



Directions for Use of automatic Star Delta Starters

Please observe the following rules:

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

 Switch off the switch and disconnect the mains plug before carrying out maintenance, adjustment or repair work. Wait until the centrifugal mass such as the saw blade, planer blade, drill chuck or other rotating parts have come to a standstill. Also disconnect the mains plug if you move or relocate the machine.

 In the case of circuits with electronic brakes, the motor is not electrically isolated from the mains, even when at rest, depending on the version. The starters may still be live on the motor even after switching off.

Check the mains supply before connecting. Incorrect connections can lead to the destruction of the electrical equipment.

Observe the mains voltage. The information on the rating plate must match the data on the mains supply.

Only connect electrical equipment to a mains supply that is adequately protected against overcurrent.

 The mains plug must be disconnected (main switch function) if the machine is left unattended for a longer period of time or stopped.

 The starter may only be connected to the motor or adjustments made by qualified personnel.

 In the event of a power failure, the electronic brake has no function. The machine must not be allowed to run down unattended. Do not reach into the danger zone.

 Avoid short switching cycles. The enormous thermal stress caused by frequent starting and braking can damage the motor, the switchgear and the electronic brake.

 When connecting a starter motor with an electronic brake, the braking current must be checked during the first few switching cycles. The specified limit values must be observed here.

 Switches with electronic brake cannot be connected to

- Power generators, emergency power generators, generators
- Electronic mains converters
- Static frequency converters
- Mains voltages with a deviating sine wave form

The starters are intended for operation on a mains supply with a mains impedance of less than 0.39 Ohm at the house connection point. The user must ensure that the device is only operated on a mains supply that fulfils the above requirements. If necessary, the mains impedance can be obtained from the local power supply company.

 Our components and ready-to-connect electrical equipment are used in a wide range of different machines and applications. When integrating this electrical equipment into the machine, the positioning is of great importance. Unfavourable positioning and, in the case of transportable machines, a risk of unintentional start-up can occur.

This can be prevented by correct positioning, design measures or special switching elements (shock). We would be happy to advise you on this problem.

No liability is accepted for damage resulting from non-compliance with the above points.

Setting the run-up time for automatic star-delta starters:

The switchover time from star to delta should be set so that the motor has audibly reached speed in star starting before switching to delta drive. This can be set on the built-in star-delta timer.

Setting the overload protection:

In most star-delta applications, the overload relay is placed in the line. This has the advantage that the motor is protected against overload both in star-delta operation and in delta operation. For the setting, please note that the setting value is determined as follows:

$$\text{Nominal motor current} \times 0.58 = \text{set value}$$

(Depending on the starting behaviour, this setting can be changed slightly. However, this should be carried out in agreement with the motor manufacturer).

Timer setting for automatic star-delta starter with KLIBO phase brake:

This timer can be used to set the switchover time from star to delta operation and also the required active braking time (approx. 10-12 sec). The active braking time must always be set longer than the adjustable braking time of the brake module (if available).

If an ASB brake is used, the active braking time does not need to be set.

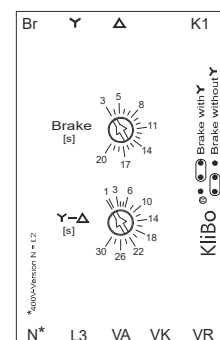
General information on setting the braking current (if electronic brake is fitted):

The required braking current depends on the motor and the flywheel mass used. As we do not know this data in most cases, it is possible to change the factory setting of the electronic brake. This should only be carried out by qualified specialists.

The braking current should be set when the motor is at operating temperature. The current must be increased, until the flywheel comes to a standstill in approx. 9 seconds. During this adjustment, the braking current should be monitored with a moving iron movement or a DC current clamp (with True RMS). The current should not exceed the specified values for the individual circuit board types. The measurement can be carried out in the mains supply cable or in the motor cable.

After the centrifugal mass has come to a standstill, a humming noise can still be heard in the motor for approx. 1-3 seconds. This is due to the active braking time of 10-12 sec. and is for safety reasons. This does not occur with our ASB brake with standstill detection.

Bedienfeld KLIBO-Phase-Brake





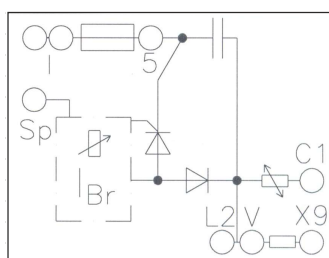
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Malfunction	Possible cause	Abhilfe
The motor does not start after pressing the start button	- Incorrect connection - Mains voltage not present - Emergency stop pressed - Position limit switch actuated (if present) - Overload protection has tipped - Cam switch is in the 0 position (if present) - Rotary field monitoring has been triggered (if present)	- Anschluss überprüfen - Netzspannung prüfen - Not-Aus-Taste zurücksetzen - Schutzhaube schließen - Nach ausreichender Abkühlzeit (Motor nicht mehr heiß) erneut starten - Stellung des Schalters überprüfen - Drehfeld von Netzleitung überprüfen
After pressing the start button, the motor runs in the wrong direction of rotation	- Rotating field of mains cable not correct - Motor connection not correct	- Phasen durch Phasenwender drehen (falls vorhanden) - Motoranschluss überprüfen
After pressing the start button, the motor hums and does not reach the rated speed	- A phase is missing in the mains supply - Motor not connected correctly	- Netzzuführung überprüfen - Motoranschluss überprüfen - Wicklungen falsch angeschlossen
The mains fuse trips when the mains cable is plugged in	- Incorrect connection (phase and neutral conductor reversed) - Power semiconductor defective (switch with electronic brake) - Defective mains cable	- Anschluss überprüfen; - Schalter aus Sicherheitsgründen zum Überprüfen einsenden - Schalter aus Sicherheitsgründen zum Überprüfen und Reparatur einsenden - Leitung überprüfen
The appliance suddenly switches off during operation	- Overload protection triggered - Mains failure - Protective cover has come loose (if present) - Limit switch or position switch or emergency stop button has been pressed - Mechanical parts of the machine run too sluggishly	- Nach ausreichender Abkühlzeit (Motor nicht mehr heiß) erneut starten - Netzspannung überprüfen - Netzabsicherung überprüfen - Überprüfen - Überprüfen und ggf. zurückstellen - Entsprechende Teile warten
After switching off, the motor continues to hum for approx. 10-15 sec.	- When the machine is switched off, the electronic brake is activated for approx. 10 to max. 15 seconds and then switched off again	- Normaler Betriebszustand (das Brummgeräusch wird durch die elektronische Bremse verursacht)
The electronic brake no longer switches off (hums continuously)	- Component failure on the electronic brake	- Netzstecker ziehen, damit der Motor nicht überhitzt; - Schalter zur Reparatur einsenden
After switching off, the flywheel mass is braked too quickly or not within 10 sec.	- Electronic brake setting not optimised - Factory setting too low	- Elektrische Bremse einstellen (siehe "Anleitung zur Verstellung des Bremsstroms") - Maximalen Bremsstrom nicht überschreiten - Bei Arbeiten am Schalter ist zuvor der Netzstecker zu ziehen - Die Arbeiten dürfen nur durch qualifiziertes Fachpersonal erfolgen
No braking function	- See above - Failure of the electronic brake	- Schalter zur Reparatur einsenden
Other faults	Contact our service department or send the defective switch (complete with all cables, without motor) to with a brief description of the fault.	

Instructions for adjusting the braking current

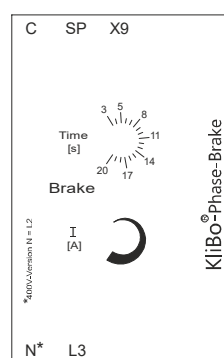
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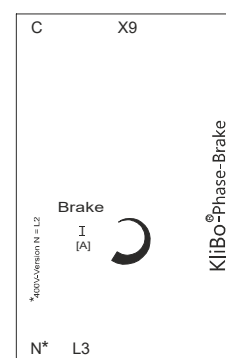
Art.Nr.
 40830500 (16A)
 87030500 (16A)
 87030501 (16A)
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 87030601 (16A)
 87020000 (10A)

The braking current can be adjusted using the potentiometer on the circuit board (+ / -). Please note that the adjustment is made in small steps (approx. 5°).

KLIBO-Phase-Brake-Bremsen:



Phase-Brake mit adjustable time



Phase-Brake

Warranty

- 2 years from date of delivery (calendar week and year are indicated on the rating plate)
- Damage caused by overloading, natural wear and tear, improper connection or handling is excluded from the warranty.
- A guarantee can only be granted if the performance class of the switch corresponds to the application.
- Complaints can only be recognised if the complete device is sent in. - Warranty claims that go beyond the switch are excluded.

It is not economical to repair switches older than 3 years. Please refrain from returning them. Otherwise, switches must be sent in free of charge for repair.