

Pneumatic Control Valve Type 3256-1 and Type 3256-7 Angle Valve Type 3256

ANSI version

Application

Control valve for process engineering applications with high industrial requirements

Valve size NPS ½ to 8
Pressure rating ANSI Class 300 to 2500
Temperatures -200 °C to 500 °C (-325 to 930 °F)



Type 3256 Angle Valve optionally operated with:

- Type 3271 Pneumatic Actuator (Type 3256-1 Control Valve) or
- Type 3277 Pneumatic Actuator (Type 3256-7 Control Valve) for integral positioner attachment.

Valve body optionally made of

- High-temperature carbon steel
- Cold-resisting carbon steel or
- Stainless carbon steel.

Valve plug optionally with

- Metal sealing
- Soft sealing up to Class 300 or
- Lapped-in metal
- Balanced to handle large differential pressures.

Stuffing boxes optionally with

- Spring-loaded PTFE V-ring packings or
- Two adjustable high-temperature (HT) packings, optionally available with a test connection between the two packings.

The control valves, designed according to the modular assembly principle, can be combined with various accessories:

Positioners, solenoid valves and other accessories according to IEC 60534-6 and NAMUR recommendation. See Information Sheet T 8350 EN for details.

Versions

Standard version (Fig. 1) · NPS ½ to 6, ANSI Class 300 to 900, NPS 8 up to Class 600, with PTFE packing for temperatures from -10 to 220 °C (15 to 430 °F) or with adjustable high-temperature packing for -10 to 350 °C (15 to 660 °F).

- **Type 3256-1** (Fig. 1) · With Type 3271 Actuator (effective area 350 to 2800 cm²).
- **Type 3256-7** · With Type 3277 Actuator (350 and 700 cm²) for integral positioner attachment (see Data Sheet T 8310-1 EN).

Additional versions with

- **ANSI Class 1500 and 2500** · On request
- **Valves in NPS 10 and 12** · On request
- **Welding ends or welding neck ends** acc. to ANSI B16.25
- **Flow divider** · For noise level reduction · See T 8081 EN
- **AC-Trim** · See T 8082 EN, T 8083 EN



Fig. 1 · Type 3256-1 Pneumatic Control Valve with Type 3271 Actuator, positioner and solenoid valve

- **Extension bonnet or bellows seal** · See Technical Data
- **Heating jacket** · Details on request
- **Additional handwheel** · See T 8310-1/-2 EN
- **DIN version** · DN 15 to 200, PN 10 to 160 · See Data Sheet T 8065 EN
- **Type 3256-3 Hand-operated Control Valve** · With Type 3273 Manual Actuator for valves with a max. travel of 30 mm · See T 8312 EN
- **Type 3256-2 Electric Control Valve** · On request

Principle of operation (Figs. 2 to 4)

The process medium flows through the valve in the direction indicated by the arrow. The position of the valve plug determines the cross-sectional area of flow between the valve seat and plug.

The version with metal bellows seal (Fig. 3) is equipped with a test connection to allow the monitoring of the stainless steel bellows.

A pressure-balanced plug (Fig. 4) needs to be used when high pressures or differential pressures act on the plug and the force produced by the actuator is insufficient.

The control valves can be equipped with Flow Divider St I or St III (see Data Sheet T 8081 EN for details).

Fail-safe action

Depending on how the compression springs are arranged in the actuator (see Data Sheets T 8310-1 EN and T 8310-2 EN for details), the control valve offers two different fail-safe actions which become effective upon supply air failure.

"Actuator stem extends":

Whenever the air supply fails, the valve is closed (fail-close).

"Actuator stem retracts":

Whenever the air supply fails, the valve is opened (fail-open).

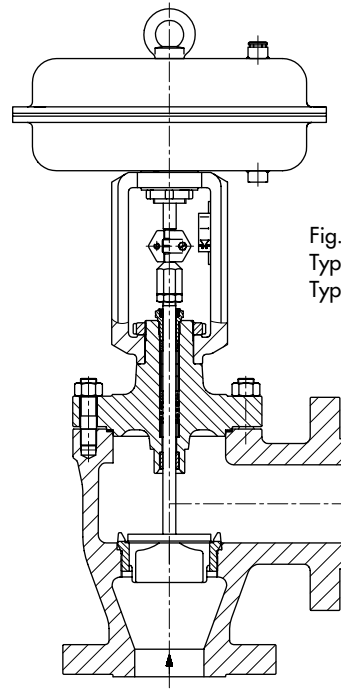


Fig. 2
Type 3256-1 Valve with
Type 3271 Actuator

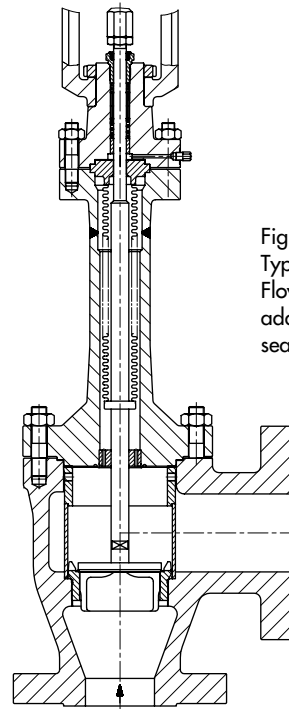


Fig. 3
Type 3256 Valve with
Flow Divider St I and
additional metal bellows
seal with test connection

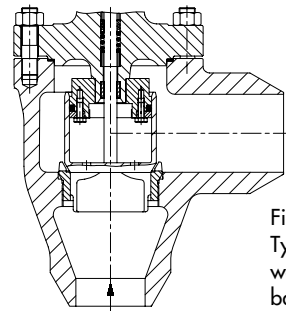


Fig. 4
Type 3256 Valve with
welding ends and
balanced valve plug

Table 1 · Technical Data for Type 3256 Angle Valve

Material		Carbon steel A 216 WCC	Carbon steel A 217 WC6	Stainless carbon steel A 351 CF8M
Valve sizes		NPS ½ ... 6 · NPS 8 up to Class 900		
Pressure rating ¹⁾	Class	150 ... 900		
End connection	Flanges	All ANSI versions		
	Welding ends	According to ANSI B16.25		
Seat/plug sealing		Metal sealing, soft sealing or lapped-in metal sealing		
Characteristic		Equal percentage · Linear		
Rangeability		50 : 1		
Temperature ranges in °C (°F) · Permissible operating pressures acc. to pressure-temperature diagrams (see Information Sheet T 8000-2 EN)				
Valve body without extension bonnet		-10 ... 220 °C (14 ... 428 °F) · Up to 350 °C (660 °F) with high-temperature packing		
Body with	Extension bonnet	-29...427 °C (-20...800 °F)	-29...500 °C (-20...930 °F)	-200...450 °C (-325...842 °F)
	Bellows seal	-29...427 °C (-20...800 °F)	-29...500 °C (-20...930 °F)	-200...450 °C (-325...842 °F)
Valve plug ²⁾	Standard	Metal sealing	-200...500 °C (-325...930 °F)	
		Soft sealing	-200...220 °C (-325...428 °F)	
	Balanced	PTFE ring	-200...220 °C (-325...428 °F)	
		Graphite ring	220...500 °C (428...930 °F)	
Leakage class according to DIN EN 1349: 2000 / ANSI/FCI 70-2-1991				
Valve plug	Standard	Metal sealing	IV	
		Soft sealing	VI	
		Lapped-in metal	IV-S2 · NPS 4 and larger: IV-S1	
Balanced, metal sealing		With PTFE ring: IV · With graphite ring: III		

¹⁾ Up to Class 2500 on request

²⁾ Only when suitable body material is used

Table 2 · Materials (material numbers according to EN)

Standard version Body and flanges ¹⁾		Carbon steel A 216 WCC	Carbon steel A 217 WC6	Stainless carbon steel A 351 CF8M
Seat and plug ²⁾	Metal sealing	1.4006/1.4008		1.4571/1.4581
Seal ring for	Soft sealing	PTFE with 15 % glass fiber		
	Balanced plug	PTFE with carbon · Graphite		
Guide bushings		1.4112		2.4610
Stuffing box packing		V-ring packing of PTFE with carbon, spring of 1.4310 or high-temperature packing		
Body gasket		Metal		
Extension bonnet ³⁾		A 217 WC6/A 182 F12		A 351 CF8M/A 182 F316
Metal bellows seal				
Intermediate piece ³⁾		A 217 WC6/A 182 F12		A 351 CF8M/A 182 F316
Metal bellows		1.4571		
Heating jacket		1.4541		

¹⁾ Also see pressure-temperature diagram (T 8000-2 EN)

Material for cryogenic service: A 352 LCC

²⁾ Also available: seats and plugs with metal sealing also stellite or plugs of solid Stellite

³⁾ Depending on the valve bonnet material

Table 3 · K_{vS} coefficients

Table 3a · Overview with Flow Divider St I (C_v I/K_{vS} I) or St III (C_v III/K_{vS} III)

C _v	0.12 - 0.2 0.3 - 0.5	0.75	1.2	2	3	5	7.5	12	20	30	47	75	120	190	290	420	735	
K _{vS}	0.1 - 0.16 0.25 - 0.4	0.63	1.0	1.6	2.5	4	6.3	10	16	25	40	63	100	160	250	360	630	
C _v I				1.7	2.6	4.2	7	10.5	17	26	42	67	105	170	265	375	650	
K _{vS} I	-			1.45	2.2	3.6	5.7	9	14.5	22	36	57	90	144	225	320	560	
C _v III						3.5	5.6	9	14	23	35	55	90	140	220	315	-	
K _{vS} III	-					3.0	4.8	7.5	12	20	30	47	75	120	190	270	-	
Seat Ø	mm	6		12		24			31	38	50	63	80	100	125	150	200	
Rated travel	mm	15									30				60			
	in	0.5"									1.18"				2.36"			

Table 3b · Versions without flow dividers · Versions in highlighted fields also available with balanced valve plug

C _v		0.12 - 0.2 0.3 - 0.5	0.75	1.2	2	3	5	7.5	12	20	30	47	75	120	190	290	420	735
NPS	DN																	
1/2	15	•	•	•	•	•	•											
1	25	•	•	•	•	•	•	•	•									
1 1/2	40	•	•	•	•	•	•	•	•	•	•							
2	50						•	•	•	•	•	•						
3	80						•	•	•	•	•	•	•	•				
4	100									•	•	•	•	•	•			
6	150											•	•	•	•	•	•	
8	200													•	•	•	•	•

Table 3c · Versions with Flow Divider St I · Versions in highlighted fields also available with balanced valve plug

C _v I		-			1.7	2.6	4.2	7	10.5	17	26	42	67	105	170	265	375	650
NPS	DN																	
1/2	15				•	•	•											
1	25				•	•	•	•	•									
1 1/2	40				•	•	•	•	•	•	•							
2	50						•	•	•	•	•	•						
3	80						•	•	•	•	•	•	•	•				
4	100									•	•	•	•	•	•			
6	150											•	•	•	•	•	•	
8	200													•	•	•	•	•

Table 3d · Versions with Flow Divider St III · Versions in shaded areas also available with balanced valve plug

C _v III		-					3.5	5.6	9	14	23	35	55	90	140	220	315	-
NPS	DN																	
2 *	50 *						•	•	•									
3	80						•	•	•	•	•							
4	100									•	•	•						
6	150											•	•	•	•			
8	200													•	•	•		

* NPS 2 version (DN 50) with Flow Divider St III not possible with bellows seal

Notes on differential pressure tables

The differential pressure tables were prepared under the following conditions:

- Direction of flow: FTO
- Version with valve plug with metal sealing
- Version with PTFE packing
- Tables 4a and 4b for unbalanced valve plug with downstream pressure $p_2 = 0$ bar (psi)
- For the listed maximum differential pressures and the previously mentioned conditions, the leakage rate stated in Table 1 is not exceeded.
- All pressures in bar (gauge) and psi
- The stated differential pressures can be limited by the pressure-temperature diagram (see T 8000-2 EN).

Overview: valve versions of the Δp tables

Tables 4a and 4b: valve with **unbalanced** valve plug without metal bellows seal; fail-safe action "valve CLOSED"

Tables 5a and 5b: valve with **balanced** valve plug with PTFE ring without metal bellows seal; fail-safe action "valve CLOSED" or "valve OPEN"

Tables 6a and 6b: valve with **unbalanced** valve plug without metal bellows seal; fail-safe action "valve OPEN"

Note on fail-safe action "valve CLOSED":

Always use pretensioned spring ranges for actuators with reduced travels.

Note! Permissible differential pressures are available on request for special versions with:

- Soft sealing or
- Lapped-in metal plug,
- Metal bellows seal or
- Balanced valve plug with graphite ring.

Selection and sizing of the control valve

1. Calculate the appropriate K_v coefficient according to IEC 60534.
2. Select the nominal size and K_{vs} coefficient according to Table 3.
3. Determine the permissible differential pressure Δp . Select the suitable actuator according to Tables 4a to 6.
4. Select materials, pressure and temperature according to Tables 1 and 2 and the pressure-temperature diagram (see T 8000-2 EN)
5. Select accessories according to Tables 1 and 2.

Table 4a · Permissible differential pressures Δp for valves with unbalanced plug with metal sealing, without metal bellows seal; fail-safe action "valve CLOSED" · Pressures in bar

Values specified in the fields highlighted in gray correspond to the standard bench range, i.e. applied at rated travel · Values specified in the other fields apply to maximally pretensioned springs · Values in parentheses apply to 50 % travel

Table 4a · Fail-safe action "valve CLOSED" (fail-close)												
Bench range (bar) with actuator (cm ²)	350	0.2...1.0	0.4...1.2	0.4...2.0	0.8...2.4	0.6...3.0	1.2...3.6	1.4...2.3	2.1...3.3	–	–	
	700		0.4...1.2		0.8...2.4		1.2...3.6	1.4...2.3	2.1...3.3	2.35...3.8	2.6...4.3	
	1400	(0.8...1.2)	(1.6...2.4)	(2.4...3.6)	(2.4...3.6)	(1.85...2.3)	(2.7...3.3)	(3.05...3.8)	(3.45...4.3)			
	2800	0.4...1.2	0.8...2.4	1.0...3.0	1.2...3.6	1.0...3.0	1.4...2.7	1.3...2.8	1.7...3.2			
	2x2800	(0.8...1.2)	(1.6...2.4)	(2.0...3.0)	(2.4...3.6)	(2.0...3.0)	(2.05...2.7)	(1.55...2.1)	(2.45...3.2)			
Required supply pressure		Upper spring range value + 0.2 bar										
NPS	C _v	Actuator cm ²	Δp when p ₂ = 0 bar									
1/2 to 1 1/2	0.12 to 1.2	350	46.1	102	102	213	158	325	380	400	–	–
	2 to 3	350	46.1	102	102	213	158	325	380	400	–	–
	5 to 12	350	8.5	22.4	22.4	50.5	36.6	78.1	92.1	141	–	–
700		–	(106)	–	(217)	–	(329)	(252)	(370)	(400)	–	
2	5 to 12	350	7.7	22	22	49.5	35.5	77.3	91.3	140	–	–
		700	–	(105)	–	(217)	–	(328)	(252)	(370)	(400)	–
1 1/2 to 3	20	350	4.1	12.4	12.4	29.1	21	45.8	54.2	83.4	–	–
		700	–	(62.5)	–	(129)	–	(196)	(150)	(221)	(250)	(284)
1 1/2 to 4	30	350	–	7.9	7.9	19	13.4	30.1	35.7	55.1	–	–
		700	–	(41.2)	–	(85.7)	–	(130)	(99.6)	(147)	(166)	(188)
2 to 4	47	700	4.3	10.7	10.7	23.6	17.1	36.4	42.8	65.3	73.3	81.3
		1400	–	(49.2)	–	(100)	–	(126)	–	(129)	–	(155)
3 to 6	75	700	–	6.3	6.3	14.4	10.4	22.5	26.5	40.7	45.7	50.8
		1400	–	(30.6)	–	(62.9)	–	(79.1)	–	(81.1)	–	(97.3)
3 to 6	120	700	–	–	–	8.7	6.2	13.7	16.3	25	28.2	31.3
		1400	–	(18.8)	–	(38.8)	–	(48.8)	–	(50.1)	–	(60.1)
4 to 6	190	700	–	–	–	5.4	–	8.7	10.3	15.9	17.9	19.9
		1400	–	(11.9)	–	(24.7)	–	(31.1)	–	(31.9)	–	(38.3)
8	190	700	–	–	–	5.4	–	8.6	10.2	15.8	17.8	19.8
		1400	–	(11.8)	–	(24.6)	–	(31)	–	(31.8)	–	(38.2)
6	290	1400	–	–	–	7.5	4.4	9.5	10.5	13.6	12.6	16.7
		2800	(15.7)	(32.1)	(40.3)	(48.5)	–	(24.9)	–	(31.1)	–	(37.2)
8	290	1400	–	–	–	7.4	4.3	9.5	10.5	13.6	12.5	16.6
		2800	(15.6)	(32)	(40.3)	(48.5)	–	(24.9)	–	(31)	–	(37.2)
		2x2800	(31.2)	(64)	(80.6)	(97)	–	(49.8)	–	(62)	–	(74.4)
6	420	1400	–	–	–	5.1	–	6.5	7.2	9.4	8.7	11.5
		2800	(10.8)	(22.2)	(27.9)	(33.6)	–	(17.2)	–	(21.5)	–	(25.8)
8	420	1400	–	–	–	5.1	–	6.5	7.2	9.3	8.6	11.5
		2800	(10.7)	(22.2)	(27.9)	(33.6)	–	(17.2)	–	(21.5)	–	(25.7)
		2x2800	(21.4)	(44.4)	(55.8)	(67.2)	–	(34.4)	–	(43)	–	(51.4)
8	735	1400	–	–	–	–	–	–	4	5.2	4.7	6.4
		2800	(6)	(12.4)	(15.6)	(18.8)	–	(9.6)	–	(12)	–	(14.4)
		2x2800	(12)	(24.8)	(31.2)	(37.6)	–	(19.2)	–	(24)	–	(28.8)

Table 4b · Permissible differential pressures Δp for valves with unbalanced plug with metal sealing, without metal bellows seal; fail-safe action "valve CLOSED" · Pressures in psi

Values specified in the fields highlighted in gray correspond to the standard bench range, i.e. applied at rated travel · Values specified in the other fields apply to maximally pretensioned springs · Values in parentheses apply to 50 % travel

Table 4b · Fail-safe action "valve CLOSED" (fail-close)												
Bench range (psi) with actuator (cm ²)	350	3 ... 15	6 ... 18	6 ... 30	12 ... 36	9 ... 45	18 ... 52	20 ... 34	30 ... 48	–	–	
	700		6 ... 18 (12 ... 18)		12 ... 36 (23 ... 36)		18 ... 52 (35 ... 52)	20 ... 34 (27 ... 34)	30 ... 48 (39 ... 48)	35 ... 55 (44 ... 55)	36 ... 6.2 (50 ... 52)	
	1400				7 ... 36	15 ... 45 (30 ... 45)	16 ... 36	20 ... 39 (30 ... 39)	19 ... 41	25 ... 46 (36 ... 46)		
	2800	6 ... 18 (12 ... 18)	12 ... 36 (23 ... 36)	15 ... 45 (30 ... 45)	18 ... 52 (35 ... 52)	15 ... 23	16 ... 26 (18 ... 23)	15 ... 30	18 ... 34 (22 ... 30)	11 ... 36	22 ... 45 (27 ... 36)	
	2x2800											
Required supply pressure			Upper spring range value + 3 psi									
NPS	C _v	Actuator cm ²	Δp when p ₂ = 0 psi									
1/2 to 1 1/2	0.12 to 1.2	350	668	1479	1479	3088	2291	4712	5510	5800	–	–
	2 to 3	350	668	1479	1479	3088	2291	4712	5510	5800	–	–
2	5 to 12	350	123	325	325	732	530	1132	1335	2044	–	–
		700	–	(1537)	–	(3146)	–	(4770)	(3654)	(5365)	(5800)	–
2	5 to 12	350	111	319	319	717	514	1121	1324	2030	–	–
		700	–	(1522)	–	(3146)	–	(4756)	(3654)	(5365)	(5800)	–
1 1/2 to 3	20	350	59	180	180	422	305	664	786	1209	–	–
		700	–	(906)	–	(1870)	–	(2842)	(2175)	(3204)	(3625)	(4118)
1 1/2 to 4	30	350	–	114	114	275	194	436	517	799	–	–
		700	–	(597)	–	(1242)	–	(1885)	(1444)	(2131)	(2407)	(2726)
2 to 4	47	700	62	155	155	342	248	527	620	947	1063	1178
		1400	–	(713)	–	(145)	–	(1827)	–	(1870)	–	(2247)
3 to 6	75	700	–	91	91	209	151	326	384	590	662	736
		1400	–	(443)	–	(912)	–	(1147)	–	(1176)	–	(1411)
3 to 6	120	700	–	–	–	126	90	198	236	362	409	454
		1400	–	(272)	–	(562)	–	(707)	–	(726)	–	(871)
4 to 6	190	700	–	–	–	78	–	126	149	230	259	288
		1400	–	(172)	–	(358)	–	(451)	–	(462)	–	(555)
8	190	700	–	–	–	78	–	124	148	224	258	287
		1400	–	(171)	–	(356)	–	(449)	–	(461)	–	(554)
6	290	1400	–	–	–	108	64	137	152	197	183	242
		2800	(227)	(465)	(584)	(703)	–	(361)	–	(451)	–	(539)
8	290	1400	–	–	–	107	62	137	152	197	181	240
		2800	(226)	(464)	(584)	(703)	–	(361)	–	(449)	–	(539)
		2x2800	(452)	(928)	(1168)	(1406)	–	(722)	–	(899)	–	(1079)
6	420	1400	–	–	–	74	–	94	104	136	126	166
		2800	(156)	(322)	(404)	(487)	–	(249)	–	(312)	–	(374)
8	420	1400	–	–	–	74	–	94	104	135	125	166
		2800	(155)	(322)	(404)	(487)	–	(249)	–	(312)	–	(372)
		2x2800	(310)	(644)	(809)	(974)	–	(499)	–	(623)	–	(745)
8	735	1400	–	–	–	–	–	–	58	75	68	93
		2800	(87)	(180)	(226)	(272)	–	(139)	–	(174)	–	(209)
		2x2800	(174)	(359)	(452)	(545)	–	(278)	–	(348)	–	(417)

Table 5a · Permissible differential pressures Δp for valves with balanced plug with metal sealing and PTFE ring, without metal bellows seal · Pressures in bar

Values specified in the fields highlighted in gray correspond to the standard bench range, i.e. applied at rated travel · Values specified in the other fields apply to maximally pretensioned springs · Values in parentheses apply to 50 % travel

Fail-safe action			"Valve CLOSED" (fail-close)						"Valve OPEN" (fail-open)		
Bench range (bar) with actuator (cm ²)	700	0.4...2.0	0.8...2.4 (1.6...2.4)	–	–	0.6...3.0	1.2...3.6	0.4 ... 2.0 (0.4 ... 1.2)	–	–	–
	1400			–	1.0...3.0 (2.0...3.0)	–	–				
	2800			0.5...2.5	–	0.6...3.0	1.2...3.6 (2.4...3.6)				
	2x2800			–	–	–	–				
Required supply pressure			Upper spring range value + 0.2 bar						2.4	4.0	6.0
NPS	C _v	Actuator cm ²	Δp when p ₂ = 0 bar								
3 4	75	700	57.4	155	–	–	106	252	57.4	400	–
		1400	–	(400)	–	(400)	–	–	(400)	–	–
6	75	700	22.2	62.1	–	–	42.2	102	22.2	182	382
		1400	–	(302)	–	(381)	–	–	(221)	(400)	–
3 4	120	700	48.1	146	–	–	96.8	243	48.1	400	–
		1400	–	(400)	–	(400)	–	–	(400)	–	–
6	120	700	18.4	58.3	–	–	38.4	98.3	18.4	178	378
		1400	–	(298)	–	(378)	–	–	(218)	(400)	–
4	190	700	37.2	135	–	–	85.9	232	37.2	400	–
		1400	–	(400)	–	(400)	–	–	(400)	–	–
6	190	700	13.9	53.8	–	–	33.9	93.8	13.9	174	373
		1400	–	(293)	–	(373)	–	–	(213)	(400)	–
8	190	700	4.6	20.2	–	–	12.4	35.8	4.6	67	145
		1400	–	(114)	–	(145)	–	–	(82.6)	(207)	(363)
6	290	1400	48.3	128	68.2	168	–	–	48.3	368	400
		2800	–	(400)	–	(400)	–	(400)	(400)	–	–
8	290	1400	18	49.2	25.8	64.8	–	–	18	143	299
		2800	–	(236)	–	(298)	–	(361)	(174)	(400)	–
		2x2800	–	(400)	–	(400)	–	(400)	(348)	(400)	–
6	420	1400	42.6	123	62.6	162	–	–	42.7	362	400
		2800	–	(400)	–	(400)	–	(400)	(400)	–	–
8	420	1400	15.8	47	23.6	62.6	–	–	15.3	109	265
		2800	–	(234)	–	(296)	–	(359)	(172)	(400)	–
		2x2800	–	(400)	–	(400)	–	(400)	(344)	(400)	–
8	735	1400	11.4	42.6	19.2	58.2	–	–	11.4	136	292
		2800	–	(230)	–	(292)	–	(354)	(167)	(400)	–
		2x2800	–	(400)	–	(400)	–	(400)	(334)	(400)	–

Table 5b · Permissible differential pressures Δp for valves with balanced plug with metal sealing and PTFE ring, without metal bellows seal · Pressures in psi

Values specified in the fields highlighted in gray correspond to the standard bench range, i.e. applied at rated travel · Values specified in the other fields apply to maximally pretensioned springs · Values in parentheses apply to 50 % travel

Fail-safe action			"Valve CLOSED" (fail-close)						"Valve OPEN" (fail-open)		
Bench range (psi) with actuator (cm ²)	700	6...30	12...36 (23...36)	–	–	9...45	18...52	6 ... 30 (6 ... 18)			
	1400			7...36	15...44 (30...44)	–	–				
	2800			–	–	9...45	18...52 (36...52)				
	2x2800			–	–	–	–				
Required supply pressure			Upper spring range value + 3 psi						36	60	90
NPS	C _v	Actuator cm ²	Δp when p ₂ = 0 psi								
3 4	75	700	832	2247	–	–	1537	3654	832	5800	–
		1400	–	(5800)	–	(5800)	–	–	(5800)	–	–
6	75	700	322	900	–	–	615	1479	322	2639	5539
		1400	–	(4379)	–	(5524)	–	–	(3204)	(5800)	–
3 4	120	700	697	2117	–	–	1403	2523	697	5800	–
		1400	–	(5800)	–	(5800)	–	–	(5800)	–	–
6	120	700	267	845	–	–	557	1425	267	2581	5481
		1400	–	(4321)	–	(5481)	–	–	(3161)	(5800)	–
4	190	700	539	1957	–	–	1245	3364	539	5800	–
		1400	–	(5800)	–	(5800)	–	–	(5800)	–	–
6	190	700	201	780	–	–	491	1360	201	2523	5408
		1400	–	(4248)	–	(5409)	–	–	(3088)	(5800)	–
8	190	700	66	293	–	–	179	519	66	971	2102
		1400	–	(1653)	–	(2102)	–	–	(1197)	(3001)	(5263)
6	290	1400	700	1856	989	2436	–	–	700	5336	5800
		2800	–	(5800)	–	(5800)	–	(5800)	(5800)	–	–
8	290	1400	261	713	374	939	–	–	261	2073	4335
		2800	–	(3422)	–	(4321)	–	(5234)	(2523)	(5800)	–
		2x2800	–	(5800)	–	(5800)	–	(5800)	(5046)	(5800)	–
6	420	1400	617	1783	907	2349	–	–	619	5249	5800
		2800	–	(5800)	–	(5800)	–	(5800)	(5800)	–	–
8	420	1400	229	681	342	907	–	–	221	1580	3842
		2800	–	(3393)	–	(4292)	–	(5205)	(2494)	(5800)	–
		2x2800	–	(5800)	–	(5800)	–	(5800)	(4988)	(5800)	–
8	735	1400	165	617	278	844	–	–	165	1972	4234
		2800	–	(3335)	–	(4234)	–	(5133)	(2421)	(5800)	–
		2x2800	–	(5800)	–	(5800)	–	(5800)	(4843)	(5800)	–

Table 6 · Permissible differential pressures Δp for valves with unbalanced plug with metal sealing, without metal bellows seal · Fail-safe action "valve OPEN"

			Table 6a · Pressures in bar				Table 6b · Pressures in psi			
Bench range (bar/psi) with actuator (cm ²)			0.2 ... 1.0 (0.2 ... 0.6)				3 ... 15 (3 ... 9)			
Required supply pressure			1.4	2.4	4.0	6.0	20	36	60	90
NPS	C _v	Actuator cm ²	Δp when p ₂ = 0 bar				Δp when p ₂ = 0 psi			
1/2 to 1 1/2	0.12 to 1.2	350	102	380	400	–	1479	5510	5800	–
	2 to 3	350	101	380	400	–	1464	5510	5800	–
	5 to 12	350	22.4	92.1	203	343	325	1335	2943	4973
700		(106)	(245)	(400)	–	(1537)	(3552)	(5800)	–	
2	12	350	21.6	91.3	203	342	313	1324	2943	4959
		700	(105)	(244)	(400)	–	(1522)	(3538)	(5800)	–
1 1/2 to 3	20	350	12.4	54.2	121	204	180	786	1754	2958
		700	(62.5)	(146)	(280)	(400)	(906)	(2117)	(4060)	(5800)
1 1/2 to 4	30	350	7.9	35.7	80.1	136	114	517	1161	1972
		700	(41)	(97)	(185)	(297)	594	2682	2682	4306
2 to 4	47	700	10.6	42.7	94.1	158	153	619	1364	2291
		1400	(49)	(113)	(216)	(344)	(710)	(1638)	(3123)	4988
3 to 6	75	700	6.2	26.4	58.7	99.2	90	383	851	1438
		1400	(30.4)	(71)	(135)	(216)	(441)	(1023)	(1957)	(3132)
3 to 6	120	700	–	16.2	36.2	61.3	–	235	525	889
		1400	(18.7)	(43.7)	(84)	(134)	(271)	(633)	(1218)	(1943)
4 to 6	190	700	–	10.2	23	39.1	–	148	333	567
		1400	(11.8)	(27.8)	(53.5)	(85)	(171)	(403)	(775)	(1232)
8	190	700	–	10.0	22.9	38.9	–	145	332	564
		1400	(11.6)	(27.7)	(53.3)	(85)	(168)	(401)	(773)	(1232)
6	290	1400	–	13.6	30	50.6	–	197	435	731
		2800	(15.6)	(36.2)	(69)	(110)	(226)	(525)	(1000)	(1595)
8	290	1400	–	13.5	29.9	50.4	–	195	433	731
		2800	(15.5)	(36.1)	(69)	(110)	(224)	(523)	(1000)	(1595)
		2x2800	(31)	(72)	(138)	(220)	(449)	(1044)	(2001)	(3190)
6	420	1400	–	9.4	20.8	35	–	136	301	507
		2800	(10.8)	(25)	(47.8)	(76.4)	(156)	(362)	(693)	(1108)
8	420	1400	–	9.3	20.7	34.9	–	135	300	506
		2800	(10.7)	(25)	(47.8)	(76.3)	(156)	(362)	(693)	(1108)
		2x2800	(21.4)	(50)	(95.6)	(152)	(310)	(725)	(1386)	(2204)
8	735	1400	–	5.1	11.5	19.5	–	74	166	282
		2800	(5.9)	(13.9)	(26.8)	(42.8)	(85)	(201)	(388)	(620)
		2x2800	(11.8)	(27.8)	(53.6)	(85.6)	(171)	(403)	(777)	(1241)

Table 7 · Dimensions in mm for Type 3256-1 and Type 3256-7 Control Valve in standard version

Valve	NPS	1/2	1	1 1/2	2	3	4	6	8		
Length L	Class 150	mm	92	92	111	127	149	176	225	271	
		in	3.6	3.6	4.37	5	5.86	6.93	8.86	10.67	
	Class 300	mm	95	98	117	133	159	184	236	284	
		in	3.75	3.86	4.6	5.23	6.26	7.24	9.29	11.18	
	Class 600	mm	101	105	125	143	168	197	254	304	
		in	3.97	4.13	4.92	5.63	6.6	7.75	10	11.97	
	Class 900	mm	108	127	152	184	190	228	305	369	
		in	4.25	5	5.98	7.24	7.48	8.97	12	14.53	
H1 for actuator	350 cm ²	Cl 150/600	mm	374	369	369	415	400	410	-	
			in	14.72	14.52	14.52	16.34	15.75	16.14		
		Class 900	mm	415	410	410	461	400	410	-	
			in	16.34	16.14	16.14	18.15	15.75	16.14		
	700 cm ²	Cl 150/600	mm	374	369	369	415	400	410	628	On request
			in	14.72	14.52	14.52	16.34	15.75	16.14	24.72	
		Class 900	mm	415	410	410	461	400	410	628	
			in	16.34	16.14	16.14	18.15	15.75	16.14	24.72	
	1400 cm ²	Cl 150/600	mm	-			470	455	465	628	
			in	-			18.5	17.9	18.3	24.72	
		Class 900	mm	-			516	455	465	628	
			in	-			20.3	17.9	18.3	24.72	
	2800 cm ²	Cl 150/600	mm	-				650	713	-	
			in	-				25.6	28.1		
		Class 900	mm	-				650	713		
			in	-				25.6	28.1		

Actuator	cm ²	350	700	1400	2800	2 x 2800
Diaphragm Ø	mm	280	390	530	770	
	in	11.02	15.35	20.86	30.3	
H ¹⁾	mm	82	200	287	620	1130
	in	3.23	7.87	11.3	24.41	44.49
H3 ²⁾	mm	110	190	610	650	
	in	4.33	7.48	24	25.6	
Thread		M 30 x 1.5		M 60 x 1.5	M 100 x 2	
α (with Type 3271 Actuator)		G 3/8 (3/8 NPT)		G 3/4 (3/4 NPT)	G 1 (1 NPT)	
α2 (with Type 3277 Actuator)		G 3/8 (3/8 NPT)		-		

¹⁾ Actuator 350 cm² without lifting ring

²⁾ Minimum clearance to disassemble the actuator

Table 8 · Weights for Type 3256-1 and Type 3256-7 Control Valve in standard version

Valve		NPS	1/2	1	1 1/2	2	3	4	6	8
Valve without actuator (approx.)	Class 150/300	kg	12	On request		35	58	75	190	On request
		lbs	26			77	128	165	419	
	Class 600	kg	On request			58	92	On request		
		lbs				128	203			
	Class 900	kg	On request	38	57	91	110			
		lbs		84	126	200	242			

Actuator		cm ²	350	700	1400	2800	2 x 2800	
Type 3271 (approx. kg) ¹⁾	Without -	kg	8	22	70	450	950	
		lbs	17.6	48.5	154.5	992	2095	
	With handwheel	kg	13	27	Only with side-mounted handwheel, see T 8310-2 EN			
		lbs	28.7	59.5				
Type 3277 (approx. kg) ¹⁾	Without -	kg	12	26	-			
		lbs	26.5	57.6				
	With handwheel	kg	17	31				
		lbs	37.5	68.5				

¹⁾ Top row without handwheel, bottom row with handwheel

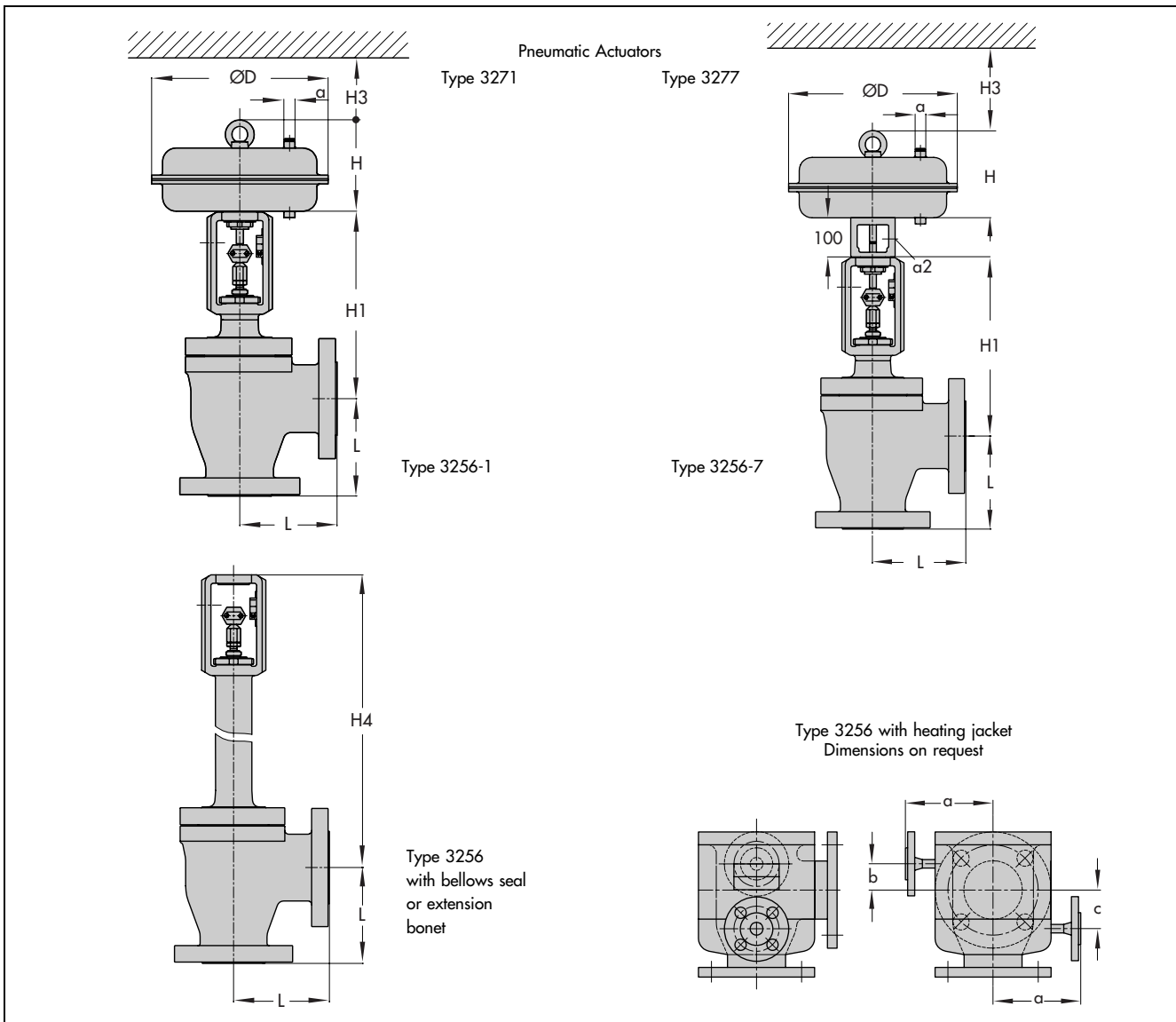


Table 9 · Dimensions and weights for Type 3256 Angle Valve in standard version with extension bonnet · Without actuator

Valve		NPS	½	1	1½	2	3	4	6	8	
Class 150 ... 600	350 cm ²	mm	575	570	571	685	670	680	-	On request	
		in	22.63	22.44	22.48	26.97	26.37	26.77			
	700 cm ²	mm	575	570	571	685	670	680	-		
		in	22.63	22.44	22.48	26.97	26.37	26.77			
	H4 for actuator	1400 cm ²	mm	-			740	725	735		978
			in	-			29.13	28.54	28.93		38.5
2800 cm ²	mm	-						920	1063		
	in	-						36.22	41.85		
Class 900	350 cm ²	mm	606	606	606	727	670	680	-		
		in	23.85	23.85	23.85	28.62	26.37	26.77			
	700 cm ²	mm	606	606	606	727	670	680	978		
		in	23.85	23.85	23.85	28.62	26.37	26.77	38.5		
	H4 for actuator	1400 cm ²	mm	-			782	725	735	978	
			in	-			30.78	28.54	28.93	38.5	
2800 cm ²	mm	-						920	1063		
	in	-						36.22	41.85		
Weight without actuator for	Class 150/300	kg	20	On request		43	66	94	210		
		lbs	44	On request		95	146	207	463		
	Class 600	kg	On request	On request		66	100	On request			
		lbs		On request		146	220				
	Class 900	kg	On request	46	65	99	120	On request			
		lbs		101	143	218	264				

Table 10 · Dimensions and weights for Type 3256 Angle Valve in standard version with bellows seal · Without actuator

Valve		NPS	½	1	1½	2	3	4	6	8	
Class 150	350 cm ²	mm	572	567	568	794	779	769	-		
		in	22.52	22.32	22.36	31.26	30.67	30.27			
	700 cm ²	mm	572	567	568	794	779	769	1036	On request	
		in	22.52	22.32	22.36	31.26	30.67	30.27	40.78		
	H4 for actuator	1400 cm ²	mm	-			849	841	824		1036
			in	-			33.42	33.1	32.44		40.78
2800 cm ²	mm	-						1009	1121		
	in	-						39.72	44.13		
Class 300/600	350 cm ²	mm	572	567	568	794	779	769	-		
		in	22.52	22.32	22.36	31.26	30.67	30.27			
	700 cm ²	mm	572	567	568	794	779	769	1168	1445	
		in	22.52	22.32	22.36	31.26	30.67	30.27	45.98	56.89	
	H4 for actuator	1400 cm ²	mm	-			849	841	824	1168	1445
			in	-			33.42	33.1	32.44	45.98	56.89
2800 cm ²	mm	-						1009	1253	1530	
	in	-						39.72	49.33	60.24	
Class 900	350 cm ²	mm	845	845	On request		779	769	-		
		in	33.26	33.26	On request		30.67	30.27			
	700 cm ²	mm	845	845	On request		779	769	1168	On request	
		in	33.26	33.26	On request		30.67	30.27	45.98		
	H4 for actuator	1400 cm ²	mm	-			On request	834	824		1068
			in	-			On request	32.83	32.44		45.98
2800 cm ²	mm	-						1009	1253		
	in	-						39.72	49.33		
Weight without actuator for	Class 150/300	kg	20	On request		43	66	94	210		
		lbs	44	On request		95	146	207	463		
	Class 600	kg	On request	On request		66	100	On request			
		lbs		On request		146	220				
	Class 900	kg	On request	46	65	99	120	On request			
		lbs		101	143	218	264				

The following details are required on ordering

Nominal size	NPS
Nominal pressure	ANSI Class ...
Body material	According to Table 2
Connection	Flanges/welding ends
Plug	Standard/balanced Soft sealing, metal sealing or lapped-in metal
Characteristic	Equal percentage or linear
Actuator	Type 3271 or Type 3277 (see T 8310-1 EN or T 8310-2 EN)
Fail-safe action	Valve CLOSED or valve OPEN
Process medium	Density in lb/cu.ft or kg/m ³ and temperature in °C (°F)
Flow rate	lbs/h or kg/h or cu.ft/min or m ³ /h in standard or operating conditions
Pressure	p ₁ and p ₂ in bar (psi) (absolute pressure p _{abs}) with minimum, standard and maximum flow rate
Accessories	Positioner and/or limit switches

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
Internet: <http://www.samson.de>

T 8066 EN