DATA SHEET

T 8053 EN

Type 3252-1 and Type 3252-7 Pneumatic Control Valves

Type 3252 High-pressure Valve

Application

Control valve especially designed for controlling low flow rates in process engineering

Nominal sizes	**G ½ to G 1**	**½ NPT to 1 NPT**
	DN 15 to 25	**NPS ½ to 1**
Pressure ratings	**PN 40 to 400**	**Class 300 to 2500**
Temperatures	**-196 to +450 °C**	**-325 to +842 °F**



Fig. 1: *Type 3252 High-pressure Valve with globe valve body and bolted bonnet (plus Type 3277 Actuator, Type 3730-2 Positioner and Type 4708-53 Supply Pressure Regulator)*



Fig. 2: *Cutaway view of Type 3252 High-pressure Valve with globe valve body and threaded bonnet (plus Type 3277 Actuator, Type 3730-2 Positioner and Type 4708-53 Supply Pressure Regulator)*

Type 3252 High-pressure Valve with globe-style or angle-style valve body with:

- Type 3271 Pneumatic Actuator (Type 3252-1 Control Valve)
- Type 3277 Pneumatic Actuator (Type 3252-7 Control Valve) for integral positioner attachment

Special features

Valve body

- Material 1.4404/316L
- G or NPT threaded connections, optionally welding ends or weld-on flanges

Valve plug

- Metal seal

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.

Optional with RFID tags with unique identification according to DIN SPEC 91406.

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Versions

Standard version as globe-style or angle-style valve body with bolted or threaded bonnet, with PTFE V-ring packing suitable for temperatures from -10 to +220 °C (15 to 430 °F) · Pressure rating PN 40 to 400 or Class 300 to 2500 · Female thread G ½, G ¾, G 1 or ½ NPT, ¾ NPT, 1 NPT · Body material 1.4404/316L

- **Type 3252-1** · Valve with Type 3271-5 Pneumatic Actuator (120 cm²) or Type 3271 Pneumatic Actuator (350 cm²)
- **Type 3252-7** (Fig. 1, Fig. 2) · Valve with Type 3277-5 Pneumatic Actuator (120 cm²) or Type 3277 Pneumatic Actuator (350 cm²) for integral positioner attachment

Further versions

- **Welding ends** · DN 15, 20, 25 or NPS ½, ¾, 1
- **Flanges** · DN 15, 20, 25 or NPS ½, ¾, 1
- **Plug** with **PEEK soft seal**[2)]
- **Metal anti-wear sleeve**
- **Male thread** · On request
- **Insulating section** · For temperatures from -196 to +450 °C (-325 to +842 °F)
- **Long insulating section**
- **Bellows seal** · For PN 40 to 400 or Class 150 to 2500
- Body materials: **Hastelloy® and duplex**
- **Special materials** · On request
- **Adjustable packing**
- **Heating jacket** · Details on request
- Two versions for the **food and beverage industry** and for the **pharmaceuticals and biotechnology sector**:
  - Valve with gaskets and packings that comply with the European Regulation (EC) No. 1935/2004 and the US Regulation FDA 21 CFR Section 177.1550.
  - Valve for cleanroom environments: Materials (gaskets, packings, body), manufacture of parts as well as assembly conditions in accordance with the European Regulation (EC) No. 1935/2004 and the US Regulation FDA 21 CFR Section 177.1550.

2) For seat bore (SB) ≥6, for SB 3 on request

Principle of operation

The medium flows through the valve in the direction indicated by the arrow. Standard direction of flow is FTO (flow-to-open)[3)], see arrows in Fig. 3, Fig. 4 and Fig. 5. The direction of flow FTC (flow-to-close)[3)] is also possible on request. The valve 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 a self-adjusting packing. To comply with stricter fugitive emissions requirements, the valve can be equipped with a multi-walled metal bellows.

3) FTO: Flow-to-open (flow under the plug)
FTC: Flow-to-close (flow over the plug)

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.

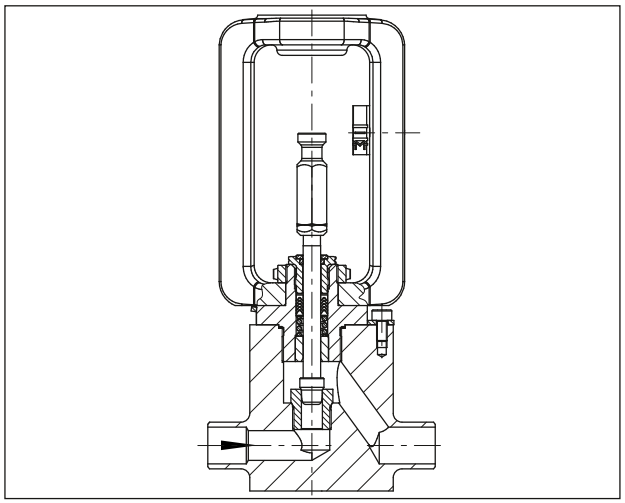


Fig. 3: *Type 3252 High-pressure Valve as globe-style valve with welding ends*

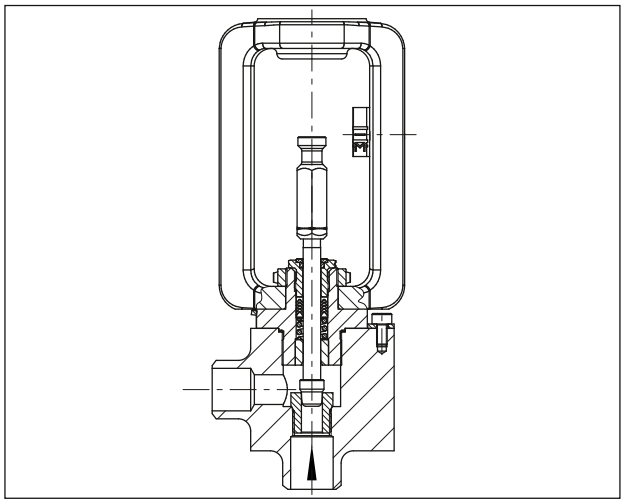


Fig. 4: *Type 3252 High-pressure Valve as angle-style valve with welding ends*

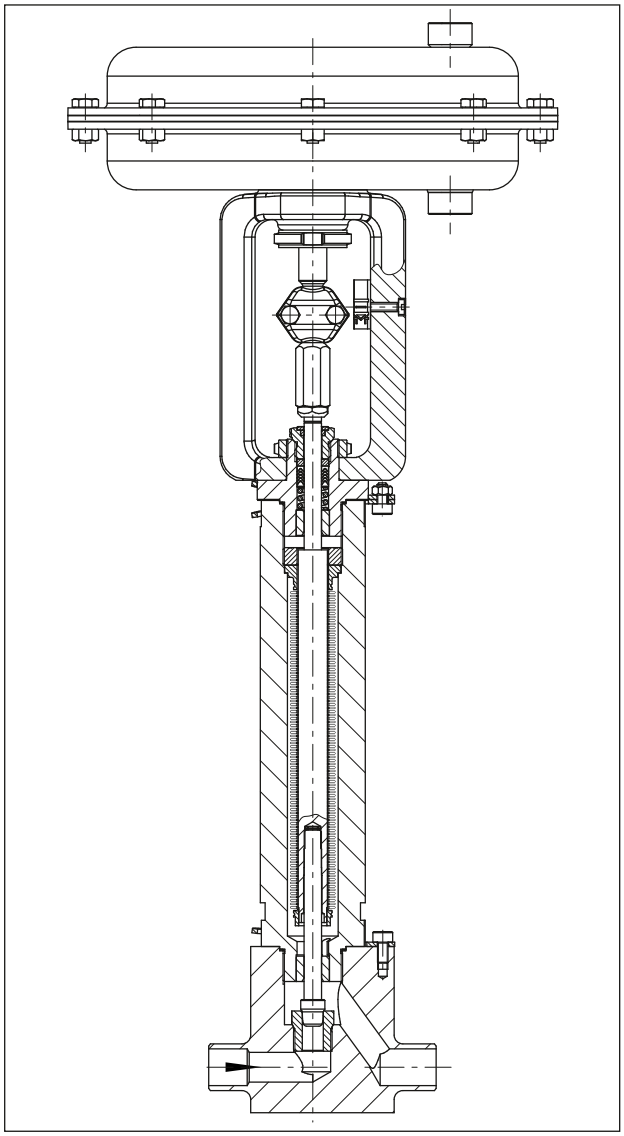


Fig. 5: *Type 3252-1 High-pressure Valve with insulating section or bellows seal*

Table 1: *Technical data for Type 3252*

Connection		**Female thread**	**Welding ends**	**Weld-on flanges**
Nominal size		G ½, G ¾, G 1 ½ NPT, ¾ NPT, 1 NPT	DN 15, 20, 25 NPS ½, ¾, 1	DN 15, 20, 25 NPS ½, ¾, 1
Pressure rating		PN 40 to 400 or Class 300 to 2500		
Seat-plug seal		Metal seal or high-performance metal seal, soft seal for K_{VS} >0.1 and higher up to an operating pressure of 50 bar		
Characteristic		Equal percentage · Linear · On/off		
Rangeability		50:1[1)]		
Conformity		CE		
Temperature ranges				
Body without insulating section		-10 to +220 °C (14 to 428 °F)		
Body with	Insulating section	-50 to +450 °C (-58 to +842 °F)		
	Long insulating section	-196 to +450 °C (-325 to +842 °F)		
	Bellows seal	-50 to +450 °C (-58 to +842 °F)		
Leakage class acc. to DIN EN 60534-4/ANSI FCI 70-2		Metal seal: IV · High-performance metal seal: V[2)] · Soft seal: VI		

1) Not applicable to SB 3

2) Leakage class V for temperatures below -50 °C (-58 °F) on request

Table 2: *Materials for Type 3252*

Standard version	
Valve body	1.4404/316L · Other materials on request
Valve bonnet (wetted parts)	1.4404/316L
Seat and plug	1.4404/316L Stellite®-faced seats and plugs made of solid Stellite® are standard with SB 3 (for other versions on request).
Packing	PTFE with carbon V-ring packing
Body gasket	1.4404/316L
Insulating section	1.4404/316L
Bellows seal	
Intermediate piece	1.4404/316L
Metal bellows	1.4571/A316 Ti

Flow coefficients and associated nominal sizes

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

Table 3: *Overview of K_{VS} and C_V coefficients*

	K_{VS}	**0.1**	**0.16**	**0.25**	**0.4**	**0.63**	**1**	**1.6**	**2.5**	**4**
	C_V	**0.12**	**0.2**	**0.3**	**0.5**	**0.75**	**1.2**	**2**	**3**	**5**
Seat Ø	mm	3[1)]	3[1)]	3[1)]	6	6	6	12	12	14
Travel	mm	7.5								
Plug stem Ø	mm	10								

1) Available for versions with insulating section or bellows seal on request

Table 4: *Nominal sizes and associated K_{VS}/C_V coefficients*

	K_{VS}	**0.1**	**0.16**	**0.25**	**0.4**	**0.63**	**1**	**1.6**	**2.5**	**4**
	C_V	**0.12**	**0.2**	**0.3**	**0.5**	**0.75**	**1.2**	**2**	**3**	**5**
DN	**NPS**									
15	½	•	•	•	•	•	•	•[1)]	•[1)]	
20	¾	•	•	•	•	•	•	•	•	•[1)]
25	1	•	•	•	•	•	•	•	•	•

1) On request depending on availability, end connections and pressure rating

Permissible differential pressures for Type 3252 Valve without bellows seal

Table 5: *Fail-safe action: Stem extends (FA) · Pressures in bar*

Bench range				**0.2 to 1.0**	**0.4 to 2.0**	**1.4 to 2.3**	**2.1 to 3.3**
Operating range with 7.5 mm travel and actuator area of			120 cm²	0.6 to 1.0	1.2 to 2.0	1.85 to 2.3	2.7 to 3.3
			350 cm²	0.8 to 1.2	1.6 to 2.4	1.85 to 2.3	2.7 to 3.3
Required supply pressure			bar	1.4	2.6	2.5	3.5
DN	**NPS**	**K_{VS}**	**Actuator area in cm²**	**Δp when p2 = 0 bar**			
15 to 25	½ to 1	0.01 to 1.0	120	50	120	200	300
			350	250	400	–	–
		1.6 · 2.5	120	35	85	140	210
			350	175	350	400	–
		4	120	25	60	100	150
			350	130	270	310	400

Table 6: *Fail-safe action: Stem retracts (FE) · Pressures in bar*

Bench range				**0.2 to 1.0**		
Operating range with 7.5 mm travel and actuator area of			120 cm²	0.2 to 0.6		
			350 cm²			
Required supply pressure			bar	1.4	2.5	3.5
DN	**NPS**	**K_{VS}**	**Actuator area in cm²**	**Δp when p2 = 0 bar**		
15 to 25	½ to 1	0.01 to 1.0	120	90	230	375
			350	300	400	–
		1.6 · 2.5	120	60	165	260
			350	210	400	–
		4	120	45	120	190
			350	150	375	400

Permissible differential pressures for Type 3252 Valve with bellows seal

Table 7: *Fail-safe action: Stem extends (FA) · Pressures in bar*

Bench range				**0.2 to 1.0**	**0.4 to 2.0**	**1.4 to 2.3**	**2.1 to 3.3**
Operating range with 7.5 mm travel and actuator area of			120 cm²	0.6 to 1.0	1.2 to 2.0	1.85 to 2.3	2.7 to 3.3
			350 cm²	0.8 to 1.2	1.6 to 2.4	1.85 to 2.3	2.7 to 3.3
Bench range				**–**	**–**	**0.6 to 3.0**	**0.6 to 3.0**
Operating range with 7.5 mm travel and actuator area of			700 cm²	–	–	2.4 to 3.0	3.0 to 3.6
Required supply pressure			bar	1.4	2.6	2.5	3.5
DN	**NPS**	**K_{VS}**	**Actuator area in cm²**	**Δp when p2 = 0 bar**			
15 to 25	½ to 1	0.01 to 1.0	120	–	15	30	50
			350	45	100	120	185
			700	–	–	325	400
		1.6 · 2.5	120	–	15	30	50
			350	45	100	120	185
			700	–	–	325	400
		4	120	–	15	30	50
			350	45	100	120	185
			700	–	–	300	400

Table 8: *Fail-safe action: Stem retracts (FE) · Pressures in bar*

Bench range				**0.2 to 1.0**		
Operating range with 7.5 mm travel and actuator area of			120 cm²	0.2 to 0.6		
			350 cm²			
			700 cm²	0.2 to 0.4		
Required supply pressure			bar	1.4	2.5	3.5
DN	**NPS**	**K_{VS}**	**Actuator area in cm²**	**Δp when p2 = 0 bar**		
15 to 25	½ to 1	0.01 to 1.0	120	6	39	68
			350	52	145	230
			700	153	340	400
		1.6 · 2.5	120	–	36	62
			350	47	130	210
			700	140	310	400
		4	120	–	32	56
			350	42	120	190
			700	125	284	400

Dimensions and weights

Table 9: *Dimensions in mm for Type 3252 Globe Valve with threaded valve bonnet*

Valve	Standard	DIN			ANSI			
	DN	15	20	25	NPS	½	¾	1
Length L With female thread	PN 40 to 400	130	130	130	Class 300 to 2500	130	130	130
Length L With welding ends	PN 40 to 400	130	130 (PN 40 only)	130	Class 300 to 2500	130	130	130
Length L With flanges	PN 40	210	210	230	Class 300	190	194	197
	PN 63 to 160	210	–	230	Class 600	203	206	210
	PN 250 to 400	230	–	260	Cl. 900/ 1500	216	229	254
					Class 2500	264	273	308
B[1)]	PN 40 to 400	70	70	70	Class 300 to 2500	70	70	70
H1	PN 40 to 400	246	246	246	Class 300 to 2500	246	246	246
H2 with female thread/ welding ends	PN 40 to 400	26	26	26	Class 300 to 2500	26	26	26
H2 with flanges	PN 400	75	–	90	Class 2500	75	80	80
With insulating section								
H4	PN 40 to 400	433	433	433	Class 300 to 2500	433	433	433
With bellows seal								
H4	PN 40 to 160	433	433	433	Class 300 to 900	433	433	433
	PN 250	501	501	501	Class 1500	501	501	501
	PN 400	606	606	606	Class 2500	606	606	606

1) Not for version with flanges

Table 10: *Dimensions in mm for Type 3252 Angle Valve with threaded valve bonnet*

Valve	Standard	DIN			ANSI			
	DN	15	20	25	NPS	½	¾	1
Length L With female thread	PN 40 to 400	60	60	60	Class 300 to 2500	60	60	60
Length L With welding ends	PN 40 to 400	57	57 (PN 40 only)	57	Class 300 to 2500	57	57	57
Length L With flanges	PN 40	90	95	100	Class 300	95[1)]	97[1)]	98[1)]
	PN 63 to 160	105	–	115	Class 600	102[1)]	103[1)]	105[1)]
	PN 250 to 400	115	–	130	Cl. 900/ 1500	108	114	127
					Class 2500	132	136	154
B[2)]	PN 40 to 400	70	70	70	Class 300 to 2500	70	70	70
H1	PN 40 to 400	212	212	212	Class 300 to 2500	212	212	212
With insulating section								
H4	PN 40 to 400	400	400	400	Class 300 to 2500	400	400	400

Valve	Standard	DIN			ANSI			
	DN	15	20	25	NPS	½	¾	1
With bellows seal								
H4	PN 40 to 160	400	400	400	Class 300 to 900	400	400	400
	PN 250	468	468	468	Class 1500	468	468	468
	PN 400	572	572	572	Class 2500	572	572	572

1) Special length

2) Not for version with flanges

Table 11: *Further dimensions[1] in combination with Type 3271 Pneumatic Actuator or Type 3277 Pneumatic Actuator*

Actuator area		cm²	120	175v2	350	350v2	355v2	750v2
Diaphragm ØD		mm	168	215	280	280	280	394
H[2]	Type 3271	mm	69	78	82	92	131	236
H[2]	Type 3277	mm	69	78	82	82	121	236
H3[3]		mm	110	110	110	110	110	190
H5	Type 3277	mm	88	101	101	101	101	101
Thread	Type 3271		M30x1.5	M30x1.5	M30x1.5	M30x1.5	M30x1.5	M30x1.5
Thread	Type 3277		M30x1.5	M30x1.5	M30x1.5	M30x1.5	M30x1.5	M30x1.5
a	Type 3271		G ⅛ (⅛ NPT)	G ¼ (¼ NPT)	G ⅜ (⅜ NPT)	G ⅜ (⅜ NPT)	G ⅜ (⅜ NPT)	G ⅜ (⅜ NPT)
a2	Type 3277		–	G ⅜[4]	G ⅜[4]	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

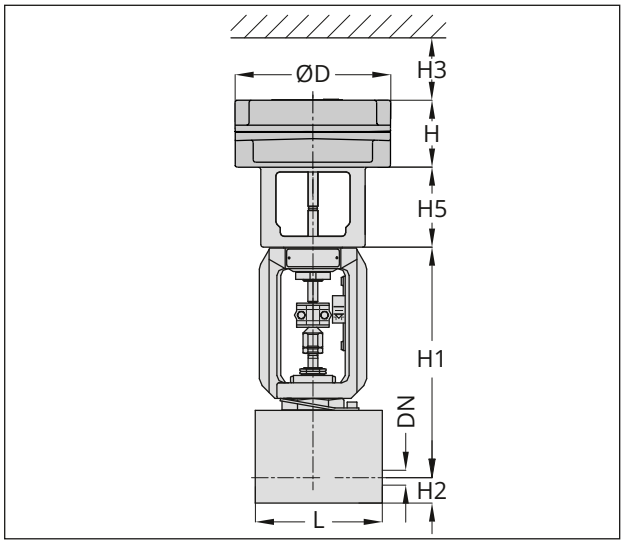


Fig. 6: *Type 3252 Globe Valve with female thread and Type 3277 Actuator*

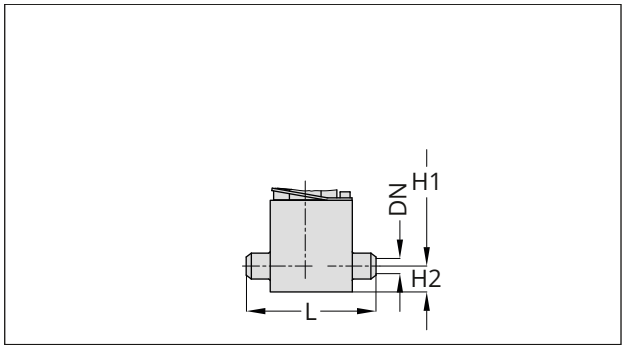


Fig. 7: *Type 3252 Globe Valve with welding ends*

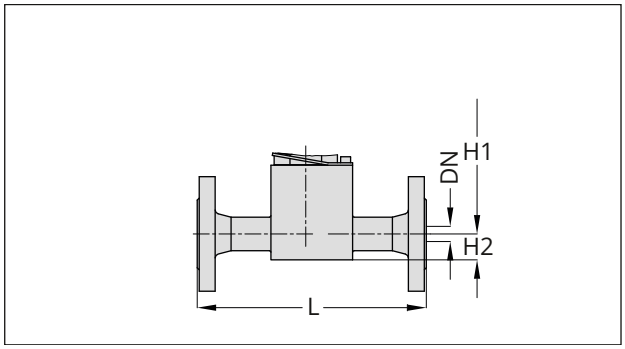


Fig. 8: *Type 3252 Globe Valve with flanges*

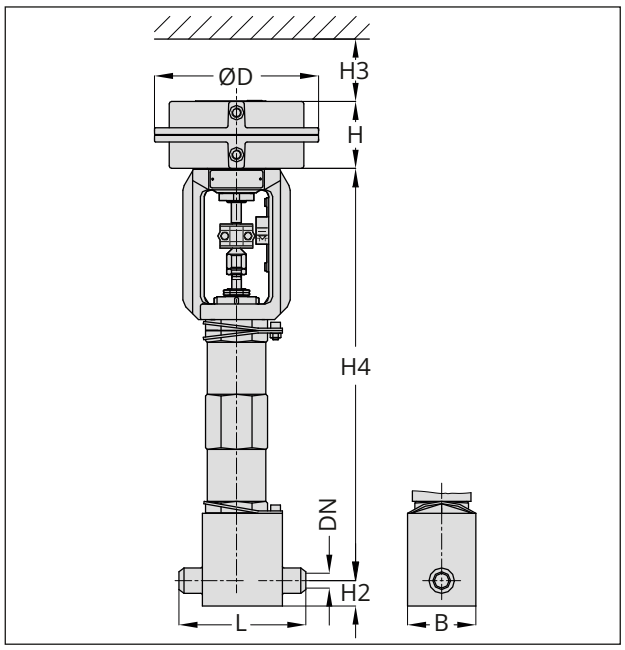


Fig. 9: *Type 3252 Valve with insulating section or bellows seal and Type 3271 Actuator*

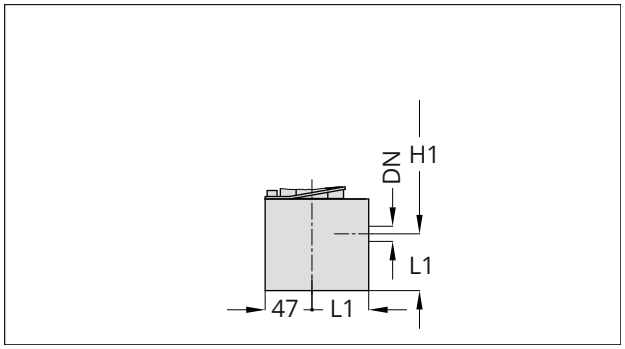


Fig. 10: *Type 3252 Angle Valve with female thread*

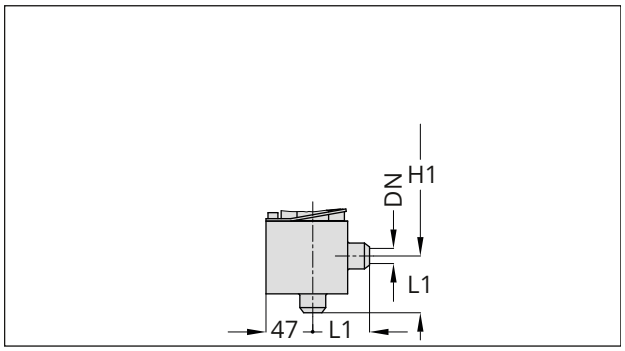


Fig. 11: *Type 3252 Angle Valve with welding ends*

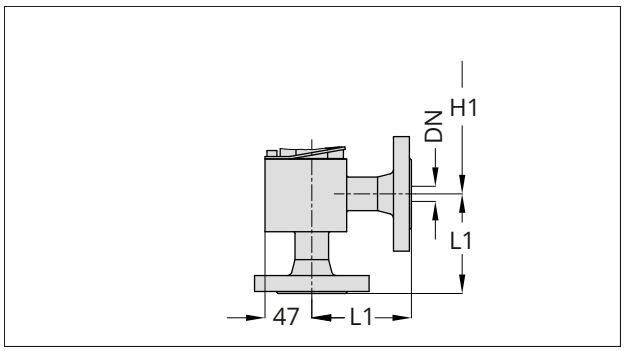


Fig. 12: *Type 3252 Angle Valve with flanges*

Table 12: *Weights in kg for Type 3252 Globe Valve including yoke*

Valve	Standard	DIN			ANSI			
	DN	15	20	25	NPS	½	¾	1
With threaded valve bonnet								
With female thread	PN 40 to 400	8.5	8.5	8.5	Class 300 to 2500	*)	*)	*)
With welding ends	PN 40 to 400	6.5	6.5	6.5	Class 300 to 2500	*)	*)	*)
With flanges	PN 400	13	–	19.5	Class 2500	12.5	13.5	16.5

Valve	Standard	DIN			ANSI			
	DN	15	20	25	NPS	½	¾	1
With bolted valve bonnet								
With female thread	PN 40 to 400	*)	*)	*)	Class 300 to 900	*)	*)	*)
With welding ends	PN 40 to 400	*)	*)	*)	Class 1500	*)	*)	*)
With flanges	PN 400	*)	*)	*)	Class 2500	*)	*)	*)

*) On request

Table 13: *Weights in kg for Type 3252 Angle Valve including yoke*

Valve	Standard	DIN			ANSI			
	DN	15	20	25	NPS	½	¾	1
With threaded valve bonnet								
With female thread	PN 40 to 400	7.5	7.5	7.5	Class 300 to 2500	*)	*)	*)
With welding ends	PN 40 to 400	5.5	5.5	5.5	Class 300 to 2500	*)	*)	*)
With flanges	PN 400	12	–	18.5	Class 2500	11.5	12.5	15.5
With bolted valve bonnet								
With female thread	PN 40 to 400	*)	*)	*)	Class 300 to 900	*)	*)	*)
With welding ends	PN 40 to 400	*)	*)	*)	Class 1500	*)	*)	*)
With flanges	PN 400	*)	*)	*)	Class 2500	*)	*)	*)

*) On request

Table 14: *Additional weight in kg for version with bellows seal*

Valve	Standard	DIN			ANSI			
	DN	15	20	25	NPS	½	¾	1
Bellows seal (additional weight)	PN 40 to 160	3.5	3.5	3.5	Class 300 to 900	3.5	3.5	3.5
	PN 250	5.0	5.0	5.0	Class 1500	5.0	5.0	5.0
	PN 400	6.5	6.5	6.5	Class 2500	6.5	6.5	6.5

Table 15: *Weights[1)] for Type 3271 and Type 3277 Pneumatic Actuators*

Type ... Actuator	Actuator area in cm²		120	175v2	350	350v2	355v2	750v2
3271	Without handwheel	kg	2.5	6	8	11.5	15	36
3271	With handwheel	kg	4	10	13	16.5	20	41
3277	Without handwheel	kg	3.2	10	12	15	19	40
3277	With handwheel	kg	4.5	14	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.).

Ordering text

The following specifications are required on ordering:

Body version	Globe or angle valve
Nominal size and pressure rating	According to DIN or ANSI
Type of end connections	G or NPT female thread Flanges Welding ends
Characteristic	Equal percentage or linear
Direction of flow	FTO (flow-to-open) or FTC (flow-to-close)
Process medium	Density in kg/m³ and temperature in °C
Max. 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
Actuator	Type 3271 or Type 3277 (see Data Sheet ▶ T 8310-1)
Actuator area	... cm²
Bench range	... bar
Fail-safe position	Fail-close or fail-open
Additional equipment	Positioner and/or limit switch

Associated Data Sheet for Type 3271/3277 Pneumatic Actuators	▶ T 8310-1
Associated Mounting and Operating Instructions	▶ EB 8053

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