



ZDT Series Automatic Recycle Valve



INTRODUCTION

ZDT series automatic recirculation valve (ARC valve) is a kind of pump protection device. It automatic protect centrifugal pump when pump body occur cavitation damage or unstable (especially conveying hot water at low load operation medium). Once pump flow is lower than the preseted flow, bypass can completely open to ensure the minimum required flow pump. Even running fully closed, namely running flow is zero, the minimum flow can also pass bypass for Automatic Recycle. Pressure reduced through the multistage bypass pressure reducing valve.

ZDT series **automatic recirculation valve** has big bypass, and this valve is suitable for bypass with big flow, maximum pressure differential is 4MPa, specific choice is determined by factory.

CHARACTERISTICS

- ▶ Simple structure, operation reliable and stabile, with few movement parts.
 - ▶ Be easy for installation, can be installed vertically or horizontally on pump pressure outlet.
 - ▶ Bypass flow is large, maximum flow is 60% of main flow, KV value can be adjusted.
 - ▶ Maximum bypass operating pressure differential is 4MPa. Bypass non-return function is optional.
 - ▶ Applicable medium including: water, oil, methanol and other liquid medium.
- Working temperature is from -196℃ to +300 ℃.

DIAMETER AND PRESSURE RANGE

- ▶ Valve body type: three-way casting valve
- ▶ Nominal diameter: DN25, 32, 40, 50, 65, 80, 100, 200, 250, 300, 350, 400
- ▶ Nominal pressure: PN 16, 25, 40, 64, Class 150, 300 L, etc.
- ▶ Connection type: flange FF, RF, RTJ, BW, SW etc .

MATERIAL TEMPERATURE RANGE

Body Material Sealing Material	WCB	LCB/LCC	CF8	CF8M
NBR	-20~+100	-30~+100	-30~+100	-30~+100
FKM	-20~+200	-40~+200	-40~+200	-40~+200
PTFE	-20~+230	-40~+230	-80~+230	-80~+230
SS winding gasket	-20~+300	-40~+300	-196~+300	-196~+300

MODEL NO.

ZD	T	Nominal Pressure	Body Material	Main Diameter	/Bypass Diameter	Structure Type
Auto recirculation pump protection valve	T type bypass assembly	PN16=PN16 CLSS150 LB=CL150	C=WCB LC=LCB P=CF8 PL=CF3 R=CF8M RL=CF3M D=Customed	DN25=25 NPS1"=1"	DN25=25 NPS1"=1"	V=vertically mounted H=Horizontally mounted Z=Bypass non-return D=With discharge mouth

Such as: T type automatic recirculation valve, pressure is PN40, body material is WCB, main diameter DN50, Bypass diameter DN 25, vertically mounted, Model: ZDT-PN40-C-50/25-V

WORKING PRINCIPLE

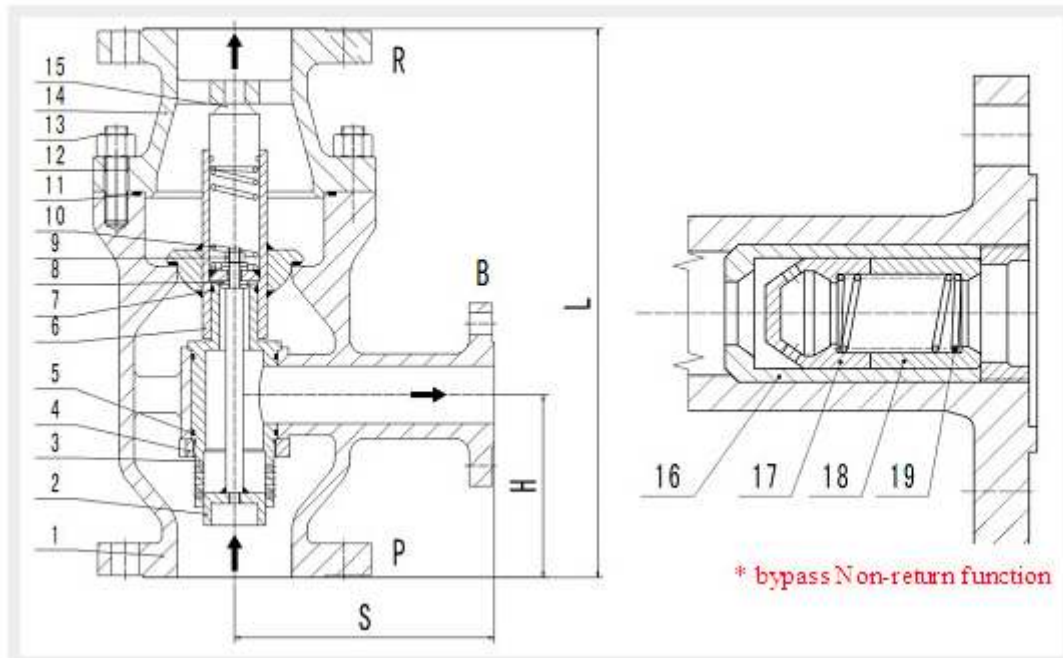
According to the difference of inductive main flow, main valve disc check cone of automatic recirculation valve will automatically move to a certain position. At the same time the main valve disc drive bypass valve stem, transfer the movement of main valve disc to bypass, through control bypass valve disc position, change bypass throttling area, so as to control bypass flow. When main valve disc back into valve seat closed, all flow backflow through bypass. When main valve disc to rise to top position, bypass is fully closed, all the flow of pump flow to process system. This valve set four functions in one body.

- ▶ Flow perception: automatic recirculation valve main valve disc can automatically perceive main flow of process system, thereby according to the flow to determine position of main valve disc and bypass disc.
- ▶ Recirculation control: automatic recirculation valve can inhale pump normal operation required minimum flow into storage device through bypass, so as to adjust pump H – Q characteristics, to realize recycling.
- ▶ Bypass multistage pressure reducing: bypass control system can reduce the backflow medium from high-pressure pump outlet to appropriate backflow to low-pressure storage device with low noise and small wear.
- ▶ Check: automatic recirculation valve also has check valve effect, preventing the liquid backflow to pump body. Bypass non-return function is optional.
- ▶ Special bypass size can be customized. The max flow rate of bypass is subject to the max Kv value.

SIZE

Valve Size	Mm	25	32	40	50	65	80	100	125	150	200	250	300
	In	1	1 1/4	1 1/2	2	2 1/2	3	4	5	6	8	10	12
Max main flow	m ³ /h	12	28	30	50	100	114	200	400	455	750	1250	1650
Bypass size	mm	15	20	20	25	40	40	50	80	80	100	100	150
	in	1/2	3/4	3/4	1	1 1/2	1 1/2	2	3	3	4	4	6
Max bypass Kv	Cv	2.3	4.6	4.6	6.9	18.5	18.5	34.7	69.3	69.3	116	116	170

Note: Valve main ouelet size depends on the outlet size of pump.



PARTS AND MATERIAL

NO	Name	Material		NO	Name	Material	
1	Body	WCB	CF8	11	O ring	EPDM	EPDM
2	Recycle disc	2Cr13	304	12	Stud bolt	45	0Cr18Ni9
3	Recycle seat	2Cr13	304	13	Hex nut	35	0Cr18Ni9
4	Screw gland	2Cr13	304	14	Bonnet	WCB	CF8
5	O ring	EPDM	EPDM	15	Guide block	2Cr13	304
6	Main disc	2Cr13+STL	304+STL	16	Bushing	2Cr13	304
7	O ring	EPDM	EPDM	17	Porous set	2Cr13	304
8	Gasket	2Cr13	304	18	End ring	2Cr13	304
9	Hexagon nut	304	304	19	Spring 2	60Si2Mn	1Cr18Ni9Ti
10	Spring	60Si2Mn	1Cr18Ni9Ti				

DIMENSION AND WEIGHT

Valve Specification DNP DNR	Size Mm (In)			Bypass (DNB)	Weight Kg	
	S	H	L		PN10/16/25 150lbs	PN40/64 300lbs
25 (1")	115	102	267	15	12	18
32 (1 1/4")	115	102	267	20	14	20
40 (1 1/2")	115	102	267	20	14	20
50 (2")	130	108	305	25	22	26
65 (2 1/2")	165	127	381	40	46	51
80 (3")	181	127	381	40	46	51
100 (4")	209	159	495	50	105	118
125 (5")	267	220	575	80	143	156
150 (6")	267	220	575	80	220	240
200 (8")	300	220	600	100	255	302
250 (10")	356	305	780	100	400	455
300 (12")	530	280	830	150	590	650