SEW EURODRIVE

Operating Instructions

Drive Unit
MGF..-DSM

Edition 12/2019

23102926/EN

Contents

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1 General information

1.1 About this documentation

The documentation at hand is the original.

This documentation is an integral part of the product. The documentation is intended for all employees who perform work on the product.

Make sure this documentation is accessible and legible. Ensure that persons responsible for the systems and their 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 if you 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.

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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

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 MGF..-DSM drive unit

2.1 Preliminary information

The following general safety notes serve the purpose of preventing injury to persons 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 be performed only by adequately qualified specialists. Specialists in the context of this documentation are persons who are familiar with the design, mechanical installation, troubleshooting, and maintenance of the product who possess the following qualifications:

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

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Specialist for electrotechnical work

Any electrotechnical work may be performed only by electrically skilled persons with a suitable education. Electrically skilled persons in the context of this documentation are persons who are familiar with electrical installation, startup, troubleshooting, and maintenance of the product who possess the following qualifications:

- 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 devices, 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 to give persons the ability to perform 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 the 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.

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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.

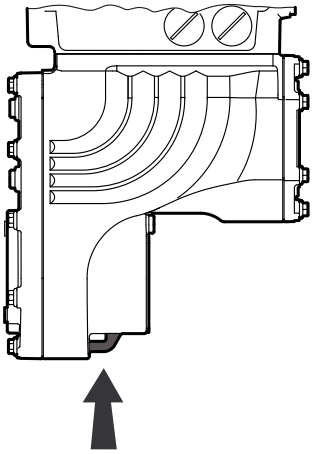
Observe the following notes when transporting the device:

- 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 the 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 strong mechanical strain. The product and its mounting parts must never protrude into the path of persons or vehicles. Ensure that components are not deformed and insulation spaces are not changed, particularly during transportation and handling. Electric components must not be mechanically damaged or destroyed.

Observe the notes in chapter Mechanical installation in the documentation.

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2.6.1 Restrictions of use

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

- Use in potentially explosive atmospheres
- Use in areas exposed to harmful oils, acids, gases, vapors, dust, and radiation
- Operation in applications with impermissibly high mechanical vibration and shock loads in excess of the regulations stipulated in EN 61800-5-1
- Use at an elevation of more than 3800 m above sea level

2.7 Electrical installation

Ensure that all of the required covers are correctly attached after carrying out the 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 Required preventive measure

Make sure that the product is correctly attached to the ground connection.

2.7.2 Stationary application

Necessary preventive measure for the product is:

Type of energy transfer	Preventive measure
Direct power supply	• Ground connection

2.7.3 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.

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2.9 Startup/operation

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

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.

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 protective functions of the product can cause a motor standstill. Eliminating the cause of the problem or performing a reset may result in the drive restarting 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.

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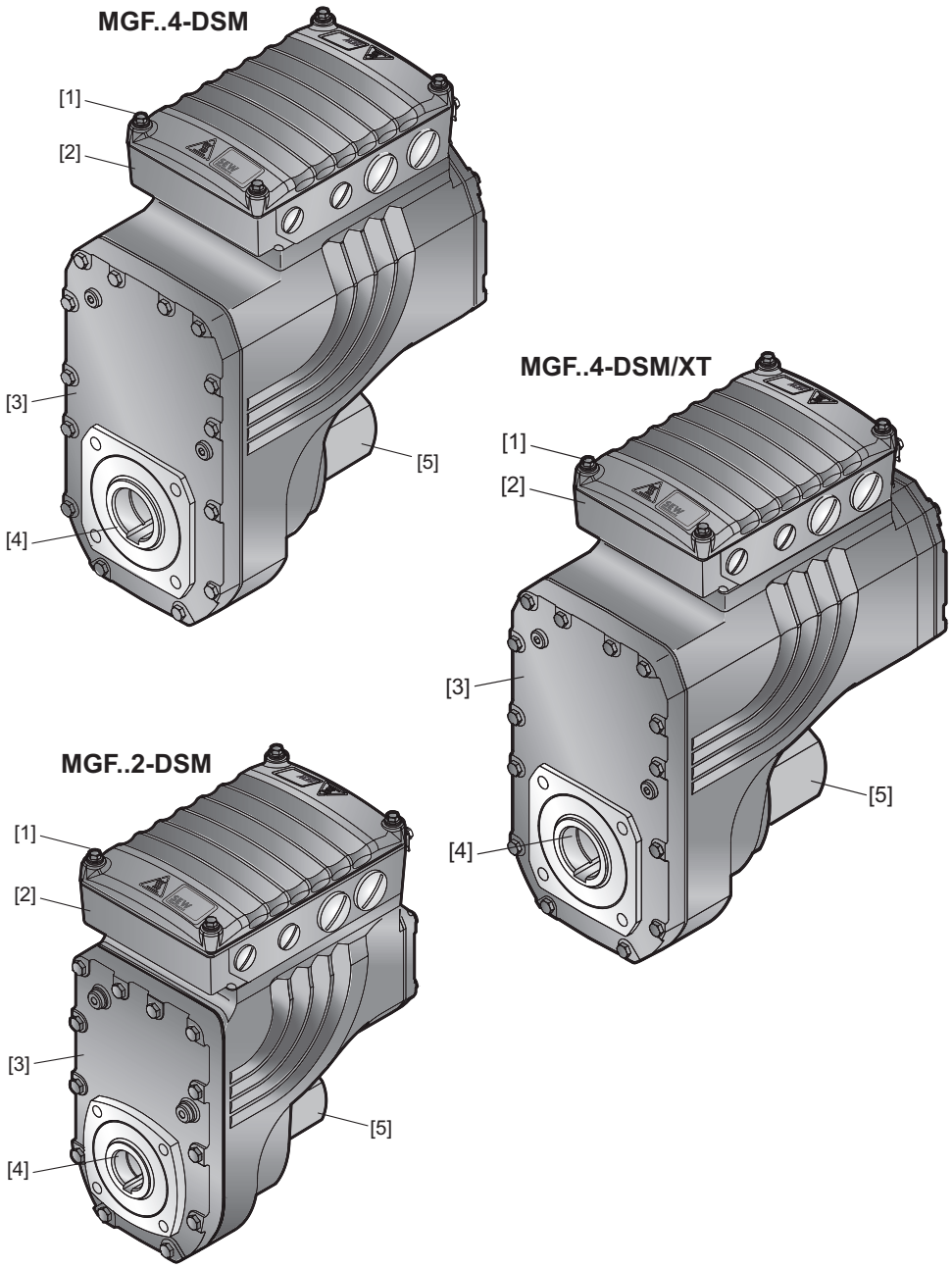
3 Unit structure

3.1 MGF..-DSM drive unit

MGF..-DSM 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] MGF..-DSM cover
[2] Connection ring for cable glands
[3] Gear unit cover
[4] Output shaft design (pictured here: hollow shaft with keyway)
[5] Optional safety cover

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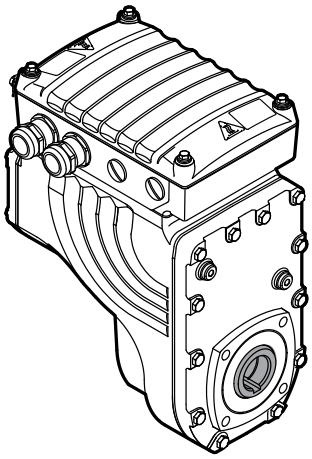
3.2 Shaft designs

MGF..-DSM is available with the following shaft designs:

3.2.1 MGF..-DSM with hollow shaft and keyway (MGFA..)

The following figure shows a MGF..-DSM unit with hollow shaft and keyway:



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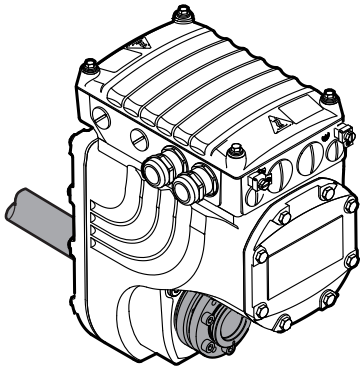
3.2.2 MGF..-DSM with TorqLOC® hollow shaft mounting system (MGFT..)

The following figure shows a MGF..-DSM unit with TorqLOC® hollow shaft mounting system:



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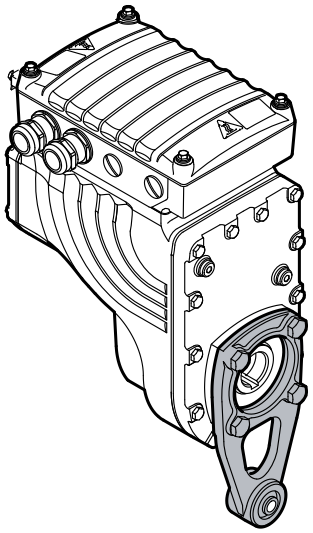
3.3 Housing mounting types

3.3.1 Torque arm (for MGF.T)

The following figure shows the torque arm for MGF.T:



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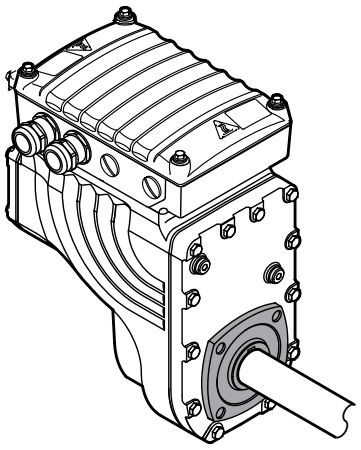
3.3.2 Housing with threads (for MGF.S)

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



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3.4 Threads for the protection cover

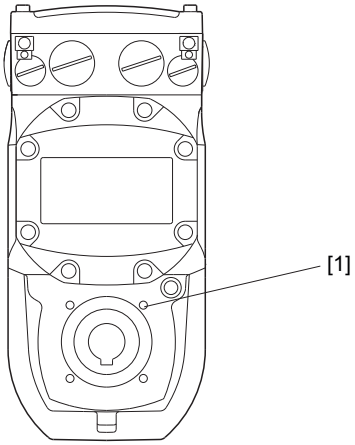
NOTICE

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 protection cover:



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[1] Threads for protection cover (4×)

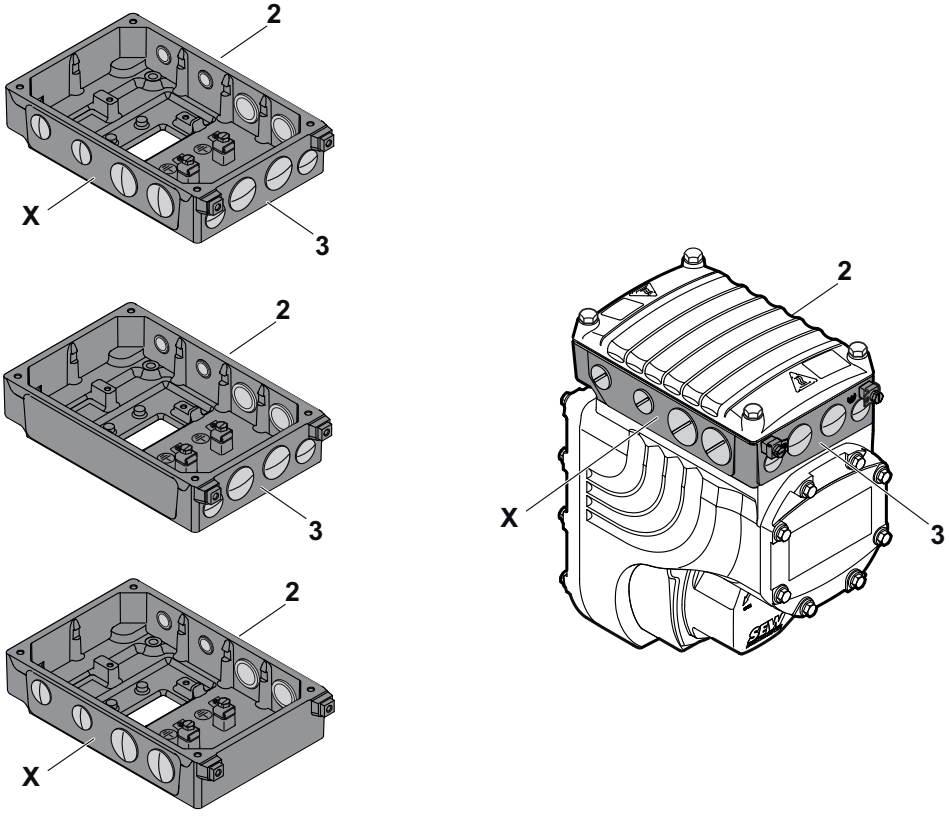
3.5 Cable entry position

The following cable entries are possible for MGF..-DSM drive units:

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

3.5.1 Overview

The following figure shows possible cable entries:



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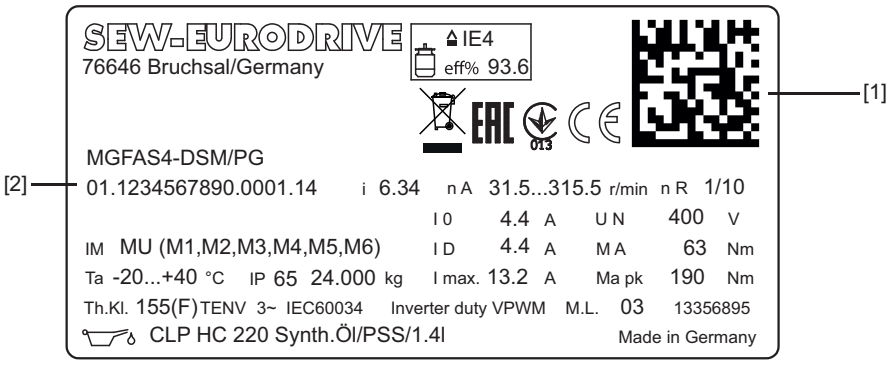
3.6 Example nameplate and type designation of the drive unit

3.6.1 Nameplate

The following figure gives an example of an MGF..-DSM nameplate. For the structure of the type designation, refer to the chapter "Type designation".



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

3.6.2 Type designation

The following table shows the type designation for MGF..-DSM:

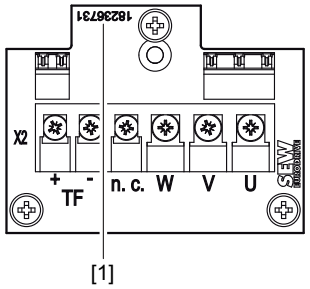
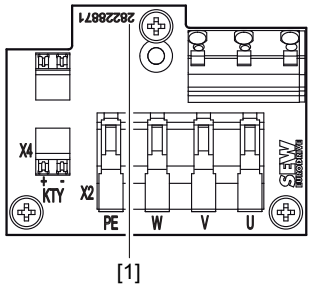
MG	**Product family**
F	**Gear unit type** F = Parallel-shaft helical gear unit
A	**Shaft design** A = Shaft-mounted gear unit (hollow shaft with key) T = TorqLOC® hollow shaft mounting system
S	**Housing mounting types** T = Drive with torque arm S = Housing with threads for mounting a torque arm
2	**Size** 2 = Torque class 200 Nm 4 = Torque class 400 Nm
–	
DSM	**Motor type**
/	
WA	**Option** WA = Variant for wet areas PE = Pressure compensation fitting electronics PG = Integrated pressure compensation gear unit XT = Increased torque

3.7 MGF..-DSM cover and connection box

3.7.1 Important notes on the terminal design

In the future, the MGF..-DSM drive unit will be delivered with new cage clamp terminals instead of screw terminals and with changed connection assignment.

Observe the applicable chapters of the operating instructions depending on the supplied design. The following table shows the MGF..-DSM terminal designs in comparison:

Old: Design with screw terminals	New: Design with spring cage terminals
	
[1] Part number: 18236731	[1] Part number: 28228871

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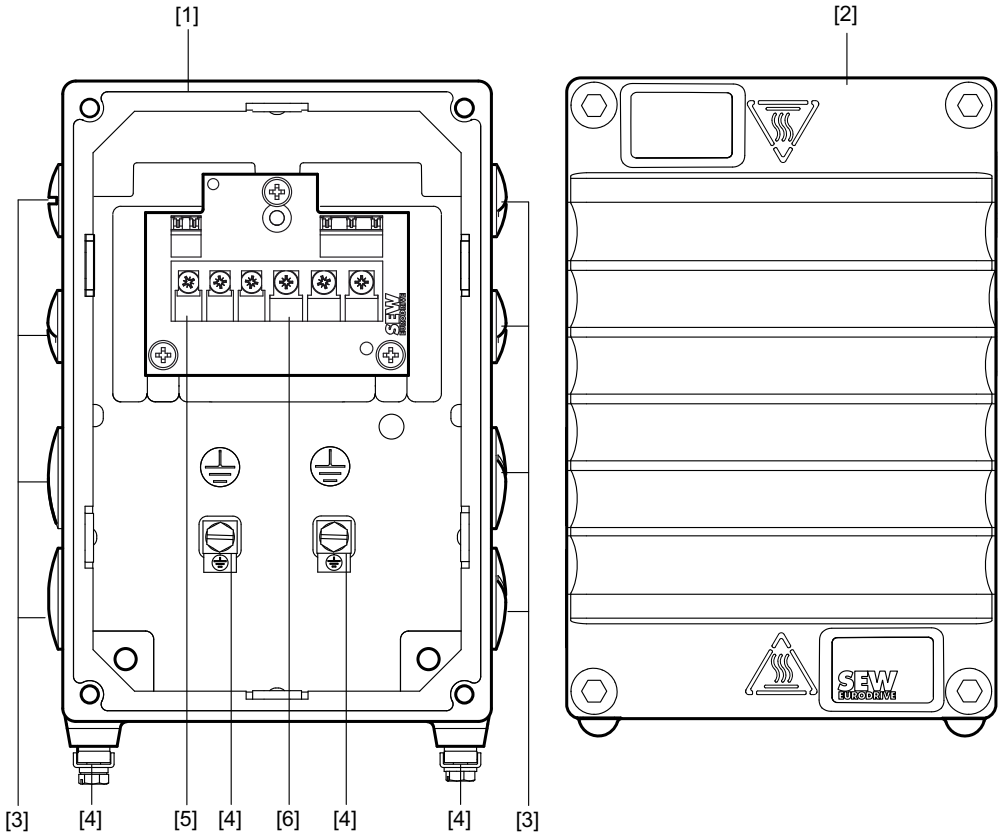
3.7.2 Design with screw terminals

The following figure shows the connection box and the MGF..-DSM cover



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[1] Connection ring
[2] MGF..-DSM cover
[3] Cable glands
[4] Screws for PE connection
[5] Terminals for KTY temperature sensor
[6] Motor connection W, V, U

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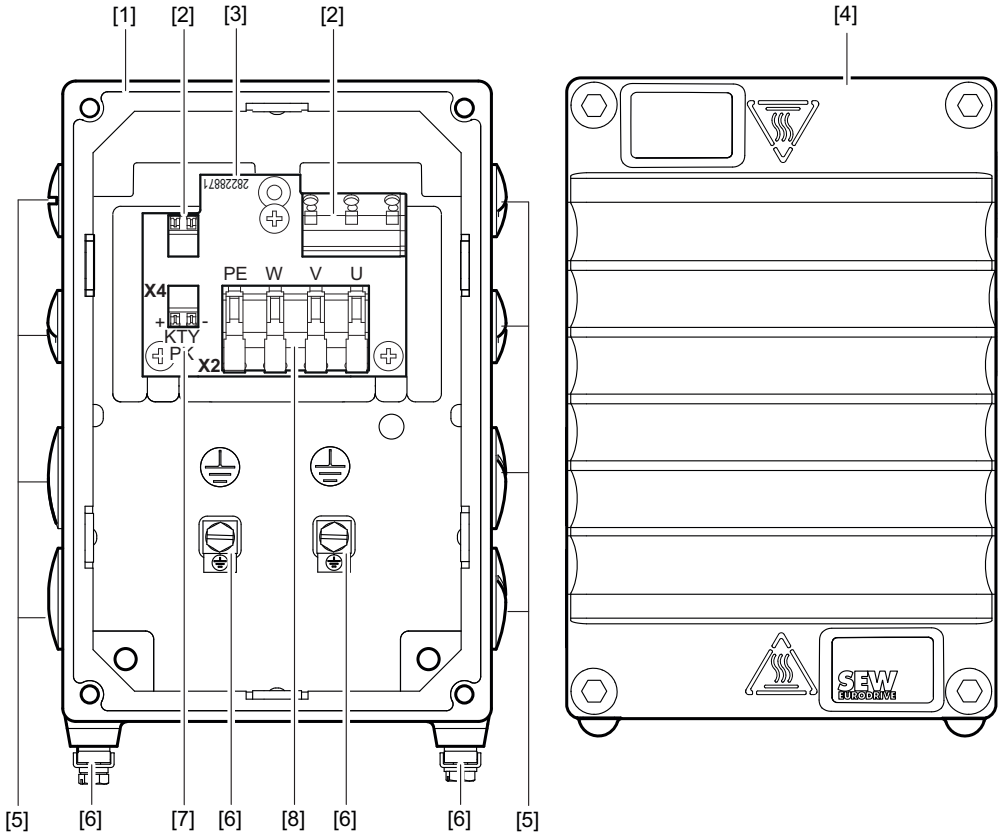
3.7.3 Design with cage clamp terminals

The following figure shows the connection box and the MGF..-DSM cover



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[1] Connection ring
[2] Terminals for internal wiring
[3] Part number of the connection board
[4] MGF..-DSM cover
[5] Cable glands
[6] Screws for PE connection
[7] Terminals X4 for KTY temperature sensor
[8] Terminals X2 for motor connection PE, W, V, U

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3.8 Integrated pressure compensation (/PG option)

3.8.1 Description

When the gear unit oil heats up, the pressure rises within the gear unit due to expansion. Until now, the pressure has been reduced by means of a breather valve. As this valve cannot be installed in mounting position M3, this mounting position could until now only be used with restrictions concerning the output power.

The /PG option is a fully integrated pressure compensation mechanism that replaces the breather valve and makes it possible to implement applications in mounting position M3 without restrictions concerning the output power.

3.8.2 Advantages

- Universal mounting position without restrictions concerning the output power
- Fully integrated pressure compensation mechanism without external valve
- No oil mist caused by the breather valve
- No risk of damaging the product due to an inactive breather valve
- The position of the breather valve must no longer be adjusted when changing the mounting position
- Reduced risk of oil leakages due to incorrectly installed breather valve

3.8.3 Restrictions

For integrated pressure compensation (/PG option) and drive units with pressure compensation fitting in the electronics cover (/PE option or /WA design for use in wet areas), observe the notes on use according to mounting position (see chapter "Mechanical installation").

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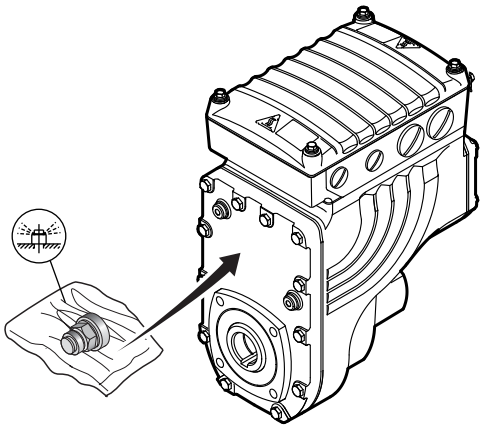
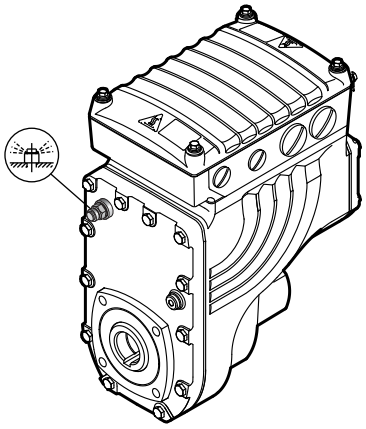
3.8.4 Combination options

Standard design

Type/mounting position	Pressure compensation design	Illustration
• **MGF..-DSM** • **Universal use in M1/M2/ M4/M5/M6**	• Breather valve included in delivery	 *9007212102074251*
• **MGF..-DSM** • **Use in the ordered mounting position M1 or M2 or M4 or M5 or M6**	• Breather valve mounted according to the specific mounting position	 *9007212102071819*

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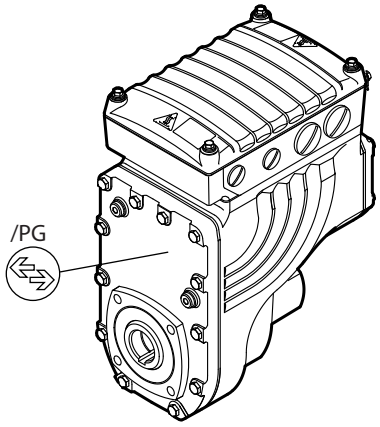
Type/mounting position	Pressure compensation design	Illustration
• **MGF..-DSM/PG** • **Universal mounting position MU**	• Integrated pressure compensation /PG	 *9007212102081547*

 – Breather valve

 /PG Integrated pressure compensation

 /PE Pressure compensation fitting, electronics

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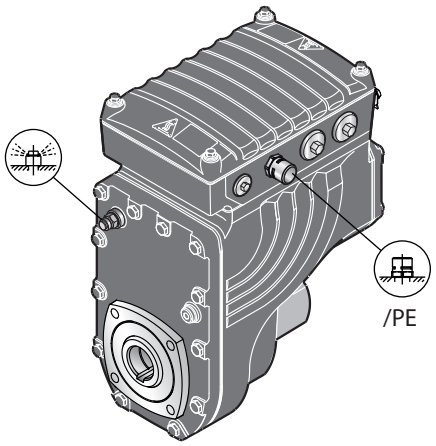
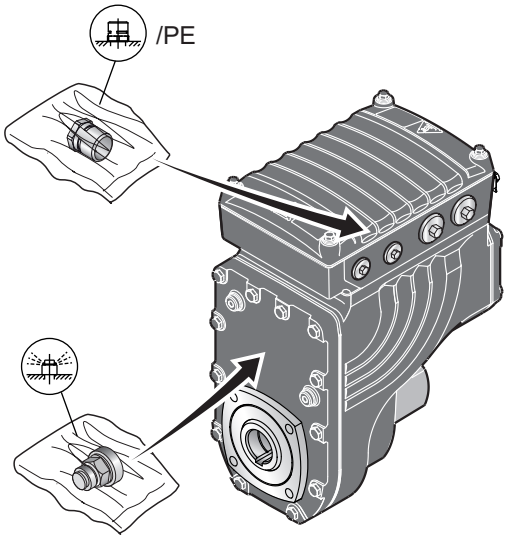
Design for wet areas (/WA option)

Design with pressure compensation fitting		
Type/mounting position	**Pressure compensation design**	**Illustration**
• **MGF..-DSM/WA/PE** • **Operation in the ordered mounting position**[1)]	• Breather valve and /PE pressure compensation fitting **installed according to mounting position**	
• **MGF..-DSM/WA/PE** • **Universal operation in mounting positions M1/ M2/M4/M5/M6**	• Breather valve and /PE pressure compensation fitting **included in delivery** • **Adhere to the assembly notes included in the screw fitting delivery.**	

1) Mounting position M3 not possible

	/WA	In this documentation, all illustrations depicting the version for use in wet areas are displayed with a shading (= HP200 surface protection)
	–	Breather valve
	/PE	Pressure compensation fitting, electronics

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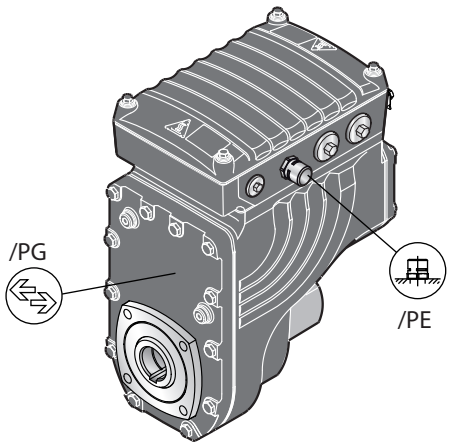
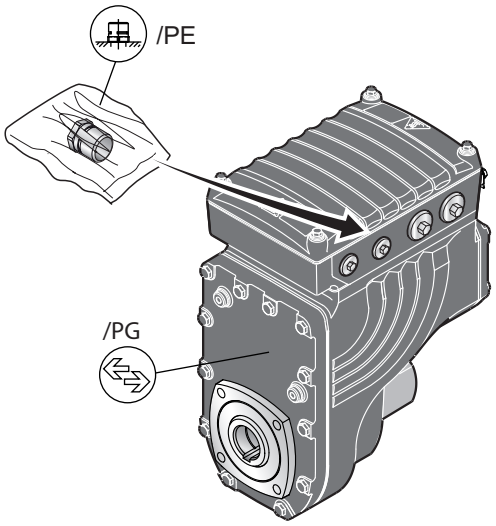
Design with integrated pressure compensation		
Type/mounting position	**Pressure compensation design**	**Illustration**
• **MGF..-DSM/WA/PE/PG** • **Operation in the ordered mounting position**	• Integrated pressure compensation /PG • Pressure compensation fitting electronics /PE **installed according to mounting position**	
• **MGF..-DSM/WA/PE/PG** • **Universal mounting position MU (M1/M2/M3/M4/ M5/M6)**	• Integrated pressure compensation /PG • Pressure compensation fitting electronics /PE **included in delivery** • **Adhere to the assembly notes included in the screw fitting delivery.**	

	/WA	In this documentation, all illustrations depicting the version for use in wet areas are displayed with a shading (= HP200 surface protection)
	/PG	Integrated pressure compensation
	/PE	Pressure compensation fitting, electronics

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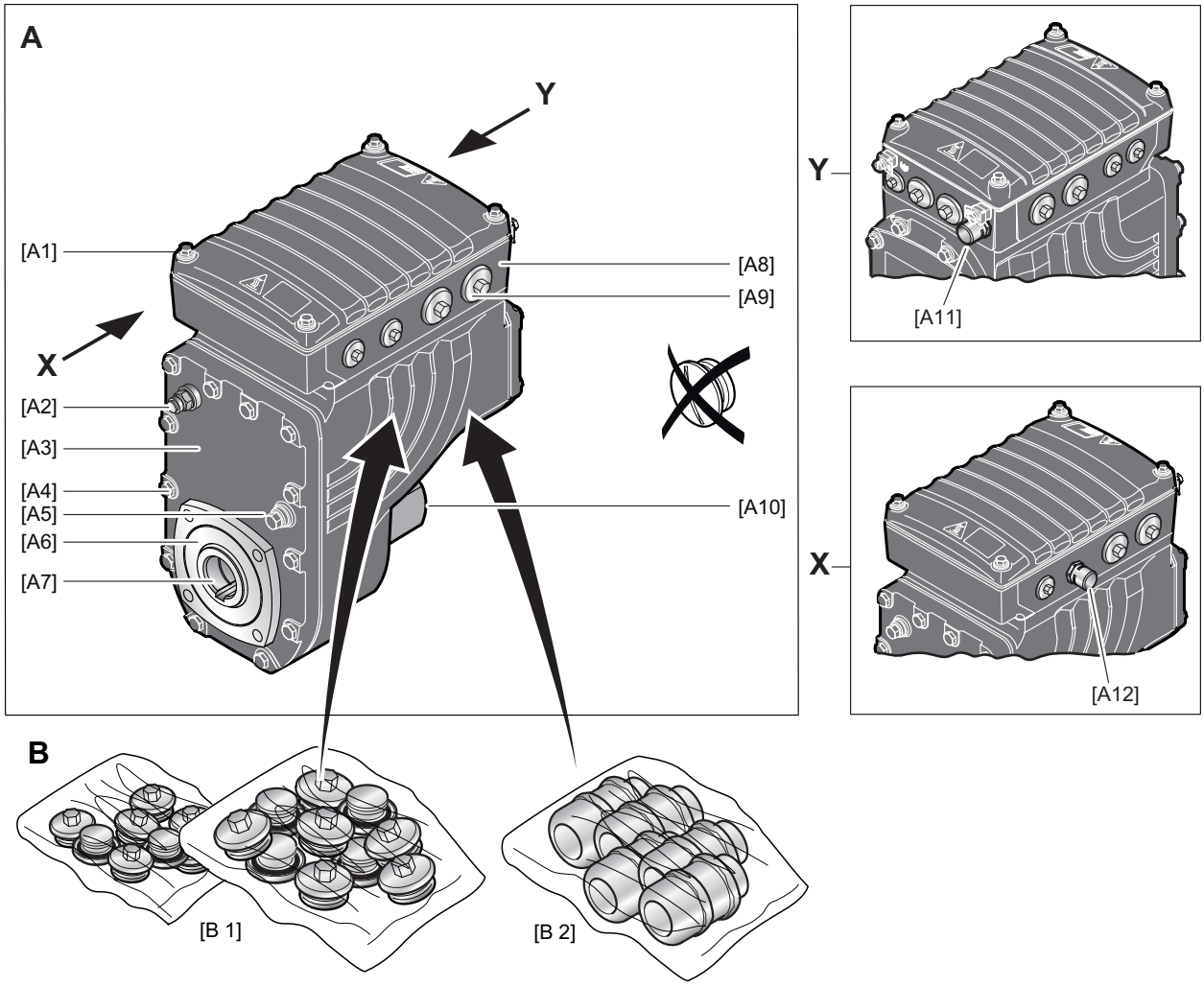
3.9 Design for wet areas (/WA option)

INFORMATION

Slight color differences are possible in the HP200 surface finish due to the treatment process (individual treatment of the components).

The following figure shows the additional features of MGF..-DSM drive units with the optional version for applications in wet areas (/WA option):

- The variant for use in wet areas is delivered as standard with screw plugs made of stainless steel.
- Optionally, plastic screw plugs can be chosen for certain designs. To achieve degree of protection IP66 and compatibility with cleaning agents, you have to replace the plastic screw plugs by suitable screw fittings made of stainless steel.



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/WA In this documentation, all illustrations depicting the version for use in wet areas are displayed with a shading (= HP200 surface protection)

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3.9.1 Key

A	Scope of delivery			
	MGF..-DSM/WA/PE **Operation in the ordered mounting position**[1]	**MGF..-DSM/WA/PE** **Universal use in mounting positions M1/M2/M4/M5/M6**	**MGF..-DSM/WA/PE/PG** **Operation in the ordered mounting position**[1]	**MGF..-DSM/WA/PE/PG** **Universal mounting position MU (M1/M2/M3/M4/M5/M6)**
[A1]	Mounting screws for cover made of stainless steel			
[A2]	Breather valve made of non-corrosive steel **installed and activated** according to mounting position	**Included** breather valve made of stainless steel	**Integrated** pressure compensation /PG	**Integrated** pressure compensation /PG
[A3]	HP200 surface protection, see chapter "Technical data and dimension sheets"			
[A4]	Mounting screws for gear unit housing made of stainless steel			
[A5]	Oil screw plug made of stainless steel (hexagon)			
[A6]	**Standard:** 1 × FKM oil seal (fluorocarbon rubber)		**Optional:** 2 × FKM oil seal (fluorocarbon rubber)	
[A7]	Output shaft made of stainless steel			
[A8]	Connection ring only possible with cable outlet "at the bottom" or "on the side": • In connection with mounting positions M1, M2, M3: 2 + 3, 2 + X, X + 3, 2 + X + 3 • In connection with mounting position M4: 2 + X • In connection with mounting position M5: X + 3 • In connection with mounting position M6: 2 + 3			
[A9]	Screw plugs made of stainless steel			
[A10]	Additional safety cover opposite the output end			
[A11]	**Factory-installed** pressure compensation fitting electronics /PE (M16) with mounting positions M5, M6	**Installation position of included** pressure compensation fitting electronics /PE (M16) with mounting positions M5, M6	**Factory-installed** pressure compensation fitting electronics /PE (M16) with mounting positions M5, M6	**Installation position of included** pressure compensation fitting electronics /PE (M16) with mounting positions M5, M6
[A12]	**Factory-installed** pressure compensation fitting electronics /PE (M16) with mounting position M1, M2, M3, M4	**Installation position of included** pressure compensation fitting electronics /PE (M16) with mounting position M1, M2, M3, M4	**Factory-installed** pressure compensation fitting electronics /PE (M16) with mounting position M1, M2, M3, M4	**Installation position of included** pressure compensation fitting electronics /PE (M16) with mounting position M1, M2, M3, M4
B	**Required screw fittings**			
[B1]	Screw plugs made of stainless steel[2]			
[B2]	Cable glands made of stainless steel[1]			
The required screw fittings can be ordered from SEW-EURODRIVE. For an overview, refer to chapter "Optional metal screw fittings".				

1) Mounting position M3 not possible

2) Make sure to select plug seals that are compatible with the cleaning agents used

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4 Mechanical installation

4.1 Installation notes

INFORMATION

Adhere to the safety notes during installation.

⚠ WARNING

Improper installation/disassembly of MGF..-DSM drive units and mount-on components.

Risk of injury.

- 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

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

Severe or fatal injuries.

- Disconnect the MGF..-DSM drive unit from the power supply 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 MGF..-DSM drive unit from the power supply and secure 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.

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4.2 Required tools and resources

- Set of wrenches
- Torque wrench
- Mounting device
- Compensation elements (washers 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 nameplate of the MGF..-DSM drive unit 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 that they are free of anti-corrosion agents, contamination or similar. Use a commercially available solvent. Do not expose the sealing lips of the oil seals to the solvent – damage to the material.
- When the drive is installed in abrasive ambient conditions, protect the output end oil seals against wear.

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4.4 Setting up the drive unit

4.4.1 Notes

- 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 MGF..-DSM 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 surfaces of the MGF..-DSM 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

Make sure to read 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 and, if necessary, the position of the pressure compensation fitting.**

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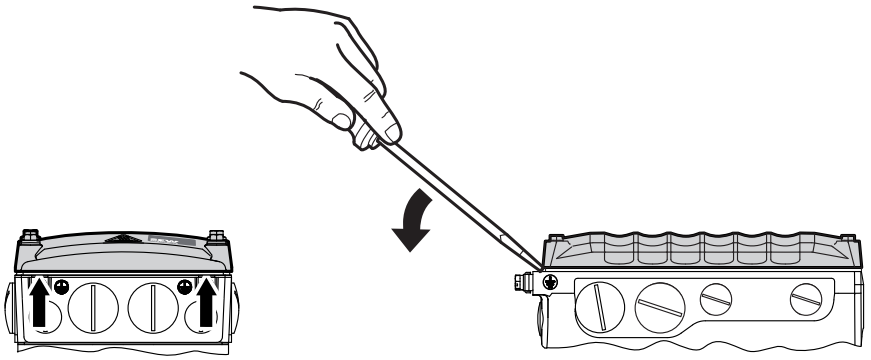
4.4.2 Removing the MGF..-DSM cover

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 design for use in damp areas or in the open. Repair any damage to the paint work if necessary.

For variants with HP200 surface treatment, observe the notes in chapter "Drive units with optional design for wet areas".

4.4.4 Painting drive units

NOTICE

Breather valves and oil seals may be damaged during painting or repainting.

Potential damage to property.

- Clean the surface of the drive unit and make sure it is free from grease.
- Before painting, thoroughly cover the breather valves and sealing lip of the oil seals with strips.
- After painting, remove the adhesive strips.

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4.4.5 Gear unit venting

Drive units with installed breather valve

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

Except for the M3 mounting position, SEW-EURODRIVE delivers MGF..-DSM drive units with optional design for use in wet areas with an activated breather valve installed according to the mounting position.

Drive units with separately included breather valve

NOTICE

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

Possible damage to property.

- For MGF..-DSM drive units in mounting position M3, use the option with integrated pressure compensation (/PG option).

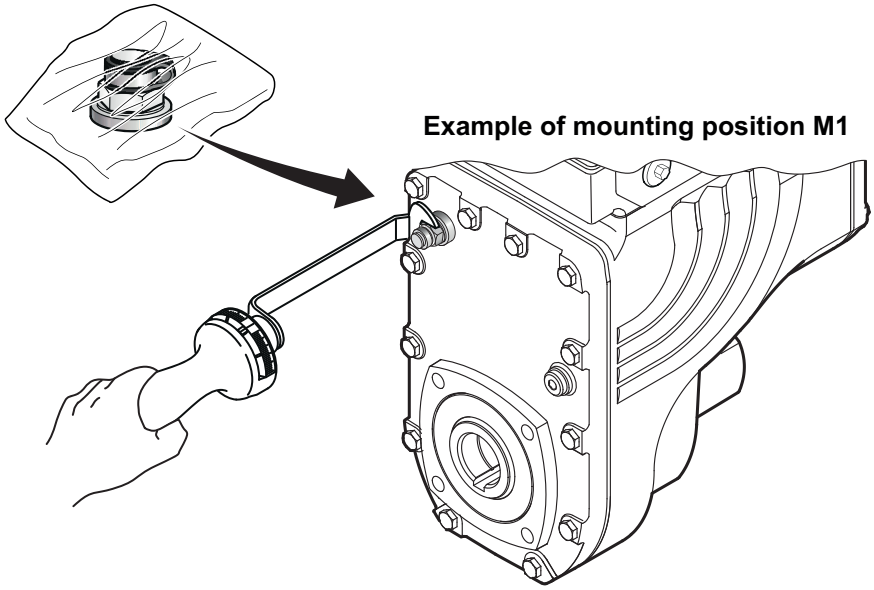
SEW-EURODRIVE delivers MGF..-DSM drive units ordered for universal operation in mounting position M1, M2, M4, M5, M6 with an enclosed breather valve.

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

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 mounting position M1

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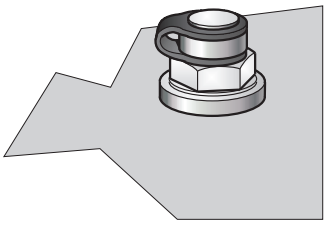
Drive units with integrated pressure compensation (/PG option)

No further measures are required because a breather valve is not required for MGF..-DSM drive units with integrated pressure compensation (/PG option).

Activating the breather valve (not with integrated pressure compensation /PG option)

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 protection of the breather valve before you start up the drive unit.

1. Breather valve with transport protection



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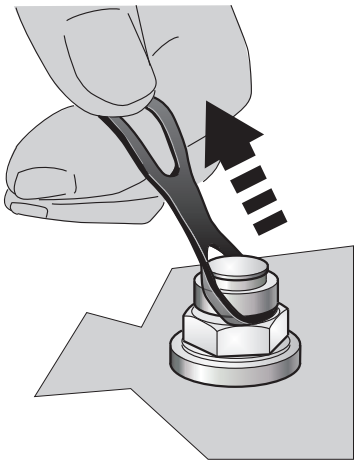
2. Remove transport protection



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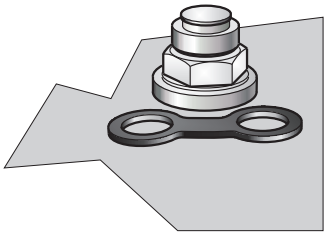
3. Activated breather valve



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4.5 Shaft-mounted gear unit with keyway

INFORMATION

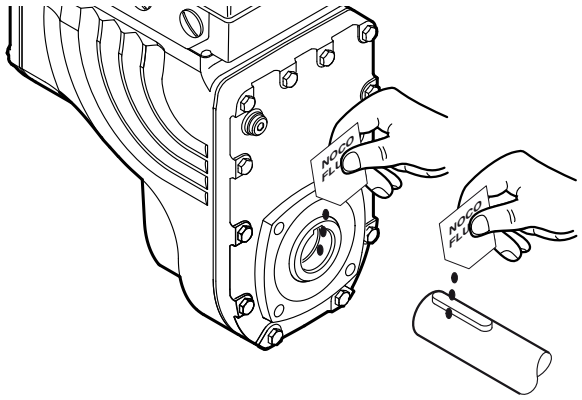
Observe the design notes in chapter "Technical data and dimension sheets" for the customer shaft design.

INFORMATION

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

4.5.1 Installation notes

1. Apply NOCO® fluid and spread it thoroughly.



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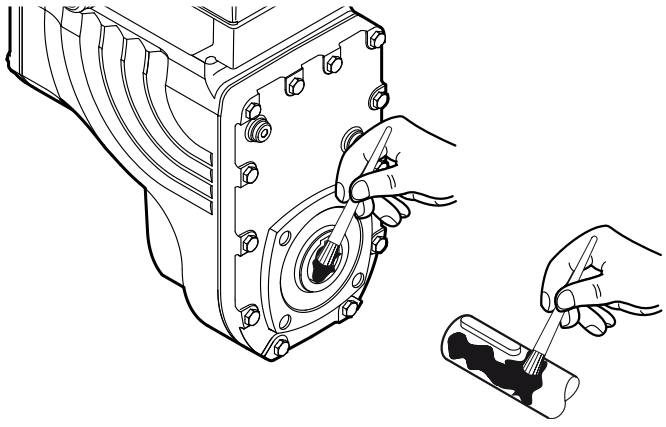

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2. Mount the shaft and secure it axially (using a mounting device makes installation easier). Following a description of the three mounting types:
   - 2A: Standard scope of delivery
   - 2B: Assembly/disassembly kit for customer shaft with contact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

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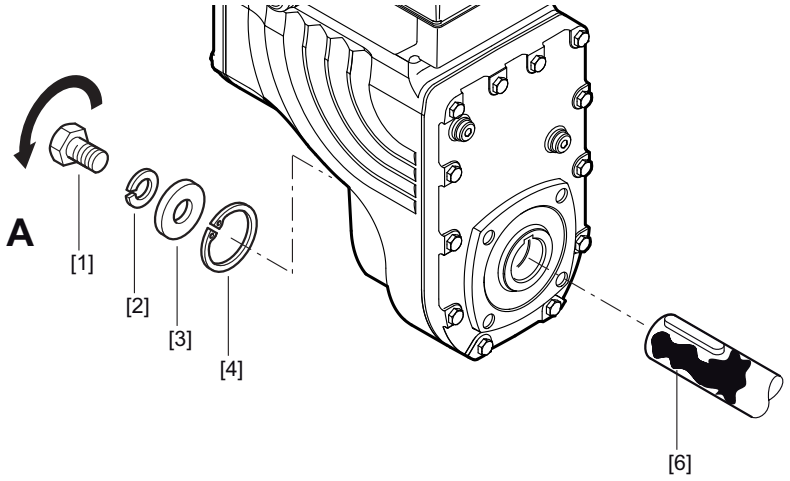
2A: Standard installation procedure



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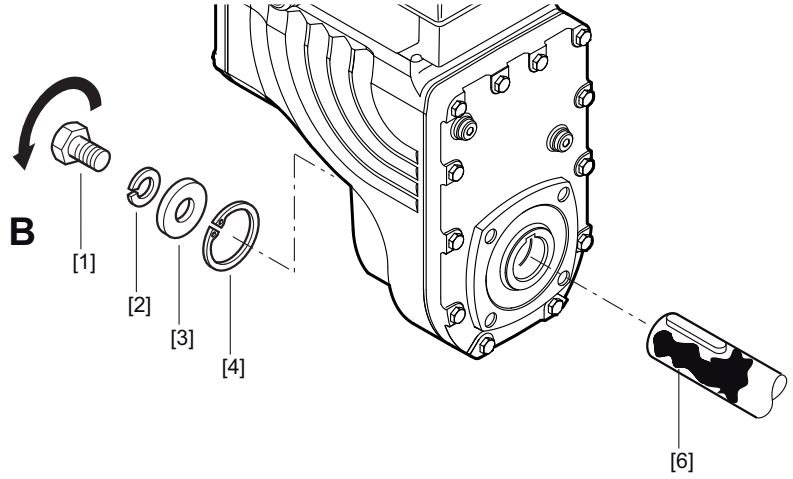
[1]	Short retaining screw (standard scope of delivery)	[4]	Retaining ring
[2]	Lock washer	[6]	Customer shaft
[3]	Washer		

2B: Installation with SEW-EURODRIVE assembly/disassembly kit[1)]

Customer shaft **with** contact shoulder



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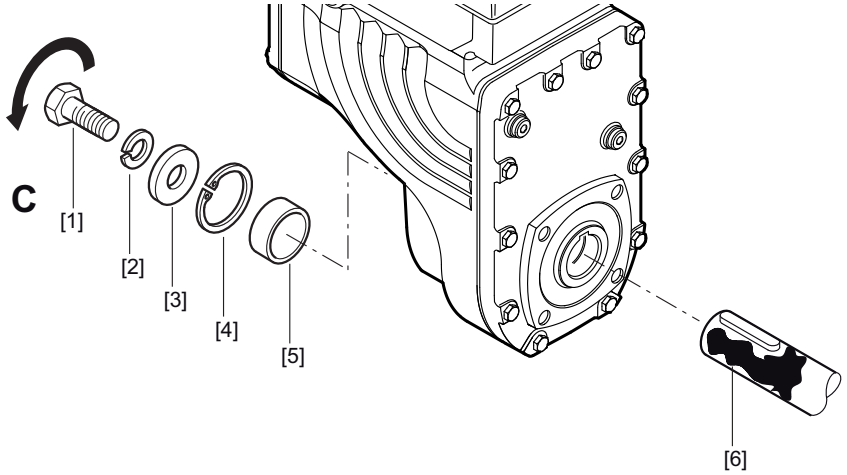
[1)] Observe chapter "Technical data and dimension sheets/Design notes for gear units with hollow shaft and key".

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

2C: Installation with SEW-EURODRIVE assembly/disassembly kit[1)]

Customer shaft **without** contact shoulder



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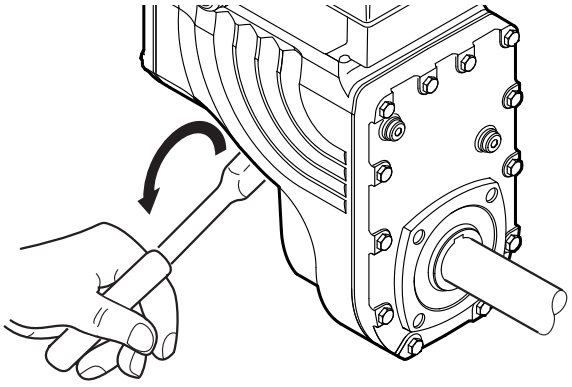
[1)] Observe chapter "Technical data and dimension sheets/Design notes for gear units with hollow shaft and key".

[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).



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Drive	Screw	Tightening torque [Nm]
MGFA.2	M10	20
MGFA.4	M16	40

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4.5.2 Disassembly notes

⚠ WARNING

Risk of burns due to hot surfaces.

Serious injuries.

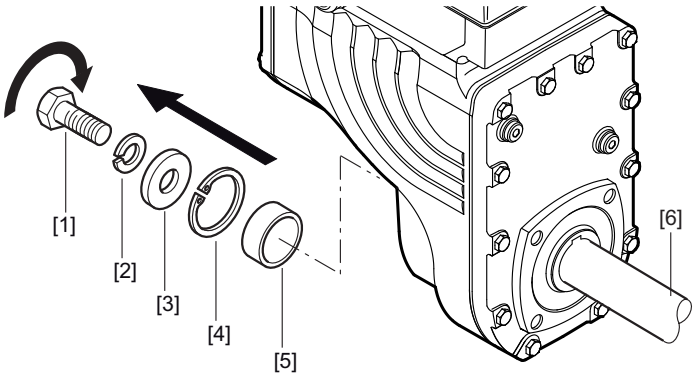
- Let the devices cool down before touching them.

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].



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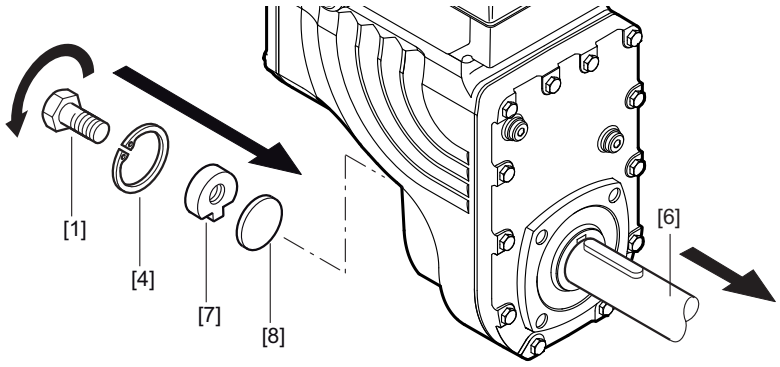
[1]	Retaining screw	[4]	Retaining ring
[2]	Lock washer	[5]	Spacer tube
[3]	Washer	[6]	Customer shaft

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.



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[4] Retaining ring
[6] Customer shaft
[7] Fixed nut
[8] Forcing washer

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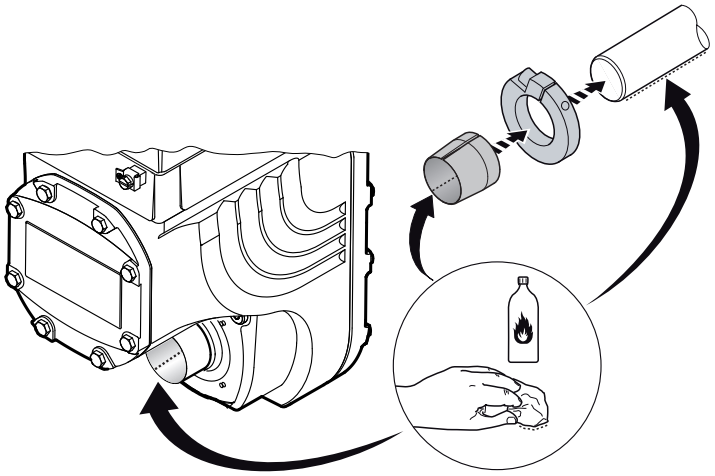
4.6 Shaft-mounted gear unit with TorqLOC® (customer shaft without contact shoulder)

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.



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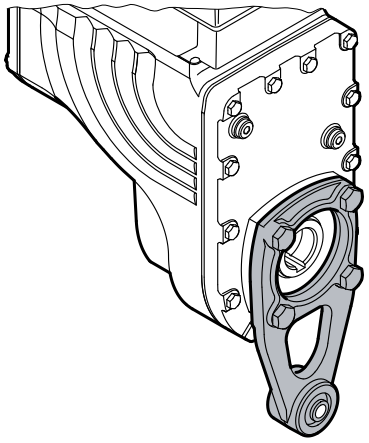
3. Fasten the torque arm on the MGF..-DSM drive unit; observe the chapter "Torque arm".



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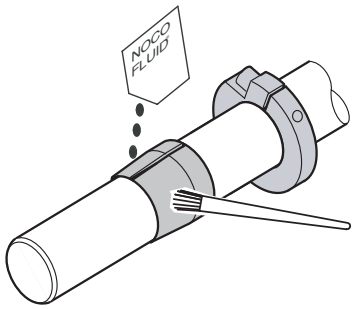
4. Apply NOCO® fluid on the bushing and spread thoroughly.



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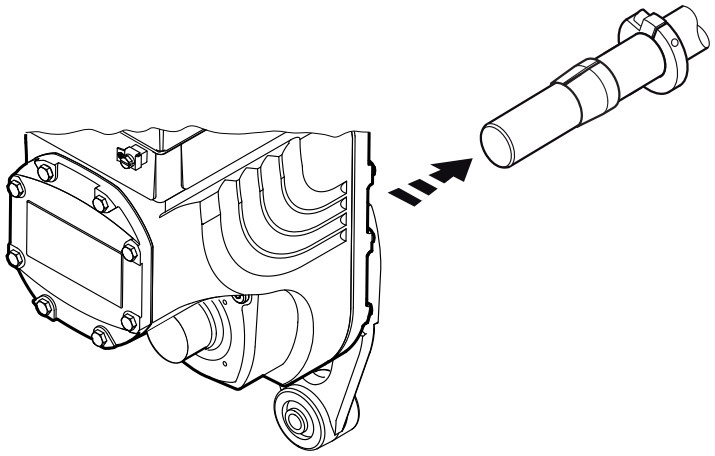
5. Push the gear unit onto the customer shaft.



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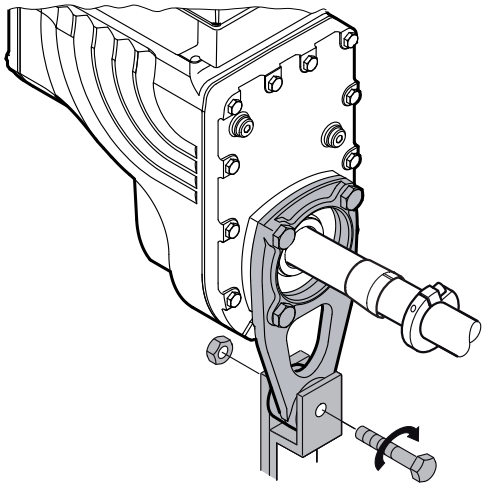
6. Mount the torque arm onto the system structure/holding fixture (do not tighten the screws).



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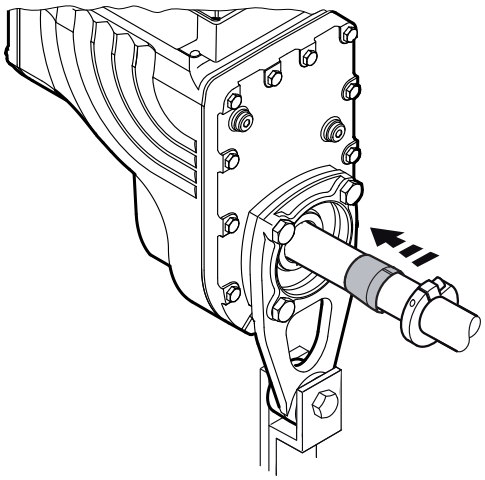
7. Push the bushing into the gear unit up to the stop.



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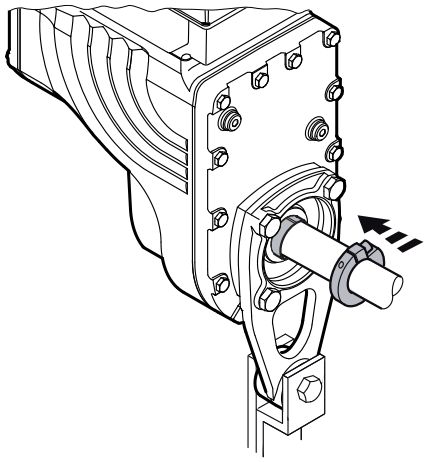
8. Push the stop ring to the bushing. Mark the position of the stop ring.



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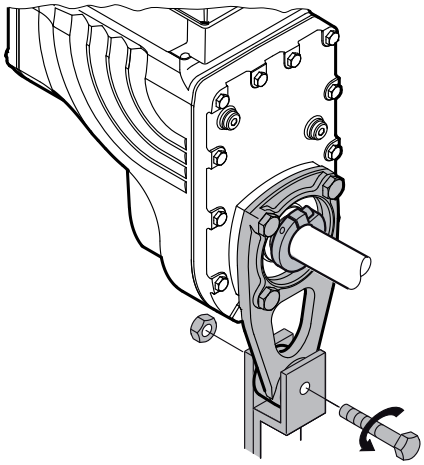
9. Remove the torque arm from the holding fixture/system structure.



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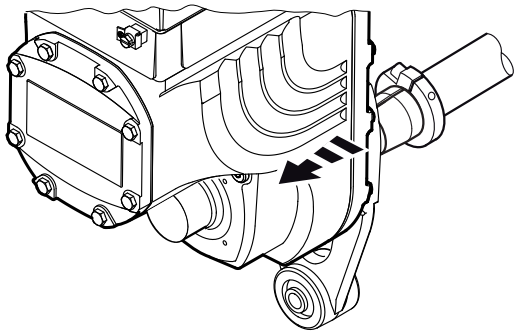
10. Pull the gear unit off the customer shaft until the stop ring is accessible for fastening.



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

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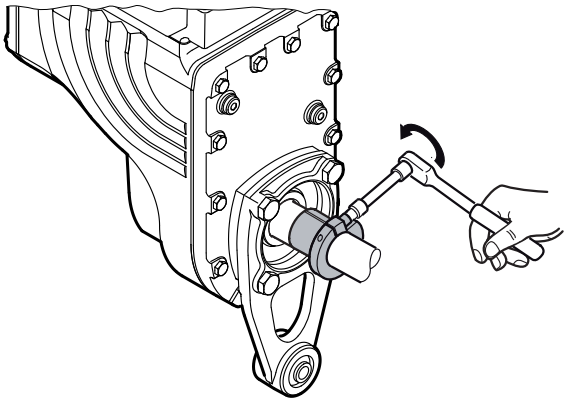
12. Tighten the stop ring using the appropriate torque as specified in the table below.



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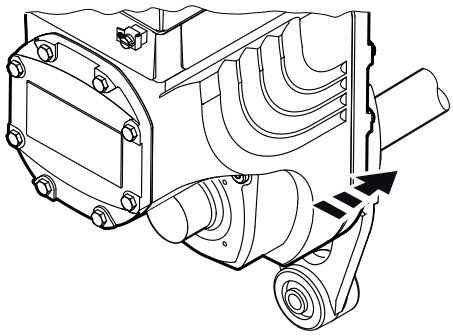
Type	Tightening torque [Nm]	
	Standard design	Stainless steel
MGFT.2	18	7.5
MGFT.4	18	7.5

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



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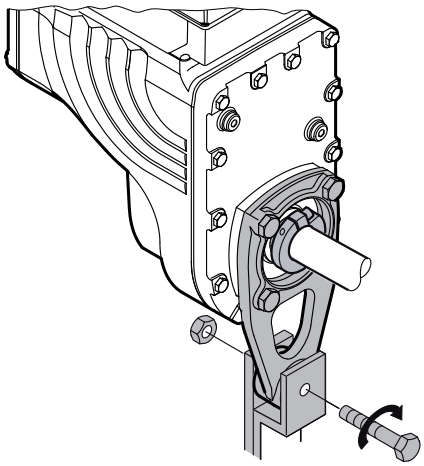
14. Mount the torque arm onto the system structure/holding fixture again (do not tighten the screws).



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

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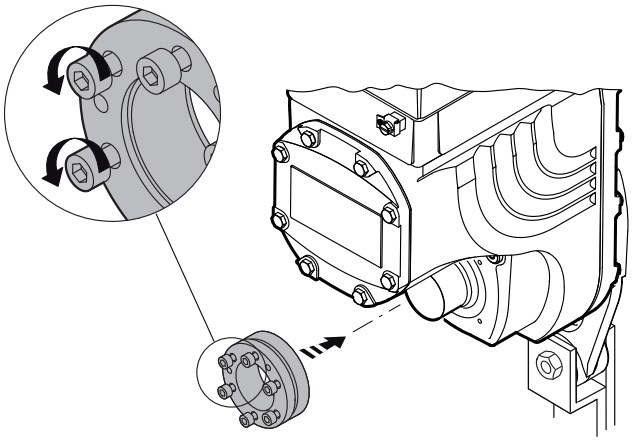

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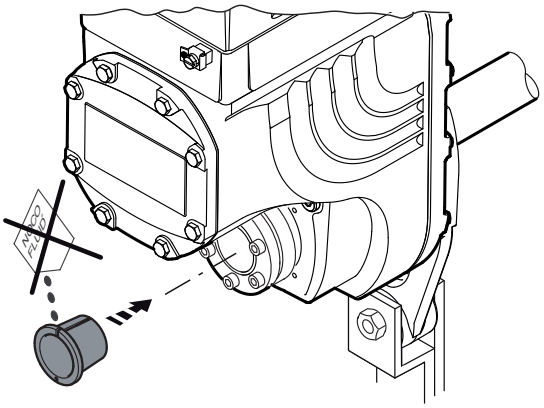
16. Slide the counter bushing onto the customer shaft and into the hollow shaft.



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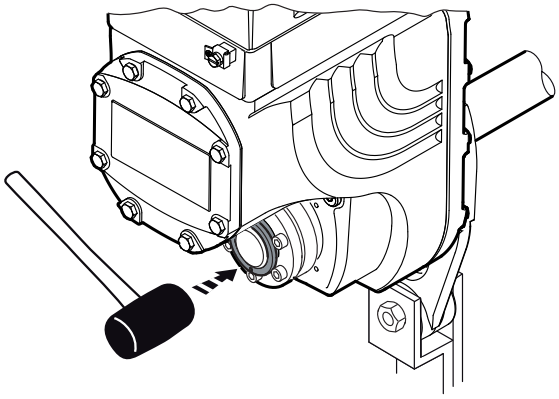
17. Ensure the shrink disk is properly seated.
18. Tap lightly on the flange of the counter bushing to ensure that the bushing is fitted securely in the hollow shaft.



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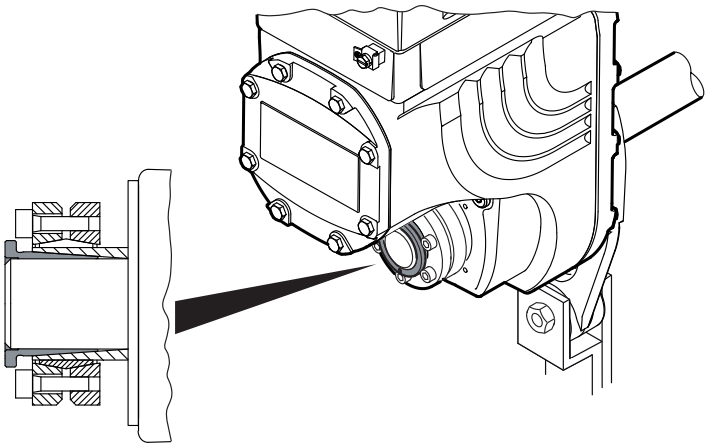
19. Make sure that the customer shaft is seated in the counter bushing.



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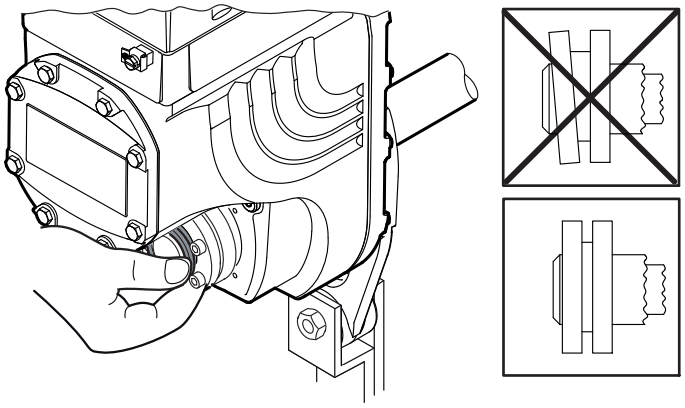
20. Tighten the screws of the shrink disk only hand-tight and ensure that the outer rings of the shrink disk are parallel.



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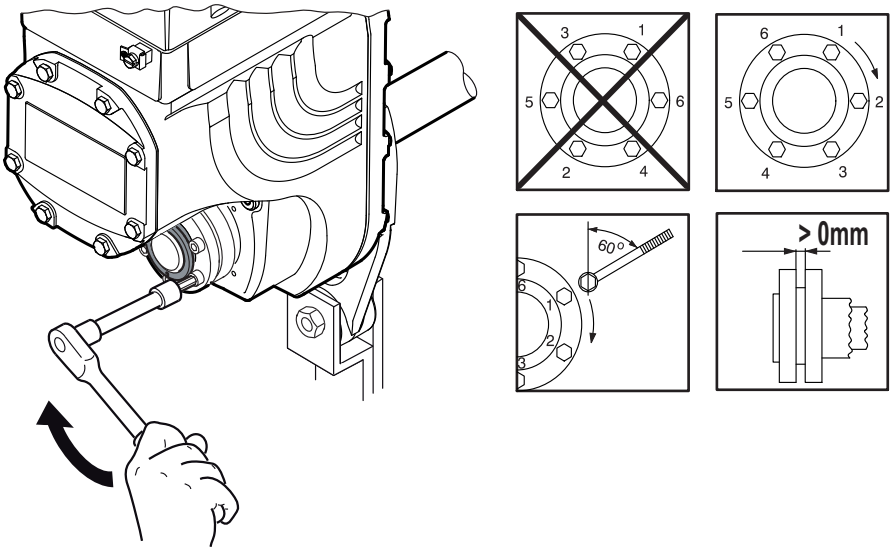
21. Tighten the locking screws by working round several times from one screw to the next (not in diametrically opposite sequence):

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



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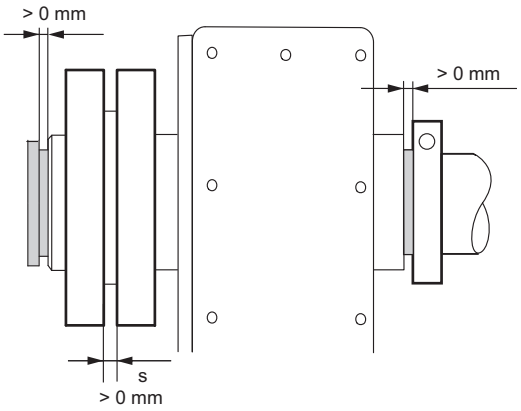
22. After installation, make sure the remaining gap s between the outer rings of the shrink disks is > 0 mm.

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



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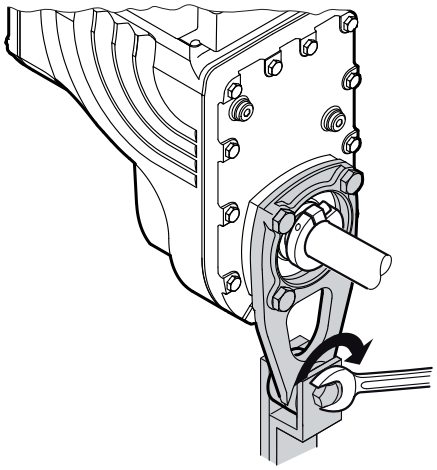
23. Securely tighten the torque arm; observe the chapter "Torque arm".



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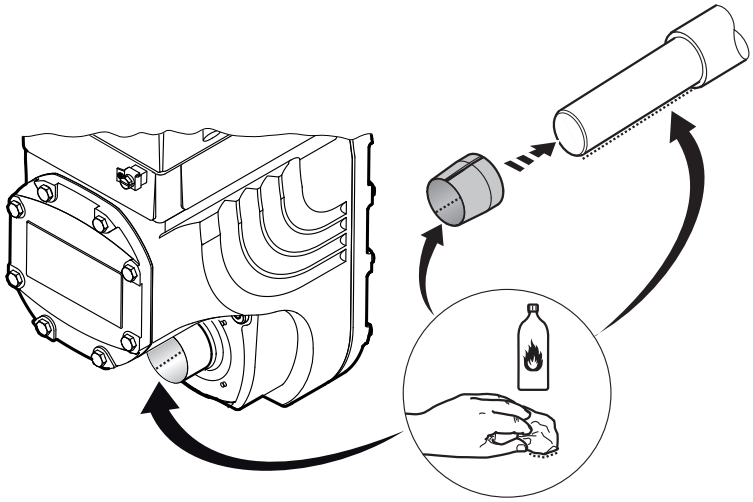
4.7 Shaft-mounted gear unit with TorqLOC® (customer shaft with contact shoulder)

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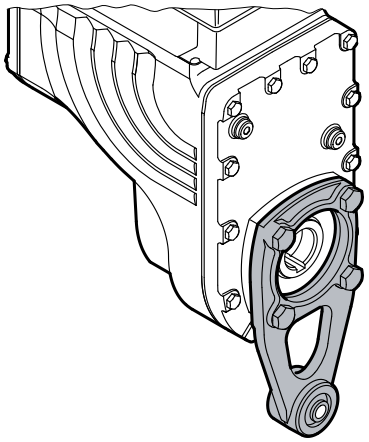
2. Fasten the torque arm on the MGF..-DSM drive unit; observe the chapter "Torque arm".



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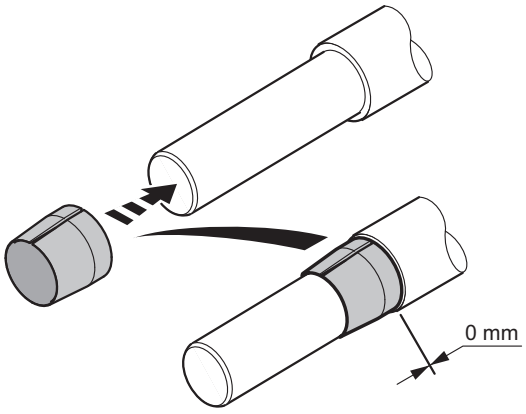
3. Slide the bushing onto the customer shaft.



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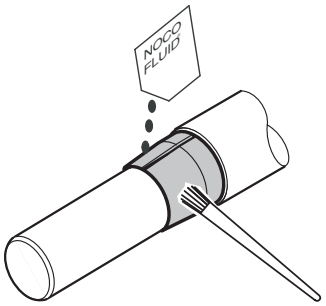
4. Apply NOCO® fluid on the bushing and spread thoroughly.



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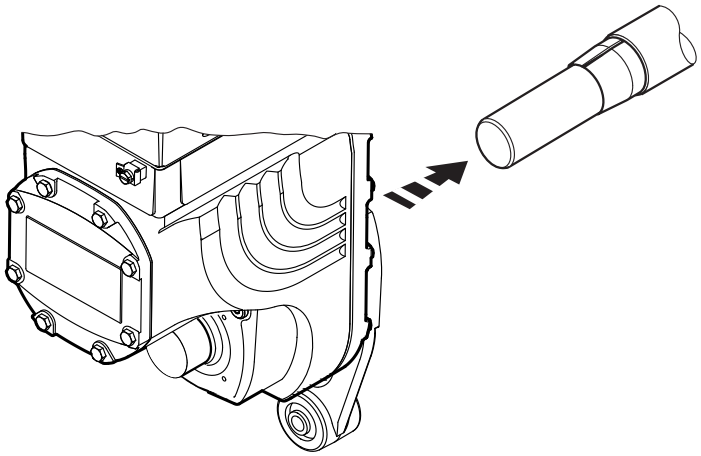
5. Push the gear unit onto the customer shaft.



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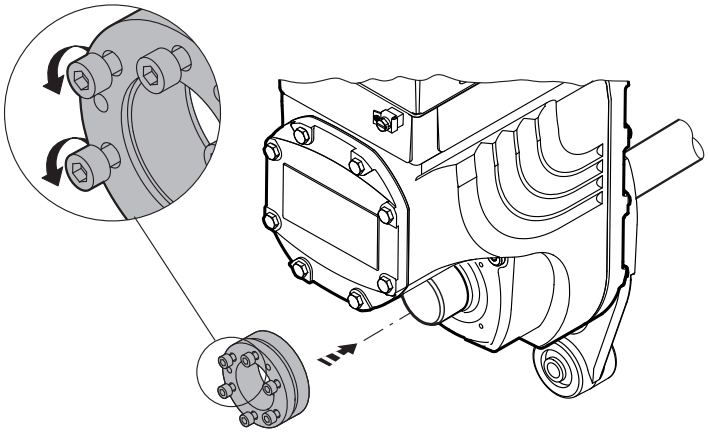
6. Make sure that all screws are loosened and slide the shrink disk onto the hollow shaft.



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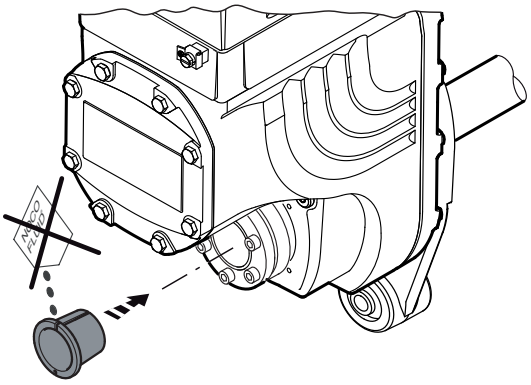
7. Slide the counter bushing onto the customer shaft and into the hollow shaft.



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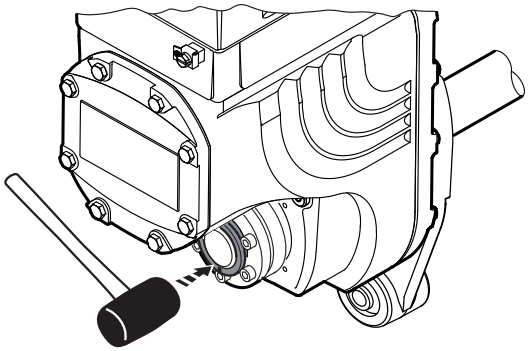
8. Ensure the shrink disk is properly seated.
9. Tap lightly on the flange of the counter bushing to ensure that the bushing is fitted securely in the hollow shaft.



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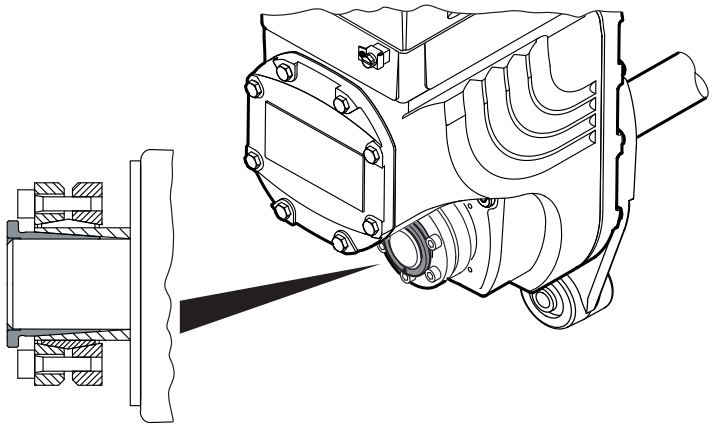
10. Make sure that the customer shaft is seated in the counter bushing.



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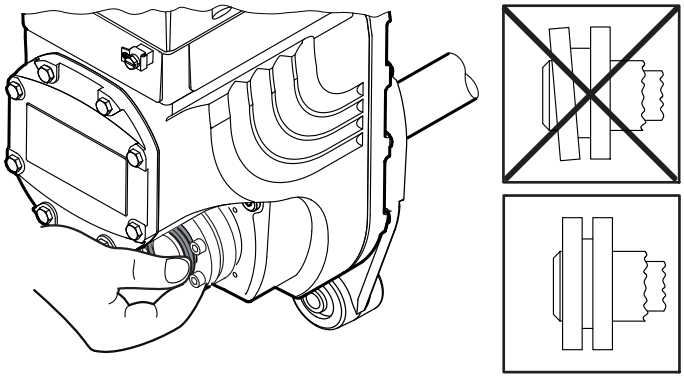
11. Tighten the screws of the shrink disk only hand-tight and ensure that the outer rings of the shrink disk are parallel.



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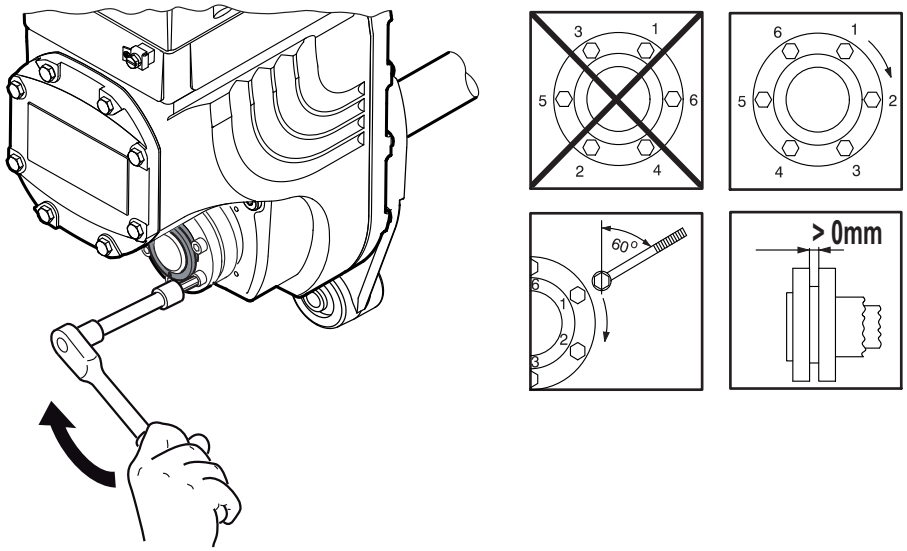
12. Tighten the locking bolts by working round several times from one bolt to the next (not in diametrically opposite sequence).

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



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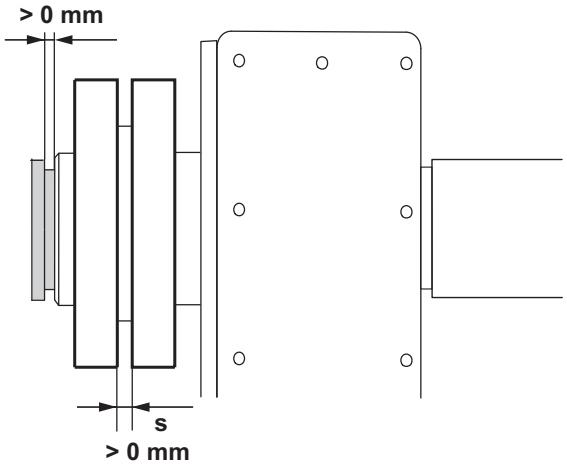
13. After installation, make sure the remaining gap s between the outer rings of the shrink disks is > 0 mm.

14. The remaining gap between counter bushing and hollow shaft end must be > 0 mm.



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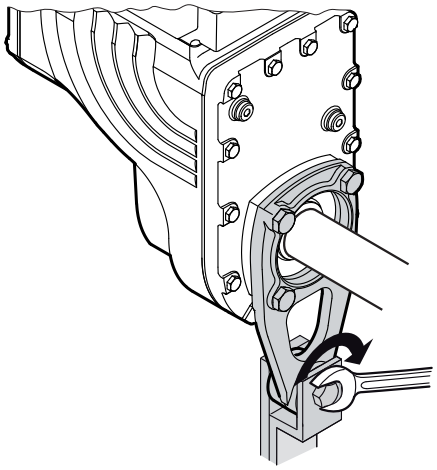
15. Mount the torque arm and tighten it securely; observe the chapter "Torque arm".



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

4.8.1 Removal notes

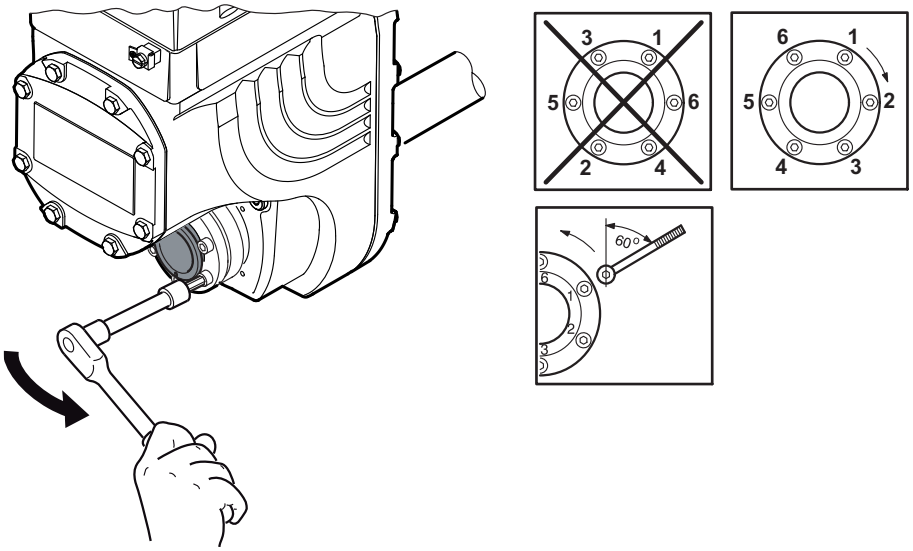
⚠ WARNING

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.

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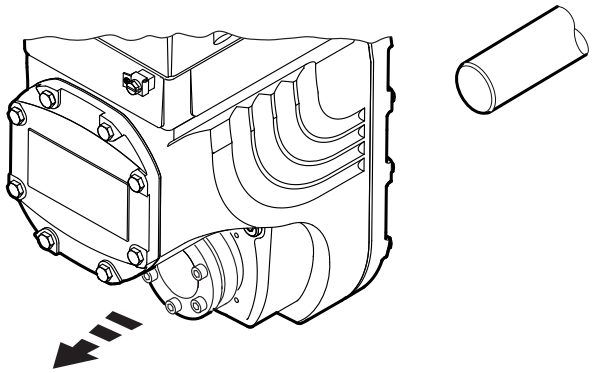
4. Remove the gear unit from the shaft.



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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.

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4.9 Installing the protective cover

⚠ WARNING

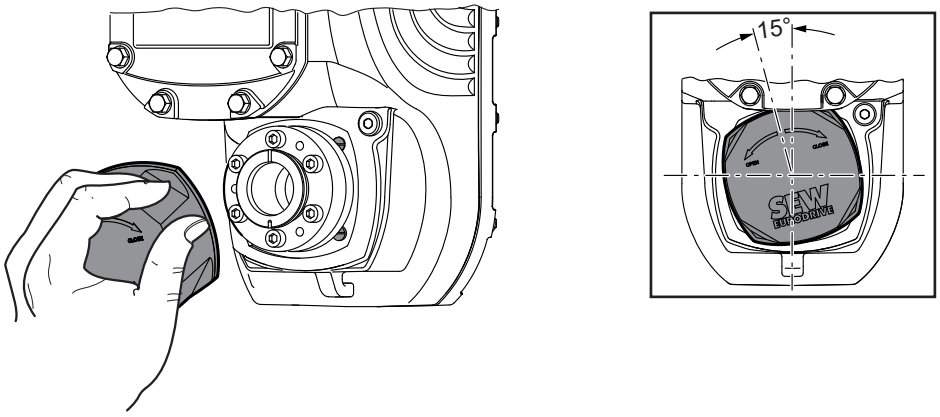
Risk of injury caused by rapidly moving output elements.

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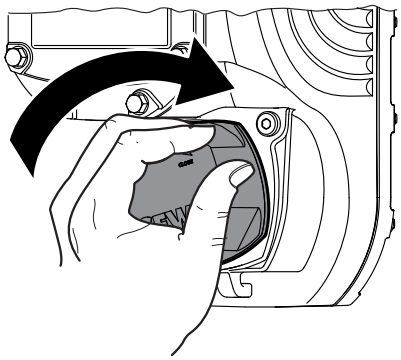
2. Turn the safety cover clockwise until it locks in position.



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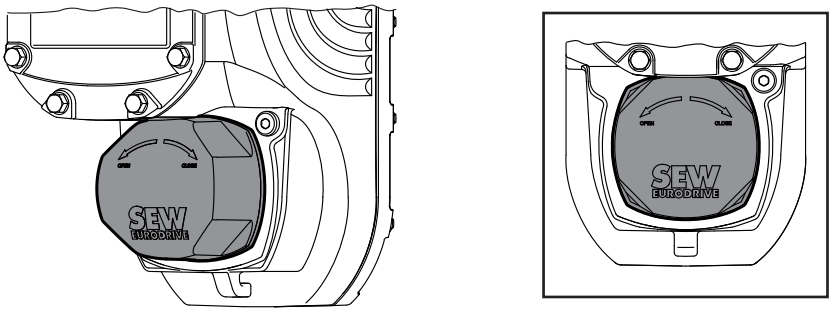
3. The following figure shows the installed safety cover:



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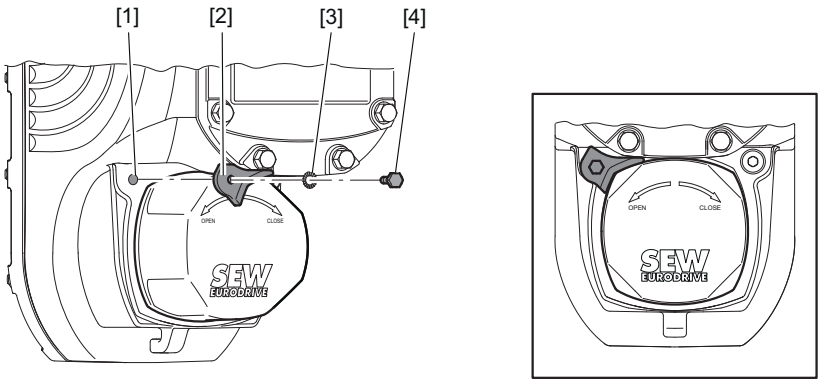
4. Fasten the locking (in preparation) at the designated bore using the screws included in the delivery. The permitted tightening torque for the screw M4x10 is 3.3 Nm.



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[1] Bore for the locking device
[2] Locking device
[3] Serrated lock washer
[4] M4x10 screw

4.9.2 Installation without cover

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

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4.10 Torque arm

NOTICE

Improper assembly can damage the MGF..-DSM 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

As an option, the necessary bolts can be enclosed in the delivery.

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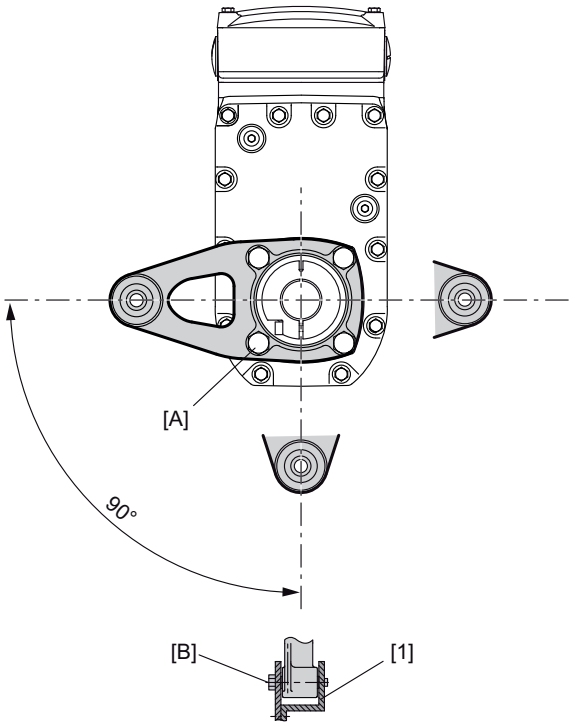
4.10.1 MGF.T2 and MGF.T4 torque arm

Installation options

The following figure shows the MGF.T2 and MGF.T4 torque arm:



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[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 [Nm]	Size	Tightening torque [Nm]
MGF.T2	M10	48 Nm	M10	20 Nm
MGF.T4	M12	70 Nm	M10	20 Nm

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4.11 Tightening torques

⚠ WARNING

Risk of burns due to hot surfaces.

Serious injuries.

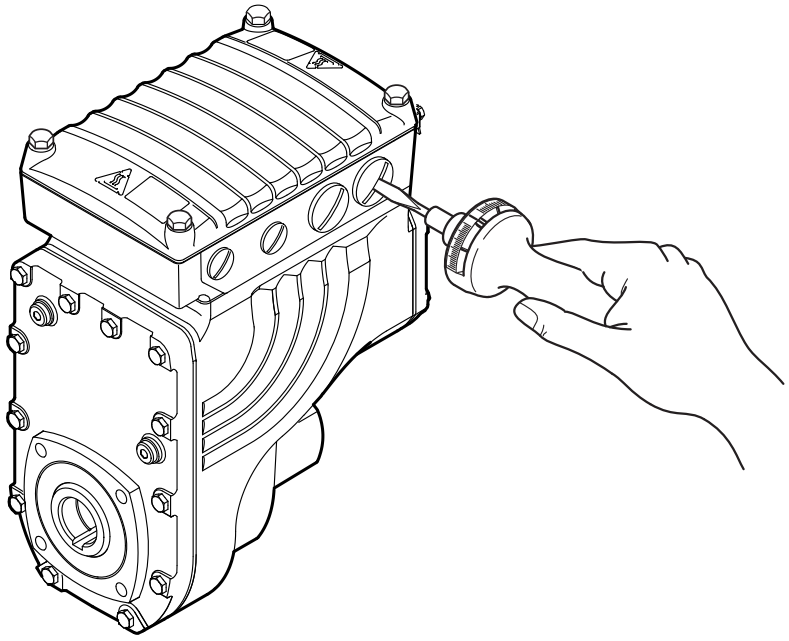
- Let the devices cool down before touching them.

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 cable entries depend 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:

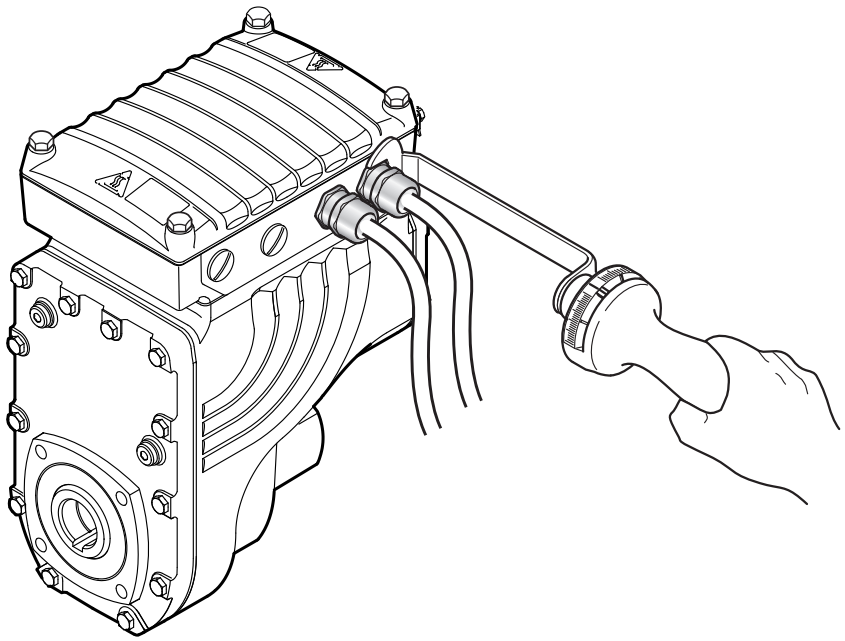
Screw fitting	Part number	Content	Size	Outer cable diameter	Tightening torque
EMC cable glands (nickel-plated brass)	18204783	10 pieces	M16 x 1.5	5 to 9 mm	4.0 Nm
	18204805	10 pieces	M25 x 1.5	11 to 16 mm	7.0 Nm
EMC cable glands (stainless steel)	18216366	10 pieces	M16 x 1.5	5 to 9 mm	4.0 Nm
	18216382	10 pieces	M25 x 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 cable entries depend on the ordered variant.



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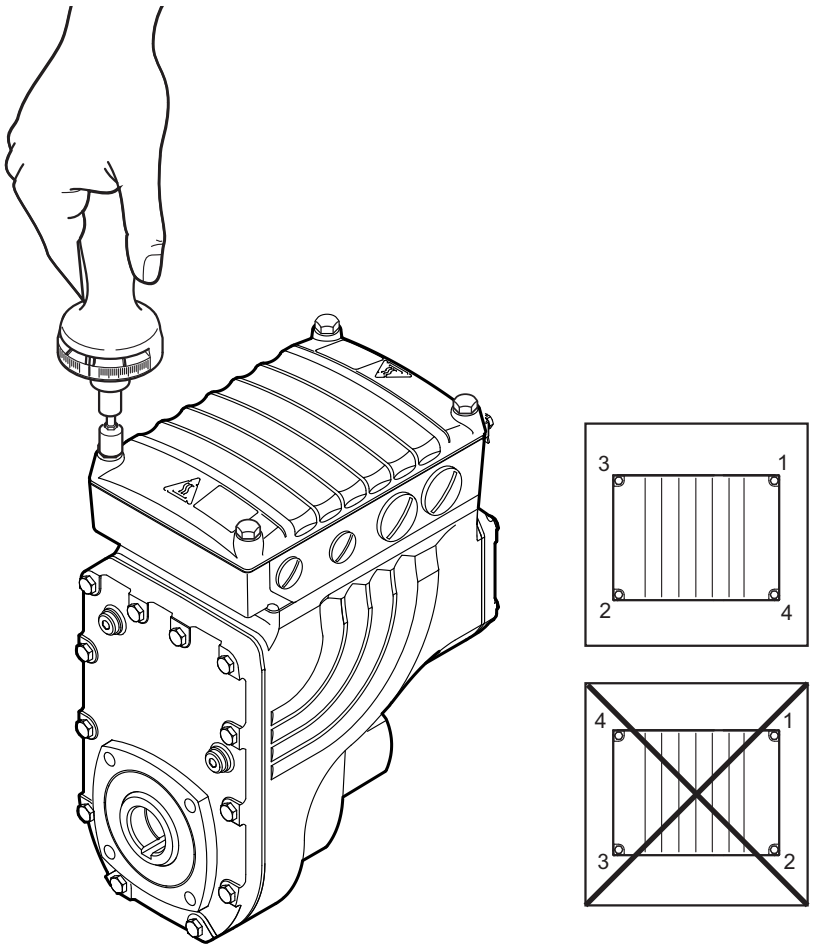
4.11.3 MGF..-DSM cover

Proceed as follows when installing the MGF..-DSM 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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4.12 Drive units with optional design for use in wet areas

INFORMATION

SEW-EURODRIVE guarantees that the HP200 special surface is free from faults when delivered. Report any transportation damage immediately.

Although the housing surfaces have a high impact resistance, they are to be handled with care. The corrosion protection can be affected by damage to the surface as a result from improper handling during transport, installation, operation, cleaning, etc. SEW-EURODRIVE is not liable for such damage.

4.12.1 Installation notes

NOTICE

Loss of degree of protection IP66 and incompatibility with cleaning agents.

Possible damage to property.

- Replace the optionally supplied plastic screw plugs with suitable stainless steel screw fittings.

Observe the following additional notes when installing MGF..-DSM drive units with optional design for use in wet areas:

- Make sure to prevent moisture and dirt from entering the device during installation.
- After electrical installation, make sure that the sealing and sealing surfaces are clean during assembly.
- When performing maintenance work, check the condition of the gaskets as well as the tightening torques of the screw fittings. If damaged, contact SEW-EURODRIVE.
- 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. For this purpose it is essential that you observe the chapter "Inspection and maintenance".
- Make sure to install the cables with a drip loop. Observe the permitted bending radii of the installed cables for cable routing.
- Use only stainless steel cable glands and screw plugs offered by SEW-EURODRIVE, see chapter "Technical data and dimension sheets".
- You must seal unused cable bushings and plug connectors with suitable screw plugs, see chapter "Technical data and dimension sheets".
- To prevent permanent water accumulation in the B-side safety cover, clean it at regular intervals.

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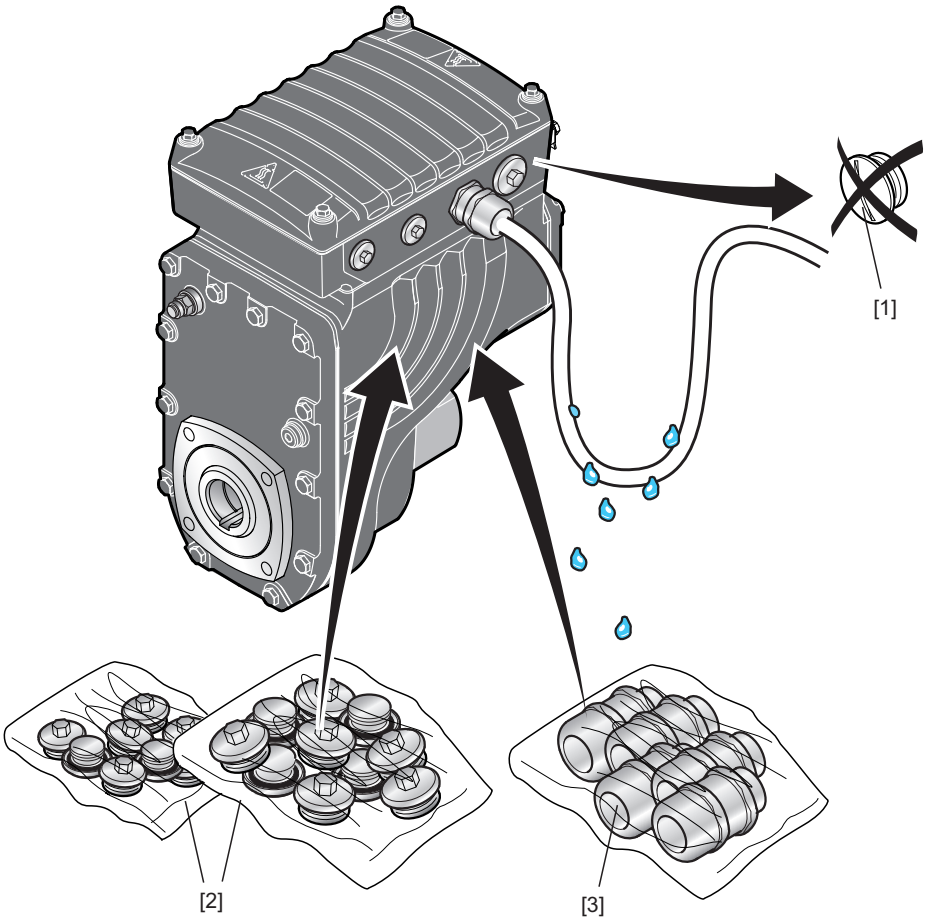
Example

The following figure gives an example of a cable entry with drip loop and replacement of plastic screw plugs supplied as standard with suitable stainless steel screw fittings.



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[1] The optionally delivered plastic screw plugs must be replaced by suitable screw plugs made of stainless steel.
[2] Stainless steel screw plugs, if necessary (see chapter "Technical data and dimension sheets")
[3] Required stainless steel cable glands (see chapter "Technical data and dimension sheets")

Use according to mounting position

INFORMATION

Also with the option "integrated pressure compensation gear unit (/PG)", MGF..-DSM drive units must only be used in the ordered mounting position because of the mounting position-dependent pressure compensation fitting electronics (/PE).

MGF..-DSM drive units with optional design for use in wet areas are delivered with pressure compensating valve and pressure compensation fitting (/PE) both installed according to the mounting position.

As an alternative, you can order the option "integrated pressure compensation gear unit (/PG).

This is why MGF..-DSM drive units with optional design for use in wet areas must be used only in the mounting position specified in the order:

- Mounting position
  - M1
  - M2
  - M3: Only possible with the option "integrated pressure compensation gear unit (/PG)".
  - M4
  - M5
  - M6
- Cable entries
  - Position 3 (not possible for M4 mounting position)
  - Position 2 (not possible for M5 mounting position)
  - Position X (not possible for M6 mounting position)

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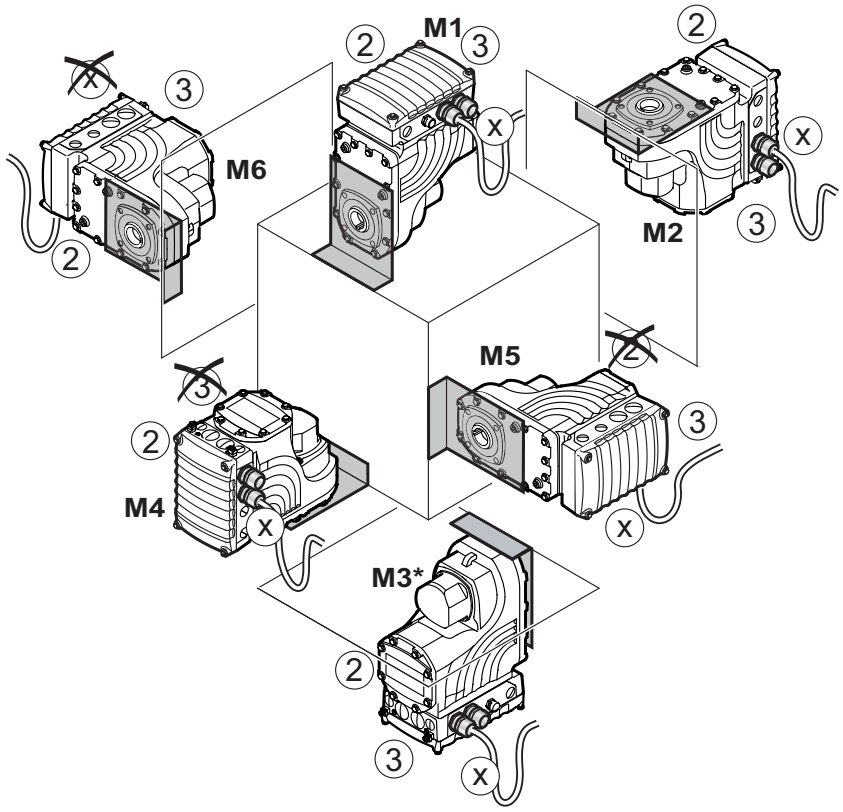
Mounting positions

The following figure shows the position of MGF..-DSM when installed in mounting positions M1 to M6:



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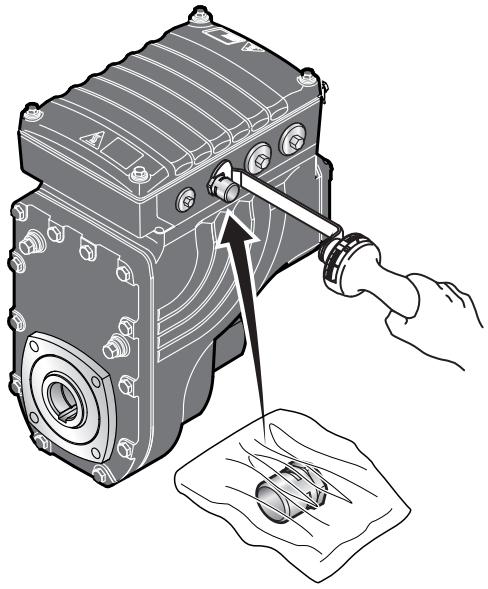
* Mounting position M3 is only possible with the option "integrated pressure compensation gear unit (/PG)".

Designs with included pressure compensation fitting (/PE option)

For designs with an included pressure compensation fitting (/PE option), 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 positions M1, M2, M3*, M4



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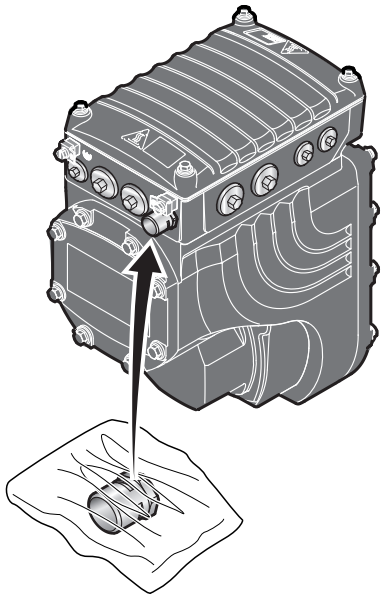
Mounting position M5, M6



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* Mounting position M3 is only possible with the option "integrated pressure compensation gear unit (/PG)".

4.12.2 Tightening torques when using optional design for use in wet areas

⚠ WARNING

Risk of burns due to hot surfaces.

Serious injuries.

- Let the devices cool down before touching them.

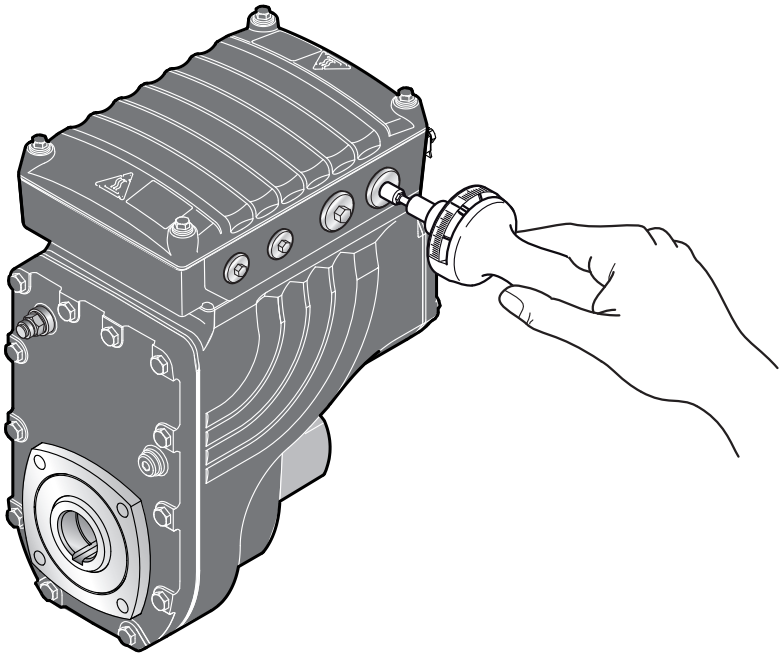
Blanking plugs

Tighten the stainless steel blanking plugs supplied by SEW-EURODRIVE with 6.8 Nm:

Type of screw fitting	Content	Size	Part number	Tightening torque
Hexagon head screw plug (made of stainless steel)	10 pieces	M16 x 1.5	18247342	6.8 Nm
	10 pieces	M25 x 1.5	18247350	6.8 Nm

Example

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



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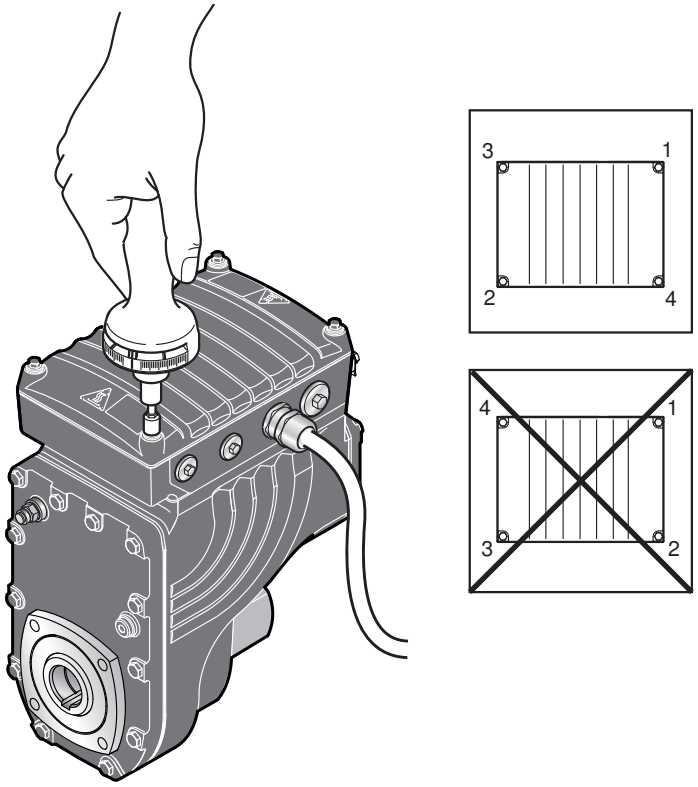
MGF..-DSM cover

Proceed as follows when installing the MGF..-DSM 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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EMC cable glands

Tighten the EMC cable glands **optionally included in the delivery** with the following tightening torques:

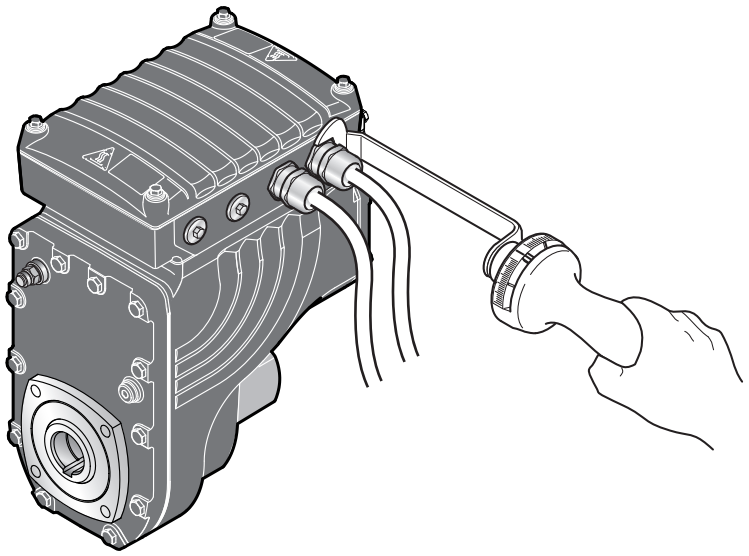
Screw fitting	Part number	Content	Size	Outer cable diameter	Tightening torque
EMC cable glands (nickel-plated brass)	18204783	10 pieces	M16 x 1.5	5 to 9 mm	4.0 Nm
	18204805	10 pieces	M25 x 1.5	11 to 16 mm	7.0 Nm
EMC cable glands (stainless steel)	18216366	10 pieces	M16 x 1.5	5 to 9 mm	4.0 Nm
	18216382	10 pieces	M25 x 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 cable entries depend on the ordered variant.



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5 Electrical installation

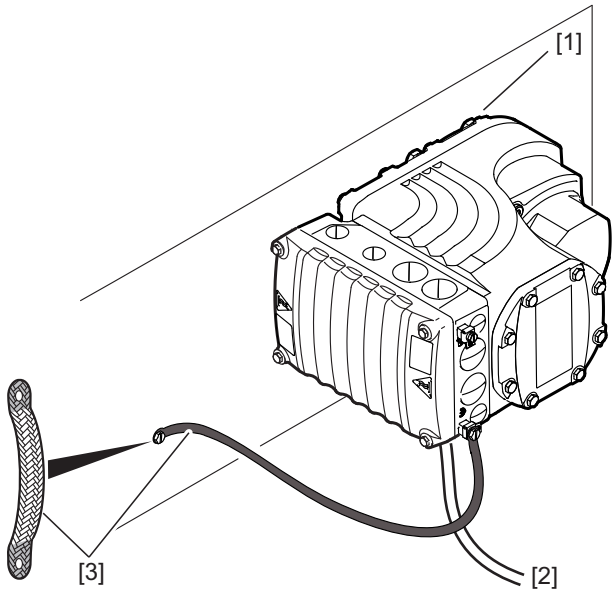
INFORMATION

Adhere to the safety notes during 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 system.



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[1] The mechanical installation of a drive unit with hollow shaft (e.g. MGF..-DSM) does **not** create a conductive connection of 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)
The contact surfaces must be free of paint.

INFORMATION

For further information on equipotential bonding for decentralized inverters and drive units, refer to the publication "Equipotential Bonding of Decentralized Inverters" by SEW-EURODRIVE.

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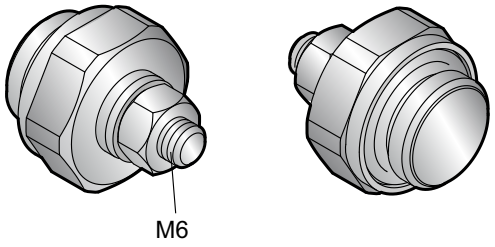
5.2 Equipotential bonding at the connection box

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



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	Tightening torque of the cable gland	Tightening torque of the 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 of size M16 or M25.

Screw the cable gland into the free cable entry 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 KTY separately from other power cables maintaining a distance of at least 200 mm. The cables can only be routed together if either the KTY cable or the power cable is shielded.

5.3.2 Permitted cable cross sections of terminals

Design with screw terminals

Observe the permitted cable cross sections for installation:

Line terminals X2	
Connection cross section (mm^2)	1.0 mm^2 – 4.0 mm^2
Connection cross section (AWG)	AWG17 – AWG12
Permitted tightening torque	1.2 – 1.4 Nm (10.6 – 12.4 in-lbs)
Conductor end sleeves	• **For single assignment:** Connect only single-wire conductors or flexible conductors with conductor end sleeve (DIN 46228 part 1, material E-CU) **with or without plastic collar** • Permitted length of the conductor end sleeve: At least 10 mm

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Design with cage clamp terminals

Terminals X2 for line connection

Adhere to the permitted cable cross sections for installation:

Terminals X2 for line 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:

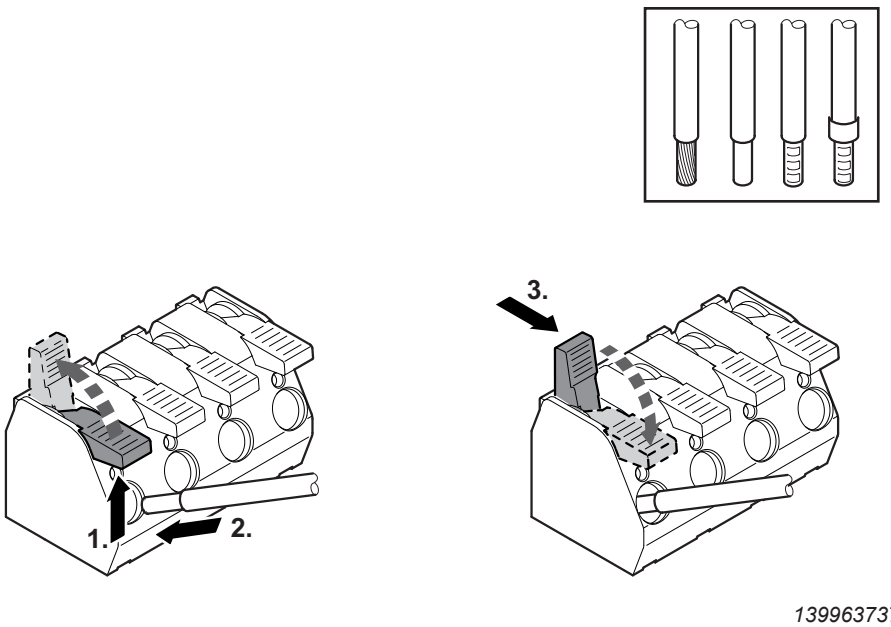
Terminals X4 for temperature sensor	Without conductor end sleeves	With conductor end sleeves (without shroud)	With conductor end sleeves (with shroud)
Connection cross section (mm^2)	0.2 mm^2 – 1.5 mm^2	0.25 mm^2 – 1.5 mm^2	0.25 mm^2 – 0.75 mm^2
Connection cross section (AWG)	AWG24 – AWG16	AWG24 – AWG16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

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

Activating terminals X2 for line connection

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

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



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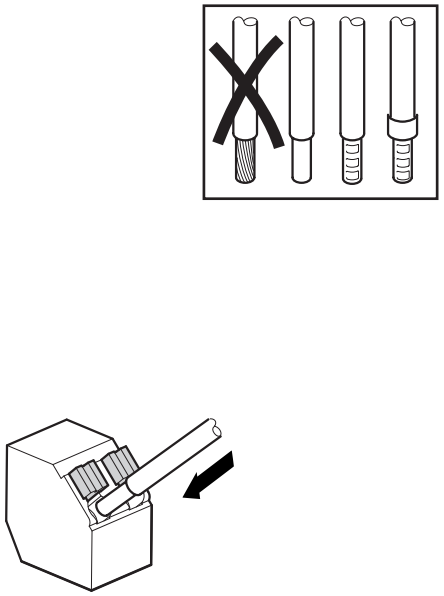
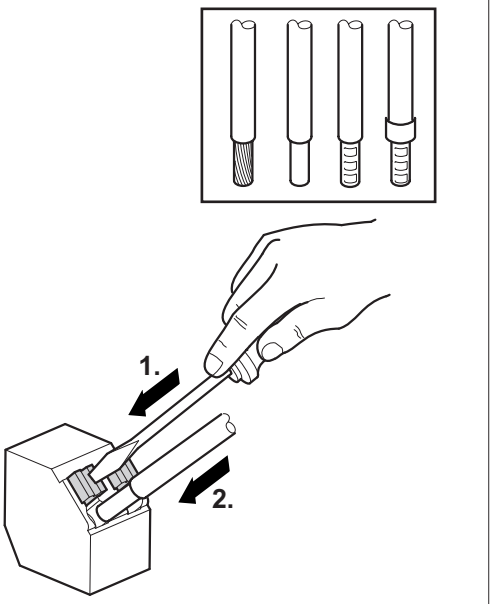
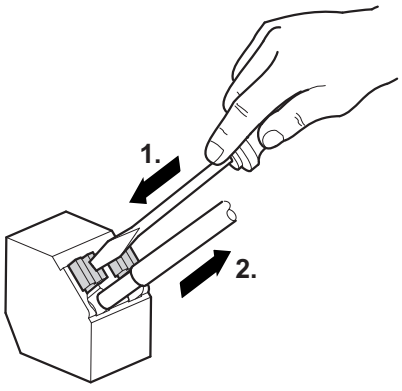
Activating terminals X4 for temperature sensor

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

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

<table>
<tr><th colspan="2">Terminals X4 for temperature sensor (the following figure shows a schematic illustration)</th></tr>
<tr><th>Connect conductor
without pushing the activation button.</th><th>Connect conductor
after pressing the activation button.</th></tr>
<tr><td> 
13991646475</td><td> 
13991648907</td></tr>
<tr><td>The following conductors can be installed directly (without tool) up to 2 cross-section sizes below the nominal cross section:
• Single-wire conductors
• Flexible conductors with end sleeves</td><td>When connecting the following conductors, you must press the actuation button on top to open the clamping spring:
• Untreated, flexible conductors
• Conductors with small cross sections that cannot be plugged in directly.</td></tr>
<tr><th colspan="2">Remove the conductor.
First press the activation button.</th></tr>
<tr><td colspan="2"> 
13991651339</td></tr>
</table>

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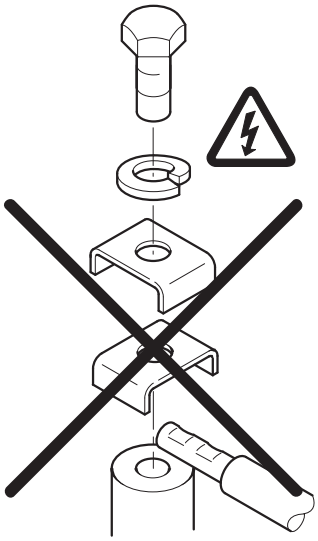
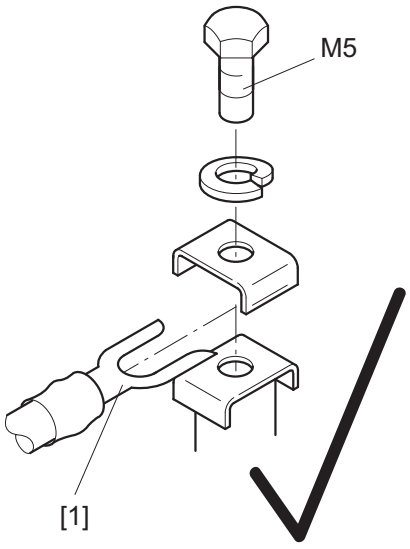
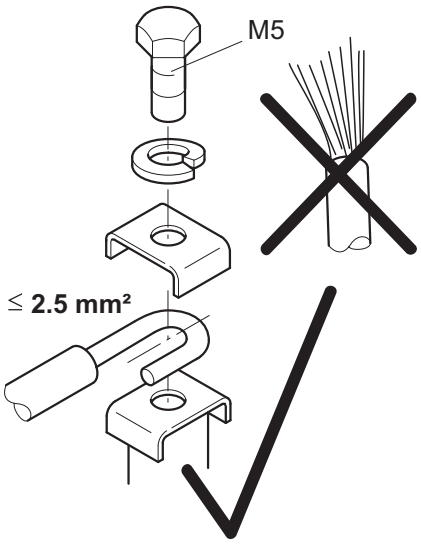
5.3.4 Notes on PE connection

⚠ WARNING

Electric shock due to incorrect connection of PE.

Severe or fatal injuries.

- The permitted tightening torque for the screw is 2.0 to 2.4 Nm (18 to 21 in-lbs).
- Observe the following notes regarding PE connection.

Impermissible 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 mm²
	 *9007201632429067*	 *9007201632413579*

[1] Forked cable lug suitable for M5 PE screws

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5.4 Terminal assignment

5.4.1 Design with screw terminals

⚠ WARNING

Electric shock due to regenerative operation while the shaft is turning.

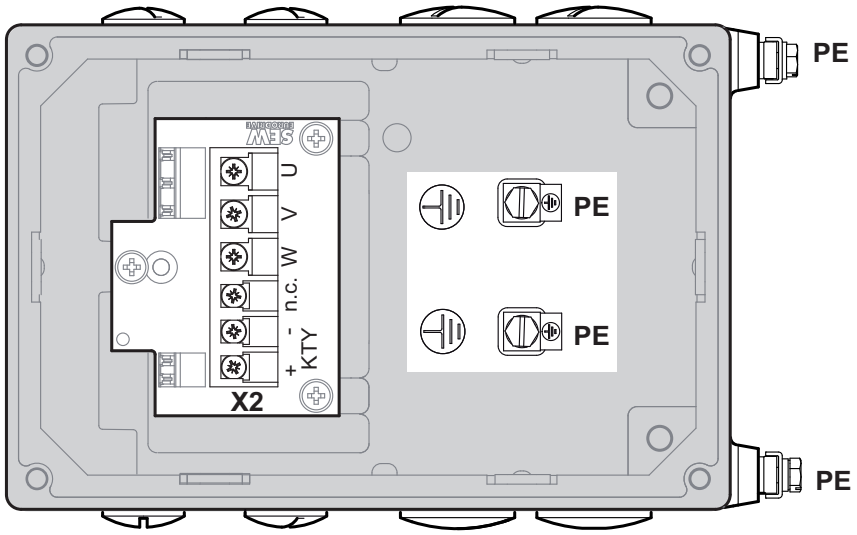
Severe or fatal injuries.

- 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 you use.

The following figure shows the terminal assignment of the MGF..-DSM drive unit:



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Frequency inverter connection			
Terminal	**Name**	**Function**	**Permitted tightening torque**
X2	KTY+	Temperature sensor KTY+	0.8 to 1.1 Nm
	KTY-	Temperature sensor KTY-	0.8 to 1.1 Nm
	n.c.	Not assigned	0.8 to 1.1 Nm
	W	Phase W	1.2 to 1.6 Nm
	V	Phase V	1.2 to 1.6 Nm
	U	Phase U	1.2 to 1.6 Nm
⏚	PE	PE connection	2.0 to 3.3 Nm

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5.4.2 Design with cage clamp terminals

⚠ WARNING

Electric shock due to regenerative operation while the shaft is turning.

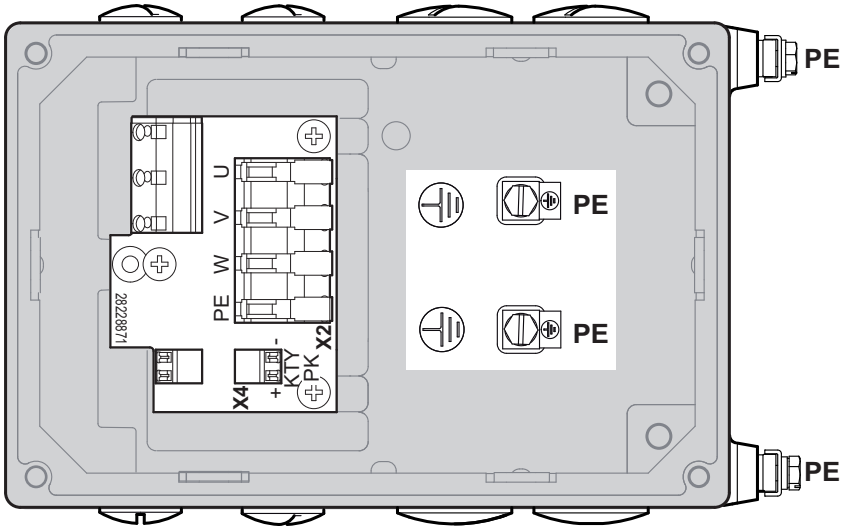
Severe or fatal injuries.

- 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 you use.

The following figure shows the terminal assignment of the MGF..-DSM drive unit:



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Frequency inverter connection			
Terminal	**Name**		**Function**
X4	KTY PK	+	Temperature sensor KTY+
	KTY PK	-	Temperature sensor KTY-
X2	PE		PE connection
	W		Phase W
	V		Phase V
	U		Phase U
⏚	PE		PE connection

5.5 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, rms current monitoring), or activate a motor model for thermal protection as with SEW servo systems.

5.5.1 Temperature sensor KTY84 – 130

NOTICE

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

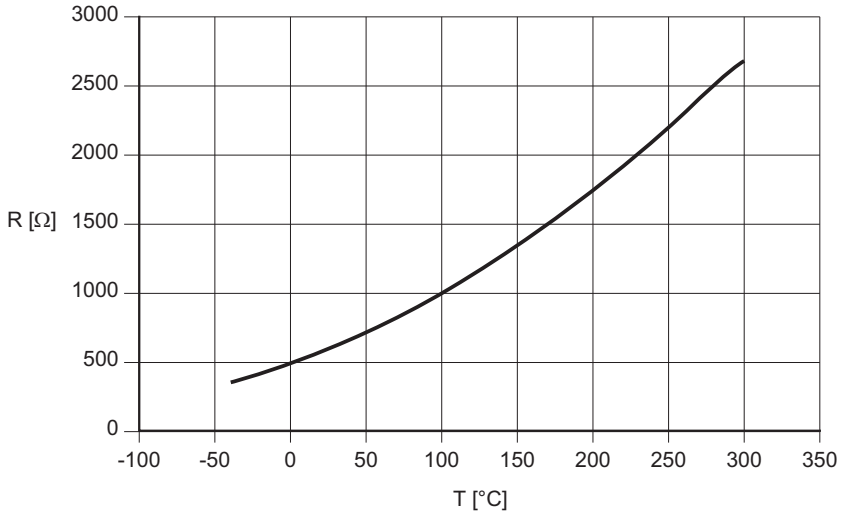
Possible damage to property.

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

It is important that the KTY is connected properly and with correct polarity to ensure proper evaluation of the temperature sensor.

Typical characteristic curve of KTY

The following figure shows the resistance of the KTY sensor subject to the motor temperature:



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For detailed information on how to connect the KTY sensor, refer to the chapter "Terminal assignment".

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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 Requirements for startup

6.2.1 Before startup

Before startup, make sure that

- The MGF..-DSM drive unit is not damaged and not blocked
- The measures stipulated in chapter "Extended storage" are performed after an extended storage period
- All connections have been made properly
- The direction of rotation of the MGF..-DSM drive unit is correct
- All protective covers have been properly installed
- All motor protection equipment is active and set for the rated motor current
- There are no other sources of danger
- No heat-sensitive or insulating materials are covering the surface of the MGF..-DSM drive unit

6.2.2 During startup

During startup, make sure that

- The motor is running properly, which means
  - No overload
  - No speed fluctuation
  - No loud noises
  - No unusual vibrations, etc.

  In case of problems, refer to chapter "Service".

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7 Service

NOTICE

Improper work on MGF..-DSM 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.

7.1 Malfunctions of the mechanical MGF..-DSM drive

The following table shows the troubleshooting options for malfunctions of the mechanical MGF..-DSM drive:

Fault	Possible cause	Measure
Unusual, regular running noise	Meshing/grinding noise: Bearing damage	Contact 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	Contact SEW-EURODRIVE Service
Oil leaking from the connection box	Internal seal defective	Contact SEW-EURODRIVE Service
Oil leaking from oil seal at output end[1)]	Oil seal defective	Replace the 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 MGF..-DSM in for repair
MGF..-DSM 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
Incorrect direction of rotation	Incorrect setpoint polarity	Check frequency inverter, check setpoints

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Fault	Possible cause	Measure
MGF..-DSM unit hums and has high current consumption	Drive is blocked	Check drive
	Frequency inverter set incorrectly	Check frequency inverter
MGF..-DSM unit heats up excessively (measure temperature, significantly higher than 100 °C)	Overload	Measure power, use larger MGF..-DSM 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).

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7.2 SEW-EURODRIVE Service

7.2.1 Sending in a unit for repair

If a fault cannot be rectified, contact the SEW-EURODRIVE Electronics Service (see chapter "Address list").

When you contact the SEW-EURODRIVE Electronics Service, always quote the digits on the status label so that our service personnel can assist you more effectively.

Provide the following information when sending the unit in for repair:

- Serial number (see nameplate)
- Type designation
- Unit variant
- Short description of the application (application, control mode, etc.)
- Nature of the fault
- Accompanying circumstances
- Your own presumptions as to what has happened
- Any unusual events preceding the problem, etc.

7.3 Shutdown

⚠ WARNING

Electric shock caused by dangerous voltages in the connection box.

Severe or fatal injuries.

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

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

7.4 Storage

Observe the following instructions when shutting down or storing the MGF..-DSM drive unit:

- If you shut down and store the MGF..-DSM drive unit for an extended period, close open cable bushings and cover ports with protective caps.
- Make sure that the unit is not subject to mechanical impact during storage.

Observe the notes on storage temperatures in the "Technical data" chapter.

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7.5 Extended storage

7.5.1 Drive

NOTICE

Volatilization of the VCI anti-corrosion agent.

Possible damage to property.

- MGF..-DSM 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" design. MGF..-DSM drive units in this design are designated with a corresponding label.

The lubricant of those MGF..-DSM drive units is mixed with a VCI anti-corrosion agent (**v**olatile **c**orrosion **i**nhibitors). Note that this VCI anti-corrosion agent is only effective in a temperature range of -25 °C and +50 °C. The shaft ends are also treated with an anti-corrosion agent. MGF..-DSM drive units of the "extended storage" type are equipped with OS2 surface protection unless stated otherwise in the order. Instead of OS2, you can order OS3. For more information refer to chapter "Surface protection".

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7.5.2 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 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 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 plastic wrap. Protected against insect damage and mildew by chemical treatment.	Under 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 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.

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7.6 Waste disposal

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

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

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

- Oil and grease

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

Waste disposal according to WEEE Directive 2012/19/EU

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

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

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8 Inspection and maintenance

8.1 Inspection and maintenance intervals

8.1.1 Determining motor oil seal and options

The following information must be known to being able to specify the inspection and maintenance intervals:

- [1] Use of the "Integrated pressure compensation" option

  You can see from the type designation on the nameplate whether the option is used:

  – /PG = "Integrated pressure compensation" option

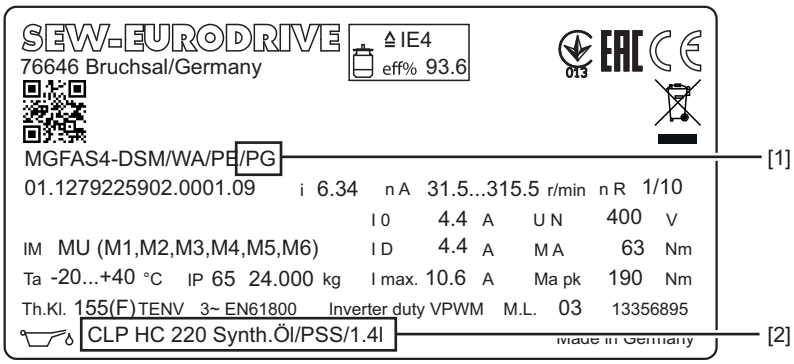
- [2] Type of motor oil seal: FKM or Premium Sine Seal FKM

  The "Premium Sine Seal FKM" motor oil seal is indicated on the nameplate as "PSS" in the oil group. If the nameplate does not indicate "PSS", an FKM motor oil seal is used.

  – Example: CLP HC 220 Synth. oil/**PSS**/..l = drive units with Premium Sine Seal FKM motor oil seal

  – Example: CLP HC 220 Synth. oil/..l = drive units with FKM motor oil seal

The following figure shows an example of a MGF..-DSM drive unit nameplate.



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[1] /PG = "Integrated pressure compensation" option
[2] Oil group

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8.1.2 Inspection and maintenance intervals

The following table shows the inspection and replacement intervals for MGF..-DSM 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	Specialists at customer site
	In the event of 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	Specialists at customer site
	In the event of leakage at the output oil seal: Change the oil seal	Specialists 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	Specialists at customer site
Recommendation: Every 10000 operating hours[1)]	Drive units with **FKM motor oil seal**: Have the motor inspected by SEW-EURODRIVE Service or qualified personnel trained by SEW-EURODRIVE.	SEW-EURODRIVE Service
		Qualified personnel trained by SEW-EURODRIVE
	Have the integrated pressure compensation (/PG option) inspected by SEW-EURODRIVE Service or qualified personnel trained by SEW-EURODRIVE.	SEW-EURODRIVE Service
		Qualified personnel trained by SEW-EURODRIVE
Recommendation: Every 20000 operating hours[1)]	Drive units with **Premium Sine Seal FKM motor oil seal ("PSS"):** Have the motor inspected by SEW-EURODRIVE Service or qualified personnel trained by SEW-EURODRIVE.	

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Time interval	What to do?	Who is permitted to perform the work?
MGF..-DSM drive units are delivered 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	Specialists at customer site
	Replace oil seal on output end (do not install it in the same track)	Specialists at customer site
When the cover/electronics cover is opened after an operating period of ≥ 6 months.	When the cover/electronics cover is opened after an operating period of ≥ 6 months, the gasket between the connection box and the cover/electronics cover must always be replaced. The 6-month period can be shortened by harsh ambient/operating conditions, e.g. cleaning with aggressive chemicals or frequent temperature fluctuations.	Specialists at customer site
Each time the cover/ electronics cover is opened	Visual inspection of the gasket between connection box and cover/electronics cover: Replace the gasket if it is damaged or separating from the connection box.	Specialists at customer site
Varying (depending on external factors)	Touch up or renew the surface/ anti-corrosion coating	Specialists at customer site
	To prevent permanent water accumulation in the B-side safety cover, clean it at regular intervals.	Specialists 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.

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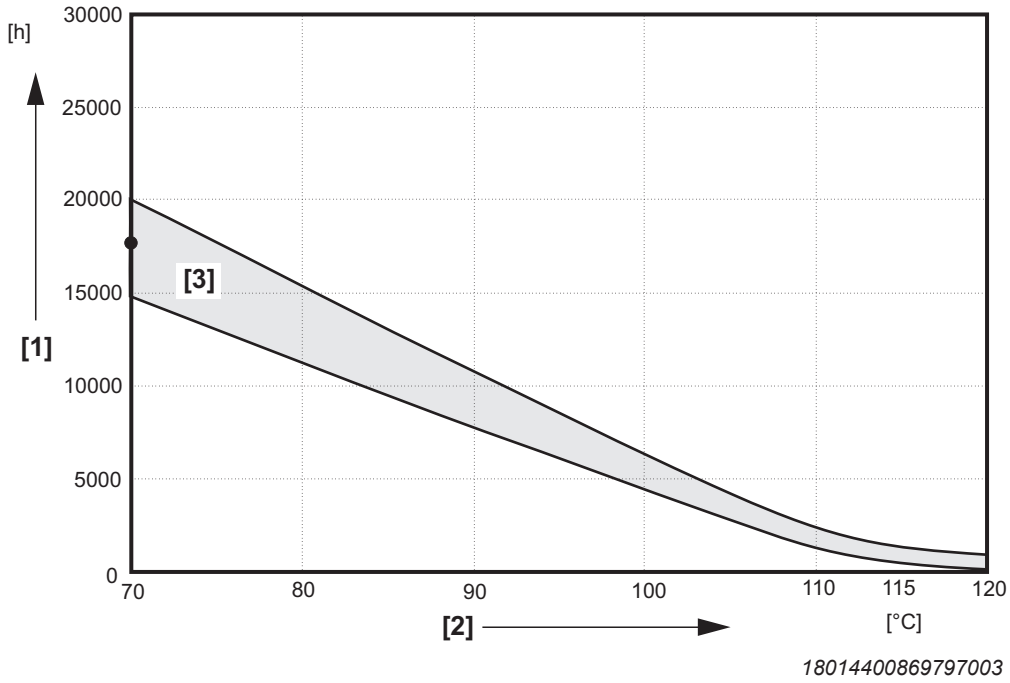
8.2 Lubricant change intervals

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 inspection/maintenance work on MGF..-DSM.

⚠ 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 MGF..-DSM drive units using a suitable external disconnection device.
- Secure the drive unit against unintended reconnection 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 MGF..-DSM 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.

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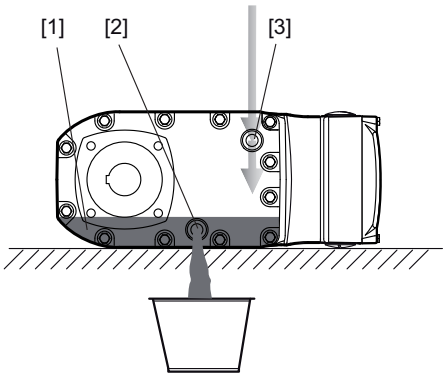
8.3.2 Changing the oil

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 MGF..-DSM 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.

Recommended position

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



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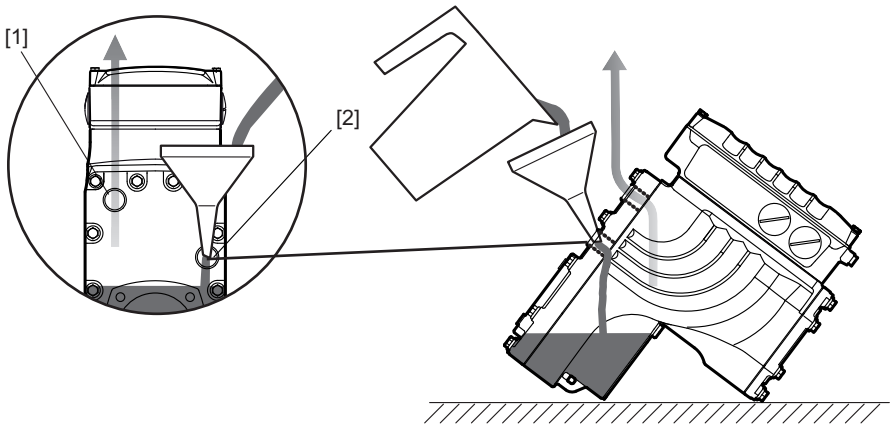
Filling in the oil

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 gear 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 surface/anti-corrosion coating.

Recommended position

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



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[1] Upper bore (air can flow out)
[2] Lower bore (filling in oil)

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8.3.3 Replacing the output oil seal

1. Observe the notes in chapter "Preliminary work for inspection and maintenance".
2. Remove the MGF..-DSM 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 surface/anti-corrosion coating.

8.3.4 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 masking strips after painting.

8.3.5 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, 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).

8.3.6 Connection cables

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

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

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8.3.7 Replacing the gasket between connection box and cover

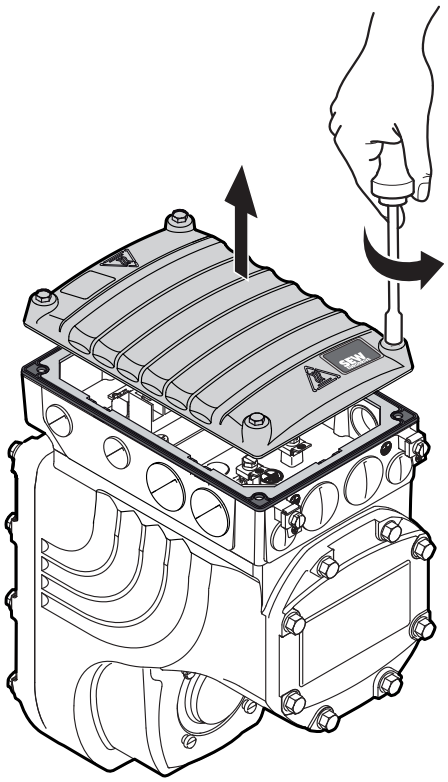
Spare part kit

The gasket is available as spare part from SEW-EURODRIVE.

Content	Part number
	MGF..2-DSM/MGF..4-DSM drive unit (die-cast design)
1 piece	28211626
10 pieces	28211634
50 pieces	28211642

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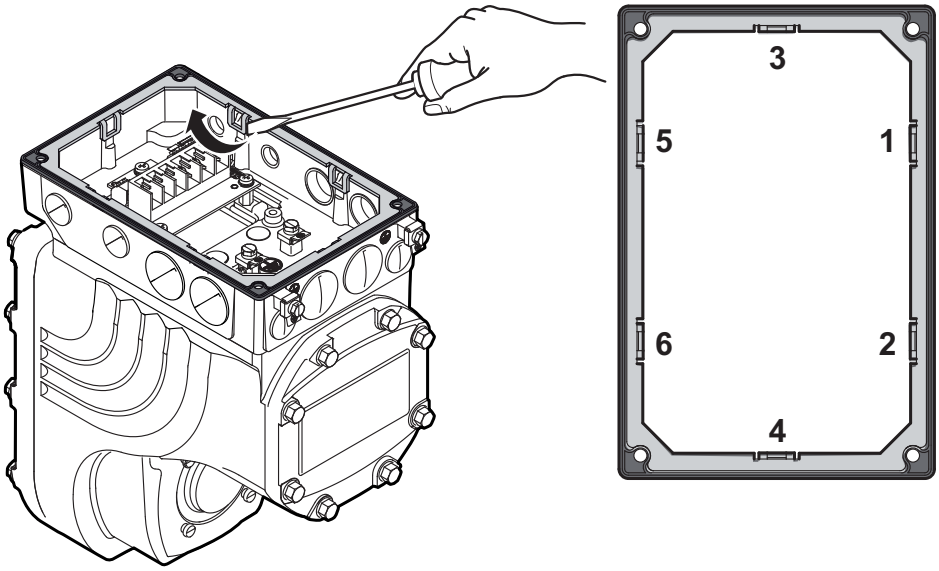
3. **NOTICE!** Loss of the guaranteed degree of protection. Possible damage to property. Make sure not to damage the sealing surfaces when removing the gasket. Loosen the used gasket by levering it off the retaining cams.

   ⇨ Doing so will be easier if you adhere to the sequence shown in the figure below.



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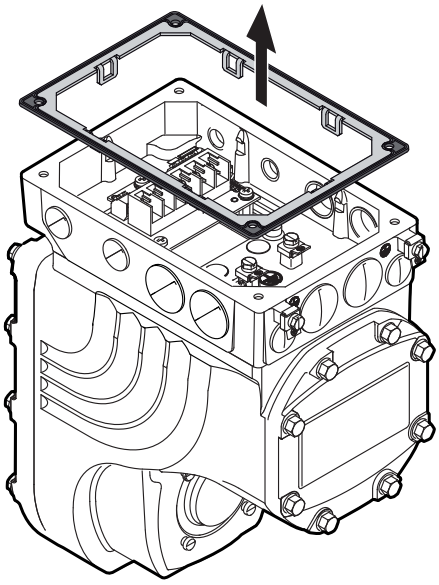
4. Remove the old gasket completely from the connection box.



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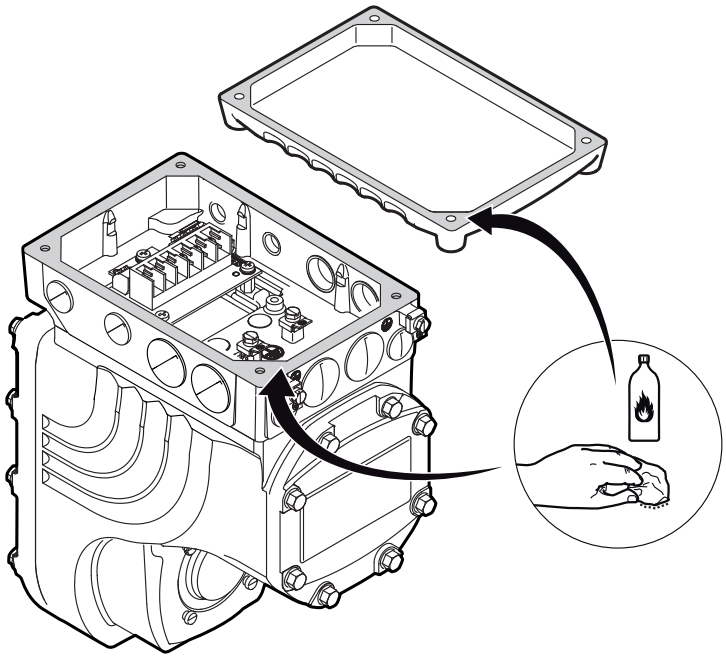
5. ⚠ **CAUTION!** Risk of injury due to sharp edges. Risk of cutting injuries. Use protective gloves for cleaning. Work may only be carried out by qualified personnel. Clean the sealing surfaces of the connection box and the cover carefully.



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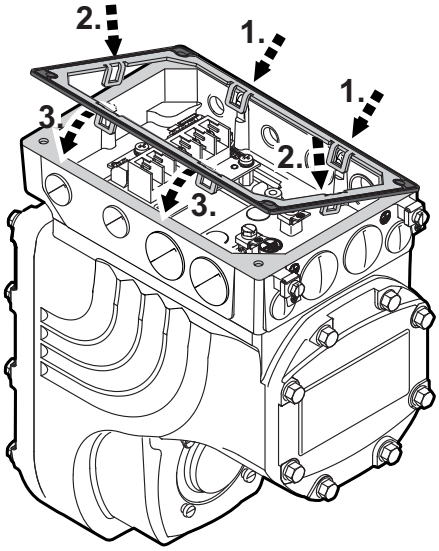
6. Place the new gasket on the connection box and fix it in position with the retaining cams. Doing so will be easier if you adhere to the sequence shown in the figure below.



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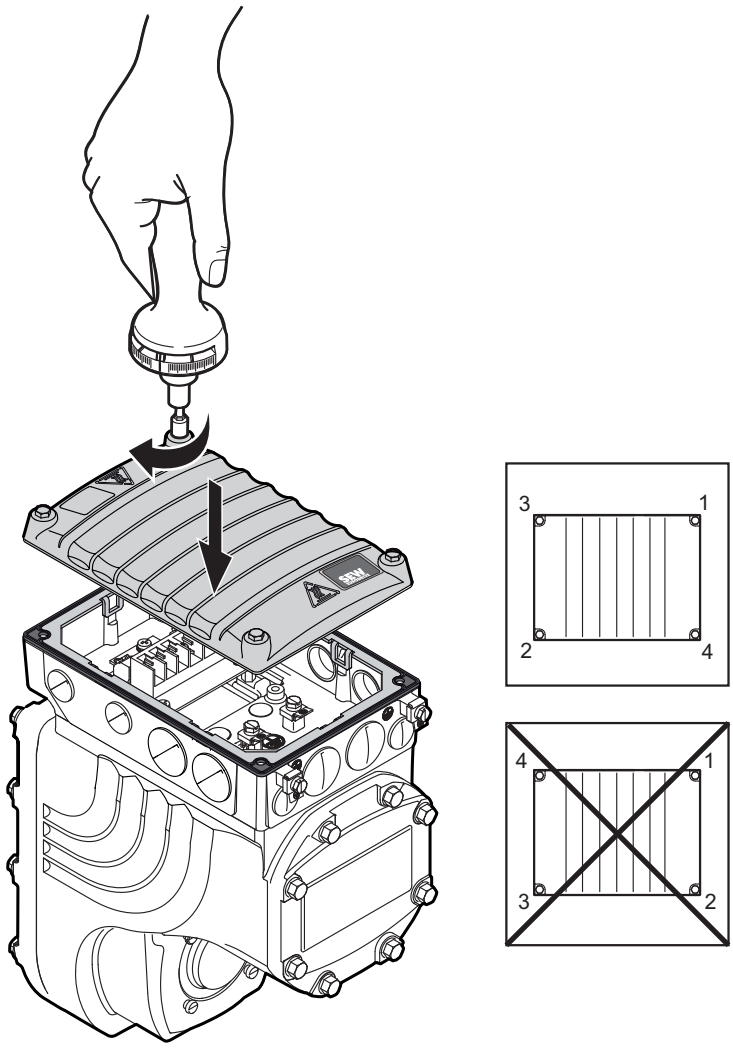
7. Check the installation and startup of the drive unit using the applicable operating instructions.
8. Place the cover on the connection box again and fasten it. Proceed as follows when screwing on the MGF..-DSM cover:
   ⇨ Insert the screws and tighten them in diametrically opposite sequence **step 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 MGF..-DSM drive system fulfills the regulations of the Low Voltage Directive 2014/35/EU.

- Electromagnetic compatibility (EMC):

  The devices 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 on EMC-compliant installation, refer to the "Electromagnetic Compatibility in Drive Technology" publication 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 MGF..-DSM drive 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 MGF..-DSM series.

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9.2 General technical data of MGF..-DSM

MGF..-DSM		
Climate class		EN 60721-3-3; class 3K3, non-condensing, no condensation
Storage temperature	ϑ_L	-25 °C to +70 °C (different to class 3K3)
Ambient temperature	ϑ_U	-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 with EN 60529 (MGF..-DSM housing closed and all cable entries sealed) With optional design for applications in wet areas: IP65 in accordance with EN 60529 (MGF..-DSM housing closed and all cable entries sealed)
Duty type		S1, DB (EN 60034-1)
Type of cooling		Natural cooling to DIN 41751 and EN 61800-5-1
Installation altitude	h	Up to h ≤ 1000 m without restrictions. The following restrictions apply to heights ≥ 1000 m: • From 1000 m to max. 4000 m: – 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")

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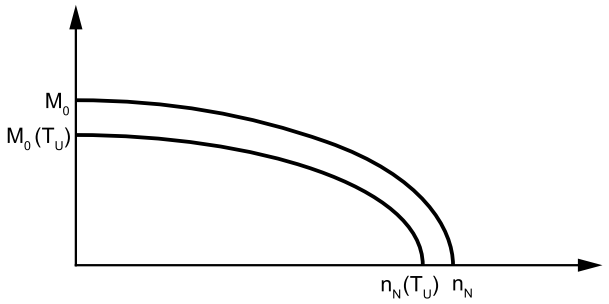
9.3 Derating for increased ambient temperature

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

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



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

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

T_{amb}	Ambient temperature [°C]
M_0	Standstill torque under nominal conditions
$M_0(T_{amb})$	Standstill torque at increased temperature 40 °C < T_{amb} < 60 °C
n_N	Rated speed
$n_N(T_{amb})$	Rated speed at increased temperature 40 °C < T_{amb} < 60 °C
K_e	Transmitter factor = 1

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9.4 MGF..-DSM motor data

9.4.1 System voltage: 400 V, connection type of motor: 人

Motor	J_{mot}	n_N	n_{max}	KTY limit	U_N	M_0	I_0	V_{p0} cold	C_T	R_1	L_1	Number of poles Motor	f_N
	[kgm² × 10⁻⁴]	[min⁻¹]	[min⁻¹]	[°C]	[V]	[Nm]	[A]	[V]	[Nm/A]	Ω	[mH]		[Hz]
MGF..2-DSM	2.26	2000	2000	150	400	4	1.85	144.8	2.17	5.17	47.3	10	166.6
MGF..4-DSM	11.05	2000	2000	150	400	10	4.40	165	2.28	1.1	17.8	10	166.6
MGF..4-DSM/XT	14.86	2000	2000	150	400	14.3	5.3	181	2.70	0.887	16.7	10	166.6

J_{mot}	=	Mass moment of inertia of the motor
n_N	=	Rated speed
n_{max}	=	Maximum permitted speed
KTY limit	=	Maximum permitted motor temperature measured at KTY
U_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

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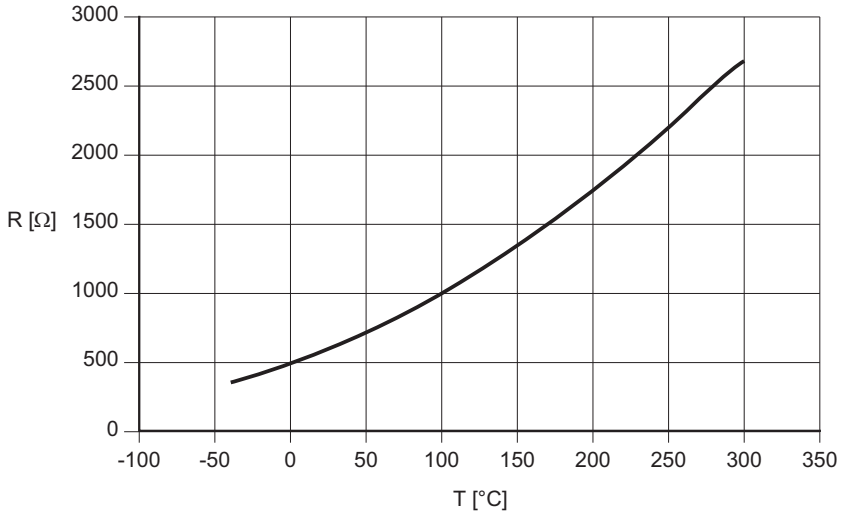
9.5 Technical data of KTY temperature sensor

The temperature sensor KTY84 - 130 continuously detects the motor temperature:

Technical data	KTY84 - 130
Connection	Red (+) Blue (-)
Total resistance at 20 – 25 °C	540 Ω < R < 640 Ω
Test current	< 3 mA

9.5.1 Typical characteristic curve of KTY

The following figure shows a typical characteristic curve of the KTY:



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9.6 Current-carrying capacity of terminals

Current-carrying capacity of terminals		
Line terminals	X2	Max. 24 A

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9.7 Permitted currents, speeds and torques

NOTICE

Damage to the MGF..-DSM unit

Potential damage to property.

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

9.7.1 MGF2..-DSM

MGF2..-DSM									
	n_a		M_a	$I_{cont.}$	M_{apk}	I_{max}	M_{a_eso}	i_{tot}	Weight
	at n_e= 1 min^{-1}	at n_e= 2000 min^{-1}							
	[min^{-1}]	[min^{-1}]	[Nm]	[A]	[Nm]	[A]	[Nm]		[kg]
2-stage	0.29	593.5	14	1.85	51	7.40	65	3.37	13
	0.24	473.9	17	1.85	64	7.40	85	4.22	
	0.20	400	20	1.85	76	7.00	210	5.00*	
	0.19	374.5	21	1.85	81	7.00	215	5.34	
	0.16	320	25	1.85	95	7.00	225	6.25*	
	0.14	285.7	28	1.85	106	7.00	235	7.00*	
	0.12	242.7	33	1.85	125	7.00	245	8.24	
	0.10	206	39	1.85	147	7.00	330	9.71	
	0.10	192.9	42	1.85	157	7.00	330	10.37	
	0.08	164.7	49	1.85	184	7.00	330	12.14	
	0.07	147.1	55	1.85	206	7.00	330	13.60*	
	0.06	125	64	1.85	220	6.35	330	16.00	
	0.05	108	74	1.85	220	5.45	330	18.52	
	0.05	101	80	1.85	220	5.10	330	19.81	
	0.04	87.5	92	1.85	220	4.40	330	22.86	
3-stage	0.04	71.3	113	1.85	220	3.60	330	28.07	14
	0.03	60.6	133	1.85	220	3.05	330	33.02	
	0.03	53.7	149	1.85	220	2.70	330	37.24	
	0.02	47.4	169	1.85	220	2.40	330	42.19	
	0.02	44.4	181	1.85	220	2.25	330	45.03	
	0.02	38.8	200	1.80	220	1.95	330	51.51	
	0.02	36.2	200	1.65	220	1.85	330	55.25	

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Key

	=	Preferred gear ratio
*	=	Finite gear unit ratio
M_{apk}	=	Maximum permitted torque for short-time duty If M_{apk} occurs more often than 10 times per hour, a detailed project planning must be carried out using the SEW-Workbench.
I_{max}	=	Maximum permitted current for short-time duty
M_a	=	Continuous output torque MGF..-DSM
$I_{cont.}$	=	Continuous current S1 duty
M_{a_eso}	=	Maximum permitted torque for non-cyclical special loads, maximum 1000 cycles
n_a	=	Output speed
n_e	=	Motor speed

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9.7.2 MGF4..-DSM

MGF4..-DSM									
	n_a		M_a	$I_{cont.}$	M_{apk}	I_{max}	M_{a_eso}	i_{tot}	Weight
	at n_e= 1 min^{-1}	at n_e= 2000 min^{-1}							
	[min^{-1}]	[min^{-1}]	[Nm]	[A]	[Nm]	[A]	[Nm]		[kg]
2-stage	0.29	566.6	35	4.40	106	13.20	147	3.53*	24
	0.23	460.8	43	4.40	130	13.20	165	4.34*	
	0.20	400.8	50	4.40	150	13.20	420	4.99	
	0.17	347.2	57	4.40	173	13.20	450	5.76	
	0.16	315.5	63	4.40	190	13.20	470	6.34	
	0.13	268.8	74	4.40	223	13.20	515	7.44*	
	0.13	253.8	78	4.40	236	13.20	525	7.88	
	0.11	223.2	89	4.40	269	13.20	560	8.96	
	0.09	182.3	109	4.40	329	13.20	675	10.97	
	0.08	158	126	4.40	380	13.20	710	12.66	
	0.07	143.6	139	4.40	418	13.20	710	13.93	
	0.06	122.2	163	4.40	475	12.80	710	16.36	
	0.06	115.4	173	4.40	475	12.10	710	17.33	
	0.05	101.5	197	4.40	475	10.60	710	19.70	
	0.05	91.7	218	4.40	475	9.60	710	21.82	
	0.04	77.8	257	4.40	475	8.15	710	25.72	
3-stage	0.03	69.3	288	4.40	475	7.25	710	28.88	25
	0.03	58.3	342	4.40	475	6.10	710	34.29	
	0.03	54.6	366	4.40	475	5.70	710	36.61	
	0.02	46.7	400	4.10	475	4.85	710	42.86	
	0.02	41.7	400	3.65	475	4.35	710	48.00*	
	0.02	35.4	400	3.10	475	3.70	710	56.49	

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Key

	=	Preferred gear ratio
*	=	Finite gear unit ratio
M_{apk}	=	Maximum permitted torque for short-time duty If M_{apk} occurs more often than 10 times per hour, a detailed project planning must be carried out using the SEW-Workbench.
I_{max}	=	Maximum permitted current for short-time duty
M_a	=	Continuous output torque MGF..-DSM
$I_{cont.}$	=	Continuous current S1 duty
M_{a_eso}	=	Maximum permitted torque for non-cyclical special loads, maximum 1000 cycles
n_a	=	Output speed
n_e	=	Motor speed

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9.7.3 MGF4..-DSM/XT

MGF4..-DSM/XT									
	n_a		M_a	$I_{cont.}$	M_{apk}	I_{max}	M_{a_eso}	i_{tot}	Weight
	at n_e= 1 min^{-1}	at n_e= 2000 min^{-1}							
	[min^{-1}]	[min^{-1}]	[Nm]	[A]	[Nm]	[A]	[Nm]		[kg]
2-stage	0.29	566.6	51	5.30	147	17.45	147	3.53*	25
	0.23	460.8	62	5.30	165	15.85	165	4.34*	
	0.20	400.8	71	5.30	250	21.20	420	4.99	
	0.17	347.2	82	5.30	288	21.20	450	5.76	
	0.16	315.5	91	5.30	315	21.20	470	6.34	
	0.13	268.8	106	5.30	345	19.55	515	7.44*	
	0.13	253.8	113	5.30	352	18.80	525	7.88	
	0.11	223.2	128	5.30	375	17.55	560	8.96	
	0.09	182.3	157	5.30	450	17.20	675	10.97	
	0.08	158	181	5.30	475	15.65	710	12.66	
	0.07	143.6	199	5.30	475	14.10	710	13.93	
	0.06	122.2	234	5.30	475	11.85	710	16.36	
	0.06	115.4	248	5.30	475	11.15	710	17.33	
	0.05	101.5	282	5.30	475	9.65	710	19.70	
	0.05	91.7	312	5.30	475	8.60	710	21.82	
	0.04	77.8	368	5.30	475	7.15	710	25.72	
3-stage	0.03	69.3	400	5.10	475	6.25	710	28.88	26
	0.03	58.3	400	4.13	475	5.10	710	34.29	
	0.03	54.6	400	3.80	475	4.70	710	36.61	
	0.02	46.7	400	3.09	475	3.85	710	42.86	
	0.02	41.7	400	2.65	475	3.35	710	48.00*	
	0.02	35.4	400	2.09	475	2.70	710	56.49	

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Key

	=	Preferred gear ratio
*	=	Finite gear unit ratio
M_{apk}	=	Maximum permitted torque for short-time duty If M_{apk} occurs more often than 10 times per hour, a detailed project planning must be carried out using the SEW-Workbench.
I_{max}	=	Maximum permitted current for short-time duty
M_a	=	Continuous output torque MGF..-DSM
$I_{cont.}$	=	Continuous current S1 duty
M_{a_eso}	=	Maximum permitted torque for non-cyclical special loads, maximum 1000 cycles
n_a	=	Output speed
n_e	=	Motor speed

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9.8 Surface protection

9.8.1 General information

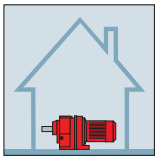
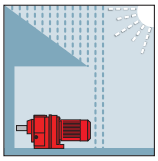
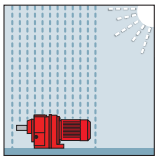
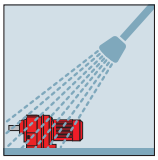
SEW-EURODRIVE offers the following optional protective measure for operating MGF..-DSM drive units under special environmental conditions.

- OS surface protection
- HP200 high protection treatment (only in connection with the optional variant for wet areas)

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

9.8.2 Surface protection

Instead of the standard surface protection, MGF..-DSM drive units can be equipped with OS1 to OS3 surface protection as an option. The special procedure Z can also be performed in addition. Special measure Z means that large contour recesses are filled with rubber before painting.

Surface protection		Ambient conditions	Sample applications
Standard		For machines and systems in buildings and enclosed rooms with neutral atmospheres. Similar to corrosivity category[1]: • C1 (negligible)	• Machines and systems in the automotive industry • Conveyor systems in logistics areas • Conveyor systems at airports
OS1		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]: • C2 (low)	• Systems in saw mills • Hall gates • Agitators and mixers
OS2		For environments with high humidity or mean atmospheric contamination, such as applications outdoors subject to direct weathering. Similar to corrosivity category[1]: • C3 (moderate)	• Cable cars and chairlifts • Applications in gravel plants
OS3		For environments with high humidity and occasionally severe atmospheric and chemical contamination. Occasionally acidic or caustic wet cleaning. Also for applications in coastal areas with moderate salt load. Similar to corrosivity category[1]: • C4 (high)	• Sewage treatment works • Port cranes • Mining applications

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Surface protection		Ambient conditions	Sample applications
HP200 high protection surface treatment[2]		For hygienic areas in the food and beverage industry with regular acidic and caustic wet cleaning. Antistick properties support the cleaning process even in inaccessible areas.	• Hygienic and aseptic conveyors in the beverage industry • Systems in cheese dairies and butcher shops • "Splash zones" in the food industry

1) According to DIN EN ISO 12 944-2

2) Only in connection with the optional variant for wet areas

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
Fluorocarbon rubber oil seal Standard on MGF..-DSM 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 fluorocarbon rubber oil seal
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 MGF..-DSM 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.

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9.9 Design for use in wet areas

9.9.1 Sealing material

Resistance to cleaning agents

The sealing material used in MGF..-DSM drive units has been tested for resistance to cleaning agents.

Resistance to the following cleaning agents was proven in the tests performed by the company ECOLAB®:

Alkaline and chlorinated alkaline foam cleaning agents		
Designation	**Application concentration**	**Application temperature**
P3-topax 19	5%	40 °C

Acid foam cleaning agents		
Designation	**Application concentration**	**Application temperature**
P3-topax 56	5%	40 °C
P3-topax 58	5%	40 °C

TFC cleaner		
Designation	**Application concentration**	**Application temperature**
P3-topactive 200	4%	40 °C
P3-topactive 500	4%	40 °C

Disinfectant		
Designation	**Application concentration**	**Application temperature**
P3-topax 990	5%	23 °C

DI water	–	40 °C

Product specifications

P3-topax 19	Alkaline foam cleaning agent
P3-topax 56	Acid foam cleaning agent based on phosphoric acid
P3-topax 58	Acid foam cleaning agent based on organic acids
P3-topactive 200	Alkaline cleaning agent for operational cleaning as TFC application
P3-topactive 500	Acid cleaning agent for operational cleaning as TFC application
P3-topax 990	Alkaline foam disinfectant based on alkylamine acetate
DI water	Demineralized water

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9.9.2 HP200 surface treatment

INFORMATION

The information in this chapter is based on the current technical knowledge and experience. No legally binding guarantee of certain properties or of the suitability for a specific application purpose can be derived from the given information.

Characteristics

Thermoplastic fluorinated polymer coating with nearly non-porous surface, excellent anti-stick properties and chemical resistance. Approved for contact with food.

Properties

The HP200 surface has the following properties:

HP200 surface treatment	
Anti-adhesive properties	Excellent
Abrasion resistance	Good, not suitable for abrasion or high pressure
Chemical resistance	Excellent
Solvent resistance	Not soluble
Corrosion resistance	DIN 50021, > 1000 h depending on layer structure
Flammability	Not flammable
Temperature resistance	-40 to +200 °C, thermoplastic behavior
Layer thickness	Approx. 25 µm
Color	Silver gray (similar to RAL 7012) • Slight color differences are possible due to the paint process. • Slight color differences are possible in the HP200 surface finish due to the treatment process (individual treatment of the components).
Food grade approval	Approved according to German Federal law and US FDA (no. 21 CFR 175.300)

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Cleaning

Do not mix cleaning and disinfecting agents under any circumstances.
Never mix acids and chloralkalis, as poisonous chlorine gas will result.
Strictly observe the safety instructions of the cleaning agent manufacturer.

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Certificate of Ecolab Deutschland GmbH

Ecolab Deutschland GmbH
P.O. Box 13 04 06
D-40554 Düsseldorf

certifies that

a material resistance test

was performed for

SEW-EURODRIVE GmbH & Co. KG
Ernst-Blickle-Straße 42
D-76646 Bruchsal

with the following cleaning agents and disinfectants:
P3-topax 19, **P3-topax 56**, **P3-topax 58**, **P3-topax 686**, **P3-topactive 200**, **P3-topactive 500**, **P3-topactive DES**, **P3-topax 990** and **P3-oxysan ZS**, and **demineralized water**.

The protective properties of the **High Protection surface treatment HP 200** tested against the above-mentioned Ecolab products used in the test can be considered to be positive according to the cleaning procedures mentioned overleaf.

Düsseldorf, 14 August 2009

Ecolab Deutschland GmbH

i.V.

Thomas Wershofen
Manager Corporate Service RD&E
Center of Excellence EMEA
Food & Beverage Division

i. A.

Karin Uhlenbrock
Service Engineer RD&E
Center of Excellence EMEA
Food & Beverage Divsion

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This certificate for the HP200 surface treatment is based on

- documented test procedures on material resistance
- defined product specifications
- a standardized cleaning procedure

Test procedure

Dipping test:
- Immersion into the test medium with contact surface toward ambient air

Test period:
- 7 days

Evaluation:
- Evaluation approx. 7 days after regeneration
- Evaluation of changes of the protective properties according to DIN EN ISO 4628-1
- Evaluation of decorative changes (color, brightness, blistering)
  (+) no changes
  (o) possible minor changes
  (-) possible changes under long-term influence

The HP200 surface treatment was tested in the following media:

Alkaline and chlorinated foam cleaners			
P3-topax 19	5%	40°C	o
P3-topax 686	5%	40°C	o

Acid foam cleaning agents			
P3-topax 56	5%	40°C	o
P3-topax 58	5%	40°C	+

TFC cleaning agents			
P3-topactive 200	4%	40°C	o
P3-topactive 500	4%	40°C	o

Disinfectants			
P3-topax 990	5%	23°C	+
P3-topactive DES	3%	23°C	+
P3-oxysan ZS	1%	23°C	+

DI water	-	40°C	+

Product specifications:

P3-topax 19
Alkaline foam cleaning agent
P3-topax 56
Acid foam cleaning agent based on phosphoric acid
P3-topax 58
Acid foam cleaning agent based on organic acids
P3-topax 686
Alkaline foam cleaning agent with active chlorine
P3-topactive 200
Alkaline cleaning agent for operational cleaning as TFC application
P3-topactive 500
Acid cleaning agent for operational cleaning as TFC application
P3-topax 990
Alkaline foam disinfectant based on alkylamine acetate
P3-topactive DES
Foam and TFC capable disinfectant based on H_2O_2 and peroxy acid
P3-oxysan ZS
Disinfectant based on peroxy compounds
DI water
Demineralized water

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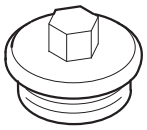
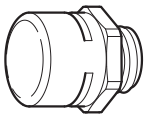
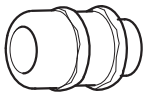
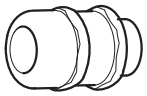
9.10 Screw fittings

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

9.10.1 Cable glands/screw plugs/pressure compensation

Type of screw fitting	Image	Content	Size	Tightening torque[1)]	Outer cable diameter	Part number
Screw plugs external hexagon (made of stainless steel)		10 pieces	M16 x 1.5	6.8 Nm	–	18247342
		10 pieces	M25 x 1.5	6.8 Nm	–	18247350
Pressure compensation screw fittings (made of stainless steel)		1 piece	M16 x 1.5	4 Nm	–	28214617
EMC cable gland (brass, nickel-plated)		10 pieces	M16 x 1.5	4 Nm	5 to 9 mm	18204783
		10 pieces	M25 x 1.5	7 Nm	11 to 16 mm	18204805
EMC cable gland (made of stainless steel)		10 pieces	M16 x 1.5	4 Nm	5 to 9 mm	18216366
		10 pieces	M25 x 1.5	7 Nm	11 to 16 mm	18216382

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

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9.11 Mounting positions

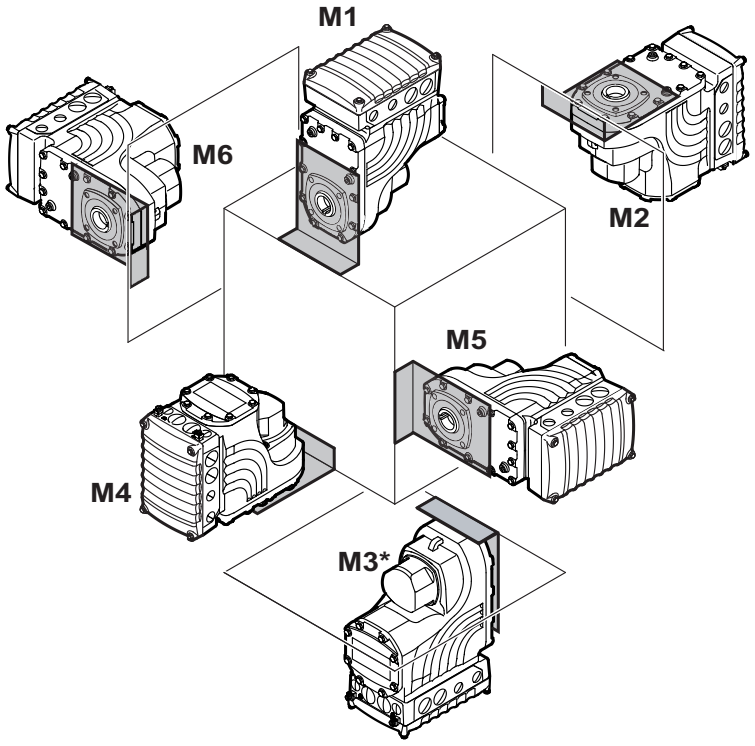
9.11.1 Description of mounting positions

The following mounting positions are possible for MGF..-DSM drive units:

- Specified mounting position: M1 or M2 or M3* or M4 or M5 or M6
- Universal use in mounting positions M1, M2, M4, M5, M6
- Universal mounting position MU (= M1 to M6) with "integrated pressure compensation /PG" option

Mounting positions M1 to M6

The following figure shows the position of MGF..-DSM when installed in mounting positions M1 to M6:



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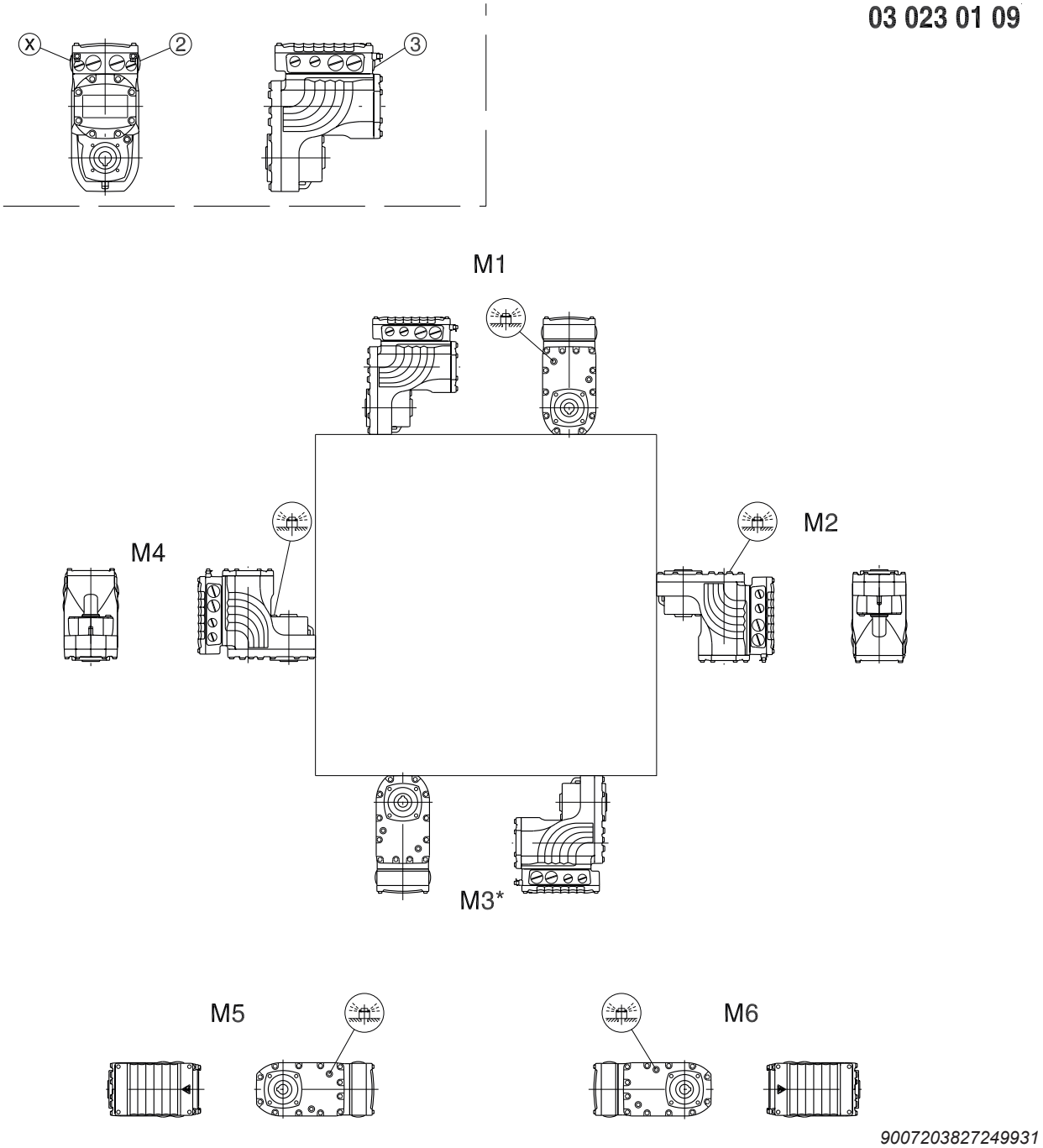
* = Mounting position M3 is only possible with "integrated pressure compensation / PG" option.

9.11.2 Mounting position sheet



* = Mounting position M3 is only possible with "integrated pressure compensation /PG" option.

= Breather valve

9.12 Lubricants

9.12.1 Lubricant fill quantities of the die-cast variant

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

MGF..2		MGF..4	
Gear ratio	**Fill quantities in liters**	**Gear ratio**	**Fill quantities in liters**
i	**for mounting positions M1, M2, M3**, M4, M5, M6**	**i**	**for mounting positions M1, M2, M3**, M4, M5, M6**
55.25	0.59 l	56.49	1.3 l
51.51		48.00*	
45.03		42.86	
42.19		36.6	
37.24		34.29	
33.02		28.89	
28.07		25.72	1.37 l
22.86	0.63 l	21.82	
19.81		19.70	
18.52		17.33	
16.00		16.36	
13.60*		13.93	
12.14		12.66	
10.37		10.97	
9.71		8.96	1.41 l
8.24	0.68 l	7.88	
7.00*		7.44*	
6.25*		6.34	
5.34		5.76	
5.00*		4.99	
4.22		4.34*	
3.37		3.53*	

* = Finite gear unit ratio

** = Mounting position M3 is only possible with the option "integrated pressure compensation /PG".

= Preferred gear ratio

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9.12.2 Rolling 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[1)]
	-40 °C to +80 °C	Klüber	Petamo GHY 133 N
	-40 °C to +40 °C	Bremer & Leguil	Cassida Grease GTS 2

1) Bearing grease based on semi-synthetic base oil.

9.12.3 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

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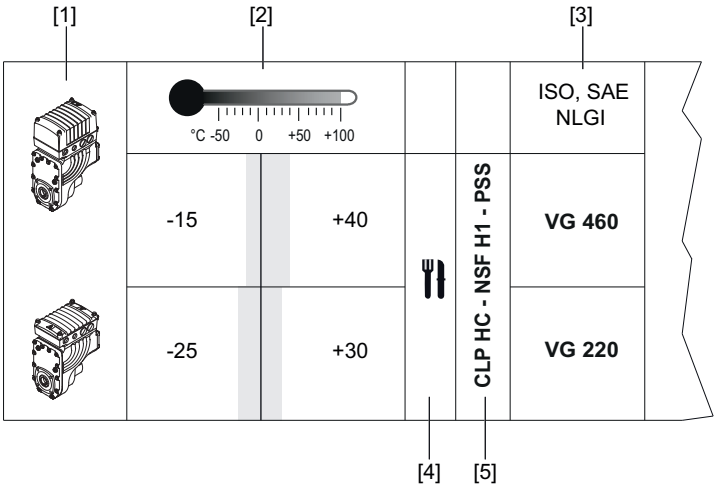
Information on the table structure

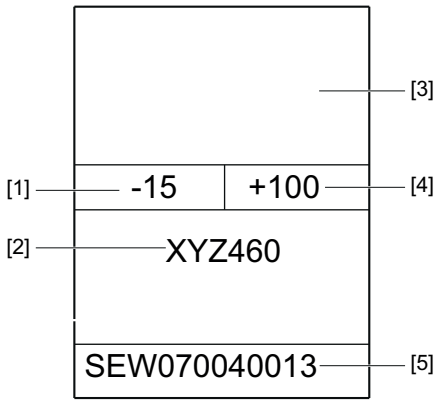
The specified **ambient temperatures** are **guide values for the preselection** of a suitable lubricant. The exact upper and lower temperature limits for project planning are specified in the table with the respective trade name.



22296347915

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

Explanations of the various lubricants



9007221548600459

[1] Lowest oil sump temperature in °C,
may not be undershot in operation
[2] Trade name
[3] Manufacturer
[4] Highest oil sump temperature in °C[1)]
[5] 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	75 FKM 170055	
			2	Trelleborg	1	VCBVR	

Examples:

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

Key to the lubricant tables

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

Abbreviation/ symbol	Meaning
	Synthetic lubricant (marked gray)
CLP HC	Synthetic hydrocarbons – polyalphaolefin (PAO)
	Lubricant for the food processing industry – NSF-H1-compliant
Oil seal	Oil seal
PSS	"Premium Sine Seal" oil seal. The addendum "PSS" for the lubricant type indicates compatibility with the sealing system.

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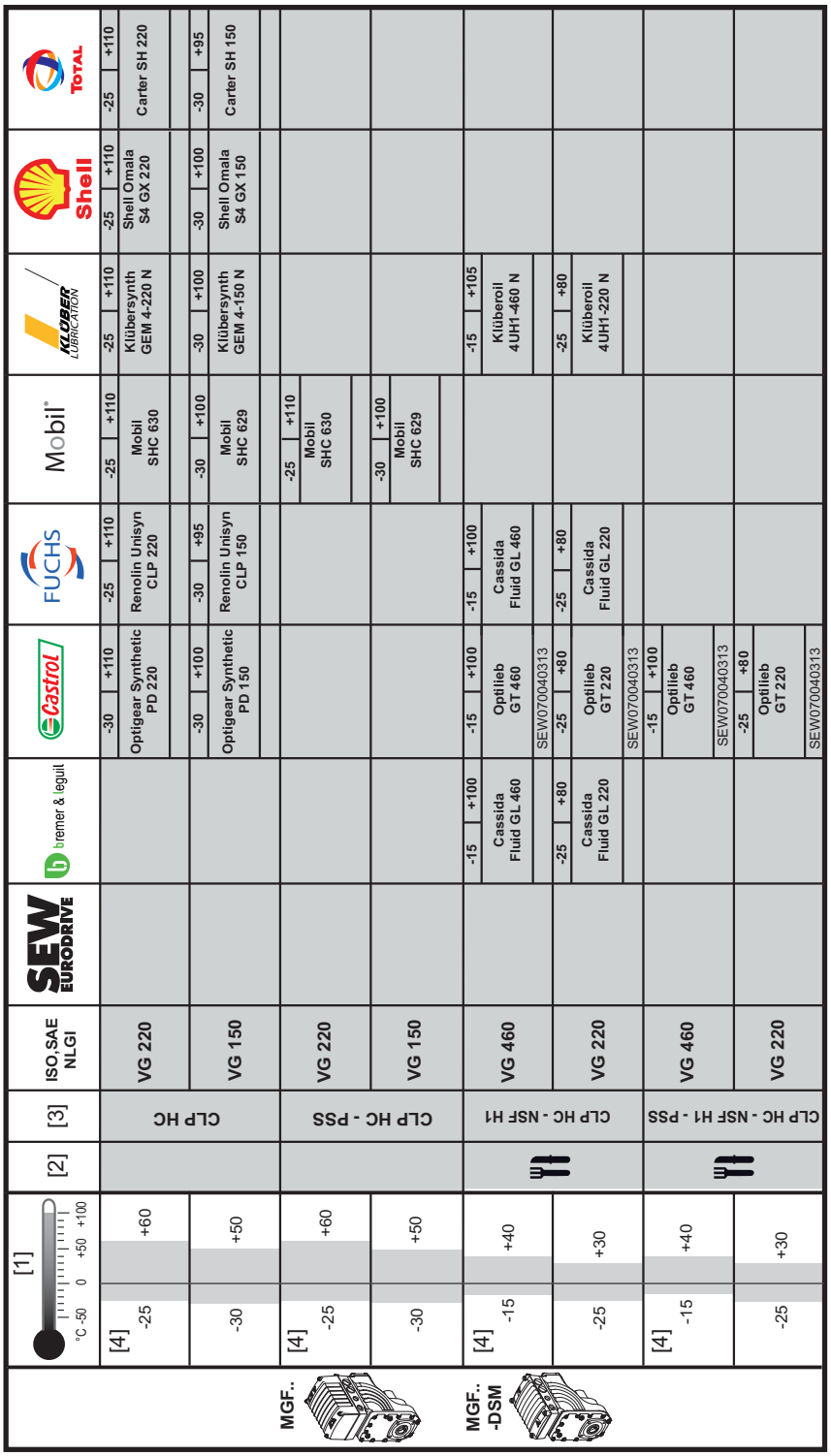
Lubricant table

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".



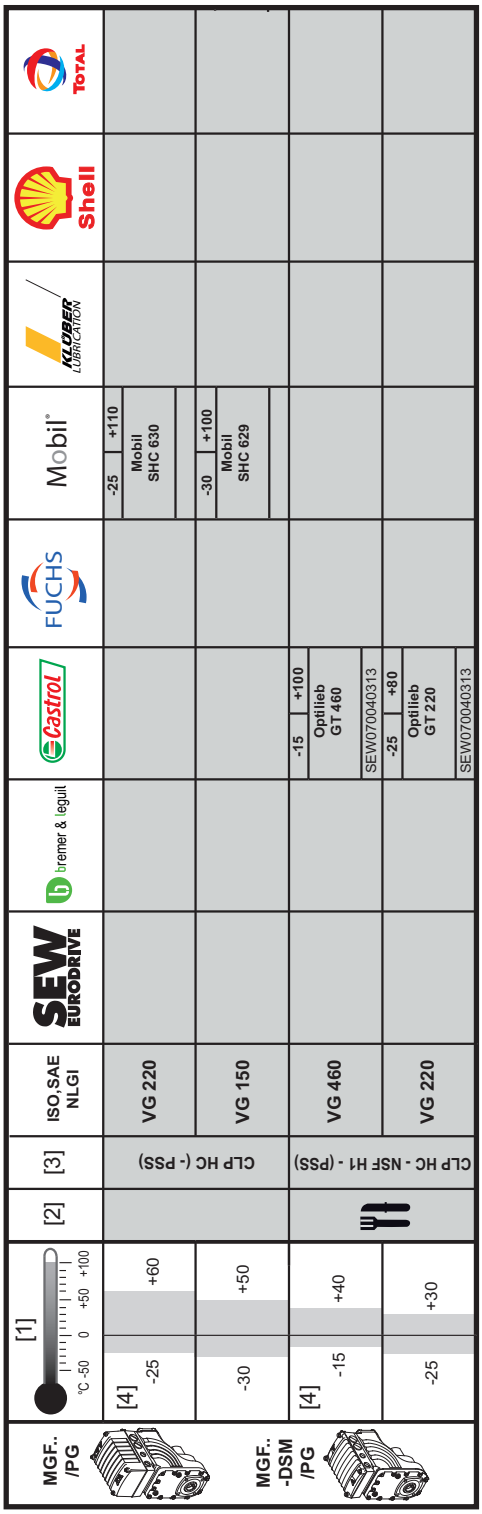
9007221260862603

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

Lubricant table for drive units with /PG option

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".



9007221260865035

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

9.13 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 X is defined by the customer; however, X must be > DK.

9.13.1 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 installation/removal kit for installation.

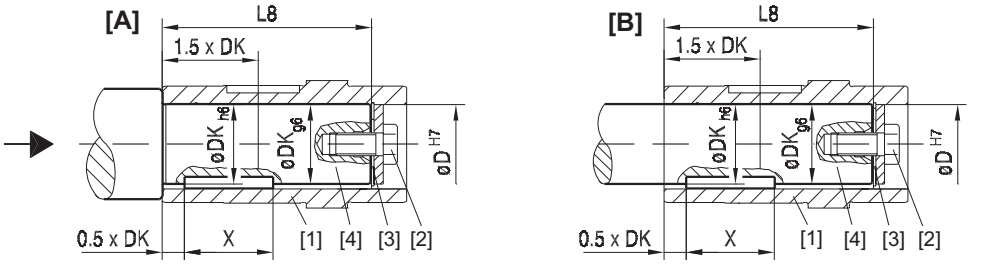
9.13.2 1. Supplied fastening parts

The following fastening parts are provided as standard:

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

Customer shaft

00 001 00 02



90704139

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

- 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 equal L8.

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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} [mm]	Key type	DK [mm]	L8 [mm]	MS [Nm]
MGFA.2	25	DIN 6885-1 (domed type)	25	100	20
	30		30	101	20
	35		35	97.9	20
	40	DIN 6885-3 (low type)	40	101.85	40
MGFA.4	30	DIN 6885-1 (domed type)	30	124	20
	35		35	123.5	20
	40		40	123	40

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9.13.3 2. Installation/removal kit

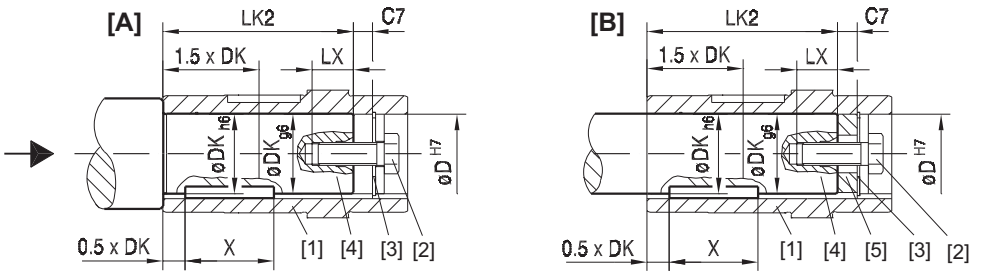
You can use the optional assembly/disassembly kit for mounting. You can order the kit for the specific size by quoting the part numbers in the table below. The scope of delivery includes:

- 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. It is mandatory that you use the retaining screw [2] of the assembly/disassembly kit.

Customer shaft

00 002 00 02



90706315

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

- The installation length of the customer shaft must be LK2. **Do not use the spacer tube** if the customer shaft **has a contact shoulder [A]**.
- The installation length of the customer shaft must be LK2. **Use the spacer tube if the customer shaft has no contact shoulder [B]**.

Dimensions, tightening torques and part numbers

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

Type	D^{H7} [mm]	Key type	DK [mm]	LK2 [mm]	LX^{+2} [mm]	C7 [mm]	MS [Nm]	Part number of the assembly/disassembly kit
MGFA.2	25	DIN 6885-1 (domed type)	25	83.5	22	16	20	06436846
	30		30	84.5	22	16	20	06436854
	35		35	80	28	17.9	20	06436862
	40	DIN 6885-3 (low type)[1]	40	89	36	12.85	40	-[1]
MGFA.4	30	DIN 6885-1 (domed type)	30	107.3	22	16	20	06436854
	35		35	105.5	28	18	20	06436862
	40		40	105.5	36	18	40	06436870

1) Not in conjunction with the assembly/disassembly kit of SEW-EURODRIVE.

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9.14 Dimension drawings

9.14.1 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...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...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 may vary slightly due to preinstalled breather valves, plug connectors or pressure compensation fittings (in conjunction with the design for wet areas MGF..-DSM).

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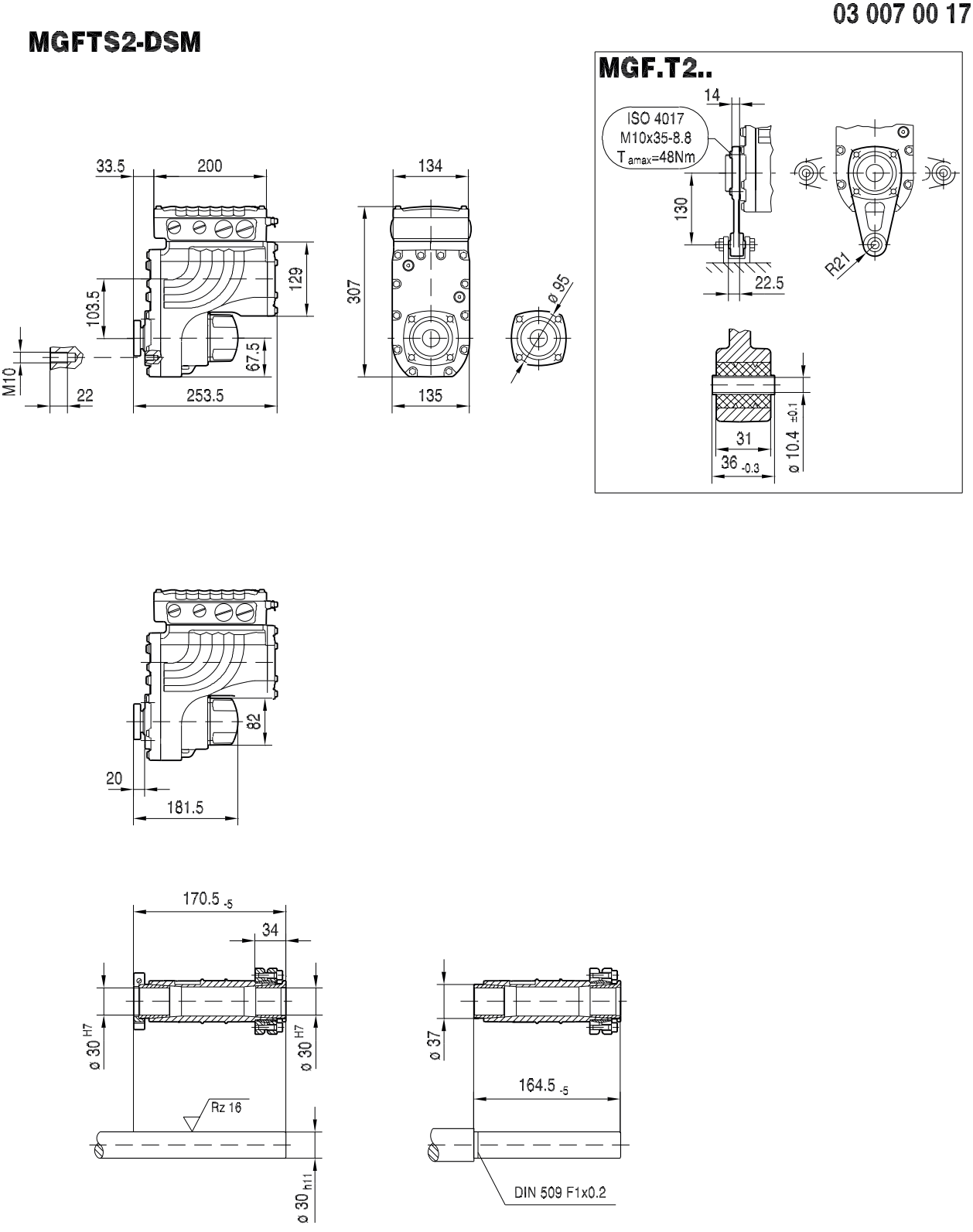
9.14.2 MGF..2..-DSM

03 007 00 17



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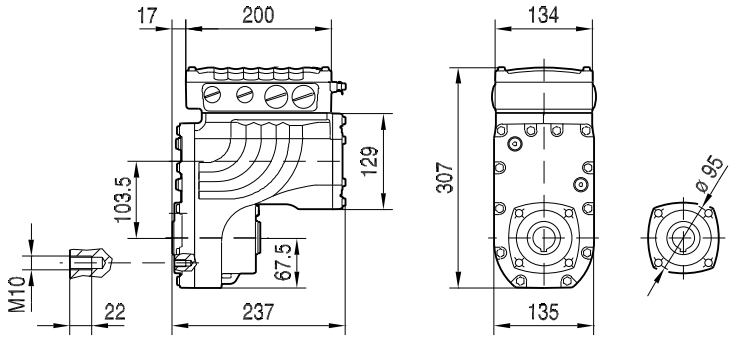
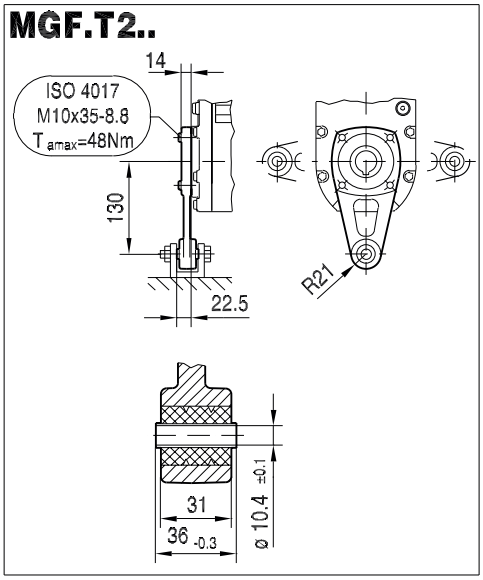
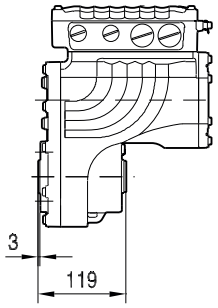
03 017 02 10

MGFAS2-DSM

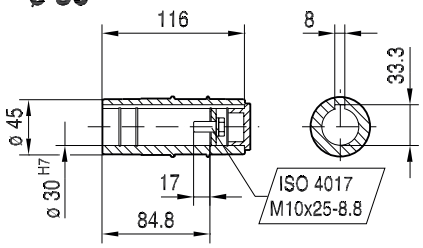


MGF.T2..

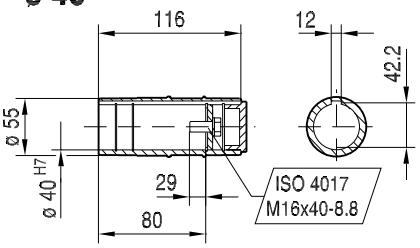




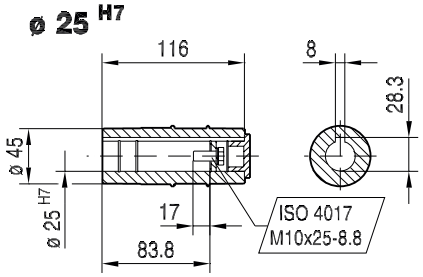
ø 30 H7



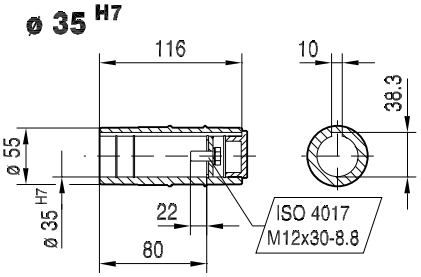
ø 40 H7



ø 25 H7



ø 35 H7



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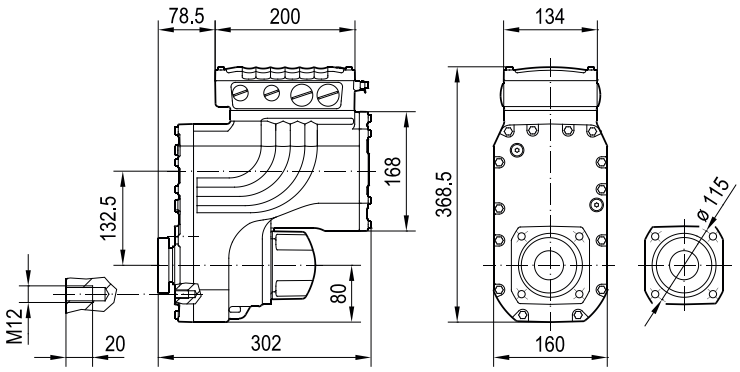
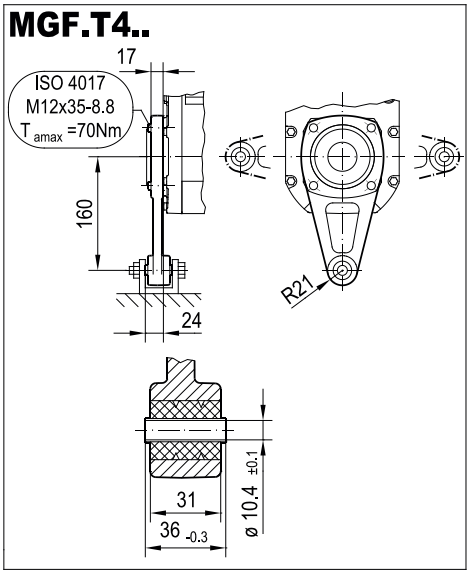
9.14.3 MGF..4..-DSM

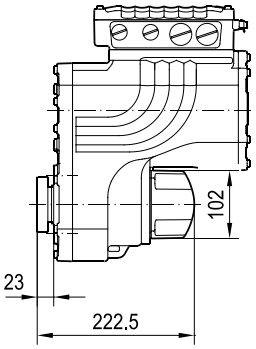
03 010 01 17

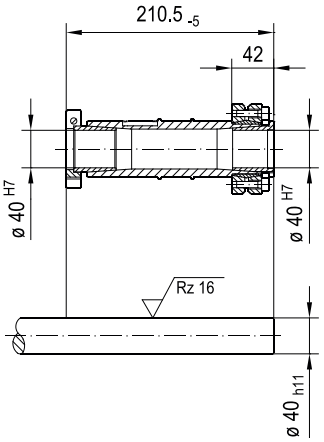
MGFTS4-DSM

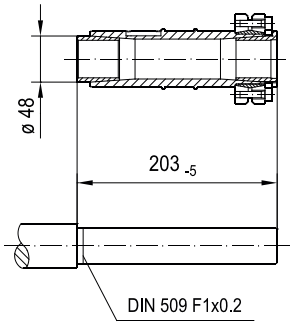


MGF.T4..









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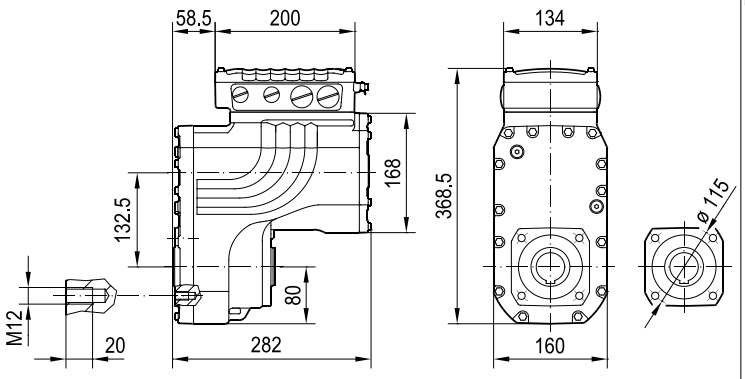
MGFAS4-DSM



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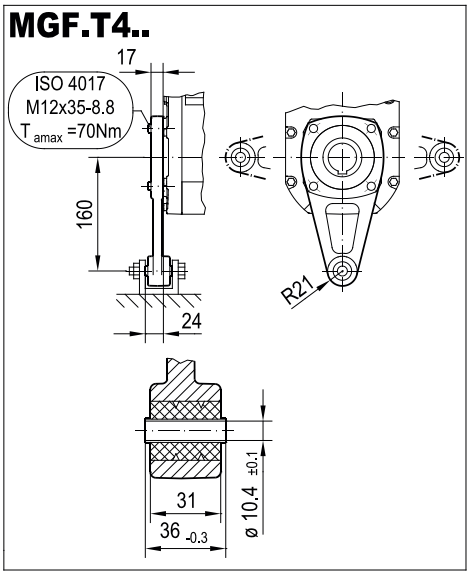
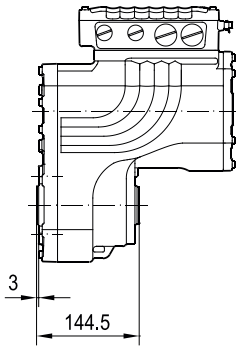
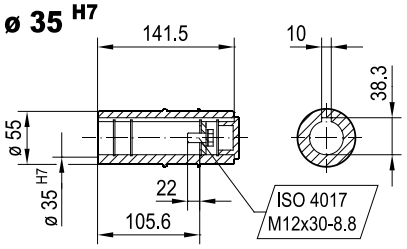




ø 35 H7



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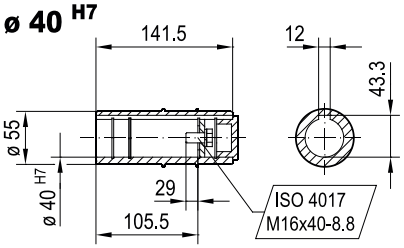
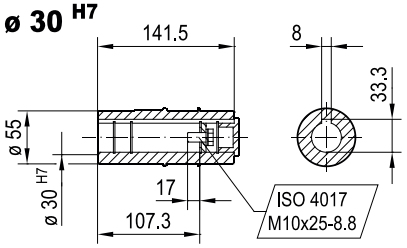


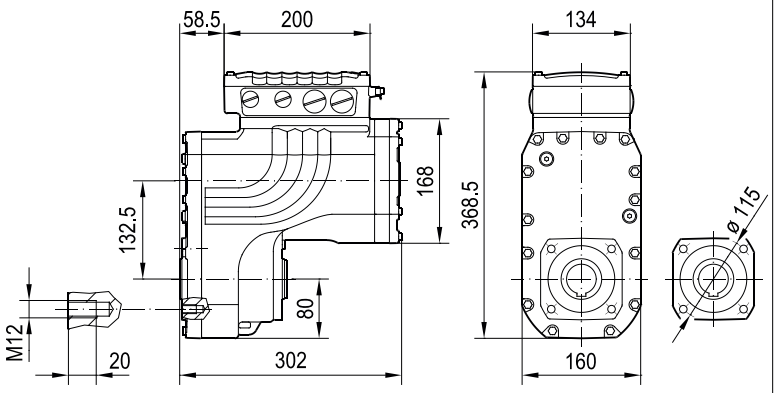
ø 30 H7



9.14.4 MGF..4..-DSM/XT with increased torque

03 004 04 11

MGFAS4-DSM-B/XT



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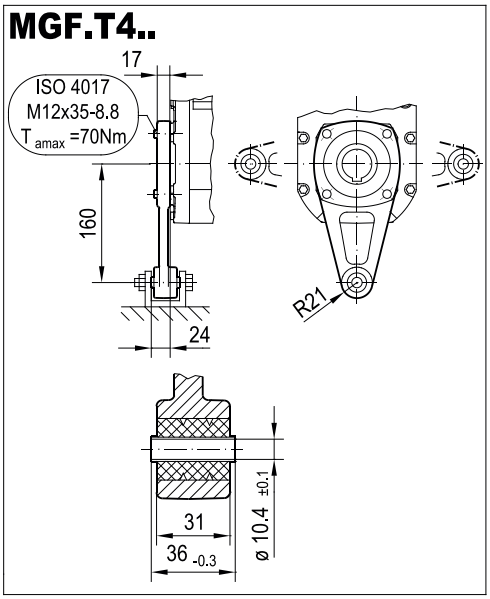

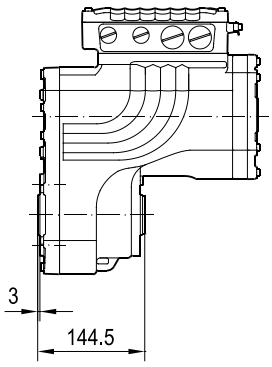

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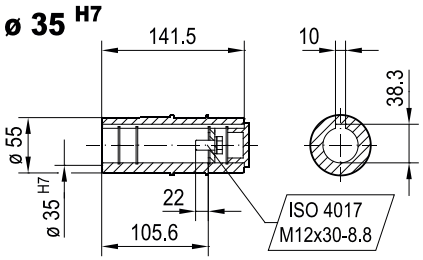
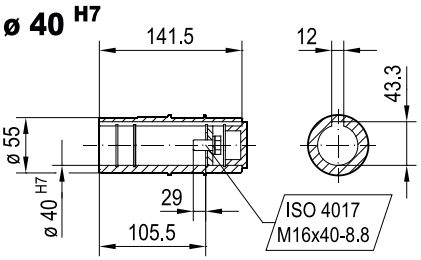


ø 40 H7



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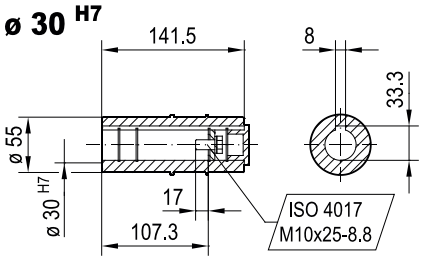

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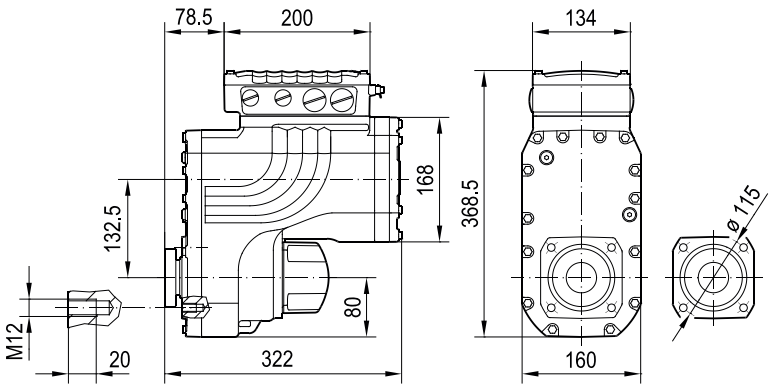
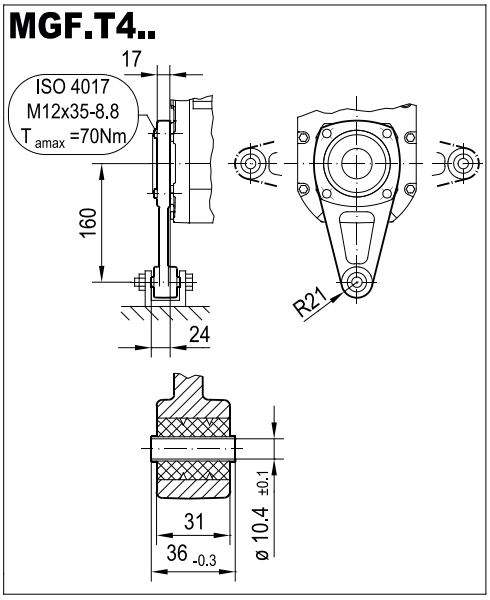
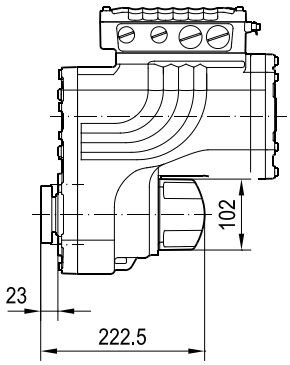
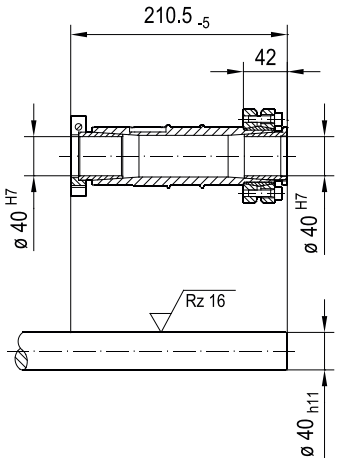
03 013 01 17

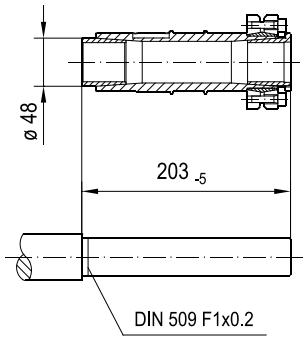
MGFTS4-DSM-B/XT











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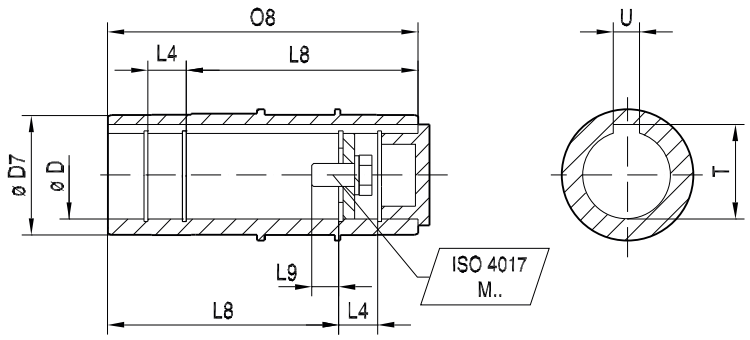
9.14.5 Shaft designs

MGFAS..B [mm]

03 003 01 16



	ø D H7	ø D7	L4	L8	L9	O8	T	U	ISO 4017
MGFAS2..B	25	45	16.2	83.8	17	116	28.3	8	M10 × 25-8.8
MGFAS2..B	30	45	16.2	84.8	17	116	33.3	8	M10 × 25-8.8
MGFAS2..B	35	55	17.9	80	22	116	38.3	10	M12x30-8.8
MGFAS2..B	40	55	12.85	89	29	116	42.2	12	M16x40-8.8
	ø D H7	**ø D7**	**L4**	**L8**	**L9**	**O8**	**T**	**U**	**ISO 4017**
MGFAS4..B	30	55	16.2	107.3	17	141.5	33.3	8	M10 × 25-8.8
MGFAS4..B	35	55	17.9	105.6	22	141.5	38.3	10	M12x30-8.8
MGFAS4..B	40	55	17.65	105.5	29	141.5	43.3	12	M16x40-8.8

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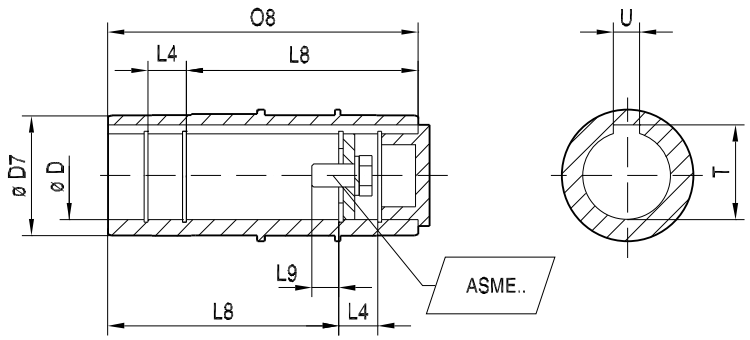
MGFAS..B [inch]

03 004 00 16



	ø D H7	ø D7	L4	L8	L9	O8	T	U	ASME
MGFAS2..B	1.000	1.772	0.638	3.299	0.69	4.567	1.122	0.250	3/8-16x1.00
MGFAS2..B	1.250	1.772	0.638	3.339	0.68	4.567	1.374	0.250	7/16-14x1.00
	ø D H7	**ø D7**	**L4**	**L8**	**L9**	**O8**	**T**	**U**	**ASME**
MGFAS4..B	1.250	2.165	0.717	4.146	0.68	5.571	1.374	0.250	7/16-14x1.00
MGFAS4..B	1.437	2.165	0.705	4.154	1.40	5.571	1.610	0.375	5/8-11x1.75
MGFAS4..B	1.500	2.165	0.705	4.154	1.40	5.571	1.669	0.375	5/8-11x1.75

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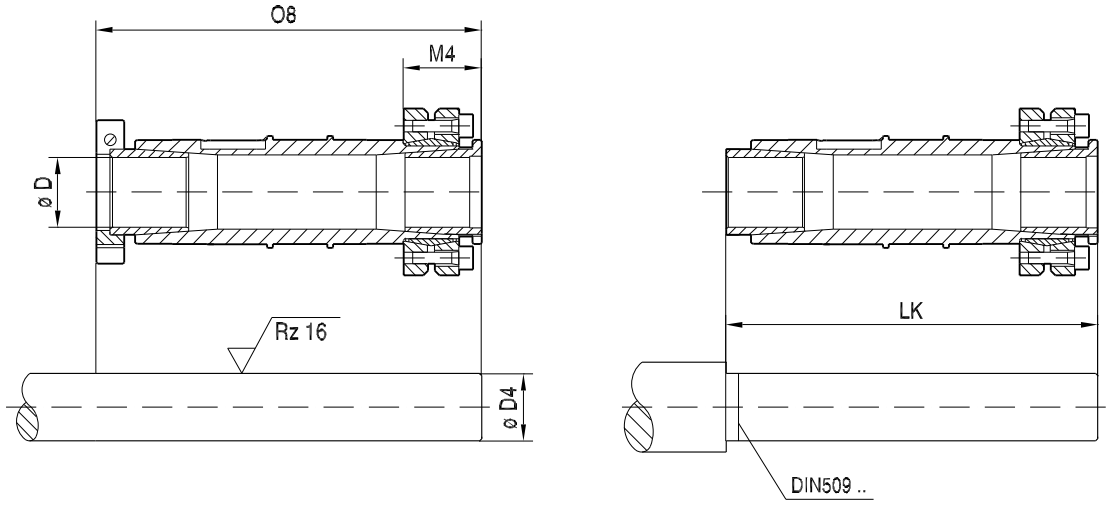
MGFTS..B [mm]

03 005 00 16



	ø D4 $_{h11}$	ø D $^{+0.1}$	M4	O8 $_{-5}$	LK $_{-5}$	DIN 509
MGFTS2..B	25	25.1	33	170.5	164.5	F1 × 0.2
MGFTS2..B	30	30.26	33	170.5	164.5	F1 × 0.2
	ø D4 $_{h11}$	**ø D $^{+0.1}$**	**M4**	**O8 $_{-5}$**	**LK $_{-5}$**	**DIN 509**
MGFTS4..B	35	35.03	44	210.5	203	F1 × 0.2
MGFTS4..B	40	40.1	44	210.5	203	F1 × 0.2

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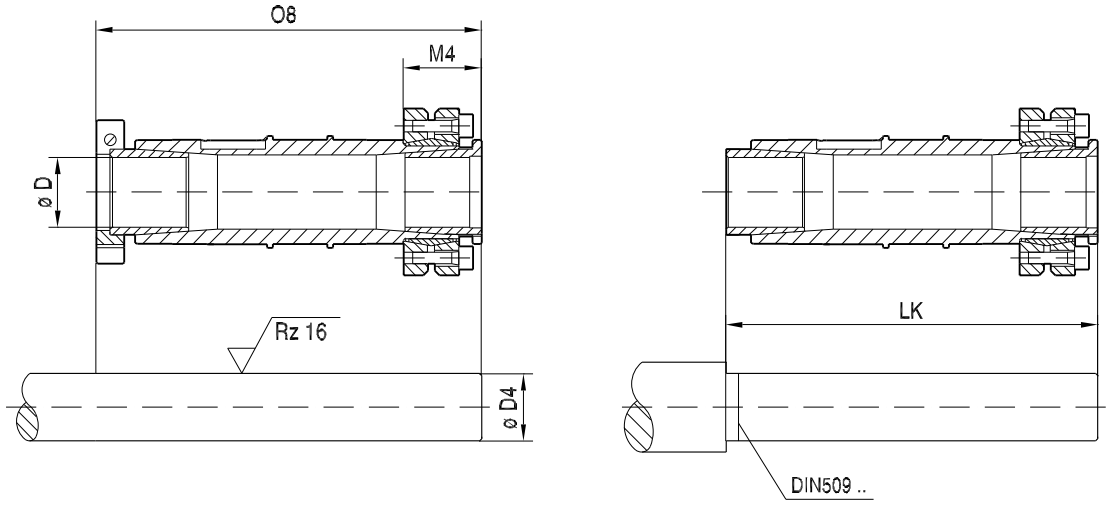
MGFTS..B [inch]

03 006 00 16



	ø D4 $_{h11}$	ø D $^{+0,004}$	M4	O8 $_{-0,197}$	LK $_{-0,197}$	DIN 509
MGFTS2..B	1.000	1.004	1.299	6.713	6.476	F1 × 0.2
MGFTS2..B	1.1875	1.191	1.299	6.713	6.476	F1 × 0.2
MGFTS2..B	1.250	1.254	1.299	6.713	6.476	F1 × 0.2
	ø D4 $_{h11}$	**ø D $^{+0,004}$**	**M4**	**O8 $_{-0,197}$**	**LK $_{-0,197}$**	**DIN 509**
MGFTS4..B	1.250	1.250	1.732	8.287	7.992	F1 × 0.2
MGFTS4..B	1.375	1.379	1.732	8.287	7.992	F1 × 0.2
MGFTS4..B	1.4375	1.441	1.732	8.287	7.992	F1 × 0.2
MGFTS4..B	1.500	1.504	1.732	8.287	7.992	F1 × 0.2
MGFTS4..B	1.625	1.629	1.732	8.287	7.992	F1 × 0.2

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10 Address list

Argentina			
Assembly Sales	Buenos Aires	SEW EURODRIVE ARGENTINA S.A. Ruta Panamericana Km 37.5, Lote 35 (B1619IEA) Centro Industrial Garín Prov. de Buenos Aires	Tel. +54 3327 4572-84 Fax +54 3327 4572-21 http://www.sew-eurodrive.com.ar sewar@sew-eurodrive.com.ar
Australia			
Assembly Sales Service	Melbourne	SEW-EURODRIVE PTY. LTD. 27 Beverage Drive Tullamarine, Victoria 3043	Tel. +61 3 9933-1000 Fax +61 3 9933-1003 http://www.sew-eurodrive.com.au enquires@sew-eurodrive.com.au
	Sydney	SEW-EURODRIVE PTY. LTD. 9, Sleigh Place, Wetherill Park New South Wales, 2164	Tel. +61 2 9725-9900 Fax +61 2 9725-9905 enquires@sew-eurodrive.com.au
Austria			
Assembly Sales Service	Vienna	SEW-EURODRIVE Ges.m.b.H. Richard-Strauss-Straße 24 1230 Wien	Tel. +43 1 617 55 00-0 Fax +43 1 617 55 00-30 http://www.sew-eurodrive.at sew@sew-eurodrive.at
Bangladesh			
Sales	Bangladesh	SEW-EURODRIVE INDIA PRIVATE LIMITED 345 DIT Road East Rampura Dhaka-1219, Bangladesh	Tel. +88 01729 097309 salesdhaka@seweurodrivebangladesh.com
Belarus			
Sales	Minsk	Foreign unitary production enterprise SEW-EURODRIVE RybalkoStr. 26 220033 Minsk	Tel. +375 17 298 47 56 / 298 47 58 Fax +375 17 298 47 54 http://www.sew.by sales@sew.by
Belgium			
Assembly Sales Service	Brussels	SEW-EURODRIVE n.v./s.a. Researchpark Haasrode 1060 Evenementenlaan 7 3001 Leuven	Tel. +32 16 386-311 Fax +32 16 386-336 http://www.sew-eurodrive.be info@sew-eurodrive.be
Service Competence Center	Industrial Gears	SEW-EURODRIVE n.v./s.a. Rue du Parc Industriel, 31 6900 Marche-en-Famenne	Tel. +32 84 219-878 Fax +32 84 219-879 http://www.sew-eurodrive.be service-IG@sew-eurodrive.be
Brazil			
Production Sales Service	São Paulo	SEW-EURODRIVE Brasil Ltda. Estrada Municipal José Rubim, 205 – Rodovia Santos Dumont Km 49 Indaiatuba – 13347-510 – SP	Tel. +55 19 3835-8000 sew@sew.com.br
Assembly Sales Service	Rio Claro	SEW-EURODRIVE Brasil Ltda. Rodovia Washington Luiz, Km 172 Condomínio Industrial Conpark Caixa Postal: 327 13501-600 – Rio Claro / SP	Tel. +55 19 3522-3100 Fax +55 19 3524-6653 montadora.rc@sew.com.br
	Joinville	SEW-EURODRIVE Brasil Ltda. Jvl / Ind Rua Dona Francisca, 12.346 – Pirabeiraba 89239-270 – Joinville / SC	Tel. +55 47 3027-6886 Fax +55 47 3027-6888 filial.sc@sew.com.br
Bulgaria			
Sales	Sofia	BEVER-DRIVE GmbH Bogdanovetz Str.1 1606 Sofia	Tel. +359 2 9151160 Fax +359 2 9151166 bever@bever.bg

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Sales	Douala	SEW-EURODRIVE S.A.R.L. Ancienne Route Bonabéri P.O. Box B.P 8674 Douala-Cameroun	Tel. +237 233 39 02 10 Fax +237 233 39 02 10 sew@sew-eurodrive-cm
Canada			
Assembly Sales Service	Toronto	SEW-EURODRIVE CO. OF CANADA LTD. 210 Walker Drive Bramalea, ON L6T 3W1	Tel. +1 905 791-1553 Fax +1 905 791-2999 http://www.sew-eurodrive.ca l.watson@sew-eurodrive.ca
	Vancouver	SEW-EURODRIVE CO. OF CANADA LTD. Tilbury Industrial Park 7188 Honeyman Street Delta, BC V4G 1G1	Tel. +1 604 946-5535 Fax +1 604 946-2513 b.wake@sew-eurodrive.ca
	Montreal	SEW-EURODRIVE CO. OF CANADA LTD. 2001 Ch. de l'Aviation Dorval Quebec H9P 2X6	Tel. +1 514 367-1124 Fax +1 514 367-3677 n.paradis@sew-eurodrive.ca
Chile			
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China			
Production Assembly Sales Service	Tianjin	SEW-EURODRIVE (Tianjin) Co., Ltd. No. 78, 13th Avenue, TEDA Tianjin 300457	Tel. +86 22 25322612 Fax +86 22 25323273 http://www.sew-eurodrive.cn info@sew-eurodrive.cn
Assembly Sales Service	Suzhou	SEW-EURODRIVE (Suzhou) Co., Ltd. 333, Suhong Middle Road Suzhou Industrial Park Jiangsu Province, 215021	Tel. +86 512 62581781 Fax +86 512 62581783 suzhou@sew-eurodrive.cn
	Guangzhou	SEW-EURODRIVE (Guangzhou) Co., Ltd. No. 9, JunDa Road East Section of GETDD Guangzhou 510530	Tel. +86 20 82267890 Fax +86 20 82267922 guangzhou@sew-eurodrive.cn
	Shenyang	SEW-EURODRIVE (Shenyang) Co., Ltd. 10A-2, 6th Road Shenyang Economic Technological Development Area Shenyang, 110141	Tel. +86 24 25382538 Fax +86 24 25382580 shenyang@sew-eurodrive.cn
	Taiyuan	SEW-EURODRIVE (Taiyuan) Co,. Ltd. No.3, HuaZhang Street, TaiYuan Economic & Technical Development Zone ShanXi, 030032	Tel. +86-351-7117520 Fax +86-351-7117522 taiyuan@sew-eurodrive.cn
	Wuhan	SEW-EURODRIVE (Wuhan) Co., Ltd. 10A-2, 6th Road No. 59, the 4th Quanli Road, WEDA 430056 Wuhan	Tel. +86 27 84478388 Fax +86 27 84478389 wuhan@sew-eurodrive.cn
	Xi'An	SEW-EURODRIVE (Xi'An) Co., Ltd. No. 12 Jinye 2nd Road Xi'An High-Technology Industrial Development Zone Xi'An 710065	Tel. +86 29 68686262 Fax +86 29 68686311 xian@sew-eurodrive.cn
Sales Service	Hong Kong	SEW-EURODRIVE LTD. Unit No. 801-806, 8th Floor Hong Leong Industrial Complex No. 4, Wang Kwong Road Kowloon, Hong Kong	Tel. +852 36902200 Fax +852 36902211 contact@sew-eurodrive.hk

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Assembly Sales Service	Bogota	SEW-EURODRIVE COLOMBIA LTDA. Calle 17 No. 132-18 Interior 2 Bodega 6, Manzana B Santafé de Bogotá	Tel. +57 1 54750-50 Fax +57 1 54750-44 http://www.sew-eurodrive.com.co sew@sew-eurodrive.com.co
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Sales Service	Zagreb	KOMPEKS d. o. o. Zeleni dol 10 10 000 Zagreb	Tel. +385 1 4613-158 Fax +385 1 4613-158 kompeks@inet.hr
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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
Denmark			
Assembly Sales Service	Copenhagen	SEW-EURODRIVEA/S Geminivej 28-30 2670 Greve	Tel. +45 43 95 8500 Fax +45 43 9585-09 http://www.sew-eurodrive.dk sew@sew-eurodrive.dk
Egypt			
Sales Service	Cairo	Copam Egypt for Engineering & Agencies Building 10, Block 13005, First Industrial Zone, Obour City Cairo	Tel. +202 44812673 / 79 (7 lines) Fax +202 44812685 http://www.copam-egypt.com copam@copam-egypt.com
Estonia			
Sales	Tallin	ALAS-KUUL AS Loomäe tee 1, Lehmja küla 75306 Rae vald Harjumaa	Tel. +372 6593230 Fax +372 6593231 http://www.alas-kuul.ee veiko.soots@alas-kuul.ee
Finland			
Assembly Sales Service	Hollola	SEW-EURODRIVE OY Vesimäentie 4 15860 Hollola	Tel. +358 201 589-300 Fax +358 3 780-6211 http://www.sew-eurodrive.fi sew@sew.fi
Service	Hollola	SEW-EURODRIVE OY Keskikankaantie 21 15860 Hollola	Tel. +358 201 589-300 Fax +358 3 780-6211 http://www.sew-eurodrive.fi sew@sew.fi
	Tornio	SEW-EURODRIVE Oy Lossirannankatu 5 95420 Tornio	Tel. +358 201 589 300 Fax +358 3 780 6211 http://www.sew-eurodrive.fi sew@sew.fi
Production Assembly	Karkkila	SEW Industrial Gears Oy Santasalonkatu 6, PL 8 03620 Karkkila, 03601 Karkkila	Tel. +358 201 589-300 Fax +358 201 589-310 http://www.sew-eurodrive.fi sew@sew.fi
France			
Production Sales Service	Hagenau	SEW-USOCOME 48-54 route de Soufflenheim B. P. 20185 67506 Haguenau Cedex	Tel. +33 3 88 73 67 00 Fax +33 3 88 73 66 00 http://www.usocome.com sew@usocome.com
Production	Forbach	SEW-USOCOME Zone industrielle Technopôle Forbach Sud B. P. 30269 57604 Forbach Cedex	Tel. +33 3 87 29 38 00
	Brumath	SEW-USOCOME 1 Rue de Bruxelles 67670 Mommenheim Cedex	Tel. +33 3 88 37 48 00

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France			
Assembly Sales Service	Bordeaux	SEW-USOCOME Parc d'activités de Magellan 62 avenue de Magellan – B. P. 182 33607 Pessac Cedex	Tel. +33 5 57 26 39 00 Fax +33 5 57 26 39 09
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	Nantes	SEW-USOCOME Parc d'activités de la forêt 4 rue des Fontenelles 44140 Le Bignon	Tel. +33 2 40 78 42 00 Fax +33 2 40 78 42 20
	Paris	SEW-USOCOME Zone industrielle 2 rue Denis Papin 77390 Verneuil l'Étang	Tel. +33 1 64 42 40 80 Fax +33 1 64 42 40 88
Gabon			
Representation: Cameroon			
Germany			
Headquarters Production Sales	Bruchsal	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 42 76646 Bruchsal	Tel. +49 7251 75-0 Fax +49 7251 75-1970 http://www.sew-eurodrive.de sew@sew-eurodrive.de
Production / Industrial Gears	Bruchsal	SEW-EURODRIVE GmbH & Co KG Christian-Pähr-Str. 10 76646 Bruchsal	Tel. +49 7251 75-0 Fax +49 7251 75-2970
Production	Graben	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 1 76676 Graben-Neudorf	Tel. +49 7251 75-0 Fax +49 7251-2970
	Östringen	SEW-EURODRIVE GmbH & Co KG, Werk Östringen Franz-Gurk-Straße 2 76684 Östringen	Tel. +49 7253 9254-0 Fax +49 7253 9254-90 oestringen@sew-eurodrive.de
Service Competence Center	Mechanics / Mechatronics	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 1 76676 Graben-Neudorf	Tel. +49 7251 75-1710 Fax +49 7251 75-1711 scc-mechanik@sew-eurodrive.de
	Electronics	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 42 76646 Bruchsal	Tel. +49 7251 75-1780 Fax +49 7251 75-1769 scc-elektronik@sew-eurodrive.de
Drive Technology Center	North	SEW-EURODRIVE GmbH & Co KG Alte Ricklinger Straße 40-42 30823 Garbsen (Hannover)	Tel. +49 5137 8798-30 Fax +49 5137 8798-55 dtc-nord@sew-eurodrive.de
	East	SEW-EURODRIVE GmbH & Co KG Dänkritzer Weg 1 08393 Meerane (Zwickau)	Tel. +49 3764 7606-0 Fax +49 3764 7606-30 dtc-ost@sew-eurodrive.de
	South	SEW-EURODRIVE GmbH & Co KG Domagkstraße 5 85551 Kirchheim (München)	Tel. +49 89 909552-10 Fax +49 89 909552-50 dtc-sued@sew-eurodrive.de
	West	SEW-EURODRIVE GmbH & Co KG Siemensstraße 1 40764 Langenfeld (Düsseldorf)	Tel. +49 2173 8507-30 Fax +49 2173 8507-55 dtc-west@sew-eurodrive.de
Drive Center	Berlin	SEW-EURODRIVE GmbH & Co KG Alexander-Meißner-Straße 44 12526 Berlin	Tel. +49 306331131-30 Fax +49 306331131-36 dc-berlin@sew-eurodrive.de
	Hamburg	SEW-EURODRIVE GmbH & Co KG Hasselbinnen 11 22869 Schenefeld	Tel. +49 40 298109-60 Fax +49 40 298109-70 tb-hamburg@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

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Germany			
	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
	Würzburg	SEW-EURODRIVE GmbH & Co KG Nürnbergerstraße 118 97076 Würzburg-Lengfeld	Tel. +49 931 27886-60 Fax +49 931 27886-66 dc-wuerzburg@sew-eurodrive.de
Drive Service Hotline / 24 Hour Service			0 800 SEWHELP 0 800 7394357
Great Britain			
Assembly Sales Service	Normanton	SEW-EURODRIVE Ltd. DeVilliers Way Trident Park Normanton West Yorkshire WF6 1GX	Tel. +44 1924 893-855 Fax +44 1924 893-702 http://www.sew-eurodrive.co.uk info@sew-eurodrive.co.uk
	Drive Service Hotline / 24 Hour Service		Tel. 01924 896911
Greece			
Sales	Athens	Christ. Boznos & Son S.A. 12, K. Mavromichali Street P.O. Box 80136 18545 Piraeus	Tel. +30 2 1042 251-34 Fax +30 2 1042 251-59 http://www.boznos.gr info@boznos.gr
Hungary			
Sales Service	Budapest	SEW-EURODRIVE Kft. Csillaghegyí út 13. 1037 Budapest	Tel. +36 1 437 06-58 Fax +36 1 437 06-50 http://www.sew-eurodrive.hu office@sew-eurodrive.hu
Iceland			
Sales	Reykjavik	Varma & Vélaverk ehf. Knarrarvogi 4 104 Reykjavík	Tel. +354 585 1070 Fax +354 585)1071 http://www.varmaverk.is vov@vov.is
India			
Registered Office Assembly Sales Service	Vadodara	SEW-EURODRIVE India Private Limited Plot No. 4, GIDC POR Ramangamdi • Vadodara - 391 243 Gujarat	Tel. +91 265 3045200 Fax +91 265 3045300 http://www.seweurodriveindia.com salesvadodara@seweurodriveindia.com
Assembly Sales Service	Chennai	SEW-EURODRIVE India Private Limited Plot No. K3/1, Sipcot Industrial Park Phase II Mambakkam Village Sriperumbudur - 602105 Kancheepuram Dist, Tamil Nadu	Tel. +91 44 37188888 Fax +91 44 37188811 saleschennai@seweurodriveindia.com
	Pune	SEW-EURODRIVE India Private Limited Plant: Plot No. D236/1, Chakan Industrial Area Phase- II, Warale, Tal- Khed, Pune-410501, Maharashtra	Tel. +91 21 35 628700 Fax +91 21 35 628715 salespune@seweurodriveindia.com
Sales Service	Gurgaon	SEW-EURODRIVE India Private Limited Drive Center Gurugram Plot no 395, Phase-IV, UdyogVihar Gurugram , 122016 Haryana	Tel. +91 99588 78855 salesgurgaon@seweurodriveindia.com
Indonesia			
Sales	Medan	PT. Serumpun Indah Lestari Jl.Pulau Solor no. 8, Kawasan Industri Medan II Medan 20252	Tel. +62 61 687 1221 Fax +62 61 6871429 / +62 61 6871458 / +62 61 30008041 sil@serumpunindah.com serumpunindah@yahoo.com http://www.serumpunindah.com
	Jakarta	PT. Cahaya Sukses Abadi Komplek Rukan Puri Mutiara Blok A no 99, Sunter Jakarta 14350	Tel. +62 21 65310599 Fax +62 21 65310600 csajkt@cbn.net.id

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Indonesia			
	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
	Surabaya	PT. TRIAGRI JAYA ABADI Jl. Sukosemolo No. 63, Galaxi Bumi Permai G6 No. 11 Surabaya 60111	Tel. +62 31 5990128 Fax +62 31 5962666 sales@triagri.co.id http://www.triagri.co.id
	Surabaya	CV. Multi Mas Jl. Raden Saleh 43A Kav. 18 Surabaya 60174	Tel. +62 31 5458589 Fax +62 31 5317220 sianhwa@sby.centrin.net.id http://www.cvmultimas.com
Ireland			
Sales Service	Dublin	Alperton Engineering Ltd. 48 Moyle Road Dublin Industrial Estate Glasnevin, Dublin 11	Tel. +353 1 830-6277 Fax +353 1 830-6458 http://www.alperton.ie info@alperton.ie
Israel			
Sales	Tel Aviv	Liraz Handasa Ltd. Ahofer Str 34B / 228 58858 Holon	Tel. +972 3 5599511 Fax +972 3 5599512 http://www.liraz-handasa.co.il office@liraz-handasa.co.il
Italy			
Assembly Sales Service	Milan	SEW-EURODRIVE S.a.s. di SEW S.r.l. & Co. Via Bernini,12 20020 Solaro (Milano)	Tel. +39 02 96 980229 Fax +39 02 96 980 999 http://www.sew-eurodrive.it milano@sew-eurodrive.it
Ivory Coast			
Sales	Abidjan	SEW-EURODRIVE SARL Ivory Coast Rue des Pêcheurs, Zone 3 26 BP 916 Abidjan 26	Tel. +225 21 21 81 05 Fax +225 21 25 30 47 info@sew-eurodrive.ci http://www.sew-eurodrive.ci
Japan			
Assembly Sales Service	Iwata	SEW-EURODRIVE JAPAN CO., LTD 250-1, Shimoman-no, Iwata Shizuoka 438-0818	Tel. +81 538 373811 Fax +81 538 373814 http://www.sew-eurodrive.co.jp sewjapan@sew-eurodrive.co.jp
Kazakhstan			
Sales Service	Almaty	SEW-EURODRIVE LLP 291-291A, Tole bi street 050031, Almaty	Tel. +7 (727) 350 5156 Fax +7 (727) 350 5156 http://www.sew-eurodrive.kz sew@sew-eurodrive.kz
	Tashkent	SEW-EURODRIVE LLP Representative office in Uzbekistan 96A, Sharaf Rashidov street, Tashkent, 100084	Tel. +998 71 2359411 Fax +998 71 2359412 http://www.sew-eurodrive.uz sew@sew-eurodrive.uz
	Ulaanbaatar	IM Trading LLC Olympic street 28B/3 Sukhbaatar district, Ulaanbaatar 14230, MN	Tel. +976-77109997 Fax +976-77109997 imt@imt.mn
Latvia			
Sales	Riga	SIA Alas-Kuul Katlakalna 11C 1073 Riga	Tel. +371 6 7139253 Fax +371 6 7139386 http://www.alas-kuul.lv info@alas-kuul.com
Lebanon			
Sales (Lebanon)	Beirut	Gabriel Acar & Fils sarl B. P. 80484 Bourj Hammoud, Beirut	Tel. +961 1 510 532 Fax +961 1 494 971 ssacar@inco.com.lb

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Lebanon			
Sales (Jordan, Kuwait , Saudi Arabia, Syria)	Beirut	Middle East Drives S.A.L. (offshore) Sin El Fil. B. P. 55-378 Beirut	Tel. +961 1 494 786 Fax +961 1 494 971 http://www.medrives.com info@medrives.com
Lithuania			
Sales	Alytus	UAB Irseva Statybininku 106C 63431 Alytus	Tel. +370 315 79204 Fax +370 315 56175 http://www.irseva.lt irmantas@irseva.lt
Luxembourg			
Representation: Belgium			
Macedonia			
Sales	Skopje	Boznos DOOEL Dime Anicin 2A/7A 1000 Skopje	Tel. +389 23256553 Fax +389 23256554 http://www.boznos.mk
Malaysia			
Assembly Sales Service	Johor	SEW-EURODRIVE SDN BHD No. 95, Jalan Seroja 39, Taman Johor Jaya 81000 Johor Bahru, Johor West Malaysia	Tel. +60 7 3549409 Fax +60 7 3541404 sales@sew-eurodrive.com.my
Mexico			
Assembly Sales Service	Quéretaro	SEW-EURODRIVE MEXICO S.A. de C.V. SEM-981118-M93 Tequisquiapan No. 102 Parque Industrial Quéretaro C.P. 76220 Querétaro, México	Tel. +52 442 1030-300 Fax +52 442 1030-301 http://www.sew-eurodrive.com.mx scmexico@seweurodrive.com.mx
Sales Service	Puebla	SEW-EURODRIVE MEXICO S.A. de C.V. Calzada Zavaleta No. 3922 Piso 2 Local 6 Col. Santa Cruz Buenavista C.P. 72154 Puebla, México	Tel. +52 (222) 221 248 http://www.sew-eurodrive.com.mx scmexico@seweurodrive.com.mx
Mongolia			
Technical Office	Ulaanbaatar	IM Trading LLC Olympic street 28B/3 Sukhbaatar district, Ulaanbaatar 14230, MN	Tel. +976-77109997 Tel. +976-99070395 Fax +976-77109997 http://imt.mn/ imt@imt.mn
Morocco			
Sales Service Assembly	Bouskoura	SEW-EURODRIVE Morocco SARL Parc Industriel CFCIM, Lot. 55/59 27182 Bouskoura Grand Casablanca	Tel. +212 522 88 85 00 Fax +212 522 88 84 50 http://www.sew-eurodrive.ma sew@sew-eurodrive.ma
Namibia			
Sales	Swakopmund	DB MINING & INDUSTRIAL SUPPLIES CC Einstein Street Strauss Industrial Park Unit1 Swakopmund	Tel. +264 64 462 738 Fax +264 64 462 734 anton@dbminingnam.com
Netherlands			
Assembly Sales Service	Rotterdam	SEW-EURODRIVE B.V. Industrieweg 175 3044 AS Rotterdam Postbus 10085 3004 AB Rotterdam	Tel. +31 10 4463-700 Fax +31 10 4155-552 Service: 0800-SEWHELP http://www.sew-eurodrive.nl info@sew-eurodrive.nl

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

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Russia			
Assembly Sales Service	St. Petersburg	ЗАО «СЕВ-ЕВРОДРАЙФ» 188660, Russia, Leningrad Region, Vsevolozhsky District, Korabselki, Aleksandra Nevskogo str. building 4, block 1 P.O. Box 36 195220 St. Petersburg	Tel. +7 812 3332522 / +7 812 5357142 Fax +7 812 3332523 http://www.sew-eurodrive.ru sew@sew-eurodrive.ru
Senegal			
Sales	Dakar	SENEMECA Mécanique Générale Km 8, Route de Rufisque B.P. 3251, Dakar	Tel. +221 338 494 770 Fax +221 338 494 771 http://www.senemeca.com senemeca@senemeca.sn
Serbia			
Sales	Belgrade	DIPAR d.o.o. Ustanicka 128a PC Košum, IV floor 11000 Beograd	Tel. +381 11 347 3244 / +381 11 288 0393 Fax +381 11 347 1337 office@dipar.rs
Singapore			
Assembly Sales Service	Singapore	SEW-EURODRIVE PTE. LTD. No 9, Tuas Drive 2 Jurong Industrial Estate Singapore 638644	Tel. +65 68621701 Fax +65 68612827 http://www.sew-eurodrive.com.sg sewsingapore@sew-eurodrive.com
Slovakia			
Sales	Bernolákovo	SEW-Eurodrive SK s.r.o. Priemyselná ulica 6267/7 900 27 Bernolákovo	Tel.+421 2 33595 202, 217, 201 Fax +421 2 33595 200 http://www.sew-eurodrive.sk sew@sew-eurodrive.sk
Slovenia			
Sales Service	Celje	Pakman - Pogonska Tehnika d.o.o. UI. XIV. divizije 14 3000 Celje	Tel. +386 3 490 83-20 Fax +386 3 490 83-21 pakman@siol.net
South Africa			
Assembly Sales Service	Johannesburg	SEW-EURODRIVE (PROPRIETARY) LIMITED Eurodrive House Cnr. Adcock Ingram and Aerodrome Roads Aeroton Ext. 2 Johannesburg 2013 P.O.Box 90004 Bertsham 2013	Tel. +27 11 248-7000 Fax +27 11 248-7289 http://www.sew.co.za info@sew.co.za
	Cape Town	SEW-EURODRIVE (PROPRIETARY) LIMITED Rainbow Park Cnr. Racecourse & Omuramba Road Montague Gardens Cape Town P.O.Box 36556 Chempet 7442	Tel. +27 21 552-9820 Fax +27 21 552-9830 Telex 576 062 bgriffiths@sew.co.za
	Durban	SEW-EURODRIVE (PROPRIETARY) LIMITED 48 Prospecton Road Isipingo Durban P.O. Box 10433, Ashwood 3605	Tel. +27 31 902 3815 Fax +27 31 902 3826 cdejager@sew.co.za
	Nelspruit	SEW-EURODRIVE (PROPRIETARY) LIMITED 7 Christie Crescent Vintonia P.O.Box 1942 Nelspruit 1200	Tel. +27 13 752-8007 Fax +27 13 752-8008 robermeyer@sew.co.za
South Korea			
Assembly Sales Service	Ansan	SEW-EURODRIVE KOREA CO., LTD. 7, Dangjaengi-ro, Danwon-gu, Ansan-si, Gyeonggi-do, Zip 425-839	Tel. +82 31 492-8051 Fax +82 31 492-8056 http://www.sew-eurodrive.kr master.korea@sew-eurodrive.com

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South Korea			
	Busan	SEW-EURODRIVE KOREA CO., LTD. 28, Noksansandan 262-ro 50beon-gil, Gangseo-gu, Busan, Zip 618-820	Tel. +82 51 832-0204 Fax +82 51 832-0230
Spain			
Assembly Sales Service	Bilbao	SEW-EURODRIVE ESPAÑA, S.L. Parque Tecnológico, Edificio, 302 48170 Zamudio (Vizcaya)	Tel. +34 94 43184-70 http://www.sew-eurodrive.es sew.spain@sew-eurodrive.es
Sri Lanka			
Sales	Colombo	SM International (Pte) Ltd 254, Galle Raod Colombo 4, Sri Lanka	Tel. +94 1 2584887 Fax +94 1 2582981
Swaziland			
Sales	Manzini	C G Trading Co. (Pty) Ltd Simunye street Matsapha, Manzini	Tel. +268 7602 0790 Fax +268 2 518 5033 charles@cgtrading.co.sz www.cgtradingswaziland.com
Sweden			
Assembly Sales Service	Jönköping	SEW-EURODRIVE AB Gnejsvägen 6-8 553 03 Jönköping Box 3100 S-550 03 Jönköping	Tel. +46 36 34 42 00 Fax +46 36 34 42 80 http://www.sew-eurodrive.se jonkoping@sew.se
Switzerland			
Assembly Sales Service	Basel	Alfred Imhof A.G. Jurastrasse 10 4142 Münchenstein bei Basel	Tel. +41 61 417 1717 Fax +41 61 417 1700 http://www.imhof-sew.ch info@imhof-sew.ch
Taiwan			
Sales	Taipei	Ting Shou Trading Co., Ltd. 6F-3, No. 267, Sec. 2 Tung Huw S. Road Taipei	Tel. +886 2 27383535 Fax +886 2 27368268 Telex 27 245 sewtwn@ms63.hinet.net http://www.tingshou.com.tw
	Nan Tou	Ting Shou Trading Co., Ltd. No. 55 Kung Yeh N. Road Industrial District Nan Tou 540	Tel. +886 49 255353 Fax +886 49 257878 sewtwn@ms63.hinet.net http://www.tingshou.com.tw
Tanzania			
Sales	Daressalam	SEW-EURODRIVE PTY LIMITED TANZANIA Plot 52, Regent Estate PO Box 106274 Dar Es Salaam	Tel. +255 0 22 277 5780 Fax +255 0 22 277 5788 http://www.sew-eurodrive.co.tz info@sew.co.tz
Thailand			
Assembly Sales Service	Chonburi	SEW-EURODRIVE (Thailand) Ltd. 700/456, Moo.7, Donhuaroh Muang Chonburi 20000	Tel. +66 38 454281 Fax +66 38 454288 sewthailand@sew-eurodrive.com
Tunisia			
Sales	Tunis	T. M.S. Technic Marketing Service Zone Industrielle Mghira 2 Lot No. 39 2082 Fouchana	Tel. +216 79 40 88 77 Fax +216 79 40 88 66 http://www.tms.com.tn tms@tms.com.tn
Turkey			
Assembly Sales Service	Kocaeli-Gebze	SEW-EURODRIVE Ana Merkez Gebze Organize Sanayi Böl. 400 Sok No. 401 41480 Gebze Kocaeli	Tel. +90 262 9991000 04 Fax +90 262 9991009 http://www.sew-eurodrive.com.tr sew@sew-eurodrive.com.tr

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Ukraine			
Assembly Sales Service	Dnipropetrovsk	SEW-EURODRIVE, LLC Robochya str., bld. 23-B, office 409 49008 Dnipro	Tel. +380 56 370 3211 Fax +380 56 372 2078 http://www.sew-eurodrive.ua sew@sew-eurodrive.ua
United Arab Emirates			
Drive Technology Center	Dubai	SEW-EURODRIVE FZE PO Box 263835 Jebel Ali Free Zone – South, P.O. Box Dubai, United Arab Emirates	Tel. +971 (0)4 8806461 Fax +971 (0)4 8806464 info@sew-eurodrive.ae
Uruguay			
Assembly Sales	Montevideo	SEW-EURODRIVE Uruguay, S. A. Jose Serrato 3569 Esqina Corumbe CP 12000 Montevideo	Tel. +598 2 21181-89 Fax +598 2 21181-90 sewuy@sew-eurodrive.com.uy
USA			
Production Assembly Sales Service	Southeast Region	SEW-EURODRIVE INC. 1295 Old Spartanburg Highway P.O. Box 518 Lyman, S.C. 29365	Tel. +1 864 439-7537 Fax Sales +1 864 439-7830 Fax Production +1 864 439-9948 Fax Assembly +1 864 439-0566 Fax Confidential/HR +1 864 949-5557 http://www.seweurodrive.com cslyman@seweurodrive.com
Assembly Sales Service	Northeast Region	SEW-EURODRIVE INC. Pureland Ind. Complex 2107 High Hill Road, P.O. Box 481 Bridgeport, New Jersey 08014	Tel. +1 856 467-2277 Fax +1 856 845-3179 csbridgeport@seweurodrive.com
	Midwest Region	SEW-EURODRIVE INC. 2001 West Main Street Troy, Ohio 45373	Tel. +1 937 335-0036 Fax +1 937 332-0038 cstroy@seweurodrive.com
	Southwest Region	SEW-EURODRIVE INC. 3950 Platinum Way Dallas, Texas 75237	Tel. +1 214 330-4824 Fax +1 214 330-4724 csdallas@seweurodrive.com
	Western Region	SEW-EURODRIVE INC. 30599 San Antonio St. Hayward, CA 94544	Tel. +1 510 487-3560 Fax +1 510 487-6433 cshayward@seweurodrive.com
	Wellford	SEW-EURODRIVE INC. 148/150 Finch Rd. Wellford, S.C. 29385	Tel. +1 864 439-7537 Fax +1 864 661 1167 IGOrders@seweurodrive.com
	Additional addresses for service provided on request!		
Vietnam			
Sales	Ho Chi Minh City	SEW-EURODRIVE PTE. LTD. RO at Hochiminh City Floor 8, KV I, Loyal building, 151-151 Bis Vo Thi Sau street, ward 6, District 3, Ho Chi Minh City, Vietnam	Tel. +84 937 299 700 huytam.phan@sew-eurodrive.com
	Hanoi	MICO LTD Quảng Trị - North Vietnam / All sectors except Construction Materials 8th Floor, Ocean Park Building, 01 Dao Duy Anh St, Ha Noi, Viet Nam	Tel. +84 4 39386666 Fax +84 4 3938 6888 nam_ph@micogroup.com.vn http://www.micogroup.com.vn
Zambia			
Representation: South Africa			

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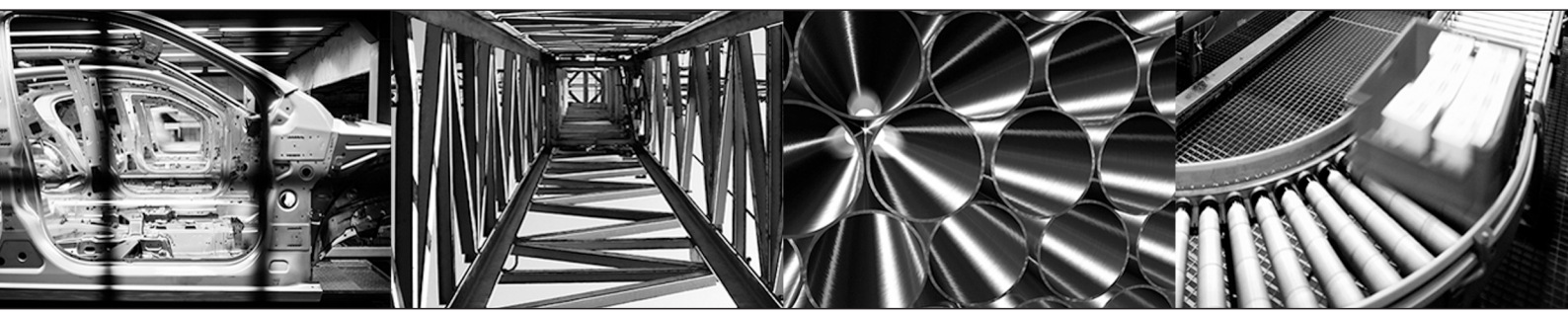

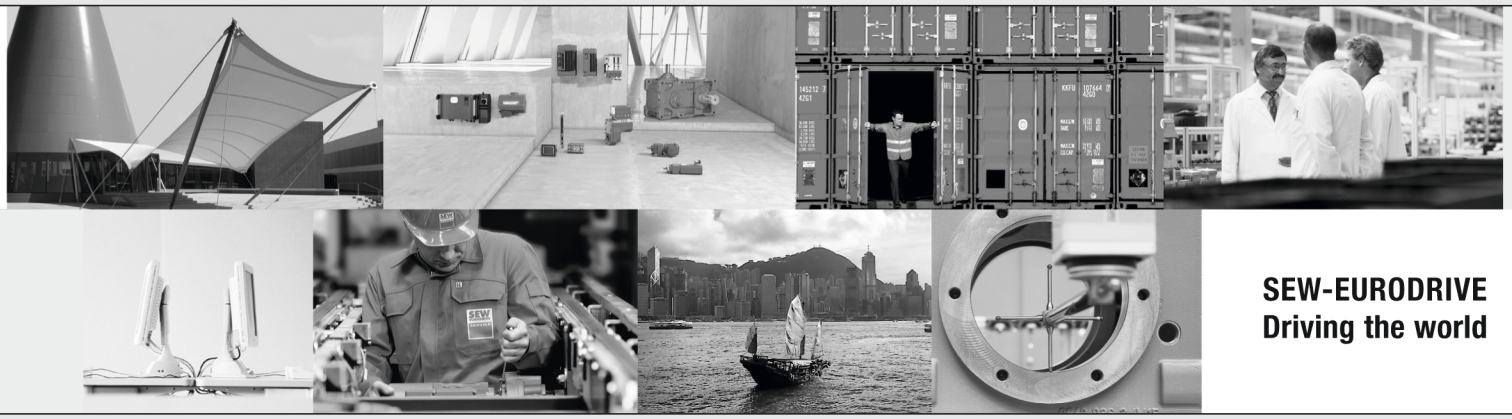

SEW-EURODRIVE
Driving the world

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