



## LFC™\_1B Nitrogen Surge Relief Valve

### Overview:

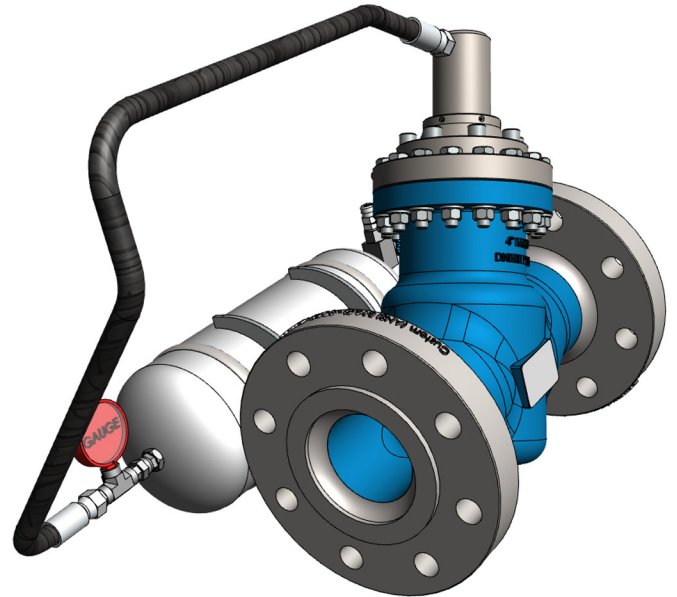
A surge relief valve is designed to open when a over pressure situation occurs and thereby prevent excessively high pressures from putting people and equipment at risk.

The LFC™\_1B nitrogen charged surge relief valve has been developed to present a robust and simple solution to fluid handling issues in the mining sector.

### Simplicity:

The LFC™\_1B nitrogen charged 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 unbalanced. The unbalanced plug assembly together with the nitrogen pressure on top of the plug assembly, 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 nitrogen pressure combined. Upstream pressure (Pu) would act to open the valve. As the Pu increases, the opening force increases proportionally causing the nitrogen to compress and the valve to open. If Pu is reduced, the valve will close proportionally in an effort to maintain its hydraulic ratio and nitrogen force combined.



### Materials Of Construction:

Part Name	Material Specification
Body - DN50 to DN100	Casting - 431 S/ Steel
Body - DN150 to DN400	Casting - BS3100 Grade A2
Body seat	431 S/ Steel
Flanges	ASTM A105
Plug	431 S/ Steel
V-Port	431 S/ Steel
Shaft	431 S/ Steel
Piston	Carbon steel clad with 309 S/ Steel or 431 S/ Steel
Plug seat – 0 to 2,5 MPa	Polyurethane
Plug seat - above 2, 5 MPa	UHMWPE
Sleeve - DN150 to DN400	431 or 304 S/Steel
Cylinder	431 S/ Steel
Cylinder holder	Carbon steel or 431 S/Steel
Seals	Polyurethane
O-Rings	Nitrile (Buna)
Nitrogen tank	Carbon steel
Hose	Double braided
Ball valve	Carbon steel with zinc coating
Charging valve	Carbon steel with zinc coating

### Valve Sizing:

Please consult with Hydromine for clarification of correct sizing for your requirements.

### Low Maintenance Requirement:

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





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### Flow Rates:

Flow (ℓ/sec)		5	10	25	35	50	100	150	200	250	300
Pressure Drop (Kpa)	DN50	17	81								
	DN80	5	35	90							
	DN100		1.5	30	45	98					
	DN150			2.5	6.5	15	57				
	DN200					2.5	14	42	76		
	DN250						7	17	27	46	65
	DN300										
Flow US gallon / min		79.25	158.50	396.26	554.76	792.52	1585.03	2377.55	3170.06	3962.58	4755.09
Pressure Drop (psi)	2"	2.47	11.75								
	3"	0.73	5.08	13.05							
	4"		0.22	4.35	6.53	14.21					
	6"			0.36	0.94	2.18	8.27				
	8"					0.36	2.03	6.09	11.02		
	10"						1.02	2.47	3.92	6.67	9.43
	12"										

### Face To Face Dimensions:

Unit	Face To Face Dimensions:								Height	
	#300		#600		#900		#1500		Centre line to Top of valve	
	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)
DN50 / 2"	292	11.50	292	11.50	368	14.49	368	14.49		
DN80 / 3"	356	14.02	356	14.02	381	15.00	470	18.50		
DN100 / 4"	432	17.01	432	17.01	457	17.99	546	21.50		
DN150 / 6"	559	22.01	559	22.01	610	24.02	705	27.76		
DN200 / 8"	660	25.98	660	25.98	737	29.02	832	32.76		
DN250 / 10"	787	30.98	787	30.98	838	32.99	991	39.02		
DN300 / 12"	838	32.99	838	32.99	965	37.99	1130	44.49		
DN350 / 14"	889	35.00	889	35.00	1029	40.51	1257	49.49		
DN400 / 16"	991	39.02	991	39.02	1130	44.49	1384	54.49		

### Design & Manufacturing Standards:

The LFC™\_1B nitrogen surge 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 ANSI B16.3

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 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, HMP™ Coupling, HMP™-TE tapered couplings and other as per clients requirement.

