

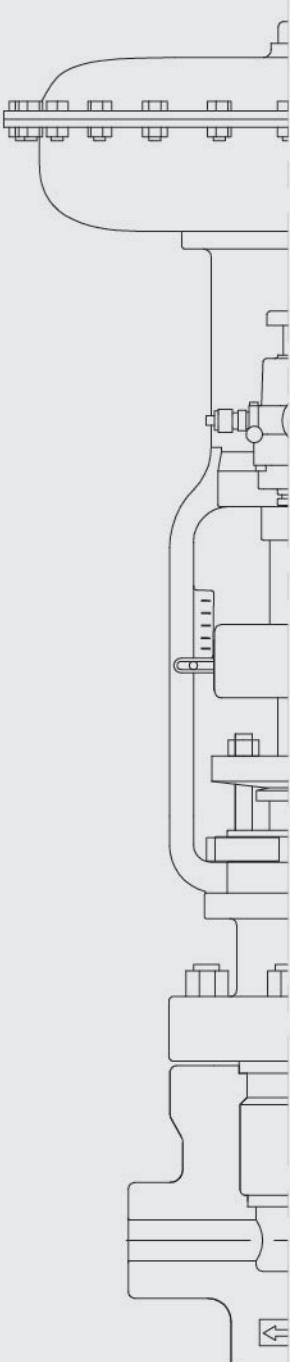


Energy Fluid Technology Solution

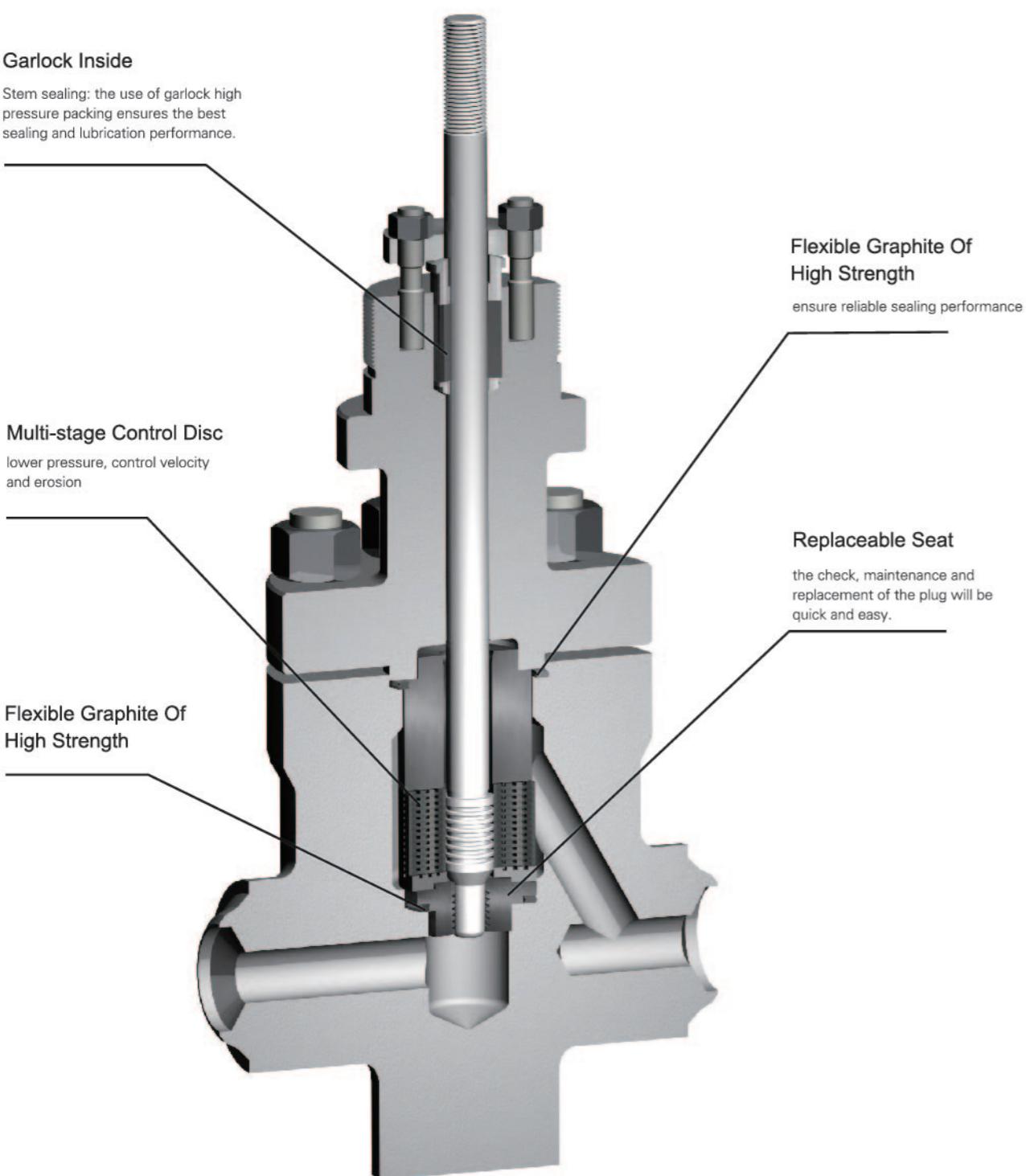
Delan 德兰调节阀
DELAN MX2500 SERIES

Content

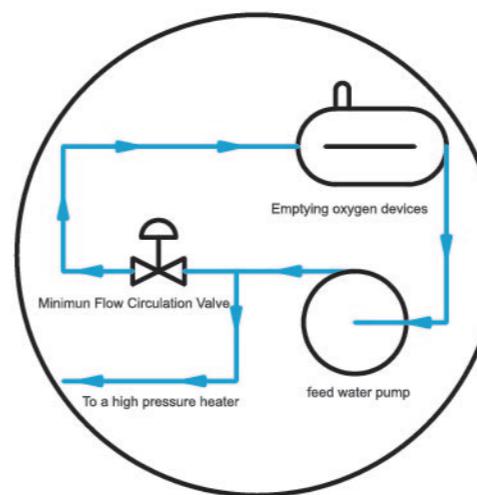
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Anatomical Drawing



Typical Application

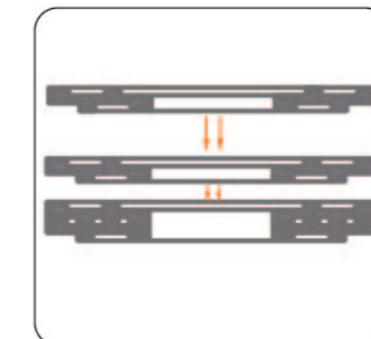


Minimum flow circulation valve is the key supporting equipment of power plant's boiler feedwater pump. Boiler water from the feedwater pump will be pressurized up to 20–30Mpa or above in the deaerator then sent to the high pressure heater and eventually into the boiler. A certain minimum flow quantity of the feedwater pump should be ensured to take away the heat generated by its operation so as to avoid overheating and damage of vanes due to cavitation. Boiler feedwater flow is small during the startup and shutdown process while the water demand decreases in condition of breakdown. In order to ensure the normal operation of the pump, a recirculation system should be mounted in the pump outlet to carry a portion of the feedwater back to the deaerator from the pump.

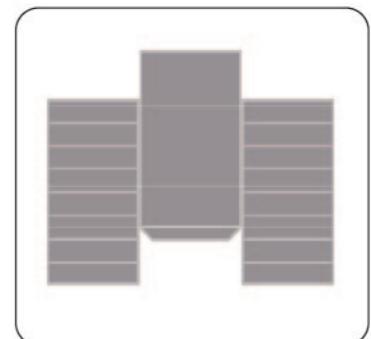
Valve Characteristic



circulatory convection mechanism



disc stack



welding assembly

Circulatory convection mechanism, multi-stage pressure reducing

Innovative design concept

Circulatory convection structure control valve is a new generation of control valve for high pressure difference and anti-cavitation application which is developed from multiple orifice, anti-cavitation sleeve valve, multi-stage plug throttle control valve and labyrinth disc control valve. Circulatory convection disc, as the key component applies special structure and technology. Compared with the popular labyrinth disc, it has the similar appearance but rather different function and mechanism. Labyrinth disc has several independent and tortuous groove passages on the round disc which can add resistance and reduce pressure gradually through a number of turns and then prevent cavitation during the process of pressure reducing. Circulatory convection disc also has dozens of groove passages. Fluid makes their way from outer ring to inner ring through the Radial slot. During this process, a portion of the fluid deviated while the other portion joined together. The hit, friction and swirl produced by the high speed molecule will consume a large volume of energy and reduce pressure more efficiently. It has a better pressure reducing, anti-cavitation, noise attenuation performance and longer service life compared with labyrinth disc.

Valve Characteristic

Eight peculiar advantages

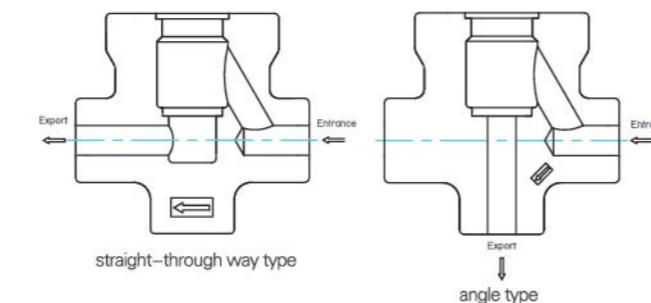
With scientific design principle, proper inner structure, high-performance material and original technique, our minimum flow valve has some unique advantages as bellow:

- Circulatory convection, multi-stage pressure reducing mechanism, avoid cavitation efficiently, prolong service life.
- All the trims can be quickly removed and replaced, easy to maintain with less cost.
- Imported high-quality stem packing ensures leak-free without frequent replacement.
- Scientific construction, high-performance materials and exquisite workmanship enable both the plug and cage to have excellent anti-blocking and anti-seizure performance so that a small amount of sundries in the pipeline will not lead to any blocking for the passage nor seizure for the plug in condition of frequent opening.
- Appropriately matched plug and cage materials provide an excellent resistance for abrasion, scratching and seizure.
- Zero leakage, long-service life and low breakdown rate ensure a safe and reliable operation of the feedwater pump.



Technical Parameters

- nominal diameter: 3/4" ~ 6"
- nominal pressure: ANSI 150Lb ~ 4500Lb
- Body type: straight-through way type, angle type
- operation temperature: 150°C~450°C
- Flow characteristics: equal percentage
- Actuator: electric or pneumatic actuator
- Leakage: meet ANSI B16.104 V leakage (VI level seal is available)



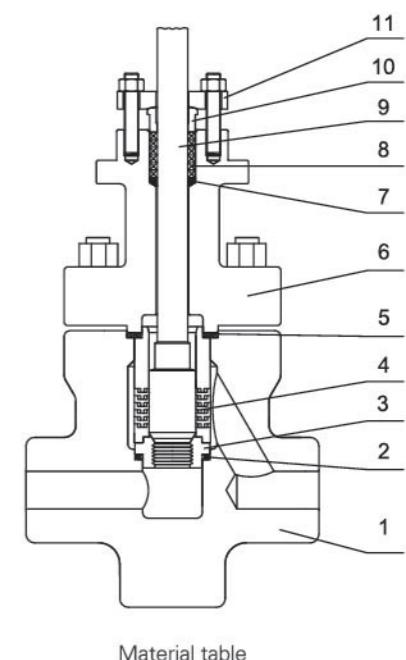
Both the pneumatic and electric valves have handwheels. In condition of gas or power loss manual operation is available to maintain throttling capability.

Design Standards

- Design and manufacture: ASME B16.34 JB/T 3595
- Check and test: JB/T 3595、MSS SP61
- End connection
 - butt weldingends: ASME B16.25
 - flange ends: ASME B16.5

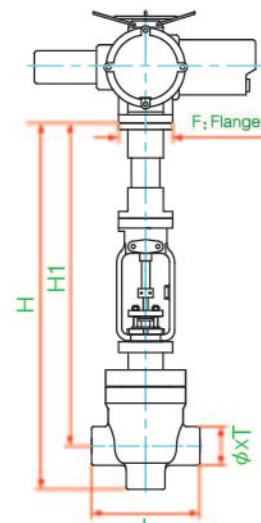
Material Table

No	Name	Material
1	body	A105
2	seat gasket	flexible graphite with 316 stainless steel wire
3	seat	1Cr13+stellite
4	disc assembly	17-4PH
5	flange gasket	flexible graphite with 316 stainless steel wire
6	bonnet	25
7	packing seat	1Cr13
8	packing	flexible graphite
9	stem	1Cr13+stellite
10	gland	1Cr13
11	plate	45

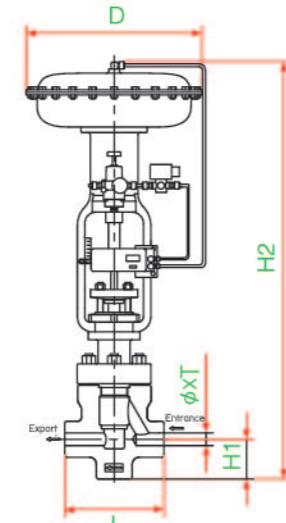


Material table

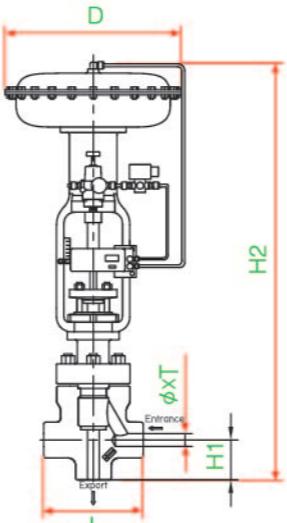
Dimension and Weight



electric minimum flow valve



pneumatic straight-through way minimum flow valve



pneumatic angle type minimum flow valve

Product Model

Size	Type	Pressure Rating	Connection	Body Material
2"	MX	15	F	C
Metric: mm	MX-pneumatic Actuator	1=150LB	W: Butt Weld	C: carbon steel
Imperial: Inch	KX-Electric Actuator	3=300LB	S: Socket Weld	
		6=600LB	F: Flange	
		9=900LB		
		15=1500LB		
		25=2500LB		
		35=3500LB		
		45=4500LB		

Performance Parameters

nominal diameter		L	H	H1	F: Flange	H2	H1	D	φxT	weight
Inch	mm	(mm)	(mm)	(mm)		(mm)	(mm)	(mm)		
3/4"	20	250	950	850	F10	884	100	333		80
1"	25	250	950	850	F10	884	100	333		80
1-1/2"	40	250	950	850	F10	884	100	333		80
2"	50	250	1035	935	F14	1058	100	406		86
2-1/2"	65	400	1115	1015	F14	1158	122	473		140
3"	80	498	1115	1015	F14	1258	140	473		220
4"	100	575	1320	1190	F14	1332	168	536		340
6"	150	700	1320	1190	F14	1332	212	536		380

nominal diameter(mm)	20	25	32	40	50	65	80	100	150
nominal pressure(Mpa)	25, 32								
body structure	straight-through way type, angle type								
direction of flow	flow-to-close								
actuator	electric or pneumatic actuator								
KV	2.5	2.5	6.3	6.3	10	16	25	63	90
rated stroke	38	38	38	38	51	51	51	76	76
control signal	switch value control, 4~20mA DC analog quantity control								
power source	electric:380V three-phase, single-phase; pneumatic: 0.4~0.7Mpa								

Material Pressure-Temperature Ratings

Class	Material	Pressure-Temperature Table(Standard)																					
		Pressure Bar																					
		Temperature°C																					
38	50	100	150	200	250	300	325	350	375	400	425	450	475	500	525	538	550	575	600				
150	A105/WCB	19	19	17	15	13	12	10	9	8	7	6	5										
	F11/WC6	19	19	17	15	13	12	10	9	8	7	6	5	4	3	2	1	1	1	1			
	F12	19	19	17	15	13	12	10	9	8	7	6	5	4	3	2	1	1	1	1			
	F22/WC9	19	19	17	15	13	12	10	9	8	7	6	5	4	3	2	1	1	1	1			
	F91/C12A	20	19	17	15	13	12	10	9	8	7	6	5	4	3	2	1	1	1	1			
300	F316/CF8M	19	18	16	14	13	12	10	9	8	7	6	5	4	3	2	1	1	1				
	A105/WCB	51	50	46	45	43	41	39	38	37	36	34	28										
	F11/WC6	51	51	49	48	46	42	41	40	38	36	35	33	31	25	18	14	12	8				
	F12	51	51	48	46	44	42	41	40	38	36	35	33	27	21	16	13	12	8				
	F22/WC9	51	51	50	48	46	42	41	40	38	36	35	33	31	28	21	18	15	10				
600	F91/C12A	51	51	50	48	46	42	41	40	38	36	35	33	31	28	26	25	25	24	19			
	F316/CF8M	49	48	42	38	35	33	31	30	30	29	29	28	28	28	26	25						
	A105/WCB	102	100	93	90	87	83	79	77	75	72	69	57										
	F11/WC6	103	103	99	95	92	85	82	80	77	73	70	67	63	51	37	29	25	17				
	F12	103	103	100	96	92	85	82	80	77	73	70	67	55	42	32	27	24	17				
800	F22/WC9	103	103	100	97	92	85	82	80	77	73	70	67	63	56	43	36	31	21				
	F91/C12A	103	103	100	97	92	85	82	80	77	73	70	67	63	56	52	50	49	47	39			
	F316/CF8M	99	96	84	77	71	66	63	61	60	59	58	58	57	57	56	52	50					
	A105/WCB	136	133	124	120	116	111	106	103	100	96	92	76										
	F11/WC6	137	137	132	127	123	114	110	107	103	97	93	90	84	68	49	39	33	23				
900	F12	137	137	134	128	123	119	114	110	107	103	97	93	90	74	57	43	36	32	23			
	F22/WC9	137	137	133	129	123	114	110	107	103	97	93	90	84	75	58	49	41	28				
	F91/C12A	137	137	137	133	129	123	114	110	107	103	97	93	90	84	75	69	66	63	52			
	F316/CF8M	132	128	112	102	95	89	84	82	80	79	78	77	76	75	69	66						
	A105/WCB	155	150	139	135	131	125	119	116	112	109	104	86										
1500	F11/WC6	155	155	154	149	143	139	128	124	120	116	109	105	101	95	77	55	44	38	26			
	F12	155	154	151	144	138	134	128	124	120	116	109	105	101	83	64	48	41	36	26			
	F22/WC9	155	155	154	150	145	139	128	124	120	116	109	105	101	95	84	65	55	46	31			
	F91/C12A	155	155	154	150	145	139	128	124	120	116	109	105	101	95	84	78	75	74	71	58		
	F316/CF8M	148	144	126	115	107	100	94	92	91	89	88	87	86	86	84	78	75					
1700	A105/WCB	255	250	233	225	219	209	199	193	187	181	173	143										
	F11/WC6	258	258	257	248	239	231	214	206	201	194	183	175	169	158	128	93	74	63	44			
	F12	258	257	252	240	231	224	214	206	201	194	183	175	169	158	140	108	92	78	52			
	F22/WC9	258	258	257	250	243	231	214	206	201	194	183	175	169	158	140	130	125	124	119	97		
	F91/C12A	258	258	257	250	243	231	214	206	201	194	183	175	169	158	140	130	125	124	119	97		
2500	F316/CF8M	248	240	211	192	178	166	158	154	151	149	147	145	144	143	140	130	125					
	A105/WCB	289	284	264	255	248	237	225	219	212	206	196	162										
	F11/WC6	293	293	291	281	271	262	242	234	227	219	207	198	191	179	145	105	84	71	49			
	F12	293	293	291	285	273	262	253	242	234	227	219	207	198	191	157	121	92	77	68	49		
	F22/WC9	293	293	291	284	275	262	242	234	227	219	207	198	191	179	159	123	104	8				