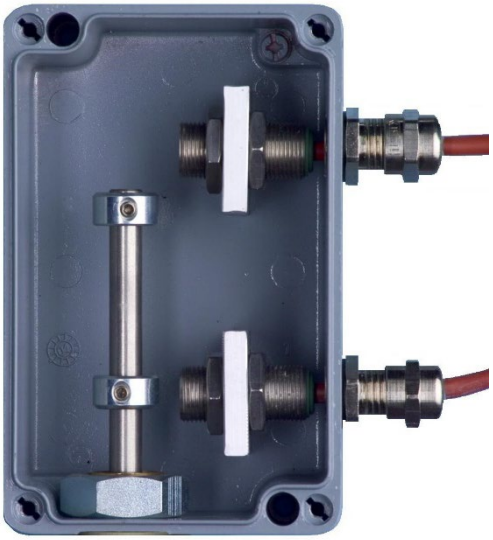
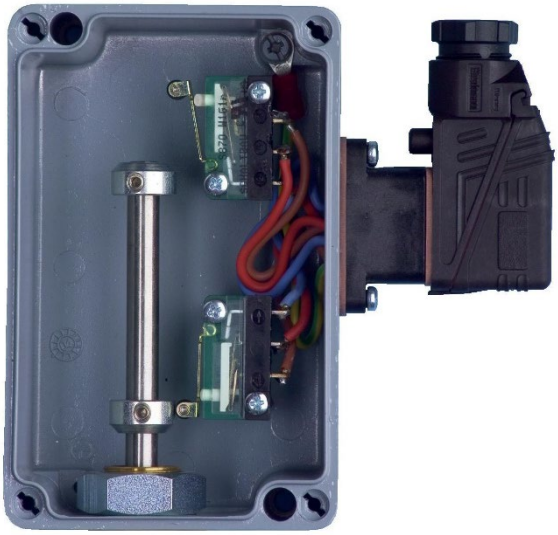
Limit switch mounting





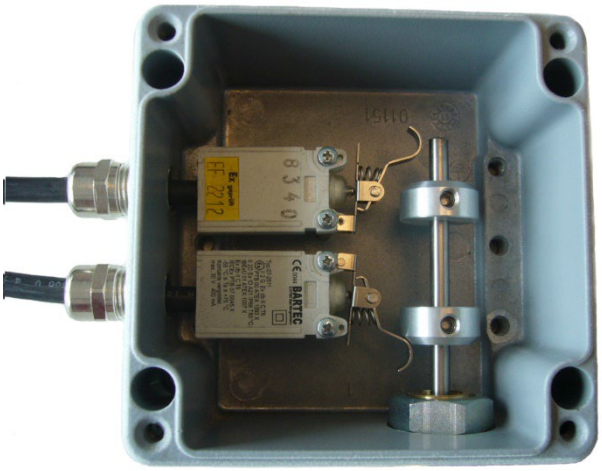


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Table of contents

1.0 Danger instructions
- 1.1 Safety-related terms

2.0 General
- 2.1 Application
- 2.2 Associated accompanying documentation

3.0 Versions
- 3.1 Limit switch mounting, mechanical
- 3.2 Limit switch mounting, mechanical (Ex version)
- 3.3 Limit switch mounting, inductive (optional Ex version)
- 3.4 Visual position indication / limit switch mounting with visual position indication

4.0 Technical data
- 4.1 Limit switch
- 4.2 Connection variants

5.0 Positioning

6.0 Size

7.0 Depiction of limit switch mountings

8.0 Installation

9.0 Disassembly
- 9.1 Limit switch mounting beneath fitting, mechanical
- 9.2 Limit switch mounting above fitting, mechanical (Ex version)
- 9.3 Limit switch mounting above solenoid actuator, inductive

10.0 Installation
- 10.1 Limit switch mounting beneath fitting, mechanical
- 10.2 Limit switch mounting above fitting, mechanical (Ex version)
- 10.3 Limit switch mounting above solenoid actuator, inductive

1.0 Danger instructions

1.1 Safety-related terms

The signal terms DANGER, CAUTION and NOTE are used in this data sheet to point out particular dangers or for exceptional information that requires special marking,

DANGER! means that failure to follow the instruction can be potentially fatal and /or cause considerable property damage.

CAUTION! means that failure to follow the instruction can result in injuries and /or property damage.

NOTE! means that particular attention must be paid to technical associations.

However, it is just as essential to pay attention to the other transport, installation, operating and maintenance instructions which are not specially highlighted (in the operating instructions, the product documentation and on the device itself) in order to avoid problems which can directly or indirectly affect persons and property.

2.0 General

2.1 Application

UNI-Geräte fittings can be optionally equipped with a limit switch mounting for electronic (optical) position indication, mechanical limit switches or inductive proximity switches.

Depending on the version, this limit switch mounting can be equipped with one, two, three or four limit switches. The limit switches are actuated by operating the limit switch by means of the open and/or closed position of the fitting.

The limit switches are reliably protected against external influences in a limit switch housing.

The limit switch housing is attached to the fitting by means of a mechanical connection.
The connection variants, such as cable end, plug connector or terminal box, are prepared by UNI-Geräte, and form the interface between the scope of delivery and the customer's electrical connecting facility.

Depending on the type of fitting, the limit switch mounting is positioned above or below the fitting as standard.
When it is attached beneath the fitting housing, a protective bracket is used from a nominal diameter of DN 80.

Depending on the version of the limit switch mounting or the limit switches that are used, they can also be used in potentially explosive areas (Ex zone 2 or 22 or Ex zone 1 or 21).

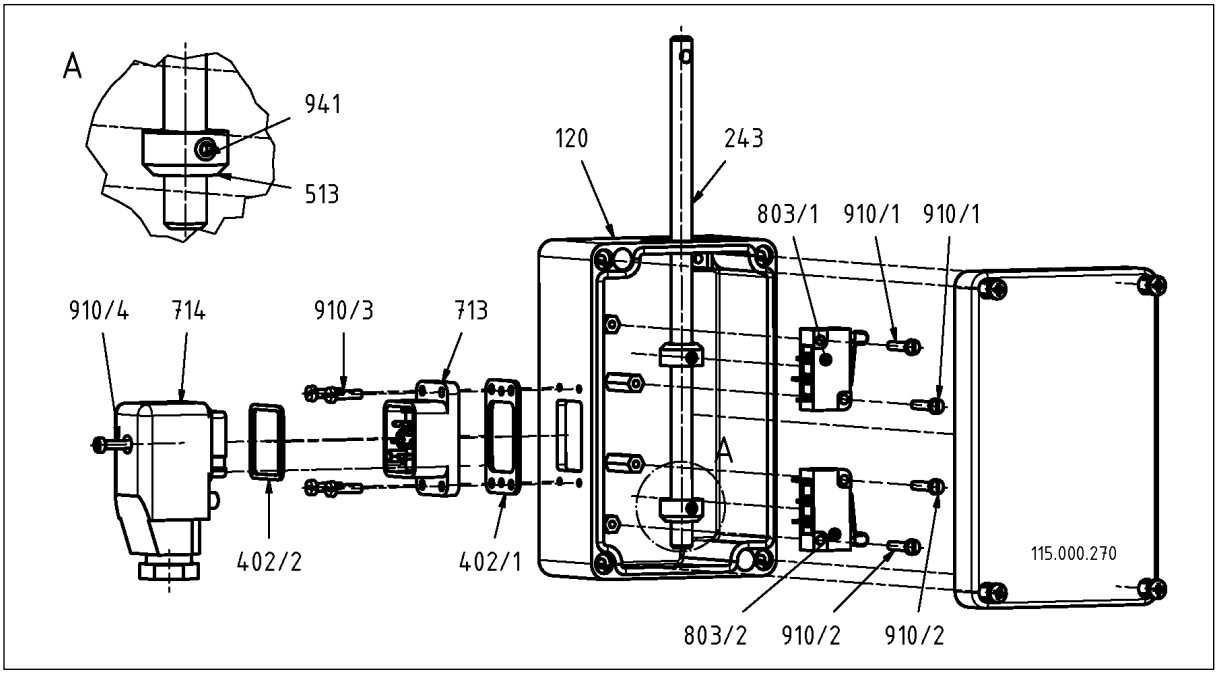
2.2 Associated accompanying documentation

The following associated accompanying documentation belongs to this data sheet depending on the type of fitting:

- Fitting documentation
- Attachment documentation
- Solenoid actuator documentation
- Limit switch manufacturer documentation

3.0 Versions

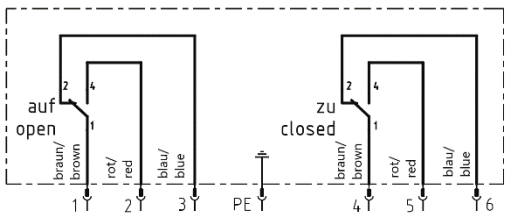
3.1 Limit switch mounting, mechanical



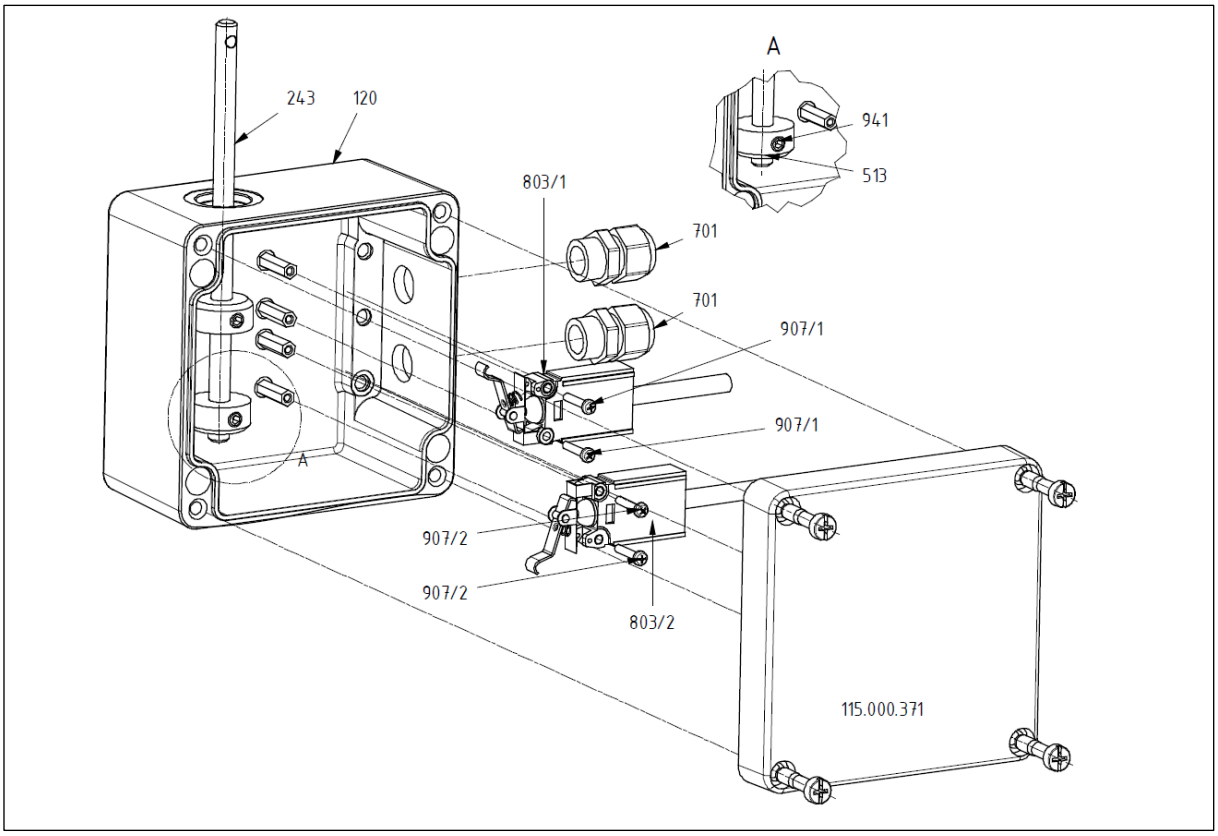
Part list (example of limit switch mounting with connector)

	Pos/Item	St./Qty	DEU Benennung DEUTSCH	ENG Parts description ENGLISH
1	120	1	Endschalter-Gehäuse	limit switch housing
2	243	1	Endschalterspindel	limit switch spindle
3	402 / 1	1	Flachdichtung	gasket
4	402 / 2	1	Flachdichtung	gasket
5	513	1/2	Endschalterbetätigung	switch actuator
6	713	1	Gerätestecker	connector
7	714	1	Leitungsdose	line socket
8	803 / 1	1	Endschalter	limit switch
9	803 / 2	1	Endschalter	limit switch
10	910 / 1	2	Zylinderschraube	cylinder head screw
11	910 / 2	2	Zylinderschraube	cylinder head screw
12	910 / 3	4	Zylinderschraube	cylinder head screw
13	910 / 4	1	Zylinderschraube	cylinder head screw
14	941	1/2	Gewindestift	setscrew

Wiring diagram



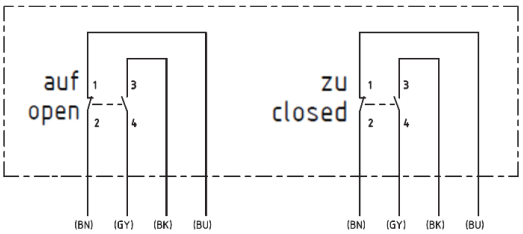
3.2 Limit switch mounting, mechanical (Ex version)

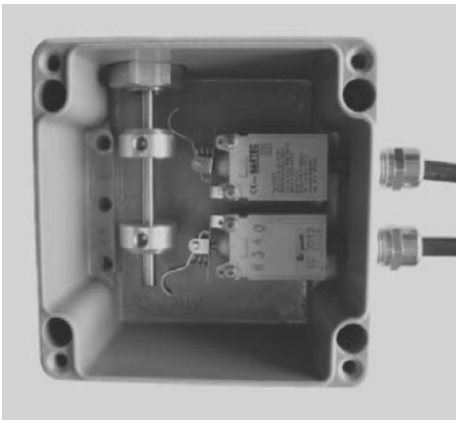


Part list (example of limit switch with cable gland)

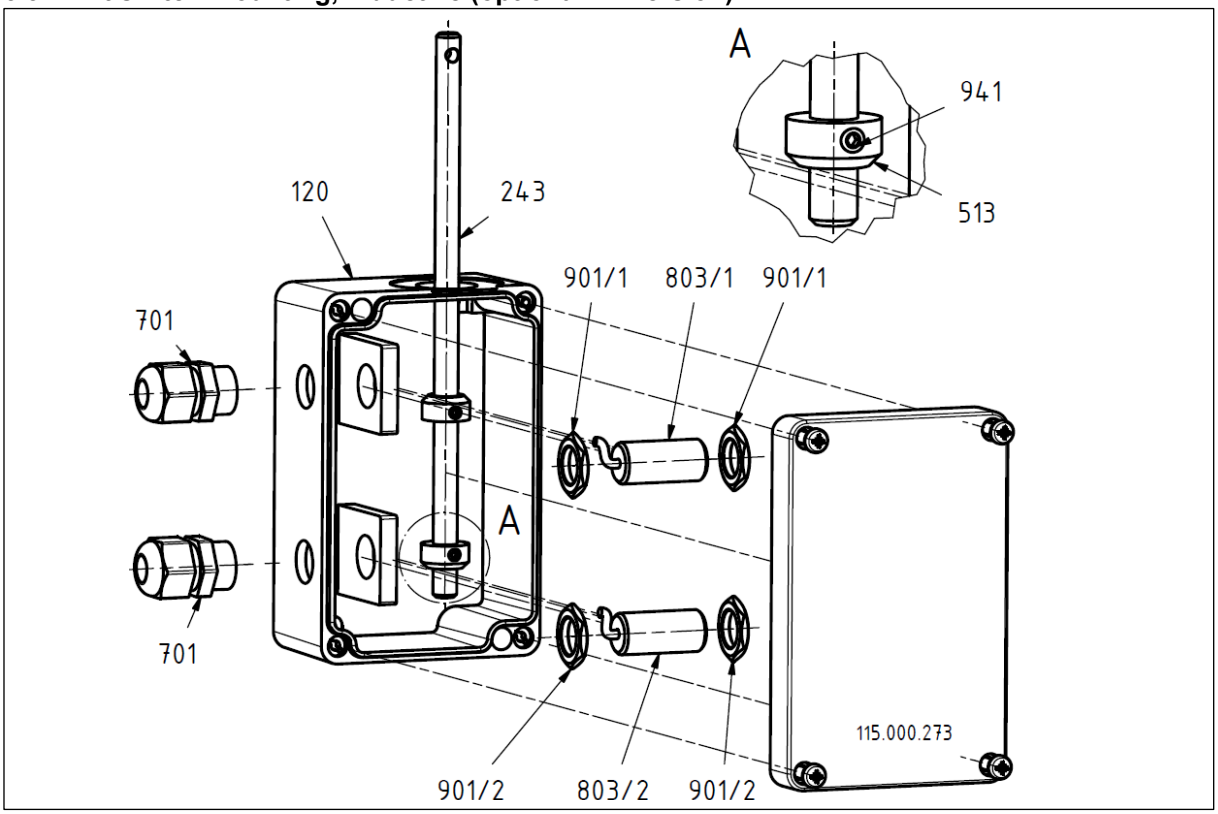
	Pos/Item	St./Qty	DEU Benennung DEUTSCH	ENG Parts description ENGLISH
1	120	1	Endschalter-Gehäuse	limit switch housing
2	243	1	Endschalterspindel	limit switch spindle
3	513	1	Endschalterbetätigung	switch actuator
4	701	1	Kabelverschraubung	cable gland
5	803 / 1	1/2	Endschalter	limit switch
6	907 / 1	1	Senkschraube	countersunk bolt
7	907 / 2	1	Senkschraube	setscrew
8	941	1	Gewindestift	setscrew with IKS with point
9	803	1	Endschalter	limit switch

Wiring diagram





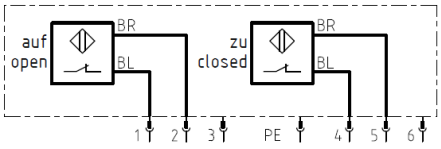
3.3 Limit switch mounting, inductive (optional Ex version)



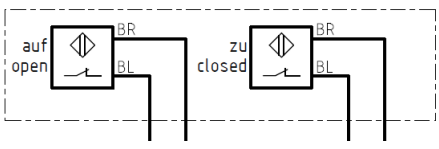
Part list (example of limit switch mounting with cable gland)

	Pos/Item	St./Qty	DEU Benennung DEUTSCH	ENG Parts description ENGLISH
1	120	1	Endschalter-Gehäuse	limit switch housing
2	243	1	Endschalterspindel	limit switch spindle
3	513	1/2	Endschalterbetätigung	switch actuator
4	701	1/2	Kabelverschraubung	cable gland
5	803 / 1	1	Endschalter	limit switch
6	803 / 2	1	Endschalter	limit switch
7	901 / 1	2	Sechskantmutter	hexagon nut
8	901 / 2	2	Sechskantmutter	hexagon nut
9	941	1/2	Gewindestift	setscrew

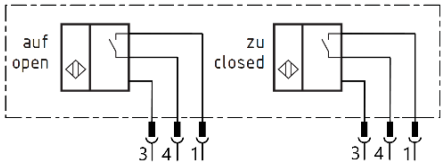
Wiring diagram (version with connector)

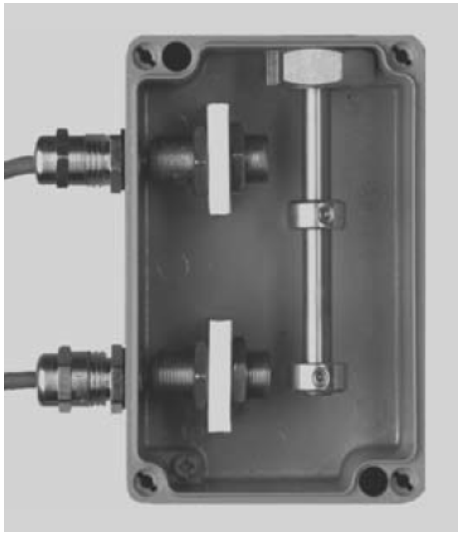


Wiring diagram (version without connector)



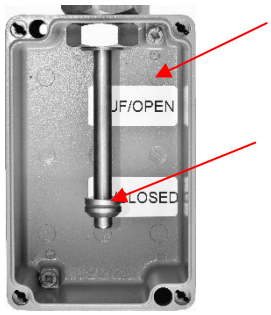
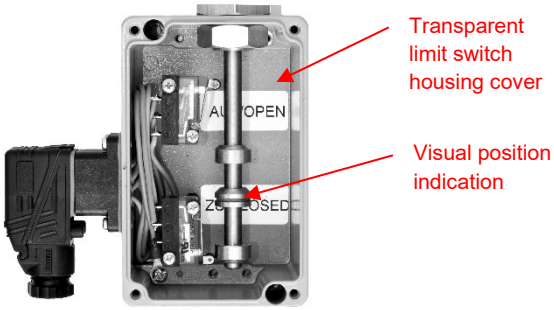
Wiring diagram (version for angular cable socket)





3.4 Visual position indication / limit switch mounting with visual position indication

With visual position indication or limit switch mounting with visual position indication, the standard limit switch housing cover is replaced with a transparent one so that the fitting position can be visually read off.

Visual position indication	Limit switch mounting with visual position indication
	

NOTE!
Transparent limit switch housing covers which are approved for used in Ex areas are marked with a milled-in “X”. These are equipped with an electrically conductive coating, which suppresses the occurrence of a potential ignition source caused by a build-up of electrostatic charge.

DANGER!
Electrostatic charging
In order to protection the coating over the long term, cleaning is only permitted with a damp, soft cloth, and only with fresh water (do not use detergent).

4.0 Technical data

4.1 Limit switch

Limit position switch	Mechanical		Mechanical (Ex version)	
Make	Schaltbau		Bartec	
Illustration				
Type	S870 W1G1R	S870 W1G4R	07-2511-734052	07-2511-834052
Switch contact	Silver	Gold	Silver	Gold
Rated voltage / current	230 V AC / 1.5 A 60 V DC / 0.5 A	230 V AC / 1 A 60 V DC / 0.5 A	250 V AC / 4 A 250 V DC / 0.15 A	30 V UC / 4 mA 12 V UC / 10 mA 5 V UC / 24 mA
Electrical connection	Plug connector	Plug connector	Terminal box / Cable gland with cable end*	Terminal box / Cable gland with cable end*
Ex-zone	-	-	1/21 or 2/22	1/21 or 2/22

Proximity switch	Inductive (optional Ex version)				
Make	Pepperl & Fuchs				Sick
Illustration					
Type	NJ2-11-N-G	NJ2-11-SN-G	NCB5-18GM40-Z0-3G-3D	NBB8-18GM50-E2-V1-3G-3D	IMF18-08BPSNC0SX01
Switching function	Normally closed (NC) NAMUR	Normally closed (NC) NAMUR	Normally open (NO) 2-wire	Normally open (NO) 3-wire PNP	Normally open (NO) 3-wire PNP
Nominal voltage	8V DC	8.2V DC	5…60 V DC	10…30 VDC	10…30 V DC
Electrical connection	Plug connector (not for Ex-zone) / Cable gland with cable end* / Terminal box	Plug connector (not for Ex-zone) / Cable gland with cable end* / Terminal box	Cable gland with cable end*	Angular cable socket with cable end* and unlocking protection	Angular cable socket with cable end* and unlocking protection
Ex-zone	1/21 or 2/22	1/21 or 2/22	2/22	2/22	2/22

* Long cable end by request

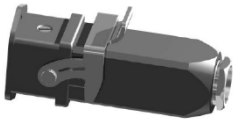
The standard versions of the limit switch which are used by UNI-Geräte are listed in the tables.
Other limit switches and proximity switches are available by request.
The technical data for the limit switches can be found in the manufacturer's documentation.

4.2 Connection variants

Version with cable end (suitable for Ex applications)

Cable gland	Angular cable socket with cable end and unlocking protection
	 

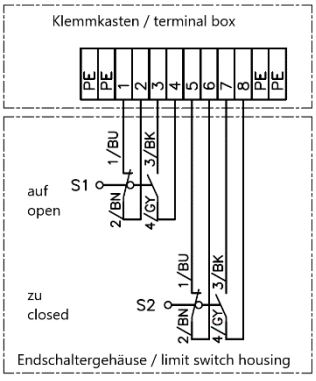
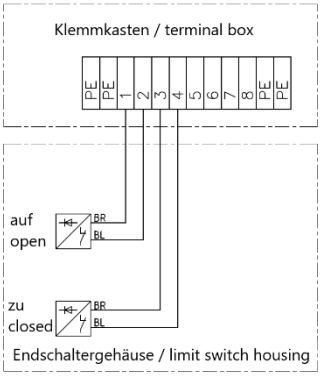
Version with plug connector (not suitable for Ex applications)

GO 610 WF	RD24 Series 693 straight	RD24 Series 693 angular	HAN 8D (optional)
			

Version with terminal box (suitable for Ex applications)

Illustration of terminal box



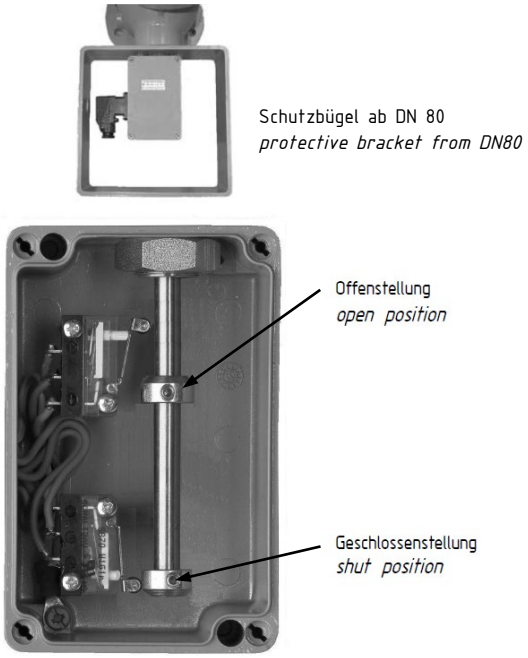
Limit switch, mechanical (Ex version)	Limit switch, inductive (Ex version)
 Wiring diagram: 07-2511-734052 07-2511-834052	 Wiring diagram: NJ2-11-N-G NJ2-11-SN-G

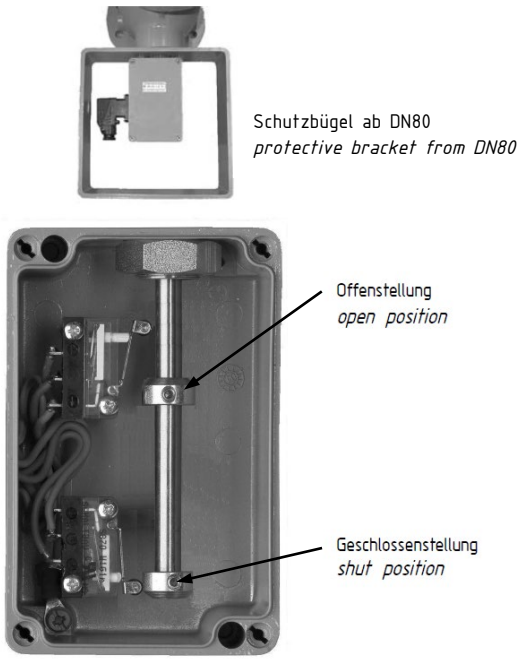
The standard connection versions which are used are listed in the illustrations.
Other connection variants are available by request.

5.0 Positioning

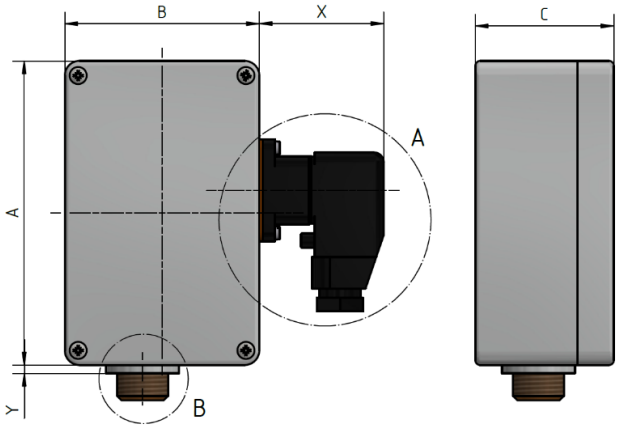
The positioning of the limit switch mounting depends on the type of fitting.

The electronic feedback of the open or closed position depends on the position of the limit switch mounting (above / below the fitting) and the function of the fitting.
NC (normally closed) or NO (normally open).

Solenoid valve	Pneumatic valve
	
below the solenoid valve, NC function	above the pneumatic valve, NC function

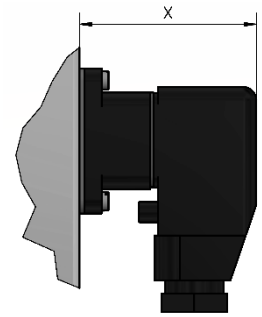
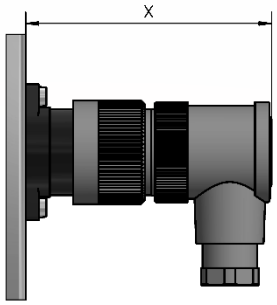
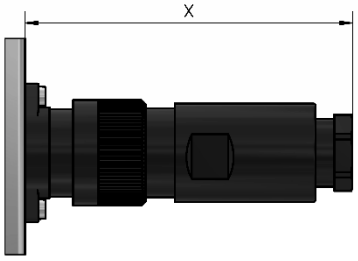
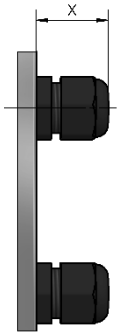
Solenoid valve (optional)	Pneumatic valve (optional)
	
above the solenoid valve, NC function	below the pneumatic valve, NC function

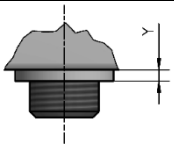
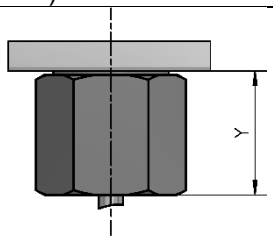
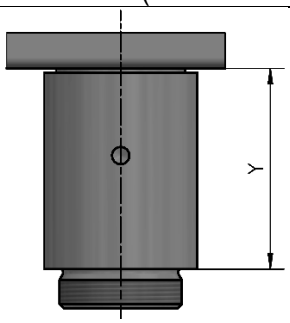
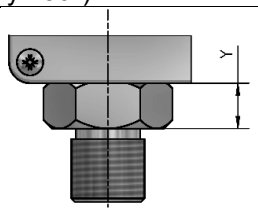
6.0 Size



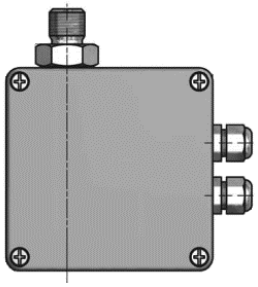
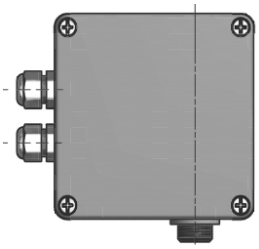
Dimensions			Limit switch housing
A [mm]	B [mm]	C [mm]	Type
75	80	57	CA140
125*	80*	57	CA160
175*	80*	57	CA180
120	122	80	CA210
120	220	80	CA230
160	160	90	CA270

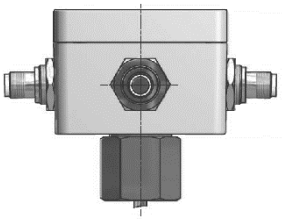
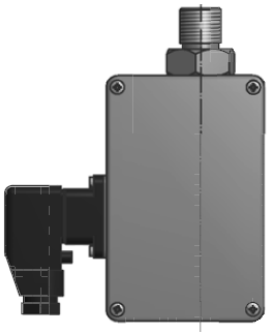
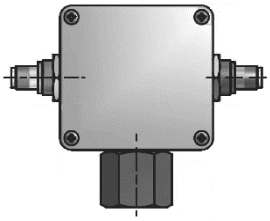
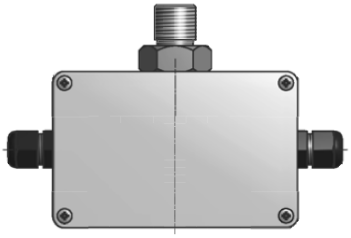
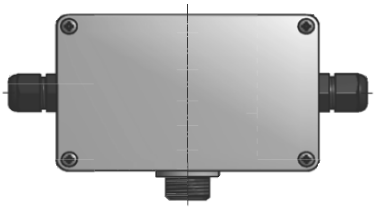
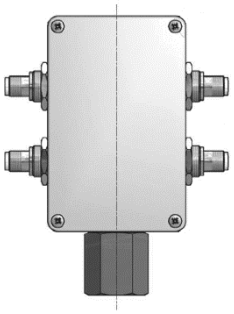
When the respective limit switch mounting is being installed / disassembled, at least 2 x dimension A must be adhered to as clearance from adjacent components.
(*) For Version limit switch housing rotated by 90° the dimensions A and B must be interchanged.

Detail A: Connection variants			
Plug connector GO 610 WF	Plug connector RD24 Series 693 straight	Plug connector RD24 Series 693 angular	Cable gland
			
X = 52	X = 69	X = 91	X = 23

Detail B: Connection between fitting and limit switch			
Limit switch mounting above fitting	Limit switch mounting above fitting	Limit switch mounting below fitting	Limit switch mounting below fitting
Pneumatic valve	Solenoid valve	Thread version	Flange version
(as shown)		(shown rotated by 180°)	
			
Y = 4	Y = 31	Y = 46	Y = 13

7.0 Depiction of limit switch mountings

Limit switch mounting: mechanical		Limit switch mounting: mechanical (Ex version)	
			
below the fitting	above the fitting	below the fitting	above the fitting

Limit switch: inductive		
		
		
		
below the fitting	above the fitting	above the solenoid actuator

The illustrations show example limit switch mountings.
Other versions of the limit switch mountings are available by request.

8.0 Installation

NOTE!
Prior to installing the limit switches, it is essential to take the manufacturer's limit switch documentation into consideration, and the intended operating conditions must be compared with this to ensure that the equipment operates properly.

The explosion protection relates to operation. During installation, maintenance and repair work, the explosion protection regulations in accordance with EN 60079-14 (VDE 0165-1) must be observed.

The electrical installation must be carried out by a qualified electrician or under the supervision of a qualified electrician, also taking the relevant regulations into consideration (VDE 0100 in Germany).

9.0 Disassembly

The following sections describe some limit switch mounting disassembly examples.
These disassembly descriptions also apply to other limit switch mounting variants.
If discrepancies arise that cannot be resolved using the disassembly instructions, further information must be requested from the manufacturer.

NOTE!
It is essential to take the documentation of the limit switch manufacturer into consideration when carrying out any work on limit switch mountings.

CAUTION!
Damage to property due to dirty subsurface.
If the subsurface is dirty, parts of the valve can be damaged.
- Place all parts on a clean subsurface.

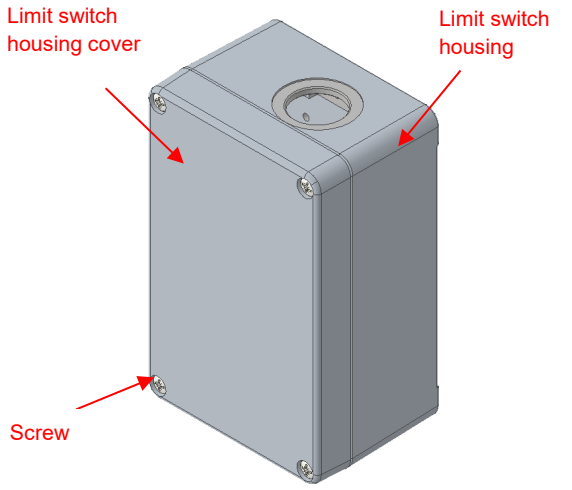
DANGER!
Electric shock
There is a risk of electric shock from live components.
- Before carrying out any work on live components, deenergise the components, check that they are deenergised, and safeguard them from being switched on again!

DANGER!
Risk of injury from moving components
If the fitting is activated, the limit switch spindle and any other attached components will move.
- Deenergise the fitting before carrying out any work, and safeguard it from being switched on again!

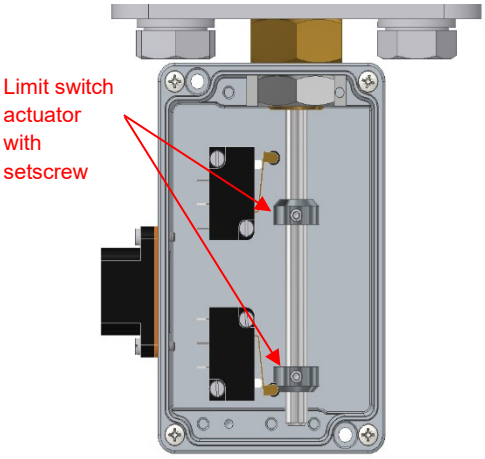
DANGER!
Risk of explosion from using the wrong lubricants and sealing materials!
The medium can undergo a chemical reaction with unsuitable lubricants or sealing materials and explode.
- With specific applications such as oxygen, only use approved lubricants and suitable sealing materials (BAM approval, see also accompanying document 225.100.259).

9.1 Limit switch mounting beneath fitting, mechanical

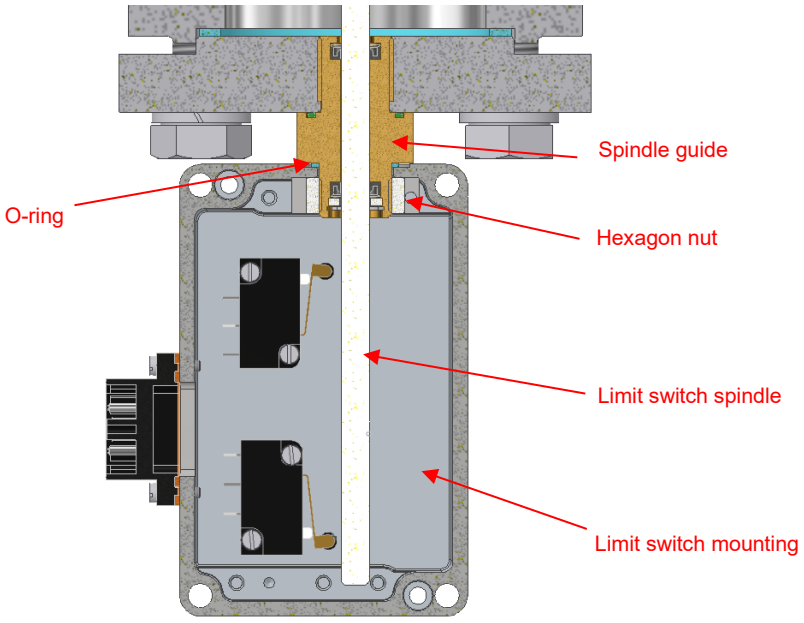
1. Open the limit switch housing by undoing the screws on the limit switch housing cover.



2. Undo the setscrew on the limit switch actuator and remove it together with the limit switch actuator.

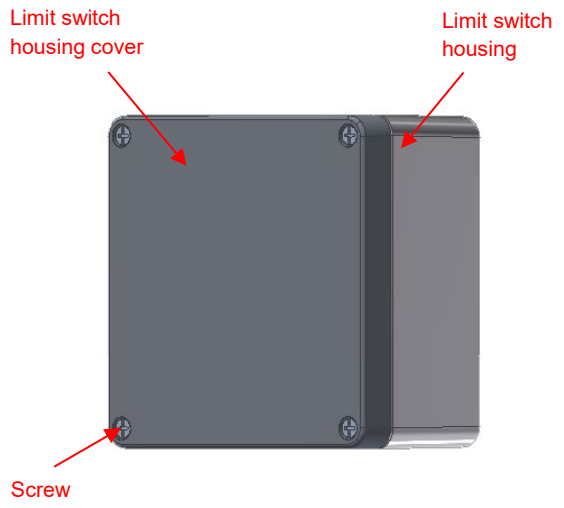
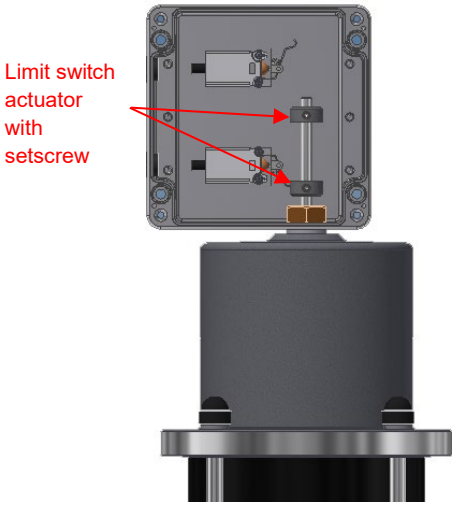
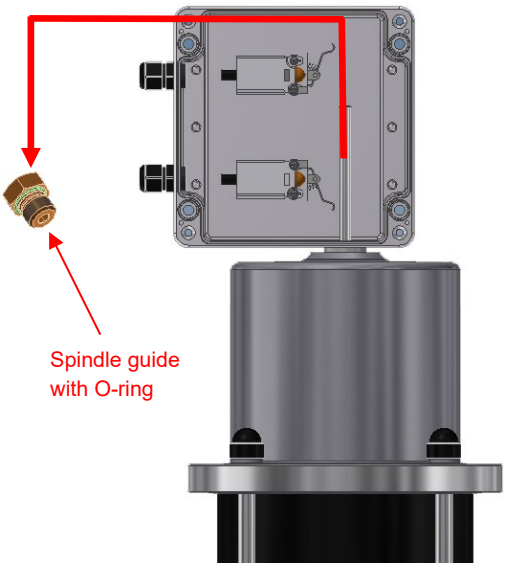
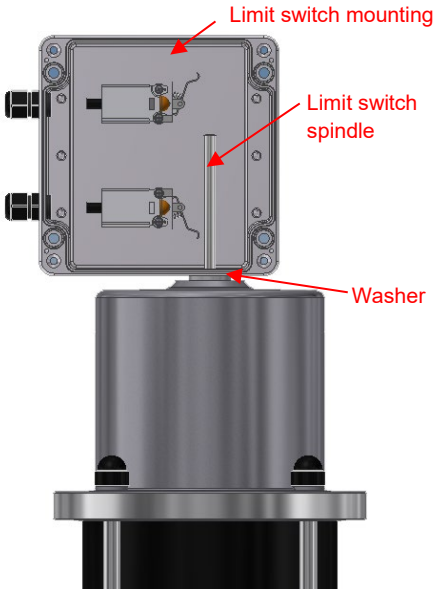


3. Unscrew the hexagon nut from the spindle guide and guide the limit switch mounting over the limit switch spindle and remove.



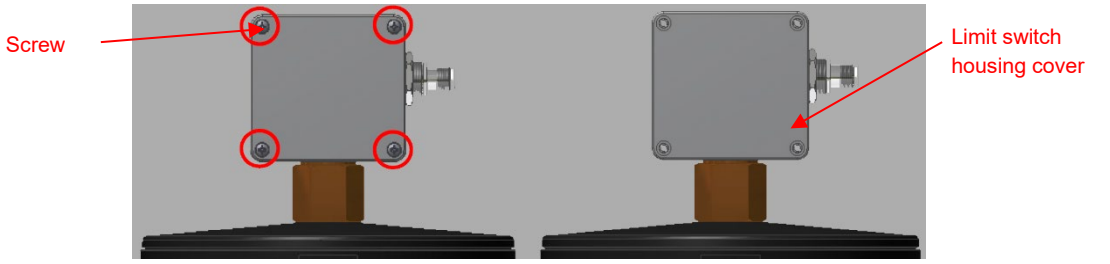
NOTE!
The marked O-ring can fall out during disassembly.

9.2 Limit switch mounting above fitting, mechanical (Ex version)

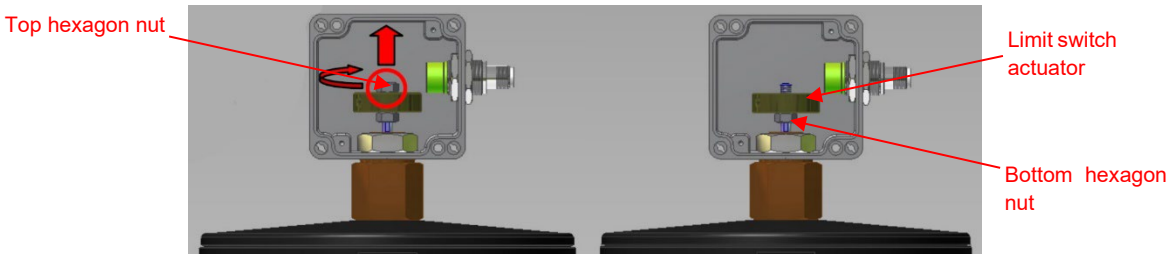
1. Open the limit switch housing by undoing the screws on the limit switch housing cover.	2. Undo the setscrew on the limit switch actuator mechanism and remove it together with the actuator.
	
3. Undo the spindle guide and remove together with the O-ring.	4. Guide the limit switch mounting with washer over the limit switch spindle and remove.
	

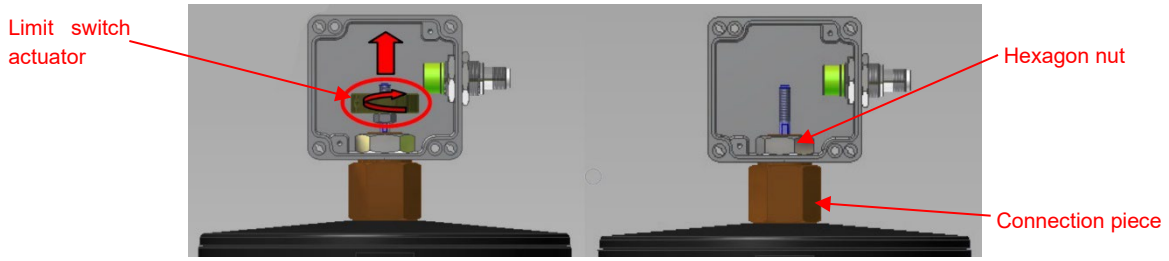
9.3 Limit switch mounting above solenoid actuator, inductive

1. Open the limit switch housing by undoing the screws on the limit switch housing cover.

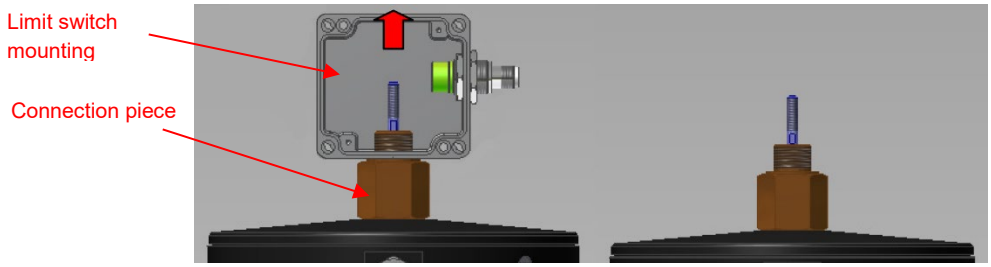


2. Undo the top hexagon nut on the limit switch actuator. Unscrew and remove the limit switch actuator. Undo and remove the hexagon nut from the connection piece.

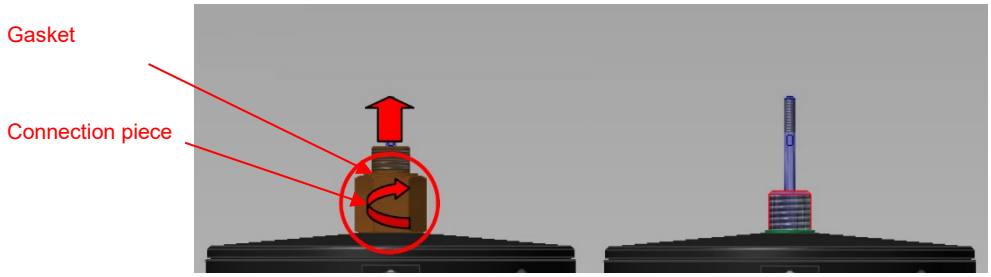




3. Guide the limit switch mounting over the connection piece and remove.



4. If the solenoid actuator needs to be disassembled, this is described in the operating instructions of the respective solenoid actuator 220.100.011, 220.100.028 or 220.100.004. The connection piece must be undone and removed beforehand.



NOTE!
The marked gasket can fall out during disassembly.

10.0 Installation

The following sections describe some limit switch mounting installation examples. These installation descriptions also apply to other limit switch mounting variants.
If discrepancies arise that cannot be resolved using the disassembly instructions, further information must be requested from the manufacturer.

NOTE!
It is essential to take the documentation of the limit switch manufacturer into consideration when carrying out any work on limit switch mountings.

CAUTION!
Damage to property due to dirty subsurface.
If the subsurface is dirty, parts of the valve can be damaged.
- Place all parts on a clean subsurface.

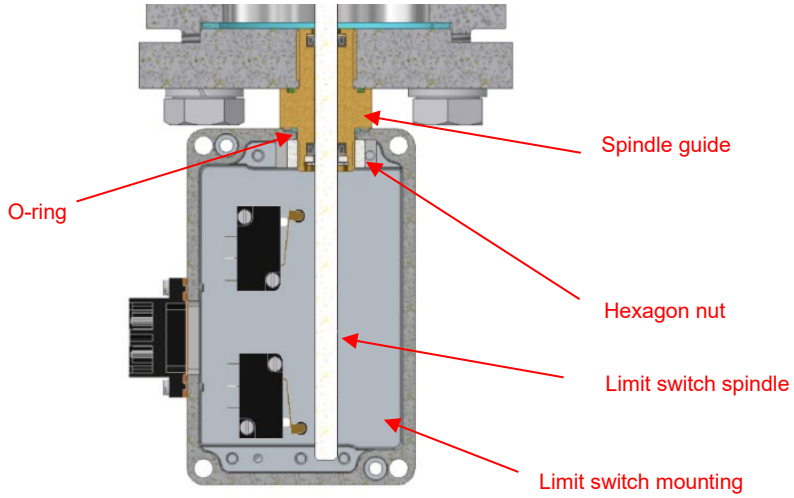
DANGER!
Electric shock
There is a risk of electric shock from live components.
- Before carrying out any work on live components, deenergise the components, check that they are deenergised, and safeguard them from being switched on again!

DANGER!
Risk of injury from moving components
If the fitting is activated, the limit switch spindle and any other attached components will move.
- Deenergise the fitting before carrying out any work, and safeguard it from being switched on again!

DANGER!
Risk of explosion from using the wrong lubricants and sealing materials!
The medium can undergo a chemical reaction with unsuitable lubricants or sealing materials and explode.
- With specific applications such as oxygen, only use approved lubricants and suitable sealing materials (BAM approval, see also accompanying document 225.100.259).

10.1 Limit switch mounting beneath fitting, mechanical

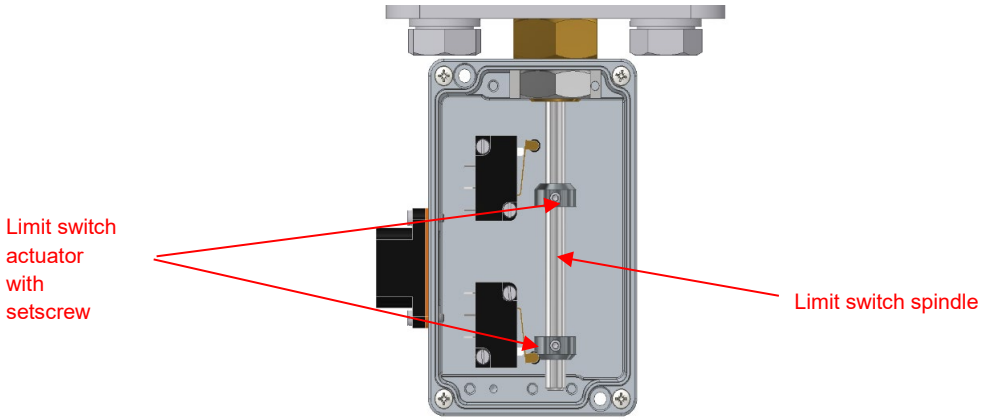
1. Insert the O-ring into the spindle guide.
Guide the limit switch mounting over the spindle guide and position.
Guide the hexagon nut over the limit switch spindle and tighten with torque of 50 Nm.



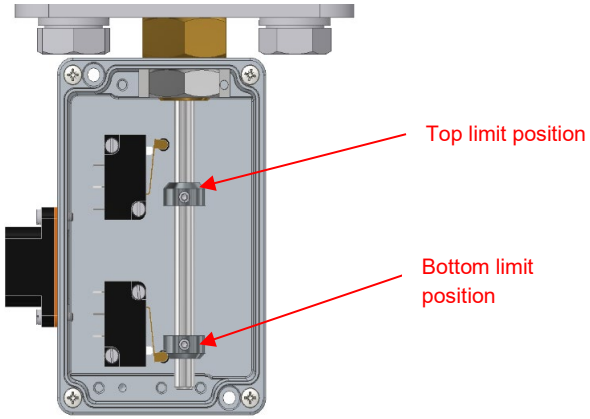
NOTE!
Ensure that the O-ring is correctly installed in the spindle guide.

NOTE!
The positioning of the limit switch mounting is freely selectable.

2. Slide the limit switch actuator with setscrew over the limit switch spindle.



3. After installing the limit switch mounting, the limit switch actuator of the top and bottom limit position are adjusted.



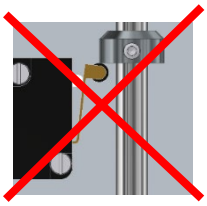
The setting for the top and bottom limit position in relation to the open and closed position of the fitting depends on the positioning of the limit switch mounting (above / below the fitting) and the design of the fitting.
NC (normally closed) or NO (normally open).

The limit switch actuator of the non-switched fitting can be adjusted directly.
The limit switch actuator of the switched fitting can **only** be adjusted in this condition.

DANGER!
Electric shock
In order to adjust the limit switch actuator of the switched fitting, it must be briefly provided with voltage and switched.
- Following the adjusting procedure, all live components must be deenergised, checked for deenergisation and safeguarded from being switched on again!

DANGER!
Risk of injury from moving limit switch spindle!
If the fitting is switched, the limit switch spindle will move.
- The limit switch actuator of the switched fitting must not be adjusted until **after** the changeover procedure.

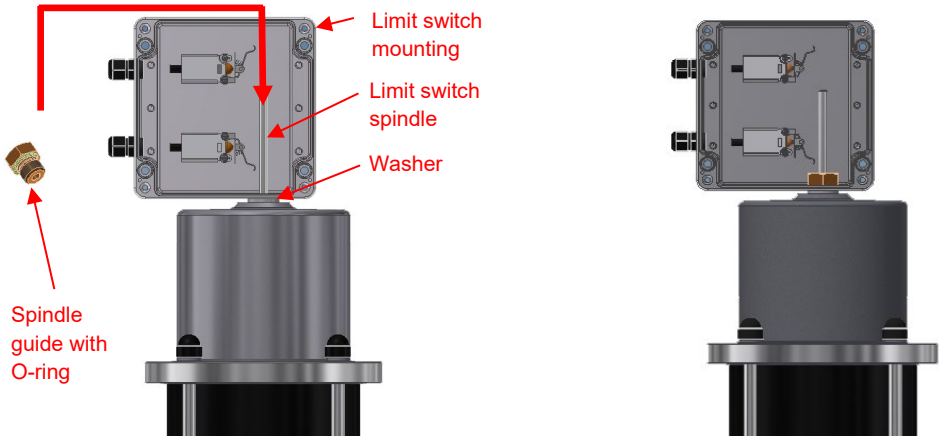
CAUTION!
Damaged limit switch and switching function error!
If the position of the arm of the limit switch is not correctly set in relation to the limit switch actuator, the limit switch may be damaged and the switching function will not work.
The limit switch actuator may not move over the arm of the limit switch so far that it is behind it.
• It must be ensured that the position of the limit switch actuator in relation to the limit switch is **correctly adjusted**.



4. Following installation/adjustment, the function must be checked and the limit switch housing cover fitted and secured with the screws.

10.2 Limit switch mounting above fitting, mechanical (Ex version)

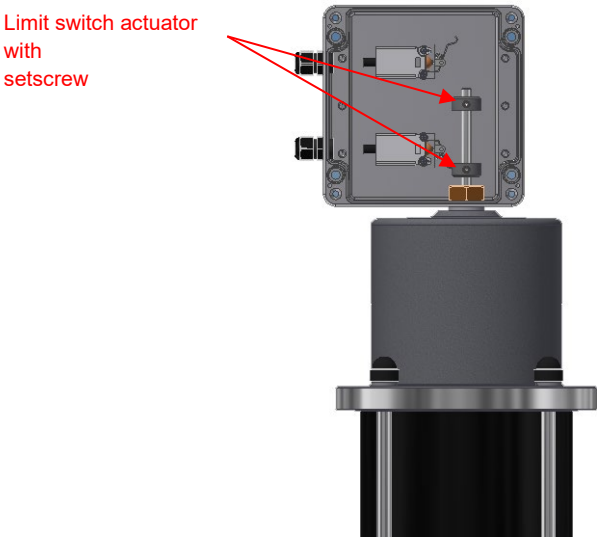
1.	Place the limit switch mounting onto the suspension turret with washer. Guide the spindle guide with O-ring over the limit switch spindle and tighten with torque of 50 Nm.



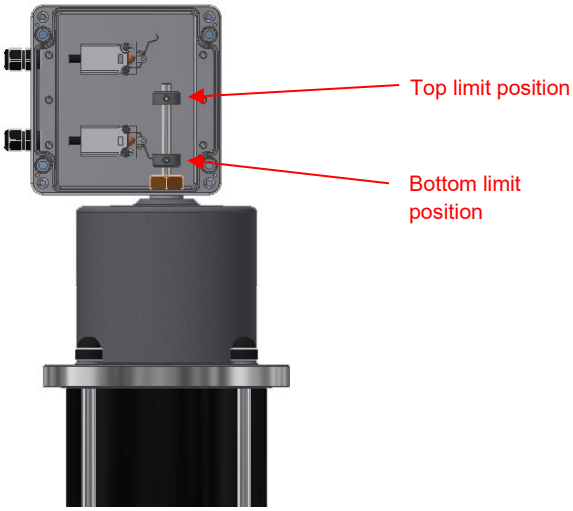
NOTE!
Ensure that the O-ring is correctly installed beneath the spindle guide.

NOTE!
The positioning of the limit switch mounting is freely selectable.

2.	Slide the limit switch actuator with setscrew over the limit switch spindle.



3. After installing the limit switch mounting, the limit switch actuator of the top and bottom limit position are adjusted.



The setting for the top and bottom limit position in relation to the open and closed position of the fitting depends on the positioning of the limit switch mounting (above / below the fitting) and the design of the fitting.
NC (normally closed) or NO (normally open).

The limit switch actuator of the non-switched fitting can be adjusted directly.
The limit switch actuator of the switched fitting can **only** be adjusted in this condition.

DANGER!
Electric shock
In order to adjust the limit switch actuator of the switched fitting, it must be briefly provided with voltage and switched.

- Following the adjusting procedure, all live components must be deenergised, checked for deenergisation and safeguarded from being switched on again!

DANGER!
Risk of injury from moving limit switch spindle!
If the fitting is switched, the limit switch spindle will move.

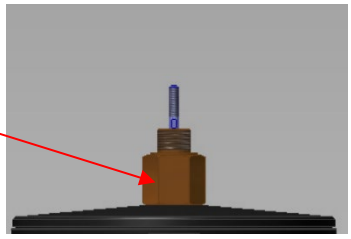
- The limit switch actuator of the switched fitting must not be adjusted until **after** the changeover procedure.

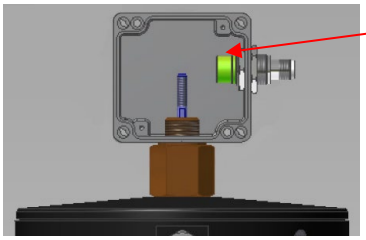
CAUTION!
Damaged limit switch and switching function error!
If the position of the arm of the limit switch is not correctly set in relation to the limit switch actuator, the limit switch may be damaged and the switching function will not work.
The limit switch actuator may not move over the arm of the limit switch so far that it is behind it.
• It must be ensured that the position of the limit switch actuator in relation to the limit switch is **correctly adjusted**.

4. Following installation/adjustment, the function must be checked and the limit switch housing cover fitted and secured with the screws.

10.3 Limit switch mounting installation above solenoid actuator, inductive

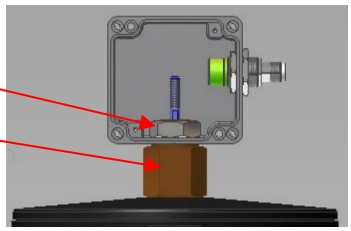
1. Guide the limit switch mounting over the connection piece with gasket and position.





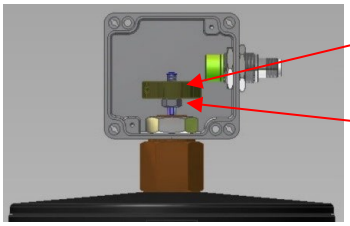
NOTE!
Ensure that the gasket is correctly installed on the connection piece.

2. Guide the hexagon nut over the connection piece and tighten with torque of 50 Nm.



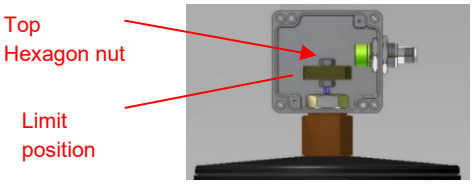
NOTE!
The positioning of the limit switch mounting is freely selectable.

3. The bottom hexagon nut is screwed on. The limit switch actuator is screwed onto the bottom hexagon nut as far as it will go.



Before fitting the bottom or top hexagon nut, the nut thread must be coated with Loctite 577 or a comparable adhesive.

4. The limit position is adjusted using the limit switch actuator and the bottom hexagon nut. Following adjustment, the top hexagon nut is screwed on above the limit switch actuator in order to secure it.



The setting for the limit position in relation to the open or closed position of the fitting depends on the positioning of the limit switch mounting (above / below the fitting) and the design of the NC (normally closed) or NO (normally open) fitting.

The limit switch actuator of the non-switched fitting can be adjusted directly.
The limit switch actuator of the switched fitting can **only** be adjusted in this condition.

DANGER!
Electric shock
In order to adjust the limit switch actuator of the switched fitting, it must be briefly provided with voltage and switched.

- Following the adjusting procedure, all live components must be deenergised, checked for deenergisation and safeguarded from being switched on again!

DANGER!
Risk of injury from moving limit switch spindle!
If the fitting is switched, the limit switch spindle will move.

- The limit switch actuator of the switched fitting must not be adjusted until **after** the changeover procedure.

5. Following installation/adjustment, the function must be checked and the limit switch housing cover fitted and secured with the screws.