# DATA SHEET

**T 8059 EN**

**Series 250 · Type 3259-1 and Type 3259-7 Pneumatic Control Valves**

**Type 3259 Angle Valve**

## Application

Control valve for industrial high-pressure plants according to IG standard

| | |
|---|---|
| **Nominal size** | **DN 10 to 90** |
| **Pressure rating** | **PN 325** |
| **Temperatures** | **-10 to +450 °C** |



**Fig. 1:** *Type 3259-1 Pneumatic Control Valve: Type 3259 Valve with Type 3271 Pneumatic Actuator*

## Special features

Type 3259 Angle Valve with

- Type 3271 Pneumatic Actuator (Type 3259-1 Control Valve)
- Type 3277 Pneumatic Actuator (Type 3259-7 Control Valve) for integral positioner attachment

The valve body is made of forged stainless steel. The end connections are designed as screwed flanges with lens ring gaskets.

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, such as positioners, limit switches, solenoid valves and other devices according to DIN EN 60534-6-1[1)] and NAMUR Recommendation (see Information Sheet ▶ T 8350).

[1)] Accessories required. See associated actuator documentation.

A safety manual containing the safety-related data is optionally available for use in safety-instrumented systems (SIL requirements).

## Versions

Operating temperature (medium temperature) with spring-loaded double packing for temperatures from -10 to +220 °C; nominal sizes DN 10, 16, 24, 30, 45, 58, 70 and 90 · Pressure rating PN 325

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Body made of 1.4404 with intermediate flanges made of 1.7218 (K2), end connections as screwed flanges with lens ring gaskets

- **Type 3259-1** (Fig. 1) • Type 3259 Valve and Type 3271 Actuator with 350 to 2800 cm² actuator area (see Data Sheets ▶ T 8310-1, ▶ T 8310-2 and ▶ T 8310-3)
- **Type 3259-7** • Type 3259 Valve and Type 3277 Actuator with 350 to 750v2 cm² actuator area for integral positioner attachment (see Data Sheet ▶ T 8310-1)

Further versions

- **Adjustable high-temperature packing** · For temperatures between -10 and +350 °C
- **Version with insulating section** · For temperatures from -10 to +450 °C (see Fig. 2 for pressures and temperatures)
- **Heating jacket** · On request
- **Version with bellows seal** · Material 2.4819 with additional back-up packing and test connection
- **Nominal sizes DN 6, DN 10 and DN 16** are also available as Type 3510 **Micro-flow Valve**.

## Principle of operation

The medium normally flows through the valve in the flow-to-open direction. The valve plug position determines the free area between the valve seat and the plug. The plug stem is sealed by a spring-loaded double PTFE packing.

A metal bellows seal (Fig. 4) can be used to meet stricter emission requirements.

A test connection is available for both valve versions.

The actuators can be designed for pressure applied from either side on request.

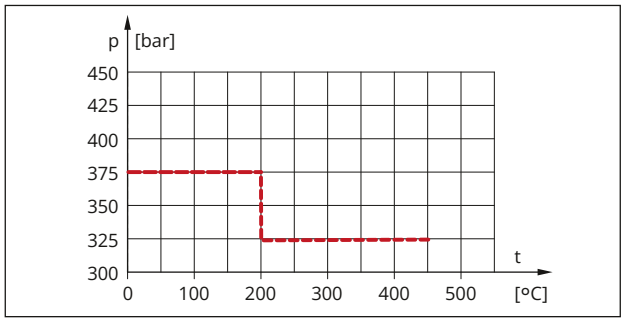



**Fig. 2:** *Pressure-temperature diagram for material 1.4404*

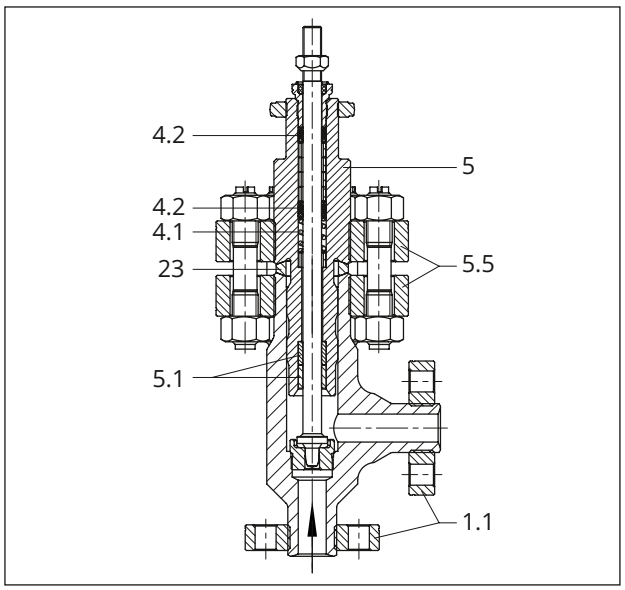



**Fig. 3:** *Standard version of Type 3259 Valve*

| | | | |
|---|---|---|---|
| 1.1 | Connecting flanges | 5.1 | Guide bushing |
| 4.1 | Spring | 5.5 | Intermediate flanges |
| 4.2 | PTFE V-ring packing (2 pcs.) | 23 | Lens ring gasket |
| 5 | Bonnet | | |

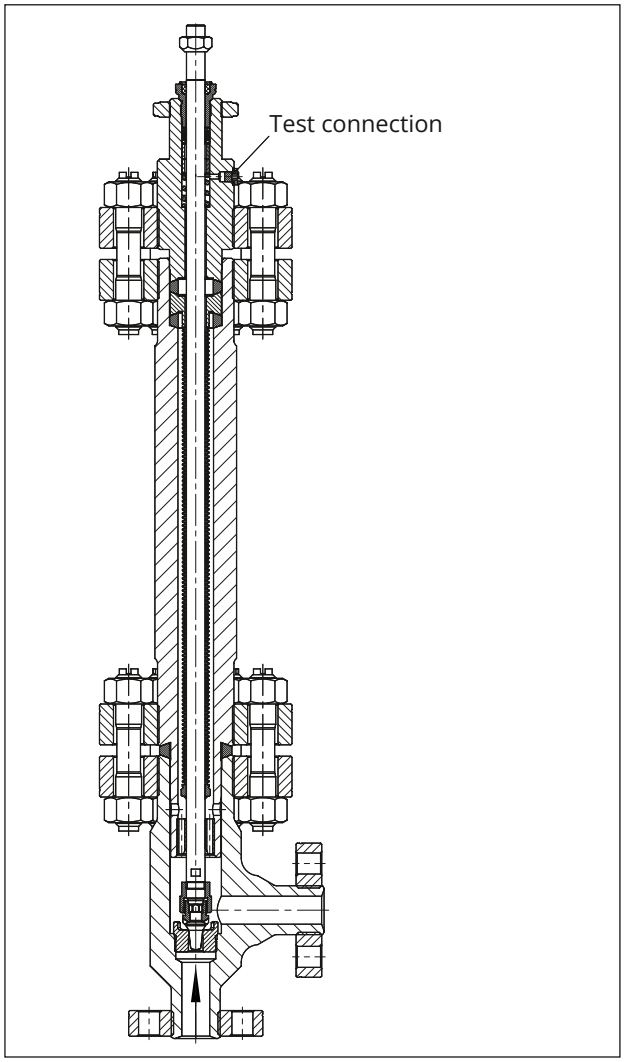



**Fig. 4:** *Type 3259 Valve with bellows seal and test connection*

### Fail-safe positions

Depending on how the springs are arranged in the Type 3271 or Type 3277 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 is closed upon air supply failure.
- **Actuator stem retracts (fail-open):**
  The valve is opened upon air supply failure.

**Table 1:** *Technical data for Type 3259*

| **Nominal size** | **DN** | **10 · 16 · 24 · 30 · 45 · 58 · 70 · 90** |
|---|---|---|
| Pressure rating | PN | 325 |
| Type of end connections | | Threaded flanges with lens ring gaskets according to the IG standard |
| Seat-plug seal | | Metal seal or high-performance metal seal |
| Characteristic | | Equal percentage or linear |
| Rangeability | | 50:1 for $K_{VS}$ ≥ 1 or 30:1 for $K_{VS}$ < 1 |
| Conformity | | CE |
| Optional RFID tag | | Application range according to the technical specifications and the explosion protection certificates. These documents are available on our website: ▶ www.samsongroup.com > Products > Electronic nameplate The permissible range for temperatures at the RFID tag is between -40 and +85 °C. |
| **Temperature ranges** in °C · Permissible operating pressures according to pressure-temperature diagram | | |
| Body without insulating section with | PTFE packing | -10 to +220 °C |
| | High-temperature packing | -10 to +350 °C |
| Body with | Insulating section | -10 to +450 °C |
| | Bellows seal | -10 to +450 °C |
| **Leakage class** according to DIN EN 60534-4 | | |
| Valve plug | Metal seal | IV · High performance metal seal: V |

**Table 2:** *Materials for Type 3259*

| **Standard version**<br>**Body** | **1.4404**[1)] |
|---|---|
| Flanges | 1.7218 (K2) |
| Screws | 1.7218 (K2) |
| Seat and plug | 1.4404<br>Seat: 1.4404 Stellite®-faced • Plug: Stellite® 6<br>Hardened 1.4112 |
| Guide bushing | 2.4610/1.4112 |
| Packing | V-ring packing, PTFE-carbon compound |
| Body gasket | Lens ring gaskets 1.4404[1)] |
| Insulating section | 1.4404[1)] |
| Bellows seal | |
| Intermediate piece | 1.4404[1)] |
| Metal bellows | 2.4819 |

1) Other materials on request

**Table 3:** *Available $K_{VS}$ coefficients*

| $K_{VS}$ | 0.1 · 0.16<br>0.25 · 0.4 | 0.63 | 1.0 | 1.6 | 2.5 | 4 | 6.3 | 10 | 16 | 25 | 40 | 63 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Seat Ø in mm | 6 | | | 12 | | | 24 | | 31 | 38 | 50 | 63 | 80 |
| Rated travel in mm | 15 | | | | | | | | | | 30 | | |
| **DN** | | | | | | | | | | | | | |
| 10 | • | • | • | • | • | | | | | | | | |
| 16 | • | • | • | • | • | • | | | | | | | |
| 24 | • | • | • | • | • | • | • | • | | | | | |
| 30 | • | • | • | • | • | • | • | • | | | | | |
| 45 | | | | • | • | • | • | • | • | • | | | |
| 58 | | | | | | • | • | • | • | • | | | |
| 70 | | | | | | | | | • | • | • | • | |
| 90 | | | | | | | | | • | • | • | • | • |

## Dimensions

**Table 4:** *Dimensions for Type 3259 Angle Valve*

| Valve | DN | 10 | 16 | 24 | 30 | 45 | 58 | 70 | 90 |
|---|---|---|---|---|---|---|---|---|---|
| Length L | | 85 | 95 | 110 | 120 | 150 | 170 | 200 | 235 |
| **Standard bonnet** | | | | | | | | | |
| H1 for actuator | 350 cm² | 470 | 470 | 470 | 470 | 560 | 560 | – | – |
| | 350v2 cm² | 470 | 470 | 470 | 470 | 560 | 560 | – | – |
| | 355v2 cm² | 470 | 470 | 470 | 470 | 560 | 560 | – | – |
| | 750v2 cm² | 470 | 470 | 470 | 470 | 560 | 560 | 820 | 820 |
| | 1000 cm² | 525 | 525 | 525 | 525 | 615 | 615 | 820 | 820 |
| | 1400-60 cm² | 525 | 525 | 525 | 525 | 615 | 615 | 820 | 820 |
| | 1400-120 cm² | – | – | – | – | 800 | 800 | 905 | 905 |
| | 2800 cm² | – | – | – | – | 800 | 800 | 905 | 905 |
| | 2 x 2800 cm² | – | – | – | – | – | – | 905 | 905 |
| **With insulating section** | | | | | | | | | |
| H4 for actuator | 350 cm² | 735 | 735 | 735 | 735 | 810 | 810 | – | – |
| | 350v2 cm² | 735 | 735 | 735 | 735 | 810 | 810 | – | – |
| | 355v2 cm² | 735 | 735 | 735 | 735 | 810 | 810 | – | – |
| | 750v2 cm² | 735 | 735 | 735 | 735 | 810 | 810 | 1175 | 1175 |
| | 1000 cm² | 790 | 790 | 790 | 790 | 865 | 865 | 1175 | 1175 |
| | 1400-60 cm² | 790 | 790 | 790 | 790 | 865 | 865 | 1175 | 1175 |
| | 1400-120 cm² | – | – | – | – | 1050 | 1050 | 1260 | 1260 |
| | 2800 cm² | – | – | – | – | 1050 | 1050 | 1260 | 1260 |
| | 2 x 2800 cm² | – | – | – | – | – | – | 1260 | 1260 |
| **With bellows seal** | | | | | | | | | |
| H4 for actuator | 350 cm² | 885 | 885 | 885 | 885 | 875 | 875 | – | – |
| | 350v2 cm² | 885 | 885 | 885 | 885 | 875 | 875 | – | – |
| | 355v2 cm² | 885 | 885 | 885 | 885 | 875 | 875 | – | – |
| | 750v2 cm² | 885 | 885 | 885 | 885 | 875 | 875 | 1485 | 1485 |
| | 1000 cm² | 940 | 940 | 940 | 940 | 930 | 930 | 1485 | 1485 |
| | 1400-60 cm² | 940 | 940 | 940 | 940 | 930 | 930 | 1485 | 1485 |
| | 1400-120 cm² | – | – | – | – | 1115 | 1115 | 1570 | 1570 |
| | 2800 cm² | – | – | – | – | 1115 | 1115 | 1570 | 1570 |
| | 2 x 2800 cm² | – | – | – | – | – | – | 1570 | 1570 |

**Table 5:** *Further dimensions[1] in combination with Type 3271 Pneumatic Actuator or Type 3277 Pneumatic Actuator*

| Actuator area | | cm² | 350v2 | 355v2 | 750v2 | 1000 | 1400-60 | 1400-120 | 2800 | 2x 2800 |
|---|---|---|---|---|---|---|---|---|---|---|
| Diaphragm ØD | | mm | 280 | 280 | 394 | 462 | 530 | 534 | 770 | 770 |
| H[2] | Type 3271 | mm | 92 | 131 | 236 | 403 | 337 | 598 | 713 | 1213 |
| H[2] | Type 3277 | mm | 82 | 121 | 236 | – | – | – | – | – |
| H3[3] | | mm | 110 | 110 | 190 | 610 | 610 | 650 | 650 | 650 |
| H5 | Type 3277 | mm | 101 | 101 | 101 | – | – | – | – | – |
| Thread | Type 3271 | | M30x1.5 | M30x1.5 | M30x1.5 | M60x1.5 | M60x1.5 | M100x2 | M100x2 | M100x2 |
| Thread | Type 3277 | | M30x1.5 | M30x1.5 | M30x1.5 | – | – | – | – | – |
| a | Type 3271 | | 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) | G 1 (1 NPT) |
| a2 | Type 3277 | | G ⅜[4] | G ⅜[4] | G ⅜[4] | – | – | – | – | – |

1) The specified dimensions are theoretical maximum design values for a specific standard device configuration. They do not reflect every possible case of use. The actual values for individual devices may differ depending on the device configuration and the specific application.

2) 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 thread.

3) Minimum clearance required to remove the actuator

4) An adapter G ⅜ to ⅜ NPT is available for the a2 connection. It can be ordered separately using the following article number: 100160362

## Dimensional drawings

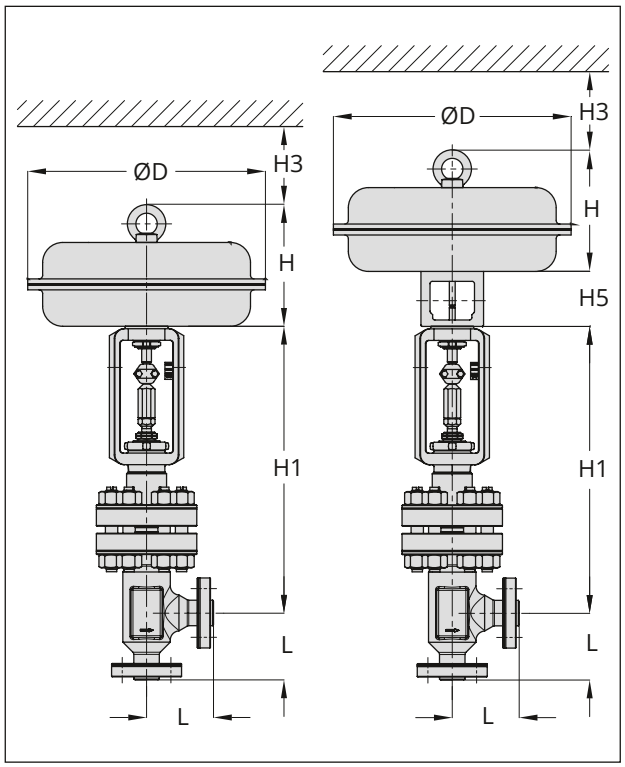



**Fig. 5:** *Type 3259-1 (left) · Type 3259-7 (right)*

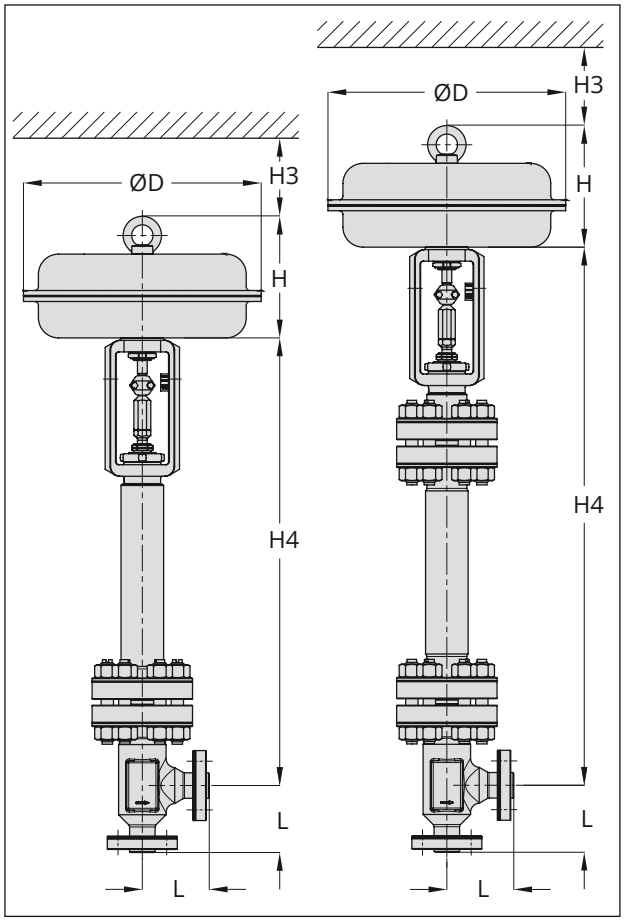



**Fig. 6:** *Type 3259-1 · With insulating section (left) · With bellows seal (right)*

## Weights

**Table 6:** *Weight (approx.) in kg for Type 3259 Angle Valve*

| Valve | DN | 10 | 16 | 24 | 30 | 45 | 58 | 70 | 90 |
|---|---|---|---|---|---|---|---|---|---|
| Weight[1] without actuator | | 33 | 35 | 40 | 45 | 85[2] | 90[2] | 220[2] | 230[2] |
| **With insulating section** | | | | | | | | | |
| Weight[1] without actuator | | 43 | 45 | 48 | 53 | 100[2] | 105[2] | 295[2] | 305[2] |
| **With bellows seal** | | | | | | | | | |
| Weight[1] without actuator | | On req. | On req. | On req. | On req. | On req. | On req. | On req. | On req. |

1) The weights specified apply to a specific standard device configuration. Weights of other valve configurations may differ depending on the version (material, trim etc.).

2) The weight of the valve with a 2800 cm² or 2 x 2800 cm² actuator increases by 30 kg.

**Table 7:** *Weights[1] for Type 3271 and Type 3277 Pneumatic Actuators*

| Type ... Actuator | Actuator area in cm² | | 350v2 | 355v2 | 750v2 | 1000 | 1400-60 | 1400-120 | 2800 | 2x 2800 |
|---|---|---|---|---|---|---|---|---|---|---|
| 3271 | Without handwheel | kg | 11.5 | 15 | 36 | 80 | 70 | 175 | 450 | 950 |
| 3271 | With handwheel | kg | 16.5 | 20 | 41 | 180 | 175 | 300[2]/ 425[3] | 575[2]/ 700[3] | *) |
| 3277 | Without handwheel | kg | 15 | 19 | 40 | – | – | – | – | – |
| 3277 | With handwheel | kg | 20 | 24 | 45 | – | – | – | – | – |

*) On request

1) The weights specified apply to a specific standard device configuration. Weights of other actuator configurations may differ depending on the version (material, number of actuator springs etc.).

2) Side-mounted handwheel up to 80 mm travel

3) Side-mounted handwheel with travel higher than 80 mm travel

### Selection and sizing of the valve

1. Calculate $K_{VS}$ coefficient according to DIN EN 60534-1.
2. Select nominal size DN and $K_{VS}$ coefficient from Table 3.
3. Actuator sizing and calculation of permissible differential pressure Δp on request
4. Select accessories from Table 1 and Table 2.

### Ordering text

The following specifications are required on ordering:

| | |
|---|---|
| Nominal size | DN … |
| Direction of flow | Flow-to-open or flow-to-close design |
| Plug | Metal seal or high-performance metal seal |
| Characteristic | Equal percentage or linear |
| Bonnet | Standard bonnet, insulating section or bellows seal |
| Actuator | Type 3271 or Type 3277 (see Data Sheets ▶ T 8310-1, ▶ T 8310-2 and ▶ T 8310-3) |
| Fail-safe action | Actuator stem extends/retracts |
| Process medium | Density in kg/m³ and temperature in °C |
| Flow rate | in kg/h or m³/h in standard or operating state |
| Pressure | $p_1$ and $p_2$ in bar (absolute pressure $p_{abs}$), with minimum, normal and maximum flow rate |
| RFID tag | Yes/No |
| Valve accessories | Positioner and/or limit switch |

| | |
|---|---|
| **Associated Information Sheet** | ▶ T 8000-X |
| **Associated Data Sheets for pneumatic actuators** | ▶ T 8310-1 to ▶ T 8310-3 |
| **Associated Mounting and Operating Instructions** | ▶ EB 8059 |

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