



Series 82 - Rotary Plug Valve Type 82.7

Double eccentric control valve for process engineering and industrial applications.

Valve Size	DN 25 to 300	NPS 1 to 12
Nominal Pressure	PN 10 to PN 40	CL 150 and 300
Temperature Range	-40 to 350 °C	-40 to +662 °F
Medium	-100 to -40 °C 350 to 500 °C	-148 to -40 °F 662 to 932 °F
	-196 to -100 °C	-321 to -148 °F



82.7
Standard Design
82.7/IT1
(with temperature extension)
82.7/IT2
(cryogenic extension)

Valve Body Material

- Cast carbon steel
- Cast stainless steel
- Low temperature carbon steel
- Special alloys (Duplex, Hastelloy etc.)
- Other special materials on request

Seat version

- Metal sealing, armored or unarmored
- Soft sealing
- Standard seat factors 1 / 0.6 / 0.4 / 0.25

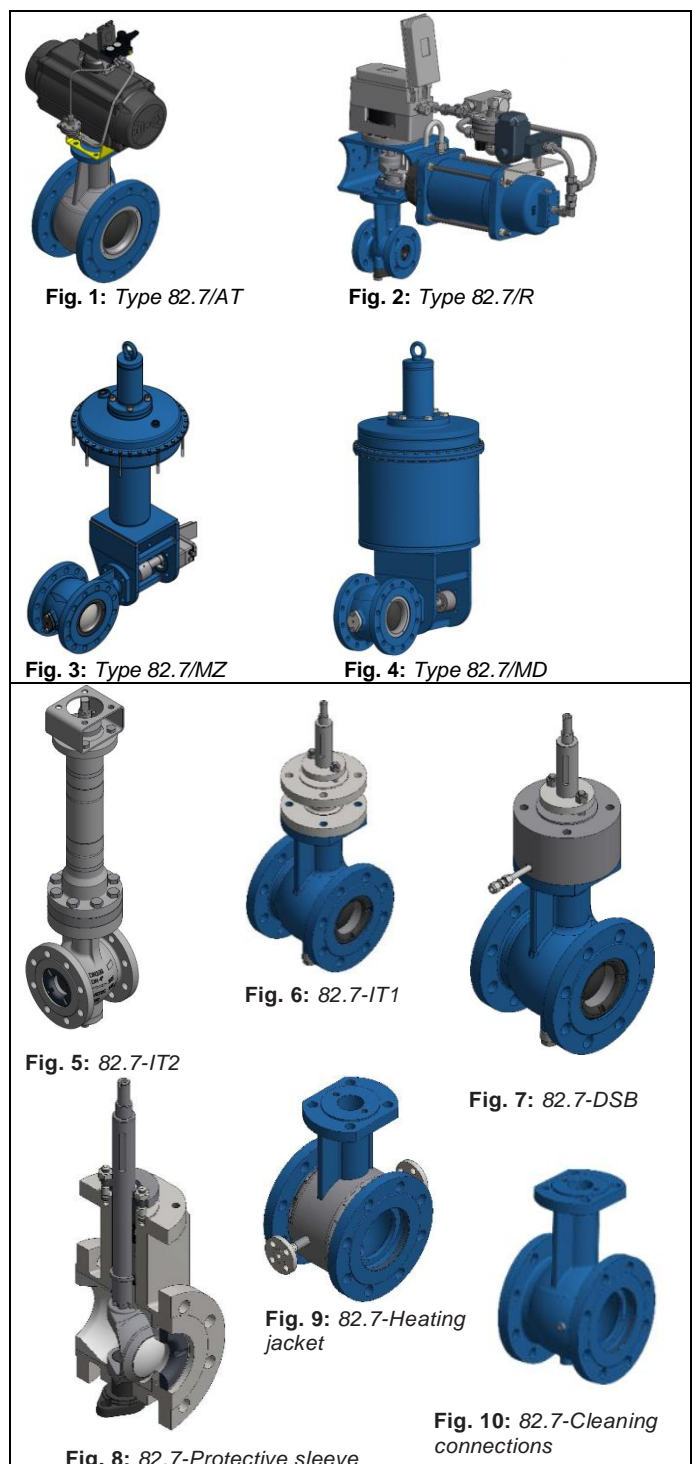
Flanged version

- DN 25 to 300, PN10/ PN16/ PN25/ PN40, face-to-face dimensions acc. to EN 558, Table 2, Series 36
- NPS 1 to 12, CL 150 / CL 300, face-to-face dimensions acc. to EN 558, Table 2, Series 36

Further versions

- TA-Luft packing
- With high and low temperature extension (IT1)
- With Cryogenic extension (IT2)
- Double stuffing box (DSB)
- Heating jacket
- Special materials for body and trim
- Noise-reducing features
- Flange version with tongue/groove, male face/female face according to EN 1092-1
- RF and RTJ according to ANSI B16.5

The valves can be equipped with different accessories, such as positioners, solenoid valves and other accessories according to VDI/VDE 3845.



Principle of operation

The shaft/plug arrangement is eccentric (Figs. 3 and 4). The double-eccentric design of the rotary plug valve is achieved in combination with the offset of the plug's pivot. When turning the plug shaft from closed position in opening direction, the double-eccentric design allows the plug to lift off the seat smoothly without initial breakaway torque. The valve is not opened suddenly and shows a stable control response even with small opening angles.

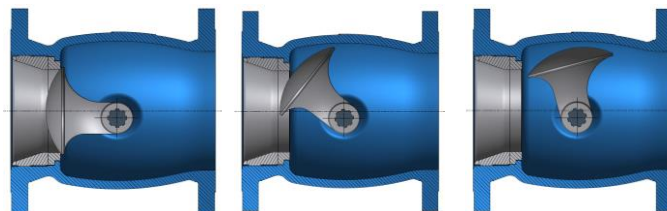


Fig. 3: Plug Movement with Double-Eccentric Arrangement

Flow Direction

The rotary plug valve can be used for both directions of flow (FTO, FTC).
For soft sealing only flow to close (FTC)

The flow coefficient (K_v / C_v) depends on the opening angle of the valve.

Using positioners or cam disks, the natural characteristic of the rotary plug valve can be modified to achieve a linear or equal-percentage characteristic (Figs. 6 and 7).

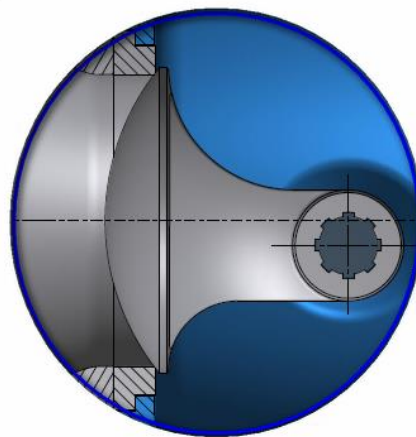


Fig. 4: Double-Eccentric Principle

Fail-safe action

In combination with the Type R/M/AT/S Rotary Actuators, the control valve has two fail-safe actions, which become effective when the piston is relieved of pressure or when the supply air fails.

Valve CLOSED (FC): Rotary Plug Valve is closed when the supply air fails.

Valve OPEN (FO): Rotary Plug Valve is opened when the supply air fails.

Installation

An arrow on the valve will indicate the direction of flow the valve has been configured for (Fig.5).

For installing the valve into the pipeline we recommend a minimal distance of 6 nominal valve size (6 x NPS) in front of the valve and 6 nominal valve size (6 x NPS) behind the valve.

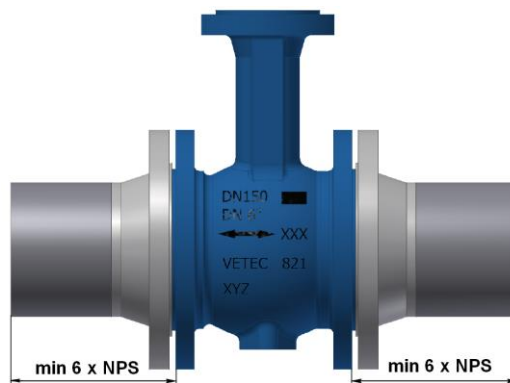


Fig. 5: Installation into the Pipeline

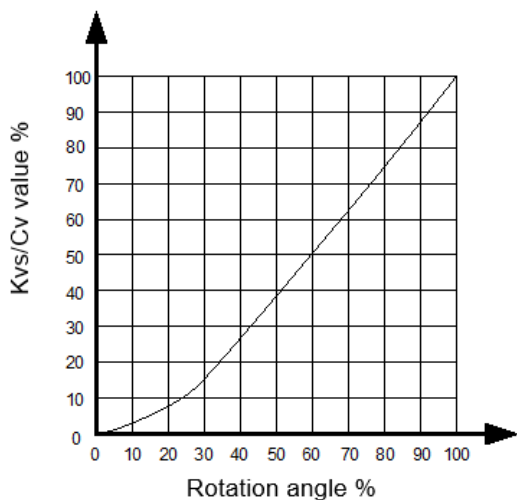


Fig. 6: Natural characteristic

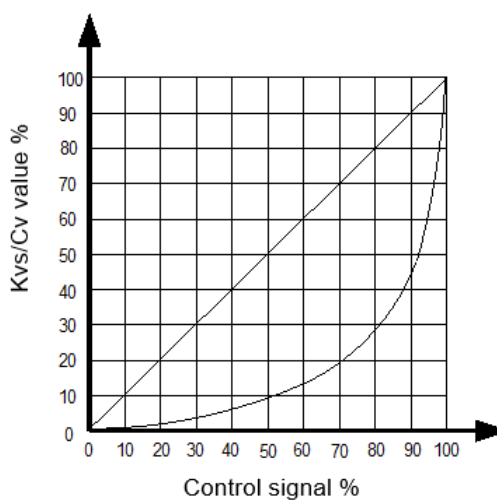


Fig. 7: Equal-percentage and linear characteristic

Table 1: Technical data

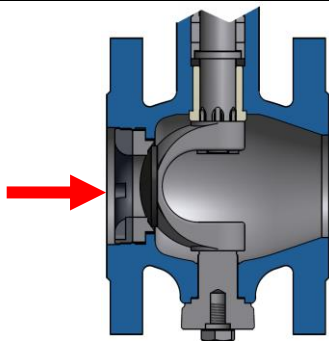
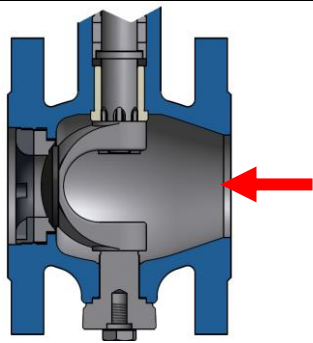
Valve Type	82.7	
Valve size	DN 25 to 300	NPS 1 to 12
Style	Flanged	Flanged
Flange pressure rating	PN 10 / 16 / 25 / 40	CL 150 / 300
Max. operating pressure	40 bar	50 bar
Overall length	EN 558, Table 2, Series 36	EN 558, Table 2, Series 36
Flange bore/form	DIN EN 1092-1	ASME B16.5
Flow direction	 <p>Flow to open: FTO</p>	 <p>Flow to close: FTC</p>
Characteristic	Equal percentage / linear / ON-OFF	
Rangeability	up to 200:1	
Temperature range of medium	-196 bis +500°C / -321 bis +932 °F (see temperature range page 1)	
Opening angle	75°	

Table 2: Materials

Body	1.0619/A216 WCC	1.4408/A351 CF8M
Shaft	1.4404	
Plug	1.4404/Stellite 6	
Trunnion bearing	1.4404	
Seat ring	1.4404 armored with Stellite / seat with soft sealing	
Seat holder	1.4404	
Soft sealing	PTFE / KTL	
Guide bushing	1.4404 / plastic	
Packing bushing	1.4404	
O-ring	FPM 80 VR1	
Sealing - Trunnion bearing	Graphite-VA / PTFE	
Packing	PTFE / Graphite	

Table 3. Kvs and Cv Coefficients

3a. Seat Facing: metallic, FTO

DN mm	25	40	50	80	100	150	200	250	300	
NPS inch	1	1½	2	3	4	6	8	10	12	
Flow rate										
100%	Kvs	16	36	70	220	360	720	1100	1950	2700
	Cv	18	42	81	254	416	832	1272	2254	3121
	Seat Ø mm	18	26	36	60	76	105	135	170	210
60%	Kvs	12	22	43	145	210	430	630	1230	1500
	Cv	14	25	50	168	243	497	728	1422	1734
	Seat Ø mm	16	21,5	29,5	50	60	86	106	146	163
40%	Kvs	10	16	31	105	150	275	390	850	900
	Cv	12	18	36	121	173	318	451	983	1040
	Seat Ø mm	14	18,5	25,5	44	53	73	88	126	133
25%	Kvs	4	12	19	70	100	185	245	500	640
	Cv	4,6	14	22	81	116	214	283	578	740
	Seat Ø mm	10	16	21	37	45	62	73	102	116

3b. Seat Facing: metallic, FTC

DN mm	25	40	50	80	100	150	200	250	300	
NPS inch	1	1½	2	3	4	6	8	10	12	
Flow rate										
100%	Kvs	16	36	70	210	340	660	810	1300	2100
	Cv	18	42	81	243	393	763	936	1503	2428
	Seat Ø mm	18	26	36	60	76	105	135	170	210
60%	Kvs	12	22	43	135	200	320	410	820	900
	Cv	14	25	50	156	231	370	474	948	1040
	Seat Ø mm	16	21,5	29,5	50	60	86	106	146	163
40%	Kvs	10	16	31	95	120	185	250	540	570
	Cv	12	18	36	110	139	214	289	624	659
	Seat Ø mm	14	18,5	25,5	44	53	73	88	126	133
25%	Kvs	4	12	19	56	90	125	160	320	410
	Cv	4,6	14	22	65	104	145	185	370	474
	Seat Ø mm	10	16	21	37	45	62	73	102	116

3c. Seat Facing: soft, FTC

DN mm	25	40	50	80	100	150	200	250	300
NPS inch	1	1½	2	3	4	6	8	10	12

Flow rate

100%	Kvs	12	36	68	180	290	535	730	1220	2000
	Cv	14	42	79	208	335	618	844	1410	2312
	Seat Ø mm	16	26	35	54	70	98	128	160	204
60%	Kvs	11	22	43	135	200	320	410	820	900
	Cv	13	25	50	156	231	370	474	948	1040
	Seat Ø mm	15	21,5	29,5	50	60	86	106	146	163
40%	Kvs	10	16	31	105	120	185	250	540	570
	Cv	12	18	36	121	139	214	289	624	659
	Seat Ø mm	14	18,5	25,5	46	53	73	88	126	133
25%	Kvs	4	12	19	56	90	125	160	320	410
	Cv	4,6	14	22	65	104	145	185	370	474
	Seat Ø mm	10	16	21	37	45	62	73	102	116

Table 4: Weight kg (without Actuator)

DN mm	25	40	50	80	100	150	200	250	300
NPS inch	1	1½	2	3	4	6	8	10	12
Weight kg	8	13	16	35	43	85	140	190	260

Table 5: DIN Face-to-Face Dimensions

	DN	25	40	50	80	100	150	200	250	300
PN 10	Length mm	102	114	124	165	194	229	243	297	338
PN 16										
PN 25										
PN 40										

Table 6: ANSI Face-to-Face Dimensions

	NPS	1	1½	2	3	4	6	8	10	12
CL 150	Length mm	102	114	124	165	194	229	243	297	338
CL 300										

Order Specification

Type	According to table
Valve size	DN / NPS
Nominal pressure	PN / CL
Body material	According to table
Seat version	Metallic or soft seat facing
Characteristic	Equal percentage / linear / ON-OFF
Kvs / Cv	According to table
Flow direction	FTO (flow to open) / FTC (flow to close)
Actuator	Type
Type of mounting	Mounting location of actuator
Fail-safe action	Fail-Close (FC) or Fail-Open (FO)
Max. differential pressure for actuator	... bar
Supply air	... bar
Bench range	... bar
Accessories	e.g. positioner, limit switch, solenoid valve etc.
Others	e.g. special version, certificates, approvals etc.

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