



Series 73 - Rotary Plug Valve Type 73.7 High Pressure

Double eccentric control valve for process engineering and industrial applications.

Valve size	DN 25 to 500	NPS 1 to 20
Nominal pressure	PN 63 to 160	Class 600, 900, 1500*, 2500*
Temperature	-196 to +500 °C	-321 to +932 °F



* Depending on valve size. Other pressure ratings on request.

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 F 1 / 0.6 / 0.4 / 0.25

Flanged version

- DN 25, PN 63 to PN 160, face-to-face dimensions acc. to EN 558, Table 2, Series 2
- DN 40 to DN 500, PN 63 to PN 160, face-to-face dimensions acc. to EN 558, Table 2, Series 15
- NPS 1, Class 600, face-to-face dimensions acc. to EN 558, Table 2, Series 39
- NPS 1, Class 900, face-to-face dimensions acc. to EN 558, Table 2, Series 54
- NPS 1½ to NPS 20, Class 600 to Class 900, face-to-face dimensions acc. to EN 558, Table 2, Series 15

Further versions

- With temperature extension IT2 for cryogenic service, fig. 5
- With high and low temperature extension IT1, fig. 6
- Double stuffing box DSB, fig. 7
- Heating jacket, fig. 8
- Flushing connections, fig. 9
- TA-Luft packing
- 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 DIN EN 60534-6-1 and VDI/VDE 3847-2.

Configuration samples

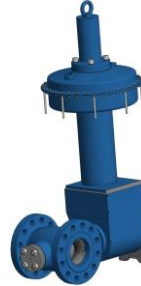


Fig. 1: Type 73.7/MZ



Fig. 2: Type 73.7/MD



Fig. 3: Type 73.7/AT



Fig. 4: Type 73.7/R

Special designs



Fig. 5: Type 73.7-IT2



Fig. 6: Type 73.7-IT1



Fig. 7: Type 73.7-DSB



Fig. 8: Type 73.7-Heating Jacket



Fig. 9: Type 73.7- Cleaning connection

Principle of operation

The shaft/plug arrangement is eccentric Figs. 10 and 11. 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. The rotary plug valve can be used for both directions of flow.

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.

The flow coefficient depends on the opening angle of the valve.

Using positioners, the natural characteristic of the rotary plug valve can be modified to achieve a linear or equal-percentage characteristic Figs. 12 and 13.

Fail-safe action

In combination with the Type R/M/other 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.

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

Installation

An arrow on the valve indicates the direction of flow the valve has been configured for.

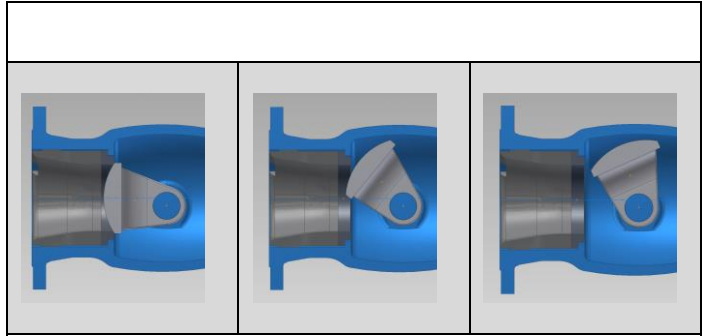


Fig. 10: Plug movement with Double-Eccentric Arrangement

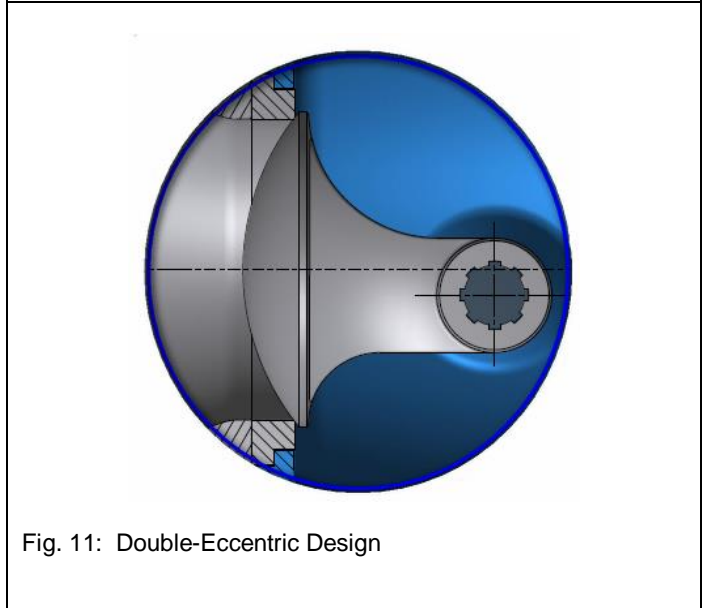


Fig. 11: Double-Eccentric Design

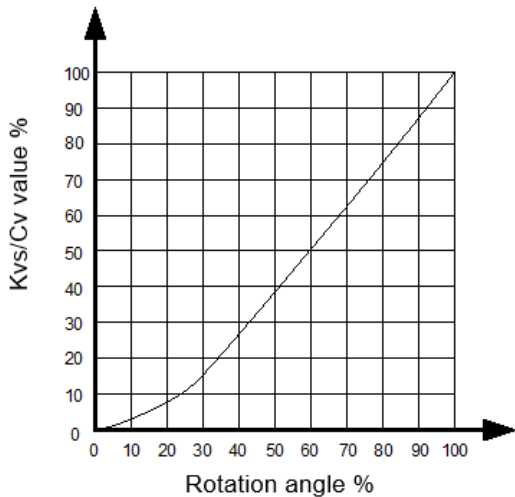


Fig. 12: Natural characteristic

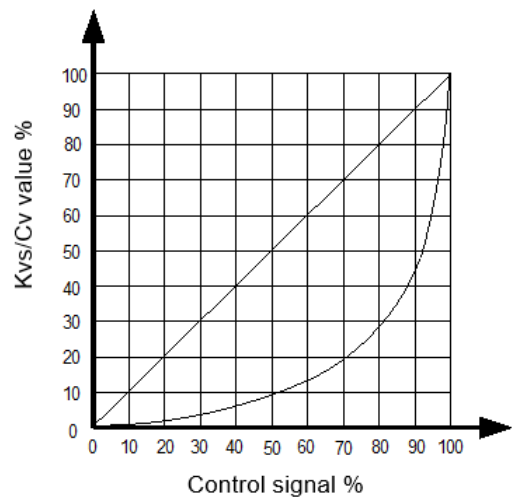


Fig. 13: Equal-percentage and linear characteristic

Table 1: Technical data

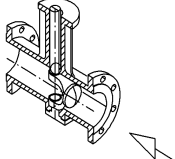
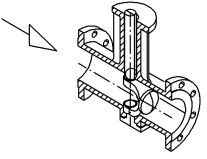
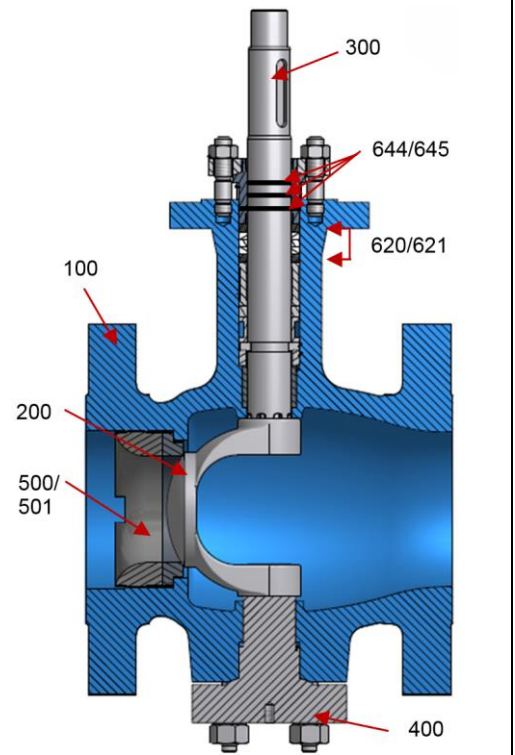
Type		73.7			
Valve size	DN 25 to 500		NPS 1 to 20		
Style	Flange		Flange		
Flange pressure rating	PN 63/100/160		ANSI Class 600/900		
Max. operating pressure	160 bar		160 bar		
Overall length	DN 25	DN 40 to DN 500	NPS 1 Class 600 only	NPS 1½ to NPS 20	
	EN 558, Table 2, Series 2	EN 558, Table 2, Series 15	EN 558, Table 2, Series 39	EN 558, Table 2, Series 15	
Flange bore/form	DIN EN 1591-1/DIN 2500		ASME B16.5		
Seat ring	 Direction of flow from the front: FTO		 Direction of flow from behind: FTC		
Characteristic	Equal percentage / linear characteristic by means of positioner				
Rangeability	Up to 200:1				
Opening angle	75°				
Movement of the plug	Closing counterclockwise				
Leakage class acc. to DIN EN 60534-4	Standard - metal seat		Optional - soft seat		
	IV		VI		
Temperature range in °C	-196 bis +500				
Body	Without insulating section		-40... +350		
	With insulating section IT1		-100...-40 / 350... 500		
	With insulating section IT2		-196... -100 / ab 500		

Table 2: Standard Materials

Body 100	1.0619 -10... +400 °C	A216 WCC -29... +400 °C	1.4408/A351 CF8M -196... +500 °C
Plug 200	R30006 Stellite® 6; 1.4408 stellite		
Shaft 300	1.4542 17-4PH® -29... +315 °C	1.4404 and 1.4980 -196... +500 °C	
Trunnion bearing 400	1.4404 stellite; 1.4408 stellite		
Seat ring 500	1.4404 stellite; 1.4408 stellite		
Seat holder 501	1.4404; 1.4408		
Packing 620/621	PTFE/Graphite -29... +280 °C	Graphite, Aramid -196... +500 °C	
O-ring 644/645	FPM 80		
Seal	ss/Graphite		



Other materials on request.

Table 3. Kvs and Cv Coefficients

3a. Seat with metal sealing FTO

DN	25	40	50	80	100	150	200	250	300	400	500
NPS	1	1½	2	3	4	6	8	10	12	16	20

Flow rate

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

3b. Seat with metal sealing FTC

DN	25	40	50	80	100	150	200	250	300	400	500
NPS	1	1½	2	3	4	6	8	10	12	16	20

Flow rate

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

3c. Seat with soft sealing **FTC**

DN	25	40	50	80	100	150	200	250	300	400	500
NPS	1	1½	2	3	4	6	8	10	12	16	20

Flow rate

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

Table 4: Weight kg without actuator

DN	25	40	50	80	100	150	200	250	300	400	500
NPS	1	1½	2	3	4	6	8	10	12	16	20
Weight in kg	16	28	36	55	73	165	249	382	630	1209	2030

Table 5: DIN face-to-face dimensions

	DN	25	40	50	80	100	150	200	250	300	400	500
PN 63	Length in mm	230	240	250	280	300	350	400	450	500	600	700
PN 100												
PN 160												

Table 6: ANSI face-to-face dimensions

	NPS	1	1½	2	3	4	6	8	10	12	16	20
CL 600	Length in mm	210	240	250	280	300	350	400	450	500	600	700
CL 900		254										

Order specifications:

Type	According to table
Valve size	DN ...
Nominal pressure	PN ...
Body material	According to table
Seat version	Metal seal
Characteristic	Equal percentage or linear
Kvs/Cv	According to table
Direction of flow	Standard: FTO or FTC
Actuator	Type
Type of mounting	Mounting location of actuator
Fail-safe action	when supply air fails Fail-close Fail-open
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 etc.

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