

970 Stainless Steel Manual Bonnet

P Resistant to standard washdown protocols, the 970 stainless steel bonnet is the compact, autoclavable solution for Pharmaceutical/ Bioprocessing applications.

Type: 970

Size Range: 0.5–2" (DN15-DN50)

Max Service Pressure:

0.5–1" (DN15-25): 200 psig (13.8 bar)

1.5–2" (DN40-50): 175 psig (12.1 bar)

Max Service Temperature:

See page D-9

Bonnet Material:

316 Stainless Steel

Handwheel Material:

Glass reinforced polyethersulfone (PES)

FDA compliant to 21CFR 177.1660

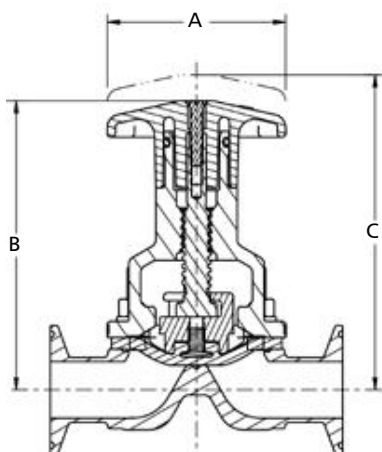
Corrosion Resistance:

Resists alcohol, chloride and most caustic wash-downs. For specific chemical resistance, consult factory.

Standard Features:

- Easy assembly and disassembly
- Rising handwheel
- Adjustable travel stop*
- Visual position indicator
- O-ring splash seal
- Stainless steel stem
- Bronze compressor/ Stainless Steel Optional

* Patent # 6,241,213



Valve Size		Bonnet Weight	
Inch	DN	lb.	kg.
0.50	15	0.97	0,44
0.75	20	1.23	0,56
1.00	25	1.67	0,76
1.50	40	5.00	2,27
2.00	50	6.50	2,95

Valve Size		A		B		C	
Inch	DN	Inch	mm	Inch	mm	Inch	mm
0.50	15	2.75	69,9	3.69	93,7	3.90	99,1
0.75	20	2.75	69,9	4.11	104,4	4.32	109,7
1.00	25	2.75	69,9	4.74	120,3	4.95	125,7
1.50	40	5.25	133,3	6.05	153,6	6.53	165,9
2.00	50	5.25	133,3	6.05	153,6	6.53	165,9

Note: Handwheel diameter and assembly heights are from body centerline to top of bonnet assembly.

¹ Tri Clamp, TC x BW, Short Tangent BW

² Extended BW Forging

³ ISO/DIN

963 Manual Bonnet

P Capable of withstanding typical washdown media, the 963 bonnet is a fully featured, compact, light-weight, yet rugged design. The 963 is packed with features that fulfill the most demanding requirements of today's critical bioprocessing systems.

Type: 963 & 963S

Size Range: 0.5–4" (DN15-DN100)

Service Pressure/Temperature:

Max Service Pressure:

150 psig (10.34 bar)

Max Service Temperature:

300°F (149°C)

External Temperature Limitations:

300°F (149°C)

Bonnet & Handwheel Material:

Glass reinforced polyethersulfone (PES)

FDA compliant to 21CFR 177.1660

Corrosion Resistance:

Resists alcohol, chloride and most caustic wash-downs.

For specific chemical resistance, consult factory.

Standard Features:

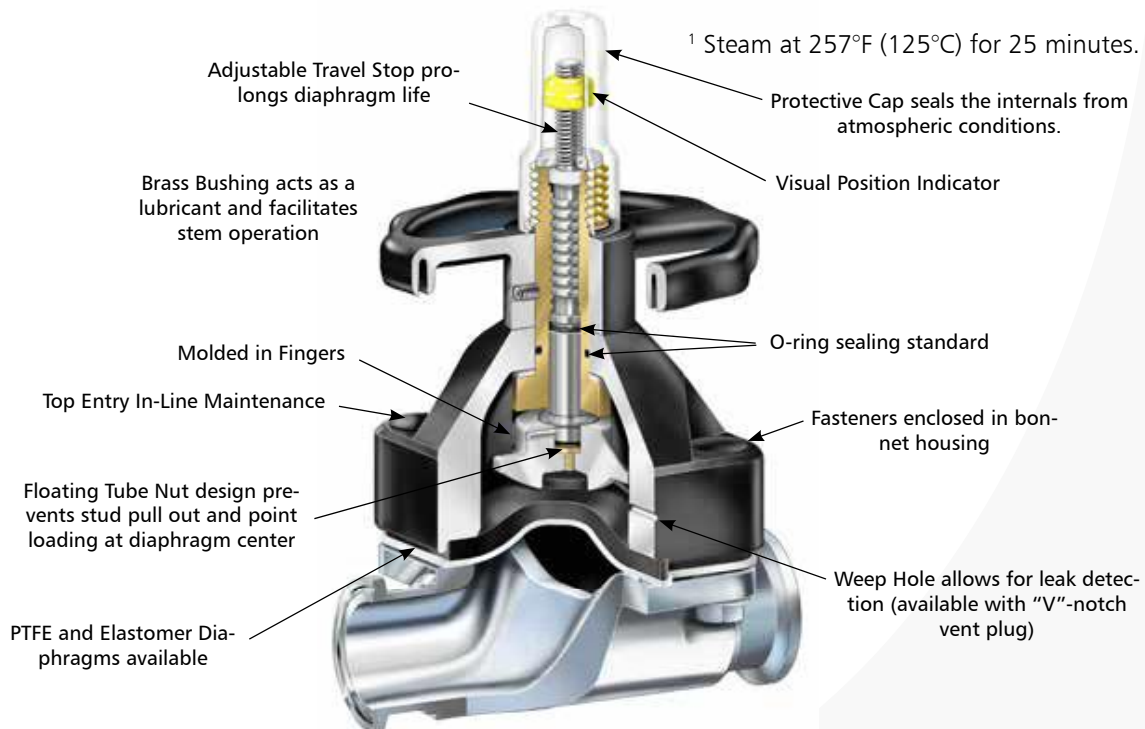
- Autoclavable¹
- Rising stem
- Adjustable travel stop
- Protective PPS cap
- Brass stem bushing
- Visual position indicator
- Permanent lubrication
- O-ring seals
- Stainless steel compressor
0.5 - 2" (DN15-DN50), bronze compressor
3 - 4" (DN80-DN100)
- Enclosed fasteners 0.5–3" (DN15–DN80)
- Hygienic internals: 0.5–4" (DN15-DN100)



Optional Features:

- Sealed bonnets: 963S
- Hygienic internals (M2): 3–4"
- Lockable: 0.5, 0.75, 1, 1.5, 2, 3, 4 in. sizes
- Available in blue, green, & yellow colored hand wheels (sizes 0.5, 0.75, 1, 1.5, 2")

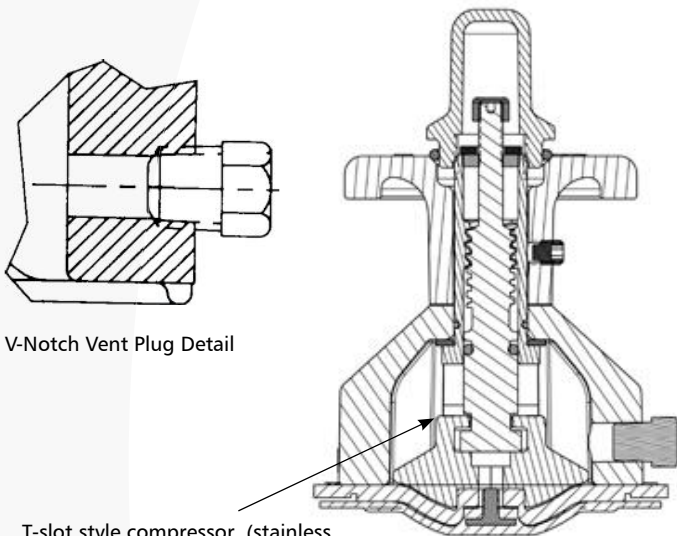
Note: Bonnets manufactured 2010 and beyond with model number 963 and 963S and stainless compressor are autoclavable as standard. Bronze compressor versions are autoclavable only with S2-M2-M17 options.



963 Manual Bonnet

P Sealed Bonnet Option:

A sealed bonnet provides a secondary containment area for process fluids if the diaphragm should ever fail. A v-notch vent plug is provided to serve as a leak detector and prevents the release of process fluids into the atmosphere. Sealed bonnets are an available option on 963 manual bonnets.



V-Notch Vent Plug Detail

T-slot style compressor (stainless steel compressor version only)

Sealed Bonnet - V-Notch Vent Plug

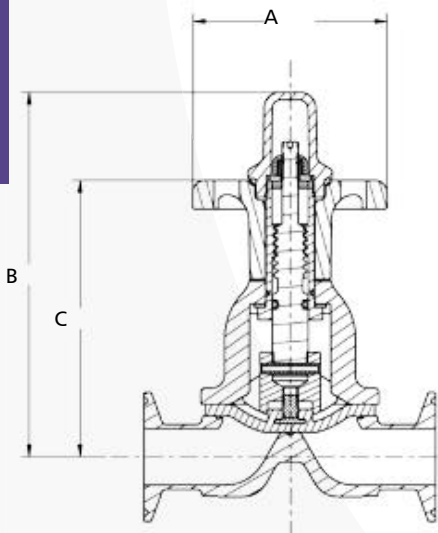
Colored Hand Wheel Option:

The colored hand wheel option available in blue, green, and yellow will help you organize your operation and maintenance practices to:

- Organize your preventative maintenance work flow
- Segregate your valves by suite or process
- Simplify your work instructions (close the yellow valve)



Topworks



Weights and Dimensions for 963 Manual Bonnets

Valve Size		A		B		C		Bonnet Weight	
Inch	DN	Inch	mm	Inch	mm	Inch	mm	lb	kg
0.50	15	3.00	76,2	3.62	92,1	2.75	70,0	0.6	0,27
0.75	20	3.00	76,2	4.63	117,5	3.5	88,8	0.9	0,41
1.00	25	3.00	76,2	5.50	139,8	4.17	106,0	1.3	0,59
1.50	40	5.50	139,7	8.30	210,9	5.20	132,3	3.9	1,77
2.00	50	5.50	139,7	8.90	226,2	5.80	147,4	5.3	2,41
2.50 ¹	65	7.75	196,8	11.61	294,9	7.53	191,3	NA	NA
3.00	80	7.75	196,8	11.61	294,9	7.53	191,3	11.7	5,32
4.00	100	10.15	257,8	14.90	378,6	10.24	260,2	16.2	7,36

¹ The 2.5 in. (DN65) valve is a 3 in. (DN80) body and topworks with 2.5 in. (DN65) end connections.

Bio-Pure[®] Manual Bonnet

P The Bio-Pure is the compact solution for the most demanding Biopharm applications. Available in fractional sizes and a wide selection of body materials and end connections the Bio-Pure is the ideal choice for sampling and other low flow, high value processes. Bioreactors, chromatography systems, filtration skids are just a small number of applications that will benefit from the compact, reliable performance. Bio-Pure is capable of withstanding typical Steam in Place (SIP) and Clean in Place (CIP) protocols. For demanding Clean out of Place (COP) requirements the manual BPMC option is the solution for reliable trouble free operation. A standard 2 piece PTFE diaphragm prevents separation of the diaphragm, which is common in laminated diaphragm designs.

Typical Applications

- Sampling
- Bioreactors
- Chromatography systems
- Filtration skids
- Portable vessels

Size Range

0.25", 0.31" 0.375", 0.5" (DN 6, 8, 10, 15)

Service Pressure/Temperature

150 psi at 220°F (10.34 bar at 104°C)

Maximum external temperature: 300°F (149°C)



Standard Body Materials:

- ASTM A182 Grade 316, DIN 17440. 1.4435
- ASTM A479
- Other materials available upon request

Bonnet Materials:

- Bonnet: 316 Stainless Steel
- Spindle: Stainless Steel
- Compressor: Stainless Steel
- Handwheel: PES

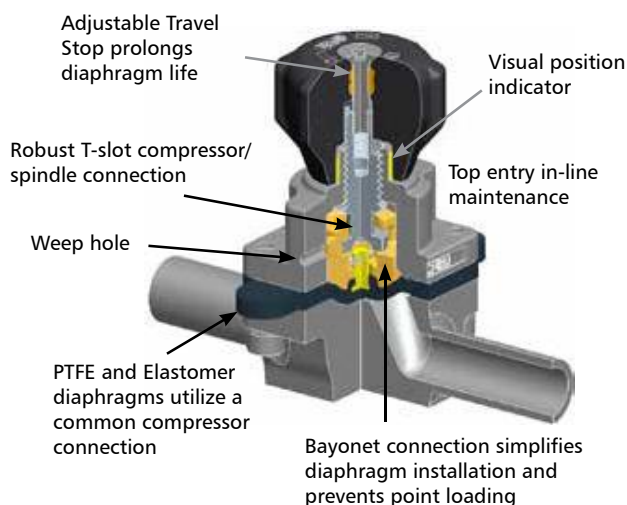
Available End Connections:

- 0.5" (DN 15) 16 Gauge
- 0.25", 0.375" (DN 6, 10) 20 Gauge
- DIN/ISO
- Hygienic Tri-Clamp[®]

Corrosion Resistance:

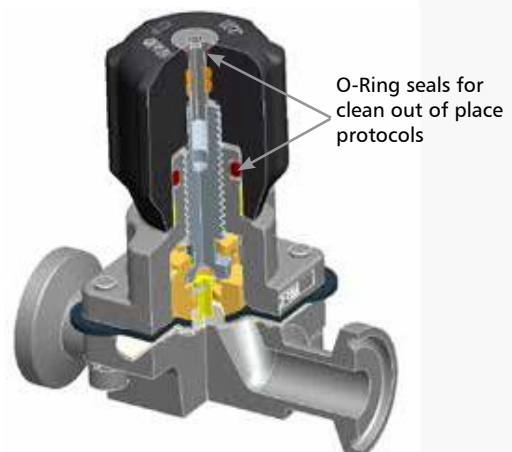
Resists alcohol, chloride and most caustic washdowns.

BPM Option



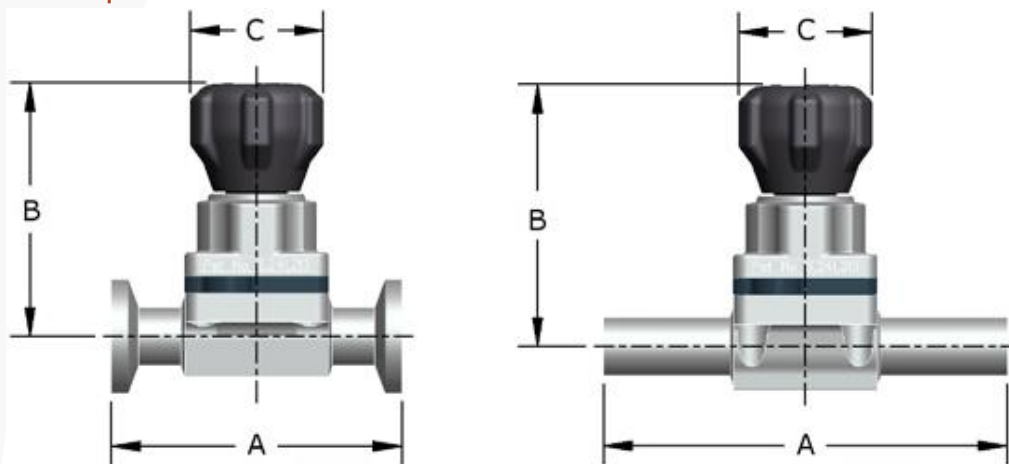
BPMC Option

BPM features plus



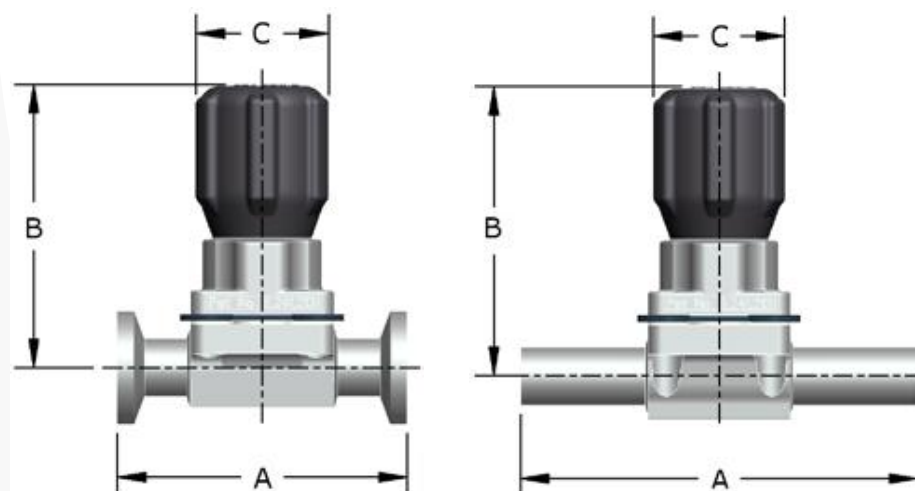
Bio-Pure[®] Dimensions

BPM Option



	ANSI (USOD)		DIN/ISO	B Open	C
	A Tri-Clamp	A Butt weld	A		
In.	2.50	3.50	3.50	2.34	1.25
mm	63,5	89,0	89,0	59,4	31,8

BPMC Option



	ANSI (USOD)		DIN/ISO	B Open	C
	A Tri-Clamp	A Butt weld	A		
In.	2.50	3.50	3.50	2.71	1.25
mm	63,5	89,0	89,0	68,9	31,8

Bio-Tek[®] Manual Bonnet

P The Bio-Tek is a compact, lightweight solution ideal for Bioprocessing applications and utilized frequently as a sample or drain port in Pharmaceutical process systems and Pure-Flo fabrications.

Type: 18 & 18S

Size Range: 0.25", 0.375", 0.5"
(DN6-DN15)

Service Pressure/Temperature:
150 psi at 220°F (10.34 bar, 104°C)
Maximum external temperature: 300°F (149°C)

Bonnet Materials:

Model 18

- Bonnet: 316 Stainless Steel
- Spindle: Stainless Steel
- Compressor: Stainless Steel
- Handwheel: PES

Model 18S

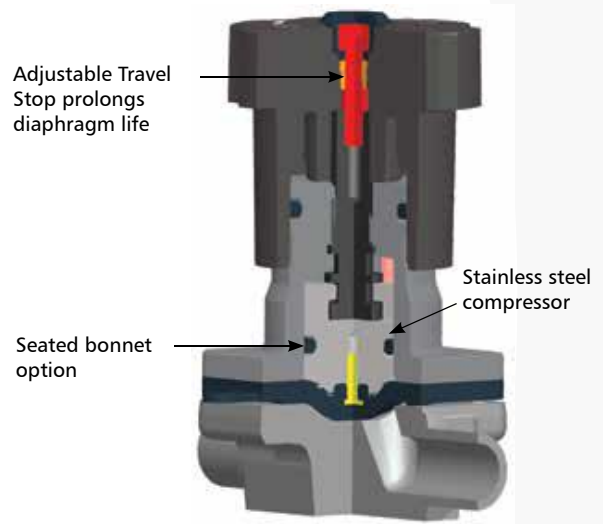
- Bonnet: 316 Stainless Steel
- Spindle: Stainless Steel
- Compressor: Stainless Steel
- O-rings: Fluoropolymer, FDA compliant
- Handwheel: PES

Handwheel Material:
PES (Polyethersulphone)

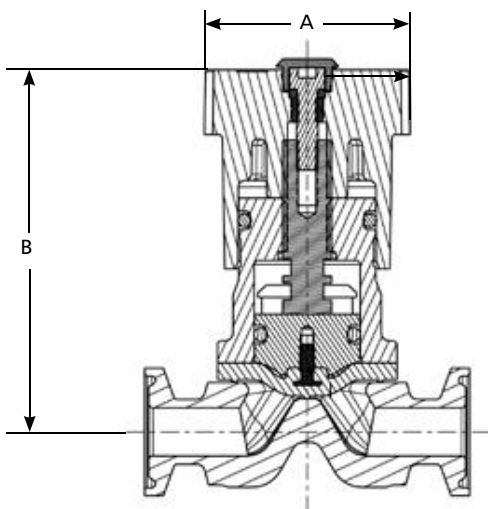
Standard Features:

- Adjustable travel stop
- Autoclavable

Note: This bonnet is available for Bio-Tek type bodies only.



Dimensions for Bio-Tek Bonnet



Valve Size		A		B Open	
Inch	DN	Inch	mm	Inch	mm
0.25, 0.375, 0.5	6, 10, 15	1.62	41,2	2.82	71,6

913 Stainless Steel Manual Bonnet

P Satisfying the most stringent biopharm processing requirements, the 913 is available with many standard and optional features. Stainless steel construction and the availability of a sealed option make the 913 bonnet an excellent choice for critical applications requiring reliability, corrosion resistance and secondary product containment.

Type: 913 & 913S

Size Range: 0.5"–4" (DN15-DN100)

Max Service Pressure:

0.5–1" (DN15-25): 200 psig (13.8 bar)

1.5–2" (DN40-50): 175 psig (12.1 bar)

3–4" (DN80-100): 150 psig (10.3 bar)

Max Service Temperature:
See Page D-9

Bonnet and Handwheel Material:
Stainless Steel

Corrosion Resistance:
Resists alcohol and most caustic washdowns.
For specific chemical resistance, consult factory.

Standard Features:

- Adjustable travel stop
- Protective cap
- Brass stem bushing
- Visual position indicator
- Permanent lubrication
- O-ring seals
- Bronze compressor
- Hygienic internals

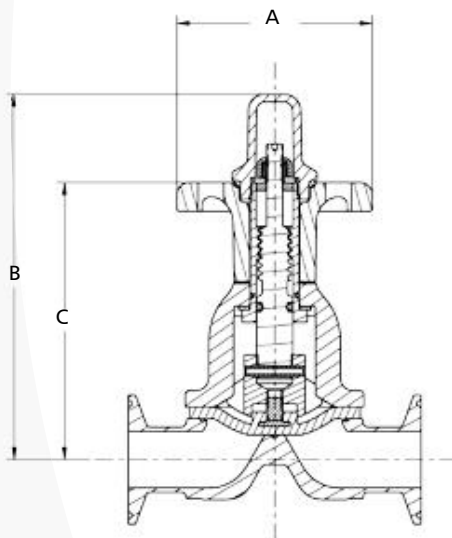


Optional Features:

- Sealed bonnets: 913S
- Adjustable opening stop
- Lockable
- Extended handwheel

Autoclavable Options:

- 913 (Unsealed)
- 913S (Sealed)



Valve Size		A		B		C		Weight	
Inch	DN	Inch	mm	Inch	mm	Inch	mm	lb	kg
0.50	15	3.00	76,2	3.62	92,1	2.75	70,0	0.72	0,33
0.75	20	3.00	76,2	4.63	117,5	3.5	88,8	1.8	0,82
1.00	25	3.00	76,2	5.50	139,8	4.17	106,0	2.3	1,05
1.50	40	5.50	139,7	8.30	210,9	5.20	132,3	7.8	3,55
2.00	50	5.50	139,7	8.90	226,2	5.80	147,4	8.4	3,82
2.50 ¹	65	7.75	196,8	11.61	294,9	7.53	191,3	13.0	5,90
3.00	80	7.75	196,8	11.61	294,9	7.53	191,3	19.0	8,64
4.00	100	10.15	257,8	14.90	378,6	10.24	260,2	32.0	14,55

¹ The 2.5 in. (DN65) valve is a 3 in. (DN80) body and topworks with 2.5 in. (DN65) end connections.

903 Cast Iron Bonnet

P The 903 is an economical option for applications that do not require autoclavability. A selection of coatings makes the 903 suitable for a range of sanitary service including USDA 3A requirements.

Type: 903 & 903S

Size Range: 0.5–4" (DN15–DN100)

Max Service Pressure:

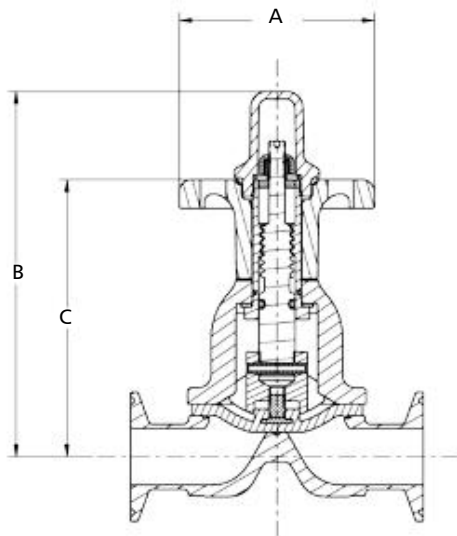
0.5–1": 200 psig (13.8 bar)

1.5–2": 175 psig (12.1 bar)

3–4": 150 psig (10.3 bar)

Max Service Temperature:

See Page D-9



Bonnet Material:

Cast iron with coating

Coatings available: Atmospheric white epoxy and PVDF

Handwheel Material:

Glass reinforced polyarylsulfane (PAS) coated to match bonnet 0.5–1" (DN15–DN25)

Cast iron with coating 1.5–4" (DN40–DN100)

Corrosion Resistance:

Resists alcohol and most semi-caustic washdowns. For specific chemical resistance, consult factory.

Standard Features:

- Adjustable travel stop
- Protective cap
- Brass stem bushing
- Visual position indicator
- Permanent lubrication
- O-ring seals
- Cast iron or zinc compressor

Optional Features:

- Sealed bonnets: 903S
- Hygienic internals
- Adjustable opening stop
- Bronze compressor
- Extended handwheel
- Lockable



Valve Size		A		B		C		Weight	
Inch	DN	Inch	mm	Inch	mm	Inch	mm	lb	kg
0.50	15	3.00	76,2	3.62	92,1	2.75	70,0	0.72	0,33
0.75	20	3.00	76,2	4.63	117,5	3.5	88,8	1.8	0,82
1.00	25	3.00	76,2	5.50	139,8	4.17	106,0	2.3	1,05
1.50	40	5.50	139,7	8.30	210,9	5.20	132,3	7.8	3,55
2.00	50	5.50	139,7	8.90	226,2	5.80	147,4	8.4	3,82
2.50 ¹	65	7.75	196,8	11.61	294,9	7.53	191,3	13.0	5,90
3.00	80	7.75	196,8	11.61	294,9	7.53	191,3	19.0	8,64
4.00	100	10.15	257,8	14.90	378,6	10.24	260,2	32.0	14,55

¹ The 2.5 in. (DN65) valve is a 3 in. (DN80) body and topworks with 2.5 in. (DN65) end connections.