

Diaphragm Valve Components

All handwheels are designed for functional use and comfortable handling.

Bonnet is painted bright yellow under handle skirt to provide clear indication of valve position from any angle.

Precision machined from stainless steel provides long term corrosion resistance.

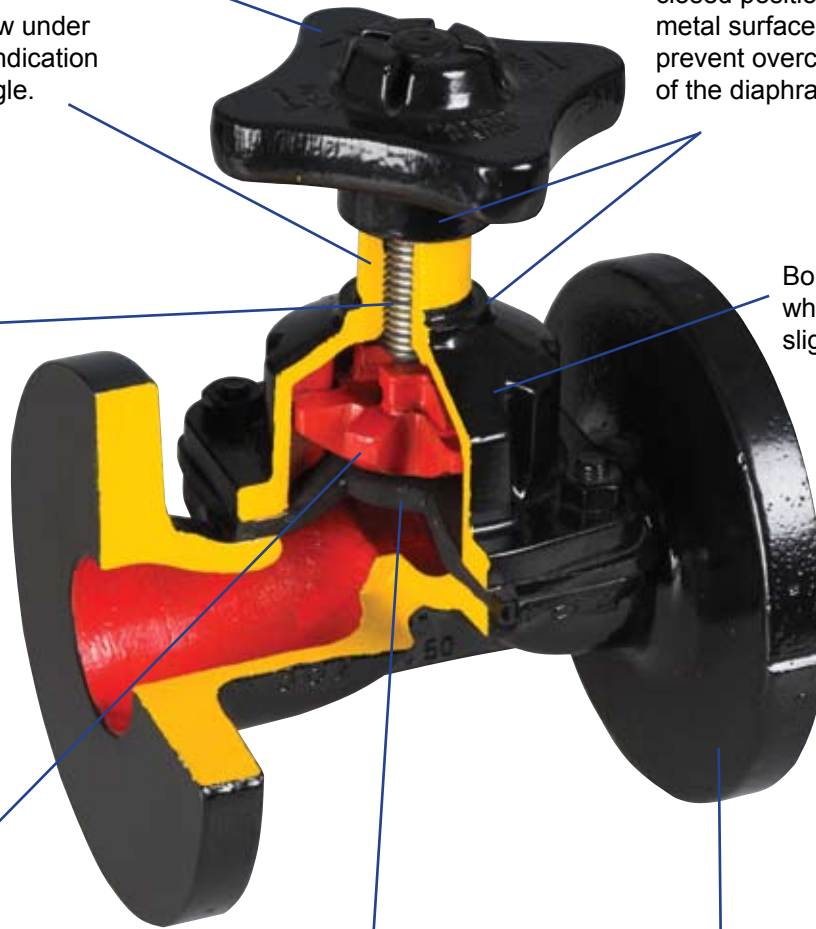
Conforms to contours of diaphragm for support during opening and closing.

Flexible membrane provides positive closure and isolates bonnet components from fluid stream.

Unique bonnet design provides overclosure protection for the diaphragm in the closed position. These two metal surfaces will seat and prevent overcompression of the diaphragm.

Bonnet self-drains when mounted at slight angle.

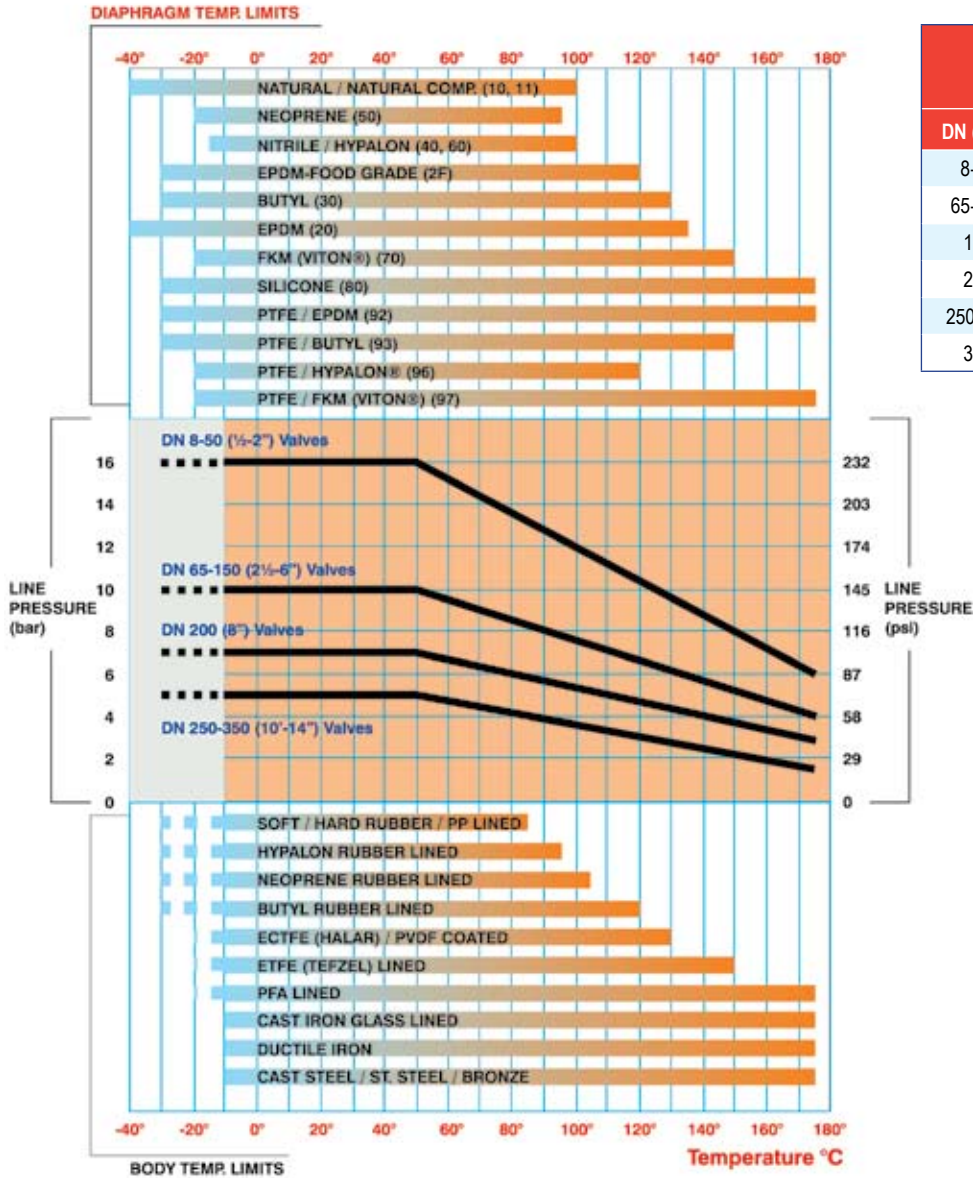
The interior's smooth contours provide unrestricted flow and minimum pressure loss.



Working Pressure and Temperature



For Valves with elastomeric diaphragms

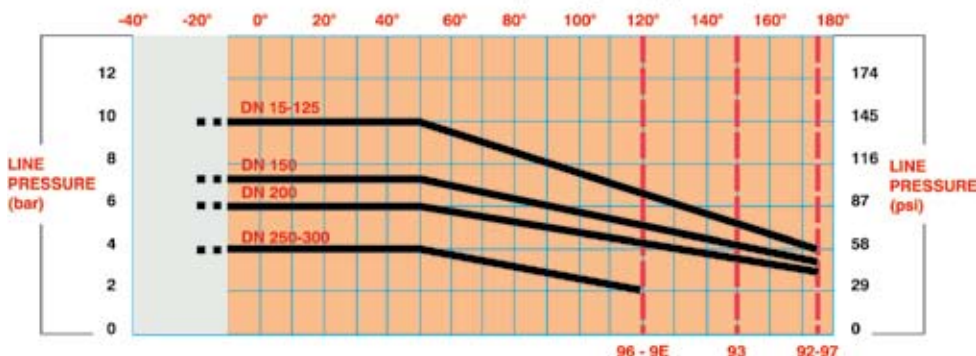


Maximum recommended working pressure

Valve Size		Pressure with Elastomer Diaphragm		Pressure with PTFE Diaphragm	
DN (mm)	INCH	Bar	psi	Bar	psi
8-50	1/4-2	16	232	10	145
65-125	2 1/2-5	10	145	10	145
150	6	10	145	7	101
200	8	7	102	6	87
250-300	10	5	72	4	58
350	14	5	72	n/a	n/a



For Valves with PTFE diaphragms (type 90)



Body Selection

The flexibility of body selection in Weir Type Diaphragm Valves can be seen in the table below. With a wide range of base body materials including cast/ductile iron and SS, solid plastics, elastomeric linings, injection moulded plastic linings, fluoro-polymer coatings and other specialty coatings, our range enables our valves to be optimised to suit many corrosive and abrasive environments.

The majority of body materials can be lined with our coatings, elastomer and injection moulded plastic linings. The selection of the best body material to suit an application is made based on such variables as: media type, temperature and pressure; frequency of thermal cycling, percentage of solids, particle size

profile, required end connections and size.

It is necessary to consider many other variables before finalising a selection. These include:

- Service chemical(s)
- Concentration
- Percentage solids and particle size profile
- Velocity of service
- Proximity of valve to pipe-work direction changes
- Working temperature – minimum/normal/maximum
- Working pressure – minimum/normal/maximum
- Frequency of operation (throttling requirements)

MATERIAL		END CONNECTION	SIZE AVAILABLE		TEMP.
			inch	mm	°C
UNLINED BODY	Cast Iron	Screwed	1/4" - 3"	8 - 80	-10 to 175°
		Flanged	1/2" - 14"	15 - 350	-10 to 175°
	Ductile Iron	Screwed	1/2" - 3"	15 - 80	-10 to 175°
		Flanged	1/2" - 14"	15 - 350	-10 to 175°
	Cast Steel	Screwed	1/2" - 3"	15 - 80	-30 to 175°
		Flanged	1/2" - 14"	15 - 350	-30 to 175°
	Cast St Steel	Screwed	1/2" - 3"	15 - 80	-30 to 175°
			Socket Weld	1/2" - 3"	15 - 80
		Butt Weld	1/2" - 3"	15 - 80	-30 to 175°
			Flanged	1/2" - 14"	15 - 350
	Bronze	Screwed	1/2" - 2"	15 - 50	-30 to 175°
		Flanged	1/2" - 6"	15 - 150	-30 to 175°
RUBBER LINED BODY	Soft Rubber	Flanged	1/2" - 14"	15 - 350	-10 to 85°
	Hard Rubber	Flanged	1/2" - 14"	15 - 350	-10 to 85°
	Butyl Rubber	Flanged	1/2" - 14"	15 - 350	-10 to 110°
	Neoprene Polychloroprene	Flanged	1/2" - 14"	15 - 350	-10 to 105°
	EPDM	Flanged	1/2" - 14"	15 - 350	-10 to 110°
	Chlorosulpho- nated PE	Flanged	1/2" - 14"	15 - 350	-10 to 95°
PLASTIC LINED BODY	ETFE	Flanged	1/2" - 8"	15 - 200	-10 to 149°
	PFA	Flanged	1/2" - 8"	15 - 200	-10 to 175°
	PVDF	Flanged	1/2" - 8"	15 - 200	-10 to 140°
	PP	Flanged	1/2" - 8"	15 - 150	-10 to 95°
COATED BODY	GLASS	Flanged	1/2" - 8"	15 - 200	175°
	ECTFE	Flanged	1/2" - 14"	15 - 350	120°
	ETFE	Flanged	1/2" - 14"	15 - 350	130°
	PVDF	Flanged	1/2" - 14"	15 - 350	130°
	FBE	Flanged	1/2" - 8"	15 - 200	90°
	NYLON	Flanged	1/2" - 14"	15 - 350	80°
HYGIENIC VALVE	FORGED	Butt Weld	1/2" - 3"	15 - 80	-10 to 175°
	ST STEEL	Tri Clamp	1/2" - 3"	15 - 80	-10 to 175°
SOLID PLASTIC	UPVC, PP, CPVC, ABS, PVDF	Spigot / Screwed / Union Solvent Cement and Screwed / Flanged	1/2" - 6"	15 - 150	On application

* Maximum Continuous Service Temperature
(Refer also to Specific Chemical resistance guide for media information and Pressure/Temperature chart on page 5.)

Standard Specifications

Design Standards

- EN13397-2001 (BS5156:1985)
- MSS SP88-1993-(R-01)

Face to Face Standards

- EN558-1 Series 1(DIN3202-F1)
- EN558-1 Series 7(BS5156)
- MSS SP88-1993-(R-01)

Testing Standards

- EN12266-2 2002(BS6755 Part 1)

Material Specifications – Metal Bodies

- Cast Iron (ASTM A126 Cl B)
- Ductile Iron (ASTM A395 60-40-18)
- Carbon Steel (ASTM A216 Gr WCB)
- Stainless Steel (ASTM A351 Gr CF8)
- Stainless Steel (ASTM A351 Gr CF8M)
- Stainless Steel (ASTM A351 Gr CF3M)
- Alloy 20 (ASTM A351 Gr CN7M)
- Hastelloy C ASTM A-494 Gr CW-6M
- Bronze ASTM A83600 LG2/4

Flange Valve Drilling Standards

- ANSI B16.5 Class 125 & 150
- EN1092 (PN10/16) (BS4504)
- AS2129-2000 Table D/E (BS10 1962)
- JIS B2220

Screwed Valve Thread Standards

- ANSI B2.1 NPT
- AS1722.1 Part 1 BSPP

Fluid behaviour differs according to variables such as process conditions, temperature, concentration, pressure, nature of the flow, installation & design and site experience and these variables should be taken into account in the application of the above guidelines.

There are many critical services that demand a lined body for maximum chemical or corrosion resistance. Valves offers the above standard linings with many other special linings and coatings available on request. Special linings and coatings are available to suit specific applications where combinations of corrosion and abrasion occur. Not all linings as above are

available in all different face to face standards.

We recommend that your selection is confirmed with an Engineer from or an authorised distributor.

bodies can be identified by heat number traceability when requested at order and linings are spark tested in accordance with the relevant standards.

FACE TO FACE DIMENSIONS						
DN mm	FLANGED			SCREWED		
	EN558-1 Series 7 BS-5156 UNLINED	EN558-1 Series 1 DN 3202 F-1 LINED/UNLINED	MSS-SP88 UNLINED	CAST IRON	STAINLESS STEEL	DN-INCHES
8	n/a	n/a	n/a	48	108	0.25
15	108	130	102	64	108	0.5
20	117	150	140	83	117	.75
25	127	160	140	108	127	1
32	146	180	165	121	146	1.25
40	159	200	165	140	159	1.5
50	190	230	190	165	190	2
65	216	290	216	203	216	2.5
80	254	310	254	254	254	3
100	305	350	318	n/a	305	4
125	356	400	356	n/a	n/a	5
150	406	480	406	n/a	n/a	6
200	521	600	521	n/a	n/a	8
250	635	730	635	n/a	n/a	10
300	749	850	749	n/a	n/a	12
350	749	980	n/a	n/a	n/a	14

For Rubber Lined Bodies - add to total length (except for EN588-1 Series 1 / DN3202-F1),

- 6mm for DN15 - DN80,
- 8mm for DN100 - DN200,
- 10mm for DN250 - DN350.

For plastic Lined bodies - add to total length (except for EN558-1 Series 1/DN3202-F1)

- 6mm for DN15 - DN200



Unlined Body



Glass Lined Body



Plastic Lined Body



Coated Body



Rubber Lined Body



Screwed Type Body



SS Butt Welded Body

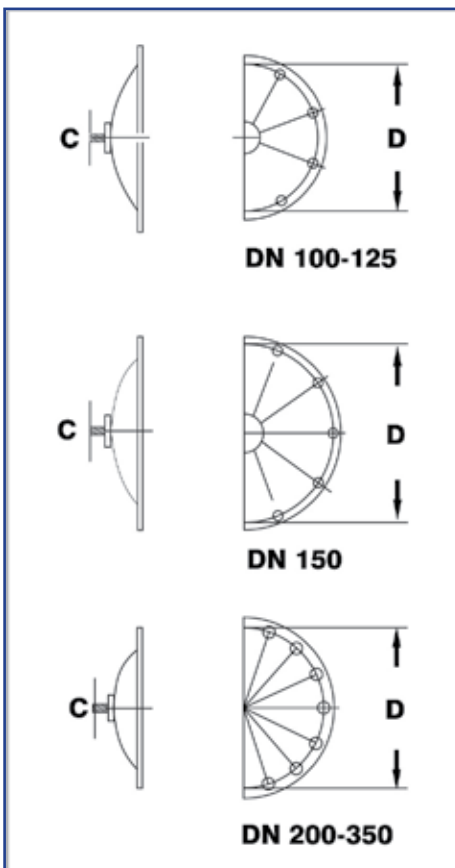
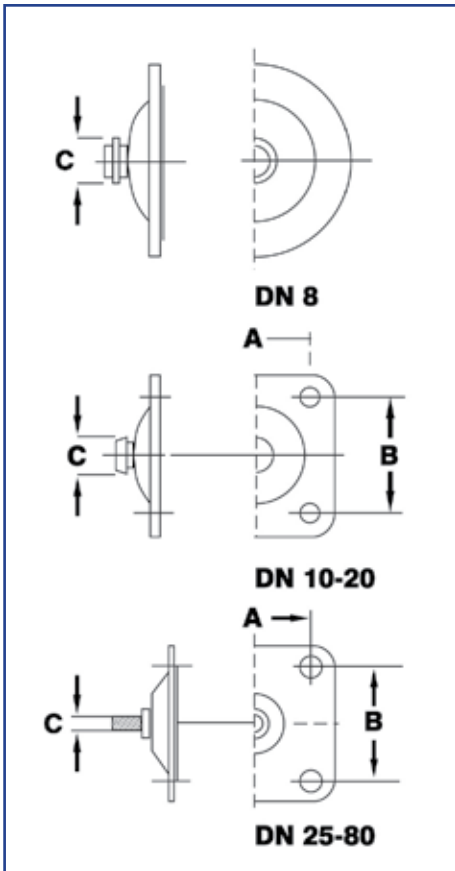


Weir Type Diaphragm Valves are preferred by the mining, mineral processing and fertilizer industries for their ability to control abrasive and corrosive media.

Diaphragm Selection and Services

GRADE	MATERIALS	TEMP		SIZE RANGE		TYPICAL SERVICES
		°C	°F	Imperial	Metric	
10	Natural Rubber NR	-40 - 100	-40 - 212	1/4" - 14"	8 - 350mm	General Purpose, abrasives, water, diluted minerals acids,
11	Natural Rubber Composite	-40 - 100	-40 - 212	1/4" - 8"	8 - 200mm	Abrasives, slurry and suspended solids
20	EPDM/Black Ethylene Propylene Rubber	-40 - 140	-40 - 284	1/4" - 14"	8 - 350mm	General Purpose, resistant to temperatures, most corrosive chemicals and abrasive liquids.
22	EPDM/food grade	-30 - 120	-22 - 248	1/4" - 8"	8 - 200mm	Food and pharmaceuticals
30	Butyl Rubber IIR Chlorobutyl - Isobutylene Isoprene Halogenated	-30 - 130	-22 - 266	1/4" - 14"	8 - 350mm	Acids, alkalis, hot water, low pressure steam
40	Nitrile Rubber NBR Acrylonitrile Butadiene Rubber	-20 - 100	-4 - 212	1/4" - 14"	8 - 350mm	Oils, fats & fuels
50	Neoprene CR Chloroprene Rubber	-20 - 100	-4 - 212	1/4" - 14"	8 - 350mm	Air, weak chemicals, greases
60	Hypalon® CSM Chlorosulfonated Polyethylene	-20 - 100	-4 - 212	1/2" - 14"	15 - 350mm	Concentrated acids & alkalis, chlorine services
70	FPM Fluorinated Elastomer	-20 - 150	-4 - 302	1/2" - 8"	15 - 200mm	Concentrated sulphuric & other acids, aromatic hydrocarbons, chlorine services
80	Silicone	-30 - 175	-22 - 347	1/2" - 8"	15 - 200mm	Moderate or oxidizing chemicals, concentrated sodium hydroxide. Recommended for food.
92	PTFE/EPDM Backed	-30 - 175	-22 - 347	1/2" - 12"	15 - 300mm	High Chemical and temperature resistance
93	PTFE/Butyl Backed	-30 - 150	-22 - 300	1/2" - 8"	15 - 200mm	High Chemical and temperature resistance
96	PTFE Backed	-20 - 120	-4 - 248	1/2" - 8"	15 - 200mm	High Chemical and temperature resistance
97	PTFE/FKM Backed	-20 - 175	-4 - 347	1/2" - 8"	15 - 200mm	High Chemical and high temperature resistance

- Temperature range shown is a guide only. For specific services contact your local distributor.
- Diaphragms at maximum temperatures cannot be used satisfactorily at maximum pressures. See pressure/temperature chart on Page 5.
- Vacuum. Type "W" diaphragm valves are ideally suited for vacuum application. Soft diaphragm material forms a perfect seal around the bonnet flange and across the weir. Standard valves will hold vacuum down to 1 Torr (industrial vacuum).
- Note : 1 Torr = 1 mm (Hg)
1 Torr = 1.33 millibar
- All elastomeric diaphragms are suitable for vacuum in sizes DN8-80. For sizes DN100 and above diaphragms are manufactured with special reinforcing for vacuum duties. Diaphragms with such reinforcing are identified with a suffix "V" after the material code on the Tab e.g: 3V.



Identification of a valve size can be performed by matching dimensions with those of the diagrams and table below.

Nominal Size	A	B	C	D
8			9.5	28
10	33	37	13	
15	33	37	13	
20	40	44	13	
25	46	54		
32	60	67	1/4"W	
40	65	70		
50	78	83		
65	95	102		
80	114	127	5/16" W	
100				194
125			3/8"W	222
150				273
200				381
250			7/8"W	438
300				508
350				527

Diaphragm Styles

Elastomer Diaphragms:

DN8-DN20 "Button Style" - diaphragms are assembled by forcing the diaphragm button against the corresponding recess on the compressor.

DN25 + "Screwed Style" - diaphragms are assembled by screwing the diaphragm stud into the corresponding female thread on the compressor.

Standard PTFE Diaphragms - DN15-200 two piece diaphragms are assembled by rotating the bayonet connection on the diaphragm 90°.

PTFE diaphragms also available include - One piece laminated diaphragms DN15-50 and DN250-300 with screwed connection, and two piece with screwed connection DN15-250.

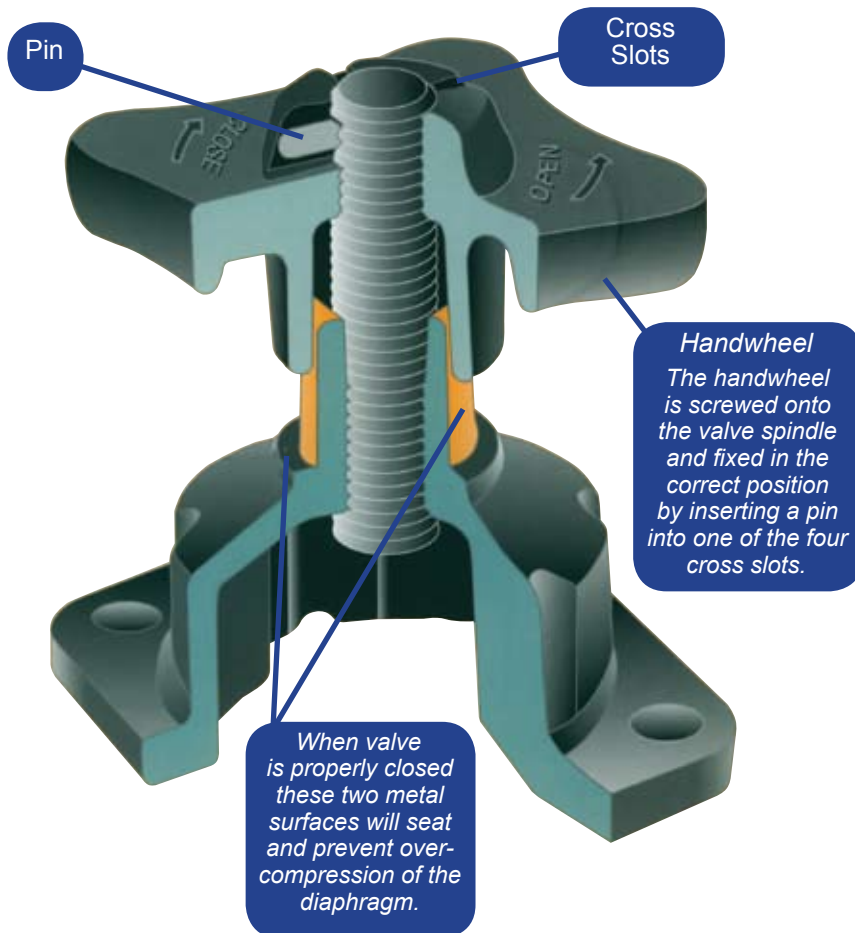
Assembly of Diaphragms

Screw the threaded stud into the compressor and turn, tightening completely. Rotate back counter-clockwise to align the holes. Bonnet and diaphragm are then ready to be assembled onto the body by tightening the bolts diagonally and evenly. Torque levels for each size can be found in the Installation and Maintenance Manual.



OVER-CLOSURE PROTECTED BONNET

®



Bonnet/Operator variations

- **Chain-wheel** adapted bonnet for valves in elevated positions – fitted with chain wheel, guides and chain to suit the “drop” required.
- **Extension Spindle** for valves in inaccessible positions – can be single straight extension or fitted with single/multiple universal joints and/or fitted with key operation for pit environment.
- **Sealed bonnet** assembly fitted with FKM O-Ring spindle seals
- **Stainless Steel bonnet** assemblies in Non Rising handwheel configuration for environmental corrosion applications with OH&S lockout system as an option. Larger sizes fitted with ball thrust bearing on handwheel.
- **Plastic bonnets** and SS/Plastic bonnets for environmental corrosive/high temperature services.
- **Sliding spindle bonnet** assemblies to suit adaptation to specific automation systems – cylinders, diaphragm actuators
- **Automation systems** – actuators in various configurations with many accessories to suit control and automated isolation valve applications using pneumatic or electric actuators.
- **Normally Closed/Open and Double Acting** diaphragm operated pneumatic actuators in various materials – plastics, cast iron, stainless steel or steel, fitted with accessories such as limit stops, visual position indication, emergency handwheel over-ride device, mechanical or proximity switches, pneumatic and electro pneumatic positioners.

Overclosure adjustment in five easy steps...



Remove handwheel pin.



Turn handwheel anti-clockwise one turn.



Insert a piece of steel wire.



Close valve tightly and remove steel wire.



Turn handwheel clockwise until sleeve seats on bonnet rim and re-insert handwheel pin.

FBE/nylon coated rising handwheel body

Other Valve Types and Automated Controllers



Diaphragm valves can be automated using a variety of actuation systems. Pneumatic actuation is achieved by piston/cylinder or diaphragm operation; both can be fitted with a wide range of accessories including:

- solenoid valves
- switch enclosures
- electro-pneumatic positioners
- limit stops
- emergency hand wheel overrides.

The range offers a low maintenance solution for the control of corrosive and erosive media where repeated control and integration into plant control systems is of paramount importance. electric actuators are available in a wide range of voltages and configurations and can be offered using all world wide brands of valve electric actuators.

An automation/control package is available to suit your specific process conditions, offering tailored features to optimise production and minimise maintenance downtime.



"ST" Type Diaphragm Valves



High Purity Diaphragm Valves



Plastic Valve Systems



PFA Lined Ball Valves



Flap Check Valves



PTFE Lined Butterfly Valves



KASKO DEMİRÇELİK MAKİNE VE İNŞAAT SANAYİ TİCARET LİMİTED ŞİRKETİ

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