

# Electrical operating instructions

**GB**

Reversing contactor-  
curtain-  
**ELEKTROMATEN**

**3 Contactor / 24 V  
keyswitch with  
emergency stop  
and CEE - plug - in**

51171184 / 08.2002

**GfA**



**GfA**

**ELEKTROMATEN®**





consisting of:

**M : Mechanical operating instructions**

**E : Electrical operating instructions**

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## Basic Directions

This control has been built in accordance with **EN 12453 Industrial, commercial and garage doors and gates - Safety in use of power operated doors - Requirements**; and left the factory in perfect condition from the point of view of safety. To maintain this condition and to ensure safe operation, the user must observe all the directions and warnings contained in these operating instructions.

In principle, only trained electrical craftsmen should work on electrical equipment. They must assess the work which has been assigned to them, identify potential danger sources and take suitable safety precautions.

Reconstruction of or changes to ELEKTROMAT are only permissible with the approval of the manufacturer. Original replacement parts and accessories authorised by the manufacturer guarantee safety. Liability ceases to apply if other parts are used.

The operational safety of an ELEKTROMATEN is only guaranteed if it is used in accordance with the regulations. The limiting values stated in the technical data should not be exceeded under any circumstances (see corresponding sections of the operating instructions).

## Safety Regulations

During the installation, initial operation, maintenance and testing of the ELEKTROMATEN, it is necessary to observe the safety and accident-prevention regulations valid for the specific application.

In particular, you should observe the following regulations (this list is not exhaustive):

European normativ

- EN 12453  
Safety in use of power operated doors - Requirements
- EN 12445  
Safety in use of power operated doors - Test methods

Please check normative's bellow.

VDE-regulations

- DIN EN 418  
Safety machinery  
Emergency stop equipment functional aspects  
Principles for design
- DIN EN 60204-1 / VDE 0113-1  
Safety of machinery - Electrical equipment of machines - Part 1:  
Prescriptions générales
- DIN EN 60335-1 / VDE 0700-1  
Safety of household and similar electrical appliances - Part 1:  
General requirements



Regulations

- Please ensure that the local regulations relating to the Safety of Operations of Doors are followed

## Codes

DIN EN 18032 Halls for gymnastics and matches, Part 4 Double-shell suspended curtains.  
Here some important excerpts:

### 3.3 Driving mechanism

The upwards/downwards movement shall be limited by operational limit switches and emergency limit switches. The operating control system must be OFF as soon as the emergency limit switch responds.

It must be possible to switch off three poles of the driving mechanism by a mains connection switch. The switch must be secured against unauthorised or unintended switching on. A CEE socket, 16 A, replaces the main switch according to the code EN 12453.

### 3.4 Control system

The control system of the driving mechanism shall be designed without latching (dead man switching) and shall be equipped with a key-operated button as a protection against unauthorised use. It must be possible to withdraw this key in OFF position only.

The manual controls (control components) shall be arranged so that the suspended curtain can be seen from the place of operation.

### 3.5 Safety - brake

Suspended curtains which might fall down as a whole or in parts in case of rupture of the winding shaft or rupture of gearing parts or couplings shall be provided with safeguards, e.g. safety brakes, which prevent falling down and which switch off the drive via a switch when released. They shall be tested and provided with a nameplate.

## Explanation of warnings

These operating instructions contain directions which are important for using the ELEKTROMATEN appropriately and safely.

The individual directions have the following meaning:



### **DANGER**

This indicates danger to the life and health of the user if the appropriate precautions are not taken.



### **CAUTION**

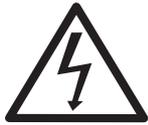
This warns that the ELEKTROMATEN or other materials may be damaged if the appropriate precautions are not taken.

## General warnings and safety precautions

The following warnings are to be understood as a general guideline for working with the ELEKTROMATEN in conjunction with other devices. These directions must be observed strictly during installation and operation.



- Please observe the safety and accident prevention regulations valid for the specific application. The installation of the ELEKTROMATEN, the opening of covers or lids and electrical connection must be carried out when the supply is switched off.
- The ELEKTROMATEN must be installed with the authorised coverings and protective devices. Care should be taken that any seals are fitted correctly and screw couplings are tightened correctly.
- In the case of ELEKTROMATEN with a permanent mains connection, an all-pole main switch with appropriate back-up fuse must be provided.
- Check live cables and conductors regularly for insulation faults or breakages. When a fault is detected in the cabling, the defective cabling should be replaced after immediately switching off the mains supply.
- Before starting operation, check whether the permissible mains voltage range of the devices corresponds to the local mains voltage.
- Emergency stop devices in accordance with VDE 0113 (EN60204) should remain operational in all operating modes of the control. Releasing the emergency stop device should not cause any uncontrolled or undefined restart.

**Warning! Danger to life through electric shock**

Before starting assembly, disconnect the cables from the electricity supply and check that they are dead.



In order to ensure relief from tensions for mains connection screwed conduit entries shall be used to lead in the cables

Only trained electrical craftsmen should work on electrical equipment. They must assess the work which has been assigned to them, identify potential danger sources and take suitable safety precautions.

The following tools are recommended for the appropriate electrical connection of the ELEKTROMAT:

- Multimeter (for alternating current up to at least 750 VAC)
- Electrically insulated screw driver
- Cable stripper
- Diagonal cutter
- Piercing tool for opening the cable ducts
- Wire end ferrules with associated pinching tongs when using flexible cables

In order to connect the ELEKTROMAT electrically, the lid of the reversing contactor housing must first be removed. After loosening the two lid screws, the housing lid can be swivelled about 45° (Fig.1) and removed.

The cable ducts in the reversing contactor housing must be opened with a piercing tool. The hole in the cable duct should be smaller than the cable diameter to ensure sealing. When the cable duct is opened with a knife or a screw driver, sealing cannot be guaranteed.

If necessary, the complete reversing contactor housing can be removed, after loosening the two mounting screws, and mounted next to the ELEKTROMAT.

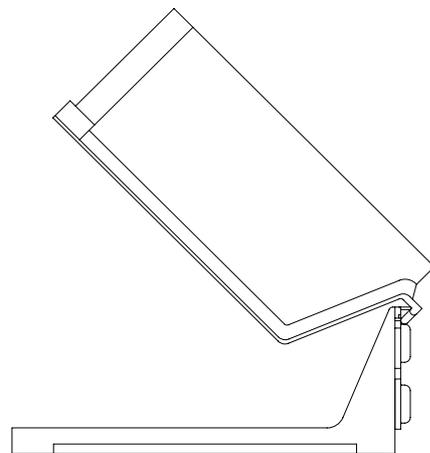


Fig. 1: Reversing contactor housing

The cables should be connected in accordance with the primary electrical circuit diagram. The 3 phases of the incoming supply are connected to the contactor with the terminals L1 / L2 / L3.

The neutral and the PE(earth) conductor are connected to the terminal strips designated N and PE.



Check that all screw connections are secure before operating the control and adjusting the limit switches.

The use of non-interchangeable connectors for the limit switch make it easy to assemble and/or change the reversing contactor board.

When doing so, the following steps should be carried out:

## Disassembly:

- Remove limit switch cover
- Detach the plug from the limit switch board; after pulling the upper end of the plug, the entire plug can be pulled out easily (**Fig.1**, whilst doing so, hold the entire limit switch board firmly with the other hand)
- Pull out 5 - pol. motor plug U/ V/ W/ N and PE (**Fig.2**)
- Pull the connecting cable for the reversing contactor housing, together with the cable duct, out of the gearbox housing
- Remove the reversing contactor housing by loosening the mounting screws

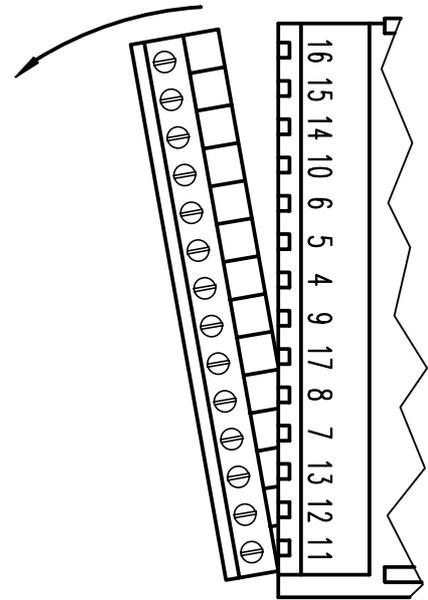


Fig. 1: Limit switch plug

## Assembly:

- Mount the reversing contactor housing
- Insert the connecting cable with the cable duct into the gearbox housing
- Plug in 5 - pol. motorsocket U/ V/ W/ N and PE
- Insert the limit switch plug whilst holding the entire limit switch board firmly with the other hand
- Check limit switch adjustment
- Mount limit switch cover

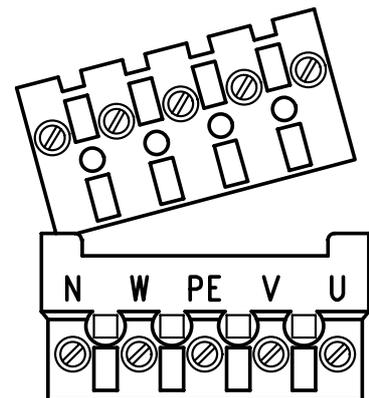
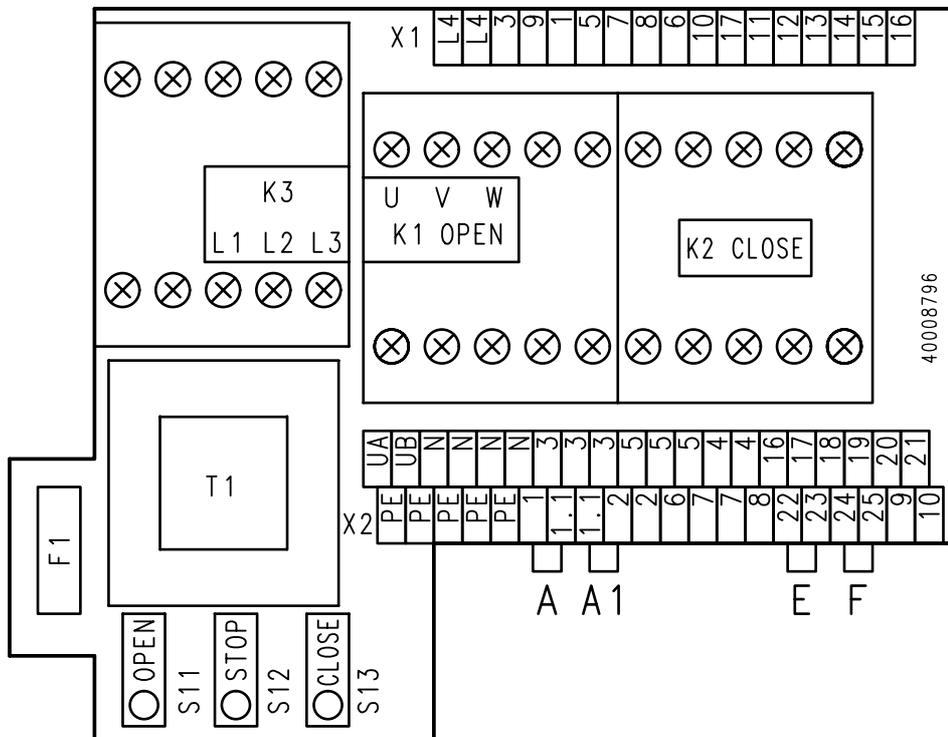


Fig. 2: Motor Terminal Rail

The control consists of a board with a reversing contactor combination for opening (K1) and closing (K2) and an additional safety contactor (K3). Different functions can be achieved by interchanging wire links.



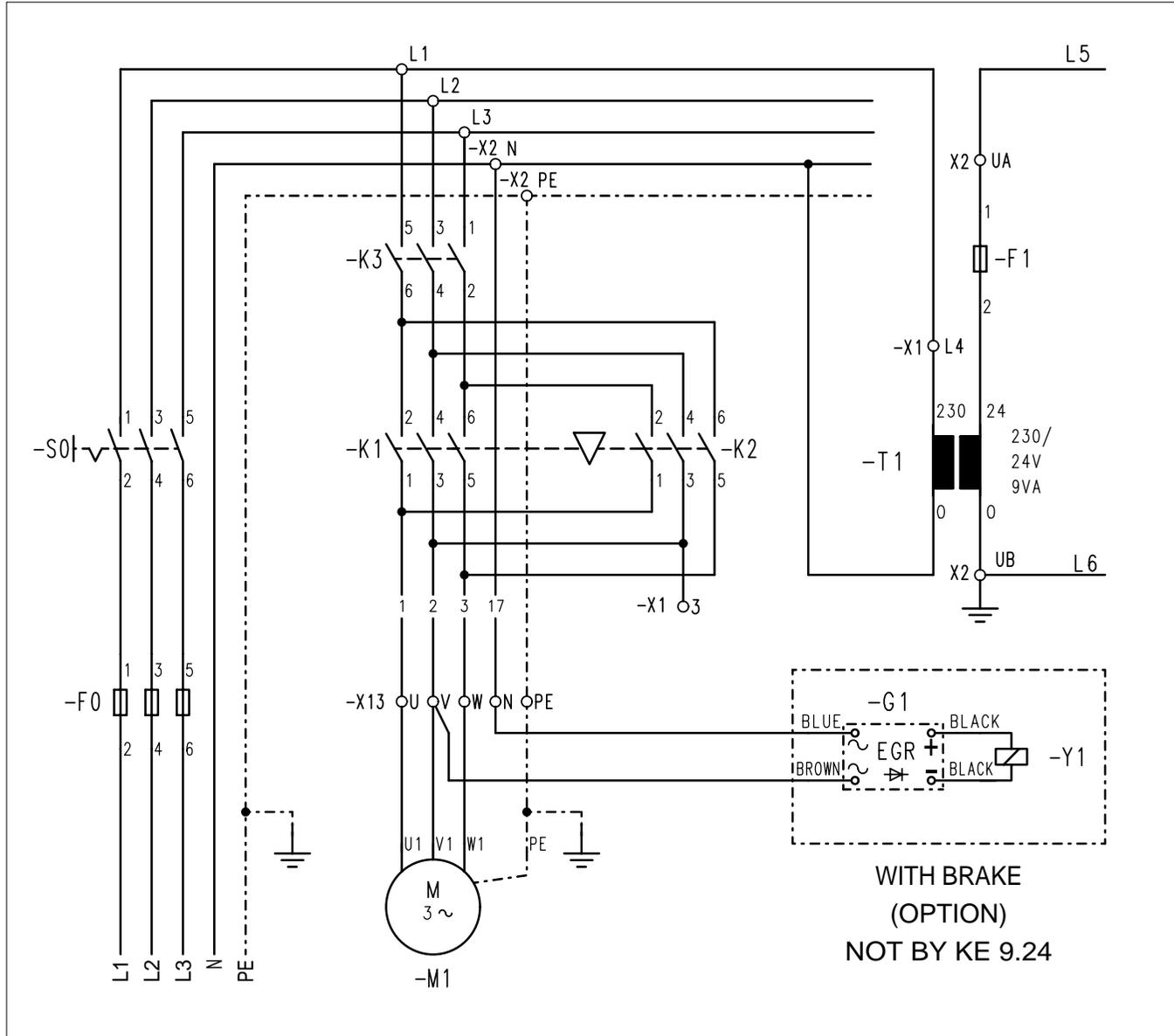
## Wire links on the reversing contactor board:

### Wire links A + A1:

These wire links are absolutely necessary for the operation of the curtain. By removing the wire links, the control voltage is interrupted and electrical operation of the curtain is no longer possible. Additional safety switches, e.g. interlocking switches, can be connected instead of the wire links A + A1.

### Wire links E + F:

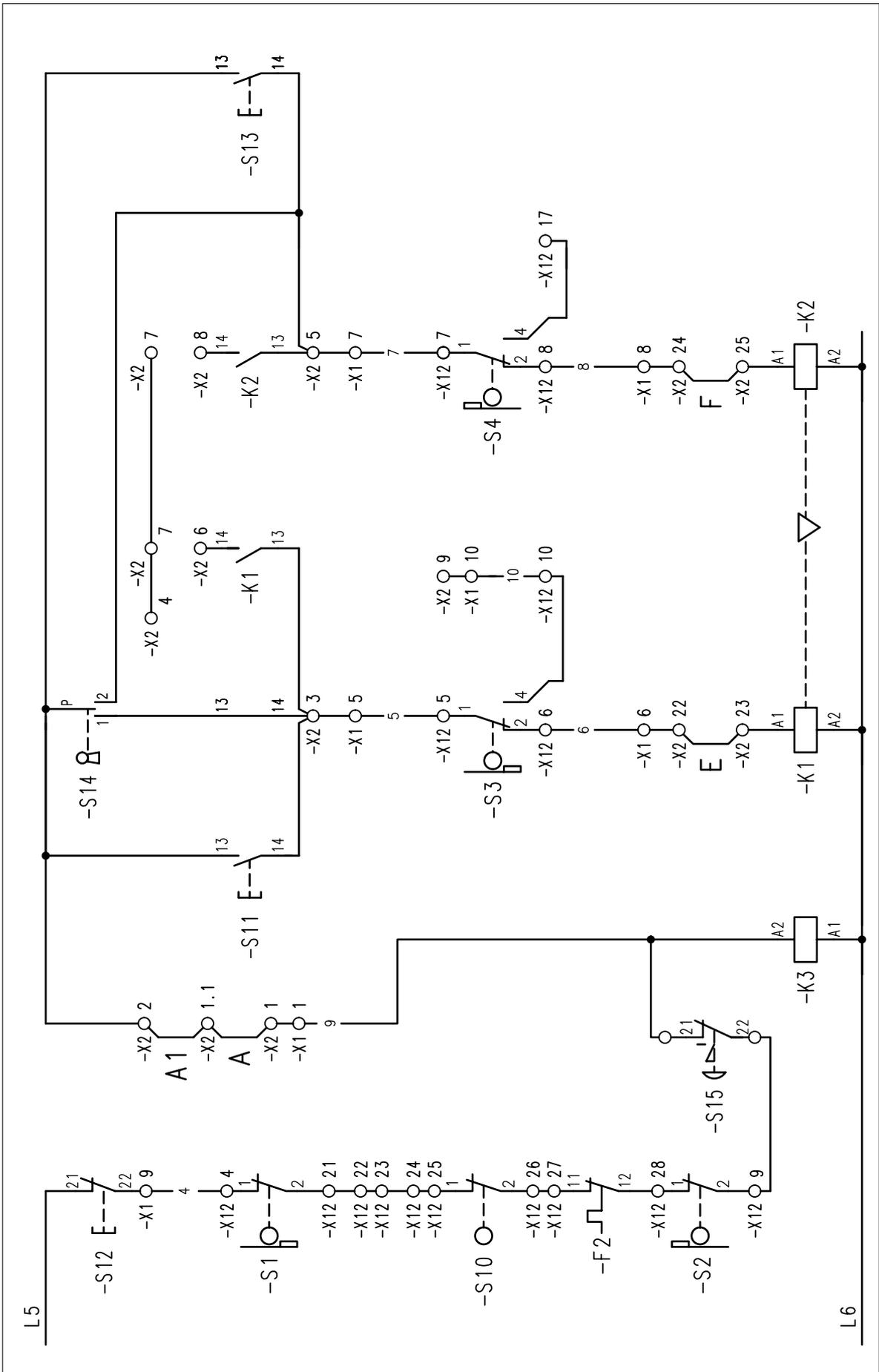
These wire links are absolutely necessary for operation of the curtain. Additional safety switches can be connected instead of the wire link E (which interrupts opening) and F (which interrupts closing).



- F0** Fusing on the building supply side
- F1** Control Fuse 0.8A
- F2** Thermal protection
- G1** Converter
- K1** OPEN Contactor
- K2** CLOSE Contacto
- K3** SAFETY Contactor
- M1** Motor
- S0** Main switch supply side
- S1** Safety limit switch OPEN
- S2** Safety limit switch CLOSE
- S3** Limit switch OPEN
- S4** Limit switch CLOSE
- S10** Manual interlock switch
- S11** Built-in OPEN push-button
- S12** Built-in STOP push-button
- S13** Built-in CLOSE push-button
- S14** Key - switch OPEN/OPEN
- S15** Key - switch EMERGENCY STOP
- T1** Transformer
- Y1** Spring tension brake if required 103V DC
  
- X1** PCB Terminal Rail
- X2** PCB Terminal Rail
- X3** PCB Terminal Rail
  
- X12** Limit Switch Terminal Rail
- X13** Motor Terminal Rail
  
- |  
2 = Wirenumber  
|

# CONTROL ELECTRICAL CIRCUIT 3 CONTACTORS / 24V

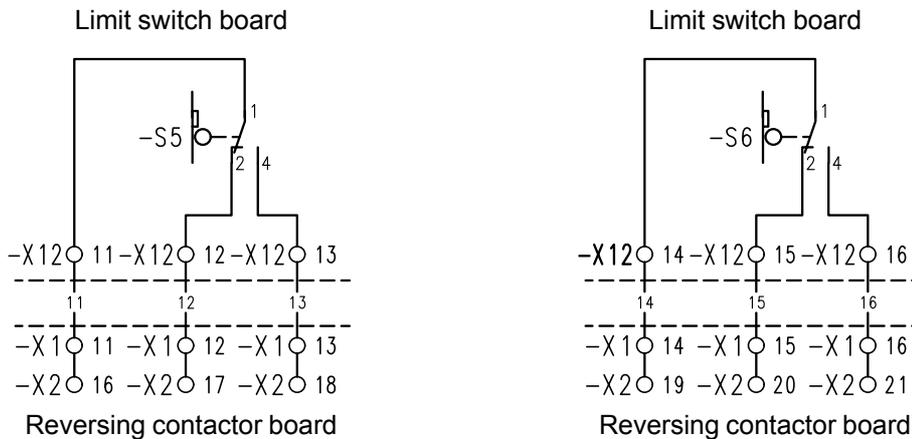
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The switching cams of the additional limit switches are adjusted as described for the operational limit switches (Part M). After tightening the coarse adjustment screw, the switching point can be corrected with the fine adjustment screw.

## 5th and 6th Additional limit switches

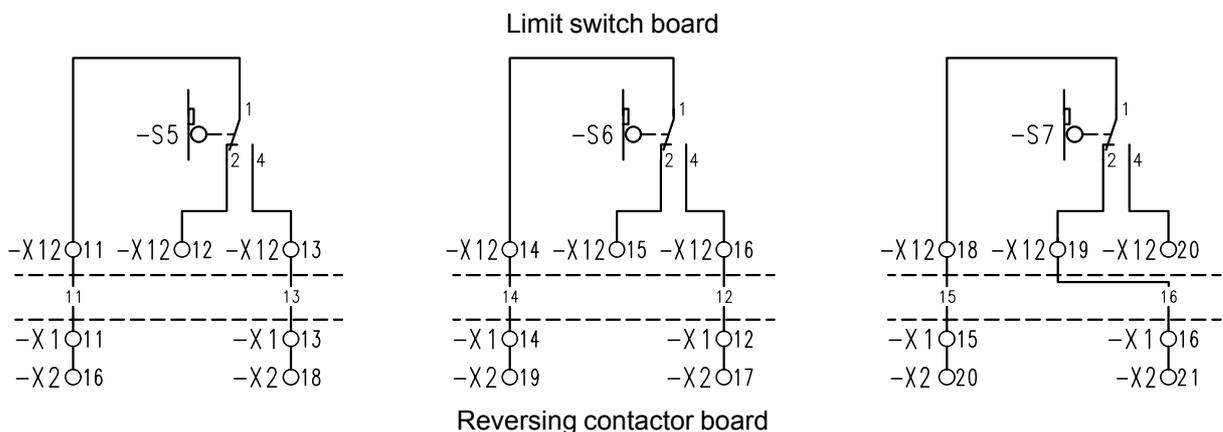
The ELEKTROMATEN is equipped with two additional limit switches (S5 / S6). Both additional limit switches are designed as volt-free changeover contacts and can be used in both directions of movement of the door.



## 5th and 6th + 7th Additional limit switches (on request)

The ELEKTROMATEN is equipped with three additional limit switches (S5/S6/S7). These additional limit switches can be used as volt-free make and/or break contacts in both directions of movement of the door. For example, the diagram shows the connection wiring for two make contacts and one break contact.

The desired function (make or break contact) of the respective limit switch can be determined by interchanging the connection cables.

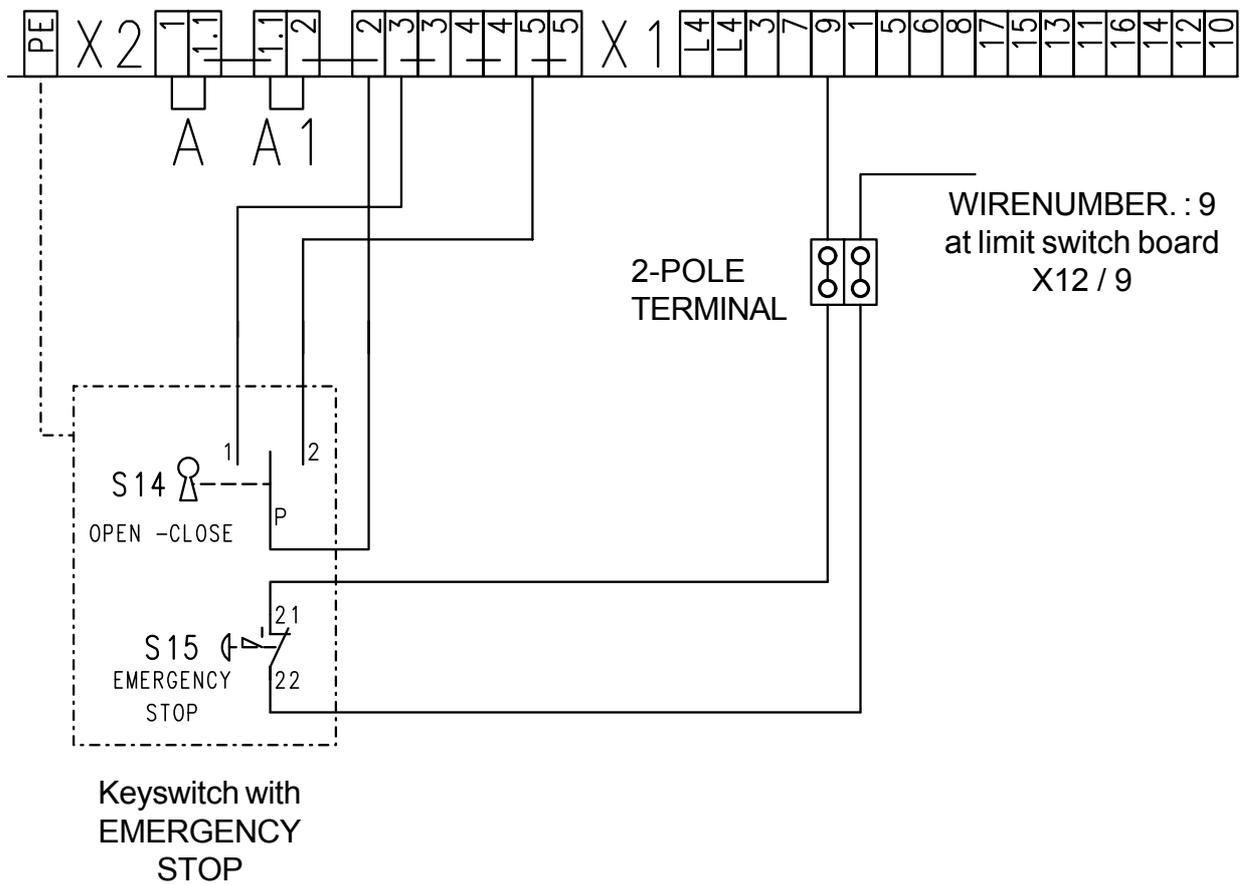




## Keyswitch with EMERGENCY STOP

Operation of the suspended partition by a command device (key-operated button) in dead man mode in both directions. The 2-pole terminal for emergency stop shall be mounted by the building contractor.

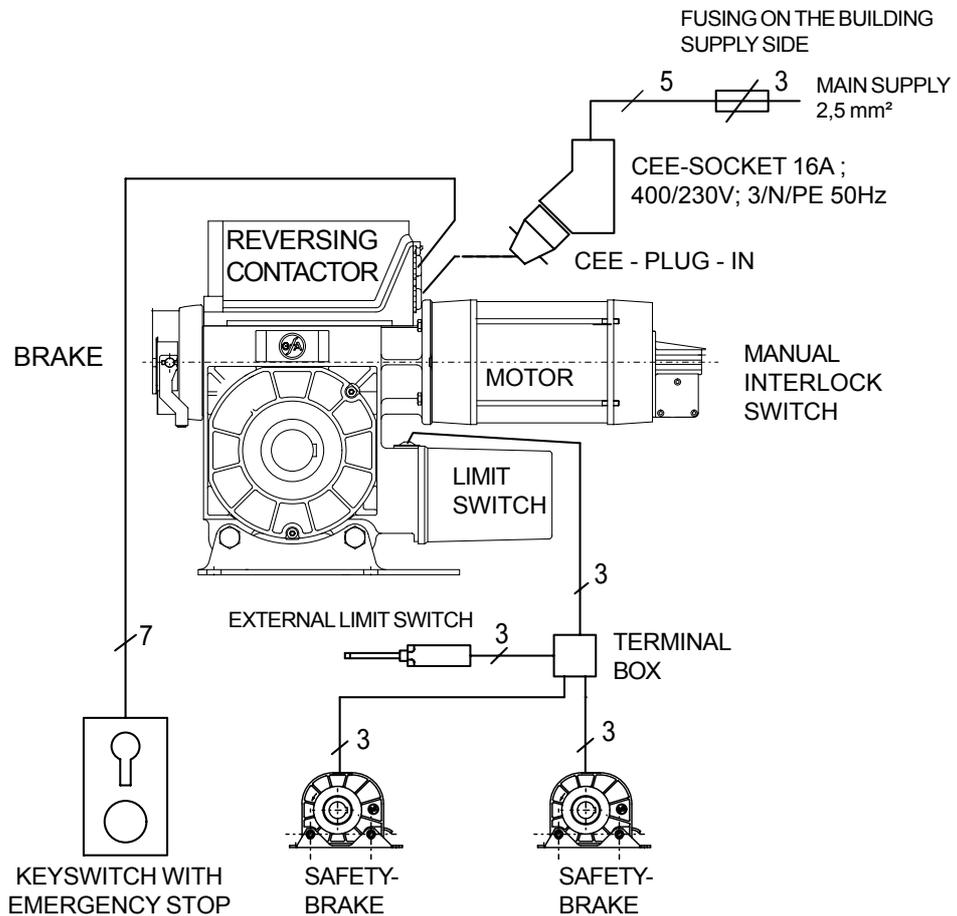
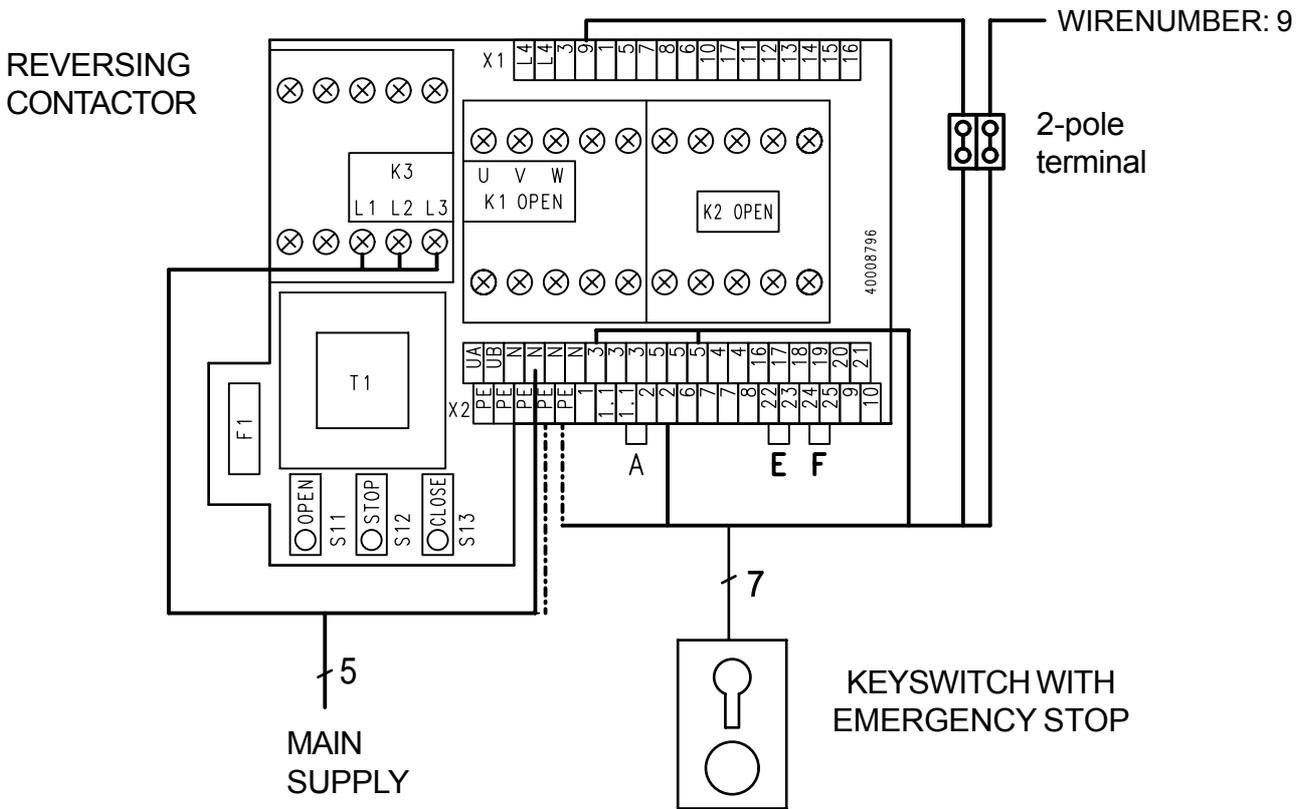
### REVERSING CONTACTOR



# CABLE PLAN

52310047

The manual controls shall be arranged so that the suspended partition can be seen from the place of operation



# HELP WITH CORRECTING FAULTS

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<b>Fault</b> Drive motor will not run and the contactors k3 and K1 or K2 will <b>not</b> pull in	
<b>Possible cause</b>	<b>Correction</b>
No voltage at the connecting terminals L1 / L2 / L3 /N	Measure the voltage. Compare: L1 with N                      L1 with L2 L2 with N                      L2 with L3 L3 with N                      L3 with L1  Where there is no voltage, check the fusing and the power supply on the attachment side
Control fuse F1 defective	Check connected control devices (e.g. key-operated push-buttons) for earth faults and short circuits. After correcting faults, insert replacement fuse supplied.
Motor protection (thermal switch) in the motor actuated by overloading or exceeding the starting duty.	After the motor winding has cooled, operation is once again possible through the operation of a control device.
Safety limit switch has interrupted the control circuit	Release the Safety limit switch again using emergency manual operation. Check adjustment of operating clearance from the working limit switch to the Safety limit switch and correct where necessary.
External safety switches (External limit switches or safety - brake) have interrupted the control circuit	Check safety switches and replace where necessary.
Switch for emergency manual operation has interrupted the control circuit	Check the emergency manual operation switch by operating several times.
Connecting screws on the connector or the terminal strips have become loose.	With the current switched off, check all connecting screws are tight and tighten where necessary.