Series 240

Pneumatic Control Valves Type 3347-1 and Type 3347-7
Aseptic Angle Valve Type 3347

Application

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

Nominal size	**DN 15 to 125** ·	**½" to 5"**
Maximum pressure	**16 bar** ·	**240 psi**
Temperature range	**–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
- Valve plug with metal or soft sealing
- Easily detachable clamp connection between body and bonnet
- Suitable for cleaning-in-place (CIP)

Seal between body and bonnet as well as between bonnet and plug stem by means of PTFE bushings. An additional steam line connection is available for increased cleanliness requirements.

The control valves can be equipped with various accessories: directly attached positioners or positioners, solenoid valves and limit switches for attachment according to DIN IEC 534-6 and NAMUR recommendation, see 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-sealing plugs for medium temperatures between –10 and 150 °C (14 to 300 °F).

– **Type 3347-1** · With Type 3271 Actuator (see T 8310 EN)
– **Type 3347-7** · With Type 3277 Actuator (see T 8311 EN)

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

Valve w. full-mold cast body acc. to **3A and EHEDG** regulations (Fig. 2) · Nominal sizes DN 15 to 125 (½" to 5")

Additional versions available with

– **Polished valve body** (internal and/or external)
– **Threaded coupling** acc. to DIN 11 887 (11 851), SMS or IDF
– **Clamp connection**, ISO 2852 T2, DIN 32 676 or BS 4825
– **Flanges** with smooth sealing face, connecting dimensions according to DIN EN 1092-1
– Valve plug with soft sealing (not 3A-certified)
– **V-port** valve plug
– **Steam line connection** (not 3A-certified)
– **Body material WN 1.4435**
– Additional **FDA-conforming sealing materials** on request
– Full-mold cast body **PN 40** with flanged-on bonnet
– **Heating jacket** · Details on request

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

Fig. 2 · Type 3347-7 Pneumatic Control Valve
Version with full-mold cast body and threaded connections acc. to 3A and EHEDG regulations

Associated Information Sheet	**T 8000 EN**
Pneumatic Actuators	**T 8310 EN, T 8311 EN**

Edition December 2002

Data Sheet **T 8097 EN**

Principle of operation (Figs. 3 to 5)

The process medium flows through the valve in the direction indicated by the arrow, against the closing direction of the plug.

A PTFE bushing (5.1) is used to seal the actuator stem. An additional bushing (5.3) guides the plug stem towards the exterior.

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 means of a clamp connection (5.4), allowing the entire bonnet to be easily detached from the body.

Fail-safe action

Depending on how the compression springs are arranged in the actuator (for details refer to Data Sheets T 8310 EN and T 8311 EN), the control valve assumes two different fail-safe positions when a supply air failure occurs:

"Actuator stem extends",
Valve closes upon supply air failure.

"Actuator stem retracts",
Valve opens upon supply air failure.

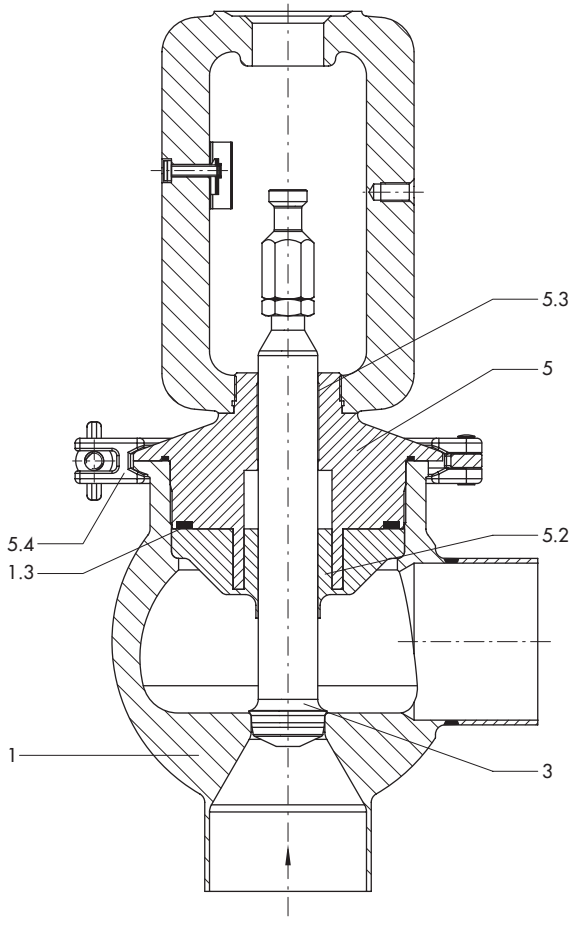


Fig. 3 · Type 3347 Valve
Full-mold cast body according to 3A and EHEDG regulations

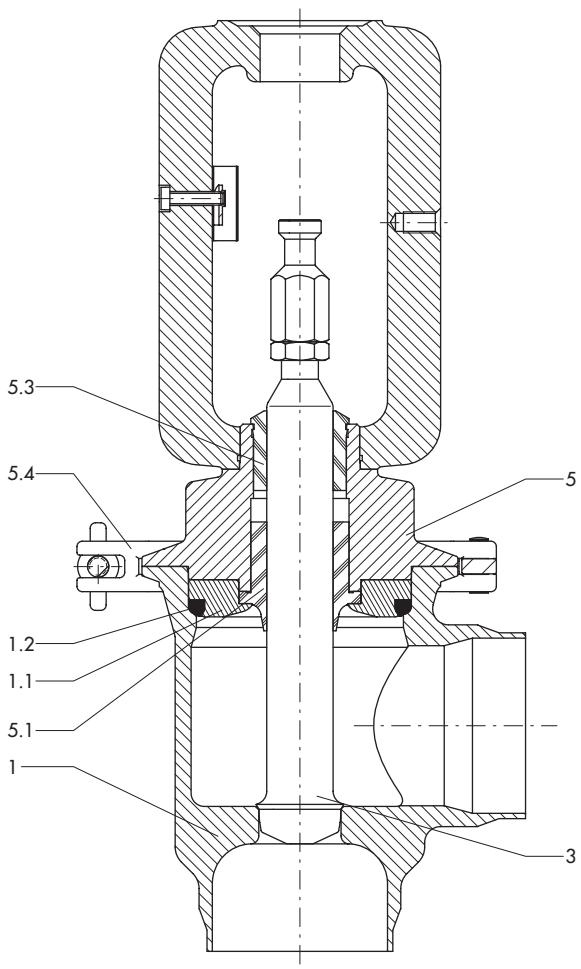


Fig. 4 · Type 3347 Valve with hollow-mold cast body

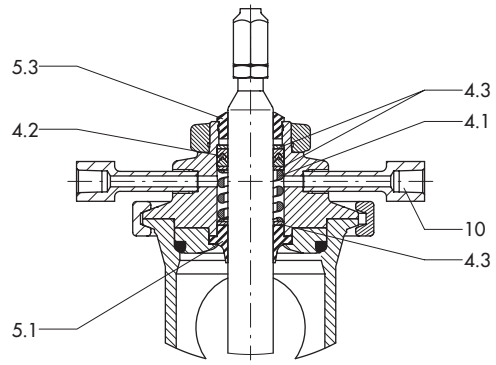


Fig. 5 · Valve bonnet with steam line connection

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 seal	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	Disc		

Table 1a · Technical data for Type 3347

Body version [1]			**Hollow-mold cast body**	**Full-mold cast body**
Nominal size			DN 25 ... 100 · 1″ ... 4″	DN 15 ... 125 · ½″ ... 5″
Maximum pressure			16 bar (240 psi) with restrictions according to Table 1b	
Connections			According to Table 1b	
Seat-plug seal			Metal sealing · Soft sealing (does not comply with 3A regulations)	
Characteristic			Equal percentage or linear	
Rangeability			50 : 1 up to DN 50; 30 : 1 for DN 65 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	VI [2]
Surface finish, peak-to-valley height		External	$R_a \leq 1.6$ µm · Glass bead blasted	
			$R_a \leq 0.6$ µm · Polished	
		Internal	$R_a \leq 1.0$ µm · Turned to a fine finish	
			$R_a \leq 0.6$ µm · Polished	
			$R_a \leq 0.4$ µm · Satin finish	
			$R_a \leq 0.4$ µm · Mirror finish	

[1] Suitable for Group 2 fluids according to the European Pressure Equipment Directive 97/23/EG
[2] Conformity to 3A and food regulations only with metal sealing

Table 1b · Connections, maximum pressures and temperature limits

Connection	Standard		Nominal sizes mm/in	Max. operating pressure bar/psi	Temperature range °C/°F
Welding ends	DIN 11 850	Series 2 / Series 1	DN 15 ... 50 / DN 65 ... 125	16 bar	–10 ... 120 °C
				14 bar	150 °C
	BS 4825		1″, 1½″ ... 4″	230 psi	14 ... 100 °F
				175 psi	300 °F
	SMS/ISO 2037 (NFA 49 249)		DN 25 ... 80	16 bar	–10 ... 120 °C
				14 bar	150 °C
Threaded ends	DIN 11 887 (11 851) Connection A		DN 15 ... 125	16 bar	–10 ... 120 °C
				14 bar	150 °C
	SMS		DN 25 ... 100	6 bar	–10 ... 120 °C
				5.5 bar	150 °C
	IDF		1″ ... 4″	90 psi	14 ... 100 °F
				68 psi	300 °F
Clamp connections	ISO 2852 Table 2		DN 25, 40, 50	16 bar	–10 ... 120 °C
				14 bar	150 °C
			DN 65 ... 100	10 bar	–10 ... 120 °C
				9 bar	150 °C
	DIN 32 676		DN 15 ... 50	16 bar	–10 ... 120 °C
				14 bar	150 °C
			DN 65 ... 100	10 bar	–10 ... 120 °C
				9 bar	150 °C
	BS 4825		1″, 1½″, 2″	230 psi	14 ... 100 °F
				175 psi	300 °F
			2½″ ... 4″	150 psi	14 ... 100 °F
				114 psi	300 °F
Flanges with smooth sealing face, but with $R_a \leq 0.8$	DIN EN 1092-1	PN 16	DN 15 ... 125	16 bar	–10 ... 120 °C
				14 bar	150 °C
		PN 10	DN 15 ... 125	10 bar	–10 ... 120 °C
				9 bar	150 °C
		PN 6	DN 15 ... 125	6 bar	–10 ... 120 °C
				5.5 bar	150 °C
	ANSI B 16.1, Class 125		1″ ... 5″	150 psi	14 ... 100 °F
				114 psi	300 °F

Table 2 · Materials

		DIN	ANSI	AFNOR
Body version with lathed seat	Hollow-mold	Stainless cast steel WN 1.4404	316 L	Z2 CND 17-12M
	Full-mold	WN 1.4404	316 L	Z2 CND 17-12
Bonnet		WN 1.4404	316 L	Z2 CND 17-12
Plug		WN 1.4404	316 L	Z2 CND 17-12
Centering ring		WN 1.4404	316 L	Z2 CND 17-12
Clamp		WN 1.4306	304 L	Z3 CN 19-10
Body and stem seal		Pure PTFE		
Guide bushing		Pure PTFE up to DN 50 · PTFE-jacketed stainless steel for DN 65 and larger		

Table 3 · K_{vs} values 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**	**16**	**25**	**40**	**60**	**80**	**100**	**160**	**200**
C_v		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 ∅	mm	6						12			24		31	38	48	63	80		100	110
Travel	mm	15																30		
Nominal size																				
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 and soft sealing plugs

Note! We recommend to use a V-port plug for nominal sizes DN 40 to DN 65 at 10 bar and higher as well as for DN 80 to DN 125 at 6 bar and higher.
A V-port plug is not required for nominal sizes smaller than DN 40.

Table 4a · For valves with fail-safe action "Actuator stem extends" · Valve fully closed at 0 bar supply pressure

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

Nominal size		K_{vs}	Actuator cm^2	Bench range in bar at Δp (valve closed)		
				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″	35	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 · For valves with fail-safe action "Actuator stem retracts" · Valve fully closed at required supply pressure

Nominal size		K_{vs}	Actuator cm^2	Bench range	Required supply pressure in bar at Δp		
					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″	35	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 in hollow-mold or full-mold cast body

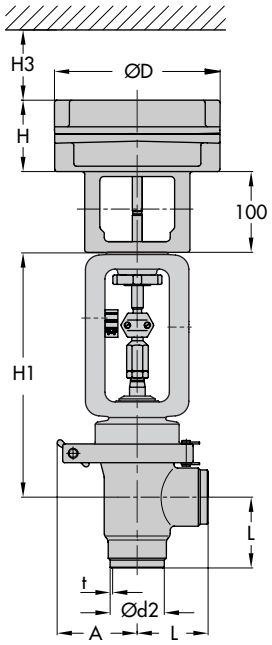
Valve	Nominal size	15	20	25	32	40	50	65	80	100	125
		½″	¾″	1″	1¼″	1½″	2″	2½″	3″	4″	5″
Welding ends for pipes acc. to DIN 11850 (up to DN 50 Series 2, DN 65 and larger Series 1)	L [1] (holl.)	–	–	50 [2]	56	67	72	85	98	110	–
	L [1] (full)	70	70	70	70	70	85	105	105	130	130
	∅ d2	19	23	29	35	41	53	70	85	104	129
	t	1.5	1.5	1.5	1.5	1.5	1.5	2	2	2	2
Welding ends for pipes acc. to NFA 49-249 and SMS standard (ISO 2037)	L [1] (holl.)	–	–	55	66	70	82	105	110	150	–
	L [1] (full)			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 acc. to BS 4825	L [1] (holl.)	–	–	55	–	70	82	105	110	150	–
	L [1] (full)	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	–
Threaded coupling acc. to DIN 11851/ and DIN 11887	L1	a. A.	a. A.	64	70	80	85	100	115	130	130 [1]
	∅ C1			RD 52 x⅙	RD 58 x⅙	RD 65 x⅙	RD 78 x⅙	RD 95 x⅙	RD 110 x ¼	RD 130 x ¼	RD 160 x ¼
	∅ d1			26	32	38	50	66	81	100	125
Threaded coupling acc. to SMS standard	L2 [1]	–	–	55	66	70	82	105	110	150	–
	∅ C2			RD 40x⅙	RD 48x⅙	RD 60x⅙	RD 70x⅙	RD 85x⅙	RD 98x⅙	RD 125x¼	
	∅ d1			22.6	29.6	35.6	48.6	60.3	72.9	100	
Clamp connection acc. to ISO 2852	L3 [1]	–	–	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	
Flanges acc. to DIN EN 1092-1	L4	90	95	100	105	115	125	145	155	175	200
	∅ d1	16	20	26	32	38	50	66	81	100	125
Common dimensions											
A	Holl.-mold	80	80	70	80	80	90	100	110	140	140
	Full-mold			80				110			
Height H1		227	227	227	229	234	240	265	273	306	314
Weight of valve in kg (approx.)											
With welding ends, threaded ends, clamp connection	Holl.-mold	–	–	5	5.5	6	7	11	14	19	–
	Full-mold	7	7	7	7.5	8	10	19	19	27	33
With flange	Holl.-mold	–	–	7.5	9	10	12	17	21	29	–
	Full-mold	8.5	9	9.5	11	12	15	25	27	37	46

[1] Dimensions are not standardized [2] L acc. to DIN 11 852 [3] ∅ d1 acc. to NFA 49-249 *Further dimensions on request

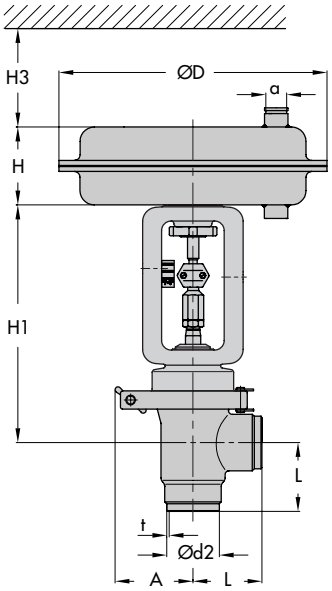
Table 5b · Dimensions and weights for Type 3271 and Type 3277 Actuators

Actuator	cm^2	**120**	**240**	**350**	**700**
Diaphragm ∅ D	mm	168	240	280	390
H		69	62	85	199
H3 (to disassemble the Type 3271 and Type 3277 Actuators)		110			125
Thread		M 30 x 1.5			
a (for Type 3271 Actuator)		G ⅛ (⅛ NPT)	G ¼ (¼ NPT)	G ⅜ (⅜ NPT)	
a2 (for Type 3277 Actuator)		–	G ⅜ (⅜ NPT)		
Weight Type 3271 (kg) w/o or w. manual operation	W/o	3	5	8	22
	With	–	9	13	27
Weight Type 3277 (kg) w/o or w. manual operation	W/o	3.5	9	12	26
	With	–	13	17	31

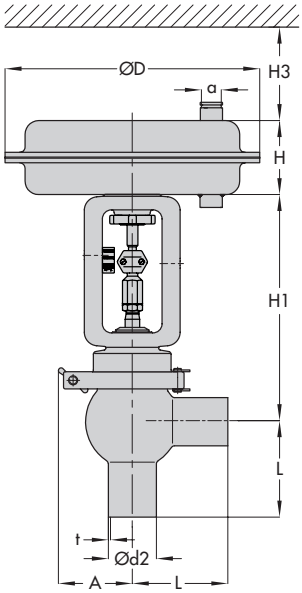
Dimensions



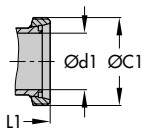
Type 3347-7 Control Valve with welding ends



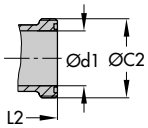
Type 3347-1 Control Valve with welding ends



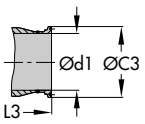
Type 3347-1 Control Valve with welding ends, body complies with 3A and EHEDG regulations



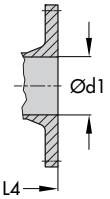
Threaded coupling acc. to DIN 11 887 (11 851)



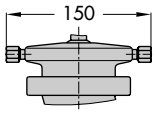
Threaded coupling acc. to SMS standard



Clamp connection acc. to ISO 2852



Flange acc. to DIN EN 1092-1



Steam line connection (not for 3A version)

Ordering text

Pneumatic control valve	DN ... / PN ...
Materials according to	DIN/ANSI/AFNOR
Connections	
Clamp connection acc. to	ISO 2852
Welding ends for pipes according to	DIN 11 850/ SMS standards/NFA 49-249
Threaded coupling acc. to	DIN 11 887 (11 851) SMS standard
Weld-on flanges	Without/with companion flange
Flanges according to	DIN EN 1092-1
K_{VS} value	
Characteristic	Equal percentage/linear
Seat-plug seal	Metal or soft sealing (except 3A)
Steam line connection	Without or with (except 3A)
Body surface	Polished internal and/or external R_a according to Table 1
Actuator	Type 3271 (see T 8310 EN) or Type 3277 (see T 8311 EN)
Effective diaphragm area	... cm^2
Bench range	... bar
Fail-safe action	Valve CLOSED or valve OPEN
Accessories	Positioner and/or Limit switch (see T 8350 EN)

Specifications subject to change without notice.

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