

en



Installation Instructions

ELEKTROMAT

SE 14.21-25,40

Model: 10002204 00098

Status: 10.03.2014

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Symbols



Warning - Potential injury or danger to life!



Warning - Danger to life from electric current!



Note - Important information!



Requirement - Required action!

Schematic representations are based on product examples. Deviations from delivered products are possible.

1 General safety information

Specified normal use

The drive unit is intended for sectional doors with full counter-balancing.

The safe operation is only guaranteed with normal specified use. The drive unit is to be protected from rain, moisture and aggressive ambient conditions. No liability for damage caused by other applications or non-observance of the information in the manual.

Modifications are only permitted with the agreement of the manufacturer. Otherwise the Manufacturer's Declaration shall be rendered null and void.

Safety information

Installation and initial operation tasks are to be performed by trained, skilled fitters only.

Only trained electrical craftsmen are permitted to work on electrical equipment. They must assess the tasks assigned to them, recognise potential danger zones and be able to take appropriate safety measures.

The installation is only to be carried out with the supply off.

Observe the applicable regulations and standards.

Coverings and safety devices

Do not operate unless corresponding coverings and safety devices are fitted/installed.

Ensure that gaskets are correctly positioned and cable glands are correctly tightened.

Spare parts

Use only original spare parts.

2 Technical Data

Type	SG 50	
Output torque	140	Nm
Output speed	21	rpm
Output shaft / hollow shaft	25,40	mm
Maximum output speed open / close for frequency inverter operation	36 / 30	rpm
Maximum holding torque	600	Nm
Maximum door weight	6000	N
Supply voltage	3N~ 400	V
Operating current	2,60	A
Operating frequency	50	Hz
Power factor $\cos \varphi$	0,52	
Maximum movement per hour	16	h ⁻¹
Class of protection	IP 54	
Limit switch range (maximum revolutions of output shaft / hollow shaft)	20	
Temperature range	-10 / +40 (+60)	°C

When using a temperature range of +40°...+60°C use half of maximum movements per hour.



Caution - Component damage can result!

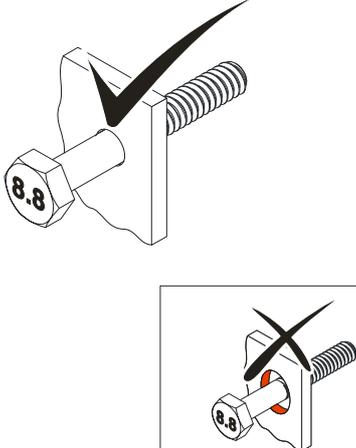
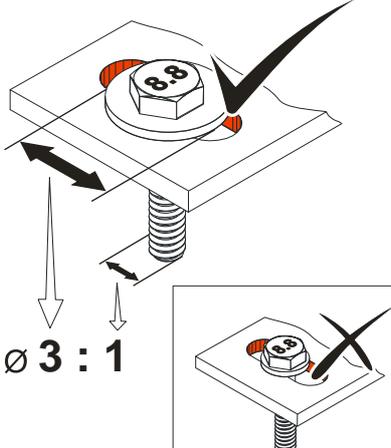
- The maximum current that can be switched over the limit switch is 1A for 230 V AC and 0.4 A for 24V DC

3 Mechanical installation

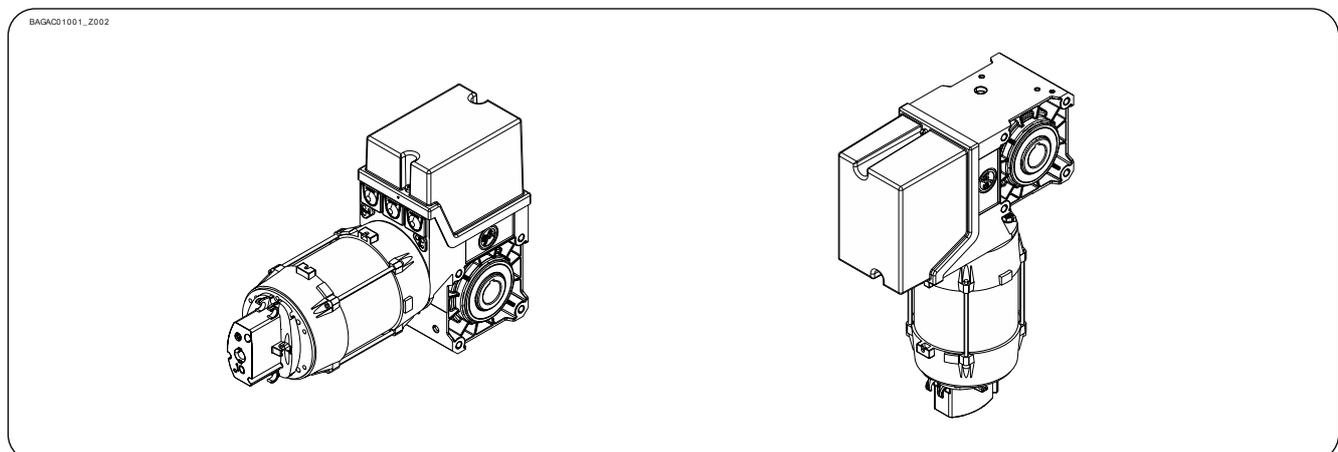
Prerequisites

The permissible loads on walls, fastenings, mountings and transmission elements must not be exceeded, even for maximum holding torques or locking torques (► refer to technical data).

Connection elements:

<ul style="list-style-type: none"> ► Self-locking connection elements with a minimum strength of 800 N/mm² (8.8) must be used. 	<ul style="list-style-type: none"> ► Utilize the hole diameter to the full. 	<ul style="list-style-type: none"> ► Use adequately dimensioned washers for elongated holes.
<p>BAGAB00001_2002</p>  <p>≥ 800 N/mm²</p>	<p>BAGAB00002_2002</p> 	<p>BAGAB00003_2002</p>  <p>Ø 3 : 1</p>

Permissible mounting positions



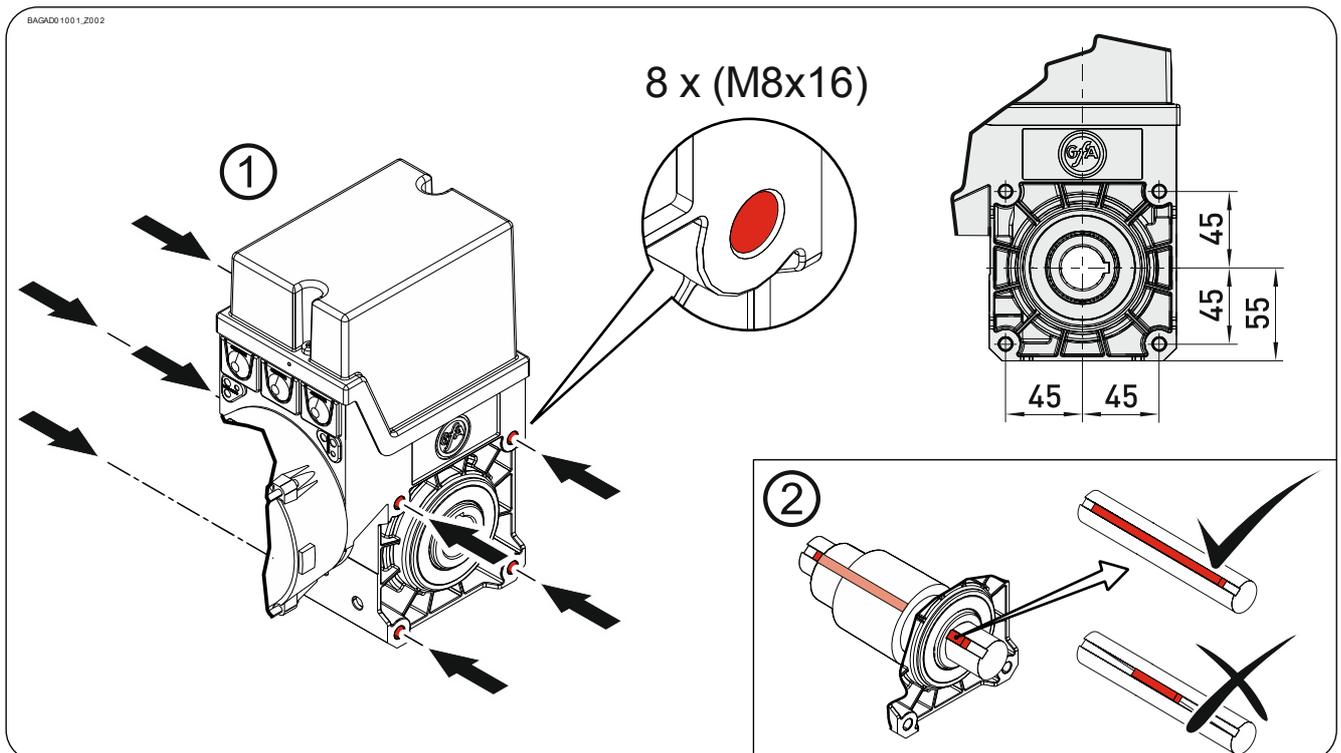
Mounting

Eight threads are provided for mounting.

- ▶ Use at least 2 of these (①).

Keys are used to connect to the door shaft.

- ▶ Use a key that is at least as long as the hollow shaft (②).



Installation

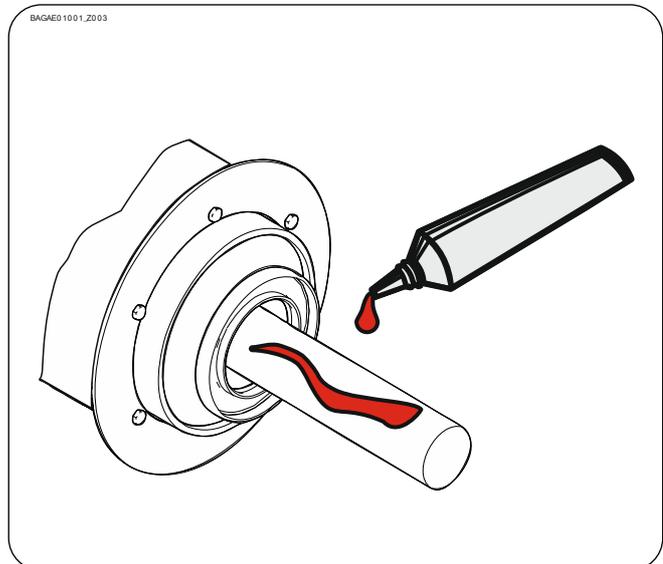
The descriptions below apply to general door specifications. The specifications of the door manufacturer must also be observed during installation.



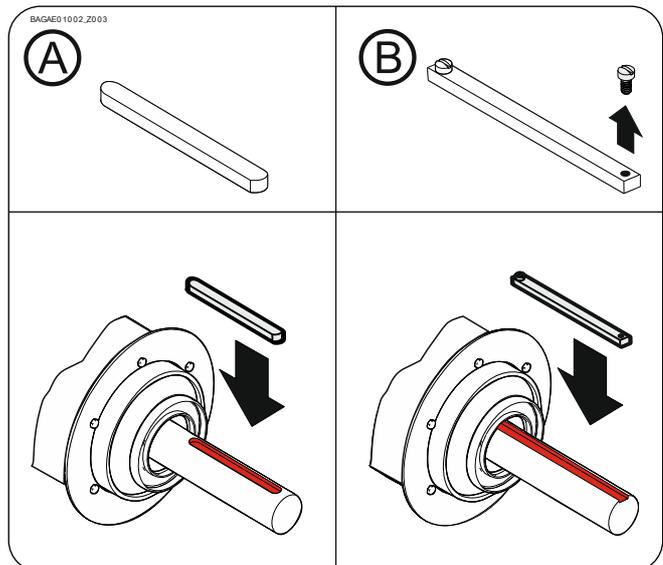
Warning - Potential injury or danger to life!

- During installation, be sure to use a lifting device that has a sufficient load-carrying capacity.

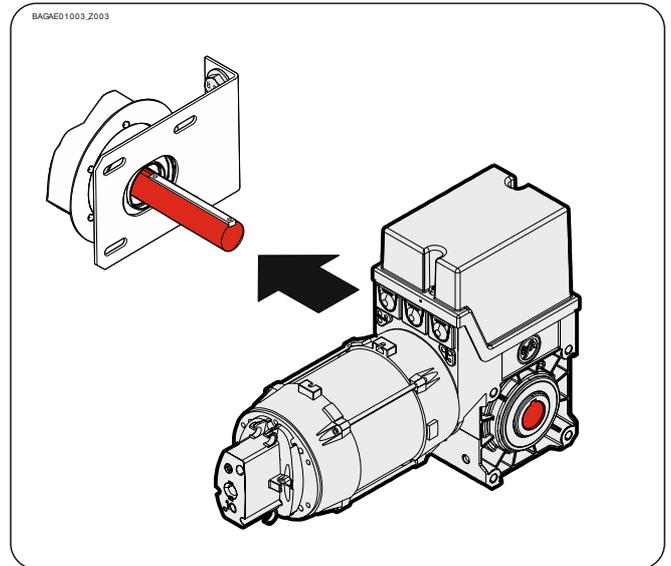
- ▶ Thoroughly grease the door shaft.



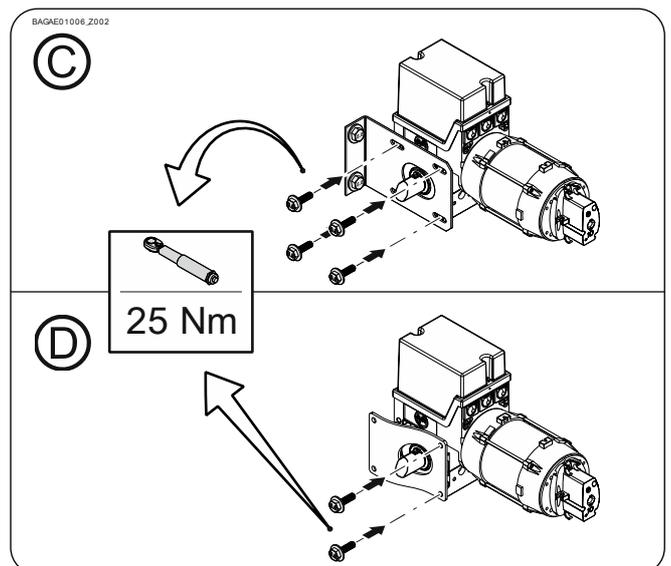
- ▶ Mount the keys. Observe possible variants
Ⓐ or Ⓑ.



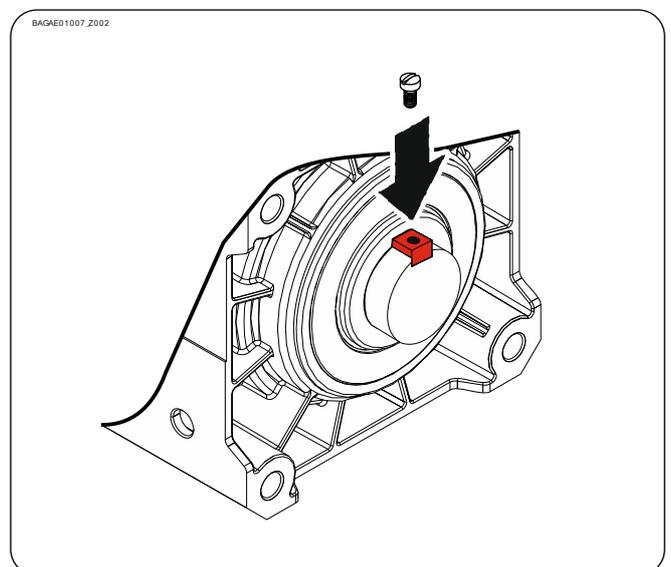
- ▶ Attach the drive unit.



- ▶ Tighten all connection elements (M8) to 25 Nm. Install all other connection elements according to the specifications of the door manufacturer.



- ▶ Secure the keys (version ② only).



4 Electrical installation



Warning - Danger to life from electric current!

- Switch the mains OFF and check that the cables are de-energised
- Observe the applicable regulations and standards
- Make a proper electrical connection
- Use suitable tools



Installation location for the control!

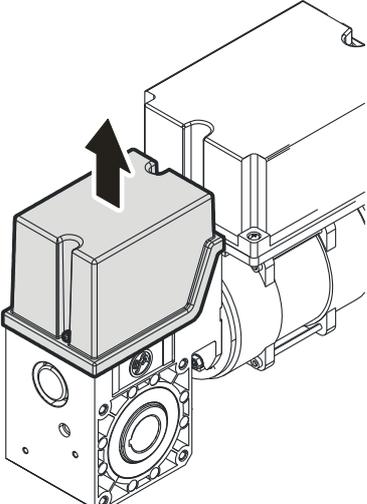
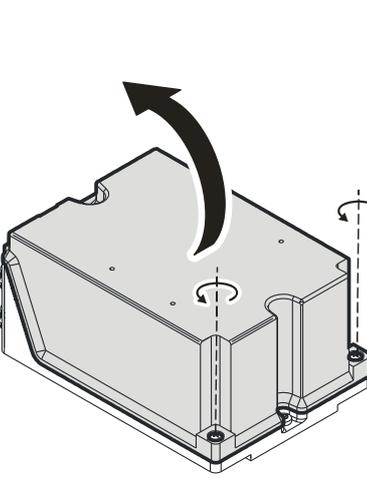
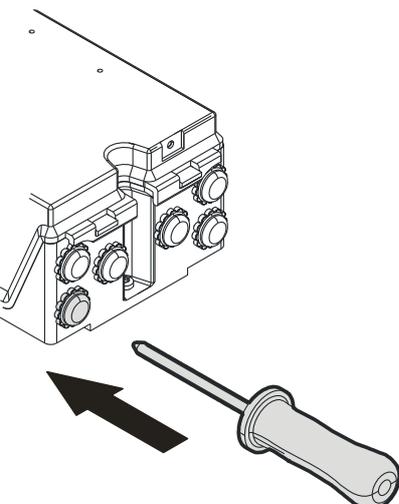
- Use indoors only
- Installation is possible adjacent the drive unit



On-site back-up fuse and mains disconnector!

- Use a three-pole automatic circuit breaker with a maximum of 10 A as protection.
- Connect to the indoor installation via an all-pole disconnecter unit $\geq 10A$ in accordance with EN 12453 (e.g. plug connection CEE, mains switch)

Performing electrical installation

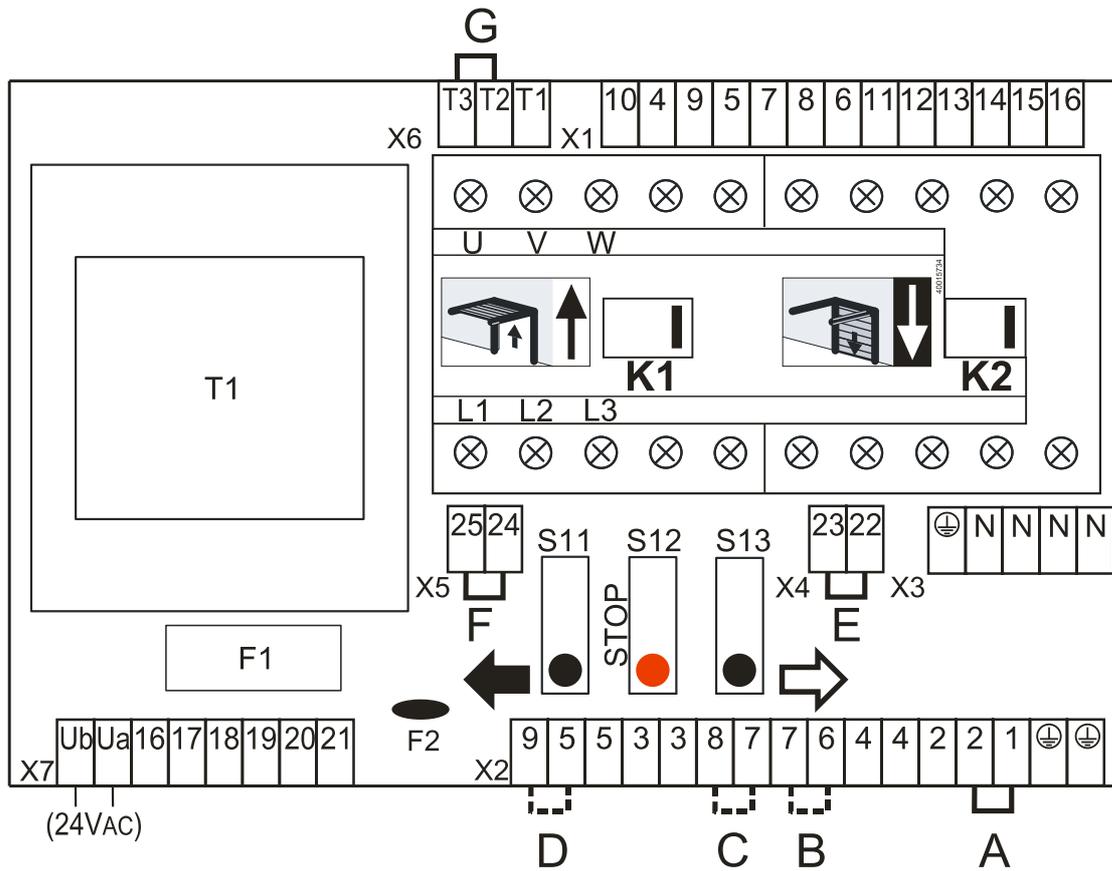
<p>Remove the cover.</p>	<p>Remove the cover.</p>	<p>Open the cable conduit. Insert the mains supply cable.</p>
<p><small>BHICE01_2001</small></p> 	<p><small>BHICF01_2001</small></p> 	<p><small>BHICG01_2001</small></p> 



Caution - Component damage can result!

- Use an appropriate tool to open the cable conduit.
- Sealing is ensured only if the hole in the cable conduit is smaller than the cable diameter.

5 Schematic of reversing contactor board



T1 Transformer 400 V AC, 230 V AC / 24 V A

F1 Control fuse 5x20 1A, slow

F2 Residual current monitoring 0.33 A

K1 OPEN contactor

K2 Close contactor

S11 Open pushbutton

S12 Stop pushbutton

S13 Close pushbutton

X1-7 Terminal strip for the reversing contactor board

A-F Wire-links

G Transformer bridge

Wire-links A-F

Wire link A:

This wire link is necessary for operation. Removing interrupts the control voltage. Electrical operation is no longer possible. Additional safety switches (e.g. interlocking switches or slack wire switches) can be connected instead of wire link A.

Wire link B:

By inserting the wire link, the door can be opened in self hold mode. A safety device against entrapment is required for uneven door leaves.

Wire link C:

By connecting a safety edge device with a relay contact (NO contact of an evaluation unit), the door closes in self-hold mode. If no safety edge device is connected, the door can only be closed in dead man mode.

Wire link D:

This wire link is used for single-channel radio control or for operation with a ceiling pull switch. With the first command, the door opens and travels to the OPEN final limit position. If a second command is given in the OPEN final limit position, the door returns to the CLOSE final limit position. If the door is stopped between its final limit positions, the next command causes the door to open.

Wire links E + F:

These wire links is necessary for operation. Additional safety switches can be connected instead of the wire link E (which interrupts opening) and F (which interrupts closing).

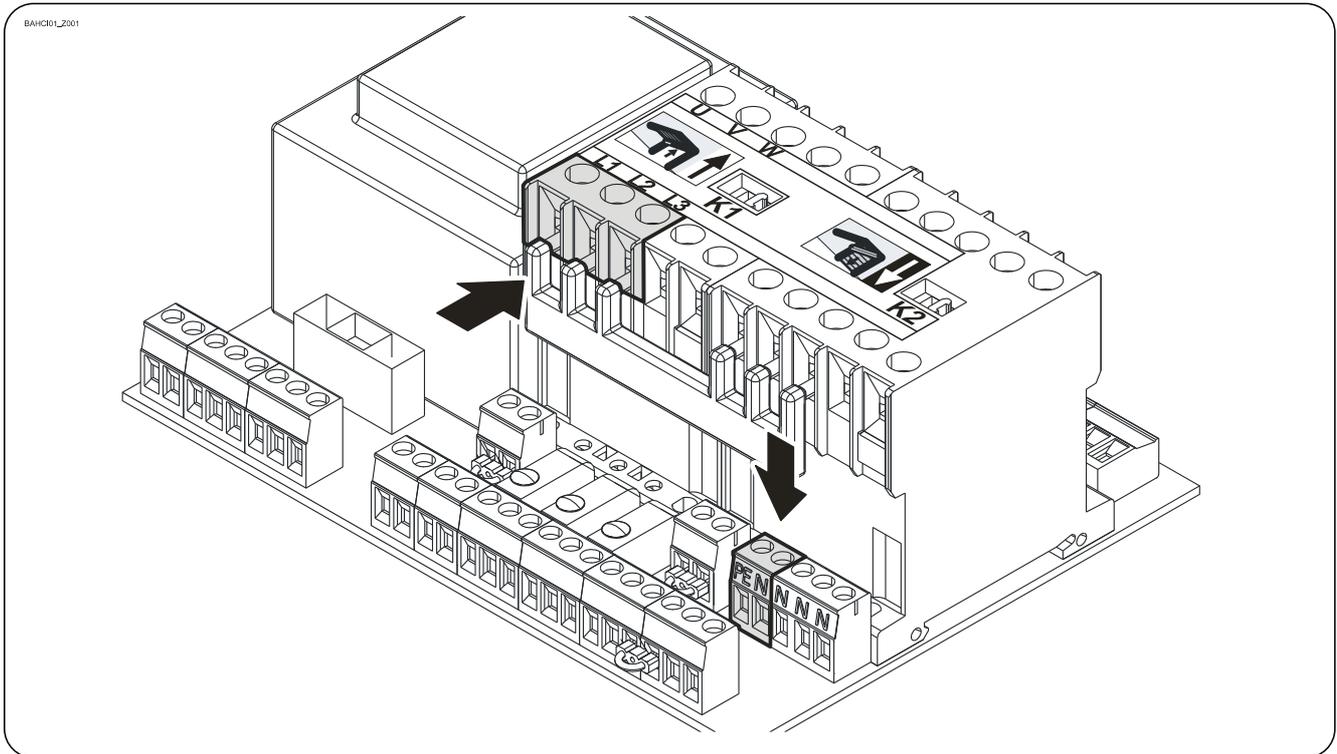
Transformer wire link G:

This wire link is necessary for operation. This wire link is used to match the transformer to the operating voltage.

T1 to T2 \triangleq 230 V AC

T2 to T3 \triangleq 400 V AC

Mains supply connection



Completing the electrical installation

Connect any control devices and/or safety devices.

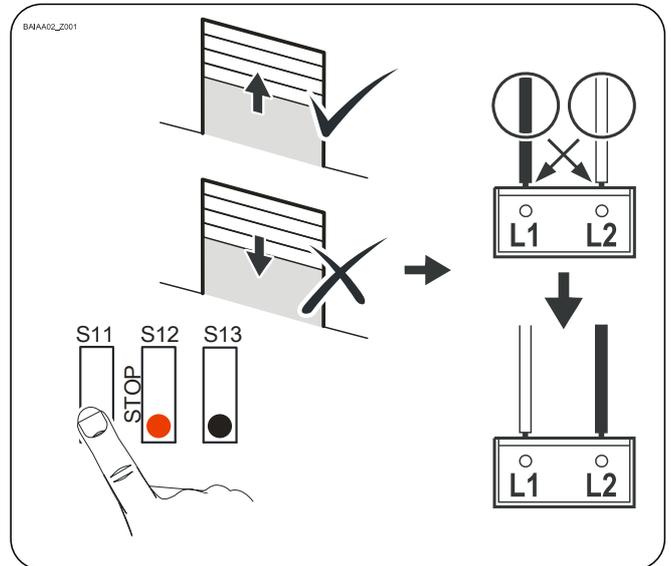
Mount the cable entries and/or cable glands.

6 Limit switch adjustment

Adjust the limit switches to define the final limits positions for OPEN and CLOSE.

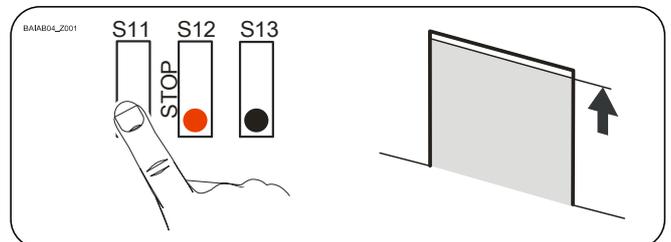
Prerequisite

The door must open when the OPEN pushbutton of the reversing contactor board is operated. If the door closes, L1 and L2 must be exchanged with the current switched off.



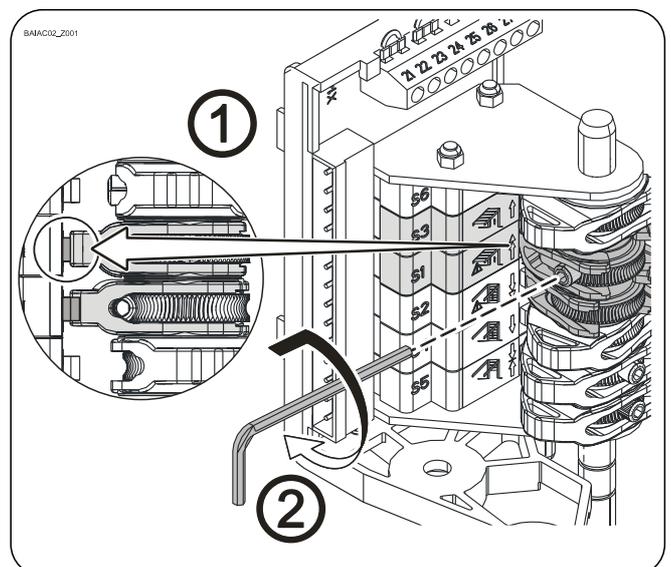
Adjusting the OPEN limit position

Use the OPEN pushbutton to open the door to the desired OPEN final limit position.



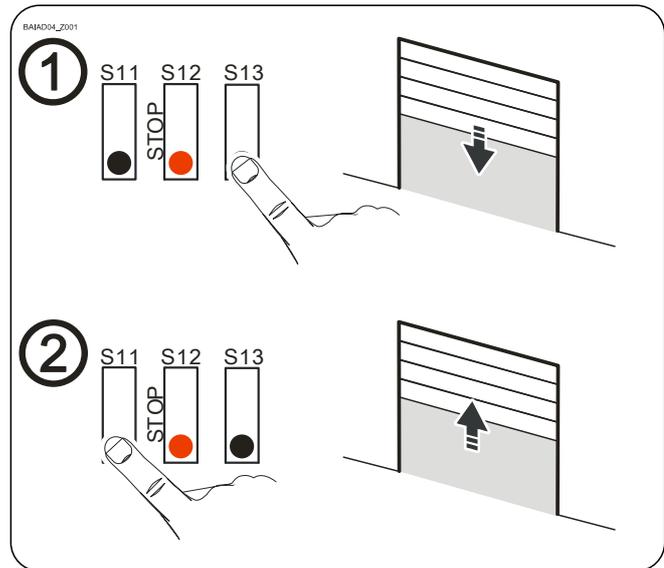
Rotate the cam of the OPEN limit switch S3 to the middle of tappet ①.

Tighten the screw of the cam ②.

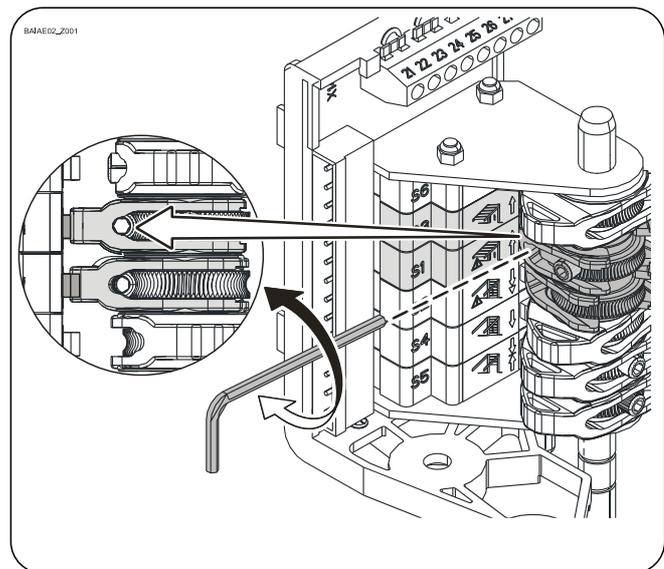


Check the position of the door:

Close the door ① until the cam is free and open the door again ② at OPEN final limit position.



Carry out fine adjustment to correct the OPEN final limit position. Check the door position after correction.

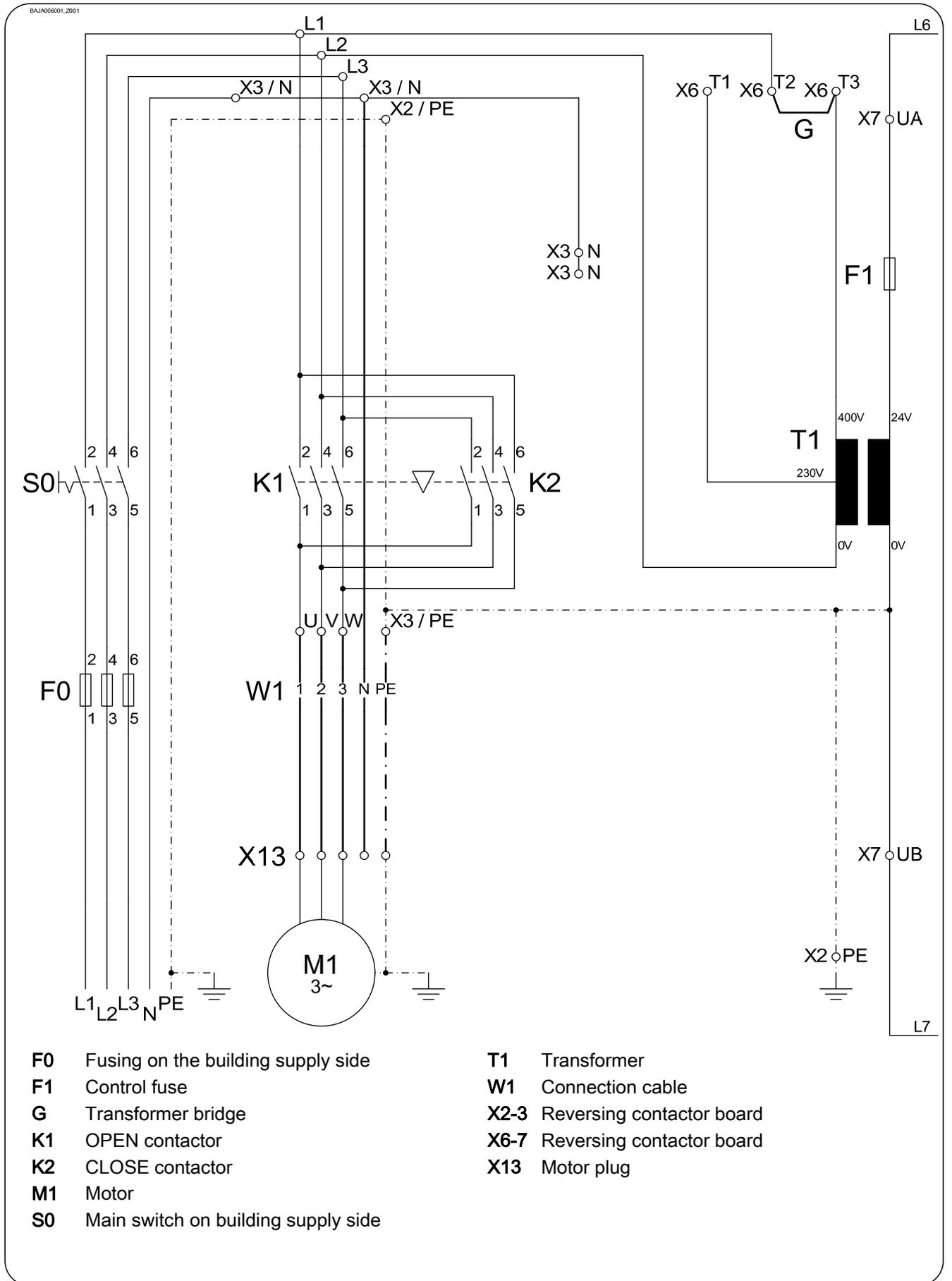


Adjusting the OPEN final limit position presets the OPEN SAFETY limit switch. The door must stop safely if the direction of rotation is wrong or the OPEN limit switch S3 fails. If necessary, carry out fine adjustment to correct the switching point of the limit switch.

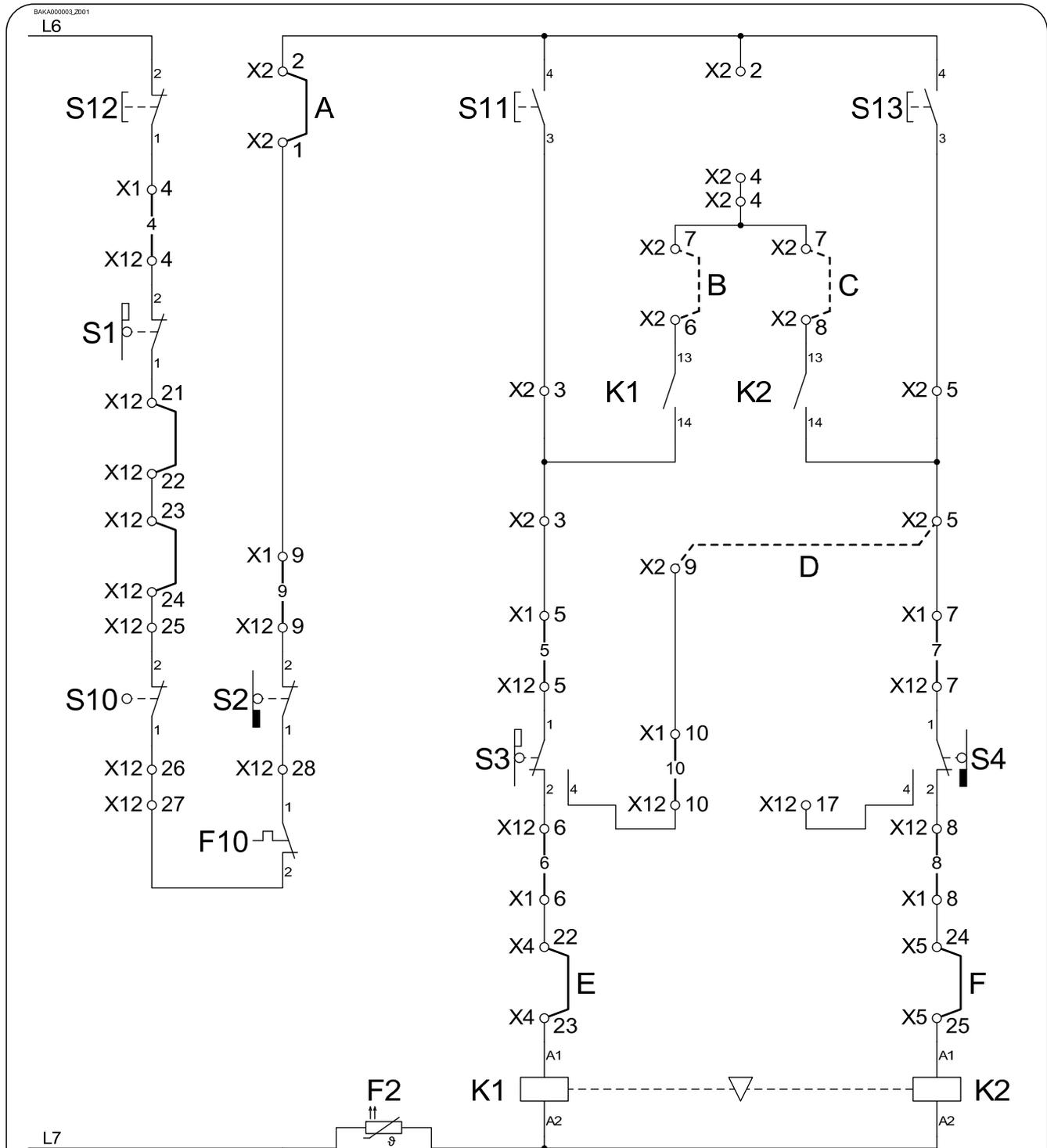
Adjusting the CLOSE final limit position and auxiliary limit switch

Carry out adjustment as for OPEN final limit position.

7 Main circuit



8 Control circuit



A - F Wire-links

F2 Residual current monitoring

F10 Motor temperature switch

S1 Safety limit switch OPEN

S2 Safety limit switch CLOSE

S3 OPEN operational limit switch

S4 CLOSE operational limit switch

S10 Manual interlock safety switches

S11 OPEN pushbutton (PCB)

S12 STOP pushbutton (PCB)

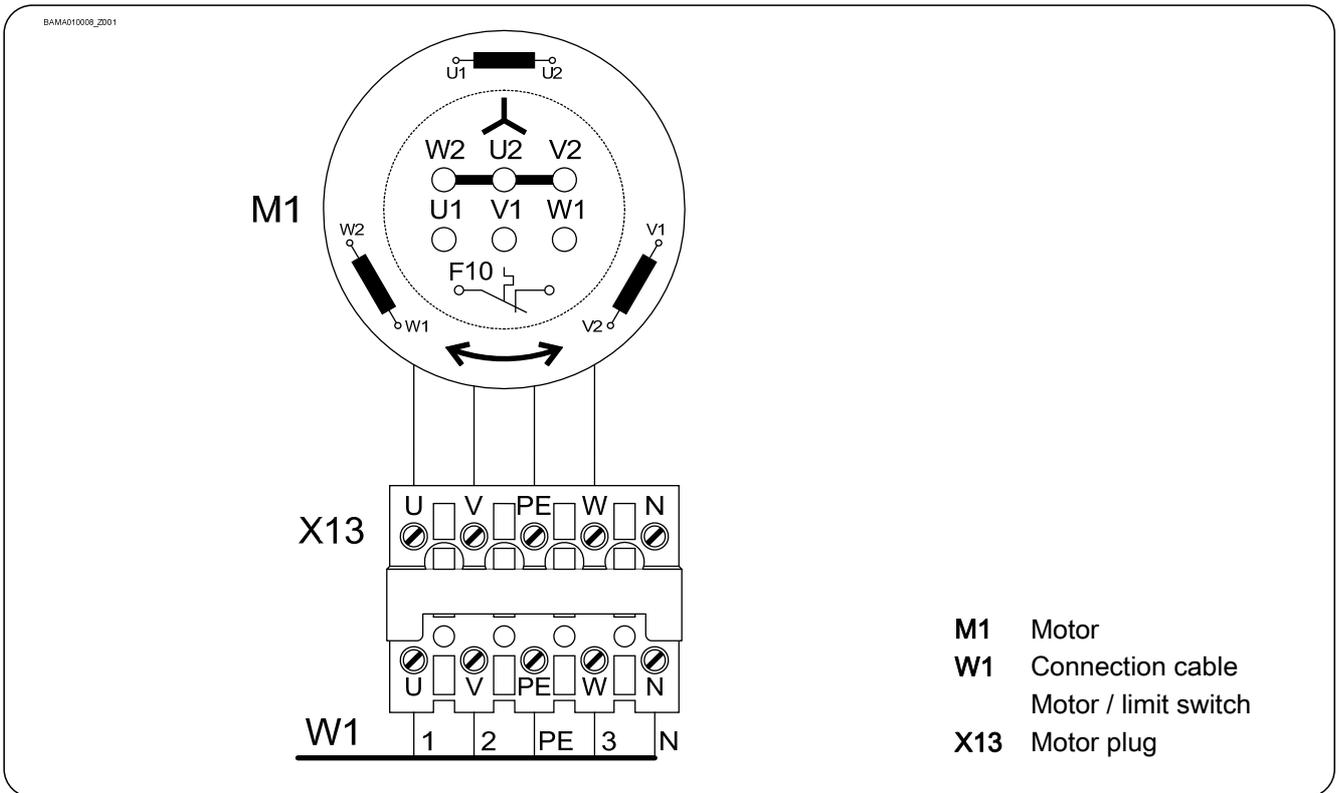
S13 CLOSE pushbutton (PCB)

X1-2 Terminal rail, reversing contactor board

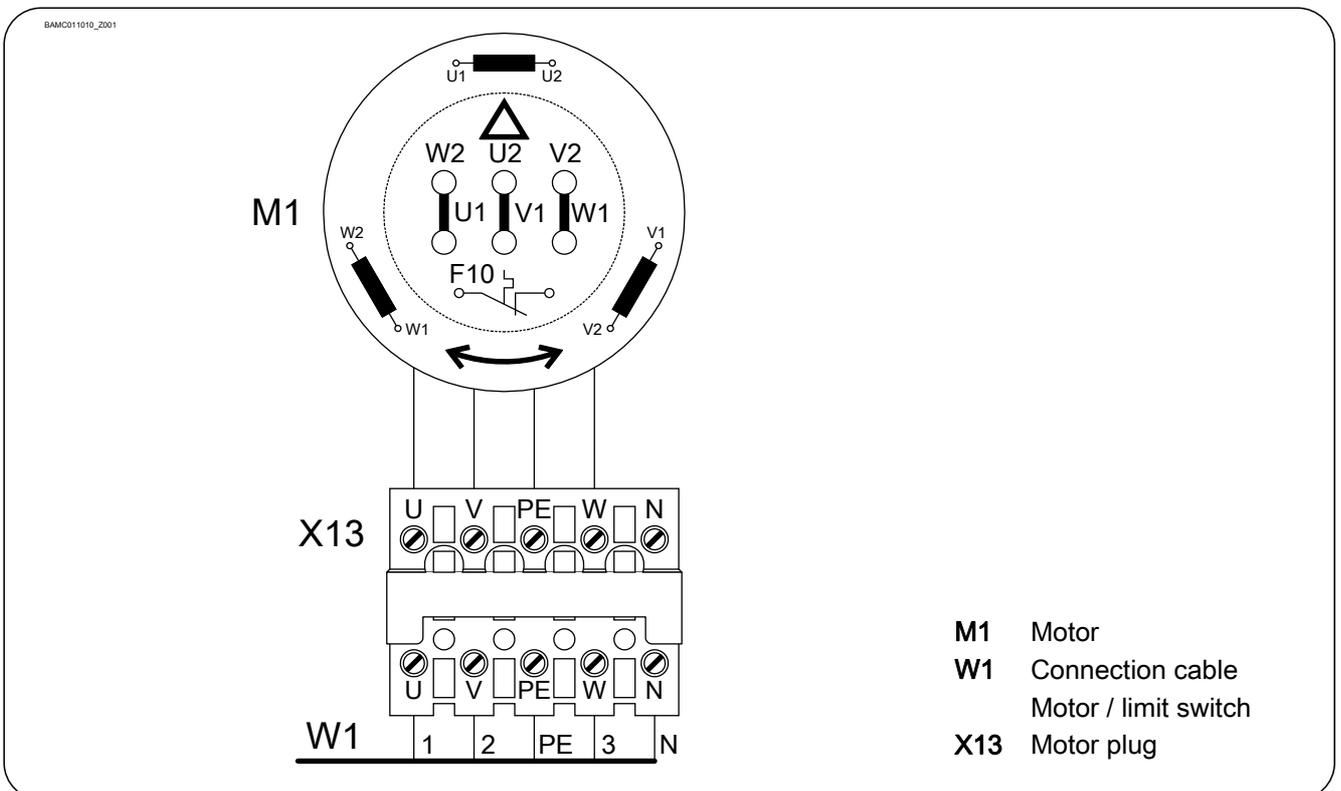
X4-5 Terminal rail, reversing contactor board

X12 Terminal rail, limit switch board

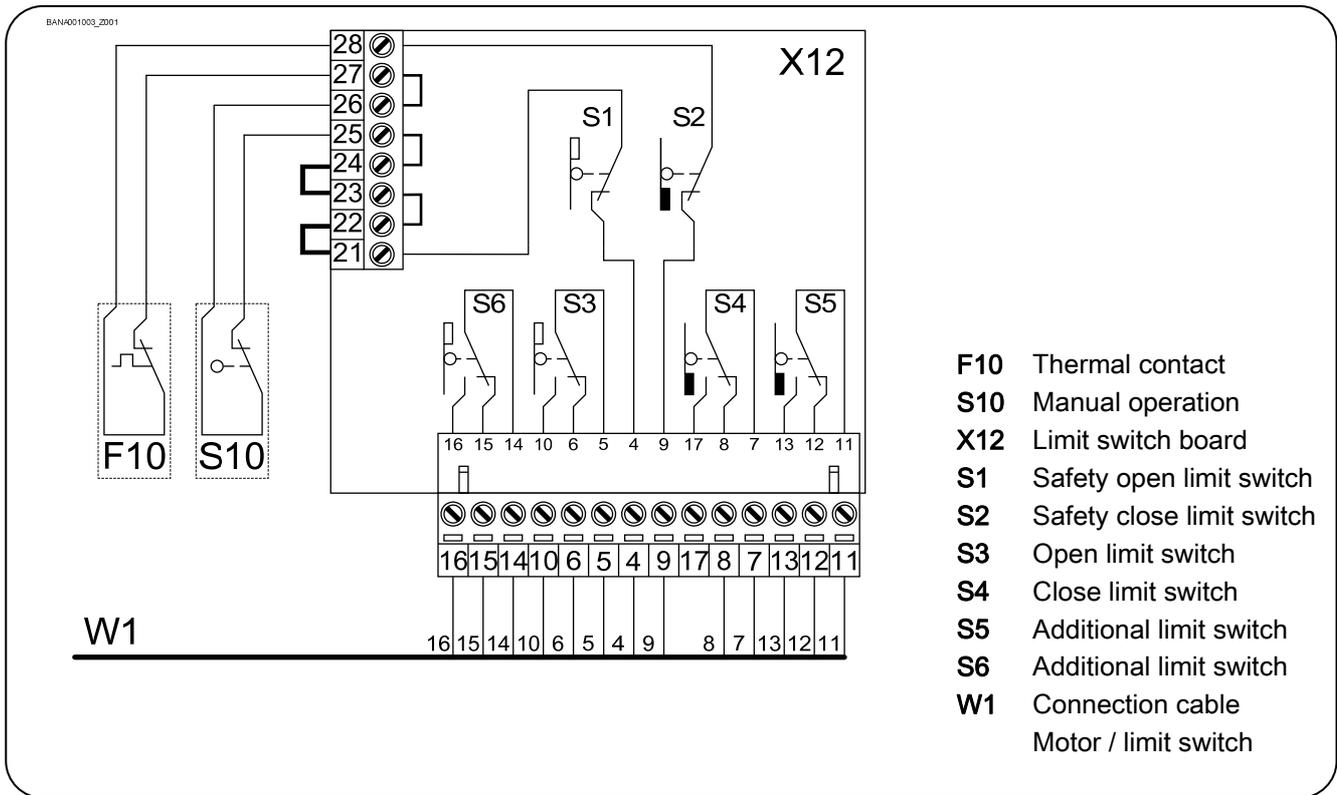
9 Motor connection



10 Alternative motor connection

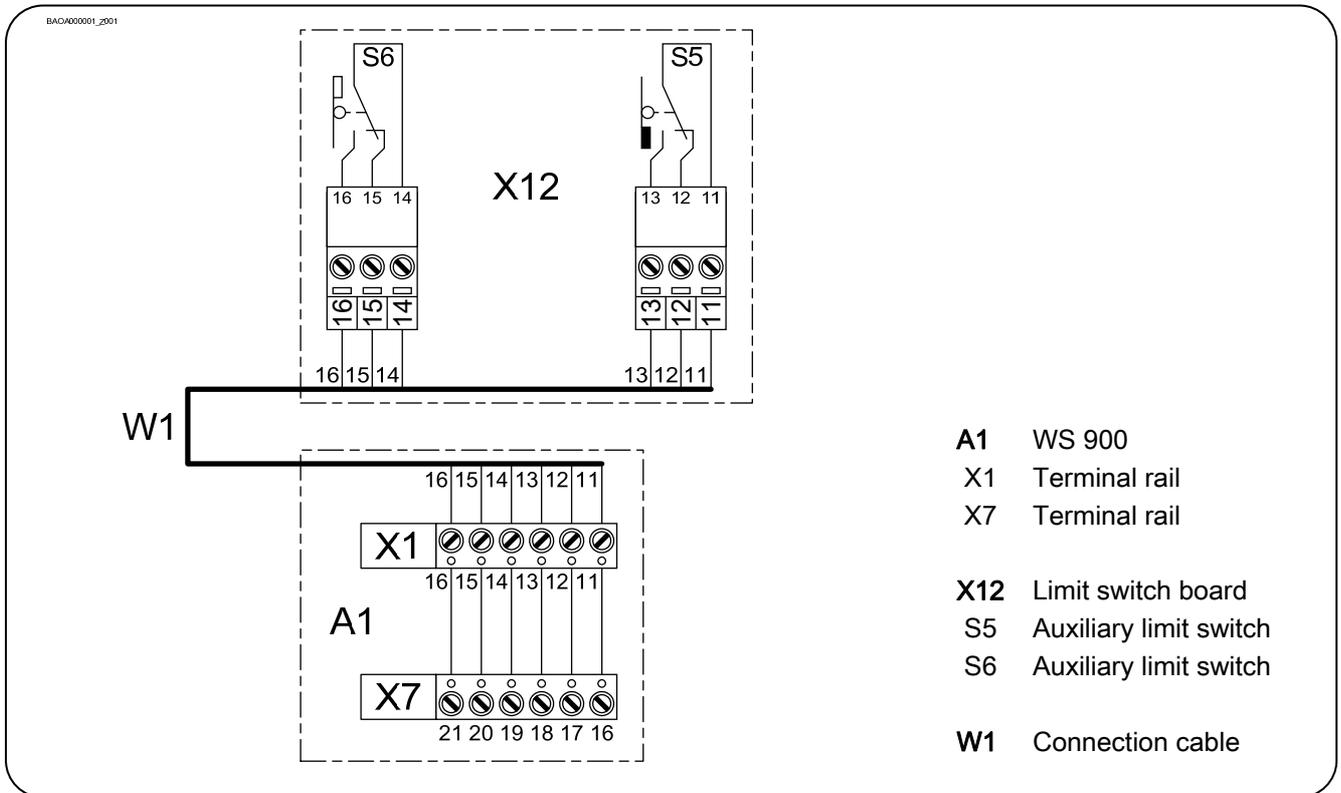


11 Limit switch connection

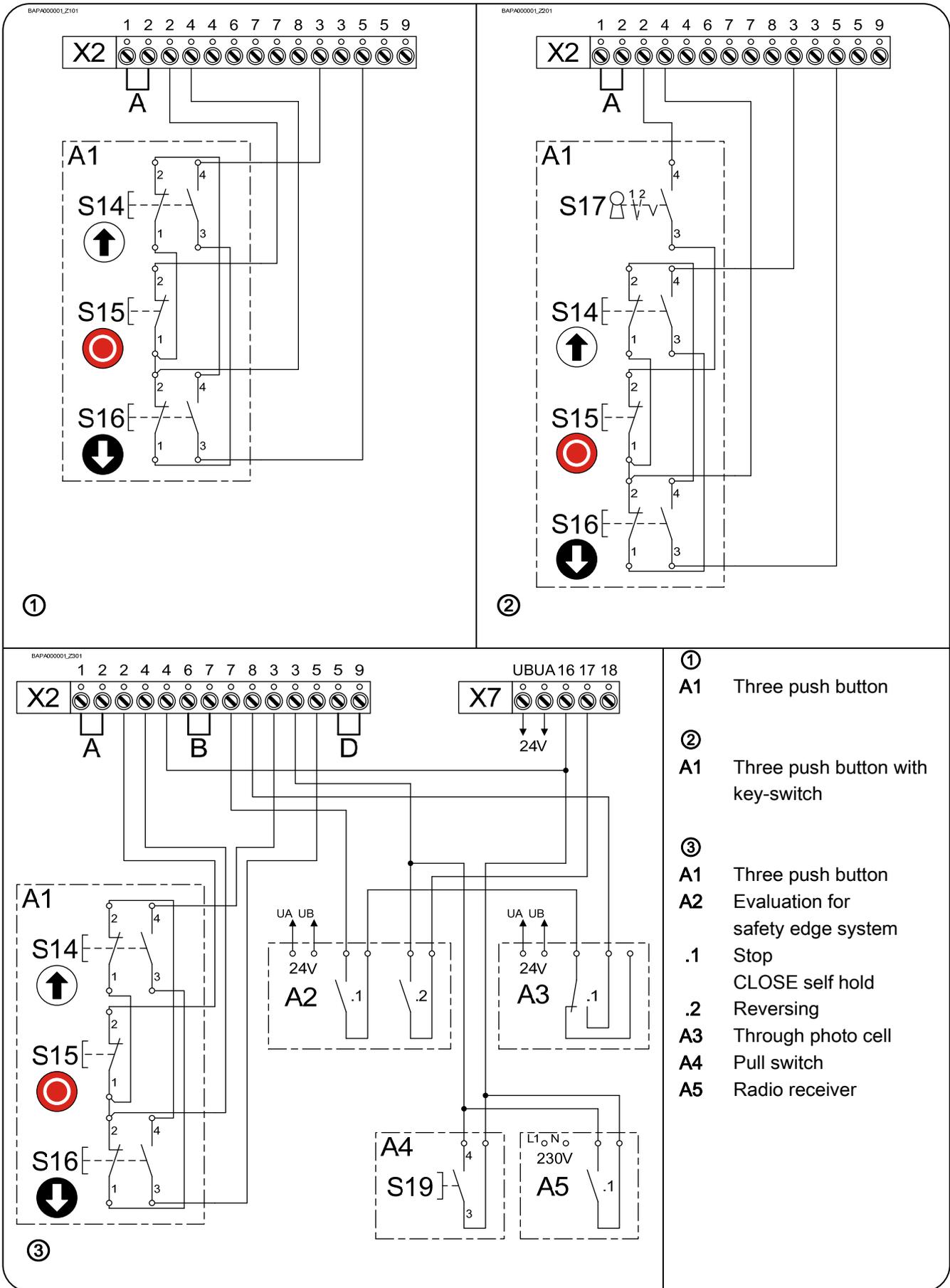


12 Connecting the additional limit switch

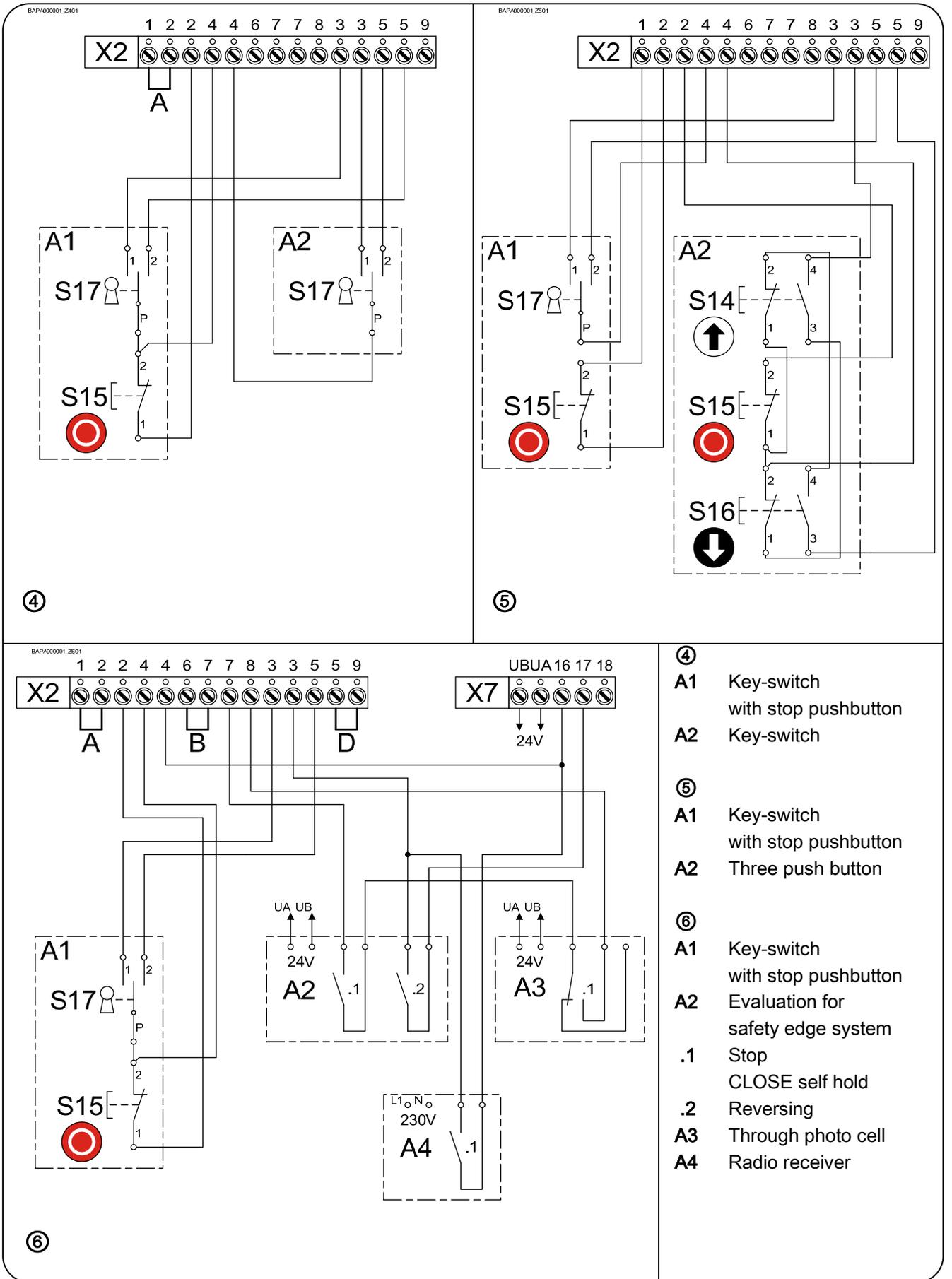
The additional limit switches can be used in both directions of motion of the door.



13 Control device connections



- ① A1 Three push button
- ② A1 Three push button with key-switch
- ③ A1 Three push button
A2 Evaluation for safety edge system
.1 Stop
.2 CLOSE self hold
.2 Reversing
A3 Through photo cell
A4 Pull switch
A5 Radio receiver



14 Emergency manual operation SK (rapid hand chain operator)

The emergency manual operation is provided as a means of opening or closing doors that do not have electric power supply. Operation interrupts the control voltage. Electrical operation is no longer possible.



Warning - Injury through improper operation!

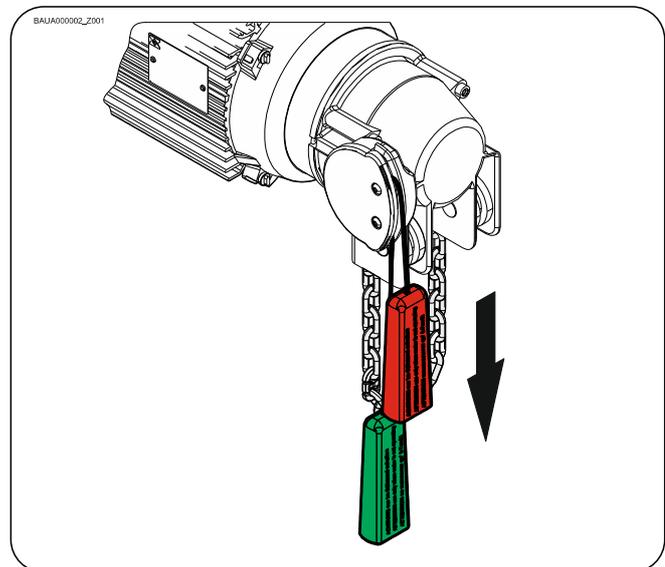
- Disconnect the voltage
- Adopt a secure position
- For drives that have a brake, emergency manual operation should be carried out with the brakes on



Caution - Component damage can result!

- Do not move the door beyond the final limit positions.

Pull the red grip to activate. Pull the chain to open or close. Pull the green grip to deactivate.



15 Correcting faults

Drive unit will not run

Possible cause	Correcting faults
No voltage at the connecting terminals: Reversing contactor Motor	Measure the voltage Three-phase L1 with L2 L2 with L3 L3 with L1 If N present: L1, L2, L3 with N Single-phase L1 with N If there is no voltage, check the fusing, supply line and connection terminals / screw on the building side.
Connection terminals/screws loose.	With the supply off, check that all connections have a tight fit.
F1 control fuse defective.	Check the control devices and external consumers for earth fault and short circuit. When the faults has been corrected, insert the replacement fuse supplied.
Motor temperature switch tripped: Overload Motor defective	Let it cool down. Replace the drive unit.
Control circuit interrupted by: emergency final limit switch External safety switch Emergency manual operation F2 residual current monitoring	Approach the emergency final limit switch with emergency manual operation and check its setting. Check the operation of the external safety switches. Check the emergency manual operation. OPEN and CLOSE commands are present simultaneously. Check the control devices.
Door blocked.	Check the door.

Door no longer closes in self-hold mode

Possible cause	Correcting faults
Safety edge device operated or defective.	Use and evaluation unit to check the safety edge device.
Photo cell operated or defective.	Check switching and alignment of photo cell.

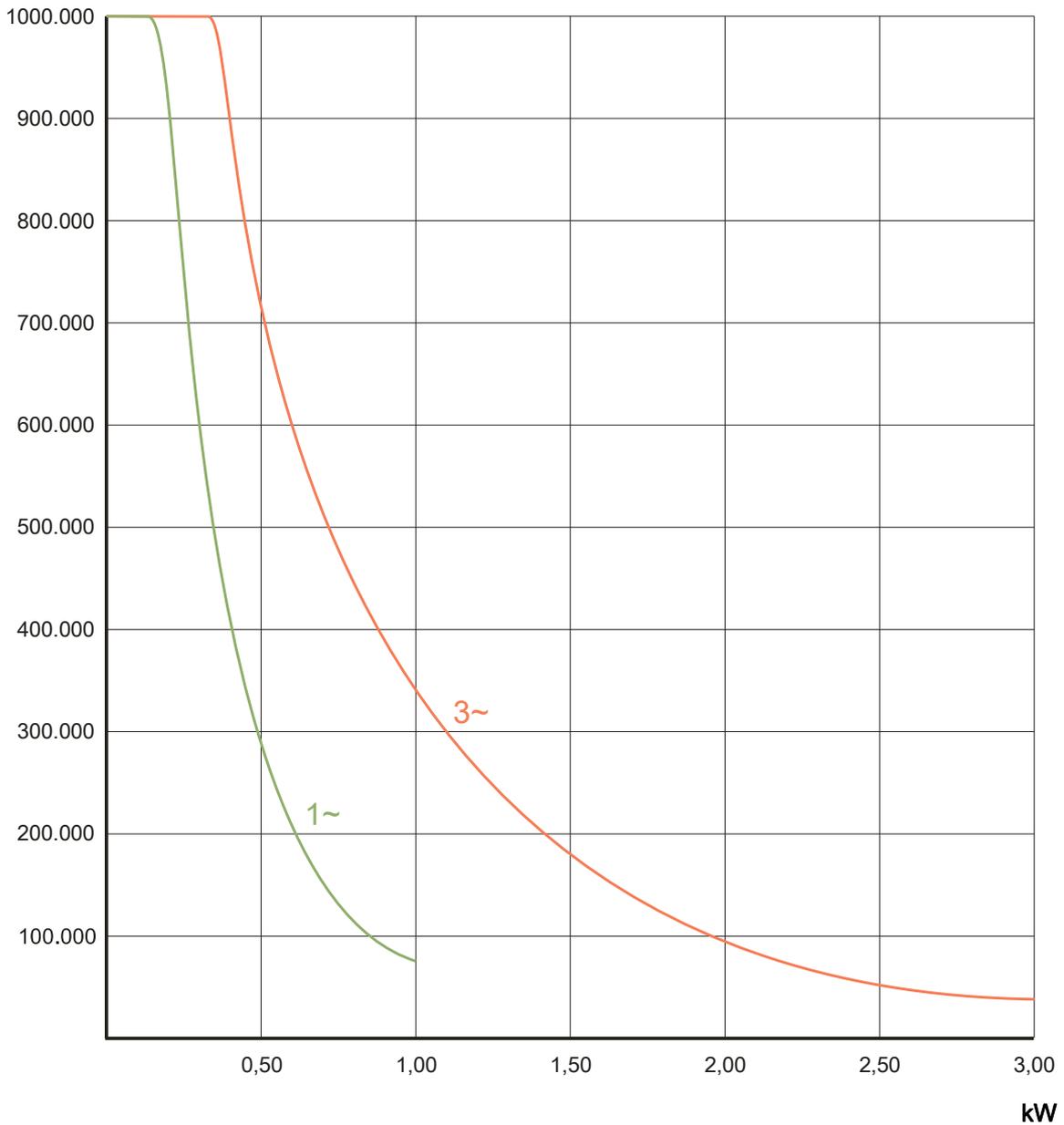
16 Service life



Caution - Component damage can result!

- Replace the reversing contactor when the permissible number of cycles has been reached

Number of cycles
according to EN 12433-2



17 Completing commissioning / inspection

Check the following components and then install all covers.

Gearbox

Check the drive unit for loss of oil (a few drops can be neglected). Protect the output-shaft permanently against corrosion.

Mounting

Check that all connection elements (consoles, torque mounts, screws, locking rings, etc.) are secure and in proper condition.

Electrical wiring

Check the connection cables and cabling for damage or crushing. Check that the screw connections and plug connections are fitted properly with a good electric contact.

Emergency manual operation

Check the function with the power disconnected. Perform the check only between the final limit positions.

Limit switch

Check the final limit positions by opening and closing fully. The safety area must not be approached.

Drive unit



Note!

- Engage a qualified engineer to check the drive unit annually
- Apply shorter inspection intervals for doors that are operated frequently
- Observe the applicable regulations and standards

Declaration of incorporation

in the terms of Machinery Directive 2006/42/EC
for partly completed machinery, Appendix II Part B



GfA - Gesellschaft für Antriebstechnik
Dr.-Ing Hammann GmbH & Co KG
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40549 Düsseldorf

Declaration of conformity

in terms of EMC Directive 2004/108/EC

We, the

GfA – Gesellschaft für Antriebstechnik

hereby declare that the following products are conform with the above
EC Guideline and are only intended for installation in door equipment.

SE 14.21-25,40

Standards applied

DIN EN 12453	Doors - safety in use of power operated doors
DIN EN 12604	Doors - Mechanical aspect
DIN EN 60335-1	Safety of household and similar electrical appliances Purposes - Part 1 : General requirements
DIN EN 61000-6-2	Electromagnetic compatibility (EMC) Part 6-2 Generic standard – Emission standard for industrial environments
DIN EN 61000-6-3	Electromagnetic compatibility (EMC) Part 6-3 Generic standard – Emission standard for residential, commercial and light-industrial environments

We undertake to transmit in response to a reasoned request by the appropriate regulatory
authorities the special
documents on the partly completed machinery.

Authorised representative for the compilation of the relevant technical documents

(internal EU address)

Dipl.-Ing. Bernd Synowsky

Documentation representative

Incomplete machines within the meaning of the EC Directive 2006/42/EC shall only be intended to
be integrated into other machines (or into other incomplete machines/systems) or to be assembled
with them to form a complete machine within the sense of the Directive. Therefore, this product
cannot be commissioned before it is determined that the entire machine/system to which it was
integrated shall comply with the provisions of the Machinery Directive indicated above.

Düsseldorf, 29.12.2009

Stephan Kleine

CEO

Signature