

## Data Sheet

### Rotary Plug Valve Type 72.3

Double eccentric control valve for process engineering and industrial applications

Valve Size	DN 25 to 500	NPS 1 to 20
Pressure Rating	PN 10 to 40	Class 150 and 300
Temperature	-100°C to +400 °C	-148°F to 752 °F

#### Valve body made of

- Cast steel
- Cast stainless 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

#### Standard version

For temperatures from -100 to +400 °C (-148 to +752 °F)

#### Version

##### Flanged version

- DN 25 to 250, PN 10 to 40, face-to-face dimensions acc. to EN 558, Table 12, Series 1
- DN 300 to 500, PN 10 to 40, face-to-face dimensions acc. to EN 558, Table 3, Series 15
- NPS 1 to 10, Class 150, CL 300, face-to-face dimensions acc. to EN 558, Table 12, Series 37/38
- NPS 12 to 20, Class 150, CL 300, face-to-face dimensions acc. to EN 558, Table 3, Series 15

#### Further versions

- TA-Luft packing/double packing
- 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
- Versions for higher and lower temperatures on request

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

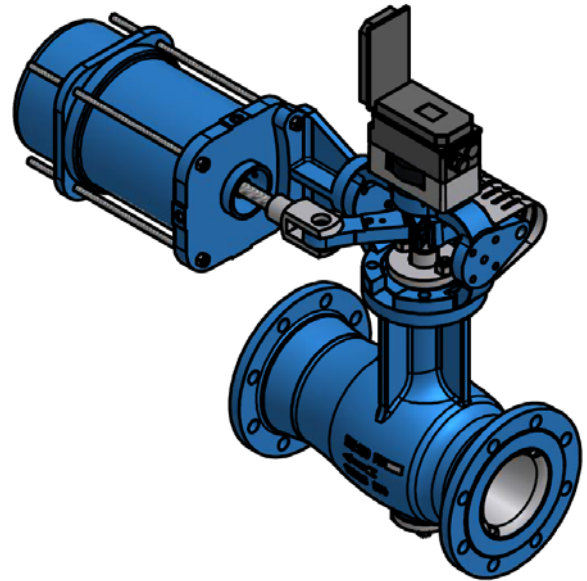


Fig. 1 VETEC Rotary Plug Valve Type 72.3 (example with mounted Type R Actuator)

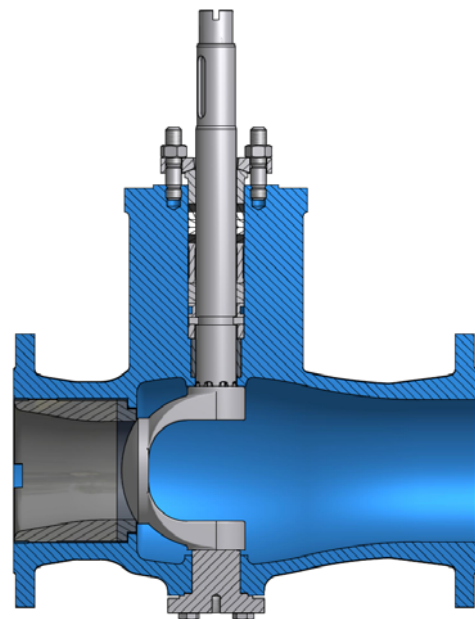


Fig. 2 VETEC Rotary Plug Valve Type 72.3 Assembly Drawing

### Principle of operation

The shaft/plug arrangement is eccentric (Fig. 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 smoothly off the seat without any friction, eliminating any breakaway torque.

This smooth opening also allows for stable control, even at small opening angles.

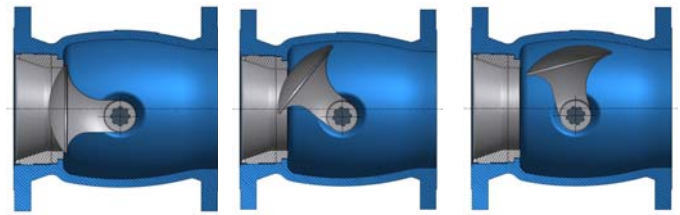


Fig. 3 Plug movement with Double-Eccentric Arrangement

### Fail-safe Action

In combination with the Type R/M/AT/S 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.

**Fail Close** - the rotary plug valve will close upon loss of supply air

**Fail Open** - the rotary plug valve will open upon loss of supply air

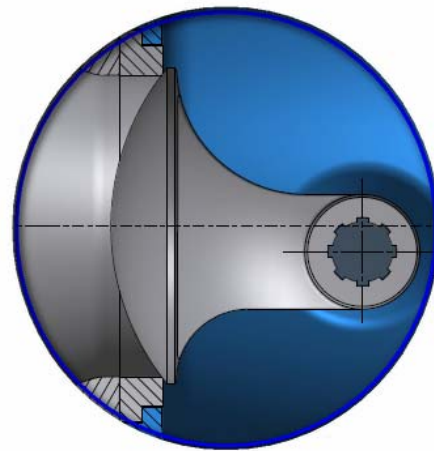


Fig. 4 Double-Eccentric Principle

### Flow Direction

The rotary plug valve may be used in either flow direction, depending on the medium, operating conditions, and shut-off and flow requirements of the valve (fig.5):

**Flow to close** = FTC

**Flow to open** = FTO

For gases and vapors, the direction of flow is FTC.

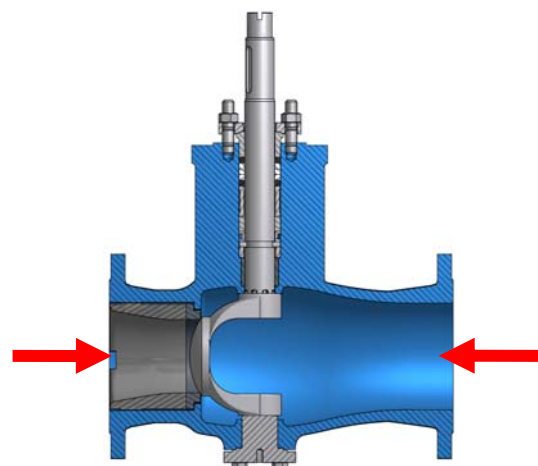


Fig 5. Flow Direction

### Installation

An arrow on the valve will indicate the direction of flow the valve has been configured for (fig.6).



Fig. 6: Installation into the Pipeline

### Flow Characteristic

The flow coefficient ( $Kvs/Cv$ ) 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 (Fig. 6 and 7).

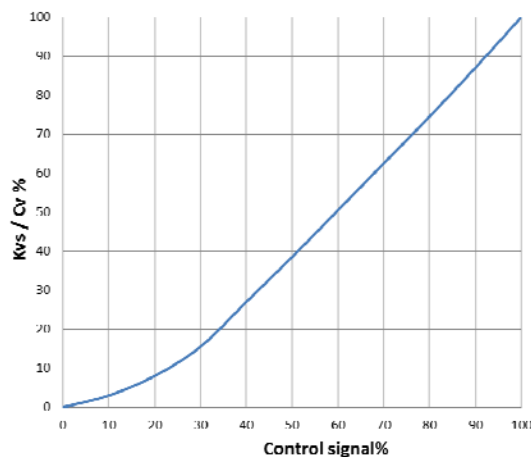


Fig. 7 Inherent Characteristic

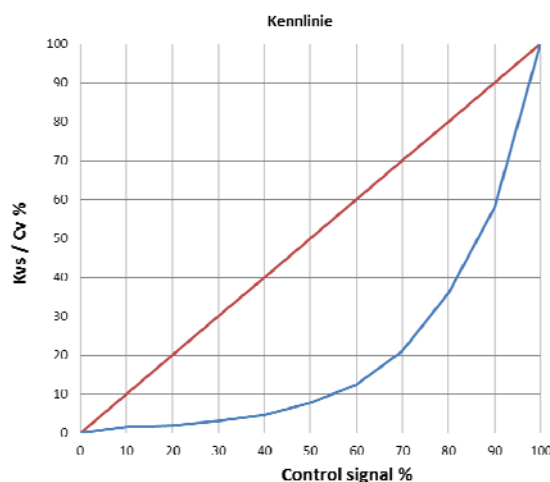
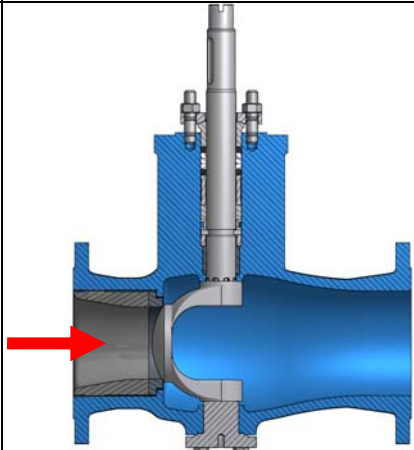
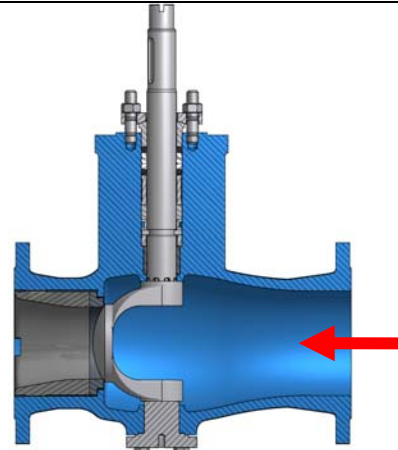


Fig. 8 Equal-percentage and linear Characteristic

**Table 1. Technical Data**

type	72.3			
Valve size	DN 25 to 500		NPS 1 to 20	
Style	Flange		Flange	
Flange pressure rating	PN 10 / 16 / 25 / 40		CL 150 / CL 300	
Max. operating pressure	40 bar		50 bar	
Overall length	DN 25 to 250	DN 300 to 500	NPS 1 to 10	NPS 12 to 20
	EN 558, Table 12, Series 1	EN 558, Table 3, Series 15	EN 558, Table 12, Series 37/38	558, Table 3, Series 15
Flange bore/form	DIN EN 1092 B1		ASME B16.5	
Flow direction	 <p>Direction of flow from the front: FTO</p>		 <p>Direction of flow from behind: FTC</p>	
Characteristic	equal percentage / linear characteristic / ON/OFF			
Rangeability	up to 200:1			
Temperature range medium	-100°C to +400 °C			
Opening angle	75°			
Leakage class acc. to DIN EN 60534-4	Standard - metal seat		Optional - soft seat	
	IV		VI	

**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	
Bearing bushing	1.4404/plastic	
Packing	1.4404	
O-ring	FPM 80 VR1	
Screw (shaft lock)	1.4404	
Seal	1.4404	
Trunnion bearing seal	Graphite/stainless steel/PTFE	
Packing	PTFE/graphite	

**Table 3. Kvs and Cvs Coefficients**

**3a. Seat with Metal Sealing - FTO**

<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>400</b>	<b>500</b>
<b>NPS [inch]</b>	<b>1</b>	<b>1 1/2</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>6</b>	<b>8</b>	<b>10</b>	<b>12</b>	<b>16</b>	<b>20</b>

**Flow rate**

<b>100%</b>	<b>Kvs</b>	16	36	70	220	360	720	1100	1950	2700	4700	6700
	<b>Cv</b>	18	42	81	254	416	832	1272	2254	3121	5434	7746
	<b>Seat Ø [mm]</b>	18	26	36	60	76	105	135	170	210	290	350
<b>60%</b>	<b>Kvs</b>	12	22	43	145	210	430	630	1230	1500	2700	3800
	<b>Cv</b>	14	25	50	168	243	497	728	1422	1734	3121	4393
	<b>Seat Ø [mm]</b>	16	21,5	29,5	50	60	86	106	146	163	225	271
<b>40%</b>	<b>Kvs</b>	10	16	31	105	150	275	390	850	900	1600	2300
	<b>Cv</b>	12	18	36	121	173	318	451	983	1040	1850	2659
	<b>Seat Ø [mm]</b>	14	18,5	25,5	44	53	73	88	126	133	184	221
<b>25%</b>	<b>Kvs</b>	4	12	19	70	100	185	245	500	640	1100	1250
	<b>Cv</b>	4,6	14	22	81	116	214	283	578	740	1272	1445
	<b>Seat Ø [mm]</b>	10	16	21	37	45	62	73	102	116	160	175

**3b. Seat with Metal Sealing - FTC**

<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>400</b>	<b>500</b>
<b>NPS [inch]</b>	<b>1</b>	<b>1 1/2</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>6</b>	<b>8</b>	<b>10</b>	<b>12</b>	<b>16</b>	<b>20</b>

**Flow rate**

<b>100%</b>	<b>Kvs</b>	16	36	70	210	340	660	810	1300	2100	3400	4800
	<b>Cv</b>	18	42	81	243	393	763	936	1503	2428	3931	5549
	<b>Seat Ø [mm]</b>	18	26	36	60	76	105	135	170	210	290	350
<b>60%</b>	<b>Kvs</b>	12	22	43	135	200	320	410	820	900	1800	2700
	<b>Cv</b>	14	25	50	156	231	370	474	948	1040	2081	3121
	<b>Seat Ø [mm]</b>	16	21,5	29,5	50	60	86	106	146	163	225	271
<b>40%</b>	<b>Kvs</b>	10	16	31	95	120	185	250	540	570	1120	1600
	<b>Cv</b>	12	18	36	110	139	214	289	624	659	1295	1850
	<b>Seat Ø [mm]</b>	14	18,5	25,5	44	53	73	88	126	133	184	221
<b>25%</b>	<b>Kvs</b>	4	12	19	56	90	125	160	320	410	860	870
	<b>Cv</b>	4,6	14	22	65	104	145	185	370	474	994	1006
	<b>Seat Ø [mm]</b>	10	16	21	37	45	62	73	102	116	160	175

### 3c. Seat with Soft Sealing - FTC

<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>400</b>	<b>500</b>
<b>NPS [inch]</b>	<b>1</b>	<b>1 1/2</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>6</b>	<b>8</b>	<b>10</b>	<b>12</b>	<b>16</b>	<b>20</b>

#### Flow rate

	<b>Kvs</b>	12	36	68	180	290	535	730	1220	2000	2700	4800
<b>100%</b>	<b>Cv</b>	14	42	79	208	335	618	844	1410	2312	3121	5549
	<b>Seat Ø [mm]</b>	16	26	35	54	70	98	128	160	204	270	350
	<b>Kvs</b>	11	22	43	135	200	320	410	820	900	1800	2700
<b>60%</b>	<b>Cv</b>	13	25	50	156	231	370	474	948	1040	2081	3121
	<b>Seat Ø [mm]</b>	15	21,5	29,5	50	60	86	106	146	163	225	271
	<b>Kvs</b>	10	16	31	105	120	185	250	540	570	1120	1600
<b>40%</b>	<b>Cv</b>	12	18	36	121	139	214	289	624	659	1295	1850
	<b>Seat Ø [mm]</b>	14	18,5	25,5	46	53	73	88	126	133	184	221
	<b>Kvs</b>	4	12	19	56	90	125	160	320	410	860	870
<b>25%</b>	<b>Cv</b>	4,6	14	22	65	104	145	185	370	474	994	1006
	<b>Seat Ø [mm]</b>	10	16	21	37	45	62	73	102	116	160	175

**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>400</b>	<b>500</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>16</b>	<b>20</b>
<b>Weight [kg]</b>	<b>8</b>	<b>15</b>	<b>20</b>	<b>40</b>	<b>50</b>	<b>100</b>	<b>160</b>	<b>220</b>	<b>250</b>	<b>450</b>	<b>850</b>

**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>400</b>	<b>500</b>
<b>PN 10</b>	<b>Length [mm]</b>	<b>160</b>	<b>200</b>	<b>230</b>	<b>310</b>	<b>350</b>	<b>480</b>	<b>600</b>	<b>730</b>	<b>500</b>	<b>600</b>	<b>700</b>
<b>PN 16</b>												
<b>PN 25</b>												
<b>PN 40</b>												

**Table 6. ANSI Face-to-Face Dimensions, Series 37**

	<b>NPS</b>	<b>1</b>	<b>1 1/2</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>6</b>	<b>8</b>	<b>10</b>	<b>12</b>	<b>16</b>	<b>20</b>
<b>CL 150</b>	<b>Length [mm]</b>	<b>184</b>	<b>222</b>	<b>254</b>	<b>298</b>	<b>352</b>	<b>451</b>	<b>543</b>	<b>673</b>	<b>500</b>	<b>600</b>	<b>700</b>

**Table 7. ANSI Face-to-Face Dimensions, Series 38**

	<b>NPS</b>	<b>1</b>	<b>1 1/2</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>6</b>	<b>8</b>	<b>10</b>	<b>12</b>	<b>16</b>	<b>20</b>
<b>CL 300</b>	<b>Length [mm]</b>	<b>197</b>	<b>235</b>	<b>267</b>	<b>317</b>	<b>368</b>	<b>473</b>	<b>568</b>	<b>708</b>	<b>500</b>	<b>600</b>	<b>700</b>

**Order specifications:**

Type	According to table
Valve size	DN / NPS
Nominal pressure	PN / CL
Body material	According to table
Seat version	Metal or soft sealing
Characteristic	Equal percentage / linear / AUF-ZU
Kvs/Cv	According to table
Direction of flow	FTO (medium opens) FTC (medium closes)
Actuator	Type
Type of mounting	Mounting location of actuator
Fail-safe action	when supply air fails Fail-close (FC) Fail-open (FO)
Max. differential pressure for actuator	... bar
Supply air	... bar
Bench range	... bar
Accessories	e.g. positioners, limit switches, solenoid valve etc.
Others	e.g. special version, certificates, approvals, documentation etc.

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