

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 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
- **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
- Version with **soft seal** · On request

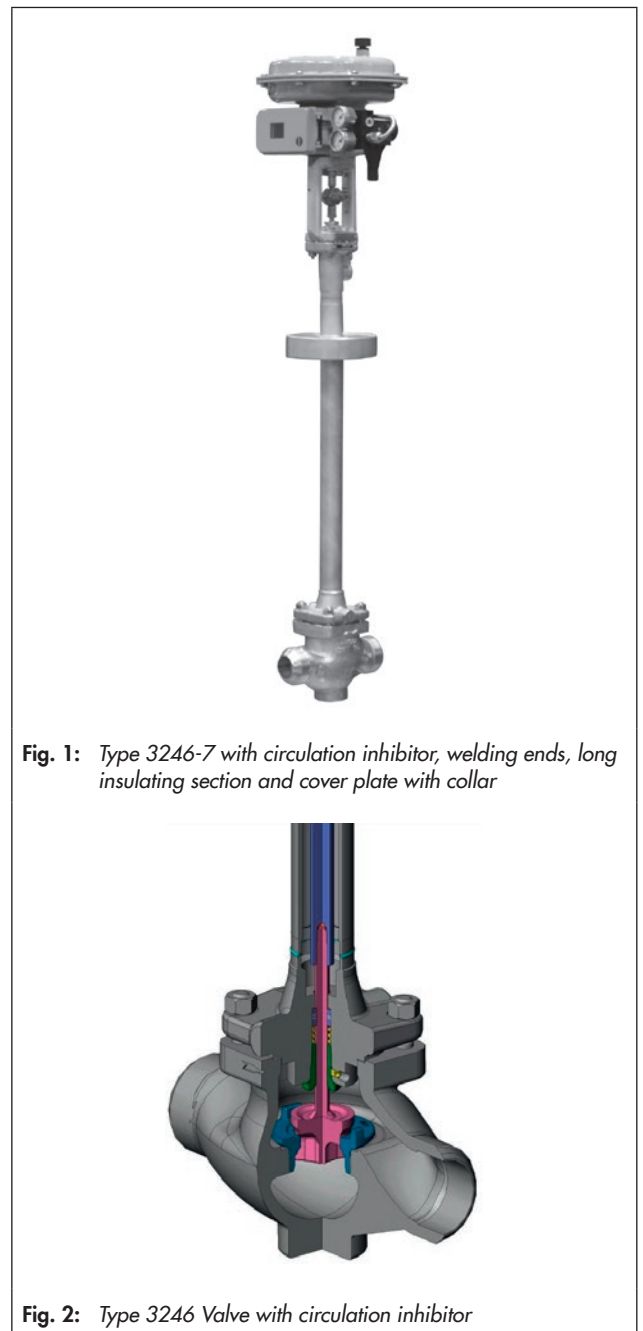


Fig. 1: Type 3246-7 with circulation inhibitor, welding ends, long insulating section and cover plate with collar

Fig. 2: Type 3246 Valve with circulation inhibitor

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 | 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 | | |

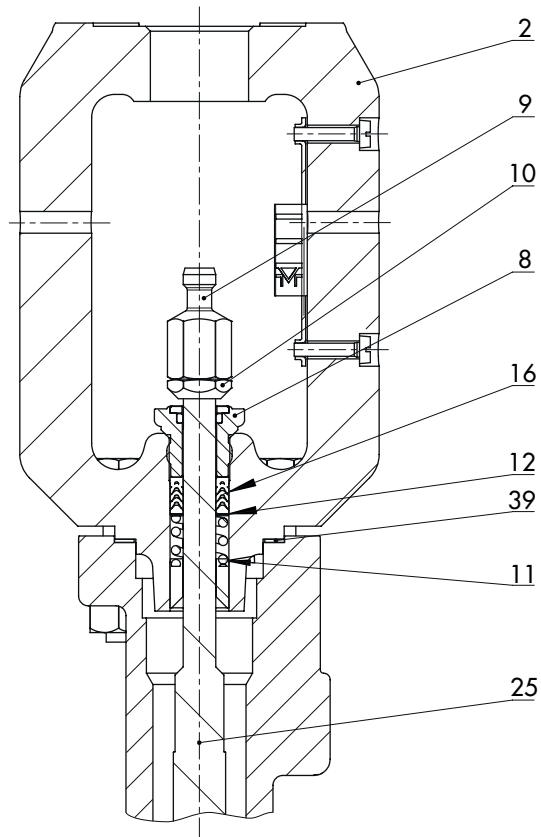


Fig. 3: Intermediate piece

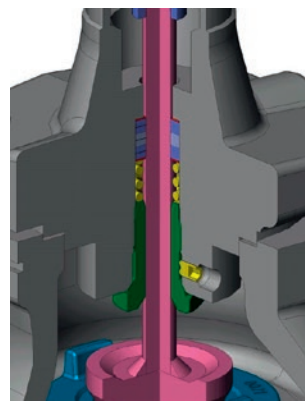


Fig. 4: Circulation inhibitor and hex socket grub screw

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 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 | |
| Compliance | CE · EAC | |
| 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 | 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 | in | | | | | | 0.59 | | | | | | | | 1.18 | | 0.59 | | 1.18 | | | | 2.36 | | 4.72 | | | | | |
| travel | 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 | in | 8.00 | 8.25 | 8.25 | 9.88 | 11.25 | 13.25 | 15.50 | 20.0 | 24.00 | 29.62 | |
| | 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 | | |
| ≤ 750v2 | in | 6.3 | | | | | 9.06 | 9.06 | - | | | |
| | mm | 160 | | | | | 230 | 230 | - | | | |
| H8 in/mm | 1000 | - | | | | | | | 11.02 | 15.55 (SB ≤ 200 ¹⁾) | | |
| | 1400-60 | - | | | | | | | 280 | 395 (SB ≤ 200 ¹⁾) | | |
| Class 150 and 300/ PN 16 and 40 | 1400-120 | - | | | | | | | 19.8 | | | |
| | SB ≤ 200 ¹⁾ | - | | | | | | | 503 | | | |
| 1400-120 | in | - | | | | | | | 25.59 | | | |
| | mm | - | | | | | | | 650 | | | |
| 40 with pneumatic actuator | 2800 | - | | | | | | | 19.8 | | | |
| | SB ≤ 200 ¹⁾ | - | | | | | | | 503 | | | |
| 2800 | in | - | | | | | | | 25.59 | | | |
| | SB 250 ¹⁾ | - | | | | | | | 650 | | | |
| Cover plate | Ød | 5.98 | | | | 7.99 | | | 10.0 | | | |
| | mm | 152 | | | | 203 | | | 254 | | | |
| h | in | 1.57 | | | | | | | | | | |
| | mm | 40 | | | | | | | | | | |

¹⁾ SB = Seat bore

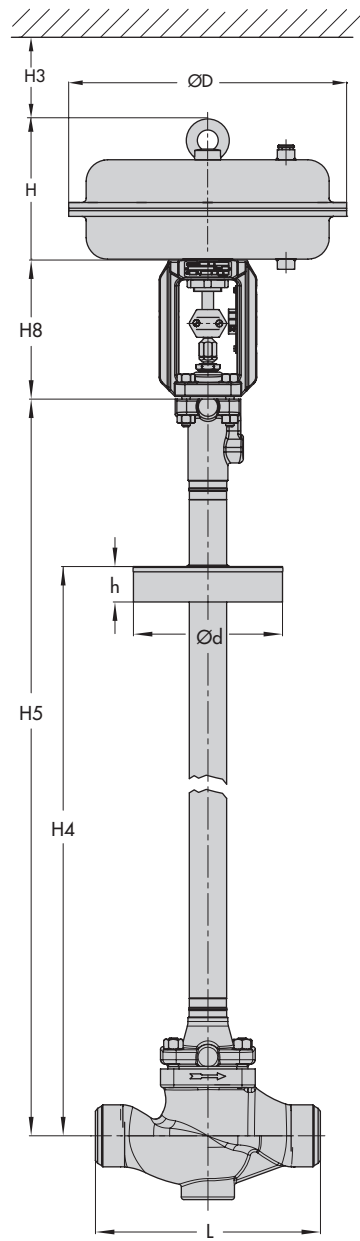
Table 4.2: Types 3271 and 3277 Pneumatic Actuators

| 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 |
| Height of yoke (Type 3277 only) | in | 3.46 | 3.98 | 3.98 | 3.98 | 3.98 | 3.98 | 3.98 | - | - | - | - |
| | mm | 88 | 101 | 101 | 101 | 101 | 101 | 101 | - | - | - | - |
| Thread | Type 3271 | M30 x 1.5 | | | | | | M60 x 1.5 | | | M100 x 2 | |
| | Type 3277 | M30 x 1.5 | | | | | | - | - | - | - | |
| α | Type 3271 | G ⅛ (⅛ NPT) | G ¼ (¼ NPT) | G ¼ (¼ NPT) | G ⅜ (⅜ NPT) | G ⅜ (⅜ NPT) | G ⅜ (⅜ NPT) | G ⅜ (⅜ NPT) | G ¾ (¾ NPT) | G ¾ (¾ NPT) | G 1 (1 NPT) | G 1 (1 NPT) |
| | Type 3277 | - | G ⅜ | G ⅜ | G ⅜ | G ⅜ | G ⅜ | G ⅜ | - | - | - | - |

¹⁾ Height including lifting eyelet or female thread and eyebolt according to DIN 580. Height of the swivel lifting hook may differ. Actuators up to 355v2 cm² without lifting eyelet or female thread

²⁾ Minimum clearance required to remove the actuator

Dimensional drawing



Version with welding ends

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 | ½ | ¾ | 1 | 1½ | 2 | 3 | 4 | 6 | 8 | 10 |
|-----------------|-----|----|----|----|----|----|----|-----|-----|-----|------|
| | DN | 15 | 20 | 25 | 40 | 50 | 80 | 100 | 150 | 200 | 250 |
| Weight, approx. | lbs | 31 | | | 38 | 49 | 84 | 175 | 410 | 948 | 1202 |
| | kg | 14 | | | 17 | 22 | 38 | 79 | 186 | 430 | 545 |

Table 5.2: *Type 3271 and Type 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 | | |
| ½ 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 10 | 200 to 250 | 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 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/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) |
| 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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