DURCON

THE RIGHT PRODUCT FOR YOUR APPLICATION

Vice 40 years

AUTOMATIC RECIRCULATION CONTROL VALVE FOR CENTRIFUGAL PUMPS PROTECTION MODEL NVL

BENEFITS:

- The protection of centrifugal pumps that saves millions in maintenance
- Maximize the availability of the plant;
- Save on maintenance of the pump;
- Save the installation (smaller pump);
- Save in energy consumption (smaller driver).

FEATURES:

A complete system with FIVE functions

1 - Main flow check valves;

2 - Pump to process flow sensing element;

3 - Modulating bypass flow control;

4 - Multi stage pressure reduction of bypass flow;

5 - Self-operated and compact.

Sizes: 2” to 30”

Pressure class: 150# to 300#

Construction standard: ASME B16.34

Connections: Flanges ANSI, DIN, BS and JIS

ISO 9001 BUREAU VERITAS Certification

FUNDAÇÃO ABRINQ RECONHECE EMPRESA AMIGA DA CRIANÇA

CE

BENEFITS

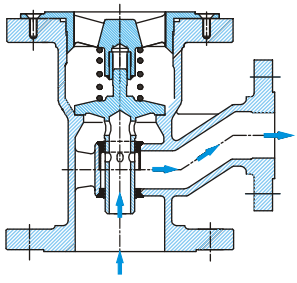
- **Stabilizes pump and process operating conditions.** The modulating control of the recirculation flow system avoids large shift in the flow through the pump.
- **Operational economy and Energy conservation.** When the process flow demand is larger than minimum flow required by centrifugal pump, recirculation flow is cut off automatically. This will result in thousands of dollars savings in power loss when recirculation is continuos.
- **Saves Installation costs.** Compact, self-contained, only three pipe connections, simplifies system design and reduces installation costs. Eliminates needs for power source, electrical wiring and instrumentation signals. It also reduces the need for oversized pump, base and driver.
- **Environmentally safe.** Zero emission, no dynamic seals, no packing box, make our **DURCON** model **NVL** an ideal and reliable product for today's low emission valves. Extremely reliable for operation even with environmentally dangerous fluids.
- **Low Maintenance. DURCON NVL** is self-powered and totally mechanical. No linkage, actuator or pilot valves. Less sensitive to clogging because of solids in fluids. Operates without supervision, adjustments or maintenance.

Recirculation control valves, with calibrate ori ces, provides modutating control for precise pump protection. **By-pass pressure reducing element** designed for quiet and safe operation.

OPERATION

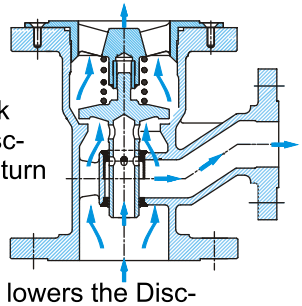
The Disc-Piston assembly not only functions as a main flow check valve, it is also the main flow sensing element. The disc is designed to operate in accordance with the main flow fluctuations in order to provide mechanical position for by-pass valve operation.

No main flow



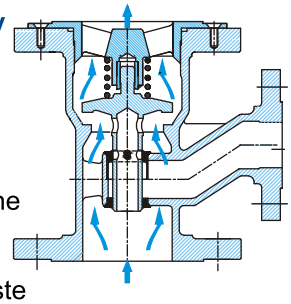
The Disc- Piston assembly acts as a check valve for the main flow, thus preventing reverse flow through the centrifugal pump. In this position, the Recirculation control valve that is part of the Disc-Piston, is fully open, precisely controlling the desired recirculation flow.

Combined flow



Main flow passing through the guided check valve, lift the Disc-Piston, which in turn reduces the Recirculation Flow. Reduction in the main flow, lowers the Disc-Piston, increasing the recirculation flow, thus maintaining the minimum specified flow through the pump.

Main flow only



When the main flow is greater than the minimum flow required by the pump, the recirculation flow is closed eliminating waste of energy.

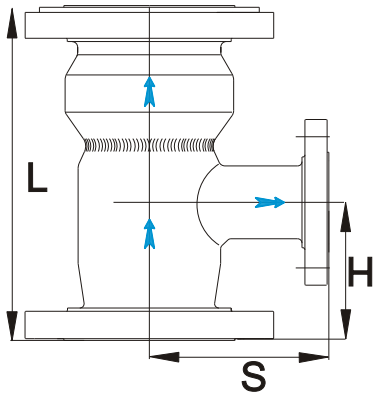
TYPICAL APPLICATIONS

DURCON NVL valves are designed to handle a wide range of applications as follows:

Aviation fuel pumps
Boiler feed water pumps
Condensate pumps
Crude oil loading pumps
Dessulphurization systems
Fire fighting systems
Injection systems
Loading platforms
Seawater injection systems
Steel works descaling

DIMENSIONS AND WEIGHTS

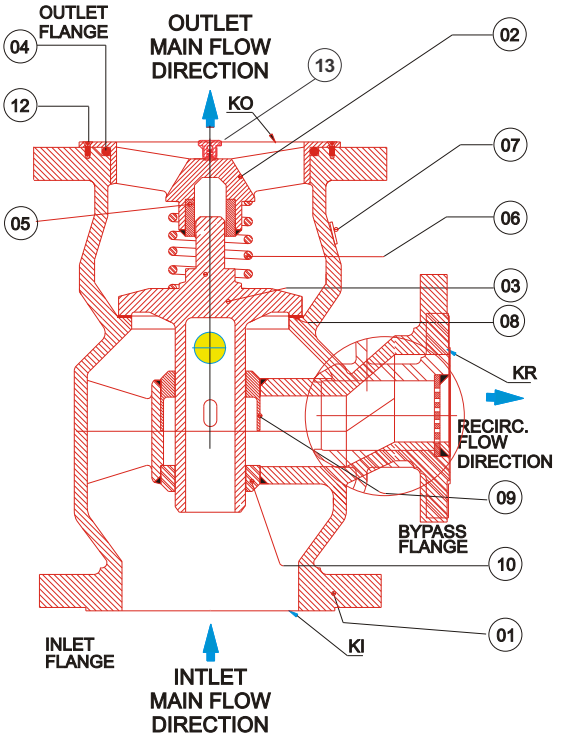
NOMINAL SIZE Inch (mm) Main	NOMINAL SIZE Inch (mm) By Pass	ANSI CLASS PN	DIMENSIONS IN (MM) L	DIMENSIONS IN (MM) H	DIMENSIONS IN (MM) S	WEIGHT Lb (Kg)
2 (50)	1 (25)	150	7,2 (183)	3,6 (92)	3,9 (100)	29 (13)
		300	8,8 (223)	4,3 (110)	4,9 (125)	40 (18)
3 (80)	1,5 (40)	150	8,0 (202)	3,9 (98)	5,1 (130)	42 (19)
		300	10,2 (259)	5,0 (126)	5,9 (150)	51 (23)
4 (100)	2 (50)	150	12,1 (308)	5,0 (127)	6,5 (165)	62 (28)
		300	12,4 (316)	5,7 (145)	6,7 (170)	88 (40)
6 (150)	4 (100)	150	14,3 (362)	6,6 (167)	8,0 (204)	99 (45)
		300	14,4 (366)	7,2 (182)	8,3 (212)	154 (70)
8 (200)	4 (100)	150	17,3 (440)	6,5 (165)	8,7 (220)	176 (80)
		300	18,9 (480)	7,7 (195)	9,8 (250)	264 (120)
10 (250)	6 (150)	150	22,6 (575)	7,9 (200)	10,0 (255)	397 (180)
		300	24,0 (610)	9,1 (230)	11,0 (280)	573 (260)
12 (300)	8 (200)	150	31,3 (795)	10,4 (265)	13,7 (348)	639 (290)
		300	32,0 (813)	11,1 (283)	14,2 (360)	683 (310)
14 (350)	10 (250)	150	35,3 (896)	12,5 (317)	14,8 (376)	705 (320)
		300	36,1 (916)	13,2 (336)	15,3 (388)	782 (355)



For sizes 16” to 30", consult DURCON

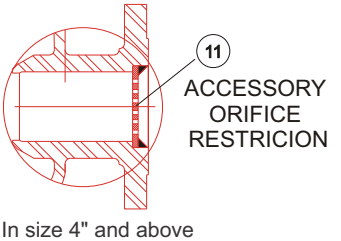
PART LIST/ MATERIALS

Item	Qty	Description	Carbon Steel Materials	Carbon Steel Specification	Stainless Steel Materials	Stainless Steel Specification
01	1	Body	CS	ASTM A 216 WCB	SS	ASTM A 351 CF8M
02	1	Upper Guide	CS	ASTM A 216 WCB	SS	ASTM A 351 CF8M
03	1	Disc/ Piston	SS	AISI 304 Surface Treated	SS	AISI 304 Surface Treated
04 ◢	1	O'ring	●	●	●	●
05	1	Upper Sleeve	SS	17-4 PH	SS	17-4 PH
06 ◢	1	Spring	SS	AISI 302	SS	AISI 302
07	1	Name Plate	SS	AISI 304	SS	AISI 304
08	-	Seat	SS	AWS E 316 L	SS	AWS E 316 L
09	1	By-pass Ring	SS	17-4 PH	SS	17-4 PH
10	1	Lower Slide Ring	SS	17-4 PH	SS	17-4 PH
11	1	Orifice Restricion (#)	SS	AISI 304	SS	AISI 304
12	2	Fastening Screw (allen)	AS	Alloy Steel	AS	Alloy Steel
13	1	Dampening Valve (#)	SS	AISI 304	SS	AISI 304



Notes: ● Elastomer/ PTFE/ Kalrez or Metal
◢ Recommended Spare Part
SS- Stainless Steel
CS- Carbon Steel
AS- Alloy Steel
(#) When required

Alternative materials available on request



In size 4" and above

SIZES AND CONNECTIONS

Sizes: from 2" to 30"

Connections: Flanged ANSI Class 150, 300 Lbs RF. Other connections such as RTJ, BW and DIN are available upon request.

Temperature Range: - 250ºF to + 600ºF. (-157ºC to 316ºC)

Optionals include:

- Valves conforming to NACE MR-01-75.
- External Back Pressure Regulator (when required)
- Sea water service
- Duplex Stainless Steel construction
- Others on request

Other valve models for higher pressures: Model **NVM** for pressure class up to 600#. Model **VRM** for pressure class 600# to 2.500#.

SELECTION

The nominal size of the valve is selected on the basis of the required main flow and the required bypass Cv and flow.

MAIN	Inlet- Outlet Size	In	2"	2,5"	3"	4"	6"	8"	10"	12"	14"
	Max. Flow	GPM	162	270	324	613	1082	2434	4327	8475	10456
		m³ /h	37	62	74	139	246	553	983	1925	2375

BYPASS	Size	In	1"	1.5"	1.5"	2"	4"	4"	6"	8"	10"
	Maximun CV/KV	Cv	8.0	10.0	12.0	17.0	36.4	91	170	425	565
		Kv	6.9	8.7	10.4	14.7	31.5	78.7	147.1	367.6	488.8
	Max. Flow	GPM	80	80	90	166	318	648	1300	2450	3750
		m³ /h	18.2	18.2	20.4	37.7	72.2	147.2	295.3	556.4	851.7

Flow values indicated above are for uids with speci c gravity 1. For uids with different specify gravity, ows must be corrected.

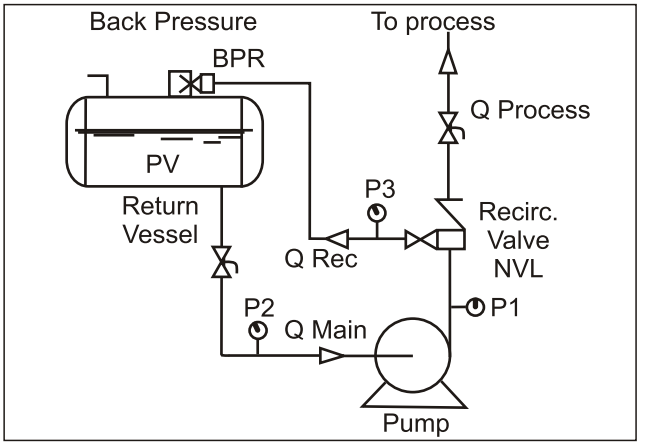
HOW TO SPECIFY AND BUY

- The centrifugal pump shall be protected against low flow operating conditions by the **DURCON** Automatic Recirculation Valve model **NVL** which is self contained and fully self actuated by sensing "flow to process".
- The valve must also prevent reverse flow from process to pump.
- Operation of the valve by-pass will be modulating such that the sum of the main flow to the process and the by-pass flow will never be less than the required minimum flow of the centrifugal pump.
- The pressure reducing elements of the valve will be designed to operate without flashing or cavitation during bypass operation. Any accessories such as multi-hole Orifice Plate or Back Pressure Regulator necessary to prevent flashing or cavitation in the bypass piping will be provided by the valve supplier.
- Valve will incorporate spring assisted check valve and directly actuated modulating bypass control valve.

APPLICATION DATA

When inquiring please complete the following information:
Company_____ Contact:_____
Quantity:_____ Pump discharge, Size and ANSI class:_____
Service:_____
Main flow max._____ ☐ GPM ☐ m^3/h@_____ ☐Psi ☐Bar
Main flow normal _____ ☐ GPM ☐ m^3/h@_____ ☐Psi ☐Bar
Recirculation flow_____ ☐ GPM ☐ m^3/h@_____ ☐Psi ☐Bar

Fluid:_____@_____ ☐ °F ☐ °C
Fluid Specific Gravity (@ oper. Temp.):_____
Fluid Vapor Pressure (@ oper. Temp.):(PV) :_____ ☐Psi ☐Bar
Viscosity:_____ Centipoise
Pump suction pressure (P2):_____ ☐Psi ☐Bar
Back pressure (P3):_____ ☐Psi ☐Bar
Installation:(V) Vertical or (H) Horizontal:_____
Seals material: _____(If you have preference)



The right product for your application.

Phone: + 55 11 4447-7600 - Fax: + 55 11 4447-4164
Av. Pedro Celestino Leite Penteado, 500
07786-480 - Cajamar - SP - Brazil
E-mail: sales@durcon-vice.com.br
Web-page: www.durcon-vice.com.br

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