

T 8046-1 EN

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

Type 3246 Globe Valve

With long insulating section and circulation inhibitor

Class 150 and 300/PN 16 and 40



Application

Globe valve for cryogenic applications

Valve size	NPS ½ to 12 · DN 15 to 300
Pressure rating	Class 150 and 300 · PN 16 and 40
Temperatures	–325 to +149 °F · –196 to +65 °C

Special features

Type 3246 Globe Valve operated with

- Type 3271 Pneumatic Actuator (Type 3246-1 Control Valve)
- Type 3277 Pneumatic Actuator (Type 3246-7 Control Valve) for integral positioner attachment

Valve body made of

- Cast stainless steel

Low-noise valve plug

- Metal seal
- High-performance metal seal

Optional with RFID tags with unique identification according to DIN SPEC 91406.

The control valves with their modular design can be equipped with various accessories:

Positioners, limit switches, solenoid valves and other valve accessories according to IEC 60534-6-1 ¹⁾ and NAMUR recommendation (see Information Sheet ► T 8350).

Version

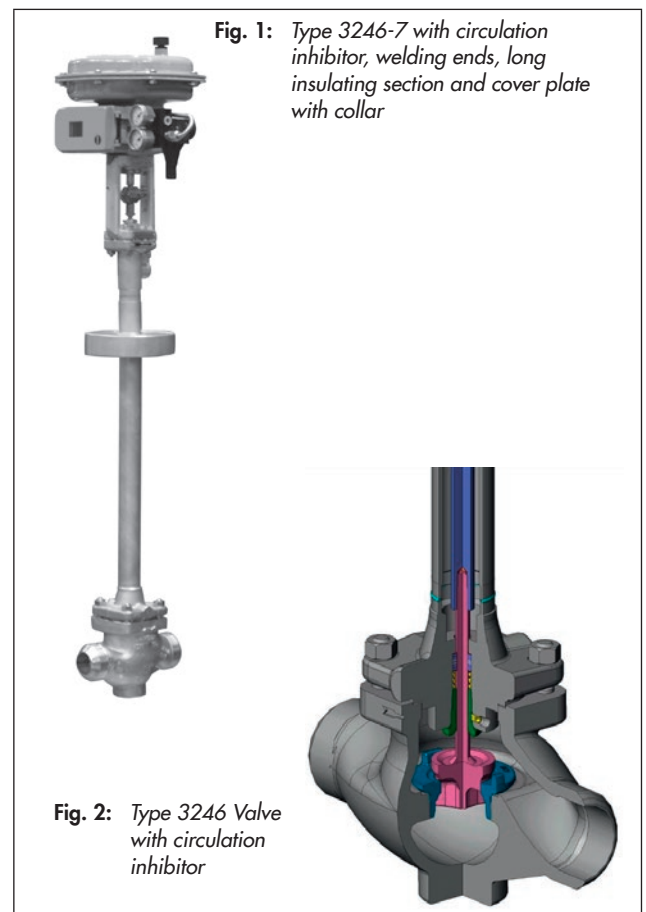
Standard version with single PTFE packing, long insulating section and circulation inhibitor · Valve size NPS ½ to 12 (DN 15 to 300) · Class 150 and 300 (PN 16 and 40) · Flanges or welding ends

- **Type 3246-1** · With Type 3271 Actuator with 120 to 2800 cm² actuator area (see Data Sheets ► T 8310-1, ► T 8310-2 and ► T 8310-3)
- **Type 3246-7** (Fig. 1) · With Type 3277 Actuator with 120 to 750v2 cm² actuator area (see Data Sheet ► T 8310-1)

Further versions

- **Type 3246-1 or Type 3246-7 Globe Valve** · With long insulating section and circulation inhibitor, NPS ½ to 8 (DN 15 to 200), Class 600 and 900 (PN 100 and 160) · See Data Sheet ► T 8046-2

¹⁾ Accessories required. See associated actuator documentation.



- **Type 3246-1 or Type 3246-7 Three-way Valve** · With long insulating section and circulation inhibitor, NPS ½ to 6 (DN 15 to 150), Class 150 and 300 (PN 16 and 40) · See Data Sheet ► T 8046-3
- **Perforated plug** · See ► T 8086
- Version for **soft seal** (on request)

Principle of operation

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

Fail-safe position

Depending on how the springs are arranged in the pneumatic actuator (see Data Sheets ► T 8310-1, ► T 8310-2 and ► T 8310-3), the valve has two different fail-safe positions that become effective when the supply air fails.

- **Actuator stem extends (fail-close):** The valve closes when the supply air fails.
- **Actuator stem retracts (fail-open):** The valve opens when the supply air fails.

Differential pressures

Permissible differential pressures are listed in Information Sheet ► T 8000-4

- | | | | |
|----|--------------------|----|-----------------------------|
| 2 | Intermediate piece | 12 | Washer |
| 8 | Threaded bushing | 16 | Packing |
| 9 | Stem connector nut | 25 | Plug stem extension |
| 10 | Lock nut | 39 | Seal for intermediate piece |
| 11 | Spring | | |

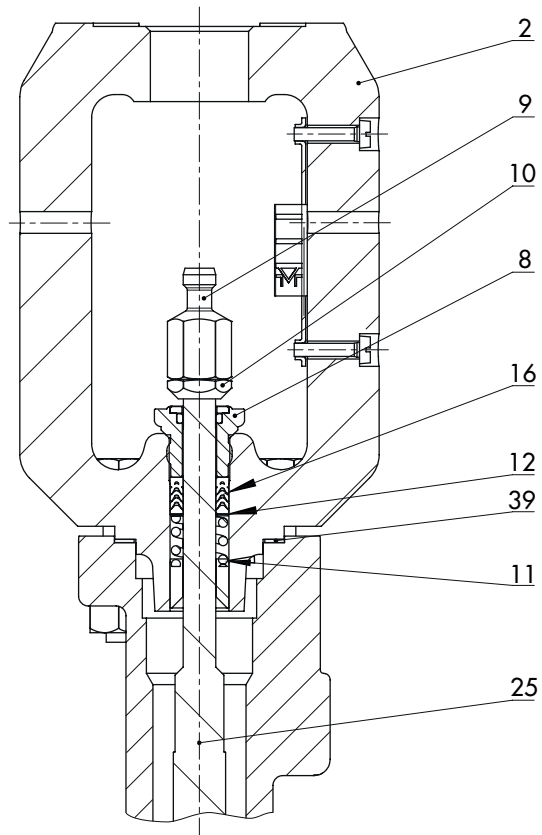


Fig. 3: Intermediate piece

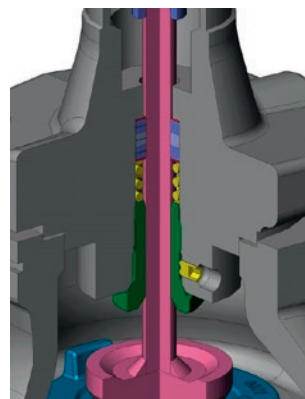


Fig. 4: Circulation inhibitor and hex socket grub screw

Table 1: Technical data for Type 3246 Globe Valve with circulation inhibitor

Material		Cast stainless steel A351 CF8/1.4308
Valve size		NPS ½ to 12 · DN 15 to 300
Pressure rating		Class 150 or 300 · PN 16 or 40
Type of connection	ANSI	Flanges with raised face · Welding ends
	DIN	Flanges form B1 · Welding ends
Seat-plug seal		Metal seal · High-performance metal seal · Stellite®
Characteristic		Equal percentage · Linear · On/off
Rangeability		50:1 · 30:1 for NPS 3 (DN 80) and larger
RFID tag (optional)		Application range according to the technical specifications and the explosion protection certificates. Documents ► www.samsongroup.com > Service & Support > Electronic nameplate
Conformity		
Temperature ranges in °C (°F) · Permissible operating pressures according to pressure-temperature diagrams (see Information Sheet ► T 8000-2)		
Valve with PTFE packing		-196 to +65 °C (-325 to +149 °F)
RFID tag (optional)		Max. permissible operating temperature: 85 °C (185 °F)
Leakage class according to ANSI/FCI 70-2 or IEC 60534-4		
Valve plug	Metal seal	IV
	High-performance metal seal	V

Table 2: Materials

Standard version Body and flanges	Cast stainless steel A351 CF8/1.4308	
Seat and plug ¹⁾	Metal seal	CrNiMo steel
Guide bushings		CrNiMo steel
Packing	Self-adjusting	V-ring packing: PTFE with carbon · Spring: 1.4310
Circulation inhibitor	NPS ½ to 6 (DN 15 to 150)	PTFE with silk cord, spring-loaded · Bushing 2.4360 (Monel®)
	NPS 8 to 12 (DN 200 to 300)	PTFE with silk cord, spring-loaded · Bushing 2.0402 (CuZn40Pb2)
Body gasket		Graphite on metal core
Insulating section		A182 F316/1.4401 A182 F316L/1.4404

¹⁾ Seats and metal-seated plug also with Stellite® facing or plug made of solid Stellite® available

Table 3: C_v and K_{vs} coefficients**Table 3.1:** Overview

C _v		0.12	0.2	0.3	0.5	0.75	1.2	2	3	5	7.5	12	20	30	47	70	75	95	120	190	300	420	735	1150	1730
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	60	63	80	100	160	260	360	630	1000	1500
Seat ØD	in	0.12			0.24			0.47			0.945		1.22	1.5	1.9	2.48		3.15		3.94	5.12	5.91	7.87	9.84	11.8
	mm	3			6			12			24		31	38	48	63		80		100	130	150	200	250	300
Rated travel	in	0.59															1.18	0.59	1.18			2.36		4.72	
	mm	15															30	15	30			60		120	

Table 3.2: Versions

C_v	0.12	0.2	0.3	0.5	0.75	1.2	2	3	5	7.5	12	20	30	47	70	75	95	120	190	300	420	735	1150	1730
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	60	63	80	100	160	260	360	630	1000	1500
NPS DN																								
½ 15	•	•	•	•	•	•	•	•	•	•														
¾ 20	•	•	•	•	•	•	•	•	•	•														
1 25	•	•	•	•	•	•	•	•	•	•	•													
1½ 40				•	•	•	•	•	•	•	•	•												
2 50				•	•	•	•	•	•	•	•	•	•											
3 80													•	•	•		•							
4 100																•		•	•					
6 150																•		•	•	•				
8 200																					•	•		
10 250																						•	•	•
12 300																						•	•	•

Table 4: Dimensions for Type 3246-1 and Type 3246-7 Control Valves with long insulating section and circulation inhibitor**Table 4.1:** Type 3246 with welding ends and cover plate with collar

Valve		NPS	½	¾	1	1½	2	3	4	6	8	10	12
		DN	15	20	25	40	50	80	100	150	200	250	300
Length L	Class 150 and 300/ PN 16 and 40	in	8.00	8.25	8.25	9.88	11.25	13.25	15.50	20.00	24.00	29.62	32.35
		mm	203	206	210	251	286	337	394	508	610	752	822
H4	Class 150 and 300/ PN 16 and 40	in	24.02					27.01		32.99			
		mm	610					686		838			
H5		in	28.66					31.10	33.27	38.90	43.86	43.86	
		mm	728					790	845	988	1091	1141	
H8 in/mm	≤750v2	in	6.3						9.06	9.06	–		
		mm	160						230	230	–		
	1000	in	–							11.02	15.55 (seat bore ≤200 ¹⁾)		
	1400-60	mm	–							280	395 (seat bore ≤200 ¹⁾)		
Class 150 and 300/ PN 16 and 40 with pneumatic actuator	1400-120	in	–								19.80		
	SB ≤200 ¹⁾	mm	–								503		
	1400-120	in	–									25.59	
	SB ≤250 ¹⁾	mm	–									650	
	2800	in	–								19.80		
	SB ≤200 ¹⁾	mm	–								503		
	2800	in	–									25.59	
	SB 250 ¹⁾	mm	–									650	
Cover plate	Ød	in	5.98					7.99		10.00			
		mm	152					203		254			
	h	in	1.57										
		mm	40										

¹⁾ SB = Seat bore**Table 4.2:** Types 3271 and 3277 Pneumatic Actuators

Actuator area	cm ²	120	175v2	240	350	355v2	700	750v2	1000	1400-60	1400-120	2800
Diaphragm ØD	in	6.61	8.46	9.45	11.02	11.02	15.35	15.51	18.19	20.87	21.02	30.32
	mm	168	215	240	280	280	390	394	462	530	534	770
H ¹⁾	in	2.71	3.07	2.44	3.23	4.76	7.83	9.29	15.87	13.27	23.54	28.07
	mm	69	78	62	82	121	199	236	403	337	598	713
H3 ²⁾	in	4.33	4.33	4.33	4.33	4.33	7.48	7.48	24.02	24.02	25.59	25.59
	mm	110	110	110	110	110	190	190	610	610	650	650
H5	Type 3277 in	3.46	3.98	3.98	3.98	3.98	3.98	3.98	–	–	–	–
	Type 3277 mm	88	101	101	101	101	101	101	–	–	–	–
Thread	Type 3271	M30x1.5							M60x1.5		M100x2	
	Type 3277	M30x1.5							–	–	–	–
α	Type 3271	G 1/8 (1/8 NPT)	G 1/4 (1/4 NPT)	G 1/4 (1/4 NPT)	G 3/8 (3/8 NPT)	G 3/8 (3/8 NPT)	G 3/8 (3/8 NPT)	G 3/8 (3/8 NPT)	G 3/4 (3/4 NPT)	G 3/4 (3/4 NPT)	G 1 (1 NPT)	G 1 (1 NPT)
α2	Type 3277	–	G 3/8	G 3/8	G 3/8	G 3/8	G 3/8	G 3/8	–	–	–	–

¹⁾ Height including lifting eyelet or female thread and eyebolt according to DIN 580. Height of the swivel hoist may differ. Actuators up to 355v2 cm² without lifting eyelet or female thread²⁾ Minimum clearance required to remove the actuator

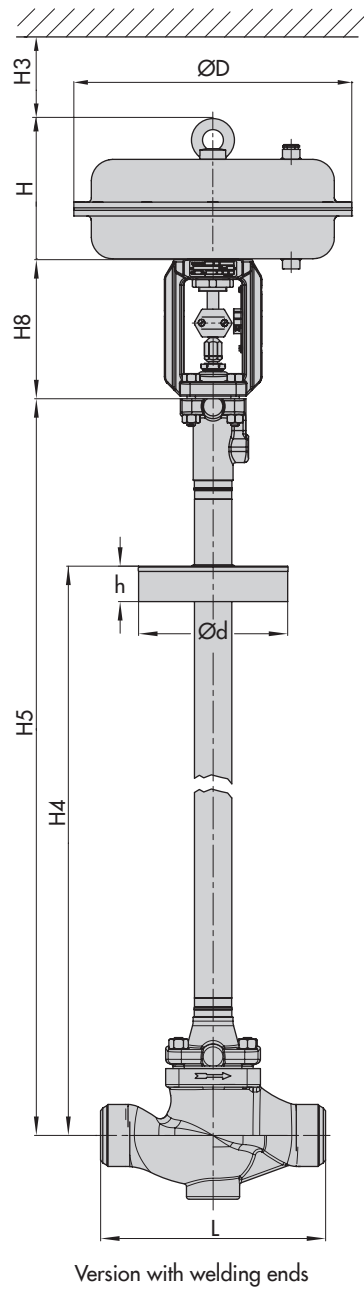


Table 5: Weights for Type 3246-1 and Type 3246-7 Control Valves with long insulating section and circulation inhibitor**Table 5.1:** Type 3246 Valve

Valve	NPS	1/2	3/4	1	1 1/2	2	3	4	6	8	10	12
	DN	15	20	25	40	50	80	100	150	200	250	300
Weight, approx.	lbs	31			38	49	84	175	410	948	1202	1929
	kg	14			17	22	38	79	186	430	545	875

Table 5.2: Types 3271 and 3277 Pneumatic Actuators

Actuator area		cm ²	120	175v2	240	350	355v2	700	750v2	1000	1400-60	1400-120	2800
Weight	Type 3271	lbs	6	13	11	18	33	49	79	176	154	385.5	992
		kg	2.5	6	5	8	15	22	36	80	70	175	450
	Type 3277	lbs	7	22	20	26	42	57	88	–			
		kg	3.2	10	9	12	19	26	40	–			

Table 6: Valve/actuator assignment

Valve size		Stem diameter	Actuator
NPS	DN		
1/2 to 3	15 to 80	0.39 in (10 mm)	120 to 750v2 cm ²
4 to 6	100 to 150	0.63 in (16 mm)	350 to 1400-60 cm ²
8 to 12	200 to 300	1.58 in (40 mm)	1000 to 2800 cm ²

Selection and sizing of the control valve

1. Calculate the C_v (K_v) coefficient according to IEC 60534.
2. Select the valve size and C_v (K_{vs}) coefficient from Table 3.
3. Determine the permissible differential pressure Δp from the Information Sheet ► T 8000-4
4. Select the trim material from Table 2
5. Select the type of end connection, seat/plug seal and characteristic from Table 1

Order specifications:

Valve size	NPS .../DN ...
Pressure rating	Class 150 or 300/PN 16 or 40
Type of connection	Flanges or welding ends
Plug	Metal seal or high-performance metal seal
Characteristic	Equal percentage, linear or on/off
Actuator	Type 3271 or Type 3277 ► T 8310-1, ► T 8310-2 or ► T 8310-3)
Fail-safe position	Fail-close or fail-open
Process medium	...
Density	kg/m ³ or lb/ft ³
Temperature	°C or °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 (psi) (absolute pressure p_{abs}) (with minimum, normal and maximum flow rate)
RFID tag	Yes/No
Valve accessories	Positioner and/or limit switch

Note: The temperature limits for DIN and ANSI versions are not directly converted temperatures.