

Linear motor operated drives LM 50

for indoor switching devices



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ISO 9001
ISO 14001
BUREAU VERITAS
Certification



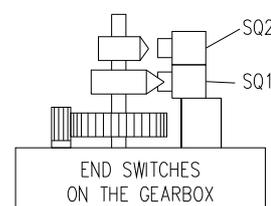
LM 50 motor operated drives for indoor use

- these are used for remote control of MV switching devices, such as the disconnectors and earthing switches
- the drive units are placed straight on the switching device
- they can be installed to already mounted switching devices and provided with hand operated drive mechanism
- owing to their high rated output forces of up to 3 000 N they provide for reliable control of the switching devices
- in despite of their high performance the drive units feature low power consumption
- the drive unit's single design and its construction parts which have been well proven in the operation process provide for reliable function of the device, without any special demand on the maintenance
- high reliability of attainment of end positions and, at the same time, defect-free indication of the ON and OFF switching positions, depending on the position of the main shaft

Description of the drive unit and its function

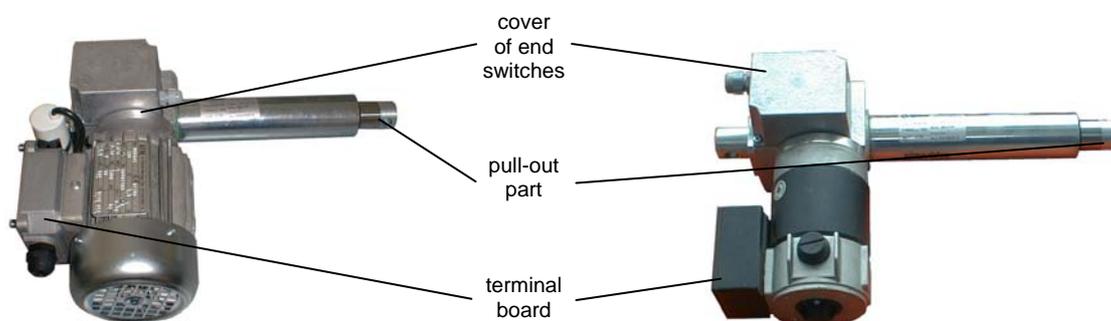
The linear electromechanical LM50 type drive mechanism transforms the rotational movement of the electric motor on a linear movement.

Using worm gear and trapezoidal screw the rotational movement of the electric motor is transformed onto linear movement of the pull-out part. The drive pull-out part is then acting on a lever mechanism, fixed to the switching device's shaft. A big reserve in the output torque of drives provides for reliable and defect-free operation, even under adverse operating conditions. The transition period from the ON into the OFF switching position takes about 11 seconds. The end positions are set up using built-in cams and end switches. These switches are used to control the contactors of electric drive power supply circuits.



Wiring of drives is done in accordance with circuit diagrams shown hereunder. The terminal board holder with the RSA4 type terminals is adapted to accommodate incoming cables using tightening bands.

The drive unit design features the protection degree of IP 54.



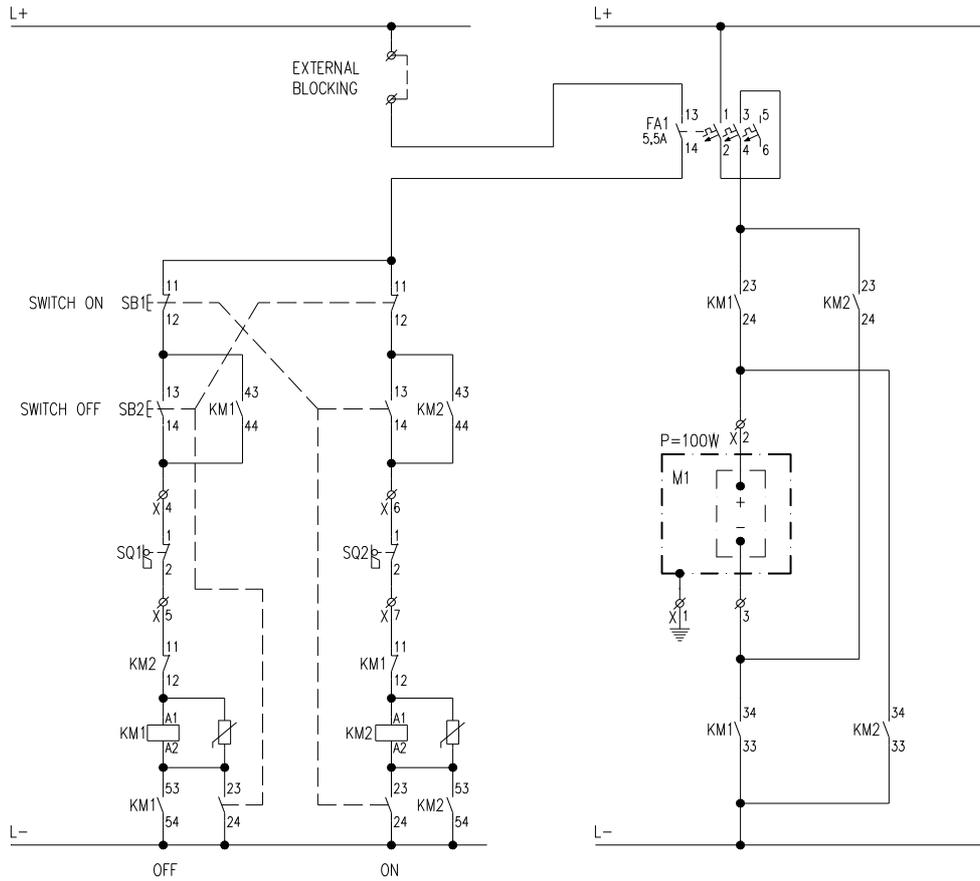
LM 50 drive – 230 V AC

LM 50 drive – 220 V DC

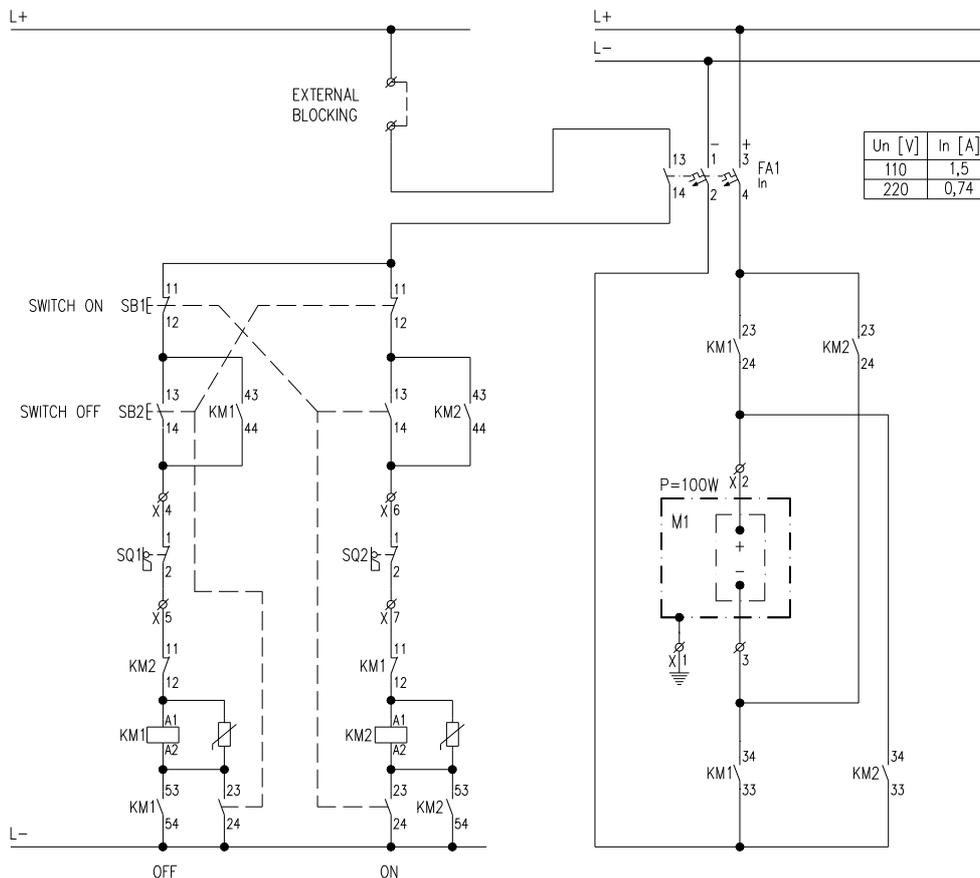
Technical data

Voltage	V	DC			AC	
		24	110	220	230	230/400 3~
power output	W	100	100	100	120	90
rated current	A	5.5	1.5	0.74	1.1	0.4
highest current	A	27.7	7.5	3.70	2.4	1.4
automatic circuit breaker set value	A	5.5	1.5	0.75	1.6	0.5

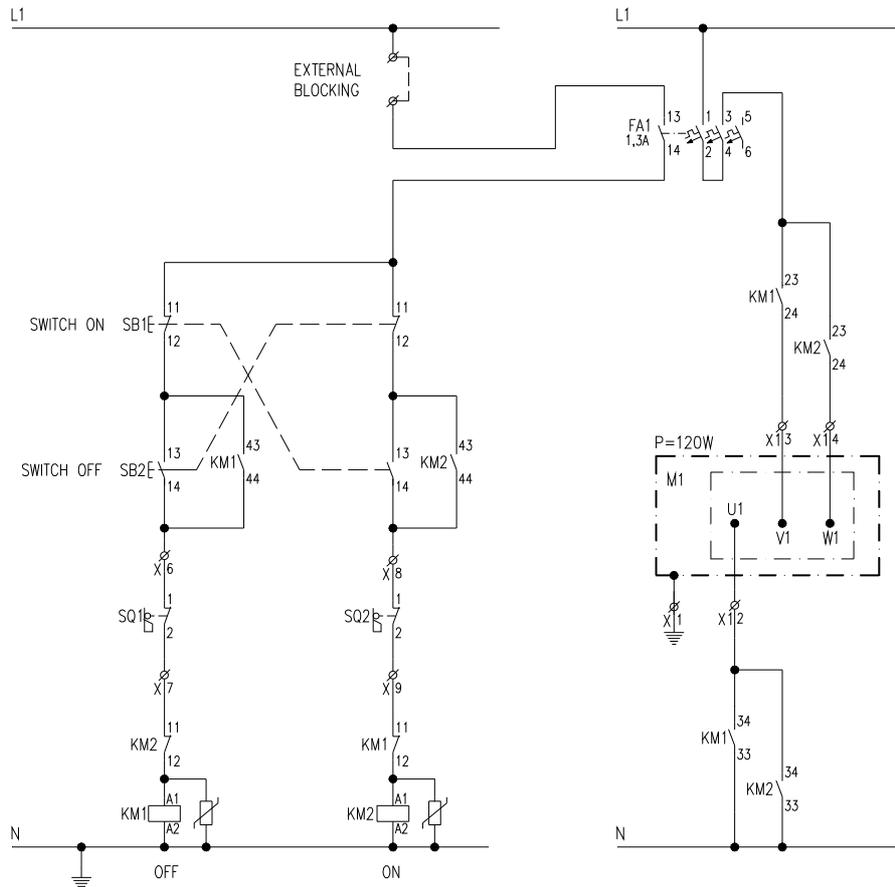
Recommended circuit diagram of 24 V DC drive unit



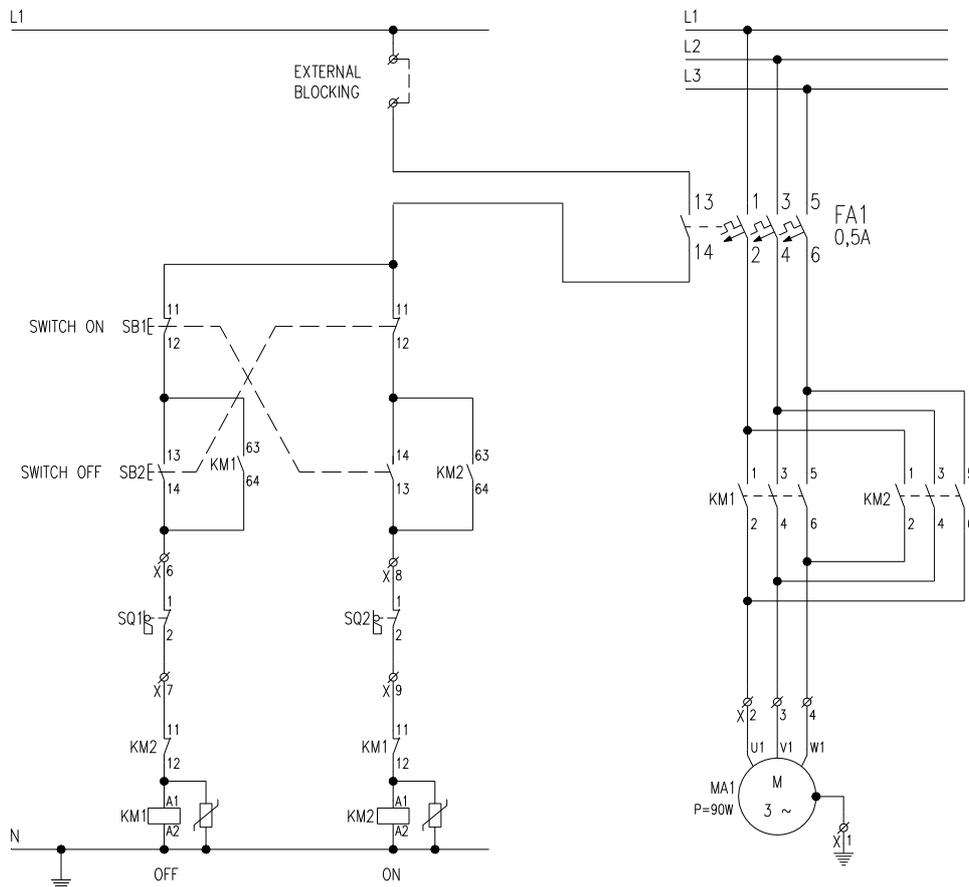
Recommended circuit diagram of 110 V and 220 V DC drive units



Recommended circuit diagram of 230 V AC drive unit



Recommended circuit diagram of 400 V AC drive unit



Electric protection

Electric motors in linear drive units have to be protected by automatic circuit breakers with the M characteristic.

Electric motors powered by 230V AC, 400V AC and 24V DC should primarily be switched ON through AC 3-phase motor starters, e.g.:

Type	Producer
GZ1 M	Schneider Electric
GV2-M	Telemecanique
PKZM0	Moeller
140M-C2E	Allen-Bradley
SM1-B	Lovato
SM1E	OEZ Letohrad
MIS	SEZ Krompachy

Electric motors powered by 110V DC and 220V DC, however, should be provided at the entry with automatic circuit breakers, capable of interrupting the DC short-circuit current.

To meet this requirement the following automatic circuit breakers have been tested and found proven:

Type	Producer
140-MN	Allen-Bradley
S 282 UC-K	ABB
RI 5 J2 M	SEZ Krompachy

The use of other brands of automatic circuit breakers for voltages of 110 V DC and 220 V DC should be discussed with the company DRIBO, prior using them.

Each automatic circuit breaker is to be completed with auxiliary contact to disconnect the drive control circuits in case of its operation.

When connecting circuit breaker into the corresponding electric circuit the recommendations of the manufacturer have to be met, paying attention mainly to the specified polarity.

Drive unit connection

The electric connection of a linear-type drive mechanism takes place using two cables, connected to the incoming terminal board. The cables are fixed with a tightening band to the terminal board holder. The recommended protective components for the drive are shown in the table. The drive unit is wired in accordance with the recommended circuit diagrams. The terminal board clamps in the drawings are marked with X.

Drives mounted on both the power-switching device and the earthing switch; have to be provided with an interlocking system to prevent coincidental switching. The built-in mechanical interlocking is used for manual operation, only. Operation drive at a mechanically blocked switching device can damage the drive unit.

The position of end switch cams of the drive units has been set by the manufacturer and must not be changed in any case. Adjustment works, if any, have to be carried out only by an adequately trained servicing technician of the supplier. Unprofessional handling can result in damages.

Manual emergency operation

The drives are manually operated using both the switching rod and the emergency handling lever with lug, which is fixed to the operating shaft of the switching device.

In emergency cases an automatic disconnection between the drive mechanism and the switching device takes place. In such a way the operating personnel is protected against erroneous switching. If during the emergency switching the positions of the switching device and that of the electrical motor drive unit are mismatched, then the connection, after unification of positions, re-establishes automatically.



Maintenance

The LM 50 drive units are maintenance free. The moving mechanical parts are greased with temperature-stable greases, which provide for their reliable operation during the whole service life of the switching device. The sealing and stripping system is designed in a way to prevent the ingress of dirt and impurities from the outside into the movable parts. Dust sediments on the movable parts, if any, that occurred as a consequence of longer down time, do not make any harm to the drive mechanism. None the less, it is recommended to wipe off these units during the regular revision works.