

# Data Sheet

## 102/103, 202/203, 302/303 Flanged Diaphragm Seal

### FEATURES

- 316L stainless steel top housing (standard)
- A thin PTFE gasket between the diaphragm/bottom housing ensures a leak-tight, corrosion resistant seal
- Continuous duty design prevents loss of process fluid if pressure instrument is removed or fails
- Modular design allows for a suitable combination of wetted and non-wetted materials for every application

### TYPICAL USES

- Oil and gas
- Refineries
- Chemical and petrochemical
- Water and wastewater
- Biogas and Biodiesel
- NACE compliant process (Sour gas separation)

### SPECIFICATIONS

Connection Style:	102, 202, 302: Flanged 103, 203, 303: Flanged with flushing connection
Process Connection:	½, ¾, 1, 1½, 2 or 3 NPS
Instrument Connection:	¼ or ½ NPT Female
Approvals:	CRN

### WETTED COMPONENTS

Diaphragm	Bottom Housing	Gasket
See table 2 on page 2	See table 3 on page 2	PTFE

### NON-WETTED COMPONENTS

Top Housing	Flange Rings
316L SS (standard), Monel®, titanium	Carbon steel



### KEY BENEFITS

- Flushing port provides ease of cleaning
- Dual containment for safety

TABLE 1 - FLANGE RATINGS

CARBON STEEL FLANGE							STAINLESS STEEL FLANGE						
Maximum Allowable Pressure (psi)							Maximum Allowable Pressure (psi)						
Temp. (°F)	FLANGE CLASS						Temp. (°F)	FLANGE CLASS					
	150	300	600	900	1500	2500		150	300	600	900	1500	2500
<100	285	740	1480	2220	3705	6170	<100	275	750	1440	2160	3600	6000
200	260	675	1350	2025	3375	5625	200	230	600	1200	1800	3000	5000
300	230	655	1315	1970	3280	5470	300	205	540	1075	1615	2690	4480
400	200	635	1270	1900	3170	5280	400	190	495	995	1490	2485	4140
500	170	600	1200	1795	2995	4990	500	170	465	930	1395	2330	3880
600	140	550	1095	1640	2735	4560	600	140	440	885	1325	2210	3680
650	125	535	1075	1610	2685	4475	650	125	430	865	1295	2160	3600
700	110	535	1065	1600	2665	4440	700	110	420	845	1265	2110	3520
750	95	505	1010	1510	2520	4200	750	95	415	825	1240	2065	3440
800	80	410	825	1235	2060	3430	800	80	405	810	1215	2030	3380
850	65	270	535	805	1340	2230	850	65	395	790	1190	1980	3300
900	50	170	345	515	860	1430	900	50	390	780	1165	1945	3240
950	35	105	205	310	515	860	950	35	380	765	1145	1910	3180
1000	20	50	105	155	280	430	1000	20	355	710	1065	1770	2950

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**TABLE 2 - DIAPHRAGM MATERIALS**

Material	Code	100	200	300	Notes
304L SS	C	•	•		
316L SS	S	•	•		
904L SS	F		•		
Carpenter® 20	D	•	•		
Gold Plated 316L SS	W	•			Temp. limits: -40°F to 400°F (-40°C to 204°C)
Halar®-coated Monel®	R	•			
Hastelloy® B	G	•	•		
Hastelloy® C-22	J	•	•		
Hastelloy® C-276	H	•	•		
Monel® 400	P	•	•		200 series: must be ordered with Monel® top housing option (XYM)
Nickel	N	•	•		
Tantalum	U	•	•		
Titanium	Ti		•		Includes Titanium top housing
Kalrez®	K		•	•	Temp. limits: 30°F to 212°F (-1°C to 100°C) Max. pressure: 500 psi
PTFE	T		•	•	Temp. limits: -40°F to 400° (-40°C to 204°C)
Viton®	Y		•	•	Temp. limits: -40°F to 350°F (-40°C to 204°C) Max. pressure: 500 psi

**TABLE 3 - BOTTOM HOUSING MATERIALS**

Material	Code	Notes
304L SS	C	
316L SS	S	
321 SS	Q	Available by request
347 SS	E	Available by request
904L SS	F	Available by request
Carpenter 20®	D	
Duplex 2205	Z	Available by request
Halar®-coated Monel®	BH	N/A with flushing connections
Hastelloy® B	G	
Hastelloy® C-22	J	
Hastelloy® C-276	H	
Inconel® 625	W	
Monel® 400	M	
Nickel	N	
PTFE	T	N/A with flushing connection Available only with 150-class flange Max. pressure: 270 psi Max. temperature: 150°F (66°C)
PVC	V	N/A with flushing connection Available only with 150-class flange Max. pressure: 75 psi Max. temperature: 100°F (38°C)
PVDF (Kynar®)	KY	N/A with flushing connection 150-class flange (only) Max. pressure: 200 psi Max. temperature: 180°F (82°C)
Steel	B	
Tantalum-clad 316L SS	SU	N/A with flushing connection
Titanium	Ti	

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**TABLE 4 - FILL FLUIDS**

Fill Fluid	Temperature	Viscosity (cSt at 70°F (21°C))	Variation Code	Notes
Glycerin (food grade)	0°F to 400°F (-18°C to 204°C)	1,300	CG	Direct-mounting only. Not for use with vacuum service
50 cSt Silicone	-40°F to 500°F (-40°C to 260°C)	50	CK	
10 cSt Silicone	-40°F to 500°F (-40°C to 260°C)	10	DJ	
Halocarbon <sup>®</sup> 4.2	-70°F to 300°F (-57°C to 199°C)	4.2	CF	For use with oxygen/ oxidizing process media
Slytherm <sup>®</sup> 800	-40°F to 750°F (-40°C to 400°C)	10	HA	High temperature applications
Syltherm <sup>®</sup> XLT	-150°F to 500°F (-100°C to 260°C)	1.4	CC	Low temperature applications
Calflo <sup>®</sup> AF	-20°F to 600°F (-29°C to 316°C)	60	KF	High temperature, silicone-free
Mineral Oil	10°F to 400°F (-12°C to 204°C)	75	MY	
Neobee <sup>®</sup> M-20 (food grade)	5°F to 400°F (-15°C to 204°C)	9.5	NM	
Silicone (food grade)	-40°F to 500°F (-40°C to 260°C)	350	CZ	
Distilled Water	40°F to 185°F (4°C to 85°C)	0.9	FJ	
50/50 Glycerin/Water	15°F to 200°F (-9°C to 93°C)	30	GH	
Propylene Glycol	-50°F to 325°F (-46°C to 163°C)	54	CV	
Ethylene Glycol	20°F to 325°F (-7°C to 163°C)	14	FK	
50/50 Ethylene Glycol/Water	-25°F to 190°F (-32°C to 88°C)	2.9	CT	
80/20 Glycerin/Water	15°F to 225°F (-9°C to 107°C)	270	GR	
95/5 Water/Propylene Glycol	40°F to 185°F (4°C to 85°C)	1.0	PY	

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ORDERING CODE	Example:	50	1	02	C	C	02T	-XCK	SE	300	RF
<b>Process Connection Size</b>											
50 - ½ NPS		50									
75 - ¾ NPS											
10 - 1 NPS											
15 - 1½ NPS											
20 - 2 NPS											
30 - 3 NPS											
<b>Diaphragm Type</b>											
1 - 100 Series metallic capsule diaphragm threaded into top housing			1								
2 - 200 Series diaphragm welded (metallic) or bonded (elastomeric) to top housing											
3 - 300 Series elastomeric diaphragm clamped between upper & lower housing											
<b>Bottom Housing Options</b>											
02 - Flanged process connection, without flushing connection				02							
03 - Flanged process connection, with flushing connection											
<b>Diaphragm Materials (see table 2 on page 2)</b>											
C - 304L SS					C						
<b>Bottom Housing Materials (see table 3 on page 2)</b>											
C - 304L SS						C					
<b>Instrument Connection Size</b>											
02T - ¼ NPT Female							02T				
04T - ½ NPT Female											
<b>Options (if choosing option(s) must include an "X")</b>											
								-X__			
<b>Fill Fluids (see table 4 on page 3 for more available fill fluids)</b>											
CG - Glycerin											
CK - 50 cSt Silicone								CK			
CF - Halocarbon®											
<b>Optional Features</b>											
<b>Flushing Port</b>											
AW - Single ½" flushing connections (03 bottom housing only)											
DB - Dual ½" flushing connections (03 bottom housing only)											
DK - Dual ¼" flushing connections (03 bottom housing only)											
PU - Pipe plug for flushing connection											
<b>Top Housing</b>											
YM - Monel® 400 top housing											
<b>Assembly/Hardware</b>											
DU - Instrument welded to top housing											
LD - SS locking device											
NH - SS instrument tag											
SB - SS clamping bolts											
SE - SS flange rings and bolts									SE		
<b>Other</b>											
CD-5 - NACE compliance certificate											
MQ - Positive material identification											
6B - Cleaned for oxygen service											
<b>Flange Rating (see table 1 on page 1 for applicable pressure rating)</b>											
150 - ASME 150											
300 - ASME 300										300	
600 - ASME 600											
900 - ASME 900											
1500 - ASME 1500											
2500 - ASME 2500 (Available by request)											
<b>Flange Types (contact Ashcroft for alternate flange types)</b>											
RF - Raised Face											RF
RJ - Ring Joint											
FF - Flat Face											

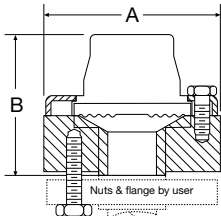
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## 102/103, 202/203, 302/303 Flanged Diaphragm Seal

### DIMENSIONS in [ ] are millimeters

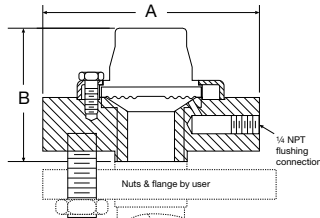
For reference only, consult Ashcroft for specific dimensional drawings

#### 102, 202, 302 - Flanged Process Connection 1/2", 3/4" NPT



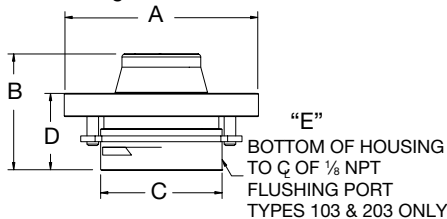
Flange Size	Rating #	A		B	
		in	mm	in	mm
1/2"	150	3.50	[89]	2.94	[75]
	300 or 600	3.75	[95]	3	[76]
	900 or 1500	4.75	[98]	3.19	[81]
3/4"	150	3.88	[152]	2.81	[71]
	300 or 600	4.63	[117]	3	[76]
	900 or 1500	5.13	[130]	3.19	[81]

#### 103, 203, 303 - Flanged Process Connection 1/2", 3/4" NPT (with flushing connection)



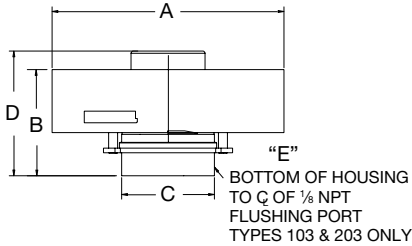
Flange Size	Rating #	A		B	
		in	mm	in	mm
1/2"	150	3.50	[89]	2.94	[75]
	300 or 600	3.75	[95]	3	[76]
	900 or 1500	4.75	[98]	3.19	[81]
3/4"	150	3.88	[152]	2.81	[71]
	300 or 600	4.63	[117]	3	[76]

#### 102, 202, 103, 203 - Flanged 1" (raised face only) one piece bottom housing, with and without flushing connection



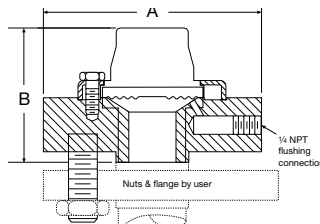
Flange Size	Rating #	A		B		C	
		in	mm	in	mm	in	mm
1"	150	4.25	[100]	2.56	[65]	1.72	[69]
	300 or 600	5	[127]				
Flange Size	Rating #	D		103 & 203 only E			
		in	mm	in	mm		
1"	150	1.63	[41]	0.38	[9]		
	300 or 600						

#### 102, 202, 103, 203 - Flanged 1" (raised face only) one piece bottom housing, with and without flushing connection



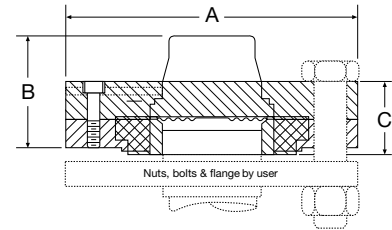
Flange Size	Rating #	A		B		C	
		in	mm	in	mm	in	mm
1"	900 or 1500	5.88	[149]	2.88	[73]	2.25	[57]
	2500	6.25	[159]				
Flange Size	Rating #	D		102 & 203 only E			
		in	mm	in	mm		
1"	900 or 1500	3.38	[86]	0.38	[9]		
	2500						

#### 102, 202, 302 - Flanged Process Connection - one piece bottom housing 1 1/2", 2", 3" (raised face only) - all materials except PVC, PTFE and Kynar



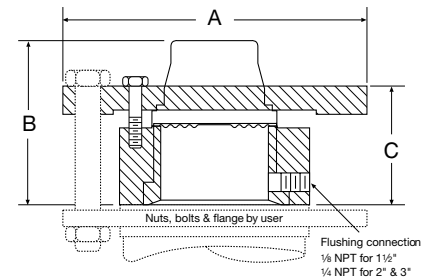
Flange Size	Rating #	A		B		C	
		in	mm	in	mm	in	mm
1 1/2"	150	5.00	[127]	2.38	[60]	1.50	[38]
	300 or 600	6.25	[159]	2.38	[60]	1.50	[38]
	900 or 1500	7.00	[178]	2.80	[71]	1.50	[38]
2"	150	6.00	[152]	2.94	[75]	1.34	[35]
	300 or 600	6.50	[165]	2.94	[75]	1.50	[38]
	900 or 1500	8.50	[216]	2.94	[75]	1.50	[38]
3"	150	7.50	[191]	2.00	[51]	1.63	[41]
	300 or 600	8.50	[216]	2.38	[60]	1.47	[37]
	900	9.50	[241]	3.00	[76]	2.09	[53]
1500	10.50	[267]	3.00	[76]	2.09	[53]	

#### 102, 202, 302 - Flanged Process Connection - (raised face only) two piece bottom housing, 1 1/2", 2", - PVC, PTFE and Kynar



Flange Size	Rating #	A		B		C	
		in	mm	in	mm	in	mm
1 1/2"	150	5	[127]	2.31	[59]	1.41	[39]
2"	150	6	[150]	2.13	[55]	1.56	[40]

#### 103, 203, 303 - Flanged 1 1/2", 2", 3" (raised face only) one piece bottom housing with flushing connection



Flange Size	Rating #	A		B		C	
		in	mm	in	mm	in	mm
1 1/2"	150	5.00	[127]	3.00	[76]	2.06	[52]
	300 or 600	6.25	[159]	3.00	[76]	2.06	[52]
	900 or 1500	7.00	[178]	3.00	[76]	2.06	[52]
2"	150	6.00	[152]	3.53	[90]	2.38	[60]
	300 or 600	6.50	[165]	3.53	[90]	2.38	[60]
	900 or 1500	8.50	[216]	3.53	[90]	2.38	[60]
3"	150	7.50	[191]	3.09	[78]	2.22	[56]
	300 or 600	8.50	[216]	3.03	[77]	2.15	[55]
	900	9.50	[241]	3.63	[92]	2.72	[69]
1500	10.50	[267]	3.63	[92]	2.72	[69]	