

Please observe the following rules:

Do not put into operation any devices with a visibly damaged mains cable, motor cable or switch.

 Before conducting maintenance work, adjustments, or repairs, switch off the switch and withdraw the mains plug. Wait for moving parts (e.g. saw blades, plane irons, or drill chucks) to come to a standstill. Withdraw the plug too if you displace or move the machine.

 After switching off SPCs (switch plug combinations) with an electronic brake, the motor is still in circuit.

Check the mains supply before connecting. Wrong connections may destroy the electrical equipment.

Observe the line voltage. Make sure the line voltage matches the voltage information on the type plate.

Connect electrical equipment only to a mains supply that is sufficiently protected against overcurrent.

 Do not install the switch on a machine with the keyboard in vertical direction (along the z-axis, with the keyboard facing up). When the switch is installed in this way, dropping the machine or strong vibration can cause unintentional activation of the motor contactor and start the machine. Furthermore, water can enter the keyboard when it is installed in this position.

We offer special product versions for this application. Please contact us.

 Withdraw the mains switch when leaving the machine without supervision for extended work breaks or when shutting down the machine (main switch functionality).

Only qualified technical personnel may connect the SPC to the motor.

 The electronic brake does not work in the event of a voltage failure. In this case, supervise the machine until it comes to a complete standstill. Do not reach into the danger area.

 In circuits with electronic brakes, even at rest the motor is not isolated from the mains supply.

 Avoid short switching cycles. Frequent starting and braking causes significant thermal stress and may damage the motor, the switching device and the electronic brake.

 When connecting a switch with an electronic brake, test the braking current during the initial switching cycles. Make sure the permissible maximum values are not exceeded.

 Switches with electronic brakes must not be connected to:

- Electric generators and emergency power generating sets
- Electronic mains converters
- Static frequency converters
- Line voltages with deviation from sinusoidal shape

 Our components and ready-for-connection electric equipment are used in a wide range of different machines and applications. When the electric equipment is integrated in the machine, the correct placement of the electric equipment is of vital importance. In the case of an unfavorable placement and transportable machines dangers can arise through unintentional starting of the machine.

This can be prevented through correct placement, design measures, or special switching elements (shock). We will be pleased to advise you on this problem.

The device is designed for operation in an electricity supply network with a service connection impedance of less than 0.39 ohm. The user must ensure that the device will only be operated in a network meeting this requirement. Information on the network impedance can be obtained from the local power supply utility.

 **Note on the electronic brake**
By pressing the off button, the machine is switched off and the tool is braked. The braking begins after the off button is released. The off button must not be pressed again during the braking time, because this interrupts braking. This interruption time is deducted from the active braking time. If it is pressed for a long time during the braking process, it can be possible that the centrifugal mass (e.g. saw blade) can't be brake until standstill.

Each time the machine is switched on again, the complete braking time is reactivated.

This applies to all brakes that are designed in the K700, K900 and K400 series with the KB-04 contactor with series break contact.

No liability will be accepted for any damage caused by failure to observe the above rules.

General information for adjusting of electronic brakes (if used in the device):

The required braking current is depending on the motor and the used flywheel mas. In the most requirement we don't know this. Therefore it is possible to change the standard setting. This should be done only from experts.

The braking current should be adjust under hot running conditions. Please increade the current as long till the flywheel mas stops in approx. 9 sec. Please monitor the cganges with a moving iron device or a DC-clamp-on ammeter (with True RMS). The current may not higher than the listed values of the several version. The measurement can be done in the mains lead or the motor cable.

After shutdown of the flywheel mas there a humming in the motor for approx. 1-3 sec. This occure by the active braking time of 10-12 sec. and it is necessary for the safety.



Directions for Use of Electrical Equipment

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Warranty

- 2 years after date of shipment (calendar week and year are stated on the type plate).
- Damage caused by overload, normal wear and tear, incorrect wiring, or incorrect treatment is not covered by warranty.
- Any warranty is voided if the power class of the switch is not suitable for the application.
- Warranty claims are only accepted if the complete device is sent in. Warranty claims beyond the switch are not accepted

- Complaints can only be accepted if the complete device is sent in (with connecting cables (as installed at the factory).
- Starters with missing cables cannot be checked. If necessary, missing cables will be installed at a cost.

It is not economic to repair switches that are older than three years. Please do not send them for repair.
All switches must be sent postage paid.

Cost of verification (if no guarantee):

- Starters K400, K570, K590, K700, K900, K3000 € 15,00 + freight
- Starters K3500, K4000, Stern-Dreieck-Starter € 25,00 + freight
- Switch cabinet based on the time spent, billing rate: 60 €/hour.

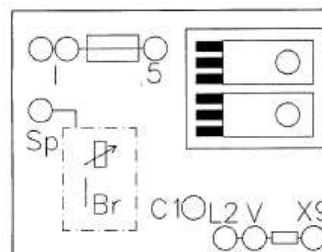
Malfunction	Possible reason	Corrective
Motor does not start after pressing the ON button	- Wrong connection - No line voltage available - Emergency stop button pressed - End position switch (if any) tripped - Overload protection tripped - Cam switch (if any) in position 0 - Phase sequence monitoring (if any) tripped	- Check connection. - Check line voltage. - Reset emergency stop button. - Close protective hood. - Allow motor sufficient time to cool down and restart. - Check switch position. - Check phase sequence of mains connection.
Motor starts with wrong direction of rotation after pressing the ON button	- Incorrect phase sequence of mains connection - Motor connection is not correct	- Use phase inverter (if any) to invert the phases. - Check motor connection.
Motor makes a humming noise and does not reach nominal speed after pressing the ON button	- One phase of the mains line is missing - Wiring of motor is not correct	- Check mains supply. - Check motor connection.
Mains fuse trips when the device is connected to the mains line	- Wrong connection (phase and neutral swapped) - Defective power semiconductor (switches with electronic brake) - Defective mains line	- Check connection. - For safety reasons send in switch for testing. - For safety reasons send in switch to be tested and repaired. - Check mains line.
Device suddenly switches off during operation	- Overload protection tripped - Mains failure	- Allow motor sufficient time to cool down and restart. - Check mains voltage. - Check mains fuse.
	- Protective hood (if any) has come loose - Limit switch, position switch, or emergency stop button were operated - Mechanical parts of the machine are tight or sluggish	- Check - Check and reset if necessary. - Service tight or sluggish parts.
After switching off, the motor makes a humming noise for 10 - 15 seconds	- When switching off the machine, the electronic brake is activated for 10 to 15 seconds and is then switched off	- Normal state during operation. (The humming noise is caused by the electronic brake.)
Electronic brake does not switch off (humming noise does not stop)	- Failure of a component of the electronic brake	- Withdraw mains plug to avoid overheating of the motor. - Send in switch for repair.
After switching off, the moving part is stopped too quickly or only after more than 10 seconds	- Settings for the electronic brake are not ideal	- Adjust jumper or potentiometer of the electronic brake for best braking effect and braking time. - Do not exceed maximum braking current. - Withdraw the mains plug before working on the switch. - Only qualified personnel may work on the switch.
No braking function	- See above - Failure of electronic brake	- Send in switch for repair.
Other malfunctions	Contact our service department or send in the defective switch (with cable, without motor) and a short fault description.	

Description for the adjustment of the braking current

Phase-control brake:

The braking current can adjust by the potentiometer on the pcb (+ / -).
Please pay attention that this effect in small steps (approx. 5°).

(*) These boards have two potentiometers (1x for braking current, 1x for active braking time).
The vertical potentiometer is for adjusting the braking current, the horizontal potentiometer for the active braking time



Art.No.	Art.No. (*)
40830500 (16A)	87030505 (16A)
87030500 (16A)	87030605 (16A)
87030501 (16A)	87020005 (10A)
40830600 (16A)	
87030600 (16A)	
87030601 (16A)	
87020000 (10A)	