

Belt misalignment switch Typ VG



OPERATING INSTRUCTIONS

Imprint

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Belt misalignment switch, Typ VG
Equipment identification no.: Various

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CE conformity certificate

The device complies with the relevant European and national regulations. CE conformity has been certified; the relevant records and documents are in the hands of the manufacturer.

Protective note (as per DIN ISO 16016:2002-5)

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1 For your safety

1.1 Intended use

Belt misalignment switches of type VG are used in conveyor systems for monitoring the true running of continuous conveyors. The switches serve to protect the belts from being damaged or destroyed if the belt deviates from its designed running line. The device is intended for use in stationary installations and in vehicles.

The manufacturer is **not liable** for personal injury and property damage arising from non-intended use of the device or unauthorized modifications to the device and its components. Make sure that the intended use is not impaired in any way even after unexpected outside influence on the device.

Intended use refers specifically to the operation of the device in accordance with these **operating instructions**. Work on this device may only be carried out by **qualified personnel** who are familiar with **accident prevention regulations** as well as other generally recognized safety regulations.

By using the equipment as intended, you protect yourself and prevent damage to the equipment and its components.

Design of warning labels

Risks are classified in accordance with ISO 3864-2 and ANSI Z535.6 using the keywords

- “Danger,” “Warning,” and “Caution” in the case of bodily injury,
- “Beware” in the case of property damage, and
- “Note” to convey general information.

In this documentation, the Risks and Notes are classified and presented as follows:



indicates the immediate threat of danger. Not avoiding this danger will result in death or extremely serious injury (crippling).



Warning!

indicates a possibly dangerous situation. Not avoiding this dangerous situation could result in death or extremely serious injury (crippling).



Caution!

indicates a possibly dangerous situation. Failure to avoid this dangerous situation can result in light or minor injuries.



Beware!

indicates a possibly harmful situation. If this harmful situation is not avoided, the product or something in its vicinity could be damaged.






Note!

“Note” indicates advice on use and other especially helpful information.

Icons

The following icons are used to more clearly define the sources of danger. The icons can appear in reference to any level of danger.

Icon	Type of danger
	Dangers of all types, except those that are labeled with the following icon
	Injuries caused by dangerous voltages and currents.
	Damage caused by electrostatic discharges (ESD protection)

Tab. 1-1: Icons for general sources of danger

2 Transport, storage and disposal

2.1 Transport and packaging

Select suitable packaging when sending the device or components of the device to Vossloh Kiepe GmbH, e.g. for repairs. In particular, ensure that the components are kept clean and protected from shock and moisture. This prevents damage to the components that may occur during transport, for which the manufacturer accepts no liability.

2.2 Storage

Avoid major temperature fluctuations, as these can lead to condensation that can cause damage to the device and its components.

The permitted storage temperature ranges from -25°C to $+70^{\circ}\text{C}$.



Damage caused by storage

Dirt or water getting into the device and exposure to weather (e.g. buildup of condensation in the device, sunlight) damage the device and lead to faster deterioration.

Protect the device by storing it in a clean, dry place under stable ambient conditions. If possible, store the device in its original packaging.

2.3 Disposal

Only materials that are not considered hazardous according to current engineering practice are used for Vossloh Kiepe GmbH products. Furthermore, we develop products that can be recycled after intended use. In our selection of raw materials and components, we favor reusable materials. This choice of materials used does not compromise product safety in any way.

3 Description

Belt misalignment switches of type VG are used in conveyor systems for monitoring the true running of continuous conveyors. The switches serve to protect the belts from being damaged or destroyed if the belt deviates from its designed running line. Upstream systems can be stopped in time to avoid material spillage or operational malfunctions.

Belt misalignment switches of type VG are mounted in pairs on the upper belt in front of the drive roller, on the lower belt in front of the deflection roller and also on critical spots where the axis distances are larger or material is transferred.

The casing (1) of the belt misalignment switch of type VG consists of an aluminum alloy. All external parts like shafts and screws are either made of alloyed steel or have a special galvanic coating. The actuating roller of the roller lever (3) consists of polyamide. Robust switching elements (7) guarantee a safe switch function.

The traction drive (12) can be installed on the casing (1) turned in 90° steps so that the belt misalignment switches of type VG can be installed flexibly in accordance with the requirements of the conveyor structure.

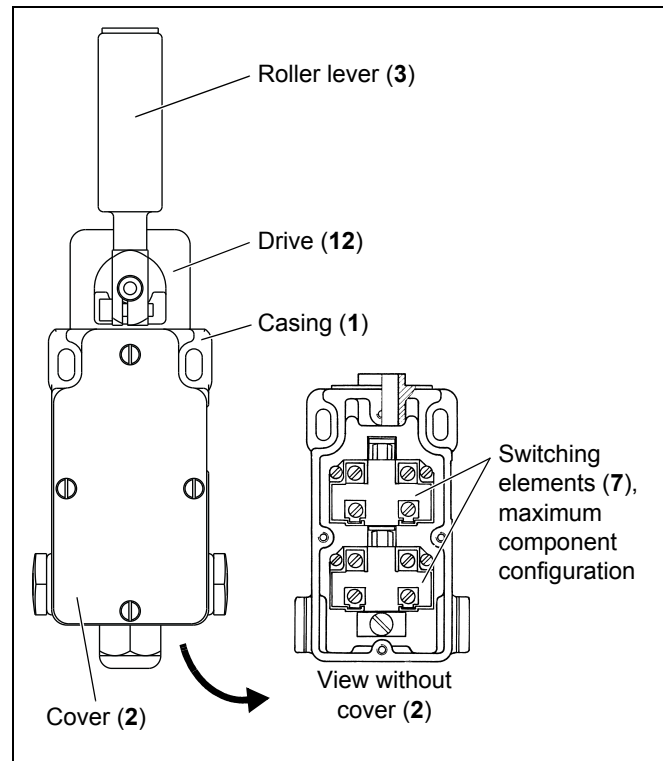


Fig. 3-1: Belt misalignment switches of type VG

With all belt misalignment switches of type VG the switch point is at approx. 12° deflection of the roller lever (3) (siehe Abschnitt 4.2: „Overview of variants“, Seite 11). The belt misalignment switches of type VG .../6 engage when the permissible deflection of 90° is exceeded. The belt misalignment switch is unlocked again by resetting the roller level (3).

The belt misalignment switch of type VG 133/6 has two switch points: An advance warning is triggered at a deflection of the roller lever (3) of approx. 12° ; final switch-off with simultaneous locking occurs at a deflection of approx. 45° . The belt misalignment switch is also unlocked again by resetting the roller level (3).

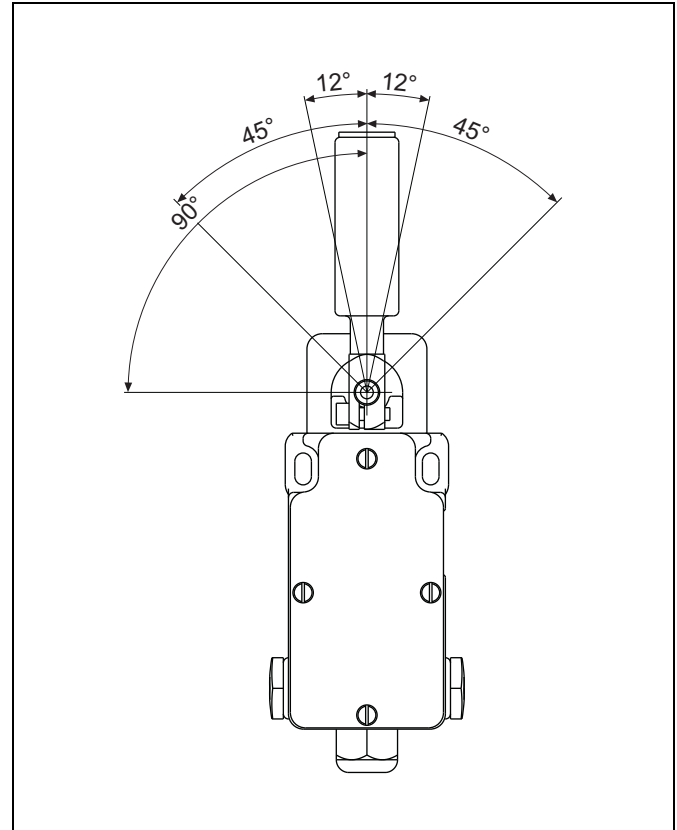


Fig. 3-2: Switch points

4 Technical data

4.1 General technical data

In compliance with the following standards and regulations	EN 60947-5-1 VDE 0110 – pollution degree 4
Suitable for	Controls and equipment according to EN 60204
Casing	Light metal alloy GK-AlSi12
Finish	2-component DD-tile enamel, yellow RAL 1004
Protection standard	IP 65 according to EN 60529
Mounting	using 2 long holes for M 6 screws
Permissible ambient temperature	– 25 °C to + 70 °C
Switching system	Toggle switch
Contact configuration	see <i>Abschnitt 4.2: „Overview of variants“, Seite 11</i>
Switch points	Switch-off at approx. 12° or advance warning at approx. 12° and switch-off at approx. 45°
Deflection	max. 90°
Rated insulation voltage U_i	AC 380 V / DC 440 V
Rated operating voltage U_e	AC 380 V / DC 400 V
Conventional thermal current I_{th}	10 A
Short circuit capacity I_e/U_e	5 A / AC 250 V
Switching frequency	1500 S/h
Mechanical operating life	10000 switching cycles
Type of drive	Cylindrical roller

Actuating roller	Polyamide
Conductor infeed	Tapped hole for 3 x M 20 x 1.5 1 x Cable feed-through M 20 x 1.5; Sealing area Ø 6 mm to Ø 12 mm 2 x dummy plug (11) M 20 x 1.5
Connection wire cross-section	max. 2.5 mm ²
Protective conductor connection	in the enclosure, M 5
Installation position	preferably as in <i>Abbildung 4-1: „Dimensions“, Seite 12</i>
Dimensions	see <i>Abbildung 4-1: „Dimensions“, Seite 12</i>
Weight	approx. 750 g

4.2 Overview of variants

Switch type	Advance warning		Locking		Contact configuration	
	without	with	without	with	Normally closed contact	Normally open contact
VG 03/5	X		X		1	1
VG 033/5	X		X		2	2
VG 03/6	X			X	1	1
VG 033/6	X			X	2	2
VG 133/6		X		X	2	2

4.3 Dimensions

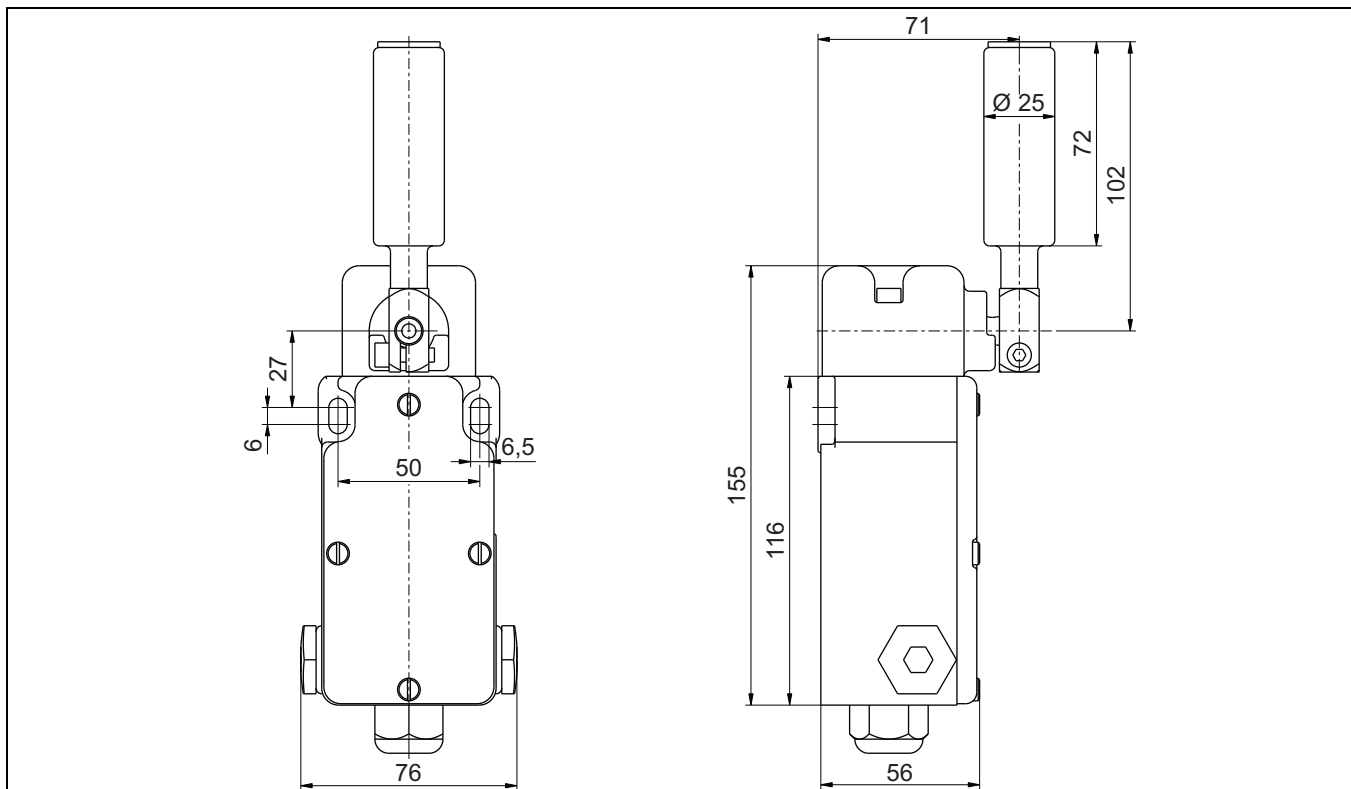


Fig. 4-1: Dimensions

5 Mounting and dismounting

5.1 Scope of delivery

The belt misalignment switches of type VG are supplied ready for operation. A screw connection (6) M 20 x 1.5 and dummy plug (11) M 20 x 1.5 are included in the scope of delivery. A replacement gasket (13) for the mounting of the traction drive (12) is also provided.

The screws M 6 (4) for mechanical mounting are not included in the scope of delivery.

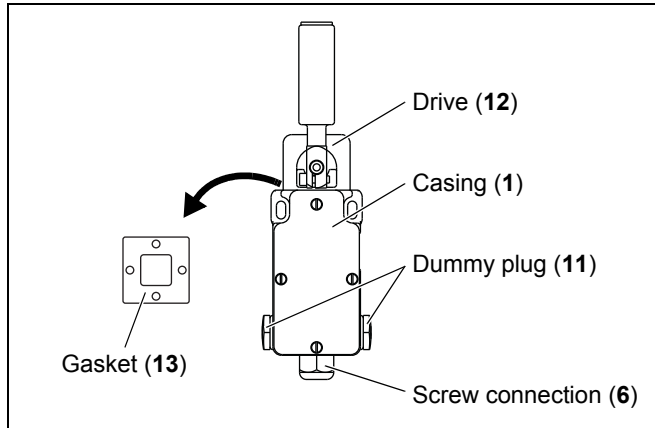


Fig. 5-1: Scope of delivery

5.2 Mounting



Danger of fatal electric shock

Work on the device may be performed only by a qualified electrical technician.

Prior to working, switch off the power supply to the system. Ensure that the system cannot be accidentally switched on. Mask any neighboring components that may be live to prevent contact.



Beware!

The belt misalignment switches are to be used in control circuits only.

5.2.1 Mechanical mounting

5.2.1.1 Setting the position of the traction drive

The traction drive (12) can be installed on the casing (1) turned in 90° steps so that the belt misalignment switch of type VG can be installed flexibly in accordance with the requirements of the conveyor structure.

1. Unscrew the two cheese head screws (14) with a size 4 allen key and remove the traction drive (12) from the casing (1).

! Penetration of dirt and water when gaskets are damaged

The gasket (13) of the traction drive (12) can only be used once, otherwise the tightness of the seal can no longer be guaranteed. Every time the traction drive (12) is detached, the gasket (13) must be replaced.

2. Replace the gasket (13) of the traction drive (12) with the replacement gasket (13) included.

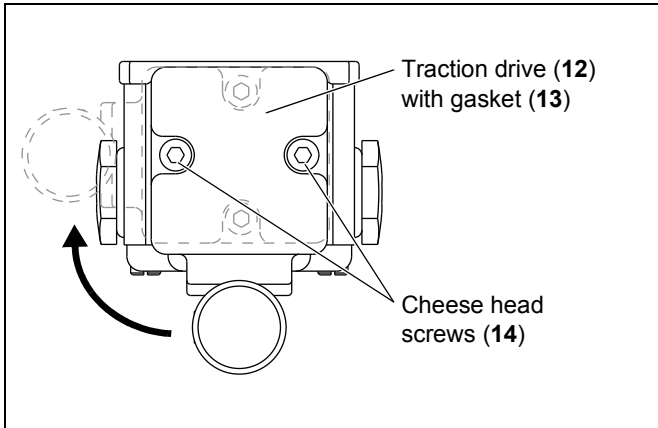


Fig. 5-2: Setting the traction drive

3. Place the traction drive (12) in the desired position on the casing (1) and tighten both cheese head screws (14).

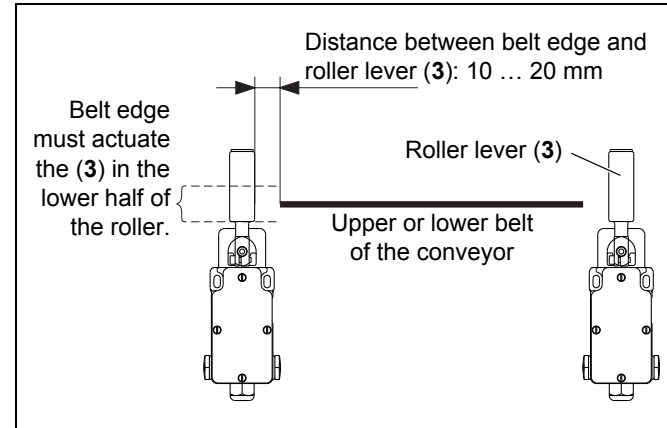


Fig. 5-3: Mounting paired belt misalignment switches

5.2.1.2 Mounting belt misalignment switches



Beware!

Make sure to mount the belt misalignment switch so that the belt edge actuates the roller lever (3) in the lower half of the roller when the belt deviates from its designed running line. This prevents the belt from sliding over the roller lever (3).

Belt misalignment switches of type VG are mounted in pairs on the upper belt in front of the drive roller, on the lower belt in front of the deflection roller and also on critical spots where the axis distances are larger or material is transferred.

1. Attach the belt misalignment switches with two screws M 6 (4) through the long holes (10) on the conveyor structure.
2. Unscrew the cheese head screw (9) using a size 4 allen key.
3. Set the roller lever (3) to the required position and retighten the cheese head screw (9).

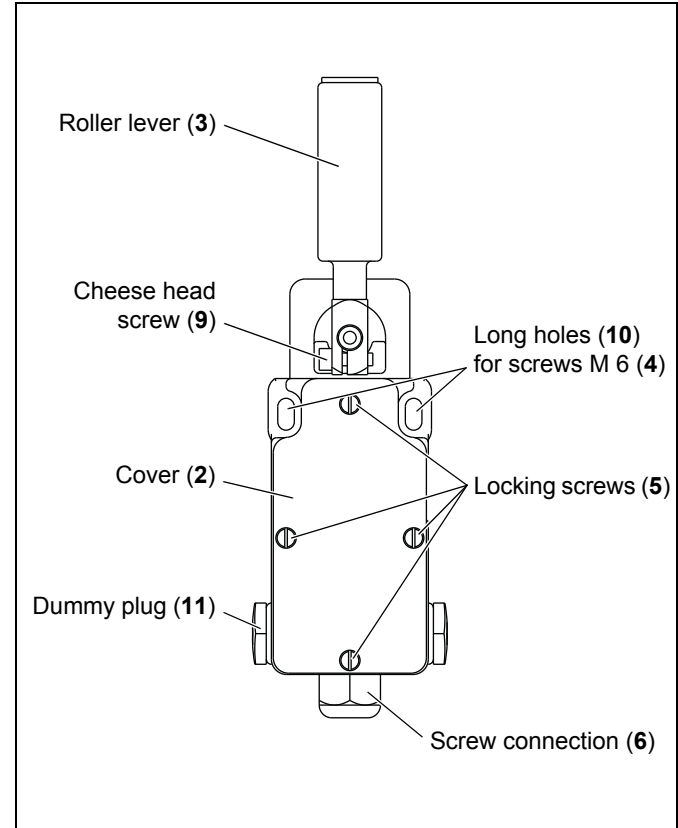


Fig. 5-4: Mounting the belt misalignment switch onto the conveyor

5.2.2 Electrical connection

1. Prior to working, switch off the power supply to the system. Ensure that the conveyor system cannot be accidentally switched on. Mask any neighboring components that may be live to prevent contact.



Penetration of dirt and water

Only use the supplied screw joint and dummy plugs – otherwise the sealing of the device is not ensured!

The device must only be operated when all three holes are closed with the supplied screw joint and the dummy plugs!

When selecting the connection cable, observe that the cable cross-section must be between 6 mm and 12 mm (sealing area of the screwed cable gland: Ø 6 mm to Ø 12 mm).

2. Turn the cable feed-through (6) into one of the threaded holes of the belt misalignment switch (s. Abb. 5-4).
3. Close the other two holes with the dummy plugs (11).
4. Open the cover (2) of the belt misalignment switch by loosening the four locking screws (5).

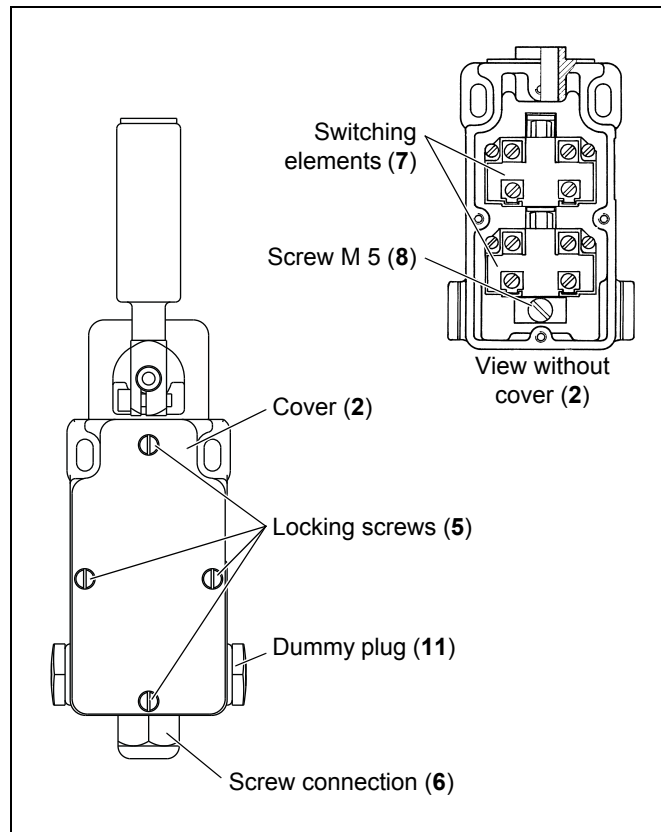


Fig. 5-5: Connecting belt misalignment switch

5. Pull the connection cable through the screw connection (6).
6. Connect the connection cable to the switching elements (7) according to the connection diagram (s. *Abb. 5-6*).
7. Tighten the screw connections (6).
8. Connect the protective conductor at the screw M 5 (8).
9. Close the cover (2) of the belt misalignment switch and tighten the four locking screws (5).

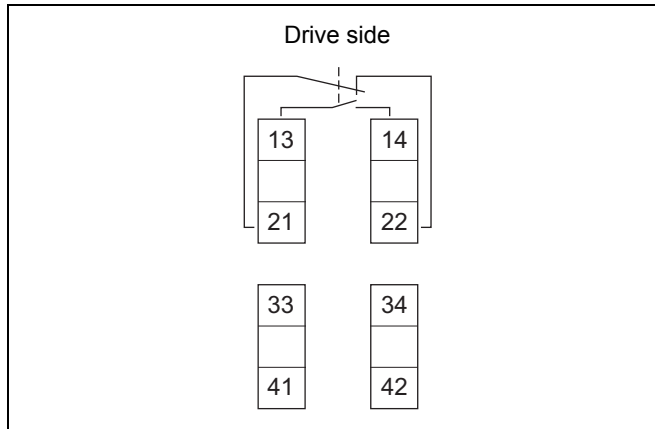


Fig. 5-6: Connector pin assignment

5.3 Removal



Danger of fatal electric shock

Work on the device may be performed only by a qualified electrical technician.

Prior to working, switch off the power supply to the system. Ensure that the system cannot be accidentally switched on. Mask any neighboring components that may be live to prevent contact.

1. Open the cover (2) by loosening the four locking screws (5) (s. *Abb. 5-5*).
2. Detach the electrical connections on the switching elements (7) and the protective conductor connection on the screw M 5 (8).
3. Turn the screw connection (6) open and pull the connection cable out of the belt misalignment switch.
4. Unscrew the two screws M 6 (4) and remove the belt misalignment switch from the conveyor structure.

6 Maintenance

Danger!

Damaged belt misalignment switches or damaged components (e.g. bolted connections, gaskets) must not be used.

Always replace damaged belt misalignment switches.

Check the belt misalignment switch at regular intervals (approximately every three months) for proper status and trouble-free functionality.

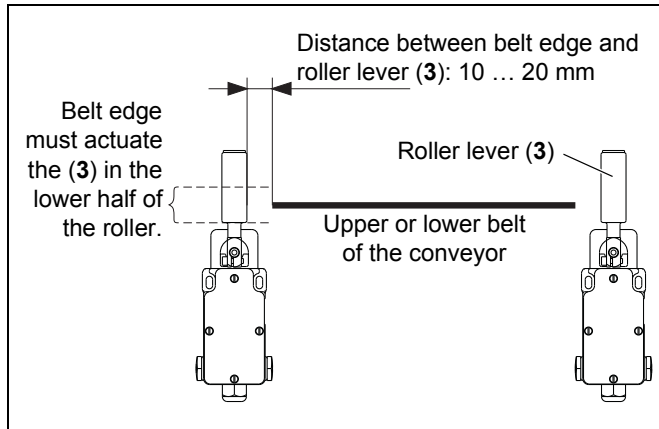


Fig. 6-1: Checking the belt misalignment switch

7 Repair

7.1 Replacing the roller lever



Danger of fatal electric shock

Work on the device may be performed only by a qualified electrical technician.

Prior to working, switch off the power supply to the system. Ensure that the system cannot be accidentally switched on. Mask any neighboring components that may be live to prevent contact.

1. Unscrew the cheese head screw (9) with a size 4 allen key and remove the roller level (3) from the axle (15).
2. Put the new roller lever (3) onto the axle (15).
3. Set the roller lever (3) to the required position and retighten the cheese head screw (9).

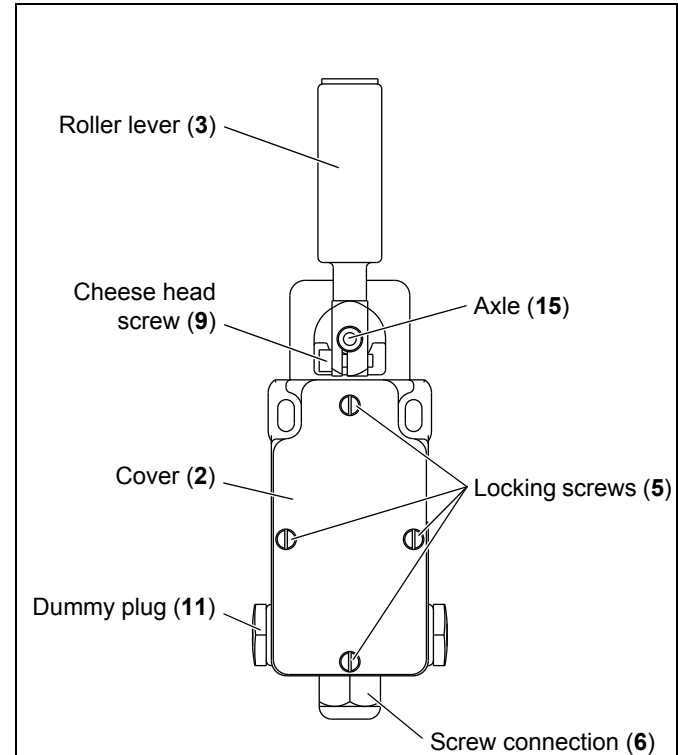


Fig. 7-1: Replacing the roller lever

7.2 Replacing the switching element

7.2.1 Replacing the switching element for belt misalignment switches with one switching element



Danger of fatal electric shock

Work on the device may be performed only by a qualified electrical technician.

Prior to working, switch off the power supply to the system. Ensure that the system cannot be accidentally switched on. Mask any neighboring components that may be live to prevent contact.

1. Remove the belt misalignment switch of type VG from the conveyor structure (*siehe Abschnitt 5.3, Seite 17*).
2. Remove the switching element **7**) by loosening the two cheese head screws **16**.
3. Install the switching element **7**) by placing the switching element **7**) into the casing **1**) and tightening it with the two cheese head screws **16**.
4. Install the belt misalignment switch of type VG on the conveyor structure (*siehe Abschnitt 5.2, Seite 13*).

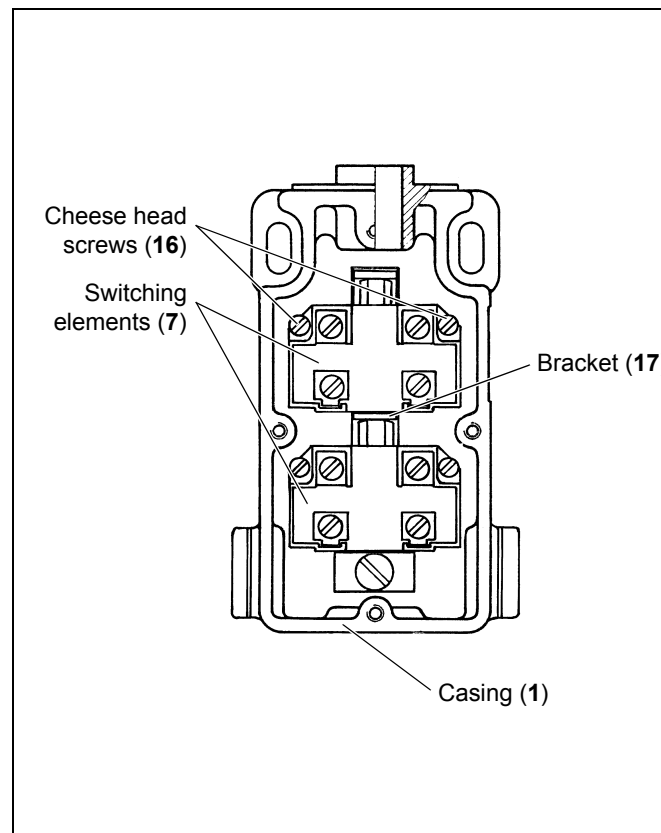


Fig. 7-2: Replacing the switching element

7.2.2 Replacing the switching elements for belt misalignment switches with two switching elements



Danger of fatal electric shock

Work on the device may be performed only by a qualified electrical technician.

Prior to working, switch off the power supply to the system. Ensure that the system cannot be accidentally switched on. Mask any neighboring components that may be live to prevent contact.

1. Remove the belt misalignment switch of type VG from the conveyor structure (*siehe Abschnitt 5.3, Seite 17*).



Note!

A bracket (17), through which the lower switching element (7) is operated, is placed between the two switching elements (7). When the switching elements (7) are removed, the bracket (17) becomes loose. Keep the bracket (17) in a safe place, because the bracket (17) must be used again when the switching elements (7) are installed.

2. Remove the switching elements (7) by unscrewing each cheese head screw (16) with a size 2.5 allen key. Remove the bracket (17) from the casing (1).

3. First install the lower switching element (7) by placing the switching element (7) into the casing (1) and tightening it with the two cheese head screws (16).
4. Place the bracket (17) into the guide in the casing (1).
5. Install the upper switching element (7) by placing the switching element (7) into the casing (1) over the bracket (17) and tightening the switching element (7) with the two cheese head screws (16).



Beware!

The switching elements (7) must switch simultaneously in order for system-specific functions (e.g. simultaneous triggering of the emergency cut-off loop and a warning message) to be met.

6. Check to see if the switching elements (7) switch simultaneously by actuating the roller level (3) (*siehe Abbildung 7-1, Seite 19*).
7. Install the belt misalignment switch of type VG on the conveyor structure (*siehe Abschnitt 5.2, Seite 13*).

8 Ordering devices, replacement parts and accessories

8.1 Ordering devices

Please provide the following data with every order (see *legal notice for address*):

- Belt misalignment switch model**
(see *rating plate on casing*): VG
- Product number** (see *rating plate on casing*): e.g. 91.038 143.501

8.2 Ordering replacement parts and accessories

Please provide the following data with every order (see *legal notice for address*):

- Belt misalignment switch model**
(see *rating plate on casing*): VG
- Product number** (see *rating plate on casing*): e.g. 91.038 143.501
- Order information and order number** (see *table*): e.g. compl. lever 94.037 860.001

Item	Order information	Order number
3	Roller lever	94.037 860.001
7	Switching element	215.15.14.10.00
18	Air conditioning membrane M 20	94.059 002.002

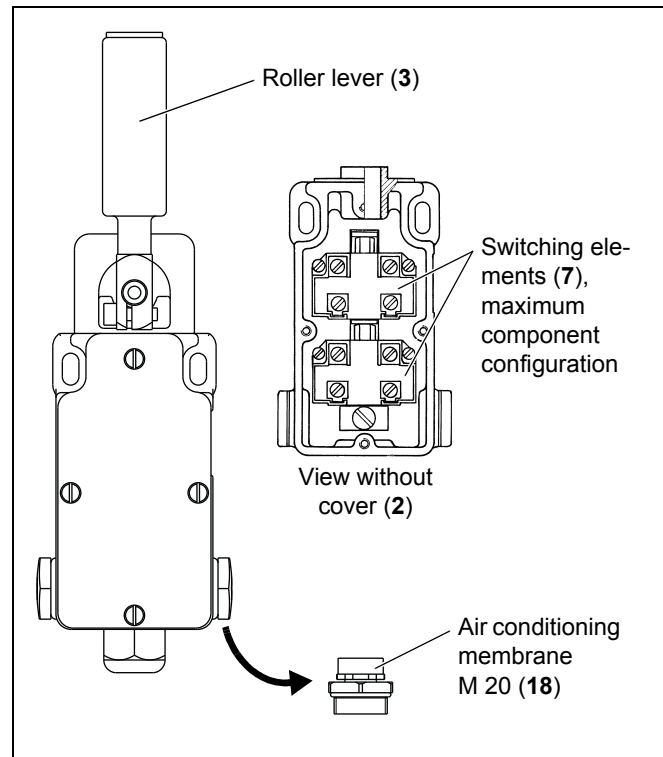


Fig. 8-1: Replacement parts

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