

# Type 3371 Pneumatic Actuator

Versions with 120 and 350 cm<sup>2</sup>



## Application

Pneumatic linear actuators for attachment to Series V2001 Valves

<b>Rated travel</b>	<b>15 and 30 mm</b>
<b>Actuator area</b>	<b>120 and 350 cm<sup>2</sup></b>

The Type 3371 Pneumatic Actuators are used for attachment to Series V2001 Valves:

- Type 3321 Globe Valve
- Type 3323 Three-way Valve
- Type 3531 Globe Valve for Heat Transfer Oil
- Type 3535 Three-way Valve for Heat Transfer Oil

The actuators mainly consist of two diaphragm cases, a diaphragm and internal springs. The actuator is connected to the valve bonnet using a yoke.

The diaphragm casing of the Type 3371 Actuator is available made of the following materials depending on the actuator size:

- 120 cm<sup>2</sup>: diaphragm cases made of die-cast aluminum
- 350 cm<sup>2</sup>: diaphragm cases made of sheet steel

## Special features

- Permissible operating temperatures from -35 to +90 °C
- Attachment to valves in nominal sizes DN 15 to 100

## Versions

- **Standard version of Type 3371 with 120 cm<sup>2</sup> actuator area:** attachment to Type 3321 and Type 3323 Valves in DN 15 to 50 as well as to Type 3531 and Type 3535 Valves in DN 15 to 80
- **Standard version of Type 3371 with 350 cm<sup>2</sup> actuator area:** attachment to Type 3321 Valves in DN 65 to 100 as well as to Type 3323 Valves in DN 65 to 100

## Accessories

- **Type 4744-2 Limit Switch** · With explosion protection flameproof enclosure II 2G Ex db IIC T6-T5 and degree of protection IP 66 · See Data Sheet ▶ T 8367

## Further versions of Type 3371, 120 cm<sup>2</sup>

- Attachment to Type 3321 and Type 3323 Valves in **DN 65 to 100**
- **Mechanically adjustable travel stop**
- **Manual override**



Fig. 1: Type 3371 Actuator with 120 cm<sup>2</sup> actuator area mounted on a Type 3321 Globe Valve



Fig. 2: Type 3371 Actuator with 350 cm<sup>2</sup> actuator area mounted on a Type 3321 Globe Valve

## Principle of operation

The signal pressure creates a force at the diaphragm surface, which is opposed by the compression springs (10) in the actuator. The number of springs and their compression determine the bench range (signal pressure range). The travel is always proportional to the signal pressure.

The stem connector connects the actuator stem (7) to the plug stem of the mounted valve.

## Fail-safe action

Depending whether the signal pressure line is connected to the top or bottom diaphragm case, the pneumatic actuator has two different fail-safe actions:

### Actuator stem extends (FA)

When the signal pressure is reduced or the air supply fails, the springs move the actuator stem downward. This causes a mounted globe valve to close. In three-way valves, port **B** is closed when the valve is used for mixing service and port **A** is closed when the valve is used for diverting service.

The valve opens when the signal pressure is increased enough to overcome the force exerted by the springs.

### Actuator stem retracts (FE)

When the signal pressure is reduced or the air supply fails, the springs move the actuator stem upward. This causes a mounted globe valve to open. In three-way valves, port **A** is closed when the valve is used for mixing service and port **B** is closed when the valve is used for diverting service.

The valve closes when the signal pressure is increased enough to overcome the force exerted by the springs.

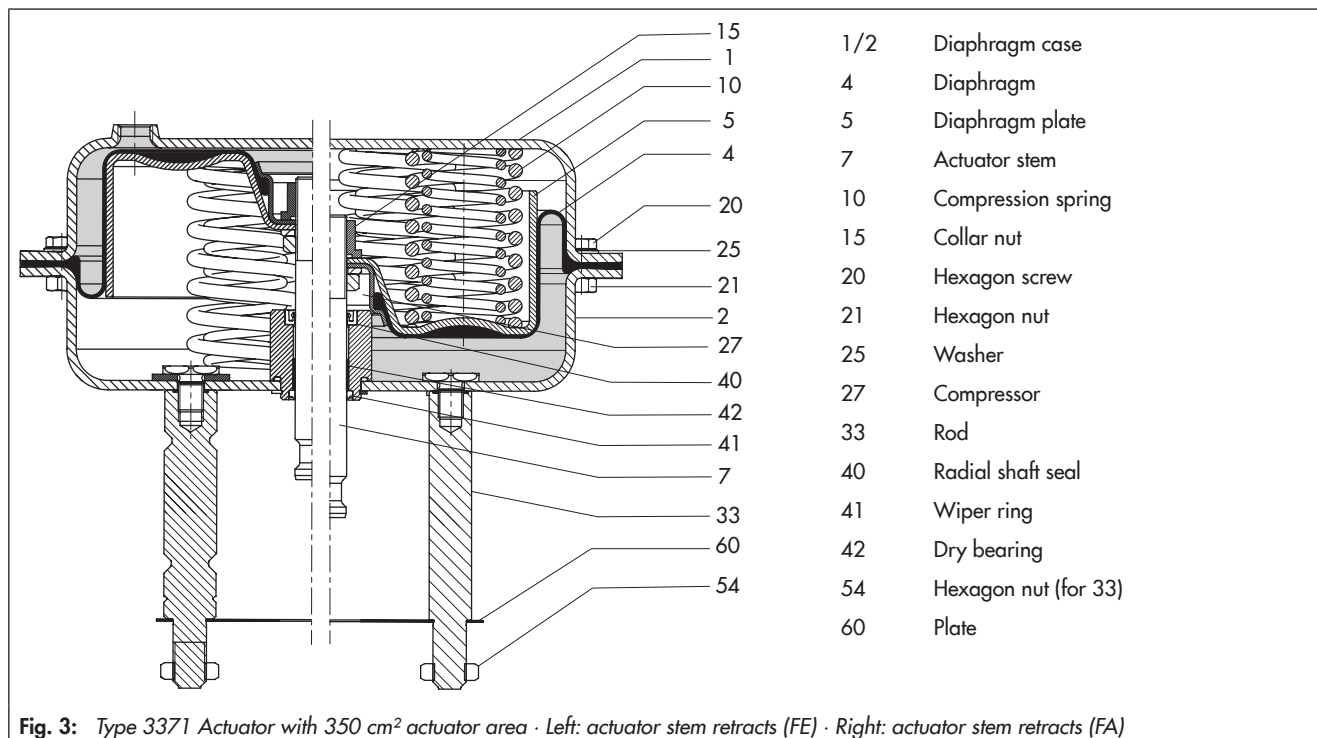
## On/off service

In on/off service, the supply pressure must be limited depending on the bench range or operating range of the actuator.

With fail-safe action "actuator stem retracts (FE)", the permissible supply pressure must not exceed the upper bench range value by more than 3 bar:


Bench range	Fail-safe action	Max. supply pressure
0.4 to 1.4 bar	Actuator stem retracts	4.4 bar
1.4 to 2.3 bar		5.3 bar
1.5 to 2.1 bar		5.1 bar

With fail-safe action "actuator stem extends" together with travel limitation, the supply pressure must not exceed the upper signal range value by more than 1.5 bar.



**Table 1: Technical data**

**Table 1.1: Type 3371 Pneumatic Actuator**

Actuator area	120 cm <sup>2</sup>				350 cm <sup>2</sup>			
Rated travel	15 mm				30 mm			
Fail-safe action	Stem retracts (FE)	Stem retracts (FE)	Stem extends (FA)	Stem extends (FA)	Stem retracts (FE)	Stem extends (FA)	Stem retracts (FE)	Stem extends (FA)
Bench range [bar]	0.4 to 1.4	1.4 to 2.3		2.1 to 3.3	1.5 to 2.1	2.1 to 2.7	1.5 to 2.7	2.2 to 3.8
Supply pressure	Max. 6 bar <sup>1)</sup>							
Ambient temperature range	-35 to +90 °C				-35 to +90 °C			
Approx. weight	3.3 kg				15 kg			
<b>Materials</b>								
Actuator housing	GD-ALSi10Mg				1.0332			
Diaphragm	NBR				NBR			
Actuator stem	1.4305				1.4401/1.4404			
<b>Compliance</b>								
								

<sup>1)</sup> Observe supply pressure restrictions.

**Table 1.2: Technical data of Type 4744-2 Limit Switch**

Type 4744-2 Electric Limit Switch	
Travel range	15 mm
Permissible load	AC voltage: 250 V/5 A DC voltage: 250 V/0.4 A
Temperature range	-20 to +60 °C
Degree of protection	IP 66
Explosion protection	Flameproof enclosure II 2G Ex db IIC T6-T5
Approx. weight	0.4 kg
Associated documentation	▶ T 8367

**Table 2: Bench ranges**

Actuator area [cm <sup>2</sup> ]	Rated travel [mm]	Travel volume at rated travel [cm <sup>3</sup> ]	Bench range [bar] (signal pressure range at rated travel)	Additional possible spring compression	No. of springs	Fail-safe action: actuator stem extends (FA)		Fail-safe action: actuator stem retracts (FE)				
						Spring force at 0 mm travel [kN]	Spring force at rated travel [kN]	Spring force [kN] at rated travel and supply pressure [bar] of				
								2	3	4	5	6
120	15	1800	0.4 to 1.4	-	4	0.5	1.7	0.7	1.9	3.1	-	-
		1800	1.4 to 2.3		8	1.7	2.8	-	0.8	2	3.2	4.4
		1800	2.1 to 3.3		12	2.5	4.0	-	-	-	-	-
350	30	5250	1.5 to 2.1	-	8	-	-	-	3.15	6.65	6.65	6.65
		5250	2.1 to 2.7		6	7.35	9.5	-	-	-	-	-
		10500	1.5 to 2.7		8	-	-	-	1.05	4.55	8.05	11.55
		10500	2.2 to 3.8		12	7.7	13	-	-	-	-	-

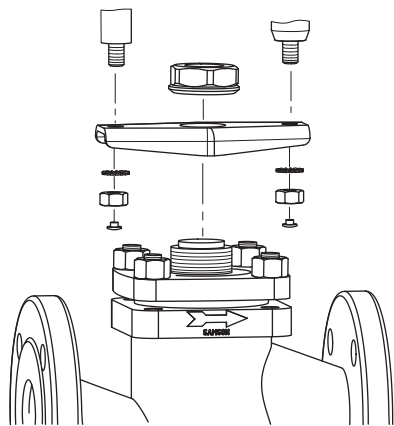
## Mounting types

There are two types of mounting depending on the valve/actuator combination: mounting using a crossbeam or mounting on rods. When the actuator is mounted to the valve using a crossbeam (Form B, Fig. 4), the actuator is fastened to the valve bonnet using a central nut.

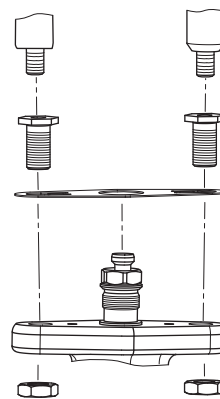
When the actuator is mounted on rods (Form C, Fig. 5) the actuator is connected to the valve bonnet using rods. In this case, a crossbeam is not required for mounting the actuator.

**Table 3:** Mounting types (see Fig. 4 and Fig. 5)

Type ... Valve	Actuator area Travel Nominal size DN	120 cm <sup>2</sup>			350 cm <sup>2</sup>	
		15 mm	15 mm	30 mm	15 mm	30 mm
3321	15 to 50	Form B	-	-	-	-
3321	65 to 100	Form C	Form C	-	-	-
3321	100	-	-	Form C	-	-
3323	15 to 50	Form B	-	-	-	-
3323	65 to 80	-	Form C	-	-	-
3323	100	-	-	Form C	-	-
3531	15 to 80	Form B	-	-	-	-
3535	15 to 80	Form B	-	-	-	-

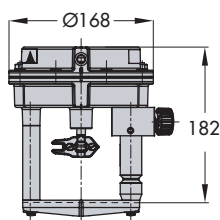


**Fig. 4:** Form B: mounting using crossbeam

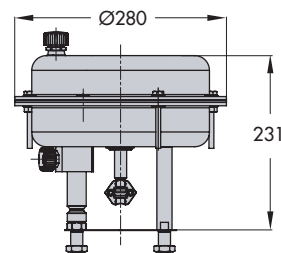


**Fig. 5:** Form C: mounting on rods

## Dimension diagrams · All dimensions in mm



Type 3371 with 120 cm<sup>2</sup> actuator area



Type 3371 with 350 cm<sup>2</sup> actuator area

## Ordering text

Pneumatic actuator Type 3371

Attachment to valve Type ...

Valve travel 15 or 30 mm

Actuator area 120 or 350 cm<sup>2</sup>

Bench range According to Table 2

Direction of action Actuator stem extends (FA)

Actuator stem retracts (FE)

Valve accessories e.g. Type 4744-2 Limit Switch

Specifications subject to change without notice



SAMSON AG · MESS- UND REGELTECHNIK  
Weismüllerstraße 3 · 60314 Frankfurt am Main, Germany  
Phone: +49 69 4009-0 · Fax: +49 69 4009-1507  
samson@samson.de · www.samson.de

**T 8317 EN**