

## T 8310-12 EN

### Pneumatic Actuators 1000 cm<sup>2</sup>

#### Type 3271 · Customer standard SAM001

## SAM 001

#### Application

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

The customer standard SAM001 indicates SAMSON devices that comply with the NAMUR Recommendation NE 53. After subscribing to the ► NE53 newsletter, users of these devices automatically receive information on any hardware or software changes.

<b>Actuator area</b>	1000 cm <sup>2</sup>
<b>Travel</b>	60 mm

The Type 3271 Pneumatic Actuators are diaphragm actuators with rolling diaphragm and internal compression springs.

#### Special features

- Powerful thrust at high stroking 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 reverse the direction of action
- Permissible operating temperatures from -60 to +90 °C
- Female thread on the top diaphragm case

#### Versions

- **Type 3271 · Pneumatic actuator**, 1000 cm<sup>2</sup> actuator area
- **Type 3271 · Actuator with travel stop**, minimum or maximum travel mechanically adjustable

#### Further versions

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

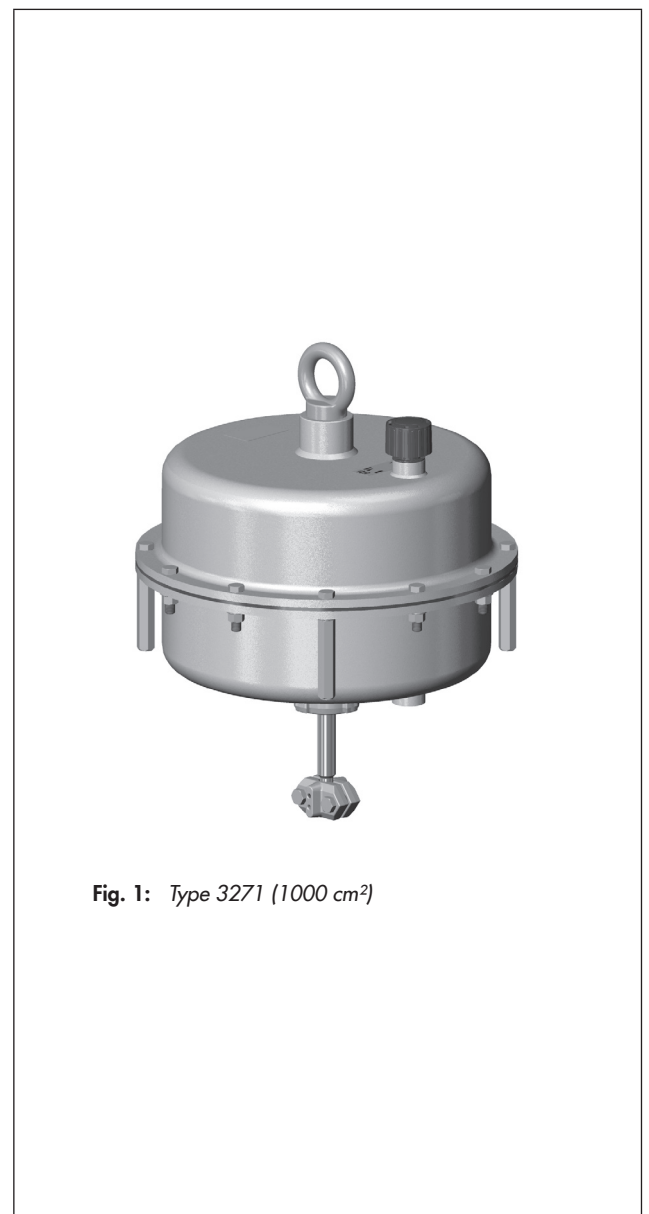


Fig. 1: Type 3271 (1000 cm<sup>2</sup>)

### Principle of operation

The signal pressure  $p_{st}$  creates the force  $F = p_{st} \times A$  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** allows the travel to be limited by up to 50 % in both directions (actuator stem extends or retracts) and permanently adjusted.

### Direction of action

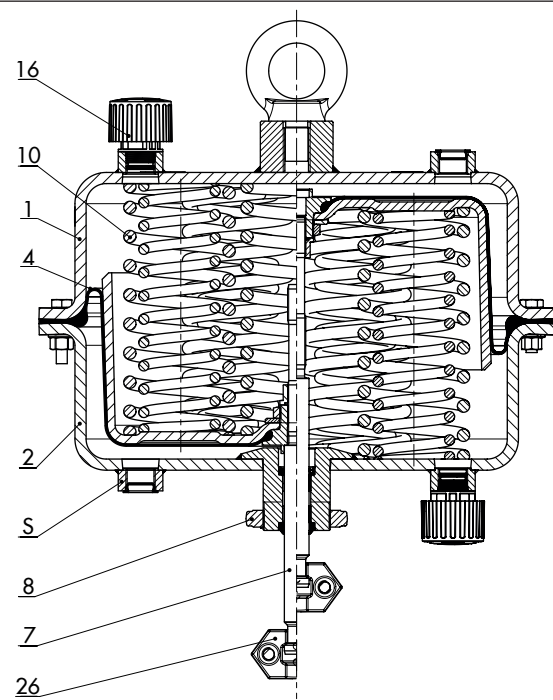
Actuators are available with the following directions of action:

- **Actuator stem extends (FA):** the springs cause the actuator stem to move to the lower end position 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 when the diaphragm is relieved of pressure or when the supply air fails.

### Throttling or on/off service

The Type 3271 Pneumatic Actuators are designed for a maximum supply pressure of 6 bar when used for throttling service.

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



- |    |                            |
|----|----------------------------|
| 1  | Top diaphragm case         |
| 2  | Bottom diaphragm case      |
| 4  | Diaphragm                  |
| 7  | Actuator stem              |
| 8  | Ring nut                   |
| 10 | Springs                    |
| 16 | Vent plug                  |
| 26 | Stem connector             |
| S  | Signal pressure connection |

Fig. 2: Type 3271 with 1000 cm<sup>2</sup> actuator area

**Table 1: Technical data**

**Table 1.1: Type 3271 Pneumatic Actuator**

Version	1000 cm <sup>2</sup>
Max. supply pressure	6 bar <sup>1)</sup>
Permissible ambient temperatures	Diaphragm material NBR: -35 to +90 °C <sup>2) 3)</sup>
Degree of protection	IP 54 <sup>4)</sup>
Materials	
Actuator stem	Stainless steel
Actuator stem sealing	NBR
Housing and associated ambient temperature	1.0982 S460 MC Sheet steel, painted ≥-60 °C

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

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

<sup>3)</sup> Install vent plug (▶ AB 07) for temperatures below -20 °C.

<sup>4)</sup> The pneumatic actuators do not pose any risk in the sense of the protection requirements described in DIN EN 60529. The IP rating depends on the connecting parts used on the pressurized side and the spring chamber side of the actuator. In this case, components (air vents as well as valves accessories, such as solenoid valves, positioners etc.) must be used that comply with the requirements. The maximum rating that can be achieved with the standard air vent is IP 54 (▶ AB 07). Depending on the IP rating of the valve accessories, a maximum rating of IP 66 can be achieved for an actuator with air purging of the actuator spring chamber.

**Table 1.2: Versions**

Version	1000 cm <sup>2</sup>
Mechanical travel stops on both sides	•
Throttling service	•
On/off service	•

**Table 2: Bench ranges**

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 in cm <sup>2</sup>	Rated travel in mm	Travel volume at rated travel in dm <sup>3</sup>	Dead volume in dm <sup>3</sup>	Max. travel in mm <sup>1)</sup>	Bench range in bar (Signal pressure range at rated travel)	Add. possible spring compression in %	Operating range with spring compression in bar	No. of springs	Spring force at 0 mm travel in kN <sup>2)</sup>	Spring force at rated travel in kN <sup>2)</sup>	Thrust in kN <sup>2)</sup> at rated travel and supply pressure in bar of					
												1.4	2.0	3.0	4.0	5.0	6.0
Type 3271	1000	60	6.4	6.1	80	0.4 to 2.0	25	0.8...2.4	6	4	20	-	10	20	30	-	
						0.6 to 3.0		1.2 to 3.6	9	6	30	-	-	10	20	30	
						1.0 to 3.2 <sup>1)</sup>		1.5 to 3.7	10	10	32	-	-	8	18	28	
						1.5 to 4.2 <sup>1)</sup>		2.1 to 4.8	13	15	42	-	-	-	8	18	

<sup>1)</sup> With fail-safe action "actuator stem extends" only

<sup>1)</sup> Based on lower bench range value. The zero travel is not taken into account (see Table 3).

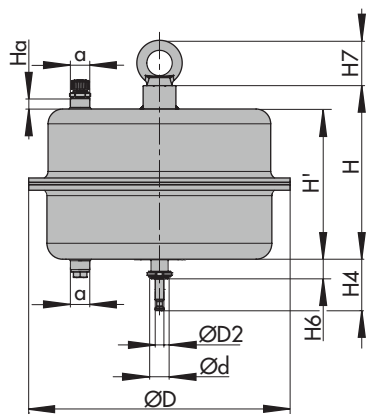
<sup>2)</sup> The forces specified relate to the bench range.

**Table 3:** Dimensions and weights for versions without handwheel

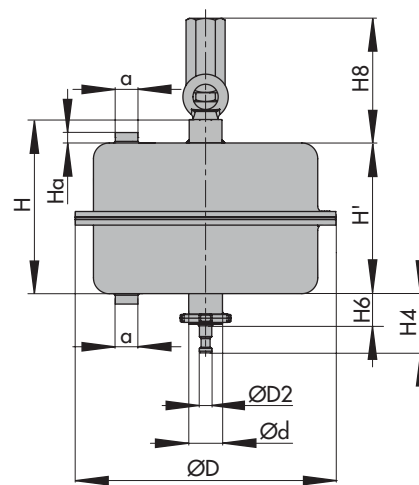
Actuator	Type	3271
Actuator area	cm <sup>2</sup>	1000
Height	H <sup>1)</sup>	313
	H'	267
	H <sub>a</sub>	19
	H <sub>4, rated</sub> FA	165
	H <sub>4, max</sub> FA	169
	H <sub>4, max</sub> FE	185
	H <sub>6</sub>	54
	H <sub>7</sub> <sup>2)</sup>	90
Travel limitation	H <sub>8</sub>	220
Diameter	ØD	462
	ØD <sub>2</sub>	22
Ød (thread)		M60x1.5
Pneumatic connection (optional)	a	G 3/4/3/4 NPT
	a <sub>2</sub>	-
Weight <sup>3)</sup> in kg (approx.)		
Without handwheel		80

- 1) In versions in which the lifting eyelet is welded directly onto the housing or the design does not allow for a horizontal connecting surface on the housing, H' and H are identical. The value H' applies in this case.  
 2) Height of eyebolt according to DIN 580. Height of the swivel hoist may differ.  
 3) The specified weight applies to a specific standard device configuration. Weights of other actuator configurations may differ depending on the version (material, number of actuator springs etc.).

**Dimensional drawings**



**Fig. 3:** Type 3271 with 1000 cm<sup>2</sup> actuator area



**Fig. 4:** Adjustable travel stop

## Accessories

The pneumatic actuators with 1000 cm<sup>2</sup> actuator area have a female thread on the top diaphragm case to allow an eyebolt or swivel hoist 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 hoist is designed for setting a control valve assembly upright or for lifting the actuator without valve. The swivel hoist can be ordered (accessories).

Actuator area	Item no.	
	Ring bolt (DIN 580)	Swivel hoist
1000 cm <sup>2</sup>	8325-0135	8442-1018

## Ordering text

Actuator	Type 3271
Actuator area	1000 cm <sup>2</sup>
Travel	60 mm
Optional	Travel limitation
Standard	Customer standard SAM001
Bench range	... bar
Direction of action	Actuator stem extends (FA) Actuator stem retracts (FE)
Signal pressure connection	G .../... NPT
Rolling diaphragm	NBR

## List of documentation for Type 3271 and Type 3277 Pneumatic Actuators

Device type	Actuator area in cm <sup>2</sup>	Data sheet		Mounting and operating instructions
		General product line	SAM001 <sup>1)</sup> product line	
Types 3271 and 3277 Pneumatic Actuators	120	▶ T 8310-1/4/5/6	Included in this data sheet	▶ EB 8310-1
	350			▶ EB 8310-6
	175v2 · 350v2 · 750v2			▶ EB 8310-5
	355v2			▶ EB 8310-4
Type 3271 Pneumatic Actuator	1000	▶ T 8310-2/7	▶ T 8310-12	▶ EB 8310-2
	1400-120 · 2800 · 2 x 2800		–	▶ EB 8310-7
	1400-60	▶ T 8310-3	▶ T 8310-13	▶ EB 8310-3
	1400-250	▶ T 8310-8	–	▶ EB 8310-8

<sup>1)</sup> Separate data sheets have been created for Type 3271 and Type 3277 Pneumatic Actuators that comply with the SAM001 standard.

