DATA SHEET

T 8015 EN

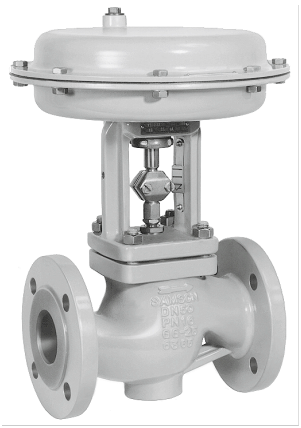
Series 240 · Type 3241-1 and Type 3241-7 Pneumatic Control Valves

Type 3241 Globe Valve · DIN version

Application

Control valve for process engineering and industrial applications

Nominal size	**DN 15 to 300**
Pressure rating	**PN 10 to 40**
Temperatures	**-196 to +450 °C**



Type 3241-1
DN 15 to 150



Type 3241-7
DN 15 to 80
Forged steel



Type 3241-1
≥DN 200

Special features

Type 3241 Globe Valve operated with

- Type 3271 Pneumatic Actuator (Type 3241-1 Control Valve)
- Type 3277 Pneumatic Actuator (Type 3241-7 Control Valve) for integral positioner attachment

Valve body made of

- Cast iron
- Spheroidal graphite iron
- Cast steel
- Cast stainless steel
- Cold-resisting cast steel
- Forged steel
- Forged stainless steel
- Special materials

Undivided valve bonnet up to DN 150

Valve plug

- Metal seal
- Soft seal
- High-performance metal seal

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 60534-6-1[1)] and NAMUR Recommendation (see Information Sheet ▶ T 8350).

1) Accessories required. See associated actuator documentation.

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A safety manual containing the safety-related data is optionally available for use in safety-instrumented systems (SIL requirements).

Versions

Standard version for temperatures from -10 to +220 °C or for nominal sizes DN 200 to 300 also with adjustable high-temperature packing from -10 to +350 °C

- **Type 3241-1** · DN 15 to 300 with Type 3271 Pneumatic Actuator (see Data Sheets ▶ T 8310-1, ▶ T 8310-2 and ▶ T 8310-3)
- **Type 3241-7** · DN 15 to 150 with Type 3277 Pneumatic Actuator for integral positioner attachment (see Data Sheet ▶ T 8310-1)

Further versions

- **Welding ends**
- **Adjustable packing** · See Information Sheet ▶ T 8000-6
- **Flow divider or AC-1 trim** for noise reduction · See Data Sheets ▶ T 8081 and ▶ T 8082
- **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** · On request
- **Stainless steel actuator** · See Data Sheet ▶ T 8310-1
- **Additional handwheel** · See Data Sheets ▶ T 8310-1, ▶ T 8310-2, ▶ T 8310-3
- **Type 3241 PSA** · Version for pressure swing adsorption plants · See Data Sheets ▶ T 8015-1, ▶ T 8012-1
- **Version tested according to DIN EN 14597** · For heat generator · See Data Sheet ▶ T 8016
- **DIN/DVGW-tested version for gas according to DIN EN 161:2013-04** · See Data Sheet ▶ T 8020-2
- **ANSI version** · See Data Sheet ▶ T 8012
- **Versions with dimensions according to Japanese Industry Standard (JIS)** · See Data Sheet ▶ T 8012-2

Design and principle of operation

The medium flows through the valve in the direction indicated by the arrow. The valve plug position determines the cross-sectional area between the seat and plug.

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.

The following diagrams show configuration examples.

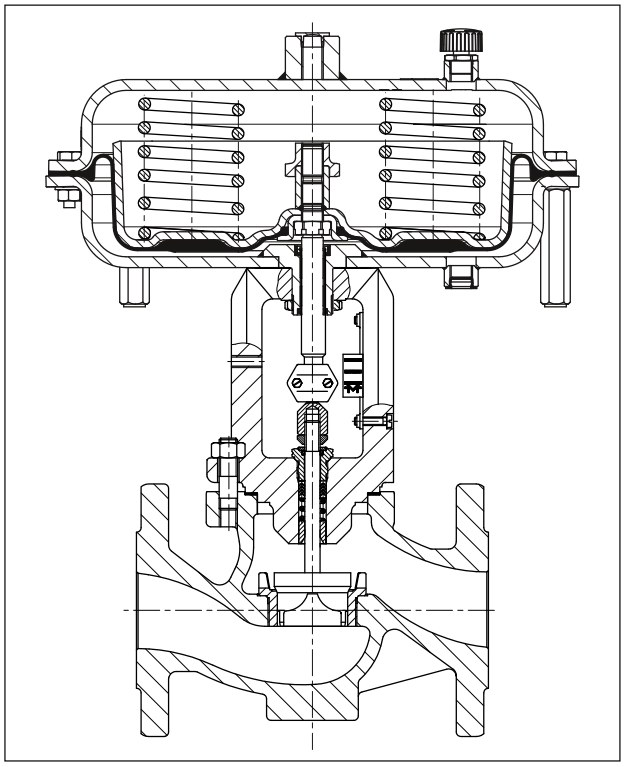


Fig. 1: *Type 3241-1 Control Valve · DN 15 to 150*

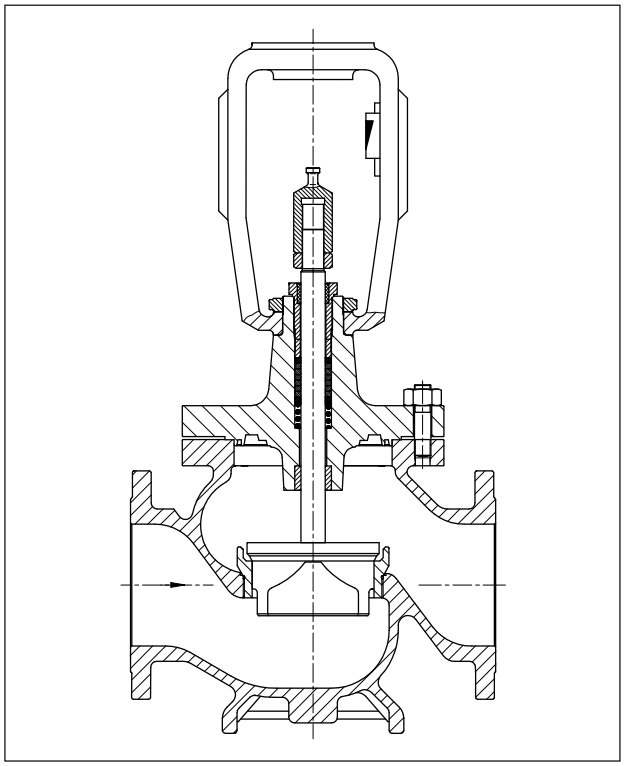


Fig. 2: *Type 3241 Valve · DN 200 to 300*

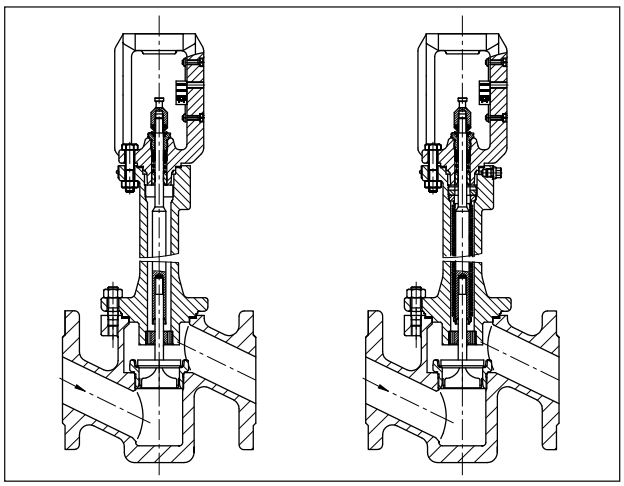


Fig. 3: *Type 3241 Valve · DN 15 to 80 · Forged steel version with insulating section (left) with bellows seal (right)*

Table 1: *Technical data for Type 3241*

Nominal size		**DN**	**15 to 250**	**15 to 150**	**15...300**				**15 · 25 · 40 · 50 · 80**	
Material			**Cast iron EN-GJL-250 (EN-JL1040)**	**Spheroidal graphite iron EN-GJS-400-18-LT (EN-JS1049)**	**Cast steel 1.0619**	**Cast stainless steel 1.4408**	**Cast steel 1.6220/ 1.1138**	**Cast stainless steel 1.4308**	**Forged steel 1.0460**	**Forged stainless steel 1.4404**
Pressure rating		PN	10 · 16	16 · 25	10 · 16 · 25 · 40					
Type of end connections		Flanges	All DIN versions							
		Welding ends	–		DIN EN 12627 only for DN 25, 40, 50, 80, 100, 150, 200, 250, 300				–	
Seat-plug seal			Metal seal · Soft seal · High-performance metal seal							
Characteristic			Equal percentage · Linear (according to Information Sheet ▶ T 8000-3)							
Rangeability			50:1 for DN 15 to 50 · 30:1 for DN 65 to 150 · 50:1 for DN 200 and larger							
Heating jacket			Up to DN 100: PN 25 · DN 125 and larger: PN 16							
Conformity			CE EAC							
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 +85 °C.							
Temperature ranges in °C · Permissible operating pressures according to pressure-temperature diagram (see Information Sheet ▶ T 8000-2)										
Body with standard bonnet			All nominal sizes: -10 to +220 Nominal sizes DN 200 to 300 with high-temperature packing: -10 to +350							
Body with	Insulating section		-10 to +300	-10 to +350	-10[4] to +400	-50 to +450[1]	-50 to +300	-50 to +300[1]	-10[4] to +400	-50 to +450
	With long insulating section[2]		–	–	–	-196 to +450	–	-196 to +300	–	-196 to +450
	Bellows seal		-10 to +300	-10 to +350	-10[4] to +400	-50 to +450[1]	-50 to +300	-50 to +300[1]	-10[4] to +400	-50 to +450
	With long bellows seal[2]		–	–	–	-196 to +450	–	-196 to +300	–	-196 to +450
Valve plug	Standard	Metal seal	-196 to +450							
		Soft seal	-196 to +220							
	Balanced	With PTFE ring	-50 to +220 · Lower temperatures on request							
		With graphite ring	10 to 450							
Leakage class according to DIN EN 60534-4										
Valve plug	Standard	Metal seal	Standard: IV · High-performance metal seal: V[3]							
		Soft seal	VI							
	Balanced	Metal seal	Standard: IV · With PTFE or graphite pressure-balancing ring Special version: V · For high-performance metal seal (only with PTFE balancing ring) on request							

1) DN 200 and larger: Down to -196 °C

2) Long insulating section or bellows seal up to DN 150

3) Leakage class V for temperatures <-50 °C on request

4) Version for lower temperatures on request

Table 2: *Materials*

Valve body[1]		**Cast iron EN-GJL-250 (EN-JL1040)**	**Spheroidal graphite iron EN-GJS-400-18-LT (EN-JS1049)**	**Cast steel 1.0619**	**Cast stain-less steel 1.4408**	**Cast steel 1.6220/ 1.1138**	**Cast stain-less steel 1.4308**	**Forged steel 1.0460**	**Forged stain-less steel 1.4571**
Valve bonnet		1.0460/ EN-GJL-250	1.0460/1.0619		1.4408/ 1.4401 · 1.4404[5]	1.0566/ 1.6220	1.4308/ 1.4301	1.0460	1.4401 · 1.4404[5]
Seat[2]		1.4006/1.4008			1.4404/ 1.4409	1.4006/ 1.4008	1.4301/ 1.4308	1.4006/ 1.4008	1.4404/ 1.4409
Plug[2]		1.4006 (1.4404)/1.4008			1.4404/ 1.4409	1.4006 (1.4404)/ 1.4008	1.4301/ 1.4308	1.4006 (1.4404)/ 1.4008	1.4404/ 1.4409
Plug seal		Seal ring for soft-seated plug: PTFE with glass fiber							
		Seal ring for balanced plug: PTFE with carbon or graphite ring						–	
Guide bushing		1.4104			1.4404	1.4404	1.4301	1.4104	1.4404
Packing[3]		V-ring packing: PTFE with carbon · Spring: 1.4310							
Body gasket		Graphite on metal core							
Insulating section		1.0460			1.4401 · 1.4404[5]	1.0566	1.4301	1.0460	1.4401 · 1.4404[5]
Bellows seal	Intermediate piece	1.0460			1.4401 · 1.4404[5]	1.0566	1.4301	1.0460	1.4401 · 1.4404[5]
	Metal bellows	1.4571[4]					1.4541	1.4571[4]	
Heating jacket		–		1.4404					

1) Special materials for applications with seawater: 1.4538, duplex 1.4470

Special material with nickel-based alloy: 9.4610

Other special materials on request

2) All seats and metal-seated plug also with Stellite® facing; for nominal sizes ≤DN 100, plugs up to SB 38 made of solid Stellite® are available.

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

4) Other materials on request

5) Material double stamping

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

Table 3: *Overview with flow divider ST 1 (K_{VS}-1), ST 2 (K_{VS}-2) or ST 3 (K_{VS}-3)*

K_{VS}	**0.1 0.16 0.25**	**0.4**	**0.63**	**1.0**	**1.6**	**2.5**	**4.0**	**6.3**	**10**	**16**	**25**	**40**	**60**	**80**	**63**	**100**	**160**	**200**	**260**	**250**	**360**	**630**	**1000**[1]	**1500**[1]
K_{VS}-1	–				1.45	2.2	3.6	5.7	9	14.5	22	36	54	72	57	90	144	180	234	225	320	560	900[1]	1350[1]
K_{VS}-2	–								8	13	20	32	48	63	50	80	125	160	210	200	290	500	800	1200
K_{VS}-3	–								7.5	12	20	30	–	–	47	75	120	–	–	190	270	480	750	–
Seat Ø in mm	3	6			12			24		31	38	48	63	80	63	80	100	110	130	125	150	200	250	300
Travel in mm	15														30					60	60		120	

[1] Not available with valve body made of cast iron (EN-GJL-250)

Table 4: *Versions without flow divider*

K_{VS}	**0.1 0.16 0.25**	**0.4**	**0.63**	**1.0**	**1.6**	**2.5**	**4.0**	**6.3**	**10**	**16**	**25**	**40**	**60**	**80**	**63**	**100**	**160**	**200**	**260**	**250**	**360**	**630**	**1000**	**1500**
DN																								
15	•	•	•	•	•	•	•																	
20	•	•	•	•	•	•	•	•																
25	•	•	•	•	•	•	•	•	•															
32		•	•	•	•	•	•	•	•	•														
40		•	•	•	•	•	•	•	•	•	•													
50		•	•	•	•	•	•	•	•	•	•	•												
65											•	•	•											
80											•	•	•	•[3]		•[1]								
100															•	•[3]	•[3]							
125															•	•[3]	•	•[3]						
150															•	•[3]	•[3]		•[3]					
200																•	•			•	•[3]	•[3]		
250																•	•			•	•[3]	•[3]	•[2][3]	
300																	•			•	•[3]	•[3]	•[3]	•[3]

[1] With 19 mm overtravel (not for version with bellows seal)

[2] DN 250 with K_{VS} = 1000 not available with valve body made of cast iron (EN-GJL-250)

[3] Versions also with pressure balancing

Table 5: *Versions with flow divider ST 1 (K_{VS}-1)*

K_{VS}-1	–				1.45	2.2	3.6	5.7	9	14.5	22	36	54	72	57	90	144	180	234	225	320	560	900	1350
DN																								
15					•	•	•																	
20					•	•	•																	
25					•	•	•																	
32								•	•	•														
40								•	•	•	•													
50								•	•	•	•	•												
65											•	•	•											
80											•	•	•	•[2)]										
100															•	•[2)]	•[2)]							
125															•	•[2)]	•	•[2)]						
150															•	•[2)]	•[2)]		•[2)]					
200																•	•			•	•[2)]	•[2)]		
250																•	•			•	•[2)]	•[2)]	•[1)2)]	
300																	•			•	•[2)]	•[2)]	•[2)]	•[2)]

[1)] DN 250 with K_{VS} = 900 not available with valve body made of cast iron (EN-GJL-250)

[2)] Versions also with pressure balancing

Table 6: *Versions with flow divider ST 2 (K_{VS}-2)*

K_{VS}-2	–								8	13	20	32	48	–	50	80	125	160	210	200	290	500	800	1200
DN																								
15																								
20																								
25																								
32									•	•														
40									•	•	•													
50									•	•	•	•												
65											•	•	•											
80											•	•	•											
100															•	•[1)]	•							
125																•[1)]	•							
150															•	•[1)]	•[1)]		•					
200																•	•			•	•[1)]	•[1)]		
250																•	•			•	•[1)]	•[1)]	•[1)]	
300																	•			•	•[1)]	•[1)]	•[1)]	•[1)]

[1)] Versions also with pressure balancing

Table 7: *Versions with flow divider ST 3 (K_{VS}-3)*

K_{VS}-3	–								7.5	12	20	30	–	–	47	75	120	–	–	190	270	480	750	–
DN																								
15																								
20																								
25																								
32																								
40																								
50									•[1]															
65										•	•	•												
80										•	•	•												
100															•									
125																•[2]								
150															•	•[2]	•[2]							
200																•	•			•	•[2]			
250															•	•	•			•	•[2]	•[2]		
300																	•			•	•[2]	•[2]	•[2]	

[1] Not versions with bellows seal or insulating section

[2] Versions also with pressure balancing

Differential pressures: Permissible differential pressures are listed in Information Sheet ▶ T 8000-4.

Dimensions and weights

The tables below provide an overview of the dimensions and weights of the standard version of Type 3241 Valve.

Dimensions in mm · Weights in kg

Table 8: *Dimensions of Type 3241 Valve, up to DN 150*

Valve	DN	15	20	25	32	40	50	65	80	100	125	150
Length L		130	150	160	180	200	230	290	310	350	400	480
H1 (actuator with ... cm²)	≤750	222	222	222	223	223	223	262	262	354	363	390
	1000 1400-60	–								413	423	450
	1400-120 2800	–										
H2[1] for	Cast steel	44[2]	44[2]	44[2]	72	72[2]	72[2]	98	98[2]	118	144	175
	Forged steel	53	–	70	–	94	100	–	132	–		

1) The H2 dimension is the distance from the middle of the flow channel to the bottom of the valve body.

2) The H2 dimension in this valve is not the lowest point of the valve. This valve's lowest point is the bottom of the connecting flanges. The flange dimensions comply with the corresponding flange standard.

Table 9: *Dimensions for Type 3241 Valve, DN 200 and larger*

Valve	DN	200 (cast iron body)	200	250 (cast iron body up to 200 mm SB)	250 Up to 200 mm SB	250 250 mm SB and larger	300
Length L		600	600	730	730	730	850
H4		390	390	390	451	451	652
H8[1] (actuator with ... cm²)	1000 1400-60	418	418	418	418	–	503
	1400-120 2800	503	503	503	503	650	650
H2		260	230	260	295	295	355

1) For valves with K_{VS} 250, 360 or 630 and 60 mm rated travel operated with overtravel, H8 increases by 170 mm.

Table 10: *Dimensions for Type 3241 Valve with insulating section or bellows seal, up to DN 150*

Nominal size		DN	15	20	25	32	40	50	65	80	100	125	150
		Insulating section or bellows seal											
H4 (actuator with ... cm²)	≤750	Short	409			410			451		636	645	672
		Long	713			714			755		877	886	913
	1000 1400-60	Short	–								695	705	732
		Long	–								936	946	973
	1400-120 2800	Short	–										
		Long											

Table 11: *Dimensions for Type 3241 Valve with insulating section or bellows seal, DN 200 and larger*

Version with		Insulating section					Bellows seal				
Valve	DN	200	250 (cast iron)	250 Up to 200 mm SB	250 250 mm SB	300	200	250 (cast iron)	250 Up to 200 mm SB	250 250 mm SB	300
Height H4		830	830	1065	1065	1150	1036	1036	1492	1492	1520
H8 (actuator with ... cm^2)	1000 1400-60	418	418	418	–	503	418	418	418	–	503
	1400-120 2800	503	503	503	650	650	503	503	503	650	650

Table 12: *Further dimensions[1] in combination with Type 3271 Pneumatic Actuator or Type 3277 Pneumatic Actuator*

Actuator area		cm²	120	175v2	350	350v2	355v2	750v2	1000	1400-60	1400-120	2800
Diaphragm ØD		mm	168	215	280	280	280	394	462	530	534	770
H[2]	Type 3271	mm	69	78	82	92	131	236	403	337	598	713
H[2]	Type 3277	mm	69	78	82	82	121	236	–	–	–	–
H3[3]		mm	110	110	110	110	110	190	610	610	650	650
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	M60x1.5	M60x1.5	M100x2	M100x2
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)	G ¾ (¾ NPT)	G ¾ (¾ NPT)	G 1 (1 NPT)	G 1 (1 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 cm^2 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

Table 13: *Dimensions for Type 3241 Valve with heating jacket[1]*

Nominal size	DN	25	32 to 50	65 to 80	100	150	200 to 300
a	mm	110	140	180	200	265	On request
b	mm	15	20	35	50	80	On request
c	mm	140	170	215	255	130	On request
d	mm	190	190	230	320	355	On request

1) Not for valves with body materials EN-GJL-250 or EN-GJS-400-18-LT

Dimensional drawings

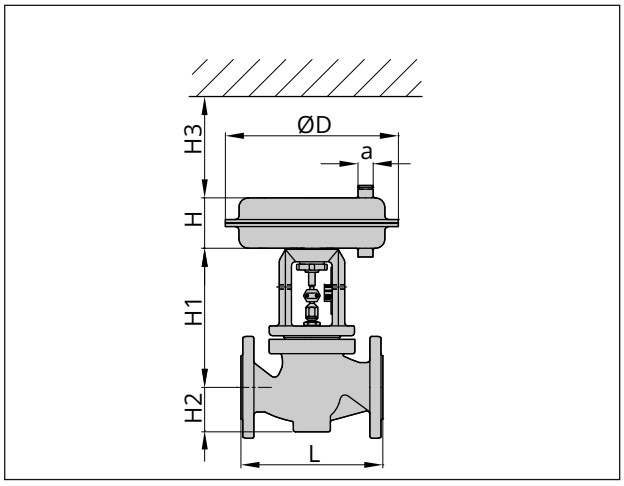


Fig. 4: *Type 3241-1 (Type 3271 Pneumatic Actuator) up to nominal size DN 150/NPS 6/DN 150A*

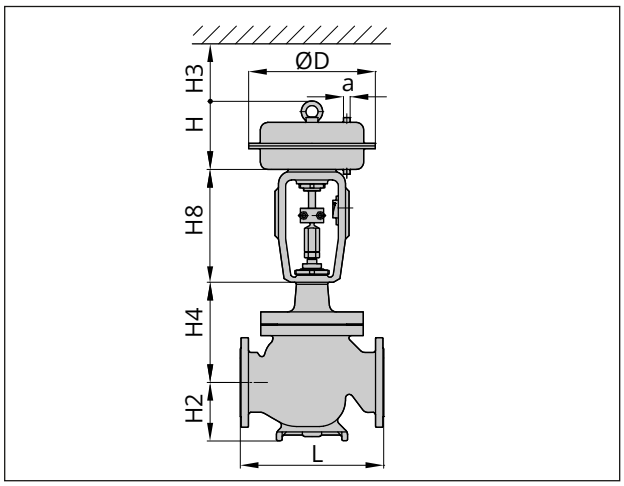


Fig. 5: *Type 3241-1 (Type 3271 Pneumatic Actuator) in nominal size DN 200/NPS 8 and larger*

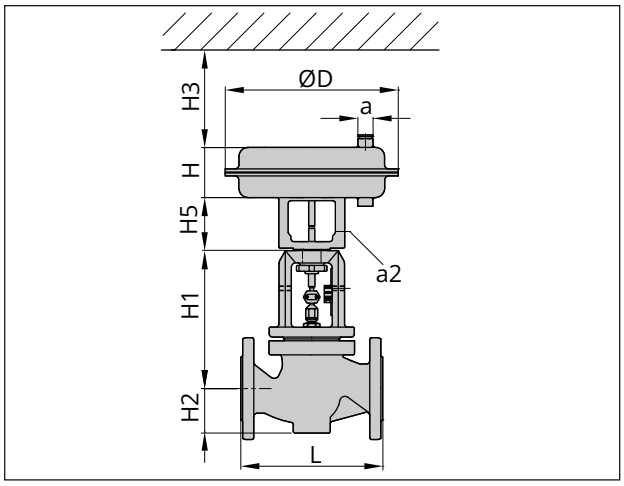


Fig. 6: *Type 3241-7 (Type 3277 Pneumatic Actuator) up to nominal size DN 150/NPS 6/DN 150A*

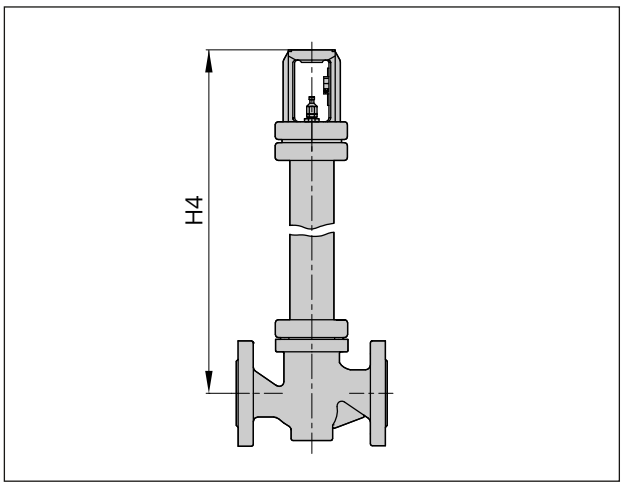


Fig. 7: *Type 3241 with insulating section or bellows seal, up to nominal size DN 150/NPS 6/DN 150A*

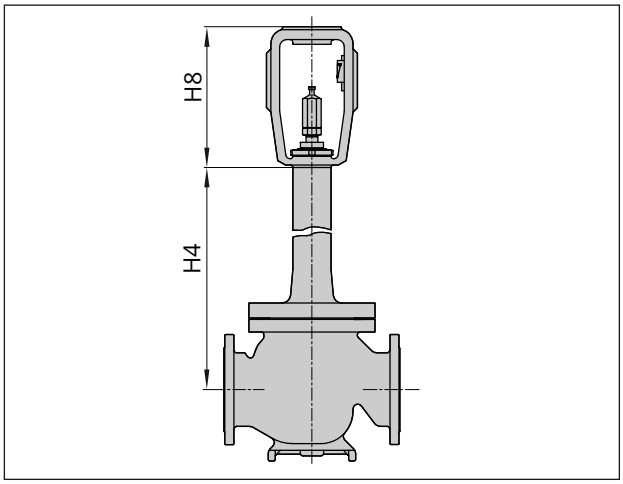


Fig. 8: *Type 3241 with insulating section or bellows seal, DN 200/NPS 8 and larger*

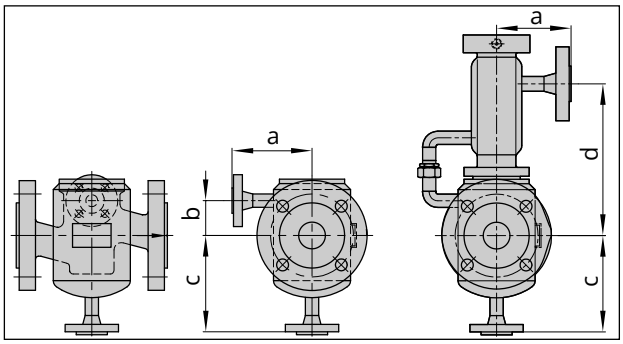


Fig. 9: *Type 3241 with heating jacket, up to nominal size DN 100/NPS 4 · With insulating section or bellows seal (right)*

Flanges: *DIN 2635*

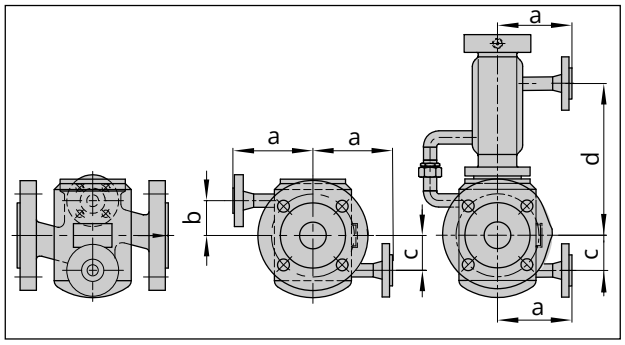


Fig. 10: *Type 3241 with heating jacket, nominal size DN 150/NPS 6 and larger · With insulating section or bellows seal (right)*

Flanges: DIN 2635

Table 14: *Weights for Type 3241 Valve*

Valve	DN	15	20	25	32	40	50	65	80	100	125	150	200	250 (cast iron)	250	300
Version with standard bonnet																
Valve[1] without actuator		6	7.5	8	12	14	18	29	34	52	81	108	430	468	858	920
Version with insulating section																
Valve[1] without actuator	Insulating section															
	Short	9	10.5	11	18	20	24	37	42	70	106	138	478	928	928	963
	Long	13	14.5	15	22	24	28	41	46	78	114	146				
Version with bellows seal																
Valve[1] without actuator	Bellows seal															
	Short	9	10.5	11	18	20	24	37	42	70	106	138	520	975	975	1010
	Long	13	14.5	15	22	24	28	41	46	78	114	146				

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

Type ... Actuator	Actuator area in cm²		120	175v2	350	350v2	355v2	750v2	1000	1400-60	1400-120	2800
3271	Without handwheel	kg	2.5	6	8	11.5	15	36	80	70	175	450
3271	With handwheel	kg	4	10	13	16.5	20	41	180	175	300[2]/ 425[3]	575[2]/ 700[3]
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.).

[2] Side-mounted handwheel up to 80 mm travel

[3] Side-mounted handwheel with travel higher than 80 mm travel

Ordering text

Globe valve	Type 3241
Nominal size	DN …
Pressure rating	PN …
Body material	See Table 2
Type of end connections	Flanges or welding ends
Seat-plug seal	Soft seal, metal seal or high-performance metal seal
Characteristic	Equal percentage or linear
Pneumatic actuator	Type 3271 or Type 3277
Fail-safe action	Fail-close or fail-open
Process medium	Density in kg/m³ and temperature in °C
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
RFID tag	Yes/No
Valve accessories	Positioner/limit switch

Associated Information Sheets	▶ T 8000-X
Associated Data Sheets for Types 3271/3277 Pneumatic Actuators	▶ T 8310-1 to ▶ T 8310-3
Associated Mounting and Operating Instructions	▶ EB 8015