

**T 8091-1 EN****Type 3510-1 and Type 3510-7 Pneumatic Control Valves****Type 3510 Micro-flow Valve**

ANSI version

**Application**

Control valve especially designed for controlling low flow rates in pilot plants and technical research facilities

**Nominal size** G, NPT and Rc female thread in  $\frac{1}{8}'' \cdot \frac{1}{4}'' \cdot \frac{3}{8}'' \cdot \frac{1}{2}'' \cdot \frac{3}{4}''$

Welding ends, flanges NPS  $\frac{1}{2} \cdot \frac{3}{4} \cdot 1$

**Pressure rating** Class 150 to 2500

**Temperatures** -325 to +842 °F · -196 to +450 °C



**Fig. 1:** Type 3510-7 Control Valve with Type 3725 Positioner

**Fig. 2:** Type 3510-7 Control Valve with Type 3767 Positioner

**Special features**

Type 3510 Micro-flow Valve with

- Type 3271-5 Pneumatic Actuator (Type 3510-1 Control Valve)
- Type 3277-5 Pneumatic Actuator (Type 3510-7 Control Valve) for integral positioner attachment

Available as

- Globe valve
- Angle valve

Valve body with

- G, NPT or Rc female thread
- Welding ends or flanges

Stainless steel is used as the standard body material. However, a wide variety of special materials can also be used on customer request.

A mounting kit (1400-9031) provides the valve with an interface according to DIN EN 60534-6-1 (NAMUR) for attachment of positioners, limit switches, solenoid valves and other valve accessories. We recommend using an insulating section or bellows seal for flanged valves to provide more space to mount valve accessories.

**Versions**

Standard version

- For temperatures from 14 to 428 °F (-10 to +220 °C)
- Class 150 to 2500
- Globe or angle valve

- Female thread G 1/8 · G 1/4 · G 3/8 · G 1/2 · G 3/4 or 1/8 NPT · 1/4 NPT · 3/8 NPT · 1/2 NPT · 3/4 NPT or Rc 1/8 · Rc 1/4 · Rc 3/8 · Rc 1/2 · Rc 3/4
- Flanges NPS 1/2, 3/4, 1, Class 150 to 2500
- Welding ends NPS 1/2 and NPS 1 with welding-neck ends

**Type 3510-1** · With Type 3271-5 Pneumatic Actuator, 120 cm<sup>2</sup> actuator area (see Data Sheet ▶ T 8310-1)

**Type 3510-7** (Fig. 1 and Fig. 2) · With Type 3277-5 Pneumatic Actuator with 120 cm<sup>2</sup> actuator area, for integral positioner attachment (see Data Sheet ▶ T 8310-1)

Further versions

- **Insulating section** for temperatures from -325 to +842 °F (-196 to +450 °C), with special material up to +1200 °F (+650 °C)
- **Metal bellows seal** up to Class 1500 with external tightness of  $\leq 10^{-5}$  mbar·l/s
- **Manual override**
- **Electric actuator** · On request
- **Stainless steel actuator** for ambient temperatures down to -76 °F (-60 °C) · On request

### Principle of operation

The medium flows through the micro-flow valve in the direction indicated by the arrow. The plug position determines the cross-sectional area between the seat and plug.

The plug stem is connected to the actuator stem by the stem connector and sealed with an adjustable packing.

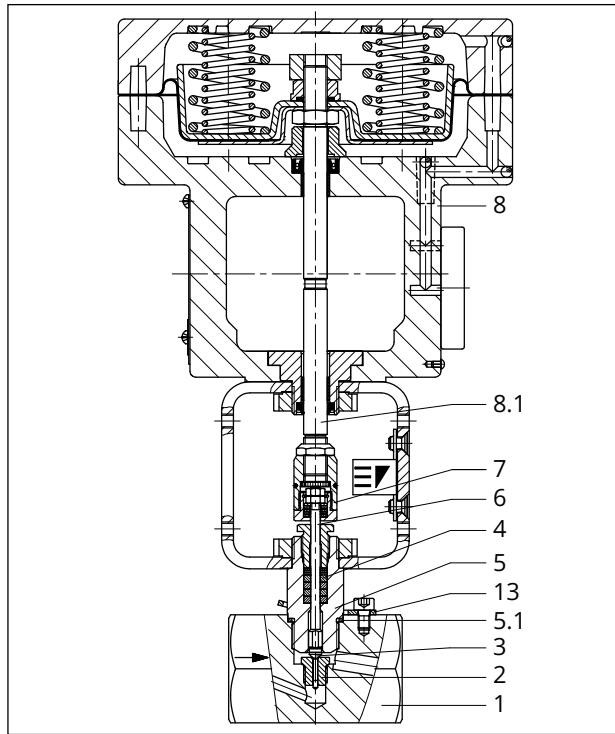
To comply with stricter fugitive emissions requirements, the valve can be equipped with a double-walled metal bellows.

The anti-rotation fixture prevents a loosening of the screw connection between the valve body and the bonnet or the intermediate piece.

### Fail-safe positions

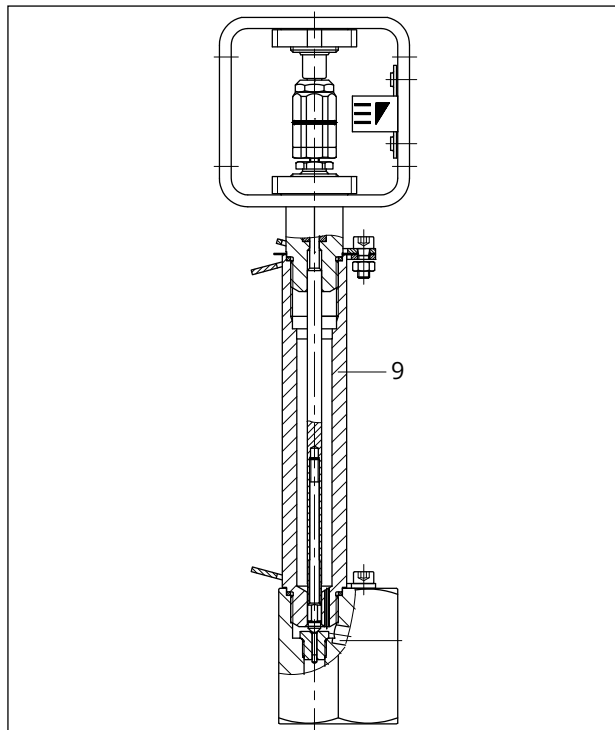
Depending on how the compression springs are arranged in the pneumatic actuator, the valve has two fail-safe positions that become effective when the supply air fails:

- **Actuator stem extends:**  
The valve is closed upon air supply failure.
- **Actuator stem retracts:**  
The valve is opened upon air supply failure.



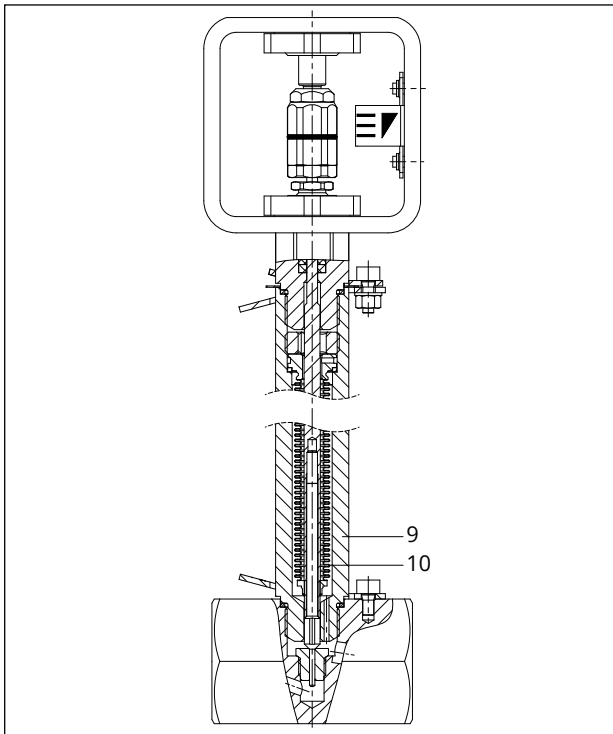
**Fig. 3:** Type 3510-7 Control Valve

- |     |              |     |                       |
|-----|--------------|-----|-----------------------|
| 1   | Valve body   | 6   | Plug stem             |
| 2   | Seat         | 7   | Stem connector        |
| 3   | Plug         | 8   | Actuator              |
| 4   | Packing      | 8.1 | Actuator stem         |
| 5   | Valve bonnet | 13  | Anti-rotation fixture |
| 5.1 | Body gasket  |     |                       |



**Fig. 4:** Type 3510 Valve, angle valve with insulating section

- 9 Intermediate piece for insulating section or bellows seal



**Fig. 5:** *Type 3510 Valve, globe valve with metal bellows seal*

- 9 Intermediate piece for insulating section or bellows seal
- 10 Metal bellows

**Table 1: Technical data for Type 3510 · ANSI version**

Connection	Female thread	Welding ends	Flanges
Nominal size	G 1/8 · G 1/4 · G 3/8 · G 1/2 · G 3/4 1/8 NPT, 1/4 NPT, 3/8 NPT, 1/2 NPT, 3/4 NPT Rc 1/8, Rc 1/4, Rc 3/8, Rc 1/2, Rc 3/4	NPS 1/2 · NPS 1	NPS 1/2 · NPS 3/4 · NPS 1
Pressure rating	Class 150 to 2500		
Seat-plug seal	Metal seal		
Characteristic	Equal percentage with $C_v \geq 0.012$ · Linear · On/off		
Rangeability	50:1 · <50:1 with $C_v < 0.12$		
Temperature range <sup>1)</sup>	14 to 428 °F (-10 to +220 °C) · With insulating section: -325 to +842 °F (-196 to +450 °C)		
Leakage class according to DIN EN 60534-4 or ANSI FCI 70-2	Metal seal: IV · High-performance metal seal: V		
Conformity	<b>CE</b>		

<sup>1)</sup> Higher temperatures on request

**Table 2: Materials for Type 3510 · ANSI version**

Valve body <sup>1)</sup> and valve bonnet <sup>2)</sup>	A479 A316/316L	B574 N06455
Seat	A479 A316/316L <sup>3)</sup> 1.4122 Stellite®	B574 N06455 <sup>3)</sup>
Plug	A479 A316/316L 1.4112 Stellite®	B574 N06455 <sup>3)</sup>
Packing	PTFE compound	
Body gasket	A479 A316/316L	B574 N06455
<b>Insulating section</b>	A479 A316/316L	B574 N06455
<b>Bellows seal</b>		
Intermediate piece	A479 A316/316L	B574 N06455
Metal bellows up to Class 1500	1.4571	2.4819

<sup>1)</sup> Other materials on request

<sup>2)</sup> Wetted parts

<sup>3)</sup> Only with  $C_v$  0.0012 to 2

## Available C<sub>v</sub> coefficients

**Table 3:** Overview · ANSI version

C <sub>v</sub> coefficient	0.00012 to 0.0075 <sup>1)</sup>	0.012 to 0.3	0.5	0.75 to 2.0 <sup>2)</sup>
Rangeability	<15:1	15:1 to 50:1	50:1	50:1
Seat Ø in mm	2	3	4	10
Seat thread <sup>3)</sup>	M10x1	M10x1	M10x1	M16x1
Plug stem Ø in mm	4	4	4	4
Travel in mm	7.5	7.5	7.5	7.5

<sup>1)</sup> Seat and plug made only of 1.4122/1.4112, 1.4122/Stellite® or Stellite®/Stellite®

<sup>2)</sup> Only up to Class 600

<sup>3)</sup> Trims are only interchangeable within the C<sub>v</sub> coefficient ranges 0.00012 to 0.5 (M10x1) and 0.75 to 2.0 (M16 x 1) due to the different seat threads.

**Table 4:** C<sub>v</sub> coefficients with associated nominal sizes · ANSI version

Flow rate	Connection		Female thread			Welding ends		Flanges		
	C <sub>v</sub>	Characteristic		G 1/8, G 1/4 · 1/8 NPT, 1/4 NPT · Rc 1/8, Rc 1/4	G 3/8 · 3/8 NPT · Rc 3/8	G 1/2, G 3/4 · 1/2 NPT, 3/4 NPT · Rc 1/2, Rc 3/4	NPS 1/2	NPS 1	NPS 1/2	NPS 3/4
Equal per-centage		Linear								
0.00012	–	•	•	•	•	•	•	•	•	•
0.00020	–	•	•	•	•	•	•	•	•	•
0.00030	–	•	•	•	•	•	•	•	•	•
0.00050	–	•	•	•	•	•	•	•	•	•
0.00075	–	•	•	•	•	•	•	•	•	•
0.0012	–	•	•	•	•	•	•	•	•	•
0.0020	–	•	•	•	•	•	•	•	•	•
0.0030	–	•	•	•	•	•	•	•	•	•
0.0050	–	•	•	•	•	•	•	•	•	•
0.0075	–	•	•	•	•	•	•	•	•	•
0.012	•	•	•	•	•	•	•	•	•	•
0.020	•	•	•	•	•	•	•	•	•	•
0.030	•	•	•	•	•	•	•	•	•	•
0.050	•	•	•	•	•	•	•	•	•	•
0.075	•	•	•	•	•	•	•	•	•	•
0.12	•	•	•	•	•	•	•	•	•	•
0.20	•	•	•	•	•	•	•	•	•	•
0.30	•	•	•	•	•	•	•	•	•	•
0.50	•	•	•	•	•	•	•	•	•	•
0.75 <sup>1)</sup>	•	•	–	–	•	•	•	•	•	•
1.2 <sup>1)</sup>	•	•	–	–	•	•	•	•	•	•
2.0 <sup>1)</sup>	•	•	–	–	•	•	•	•	•	•

<sup>1)</sup> Versions can be used up to Class 600 at the maximum

**Table 5: Valve selection guide**

Class	150 to 300		600		900 to 1500		2500	
Metal bellows	Optional		Optional		Optional		-	Optional
C <sub>v</sub>								
0.00012	Type 3510		Type 3510		Type 3510		Type 3510	
0.00020								
0.00030								
0.00050								
0.00075								
0.0012								
0.0020								
0.0030								
0.0050								
0.0075								
0.012								
0.020								
0.030								
0.050								
0.075								
0.12								
0.20	Type 3252	Type 3241	Type 3252	Type 3251	Type 3252	Type 3251	Type 3252	Type 3241
0.30								
0.50								
0.75								
1.2								
2.0								
3.0								
5.0								
7.5								
12								

Detailed information on each valve version can be found in the following data sheets:

- Type 3241: ▶ T 8015 (DIN) and ▶ T 8012 (ANSI)
- Type 3251: ▶ T 8051 (DIN) and ▶ T 8052 (ANSI)
- Type 3252: ▶ T 8053

## Permissible differential pressures · ANSI version · Pressures stated in bar (gauge)

**Table 6:** Standard version without bellows seal · Fail-close · Maximum permissible supply pressure: 4 bar

Bench range with actuator area		120 cm <sup>2</sup>	0.8 to 1.6	1.7 to 2.1	2.4 to 3.0
Nominal size	C <sub>v</sub> coefficient	Actuator	Δp when p <sub>2</sub> = 0 bar		
G 1/8 · G 1/4 · G 3/8 · G 1/2 · G 3/4 Rc 1/8 · Rc 1/4 · Rc 3/8 · Rc 1/2 · Rc 3/4 1/8 NPT, 1/4 NPT, 3/8 NPT, 1/2 NPT, 3/4 NPT NPS 1/2 · NPS 3/4 · NPS 1	0.00012 to 0.5	120 cm <sup>2</sup>	400	-	-
G 1/2 · G 3/4 Rc 1/2 · Rc 3/4 1/2 NPT · 3/4 NPT NPS 1/2 · NPS 3/4 · NPS 1	0.75 to 2.0 <sup>1)</sup>	120 cm <sup>2</sup>	84	100	-

<sup>1)</sup> Only up to Class 600

**Table 7:** Standard version with bellows seal · Fail-close · Maximum permissible supply pressure: 4 bar

Bench range with actuator area		120 cm <sup>2</sup>	0.8 to 1.6	1.7 to 2.1	2.4 to 3.0
Nominal size	C <sub>v</sub> coefficient	Actuator	Δp when p <sub>2</sub> = 0 bar		
G 1/8 · G 1/4 · G 3/8 · G 1/2 · G 3/4 Rc 1/8 · Rc 1/4 · Rc 3/8 · Rc 1/2 · Rc 3/4 1/8 NPT, 1/4 NPT, 3/8 NPT, 1/2 NPT, 3/4 NPT NPS 1/2 · NPS 3/4 · NPS 1	0.00012 to 0.5	120 cm <sup>2</sup>	72	160	250
G 1/2 · G 3/4 Rc 1/2 · Rc 3/4 1/2 NPT · 3/4 NPT NPS 1/2 · NPS 3/4 · NPS 1	0.75 to 2.0 <sup>1)</sup>	120 cm <sup>2</sup>	68	100	-

<sup>1)</sup> Only up to Class 600

**Table 8:** Standard version without bellows seal · Fail-open · Maximum permissible supply pressure: see Table 10

Bench range with actuator area		120 cm <sup>2</sup>	0.8 to 1.6		
		Supply pressure	2.0	3.3	4.3
Nominal size	C <sub>v</sub> coefficient	Actuator	Δp when p <sub>2</sub> = 0 bar		
G 1/8 · G 1/4 · G 3/8 · G 1/2 · G 3/4 Rc 1/8 · Rc 1/4 · Rc 3/8 · Rc 1/2 · Rc 3/4 1/8 NPT, 1/4 NPT, 3/8 NPT, 1/2 NPT, 3/4 NPT NPS 1/2 · NPS 3/4 · NPS 1	0.00012 to 0.5	120 cm <sup>2</sup>	254	400	-
G 1/2 · G 3/4 Rc 1/2 · Rc 3/4 1/2 NPT · 3/4 NPT NPS 1/2 · NPS 3/4 · NPS 1	0.75 to 2.0 <sup>1)</sup>	120 cm <sup>2</sup>	36	100	-

<sup>1)</sup> Only up to Class 600

**Table 9:** Standard version with bellows seal · Fail-open · Maximum permissible supply pressure: see Table 10

Bench range with actuator area		120 cm <sup>2</sup>	0.8 to 1.6		
		Supply pressure	2.0	3.3	4.3
Nominal size	C <sub>v</sub> coefficient	Actuator	Δp when p <sub>2</sub> = 0 bar		
G 1/8 · G 1/4 · G 3/8 · G 1/2 · G 3/4 Rc 1/8 · Rc 1/4 · Rc 3/8 · Rc 1/2 · Rc 3/4 1/8 NPT, 1/4 NPT, 3/8 NPT, 1/2 NPT, 3/4 NPT NPS 1/2 · NPS 3/4 · NPS 1	0.00012 to 0.5	120 cm <sup>2</sup>	27	160	250
G 1/2 · G 3/4 Rc 1/2 · Rc 3/4 1/2 NPT · 3/4 NPT NPS 1/2 · NPS 3/4 · NPS 1	0.75 to 2.0 <sup>1)</sup>	120 cm <sup>2</sup>	27	100	-

<sup>1)</sup> Only up to Class 600

**Table 10:** Maximum permissible supply pressure in bar for fail-open version

Bench range	Adjusted to	Max. permissible supply pressure
0.4 to 2.0	0.8 to 1.6	3.3
1.4 to 2.3	1.7 to 2.1	3.8
2.1 to 3.3	2.4 to 3.0	4.7

**Permissible differential pressures · ANSI version · Pressures stated in psi (gauge)**

**Table 11:** Standard version without bellows seal · Fail-close · Maximum permissible supply pressure: 58 psi

Bench range with actuator area		120 cm <sup>2</sup>	12 to 23	25 to 30	35 to 44
Nominal size	C <sub>v</sub> coefficient	Actuator	Δp when p <sub>2</sub> = 0 psi		
G 1/8 · G 1/4 · G 3/8 · G 1/2 · G 3/4 Rc 1/8 · Rc 1/4 · Rc 3/8 · Rc 1/2 · Rc 3/4 1/8 NPT, 1/4 NPT, 3/8 NPT, 1/2 NPT, 3/4 NPT NPS 1/2 · NPS 3/4 · NPS 1	0.00012 to 0.5	120 cm <sup>2</sup>	5880	-	-
G 1/2 · G 3/4 Rc 1/2 · Rc 3/4 1/2 NPT · 3/4 NPT NPS 1/2 · NPS 3/4 · NPS 1	0.75 to 2.0 <sup>1)</sup>	120 cm <sup>2</sup>	1235	1470	-

<sup>1)</sup> Only up to Class 600

**Table 12:** Standard version with bellows seal · Fail-close · Maximum permissible supply pressure: 58 psi

Bench range with actuator area		120 cm <sup>2</sup>	12 to 23	25 to 30	35 to 44
Nominal size	C <sub>v</sub> coefficient	Actuator	Δp when p <sub>2</sub> = 0 psi		
G 1/8 · G 1/4 · G 3/8 · G 1/2 · G 3/4 Rc 1/8 · Rc 1/4 · Rc 3/8 · Rc 1/2 · Rc 3/4 1/8 NPT, 1/4 NPT, 3/8 NPT, 1/2 NPT, 3/4 NPT NPS 1/2 · NPS 3/4 · NPS 1	0.00012 to 0.5	120 cm <sup>2</sup>	1060	2220	3705
G 1/2 · G 3/4 Rc 1/2 · Rc 3/4 1/2 NPT · 3/4 NPT NPS 1/2 · NPS 3/4 · NPS 1	0.75 to 2.0 <sup>1)</sup>	120 cm <sup>2</sup>	1000	1470	-

<sup>1)</sup> Only up to Class 600

**Table 13:** Standard version without bellows seal · Fail-open · Maximum permissible supply pressure: see Table 15

Bench range with actuator area		120 cm <sup>2</sup>	12 to 23		
		Supply pressure	30	48	63
Nominal size	C <sub>v</sub> coefficient	Actuator	Δp when p <sub>2</sub> = 0 psi		
G 1/8 · G 1/4 · G 3/8 · G 1/2 · G 3/4 Rc 1/8 · Rc 1/4 · Rc 3/8 · Rc 1/2 · Rc 3/4 1/8 NPT, 1/4 NPT, 3/8 NPT, 1/2 NPT, 3/4 NPT NPS 1/2 · NPS 3/4 · NPS 1	0.00012 to 0.5	120 cm <sup>2</sup>	3735	5880	-
G 1/2 · G 3/4 Rc 1/2 · Rc 3/4 1/2 NPT · 3/4 NPT NPS 1/2 · NPS 3/4 · NPS 1	0.75 to 2.0 <sup>1)</sup>	120 cm <sup>2</sup>	530	1470	-

<sup>1)</sup> Only up to Class 600

**Table 14:** Standard version with bellows seal · Fail-open · Maximum permissible supply pressure: see Table 15

Bench range with actuator area		120 cm <sup>2</sup>	12 to 23		
		Supply pressure	30	48	63
Nominal size	C <sub>v</sub> coefficient	Actuator	Δp when p <sub>2</sub> = 0 psi		
G 1/8 · G 1/4 · G 3/8 · G 1/2 · G 3/4 Rc 1/8 · Rc 1/4 · Rc 3/8 · Rc 1/2 · Rc 3/4 1/8 NPT, 1/4 NPT, 3/8 NPT, 1/2 NPT, 3/4 NPT NPS 1/2 · NPS 3/4 · NPS 1	0.00012 to 0.5	120 cm <sup>2</sup>	395	2220	3705
G 1/2 · G 3/4 Rc 1/2 · Rc 3/4 1/2 NPT · 3/4 NPT NPS 1/2 · NPS 3/4 · NPS 1	0.75 to 2.0 <sup>1)</sup>	120 cm <sup>2</sup>	395	1470	-

<sup>1)</sup> Only up to Class 600

**Table 15:** Maximum permissible supply pressure in psi for fail-open version

Bench range	Adjusted to	Max. permissible supply pressure
6 to 30	12 to 23	48
20 to 33	25 to 30	55
30 to 48	35 to 44	68

## Dimensions

**Table 16:** Dimensions in inches and mm for Type 3510 Valve · ANSI version

Connection			Female thread	Welding ends		Flanges				
Valve			G/NPT/Rc 1/8 to 3/4	NPS 1/2	NPS 1	NPS 1/2	NPS 3/4	NPS 1		
Length L <sup>1)</sup>	Class 150	in	2.91" 74 mm	7.25	7.25	7.25	7.25	7.25		
		mm		184	184	184	184	184		
	Class 300	in		7.50	7.75	7.50	7.62	7.75		
		mm		190	197	190	194	197		
	Class 600	in		8.00	8.25	8.00	8.12	8.25		
		mm		203	210	203	206	210		
	Class 900/ Class 1500	in		8.50	10.00	8.50	9.00	10.00		
		mm		216	254	216	229	254		
	Class 2500	in		10.38	12.12	10.38	10.75	12.12		
		mm		264	308	264	273	308		
	Length L <sup>1)</sup>	Class 150		in	1.33" 34 mm	3.62	3.62	3.62	3.62	3.62
				mm		92	92	92	92	92
Class 300		in	3.75	3.88		3.75	3.81	3.88		
		mm	95	99		95	97	99		
Class 600		in	4.00	4.12		4.00	4.06	4.12		
		mm	101	105		101	103	105		
Class 900/ Class 1500		in	4.25	5.00		4.25	4.50	5.00		
		mm	108	127		108	114	127		
Class 2500		in	5.19	6.06		5.19	5.38	6.06		
		mm	132	154		132	137	154		
<b>Standard bonnet</b>										
H1 for actuator		120 cm <sup>2</sup>	in	4.80						
	mm		122							
<b>With insulating section</b>										
H4	Up to Class 2500	in	10.35							
		mm	263							
<b>With bellows seal</b>										
H4	Up to Class 600	in	10.35							
		mm	263							
	Class 1500	in	14.37							
		mm	365							
H2 or flange ØD1	Class 150	in	0.90 <sup>2)</sup> 23 mm <sup>2)</sup>	0.90 <sup>2)</sup> 23 mm <sup>2)</sup>	0.90 <sup>2)</sup> 23 mm <sup>2)</sup>	3.54	3.94	4.33		
		mm				90	100	110		
	Class 300	in				3.74	4.53	4.91		
		mm				95	115	125		
	Class 600	in				3.74	4.53	4.91		
		mm				95	115	125		
	Class 900/ Class 1500	in				4.72	5.12	5.91		
		mm				120	130	150		
	Class 2500	in				5.31	5.51	6.30		
		mm				135	140	160		

<sup>1)</sup> Face-to-face dimensions of flanges according to DIN EN 558

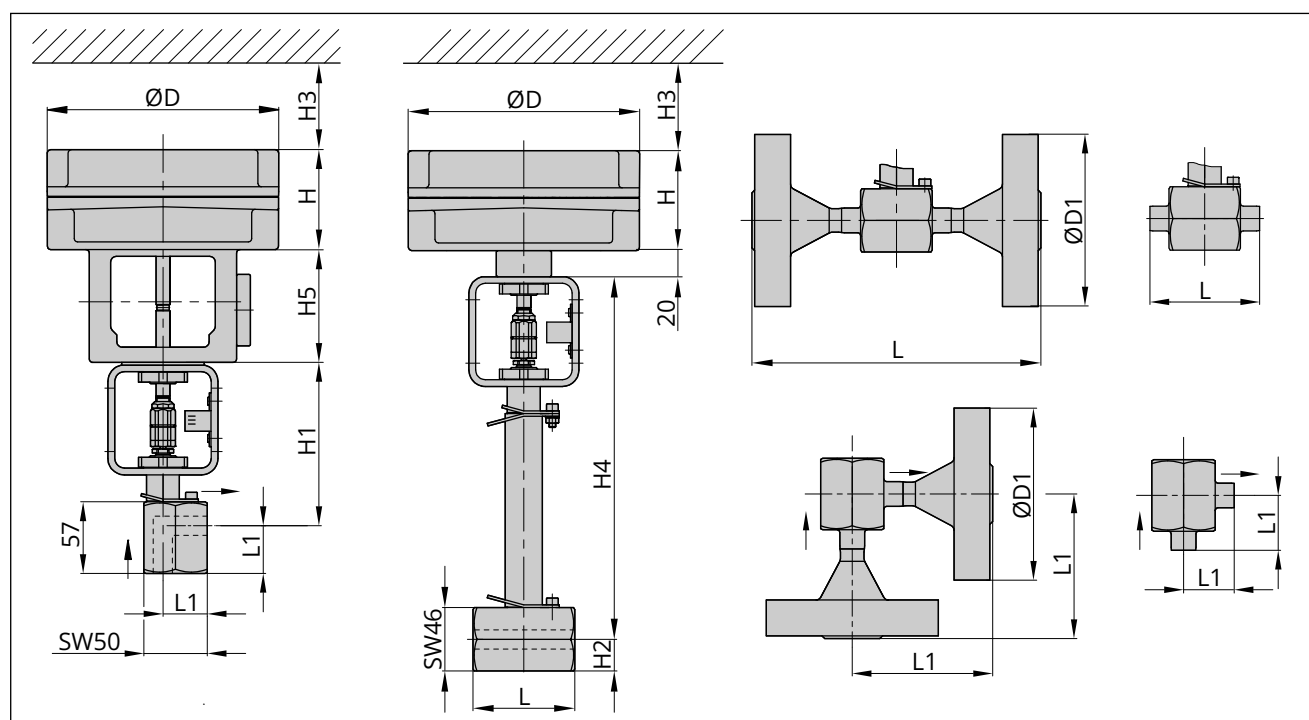
<sup>2)</sup> H2 = 1.10" (28 mm) with body material B574 N06455

**Table 17:** Further dimensions<sup>1)</sup> in combination with Type 3271 Pneumatic Actuator or Type 3277 Pneumatic Actuator

Actuator area		cm <sup>2</sup>	120
Diaphragm ØD		in	6.61
Diaphragm ØD		mm	168
H <sup>2)</sup>	Type 3271	in	2.71
H <sup>2)</sup>	Type 3271	mm	69
H <sup>2)</sup>	Type 3277	in	2.71
H <sup>2)</sup>	Type 3277	mm	69
H3 <sup>3)</sup>		in	4.33
H3 <sup>3)</sup>		mm	110
H5	Type 3277	in	3.46
H5	Type 3277	mm	88
Thread	Type 3271	M30x1.5 (M20x1.5) <sup>5)</sup>	
Thread	Type 3277	M30x1.5 (M20x1.5) <sup>5)</sup>	
a	Type 3271	G 1/8 (1/8 NPT)	
a2	Type 3277	-	

- 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 cm<sup>2</sup> without lifting eyelet or female thread.
- 3) Minimum clearance required to remove the actuator
- 5) Version with connections for micro-flow valve

### Dimensional drawings



**Fig. 6:** From left to right: Type 3510-7 Angle Valve with female thread connections, Type 3510-1 Globe Valve with female thread connections and bellows seal/insulating section, Type 3510 body with flanges, Type 3510 body with welding ends

## Weights

**Table 18:** Weights (approx.) in lbs and kg for Type 3510 Valve · ANSI version

Connection		Female thread	Welding ends	Flanges			
Valve		G/NPT/Rc ½ to ¾	NPS ½, NPS 1	NPS ½	NPS ¾	NPS 1	
Valve without actuator	Class 150	lbs	3.74	4.0	5.8	7.3	8.2
		kg	1.7	1.8	2.6	3.3	3.7
	Class 300	lbs	3.74	4.0	7.1	9.3	10.6
		kg	1.7	1.8	3.2	4.2	4.8
	Class 600	lbs	3.74	4.0	7.5	10.6	11.5
		kg	1.7	1.8	5.2	7.6	8.7
	Class 900/ Class 1500	lbs	3.74	4.0	14.4	16.8	19.2
		kg	1.7	1.8	5.2	7.6	8.7
	Class 2500	lbs	-	-	14.4	20	21.7
		kg	-	-	6.5	9.0	9.8
	<b>With insulating section</b>						
	Additional weight	lbs	1.2				
kg		0.5					
<b>With bellows seal</b>							
Additional weight	lbs	1.4					
	kg	0.6					

**Table 19:** Weights<sup>1)</sup> for Type 3271 and Type 3277 Pneumatic Actuators

Type ... Actuator	Actuator area in cm <sup>2</sup>		120
3271	Without handwheel	lbs	6
3271	Without handwheel	kg	2.5
3271	With handwheel	lbs	9
3271	With handwheel	kg	4
3277	Without handwheel	lbs	7
3277	Without handwheel	kg	3.2
3277	With handwheel	lbs	10
3277	With handwheel	kg	4.5

<sup>1)</sup> 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.).

## Ordering text

The following specifications are required on ordering:

Type 3510 Micro-flow Valve	Globe or angle valve
Nominal size	NPS ...
Pressure rating	Class ...
Body material	See Table 2
Type of end connections	G, NPT, Rc female thread Flanges or welding ends
Direction of flow	Flow-to-open or flow-to-close design
Characteristic	Equal percentage, linear or on/off
Bonnet	Standard bonnet, insulating section or bellows seal
Actuator	Type 3271-5 or Type 3277-5 (see Data Sheet ► T 8310-1)
Fail-safe action	Actuator stem extends/retracts
Process medium	Density in kg/m <sup>3</sup> and temperature in °C or °F
Flow rate	in kg/h or m <sup>3</sup> /h in standard or operating state
Pressure	p <sub>1</sub> and p <sub>2</sub> in bar or psi (absolute pressure p <sub>abs</sub> ), with minimum, normal and maximum flow rate
Valve accessories <sup>1)</sup>	Positioner and/or limit switch

<sup>1)</sup> Mounting kit (1400-9031) required

**Associated Data Sheet for pneumatic actuators** ► T 8310-1

**Associated Mounting and Operating Instructions** ► EB 8091 (DIN version)  
► EB 8091-1 (ANSI version)

