

T 8052 EN

Series 250 · Type 3251-1/3251-AM-1 and Type 3251-7/3251-AM-7 Pneumatic Control Valves

Type 3251 and Type 3251-AM Globe Valve

ANSI version



Application

Control valve for process engineering applications with high industrial requirements

Type	3251	3251-AM
Nominal size	NPS ½ to 20	NPS ½ to 3
Pressure rating	Class 150 to 2500	Class 150 to 2500
Temperatures	-320 to +1022 °F (-196 to +550 °C)	-320 to +842 °F (-196 to +450 °C)



Fig. 1: Type 3251-1 Pneumatic Control Valve: (Type 3251 Valve with Type 3271 Pneumatic Actuator)

Special features

Type 3251 or Type 3251-AM Globe Valve

- Type 3271 Pneumatic Actuator (Type 3251-1 or Type 3251-AM-1 Control Valve)
- Type 3277 Pneumatic Actuator (Type 3251-7 or Type 3251-AM-7 Control Valve) for integral positioner attachment

Valve body material

Type 3251:

- Cast steel
- Cast stainless steel, high-temperature cast steel or cast cold-resisting steel
- Special materials

Type 3251-AM:

- AM stainless steel 316/316L
- Other materials on request

Low-noise valve plug

- Metal seal
- Soft seal up to Class 300
- High-performance metal seal
- Balanced to handle high differential pressures

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 60534-6-1¹⁾ and NAMUR Recommendation (see Information Sheet ► T 8350).

¹⁾ Accessories required. See associated actuator documentation.

Versions

Standard version with PTFE packing for temperatures from 14 to 428 °F (-10 to +220 °C) or with adjustable high-temperature packing from 14 to 662 °F (-10 to +350 °C), Type 3251: nominal sizes

NPS ½ to 20; Type 3251-AM: nominal sizes NPS ½ to 3, pressure rating Class 150 to 2500

- **Type 3251-1 and Type 3251-AM-1** · Type 3251 or Type 3251-AM Valve with Type 3271 Pneumatic Actuator with 350 to 2800 cm² actuator area (see Data Sheets ► T 8310-1, ► T 8310-2 and ► T 8310-3)
- **Type 3251-7 and Type 3251-AM-7** · Type 3251 or Type 3251-AM Valve with Type 3277 Pneumatic Actuator with 350 to 750v2 cm² diaphragm area for integral positioner attachment (see Data Sheet ► T 8310-1)

Further versions

- **Welding ends** or **welding-neck ends** according to ASME B16.25
- **Flow divider** or **AC-1/AC-3 trim** for noise reduction · See Data Sheets ► T 8081, ► T 8082 and ► T 8083
- **Perforated plug** · See Data Sheet ► T 8086
- **Valve plug with pressure balancing** · See Technical data
- **Version with insulating section or bellows seal** · See Technical data
- **Heating jacket** (Type 3251 only) · Details on request
- **Additional handwheel** · See Data Sheet ► T 8310-1
- **DIN version** · See Data Sheet ► T 8051
- **Type 3251/3251-AM Valve with Type 3273 Hand-operated Actuator** · For valves with max. 30 mm rated travel and side-mounted handwheel for travel >30 mm (see Data Sheet ► T 8312)
- **Type 3251-2/3251-AM-2 Electric Control Valve** · Details on request

Design and principle of operation

The medium flows through the valve in the direction indicated by the arrow. A rise in signal pressure causes the force acting on the diaphragm in the actuator to increase. The springs are compressed. Depending on the selected direction of action, the actuator stem retracts or extends. As a result, the position of the plug in the seat changes and determines the flow rate through the valve and the pressure p_2 with it.

The version with bellows seal is fitted with a test connection to monitor the corrosion-resistant bellows.

Trims with flow dividers can be used to reduce noise emission (► T 8081).

Pressure balancing can optionally be used when high pressures or differential pressures act on the plug.

The following diagrams show configuration examples.

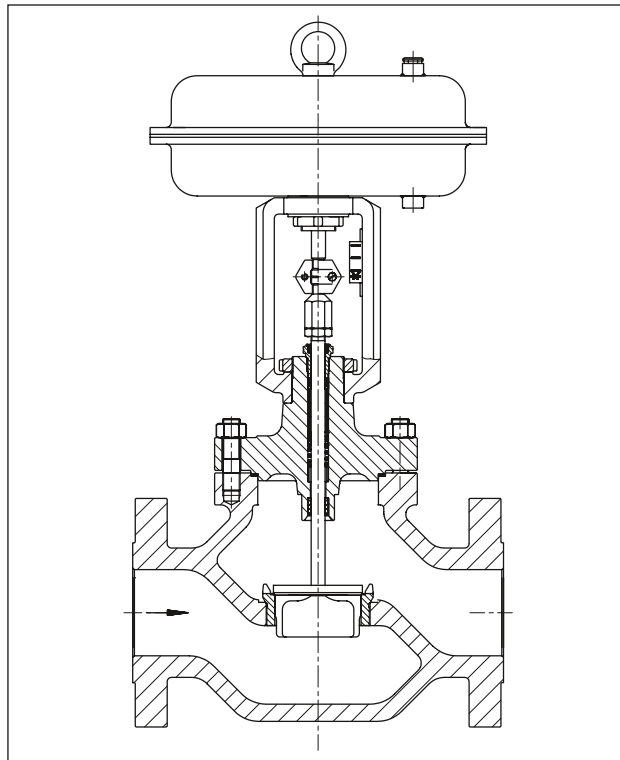


Fig. 2: Type 3251-1/3251-AM-1 Control Valve with Type 3271 Pneumatic Actuator

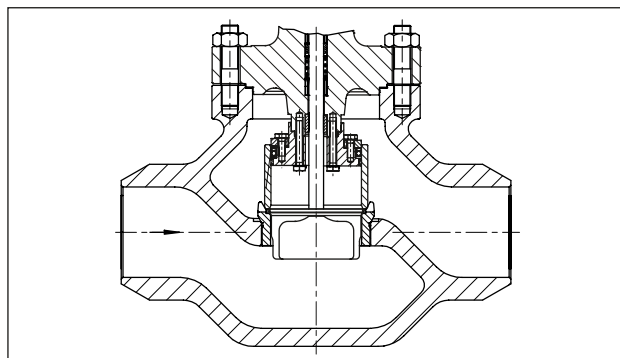


Fig. 3: Type 3251/3251-AM Valve with welding ends and balanced plug

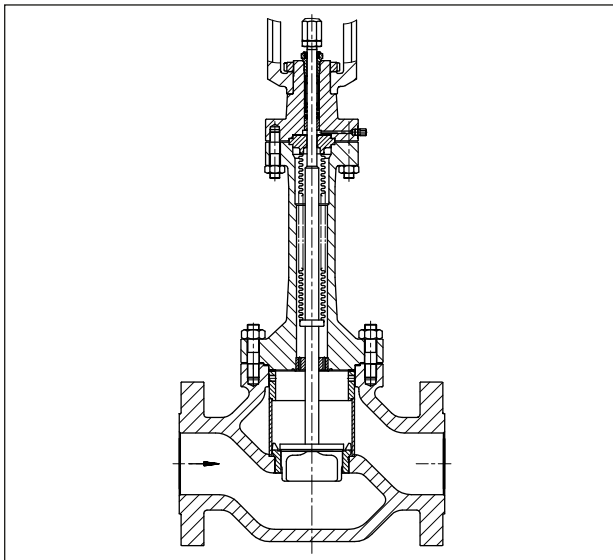


Fig. 4: Type 3251/3251-AM Valve with flow divider ST 1 and additional bellows seal with test connection

Differential pressures

See Information Sheet ► T 8000-4 for permissible differential pressures.

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 3251 and Type 3251-AM · ANSI version

Valve type			3251			3251-AM
Material			Cast steel A216 WCC	Cast steel A217 WC6	Cast stainless steel A351 CF8M	AM stainless steel 316/316L
Nominal size and pressure rating			NPS ½ to 12 in Class 150 to 2500 NPS 14 in Class 150 to 600 NPS 16 to 20 in Class 150 to 1500			NPS ½ to 3 in Class 150 to 2500
Type of end connections	Flanges		All ANSI versions			
	Welding ends		According to ASME B16.25			
Seat-plug seal			Metal seal · Soft seal · High-performance metal seal			
Characteristic			Equal percentage · Linear · On/off ▶ T 8000-3)			
Rangeability			50:1			
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 +185 °F (-40 and +85 °C).			
Conformity			 			
Temperature ranges in °F (°C) · Permissible operating pressures according to pressure-temperature diagram (see Information Sheet ▶ T 8000-2)						
Body with standard bonnet			14 to 428 (-10 to +220) · Up to 662 (350) with high-temperature packing			
Body with insulating section or bellows seal			-20 to +800 (-29 to +425)	-20 to +932 (-29 to +500)	-325 to +1022 (-196 to +550) ²⁾	-325 to +842 (-196 to +450) ²⁾
Valve plug ¹⁾	Standard	Metal seal	-325 to +1022 (-196 to +550) ²⁾			-325 to +842 (-196 to +450) ²⁾
		Soft seal	-325 to +428 (-196 to +220) ²⁾			-325 to +428 (-196 to +220) ²⁾
	Balanced with PTFE ring		-58 to +428 (-50 to +220) ³⁾			-58 to +428 (-50 to +220) ²⁾
	Balanced with graphite ring		428 to 932 (220 to 500) ⁴⁾			428 to 842 (220 to 450)
	Leakage class according to ANSI FCI 70-2					
Valve plug	Standard	Metal seal	Standard: IV · High-performance metal seal: V			
		Soft seal	VI			
	Balanced, metal seal		With PTFE ring (standard): IV · High-performance metal seal: V · With graphite ring: IV			

¹⁾ Only in combination with suitable body material

²⁾ Note: The temperature limits are not directly converted temperatures.

³⁾ Lower temperatures on request

⁴⁾ Higher temperatures on request

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

Table 2: Materials

Valve type		3251			3251-AM
Standard version Valve body ¹⁾		Cast steel A216 WCC	Cast steel A217 WC6	Cast stainless steel A351 CF8M	AM stainless steel 316/316L
Valve bonnet		A216 WCC/A105	A217 WC6/A182 F12 Cl. 2	A351 CF8M/A182 F316	A351 CF8M/A182 F316
Seat and plug ²⁾	Metal seal	410-2/1.4008		316L/CF3M	316L/CF3M or 410-2/1.4008
Seal ring for	Soft seal	PTFE with 15 % glass fiber			
	Pressure balancing	PTFE with carbon · Graphite			
Guide bushings		1.4112		2.4610	2.4610
Packing ³⁾		V-ring packing: PTFE with carbon, spring: 302 or high-temperature packing			
Body gasket		Graphite seal on metal core			
Insulating section		A216 WCC/A105	A217 WC6/A182 F12 Cl. 2	A351 CF8M/A182 F316	A351 CF8M/A182 F316
Bellows seal ⁵⁾					
	Intermediate piece	A216 WCC/A105	A217 WC6/A182 F12 Cl. 2	A351 CF8M/A182 F316	A351 CF8M/A182 F316
	Metal bellows	1.4571 ⁴⁾			–
Heating jacket		A240 316L			–

¹⁾ **Type 3251:** Other materials (e.g. for high-temperatures or low temperatures) as well as special materials for applications with seawater: 1.4538, duplex 1.4470, nickel-based alloy 9.4610 · See pressure-temperature diagrams in Information Sheet
▶ T 8000-2

Type 3251-AM: Other materials on request

²⁾ Seats and metal-seated plug also with Stellite® facing or plug made of solid Stellite® available (up to max. C_v 735)

³⁾ Other packings on request (▶ T 8000-6)

⁴⁾ Other bellows material on request

⁵⁾ Bellows with both >NPS 8 and >Class 600 on request

C_v and K_{vs} coefficients

Terms for control valve sizing according to DIN IEC 60534-2-1 and DIN IEC 60534-2-2: $F_L = 0.95$, $x_T = 0.75$

Conversion of flow coefficients: C_v (US gallons/min) = $1.17 \cdot K_{vs}$ (m³/h) or $K_{vs}/C_v = 0.865$

 = Versions available for Type 3251-AM (restricted range for Type 3251-AM)

Table 3: Versions with flow divider ST 1 (C_v-1, K_{vs}-1), ST 2 (C_v-2, K_{vs}-2) or ST 3 (C_v-3, K_{vs}-3)

		0.12 0.2 0.3 0.5																								
C _v		0.75	1.2	2	3	5	7.5	12	20	30	47	75	120	190	290	420	735	1150	1730	2300	2900	4200				
		0.1 0.16 0.25 0.4																								
K _{vs}		0.63	1.0	1.6	2.5	4	6.3	10	16	25	40	63	100	160	250	360	630	1000	1500	2000	2500	3600				
C _v -1		-		1.7	2.6	4.2	7	10.5	17	26	42	67	105	170	265	375	650	1040	1560	2080	2600	3700				
K _{vs} -1		-		1.45	2.2	3.6	5.7	9	14.5	22	36	57	90	144	225	320	560	900	1350	1800	2250	3200				
C _v -2		-				3.7	6	9.5	15	23	37	60	95	145	235	335	580	950	1400	1860	2300	-				
K _{vs} -2		-				3.2	5	8	13	20	32	50	80	125	200	290	500	800	1200	1600	2000	-				
C _v -3		-				3.5	5.6	9	14	23	35	55	90	140	220	315	560	880	1280	1730	2200	-				
K _{vs} -3		-				3	4.8	7.5	12	20	30	47	75	120	190	270	480	750	1100	1500	1900	-				
Seat Ø	inch	0.24		0.47		0.95			1.22	1.5	1.97	2.48	3.15	3.94	4.92	5.91	7.87	9.84	11.81	13.78	15.75	19.69				
	mm	6		12		24			31	38	50	63	80	100	125	150	200	250	300	350	400	500				
Travel	inch	0.59										1.18			1.18	2.36			4.72							
	mm	15										30			30	60			120							

Table 4: Versions without flow divider · Class 150 to 2500

C _v ⁵⁾		0.12	0.2	0.3	0.5	0.75	1.2	2	3	5	7.5	12	20	30	47	75	120	190	290	420	735	1150	1730	2300	2900	4200
K _{vs} ⁵⁾		0.1	0.16	0.25	0.4	0.63	1.0	1.6	2.5	4	6.3	10	16	25	40	63	100	160	250	360	630	1000	1500	2000	2500	3600
NPS	DN																									
½	15	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
1	25	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
1½	40	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
2	50									•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
3	80									•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
4	100													•	•	•	•	•	•	•	•	•	•	•	•	•
6	150															•	•	•	•	•	•	•	•	•	•	•
8	200																•	•	•	•	•	•	•	•	•	•
10	250																•	•	•	•	•	•	•	•	•	•
12	300																	•	•	•	•	•	•	•	•	•
14	–																			•	•	•	•	•	•	•
16	400																			•	•	•	•	•	•	•
20	500																				•	•	•	•	•	•

¹⁾ Version also available with balanced plug

²⁾ Pressure balancing only for ≥ Class 600

³⁾ Pressure balancing only for Class 600/900

⁴⁾ For Class 150 to 600 only

⁵⁾ Reduced C_v/K_{vs} coefficients with Class 900 to 2500 in parentheses

Table 5: Versions with flow divider ST 1 (C_{V-1} , K_{VS-1}) · Class 150 to 900⁴⁾

C_{V-1}		–		1.7	2.6	4.2	7	10.5	17	26	42	67	105	170	265	375	650	1040	1560	2080	2600	3700
K_{VS-1}		–		1.45	2.2	3.6	5.7	9	14.5	22	36	57	90	144	225	320	560	900	1350	1800	2250	3200
NPS	DN																					
½	15				•	•	•															
1	25				•	•	•	•	•													
1½	40				•	•	•	•	•	•												
2	50					•	•	•	•	•	•											
3	80					•	•	•	•	•	•	•	• ¹⁾									
4	100									•	•	•	• ¹⁾	• ¹⁾								
6	150											•	•	• ¹⁾	• ¹⁾	• ¹⁾						
8	200												•	•	• ¹⁾²⁾	• ¹⁾	• ¹⁾					
10	250												•	•	• ¹⁾²⁾	• ¹⁾	• ¹⁾	• ¹⁾				
12	300													•	• ¹⁾³⁾	• ¹⁾	• ¹⁾	• ¹⁾	• ¹⁾			
14	–															• ¹⁾	• ¹⁾	• ¹⁾	• ¹⁾			
16	400															• ¹⁾	• ¹⁾	• ¹⁾	• ¹⁾	• ¹⁾	• ¹⁾	
20	500																	• ¹⁾	• ¹⁾	• ¹⁾	• ¹⁾	• ¹⁾

¹⁾ Version also available with balanced plug

²⁾ Pressure balancing only for $\geq$ Class 600

³⁾ Pressure balancing only for Class 600/900

⁴⁾ Class 1500 to 2500 with flow divider ST 1 and pressure balancing on request

Table 6: Versions with flow divider ST 2 (C_{V-2} , K_{VS-2}) · Class 150 to 900⁴⁾

C_{V-2}		–		3.7	6	9.5	15	23	37	60	95	145	235	335	580	950	1400	1860	2300	–
K_{VS-2}		–		3.2	5	8	13	20	32	50	80	125	200	290	500	800	1200	1600	2000	–
NPS	DN																			
2	50					•	•	•	•	•	•									
3	80					•	•	•	•	•	•	• ¹⁾								
4	100									•	•	•	• ¹⁾	• ¹⁾						
6	150										•	•	• ¹⁾	• ¹⁾	• ¹⁾					
8	200											•	•	• ¹⁾²⁾	• ¹⁾	• ¹⁾				
10	250											•	•	• ¹⁾²⁾	• ¹⁾	• ¹⁾	• ¹⁾			
12	300												•	• ¹⁾³⁾	• ¹⁾	• ¹⁾	• ¹⁾	• ¹⁾		
14	–														• ¹⁾	• ¹⁾	• ¹⁾	• ¹⁾		
16	400														• ¹⁾	• ¹⁾	• ¹⁾	• ¹⁾	• ¹⁾	• ¹⁾
20	500															• ¹⁾	• ¹⁾	• ¹⁾	• ¹⁾	

¹⁾ Version also available with balanced plug

²⁾ Pressure balancing only for $\geq$ Class 600

³⁾ Pressure balancing only for Class 600/900

⁴⁾ Class 1500 to 2500 with flow divider ST 2 and pressure balancing on request

Table 7: Versions with flow divider ST 3 (C_V-3 , $K_{VS}-3$) · Class 150 to 900⁶⁾

C_V-3		–					3.5	5.6	9	14	23	35	55	90	140	220	315	560	880	1280	1730	2200	–
$K_{VS}-3$		–					3	4.8	7.5	12	20	30	47	75	120	190	270	480	750	1100	1500	1900	–
NPS	DN																						
2	50						• ⁴⁾	• ⁴⁾	• ⁴⁾														
3	80						• ⁴⁾	• ⁴⁾	• ⁴⁾	• ⁴⁾	• ⁴⁾	•											
4	100										• ⁴⁾	•	•										
6	150												•	•	• ¹⁾	• ¹⁾							
8	200													•	•	• ¹⁾²⁾	• ¹⁾						
10	250														•	• ¹⁾²⁾	• ¹⁾	• ¹⁾					
12	300														•	• ¹⁾³⁾	• ¹⁾	• ¹⁾	• ¹⁾				
14	–																• ¹⁾	• ¹⁾	• ¹⁾	• ¹⁾⁵⁾			
16	400																• ¹⁾	• ¹⁾	• ¹⁾	• ¹⁾	• ¹⁾		
20	500																		• ¹⁾	• ¹⁾	• ¹⁾	• ¹⁾	

¹⁾ Version also available with balanced plug

²⁾ Pressure balancing only for $\geq$ Class 600

³⁾ Pressure balancing only for Class 600/900

⁴⁾ Version not possible with bellows seal

⁵⁾ Only up to Class 300

⁶⁾ Class 1500 to 2500 with flow divider ST 3 and pressure balancing on request

Dimensions

Specifications in inches and mm

 = Versions available for Type 3251-AM (restricted range for Type 3251-AM)

Table 8: Type 3251/3251-AM Valve · Face-to-face dimensions according to ANSI/ISA 75.08.01 for up to ≤Class 600 and according to ASME B16.10 for ≥Class 900 and higher

Valve	NPS		½	1	1½	2	3	4	6	8	10	12	14	16	20
	DN		15	20	40	50	80	100	150	200	250	300	-	400	500
Length L (flanges RF and welding ends)	Class 150	in	7.25	7.25	8.75	10.00	11.75	13.88	17.75	21.38	26.50	29.00	35.00	40.00	On req.
		mm	184	184	222	254	298	352	451	543	673	737	889	1016	On req.
	Class 300	in	7.50	7.75	9.25	10.50	12.50	14.50	18.62	22.38	27.88	30.50	36.50	41.62	On req.
		mm	190	197	235	267	318	368	473	568	708	775	927	1057	On req.
	Class 600	in	8.00	8.25	9.88	11.25	13.25	15.50	20.00	24.00	29.62	32.25	38.25	43.62	On req.
		mm	203	210	251	286	337	394	508	610	752	819	972	1108	On req.
	Class 900	in	8.50	10.00	12.00	14.50	15.00	18.00	24.00	29.00	33.00	38.00	-	On req.	On req.
		mm	216	254	305	368	381	457	610	737	838	965	-	On req.	On req.
	Class 1500	in	8.50	10.00	12.00	14.50	18.50	21.61	27.75	32.75	39.00	44.50	-	On req.	On req.
		mm	216	254	305	368	470	549	705	832	991	1130	-	On req.	On req.
	Class 2500	in	10.38	12.12	15.12	17.75	22.75	26.50	36.00	40.25	On req.	On req.	-	-	-
		mm	264	308	384	451	578	673	914	1022	On req.	On req.	-	-	-
H8 for actua- tor	350 cm ²	in	9.45	9.45	9.45	9.45	9.45	9.45	-	-	-	-	-	-	-
		mm	240	240	240	240	240	240	-	-	-	-	-	-	-
	350v2 cm ²	in	9.45	9.45	9.45	9.45	9.45	9.45	-	-	-	-	-	-	-
		mm	240	240	240	240	240	240	-	-	-	-	-	-	-
	355v2 cm ²	in	9.45	9.45	9.45	9.45	9.45	9.45	16.46	-	-	-	-	-	-
		mm	240	240	240	240	240	240	418	-	-	-	-	-	-
	750v2 cm ²	in	9.45	9.45	9.45	9.45	9.45	9.45	16.46	16.46	16.46	-	-	-	-
		mm	240	240	240	240	240	240	418	418	418	-	-	-	-
	1000 cm ²	in	-	-	-	11.61	11.61	11.61	16.46	16.46	On req.	On req.	On req.	On req.	On req.
		mm	-	-	-	295	295	295	418	418	On req.	On req.	On req.	On req.	On req.
	1400-60 cm ²	in	-	-	-	11.61	11.61	11.61	16.46	16.46	On req.	On req.	On req.	On req.	On req.
		mm	-	-	-	295	295	295	418	418	On req.	On req.	On req.	On req.	On req.
	1400-120 cm ²	in	-	-	-	-	-	18.90	19.80	19.80	19.80	25.59	25.59	25.59	25.59
		mm	-	-	-	-	-	480	503	503	503 ⁴⁾	650	650	650	650
	2800 cm ²	in	-	-	-	-	-	18.90	19.80	19.80	19.80	25.59	25.59	25.59	25.59
		mm	-	-	-	-	-	480	503	503	503 ⁴⁾	650	650	650	650
	2 x 2800 cm ²	in	-	-	-	-	-	18.90	19.80	19.80	19.80	25.59	25.59	25.59	25.59
		mm	-	-	-	-	-	480	503	503	503 ⁴⁾	650	650	650	650

Valve	NPS		½	1	1½	2	3	4	6	8	10	12	14	16	20
	DN		15	20	40	50	80	100	150	200	250	300	-	400	500
H2 ¹⁾ (approx.) (DN 100/ NPS 4 and larger with foot)	Class 150	in	1.97	2.36	3.05	3.54	3.94	6.3	8.66	9.06	12.21	14.57	15.16	16.34	On req.
		mm	50	60	80	90	100	160	220	230	310	370	385	415	On req.
	Class 300 to 600	in	2.36	2.76	3.54	3.94	3.94	7.09	9.25	10.63	11.82	15.35	On req.	On req.	On req.
		mm	60	70	90	100	100	180	235	270	300	390	On req.	On req.	On req.
	Class 900	in	2.76	3.05	3.94	4.33	4.72	7.09	9.25	On req.	On req.	On req.	-	On req.	On req.
		mm	70	80	100	110	120	180	235	On req.	On req.	On req.	-	On req.	On req.
	Class 1500	in	2.76	3.05	3.94	4.33	5.51	8.66	11.22	On req.	On req.	On req.	-	On req.	On req.
		mm	70	80	100	110	140	220	285	On req.	On req.	On req.	-	On req.	On req.
	Class 2500	in	2.95	3.54	4.33	4.72	6.3	9.33	12.6	On req.	On req.	On req.	-	On req.	On req.
		mm	75	90	110	120	160	237	320	On req.	On req.	On req.	-	On req.	On req.
With standard bonnet															
H4	Class 150 to 600	in	5.98	5.98	6.46	8.54	8.74	9.53	12.36	15.24	17.40 ²⁾	25.79	25.20	25.20	On req.
		mm	152	152	164	217	222	242	314	387	442 ²⁾	655	640	640	On req.
	Class 900	in	7.32	7.32	7.68	9.88	8.74	9.53	12.36	15.24	20.43 ³⁾	23.90	-	On req.	On req.
		mm	186	186	195	251	222	242	314	387	519 ³⁾	607	-	On req.	On req.
	Class 1500 to 2500	in	7.32	7.32	7.68	9.88	11.34	13.70	18.35	22.44	On req.	On req.	-	Class 1500 On req.	Class 1500 On req.
		mm	186	186	195	251	288	348	466	570	On req.	On req.	-	Class 1500 On req.	Class 1500 On req.
With insulating section															
H4	Class 150 to 600	in	13.90	13.90	14.37	19.17	19.37	20.16	26.18	37.28	42.01	45.32	On req.	44.76	On req.
		mm	353	353	365	487	492	512	665	947	1067	1151	On req.	1137	On req.
	Class 900	in	15.04	15.04	15.39	20.32	19.37	20.16	26.18	37.28	42.01	On req.	-	On req.	On req.
		mm	382	382	391	516	492	512	665	947	1067	On req.	-	On req.	On req.
	Class 1500 to 2500	in	15.04	15.04	15.39	20.32	21.50	23.54	31.10	42.13	On req.	On req.	-	Class 1500 On req.	Class 1500 On req.
		mm	382	382	391	516	546	598	790	1070	On req.	On req.	-	Class 1500 On req.	Class 1500 On req.

Valve			NPS	½	1	1½	2	3	4	6	8	10	12	14	16	20
			DN	15	20	40	50	80	100	150	200	250	300	-	400	500
With bellows seal																
		Travel														
H4	Class 150	0.59 to 2.36	in	14.25	14.25	14.72	23.94	24.13	24.13	28.74	-	-	-	-	-	-
		15 to 60	mm	362	362	374	608	613	613	730	-	-	-	-	-	-
	Class 300 to 900	0.59 to 2.36	in	14.25	14.25	14.72	23.94	24.13	24.13	33.94	-	-	-	-	-	-
		15 to 60	mm	362	362	374	608	613	613	862	-	-	-	-	-	-
	Class 1500	0.59	in	24.92	24.92	25.0	33.58	33.58	On req.	On req.	-	-	-	-	-	-
		15	mm	633	633	635	853	853	On req.	On req.	-	-	-	-	-	-
		1.18	in	-	-	-	33.58	33.58	On req.	On req.	-	-	-	-	-	-
		30	mm	-	-	-	853	853	On req.	On req.	-	-	-	-	-	-
		2.36	in	-	-	-	-	-	-	On req.	-	-	-	-	-	-
		60	mm	-	-	-	-	-	-	On req.	-	-	-	-	-	-
	Class 2500	0.59	in	24.92	24.92	25.0	On req.	On req.	On req.	On req.	-	-	-	-	-	-
		15	mm	633	633	635	On req.	On req.	On req.	On req.	-	-	-	-	-	-
		1.18	in	-	-	-	On req.	On req.	On req.	On req.	-	-	-	-	-	-
		30	mm	-	-	-	On req.	On req.	On req.	On req.	-	-	-	-	-	-
		2.36	in	-	-	-	-	-	-	On req.	-	-	-	-	-	-
		60	mm	-	-	-	-	-	-	On req.	-	-	-	-	-	-
	Class 150 to 300	1.18 to 4.72	in	-	-	-	-	-	-	-	41.22	59.13	60.20	On req.	59.69	62.60
		30 to 120	mm	-	-	-	-	-	-	-	1047	1502	1529	On req.	1516	1590
	Class 600 to 900	1.18 to 2.36	in	-	-	-	-	-	-	-	62.24	62.68	64.96	-	On req.	On req.
		30 to 60	mm	-	-	-	-	-	-	-	1581	1592	1650	-	On req.	On req.
	Class 600	4.72	in	-	-	-	-	-	-	-	-	94.65	91.42	On req.	90.16	On req.
		120	mm	-	-	-	-	-	-	-	-	2404	2322	On req.	2290	On req.

¹⁾ The H2 dimension is the distance from the middle of the flow channel to the bottom of the valve body (DN 100/NPS 4 and larger: up to the bottom of the foot). The dimension up to the bottom of the flange may differ. It may be lower or higher. The dimension up to the bottom of the flange is determined based on the corresponding flange standard.

²⁾ NPS 10, Class 150 to 300: 442 mm or 17.40"

³⁾ NPS 10, Class 600 to 900: 519 mm or 20.43"

⁴⁾ H8 = 650 mm with 250 mm seat bore

Table 9: Further dimensions¹⁾ in combination with Type 3271 Pneumatic Actuator or Type 3277 Pneumatic Actuator

Actuator area		cm ²	350	350v2	355v2	750v2	1000	1400-60	1400-120	2800	2x 2800
Diaphragm ØD		in	11.02	11.02	11.02	15.51	18.19	20.87	21.02	30.32	30.32
Diaphragm ØD		mm	280	280	280	394	462	530	534	770	770
H ²⁾	Type 3271	in	3.23	3.62	5.16	9.29	15.87	13.27	23.54	28.07	47.76

Actuator area		cm ²	350	350v2	355v2	750v2	1000	1400-60	1400-120	2800	2x 2800
H ²⁾	Type 3271	mm	82	92	131	236	403	337	598	713	1213
H ²⁾	Type 3277	in	3.23	3.23	4.76	9.29	-	-	-	-	-
H ²⁾	Type 3277	mm	82	82	121	236	-	-	-	-	-
H3 ³⁾		in	4.33	4.33	4.33	7.48	24.02	24.02	25.59	25.59	25.59
H3 ³⁾		mm	110	110	110	190	610	610	650	650	650
H5	Type 3277	in	3.98	3.98	3.98	3.98	-	-	-	-	-
H5	Type 3277	mm	101	101	101	101	-	-	-	-	-
Thread	Type 3271		M30x1.5	M30x1.5	M30x1.5	M30x1.5	M60x1.5	M60x1.5	M100x2	M100x2	M100x2
Thread	Type 3277		M30x1.5	M30x1.5	M30x1.5	M30x1.5	-	-	-	-	-
a	Type 3271		G ¾ (¾ NPT)	G ¾ (¾ NPT)	G ¾ (¾ NPT)	G ¾ (¾ 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 ¾ ⁴⁾	G ¾ ⁴⁾	G ¾ ⁴⁾	G ¾ 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 ¾ to ¾ NPT is available for the a2 connection. It can be ordered separately using the following article number: 100160362

Dimensional drawings

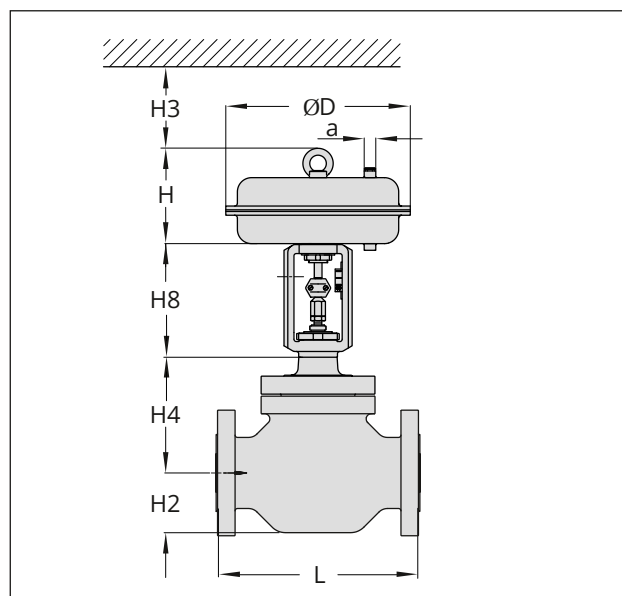


Fig. 5: Type 3251-1/3251-AM-1 up to DN 80/NPS 3 without foot (Type 3251/3251-AM Valve with Type 3271 Pneumatic Actuator)

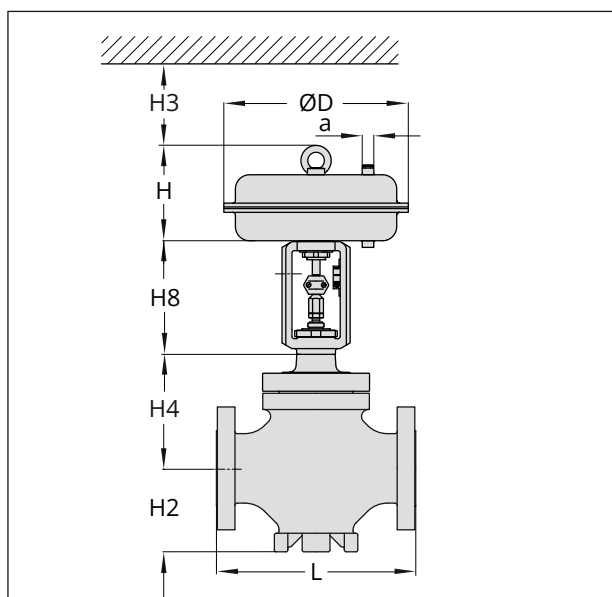


Fig. 6: Type 3251-1 in DN 100/NPS 4 and larger (Type 3251 Valve with Type 3271 Pneumatic Actuator)

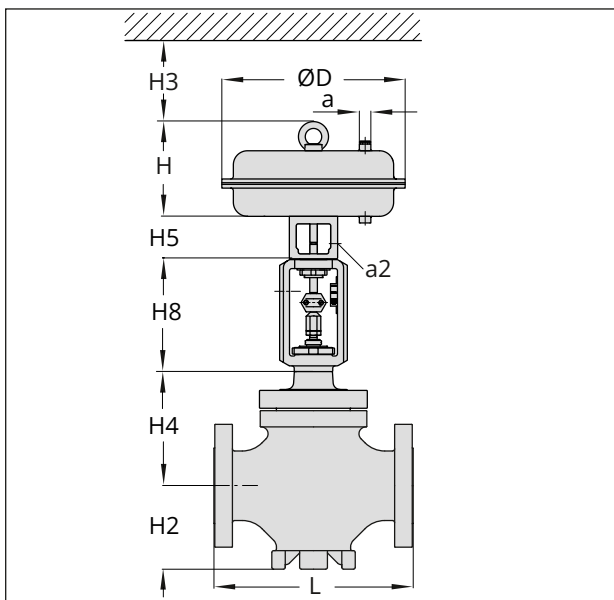


Fig. 7: Type 3251-7/3251-AM-7 (Type 3251/3251-AM Valve with Type 3277 Pneumatic Actuator)

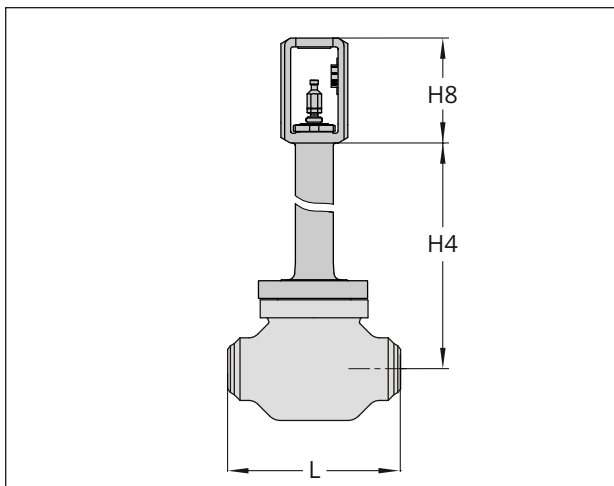


Fig. 8: Type 3251/3251-AM with bellows seal or insulating section

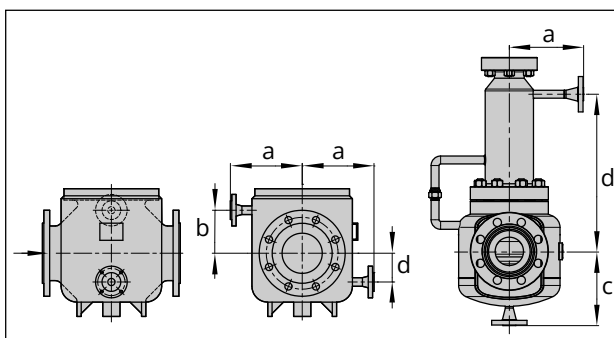


Fig. 9: Type 3251 with heating jacket · Dimensions on request

Weights

Specifications in lbs and kg

 = Versions available for Type 3251-AM (restricted range for Type 3251-AM)

Table 10: Type 3251/3251-AM Valve

Valve	NPS		½	1	1½	2	3	4	6	8	10	12	14	16	20
	DN		15	20	40	50	80	100	150	200	250	300	-	400	500
With standard bonnet															
Weight ¹⁾ , approx. Without actuator	Class 150	lbs	26	31	42	66	110	152	342	948	1892	2028	2965	3197	3638
		kg	12	14	19	30	50	69	155	430	858	920	1345	1450	1650
	Class 300	lbs	33	35	57	95	170	247	694	948	1892	2028	3010	3197	3638
		kg	15	16	26	43	77	112	315	430	858	920	1365	1450	1650
	Class 600	lbs	33	35	57	95	170	247	694	1096	1609	2535	On req.	On req.	On req.
		kg	15	16	26	43	77	112	315	497	730	1150	On req.	On req.	On req.
	Class 900	lbs	33	35	57	95	170	247	694	1157	2844	3263	-	5732	On req.
		kg	15	16	26	43	77	112	315	525	1290	1480	-	2600	On req.
	Class 1500	lbs	On req.	75	126	159	348	496	1235	1949	4630	On req.	-	On req.	On req.
		kg	On req.	34	57	72	158	225	560	884	2100	On req.	-	On req.	On req.
	Class 2500	lbs	On req.	93	163	238	379	604	2198	3990	On req.	On req.	-	-	-
		kg	On req.	42	74	108	172	274	997	1810	On req.	On req.	-	-	-
With insulating section															
Weight ¹⁾ , approx. Without actuator	Class 150	lbs	35	40	51	79	130	172	412	1054	2046	2123	On req.	On req.	On req.
		kg	16	18	23	36	59	78	187	478	928	963	On req.	On req.	On req.
	Class 300	lbs	42	44	66	108	190	267	774	1054	2046	2123	On req.	On req.	On req.
		kg	19	20	30	49	86	121	351	478	928	963	On req.	On req.	On req.
	Class 600	lbs	42	44	66	108	190	267	774	1191	2641	2635	On req.	On req.	On req.
		kg	19	20	30	49	86	121	351	540	1198	1195	On req.	On req.	On req.
	Class 900	lbs	42	44	66	108	190	267	774	1254	2657	On req.	On req.	On req.	On req.
		kg	19	20	30	49	86	121	351	569	1205	On req.	On req.	On req.	On req.
	Class 1500	lbs	On req.	79	130	172	375	545	1314	2094	On req.	On req.	-	On req.	On req.
		kg	On req.	36	59	78	170	247	596	950	On req.	On req.	-	On req.	On req.
	Class 2500	lbs	On req.	97	168	247	401	653	2277	4090	On req.	On req.	-	-	-
		kg	On req.	44	76	112	182	296	1033	1855	On req.	On req.	-	-	-

Valve	NPS		½	1	1½	2	3	4	6	8	10	12	14	16	20
	DN		15	20	40	50	80	100	150	200	250	300	-	400	500
With bellows seal															
Weight ¹⁾ , approx. Without actuator	Class 150	lbs	46	51	62	97	176	220	430	1146	2150	2227	On req.	On req.	On req.
		kg	21	23	28	44	80	100	195	520	975	1010	On req.	On req.	On req.
	Class 300	lbs	53	55	77	126	236	317	794	1146	2150	2227	On req.	On req.	On req.
		kg	24	25	35	57	107	144	360	520	975	1010	On req.	On req.	On req.
	Class 600	lbs	53	55	77	126	236	317	794	1312	2740	2734	On req.	On req.	On req.
		kg	24	25	35	57	107	144	360	595	1243	1240	On req.	On req.	On req.
	Class 900	lbs	53	55	77	126	236	317	794	1354	2866	On req.	-	On req.	On req.
		kg	24	25	35	57	107	144	360	614	1300	On req.	-	On req.	On req.
	Class 1500	lbs	On req.	93	174	On req.	414	606	1411	2216	On req.	On req.	-	On req.	On req.
		kg	On req.	42	79	On req.	188	275	640	1005	On req.	On req.	-	On req.	On req.
	Class 2500	lbs	On req.	106	201	273	507	714	2337	4222	On req.	On req.	-	-	-
		kg	On req.	48	91	124	230	324	1060	1915	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.).

Table 11: Weights¹⁾ for Type 3271 and Type 3277 Pneumatic Actuators

Type ... Actuator	Actuator area in cm ²		350	350v2	355v2	750v2	1000	1400-60	1400-120	2800	2x 2800
3271	Without handwheel	lbs	18	26	33	79	176	154	386	992	2095
3271	Without handwheel	kg	8	11.5	15	36	80	70	175	450	950
3271	With handwheel	lbs	29	37	44	90	397	386	661 ^{2)/} 937 ³⁾	1268 ^{2)/} 1544 ³⁾	On req.
3271	With handwheel	kg	13	16.5	20	41	180	175	300 ^{2)/} 425 ³⁾	575 ^{2)/} 700 ³⁾	On req.
3277	Without handwheel	lbs	27	33	42	89	-	-	-	-	-
3277	Without handwheel	kg	12	15	19	40	-	-	-	-	-
3277	With handwheel	lbs	38	44	53	100	-	-	-	-	-
3277	With handwheel	kg	17	20	24	45	-	-	-	-	-

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 C_v coefficient according to DIN EN 60534-1.
- 2. Select nominal size NPS and C_v coefficient from Table 3 and from Table 4 to Table 7.
- 3. Determine the permissible differential pressure Δp from the pressure-temperature diagrams in Information Sheet ► T 8000-4.
- 4. Select the valve body material from Table 1 and Table 2 as well as from the pressure-temperature diagrams (see Information Sheet ► T 8000-2).
- 5. Select accessories from Table 1 and Table 2.

Ordering text

The following specifications are required on ordering:

Type	3251 or 3251-AM
Nominal size	NPS ...
Pressure rating	Class ...
Body material	See Table 2
Bonnet	Standard bonnet, insulating section or bellows seal
Type of end connections	Flanges or welding ends
Plug	Standard or balanced Soft seal, metal seal or high-performance metal 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 lb/cu.ft or kg/m ³ and temperature in °F or °C
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 or psi (absolute pressure p _{abs}), with minimum, normal and maximum flow rate
RFID tag	Yes/No
Valve accessories	Positioner and/or limit switch

Associated Information Sheets	► T 8000-X
Associated Data Sheets for	► T 8310-1 to
Types 3271/3277 Pneumatic Actuators	► T 8310-3
Associated Mounting and Operating Instructions	► EB 8052
Associated Safety Manual	► SH 8051