

T 8015-10 EN

Series 240 · Type 3241-1 and Type 3241-7 Pneumatic Control Valves Type 3241 Globe Valve · DIN version · Customer standard SAM001



Application

Control valve for process engineering and industrial applications

Valve size	DN 15 to 150
Pressure rating	PN 10 to 40
Temperatures	-196 to +450 °C

Type 3241 Globe Valve operated with

- Type 3271 Pneumatic Actuator (Type 3241-1 Control Valve)
- Type 3277 Pneumatic Actuator (Type 3241-7 Control Valve)

Valve body made of

- Cast steel, cast stainless steel or cast cold-resisting steel
- Forged steel or 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 IEC 60534-6-1-1 and NAMUR Recommendation. Refer to Information Sheet ▶ T 8350 for more details.

Versions

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

- **Type 3241-1** (Fig. 1) · DN 15 to 150 with Type 3271 Pneumatic Actuator (see Data Sheets ▶ T 8310-1, ▶ T 8310-2, ▶ T 8310-3)
- **Type 3241-7** (Fig. 2) · 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**

1) Accessories required. See associated actuator documentation.

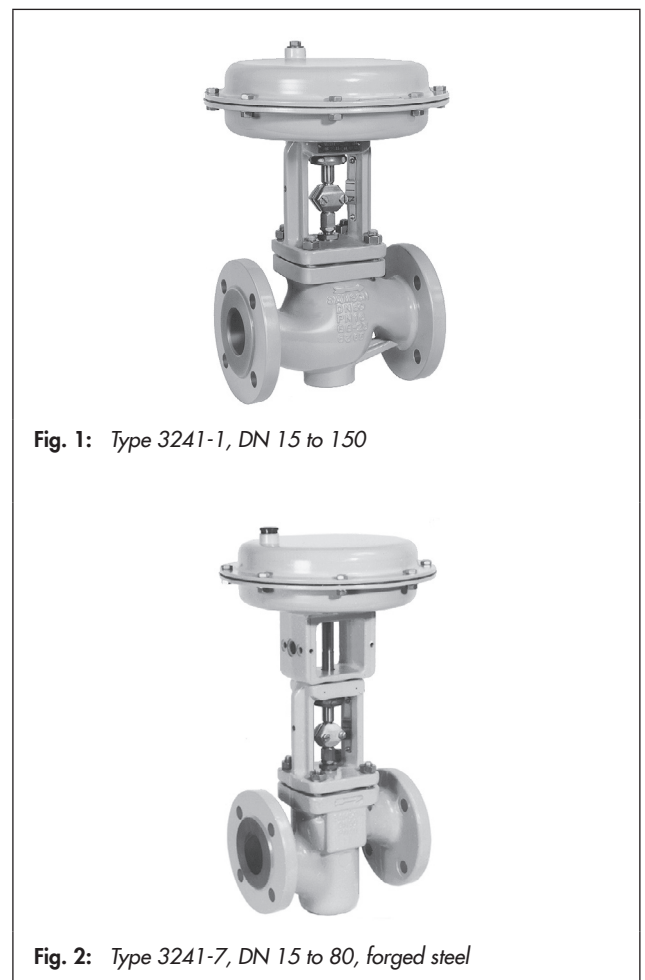


Fig. 1: Type 3241-1, DN 15 to 150

Fig. 2: Type 3241-7, DN 15 to 80, forged steel

- **Flow divider** · For noise reduction (see Data Sheets ▶ T 8081 and ▶ T 8082)
- **Valve plug with pressure balancing** · See Technical data
- **Insulating section or bellows seal** · See Technical data
- **Additional handwheel** · See Data Sheets ▶ T 8310-1, ▶ T 8310-2 and ▶ T 8310-3

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.

Fail-safe action

Depending on how the springs are arranged in the pneumatic actuator (see Data Sheets ▶ T 8310-1 and ▶ T 8310-2), the valve has two different fail-safe positions that become effective when the supply air fails:

- **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.

Differential pressures

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

Fig. 3 to Fig. 5 show configuration examples.

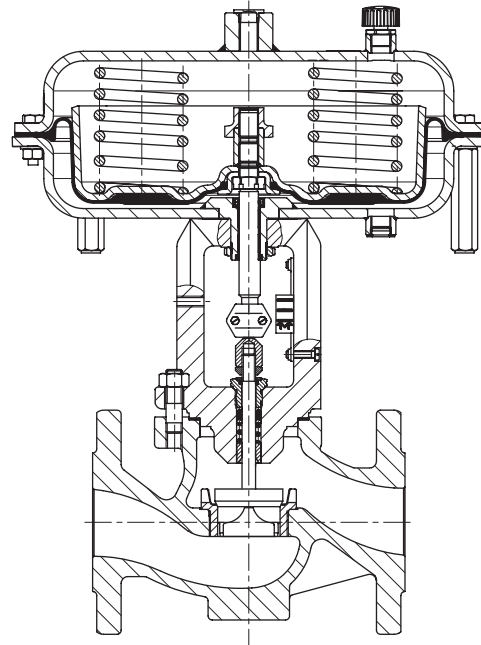


Fig. 3: Type 3241-1 Control Valve, DN 15 to 150, with Type 3271 Actuator

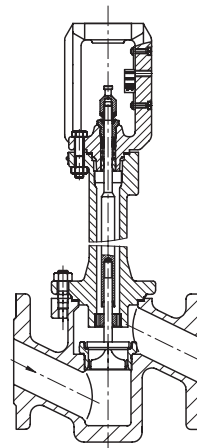


Fig. 4: Type 3241 Valve, forged steel version, DN 15 to 80, with insulating section

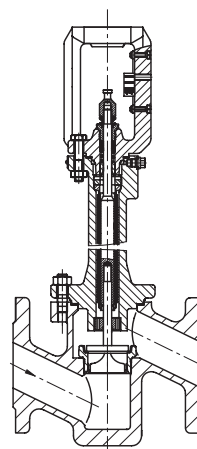


Fig. 5: Type 3241 Valve, forged steel version, DN 15 to 80, with bellows seal

Table 1: Technical data for Type 3241

Valve 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 1.4571/1.4404	
Pressure rating		PN	10 · 16 · 25 · 40					
Type of connection		Flanges	Form B1, C, D acc. 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						
RFID tag (optional)		Application range according to the technical specifications and the explosion protection certificates. Documents ▶ www.samsongroup.com > Service & Support > Electronic nameplate						
Conformity		CE · UK CA						
Temperature ranges in °C · Permissible operating pressures acc. to pressure-temperature diagrams (see Information Sheet ▶ T 8000-2)								
Body without insulating section								
Body with	Insulating section	Short	-10...+400 ¹⁾	-50...+450	-50...+300	-50...+300	-10...+400	-50...+450
		Long		-196...+450	–	-196...+300	–	-196...+450
	Bellows seal	Short	-10...+400 ¹⁾	-50...+450	-50...+300	-50...+300	-10...+400	-50...+450
		Long		-196...+450	–	-196...+300	–	-196...+450
Valve plug	Standard	Metal seal	-196...+450					
		Soft seal	-196...+220					
	Balanced	PTFE ring	-50...+220					
		With graphite ring	10...450					
RFID tag (optional)		Max. permissible operating temperature: 85 °C						
Leakage class according to IEC 60534-4								
Valve plug	Metal seal		Standard: IV · High-performance metal seal: V ²⁾					
	Soft seal		VI					
	Balanced	Metal seal	Standard: IV · With PTFE or graphite pressure-balancing ring Special version: V · For high-performance (only with PTFE balancing ring) on request					

¹⁾ Special version: extended temperature range up to 450 °C when pressurized parts are made of cast steel 1.0619

²⁾ Leakage class V for temperatures <-50 °C on request

Table 2: Materials

Standard version							
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 1.4404/1.4571	
Valve bonnet	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⁾
	Bellows seal	1.4571 ⁴⁾			1.4541	1.4571 ⁴⁾	

¹⁾ Special material with nickel-based alloy: 9.4610

²⁾ Seats and metal-seated plug also with Stellite® facing; for ≤DN 100 plug up to seat bore 38 made of solid Stellite® 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

Table 3: K_{VS} coefficientsTerms for control valve sizing according to IEC 60534, Parts 2-1 and 2-2: $F_L = 0.95$, $X_T = 0.75$ **Table 3.1:** 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 \varnothing [mm]	3	6			12			24		31	38	48	63	80	63	80	100	110	130	125
Travel in mm	15														30				60	

Table 3.2: Versions without flow divider · Areas highlighted in gray indicate versions also with pressure balancing

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											•	•	•	•		• ¹⁾			
100															•	•	•		
125															•	•	•	•	
150															•	•	•		•

¹⁾ With 19 mm overtravel (not with bellows seal)**Table 3.3:** Versions with flow divider ST 1 (K_{VS-1}) · Areas highlighted in gray indicate versions also with pressure balancing

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											•	•	•	•					
100															•	•	•		
125															•	•	•	•	
150															•	•	•		•

Table 3.1: 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
K_{VS-1}	-				1.45	2.2	3.6	5.7	9	14.5	22	36	54	72	57	90	144	180	234
K_{VS-2}	-								8	13	20	32	48	63	50	80	125	160	210
K_{VS-3}	-								7.5	12	20	30	-	-	47	75	120	-	-
Seat Ø [mm]	3	6			12			24		31	38	48	63	80	63	80	100	110	130
Travel in mm	15														30				

Table 3.4: Versions with flow divider ST 2 (K_{VS-2}) · Areas highlighted in gray indicate versions also with pressure balancing

K_{VS-2}	-								8	13	20	32	48	-	50	80	125	160	210
DN																			
15																			
20																			
25																			
32									•	•									
40									•	•	•								
50									•	•	•								
65											•	•	•						
80											•	•	•						
100															•	•	•		
125																•	•		
150															•	•	•		•

Table 3.5: Versions with flow divider ST 3 (K_{VS-3}) · Areas highlighted in gray indicate versions also with pressure balancing

K_{VS-3}	-								7.5	12	20	30	-	-	47	75	120	-	-
DN																			
15																			
20																			
25																			
32																			
40																			
50									• ¹⁾										
65										•	•	•							
80										•	•	•							
100															•				
125																•			
150															•	•	•		

¹⁾ Not with bellows seal or insulating section

Table 4: Dimensions and weights for standard version of Type 3241-1 and Type 3241-7 Valves with flanges or welding ends**Table 4.1:** Dimensions in mm for Type 3241 Valve up to DN 150 · Without actuator

Valve	DN	15	20	25	32	40	50	65	80	100	125	150
Length L	mm	130	150	160	180	200	230	290	310	350	400	480
H1 for actuator	≤750v2 cm ²	222			223			262		354	363	390
	1000 cm ² 1400-60 cm ²	-										
	1400-120 cm ² 2800 cm ²	-										
H2 ¹⁾ for	Cast steel	44 ²⁾			72	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 path 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 4.2: Dimensions in mm for Types 3271 and 3277 Pneumatic Actuators

Actuator area	cm ²	120	175v2	350	350v2	355v2	750v2	1000	1400-60
Diaphragm ØD	mm	168	215	280	280	280	394	462	530
H ¹⁾	mm	69	78	82	92 (Type 3271) 82 (Type 3277)	121	236	403	337
H3 ²⁾	mm	110	110	110	110	110	190	610	610
H5	Type 3277 mm	88	101	101	101	101	101	-	-
Thread	Type 3271	M30x1.5						M60x1.5	
	Type 3277	M30x1.5						-	-
α	Type 3271	G 1/8 (1/8 NPT)	G 1/4 (1/4 NPT)	G 3/8 (3/8 NPT)	G 3/8 (3/8 NPT)	G 3/8 (3/8 NPT)	G 3/8 (3/8 NPT)	G 3/4 (3/4 NPT)	G 3/4 (3/4 NPT)
α2	Type 3277	-	G 3/8	G 3/8	G 3/8	G 3/8	G 3/8	-	-

¹⁾ 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

²⁾ Minimum clearance required to remove the actuator

Table 4.3: Weights ¹⁾ in kg for Types 3241-1 and 3241-7

Valve	DN	15	20	25	32	40	50	65	80	100	125	150
Weight without actuator in kg		6	7.5	8	12	14	18	29	34	52	81	108
Actuator	cm ²	120	175v2	350	350v2	355v2	750v2	1000	1400-60			
Type 3271	W/o handwheel	2.5	6	8	11.5	15	36	80	70			
	Handwheel ≤80 mm travel	4	10	13	16.5	20	41	180	175			
	Handwheel ≤160 mm travel	-										
Type 3277	W/o handwheel	3.2	10	12	15	19	40	-				
	With handwheel	4.5	14	17	20	24	45					

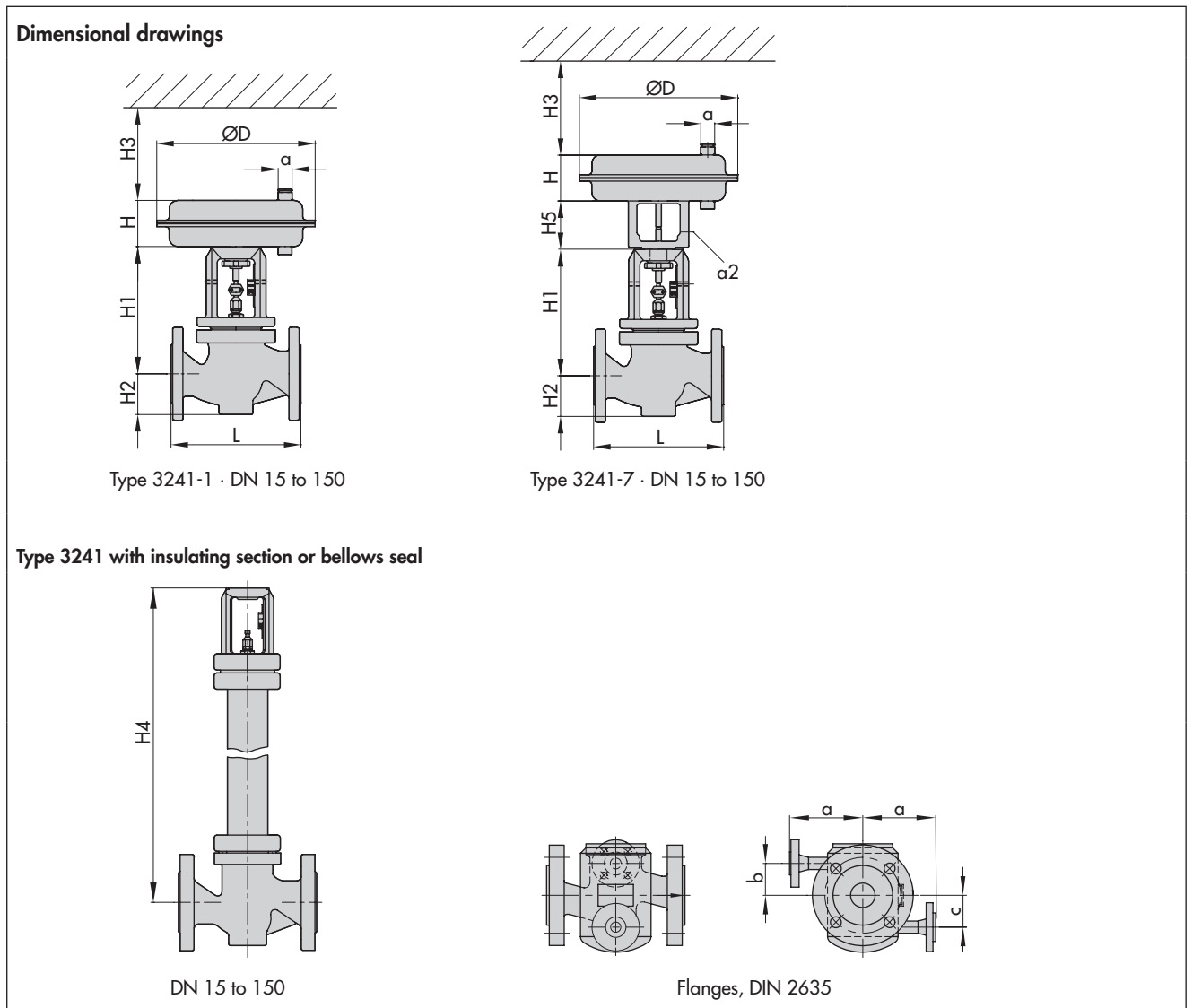
¹⁾ The weights specified apply to a specific standard device configuration. Weights of other device configurations may differ depending on the version (material, trim or number of actuator springs etc.).

Table 5: Dimensions and weights for Type 3241 Valve with insulating section or bellows seal

Table 5.1: Dimensions in mm and weights in kg for Type 3241 Valve up to DN 150 · Without actuator

Valve size		15	20	25	32	40	50	65	80	100	125	150	
Insulating section or bellows seal													
H4 for actuator	≤750v2 cm ²	Short	409		410		451		636	645	672		
		Long	713		714		755		877	886	913		
	1000 cm ² / 1400-60 cm ²	Short			-				695	705	732		
		Long			-				936	946	973		
	1400-120 cm ² / 2800 cm ²	Short											
		Long											
Weight ¹⁾ in kg	Short/with bellows	9	10.5	11	18	20	24	37	42	70	106	138	
	Long/with bellows	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.).



Ordering text

Globe valve	Type 3241	Pneumatic actuator	Type 3271 or Type 3277
Valve size	DN ...	Fail-safe action	Fail-close or fail-open
Pressure rating	PN ...	Process medium	Density and temperature
Body material	Refer to Table 2	Max. flow rate	in kg/h or m ³ /h
Type of connection	Flanges or welding ends	Pressure	p ₁ and p ₂ in bar (absolute pressure)
Seat-plug seal	Soft seal, metal seal or high-performance metal seal	RFID tag	Yes/No
Characteristic	Equal percentage or linear	Valve accessories	Positioner/limit switch

Associated Information Sheet
Associated Data Sheets for
Pneumatic actuators

▶ T 8000-X

▶ T 8310-1 to -3