



## Series 82 - Rotary Plug Valve Type 82.7/82.7-01/82.7-02

Double eccentric control valve for process engineering and industrial applications.

<b>Valve Size</b>	<b>DN 25 to 300</b>	<b>NPS 1 to 12</b>
<b>Nominal Pressure</b>	<b>PN 10 to PN 40</b>	<b>CL 150 and 300</b>
<b>Temperature Range</b>	-40 to 350 °C	-40 to +662 °F
<b>Medium</b>	-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)
- Protective sleeve
- Heating jacket (from size DN 150)
- Flushing connections
- 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.

### Configuration Example



Fig. 1: Type 82.7/AT



Fig. 2: Type 82.7/R

### Special designs



Fig. 5: 82.7-IT2



Fig. 6: 82.7-IT1



Fig. 7: 82.7-DSB



Fig. 8: 82.7-Protective sleeve



Fig. 9: 82.7-Heating jacket



Fig. 10: 82.7-Cleaning connections

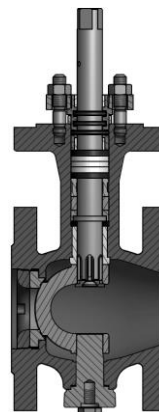


Fig. 11 : Valve Type 82.7

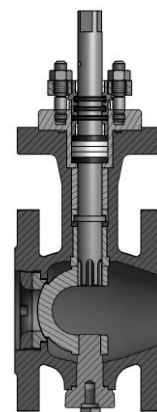


Fig. 12 : Valve Type 82.7-01

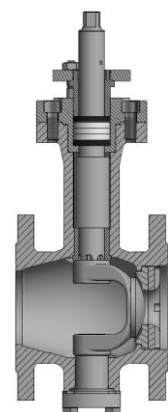


Fig. 13 : Valve Type 82.7-02

**Principle of operation**

The shaft/plug arrangement is eccentric (Figs. 14 and 15). 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.

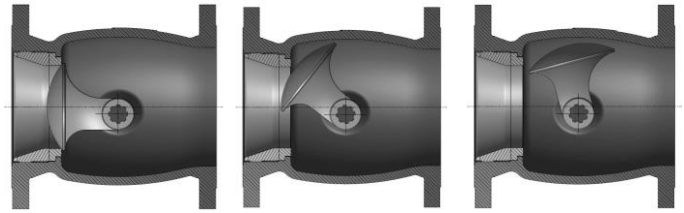


Fig. 14: Plug Movement with Double-Eccentric Arrangement

**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, the natural characteristic (Fig. 17) of the rotary plug valve can be modified to achieve a linear or equal-percentage characteristic (Fig. 18).

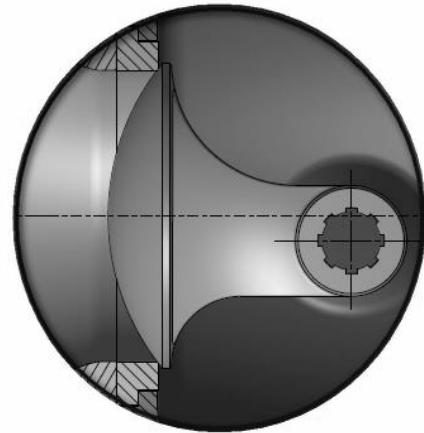


Fig. 15: Double-Eccentric Principle

**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.16).

For installing the valve into the pipeline we recommend a minimal distance of 6 nominal valve size ( $a \times DN$ ) in front of the valve and 6 nominal valve size ( $b \times DN$ ) behind the valve. See mounting and operating instructions.

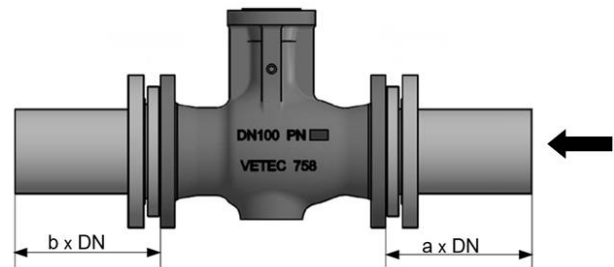


Fig. 16: Installation into the Pipeline

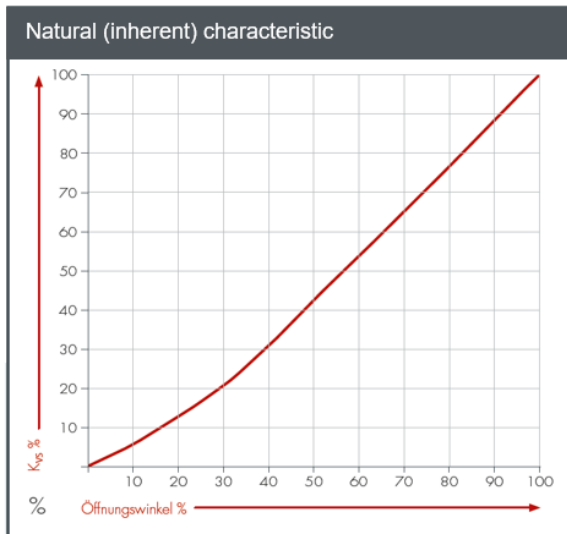


Fig. 17: Natural characteristic

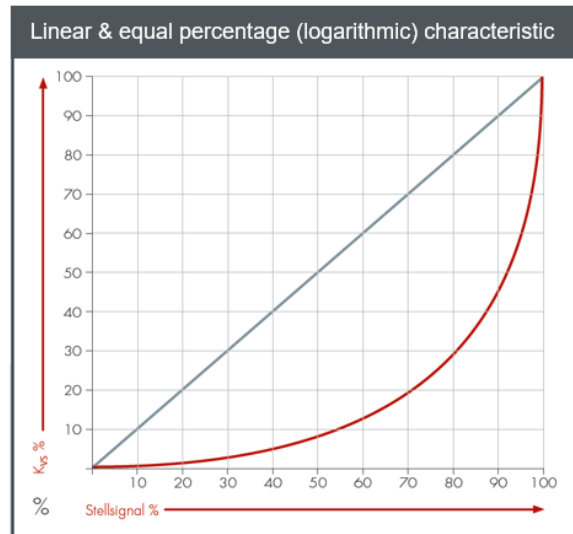
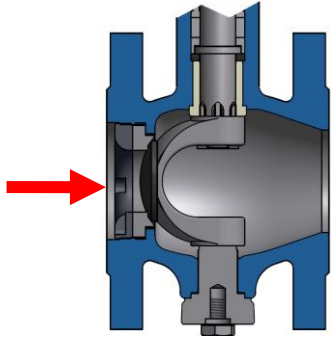
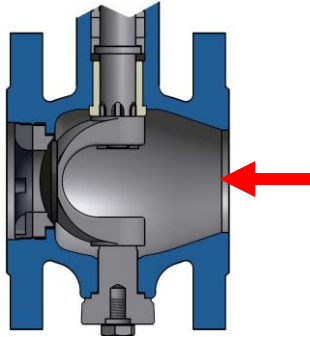


Fig. 18: Linear & Equal-percentage characteristic

**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	Natural / Equal percentage and linear (by means of a positioner) / ON-OFF	
Rangeability	up to 200:1	
Temperature range of medium	-196 to +500 °C / -321 to +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	25	40	50	80	100	150	200	250	300
NPS	1	1½	2	3	4	6	8	10	12

**Flow rate**

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

**3b. Seat Facing: metallic, FTC**

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

**Flow rate**

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

### 3c. Seat Facing: soft, FTC

<b>DN</b>	<b>25</b>	<b>40</b>	<b>50</b>	<b>80</b>	<b>100</b>	<b>150</b>	<b>200</b>	<b>250</b>	<b>300</b>
<b>NPS</b>	<b>1</b>	<b>1½</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>6</b>	<b>8</b>	<b>10</b>	<b>12</b>

#### Flow rate

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

**Table 4: Weight kg (without Actuator)**

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

**Table 5: DIN Face-to-Face Dimensions**

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

**Table 6: ANSI Face-to-Face Dimensions**

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

**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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