

## T 8310-13 EN

### Pneumatic Actuator 1400-60 cm<sup>2</sup>

#### Type 3271 · Customer standard SAM001

**SAM**  
**001**

#### Application

Linear actuator 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>	<b>1400 cm<sup>2</sup></b>
<b>Travel</b>	<b>60 mm</b>

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

#### Special features

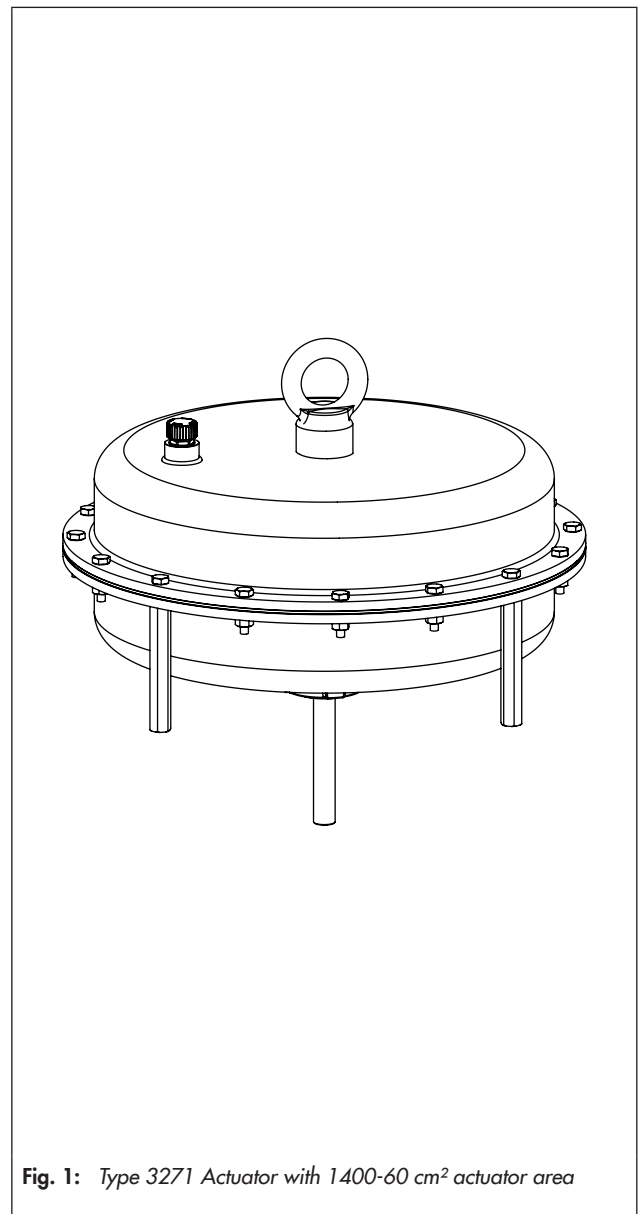
- Powerful thrust at high stroking speed
- Low friction
- Various bench ranges by varying the number of springs or their compression
- No special tools required to change the bench range or reverse the direction of action
- Permissible operating temperatures from -50 to +120 °C

#### Versions

- **Type 3271 · Pneumatic actuator** (Fig. 1), 1400 cm<sup>2</sup> 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 cm<sup>2</sup> actuator area

## 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", the permissible supply pressure must not exceed the upper bench range value by more than 3 bar:

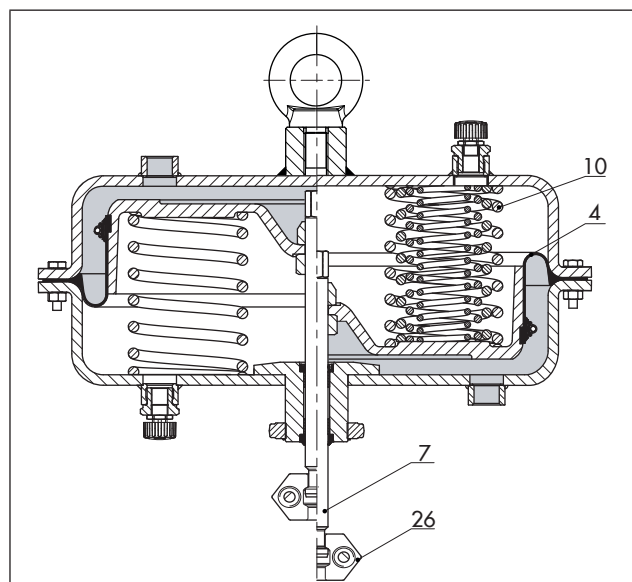
Bench range	Fail-safe action	Max. supply pressure
0.2 to 1.0 bar	Actuator stem retracts	4 bar
0.4 to 2.0 bar		5 bar
0.6 to 3.0 bar		6 bar

With the direction of action "actuator stem extends" 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 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.	
	Eyebolt (DIN 580)	Swivel hoist
1400-60 cm <sup>2</sup>	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 cm<sup>2</sup>

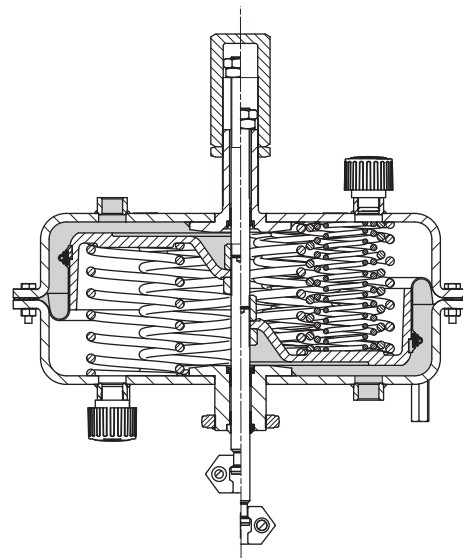


Fig. 3: Version with mechanical travel stops on both sides

**Table 1: Technical data**

**Table 1.1: Type 3271 Pneumatic Actuator**

Version	1400-60 cm <sup>2</sup>
Max. supply pressure	6 bar <sup>1)</sup>
Permissible ambient temperatures	Diaphragm material NBR: -35 to +90 °C <sup>2)</sup>
Degree of protection	IP 54 <sup>3)</sup>
Materials	
Rolling diaphragm	NBR (nitrile butadiene rubber) Butyl with fabric reinforcement
Actuator stem	Stainless steel
Actuator stem sealing	NBR (nitrile butadiene rubber)
Diaphragm cases	Sheet steel, plastic-coated

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

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

<sup>3)</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	1400-60 cm <sup>2</sup>
Mechanical travel stops on both sides	•
Throttling service	•
On/off service	•

**Table 2: Bench ranges for 1400-60 cm<sup>2</sup> 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 <sup>2</sup> ]	Rated travel [mm]	Travel volume at rated travel [dm <sup>3</sup> ]	Dead volume [dm <sup>3</sup> ]	Max. travel [mm] <sup>1)</sup>	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] <sup>2)</sup>	Spring force at rated travel [kN] <sup>2)</sup>	Thrust [kN] <sup>2)</sup> 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...1.0	25	0.4...1.2	6	2.8	14	5.6	14	28	42	56	70
						0.4...2.0		12	5.6	28	-	14	28	42	56		
						0.5...2.5		18	7	35	-	7	21	35	49		
						1.1...2.4		18	15.4	33.6	-	8.4	22.4	36.4	50.4		
						1.3...2.8		24	18.2	39.2	-	2.8	16.8	30.8	44.8		

<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.

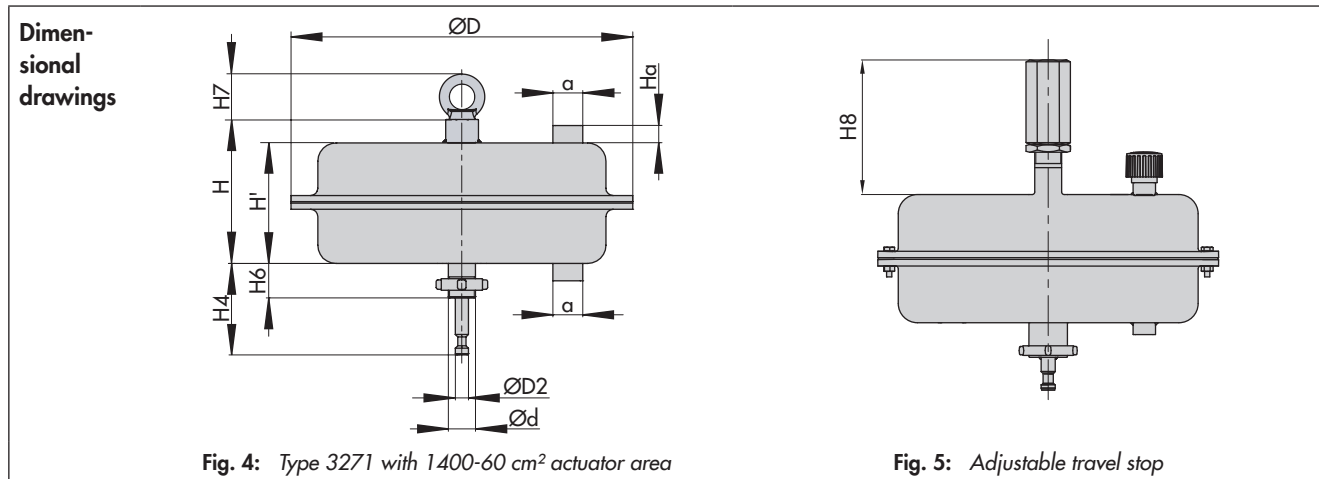
**Table 3: Dimensions and weights · Dimensions in mm and weights in kg**

Actuator	Type	3271
Actuator area	cm <sup>2</sup>	1400-60
Height	H <sup>1)</sup>	247
	H'	201
	Ha	19
	H4 <sub>rated</sub> FA	165
	H4 <sub>max</sub> FA	169
	H4 <sub>max</sub> FE	185
	H6	54
	H7 <sup>2)</sup>	90
Mechanical travel stops (on both sides)	H8	180
Diameter	ØD	530
	ØD2	22
Thread	Ød	M60x1.5
Pneumatic connection (optional)	a	G ¾ · ¾ NPT
Weight <sup>3)</sup>		
Without handwheel (approx.)		70

1) In versions in which the lifting eyelet is welded directly onto the housing, H' and H are identical. The value H' applies.

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.).



**Fig. 4:** Type 3271 with 1400-60 cm<sup>2</sup> actuator area

**Fig. 5:** Adjustable travel stop

**Ordering text**

Actuator	Type 3271
Actuator area	1400 cm <sup>2</sup>
Travel	60 mm
Optional	Travel stop
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.

