FRANK GmbH * Starkenburgstraße 1 * D-64546 Mörfelden-Walldorf
Telefon +49 (0) 6105 / 4085-0 * Telefax +49 (0) 6105 / 4085-270 * www.frank-gmbh.de

Globe control valve type 640 with pneumatic actuator

Body material	PVC-U		PP
Material plug and seat	PVC-U		PP
Stem material	• 1.4571 (SUS 316 Ti)	• Hastelloy C4	• Other materials on request
Sealing material	• EPDM	• FKM	• FEP
Working temperature	0 °C up to 60 °C[1)]		-20 °C up to 80 °C[1)]
Nominal size	DN 15 up to DN 100[2)]		
Connection	Flange connection acc. to DIN EN 1092-1 (replaces DIN 2501) - PN 10[3)]		
Length	Company standard		
Actuator	Pneumatic, single or double action, spring to close or to open		
Accessories	Electro-pneumatic or pneumatic positioner Pressure control station		
ATEX-approval	Ex II 2G EEx ia T4 on request		

1) Max. ambient temperature: 60 °C
2) DN 32 only available in PVC-U
3) Flange connection also acc. to ANSI available

Example for an invitation to tender text:

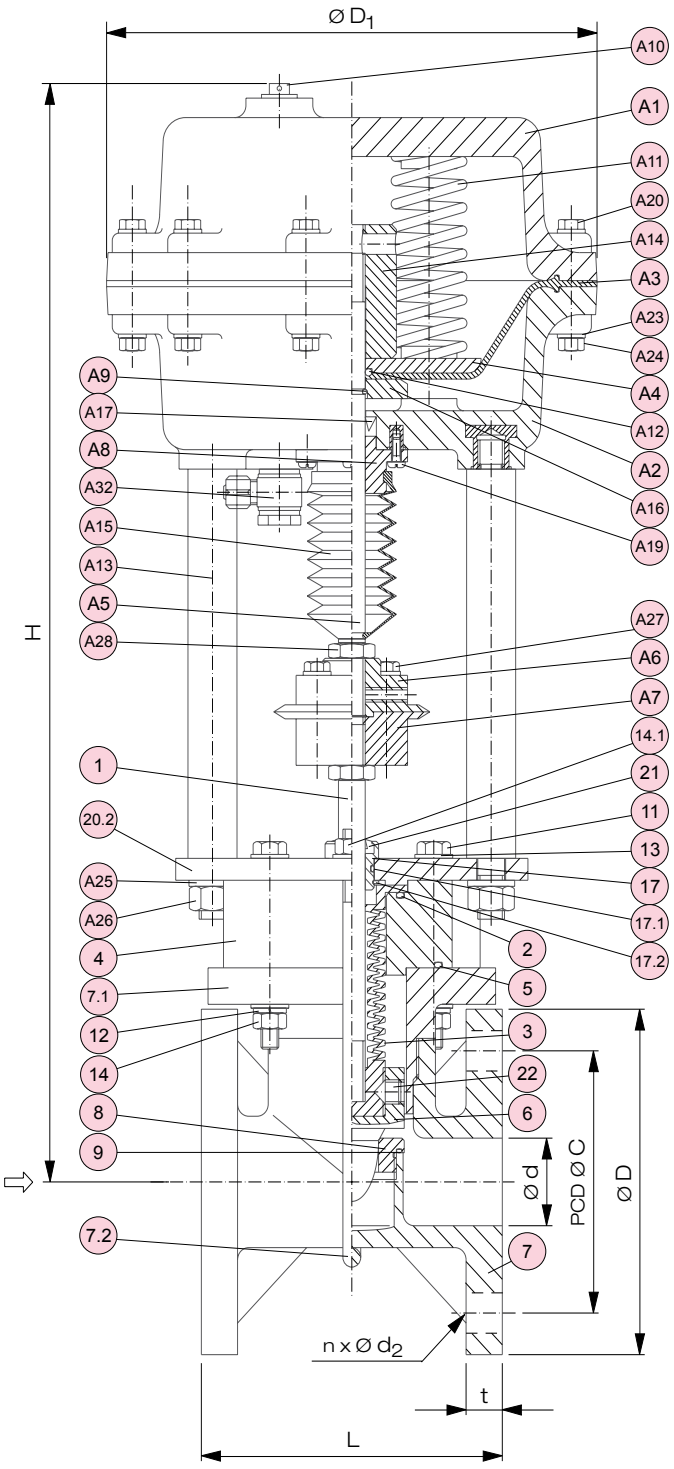
Globe control valve made of plastic, EXNER type 640, DN 25, PN 6, PP / FKM, length acc. to company standard, changeable seat and plug made of PP, PTFE-bellows, flange connection acc. to DIN EN 1092-1 - PN 10, with pneumatic actuator K 220 II, air to open, linear characteristic, k_{VS}-value 5.2

Document: *FRANK_DB_L8_Regelventil Typ 640 pneum._04-2012_EN*

Globe control valve type 640 with pneumatic actuator

No.	Description	Number	Material
1	Valve spindle	1	1.4571, titanium, Hastelloy C4
2	O-ring*)	1	EPDM, FKM, FEP
3	Bellows	1	PTFE
4	Bellows housing	1	PVC-U / PP
5	O-ring*)	1	EPDM, FKM, FEP
6	Plug*)	1	PVC-U / PP
7	Valve body	1	PVC-U / PP
7.1	Flange	1	PVC-U / PP
7.2	U-bolt	1	A5 - 1.4571 (SUS 316 Ti)
8	Valve seat*)	1	PVC-U / PP
9	O-ring*)	1	EPDM, FKM, FEP
11	Hexagonal bolt	4	A4 - 1.4401 (SUS 316)
12	Spring ring	4	A4 - 1.4401 (SUS 316)
13	Washer	10	A4 - 1.4401 (SUS 316)
14	Hexagonal nut	4	A4 - 1.4401 (SUS 316)
14.1	Locking nut	2	A4 - 1.4401 (SUS 316)
17	Guiding bushing	1	PVC-C
17.1	O-ring*)	1	EPDM, FKM
17.2	Locking ring	1	A2 - 1.4301 (SUS 304)
20.2	Mounting flange	1	A5 - 1.4571 (SUS 316 Ti)
21	Wiper ring*)	1	FKM
22	Threaded[1)]	1	PVDF
A1	Diaphragm housing upper part	1	GRP
A2	Diaphragm housing lower part	1	GRP
A3	Diaphragm	1	EPDM / reinforcement
A4	Diaphragm plate	1	Aluminium
A5	Actuator spindle	1	A5 - 1.4571 (SUS 316 Ti)
A6	Coupling upper part	1	A5 - 1.4571 (SUS 316 Ti)
A7	Coupling lower part	1	A5 - 1.4571 (SUS 316 Ti)
A8	Spindle leading	1	POM
A9	Clamp, 2-parts	1	1.4308 (SCS 13)
A10	Vent plug	1	PE
A11	Pressure spring	4[2)]	Spring steel[3)]
A12	O-ring	1	EPDM
A13	Mounting pillar	2	A5 - 1.4571 (SUS 316 Ti)
A14	Lift stop	1	Polyamid
A15	Protection bellows	1	CSM
A16	Diaphragm washer	1	A5 - 1.4571 (SUS 316 Ti)
A17	Lip ring*)	1	EPDM
A19	Cheese-head screw	3	A4 - 1.4401 (SUS 316)
A20	Hexagonal bolt	10	A4 - 1.4401 (SUS 316)
A23	Washer	20	A4 - 1.4401 (SUS 316)
A24	Hexagonal nut	10	A4 - 1.4401 (SUS 316)
A25	Washer	2	A4 - 1.4401 (SUS 316)
A26	Hexagonal nut	2	A4 - 1.4401 (SUS 316)
A27	Hexagonal bolt	4	A4 - 1.4401 (SUS 316)
A28	Hexagonal nut	1	A4 - 1.4401 (SUS 316)
A32	Air adapter	1	Aluminium

*) Wearing parts
1) from DN 32
2) DN 25-50 up to K_{VS} 5,2
3) Coated



Valve body PVC-U, DN 32
Actuator K220 II, air to open

Globe control valve type 640 with pneumatic actuator

Dimensions acc. to DIN

Dimensions in mm										Actuator
DN	d	D_1	C	D	L	H	t	Lift	n x d_2	Type[1]
15	18	220	65	95	85	441	12	15	4 x 14	K 220
20	24	220	75	105	95	445	14	15	4 x 14	K 220
25	28	220	85	115	110	444	14	25	4 x 14	K 220
32	37	220	100	140	135	452	16	25	4 x 18	K 220
40	41	220	110	150	190	446	16	25	4 x 18	K 220
50	52	220	125	165	200	450	16	25	4 x 18	K 220
65	67	330	145	185	220	592	18	40	4 x 18	K 330
80	78	330	160	200	240	592	18	40	8 x 18	K 330
100	100	330	180	220	290	595	18	40	8 x 18	K 330

[1] K 220 I / K 330 I = air to close
K 220 II / K 330 II = air to open

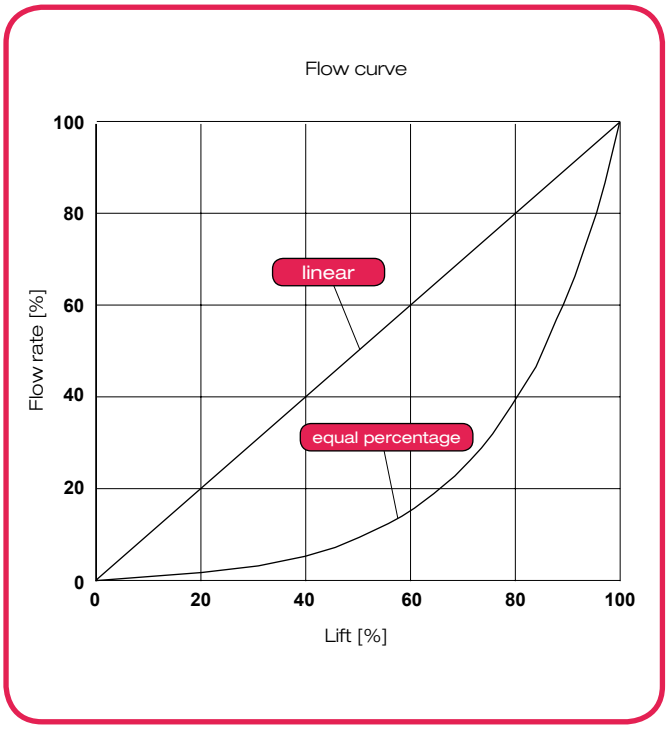
Dimensions acc. to ANSI

Dimensions in mm										Actuator
DN	d	D_1	C	D	L	H	t	Lift	n x d_2	Type[2]
1/2“	18	220	60	95	85	441	12	15	4 x 16	K 220
3/4“	24	220	70	105	95	445	14	15	4 x 16	K 220
1“	28	220	79	115	110	444	14	25	4 x 16	K 220
1 1/4“	37	220	89	140	135	452	16	25	4 x 16	K 220
1 1/2“	41	220	98	150	190	446	16	25	4 x 16	K 220
2“	52	220	121	165	200	450	16	25	4 x 19	K 220
2 1/2“	67	330	140	185	220	592	18	40	4 x 19	K 330
3“	78	330	152	200	240	592	18	40	4 x 19	K 330
4“	100	330	191	220	290	595	18	40	8 x 19	K 330

[2] K 220 I / K 330 I = air to close
K 220 II / K 330 II = air to open

Flow rate characteristic value[3] k_{VS} in m^3/h PVC-U / PP[4]

	DN								
k_{VS} / c_V	15	20	25	32	40	50	65	80	100
0,1 / 0,11	•	•	•						
0,2 / 0,23	•	•	•						
0,4 / 0,46	•	•	•						
0,6 / 0,70	•	•	•						
1,0 / 1,20	•	•	•	•					
1,5 / 1,75	•	•	•	•					
2,2 / 2,60	•	•	•	•					
3,5 / 4,00		•	•	•					
5,2 / 6,10		•	•	•	•				
8,0 / 9,50				•	•	•			
9,0 / 10,50				•	•	•	•		
14,0 / 16,00					•	•	•	•	
22,0 / 25,00						•	•	•	•
34,0 / 40,00							•	•	•
40,0 / 46,00							•	•	•
55,0 / 64,00								•	•
70,0 / 81,00									•
80,0 / 93,00									•



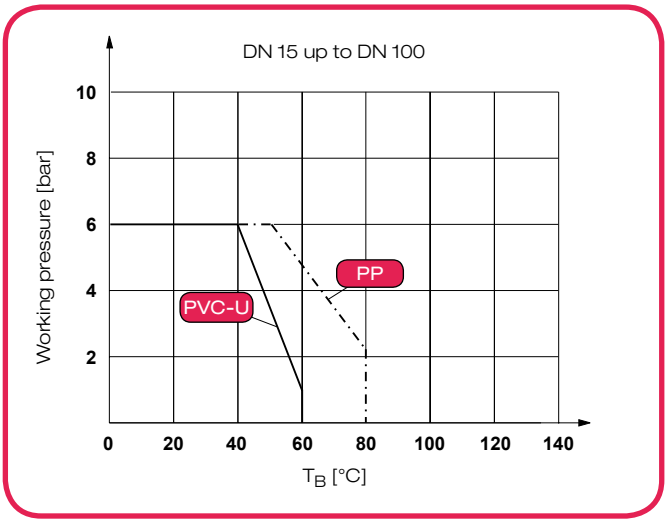
[3] Definition k_{VS}-value see chapter T2 / technical information
[4] DN 32 only available in PVC-U

Globe control valve type 640 with pneumatic actuator

Working pressure[1] p_B in bar

Body-material	T_B in °C	DN 15 - 100
PVC-U	0 up to 40	6
	60	1
PP	0 up to 50	6
	80	2,2

[1] Definition see chapter T2 / technical information



Disassembly and assembly

General information: *The valve body and the actuator are fitted with type labels containing the individual data for the valve and its specific working conditions. If the working conditions are changed, the suitability of the materials must be checked. To prevent damage to seat and plug, we recommend installing a dirt trap upstream of every valve.*

Disassembling the fitting

Attention: *Fittings may never be removed when the system is under pressure.*
During disassembly, it must be ensured that all the components can be reinstalled in their original locations. This applies in particular for ancillary equipment, e.g. positioners.

- Removal from the pipe by loosening and removing the flange screws.
- Loosen and remove the hex bolts **A27**.
- Loosen the hex nuts **A26**, and remove actuator.
- Loosen the nuts **14**, and pull the hex bolts **11** out of the mounting flange **20.2**.
- Pull bellows housing **4** from the valve body **7**.
- DN 32-100: Loosen the threaded pin **22** in the plug **6**.
  all DN: Manually turn the plug **6** counter-clockwise to remove it from the bellows **3**.
- Turn valve spindle **1** out of the bellows **3**.
- Remove the locking ring **17.2** from the collar bushing **17**.
- Press collar bushing **17** out of the mounting flange **20.2**.
- Turn the valve seat **8** counter-clockwise to remove it from the valve body **7**.

Assembling the fitting

- Proceed in the reverse order as for disassembly.
- Before commissioning, the valve must be readjusted and the positioner readjusted or reinitialized, depending on version.

Before installation

- Check the components for damage, and replace if necessary.
- All parts must be free of contamination.
- Flush the pipe, check all the screws on the valve, and retighten carefully, if necessary.

Notes for correct installation

- The fitting must be installed stress-free in the pipe (plane parallelism, axial, overall length).
- Check the direction of flow (arrow on the housing).
- Tighten the connecting screws evenly and crosswise (observe tightening torques). In general, use washers for the nuts and bolts in plastic flanges.
- The use of profiled flange gaskets is recommended.

Connections for pneumatic actuators and positioners

- We recommend fitting a compressed air maintenance unit.
- The actuators may only be operated with dry, clean compressed air at a max. pressure of 6 bar. For the configuration “spring-actuated closing”, the G 1/4“ pneumatic coupling is located on the lower part of the actuator housing, and on the upper part of the housing for the configuration “spring-actuated opening”.
- The danger warnings and the information in the operating manual must be observed.

Important:

- After commissioning, all the screws on the valve must be checked, and retightened if necessary.