



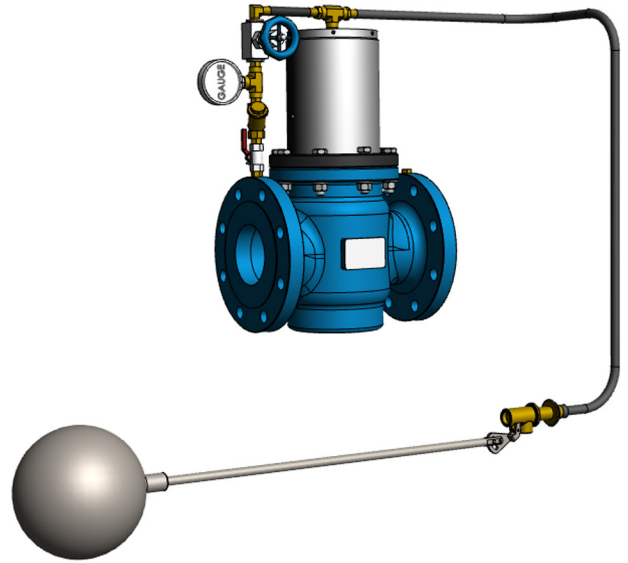
HYDROMINE™ LFC_3B Level Control Valve

Overview:

The HYDROMINE™ LFC_3B Level control valves are based on the same design as the HYDROMINE™ LFC_3B pressure regulating valve. Using a float ball to actuate the HYDROMINE™ LFC_3B level control valve is more cost effective than using electrical actuators to perform the same function. The upstream water hydraulic power is used to actuate the HYDROMINE™ LFC_3B level control valve. The speed of the valve can be adjusted to any desired speed fairly quickly and easily. The HYDROMINE™ LFC_3B Level control valve can be installed in remote locations where there is no access to electrical power. The HYDROMINE™ LFC_3B Level control valve has been developed to present a robust, simple and cost-effective low pressure (up to 2.5 MPa / 363 psi) solution to fluid handling issues in any industrial sector.

Low Maintenance Requirement:

All the moving parts of HYDROMINE™ LFC_3B Level control valve are manufactured from stainless steel which increases reliability and durability. The HYDROMINE™ LFC_3B requires minimal maintenance, the majority of which, can be conducted with the valve remaining in situ.



Materials of Construction & Dimensions:

Part Name	Material Specification	Valve size	Face To Face Dimensions	
			Unit	Face to face #150
			(mm)	(Inch)
Body	Casting - Ductile iron			
Body seat	431 / 304 S/ Steel			
Plug	431 / 304 S/ Steel	DN50 / 2"	303	8
V-Port or Seat holder	431 / 304 S/ Steel	DN80 / 3"	241	9 1/2
Shaft	431 / 304 S/ Steel	DN100 / 4"	292	11 1/2
Piston	431 / 304 S/ Steel	DN150 / 6"	356	14
Plug seat	Polyurethane	DN200 / 8"	495	19 1/2
Sleeve	431 / 304 S/ Steel	DN250 / 10"	622	24 1/2
Body cover	Ductile iron or Carbon steel	DN300 / 12"	699	27 1/2
Cylinder	431 / 304 S/ Steel	DN350 / 14"	787	31
Cylinder holder	Ductile iron	DN400 / 16"	914	36
O-Rings	Nitrile (Buna)			
Top cover	Ductile iron or Carbon steel			
Hoses	Self-grip Push-Lok			

All face to face dimensions are in accordance with ANSI B16.10 Class 150.

Simplicity:

The HYDROMINE™ LFC_3B Level control valve is designed to minimize wearing parts and in effect only has one moving part called the plug assembly. The plug assembly is a piston that is engineered to be un-balanced. The un-balanced plug uses the inline fluid pressure to remove the influence of differential pressure on operating torque. As such, the valve operating torque is the torque required to overcome the sum of the friction forces generated between the valve body, seals and the cylinder plus the weight of the plug (depending on the installation configuration). This torque requirement is not affected by inline pressure variants and therefore makes these valves extremely good for actuation applications as well as for isolation valves where manual operation is required. Removal of gearboxes reduces maintenance requirements and improves troubleshooting times. The valve uses a float ball valve to operate, and it is simple in comparison with an electrical actuator. The HYDROMINE™ LFC_3B Level control valve can easily be fitted with limit switches to give open and closed indication.

Low Operating Torque:

The HYDROMINE™ LFC_3B Level control valves are hydrostatically un-balanced to enable easy opening and closing at any pressure and differential conditions. It does not require the use of a gearbox or by-pass valve to balance pressure between the inlet and outlet.

Valve Sizing

Please consult with HYDROMINE™ Projects International for clarification of correct sizing for your requirements.



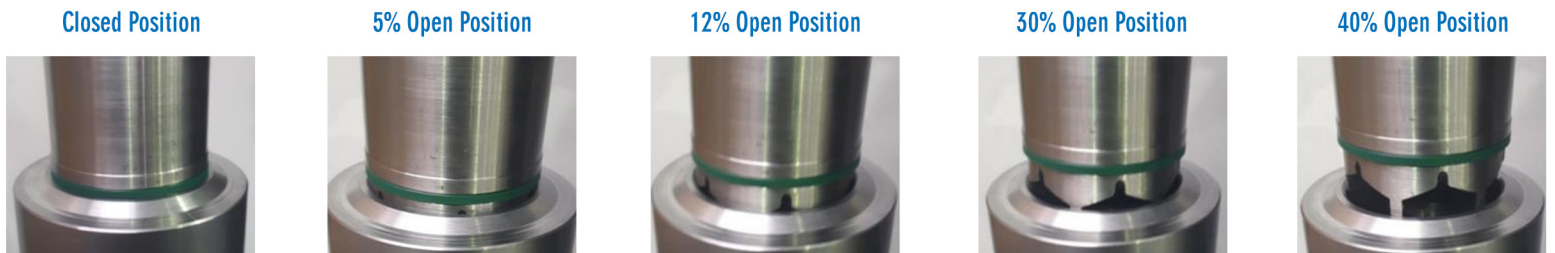
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Flow Rates:

Flow (ℓ/sec)		5	10	25	40	50	100	150	200	250	300	350	400	450	500
Pressure drop (kPa)	DN50	46	93												
	DN80	17	34	86											
	DN100		22	56	89										
	DN150			25	40	51	101								
	DN200				22	28	56	83	111						
	DN250					18	36	54	72	90	108				
	DN300						25	37	50	62	75	87	100		
	DN350							27	37	46	55	64	73	82	
	DN400							26	33	39	46	52	59	65	
Flow US gallon / min		79,25	158,50	396,26	634,01	792,52	1585,03	2377,55	3170,06	3962,58	4755,09	5547,61	6340,12	7132,64	7925,15
Pressure drop (psi)	2"	6,74	13,47												
	3"	2,48	4,97	12,42											
	4"		3,24	8,11	12,97										
	6"			3,67	5,87	7,34	14,68								
	8"				3,22	4,03	8,06	12,09	16,12						
	10"					2,62	5,24	7,85	10,47	13,09					
	12"						3,62	5,43	7,24	9,05	10,86	12,67	14,48		
	14"							3,98	5,31	6,64	7,97	9,29	10,62	11,95	
	16"								3,79	4,74	5,69	6,64	7,58	8,53	9,48

Kv / Cv Values		
Unit	Kv	Cv
DN50 / 2"	39	45
DN80 / 3"	104	122
DN100 / 4"	160	187
DN150 / 6"	354	413
DN200 / 8"	644	752
DN250 / 10"	992	1158
DN300 / 12"	1435	1675
DN350 / 14"	1955	2283
DN400 / 16"	2739	3198

Plug Assembly, V-Port And Dealing With Cavitation:



As displayed, the HYDROMINE™ LFC_3B pressure regulating valve plug assembly and movements.

Closed Position: Shows the plug assembly on the body seat in a fully closed valve position.

5% Open Position: Shows the plug assembly in a 5% open position. It can clearly be seen that only the top of the V-Port opens and creates a flow path. This reduces cavitation and helps with fine control at low flow conditions.

12% Open Position: Shows the plug assembly in the 12% open position. Now it can be observed how the V-Port moved away from the seat and the openings are increasing proportionally. At this point the top of the V-Ports is now being exposed to the flow path.

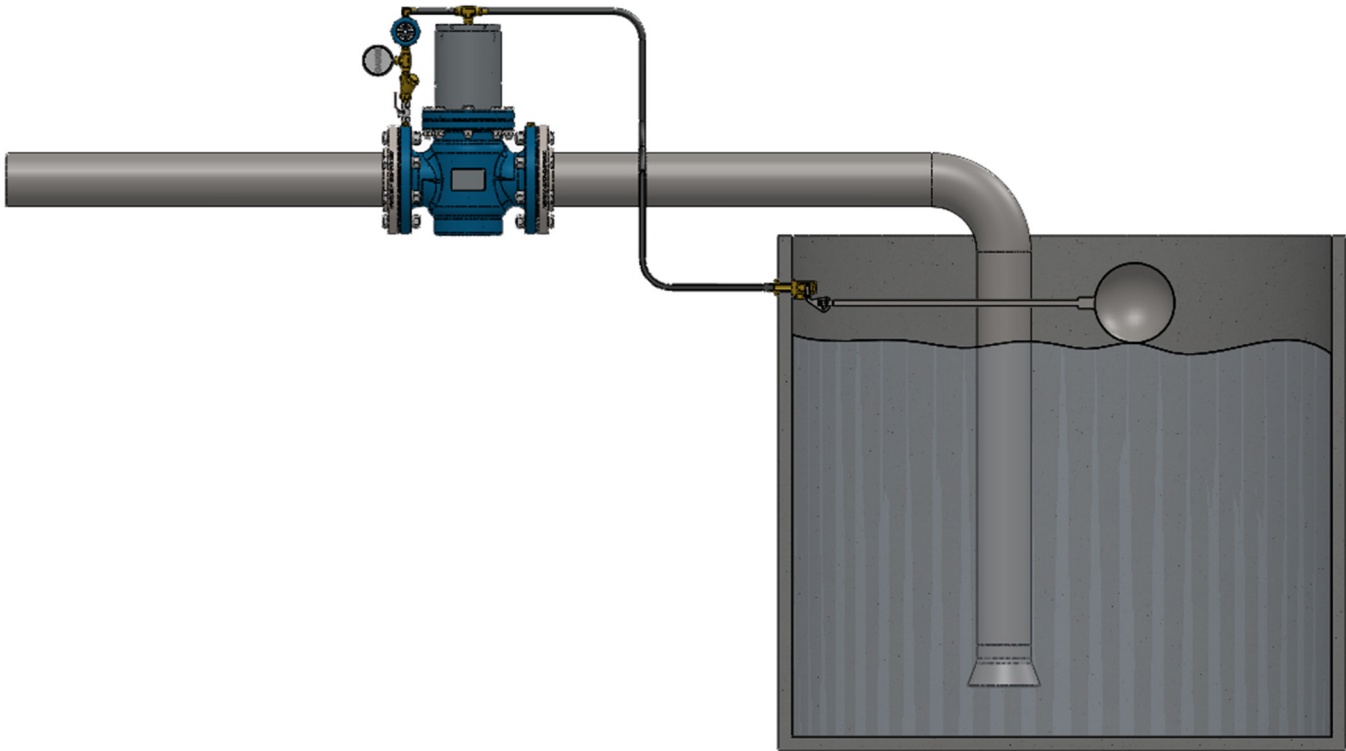
30% Open Position: Shows the plug assembly in the 30% opened position. Now it can clearly be seen that the full V-Port is creating a larger orifice in the flow path. Up to this point, cavitation needs to be dealt with to increase the life expectancy of the valve. The V-port trim ensures that the seating elements are further apart from each other during low flow allowing the cavitation to take place on noncritical components of the valve.

40% Open Position: Shows the plug assembly in the 40% open position. Now it can clearly be seen that the V-Port is completely away from the seat and the flow path is now relatively large. At this point the flow is approaching its medium demand flow rate and the V-Port has little to no function.



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Operating Conditions:

These valves are designed to operate in systems with relatively clean media like water or other liquids with a low percentage of suspended solids and chlorides. The valve's operating pH range is 2 - 14 pH.

Design & Manufacturing Standards:

The HYDROMINE™ LFC_3B level control valve has been designed in accordance with various international standards as set out below:

ASME Boilers and pressure vessels design code

ANSI B16.10	API598
ANSI B16.34	ANSI B16.37
ANSI B16.5	ANSI N278.1

Available sizes: DN50 / 2" to DN400 / 16"

Face to face dimensions to ANSI B16.10

Pressure rating: up to 2.5 MPa / 363 psi

Available end connections: ANSI B16.5, BS4504, BS10, AS/NZS 4331.1 (ISO 7005-1) DIN, all makes of grooved or ring joint couplings and other as per client's requirement.

