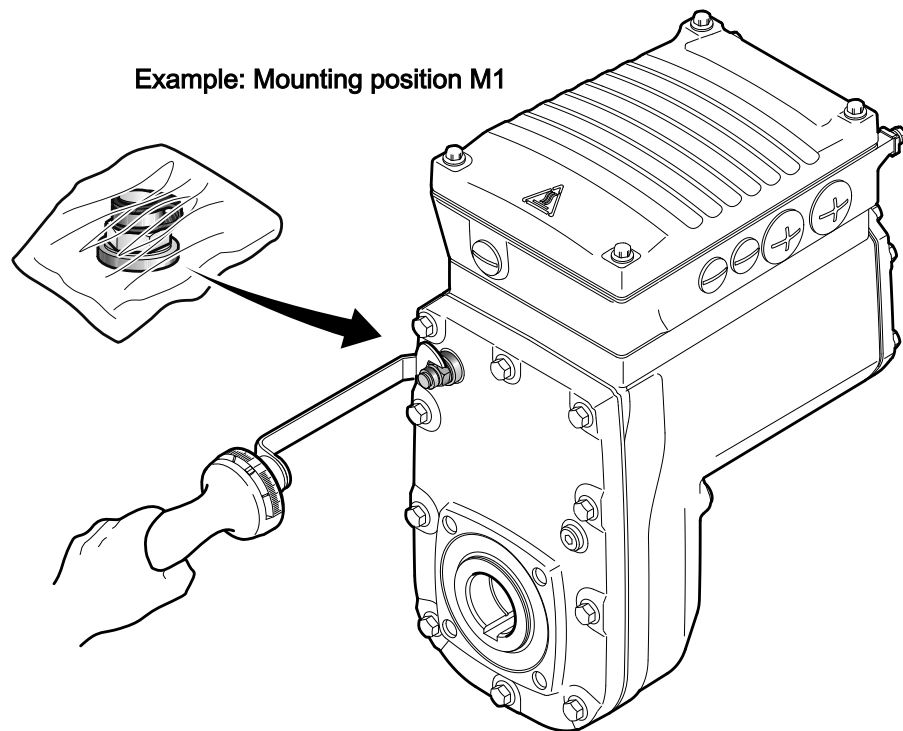
Tightening torque

Tighten the breather valve supplied by SEW-EURODRIVE to 8.0 Nm.

The position of the breather valve depends on the mounting position being used. Observe the product manual > chapter "Mounting positions".

Mounting the breather valve in mounting position M1

The following figure shows an example of how to mount the breather valve in mounting position M1:



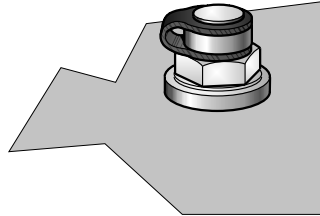
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Activating the breather valve

For designs with screwed-in breather valve, check whether the breather valve is activated. If not, you have to remove the transport protection of the breather valve before you start up the drive unit.

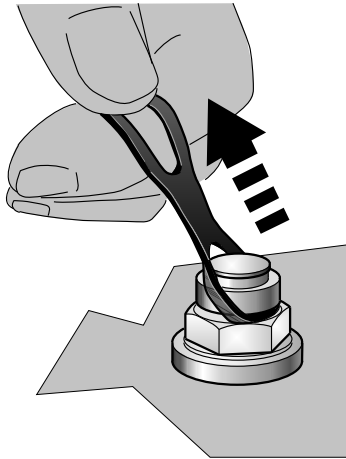
Activate the breather valve as follows:

1. Breather valve with transport protection



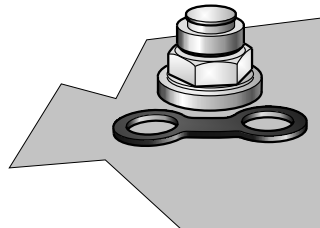
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2. Remove the transport protection.



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⇒ Breather valve is activated.



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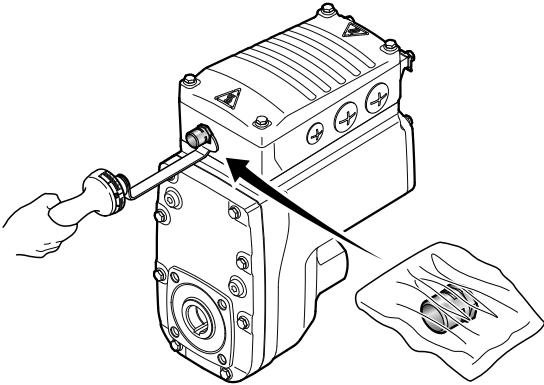
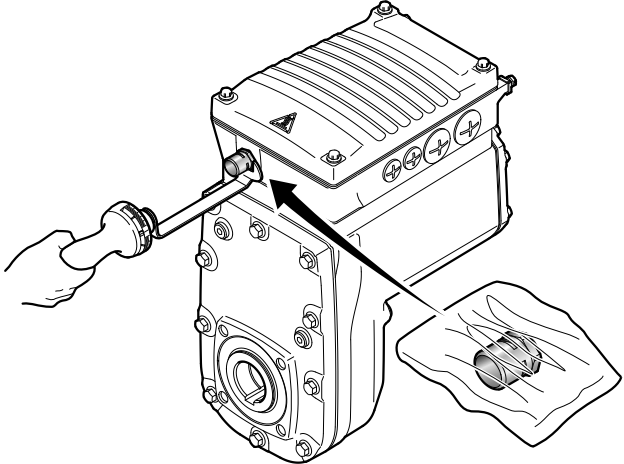
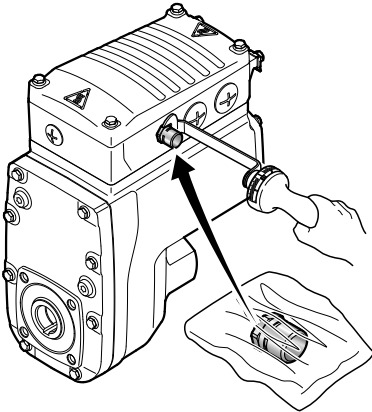
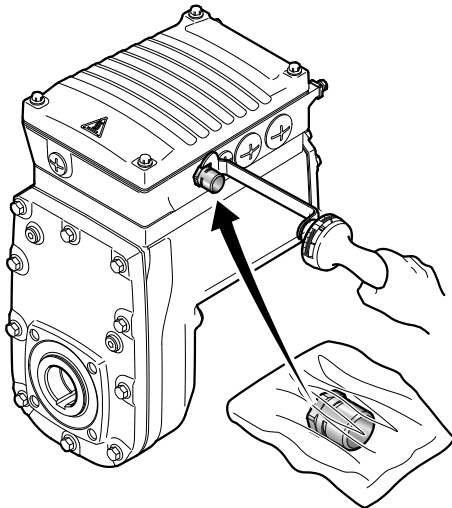
4.4.8 Pressure compensation on electronics (option /PE)

Fitting the provided pressure compensation fitting (option/PE)

For designs with an included pressure compensation fitting (option /PE), install the fitting depending on the mounting position used. The tightening torque is 4.0 Nm.

Pressure compensation fitting installation positions

The following table shows the installation location-dependent mounting positions of the pressure compensation fitting (option/PE):

Mounting position M1, M3*, M5, M6	
MGF..1-DSM-C 	MGF..2-DSM-C, MGF..4-DSM-C 
Mounting position M2, M4	
MGF..1-DSM-C 	MGF..2-DSM-C, MGF..4-DSM-C 

* Mounting position M3 is only possible with the "Integrated pressure compensation /PG" option for the designs MGF..2-DSM-C and MGF..4-DSM-C. Observe the addendum "MOVIGEAR® drive unit type MGF...-C – "Wet-area design /WA" and "Integrated pressure compensation in the gear unit /PG" options".

4.5 Shaft-mounted gear unit with keyway

INFORMATION



Concerning the customer shaft design, refer to the design notes in the product manual > chapter "Technical data".

INFORMATION

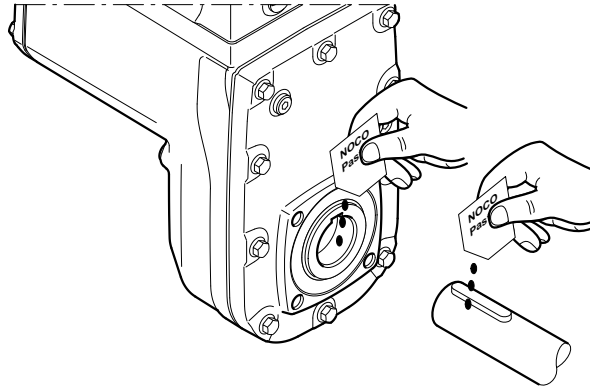


To avoid contact corrosion, SEW-EURODRIVE recommends that the customer shaft should additionally be lathed down between the 2 contact surfaces!

4.5.1 Mounting the drive unit

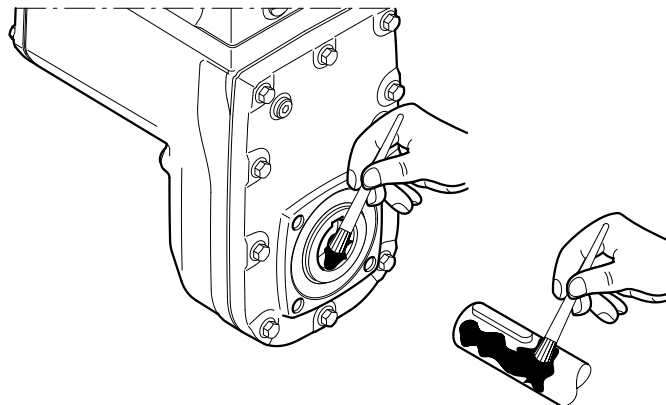
Mount the drive unit on the shaft as follows:

1. Perform the steps according to the chapter "Installation notes" (→ 15).
2. Apply NOCO-Paste.



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3. Spread NOCO-Paste thoroughly.

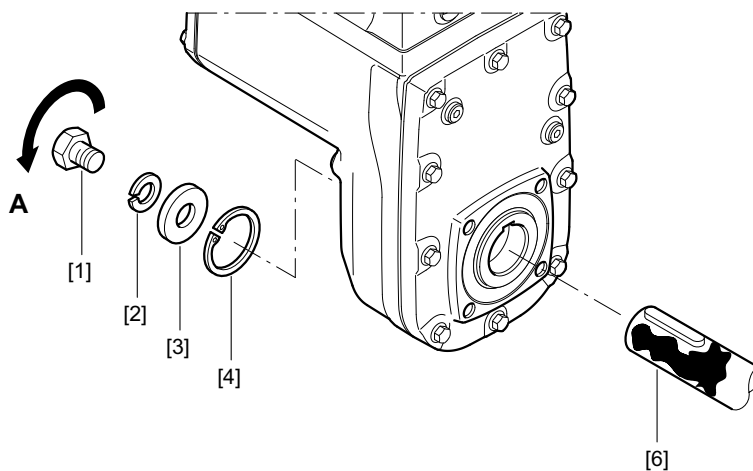


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4. Install the shaft and secure it in an axial manner (installation is facilitated by using a mounting device). Refer to the following figure for correct installation.

5. The 3 installation types are described below:

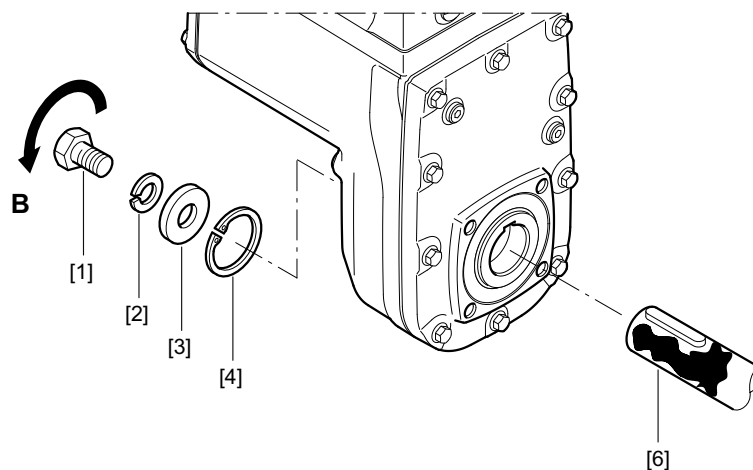
⇒ 3A: Standard scope of delivery



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- [1] Short retaining screw (standard scope of delivery)
- [2] Lock washer
- [3] Washer
- [4] Retaining ring
- [6] Customer shaft

⇒ 3B: Assembly/disassembly kit for customer shaft **with** contact shoulder. Observe the information in the product manual > chapter "Design notes for gear units with hollow shaft and key".



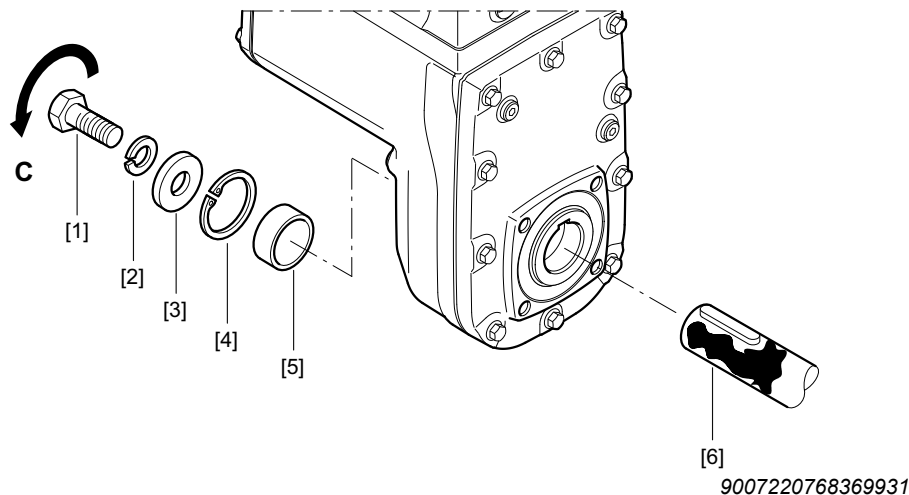
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- [1] Retaining screw
- [2] Lock washer
- [3] Washer
- [4] Retaining ring
- [6] Customer shaft with contact shoulder

⇒ 3C: Assembly/disassembly kit for customer shaft **without** contact shoulder. Observe the information in the product manual > chapter "Design notes for gear units with hollow shaft and key".

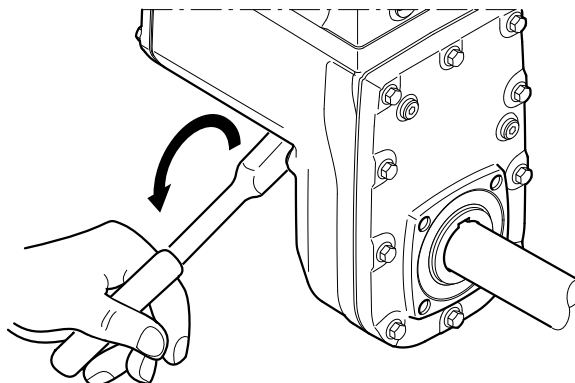
4 Mechanical installation

Shaft-mounted gear unit with keyway



- [1] Retaining screw
- [2] Lock washer
- [3] Washer
- [4] Retaining ring
- [5] Spacer tube
- [6] Customer shaft without contact shoulder

6. Tighten the retaining screw with the specified torque (see following chapter "Tightening torques for retaining screws").



4.5.2 Retaining screw tightening torques

Tighten the retaining screws with the following tightening torques:

Drive	Screw	Tightening torque
MGFA.1-.-C (D ^{H7} 20 mm)	M6	8 Nm
MGFA.1-.-C (D ^{H7} 25 mm)	M10	20 Nm
MGFA.2-.-C	M10	20 Nm
MGFA.4-.-C	M16	40 Nm

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4.5.3 Disassembly notes

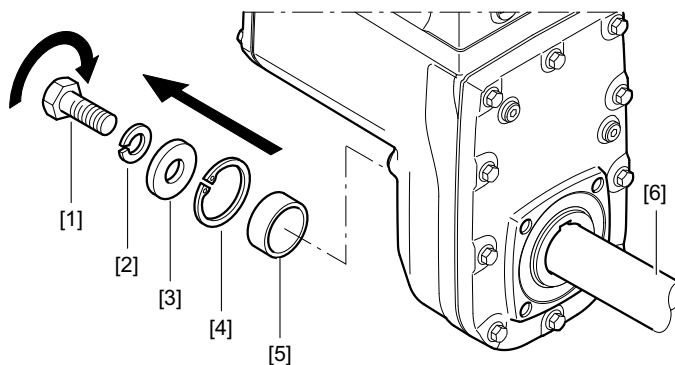
INFORMATION



Information regarding the SEW-EURODRIVE assembly/disassembly kit can be found in the product manual > chapter "Design notes for gear units with hollow shaft and key".

The following description only applies when the drive is assembled using the SEW-EURODRIVE assembly/disassembly kit (see previous description, points 2B or 2C).

1. Perform the steps according to chapter "Installation notes" (→ 15).
2. **▲ WARNING!** Risk of burns due to hot surfaces. Severe injury.
Let the devices cool down sufficiently before touching them.
3. Loosen the retaining screw [1].
4. Remove parts [2] to [4] and, if present, the spacer tube [5].

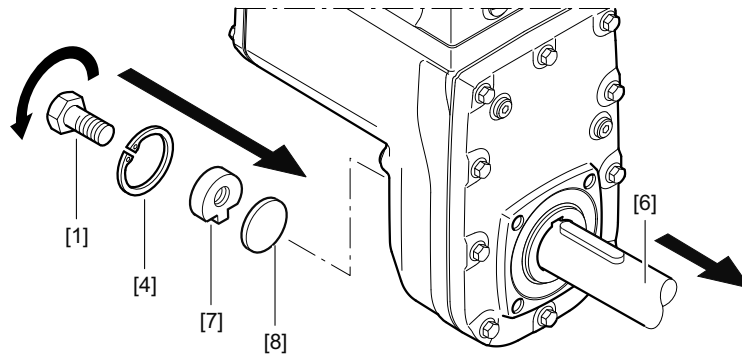


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- [1] Retaining screw
- [2] Lock washer
- [3] Washer
- [4] Retaining ring
- [5] Spacer tube
- [6] Customer shaft

5. Insert the forcing washer [8] and the fixed nut [7] from the SEW-EURODRIVE assembly/disassembly kit between the customer shaft [6] and the retaining ring [4].

6. Re-insert the retaining ring [4].
7. Screw in the retaining screw [1] again. You can now force the drive from the shaft by tightening the screw.



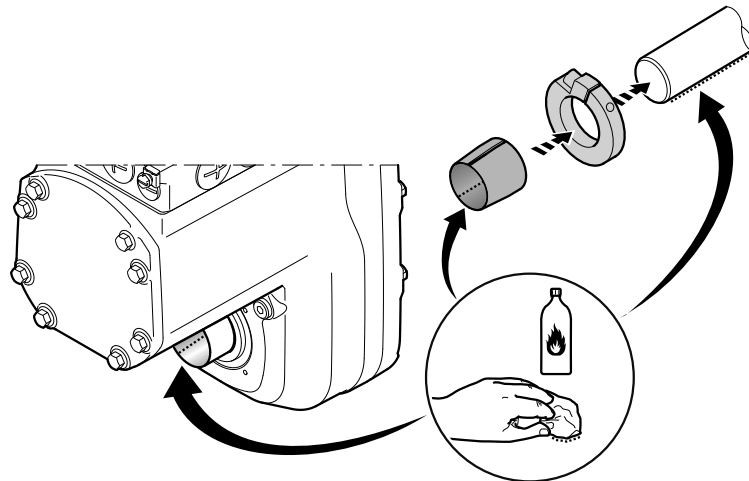
9007220768469259

- | | |
|-----|-----------------|
| [1] | Retaining screw |
| [4] | Retaining ring |
| [6] | Customer shaft |
| [7] | Fixed nut |
| [8] | Forcing washer |

4.6 Shaft-mounted gear unit with TorqLOC® (customer shaft without contact shoulder)

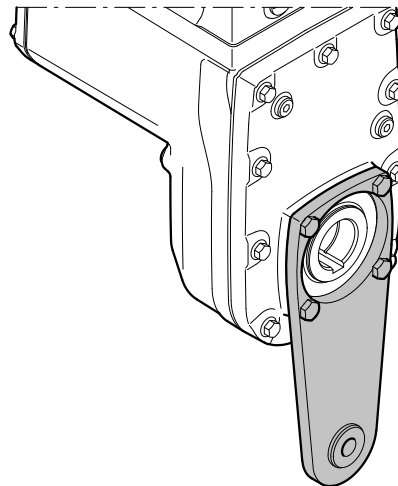
Mount the drive unit on the shaft as follows:

1. Perform the steps according to the chapter "Installation notes" (→ 15).
2. Clean the customer shaft and the inside of the hollow shaft. Make sure that all grease and oil residues are removed.
3. Mount the stop ring and the bushing on the customer shaft.



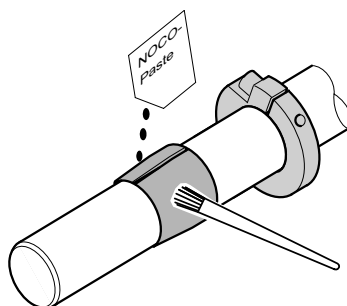
9007220783051915

4. **⚠ WARNING!** Danger due to lack of fastening of the torque arm. Risk of death or severe injuries.
Attach the torque arm to the drive unit. Observe chapter "Torque arm" (→ 43).
Installation of the drive unit without a torque arm is not permitted.



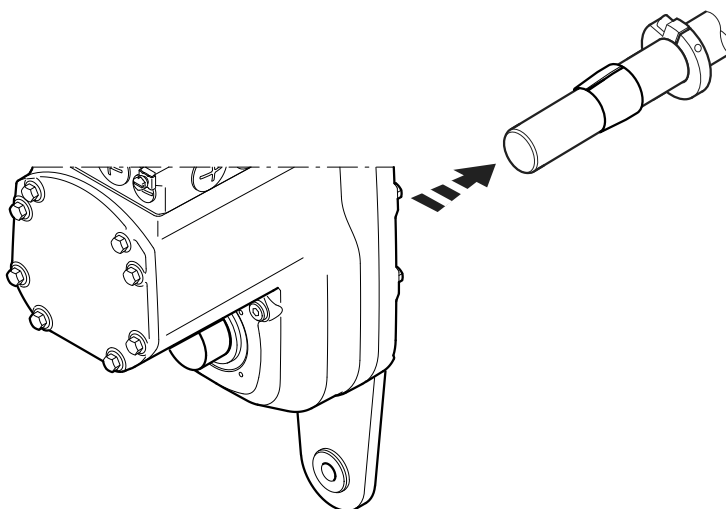
9007220783641867

5. Apply NOCO-Paste onto the bushing and spread it carefully.



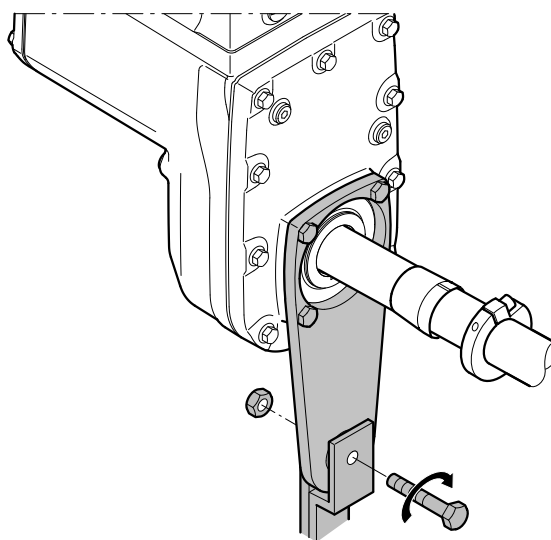
9007220783646731

6. Slide the gear unit onto the customer shaft.



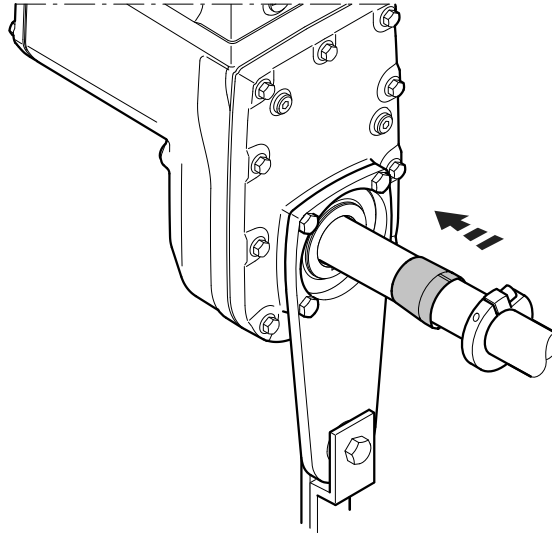
9007220783649163

7. Mount the torque arm onto the system structure/holding fixture (do not tighten the screws).



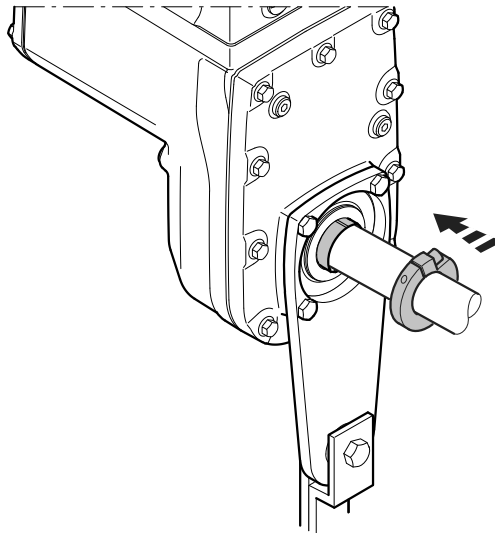
9007220783651595

8. Slide the bushing into the gear unit as far as its stop.



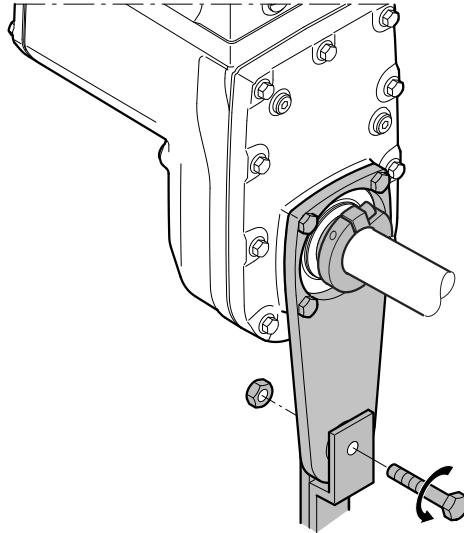
9007220783654027

9. Slide the stop ring onto the bushing. Mark the position of the stop ring.



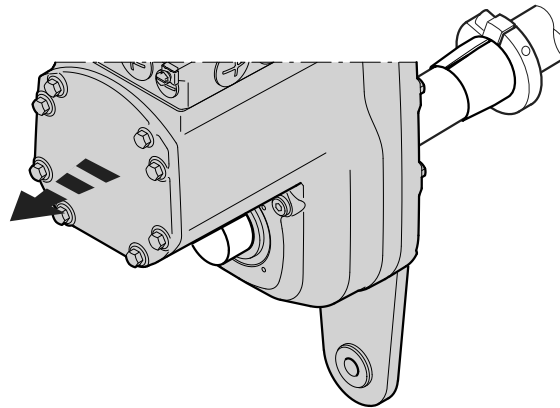
9007220783656459

10. Remove the torque arm from the holding fixture/system structure.



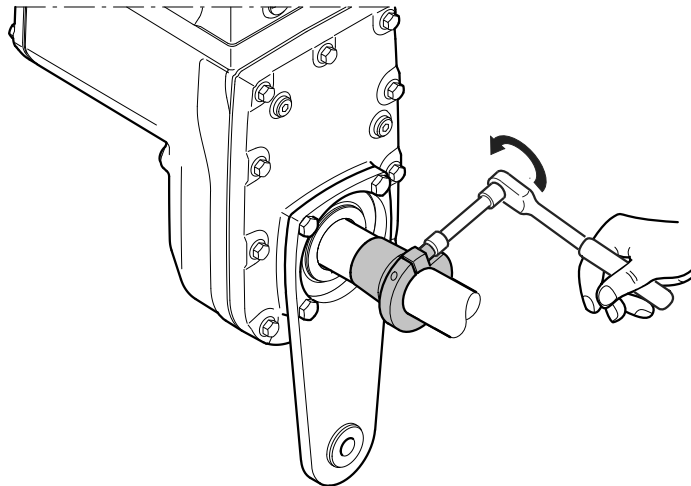
9007220783658891

11. Remove the gear unit from the customer shaft until the stop ring is accessible for installation.



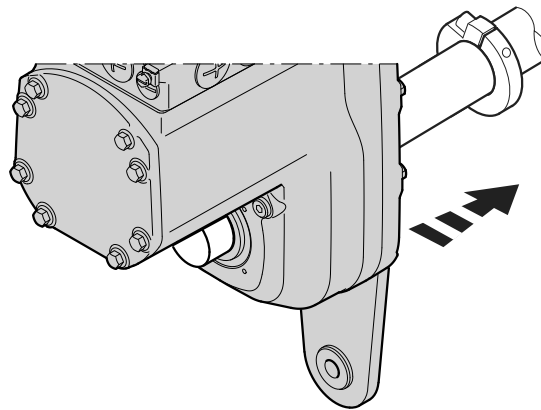
9007220783661323

12. Make sure that the position of the stop ring has not changed (note the marking).
13. Tighten the stop ring with the following torque:
- ⇒ Standard design: 18 Nm
 - ⇒ Stainless steel: 7.5 Nm



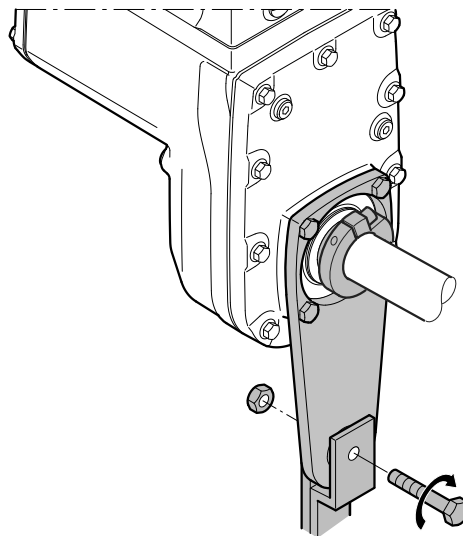
18014420037795339

14. Slide the bushing and the gear unit onto the customer shaft up to the fixed stop ring.



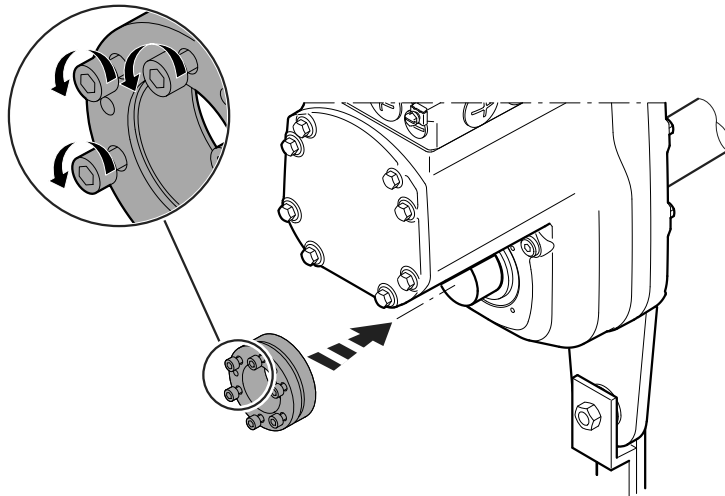
9007220783619979

15. Mount the torque arm onto the system structure/holding fixture again (do not tighten the screws).



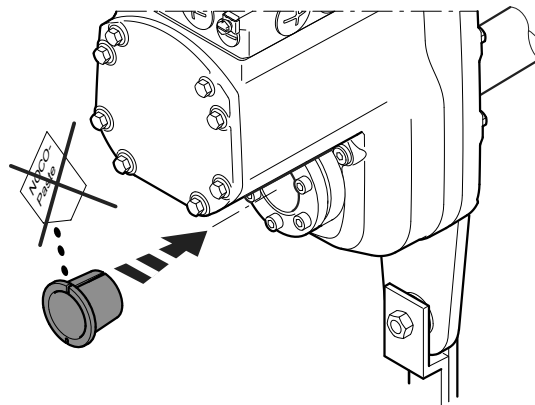
9007220783622411

16. Make sure that all screws are loosened and slide the shrink disk onto the hollow shaft.



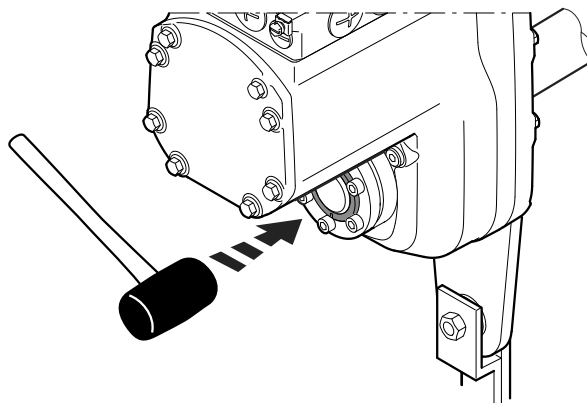
18014420038365835

17. Slide the counter bushing onto the customer shaft and into the hollow shaft.



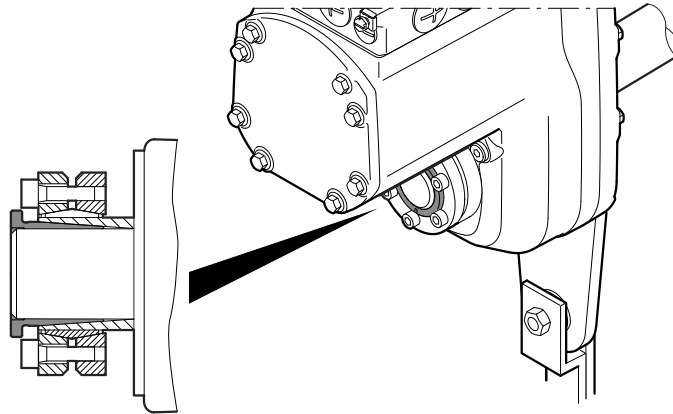
27021619293109259

18. In the case of a gear unit **with shaft shoulder**, mount the shrink disk at the shaft shoulder up to the stop. In the case of a gear unit **without shaft shoulder**, mount the shrink disk at a distance of 6.5 mm to 7.5 mm from the gear unit housing.
19. Lightly hammer on the flange of the counter bushing to ensure that the bushing is firmly seated in the hollow shaft.



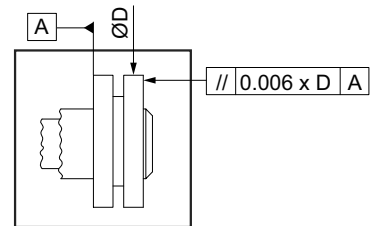
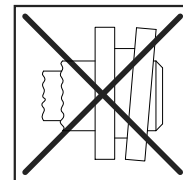
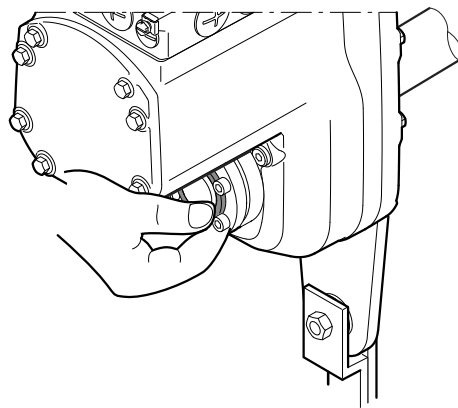
18014420038370699

20. Make sure that the customer shaft is seated in the counter bushing.



18014420038373131

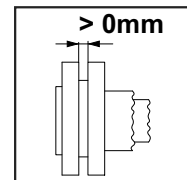
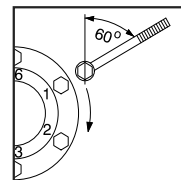
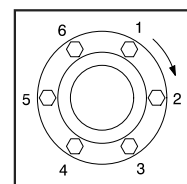
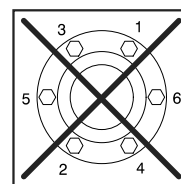
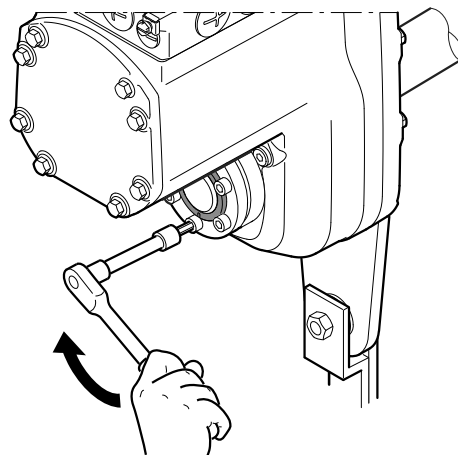
21. Tighten the screws of the shrink disk only hand-tight and make sure that the outer rings of the shrink disk are plane-parallel.



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22. Tighten the locking screws by working round several times from one screw to the next (not in diametrically opposite sequence):

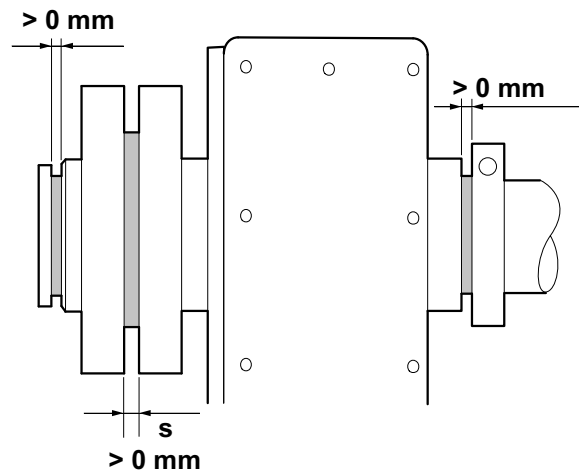
⇒ The exact values for the tightening torques are located on the shrink disk.



18014420038377995

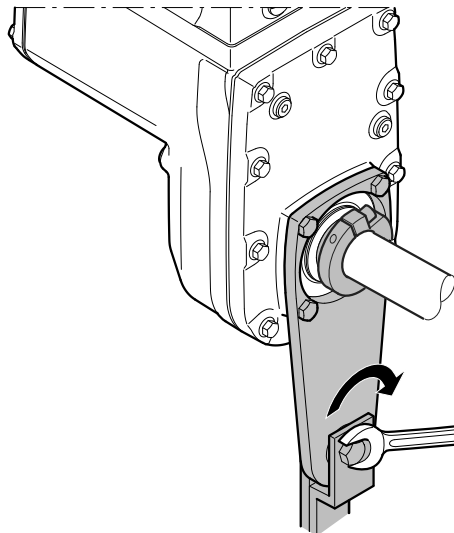
23. After installation, make sure the remaining gap s between the outer rings of the shrink disks is $> 0 \text{ mm}$.

⇒ The remaining gap between the counter bushing and hollow shaft end, as well as the bushing and stop ring must be $> 0 \text{ mm}$.



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24. Tighten the torque arm sufficiently. Observe chapter "Torque arm" (→ 43).

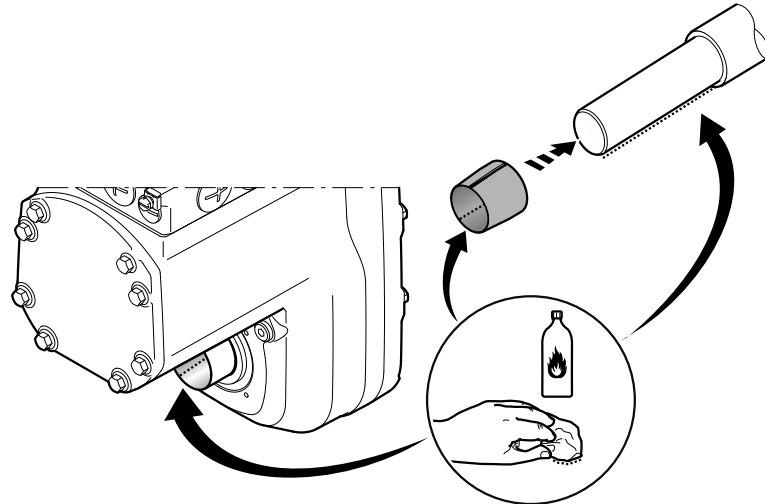


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4.7 Shaft-mounted gear unit with TorqLOC® (customer shaft with contact shoulder)

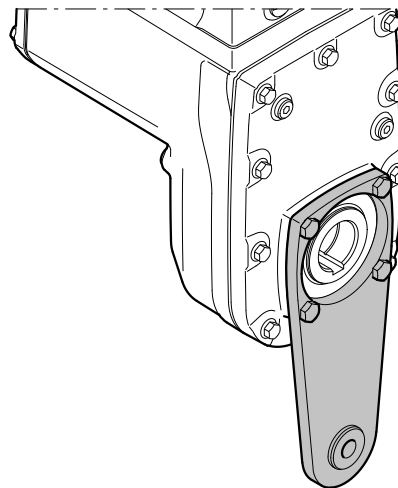
Mount the drive unit on the shaft as follows:

1. Perform the steps according to the chapter "Installation notes" (→ 15).
2. Clean the customer shaft and the inside of the hollow shaft. Make sure that all grease and oil residues are removed.



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3. **▲ WARNING!** Danger due to lack of fastening of the torque arm. Risk of death or severe injuries.
Attach the torque arm to the drive unit. Observe chapter "Torque arm" (→ 43).
Installation of the drive unit without a torque arm is not permitted.

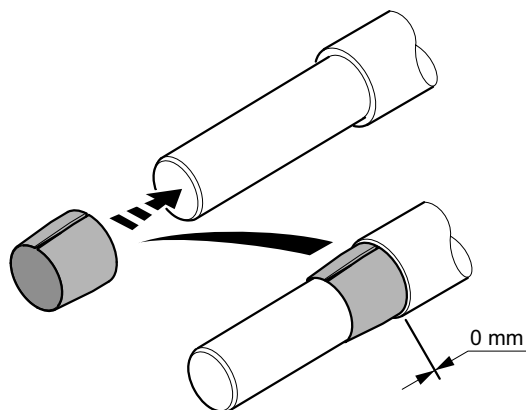


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4 Mechanical installation

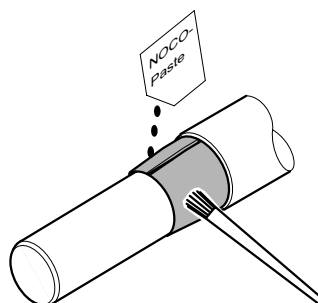
Shaft-mounted gear unit with TorqLOC® (customer shaft with contact shoulder)

4. Mount the bushing on the customer shaft.



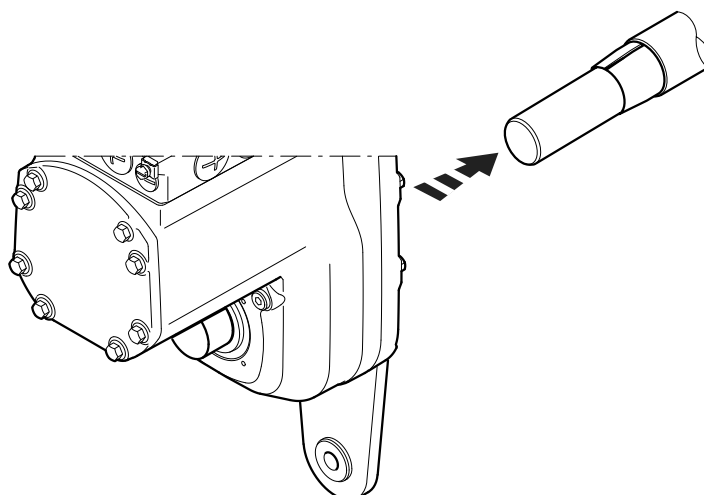
21528993931

5. Apply NOCO-Paste onto the bushing and spread it carefully.



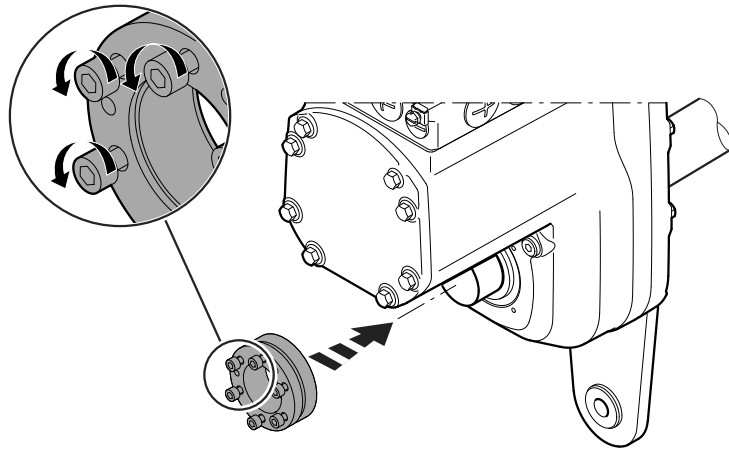
9007220783737355

6. Slide the gear unit onto the customer shaft.



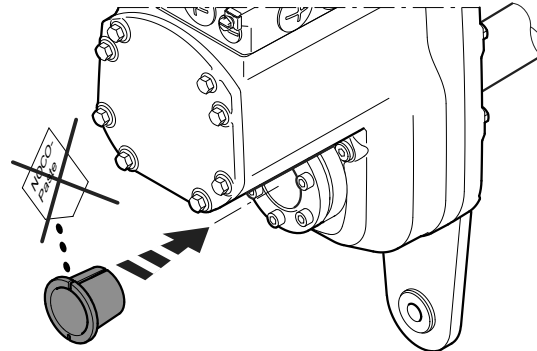
9007220783739787

7. Make sure that all screws are loosened and slide the shrink disk onto the hollow shaft.



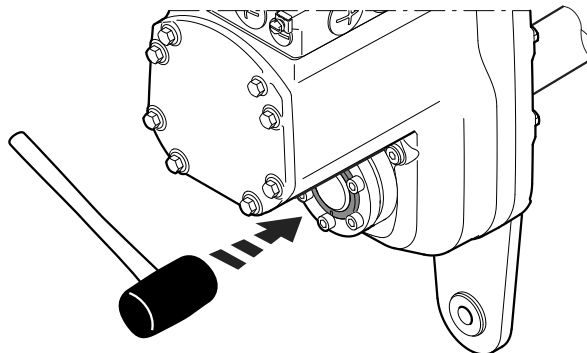
18014420038483211

8. Slide the counter bushing onto the customer shaft and into the hollow shaft.



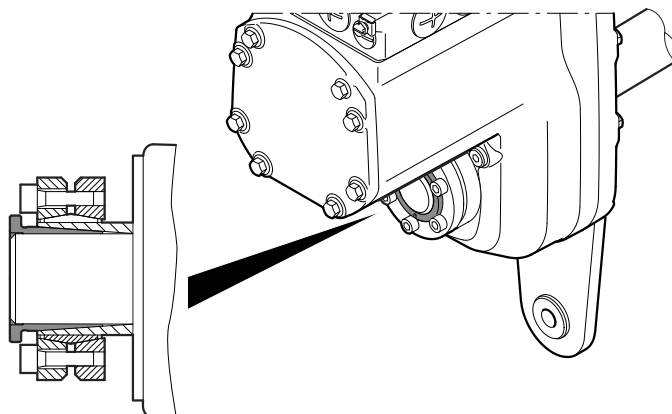
27021619293226635

9. In the case of a gear unit **with shaft shoulder**, mount the shrink disk at the shaft shoulder up to the stop. In the case of a gear unit **without shaft shoulder**, mount the shrink disk at a distance of 6.5 mm to 7.5 mm from the gear unit housing.
10. Lightly hammer on the flange of the counter bushing to ensure that the bushing is firmly seated in the hollow shaft.



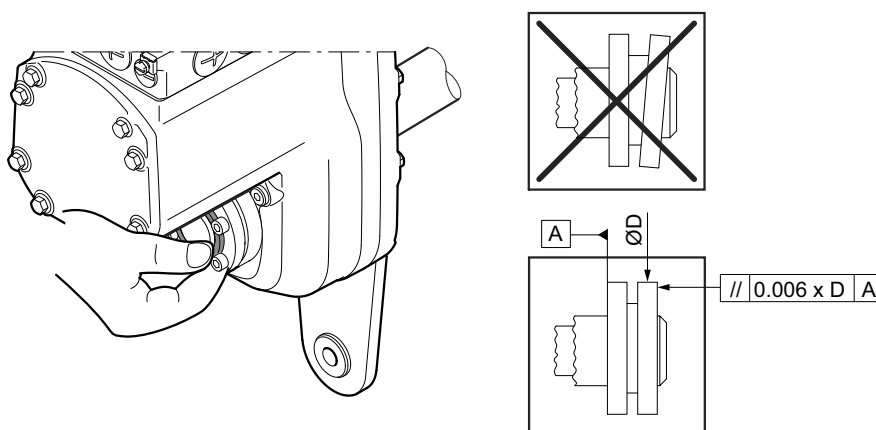
18014420038488075

11. Make sure that the customer shaft is seated in the counter bushing.



18014420038490507

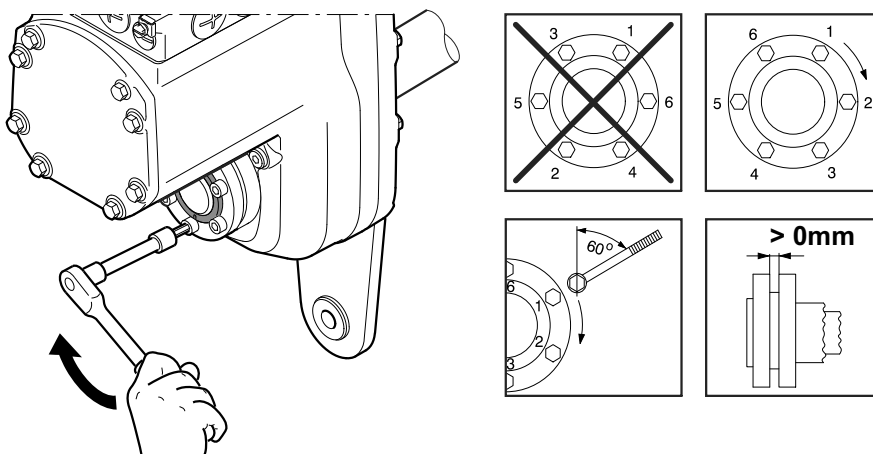
12. Tighten the screws of the shrink disk only hand-tight and make sure that the outer rings of the shrink disk are plane-parallel.



18014420038463755

13. Tighten the locking screws by working round several times from one screw to the next (not in diametrically opposite sequence).

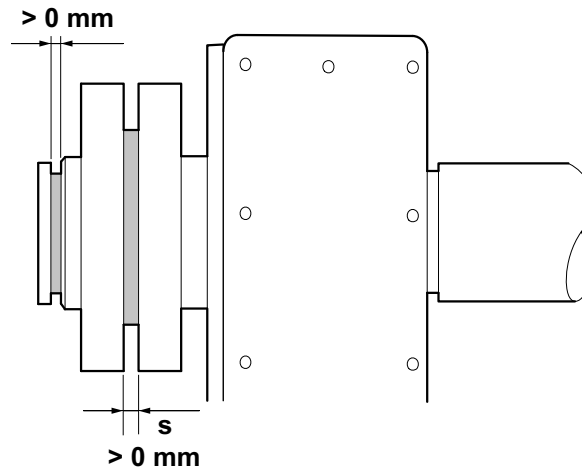
⇒ The exact values for the tightening torques are located on the shrink disk.



18014420038466187

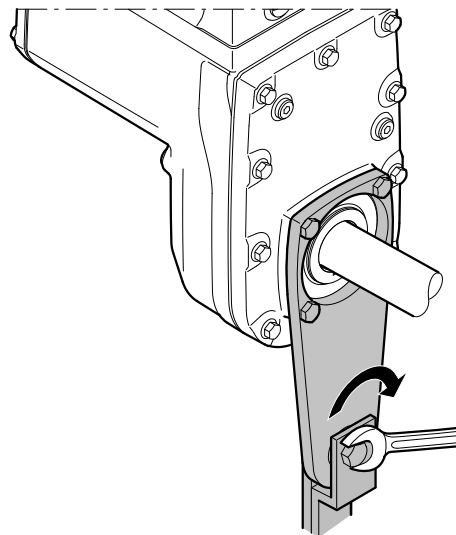
14. After installation, make sure the remaining gap s between the outer rings of the shrink disks is > 0 mm.

15. The remaining gap between the counter bushing and hollow shaft end must be $> 0 \text{ mm}$.



21528986635

16. Mount the torque arm and tighten it firmly. Observe chapter "Torque arm" ($\rightarrow$ 43).



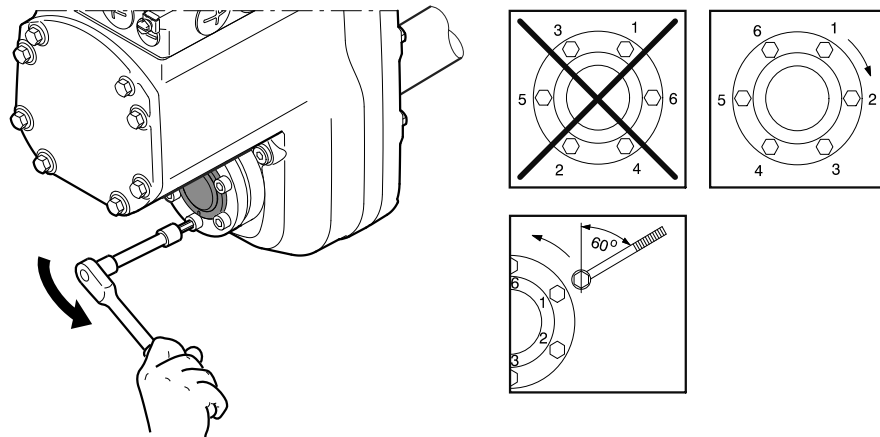
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4.8 Shaft-mounted gear unit with TorqLOC® – disassembly, cleaning, lubrication

4.8.1 Removing the drive unit

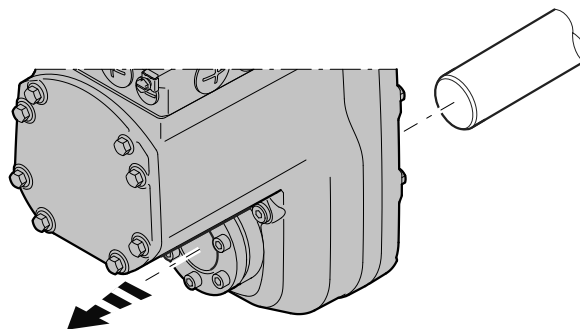
Remove the drive unit from the shaft as follows:

1. Perform the steps according to chapter "Installation notes" (→ 15).
2. **▲ WARNING!** Risk of burns due to hot surfaces. Severe injuries.
Allow the devices to cool down before touching them.
3. Loosen the locking screws one after the other by a quarter revolution each to avoid tilting the outer rings.



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4. Unscrew the locking screws evenly one after the other. Do not remove the locking screws completely.
5. Remove the conical steel bushing. If necessary, use the outer rings as pullers as follows:
 - ⇒ Remove all the locking screws.
 - ⇒ Screw the respective number of screws in the tapped holes of the shrink disk.
 - ⇒ Support the inner ring against the gear unit housing.
 - ⇒ Pull off the conical steel bushing by tightening the screws.
6. Remove the gear unit from the shaft.



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7. Remove the shrink disk from the hub.

4.8.2 Cleaning and lubrication

There is no need to dismantle removed shrink discs before they are reinstalled.

1. Clean and lubricate the shrink disk if it is dirty.
2. Lubricate the tapered surfaces with one of the following solid lubricants:

Lubricant (Mo S2)	Sold as
Molykote 321 (lube coat)	Spray
Molykote spray (powder spray)	Spray
Molykote G Rapid	Spray or compound
Aemasol MO 19P	Spray or compound
Aemasol DIO-sétral 57 N (lube coat)	Spray

3. Grease the locking screws with a multipurpose grease such as Molykote BR 2 or similar.

4.9 Installing the protective cover

4.9.1 Installing the fixed safety cover

NOTICE

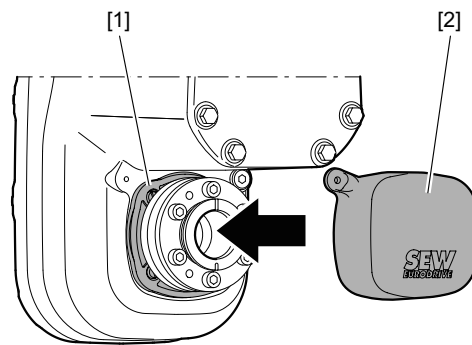
Damage to the drive unit due to improper use of the threads.

Damage to property.

- Consult SEW-EURODRIVE before using threads for other applications.

Install the safety cover as follows:

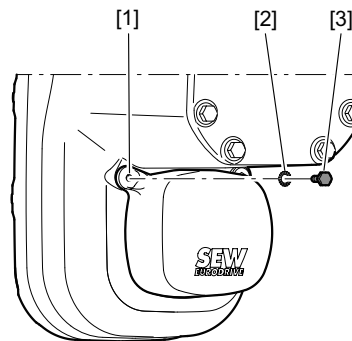
1. Perform the steps according to chapter "Installation notes" (→ 15).
2. Fit the safety cover [2] onto the adapter plate [1].



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3. Fasten the safety cover in the bore provided for this purpose using the enclosed screw and serrated lock washer.

⇒ The permitted tightening torque for the M4x10 screw is 3.3 Nm.



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- [1] Bore
- [2] Serrated lock washer
- [3] M4x10 screw

4.9.2 Installation without cover

In certain individual cases (e.g. through-shaft), you cannot install the safety cover. In these cases, the safety cover is not necessary if the system or unit manufacturer provides corresponding components to guarantee for the compliance with the required degree of protection.

If this results in additional maintenance, you have to describe this in the operating instructions for the system or component.

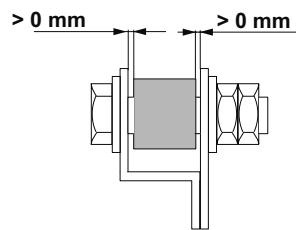
4.10 Torque arm

Note the following points when you mount the torque arm:

- Do not place torque arms under strain during installation.
- Always use bolts of quality 8.8 to fasten torque arms.
- The required screws are optionally available as an accessory bag.
- Store the socket contact de-energized on both sides.

Mount the torque arm as follows:

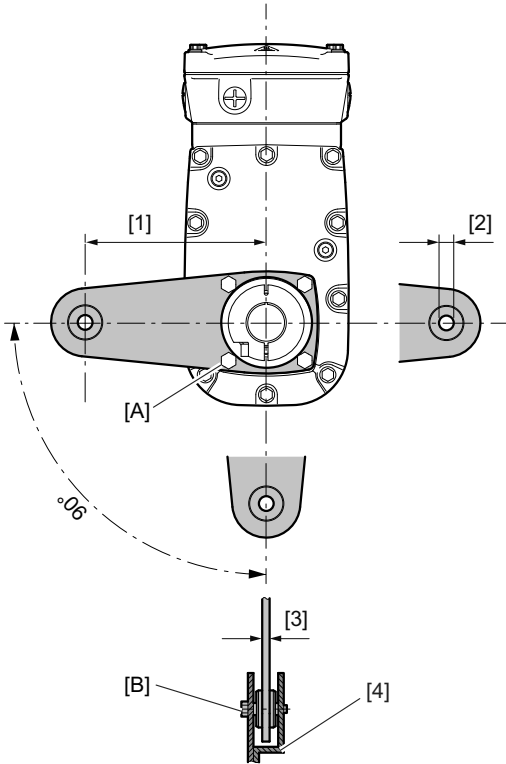
1. Perform the steps according to chapter "Installation notes".
2. Mount the torque arm with a socket contact as depicted in the following image:



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4.10.1 Installation options

The following figure shows the possible mounting positions of the torque arm:



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- [1] Torque arm axis length
- [2] Bore diameter
- [3] Torque arm thickness
- [4] Bush with bearings on both ends

The following table shows the required tightening torques:

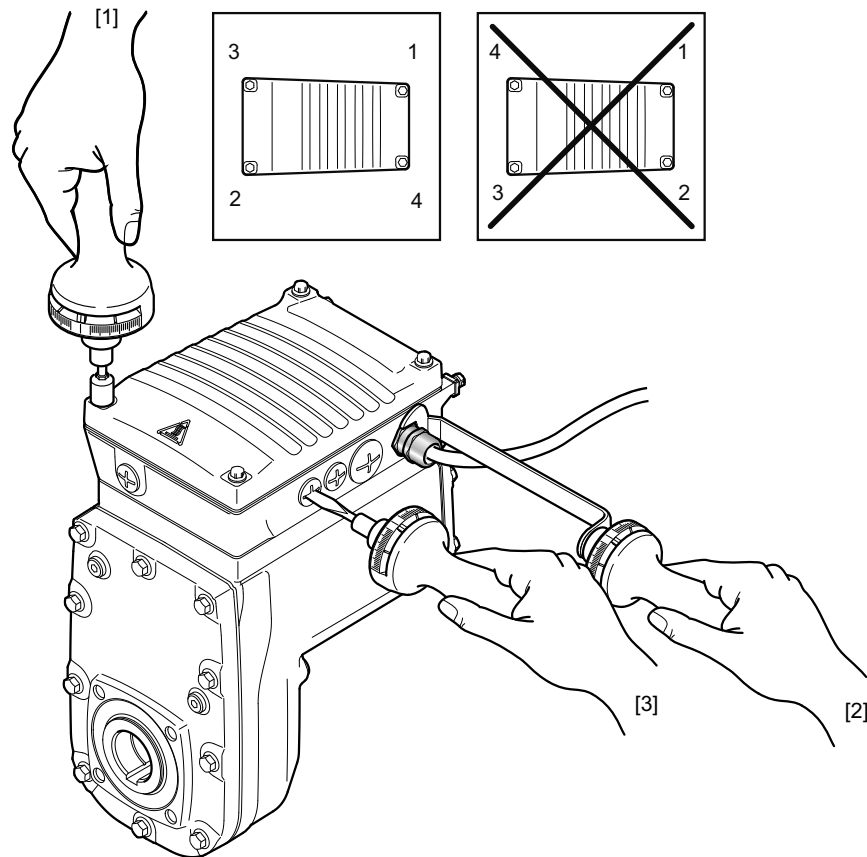
Drive	Torque arm				Tightening torque			
	Part number	[1] Axis length	[3] Thick-ness	[2] Bore Ø	Screw [A]		Screw [B]	
MGF.T1-..-C	23010495 ¹⁾	110 mm	5 mm	11 mm	M8	27 Nm	M10	20 Nm
MGF.T1-..-C	23010371	120 mm	5 mm	11 mm	M8	27 Nm	M10	20 Nm
MGF.T2-..-C	24850497	130 mm	6 mm	13 mm	M10	48 Nm	M12	20 Nm
MGF.T2-..-C	24850357	160 mm	10 mm	13 mm	M10	48 Nm	M12	20 Nm
MGF.T4-..-C	24849405	160 mm	10 mm	13 mm	M12	70 Nm	M12	20 Nm

1) This torque arm is not permitted for wet-area designs.

4.11 Tightening torques

4.11.1 Example of MOVIGEAR® classic

The following figure shows an example of the installation of the threaded blanking plugs, cable glands, and electronics cover. The number and position of threaded blanking plugs and cable bushings depend on the ordered variant.

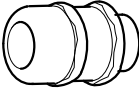


38411571979

- [1] Tighten the screws step by step in a diametrically opposite sequence with a tightening torque of 6.0 Nm.
- [2] Tighten the cable gland with a tightening torque according to chapter "Tightening torques for cable glands".
- [3] Tighten the threaded plastic blanking plugs supplied by SEW-EURODRIVE with a tightening torque of 2.5 Nm.

4.11.2 Tightening torques for cable glands

Tighten the EMC cable glands **optionally** included in the delivery by SEW-EURODRIVE with the following torques:

Screw fitting type	Image	Content	Size	Tightening torque		Outer diameter of cable	Tightening force ¹⁾	Part number
				Threaded jacket	Cable clamping			
EMC-compliant cable gland (brass, nickel-plated)		10 pieces	M16 x 1.5	4.0 Nm	3.5 Nm	> 4 to 8 mm	75 N	18204783
		10 pieces	M25 x 1.5	7.0 Nm	5.0 Nm	> 8 to 11 mm	120 N	18204805
						> 11 to 16 mm	130 N	
EMC-compliant cable gland (stainless steel)		10 pieces	M16 x 1.5	4.0 Nm	3.5 Nm	> 4 to 8 mm	75 N	18216366
		10 pieces	M25 x 1.5	7.0 Nm	5.0 Nm	> 8 to 11 mm	120 N	18216382
						> 11 to 16 mm	130 N	

1) The cable fastening in the cable gland must achieve the specified cable pull-out force from the cable gland. This is usually achieved with the specified tightening torque of the cable clamping.

5 Electrical installation

5.1 Installation instructions

5.1.1 Thermal motor protection

INFORMATION



Incorrect installation of the PK temperature sensor can cause electromagnetic interference of the drive unit.

- Install the connecting lead of the PK (Pt1000) temperature sensor separately from other power cables maintaining a distance of at least 200 mm.
- Laying together is only permitted if either the cable of the PK temperature sensor (Pt1000) or the power cable is shielded.

5.1.2 Permitted cable cross section of terminals

Terminals X2 for motor connection

Observe the permitted cable cross section for installation:

Terminals X2 for motor connection	
Connection cross section	0.5 mm ² – 6.0 mm ²
Stripping length	11 mm – 12 mm

Terminals X2_A for motor connection

Observe the permitted cable cross sections for installation:

Terminals X2_A for motor connection	Without conductor end sleeve	With conductor end sleeves (with or without plastic collar)
Connection cross section	0.08 mm ² – 4 mm ²	0.25 mm ² – 2.5 mm ²
Stripping length	8 mm – 9 mm	

Terminals X4 for temperature sensor

Observe the permitted cable cross sections for installation:

Terminals X4 for temper- ature sensor	Without con- ductor end sleeves	With conductor end sleeves (without plastic collar)	With conductor end sleeves (with plastic col- lar)
Connection cross section	0.2 mm ² – 1.5 mm ²	0.25 mm ² – 1.5 mm ²	0.25 mm ² – 0.75 mm ²
Stripping length	8 mm		

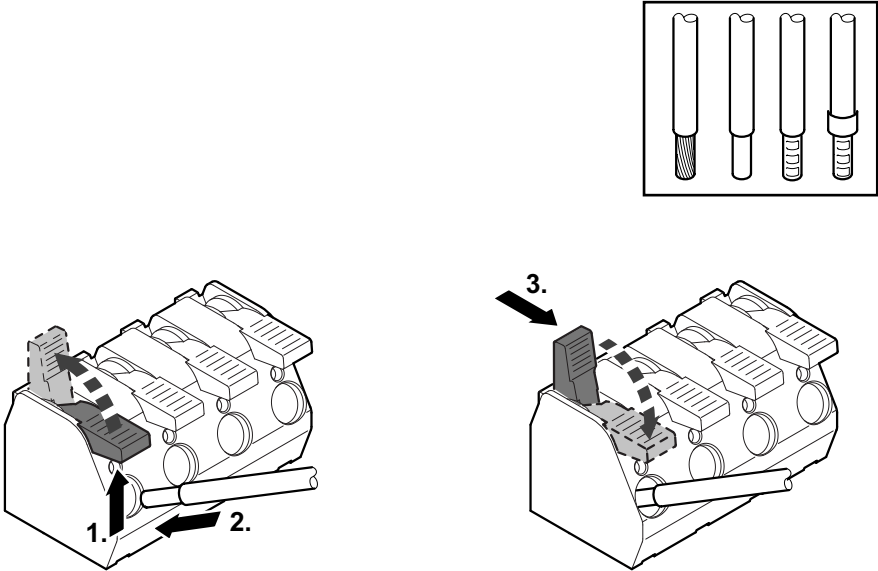
Terminals X10_A for temperature sensor

Observe the permitted cable cross sections for installation:

Terminals X10_A for temperature sensor	Without conductor end sleeves	With conductor end sleeves (without plastic collar)	With conductor end sleeves (with plastic collar)
Connection cross section	0.2 mm ² – 1.5 mm ²	0.25 mm ² – 1.5 mm ²	0.25 mm ² – 0.75 mm ²
Stripping length	8 mm		

5.1.3 Activating terminals X2 for motor connection

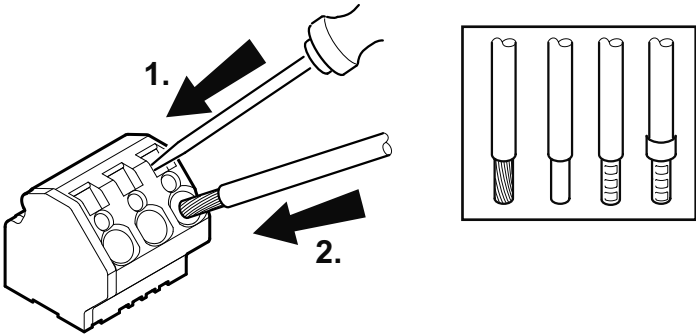
Adhere to the following sequence when activating the terminals X2 for motor connection:



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5.1.4 Activating terminals X2_A for the motor connection

Adhere to the following sequence when activating the terminals X2_A for motor connection:



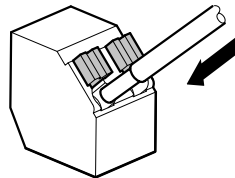
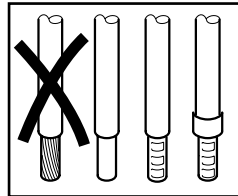
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5.1.5 Activating terminals X4 for temperature sensor

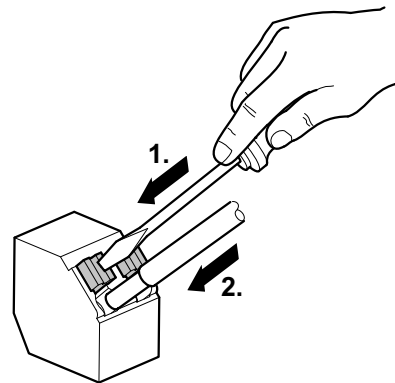
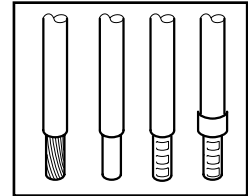
Adhere to the following sequence when activating the terminals X4 for the temperature sensor:

Connect conductor,
without pressing the activation button.



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Connect conductor,
after pressing the activation button.



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The following conductors can be installed directly (without tool) up to two cross-section sizes below the nominal cross section:

- Single-wire conductors
- Flexible conductors with conductor end sleeves

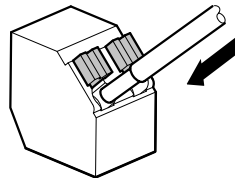
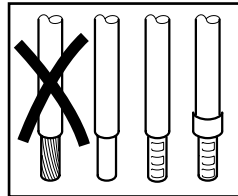
When connecting the following conductors, you must press the actuation button on top to open the clamping spring:

- Untreated, flexible conductors
- Conductors with small cross sections that cannot be plugged in directly.

5.1.6 Activating terminals X10_A for the temperature sensor

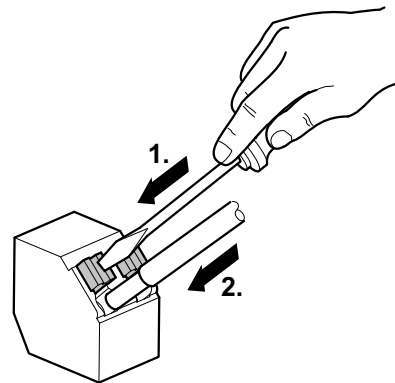
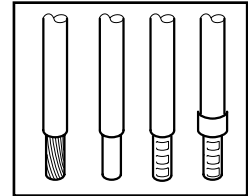
Adhere to the following sequence when activating the terminals X10_A for the temperature sensor:

Connect conductor,
without pressing the activation button.



22904860811

Connect conductor,
after pressing the activation button.



22904932619

The following conductors can be installed directly (without tool) up to two cross-section sizes below the nominal cross section:

- Single-wire conductors
- Flexible conductors with conductor end sleeves

When connecting the following conductors, you must press the actuation button on top to open the clamping spring:

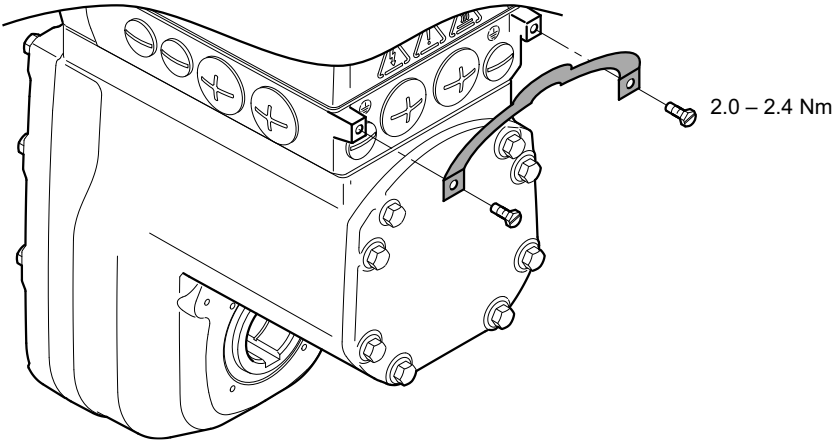
- Untreated, flexible conductors
- Conductors with small cross sections that cannot be plugged in directly.

5.1.7 Notes on PE connection

PE connection to MOVIGEAR® with lifting eye

The handle is only used to transport the unit. The handle is **not** required for operation.

1. Remove the lifting eye. Store the lifting eye for future service work.



2. **⚠ WARNING!** Electric shock due to faulty PE connection. Severe or fatal injuries. Install the PE connection cable to the connection box as follows (screw tightening torque: 2.0 – 2.4 Nm).

Non-permitted mounting	Recommendation: Mounting with forked cable lug ¹⁾ Permitted for all cross sections	Mounting with solid connecting wire or litz wire with conductor end sleeve ¹⁾ Permitted for cross sections up to maximum 2.5 mm ²

1) Use the specified material for the assembly that is included in the accessory bag.

- [1] Install the PE connection cable between both U-shaped mounting panels.
[2] Incorrect installation sequence
[3] Forked cable lug suitable for M5 PE screws

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5.2 Terminal assignment MOVIGEAR® classic

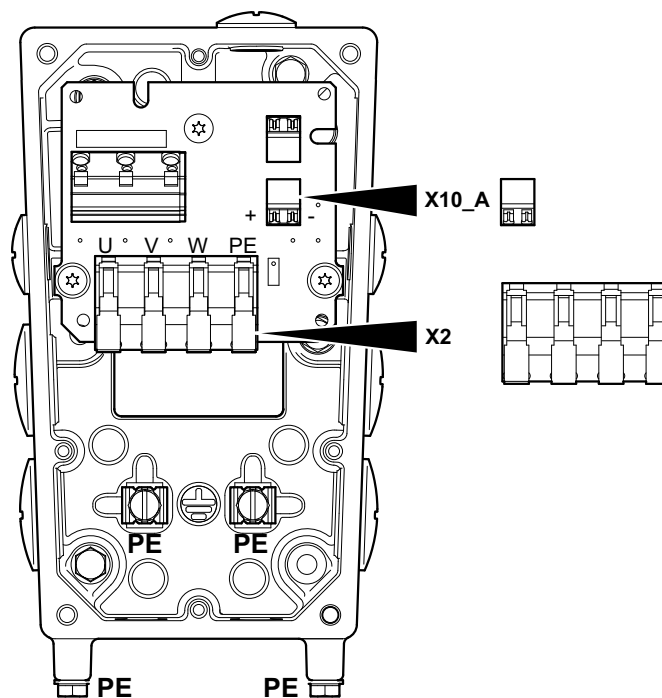
5.2.1 Terminal assignment for MGF..1-DSM-C

Observe the wiring instructions in the documentation of the frequency inverter that you use.

Attach units without a connector to the terminals as follows:

1. **⚠ WARNING!** Electric shock caused by dangerous voltages in the connection box. Severe or fatal injuries.
De-energize the device. Pay attention to the 5 safety rules in chapter "Carrying out electrical work safely".
2. Secure the output shaft of permanently excited motors against rotation. You thereby avoid an electric shock from the regenerative operation during the rotation of the shaft.
3. Loosen the screws of the cover. Remove the cover.
4. Route the cables through the cable glands into the connection box.
5. Connect the unit in accordance with the following terminal assignment.

The following figure shows the terminals of MOVIGEAR® MGF..1-DSM-C:



Terminal	Name	Function
X2 terminals for motor connection	PE	PE connection
	W	Phase W
	V	Phase V
	U	Phase U
⊕	PE	PE connection
X10_A terminals for temperature sensor	KTY PK +	Temperature sensor PK (Pt1000) +
	KTY PK -	Temperature sensor PK (Pt1000) -

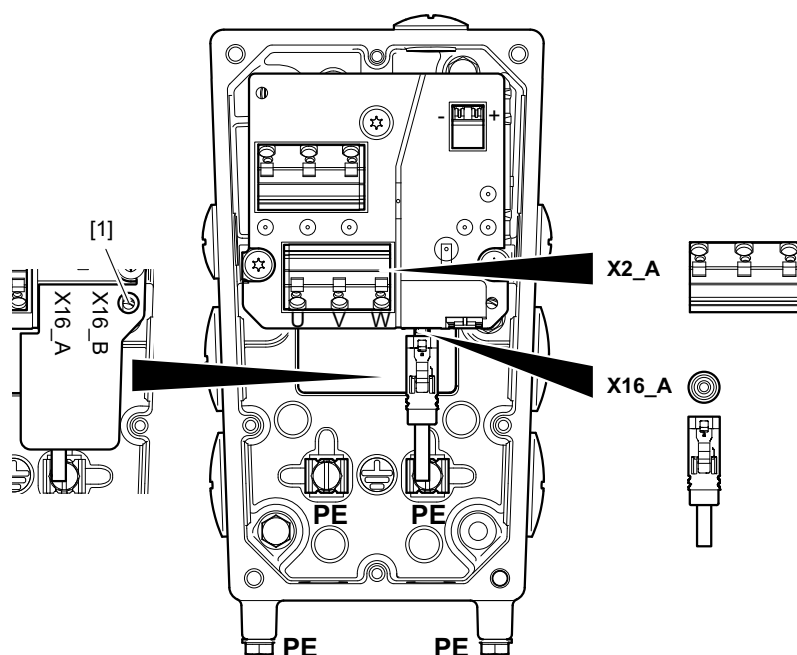
5.2.2 Terminal assignment MGF..1-DSM-C/DI

Observe the wiring instructions in the documentation of the frequency inverter that you use.

Attach units without a connector to the terminals as follows:

1. **▲ WARNING!** Electric shock caused by dangerous voltages in the connection box. Severe or fatal injuries.
De-energize the device. Pay attention to the 5 safety rules in chapter "Carrying out electrical work safely".
2. Secure the output shaft of permanently excited motors against rotation. You thereby avoid an electric shock from the regenerative operation during the rotation of the shaft.
3. Loosen the screws of the cover. Remove the cover.
4. Route the cables through the cable glands into the connection box.
5. For designs with UL, plug in connector X16_A as follows:
 - ⇒ Loosen the screw [1]. Remove the cover of the connector.
 - ⇒ Plug in the X16_A connector.
 - ⇒ Reinstall the cover of the connector.
6. Connect the unit in accordance with the following terminal assignment.

The following figure shows the terminals of MOVIGEAR® MGF..1-DSM-C/DI:



Terminal	Name	Function
X2_A terminals for motor connection	W	Phase W
	V	Phase V
	U	Phase U
⊕	PE	PE connection
X16_A DDI interface	DDI	MOVILINK® DDI interface

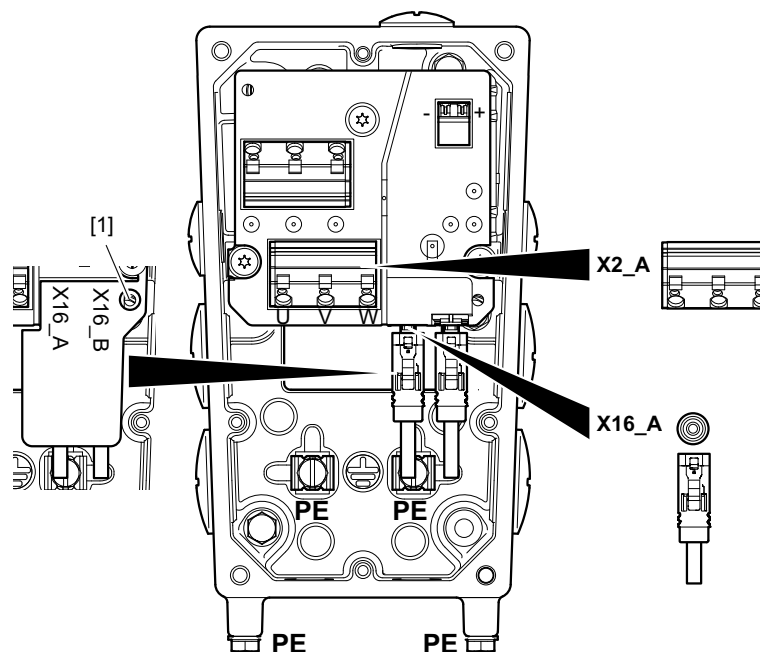
5.2.3 Terminal assignment MGF..1-DSM-C/DI/AZ1Z

Observe the wiring instructions in the documentation of the frequency inverter that you use.

Attach units without a connector to the terminals as follows:

1. **▲ WARNING!** Electric shock caused by dangerous voltages in the connection box. Severe or fatal injuries.
De-energize the device. Pay attention to the 5 safety rules in chapter "Carrying out electrical work safely".
2. Secure the output shaft of permanently excited motors against rotation. You thereby avoid an electric shock from the regenerative operation during the rotation of the shaft.
3. Loosen the screws of the cover. Remove the cover.
4. Route the cables through the cable glands into the connection box.
5. For designs with UL, plug in connector X16_A as follows:
 - ⇒ Loosen the screw [1]. Remove the cover of the connector.
 - ⇒ Plug in the X16_A connector.
 - ⇒ Reinstall the cover of the connector.
6. Connect the unit in accordance with the following terminal assignment.

The following figure shows the terminals of MOVIGEAR® MGF..1-DSM-C/DI/AZ1Z:



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Terminal	Name	Function
X2_A terminals for mo- tor connection	W	Phase W
	V	Phase V
	U	Phase U
⊕	PE	PE connection
X16_A DDI inter- face	DDI	MOVILINK® DDI interface

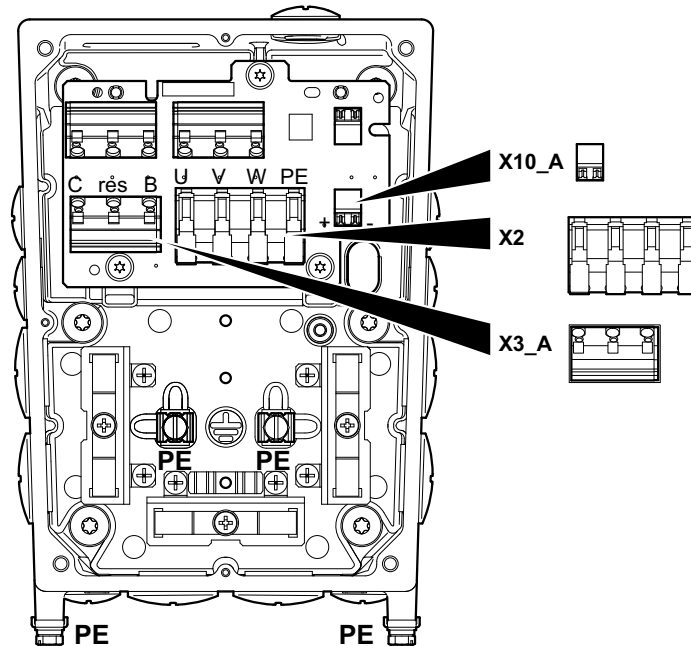
5.2.4 Terminal assignment MGF..2-DSM-C, MGF..4-DSM-C and MGF..4-DSM-C/XT

Observe the wiring instructions in the documentation of the frequency inverter that you use.

Attach units without a connector to the terminals as follows:

1. **▲ WARNING!** Electric shock caused by dangerous voltages in the connection box. Severe or fatal injuries.
De-energize the device. Pay attention to the 5 safety rules in chapter "Carrying out electrical work safely".
2. Secure the output shaft of permanently excited motors against rotation. You thereby avoid an electric shock from the regenerative operation during the rotation of the shaft.
3. Loosen the screws of the cover. Remove the cover.
4. Route the cables through the cable glands into the connection box.
5. Connect the unit in accordance with the following terminal assignment.

The following image shows the terminals of MOVIGEAR® MGF..2-DSM-C (without MOVILINK® DDI Slave, without encoder):



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Terminal	Name	Marking	Function
X2 terminals for motor connection	U	–	Phase U
	V	–	Phase V
	W	–	Phase W
	PE	–	PE connection
⊕	PE	–	PE connection
X3_A	C	Pink	Reserved
	Res.	–	Reserved
	B	Orange	Reserved
X10_A terminals for temperature sensor	KTY PK +	–	Temperature sensor PK (Pt1000) +
	KTY PK -	–	Temperature sensor PK (Pt1000) -

The terminal assignment also applies to MGF..4-DSM-C and MGF..4-DSM-C/XT.

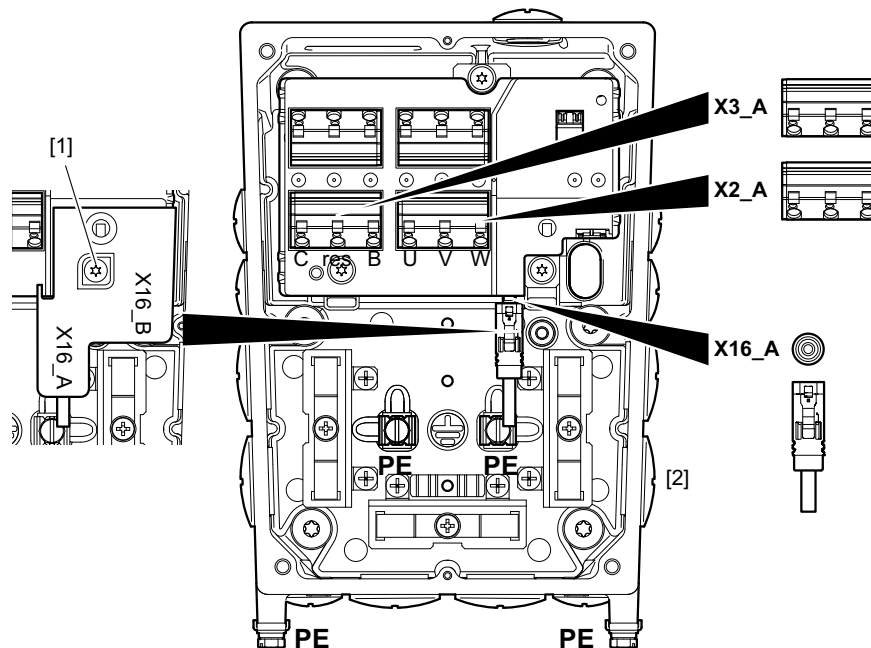
5.2.5 Terminal assignment MGF..2-DSM-C/DI, MGF..4-DSM-C/DI and MGF..4-DSM-C/XT/DI

Observe the wiring instructions in the documentation of the frequency inverter that you use.

Attach units without a connector to the terminals as follows:

1. **▲ WARNING!** Electric shock caused by dangerous voltages in the connection box. Severe or fatal injuries.
De-energize the device. Pay attention to the 5 safety rules in chapter "Carrying out electrical work safely".
2. Secure the output shaft of permanently excited motors against rotation. You thereby avoid an electric shock from the regenerative operation during the rotation of the shaft.
3. Loosen the screws of the cover. Remove the cover.
4. Route the cables through the cable glands into the connection box.
 - ⇒ Route the cable of the MOVILINK®DDI interface X16_a through the cable gland at position [2].
5. For designs with UL, plug in connector X16_A as follows:
 - ⇒ Loosen the screw [1]. Remove the cover of the connector.
 - ⇒ Plug in the X16_A connector.
 - ⇒ Reinstall the cover of the connector.
6. Connect the unit in accordance with the following terminal assignment.

The following image shows the terminals of MOVIGEAR® MGF..2-DSM-C/DI (with MOVILINK® DDI Slave, without encoder):



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Terminal	Name	Marking	Function
X2_A terminals for mo- tor connection	U	—	Phase U
	V	—	Phase V
	W	—	Phase W
⊕	PE	—	PE connection

Terminal	Name	Marking	Function
X3_A	C	Pink	Reserved
	Res.	–	Reserved
	B	Orange	Reserved
X16_A DDI interface	DDI	–	MOVILINK® DDI interface

The terminal assignment also applies to MGF..4-DSM-C/DI and MGF..4-DSM-C/XT/DI.

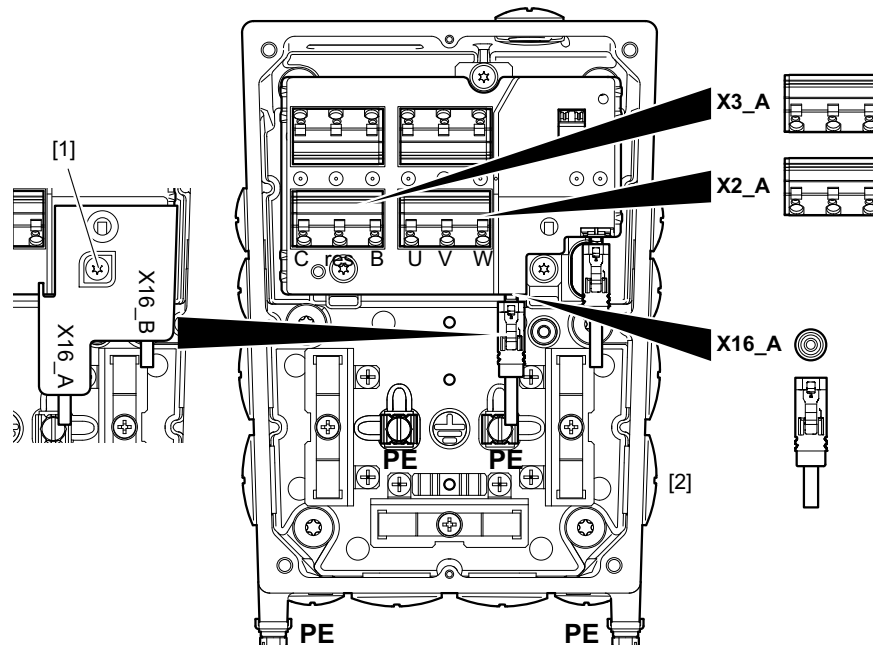
5.2.6 Terminal assignment MGF..2-DSM-C/DI/AZ1Z, MGF..4-DSM-C/DI/AZ1Z and MGF..4-DSM-C/XT/DI/AZ1Z

Observe the wiring instructions in the documentation of the frequency inverter that you use.

Attach units without a connector to the terminals as follows:

1. **▲ WARNING!** Electric shock caused by dangerous voltages in the connection box. Severe or fatal injuries.
De-energize the device. Pay attention to the 5 safety rules in chapter "Carrying out electrical work safely".
2. Secure the output shaft of permanently excited motors against rotation. You thereby avoid an electric shock from the regenerative operation during the rotation of the shaft.
3. Loosen the screws of the cover. Remove the cover.
4. Route the cables through the cable glands into the connection box.
 - ⇒ Route the cable of the MOVILINK®DDI interface X16_a through the cable gland at position [2].
5. For designs with UL, plug in connector X16_A as follows:
 - ⇒ Loosen the screw [1]. Remove the cover of the connector.
 - ⇒ Plug in the X16_A connector.
 - ⇒ Reinstall the cover of the connector.
6. Connect the unit in accordance with the following terminal assignment.

The following image shows the terminals of MOVIGEAR® MGF..2-DSM-C/DI/AZ1Z (with MOVILINK® DDI Slave, with AZ1Z encoder):



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Terminal	Name	Marking	Function
X2_A terminals for mo- tor connection	U	—	Phase U
	V	—	Phase V
	W	—	Phase W
⊕	PE	—	PE connection

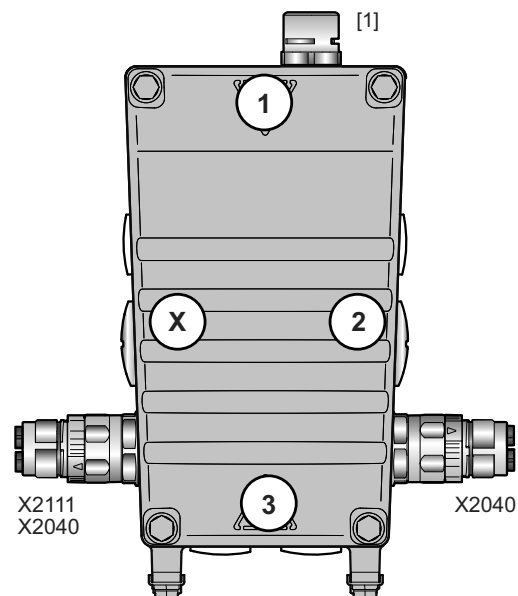
Terminal	Name	Marking	Function
X3_A	C	Pink	Reserved
	Res.	–	Reserved
	B	Orange	Reserved
X16_A MOVILINK® DDI interface	DDI	–	MOVILINK® DDI interface

The terminal assignment also applies to MGF..4-DSM-C/DI/AZ1Z and MGF..4-DSM-C/XT/DI/AZ1Z.

5.3 Connectors

5.3.1 Connector positions at MOVIGEAR® classic MGF..1-DSM-C

The following figure shows possible connector positions:



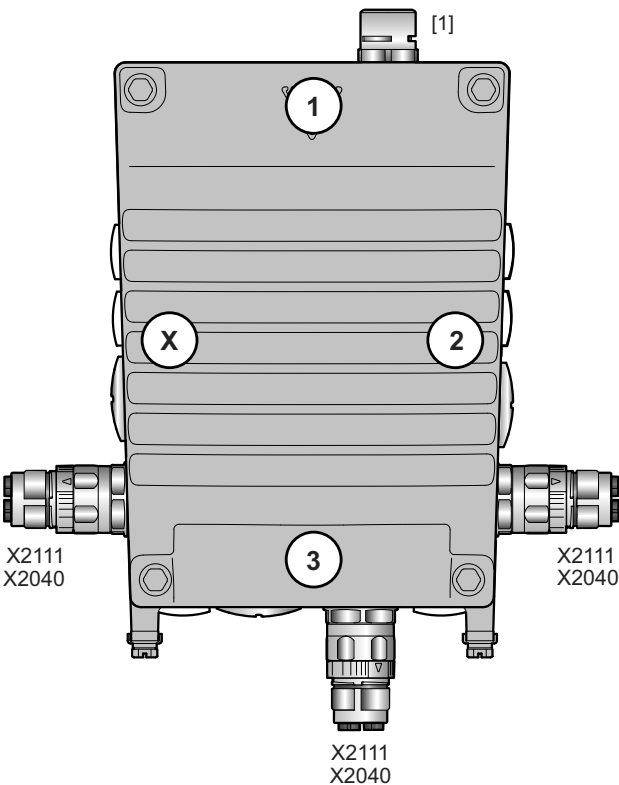
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Connector			
Designation	Coding ring color	Function	Position
X2040	Without coding ring	"Connection of standard motor", option /KH1	X or 2
X2111	Without coding ring	"Motor connection" with digital interface (MOVILINK® DDI), option /KD1	X ¹⁾
–	–	[1] Optional pressure compensation	1

1) For MGF..1-DSM/DI.. designs, the connector is not possible in position 2.

5.3.2 Connector positions MOVIGEAR® classic MGF..2-DSC-C, MGF..4-DSC-C, MGF..4-DSC-C/XT

The following figure shows possible connector positions:



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Connector			
Designation	Coding ring color	Function	Position
X2040	Without coding ring	"Connection of standard motor", option /KH1	X, 2 or 3
X2111	Without coding ring	"Motor connection" with digital interface (MOVILINK® DDI), option /KD1	X, 2 or 3
–	–	[1] Optional pressure compensation	1

6 Startup

6.1 Startup notes

INFORMATION



- Correct project planning for the drive is a prerequisite for successful startup. See chapter "Project Planning" for more information.
- The motor speed must not exceed 2000 min^{-1} . Set the maximum speed on the frequency inverter. For information on the procedure, refer to the documentation of the frequency inverter.

Perform the following steps before startup:

1. **⚠ WARNING!** Electric shock caused by dangerous voltages in the connection box. Severe or fatal injuries.
De-energize the device. Pay attention to the 5 safety rules in chapter "Carrying out electrical work safely".
2. **⚠ WARNING!** Risk of burns due to hot surfaces. Severe injuries.
Let the device cool sufficiently before touching it.
3. Install the protective covers of the system according to the instructions. This will avoid injuries.
⇒ Never start the device if the protective covers are not installed.

6.2 Startup requirements

6.2.1 Before startup

Make sure the following requirements are met before startup:

- The drive unit is undamaged and not blocked.
- The measures stipulated in chapter "Extended storage of motors" are performed after extended storage periods.
- All connections are installed correctly.
- The direction of rotation on the drive unit matches the application.
- All protective covers are installed correctly.
- All motor protection equipment is active and set for the rated motor current.
- In general, there must be no other sources of danger present.
- The surface of the drive unit must not be covered by heat-sensitive or insulating materials.

6.2.2 During startup

Make sure that the motor is running correctly during startup. During startup, none of the following problems must occur:

- Overload
- Speed fluctuations
- Loud noises
- Noticeable vibrations etc.

In case of problems, refer to chapter "Service" (→  63).

7 Service

NOTICE

Improper work on the drive units can result in damage.

Damage to property.

- Make sure that the drives from SEW-EURODRIVE are repaired by qualified personnel only.
- Consult SEW-EURODRIVE SERVICE.

7.1 Malfunctions of the mechanical drive

The following table shows troubleshooting options for malfunctions of the mechanical drive:

Fault	Possible cause	Measure
Unusual, regular running noise	Meshing/grinding noise: Bearing damage	Contact SEW-EURODRIVE Service
Unusual, regular running noise	Knocking noise: Irregularity in the gearing	Contact SEW-EURODRIVE Service
Unusual, irregular running noise	Foreign objects in the oil	Stop the drive and contact SEW-EURODRIVE Service
Oil leaking from the gear unit cover	Gear unit cover seal leaking	Contact SEW-EURODRIVE Service
Oil leaking from the connection box	Internal seal defective	Contact SEW-EURODRIVE Service
Oil leaking from the output-side oil seal	Oil seal defective Short-term oil and/or grease leakage at the oil seal is possible in the run- in phase (24 hours running time).	Replace oil seal
Oil leaking from the output-side oil seal	Too much oil Short-term oil and/or grease leakage at the oil seal is possible in the run- in phase (24 hours running time).	Correct the oil quantity

Fault	Possible cause	Measure
Oil leaking from the out-put-side oil seal	Drive installed in the wrong mounting position or breather valve installed in wrong position. Short-term oil and/or grease leakage at the oil seal is possible in the run-in phase (24 hours running time).	Install the breather valve correctly
Output shaft does not turn even though the motor is running	Shaft-hub connection in the gear unit interrupted	Send in the drive unit for repair
Drive unit does not start	Supply cable interrupted	Check connections, correct if necessary
Drive unit does not start	Fuse blown	Replace fuse
Drive unit does not start	Motor protection tripped	Check motor protection for correct setting, correct fault if necessary
Drive unit does not start	Frequency inverter defective, overloaded, incorrectly wired, or incorrectly set	Check frequency inverter, check wiring
Incorrect direction of rotation	Incorrect setpoint polarity	Check frequency inverter, check setpoints
Drive unit hums and has high current consumption	Drive is blocked	Check drive
Drive unit hums and has high current consumption	Frequency inverter set incorrectly	Check frequency inverter
Drive unit heats up excessively (measure temperature, significantly higher than 100 °C)	Overload	Measure power, use larger drive unit or reduce load if necessary, check travel profile
Drive unit heats up excessively (measure temperature, significantly higher than 100 °C)	Ambient temperature too high	Observe permitted temperature range
Drive unit heats up excessively (measure temperature, significantly higher than 100 °C)	Insufficient cooling	Correct cooling air supply or clear cooling air passages
Drive unit heats up excessively (measure temperature, significantly higher than 100 °C)	Nominal duty type (S1 to S10, EN 60034-1) exceeded, e.g. due to excessive effective torque	Adjust nominal duty type to required operating conditions; if necessary, call in a specialist to determine the correct drive

Fault	Possible cause	Measure
Drive unit heats up excessively (measure temperature, significantly higher than 100 °C)	Frequency inverter not optimized	Check frequency inverter

7.2 Device replacement

7.2.1 Replacing the drive unit

Replace the drive unit as follows:

1. Observe the safety notes.
2. Install the lifting eyes to the drive unit, see chapter "Service" > "Device replacement" > "Installing the lifting eyes" (→ 66).
3. Remove the drive unit. Observe the removal notes in chapter "Mechanical installation" (→ 15).
4. Compare the data on the nameplates of the old drive unit with the data on the nameplates of the new drive unit.

INFORMATION



Always replace the drive unit with a drive unit that has the same properties.

5. Mount the drive unit. Observe chapter "Mechanical installation" (→ 15).
6. Remove the lifting eyes from the new drive unit. Store the lifting eyes for future service work.
7. Perform the installation according to chapter "Electrical installation" (→ 47).
8. Observe the notes in chapter "Startup" > "Startup requirements" (→ 62).
9. Place the cover onto the connection box and screw it in place.
10. Supply the drive with voltage.
11. Check whether the new drive unit is functioning properly.

7.2.2 Installing the handle

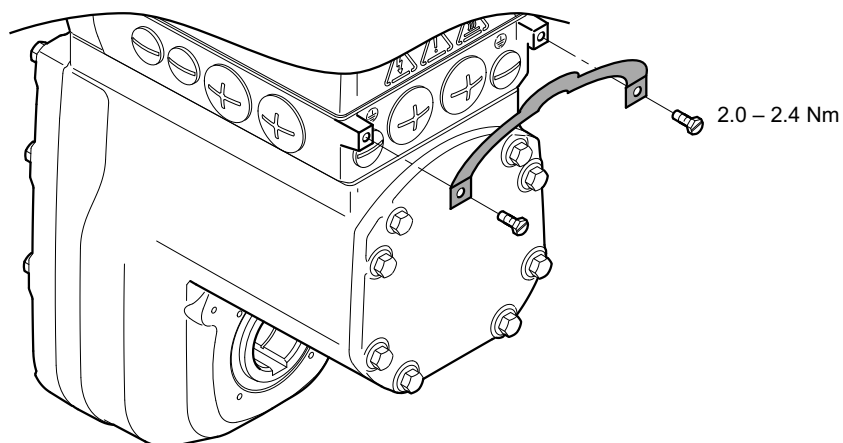
Install the handle as follows:

1. Remove the PE connection cable.
2. Install the handle for transportation as depicted in the following image:

INFORMATION



The following figure shows an example of the handle. Different designs are used depending on the size.



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7.3 Shutdown



⚠ WARNING

Risk of burns due to hot surfaces.

Severe injuries.

- Let the devices cool down before touching them.



⚠ WARNING

Electric shock caused by dangerous voltages in the connection box.

Severe or fatal injuries.

- Before removing the connection box cover, de-energize the unit via a suitable external disconnection device.
- Secure the unit against unintended re-connection of the voltage supply.

To shut down the device, de-energize the device using appropriate measures.

7.4 Waste disposal

Dispose of the product and all parts separately in accordance with their material structure and the national regulations. Put the product through a recycling process or contact a specialist waste disposal company. If possible, divide the product into the following categories:

- Iron, steel or cast iron
- Stainless steel
- Magnets
- Aluminum
- Copper
- Electronic parts
- Plastics

The following materials are hazardous to health and the environment. These materials must be collected and disposed of separately:

- Oil and grease

Collect used oil and grease separately according to type. Ensure that the used oil is not mixed with solvent. Dispose of used oil and grease correctly.

- Capacitors

Waste disposal according to WEEE Directive 2012/19/EU

This product and its accessories may fall within the scope of the country-specific application of the WEEE Directive. Dispose of the product and its accessories according to the national regulations of your country.

For further information, contact the responsible SEW-EURODRIVE branch or an authorized partner of SEW-EURODRIVE.



8 Inspection and maintenance

8.1 Inspection and maintenance intervals

The following table shows the inspection and replacement intervals for the drive units:

Time interval	What should I do?	Who is permitted to perform the work?
Every 3000 operating hours, at least every 6 months	Check running noise for possible bearing damage	Specialists at customer site
	In the event of bearing damage: Have the bearing replaced by the SEW-EURODRIVE Service team or specialists trained by SEW-EURODRIVE	SEW-EURODRIVE Service Qualified specialists trained by SEW-EURODRIVE
	Visual inspection of the seals for leakage:	Specialists at customer site
	• In the event of leakage of the oil seal at the output end: Change the oil seal	Specialists at customer site
	• In the event of leakage at other locations:	
	– Replace the drive unit	Specialists at customer site
	– Recommendation: Contact SEW-EURODRIVE Service.	SEW-EURODRIVE Service
	For gear units with a torque arm: Check the rubber buffer and replace if damaged	Specialists at customer site
Every 20 000 operating hours ¹⁾	Have the motor inspected by the SEW-EURODRIVE Service team or specialists trained by SEW-EURODRIVE.	SEW-EURODRIVE Service
		Qualified specialists trained by SEW-EURODRIVE
The drive units are equipped with lubrication for life. The oil must be changed at least once every 5 years depending on the operating conditions and oil temperature (see product manual > chapter "Lubricant change intervals).	Change synthetic oil	Specialists at customer site
	Replace the oil seal at the output end (do not install it in the same track as the previous oil seal)	Specialists at customer site

Time interval	What should I do?	Who is permitted to perform the work?
When the cover/electronics cover is opened after an operating period of ≥ 6 months	When the cover/electronics cover is opened after an operating period of ≥ 6 months, the gasket between the connection box and the cover/electronics cover must always be replaced. The 6-month period can be shortened by harsh ambient/operating conditions, e.g. cleaning with aggressive chemicals or frequent temperature variations.	Specialists at customer site
Each time the cover/electronics cover is opened	Visual inspection of the gasket between connection box and cover/electronics cover: The gasket must be replaced in the event of damage.	Specialists at customer site
Varies (depending on external factors)	Touch up or renew the surfaces/corrosion protection coating	Specialists at customer site
	In order to prevent water deposits from accumulating in the B-side safety cover, it must be cleaned at regular intervals.	Specialists at customer site

1) Wear times are influenced by many factors. The system manufacturer must calculate the required inspection and maintenance intervals individually in accordance with the project planning documents.

8.2 Inspection and maintenance work

8.2.1 Preliminary work regarding inspection and maintenance

Carry out the following steps before all inspection and maintenance work:

1. **▲ WARNING!** Electric shock caused by dangerous voltages in the connection box. Severe or fatal injuries.
De-energize the device. Pay attention to the 5 safety rules in chapter "Carrying out electrical work safely".
2. **▲ WARNING!** Risk of burns due to hot surfaces. Severe injuries.
Let the device cool sufficiently before touching it.
3. Secure the output shaft of permanently excited motors against rotation. You thereby avoid an electric shock from the regenerative operation during the rotation of the shaft.

8.2.2 Changing the oil

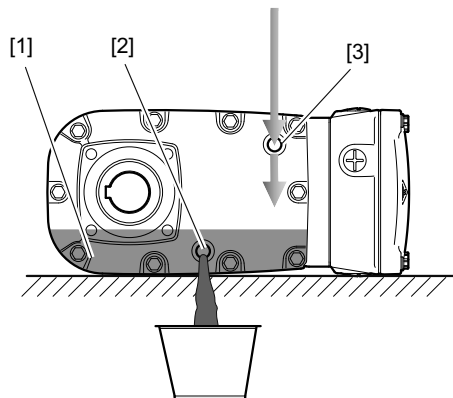
Draining the oil

The gear unit cover may only be opened by the SEW-EURODRIVE Service team or specialists trained by SEW-EURODRIVE.

1. Perform the steps according to chapter "Preliminary work regarding inspection and maintenance".
2. **▲ WARNING!** Risk of burns due to hot surfaces. Severe injury.
Let the device cool down sufficiently before touching it.
⇒ However, the gear unit must still be warm, otherwise the low flowability of excessively cold oil will make it more difficult to drain the oil correctly.
3. Remove the drive unit from the system. Otherwise an oil change is not possible.
4. SEW-EURODRIVE recommends draining the oil at the position shown in the figure below.
5. Place a sufficiently large container underneath the drain hole [2].
6. **▲ WARNING!** Risk of burns due to hot gear unit oil. Severe injury.
Let the device cool down sufficiently before touching it.
7. Remove the lowest screw plug [2] or the breather valve installed there (depends on the mounting position used according to the mounting position sheet).
8. The oil draining procedure is facilitated if you remove the upper screw plug [3] or the breather valve that is screwed into the hole (air flows inwards).
9. Drain the oil. All of the residual material [1] that is left in the drive must be extracted by using a suitable device.

Recommended position

The following figure shows the position recommended for draining the oil:



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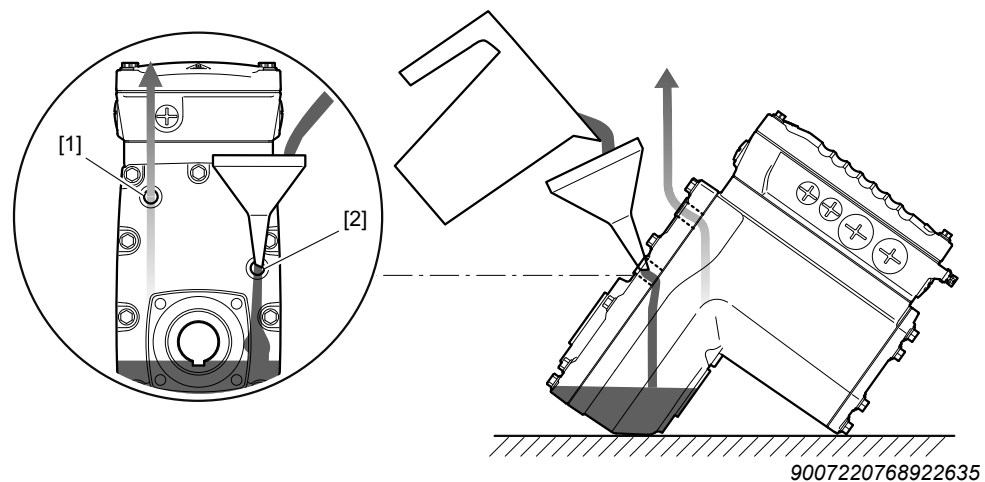
Filling in the oil

The gear unit cover may only be opened by the SEW-EURODRIVE Service team or specialists trained by SEW-EURODRIVE.

1. Perform the steps described in the chapter "Preliminary work for inspection and maintenance".
2. **▲ WARNING!** Risk of burns due to hot surfaces. Severe injury.
Let the device cool down sufficiently before touching it.
 - ⇒ However, the gear unit must still be warm, otherwise the high viscosity of excessively cold oil will make it more difficult to fill in the oil correctly.
3. SEW-EURODRIVE recommends filling in the new oil at the position shown in the figure below.
4. **NOTICE!** Filling in the wrong oil may result in significantly different lubricant characteristics. Damage to property.
Do not mix different synthetic lubricants and do not mix synthetic lubricants with mineral lubricants! As standard lubricant use synthetic oil. Fill in new oil of the same grade via the lower bore [2].
 - ⇒ The oil viscosity and type (synthetic) that are to be used are determined by SEW-EURODRIVE specifically for each order. This information is noted in the order confirmation and on the drive unit's nameplate.
 - ⇒ It is easier to fill in the oil when you also remove the upper breather plug [1] or breather valve installed there (air can flow out).
 - ⇒ For the required oil quantity, refer to the information on the nameplate or, depending on the mounting position, the product manual > chapter "Lubricant fill quantities".
5. Re-insert the screw plug and the breather valve. The position of the breather valve depends on the mounting position of the drive unit. Observe the mounting position sheet in the product manual > chapter "Mounting positions".
6. Touch up or renew the surface/corrosion protection coating.

Recommended position

The following figure shows the position recommended for filling in the new oil:



8.2.3 Replacing the output oil seal

1. Perform the steps according to chapter "Preliminary work regarding inspection and maintenance".
2. Remove the drive unit from the system.
3. **NOTICE!** If oil seals are below 0 °C, they can be damaged during assembly. Damage to property.
Store oil seals at an ambient temperature above 0 °C. If necessary, warm up the oil seals prior to assembly. When changing the oil seal, ensure that there is a sufficient grease reservoir between the dirt lip and sealing lip, depending on the design used.
 - ⇒ When using double oil seals, fill one-third of the gap with grease.
 - ⇒ The oil seal must not be reinstalled on the same track.
4. Touch up or renew the surface/corrosion protection coating.

8.2.4 Replacing the gasket between connection box and cover

Spare part kit

The gasket is available as a spare part (1, 10 or 50 pieces) from SEW-EURODRIVE.

Content	Part number of gasket	
	MOVIGEAR® classic MGF..1-..-C	MOVIGEAR® classic MGF..2-..-C MGF..4-..-C MGF..4-..-C/XT
1 piece	23010347	28131738
10 pieces	28266137	28278097
50 pieces	28266145	28284356

Work steps for MOVIGEAR® classic MGF..1-..C

NOTICE

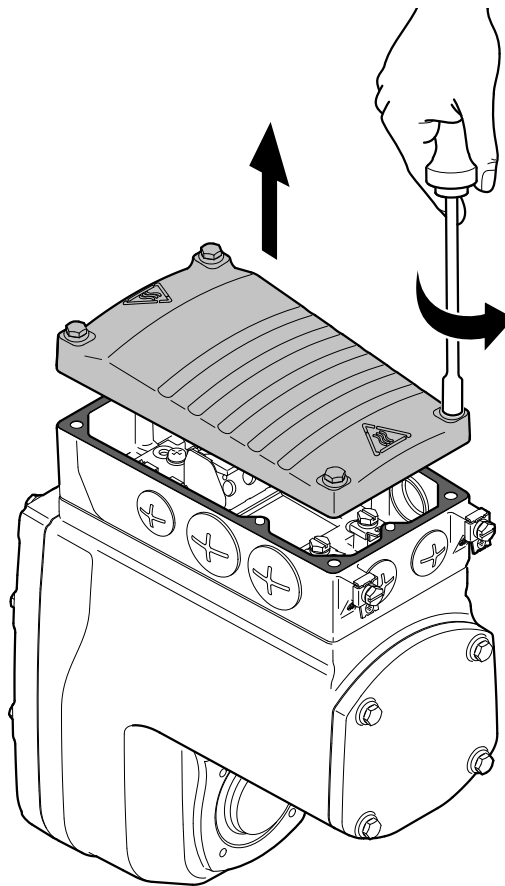
Loss of the guaranteed degree of protection.

Damage to property.

- When the cover is removed from the connection box, the cover and the wiring space must be protected from humidity, dust or foreign particles.

Replace the gasket of MOVIGEAR® classic MGF..1-..C as follows:

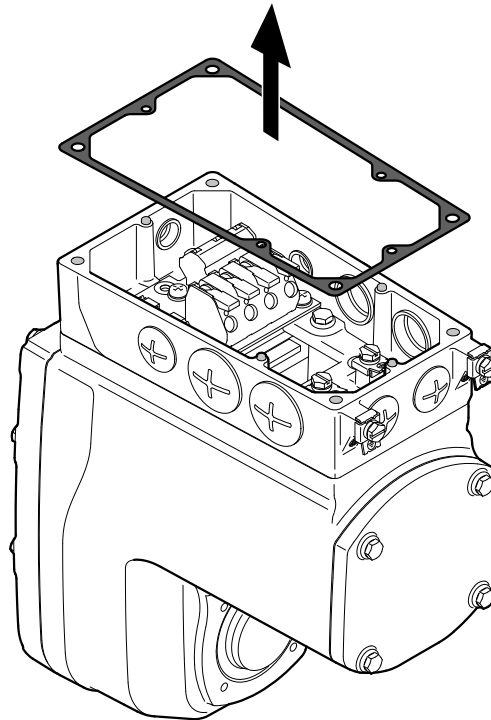
1. Perform the steps described in the chapter "Preliminary work for inspection and maintenance" (→ 69).
2. Loosen the screws of the cover and remove it.



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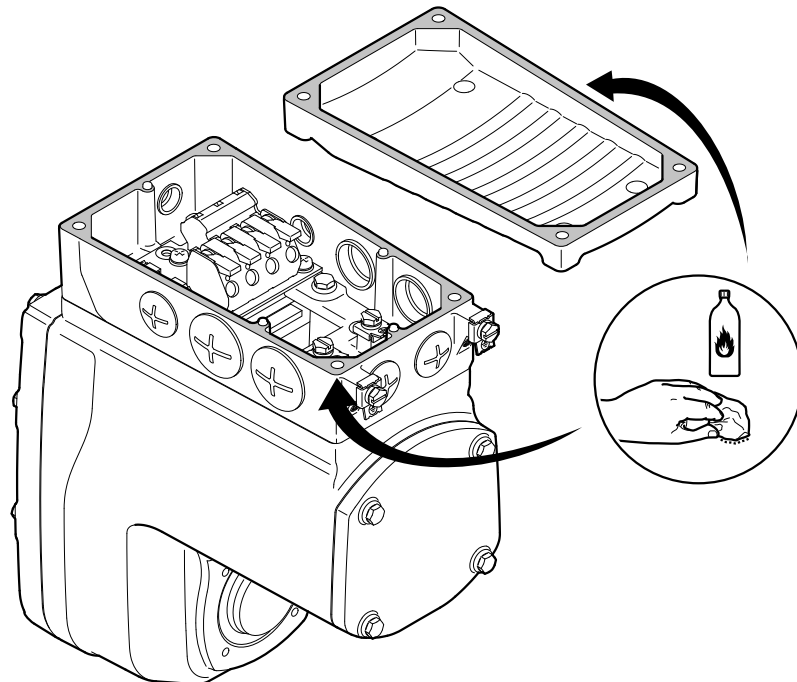
3. **NOTICE!** Loss of the guaranteed degree of protection. Possible damage to property. Make sure that the sealing surfaces are not damaged when removing the gasket.

Remove the old gasket completely from the connection box.



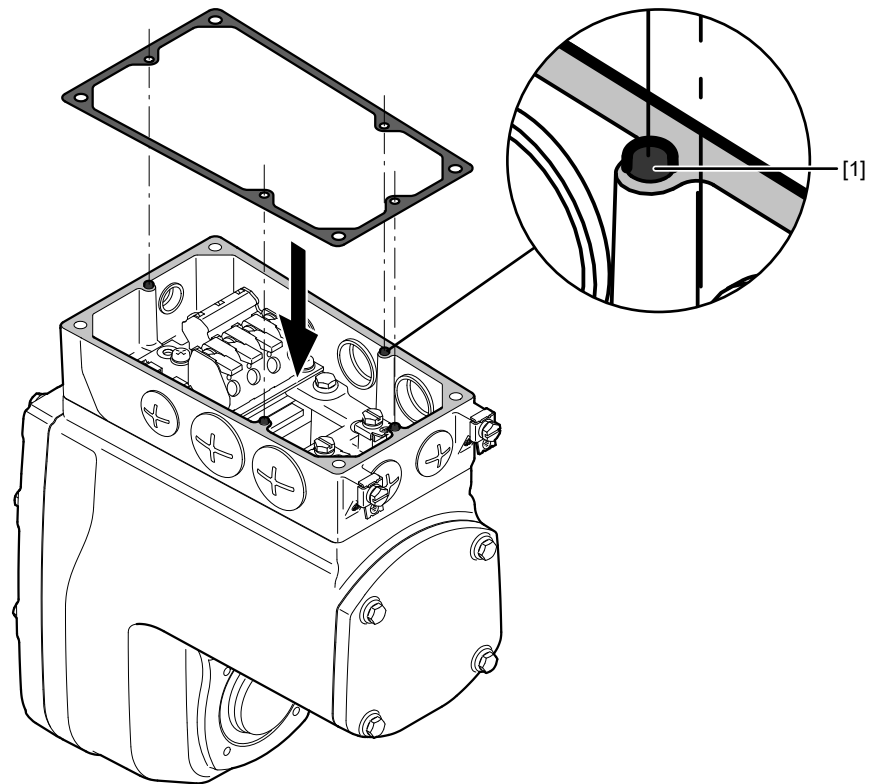
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4. **▲ CAUTION!** Risk of injury due to sharp edges. Cutting injuries. Use protective gloves when cleaning. Ensure that work is carried out by trained specialists only. Carefully clean the sealing surfaces of the connection box and the cover.



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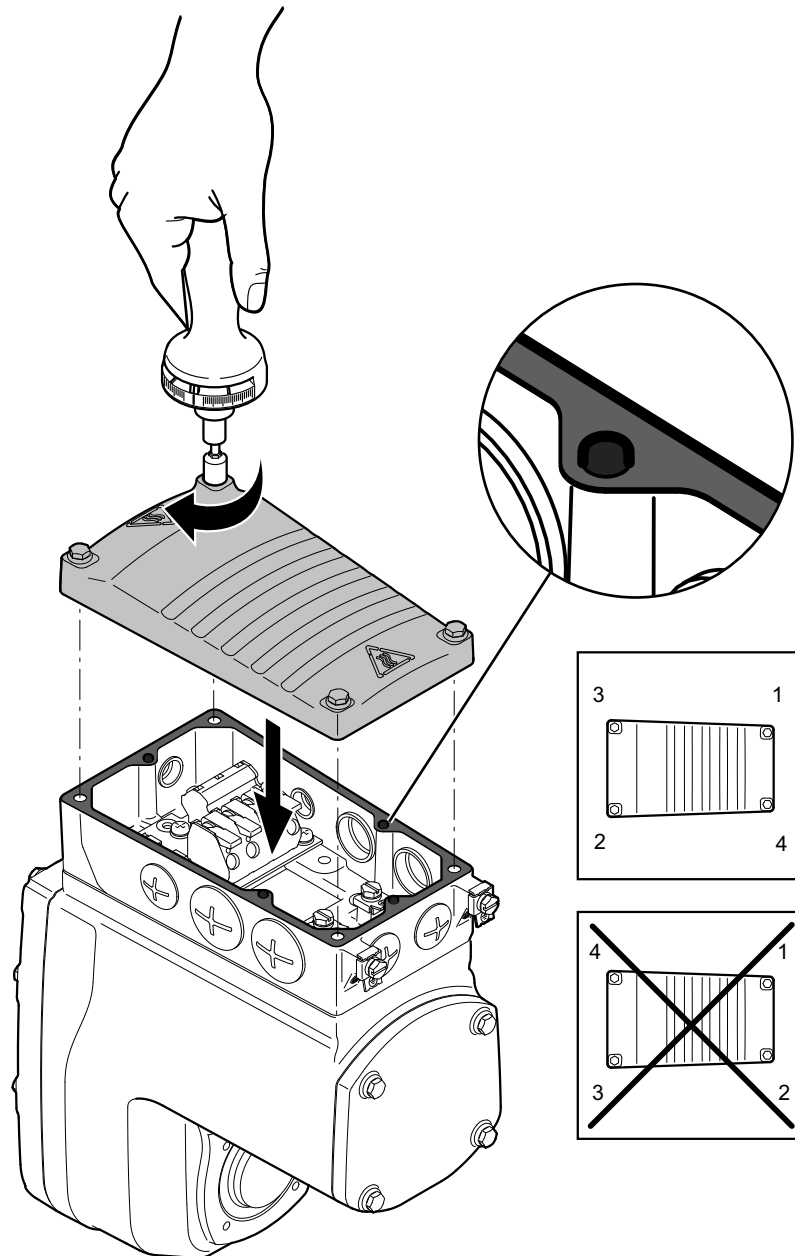
5. Place the new gasket on the connection box and fix it in position with the retaining cams [1].



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[1] Retaining cams

6. Check the installation and startup of the drive unit based on the applicable operating instructions.
7. Place the cover back onto the connection box and secure it.
 - ⇒ Proceed as follows when installing the cover: Insert/screw in the screws and tighten them **step by step** in diametrically opposite sequence with a tightening torque of 6.0 Nm.



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Work steps for MOVIGEAR® classic MGF..2-..C and MGF..4-..C

NOTICE

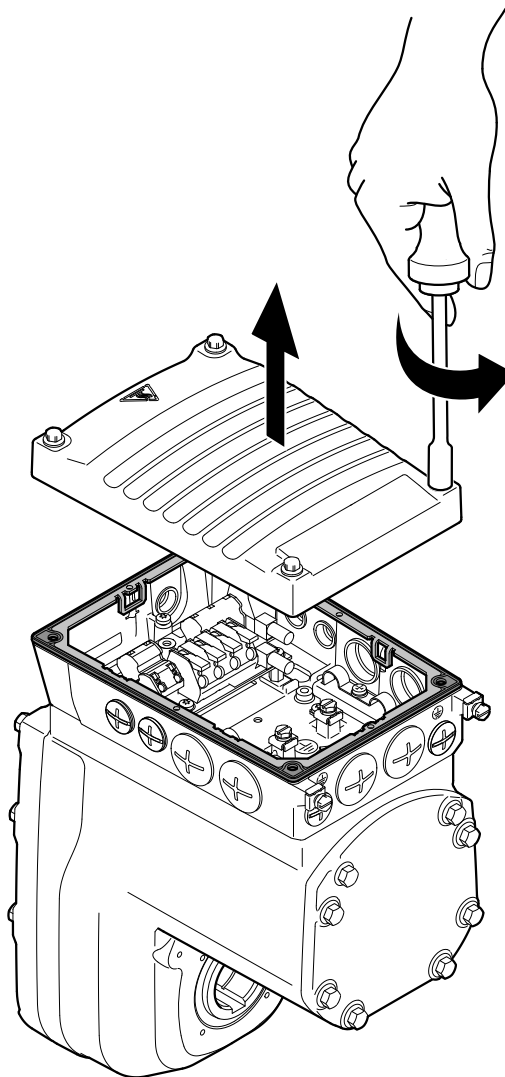
Loss of the guaranteed degree of protection.

Damage to property.

- When the cover is removed from the connection box, the cover and the wiring space must be protected from humidity, dust or foreign particles.

Replace the gasket of MOVIGEAR® classic MGF..2-..C and MGF..4-..C as follows:

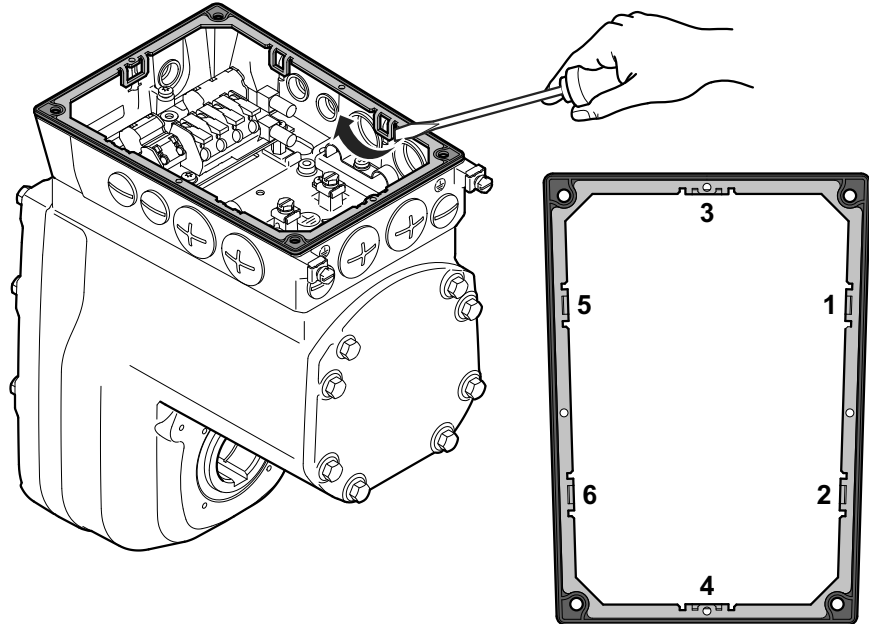
1. Perform the steps described in the chapter "Preliminary work for inspection and maintenance".
2. Loosen the screws of the electronics cover and remove it.



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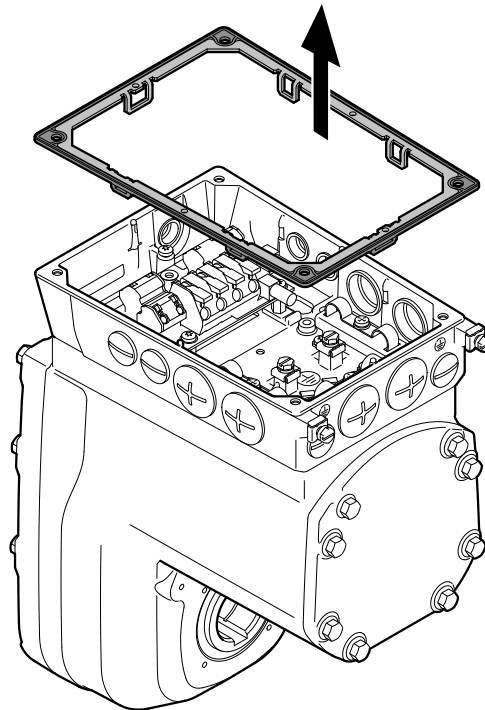
3. **NOTICE!** Loss of the guaranteed degree of protection. Damage to property. Make sure that the sealing surfaces are not damaged when removing the gasket. Loosen the used gasket by levering it off the retaining cams.

⇒ Disassembly will be easier if you adhere to the sequence shown in the following figure.



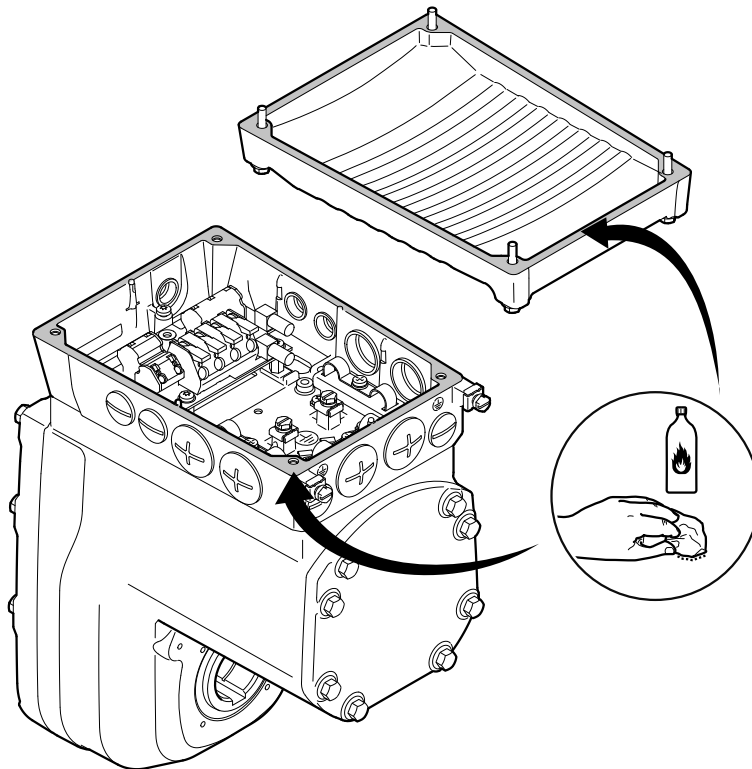
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4. Remove the old gasket completely from the connection box.



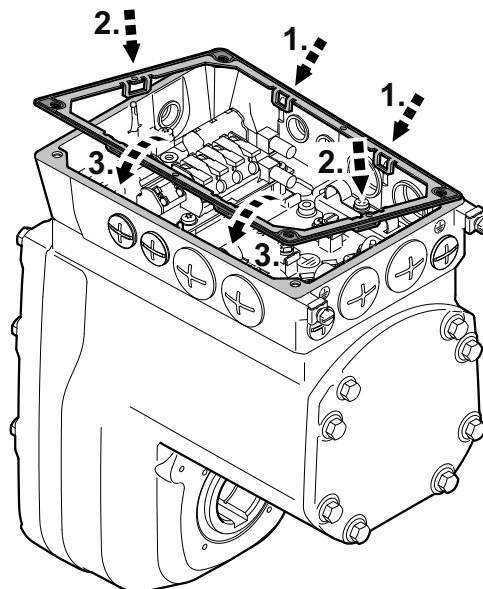
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5. **⚠ CAUTION!** Risk of injury due to sharp edges. Cutting injuries. Use protective gloves when cleaning. Ensure that work is carried out by trained specialists only. Carefully clean the sealing surfaces of the connection box and the cover.



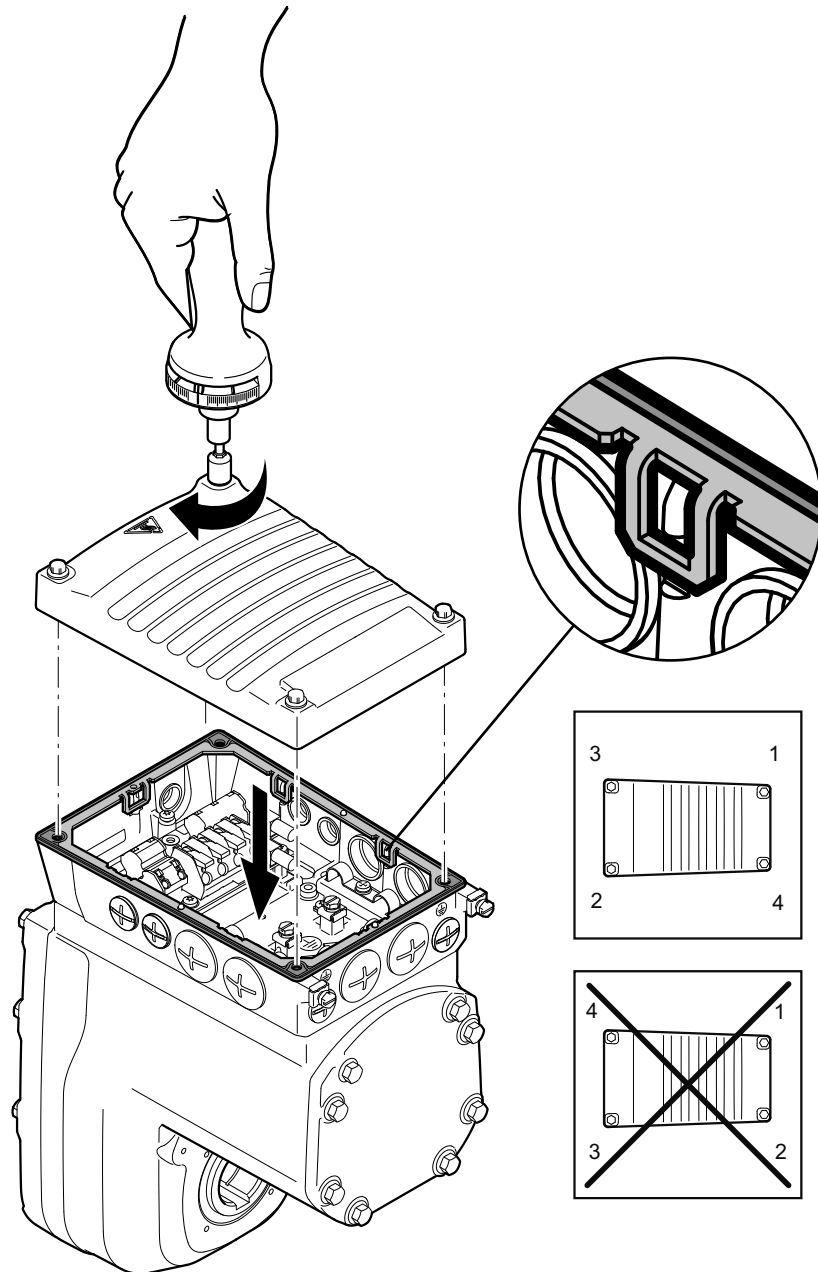
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6. Place the new gasket on the connection box and fix it with the retaining cams. Installation will be easier if you adhere to the sequence shown.



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7. Check the installation and startup of the drive unit based on the applicable operating instructions.
8. Place the cover back onto the connection box and secure it.
 - ⇒ Proceed as follows when installing the cover: Insert/screw in the screws and tighten them **step by step** in diametrically opposite sequence with a tightening torque of 6.0 Nm.



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9 Contacting SEW-EURODRIVE

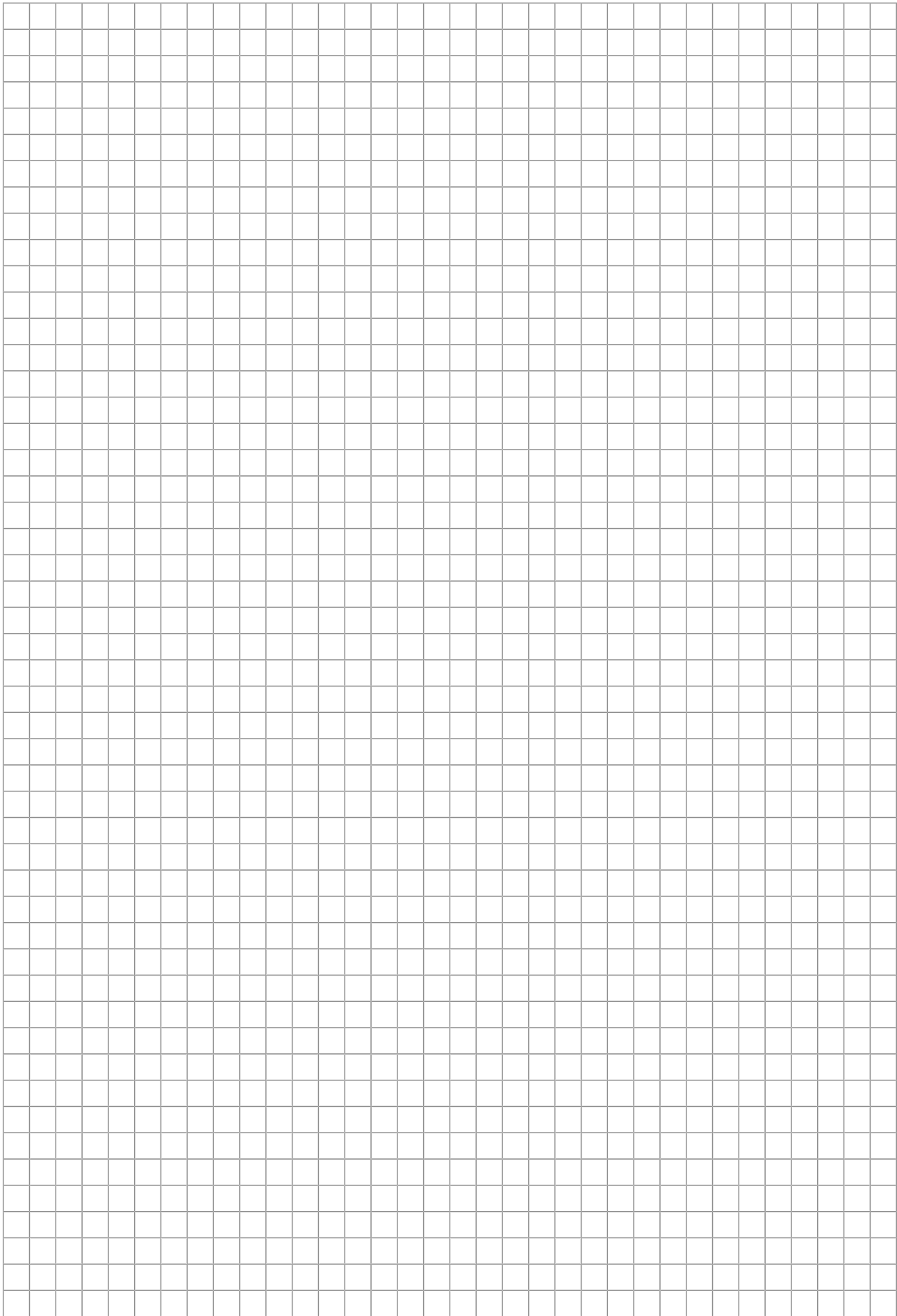
You can find the worldwide contact data and locations on the **SEW-EURODRIVE website** via the following link or the QR code shown below.

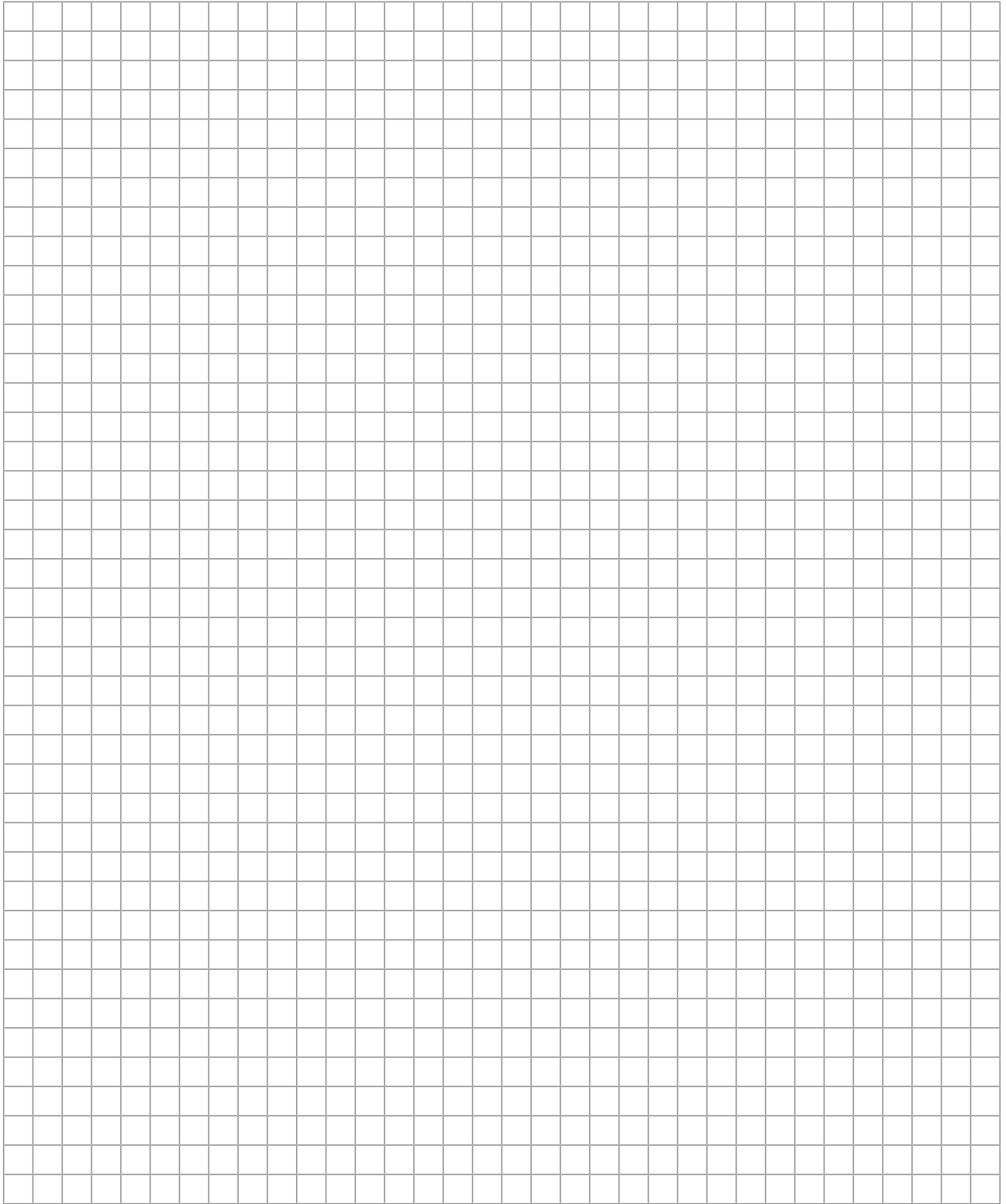
<https://www.sew-eurodrive.de/contacts-worldwide>



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SEW-EURODRIVE
Driving the world

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