

Pneumatic Control Valve Type 3246-1 and Type 3246-7



Globe Valve Type 3246

ANSI Class 600 with long insulating section and circulation inhibitor
ANSI version

Application

Globe valve for cryogenic applications

Nominal size NPS ½ to 8

Pressure rating ANSI Class 600

Temperatures -200 to 220 °C · -328 to 428 °F



Type 3246 Globe Valve with

- Type 3271 Pneumatic Actuator (Type 3246-1 Control Valve) or
- Type 3277 Pneumatic Actuator (Type 3246-7 Control Valve)

Valve body made of:

- Stainless carbon steel

Low-noise valve plug with:

- Metal sealing or
- Lapped-in metal

The modular design of the control valves allows them to be equipped 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.

Version

Standard version with double PTFE packing for temperatures ranging from -200 to 220 °C (-328 to 428 °F) with long insulating section and circulation inhibitor, nominal size NPS ½ to 8, ANSI Class 600, with flanges with Raised Face or welding ends

- **Type 3246-1** (Fig. 1) · With Type 3271 Actuator with 350 to 2800 cm² effective diaphragm area (refer to T 8310-1 EN and T 8310-2 EN)
- **Type 3246-7** · With Type 3277 Actuator with 350 to 700 cm² effective diaphragm area (refer to T 8310-1 EN)

Other versions

- **Type 3246-1/-7 Globe Valve** · With long insulating section and circulation inhibitor, NPS ½ to 10, ANSI Class 150 and 300 · Refer to Data Sheet T 8046-1 EN
- **Type 3246-1/-7 Three-way Valve** · With long insulating section and circulation inhibitor, NPS ½ to 6, ANSI Class 150 and 300 · Refer to Data Sheet T 8046-3 EN

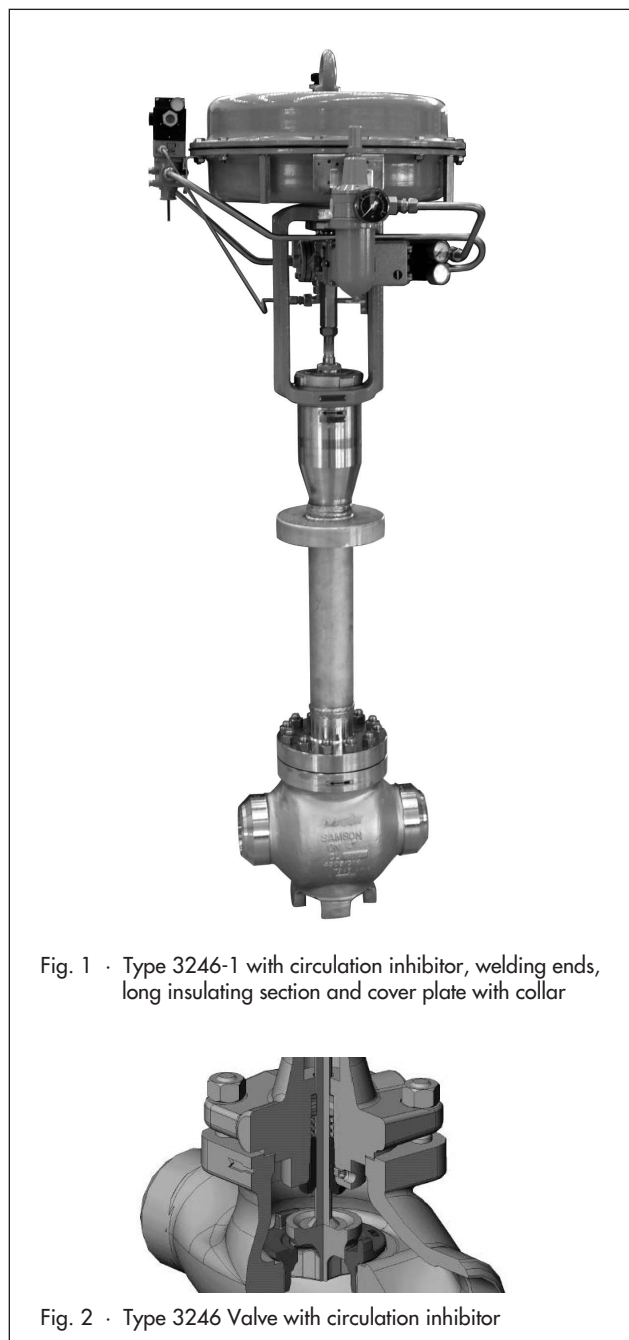


Fig. 1 · Type 3246-1 with circulation inhibitor, welding ends, long insulating section and cover plate with collar

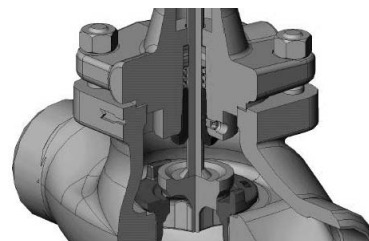


Fig. 2 · Type 3246 Valve with circulation inhibitor

Principle of operation

The process medium flows through the valve in the flow-to-open direction. The position of the valve plug determines the cross-sectional area of flow between the seat and plug. The circulation inhibitor at the bottom minimizes the effects of the medium flow in the insulating section.

Fail-safe positions

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 has two different fail-safe positions which become effective upon supply air failure:

Actuator stem extends (FA)

The actuator springs close the valve when the supply air fails.

Actuator stem retracts (FE)

The actuator springs open the valve when the supply air fails.

Servicing instructions · For trained personnel only

Installation in the pipeline

It is not necessary to remove the insulating section to weld the body in the pipeline.

Please note that the temperature at the point of connection from the valve body to the insulating section should not exceed 220 °C.

Lubricant

- Apply lubricant (order no. 8150-0116) to the plug stem, seat and plug.
- Prior to assembling the valve, apply lubricant (order no. 8150-0116) to the thread of the valve bonnet, yoke, stem connector nut and stem connector.

Packing at the top

The packing only needs to be serviced or replaced when leakage occurs.

Prior to installation, apply lubricant (8150-0116) to the plug stem.

Double packing (Fig. 3) with spring, self-adjusting
Apply lubricant (order no. 8150-0116) to all parts.
Tighten threaded bushing on assembly.

Insulating section (Fig. 4)

To perform maintenance work on the seat or plug, remove the complete insulating section.

Circulation inhibitor (Fig. 5)

A spring-loaded circulation inhibitor is used in place of a bottom metal guided bushing.

Prior to removing or assembling the plug, unscrew the hex socket headless screw at the side. The threaded bushing of the circulation inhibitor can only be removed after the headless screw has first been unscrewed.

On replacing the seals at the circulation inhibitor, insert the spring between the seals and threaded bushing.

Mounting and Operating Instructions

Refer to EB 8015 EN for more instructions on how to mount the actuator, installation, operation and maintenance (Type 3241 Globe Valve).

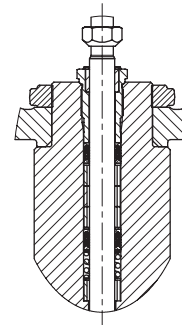


Fig. 3 · Double packing

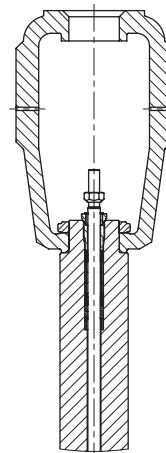


Fig. 4 · Yoke on the intermediate piece of the insulating section

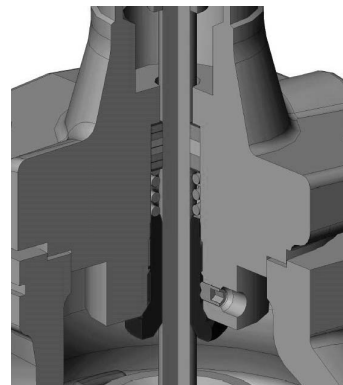


Fig. 5 · Circulation inhibitor and hex socket headless screw

Table 1 · Technical data for Type 3246 with circulation inhibitor

Material	Stainless carbon steel A 351 CF8	
Nominal size	NPS ½ ... 8	
Pressure rating	ANSI Class 600	
End connections	ANSI flanges with Raised Face · Welding ends	
Seat-plug sealing	Metal sealing · Lapped-in metal · Stellite facing	
Characteristic	Equal percentage · Linear · Quick opening	
Rangeability	50 : 1	
Temperature ranges in °C (°F) · Permissible operating pressures according to pressure-temperature diagrams (see Information Sheet T 8000-2 EN)		
Valve with	PTFE packing	-200 ... 220 °C (-328 ... 428 °F)
Leakage class according to EN 1349		
Valve plug	Metal sealing	IV
	Lapped-in metal	IV-S2 · IV-S1: NPS 4 and larger

Table 2 · Materials

Standard version Body and flanges	Stainless carbon steel A 351 CF8	
Seat and plug ¹⁾	Metal sealing	CrNi
Guided bushings	CrNi	
Packing	Self-adjusting	PTFE-carbon V-ring packing, spring 1.4310
Circulation inhibitor	NPS ½ to 6	PTFE-silk cord, spring-loaded, bushing 2.4360 (Monel)
	NPS 8	PTFE-silk cord, spring-loaded, bushing 2.0402 (CuZn40Pb2)
Body gasket	Kammprofile with graphite layer	
Insulating section	A351 CF8 / F304	

¹⁾ Seats and metal-seated plugs are also available with stellite facing or plug made of solid Stellite.

Table 3 · K_{vs} and C_v coefficients
Table 3a · Overview

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	4.0	6.3	10	16	25	40	63	100	160	250	360	630	
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

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																			
½	15	•	•	•	•	•	•	•	•	•										
¾	20	•	•	•	•	•	•	•	•	•										
1	25	•	•	•	•	•	•	•	•	•	•									
1½	40	•	•	•	•	•	•	•	•	•	•	•								
2	50								•	•	•	•	•							
3	80								•	•	•	•	•	•	•					
4	100												•	•	•	•	•			
6	150														•	•	•	•	•	
8	200																•	•	•	•

Table 4a · Permissible differential pressures Δp , fail-safe position "Valve CLOSED" · Pressures in bar

Bench ranges specified in shaded columns apply to standard cases, i.e. application at rated travel · Differential pressures specified in white columns apply to maximum pretensioned springs · Differential pressures in parentheses apply to half travel.

Fail-safe position "Valve CLOSED" (FA)												
Bench range (bar) for actuators (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...1.2)		0.8...2.4 (1.6...2.4)		1.2...3.6 (2.4...3.6)	1.4...2.3 (1.85...2.3)	2.1...3.3 (2.7...3.3)	2.35...3.8 (3.05...3.8)	2.6...4.3 (3.45...4.3)	
	1400		0.4...1.2 (0.8...1.2)		0.8...2.4 (1.6...2.4)		1.0...3.0 (2.0...3.0)	1.0...3.0 (2.0...3.0)	1.1...2.4	1.4...2.7 (2.05...2.7)	1.3...2.8	1.7...3.2 (2.45...3.2)
	2800		0.4...1.2 (0.8...1.2)		0.8...2.4 (1.6...2.4)		1.0...3.0 (2.0...3.0)	1.2...3.6 (2.4...3.6)	0.9...1.6	1.1...1.8 (1.25...1.6)	1.0...2.1	1.25...2.35 (1.55...2.1)
Required supply pressure			Upper spring range value + 0.2 bar									
NPS	C _v	Actuator cm ²	Δp when p ₂ = 0 bar									
½ to 1½	0.12 to 3	350	46.1	100	–	–	–	–	–	–	–	–
		5 to 12	350	8.7	22.4	22.4	50.5	36.6	78.4	92.3	–	–
2												
1½ to 3	20	350	4.3	12.7	12.7	29.4	21	45.1	54.4	83.6	–	–
1½ to 4	30	350	–	8.1	8.1	19.2	13.6	30.3	35.8	55.3	–	–
		700	–	(41.4)	–	(85.8)	–	–	99.7	–	–	–
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)	–	–	–	–	–	–
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)
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)
	735	1400	–	–	–	–	–	–	4	5.2	4.7	6.4
		2800	(6)	(12.4)	(15.6)	(18.8)	–	(9.6)	–	(12)	–	(14.4)

Table 4b · Permissible differential pressures Δp , fail-safe position “Valve CLOSED” · Pressures in psi

Bench ranges specified in shaded columns apply to standard cases, i.e. application at rated travel · Differential pressures specified in white columns apply to maximum pretensioned springs · Differential pressures in parentheses apply to half travel.

Fail-safe position “Valve CLOSED”(FA)												
Bench range (psi) for actuators (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...62 (50...62)	
	1400		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)	13...23	16...26 (18...23)	15...30	18...34 (22...30)	17...36	22...45 (27...36)	
Required supply pressure		Upper spring range value + 3 psi										
NPS	C _v	Actuator cm ²	Δp when p ₂ = 0 psi									
½ to 1½	0,12 to 3	350	668	1479	–	–	–	–	–	–	–	–
			5 to 12	350	126	325	325	732	530	1137	1338	–
2	20	350	62	184	184	426	304	654	789	1212	–	–
1½ to 4	30	350	–	117	117	278	197	439	519	801	–	–
		700	–	(600)	–	(1244)	–	–	(1445)	–	–	–
2 to 4	47	700	62	155	155	342	248	527	620	947	1063	1178
		1400	–	(713)	–	(145)	–	–	–	–	–	–
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)
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)
	735	1400	–	–	–	–	–	–	58	75	68	93
		2800	(87)	(180)	(226)	(272)	–	(139)	–	(174)	–	(209)

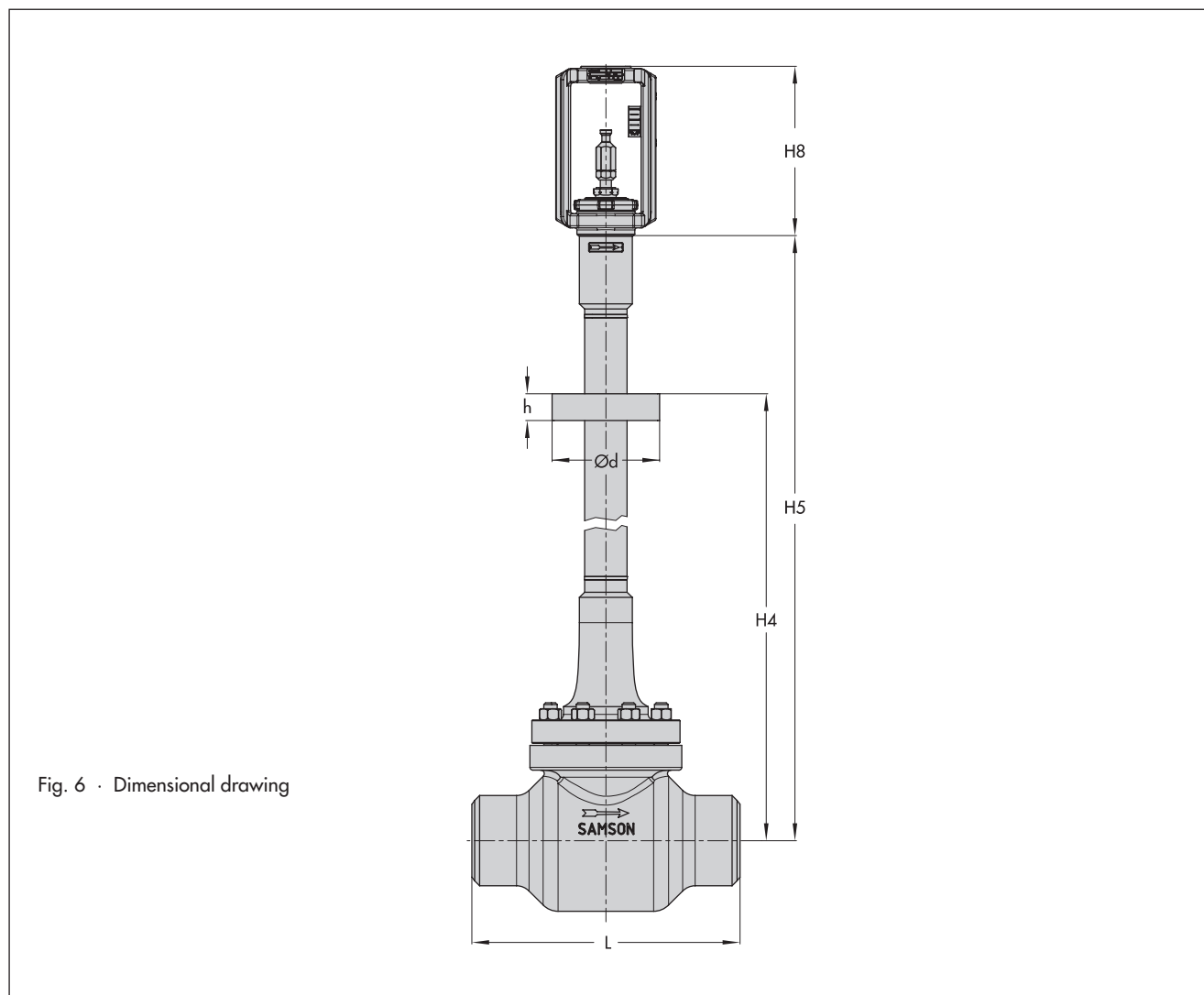
Table 5 · Permissible differential pressures · Fail-safe position "Valve OPEN"

			Table 5a · Pressures in bar				Table 5b · Pressures in psi			
Bench range in (bar/psi) for actuators (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			
½ to 1½	0.12 to 3	350	100	-	-	-	1450	-	-	-
		700	22.4	92.1	-	-	325	1335	-	-
2	5 to 12	350	21.6	91.3	-	-	313	1324	-	-
		700	(100)	-	-	-	(1450)	-	-	-
1½ to 3	20	350	12.4	54.2	-	-	180	786	-	-
		700	(62.5)	-	-	-	(906)	-	-	-
1½ to 4	30	350	7.9	35.7	80.1	-	114	517	1161	-
		700	(41)	(97)	-	-	(594)	(1407)	-	-
2 to 4	47	700	10.6	42.7	94.1	-	153	619	1364	-
		1400	(49)	-	-	-	(710)	-	-	-
3 to 6	75	700	6.2	26.4	58.7	99.2	90	383	851	1438
		1400	(30.4)	(71)	-	-	(441)	(1029)	-	-
3 to 6	120	700	-	16.2	36.2	61.3	-	235	525	889
		1400	(18.7)	(43.7)	(84)	-	(271)	(633)	(1218)	-
4 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	733
		2800	(15.6)	(36.2)	(69)	-	(226)	(525)	(1000)	-
8	290	1400	-	13.5	29.9	50.4	-	195	433	731
		2800	(15.5)	(36.1)	(69)	-	(224)	(523)	(1000)	-
6	420	1400	-	9.4	20.8	35	-	136	301	507
		2800	(10.8)	(25)	(47.8)	-	(156)	(362)	(693)	-
8	420	1400	-	9.3	20.7	34.9	-	135	300	506
		2800	(10.7)	(25)	(47.8)	-	(156)	(362)	(693)	-
	735	1400	-	5.1	11.5	19.5	-	74	166	282
		2800	(5.9)	(13.9)	(26.8)	(42.8)	(85)	(201)	(388)	(620)

Table 6 · Dimensions (inch, mm) and weights for Type 3246 Globe Valve with long insulating section and circulation inhibitor

Table 6a · Type 3246 with welding ends and cover plate with collar

Valve	NPS	1/2	3/4	1	1 1/2	2	3	4	6	8	
	mm	15	20	25	40	50	80	100	150	200	
Length L	Class 600	in	7.99	8.11	8.27	9.88	11.26	13.27	15.51	20.00	24.02
		mm	203	206	210	251	286	337	394	508	610
H4	Class 600	in	24				27			33	
		mm	610				686			838	
H5	Class 600	in	31.89			32.83	35.83	36.06	45.83	43.86	
		mm	809			834	910	916	1164	1114	
H8 (actuator size)	Class 600	in	9.45			15.55			18.90		
		mm	240 (350 and 700 cm ²)			395 (350 to 1400 cm ²)			480 (2800 cm ²)		
Cover plate	∅ d	in	5.98					7.99		10.0	
		mm	152					203		254	
	h	in	1.57								
		mm	40								
Weight, approx.	lbs	71	75	80	89	210	269	333	730	On request	
	kg	32	34	36	40	95	122	151	331		



Selecting and sizing control valves

1. Calculate the C_V (K_V) coefficient according to IEC 60 534.
2. Select the valve size and C_V (K_V) from Tables 3 to 5.
3. Determine the permissible differential pressure Δp according to Tables 4a to 4d.

Ordering text

Nominal size	NPS
Pressure rating	ANSI Class 600
End connections	Flanges or welding ends
Plug	Metal sealing or lapped-in metal
Characteristic	Equal percentage, linear or quick opening
Pneumatic actuator	Type 3271 or Type 3277 (refer to T 8310-1 EN or T 8310-2 EN)
Fail-safe position	Valve CLOSED or OPEN
Process medium and density	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 state
Pressure	p_1 and p_2 in bar (absolute pressure) at minimum, standard and maximum flow rate
Accessories	Positioner and/or limit switch

Specifications subject to change without notice.

