

Pneumatic Control and Quick-acting Shut-off Valves for gases

Type 3241-1-Gas and Type 3241-7-Gas · DIN-DVGW typetested acc. to DIN EN 161 (1996-08)

Application

Control valves for control equipment subject to special safety requirements applicable to gas supply.

For gaseous fuels acc. to EU Directive 90/396/EEC

DN 15 to DN 150 · PN 40 · -20 to 220 °C



Pneumatic control and quick-acting shut-off valves consisting of a Type 3241 Globe Valve and a pneumatic actuator:

- Type 3271 Pneumatic Actuator as Type 3241-1 Control Valve or Type 3277 Pneumatic Actuator for direct positioner attachment as Type 3241-7 Control Valve (Fig. 1)
- Pilot valve (3/2-way solenoid valve) mounted on the actuator
- Strainer (see T 1015 EN).

The safety shut-off valves, typetested according to DIN EN 161 (1996-08), are used to control the pressure, temperature or flow rate of gas-burning appliances. In the event of a fault, the valves shut off the gas supply. They meet the strict leakage requirements of Group E and are assigned to Valve Group 2.

Valve body with undivided bonnet optionally made of:

- Cast steel or cast stainless steel
- Forged material 1.0460 (22.8) or 1.4571.

The modular valves can be equipped with various accessories: Positioners, solenoid valves and other accessories according to IEC 60534-6-1 and NAMUR recommendation. See Information Sheet T 8350 EN for details.

Versions

Standard version for temperatures from -20 to +220 °C, body materials according to Table 2, plug with soft sealing and metal bellows seal, pneumatic actuator with pilot valve mounted on it and fail-safe action "fail-close", Type 2NI Strainer.

- **Type 3241-1-Gas** · Pneumatic control and quick-acting shut-off valve with Type 3271 Pneumatic Actuator (see Data Sheet T 8310-1 EN)
- **Type 3241-7-Gas** (Fig. 1) · Pneumatic control and quick-acting shut-off valve with Type 3277 Pneumatic Actuator (see Data Sheet T 8310-1 EN)

Special version

- **Type 3241-1-Gas** or **Type 3241-7-Gas** · Pneumatic control and quick-acting shut-off valve, DN 25 and PN 40 with fail-safe action "fail-open". The valve meets the TRD 412 (technical rules for steam boilers) requirements concerning leakage gas discharge on operating combustion plants.

Additional versions

- Typetested for heating systems (see Data Sheet T 8016 EN)



Fig. 1 · Type 3241-7-Gas with Type 3963 Solenoid Valve

- Typetested for liquid fuels and liquefied petroleum gas (LPG) in the liquid phase (see Data Sheet T 8022 EN)
- Version according to ANSI standards

Principle of operation (Figs. 2 to 4)

The process medium flows through the strainer and the valve in the direction indicated by the arrow. The plug stem is sealed by the metal bellows and a backup safety packing. A test connection enables monitoring of the metal bellows.

The signal pressure p_{st} is applied to the pilot valve (11) whose coil is connected to the safety interlock circuit (switch 14, Figs. 3 and 4). During operation, the coil is energized and the signal pressure p_{st} acts on the diaphragm. In the event of a malfunction, the pilot valve switches over and the pressure acting on the diaphragm is relieved. The standard valve version then closes quickly.

DIN/DVGW marks of conformity

The control valves have been typetested by the German Technical Inspectorate TÜV and have been assigned the DVGW* marks of conformity listed in Table 1.

* German Technical and Scientific Association on Gas and Water

Installation

Install the valves in horizontal pipelines in an upright position (diaphragm actuator on top). The process medium must flow through the valve in the direction indicated by the arrow.

Prior to start-up, make sure that the vent of the pilot valve and the pressure connection on the top case of the actuator are opened.

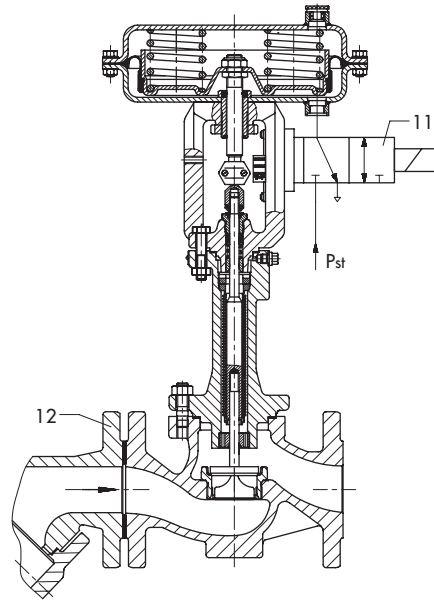


Fig. 2 · Type 3241-1-Gas Pneumatic Control and Quick-acting Shut-off Valve

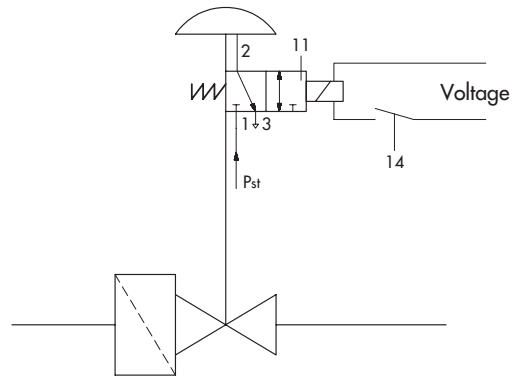


Fig. 3 · Schematics of version without positioner

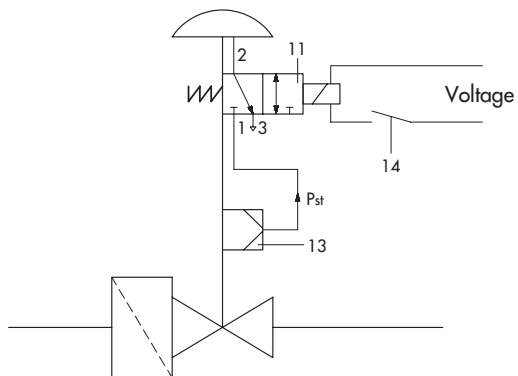


Fig. 4 · Schematics of version with positioner

Legend for Figs. 2 to 4

- 11 Pilot valve
- 12 Strainer
- 13 Positioner
- 14 Switch for safety interlock circuit

Table 1 · Technical data · All pressures in bar (gauge)**Type 3241-1-Gas and Type 3241-7-Gas** (cast body DN 15 to DN 150 · forged body DN 15 to DN 80)

DIN-DVGW mark of conformity		CE-0085AQ 0787																			-0734 ¹⁾				
Nominal size	DN	15	25		40		50				80				100		150	25 ¹⁾							
Nominal pressure	PN	40 (acc. to DIN 2401)																							
K _{V5} coefficient (without flow divider St I)		0.4	1.6	0.4	1.6	6.3	6.3	16	6.3	16	25	40	25	40	60	80	60	80	63	100	160	160	160	260	10
		0.63	2.5	0.63	2.5	10	10	–	10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		1.0	4.0	1.0	4.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
K _{V5} coefficient (with flow divider St I)		–	–	–	–	–	–	–	–	22	36	22	36	54	72	54	72	57	90	144	144	144	234	–	
Seat diameter	mm	6	12	6	12	24	24	31	24	31	38	48	38	48	63	80	63	80	63	80	100	100	100	130	24
Perm. differential or operating pressure	bar	25													15	6	25	15	15	10	4	10	4	3	20
Rated travel	mm	15													30				15						
Rangeability		50 : 1										30 : 1					50 : 1								
Perm. ambient temperature		–40 ... +60 °C																							
Perm. medium temperature		–20 ... +220 °C																							
Closing time		< 1 s																							
Valve class		Valve class E · Valve group 2 "Class 2"																							
Strainer		Type 2 NI, special version for gas, mesh size 0.25 mm																							
Type 3271 and Type 3277 Pneumatic Actuator (versions only without handwheel and without travel limitation)																									
Diaphragm area	cm ²	240		350						700						350									
Bench range	bar	0.4	0.6	0.3	0.4	0.8	0.8	1.4	0.8	1.4	1.2			1.85	1.4	2.1	1.4	0.4							
		to 2.0	to 2.2	to 1.9	to 2.0	to 2.4	to 2.4	to 2.3	to 2.4	to 2.3	to 2.0			to 2.3	to 2.3	to 3.3	to 2.3	to 2.0							
Req. supply pressure	bar	2.2	2.4	2.1	2.2	2.6	2.6	2.5	2.6	2.5	2.2			2.5	2.5	3.5	2.5	3.0							
Max. supply pressure	bar	6.0									3.5						3.0								
Closing time	kN	0.96	1.44	1.05	1.4	2.8	2.8	4.9	2.8	4.9	8.4			12.95	9.8	14.7	9.8	3.5							
Fail-safe action		Fail-close																					Fail-open		

¹⁾ Mark of conformity: CE-0085AQ 0734 for special version with fail-safe action "Fail-open"**Table 2 · Pilot valves for Type 3241-1-Gas**

Control Valve				Solenoid valve manufacturer and model number			
Type 3241	DN	Actuator	Fail-safe action	SAMSOMATIC model/K _{V5} coefficient (Attachment: threaded connection)		Norgren series Herion (Attachment: NAMUR interface)	
				3963-xxxxx13/1.4	3963-xxxxx14/4.3	24011 ¹⁾	98015
-0261	15	240	FA Fail-close	•	•	•	•
-0263	25	350		•	•	•	•
-0265	40	350		•	•	•	•
-0266	50	700		–	•	–	•
-0267		350		•	•	•	•
-0269	80	700		–	•	–	•
-0271	100	700		–	•	–	•
-0275	150	700		–	•	–	•
-4321	25	350	FE Fail-open	•	•	•	•

¹⁾ Herion Series 24011 solenoid valve with quick exhaust module

Table 3 · Materials (material number acc. to DIN EN)

Control Valve	DN 15 ... 150 · NPS ½ ... 6		DN 15 ... 80		Strainer	
	Cast steel 1.0619	Stainless cast steel 1.4581	Forged steel 1.0460	Stainless cast steel 1.4571	Cast steel 1.0619	Stainless cast steel 1.4581
Body ¹⁾						
Valve bonnet	1.0460	1.4571	1.0460	1.4571	Standard strainer insert and dual strainer insert 1.4401	
Seat and plug	1.4404 Plug with soft sealing, seal PTFE with 15 % glass fiber					
Guide bushing	1.4104	1.4571	1.4104	1.4571		
Stuffing box packing	V-ring packing: PTFE with carbon; spring: 1.4310					
Intermediate piece	1.0460	1.4571	1.0460	1.4571		
Metal bellows	1.4571					
Body gaskets	Graphite on metal core					

¹⁾ Special version: A 216 WCC or A 351 CF8M in Class 300 (a strainer must be installed at the site of installation)

Table 4 · Dimensions in mm

Valve	DN	15	25	40	50	80	100 ¹⁾	150 ¹⁾
Length	L	130	160	200	230	310	350	480
Length	L1	260	320	400	460	620	700	960
Height H1 at actuator cm ²	240	408	-					
	350	-	408	408	408	-		
	700	-			408	450	635	672
H2	with cast body	44		72		98	118	175
	with forged body	53	70	92	98	128	-	

Actuator	240 cm ²	350 cm ²	700 cm ²
Diaphragm Ø D	240	280	390
H (700 cm ² inc. lifting ring)	62	82	200
H3 ²⁾	250	240	290
H5	101	101	101
Thread	M 30 x 1.5		
a (optional), bottom connection only with Type 3271	G ¼ (¼ NPT)		G ⅜ (⅜ NPT)
a2 (Type 3277 only)	-		

¹⁾ Only with valve body made of 1.0619 or 1.4581

²⁾ Minimum clearance to remove actuator due to solenoid valve and bracket (see Fig. 1)

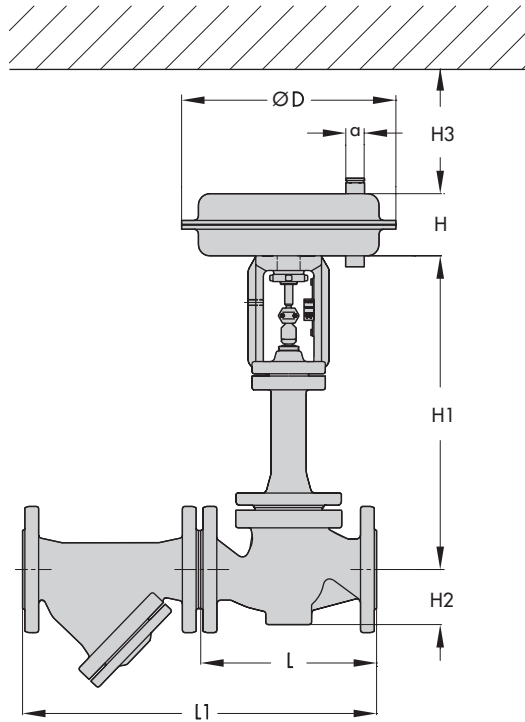
Table 5 · Weight in kg

Valve	DN	15	25	40	50	80	100	150
Valve weight without actuator	approx. kg	8	10	18	21	38	60	150
Strainer								
Weight	approx. kg	2	4	7	10	19	28	60

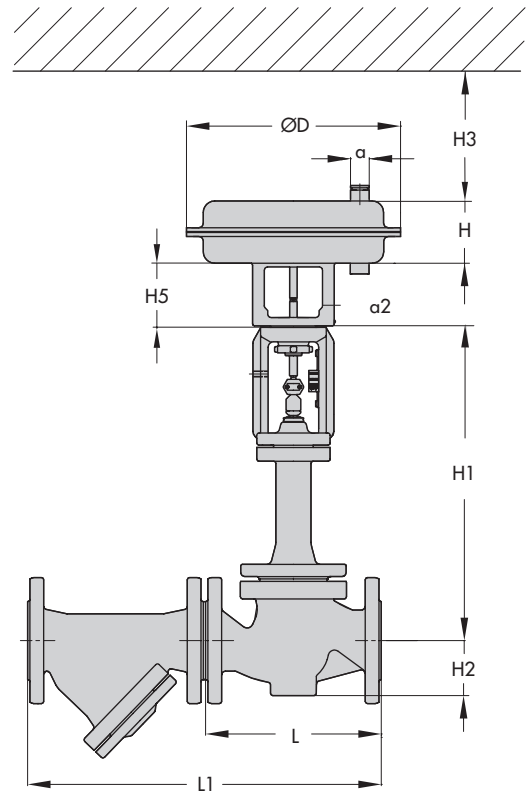
Actuator	cm ²	240	350	700
Type 3271	approx. kg	5	8	22
Type 3277	approx. kg	9	12	26

Solenoid valve	approx. kg	1
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Dimensions in mm



Type 3241-1-Gas Control and Quick-acting Shut-off Valve with Type 3271 Pneumatic Actuator



Type 3241-7-Gas Control and Quick-acting Shut-off Valve with Type 3277 Pneumatic Actuator

Ordering text

Control and Quick-acting Shut-off Valve for gas	Type 3241-1-Gas or Type 3241-7-Gas
DN ... PN ...	Kvs ...
Body material	According to Table 3
Characteristic	Equal percentage or linear
Flow divider St I	Without/with
Actuator	Type 3271 or Type 3277
Effective diaphragm area ... cm ²	
Fail-safe action	Fail-close or fail-open
Pilot valve	Type ...
Positioner	Type ...
Strainer	Without/with

Specifications subject to change without notice.



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