

FLOVAL

CONTROL VALVES

Performance, Design & Service

PHOENIX MFC
MULTIFUNCTION CONTROL

PHOENIX
VALVES YOUR BEST CHOICE
FOR LIQUID CONTROL
APPLICATIONS

Manufactured and supplied in response
to the demand

**SIMPLICITY.
VERSATILITY.
RELIABILITY**
at a minimal cost.



PRESSURE REDUCING



RELIEF VALVE



LEVEL CONTROL

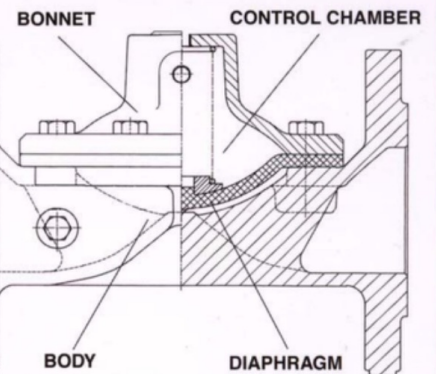


SIMPLICITY

The "PHOENIX MFC" is a direct sealing diaphragm valve which consists of only three main parts: **body, bonnet, and diaphragm**.

The only moving component is the diaphragm which can operate in any of the following modes:

- **Closure** - with drip tight shut off.
- **Full open** - free flow passage.
- **Modulating** - restricting flow as dictated by the pressure in the control chamber.



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Reg. No. 88/04778/07

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Reg. No. FM59389
Johannesburg, South Africa



FEATURES

1. Hydrodynamic design with superior hydraulic performance giving low energy losses at high flow-rates.
2. Drip tight closure down to atmospheric pressure.
3. Easy in-line maintenance. One spare part accessible by removal of the bonnet. No special tools required.
4. The diaphragm, being the one free moving part, ensures smooth frictionless and fault free operation with low hysteresis.
5. A locked in diaphragm, bolted between bonnet/body flange, prevents dislodgement in the event of extreme or back pressure, is unaffected by pipe stresses.
6. Simple sturdy construction with no crevices or contours, coated internally and externally prevents corrosion.
7. The natural tendency for the moulded diaphragm is to close automatically when the line pressure drops to about 0.5 kg/cm² (7psi) which prevents line drainage.
8. Controllable opening and closing speeds prevents water hammer.
9. The internals are unaffected by precipitated deposits, such as dissolved minerals in water, which cause conventional valves to jam due to close-fitting parts.
10. No Sticking, even after prolonged periods, in the open or closed position.
11. Only the valve pilot system will activate the main valve and not external influences such as pressure surges.
12. Internal ribs add strength to the construction and supports the diaphragm preventing excessive deformation taking place.

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VERSATILITY

CONTROL FUNCTIONS

The " PHOENIX MFC " valve is designed to withstand heavy duty conditions with the capacity of providing a solution for flow control applications utilising a standard body with a variety of pilot configurations that can achieve a wide range of functions such as:

MC - MANUAL

On/off either locally or remote.
Speed control available on open/close cycle. (optional on all valves)

ES - ELECTRIC SOLENOID

Opens and closes on electric command. Standard 3/2 way configuration solenoid.
Voltages 24 volt DC, 110 & 220 volt AC.

PR - PRESSURE REDUCING

Maintains accurate downstream pressure regardless of upstream pressure fluctuations.
Reduction ratio of up to 3:1 achievable as standard.

PS - PRESSURE SUSTAINING / RELIEF

Maintains constant upstream pressure by relieving excess pressure downstream or to atmosphere.

QR - QUICK RELIEF

Opens fully to relieve excess pressure out of the system when pressure surge occurs.
Closes slowly when normal conditions resume.

NR - NON-RETURN

Closes when downstream pressure exceeds upstream, protecting the system from water hammer.

FM - FLOAT CONTROL (MODULATING TYPE)

Controls liquid levels of tanks and reservoirs. The valve closes gradually when the preset level approaches.

FD - FLOAT CONTROL (DIFFERENTIAL ON/OFF TYPE)

The valves closes when the water level reaches maximum and opens only at the preset minimum.



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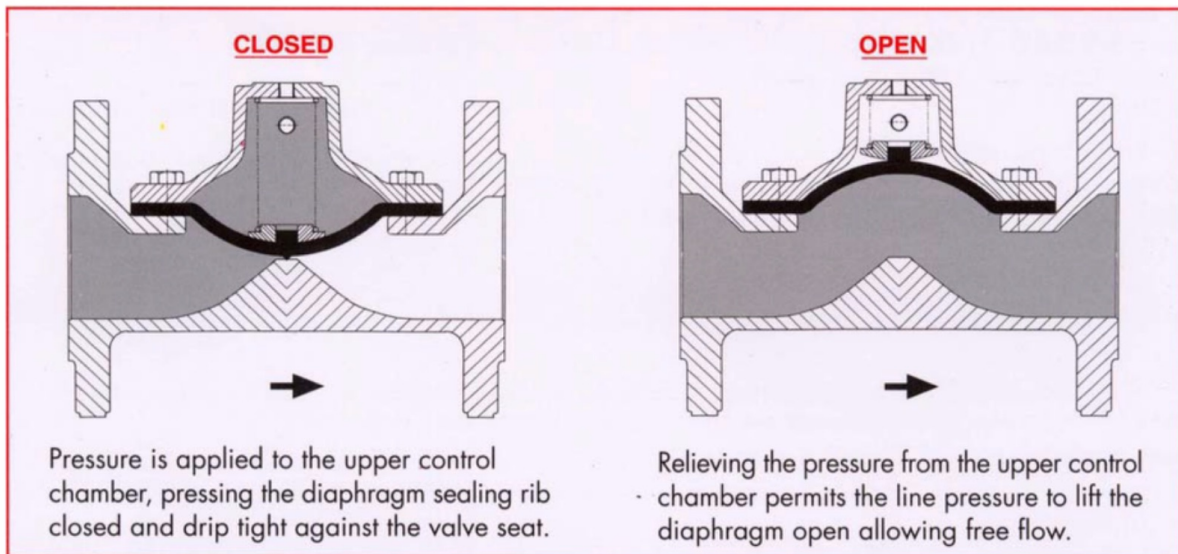


RELIABILITY

The " PHOENIX MFC " valve is ideal for industrial, mining, municipal, irrigation and fire protection applications as no shafts, seals or guiding bearings exist in the valve which could be corroded or eroded by dirty, abrasive or chemically contaminated media. The valve can be installed in any position enabling its utilization in various applications.

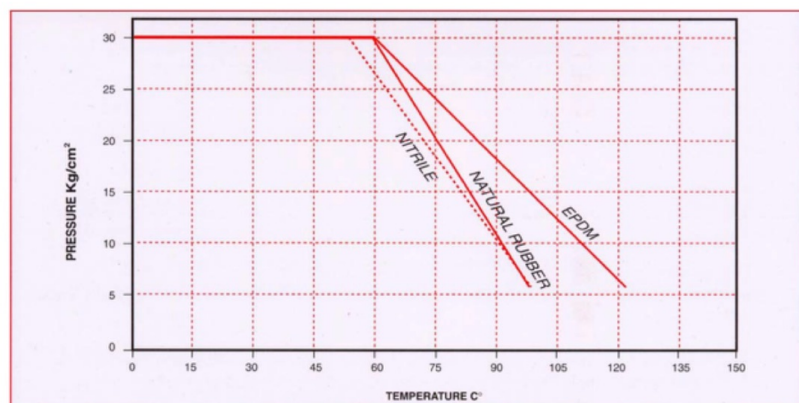
The valve can be controlled by the line media pressure, or if this is unsuitable, by an external separate hydraulic or pneumatic pressure source equal to or greater than the line pressure. The controlled media would then only contact the internals of the valve body and the bottom surface of the diaphragm.

OPERATION



A stable throttling position is obtained when a volume of pressure is retained in the upper chamber. It is this volume in the upper control that determines the position of the diaphragm. This control volume can be filled or exhausted to achieve the desired operating conditions

PRESSURE/TEMPERATURE CHART



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FLOW CHARACTERISTICS

The capacity of hydraulic control valves can be expressed as the volumetric flow through the valve in the wide open position, without the restriction of pressure drops through the pilot and tubing system, at a velocity compatible with the pipeline.

In all cases when sizing hydraulic control valves the following must be considered:

1. Maximum flow at minimum head loss.
2. Minimum flow at maximum head loss.

The ratio of 1 and 2 is known as the turn down ratio and care should be taken that these figures are within the normal capacity of valves recommended ratio of 3:1. Where the turn down ratio is larger it is recommended to use a smaller control valve in parallel with the main valve to take care of low demand conditions.

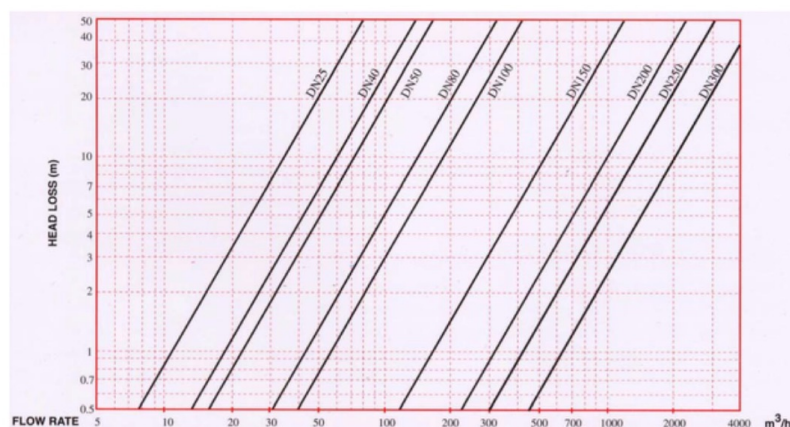
SIZING GUIDE

The normal capacity of the Floval " PHOENIX MFC " valve is expressed at a pipeline velocity of 6.1m/sec, but during intermittent surges this velocity can be exceeded for a very short period of relief only. The following figures are maximum flow rates to be used as a guide for valve sizing:

		NORMAL OPERATION		SHORT PERIOD RELIEF			
VALVE SIZE		m ³ /h	Gpm	m ³ /h	Gpm	Kv	Cv
DN25S	1"	12	50	27	120	22	26
DN40S	1.5"	20	85	45	200	62	72
DN50S	2"	38	170	85	375	73	85
DN50F	2"	42	185	100	445	73	85
DN80F	3"	105	465	235	1045	143	166
DN100F	4"	165	737	385	1710	182	213
DN150F	6"	385	1710	915	4070	526	614
DN200F	8"	685	3045	1595	7090	992	1158
DN250F	10"	1100	4900	2600	11500	1250	1460
DN300F	12"	1700	7500	3800	16700	1950	2280

Modulating control valves do not operate in the fully open position. It is recommended to use approximately 80% of the valve capacity for sizing.

HEAD LOSS CHART



Data verified by South African
Bureau of Standards (SABS)
in accordance with SABS
1808-31 Edition 1-1 1999

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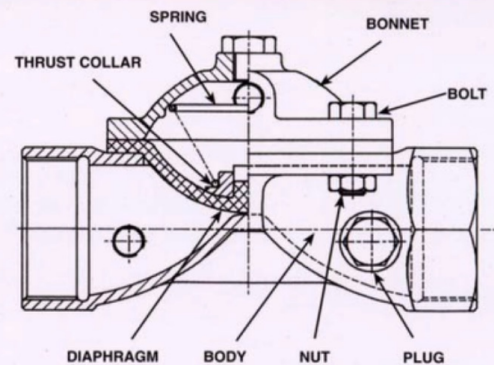
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CONSTRUCTION

1. BODY
2. BONNET
3. DIAPHRAGM
4. SPRING (LOW PRESSURE)
5. THRUST COLLAR
6. BONNET BOLT
7. BONNET NUT (SCREWED ONLY)
8. BLANKING PLUG



MATERIALS

END CONNECTIONS	<u>SCREWED</u> BSP PARALLEL BS 21 ISO 724	<u>FLANGED</u> BS 4504 < 25 ANSI B16.42 < 300
MAXIMUM TEMPERATURE	85°C (191°F)	85°C (191°F)
OPERATING PRESSURES	1 Bar (14.7 psi) minimum 20 Bar (294 psi) maximum	1.5 Bar (22 psi) minimum 25 Bar (368 psi) maximum
BODY & BONNET	Bronze. BS 1400 LG2 ASTM B30 - 836 ASTM A 743 CF8M (316 SS)	Ductile Iron. BS 2789 - 450/10 ASTM A 395-7056-45-12 ASTM A 743 CF8M (316 SS)
DIAPHRAGMS	Natural Rubber ISO 1629 ASTM D-1418-79	Natural Rubber ISO 1629 ASTM D-1418-79
SPRING	Stainless Steel 302	Stainless Steel 302
THRUST COLLAR	Brass ISO R246 ASTM B 121	Brass ISO R246 ASTM B 121
BOLTS	Stainless Steel 316 Stainless Steel 304 Stainless Steel 316	Stainless Steel 316 B7- 2H High Tensile Plated Stainless Steel 316
COATINGS	Polyester Epoxy, Nylon, Enamel, Rubber.	Polyester Epoxy, Nylon, Enamel, Rubber.

NOTE: STANDARD MATERIALS. Other Materials and coatings on request.

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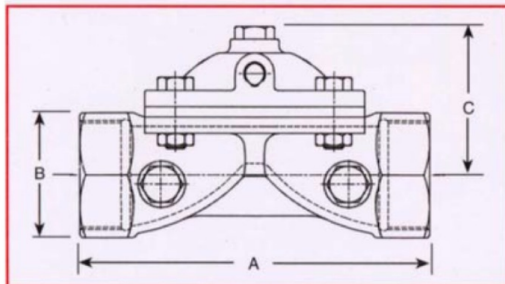
INSTALLATION STORAGE

- Always flush the pipeline before installation of the valve.
- The arrow on the body must point in the direction of flow.
- Exhaust ports must be free of any back pressure or restriction.
- Trapped air to be exhausted from pilot system prior to commissioning.
- Minimum pressure, as indicated, must be present for operation.

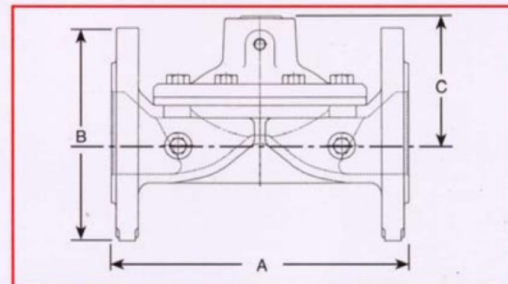
FLOVAL (PTY) LTD reserves the right to make such alterations in design, dimensions, specifications and manufacture as and when it is deemed necessary to ensure continued improvement of the product

DIMENSIONS & WEIGHTS

VALVE SIZE	A MM	A INCH	B MM	B INCH	C MM	C INCH	MASS KG	MASS LBS
DN25S	119	4,69	42	1,65	44,5	1,75	1,5	3.3
DN40S	150	5,90	58	2,28	58	2,28	2	4.4
DN50S	177	6,97	71	2,80	67	2,64	3,75	8.3
DN50F	228	8,97	165	6,50	106	4,17	12	26.5
DN80F	309	12,17	210	8,27	135	5,32	26	57
DN100F	352	13,86	254	10	147	5,79	39	86
DN150F	432	17	318	12,50	211	8,13	70	154
DN200F	529	20,83	381	15	260	10,24	110	242
DN250F	540	21,25	445	17,50	234	9,21	160	353
DN300F	600	23,62	520	20,47	282	11,10	250	551



S - SCREWED



F - FLANGED

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MODEL DESIGNATION

MODEL NUMBER	MFC	80	F	D	/ Q	ES	X
SIZE							
END CONNECTION							
S - Screwed							
F - Flanged							
BODY MATERIAL							
B - Bronze							
D - Ductile							
S - Stainless							
DIAPHRAGM							
Q - Natural Rubber							
C - Nitrile							
E - EPDM							
FUNCTION							
MC - Manual	QR - Quick Relief	AL - Altitude Control	DS - Deluge Single Knock				
ES - Electric Solenoid	NR - Non-return	BC - Booster Control	DD - Deluge Double Knock				
PR - Pressure Reducing	FM - Float Modulating	PC - Proportional Control	QB - Quartzoid Bulb				
PS - Pressure Sustaining	FD - Float Differential	FL - Flow Limiter	AS - Auto Sensing				
ADDITIONAL/SPECIAL REQUIREMENTS							
Add to model number when required.							

PURCHASE SPECIFICATION

The valve shall be self actuated, pressure operated, either by line pressure or by equal or greater pressure from an external source. The valve will have a locked-in diaphragm incorporating a sealing rib for drip tight closure against the valve seat. The design should permit complete in-line maintenance requiring the replacement of only one moving part i.e. the diaphragm. There shall be no stems, shafts, bearings or seals located within the liquid flow passage or chambers.

ORDER CHECKLIST

- Function required • Fluid specification i.e Type, Temperature, Contaminants etc.
- Working pressure (min/max) • Flow rates (min/max) • "PHOENIX" model number

WARRANTY:

Floval (Pty) Ltd warrants the equipment to be free from defects in material and workmanship under normal use and service for a period of six months. The sole obligation hereunder shall be limited to repairing or replacing the part or valve at the company's discretion if it is shown to have been defective at the time of shipment. Any liability shall not exceed the contract price for the equipment claimed to be defective and will not in any event, be liable for any special or consequential damages whatsoever.

The above constitutes Floval's sole warranty with regard to the equipment covered hereby. All other warranties expressed or implied, are hereby excluded.