

Pneumatic Control Valve Type 3347-1 and Type 3347-7 Hygienic Angle Valve Type 3347

Application

Control valve for hygienic applications in the pharmaceutical and food processing industries

Nominal size	DN 15 to 125	•	NPS ½ to 5
Maximum pressure	16 bar	•	240 psi
Medium temperature	-10 to 150 °C	•	14 to 300 °F



Type 3347 Angle Valve with:

- Type 3271 Pneumatic Actuator (Type 3347-1 Control Valve) or
- Type 3277 Pneumatic Actuator (Type 3347-7 Control Valve) for integral positioner attachment
- Cavity-free valve body made of stainless steel
- FDA conformity for wetted sealing materials
- 3A conformity for Type 3277 Pneumatic Actuator and approved valve accessories (see Table 1b)
- Valve plug with metal or soft sealing
- Easily detachable clamp connection between body and bonnet
- Suitable for cleaning-in-place (CIP)

PTFE bushings are used to seal body and bonnet as well as bonnet and plug stem. An additional steam line connection is available for stricter purity requirements.

The control valves can be equipped with various accessories, such as directly attached positioners or positioners, solenoid valves and limit switches for attachment according to IEC 60534-6 and NAMUR recommendation. Refer to Data Sheet T 8350 EN.

Versions

Valves with welding ends for pipes according to DIN 11850, ISO 2037, BS 4825 or AFNOR with internal surfaces turned to a fine finish and metal-seated plugs for medium temperatures between -10 and 150 °C (15 to 300 °F).

Valve with hollow-mold cast body (Fig. 1) · DN 25 to 100 (NPS 1 to 4)

- **Type 3347-1** · With Type 3271 Actuator (T 8310-1 EN)
- **Type 3347-7** · With Type 3277 Actuator (T 8310-1 EN)

Valve with bar stock body · DN 15 to 125 (NPS ½ to 5)

- **Type 3347-1** · With Type 3271 Actuator (with EHEDG approval)
- **Type 3347-7** (Fig. 2) · With Type 3277 Actuator · With EHEDG and 3A approvals

Additional versions available with

- **Polished valve body** (internal and/or external surfaces)
- **Threaded connections**, DIN 11887 (11851), SMS or IDF
- **Clamp connection**, ISO 2852 Part 2, DIN 32676 or BS 4825

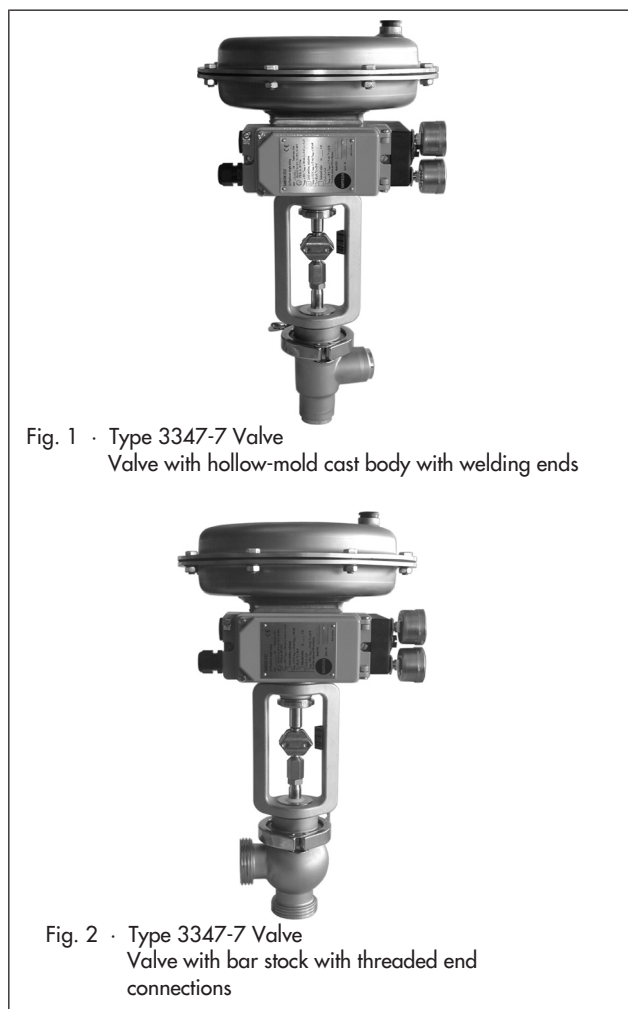


Fig. 1 · Type 3347-7 Valve
Valve with hollow-mold cast body with welding ends

Fig. 2 · Type 3347-7 Valve
Valve with bar stock with threaded end connections

- **Flanges** with smooth raised face, dimensions acc. to DIN EN 1092-1
- Valve plug with **soft sealing**
- **V-port** valve plug
- **Steam line connection** (without 3A or EHEDG compliance)
- **Body material 1.4435**
- Additional **FDA-compliant sealing materials** on request
- Bar stock body PN 40 with **flanged-on bonnet**
- **Heating jacket** · Details on request

Principle of operation (Figs. 3 to 5)

The process medium flows through the valve in the direction indicated by the arrow (flow-to-open).

A PTFE bushing (5.1) seals the actuator stem. An additional bushing (5.3) guides the plug stem to the outside.

An optional steam or sterile fluid line connection (Fig. 5) for sterilization of the plug stem is available (not for 3A version).

The valve bonnet is fixed to the body by a clamp connection (5.4) to allow the entire bonnet to be easily detached from the body.

Installation

The valve must be installed in the upright position with the actuator on top. Contact SAMSON if the valve is to be installed with the valve outlet facing downward.

Valve accessories

Note: Any devices mounted on 3A-compliant valves must also be 3A-compliant.

Fail-safe action

Depending on how the compression springs are arranged in the actuator (refer to Data Sheets T 8310-1 EN and T 8310-2 EN), the control valve has two different fail-safe positions when the supply air fails:

Actuator stem extends

Valve is closed upon supply air failure.

Actuator stem retracts

Valve is opened upon supply air failure.

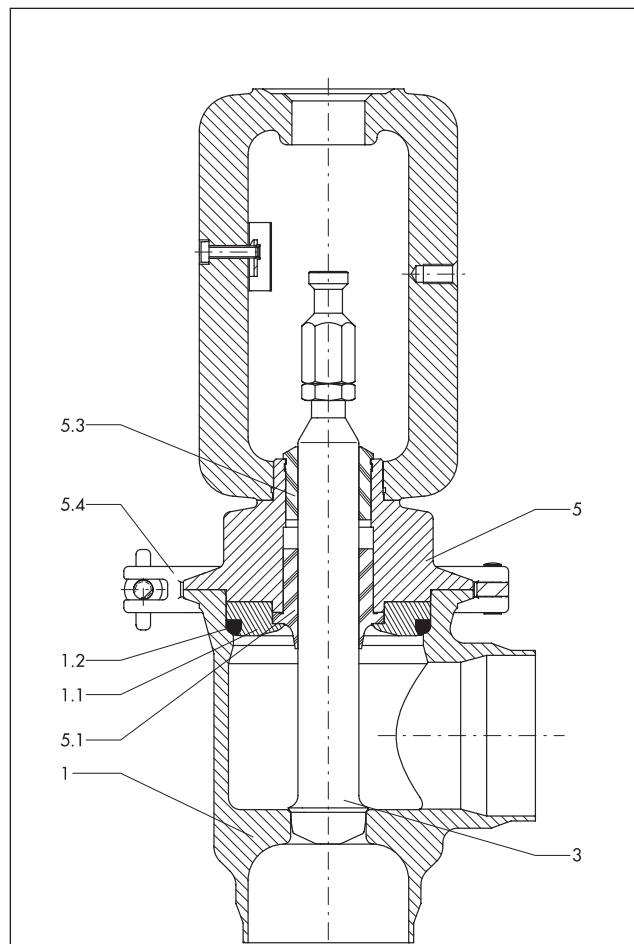
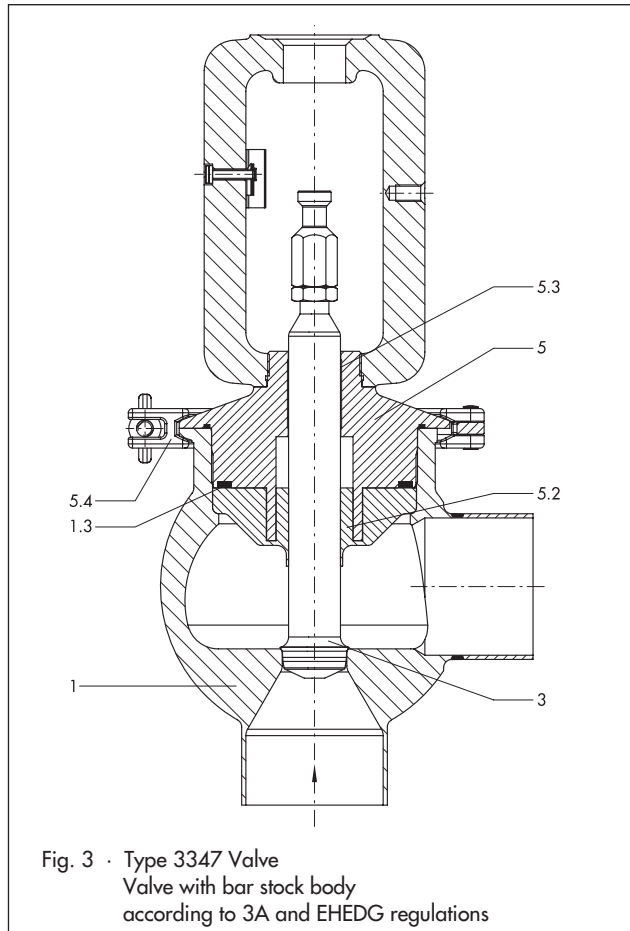


Fig. 4 · Type 3347 Valve with hollow-mold cast body

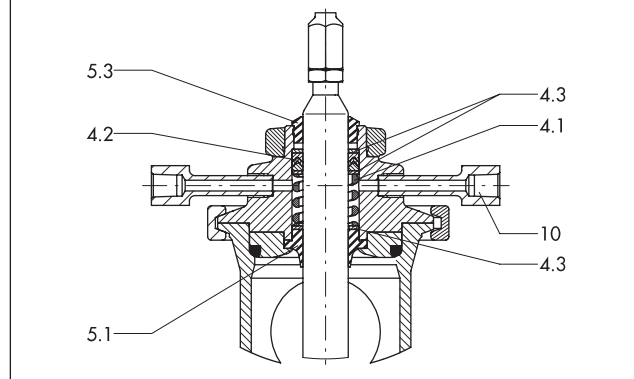


Fig. 5 · Valve bonnet with steam line connection

Legend for Figs. 3 to 5

- | | |
|-------------------------|---------------------------------------|
| 1 Valve body | 5 Valve bonnet with yoke |
| 1.1 Centering ring | 5.1 Stem seal |
| 1.2 Body gasket | 5.2 Body and stem seal |
| 1.3 Compensating ring | 5.3 Plug stem guide/
guide bushing |
| 3 Plug | 5.4 Clamp |
| 4.1 Spring | 10 Nipple |
| 4.2 PTFE V-ring packing | |
| 4.3 Washer | |

Table 1a · Technical data for Type 3347

Body version ¹⁾	Valve with hollow-mold cast body	Valve with bar stock body
Nominal size	DN 25 ... 100 · NPS 1 ... 4	DN 15 ... 125 · NPS ½ ... 5
Maximum pressure	16 bar (240 psi) with restrictions listed in Table 1b	
End connections	According to Table 1b	
Seat/plug sealing	Metal sealing · Soft sealing (not compliant with 3A regulations)	
Characteristic	Equal percentage or linear	
Rangeability	50:1 for DN 50 (NPS 2) and smaller · 30:1 for DN 65 (NPS 2½) and larger	
Permissible medium temperature (restrictions acc. to Table 1b)	-10 ... 150 °C (14 ... 300 °F)	
Leakage class acc. to DIN EN 1349	Metal sealing	IV
	Soft sealing	VI
Peak-to-valley height and surface finish	External	$R_a \leq 1.6 \mu\text{m}$ · Glass bead blasted
		$R_a \leq 0.6 \mu\text{m}$ · Polished
	Internal	$R_a \leq 0.8 \mu\text{m}$ · Turned to a fine finish
		$R_a \leq 0.6 \mu\text{m}$ · Polished
		$R_a \leq 0.4 \mu\text{m}$ · Mirror finish

¹⁾ Suitable for Group 2 fluids according to European Pressure Equipment Directive 97/23/EC.

Table 1b · End connections, maximum pressures and 3A conformity

End connections	Standard	Nominal size DN/NPS	Max. operating pressure in bar or psi at a medium temperature of		3A-conformity
			-10 ... 20 °C (14 ... 68 °F)	150 °C (300 °F)	
Welding ends	DIN 11 850 Series 2	DN 15 ... 125	16 bar	14 bar	•
	BS 4825	NPS 1, 1½ ... 4	230 psi	175 psi	•
	SMS 3008/ISO 2037 (NFA 49 249)	DN 25 ... 80	16 bar	14 bar	•
	DIN EN ISO 1127	DN 15 ... 100	16 bar	14 bar	•
	ASTM A-270	NPS 1, 1½ ... 4	230 psi	175 psi	•
Threaded coupling	DIN 11 887 (11 851) Connection A	DN 15 ... 125	16 bar	14 bar	–
	SMS 3008	DN 25 ... 100	6 bar	5.5 bar	•
	ISO 2853 - IDF	NPS 1 ... 4	90 psi	68 psi	•
	DIN 11864-1 Form A	DN 15 ... 100 NPS ½ ... 4	16 bar	14 bar	•
Clamp connections	ISO 2852 Table 2	DN 25, 40, 50	16 bar	14 bar	•
		DN 65 ... 100	10 bar	9 bar	
	DIN 32 676	DN 15 ... 50	16 bar	14 bar	•
		DN 65 ... 100	10 bar	9 bar	
	DIN 11864-3 Form A	DN 15 ... 100 NPS ½ ... 4	16 bar	14 bar	•
	BS 4825	NPS 1, 1½, 2	230 psi	175 psi	•
NPS 2½ ... 4		150 psi	114 psi		
Flanges with smooth raised face, but with $R_a \leq 0.8$	DIN EN 1092-1	PN 16	16 bar	14 bar	–
		PN 10	10 bar	9 bar	
		PN 6	6 bar	5.5 bar	
	DIN 11864-2 Form A	DN 15 ... 100 NPS ½ ... 4	16 bar	14 bar	•

Table 2 · Materials

		DIN	ANSI	AFNOR
Body version with lathed seat	Hollow-mold	Stainless cast steel 1.4409	CF3M	Z2 CND 17-12
	Bar stock	1.4404	316L	Z2 CND 17-12
Bonnet		1.4404	316L	Z2 CND 17-12
Plug		1.4404	316L	Z2 CND 17-12
Centering ring		1.4404	316L	Z2 CND 17-12
Clamp		1.4306	304L	Z3 CN 19-10
Body gasket and stem seal		Pure PTFE		
Guide bushing		Pure PTFE for DN 50 (NPS 2) and smaller PTFE-jacketed stainless steel for DN 65 (NPS 2½) and larger		

Table 3 · Kvs coefficients and associated nominal sizes

Kvs	0.1	0.16*	0.25	0.4*	0.63	1.0*	1.6	2.5*	4	6.3	10	16	25	40	60	80	100	160	200	
Cv	0.12	0.2*	0.3	0.5*	0.75	1.2*	2	3*	5	7.5	12	20	30	47	70	95	120	190	240	
Seat Ø mm	6						12			24	31	38	48	63	80	100	110			
Travel mm	15															30				
DN	NPS																			
15	½	•	•	•	•	•	•	•	•											
20	¾	•	•	•	•	•	•	•	•											
25	1	•	•	•	•	•	•	•	•	•	•									
32	1¼						•		•	•	•	•								
40	1½								•	•	•	•	•							
50	2									•	•	•	•	•						
65	2½												•	•	•					
80	3													•	•	•	•			
100	4																	•	•	
125	5																			•

* Special sizes

Table 4 · Bench ranges and required supply pressure for metal-seated and soft-seated plugs

Note: We recommend using a V-port plug for valves in nominal sizes DN 40 to 65 for 10 bar and higher as well as for valves in nominal sizes DN 80 to 125 for 6 bar and higher.
A V-port plug is not required for valves in nominal sizes DN 40 and smaller.

Table 4a · Valve with fail-safe position “Actuator stem extends” · Valve closed at a supply pressure of 0 bar

The required supply pressure is 0.2 bar higher than the bench range.

Nominal size		K _{Vs}	Actuator cm ²	Bench range in bar at Δp (valve closed)		
DN	NPS			5 bar	10 bar	16 bar
15 20 25	½ ¾ 1	0.1/0.25/ 0.63	120	0.4 ... 2.0	0.4 ... 2.0	0.4 ... 2.0
			240	0.2 ... 1.0	0.2 ... 1.0	0.2 ... 1.0
		1.6/4	120	0.4 ... 2.0	0.4 ... 2.0	1.4 ... 2.3
			240	0.2 ... 1.0	0.2 ... 1.0	0.3 ... 1.1
25	1	6.3/10	120	1.4 ... 2.3	1.4 ... 2.3	1.4 ... 2.3
			240	0.3 ... 1.1	0.4 ... 2.0	0.6 ... 2.2
32 40	1¼ 1½	16	120	1.4 ... 2.3	1.4 ... 2.3	2.1 ... 3.3
			240	0.4 ... 2.0	0.6 ... 2.2	0.9 ... 3.3
40	1½	25	120	1.4 ... 2.3	2.1 ... 3.3	–
			240	0.6 ... 2.2	0.9 ... 3.3	–
			350	0.4 ... 1.2	0.8 ... 2.4	0.8 ... 2.4
50	2	40	240	0.9 ... 3.3	–	–
			350	0.8 ... 2.4	0.8 ... 2.4	1.4 ... 2.3
65	2½	60	350	0.8 ... 2.4	1.4 ... 2.3	2.1 ... 3.3
80	3	80	350	1.4 ... 2.3	2.1 ... 3.3	1.6 ... 2.4 (700 cm ²)
100	4	100	700	0.8 ... 2.4	1.4 ... 2.3	2.1 ... 3.3
		160		1.4 ... 2.3	2.1 ... 3.3	2.6 ... 4.3
125	5	200	700	1.4 ... 2.3	2.1 ... 3.3	2.6 ... 4.3

Table 4b · Valve with fail-safe position “Actuator stem retracts” · Valve closed at the required supply pressure

Nominal size		K _{Vs}	Actuator cm ²	Bench range	Required supply pressure at Δp		
DN	NPS				5 bar	10 bar	16 bar
15 20 25	½ ¾ 1	0.1/0.25/ 0.63	120	0.4 ... 2.0	2.4	2.4	2.4
			240	0.2 ... 1.0	1.4	–	1.4
		1.6/4	120	0.4 ... 2.0	2.4	2.4	3.4
			240	0.2 ... 1.0	1.4	1.4	1.4
25	1	6.3/10	120	0.4 ... 2.0	3.4	3.4	3.4
			240	0.2 ... 1.0	1.4	1.4	1.6
32 40	1¼ 1½	16	120	0.4 ... 2.0	3.4	3.4	4.1
			240	0.2 ... 1.0	1.4	1.6	1.9
40	1½	25	120	0.4 ... 2.0	3.4	4.1	–
			240	0.2 ... 1.0	1.6	1.9	–
			350		1.4	1.8	1.8
50	2	40	240	0.2 ... 1.0	1.9	–	–
			350		1.8	1.8	2.4
65	2½	60	350	0.2 ... 1.0	1.8	2.4	3.1
80	3	80	350	0.2 ... 1.0	2.4	3.1	4
100	4	100	700	0.2 ... 1.0	1.7	2.1	2.5
		160		0.2 ... 1.0	2.4	3.1	3.6
125	5	200	700	0.2 ... 1.0	2.4	3.1	3.6

Table 5 · Dimensions and weights

Table 5a · Connecting dimensions* in mm and weights for Type 3347 Valve with hollow-mold cast or bar stock bodies

Valve	DN	15	20	25	32	40	50	65	80	100	125
	NPS	½	¾	1	1¼	1½	2	2½	3	4	5
Version with welding ends for pipes according to DIN 11850 Series 2	L ¹⁾ (holl.)	–	–	50 ²⁾	56	67	72	85	98	110	–
	L ¹⁾ (bar st)	70	70	70	70	70	85	105	105	130	130
	∅ d2	19	23	29	35	41	53	70	85	104	129
	t	1.5	1.5	1.5	1.5	1.5	1.5	2	2	2	2
Version with welding ends for pipes according to NFA 49-249 and SMS standard (ISO 2037)	L ¹⁾ (holl.)	–	–	55	66	70	82	105	110	150	–
	L ¹⁾ (bar st)	–	–	70	70	70	85	105	105	130	130
	∅ d2	–	–	25	33.7	38	51	63.5	76.1	104 ³⁾	127 ³⁾
	t	–	–	1.2	1.2	1.2	1.2	1.6	1.6	2	2
Welding ends for pipes according to BS 4825	L ¹⁾ (holl.)	–	–	55	–	70	82	105	110	150	–
	L ¹⁾ (bar st)	70	70	70	–	70	85	105	105	130	–
	∅ d2	12.7	19.1	25.4	–	38.1	50.8	63.5	76.2	101.6	–
	t	1.6 ¹⁾	1.6 ¹⁾	1.6	–	1.6	1.6	1.6	1.6	2.0	–
Welding ends for pipes according to ASTM A-270	L ¹⁾ (holl.)	–	–	55	–	70	82	105	110	150	–
	L ¹⁾ (bar st)	70	70	70	–	70	85	105	105	130	–
	∅ d2	12.7	19.1	25.4	–	38.1	50.8	63.5	76.2	101.6	–
	t	1.65	1.65	1.65	–	1.65	1.65	1.65	1.65	2.11	–
Version with threaded coupling acc. to DIN 11851/ and DIN 11887	L ^{1) 5)}	On request	On request	64	70	80	85	100	115	130	130 ¹⁾
	∅ C1			RD 52x½	RD 58x½	RD 65x½	RD 78x½	RD 95x½	RD 110 x ¼	RD 130 x ¼	RD 160 x ¼
	∅ d1			26	32	38	50	66	81	100	125
Version with threaded coupling acc. to SMS standard	L ^{1) 5)}	–	–	55	66	70	82	105	110	150	–
	∅ C2			RD 40x½	RD 48x½	RD 60x½	RD 70x½	RD 85x½	RD 98x½	RD 125x ¼	
	∅ d1			22.6	29.6	35.6	48.6	60.3	72.9	100	
Version with threaded coupling acc. to ISO 2853 (IDF)	L (holl.)	–	–	55	66	70	82	105	110	150	–
	L (bar st)			64	70	80	85	100	115	130	
	∅ C1			37x½	45.9x½	52.6x½	64x½	77.6x½	91x½	118x½	
	∅ d1			22.6	31.3	37.6	48.6	60.3	72.9	4)	
Version with clamp connection acc. to ISO 2852	L ^{3) 5)}	–	–	60.3	–	69.9	88.9	88.9	95.3	114.3	–
	∅ C3			50.5	–	50.5	64	77.5	91	119	
	∅ d1			22.6	–	35.6	48.6	60.3	72.9	97.6	
Version with clamp connection acc. to DIN 32676	L ^{3) 5)}	60.3	60.3	60.3	60.3	69.9	88.9	88.9	95.3	114.3	130
	∅ C3	34	34	50.5	50.5	50.5	64	91	106	119	155
	∅ d1	16	20	26	32	38	50	66	81	100	125
Version with clamp connection acc. to BS 4825	L ^{3) 5)}	–	–	60.3	–	69.9	88.9	88.9	95.3	114.3	–
	∅ C3	–	–	50.5	–	50.5	64	77.5	91	119	–
	∅ d1	–	–	22.2	–	34.9	47.6	60.3	73	97.6	–
Version with flanges acc. to DIN EN 1092-1	L ^{4) 5)}	90	95	100	105	115	125	145	155	175	200
	∅ d1	16	20	26	32	38	50	66	81	100	125
Valve	DN	15	20	25	32	40	50	65	80	100	125
	NPS	½	¾	1	1¼	1½	2	2½	3	4	5

Valve	DN	15	20	25	32	40	50	65	80	100	125
	NPS	½	¾	1	1¼	1½	2	2½	3	4	5
Common dimensions											
A	Holl.-mold	80	80	70	80	80	90	100	110	140	140
	Bar stock			80				110			
Height H1		227	227	227	229	234	240	265	273	306	314
E Steam line connection	Holl.-mold	–	–	162	164	164	164	192	203	178	–
	Bar stock	164	164	164	164	164	164	187	187	212	212
Valve weight in kg (approx.)											
With welding ends, threaded coupling, clamp connection	Holl.-mold	–	–	5	5.5	6	7	11	14	19	–
	Bar stock	7	7	7	7.5	8	10	19	19	27	33
With flanges	Holl.-mold	–	–	7.5	9	10	12	17	21	29	–
	Bar stock	8.5	9	9.5	11	12	15	25	27	37	46

* Other dimensions on request 1) Dimensions are not standardized 2) L according to DIN 11 852

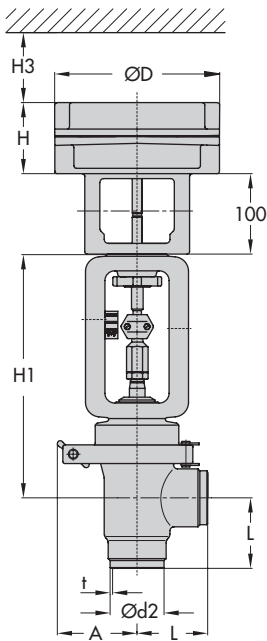
3) Ø-d1 according to NFA 49-249 4) Dimension on request

5) Length specifications L1 to L4 are identical for hollow-mold cast and bar stock bodies

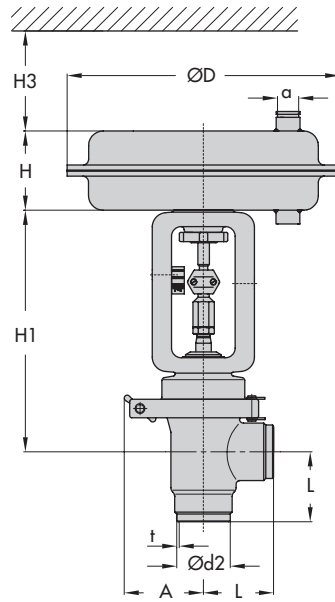
Table 5b · Dimensions and weights for Type 3271 and Type 3277 Actuators

Actuator	cm ²	120	240	350	700
Diaphragm Ø D	mm	168	240	280	390
H	mm	69	62	85	199
H3 (to remove Type 3271 and Type 3277 Actuators)		110			125
Thread		M30 x 1.5			
a (with Type 3271 Actuator)		G ½ (½ NPT)	G ¼ (¼ NPT)	G ¾ (¾ NPT)	
a2 (with Type 3277 Actuator)		–	G ¾ (¾ NPT)		
Weight Type 3271 (kg) without/with handwheel	Without	3	5	8	22
	With	–	9	13	27
Weight Type 3277 (kg) without/with handwheel	Without	3.5	9	12	26
	With	–	13	17	31

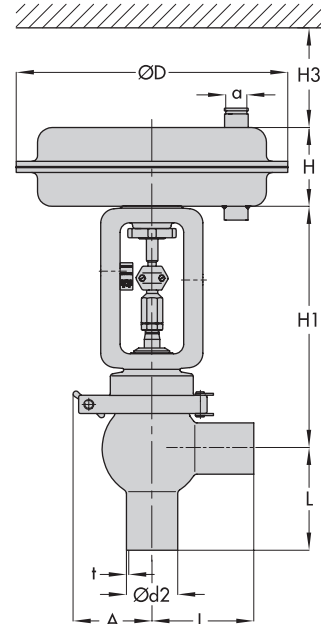
Dimensions



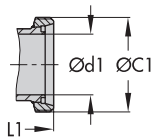
Type 3347-7 Control Valve
with welding ends



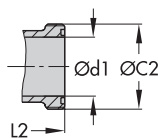
Type 3347-1 Control Valve
with welding ends



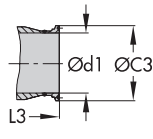
Type 3347-1 Control Valve with welding ends,
body according to 3A and EHEDG regulations



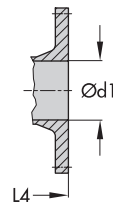
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DIN 11 887 (11 851)
or IDF



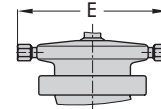
Threaded coupling
acc. to SMS standard



Clamp connection
acc. to ISO 2852



Flange acc. to
DIN EN 1092-1



Steam line connection,
G 1/4 connections
(not for 3A or EHEDG versions)

Ordering text

Pneumatic control valve	DN ... / PN ...	Actuator	Type 3271 or Type 3277 (see T 8310-1 EN)
Materials according to	DIN/ANSI/AFNOR	Effective diaphragm area	... cm ²
End connections	Welding ends Threaded couplings Clamp connection Flanges	Bench range	... bar
Valve coefficient	Kvs ... / Cv ...	Fail-safe action	Valve CLOSED or valve OPEN
Characteristic	Equal percentage/linear	Accessories	Positioner and/or limit switch (see T 8350 EN)
Seat/plug sealing	Metal sealing or soft sealing (not for 3A version)		
Steam line connection	Without or with (not for 3A or EHEDG versions)		
Body surface	Polished internal and/or external Ra according to Table 1		

