SEW EURODRIVE

Addendum to the Operating Instructions

MOVIGEAR® Drive Unit of Type MGF..-..-C

Options "Design for Use in Wet Areas /WA" and "Integrated Pressure Compensation in the Gear Unit /PG"

Edition 02/2020

29197457/EN

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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

This documentation supplements the operating instructions of the associated product. Use this document only in connection with the operating instructions.

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 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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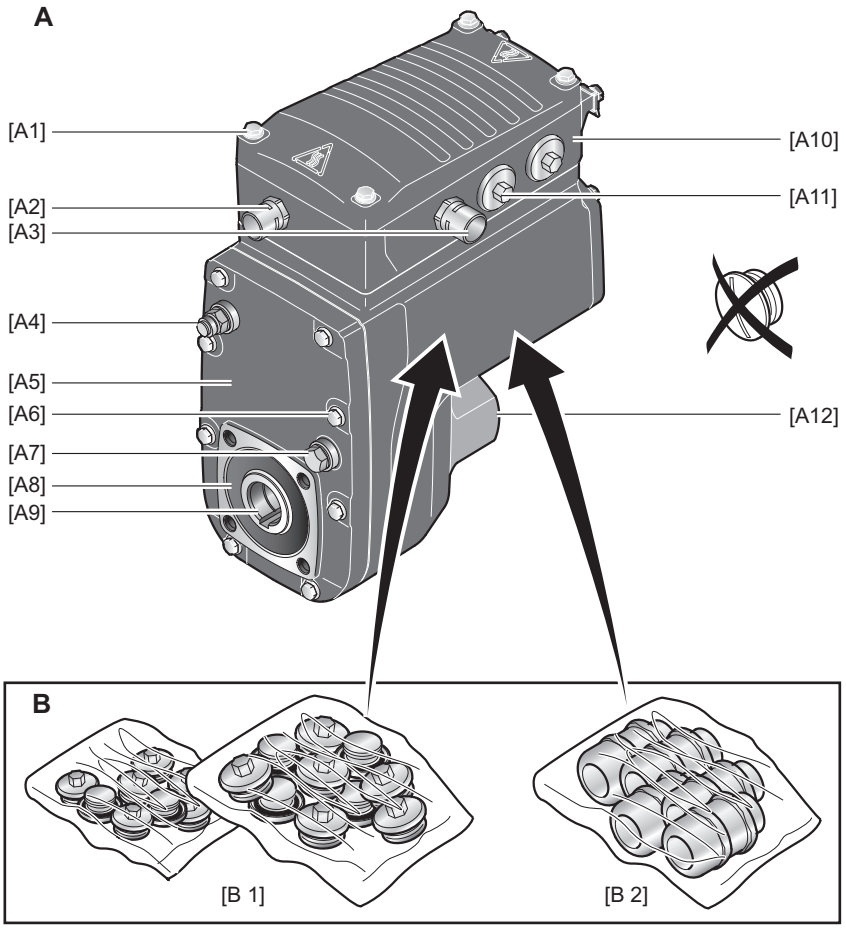
2 Unit structure

2.1 Design for wet areas (option /WA)

2.1.1 MOVIGEAR® classic drive unit of type MGF..1-DSM-C

The following figure shows the additional features of MOVIGEAR® classic drive units in the design for applications in wet areas (/WA option):

- As standard, the design for use in wet areas is delivered with screw plugs made of stainless steel.
- As an option, the drive unit as design for use in wet areas is available with a plastic screw plug. 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 All parts of the drive unit in design for use in wet areas are highlighted in gray when depicted in figures within this documentation (= surface protection HCP200/HCP200F)

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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]	**Installed at the factory** M16 pressure compensation fitting at the connection box (/PE) with mounting position M1/3/5/6	**Installation position of the included** M16 pressure compensation fitting at the connection box (/PE) with mounting position M1/3/5/6	**Installed at the factory** M16 pressure compensation fitting at the connection box (/PE) with mounting position M1/3/5/6	**Installation position of the included** M16 pressure compensation fitting at the connection box (/PE) with mounting position M1/3/5/6
[A3]	**Installed at the factory** M16 pressure compensation fitting at the connection box (/PE) with mounting position M2/4	**Installation position of the included** pressure compensation fitting at the connection box (/PE) with mounting position M2/4	**Installed at the factory** pressure compensation fitting at the connection box (/PE) with mounting position M2/4	**Installation position of the included** pressure compensation fitting at the connection box (/PE) with mounting position M2/4
[A4]	Breather valve made of non-corrosive steel **installed and activated** according to mounting position	**Included** breather valve made of stainless steel	**Integrated** pressure compensation in the gear unit (/PG)	**Integrated** pressure compensation in the gear unit (/PG)
[A5]	HCP200/HCP200F surface protection, see chapter "Technical data and dimension sheets"			
[A6]	Stainless steel screws of the drive unit			
[A7]	Stainless steel screw plug (hexagon) for oil change			
[A8]	**Standard:** 1 × FKM oil seal (Fluorocarbon rubber)		**Optional:** 2 × FKM oil seal (Fluorocarbon rubber)	
[A9]	Output shaft made of stainless steel			
[A10]	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			
[A11]	Screw plugs made of stainless steel			
[A12]	Additional safety cover opposite the output end			
B	**Required screw fittings**			
[B1]	Screw plugs made of stainless steel[2]			
[B2]	Cable glands made of stainless steel[2]			
The required screw fittings can be ordered from SEW-EURODRIVE. For an overview, refer to chapter "Optional metal screw fittings".				

1) MGF..2-..-C, MGF..4-..-C, MGF..4-..-C/XT: Mounting position M3 is not possible; MGF..1-..-C: Without restrictions

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

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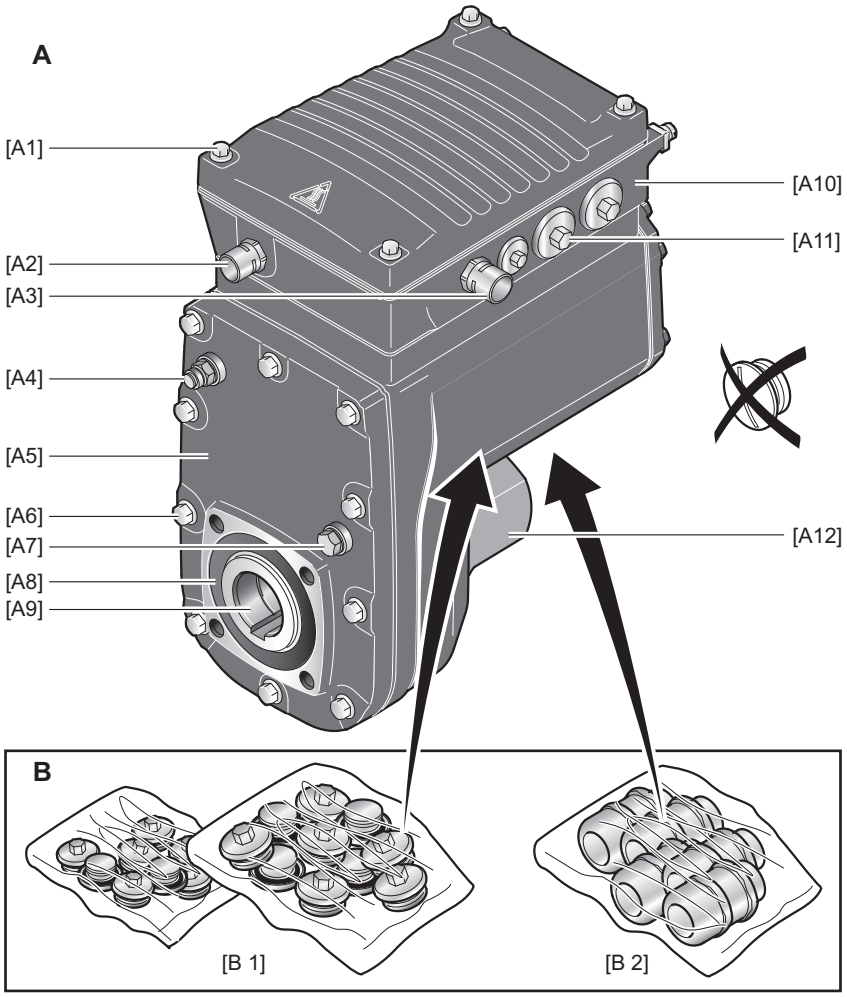
2.1.2 MOVIGEAR® classic drive unit of type MGF..2-DSM-C/WA; MGF..4-DSM-C/WA

The following figure shows the additional features of MOVIGEAR® classic drive units in the design for applications in wet areas (/WA option):

- As standard, the design for use in wet areas is delivered with screw plugs made of stainless steel.
- As an option, the drive unit as design for use in wet areas is available with a plastic screw plug. 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 All parts of the drive unit in design for use in wet areas are highlighted in gray when depicted in figures within this documentation (= surface protection HCP200/HCP200F)

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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]	**Installed at the factory** M16 pressure compensation fitting at the connection box (/PE) with mounting position M1/3/5/6	**Installation position of the included** M16 pressure compensation fitting at the connection box (/PE) with mounting position M1/3/5/6	**Installed at the factory** M16 pressure compensation fitting at the connection box (/PE) with mounting position M1/3/5/6	**Installation position of the included** M16 pressure compensation fitting at the connection box (/PE) with mounting position M1/3/5/6
[A3]	**Installed at the factory** M16 pressure compensation fitting at the connection box (/PE) with mounting position M2/4	**Installation position of the included** pressure compensation fitting at the connection box (/PE) with mounting position M2/4	**Installed at the factory** pressure compensation fitting at the connection box (/PE) with mounting position M2/4	**Installation position of the included** pressure compensation fitting at the connection box (/PE) with mounting position M2/4
[A4]	Breather valve made of non-corrosive steel **installed and activated** according to mounting position	**Included** breather valve made of stainless steel	**Integrated** pressure compensation in the gear unit (/PG)	**Integrated** pressure compensation in the gear unit (/PG)
[A5]	HCP200/HCP200F surface protection, see chapter "Technical data and dimension sheets"			
[A6]	Stainless steel screws of the drive unit			
[A7]	Stainless steel screw plug (hexagon) for oil change			
[A8]	**Standard:** 1 × FKM oil seal (Fluorocarbon rubber)		**Optional:** 2 × FKM oil seal (Fluorocarbon rubber)	
[A9]	Output shaft made of stainless steel			
[A10]	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			
[A11]	Screw plugs made of stainless steel			
[A12]	Additional safety cover opposite the output end			
B	**Required screw fittings**			
[B1]	Screw plugs made of stainless steel[2]			
[B2]	Cable glands made of stainless steel[2]			
The required screw fittings can be ordered from SEW-EURODRIVE. For an overview, refer to chapter "Optional metal screw fittings".				

1) MGF..2-..-C, MGF..4-..-C, MGF..4-..-C/XT: Mounting position M3 is not possible; MGF..1-..-C: Without restrictions

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

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2.2 Integrated pressure compensation in the gear unit (option /PG)

2.2.1 Description

When the gear unit oil heats up, the pressure rises within the gear unit due to the 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.

2.2.2 Advantages

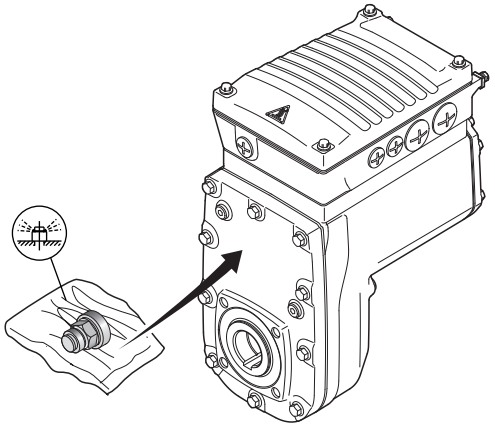
- Universal mounting position without restrictions concerning the output power.
- Fully integrated pressure compensation mechanism without external valve.
- No oil mist caused by the breather valve.
- No risk of damaging the product due to an inactive breather valve.
- The position of the breather valve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

2.2.3 Restrictions

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

2.2.4 Designs of the MOVIGEAR® classic drive unit (only in combination with MGF..2-..-C, MGF..4-..-C, MGF..4-..-C/XT)

MOVIGEAR® classic drive units in standard design

Type/mounting position	Pressure compensation provided by	Representation
• **MGF..-DSM-C** • **Universal use in M1/M2/ M4/M5/M6**	• Breather valve included in the delivery (must be installed by the customer)	

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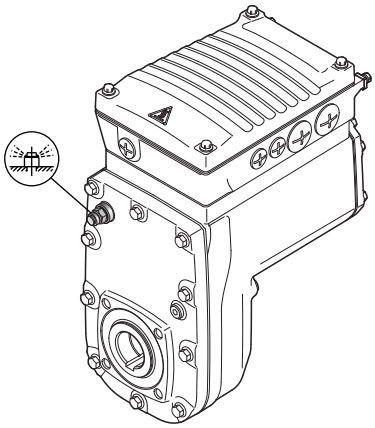
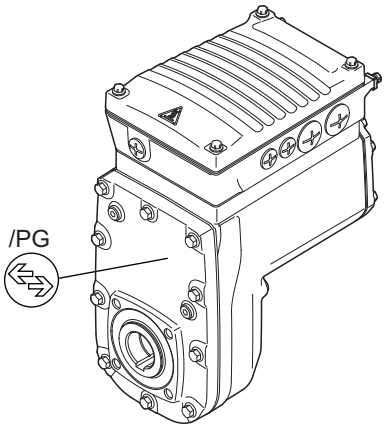
Type/mounting position	Pressure compensation provided by	Representation
• **MGF..-DSM-C** • **Use in the ordered mounting position M1 or M2 or M4 or M5 or M6**	• Breather valve installed according to the mounting position	
• **MGF..-DSM-C/PG** • **Universal mounting position MU**	• Integrated pressure compensation in the gear unit (/PG)	

 – Breather valve

 /PG Integrated pressure compensation in the gear unit

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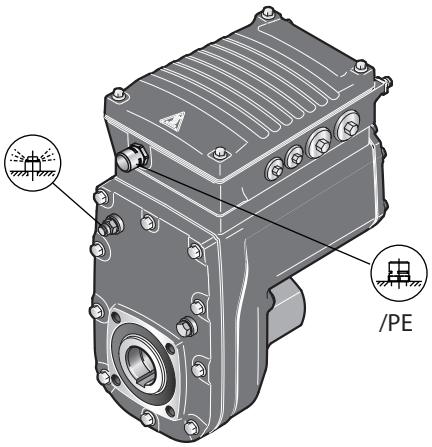
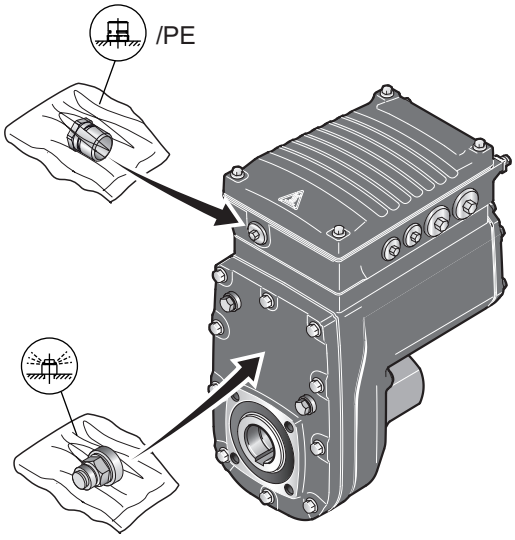
MOVIGEAR® classic drive units in design for wet areas (option /WA)

Design with pressure compensation fitting		
Type/mounting position	**Pressure compensation provided by**	**Representation**
• **MGF..-DSM/WA/PE** • **Operation in the ordered mounting position**[1]	• Breather valve and pressure compensation fitting at the connection box (/PE), both **installed according to the mounting position**	
• **MGF..-DSM/WA/PE** • **Universal operation in mounting positions M1/ M2/M4/M5/M6**	• **Included** breather valve and **included** pressure compensation fitting at the connection box (/PE) (must be installed by the customer) • **Observe chapter "Mechanical installation".**	

1) Mounting position M3 not possible

	/WA	All parts of the drive unit in design for use in wet areas are highlighted in gray when depicted in figures within this documentation (= surface protection HCP200/HCP200F)
	–	Breather valve
	/PE	Pressure compensation fitting at the connection box

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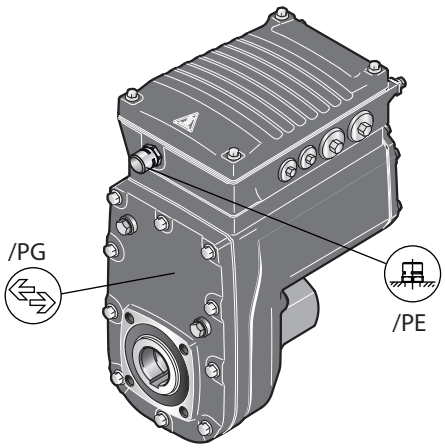
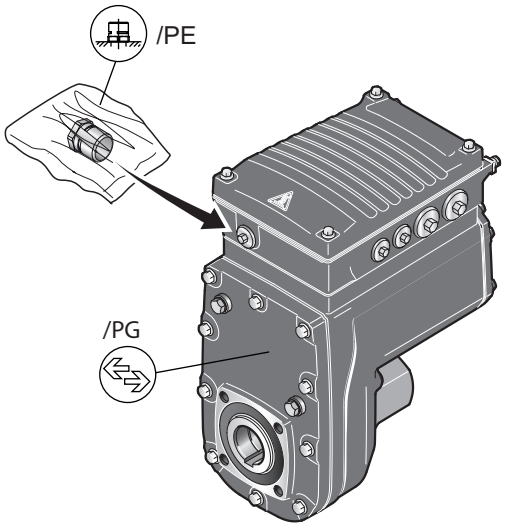
Design with integrated pressure compensation in the gear unit (/PG)		
Type/mounting position	**Pressure compensation provided by**	**Representation**
• **MGF..-DSM/WA/PE/PG** • **Operation in the ordered mounting position**	• Integrated pressure compensation in the gear unit (/PG) • Pressure compensation fitting at the connection box (/PE) **installed according to the mounting position**	
• **MGF..-DSM/WA/PE/PG** • **Universal mounting position MU (M1/M2/M3/ M4/M5/M6)**	• Integrated pressure compensation in the gear unit (/PG) • **Included** pressure compensation fitting at the connection box (/PE) (must be installed by the customer) • **Observe chapter "Mechanical installation".**	

	/WA	All parts of the drive unit in design for use in wet areas are highlighted in gray when depicted in figures within this documentation (= surface protection HCP200/HCP200F)
	/PG	Integrated pressure compensation in the gear unit
	/PE	Pressure compensation fitting at the connection box

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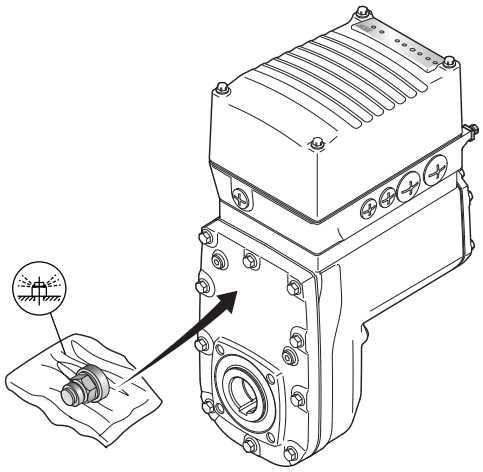
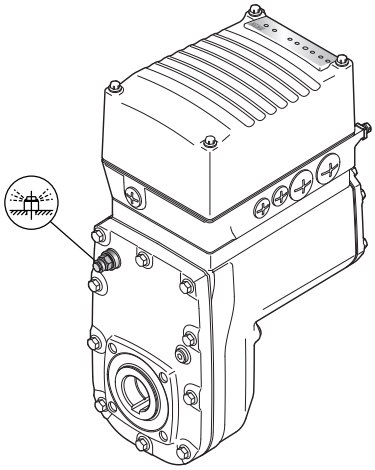
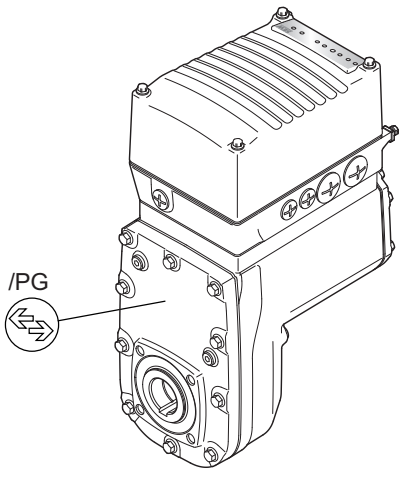
2.2.5 Designs of the MOVIGEAR® performance drive unit

MOVIGEAR® performance drive units in standard design

Type/mounting position	Pressure compensation provided by	Representation
• **MGF..-..-C** • **Universal use in M1/M2/ M4/M5/M6**	• Breather valve included in the delivery (must be installed by the customer)	
• **MGF..-..-C** • **Use in the ordered mounting position M1 or M2 or M4 or M5 or M6**	• Breather valve installed according to the mounting position	
• **MGF..-..-C/PG** • **Universal mounting position MU**	• Integrated pressure compensation in the gear unit (/PG)	

– Breather valve

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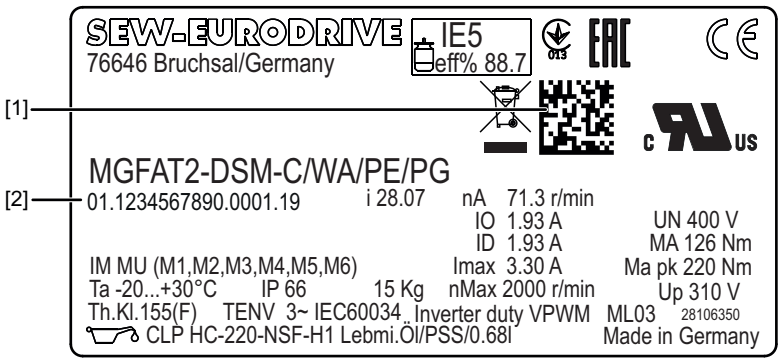
/PG Integrated pressure compensation in the gear unit

2.3 Example nameplate and type designation of the drive unit

2.3.1 MOVIGEAR® classic

Nameplate

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



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[1] The 2D code on the nameplate indicates the unique serial number.
[2] Unique serial number

Type designation

The following table shows the type designation of MOVIGEAR® classic:

MG	**Product family** MG = MOVIGEAR®
F	**Gear unit type** F = Parallel-shaft helical gear unit
A	**Shaft design** A = Shaft-mounted gear unit (hollow shaft with key) T = TorqLOC® hollow shaft mounting system
T	**Housing mounting types** T = Drive with torque arm S = Housing with threads for mounting a torque arm
2	**Size** 1 = Torque class 100 Nm 2 = Torque class 200 Nm 4 = Torque class 400 Nm
–	
DSM	**MOVIGEAR® variant** DSM = Drive unit without electronics

–	
C	**MOVIGEAR® version**
/	
PE	**MOVIGEAR® option** XT = Increased torque (only in conjunction with size 4) DI = Digital interface (MOVILINK® DDI) AZ1Z = Multi-turn encoder with MOVILINK® DDI connection KD1 = Plug connector for digital motor integration KO1 = Plug connector for standard (brake)motor PE = Pressure compensation fitting at the connection box PG = Integrated pressure compensation in the gear unit (only with sizes 2 and 4) WA = Variant for wet areas

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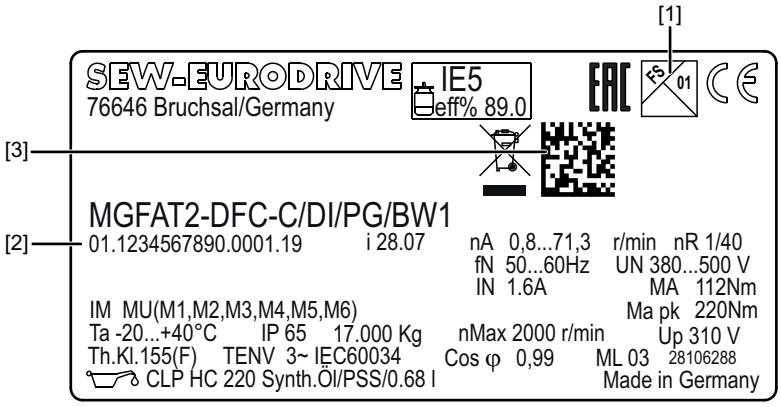
2.3.2 MOVIGEAR® performance

Nameplate

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



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[1] FS logo
[2] Unique serial number
[3] The DataMatrix code on the nameplate indicates the unique serial number.

FS logo description

The FS logo on the nameplate is based on the combination of safety-related components that is installed.

The following FS logo variants are possible:

Device with STO connection via terminals or plug connectors.

Device with MOVISAFE® CSB51A safety option.

Type designation

The following table shows the type designation of MOVIGEAR® performance:

MG	**Product family** MG = MOVIGEAR®
F	**Gear unit type** F = Parallel-shaft helical gear unit
A	**Shaft design** A = Shaft-mounted gear unit (hollow shaft with key) T = TorqLOC® hollow shaft mounting system
S	**Housing mounting types** T = Drive with torque arm S = Housing with threads for mounting a torque arm

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2	**Size** 2 = Torque class 200 Nm 4 = Torque class 400 Nm
–	
DFC	**Communication variant** DFC = **D**irect **F**ieldbus **C**ommunication
–	
C	**MOVIGEAR® version**
/	
DSP	**MOVIGEAR® option** XT = Increased torque (only in conjunction with size 4) DI = Digital interface (MOVILINK® DDI) AZ1Z = Multi-turn encoder with MOVILINK® DDI connection DSP = DynaStop® electrodynamic retarding function IV = Plug connector PE = Pressure compensation fitting at the connection box PG = Integrated pressure compensation in the gear unit BW1 = Integrated braking resistor type: BW1

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3 Mechanical installation

3.1 Gear unit venting

3.1.1 Drive units with installed breather valve

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

3.1.2 Drive units with separately included breather valve

⚠ CAUTION

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

Damage to the drive unit

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

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

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

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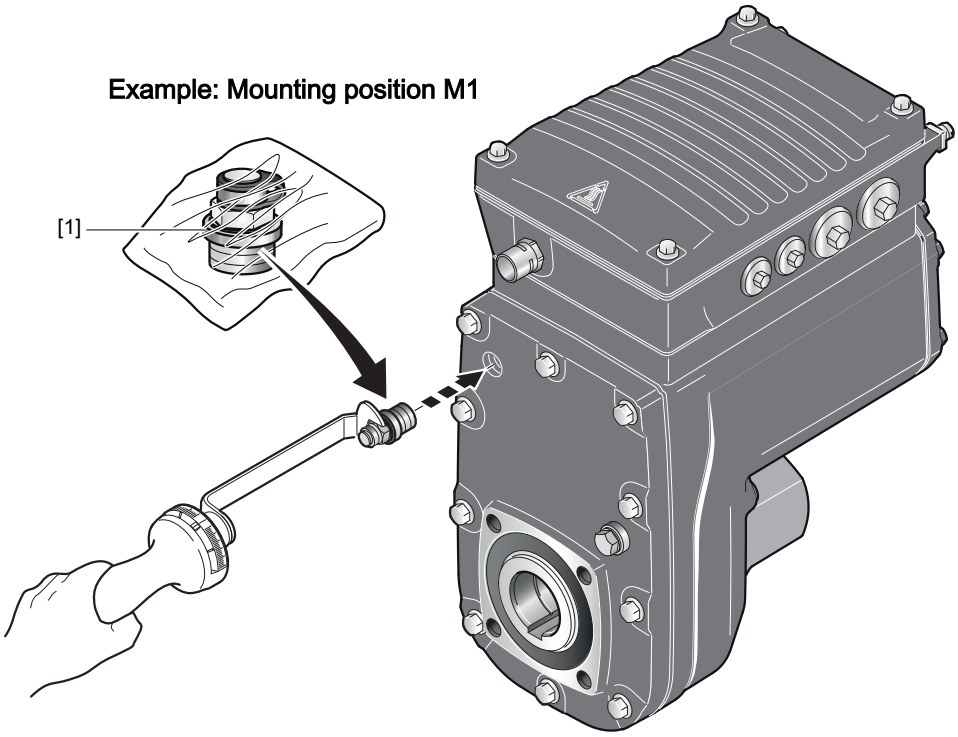
Tightening torque

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 depends on the mounting position in use. Observe chapter "Technical data and dimension sheets" > "Mounting positions".



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[1] Breather valve

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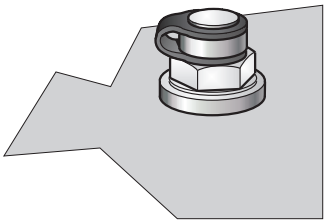
3.1.3 Drive units with integrated pressure compensation in the gear unit (/PG option)

No further measures are required because a breather valve is not required for drive units with integrated pressure compensation in the gear unit (/PG option).

3.1.4 Activating the breather valve (not with the option /PG "integrated pressure compensation in the gear unit")

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, remove the transport fixture of the breather valve before starting up the drive unit.

1. Breather valve with transport protection fixture



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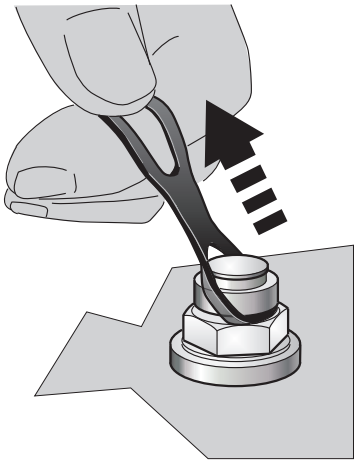
2. Remove transport fixture



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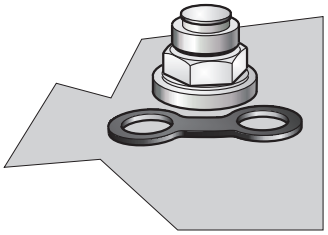
3. Activated breather valve



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3.2 Drive units with optional design for use in wet areas

INFORMATION

SEW-EURODRIVE guarantees that the High Corrosion Protection HCP200/ HCP200F is free of flaws upon delivery. Report any transportation damage immediately.

Treat all housing surfaces with care. The corrosion protection can be affected by damage as a result from improper handling during transport, installation, operation, cleaning, etc. SEW-EURODRIVE is not liable for such damage.

3.2.1 Installation notes

⚠ CAUTION

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

Damage to the drive unit.

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

Observe the following additional notes when installing drive units in the 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 chapter "Inspection and maintenance" in the operating instructions.
- 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".
- You must seal unused cable bushings and plug connectors with suitable screw plugs, see chapter "Technical data".
- To prevent permanent water accumulation in the B-side safety cover, clean it at regular intervals.

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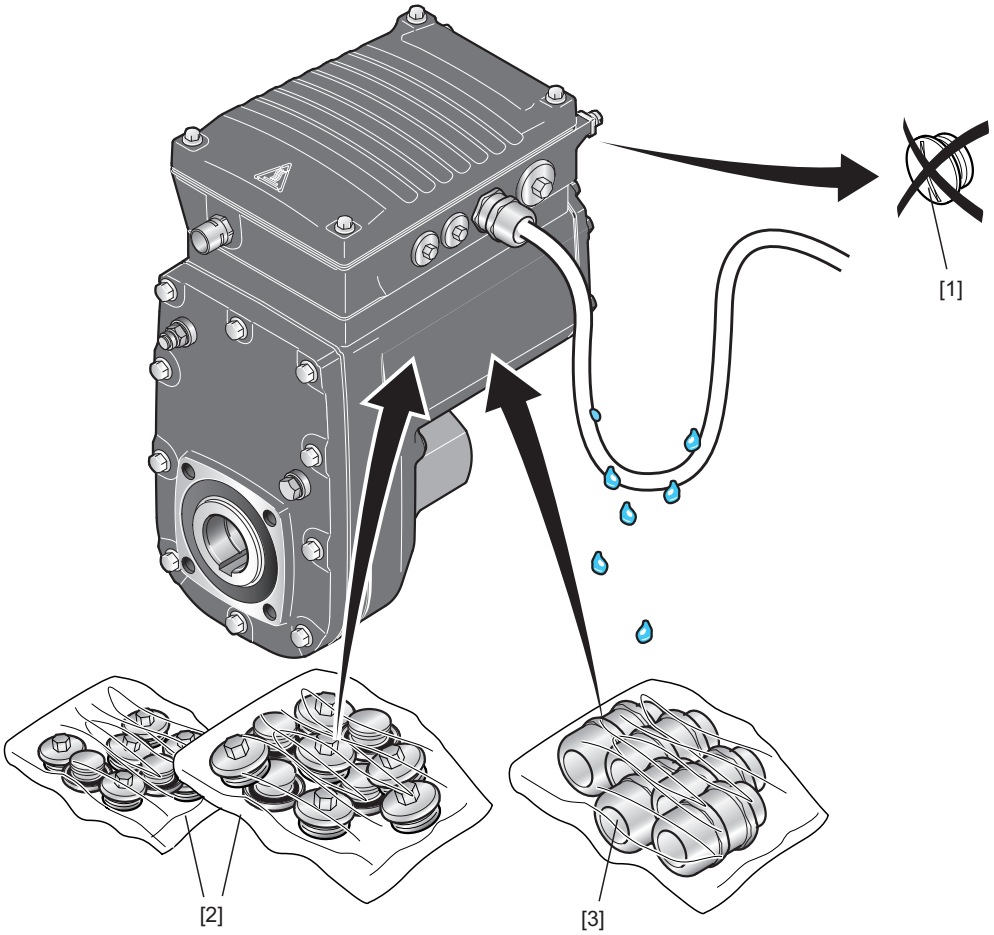
Example of MOVIGEAR® classic

The following figure gives an example of a cable entry with drip loop and the replacement of the 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] Eventually required stainless steel screw plugs (see chapter "Technical data and dimension sheets")
[3] Required stainless steel cable glands (see chapter "Technical data and dimension sheets")

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Use according to mounting position

INFORMATION

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

Drive units with optional design for use in wet areas are delivered with a pressure compensating valve and a pressure compensation fitting in the connection box (/PE) both installed according to the mounting position.

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

This is why 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 with MGF..2-..-C, MGF..4-..-C, MGF..4-..-C/XT: Mounting position M3 is only possible with the option "integrated pressure compensation in the gear unit (/PG)".
  - M3 with MGF..1-..-C: Without restrictions.
  - 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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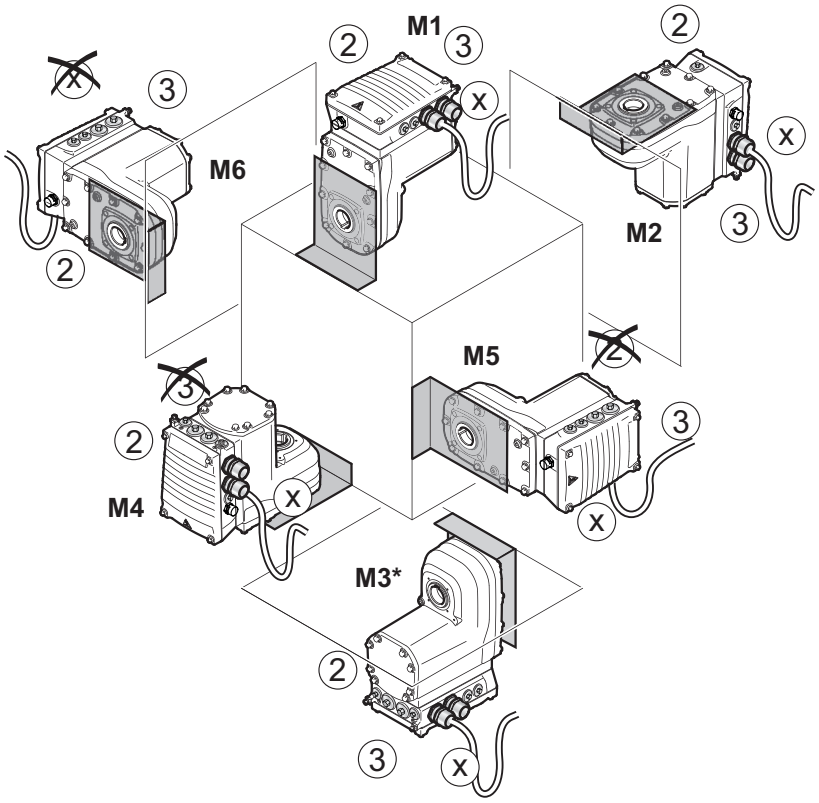
Mounting positions of MOVIGEAR® classic

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



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* **MOVIGEAR® classic MGF..2-..-C, MGF..4-..-C, MGF..4-..-C/XT:**
Mounting position M3 is only possible with the option "integrated pressure compensation in the gear unit (/PG)".
MOVIGEAR® classic MGF..1-..-C:
No restrictions

This cable entry is prohibited in the depicted mounting position

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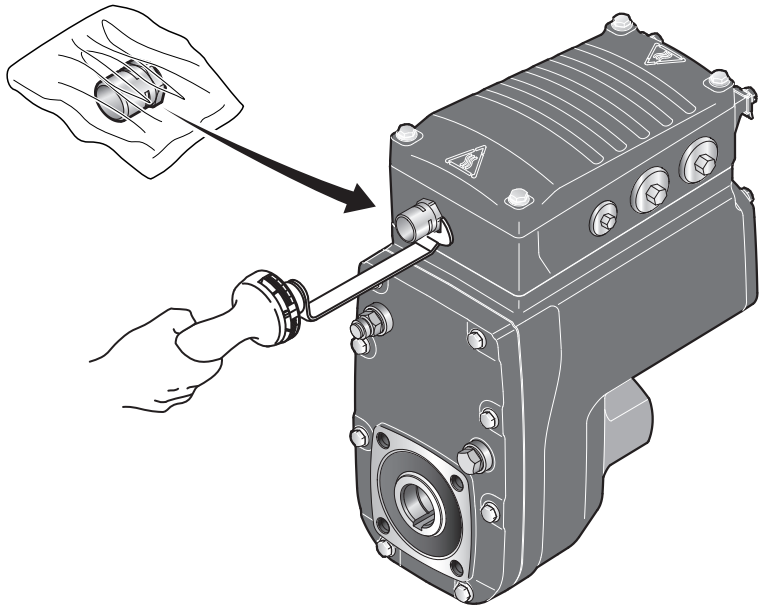
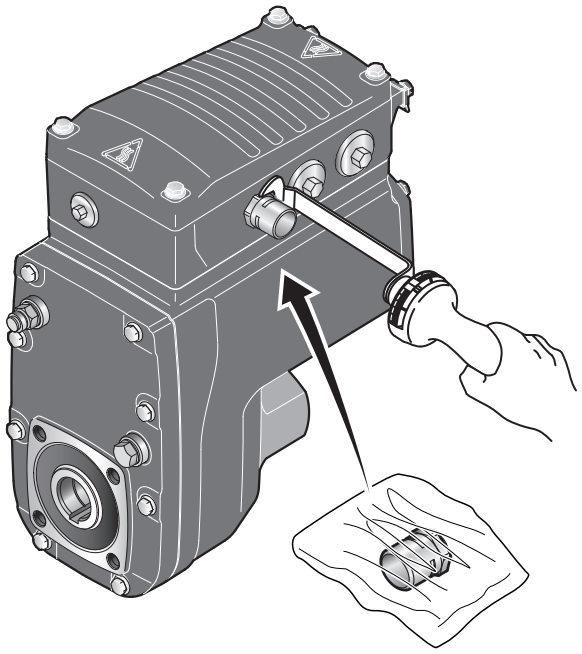
Designs with included pressure compensation fitting at the connection box (option /PE)

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

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

Mounting positions for MGF..1-DSM-C

Mounting position M1, M3, M5, M6
 *31407940363*
Mounting position M2, M4
 *31407997963*

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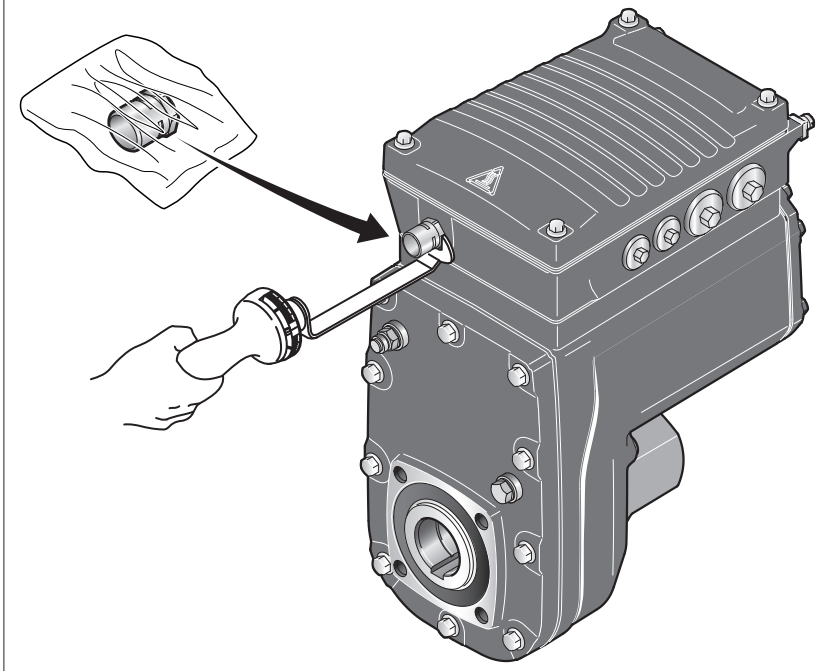
Installation positions MGF..2-DSM-C/WA; MGF..4-DSM-C/WA

Mounting position M1, M3*, M5, M6



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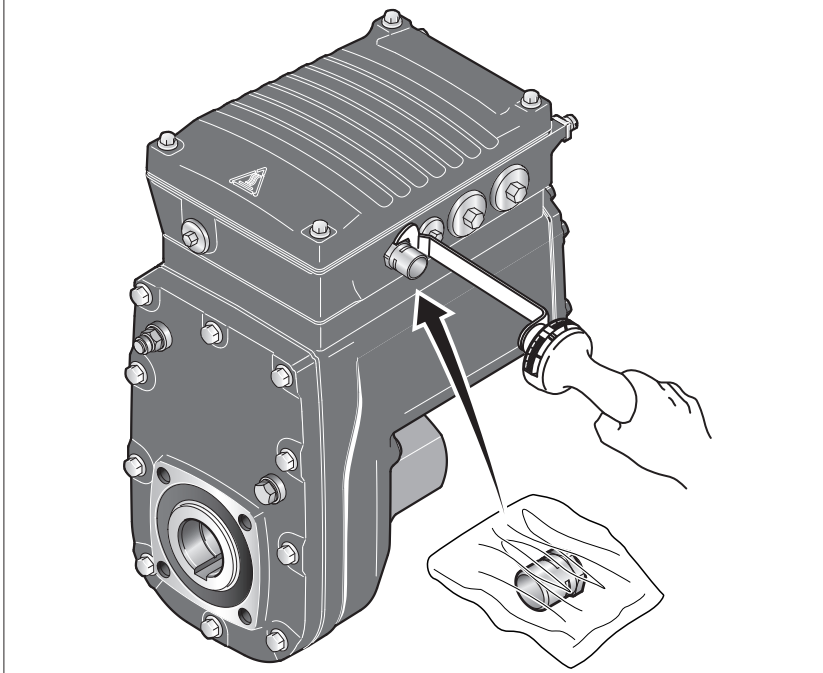
Mounting position M2, M4



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

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3.2.2 Tightening torques when using the optional design for use in wet areas

⚠ WARNING

Risk of burns due to hot surfaces.

Severe injuries can occur.

- Let the devices cool down before touching them.

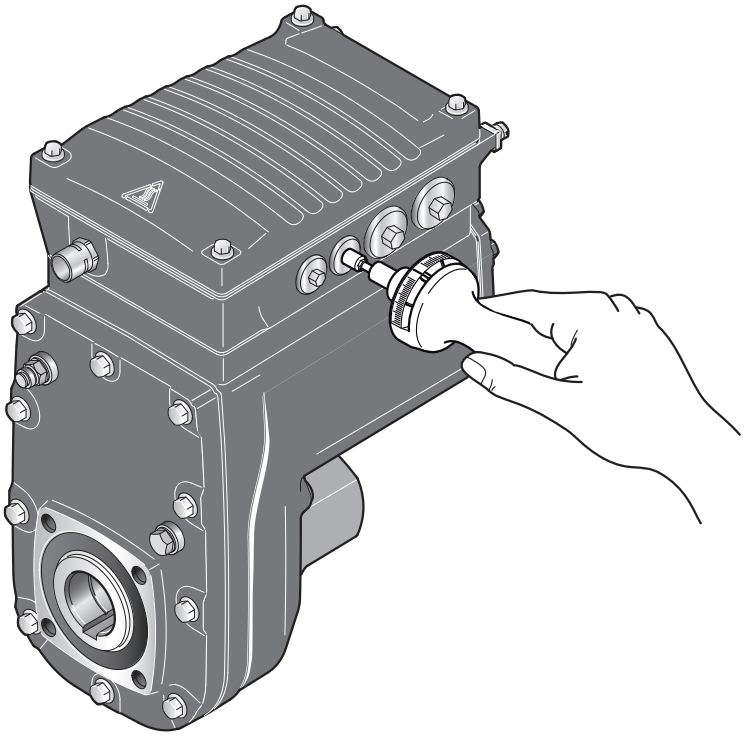
Blanking plugs

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 ×1.5	18247342	6.8 Nm
	10 pieces	M25 × 1.5	18247350	6.8 Nm

Example of MOVIGEAR® classic

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



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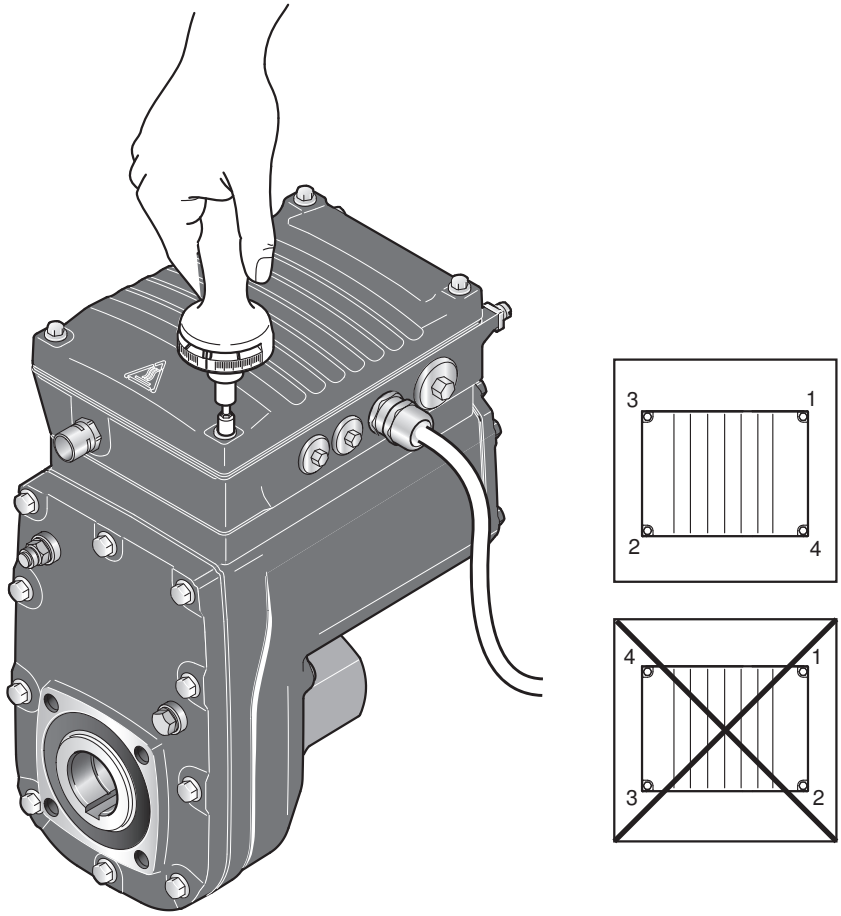
Cover of MOVIGEAR® classic

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-compliant cable glands

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

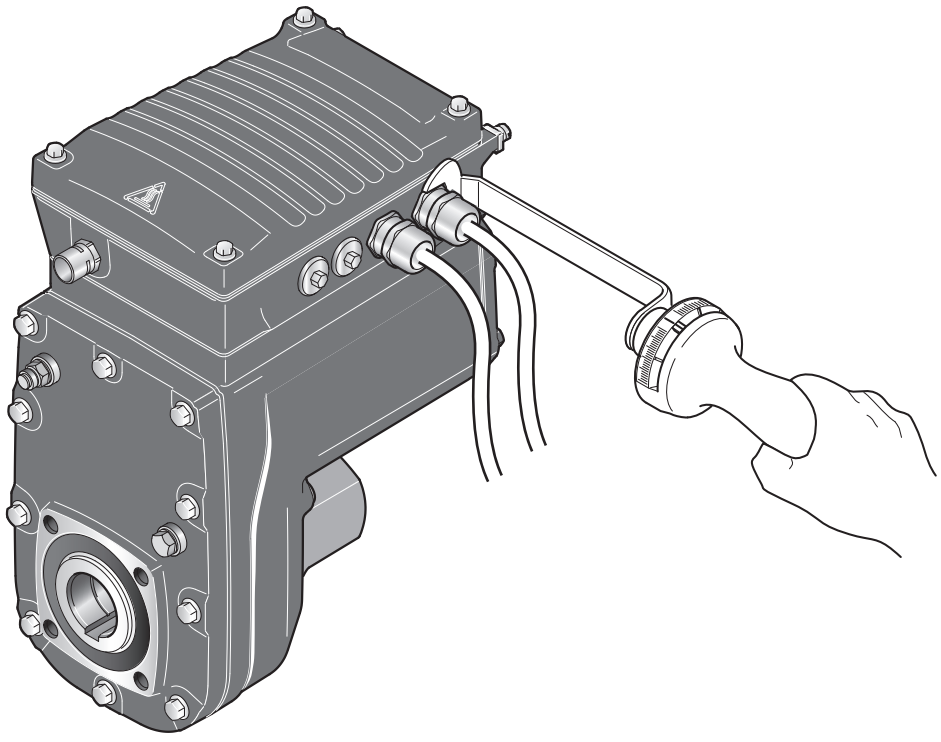
Screw fitting	Part number	Content	Size	Outer cable diameter	Tightening torque
EMC-compliant cable gland (brass, nickel-plated)	18204783	10 pieces	M16 × 1.5	5 – 9 mm	4.0 Nm
	18204805	10 pieces	M25 × 1.5	11 – 16 mm	7.0 Nm
EMC-compliant cable gland (stainless steel)	18216366	10 pieces	M16 × 1.5	5 – 9 mm	4.0 Nm
	18216382	10 pieces	M25 × 1.5	11 – 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 of MOVIGEAR® classic

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



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4 Inspection and maintenance

4.1 Inspection and maintenance intervals /PG option

The following table shows the inspection and replacement intervals for the integrated pressure compensation (/PG option):

Time interval	What to do?	Who is permitted to perform the work?
Every 10000 operating hours[1)]	Have the integrated pressure compensation in the gear unit (/PG option) inspected by SEW-EURODRIVE Service or qualified personnel trained by SEW-EURODRIVE.	SEW-EURODRIVE Service
		Qualified personnel trained by SEW-EURODRIVE

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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5 Project planning

INFORMATION

For information regarding the drive selection, refer to the relevant operating instructions:

- MOVIGEAR® classic MGF..-DSM-C
- MOVIGEAR® performance MGF..-..-C

5.1 Applications in wet areas

SEW-EURODRIVE recommends to use the MOVIGEAR® drive units in the design for wet areas under the following conditions:

- Large temperature differences (e.g. in case the drive is cleaned with cold water immediately after operation).
- In case of changing temperatures (e. g. access to refrigerated storage application)
- In case sealing surfaces come into contact with water during operation
- When the drive is cleaned with low surface tension water and/or chemicals
- In case of cycle mode (S3) in cold and/or humid environment

5.1.1 Support through special consultants

INFORMATION

- These requirements cannot always be imparted in written form. Consulting talks between system operators, system suppliers and component suppliers have proven to be a productive means of clarifying existing conditions and necessary measures.
- SEW-EURODRIVE has a team of competent consultants that offer their active support when it comes to selecting optimum configurations and economical solutions.

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5.1.2 Questionnaire

INFORMATION

To better prepare for a consultation with SEW-EURODRIVE, we ask you to submit the following questionnaire to the nearest SEW location.

Company: .....

Contact person: .....

Phone/fax: .....

E-mail: .....

Street: .....

Postal code: .....

Place, date: .....

1. Information on location

- Detailed description of the plant (e.g. bottle filling, transportation of empty bottles, cans etc.)

  .....

  .....

  .....

- What is the ambient temperature in the plant?

  In the summer approx.: ..... In the winter approx.: .....

- What is the relative humidity in the vicinity of the motor?

  Min: ..... Max.: .....

- Which duty types apply to the motor? (e.g. S1, S3, etc.)

  .....

  .....

- Is the drive subject to extreme temperature fluctuations? (e.g. does the drive run for an extended period of time and then cool down or does the operating environment heat up and then cool down again?)

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.....

.....

.....

- Are you operating other products (third-party products) in the same area?

.....

.....

2. Cleaning the location

- How often does cleaning take place?

  ..... times a day ..... times a week

- Are pressure washers used to clean the location? (e.g. Kärcher)

  ☐ Yes, with ..... ☐ No

- Does the water contain solvents or cleaning agents?

  ☐ Yes, with ..... ☐ No

- Is the drive regularly exposed to liquids, emulsions or other substances used in the ongoing production?

  ☐ Yes, with ..... ☐ No

- Are the components compatible with sealing compounds?

  ☐ Yes ☐ No

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6 Technical data

6.1 Surface protection

6.1.1 General information

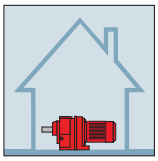
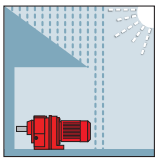
SEW-EURODRIVE offers the following optional protective measure for operating drive units under special environmental conditions.

- OS surface protection
- High Corrosion Protection HCP200/HCP200F (only in connection with the optional design for wet areas)

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

6.1.2 Surface protection

Instead of the standard surface protection, the drive units are optionally available with the OS1 and HCP200/HCP200F surface protection.

Surface protection		Ambient conditions	Sample applications
Standard		Suitable for machines and systems in buildings and enclosed rooms with neutral atmospheres. Similar to corrosivity category[1]: • C1 (negligible)	• Machines and systems in the automotive industry • Conveyor systems in logistics areas • Conveyor systems at airports
OS1		Suited for environments prone to condensation and atmospheres with low humidity or contamination, such as applications outdoors under roof or with protection. Similar to corrosivity category[1]: • C2 (low)	• Systems in saw mills • Hall gates • Agitators and mixers
High Corrosion Protection HCP200/ HCP200F[2]		For wet areas in the food and beverage industry with regular acidic and caustic wet cleaning. Additional with HCP200**F**: Operation in ambient conditions with requirements regarding the food grade approval according to US FDA (no. 21 CFR §175.300)	• Conveyors in the beverage industry • "Splash zones" in the food industry

1) According to DIN EN ISO 12 944-2

2) Only in connection with the optional design for wet areas.

6.1.3 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
Standard with MOVIGEAR®: FKM oil seal (fluorocarbon rubber)	High-quality material	Drives subject to chemical contamination

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Measure	Protection principle	Suited for
Coating 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
As standard, drive units in the optional design for use in wet areas (option /WA) are designed with output shafts made of stainless steel.	Surface protection with high-quality material	Particularly demanding applications in terms of surface protection

6.1.4 NOCO® fluid

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

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

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6.2 Design for wet areas (option /WA)

6.2.1 Sealing material

Resistance to cleaning agents

The sealing material used for the drive units has been tested for compatibility with cleaning agents.

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

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

Acid foam cleaning agent		
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

Demineralized 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
Demineralized water	Demineralized water

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6.2.2 Surface protection High Corrosion Protection HCP200/HCP200F

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

Surface protection with almost non-porous surface and chemical resistance. Approved for contact with food.

Properties

The surface protection High Corrosion Protection HCP200/HCP200F has the following characteristics:

Characteristic	Surface protection High Corrosion Protection	
	HCP200	HCP200F
Abrasion resistance	Good, not suitable for abrasion or high pressure	
Chemical resistance	Excellent	
Solvent resistance	Not soluble	
Corrosion resistance	DIN EN 9227, 720 h	
Flammability	Combustible	
Temperature resistance	-40 to +120 °C	
Color	• RAL5002 (Ultramarine blue) • RAL9006 (White aluminum) • RAL9005 (Jet black) • RAL9018 (Papyrus white)	• RAL9005 (Jet black) • RAL9018 (Papyrus white)
Food grade approval	–	Approved according to US FDA (no. 21 CFR §175.300)

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Resistance to cleaning agents

The surface protection High Corrosion Protection HCP200/HCP200F was tested for compatibility with cleaning agents.

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

Alkaline foam cleaning agent		
Designation	**Application concentration**	**Application temperature**
Topaz MD3	5%	23 °C, 7 days

Acid foam cleaning agent		
Designation	**Application concentration**	**Application temperature**
Topaz AC3	5%	23 °C, 7 days
Topaz AC4	5%	23 °C, 7 days

Neutral foam cleaning agent		
Designation	**Application concentration**	**Application temperature**
Topaz LD1	5%	23 °C, 7 days

Disinfectant		
Designation	**Application concentration**	**Application temperature**
Topax 990	1%	23 °C, 7 days
Topactive DES	3%	23 °C, 7 days

In this test procedure, the components with surface protection HCP200 are placed in a cleaning bath (immersion test based on DIN 50905).

Product specifications

Topaz MD3	Alkaline foam cleaning agent based on sodium hydroxide
Topaz AC3	Acid foam cleaning agent based on phosphoric acid
Topaz AC4	Acid foam cleaning agent based on citric acid/sulfamide acid
Toapz LD1	Neutral foam cleaning agent based on phosphates anionic surfactants, non-ionic surfactants, polycarboxylates
Topax 990	Alkaline foam disinfectant based on alkylamine acetate
Topactive DES	Peroxide-containing acid foam disinfectant based on acetic acid

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6.2.3 Cleaning

Observe the following information for cleaning the unit.

⚠ **WARNING!** Risk of intoxication due to developing chlorine gas when acids and chlorine alkalis are mixed. Severe or fatal injuries.
Do not mix acids and chlorine alkalis under any circumstances. Observe the safety instructions of the cleaning agent manufacturer.

⚠ **WARNING!** Unwanted secondary reactions (such as development of toxic fumes or odors) when cleaning agents and disinfectants are mixed. Severe or fatal injuries.
Do not mix cleaning agents and disinfectants under any circumstances. Observe the safety instructions of the cleaning agent manufacturer.

NOTICE! The surface protection High Corrosion Protection HCP200/HCP200F is not suitable for cleaning with chlorine alkalis. Damage to the device.
Do not use cleaning agents with chlorine alkali. Use tested cleaning agents and disinfectants.

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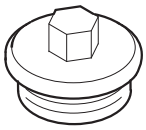
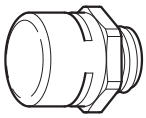
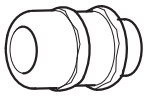
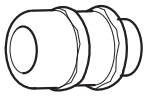
6.3 Screw fittings

The following tables show the screw connections available from SEW-EURODRIVE.

6.3.1 Cable glands / screw plugs / pressure compensation

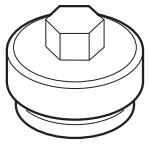
Type of screw fitting	Image	Content	Size	Tightening torque[1]	Outer cable diameter	Part number
Screw plugs external hexagon (made of stainless steel)		10 pieces	M16 × 1.5	6.8 Nm	–	18247342
		10 pieces	M25 × 1.5	6.8 Nm	–	18247350
Pressure compensation screw fittings (made of stainless steel)		1 piece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

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

6.3.2 Screw fittings of the potentiometer

Type of screw fitting	Image	Content	Size	Tightening torque[1]	Part number
Hexagon head screw plug for potentiometer (stainless steel)		10 piece	M24 × 1.5	6.8 Nm	18241077

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

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6.4 Mounting positions

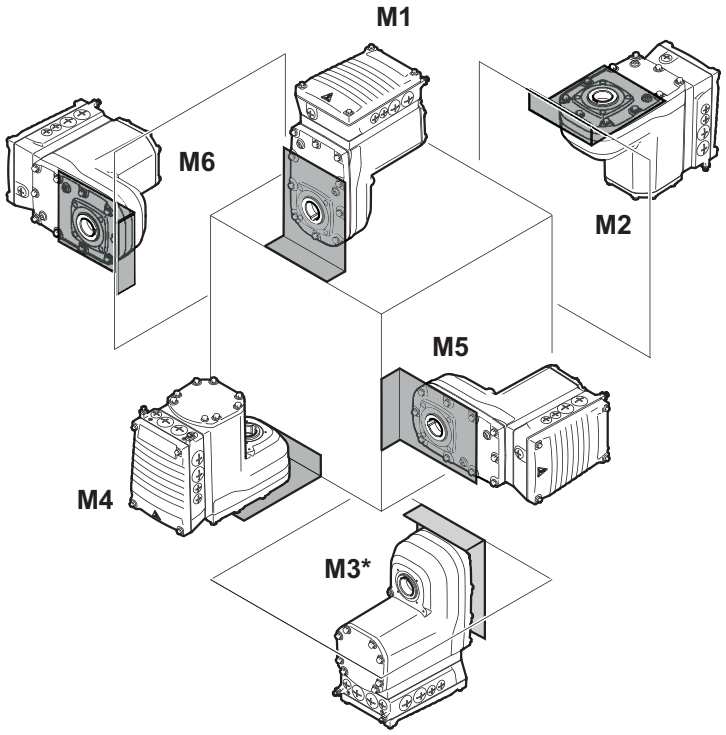
6.4.1 Description of mounting positions

The following mounting positions are possible for the 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, M2, M3, M4, M5, M6) with option "integrated pressure compensation in the gear unit /PG".

Mounting positions M1 to M6 MOVIGEAR® classic

The following figure shows the position of the drive unit when installed in mounting positions M1 to M6:



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*** MOVIGEAR® classic MGF..2-..-C, MGF..4-..-C, MGF..4-..-C/XT:**
Mounting position M3 is only possible with the option "integrated pressure compensation in the gear unit (/PG)".
MOVIGEAR® classic MGF..1-..-C:
No restrictions

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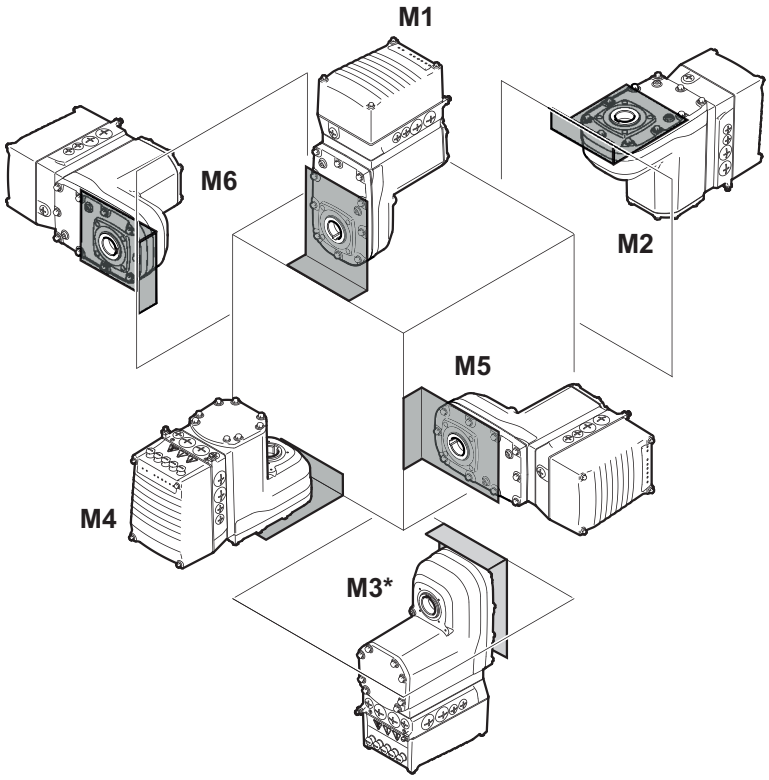
Mounting positions M1 to M6 MOVIGEAR® performance

The following figure shows the position of the drive unit when installed in mounting positions M1 to M6:



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

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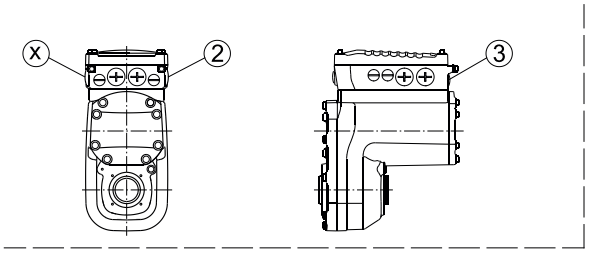
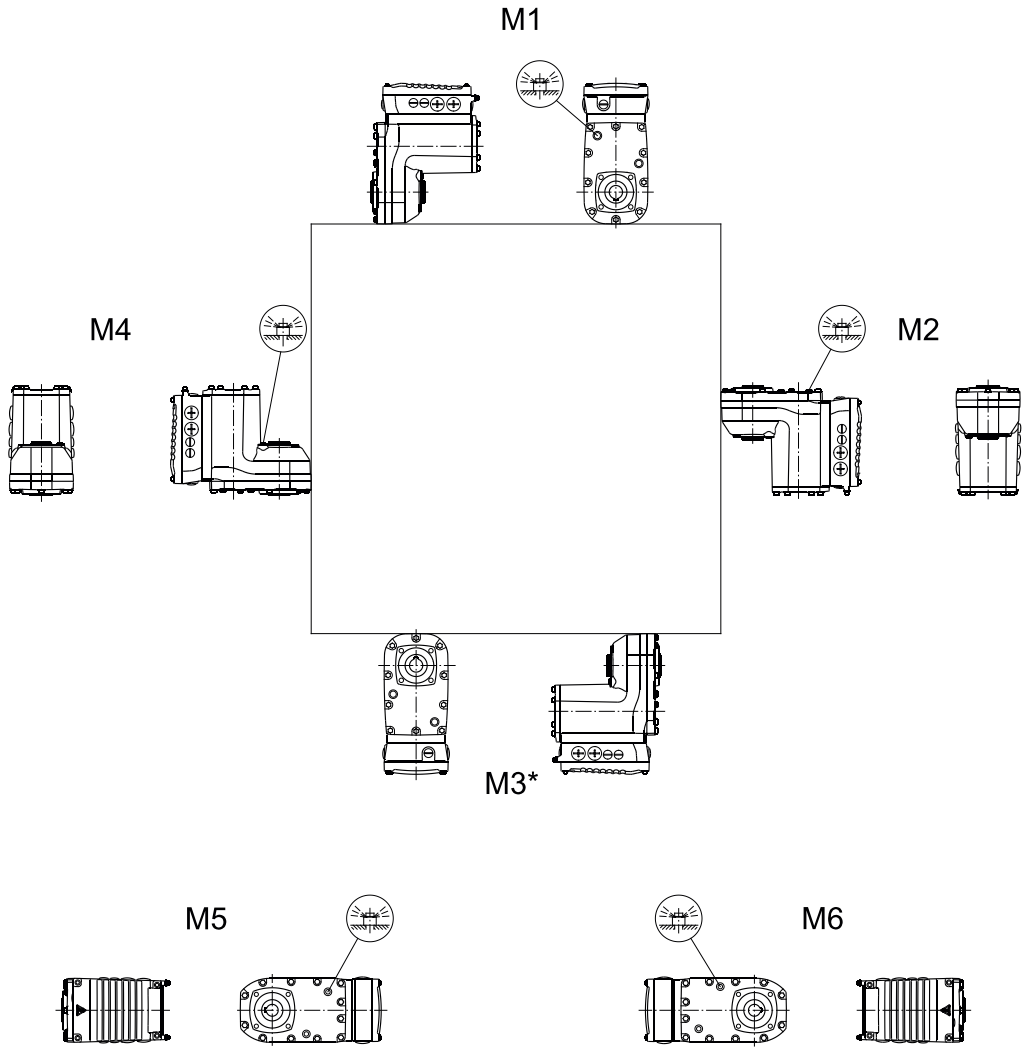
6.4.2 Mounting position sheet for MOVIGEAR® classic

03 014 00 18





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* **MOVIGEAR® classic MGF..2-..-C, MGF..4-..-C, MGF..4-..-C/XT:**
Mounting position M3 is only possible with the option "integrated pressure compensation in the gear unit (/PG)".
MOVIGEAR® classic MGF..1-..-C:
No restrictions

Breather valve

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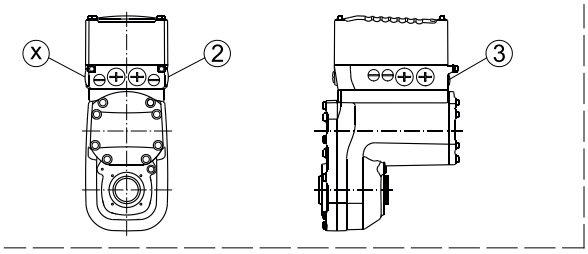
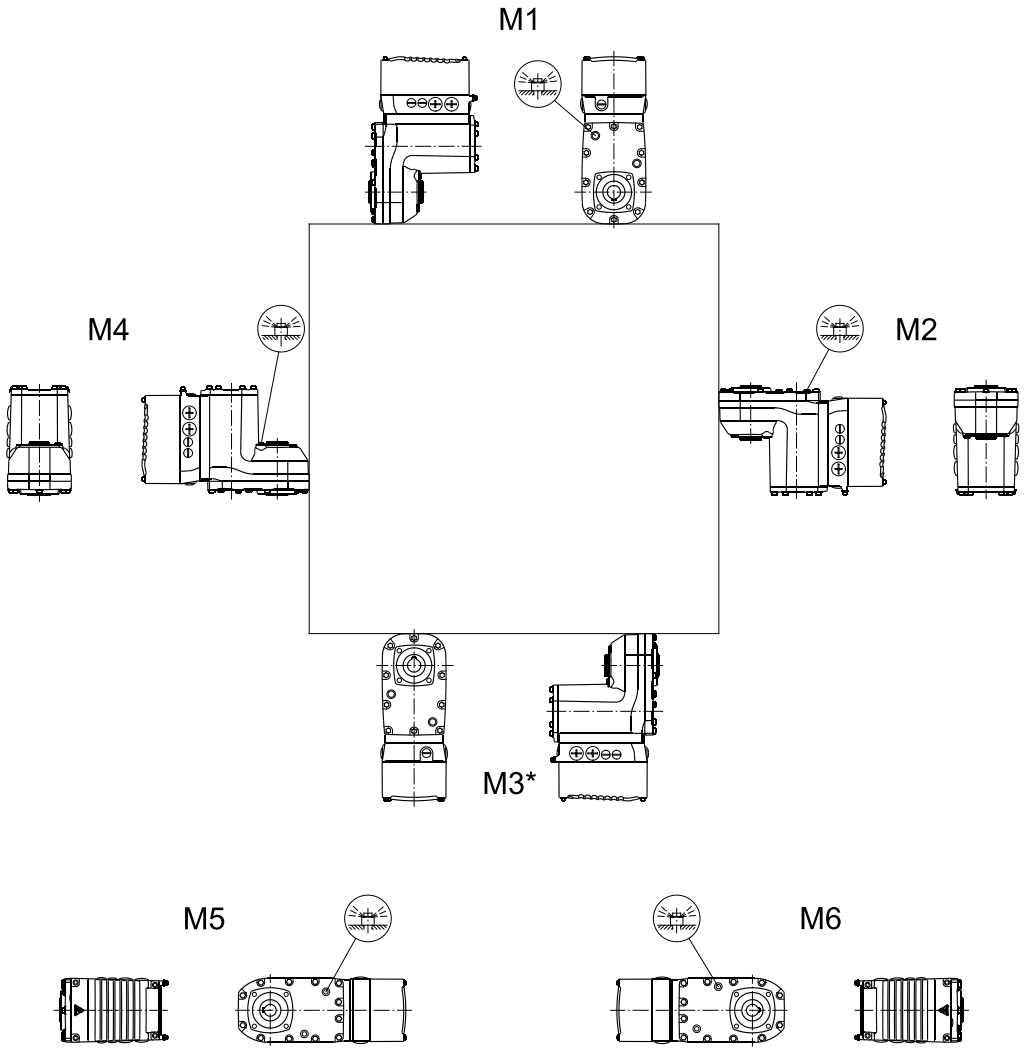
6.4.3 Mounting position sheet for MOVIGEAR® performance

03 015 00 18





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

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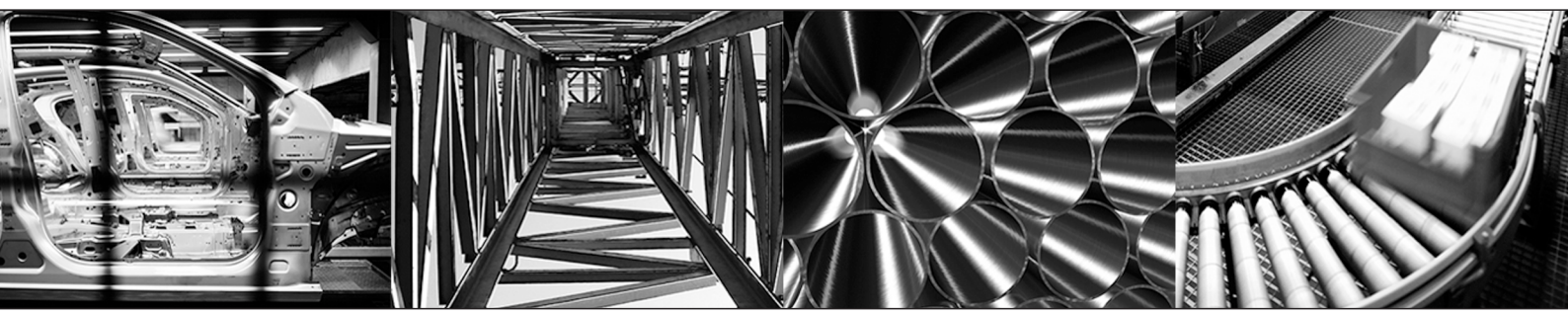

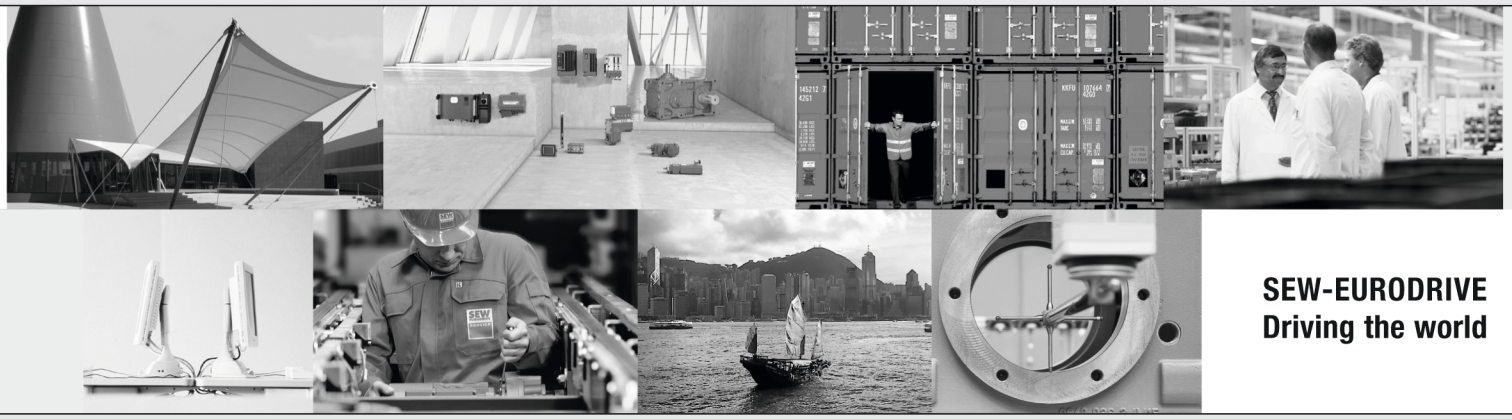

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