Automatic Recirculation Control Check Valve

RC/RM/RX-Series

for Centrifugal Pump Protection



GENERAL / 3-way Self-regulating Recirculation Check Valve System

The **"RC/RM/RX-series"** provides reliable, economical protection for centrifugal pumps against the serious damage from overheating and instability that can result from even a few minutes of low flow, By providing recirculation flow to the inlet of the pump, the RC-series helps ensure a minimum flow for stable pump operation.

The modulating RC/RM-series creates operating economies in several ways. The RC/RM-series recirculates only the flow required to help ensure a minimum flow through the pump at all times. Under full process main flow demand, recirculation flow is not required. But as the process main flow demand decreases, recirculation becomes necessary. Unlike continuous recirculation, the RC/RM-series responds directly to this need. The use of on RC/RM-series valve eliminates the need to oversize the pump and prime mover. Such over-sizing adds significantly to the capital cost of the pump and prime mover as well as to the cost of energy needed for operation.

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MODEL NUMBERING SYSTEM

Body Type	Body Size	Press. Rating	Body Materials	Connection Type
RC- Conventional trim	01-1"(25A)	**HF**-150#	**CB-**A216-WCB	**FF-**Flat Flange
RM-Multi-Stage Trim	**02**-1.5"(40A)	**TH**-300#	**8M-**A351-CF8M"	**RF**-Rajied flange
RX-X[iks]-trim Disk Stack Type (Option)	**03**-2"(50A)	**SH**-600#	**8X**-A351-CF8.	**RTJ**-Ring type joint
	04-2.5" (65A)	**NH**-900#	**XX**-Option	**SW**-socket weld
	05-3"(80A)	**TF**-1500#		**BW**-butt. weld
	06-4"(100A)	**TT**-2500#		**SC**-screwed
	07-5"(125A)	**XX**-Option		**XX-**Option
	08-6"(150A)			I
	09-8"(200A)			
	10-10"(250A)			
	11-12"(300A)			

Features & Benefits

Feature

Self-Regulating valve function as integral check valve, flow sensing element, bypass control valve, bypass actuator and multi-step pressure let-down valve.

Saves installation and maintenance costs

- Needs no electrical wiring, plant or instrument air.
- Eliminates other components of a conventional system.

Reduced Down Time

- Minimizes the problems of high-velocity wiredrawing and cavitation erosion common to high pressure drop service.

Benefits

- Eliminates high cost of installation and maintenance of complex conventi -onal flow control loops.
- Eliminates cavitation in the valve and piping.
- Only three pipe connections.
- Eliminates any power source or instru -ment signal.

Valve Sizes & Connection

- 1" to 12" Main discharge feed.
- 1" to 3" Recirculation discharge.
- Flanged or Welding end connection.

Valve Pressure Ratings

- ANSI 150/300/600/900/1500/2500.

Temperature Limitations

- 500deg.F (260deg.C)

RC/RM-series for Pump Protection

3-way Automatic Recirculation Check Valve.

During critical low load periods, centrifugal feed pumps need a reliable recirculation system prevent pump instability and over-heating. Because many such systems are constructed of a number of components, the system can become both complex and costly, requiring, substantial outlays for design, instal-lation and maintenance.

BFS's RC/RM-series, on the other hand, is a complete system within itself. It actually performs four separate functions within the pumping circuit-all with on compact body. Essentially, the RC/RM-series is a check valve installed in the main line. But it also acts as the sensing and powering Element which pilots the operation of the recirculation control Valve. The sensing system responds to changes in flow rather than pressure.

The Control valve incorporates a pressure reducing device that divides recirculation flow and guides the resulting streams through successive 90deg. turns to dissipate the destructive of high pressure while controlling fluid velocity.



MATERIALS

Carbon Steel or Stainless Steel Body

		-196degC.	-20deg.C		350deg.C	425deg.C	450deg.C
Part No.	**Name of Part**	**Temperature Range**					
1	Lower Body	A351-CF8M		A216-WCB or A105			A351-CF8M
2	Upper Body	A351-CF8M		A216-WCB or A105			A351-CF8M
3	Disc	316SS+STF		420 SS			316SS+STF
4	Guide	316SS+STF		420 SS			316SS+STF
5	Stem	17-4PH / 630 SS					
6	Branch	316 SS		A216-WCB or A105			316 SS
7	Control Head	316 SS		420 SS			316 SS
8	Muti-Step-Nozzle	316SS+STF		420 SS			316SS+STF
9	Throat	316SS+STF		420 SS			316SS+STF
10	Relief Bush	316 SS		420 SS			316 SS
11	Nut	316 SS					
12	Piston-Ring	Teflon		Viton			Karlez
13	Lever	316 SS		420 SS			316 SS
14	Orifice	316 SS		420 SS			316 SS
15	Spring	304 SS					
16	Orifice-O-Ring	Teflon		Viton			Karlez
17	Bolt & Nut	316 SS		Steel			316 SS

Other Materials are available.

VALVE SIZE SELECTION GUIDE

Main Size	1.5" (40A)	2" (50A)	2.5" (65A)	3" (80A)	4" (100A)	5" (125A)	6"(150A)	8"(200A)
Main Flow	35m3/hr	50m3/hr	85m3/hr	130m3/hr	200m3/hr	300m3/hr	450m3/hr	800m3/hr
Disch. Size	1' (25A)	1" (25A)	1.5" (40A)	1.5" (40A)	2" (50A)	2" (50A0	2.5" (65A0	3" (80A)
Disch. Flow	15m3/hr	20m3/hr	40m3/hr	45m3/hr	60m3/hr	70m3/hr	125m3/hr	200m3/hr

- This table is only for your referance.
- Valve Friction Loss (Differential Pressure)

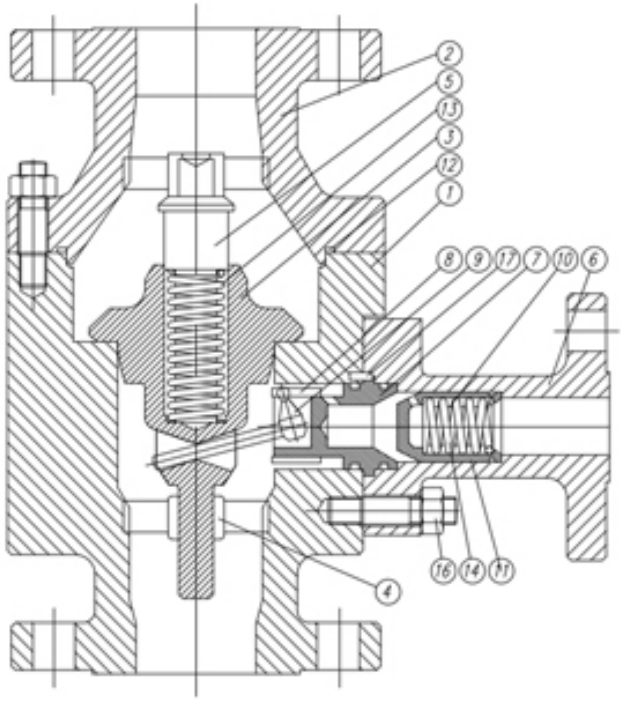
  Delta P = (Actual Main Flow / Max. Main Floe)2 x 0.8 x S.G (unit/bar)

X[iks]-trim for HIGH DELTA-P SERVICE

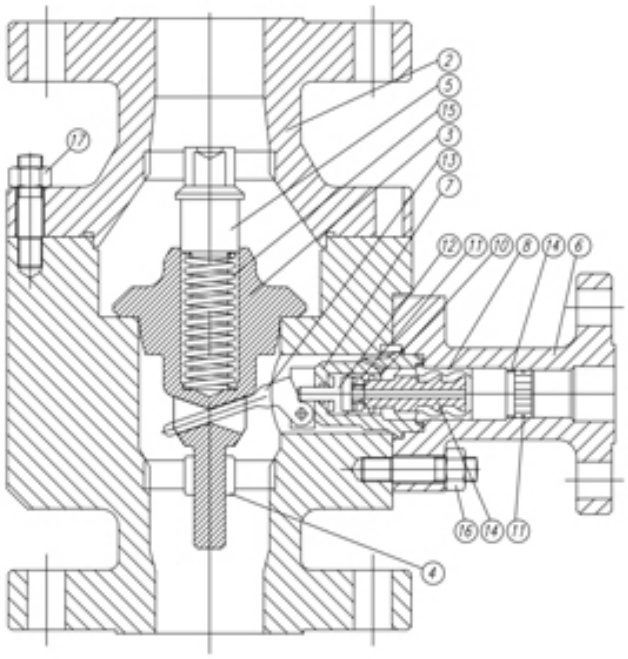
X[iks]-trim application instead od multi-step Trim is highly suitable for high differential pressure service.

This pressure reduction device is for preventing from noise and vibration by controlling speed. Flow path with maze shape of X[iks]-trim is highly effective for preventing from pipe damage caused by cavitations, noise and vibration. This is customized engineered design based on service condition. And discharge side dimension of standard main pipe connection is a bit bigger than standard discharge pipe connection

BODY CONSTRUCTION



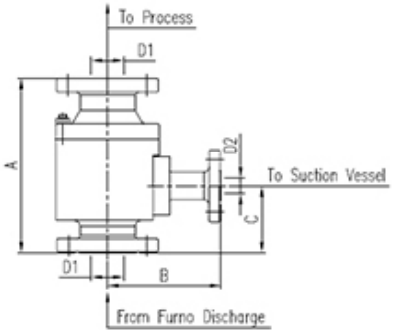
RC-series / Automatic Recirculation Conventional Check Valve



RM-series / Automatic Recirculation Multi-stage Check Valve

DIMENSIONS

RC/RM/RX-series



No	Size (inch/mm)		Press Rating		Dimension / mm			Remarks
	in x out	discharge	㎏	ANSI	A	B	C	
1	1.5"(40A)	1"(25A)	10K	150#	200	155	75	
2			20K	300#	260	190	90	
3			40K	600#	260	190	90	
4			63K	900#	300	200	110	
5			100K	1500#	310	215	120	
6	2"(50A)	1"(25A)	10K	150#	230	160	90	
7			20K	300#	300	185	110	
8			40K	600#	300	190	110	
9			63K	900#	340	200	130	
10			100K	1500#	350	230	130	
11	2.5"(65A)	1.5" (40A)	10K	150#	290	175	110	
12			20K	300#	340	200	125	
13			40K	600#	340	220	125	
14			63K	900#	380	230	140	
15			100K	1500#	400	250	145	
16	3" (80A)	1.5" (40A)	10K	150#	310	190	115	
17			20K	300#	380	220	140	
18			40K	600#	380	240	140	
19			63K	900#	410	250	150	
20			100K	1500#	450	275	165	
21	4" (100A)	2" (50A)	10K	150#	350	210	125	
22			20K	300#	430	240	155	
23			40K	600#	430	265	155	
24			63K	900#	450	280	160	
25			100K	1500#	520	300	190	
26	5" (125A)	2" (50A)	10K	150#	400	265	135	
27			20K	300#	500	290	175	
28			40K	600#	500	300	175	
29			63K	900#	525	310	185	
30			100K	1500#	650	340	235	
31	6" (150A)	2.5" (65A)	10K	150#	480	295	165	
32			20K	300#	550	320	190	
33			40K	600#	550	335	190	
34			63K	900#	585	350	200	
35			100K	1500#	700	370	250	
36	8" (200A)	3" (80A)	10K	150#	600	360	200	
37			20K	300#	650	390	215	
38			40K	600#	650	400	215	
39			63K	900#	675	400	225	
40			100K	1500#	850	450	295	

SPECIFICATION SHEET of RC-Series

Our sales representatives will help you select the correct valve for your application.

Please complete this form before contacting he sales office to help ensure all necessary information is Provided.

SPECIFICATION SHEET

Automatic Recirculation Control Check Valve

1	**Project**				**Tag. No**			
2	**Customer**				**Qty**		**Item No**	
3	**Location**				**Model No**			
4	**Ref. No.**				**Serial No.**			
5	**Fluid**				**Date**			
6	**Service**							
7	**Pump Flow**							
8		**Unit**	**Max.**	**Nor**	**Min**			
9	**Flow**	**LPM**						
10	**Inlet Press**	**BarG**						
11	**Outlet Press**	**BarG**						
12	**Diff. Press**	**Bar**						
13	**Tdeg. C**	**deg.C**						
14	**Spec. Gravity**	**S.G**						
15	**Vapor Pressure**	**Bar**						
16	**Viscosity**	**CP**						
17	**Pump pressure at minmum pump protection flow**							
18	**RC-Series valve bypass line pressure**							
19	**Pump Discharge Pressure**							
20	Pump pressure at Shut-off (zero flow)							
21	Pump pressure at Normal-process-flow							
22	Pump pressure at minmum pump protection flow							
23	RC-Series valve bypass line pressure							
24	**General Specification**							
25	Orientation of RC-Series Valve							
26	Type of End Connection							
27	Pressure Rating							
28	Body Material							
29	Trim Material							
30	Seal Material							
31	**Pump Drive Type**							
32	**Nace Materials Required**							
33	**Etc. Required**							
	Note							
34								
35								
36								
37	`							
38	**Prepared**		**Approved**			**Rev.**		
39	**Prepared**		**Approved**			**Rev.**	**0**	

Automatic Recirculation Control Check Valve

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