

Type 3349-1 and Type 3349-7 Pneumatic Control Valves

Type 3349 Aseptic Angle Valve

With USP-VI diaphragm

SAMSON

Application

Control valve for aseptic applications in the food and pharmaceutical industries according to DIN or ANSI standards with USP-VI diaphragm

Valve sizes	DN 15 to 100	· NPS ½ to 4
Maximum pressure	10 bar	· 150 psi
Temperature range	0 to 160 °C	· 32 to 320 °F



Type 3349 Angle Valve with

- Type 3271 Pneumatic Actuator (Type 3349-1 Control Valve)
- Type 3277 Pneumatic Actuator (Type 3349-7 Control Valve) for integral positioner attachment

Special features

- Valve body made of stainless steel 1.4435 or 316L
- Wetted inside surfaces with a precision-lathed or polished finish
- Categorized in conformity assessment module A of the Pressure Equipment Directive
- Wetted sealing materials comply with FDA regulations
- USP-VI 121 °C conformity

The valve body is designed without cavities and can be fitted with welding ends depending on the version. The valves are suitable for CIP (cleaning-in-place) or SIP (sterilization-in-place). The plug stem guide is sealed by a diaphragm.

A test connection enables the diaphragm to be monitored for leakages. The valve is suitable for aseptic applications.

Versions

Standard version · Angle valve in bar stock with USP-VI certification, DN 15 to 100 (NPS ½ to 4) with welding ends according to DIN 11866 Series A (DIN 11850 Series 2) Maximum operating pressure according to Table 1.1 · Valve with bolted-on bonnet with or without backup packing · Plug stem sealed by PTFE diaphragm

- **Type 3349-1** · Type 3349 Valve with Type 3271 Actuator (see Data Sheet ▶ T 8310-1)
- **Type 3349-7** (Fig. 1) · Type 3349 Valve with Type 3277 Actuator (see Data Sheet ▶ T 8310-1)



Fig. 1: Type 3349-7 Control Valve with Type 3730 Electropneumatic Positioner



Fig. 2: Type 3349 Aseptic Angle Valve

Further versions

- **Welding ends** according to DIN 11866 Series B, (ISO 1127), DIN 11866 Series C (BS 4825/ ASTM A-270/ASME BPE), ISO 2037, SMS 3008, JIS 3447/3459
- **Threaded connections** (aseptic) according to DIN 11864-1 GS Form A, Series A, B, C
- **Clamp connections** (aseptic) according to DIN 11864-3 NKS Form A, Series A, B, C. Hygienic connections according to DIN 32676, BS 4825, JIS G 3447/3459, ISO 2852 as special version on request
- **Flanges** (aseptic) according to DIN 11864-2 NF Form A, Series A, B, C
- **Micro-flow valve version** · Version in bar stock, DN 8 to 25 (NPS ¼ to 1), special version with packing · On request

Principle of operation

The process medium flows through the valve in the flow-to-close direction as indicated by the arrow. The position of the valve plug (2) determines the flow rate across the cross-sectional area of flow released between plug and lathed seat.

In the standard version, the plug stem (3) is sealed by the diaphragm (24). In the special version, an additional backup packing (23) is used.

The test connection (36) allows the diaphragm to be monitored for leakage.

In the version with backup packing, the test connection is sealed by a stopper.

The test connection of valves without a backup packing is fitted with a pipe (40) to allow the drainage of any medium that escapes.

Fail-safe position

Depending on how the springs are arranged in the pneumatic actuator (► T 8310-1), 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.

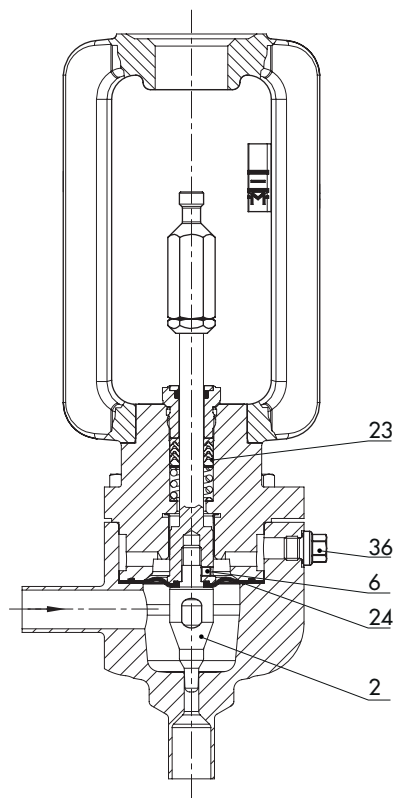


Fig. 3: Type 3349 Angle Valve, special version with packing

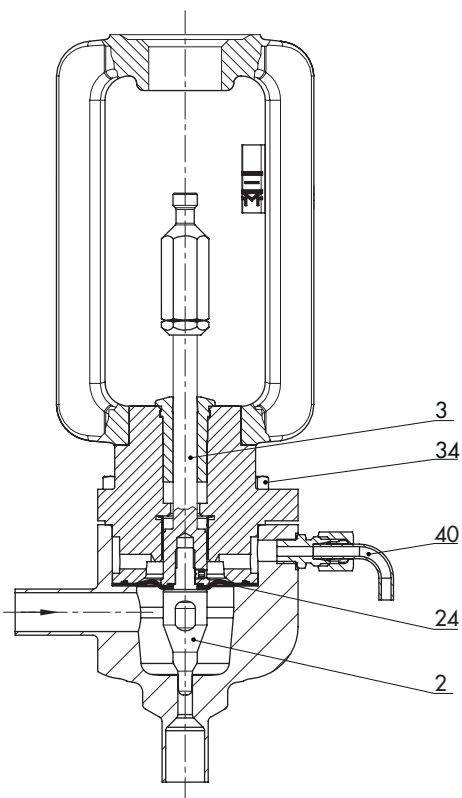


Fig. 4: Type 3349 Angle Valve, version with test connection

Legend for Fig. 3 and Fig. 4

- | | |
|----|---|
| 2 | Plug |
| 3 | Plug stem |
| 6 | Threaded pin |
| 23 | V-ring packing |
| 24 | USP-VI diaphragm |
| 34 | Hex bolt |
| 36 | Screw plug (test connection) or nipple (pipe) |
| 40 | Pipe |

Table 1: Technical data for Type 3349

Version		DIN	ANSI
Valve size		DN 15 to 100	NPS ½ to 4
Maximum pressure	See Table 1.1	10 bar	150 psi
Type of connection		According to Table 1.1	
Seat-plug seal		Metal seal · Soft seal ¹⁾	
Characteristic		Equal percentage or linear	
Rangeability		50:1 for K _{VS} 0.1 to 40 (up to DN 50/NPS 2) 30:1 for K _{VS} 60 to 160 (DN 65/NPS 2½ and larger)	
Permissible temperatures	Operating temperature	0 to 160 °C	32 to 320 °F
	Sterilizing temperature	180 °C for up to 30 min	356 °F for up to 30 min
Leakage class according to IEC 60534-4 or ANSI/FCI 70-2	Metal seal	IV	
	Soft seal (PEEK) ¹⁾	VI	
Cleaning		CIP (cleaning in place) or SIP (sterilization in place)	
Peak-to-valley height ²⁾ and surface finish	External	Standard: Glass bead blasted	
		R _a ≤ 0.6 µm · Polished	
	Internal	Standard: Ra ≤ 0.8 µm · Fine machine finish	
		R _a ≤ 0.6 µm · Polished	
		R _a ≤ 0.4 µm · Satin finish	
		Ra ≤ 0.4 µm · Mirror finish	
Certificates		USP-VI 121 °C ³⁾ ADI-free CFR Title 21 FDA Regulation (EC) No. 1935/2004 Regulation (EU) No. 10/2011 Regulation (EC) No. 2023/2006	
Compliance		CE ⁴⁾ · EAC	

¹⁾ Special version

²⁾ Other peak-to-valley heights on request

³⁾ Only for version with metal seal

⁴⁾ CE compliance only for versions in DN 32 (NPS 1¼) and higher; Article 3, Paragraph 3 of PED applies to all other versions

Table 1.1: End connections, operating range with maximum pressures and temperature limits

Connection	Standard	Valve sizes	Max. operating pressure	Pressure-temperature diagram
Welding ends	DIN 11850 Series 2 (standard)	See Table 9.1 to Table 9.4	10 bar	DIN
	DIN 11866, Series B			
	ISO 1127			
	ISO 2037		150 psi	ANSI
	SMS 3008			
	BS 4825			
	ASTM A-270			
Threaded connection	DIN 11864-1, Form A	10 bar	DIN	
Clamp connections	DIN 11864-3, Form A			
Flanges	DIN 11864-2, Form A			

Table 2: Materials

Version	DIN	ANSI
Body	1.4435	316 L
Bonnet	1.4404	316 L
Plug	1.4435	316 L
Plug stem guide	PTFE	
Packing	Special version	PTFE
Diaphragm	PTFE	

Table 3: K_{VS} and C_V coefficients and associated nominal sizes

K_{VS}	0.1	0.16	0.25	0.4	0.63	1.0	1.6	2.5	4	6.3	10	6.3	10	16	25	40	60	80	100	160
C_V	0.12	0.2	0.3	0.50	0.75	1.2	2	3	5	7.5	12	7.5	12	20	30	47	70	95	120	190
Seat Ø [mm]	6					6 12 ¹⁾	12		12 24 ¹⁾	24		31			38	48	63	80		100
Rated travel [mm]	7.5											15					30			
DN	NPS																			
15	½	•	•	•	•	•	•	•	•	•										
20	¾	•	•	•	•	•	•	•	•	•										
25	1	•	•	•	•	•	•	•	•	•	•	•								
32	1¼											•	•	•						
40	1½											•	•	•	•					
50	2											•	•	•	•	•				
65	2½											•	•	•	•	•	•			
80	3											•	•	•	•	•	•	•		
100	4																		•	•

¹⁾ Seat Ø for version with V-port plug

Table 4: Permissible differential pressures for Type 3349 in standard and special version with fail-safe position "actuator stem extends" · Valve CLOSED when the signal pressure is 0 bar/psi · Metal seal (leakage class IV)

Table 4.1: All pressures stated in bar

Valve size		Seat Ø [mm]	K _{V5}	Actuator area [cm ²]	Bench range [bar]	Operating range in bar when p ₂ = 0 bar (valve CLOSED)	
DN	NPS					Δp = 5 bar	Δp = 10 bar
15 to 25	½ to 1	6	0.1 to 1.0	120	0.4 to 2.0	1.2 to 2.0	1.2 to 2.0
		12	1.6 to 4.0				
25	1	24	6.3 to 10				
15 to 25	½ to 1	6	0.1 to 1.0	175v2	0.4 to 2.0	1.2 to 2.0	1.2 to 2.0
		12	1.6 to 4.0				
25	1	24	6.3 to 10				
15 to 25	½ to 1	6	0.1 to 1.0	240	0.4 to 2.0	1.2 to 2.0	1.2 to 2.0
		12	1.6 to 4.0				
25	1	24	6.3 to 10				
32 to 65	1¼ to 2½	31	16	350	0.6 to 3.0	0.6 to 3.0	1.2 to 3.6
40 to 65	1½ to 2½	38	25				
50 to 65	2 to 2½	48	40				
65	2½	63	60				
32 to 65	1¼ to 2½	31	16	355v2	0.4 to 2.0	1.2 to 2.0	1.2 to 2.0
		38	25				
40 to 65	1½ to 2½	48	40				
65	2½	63	60				
80	3	80	80	700	2.1 to 3.3	2.1 to 3.3	2.1 to 3.3
100	4	80	100				
100	4	100	100				
80	3	80	80	750v2	1.9 to 3.1	1.9 to 3.1	2.2 to 3.4
		100	100				
100	4	80	100				
100	4	100	100				

Table 4.2: All pressures stated in psi

Valve size		Seat Ø [mm]	C _V	Actuator area [cm ²]	Bench range [psi]	Operating range in psi when p ₂ = 0 psi (valve CLOSED)	
DN	NPS					Δp = 75 psi	Δp = 10 psi
15 to 25	½ to 1	6	0.12 to 1.2	120	6 to 30	18 to 30	18 to 30
		12	2 to 5				
25	1	24	7.5 to 12				
15 to 25	½ to 1	6	0.12 to 1.2	175v2	6 to 30	18 to 30	18 to 30
		12	2 to 5				
25	1	24	7.5 to 12				
15 to 25	½ to 1	6	0.12 to 1.2	240	6 to 30	18 to 30	18 to 30
		12	2 to 5				
25	1	24	7.5 to 12				
32 to 65	1¼ to 2½	31	20	350	9 to 44	9 to 44	18 to 53
40 to 65	1½ to 2½	38	30				
50 to 65	2 to 2½	48	46				
65	2½	63	70				
32 to 65	1¼ to 2½	31	20	355v2	6 to 30	18 to 30	18 to 30
		38	30				
40 to 65	1½ to 2½	48	46				
65	2½	63	70				
80	3	80	95	700	31 to 48	31 to 48	31 to 48
		100	120				
100	4	100	190				
80	3	80	95	750v2	28 to 45	28 to 45	32 to 50
		100	120				
100	4	80	120				
100	4	100	190				

Table 5: Permissible differential pressures for Type 3349 in standard and special version with fail-safe position "actuator stem retracts" · Valve CLOSED at the required supply pressure · Metal seal (leakage class IV)

Table 5.1: All pressures stated in bar

Valve size		Seat Ø [mm]	K _{Vs}	Actuator area [cm ²]	Bench range [bar]	Required supply pressure in bar when p ₂ = 0 bar (valve CLOSED)		
DN	NPS					Δp = 5 bar	Δp = 10 bar	
15 to 25	½ to 1	6	0.1 to 1.0	120	0.4 to 2.0 (operating range 0.4 to 1.2)	1.8	2.1	
		12	1.6 to 4.0					
25	1	24	6.3 to 10					
15 to 25	½ to 1	6	0.1 to 1.0	175v2		0.4 to 2.0 (operating range 0.4 to 1.2)	1.6	1.8
		12	1.6 to 4.0					
25	1	24	6.3 to 10					
15 to 25	½ to 1	6	0.1 to 1.0	240	0.4 to 2.0 (operating range 0.4 to 1.2)		1.5	1.7
		12	1.6 to 4.0					
25	1	24	6.3 to 10					
32 to 65	1¼ to 2½	31	16	350		0.2 to 1.0 ¹⁾	1.6	1.8
40 to 65	1½ to 2½	38	25					
50 to 65	2 to 2½	48	40					
65	2½	63	60					
32 to 65	1¼ to 2½	31	16	355v2	0.4 to 2.0 (operating range 0.4 to 1.2)	1.8	2.0	
40 to 65	1½ to 2½	38	25					
50 to 65	2 to 2½	48	40					
65	2½	63	60					
80	3	80	80	700	0.2 to 1.0 ¹⁾	2.1	3.0	
100	4	80	100					
100	4	100	100					
80	3	80	80	750v2	0.2 to 1.0 ¹⁾	2.1	3.0	
100	4	80	100					
100	4	100	100					

¹⁾ Operating range corresponds to bench range

Table 5.2: All pressures stated in psi

Valve size		Seat Ø [mm]	C _v	Actuator area [cm ²]	Bench range [psi]	Required supply pressure in psi when p ₂ = 0 psi (valve CLOSED)		
DN	NPS					Δp = 75 psi	Δp = 150 psi	
15 to 25	½ to 1	6	0.12 to 1.2	120	6 to 30 (operating range 6 to 18)	27	31	
		12	2 to 5					
25	1	24	7.5 to 12					
15 to 25	½ to 1	6	0.12 to 1.2	175v2		6 to 30 (operating range 6 to 18)	24	27
		12	2 to 5					
25	1	24	7.5 to 12					
15 to 25	½ to 1	6	0.12 to 1.2	240	6 to 30 (operating range 6 to 18)		22	25
		12	2 to 5					
25	1	24	7.5 to 12					
32 to 65	1¼ to 2½	31	20	350		3 to 15 ¹⁾	24	27
40 to 65	1½ to 2½	38	30					
50 to 65	2 to 2½	48	46					
65	2½	63	70					
32 to 65	1¼ to 2½	31	20	355v2	6 to 30 (operating range 6 to 18)	27	30	
40 to 65	1½ to 2½	38	30					
50 to 65	2 to 2½	48	46					
65	2½	63	70					
80	3	80	95	700	3 to 15 ¹⁾	31	44	
100	4	80	120					
100	4	100	190					
80	3	80	95	750v2	3 to 15 ¹⁾	31	44	
100	4	80	120					
100	4	100	190					

¹⁾ Operating range corresponds to bench range

Table 6: Permissible differential pressures for Type 3349 in standard and special version with fail-safe position "actuator stem extends" · Valve CLOSED when the signal pressure is 0 bar/psi · Soft seal with PEEK (leakage class VI)

Table 6.1: All pressures stated in bar

Valve size		Seat Ø [mm]	K _{VS}	Actuator area [cm ²]	Bench range [bar]	Operating range in psi when p ₂ = 0 bar (valve CLOSED)	
DN	NPS					Δp = 5 bar	Δp = 10 bar
15...25	½ to 1	6	0.1 to 1.0	240	0.4 to 2.0	1.2 to 2.0	1.2 to 2.0
		12	1.6 to 4.0				
25	1	24	6.3 to 10	350	1.2 to 3.6	1.2 to 3.6	2.1 to 3.3
32 to 65	1¼ to 2½	31	16				
40 to 65	1½ to 2½	38	25				
50 to 65	2 to 2½	48	40				
65	2½	63	60				
32 to 65	1¼ to 2½	31	16	355v2	1.2 to 3.6	2.4 to 3.6	2.4 to 3.6
40 to 65	1½ to 2½	38	25				
50 to 65	2 to 2½	48	40				
65	2½	63	60				
80	3	80	80	700	2.1 to 3.3	2.1 to 3.3	2.6 to 4.3
100	4	80	100				
100	4	100	100				
80	3	80	80	750v2	1.9 to 3.1	1.9 to 3.1	2.5 to 4.2
100	4	80	100				
100	4	100	100				

Table 6.2: All pressures stated in psi

Valve size		Seat Ø [mm]	K _{VS}	Actuator area [cm ²]	Bench range [psi]	Operating range in psi when p ₂ = 0 psi (valve CLOSED)	
DN	NPS					Δp = 75 psi	Δp = 150 psi
15 to 25	½ to 1	6	0.12 to 1.2	240	6 to 30	18 to 30	18 to 30
		12	2 to 5				
25	1	24	7.5 to 12	350	18 to 53	18 to 53	31 to 48
32 to 65	1¼ to 2½	31	20				
40 to 65	1½ to 2½	38	30				
50 to 65	2 to 2½	48	46				
65	2½	63	70				
32 to 65	1¼ to 2½	31	20	355v2	18 to 53	35 to 53	35 to 53
40 to 65	1½ to 2½	38	30				
50 to 65	2 to 2½	48	46				
65	2½	63	70				
80	3	80	95	700	31 to 48	31 to 48	38 to 63
100	4	80	120				
100	4	100	190				
80	3	80	95	750v2	28 to 45	28 to 45	37 to 61
100	4	80	120				
100	4	100	190				

Table 7: Permissible differential pressures for Type 3349 in standard and special version with fail-safe position "actuator stem retracts" · Valve CLOSED at the required supply pressure · Soft seal with PEEK (leakage class VI)

Table 7.1: All pressures stated in bar

Valve size		Seat Ø [mm]	K _{Vs}	Actuator area [cm ²]	Bench range [bar]	Required supply pressure in bar when p ₂ = 0 bar (valve CLOSED)		
DN	NPS					Δp = 5 bar	Δp = 10 bar	
15 to 25	½ to 1	6	0.1 to 1.0	120	0.4 to 2.0 (operating range 0.4 to 1.2)	2.2	3.1	
		12	1.6 to 4.0					
25	1	24	6.3 to 10					
15 to 25	½ to 1	6	0.1 to 1.0	175v2		0.4 to 2.0 (operating range 0.4 to 1.2)	1.9	2.6
		12	1.6 to 4.0					
25	1	24	6.3 to 10					
15 to 25	½ to 1	6	0.1 to 1.0	240	0.4 to 2.0 (operating range 0.4 to 1.2)		1.7	2.2
		12	1.6 to 4.0					
25	1	24	6.3 to 10					
32 to 65	1¼ to 2½	31	16	350		0.2 to 1.0 ¹⁾	2.0	2.8
40 to 65	1½ to 2½	38	25					
50 to 65	2 to 2½	48	40					
65	2½	63	60					
32 to 65	1¼ to 2½	31	16	355v2	0.4 to 2.0 (operating range 0.4 to 1.2)	2.2	2.9	
		40 to 65	1½ to 2½					38
50 to 65	2 to 2½	48	40					
65	2½	63	60					
80	3	80	80	700	0.2 to 1.0 ¹⁾	2.3	3.4	
100	4	80	100					
100	4	100	100					
80	3	80	80	750v2	0.2 to 1.0 ¹⁾	2.2	3.2	
100	4	80	100					
100	4	100	100					

¹⁾ Operating range corresponds to bench range

Table 7.1: All pressures stated in psi

Valve size		Seat Ø [mm]	C _v	Actuator area [cm ²]	Bench range [psi]	Operating range in bar when p ₂ = 0 psi (valve CLOSED)		
DN	NPS					Δp = 75 psi	Δp = 150 psi	
15 to 25	½ to 1	6	0.12 to 1.2	120	6 to 30 (operating range 6 to 18)	32	45	
		12	2 to 5					
25	1	24	7.5 to 12					
15 to 25	½ to 1	6	0.12 to 1.2	175v2		6 to 30 (operating range 6 to 18)	28	38
		12	2 to 5					
25	1	24	7.5 to 12					
15 to 25	½ to 1	6	0.12 to 1.2	240	6 to 30 (operating range 6 to 18)		25	32
		12	2 to 5					
25	1	24	7.5 to 12					
32 to 65	1¼ to 2½	31	20	350		3 to 15 ¹⁾	30	41
40 to 65	1½ to 2½	38	30					
50 to 65	2 to 2½	48	46					
65	2½	63	70					
32 to 65	1¼ to 2½	31	20	355v2	6 to 30 (operating range 6 to 18)	32	43	
		40 to 65	1½ to 2½					38
50 to 65	2 to 2½	48	46					
65	2½	63	70					
80	3	80	95	700	3 to 15 ¹⁾	34	50	
100	4	80	120					
100	4	100	190					
80	3	80	95	750v2	3 to 15 ¹⁾	32	47	
100	4	80	120					
100	4	100	190					

¹⁾ Operating range corresponds to bench range

Table 8: Dimensions for Type 3349-1 and Type 3349-7 Control Valves · Dimensions in mm

Table 8.1: Type 3349 Valve

Valve	DN	15	20	25	32	40	50	65	80	100	
	NPS	½	¾	1	1¼	1½	2	2½	3	4	
Rated travel	mm	7.5			15				30		
H1	mm	238	241	244	276	279	285	293	348	360	
G	mm	86	86	86	113	113	113	113	144	144	

Table 8.2: Types 3271 and 3277 Pneumatic Actuators

Actuator area	cm ²	120	175v2	240	350	355v2	700	750v2
Diaphragm ØD	mm	168	215	240	280	280	390	394
H ¹⁾	mm	69	78	62	82	121	199	236
H3 ²⁾	mm	110	110	110	110	110	190	190
H5	Type 3277 mm	88	101	101	101	101	101	101
Thread	Type 3271	M30 x 1.5						
	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)
α2	Type 3277	–	G ⅜	G ⅜	G ⅜	G ⅜	G ⅜	G ⅜

1) Height with welded-on lifting eyelet or height of eyebolt according to DIN 580. Height of the swivel lifting hook may differ. Actuators up to 355v2 cm² without lifting eyelet

2) Minimum clearance required to remove the actuator

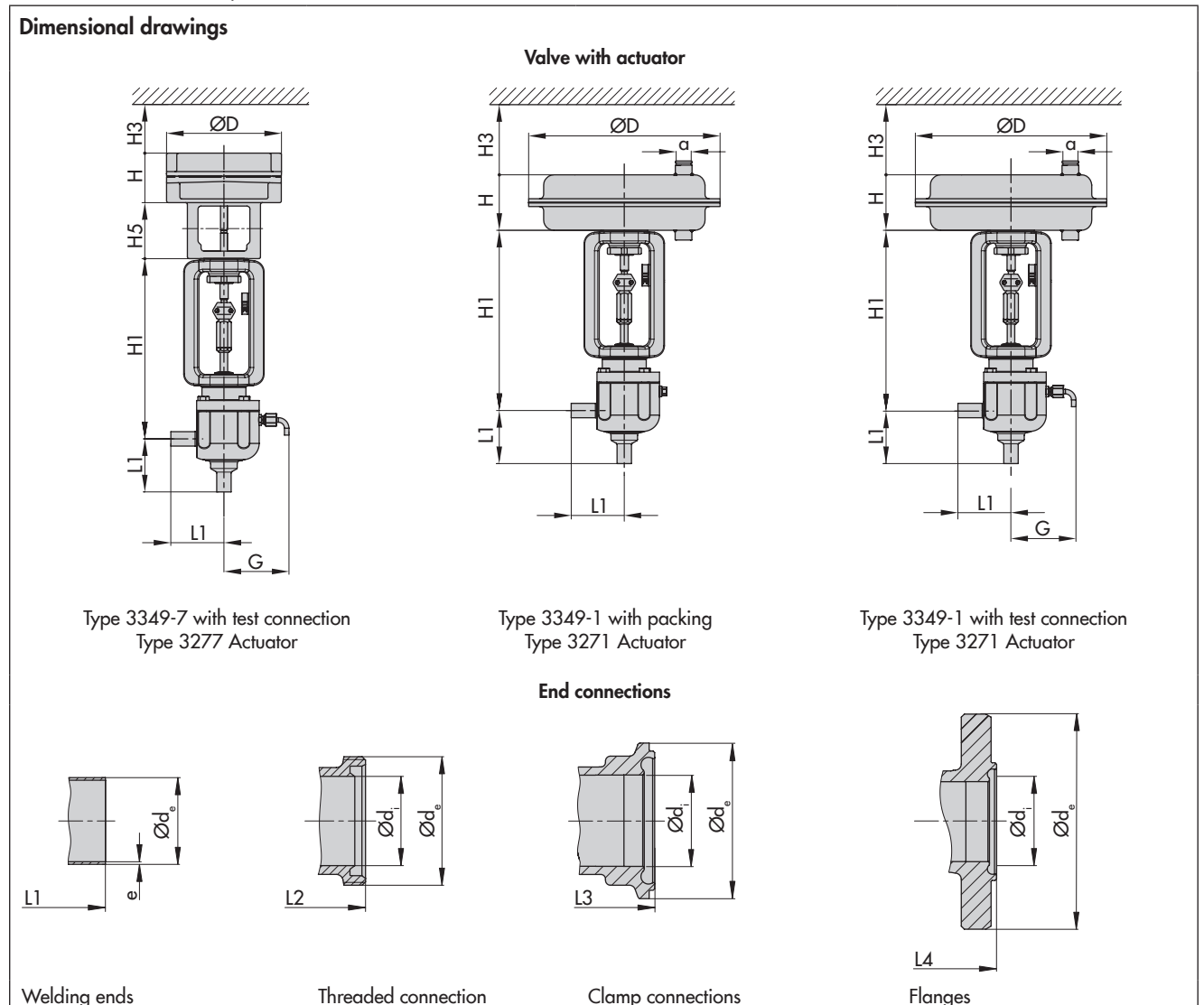


Table 9: Dimensions of end connections · Dimensions in mm

Table 9.1: Welding ends · Dimensions marked by an asterisk (*) are not standardized

Valve	DN (OD)	15 (21.3)	20 (26.9)	25 (33.7)	32 (42.4)	40 (48.3)	50 (60.3)	65 (76.1)	80 (88.9)	100 (114.3)
	NPS	½	¾	1	1¼	1½	2	2½	3	4
Welding ends for pipes acc. to DIN 11866 Series A (DIN 11850 Series 2) ¹⁾	L1	70*	70*	70*	105*	105*	105*	105*	150*	150*
	Ød _i	16	20	26	32	38	50	66	81	100
	Ød _e	19	23	29	35	41	53	70	85	104
	e	1.5	1.5	1.5	1.5	1.5	1.5	2	2	2
Welding ends for pipes acc. to DIN 11866 Series B	L1	70*	70*	70*	105*	105*	105*	105*	150*	150*
	Ød _i	18.1	23.7	29.7	38.4	44.3	56.3	72.1	84.3	109.7
	Ød _e	21.3	26.9	33.7	42.4	48.3	60.3	76.1	88.9	114.3
	e	1.6	1.6	2	2	2	2	2	2.3	2.3
Welding ends for pipes acc. to DIN 11866 Series C (ASTM A-270/ASME BPE)	L1	70*	70*	70*	-	105*	105*	105*	150*	150*
	Ød _i	9.4	15.75	22.1		34.8	47.5	60.2	72.9	97.38
	Ød _e	12.7	19.05	25.4		38.1	50.8	63.5	76.2	101.6
	e	1.65	1.65	1.65		1.65	1.65	1.65	1.65	2.11
Welding ends for pipes acc. to ISO 1127 Series 1	L1	70*	70*	70*	105*	105*	105*	105*	150*	150*
	Ød _i	18.1	23.7	29.7	38.4	44.3	55.1	70.9	83.7	109.1
	Ød _e	21.3	26.9	33.7	42.4	48.3	60.3	76.1	88.9	114.3
	e	1.6	1.6	2	2	2	2.6	2.6	2.6	2.6
Welding ends for pipes acc. to ISO 2037	L1	70*	70*	70*	105*	105*	105*	105*	150*	150*
	Ød _i	15.2	19.3	22.6	31.3	35.6	48.6	60.3	72.9	97.6
	Ød _e	17.2	21.3	25	33.7	38	51	63.5	76.1	101.6
	e	1	1	1.2	1.2	1.2	1.2	1.6	1.6	2
Welding ends for pipes according to BS 4825	L1	-	-	70*	-	105*	105*	105*	150*	150*
	Ød _i			22.1		34.8	47.5	60.3	73	97.6
	Ød _e			25.4		38.1	50.8	63.5	76.2	101.6
	e			1.65		1.65	1.6	1.65	2.11	
Welding ends for pipes acc. to SMS 3008	L1	70*	-	70*	105*	105*	105*	105*	150*	150*
	Ød _i	16		22.6	31.3	35.6	48.6	60.3	72.9	97.6
	Ød _e	18		25	33.7	38	51	63.5	76.1	101.6
	e	1		1.2	1.2	1.2	1.2	1.6	1.6	2
Welding ends according to JIS G 3447	L1	-	-	70*	105*	105*	105*	105*	150*	150*
	Ød _i			23	29.4	35.7	47.8	59.5	72.3	97.6
	Ød _e			25.4	31.8	38.1	50.8	63.5	76.3	101.6
	e			1.2	1.2	1.2	1.5	2	2	2
Welding ends according to JIS G 3459	L1	70*	70*	70*	105*	105*	105*	105*	150*	150*
	Ød _i	18.4	23.9	30.7	39.4	45.3	57.2	72.1	84.9	110.1
	Ød _e	21.7	27.2	34	42.7	48.6	60.5	76.3	89.1	114.3
	e	1.65	1.65	1.65	1.65	1.65	1.65	2.1	2.1	2.1

Table 9.2: Threaded connections · Dimensions marked by an asterisk (*) are not standardized

Valve	DN (OD)	15 (21.3)	20 (26.9)	25 (33.7)	32 (42.4)	40 (48.3)	50 (60.3)	65 (76.1)	80 (88.9)	100 (114.3)
	NPS	½	¾	1	1¼	1½	2	2½	3	4
Threaded connections according to DIN 11864-1 GS Form A, Series A	L2	70*	70*	70*	100*	100*	100*	100*	155*	155*
	Ø _{d_i}	16	20	26	32	38	50	66	81	100
	Ø _{d_e}	Rd 34 x ⅛"	Rd 44 x ⅛"	Rd 52 x ⅛"	Rd 58 x ⅛"	Rd 65 x ⅛"	Rd 78 x ⅛"	Rd 95 x ⅛"	Rd 110 x ¼"	Rd 130 x ¼"
Threaded connections according to DIN 11864-1 GS Form A, Series B	L2	70*	70*	70*	100*	100*	100*	100*	155*	155*
	Ø _{d_i}	18.1	23.7	29.7	38.4	44.3	56.3	72.1	84.3	–
	Ø _{d_e}	Rd 44 x ⅛"	Rd 52 x ⅛"	Rd 58 x ⅛"	Rd 65 x ⅛"	Rd 78 x ⅛"	Rd 95 x ⅛"	Rd 110 x ¼"	Rd 130 x ¼"	–
Threaded connections according to DIN 11864-1 GS Form A, Series C	L2			70*		100*	100*	100*	155*	155*
	Ø _{d_i}	–	–	22.1	–	34.8	47.5	60.2	72.9	97.38
	Ø _{d_e}			Rd 52 x ⅛"		Rd 65 x ⅛"	Rd 78 x ⅛"	Rd 95 x ⅛"	Rd 110 x ¼"	Rd 130 x ¼"

Table 9.3: Clamp connections · Dimensions marked by an asterisk (*) are not standardized

Valve	DN (OD)	15 (21.3)	20 (26.9)	25 (33.7)	32 (42.4)	40 (48.3)	50 (60.3)	65 (76.1)	80 (88.9)	100 (114.3)
	NPS	½	¾	1	1¼	1½	2	2½	3	4
Clamp connections according to DIN 11864-3 NKS Form A, Series A	L3	60.3*	60.3*	60.3*	88.9*	88.9*	88.9*	88.9*	150*	150*
	Ø _{d_i}	16	20	26	32	38	50	66	81	100
	Ø _{d_e}	34	50.5	50.5	50.5	64	77.5	91	106	130
Clamp connections according to DIN 11864-3 NKS Form A, Series B	L3	60.3*	60.3*	60.3*	88.9*	88.9*	88.9*	88.9*	150*	150*
	Ø _{d_i}	18.1	23.7	29.7	38.4	44.3	56.3	72.1	84.3	–
	Ø _{d_e}	34	50.5	50.5	64	64	91	106	119	–
Clamp connections according to DIN 11864-3 NKS Form A, Series C	L3	60.3*	60.3*	60.3*		88.9*	88.9*	88.9*	150*	150*
	Ø _{d_i}	9.4	15.75	22.1	–	34.8	47.5	60.2	72.9	97.38
	Ø _{d_e}	34	34	50.5		64	77.5	91	106	130

Table 9.4: Flanges

Valve	DN (OD)	15 (21.3)	20 (26.9)	25 (33.7)	32 (42.4)	40 (48.3)	50 (60.3)	65 (76.1)	80 (88.9)	100 (114.3)
	NPS	½	¾	1	1¼	1½	2	2½	3	4
Flanges according to DIN 11864-2 NF Form A, Series A	L4	90	95	100	105	115	125	145	155	175
	Ø _{d_i}	16	20	26	32	38	50	66	81	100
	Ø _{d_e}	59	64	70	76	82	94	113	133	159
Flanges according to DIN 11864-2 NF Form A, Series B	L4	90	95	100	105	115	125	145	155	175
	Ø _{d_i}	18.1	23.7	29.7	38.4	44.3	56.3	72.1	84.3	109.7
	Ø _{d_e}	62	69	74	82	88	103	125	137	168
Flanges according to DIN 11864-2 NF Form A, Series C	L4			100		115	125	145	155	175
	Ø _{d_i}	–	–	22.1	–	34.8	47.5	60.2	72.9	97.38
	Ø _{d_e}			66		79	92	107	125	157

Table 10: Weights for Type 3349-1 and Type 3349-7 Control Valves · Weights in kg**Table 10.1:** Type 3349 Valve

Valve	DN	15	20	25	32	40	50	65	80	100
	NPS	½	¾	1	1¼	1½	2	2½	3	4
Weight with welding ends	Approx.	6			16			42		

Table 10.2: Types 3271 and 3277 Pneumatic Actuators

Actuator	cm ²	120	175v2	240	350	355v2	700	750v2
Type 3271		2.5	6	5	8	15	22	36
Type 3277		3.2	10	9	12	19	26	40

Ordering text

Control valve for aseptic service	Type 3349 with USP-VI diaphragm
Body version	Standard or special version with or without backup packing
Valve size	DN ... or NPS ...
K _{VS} /C _V coefficient	...
Plug seal	Metal or soft seal
End connections	Welding ends, threaded connections, clamp connections or flanges
Characteristic	Equal percentage or linear
Actuator	Type 3271/3277
Actuator area	... cm ²
Travel	... mm
Fail-safe position	Fail-close or fail-open
Bench range	...

Specifications subject to change without notice

