

Series 240

Type 3241-1 and Type 3241-7 Pneumatic Control Valves Type 3241 Globe Valve

JIS version

SAMSON

Application

Control valve for process engineering and industrial applications

Valve size	DN 15A to 150A
Pressure rating	JIS 10K and 20K
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 iron
- Spheroidal graphite iron
- Cast steel, cast stainless steel or cast cold-resisting steel
- Forged steel or forged stainless steel
- Special materials

Undivided valve bonnet up to DN 150A

Valve plug

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

The control valves, designed according to the modular assembly principle, can be equipped with various accessories: Positioners, limit switches, solenoid valves and other accessories according to IEC 60534-6-1 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 15A to 150A with Type 3271 Pneumatic Actuator (see Data Sheet ▶ T 8310-1)
- **Type 3241-7** (Fig. 2 and Fig. 3) · DN 15A to 150A with Type 3277 Pneumatic Actuator for integral positioner attachment (see Data Sheet ▶ T 8310-1)

Further versions

- **Adjustable packing** · See Information Sheet ▶ T 8000-1
- **Flow divider or AC-1/AC-2 Trim** 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
- **Heating jacket** · On request
- **Stainless steel actuator** · See Data Sheet ▶ T 8310-1

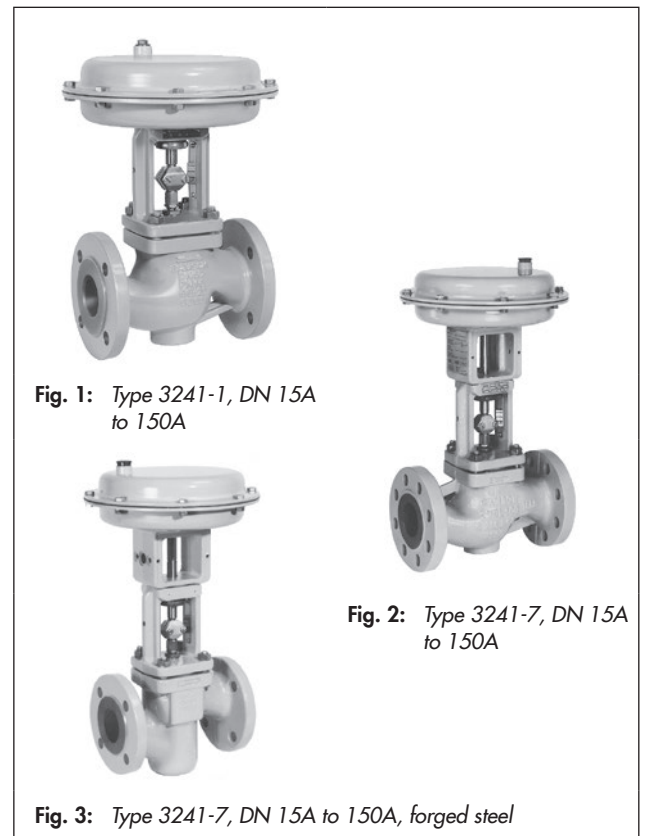


Fig. 1: Type 3241-1, DN 15A to 150A

Fig. 2: Type 3241-7, DN 15A to 150A

Fig. 3: Type 3241-7, DN 15A to 150A, forged steel

- **Additional handwheel** · See Data Sheet ▶ T 8310-1
- **Type 3241 PSA** · Version for pressure swing adsorption plants · See Data Sheets ▶ T 8015-1 and ▶ T 8012-1
- **DIN version** · See Data Sheet ▶ T 8015
- **ANSI version** · See Data Sheet ▶ T 8012
- **Special version** in NPS ½B to 6B · On request
- Version with **Type 3271 Actuator with 1000 or 1400-60 cm²** actuator area (see Data Sheets ▶ T 8310-2 and ▶ T 8310-3) · On request

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 position

Depending on how the springs are arranged in the pneumatic actuator (► T 8310-1), the valve has two different fail-safe positions effective upon air supply failure.

- **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. 4 and Fig. 5 show configuration examples.

Table 1: Technical data for Type 3241

Valve size	DN	15A to 150A				15A · 25A · 40A · 50A · 80A ¹⁾			
Material		Cast iron FC 250	Spheroidal graphite iron A216 WCC	Cast stain- less steel A351 CF8M	Cast steel A352 LCC	Cast stain- less steel A351 CF8	Forged steel A105	Cast stain- less steel A182 F316	
Pressure rating	JIS	10K	10K · 20K				20K		
Type of connection	Flanges	FF	RF ²⁾				RF ²⁾		
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 15A to 50A · 30:1 for DN 50A and larger								
Associated documentation	► EB 8012								
Temperature ranges in °C · Permissible operating pressures acc. to pressure-temperature diagrams (see Information Sheet ► T 8000-2)									
Body without insulating section		-10 to +220							
Body with	Insulating section	Short	-29 to +232	-29 to +427	-50 to +450	-46 to +343	-50 to +300	-29 to +427	-50 to +450
		Long	-	-	-196 to +450	-	-196 to +300	-	-196 to +450
	Bellows seal	Short	-29 to +232	-29 to +427	-50 to +427	-46 to +343	-50 to +300	-29 to +427	-50 to +450
		Long	-	-	-196 to +427	-	-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	220 to 450						
Leakage class according to IEC 60534-4									
Valve plug	Standard	Metal seal	Standard: IV · High-performance metal seal: V						
		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⁾ DN 80A only available in forged steel A105

²⁾ Optional versions (on request)

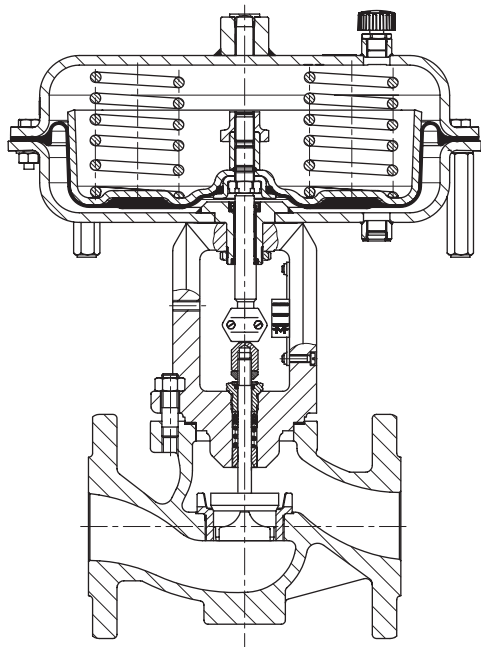


Fig. 4: Type 3241-1 Control Valve, DN 15A to 150A, with Type 3271 Actuator

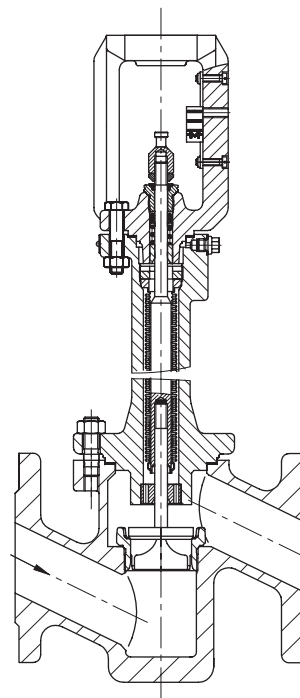


Fig. 5: Type 3241 Valve, forged steel version, DN 15A to 80A, with bellows seal

Table 2: Materials

Standard version								
Valve body ¹⁾	Cast iron FC 250	Cast steel A216 WCC	Cast stainless steel A351 CF8M	Cast steel A352 LCC	Cast stainless steel A351 CF8	Forged steel A105	Cast stainless steel A182 F316	
Valve bonnet	A105/ FC 250	A105/ A216 WCC	A182 F316 A351 CF8M A182 F316L	A350 LF2 A352 LCC	A182 F304 A351 CF8	A105	A182 F316 A182 F316L	
Seat ²⁾	Cr steel UNS S41000/ 1.4008		A182 F316L/ A351 CF3M	Cr steel UNS S41000/ 1.4008	A182 F304 A351 CF8	Cr steel UNS S41000/ 1.4008	A182 F316L/ A351 CF3M	
Plug ²⁾	Cr steel UNS S41000 (A182 F316L)/ 1.4008		A182 F316L/ A351 CF3M	Cr steel UNS S41000/ 1.4008	A182 F304 A351 CF8	Cr steel UNS S41000 (A182 F316L)/ 1.4008	A182 F316L/ A351 CF3M	
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	A582 430F		316L A182 F316L	316L A182 F316L	A182 F304	A582 430F	316L A182 F316L	
Packing ³⁾	V-ring packing with carbon · Spring: A479 302							
Body gasket	Graphite on metal core							
Insulating section	A105		A182 F316 A182 F316L	A350 LF2	A182 F304	A105	A182 F316 A182 F316L	
Bellows seal	Intermediate piece	A105		A182 F316 A182 F316L	A350 LF2	A182 F304	A105	A182 F316 A182 F316L
	Metal bellows	1.4571 ⁴⁾				A182 F321	1.4571	
Heating jacket	-		A182 F316L					

¹⁾ Special materials for applications with sea water: N 08904, duplex A995 4A; nickel-based alloy: A494 LW-21M; other special materials on request.

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

³⁾ Other packings on request (see Information Sheet ▶ T 8000-1)

⁴⁾ Other materials on request

Table 3: C_V and K_{VS} coefficientsTerms for control valve sizing according to IEC 60534, Parts 2-1 and 2-2: $F_L = 0.95$, $X_T = 0.75$ Conversion of flow coefficients: C_V (US gallons/min.) = $1.17 \times K_{VS}$ (m³/h) or $K_{VS}/C_V = 0.865$ **Table 3.1:** Overview with flow divider ST 1 (K_{VS1}), ST 2 (K_{VS2}) and ST 3 (K_{VS3})

C_V	0.12	0.2	0.3	0.5	0.75	1.2	2.0	3.0	5.0	7.5	12	20	30	47	70	95	75	120	190	300	
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	260	
C_{V1}	-					1.7	2.6	4.2	7.0	10.5	17	26	42	62	85	67	105	170	275		
K_{VS1}	-					1.45	2.2	3.6	5.7	9.0	14.5	22	36	54	72	57	90	144	234		
C_{V2}	-										9.5	15	23	37	56	-	60	95	145	245	
K_{VS2}	-										8.0	13	20	32	48	-	50	80	125	210	
C_{V3}	-										9.0	14	23	35	-	-	55	90	140	-	
K_{VS3}	-										7.5	12	20	30	-	-	47	75	120	-	
Seat \varnothing [mm]	3			6			12			24			31	38	48	63	80	63	80	100	130
Travel [mm]	15															30					

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

C_V	0.12	0.2	0.3	0.5	0.75	1.2	2.0	3.0	5.0	7.5	12	20	30	47	70	95	75	120	190	300
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	260
DN																				
15A	•	•	•	•	•	•	•	•	•											
20A	•	•	•	•	•	•	•	•	•	•										
25A	•	•	•	•	•	•	•	•	•	•	•									
40A				•	•	•	•	•	•	•	•	•	•							
50A				•	•	•	•	•	•	•	•	•	•	•						
65A													•	•	•					
80A													•	•	•	•		• ¹⁾		
100A																	•	•	•	
150A																	•	•	•	•

¹⁾ With 19 mm overtravel (not with bellows seal)**Table 3.3:** Versions with flow divider ST 1 (K_{VS1}) · Areas highlighted in gray indicate versions also with pressure balancing

C_{V1}	-					1.7	2.6	4.2	7.0	10.5	17	26	42	62	85	67	105	170	275	
K_{VS1}	-					1.45	2.2	3.6	5.7	9.0	14.5	22	36	54	72	57	90	144	234	
DN																				
15A						•	•	•												
20A						•	•	•												
25A						•	•	•												
40A									•	•	•	•								
50A									•	•	•	•	•							
65A													•	•	•					
80A													•	•	•	•				
100A																•	•	•		
150A																•	•	•	•	

Table 3.1: Overview with flow divider ST 1 (K_{VS1}), ST 2 (K_{VS2}) or ST 3 (K_{VS3})

C_V	0.12	0.2	0.3	0.5	0.75	1.2	2.0	3.0	5.0	7.5	12	20	30	47	70	95	75	120	190	300
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	260
C_{V1}	-						1.7	2.6	4.2	7.0	10.5	17	26	42	62	85	67	105	170	275
K_{VS1}	-						1.45	2.2	3.6	5.7	9.0	14.5	22	36	54	72	57	90	144	234
C_{V2}	-										9.5	15	23	37	56	-	60	95	145	245
K_{VS2}	-										8.0	13	20	32	48	-	50	80	125	210
C_{V3}	-										9.0	14	23	35	-	-	55	90	140	-
K_{VS3}	-										7.5	12	20	30	-	-	47	75	120	-
Seat \varnothing [mm]	3			6			12			24		31	38	48	63	80	63	80	100	130
Travel [mm]	15															30				

Table 3.4: Versions with flow divider ST 2 (K_{VS2}) · Areas highlighted in gray indicate versions also with pressure balancing

C_{V2}	-										9.5	15	23	37	56	-	60	95	145	245		
K_{VS2}	-										8.0	13	20	32	48	-	50	80	125	210		
DN																						
15A																						
20A																						
25A																						
40A											•	•	•									
50A											•	•	•									
65A													•	•	•							
80A													•	•	•							
100A																	•	•	•			
150A																	•	•	•	•		

Table 3.5: Versions with flow divider ST 3 (K_{VS3}) · Areas highlighted in gray indicate versions also with pressure balancing

C_{V3}	-										9.0	14	23	35	-	-	55	90	140	-	
K_{VS3}	-										7.5	12	20	30	-	-	47	75	120	-	
DN																					
15A																					
20A																					
25A																					
40A																					
50A											• ¹⁾										
65A												•	•	•							
80A												•	•	•							
100A																	•				
150A																	•	•	•		

¹⁾ Not with bellows seal or insulating section

Table 4: Dimensions for Type 3241-1 and Type 3241-7 Control Valves with flanges · Dimensions in mm**Table 4.1:** Type 3241 Valve · Without actuator

Valve	DN	15A	20A	25A	40A	50A	65A	80A	100A	150A	
Length L	10K	mm	184	184	184	222	254	276	298	352	451
	20K	mm	190	194	197	235	267	292	318	368	473
H1 for actuator	≤750v2 cm ²	mm	222			223		262		354	390
H2 for	Cast steel	mm	44			72		98		118	175v2
	Forged steel	mm	53	–	70	92	98	–	128	–	

Table 4.2: Type 3241 Valve with insulating section or bellows seal · Without actuator

Valve	DN	15A	20A	25A	40A	50A	65A	80A	100A	150A	
H4 for actuator	≤750v2 cm ²	Short insulating section/bellows seal	409			410		451		636	672
		Long insulating section/bellows seal	713			714		755		877	913

Table 4.3: Types 3271 and 3277 Pneumatic Actuators

Actuator area	cm ²	120	175v2	240	350	355v2	700	750v2
Diaphragm ØD	mm	168	215	240	280	280	390	394
H ¹⁾	mm	69	78	62	82	121	199	236
H3 ²⁾	mm	110	110	110	110	110	190	190
H5	Type 3277	mm	88	101	101	101	101	101
Thread	Type 3271	M30 x 1.5 ³⁾						
	Type 3277	M30 x 1.5 ³⁾						
α	Type 3271	G 1/8 (1/8 NPT)	G 1/4 (1/4 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)
α2	Type 3277	–	G 3/8	G 3/8	G 3/8	G 3/8	G 3/8	G 3/8

¹⁾ Height with welded-on lifting eyelet or height of eyebolt according to DIN 580. Height of the swivel lifting hook may differ. Actuators up to 355v2 cm² without lifting eyelet

²⁾ Minimum clearance required to remove the actuator

³⁾ 120 and 175v2 cm² actuator areas with connection for micro-flow valve: M20 x 1.5 thread

Table 5: Weights for Type 3241-1 and Type 3241-7 Control Valves with flanges · Weights in kg**Table 5.1:** Type 3241 Valve · Without actuator

Valve	DN	15A	20A	25A	40A	50A	65A	80A	100A	150A
Weight	kg	7	8	9	16	20	32	37	62	130

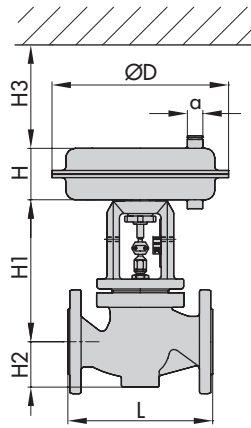
Table 5.2: Type 3241 Valve with insulating section or bellows seal · Without actuator

Valve	DN	15A	20A	25A	40A	50A	65A	80A	100A	150A
Weight	Short bellows seal	10	11	12	22	26	40	45	80	160
	Long bellows seal	14	15	16	26	30	44	49	88	168

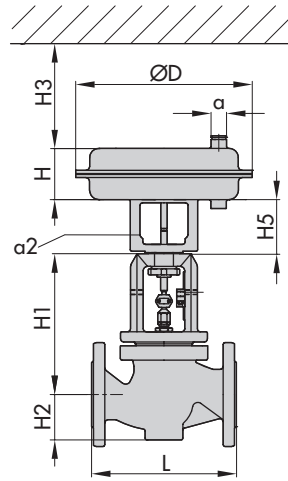
Table 5.3: Types 3271 and 3277 Pneumatic Actuators

Actuator	cm ²	120	175v2	240	350	355v2	700	750v2
Type 3271	Without handwheel	2.5	6	5	8	15	22	36
	With handwheel	4	10	9	13	20	27	41
Type 3277	Without handwheel	3.2	10	9	12	19	26	40
	With handwheel	4.5	14	13	17	24	31	45

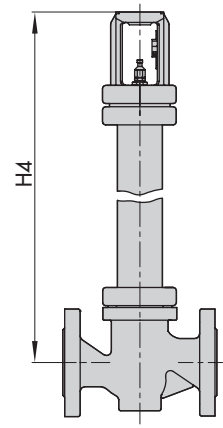
Dimensional drawings



Type 3241-1 · DN 15A to 150A



Type 3241-7 · DN 15A to 150A



Type 3241 · DN 15A to 150A
with insulating section or bellows seal

Ordering text

Globe valve	Type 3241
Valve size	DN ...A
Pressure rating	JIS ...K
Body material	According to Table 2
Type of connection	Flanges
Seat-plug seal	Soft seal, metal seal or high-performance metal seal
Characteristic	Equal percentage or linear
Process medium	Density and temperature
Max. flow rate	in kg/h or m ³ /h
Pressure	p ₁ and p ₂ in bar (absolute pressure)
Pneumatic actuator	Type 3271 or Type 3277
Fail-safe position	Fail-close or fail-open
Actuator area	... cm ²
Valve accessories	Positioner/limit switch

Specifications subject to change without notice



SAMSON AG · MESS- UND REGELTECHNIK
Weismüllerstraße 3 · 60314 Frankfurt am Main, Germany
Phone: +49 69 4009-0 · Fax: +49 69 4009-1507
samson@samson.de · www.samson.de

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