

T 8318 EN

Type 3276 Pneumatic Actuator

Versions: D (direct-acting) · R (reverse-acting)

Application

Linear actuators particularly suitable for attachment to SAMSON Series 590 Valves

Actuator areas 258, 387, 645 and 1032 cm²

Travel Up to 127 mm

The Type 3276 Pneumatic Actuators are linear diaphragm actuators with an internal compression spring.

Special features

- Powerful thrust and fast response
- Low friction
- Various bench ranges achieved by varying the spring compression
- No special tools required to change the bench range or to reverse the direction of action
- Permissible operating temperatures from -40 to +120 °C
- Signal pressures up to max. 80 psi (5.5 bar)

Versions

Pneumatic linear actuator with 258, 387, 645 or 1032 cm² actuator area

- **Type 3276-D** · The actuator stem of the version D (direct-acting) retracts upon the air supply failure (see Fig. 1). The globe valve on which the actuator is mounted is opened.
- **Type 3276-R** · The actuator stem of the version R (reverse-acting) extends upon the air supply failure (see Fig. 2). The globe valve on which the actuator is mounted is closed.

Further versions

- **Top-mounted handwheel** (see Fig. 3 and Fig. 5)
- **Side-mounted handwheel** (see Fig. 4 and Fig. 6)
- **Travel stop on both sides (mechanical)**
- **Stainless steel version** for low temperatures available on request
- Versions **partially made of stainless steel** for other control media (e.g. water) available on request



Fig. 1: Type 3276-D Pneumatic Actuator · Direct acting (stem retracts)



Fig. 2: Type 3276-R Pneumatic Actuator · Reverse-acting (stem extends)

Principle of operation

The actuator mainly consists of a housing with yoke (1), diaphragm chamber (4), diaphragm (2) with diaphragm plate (3), spring (6) with spring plate (21) as well as actuator stem (7). See Fig. 7.

The signal pressure p_{st} creates the force $F = p_{st} \cdot A$ at the diaphragm surface A , which is opposed by the spring in the actuator. The bench range is determined by the spring and its compression, taking into account the rated travel. The travel is proportional to the signal pressure p_{st} . The direction of action of the actuator stem (fail-safe action) depends on the actuator version.

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

Direction of action

When the signal pressure is reduced or the supply air fails, the actuator version determines the direction of action and, as a result, the fail-safe position of the valve.

- **Actuator stem retracts · Version D:** the spring causes the actuator stem to retract when the diaphragm is relieved of pressure or when the supply air fails.
- **Actuator stem extends · Version R:** the spring causes the actuator stem to extend when the diaphragm is relieved of pressure or when the supply air fails.
- **Version with handwheel:** in the active manual mode (the handwheel is not in the neutral position), the valve is not moved to the fail-safe position even upon failure of the supply air.

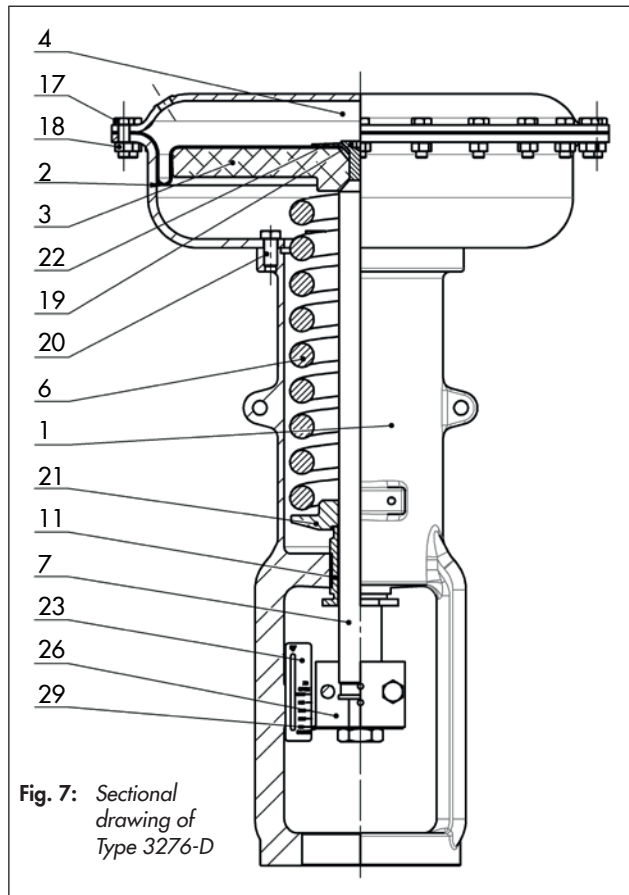


Fig. 7: Sectional drawing of Type 3276-D



Fig. 3: Type 3276-D Actuator with top-mounted handwheel



Fig. 4: Type 3276-D Actuator with side-mounted handwheel



Fig. 5: Type 3276-R Actuator with top-mounted handwheel



Fig. 6: Type 3276-R Actuator with side-mounted handwheel

Legend for Fig. 7

1	Housing with yoke	17	Hex bolt	26	Stem connector clamp
2	Diaphragm	18	Hex nut	29	Travel indicator
3	Diaphragm plate	19	Screw		
4	Diaphragm chamber	20	Screw		
6	Spring	21	Spring plate		
7	Actuator stem	22	Diaphragm holder		
11	Spring adjuster	23	Travel indicator scale		

Table 1: Technical data

Type 3276	Version D	Version R
Maximum permissible signal pressure	80 psi (5.5 bar)	
Actuator area	258 cm ² · 387 cm ² · 645 cm ² · 1032 cm ²	
No. of springs	1	
Permissible temperatures	-40 to +120 °C	

Table 2: Materials

Type 3276	Version D	Version R
Yoke	A352 LCC	
Diaphragm chamber	Carbon steel	
Actuator stem	A105	AISI 304
Seals	-	NBR
Diaphragm	NBR (-40 to +90 °C) · EPDM (-40 to +120 °C)	

Table 3: Maximum effective thrusts in N

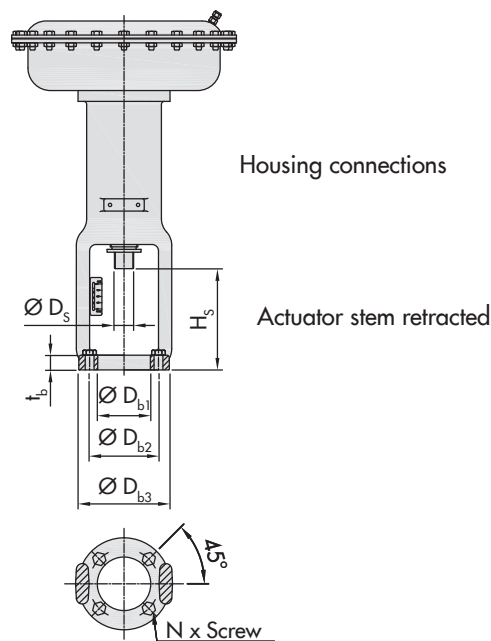
Version	Actuator area (cm ²)	Bench range (bar)	Travel (mm)					
			26	51	75	95	127	
Type 3276-D	258	0.2 to 1	11594 ¹⁾	-	-	-	-	
		0.4 to 2	8918 ¹⁾	-	-	-	-	
	387	0.2 to 1	17390 ¹⁾	-	-	-	-	
		0.4 to 2	13377 ¹⁾	-	-	-	-	
	645	0.2 to 1	31660 ¹⁾	28984 ¹⁾	-	-	-	
		0.4 to 2	27646 ¹⁾	22295 ¹⁾	-	-	-	
	1032	0.2 to 1	0.2 to 1	52082 ¹⁾	49228 ¹⁾	46375 ¹⁾	-	-
			0.4 to 2	47088 ¹⁾	41380 ¹⁾	35673 ¹⁾	-	-
		0.2 to 1	0.2 to 1	53509 ¹⁾	51369 ¹⁾	49942 ¹⁾	48515 ¹⁾	46375 ¹⁾
			0.4 to 2	49228 ¹⁾	45661 ¹⁾	42807 ¹⁾	39953 ¹⁾	35673 ¹⁾
	Type 3276-R	258	0.2 to 1	535	-	-	-	-
			0.4 to 2	1070	-	-	-	-
1.4 to 2.8			3567	-	-	-	-	
387		0.2 to 1	803	-	-	-	-	
		0.4 to 2	1605	-	-	-	-	
		1.4 to 2.8	5351	-	-	-	-	
645		0.2 to 1	4013	1338	-	-	-	
		0.4 to 2	8026	2675	-	-	-	
		1.4 to 2.8	13377	8918	-	-	-	
1032		0.2 to 1	0.2 to 1	7848	4994	2140	-	-
			0.4 to 2	15696	9988	4281	-	-
		1 to 3.1	1 to 3.1	24971	17836	10702	-	-
	0.2 to 1		9275	7135	5708	4281	2140	
	0.4 to 2	0.4 to 2	17836	14269	11415	8561	4281	
		0.9 to 3.5	29965	24971	19977	15696	9275	

¹⁾ With a signal pressure of 80 psi (5.5 bar)

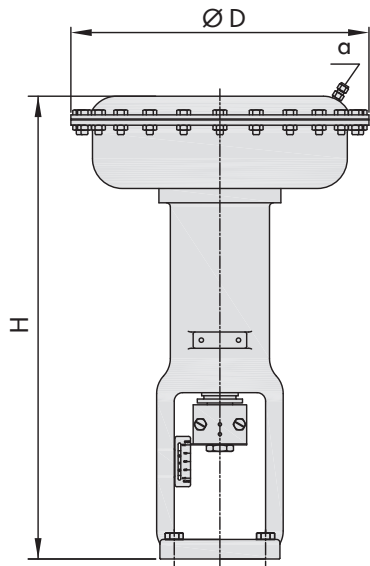
Table 4: Dimensions and weights

Version	Type 3276-D						Type 3276-R							
	320D	330D	350D	350D	380D	390D	320R	330R	350R	350R	380R	390R		
Actuator area [cm ²]	258	387	645		1032		258	387	645		1032			
Travel (mm)	26	26	51		75	127	26	26	51		75	127		
Weight (kg)	Without hand-wheel	19	24	51	56	68	107	23	29	53	57	100	118	
	With hand-wheel (top)	24	29	63	67	84	108	28	33	68	69	111	132	
	With side-mounted handwheel	34	39	87	92	94	133	38	44	89	93	126	144	
Pneumatic connection (NPT)	a (std)	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	
	a2	-	1/2	3/4 · 1/2	3/4 · 1/2	1 · 3/4 · 1/2	1 · 3/4 · 1/2	-	1/2	3/4 · 1/2	3/4 · 1/2	1 · 3/4 · 1/2	1 · 3/4 · 1/2	
Dimensions (mm)	General	∅ D	254	292	384	384	457	457	254	292	384	384	457	457
		H	380	434	705	690	709	864	405	447	691	677	809	931
	Hand-wheel (top)	∅ D _{ht}	250	250	500	500	500	500	250	250	500	500	500	500
		H _{ht}	169	169	388	283	283	402	231	231	389	283	405	569
	Side-mounted hand-wheel	∅ D _{hs}	300	300	500	500	500	500	300	300	500	500	500	500
		H _{hs}	203	203	285	285	285	341	187	187	285	285	341	341
	Actuator stem	∅ D _s	3/4" - 16 UNF	1 1/8" - 12 UNF	1 1/8" - 12 UNF	1 1/8" - 12 UNF	M39x3	M39x3	3/4" - 16 UNF	1 1/8" - 12 UNF	M39x3	M39x3	M39x3	M39x3
		H _s	135	160	190	190	220	280	135	160	190	200	260	280
	Housing connections	t _b	25	18	18	30	30	30	25	18	18	30	30	30
		∅ D _{b1}	75.1	75.1	75.1	107.1	107.1	107.1	75.1	75.1	75.1	107.1	107.1	107.1
		∅ D _{b2}	116	116	116	140	140	140	116	116	116	140	140	140
		∅ D _{b3}	140	140	140	184	184	184	140	140	140	184	184	184
		N	4	4	4	4	4	4	4	4	4	4	4	4
		Screw	M12x35	M12x35	M12x35	M16x60	M16x60	M16x60	M12x35	M12x35	M12x35	M16x60	M16x60	M16x60

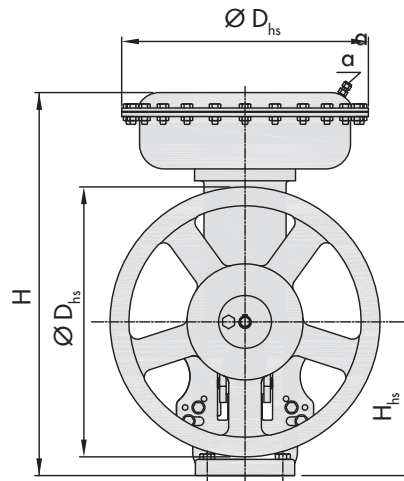
Dimensional drawings



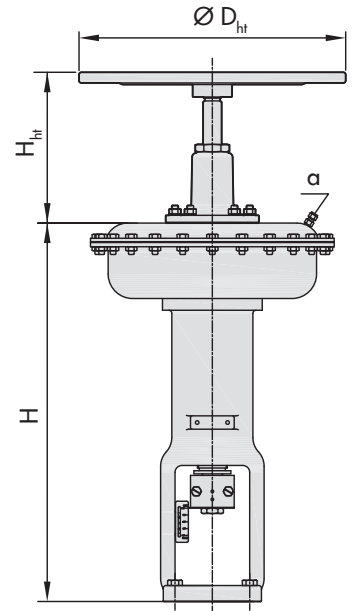
Dimensional drawings



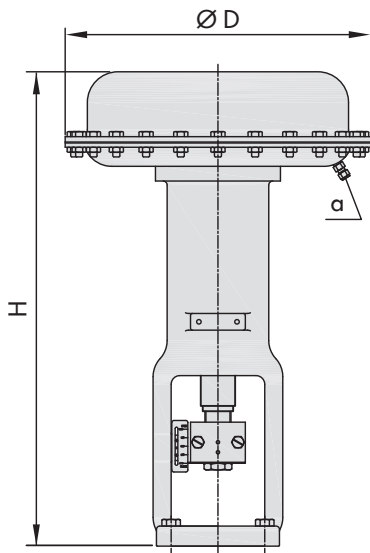
Type 3276-D



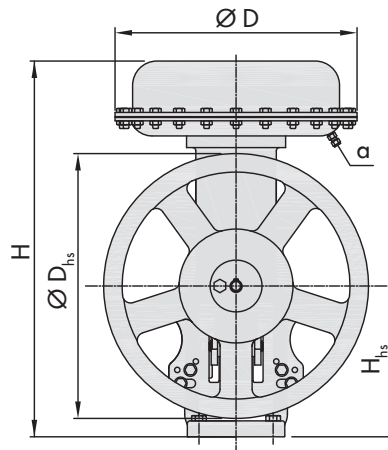
Type 3276-D with side-mounted handwheel



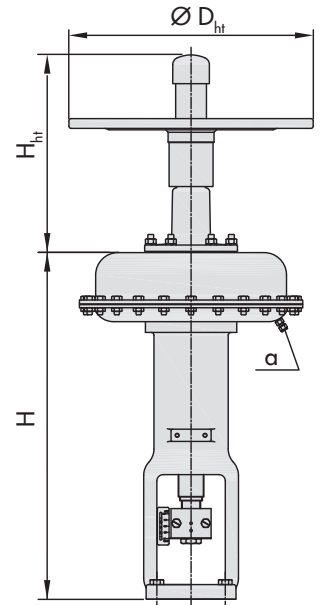
Type 3276-D with top-mounted handwheel



Type 3276-R



Type 3276-R with side-mounted handwheel



Type 3276-R with top-mounted handwheel

Ordering text

Type 3276 Pneumatic Actuator

Version D or R

Handwheel Without/with (top or side)

Actuator area 258, 387, 645 or 1032 cm²

Fail-safe action Actuator stem extends or retracts

Bench range ... bar

Adjusted to ... bar

Optionally, special version

Associated Mounting and Operating Instructions

▶ **EB 8318**