DATA SHEET

T 8015-10 EN

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

Type 3241 Globe Valve · DIN version

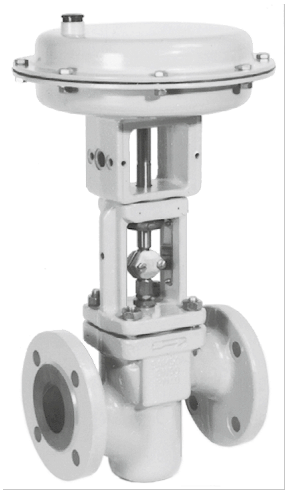
Application

Control valve for process engineering and industrial applications

Nominal size	**DN 15 to 150**
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

The customer standard SAM001 indicates SAMSON devices that comply with the NAMUR Recommendation NE 53. After subscribing to ▶ NE53 newsletter, users of these devices automatically receive information on any hardware or software changes.

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 steel
- Cast stainless steel
- Cold-resisting cast steel
- Forged steel
- Forged stainless steel
- Hastelloy®

Undivided valve bonnet

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

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NAMUR Recommendation (see Information Sheet ▶ T 8350).

[1] Accessories required. See associated actuator documentation.

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

Versions

Standard version for temperatures ranging from -10 to +220 °C

- **Type 3241-1** · DN 15 to 150 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** for noise reduction · See Data Sheets ▶ T 8081 and ▶ T 8082
- **Valve plug with pressure balancing** · See Technical data
- **Version with insulating section or bellows seal** · See technical data
- **Additional handwheel** · See Data Sheets ▶ T 8310-1, ▶ T 8310-2, ▶ T 8310-3

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.

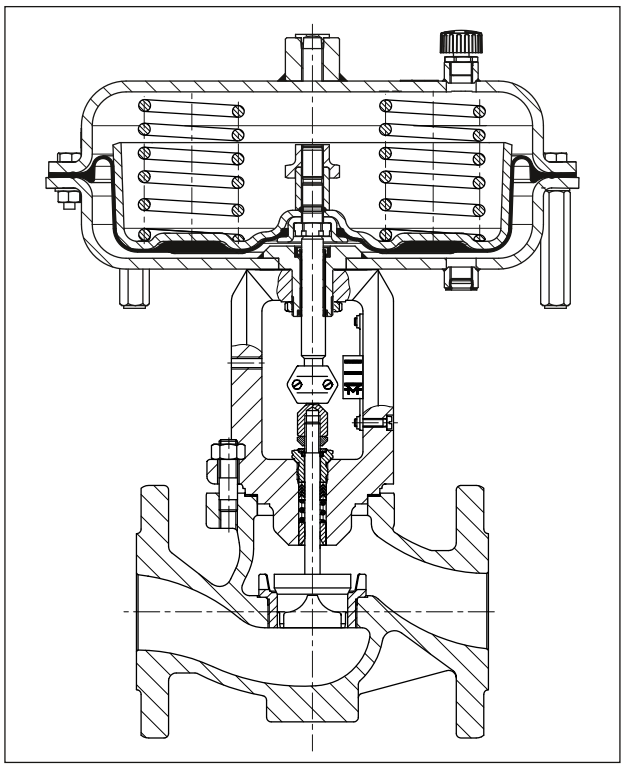


Fig. 1: *Type 3241-1 Control Valve · DN 15 to 150*

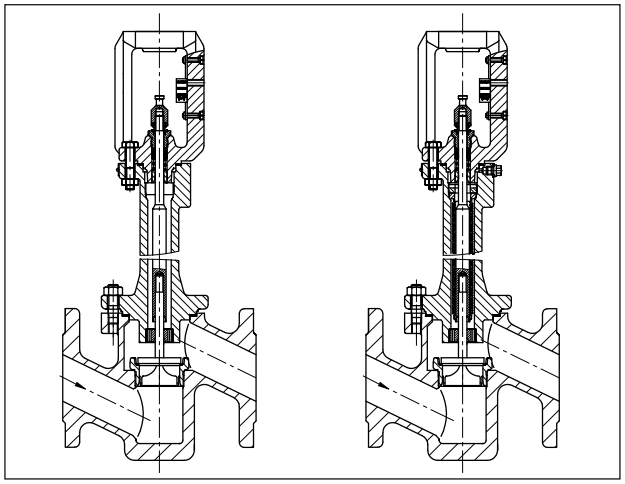


Fig. 2: *Type 3241 Valve · DN 15 to 80 · Forged steel version with insulating section (left) with bellows seal (right)*

Table 1: *Technical data for Type 3241*

Nominal size		**DN**	**15…150**				**15 · 25 · 40 · 50 · 80**	
Material			**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 · 25 · 40					
Type of end connections		Flanges	Form B1, C, D according to DIN EN 1092-1					
		Welding ends	DIN EN 12627 only for DN 25, 40, 50, 80, 100, 150				–	
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					
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					
Body with	Insulating section		-10 to +400	-50 to +450	-50 to +300	-50 to +300	-10 to +400	-50 to +450
	With long insulating section		–	-196 to +450	–	-196 to +300	–	-196 to +450
	Bellows seal		-10 to +400	-50 to +450	-50 to +300	-50 to +300	-10 to +400	-50 to +450
	With long bellows seal		–	-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					
		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					

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

Table 2: *Materials*

Valve body[1]		**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 1.4571**
Valve bonnet			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]	

1) Special material with nickel-based alloy: 9.4610

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) Packing Form D (pure PTFE, spring-loaded) and packing Form H on request

4) 2.4819 and 2.4360 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
K_{VS}-1	–				1.45	2.2	3.6	5.7	9	14.5	22	36	54	72	57	90	144	180	234	225
K_{VS}-2	–								8	13	20	32	48	63	50	80	125	160	210	200
K_{VS}-3	–								7.5	12	20	30	–	–	47	75	120	–	–	190
Seat Ø in mm	3	6			12			24		31	38	48	63	80	63	80	100	110	130	125
Travel in mm	15														30					60

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
DN																			
15	•	•	•	•	•	•	•												
20	•	•	•	•	•	•	•	•											
25	•	•	•	•	•	•	•	•	•										
32		•	•	•	•	•	•	•	•	•									
40		•	•	•	•	•	•	•	•	•	•								
50		•	•	•	•	•	•	•	•	•	•	•							
65											•	•	•						
80											•	•	•	•3)		•1)			
100															•	•3)	•3)		
125															•	•3)	•	•3)	
150															•	•3)	•3)		•3)

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

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
DN																
15		•	•	•												
20		•	•	•												
25		•	•	•												
32					•	•	•									
40					•	•	•	•								
50					•	•	•	•	•							
65								•	•	•						
80								•	•	•	•2)					
100												•	•2)	•2)		
125												•	•2)	•	•2)	
150												•	•2)	•2)		•2)

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
DN																			
15																			
20																			
25																			
32									•	•									
40									•	•	•								
50									•	•	•	•							
65											•	•	•						
80											•	•	•						
100															•	•[1]	•		
125																•[1]	•		
150															•	•[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	–	–
DN																			
15																			
20																			
25																			
32																			
40																			
50									•[1]										
65										•	•	•							
80										•	•	•							
100															•				
125																•[2]			
150															•	•[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
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 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

Table 10: *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
Diaphragm ØD		mm	168	215	280	280	280	394	462	530
H[2]	Type 3271	mm	69	78	82	92	131	236	403	337
H[2]	Type 3277	mm	69	78	82	82	121	236	–	–
H3[3]		mm	110	110	110	110	110	190	610	610
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
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)
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

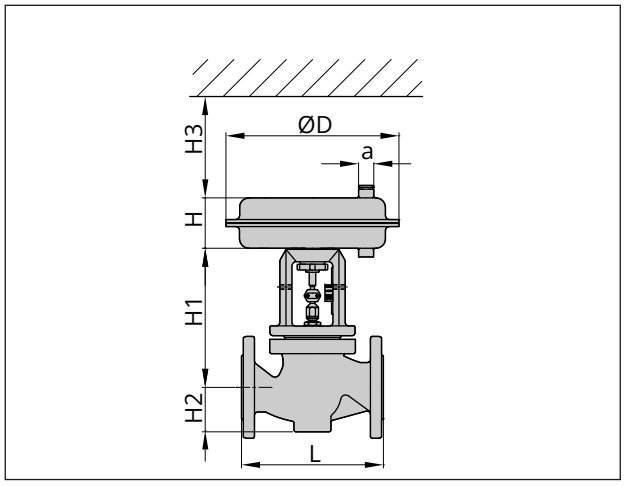


Fig. 3: *Type 3241-1 (Type 3271 Pneumatic Actuator) up to nominal size DN 150/NPS 6/DN 150A*

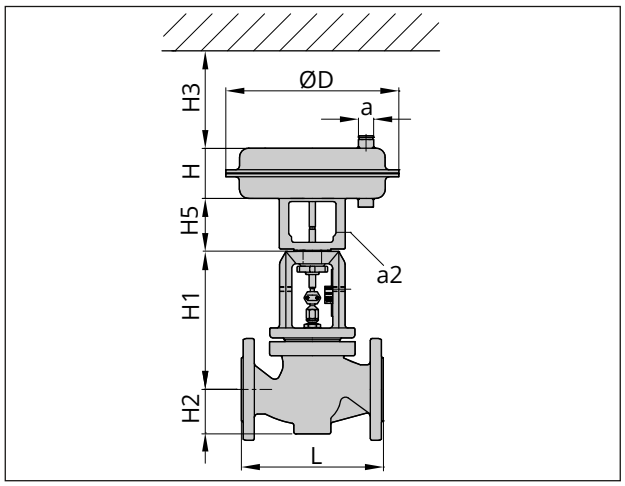


Fig. 4: *Type 3241-7 (Type 3277 Pneumatic Actuator) up to nominal size DN 150/NPS 6/DN 150A*

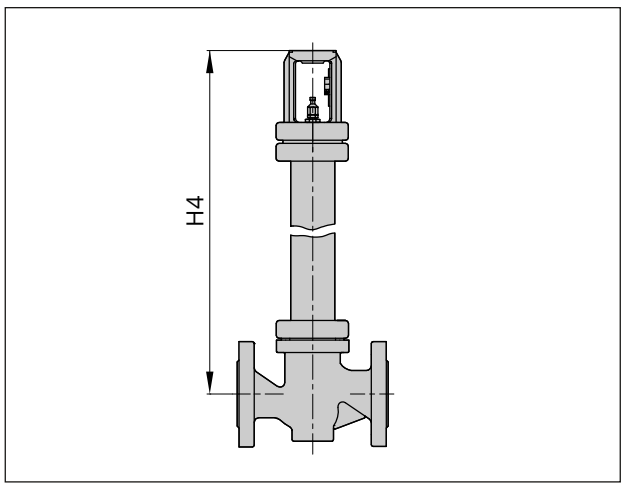


Fig. 5: *Type 3241 with insulating section or bellows seal, up to nominal size DN 150/NPS 6/DN 150A*

Table 11: *Weights for Type 3241 Valve*

Valve	DN	15	20	25	32	40	50	65	80	100	125	150
Version with standard bonnet												
Valve[1] without actuator		6	7.5	8	12	14	18	29	34	52	81	108
Version with insulating section												
Valve[1] without actuator	Insulating section											
	Short	9	10.5	11	18	20	24	37	42	70	106	138
	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
	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 12: *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
3271	Without handwheel	kg	2.5	6	8	11.5	15	36	80	70
3271	With handwheel	kg	4	10	13	16.5	20	41	180	175
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

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

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