Series 240
Type 3351 Pneumatic On/off Valve

Application

Tight-closing on/off valve for liquids, gases and vapors according to DIN or ANSI standards

Valve size	**DN 15 to 100 · NPS ½ to 4**
Pressure rating	**PN 10 to 40 · Class 150 and 300**
Medium temp.	**–50 to +250 °C · –58 to +482 °F**

The Type 3351 Pneumatic Control Valve consists of an on/off valve and a pneumatic actuator. Optionally, the valve can be equipped with a bellows seal or insulating section.

Valve body made of:

- Cast iron
- Spheroidal graphite iron
- Cast steel
- Cast stainless steel

Special features

- Soft-seated valve plug
- Leakage class VI according to IEC 60534-4 or class VI according to ANSI/FCI 70-2
- Attachment of solenoid valves and limit switches
  - See Information Sheet ▶ T 8350 for more details on valve accessories.
  - See Mounting and Operating Instructions ▶ EB 8039 for suitable mounting kits.

Versions

Standard version for pressure rating PN 10 to 40 or Class 150 and 300, fail-close or fail-open

– **Type 3351** (Fig. 1) · On/off valve with self-adjusting PTFE V-ring packing · Valve size DN 15 to 100 (NPS ½ to 4) Medium temperatures from –10 to 220 °C (14 to 428 °F)

– **Type 3351 with bellows seal**[1] · On/off valve with bellows seal and PTFE V-ring packing · Valve size DN 15 to 50 (NPS ½ to 2) · Medium temperatures according to Table 1 · Use with thermal fluids

– **Type 3351 with insulating section** · On/off valve with insulating section and plug stem sealed by a PTFE V-ring packing · Valve size DN 15 to 50 (NPS ½ to 2) · Medium temperatures according to Table 1

Further versions

– Additional handwheel
– Reinforced spring
– Higher or lower medium temperatures
– Higher ambient temperatures

[1] Version does meet TA Luft requirements

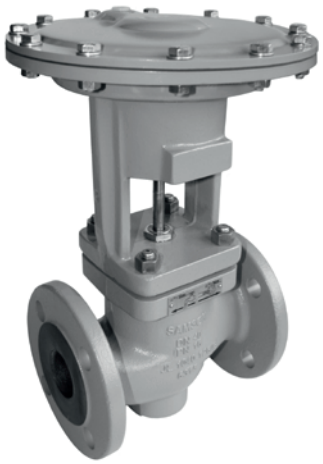

Fig. 1: *Type 3351 Pneumatic On/off Valve*

Fig. 2: *Type 3351 Pneumatic On/off Valve · Version with handwheel*

Associated Information Sheet	**T 8000-X**
Associated Data Sheets for pneumatic actuators	**T 8310-1, T 8310-2**

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Data Sheet **T 8039 EN**

Principle of operation

Depending on the type of valve seat and the arrangement of the valve plug, the valve has two different fail-safe actions which are used when the pressure acting on the diaphragm is reduced or when the control signal fails:

– **Fail-close action:** the valve is closed upon supply air failure.
– **Fail-open action:** the valve is opened upon supply air failure.

Direction of flow

The direction of the medium flow in the valve depends on the process medium and the selected fail-safe action.

For fail-close valves which are used to control gases and vapors, the medium must flow in the closing direction (A → B), except for the DN 100 version, in which the medium must flow into the plug in the opening direction (B → A).

For control applications with liquids, the medium must flow into the plug in the opening direction (B → A).

In fail-open valves, all media must flow in the opening direction (A → B). For versions with the optional handwheel, a fail-close valve can be opened and a fail-open valve can be closed in the event of supply air failure.

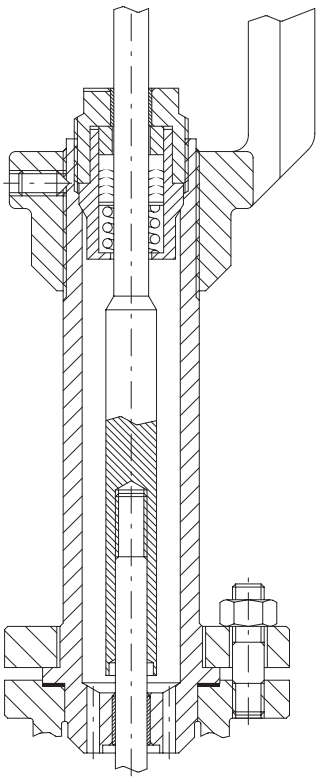


Fig. 3: *Detailed drawing of the insulating section*

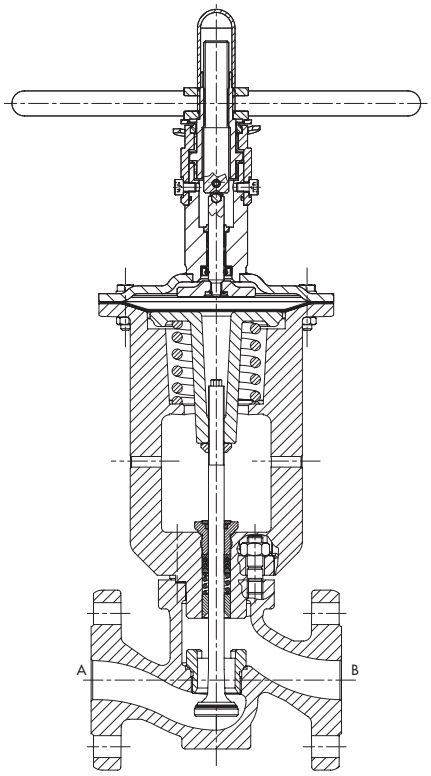


Fig. 4: *Type 3351 Pneumatic On/off Valve with handwheel*

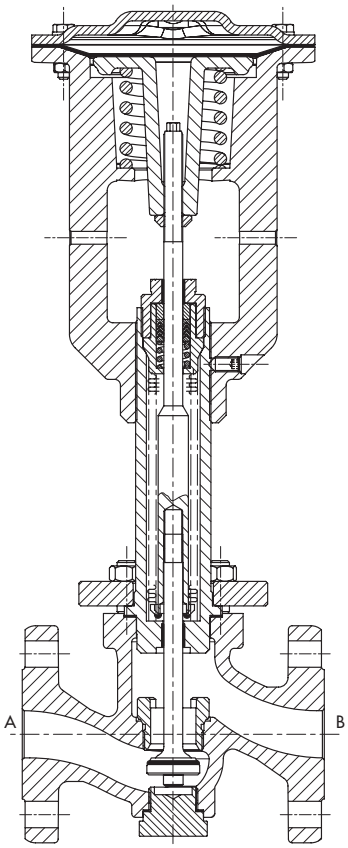


Fig. 5: *Type 3351 Pneumatic On/off Valve · Version with bellows*

Table 1: *Technical data*

Version		**DIN**				**ANSI**	
Body material		Cast iron EN-GJL-250	Spheroidal graphite iron EN-GJS-400-18-LT	Cast steel 1.0619	Cast stainless steel 1.4408	Cast steel A216 WCC	Cast stainless steel A351 CF8M
Pressure rating		PN 10, 16	PN 10, 16, 25	PN 10, 16, 25, 40		Class 150 and 300	
Valve size	Standard	DN 15 to 100				NPS ½ to 4	
	Bellows seal/ insulating section	DN 15 to 50				NPS ½ to 2	
Connecting flanges		Form B according to DIN EN 1092-2		Form B1 according to DIN EN 1092-1		RF	
Temperature ranges in °C (°F) · Permissible operating pressures according to pressure-temperature diagrams (see Information Sheet ▶ T 8000-2)							
Ambient temperature		–35 to +100 °C (–30 to +212 °F)				–35 to +100 °C (–30 to +212 °F)	
Medium temperature (standard)		–10 to +220 °C (14 to 428 °F)				–10 to +220 °C (14 to 428 °F)	
High-temperature version[2]		–10 to +240 °C (14 to 464 °F)[1]				–10 to +240 °C (14 to 464 °F)[1] [4]	
Low-temperature version		–			–50 to +220 °C (–58 to +428 °F)[3] [4]	–29 to +220 °C (–20 to +428 °F)[3] [4]	–50 to +220 °C (–58 to +428 °F)[3] [4]
Leakage class		IEC 60534-4: VI				ANSI/FCI 70-2: Class VI	
Compliance		CE · EAC					

1) With soft-seated special plug and bellows seal or insulating section
2) Higher temperatures (max. 450 °C/84 °F) with metal-seated plug and leakage class IV or V on request
3) Additional impact test certification required between –29 °C (–20 °F) and –50 °C (–58 °F)
4) With bellows seal or insulating section only

Table 2: *Materials*

Valve	**DIN**				**ANSI**	
Body	Cast iron EN-GJL-250	Spheroidal graphite iron EN-GJS-400-18-LT	Cast steel 1.0619	Cast stainless steel 1.4408	Cast steel A216 WCC	Cast stainless steel A351 CF8M
Seat	1.4006			1.4404/1.4571	A182 F6a Cl. 2	316Ti/316L
Plug	1.4404 · Seal made of reinforced PTFE[1]					
Body gasket	Graphite on metal core					
Actuator diaphragm	NBR (nitrile butadiene rubber) with fabric reinforcement Materials for higher or lower ambient temperatures on request					
Standard version						
Valve bonnet	Cast iron EN-GJL-250	Cast steel 1.0619	Cast steel 1.0619	Bonnet flange 1.4404 welded to bonnet 1.0619	Cast steel A216 WCC	Bonnet flange 316L welded to bonnet A216 WCC
Guide bushing	1.4104			1.4404	1.4104	316L
Packing	V-ring packing: PTFE with carbon · Spring: 1.4310					
Threaded bushing assembly	1.4404 + Carbon				316L + Carbon	
Version with bellows seal or insulating section						
Bellows seal/insulating section	1.0460			1.4404	A105	316L
Actuator flange	Cast iron	Cast steel			Cast steel	
	EN-GJL-250	1.0619			A216 WCC	
Guide bushing	Polymer					
Seal	Bellows seal: Bellows 1.4571[2] and PTFE/graphite V-ring packing · Spring 1.4310					
	Insulating section: PTFE/graphite V-ring packing · Spring 1.4310					
Guide nut assembly	1.4404 and polymer				316L and polymer	
Flange of bellows seal or insulating section	1.0460			1.4301	A105	304

1) Seal made of PEEK on request
2) Use with thermal fluids. Version does not meet TA Luft requirements

Table 3: *Control pressure and maximum differential pressure · All pressures in bar and psi*

Valve size (bellows seal or insulating section up to DN 50/NPS 2)		**DN**	**15**	**20**	**25**	**32**	**40**	**50**	**65**	**80**	**100**
		NPS	**½**	**¾**	**1**	**–**	**1½**	**2**	**2½**	**3**	**4**
Flow coefficient		K_{VS}	6.3	10	14	25	31	40	72	90	170
		C_V	7.5	12	16	–	36	47	84	105	200
Pneumatic actuator	Actuator area in cm²		60			186			255		700
	Travel in mm		8			10			12.5		30
Max. supply pressure			6 bar/88 psi								
Standard version											
Fail-close											
Min. control pressure to open the valve at Δ_{max}			4 bar/58 psi								
Max. perm. differential pressure Δp_{max} at	Vapors, gases A → B		20 bar/290 psi			16 bar/235 psi			10 bar/145 psi		10 bar
	Liquids B → A		16 bar/235 psi			10 bar/145 psi			5 bar/73 psi		145 psi
Fail-open											
Min. control pressure to close the valve at Δp_{max}			4.5 bar/65 psi								4 bar/ 58 psi
Max. permissible differential pressure Δp_{max} for vapors, gases or liquids			20 bar/290 psi			16 bar/235 psi			10 bar/145 psi		
Special version for fail-close version for higher differential pressure Δp											
Min. control pressure to open the valve at Δp_{max}			5.5 bar/80 psi								–
Max. permissible differential pressure Δp_{max} for vapors, gases or liquids [1]			30 bar/435 psi			20 bar/290 psi			7 bar/102 psi		–

[1] For direction of flow B → A (see Fig. 4)

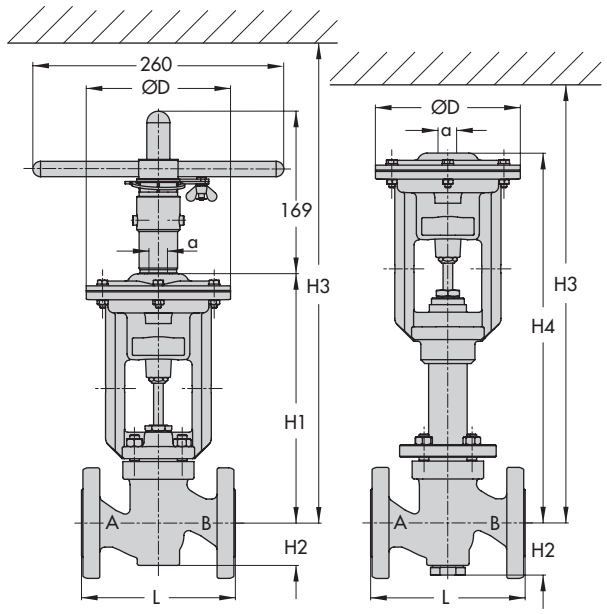
Table 4: *Dimensions for Type 3351 (see Fig. 6)*

Valve		**DN**	**15**	**20**	**25**	**32**	**40**	**50**	**65**	**80**	**100**
		NPS	**½**	**¾**	**1**	**–**	**1½**	**2**	**2½**	**3**	**4**
Length L	PN 10/40	mm	130	150	160	180	200	230	290	310	350
	Class 150	in	7.25			–	8.75	10	10.88	11.75	13.86
		mm	184			–	222	254	276	298	352
	Class 300	in	7.50	7.63	7.75	–	9.25	10.50	11.50	12.50	14.49
		mm	191	194	197	–	235	267	292	318	368
Diaphragm ØD		mm	150			240			280		390
Control pressure connection		a	G ¼			G ¼			G ⅜		
Standard version											
H1		mm	260			285			328		485
H2		mm	45			72			98		118
H3 [1]		mm	380			380			415		565
Version with bellows seal or insulating section											
H4		mm	400			415			–		
H2		mm	55			80					
H3 [1]		mm	520			535					

[1] Minimum clearance to remove the actuator; version with handwheel: up to DN 80: +150 mm, DN 100: +210 mm

Table 5: *Weights for Type 3351*

Standard version	DN	15	20	25	32	40	50	65	80	100
	NPS	½	¾	1	–	1½	2	2½	3	4
Weight, approx. kg	PN 10/40	11	12	12	25	26	29	48	52	70
	Class 150	11	12	13	–	23	27	47	52	64
	Class 300	12	13	14	–	25	29	50	55	64
Version with bellows seal or insulating section										
Weight, approx. kg	PN 10/40	16	17	17	33	34	37	–		
	Class 150	16	17	18	–	31	35			
	Class 300	17	18	19	–	33	37			



Type 3351

With handwheel | With bellows seal or insulating section

Fig. 6: *Dimensional drawing of Type 3351*

Ordering text

Type 3351 Pneumatic On/off Valve

Valve size	DN/NPS
Nominal pressure	PN/Class
Body material	According to Table 1
Fail-safe position	Fail-close or fail-open
Control air pressure	… bar
Handwheel	With/without
Special version	Bellows seal/insulating section High or low-temperature version
Valve accessories	Solenoid valve and/or electric or pneumatic limit switch

Specifications subject to change without notice

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