



SEW
EURODRIVE

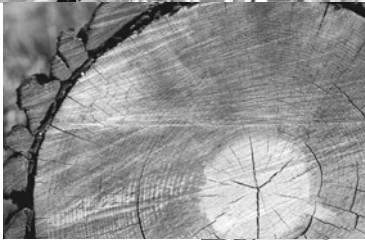


MOVI-SWITCH[®]-1E/-2S

Edition 05/2008

16650026 / EN

Operating Instructions





Contents

1	General Information	5
1.1	Structure of the safety notes	5
1.2	Right to claim under limited warranty	5
1.3	Exclusion of liability	5
1.4	Copyright notice	6
2	Safety Notes	7
2.1	General	7
2.2	Target group	7
2.3	Designated use	7
2.4	Other applicable documentation	8
2.5	Transportation, storage	8
2.6	Installation	8
2.7	Electrical Connection	9
2.8	Safe disconnection	9
2.9	Operation	9
3	Unit Design	10
3.1	MOVI-SWITCH [®] -1E	10
3.2	MOVI-SWITCH [®] -2S	11
3.3	Nameplate, unit designation of MOVI-SWITCH [®] -1E (example)	12
3.4	Nameplate, unit designation MOVI-SWITCH [®] -2S	13
4	Mechanical Installation (All MOVI-SWITCH[®] Variants)	16
4.1	Installation instructions	16
4.2	Mounting MOVI-SWITCH [®] with option P22A close to the motor	18
4.3	Tightening torques	19
5	Electrical Installation	22
5.1	Installation instructions	22
5.2	MOVI-SWITCH [®] -1E	25
5.3	MOVI-SWITCH [®] -2S/CB0 (binary control)	33
5.4	MOVI-SWITCH [®] -2S/CK0 (control with AS-Interface)	44
6	Startup	53
6.1	Startup notes (all MOVI-SWITCH [®] variants)	53
6.2	Starting up MOVI-SWITCH [®] -1E	54
6.3	Starting up MOVI-SWITCH [®] -2S/CB0 (binary control)	55
6.4	Starting up MOVI-SWITCH [®] -2S/CK0 (control via AS-Interface)	57
7	Operation	62
7.1	Operating display (binary control)	62
7.2	Operating display (control via AS-Interface)	64
8	Service	66
8.1	MOVI-SWITCH [®] -1E	66
8.2	MOVI-SWITCH [®] -2S	66
8.3	Modular terminal box	67
8.4	SEW Service	69
8.5	Disposal	70



Contents

9	Inspection/Maintenance	71
9.1	Inspection and maintenance intervals.....	72
9.2	Inspection/maintenance for DR.71-DR.112 motors	73
9.3	Inspection/maintenance for DR.71-DR.112 brakemotors	76
10	Technical Data.....	84
10.1	Technical data of MOVI-SWITCH®-1E	84
10.2	Technical data of MOVI-SWITCH®-2S/CB0	85
10.3	Technical data of MOVI-SWITCH®-2S/CK0 (with integrated AS-Interface)	86
10.4	Work done, working air gap, braking torque of the brake	87
10.5	Permitted rolling bearing types	88
11	Address List	89
	Index.....	98



1 General Information

1.1 Structure of the safety notes

The safety notes in these operating instructions are structured as follows:

Symbol 	SIGNAL WORD!		
	Nature and source of hazard. Possible consequence(s) if disregarded. • Measure(s) to avoid the hazard.		
Symbol	Signal word	Meaning	Consequences if disregarded
Example: General hazard	HAZARD!	Imminent hazard	Severe or fatal injuries
 General hazard	WARNING!	Possible hazardous situation	Severe or fatal injuries
 Specific hazard, e.g. electric shock	CAUTION!	Possible hazardous situation	Minor injuries
	STOP!	Possible damage to property	Damage to the drive system or its environment
	NOTE	Useful information or tip. Simplifies handling of the drive system.	

1.2 Right to claim under limited warranty

Adhering to the operating instructions is a prerequisite for fault-free operation and the fulfillment of any right to claim under warranty. Read the operating instructions before you start working with the unit.

Make sure that the operating instructions are available to persons responsible for the system and its operation as well as to persons who work independently on the unit. You must also ensure that the documentation is legible.

1.3 Exclusion of liability

You must comply with the information contained in these operating instructions to ensure safe operation of the MOVI-SWITCH® drive and to achieve the specified product characteristics and performance requirements. SEW-EURODRIVE does not assume 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.



1.4 Copyright notice

© <2008> - SEW-EURODRIVE. All rights reserved.

Any reproduction, modification, distribution or unintended use, in whole or in part, is prohibited.



2 Safety Notes

The following basic safety notes are intended to prevent injury to persons and damage to property. The operator must ensure that the basic safety notes are read and observed. Make sure 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, please contact SEW-EURODRIVE.

2.1 General

Never install or start up damaged products. Submit a complaint to the shipping company immediately in the event of damage.

During operation, MOVI-SWITCH® drives can have live, bare and movable or rotating parts as well as hot surfaces, depending on their enclosure.

Removing covers without authorization, improper use as well as incorrect installation or operation may result in severe injuries to persons or damage to property. Refer to the documentation for additional information.

2.2 Target group

Only qualified personnel is authorized to install, startup 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.

Any activities regarding transportation, storage, operation, and disposal must be carried out by persons who have been instructed appropriately.

2.3 Designated use

- MOVI-SWITCH® drives are intended for industrial systems. They comply with the applicable standards and regulations and meet the requirements of the Low Voltage Directive 73/23/EEC.
- Technical data and information on approved conditions on site can be found on the nameplate and in these operating instructions.
- You must comply with this information!
- Do not start up the unit (operate in the designated fashion) until you have established that the machine complies with the EMC Directive 2004/108/EC and that the end product categorically conforms to Machinery Directive 98/37/EC (with reference to EN 60204).



2.3.1 Safety functions

The MOVI-SWITCH® drives may not perform safety functions unless these functions are described and expressly permitted.

2.3.2 Hoist applications

MOVI-SWITCH® drives are suitable for hoist applications to a limited degree only.

MOVI-SWITCH® drives are not designed for use as safety devices in hoist applications.

2.4 Other applicable documentation

Note also the following documentation:

- "AC Motors DRS/DRE/DRP" operating instructions
- "Fieldbus Interfaces/Field Distributors for Controlling MOVI-SWITCH®" manual

2.5 Transportation, storage

You must observe the notes on transportation, storage and proper handling. Comply with the requirements for climatic conditions stated in sec. "Technical Data". Tighten installed eyebolts securely. They are designed for the weight of the MOVI-SWITCH® drive. Do not attach any additional loads. Use suitable, sufficiently rated handling equipment (e.g. rope guides) if required.

2.6 Installation

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

Protect the MOVI-SWITCH® drives from excessive strain.

The following applications are **prohibited** unless explicitly permitted:

- Use in potentially explosive areas
- Use in areas exposed to harmful oils, acids, gases, vapors, dust, radiation, etc.
- Use in non-stationary applications with strong mechanical oscillation and impact loads; see chapter "Technical Data" (see page 84)".



2.7 Electrical Connection

Observe the applicable national accident prevention guidelines when working on live MOVI-SWITCH[®] drives (e.g. BGV A3).

Perform electrical installation according to the pertinent regulations (e.g. cable cross sections, fusing, protective conductor connection). Additional information is contained in the documentation.

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 or EN 61800-5-1).

2.8 Safe disconnection

MOVI-SWITCH[®] drives meet all requirements for safe disconnection of power and electronic connections in accordance with EN 61800-5-1. All connected circuits must also satisfy the requirements for safe disconnection.

2.9 Operation

Systems with integrated MOVI-SWITCH[®] drives must be equipped with additional monitoring and protection devices according to the applicable safety guidelines, such as the law governing technical equipment, accident prevention regulations, etc. Additional protective measures may be necessary for applications with increased potential risk.

Before removing the terminal box cover/MOVI-SWITCH[®] control unit, disconnect the MOVI-SWITCH[®] drive from the supply system.

The terminal box must remain closed during operation, i.e. the terminal box cover and the MOVI-SWITCH[®] control unit must be screwed on.

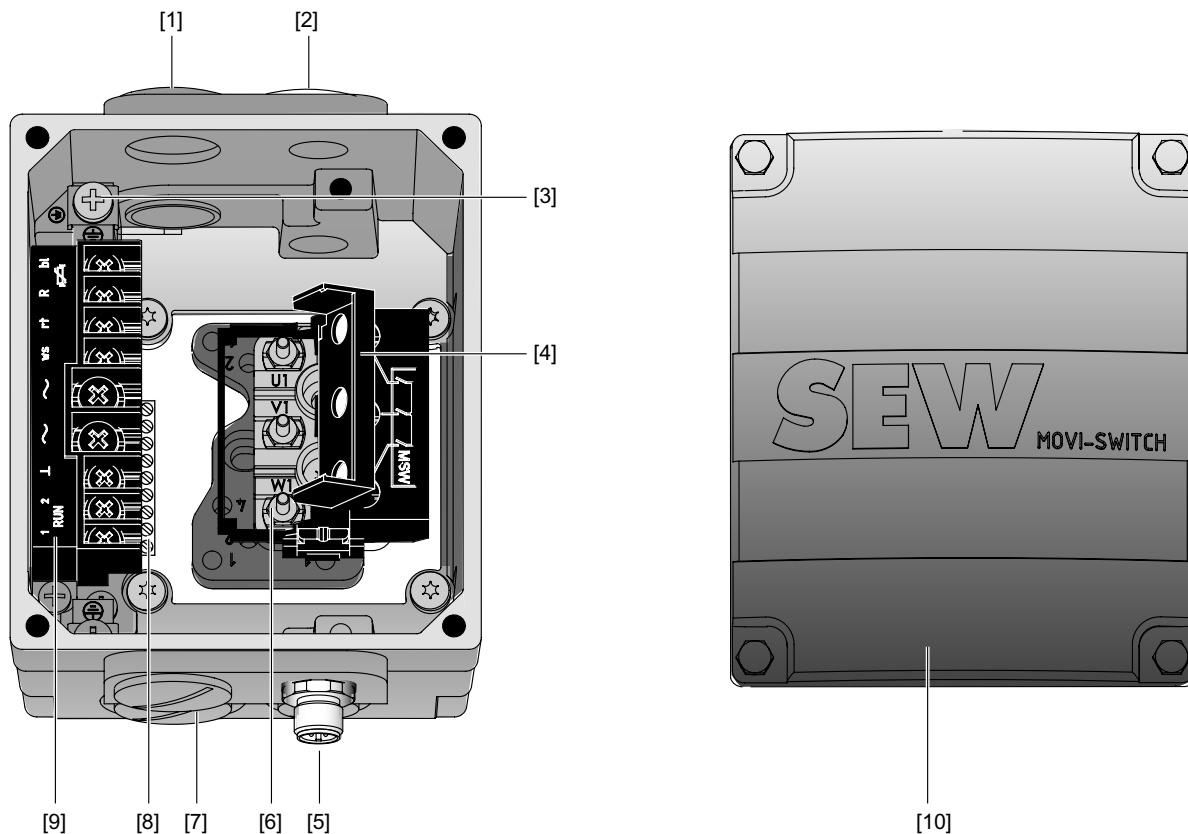
Mechanical blocking or internal safety functions of the unit can cause a motor standstill. Eliminating the cause of the problem or performing a reset may result in the drive restarting automatically. If, for safety reasons, this is not permitted for the driven machine, disconnect the unit from the supply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

Caution! Danger of burns: The MOVI-SWITCH[®] surface temperature can exceed 60 °C during operation!



3 Unit Design

3.1 MOVI-SWITCH®-1E

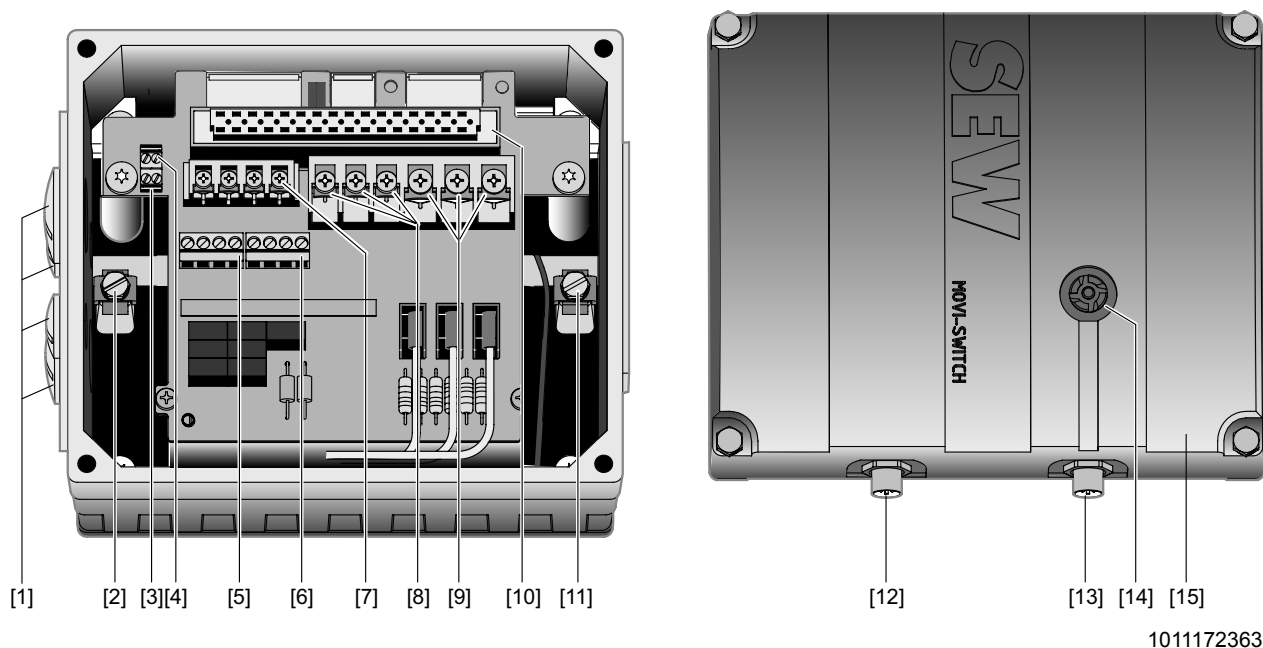


1061229067

- [1] Cable gland 2 x M25 x 1.5
- [2] Cable gland M16 x 1.5
- [3] Screw for PE connection ⊕
- [4] Protective cover for supply system connections
- [5] M12 connector AVS1, standard coding (connection for control signals)
- [6] Supply system connection (L1, L2, L3)
- [7] Cable gland 2 x M25 x 1.5
- [8] MOVI-SWITCH® module
- [9] BGW brake control (only with brake motors)
- [10] Terminal box cover



3.2 MOVI-SWITCH®-2S

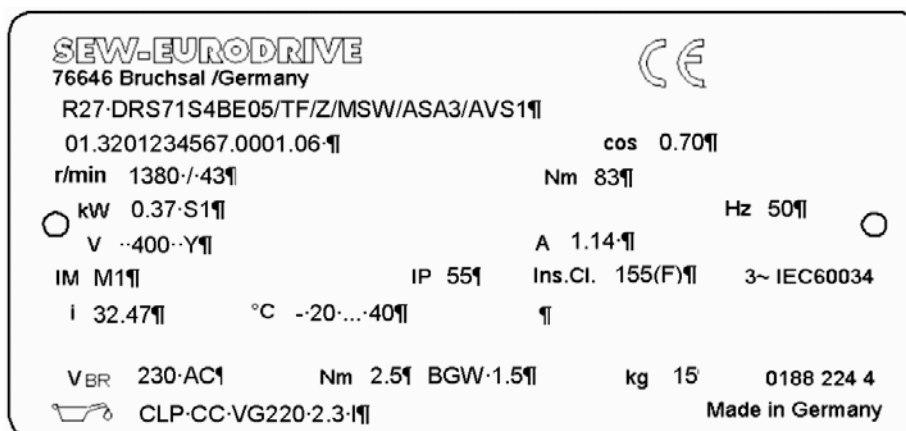


1011172363

- [1] Cable glands
- [2] Screw for PE connection ⊕
- [3] Terminals X6 for ready signal (for CB0 design only)
- [4] Terminals X11 for internal wiring
- [5] Terminals X5 for internal wiring
- [6] Terminals X4 for internal wiring
- [7] Terminals X1:
 - CB0 design: for voltage supply and direction of rotation signals
 - CK0 design: for AS-Interface and auxiliary voltage (AUX-PWR)
- [8] Terminals X1 for brake connection
- [9] Terminals X1 for supply system connection (L1, L2, L3)
- [10] Connection to MOVI-SWITCH® control unit
- [11] Screw for PE connection ⊕
- [12] M12 plug X102
- [13] M12 plug X101
- [14] Status LED
- [15] MOVI-SWITCH® control unit

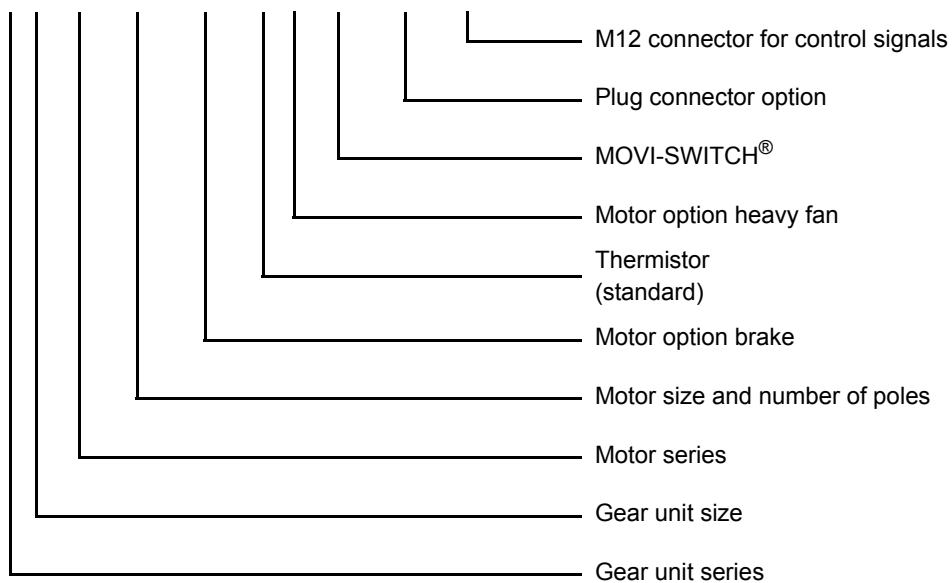


3.3 Nameplate, unit designation of MOVI-SWITCH®-1E (example)



1020396043

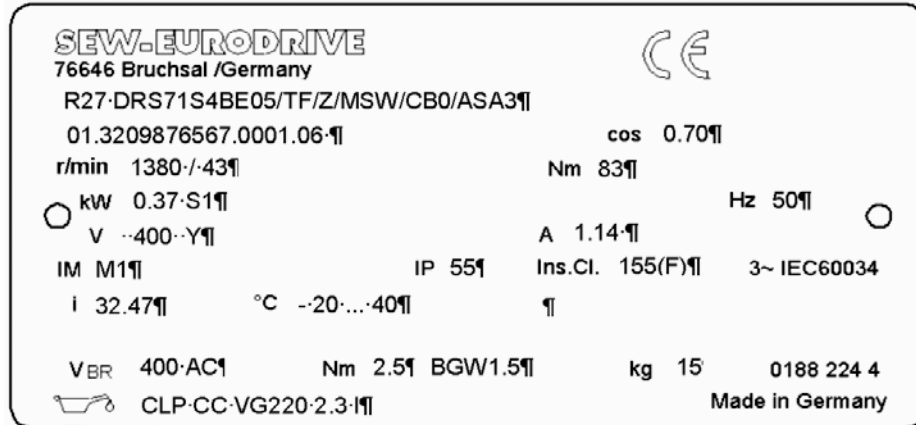
R 27 DRS 71S4 /BE05/TF/Z/MSW/ASA3/AVS1





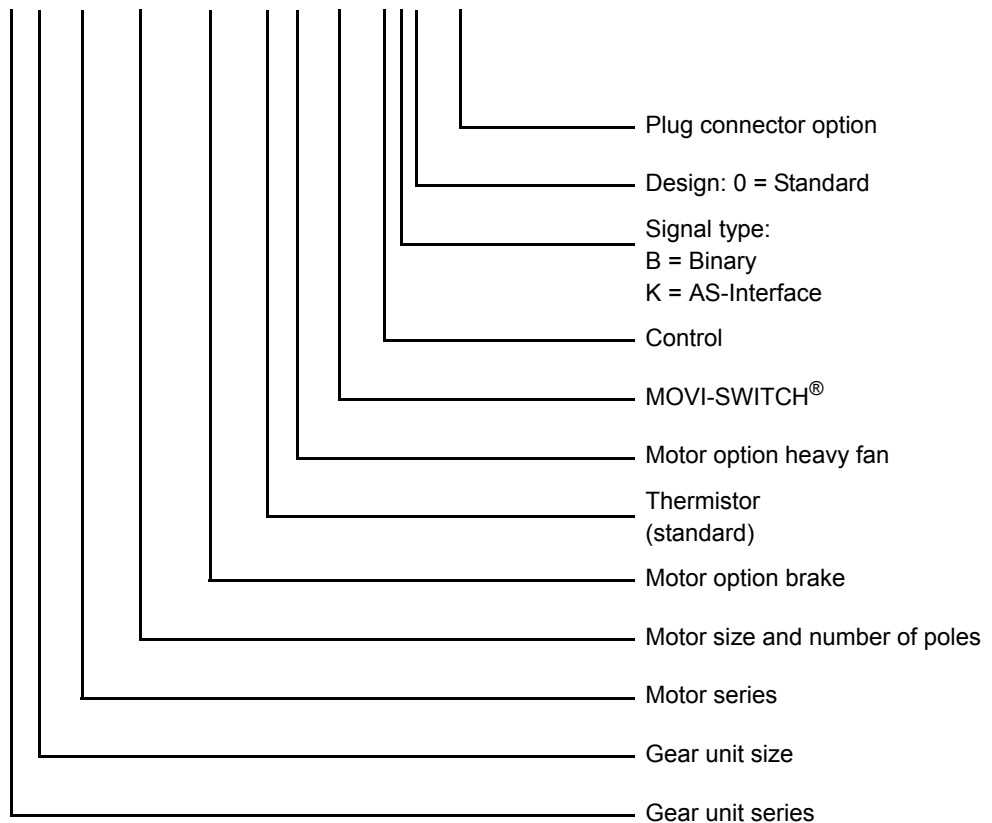
3.4 Nameplate, unit designation MOVI-SWITCH®-2S

3.4.1 Sample motor nameplate



1021652363

R 27 DRS 71S4 /BE05/TF/Z/MSW/CB0/ASA3

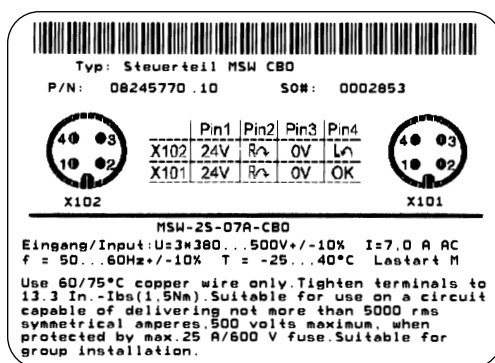




Unit Design

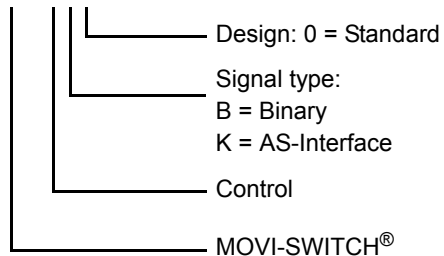
Nameplate, unit designation MOVI-SWITCH®-2S

3.4.2 Sample electronics nameplate



1022004363

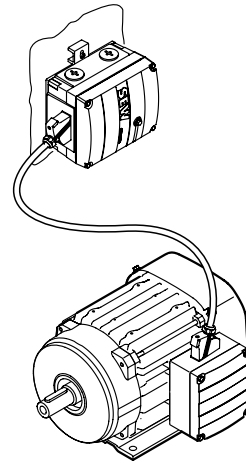
MSW CB0





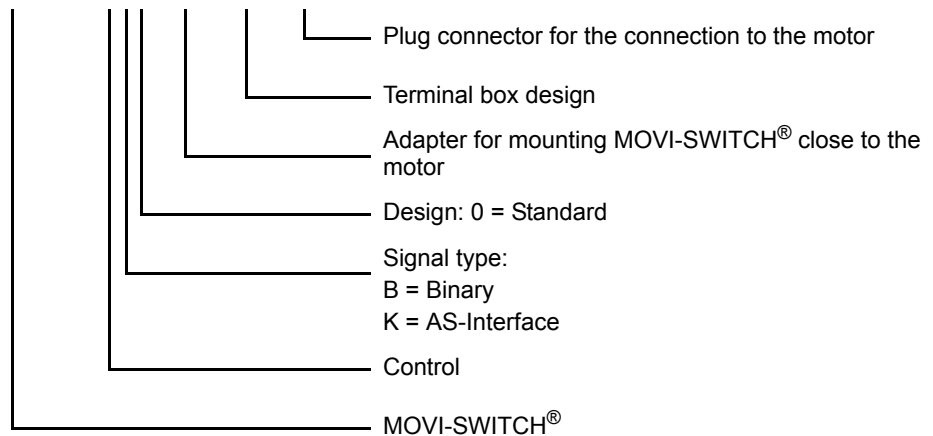
3.4.3 "Mounting close to the motor" design with option P22A

The following illustration shows an example for mounting of the MOVI-SWITCH® unit close to the motor with corresponding nameplate and unit designation:



1068243467

MSW-2S-07A/CB0/P22A/R12A/ALA4





4 Mechanical Installation (All MOVI-SWITCH® Variants)

4.1 Installation instructions

4.1.1 Before you start

The MOVI-SWITCH® drive may only be installed if:

- The entries on the nameplate of the drive match the voltage supply system.
- The drive is undamaged (no damage caused by transportation or storage).
- You have ensured that there are no oils, acids, gases, vapors, radiation, etc. present

Installation tolerances

Shaft end	Flanges
Diameter tolerance according to EN 50347 <ul style="list-style-type: none"> • ISO j6 with $\varnothing \leq 26$ mm • ISO k6 with $\varnothing \leq 38$ mm up to ≤ 48 mm • ISO m6 for $\varnothing > 55$ mm • Center bore in accordance with DIN 332, shape DR.. 	Centering shoulder tolerance in accordance with EN 50347 <ul style="list-style-type: none"> • ISO j6 with $\varnothing \leq 250$ mm • ISO h6 for $\varnothing > 300$ mm

4.1.2 Mounting the MOVI-SWITCH® drive

Observe the following mounting instructions:

- Install/mount MOVI-SWITCH® only in the specified mounting position on a level, vibration-free, and torsionally rigid support structure.
- Clean the output shafts thoroughly to ensure they are free of anti-corrosion agents (use a commercially available solvent). Do not expose the bearings and shaft seals to the solvent – damage to the material!
- Carefully align MOVI-SWITCH® and the driven machine to avoid placing any unacceptable strain on motor shafts (observe permitted overhung and axial loads).
- Do not butt or hammer the shaft end.
- Use an appropriate cover to prevent objects or fluids from entering in vertical mounting positions.
- Ensure the cooling air supply is unobstructed and that air heated by other apparatus cannot be drawn in again.
- Balance components for subsequent mounting on the shaft with a half key (output shafts are balanced with a half key). Any condensation drain holes are closed with plastic plugs and must not be opened unless needed.
- Open condensation drain holes are not permitted. They would render the assigned degrees of protection void.



4.1.3 Installation in damp locations or in the open

Observe the following notes for mounting the MOVI-SWITCH® drive in damp areas or in the open:

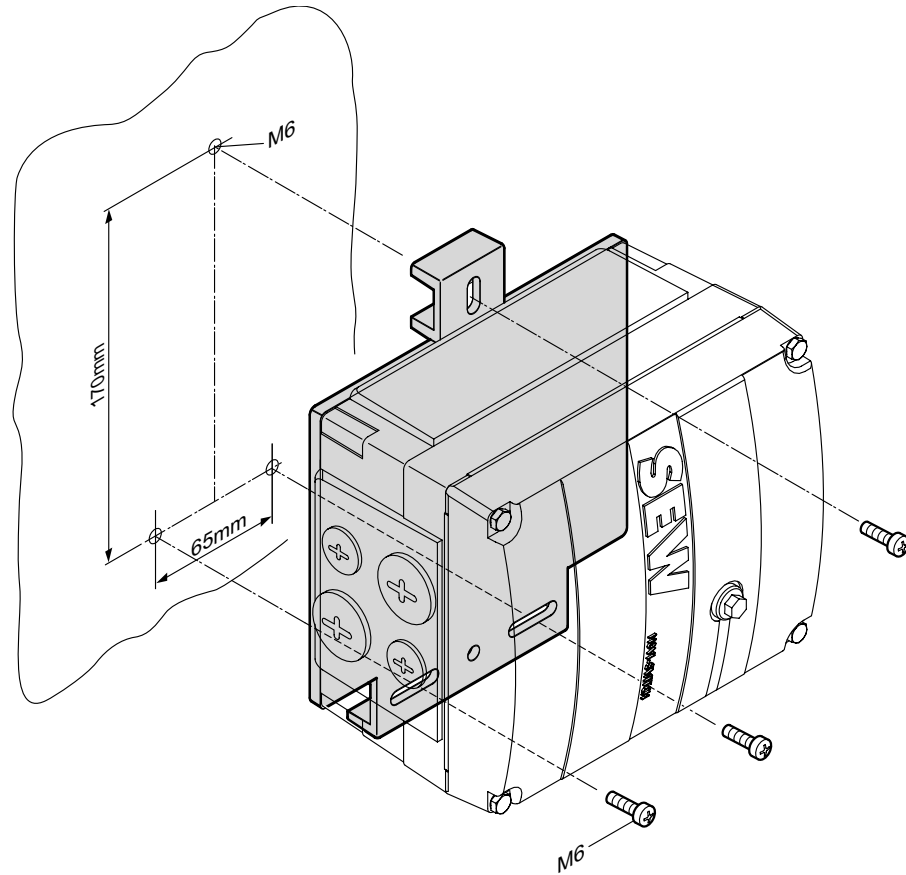
- Use suitable cable glands for the supply leads (use reducing adapters if necessary).
- Coat the threads of cable glands and filler plugs with sealing compound and tighten them well – then coat them again.
- Seal the cable entries well
- Clean the sealing faces of the terminal box cover/MOVI-SWITCH® control unit well before reassembly.
- Touch up the corrosion protection coating if damaged anywhere
- Check enclosure according to nameplate.



Mechanical Installation (All MOVI-SWITCH® Variants) Mounting MOVI-SWITCH® with option P22A close to the motor

4.2 Mounting MOVI-SWITCH® with option P22A close to the motor

The following figure shows the mounting dimensions for mounting the MOVI-SWITCH® terminal box with option P22A close to the motor.



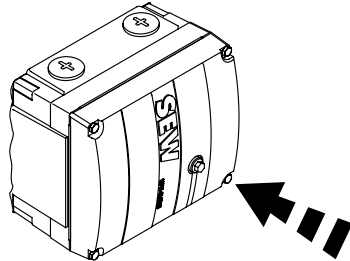
986364683



4.3 Tightening torques

4.3.1 MOVI-SWITCH® control unit/terminal box

Tighten the screws on the MOVI-SWITCH® control unit using 3.0 Nm (26.6 lb.in) working diagonally across.



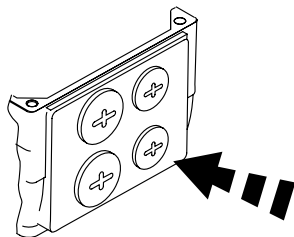
986785291

4.3.2 Cable glands

It is essential to observe the manufacturer's specifications for the cable glands.

4.3.3 Blanking plug cable glands

Tighten blanking plugs using 2.5 Nm (22.1 lb.in).



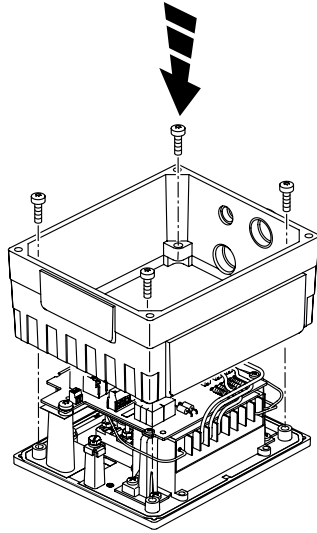
986793739



Mechanical Installation (All MOVI-SWITCH® Variants) Tightening torques

4.3.4 Modular terminal box

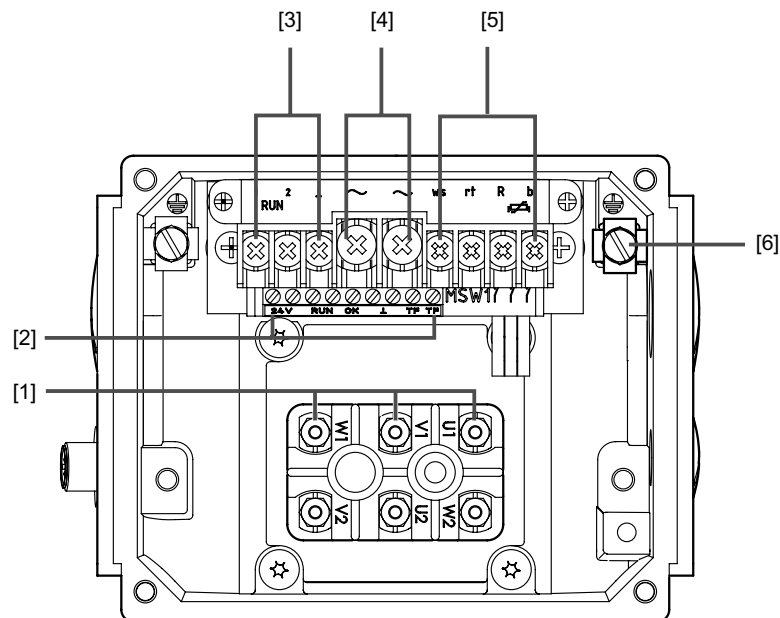
For fastening the terminal box on the mounting plate, tighten screws using 3.3 Nm (29.2 lb.in).



986891403

4.3.5 Tightening torques for terminals (MOVI-SWITCH®-1E)

Use the following tightening torques for terminals during installation:



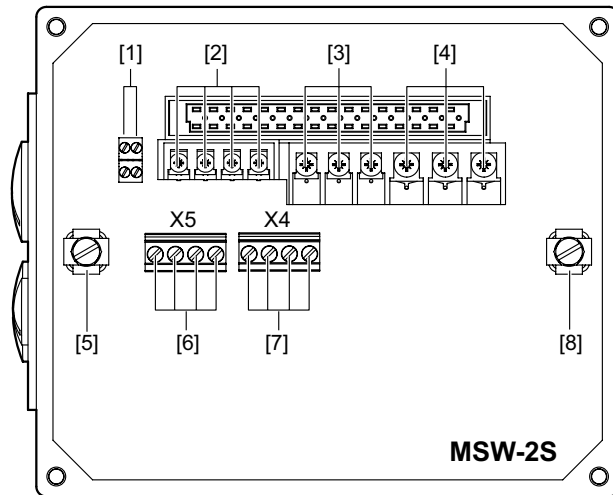
991568395

- [1] 1.6 – 2.0 Nm (14.2 lb.in – 17.7 lb.in)
- [2] 0.3 – 0.5 Nm (3.0 lb.in – 4.5 lb.in)
- [3] 0.5 – 0.7 Nm (4.4 lb.in – 6.2 lb.in)
- [4] 1.2 – 1.6 Nm (10.6 lb.in – 14.2 lb.in)
- [5] 0.5 – 0.7 Nm (4.4 lb.in – 6.2 lb.in)
- [6] 2.0 – 2.4 Nm (17.7 lb.in – 21.2 lb.in)



4.3.6 Tightening torques for terminals (MOVI-SWITCH®-2S)

Use the following tightening torques for terminals during installation:



991608075

- [1] 0.5 – 0.7 Nm (4.4 lb.in – 6.2 lb.in)
- [2] 0.5 – 0.7 Nm (4.4 lb.in – 6.2 lb.in)
- [3] 0.8 – 1.1 Nm (7.1 lb.in – 9.7 lb.in)
- [4] 1.2 – 1.6 Nm (10.6 lb.in – 14.2 lb.in)
- [5] 2.0 – 2.4 Nm (17.7 lb.in – 21.2 lb.in)
- [6] 0.5 – 0.7 Nm (4.4 lb.in – 6.2 lb.in)
- [7] 0.5 – 0.7 Nm (4.4 lb.in – 6.2 lb.in)
- [8] 2.0 – 2.4 Nm (17.7 lb.in – 21.2 lb.in)



5 Electrical Installation

5.1 Installation instructions

5.1.1 Connecting supply system leads

- The rated voltage and frequency of the MOVI-SWITCH® drive must correspond to the data for the supply system (line).
- Wire cross section: according to input current I_{line} for rated power (see chapter Technical Data (see page 84)).
- Use conductor end sleeves without insulating shrouds (DIN 46228 part 1, material E-CU).
- Install line fuses at the beginning of the supply system line behind the supply bus junction. Use D, DO, NH fuses or circuit breakers. Select the fuse size according to the cable cross section.

5.1.2 Connecting the DC 24 V power supply

- Supply the MOVI-SWITCH® drive either via the external DC 24 V voltage and/or via AS-Interface data line¹⁾.

5.1.3 Conventional control (via binary commands)

- Connect the required control leads²⁾ (e.g. CW/Stop, CCW/Stop)
- Route the control cables separately from the supply system cables.

5.1.4 Permitted wire cross section of the terminals

Permitted wire cross section of the MOVI-SWITCH® 1E terminals and diameter of the terminal studs:

Terminal board	MOVI-SWITCH® module (for internal wiring)	BGW brake control (only with brake motor, for internal wiring)	
		Power terminals	Control terminals
M4	0.25 mm ² - 1.0 mm ²	1.0 mm ² - 4.0 mm ² (2 x 4.0 mm ²)	0.25 mm ² - 1.0 mm ² (2 x 0.75 mm ²)
	AWG22 – AWG17	AWG17 – AWG10 (2 x AWG10)	AWG22 – AWG17 (2 x AWG18)

Permitted wire cross section of the MOVI-SWITCH® 2S terminals:

Power terminals	Control terminals (for internal wiring)
1.0 mm ² - 4.0 mm ² (2 x 4.0 mm ²)	0.25 mm ² - 1.0 mm ² (2 x 0.75 mm ²) Except for OK terminals X6/X11: 1 x 0.25 mm ² – 0.75 mm ²
AWG17 – AWG10 (2 x AWG10)	AWG22 – AWG17 (2 x AWG18) Except for OK terminals X6/X11: 1 x AWG22 – AWG18

1) For MSW-2S CK0 design only

2) For MSW-1E and MSW-2S CB0 only



5.1.5 Protective devices

MOVI-SWITCH® drives are equipped with integrated protection devices against motor overload. External motor protection elements will not be necessary.

	⚠ WARNING!
	<p>Insufficient protection of the leads. Severe or fatal injuries.</p> <ul style="list-style-type: none"> • When mounting MOVI-SWITCH® close to the motor, the applicable regulations concerning line protection must be observed! • The protection of the lead between MOVI-SWITCH® and the motor must be ensured by appropriate dimensioning or optional line protection components!

5.1.6 Notes on PE connection

	⚠ HAZARD!
	<p>Incorrect connection of PE. Death, severe injuries or damage to property from electric shock.</p> <ul style="list-style-type: none"> • The permitted tightening torque for the screw fitting is 2.0 to 2.4 Nm (18...21 lb.in). • Observe the following notes regarding the PE connection:

Prohibited assembly sequence	Recommendation: Assembly with forked cable lug Permitted for all cross sections	Assembly with thick connecting wire Permitted for cross sections up to max. 2.5 mm ²
<p>323042443</p>	<p>323034251</p>	<p>323038347</p>

[1] Forked cable lug suitable for M5 PE screws

**5.1.7 Installation above 1000 m asl**

MOVI-SWITCH[®] drives with line voltages of 380 to 500 V can be used at altitudes above 1000 m asl up to 4000 m asl under the following peripheral conditions.¹⁾

- The rated continuous power is reduced based on the reduced cooling above 1000 m (see chapter Technical Data (see page 84)).
- Above 2000 m asl, the air and creeping distances are only sufficient for overvoltage class 2. If the installation calls for overvoltage class 3, you will have to install additional external overvoltage protection to limit overvoltage peaks to 2.5 kV phase-to-phase and phase-to-ground.
- If safe electrical disconnection is required, it must be implemented outside the device at altitudes above 2,000 m asl (safe electrical disconnection in accordance with EN 61800-5-1).
- The permitted rated supply voltage of 3 x 500 V up to 2,000 m asl is reduced by 6 V for every 100 m to a maximum of 3 x 380 V at 4,000 m asl.

5.1.8 UL-compliant installation

- Use only copper conductors with a permitted temperature range (60/75°C) as connection cables.
- MOVI-SWITCH[®] is suited for operation on voltage supply systems with grounded star (TN and TT systems) supplying a maximum supply current of AC 5000 A and having a maximum voltage of AC 500 V. The performance data of the fuses must not exceed 25 A/600 V.
- Only use tested units with a limited output voltage ($V \leq \text{DC } 30 \text{ V}$) and limited output current ($I \leq 8 \text{ A}$) as an external DC 24 V voltage source.
- The UL certification only applies to operation on voltage supply systems with voltages to ground up to a maximum of 300 V.

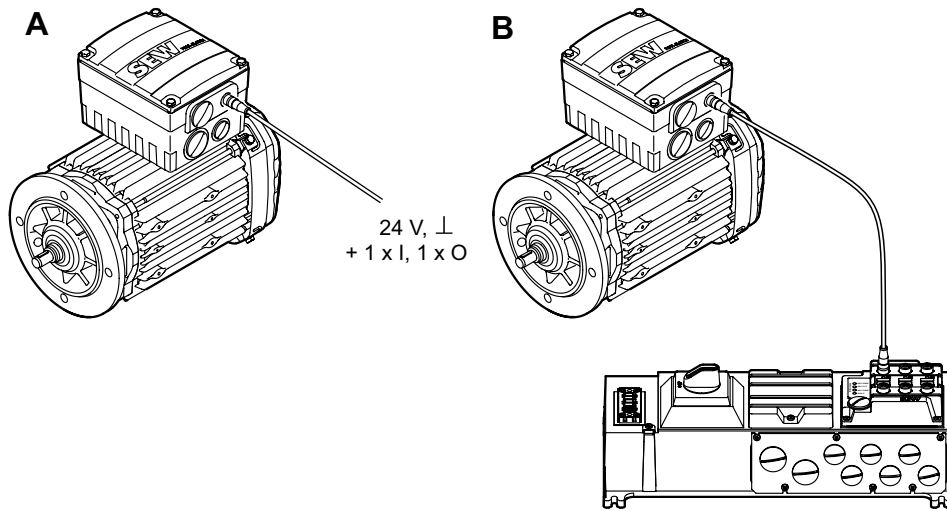
1) The maximum altitude is limited by creeping distances and flameproof components such as electrolytic capacitors.



5.2 MOVI-SWITCH®-1E

5.2.1 Connection options for control signals

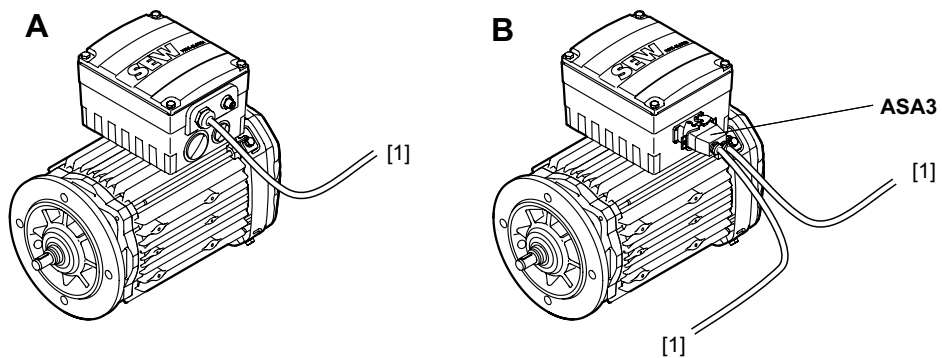
Design	A	B
Control signals	Binary signals (e.g. PLC)	MF../MQ.. fieldbus interface
Additional information	(see page 27)	"Fieldbus Interfaces/Field Distributors for Controlling MOVI-SWITCH®" manual



1070192907

5.2.2 Connection options for power

Design	A	B
Unit designation	MSW/AVS1	MSW/AVS1/ASA3
Supply system connection	Terminal stud on motor terminal board	ASA3 plug connector
Additional information	(see page 27)	(see page 30)



1070261899

[1] Supply system



5.2.3 Connection via field distributor

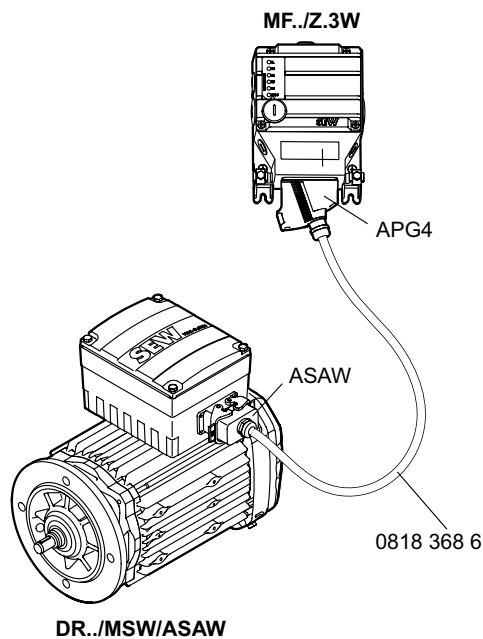
MF../Z.3W, and MF../Z.6W.. field distributors have been specifically designed for connecting MOVI-SWITCH®. They provide a simple means of connecting the drives to the supply system, the DC 24 V control voltage and the fieldbus.



NOTE

For detailed information about connecting the MOVI-SWITCH® drive via MF../Z3.W field distributor, refer to the "Fieldbus Interfaces/Field Distributors for Controlling MOVI-SWITCH®" manual.

Example



1070293771



NOTE

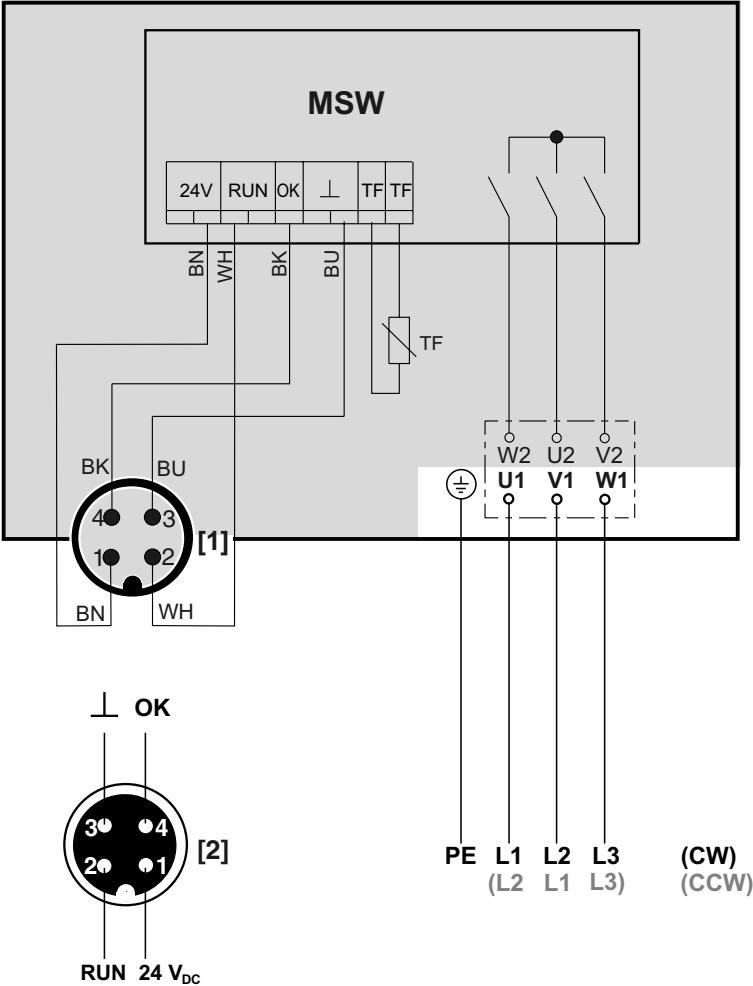
The direction of rotation of the motor can be reversed by switching two current phases at the input terminal of the field distributor or at the motor terminal board in the MOVI-SWITCH®-1E terminal box.



5.2.4 Description of the control signals (M12 connection)

PIN	Assign-ment	Function
1	24 V	Power supply voltage DC 24 V
2	RUN	DC 24 V control signals, high = start, low = stop
3	⊥	Reference potential 0V24
4	OK	Checkback signal Ready for operation, DC 24 V, high = ready for operation, low = overtemperature or no 24 V supply

5.2.5 Connection of MOVI-SWITCH®-1E without brake control



995433611

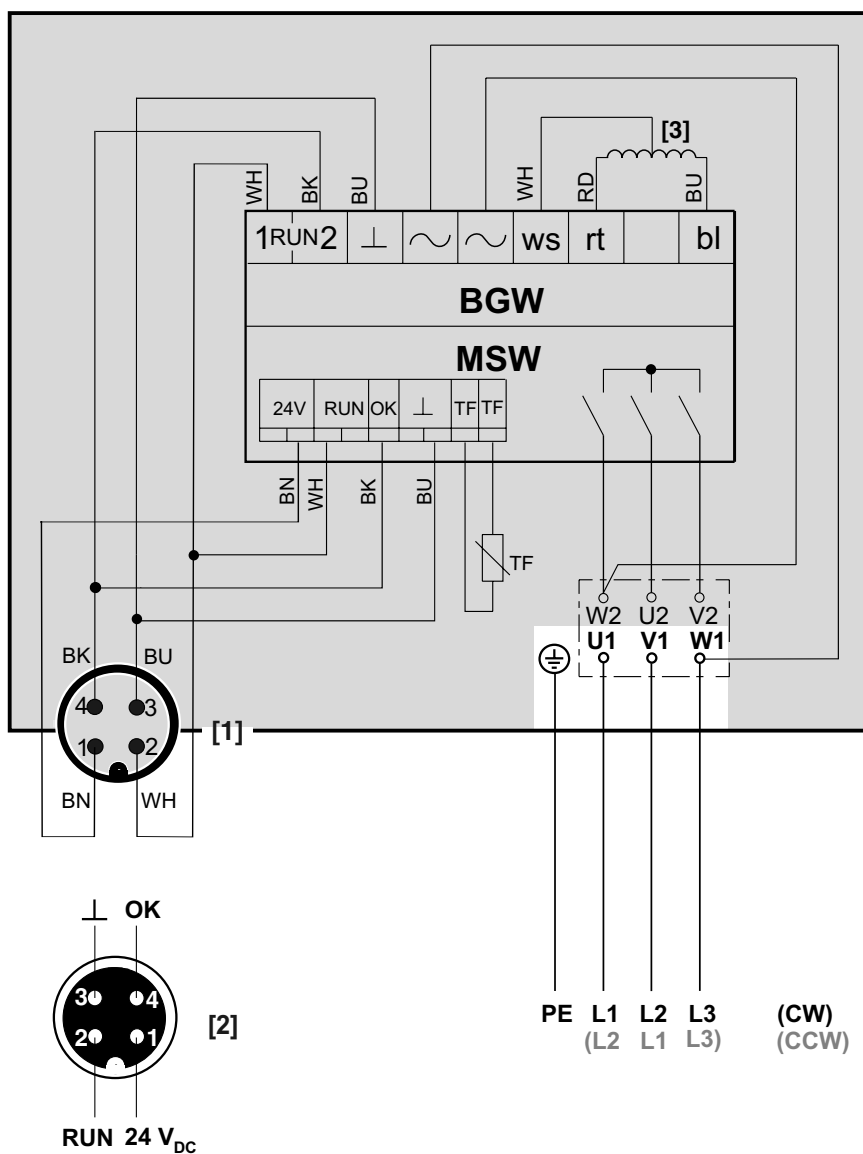
- [1] M12 connector AVS1 (standard coding)
- [2] M12 socket (standard coding)
- CW Clockwise rotation
- CCW Counterclockwise rotation

Wired at the factory



5.2.6 MOVI-SWITCH®-1E with BGW brake control

Brake voltage = supply voltage/√3 (phase-star point)



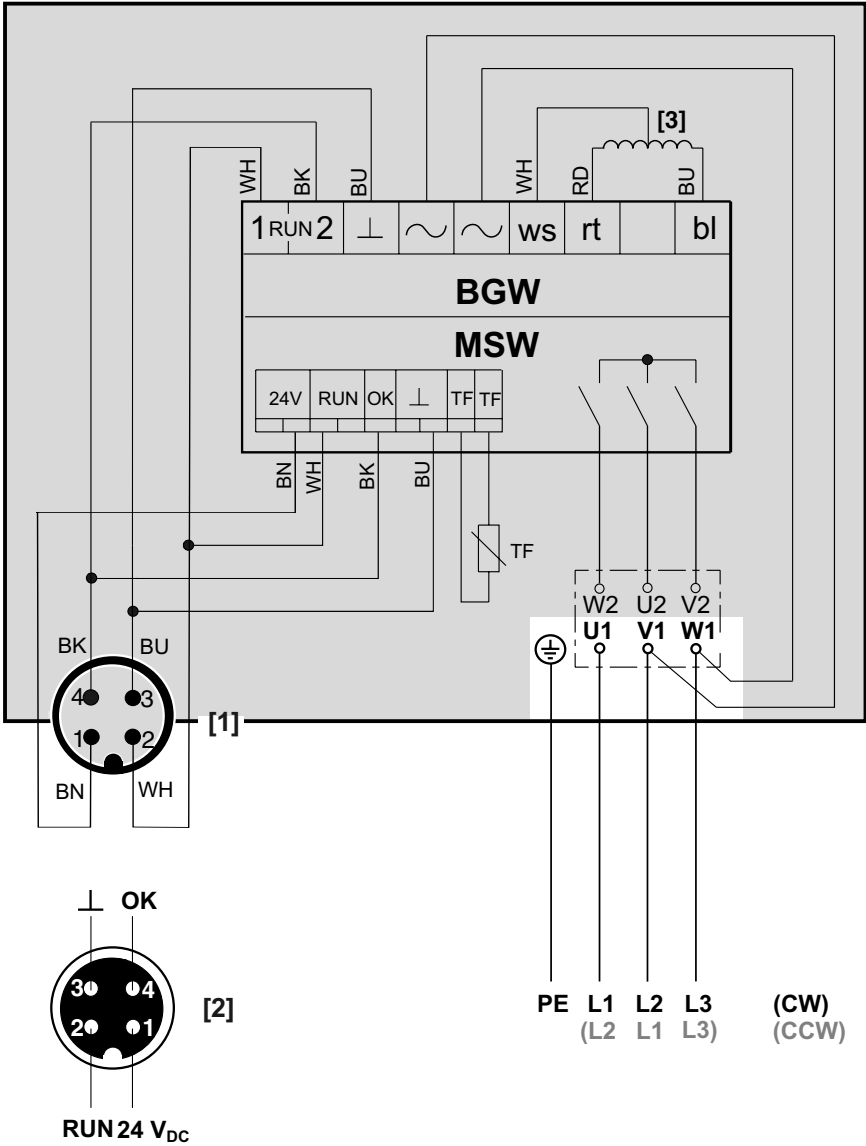
995487115

- [1] M12 connector AVS1 (standard coding)
- [2] M12 socket (standard coding)
- [3] Brake coil
- CW Clockwise rotation
- CCW Counterclockwise rotation

Wired at the factory



Brake voltage = supply voltage (phase-phase)



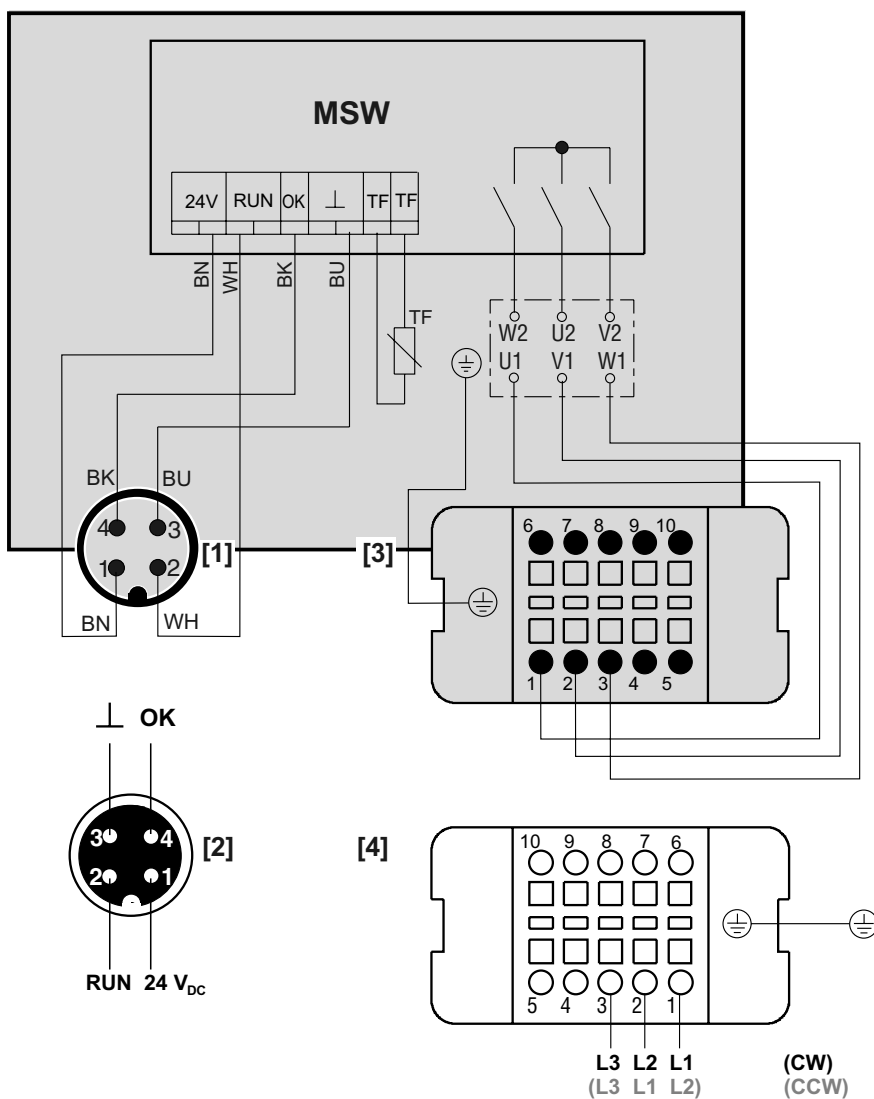
995937419

- [1] M12 connector AVS1 (standard coding)
- [2] M12 socket (standard coding)
- [3] Brake coil
- CW Clockwise rotation
- CCW Counterclockwise rotation

Wired at the factory



5.2.7 MOVI-SWITCH®-1E with optional ASA3 plug connector (without brake control)



- [1] M12 connector AVS1 (standard coding)
- [2] M12 socket (standard coding)
- [3] ASA3 plug connector (plug)
- [4] Plug connector (socket)
- CW Clockwise rotation
- CCW Counterclockwise rotation

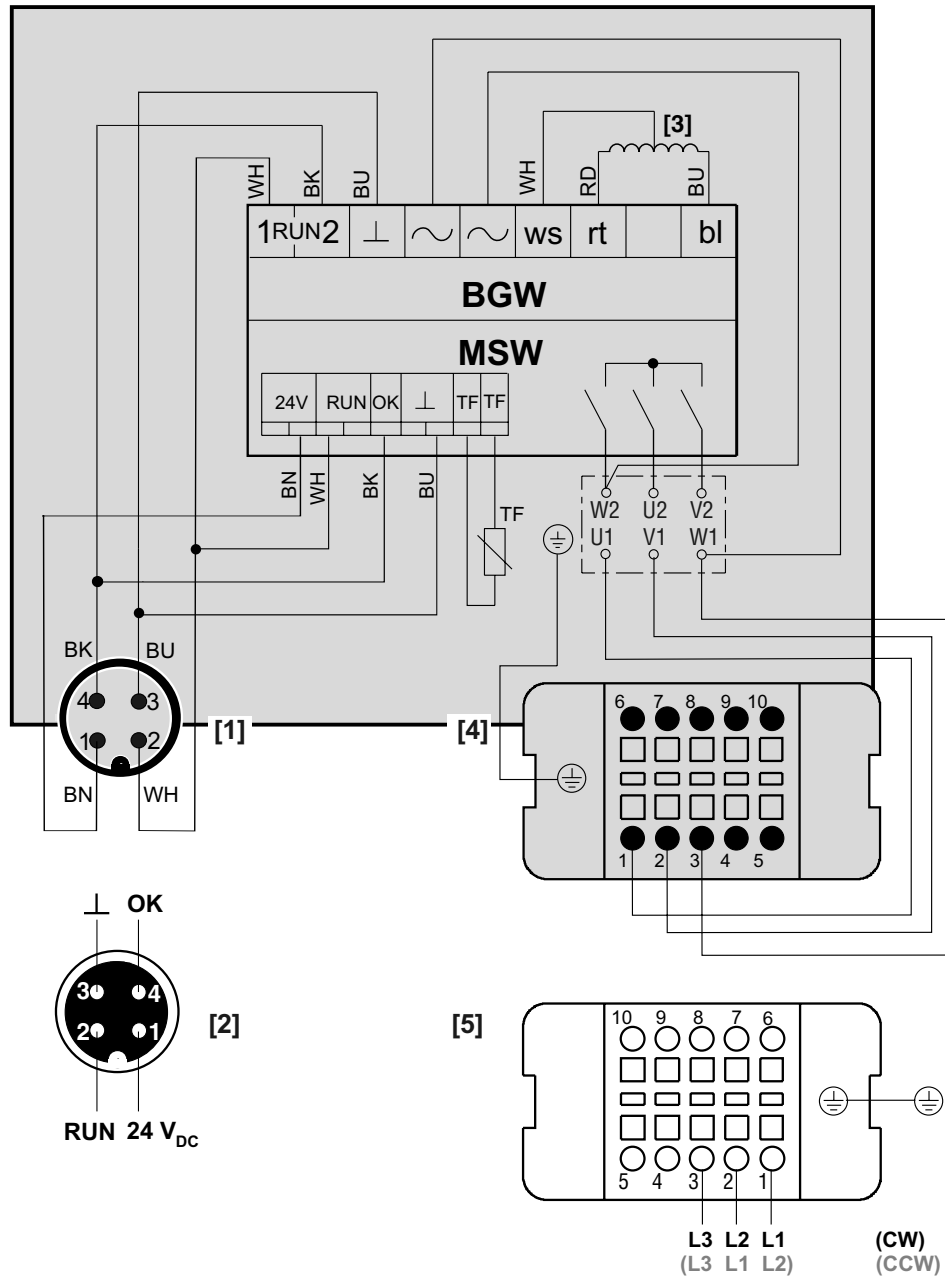
Wired at the factory

996056843



5.2.8 MOVI-SWITCH®-1E with optional ASA3 plug connector (with BGW brake control)

Brake voltage = supply voltage/√3 (phase-star point)



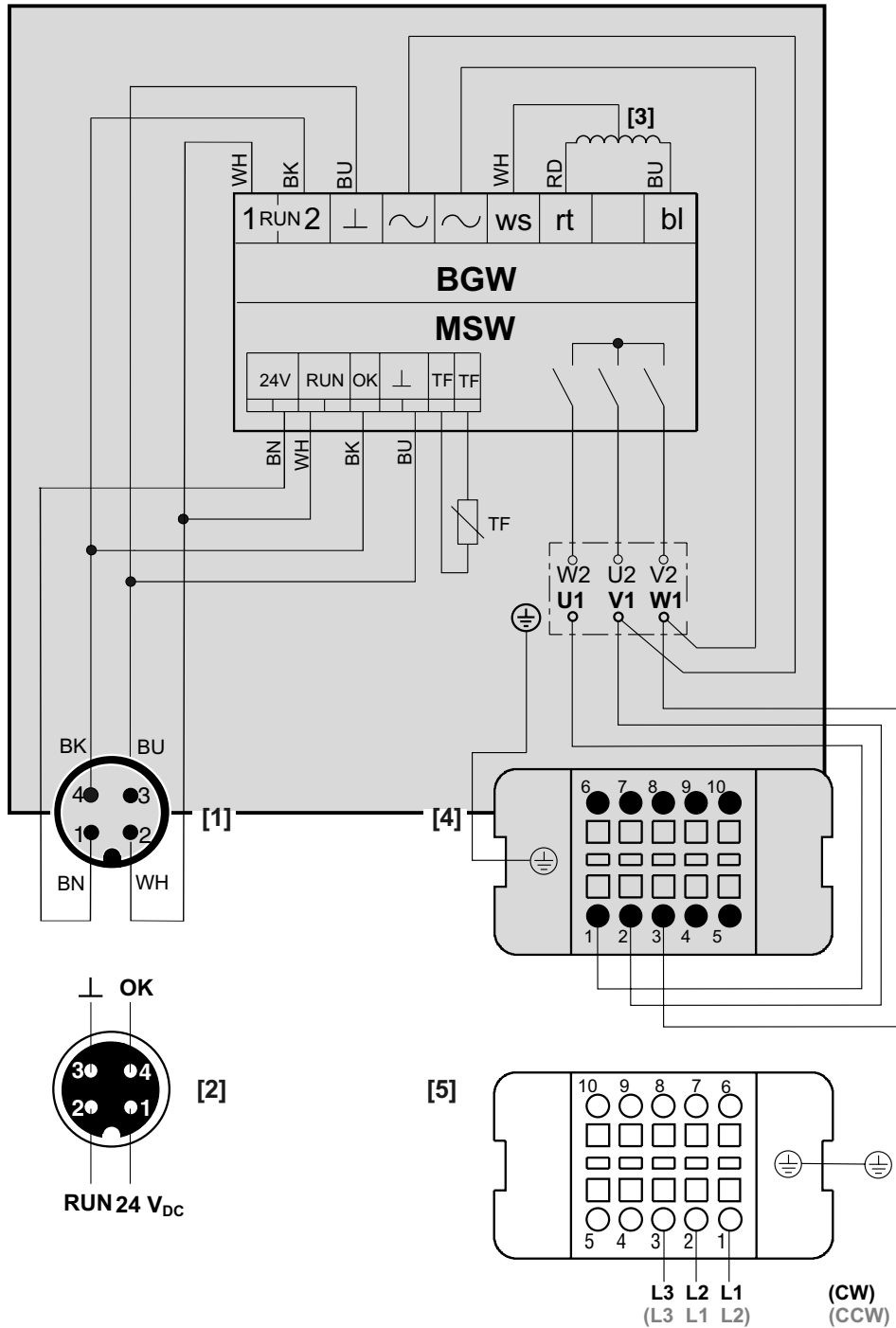
996112907

- [1] M12 connector AVS1 (standard coding)
- [2] M12 socket (standard coding)
- [3] Brake coil
- [4] ASA3 plug connector (plug)
- [5] Plug connector (socket)
- CW Clockwise rotation
- CCW Counterclockwise rotation

Wired at the factory



Brake voltage = supply voltage (phase-phase)



996168715

- [1] M12 connector AVS1 (standard coding)
- [2] M12 socket (standard coding)
- [3] Brake coil
- [4] ASA3 plug connector (plug)
- [5] Plug connector (socket)
- CW Clockwise rotation
- CCW Counterclockwise rotation

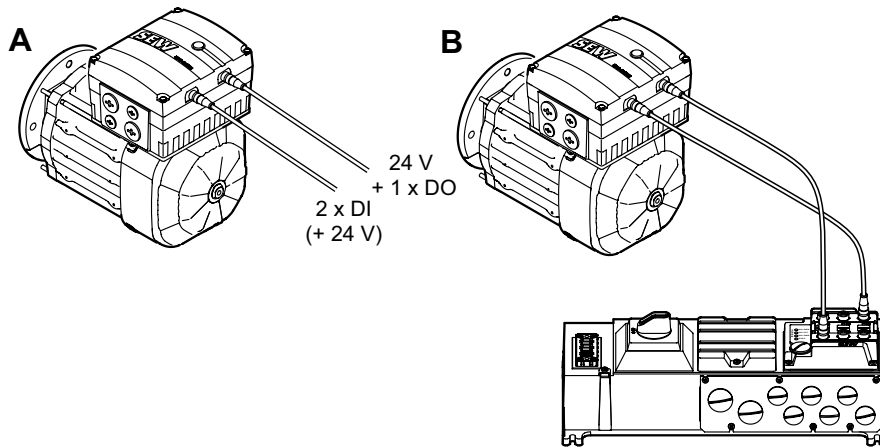
Wired at the factory



5.3 **MOVI-SWITCH®-2S/CB0 (binary control)**

5.3.1 Connection options for control signals (for field and motor mounting)

Design	A	B
Unit designation	DR../MSW/CB0	DR../MSW/CB0
Control signals	Binary signals (e.g. PLC)	MF../MQ.. fieldbus interface
Additional information	(see page 36)	"Fieldbus Interfaces/Field Distributors for Controlling MOVI-SWITCH®" manual

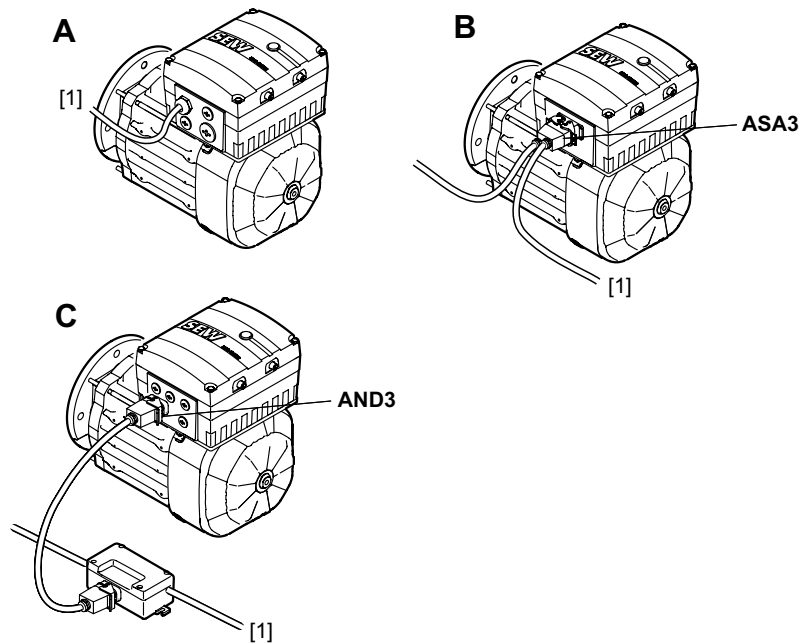


1070608395



5.3.2 Connection options for power (for field and motor mounting)

Design	A	B	C
Unit designation	DR../MSW/CB0	DR../MSW/CB0/ASA3	DR../MSW/CB0/AND3
Supply system connection	Terminals	ASA3 plug connector	AND3 plug connector
Additional information	(see page 37)	(see page 38)	(see page 39)



1070704779



5.3.3 Connection via field distributor

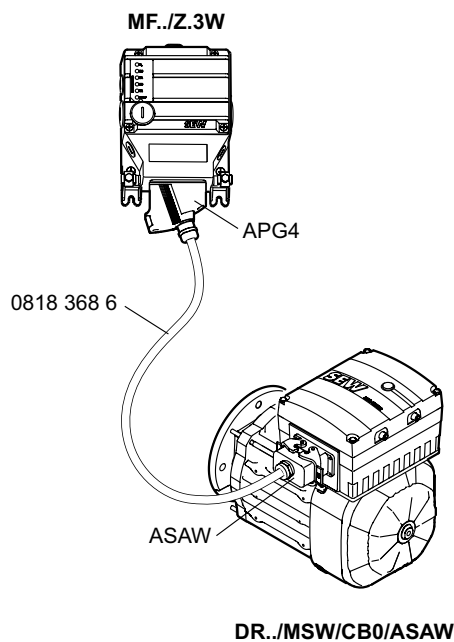
MF..Z.3W field distributors have been specifically designed for connecting MOVI-SWITCH®. They provide a simple means of connecting the drives to the supply system, the DC 24 V control voltage and the fieldbus.



NOTE

For detailed information about connecting the MOVI-SWITCH® drive via MF.../Z3.W field distributor, refer to the "Fieldbus Interfaces/Field Distributors for Controlling MOVI-SWITCH®" manual.

Example



1070704779

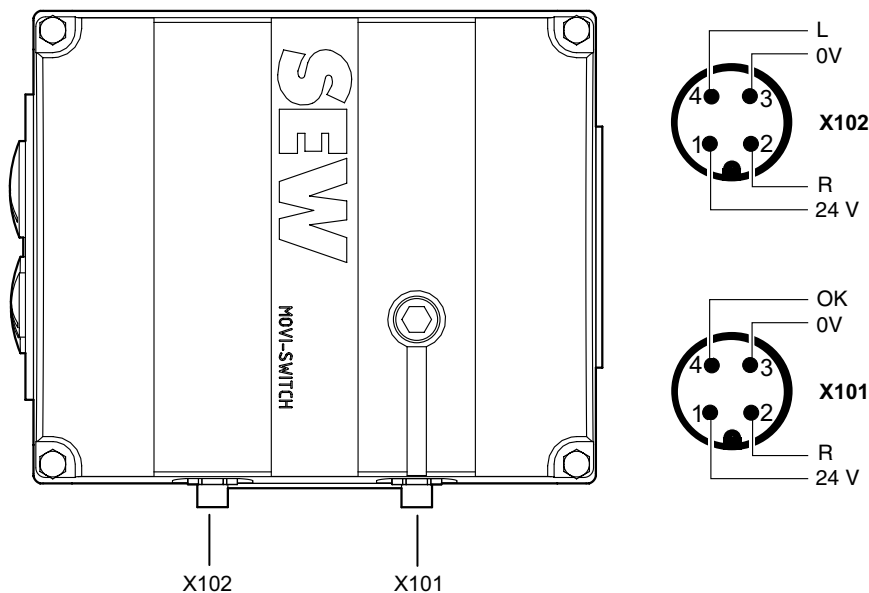


Electrical Installation

MOVI-SWITCH®-2S/CB0 (binary control)

5.3.4 Connector assignment for MOVI-SWITCH®-2S/CB0 control unit

The following illustration shows the assignment of the X102 and X101 plugs.



996559883

PIN	Assignment	Function
X102	1 24 V	Power supply voltage DC 24 V, jumpered with X101/1
	2 R	Control signal DC 24 V for CW rotation, high = start, low = stop (jumpered with X101/2)
	3 ⊥	Reference potential 0V24 (jumpered with X101/3)
	4 L	Control signal DC 24 V for CCW rotation, high = start, low = stop
X101 ¹⁾	1 24 V	Power supply voltage DC 24 V, (jumpered with X102/1)
	2 R	Control signal DC 24 V for CW rotation, high = start, low = stop (jumpered with X102/2)
	3 ⊥	Reference potential 0V24 (jumpered with X102/3)
	4 OK	Checkback signal Ready for operation, DC 24 V, high = ready for operation

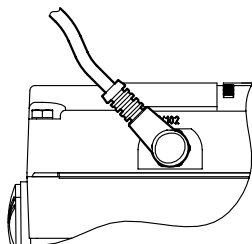
1) Plug is compatible with M12 plug of MOVI-SWITCH® design 1E



NOTE

If angular plug connectors are used for the connection for X102 and X101, they can only be mounted in the position shown in the following figure!

For this reason, it is recommended using straight plug connectors!

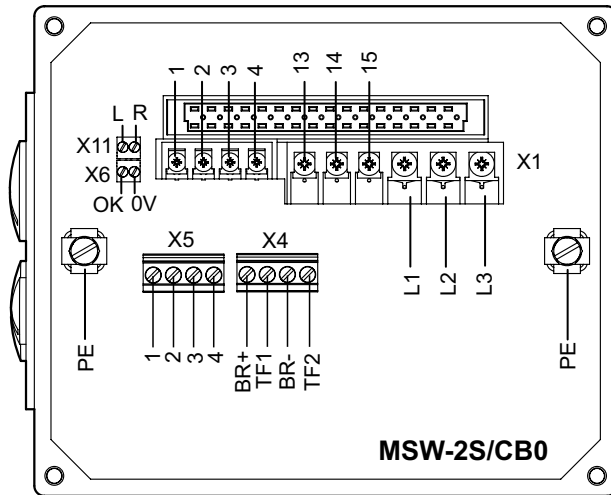


996605323



5.3.5 Terminal assignment of terminal box

The following figure shows the assignment of MOVI-SWITCH®-2S/CB0 terminals.



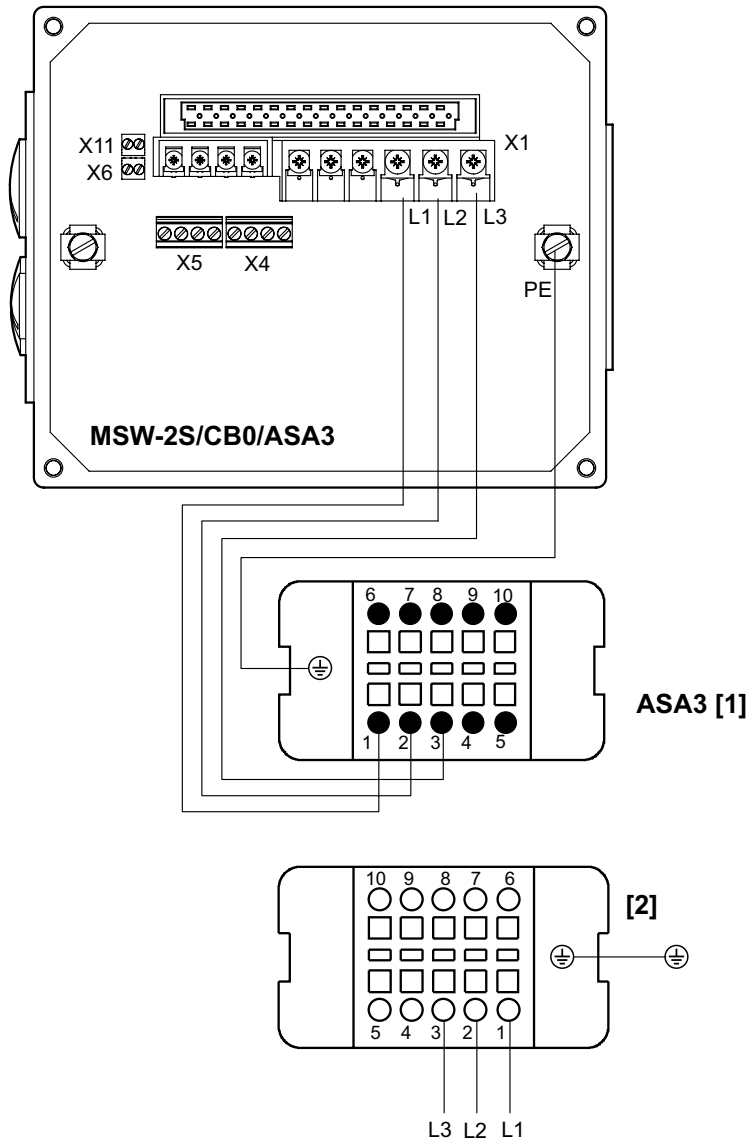
996676363

Terminal		Function
X1	L1	Supply system terminal
	L2	Supply system terminal
	L3	Supply system terminal
	13	Brake connection (red)
	14	Brake connection (white)
	15	Brake connection (blue)
	1	24 V alternate 24 V supply (reserved for plug connector variants)
	2	L CCW/stop (reserved for plug connector variants)
X4	3	0V GND (reserved for plug connector variants)
	4	R CW/stop (reserved for plug connector variants)
	BR+	for internal wiring
	TF1	for internal wiring
X5	BR-	for internal wiring
	TF2	for internal wiring
	1	for internal wiring
	2	for internal wiring
X6	3	for internal wiring
	4	for internal wiring
X11	OK	for internal wiring
	0V	for internal wiring
X11	L	for internal wiring
	R	for internal wiring



5.3.6 Assignment of ASA3 plug connectors

The following illustration shows the assignment of the optional ASA3 plug connector.



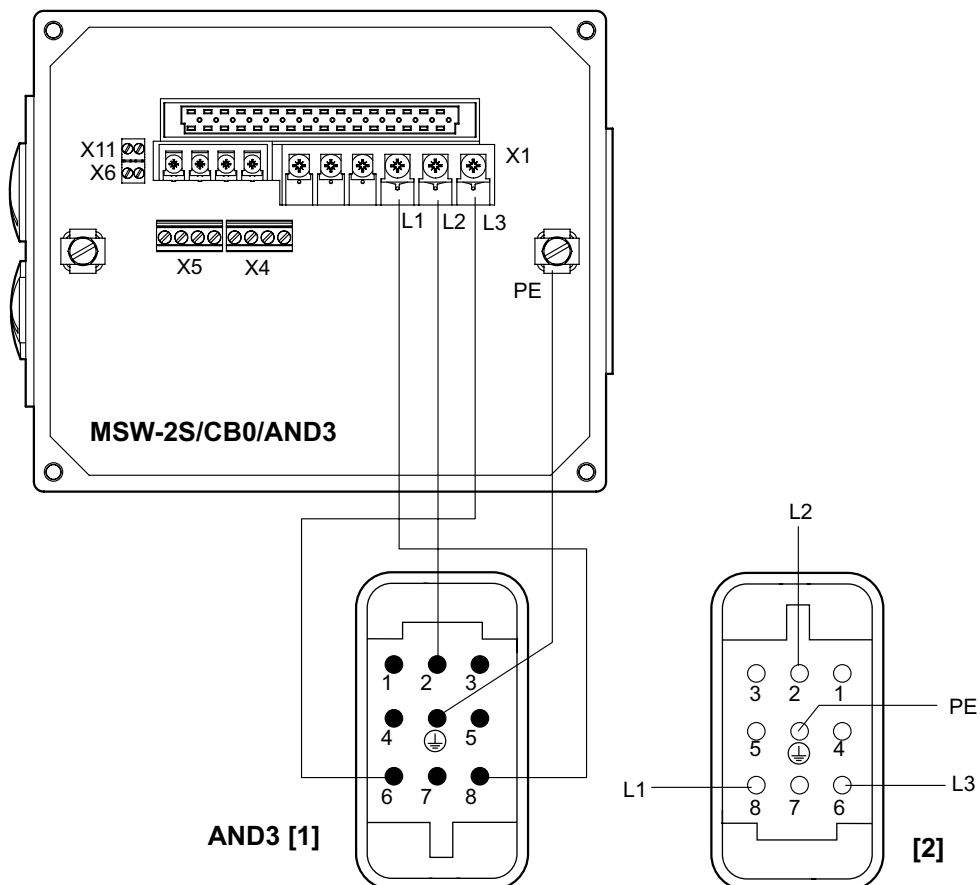
- [1] ASA3 plug connector (plug)
- [2] Plug connector (socket)

997311499



5.3.7 Assignment of AND3 plug connectors

The following illustration shows the assignment of the optional AND3 plug connector.



997383947

- [1] Plug connector AND3 (plug)
- [2] Plug connector (socket)

5.3.8 Connection between MOVI-SWITCH® and motor when mounting close to the motor

If the MOVI-SWITCH®-2S control unit with option P22 is mounted close to the motor, it is connected to the motor with a pre-fabricated cable.

The following designs are possible on the MOVI-SWITCH® side:

- A: MSW-2S-07A/C.0/P22A/RI2A/**APG4**
 MSW-2S-07A/C.0/**CC15**/P22A/RI2A/**APG4** (with line protection)
- B: MSW-2S-07A/C.0/P22A/RI2A/**ALA4**
 MSW-2S-07A/C.0/**CC15**/P22A/RI2A/**ALA4** (with line protection)

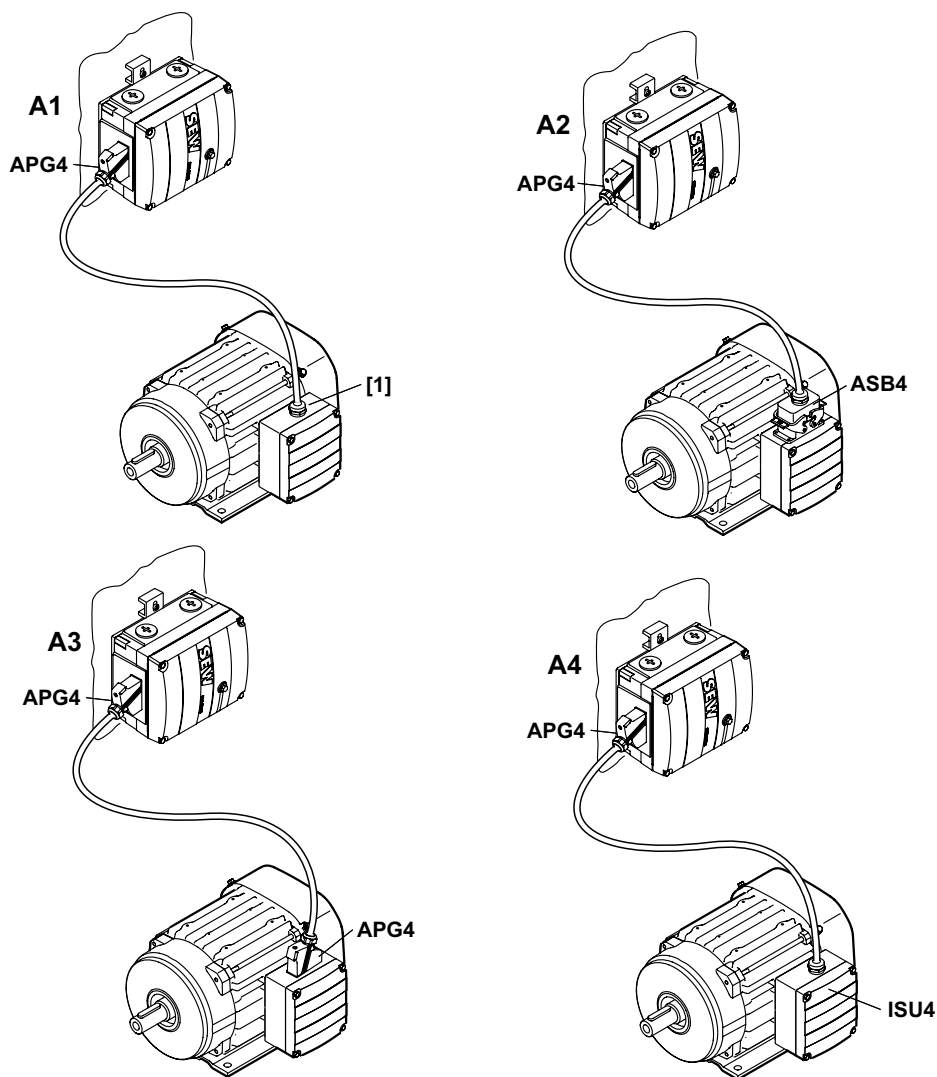


Electrical Installation

MOVI-SWITCH®-2S/CB0 (binary control)

The APG4 design results in the following connection options to the motor, depending upon the hybrid cable used:

Design	A1	A2	A3	A4
MOVI-SWITCH®	APG4	APG4	APG4	APG4
Motor	Cable gland / terminals	ASB4	APG4	ISU4
Hybrid cable	0817 887 9	0817 889 5	0186 741 5	0593 278 5 \curvearrowright (DR.63) 0593 755 8 \curvearrowright (DR.71-DR.112)
Additional information	(see page 42)			



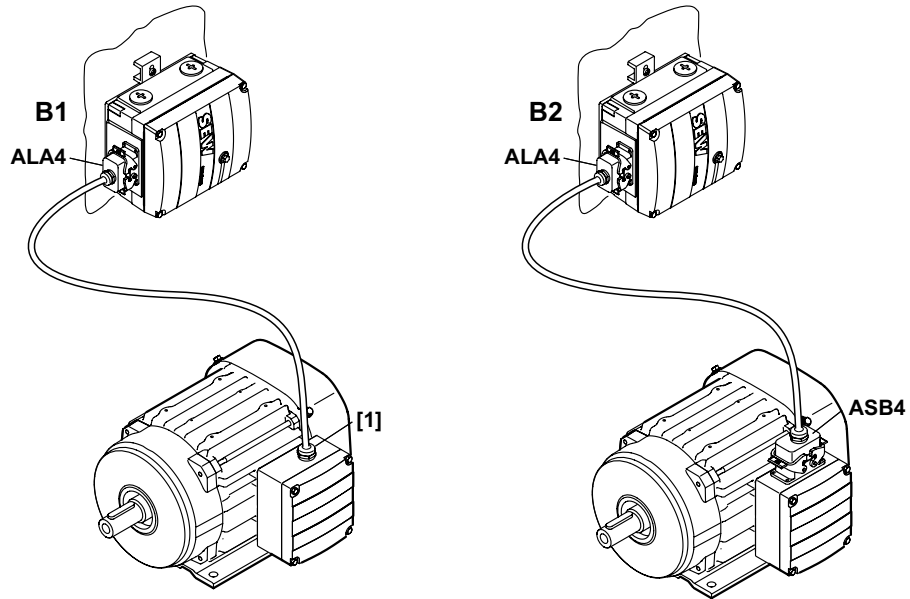
1070941451

[1] Connection via cable gland



The ALA4 design results in the following connection options to the motor, dependent upon the hybrid cable used:

Design	B1	B2
MOVI-SWITCH®	ALA4	ALA4
Motor	Cable gland / terminals	ASB4
Hybrid cable	0817 886 0	0817 888 7
Additional information	(see page 42)	

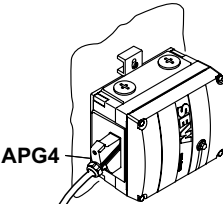
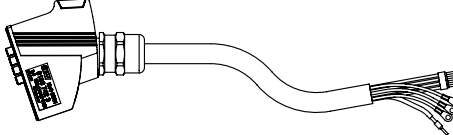
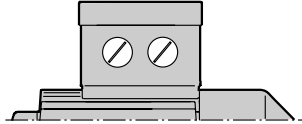
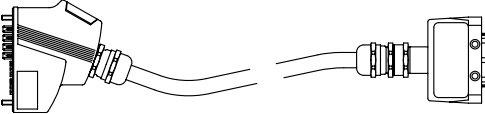
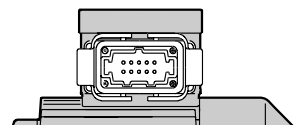
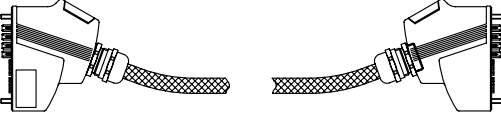
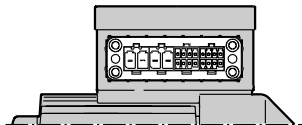
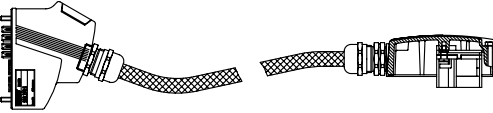
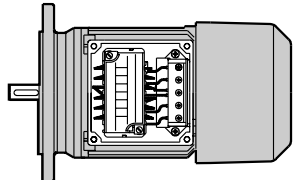
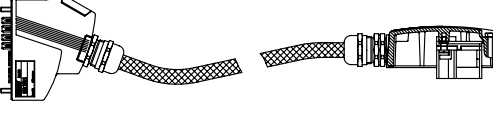
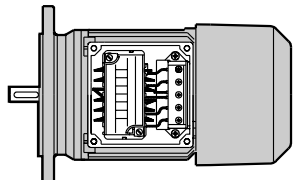
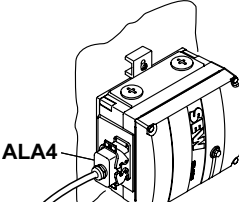
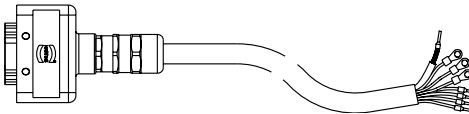
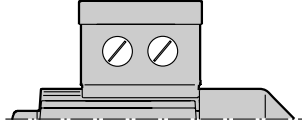
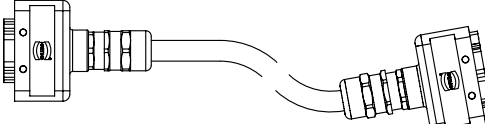
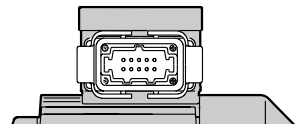


1071000331

[1] Connection via cable gland



5.3.9 Hybrid cable

MOVI-SWITCH®	Design	Hybrid cable	Drive
MSW-2S../C.0/P22A/RI2A/ APG4 MSW-2S../C.0/CC15/P22A/ RI2A/APG4¹⁾ 	A1	Part number: 0817 887 9 	AC motors with cable gland 
	A2	Part number: 0817 889 5 	AC motors with ASB4 plug connector 
	A3	Part number: 0 186 741 5 	AC motors with APG4 plug connector 
	A4	Part number: 0 593 278 5 (人) 	AC motors with plug connector ISU4 Size DR.63 
	A4	Part number: 0 593 755 8 (人) 	AC motors with plug connector ISU4 Size DR.71 - DR.112 
MSW-2S../C.0/P22A/RI2A/ ALA4 MSW-2S../C.0/CC15/P22A/ RI2A/ALA4¹⁾ 	B1	Part number: 0817 886 0 	AC motors with cable gland 
	B2	Part number: 0817 888 7 	AC motors with ASB4 plug connector 

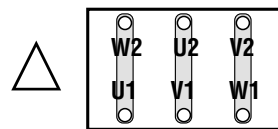
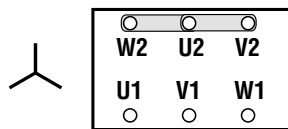
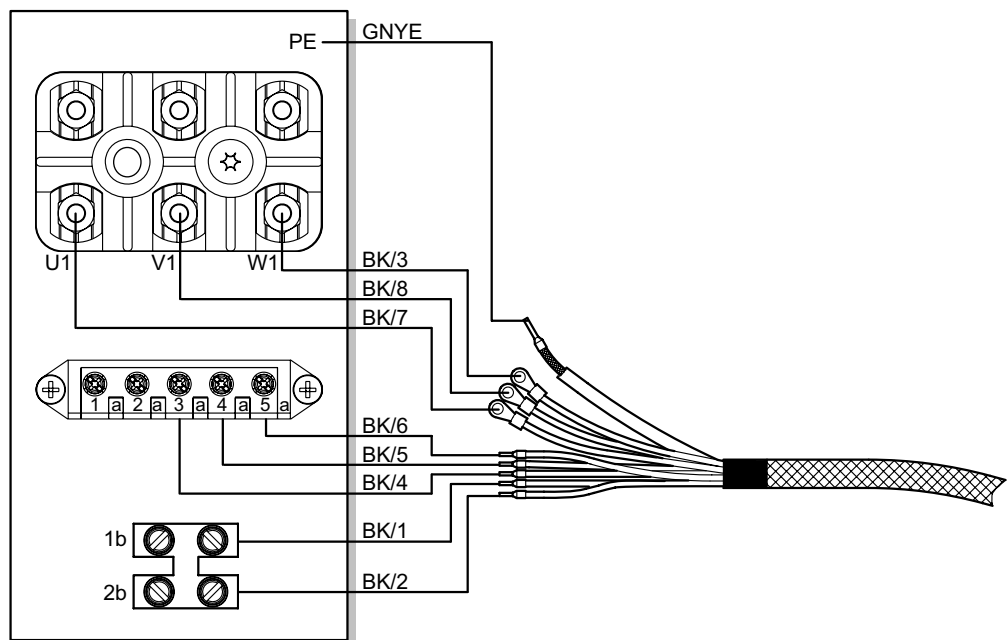
1) with line protection



5.3.10 Hybrid cable connection

The following tables shows the conductor assignment in hybrid cables with part no. 0817 887 9 and 0817 886 0 and the corresponding motor terminals:

Motor terminal	Wire color/hybrid cable designation
U1	Black/7
V1	Black/8
W1	Black/3
3a	Black/4
4a	Black/5
5a	Black/6
1b	Black / 1 (shielded)
2b	Black / 2 (shielded)
PE terminal	Green / yellow + shield end (internal shield)



1008298379



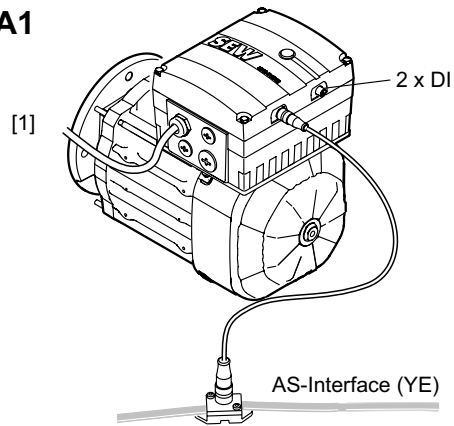
5.4 MOVI-SWITCH®-2S/CK0 (control with AS-Interface)

5.4.1 Connection options for supply system and control

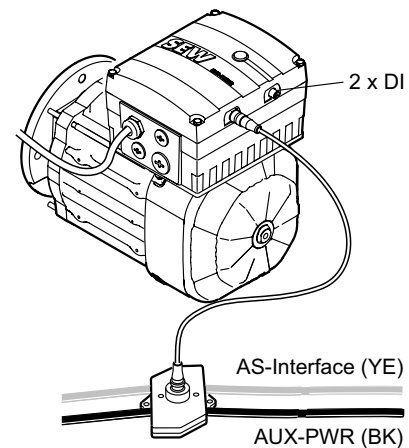
Design A: DR../MSW/CK0

Design	A1	A2
Unit designation	DR../MSW/CK0	DR../MSW/CK0/RA2A
Switch S1	0	1
AS-Interface connection	Yellow AS-Interface cable via connector X102	Yellow AS-Interface cable via connector X102
24 V supply	Yellow AS-Interface cable via connector X102	Black AS-Interface cable via connector X102
Supply system connection	Terminals	Terminals
Additional information	(see page 47), (see page 46)	

A1



A2



1071478667

[1] Supply system



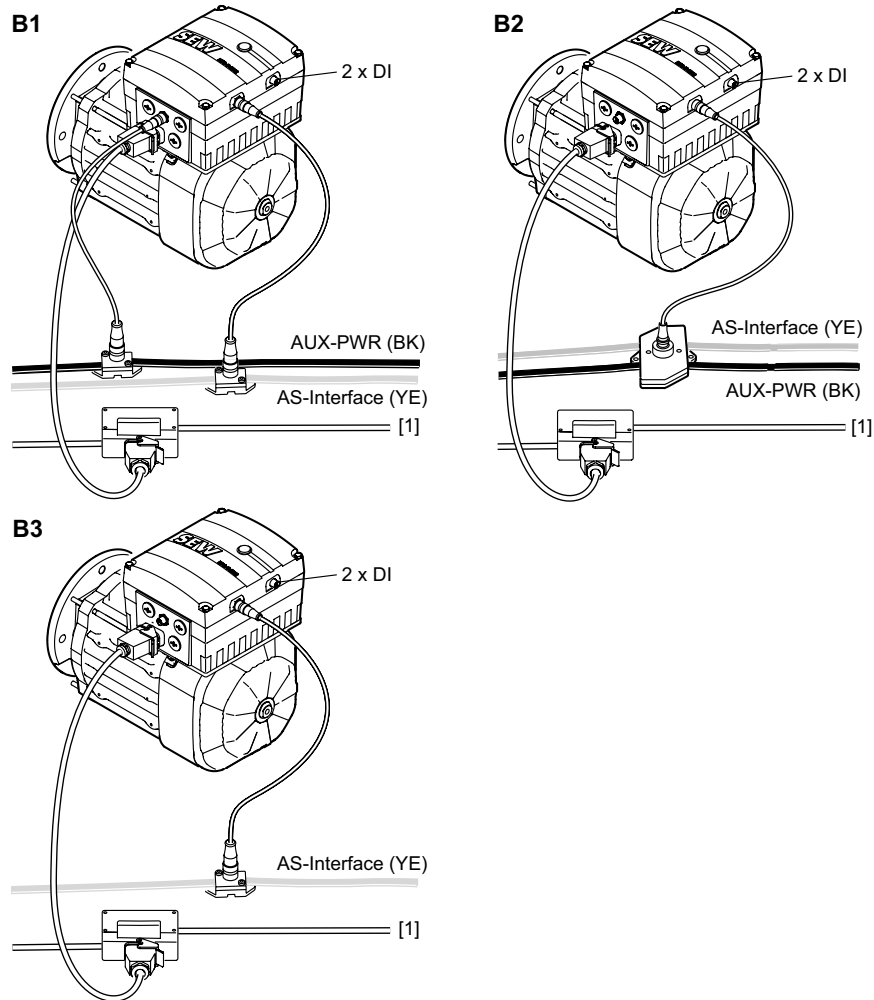
NOTE

The designs listed above are also valid for mounting the MOVI-SWITCH® terminal box with option P22A close to the motor.



Design B: DR../MSW/CK0/AND3/AVS0

Design	B1	B2	B3
Unit designation	DR../MSW/CK0/AND3/AVS0	DR../MSW/CK0/AND3/AVS0	DR../MSW/CK0/AND3/AVS0
Switch S1	1	1	0
AS-Interface connection	Yellow AS-Interface cable via connector X102	Yellow AS-Interface cable via connector X102	Yellow AS-Interface cable via connector X102
24 V supply	Black AS-Interface cable via connector AVS0 (terminal box)	Black AS-Interface cable via connector X102	Yellow AS-Interface cable via connector X102
Supply system connection	AND3 plug connector	AND3 plug connector	AND3 plug connector
Additional information	(see page 48), (see page 46)		



1071551755

[1] Supply system

	<p>NOTE</p> <p>The designs listed above are also valid for mounting the MOVI-SWITCH® terminal box with option P22A close to the motor.</p>
--	---

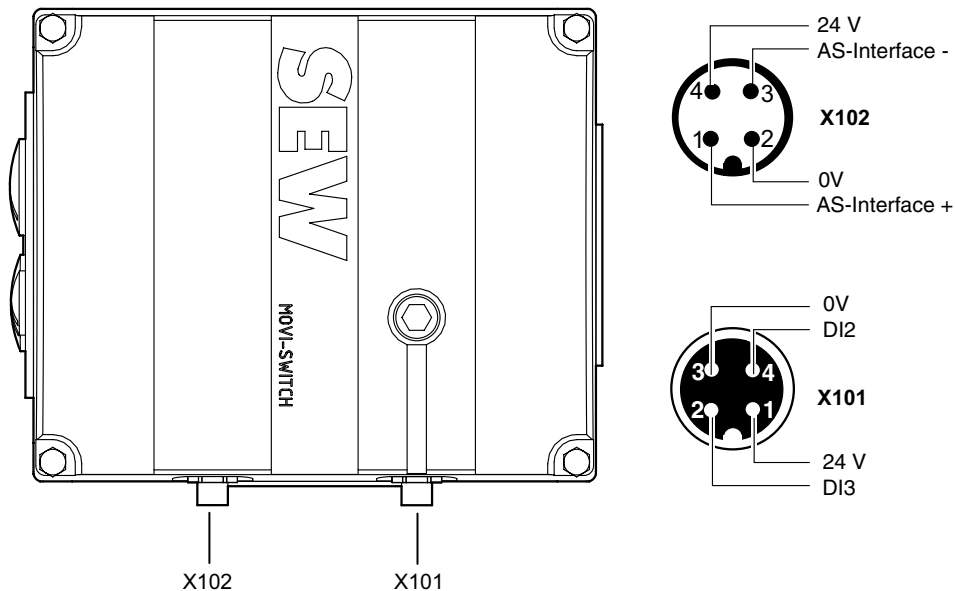


Electrical Installation

MOVI-SWITCH®-2S/CK0 (control with AS-Interface)

5.4.2 Connector/socket assignment for MOVI-SWITCH®-2S/CK0 control unit

The following illustration shows the assignment of the plug X102 and X101.



1009084171

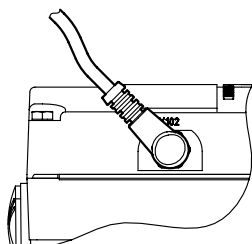
PIN	Assignment	Function
X102	1	AS-Interface + AS-Interface data cable + Voltage supply for MSW, if switch AUX-PWR (S1) = 0
	2	⊥ Reference potential 0V24
	3	AS-Interface - AS-Interface data cable - Voltage supply for MSW, if switch AUX-PWR (S1) = 0
	4	24 V DC 24 V power supply, if switch AUX-PWR (S1) = 1 (as an alternative to the power supply via AS-Interface data cable)
X101	1	24 V DC 24 V power supply for sensors
	2	DI3 Control signal of sensor 2
	3	⊥ 0V24 reference potential for sensors
	4	DI2 Control signal of sensor 1



NOTE

If angular plug connectors are used for the connection for X102 and X101, they can only be mounted in the position shown in the following figure!

For this reason, it is recommended using straight plug connectors!

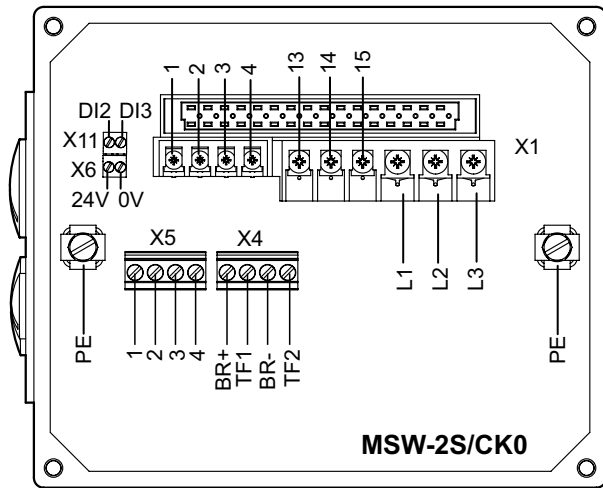


996605323



5.4.3 Terminal assignment

The following figure shows the assignment of MOVI-SWITCH®-2S/CK0 terminals.

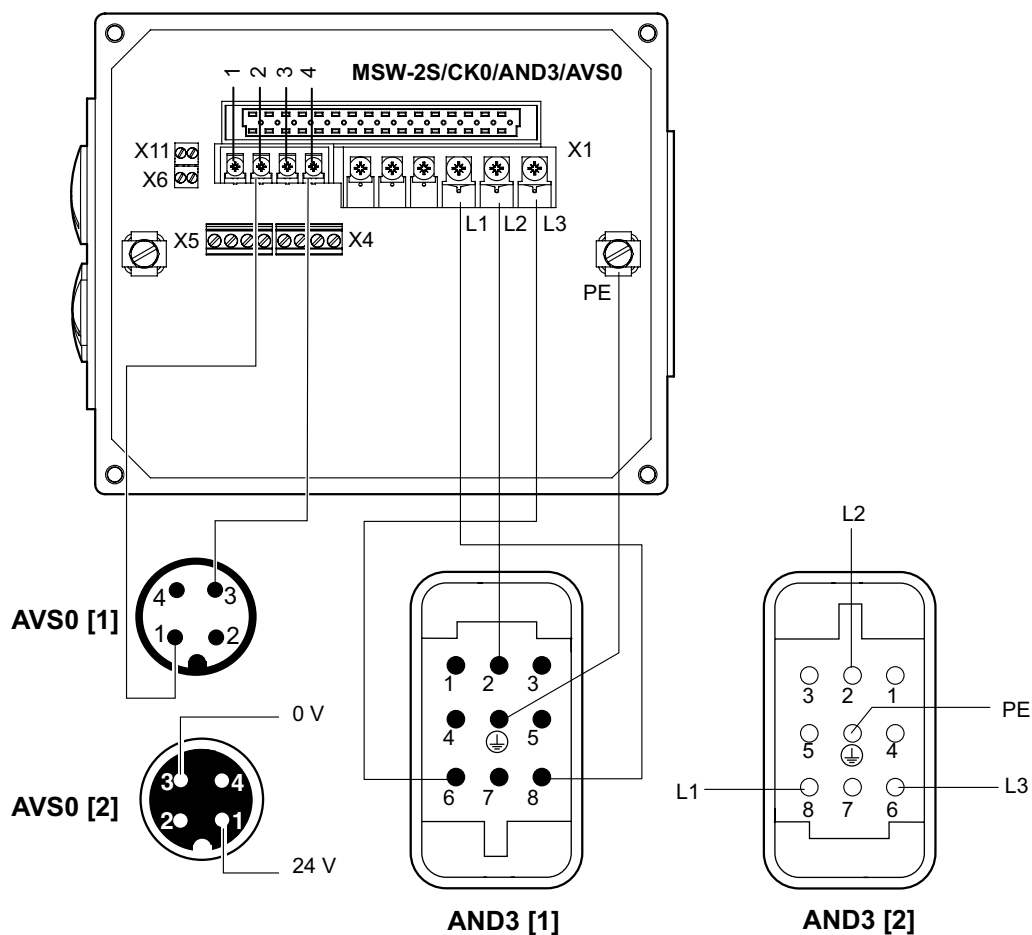


1009137035

Terminal	Function	
X1	L1	Supply system terminal
	L2	Supply system terminal
	L3	Supply system terminal
	13	Brake connection
	14	Brake connection
	15	Brake connection
	1	AS-Interface + AS-Interface data cable + (reserved for plug connector variants)
	2	24 V: DC 24 V power supply (reserved for plug connector variants)
	3	AS-Interface - AS-Interface data cable - (reserved for plug connector variants)
4	0V24 reference potential 0V24 (reserved for plug connector variants)	
X4	BR+	for internal wiring
	TF1	for internal wiring
	BR-	for internal wiring
	TF2	for internal wiring
X5	1	for internal wiring
	2	for internal wiring
	3	for internal wiring
	4	for internal wiring
X6	24 V	for internal wiring
	0 V	for internal wiring
X11	DI2	for internal wiring
	DI3	for internal wiring



5.4.4 Variant with AND3 + AVS0



1009420939

- [1] AVS0 plug connector (plug, standard coding)
- [2] Plug connector (socket, standard coding)
- [3] Plug connector AND3 (plug)
- [4] Plug connector (socket)

5.4.5 Connection between MOVI-SWITCH® and motor when mounted close to the motor

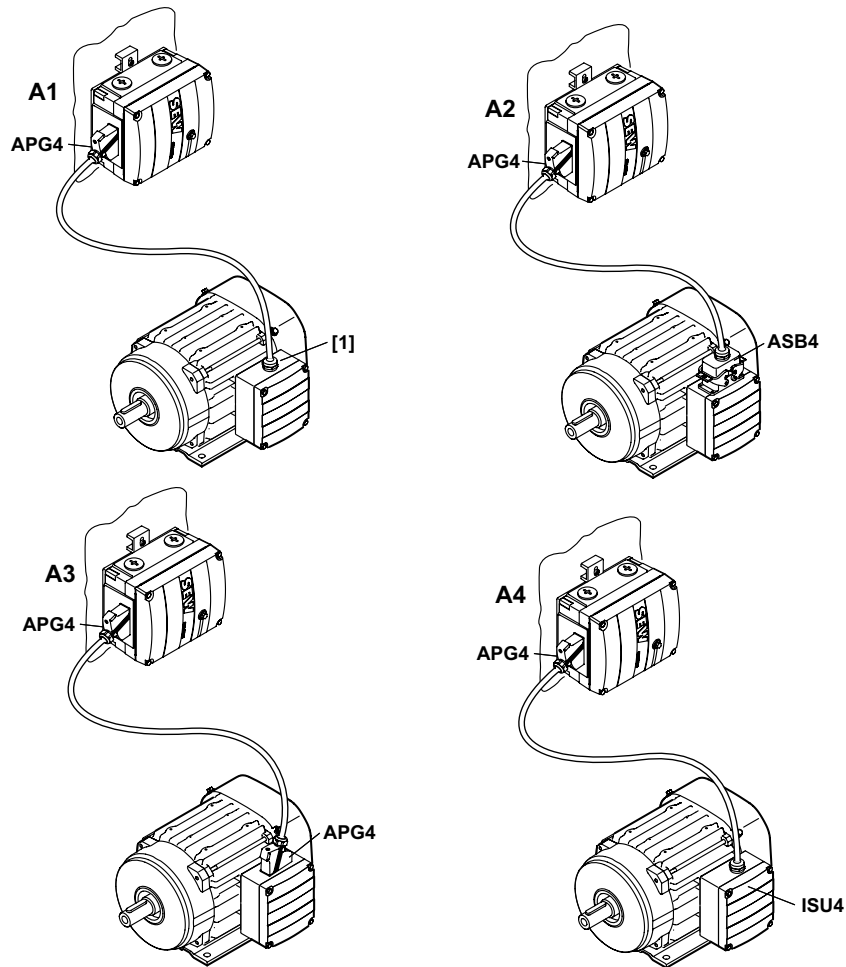
If the MOVI-SWITCH®-2S control unit with option P22 is mounted close to the motor, it is connected to the motor with a pre-fabricated cable. The following designs are possible on the MOVI-SWITCH® side:

- A: MSW-2S-07A/C.0/P22A/RI2A/**APG4**
MSW-2S-07A/C.0/**CC15**/P22A/RI2A/**APG4** (with line protection)
- B: MSW-2S-07A/C.0/P22A/RI2A/**ALA4**
MSW-2S-07A/C.0/**CC15**/P22A/RI2A/**ALA4** (with line protection)



The APG4 design results in the following connection options to the motor, dependent upon the hybrid cable used:

Design	A1	A2	A3	A4
MOVI-SWITCH®	APG4	APG4	APG4	APG4
Motor	Cable gland / terminals	ASB4	APG4	ISU4
Hybrid cable	0817 887 9	0817 889 5	0186 741 5	0593 278 5 \curvearrowright (DR.63) 0593 755 8 \curvearrowright (DR.71-DR.112)
Additional information	(see page 51)			



1070941451

[1] Connection via cable gland

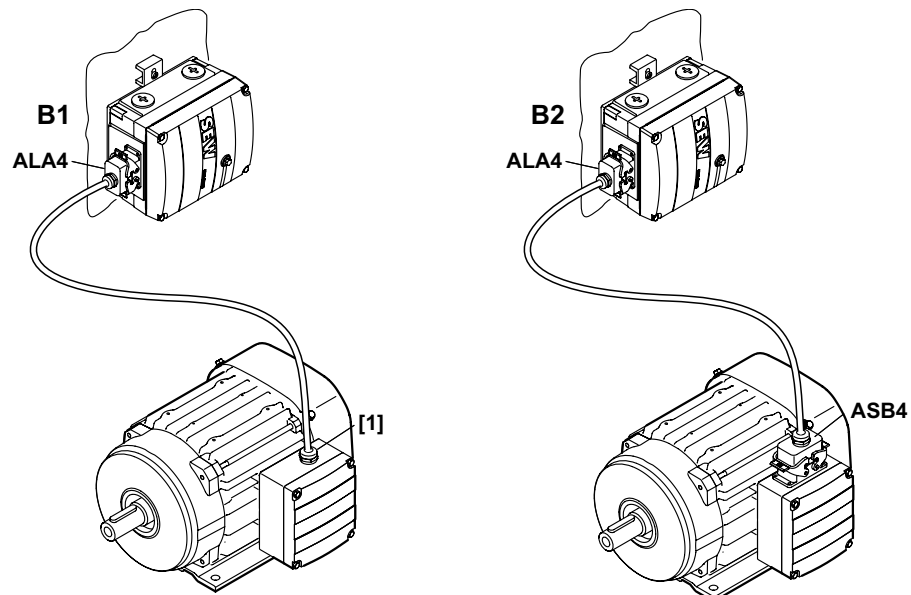


Electrical Installation

MOVI-SWITCH®-2S/CK0 (control with AS-Interface)

The ALA4 design results in the following connection options to the motor, dependent upon the hybrid cable used:

Design	B1	B2
MOVI-SWITCH®	ALA4	ALA4
Motor	Cable gland / terminals	ASB4
Hybrid cable	0817 886 0	0817 888 7
Additional information	(see page 51)	

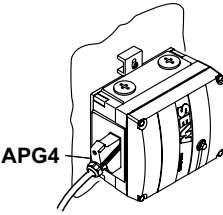
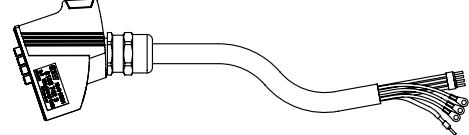
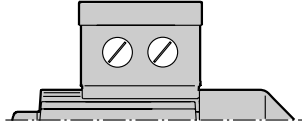
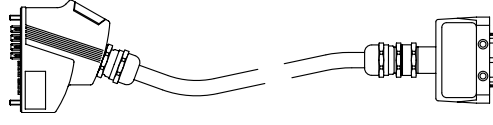
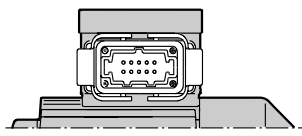
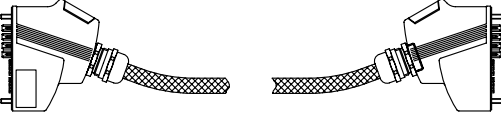
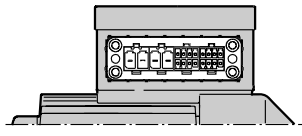
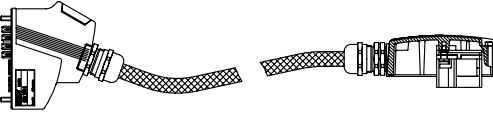
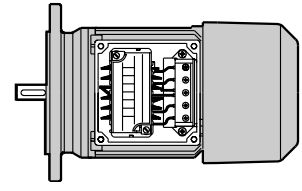
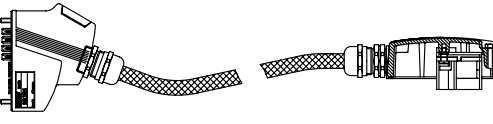
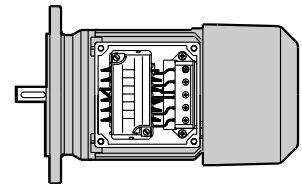
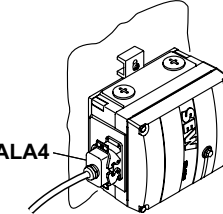
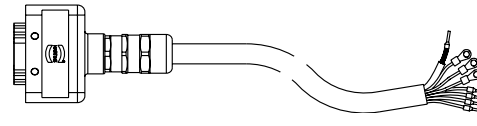
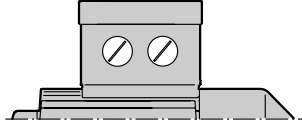
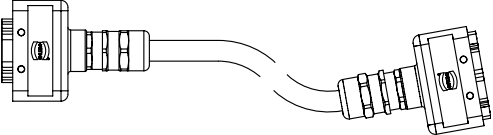
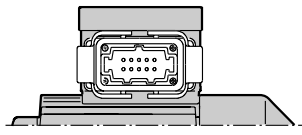


1071000331

[1] Connection via cable gland



5.4.6 Hybrid cable

MOVI-SWITCH®	Design	Hybrid cable	Drive
<p>MSW-2S../C.0/P22A/RI2A/ APG4 MSW-2S../C.0/CC15/P22A/ RI2A/APG4¹⁾</p> 	A1	<p>Part number: 0817 887 9</p> 	<p>AC motors with cable gland</p> 
	A2	<p>Part number: 0817 889 5</p> 	<p>AC motors with ASB4 plug connector</p> 
	A3	<p>Part number: 0 186 741 5</p> 	<p>AC motors with APG4 plug connector</p> 
	A4	<p>Part number: 0 593 278 5 (人)</p> 	<p>AC motors with plug connector ISU4 Size DR.63</p> 
	A4	<p>Part number: 0 593 755 8 (人)</p> 	<p>AC motors with plug connector ISU4 Size DR.71 - DR.112</p> 
<p>MSW-2S../C.0/P22A/RI2A/ ALA4 MSW-2S../C.0/CC15/P22A/ RI2A/ALA4¹⁾</p> 	B1	<p>Part number: 0817 886 0</p> 	<p>AC motors with cable gland</p> 
	B2	<p>Part number: 0817 888 7</p> 	<p>AC motors with ASB4 plug connector</p> 

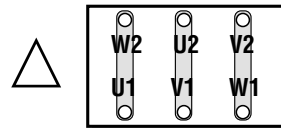
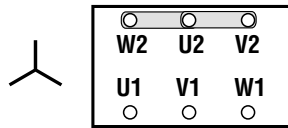
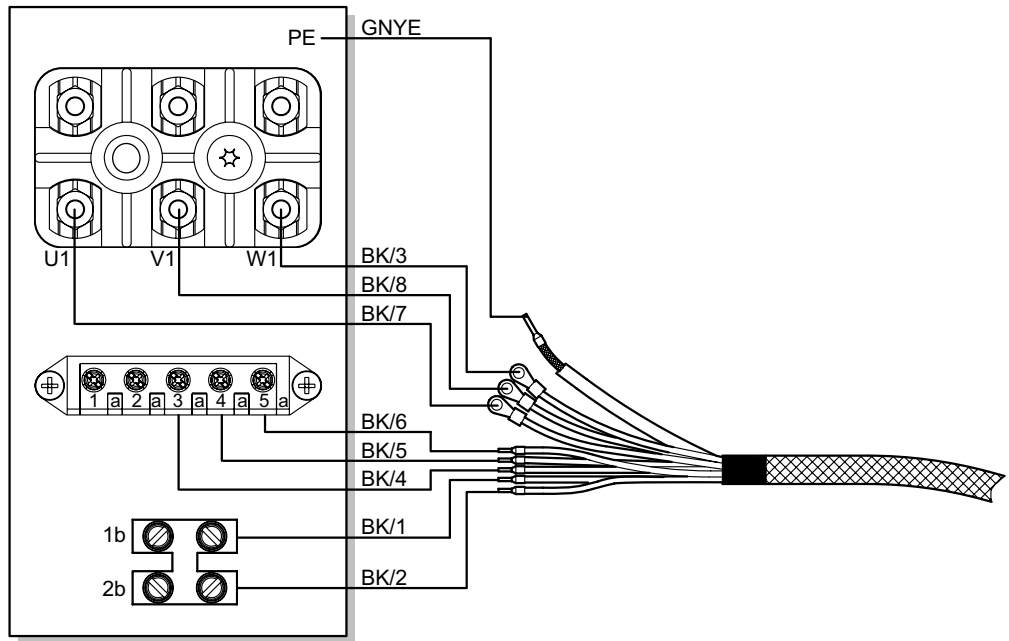
1) with line protection



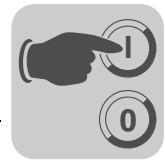
5.4.7 Hybrid cable connection

The following tables shows the conductor assignment in hybrid cables with part no. 0817 887 9 and 0817 886 0:

Motor terminal	Core color / designation
U1	Black/7
V1	Black/8
W1	Black/3
3a	Black/4
4a	Black/5
5a	Black/6
1b	Black / 1 (shielded)
2b	Black / 2 (shielded)
PE terminal	Green / yellow + shield end (internal shield)



1008298379



6 Startup


6.1 Startup notes (all MOVI-SWITCH® variants)

Before startup, make sure that

- the drive is undamaged and not blocked,
- all connections have been established correctly,
- the direction of rotation of the motor/gearmotor is correct,
- and all protective covers have been installed correctly.

During startup, make sure that

- the motor is running correctly (no speed fluctuations, no loud noises, etc.).

	STOP!
	On brake motors with a self-reengaging manual brake release, the hand lever must be removed after startup! A bracket is provided for storing the lever on the outside of the motor.



6.2 Starting up MOVI-SWITCH®-1E

6.2.1 Starting the motor

	! HAZARD!
	<p>Voltage is always present in the terminal box (even when the motor is at a standstill). Severe or fatal injuries from electric shock.</p> <ul style="list-style-type: none"> • Before opening the terminal box, de-energize it and safeguard it against unintentional power-up.

1. Check the connection of the MOVI-SWITCH® drive.
2. Connect the supply system voltage.
3. The drive is switched on/off using the control signal "RUN" if the supply voltage is connected permanently (terminals U1, V1, W1).

6.2.2 Monitoring

- The power semiconductors of the motor switch and motor winding are subject to thermal monitoring.
- If an overload occurs, the MOVI-SWITCH® drive switches off automatically.
- The monitoring status is indicated by the 24 V output signal "OK".
- The "OK" output signal must be evaluated by a higher-level controller (e.g. PLC).

	! HAZARD!
	<p>If signal "RUN" = "1", there is a risk that, after the drive has been switched off due to overtemperature, the drive might restart automatically after cooling down. Severe or fatal injuries.</p> <ul style="list-style-type: none"> • If automatic restarting could pose a risk to persons or components, you must implement an external restart lock.

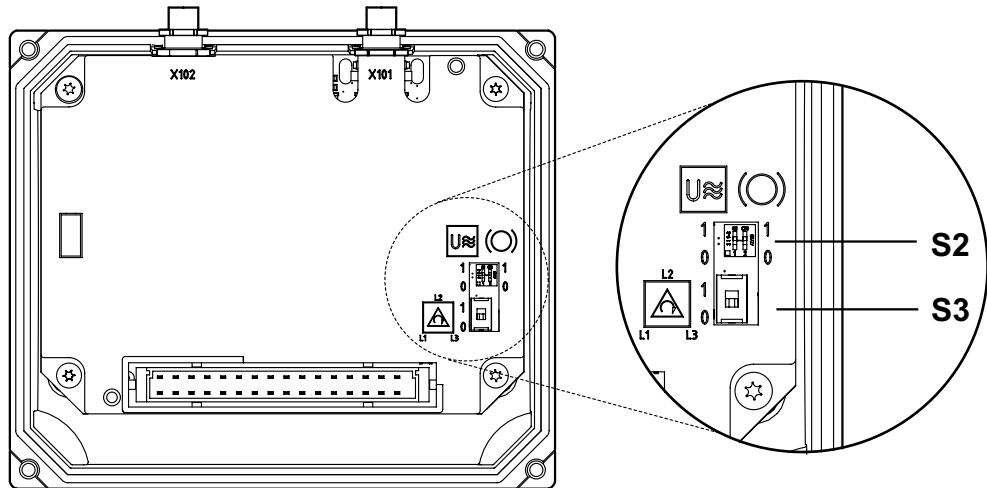
- The MOVI-SWITCH® module is protected against overvoltages.



6.3 Starting up MOVI-SWITCH®-2S/CB0 (binary control)




6.3.1 Description of DIP switches

MOVI-SWITCH®-2S/CB0 has 2 DIP switches (S2 and S3). The functions are listed in the following table.



1013697931

Description of the DIP switches

Status	 S3	 S2/1	 S2/2
1	Monitoring of phase sequence is activated	Monitoring of supply and phase fault is activate	Reserved for special designs
0	Monitoring of phase sequence is deactivated	Monitoring of supply and phase fault deactivated	

DIP switches S3

DIP switch S3 is used for monitoring the phase sequence

- S3 = 1:** The motor of direction is determined by the control terminals, i.e. it is independent of the phase sequence of the power supply.
- S3 = 0:** The motor of direction is determined by the phase sequence of the power supply and the control terminals. Changing the phases changes the direction of rotation.



Startup

Starting up MOVI-SWITCH®-2S/CB0 (binary control)

DIP switch S2/1

DIP switch S2/1 is used to set the supply system and phase failure monitoring function.

S2/1 = 1: Supply system and phase failure monitoring is active. The "OK" output signal must be evaluated by a higher-level controller (e.g. PLC).

	! HAZARD!
	<p>Motor restarts automatically when supply system voltage is present again.</p> <p>Severe or fatal injuries.</p> <ul style="list-style-type: none"> • If automatic restarting could pose a risk to persons or components, you must implement an external restart lock.

S2/1 = 0: Supply system and phase failure monitoring is not active. The MOVI-SWITCH® drive does not distinguish between supply system or phase failure.

6.3.2 Starting the motor

	! HAZARD!
	<p>Voltage is always present in the terminal box (even when the motor is at a standstill).</p> <p>Severe or fatal injuries from electric shock.</p> <ul style="list-style-type: none"> • Before opening the terminal box, de-energize it and safeguard it against unintentional power-up.

1. Check the connection of the MOVI-SWITCH® drive.
2. Connect the supply system voltage.
3. The drive is switched on/off using the control signals "CW" or "CCW" if the supply voltage is connected permanently (terminals L1, L2, L3).

6.3.3 Temperature monitoring

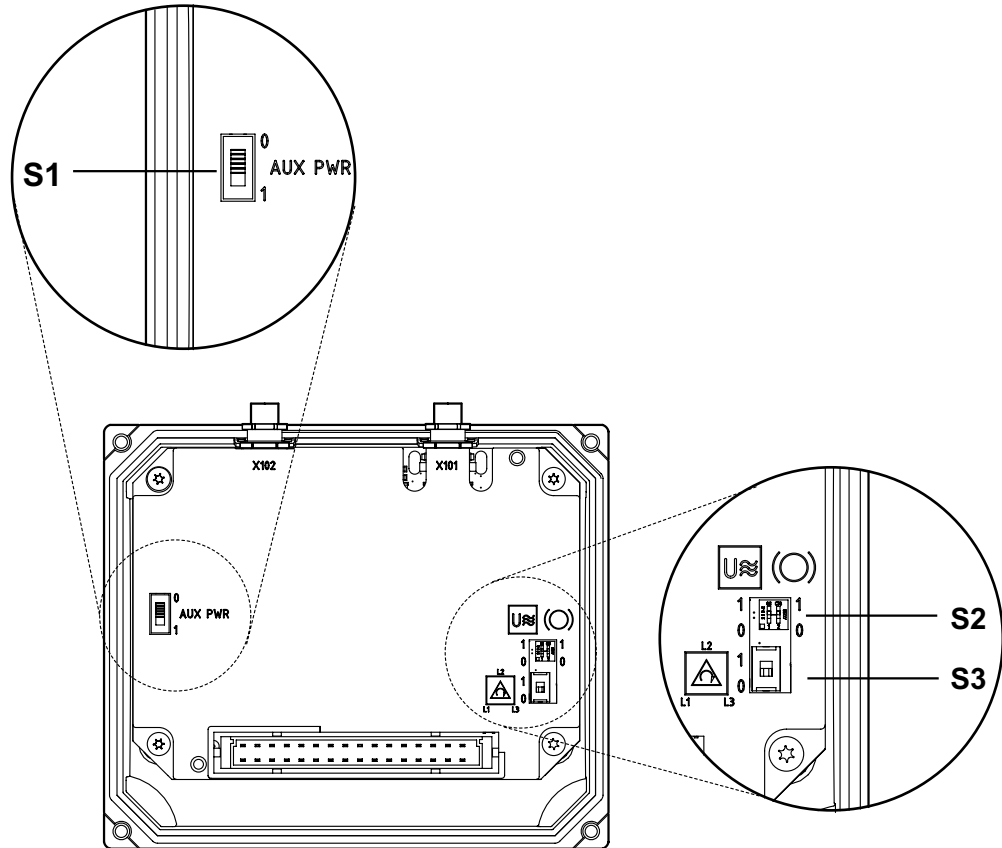
- The temperature of the motor winding is monitored.
- If an overload occurs, the MOVI-SWITCH® drive switches off automatically.
- The monitoring status is indicated by the 24 V output signal "OK".
- The "OK" output signal must be evaluated by a higher-level controller (e.g. PLC).



6.4 Starting up MOVI-SWITCH®-2S/CK0 (control via AS-Interface)

6.4.1 Description of DIP switches

MOVI-SWITCH®-2S-CK0 has 3 DIP switches (S1, S2 and S3). The functions are listed in the following tables.






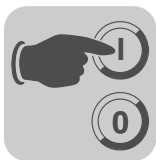
1014376715

AUX-PWR (S1) switch:

Status	AUX-PWR (S1)
0	24 V supply via AS-Interface data cable
1	24 V supply via AUX-PWR (X102 pin 4 + pin 2)

DIP switches S2 and S3:

Status	 S3	 S2/1	 S2/2
1	Monitoring of phase sequence is activated	Monitoring of supply and phase fault is activate	Reserved for special designs
0	Monitoring of phase sequence is deactivated	Monitoring of supply and phase fault deactivated	



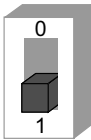
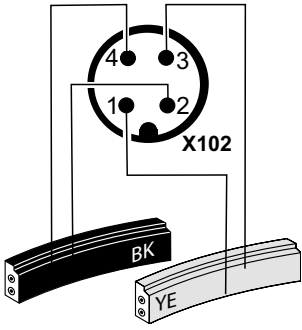
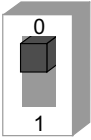
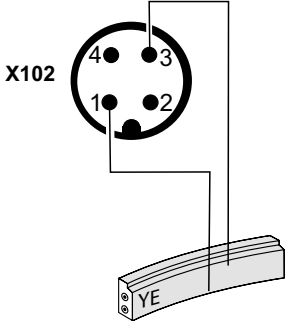
Startup

Starting up MOVI-SWITCH®-2S/CK0 (control via AS-Interface)

DIP switch S1

DIP switch S1 sets the type of 24 V power supply.

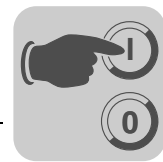
Please observe the notes in chapter "Connection options for supply and control" (see page 44).

Switch	24 V supply
<p>AUX-PWR (S1) switch = 1</p>  <p>AUX-PWR (S1)</p> <p>1014453131</p>	<p>Supplying MOVI-SWITCH® via AUX-PWR (e.g. black cable)</p>  <p>1014552459</p>
<p>AUX-PWR (S1) switch = 0</p>  <p>AUX-PWR (S1)</p> <p>1014601355</p>	<p>Supplying MOVI-SWITCH® via the AS-Interface data cable</p>  <p>1014637451</p>

DIP switches S3

DIP switch S3 is used for setting phase sequence monitoring.

- S3 = 1:** The motor of direction is determined by the control terminals, i.e. it is independent of the phase sequence of the power supply.
- S3 = 0:** The motor of direction is determined by the phase sequence of the power supply and the control terminals. Changing the phases changes the direction of rotation.



DIP switch S2/1

DIP switch S2/1 is used to set the supply system and phase failure monitoring function.

S2/1 = 1: Supply system and phase failure monitoring is active. The "OK" output signal must be evaluated by a higher-level controller (e.g. PLC).

	<p>HAZARD!</p>
	<p>Motor restarts automatically when supply system voltage is present again. Severe or fatal injuries.</p> <ul style="list-style-type: none"> • If automatic restarting could pose a risk to persons or components, you must implement an external restart lock.

S2/1 = 0: Supply system and phase failure monitoring is not active. The MOVI-SWITCH® drive does not distinguish between supply system or phase failure.

6.4.2 Data from AS-Interface master to MOVI-SWITCH®

The following table shows the 4 data bits that are transferred from the AS-Interface master to the MOVI-SWITCH® drive:

Bit	Function
D0	CW operation/stop "R"
D1	CCW operation/stop "L"
D2	-
D3	Enable/reset

6.4.3 Data from MOVI-SWITCH® to the AS-Interface master

The following table shows the 4 data bits that are transferred via AS-Interface from the MOVI-SWITCH® drive back to the master:

Bit	Function
D0	Ready signal, "OK"
D1	-
D2	Sensor 1 (M12 socket, pin 4)
D3	Sensor 2 (M12 socket, pin 2)



6.4.4 Assigning the slave address

MOVI-SWITCH® drives with integrated AS-Interface are supplied with address 0 ex works. The AS-Interface address (address 1 to 31) is assigned as follows:

- Addresses are assigned automatically within a configured AS-Interface system when replacing a MOVI-SWITCH® drive. The following prerequisites must be fulfilled for this purpose:
 - The new MOVI-SWITCH® drive must have address 0.
 - If you need to replace multiple MOVI-SWITCH® drives, you must exchange them individually (one after another).

- Manual address assignment via the system master.

The drives must be connected to the AS-Interface cable one after another. This prevents that MOVI-SWITCH® drives have the same address.

- Manual address assignment using a hand-held AS-Interface programming device.

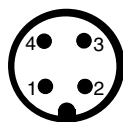
Before connecting the MOVI-SWITCH® drive to the AS-Interface cable, read the following chapter.

Assigning the slave address using a hand-held programming device

Hand-held AS-Interface programming devices offer the following functions:

- Reading and changing an AS-Interface slave address
- Reading off the AS-Interface profile
- Reading and changing the data bits
- Function check and test run. You will need an external voltage supply (AUX-PWR), as the hand-held programming devices do not provide enough power for operation.

You need a 2-core connection cable for using a hand-held programming device. This cable connects the hand-held programming device to the AS-Interface plug connector at MOVI-SWITCH®-2S-CK0 (see following figure).

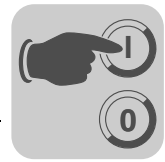


- 1: AS-Interface +
- 2: 0V24 [1]
- 3: AS-Interface -
- 4: 24V [1]

1015744523

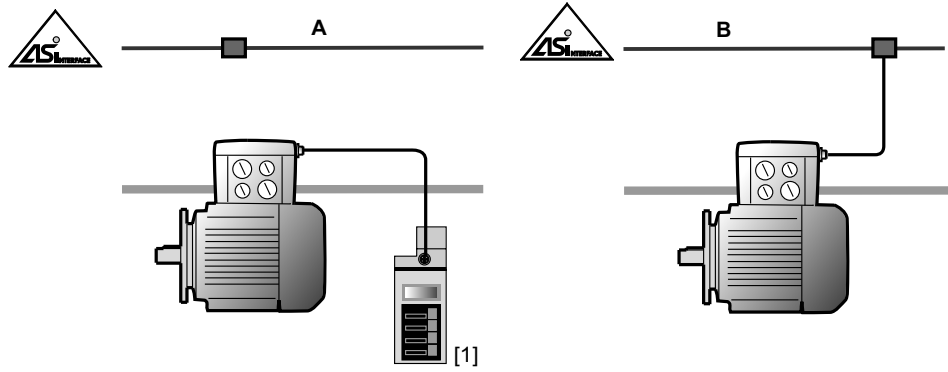
[1] Pins 2 + 4 are not required for assigning the address.

	STOP!
	<ul style="list-style-type: none"> • The hand-held programming device may only be connected via pins 1 "AS-Interface +" and 3 "AS-Interface -" with the AS-Interface plug connector. • For address assignment via a hand-held programming device, the AUX-PWR switch (S1) in the MOVI-SWITCH® control unit must be set to 1! • Once address assignment is complete, the AUX-PWR switch (S1) must be set according to the type of 24 V power supply.



Example

Each AS-Interface station is disconnected from the network individually and assigned an address with the hand-held programming device (A). Then the station is connected to AS-Interface again (B).



[1] AS-Interface addressing device

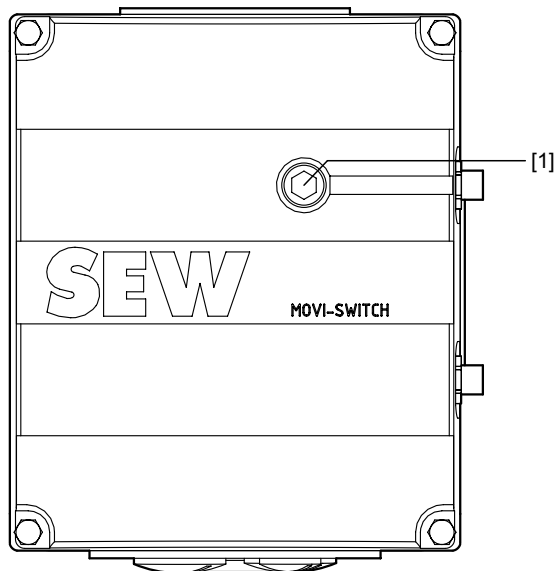
1015780363



7 Operation

7.1 Operating display (binary control)

The 3-colored status LED is located in the cover of the MOVI-SWITCH[®] terminal box (see following figure).



1014078603

[1] Status LED

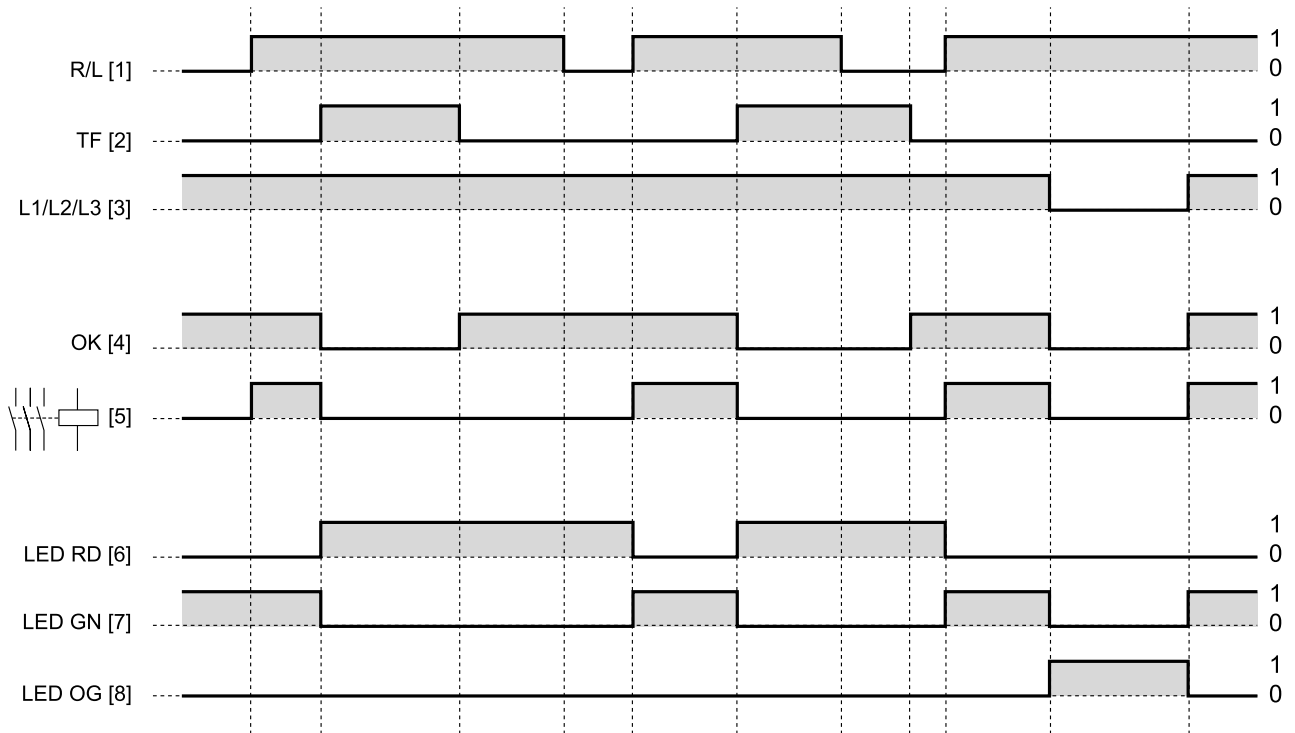
The LED can assume the following states:

Status LED	Operating status
Off	No 24 V power supply
Orange ¹⁾	24V supply available, supply system or phase fault
Red ²⁾	TF triggered
Green	Ready for operation (24 V supply available, supply system available)

- 1) This state is displayed as long as the supply system/phase failure lasts. Once the supply or phase fault has been repaired, the drive restarts automatically.
- 2) The error message is displayed until a new enable signal is received. The enable signal can only be issued once the fault has been corrected (indicated by the OK output).



7.1.1 LED status depends on signal level when supply system failure monitoring is active



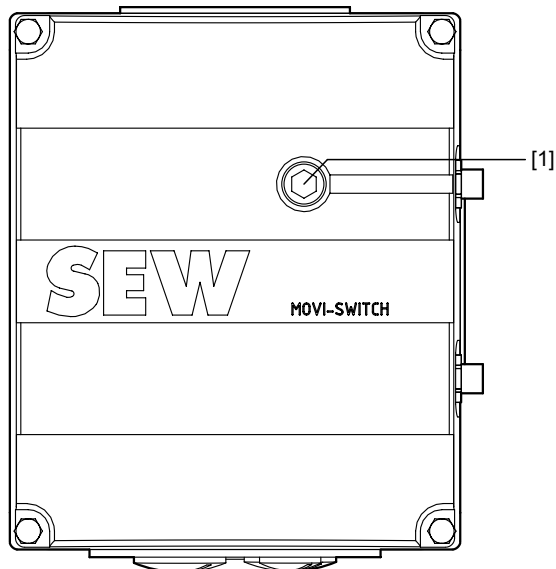
1014316939

- [1] Enable CW or CCW
- [2] TF signal
- [3] Line voltage
- [4] Ready signal
- [5] Motor contactor
- [6] LED red
- [7] LED green
- [8] LED orange



7.2 Operating display (control via AS-Interface)

The 2-colored status LED is located in the cover of the MOVI-SWITCH® terminal box (see following figure).



1014078603

[1] Status LED

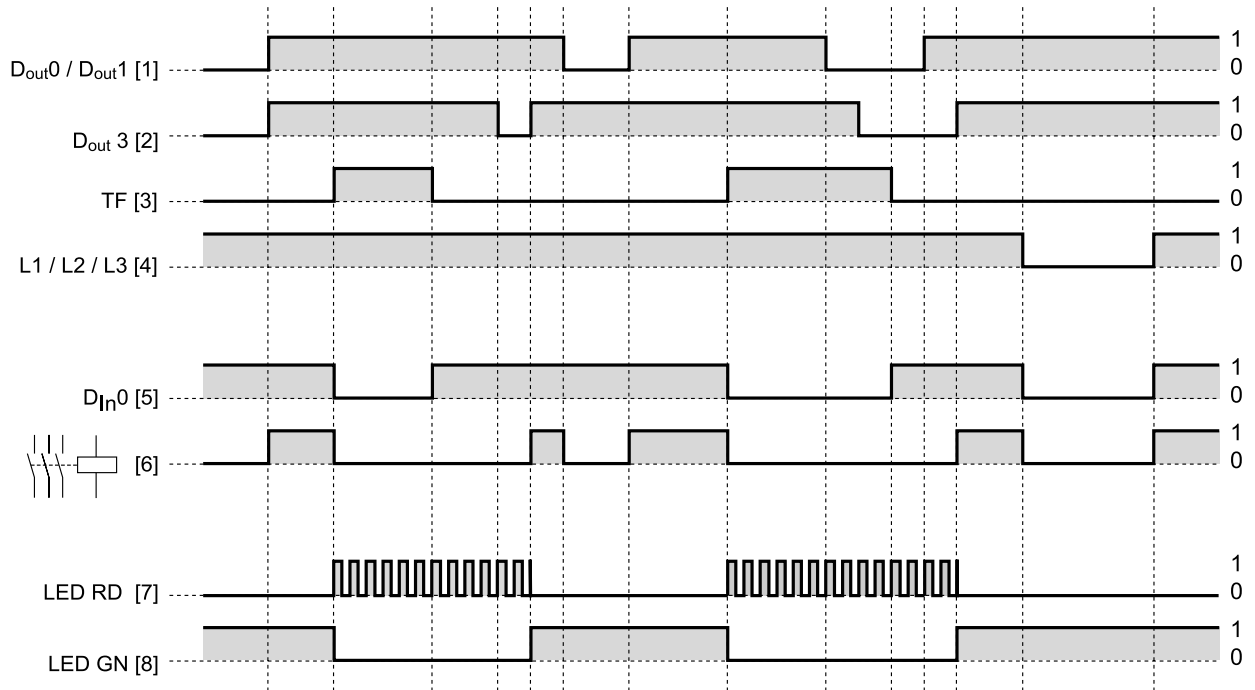
The LED can assume the following states:

Status LED	Operating status
Off	No connection to AS-Interface
Green	Normal operation (24 V supply and communication available, no error message)
Red	<ul style="list-style-type: none"> AS-Interface communication interrupted Slave address 0 set Slave address not configured in the AS-Interface master. Master in protected operating mode
Flashing red ¹⁾	Overtemperature in motor

1) The error message is displayed until a reset is performed by switching the enable signal off and on again. The reset (bit D3) can only be performed once the motor temperature is back down to normal values.



7.2.1 LED status depends on signal level when supply system failure monitoring is active (S2/1 = 1)



1014974475

- [1] Enable CW or CCW
- [2] Enable/reset
- [3] TF signal
- [4] Line voltage
- [5] Ready signal
- [6] Motor contactor
- [7] LED red (flashing)
- [8] LED green



8 Service

8.1 MOVI-SWITCH®-1E

Problem	Possible cause	Solution
Drive turns in the wrong direction	<ul style="list-style-type: none"> Incorrect phase sequence 	<ul style="list-style-type: none"> Swap two phases on the terminal board
Motor does not run, no current consumption	<ul style="list-style-type: none"> No supply system voltage 	<ul style="list-style-type: none"> Check incoming cable, correct Check line protection fuse, replace
	<ul style="list-style-type: none"> No control voltage 	<ul style="list-style-type: none"> Check DC 24 V signal (terminal 24 V), correct
	<ul style="list-style-type: none"> No enable signal 	<ul style="list-style-type: none"> Check "RUN" signal (terminal "RUN"), repair control error
Motor buzzes, high current consumption	<ul style="list-style-type: none"> Not ready, OK signal LOW 	<ul style="list-style-type: none"> No control voltage (terminal 24 V), correct "OK" output connected to ground, correct Motor too hot, let it cool down, reduce load TF not connected, check connections, correct
	<ul style="list-style-type: none"> Mechanical components blocking Brake does not release Winding defective 	<ul style="list-style-type: none"> Correct mechanical fault Service brakes according to chapter "Inspection and Maintenance" Replace drive

8.2 MOVI-SWITCH®-2S

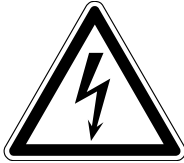
Problem	Possible cause	Solution
Drive turns in the wrong direction	<ul style="list-style-type: none"> Phase sequence incorrect and DIP switch S3 deactivated 	<ul style="list-style-type: none"> Swap two phases on the terminal board Activate DIP switch S3 (S3 = 1)
	<ul style="list-style-type: none"> Odd number of gear unit stages 	<ul style="list-style-type: none"> Adjust CW/CCW operation in controller
Motor does not run, no current consumption	<ul style="list-style-type: none"> No supply system voltage 	<ul style="list-style-type: none"> Check incoming cable, correct Check line protection fuse, replace
	<ul style="list-style-type: none"> No control voltage 	<ul style="list-style-type: none"> Check DC 24 V signal (terminal 24 V), correct
	<ul style="list-style-type: none"> CW or CCW enable signal is missing 	<ul style="list-style-type: none"> Enable signal (terminal R/L), repair control fault
	<ul style="list-style-type: none"> CW or CCW enable signal set simultaneously 	
Motor buzzes, high current consumption	<ul style="list-style-type: none"> Not ready, OK signal LOW 	<ul style="list-style-type: none"> No control voltage (terminal 24 V), correct "OK" output connected to ground, correct Motor too hot, let it cool down, reduce load TF not connected, check connections, correct Supply voltage/phase is missing
	<ul style="list-style-type: none"> Mechanical components blocking Brake does not release Winding defective 	<ul style="list-style-type: none"> Correct mechanical fault Service brake in accordance with the instructions in the chapter "MOVI-SWITCH® Inspection and Maintenance" Replace drive



8.3 Modular terminal box

We recommend purchasing pre-fabricated MOVI-SWITCH® 2S drives with the correct position of cable entries. In exceptional cases, the position of cable entries may be rotated to the opposite side.

8.3.1 Turning the modular terminal box



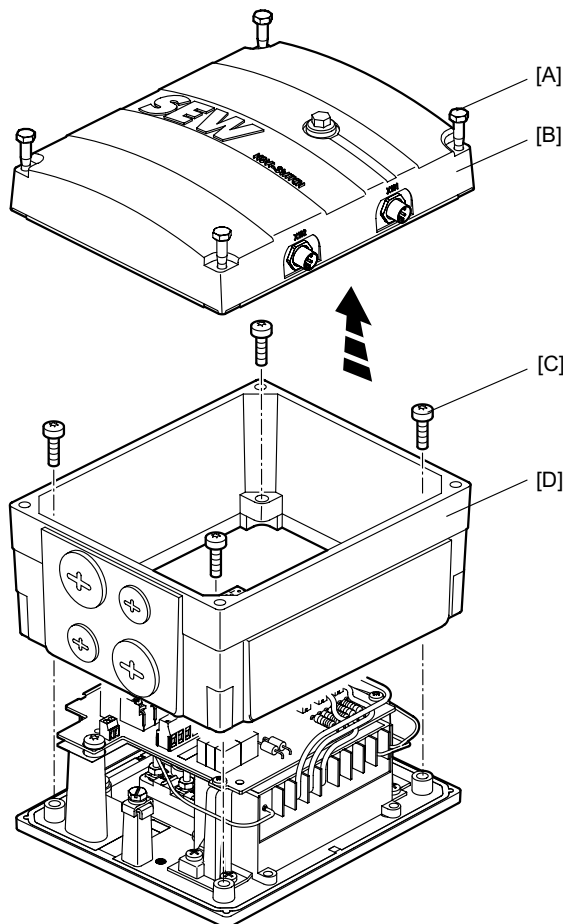
⚠ HAZARD!

High voltages are present in the terminal box and at the drive.

Severe or fatal injuries from electric shock.

- Before opening the terminal box, de-energize the drive and safeguard it against unintentional power-up.

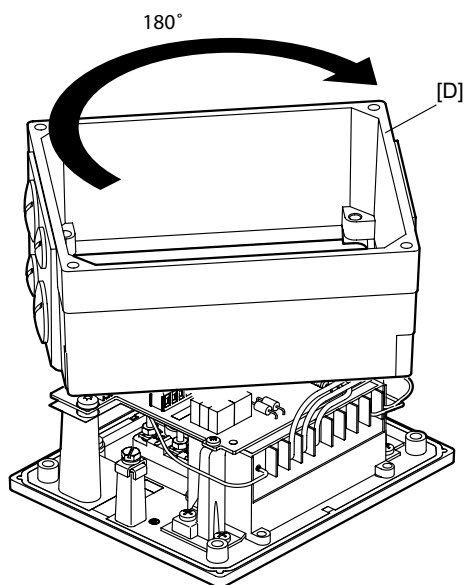
1. Label the connections before disconnecting them for later re-installation.
2. Disconnect the supply system, control and sensor connections.
3. Remove screws [A] and detach the MOVI-SWITCH® control unit [B].
4. Remove the screws [C] and detach the terminal box [D].



985930891

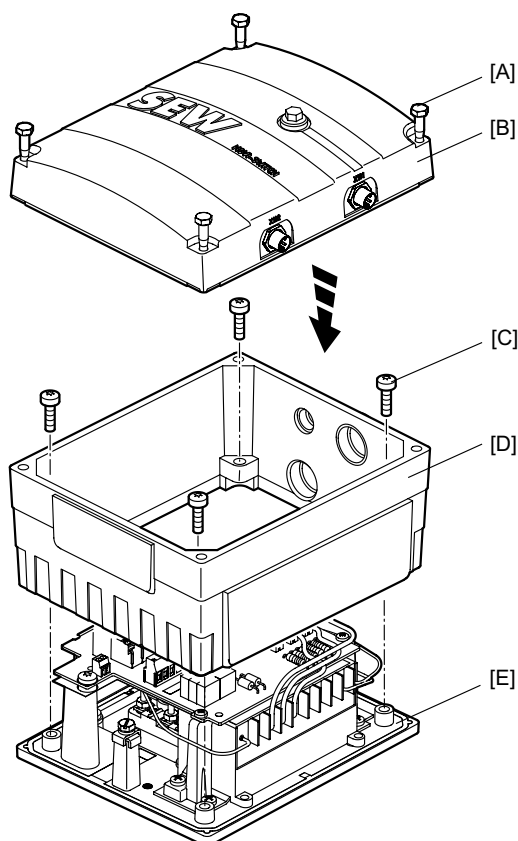


5. Rotate the terminal box [D] by 180°.



986174987

6. Place the terminal box [D] on the mounting plate [E] and fasten it with screws [C] (observe chapter "Tightening torques" (see page 19)).
7. Re-establish the connection.
8. Replace the MOVI-SWITCH® control unit [B] and fasten it with screws [A] (observe chapter "Tightening torques" (see page 19)).



986179723

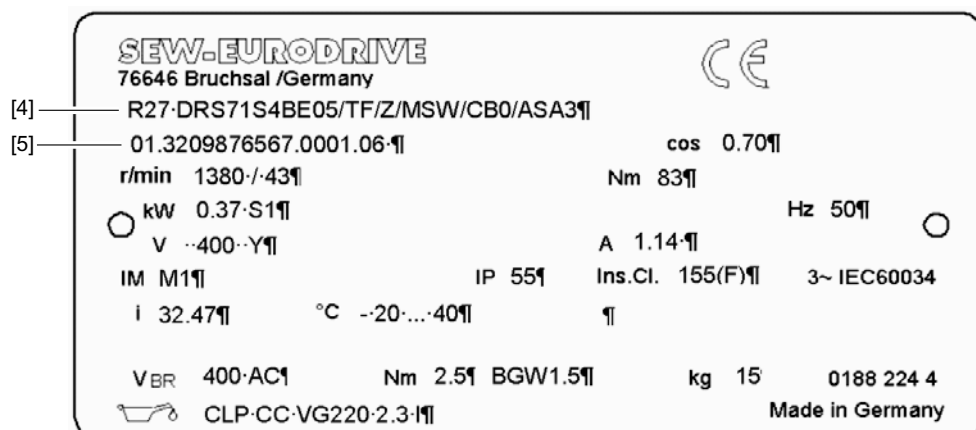
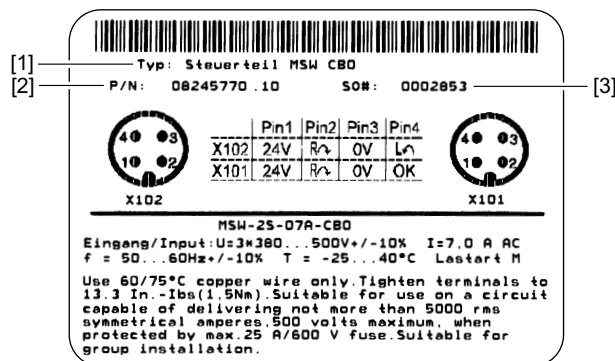


8.4 SEW Service

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

If the components configured in the order confirmation are not in stock, delivery will take up to eight weeks (as before).

- Unit designation on electronics nameplate [1]
- Part number [2]
- Serial number [3]
- Type designation on motor nameplate [4]
- Serial number [5]
- Short application description (application, control type)
- Type of fault
- Accompanying circumstances (e.g. initial startup)
- Your own presumptions
- Any unusual events preceding the problem, etc.



1182683915



8.5 Disposal





This product consists of:

- Iron
- Aluminum
- Copper
- Plastic
- Electronic components

Dispose of all components in accordance with applicable regulations!



9 Inspection/Maintenance

	<p>! HAZARD!</p> <p>Dangerous voltages are present at the motors!</p> <p>Severe or fatal injuries from electric shock.</p> <ul style="list-style-type: none"> • De-energize MOVI-SWITCH® before starting work and protect it against unintentional restart!
	<p>! WARNING!</p> <p>The motors can become very hot during operation!</p> <p>Danger of burns.</p> <ul style="list-style-type: none"> • Touch the motors only after they have cooled down sufficiently.
	<p>! HAZARD!</p> <p>Risk of fatal injury if the hoist falls.</p> <p>Severe or fatal injuries.</p> <ul style="list-style-type: none"> • Secure or lower hoist drives (danger of falling)!
	<p>NOTES</p> <ul style="list-style-type: none"> • The figures in the following chapter are examples of the MOVI-SWITCH®-1E design. • The inspection and maintenance work for MOVI-SWITCH®-2S is identical with that for MOVI-SWITCH®-1E.

Use only genuine spare parts in accordance with the valid parts list!



9.1 Inspection and maintenance intervals

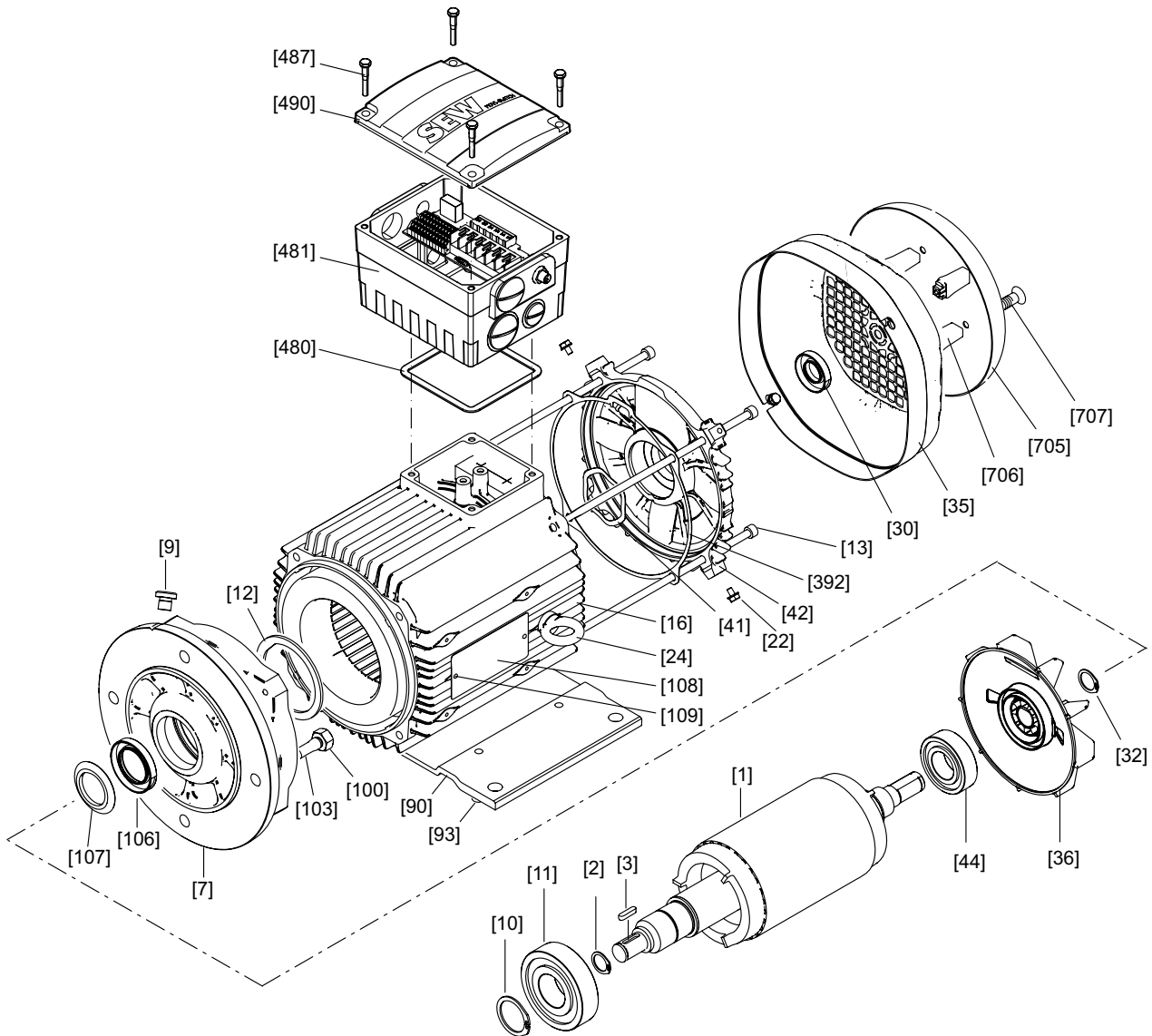
Unit/unit part	Time interval	What do I do?
Brake	<ul style="list-style-type: none"> If used as a working brake: at least every 3000 hours of operation¹⁾ If used as a holding brake: Every 2 to 4 years, depending on operating conditions¹⁾ 	Inspecting the brake <ul style="list-style-type: none"> measure the brake disk thickness brake disk, lining Measure and adjust working air gap Pressure plate Carrier/gearing Pressure rings <ul style="list-style-type: none"> Suck off any abrasion Inspect the switch contacts and replace them if necessary (e.g. in case of burn-out)
Motor	<ul style="list-style-type: none"> Every 10,000 operating hours 	Inspecting the motor: <ul style="list-style-type: none"> Check ball bearings and replace if necessary Replace the oil seal Clean the cooling air passages
Motor with backstop (only for MOVI-SWITCH®-1E)		<ul style="list-style-type: none"> Change the low-viscosity grease of the backstop
Drive	<ul style="list-style-type: none"> Varies (depending on external factors) 	<ul style="list-style-type: none"> Touch up or renew the surfaces/ anticorrosion coating

1) The amount of wear depends on many factors and may be high. The machine designer must calculate the required inspection/maintenance intervals individually in accordance with the project planning documents (e.g. "Project Planning for Drives").



9.2 Inspection/maintenance for DR.71-DR.112 motors

9.2.1 Basic design of DR.71-DR.112





1072728715

[1] Rotor	[32] Circlip	[109] Grooved pin
[2] Circlip	[35] Fan guard	[392] Seal
[3] Key	[36] Fan	[480] Seal
[7] Flanged endshield	[41] Shim washer	[481] Terminal box
[9] Screw plug	[42] B-side endshield	[487] Terminal box screws
[10] Circlip	[44] Deep groove ball bearing	[490] Terminal box cover
[11] Deep groove ball bearing	[90] Base plate	[705] Protective cover
[12] Circlip	[93] Pan head screw	[706] Spacers
[13] Machine screw	[100] Hex nut	[707] Pan head screw
[16] Stator	[103] Stud	
[22] Hex head screw	[106] Oil seal	
[24] Lifting eyebolt	[107] Oil flinger	
[30] Oil seal	[108] Nameplate	



9.2.2 Inspection steps for DR.71-DR.112 motors

	 HAZARD!
	<p>Risk of crushing if the drive starts up unintentionally and danger of electrical voltages. Severe or fatal injuries.</p> <ul style="list-style-type: none"> • Prior to any measures, de-energize the motor and protect it against unintentional re-start! • Strictly observe the following instructions.

1. Remove forced cooling fan and encoder, if installed.
2. Remove fan guard [35] and fan [36].
3. Remove machine screws [13] from the flanged endshield [7] and take the B-side endshield [42] and stator [16] off the flanged endshield.
4. Visual inspection: Is there any moisture or gear unit oil inside the stator?
 - If not, proceed to step 7
 - If there is condensation, proceed to step 5
 - If there is gear oil, have the motor repaired by a specialist workshop
5. If there is moisture inside the stator:
 - Gearmotors: Remove the motor from the gear unit
 - Motors without a gear unit: Remove the A-flange
 - Remove the rotor [1]
6. Clean the winding, dry it and check it electrically.
7. Replace the grooved ball bearings [11] [44] with permitted ball bearings. See sec. "Permitted anti-friction bearing types" (see page 88).
8. Reseal the shaft:
 - A-side: Replace oil seal [106]
 - B-side: Replace oil seal [30]

Coat the sealing lip with grease (Klüber Petamo GHY 133).
9. Reseal the stator seat:
 - Seal the sealing surface with duroplastic sealing compound (operating temperature -40...180 °C), such as "Hylomar L Spezial".
 - Replace gasket [392]
10. Install the motor and accessory equipment.



Backstop lubrication (only for MOVI-SWITCH®-1E)

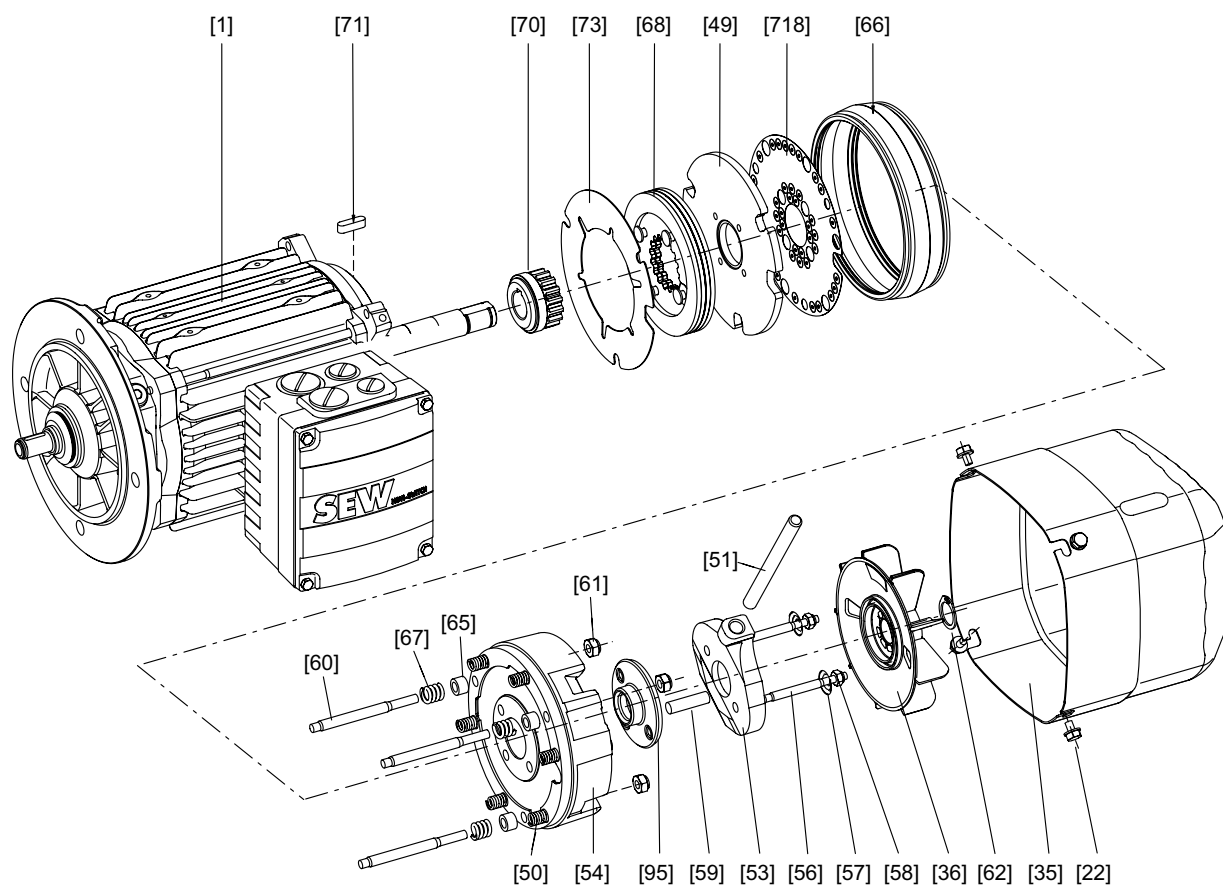
The backstop is supplied with the corrosion protection low-viscosity grease Mobil LBZ. If you want to use a different grease, make sure it complies with NLGI class 00/000, with a base oil viscosity of 42 mm²/s at 40 °C on a lithium soap and mineral oil base. The application temperature range is from -50 °C to +90 °C. See the following table for the amount of grease required.

Motor type	71/80	90/100	112
Grease [g]	9	15	15



9.3 Inspection/maintenance for DR.71-DR.112 brakemotors

9.3.1 Basic design of DR.71-DR.80 brakemotors

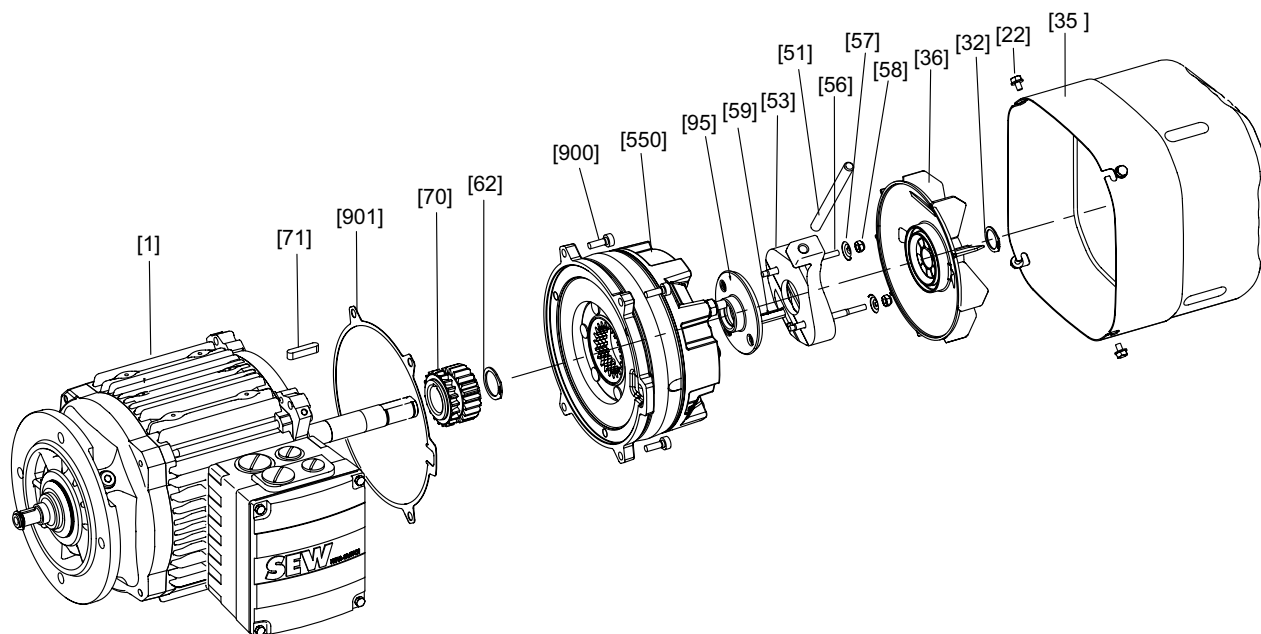


1072773259

[1] Motor with brake endshield	[56] Stud	[62] Circlip
[22] Hex head screw	[57] Conical coil spring	[70] Carrier
[35] Fan guard	[58] Setting nut	[71] Key
[36] Fan	[59] Parallel pin	[73] Niro disk
[49] Pressure plate	[60] Stud 3x	[95] Sealing ring
[50] Brake spring	[61] Hex nut	[718] Damping plate
[11] Magnet, complete	[65] Pressure ring	
[51] Hand lever	[66] Rubber sealing collar	
[53] Releasing lever	[67] Counter spring	
[54] Magnet, complete	[68] Brake disk	



9.3.2 Basic design of DR.90-DR.112 brakemotors

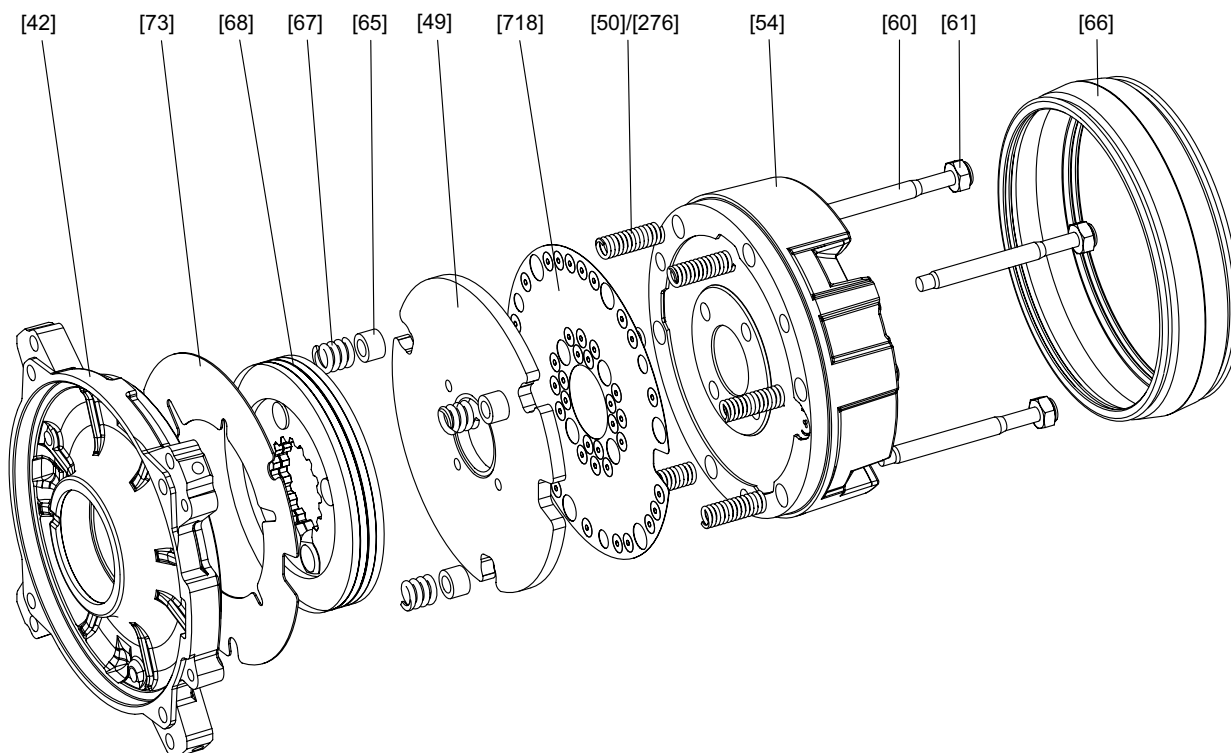


1072779403

- | | | |
|--------------------------------|--------------------------|---------------------------|
| [1] Motor with brake endshield | [53] Releasing lever | [70] Carrier |
| [22] Hex head screw | [56] Stud | [95] Sealing ring |
| [32] Circlip | [57] Conical coil spring | [550] Pre-assembled brake |
| [35] Fan guard | [58] Setting nut | [900] Screw |
| [36] Fan | [59] Parallel pin | [901] Seal |
| [51] Hand lever | [62] Circlip | |



9.3.3 Basic design of BE05-BE2 brake (for DR.71-DR.80 brakemotor)



525084811

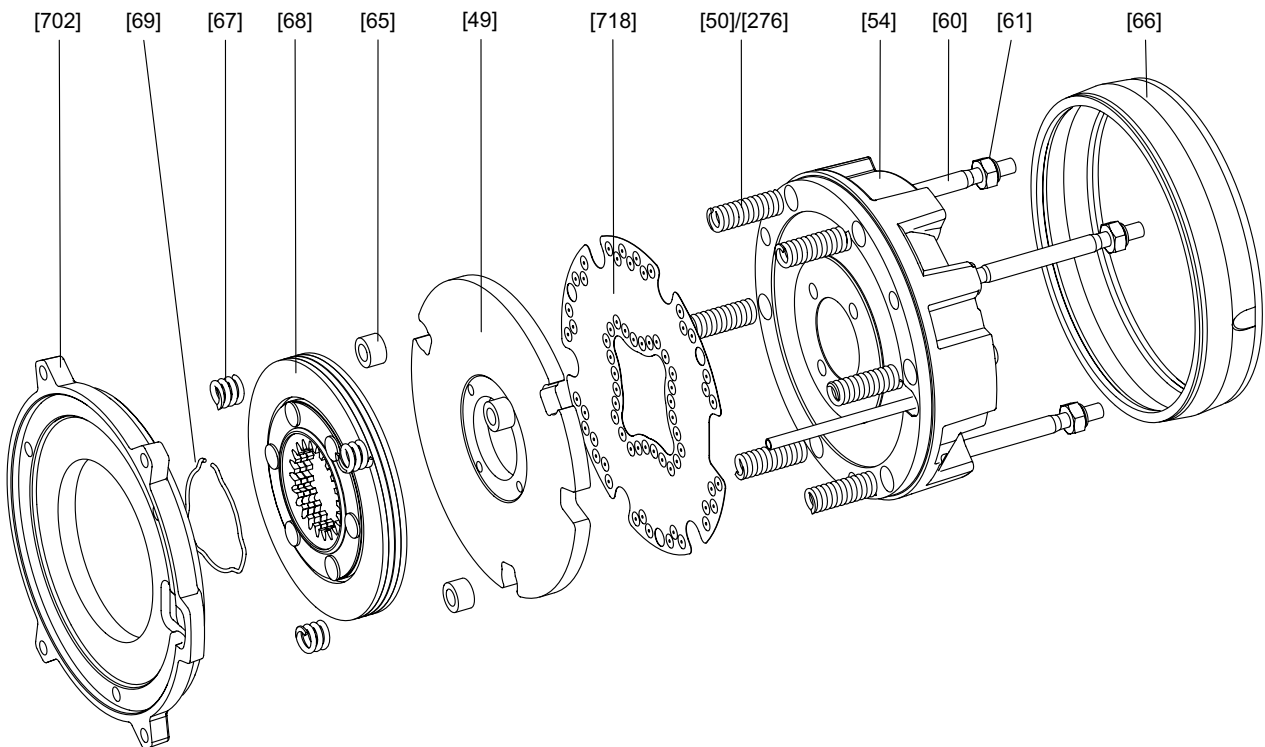
[42] Brake endshield
 [49] Pressure plate
 [50] Brake spring (normal)
 [54] Magnet, complete
 [60] Stud 3x

[61] Hex nut
 [65] Pressure ring
 [66] Rubber sealing collar
 [67] Counter spring
 [68] Brake disk

[73] Niro disk
 [276] Brake spring (blue)
 [718] Damping plate



9.3.4 Basic design of the BE1-BE11 brake (for DR.90-DR.112 brakemotor)




488358283

- | | | |
|------------------------------|----------------------------|---------------------------|
| [49] Pressure plate | [65] Pressure ring | [276] Brake spring (blue) |
| [50] Brake spring (standard) | [66] Rubber sealing collar | [702] Friction disk |
| [54] Magnet, complete | [67] Counter spring | [718] Damping plate |
| [60] Stud 3x | [68] Brake disk | |
| [61] Hex nut | [69] Circular spring | |



9.3.5 Inspection steps for DR.71-DR.112 brakemotors

	! HAZARD!
	<p>Risk of crushing if the drive starts up unintentionally and danger of electrical voltages. Severe or fatal injuries.</p> <ul style="list-style-type: none"> • Prior to any measures, de-energize the motor and protect it against unintentional re-start! • Strictly observe the following instructions.

1. Remove forced cooling fan and encoder, if installed.
2. Remove fan guard [35] and fan [36].
3. Remove machine screws [13] from the flanged endshield [7] and take the B-side endshield [42] and stator [16] off the flanged endshield.
4. Remove the brake cable from the rectifier.
5. Push the brake off the stator and carefully lift it off.
6. Pull the stator back by approx. 3 to 4 cm.
7. Visual inspection: Is there any moisture or gear unit oil inside the stator?
 - If not, proceed to step 10
 - If there is condensation, proceed to step 8
 - If there is gear oil, have the motor repaired by a specialist workshop
8. If there is moisture inside the stator:
 - Gearmotors: Remove the motor from the gear unit
 - Motors without a gear unit: Remove the A-flange
 - Remove the rotor [1]
9. Clean the winding, dry it and check it electrically.
10. Replace the grooved ball bearings [11] [44] with permitted ball bearings.
See sec. "Permitted anti-friction bearing types" (see page 88).
11. Reseal the shaft:
 - A-side: Replace oil seal [106]
 - B-side: Replace oil seal [30]
 Coat the sealing lip with grease (Klüber Petamo GHY 133).
12. Reseal the stator seat:
 - Seal the sealing surface with duroplastic sealing compound (operating temperature -40...180 °C), such as "Hylomar L Spezial".
 - Replace sealing [392].
13. Install the motor, the brake and accessory equipment.



9.3.6 Setting the working air gap of the BE05-BE11 brake



⚠ HAZARD!

Risk of crushing if the drive starts up unintentionally.

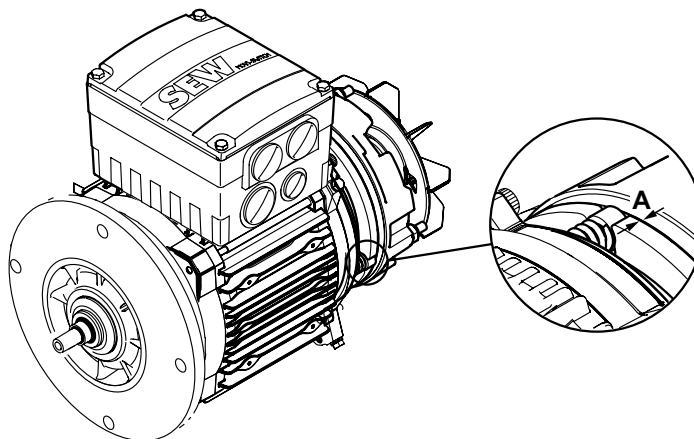
Severe or fatal injuries.

- Isolate the motor and brake from the power supply before starting work, safeguarding them against accidental startup!
- Carefully observe the following operation steps!

1. Remove the following:
 - Forced cooling fan and encoder (if installed)
 - Flange cover or fan guard [35]
2. Push the rubber sealing collar [66] aside,
 - loosen the clamp, if necessary
 - Suck off any abrasion
3. Measure the brake disk [68]:
 - Minimum brake disk thickness see sec. "Work done, working air gap and braking torque of the brake" (see page 87).
 - Replace the brake disk, if necessary.

See sec. "Replacing the brake disk of brakes BE05-BE11" (see page 82).
4. Measure the working air gap A (see following figure)
(use a feeler gauge and measure at 3 points offset by 120°):
 - between the pressure plate [49] and damping plate [718]
5. Tighten the hex nuts [61]:
6. Tighten the setting sleeves
 - until working air gap is set correctly.

See sec. "Work done, working air gap and braking torque of the brake" (see page 87).
7. Put the rubber sealing collar back in place and re-install the dismantled parts.



1072914187



9.3.7 Replacing the brake disk of BE05-BE11 brakes

When installing a new brake disk, inspect the other removed parts as well and fit new ones if necessary.

	HAZARD!
	<p>Risk of crushing if the drive starts up unintentionally.</p> <p>Severe or fatal injuries.</p> <ul style="list-style-type: none"> • Isolate the motor and brake from the power supply before starting work, safeguarding them against accidental startup! • Carefully observe the following operation steps!

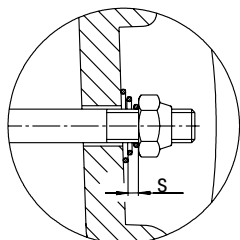
	NOTES
	<ul style="list-style-type: none"> • The brake of DR.71-DR.80 motor sizes cannot be removed from the motor because the BE brake is directly installed on the brake endshield of the motor. • The brake of DR.90-DR.112 motor sizes can be removed from the motor for replacing the brake disk because the BE brake is pre-installed on the brake endshield of the motor with a friction disk .

1. Remove the following:
 - Forced cooling fan and encoder (if installed)
 - Flange cover or fan guard [35], circlip [32]/[62] and fan [36]
2. Remove the brake cable from the rectifier.
3. Remove the rubber sealing collar [66].
4. Loosen hex nuts [61], carefully pull off the magnet [54] (brake cable!) and take out the brake springs [50].
5. Remove the damping plate [718], pressure plate [49] and brake disk [68], and clean the brake components.
6. Install a new brake disk.
7. Re-install the brake components,
 - except for the fan and the fan guard, because the working air gap has to be set first, see section "Setting the working air gap of BE05-BE11 brakes" (see page 81).



8. With manual brake release: Use setting nuts to set the floating clearance "s" between the conical coil springs (pressed flat) and the setting nuts (see following figure).

This floating clearance "s" is necessary so that the pressure plate can move up as the brake lining wears. Otherwise, reliable braking is not guaranteed.

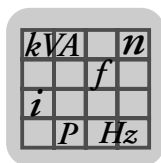


177241867

Brake	Floating clearance "s" [mm]
BE05; BE1; BE2	1.5
BE5; BE11	2

9. Put the rubber sealing collar back in place and re-install the dismantled parts.

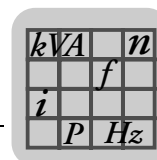
	<p>NOTES</p> <ul style="list-style-type: none"> • The lockable manual brake release (type HF) is already released if a resistance is encountered when operating the setscrew. • The self-reengaging manual brake release (type HR) can be operated with normal hand pressure. • In brake motors with self-reengaging manual brake release, the manual brake release lever must be removed after startup/maintenance! A bracket is provided for storing the lever on the outside of the motor.
	<p>NOTE</p> <p>Important: After replacing the brake disk, the maximum braking torque is reached only after several cycles.</p>



10 Technical Data

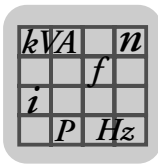
10.1 Technical data of MOVI-SWITCH®-1E

MOVI-SWITCH®-1E		
Supply voltages (motor-dependent)	V_{supply}	AC 3 x 380 V / 400 V / 415 V / 460 V / 480 V / 500 V \pm 10%
Line frequency (motor-dependent)	f_{supply}	50 Hz ... 60 Hz \pm 10%
Rated operating current (at 400 V) (motor-dependent)		I_{max} AC 7.0 A I_{min} \geq 0.5 A
Position of normal use		Any
Motor protection		Thermistor
Module protection		Temperature shutdown 89 to 100°C Temperature hysteresis typ. 5 K
Maximum starting frequency		1800 cycles/h
Cycle times		typ. 10 ms
Interference resistance		Meets EN 61800-3
Interference emission		Conforms to EN 61800-3 and class A limit of EN 55011 and EN 55014
Ambient temperature	ϑ_U	-25 °C...40 °C (P_{rated} reduction: 3 % I_{rated} per K to max. 60 °C), no moisture condensation
Storage temperature	ϑ_L	-25 °C...85 °C (EN 60721-3-3, class 3K3)
Climate class		3 K3
Pollution class		2 according to IEC 60664-1 (VDE 0110-1)
Degree of protection (motor-dependent)		IP54, IP55, IP65, IP66 (options, specify when ordering)
Duty cycle		S1 (EN 60149-1-1 and 1-3), S3 max. cycle duration 10 minutes
Cooling type (DIN 41,751)		Self-cooling
Installation altitude		$h \leq 1,000$ m: No power reduction $h > 1,000$ m: P_{rated} reduction by 1 % per 100 m $h > 2,000$ m: V_{supply} reduction by AC 6 V per 100 m, to max. 3 x 380 V at 4000 m asl $h_{\text{max}} = 4,000$ m (see also chapter "Electrical Installation – Installation instructions")
Power supply to control electronics (M12 connector AVS1)	Pin 1 (24 V) Pin 3 (0 V)	$V = +24$ V \pm 25 %, EN 61131-2, residual ripple max. 13 % $I_E \leq 50$ mA (without I_{OK})
Binary inputs		Isolated via optocoupler; PLC compatible (EN 61131-2) $R_i \approx 3.0$ k Ω , $I_E \approx 10$ mA, sampling interval ≤ 5 ms
Signal level		+13 V to +30 V = "1" = Contact closed -3 V to +5 V = "0" = Contact open
Control functions (M12 connector AVS1)	Pin 2	RUN/stop
"OK" output (M12 connector AVS1)	Pin 4	Response time ≤ 10 ms
Signaling function (M12 connector AVS1)	Pin 4	Output for ready signal Checkback signal Ready for operation (high): $V_{\text{OK}} > V_{-3V} 24$ V - with voltage present (24 V + supply system) - in case no error was detected - at end of self-testing phase (when unit is turned on)
	I_{OK}	Current for checkback max. 0.65 A, short-circuit proof



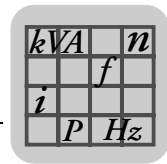
10.2 Technical data of MOVI-SWITCH®-2S/CB0

MOVI-SWITCH® 2S-CB0		
Supply voltages (motor-dependent)	V_{supply}	AC 3 x 380 V / 400 V / 415 V / 460 V / 480 V / 500 V \pm 10%
Line frequency (motor-dependent)	f_{supply}	50 Hz ... 60 Hz \pm 10%
Rated operating current (at 400 V) (motor-dependent)		I_{max} AC 7.0 A
Position of normal use		Any
Contacting switching cycles		\geq 5 million at $I_E \leq 4.0$ A utilization category AC3 \geq 1 million at $I_E \leq 7.0$ A utilization category AC3
AC3 maximum starting frequency		600 cycles/h
Short-circuit fuse classification type 1		25 A
Cycle times		On/off period: < 50 ms Reversing time: 85 ms to 150 ms
Interference resistance		Meets EN 61800-3
Interference emission		Conforms to EN 61800-3 and class A limit of EN 55011 and EN 55014
Ambient temperature	ϑ_U	-25 °C...40 °C (P_{rated} reduction: 3 % I_{rated} per K to max. 60 °C), no moisture condensation
Storage temperature	ϑ_L	-25 °C...85 °C (EN 60721-3-3, class 3K3)
Climate class		3 K3
Pollution class		2 according to IEC 60664-1 (VDE 0110-1)
Degree of protection (motor-dependent)		IP54, IP55, IP65, IP66 (options, specify when ordering)
Duty cycle		S1 (EN 60149-1-1 and 1-3), S3 max. cycle duration 10 minutes
Cooling type (DIN 41,751)		Self-cooling
Motor protection		Thermistor (non-floating connection terminals)
Installation altitude		$h \leq 1,000$ m: No power reduction $h > 1,000$ m: P_{rated} reduction by 1 % per 100 m $h > 2000$ m: V_{supply} reduction by AC 6 V per 100 m, to max. 3 x 380 V at 4000 m asl $h_{\text{max}} = 4,000$ m (see also chapter "Electrical Installation – Installation instructions")
Power supply to control electronics M12/X102	Pin 1 (24 V) Pin 3 (0 V)	$V_{\text{in}} = +24$ V 25 %, EN 61131-2, residual ripple max. 13 % $P_{\text{in}} \leq 7$ W across the entire input voltage range $I_{E \text{ max}} \leq 350$ mA at $V_{\text{in}} = 18$ V input voltage $I_{E \text{ typ}} = 250$ mA at $V_{\text{in}} = 24$ V input voltage
Binary inputs		Isolated via optocoupler; PLC compatible (EN 61131-2) $R_i \approx 3.0$ k Ω , $I_E \approx 10$ mA, sampling interval ≤ 5 ms
Signal level		+13 V to +30 V = "1" = Contact closed -3 V to +5 V = "0" = Contact open
Control functions M12/X102	Pin 2 Pin 4	CW/stop CCW/stop
Activation / deactivation delay		< 50 ms (delay between receiving the activation/deactivation command and switching the motor on/off)
OK output (M12/X101)	Pin 4	Response time ≤ 10 ms
Signaling function (M12/X101 pin 4)		Output for ready signal Checkback signal Ready for operation (high): $V_{\text{OK}} > V_{-3}$ V 24V - with voltage present (24 V + supply system) - in case no error was detected - at end of self-testing phase (when unit is turned on)
	I_{OK}	Current for checkback max. 0.65 A, short-circuit proof



10.3 Technical data of MOVI-SWITCH®-2S/CK0 (with integrated AS-Interface)

MOVI-SWITCH®-2S-CK0		
Supply voltages (motor-dependent)	V_{supply}	AC 3 x 380 V / 400 V / 415 V / 460 V / 480 V / 500 V \pm 10%
Line frequency (motor-dependent)	f_{supply}	50 Hz ... 60 Hz \pm 10%
Rated operating current (at 400 V) (motor-dependent)		I_{max} AC 7.0 A
Position of normal use		Any
Contacting switching cycles		\geq 5 million at $I_E \leq 4.0$ A utilization category AC3 \geq 1 million at $I_E \leq 7.0$ A utilization category AC3
AC3 maximum starting frequency		600 cycles/h
Short-circuit fuse classification type 1		25 A
Cycle times		On/off period: < 50 ms Reversing time: 85 ms to 150 ms
Interference resistance		conforms to EN 61800-3
Interference emission		Conforms to EN 61800-3 and class A limit of EN 55011 and EN 55014
Ambient temperature	ϑ_U	-25 °C – 40 °C (P_{rated} reduction: 3 % I_{rated} per K to max. 60 °C), no moisture condensation
Storage temperature	ϑ_L	-25 °C...85 °C (EN 60721-3-3, class 3K3)
Climate class		3 K3
Pollution class		2 according to IEC 60664-1 (VDE 0110-1)
Degree of protection (motor-dependent)		IP54, IP55, IP65, IP66 (options, specify when ordering)
Duty cycle		S1 (EN 60149-1-1 and 1-3), S3 max. cycle duration 10 minutes
Cooling type (DIN 41751)		Self-cooling
Motor protection		Thermistor (non-floating connection terminals)
Installation altitude		$h \leq 1,000$ m: No power reduction $h > 1,000$ m: P_{rated} reduction by 1 % per 100 m $h > 2000$ m: $V_{\text{supply system}}$ reduction: AC 6 V per 100 m, to max. 3 x 380 V at 4000 m asl $h_{\text{max}} = 4,000$ m (see also chapter "Electrical Installation – Installation instructions")
Power supply to control electronics M12/X102 S1-AUX-PWR = "0"	Pin 1 (AS-Interface +) Pin 3 (AS-Interface -)	$V_{\text{in AS-Interface}} = [+22 \text{ V} \dots +32 \text{ V}]$ Without sensor supply: $P_{\text{in AS-Interface}} \leq 6 \text{ W}$ across the entire input voltage range $I_E \text{ AS-Interface max} \leq 270 \text{ mA}$ at $V_{\text{in AS-Interface}} = 22 \text{ V}$ input voltage $I_E \text{ AS-Interface typ} = 220 \text{ mA}$ at $V_{\text{in AS-Interface}} = 26.5 \text{ V}$ input voltage $I_E \text{ AS-Interface} = 420 \text{ mA}$ to EN50195 section 8.2.3.2
Power supply to control electronics M12/X102 S1-AUX-PWR = "1"	Pin 1 (AS-Interface +) Pin 3 (AS-Interface -) Pin 4 (24 V) Pin 2 (0 V)	$V_{\text{in AS-Interface}} = [+22 \text{ V} \dots +32 \text{ V}]$ $I_E \text{ AS-Interface} \leq 50 \text{ mA}$ $V_{\text{in AUX-PWR}} = +24 \text{ V } 25\%$, EN 61131-2, residual ripple max. 13% Without sensor supply: $P_{\text{in AUX-PWR}} \leq 6 \text{ W}$ across the entire input voltage range $I_E \text{ AUX-PWR max} \leq 350 \text{ mA}$ at $V_{\text{in AUX-PWR}} = 18 \text{ V}$ input voltage $I_E \text{ AUX-PWR typ} = 250 \text{ mA}$ at $V_{\text{in AUX-PWR}} = 24 \text{ V}$ input voltage



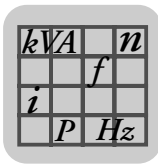
Work done, working air gap, braking torque of the brake

MOVI-SWITCH®-2S-CK0		
		A PELV power supply (Protective Extra Low Voltage) to IEC 60364-4-41 with safe disconnection is mandatory for the AUX PWR auxiliary supply.
Control functions Outputs	Bit D0 Bit D1 Bit D3	CW/stop CCW/stop Enable/reset
Control functions Inputs	Bit D0 Bit D2 Bit D3	Ready signal, "OK" Sensor 1 (M12 socket, pin 4) Sensor 2 (M12 socket, pin 2)
AS-Interface profile		S-7.F.E (free profile)
I/O configuration		7 _{hex}
ID code		F _{hex}
ID2 code		E _{hex}
Address		1 to 31 (factory setting: address 0)
Watchdog		≥ 40 ms (all outputs de-energized)
Sensor connection M12 / X101		
Voltage supply	Pin 1 (+24V) Pin 3 (0V)	V _{out sensor} = +24 V 25 % I _{out sensor max} = 100 mA, short-circuit proof
Binary inputs DI2 / DI3 Signal level Signal delay	Pin 2 (DI3) Pin 4 (DI2)	PNP switching "1": U ≥ 10 V, I ≥ 6 mA (max. 10 mA) "0": U ≤ 5 V, I ≤ 2 mA < 5 ms

10.4 Work done, working air gap, braking torque of the brake

Brake type	Work done until maintenance [10 ⁶ J]	Working air gap [mm]		Brake disk [mm] min.	Braking torque [Nm]	Braking torque settings		Order numbers for brake springs	
		min. ¹⁾	max.			Type and number of brake springs		Normal	Blue
						Normal	Blue		
BE05	120	0.25	0.6	9.0	5.0	2	4	135,017 X	1 374 137 3
					3.5	2	2		
					2.5	-	6		
					1.8	-	3		
BE1	120	0.25	0.6	9.0	10	6	-	135,017 X	1 374 137 3
					7.0	4	2		
					5.0	2	4		
BE2	165	0.25	0.6	9.0	20	6	-	1 374 024 5	1 374 052 0
					14	2	4		
					10	2	2		
					7.0	-	4		
BE5	260	0.25	0.9	9.0	55	6	-	1 374 070 9	1 374 071 7
					40	2	4		
					28	2	2		
					20	-	4		
BE11	640	0.3	1.2	10.0	110	6	-	1 374 183 7	1 374 184 7
					80	2	4		
					55	2	2		
					40	-	4		

1) When checking the working air gap, note: Parallelism tolerances on the brake disk may cause deviations of ±0.15 mm after a test run.



10.5 Permitted rolling bearing types

Motor type	A-side bearing		B-side bearing	
	IEC motor	Gearmotor	Three-phase current motor	Brakemotor
DR.71	6204-2Z-J-C3	6303-2Z-J-C3	6203-2Z-J-C3	6203-2RS-J-C3
DR.80	6205-2Z-J-C3	6304-2Z-J-C3	6304-2Z-J-C3	6304-2RS-J-C3
DR.90-DR.100	6306-2Z-J-C3		6205-2Z-J-C3	6205-2RS-J-C3
DR.112	6308-2Z-J-C3		6207-2Z-J-C3	6207-2RS-J-C3



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
Service Competence Center	Central	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
	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
	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 Service Hotline / 24 Hour Service		
Additional addresses for service in Germany provided on request!			
France			
Production Sales Service	Hagenau	SEW-USOCOME 48-54, route de Soufflenheim B. P. 20185 F-67506 Hagenau 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-EUROCOME 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
	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	Alger	Réducom 16, rue des Frères Zagnoun Bellevue El-Harrach 16200 Alger	Tel. +213 21 8222-84 Fax +213 21 8222-84 reducom_sew@yahoo.fr
Argentina			
Assembly Sales Service	Buenos Aires	SEW EURODRIVE ARGENTINA S.A. Centro Industrial Garin, Lote 35 Ruta Panamericana Km 37,5 1619 Garin	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://sew-eurodrive.at sew@sew-eurodrive.at
Belarus			
Sales	Minsk	SEW-EURODRIVE BY RybalkoStr. 26 BY-220033 Minsk	Tel.+375 (17) 298 38 50 Fax +375 (17) 29838 50 sales@sew.by
Belgium			
Assembly Sales Service	Brüssel	SEW Caron-Vector S.A. Avenue Eiffel 5 B-1300 Wavre	Tel. +32 10 231-311 Fax +32 10 231-336 http://www.sew-eurodrive.be info@caron-vector.be
Service Competence Center	Industrial Gears	SEW Caron-Vector 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	Sao 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 6489-9133 Fax +55 11 6480-3328 http://www.sew-eurodrive.com.br sew@sew.com.br
Additional addresses for service in Brazil provided on request!			
Bulgaria			
Sales	Sofia	BEVER-DRIVE GmbH Bogdanovetz Str.1 BG-1606 Sofia	Tel. +359 2 9151160 Fax +359 2 9151166 bever@fastbg.net
Cameroon			
Sales	Douala	Electro-Services Rue Drouot Akwa B.P. 2024 Douala	Tel. +237 33 431137 Fax +237 33 431137



Canada				
Assembly Sales Service	Toronto	SEW-EURODRIVE CO. OF CANADA LTD. 210 Walker Drive Bramalea, Ontario L6T3W1	Tel. +1 905 791-1553 Fax +1 905 791-2999 http://www.sew-eurodrive.ca marketing@sew-eurodrive.ca	
	Vancouver	SEW-EURODRIVE CO. OF CANADA LTD. 7188 Honeyman Street Delta. B.C. V4G 1 E2	Tel. +1 604 946-5535 Fax +1 604 946-2513 marketing@sew-eurodrive.ca	
	Montreal	SEW-EURODRIVE CO. OF CANADA LTD. 2555 Rue Leger LaSalle, Quebec H8N 2V9	Tel. +1 514 367-1124 Fax +1 514 367-3677 marketing@sew-eurodrive.ca	
Additional addresses for service in Canada provided on request!				
Chile				
Assembly Sales Service	Santiago de Chile	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 75770-00 Fax +56 2 75770-01 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 25322611 info@sew-eurodrive.cn http://www.sew-eurodrive.cn	
	Assembly Sales Service	Suzhou	SEW-EURODRIVE (Suzhou) Co., Ltd. 333, Suhong Middle Road Suzhou Industrial Park Jiangsu Province, 215021	Tel. +86 512 62581781 Fax +86 512 62581783 suzhou@sew-eurodrive.cn
		Guangzhou	SEW-EURODRIVE (Guangzhou) Co., Ltd. No. 9, JunDa Road East Section of GETDD Guangzhou 510530	Tel. +86 20 82267890 Fax +86 20 82267891 guangzhou@sew-eurodrive.cn
Assembly Sales Service	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 84478398 Fax +86 27 84478388	
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 sewcol@sew-eurodrive.com.co	
Croatia				
Sales Service	Zagreb	KOMPEKS d. o. o. PIT Erdödy 4 II HR 10 000 Zagreb	Tel. +385 1 4613-158 Fax +385 1 4613-158 kompeks@inet.hr	



Czech Republic			
Sales	Praha	SEW-EURODRIVE CZ S.R.O. Business Centrum Praha Lužná 591 CZ-16000 Praha 6 - Vokovice	Tel. +420 255 709 601 Fax +420 220 121 237 http://www.sew-eurodrive.cz sew@sew-eurodrive.cz
Denmark			
Assembly Sales Service	Kopenhagen	SEW-EURODRIVEA/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	Lahti	SEW-EURODRIVE OY Vesimäentie 4 FIN-15860 Hollola 2	Tel. +358 201 589-300 Fax +358 3 780-6211 sew@sew.fi http://www.sew-eurodrive.fi
Production Assembly Service	Karkkila	SEW Industrial Gears OY Valurinkatu 6 FIN-03600 Karkkila	Tel. +358 201 589-300 Fax +358 201 589-310 sew@sew.fi http://www.sew-eurodrive.fi
Gabon			
Sales	Libreville	Electro-Services B.P. 1889 Libreville	Tel. +241 7340-11 Fax +241 7340-12
Great Britain			
Assembly Sales Service	Normanton	SEW-EURODRIVE Ltd. Beckbridge Industrial Estate P.O. Box No.1 GB-Normanton, West- Yorkshire WF6 1QR	Tel. +44 1924 893-855 Fax +44 1924 893-702 http://www.sew-eurodrive.co.uk info@sew-eurodrive.co.uk
Greece			
Sales Service	Athen	Christ. Boznos & Son S.A. 12, 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	Budapest	SEW-EURODRIVE Kft.	Tel. +36 1 437 06-58
Service		H-1037 Budapest Kunigunda u. 18	Fax +36 1 437 06-50 office@sew-eurodrive.hu
India			
Assembly	Vadodara	SEW-EURODRIVE India Private Limited	Tel. +91 265 2831086
Sales		Plot No. 4, GIDC	Fax +91 265 2831087
Service		POR Ramangamdi • Vadodara - 391 243 Gujarat	http://www.seweurodriveindia.com sales@seweurodriveindia.com subodh.ladwa@seweurodriveindia.com
Ireland			
Sales	Dublin	Alperon Engineering Ltd.	Tel. +353 1 830-6277
Service		48 Moyle Road Dublin Industrial Estate Glasnevin, Dublin 11	Fax +353 1 830-6458 info@alperon.ie http://www.alperon.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	Milano	SEW-EURODRIVE di R. Blicke & Co.s.a.s.	Tel. +39 02 96 9801
Sales		Via Bernini,14	Fax +39 02 96 799781
Service		I-20020 Solaro (Milano)	http://www.sew-eurodrive.it sewit@sew-eurodrive.it
Ivory Coast			
Sales	Abidjan	SICA Ste industrielle et commerciale pour l'Afrique 165, Bld de Marseille B.P. 2323, Abidjan 08	Tel. +225 2579-44 Fax +225 2584-36
Japan			
Assembly	Iwata	SEW-EURODRIVE JAPAN CO., LTD	Tel. +81 538 373811
Sales		250-1, Shimoman-no,	Fax +81 538 373814
Service		Iwata Shizuoka 438-0818	http://www.sew-eurodrive.co.jp sewjapan@sew-eurodrive.co.jp
Korea			
Assembly	Ansan-City	SEW-EURODRIVE KOREA CO., LTD.	Tel. +82 31 492-8051
Sales		B 601-4, Banweol Industrial Estate	Fax +82 31 492-8056
Service	1048-4, Shingil-Dong Ansan 425-120	http://www.sew-korea.co.kr master@sew-korea.co.kr	
	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
Latvia			
Sales	Riga	SIA Alas-Kuul Katlakalna 11C LV-1073 Riga	Tel. +371 7139253 Fax +371 7139386 http://www.alas-kuul.com info@alas-kuul.com



Lebanon			
Sales	Beirut	Gabriel Acar & Fils sarl B. P. 80484 Bourj Hammoud, Beirut	Tel. +961 1 4947-86 +961 1 4982-72 +961 3 2745-39 Fax +961 1 4949-71 gacar@beirut.com
Lithuania			
Sales	Alytus	UAB Irseva Naujoji 19 LT-62175 Alytus	Tel. +370 315 79204 Fax +370 315 56175 info@irseva.lt http://www.sew-eurodrive.lt
Luxembourg			
Assembly Sales Service	Brüssel	CARON-VECTOR S.A. Avenue Eiffel 5 B-1300 Wavre	Tel. +32 10 231-311 Fax +32 10 231-336 http://www.sew-eurodrive.lu info@caron-vector.be
Malaysia			
Assembly Sales Service	Johore	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	Queretaro	SEW-EURODRIVE MEXIKO SA DE CV SEM-981118-M93 Tequisquiapan No. 102 Parque Industrial Queretaro C.P. 76220 Queretaro, Mexico	Tel. +52 442 1030-300 Fax +52 442 1030-301 http://www.sew-eurodrive.com.mx scmexico@sew-eurodrive.com.mx
Morocco			
Sales	Casablanca	Afit 5, rue Emir Abdelkader MA 20300 Casablanca	Tel. +212 22618372 Fax +212 22618351 ali.alami@premium.net.ma
Netherlands			
Assembly Sales Service	Rotterdam	VECTOR Aandrijftechniek B.V. Industrieweg 175 NL-3044 AS Rotterdam Postbus 10085 NL-3004 AB Rotterdam	Tel. +31 10 4463-700 Fax +31 10 4155-552 http://www.vector.nu info@vector.nu
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
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



Peru			
Assembly	Lima	SEW DEL PERU MOTORES REDUCTORES S.A.C.	Tel. +51 1 3495280
Sales		Los Calderos, 120-124	Fax +51 1 3493002
Service		Urbanizacion Industrial Vulcano, ATE, Lima	http://www.sew-eurodrive.com.pe sewperu@sew-eurodrive.com.pe
Poland			
Assembly	Lodz	SEW-EURODRIVE Polska Sp.z.o.o.	Tel. +48 42 67710-90
Sales		ul. Techniczna 5	Fax +48 42 67710-99
Service		PL-92-518 Łódź	http://www.sew-eurodrive.pl sew@sew-eurodrive.pl
		24 Hour Service	Tel. +48 602 739 739 (+48 602 SEW SEW) sewis@sew-eurodrive.pl
Portugal			
Assembly	Coimbra	SEW-EURODRIVE, LDA.	Tel. +351 231 20 9670
Sales		Apartado 15	Fax +351 231 20 3685
Service		P-3050-901 Mealhada	http://www.sew-eurodrive.pt infosew@sew-eurodrive.pt
Romania			
Sales	București	Sialco Trading SRL	Tel. +40 21 230-1328
Service		str. Madrid nr.4	Fax +40 21 230-7170
		011785 Bucuresti	sialco@sialco.ro
Russia			
Assembly	St. Petersburg	ZAO SEW-EURODRIVE	Tel. +7 812 3332522 +7 812 5357142
Sales		P.O. Box 36	Fax +7 812 3332523
Service		195220 St. Petersburg Russia	http://www.sew-eurodrive.ru sew@sew-eurodrive.ru
Senegal			
Sales	Dakar	SENEMECA	Tel. +221 338 494 770
		Mécanique Générale	Fax +221 338 494 771
		Km 8, Route de Rufisque	senemeca@sentoo.sn
		B.P. 3251, Dakar	
Serbia			
Sales	Beograd	DIPAR d.o.o.	Tel. +381 11 347 3244 / +381 11 288 0393
		Ustanicka 128a	Fax +381 11 347 1337
		PC Košum, IV floor	office@dipar.co.yu
		SCG-11000 Beograd	
Singapore			
Assembly	Singapore	SEW-EURODRIVE PTE. LTD.	Tel. +65 68621701
Sales		No 9, Tuas Drive 2	Fax +65 68612827
Service		Jurong Industrial Estate	http://www.sew-eurodrive.com.sg sewsingapore@sew-eurodrive.com
		Singapore 638644	
Slovakia			
Sales	Bratislava	SEW-Eurodrive SK s.r.o.	Tel. +421 2 33595 202
		Rybničná 40	Fax +421 2 33595 200
		SK-831 06 Bratislava	sew@sew-eurodrive.sk http://www.sew-eurodrive.sk
	Žilina	SEW-Eurodrive SK s.r.o.	Tel. +421 41 700 2513
		Industry Park – PChZ	Fax +421 41 700 2514
		ulica M.R.Štefánika 71	sew@sew-eurodrive.sk
		SK-010 01 Žilina	



Slovakia			
	Banská Bystrica	SEW-Eurodrive SK s.r.o. Rudlovska 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 jhainsworth@sew.co.za
	Durban	SEW-EURODRIVE (PROPRIETARY) LIMITED 2 Monaceo Place Pinetown Durban P.O. Box 10433, Ashwood 3605	Tel. +27 31 700-3451 Fax +27 31 700-3847 hengela@sew.co.za
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
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 info@sew-eurodrive.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
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 5, Rue El Houdaibiah 1000 Tunis	Tel. +216 71 4340-64 + 71 4320-29 Fax +216 71 4329-76 tms@tms.com.tn
Turkey			
Assembly Sales Service	Istanbul	SEW-EURODRIVE Hareket Sistemleri San. ve Tic. Ltd. Sti. Bagdat Cad. Koruma Cikmazi No. 3 TR-34846 Maltepe ISTANBUL	Tel. +90 216 4419164, 3838014, 3738015 Fax +90 216 3055867 http://www.sew-eurodrive.com.tr sew@sew-eurodrive.com.tr
Ukraine			
Sales Service	Dnepropetrovsk	SEW-EURODRIVE Str. Rabochaja 23-B, Office 409 49008 Dnepropetrovsk	Tel. +380 56 370 3211 Fax +380 56 372 2078 http://www.sew-eurodrive.ua sew@sew-eurodrive.ua
USA			
Production Assembly Sales Service Cooperate Offices	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 +1 937 440-3799 cstroy@seweurodrive.com
	Southwest Region	SEW-EURODRIVE INC. 3950 Platinum Way Dallas, Texas 75237	Tel. +1 214 330-4824 Fax +1 214 330-4724 csdallas@seweurodrive.com
	Western Region	SEW-EURODRIVE INC. 30599 San Antonio St. Hayward, CA 94544	Tel. +1 510 487-3560 Fax +1 510 487-6433 cshayward@seweurodrive.com
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



Index

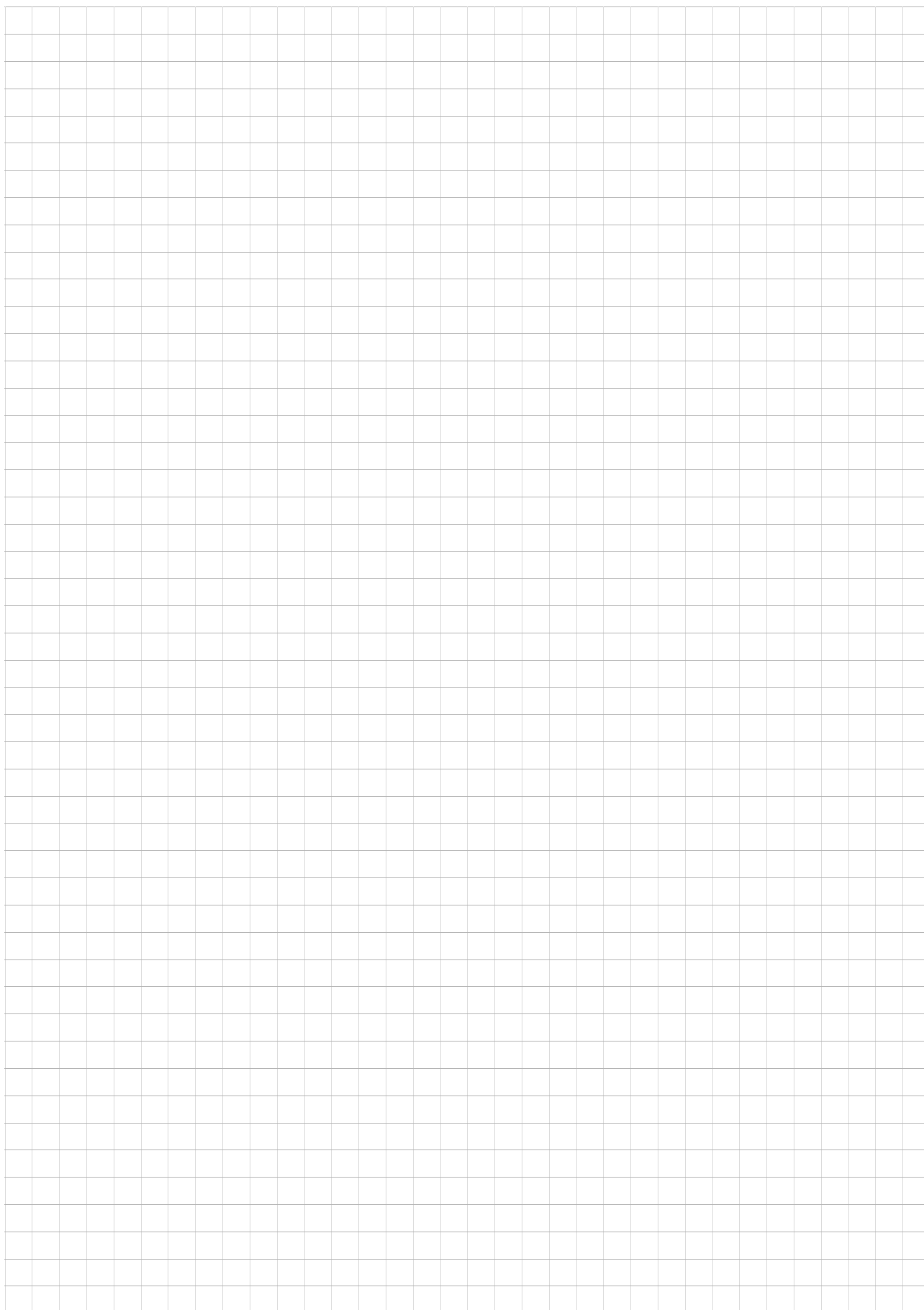
A	
Additional documentation.....	8
Addressing device.....	60
Assigning the slave address	
MOVI-SWITCH®-2S/CK0	60
Assignment of AND3 plug connectors	
MOVI-SWITCH®-2S/CB0	39
Assignment of ASA3 plug connectors	
MOVI-SWITCH®-2S/CB0	38
B	
Backstop	
Lubrication	75
BE05-BE2	78
BE1-BE11	79
Brake	
BE05-BE11, replacing the brake disk	82
BE05-BE11, setting the working air gap	81
BE05-BE2	78
BE1-BE11	79
Brakemotor DR.71- DR.112	
Inspection.....	80
Brakemotor DR.90-DR.112	
Design.....	77
Brakemotors DR.71-DR.80	
Design.....	76
Braking torque of the brake	
Technical data.....	87
C	
Connection	
Safety notes.....	9
Connection of MOVI-SWITCH®-1E	
Control signals	25
Supply system connection	25
Via field distributor	26
With ASA3 plug connector	30, 31
With brake control	28
Without brake control	27
Connection of MOVI-SWITCH®-2S/CB0	
Assignment of AND3 plug connectors	39
Assignment of ASA3 plug connectors.....	38
Connector assignment for control unit	36
Control signals	33
Hybrid cable	42
Supply system and control.....	44
Supply system connection.....	34
Terminal assignment of terminal box.....	37
Via field distributor	35
Connection of MOVI-SWITCH®-2S/CK0	
Control unit assignment.....	46
Hybrid cable.....	51
Plug connectors AND3 + AVS0	48
Terminal assignment	47
Control signals	
MOVI-SWITCH®-1E	27
Control unit	
MOVI-SWITCH®-2S/CB0	36
MOVI-SWITCH®-2S/CK0	46
Conventional control.....	22
Copyright notice.....	6
D	
Data transfer AS-Interface	
MOVI-SWITCH®-2S/CK0	59
Designated use.....	7
DIP switch description	
MOVI-SWITCH®-2S/CB0	55
MOVI-SWITCH®-2S/CK0	57
Disposal	70
Documentation, additional	8
E	
Electrical installation	22
Electronics nameplate	14
Exclusion of liability.....	5
H	
Hoist applications.....	8
Hybrid cable	
MOVI-SWITCH®-2S/CB0	42
MOVI-SWITCH®-2S/CK0	51
Hybrid cable connection	
MOVI-SWITCH®-2S/CB0	42
MOVI-SWITCH®-2S/CK0	51
I	
Inspection	
DR.71- DR.112 brakemotors	80
Motor DR.71-DR.112	74
Inspection intervals	72

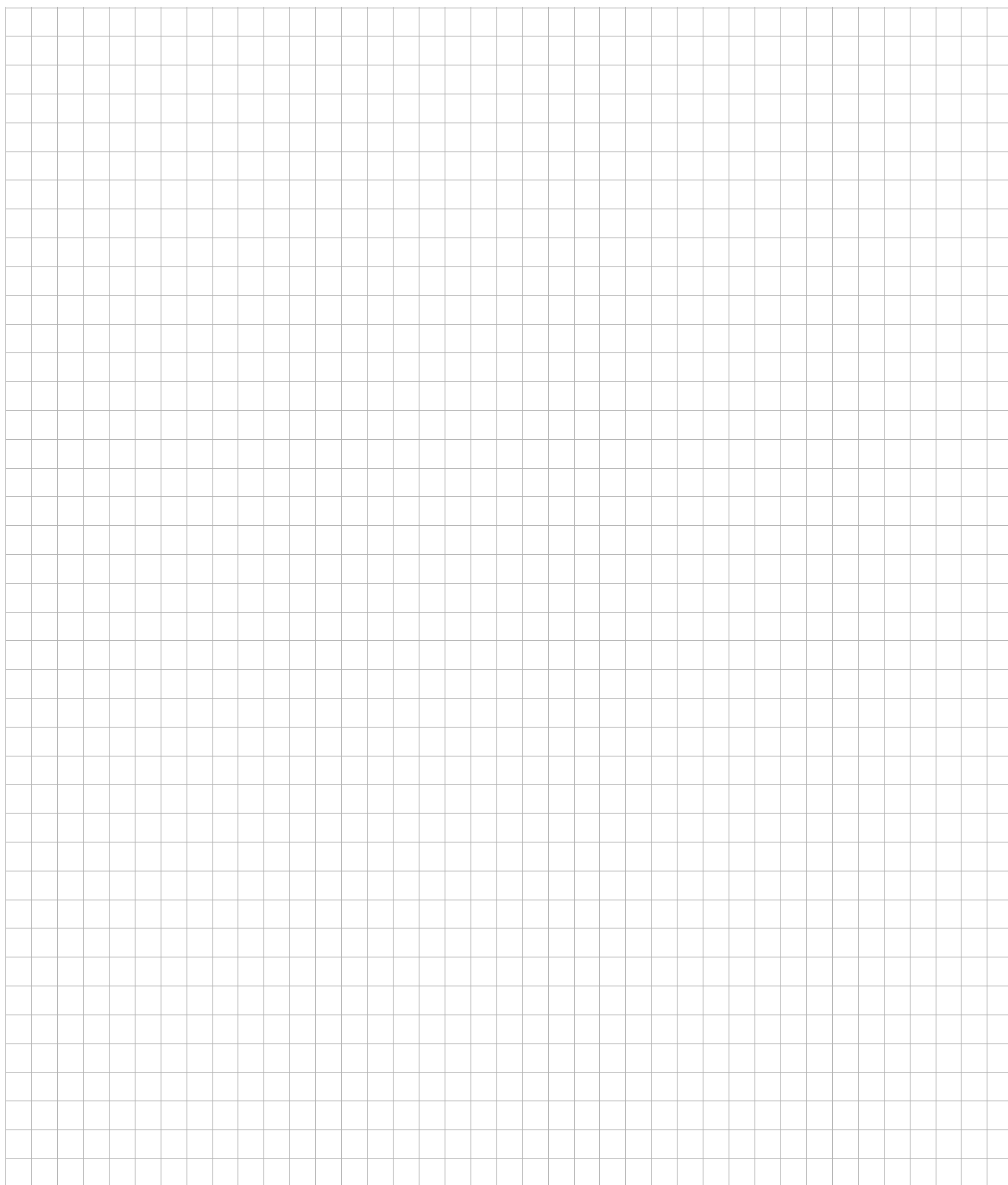


Inspection/Maintenance	71	R	
Installation	8	Rated voltage	22
Installation altitude	24	Replacing the brake disk	82
Installation instructions	16, 22	Right to claim under limited warranty	5
Installation tolerances	16		
L		S	
LED display		Safe disconnection	9
MOVI-SWITCH®-2S/CB0	62	Safety functions	8
MOVI-SWITCH®-2S/CK0	64	Safety notes	7
Lubrication		Electrical connection	9
Backstop	75	General	7
		Installation	8
		Operation	9
		Storage	8
		Structure	5
		Transportation	8
M		Service	69
Maintenance intervals	72	MOVI-SWITCH®-1E	66
Mechanical installation	16	MOVI-SWITCH®-2S	66
Modular terminal box	67	Setting the working air gap	
Monitoring		BE05-BE11 brakes	81
MOVI-SWITCH®-1E	54	SEW Service	69
MOVI-SWITCH®-2S/CB0	56	Starting the motor	
MOVI-SWITCH®-2S/CK0	57	MOVI-SWITCH®-1E	54
Motor DR.71-DR.112		MOVI-SWITCH®-2S/CB0	56
Design	73	Startup	53
Inspection	74	MOVI-SWITCH®-1E	54
Motor nameplate	13	MOVI-SWITCH®-2S/CB0	55
Mounting	16	MOVI-SWITCH®-2S/CK0	57
Mounting close to the motor	15, 18	Startup notes	53
MOVI-SWITCH®-2S/CB0	39	Storage	8
MOVI-SWITCH®-2S/CK0	48	Structure	
With option P22A	18	DR.71-DR.80 brakemotors	76
		DR.90-DR.112 brakemotors	77
		Motor DR.71-DR.112	73
		Structure of the safety notes	5
		Supply system leads	22
N			
Nameplate		T	
MOVI-SWITCH®-1E	12	Target group	7
MOVI-SWITCH®-2S	13	Technical data	
		Braking torque of the brake	87
O		MOVI-SWITCH®-1E	84
Operation		MOVI-SWITCH®-2S/CB0	85
Safety notes	9	MOVI-SWITCH®-2S/CK0	86
Other applicable documentation	8	Permitted rolling bearing types	88
		Work done	87
		Working air gap	87
P			
PE connection	23		
Permitted rolling bearing types	88		
Plug connectors AND3 + AVS0			
MOVI-SWITCH®-2S/CK0	48		
Power supply, DC 24 V	22		
Protective devices	23		



Terminal assignment	
MOVI-SWITCH®-2S/CB0	37
MOVI-SWITCH®-2S/CK0	47
Terminal tightening torques	
MOVI-SWITCH®-1E	20
MOVI-SWITCH®-2S	21
Tightening torques	19
Blanking plug cable glands	19
Cable glands	19
Control unit/terminal box	19
Modular terminal box	20
Transportation	8
U	
UL-compliant installation	24
Unit structure	10
MOVI-SWITCH®-1E	10
MOVI-SWITCH®-2S	11
W	
Wire cross section	22
Work done	
Technical data	87
Working air gap	
Technical data	87





How we're driving the world

With people who think fast and develop the future with you.

With a worldwide service network that is always close at hand.

With drives and controls that automatically improve your productivity.

With comprehensive knowledge in virtually every branch of industry today.

With uncompromising quality that reduces the cost and complexity of daily operations.



SEW-EURODRIVE
Driving the world

With a global presence that offers responsive and reliable solutions. Anywhere.

With innovative technology that solves tomorrow's problems today.

With online information and software updates, via the Internet, available around the clock.

SEW
EURODRIVE

SEW-EURODRIVE GmbH & Co KG
P.O. Box 3023 · D-76642 Bruchsal / Germany
Phone +49 7251 75-0 · Fax +49 7251 75-1970
sew@sew-eurodrive.com

→ www.sew-eurodrive.com