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 10 · DN 15 to 250**
Pressure rating	**Class 150 and 300 · PN 16 and 40**
Temperatures	**–325 to +149 °F · –196 to +65 °C**

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

The control valves, designed according to the modular assembly principle, can be equipped with various accessories: Positioners, limit switches, solenoid valves and other accessories according to IEC 60534-6 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 10 (DN 15 to 250) · 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 750 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
– **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 Data Sheet ▶ T 8086

Fig. 1: *Type 3246-7 with circulation inhibitor, welding ends, long insulating section and cover plate with collar*

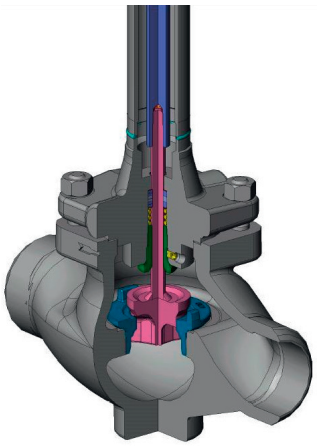

Fig. 2: *Type 3246 Valve with circulation inhibitor*

Associated Information Sheet	**T 8000-X**
Data Sheets for pneumatic actuators	**T 8310-1/-2**
Mounting and Operating Instructions	**EB 8015**

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Data and Service Sheet T 8046-1 EN

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 effective upon air supply failure.

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

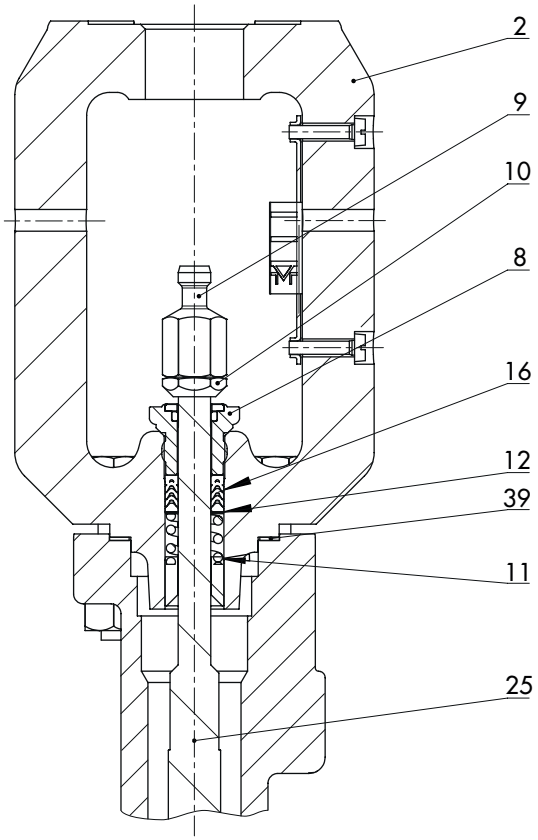


Fig. 3: *Intermediate piece*

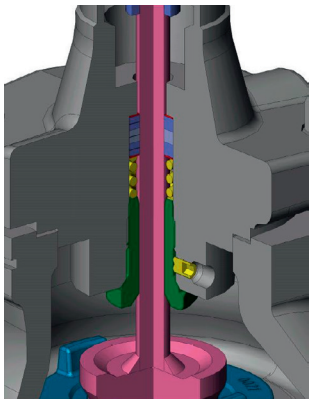


Fig. 4: *Circulation inhibitor and hex socket grub screw*

Servicing instructions · For trained personnel only

Installation into the pipeline

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

> ***NOTICE***
> *The temperature at the joint between the body and the insulating section must not exceed 65 °C.*

Lubricant

Before installation or assembly, apply a suitable lubricant to the following components:

- Plug stem, seat and plug
- Thread of the threaded bushing (8) at the intermediate piece (2)
- Stem connector nut (9) and stem connector
- All parts of the top packing (16) with self-adjusting spring (11)

> ***NOTICE***
> *Only apply lubricant to the top packing. Do not apply any lubricant to the packing rings of the circulation inhibitor.*

Top packing

- Renew or service the top packing (16) only in case of leakage.
- Tighten threaded bushing (8) on assembly.
- On performing work on the packing, only remove the intermediate piece (2). The insulating section can remain mounted on the valve.

Seat or plug

To perform maintenance work on the seat or plug, remove the insulating section together with intermediate piece (2).

Circulation inhibitor (Fig. 4)

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

Removal or assembly of the plug:

1. Undo the hex socket grub screw at the side.
2. Unscrew the threaded bushing of the circulation inhibitor.

Renewing seals:
Insert the spring at the circulation inhibitor between the seals and threaded bushing.

Mounting and operating instructions

Refer to ▶ EB 8015 for more instructions on how to mount the actuator as well as installation, operation and maintenance of the Type 3241 Globe Valve.

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 10 · DN 15 to 250
Pressure rating		Class 150 or 300 · PN 16 or 40
Type of end connections	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 · Quick opening
Rangeability		50:1 · 30:1 for NPS 3 (DN 80) and larger
Temperature ranges · Permissible operating pressures according to pressure-temperature diagrams (see Information Sheet ▶ T 8000-2)		
Valve with	PTFE packing	–325 to +149 °F · –196 to +65 °C
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 10 (DN 200 to 250)	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**
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**
Seat Ø	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
	mm	3			6			12			24		31	38	48	63		80		100	130	150	200	250
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**
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**
NPS	DN																							
½	15	•	•	•	•	•	•	•	•	•														
¾	20	•	•	•	•	•	•	•	•	•	•													
1	25	•	•	•	•	•	•	•	•	•	•	•												
1½	40				•	•	•	•	•	•	•	•	•	•										
2	50				•	•	•	•	•	•	•	•	•	•	•									
3	80													•	•	•		•						
4	100																•		•	•				
6	150																•		•	•	•			
8	200																					•	•	
10	250																					•	•	•

Table 4: *Dimensions and weights for Type 3246 Globe Valve 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
		DN	15	20	25	40	50	80	100	150	200	250
Length L	Class 150 and 300/ PN 16 and 40	in	7.99	8.11	8.27	9.88	11.26	13.27	15.51	20.0	24.02	29.61
		mm	203	206	210	251	286	337	394	508	610	752
H4		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 Class 150 and 300/ PN 16 and 40 with pneumatic actuator	≤ 750	in	6.3						9.06	9.06	–	
		mm	160						230	230	–	
	1000 1400-60	in	–							11.02	15.55 (SB ≤ 200 [1])	
		mm	–							280	395 (SB ≤ 200 [1])	
	1400-120 SB ≤ 200 [1]	in	–								19.8	
		mm	–								503	
	1400-120 SB ≤ 250 [1]	in	–									25.59
		mm	–									650
	2800 SB ≤ 200 [1]	in	–								19.8	
		mm	–								503	
	2800 SB 250 [1]	in	–									25.59
		mm	–									650
Cover plate	Ød	in	5.98					7.99		10.0		
		mm	152					203		254		
	h	in	1.57									
		mm	40									
Weight, approx.		lbs	31			38	49	84	175	410	948	1202
		kg	14			17	22	38	79	186	430	545

[1] SB = Seat bore

Table 4.2: *Types 3271 and 3277 Pneumatic Actuators*

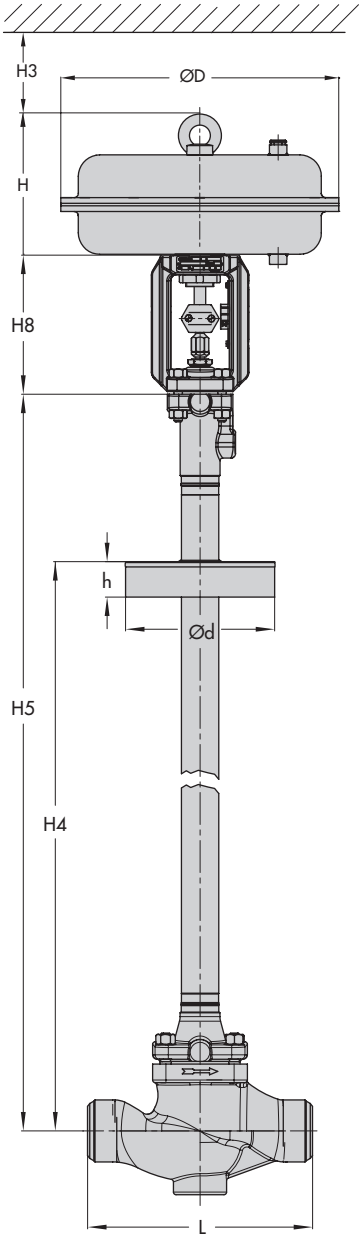
Actuator		in²	18.6	27.13	37.2	54.25	55.03	108.5	116.25	155	217	217	434
		cm²	120	175	240	350	355	700	750	1000	1400-60	1400-120	2800
Diaphragm ØD		in	6.61	8.5	9.45	11.02	11.02	15.35	15.35	18.19	20.87	21.02	28.23
		mm	168	215	240	280	280	390	390	462	530	534	770
H (700 cm² and larger including lifting eyelet)		in	2.76	3.07	2.56	3.23	4.8	7.87	8.03	14.06	11.3	19.3	24.8
		mm	70	78	65	82	121	200	204	357	287	490	630
Travel (max.)		in	0.59				1.18			2.36		4.72	
		mm	15				30			60		120	
H3 [1]	Type 3271	in	4.33				7.48			24.02		25.59	
		mm	110				190			610		650	
	Type 3277	in	4.33				7.48			–			
		mm	110				190			–			
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	–			

[1] Minimum clearance required to remove the actuator

Table 4.3: *Valve/actuator assignment*

Valve size		Stem diameter	Actuator
NPS	DN		
½ to 3	15 to 80	0.39 in (10 mm)	120 to 750 cm²
4 to 6	100 to 150	0.63 in (16 mm)	350 to 1400-60 cm²
8 to 10	200 to 250	1.58 in (40 mm)	1000 to 2800 cm²

Dimensional drawing



Version with welding ends

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 end connections	Flanges or welding ends
Plug	Metal seal or high-performance metal seal
Characteristic	Equal percentage, linear or quick opening
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/m³ or lb/ft³
Temperature	°C or °F
Flow rate	lbs/h or kg/h or cu.ft/min or m³/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
Valve accessories	Positioner and/or limit switch

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

Specifications subject to change without notice

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