



## HYDROMINE™ LFC\_1B Oil Hydraulic / Nitrogen Accumulator Acting Surge Relief Valves

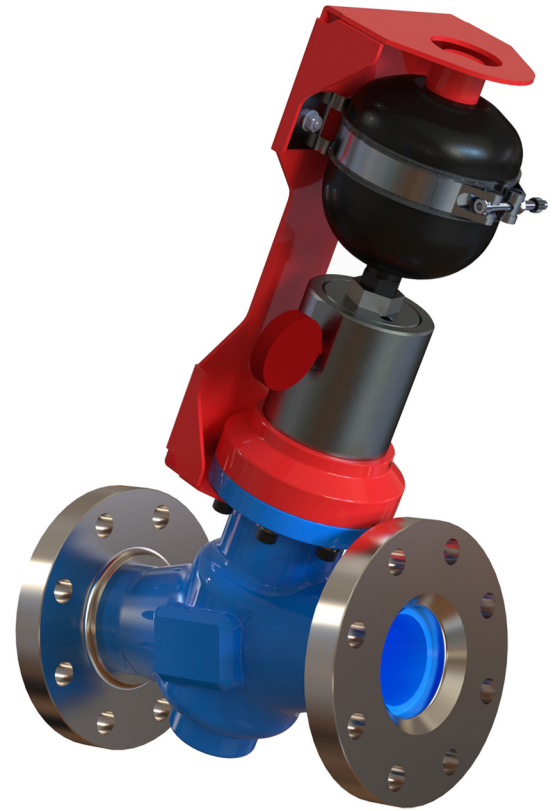
### Overview:

A surge relief valve is designed to open when an over pressure situation occurs and thereby prevent excessively high pressures from putting people and equipment at risk. The HYDROMINE™ LFC\_1B oil hydraulic / nitrogen accumulator acting surge relief valve has been developed to present a robust and simple solution to fluid handling issues in the mining and other industrial sectors.

The HYDROMINE™ LFC\_1B surge relief valve is specifically engineered to operate effectively in dirty and muddy water conditions. It is designed for easy commissioning and setup in underground mines and remote locations with limited access to tools and equipment. The oil pressure can be easily set and adjusted using a portable hydraulic hand pump. The accumulator comes pre-charged from the factory, eliminating the need to bring a nitrogen cylinder to the site for charging. In case of any faults, a compact and portable spare accumulator can be purchased and easily replaced on site.

### Simplicity:

The HYDROMINE™ LFC\_1B oil hydraulic / nitrogen accumulator acting surge relief 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 balanced. The balanced plug assembly together with the oil pressure on top of the plug assembly and the and nitrogen pressure in the accumulator, are designed to use inline fluid pressure to create specific conditions in the system without the use of an external controller or pilot. A fixed opening force can be established by fixing the surface area ratio exposed to the upstream pressure and the oil pressure and nitrogen pressure combined. Upstream pressure ( $P_u$ ) would act to open the valve. As the  $P_u$  increases, the opening force increases proportionally causing the oil to compress the nitrogen to force the plug assembly to move to an open position.. If  $P_u$  is reduced, the valve will close proportionally in an effort to maintain its hydraulic ratio and oil pressure / nitrogen force combined.



### Materials Of Construction:

Part Name	Specification
Body - DN50 to DN100	Casting - 431 S/Steel
Body - DN150 to DN400	Casting - BS3100 Grade A5 / A6 / BT2
Flanges	ASTM A105
Plug	431 S/Steel
V-Port	431 S/Steel
Piston rod	431 S/Steel
Piston	431 S/Steel
Cylinder	304 S/Steel
Sleeve - DN150 to DN400	304 S/Steel
Body Cover	Carbon steel
Cylinder cover	Carbon steel
Seals	Nitrile (Buna)
O-Rings	Nitrile (Buna)
Accumulator	HYDAC or Other
Oil charging valve	Carbon steel with zinc coating

### Dimensions:

Unit	Face to face dimensions (ANSI B16.10)								Height	
	#300		#600		#900		#1500		Centre line to Top & bottom	
	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)
DN50 / 2"	267	10 1/2	292	11 1/2	368	14 1/2	368	14 1/2		
DN80 / 3"	318	12 1/2	356	14	381	15	470	18 1/2		
DN100 / 4"	356	14	432	17	457	18	546	21 1/2		
DN150 / 6"	445	17 1/2	559	22	610	24	705	27 3/4		
DN200 / 8"	559	22	660	26	737	29	832	32 3/4		
DN250 / 10"	622	24 1/2	787	31	838	33	991	39		
DN300 / 12"	711	28	838	33	965	38	1130	44 1/2		
DN350 / 14"	762	30	889	35	1029	41	1257	49 1/2		
DN400 / 16"	838	33	991	39	1130	44	1384	45 1/2		



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### Flow Rates:

Flow (ℓ/sec)	5	10	25	35	50	60	100	150	200	250	
Pressure drop (kPa)	DN50	17	81								
	DN80	3	10	27	80						
	DN100		2,2	14,3	53	76	91				
	DN150			2,5	4,5	10	13	38	87		
	DN200					3,4	4,5	14	32	55	
	DN250							7	17	27	42
	DN300							5	11	18	28
Flow US gallon / min	79,25	158,50	396,26	554,76	792,52	951,018	1585,03	2377,545	3170,06	3962,575	
Pressure drop (psi)	2"	2,47	11,75								
	3"	0,44	1,45	3,92	11,60						
	4"		0,32	2,07	7,69	11,02	13,20				
	6"			0,36	0,65	1,45	1,89	5,51	12,62		
	8"					0,49	0,65	2,03	4,64	7,98	
	10"							1,02	2,47	3,92	6,09
	12"							0,73	1,60	2,61	4,06

Kv / Cv VALUES		
Unit	Kv	Cv
DN50 / 2"	42	49
DN80 / 3"	140	162
DN100 / 4"	237	274
DN150 / 6"	579	669
DN200 / 8"	969	1120
DN250 / 10"	1382	1599
DN300 / 12"	2688	3118

### Valve Sizing:

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

### Low Maintenance Requirement:

All the moving parts of HYDROMINE™ LFC\_1B oil hydraulic / nitrogen accumulator acting surge relief valve are manufactured from stainless steel which increases reliability and durability. The HYDROMINE™ LFC\_1B requires minimal maintenance, the majority of which, can be conducted with the valve remaining in situ.

### Design & Manufacturing Standards:

The HYDROMINE™ LFC\_1B oil hydraulic / nitrogen accumulator acting relief valve has been designed in accordance with various international standards as set out below:

ASME Boilers and pressure vessels design code

ANSI B16.10 API 598  
ANSI B16.34 ANSI B16.37  
ANSI B16.5 ANSI N278 .1

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

Face to face dimensions: ANSI B16.10

Pressure rating: up to 25MPa / 3 626 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, HYDROMINE™ U-Coupling, HYDROMINE™ HMP-TE tapered couplings and other as per clients requirement.

