



SEW
EURODRIVE

Operating Instructions



Decentralized Drive Controller
MOVIFIT® FDC



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1 General information

1.1 About this documentation

The current version of the documentation is the original.

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

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

1.2 Structure of the safety notes

1.2.1 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.	

1.2.2 Structure of section-related safety notes

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

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



SIGNAL WORD

Type and source of hazard.

Possible consequence(s) if disregarded.

- Measure(s) to prevent the hazard.

Meaning of the hazard symbols

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

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

1.2.3 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.

1.3 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.

1.4 Other applicable documentation

Also take note of the documentation for MOVIGEAR® and DRC.. drive units:

- Operating instructions of the connected MOVIGEAR® and/or DRC.. drive units, such as:
 - "MOVIGEAR® DSC-B" operating instructions
 - "MOVIGEAR® SNI-B" operating instructions
 - "Electronic Motor DRC...-DSC" operating instructions
 - "Electronic Motor DRC...-SNI" operating instructions
- "DHE/DHF/DHR21B (standard) and DHE/DHF/DHR41B (advanced) controllers" manual
- "Application Configurator for CCU" manual
- "SNI-I/O System" operating instructions

1.5 Product names and trademarks

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

1.6 Copyright notice

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2 Safety notes

2.1 Preliminary information

The following general safety notes 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, and who possess the following qualifications: • Qualifications in the field of mechanics in accordance with the national regulations • Familiarity with this documentation
Specialist for electrotechnical work	Any electrotechnical work may be performed only by electrically skilled persons with a suitable education. Electrically skilled persons in the context of this documentation are persons who are familiar with electrical installation, startup, troubleshooting, and maintenance of the product, and who possess the following qualifications: • Qualifications in the field of electrical engineering in accordance with the national regulations • Familiarity with this documentation
Additional qualification	In addition to that, these persons must be familiar with the valid safety regulations and laws, as well as with the requirements of the standards, directives, and laws specified in this documentation. The persons must have the express authorization of the company to operate, program, parameterize, label, and ground units, systems, and circuits in accordance with the standards of safety technology.
Instructed persons	All work in the areas of transportation, storage, operation and waste disposal must be carried out by persons who are trained appropriately. The purpose of the training 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 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.

2.5 Functional safety technology

The product must not perform any safety functions without a higher-level safety system unless explicitly allowed by the documentation.

2.6 Transport

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.
- Before transportation, cover the connections with the supplied protection caps.
- Only place the product on the cooling fins or on the side without connectors during transportation.
- Always use lifting eyes if available.

If necessary, use suitable, sufficiently dimensioned handling equipment.

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

2.7 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.

2.7.1 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 4000 m above sea level

The product can be used at altitudes above 1000 m above sea level up to 4000 m above sea level under the following conditions:

- The reduction of the nominal output current and/or the line voltage is considered according to the data in chapter "Technical data" in the documentation.
- Above 2000 m above sea level, the air and creepage distances are only sufficient for overvoltage class II according to EN 60664. At altitudes above 2000 m above sea level, limiting measures must therefore be taken that reduce the line side overvoltage from category III to category II for the entire system.
- If a protective electrical separation (in accordance with EN 61800-5-1 and EN 60204-1) is required, then implement this outside the product at altitudes of more than 2000 m above sea level.

2.8 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).

2.8.1 Required preventive measure

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

2.9 Protective separation

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

2.10 Startup/operation

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

Make sure that the present transport protection is removed.

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

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

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

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

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

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

Do not separate the connection to the product during operation.

This may result in dangerous electric arcs damaging the product.

If you disconnect the product from the voltage supply, do not touch any live components or power connections because capacitors might still be charged. Observe the following minimum switch-off time:

5 minutes.

Observe the corresponding information signs on the product.

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

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

Risk of burns: The surface temperature of the product can exceed 60 °C during operation.

Do not touch the product during operation.

Let the product cool down before touching it.

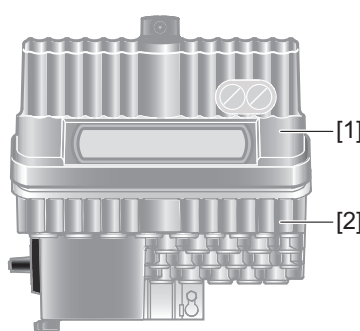
3 Device structure

3.1 MOVIFIT® FDC

MOVIFIT® FDC is a decentralized drive controller for controlling the following units:

- MOVIGEAR® SNI-B drive units
- MOVIGEAR® DSC-B drive units
- DRC...-SNI drive units
- DRC...-DSC drive units
- MOVIFIT® FC slave units
- SNI I/O system

The following figure shows an example of a standard-design MOVIFIT® FDC device:



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- [1] EBOX (active electronics device)
- [2] ABOX (passive connection device)

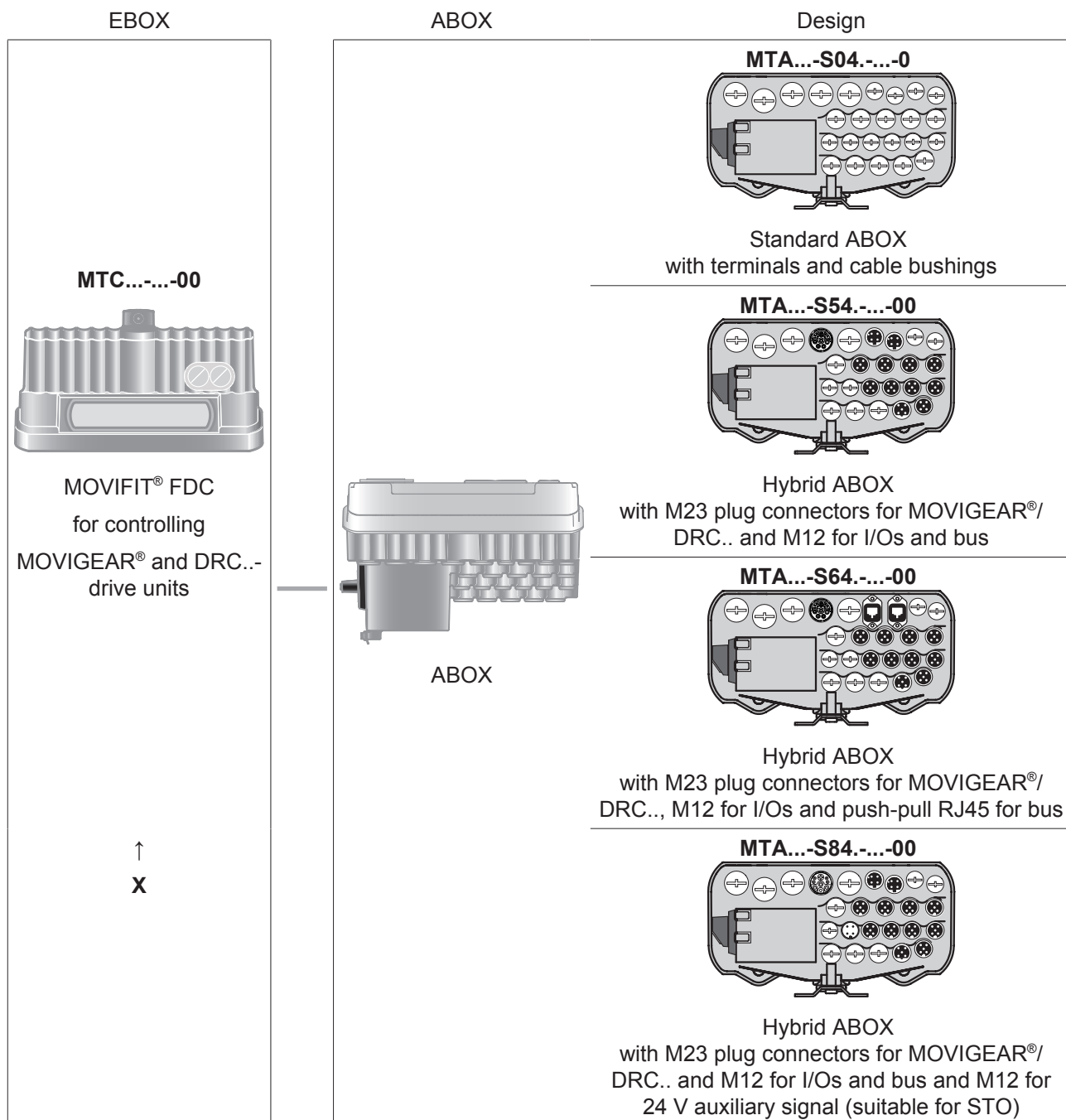
3.1.1 MOVIFIT® FDC device properties

MOVIFIT® FDC is characterized by the following features:

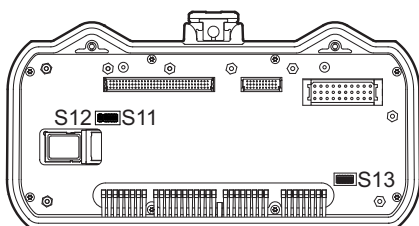
- Up to 10 SNI actuators or 16 SBus actuators can be connected
- **Single Line Network Installation (SNI)** and/or SBus communication
- Industrial Ethernet with the following protocols:
 - PROFINET IO
 - Modbus TCP
 - EtherNet/IP™
- Service interface via:
 - USB
 - Ethernet
- Maintenance switch
- 12 digital inputs + 4 digital inputs/outputs
- Configurable application modules
- User-defined programming in accordance with IEC 61131-3
- Easy data management via SD memory card

3.2 Overview

The following figure shows the MOVIFIT® FDC designs described in these operating instructions with the standard ABOX and the hybrid ABOX:



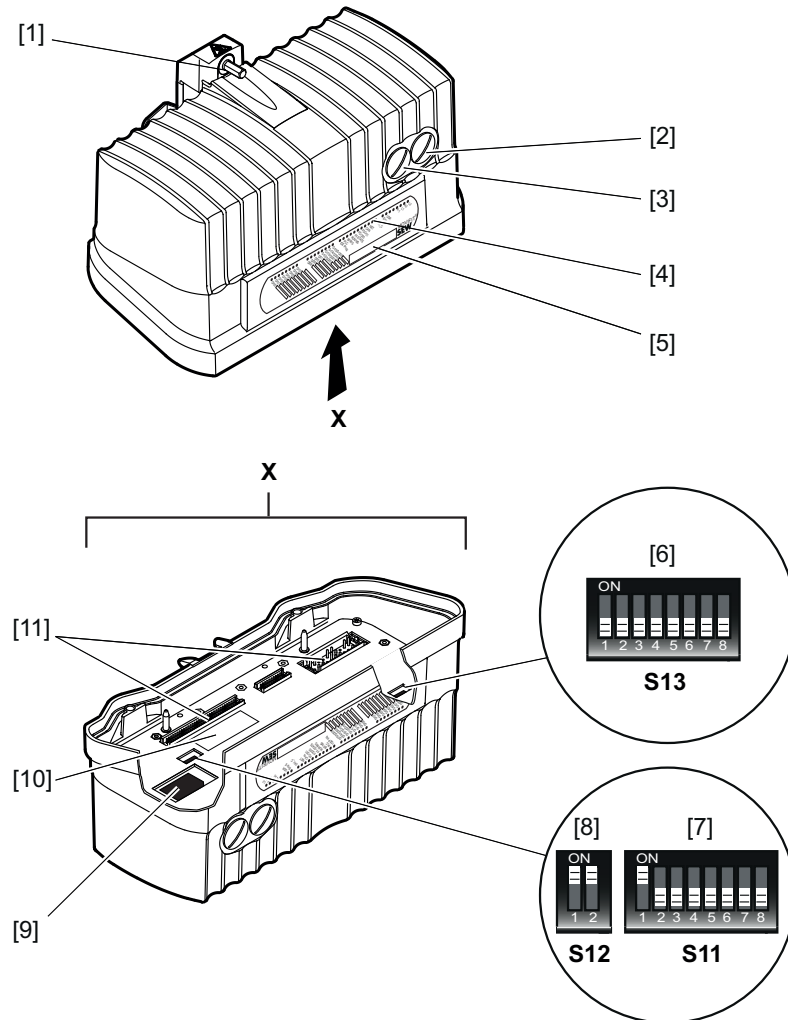
X: Detailed view of the EBOX from bottom



3.3 EBOX (active electronics unit)

The MOVIFIT® FDC EBOX is an electronics device with communication interface and I/O system for controlling MOVIGEAR® and DRC..- drive units:

EBOX "MTC...-....-00"



9007202295760523

- [1] Central opening/closing mechanism
- [2] EtherNet service interface (underneath the screw plug)
Use only screw plugs with part number 18130623.
- [3] USB interface (underneath the screw plug)
Use only screw plugs with part number 18130623.
- [4] Operation LEDs for I/Os (can be labeled), communication, and device status
- [5] External nameplate
- [6] DIP switch S13 (reserved) Do not change the DIP switch settings.
- [7] DIP switch S11 (reserved) Do not change the DIP switch settings.
- [8] DIP switch S12 for selecting the communication protocol and for IP address allocation
- [9] SD memory card
- [10] Internal nameplate
- [11] ABOX connection

3.3.1 SD memory card

The SD memory card is used for central data management of MOVIFIT® FDC and thus enables easy replacement of the EBOX during servicing. It contains the firmware, the IEC program, and user data.

The memory card slot is located inside the EBOX. This position ensures the degree of protection of MOVIFIT® FDC and enables easy access.

MOVIFIT® FDC is available with the following memory cards, among others:

Short designation	Performance class	SD memory card	
		Type	Property
R95	CCU standard	OMC41B-T0	Parameterizable controller T0: Use of application modules such as Universal module or RapidCreep via the <i>Application Configurator</i> program module
R96	MOVI-PLC® standard	OMH41B-T0	Programmable controller T0: Use of the <i>MultiMotion Light</i> program module
R97	CCU advanced	OMC41B-T0 to OMC41B-T1	Parameterizable controller T0: Use of application modules such as Universal module or RapidCreep via the <i>Application Configurator</i> program module T1: Additional use of brake test
R98	MOVI-PLC® advanced	OMH41B-T0 to OMH41B-T2	Programmable controller T0: Use of the <i>MultiMotion Light</i> program module T1: Additional use of brake test T2: Use of the <i>MultiMotion</i> program module

- When using the SD memory card OMC41B-T..., you can freely **parameterize** the MOVIFIT® FDC.
- When using SD memory card OMH41B-T, you can freely **program** MOVIFIT® FDC (programming languages in accordance with IEC 61131-3).

3.3.2 Configurable application controller (control card)

When using an SD card of the type OMC41B-T0, you can use MOVIFIT® FDC as a configurable application controller (CCU). The *Application Configurator* program module can be used to run standardized application modules created by SEW-EURODRIVE. The application modules can be started up quickly and conveniently by graphical configuration. A defined process data interface provides this function to the higher-level controller. A process data monitor with control mode is available to support the startup procedure.

Performance class CCU standard

The CCU standard performance class is intended for application modules with single-axis function and medium response times. A maximum of 16 axes (max. 10 of them SNI axes) can be connected to a configurable application controller. The following application modules are available and can be started up using the *Application Configurator* tool.

- Speed control
- Cam positioning
- Bus positioning with 6 process data
- Single-axis universal module

Performance class CCU advanced

The CCU advanced performance class is intended for application modules with single-axis function and short response times. A maximum of 16 axes (max. 10 of them SNI axes) can be connected to a configurable application controller. The following application modules are available:

- Single-axis function:
 - Speed control
 - Cam positioning
 - Bus positioning with 6 process data
 - Single-axis universal module

3.3.3 Freely programmable motion and logic controller card (MOVI-PLC®)

When using an SD card of the type OMH41B-T0, you can use MOVIFIT® FDC as freely programmable motion and logic controller MOVI-PLC®. MOVI-PLC® is a series of programmable motion and logic controllers. It allows drive solutions, logic processes and sequence controls to be automated simply and efficiently using IEC 61131-3 compliant programming languages.

- MOVI-PLC® is a **universal** solution because it is able to control the entire portfolio of SEW inverters and offers a simple upgrade to a more powerful MOVI-PLC® version thanks to the universal execution of the programs.
- MOVI-PLC® is **scalable** due to several different hardware platforms (MOVI-PLC® standard, MOVI-PLC® advanced, etc.) and modular software concepts (libraries for numerous applications).
- MOVI-PLC® is **powerful** due to extensive technologies (such as electronic cam, synchronous operation) and the control of sophisticated applications (such as material handling).

MOVI-PLC® standard performance class

The control card of the MOVI-PLC® standard performance class enables the performance of coordinated single-axis movements and the integration of external inputs/outputs and Drive Operator Panels (DOP). This means the control card is suitable for use as a module controller or stand-alone controller for machines of medium complexity. SEW-EURODRIVE recommends the *MultiMotion Light* program module for programming.

MOVI-PLC® advanced performance class

The MOVI-PLC® advanced performance class supplements the MOVI-PLC® standard performance class with short response times and the possibility of performing complex technology functions, such as synchronous operation or robotics. SEW-EURODRIVE recommends the *MultiMotion* program module for programming.

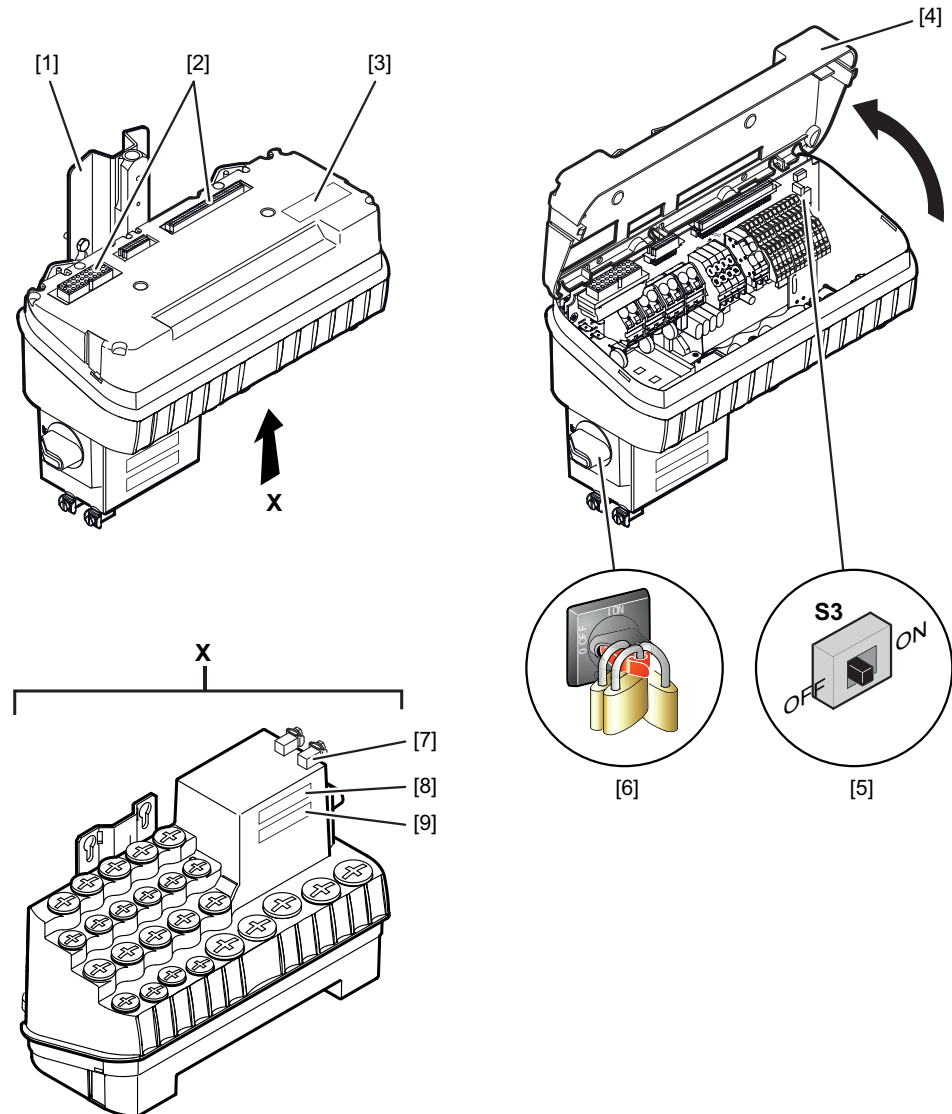
3.3.4 Actuator module (SNI)

The actuator module of the EBOX modulates the SNI communication onto the supply system cable. Communication and power supply of the connected SNI stations is via one SNI cable (**SNI** = **S**ingle **L**ine **N**etwork **I**nstallation).

3.4 ABOX (passive connection unit)

The following figure depicts an example of the MOVIFIT® standard ABOX:

ABOX "MTA.....-00"



9007202295743243

- [1] Mounting rail
- [2] Connection to EBOX
- [3] Inner nameplate of the ABOX
- [4] Protection cover
- [5] DIP switch S3 for SBus bus termination
- [6] Maintenance switch (triple lock)
- [7] Grounding screws
- [8] Identification tag of the ABOX
- [9] Outer nameplate of the ABOX

3.4.1 Maintenance switch

**⚠ WARNING**

Electric shock due to dangerous voltages in the ABOX.

Severe or fatal injuries.

- De-energize the MOVIFIT® device. Observe the minimum switch-off time after disconnection from the supply system:
 - **5 minutes**

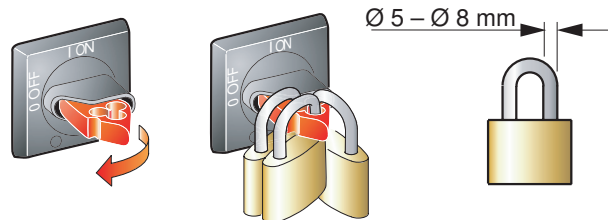
**NOTICE**

Increased wear of the switch contacts.

Destruction of the switch contacts.

- Do not operate the maintenance switch under load.

The maintenance switch of the ABOX is used to disconnect the AC 400 V voltage supply to the connected MOVIGEAR® or DRC..- drive units. The maintenance switch can be locked with a maximum of 3 locks.



1136352395

If the maintenance switch is located in the "0" position, voltage is still present at some of the terminals in the ABOX.

When a valid enable signal for a MOVIGEAR® or DRC.. drive unit is pending, the motor of the drive unit is supplied with current as soon as the maintenance switch is set to "1".

MOVIFIT® FDC can be configured with the following maintenance switches for the line and device protection of the following devices:

Identification on the nameplate	Maintenance switch	Tripping current	Recommended cable cross-section
	Type		
..M16..	ABB MS325-16	15 A	2.5 mm ²
..M20..	ABB MS325-25	20 A	4.0 mm ²

3.5 Design for wet areas/corrosion protection (optional)

3.5.1 Characteristics

The design for wet areas has the following properties:

- IP65 in accordance with EN 60529 (MOVIFIT® housing closed and all cable entries and plug connections sealed according to the relevant degree of protection)
- Easy-to-clean housing (self-draining design)
- Surface coating with anti-stick property (= surface protection HP200)
- High impact resistance of the surface against mechanical damage
- Coated mounting rail with anti-stick properties
(= HP200 surface protection)

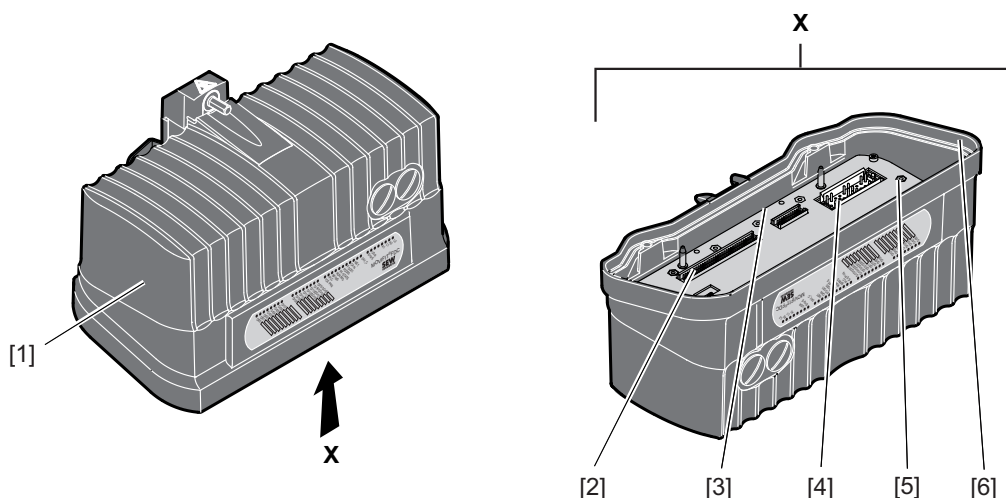
INFORMATION



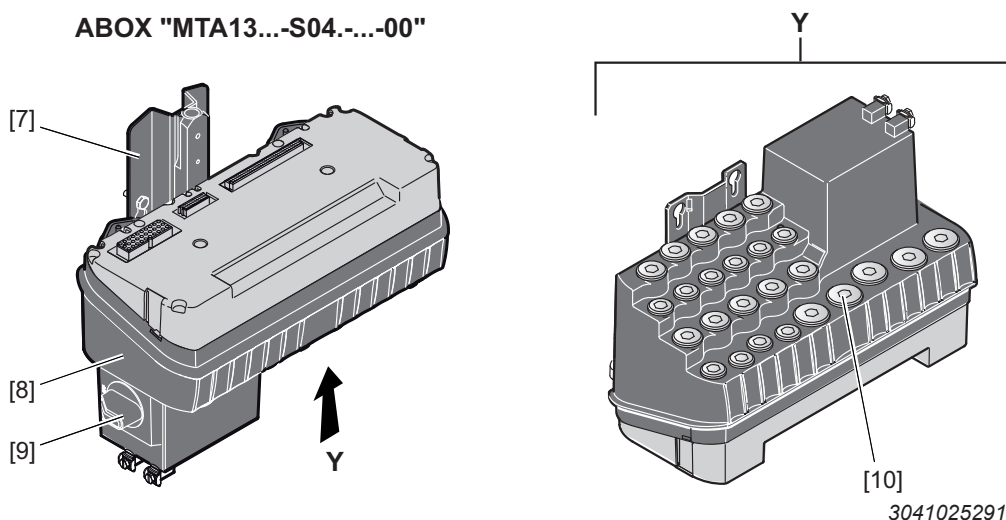
The design for wet areas is available only in connection with the standard ABOX "MTA13...-S04.-...-00".

The following figure depicts the additional properties of MOVIFIT® devices in the optional design for wet areas:

EBOX "MTC13...-....-00"



ABOX "MTA13...-S04.-...-00"



- [1] EBOX with surface coating (available in only one color)
- [2] Signal plug connector
- [3] Gasket between ABOX and cover plate
- [4] Power plug connector
- [5] Screws with thread sealant
- [6] Replaceable profile seal
- [7] Mounting rail with surface coating
- [8] ABOX with surface coating (available in only one color)
- [9] Maintenance switch
- [10] Screw plugs made of stainless steel (optionally available)

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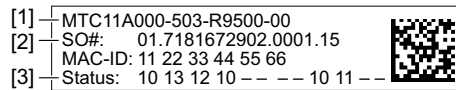
3.6 MOVIFIT® FDC type designation

3.6.1 EBOX

EBOX nameplates

Outer nameplate EBOX

The following figure shows an example of an **outer** nameplate of the EBOX of MOVIFIT® FDC:

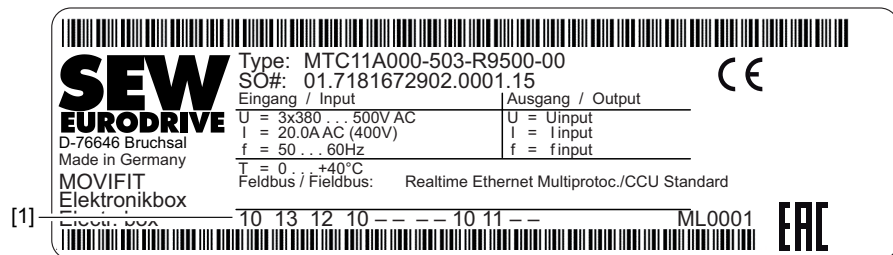


13849000075

- [1] EBOX type designation
- [2] Serial number
- [3] Status field

Inner nameplate EBOX

The following figure shows an example of an **inner** nameplate of the EBOX of MOVIFIT® FDC:



18014401809034891

- [1] EBOX status field

EBOX type designation

The following table shows an example of the type designation of the MOVIFIT® **MTC11A000-503-R9500-00** FDC EBOX:

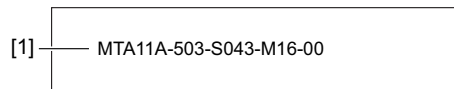
MT	Series	MT = MOVIFIT®
C	Device type	C = MOVIFIT® FDC
11	Series	11 = Standard (IP65) 13 = Design for wet areas (IP65)
A	Version A	
000	Device power	000 = MTC variant (MOVIFIT® FDC)
-		
50	Connection voltage	50 = 380 V – 500 V
3	Connection type	3 = 3-phase (AC)
-		
R9500	Design Performance class (SD memory card)	R95.. = OMC41B-T0 (CCU standard, parameterizable) R96.. = OMH41B-T0 (MOVI-PLC® standard, programmable) R97.. = OMC41B-T0 – OMC41B-T1 (CCU advanced, parameterizable) R98.. = OMH41B-T0 – OMH41B-T2 (MOVI-PLC® advanced, programmable)
-		
00	EBOX design	00 = Series

3.6.2 ABOX

ABOX nameplates

ABOX device identification

The following figure shows an example of the ABOX identification tag of MOVIFIT® FDC:

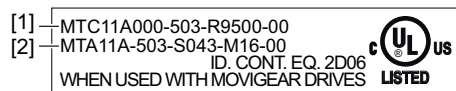


13850947211

[1] ABOX type designation

Outer nameplate ABOX

The following figure shows an example of an **outer** nameplate of the ABOX of MOVIFIT® FDC:

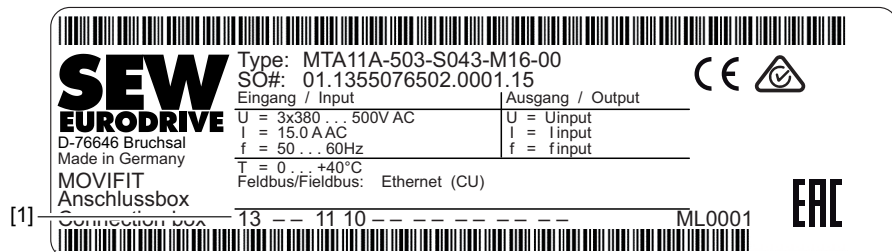


13851078411

[1] EBOX type designation
[2] ABOX type designation

Inner nameplate ABOX

The following figure shows an example of an **inner** nameplate of the ABOX of MOVIFIT® FDC:



18014401814055563

[1] ABOX status field

ABOX type designation

The following table shows an example of the type designation of the MOVIFIT® FDC **MTA11A-503-S043-M16-00/M11** ABOX:

MT	Type series	MT = MOVIFIT®
A	Device type	A = ABOX (connection box)
11	Series	11 = Standard (IP65) 13 = For wet areas (IP65)
A	Version A	
-		
50	Connection voltage	50 = 380 V – 500 V
3	Connection type	3 = 3-phase (AC)
-		
S04	Connection configuration	S04 = Standard ABOX with terminals and cable bushings S54 = Hybrid ABOX with M12 for I/Os + bus and plug connector for MOVIGEAR® / DRC.. S64 = Hybrid ABOX with M12 for I/Os push-pull RJ45 for bus and plug connector for MOVIGEAR® / DRC.. S84 = Hybrid ABOX with M12 for I/Os + bus + 24 V subsidiary signal (suitable for STO) and plug connector for MOVIGEAR® / DRC..
3	Fieldbus	3 = PROFINET IO, EtherNet/IP™, Modbus TCP
-		
M16	Maintenance switch	M16 = Load disconnecter and line protection up to 15 A M20 = Load disconnecter and line protection up to 20 A
-		
00	ABOX design	00 = Series
/		
M11	ABOX option	M11 = Stainless steel mounting rail

4 Mechanical installation

4.1 General information



⚠ CAUTION

Risk of injury due to protruding parts, especially the mounting rail.

Risk of cutting or crushing.

- Cover sharp and protruding parts, especially the mounting rail, to protect against injury and damage.
- MOVIFIT® may only be installed by qualified personnel.

Observe the following notes on mechanical installation:

- Observe the general safety notes.
- Only install MOVIFIT® on a level, low-vibration, and torsionally rigid support structure, see "Mounting position" chapter.
- Strictly observe all instructions referring to the technical data and the permissible conditions regarding the place of installation.
- Use only the provided attachment options when mounting the unit.
- When selecting and dimensioning the mounting and safety elements, observe the applicable standards, the technical data of the unit, and the local circumstances.
- Use suitable screw fittings for the cables (use reducing adapters if necessary). Use suitable mating connectors with plug connector variants.
- Close all unused cable entries with suitable closing plugs.
- Cover the unused plug connectors with blind caps.

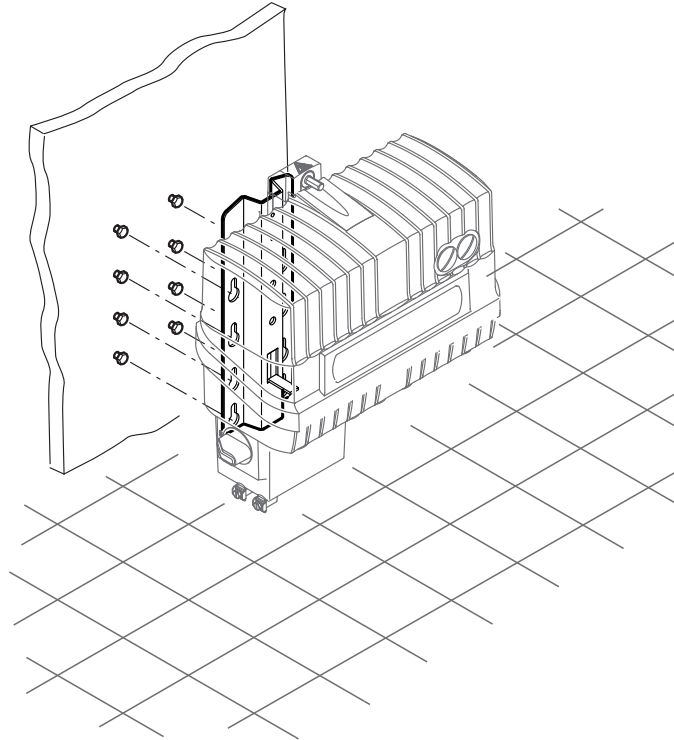
4.2 Tools required

- Set of wrenches
- Socket wrench, SW8 mm
- Torque wrench
- Screwdriver set

4.3 Permitted mounting position

The following figure shows the permitted mounting positions for MOVIFIT® FDC.

MOVIFIT® FDC is attached by means of a mounting plate using the 4 screws already installed in the mounting surface. For detailed information, refer to chapter "Mounting".



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INFORMATION

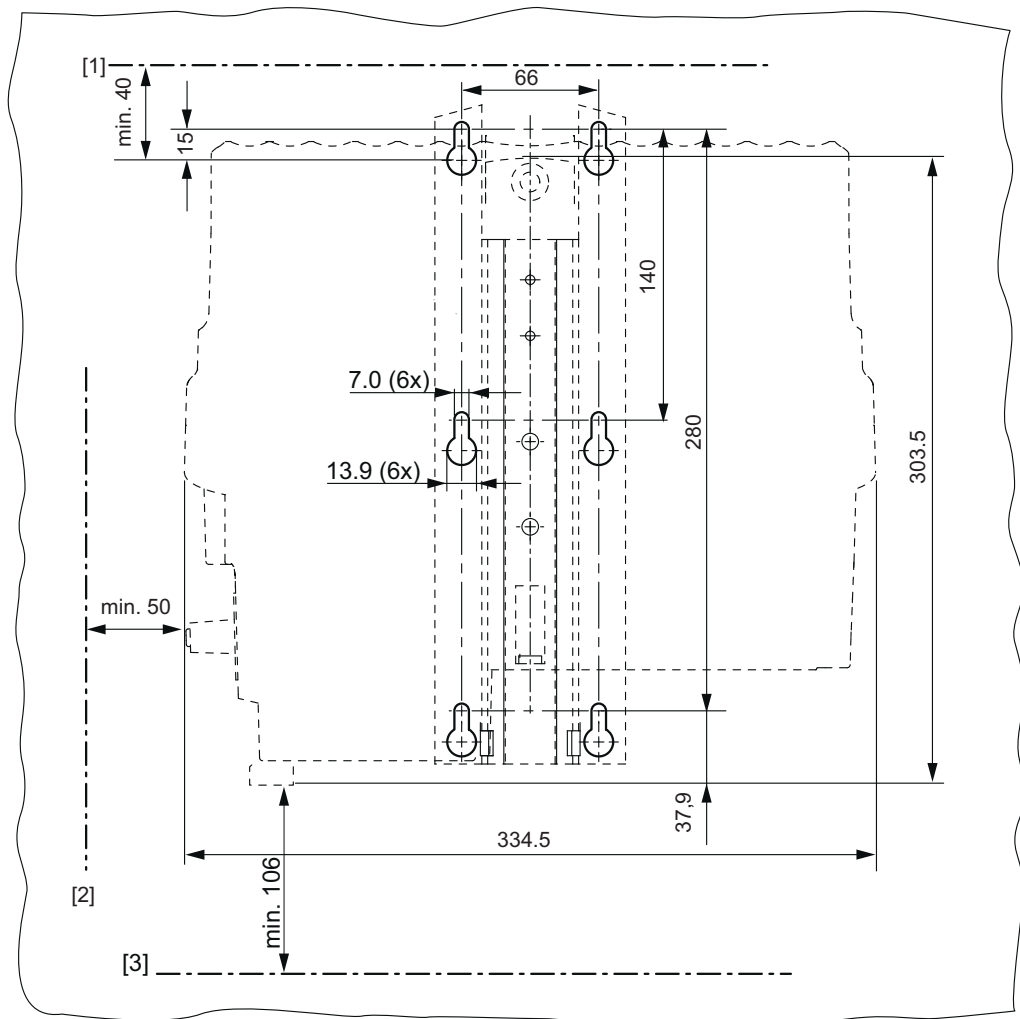
This chapter gives an example of the standard design with terminals and cable bushings. However, the installation notes apply to all designs.

4.4 Installation

4.4.1 Mounting rail

MOVIFIT® is equipped with a mounting rail to attach the unit to a level, low-vibration mounting surface using M6 screws. For bore dimensions of the respective type of fixture, see the following figures.

Drilling template for standard mounting rail

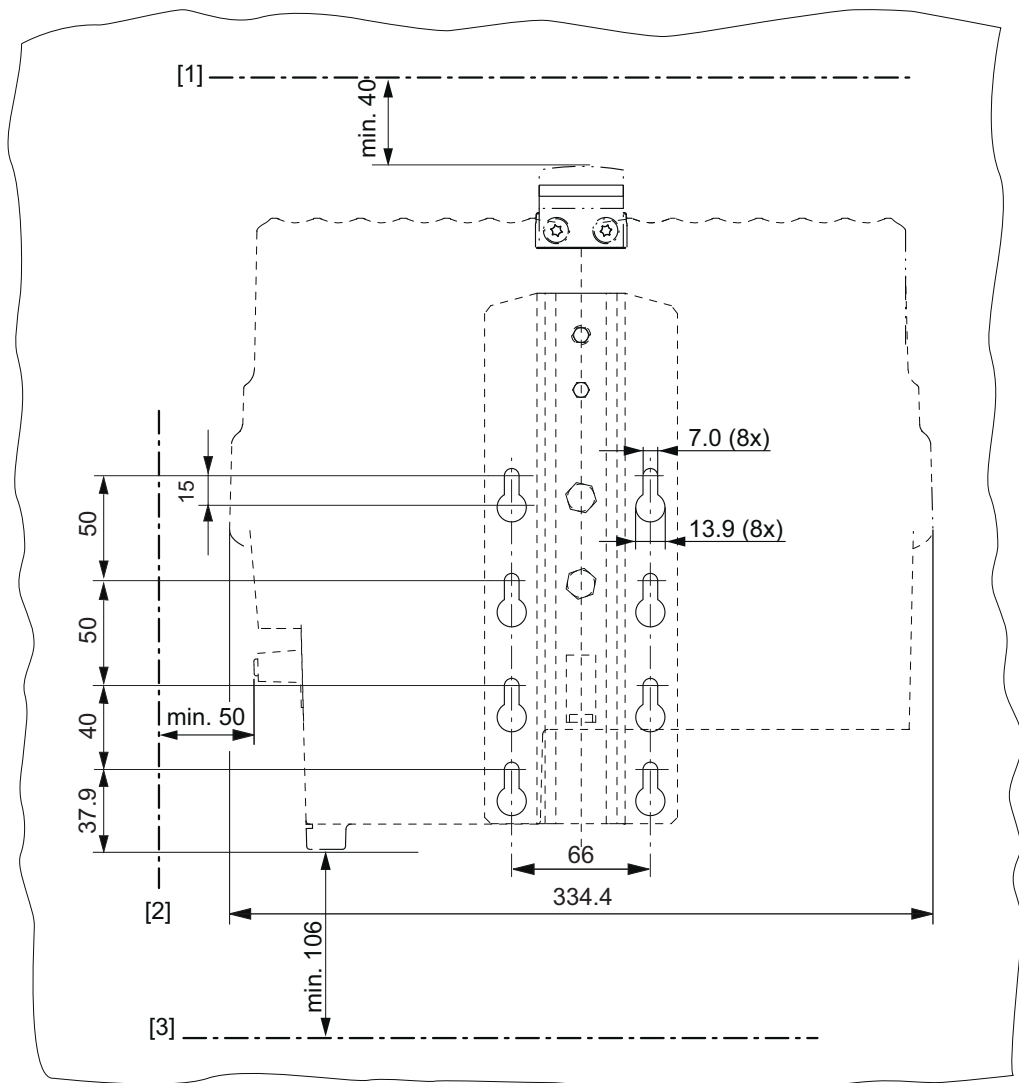


18014401554176139

- [1] Observe the minimum installation distance so that the EBOX can be removed from the ABOX.
- [2] Observe the minimum installation distance required to operate the maintenance switch and to ensure heat dissipation for the device.
- [3] Observe the minimum downward distance of 106 mm for all ABOXes with circular connectors (TE/Intercontec).
- Make sure that the minimum permitted bending radiuses of the cables used are observed when connecting the cables.

For detailed dimension drawings, refer to chapter "Technical data" > "Dimension drawings".

Drilling template for optional M11 stainless steel mounting rail



18014401554225803

- [1] Observe the minimum installation distance so that the EBOX can be removed from the ABOX.
- [2] Observe the minimum installation distance required to operate the maintenance switch and to ensure heat dissipation for the device.
- [3] Observe the minimum downward distance of 106 mm for all ABOXes with circular connectors (TE/Intercontec).
- Make sure that the minimum permitted bending radiuses of the cables used are observed when connecting the cables.

For detailed dimension drawings, refer to chapter "Technical data" > "Dimension drawings".

4.4.2 Fastening



⚠ CAUTION

Risk of crushing if the load falls.

Severe or fatal injuries.

- Do not stand under the load.
- Secure the danger zone.



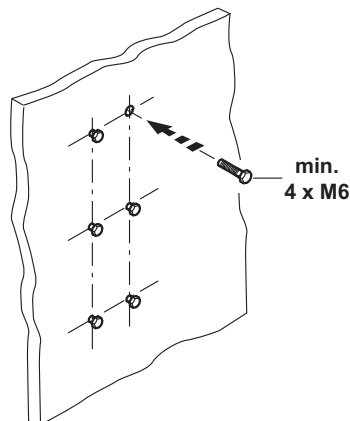
⚠ CAUTION

Risk of injury due to protruding parts.

Risk of cutting or crushing injuries.

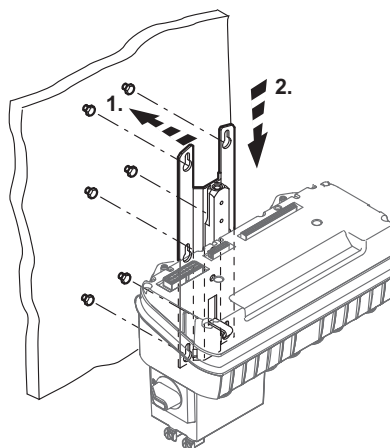
- Secure sharp and protruding parts by using cover plates.
- Always have the installation carried out by trained specialists.

1. Bore the holes required for mounting at least 4 screws into the mounting surface according to the previous drilling templates. SEW-EURODRIVE recommends:
 - ⇒ Screws of size M6
 - ⇒ and suitable dowel pins depending on the respective base.
2. Mount at least 4 screws on the mounting surface.



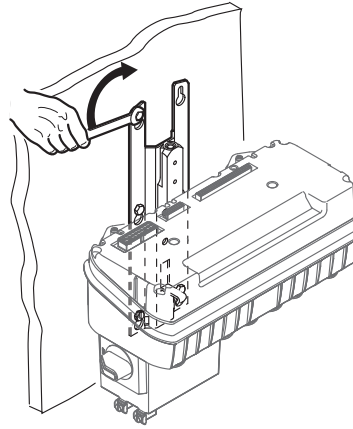
9007200013291403

3. Attach the ABOX to the screws with the mounting plate.



9007202299765515

4. Tighten the screws.
5. **⚠ CAUTION!** Risk of injury if the load falls. Minor injuries.
Tighten at least 4 wall screws to ensure a secure fit after mounting.



9007202299929995

4.5 Central opening/closing mechanism



⚠ WARNING

Risk of burns due to hot surfaces of the MOVIFIT® unit.

Serious injuries.

- Do not touch the MOVIFIT® unit until it has cooled down sufficiently.



⚠ CAUTION

Risk of injury if the EBOX falls.

Minor injuries.

- Make sure that the EBOX cannot fall when it is opened or closed.



NOTICE

The degree of protection specified in the technical data only applies when a unit is mounted correctly. When the EBOX is removed from the ABOX, moisture, dust, or foreign particles can damage the MOVIFIT® unit.

Damage to the MOVIFIT® unit.

- Protect the ABOX and the EBOX when the unit is open.



NOTICE

The central opening/closing mechanism may be damaged as a result.

Destruction of central opening/closing mechanism.

- When opening or closing the EBOX in tilted mounting position, make sure the EBOX does not jam and use your hand to move the EBOX.

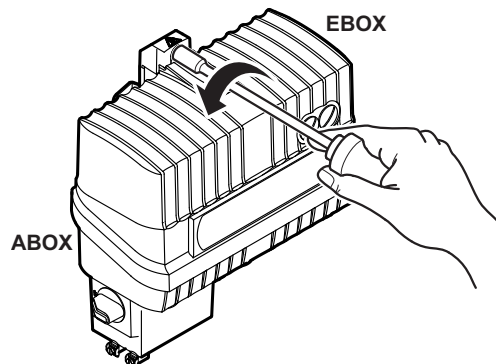
4 Mechanical installation

Central opening/closing mechanism

4.5.1 Open

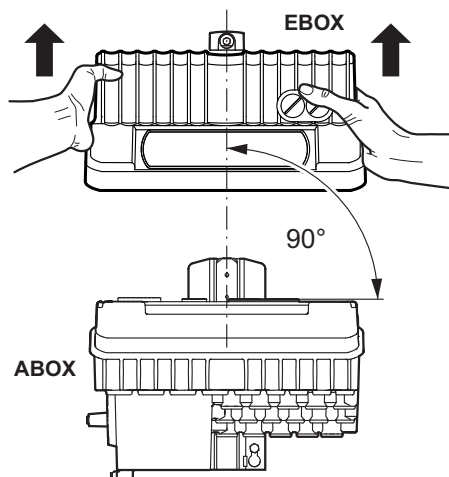
You need a socket wrench (SW8) for the central retaining screw.

1. Loosen the central retaining screw and continue to turn in counterclockwise direction until the EBOX does not move any further upwards.



3041000331

2. Remove the EBOX from the ABOX by lifting it upwards. Do not jam the EBOX during this procedure.

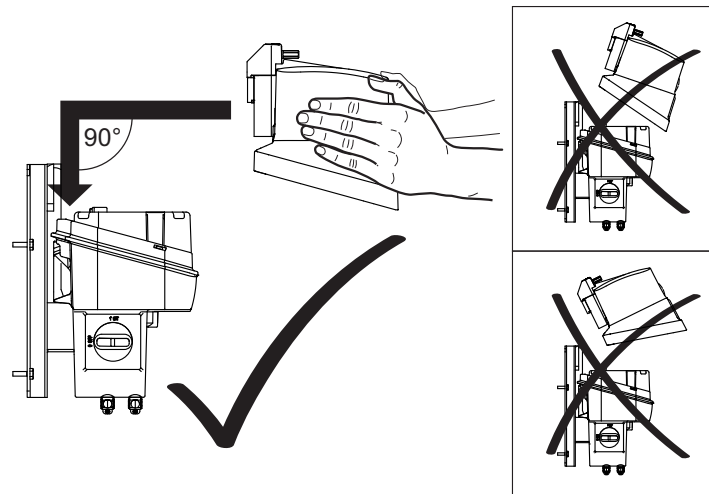


3041015691

4.5.2 Close

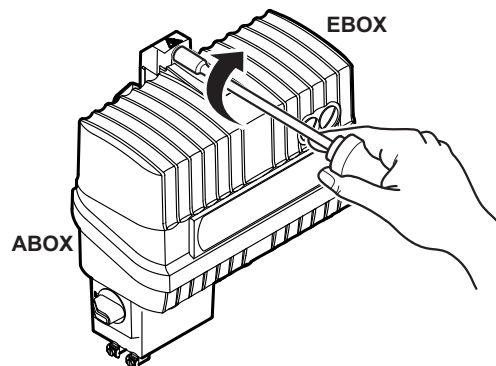
You need a socket wrench (SW8) for the central retaining screw.

1. **NOTICE!** An improperly seated gasket in the EBOX creates a strong counterforce when closing the MOVIFIT® device. Damage to the central opening/closing mechanism.
Make sure that the gasket is properly seated in the groove of the EBOX. This means that
 - ⇒ the gasket is inserted into the groove across the entire circumference
 - ⇒ and does not protrude from the groove anywhere.
2. Position the EBOX on the ABOX.
 - ⇒ Do not jam the EBOX during this procedure.
 - ⇒ Hold the EBOX only on the sides while setting it down. See following figure.



3041013771

3. Check the EBOX for correct position.
4. **NOTICE!** Damage to the central opening/closing mechanism.
Destruction of the central opening/closing mechanism.
 - ⇒ Make sure that the EBOX does not become jammed.
5. Tighten the retaining screw up to the stop using a tightening torque of 7 Nm.



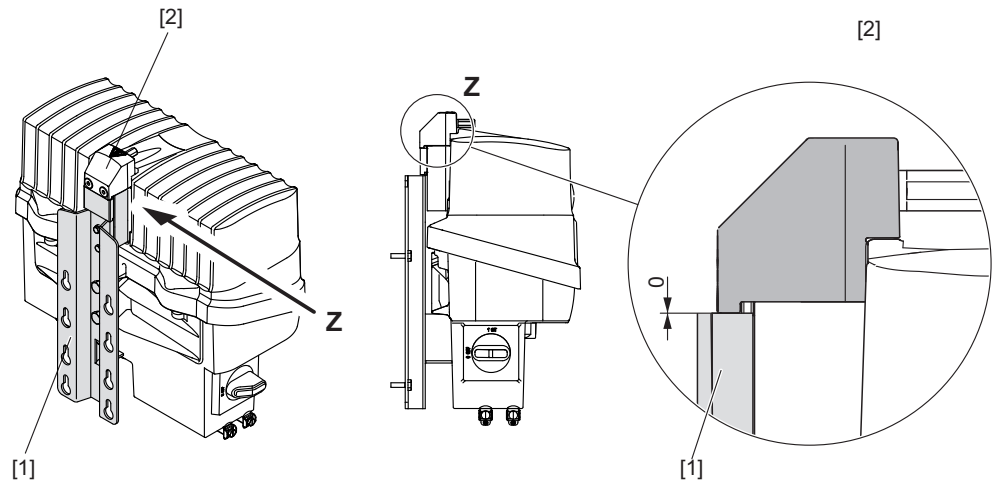
3041029131

NOTICE! The central opening/closing mechanism might become destroyed if the torque is too high.

Destruction of the central opening/closing mechanism.

- ⇒ Tighten the retaining screw with a maximum tightening torque of 7 Nm.

- ⇒ If there is a noticeable counter-torque, remove the EBOX again and check to see that the gasket is seated properly. If necessary, press the gasket securely into the groove.
 - ⇒ Never tighten the retaining screws with impermissibly high tightening torques.
6. MOVIFIT® is closed correctly when the redirector of the closing mechanism [2] is up against the mounting panel [1].

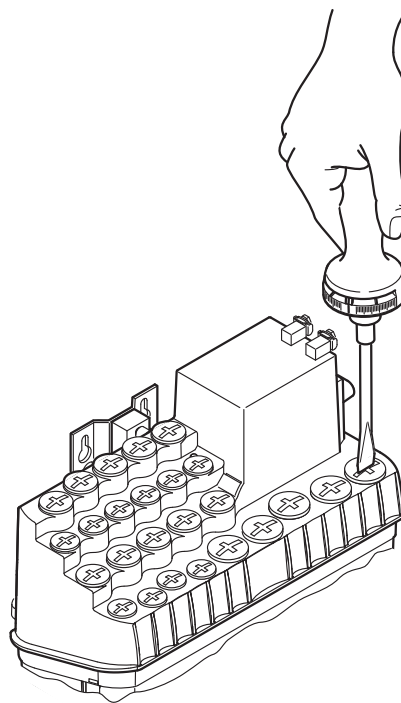


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4.6 Tightening torques

4.6.1 Screw plugs

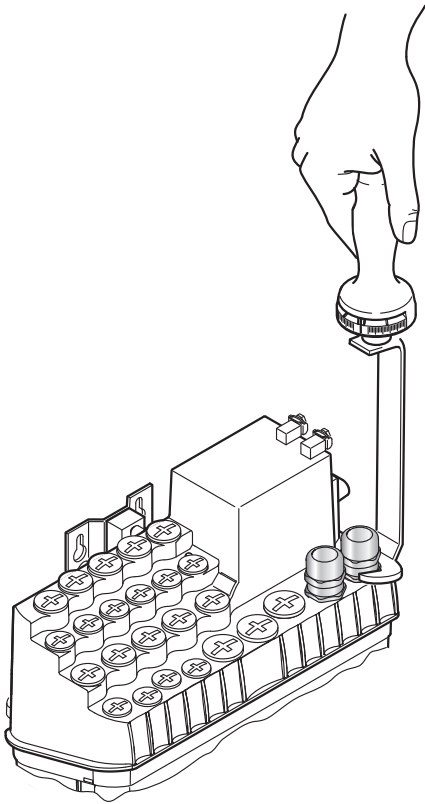
Tighten the screw plugs **included in the delivery** with 2.5 Nm:



758614667

4.6.2 EMC cable glands

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



758624523

Screw fitting	Part number	Con- tents	Size	Outer diame- ter cable	Tighten- ing torque
EMC cable glands (nickel-plated brass)	18204783	10 pieces	M16 × 1.5	5 to 9 mm	4.0 Nm
	18204791	10 pieces	M20 × 1.5	9 to 13 mm	6.0 Nm
	18204805	10 pieces	M25 × 1.5	11 to 16 mm	7.0 Nm
EMC cable glands (stainless steel)	18216366	10 pieces	M16 × 1.5	5 to 9 mm	4.0 Nm
	18216374	10 pieces	M20 × 1.5	9 to 13 mm	6.0 Nm
	18216382	10 pieces	M25 × 1.5	11 to 16 mm	7.0 Nm

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

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

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4.7 MOVIFIT® FDC design for wet areas

INFORMATION



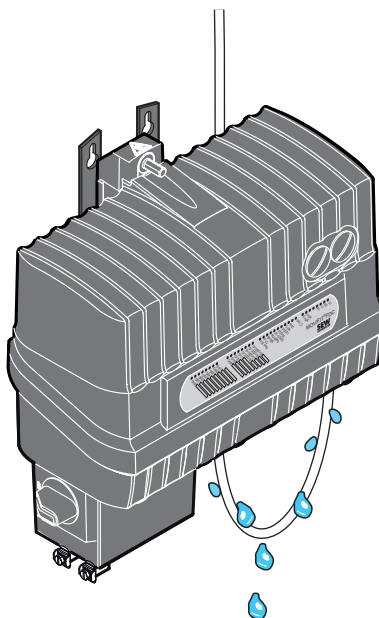
SEW-EURODRIVE guarantees that the surface coating is free of flaws. Report any transport damage immediately.

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

4.7.1 Installation notes

Observe the following additional notes when installing MOVIFIT® FDC in the design for use in wet areas:

- Make sure to prevent moisture and dirt from entering the device during installation.
- After electrical installation and during assembly, check for damaged seals and sealing surfaces.
- Check the state of the profile seal in the EBOX when performing maintenance. If damaged: Contact SEW-EURODRIVE.
- When installing the design for wet areas, replace the plastic screw plugs delivered as standard with suitable stainless (→ 140) steel screw plugs.
- Note the permitted mounting position (→ 28).
- Make sure to install the cable with a drip loop; see the following figure:



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4.7.2 Tightening torques for the version for wet areas

INFORMATION

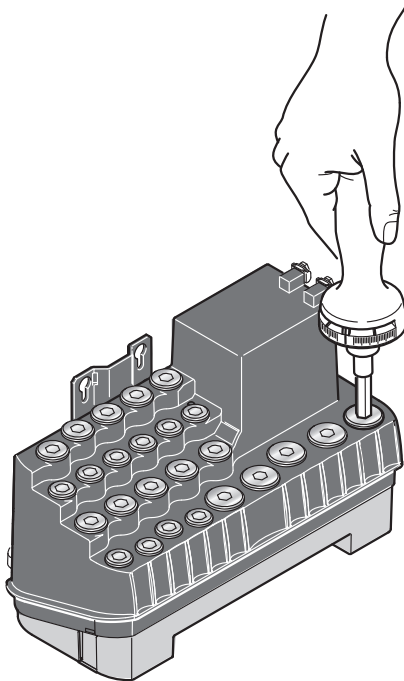


When installing the design for wet areas, you must replace the plastic screw plugs delivered as standard with suitable stainless steel screw plugs.

Refer to the "Options and accessories" (→ 140) chapter for screw plugs available from SEW-EURODRIVE.

Screw plugs

Tighten the screw plugs supplied **as accessories** by SEW-EURODRIVE to the following torques.



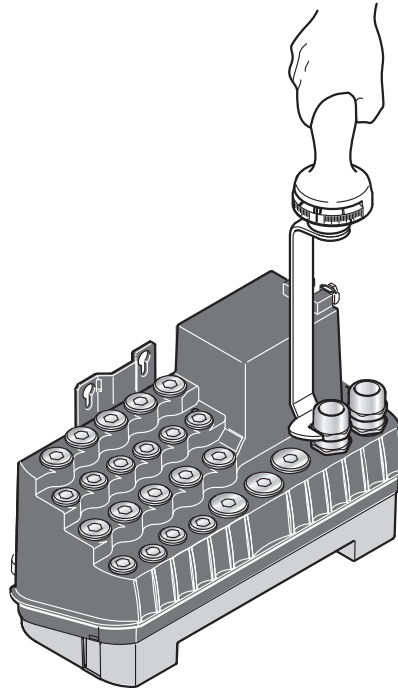
512774539

Screw fitting	Part number	Contents	Size	Tightening torque
EMC screw plugs (stainless steel)	18202233	10 pieces	M16 × 1.5	6.8 Nm
	18202241	10 pieces	M20 × 1.5	
	18202268	10 pieces	M25 × 1.5	

27801292/EN – 12/2022

EMC cable glands

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



512772875

Screw fitting	Part number	Contents	Size	Outer cable diameter	Tightening torque
EMC cable glands (stainless steel)	18216366	10 pieces	M16 × 1.5	5 to 9 mm	4.0 Nm
	18216374	10 pieces	M20 × 1.5	9 to 13 mm	6.0 Nm
	18216382	10 pieces	M25 × 1.5	11 to 16 mm	7.0 Nm

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

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

5 Electrical installation

5.1 General information

Observe the following notes on electrical installation:

- Observe the general safety notes.
- Strictly observe all instructions referring to the technical data and the permissible conditions regarding the place of installation.
- Use suitable cable glands for the cables (use reducing adapters if necessary). With connector plug variants, you must use a suitable mating connector.
- Seal open cable entries with screw plugs.
- Use protective caps to seal plug connectors not in use.

5.2 Installation planning taking EMC aspects into account

INFORMATION



This drive system is not designed for operation on a public low voltage supply system that supplies residential areas.

MOVIFIT® units can cause EMC interference within the permitted limit range according to EN 61800-3. In this case, it is recommended for the operator to take suitable measures.

For detailed information on EMC compliant installation, refer to the SEW publication Drive Engineering – Practical Implementation, "Electromagnetic Compatibility in Drive Engineering".

Successful installation of decentralized drives depends on selecting the correct cables, providing correct grounding and a functioning equipotential bonding.

Always apply the **relevant standards**.

Observe the notes in the following chapters in particular.

5.2.1 Line filter

The NF.. line filter is used to suppress interference emission on the line side.

In all SNI installation topologies, install an NF ... line filter upstream of each MOVIFIT® FDC device. The cable between the NF.. line filter and MOVIFIT® FDC must be shielded.

Do not switch between the NF... line filter and MOVIFIT® FDC.

The NF.. line filter has an independent cRUus approval.

The following line filters are available:

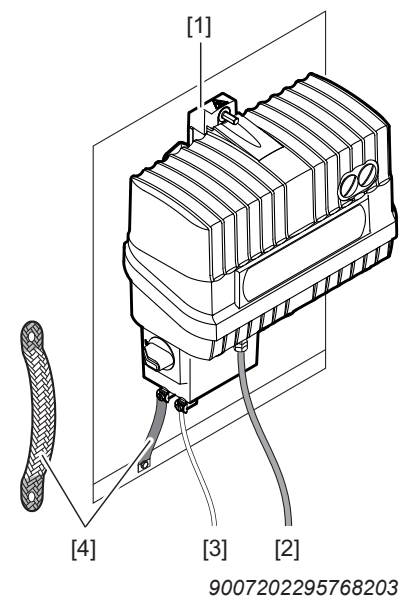
Line filter Type	Maximum permitted current A	Part number
NF018-503	18	08274134
NF035-503	35	08271283
NF048-503	48	08271178
NF018-503-UOH66A	18	19501684

5.2.2 Equipotential bonding

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

- Establish a connection over a wide surface area between the MOVIFIT® mounting rail and the system (untreated, unpainted, uncoated mounting surface).
- To do so, use a ground strap (HF litz wire) to connect MOVIFIT® and the system's grounding point.

- [1] Conductive connection over a large area between MOVIFIT® device and the mounting plate
- [2] PE conductor in the supply system cable
- [3] Second PE conductor via separate terminals
- [4] EMC-compliant equipotential bonding, for example using a ground strap (HF litz wire)



- Do not use the cable shields of data lines for equipotential bonding.

5.2.3 Data lines and 24 V supply

Route data lines and 24 V supply separately from cables that emit interference (such as control cables of solenoid valves, motor cables).

5.2.4 Connection between MOVIFIT® FDC and the MOVIGEAR® and DRC.. drive units

Use only the following cables to connect MOVIFIT® FDC with the MOVIGEAR® and DRC.. drive units:

- Prefabricated SNI cables,
see chapter "Electrical connections" > "X8: 400 V output (SNI)"
- SNI cable with open ends,
see chapter "Technical Data" > "Specified connection cables for single-line installation"
- Prefabricated hybrid cables,
see chapter "Electrical connections" > "X8: 400 V output and CAN bus"
see chapter "Electrical connections" > "X9: 400 V output, communication and 24 V subsidiary signal (suitable for STO)"
- Hybrid cable with open ends,
see chapter "Connection cables" > "Hybrid cables > AC 400 V, communication (DSC or SNI) and safe disconnection (STO)"

5.2.5 Cable shields

- must have good EMC properties (high screening attenuation).
- may not be intended only as mechanical protection for the cable.
- must be connected at the cable ends to a wide area of the device's metal housing.

See also:

- the "Connecting the SNI cable" (→ 61) chapter
- or the "Connecting the hybrid cable with CAN bus" (→ 62) chapter.
- or the "Connecting the hybrid cable with CAN bus and 24 V subsidiary signal (suitable for STO)" (→ 63) chapter

5.3 Installation instructions (all versions)

5.3.1 Connecting supply system leads

- The nominal voltage and frequency of the MOVIFIT® device must correspond to the data of the supplying system.
- Dimension the cable cross section according to the input current I_{line} for rated power (see chapter "Technical data").
- Install fuses at the beginning of the supply system cables behind the supply bus junction.

The following fuses are permitted:

- Fuses of utilization category gG
- Power circuit breakers with characteristic B or C
- Motor circuit breaker

Dimension the fuses according to the cable cross section.

5.3.2 Line contactor

- Use contactor switch contacts of utilization category AC-3 according to EN 60947-4-1 to connect the supply system cable.

5.3.3 Residual current device



⚠ WARNING

No protection against electric shock if an incorrect type of residual current device is used.

Severe or fatal injuries.

- The product can cause direct current in the PE conductor. If a residual current device (RCD) or a residual current monitoring device (RCM) is used for protection in the event of a direct or indirect contact, only a type B RCD or RCM is permitted at the supply end of the product.
- If the use of a residual current device is not mandatory according to the standards, SEW-EURODRIVE recommends not using a residual current device.

5.3.4 Requirements to STO control cable

Observe the following notes when installing STO control cables:

- MOVIFIT® FDC has no STO function.
Observe the manuals for functional safety of the devices that are connected to the MOVIFIT® FDC.
- Supply cables and STO control cables have to be routed in separate cables. This does not apply to cables approved by SEW-EURODRIVE specifically for this case of application.
- The cable length between the safety controller and MOVIGEAR® or DRC.. must not exceed 100 m.
- The wiring technology used must comply with EN 60204-1.
- The STO control cables must be routed according to EMC guidelines and as follows:
 - Outside an electrical installation space: Shielded cables must be routed permanently (fixed) and protected against external damage, or equivalent measures have to be taken.
 - Inside an electrical installation space: Individual cores can be routed.
 - Adhere to the relevant regulations in force for the application.
- Do not use the DC 24 V output of MOVIFIT® FDC for safety-related applications with MOVIGEAR® or DRC...

5.3.5 Notes on PE connection and/or equipotential bonding

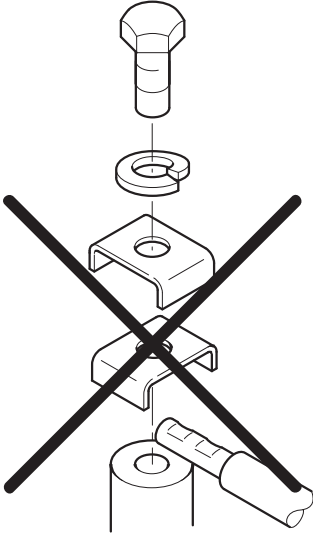
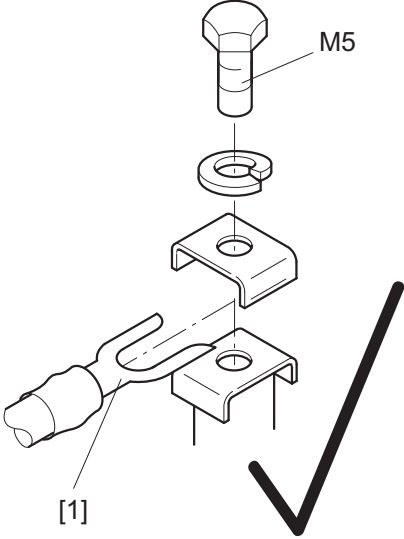
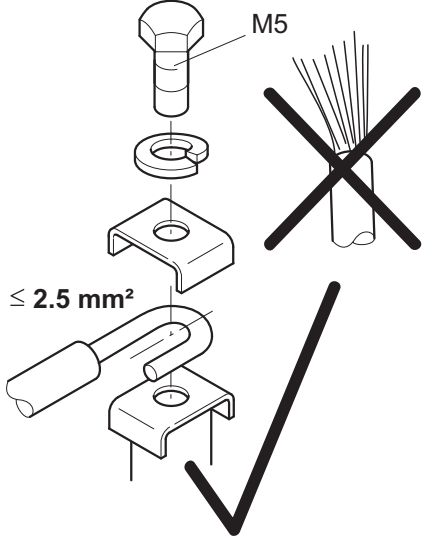
⚠ WARNING



Electric shock due to incorrect connection of PE.

Severe, fatal injuries.

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

Prohibited assembly	Recommendation: Assembly with forked cable lug Permitted for all cross sections	Assembly with solid connecting wire Permitted for cross section up to max. 2.5 mm ²
	 9007199577775243	 9007199577779339

[1] Forked cable lug suitable for M5 PE screws

Leakage currents ≥ 3.5 mA can occur during normal operation. To meet the requirements of EN 61800-5-1, observe the following notes:

- The protective earth (PE) connection must meet the requirements for plants with high earth-leakage currents.
- This usually means
 - installing a PE connection cable with a minimum cross section of 10 mm²
 - or installing a second PE connection cable in parallel with the original PE connection.

5.3.6 Definition PE, FE



▲ WARNING

Electric shock due to incorrect connection of PE to the terminals marked with "FE" (functional earth). The FE connections are not designed for this purpose. This means electrical safety is not guaranteed.

Severe or fatal injuries.

- The permitted tightening torque for the retaining screw is 2.0 to 2.4 Nm.
 - Observe the following notes regarding the PE connection:
-
- **PE** refers to the mains-side protective earth connection. The PE conductor in the mains connection cable may only be connected with terminals marked with "PE". These are dimensioned for the max. permitted line connection cross section.
 - **FE** refers to connections for "functional earth". You can connect any existing grounding conductor in the 24 V connection lead.

5.3.7 Plug connectors

All MOVIFIT® plug connectors are illustrated in these operating instructions with view on the contact end.

5.3.8 Protective devices

- The connected MOVIGEAR® and DRC.. drive units are equipped with integrated overload protection devices. External safety devices are not required.
- You must implement line protection up to the MOVIFIT® FDC through the use of external safety devices.
- The line protection between MOVIFIT® FDC and the drive units, as of 2.5 mm² is ensured by the maintenance switch of the MOVIFIT® device (design with 15 A at 2.5 mm², 20 A at 4.0 mm²).
- Country-specific standards must be considered as regards the cable cross-section, the voltage drop, the installation type and the line protection.

5.3.9 Installation altitude higher than 1000 m above sea level

MOVIFIT® devices with supply voltages of 380 to 500 V can be used at altitudes above 1000 up to 4000 m above sea level. To do so, you must observe the following basic conditions.

- At heights above 1000 m above sea level, the nominal continuous power is reduced due to reduced cooling: I_N reduction by 1% per 100 m.
- At altitudes of 2000 to 4000 m above sea level, you must take limiting measures which reduce the line side overvoltage from category III to category II for the entire system.

5.3.10 Power distribution and line protection

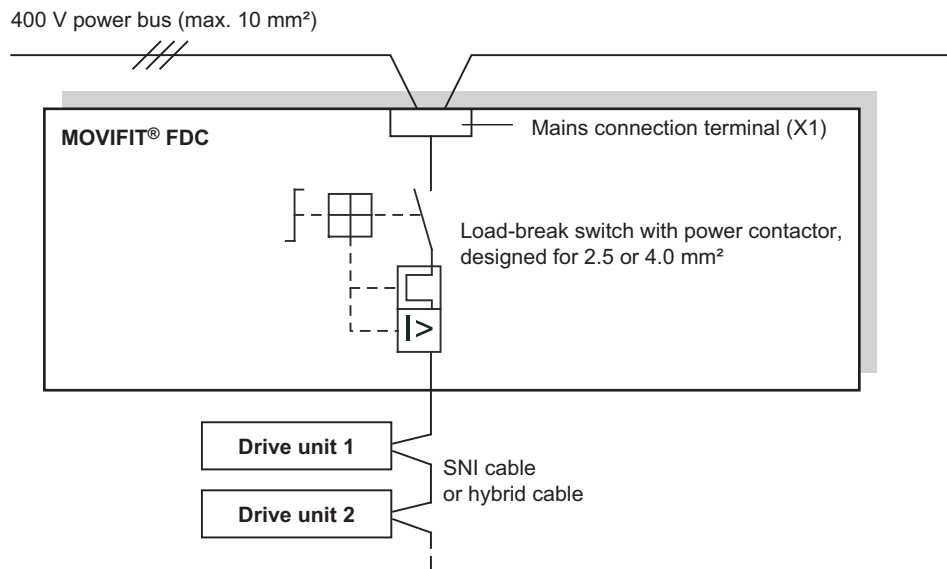
MOVIFIT® FDC is equipped with integrated line protection for the supply cable to the MOVIGEAR® and DRC.. drive units. This line protection is implemented through the ABOX maintenance switch.

The maintenance switch is also used to protect the cables to the lower-level MOVIGEAR®and DRC.. drive units. Depending on the cable cross section, SEW-EURODRIVE recommends maintenance switches with the following tripping currents:

- Cable cross section = 2.5 mm² => tripping current of maintenance switch = 15 A
- Cable cross section = 4.0 mm² => tripping current of maintenance switch = 20 A

During project planning, make sure that no more than a current of 15 A or 20 A runs through the connected drive units.

For UL-compliant installation, you must observe additional restrictions, see chapter "UL-compliant installation" (→ 51).



For power bus configuration, check to make sure that short-circuit and overload protection (in accordance with DIN VDE 0100-430) are still ensured for the supply system cables to the MOVIGEAR® and DRC.. drive units, depending on line impedance, cable lengths and contact resistances.

Check and take the following conditions into account when selecting the tripping current of the maintenance switch and the cable cross section used:

- Routing type of the cable
- Ambient temperature
- Actual current load
- Use of the maintenance switch as line protection

Observe the technical data and characteristic curves of the maintenance switch:

Tripping current ¹⁾	Motor circuit breaker	
	Type	Part number ABB
15 A	MS325-16	1SAM 150 005 R0012
20 A	MS325-25	1SAM 150 005 R0014

1) You cannot change the set tripping current.

For further technical data of the motor circuit breaker used (= integrated maintenance switch), contact the manufacturer ABB.

5.3.11 UL-compliant installation

INFORMATION



Due to UL requirements, the following chapter is always printed in English independent of the language of the documentation.

Field Wiring Power Terminals

- Use 75 °C copper wire only.
- MOVIFIT®-FDC uses cage clamp terminals.

Short Circuit Current Rating

When installed in combination with listed MOVIGEAR® / DRC drive units:

Suitable for use on a circuit capable of delivering not more than 200,000 rms symmetrical amperes when protected by 40 A, 600 V non-semiconductor fuses or 500 V minimum 40 A maximum inverse time circuit breakers:

MOVIFIT®-FDC, max. voltage is limited to 500 V.

Branch Circuit Protection

For maximum branch circuit protection see table below.

Series	non-semiconductor fuses	inverse time circuit breaker
MOVIFIT®-FDC	40 A / 600 V	500 V minimum, 40 A maximum

Ambient Temperature

MOVIFIT®-FDC is suitable for an ambient temperature of 40 °C, max. 60 °C with derated output current. To determine the output current rating at higher than 40°C, the output current should be derated 3.0 % per °C between 40°C and 60°C.

Wiring Diagrams

For wiring diagrams, please refer to the English operating manual "MOVIFIT®-FDC" (see <http://www.sew-eurodrive.com>).

UL-compliant installation

- For UL-compliant installation, only the EBOX specified on the ABOX nameplate may be mounted to the ABOX. The UL certification refers only to the ABOX / EBOX combination stated on the nameplate.
- The standard version of MOVIFIT®-FDC is equipped with integrated, UL-approved short-circuit and ground fault protection for the supply cables to the MOVIGEAR® / DRC drive units. The protection device is set to 15 A or 20 A depending on the type.

For MOVIFIT®-FDC variants without integrated short-circuit and ground fault protection of the supply cables to the MOVIGEAR® / DRC drive units, you have to ensure this protection by suitable external measures.

The UL certification only applies for the operation on voltage supply systems with voltages to ground of max. 300 V. The UL-certification does not apply for the operation on voltage supply systems with a non-grounded star point (IT systems).

5.3.12 Additional installation instructions in connection with MOVIGEAR®/DRC...- SNI design**Line connection**

Use a line filter and shielded cables for the line connection of the MOVIFIT® FDC.
Looping the supply system cable through in order to further loads is not permitted.

24 V connection

Use shielded cables for connecting the 24 V supply of the MOVIFIT® FDC.

SNI connection

Use only the following cables to connect the entire SNI line:

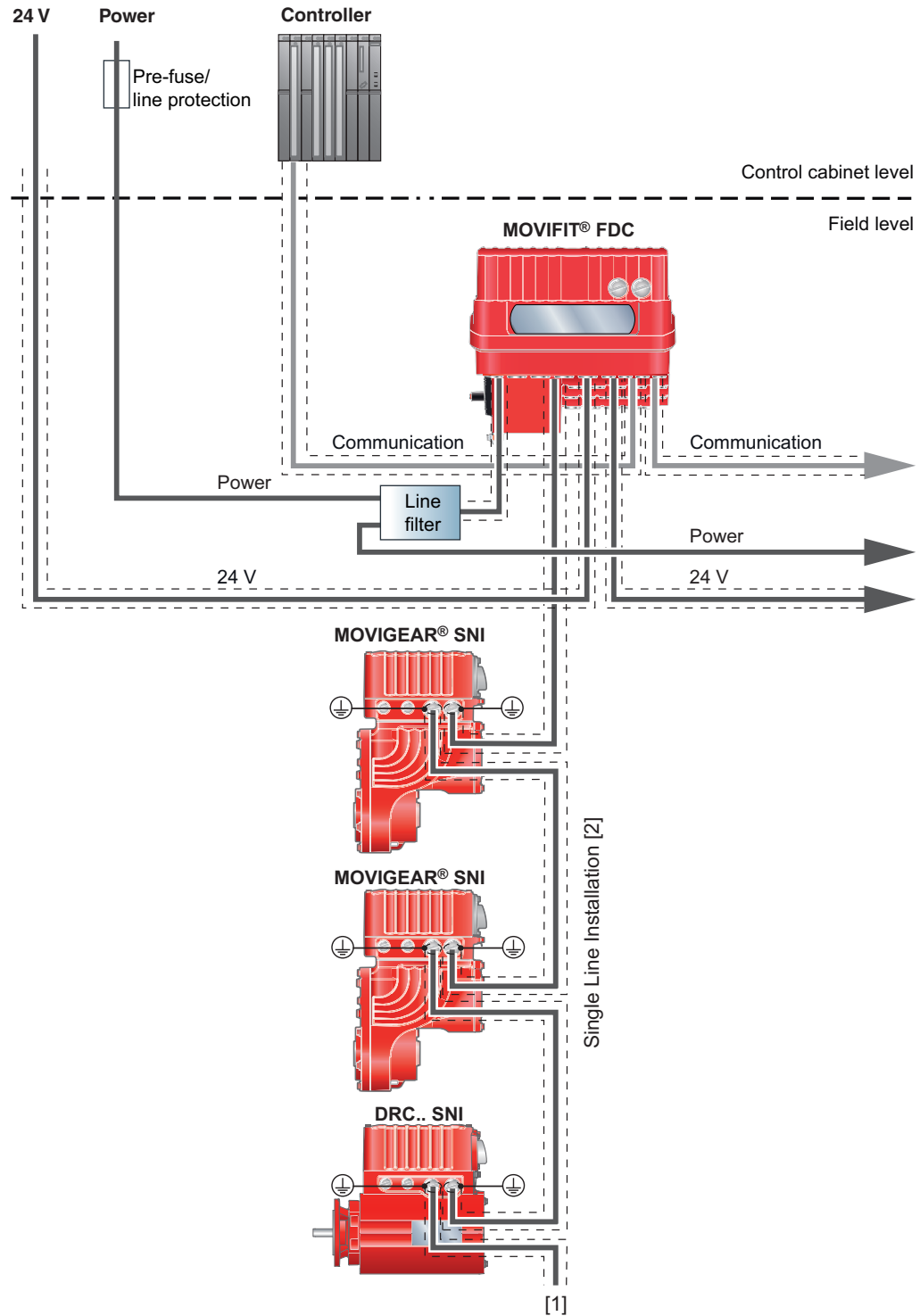
- Prefabricated SNI cables
see chapter "Electrical connections" > "X8: AC 400 V output (SNI)"
or chapter "Electrical connections" > "X9: AC 400 V output, communication and 24 V subsidiary signal (suitable for STO)
- SNI cable with open ends
see chapter "Technical Data" > "Specified connection cables for single-line installation"

You find an example of the installation topology for SNI in chapter "Installation topologies" > "Installation topology SNI (example)".

5.4 Installation topologies

5.4.1 Installation topology SNI (example)

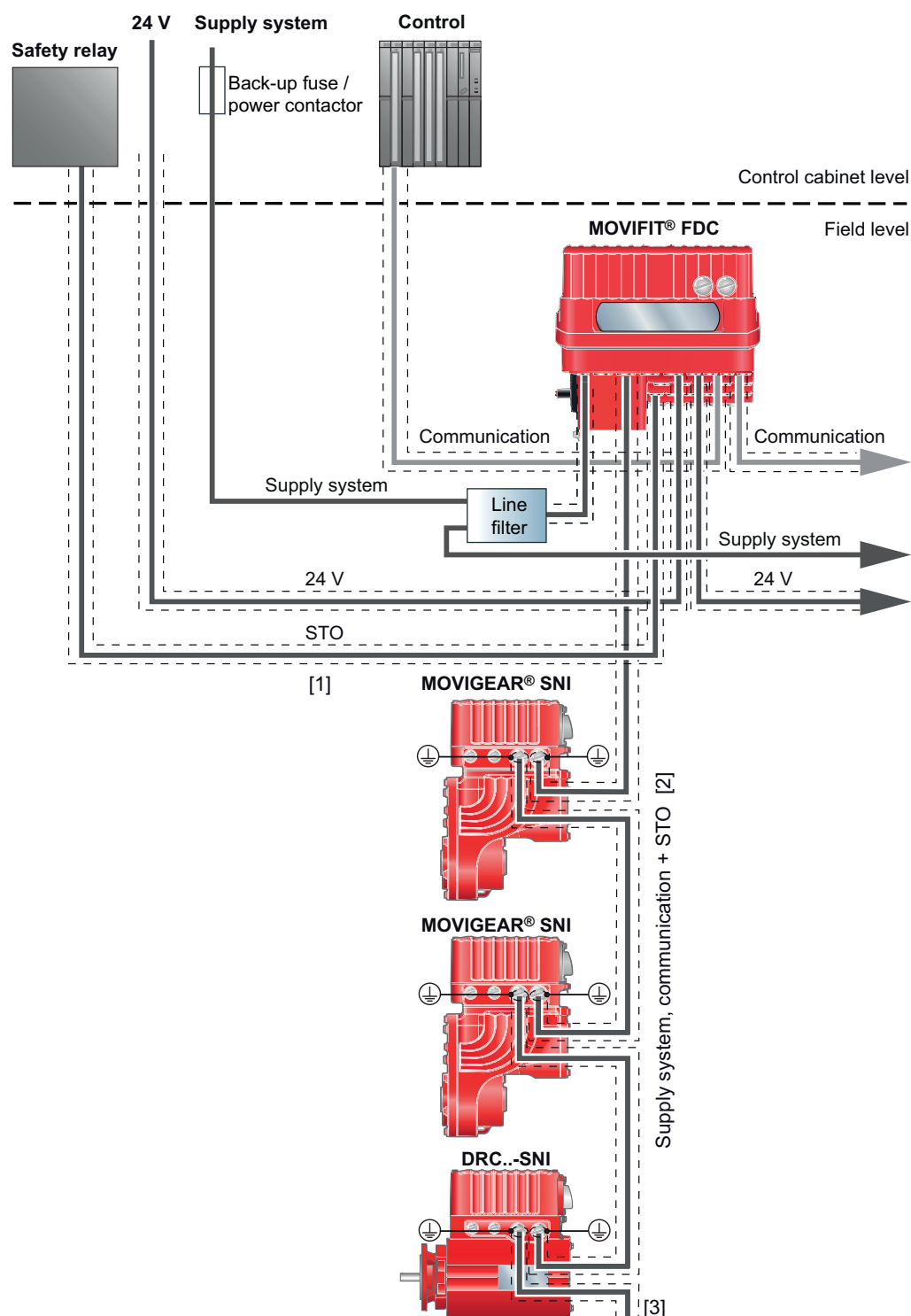
The following figure shows the basic SNI installation topology of MOVIFIT® FDC in conjunction with MOVIGEAR® SNI-B and DRC..-SNI drive units:



- [1] Max. 10 drive units (MOVIGEAR® SNI or DRC..-SNI) in total
- [2] Permitted cable length between MOVIFIT® FDC and the last drive unit max. 100 m

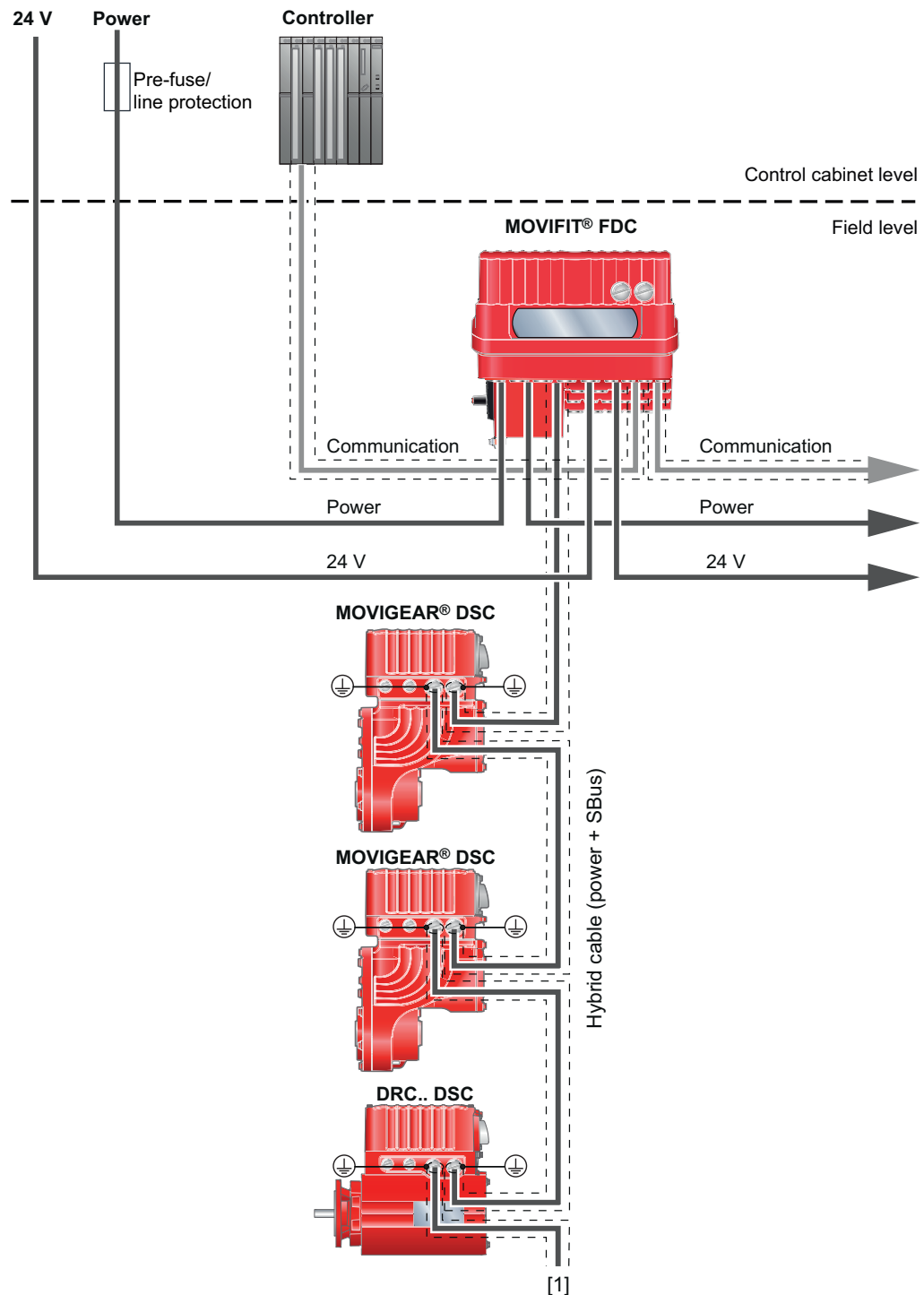
5.4.2 Installation topology SNI with STO signal (example)

The following figure shows the basic SNI installation topology of MOVIFIT® FDC in conjunction with MOVIGEAR® SNI-B and DRC...-SNI drive units:



5.4.3 Installation topology DSC (example)

The following figure shows the basic SBus installation topology of MOVIFIT® FDC in conjunction with MOVIGEAR® SNI-B and DRC...DSC drive units:

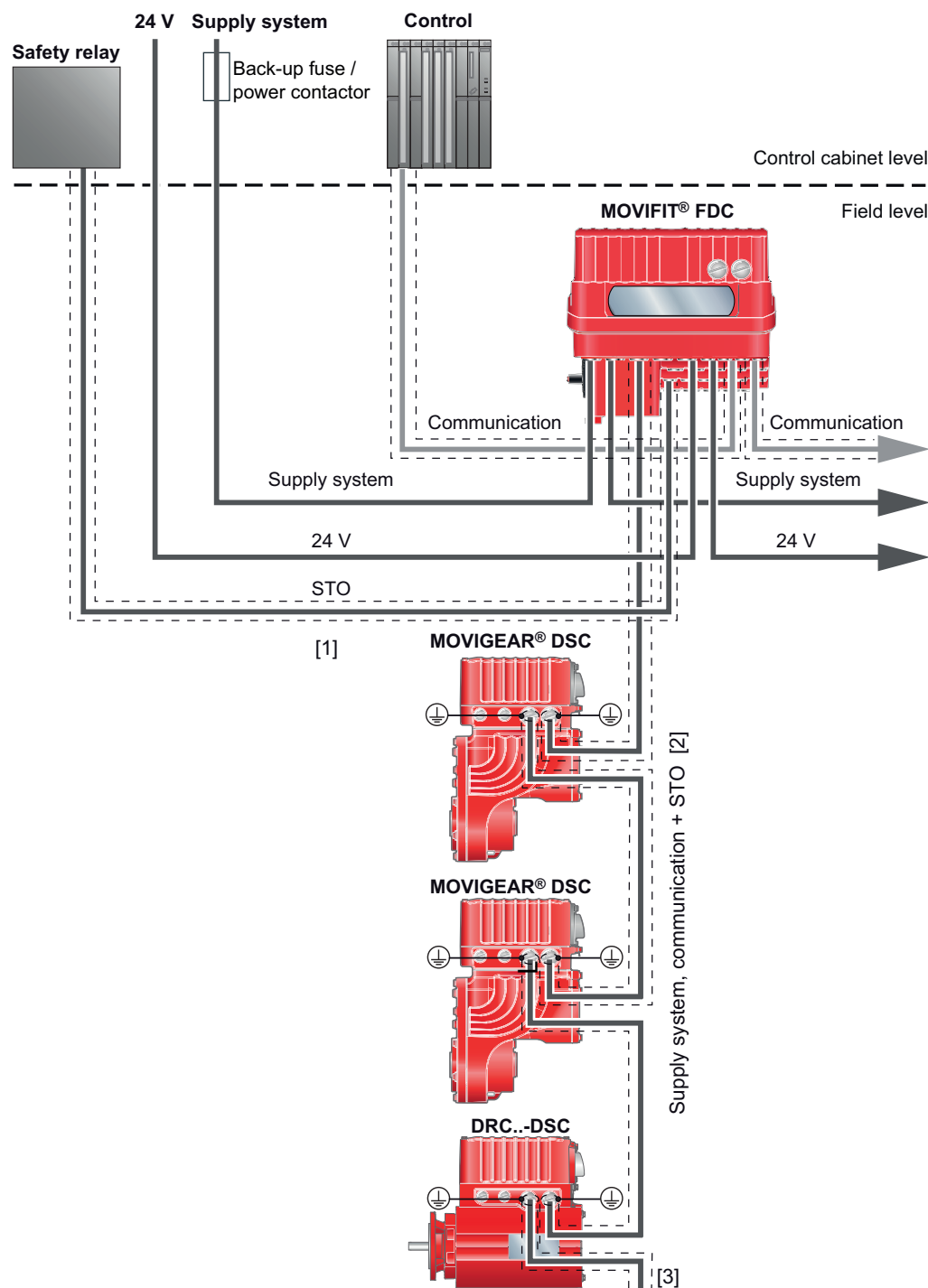


[1] Permitted length of the CAN bus cable between MOVIFIT® FDC and last drive unit:

- 1 MBaud: max. 25 m
- 500 kBaud: max. 50 m

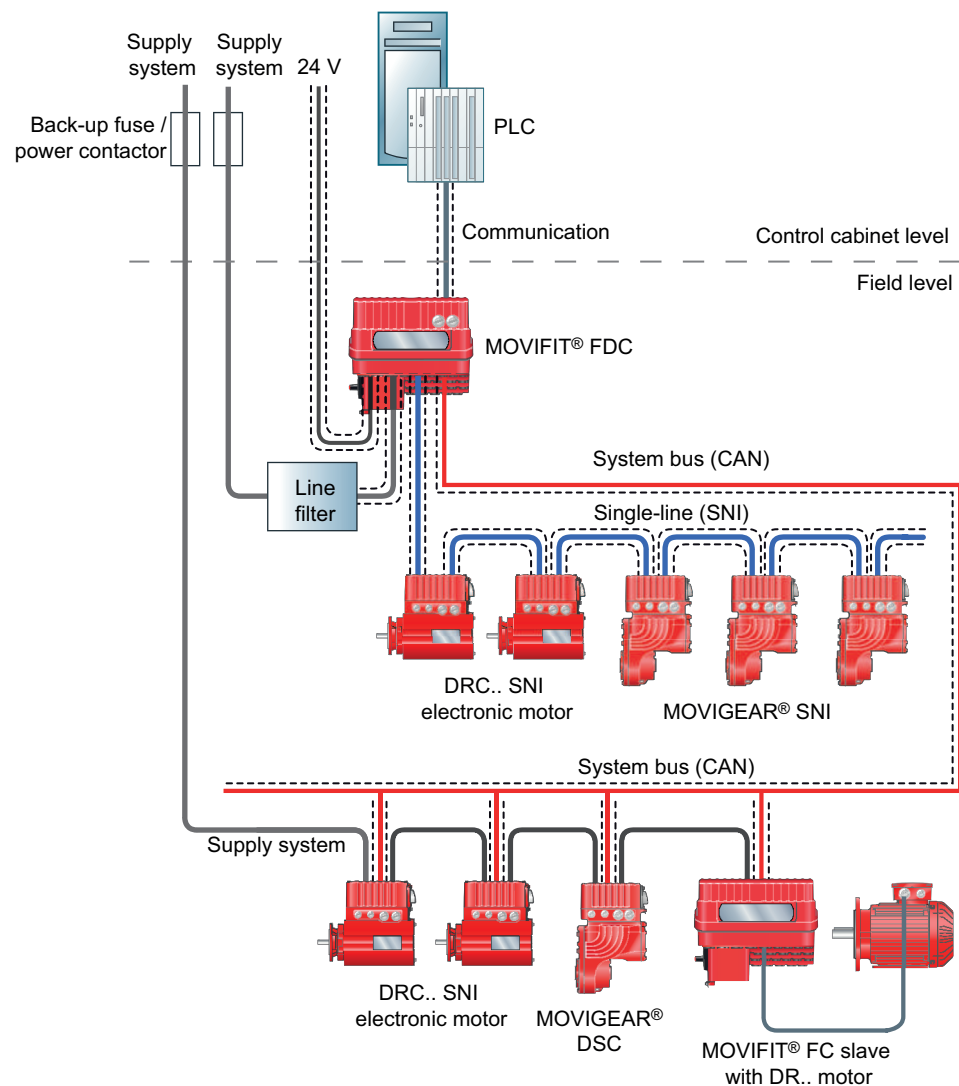
5.4.4 Installation topology DSC with STO signal (example)

The following figure shows the basic DSC installation topology of MOVIFIT® FDC in conjunction with MOVIGEAR® DSC-B and DRC...-DSC drive units:



5.4.5 Combined installation topology

The following figure shows a combined topology with single line network and SBus installation:



Permitted length of the SNI cable between MOVIFIT® FDC and last drive unit
max. 100 m.

Permitted length of the CAN bus cable between MOVIFIT® FDC and last drive unit:

- 1 MBaud: max. 25 m
- 500 kBaud: max. 50 m

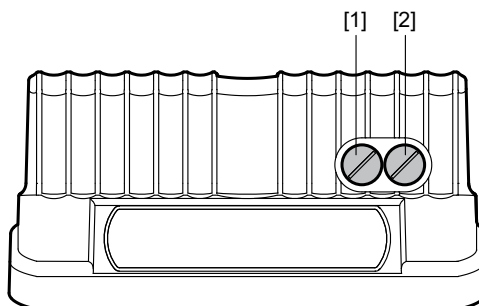
Max. permitted drive units (MOVIGEAR® or DRC..):

- Max. 10 SNI drive units
- Max. 16 DSC drive units
- Max. 16 drive units in total

5.5 EBOX "MTC...-R9...-00"

5.5.1 Plug connector positions

The following figure depicts the EBOX "MTC...-R9...-00":



3041021451

- | | | |
|-----|-----|---|
| [1] | X51 | USB interface (underneath the screw fitting) |
| [2] | X52 | Ethernet service interface (underneath the screw fitting) |

USB socket type B
RJ45



NOTICE

The degree of protection specified under technical data applies only if the screw plugs of the USB and Ethernet service interface are properly installed.

Damage to the MOVIFIT® device.

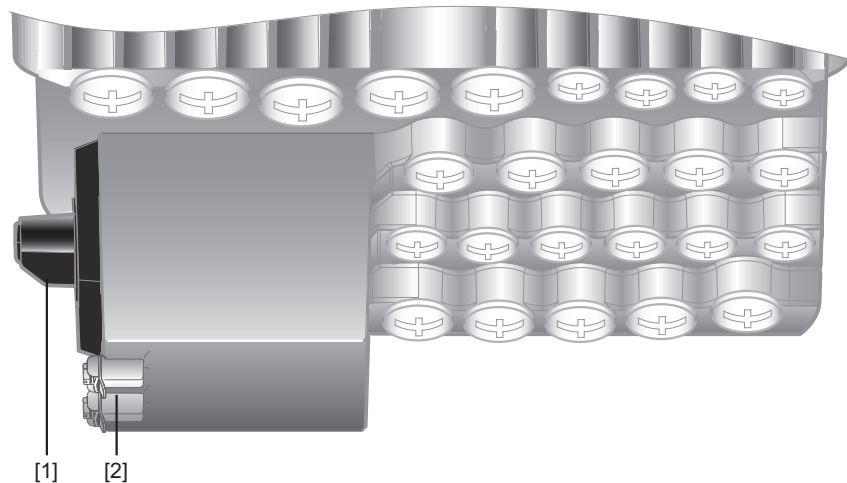
- Once you have finished working on the MOVIFIT® device, check for proper installation of the screw plugs of the USB and Ethernet service interfaces.
- For closing the USB and Ethernet service interface, use only screw plugs with the part number 18130623.

You find the pin assignment of the plug connectors in the "Electrical Connections" chapter.

5.6 Standard ABOX "MTA...-S04.-...-00"

5.6.1 Description

The following figure depicts the standard ABOX "MTA...-S04.-...-00" with terminals and cable bushings:



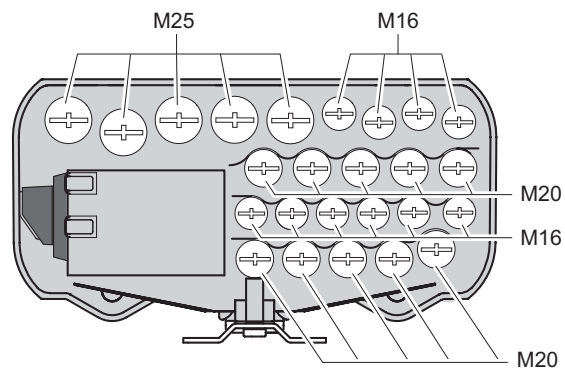
3045820427

- [1] Maintenance switch
- [2] PE connection

5.6.2 Screw fittings

The following figure depicts the screw fittings of the standard ABOX:

PROFINET MTA11A-503-S043-...-00
EtherNet/IP™ MTA11A-503-S043-...-00
Modbus/TCP MTA11A-503-S043-...-00



36028800064490123

5.6.3 Additional installation instructions for "MTA...-S04.-...-00"

Permitted connection cross-section and current-carrying capacity of the terminals

During installation, observe the permitted cable cross-sections of the MOVIFIT® FDC terminals:

Terminal data	X1 ¹⁾ Line cable	X20 External 24 V supply	X25 ¹⁾ I/O terminals	X8 ¹⁾ Terminal MOVIGEAR®/DRC..
Connection cross-section	0.2 – 10 mm²	0.2 – 6 mm²	0.08 – 2.5 mm²	0.2 – 6 mm²
Current-carrying capacity (max. continuous current) ²⁾	40 A	16 A	150 mA per sensor connection, total current 1.5 A	20 A
			500 mA per output, total current 2.0 A	

1) When using conductor end sleeves, the maximum permitted cross section is reduced by one unit (e.g. 2.5 to 1.5)

2) The current-carrying capacity indicates the value for the entire current path.

Actuating the terminals

Note the following information for actuating the terminals:

Terminal X1, X8, X20

9007199599468811

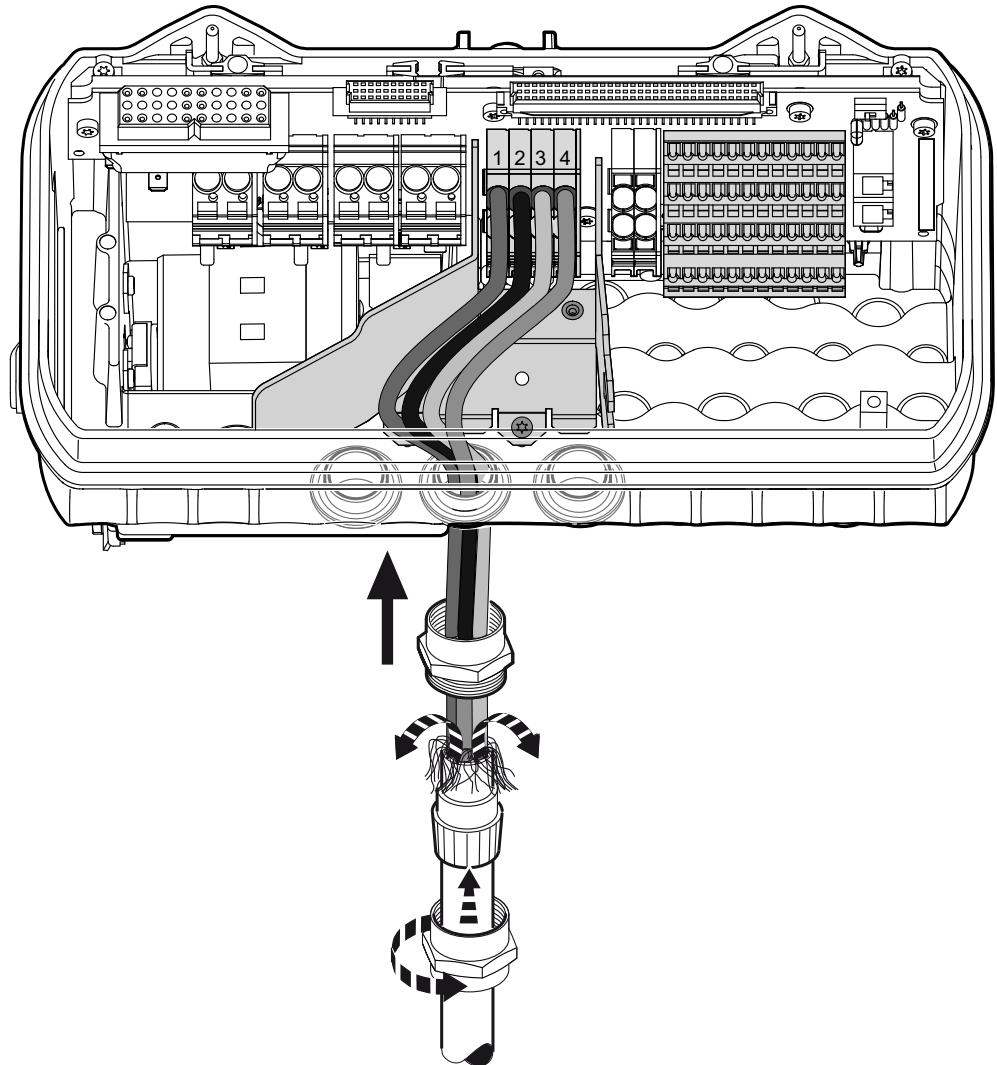
Terminal X25

344724491

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Connecting the SNI cable

- Use only the SNI cables specifically approved for this purpose for the connection between MOVIFIT® FDC with the SNI stations (MOVIGEAR® SNI or DRC...-SNI).
- The cable shield of the SNI cable must be applied to the MOVIFIT® ABOX as follows using an EMC cable gland:



18014401635546123

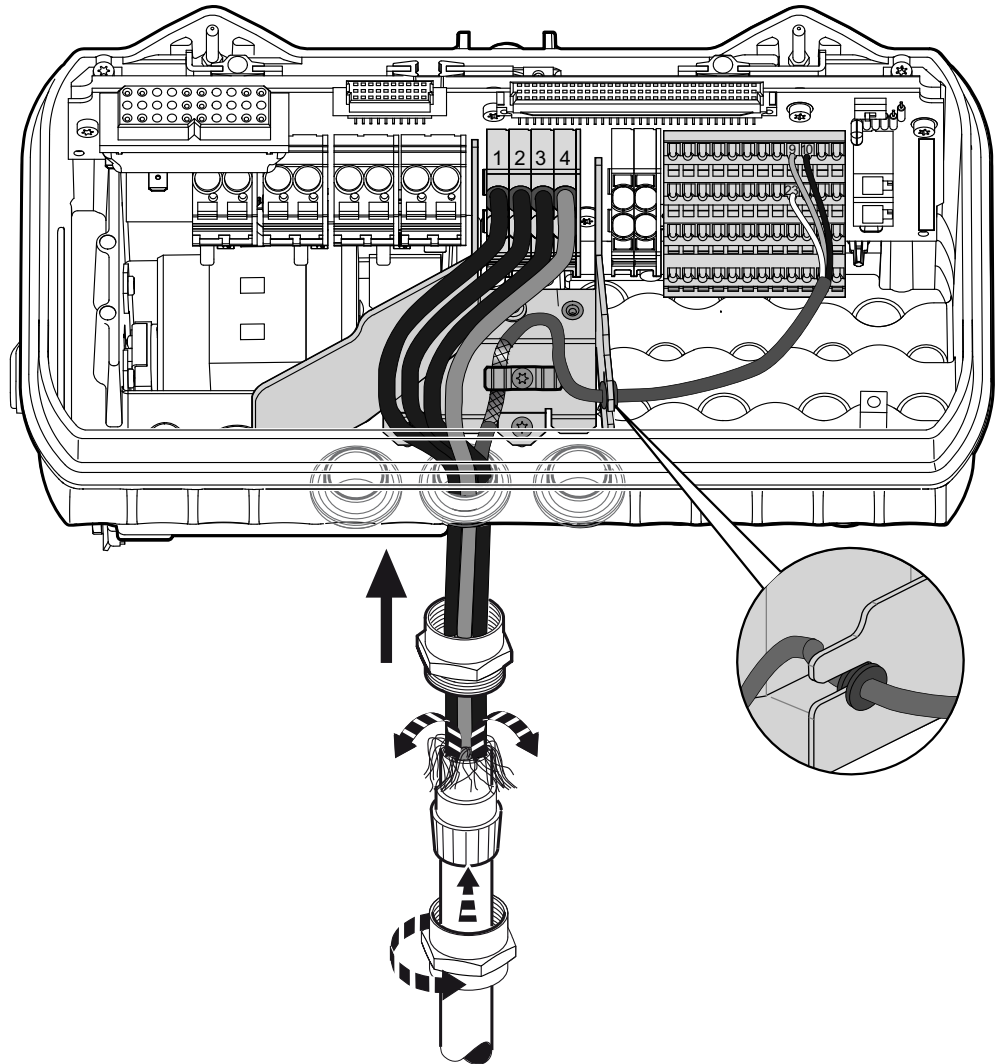
Connecting the hybrid cable with CAN bus

NOTICE

Damage due to missing or incorrectly mounted rubber grommet

Damage to the CAN cable

- During installation, make sure the CAN cable is protected with a rubber grommet where it passes through the shield plate (see figure below).
- Push the CAN cable with the rubber grommet in the recess of the shield plate all the way to the back and then slightly downward.
- SEW-EURODRIVE recommends using only the hybrid cables specifically prefabricated for this purpose to connect MOVIFIT® FDC with the SBus actuators (MOVIGEAR® DSC or DRC...-DSC).
- The outer cable shield of the hybrid cable must be applied to the MOVIFIT® ABOX as follows using an EMC cable gland (see following figure):
- Place the internal cable shield of the CAN cable in the hybrid cable as follows on the MOVIFIT® ABOX shield plate, using a clamp:



9007204850449803

Connecting the hybrid cable with CAN bus and 24 V subsidiary signal (suitable for STO)

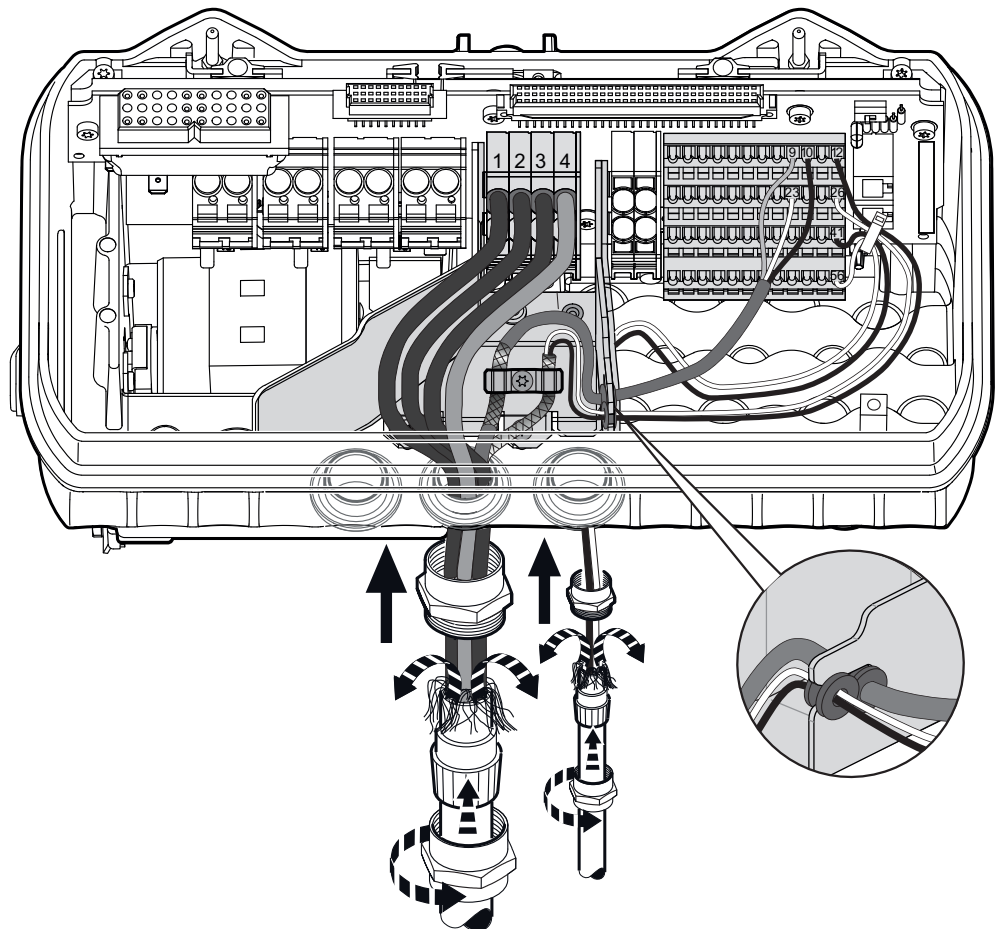
NOTICE



Damage due to missing or incorrectly mounted rubber grommet

Damage to the cable

- During installation, make sure the CAN cable and the 24 V auxiliary signal cable are protected with a rubber grommet at the positions where they pass through the shield plate (see figure below).
- Push the CAN cable and the 24 V auxiliary signal cable to the rear, each with the rubber grommet in the recess of the shield plate.
- Use only the hybrid cables specifically released for that purpose for the connection between MOVIFIT® FDC and the SBus actuators (MOVIGEAR® DSC or DRC...-DSC).
- The outer cable shield of the hybrid cable must be applied to the MOVIFIT® ABOX as follows using an EMC cable gland (see following figure):
- Place the inner cable shields of the CAN cable and the 24 V auxiliary signal cable on the shield plate of the MOVIFIT® ABOX as follows using a clamp (see following figure):
- Connect the 4 cores of the 24 V auxiliary signal with a cable tie as close as possible to the terminals (see the following figure).
- You must use conductor end sleeves to connect the 24 V auxiliary signal.



9007219063718283

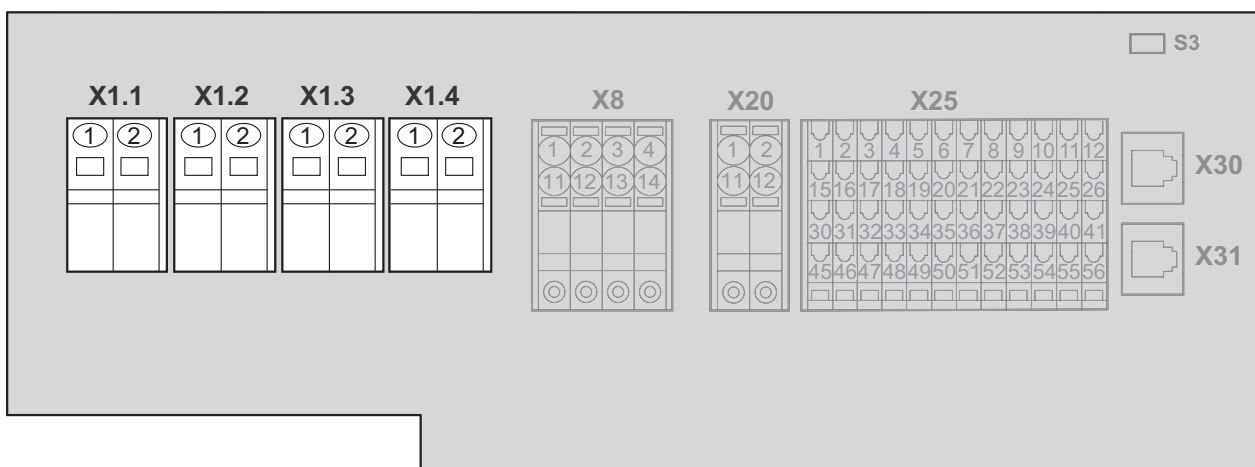
5.6.4 Terminal assignment

▲ WARNING

Electric shock due to dangerous voltages present in the ABOX.

The maintenance switch disconnects only the connected MOVIGEAR® and DRC.. drive units from the power supply system. Voltage is still present on the X1 terminals of MOVIFIT® FDC. Voltage is still present on the X8 terminals for up to 5 minutes after actuation of the maintenance switch.

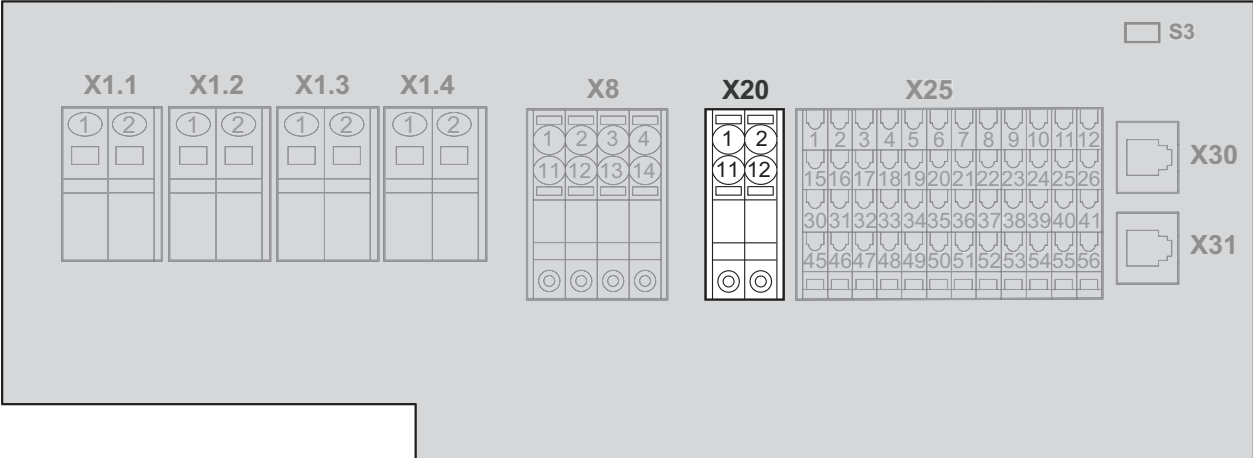
- Switch off the power to MOVIFIT® FDC using a suitable external disconnecting device, and wait for at least 5 minutes afterwards before opening the wiring space.

X1: Line terminals (power bus)

9007202265263627

Line terminal (power bus)			
No.		Name	Function
X1.1	1	L1	Line connection phase 1 (IN)
	2	res.	Reserved
X1.2	1	L2	Line connection phase 2 (IN)
	2	res.	Reserved
X1.3	1	L3	Line connection phase 3 (IN)
	2	res.	Reserved
X1.4	1	PE	PE connection (IN)
	2	res.	Reserved

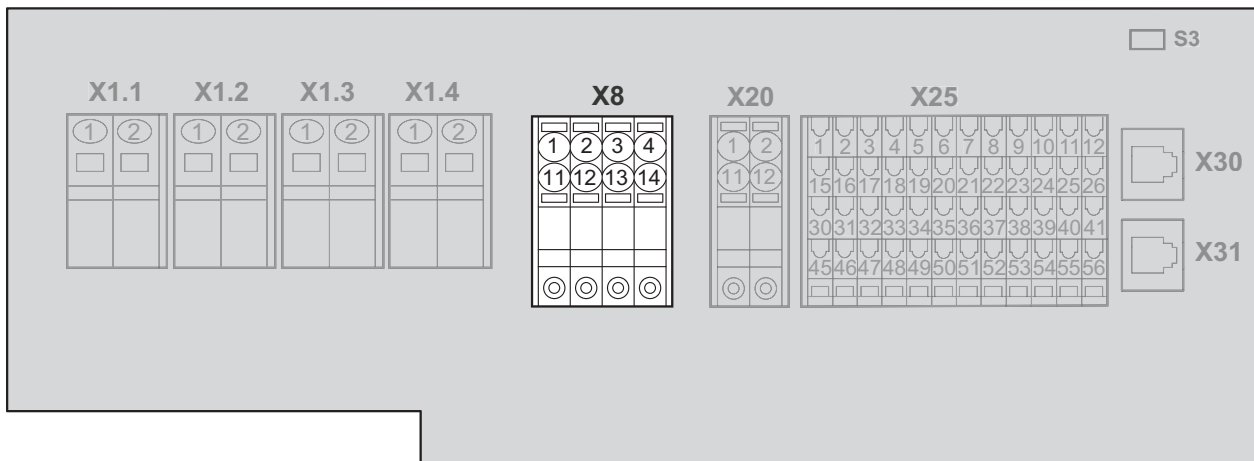
X20: 24 V supply terminal (24 V power bus)



9007202267618059

Terminal for external DC 24 V supply			
No.		Name	Function
X20	1	+24V	DC 24 V voltage (IN)
	2	0V24	0V24 reference potential for DC 24 V voltage (IN)
	11	res.	Reserved
	12	res.	Reserved

X8: Connecting terminals of SNI actuators (SNI cable)

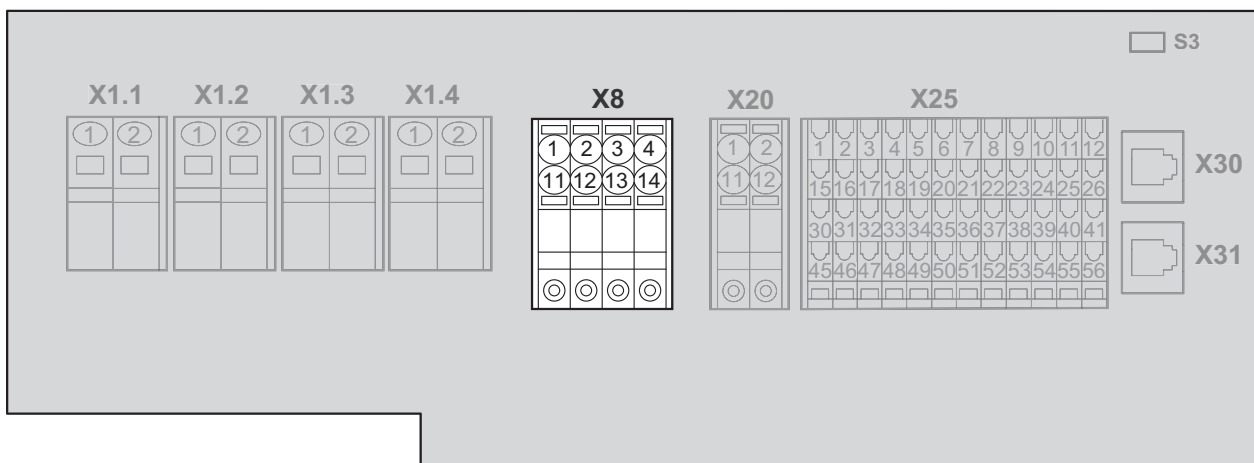


9007202267640971

Terminals of SNI actuators (MOVIGEAR® SNI/DRC...-SNI) (SNI cable)

No.		Name	Function
X8	1	L1_SNI	Actuator supply phase L1 with SNI communication
	2	L2_SNI	Actuator supply phase L2 with SNI communication
	3	L3_SNI	Actuator supply phase L3 with SNI communication
	4	PE	PE connection
	11	res.	Reserved
	12	res.	Reserved
	13	res.	Reserved
	14	res.	Reserved

X8: Connecting terminals SBus actuators (hybrid cable)



9007202267640971

Terminals SBus actuators (MOVIGEAR® SNI/DRC...-SNI) (hybrid cable)

No.		Name	Function
X8	1	L1	Actuator supply phase L1
	2	L2	Actuator supply phase L2
	3	L3	Actuator supply phase L3
	4	PE	PE connection
	11	res.	Reserved
	12	res.	Reserved
	13	res.	Reserved
	14	res.	Reserved

Important information on the assignment of the X25 terminal strip

MOVIFIT® FDC is delivered with a new assignment of the X25 terminal strip.

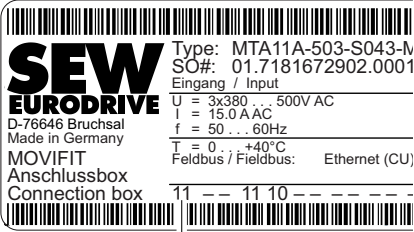
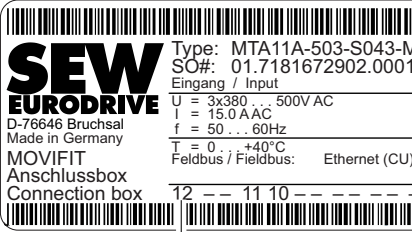
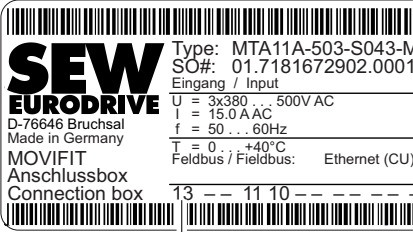
The X25 terminal strip assignment depends on the unit status (position 1) of the ABOX.

NOTICE!

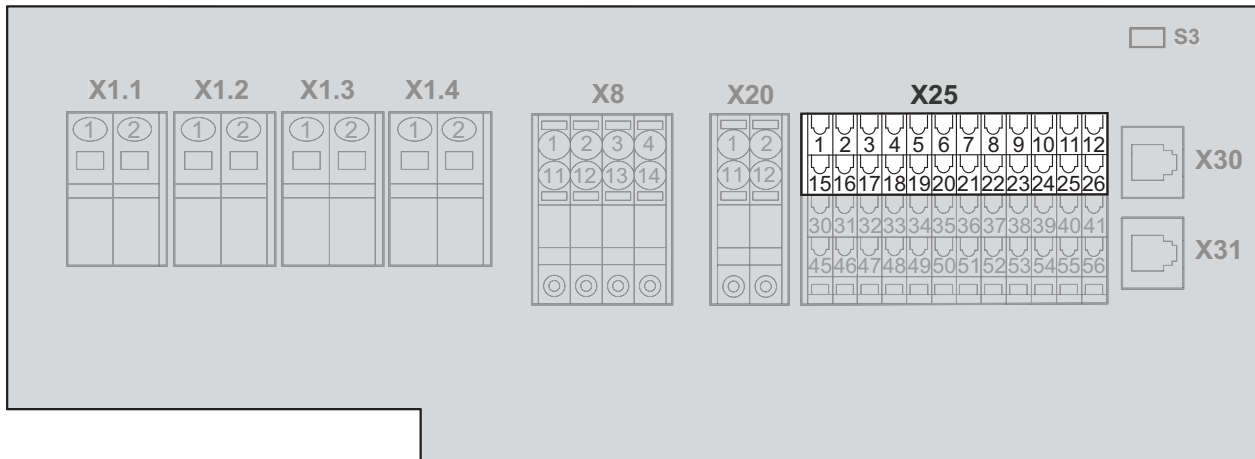
Damage to the EBOX due to incorrect X25 terminal strip connection.

Damage to the EBOX.

- Before connecting the cables to the X25 terminal strip, determine the unit status (position 1) on the inner nameplate of the ABOX.
- Observe the correct assignment when connecting the X25 terminal strip depending on the unit status (position 1) of the ABOX.

Unit status (position 1) of ABOX ≤ 11	Unit status (position 1) of ABOX = 12	Unit status (position 1) of ABOX = 13
 Type: MTA11A-503-S043-M SO#: 01.7181672902.0001 Eingang / Input U = 3x380 ... 500V AC I = 15.0 AAC f = 50 ... 60Hz T = 0 ... +40°C Feldbus / Fieldbus: Ethernet (CU) MOVIFIT Anschlussbox Connection box 11 -- 11 10 -- -- -- -- [1]	 Type: MTA11A-503-S043-M SO#: 01.7181672902.0001 Eingang / Input U = 3x380 ... 500V AC I = 15.0 AAC f = 50 ... 60Hz T = 0 ... +40°C Feldbus / Fieldbus: Ethernet (CU) MOVIFIT Anschlussbox Connection box 12 -- 11 10 -- -- -- -- [1]	 Type: MTA11A-503-S043-M SO#: 01.7181672902.0001 Eingang / Input U = 3x380 ... 500V AC I = 15.0 AAC f = 50 ... 60Hz T = 0 ... +40°C Feldbus / Fieldbus: Ethernet (CU) MOVIFIT Anschlussbox Connection box 13 -- 11 10 -- -- -- -- [1]
[1] Unit status (position 1) = 11	[1] Unit status (position 1) = 12	[1] Unit status (position 1) = 13
Observe in chapter "X25: ..." the columns "Status 11"	Observe in chapter "X25: ..." the columns "Status 12"	Observe in chapter "X25: ..." the columns "Status 13"

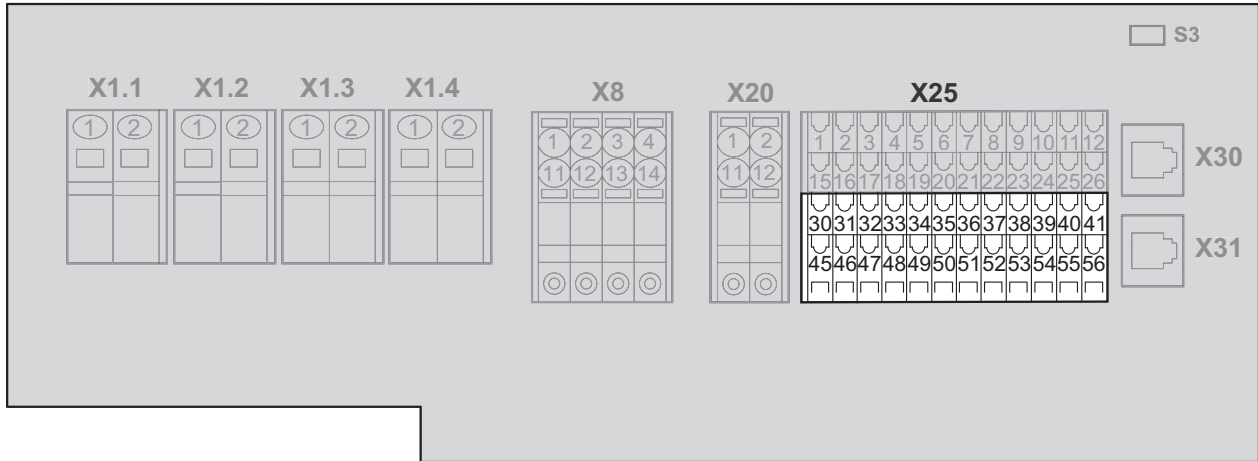
X25: I/O SBus RS485 terminals



3012854923

I/O terminals (connection of sensors + actuators)
 SBus terminal (CAN)
 RS485 terminals

No.		Status 11		Status 12		Status 13	
		Name	Function	Name	Function	Name	Function
X25	1	DI00/DO00	Digital input DI00 (switching signal) and digital output DO00				
	2	DI02/DO02	Digital input DI02 (switching signal) and digital output DO02				
	3	DI04	Digital input DI04 (switching signal)				
	4	D06	Digital input DI06 (switching signal)				
	5	DI08	Digital input DI08 (switching signal)				
	6	DI10	Digital input DI10 (switching signal)				
	7	DI12	Digital input DI12 (switching signal)				
	8	DI14	Digital input DI14 (switching signal)				
	9	CAN_H	CAN data line (high)				
	10	CAN_GND	Reference potential for CAN data line	CAN_H	CAN data line (high)	CAN_H	CAN data line (high)
	11	RS+	RS485 data line (+)				
	12	res.	Reserved	res.	Reserved	HT+	DC 24 V subsidiary signal (suitable for STO) max. 4 A
	15	DI01/DO01	Digital input DI01 (switching signal) and digital output DO01				
	16	DI03/DO03	Digital input DI03 (switching signal) and digital output DO03				
	17	DI05	Digital input DI05 (switching signal)				
	18	DI07	Digital input DI07 (switching signal)				
	19	DI09	Digital input DI09 (switching signal)				
	20	DI11	Digital input DI11 (switching signal)				
	21	DI13	Digital input DI13 (switching signal)				
	22	DI15	Digital input DI15 (switching signal)				
	23	CAN_L	CAN data line (low)				
	24	res.	Reserved	CAN_L	CAN data line (low)	CAN_L	CAN data line (low)
	25	RS-	RS485 data line (-)				
	26	res.	Reserved	res.	Reserved	HT-	0V24V subsidiary signal (suitable for STO) max. 4 A



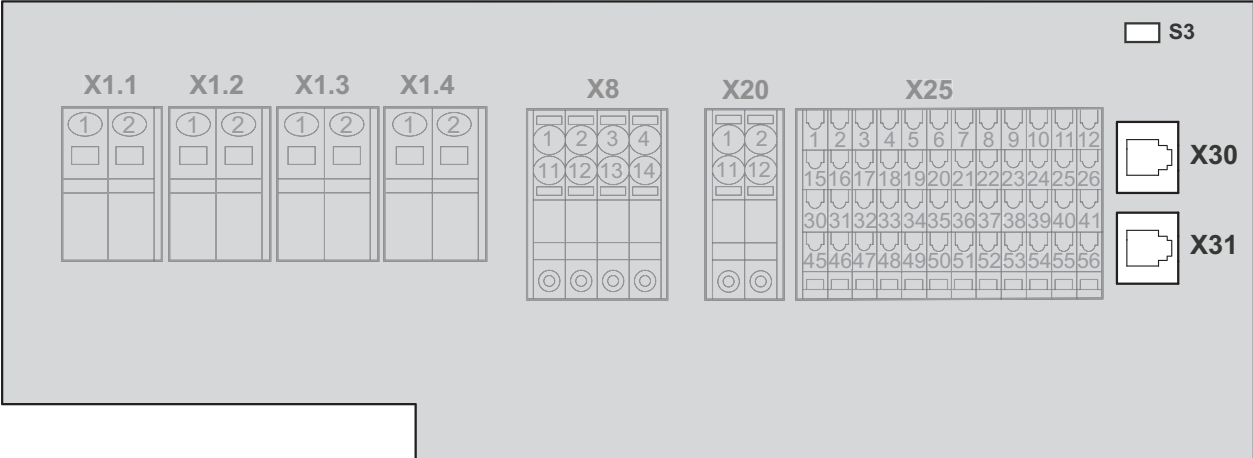
3121639051

I/O terminals (connection of sensors + actuators)
SBus terminal (CAN)
RS485 terminals

No.		Status 11		Status 12		Status 13	
		Name	Function	Name	Function	Name	Function
X25	30	+24V	DC 24 V output				
	31	+24V	DC 24 V output				
	32	+24V	DC 24 V output				
	33	+24V	DC 24 V output				
	34	+24V	DC 24 V output				
	35	+24V	DC 24 V output				
	36	+24V	DC 24 V output				
	37	+24V	DC 24 V output				
	38	CAN_H	CAN data line (high) ¹⁾	CAN_GND	Reference potential for CAN data line	CAN_GND	Reference potential for CAN data line
	39	CAN_GND	Reference potential for CAN data line ¹⁾				
	40	+5V_CAN	DC 5 V output (CAN interface supply)				
	41	res.	Reserved	res.	Reserved	HT+	DC 24 V subsidiary signal (suitable for STO) ¹⁾ max. 4 A
	45	GND	Reference potential				
	46	GND	Reference potential				
	47	GND	Reference potential				
	48	GND	Reference potential				
	49	GND	Reference potential				
	50	GND	Reference potential				
	51	GND	Reference potential				
	52	GND	Reference potential				
	53	CAN_L	CAN data line (low) ¹⁾				
	54	res.	Reserved	CAN_H	CAN data line (high) ¹⁾	CAN_H	CAN data line (high) ¹⁾
	55	res.	Reserved	CAN_GND	Reference potential for CAN data line ¹⁾	CAN_GND	Reference potential for CAN data line ¹⁾
	56	res.	Reserved	res.	Reserved	HT-	0V24V subsidiary signal (suitable for STO) ¹⁾ max. 4 A

1) for looping through

X30 and X31 Ethernet fieldbus plug connector

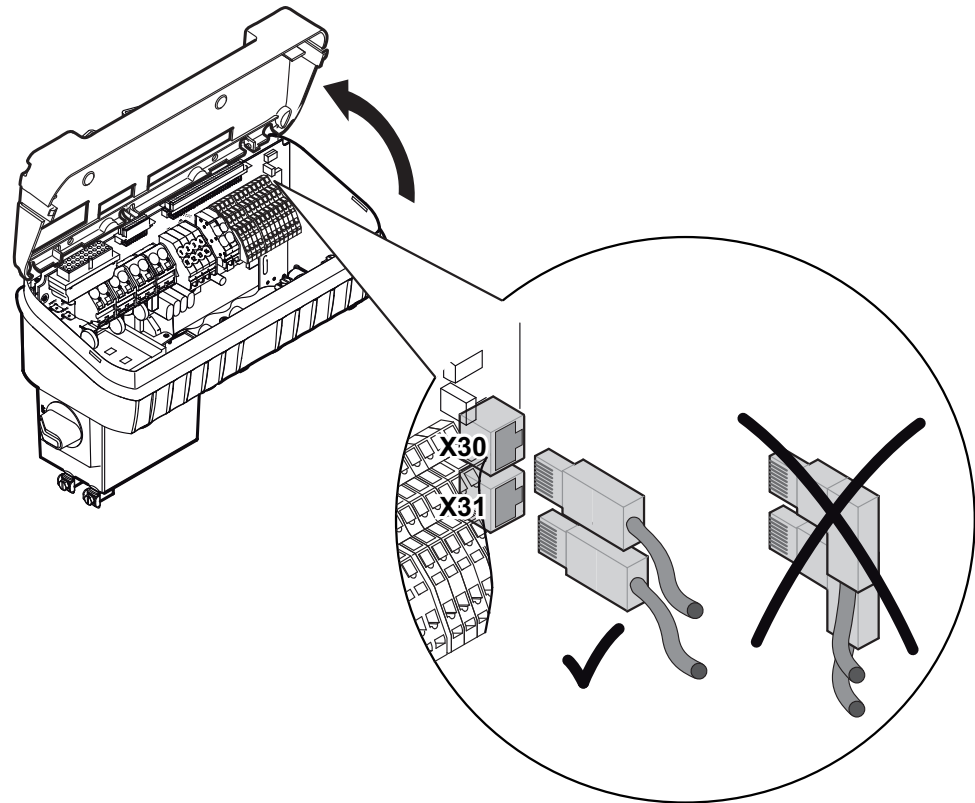


3012923659

Function				
Ethernet fieldbus interface				
• PROFINET IO • EtherNet/IP™ • Modbus TCP				
Connection type				
RJ45				
Connection diagram				
No.		Name	Function	
X30	1	TX+	Transmit line (+)	Ethernet port 1
	2	TX-	Transmit line (-)	
	3	RX+	Receive line (+)	
	4	res.	Reserved (75 Ω terminal lead)	
	5	res.	Reserved (75 Ω terminal lead)	
	6	RX-	Receive line (-)	
	7	res.	Reserved (75 Ω terminal lead)	
	8	res.	Reserved (75 Ω terminal lead)	
X31	1	TX+	Transmit line (+)	Ethernet port 2
	2	TX-	Transmit line (-)	
	3	RX+	Receive line (+)	
	4	res.	Reserved (75 Ω terminal lead)	
	5	res.	Reserved (75 Ω terminal lead)	
	6	RX-	Receive line (-)	
	7	res.	Reserved (75 Ω terminal lead)	
	8	res.	Reserved (75 Ω terminal lead)	

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The following figure shows the Ethernet connection in the ABOX:



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INFORMATION



Angular RJ45 connectors cannot be used to connect the Ethernet to plug connectors X30 and X31 (see above figure).

5.7 Hybrid ABOX "MTA...-S54.-...-00"

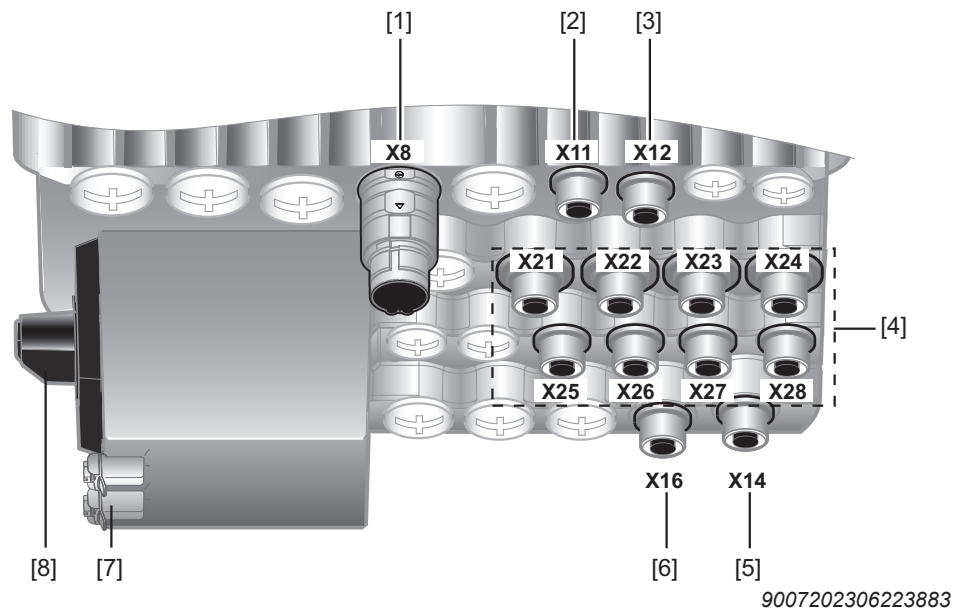
INFORMATION



- The hybrid ABOX is based on the standard ABOX "MTA...-S02.-...-00". You find the description of the additional plug connectors in comparison with the standard ABOX in the "Electrical Connections" chapter.
- For a description of the terminals, refer to chapter "Standard-ABOX "MTA...-S04.-...-00"" (→ 59).
- Customers can no longer use terminals X25 and the internal Ethernet plug connectors X30 and X31 because they are assigned to the described plug connectors.

5.7.1 Description

The following figure depicts the hybrid ABOX with M12 plug connectors for connecting I/Os and bus:

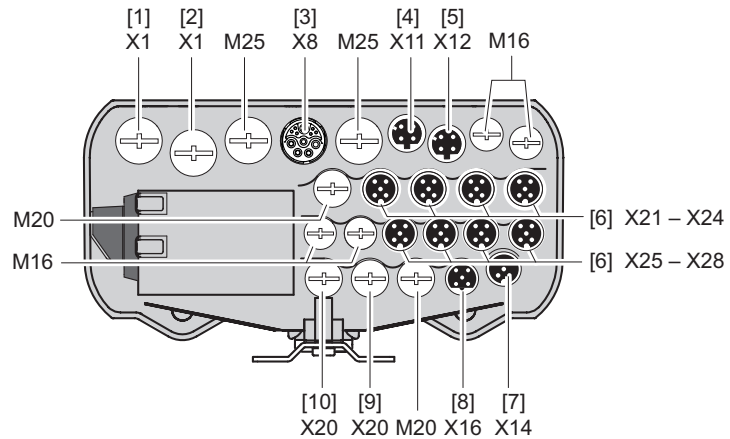


- | | | |
|-----|-----------|--|
| [1] | X8 | Drive unit connection |
| | | <ul style="list-style-type: none"> • AC 400 V output (SNI cable) • or AC 400 V output and CAN bus (hybrid cable) • or AC 400 V output |
| [2] | X11 | Ethernet fieldbus, port 1 |
| [3] | X12 | Ethernet fieldbus, port 2 |
| [4] | X21 – X28 | Digital inputs/outputs |
| [5] | X14 | SBus (CAN) – external |
| [6] | X16 | RS485 interface – external |
| [7] | | PE connection |
| [8] | | Maintenance switch |

5.7.2 Plug connector positions

The following figure shows the screw fittings and plug connectors of the hybrid ABOX:

PROFINET MTA11A-503-S543-...-00
EtherNet/IP™ MTA11A-503-S543-...-00
Modbus/TCP MTA11A-503-S543-...-00



45035999325661707

[1]	X1	AC 400 V input	(terminals underneath the M25 screw fitting)
[2]	X1	Reserved	(M25 screw fitting)
[3]	X8	Drive unit connection	(M23, SEW insert, SpeedTec equipment, company: TE/ Intercontec, female, coding ring: red-violet, protected against contact)
		• AC 400 V output (SNI cable) • or AC 400 V output and CAN bus (hybrid cable) • or AC 400 V output	
[4]	X11	Ethernet fieldbus, port 1	(M12, 4-pole, female, D-coded)
[5]	X12	Ethernet fieldbus, port 2	(M12, 4-pole, female, D-coded)
[6]	X21 – X28	Digital inputs/outputs	(M12, 5-pole, female, A-coded)
[7]	X14	SBus (CAN) – external	(M12, 5-pole, female, A-coded)
[8]	X16	RS485 interface – external	(M12, 5-pole, female, B-coded)
[9]	X20	Reserved	(M20 screw fitting)
[10]	X20	DC 24 V input	(terminals underneath the M20 screw fitting)

You find the pin assignment of the plug connectors in the operating instructions > "Electrical connections" chapter.

5.8 Hybrid ABOX "MTA...-S64.-...-00"

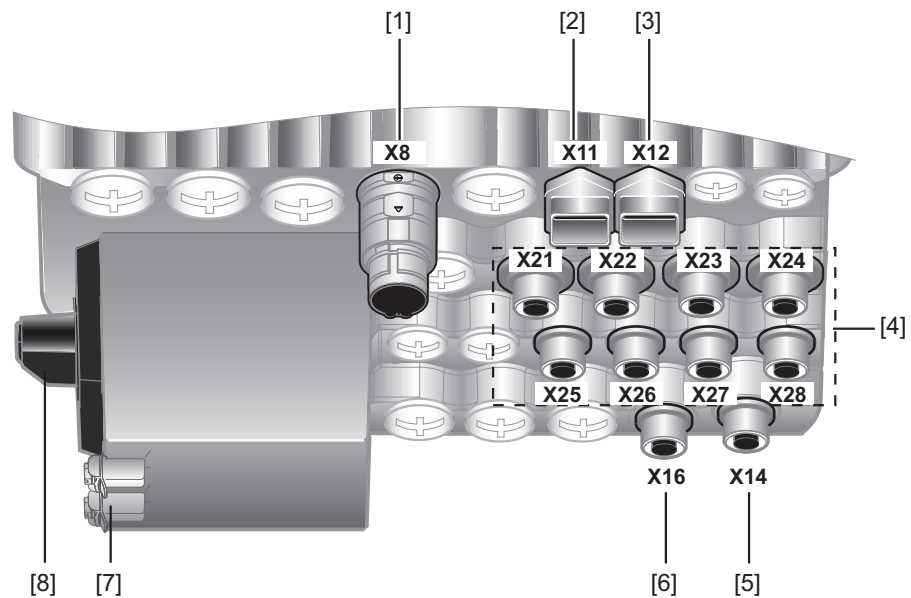
INFORMATION



- The hybrid ABOX is based on the standard ABOX "MTA...-S02.-...-00". You find the description of the additional plug connectors in comparison with the standard ABOX in the "Electrical Connections" chapter.
- For a description of the terminals, refer to chapter "Standard-ABOX "MTA...-S04.-...-00"" (→ 59).
- Customers can no longer use terminals X25 and the internal Ethernet plug connectors X30 and X31 because they are assigned to the described plug connectors.

5.8.1 Description

The following figure shows the hybrid ABOX with M12 plug connectors for connecting I/Os and push-pull RJ45 plug connector for Ethernet connection:



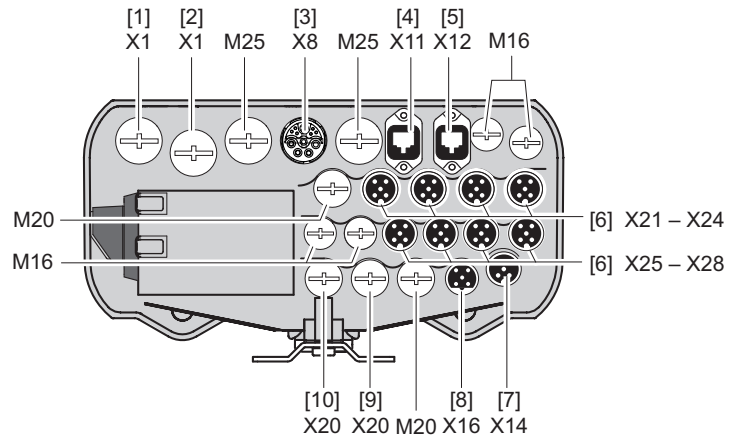
9007202308003083

- | | | |
|-----|-----------|---|
| [1] | X8 | Drive unit connection |
| | | • AC 400 V output (SNI cable) |
| | | • or AC 400 V output and CAN bus (hybrid cable) |
| | | • or AC 400 V output |
| [2] | X11 | Ethernet fieldbus, port 1 |
| [3] | X12 | Ethernet fieldbus, port 2 |
| [4] | X21 – X28 | Digital inputs/outputs |
| [5] | X14 | SBus (CAN) – external |
| [6] | X16 | RS485 interface – external |
| [7] | | PE connection |
| [8] | | Maintenance switch |

5.8.2 Plug connector positions

The following figure shows the screw fittings and plug connectors of the hybrid ABOX:

PROFINET MTA11A-503-S643-...-00
EtherNet/IP™ MTA11A-503-S643-...-00
Modbus/TCP MTA11A-503-S643-...-00



36028800072239627

[1]	X1	AC 400 V input	(terminals underneath the M25 screw fitting)
[2]	X1	Reserved	(M25 screw fitting)
[3]	X8	Drive unit connection	(M23, SEW insert, SpeedTec equipment, company: TE/ Intercontec, female, coding ring: red-violet, protected against contact)
		• AC 400 V output (SNI cable)	
		• or AC 400 V output and CAN bus (hybrid cable)	
		• or AC 400 V output	
[4]	X11	Ethernet fieldbus, port 1	(Han® 3 A RJ45)
[5]	X12	Ethernet fieldbus, port 2	(Han® 3 A RJ45)
[6]	X21 – X28	Digital inputs/outputs	(M12, 5-pole, female, A-coded)
[7]	X14	SBus (CAN) – external	(M12, 5-pole, female, A-coded)
[8]	X16	RS485 interface – external	(M12, 5-pole, female, B-coded)
[9]	X20	Reserved	(M20 screw fitting)
[10]	X20	DC 24 V input	(terminals underneath the M20 screw fitting)

You find the pin assignment of the plug connectors in the operating instructions > "Electrical connections" chapter.

5.9 Hybrid ABOX "MTA...-S84.-...-00"

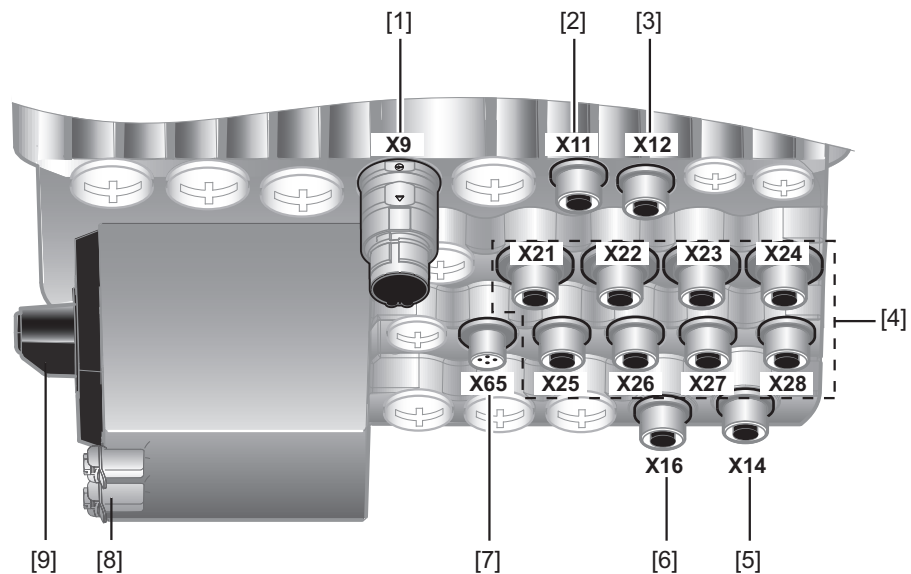
INFORMATION



- The hybrid ABOX is based on the standard ABOX "MTA...-S04.-...-00". You find the description of the additional plug connectors in comparison with the standard ABOX in the "Electrical Connections" chapter.
- For a description of the terminals, refer to chapter "Standard-ABOX "MTA...-S04.-...-00"" (→ 59).
- Customers cannot use terminals X25 and the internal Ethernet plug connectors X30 and X31 because they are assigned to the described plug connectors.

5.9.1 Description

The following figure depicts the hybrid ABOX with M12 plug connectors for connecting I/Os and bus:



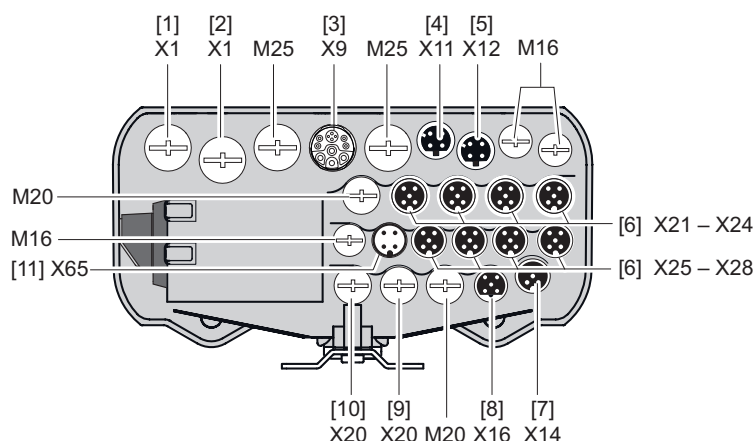
19812841867

- | | | |
|-----|-----------|---|
| [1] | X9 | Drive unit connection
AC 400 V output, communication and 24 V subsidiary signal (suitable for STO) |
| [2] | X11 | Ethernet fieldbus, port 1 |
| [3] | X12 | Ethernet fieldbus, port 2 |
| [4] | X21 – X28 | Digital inputs/outputs |
| [5] | X14 | SBus (CAN) – external |
| [6] | X16 | RS485 interface – external |
| [7] | X65 | DC 24 V input subsidiary signal (suitable for STO) |
| [8] | | PE connection |
| [9] | | Maintenance switch |

5.9.2 Plug connector positions

The following figure shows the screw fittings and plug connectors of the hybrid ABOX:

PROFINET MTA11A-503-S843-...-00
EtherNet/IP™ MTA11A-503-S843-...-00
Modbus/TCP MTA11A-503-S843-...-00



19817650059

[1]	X1	AC 400 V input	(terminals underneath the M25 screw fitting)
[2]	X1	Reserved	(M25 screw fitting)
[3]	X9	Drive unit connection AC 400 V output, communication and 24 V auxiliary signal (suitable for STO)	(M23, SEW insert, female, SpeedTec-capable, company: TE/Intercontec, coding ring: yellow, protected against contact)
[4]	X11	Ethernet fieldbus, port 1	(M12, 4-pole, female, D-coded)
[5]	X12	Ethernet fieldbus, port 2	(M12, 4-pole, female, D-coded)
[6]	X21 – X28	Digital inputs/outputs	(M12, 5-pole, female, A-coded)
[7]	X14	SBus (CAN) – external	(M12, 5-pole, female, A-coded)
[8]	X16	RS485 interface – external	(M12, 5-pole, female, B-coded)
[9]	X20	Reserved	(M20 screw fitting)
[10]	X20	DC 24 V input	(terminals underneath the M20 screw fitting)
[11]	X65	DC 24 V input auxiliary signal (suitable for STO)	(M12, 4-pole, male, A-coded)

You find the pin assignment of the plug connectors in the operating instructions > "Electrical connections" chapter.

5.10 Electrical connections

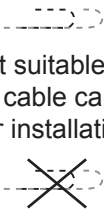
5.10.1 Connection cables

Connection cables are not included in the delivery.

Prefabricated cables for connection between SEW components can be ordered from SEW-EURODRIVE at any time. These cables are described in the following sections. Specify the part number and length of the required cable in your order.

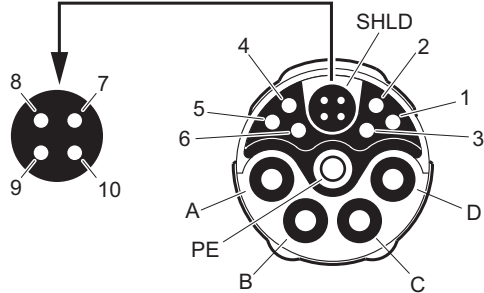
The number and type of required connection cables depend on the design of the units and the components to be connected. This is why not all listed cables are required.

The following figure shows the various cable types:

Cable	Length	Installation type
	Fixed length	Suitable for cable carrier installation
	Variable length	Not suitable for cable carrier installation 

5.10.2 X8: AC 400 V output (SNI)

The following table shows information about this connection:

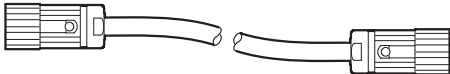
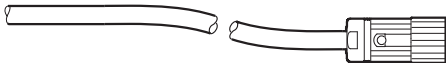
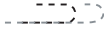
Function
AC 400 V output for Single Line Network Installation (SNI) of the hybrid ABOX
Connection type
M23, SEW insert, SpeedTec equipment, company: TE/Intercontec, female, coding ring: red-violet, protected against contact
Connection diagram
 18014401258849163

No.	Name	Function
A	L1_SNI	Actuator supply phase L1 with SNI communication
B	L2_SNI	Actuator supply phase L2 with SNI communication
C	L3_SNI	Actuator supply phase L3 with SNI communication
D	n.c.	Not connected
PE	PE	PE connection
1	n.c.	Not connected
2	n.c.	Not connected
3	n.c.	Not connected
4	n.c.	Not connected
5	n.c.	Not connected
6	n.c.	Not connected
7	res.	Reserved
8	res.	Reserved
9	res.	Reserved
10	res.	Reserved
SHLD	res.	Reserved

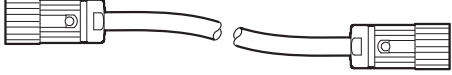
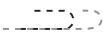
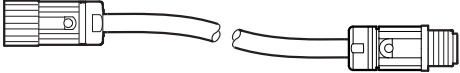
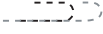
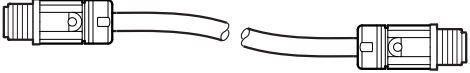
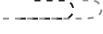
Connection cables

The following tables list the cables available for this connection:

Cable cross section 2.5 mm²

Connection cable	Conformity/ part num- ber	Cable type see also technical data	Length/in- stallation type	Cable cross sec- tion/operat- ing voltage
 M23, coding ring: red, male	CE: 18127509	HELUKABEL® TOPFLEX® – EMV- UV-2YSLCYK -J	Variable 	2.5 mm ² / AC 500 V
	UL: 18150381	HELUKABEL® TOPFLEX® – EMV- UV-2YSLCYK -J-UL/CSA	Variable 	
	CE/UL: 18120679	HELUKABEL® TOPSERV® – 109	Variable 	
 Open	CE: 18127517	HELUKABEL® TOPFLEX® – EMV- UV-2YSLCYK -J	Variable 	2.5 mm ² / AC 500 V
	UL: 18150403	HELUKABEL® TOPFLEX® – EMV- UV-2YSLCYK -J-UL/CSA	Variable 	
	CE/UL: 18120687	HELUKABEL® TOPSERV® – 109	Variable 	

Cable cross-section 4 mm²

Connection cable	Conformity/ part num- ber	Cable type see also technical data	Length/in- stallation type	Cable cross-sec- tion/operat- ing voltage
 M23, coding ring: red, male	CE: 18127525	HELUKABEL® TOPFLEX® – EMV- UV-2YSLCYK -J	variable 	4 mm ² / AC 500 V
	UL: 18150411	HELUKABEL® TOPFLEX® – EMV- UV-2YSLCYK -J-UL/CSA	variable 	
	CE/UL: 18120695	HELUKABEL® TOPSERV® – 109	variable 	
 Open	CE: 18127533	HELUKABEL® TOPFLEX® – EMV- UV-2YSLCYK -J	variable 	4 mm ² / AC 500 V
	UL: 18153259	HELUKABEL® TOPFLEX® – EMV- UV-2YSLCYK -J-UL/CSA	variable 	
	CE/UL: 18120709	HELUKABEL® TOPSERV® – 109	variable 	
 M23, coding ring: red, male	CE/UL: 18166296	HELUKABEL® TOPSERV® – 109	variable 	4 mm ² / AC 500 V
 M23, coding ring: red, fe- male	CE/UL: 18191444	HELUKABEL® TOPSERV® – 109	variable 	4 mm ² / AC 500 V

Connection of cables with open end

The following tables show the conductor assignment of cables with the following part numbers:

Part number	Signal name	Color coding	Identification
18127517	L1_SNI	Brown	–
18150403	L2_SNI	Black	–
18127533	L3_SNI	Gray	–
18153259	PE	Green/yellow	–

Part number	Signal name	Color coding	Identification
18120687	L1_SNI	Black	1
18120709	L2_SNI	Black	2
	L3_SNI	Black	3
	PE	Green/yellow	–

5.10.3 X8: AC 400 V output (DSC)

The following table shows information about this connection:

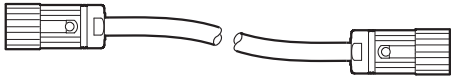
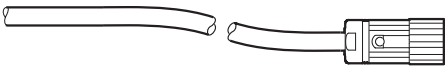
Function
AC 400 V connection for supplying the device/for looping through
Connection type
M23, SEW insert, SpeedTec equipment, company: TE/Intercontec, female, coding ring: red-violet, protected against contact
Connection diagram

No.	Name	Function
A	L1	Line connection phase L1
B	L2	Line connection phase L2
C	L3	Line connection phase L3
D	n.c.	Not connected
PE	PE	PE connection
1	n.c.	Not connected
2	n.c.	Not connected
3	n.c.	Not connected
4	n.c.	Not connected
5	n.c.	Not connected
6	n.c.	Not connected
7	res.	Reserved
8	res.	Reserved
9	res.	Reserved
10	res.	Reserved
SHLD	res.	Reserved

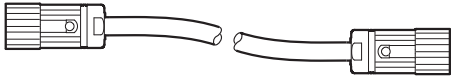
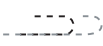
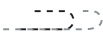
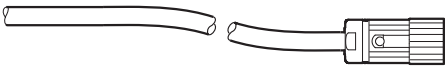
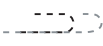
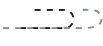
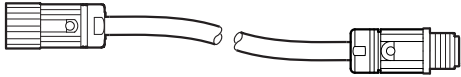
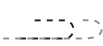
Connection cables

The following tables list the cables available for this connection:

Cable cross section 2.5 mm²

Connection cable	Conformity/ part num- ber	Cable type	Length/in- stallation type	Cable cross sec- tion/oper- ating voltage
 M23, coding ring: black, male M23, coding ring: black, male	CE: 18127460	HELUKABEL® TOPFLEX® – 600-PVC	Variable 	2.5 mm ² / AC 500 V
	CE: 18133959 Halogen- free	HELUKABEL® TOPFLEX® – 611-PUR	Variable 	
	UL: 18153267	HELUKABEL® – JZ-602	Variable 	
	UL: 18153275	HELUKABEL® MULTIFLEX® – 512	Variable 	
 Open M23, coding ring: black, male	CE: 18127479	HELUKABEL® TOPFLEX® – 600-PVC	Variable 	2.5 mm ² / AC 500 V
	CE: 18133967 Halogen- free	HELUKABEL® TOPFLEX® – 611-PUR	Variable 	
	UL: 18153283	HELUKABEL® – JZ-602	Variable 	
	UL: 18153291	HELUKABEL® MULTIFLEX® – 512	Variable 	

Cable cross section 4 mm²

Connection cable	Conformity/ part num- ber	Cable type	Length/in- stallation type	Cable cross sec- tion/operat- ing voltage
 M23, coding ring: black, male M23, coding ring: black, male	CE: 18127487	HELUKABEL® TOPFLEX® – 600-PVC	Variable 	4 mm ² / AC 500 V
	CE: 18133975 Halogen- free	HELUKABEL® TOPFLEX® – 611-PUR	Variable 	
	UL: 18153305	HELUKABEL® – JZ-602	Variable 	
	UL: 18153313	HELUKABEL® MULTIFLEX® – 512	Variable 	
 Open M23, coding ring: black, male	CE: 18127495	HELUKABEL® TOPFLEX® – 600-PVC	Variable 	4 mm ² / AC 500 V
	CE: 18133983 Halogen- free	HELUKABEL® TOPFLEX® – 611-PUR	Variable 	
	UL: 18153321	HELUKABEL® – JZ-602	Variable 	
	UL: 18153348	HELUKABEL® MULTIFLEX® – 512	Variable 	
 M23, coding ring: black, male M23, coding ring: black, fe- male	UL: 18166318	HELUKABEL® MULTIFLEX® – 512	Variable 	4 mm ² / AC 500 V

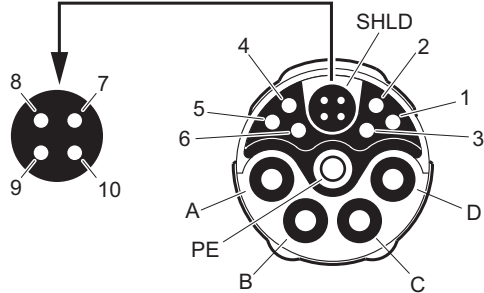
Connection of cables with open end

The following table shows the conductor assignment of cables with the following part numbers:

Part number	Signal name	Color coding	Identification
18180094	L1	Black	1
18127479	L2	Black	2
18133967	L3	Black	3
18153283	PE	Green/yellow	–
18153291			
18127495			
18133983			
18153321			
18153348			

5.10.4 X8: AC 400 V output and CAN bus (DSC hybrid)

The following table shows information about this connection:

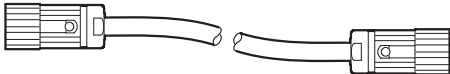
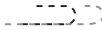
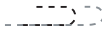
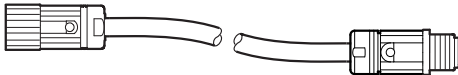
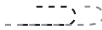
Function
AC 400 V output, CAN bus (SBus)
Connection type
M23, SEW insert, SpeedTec equipment, company: TE/Intercontec, female, coding ring: red-violet, protected against contact
Connection diagram
 18014401258849163

No.	Name	Function
A	L1	Actuator supply phase L1
B	L2	Actuator supply phase L2
C	L3	Actuator supply phase L3
D	n.c.	Not connected
PE	PE	PE connection
1	n.c.	Not connected
2	n.c.	Not connected
3	n.c.	Not connected
4	n.c.	Not connected
5	n.c.	Not connected
6	n.c.	Not connected
7	CAN_L	CAN data line (low)
8	CAN_GND	Reference potential CAN bus
9	CAN_H	CAN data line (high)
10	n.c.	Not connected
SHLD	CAN_SHLD	Shield/equipotential bonding CAN bus

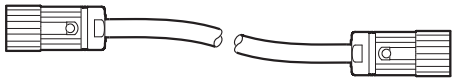
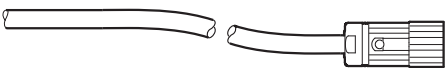
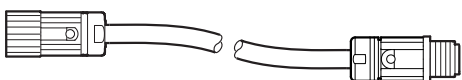
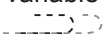
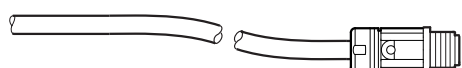
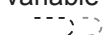
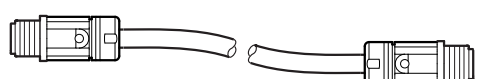
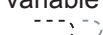
Connection cables

The following tables list the cables available for this connection:

Cable cross-section 2.5 mm²

Connection cable	Conformity/ part number	Cable type see also technical data	Length/in- stallation type	Cable cross-sec- tion/operat- ing voltage
 M23, coding ring: violet, male M23, coding ring: violet, male	CE/UL: 18127428	LEONI Type: LEHC 005221	variable 	2.5 mm ² / AC 500 V
 Open M23, coding ring: violet, male	CE/UL: 18127436	LEONI Type: LEHC 005221	variable 	2.5 mm ² / AC 500 V
 M23, coding ring: violet, male M23, coding ring: violet, female	CE/UL: 18166199	LEONI Type: LEHC 005221	variable 	2.5 mm ² / AC 500 V
 Open M23, coding ring: violet, female	CE/UL: 18166490	LEONI Type: LEHC 005221	variable 	2.5 mm ² / AC 500 V

Cable cross-section 4 mm²

Connection cable	Conformity/ part num- ber	Cable type see also technical data	Length/in- stallation type	Cable cross-sec- tion/operat- ing voltage
 M23, coding ring: violet, male M23, coding ring: violet, male	CE/UL: 18127444	LEONI Type: LEHC 005211	variable 	4 mm ² / AC 500 V
 Open M23, coding ring: violet, male	CE/UL: 18127452	LEONI Type: LEHC 005211	variable 	4 mm ² / AC 500 V
 M23, coding ring: violet, male M23, coding ring: violet, female	CE/UL: 18166202	LEONI Type: LEHC 005211	variable 	4 mm ² / AC 500 V
 Open M23, coding ring: violet, female	CE/UL: 18166504	LEONI Type: LEHC 005211	variable 	4 mm ² / AC 500 V
 M23, coding ring: violet, female M23, coding ring: violet, female	CE/UL: 18189652	LEONI Type: LEHC 005211	variable 	4 mm ² / AC 500 V

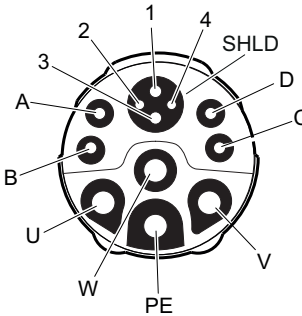
Connection of cables with open end

The following table shows the conductor assignment of the cables with the following part numbers:

Part number	Signal name	Core color	Identification
18127436	L1	Black	1
18166490	L2	Black	2
18127452	L3	Black	3
18166504	PE	Green/yellow	–
	CAN_L	Blue	–
	CAN_GND	Black	–
	CAN_H	White	–

5.10.5 X9: AC 400 V output, communication, 24 V subsidiary signal (suitable for STO)

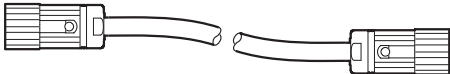
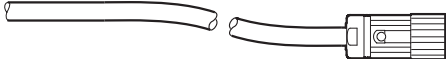
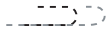
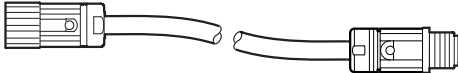
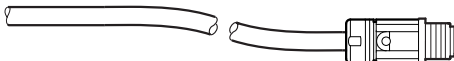
The following table shows information about this connection:

Function		
AC 400 V output for actuator supply, communication and 24 V auxiliary signal (suitable for STO)		
Connection type		
M23, SEW insert, female, SpeedTec-capable, company: TE/Intercontec, female, coding ring: yellow, protected against contact		
Connection diagram		
		
Assignment		
No.	Name	Function
U	L1	Actuator supply phase L1 (with SNI communication)
V	L2	Actuator supply phase L2 (with SNI communication)
W	L3	Actuator supply phase L3 (with SNI communication)
PE	PE	PE connection
A	HT+	Auxiliary signal 24 V (suitable for STO)
B	HT-	Auxiliary signal 0V24 (suitable for STO)
C	Res.	Reserved
D	Res.	Reserved
1	CAN_L	CAN data line (low)
2	CAN_GND	Reference potential CAN bus
3	CAN_H	CAN data line (high)
4	Res.	Reserved
SHLD	Shield	Shield/equipotential bonding CAN bus

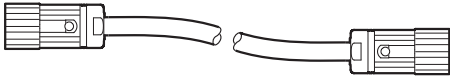
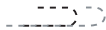
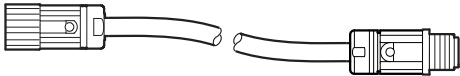
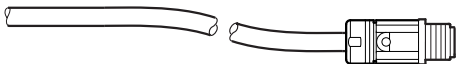
Connection cables

The following tables list the cables available for this connection:

Connection cable 2.5 mm²

Connection cable	Conformity/ part number	Cable type, see also technical data	Length/in- stallation type	Cable cross section/op- erating voltage
 M23, coding ring: yellow, male M23, coding ring: yellow, male	CE/UL: 18177867	LEONI type: LEHC 005295	Variable 	2.5 mm ² / AC 500 V
 Open M23, coding ring: yellow, male	CE/UL: 18191134	LEONI type: LEHC 005295	Variable 	2.5 mm ² / AC 500 V
 M23, coding ring: yellow, male M23, coding ring: yellow, female	CE/UL: 18177883	LEONI type: LEHC 005295	Variable 	2.5 mm ² / AC 500 V
 Open M23, coding ring: yellow, female	CE/UL: 18191401	LEONI type: LEHC 005295	Variable 	2.5 mm ² / AC 500 V

Connection cable 4 mm²

Connection cable	Conformity/ part number	Cable type, see also technical data	Length/in- stallation type	Cable cross section/op- erating voltage
 M23, coding ring: yellow, male M23, coding ring: yellow, male	CE/UL: 18177875	LEONI type: LEHC 005296	Variable 	4 mm ² / AC 500 V
 Open M23, coding ring: yellow, male	CE/UL: 18191142	LEONI type: LEHC 005296	Variable 	4 mm ² / AC 500 V
 M23, coding ring: yellow, male M23, coding ring: yellow, female	CE/UL: 18177891	LEONI type: LEHC 005296	Variable 	4 mm ² / AC 500 V
 Open M23, coding ring: yellow, female	CE/UL: 18191428	LEONI type: LEHC 005296	Variable 	4 mm ² / AC 500 V

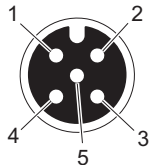
Connection of cables with open end

The following table shows the core assignment of cables with the following part numbers:

Part number	Signal name	Core color	Identification
18191134	L1	Black	U/L1
18191401	L2	Black	V/L2
18191142	L3	Black	W/L3
18191428	PE	Green/yellow	-
	STO+	Black	2
	STO-	Black	1
	CAN_L	Blue	-
	CAN_GND	Drain wire	-
	CAN_H	White	-

5.10.6 X14: CAN BUS/SBus interface

The following table shows information about this connection:

Function		
CAN bus of the hybrid ABOX for external components		
Connection type		
M12, 5-pole, female, A-coded, violet		
Connection diagram		
		
No.	Name	Function
1	CAN_SHLD	Shield/equipotential bonding
2	+5V_CAN	DC 5 V output (supply of CAN interface)
3	CAN_GND	Reference potential for CAN data line
4	CAN_H	CAN data line (high)
5	CAN_L	CAN data line (low)

Connection cables

The following table provides an overview of the cables available for this connection:

Connection cable	Conformity/part number	Length/installation type	Operating voltage
 M12, 5-pin, A-coded, female M12, 5-pin, A-coded, male	CE: 13286331	5 m 	DC 60 V
	CE: 13286358	10 m 	
	CE: 13286366	15 m 	
 open M12, 5-pin, A-coded, male	CE: 13281402	5 m 	DC 60 V
	CE: 13281410	10 m 	
	CE: 13281429	15 m 	

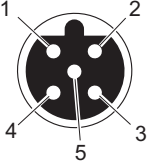
Connection of cables with open ends

The following table shows the conductor assignment of the cables with the following part numbers:

Part number	Signal name	Core color
13281402	CAN_SHLD	Gray
13281410	+5V_CAN	Red
13281429	CAN_GND	Black
	CAN_H	White
	CAN_L	Blue

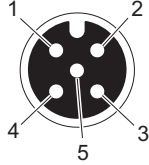
5.10.7 X16: RS485 interface – external

The following table shows information about this connection:

Function		
RS485 interface of the hybrid ABOX for external components		
Connection type		
M12, 5-pole, female, B-coded, black		
Connection diagram		
		
No.	Name	Function
1	res.	Reserved
2	RS-	RS485 data line (-)
3	res.	Reserved
4	RS+	RS485 data line (+)
5	res.	Reserved

5.10.8 X21 – X28: Digital inputs/outputs

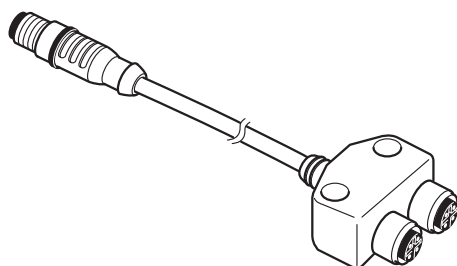
The following table shows information about this connection:

Function				
Digital inputs/outputs of the hybrid ABOX				
Connection type				
M12, 5-pin, female, A-coded				
Connection diagram				
				
No.	X21	X22	X23	X24
1	+24V	+24V	+24V	+24V
2	DI01/DO01	DI03/DO03	DI05	DI07
3	GND	GND	GND	GND
4	DI00/DO00	DI02/DO02	DI04	DI06
5	n.c.	n.c.	n.c.	n.c.
No.	X25	X26	X27	X28
1	+24V	+24V	+24V	+24V
2	DI09	DI11	DI13	DI15
3	GND	GND	GND	GND
4	DI08	DI10	DI12	DI14
5	n.c.	n.c.	n.c.	n.c.

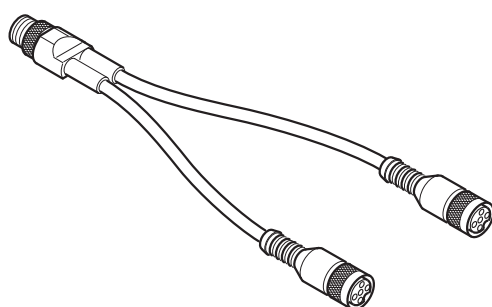
Y adapter

For connecting 2 sensors/actuators to an M12 plug connector, use a Y adapter with extension.

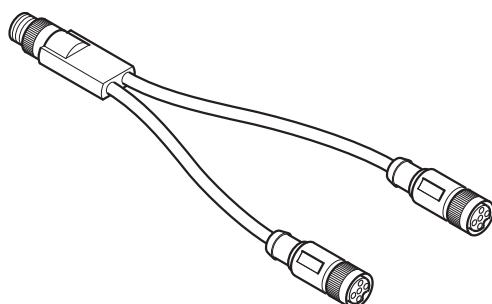
The Y adapter is available from different manufacturers:



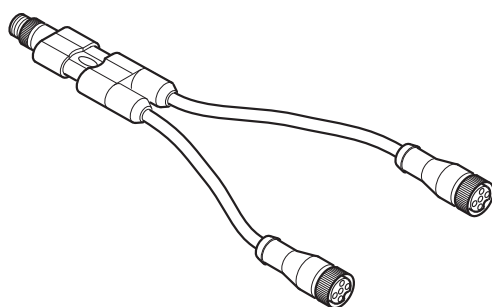
Manufacturer: Escha
Type: WAS4-0,3-2FKM3/..



Manufacturer: Binder
Type: 79 5200..



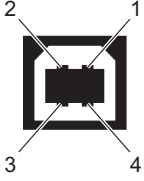
Manufacturer: Phoenix Contact
Type: SAC-3P-Y-2XFS SCO/.../...
The sheath of the cables is made of PVC. Provide suitable UV protection.



Manufacturer: Murrelektronik
Type: 7000-40721-..

5.10.9 X51: USB interface

The following table shows information about this connection:

Function		
USB interface of the EBOX		
Connection type		
USB type B, female		
Connection diagram		
		
No.	Name	Function
1	+5V	5 V output
2	USB–	USB data line (–)
3	USB+	USB data line (+)
4	GND	Reference potential

USB interface X51 comprises the following functions:

- MOVIFIT® engineering and diagnostics with MOVITOOLS® MotionStudio

Connection cable

- Use a commercially available USB cable with a type B USB plug.
- Maximum permitted length of the USB cable: 5 m.

5.10.10 X52: Ethernet service interface

The following table shows information about this connection:

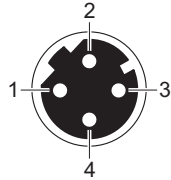
Function		
Ethernet service interface of the EBOX		
Connection type		
Ethernet RJ45		
Connection diagram		
		
No.	Name	Function
1	TX+	Transmit line (+)
2	TX-	Transmit line (-)
3	RX+	Receive line (+)
4	res.	Reserved
5	res.	Reserved
6	RX-	Receive line (-)
7	res.	Reserved
8	res.	Reserved

EtherNet service interface X52 comprises the following functions:

- MOVIFIT® engineering and diagnostics with MOVITOOLS® MotionStudio

5.10.11 X11 and X12: Ethernet fieldbus interface

The following table shows information about this connection:

Function		
Ethernet fieldbus interface of the hybrid ABOX "MTA...-S54.-...-00" or "MTA...-S84.-...-00"		
• PROFINET IO • EtherNet/IP™ • Modbus TCP		
Connection type		
M12, 4-pin, female, D-coded		
Connection diagram		
		
No.	Name	Function
1	TX+	Transmit line (+)
2	RX+	Receive line (+)
3	TX-	Transmit line (-)
4	RX-	Receive line (-)

5.10.12 X11 and X12: Ethernet fieldbus interface

The following table shows information about this connection:

Function		
Ethernet fieldbus interface of the hybrid ABOX "MTA...-S64.-...-00"		
• PROFINET IO • EtherNet/IP™ • Modbus TCP		
Connection type		
Ethernet RJ45		
Connection diagram		
		
No.	Name	Function
1	TX+	Transmit line (+)
2	TX-	Transmit line (-)
3	RX+	Receive line (+)
4	res.	Reserved
5	res.	Reserved
6	RX-	Receive line (-)
7	res.	Reserved
8	res.	Reserved

Connection cables



NOTICE

The RJ45 socket can be damaged by inserting commercially available RJ45 patch cables without push-pull connector housing.

Damage to the RJ45 socket.

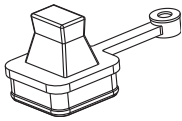
- Plug only suitable push-pull RJ45 mating connectors according to IEC PAS 61076-3-117 into the push-pull RJ45 socket.
- Never use commercially available RJ45 patch cables without push-pull connector housing. These plug connectors do not snap into place when they are plugged. They may damage the socket and are therefore not suitable.



INFORMATION

Use only shielded cables for this connection.

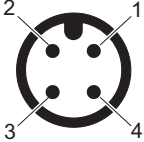
Closing plug, optional

Type	Image	Contents	Part number
Ethernet closing plug for push-pull RJ45 socket		10 pieces	18223702
		30 pieces	18223710

5.10.13 X65: DC 24 V subsidiary signal (suitable for STO)

Function
DC 24 V subsidiary signal input (suitable for the connection of a STO signal to loop through to the plug connector X9)

Connection type
M12, 4-pin, male, A-coded, color: orange

Wiring diagram


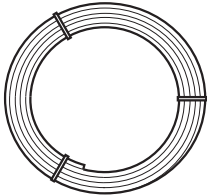
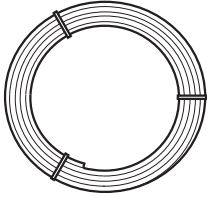
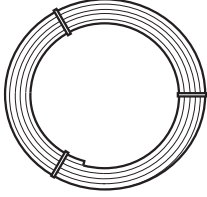
Assignment		
No.	Name	Function
1	Res.	Reserved
2	HT-	Subsidiary signal 0V24 (suitable for STO)
3	Res.	Reserved
4	HT+	Subsidiary signal 24 V (suitable for STO), max. 4 A

5.11 Connection cables

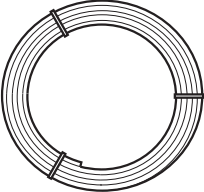
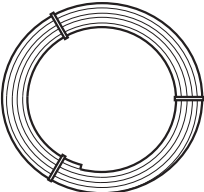
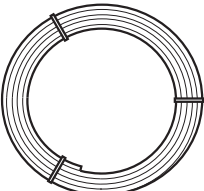
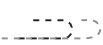
5.11.1 Prescribed SNI cables

The following table gives an overview of available SNI cables:

Cable cross section 2.5 mm²

SNI supply system cable				
Lengths that can be preassembled	Conformity/ part number	Cable type see also technical data	Length/in- stallation type	Cable cross section/oper- ating voltage
Cable reel 100 m Cable reel 200 m  Open cable end (not prefabricated)	CE: 13303309	HELUKABEL TOPFLEX® – EMV- UV-2YSLCYK-J	Fixed 	2.5 mm ² / AC 500 V
Cable reel 100 m Cable reel 200 m  Open cable end (not prefabricated)	UL: 19092156	HELUKABEL TOPFLEX® – EMV- UV-2YSLCYK-J- UL/CSA	Fixed 	
Cable reel 100 m Cable reel 200 m  Open cable end (not prefabricated)	CE/UL: 19095090	HELUKABEL TOPSERV® – 109	Fixed 	

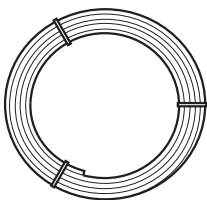
Cable cross-section 4 mm²

SNI supply system cable				
Lengths that can be preassembled	Conformity/ part number	Cable type see also technical data	Length/in- stallation type	Cable cross- section/oper- ating voltage
Cable reel 100 m Cable reel 200 m  Open cable end (not prefabricated)	CE: 13305506	HELUKABEL TOPFLEX® – EMV- UV-2YSLCYK-J	fixed 	4 mm ² / AC 500 V
Cable reel 100 m Cable reel 200 m  Open cable end (not prefabricated)	UL: 19092164	HELUKABEL TOPFLEX® – EMV- UV-2YSLCYK-J- UL/CSA	fixed 	
Cable reel 100 m Cable reel 200 m  Open cable end (not prefabricated)	CE/UL: 19095104	HELUKABEL TOPSERV® – 109	fixed 	

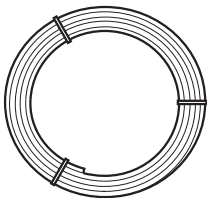
5.11.2 Recommended hybrid cables AC 400 V and communication (DSC)

The following tables show the recommended hybrid cables AC 400 V and communication:

Cable cross section 2.5 mm²

Recommended hybrid cables				
Lengths that can be preassembled	Conformity/ part number	Cable type see also technical data	Length/ Installation type	Cable cross section/operating voltage
Cable reel 100 m Cable reel 200 m  Open cable end (not prefabricated)	CE/UL: 19129173	LEONI Type: LEHC 005221	Fixed 	2.5 mm ² / AC 500 V

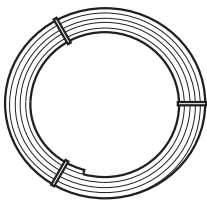
Cable cross section 4 mm²

Recommended hybrid cables				
Lengths that can be preassembled	Conformity/ part number	Cable type see also technical data	Length/ Installation type	Cable cross section/operating voltage
Cable reel 100 m Cable reel 200 m  Open cable end (not prefabricated)	CE/UL: 19122489	LEONI Type: LEHC 005211	Fixed 	4 mm ² / AC 500 V

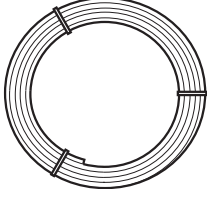
5.11.3 Hybrid cables AC 400 V, communication (DSC or SNI) and safe disconnection (STO)

The following table shows the available hybrid cables:

Cable cross-section 2.5 mm²

Hybrid cable				
Lengths that can be preassembled	Conformity/ part number	Cable type see also technical data	Length/ Installation type	Cable cross-section/ operating voltage
Cable reel 100 m Cable reel 200 m  Open cable end (not prefabricated)	CE/UL: 19162812	LEONI Type: LEHC 005295	fixed 	2.5 mm ² / AC 500 V

Cable cross-section 4 mm²

Hybrid cable				
Lengths that can be preassembled	Conformity/ part number	Cable type see also technical data	Length/ Installation type	Cable cross-section/ operating voltage
Cable reel 100 m Cable reel 200 m  Open cable end (not prefabricated)	CE/UL: 19162820	LEONI Type: LEHC 005296	fixed 	4 mm ² / AC 500 V

5.12 Connection examples

5.12.1 Connecting external SBus

The following figures show the connection of SBus slave units to MOVIFIT® FDC:

- If the MOVIFIT® unit is located at the end of an SBus segment, it is only connected via the incoming SBus cable (CAN).
- To prevent malfunctions in the bus system due to reflections, etc., the SBus segment must be terminated using bus terminating resistors at the first and last physical stations.
- The bus terminating resistors are already installed in the MOVIFIT® ABOX and they can be activated using the S3 switch.

Connection example 1:



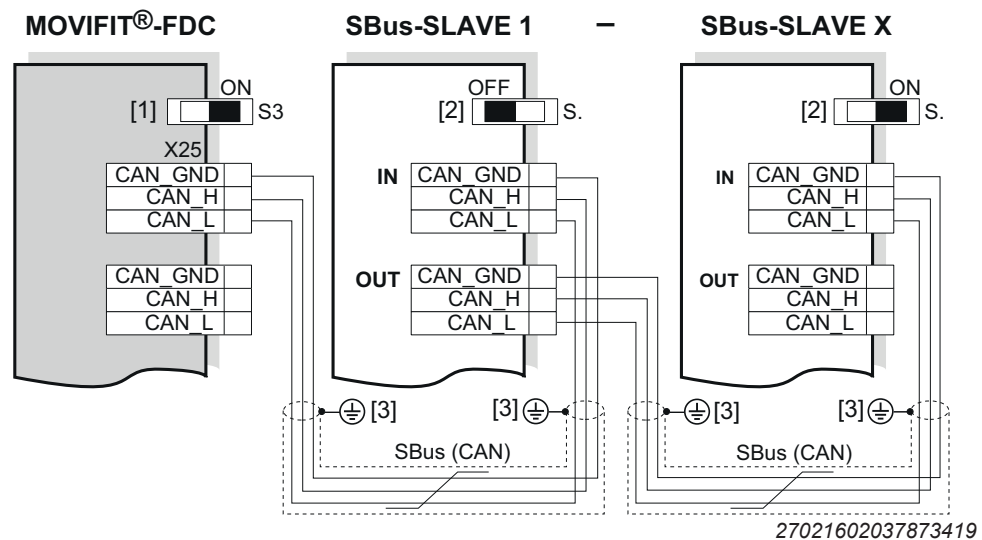
INFORMATION

Connection example 1 applies in combination with the following master ABOXes:

- Standard ABOX "MTA...-S04.-...-00"
- Hybrid ABOX "MTA...-S54.-...-00"
- Hybrid-ABOX "MTA...-S64.-...-00"
- Hybrid ABOX "MTA...-S84.-...-00"

The SBus master MOVIFIT® FDC is installed at the end of the SBus segment.

DIP switch S3 of the SBus master MOVIFIT® FDC = "ON".



X = 16 – Number of connected SBus devices

- [1] DIP switch S3 for bus termination
- [2] DIP switch for bus termination in the slave device
- [3] EMC cable gland

If the SBus is connected to the master using the external plug connector X14, then only connection example 1 is possible.

Connection example 2:

INFORMATION

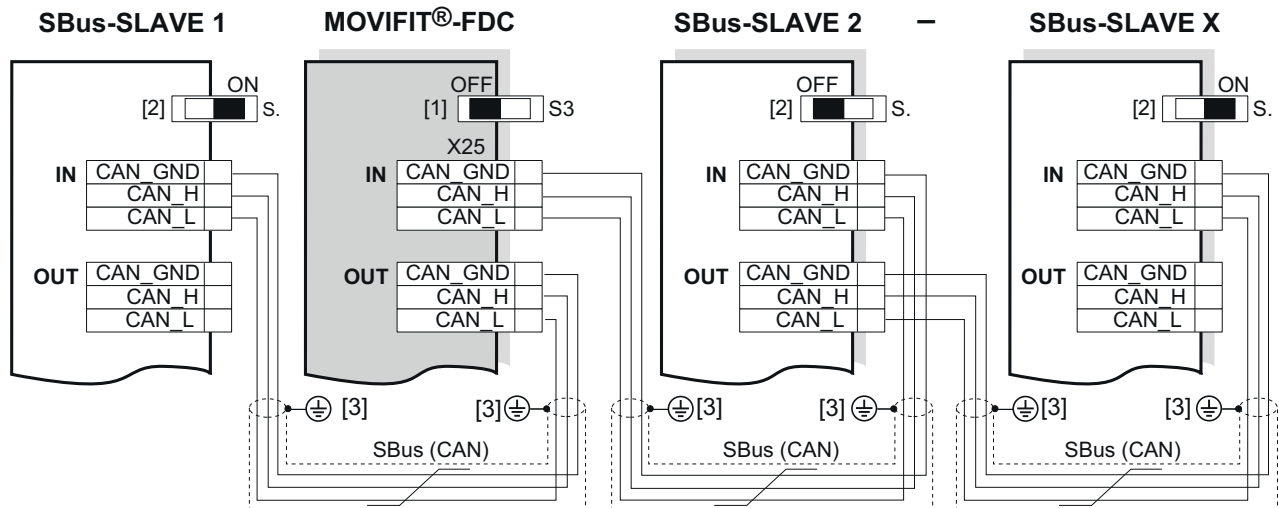


The connection example below applies in combination with the following master ABOX:

- Standard ABOX "MTA...-S04.-...-00"

The SBus master MOVIFIT® FDC is installed between the SBus slaves.

DIP switch S3 of the master MOVIFIT® FDC = "OFF".



27021602037876875

X = 16 – Number of connected SBus devices

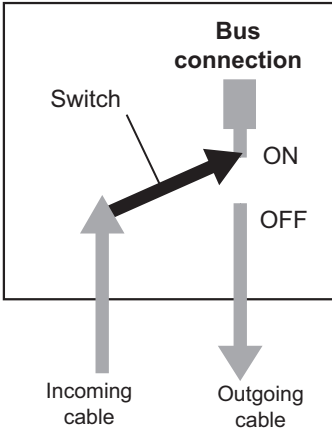
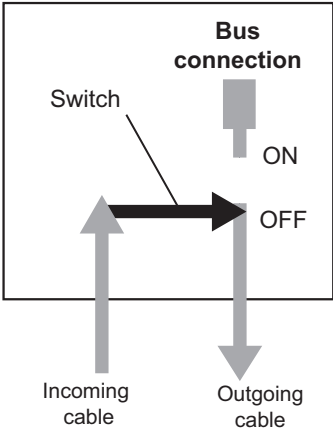
- [1] DIP switch S3 for bus termination
- [2] DIP switch for bus termination in the slave device
- [3] EMC cable gland

5.12.2 SBus termination

The bus terminating resistors are already installed in the MOVIFIT® ABOX and they can be activated using the S3 switch:

Bus termination S3 = "ON"	Bus termination S3 = "OFF" (factory setting)
S3 	S3 

The following table shows the operating principle of the bus termination switch:

Bus termination switch S3	
Bus termination S3 = "ON"	Bus termination S3 = "OFF"
Bus connection Switch ON OFF Incoming cable Outgoing cable 	Bus connection Switch ON OFF Incoming cable Outgoing cable 

5.13 Wiring check

Before connecting the system to the power source for the first time, you must perform a wiring check to prevent damage to persons, systems, and equipment caused by incorrect wiring:

- Remove the EBOX from the ABOX.
- Check the insulation of the wiring in accordance with applicable national standards.
- Check the grounding.
- Check the insulation between the supply system cable and the DC 24 V cable.
- Check the insulation between the supply system cable and the communication cable.
- Check the polarity of the DC 24 V cable.
- Check the polarity of the communication line.
- Ensure equipotential bonding between the MOVIFIT® units.

5.14 After the wiring check

- Push the EBOX onto the ABOX and screw it on.
- Seal all cable openings and plug connections that are not in use.

6 Startup

6.1 General information



INFORMATION

You must comply with the general safety notes in chapter "Safety Notes" during start-up.



⚠ WARNING

Electric shock due to dangerous voltages in the ABOX.

Severe or fatal injuries.

- De-energize the MOVIFIT® device. Observe the minimum switch-off time after disconnection from the supply system:
 - **5 minutes**



⚠ WARNING

Uncontrolled device behavior due to ineffective EMERGENCY OFF circuit.

Severe or fatal injuries.

- Comply with the installation notes.
- Always have the installation carried out by trained specialists.



⚠ WARNING

Device malfunction due to incorrect device setting.

Severe or fatal injuries.

- Observe the startup instructions.
- Always have the installation carried out by trained specialists.
- Check the parameters and data sets.
- Only use settings that are correct for the function.



⚠ WARNING

Danger of burns due to hot surfaces of the device (e.g. the heat sink).

Severe injuries.

- Do not touch the device until it has cooled down sufficiently.



NOTICE

Danger due to arcing.

Damage to electrical components.

- Do not unplug the power connectors during operation. Do not plug in the power connectors during operation.
- Never remove the EBOX during operation.

INFORMATION



To ensure fault-free operation, do not disconnect or connect the signal cables during operation.

6.2 Requirements

The following prerequisites apply to startup:

- MOVIFIT® and the MOVIGEAR® and DRC..- drive units must be installed correctly, both mechanically and electrically.
- Appropriate safety measures prevent the MOVIGEAR® and DRC..- drive units from starting up unintentionally.
- Appropriate safety measures are taken to prevent risk of injury or damage to the machine.

The following hardware is required for startup:

- PC or laptop
- Commercially available USB cable, type B plug, or commercially available Ethernet cable

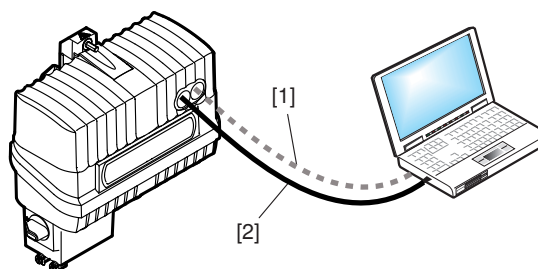
The following software is required on the PC or laptop for startup:

- MOVITOOLS® MotionStudio, Version 5.8 or later

Additional information can be found in the manual "MOVI-PLC® advanced DHR41B Controller – Fieldbus Interfaces EtherNet/IP™, Modbus TCP and PROFINET IO".

6.3 PC/laptop connection

The following figure shows the connection between a PC/laptop and the engineering interface of MOVIFIT® FDC:



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- | | |
|--|---|
| [1] Commercially available Ethernet cable | Configure the Ethernet interface at a fixed IP address. |
| [2] Commercially available USB cable, type B | The USB interface configures itself automatically. |

The following table shows the IP address, the subnet mask, and the standard gateway of the engineering interface of MOVIFIT® FDC:

Ethernet service interface		
Default IP address	Subnet mask	Default gateway
192.168.10.4	255.255.255.0	192.168.10.1

6.4 Description of the DIP switches

6.4.1 Notes



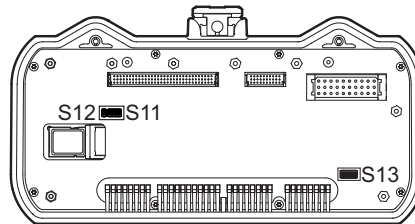
NOTICE

Hazard caused by unsuitable tools.

Damage to the DIP switches.

- To set the DIP switches use only suitable tools, such as a slotted screwdriver with a blade width smaller than 3 mm.
- The force used for setting the DIP switches must not exceed 5 N.

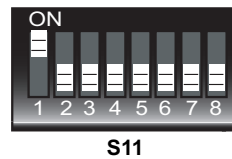
The following figure shows the position of DIP switches S11 – S13 in the EBOX:



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6.4.2 DIP switch S11

DIP switches S11/1 through S11/8 of the EBOX are factory-set as follows:



S11

20574869515

You must **not alter** these settings.

6.4.3 DIP switch S12

The following table shows the functions of the S12 DIP switches:

DIP switch	S12	
	1	2
	IP address allocation	Ethernet protocol
ON	DHCP/ Saved IP parameters	PROFINET IO
OFF	Default values	EtherNet/IP™ or Modbus TCP

DIP switch S12/1

Default IP

DIP switch S12/1 of the EBOX is used to set the type of the IP address allocation.

- DIP switch S12/1 = ON: The saved IP parameters are used in PROFINET IO operation.
In Modbus TCP and EtherNet/IP™ operation, the IP parameters are taken from a DHCP server (default) or from the address parameter of MOVIFIT® FDC (see "DHCP start from configuration" parameter).
- DIP switch S12/1 = OFF: The IP parameters are set to the following default values:

IP address:	192.168.10.4
Subnet mask:	255.255.255.0
Gateway:	192.168.10.4

DIP switch S12/2

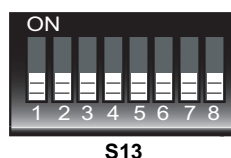
Ethernet protocol

DIP switch S12/2 is used to select the Ethernet protocol of the connection between higher-level controller and MOVIFIT® FDC.

- DIP switch S12/2 = ON: PROFINET IO
- DIP switch S12/2 = OFF: EtherNet/IP™ or Modbus TCP

6.4.4 DIP switch S13

DIP switches S13/1 through S13/8 of the EBOX are factory-set as follows:



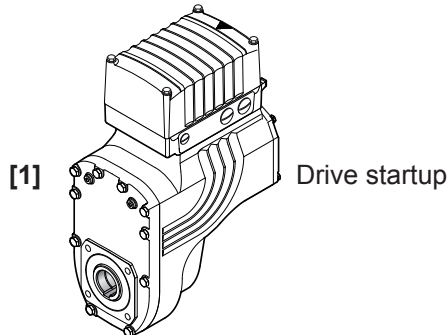
S13

20574872459

You must **not alter** these settings.

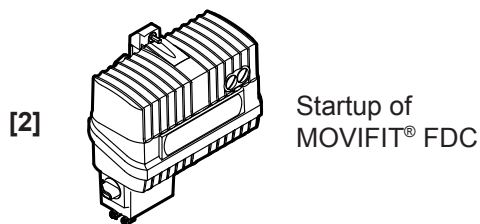
6.5 Startup procedure

The following provides an overview of the MOVIFIT® MC startup procedure and lists other applicable documentation:



→ For information, refer to:

- "MOVIGEAR® SNI-B" operating instructions
- "MOVIGEAR® DSC-B" operating instructions
- "DRC...-SNI" operating instructions
- "DRC...-DSC" operating instructions



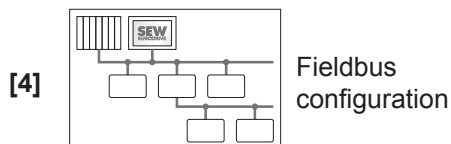
→ For information, refer to:

- Chapter "Startup of MOVIFIT® FDC"
- Manual "MOVI-PLC® advanced DHR41B Fieldbus Interfaces EtherNet/IP™, Modbus TCP and PROFINET IO controller"



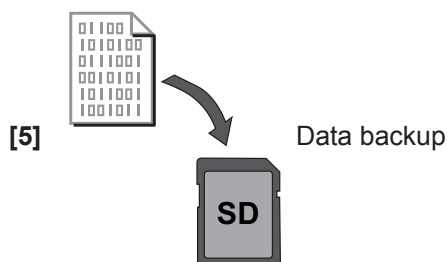
→ For information, refer to:

- the chapter "First steps with MOVITOOLS® MotionStudio"
- the "MOVI-PLC® Programming in the PLC Editor" system manual
- the "Application Configurator for CCU" manual
- in the online help of the Application Configurator



→ For information, refer to:

- the "MOVI-PLC® advanced DHR41B Fieldbus Interfaces EtherNet/IP™, Modbus TCP and PROFINET IO controller" manual



→ For information, refer to:

- the "Device replacement" (→ 128) chapter
- the "MOVI-PLC® advanced DHR41B Fieldbus Interfaces EtherNet/IP™, Modbus TCP and PROFINET IO controller" manual

6.6 Startup of MOVIFIT® FDC

The entire startup process is performed via software tools and is described in the manual "MOVI-PLC® advanced DHR41B Controller – Fieldbus Interfaces EtherNet/IP™, Modbus TCP and PROFINET IO":

1. Check the connection of the MOVIFIT® FDC.
2. Select the communication protocol using DIP switch S12/2.

PROFINET IO DIP switch S12/2 = ON	EtherNet/IP™ or Modbus TCP DIP switch S12/2 = OFF
 S12	 S12

3. Place the MOVIFIT® EBOX onto the ABOX and screw the EBOX closed.
 - ⇒ With PROFINET IO, EtherNet/IP™ or Modbus TCP, you do not have to make any settings on MOVIFIT® FDC.
4. Switch on the 24 V supply voltage.
 - ⇒ The "24V_C" LED should now light up green.

6.7 First steps with MOVITOOLS® MotionStudio

6.7.1 Starting the software and creating a project

To start MOVITOOLS® MotionStudio and create a project, proceed as follows:

1. Start the MOVITOOLS® MotionStudio from the Windows start menu via:
[Start] > [Programs] > [SEW] > [MOVITOOLS MotionStudio] > [MOVITOOLS MotionStudio]
2. Create a project with a name and directory.

6.7.2 Establishing a communication and scanning the network

To establish communication with MOVITOOLS® MotionStudio and to scan your network, proceed as follows:

1. Set up a communication channel to communicate with your devices.
Detailed information is included in the manual "MOVI-PLC® advanced DHR41B Controller – Fieldbus Interfaces EtherNet/IP™, Modbus TCP and PROFINET IO".
2. Scan your network (device scan). To do so, click the [Start network scan] button [1] in the toolbar.



[1]

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6.7.3 Programming MOVIFIT® FDC with the PLC Editor

INFORMATION



You can program the MOVIFIT® FDC device only if the SD memory card installed in the EBOX is a type OMH41B-T0 card.

Detailed information on how to program MOVIFIT® FDC is included in the "MOVI-PLC® programming in the PLC Editor" system manual.

6.7.4 Configuring MOVIFIT FDC® with the Application Configurator

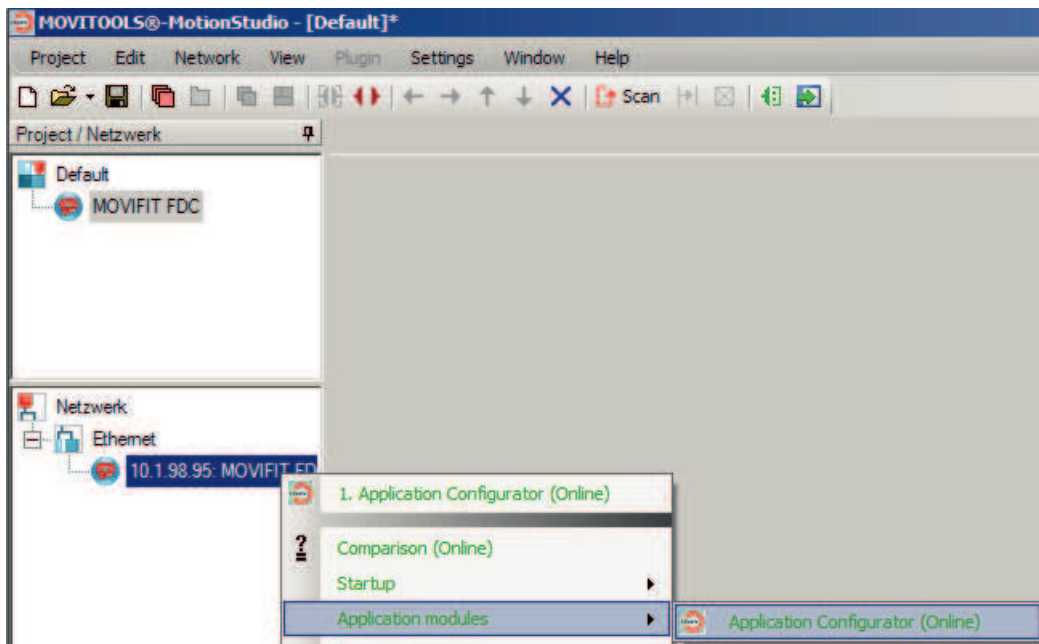
INFORMATION



You can configure the MOVIFIT® FDC device only if the SD memory card installed in the EBOX is a type OMC41B-T0 card.

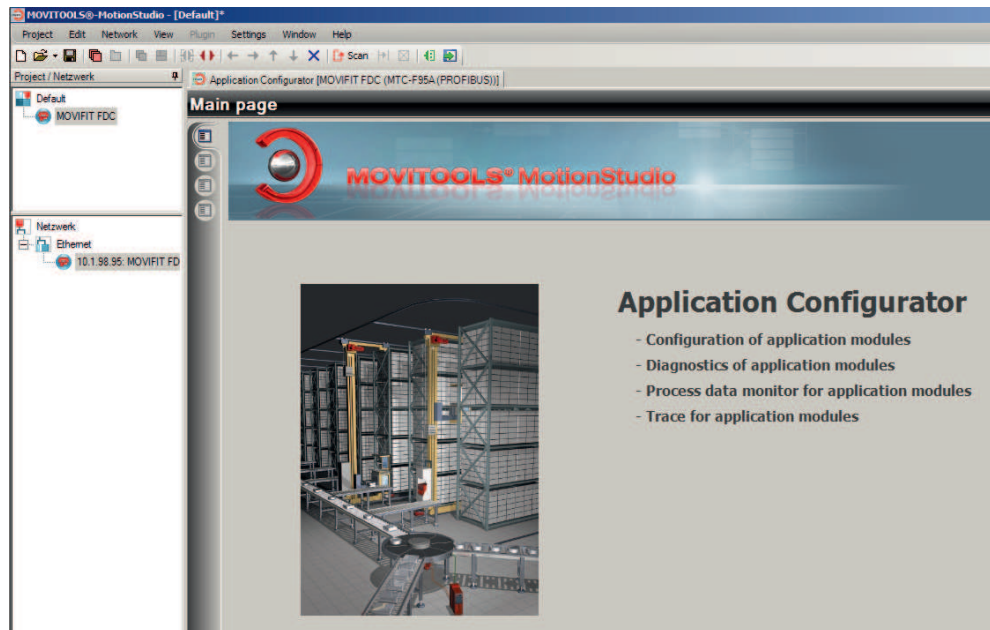
Proceed as follows to configure a device:

1. Select the device in the network view.
2. Right-click to open the context menu and display the tools for configuring the device.



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3. To open the Application Configurator, choose "Application Configurator" from the menu.



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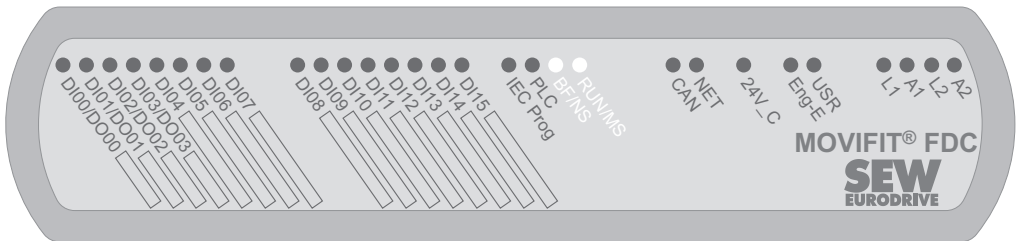
4. Configure the device in the Application Configurator.
For detailed information, refer to the "Application Configurator for CCU" manual.

7 Operation

7.1 Status LEDs for MOVIFIT® FDC

7.1.1 General LEDs

This chapter describes the fieldbus-independent LEDs. In the following figure, the LEDs are shown as dark:



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"DI.." LEDs

The "DI.." LED indicates the status of digital inputs DI..

LED	Meaning
Yellow Illuminated	Input signal present at digital input DI..
Off	Input signal at digital input DI.. open or "0".

"DO.." LEDs

The "DO.." LED indicates the status of digital outputs DO..

LED	Meaning
Yellow Illuminated	DO.. output switched.
Off	DO.. output logical "0".

LEDs "IEC Prog" and "PLC"

The **"PLC" LED** indicates the status of the **firmware of the control card**.

The **"IEC Prog" LED** indicates the **status of the control program**.

LED	Possible cause	Measure
"PLC" red, illuminated "IEC Prog" off	The SD memory card is not readable.	Insert a new SD memory card.
"PLC" orange, flashing "IEC Prog" orange, flashing	A Bootloader update is required.	Contact SEW Service.
"PLC" green, flashing "IEC Prog" off	No application program loaded.	Perform a configuration using the Application Configurator. (see the "Application Configurator for CCU" manual)
		Load an IEC control program into the control card. (see the "MOVI-PLC® programming" system manual)
"PLC" green, flashing "IEC Prog" green, illuminated	The application program is running.	–
"PLC" green, flashing "IEC Prog" orange, flashing	The application program has been stopped.	Start the application program if required.
"PLC" green/orange, flashing "IEC Prog" any	Data backup is active.	–

"NET" LED

The **"NET" LED** indicates the status of the **SNI connection** between MOVIFIT® FDC and the drive unit (MOVIGEAR®/DRC..).

LED	Meaning	Measure
Off	No SNI communication is active. Data packages are sent and received.	- Check and correct the voltage supply to the SNI stations. - Check and correct the SNI address of the SNI stations. - Log the SNI stations in the controller configuration.
Green Flashing	Communication is active. Data packages are sent and received.	–
Green/red Flashing	Communication is active. Data packages are being sent and received, Ethernet collision.	–

"24V_C" LED

The "24_C" LED indicates the status of the 24 V continuous voltage.

LED	Possible cause	Measure
Green Illuminated	24 V continuous voltage is present.	-
Off	No 24 V continuous voltage.	Check the 24 V voltage supply.

"CAN" LED

The **"CAN" LED** indicates the status of the **CAN 2** system bus.

LED	Possible cause	Measure
Off	The CAN 2 system bus is out of service (BUS-OFF).	-
Orange Illuminated	The CAN 2 system bus is being initialized.	-
Green Illuminated	The CAN 2 system bus is initialized.	-
Green Flashing (0.5 Hz)	The CAN 2 system bus is currently in SCOM suspend mode.	-
Green Flashing (1 Hz)	The CAN 2 system bus is currently in SCOM On mode.	-
Red Illuminated	The CAN 2 system bus is out of service (BUS-OFF). No station can be reached on the CAN 2 system bus.	• Check and correct the cabling of the CAN 2 system bus. • Check and correct the baud rate that is set for CAN 2. • Check and correct the terminating resistors of the CAN 2 system bus.
Red Flashing (1 Hz)	Warning on the CAN 2 system bus.	• Check and correct the cabling of the CAN 2 system bus. • Check and correct the baud rate that is set for CAN 2.

"Eng-E" LED

The "Eng-E" LED indicates the status of the X52 service interface.

LED	Meaning
Off	No Ethernet connection is established via the X52 service interface.
Green Illuminated	An Ethernet connection has been established via the X52 service interface.
Green Flashing	The X52 service interface transmits data.

"USR" LED

The status of the "USR" LED depends on the SD memory card in the MOVIFIT® device and therefore also on the MOVIFIT® device performance class. Refer to the "Device structure" > "EBOX (active electronics device)" > "SD memory card" chapter.

- When using the CCU.. performance class, note the "USR" LED description in the "Application Configurator for CCU" manual.
- When using the MOVI-PLC®.. performance class, the status of the "USR" LED depends on the customer-specific programming.

LEDs "L1" and "L2"

The "**L1**" LED indicates the **status of Ethernet fieldbus interface X11/X30**.

The "**L2**" LED indicates the **status of Ethernet fieldbus interface X12/X31**.

LED	Meaning
Off	There is no Ethernet connection.
Green Illuminated	There is an Ethernet connection.
Green Flashing	Function to locate MOVIFIT® FDC with the Address Editor

LEDs "A1" and "A2"

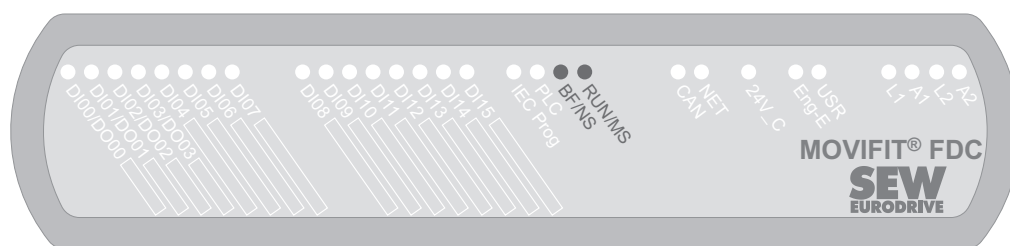
The "**A1**" LED indicates the **activity of Ethernet fieldbus interface X11/X30**.

The "**A2**" LED indicates the **activity of Ethernet fieldbus interface X12/X31**.

LED	Meaning
Off	No data is transmitted.
Yellow Illuminated	The Ethernet interface is transmitting data.

7.1.2 Bus-specific LEDs for PROFINET

This chapter describes the bus-specific LEDs for PROFINET. In the following figure, the LEDs are shown as dark:



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"BF/NS" LED

The "BF/NS" LED indicates the status of PROFINET.

LED	Possible cause	Measure
Off	PROFINET IO device is currently exchanging data with the PROFINET IO controller (Data Exchange).	-
Yellow Illuminated, flashing	The STEP 7 hardware configuration contains a module that is not permitted.	Switch the STEP 7 hardware configuration to ONLINE and analyze the component status of the slots in the PROFINET IO device.
Green, Green/red Flashing	The flashing function in the PROFINET IO controller configuration is activated to visually localize the stations.	-
Red Illuminated	Connection to the PROFINET IO controller has failed. PROFINET IO device does not detect a link. Bus interruption PROFINET IO controller is not in operation.	- Check the PROFINET connection. - Check the PROFINET IO controller. - Check the cabling of your PROFINET network.

"RUN/MS" LED

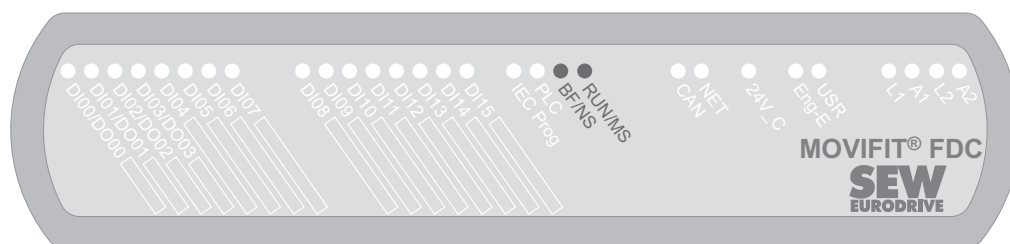
The "RUN/MS" LED indicates whether the bus electronics is functioning properly.

LED	Possible cause	Measure
Off	Control card is not ready for operation.	• Switch the unit on again. ¹⁾
Green Illuminated	Control card ok. Proper operation.	—
Green Flashing	Control card does not start up.	• Switch the unit on again. ¹⁾
Yellow Illuminated	Control card does not start up.	• Switch the unit on again. ¹⁾
Yellow Flashing	Control card does not start up.	• Switch the unit on again. Set the default IP address parameter with DIP switch S12/1 = OFF. ¹⁾
Red Illuminated	Control card error.	• Switch the unit on again. ¹⁾

¹⁾ If the error reoccurs, contact SEW Service.

7.1.3 Bus-specific LEDs for EtherNet/IP™ and Modbus TCP

This chapter describes the bus-specific LEDs for EtherNet/IP™ and Modbus TCP. In the following figure, the LEDs are shown as dark:



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"BF/NS" LED

The "BF/NS" LED signals the network status of EtherNet/IP™ and Modbus TCP.

LED	Meaning
Off	The control card does not yet have any IP parameters.
Green/red Flashing	The control card performs an LED test.
Green Flashing	There is no controlling IO connection.
Green Illuminated	There is a controlling EtherNet/IP™ or Modbus TCP connection.
Red Illuminated	A conflict has been detected in the IP address assignment. Another station in the network uses the same IP address.
Red Flashing	The previously established controlling IO connection is in timeout state. The state is reset by restarting communication.

"RUN/MS" LED

The "RUN/MS" LED indicates the module status of EtherNet/IP™ and Modbus TCP.

LED	Meaning
Off	The control card is either not supplied with voltage or it is faulty.
Green Flashing	- When the "BF/NS" LED is off at the same time, the TCP/IP stack of the control card is started. If this state continues and DHCP is activated, the control card waits for data from the DHCP server. - When the "BF/NS" LED is flashing green at the same time, the application of the control card is started.
Green/red Flashing	The control card performs an LED test.
Green Illuminated	Indicates the standard operating state of the control card.
Red Illuminated	Control card error.
Red Flashing	A conflict has been detected in the IP address assignment. Another station in the network uses the same IP address.

8 Service

8.1 Device diagnostics

INFORMATION



The error diagnostics of the MOVIFIT® FDC device is mainly available on the PC/laptop. More detailed information on fault diagnostics is therefore included in the manual "MOVI-PLC® advanced DHR41B Controller – Fieldbus Interfaces EtherNet/IP™, Modbus TCP and PROFINET IO".

8.2 Inspection/maintenance

8.2.1 MOVIFIT® unit

The MOVIFIT® unit is maintenance-free. SEW-EURODRIVE does not prescribe any inspection or maintenance work for the MOVIFIT® unit.

8.3 Device replacement

8.3.1 Notes on replacing devices

The MOVIFIT® FDC device allows for a quick device replacement. The EBOX is equipped with a replaceable memory card on which all device data can be stored.

If the EBOX has to be replaced, the plant can be started up again quickly by simply re-plugging the memory card.

After startup, you must download the device data to the memory card.

INFORMATION



Observe the following notes during device replacement:

- **Before replacing the device**, make a data backup.
 - In MOVITOOLS® MotionStudio, right-click the MOVIFIT FDC® symbol.
 - Choose [Startup] > [Data Management].
 - Choose the "Upload" task.
 - Afterwards, click the [Start upload] button.
- The MOVIFIT® FDC must be switched off when you insert the memory card.
- After the device replacement, the parameters last saved on the SD memory card are used.

8.3.2 Replacing devices

Proceed as follows to replace the MOVIFIT® EBOX:

1. Perform a data backup now if you are not certain whether the current device parameterization is stored on the SD memory card.
2. Power off the MOVIFIT® FDC device and wait for at least 5 minutes.
3. Loosen the retaining screw and remove the EBOX from the ABOX.
4. Remove the SD memory card at the bottom from the previous EBOX.
5. Insert the SD memory card into the new EBOX at the bottom.
6. Position the new EBOX on the ABOX. Tighten the retaining screw.
7. Switch on the MOVIFIT® FDC device with the new EBOX.

"PLC" LED:	Flashing green/orange.
The data backup of the communication and control device is restored. This process can take several minutes. Do not switch off the MOVIFIT® FDC device during this time.	



"PLC" LED:	Flashing green
"IEC Prog" LED:	Illuminated in green
The data of the communication and control device has been restored. Boot process is active. Data backup of the MOVIGEAR® and DRC.. drive units is restored.	

The parameters saved on the SD memory card are now available again.

8. If required, you can change the parameter set and save the changed device data on the SD memory card again after startup.
9. For applications with a motor encoder or distance encoder, you must carry out a reference travel.

8.4 SEW-EURODRIVE Service

If a fault cannot be solved, please contact SEW-EURODRIVE Service (see chapter "Address List").

Please have the following information at hand when you consult the SEW-EURODRIVE Service:

- Type designation [1]
- Serial number [2]
- Digits in the status field [3]
- Brief description of the application
- Nature of the fault
- Accompanying circumstances (e.g. initial startup)
- Your own assumptions
- Any unusual events preceding the problem, etc.

[1]	MTC11A000-503-R9500-00	
[2]	SO#: 01.7181672902.0001.15	
[3]	MAC-ID: 11 22 33 44 55 66	
	Status: 10 13 12 10 -- -- 10 11 --	

13849000075

- [1] EBOX type designation
 [2] Serial number
 [3] Status field

8.5 Shutdown

To shut down the MOVIFIT® device, use suitable measures to de-energize the device.



⚠ WARNING

Electric shock due to dangerous voltages in the ABOX. If the maintenance switch is located in the "0" position, voltage is still present on some terminals in the ABOX.

Severe or fatal injuries.

- Use suitable measures to de-energize the MOVIFIT® device.



⚠ WARNING

Electric shock due to incompletely discharged capacitors.

Severe or fatal injuries.

- Observe a minimum switch-off time after switching off the supply voltage:
 - **5 minutes**

8.6 Storage

Observe the following instructions when shutting down or storing MOVIFIT® device:

- If you shut down and store the MOVIFIT® device for a longer period, you must close open cable bushings and cover ports with protective caps.
- Make sure that the device is not subject to mechanical impact during storage.

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

8.7 Disposal

This product consists of:

- Iron
- Aluminum
- Copper
- Plastics
- Electronic components

Dispose of all components in accordance with applicable regulations!

9 Technical data

9.1 Conformity

9.1.1 CE marking

- Low voltage directive:

The MOVIFIT® FDC fulfills the regulations of the low voltage directive 2014/35/EU.

- Electromagnetic compatibility (EMC):

MOVIFIT® FDC 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 for the entire machine/system that is equipped with these devices are met in accordance with the EMC directive 2014/30/EU. 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 EAC marking



The MOVIFIT® 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.

9.1.3 UL approval



UL and cUL approval has been granted for the unit series.

9.2 General technical data

Input		
Connection voltage	U_{line}	AC 3 x 380 V -5% to AC 3 x 500 V +10%
Line frequency	f_{line}	50 – 60 Hz $\pm 5\%$
Line input current 100% (At $U_{\text{line}} = \text{AC } 3 \times 380 \text{ V}$)	I_{line}	AC 20 A
Output		
Nominal output power	P_N	8 kW
Nominal output current	I_N	AC 15 A for motor circuit breaker design M16 AC 20 A for motor circuit breaker design M20
Line protection to the MOVIGEAR®/DRC.. drive unit		Maintenance switch: Motor circuit breaker type: ABB MS325, The design required depends on the cable cross-section of the SNI cable/hybrid cable. See chapter "Power distribution and line protection" (→ 49).
Cable length between MOVIFIT® and MOVIGEAR®/ DRC.. drive unit		SNI cable max. 100 m for prescribed SNI cable
		CAN bus cable max. 25 m for 1 Mbaud
		CAN bus cable max. 50 m for 500 kbaud
General		
Interference immunity		Complies with EN 61800-3
Interference emission for EMC-compliant installation on the grid side		- Fulfills C2 limit class according to EN 61800-3, if 24 V supply of the MOVIFIT® FDC is shielded. - Fulfills C3 limit class according to EN 61800-3, if 24 V supply of the MOVIFIT® FDC is unshielded.
Ambient temperature	ϑ_{amb}	Non-condensing, no condensation 0 – 40 °C: no restrictions 40 – 60 °C: I_N reduction by 3% per K and reduction of the permitted continuous current to the X1 terminal by 3% per K.
Climate class		EN 60721-3-3, class 3K3
Storage temperature	ϑ_L	-25 to +75 °C (EN 60721-3-3, class 3K3)
Permitted vibration and im- pact load		According to EN 61800-5-1
Degree of protection		IP65 according to EN 60529 (MOVIFIT® housing closed and all cable glands and plug con- nections sealed)
Type of cooling (DIN 41751)		Natural cooling
Overvoltage category		III according to IEC 60664-1 (VDE 0110-1)
Pollution class		2 according to IEC 60664-1 (VDE 0110-1) inside the housing

Installation altitude	h	$h \leq 1000$ m: no restrictions $h > 1000$ m: I_N reduction by 1% per 100 m $h > 2000$ m: U_{line} reduction by AC 6 V per 100 m $h_{max} = 4000$ m
Mass	m	Approx. 9 kg
Dimensions	W × D × H	334 × 190 × 333 mm

9.3 Electronics data

Electronics data	
DC 24 V supply	$V_{IN} = \text{DC } 24 \text{ V} -15\% / +20\%$ according to EN 61131-2 Current consumption: $I_E \leq 500$ mA, typically 200 mA (for MOVIFIT® electronics) - plus up to 2000 mA (4 outputs with 500 mA each) - plus up to 1400 mA (for sensor supply depending on the number and type of connected sensors)
Sensor supply X25	2 circuits - Total current terminals 30 – 33: 700 mA - Total current terminal 34 – 37: 700 mA
Electrical isolation	Separate potential levels for: - Fieldbus connection (X30, X31 internal or X11, X12 external) - Auxiliary signal, suitable for STO 24 V for: - MOVIFIT® electronics including USB interface - DI00 – DI15 - SBus interface - RS485 interface 24 V outputs for sensors
Bus cable shielding	Set up using EMC metal cable glands and fittings and with EMC shield clamps (see operating instructions, chapter "Installation instructions")

9.4 Communication and control unit

Control card				
Performance class	CCU standard	MOVI-PLC® standard	CCU advanced	MOVI-PLC® advanced
SD memory card	OMC41B-T0 (parameterizable)	OMH41B-T0 (programmable)	OMC41B-T0 to OMC41B-T25 (parameterizable)	OMH41B-T0 to OMH41B-T25 (programmable)
Task system	1 × free-running, minimum 10 ms 1 × cyclical 10 – 10000 ms		1 × free-running 8 × cyclical 1 – 10000 ms	
Memory	• Program memory: 2 MB (for application program, incl. IEC libraries) • Data memory: 4 MB (for IEC application) • Retain data: 32 kB • System variables (Retain): 8 kB		• Program memory: 4 MB (for user program, incl. IEC libraries) • Data memory: 12 MB (for IEC application) • Retain data: 32 kB • System variables (Retain): 8 kB	
Engineering	Engineering for all SEW components connected to MOVIFIT® FDC is carried out via: • USB service interface (X51) • Ethernet service interface (X52) • Ethernet fieldbus interface (X30/X31 internal) or (X11/X12 external) using the MOVITOOLS® MotionStudio PC software with PLC Editor.			
Ethernet fieldbus interface	Possible connections: • Engineering PC • Intranet • Higher-level controller (see following sections)			

9.4.1 Binary inputs

Digital inputs	
Number of inputs	16
Input type	PLC-compatible according to EN 61131-2 (digital inputs type 1) R _i approx. 3 kΩ, sampling cycle ≤ 10 ms Signal level: DC +13 V – +30 V "1" = contact closed DC -3 V – +5 V "0" = contact open
Sensor supply	DC 24 V to EN 61131-2, interference-voltage-proof and short-circuit-proof
Rated current	500 mA
Internal voltage drop	Max. 2 V

9.4.2 Binary outputs

Digital outputs	
Number of outputs	4
Output type	PLC-compatible to EN 61131-2, interference-voltage-proof and short-circuit-proof
Rated current	500 mA
Leakage current	max. 0.2 mA
Internal voltage drop	Max. 2 V

9.4.3 Auxiliary terminals (suitable for STO)

Auxiliary terminals (suitable for STO)	
Number of inputs	1
Number of outputs	1
Permitted current	max. 4 A
Permitted voltage	max. DC 30 V

9.5 Interfaces

9.5.1 SBus interface

SBus	
SBus interface	Interface to other SBUS-capable SEW devices CAN bus to CAN specification 2.0, parts A and B
Connection technology	M12, terminals
Transmission technology	ISO 11898 compliant
Bus termination	120 Ω terminating resistor can be activated using DIP switch S3 (ABOX).
Maximum line length	25 m for 1 MBaud 50 m for 500 kBaud
CAN interface sensor supply	DC 5 V
Rated current	max. 100 mA

9.5.2 RS485 interface

RS485	
RS485 interface	Electrically isolated from MOVIFIT® electronics
Connection technology	M12, terminals
Standard	RS485 to EIA standard (with integrated dynamic terminating resistor)

9.5.3 USB service interface

USB	
USB service interface	Service interface, not electrically isolated from MOVIFIT® electronics according to USB-2.0 specification
Connection technology	USB socket, type B (on the EBOX)

9.5.4 Ethernet service interface

Ethernet	
Automatic baud rate detection	10 MBd/100 MBd
Connection technology	RJ45 (on the EBOX)
Maximum line length	100 m according to IEEE 802.3
Addressing	4 byte IP address or MAC ID (00-0F-69-xx-xx-xx) IP address: 192.168.10.4 Subnet mask: 255.255.255.0 Standard gateway: 192.168.10.1

9.5.5 Ethernet fieldbus interface

One of the following protocols can be used for communication via the Ethernet fieldbus interface (depending on DIP switch S12/2):

PROFINET IO interface

PROFINET IO	
PROFINET protocol option	PROFINET IO RT
Supported baud rates	100 Mbit/s (full duplex)
SEW ID number	010A _{hex}
Device ID number	2
Connection technology	2 × M12, 2 × RJ45 (push-pull) or 2 × RJ45 plug connector (in the ABOX)
Integrated switch	Supports auto-crossing, auto-negotiation
Permitted cable types	Category 5 and higher, class D according to IEC 11801
Maximum line length (from switch to switch)	100 m according to IEEE 802.3
GSD file name	GSDML-V2.1-SEW-MOVIFIT_FDC-20100401.xml
Bitmap file name	SEW-MOVIFIT-FDC.bmp

EtherNet/IP™ fieldbus interface

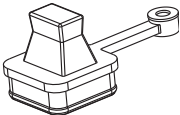
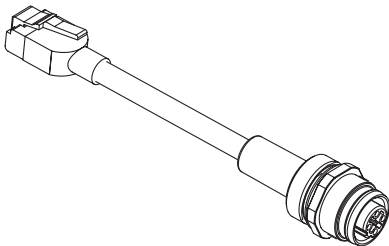
EtherNet/IP™	
Automatic baud rate detection	10 MBd/100 MBd
Connection technology	2 × M12, 2 × RJ45 (push-pull) or 2 × RJ45 plug connector (in the ABOX)
Integrated switch	Supports auto-crossing, auto-negotiation
Maximum line length	100 m according to IEEE 802.3
Addressing	4 byte IP address or MAC ID (00-0F-69-xx-xx-xx) Configurable via DHCP server or MOVITOOLS® MotionStudio with Version 5.5 and higher. Default address 192.168.10.4 (depending on the setting of DIP switch S12/1)
Manufacturer ID (vendor ID)	013B _{hex}
Name of EDS files	SEW_MOVIFIT_FDC.eds
Name of icon files	SEW_MOVIFIT_FDC.ico

Modbus/TCP interface

Modbus TCP	
Automatic baud rate detection	10 MBd/100 MBd
Connection technology	2 × M12, 2 × RJ45 (push-pull) or 2 × RJ45 plug connector (in the ABOX)
Integrated switch	Supports auto-crossing, auto-negotiation
Maximum line length	100 m according to IEEE 802.3
Addressing	4 byte IP address or MAC ID (00-0F-69-xx-xx-xx) Configurable via DHCP server or MOVITOOLS® MotionStudio with Version 5.5 and higher. Default address 192.168.10.4 (depending on the setting of DIP switch S12/1)
Supported services	FC3, FC16, FC23, FC43

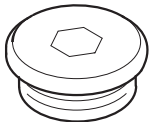
9.6 Accessories and options

9.6.1 Accessories

Type	Image	Contents	Size	Tightening torque	Part number
Ethernet closing plug for push-pull RJ45 socket		10 pieces	-	-	18223702
		30 pieces	-	-	18223710
Ethernet adapter RJ45-M12 ¹⁾ RJ45 (inside of device) M12 (outside of device)		1 piece	-	-	13281682
Screw plug (nickel-plated brass) for interfaces on the EBOX		1 piece	M25 × 1.5	6.8 Nm	18130623

1) 2 required per device.

9.6.2 Accessories, wet area design

Type	Image	Permitted cable diameter	Contents	Size	Tightening torque	Part number
Screw plug (stainless steel)		-	10 pieces	M16 × 1.5	6.8 Nm	18202233
		-	10 pieces	M20 × 1.5	6.8 Nm	18202241
		-	10 pieces	M25 × 1.5	6.8 Nm	18202268
EMC cable gland (brass, nickel-plated)		5 to 9 mm	10 pieces	M16 × 1.5	4.0 Nm	18204783
		9 to 13 mm	10 pieces	M20 × 1.5	6.0 Nm	18204791
		11 to 16 mm	10 pieces	M25 × 1.5	7.0 Nm	18204805
EMC cable gland (stainless steel)		5 to 9 mm	10 pieces	M16 × 1.5	4.0 Nm	18216366
		9 to 13 mm	10 pieces	M20 × 1.5	6.0 Nm	18216374
		11 to 16 mm	10 pieces	M25 × 1.5	7.0 Nm	18216382

9.6.3 NF line filters

Type	NF018-503	NF035-503	NF048-503	NF018-503-UOH66A (decentralized)
Part number	08274134	08271283	08271178	19501684
Nominal voltage	3 × AC 200 – 500 V ±10%			
Ambient temperature	-25 °C to +45 °C			
Degree of protection	IP20 (EN 60529)			IP66 (EN 60529)
Nominal current	AC 18 A	AC 35 A	AC 48 A	AC 18 A
Power loss	12 W	15 W	22 W	12 W
Leakage current	≤ 25 mA	≤ 25 mA	≤ 40 mA	≤ 25 mA
Connection cross-section L1 – L3, L1' – L3'	4 mm ²	10 mm ²	10 mm ²	Line filters: 10 mm ² single-wire 6 mm ² litz wire with/without conductor end sleeve Distributor terminals: 10 mm ² single-wire 10 mm ² litz wire without conductor end sleeve 6 mm ² litz wire with conductor end sleeve
Tightening torque L1 – L3, L1' – L3'	0.8 Nm	1.8 Nm	1.8 Nm	At the line filter: 1.2 Nm Distributor terminals: Cage clamp terminals
PE screw connection	M5	M5	M6	At the housing: 2 × M6 At the line filter: 2 × M5 Distributor terminals: 10 mm ² single-wire 10 mm ² litz wire without conductor end sleeve 6 mm ² litz wire with conductor end sleeve
PE screw tightening torque	3.4 Nm	3.4 Nm	5.5 Nm	At the housing: 2.5 Nm At the line filter: 2.2 Nm
Cover screw tightening torque	–	–	–	2.5 Nm

9.7 Connection cables

9.7.1 Required connection cables for single line installation (SNI)

INFORMATION



Compare the outer diameter of the specified connection cables for single-line installation with the technical data of the EMC cable glands supplied with certain products.

INFORMATION

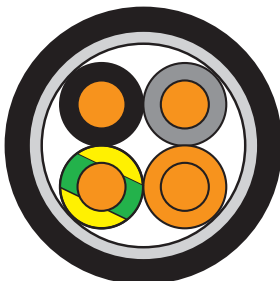
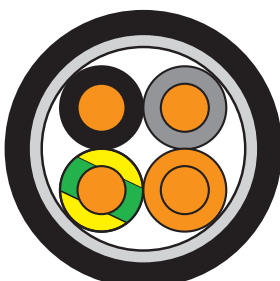


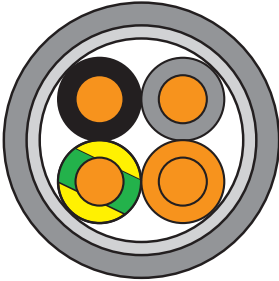
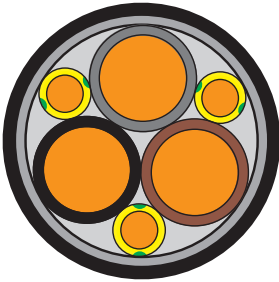
SEW-EURODRIVE recommends using approved, cable-carrier-suited connection cables for single-line installation **only** in areas where this property is actually needed.

SEW-EURODRIVE specifies the following cable types for connecting SNI drive units and SNI controller:

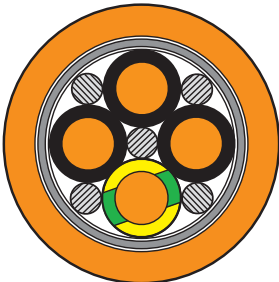
A high signal quality is achieved due to the low operating capacitance of the specified cables. The shielding prevents interference emission resulting from the data transmission modulated onto the line.

HELUKABEL TOPFLEX®

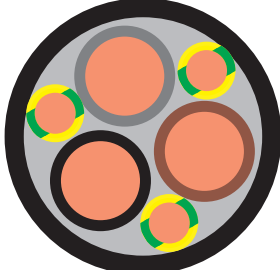
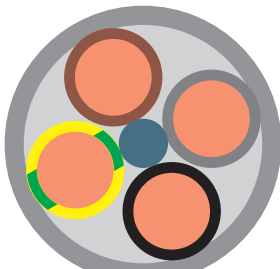
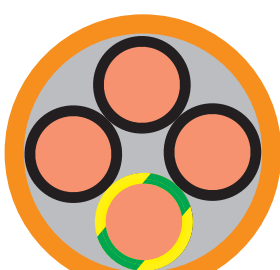
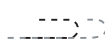
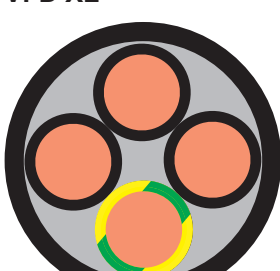
Cable type	Outer cable sheath	Conformity	Properties
HELUKABEL TOPFLEX® – EMV-UV-2YSLCYK-J 	Color: - Black Diameter: 12.3 mm (2.5 mm²) 14.5 mm (4.0 mm²)	CE	- UV resistant - Not suitable for cable carriers 
HELUKABEL TOPFLEX® – EMV-UV-2YSLCYK-J/UL/CSA 	Color: - Black Diameter: 12.5 mm (2.5 mm²) 14.2 mm (4.0 mm²)	CE/UL	- UV resistant - Not suitable for cable carriers 

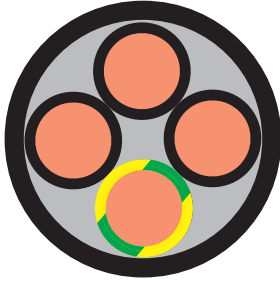
Cable type	Outer cable sheath	Conformity	Properties
HELUKABEL TOPFLEX® – EMV-2YSLCY-J 	Color: - Transparent Diameter: 11.9 mm (2.5 mm²) 13.6 mm (4.0 mm²)	CE	Not suitable for cable carriers 
HELUKABEL TOPFLEX® – EMV-UV-3 PLUS 2YSLCYK-J 	Color: - Black Diameter: 10.8 mm (2.5 mm²) 12.3 mm (4.0 mm²)	CE	- UV resistant - Not suitable for cable carriers 

HELUKABEL TOPSERV®

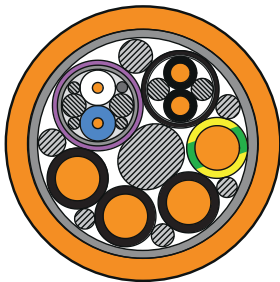
Cable type	Outer cable sheath	Conformity	Properties
HELUKABEL TOPSERV® – 109 PUR 	Color: - Orange Diameter: 10.6 mm (2.5 mm²) 11.9 mm (4.0 mm²)	CE/UL	- Halogen-free - UV resistant - Suitable for cable carriers 

LAPP ÖLFLEX®

Cable type	Outer cable sheath	Conformity	Properties
LAPP ÖLFLEX® SERVO 2YSLCYK-JB 	Color: - Black Diameter: 12.2 mm (2.5 mm²) 14.4 mm (4.0 mm²)	CE	- UV resistant - Not suitable for cable carriers 
LAPP ÖLFLEX® SERVO 2YSLCY-JB 	Color: - Transparent Diameter: 12.4 mm (2.5 mm²) 15.6 mm (4.0 mm²)	CE	Not suitable for cable carriers 
LAPP ÖLFLEX® SERVO FD796 CP 	Color: - Orange Diameter: 10.6 mm (2.5 mm²) 11.9 mm (4.0 mm²)	CE/UL	- Halogen-free - UV resistant - Suitable for cable carriers 
LAPP ÖLFLEX® VFD XL 	Color: - Black Diameter: 14.8 mm (2.5 mm²) 16.5 mm (4.0 mm²)	CE/UL	- UV resistant - TC-ER approval - Not suitable for cable carriers 

Cable type	Outer cable sheath	Conformity	Properties
LAPP ÖLFLEX® VFD 2XL 	Color: - Black Diameter: 14.8 mm (2.5 mm²) 16.7 mm (4.0 mm²)	CE/UL	- UV resistant - TC-ER approval - Not suitable for cable carriers 

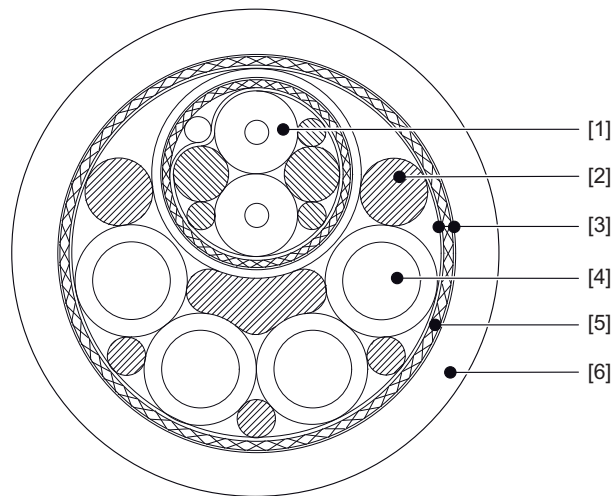
Leoni LEHC

Cable type	Outer cable sheath	Conformity	Properties ¹⁾
Leoni LEHC 005295 Rev.2 LEHC 005296 Rev.2 	Color: - Orange Diameter: - LEHC 005295 Rev.2: 15.6 mm (2.5 mm²) - LEHC 005296 Rev.2: 16.7 mm (4.0 mm²)	CE/UL	- Halogen-free - UV resistant - Suitable for cable carriers 

1) See also chapter "Specification of hybrid cables AC 400 V, communication (DSC or SNI) and safe disconnection (STO)"

9.7.2 Specification of recommended hybrid cables AC 400 V and communication (DSC)

SEW-EURODRIVE recommends the following hybrid cables for connecting DSC drive units and controller. The following figure shows the structure of the hybrid cable:



19915242379

	Type: Leoni LEHC 005221 Rev.0		Type: Leoni LEHC 005211 Rev.0	
[1]	1 conductor pair	2 × 0.24 mm ²		
	Conductor	Stranded copper wire, blank, 19 × 0.127 mm		
	Insulation	Polypropylene		
	Colors	White and blue		
	Shield	Banding		
	Drain wire	0.34 mm ²		
	Conductor	Stranded copper wire, blank, 19 x 0.15 mm		
	Shield	Braided copper wire, 0.1 mm, tinned		
	Optical coverage	min. 85%		
	Sheath	TPE		
	Color	Violet		
[2]	Filler			
[3]	Banding			
[4]	4 conductors	2.5 mm ²	4 conductors	4.0 mm ²
	Conductor	Stranded copper wire, blank, 147 × 0.15 mm	Conductor	Stranded copper wire, blank, 224 × 0.15 mm
	Insulation	Polypropylene	Insulation	Polypropylene
	Colors	Green/yellow, black with lettering 1; 2; 3	Colors	Green/yellow, black with lettering 1; 2; 3

	Type: Leoni LEHC 005221 Rev.0	Type: Leoni LEHC 005211 Rev.0
[5]	Shield Optical cover- age	Braided tinned copper wires, 0.128 mm min. 85%
[6]	Outer cable sheath Color	Polyurethane Black matte (similar to RAL9005)

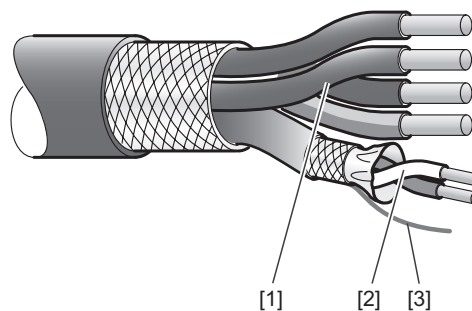
Technical data of hybrid cables

The following table shows the technical data of the hybrid cable:

Properties	Type: Leoni LEHC 005221 Rev.0	Type: Leoni LEHC 005296 Rev.2
UL features	UL style 20234, 80 °C, 1000 V E47543-LIL  certified	
Test voltage core/core	4.0 kV 50 Hz AC	
Test voltage core/shield	3.0 kV 50 Hz AC	
Operating voltage Position [4]	1000 V	
Wave impedance Position [1]	120 Ω ± 10%	
Attenuation Position [1]	Nom. 2.0 dB/100 m at 1 MHz Nom. 5.5 dB/100 m at 10 MHz	
Runtime Position [1]	Nom. 5 ns/m	
Operating temperature	-30 °C to +80 °C (fixed installation) -25 °C to +80 °C (cable carrier)	
Weight of cable	Nom. 279 g/m	Nom. 428 g/m
Bending radii	Min. 5 × outer diameter (fixed installation) Min. 10 × outer diameter (cable carrier)	
Cable diameter	13.5 mm	14.9 mm
Chemical properties	Flame retardant Halogen-free	

Notes on connection

The following figure shows the cable design and use of connections:

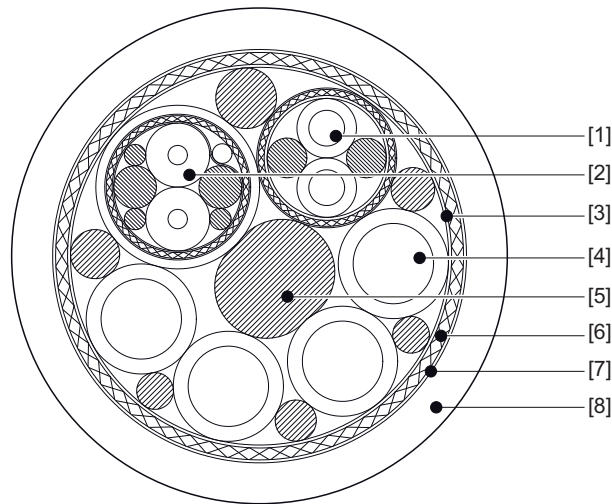


- [1] Connection for supply system/PE
- [2] CAN_H/CAN_L connection
- [3] CAN_GND connection via drain wire

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9.7.3 Specification of hybrid cables AC 400 V, communication (DSC or SNI) and safe disconnection (STO)

The following figure shows the structure of the hybrid cable:



9007219046263179

	Type: Leoni LEHC 005295 Rev.2	Type: Leoni LEHC 005296 Rev.2
[1]	1 core pair Conductor Insulation Colors Shield Optical cover- age Sheath	0.75 mm ² Stranded copper wire, 42 × 0.15 mm Polypropylene Black cores with white digits 1, 2 Braided copper wire, 0.1 mm, tinned min. 85% Banding
[2]	1 core pair Conductor Insulation Colors Shield Drain wire Conductor Shield Optical cover- age Sheath Color	2 × 0.24 mm ² Stranded copper wire, blank, 19 × 0.127 mm Polypropylene White and blue Banding 0.34 mm ² Stranded copper wire, blank, 19 × 0.15 mm Braided copper wire, 0.10 mm, tinned min. 85% TPE Violet
[3]	Banding	

	Type: Leoni LEHC 005295 Rev.2		Type: Leoni LEHC 005296 Rev.2	
[4]	4 cores	2.5 mm ²	4 cores	4.0 mm ²
	Conductor	Stranded copper wire, blank, 147 × 0.15 mm	Conductor	Stranded copper wire, blank, 224 × 0.15 mm
	Insulation	Polypropylene	Insulation	Polypropylene
	Colors	Green/yellow, black with lettering U/L1; V/L2; W/L3	Colors	Green/yellow, black with lettering U/L1; V/L2; W/L3
[5]	Filler			
[6]	Shield	Braided tinned copper wires, 0.15 mm	Shield	Braided tinned copper wires, 0.20 mm
	Optical coverage	min. 87%	Optical coverage	min. 87%
[7]	Banding	EMC fleece		
[8]	Outer cable sheath	Polyurethane		
	Color	Orange (similar to RAL2003)		

Technical data of hybrid cables

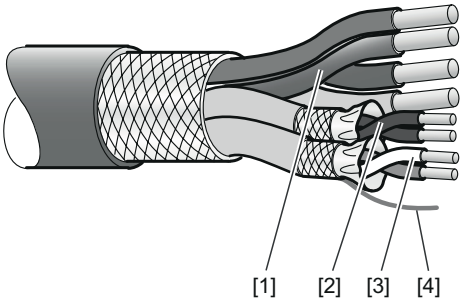
The following table shows the technical data of the hybrid cable:

Properties	Type: Leoni LEHC 005295 Rev.2	Type: Leoni LEHC 005296 Rev.2
UL properties	UL style 20234, 80 °C, 1000 V E47543-LIL  certified	
Test voltage core/core	4.0 kV 50 Hz AC	
Test voltage core/shield	3.0 kV 50 Hz AC	
Operating voltage	1000 V	
Position [4]		
Surge impedance	125 Ω ±10%	
Position [2]		
Damping	Nom. 2.5 dB/100 m at 1 MHz	
Position [2]	Nom. 6.5 dB/100 m at 10 MHz	
Runtime	Nom. 5 ns/m	
Position [2]		
Operating temperature	-30 °C to +80 °C (fixed installation) -25 °C to +80 °C (cable carrier)	
Weight of cable	Nom. 342 g/m	Nom. 428 g/m
Bending radiuses	Min. 5 × outer diameter (fixed installation) Min. 10 × outer diameter (cable carrier)	

Properties	Type: Leoni LEHC 005295 Rev.2	Type: Leoni LEHC 005296 Rev.2
Cable diameter	15.6 mm ± 0.5 mm	16.7 mm ± 0.5 mm
Chemical properties	- Oil resistance according to DIN VDE 0282-10/ HD 22.10 S2 - General fuel resistance (e.g. diesel, gasoline) - Flame retardant according to UL 1581 section 1060 Vertical Flame Test (FT1) - Flame retardant according to CSA C22.2 No.3-92 Vertical Flame Test (FT1) - Flame retardant according to IEC 60332-1-2 - Halogen-free according to IEC 60754-1 - General resistance to acids, alkalis, and cleaning agents - Generally hydrolysis-resistant - General resistance against UV radiation - Free of paint-wetting impairment substances	

Notes on connection

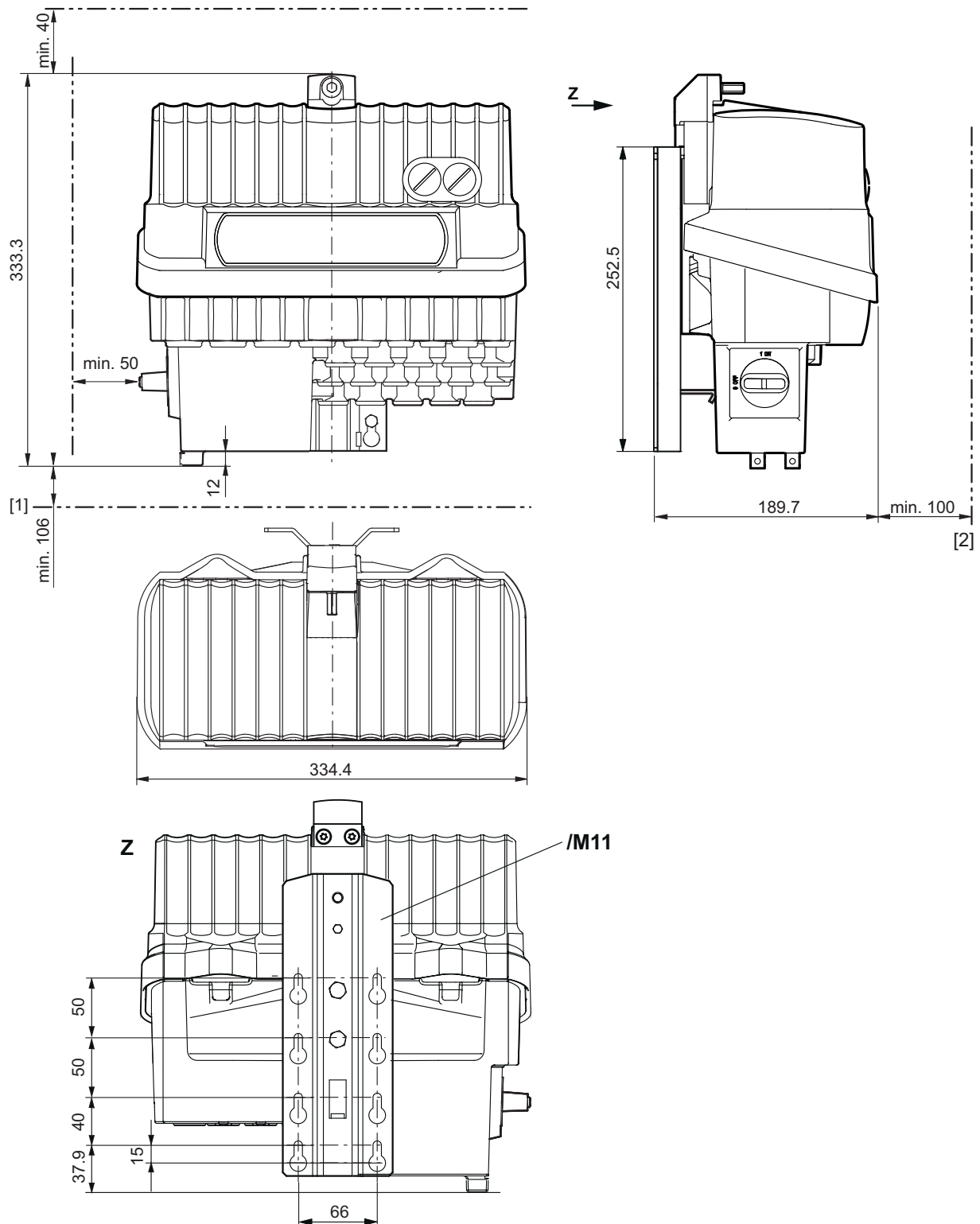
The following figure shows the cable design and use of connections:



19800410891

- [1] Connection for supply system/PE
- [2] STO connection
- [3] CAN_H/CAN_L connection
- [4] CAN_GND connection via drain wire

9.8.2 MOVIFIT® FDC with optional stainless steel mounting rail M11

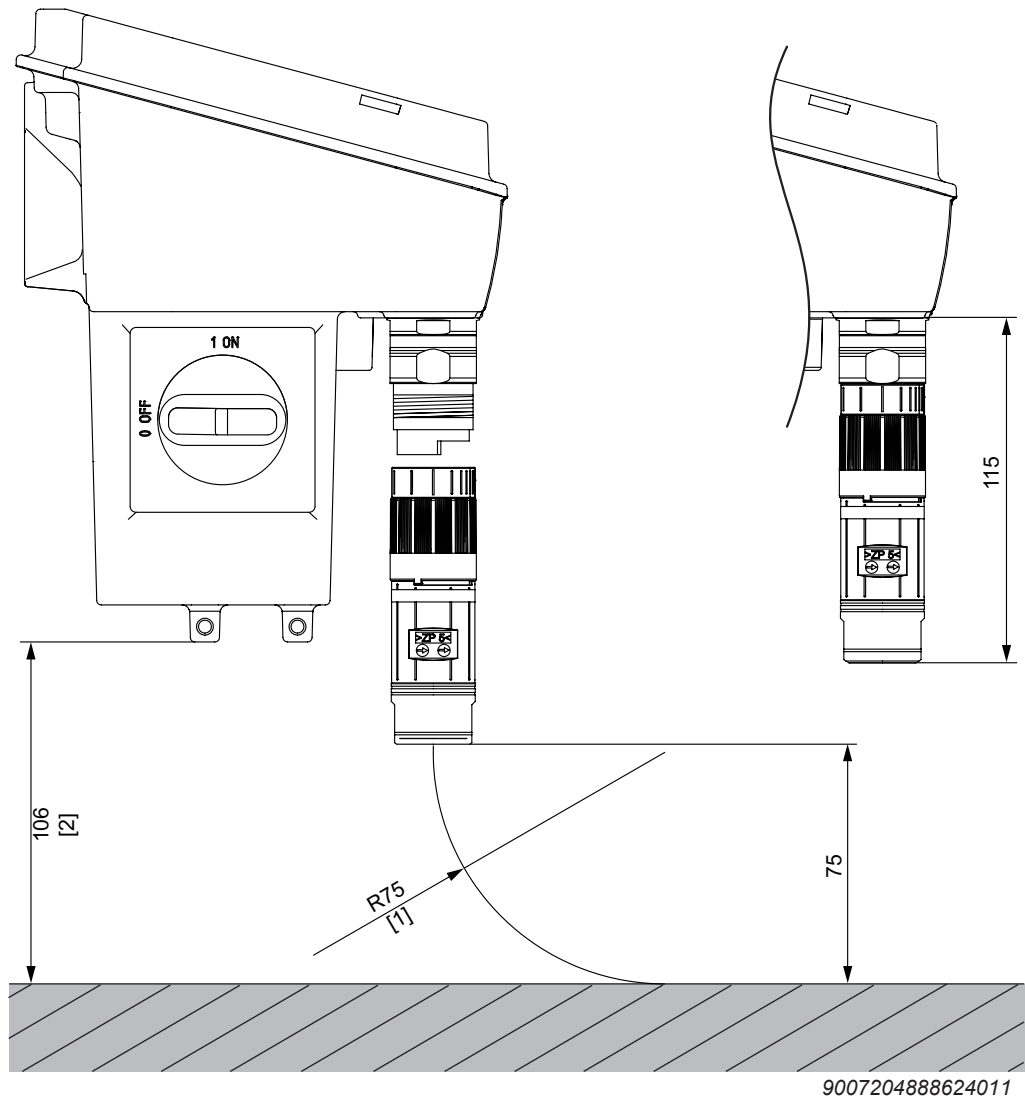


18014401553939723

- [1] The distance of 106 mm below is necessary only for ABOXes with plug connector for connecting the drive unit.
- [2] The distance of 100 mm at the front is necessary for the connection to the EBOX interfaces.

9.8.3 ABOX with plug connector for connecting the drive units

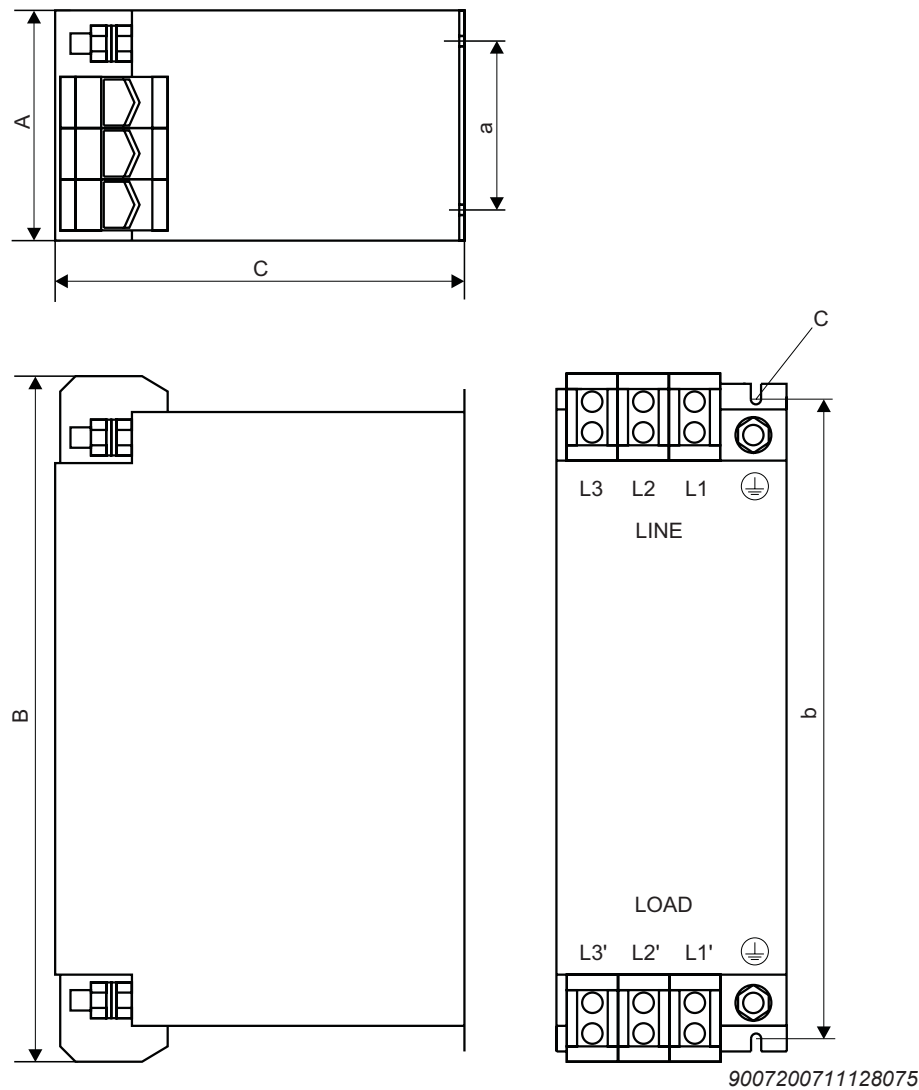
The following figure shows the minimum installation distance of the hybrid ABOX with plug connector for connecting the drive units:



[1] Minimum permitted bending radius of bulk cable: 75 mm

[2] Minimum distance to the bottom of the ABOX: 106 mm

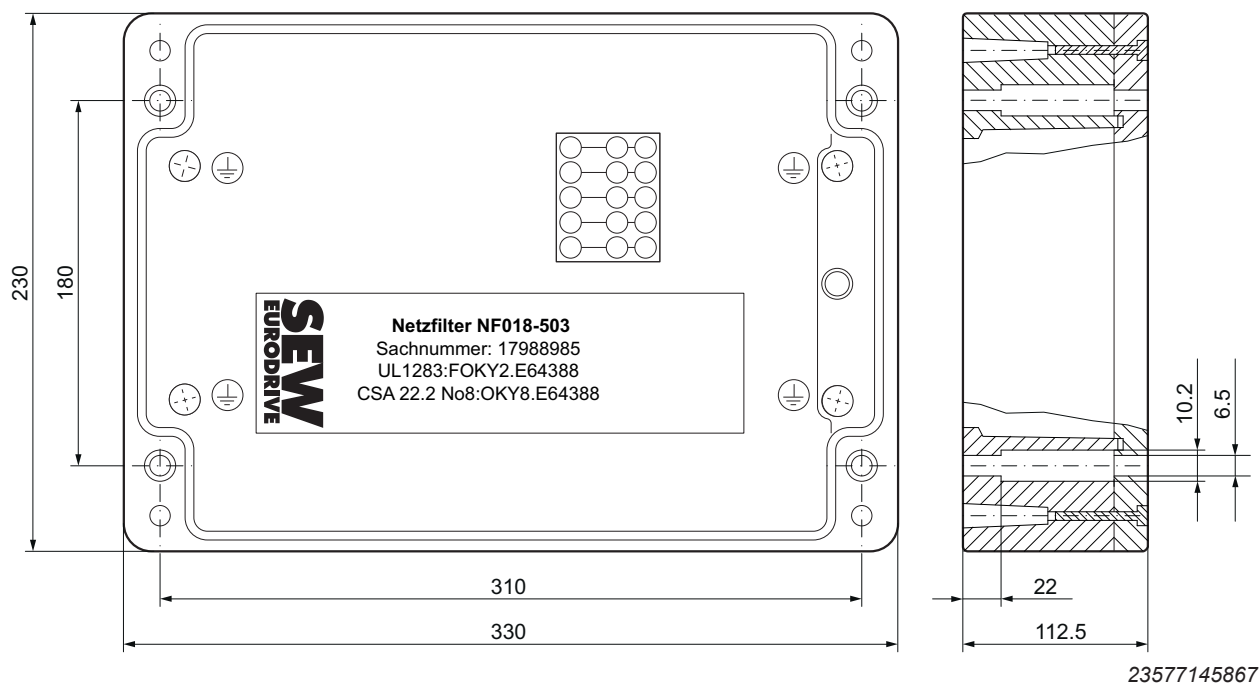
9.8.4 Dimension drawing NF.. line filter



Desired mounting position

Line filter type	Main dimensions mm			Fastening dimensions mm		Hole dimension mm	PE connection	Mass
	A	B	C	a	b			kg
NF018-503	50	255	80	20	240	5.5	M5	1.1
NF035-503	60	275	100	30	255			1.7
NF048-503		315			295	6.5	M6	2.1

9.8.5 Dimension drawing for line filter NF018-503



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 Novodvorskiy village council 145 223016, Minsk region	Tel. +375 17 319 47 56 / +375 17 378 47 58 Fax +375 17 378 47 54 http://www.sew-eurodrive.by sew@sew-eurodrive.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 info@sew.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

Cameroon			
Sales	Douala	SEW-EURODRIVE SARLU Ancienne Route Bonabéri P.O. Box B.P 8674 Douala-Cameroun	Tel. +237 233 39 12 35 Fax +237 233 39 02 10 www.sew-eurodrive.ci/ info@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			
Assembly Sales Service	Santiago de Chile	SEW-EURODRIVE CHILE LTDA Las Encinas 1295 Parque Industrial Valle Grande LAMP Santiago de Chile P.O. Box Casilla 23 Correo Quilicura - Santiago - Chile	Tel. +56 2 2757 7000 Fax +56 2 2757 7001 http://www.sew-eurodrive.cl ventas@sew-eurodrive.cl
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

Colombia			
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
Croatia			
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
Czech Republic			
Assembly Sales Service	Hostivice	SEW-EURODRIVE CZ s.r.o. Floriánova 2459 253 01 Hostivice	Tel. +420 255 709 601 Fax +420 235 350 613 http://www.sew-eurodrive.cz sew@sew-eurodrive.cz
Denmark			
Assembly Sales Service	Copenhagen	SEW-EURODRIVE A/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
Service	Vejle	SEW-EURODRIVE A/S Bødkervej 2 7100 Vejle	Tel. +45 43 9585 00 http://www.sew-eurodrive.dk sew@sew-eurodrive.dk
Egypt			
Technical Office	Cairo	SEW-EURODRIVE Representative Office in Egypt 47 Office Building, Section 1, City Centre, New Cairo Cairo	
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 info@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	Haguenau	SEW USOCOME 48-54 route de Soufflenheim B. P. 20185 67506 Haguenau Cedex	Tel. +33 3 88 73 67 00 http://www.usocom.com sew@usocom.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 Mommernheim Cedex	Tel. +33 3 88 37 48 00

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 dtcbordeaux@usocome.com
	Haguenau	SEW USOCOME 48-54 route de Soufflenheim B. P. 20185 67506 Haguenau Cedex	Tel. +33 3 88 73 67 00 dtchaguenau@usocome.com
	Lyon	SEW USOCOME 75 rue Antoine Condorcet 38090 Vaulx-Milieu	Tel. +33 4 74 99 60 00 dtclyon@usocome.com
	Nantes	SEW USOCOME Parc d'activités de la forêt 4 rue des Fontenelles 44140 Le Bignon	Tel. +33 2 40 78 42 00 dtcnantes@usocome.com
	Paris	SEW USOCOME Zone industrielle 2 rue Denis Papin 77390 Verneuil l'Étang	Tel. +33 1 64 42 40 80 dtcparis@usocome.com
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 / Precision Gear Units	Bruchsal	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 42 76646 Bruchsal	Tel. +49 7251 75-0 Fax +49 7251 75-1970 sew@sew-eurodrive.de
Production	Graben	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 1 76676 Graben-Neudorf	Tel. +49 7251 75-0 Fax +49 7251-2970
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 Christian-Pähr-Straße 12 76646 Bruchsal	Tel. +49 7251 75-1780 Fax +49 7251 75-1769 scc-elektronik@sew-eurodrive.de
	MAXOLU- TION® Factory Automation	SEW-EURODRIVE GmbH & Co KG Eisenbahnstraße 11 76646 Bruchsal	Tel. +49 7251 75-0 Fax +49 7251 75-1970 sew@sew-eurodrive.de
Drive Technology Center	North	SEW-EURODRIVE GmbH & Co KG Alte Ricklinger Straße 43 30823 Garbsen (Hannover)	Tel. +49 5137 8798-30 Fax +49 5137 8798-55 dtc-nord@sew-eurodrive.de
	East	SEW-EURODRIVE GmbH & Co KG Dänkritzter Weg 1 08393 Meerane (Zwickau)	Tel. +49 3764 7606-0 Fax +49 3764 7606-20 dtc-ost@sew-eurodrive.de
	South	SEW-EURODRIVE GmbH & Co KG Domagkstraße 5 85551 Kirchheim (München)	Tel. +49 89 909551-21 Fax +49 89 909551-50 dtc-sued@sew-eurodrive.de
	West	SEW-EURODRIVE GmbH & Co KG Siemensstraße 1 40764 Langenfeld (Düsseldorf)	Tel. +49 2173 8507-10 Fax +49 2173 8507-50 dtc-west@sew-eurodrive.de
Drive Center	Berlin	SEW-EURODRIVE GmbH & Co KG Melitta-Schiller-Straße 8 12526 Berlin	Tel. +49 306331131-30 Fax +49 306331131-36 dc-berlin@sew-eurodrive.de
	Bremen	SEW-EURODRIVE GmbH & Co KG Allerkai 4 28309 Bremen	Tel. +49 421 33918-10 Fax +49 421 33918-22 tb-bremen@sew-eurodrive.de

Germany

Hamburg	SEW-EURODRIVE GmbH & Co KG Hasselbinnen 11 22869 Schenefeld	Tel. +49 40298109-60 Fax +49 40298109-70 dc-hamburg@sew-eurodrive.de
Saarland	SEW-EURODRIVE GmbH & Co KG Gottlieb-Daimler-Straße 4 66773 Schwalbach Saar – Hülzweiler	Tel. +49 6831 48946 10 Fax +49 6831 48946 13 dc-saarland@sew-eurodrive.de
Ulm	SEW-EURODRIVE GmbH & Co KG Dieselstraße 18 89160 Dornstadt	Tel. +49 7348 9885-0 Fax +49 7348 9885-90 dc-ulm@sew-eurodrive.de
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
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Greece

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

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

Sales	Reykjavik	Varma & Vélaverk ehf. Knarrarvogi 4 104 Reykjavik	Tel. +354 585 1070 Fax +354 585)1071 https://vov.is/ vov@vov.is
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India

Registered Office Assembly Sales Service	Vadodara	SEW-EURODRIVE India Private Limited 302, NOTUS IT PARK, Sarabhai Campus, Beside Notus Pride, Genda Circle, Vadodara 390023 Gujarat	Tel. +91 265 3045200 Fax +91 265 3045300 https://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
	Tapukara	SEW-EURODRIVE India Private Limited Plot No SP-6-46, Tapukara, Karoli Industrial Area, No. 1, district : Alwar , Rajasthan - 301707	Tel. +91 265 3045200 Fax +91 265 3045300 tapukara.plant@seweurodriveindia.com
Sales	Gurgaon	SEW-EURODRIVE India Private Limited Global Business Park, M.G. Road Unit No. 205, 2nd Floor, Tower – D Gurugram 122001, Haryana	Tel. +91 99588 78855 salesgurgaon@seweurodriveindia.com

Indonesia			
Registered Office Sales Service	Jakarta	PT SEW EURODRIVE INDONESIA Palma Tower, 16th Floor, Unit H & I, Jl R.A. Kartini II-S Kav 06 Pondok Pinang, Kebayoran Lama Jakarta Selatan 12310	Tel. +62 21 7593 0272 Fax +62 21 7593 0273 sales.indonesia@sew-eurodrive.com https://www.sew-eurodrive.com.sg
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
	Jakarta	PT. Agrindo Putra Lestari Jl.Pantai Indah Selatan, Komplek Sentra In- dustri 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	Alpert Engineering Ltd. 48 Moyle Road Dublin Industrial Estate Glasnevin, Dublin 11	Tel. +353 1 830-6277 Fax +353 1 830-6458 http://www.alpert.ie info@alpert.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 20033 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 27 21 21 81 05 Fax +225 27 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.com kazakhstan@sew-eurodrive.com
	Tashkent	Representative Office SEW-EURODRIVE Representative office in Uzbekistan 95A Amir Temur ave, office 401/3 100084 Tashkent	Tel. +998 97 134 01 99 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
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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
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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
Sales (Jordan, Kuwait , Beirut Saudi Arabia, Syria)		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
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Luxembourg

Representation: Belgium

Macedonia

Sales	Skopje	Boznos DOOEL Dime Anicin 2A/7A 1000 Skopje	Tel. +389 23256553 Fax +389 23256554 http://www.boznos.mk
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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
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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@sew-eurodrive.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@sew-eurodrive.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
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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
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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
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 Loderstar Avenue, Wigram Christchurch	Tel. +64 3 384-6251 Fax +64 3 384-6455 sales@sew-eurodrive.co.nz
Nigeria			
Sales	Lagos	Greenpeg Nig. Ltd 64C Toyin Street Opebi-Allen Ikeja Lagos-Nigeria	Tel. +234-701-821-9200-1 http://www.greenpeg ltd.com sales@greenpeg ltd.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 Com- mercial 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. Nu Guazu No. 642 casi Campo Esperanza Santisima Trinidad Asuncion	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			
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Representation: South Africa			

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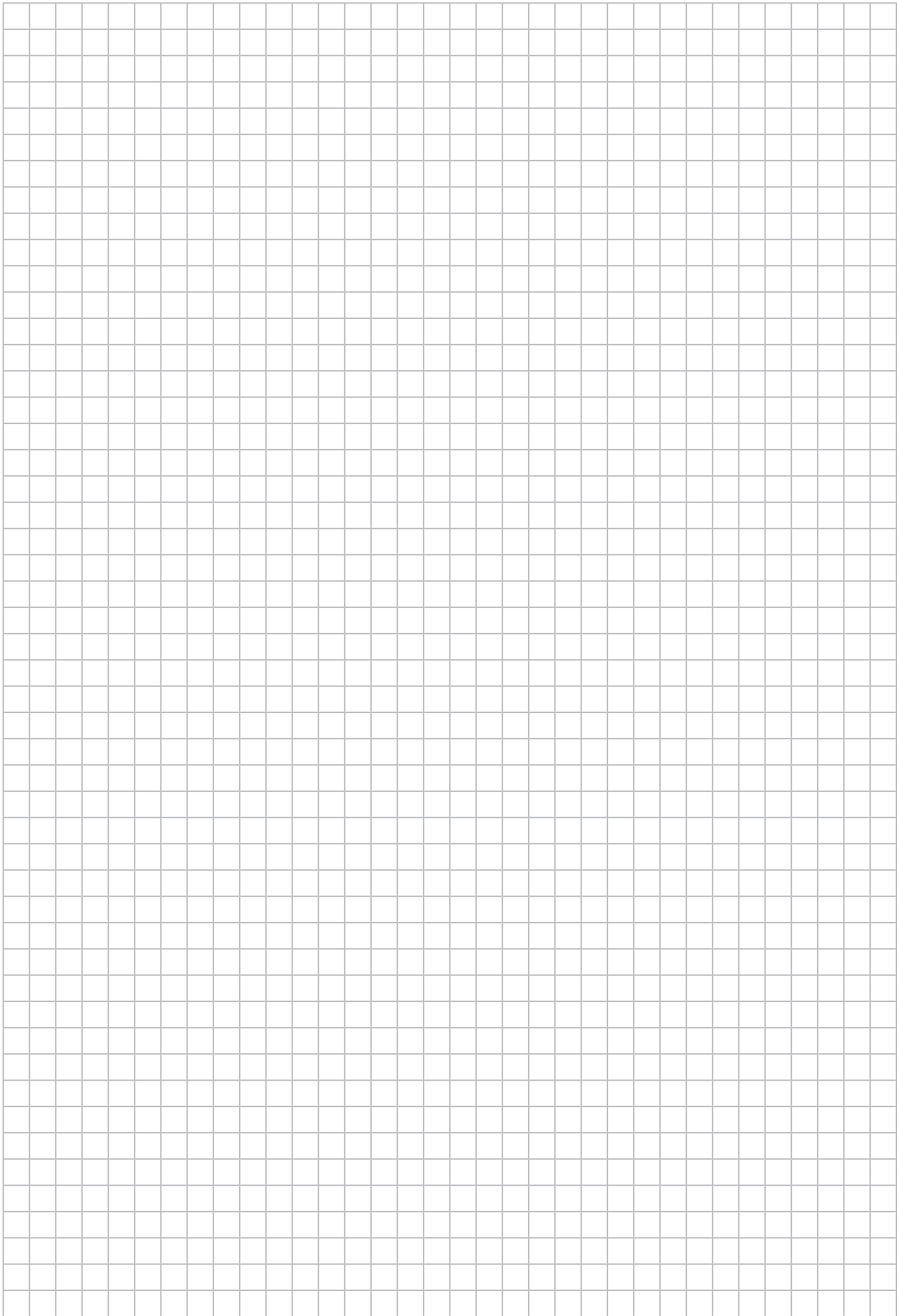
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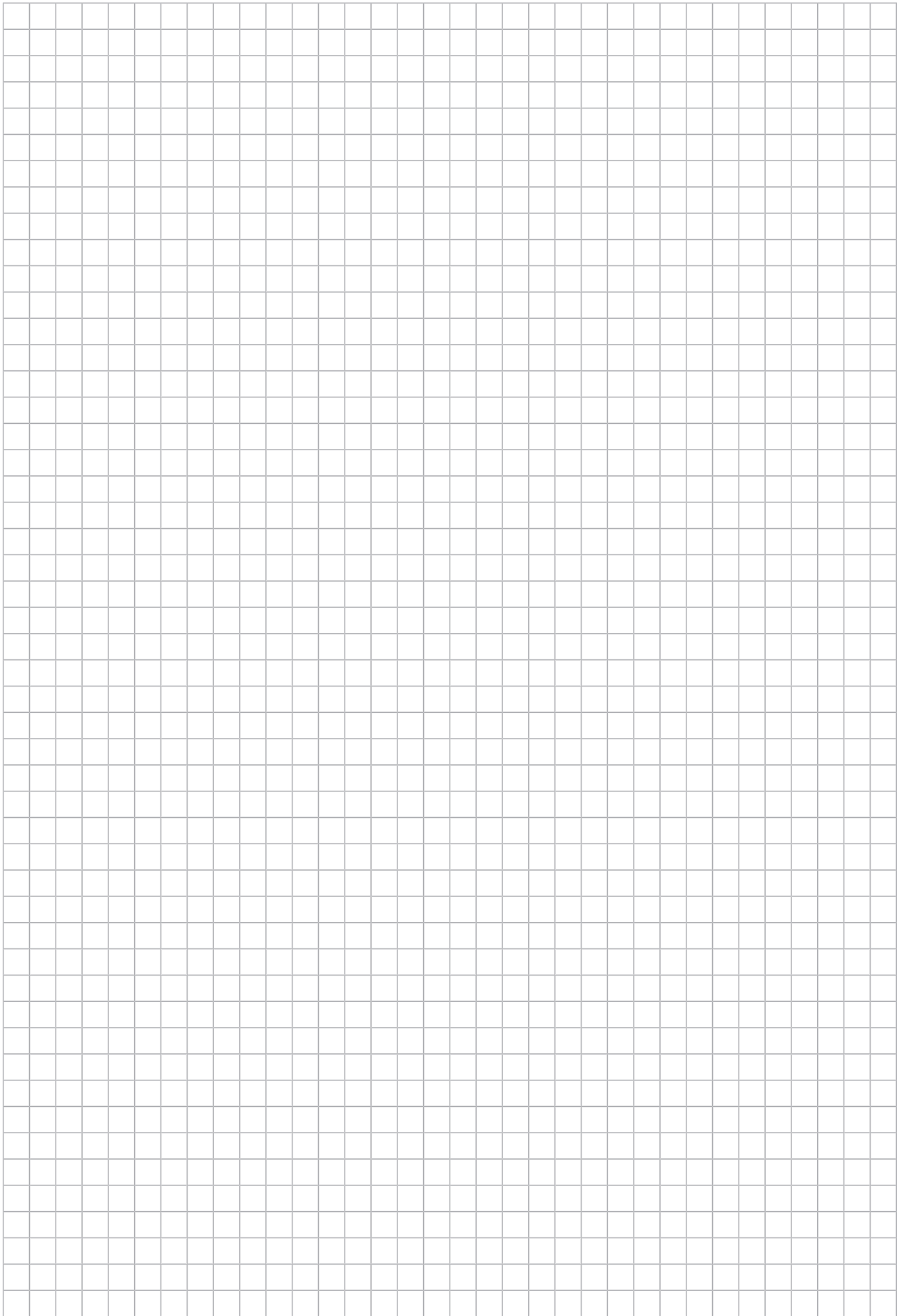
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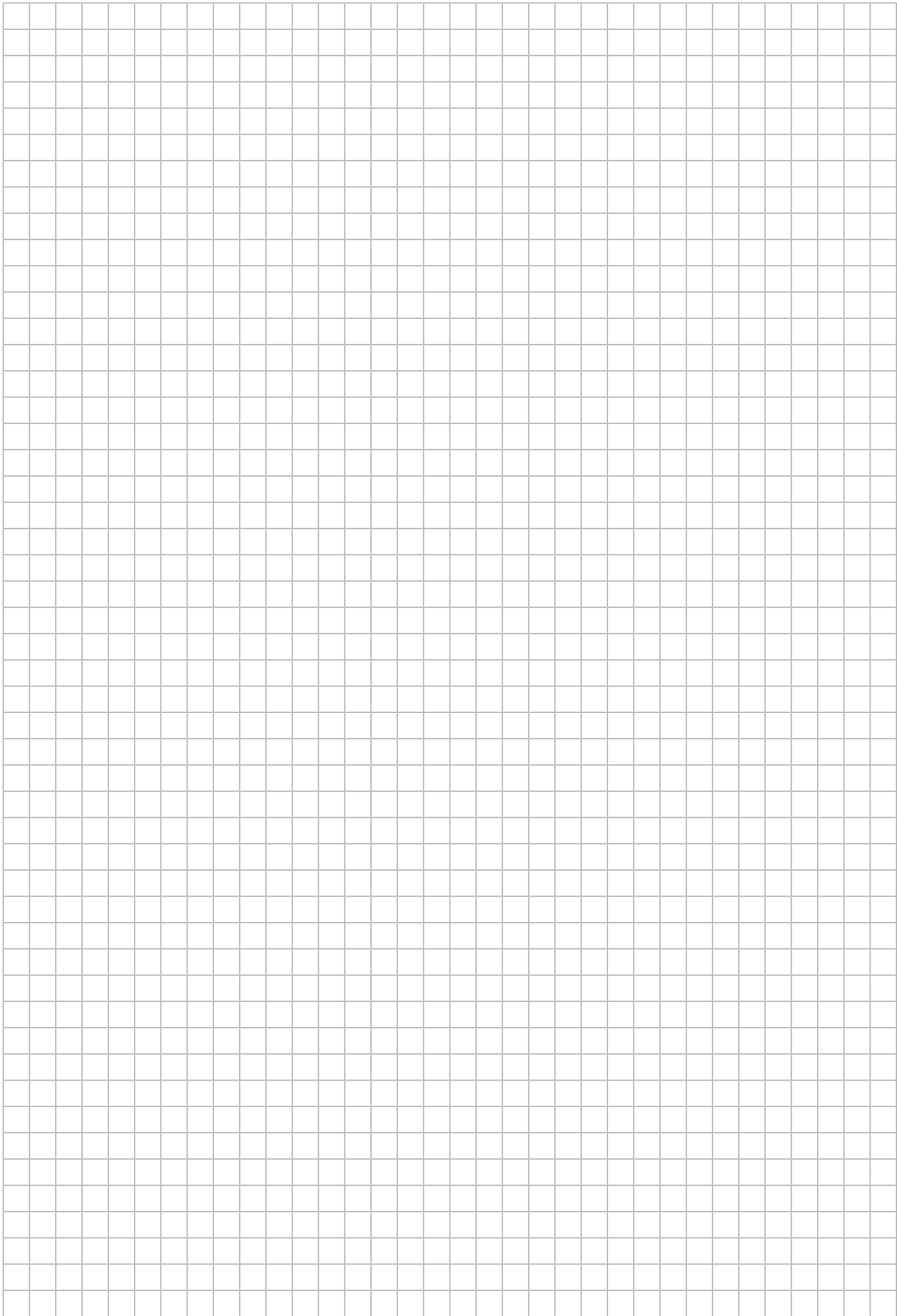
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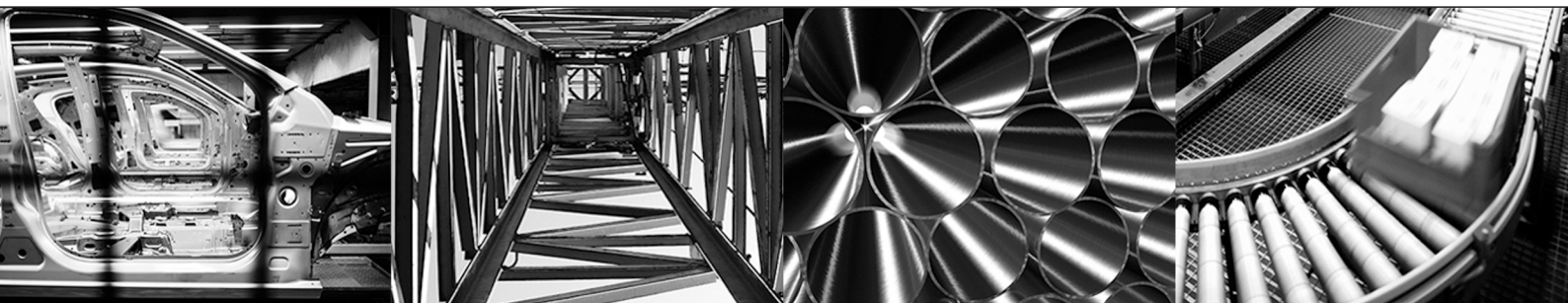
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