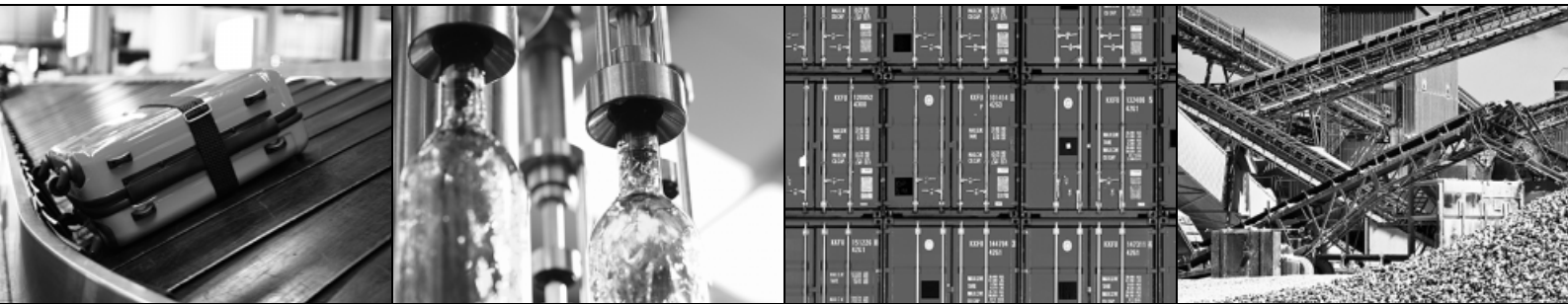**SEW**
EURODRIVE

Operating Instructions

MOVI4R-U®

1 General Information

1.1 About this documentation

This documentation is an integral part of the product. The documentation is intended for all employees who perform assembly, installation, startup, and service work on the product.

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

1.2 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 drive system or its environment
INFORMATION	Useful information or tip: Simplifies handling of the drive system.	

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 danger 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.

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

A requirement of fault-free operation and fulfillment of any rights to claim under limited warranty is that you adhere to the information in the documentation. You should therefore read the documentation before you start working with the unit!

1.4 Exclusion of liability

You must comply with the information contained in this documentation to ensure safe operation and to achieve the specified product characteristics and performance features. SEW-EURODRIVE assumes no liability for injury to persons or damage to equipment or property resulting from non-observance of these operating instructions. In such cases, any liability for defects is excluded.

1.5 Other applicable documentation

Note also the following documentation:

• "DR.71 – 315 AC Motors" operating instructions

You can download or order this publication on the Internet (**http://www.sew-eurodrive.com** under the heading "Documentation").

1.6 Product names and trademarks

All product names in this documentation are trademarks or registered trademarks of their respective titleholders.

1.7 Copyright

2 Safety Notes

The following basic safety notes must be read carefully to prevent injury to persons and damage to property. The operator must ensure that the basic safety notes are read and adhered to. Ensure that persons responsible for the system and its operation, as well as persons who work independently on the unit, have read through the operating instructions carefully and understood them. If you are unclear about any of the information in this documentation, or if you require further information, please contact SEW-EURODRIVE.

2.1 Preliminary information

The following safety notes are primarily concerned with the use of MOVI4R-U$^®$ units. If you use other SEW components, also refer to the safety notes for these particular components in the corresponding documentation.

Please also observe the supplementary safety notes in the individual chapters of this documentation.

2.2 General

Never install or operate damaged products. In the event of damage, submit a complaint to the shipping company immediately.

During operation, the MOVI4R-U$^®$ unit can have live or uninsulated parts, as well as hot surfaces according to the degree of protection.

Removing covers without authorization, improper use as well as incorrect installation or operation may result in severe injuries to persons or damage to machinery.

Consult the documentation for further information.

2.3 Target group

Only qualified electricians are authorized to install, start up or service the units or correct unit faults (observing IEC 60364 or CENELEC HD 384 or DIN VDE 0100 and IEC 60664 or DIN VDE 0110 as well as national accident prevention guidelines).

Qualified personnel in the context of these basic safety notes are persons familiar with installation, assembly, startup and operation of the product who possess the necessary qualifications.

All persons involved in any other work, such as transportation, storage, operation and disposal, must be trained appropriately.

2.4 Designated use

The MOVI4R-U® unit is a component intended for installation in electrical systems or machines.

In case of installation in machines, startup of MOVI4R-U® units (i.e. start of designated operation) is prohibited until it is determined that the machine meets the requirements stipulated in the Machinery Directive 2006/42/EC.

Startup (i.e. the start of designated use) is only permitted under observance of EMC Directive 2004/108/EC.

The MOVI4R-U® unit meets the requirements stipulated in the Low Voltage Directive 2006/95/EC. The standards contained in the declaration of conformity are applied to the MOVI4R-U® unit.

Observe the technical data and information on the connection requirements as provided on the nameplate and in the documentation.

2.4.1 Safety functions

MOVI4R-U® units may not perform safety functions.

2.4.2 Lifting applications

MOVI4R-U® units are not designed for lifting applications.

2.5 Transportation and storage

You must observe the notes on transportation, storage and proper handling. Observe the climatic conditions as stated in the "Technical Data" sections.

2.6 Installation

The units must be installed and cooled according to the regulations and specifications in the corresponding documentation.

Protect the MOVI4R-U® units from improper strain.

The following applications are prohibited unless explicitly permitted:

- Use in potentially explosive atmospheres.

- Use in areas exposed to harmful oils, acids, gases, vapors, dust, radiation, aggressive cleaning agents and solvents, etc.

- Use in non-stationary applications with strong mechanical oscillation and impact loads; see the "Technical Data" chapter.

2.7 Electrical connection

Observe applicable national accident prevention regulations (e.g. BGV A3) when working on a live MOVI4R-U® unit.

Perform electrical installation according to the pertinent regulations (e.g. cable cross sections, fusing, protective conductor connection). For any additional information, refer to the applicable documentation.

For notes on EMC compliant installation, such as shielding, grounding, arrangement of filters and routing of lines, refer to the "Installation instructions" chapter. The manufacturer of the system or machine is responsible for maintaining the limits established by EMC legislation.

Protective measures and protection devices must comply with the regulations in force (e.g. EN 60204-1 or EN 61800-5-1).

2.8 Safe disconnection

The MOVI4R-U® unit meets all requirements for reliable disconnection of power and electronics connections in accordance with EN 61800-5-1. All connected circuits must also satisfy the requirements for safe disconnection to ensure reliable isolation.

2.9 Operation

Systems into which MOVI4R-U® unit is installed must, if necessary, be equipped with additional monitoring and protection devices according to applicable safety regulations; e.g., the German law governing technical equipment (Gesetz über technische Arbeitsmittel), accident prevention regulations, etc. Additional protective measures may be necessary for applications with increased potential risk.

Do not touch live parts or power connections immediately after disconnecting the MOVI4R-U® unit from the supply voltage because there may still be some charged capacitors. Wait at least for 1 minute after having switched off the supply voltage.

As soon as supply voltage is applied to the MOVI4R-U® unit, the MOVI4R-U® unit must be closed, i.e. the control plate and any optional fans must be connected.

Never disconnect cable connections during operation. Doing so can lead to dangerous electric arcs forming, which can cause irreparable damage to the unit (fire risk, irreparable contacts).

The unit may still be live and connected to the supply system, even if the operation LEDs are no longer illuminated.

Mechanical blocking or internal safety functions of the unit can cause a motor standstill. Eliminating the cause of the problem or performing a reset may result in the drive restarting automatically. If, for safety reasons, this is not permitted for the drive-controlled machine, disconnect the unit from the supply system before correcting the error.

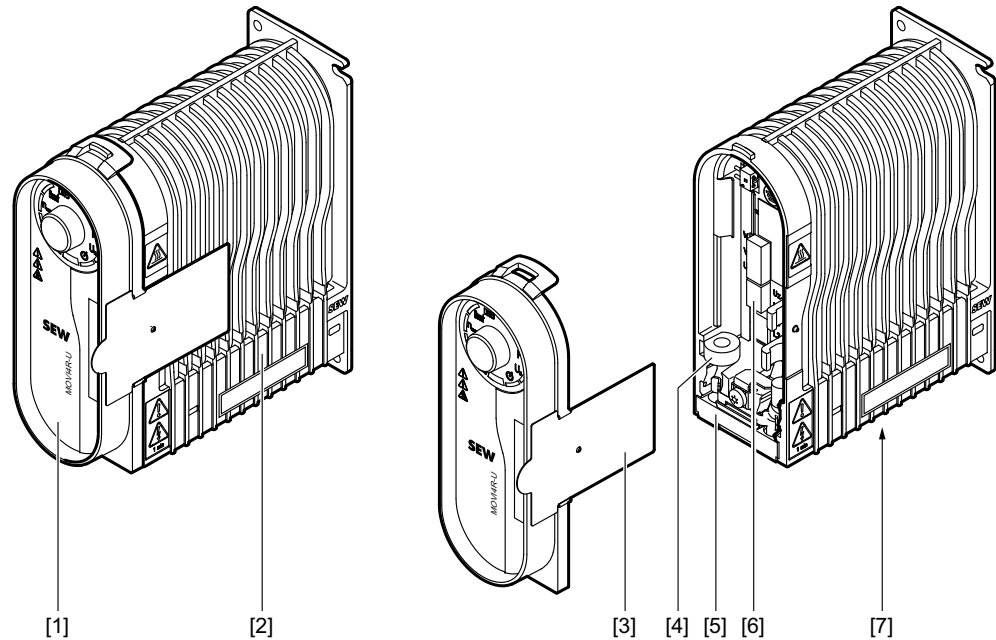Warning – danger of burns: The surface temperature of MOVI4R-U® unit can exceed 60°C during operation!

3 Unit Structure

3.1 MOVI4R-U® inverter

MOVI4R-U® is an inverter for controlling asynchronous motors.

The following figure illustrates the structure of the size 1 MOVI4R-U® inverter:

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[1] Control plate
[2] Housing with cooling fins
[3] Instruction sign
[4] EMC toroidal core
[5] Cable seal
[6] Power section
[7] Fan (optional)

3.1.1 MOVI4R-U® inverter features

The MOVI4R-U® inverter has the following characteristics:

- Robust housing with IP54 protection
- Frequency inverter with V/f control
- Power range from 0.25 to 1.1 kW
- Binary input control, or operation at the unit
- Setpoint selection using the analog input, or settings can be made on the unit
- 2 speed setpoints
- Simple startup and operation at the control plate
- Quick replacement of the power section and the control plate
- The housing can be reused

3.2 Spare parts

The following spare parts are available for the MOVI4R-U® inverter:

Spare part	Part number
Housing for version without fan	18151213
Housing for version with fan	18155529
1 x AC 200 – 240 V power section	28213556
3 x AC 200 – 240 V power section	28213688
3 x AC 380 – 500 V power section	28213661
Flat ribbon cable between the power section and the control plate	19104936
MUOP11A control plate	18258328
MUPF11A fan	28208668
Cable seal for cables with Ø = 5 – 8 mm / 8 – 11.5 mm	18151221
Shield plate	18151248
Grounding bracket	00104426
Screw (for shield plate)	00130591
EMC toroidal core	19103360

3.3 MOVI4R-U® inverter type designation

3.3.1 Nameplate of complete unit

The following figure shows an example of the nameplate of the complete MOVI4R-U® inverter unit (on the side of the housing):

```
Input:   1x200..240V/6,3A/50..60Hz
Output: 3x..Un/2,8A/2..100Hz
```

9651342347

The following figure shows an example of the nameplate of the complete MOVI4R-U® inverter unit (on the front of the control plate):

```
01.1234567890.0001.13
MUWA037-231-S00-00/PF
```

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3.3.2 Power section nameplate

The following figure shows an example of the nameplate of the power section:

```
part-#: 18226485.10
10.11.10.xx - 12345678901
Input:              Output:
1x200..240V         3x..Un
6,3A(6,8A*)         2,8A (3,3A*)
50..60Hz            2..100Hz
*) with SEW fan MUPF11A

SEW
D-76646 Bruchsal
```
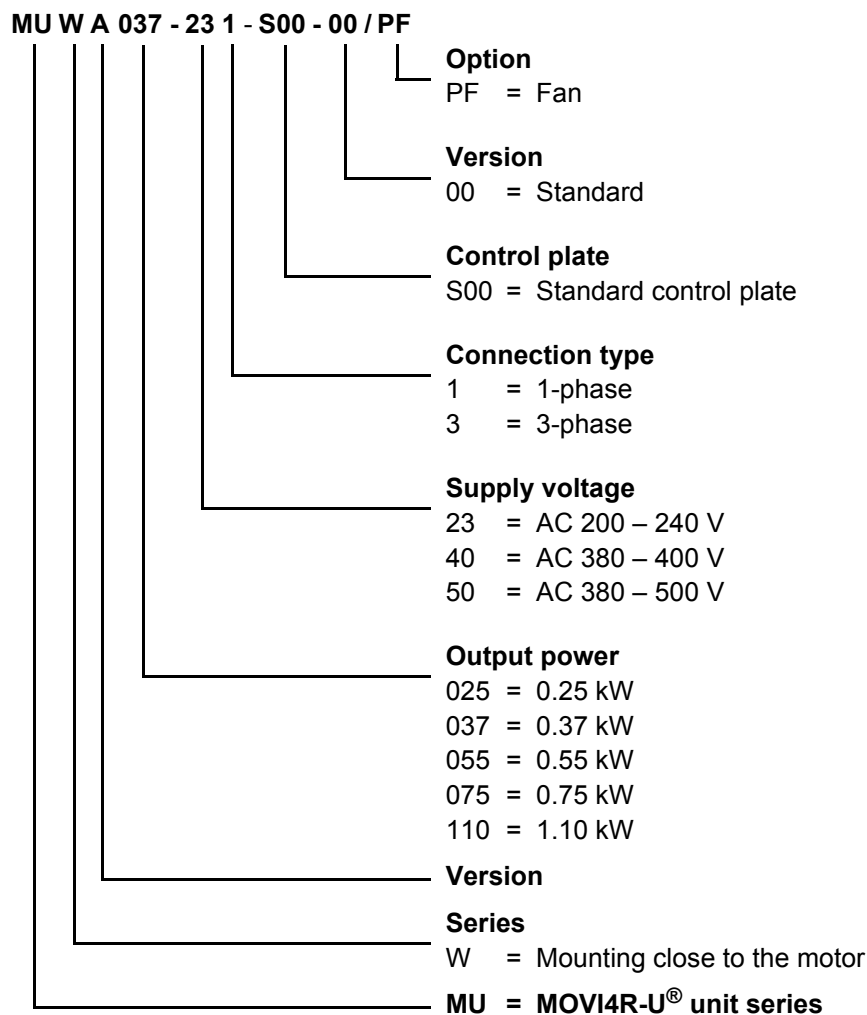
9651348875

The nameplate for the power section can be found on the front of the power section. It is not visible from the outside when the unit is closed.

3.3.3 Type designation

The following table shows an example of the type designation of the MOVI4R-U® inverter:

MU W A 037 - 23 1 - S00 - 00 / PF

Option
PF = Fan

Version
00 = Standard

Control plate
S00 = Standard control plate

Connection type
1 = 1-phase
3 = 3-phase

Supply voltage
23 = AC 200 – 240 V
40 = AC 380 – 400 V
50 = AC 380 – 500 V

Output power
025 = 0.25 kW
037 = 0.37 kW
055 = 0.55 kW
075 = 0.75 kW
110 = 1.10 kW

Version

Series
W = Mounting close to the motor

MU = MOVI4R-U® unit series

3.4 Control plate type designation

3.4.1 Control plate nameplate

The following figure shows an example of the nameplate of the control plate:

MUOP11A
P #: 18258328.10   **SEW**

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The nameplate for the control plate can be found on the control plate (inside the unit). It is not visible from the outside when the unit is closed.

3.4.2 Type designation

The following table shows an example of the type designation of the control plate:

MU OP 11 A

Version

Variant
11   = Standard

Component
OP   = Control plate

MU = MOVI4R-U® unit series
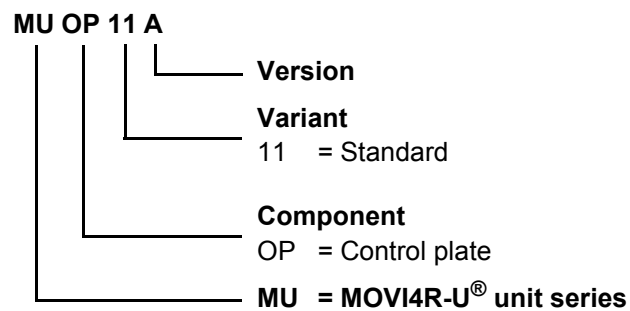
4 Mechanical Installation

4.1 Installation instructions

4.1.1 General information

> **NOTICE**
>
> Loss of guaranteed degree of protection if the MOVI4R-U® inverter is installed incorrectly or not at all.
>
> Damage to the MOVI4R-U® inverter.
>
> • Protect the power section and the control plate from dust and moisture when removing the control plate from the housing.

Note the following when installing the MOVI4R-U® inverter:

• Observe the general safety notes.
• Only install the MOVI4R-U® inverter drive on a level, low-vibration, and torsionally rigid support structure.
• Ensure sufficient clearance around the unit to allow for adequate cooling. Warm outlet air of other units must not be drawn in.
• Comply with all instructions referring to the technical data and the permissible conditions where the unit is operated.
• Use only the provided attachment options when mounting the drive.
• Seal unused cable entries.

The degree of protection specified in the technical data only applies if the MOVI4R-U® inverter is properly installed.

4.1.2 Installation requirements

Make sure that the following requirements are met before you start installing the unit:

• The entries on the nameplate of the MOVI4R-U® inverter match the voltage supply system.
• The MOVI4R-U® inverter is undamaged (no damage caused by transport or storage).
• The ambient temperature corresponds to the specifications in the "Technical Data" chapter.
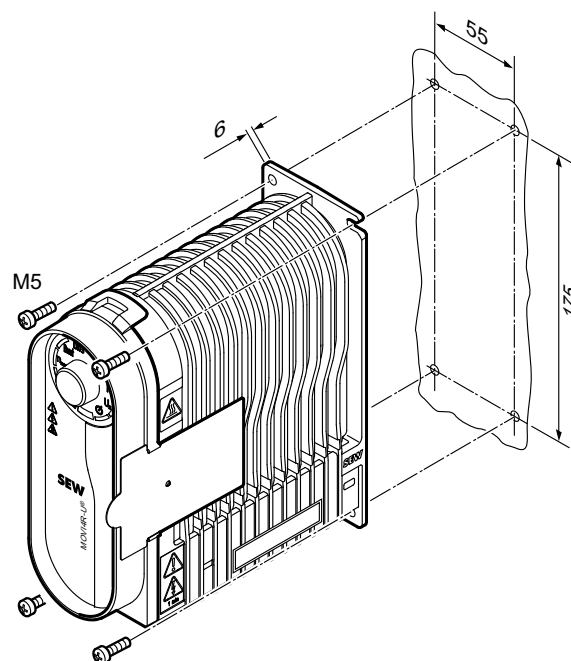
4.2 Mounting position

The MOVI4R-U® inverter may only be installed according to the following mounting positions.
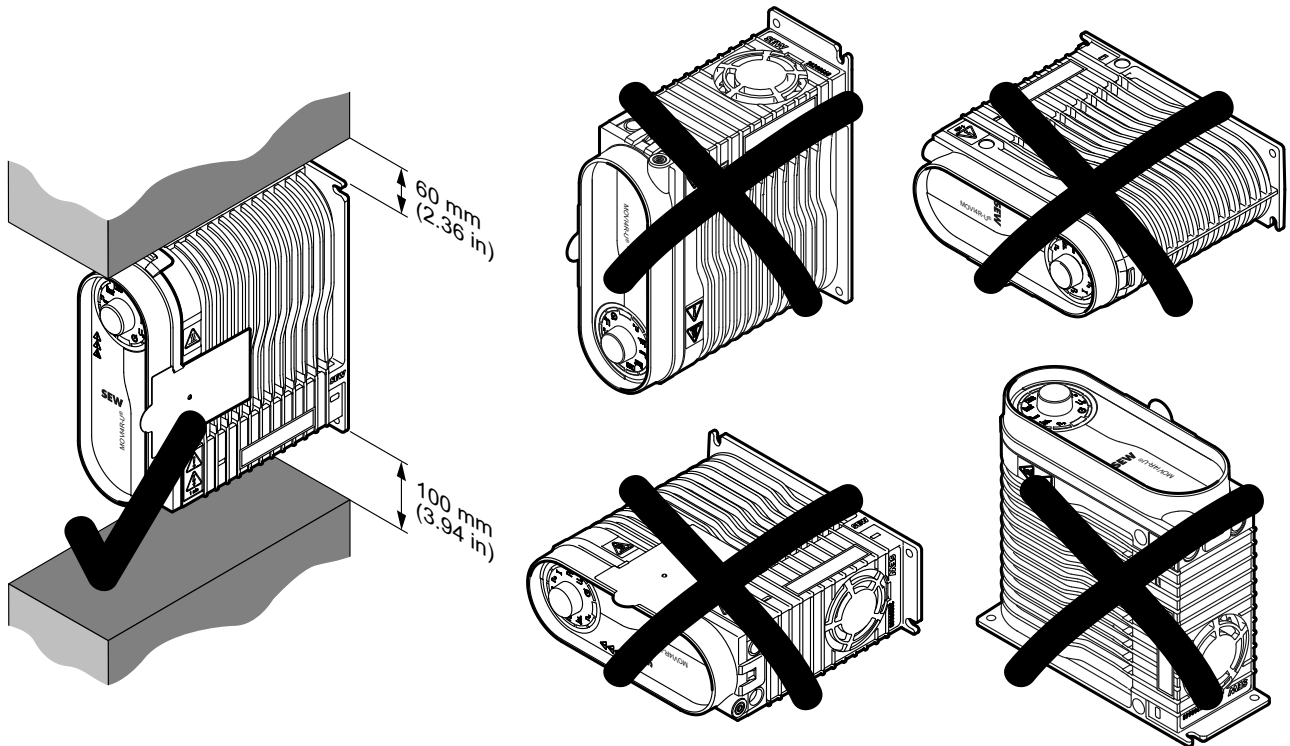
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4.3 MOVI4R-U® installation

Mount the MOVI4R-U® inverter with 4 M5 screws according to the following figure:

(Tightening torque 2.0 – 2.4 Nm (18 – 21 lb.in))

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5 Electrical Installation

5.1 General information

Observe the following notes on electrical installation:

- Observe the general safety notes.
- Comply with all instructions referring to the technical data and the permissible conditions where the unit is operated.
- Seal unused cable entries.

5.2 Installation planning taking EMC aspects into account

INFORMATION

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

MOVI4R-U® units can cause EMC interference within the permitted limit range according to EN 61800-3. (see Technical Data). In this case, it is recommended that the user 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 depends on selecting the correct cables, providing correct grounding and a functioning equipotential bonding.

You must always apply the **relevant standards**.

Observe the notes in the following chapters in particular.
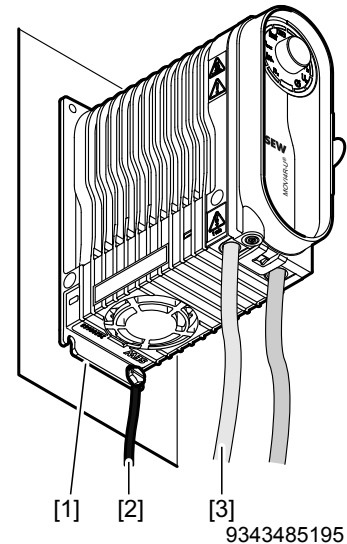
5.2.1 Equipotential bonding

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

Establish a connection over a wide surface area between the MOVI4R-U® housing and the system (untreated, unpainted, uncoated mounting surface).

[1] Conductive connection over a large area between MOVI4R-U® inverter and the mounting plate

[2] PE conductor on housing

[3] PE conductor in the power supply cable

[1]   [2]   [3]

9343485195

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

5.2.2 Data cables (binary inputs/outputs)

Route the data cables for the binary inputs/outputs separately from cables that emit interference (such as control cables of solenoid valves, motor cables).

5.2.3 Cable shields

- Must have good EMC properties (high shield attenuation)
- May not serve only as mechanical protection for the cable.
- Must be connected to a wide area of the unit's metal housing at the cable ends.

5.3 Installation instructions

5.3.1 Connecting power supply cables

- The rated voltage and frequency of the MOVI4R-U® inverter must correspond to the data for the power supply system.
- Install line fuses at the beginning of the power supply cable behind the supply bus junction. Use D, D0, NH fuses or circuit breakers. Select the fuse size according to the cable cross section.
- Cable cross section according to input current I_{line} for rated power (see the "Technical Data" chapter).

Operation on IT system   Operation of MOVI4R-U® inverters on IT supply systems is in preparation.

5.3.2 Permitted outer cable diameter and cable cross section

Power terminals   Observe the permitted outer cable diameters and cable cross sections for installation:

Power terminals	
Outer cable diameter	Power supply cable: 7.0 – 10.0 mm Motor cable: 8.0 – 11.5 mm
Cable cross section	0.25 mm^2 – 2.5 mm^2 AWG24 – AWG14
Conductor end sleeves	• Connect only single-wire conductors or flexible conductors with conductor end sleeves (DIN 46228, material E-CU) <u>with or without plastic collars</u> • Permitted length of the conductor end sleeve: at least 8 mm

Control terminals   Observe the permitted outer cable diameters and cable cross sections for installation:

Control terminals	
Outer cable diameter	Control cable: 5.0 – 8.0 mm
Cable cross section • Flexible conductor (bare litz wire) • Conductor with conductor end sleeve <u>without</u> plastic collar	0.25 mm^2 – 1.5 mm^2 AWG24 – AWG16
• Conductor with conductor end sleeve <u>with</u> plastic collar	0.25 mm^2 – 0.75 mm^2 AWG24 – AWG19

5.3.3 Line contactor

NOTICE

Damage due to jog mode.

Damage to the MOVI4R-U® inverter.

- Do not use the line contactor for jog mode, but only for switching the MOVI4R-U® inverter on and off. In jog mode, use the control signals (binary inputs).

- Observe the minimum switch-off time for the line contactor:
  - 20 s for MOVI4R-U® with 1-phase voltage supply
  - 2 s for MOVI4R-U® with 3-phase voltage supply

- Use only a contactor of utilization category AC3 (EN 60947-4-1) as a line contactor.

5.3.4 Residual current device

⚠ WARNING

Electric shock due to incorrect RCD type.

Severe or fatal injuries.

- MOVI4R-U® can cause direct current in the protective earth conductor. When a residual current device (RCD) is used for protection against direct or indirect contact, only install a type B residual current device on the supply system end of the MOVI4R-U® inverter.

- Do not use a conventional RCD as a protective device. Universal current-sensitive RCDs are permitted as a protective device. During normal operation of MOVI4R-U® inverter, earth-leakage currents of > 3.5 mA can occur.

- SEW-EURODRIVE recommends that you do not use RCDs. However, if a residual current device is stipulated for direct or indirect protection against contact, observe the above note.
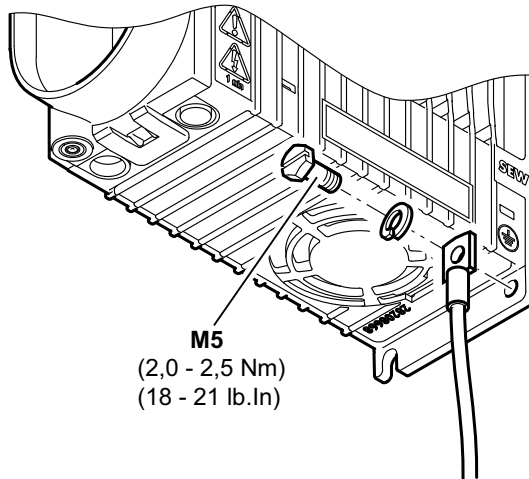
5.3.5 Information on PE connection

> ⚠ **WARNING**
>
> Electric shock due to incorrect connection of PE.
>
> Severe or fatal injuries.
>
> • Observe the following notes regarding PE connection.

M5
(2,0 - 2,5 Nm)
(18 - 21 lb.In)

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Earth-leakage currents ≥ 3.5 mA may 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 mm^2

  – or installing a second PE connection cable in parallel with the original PE connection.

5.3.6 Protection devices

• MOVI4R-U® inverters are equipped with integrated protection devices against overload of the drive. External motor protection devices are not necessary.

5.3.7 EMC-compliant installation

> **INFORMATION**
>
> This drive system is not designed for operation on a public low voltage grid that supplies residential areas.
>
> This is a product with restricted availability in accordance with IEC 61800-3. This product may cause EMC interference. In this case, it is recommended that the user take suitable measures.
>
> For detailed information on EMC compliant installation, refer to the publication "Electromagnetic Compatibility in Drive Engineering" from SEW-EURODRIVE.

With respect to the EMC regulation, frequency inverters cannot be operated as stand-alone units. Regarding EMC, they can only be evaluated when they are integrated in a drive system. Conformity is declared for a described, CE-typical drive system. These operating instructions contain further information.

5.3.8 UL-compliant installation (in preparation)

UL and cUL approval for the MOVI4R-U$^®$ inverter series is in preparation.

5.3.9 Installation above 1000 m amsl

MOVI4R-U$^®$ inverters can also be operated at an altitude of 1000 – 4000 m amsl. To do so, you must observe the following basic conditions.

- At heights above 1000 m amsl, the nominal continuous power is reduced due to reduced cooling: I_N reduction by 1% per 100 m.
- For heights from 2000 m to max. 4000 m amsl, observe the following notes:
    - The safe disconnection of power and electronics connections can no longer be assured above 2000 m. For safe disconnection, you have to take measures according to IEC 60664-1 / EN 61800-5-1.
    - Connect an overvoltage protection device upstream of MOVI4R-U$^®$ inverter to reduce overvoltages from category III to category II.
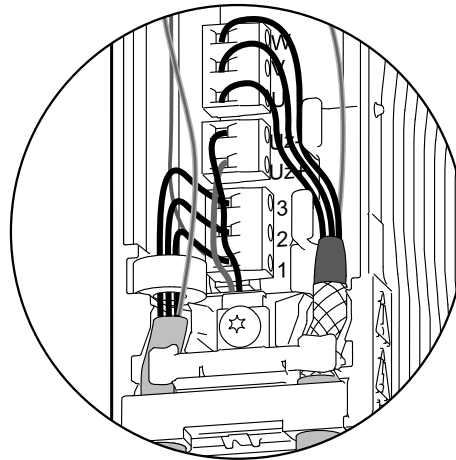
5.4 MOVI4R-U® inverter

5.4.1 Power section connections

The following figure shows the electrical connection of the power section:
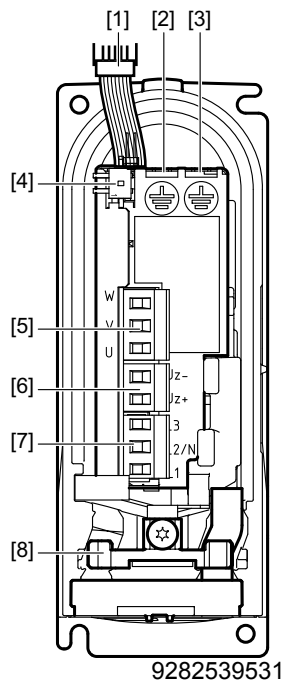
[1] X5 Connection for the control plate
[2] PE connection (IN, supply system)
[3] PE connection (OUT, motor)
[4] X4 Connection for fan control
[5] X3 Connection for motor U, V, W
[6] X2 Connection for fan supply
[7] X1 Connection for supply system L1 – L3
[8] Shield plate

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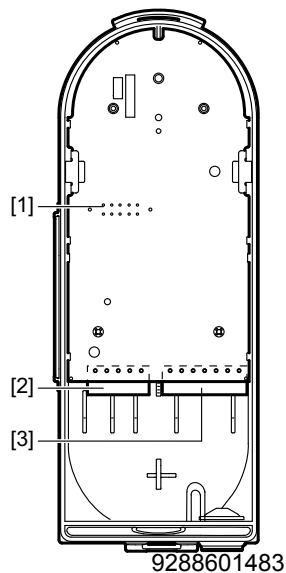Note the following cable routing:

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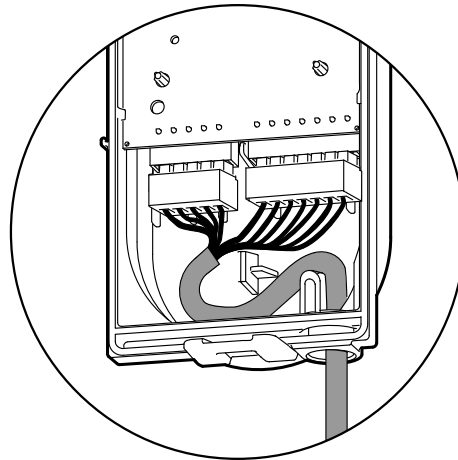Refer to chapter "Electrical connections" for connection and cable assignment

5.4.2 Control plate connections

The following figure shows the electrical connections on the back of the MUOP11A control plate:

[1] X3 Connection for the power section
[2] X2 Analog inputs/outputs
• Analog input AI
• Analog output AO
[3] X1 Binary inputs/outputs
• Connection for relay
• Binary output DO
• Binary inputs DI01 – DI03

Note the following cable routing:

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Refer to chapter "Electrical connections" for connection and cable assignment

Wiring diagram for MUOP11A control plate

X1: Binary inputs/outputs
1 Normally open contact relay
2 Common relay
3 Normally closed contact relay
4 DC 24 V output
5 Binary input DI01 (enable)
6 Binary input DI02 (direction of rotation)
7 Binary input DI03 (setpoint source, error reset)

X2: Analog inputs/outputs
1 Reference potential/mass
2 +10 V output
3 Analog input, 0 – 10 V
4 Analog output, 0 – 10 V
5 Reference potential/mass

MUOP11A	
X1	
REL NO	1
REL C	2
REL NC	3
DO01	4
DI01	5
DI02	6
DI03	7
X2	
COM	1
REF10V	2
AIN	3
AOUT	4
COM	5

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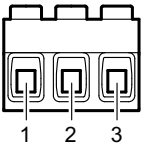After connecting the inputs/outputs, put the insulating sheet on the rear of the control plate.
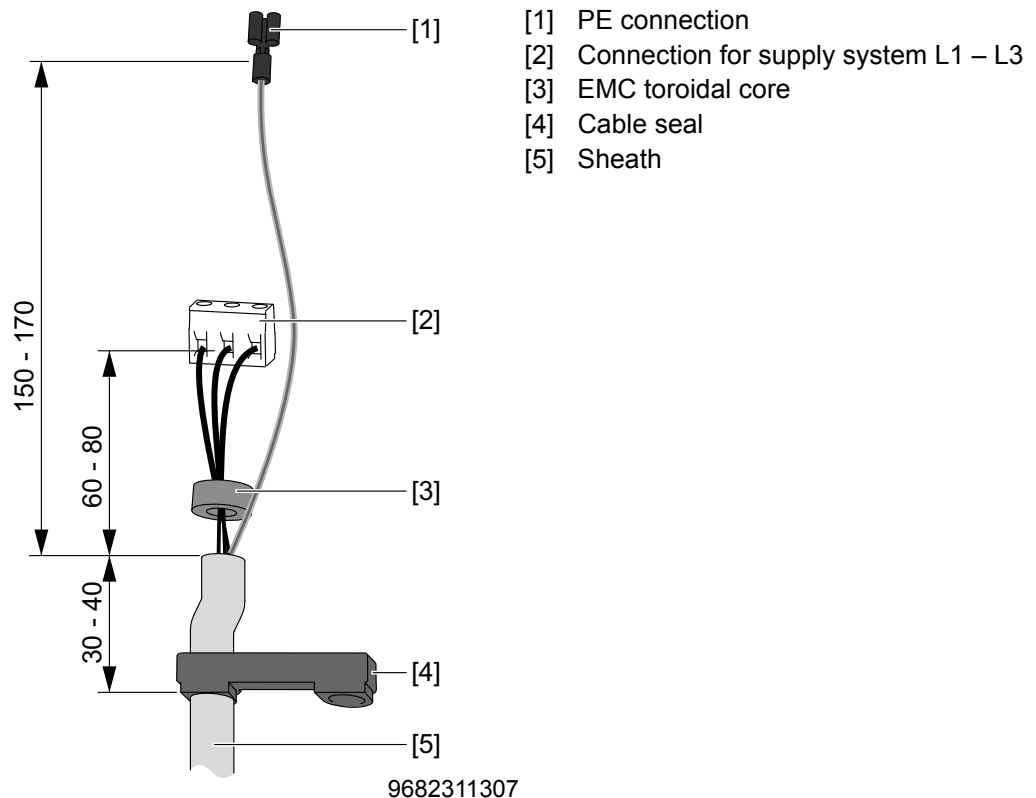
5.5 Electrical connections

5.5.1 X1: Supply system connection

The following table shows information about this connection:

Function
Unit supply line connection

Connection type
Terminals, separable • 2-pole (for 1-phase supply) • 3-pole (for 3-phase supply)

Wiring diagram

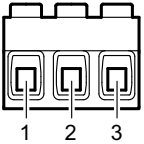| **Assignment**		
No.	**Name**	**Function**
1	L3	Phase L3 line connection (Only for 3-phase supply)
2	L2 / N	Phase L2 line connection
3	L1	Line connection phase L1

Power supply cable prefabrication

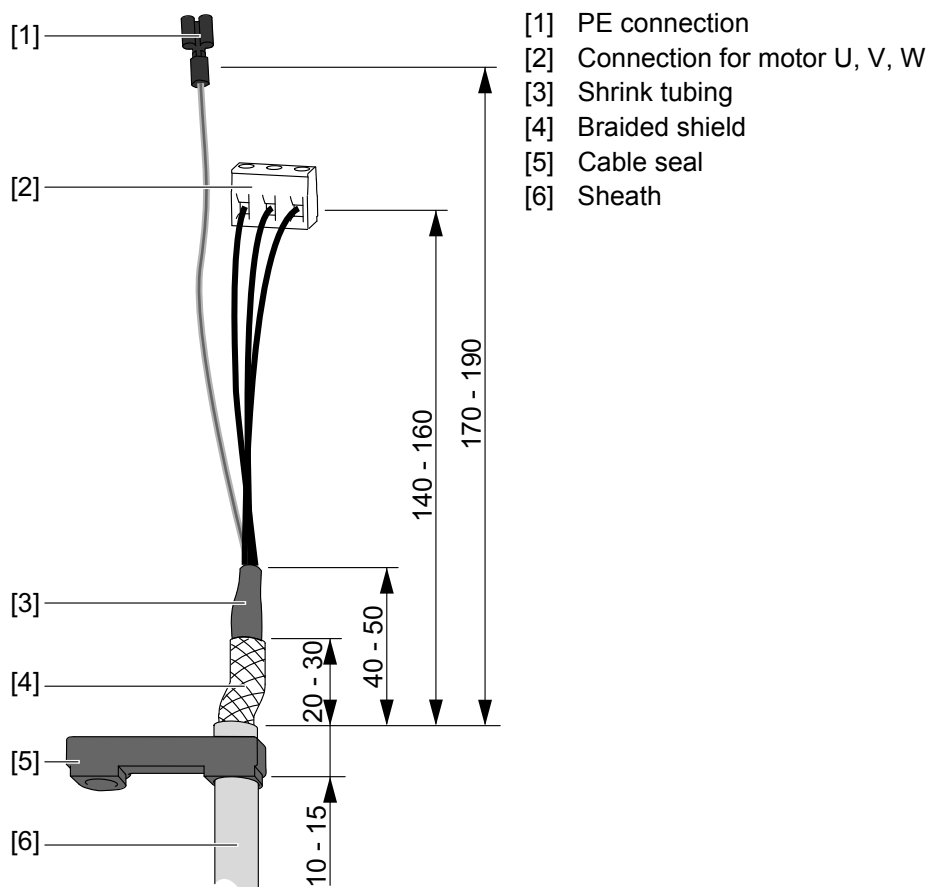Assemble the power supply cable as shown in the following figure:

[1] PE connection
[2] Connection for supply system L1 – L3
[3] EMC toroidal core
[4] Cable seal
[5] Sheath

9682311307

5.5.2   X3: Motor connection

The following table shows information about this connection:

Function
Motor connection
Connection type
Terminals, separable, 3-pole
Wiring diagram

Assignment		
No.	**Name**	**Function**
1	W	W motor phase output
2	V	V motor phase output
3	U	U motor phase output

Motor cable prefabrication

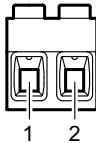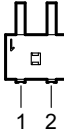Assemble the motor cable as shown in the following figure:

[1] PE connection
[2] Connection for motor U, V, W
[3] Shrink tubing
[4] Braided shield
[5] Cable seal
[6] Sheath

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5.5.3 X2: Connection for fan supply

The following table shows information about this connection:

Function		
Connection for fan supply		
Connection type		
Terminals, separable, 2-pole		
Wiring diagram		
Assignment		
No.	**Name**	**Function**
1	UZ−	DC link voltage, − phase
2	UZ+	DC link voltage, + phase

5.5.4 X4: Connection for fan control

The following table shows information about this connection:

Function		
Connection for fan controller		
Connection type		
Terminals, separable, 2-pole		
Wiring diagram		
Assignment		
No.	**Name**	**Function**
1	0V24	Reference potential
2	+24V	+24 V control signal

5.5.5 X5: Connection for the control plate (on the power section)

The following table shows information about this connection:

Function		
Connection for the control plate on the power section		
Connection type		
Flat ribbon cable plug connector, male, 10-pole		
Wiring diagram		

Assignment		
No.	**Name**	**Function**
1	COM	Reference potential
2	COM	Reference potential
3	RxD	Receive line
4	+24V	+24 V voltage supply
5	TxD	Transmit line
6	TxD	Sending cable
7	+24V	+24 V voltage supply
8	RxD	Receive line
9	COM	Reference potential
10	COM	Reference potential

Flat ribbon cable　　The flat ribbon cable for connecting the power section and the control plate is equipped with 2 flat ribbon cable plug connectors (10-pin, 1 male + 1 female). The flat ribbon cable is assembled at the factory; it is connected using the plug connector on to the top of the power section and guided to the front to the control plate.

5.5.6 X3: Connection for the power section (on the control plate)

The following table shows information about this connection:

Function
Connection of the power section on the control plate
Connection type
Flat ribbon cable plug connector, female, 10-pole
Wiring diagram

Assignment		
No.	**Name**	**Function**
1	COM	Reference potential
2	COM	Reference potential
3	RxD	Receive line
4	+24V	+24 V voltage supply
5	TxD	Transmit line
6	TxD	Transmit line
7	+24V	+24 V voltage supply
8	RxD	Receive line
9	COM	Reference potential
10	COM	Reference potential

5.5.7 X1: Binary inputs/outputs

The following table shows information about this connection:

Function
Binary inputs/outputs (on the control plate)
Connection type
Terminals, separable, 7-pole
Wiring diagram

Assignment		
No.	**Name**	**Function**
1	REL NO	Normally open contact relay
2	REL C	Common relay
3	REL NC	Normally closed contact relay
4	DO01	Binary DC 24 V output DO
5	DI01	Binary input DI01 (enable)
6	DI02	Binary input DI02 (direction of rotation)
7	DI03	Binary input DI03 (setpoint source, error reset)

5.5.8 X2: Analog inputs/outputs

The following table shows information about this connection:

Function
Analog inputs/outputs (on the control plate)

Connection type
Terminals, separable, 5-pole

Wiring diagram

Assignment		
No.	Name	Function
1	COM	Reference potential/mass
2	REF10V	+10 V output
3	AIN	Analog input, 0 – 10 V
4	AOUT	Analog output, 0 – 10 V
5	COM	Reference potential/mass

6 Startup

6.1 General information

INFORMATION

You must comply with the general safety notes in the chapter "Safety notes" during startup.

⚠ WARNING

Risk of crushing due to missing or defective protective covers.

Severe or fatal injuries.

- Install the protective covers of the plant according to the instructions, also see the operating instructions of the motor and the gear unit.
- Never start up the MOVI4R-U® drive if the protective covers are not installed.

⚠ WARNING

Danger of burns due to hot surfaces of the MOVI4R-U® inverter (in particular the cooling fins).

Serious injuries.

- Do not touch the MOVI4R-U® inverter until it has cooled down sufficiently.

⚠ WARNING

Unit malfunction due to incorrect inverter settings.

Severe or fatal injuries.

- Comply with the startup instructions.
- The installation must be carried out by qualified personnel only.
- Only use settings that are consistent with the function.

INFORMATION

- Observe the minimum switch-off time for the line contactor:
  - 20 s for MOVI4R-U® with 1-phase voltage supply
  - 2 s for MOVI4R-U® with 3-phase voltage supply

6.2 Requirements

The following conditions apply to startup:

- The MOVI4R-U® inverter and the drive must be installed correctly both mechanically and electrically.
- The insulating sheet is connected to the control plate; see the "Control plate unit replacement" / "Installing the control plate" chapters.
- Appropriate safety measures prevent the drive from starting up unintentionally.
- Appropriate safety measures must be taken to prevent risk of injury or damage to the machine.

6.3 Control knob

The following figure shows the control knob of the MOVI4R-U® inverter

[1]
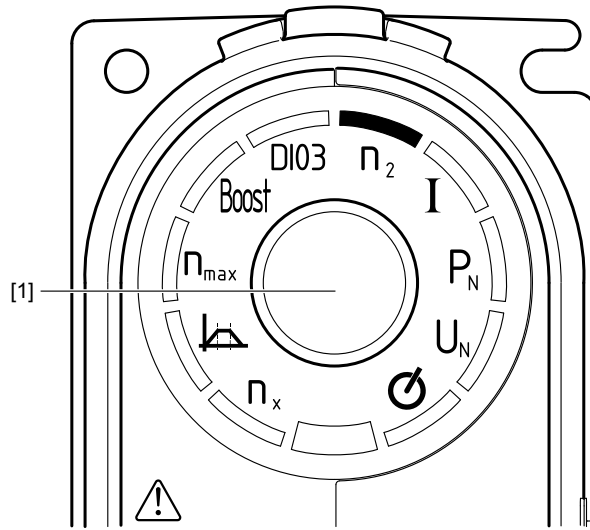
9282518667

[1] Control knob with pushbutton

6.3.1 Function

The control knob is used for startup, setting parameters and operation of the drive.

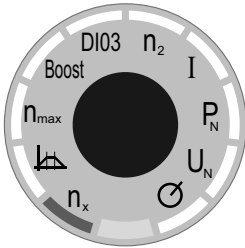The control knob is a combination of a rotary button and a pushbutton.

There are 10 function LEDs and 1 status LED arranged around the control knob. The function LED that is currently illuminated or flashing indicates the current position of the control knob.

6.3.2 Menus

You can switch between the following menu levels using the control knob:

Selection menu

After switching the unit on, briefly press (< 1 s) the control knob to return the selection menu.

Select one of 10 function menus from the selection menu.

Switching to the function menu

To switch to any function menu, turn the control knob until the LED of the function menu desired is illuminated, then briefly press the control knob.

Function menus
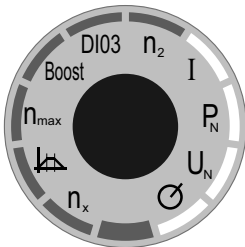
Set the desired values in the function menus (setpoint values, actual values, parameters).

Setting values

To set the value of a function menu, (setpoint values, actual values, parameters), turn the control knob

– until all LEDs are illuminated up to the appropriate setpoint (bargraph display),

– or until the LED of the selected parameter flashes.

The value is only active when saved.

Saving values

To save the current value, press the control knob for longer (> 1 s).

Switching to the selection menu

To switch the selection menu, briefly press the control knob (< 1 s).

You can find additional information on the function menus in the following chapter.

Submenus

Only Function menu 9 – Nominal motor voltage V_N has several submenus, see chapter 9 "Nominal motor voltage".

6.4   Function menus

The following function menus are available in the selection menu:

8895242251
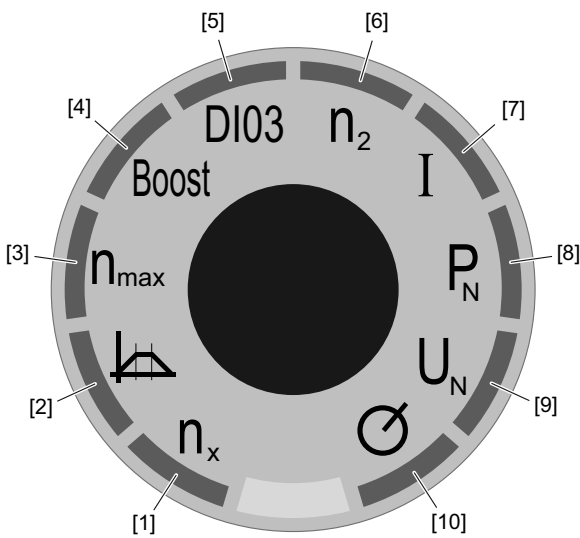
[1]	n_x	Actual speed value display + Setpoint setting
[2]		Acceleration/deceleration
[3]	n_{max}	Maximum speed
[4]	Boost	Boost
[5]	DI03	Terminal assignment DI03/setpoint source
[6]	n_2	Fixed speed setpoint
[7]	$\mathbb{I}$	Inverter output current (only display)
[8]	P_N	Nominal motor power
[9]	V_N	Nominal motor voltage
[10]		Manual mode

The following table shows an overview of setting options in the function menus. The factory settings are <u>underlined.</u>

|			Function menu										
LED	**1** n_x [% n_{max}] ↻		**2** [rpm / s]	**3** n_{max} [rpm]	**4** Boost [V]	**5** DI03	**6** n_2 [% n_{max}]	**7** $\mathbb{I}$ [% I_M]	**8** P_N [kW]	**9** V_N [V]	**10** ⊘ [% n_{max}] ↻	
1 n_x	10	100	12000	50	<u>0</u>	n_x	<u>10</u>	20	0.09	<u>230</u>	10	100
2	20	90	6000	100	5	0: n_x 1: AI	20	40	0.12	400	20	90
3 n_{max}	30	80	<u>3000</u>	250	10	1: Error reset / n_x	30	60	0.18	400	30	80
4 Boost	40	70	2000	500	15	1: Error reset / AI	40	80	<u>0.25</u>	400	40	70
5 DI03	50	60	1000	750	20	0: n_x 1: n_2	50	100	0.37	400	50	60
6 n_2	60	50	500	1000	25	0: AI 1: n_2	60	120	0.55	400	60	50
7 $\mathbb{I}$	70	40	250	<u>1500</u>	30	n_x	70	140	0.75	400	70	40
8 P_N	80	30	100	2000	35	n_x	80	160	1.1	Delivery state	80	30
9 V_N	90	20	50	2500	40	n_x	90	180	1.5	Firmware for power section	90	20
10 ⊘	100	10	10	3000	50	n_x	100	200	2.2	Firmware for the control plate	100	10

6.4.1 Function menu 1 Actual speed value display + Setpoint setting
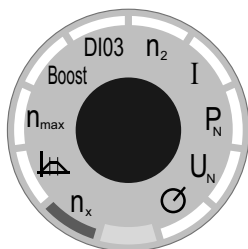
After being switched on for the first time, the MOVI4R-U® inverter starts up in Function menu 1 Actual speed value display + Setpoint setting.

The illuminated LEDs show the current actual speed value of the drive as a bargraph display. The display is scaled from 0 to 100% of n_{max}.

When rotating in **clockwise direction**, all LEDs from LED 1 through to the LED that signals the current actual speed value are illuminated.
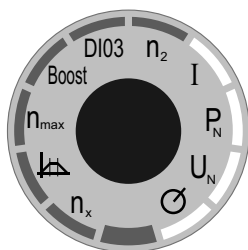
When rotating in **counterclockwise direction**, all LEDs from LED 10 through to the LED that signals the current actual speed value are illuminated.
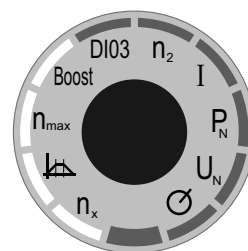
If the setpoint source is set to n_x, set the speed as follows (Setting the setpoint source in Function menu 5):

You can increase the speed setpoint by turning the control knob to the right.

You can decrease the speed setpoint by turning the control knob to the left.

You can increase the speed setpoint by turning the control knob to the left.

You can decrease the speed setpoint by turning the control knob to the right.

Turn the control knob slowly for small acceleration values. The actual speed value could otherwise unintentionally overshoot.

The LEDs 1 – 10 show the current direction of rotation and the actual speed value of the motor as a bargraph display, according to the following assignment.

Clockwise rotation			Counterclockwise rotation		
LED		Actual speed value n_x [% n_{max}]	LED		Actual speed value n_x [% n_{max}]
1	n_x	10	10 – 1	n_x	100
1 – 2	⬔	20	10 – 2	⬔	90
1 – 3	n_{max}	30	10 – 3	n_{max}	80
1 – 4	Boost	40	10 – 4	Boost	70
1 – 5	DI03	50	10 – 5	DI03	60
1 – 6	n_2	60	10 – 6	n_2	50
1 – 7	I	70	10 – 7	I	40
1 – 8	P_N	80	10 – 8	P_N	30
1 – 9	V_N	90	10 – 9	V_N	20
1 – 10	⊘	100	10	⊘	10

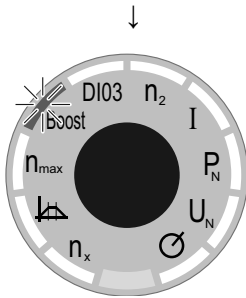To save the speed setpoint, press the control knob for longer. All LEDs briefly flash to confirm your entry.

6.4.2 Function menu 2 Acceleration/Deceleration
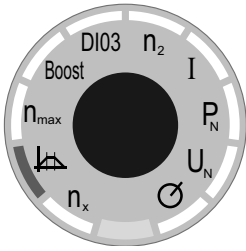
Select Function menu 2 Acceleration/Deceleration in the selection menu, and briefly press the control knob.

↓

The flashing LED shows the acceleration and deceleration of the motor during every change of speed according to the following assignment:

LED		Acceleration/deceleration $\llcorner$ [rpm / s]	Ramp time [1] [s]
1	n_x	12000	0.25
2	$\llcorner$	6000	0.5
3	n_{max}	3000	1.0
4	Boost	2000	1.5
5	DI03	1000	3
6	n_2	500	6
7	I	250	12
8	P_N	100	30
9	V_N	50	60
10	$\varnothing$	10	300

1) Ramp time = Duration for acceleration from 0 to 3000 rpm

Set motor acceleration/deceleration using the control knob.

To save the current value, give the control knob a longer press. All LEDs briefly flash to confirm your entry.

6.4.3 Function menu 3 Maximum speed
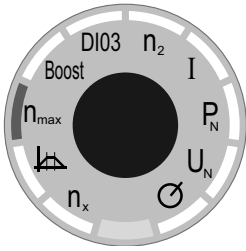
Select Function menu 3 – Maximum speed in the selection menu, and briefly press the control knob.

↓
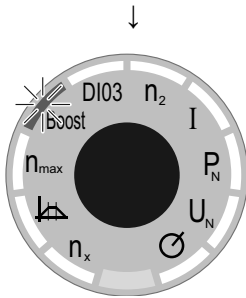
The flashing LED shows the maximum speed according to the following assignment:

	LED	Maximum speed n_{max} [rpm]
1	n_x	50
2	⊿	100
3	n_{max}	250
4	Boost	500
5	DI03	750
6	n_2	1000
7	I	1500
8	P_N	2000
9	V_N	2500
10	⊘	3000

Set the maximum motor speed using the control knob.

To save the current value, give the control knob a longer press. All LEDs briefly flash to confirm your entry.

6.4.4 Function menu 4 Boost

At very low speeds, the V/f operating mode of the inverter leads to a small torque due to the ohmic resistance of the winding. To correct this, you can use this function menu to set a voltage offset (Boost) in the lower frequency range.

You can increase the motor torque at very low speeds using an increasing voltage offset.
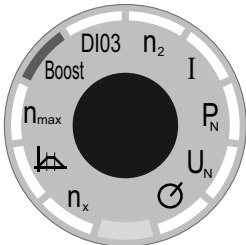
Select Function menu 4 Boost in the selection menu, and briefly press the control knob.

↓
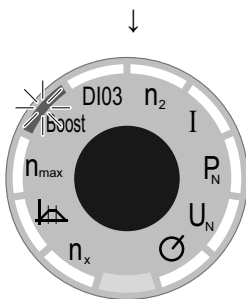
The flashing LED shows the voltage offset of the V/f characteristic curve (Boost) according to the following assignment:

LED		Voltage offset (Boost) [V]
1	n_x	0
2	⊿	5
3	n_{max}	10
4	Boost	15
5	DI03	20
6	n_2	25
7	I	30
8	P_N	35
9	V_N	40
10	⊘	50

Set the voltage offset of the V/f characteristic curve using the control knob.

To save the current value, give the control knob a longer press. All LEDs briefly flash to confirm your entry.

6.4.5 Function menu 5 Terminal assignment DI03/Setpoint source
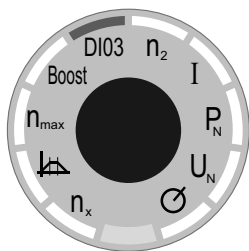
Select Function menu 5 – Terminal assignment DI03/Setpoint source in the selection menu, and briefly press the control knob.
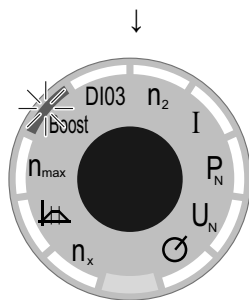
The flashing LED shows the function of the binary input DI03 according to the following assignment:

| LED		Function of binary input DI03/setpoint source, delivery state or firmware display
1	n_x	**Binary input DIO3 does not have any function.** The speed is specified by using the control knob to set the **setpoint n_x** from 0 – 100% of n_{max}.
2	⊿	**Switching the speed setpoint source n_x – AI**
		DI03 = 0 V — The speed is specified by using the control knob to set the **setpoint n_x** from 0 – 100% of n_{max}.
		DI03 = 24 V — The speed is specified by the **analog input AI** (0 – 10 V) from 0 – 100% of n_{max}.
3	n_{max}	**Error reset** Reset the unit error by setting the binary input DI03 = 24 V. (Setpoint source = n_x)
4	Boost	**Error reset** Reset the unit error by setting the binary input DI03 = 24 V. (Setpoint source = AI)
5	DI03	**Switching the speed setpoint source n_x – n_2**
		DI03 = 0 V — The speed is specified by using the control knob to set the **setpoint n_x** from 0 – 100% of n_{max}.
		DI03 = 24 V — The specified speed is the **fixed setpoint n_2** set in Function menu 6 from 10 – 100% of n_{max}.
6	n_2	**Switching the speed setpoint source AI – n_2**
		DI03 = 0 V — The speed is specified by the **analog input AI** (0 – 10 V) from 0 – 100% of n_{max}.
		DI03 = 24 V — The specified speed is the **fixed setpoint n_2** set in Function menu 6 from 10 – 100% of n_{max}.
7	I	**Binary input DIO3 does not have any function.** The speed is specified by using the control knob to set the **setpoint n_x** from 0 – 100% of n_{max}.
8	P_N	
9	V_N	
10	⌀	

You can find additional information on the functions of the binary inputs in the chapter "Functions of the MOVI4R-U® inverter".

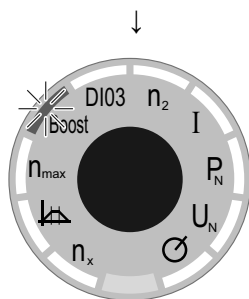Set the function of the binary input DI03 using the control knob.

To save the current value, give the control knob a longer press. All LEDs briefly flash to confirm your entry.
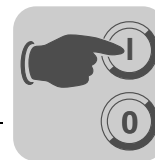
6.4.6 Function menu 6 Fixed speed setpoint n_2
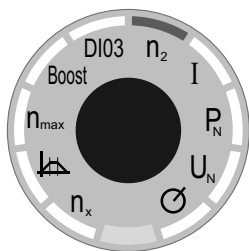
Select Function menu 6 – Fixed speed setpoint n_2 in the selection menu, and briefly press the control knob.

↓

The flashing LED shows the fixed speed setpoint n_2 according to the following assignment:

LED		Fixed speed setpoint n_2 [% n_{max}]
1	n_x	10
2	⊿	20
3	n_{max}	30
4	Boost	40
5	DI03	50
6	n_2	60
7	I	70
8	P_N	80
9	V_N	90
10	⊘	100

Set the fixed speed setpoint n_2 using the control knob.

To save the current value, give the control knob a longer press. All LEDs briefly flash to confirm your entry.

The fixed speed setpoint n_2 can only be activated when parameter DI03 in Function menu 5 is set to 4 or 5, see Function menu 5.
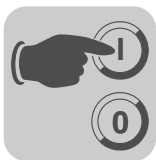
6.4.7 Function menu 7 Inverter output current (only display)
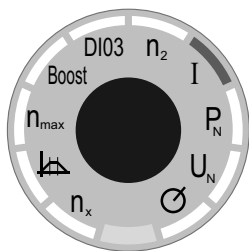
Select Function menu 7 – Inverter output current in the selection menu, and briefly press the control knob.

↓
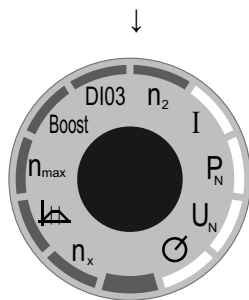
The illuminated LEDs show the current output current of the MOVI4R-U® inverter as a bargraph display. The display is scaled from 0 to 200% of the nominal motor current of the started up motor:

LED		Inverter output current I [% I_N]
1	n_x	20
1 – 2	⊿	40
1 – 3	n_{max}	60
1 – 4	Boost	80
1 – 5	DI03	100
1 – 6	n_2	120
1 – 7	I	140
1 – 8	P_N	160
1 – 9	V_N	180
1 – 10	Ø	200

6.4.8 Function menu 8 Nominal motor power

NOTICE

Overload of the connected motor possible due to incorrect setting of the nominal motor power P_N. The nominal motor power P_N is set to 0.25 kW in delivery state.

Damage to the motor.

- Set the nominal motor power only according to the value specified on the nameplate of the connected motor.

- Operating the motor (e.g. 0.25 kW) with the inverter set to a higher nominal motor power (e.g. 0.75 kW) can destroy the motor.
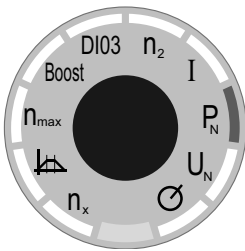
Select Function menu 8 – Nominal motor power in the selection menu, and briefly press the control knob.

↓
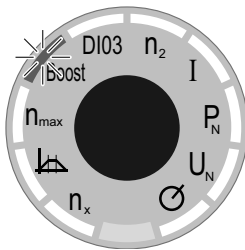
The flashing LED shows the nominal motor power according to the following assignment:

LED		Nominal motor power P_N [kW]
1	n_x	0.09
2	⊿	0.12
3	n_{max}	0.18
4	Boost	0.25
5	DI03	0.37
6	n_2	0.5
7	I	0.75
8	P_N	1.1
9	V_N	1.5
10	⟳	2.2

Set the nominal motor power using the control knob.

To save the current value, give the control knob a longer press. All LEDs briefly flash to confirm your entry.
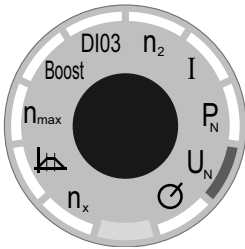
### 6.4.9 Function menu 9 Nominal motor voltage

NOTICE

Overload of the connected motor possible due to incorrect setting of the nominal motor voltage V_N. The nominal motor voltage V_N is set to 230 V in delivery state.

Damage to the motor.

- Set the nominal motor voltage only according to the value specified on the motor nameplate.
- Operating the motor (e.g. 230 V) with the inverter set to a higher nominal motor voltage (e.g. 400 V) can destroy the motor.

Select Function menu 9 – Nominal motor voltage in the selection menu, and briefly press the control knob.

↓
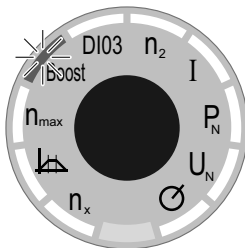
The flashing LED 1 – 7 shows the nominal motor voltage according to the following assignment:

LED		Nominal motor voltage V_N [V]
1	n_x	230
2	⊿	400
3	n_{max}	400
4	Boost	400
5	DI03	400
6	n_2	400
7	I	400
8	P_N	Submenu 8 Delivery state
9	V_N	Submenu 9 Firmware power section
10	⟳	Submenu 10 Control plate firmware

Set the nominal motor voltage using the control knob.

To save the current value, give the control knob a longer press. All LEDs briefly flash to confirm your entry.

The flashing LEDs 8 – 10 (P_N, V_N, ⟳) are exceptions. When one of these LEDs flashes, switch to the selected submenu by giving the control knob a longer press (see the following page).

Submenu 8 Delivery state

In this submenu, you can reset the operating parameters of the MOVI4R-U$^®$ inverter to the delivery state as follows (only possible when the drive is <u>not</u> enabled):
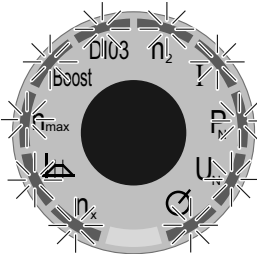
In Function menu 9 - Nominal motor voltage, select Submenu 8 (P_N) Delivery state, and give the control knob a longer press.

All LEDs flash simultaneously. Te drive can now no longer be enabled.

Briefly press the control knob if you would like to return to Function menu 9 Nominal motor voltage.

To reset the inverter back to delivery state, press the control knob until all LEDs briefly light up. All settable functions will be reset to their default value.

The control plate then automatically switches to Function menu 9 – Nominal motor voltage.

Submenu 9 Firmware power section

In Function menu 9 – Nominal motor voltage, select Submenu 9 (V_N) Firmware power section, and give the control knob a longer press.

In Submenu 9 (V_N) Firmware power section, the illuminated LEDs show the firmware release number of the power section in binary format, see the table to the right.

Example: LEDs I and P_N light up.
Release No. = $2^3 + 2^2 = 8 + 4 = 12$

LED		Significance	
1	n_x	2^9	512
2	⊿	2^8	256
3	n_{max}	2^7	128
4	Boost	2^6	64
5	DI03	2^5	32
6	n_2	2^4	16
7	I	2^3	8
8	P_N	2^2	4
9	V_N	2^1	2
10	⏱	2^0	1

Submenu 10 Control plate firmware

In Function menu 9 – Nominal motor voltage, select Submenu 10 (⏱) Control plate firmware, and hold down the control knob.
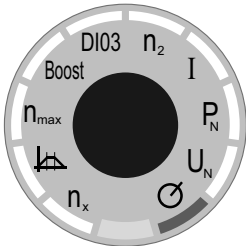
In Submenu 10 (⏱) Control plate firmware, the illuminated LEDs show the firmware release number of the control plate in binary format; see the table to the right.

Example: LEDs I, P_N and ⏱ light up.
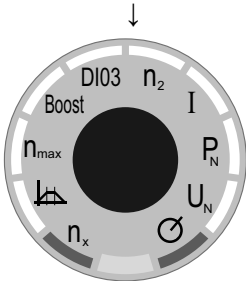Release No. = $2^3 + 2^2 + 2^0 = 8 + 4 + 1 = 13$

LED		Significance	
1	n_x	2^9	512
2	⊿	2^8	256
3	n_{max}	2^7	128
4	Boost	2^6	64
5	DI03	2^5	32
6	n_2	2^4	16
7	I	2^3	8
8	P_N	2^2	4
9	V_N	2^1	2
10	⏱	2^0	1

6.4.10 Function menu 10 Manual mode

Select Function menu 10 Manual mode in the selection menu, and briefly press the control knob.

↓

Manual mode is now activate.
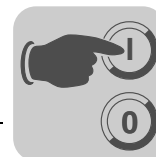
LED 1 and LED 10 are lit up.

The drive is not enabled.

When you turn the control knob to the right, you enable **clockwise rotation** and increase the speed setpoint to n_{max}.

When you then turn the control knob to the left again, you decrease the speed setpoint to 0.

When you turn the control knob to the left, you enable **counterclockwise rotation** and increase the speed setpoint to n_{max}.

When you then turn the control knob to the right again, you decrease the speed setpoint to 0.
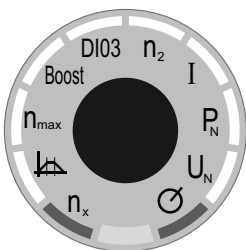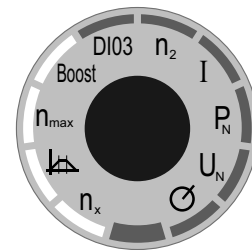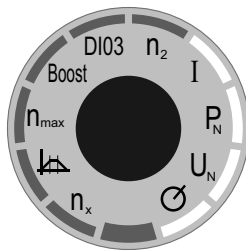
You disable the drive when you set the speed setpoint to 0.

LED 1 and LED 10 are lit up.

The illuminated LEDs show the current direction of rotation and the speed setpoint of the motor as a bargraph display, according to the following assignment.

Clockwise rotation				Counterclockwise rotation		
LED		**Speed setpoint Manual mode ↻** [% n_{max}]		**LED**		**Speed setpoint Manual mode ↻** [% n_{max}]
1	n_x	10		10 – 1	n_x	100
1 – 2	⊿	20		10 – 2	⊿	90
1 – 3	n_{max}	30		10 – 3	n_{max}	80
1 – 4	Boost	40		10 – 4	Boost	70
1 – 5	DI03	50		10 – 5	DI03	60
1 – 6	n_2	60		10 – 6	n_2	50
1 – 7	I	70		10 – 7	I	40
1 – 8	P_N	80		10 – 8	P_N	30
1 – 9	V_N	90		10 – 9	V_N	20
1 – 10	↻	100		10	↻	10

⚠ **WARNING** Risk of crushing if the drive starts up unintentionally.

When manual mode is deactivated, the binary signals at the binary inputs are active. When manual mode is deactivated, the drive can start up unintentionally if it has been enabled by the binary signals.

Severe or fatal injuries.

• Before deactivating manual mode, set the binary signals in such way that the drive is not enabled.

• Change the binary signals again only after deactivating manual mode.

Briefly press the control knob to deactivate manual mode, and to switch to the selection menu.

6.5   Startup procedure

Proceed as follows to start up the MOVI4R-U® inverter:

6.5.1   Setting parameters

NOTICE

Overload of the motor possible due to incorrect setting of the nominal motor power or the nominal motor voltage.

Damage to the motor.

- Observe the values specified on the motor nameplate when setting the nominal motor power and the nominal motor voltage.

1. Check the connection of the MOVI4R-U® inverter.

   See chapter "Electrical Installation".

2. **NOTICE** Loss of guaranteed degree of protection if the MOVI4R-U® inverter is not sealed correctly.

   Damage to the MOVI4R-U® inverter.

   - Make sure that the MOVI4R-U® inverter is sealed correctly.

3. Set binary input DI01 to 0 V.

4. Switch on the line voltage.

   If no error is present, the status LED should light up yellow.

   If there is an error present, the status LED lights up red, see the "Error list MOVI4R-U®" chapter.

5. Set the following parameters in the function menus:

⊿	Acceleration/deceleration	(10 – 12000 rpm / s)
n_{max}	Maximum speed	(50 – 3000 rpm)
Boost	Voltage offset V/f characteristic curve	(0 – 50 V)
P_N	Nominal motor power	(according to motor nameplate)
V_N	Nominal motor voltage	(according to motor nameplate)

   The remaining procedure for startup depends on the required operating mode:

   - Manual mode (control using the control plate in function menu 10)
   - Binary control (control using the binary inputs DI01 – DI03)

6.5.2 Startup in different operating modes

After presetting parameters, perform the following steps:

Manual mode
1. Activate manual mode in Function menu 10.

2. Enable the motor by setting the motor's direction of rotation and the speed setpoint using the control knob.

You can now control the drive in Function menu 10, see the "Function menu 10 Manual mode" chapter.

⚠ **WARNING** Risk of crushing if the drive starts up unintentionally.

When manual mode is deactivated, the binary signals at the binary inputs are active. When manual mode is deactivated, the drive can start up unintentionally if it has been enabled by the binary signals.

Severe or fatal injuries.

- Before deactivating manual mode, set the binary signals in such way that the drive is not enabled.

- Change the binary signals again only after deactivating manual mode.

Briefly press the control knob to deactivate manual mode ,and to switch to the selection menu.

Binary control
1. In Function menu 5, select the setpoint sources (n_x, n_2, AI) that binary input DI03 should switch between, see the "Functions of the MOVI4R-U$^®$ inverter" chapter.

2. Select the desired speed setpoint.
   - When selecting setpoint source n_x, set speed setpoint n_x in function menu 1.
   - When selecting setpoint source n_2, set fixed speed setpoint n_2 in function menu 6.
   - When selecting setpoint source AI, set the speed setpoint by setting the voltage on analog input AI.

3. Select the setpoint source (n_x, n_2, AI) by setting binary input DI03 = 0 V or 24 V (see the following chapter).

4. Select the direction of rotation by setting binary input DI02 = 0 V (clockwise rotation) or 24 V (counterclockwise rotation).

5. Enable the drive by setting the binary input DI01 = 24 V.

6.6 Functions of the MOVI4R-U® inverter

6.6.1 Operating modes

The following table shows the operating modes and enabled direction of rotation of the MOVI4R-U® inverter depending on the settings on the control plate and the terminal signal levels:

Operating mode	Enable	Manual mode	Terminal signal level		
			DI01 Enable	DI02 Direction of rotation	Supply system L1 - L3
Inverter off	No enable	X	X	X	Off
Manual mode	Counterclockwise rotation	Active	X	X	On
	Clockwise rotation				
Binary control	No enable	Not active	0 V	X	On
	Counterclockwise rotation		24 V	24 V	
	Clockwise rotation		24 V	0 V	

X = Any

6.6.2 Speed setpoint

The speed setpoint of the MOVI4R-U® inverter depends on the following factors:

- Maximum speed n_{max}
- Manual mode active/not active
- Setting in Function menu 5 "Terminal assignment DI03/Setpoint source"
- Speed setpoint n_x, fixed speed setpoint n_2 or analog input AI

The following table shows the setting of the speed setpoint:

Setting		Terminal signal level	Speed setpoint		
Manual mode	Function menu 5	DI03	Scaling by		Setpoint [% n_{max}]
Active	X	X	Manual mode (Clockwise rotation)	⟳ = 1 – 10	0 – 100%
			Manual mode (Counterclockwise rotation)	⟳ = 10 – 1	0 – 100%
Not active	1, 3, 7 – 10	X	Setpoint [1]	n_x = 0 – 10	0 – 100%
	2	0 V	Setpoint [1]	n_x = 0 – 10	0 – 100%
		24 V	Analog input	AI = 0 – 10 V	0 – 100%
	4	X	Analog input	AI = 0 – 10 V	0 – 100%
	5	0 V	Setpoint [1]	n_x = 0 – 10	0 – 100%
		24 V	Fixed setpoint [1]	n_2 = 1 – 10	10 – 100%
	6	0 V	Analog input	AI = 0 – 10 V	0 – 100%
		24 V	Fixed setpoint [1]	n_2 = 1 – 10	10 – 100%

1) Setting on the rotary button

X = Any

6.6.3 Output signals

The following table shows the meaning of the output signals of the MOVI4R-U® inverter:

Output	Meaning
DO	**DC 24 V output**
AO	**Amount is the actual speed**
	0 – 10 V: $\triangleq$ 0 – n_{max}
Relays	**Inverter enable feedback**
	Inverter <u>not</u> enabled: Contact REL NO – REL C open
	Contact REL NC – REL C closed
	Inverter enabled: Contact REL NO – REL C closed
	Contact REL NC – REL C open

7 Operation

7.1 *Operating display (LEDs)*

The following figure shows the LEDs of the MOVI4R-U® inverter
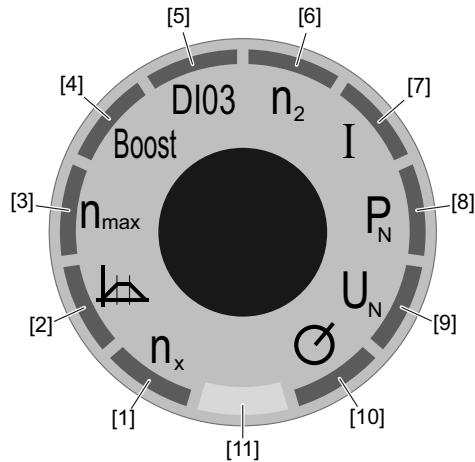
9290647051

[1] – [10]   LED 1 – 10
[11]   Status LED

7.1.1 LED 1 – 10

LEDs 1 – 10 are used to visualize the menus, setpoints, actual values and parameters. It is for this reason that the LED display depends on the current status of the MOVI4R-U® inverter.

LED 1 – 10		Status MOVI4R-U® inverter	Display
Lights up	(1 LED)	Selection menu	Function menu no.
Lights up	(bargraph display)	Setting a setpoint, display of an actual value	Setpoint/actual value
Flashes	(400 ms on) (100 ms off)	Setting a parameter	Parameter value
Flashes	(100 ms on) (400 ms off)	An error has occurred. See chapter "Error list".	Error code no.

Refer to the "Function menu" chapter for more information on the meaning of the LEDs.

7.1.2 Status LED

The status LED shows the current status of the MOVI4R-U® inverter:

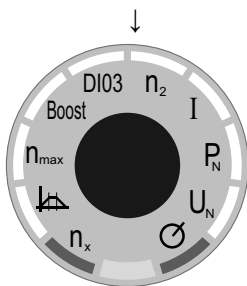| Status LED	Meaning
Off	Voltage supply missing.
Lights up **yellow**	The MOVI4R-U® inverter is ready for operation.
Lights up **green**	The MOVI4R-U® inverter is enabled.
Lights up **red**	An error has occurred. The inverter is not ready for operation. See chapter "Error list".

7.2   Manual mode

In manual mode, you control inverter enable, the direction of rotation, and specify speed using only the control knob.
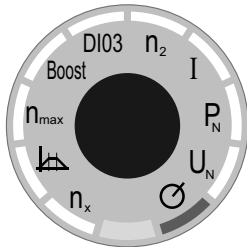
Connect the voltage supply.

Select Function menu 10 Manual mode in the selection menu, and briefly press the control knob.

↓

Manual mode is now activate.

LED 1 and LED 10 are lit up.

The drive is not enabled.

When you turn the control knob to the right, you enable **clockwise rotation** and increase the speed setpoint to n_{max}.

When you then turn the control knob to the left again, you decrease the speed setpoint to 0.

When you turn the control knob to the left, you enable **counterclockwise rotation** and increase the speed setpoint to n_{max}.

When you then turn the control knob to the right again, you decrease the speed setpoint to 0.
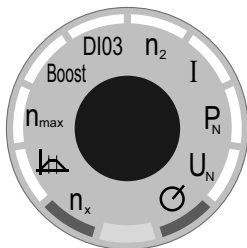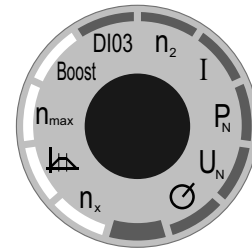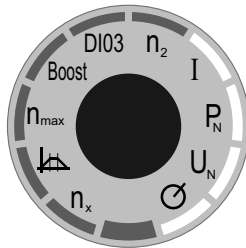
The illuminated LEDs show the direction of rotation and the speed setpoint of the motor as a bargraph display from 0 – 100% of n_{max}; see the "Function menu 10 Manual mode".

You disable the drive when you set the speed setpoint to 0.

LED 1 and LED 10 are lit up.

⚠ WARNING Risk of crushing if the drive starts up unintentionally.

When manual mode is deactivated, the binary signals at the binary inputs are active. When manual mode is deactivated, the drive can start up unintentionally if it has been enabled by the binary signals.

Severe or fatal injuries.

• Before deactivating manual mode, set the binary signals in such way that the drive is not enabled.

• Change the binary signals again only after deactivating manual mode.

Briefly press the control knob to deactivate manual mode, and to switch to the selection menu.

8 Services

8.1 List of faults

The status LED lights up red when an error occurs on the MOVI4R-U® drive. In the selection menu, one of the 10 LEDs (100 ms on, 400 ms off) also flashes. The flashing LED shows the error according to the following error list:

Status LED	LED		Error	Elimination of errors
lights up red	1	n_x	**Error code 00** Reserved	• Contact the SEW-EURODRIVE Service.
	2	⊿	**Error code 45** Error during initialization of the power section	• Reset error • If this problem occurs repeatedly, contact SEW-EURODRIVE service.
	3	n_{max}	**Error code 11** Excessive power section temperature	• Check inverter cooling. • Provide additional space or cooling, if necessary. • Retrofit a fan
	4	Boost	**Error code 50** Power section supply voltage error	• Hardware defect → Replace power section.
	5	DI03	**Error code 06** Line phase failure	• Check the power supply cables for phase failure.
	6	n_2	**Error code 43** Error during communication with the power section	• Check the connection cable between the control plate and the power section. • When this connection has been reestablished, MOVI4R-U® automatically resets the error.
	7	I	**Error code 01** Overcurrent at inverter output to the motor	• Check motor and motor cable for phase short circuits or ground faults. • Check load for blocking, stalling, or impact loads. • Ensure that the "Nominal motor voltage" and "Nominal motor power" parameters are set according to the motor nameplate. • Reduce the acceleration/deceleration parameters.
	8	P_N	**Error code 84** Error UL motor protection (thermal overload)	• Reduce the load on the motor. • Ensure that the "Nominal motor power" parameter is set according to the motor nameplate. • Reduce the "Boost" parameter at a very low speed.
	9	V_N	**Error code 07** DC link overvoltage	• Check whether the supply voltage is too high. • If the inverter switches off during deceleration, reduce the acceleration/deceleration parameters.
	10	⊘	Error code unknown/not verified	• Contact the SEW-EURODRIVE Service.

8.1.1 Error reset

Remedy the cause of the error, and then reset the error by giving the control knob a longer press (> 1 s). You can also reset the error with binary input DI03 (see chapter "Function menu 5 ..."). In terminal mode, you can only reset the error when binary input DI01 = 0 V (no enable).
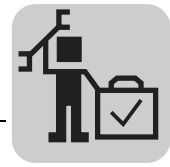
8.2 Unit replacement

This chapter describes unit replacement and retrofitting of the following components:

• Power section

• Control plate

• Fan

You can reuse the housing.

INFORMATION

Refer to the operating conditions in the "Technical Data" chapter.

8.2.1 Power section unit replacement

⚠ WARNING

Electric shock due to charged capacitors.

Severe or fatal injuries.

• Observe the minimum switch-off time after disconnection from the supply system:

1 minute

Power section removal

Remove the power section from the housing as follows:

1. **If required:**

   To make removal easier, undo the retaining screws and remove the MOVI4R-U® inverter from the installation location.

2. Remove the instruction sign from the control plate.

3. Unlock the lower mounting lug on the control plate using a screwdriver (blade width max. 4.5 mm) and remove the control plate [A] from the housing.

   NOTICE The lower mounting lug can become damaged by being bent too far.

   If the lower mounting lug is bent too far (plastic deformation), the mounting lug will no longer latch in when closing the housing, making the control plate defective.

   • Unlock the mounting lug with a screw driver only enough to remove the control plate.
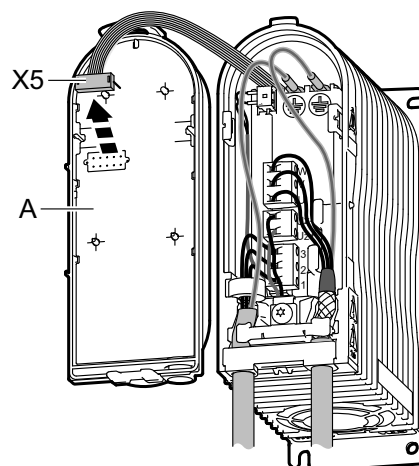

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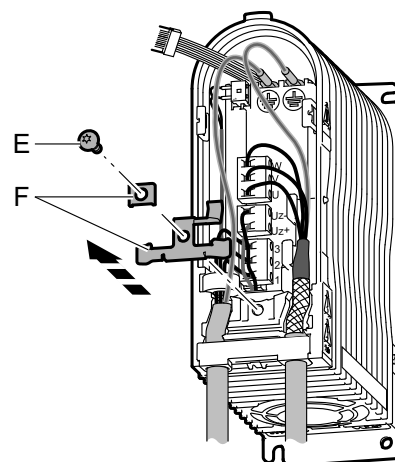4. Unplug plug connector X5 on the flat ribbon cable from the control plate [A].

   NOTICE The flat ribbon cable could become damaged due to tensile loads.

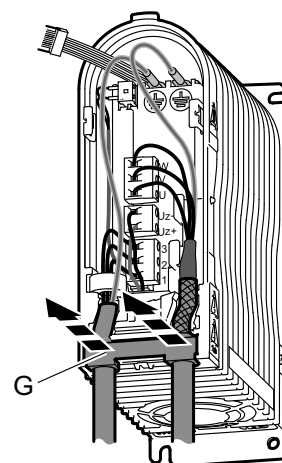   • Do not pull on the flat ribbon cable, but rather on the plug connector.

9287938315

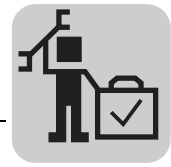5. Undo the shielding screw [E] using a hexalobular screw driver (Torx) T25 and remove the shield plate [F].
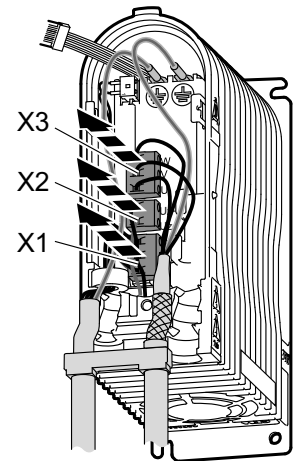
9287940235

6. Remove the cable seal [G] together with the power supply cable and the motor cable from the housing.

9287944075

7. Remove the separable terminals of the following cables from the power section:
    - X3: Motor cable (U, V, W)
    - X2: Fan cable (Uz+, Uz-)
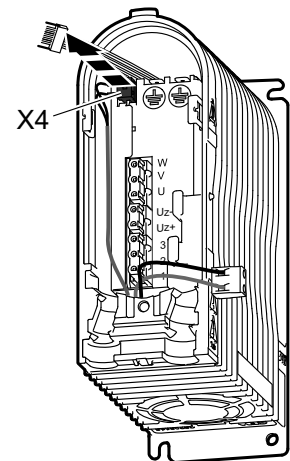   - X1: Power supply cable (L1 – L3)

9287945995

8. Remove both grounding cables of the PE connections ⏚ from the power section.

    NOTICE The grounding cable could become damaged due to tensile loads on the conductors.

    - Do not pull on the conductors, but rather on the cable lugs.
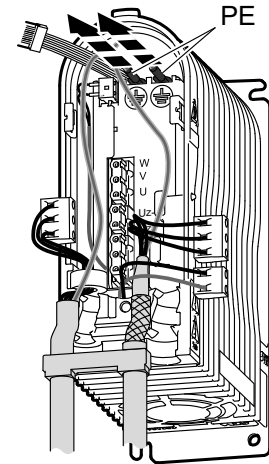
9287947915

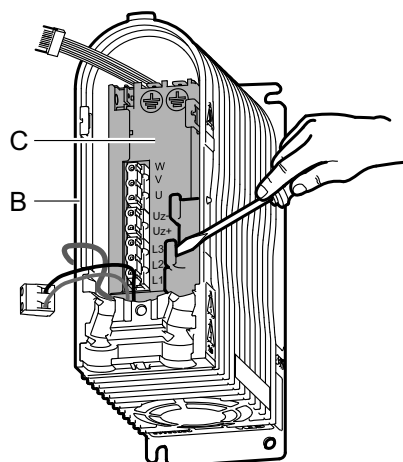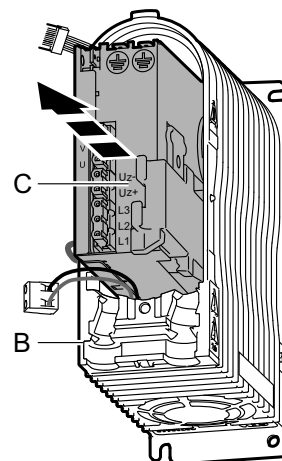9. Remove the separable fan terminals X4 (control) from the power section.

9287949835

10. Carefully lever the power section [C] out of the housing [B] using a screw driver according to the figure to the right.
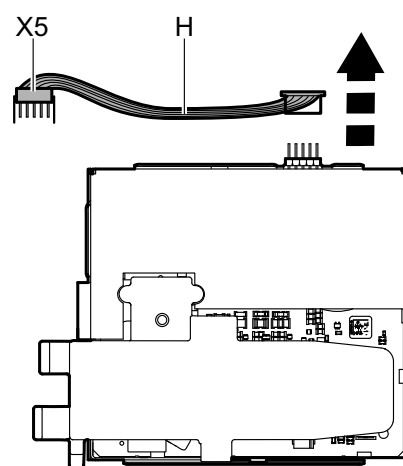

9287951755

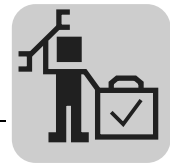11. Remove the power section [C] from the housing [B].

9287967115

12. Remove the plug connector of the flat ribbon cable [H] from the power section.

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Power section installation

Compare the data on the nameplate of the previous power section with the data on the nameplate of the new power section. Only replace the power section with a power section with the same part number.
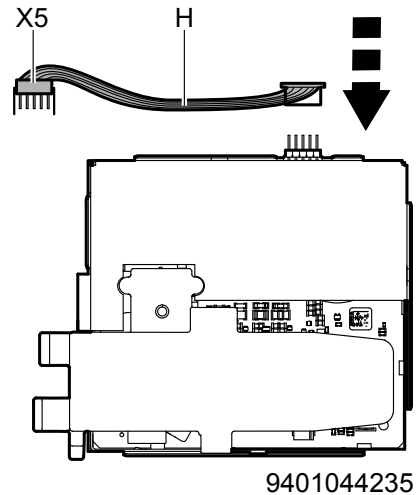
Install the power section in the housing as follows:

1. **NOTICE** Risk of short circuit due to loose foreign objects in the housing.

   Inverter damage.

   - Ensure that no loose foreign objects (e.g. metal chips, nuts, screws, conductors) remain in the housing.

2. Plug the plug connector of the flat ribbon cable [H] onto the power section.

X5   H

9401044235

3. Slide the power section [C] into the housing [B] and carefully press the power section on.

   NOTICE Damage to the fan cable of the flat ribbon cable due to crushing.

   - Make sure you do not jam both fan cables and the flat ribbon cable.

9401048331
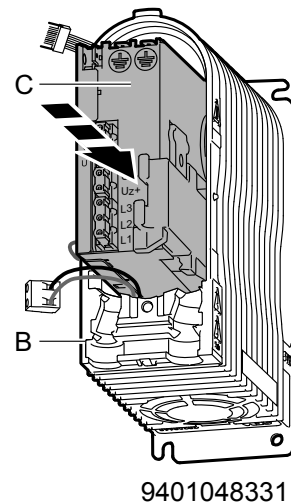
4. If the power supply cable, the motor cable, or the cable seal are damaged, replace them as follows:

   A. Undo the screws for the separable line and motor terminals, and pull the conductors out of the terminals.

   B. Pull the cable out of the cable seal.

   C. If necessary, remove the jacket insulation from the cables at the same height as the shield plate. In order to ensure a shield connection over a large area, the cable shield there must be blank over a width of about 1.5 cm.

   D. Insert correct power supply and motor cables in the correct cable seal.

   E. Connect the conductors to the separable line and motor terminals. In doing so, observe the terminal assignment, see the "Electrical connections" chapter.

5. Plug the separable terminals/cable lugs of the following components onto the power section:

  • PE conductor, motor ⏚

  • PE conductor, power supply ⏚

  • X4 fan cable control

  • X3 motor cable (U, V, W)

  • X2 fan cable supply (Uz-, Uz+)

  • X1 power supply cable (L1, L2, L3)
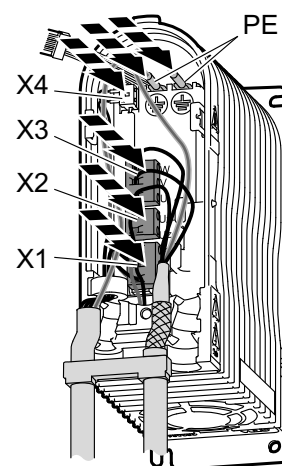
9401052171

6. Push the cable seal [G] together with the power supply cable and the motor cable into the housing.

   NOTICE Faulty shield connection.

   EMC problems.

   • Ensure that the sections with blank cable shields are positioned at the same height as the shield plate, see figure on the right.
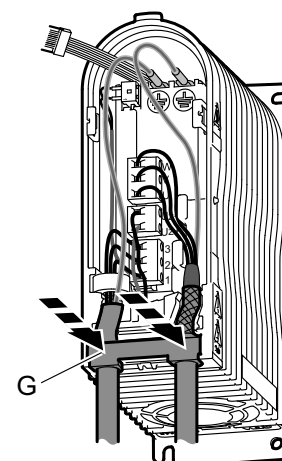
9401068683

7. Place the shield plate and the grounding screw [F] on the motor cable and power supply cable, and screw the shield plate using the shielding screw [E] (tightening torque: 2.0 – 3.5 Nm) onto the housing.

   NOTICE Damage to cables/conductors due to crushing.

   • Make sure that you do not jam any other cables/conductors under the shield plate.

9287942155

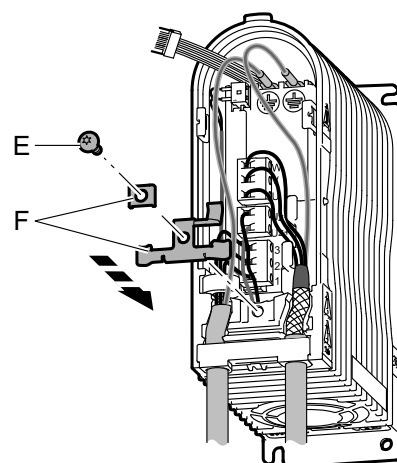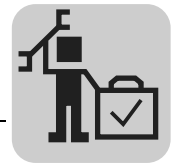8. Connect plug connector X5 on the flat ribbon cable to the control plate [A].

9. **NOTICE** Loss of guaranteed degree of protection due to missing or faulty sealing.

    Inverter damage.

    - Ensure that the sealing on the edge of the control plate is complete and not damaged (no notches, no deep pressure marks).

9401075595
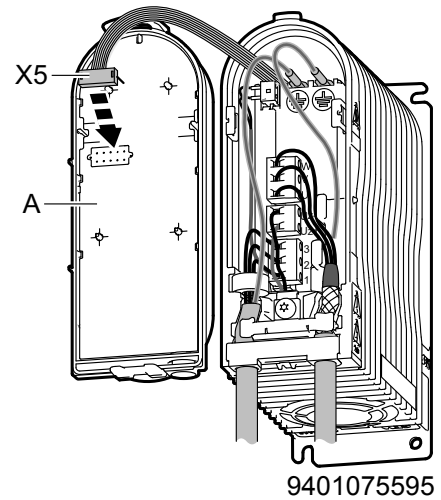
10. Mount the lug of the control plate in the fastening slot at the top of the housing and attach the control plate [A] to the housing.

    Make sure that the lower mounting lug engages properly.

9287969035
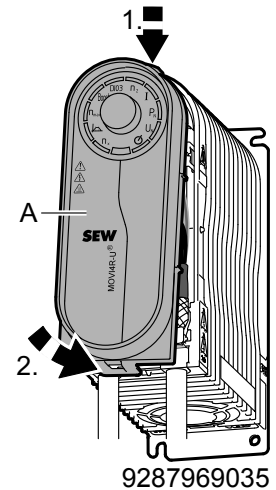
11. Insert the instruction sign from the front into the holding fixture on the side of the control plate.

12. Install the MOVI4R-U® inverter at the installation location.

13. Supply voltage to the MOVI4R-U® inverter.

14. Check whether the MOVI4R-U® inverter is functioning properly.

8.2.2 Control plate unit replacement

⚠ **WARNING**

Electric shock due to charged capacitors.

Severe or fatal injuries.

- Observe the minimum switch-off time after disconnection from the supply system:

  1 minute

Removing the control plate

Remove the control plate from the housing as follows:

1. Remove the instruction sign from the control plate.

2. Unlock the lower mounting lug on the control plate using a screwdriver (blade width max. 4.5 mm) and remove the control plate [A] from the housing.

   NOTICE The lower mounting lug can become damaged by being bent too far.

   If the lower mounting lug is bent too far (plastic deformation), the mounting lug will no longer latch in correctly when closing the housing, making the control plate defective.

   - Unlock the mounting lug with a screw driver only enough to remove the control plate.
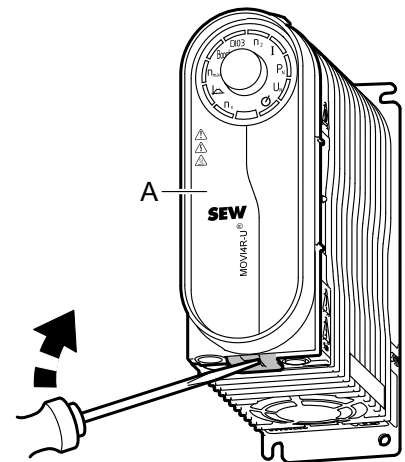
9287936139

3. Unplug plug connector X5 on the flat ribbon cable from the control plate [A].

   NOTICE The flat ribbon cable could become damaged due to tensile loads.

   - Do not pull on the flat ribbon cable, but rather on the plug connector.
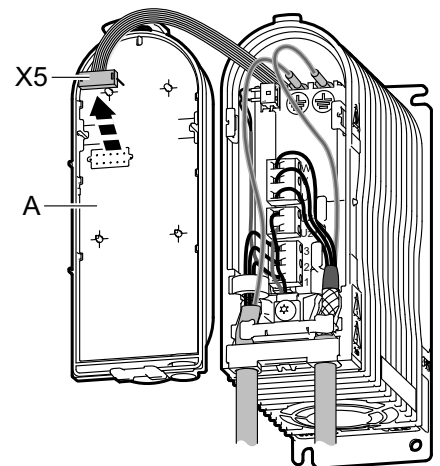
9287938315
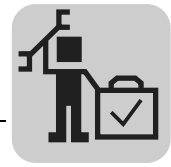
4. Remove the insulating sheet [I] from the control plate [A].

9404751115
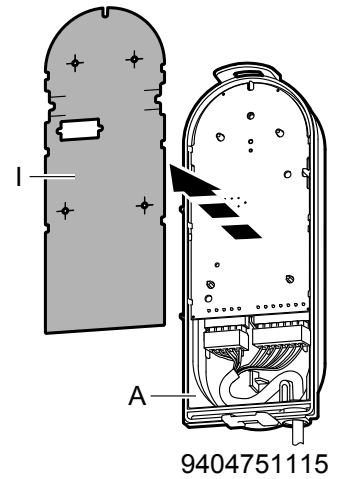
5. Remove both separable terminals X1 and X2 from the control plate [A].

9404793739
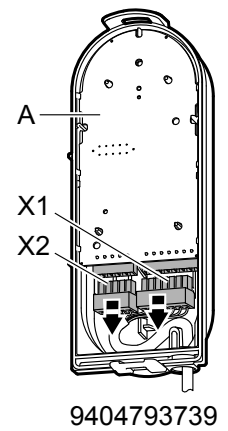
6. Undo the screws for the terminals X1 and X2, and pull all the conductors out of the terminals.

9404797835
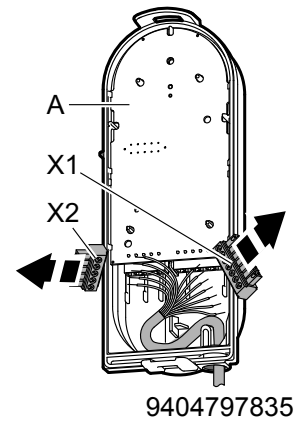
7. Remove the control cable from the control plate [A].

9404802315
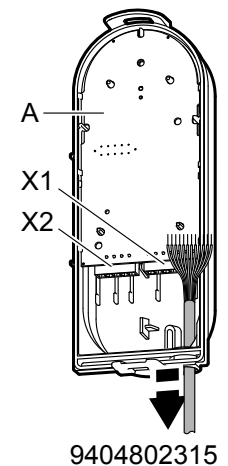
Installing the control plate

Compare the data on the inner nameplate of the old control plate with the data on the inner nameplate of the new control plate.

Only replace the control plate with a control plate with the same part number.

Install the control plate on the housing as follows:

1. Insert the control cable into the cable seal on the control plate [A] from below.
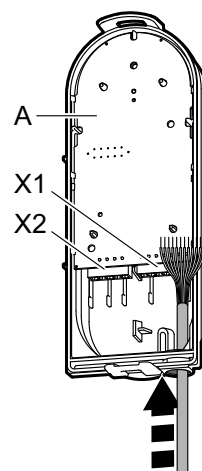
9404807435

2. Connect the control cable conductors to the separable terminals X1 and X2.

   In doing so, observe the assignment of terminals X1 and X2 according to the "Electrical connections" chapter.
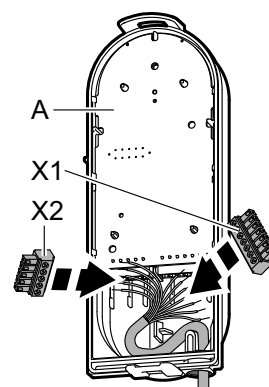
9404813067

3. Plug both separable terminals X1 and X2 into the control plate [A].
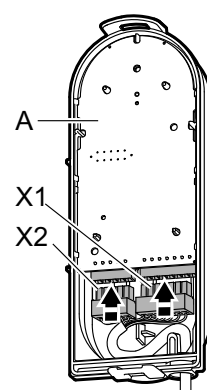
9404819083

4. Put the insulating sheet [I] onto the control plate [A].

I

A
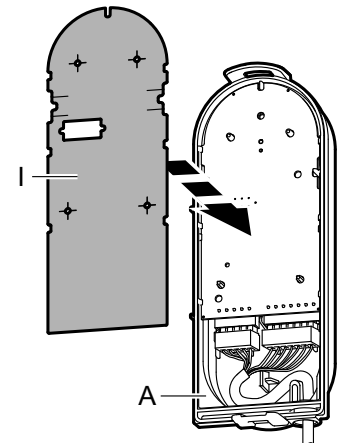
9404825483

5. Connect plug connector X5 on the flat ribbon cable to the control plate [A].

6. **NOTICE** Loss of guaranteed degree of protection due to missing or faulty sealing.

   Inverter damage.

   • Ensure that the sealing on the edge of the control plate is complete and not damaged (no notches, no deep pressure marks).

X5

A
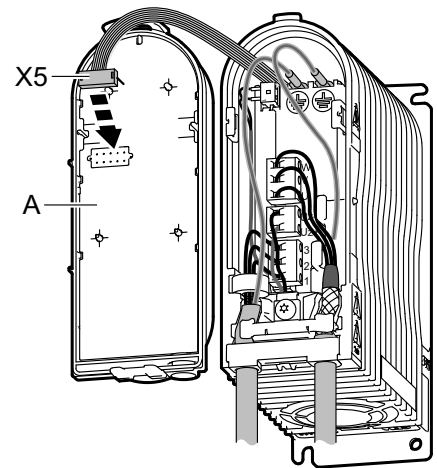
9401075595

7. Mount the lug of the control plate in the fastening slot at the top of the housing and attach the control plate [A] to the housing.

   Make sure that the lower mounting lug engages properly.

1.

A

2.
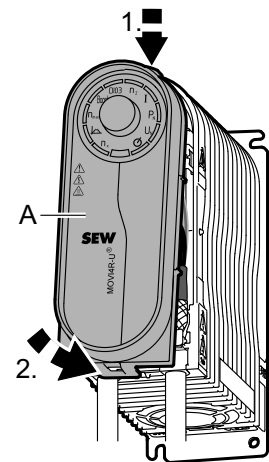
9287969035

8. Insert the instruction sign into the holding fixture on the side of the control plate.

9. Install the MOVI4R-U® inverter at the installation location.

10. Supply voltage to the MOVI4R-U® inverter.

11. Check whether the MOVI4R-U® inverter is functioning properly.

8.2.3 Fan unit replacement/retrofitting

> ⚠ **WARNING**
>
> Electric shock due to charged capacitors.
>
> Severe or fatal injuries.
>
> • Observe the minimum switch-off time after disconnection from the supply system:
>
> **1 minute**

If high operating temperatures occur frequently on an MOVI4R-U® inverter that is not fitted with a fan (e.g. Error, power section overtemperature), you can retrofit the inverter with MUPF11A fan (part number: 28208668):

Fan removal

Remove the fan from the housing as follows:

1. Remove the power section from the housing according to the "Power section removal" chapter.

2. Unlock all fan detents by pushing a screw driver (blade width max. 4.5 mm) into each lateral opening on the bottom of the housing.

   While doing to, gently release the fan [D] from the housing [B].
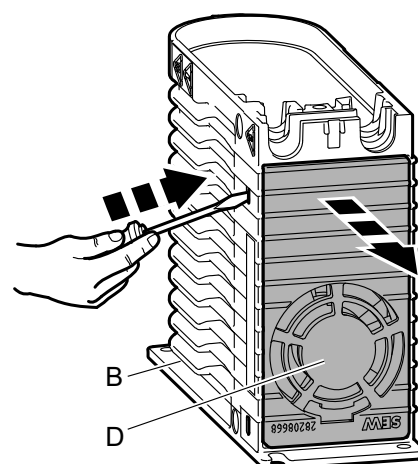
9287953675

3. Carefully pull the fan [D] from below out of the housing [B].

   While doing so, first remove the long fan cable (control) X4 and then the short fan cable (supply) X2 from inside the housing.

   NOTICE Fan does not function due to incorrect connection of the fan cable conductors.

   • Do <u>not</u> undo the fan cable conductors from the terminal.
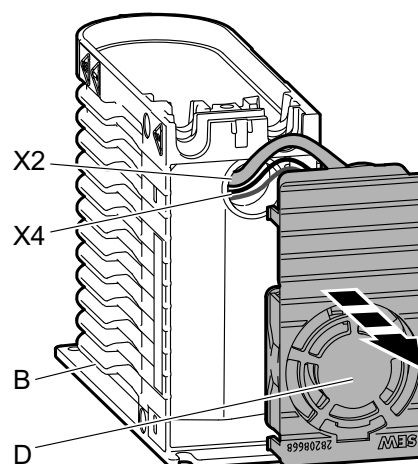
9287955595

Fan installation   Install the fan in the housing as follows:

1. If there is no opening between the fan space and the inside of the housing [B], open up the knock-out [J] in the housing using a hammer and a screw driver, see figure to the right.

    NOTICE Damage to the fan cable by sharp break lines.

    •   Deburr the break line that has been generated by opening up the knock-out.
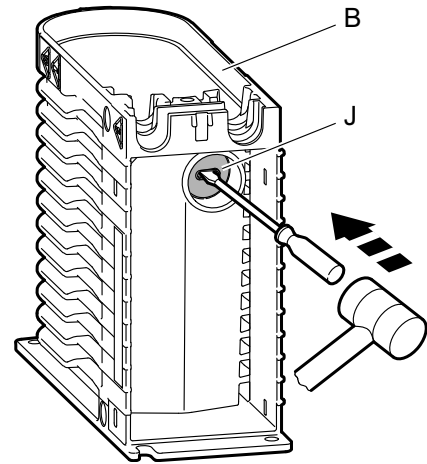
9287957515

2. **NOTICE** Risk of short circuit due to loose foreign objects in the housing.

    Inverter damage.

    •   Ensure that no loose foreign objects (e.g. metal chips, nuts, screws, conductors) remain in the housing.

3. First route the short fan cable (supply) X4 and then the long fan cable (control) X2 from below through the opening into the housing.
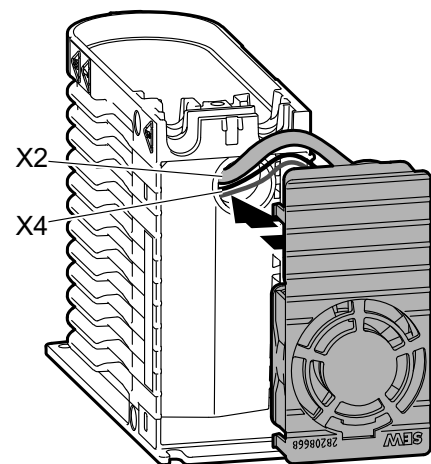
9287959435

4. Mount the fan [D] from below onto the housing [B] and carefully push it in.

    NOTICE Insufficient fastening of the fan.

    •   Ensure that all fan detents latch in properly.
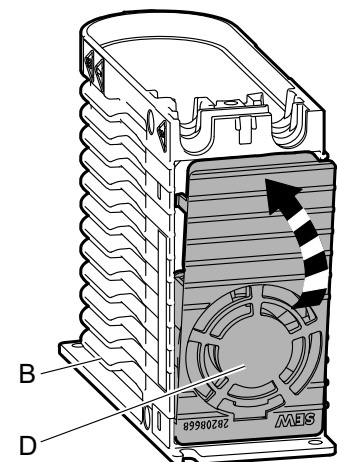
9287961355

5. Install the power section and the control plate on the housing according to the chapter "Power section installation."

8.3 Inspection/maintenance

The MOVI4R-U® inverter is maintenance-free. SEW-EURODRIVE does not prescribe any inspection or maintenance work for the MOVI4R-U® inverter.

Exception: For extended storage, refer to the instructions in the "Service/Extended storage" chapter.

8.4 Shutdown

To shut down the drive, de-energize the MOVI4R-U® inverter using appropriate measures.

> ⚠ **WARNING**
>
> Electric shock due to charged capacitors.
>
> Severe or fatal injuries.
>
> • Observe the minimum switch-off time after disconnection from the supply system:
>
>   **1 minute**

8.5 Storage

Observe the following instructions when shutting down or storing the MOVI4R-U® inverter:

• If you shut down and store the MOVI4R-U® inverter, you must close open cable bushings.

• Make sure that the unit is not subject to mechanical impact during storage.

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

8.6 Extended storage

MOVI4R-U® is equipped with capacitors which are subject to aging effects when de-energized.

The capacity and impedance of the built-in capacitors of MOVI4R-U® do not change significantly during extended storage. However, the leakage current of the capacitors slowly increases.

If the unit is stored for a long time, connect it to the power supply for at least 5 minutes every 2 years. Otherwise, the unit's service life may be reduced.

8.7   Waste disposal

You can reuse the aluminum housing.

If necessary, you only need to replace the power section, the control plate and/or the fan (see previous chapters).

The power section, the control plate and the fan consist of:

*   Plastic
*   Electronic components

Dispose of all these components in accordance with applicable regulations.

INFORMATION

The MOVI4R-U® is a product that complies with SEW-EURODRIVE's sustainability concept. A process for the return of the product is in preparation.
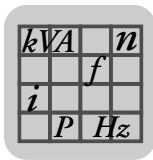
9 Technical Data

9.1 Conformity

9.1.1 CE marking

- Low voltage directive:

  The MOVI4R-U® drive system complies with the regulations of Low Voltage Directive 2006/95/EC.

- Electromagnetic compatibility (EMC):

  MOVI4R-U® units are designed for use as components for installation in machinery and systems. They comply with the EMC product standard EN 61800-3 "Adjustable speed electrical power drive systems." Provided that you comply with the installation instructions, the CE marking requirements for the entire machine/system in which they are installed are satisfied on the basis of EMC Directive 2004/108/EC. For detailed information on EMC-compliant installation, refer to the publication "Electromagnetic Compatibility in Drive Engineering" from SEW-EURODRIVE.

The CE mark on the nameplate indicates conformity with the Low Voltage Directive 2006/95/EC and the EMC Directive 2004/108/EC.

9.1.2 UL approval (in preparation)

UL and cUL approval for the MOVI4R-U® inverter series is in preparation.

9.1.3 C-Tick (in preparation)

C-Tick approval for the MOVI4R-U® basic unit series is in preparation.

C-Tick certifies conformity with ACA (Australian Communications Authority) standards.

9.1.4 Gost-R certification (in preparation)

Gost-R certification for the MOVI4R-U® basic unit series is in preparation.

The Gost-R certificate certifies compliance with certain quality and safety standards in Russia.
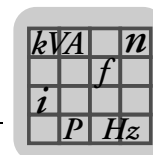
9.2 MOVI4R-U® inverter 1 x 200 – 240 V

MOVI4R-U® type		MUWA 025- 231-...-00	MUWA 037- 231-...-00	MUWA 055- 231-...-00/PF
Order ID		ER001010	ER001011	ER001012
Apparent output power	S_N	0.25 kVA	0.37 kVA	0.55 kVA
Supply voltage	V_{line}	AC 1 x 230 V	AC 1 x 230 V	AC 1 x 230 V
Permitted range		AC 1 x 200 – 240 V according to EN 50160 ±10%		
Line frequency	f_{line}	50/60 Hz ±5%		
Nominal line current	I_{line}	AC 3.2 A	AC 5.2 A	AC 6.3 A
Output voltage	V_O	0 – V_{line} (output is short-circuit-proof)		
Output frequency	f_O	2 – 100 Hz		
Operating point		AC 1 x 230 V at 50 Hz		
Nominal output current	I_N	AC 1.2 A	AC 2.0 A	AC 2.7 A
Inverter power	P	**0.25 kW** (0.37 HP)	**0.37 kW** (0.5 HP)	**0.55 kW** (0.75 HP)
PWM frequency		4 kHz		
Efficiency		> 96%		
Current limitation	I_{max}	Motor: 150%, 60 s, Regenerative: 150%, 60 s		
Motor cable length		Max. 25 m shielded, max. 50 m unshielded		
Interference immunity		Complies with EN 61800-3		
Interference emission		Meets category C3 according to EN 61800-3 (EMC toroidal core installed)		
Ambient temperature	ϑ_A	−25°C to +40°C		
Climate class		EN 60721-3-3, class 3K3		
Storage temperature[1]		–25°C to +75°C		
Maximum permitted vibration and impact load		According to EN 50178 According to EN 60721-3-3, class 3M7		
Degree of protection		IP54 (housing closed, all cable entries sealed)		
Operating mode		S1 (EN 60149-1-1 and 1-3)		
Type of cooling (DIN 41751)		Natural cooling		Fan cooling
Installation altitude		h ≤ 1000 m: no reduction h > 1000 m: I_N reduction by 1% per 100 m h_{max} = 2000 m		
Weight		Approx. 1.7 kg		Approx. 1.8 kg
Dimensions (W x H x D)		Approx. 70 x 180 x 190 mm		
Required preventive measures		Grounding the unit		

1) If the unit is stored for a long time, connect it to the supply system voltage for at least 5 minutes every 2 years. Otherwise, the unit's service life may be reduced.

9.3 MOVI4R-U® inverter 3 x 200 – 240 V

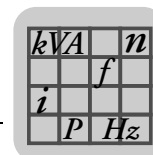| MOVI4R-U® type		MUWA 025-233-...-00	MUWA 037-233-...-00	MUWA 055-233-...-00
Order ID		ER001013	ER001014	ER001015
Apparent output power	S_N	0.25 kVA	0.37 kVA	0.55 kVA
Supply voltage	V_{line}	AC 3 x 230 V	AC 3 x 230 V	AC 3 x 230 V
Permitted range		AC 3 x 200 – 240 V according to EN 50160 ±10%		
Line frequency	f_{line}	50/60 Hz ±5%		
Nominal line current	I_{line}	AC 1.2 A	AC 1.9 A	AC 2.2 A
Output voltage	V_O	0 – V_{line} (output is short-circuit-proof)		
Output frequency	f_O	2 – 100 Hz		
Operating point		AC 3 x 230 V at 50 Hz		
Nominal output current	I_N	AC 1.2 A	AC 2.0 A	AC 2.7 A
Inverter power	P	**0.25 kW** (0.37 HP)	**0.37 kW** (0.5 HP)	**0.55 kW** (0.75 HP)
PWM frequency		4 kHz		
Efficiency		> 96%		
Current limitation	I_{max}	Motor: 150%, 60 s, Regenerative: 150%, 60 s		
Motor cable length		Max. 25 m shielded, max. 50 m unshielded		
Interference immunity		Complies with EN 61800-3		
Interference emission		Meets category C3 according to EN 61800-3 (EMC toroidal core installed)		
Ambient temperature	ϑ_A	−25°C to +40°C		
Climate class		EN 60721-3-3, class 3K3		
Storage temperature[1]		–25°C to +75°C		
Maximum permitted vibration and impact load		According to EN 50178 According to EN 60721-3-3, class 3M7		
Degree of protection		IP54 (housing closed, all cable entries sealed)		
Operating mode		S1 (EN 60149-1-1 and 1-3)		
Type of cooling (DIN 41751)		Natural cooling		
Installation altitude		h ≤ 1000 m: no reduction h > 1000 m: I_N reduction by 1% per 100 m h_{max} = 2000 m		
Weight		Approx. 1.7 kg		
Dimensions (W x H x D)		Approx. 70 x 180 x 190 mm		
Required preventive measures		Grounding the unit		

1) If the unit is stored for a long time, connect it to the supply system voltage for at least 5 minutes every 2 years. Otherwise, the unit's service life may be reduced.

9.4 MOVI4R-U® inverter 3 x 380 – 400 V

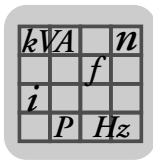| MOVI4R-U® type		MUWA 075- 403-...-00
Order ID		ER001021
Apparent output power	S_N	0.75 kVA
Supply voltage	V_{line}	AC 3 x 400 V
Permitted range		AC 3 x 380 – 400 V according to EN 50160 ±10%
Line frequency	f_{line}	50/60 Hz ±5%
Nominal line current	I_{line}	AC 1.5 A
Output voltage	V_O	0 – V_{line} (output is short-circuit-proof)
Output frequency	f_O	2 – 100 Hz
Operating point		AC 3 x 400 V at 50 Hz
Nominal output current	I_N	AC 1.7 A
Inverter power	P	**0.75 kW** (1.0 HP)
PWM frequency		4 kHz
Efficiency		> 96%
Current limitation	I_{max}	Motor: 150%, 60 s, Regenerative: 150%, 60 s
Motor cable length		Max. 25 m shielded, max. 50 m unshielded
Interference immunity		Complies with EN 61800-3
Interference emission		Meets category C3 according to EN 61800-3 (EMC toroidal core installed)
Ambient temperature	ϑ_A	−25°C to +40°C
Climate class		EN 60721-3-3, class 3K3
Storage temperature[1]		−25°C to +75°C
Maximum permitted vibration and impact load		According to EN 50178 According to EN 60721-3-3, class 3M7
Degree of protection		IP54 (housing closed, all cable entries sealed)
Operating mode		S1 (EN 60149-1-1 and 1-3)
Type of cooling (DIN 41751)		Natural cooling
Installation altitude		h ≤ 1000 m: no reduction h > 1000 m: I_N reduction by 1% per 100 m h_{max} = 2000 m
Weight		Approx. 1.7 kg
Dimensions (W x H x D)		Approx. 70 x 180 x 190 mm
Required preventive measures		Grounding the unit

1) If the unit is stored for a long time, connect it to the supply system voltage for at least 5 minutes every 2 years. Otherwise, the unit's service life may be reduced.
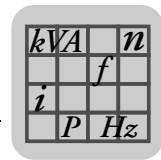
9.5 MOVI4R-U® inverter 3 x 380 – 500 V

MOVI4R-U® type		MUWA 025- 503-...-00	MUWA 037- 503.-...-00	MUWA 055- 503-...-00	MUWA 075- 503-...-00/PF	MUWA 110- 503-...-00/PF
Order ID		ER001016	ER001017	ER001018	ER001019	ER001020
Apparent output power	S_N	0.25 kVA	0.37 kVA	0.55 kVA	0.75 kVA	1.1 kVA
Supply voltage	V_{line}	AC 3 x 400 V				
Permitted range		AC 3 x 380 – 500 V according to EN 50160 ±10%				
Line frequency	f_{line}	50/60 Hz ±5%				
Nominal line current	I_{line}	AC 0.6 A	AC 1.0 A	AC 1.4 A	AC 1.5 A	AC 2.2 A
Output voltage	V_O	0 – V_{line} (output is short-circuit-proof)				
Output frequency	f_O	2 – 100 Hz				
Operating point		AC 3 x 400 V at 50 Hz				
Nominal output current	I_N	AC 0.7 A	AC 1.1 A	AC 1.6 A	AC 1.7 A	AC 2.5 A
Inverter power	P	**0.25 kW** (0.37 HP)	**0.37 kW** (0.5 HP)	**0.55 kW** (0.75 HP)	**0.75 kW** (1.0 HP)	**1.1 kW** (1.5 HP)
PWM frequency		4 kHz				
Efficiency		> 96%				
Current limitation	I_{max}	Motor: 150%, 60 s, Regenerative: 150%, 60 s				
Motor cable length		Max. 25 m shielded, max. 50 m unshielded				
Interference immunity		Complies with EN 61800-3				
Interference emission		Meets category C3 according to EN 61800-3 (EMC toroidal core installed)				
Ambient temperature	ϑ_A	−25°C to +40°C				
Climate class		EN 60721-3-3, class 3K3				
Storage temperature[1]		–25°C to +75°C				
Maximum permitted vibration and impact load		According to EN 50178 According to EN 60721-3-3, class 3M7				
Degree of protection		IP54 (housing closed, all cable entries sealed)				
Operating mode		S1 (EN 60149-1-1 and 1-3)				
Type of cooling (DIN 41751)		Natural cooling			Fan cooling	
Installation altitude		h ≤ 1000 m: no reduction h > 1000 m: I_N reduction by 1% per 100 m h_{max} = 2000 m				
Weight		Approx. 1.7 kg			Approx. 1.8 kg	
Dimensions (W x H x D)		Approx. 70 x 180 x 190 mm				
Required preventive measures		Grounding the unit				

1) If the unit is stored for a long time, connect it to the supply system voltage for at least 5 minutes every 2 years. Otherwise, the unit's service life may be reduced.

9.6 Inputs

9.6.1 Binary inputs DI01 – DI03

Binary inputs		
Input type	PLC-compatible according to EN 61131-2 type 1 or 3	
	R_i approx. 3 kΩ, IE = 10 mA, sampling cycle ≤ 8 ms	
Signal level	+11 V – +30 V	= "1" = Contact closed
	–3 V – +5 V	= "0" = Contact open
Control functions	DI01:	Enable
	DI02:	Direction of rotation
	DI03:	Programmable, see chapter "Functions of the MOVI4R-U® inverter"

9.6.2 Analog input AI

Analog input	
Input type	Unipolar analog input
Signal level	DC 0 – 10 V (R_i > 40 kΩ)
Control function	Speed control

9.7 Outputs

9.7.1 Binary output DO

Binary output	
Output type	PLC-compatible to EN 61131-2, interference voltage proof and short-circuit proof
Rated current	50 mA
Leakage current	Max. 0.2 mA
Function	DC-24 V supply for binary inputs

9.7.2 Analog output AO

Analog output	
Output type	Unipolar analog output
Signal level	DC 0 – 10 V (R_L = 10 – 40 kΩ)
Function	Actual speed feedback

9.7.3 Reference output REF

Reference output	
Reference output voltage	DC 10 V + 5 % (R_L > 8 kΩ)
Function	Reference voltage for analog signals
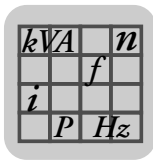
9.7.4 Relay contact REL

Relay contact	
Contact details	DC 30 V, 1.0 A
	DC 30 V according to DIN 60947-5-1 (only SELV or PELV circuits)
Response time	≤ 8 ms
Function	Inverter enable feedback

9.8 Technical data of options

9.8.1 MUPF11A fan

| Option	MUPF11A
Supply voltage	DC 200 – 800 V
Control voltage	DC 19 – 30 V
Power	3 W
Degree of protection	IP54
Ambient temperature	–25°C to +40°C

9.9 Motor assignment

MOVI4R-U® inverters are suitable for 4-pole asynchronous motors according to the following assignment:

MOVI4R-U				Motor							
V_{line}	Fan	Type	Power [kW]	Nominal power P_N [kW]							
1 x 200 – 240 V	without fan	MUWA025-231-...-00	0.25	0.09	0.18	0.25	-	-	-	-
		MUWA037-231-...-00	0.37	0.09	0.18	0.25	0.37	-	-	-
	with fan	MUWA055-231-...-00/PF	0.55	0.09	0.18	0.25	0.37	0.55	-	-
3 x 200 – 240 V	without fan	MUWA025-233-...-00	0.25	0.09	0.18	0.25	-	-	-	-
		MUWA037-233-...-00	0.37	0.09	0.18	0.25	0.37	-	-	-
		MUWA055-233-...-00	0.55	0.09	0.18	0.25	0.37	0.55	-	-
3 x 380 – 400 V	without fan	MUWA075-403-...-00	0.75	0.09	0.18	0.25	0.37	0.55	0.75	-
3 x 380 – 500 V	without fan	MUWA025-503-...-00	0.25	0.09	0.18	0.25	-	-	-	-
		MUWA037-503-...-00	0.37	0.09	0.18	0.25	0.37	-	-	-
		MUWA055-503-...-00	0.55	0.09	0.18	0.25	0.37	0.55	-	-
	with fan	MUWA075-503-...-00/PF	0.75	0.09	0.18	0.25	0.37	0.55	0.75	-
		MUWA110-503-...-00/PF	1.1	0.09	0.18	0.25	0.37	0.55	0.75	1.1

9.10 MOVI4R-U® dimension drawing
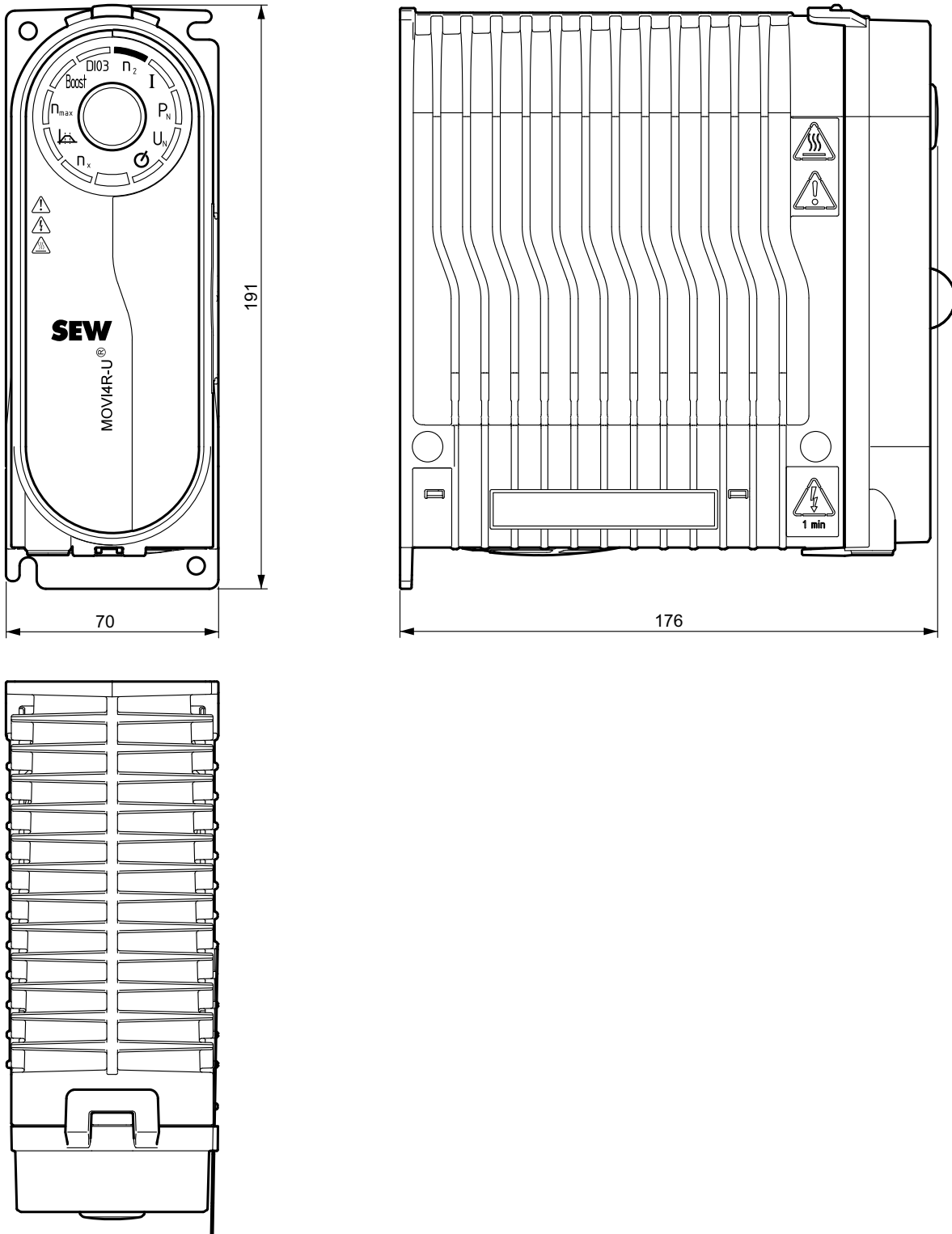
9290850187

10 Declaration of Conformity

EC Declaration of Conformity

SEW
EURODRIVE

902210013

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

declares under sole responsibility that the

frequency inverters of the series	**MUWA...**

are in conformity with

Low Voltage Directive	**2006/95/EC**	
EMC Directive	**2004/108/EC**	**4)**
Applied harmonized standards:	**EN 61800-5-1:2007**	
	EN 61800-3:2004	

4)   According to the EMC Directive, the listed products are not independently operable products. EMC assessment is only possible after these products have been integrated in an overall system. The assessment was verified for a typical system constellation, but not for the individual product.

Bruchsal	13.12.13		
Place	Date	Johann Soder	a) b)
		Managing Director Technology	

a) Authorized representative for issuing this declaration on behalf of the manufacturer
b) Authorized representative for compiling the technical documents

9739356043

11 Address List

Germany			
Headquarters Production Sales	**Bruchsal**	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 42 D-76646 Bruchsal P.O. Box Postfach 3023 • D-76642 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 D-76646 Bruchsal	Tel. +49 7251 75-0 Fax +49 7251 75-2970
Service Competence Center	**Mechanics / Mechatronics**	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 1 D-76676 Graben-Neudorf	Tel. +49 7251 75-1710 Fax +49 7251 75-1711 sc-mitte@sew-eurodrive.de
	Electronics	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 42 D-76646 Bruchsal	Tel. +49 7251 75-1780 Fax +49 7251 75-1769 sc-elektronik@sew-eurodrive.de
Drive Technology Center	**North**	SEW-EURODRIVE GmbH & Co KG Alte Ricklinger Straße 40-42 D-30823 Garbsen (near Hannover)	Tel. +49 5137 8798-30 Fax +49 5137 8798-55 sc-nord@sew-eurodrive.de
	East	SEW-EURODRIVE GmbH & Co KG Dänkritzer Weg 1 D-08393 Meerane (near Zwickau)	Tel. +49 3764 7606-0 Fax +49 3764 7606-30 sc-ost@sew-eurodrive.de
	South	SEW-EURODRIVE GmbH & Co KG Domagkstraße 5 D-85551 Kirchheim (near München)	Tel. +49 89 909552-10 Fax +49 89 909552-50 sc-sued@sew-eurodrive.de
	West	SEW-EURODRIVE GmbH & Co KG Siemensstraße 1 D-40764 Langenfeld (near Düsseldorf)	Tel. +49 2173 8507-30 Fax +49 2173 8507-55 sc-west@sew-eurodrive.de
	Drive Service Hotline / 24 Hour Service		+49 800 SEWHELP +49 800 7394357
	Additional addresses for service in Germany provided on request!		

France			
Production Sales Service	**Haguenau**	SEW-USOCOME 48-54 route de Soufflenheim B. P. 20185 F-67506 Haguenau Cedex	Tel. +33 3 88 73 67 00 Fax +33 3 88 73 66 00 http://www.usocome.com sew@usocome.com
Production	**Forbach**	SEW-USOCOME Zone industrielle Technopôle Forbach Sud B. P. 30269 F-57604 Forbach Cedex	Tel. +33 3 87 29 38 00
Assembly Sales Service	**Bordeaux**	SEW-USOCOME Parc d'activités de Magellan 62 avenue de Magellan - B. P. 182 F-33607 Pessac Cedex	Tel. +33 5 57 26 39 00 Fax +33 5 57 26 39 09
	Lyon	SEW-USOCOME Parc d'affaires Roosevelt Rue Jacques Tati F-69120 Vaulx en Velin	Tel. +33 4 72 15 37 00 Fax +33 4 72 15 37 15
	Nantes	SEW-USOCOME Parc d'activités de la forêt 4 rue des Fontenelles F-44140 Le Bignon	Tel. +33 2 40 78 42 00 Fax +33 2 40 78 42 20

France			
	Paris	SEW-USOCOME Zone industrielle 2 rue Denis Papin F-77390 Verneuil l'Etang	Tel. +33 1 64 42 40 80 Fax +33 1 64 42 40 88
	Additional addresses for service in France provided on request!		

Algeria			
Sales	**Algiers**	REDUCOM Sarl 16, rue des Frères Zaghnoune Bellevue 16200 El Harrach Alger	Tel. +213 21 8214-91 Fax +213 21 8222-84 info@reducom-dz.com http://www.reducom-dz.com

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 sewar@sew-eurodrive.com.ar http://www.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**	**Wien**	SEW-EURODRIVE Ges.m.b.H. Richard-Strauss-Strasse 24 A-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

Belarus			
Sales	**Minsk**	SEW-EURODRIVE BY RybalkoStr. 26 BY-220033 Minsk	Tel.+375 17 298 47 56 / 298 47 58 Fax +375 17 298 47 54 http://www.sew.by sales@sew.by

Belgium			
Assembly **Sales** **Service**	**Brussels**	**SEW-EURODRIVE n.v./s.a.** Researchpark Haasrode 1060 Evenementenlaan 7 BE-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 de Parc Industriel, 31 BE-6900 Marche-en-Famenne	Tel. +32 84 219-878 Fax +32 84 219-879 http://www.sew-eurodrive.be service-wallonie@sew-eurodrive.be

Brazil			
Production **Sales** **Service**	**São Paulo**	SEW-EURODRIVE Brasil Ltda. Avenida Amâncio Gaiolli, 152 - Rodovia Presidente Dutra Km 208 Guarulhos - 07251-250 - SP SAT - SEW ATENDE - 0800 7700496	Tel. +55 11 2489-9133 Fax +55 11 2480-3328 http://www.sew-eurodrive.com.br sew@sew.com.br

Brazil			
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. 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
	Indaiatuba	SEW-EURODRIVE Brasil Ltda. Estrada Municipal Jose Rubim, 205 Rodovia Santos Dumont Km 49 13347-510 - Indaiatuba / SP	Tel. +55 19 3835-8000 sew@sew.com.br

Bulgaria			
Sales	**Sofia**	BEVER-DRIVE GmbH Bogdanovetz Str.1 BG-1606 Sofia	Tel. +359 2 9151160 Fax +359 2 9151166 bever@bever.bg

Cameroon			
Sales	**Douala**	Electro-Services Rue Drouot Akwa B.P. 2024 Douala	Tel. +237 33 431137 Fax +237 33 431137 electrojemba@yahoo.fr

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. 2555 Rue Leger Lasalle, PQ H8N 2V9	Tel. +1 514 367-1124 Fax +1 514 367-3677 a.peluso@sew-eurodrive.ca
	Additional addresses for service in Canada provided on request!		

Chile			
Assembly Sales Service	**Santiago**	SEW-EURODRIVE CHILE LTDA. Las Encinas 1295 Parque Industrial Valle Grande LAMPA RCH-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. 46, 7th Avenue, TEDA Tianjin 300457	Tel. +86 22 25322612 Fax +86 22 25323273 info@sew-eurodrive.cn http://www.sew-eurodrive.cn
	Tianjin	SEW Industrial Gears (Tianjin) Co., Ltd. No.38,9th Avenue, TEDA Tianjin 300457	Tel. +86 22 25322612 Fax +86 22 25323273 logistic@sew-eurodrive.cn http://www.sew-eurodrive.cn

China			
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
	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
	Additional addresses for service in China provided on request!		

Colombia			
Assembly Sales Service	**Bogotá**	SEW-EURODRIVE COLOMBIA LTDA. Calle 22 No. 132-60 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 HR 10 000 Zagreb	Tel. +385 1 4613-158 Fax +385 1 4613-158 kompeks@inet.hr

Czech Republic			
Sales Assembly 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
	Drive Service Hotline / 24 Hour Service	HOT-LINE +420 800 739 739 (800 SEW SEW)	**Servis:** Tel. +420 255 709 632 Fax +420 235 358 218 servis@sew-eurodrive.cz

Denmark			
Assembly Sales Service	**Copenhagen**	SEW-EURODRIVE A/S Geminivej 28-30 DK-2670 Greve	Tel. +45 43 9585-00 Fax +45 43 9585-09 http://www.sew-eurodrive.dk sew@sew-eurodrive.dk

Egypt			
Sales Service	**Cairo**	Copam Egypt for Engineering & Agencies 33 El Hegaz ST, Heliopolis, Cairo	Tel. +20 2 22566-299 +1 23143088 Fax +20 2 22594-757 http://www.copam-egypt.com/ copam@datum.com.eg

Estonia			
Sales	Tallin	ALAS-KUUL AS Reti tee 4 EE-75301 Peetri küla, Rae vald, Harjumaa	Tel. +372 6593230 Fax +372 6593231 veiko.soots@alas-kuul.ee

Finland			
Assembly Sales Service	Hollola	SEW-EURODRIVE OY Vesimäentie 4 FIN-15860 Hollola 2	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 FIN-15860 Hollola	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 Valurinkatu 6, PL 8 FI-03600 Karkkila, 03601 Karkkila	Tel. +358 201 589-300 Fax +358 201 589-310 sew@sew.fi http://www.sew-eurodrive.fi

Gabon			
Sales	Libreville	ESG Electro Services Gabun Feu Rouge Lalala 1889 Libreville Gabun	Tel. +241 741059 Fax +241 741059 esg_services@yahoo.fr

Great Britain			
Assembly Sales Service	Normanton	SEW-EURODRIVE Ltd. DeVilliers Way Trident Park Normanton West Yorkshire WF6 1GX	Tel. +44 1924 893-855 Fax +44 1924 893-702 http://www.sew-eurodrive.co.uk info@sew-eurodrive.co.uk
	Drive Service Hotline / 24 Hour Service		Tel. 01924 896911

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

Hong Kong			
Assembly 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

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

India			
Registered Office Assembly Sales Service	Vadodara	SEW-EURODRIVE India Private Limited Plot No. 4, GIDC POR Ramangamdi • Vadodara - 391 243 Gujarat	Tel. +91 265 3045200 Fax +91 265 3045300 http://www.seweurodriveindia.com salesvadodara@seweurodriveindia.com

India			
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-411003, Maharashtra	salespune@seweurodriveindia.com

Ireland			
Sales **Service**	**Dublin**	Alperton Engineering Ltd. 48 Moyle Road Dublin Industrial Estate Glasnevin, Dublin 11	Tel. +353 1 830-6277 Fax +353 1 830-6458 info@alperton.ie http://www.alperton.ie

Israel			
Sales	**Tel-Aviv**	Liraz Handasa Ltd. Ahofer Str 34B / 228 58858 Holon	Tel. +972 3 5599511 Fax +972 3 5599512 http://www.liraz-handasa.co.il office@liraz-handasa.co.il

Italy			
Assembly **Sales** **Service**	**Solaro**	SEW-EURODRIVE di R. Blickle & Co.s.a.s. Via Bernini,14 I-20020 Solaro (Milano)	Tel. +39 02 96 9801 Fax +39 02 96 980 999 http://www.sew-eurodrive.it sewit@sew-eurodrive.it

Ivory Coast			
Sales	**Abidjan**	SICA Société Industrielle & Commerciale pour l'Afrique 165, Boulevard de Marseille 26 BP 1173 Abidjan 26	Tel. +225 21 25 79 44 Fax +225 21 25 88 28 sicamot@aviso.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 373855 http://www.sew-eurodrive.co.jp sewjapan@sew-eurodrive.co.jp

Kazakhstan			
Sales	**Almaty**	SEW-EURODRIVE LLP 291A, Tole bi street 050031, Almaty Republic of Kazakhstan	Tel. +7 (727) 238 1404 Fax +7 (727) 243 2696 http://www.sew-eurodrive.kz sew@sew-eurodrive.kz

Kenya			
Sales	**Nairobi**	Barico Maintenances Ltd Kamutaga Place Commercial Street Industrial Area P.O.BOX 52217 - 00200 Nairobi	Tel. +254 20 6537094/5 Fax +254 20 6537096 info@barico.co.ke

Latvia			
Sales	Riga	SIA Alas-Kuul Katlakalna 11C LV-1073 Riga	Tel. +371 6 7139253 Fax +371 6 7139386 http://www.alas-kuul.com info@alas-kuul.com

Lebanon			
Sales Lebanon	Beirut	Gabriel Acar & Fils sarl B. P. 80484 Bourj Hammoud, Beirut	Tel. +961 1 510 532 Fax +961 1 494 971 ssacar@inco.com.lb
		After Sales Service	service@medrives.com
Sales Jordan / Kuwait / Saudi Arabia / Syria	Beirut	Middle East Drives S.A.L. (offshore) Sin El Fil. B. P. 55-378 Beirut	Tel. +961 1 494 786 Fax +961 1 494 971 info@medrives.com http://www.medrives.com
		After Sales Service	service@medrives.com

Lithuania			
Sales	Alytus	UAB Irseva Statybininku 106C LT-63431 Alytus	Tel. +370 315 79204 Fax +370 315 56175 irmantas@irseva.lt http://www.sew-eurodrive.lt

Luxembourg			
Assembly Sales Service	Brussels	**SEW-EURODRIVE n.v./s.a.** Researchpark Haasrode 1060 Evenementenlaan 7 BE-3001 Leuven	Tel. +32 16 386-311 Fax +32 16 386-336 http://www.sew-eurodrive.lu info@sew-eurodrive.be

Madagascar			
Sales	Antananarivo	Ocean Trade BP21bis. Andraharo Antananarivo. 101 Madagascar	Tel. +261 20 2330303 Fax +261 20 2330330 oceantrabp@moov.mg

Malaysia			
Assembly Sales Service	Johor	SEW-EURODRIVE SDN BHD No. 95, Jalan Seroja 39, Taman Johor Jaya 81000 Johor Bahru, Johor West Malaysia	Tel. +60 7 3549409 Fax +60 7 3541404 sales@sew-eurodrive.com.my

Mexico			
Assembly Sales Service	Quéretaro	SEW-EURODRIVE MEXICO SA DE CV SEM-981118-M93 Tequisquiapan No. 102 Parque Industrial Quéretaro C.P. 76220 Quéretaro, México	Tel. +52 442 1030-300 Fax +52 442 1030-301 http://www.sew-eurodrive.com.mx scmexico@seweurodrive.com.mx

Mongolia			
Sales	Ulan Bator	SEW EURODRIVE LLP Representative office in Mongolia Suite 407, Tushig Centre Seoul street 23, Sukhbaatar district, Ulaanbaatar 14250	Tel. +976-70009997 Fax +976-70009997 http://www.sew-eurodrive.mn sew@sew-eurodrive.mn

Morocco			
Sales Service	Mohammedia	SEW-EURODRIVE SARL 2 bis, Rue Al Jahid 28810 Mohammedia	Tel. +212 523 32 27 80/81 Fax +212 523 32 27 89 sew@sew-eurodrive.ma http://www.sew-eurodrive.ma

Namibia			
Sales	Swakopmund	DB Mining & Industrial Services Einstein Street Strauss Industrial Park Unit1 Swakopmund	Tel. +264 64 462 738 Fax +264 64 462 734 sales@dbminingnam.com

Netherlands			
Assembly Sales Service	Rotterdam	SEW-EURODRIVE B.V. Industrieweg 175 NL-3044 AS Rotterdam Postbus 10085 NL-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. 10 Settlers Crescent, Ferrymead Christchurch	Tel. +64 3 384-6251 Fax +64 3 384-6455 sales@sew-eurodrive.co.nz

Nigeria			
Sales	Lagos	EISNL Engineering Solutions and Drives Ltd Plot 9, Block A, Ikeja Industrial Estate (Ogba Scheme) Adeniyi Jones St. End Off ACME Road, Ogba, Ikeja, Lagos Nigeria	Tel. +234 (0)1 217 4332 team.sew@eisnl.com http://www.eisnl.com

Norway			
Assembly Sales Service	Moss	SEW-EURODRIVE A/S Solgaard skog 71 N-1599 Moss	Tel. +47 69 24 10 20 Fax +47 69 24 10 40 http://www.sew-eurodrive.no sew@sew-eurodrive.no

Pakistan			
Sales	Karachi	Industrial Power Drives Al-Fatah Chamber A/3, 1st Floor Central Commercial Area, Sultan Ahmed Shah Road, Block 7/8, Karachi	Tel. +92 21 452 9369 Fax +92-21-454 7365 seweurodrive@cyber.net.pk

Paraguay			
Sales	Fernando de la Mora	SEW-EURODRIVE PARAGUAY S.R.L De la Victoria 112, Esquina nueva Asunción Departamento Central Fernando de la Mora, Barrio Bernardino	Tel. +595 991 519695 Fax +595 21 3285539 sew-py@sew-eurodrive.com.py

Peru			
Assembly Sales Service	Lima	SEW DEL PERU MOTORES REDUCTORES 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

Poland			
Assembly Sales Service	**Lodz**	SEW-EURODRIVE Polska Sp.z.o.o. ul. Techniczna 5 PL-92-518 Łódź	Tel. +48 42 676 53 00 Fax +48 42 676 53 49 http://www.sew-eurodrive.pl sew@sew-eurodrive.pl
	Service	Tel. +48 42 6765332 / 42 6765343 Fax +48 42 6765346	Linia serwisowa Hotline 24H Tel. +48 602 739 739 (+48 602 SEW SEW) serwis@sew-eurodrive.pl

Portugal			
Assembly Sales Service	**Coimbra**	SEW-EURODRIVE, LDA. Apartado 15 P-3050-901 Mealhada	Tel. +351 231 20 9670 Fax +351 231 20 3685 www.sew-eurodrive.pt infosew@sew-eurodrive.pt

Romania			
Sales Service	**Bucharest**	Sialco Trading SRL str. Brazilia nr. 36 011783 Bucuresti	Tel. +40 21 230-1328 Fax +40 21 230-7170 sialco@sialco.ro

Russia			
Assembly Sales Service	**St. Petersburg**	ZAO SEW-EURODRIVE P.O. Box 36 RUS-195220 St. Petersburg	Tel. +7 812 3332522 +7 812 5357142 Fax +7 812 3332523 http://www.sew-eurodrive.ru sew@sew-eurodrive.ru

Senegal			
Sales	**Dakar**	SENEMECA Mécanique Générale Km 8, Route de Rufisque B.P. 3251, Dakar	Tel. +221 338 494 770 Fax +221 338 494 771 senemeca@sentoo.sn http://www.senemeca.com

Serbia			
Sales	**Beograd**	DIPAR d.o.o. Ustanicka 128a PC Košum, IV sprat SRB-11000 Beograd	Tel. +381 11 347 3244 / +381 11 288 0393 Fax +381 11 347 1337 office@dipar.rs

Singapore			
Assembly Sales Service	**Singapore**	SEW-EURODRIVE PTE. LTD. No 9, Tuas Drive 2 Jurong Industrial Estate Singapore 638644	Tel. +65 68621701 Fax +65 68612827 http://www.sew-eurodrive.com.sg sewsingapore@sew-eurodrive.com

Slovakia			
Sales	**Bratislava**	SEW-Eurodrive SK s.r.o. Rybničná 40 SK-831 06 Bratislava	Tel. +421 2 33595 202 Fax +421 2 33595 200 sew@sew-eurodrive.sk http://www.sew-eurodrive.sk
	Žilina	SEW-Eurodrive SK s.r.o. Industry Park - PChZ ulica M.R.Štefánika 71 SK-010 01 Žilina	Tel. +421 41 700 2513 Fax +421 41 700 2514 sew@sew-eurodrive.sk
	Banská Bystrica	SEW-Eurodrive SK s.r.o. Rudlovská cesta 85 SK-974 11 Banská Bystrica	Tel. +421 48 414 6564 Fax +421 48 414 6566 sew@sew-eurodrive.sk
	Košice	SEW-Eurodrive SK s.r.o. Slovenská ulica 26 SK-040 01 Košice	Tel. +421 55 671 2245 Fax +421 55 671 2254 sew@sew-eurodrive.sk

Slovenia			
Sales Service	Celje	Pakman - Pogonska Tehnika d.o.o. Ul. XIV. divizije 14 SLO - 3000 Celje	Tel. +386 3 490 83-20 Fax +386 3 490 83-21 pakman@siol.net

South Africa			
Assembly Sales Service	Johannesburg	SEW-EURODRIVE (PROPRIETARY) LIMITED Eurodrive House Cnr. Adcock Ingram and Aerodrome Roads Aeroton Ext. 2 Johannesburg 2013 P.O.Box 90004 Bertsham 2013	Tel. +27 11 248-7000 Fax +27 11 494-3104 http://www.sew.co.za info@sew.co.za
	Cape Town	SEW-EURODRIVE (PROPRIETARY) LIMITED Rainbow Park Cnr. Racecourse & Omuramba Road Montague Gardens Cape Town P.O.Box 36556 Chempet 7442 Cape Town	Tel. +27 21 552-9820 Fax +27 21 552-9830 Telex 576 062 bgriffiths@sew.co.za
	Durban	SEW-EURODRIVE (PROPRIETARY) LIMITED 48 Prospecton Road Isipingo Durban P.O. Box 10433, Ashwood 3605	Tel. +27 31 902 3815 Fax +27 31 902 3826 cdejager@sew.co.za
	Nelspruit	SEW-EURODRIVE (PTY) LTD. 7 Christie Crescent Vintonia P.O.Box 1942 Nelspruit 1200	Tel. +27 13 752-8007 Fax +27 13 752-8008 robermeyer@sew.co.za

South Korea			
Assembly Sales Service	Ansan	SEW-EURODRIVE KOREA CO., LTD. B 601-4, Banweol Industrial Estate #1048-4, Shingil-Dong, Danwon-Gu, Ansan-City, Kyunggi-Do Zip 425-839	Tel. +82 31 492-8051 Fax +82 31 492-8056 http://www.sew-korea.co.kr master.korea@sew-eurodrive.com
	Busan	SEW-EURODRIVE KOREA Co., Ltd. No. 1720 - 11, Songjeong - dong Gangseo-ku Busan 618-270	Tel. +82 51 832-0204 Fax +82 51 832-0230 master@sew-korea.co.kr

Spain			
Assembly Sales Service	Bilbao	SEW-EURODRIVE ESPAÑA, S.L. Parque Tecnológico, Edificio, 302 E-48170 Zamudio (Vizcaya)	Tel. +34 94 43184-70 Fax +34 94 43184-71 http://www.sew-eurodrive.es sew.spain@sew-eurodrive.es

Swaziland			
Sales	Manzini	C G Trading Co. (Pty) Ltd PO Box 2960 Manzini M200	Tel. +268 2 518 6343 Fax +268 2 518 5033 engineering@cgtrading.co.sz

Sweden			
Assembly Sales Service	Jönköping	SEW-EURODRIVE AB Gnejsvägen 6-8 S-55303 Jönköping Box 3100 S-55003 Jönköping	Tel. +46 36 3442 00 Fax +46 36 3442 80 http://www.sew-eurodrive.se jonkoping@sew.se

Switzerland			
Assembly Sales Service	**Basel**	Alfred Imhof A.G. Jurastrasse 10 CH-4142 Münchenstein bei Basel	Tel. +41 61 417 1717 Fax +41 61 417 1700 http://www.imhof-sew.ch info@imhof-sew.ch

Tanzania			
Sales	**Dar es Salaam**	SEW-EURODRIVE PTY LIMITED TANZANIA Plot 52, Regent Estate PO Box 106274 Dar Es Salaam	Tel. +255 0 22 277 5780 Fax +255 0 22 277 5788 http://www.sew-eurodrive.co.tz uroos@sew.co.tz

Thailand			
Assembly Sales Service	**Chonburi**	SEW-EURODRIVE (Thailand) Ltd. 700/456, Moo.7, Donhuaroh Muang Chonburi 20000	Tel. +66 38 454281 Fax +66 38 454288 sewthailand@sew-eurodrive.com

Tunisia			
Sales	**Tunis**	T. M.S. Technic Marketing Service Zone Industrielle Mghira 2 Lot No. 39 2082 Fouchana	Tel. +216 79 40 88 77 Fax +216 79 40 88 66 http://www.tms.com.tn tms@tms.com.tn

Turkey			
Assembly Sales Service	**Kocaeli-Gebze**	SEW-EURODRİVE Sistemleri San. Ve TIC. Ltd. Sti Gebze Organize Sanayi Böl. 400 Sok No. 401 41480 Gebze Kocaeli	Tel. +90-262-9991000-04 Fax +90-262-9991009 http://www.sew-eurodrive.com.tr sew@sew-eurodrive.com.tr

Ukraine			
Assembly Sales Service	**Dnipropetrovsk**	ООО «СЕВ-Евродрайв» ул.Рабочая, 23-В, офис 409 49008 Днепропетровск	Тел. +380 56 370 3211 Факс. +380 56 372 2078 http://www.sew-eurodrive.ua sew@sew-eurodrive.ua

United Arab Emirates			
Sales Service	**Sharjah**	Copam Middle East (FZC) Sharjah Airport International Free Zone P.O. Box 120709 Sharjah	Tel. +971 6 5578-488 Fax +971 6 5578-499 copam_me@eim.ae

USA			
Production Assembly Sales Service	**Southeast Region**	SEW-EURODRIVE INC. 1295 Old Spartanburg Highway P.O. Box 518 Lyman, S.C. 29365	Tel. +1 864 439-7537 Fax Sales +1 864 439-7830 Fax Manufacturing +1 864 439-9948 Fax Assembly +1 864 439-0566 Fax Confidential/HR +1 864 949-5557 http://www.seweurodrive.com cslyman@seweurodrive.com
Assembly Sales Service	**Northeast Region**	SEW-EURODRIVE INC. Pureland Ind. Complex 2107 High Hill Road, P.O. Box 481 Bridgeport, New Jersey 08014	Tel. +1 856 467-2277 Fax +1 856 845-3179 csbridgeport@seweurodrive.com
	Midwest Region	SEW-EURODRIVE INC. 2001 West Main Street Troy, Ohio 45373	Tel. +1 937 335-0036 Fax +1 937 332-0038 cstroy@seweurodrive.com
	Southwest Region	SEW-EURODRIVE INC. 3950 Platinum Way Dallas, Texas 75237	Tel. +1 214 330-4824 Fax +1 214 330-4724 csdallas@seweurodrive.com

USA			
	Western Region	SEW-EURODRIVE INC. 30599 San Antonio St. Hayward, CA 94544	Tel. +1 510 487-3560 Fax +1 510 487-6433 cshayward@seweurodrive.com
	Additional addresses for service in the USA provided on request!		

Venezuela			
Assembly **Sales** **Service**	**Valencia**	SEW-EURODRIVE Venezuela S.A. Av. Norte Sur No. 3, Galpon 84-319 Zona Industrial Municipal Norte Valencia, Estado Carabobo	Tel. +58 241 832-9804 Fax +58 241 838-6275 http://www.sew-eurodrive.com.ve ventas@sew-eurodrive.com.ve sewfinanzas@cantv.net

Vietnam			
Sales	**Ho Chi Minh City**	**Huế - South Vietnam / Construction Materials** Nam Trung Co., Ltd 250 Binh Duong Avenue, Thu Dau Mot Town, Binh Duong Province HCM office: 91 Tran Minh Quyen Street District 10, Ho Chi Minh City	Tel. +84 8 8301026 Fax +84 8 8392223 namtrungco@hcm.vnn.vn truongtantam@namtrung.com.vn khanh-nguyen@namtrung.com.vn
	Hanoi	**Quảng Trị - North Vietnam / All sectors except Construction Materials** MICO LTD 8th Floor, Ocean Park Building, 01 Dao Duy Anh St, Ha Noi, Viet Nam	Tel. +84 4 39386666 Fax +84 8 39742709 nam_ph@micogroup.com.vn
Laos	**Ho Chi Minh City**	DUC VIET INT LTD Industrial Trading and Engineering Services 11 Hoang Sa Str., Da Kao Ward, District 1, HCM City	Tel. +84 8 3820 60 64 Fax +84 8 3820 60 23 totien@ducvietint.com

Zambia			
Sales	**Kitwe**	EC Mining Limited Plots No. 5293 & 5294,Tangaanyika Road, Off Mutentemuko Road, Heavy Industrial Park, P.O.BOX 2337 Kitwe	Tel. +260 212 210 642 Fax +260 212 210 645 sales@ecmining.com http://www.ecmining.com

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