

Type 3271 Pneumatic Actuator

1400-60 cm²



Application

Linear actuator particularly suitable for attachment to SAMSON Series 240, 250, 280 and 290 Valves

Actuator area	1400 cm²
Travel	60 mm

The Type 3271 Pneumatic Actuator contains a rolling diaphragm and internal springs.

Special features

- Powerful thrust at high response speed
- Low friction
- Various bench ranges by varying the number of springs or their compression
- No special tools required to change the bench range or to reverse the direction of action
- Permissible operating temperatures from -50 to +120 °C

Versions

- **Type 3271 · Pneumatic actuator** (Fig. 1), 1400 cm² actuator area
- **Type 3271 · Pneumatic actuator with travel stop** (Fig. 3), mechanically adjustable minimum and maximum travel

Further versions

- **Type 3273 Side-mounted Handwheel** · See Data Sheet
▶ T 8312
- **Versions for other control media** (e.g. water) available on request.

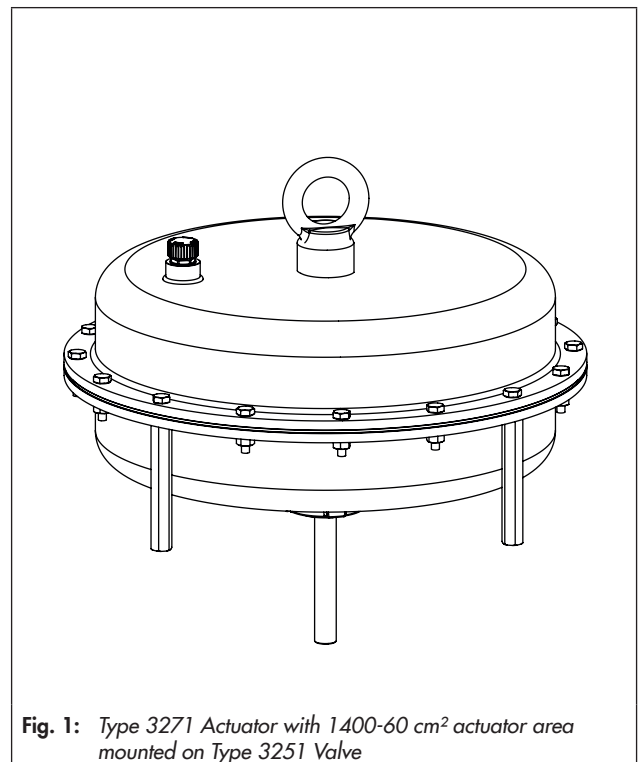


Fig. 1: Type 3271 Actuator with 1400-60 cm² actuator area mounted on Type 3251 Valve

Principle of operation

The signal pressure p_{st} creates the force $F = p_{st} \cdot A$ at the diaphragm surface A (4) which is opposed by the springs (10) in the actuator. The bench range is determined by the number of springs used and their compression, taking into account the rated travel. The travel H is proportional to the signal pressure p_{st} . The direction of action of the actuator stem (7) depends on how the springs are installed in the actuator.

The stem connector (26) connects the actuator stem (7) with the plug stem of the valve.

The adjustable **mechanical travel stop** (Fig. 3) allows the travel to be limited by up to 50 % in both directions (actuator stem extends or retracts) and permanently adjusted.

Direction of action

Actuators are available with the following directions of action:

- **Actuator stem extends (FA):** the springs cause the actuator stem to move to the lower end position (sectional drawings, right) when the diaphragm is relieved of pressure or when the supply air fails.
- **Actuator stem retracts (FE):** the springs cause the actuator stem to retract (sectional drawings, left) when the diaphragm is relieved of pressure or when the supply air fails.

Throttling or on/off service

In throttling service, the Type 3271 Pneumatic Actuator can be used for supply pressures up to max. 6 bar.

In on/off service, the supply pressure must be limited.

For the direction of action "actuator stem retracts (FE)", the permissible supply pressure must not exceed the upper bench range value by more than 3 bar:

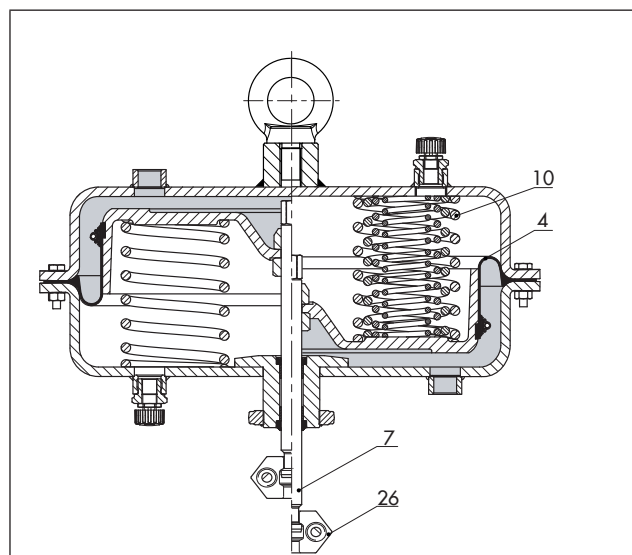
Bench range	Fail-safe action	Max. supply pressure
0.2 to 1.0 bar	Actuator stem retracts	4 bar
0.4 to 2.0 bar		5 bar
0.6 to 3.0 bar		6 bar

With the direction of action "actuator stem extends (FA)" and travel stop, the supply pressure must not exceed the upper bench range value by more than 1.5 bar.

Accessories

The pneumatic actuators with 1400 cm² actuator area are fitted with a female thread on the top diaphragm case to allow an eyebolt or swivel lifting hook to be screwed into it. The eyebolt can be used to vertically lift the actuator and is included in the scope of delivery. The swivel lifting hook is designed for setting a control valve assembly upright or for lifting the actuator without valve. The swivel lifting hook can be ordered (accessories).

Actuator area	Item number	
	Eyebolt (DIN 580)	Swivel lifting hook
1400-60 cm ²	8325-0135	8442-1018



4 Diaphragm
10 Springs
7 Actuator stem
26 Stem connector

Fig. 2: Sectional drawing of Type 3271 Pneumatic Actuator, 1400-60 cm²

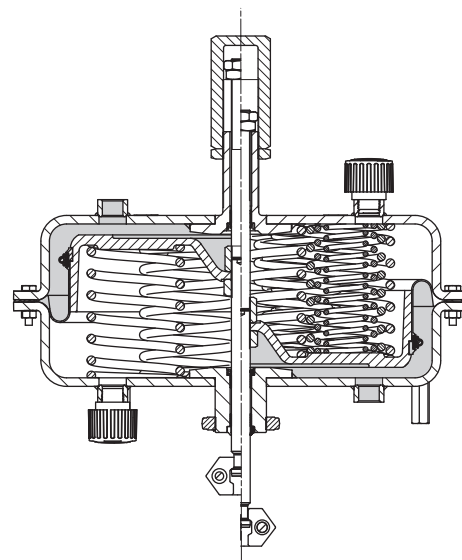


Fig. 3: Version with mechanical travel stops on both sides

Table 1: Technical data

Table 1.1: Type 3271 Pneumatic Actuator

Version	1400-60 cm²
Max. supply pressure	6 bar ¹⁾
Permissible ambient temperatures	Diaphragm material NBR: -35 to +90 °C ²⁾
	Diaphragm material EPDM: (with air free of oil and grease): -50 to +120 °C ³⁾
Compliance	ERC
Materials	
Rolling diaphragm	NBR (nitrile butadiene rubber) Butyl with fabric reinforcement
	EPDM with fabric reinforcement
Actuator stem	1.4404
Actuator stem sealing	NBR (nitrile butadiene rubber)
	EPDM
Diaphragm cases	Sheet steel, plastic-coated

¹⁾ Observe supply pressure restrictions.

²⁾ In on/off service, lowest temperature restricted to -20 °C.

³⁾ In on/off service, lowest temperature restricted to -40 °C.

Table 1.2: Versions

Version	1400-60 cm²
Mechanical travel stops on both sides	•
Throttling service	•
On/off service	•

Table 2: Bench ranges for 1400-60 cm² pneumatic actuators

All pressures in bar (gauge) · Pretensioned springs cannot be used with the direction of action “actuator stem retracts” for Series 240, 250 and 280 Valves.

Actuator type	Actuator area [cm ²]	Rated travel [mm]	Travel volume at rated travel [dm ³]	Dead volume [dm ³]	Max. travel [mm] ¹⁾	Bench range [bar] (Signal pressure range at rated travel)	Add. possible spring compression [%]	Operating range with spring compression [bar]	No. of springs	Spring force at 0 mm travel [kN] ²⁾	Spring force at rated travel [kN] ²⁾	Thrust [kN] ²⁾ at rated travel and supply pressure [bar] of					
												1.4	2.0	3.0	4.0	5.0	6.0
Type 3271	1400	60	8.3	5.7	80	0.2 to 1.0	25	0.4 to 1.2	6	2.8	14	5.6	14	28	42	56	70
						0.4 to 2.0		0.8 to 2.4	12	5.6	28	-	14	28	42	56	
						0.5 to 2.5		1.0 to 3.0	18	7	35	-	7	21	35	49	
						1.1 to 2.4		1.4 to 2.7	18	15.4	33.6	-	8.4	22.4	36.4	50.4	
						1.3 to 2.8		1.7 to 3.2	24	18.2	39.2	-	2.8	16.8	30.8	44.8	

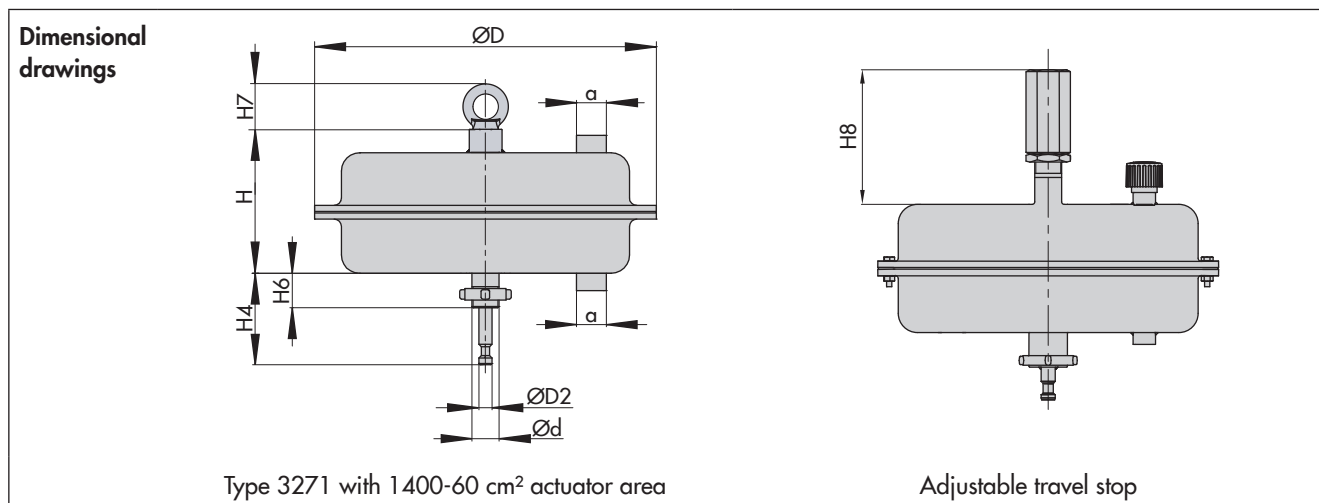
¹⁾ Based on lower bench range value, not taking zero travel (to unseat the plug) into account (see Table 3).

²⁾ The forces specified relate to the bench range.

Table 3: Dimensions and weights for versions without handwheel · Dimensions in mm and weights in kg

Actuator	Type	3271
Actuator area	cm ²	1400-60
Height	H	247
	H _{4 rated} FA	165
	H _{4 max} FA	169
	H _{4 max} FE	185
	H ₆	54
	H ₇ ¹⁾	90
Mechanical travel stops (on both sides)	H ₈	180
Diameter	ØD	530
	ØD ₂	22
Thread	Ød	M60 x 1.5
Pneumatic connection (optional)	a	G ¾ · ¾ NPT
Weight		
Without handwheel		70

¹⁾ Height of eyebolt according to DIN 580. Height of the swivel lifting hook may differ.



List of documentation

Actuator type	Actuator area [cm ²]	Data sheet	Mounting and operating instructions
Types 3271 and 3277 Pneumatic Actuators	120	▶ T 8310-1/4/5/6	▶ EB 8310-1
	240 · 350 · 700		▶ EB 8310-6
	175v2 · 350v2 · 750v2		▶ EB 8310-5
	355v2		▶ EB 8310-4
Type 3271 Pneumatic Actuator	1000	▶ T 8310-2/7	▶ EB 8310-2
	1400-120 · 2800 · 2 x 2800		▶ EB 8310-7
	1400-60	Included in this data sheet	▶ EB 8310-3
	1400-250	▶ T 8310-8	▶ EB 8310-8

Ordering text

Actuator	Type 3271	Bench range	... bar
Actuator area	1400 cm ²	Direction of action	Actuator stem extends (FA) Actuator stem retracts (FE)
Travel	60 mm	Signal pressure connection	G .../... NPT
Optional	Travel stop	Rolling diaphragm	NBR/EPDM

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 8310-3 EN

2018-04-25 · English