

MBA 20

Level indicator

User Manual



1. Appropriate use

The MBA20 may not be used without a appropriate housing. It is mandatory to place the MBA20 into a dust tight housing.

WARNING: Dangers from inappropriate use

- MBA bin level indicators are only to be installed and put into operation by technicians who are suitably qualified to carry out such work and are aware of the possible dangers.
- In addition to these instructions, compliance must be insured with all local regulations, technical rulings and company-internal instructions that are valid at the place of use.
- MBA bin level indicators may only be operated as it is described and specified in this manual. Otherwise the manufacturer's warranty is no longer valid, and the unit could be hazardous in use.

2. Functional principle

The electric motor rotates the shaft and the paddle slowly. When the bulk material surrounds the paddle, the rotation is blocked. The counter-torque is used to turn the motor mechanism against a switch which then turns the motor off. The switch has a second contact (potential free) which is used for the status indication. As soon as the bulk material releases the paddle again, a spring pulls the motor mechanism back into the working position. Thus the switch is released and the paddle starts rotating again.

3. Installation

1. In the bottom wall of the container, make a precision bore-hole that fits to the cylindrical part of the MBA housing (diameter matching MBA's sealing ring).
2. Near this bore-hole, install a pin (or similar) matching the hole in the MBA 20 chassis plate, to prevent it from turning.
3. Insert the MBA 20 into the bore-hole, then fix it with a nut on the bulk materials side.
4. Provide a suitable protective covering over the electromechanical part.

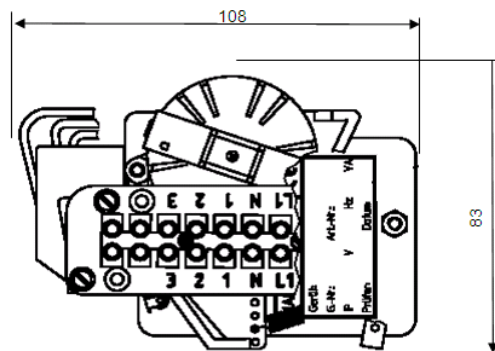
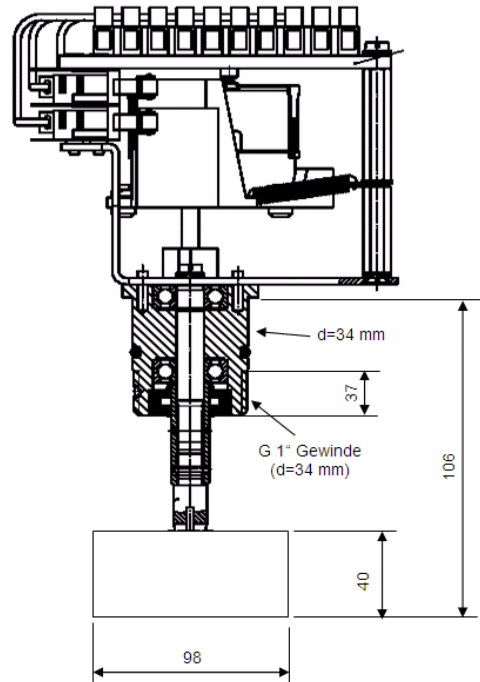
DANGER in the event of incorrect installation

The MBA 20 is designed as a built-in unit and thus has no housing. To ensure safe operation, an additional housing (or a similar form of protection) must be installed, in order to protect the mechanical parts from being touched, and to provide safe electrical condition. Selection and installation of these components is the responsibility of the user.

MBA 20 with protective cage

1. Make a suitably-sized circular cutout in the container wall.
2. Attach the plate of the protective cage to the inner side of the container.
3. Provide a suitable protective covering over the electromechanical part (on the outside)..

Dimension MBA 20

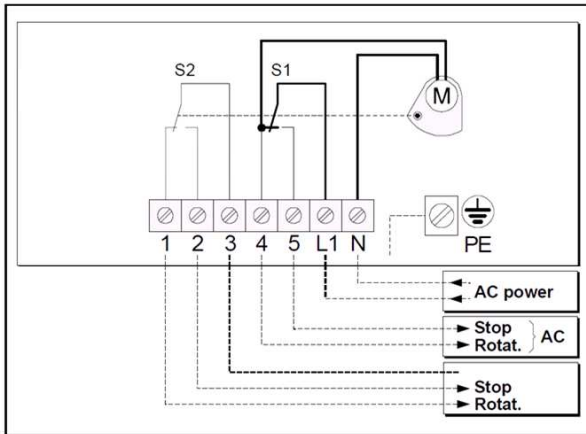


4. Electrical connection

MBA bin level indicators are provided with 4 different types of electronics: AC or the DC electronic. The accompanying papers will tell you which MBA model you have. The circuit diagrams in this manual show the switching status when the paddle is rotating. MBA's motor mechanism requires around 3 seconds to indicate stopping or restarting of the paddle (switching delay due to the mechanical sequence). For units with fast-rotating paddle (option), the delay is around 0.6 seconds. There can be some more timing delays due to

- the characteristics of the bulk material
- torsion effects (e.g. cable shaft, rubber paddle)

4.1 Standard version for AC



Status contacts

S1 and S2 are directly actuated by the motor mechanism. S1 carries the power supply; S2 is potential-free.

Permissible contact loadings:

AC: 250 VAC / 10 A
DC: 250 VDC / 0,25 A

Mains connection

Connect the mains supply line to terminals L1 and N (via an external fuse). Connect the protective earth (PE) conductor to the corresponding terminal in the housing.

Permissible contact loadings:

AC: 250 VAC / 10 A
DC: 250 VDC / 0,25 A

Mains connection

Connect the power supply from the mains to terminals [+], [-] and PE (earth conductor). Check for triggering by the bulk material

Procedure

While visually watching the bulk material level, fill and empty the bulk materials container up to the MBA unit, and check that the indicating function is correctly triggered. This test should be made several times. If the MBA unit does not correctly indicate the level status, check the options for mechanical adaptation (see below) and carry them out if necessary.

Possible ways of adapting the unit

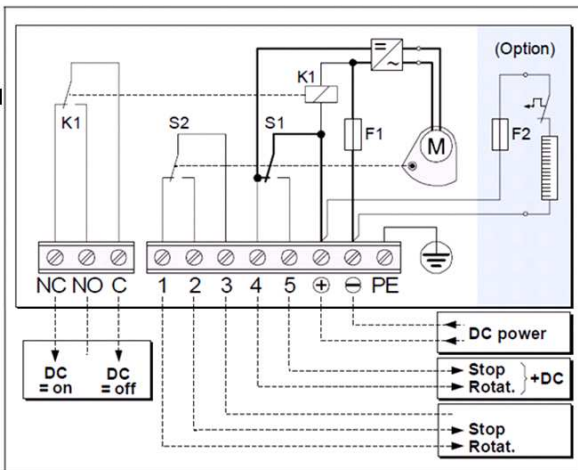
Change the paddle:

- To make it more sensitive (for lighter bulk material): Install a bigger paddle.
- To make it less sensitive: Install a smaller paddle.

Changing the lever arm of the spring (see illustration):

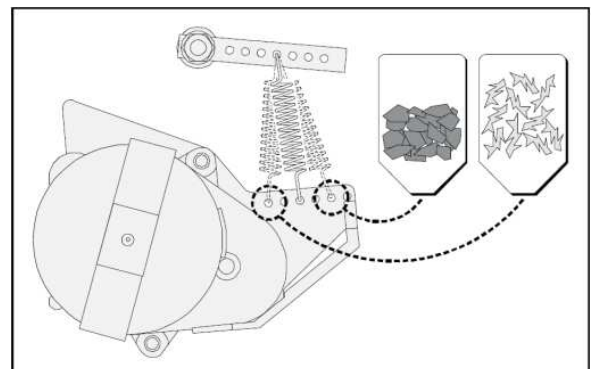
- To make it more sensitive (for lighter bulk material): Bring the spring to a position closer to the shaft (= shorter lever arm).
- To make it less sensitive: Bring the spring to a position further from the shaft (= longer lever arm).
- Changing the spring: If required, install a stronger or weaker spring (3 different types available).

4.2 Standard version for DC



Status contacts

S1 and S2 are directly actuated by the motor mechanism. S1 carries the power supply; S2 is potential-free. K1 is activated when in an operational state and drops out if the power supply inside the unit fails.



MBA 20

Document-Information

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Manufacturer:

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