



SEW
EURODRIVE

Operating Instructions



Drive Unit
MOVIGEAR® classic
MGF..1-DSM-C



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1 General information

1.1 About this documentation

The current version of the documentation is the original.

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

Make sure this documentation is accessible and legible. Ensure that persons responsible for the machinery and its operation as well as persons who work on the product independently have read through the documentation carefully and understood it. If you are unclear about any of the information in this documentation or require further information, contact SEW-EURODRIVE.

1.2 Other applicable documentation

Observe the corresponding documentation for all further components.

1.3 Structure of the safety notes

1.3.1 Meaning of signal words

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

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

1.3.2 Structure of section-related safety notes

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

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



SIGNAL WORD







Type and source of hazard.

Possible consequence(s) if disregarded.

- Measure(s) to prevent the hazard.

Meaning of the hazard symbols

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

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

1.3.3 Structure of embedded safety notes

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

This is the formal structure of an embedded safety note:

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

1.4 Rights to claim under limited warranty

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

1.5 Product names and trademarks

The brands and product names in this documentation are trademarks or registered trademarks of their respective titleholders.

1.6 Copyright notice

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2 Safety notes

2.1 Preliminary information

The following general safety notes have the purpose to avoid injury and damage to property. They primarily apply to the use of products described in this documentation. If you use additional components also observe the relevant warning and safety notes.

2.2 Duties of the user

As the user, you must ensure that the basic safety notes are observed and complied with. Make sure that persons responsible for the machinery and its operation as well as persons who work on the device independently have read through the documentation carefully and understood it.

As the user, you must ensure that all of the work listed in the following is carried out only by qualified specialists:

- Setup and installation
- Installation and connection
- Startup
- Maintenance and repairs
- Shutdown
- Disassembly

Ensure that the persons who work on the product pay attention to the following regulations, conditions, documentation, and information:

- National and regional safety and accident prevention regulations
- Warning and safety signs on the product
- All other relevant project planning documents, installation and startup instructions, and wiring diagrams
- Do not assemble, install or operate damaged products
- All system-specific specifications and conditions

Ensure that systems in which the product is installed are equipped with additional monitoring and protection devices. Observe the applicable safety regulations and legislation governing technical work equipment and accident prevention regulations.

2.3 Target group

Specialist for mechanical work

Any mechanical work may only be performed by adequately qualified specialists. Specialists in the context of this documentation are persons familiar with the design, mechanical installation, troubleshooting, and maintenance of the product who possess the following qualifications:

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

Specialist for electrotechnical work	Any electrotechnical work may only be performed by electrically skilled persons with a suitable education. Electrically skilled persons in the context of this documentation are persons familiar with electrical installation, startup, troubleshooting, and maintenance of the product who possess the following qualifications: <ul style="list-style-type: none"> • Qualification in the electrotechnical area in accordance with the national regulations • Familiarity with this documentation
Additional qualification	In addition to that, these persons must be familiar with the valid safety regulations and laws, as well as with the requirements of the standards, directives, and laws specified in this documentation. The persons must have the express authorization of the company to operate, program, parameterize, label, and ground units, systems, and circuits in accordance with the standards of safety technology.
Instructed persons	All work in the areas of transportation, storage, operation and waste disposal must be carried out by persons who are trained appropriately. The purpose of the instruction is that the persons are capable of performing the required tasks and work steps in a safe and correct manner.

2.4 Designated use

The product is intended for installation in electrical plants 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.

2.4.1 Lifting applications

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

2.5 Transportation

Inspect the shipment for damage as soon as you receive the delivery. Inform the shipping company immediately about any damage. If the product is damaged, it must not be assembled, installed or started up.

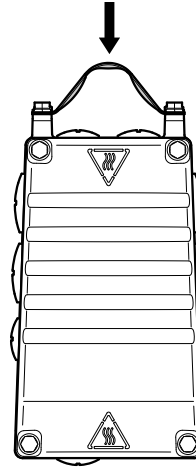
Observe the following notes when transporting the device:

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

If necessary, use suitable, sufficiently dimensioned handling equipment.

Observe the information on climatic conditions in chapter "Technical data" of the documentation.

The following figure shows the position of the lifting eye.



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2.6 Installation/assembly

Ensure that the product is installed and cooled according to 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 components are not deformed and that insulation spaces are maintained, particularly during transportation. Electric components must not be mechanically damaged or destroyed.

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

2.6.1 Restrictions of use

The following applications are prohibited unless explicitly permitted:

- 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
- Operation at installation altitudes above 4000 m above sea level

2.7 Electrical connection

Make yourself familiar with the applicable national accident prevention guidelines before you work on the product.

Perform electrical installation according to the pertinent regulations (e.g. cable cross sections, fusing, protective conductor connection). The documentation at hand contains additional information.

Make sure that all required covers are installed correctly after electrical installation.

Make sure that preventive measures and protection devices 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 energy transfer	Preventive measure
Direct power supply	<ul style="list-style-type: none"> • 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 Protective separation

The product meets all requirements for protective separation of power and electronics connections in accordance with EN 61800-5-1. To ensure protective separation, all connected circuits must also meet the requirements for protective separation.

2.9 Startup/operation

Observe the safety notes in the chapters "Startup" and "Operation" in the documentation.

Make sure that the present transport protection is removed.

Do not deactivate monitoring and protection devices of the machine or system even for a test run.

Make sure the connection boxes are closed and screwed before connecting the supply voltage.

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

Additional preventive measures may be required for applications with increased hazard potential. You have to check the protection devices after each modification.

When in doubt, switch off the product whenever changes occur in relation to normal operation. Possible changes are e.g. increased temperatures, noise, or oscillation. Determine the cause. Contact SEW-EURODRIVE if necessary.

When the device is switched on, dangerous voltages are present at all power connections as well as at any connected cables and terminals. This also applies even when the product is inhibited and the motor is at standstill.

Mechanical blocking or internal safety functions of the product can cause a motor standstill. Eliminating the cause of the problem or performing a reset may result in the drive re-starting automatically. If, for safety reasons, this is not permitted for the drive-controlled machine, first disconnect the product from the supply system and then 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.

2.10 Magnetic fields

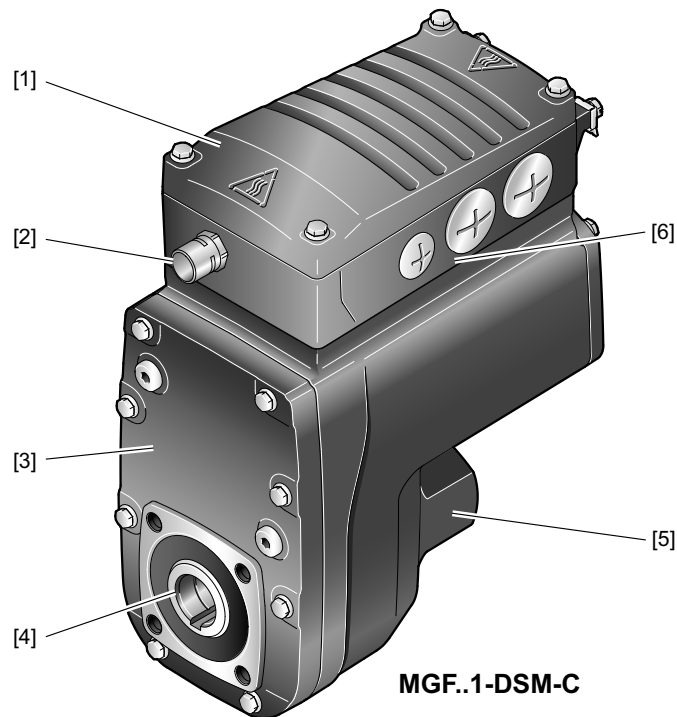
The device contains permanent magnets that create strong magnetic fields even when de-energized. Magnetic fields may pose a health risk. This especially applies to persons with active medical implants. During operation, additional electromagnetic fields are generated.

Observe DGUV (German Social Accident Insurance) regulation 15 – "Electromagnetic fields" for use in industrial workplaces. In other countries, the corresponding national and local regulations and provisions must be complied with.

3 Unit structure

3.1 MOVIGEAR® classic drive unit

MOVIGEAR® classic is a unit consisting of a gear unit and a synchronous motor in a compact aluminum die-cast housing (see following figure).



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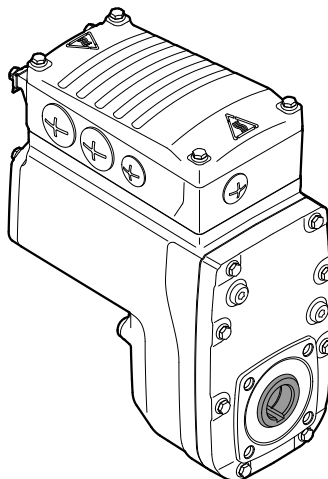
- [1] Cover
- [2] Option /PE (pressure compensation fitting electronics)
- [3] Gear unit cover
- [4] Output shaft variant (pictured here: hollow shaft with keyway)
- [5] Optional safety cover
- [6] Connection box for cable glands

3.2 Shaft types

MOVIGEAR® classic is available with the following shaft variants:

3.2.1 MOVIGEAR® classic with hollow shaft and keyway (MGFA.)

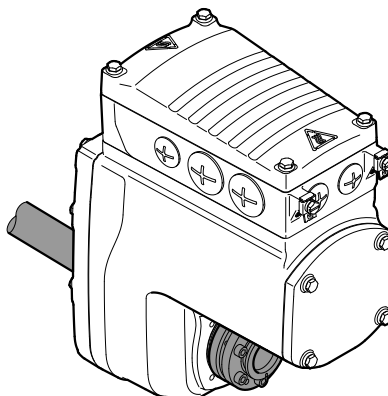
The following figure shows a MOVIGEAR® classic unit with hollow shaft and keyway:



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3.2.2 MOVIGEAR® classic with TorqLOC® hollow shaft mounting system (MGFT.)

The following figure shows a MOVIGEAR® classic unit with TorqLOC® hollow shaft mounting system:

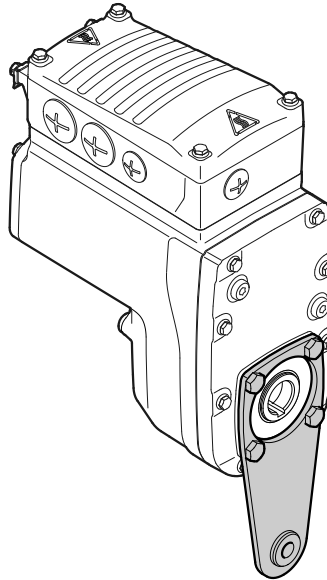


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3.3 Housing mounting

3.3.1 Torque arm (MGF.T)

The following figure shows the torque arm for MOVIGEAR® classic:



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3.3.2 Housing with threads (MGF.S)



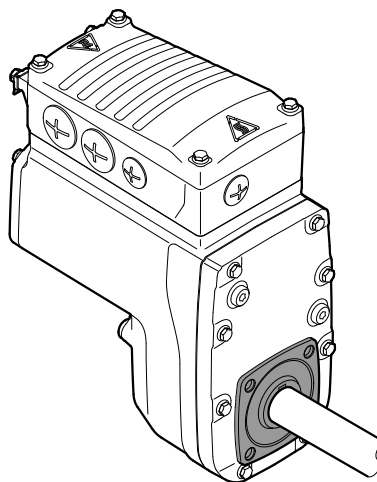
⚠ WARNING

Improper installation of the drive unit without torque arm.

Severe or fatal injuries.

- Only mount the drive units to the plant structure together with a torque arm. Installation without a torque arm is not permitted.

The following figure shows the housing type with threads for mounting a torque arm. This type does not include a centering shoulder, which means it is not suitable for direct installation to the plant structure:



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3.4 Threads for protective cover



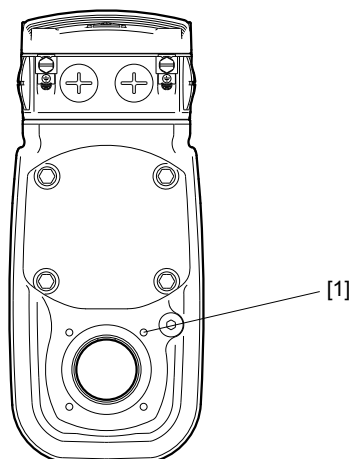
NOTICE

Impermissible use of the threads.

Damage to the drive unit.

- The threads may only be used for other applications after consultation with SEW-EURODRIVE.
- SEW-EURODRIVE assumes no guarantee or liability for resulting product damages.

The following figure shows the threads used for fastening the protective cover:



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[1] Threads for protective cover (4×)

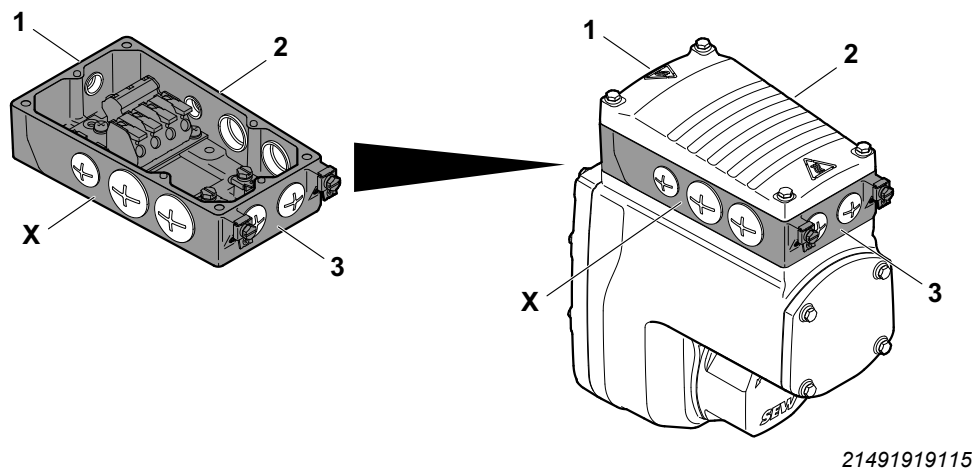
3.5 Cable entry position

The following cable entries are possible for MOVIGEAR® classic MGF..1-DSM-C:

- Position X + 1 + 2 + 3
 - X: 2 × M25 × 1.5 + 1 × M16 × 1.5
 - 1: 1 × M16 × 1.5
 - 2: 2 × M25 × 1.5 + 1 × M16 × 1.5
 - 3: 2 × M16 × 1.5

3.5.1 Overview

The following figure shows the possible cable entries:



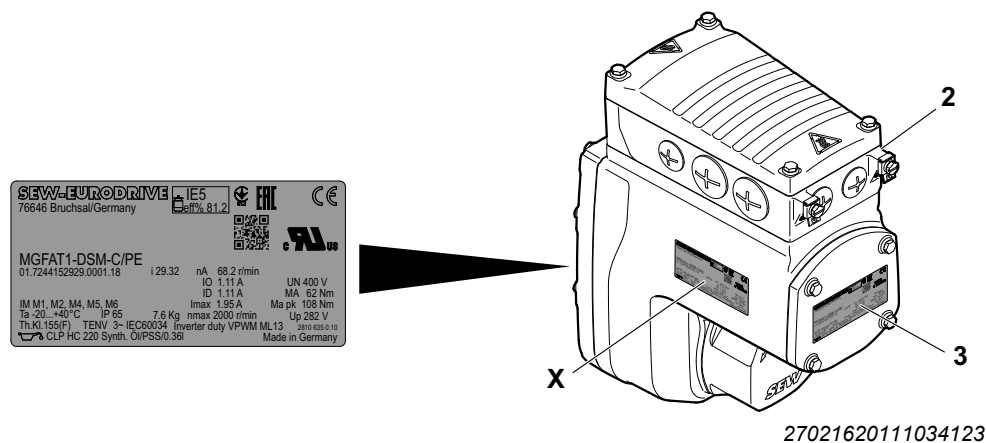
3.6 Nameplate position

The following nameplate positions are possible for MOVIGEAR® classic:

- X
- 2
- 3 (standard position)

3.6.1 Overview

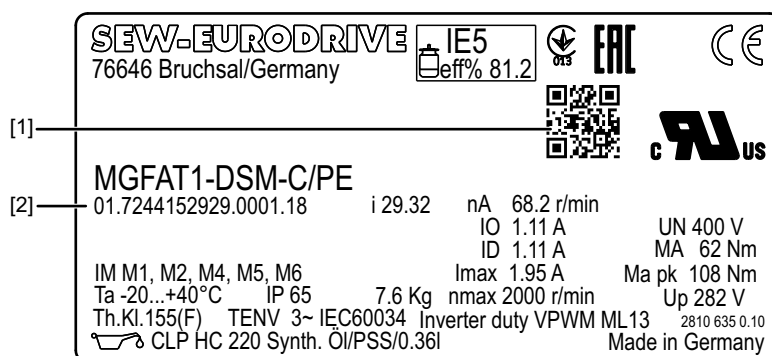
The following figure shows the possible positions:



3.7 Example nameplate and type designation of drive unit

3.7.1 Nameplate

The following figure gives an example of a MOVIGEAR® classic nameplate. For the structure of the type designation, refer to chapter "Type designation".



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- [1] The QR code on the nameplate represents the unique serial number (with period as separator).
- [2] Unique serial number

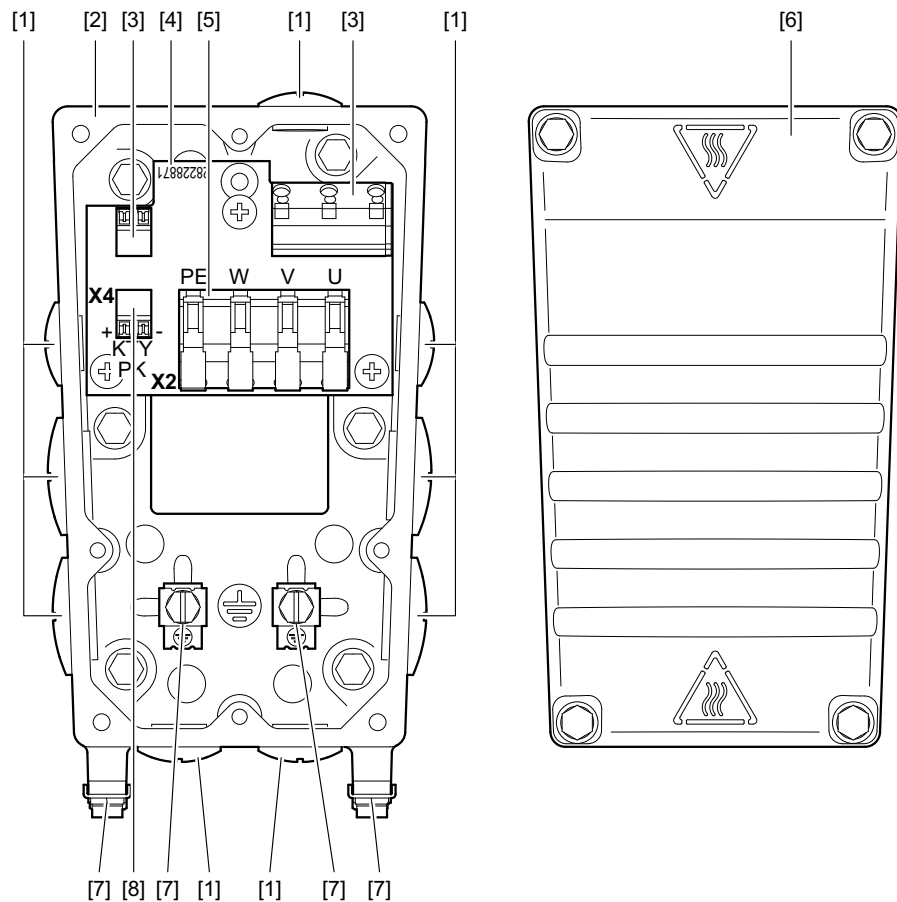
3.7.2 Type designation

The following table shows the MOVIGEAR® classic type designation:

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 T = Drive with torque arm S = Housing with threads for mounting a torque arm
1	Size 1 = Torque class 100 Nm
-	
DSM	Design DSM = classic (without electronics)
-	
C	Generation
/	
PE	Option PE = Pressure compensation fitting electronics

3.8 Cover and connection box

The following figure shows the connection box and cover on the MOVIGEAR® classic MGF..1-DSM-C:



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- [1] Cable glands
- [2] Connection box
- [3] Terminals for internal wiring
- [4] Part number of the connection board
- [5] Terminals X2 for motor connection PE, W, V, U
- [6] Cover
- [7] Screws for PE connection
- [8] Terminals X4 for PK (PT1000) temperature sensor

4 Mechanical installation

4.1 Installation notes

INFORMATION



Adhere to the safety notes during installation.



⚠ WARNING

Improper installation/disassembly of drive unit and mount-on components.

Serious injuries.

- Adhere to the notes about installation and disassembly.
- Before releasing shaft connections, make sure that there are no active torsional moments present (tensions within the system).



⚠ WARNING

Improper installation of the drive unit without torque arm.

Severe or fatal injuries.

- Only mount the drive units to the plant structure together with a torque arm. Installation without a torque arm is not permitted.



⚠ WARNING

Risk of injury if the drive unit starts up unintentionally and danger of electrical voltage.

Severe or fatal injuries.

- Disconnect the drive unit from the power supply with suitable external measures before you start working on the unit and secure it against unintentional reconnection to the voltage supply.
- Secure the output shaft against rotation.



⚠ WARNING

Risk of injury caused by rapidly moving output elements.

Serious injuries.

- Disconnect the drive unit from the power supply and safeguard it against unintentional power up before you start working on it.
- Equip the input and output elements (e.g. customer shaft with contact shoulder or clamping ring, shrink disk) with a touch guard.

4.2 Required tools and resources

- Set of wrenches, set of screwdrivers, set of socket wrenches
- Torque wrench
- Mounting device
- Compensation elements (shims and spacing rings), if necessary
- Fasteners for output elements
- Lubricant (e.g. NOCO® fluid)
- Standard parts are not included in the delivery

4.2.1 Installation tolerances for shaft ends

Diameter tolerance in accordance with DIN 748:

- ISO H7 for hollow shafts

4.2.2 Tolerances for torque ratings

The specified torques must be adhered to 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 is undamaged (no damage caused by transportation or storage).
- Ambient temperature according to the operating instructions, nameplate and lubricant table in chapter "Technical data / Lubricants".
- The drive must not be assembled in the following ambient conditions:
 - Potentially explosive atmosphere
 - Oils
 - Acids
 - Gases
 - Vapors
 - Radiation
- For special designs: The drive is designed in accordance with the actual ambient conditions.
- Clean the output shafts and flange surfaces thoroughly to ensure they are free of anti-corrosion agents, contamination or similar. Use a commercially available solvent. Do not expose the sealing lips of the oil seals to the solvent – damage to the material.
- 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

- Only mount the drive units to the plant structure together with a torque arm. Installation without a torque arm is not permitted.
- Clean the shaft ends thoroughly to ensure they are free of anti-corrosion agents (use a commercially available solvent). Do not expose the bearings and sealing rings to the solvent – damage to the material.
- Carefully align the drive unit and the driven machine to avoid placing any unacceptable strain on the shaft ends.
- Do not butt or hammer the shaft end.
- Ensure that cooling air supply is unobstructed and that air discharged by other units does not influence cooling.
- Use suitable cable glands for the supply leads (use reducing adapters if necessary).
- Seal the cable entry well.
- Clean the sealing faces of the cover well before reassembling the unit.
- Restore the corrosion protection if necessary.
- Check the validity of the degree of protection using the information in the operating instructions and the data on the nameplate.

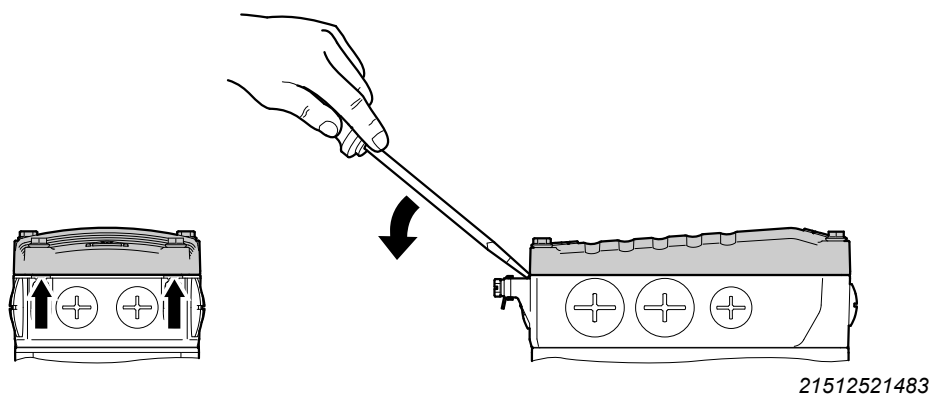
Changing the mounting position

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

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

4.4.2 Removing the cover

The following figure shows how you can lever off the cover in the intended places:



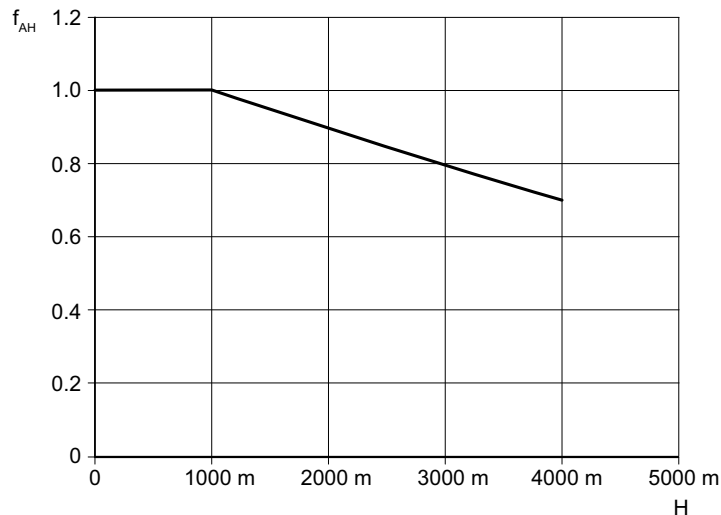
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4.4.3 Installation in damp areas or in the open

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

4.4.4 Derating depending on the installation altitude

The following diagram shows the factor f_{AH} (according to IEC 60034-1:2017, Table 12) by which the thermal motor torque has to be reduced depending on the installation altitude H .



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4.4.5 Painting drive units



NOTICE

Breather valves and oil seals may be damaged during painting or re-painting.
Potential damage to property.

- Clean the surface of the drive unit and make sure it is free from grease.
- Thoroughly cover the breather valves and sealing lip of the oil seals with strips prior to painting.
- Remove the strips after painting.

4.4.6 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



NOTICE

The breather valve cannot be used for drive units in mounting position M3.

Possible damage to property.

- You may only install the drive units in the mounting position M3 after consultation with SEW-EURODRIVE.

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

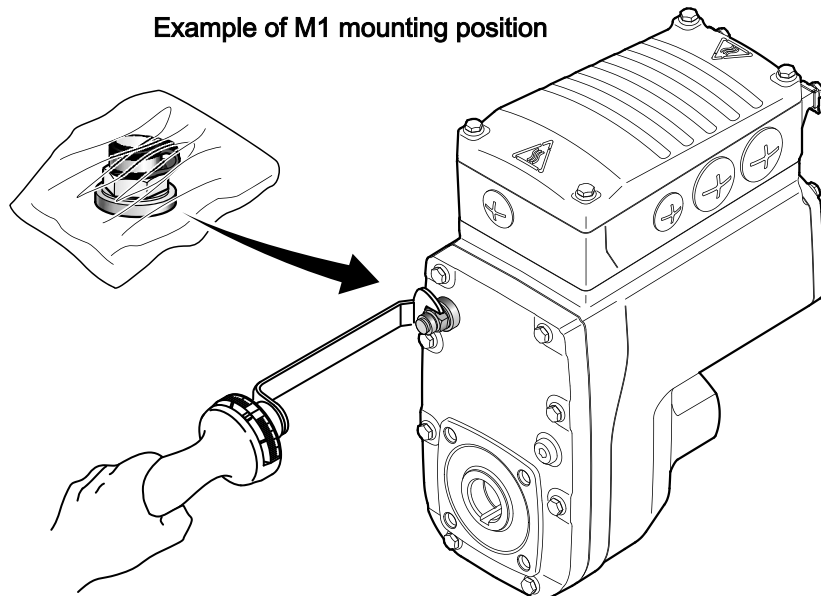
In this case, the breather valve is delivered in the hollow shaft of the drive unit. Before startup, you must replace the highest oil screw plug with the provided breather valve.

Tightening torque

Tighten the breather valve from SEW-EURODRIVE included in the delivery with 8.0 Nm.

The following figure shows an example. The position of the breather valve is dependent on the mounting position used. Observe chapter "Technical data and dimension sheets / Mounting positions".

Example of M1 mounting position

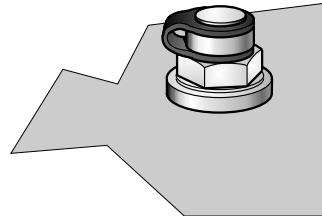


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Activating the breather valve

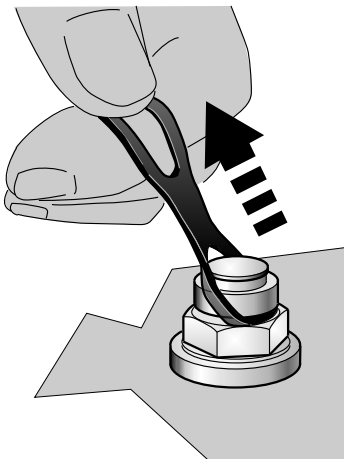
After installing the breather valve, activate it as follows. For designs with the breather valve screwed in: Check whether the breather valve is activated. If not, you have to remove the transport fixture of the breather valve before you start up the drive unit.

1. Breather valve with transport fixture



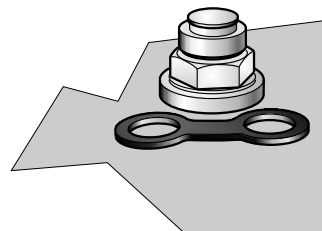
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2. Remove transport fixture



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3. Activated breather valve



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4 Mechanical installation

Setting up the drive unit

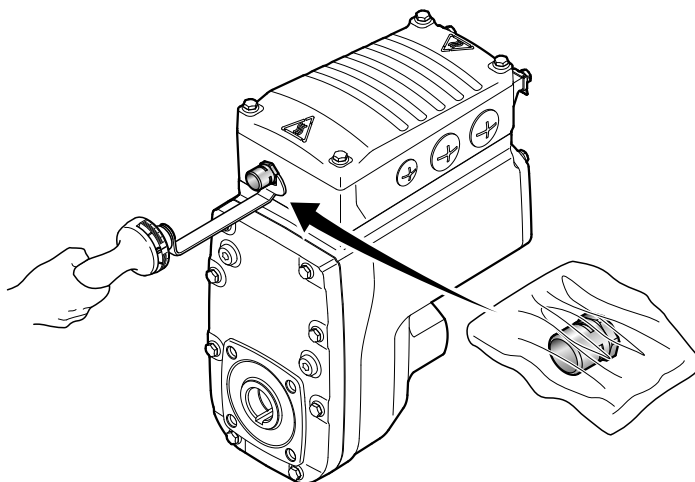
4.4.7 Pressure compensation on electronics (option /PE)

Designs with included pressure compensation fitting (option /PE)

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

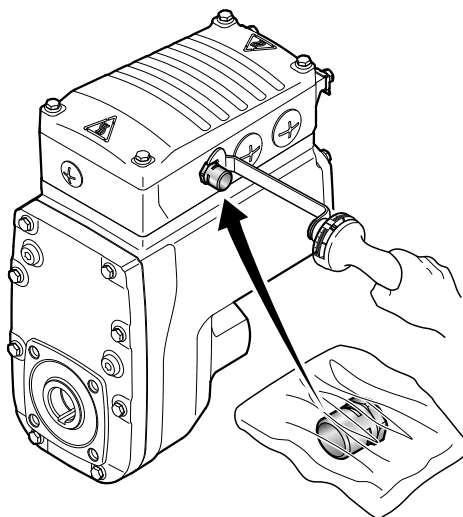
The following table shows the installation positions depending on the mounting positions:

Mounting position M1, M3*, M5, M6



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Mounting position M2, M4



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* Mounting position M3 only possible after consultation with SEW-EURODRIVE.

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4.5 Shaft-mounted gear unit with keyway

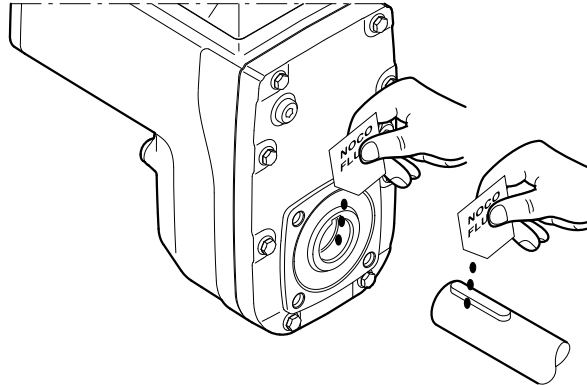
INFORMATION



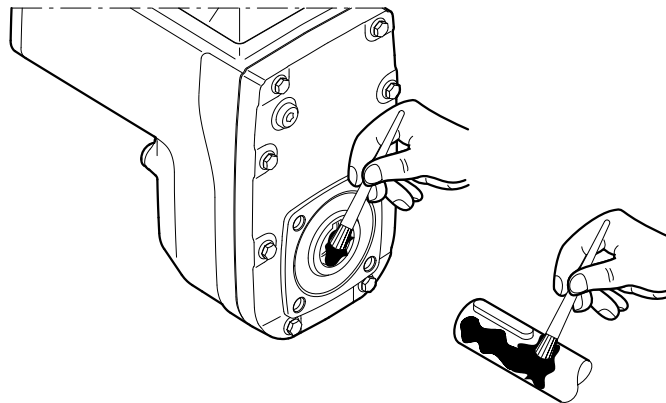
Observe the design notes in chapter "Technical data and dimension sheets" for the customer shaft design.

4.5.1 Installation notes

1. Apply NOCO® fluid and spread it thoroughly.

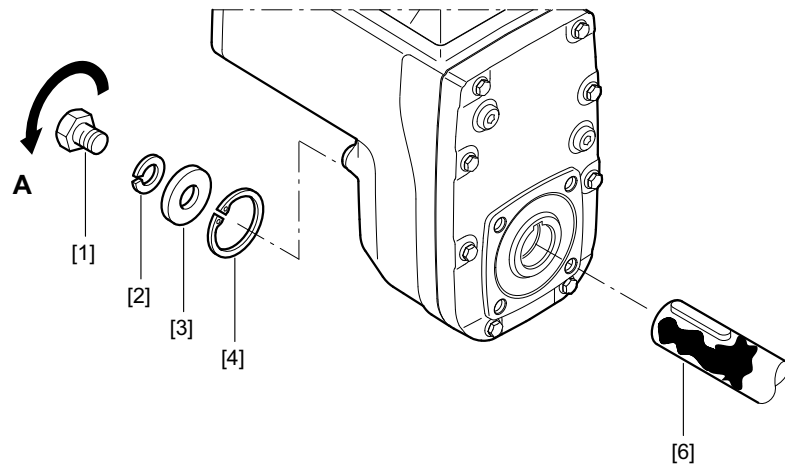


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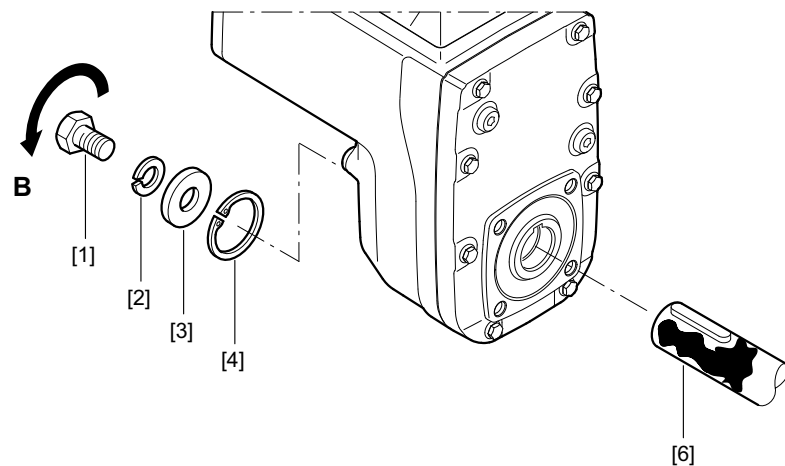
21513618699

2. Mount the shaft and secure it axially (using a mounting device makes installation easier). The three mounting types are described below:
 - 2A: Standard scope of delivery
 - 2B: Assembly/disassembly kit for customer shaft with contact shoulder
 - 2C: Assembly/disassembly kit for customer shaft without contact shoulder

2A: Standard installation procedure

21513623051

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

2B: Installation with the SEW-EURODRIVE assembly/disassembly kit¹⁾Customer shaft **with** contact shoulder

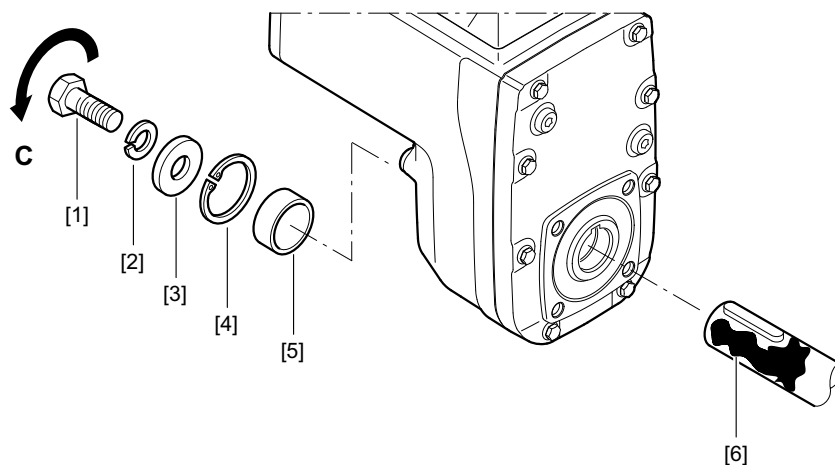
21513626507

¹⁾ Observe chapter "Technical data and dimension sheets / Design notes for gear units with hollow shaft and key".

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

2C: Installation with the SEW-EURODRIVE assembly/disassembly kit¹⁾

Customer shaft **without** contact shoulder

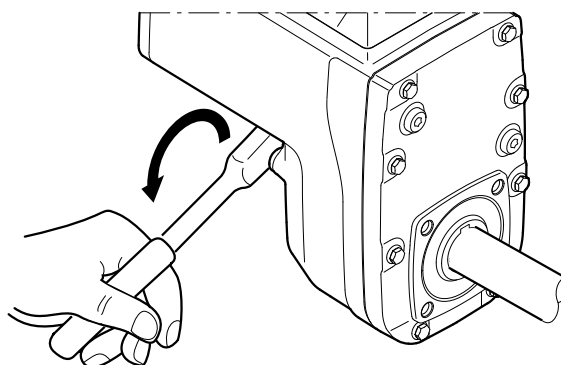


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¹⁾ Observe chapter "Technical data and dimension sheets / Design notes for gear units with hollow shaft and key".

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

3. Tighten the retaining screw to the appropriate torque (see table).



21513722379

Drive	D ^{H7}	Screw	Tightening torque
MGFA.1	20 mm	M6	8 Nm
MGFA.1	25 mm	M10	20 Nm

4.5.2 Disassembly notes

**▲ WARNING**

Risk of burns due to hot surfaces.

Serious injuries.

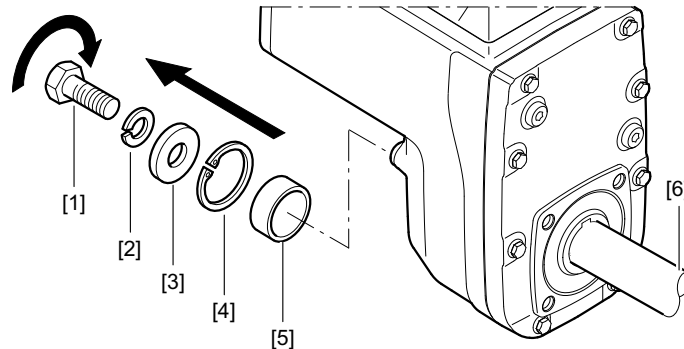
- Let the devices cool down before touching them.

**INFORMATION**

For information on the SEW-EURODRIVE assembly/disassembly kit, see chapter "Technical data and dimension sheets / Design notes".

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. Loosen the retaining screw [1].
2. Remove parts [2] to [4] and, if applicable, the spacer tube [5].

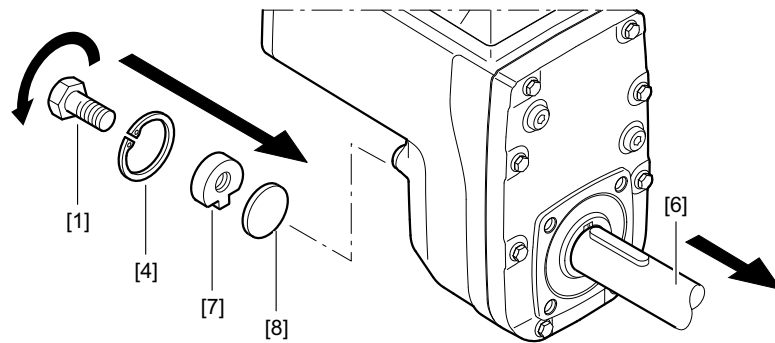


21513725835

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

3. 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].
4. Re-install the retaining ring [4].

5. Screw the retaining screw [1] back in. Now you can force the drive off the shaft by tightening the bolt.



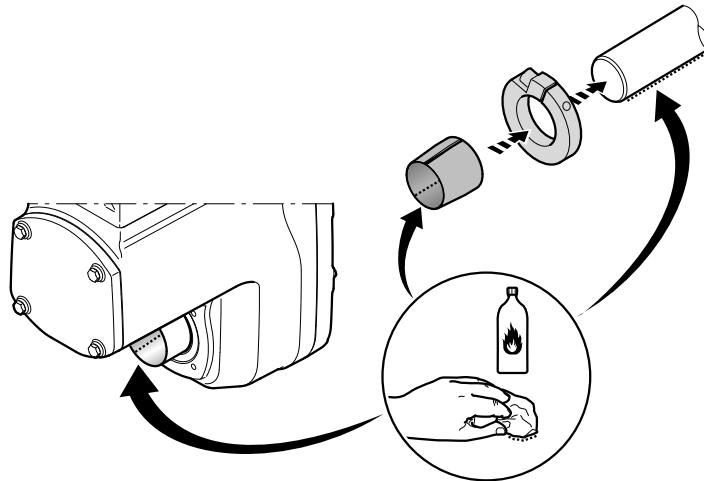
21513728267

[1] Retaining screw
[4] Retaining ring
[6] Customer shaft

[7] Fixed nut
[8] Forcing washer

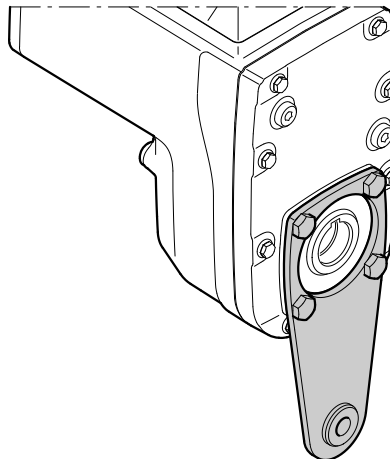
4.6 Shaft-mounted gear unit with TorqLOC® (customer shaft without contact shoulder)

1. Clean the customer shaft and the inside of the hollow shaft. Ensure that all traces of grease or oil are removed.
2. Install the stop ring and the bushing on the customer shaft.



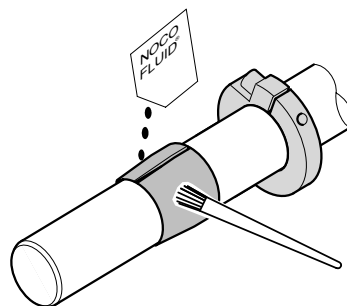
21528310923

3. Fasten the torque arm on the drive unit; observe chapter "Torque arm".



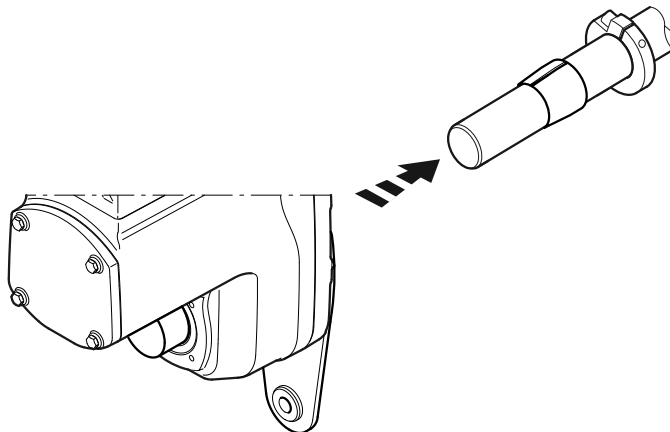
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4. Apply NOCO® fluid on the bushing and spread thoroughly.



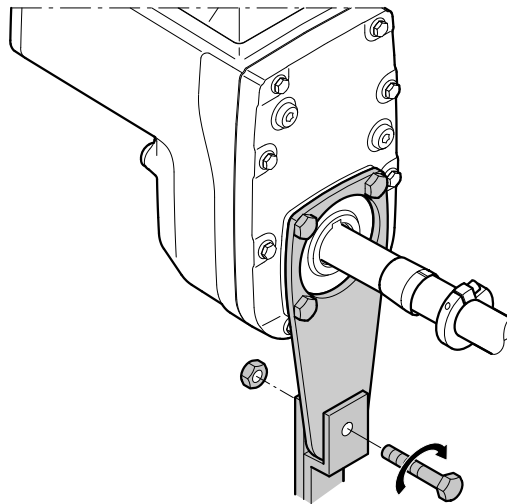
21528905739

5. Push the gear unit onto the customer shaft.



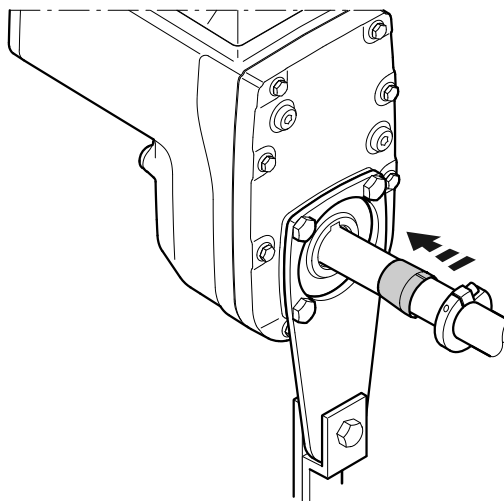
21528908171

6. Preassemble the torque arm on the plant structure / holding fixture (do not tighten the screws).



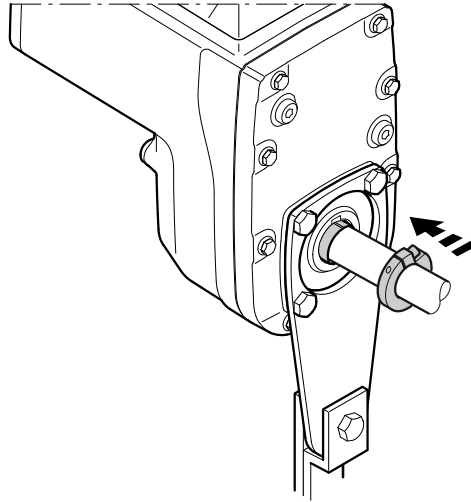
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7. Push the bushing into the gear unit up to the stop.



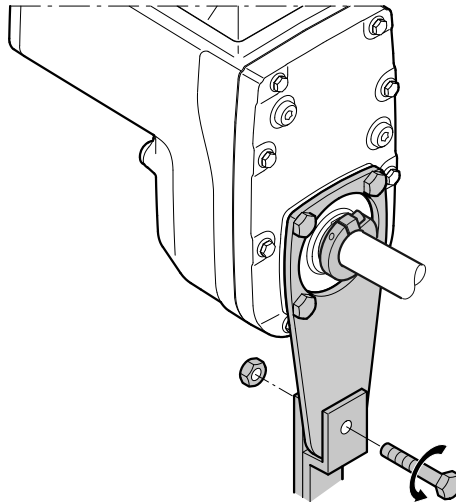
21528913035

8. Push the stop ring to the bushing. Mark the position of the stop ring.



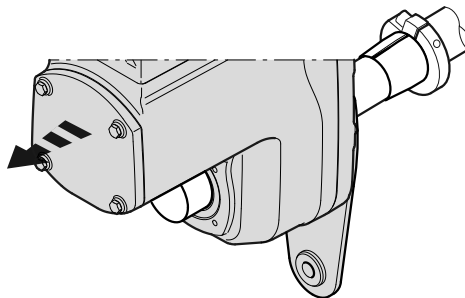
21528915467

9. Remove the torque arm from the holding fixture / plant structure.



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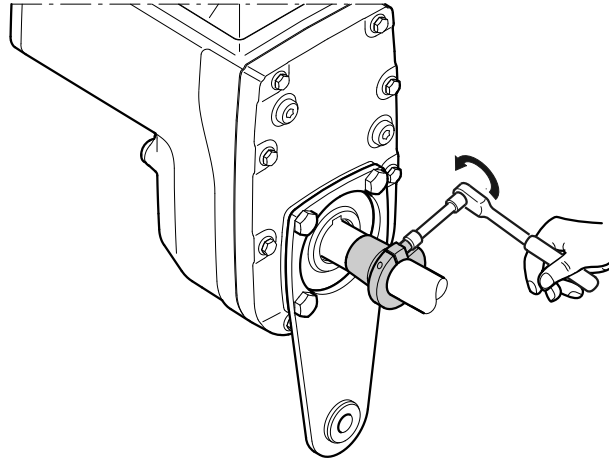
10. Pull the gear unit off the customer shaft until the stop ring is accessible for fastening.



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11. Make sure that the position of the stop ring has not changed (see marking).

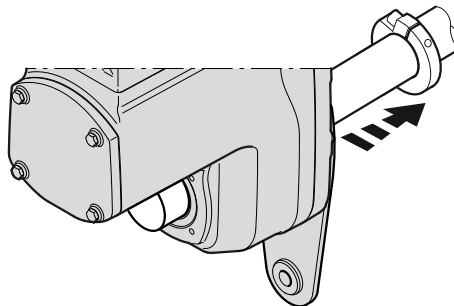
12. Tighten the stop ring using the appropriate torque as specified in the table below.



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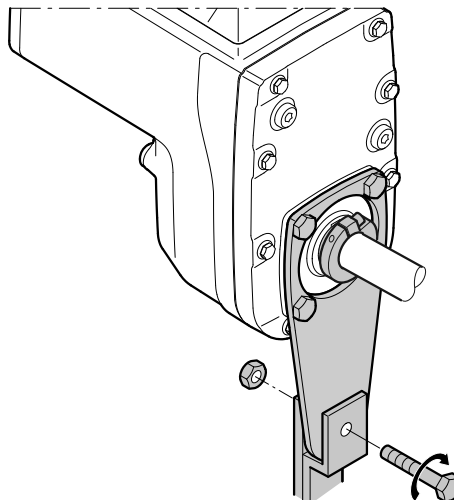
Type	Tightening torque	
	Standard design	Stainless steel
MGFT.1	18 Nm	7.5 Nm

13. Push the bushing and the gear unit onto the customer shaft up to the fixed stop ring.



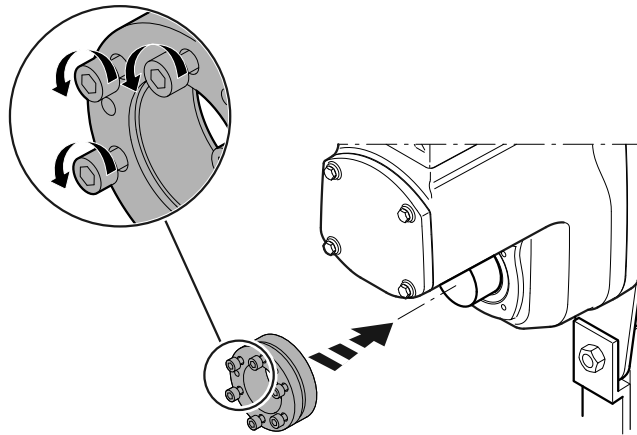
21528878987

14. Preassemble the torque arm on the plant structure / holding fixture again (do not tighten the screws).



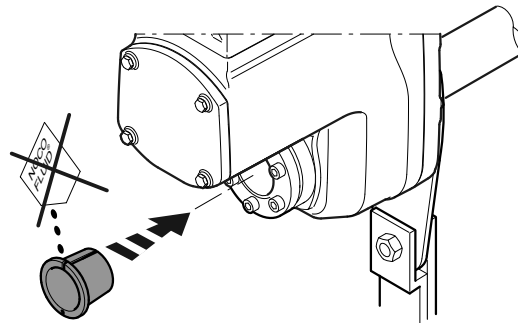
21528881419

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



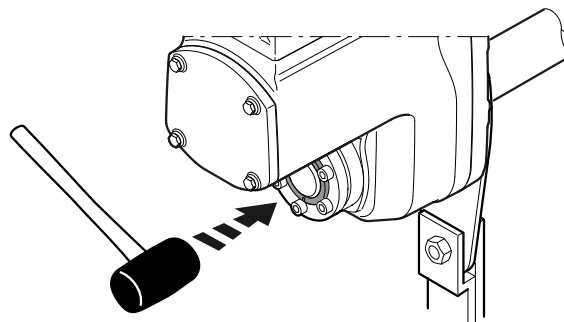
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16. Slide the counter bushing onto the customer shaft and into the hollow shaft.



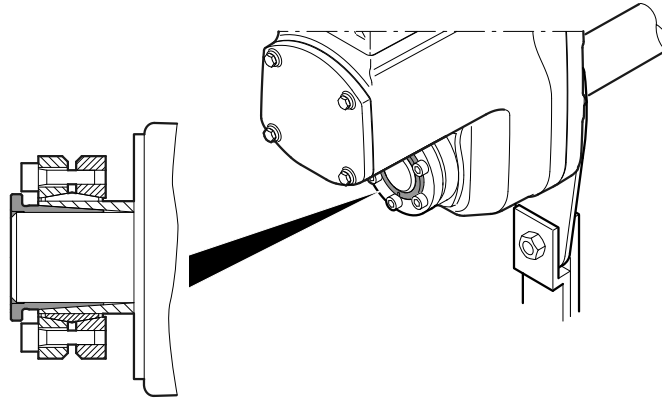
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17. Ensure the shrink disk is properly seated.
18. Tap lightly on the flange of the counter bushing to ensure that the bushing is fitted securely in the hollow shaft.



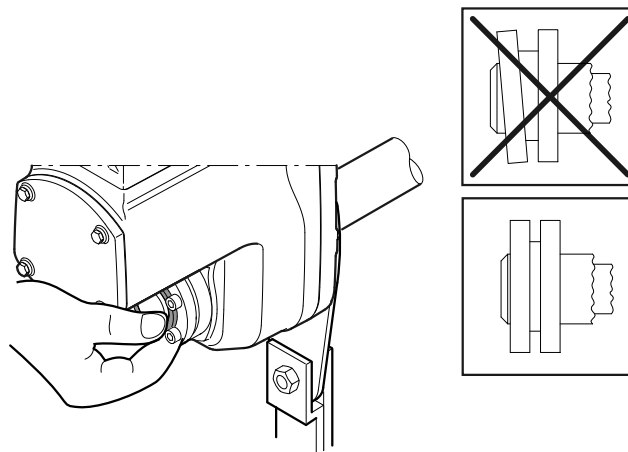
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19. Make sure that the customer shaft is seated in the counter bushing.



9007220783632139

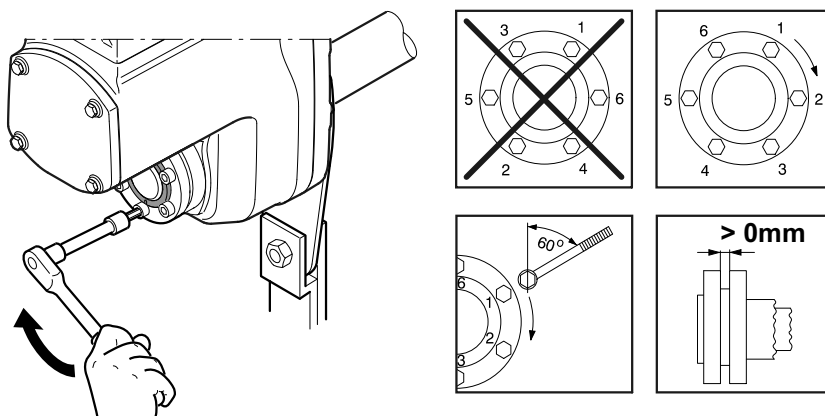
20. Only tighten the screws of the shrink disk hand-tight and ensure that the outer rings of the shrink disk are parallel.



9007220783634571

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

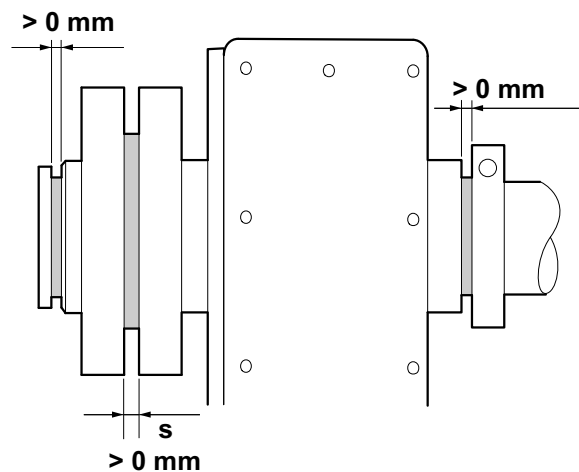
The exact values for the tightening torques are shown on the shrink disk.



9007220783637003

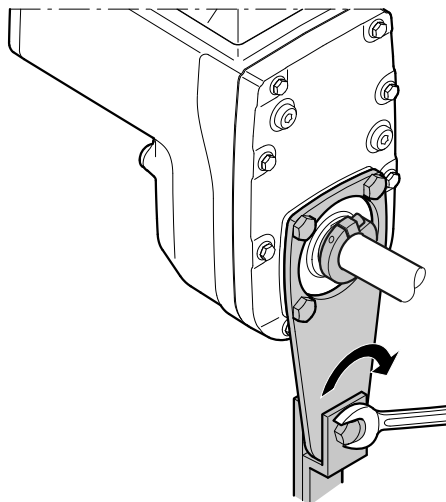
22. After installation, make sure the remaining gap s between the outer rings of the shrink disks is > 0 mm.

The remaining gap between counter bushing and hollow shaft end as well as bushing and stop ring must be > 0 mm.



21528898443

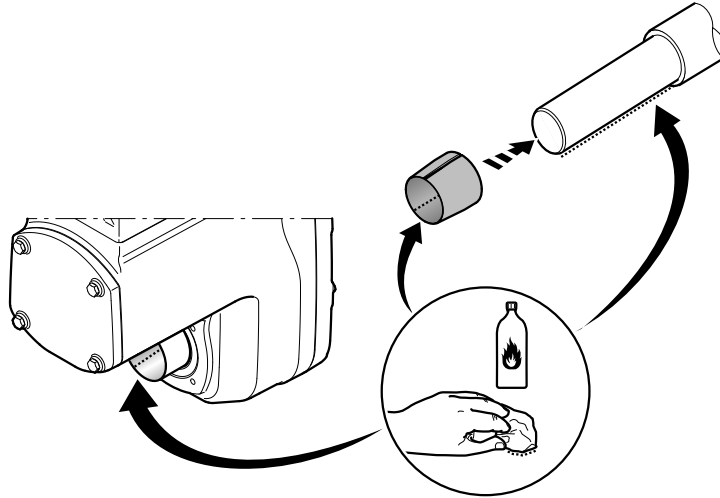
23. Securely tighten the torque arm; observe chapter "Torque arm".



21528903307

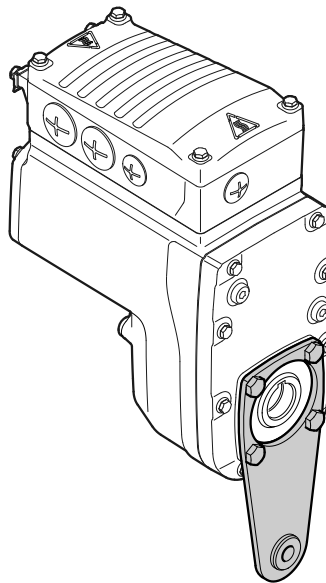
4.7 Shaft-mounted gear unit with TorqLOC® (customer shaft with contact shoulder)

1. Clean the customer shaft and the inside of the hollow shaft. Ensure that all traces of grease or oil are removed.



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2. Fasten the torque arm on the drive unit; observe chapter "Torque arm".

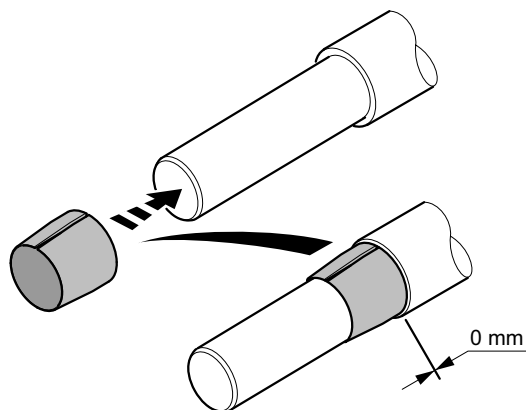


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4 Mechanical installation

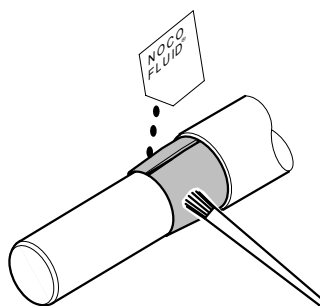
Shaft-mounted gear unit with TorqLOC® (customer shaft with contact shoulder)

3. Slide the bushing onto the customer shaft.



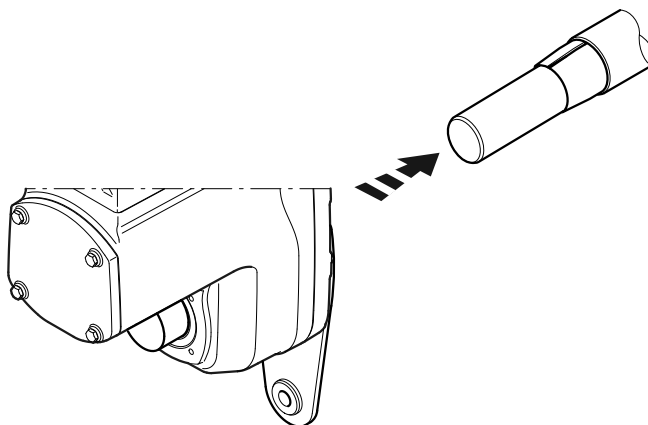
21528993931

4. Apply NOCO® fluid on the bushing and spread thoroughly.



21528996363

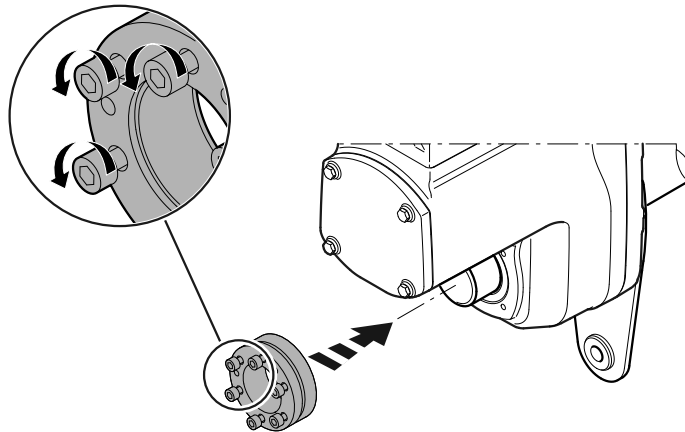
5. Push the gear unit onto the customer shaft.



21528998795

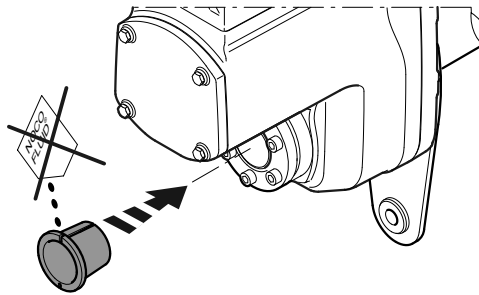
25805134/EN – 07/2018

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



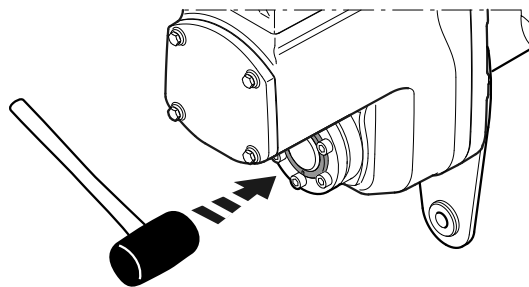
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7. Slide the counter bushing onto the customer shaft and into the hollow shaft.



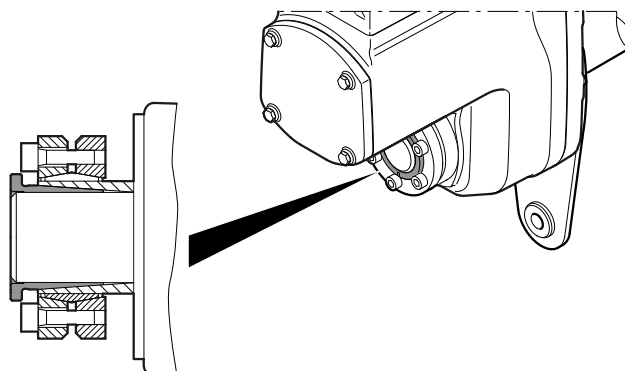
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8. Ensure the shrink disk is properly seated.
9. Tap lightly on the flange of the counter bushing to ensure that the bushing is fitted securely in the hollow shaft.



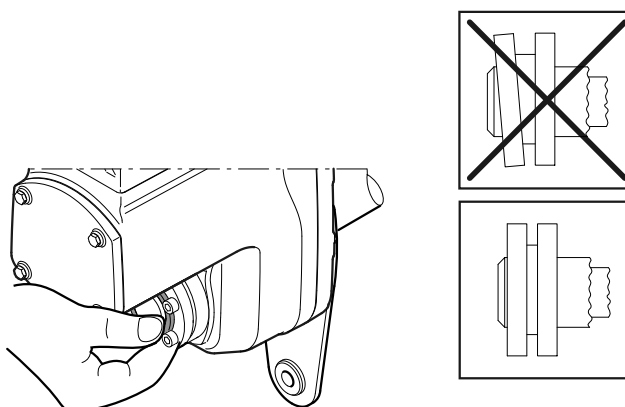
9007220783747083

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



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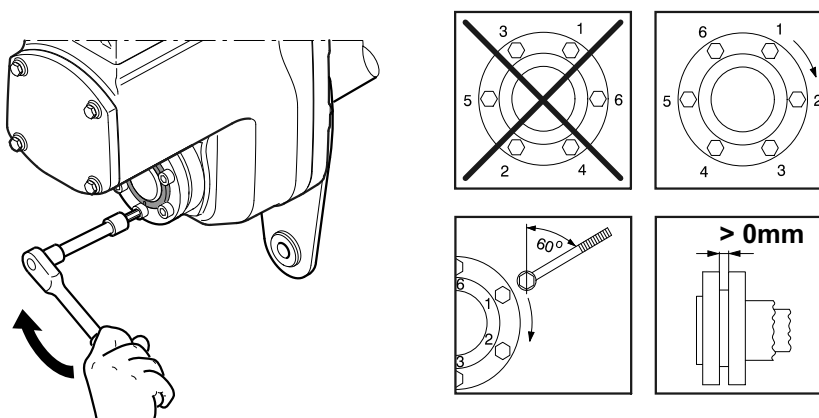
11. Only tighten the screws of the shrink disk hand-tight and ensure that the outer rings of the shrink disk are parallel.



9007220783722763

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

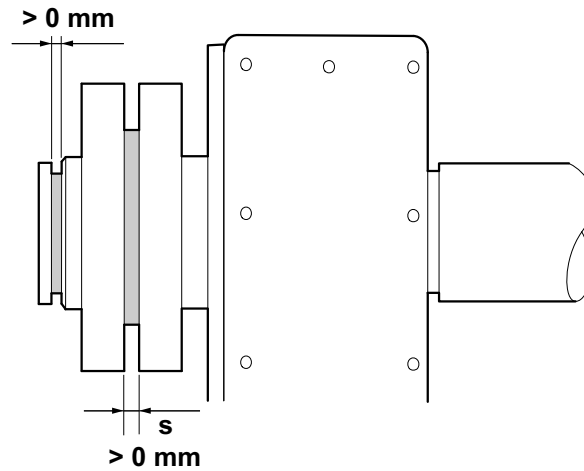
The exact values for the tightening torques are shown on the shrink disk.



9007220783725195

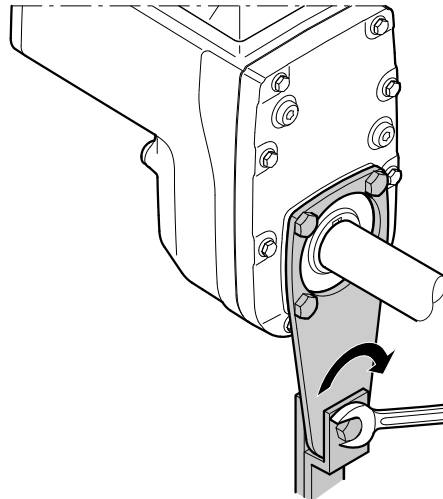
13. After installation, make sure the remaining gap s between the outer rings of the shrink disks is > 0 mm.

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



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15. Mount the torque arm and tighten it securely; observe chapter "Torque arm".



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

4.8.1 Removal notes



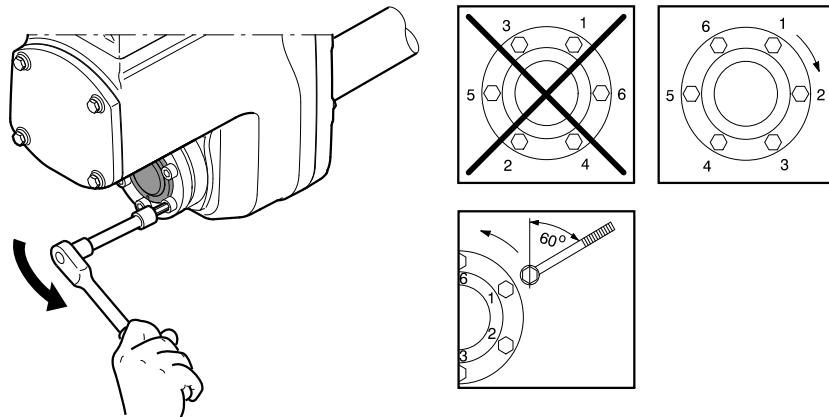
▲ WARNING

Risk of burns due to hot surfaces.

Serious injuries.

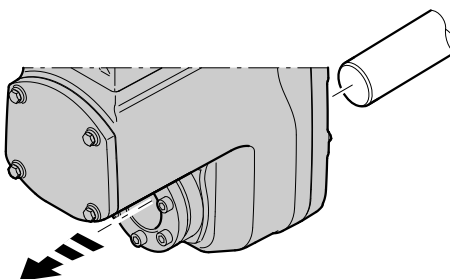
- Let the devices cool down before touching them.

1. Loosen the locking screws one after the other by a quarter rotation each to avoid tilting the outer rings.



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2. Unscrew the locking screws evenly one after the other.
Do not remove the locking screws completely.
3. Dismantle the conical steel bushing.
If required, 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.
4. Remove the gear unit from the shaft.



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5. Remove the shrink disk from the hub.

4.8.2 Cleaning and lubrication

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

Clean and lubricate the shrink disk if it is dirty.

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 paste
Aemasol MO 19P	Spray or paste
Aemasol DIO-sétral 57 N (lube coat)	Spray

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

4.9 Installing the protective cover



⚠ WARNING

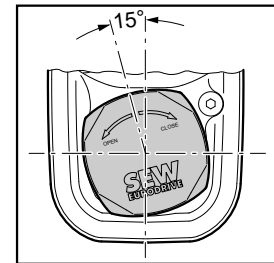
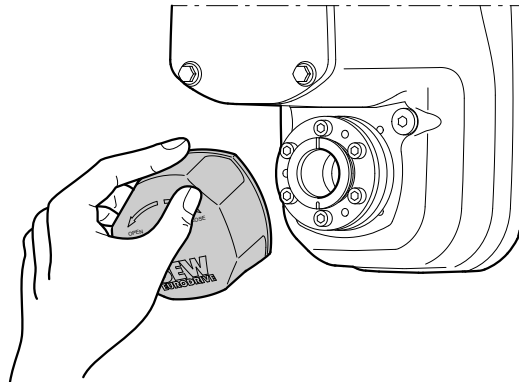
Risk of injury caused by rapidly moving output elements.

Serious injuries.

- Disconnect the drive unit from the power supply and safeguard it against unintentional power up before you start working on it.
- Equip the input and output elements with a touch guard.

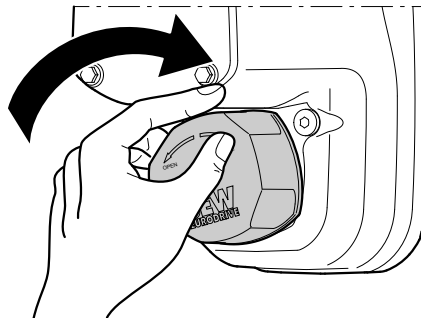
4.9.1 Installing the fixed cover

1. Place the safety cover offset by 15° counterclockwise.



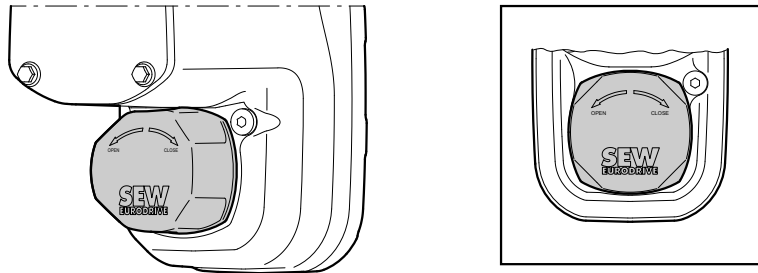
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2. Turn the safety cover clockwise until it locks in position.



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3. The following figure shows the installed safety cover:



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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



NOTICE

Improper assembly may damage the drive unit.

Possible damage to property.

- Do not place torque arms under strain during installation.
- Always use bolts of quality 8.8 to fasten torque arms.



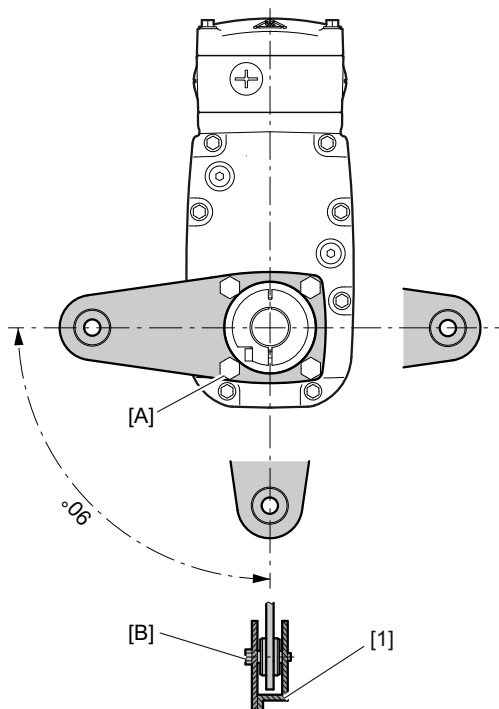
INFORMATION

The bolts required can be enclosed with delivery, when required.

4.10.1 MGF.T1 torque arm

Installation options

The following figure shows the MGF.T1 torque arm:



21524154891

[1] Bush with bearings on both ends

Tightening torques

The following table shows the required tightening torques:

Drive	Screw [A]		Screw [B]	
	Size	Tightening torque	Size	Tightening torque
MGF.T1	M8	25 Nm	M10	20 Nm

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4.11 Tightening torques



▲ WARNING

Risk of burns due to hot surfaces.

Serious injuries.

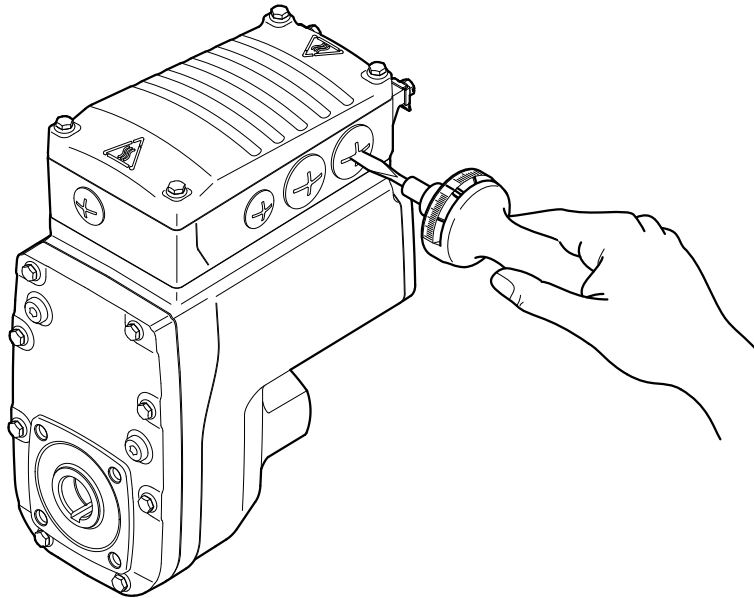
- Let the devices cool down before touching them.

4.11.1 Blanking plugs

Tighten the plastic blanking plugs **included in the delivery** by SEW-EURODRIVE with 2.5 Nm.

Example

The following figure shows an example. The number and position of the cable entries depends on the ordered variant.



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4.11.2 Cable glands

Tightening torques

Tighten the EMC cable glands **optionally** supplied by SEW-EURODRIVE to the following torques:

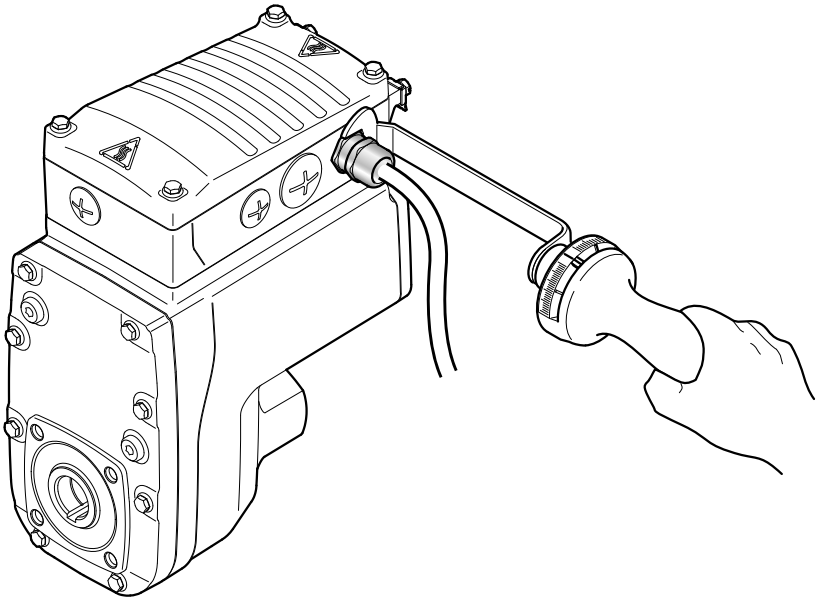
Screw fitting	Part number	Contents	Size	Outer cable diameter	Tightening torque
EMC cable glands (nickel-plated brass)	18204783	10 pieces	M16 × 1.5	5 to 9 mm	4.0 Nm
	18204805	10 pieces	M25 × 1.5	11 to 16 mm	7.0 Nm
EMC cable glands (stainless steel)	18216366	10 pieces	M16 × 1.5	5 to 9 mm	4.0 Nm
	18216382	10 pieces	M25 × 1.5	11 to 16 mm	7.0 Nm

The cable retention in the cable gland must withstand the following removal force of the cable from the cable gland:

- Cable with outer diameter > 10 mm: ≥ 160 N
- Cable with outer diameter < 10 mm: = 100 N

Example

The following figure shows an example. The number and position of the cable entries depends on the ordered variant.

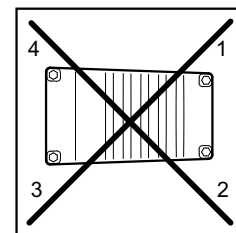
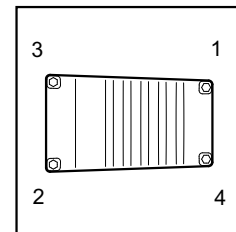
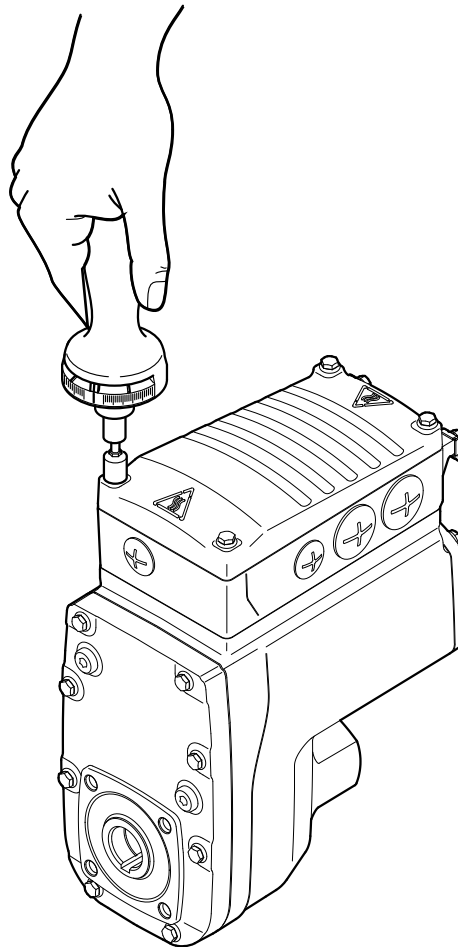


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4.11.3 Cover

Proceed as follows when installing the cover: Insert the screws and tighten them in diametrically opposite sequence **step by step** with a tightening torque of 6.0 Nm.



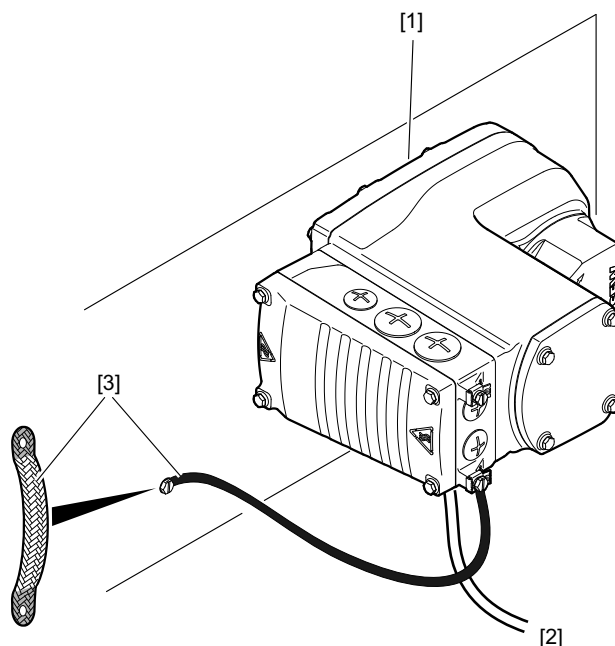
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5 Electrical installation

5.1 Equipotential bonding

Regardless of the PE connection, it is essential that **low-impedance, HF-capable equipotential bonding** is provided (see also EN 60204-1 or DIN VDE 0100-540):

- Establish a connection over a wide surface area between the drive unit and the mounting rail.
- To do so, use a ground strap (HF litz wire), for example, to connect the drive unit and the grounding point of the plant.

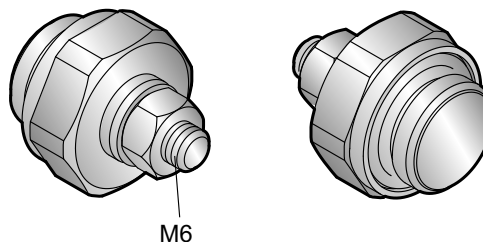


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- [1] Conductive connection over a large area between drive unit and mounting plate
- [2] PE conductor in the supply system cable
- [3] EMC-compliant equipotential bonding, for example using a ground strap (HF litz wire)

5.2 Equipotential bonding at the connection box

Another option for HF-capable equipotential bonding at a connection box is the following cable gland with M6 stud bolt:



3884960907

	Tightening torque on cable gland	Tightening torque on M6 nut for stud bolt	Part number
M16 cable gland with M6 stud bolt	4.0 Nm	3.0 Nm	08189234
M25 cable gland with M6 stud bolt	7.0 Nm	3.0 Nm	08192685

You can install this cable gland at a connection box that still has a free cable entry hole of size M16 or M25.

Screw the cable gland into the free hole and install the grounding cable (with ring cable lug) or the HF litz wire at the M6 stud bolt.

5.3 Installation instructions

5.3.1 Thermal motor protection



NOTICE

Faulty installation.

Electromagnetic interference of the drives.

- Install the connecting lead of the PK (PT1000) 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 (PT1000) or the power cable is shielded.

5.3.2 Permitted cable cross section of terminals

Design with cage clamp terminals

Terminals X2 for motor connection

Observe the permitted cable cross sections for installation:

Terminals X2 for motor connection	
Connection cross section (mm ²)	0.5 mm ² – 6.0 mm ²
Connection cross section (AWG)	AWG20 – AWG10
Stripping length	11 mm – 12 mm

Terminals X4 for temperature sensor

Adhere to the permitted cable cross sections for installation:

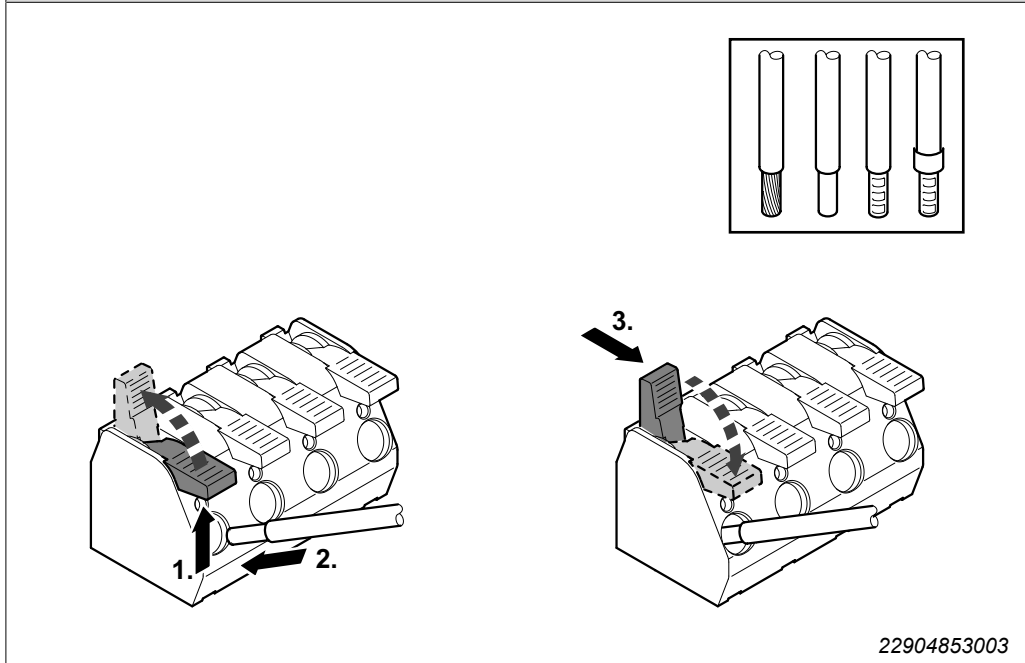
Terminals X4 for temperature sensor	Without conductor end sleeves	With conductor end sleeves (without shroud)	With conductor end sleeves (with shroud)
Connection cross section (mm ²)	0.2 mm ² – 1.5 mm ²	0.25 mm ² – 1.5 mm ²	0.25 mm ² – 0.75 mm ²
Connection cross section (AWG)	AWG24 – AWG16	AWG24 – AWG16	AWG24 – AWG18
Stripping length	8 mm		

5.3.3 Activating the terminals (only designs with cage clamp terminals)

Activating terminals X2 for motor connection

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

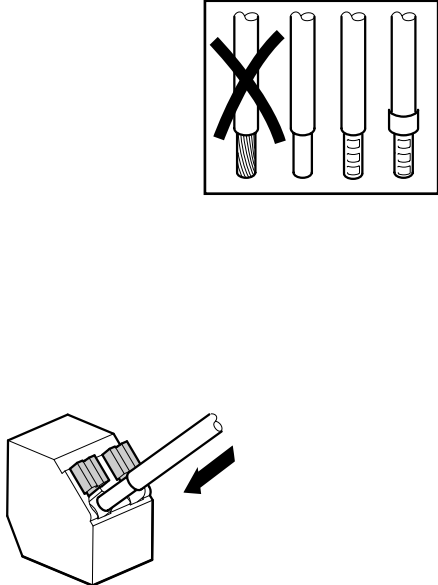
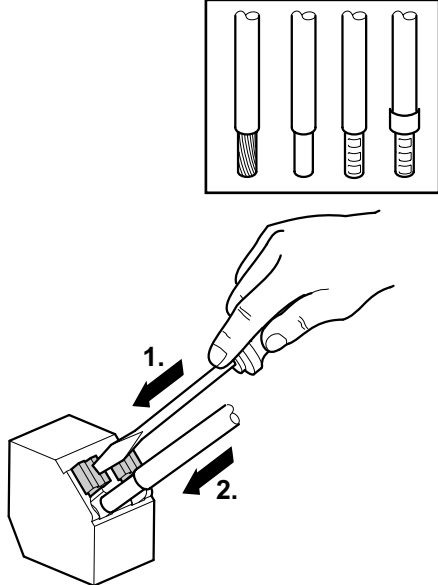
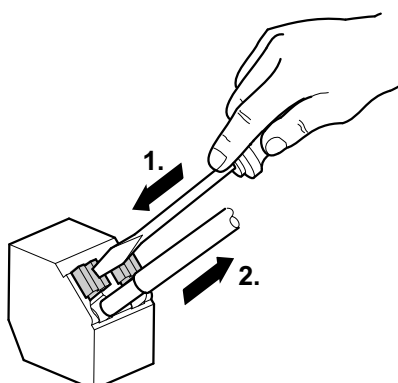
Terminals X2 for motor connection (the following figure shows a schematic illustration)



Activating terminals X4 for temperature sensor

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

Before removing the conductor, first press the actuation button on top.

Terminals X4 for temperature sensor (the following figure shows a schematic illustration)	
Connect conductor, without pushing the activation button.	Connect conductor, after pressing the activation button.
 <p>22904860811</p>	 <p>22904932619</p>
<p>The following conductors can be installed directly (without tool) up to two cross-section sizes below the nominal cross section:</p> <ul style="list-style-type: none"> • Single-wire conductors • Flexible conductors with end sleeves 	<p>When connecting the following conductors, you must press the actuation button on top to open the clamping spring:</p> <ul style="list-style-type: none"> • Untreated, flexible conductors • Conductors with small cross sections that cannot be plugged in directly.
Remove the conductor. First press the activation button.	
 <p>22904940427</p>	

5.3.4 Notes on PE connection



▲ WARNING

Electric shock due to incorrect connection of PE.
Severe or fatal injuries.

- The permitted tightening torque for the screw is 2.0 – 2.4 Nm.
- Observe the following notes regarding PE connection.

Prohibited assembly	Recommendation: Assembly with forked cable lug Permitted for all cross sections	Assembly with solid connecting wire Permitted for cross sections up to max. 2.5 mm ²
	22904959499	22904948235

[1] Forked cable lug suitable for M5 PE screws

5.4 Installation topologies

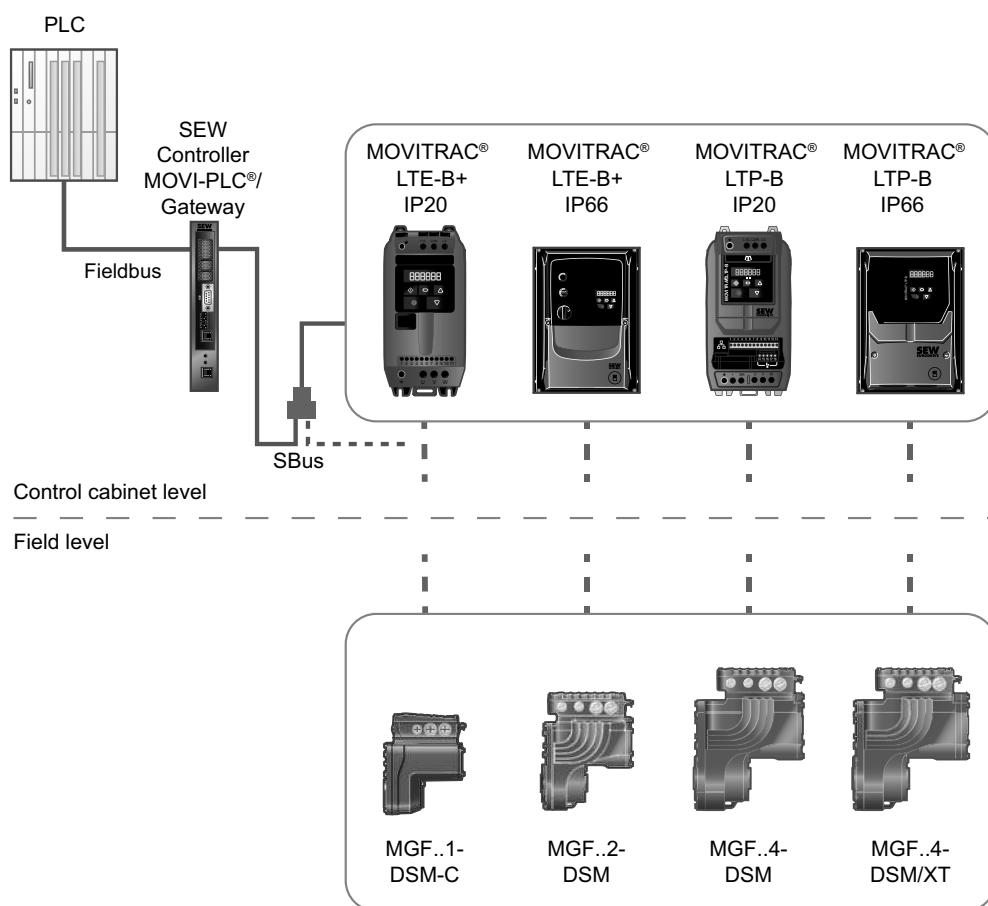
5.4.1 Installation topology with MOVITRAC® LTP-B, LTE-B+ and MOVI-PLC® with CCU



INFORMATION

The following figure shows a schematic installation topology with the frequency inverter MOVITRAC® LTP-B, LTE-B+ and SEW-EURODRIVE controller MOVI-PLC® with CCU.

Observe the installation notes in the documentation of the inverter/controller that you use.



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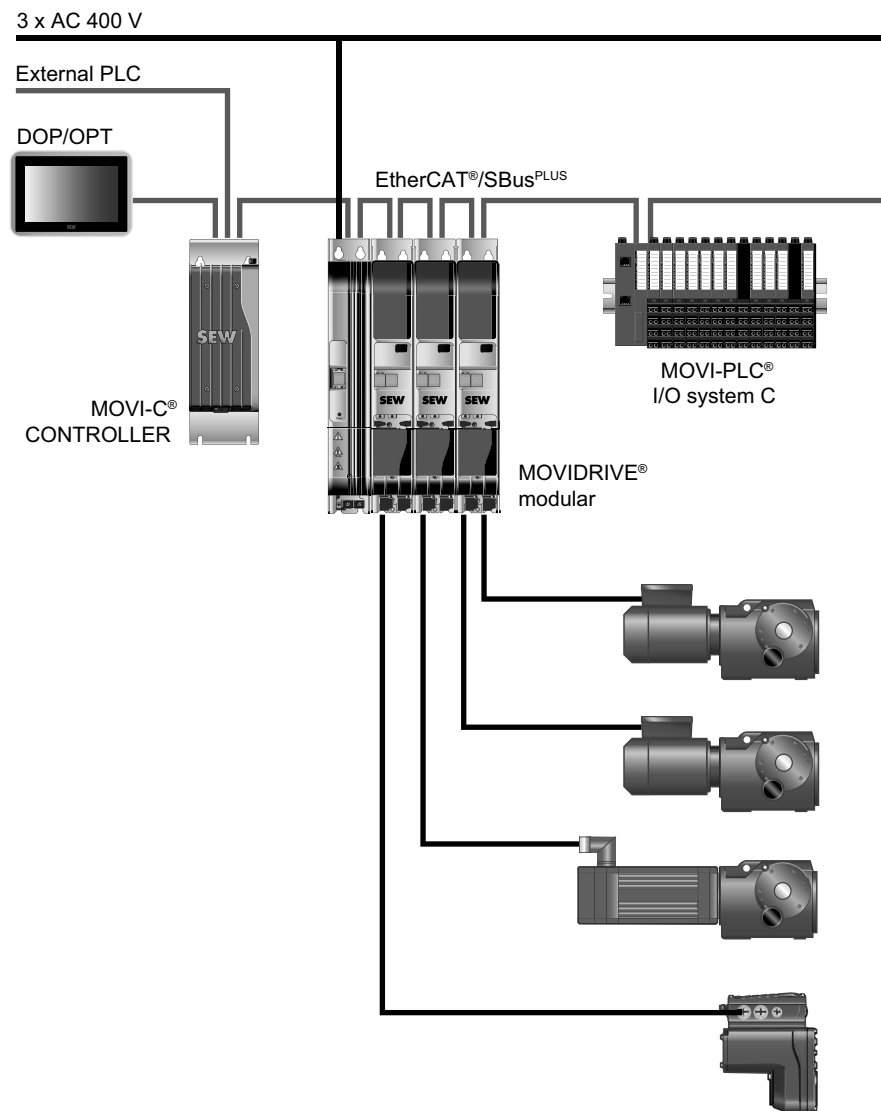
5.4.2 Installation topology with MOVIDRIVE® modular and MOVI-C® CONTROLLER



INFORMATION

The following figure shows a schematic installation topology with the MOVIDRIVE® modular application inverter and MOVI-C® CONTROLLER from SEW-EURODRIVE.

Observe the installation notes in the documentation of the inverter/controller that you use.



5.5 Terminal assignment

5.5.1 Design with cage clamp terminals



⚠ WARNING

Electric shock due to regenerative operation while turning the shaft.

Severe or fatal injuries.

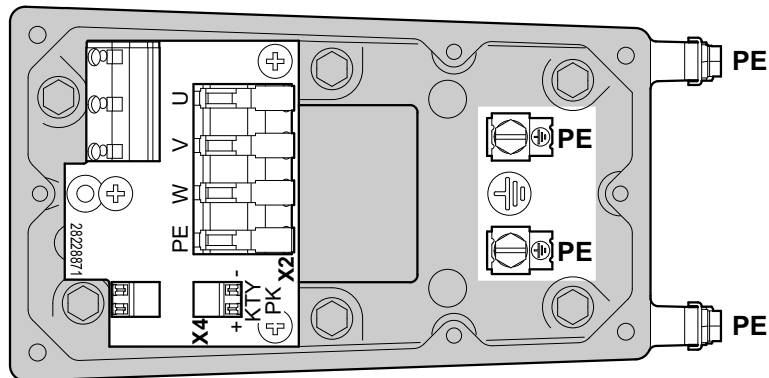
- Secure the output shaft against rotation while the cover is removed.



INFORMATION

It is essential that you observe the wiring instructions in the documentation of the frequency inverter that you use.

The following figure shows the terminal assignment of the MOVIGEAR® MGF..1-DSM-C drive unit:



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Frequency inverter connection		
Terminal	Name	Function
X4	KTY PK	+
	KTY PK	-
X2	PE	PE connection
	W	Phase W
	V	Phase V
	U	Phase U
⊕	PE	PE connection

5.6 Thermal motor protection



NOTICE

Overheating of the device due to the low thermal time constants of the winding.

Possible damage to property.

- In addition to the temperature sensor also activate current monitoring (I^2t , effective current monitoring), or activate a motor model for thermal protection, providing your inverter supports such functions.

5.6.1 PK (PT1000) temperature sensor



NOTICE

Damage to the temperature sensor and the motor winding caused by excessive test currents.

Possible damage to property.

- Use test currents < 3 mA in the PK (PT1000) circuit. Doing so avoids excessive self-heating of the temperature sensor and consequently prevents its insulation and the motor winding from damage.

For detailed information about how to connect the PK (PT1000) temperature sensor, refer to chapter "Terminal assignment".

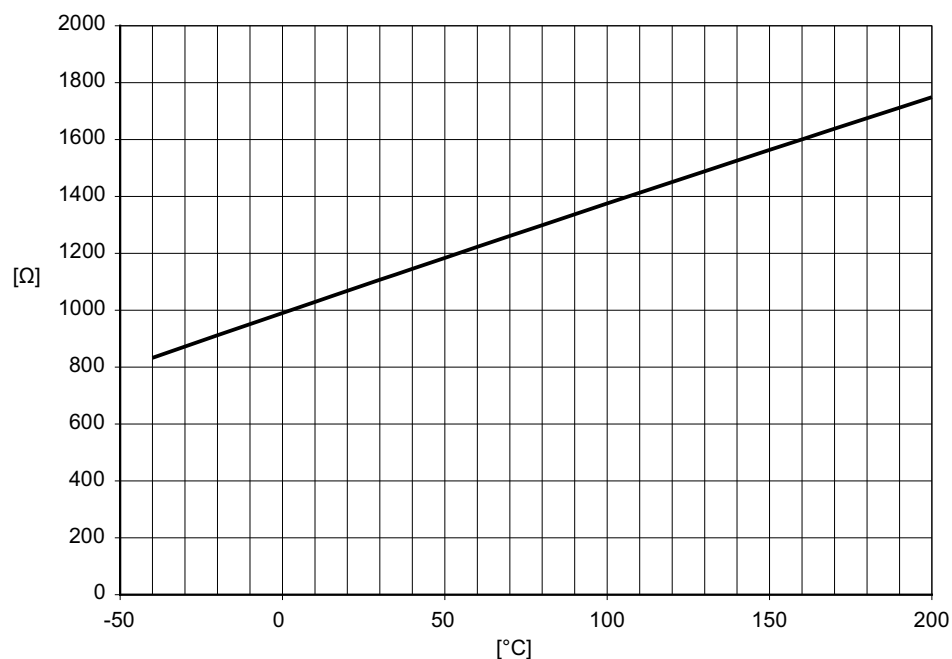
Typical characteristic curve

INFORMATION



The temperature sensor is unipolar, which means that interchanging the incoming cables does not change the measurement result.

The following figure shows a typical characteristic curve of the PK (PT1000):



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6 Startup

6.1 Startup notes

INFORMATION



- It is essential to comply with the safety notes during startup.
- Correct project planning for the drive is a prerequisite for successful startup. For project planning notes, refer to the catalog.
- 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.

6.2 Prerequisites for startup

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".

7 Service



NOTICE

Improper work on the drive units can lead to damage.

Possible damage to property.

- Note that only qualified personnel is permitted to repair drives from SEW-EURODRIVE.
- Consult SEW-EURODRIVE Service department.

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	Consult SEW-EURODRIVE Service
	Knocking noise: Irregularity in the gearing	
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	Consult SEW-EURODRIVE Service
Oil leaking from the connection box	Internal seal defective	Consult SEW-EURODRIVE Service
Oil leaking from oil seal at output end¹⁾	Oil seal defective	Replace oil seal
	Too much oil	Correct the oil quantity
	Drive installed in the wrong mounting position or breather valve installed in wrong position	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
	Fuse blown	Replace fuse
	Motor protection tripped	Check motor protection for correct setting, correct fault if necessary
	Frequency inverter defective, overloaded, incorrectly wired, or incorrectly set	Check frequency inverter, check wiring

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Fault	Possible cause	Measure
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
	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
	Ambient temperature too high	Observe permitted temperature range
	Insufficient cooling	Correct cooling air supply or clear cooling air passages
	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
	Frequency inverter not optimized	Check frequency inverter

1) Short-term oil/grease leakage at the oil seal is possible in the run-in phase (24 hours runtime).

7.2 SEW-EURODRIVE Service

7.2.1 Sending in a unit for repair

If you are unable to rectify a fault, contact SEW-EURODRIVE Service. For the addresses, refer to www.sew-eurodrive.com.

When contacting the SEW-EURODRIVE service, always specify the following information so that our service personnel can assist you more effectively:

- Information on the device type on the nameplate (e.g. type designation, serial number, part number, product key, purchase order number)
- Brief description of the application
- Fault message on the status display
- Nature of the fault
- Accompanying circumstances
- Any unusual events preceding the problem

7.3 Extended storage

7.3.1 Drive



NOTICE

Volatilization of the VCI anti-corrosion agent

Possible damage to property.

- Drive units must be kept tightly closed until they are started up.



INFORMATION

For storage periods longer than 9 months, SEW-EURODRIVE recommends the "Extended storage" variant. Drive units in this design are designated with a corresponding label.

The lubricant of those drive units is then mixed with a VCI anti-corrosion agent (volatile corrosion inhibitors). Note that this VCI anti-corrosion agent is only effective in a temperature range between -25 °C and +50 °C. The shaft ends are also treated with an anti-corrosion agent.

The service life of the ball bearing grease is reduced after storage periods exceeding 1 year. SEW-EURODRIVE recommends having the motor inspected by SEW-EURODRIVE after 4 years in storage to check the ball bearing grease for signs of aging.

7.3.2 Storage conditions

Observe the storage conditions specified in the following table for extended storage:

Climate zone	Packaging ¹⁾	Storage location ²⁾	Storage duration
Temperate (Europe, USA, Canada, China and Russia, excluding tropical zones)	Packed in containers, with desiccant and moisture indicator sealed in the plastic wrap.	Under roof, protected against rain and snow, no shock loads.	Up to 3 years with regular checks of the packaging and moisture indicator (relative humidity < 50%).
	Open	Under roof and enclosed at constant temperature and atmospheric humidity (5 °C < ϑ < 50 °C, < 50% relative humidity). No sudden temperature fluctuations. Controlled ventilation with filter (free from dust and dirt). No aggressive vapors, no shocks.	2 years or more with regular inspections. Check for cleanness and mechanical damage during the inspection. Check corrosion protection.
Tropical (Asia, Africa, Central and South America, Australia, New Zealand excluding temperate zones)	Packed in containers, with desiccant and moisture indicator sealed in the plastic wrap. Protected against insect damage and mildew by chemical treatment.	With roof, protected against rain and shocks.	Up to 3 years with regular checks of the packaging and moisture indicator (relative humidity < 50%).
	Open	Under roof and enclosed at constant temperature and atmospheric humidity (5 °C < ϑ < 50 °C, < 50% relative humidity). No sudden temperature fluctuations. Controlled ventilation with filter (free from dust and dirt). No aggressive vapors, no shocks. Protected against insect damage.	2 years or more with regular inspections. Check for cleanness and mechanical damage during the inspection. Check corrosion protection.

1) The packaging must be carried out by an experienced company using the packaging materials that have been explicitly specified for the particular application.

2) SEW-EURODRIVE recommends storing the drive according to the mounting position.

7.4 Waste disposal

Dispose 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

8 Inspection and maintenance

8.1 Inspection and maintenance intervals

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

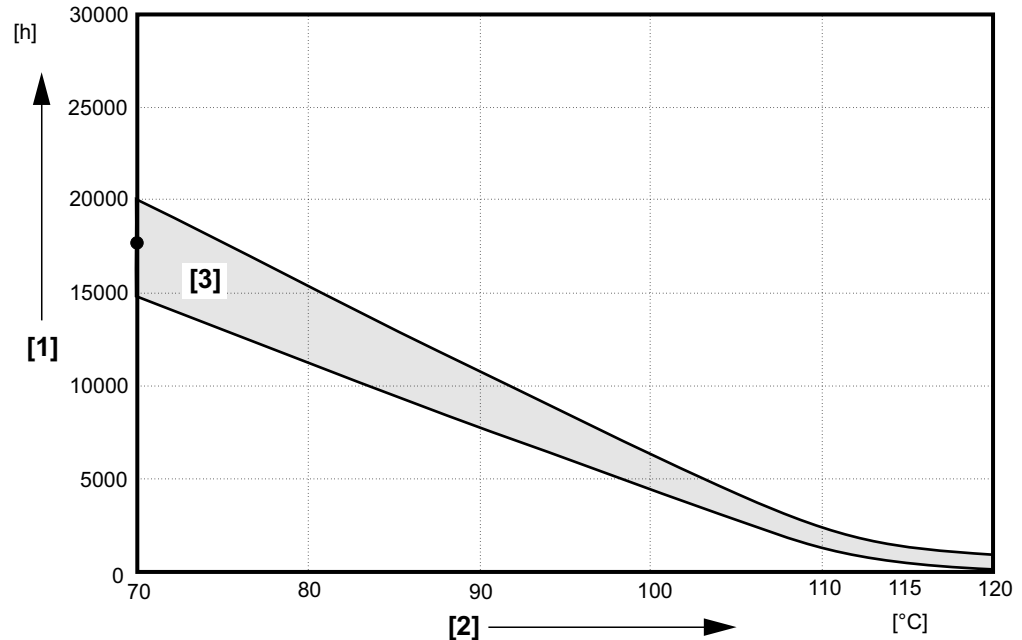
Time interval	What to do?	Who is permitted to perform the work?
Every 3000 operating hours, at least every 6 months	Check running noise for possible bearing damage	Qualified personnel at customer site
	In the event of a bearing damage: Have the bearing replaced by SEW-EURODRIVE Service or qualified personnel trained by SEW-EURODRIVE.	SEW-EURODRIVE Service Qualified personnel trained by SEW-EURODRIVE
	Visual inspection of the seals for leakage	Qualified personnel at customer site
	In the event of a leakage at the output oil seal: Change the oil seal	Qualified personnel at customer site
	In the event of any other leakage: Contact SEW-EURODRIVE Service.	SEW-EURODRIVE Service
	For gear units with a torque arm: Check rubber buffers and replace them if necessary	Qualified personnel at customer site
Recommendation: Every 20 000 operating hours ¹⁾	Have the motor inspected by SEW-EURODRIVE Service or qualified personnel trained by SEW-EURODRIVE.	SEW-EURODRIVE Service
		Qualified personnel trained by SEW-EURODRIVE
The drive units are equipped with long-term lubrication. Depending on the operating conditions and the oil temperature, the oil must be changed at least every 5 years (see chapter "Lubricant change intervals").	Change synthetic oil	Qualified personnel at customer site
	Replace oil seal on output end (do not install it in the same track)	Qualified personnel at customer site

Time interval	What to do?	Who is permitted to perform the work?
When the cover / electronics cover is removed 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 fluctuations.	Qualified personnel at customer site
Each time the cover / electronics cover is removed	Visual inspection of the gasket between connection box and cover / electronics cover: The gasket must be replaced in the event of damage.	Qualified personnel at customer site
Varying (depending on external factors)	Touch up or renew the surfaces/ anti-corrosion coating.	Qualified personnel at customer site
	To prevent permanent water accumulation in the B-side safety cover, you must clean it at regular intervals.	Qualified personnel at customer site

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

8.2 Lubricant change intervals

The following figure shows the lubricant change intervals for normal ambient conditions. In case of severe/aggressive ambient conditions, the lubricant must be changed more frequently:



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- [1] Operating hours
- [2] Sustained oil bath temperature
- [3] CLP HC
- Average value per oil type at 70 °C

8.3 Inspection and maintenance work

8.3.1 Preliminary work regarding inspection and maintenance

Observe the following notes before you start with inspection/maintenance work on the MOVIGEAR® classic:



⚠ WARNING

Risk of injury if the drive starts up unintentionally.

Electric shock caused by dangerous voltages in the connection box.

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



⚠ WARNING

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

Serious injuries.

- Let the devices cool down before touching them.
- Remove the screw plugs and the breather valve carefully.
- The gear unit must still be warm, otherwise the high viscosity of excessively cold oil will make it more difficult to drain the oil correctly.



NOTICE

Damage to the drive unit.

Potential damage to property.

- Make sure that only the SEW-EURODRIVE Service or qualified personnel trained by SEW-EURODRIVE opens the gear unit cover.



NOTICE

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

Potential damage to property.

- Do not mix different synthetic lubricants and do not mix synthetic and mineral lubricants.
- Synthetic oil is used as the standard lubricant.

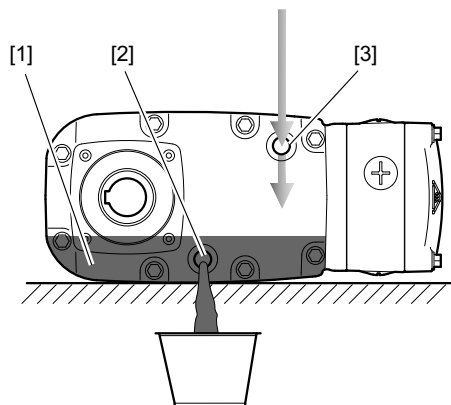
8.4 Changing the oil

8.4.1 Draining the oil

1. Observe the notes in chapter "Preliminary work for inspection and maintenance".
2. **▲ WARNING!** Risk of burns due to hot surfaces. Serious injuries. Let the devices cool down before touching them.
Remove the drive unit from the system, otherwise it is not possible to change the oil.
3. SEW-EURODRIVE recommends that you drain the oil in the position depicted in the figure below:
4. Place an adequate container underneath the oil drain plug [2].
5. **▲ WARNING!** Risk of burns due to hot gear oil. Serious injuries. Let the devices cool down before touching them.
Remove the lowest screw plug [2] or the breather valve installed there (depends on the mounting position used according to the mounting position sheet).
6. It is easier to drain the oil when you also remove the upper screw plug [3] or breather valve installed there (flowing in of air).
7. Drain the oil. Completely remove the residual oil [1] in the drive with a suitable device.

8.4.2 Recommended position

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



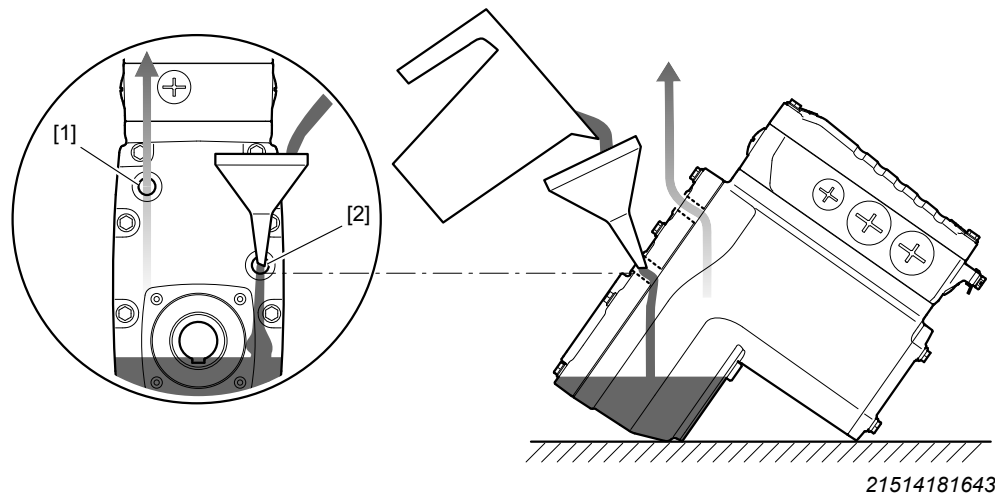
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8.4.3 Filling in the oil

1. Observe the notes in chapter "Preliminary work for inspection and maintenance".
2. SEW-EURODRIVE recommends that you fill in the new oil in the position depicted in the figure below.
3. **NOTICE!** Filling in the wrong oil may result in significantly different lubricant characteristics. Potential damage to property. Do not mix different synthetic lubricants and do not mix synthetic and mineral lubricants. Synthetic oil is used as the standard lubricant.
Fill in new oil of the same type via the lower bore hole [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 nameplate or the chapter "Technical data and dimension sheets / Lubricants" depending on the mounting position.
4. Re-insert the screw plug and the breather valve. Depending on the mounting position used, observe the mounting position sheet.
5. Touch up or renew the surfaces / anti-corrosion coating.

8.4.4 Recommended position

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



8.5 Replacing the output oil seal

1. Observe the notes in chapter "Preliminary work for inspection and maintenance".
2. Remove the drive unit from the system.
3. **NOTICE!** Oil seals with a temperature below 0 °C may get damaged during installation. Potential damage to property. Store oil seals at ambient temperatures over 0 °C. Warm up the oil seals before you install them, if necessary.
When changing the oil seal, ensure that there is a sufficient grease reservoir between the dust lip and sealing lip, depending on the type of gear unit.
⇒ If you use double oil seals, fill one-third of the gap with grease.
⇒ Do not install the oil seal on the same track.
4. Touch up or renew the surfaces / anti-corrosion coating.

8.6 Painting the drive unit

1. Observe the notes in chapter "Preliminary work for inspection and maintenance".
2. **NOTICE!** Breather valves and oil seals may be damaged during painting or repainting. Potential damage to property. Thoroughly cover the breather valves and sealing lip of the oil seals with strips prior to painting.
Clean the surface of the drive unit and make sure it is free from grease.
3. Remove the strips after painting.

8.7 Cleaning the drive unit

Observe the notes in chapter "Preliminary work for inspection and maintenance".

Excessive dirt, dust or shavings can have a negative impact on the function of synchronous motors; in extreme cases, these factors can cause the motor to break down.

For this reason, you must clean the drives at regular intervals (after one year at the latest) to ensure a sufficiently large area for heat dissipation.

Insufficient heat dissipation can have unwanted consequences. The bearing service life is reduced through operation at impermissibly high temperatures (bearing grease degrades).

8.8 Connection cables

Observe the notes in chapter "Preliminary work for inspection and maintenance".

Check the connection cable for damage at regular intervals and replace if necessary.

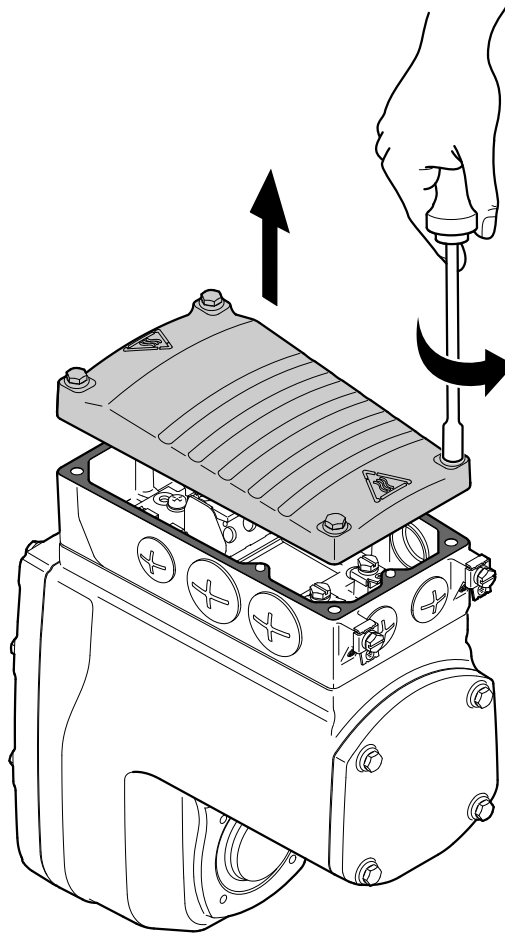
8.9 Replacing the gasket between connection box and cover

8.9.1 Spare part kit

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

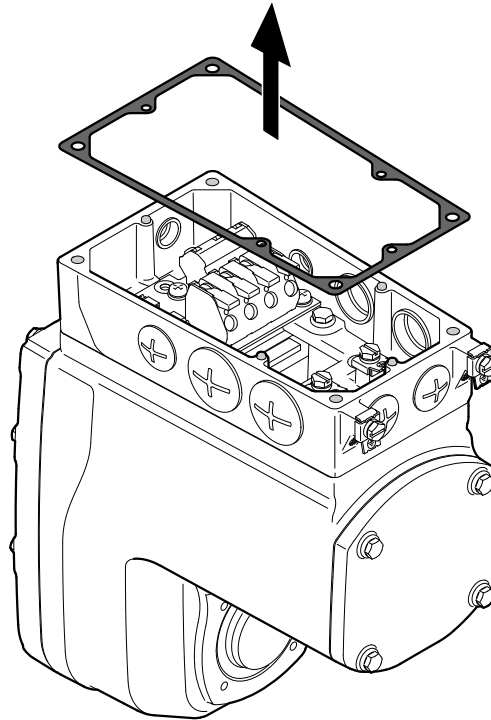
8.9.2 Steps

1. Observe the notes in chapter "Preliminary work for inspection and maintenance".
2. Loosen the screws of the cover and remove it.



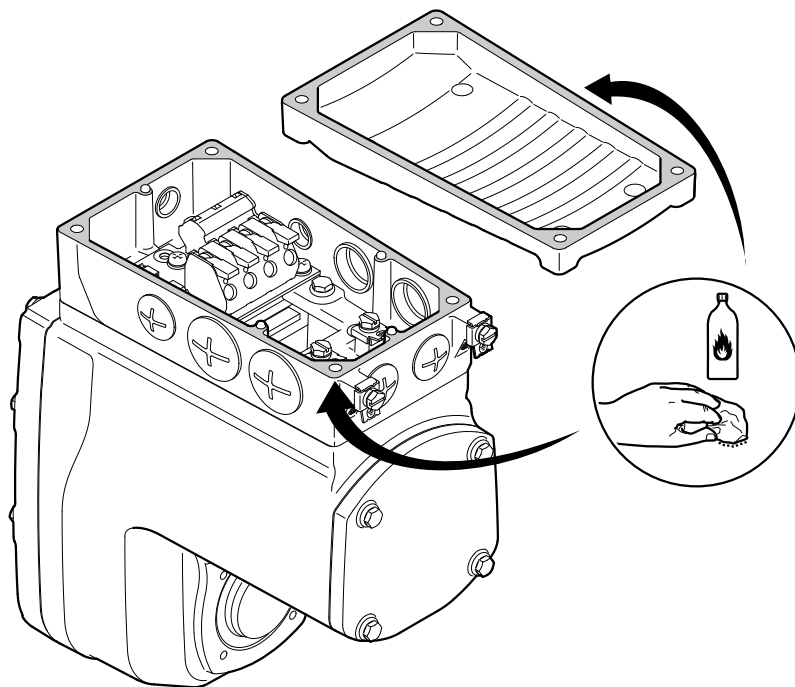
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3. **NOTICE!** Loss of the guaranteed degree of protection. Possible damage to property. Make sure not to damage the sealing surfaces when removing the gasket. Remove the old gasket completely from the connection box.



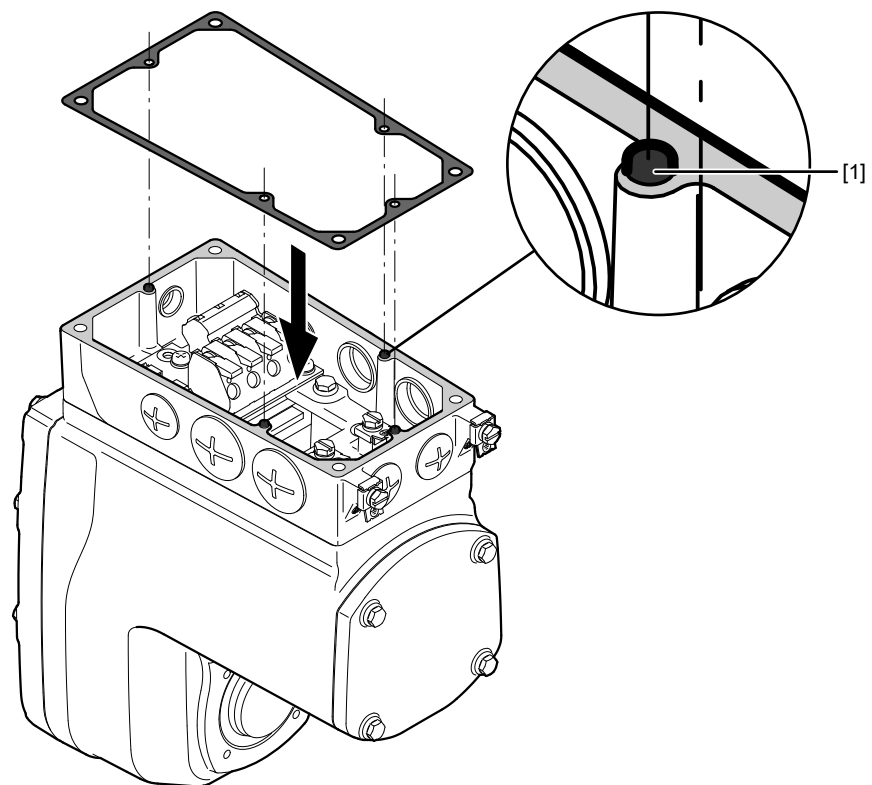
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4. **⚠ CAUTION!** Risk of injury due to sharp edges. Cuts. Use protective gloves for cleaning. Work may only be carried out by qualified personnel. Clean the sealing surfaces of the connection box and the cover carefully.



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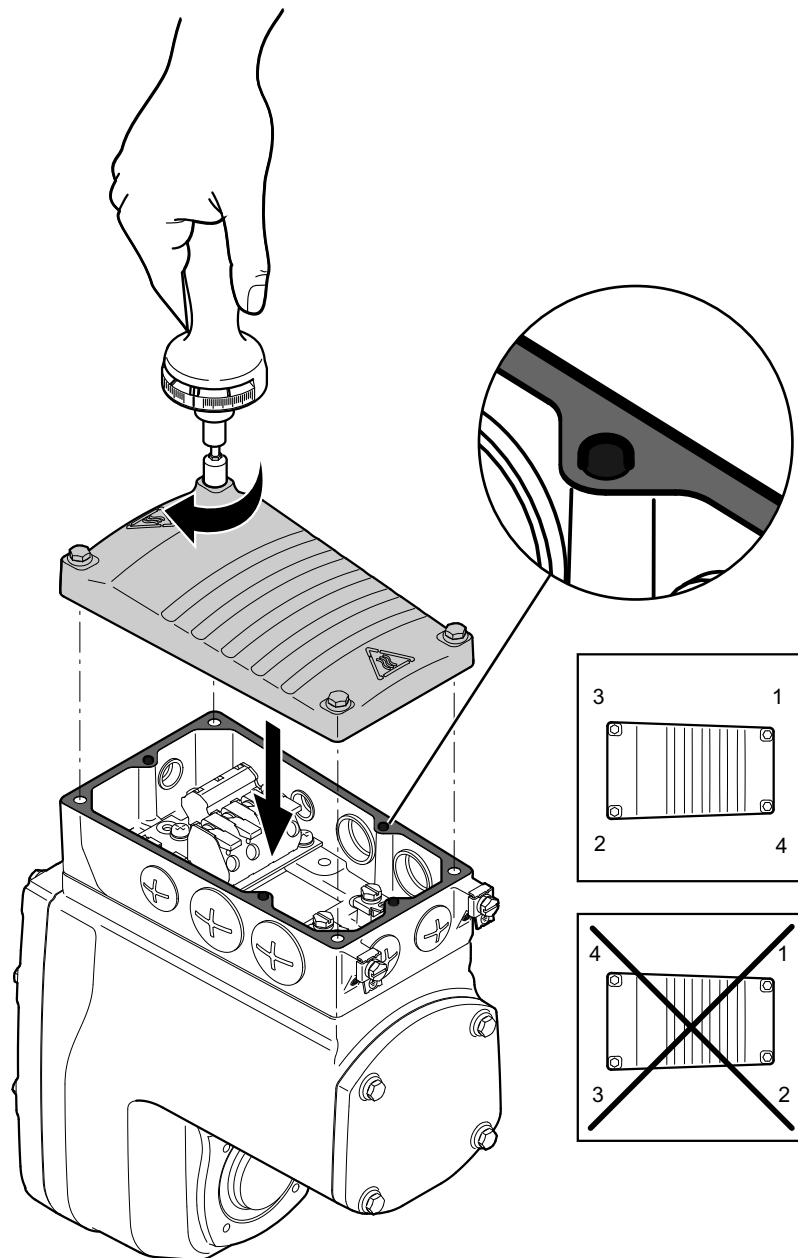
5. Place the new gasket on the connection box and fix it in position with the retaining nubs [1].



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[1] Retaining nubs

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



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9 Technical data and dimension sheets

9.1 Conformity

9.1.1 CE marking

- Low voltage directive:

The MOVIGEAR® drive system fulfills the regulations of the Low Voltage Directive 2014/35/EU.

- Electromagnetic compatibility (EMC):

The units are designed for use as components for installation in machinery and systems. They comply with the EMC product standard EN 61800-3 "Variable-speed electrical drives". Provided that the installation notes are followed, the requirements for CE marking of the entire machine/system equipped with these units on the basis of the EMC Directive 2014/30/EU are met. For detailed information about EMC-compliant installation, refer to the publication "Electromagnetic Compatibility in Drive Technology" from SEW-EURODRIVE.



The CE mark on the nameplate represents conformity with the Low Voltage Directive 2014/35/EU and the EMC Directive 2014/30/EU.

9.1.2 Recognized Component Mark



The Recognized Component Mark on the nameplate indicates compliance with the Canadian and US-American requirements, checked by UL (Underwriters Laboratory).

9.1.3 EAC



The MOVIGEAR® unit series fulfills the requirements of the technical regulations of the Customs Union of Russia, Kazakhstan, and Belarus.

The EAC marking on the nameplate certifies the conformity with the safety requirements of the Custom Union.

9.1.4 UkrSEPRO (Ukrainian Certification of Products)



The UkrSEPRO marking on the nameplate certifies adherence to the technical regulations of Ukraine for the MOVIGEAR® unit series.

9.2 General technical data

MGF..1-DSM-C		
Climate class		EN 60721-3-3; class 3K3, non-condensing, no condensation
Storage temperature	ϑ_F	-25 °C to +70 °C (different to class 3K3)
Ambient temperature	ϑ_A	-25 °C to +60 °C (different to class 3K3) ¹⁾ From +40 °C, factors that lead to a reduction in power must be taken into account (see chapter "Derating for increased ambient temperature").
Proof of mechanical strength		According to EN 61800-5-1
Degree of protection	IP	Standard: IP65 in accordance to EN 60529 (housing closed and all cable entries sealed)
Operating mode		S1, DB (EN 60034-1)
Type of cooling		Natural cooling to DIN 41751 and EN 61800-5-1
Installation altitude	h	Up to $h \leq 1000$ m without restrictions. The following restrictions apply to heights ≥ 1000 m: <ul style="list-style-type: none"> From 1000 m to max. 4000 m: <ul style="list-style-type: none"> I_N reduction by 1% per 100 m Over 2000 m only overvoltage category II, external measures are required for overvoltage category III. Overvoltage categories according to EN 60664-1.
Required preventive measures		Grounding the device

1) Observe the permitted temperature range of the oil to be used (see chapter "Lubricant table")

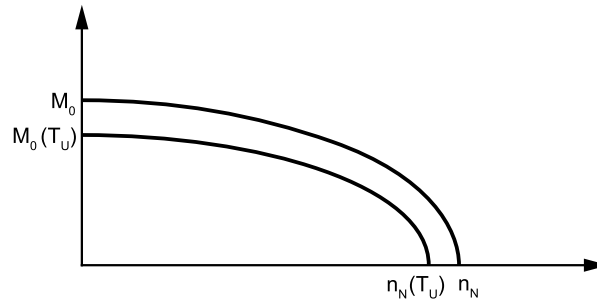
9.3 Current carrying capacity of terminals

Current carrying capacity of terminals		
Motor terminals	X2	Max. 24 A

9.4 Derating for increased ambient temperature

The following derating applies for operating the drive unit in the ambient temperature range from +40 °C to +60 °C:

The thermal speed/limit torque characteristic curve is re-scaled towards the origin (minimized). The thermal operating point based on rms torque and thermally effective speed of the application must be below the re-scaled characteristic curve.



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$$M_0(T_U) = M_0 \times \left(\sqrt{\frac{145^\circ\text{C} - T_U}{105^\circ\text{C}}} \right)$$

$$n_N(T_U) = K_e \times n_N \times \left(\sqrt{\frac{145^\circ\text{C} - T_U}{105^\circ\text{C}}} \right)$$

T_U Ambient temperature [°C]

M_0 Standstill torque under nominal conditions

$M_0(T_U)$ Standstill torque at increased temperature $40^\circ\text{C} < T_U < 60^\circ\text{C}$

n_N Rated speed

$n_N(T_U)$ Rated speed at increased temperature $40^\circ\text{C} < T_U < 60^\circ\text{C}$

K_e Transmitter factor = 1

9.5 Motor data for MOVIGEAR® classic

9.5.1 System voltage: 400 V, connection type of motor: Δ

Motor	J_{mot}	n_N	n_{max}	PK limit	V_N	M_0	I_0	V_{p0} cold	C_T	R_1	L_1	Number of poles Motor	f_N
	[kgm ² × 10 ⁻⁴]	[min ⁻¹]	[min ⁻¹]	[°C]	[V]	[Nm]	[A]	[V]	[Nm/A]	Ω	[mH]		[Hz]
MGF..1-DSM-C	1.38	2000	2000	150	400	2.1	1.11	141	1.89	15.5	31.8	8	133.3

J_{mot}	=	Mass moment of inertia of the motor
n_N	=	Rated speed
n_{max}	=	Maximum permitted speed
PK limit	=	Maximum permitted motor temperature measured on PK
V_N	=	Nominal voltage
M_0	=	Standstill torque (thermal continuous torque at low speeds)
I_0	=	Standstill current
V_{p0} cold	=	Internal voltage at 1000 min ⁻¹
C_T	=	Torque constant
R_1	=	Resistance between connection phase and star point
L_1	=	Inductance between connection phase and star point
f_N	=	Frequency at rated speed

9.6 Technical data for the PK (PT1000) temperature sensor

The PK (PT1000) temperature sensor continuously detects the motor temperature.

Type	PK (PT1000)
Total resistance at 20 – 25 °C	$1050\ \Omega < R < 1150\ \Omega$
Test current	$< 3\ \text{mA}$

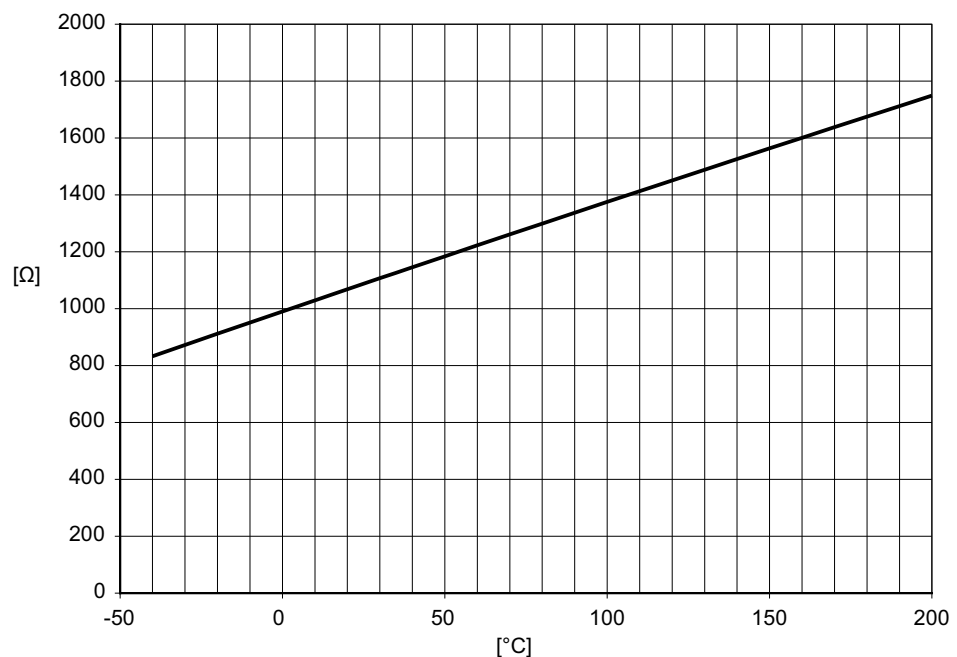
9.6.1 Typical characteristic curve of PK (PT1000)

INFORMATION



The temperature sensor is unipolar, which means that interchanging the incoming cables does not change the measurement result.

The following figure shows a typical characteristic curve of the PK (PT1000):



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9.7 Permitted currents, speeds and torques

**NOTICE**

Damage to the drive unit.

Potential damage to property.

- To protect the drive unit, you must observe the following currents, speeds, and torques.

9.7.1 MOVIGEAR® classic

MGF..1-DSM-C									
	n_a	I_0	M_a	$I_{cont.}$	M_{apk}	I_{max}	$M_{aEmerg.Off}$	i_{tot}	Weight
	at $n_e =$ 2000 min^{-1}								
	[min^{-1}]	[Nm]	[Nm]	[A]	[Nm]	[A]	[Nm]		[kg]
2 stages	555.6	1.11	8	1.11	23	3.33	74	3.6*	7.0
	484.3	1.11	9	1.11	26	3.33	81	4.13	
	451.2	1.11	9	1.11	28	3.33	82	4.43	
	390.2	1.11	11	1.11	32	3.33	90	5.13*	
	361.8	1.11	12	1.11	35	3.33	94	5.53	
	309.1	1.11	14	1.11	41	3.33	100	6.47	
	260.8	1.11	16	1.11	48	3.33	108	7.67	
	238.3	1.11	18	1.11	53	3.33	112	8.39	
	234.3	1.11	18	1.11	54	3.33	112	8.54	
	204.2	1.11	21	1.11	62	3.33	117	9.79	
	190.3	1.11	22	1.11	66	3.33	122	10.51	
	164.5	1.11	26	1.11	77	3.33	128	12.15	
	152.6	1.11	28	1.11	83	3.33	130	13.11	
	130.3	1.11	32	1.11	93	3.21	140	15.34	
	110.0	1.11	38	1.11	99	2.88	148	18.18	
	100.5	1.11	42	1.11	102	2.71	153	19.90	

MGF..1-DSM-C									
	n_a	I_0	M_a	$I_{cont.}$	M_{apk}	I_{max}	$M_{aEmerg.Off}$	i_{tot}	Weight
	at $n_e =$ 2000 min^{-1}								
	$[min^{-1}]$	$[Nm]$	$[Nm]$	$[A]$	$[Nm]$	$[A]$	$[Nm]$		$[kg]$
3 stages	97.1	1.11	43	1.11	91	2.34	136	20.59	7.6
	84.7	1.11	50	1.11	99	2.22	148	23.62	
	78.9	1.11	53	1.11	102	2.13	153	25.36	
	68.2	1.11	62	1.11	108	1.95	162	29.32	
	63.3	1.11	66	1.11	111	1.86	166	31.62	
	54.8	1.11	77	1.11	120	1.74	180	36.48	
	54.0	1.11	75	1.07	112	1.60	168	37.01	
	47.8	1.11	85	1.07	127	1.60	190	41.85	
	45.6	1.11	76	0.92	114	1.37	171	43.86	
	44.5	1.11	88	1.04	128	1.51	192	44.92	
	41.7	1.11	80	0.88	120	1.32	180	48.01	
	38.5	1.11	94	0.96	128	1.30	192	51.94	
	35.7	1.11	97	0.92	128	1.21	192	56.01	

Key

	=	Preferred gear ratio
*	=	Ultimate gear unit ratio
i_{tot}	=	Gear unit ratio
I_0	=	Standstill current
I_{max}	=	Maximum permitted current for short-time operation
$I_{cont.}$	=	Continuous current S1 duty
M_{apk}	=	Maximum permitted torque for short-time operation ¹⁾
M_a	=	Continuous output torque
$M_{aEmerg.Off}$	=	Maximum permitted torque for non-cyclical special loads, maximum 1000 cycles
n_a	=	Output speed
n_e	=	Motor speed

1) If Mapk occurs more often than 10 times per hour, detailed project planning must be carried out using SEW Workbench

9.8 Surface protection

9.8.1 General information

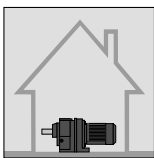
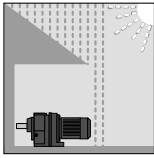
SEW-EURODRIVE offers the following optional protective measure for operating drive units under special environmental conditions.

- OS surface protection

In addition, special optional protective measures for the output shafts are also available.

9.8.2 Surface protection

Instead of the standard surface protection, the drive units are optionally available with the OS1 surface protection.

Surface protection		Ambient conditions	Sample applications
Standard		Suitable for machines and systems in buildings and enclosed rooms with neutral atmospheres. Similar to corrosivity category ¹⁾ : <ul style="list-style-type: none"> • C1 (negligible) 	<ul style="list-style-type: none"> • Machines and systems in the automotive industry • Conveyor systems in logistics areas • Conveyor systems at airports
OS1		Suited for environments prone to condensation and atmospheres with low humidity or contamination, such as applications outdoors under roof or with protection. Similar to corrosivity category ¹⁾ : <ul style="list-style-type: none"> • C2 (low) 	<ul style="list-style-type: none"> • Systems in saw mills • Hall gates • Agitators and mixers

1) According to DIN EN ISO 12 944-2

9.8.3 Special protective measures

Output shafts can be treated with special optional protective measures for operation subject to severe environmental pollution or in particularly demanding applications.

Measure	Protection principle	Suited for
FKM oil seal (fluorocarbon rubber) Standard on MOVIGEAR® drive units	High-quality material	Drives subject to chemical contamination
Surface treatment on output shaft end	Surface treatment on the contact surface of the oil seal	Severe environmental impact and in conjunction with FKM oil seal (fluorocarbon rubber)
Output shaft made of stainless steel (standard when using the design for use in wet areas)	Surface protection with high-quality material	Particularly demanding applications in terms of surface protection

9.8.4 NOCO® fluid

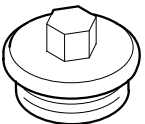
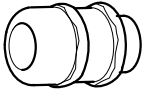
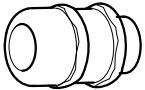
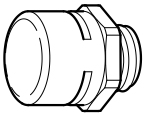
As standard, SEW-EURODRIVE supplies NOCO® fluid corrosion protection and lubricant with every drive unit with hollow shaft. Use NOCO® fluid when installing gear units with hollow shafts. Using this fluid can help prevent contact corrosion and makes it easier to disassemble the drive at a later time. NOCO® fluid is also suitable for protecting machined metal surfaces that do not have corrosion protection, such as parts of shaft ends or flanges. You can also order NOCO® fluid in larger quantities from SEW-EURODRIVE.

NOCO® fluid is a food grade substance according to NSF-H1. You can tell that NOCO® fluid is a food grade oil by the NSF-H1 identification label on its packaging.

9.9 Screw fittings

The following tables show the screw fittings available from SEW-EURODRIVE:

9.9.1 Cable glands / screw plugs / pressure compensation

Type of screw fitting	Image	Con- tents	Size	Tighten- ing torque ¹⁾	Outer cable dia- meter	Part num- ber
Screw plugs external hexagon (made of stainless steel)		10 pieces	M16 × 1. 5	6.8 Nm	–	18247342
		10 pieces	M25 × 1. 5	6.8 Nm	–	18247350
EMC cable gland (brass, nickel-plated)		10 pieces	M16 × 1. 5	4 Nm	5 to 9 mm	18204783
		10 pieces	M25 × 1. 5	7 Nm	11 to 16 mm	18204805
EMC cable gland (made of stainless steel)		10 pieces	M16 × 1. 5	4 Nm	5 to 9 mm	18216366
		10 pieces	M25 × 1. 5	7 Nm	11 to 16 mm	18216382
Pressure com- pensation screw fitting / PE (made of stainless steel)		1 piece	M16 × 1. 5	4 Nm	–	28214617

1) The specified torques must be adhered to with a tolerance of +/- 10%.

The cable retention in the cable gland must withstand the following removal force of the cable from the cable gland:

- Cable with outer diameter > 10 mm: ≥ 160 N
- Cable with outer diameter < 10 mm: = 100 N

9.10 Mounting positions

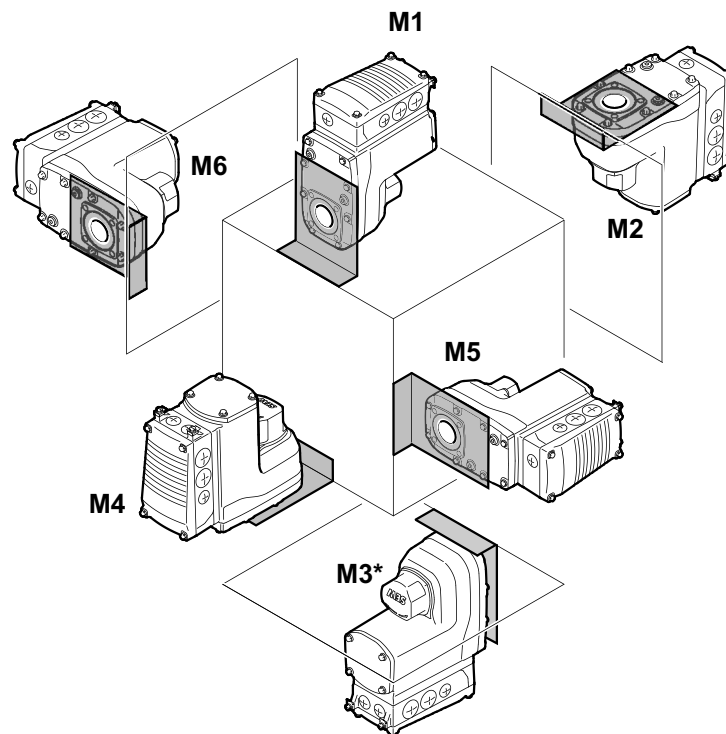
9.10.1 Description of mounting positions

The following mounting positions are possible for MOVIGEAR® classic MGF..1-DSM-C drive units:

- Specified mounting position: M1 or M2 or M3* or M4 or M5 or M6
- Universal operation in mounting positions M1, M2, M4, M5, M6

Mounting positions M1 to M6

The following figure shows the position in mounting positions M1 to M6:

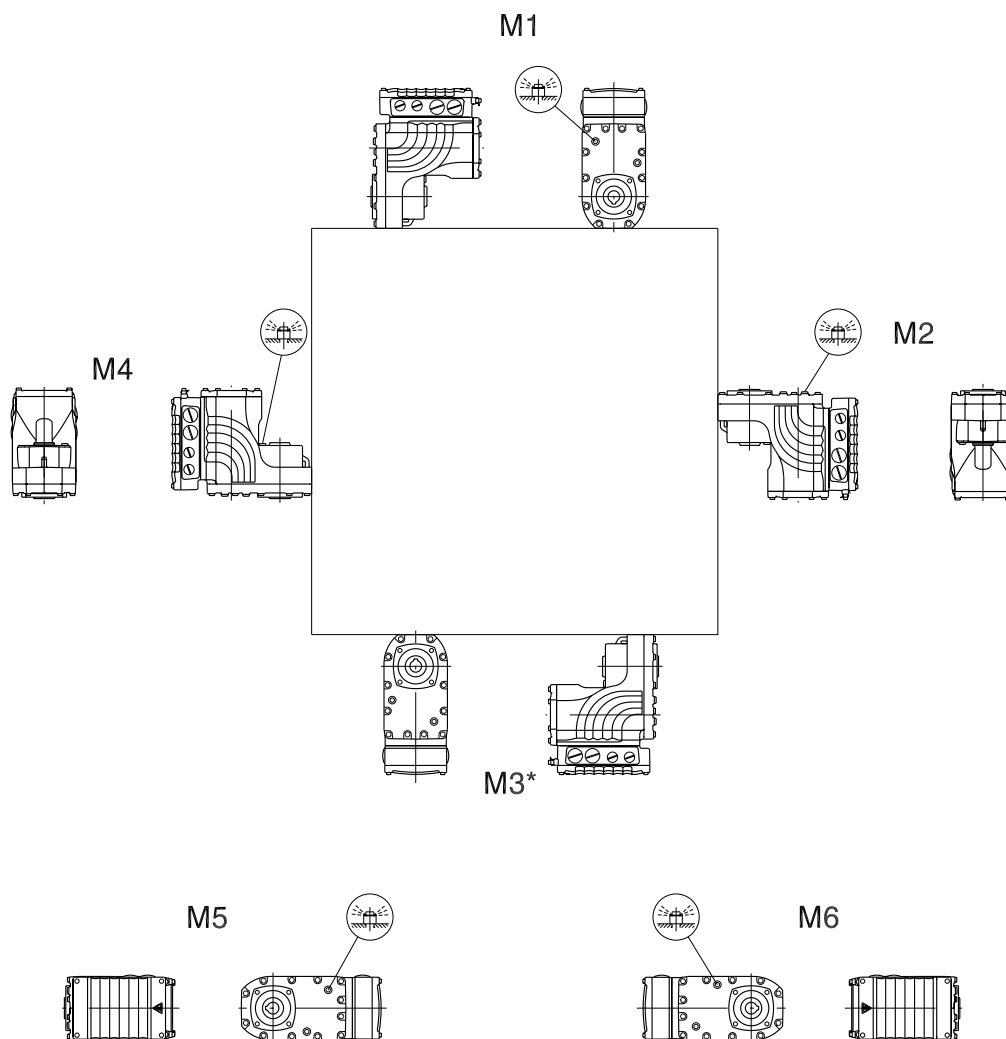
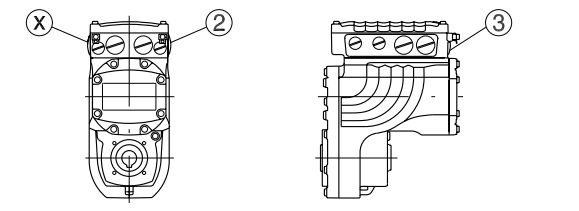


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* = Mounting position M3 only possible after consultation with SEW-EURODRIVE.


9.10.2 Mounting position sheet

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* = Mounting position M3 only possible after consultation with SEW-EURODRIVE.

 = Breather valve

9.11 Lubricants

9.11.1 Lubricant fill quantities

Unless a special arrangement is made, SEW-EURODRIVE supplies the drives with a lubricant fill adapted for the specific gear ratio.

MGF..1-DSM-C 3 stages		MGF..1-DSM-C 2 stages	
Gear ratio i	Fill quantities in liters for mounting positions M1, M2, M3**, M4, M5, M6	Gear ratio i	Fill quantities in liters for mounting positions M1, M2, M3**, M4, M5, M6
56.01	0.36 l	19.90	0.42 l
51.94		18.18	
48.01		15.34	
44.92		13.11	
43.86		12.15	
41.85		10.51	
37.01		9.79	
36.48		8.54	
31.62		8.39	
29.32		7.67	
25.36		6.47	
23.62		5.53	
20.59		5.13*	
		4.43	
		4.13	
		3.60*	


* = Ultimate gear unit ratio

** = Mounting position M3 only possible after consultation with SEW-EURODRIVE.

■ = Preferred gear ratio

9.11.2 Roller bearing greases

The rolling bearings are filled with the following greases at the factory.

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

9.11.3 Lubricant table

**NOTICE**

Selecting improper lubricants may damage the gear unit.

Possible damage to property.

- Observe the following information.

Notes

- 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 gear unit's nameplate.

If you use other lubricants for the gear units and/or use the lubricants at temperatures outside the recommended temperature range, SEW-EURODRIVE does not assume liability.


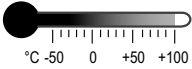
The lubricant recommendation in the lubricant table in no way represents a guarantee regarding the quality of the lubricant delivered by each respective supplier. Each lubricant manufacturer is responsible for the quality of their product.

- Do not mix synthetic lubricants.
- Do not mix synthetic and mineral lubricants.
- Oils of the same viscosity class from different manufacturers do not have the same characteristics. In particular, the minimally and maximally permitted oil bath temperatures are manufacturer-specific. These temperatures are specified in the lubricant tables.
- The values specified in the lubricant tables apply as of the time of printing of this document. The data of the lubricants is subject to dynamic change on the part of the lubricant manufacturers. For up-to-date information about the lubricants, visit:

www.sew-eurodrive.de/lubricants

Information on table structure

The specified **ambient temperatures** are **guide values for the preselection** of a suitable lubricant. The exact upper and lower temperature limits for project planning are specified in the table with the respective trade name.

<div>[1]</div> 	<div>[2]</div> 	<div>[4]</div> <div>[5]</div>	<div>[3]</div>	
	-15 +40	CLP HC - NSF H1 - PSS	ISO, SAE NLGI	VG 460
	-25 +30			VG 220

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- [1] Device type
- [2] Ambient temperature range
- [3] Viscosity class
- [4] Note on special approvals
- [5] Lubricant type

Information on the various lubricants

			[4]
[1]	-15	+100	[5]
[2]	XYZ460		
[3]	DE, FR, US, BR, CN		
	SEW070040013		[6]

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[1] Lowest oil sump temperature in °C,
may not be undershot in operation

[2] Trade name

[3] Factory filling for these countries

BR = Brazil

CN = China

DE = Germany

FR = France

US = United States

[4] Manufacturer

[5] Highest oil sump temperature in °C¹⁾

[6] Approvals regarding compatibility of the lubricant with approved oil seals

1) Service life is significantly reduced when exceeded. The lubricant change intervals in the chapter "Inspection and maintenance" must be observed.

Lubricant compatibility with oil seal

Approval	Explanation
SEW07004__13:	A lubricant especially recommended with regard to compatibility with the approved oil seal. The lubricant exceeds the state-of-the-art requirements concerning elastomer compatibility.

Approved application temperature range of the oil seals

Oil seal Material class	Permitted Oil sump temperature
FKM	-25°C to +115°C
FKM-PSS	-25°C to +115°C

Limitations of use of oil seals with the specific lubricant are described in the following table:



Material class			Manufacturer		Material		Approved oil sump temperature
S	2	FKM	1	Freudenberg	1	75 FKM 585	-25 °C to +115 °C
			2	Trelleborg	1	VCBVR	

Examples:

S2: Only the elastomer FKM meets the requirements of the approval in conjunction with the specific lubricant.

Key to lubricant tables









































The following table shows the abbreviations and icons used in the lubricant table and explains what they mean:

Abbreviation/ icon	Meaning
	Synthetic lubricant (marked gray)
CLP HC	Synthetic hydrocarbons – polyalphaolefin (PAO)
	Lubricant for the food processing industry – NSF-H1-compliant
4)	Observe the critical starting behavior at low temperatures
Oil seal	Oil seal
PSS	"Premium Sine Seal" oil seal. The addendum "PSS" at the lubricant type signals compatibility with the sealing system.

Lubricant table

The lubricant table is valid as of the time of printing of this document. Refer to www.sew-eurodrive.de/lubricants for the latest tables.

Observe the thermal limits of the oil seal materials, see chapter "Lubricant compatibility with oil seals".

 [1]	 [2]	CLP HC - NSF H1 - PSS	ISO SAE NLGI	 SEW EURODRIVE	 brenner & egul	 Castrol	 FUCHS	 Mobil	 KLOPPER LUBRICATION	 Shell	 TOTAL
 [1]	 [2]	CLP HC - NSF H1 - PSS	ISO SAE NLGI	 SEW EURODRIVE	 brenner & egul	 Castrol	 FUCHS	 Mobil	 KLOPPER LUBRICATION	 Shell	 TOTAL
 [1]	 [2]	CLP HC - NSF H1 - PSS	ISO SAE NLGI	 SEW EURODRIVE	 brenner & egul	 Castrol	 FUCHS	 Mobil	 KLOPPER LUBRICATION	 Shell	 TOTAL
 [1]	 [2]	CLP HC - NSF H1 - PSS	ISO SAE NLGI	 SEW EURODRIVE	 brenner & egul	 Castrol	 FUCHS	 Mobil	 KLOPPER LUBRICATION	 Shell	 TOTAL

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- [1] Ambient temperature range
- [2] Note on special approvals
- [3] Oil type
- [4] Standard

9.12 Design notes for gear units with hollow shaft and key

INFORMATION



Always use the supplied NOCO® fluid for assembly. The fluid prevents contact corrosion and makes disassembly at a later time easier.

The key dimension L12 is defined by the customer; however, L12 must be $> DK$.

9.12.1 Installation

SEW-EURODRIVE recommends 2 variants for installing the hollow shaft and key on the input shaft of the driven machine (= customer shaft):

1. Use the provided fastening parts for installation.
2. Use the optional assembly/disassembly kit for installation.

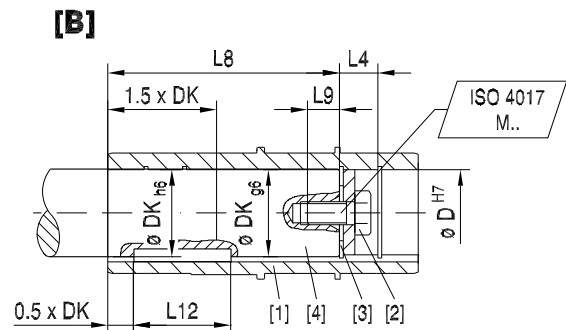
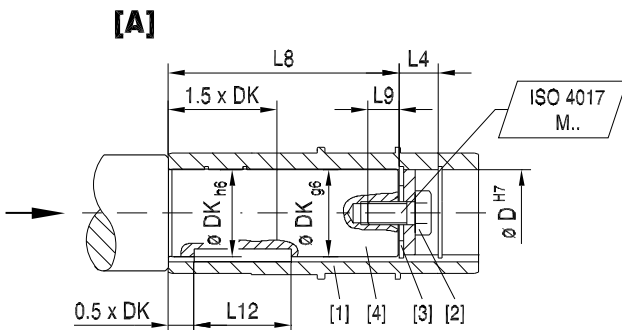
9.12.2 1. Provided fastening parts

The following fastening parts are provided as standard:

- Retaining screw with washer [2]
- Retaining ring [3]

Customer shaft

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- [1] Hollow shaft
- [2] Retaining screw with washer
- [3] Retaining ring
- [4] Customer shaft
- [1] Hollow shaft

Dimensions and tightening torque

The retaining screw [2] must be tightened to the tightening torque MS given in the following table:

Gear unit type	D ^{H7}	DK ¹⁾	L12	Key		L8 ²⁾	L4 ³⁾	L9	Supplied retaining screw	MS
				Width	Type					
	[mm]	[mm]	[mm]	[mm]		[mm]	[mm]	[mm]	ISO 4017	[Nm]
MGFA.1	20	20	>20	6	DIN 6885-1	73.6	16	10	M6 × 16 - 8.8	8
MGFA.1	25	25	>25	8	(domed type)	73.8	16	17	M10 × 25 - 8.8	20

- Up to a distance of at least $1.5 \times DK$, the diameter of the customer shaft must be $\varnothing DK_{h6}$, and with the other length $\varnothing DK_{g6}$.
- Position of retaining ring: INSIDE
The installation length of the customer shaft **with** contact shoulder [A] must be **L8 - 1 mm**.
The installation length of the customer shaft **without** contact shoulder [B] must be **equal L8**.
In this configuration, the customer shaft can be forced out using the optional assembly/disassembly kit.
- Position of retaining ring: OUTSIDE
The installation length of the customer shaft **with** contact shoulder [A] must be **(L8 + L4) - 1 mm**.
The installation length of the customer shaft **without** contact shoulder [B] must be **equal L8 + L4**.

9.12.3 2. Assembly/disassembly kit

You can also use the optional assembly/disassembly kit for mounting. You can order the kit for the specific size by quoting the part numbers in the table below. The scope of delivery includes:

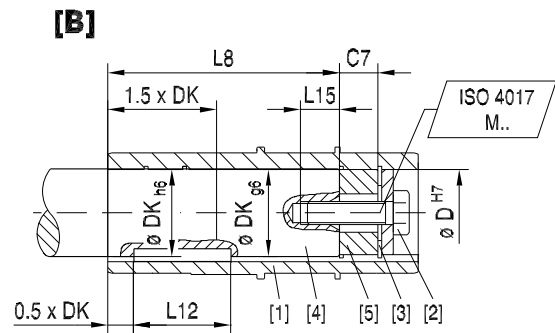
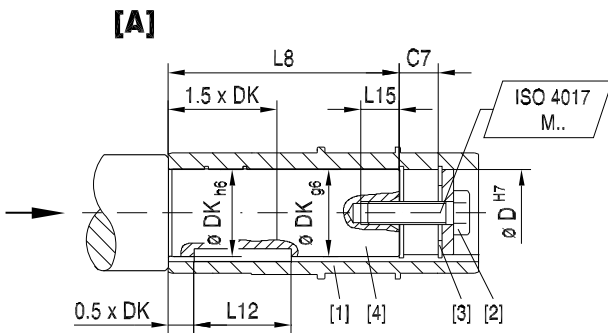
- Spacer tube for installation without contact shoulder [5]
- Retaining screw for assembly [2]
- Forcing washer for disassembly [7]
- Fixed nut for disassembly [8]

The short retaining screw delivered as standard is not required.

Customer shaft

- The installation length of the customer shaft must be L8. **Do not use the spacer tube** if the customer shaft **has a contact shoulder [A]**.
- The installation length of the customer shaft must be L8. Use the spacer tube if the customer shaft **has a contact shoulder [B]**.

03 002 00 17



- [1] Hollow shaft
- [2] Retaining screw with washer
- [3] Retaining ring
- [4] Customer shaft
- [5] Spacer tube

Dimensions, tightening torques and part numbers

The retaining screw [2] must be tightened to the tightening torque MS given in the following table:

Gear unit type	D ^{H7}	DK ¹⁾	L12	Key		L8	C7	L15	As-sembly/ disas-sembly kit	Supplied re- taining screw	MS
				Width	Type						
	[mm]	[mm]	[mm]	[mm]		[mm]	[mm]	[mm]	Part num- ber	ISO 4017	[Nm]
MGFA.1	20	20	>20	6	DIN 6885-1 (domed type)	73.6	16	16	18761941	M6 × 25 - 8.8	8
MGFA.1	25	25	>25	8		73.8	16	22	06436846	M10 × 35 - 8.8	20

- 1) Up to a distance of at least $1.5 \times DK$, the diameter of the customer shaft must be $\varnothing DK_{h6}$, and with the other length $\varnothing DK_{g6}$.

9.13 Dimension drawings

9.13.1 Dimension sheet notes

Scope of delivery



= Standard parts supplied by SEW-EURODRIVE.



= Standard parts not supplied by SEW-EURODRIVE.

Tolerances

Shaft ends

Diameter tolerance:

Ø ≤ 50 mm → ISO k6

Ø > 50 mm → ISO m6

Center holes according to DIN 332, shape DR:

Ø = 7 to 10 mm → M3

Ø > 10 to 13 mm → M4

Ø > 13 to 16 mm → M5

Ø > 16 to 21 mm → M6

Ø > 21 to 24 mm → M8

Ø > 24 to 30 mm → M10

Ø > 30 to 38 mm → M12

Ø > 38 to 50 mm → M16

Keys: according to DIN 6885 (domed type).

Hollow shafts

Diameter tolerance:

Ø → ISO H7 measured with plug gauge

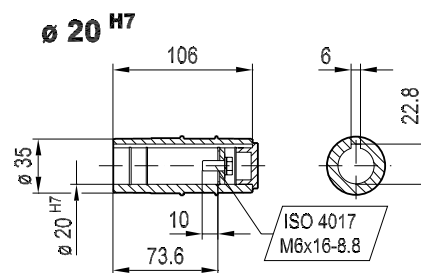
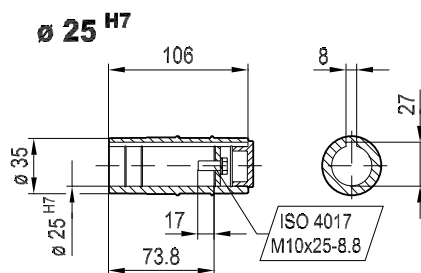
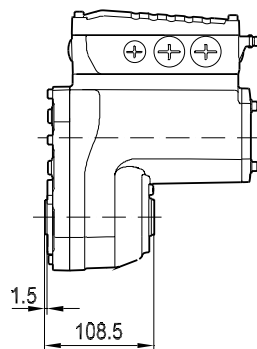
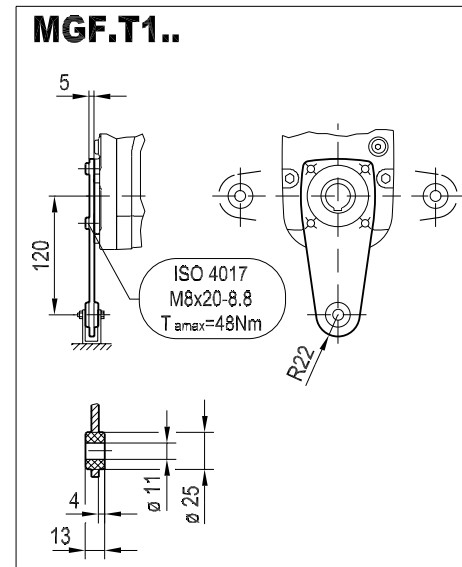
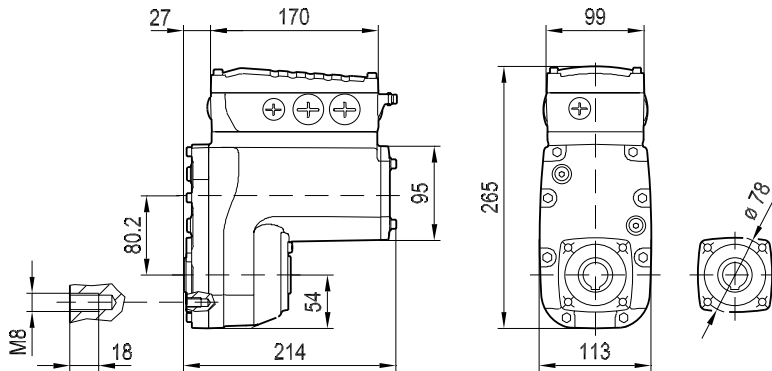
Breather valves and cable glands

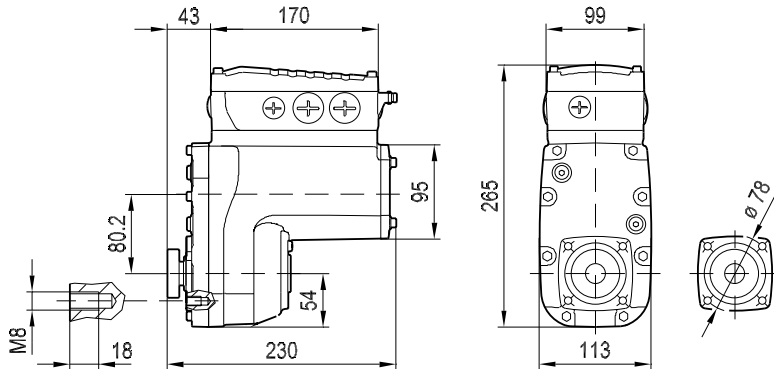
The dimension drawings always show the screw plugs. The contour dimensions can change slightly as a result of breather valves, cable glands, plug connectors or pressure compensation fittings preinstalled at the factory.

9.13.2 MGF..1-DSM-C

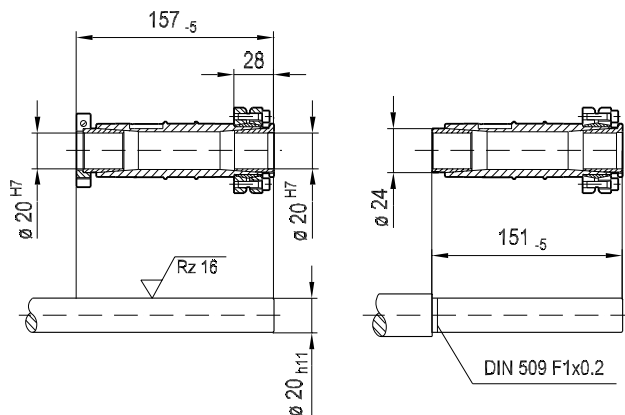
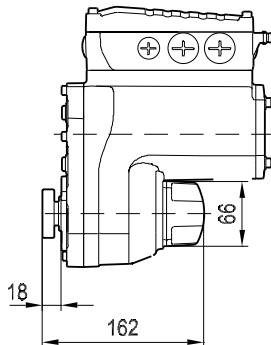
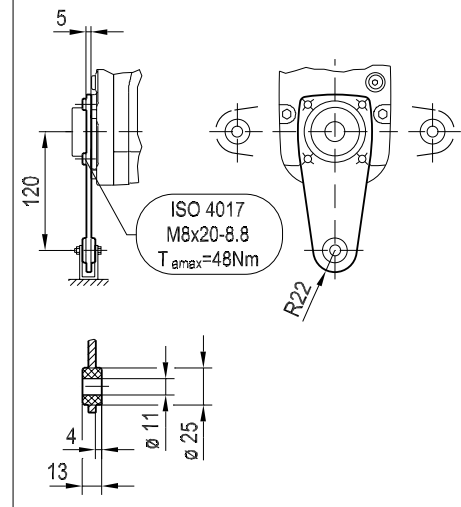
MGFAS1-DSM-C

03 003 02 17



MGFTS1-DSM-C

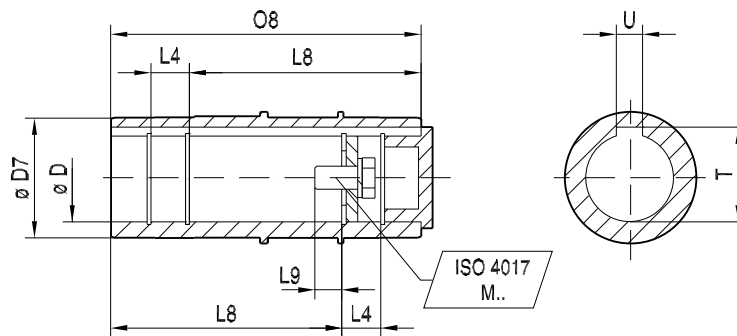
03 004 01 17

MGF.T1..

9.13.3 Shaft types

MGFAS..C [mm]

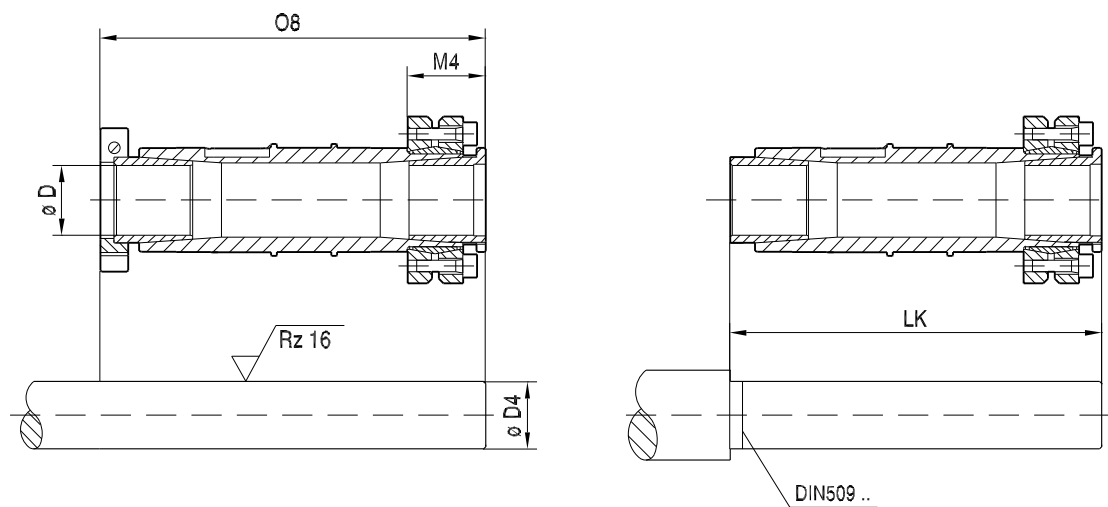
03 016 01 17



	$\varnothing D^{H7}$	$\varnothing D7$	L4	L8	L9	O8	T	U	ISO 4017
MGFAS1..C	20	35	17.5	73.6	10	106	22.8	6	M6 × 16-8.8
MGFAS1..C	25	35	17.5	73.8	17	106	27	8	M10 × 25-8.8

MGFTS..C [mm]

03 017 00 17



	$\varnothing D4_{h11}$	$\varnothing D^{+0.1}$	M4	$O8_{-5}$	LK_{-5}	DIN 509
MGFTS1..C	20	20.1	28	157	151	F1 × 0.2

10 Address list

Algeria			
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Argentina			
Assembly Sales	Buenos Aires	SEW EURODRIVE ARGENTINA S.A. Ruta Panamericana Km 37.5, Lote 35 (B1619IEA) Centro Industrial Garín Prov. de Buenos Aires	Tel. +54 3327 4572-84 Fax +54 3327 4572-21 http://www.sew-eurodrive.com.ar sewar@sew-eurodrive.com.ar
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	Taiyuan	SEW-EURODRIVE (Taiyuan) Co., Ltd. No.3, HuaZhang Street, TaiYuan Economic & Technical Development Zone ShanXi, 030032	Tel. +86-351-7117520 Fax +86-351-7117522 taiyuan@sew-eurodrive.cn
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	Xi'An	SEW-EURODRIVE (Xi'An) Co., Ltd. No. 12 Jinye 2nd Road Xi'An High-Technology Industrial Development Zone Xi'An 710065	Tel. +86 29 68686262 Fax +86 29 68686311 xian@sew-eurodrive.cn
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	Drive Service Hotline / 24 Hour Service	+420 800 739 739 (800 SEW SEW)	Service Tel. +420 255 709 632 Fax +420 235 358 218 servis@sew-eurodrive.cz
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	Brumath	SEW-USOCOME 1 Rue de Bruxelles 67670 Mommenheim Cedex	Tel. +33 3 88 37 48 00
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	Östringen	SEW-EURODRIVE GmbH & Co KG, Werk Östringen Franz-Gurk-Straße 2 76684 Östringen	Tel. +49 7253 9254-0 Fax +49 7253 9254-90 oestringen@sew-eurodrive.de
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	Electronics	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 42 76646 Bruchsal	Tel. +49 7251 75-1780 Fax +49 7251 75-1769 scc-elektronik@sew-eurodrive.de
Drive Technology Center	North	SEW-EURODRIVE GmbH & Co KG Alte Ricklinger Straße 40-42 30823 Garbsen (Hannover)	Tel. +49 5137 8798-30 Fax +49 5137 8798-55 dtc-nord@sew-eurodrive.de
	East	SEW-EURODRIVE GmbH & Co KG Dankritzer Weg 1 08393 Meerane (Zwickau)	Tel. +49 3764 7606-0 Fax +49 3764 7606-30 dtc-ost@sew-eurodrive.de
	South	SEW-EURODRIVE GmbH & Co KG Domagkstraße 5 85551 Kirchheim (München)	Tel. +49 89 909552-10 Fax +49 89 909552-50 dtc-sued@sew-eurodrive.de
	West	SEW-EURODRIVE GmbH & Co KG Siemensstraße 1 40764 Langenfeld (Düsseldorf)	Tel. +49 2173 8507-30 Fax +49 2173 8507-55 dtc-west@sew-eurodrive.de
Drive Center	Berlin	SEW-EURODRIVE GmbH & Co KG Alexander-Meißner-Straße 44 12526 Berlin	Tel. +49 306331131-30 Fax +49 306331131-36 dc-berlin@sew-eurodrive.de
	Ludwigshafen	SEW-EURODRIVE GmbH & Co KG c/o BASF SE Gebäude W130 Raum 101 67056 Ludwigshafen	Tel. +49 7251 75 3759 Fax +49 7251 75 503759 dc-ludwigshafen@sew-eurodrive.de
	Saarland	SEW-EURODRIVE GmbH & Co KG Gottlieb-Daimler-Straße 4 66773 Schwalbach Saar – Hülzweiler	Tel. +49 6831 48946 10 Fax +49 6831 48946 13 dc-saarland@sew-eurodrive.de
	Ulm	SEW-EURODRIVE GmbH & Co KG Dieselstraße 18 89160 Dornstadt	Tel. +49 7348 9885-0 Fax +49 7348 9885-90 dc-ulm@sew-eurodrive.de

Germany

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Drive Service Hotline / 24 Hour Service

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0 800 7394357**Great Britain**

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Drive Service Hotline / 24 Hour Service

Tel. 01924 896911

Greece

Sales	Athens Christ. Boznos & Son S.A. 12, K. Mavromichali Street P.O. Box 80136 18545 Piraeus	Tel. +30 2 1042 251-34 Fax +30 2 1042 251-59 http://www.boznos.gr info@boznos.gr
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Hungary

Sales Service	Budapest SEW-EURODRIVE Kft. Csillaghegyi út 13. 1037 Budapest	Tel. +36 1 437 06-58 Fax +36 1 437 06-50 http://www.sew-eurodrive.hu office@sew-eurodrive.hu
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Iceland

Sales	Reykjavik Varma & Vélaverk ehf. Knarrarvogi 4 104 Reykjavik	Tel. +354 585 1070 Fax +354 585)1071 http://www.varmaverk.is vov@vov.is
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	Jakarta PT. Cahaya Sukses Abadi Komplek Rukan Puri Mutiara Blok A no 99, Sunter Jakarta 14350	Tel. +62 21 65310599 Fax +62 21 65310600 csajkt@cbn.net.id
	Jakarta PT. Agrindo Putra Lestari Jl.Pantai Indah Selatan, Komplek Sentra Industri Terpadu, Pantai indah Kapuk Tahap III, Blok E No. 27 Jakarta 14470	Tel. +62 21 2921-8899 Fax +62 21 2921-8988 aplindo@indosat.net.id http://www.aplindo.com

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	Surabaya	CV. Multi Mas Jl. Raden Saleh 43A Kav. 18 Surabaya 60174	Tel. +62 31 5458589 Fax +62 31 5317220 sianhwa@sby.centrin.net.id http://www.cvmultimas.com
Ireland			
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