POLNA®

ECCENTRIC DISC CONTROL VALVES
Z91-2473 SERIES

FUNCTION

The Z91-2471 series control valves feature a double eccentric disc with profied and drilled wings that make the valve suitable for flow control in cavitating services on liquids and for low noise flow control on compressible fluids.

These valves provide flow control with an excelent shut-off against high pressure drops applied in either direction due to the eccentric design of the disk. The double-eccentric design minimize the contact of disk with seal ring, reducing wear and torque requirements.

Moreover the particular design of the plug disc reduces dynamic torque and improves the flow characteristic that become equal percentage for low openings.

The reduction of CV coefficient due to the particular design of the disc in balanced by higher values of factors FL, XT andKi which allow the use of 1-2473 series valves for high pressure drop and angular travel up to 80° in liquid and gas services.

CONSTRUCTION

BODY

- type:	double flange, wafer on request.
- sizes:	8" through 80°.
- face-to-face dimension:	according to ISO 5752, EN 558.
- rating:	UNI/DIN PN 10, 16, 25, 40. ANSI 150/300.
- constructionmaterials:	A 216 WCB, AISI 316, AISI 316 L, aluminium bronze (ASTM B148 D).

DISC

- type:	double-eccentric design with drilled wings.
- flow characetristic:	modified linear with rangeability 100:1.
- materials:	A 216 WCB, AISI 316, AISI 316 L, aluminium bronze (ASTM B148 D).
- rotation:	through 80°, applications with travel up to 90° are possible in particular conditions and with electrical or hydraulic actuators.
- flow direction:	with flow on the flat side of the disc. The opposite direction is permissible but with reduced performances.

SEAL RING

- construction:	is constituted by a seal ring thightened against the body by a locking ring; two versions are available for any sizes: teflon as standard and metal type for high temperature services. Teflon and metal type are inter-changeable without any change up to DN 300 included.
- temperature capabilities:	teflon seal ring: max 200°C metal seal ring: max 375°C
- shutoff classification:	teflon seal ring: max leakage is conforming to class V IEC 534.4 limits - IEC code: VL2. Metal seal ring: class IV S1 IEC 534.4 (20 times better than class IV ANSI B16.104) IEC coed: IV-S1 L2.

SHAFT

- construction:	made in one piece and pinned sidewise to the disc.
- materials:	17-4-PH, AISI 316, AISI 316L, XM 19.

BEARINGS

- construction:	PTFE-lined, phenolic resin, technopolymer or all-metal bushing for high temperature services.
- temeprature capalilities:	PTFE-lined bearings, phenolic resin, technopolymer may be used up to 250°C without drop pressure limitations, all-metal bearings haven't practical limitions.

PACKING

- construction:	adjustable by follower and two screws; seal materials are graphited teflon split rings and pure graphite rings.
- temeprature capalilities:	graphited teflon rings: up to200°C pure graphite: no practical limits.

ACTUATORS

Up to DN 600 diaphragm pneumatic single action actuator 1-X-271 is available.
For larger sizes cylinder pneumatic actuators double action fail-safe can be supplied.
Electrical or hydraulic actuators available for all sizes.

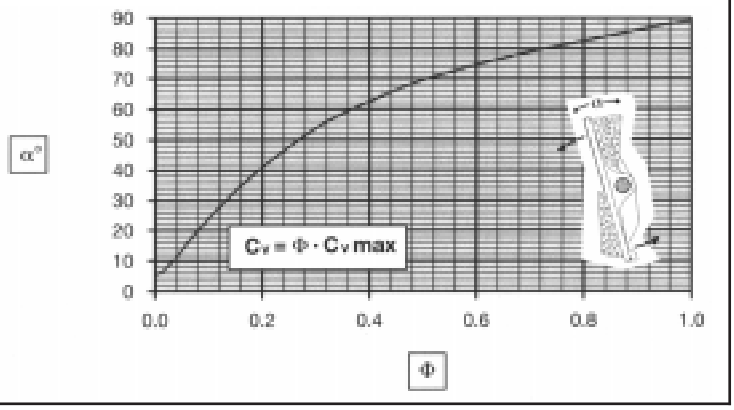
Cv, FL, X_T AND Ki COEFFICIENTS FOR 1-2473 SERIES

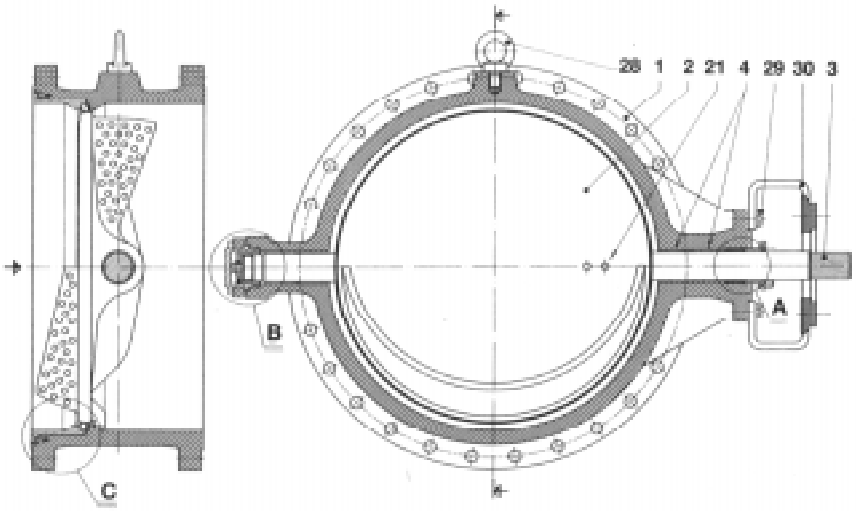
DN		CV		Open valve		∅	F_L	X_T	Ki (1)
mm	cale	90°	60°	%	α °	(%)			
200	8"	1900	700	5	4,5	1,0	0,85	0,61	0,55
250	10"	3000	1110	10	9,0	4,0	0,84	0,60	0,54
300	12"	4350	1610	20	18	7,5	0,83	0,58	0,53
350	14"	5950	2200	30	27	11,5	0,81	0,56	0,50
400	16"	7850	2910	40	36	17	0,79	0,53	0,48
450	18"	9950	3690	50	45	23	0,77	0,50	0,46
500	20"	12350	4580	60	54	32	0,76	0,47	0,44
600	24"	17900	6640	70	63	41	0,75	0,44	0,43
700	28"	24550	9100	80	72	57	0,73	0,42	0,41
800	32"	32350	12000	90	81	75	0,72	0,40	0,40
900	36"	41300	15320	100	90	100	0,70	0,36	0,38
1000	40"	51400	19060						
1200	48"	76750	28470						
1400	56"	105950	39300						
1600	64"	138400	51340						
1800	72"	175150	64980						
2000	80"	216250	80220						

(1) Ki = Incipient Cavitation Factor:

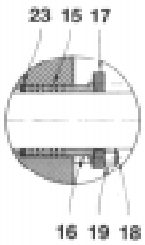
$$Ki = \frac{\Delta p_i}{p_1 - p_v}$$

Δpi = pressure drop across the valve where cavitation starts





Part. "A"



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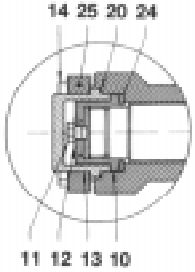
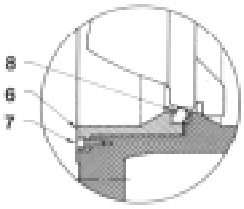


Part. "C"

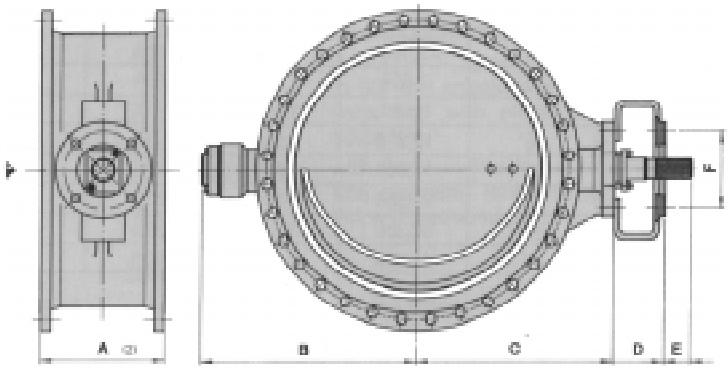


PART LIST

ITEM	PART NAME	QUANITITY
1	VALVE BODY	1
2	BUTTERFLY	1
3	SHAFT	1
4	BEARING	4
6	STOP RING	1
7	SCREW	SF
8	SEALING RING	1
10	ADJUSTING RING	1
11	SCREW	1
12	SAFETY WASHER	1
13	COVER	1
14	SCREW	4
15	PACKING	6
16	PACKING FOLLOWER	1
17	PACKING FLANGE	1
18	STUD	2
19	NUT	2
20	GASKET	1
21	PIN	2
23	SPACER	1
24	ANTIFRICTION RING	1
25	FLANGE	1
28	EYEBOLT	1
29	SREW	4
30	ACTUATOR SUPPORT	1

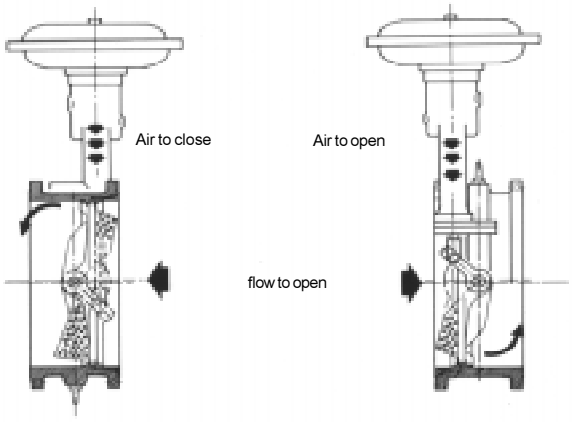
OVERALL DIMENSIONS (mm) AND MASSES (kg)

DN		A	B	C	D	E	F (1)	Mass
mm	in							
200	8	230	245	247	110	42	F14	75
250	10	250	270	272	110	42	F14	110
300	12	270	315	305	110	48	F14	150
350	14	290	332	322	110	48	F14	200
400	16	310	357	347	110	48	F14	250
450	18	330	410	390	150	63	F16	320
500	20	350	435	430	150	63	F16	450
600	24	390	523	507	150	63	F16	600
700	28	430	575	555	150	63	F16	790
800	32	470	625	610	175	100	F25	950
900	36	510	675	660	175	100	F25	1300
1000	40	550	725	725	175	100	F25	1550
1200	48	630	980	910	200	160	F35	2550
1400	56	710	1080	1010	200	160	F35	2980
1600	64	790	1225	1140	200	160	F35	3400
1800	72	870	1325	1240	250	250	F40	4500
2000	80	950	1450	1350	250	250	F40	5900



NOTE
(1)- ISO 5211 flange dimension.
(2)- DN ≤ 400 ± 1,5
DN ≥ 600 ± 2

FLOW DIRECTION



MOUTING
Check the flow drrection outlined on the plate fixed on the body. Take in car that the standard flow direction is in oposite shaft sied.
For others informations see the instructions and maintenance book.

POLNA®

DIstrIbutor:

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