

T 8318 EN**Pneumatic Actuator 3276****Type RV350D/R, Type RV370D/R, Type RV380D/R, Type RV390D/R**

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 RV350D/R, Type RV370D/R, Type RV380D/R and Type RV390D/R 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 RVXXXD** · 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 RVXXXR** · 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

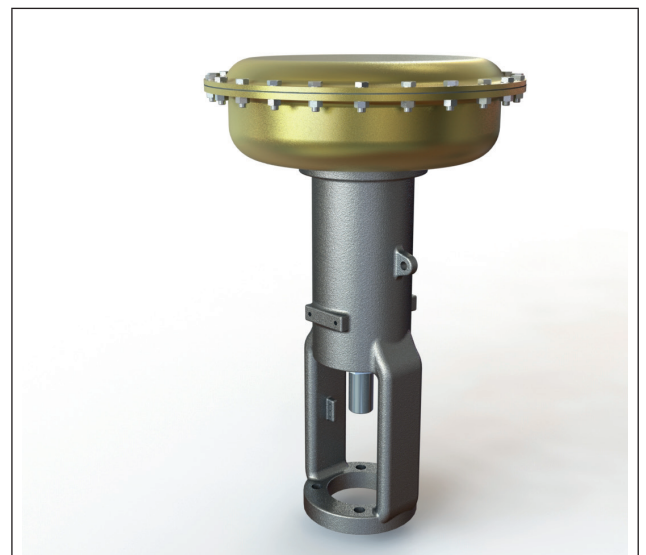


Fig. 1: Type RVXXXD Pneumatic Actuator · Direct acting (stem retracts)

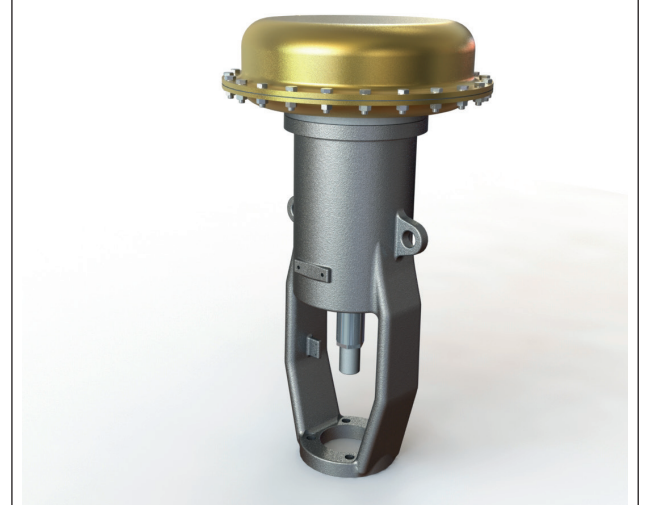


Fig. 2: Type RVXXXR Pneumatic Actuator · Reverse-acting (stem extends)

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 clamp (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.

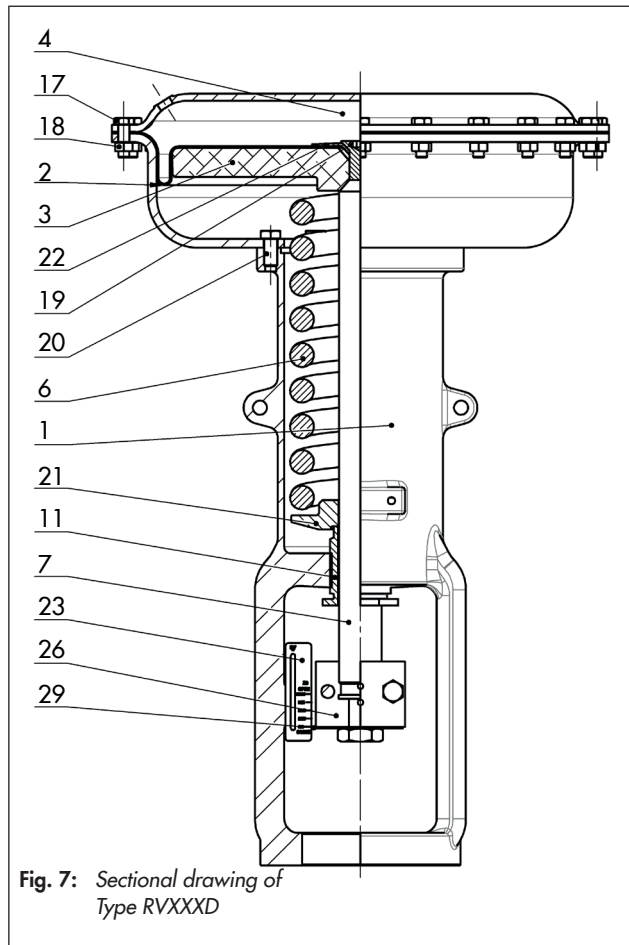


Fig. 7: Sectional drawing of Type RVXXXD



Fig. 3: Type RVXXXD Actuator with top-mounted handwheel



Fig. 4: Type RVXXXD Actuator with side-mounted handwheel

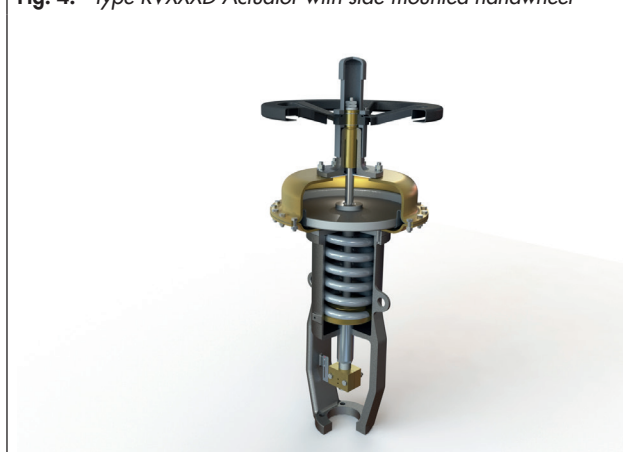


Fig. 5: Type RVXXXR Actuator with top-mounted handwheel



Fig. 6: Type RVXXXR Actuator with side-mounted handwheel

Legend for Fig. 7

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

Table 1: Technical data

Type RV350..., Type RV370..., Type RV380..., Type RV390...	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 ¹⁾	

¹⁾ The temperature range depends on the diaphragm material used (see Table 2)

Table 2: Materials

Type RV350..., Type RV370..., Type RV380..., Type RV390...	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

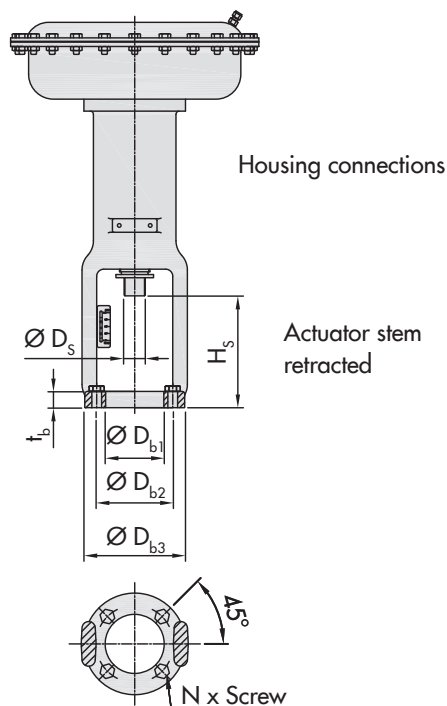
Version	Actuator area (cm ²)	Bench range (bar)	Travel (mm)				
			26	51	75	95	127
Type RVXXXD	258	0.2 to 1	11594 ¹⁾	-	-	-	-
		0.4 to 2	8918 ¹⁾	-	-	-	-
	387	0.2 to 1	17390 ¹⁾	-	-	-	-
		0.4 to 2	13377 ¹⁾	-	-	-	-
	645	0.2 to 1	31660 ¹⁾	28984 ¹⁾	-	-	-
		0.4 to 2	27646 ¹⁾	22295 ¹⁾	-	-	-
	1032	0.2 to 1	52082 ¹⁾	49228 ¹⁾	46375 ¹⁾	-	-
		0.4 to 2	47088 ¹⁾	41380 ¹⁾	35673 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 RVXXXR	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	7848	4994	2140	-	-
		0.4 to 2	15696	9988	4281	-	-
		1 to 3.1	24971	17836	10702	-	-
		0.2 to 1	9275	7135	5708	4281	2140
		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)

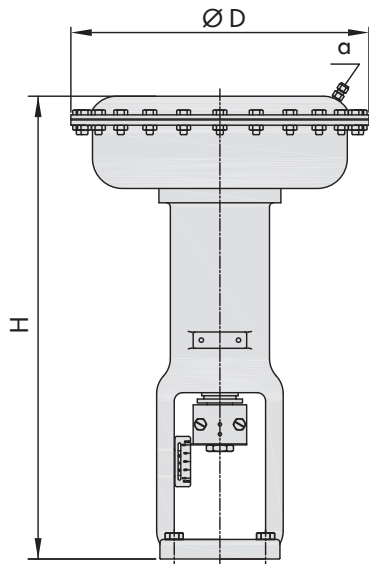
Table 4: Dimensions and weights

Version	Type RV...						Type RV...							
	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	
	Handwheel (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)	¼	¼	¼	¼	¼	¼	¼	¼	¼	¼	¼	¼	
	a2	-	½	¾ · ½	¾ · ½	1 · ¾ · ½	1 · ¾ · ½	-	½	¾ · ½	¾ · ½	1 · ¾ · ½	1 · ¾ · ½	
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
	Handwheel (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 handwheel	∅ 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	¾" - 16 UNF	1 ½" - 12 UNF	1 ½" - 12 UNF	1 ½" - 12 UNF	M39x3	M39x3	¾" - 16 UNF	1 ½" - 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

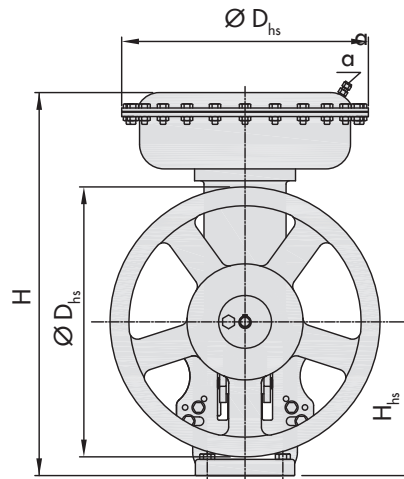
Dimensional drawings



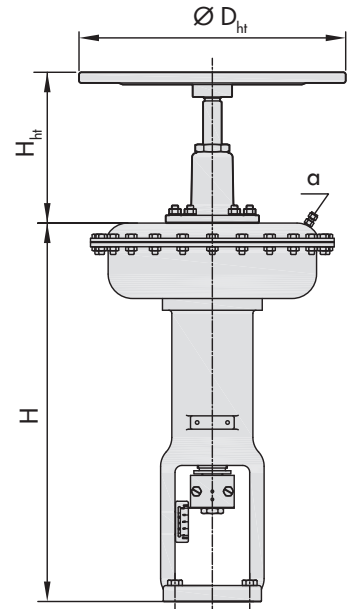
Dimensional drawings



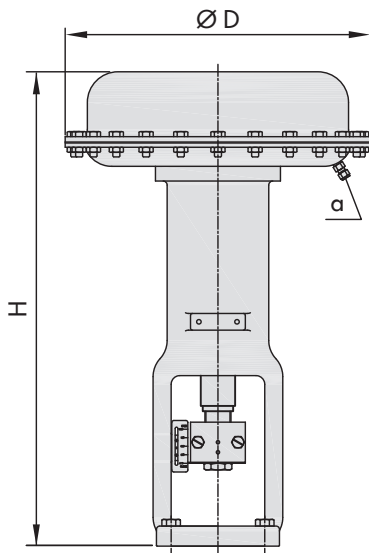
Type RVXXXD



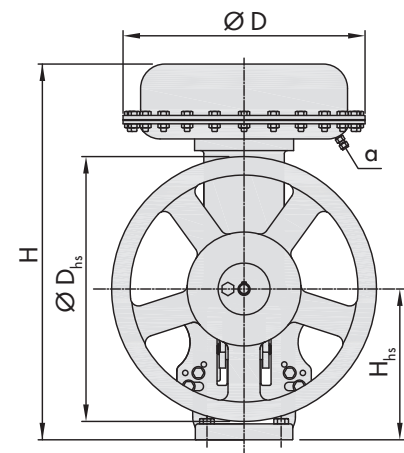
Type RVXXXD with side-mounted handwheel



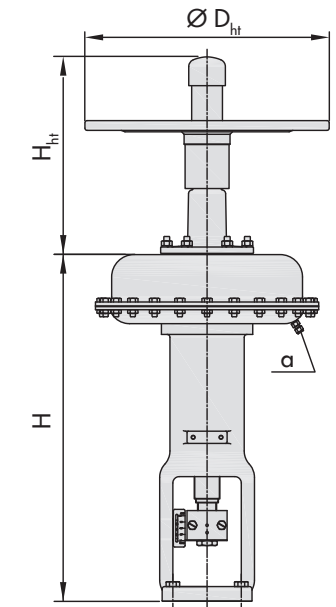
Type RVXXXD with top-mounted handwheel



Type RVXXXR



Type RVXXXR with side-mounted handwheel



Type RVXXXR with top-mounted handwheel

Ordering text

Pneumatic Actuator 3276	Type RV350..., Type RV370..., Type RV380..., Type RV390...
Version	D or R
Handwheel	Without/with (top or side)
Actuator area	258, 387, 645 or 1032 cm ²
Fail-safe action	Actuator stem extends or retracts
Bench range	... bar
Adjusted to	... bar
Accessories	?
Optionally, special version	

Associated Mounting and Operating Instructions

► **EB 8318**