

Application

Limit switches with inductive, electric or pneumatic contacts for attachment to pneumatic or electric control valves, to Type 4763 Electropneumatic Positioners or Type 4765 Pneumatic Positioners
Rated travels from 7.5 to 180 mm



The limit switches supply a signal when the valve travel exceeds or falls below the adjusted limit value. This signal is suitable for initiating visual or audible alarms as well as actuating valves or other switching units. Moreover, the limit switches can be connected to central control or alarm systems.

Optionally available with:

- Two inductive limit contacts
- Two electric limit contacts or
- Two pneumatic limit contacts

The limit contacts can be overridden. They can either be used as NO or NC contacts. The metal tag is outside the inductive field for the NO contact and inside the inductive field for the NC contact.

Versions also available

- For use in hazardous areas in type of protection intrinsically safe II 2G Ex ia IIC T6 or II 3G Ex nA II T6 for Zone 2
- Conforming to Canadian or US explosion protection approvals

Special features

- Excellent switching accuracy
- Limit contacts do not influence each other
- Hysteresis (dead band) dependent on effective lever length

Attachment to control valves with cast yokes or rod-type yokes according to IEC 60534-6 as well as to Type 4763 Electropneumatic Positioners or Type 4765 Pneumatic Positioners

Versions

Type 4746-x2 (Fig. 1) · Inductive limit switch with non-contact limit pick-up using metal tags and proximity switches (according to EN 60947-5-6)

On request with proximity switches with integral output amplifier designed as three-wire switch (no transistor relay required)

Type 4746-x3 · Electric limit switch with electric double-throw switch with friction snap-action contacts

Type 4746-04 · Pneumatic limit switch with pneumatic limit contacts and downstream pneumatic microswitches. Supply air 1.4 bar (20 psi), output 0 or 1.4 bar (20 psi)



Fig. 1: Type 4746-x Inductive Limit Switch

Versions for hazardous areas

Type 4746-1 · Limit switch with contact circuit in type of protection intrinsically safe Ex II 2G Ex ia IIC T6

Type 4746-8 · Limit switch in type of protection non-sparking Ex II 3G Ex nA II T6 for Zone 2

Versions with Canadian or US explosion protection certification are available. Refer to the summary of explosion protection certificates.

Special version on request: Housing for limit contacts, see page 6

For more information on the selection and application of positioners and limit switches, refer to Information Sheet

▶ T 8350

Principle of operation (Fig. 2 to Fig. 4)

The valve travel is transmitted either directly to the pin (1.1) and lever (1) of the limit switch by the plate (20) or by a coupling pin when a positioner is attached. The linear travel is converted into a rotary motion by the shaft (2).

All limit switches have a small hysteresis which depends on the lever length L (see Technical data). Due to this, unnecessary contact changeover is avoided and signal processing is facilitated even when the valve stem position is within the limit signal range.

Type 4746-x2 Inductive Limit Switch (Fig. 2)

In this version, the shaft (2) carries two switch cases (3) with adjustable metal tags (4.1) for non-contact activation of the proximity switches (5). When the tag is located in the inductive field of the switch, the switch assumes a high resistance. When it moves outside the field, the switch assumes a low resistance. The switching function and switching point are continuously adjustable using the adjustment screw (3.1).

For operation of the standard inductive limit switches (two-wire according to EN 60947-5-6), appropriate transistor relays must be connected to the output circuit. The three-wire version comprising the Type SB3,5-E2 proximity switch includes an integrated output amplifier and does not require a transistor relay.

Type 4746-x3 Electric Limit Switch (Fig. 3)

In this version, the shaft (2) carries two switch cases (3) with adjustable cam disks (4.2). Each cam disk activates an electric double-throw switch (7) over the roller (6.1), which is attached to the switch lever (6). The switching function and switching point are continuously adjustable using the adjustment screw (3.1).

Type 4746-04 Pneumatic Limit Switch (Fig. 4)

In this version, the shaft (2) carries two switch cases (3) with adjustable cam disks (4.2). Inside the switch (8), each cam disk activates a nozzle-flapper system whose cascade pressure (p_{k1} or p_{k2}) is used to reverse the pneumatic microswitch (9).

Whenever the cam disk (4.2) activates the switch lever (6) over the roller (6.1), the nozzle in the pneumatic switch (8) is opened and the supply air p_z is switched from the microswitch (9) through to port A_1 or A_2 . This means that input 5 is connected to output 3 and $p_{a1} = p_z$ or $p_{a2} = p_z$. As soon as the cam releases the switch lever (6), the nozzle (8.1) in the pneumatic switch (8) is closed. The microswitch changes over and the available air supply is shut off; i.e. $p_{a1} = 0$ or $p_{a2} = 0$. The switching function and the switching point are continuously adjustable at the adjustment screw (3.1)

Travel range

The limit switch requires different levers (1) depending on the travel range of the valve used:

- Lever I (149 mm) for travels up to max. 60 mm
- Lever II (202 mm) for travels exceeding 60 mm to max. 180 mm

Whenever the limit switch is attached to positioners, a special lever, regardless of the valve travel, needs to be used.

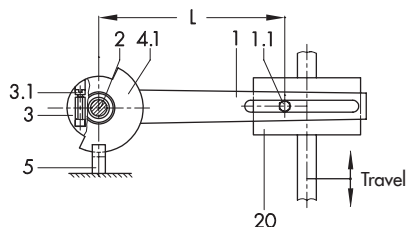


Fig. 2: Functional diagram of inductive limit switch

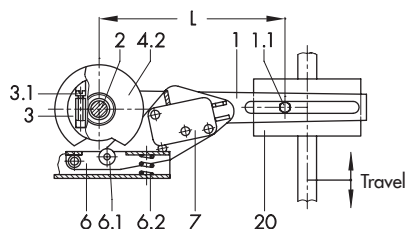
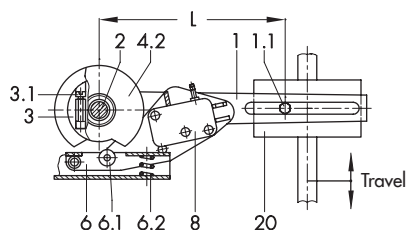
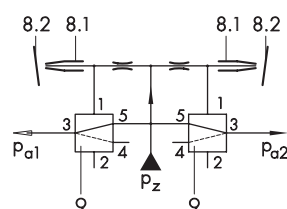


Fig. 3: Functional diagram of electric limit switch



4.1 · Functional diagram of mechanical switching mechanism



4.2 · Functional diagram of switching function

Fig. 4: Pneumatic limit switch

Legend for Fig. 2 to Fig. 4:

1 Lever for valve travel	6.1 Roller
1.1 Pin	6.2 Spring
2 Shaft	7 Electric contact
3 Switch case	8 Pneumatic contact
3.1 Adjustment screw	8.1 Nozzle (in contact)
4.1 Metal tag	8.2 Flapper (in contact)
4.2 Cam disk	9 Pneumatic microswitch
5 Proximity switch of control	20 Plate attached either to actuator stem or plug stem
6 Switch lever	

Table 1: Technical data

Inductive Limit Switch	Type 4746-x2			Type 4746-0281
Control circuit	Switching amplifier according to EN 60947-5-6			Three-wire switch Operating voltage 10 to 30 V
Proximity switch	SC3,5-N0-YE ²⁾	SJ3,5-SN	SJ3,5-S1N	SB3,5-E2
Permissible ambient temperature ¹⁾	-20 to 70 °C	-20 to 100 °C	-20 to 100 °C	-20 to 70 °C
With metal cable gland	-40 to 70 °C	-50 to 100 °C	-40 to 100 °C	-25 to 70 °C
Electrical connections	One M20x1.5 cable gland for 5.5 to 13 mm clamping range Screw terminals for 0.2 to 2.5 mm ² wire cross-section			
Degree of protection	IP 65			
Weight	Approx. 0.7 kg			
Type 4746-x3 Electric Limit Switch · Specifications apply to silver and gold-plated contacts				
Switching element	Electric limit switch: changeover contact/SPDT (single-pole/double-throw type)			
Permissible load	AC voltage: 220 V/6.9 A DC voltage: 220 V/0.25 A · 20 V/6.9 A			
Permissible ambient temperature ¹⁾	-20 to 85 °C			
With metal cable gland	-40 to 85 °C			
Electrical connections	One M20x1.5 cable gland for 5.5 to 13 mm clamping range Screw terminals for 0.2 to 2.5 mm ² wire cross-section			
Degree of protection	IP 65			
Weight	Approx. 0.7 kg			
Type 4746-04 Pneumatic Limit Switch				
Switching element	Pneumatic limit contact with downstream pneumatic microswitch			
Supply air	1.4 bar (20 psi), can be briefly overloaded up to 4 bar (60 psi)			
Air consumption	0.04 m _n ³ /h			
Output	0 or 1.4 bar (20 psi)			
Air capacity	One switch closed: 0.7 m _n ³ /h Two switches closed: 1.0 m _n ³ /h			
Permissible ambient temperature	-20 to 60 °C			
Degree of protection	IP 54			
Weight	Approx. 0.75 kg			
Materials				
Housing and cover	Powder-coated aluminum			
Lever and shaft	1.4571			
Cable gland	M20x1.5, black polyamide			
Travel range				
Attachment according to IEC 60534-6 (NAMUR)	Lever I: 7.5 to 60 mm · Lever II: 60 to 180 mm			
Attachment to Type 4763 and Type 4765 Positioner	Travel same as positioner			

¹⁾ Observe the limits concerning permissible ambient temperatures specified in the EC type examination certificate.

²⁾ Models manufactured until 2006 with SJ3,5-N proximity switch.

Table 2: Technical data for Type 4746-1 with type of protection Ex ia (ATEX)

Maximum values for connection to certified intrinsically safe circuits

Limit Switch	Type 4746-12		Type 4746-13
Limit contacts	Inductive		Electric
U _i	16 V	16 V	45 V
I _i	52 mA	25 mA	-
P _i	169 mW	64 mW	2 W
C _i - effective inner capacitance	60 nF	50 nF	Negligibly small
L _i - effective internal inductance	160 µH	250 µH	
Temperature classes	Ambient temperature range according to EC type examination certificate (technical data specified Table 1 additionally apply)		
T4	-45 to 80 °C	-45 to 100 °C	-45 to 80 °C
T5	-45 to 70 °C	-45 to 81 °C	-45 to 70 °C
T6	-45 to 60 °C	-45 to 66 °C	-45 to 60 °C

Table 3: Hysteresis (dead band)

Type 4746	-x2	-x3	-04
Lever length L	Hysteresis		
50 mm	0.15 (0.25 ¹⁾) mm	0.6 mm	0.75 mm
120 mm	0.30 (0.55 ¹⁾) mm	1.0 mm	1.5 mm

¹⁾ Special version

Ordering text

Types 4746-x2/-x3/-04 Limit Switch
 Operating as normally open/normally closed contact
 To indicate valve OPEN/valve CLOSED
 Optionally, special version

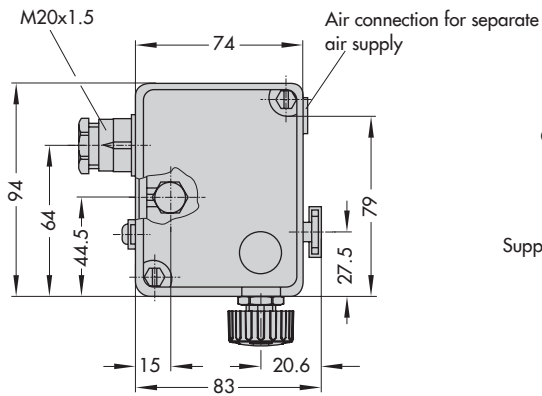
Accessories

Mounting parts for attachment to
 Type 4763/4765 Positioner
 Valve with cast yoke with lever I or II
 Valve with rod-type yoke with lever I or II

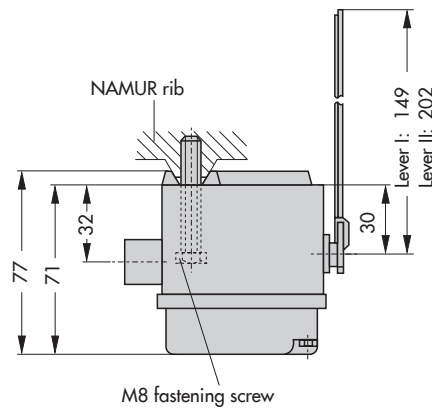
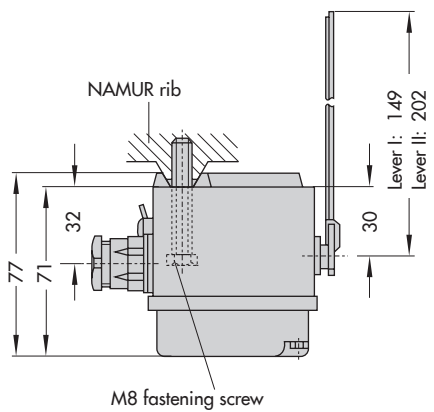
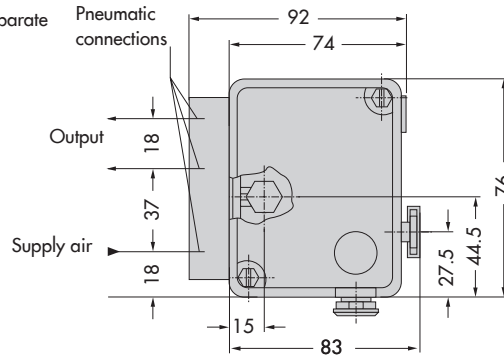
Adapter 1/2 NPT for electrical connections

Dimensions in mm

Type 4746-x2, -x3 · Air connection for separate air supply
 Tapped hole G 1/8

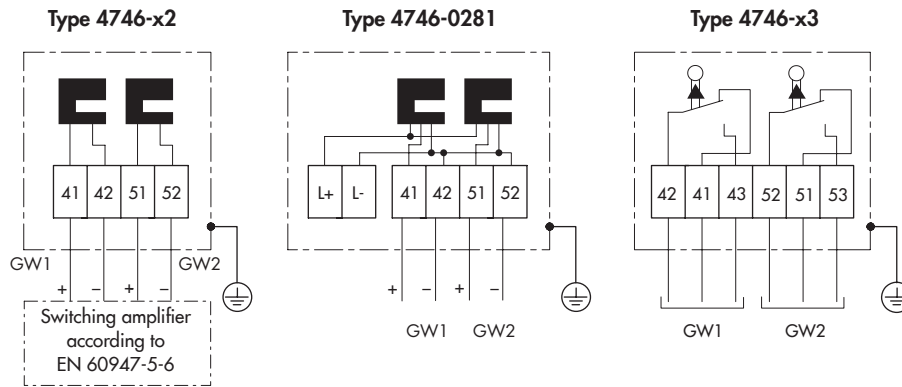


Type 4746-04 · Air connections, tapped hole G 1/8
 or 1/8 NPT



The dimensions required for attachment to Type 4765 Pneumatic Positioner and Type 4763 Electropneumatic Positioners can be found in Mounting and Operating Instructions ► EB 8365.

Electrical connection



Summary of explosion protection certificates for Type 4746

Type of approval	Certificate number	Date	Type of protection/comments
EC Type Examination Certificate First Addendum	PTB 98 ATEX 2114	1998-09-03 2003-03-07	⊕ II 2G Ex ia IIC T6 Type designations changed: Type 4746-2 and Type 4746-3 into Type 4746-12 and Type 4746-13 respectively
Statement of Conformity	PTB 02 ATEX 2012 X	2002-04-05	⊕ II 3G Ex nA II T6; Zone 2 Type 4746-82 and Type 4746-83
GOST certificate	B00045	2012-02-28	1 Ex ia IIC T6
CSA certificate	1607226 (LR 54227-1)	2005-09-16	Intrinsically Safe Entity Ex ia IIC T6; Class I, Zone 0 Class I, Div. 1, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G; Class III Type 4746-32 and Type 4746-33
FM certificate	3020228	2005-02-28	Class I, II, III, Div. 1, Gr. A, B, C, D, E, F, G Cl. I, Zone 0 AEx ia IIC T6; Cl. I, Div. 2, Gr. A, B, C, D Cl. II, Div. 2, Gr. F, G; Cl. III; NEMA 3R, with inductive and electric limit contacts; Type 4746-3
NEPSI approval	GYJ101085 GYJ101086X	2010-06-16 2010-06-16	Ex ia IIC T4 to T6; valid until 2015-06-15; Type 4746-12 Ex nL IIC T4 to T6; valid until 2015-06-15; Type 4746-82
KOSHA certificate	13-KB4O-0038	2013-01-31	Ex ia IIC T6/T5/T4; Type 4746-1
INMETRO certificate	13.0040	2013-05-17	Ex ia IIC T6/T5/T4; Type 4746-1

The test certificates are included in the mounting and operating instructions or are available on request.

Article code

Electric or Pneumatic Limit Switch	Type 4746-	x	x	x	x	x	x	x	0	x	x	x	x
Explosion protection													
Without	0												
⊕ II 2G Ex ia IIC T6 acc. to ATEX	1												
CSA/FM intrinsically safe/non incandive	3												
⊕ II 3G Ex nA II T6 acc. to ATEX	8												
Version													
Inductive		2				1/2							
Electric		3				2							
Pneumatic	0	4				2							
Contacts													
Proximity switch SC3,5-N0-YE (NAMUR NC contact)	0/1/8	2	0	0		1	0						
Proximity switch SJ3,5-SN (NAMUR NC contact in safety circuit)		2	1	0		1	0						
Proximity switch SJ3,5-S1N (NAMUR NO contact in safety circuit)		2	1	1		1	0						
SAIA - electric microswitch XGK 3 (silver contacts)		3	2	0		2	1	0					
SAIA - electric microswitch XGK3-81 (gold-plated contacts)		3	2	1		2	1	0					
Pneumatic microswitch	0	4	4	0		2	0						
Proximity switch SB3,5-E2 (three-wire switch), NO contact	0	2	8	1		2	1	0					
Switching elements													
With one switching element						1							
With two switching elements						2							
Electrical connection													
Without	0	4	4	0		0							
Plastic cable gland M20 x 1.5, black						1	0						
Pneumatic connections													
Without							0						
ISO 221/1-G 1/8	0	4	4	0		0	1						
1/8-27 NPT	0	4	4	0		0	2						
Special versions													
Without										0	0	0	
NEPSI approval Ex ia, Type 4746-12, inductive	1	2	2							0	0	9	
NEPSI approval Ex nL, Type 4746-82, inductive	8	2	2							0	1	0	
GOST approval, Ex ia, Type 4746-1...	1	2/3								0	1	3	
KOSHA approval, Ex ia	1	2/3								0	1	5	
INMETRO approval, Ex ia	1	2/3								0	1	7	
Paint compatibility													
Without													0
Free of substances that can impair paint adhesion													1

Special version on request:

Housing with electric terminals, ready for installing one or two inductive cylinder-shaped limit contacts with M8 or M12 male thread

Specifications subject to change without notice



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2015-04-16 · English

Limit Switch Type 4747



Ex d flameproof enclosure
with inductive or mechanical contacts
for linear actuators or rotary actuators acc. to VDI/VDE 3845



General

The Type 4747 Limit Switch issues an electrical signal when an adjusted limit value is exceeded or not reached. The signal is suitable for reversing control signals, generating visual and audible alarms, or for connection to central control and alarm systems.

Versions

The Type 4747 Limit Switch offers a variety of continuously adjustable contacts, switching functions and mounting kits for all desired applications:

General

- Electrical connection to terminals using an M20x1.5 or 1/2 NPT cable gland
- Corrosion-resistant, rugged enclosure with degree of protection IP 66 for applications in rough environments
- Maximum permissible ambient temperature -40 to +80 °C
- Mounting kits for linear actuators interface according to IEC 60534-6-1) or rotary actuators with interface according to VDI/VDE 3845

Contacts:

- Maximum two contacts, continuously adjustable and easily adjustable
- Inductive proximity switches or electric microswitches

Type of protection:

- Flameproof enclosure II 2G Ex d IIC T6 and II 2D Ex tD A21 IP 66 T 80 °C according to test certificate PTB 09 ATEX 1113 X

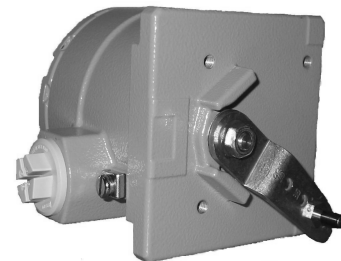


Fig. 1 · Type 4747 Limit Switch



Fig. 2 · Type 4747 Limit Switch for linear actuators

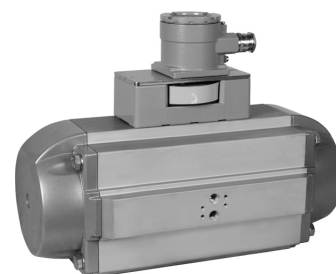


Fig. 3 · Type 4747 Limit Switch for rotary actuators

Principle of operation

General

The limit switch is equipped with a maximum of two inductive proximity switches or two electric microswitches ⑥.

For most applications, the contacts are adjusted to provide a signal when the actuator has reached one of its end positions. The switching point can also be adjusted to any position within the rotary range or travel range to signalize an intermediate position (see Mounting and Operating Instructions EB 4747 EN).

The shaft ① of the limit switch is connected to the actuator over a coupling lever ⑤. The shaft is equipped with a maximum of two metal tags or cam disks ④.

Limit switch with inductive proximity switches

The shaft ① of the limit switch is equipped with an adjustable metal tag ④. When the metal tag ④ enters the electromagnetic field of the proximity switch ⑥, the switch becomes attenuated and the output high-resistant (switching function "contact open"). When the metal tag ④ leaves the electromagnetic field of the proximity switch, the switch ⑥ is unattenuated and the output low-resistant (switching function "contact closed"). The metal tag ④ can be adjusted to a switching point between 0° and 180° using the adjusting screw ③.

Limit switch with electric microswitches

The shaft ① of the limit switch is equipped with a maximum of two adjustable cam disks ④. The cam disk ④ actuates an electric microswitch ⑥ over the roller mounted on the switch lever. The cam disks ④ can be adjusted to a switching point between 0° and 180° using the adjusting screws ③.

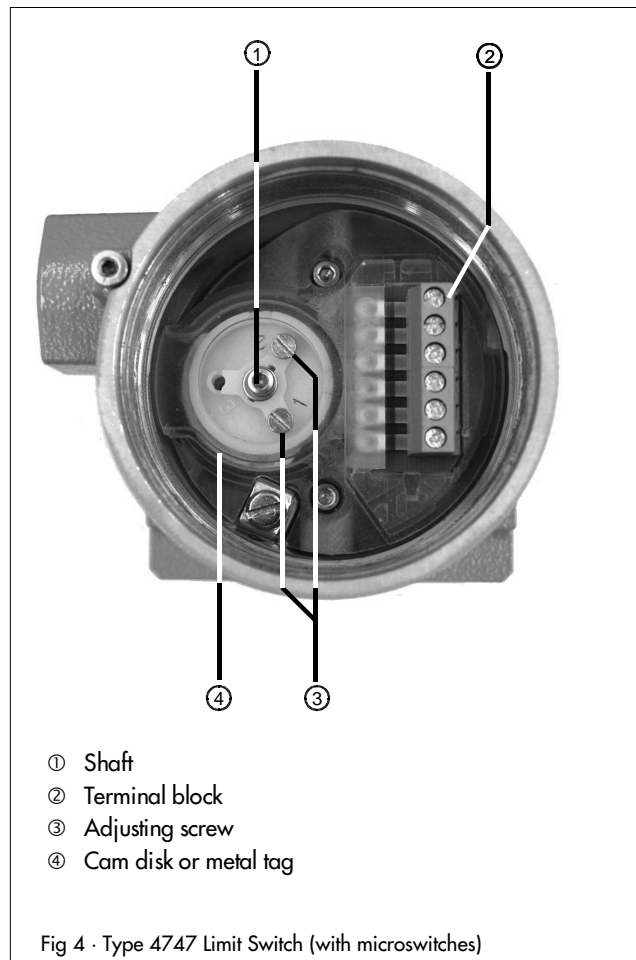


Fig 4 · Type 4747 Limit Switch (with microswitches)

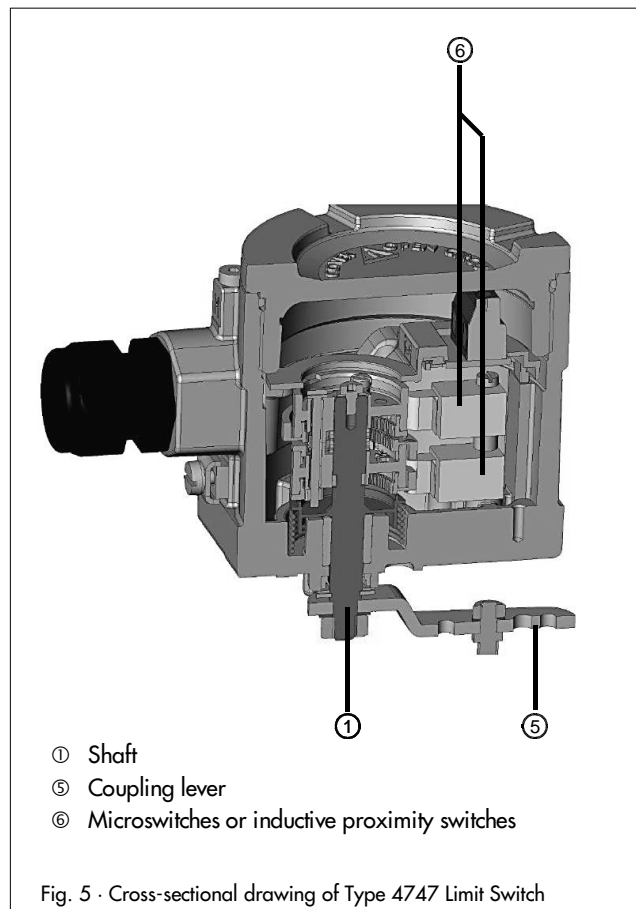


Fig. 5 · Cross-sectional drawing of Type 4747 Limit Switch

Technical data

Type 4747 Limit Switch	Type 4747-xxx1 (mechanical)	Type 4747-xxx0 (inductive)
Contact type	Electric microswitch XG	Inductive proximity switch NCB2-V3-NO
Contacts	2	1 or 2
Switching function	Double-throw contact	Break contact
Power rating (switching capacity)	AC voltage	
	250 V/10 A	-
	DC voltage	
	125 V/0.5 A 24 V/10 A	switch amplifier acc. to DIN EN 60947-5/-6
Permissible ambient temperature ¹⁾	-40 to +80 °C	-25 to +80 °C
Degree of protection	IP 66 – NEMA 4X	
Electromagnetic compatibility	Requirements according to EN 61000-6-2, EN 61000-6-3 and NAMUR Recommendation NE 21 are met	
Material		
Enclosure	Aluminum die-casting EN AC-43000KF acc. to DIN EN 1706, passivated and plastic-coated	
External parts	Stainless steel 1.4301/1.4305/1.4310	
Weight	0.65 kg	

¹⁾ The limits specified in the certificate additionally apply when used in hazardous areas.

Type of approval	Certificate number	Date	Type of protection
EC Type Examination Certificate	PTB 09 ATEX 1113 X	2009-11-20	II 2G Ex d IIC T6, T5 and T4 II 2D Ex tD A21 IP 66 T 80 °C
IECEx Certificate of Conformity	IECEx PTB 09.0060X	2009-11-25	Ex d IIC T6, T5 bzw. T4 Ex tD A21 IP66 T 80°C

Dimensions
Type 4747 Limit Switch

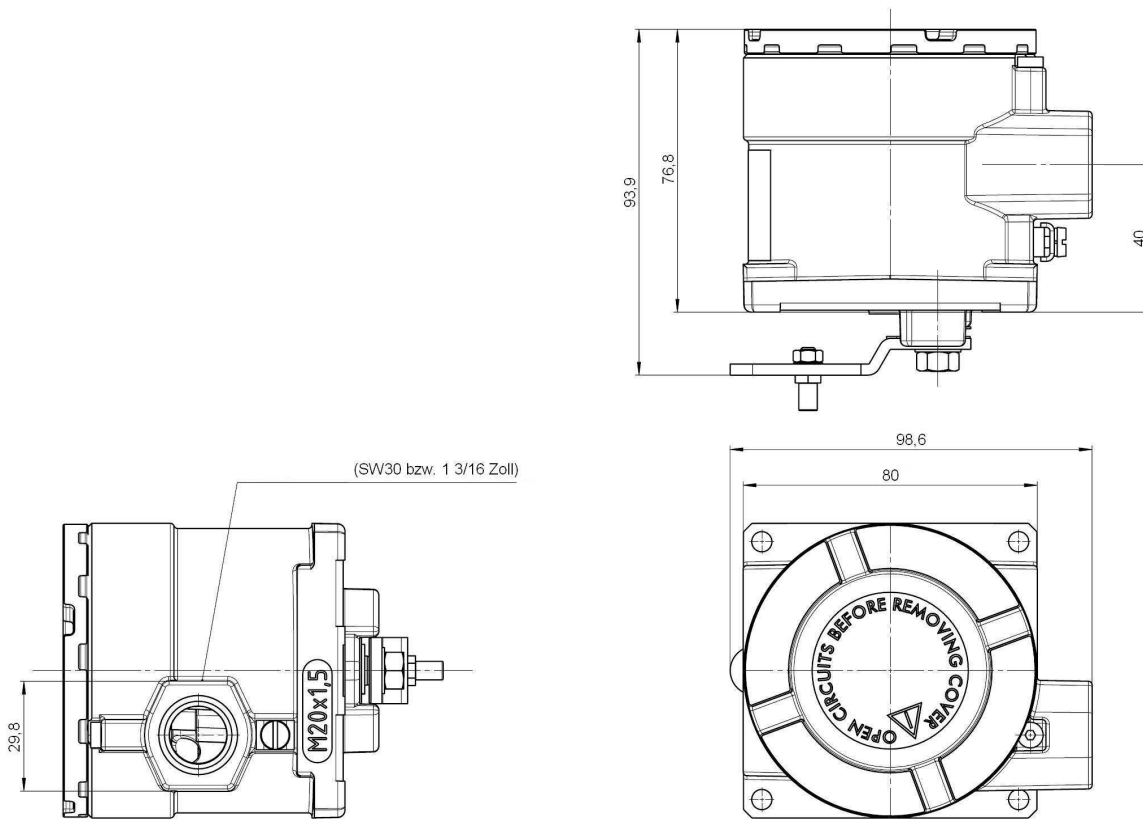


Fig. 6 · Dimensions in mm

Dimensions

Mounted onto a rotary actuator acc. to VDI/VDE 3845 – fixing level 1 (heavy-duty version)

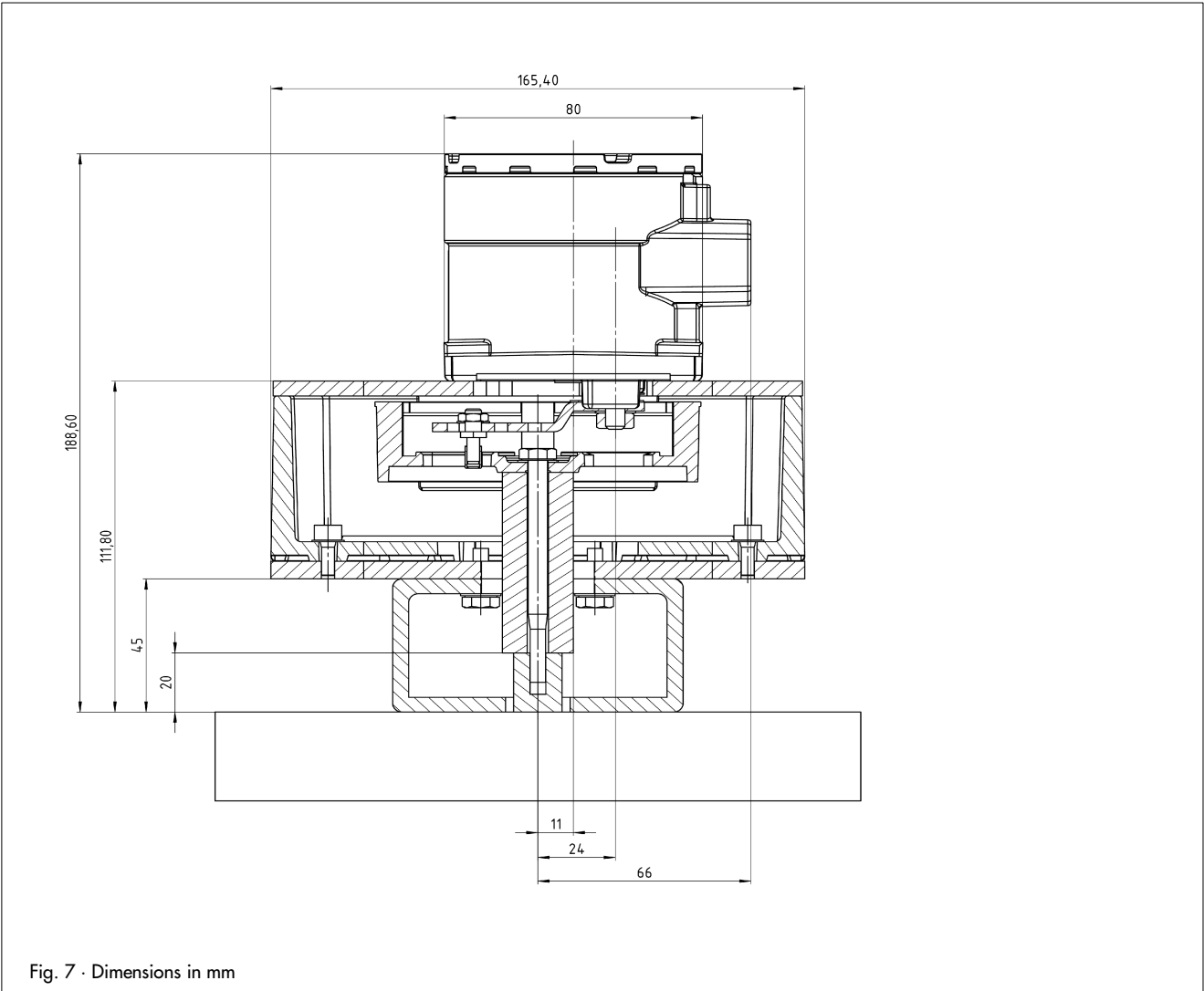


Fig. 7 · Dimensions in mm

Dimensions

Mounted onto a rotary actuator acc. to VDI/VDE 3845 – fixing level 2 (light version)

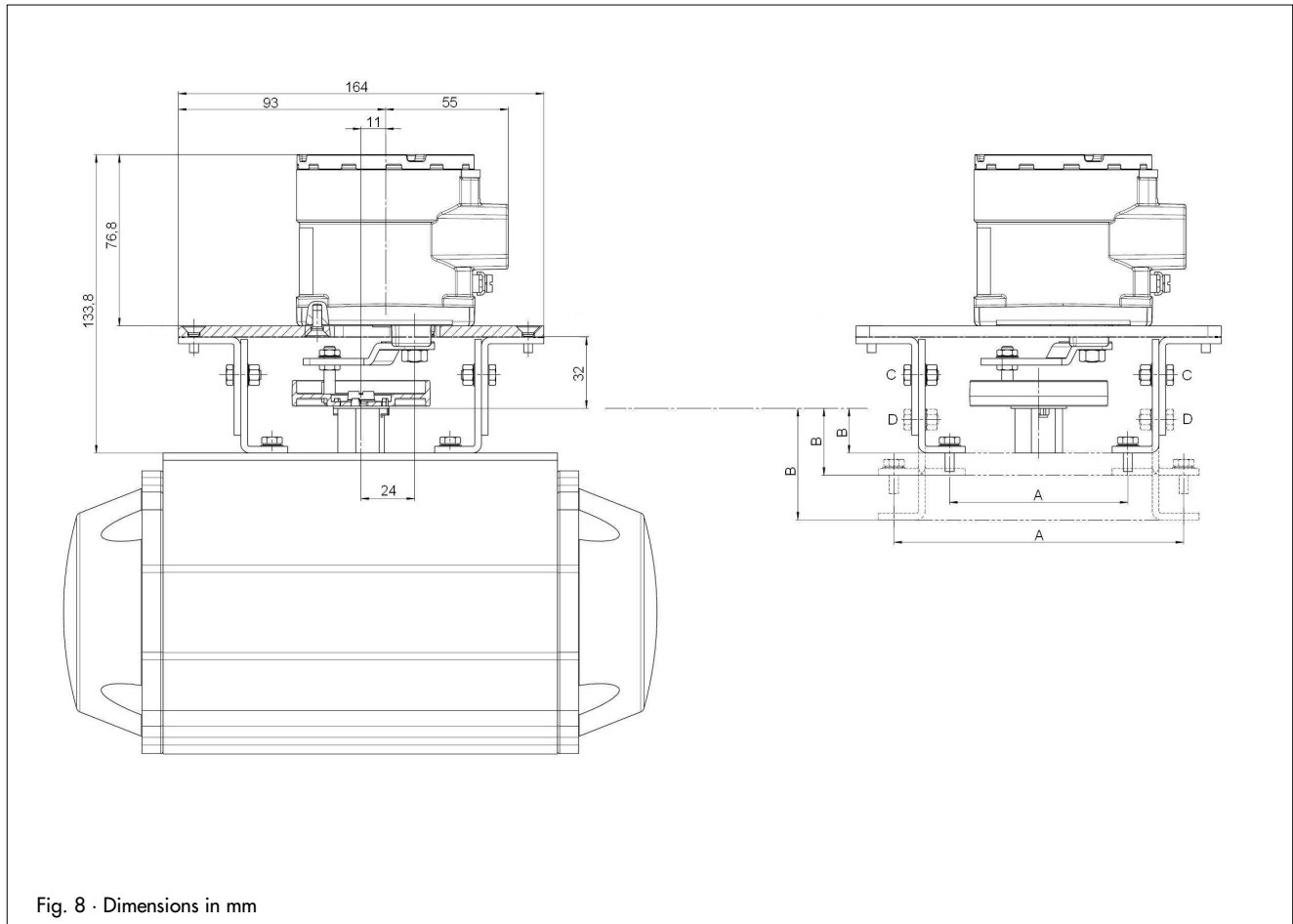
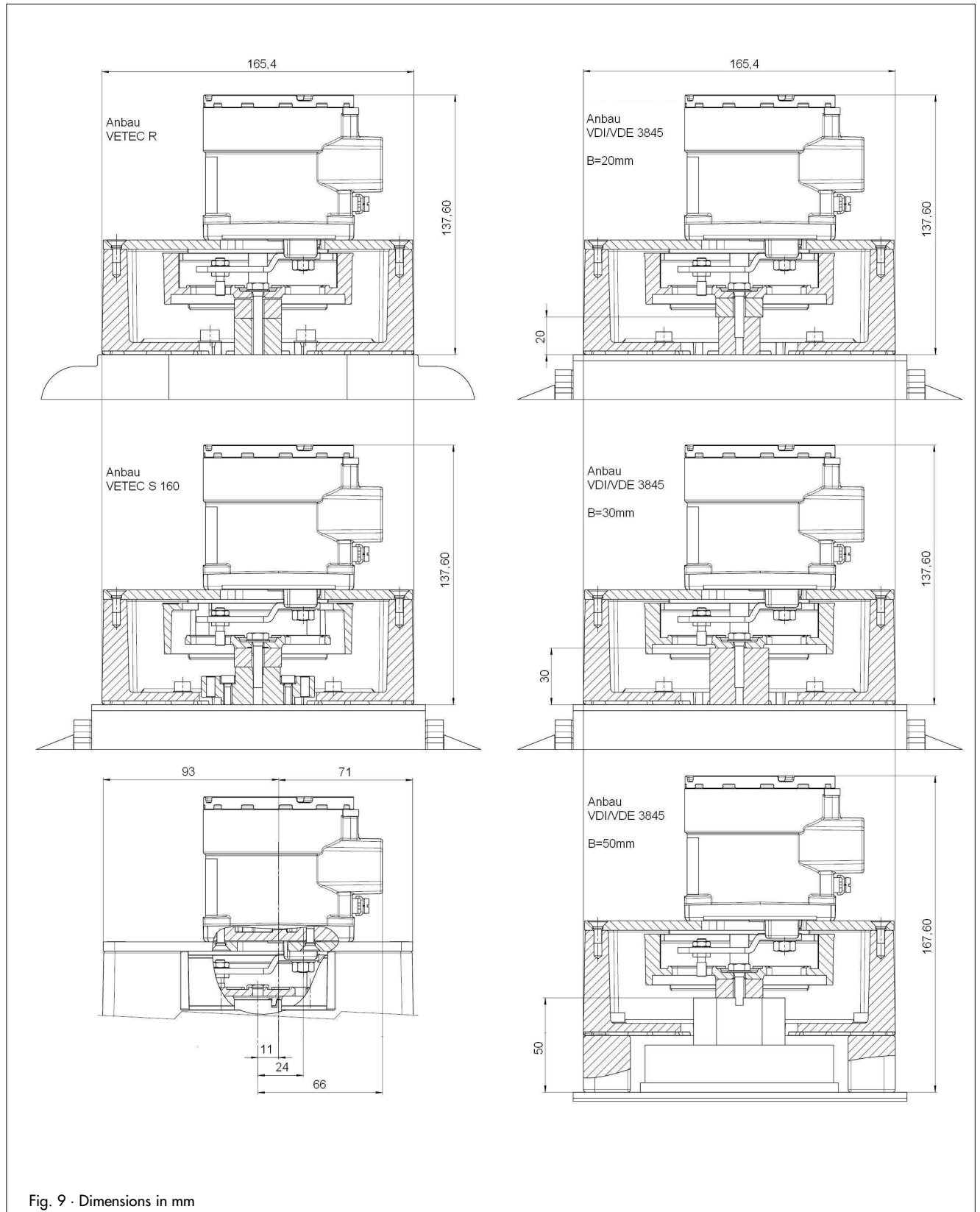


Fig. 8 · Dimensions in mm

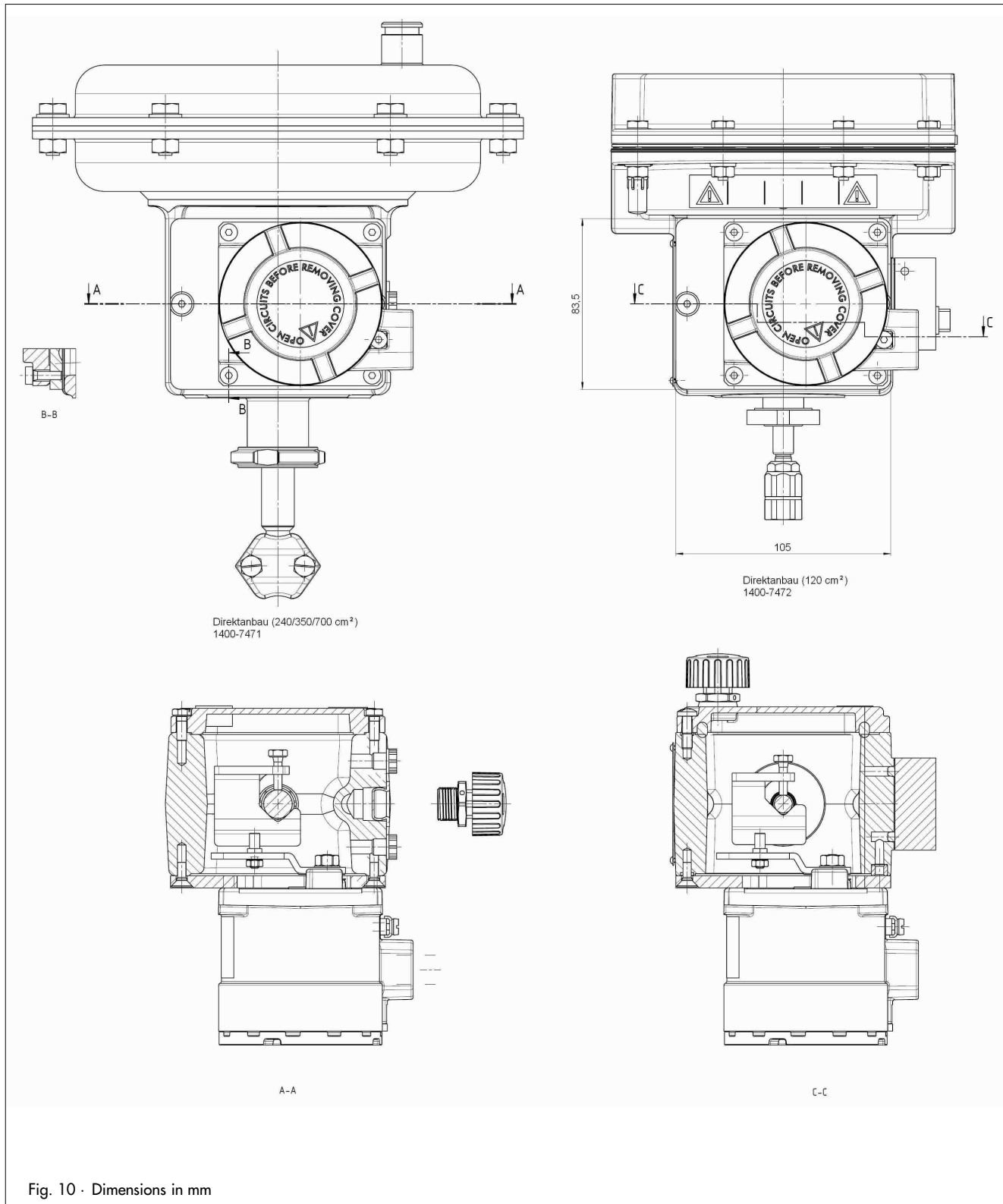
Dimensions

Mounted onto a rotary actuator acc. to VDI/VDE 3845 – fixing level 2 (heavy-duty version)



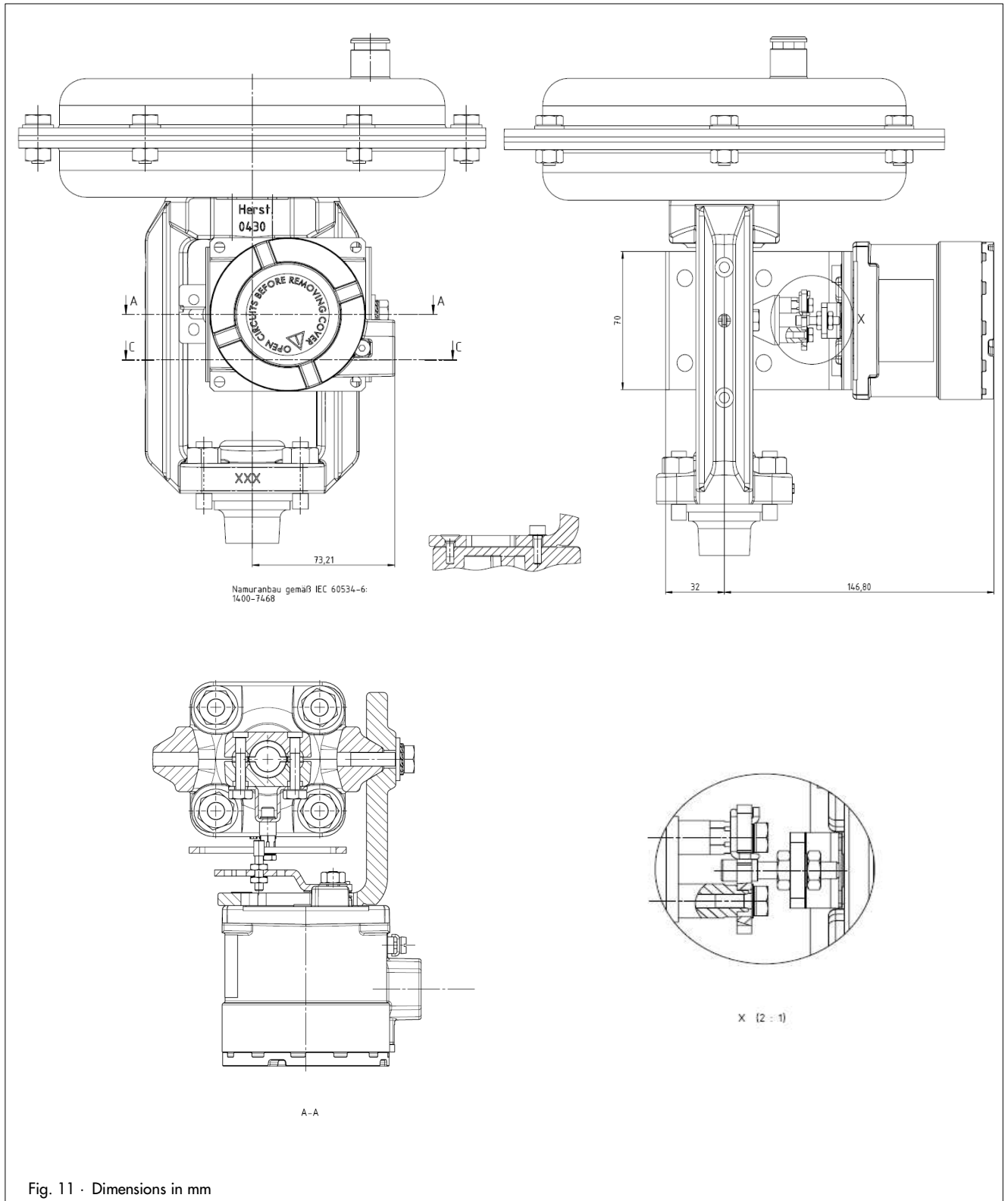
Dimensions

Mounting onto linear actuators – direct attachment



Dimensions

Mounting onto linear actuators – NAMUR rib (IEC 60535-6-1)



Versions and ordering data

Type 4747 Limit Switch	Order no. 4747-										0	
Type of protection	Without explosion protection	0	0	0	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	
	EEx d IIC T6 / ATEX	2	1	0													
	EEx d IIC T6 / GOST	2	1	3													
Contact type	Inductive proximity switch NCB2-V3-NO (-25...+80 °C)	0	1														
	Electric microswitch, silver contact (-40...+80 °C)	1	1														
	Electric microswitch, gold contact (-40...+80 °C)	1	2														
Number of contacts	One contact																
	Two contacts																
Angle of rotation	< 100° adjustable										0						
Electrical threaded connection	M20x1.5																
	½ NPT																
Degree of protection	IP 66																
Ambient temperature	-25...+80 °C																
	-40...+80 °C																
Enclosure material	Aluminum																
Safety approval	Without safety approval																
Special version	Without special version														0	0	0

Spare parts and accessories

Spare parts for Type 4747 Limit Switch	
Order no.	Designation
1180-9541	Lever M
0190-6044	Wiring labels for microswitches
0190-6045	Wiring labels for inductive proximity switches
0500-1208	Bracket for shaft
0520-1494	O-ring 66x2
8145-0432	Sealing screw GPN 735 M20x1.5
8330-0688	Slotted pan head screw M4x8 (grounding)
8333-0774	M4x10 (cover lug)
8350-0084	Hex nut
8392-0654	Washer for grounding lug
01.04.20	Clamp (grounding)

Accessories for Type 4747 Limit Switch	
Order no.	Designation
8808-0200	Ex d cable gland M20x1.5 made of brass with O-ring (for 6.5 to 14 mm cable diameter)
8808-2010	Ex d cable gland ½ NPT made of brass with O-ring (for 6.5 to 14 mm cable diameter)
8808-0178 *	Ex e cable gland M20x1.5 made of polyamide (black) with O-ring
8808-1011 *	Cable gland M20x1.5 made of polyamide (black) without O-ring
8808-1012 *	Cable gland M20x1.5 made of polyamide (blue) without O-ring
1890-4875 *	Cable gland M20x1.5 made of brass with O-ring
1890-4876 *	Cable gland M20x1.5 made of brass (blue) with O-ring

* Cable gland not suitable for Ex d instrumentation

Mounting kits for Type 4747 Limit Switch	
Order no.	Designation
1400-9974	Attachment according to VDI/VDE 3845, fixing level 1, heavy-duty version
1400-7473	Attachment according to VDI/VDE 3845, fixing level 2, light version
1400-9384	Attachment according to VDI/VDE 3845, fixing level 2, heavy-duty version
1400-9385	Attachment for VETEC S 160/R, heavy-duty version
1400-9992	Mounting kit for Air Torque 10.000, heavy-duty version
1400-7471	Mounting kit for Type 3277 Linear Actuator, 240/350/700 cm ²
1400-7472	Mounting kit for Type 3277 Linear Actuator, 120 cm ²
1400-7469	Mounting kit for Type 3510 Micro-flow Valve, 60/120 cm ²
1400-7468	Mounting kit for control valves with NAMUR rib or attachment to rod-type yokes acc. to IEC 60534-6 (20 to 35 mm rod diameter)

(Specifications subject to change without notice.)



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T 4747 EN

Type 4744 Electric Limit Switch

for hazardous areas



Application

Limit switch in type of protection II 2G Ex ed IIC T6 for attachment to pneumatic control valves according to IEC 60534-6-1

Rated travels from 7.5 to 150 mm



The limit switch issues a limit signal whenever the valve travel exceeds or falls below a certain adjusted limit, especially when a control valve has reached one of its end positions. This signal is suitable for transferring control signals, for example, to activate visible or audible alarms as well as for connection to centralized control or alarm systems.

- One or two electric limit switches (possible to override)
- High load capacity, e.g., alternating current up to 500 V/10 A

Attachment to control valves with cast yokes or rod-type yokes according to IEC 60534-6-1 (NAMUR)

Versions

- **Type 4744** (Fig. 1 and Fig. 2) · Limit switch with one or two momentary-contact limit switches designed as a position switch conforming to EN 50041. Each contact is equipped with one NC contact and one NO contact, acting as a snap-action switch, which can also be switched as a single pole, double throw switch (SPDT).

Type of protection 'flameproof enclosure' II 2G Ex ed IIC T6 according to test certificates PTB 01 ATEX 1053 and II 2D IP 65 T 80 °C according to LCIE ATEX 6308.

- **Type 4744-2** (Fig. 3) · Limit switch with one momentary-contact switch for mounting to the rod-type yoke of Series V2001 valves.

Type of protection 'flameproof enclosure' II 2G Ex d IIC T6 acc. to PTB 00 ATEX 1093 X.

For more information on the selection and application of positioners and limit switches, refer to Information Sheet **T 8350 EN**.

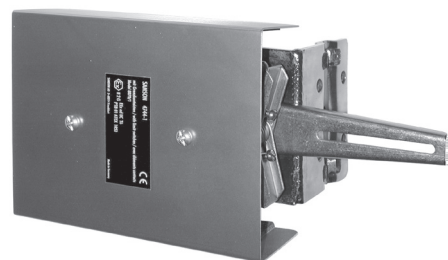


Fig. 1: Type 4744 Electric Limit Switch with protective cover

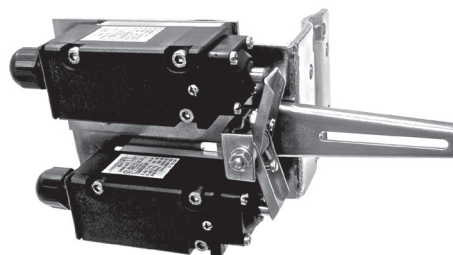


Fig. 2: Type 4744 Electric Limit Switch with two momentary-contact switches and protective cover removed

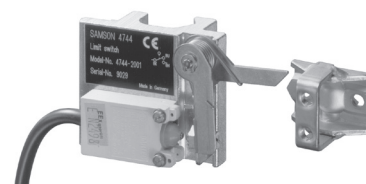


Fig. 3: Type 4744-2 Electric Limit Switch preferably for Series V2001 Valves

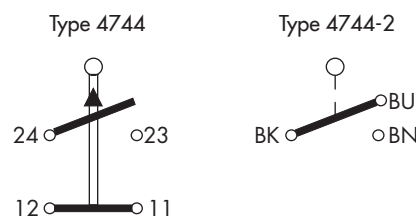


Fig. 4: Electrical connection

Principle of operation (Fig. 2)

When the limit switch is mounted to the control valve, the valve travel is transmitted by the long lever of the actuator stem to the adjusting lever on the momentary-contact limit switch. This lever actuates the snap-action contact of one of the momentary-contact limit switches when the valve travel reaches the adjusted limit. This switch can be overridden and is equipped with an overrange protection. For the initial adjustment of the limit (switching point), the momentary-contact switch is shifted on the base plate. The adjustment screw is used for fine adjustment. The terminal connection determines whether the limit contact is used either as an NO contact, an NC contact or a double-throw contact (Fig. 4).

Table 1: Technical data

Limit switch	Type	4744	4744-2
Momentary-contact switch		1 or 2	1
Type of protection		Flameproof enclosure, terminal space in increased safety ⊕ II 2G Ex ed IIC T6 - PTB 02 ATEX 1053, II 2D IP 65 T 80 °C - LCIE 03 ATEX 6308	Flameproof enclosure ⊕ II 2G Ex d IIC T6, PTB 00 ATEX 1093 X
Load capacity (contact rating)	AC voltage		
		500 V/10 A Utilization category AC-15	250 V/5 A
	DC voltage		
		125 V/10 A 250 V/0.2 A Utilization category DC-12	250 V/0.4 A
Travel range		7.5 to 100 mm with extended lever up to max. 150 mm	15 mm
Permissible ambient temperature ¹⁾		-55 to 70 °C	-20 to 75 °C
Degree of protection		IP 65	IP 66
Weight	kg (approx.)	1.75 kg	0.4 kg
Enclosure material		Glass-fiber-reinforced polyester	Thermosetting polymer

¹⁾ Observe the limits specified in the relevant certificate when the limit switch is used in hazardous areas.

Summary of explosion protection approvals

Type of approval	Certificate number	Date	Type of protection/comments
EC Type Examination Certificate	PTB 01 ATEX 1053	2001-08-09	⊕ II 2G Ex ed IIC T6; Type 4744
	LCIE 03 ATEX 6308	2003-10-10	II 2D IP 65 T 80 °C; Type 4744
	DMT 01 ATEX E 178	2001-12-28	⊕ II 2G Ex de IIC T6 II 2D IP 65 T 80 °C; Type 4744
	PTB 00 ATEX 1093 X	2000-12-07	⊕ II 2G Ex d IIC T6/T5; Type 4744-2
GOST certificate	B00045	2012-02-28	2 Ex de IIC T6

Article code

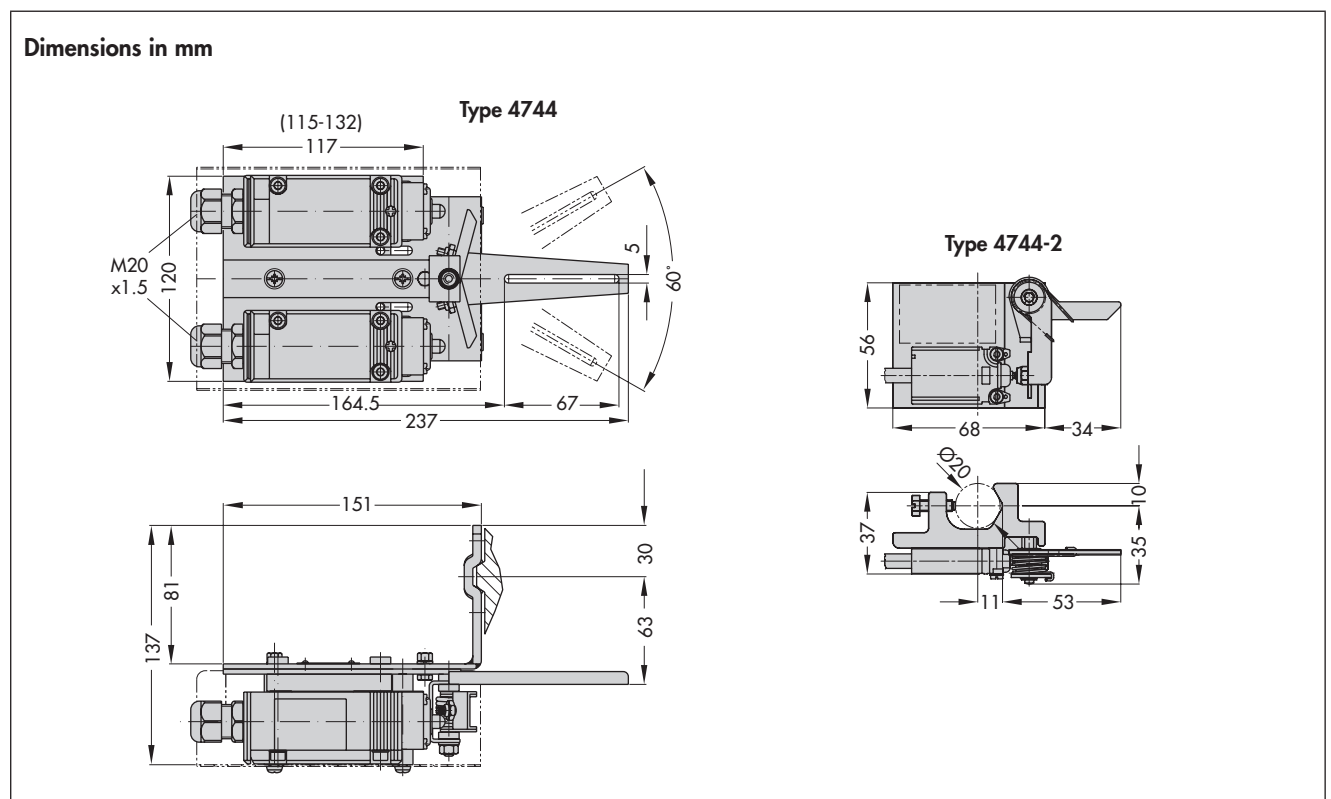
Electric limit switch	Type 4744-	x	0	0	x	1	0	0	x
Attachment									
To NAMUR rib		1			4/5				1
To rod-type yoke for Type 3372 Actuator		2			1				
Version									
Without switches			0	0	3				
One changeover switch			0	0	1				
Two 8070/1-2-S switches			0	0	4				1
One 8070/1-2-S switch			0	0	5				1
Special version									
Without									0
GOST approval Ex de									1

Ordering text

Electric limit switch Type 4744 or Type 4744-2

Momentary-contact switch 1 or 2 functioning as NO contact or NC contact

For indicating Valve OPEN/valve CLOSED or OPEN or CLOSED



Specifications subject to change without notice



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