

Type 300 Clamped Diaphragm Seal



TYPE 300 SHOWN

When isolation of the process from an instrument is required, Ashcroft offers a comprehensive line of diaphragm seals. Seal types include threaded, flanged, in-line threaded, in-line flanged, in-line socket weld, in-line butt weld, saddle and sanitary seals. Also available is a complete offering of isolation or iso-rings and isolation or iso-spools.

Applications for diaphragm seals include:

- Elevated process temperatures
- Corrosive service
- Isolation of process for safety
- Suspended solids in process
- Sanitary connections
- Replacement of process dead leg
- Ease of cleaning between batches

FEATURES

- An elastomeric or Teflon® diaphragm is clamped securely between the top and bottom housing with clamp rings, ensuring a positive seal.
- A fill/bleed connection is standard, which permits filling the seal and instrument simultaneously after evacuation and allows the fill to flow into the completed unit.
- Available Teflon® diaphragm offers corrosion resistance to most acids, caustics, alkalis, ketones, hydrocarbons and alcohols.
- Available Viton® or Kalrez diaphragms for low pressure instruments from 10 inches of water.
- Rugged, flexible and fatigue resistant for superior service life.
- Continuous-duty design will prevent loss of process fluid if pressure instrument is removed or fails.

SPECIFICATIONS

Model Number: Type 300, 301, 302, 303, 304

Process Connection Size: See Table A

Instrument Connection Size: 1/4", 1/2" NPT

Diaphragm Material: See Table B

Bottom Housing Materials: See Table C

Filling Fluid: See Table E

OPTIONS

316 stainless steel top housing

Stainless steel clamp rings and flanged ring – includes 300 stainless steel clamping bolts (1500 psi max)

300 series stainless steel clamping bolts (max pres is 1500 psi)

Pipe plugs for flushing connections – pipe plugs are available in the same materials as bottom housings per Table C

5000 psi pressure rating – (Type 100 only) threaded inlet only, no flushing connection (metal diaphragm only)

Welded instrument to diaphragm seal

Dual flushing connections (1/2" NPT) (Limited to 2" thru 3" flanged seals)

Ring joint (Flanged seal only)

Flat face (Flanged seal only)

Clean for gaseous oxygen or strong oxidizing agent applications.

Code

YT

SE

SB

PU

HP

DU

DB

RJ

FF

6B

HOW TO ORDER:

1. From Table A...select TYPE NUMBER based on process connection, process connection size and diaphragm type/construction. (e.g., Threaded/1"/capsule-code-10-300)
2. From Table B...select DIAPHRAGM MATERIAL. (e.g., 316L stainless steel-code S)
3. From Table C...select BOTTOM HOUSING MATERIAL. (e.g., 316 stainless steel-code S)
4. From Table D...select INSTRUMENT CONNECTION size. (e.g., 1/4" NPT-code 02T)
5. From Table E...select FILLING FLUID, if diaphragm seal will be attached to instrument. (e.g., Glycerin-code CG)

Coded order: 10-300TT-02T-CG

Type 300 Clamped Diaphragm Seal

TYPE 300 SERIES SEAL TYPES

Type 300 – Threaded

¼, ½, ¾, 1 NPT



Type 301 – Threaded

with flushing connection

¼, ½, ¾, 1 NPT



Type 302 – Raised Face Flanged

½, ¾, 1 NPT



Type 303 – Raised Face Flanged

1½, 2, 3 (raised face only)

1 piece with and without flushing connection



Type 304 – In-line Threaded

¼, ½, ¾, 1 NPT



Table A – Process Connection/Type Number

| Process Connection | Process Connection Size/Code—Inches | | | | | | | | | | Type Number | |
|---|-------------------------------------|---|---|---|---|----|---|---|------------|---|-------------|-----|
| | Size Code | ¼ | ½ | ¾ | 1 | 1½ | 2 | 3 | 4 | 6 | | 8 |
| Threaded—female NPT | • | • | • | • | • | • | | | | | | 100 |
| Threaded—female NPT (with flushing conn.) | • | • | • | • | • | • | | | | | | 101 |
| Flanged ⁽¹⁾ | | | • | • | • | • | • | | | | | 102 |
| Flanged (with flushing conn.) | | | • | • | • | • | • | | | | | 103 |
| In-line—threaded NPT | • | • | • | • | • | | | | | | | 104 |
| Saddle | | | | | | | | • | AND LARGER | | | 105 |
| In-line—butt weld | | • | • | • | • | • | • | | | | | 108 |
| In-line—flanged ⁽²⁾ | | • | • | • | • | • | • | • | • | • | • | 106 |
| In-line—socket weld | | • | • | • | • | • | • | | | | | 107 |

Pressure Ratings—All 2500 psi except flanged seals are per ASME B 16.5, temperature limit determined by diaphragm, bottom housing and/or filling fluid.

Table B – Diaphragm Material

| Material | Code |
|------------------------|------|
| Teflon ⁽³⁾ | T |
| Viton ⁽⁶⁾ | Y |
| Kalrez ⁽¹⁰⁾ | K |

Table C – Bottom Housing Materials

| Material | Code |
|-------------------------------------|------|
| Steel | B |
| 304L stainless steel | C |
| 316L stainless steel | S |
| Hastelloy B | G |
| Hastelloy C 22 ⁽⁵⁾ | J |
| Hastelloy C 276 ⁽⁵⁾ | H |
| Carpenter 20 | D |
| Monel “400” | M |
| Inconel “600” | W |
| Nickel | N |
| PVC ⁽⁶⁾⁽¹²⁾ | V |
| Tantalum clad SS ⁽⁷⁾ | SU |
| Halar coated SS ⁽⁸⁾ | BH |
| Teflon flanged steel ⁽⁹⁾ | T |
| Kynar ⁽¹¹⁾⁽¹²⁾ | KY |
| Titanium ⁽⁸⁾ | TI |

Table D – Instrument Connection

| Size – NPT | Code |
|------------|------|
| ¼ | O2T |
| ½ | O4T |

Table E – Filling Fluid

| Filling | Service | Connection to Instrument | Temperature Range °F | Code |
|------------|---|--------------------------|----------------------|------|
| Glycerin | Pressure | Direct Only | 0/400 | CG |
| Silicone | Pressure/Vacuum | Direct or Flexible Line | -40/600 | CK |
| Halocarbon | Pressure/Vacuum in presence of strong oxidizing agent | Direct or Flexible Line | -70/300 | CF |
| Syltherm | Pressure/Vacuum | Direct or Flexible Line | -40/750 | HA |

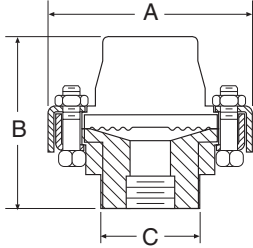
Notes:

- (1) 150, 300, 600, 900, 1500 & 2500 class flanges except 1”-1.50.
- (2) Viton diaphragm in Types 302 and 303 limited to 2”-150 class flange.
- (3) Temp. Limits: -40/400°F
- (4) Maximum Press.: 500 psi
Temp. Limits: -40/350°F
- (5) Use on applications where NACE standard MR-01-75 2003 is specified.
- (6) Maximum Press./Temp.
Threaded: 200 psi/74°F, 125 psi/125°F, 80 psi/150°F
Flanged: 75 psi/100°F
- (7) Type 302 only
- (8) Type 302 only – Temp. Limits: -40/300°F.
- (9) Only available in 1”, 1½”, & 2” 150 class, Type 302
- (10) Max. Press. 200 psi
Temp. Limits: -30/212°F
- (11) Maximum Pressure/Temp. 200 psi and 180°F
- (12) Type 300: ¼ or ½ NPT only. Larger sizes offered with solvent weld joint. N/A in 301 or 303 design

Type 300 Clamped Diaphragm Seal

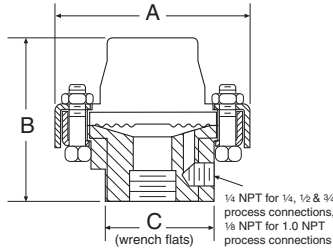
DIMENSIONS

Type 300 – Threaded
 $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, 1 NPT



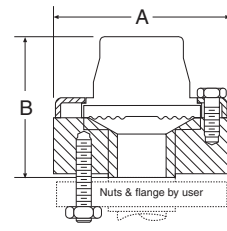
| A | | B | | C | |
|-----------------|------|------------------|------|--------------------|------|
| in | mm | in | mm | in | mm |
| $\frac{3}{4}$ " | (95) | $2\frac{7}{8}$ " | (73) | $1\frac{13}{16}$ " | (46) |

Type 301 – Threaded
 $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, 1 NPT (with flushing connection)



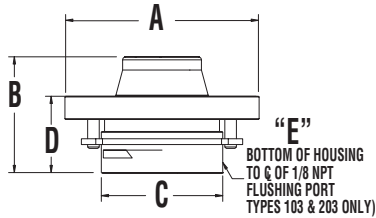
| A | | B | | C | |
|-----------------|------|------------------|------|--------------------|------|
| in | mm | in | mm | in | mm |
| $\frac{3}{4}$ " | (95) | $2\frac{7}{8}$ " | (73) | $1\frac{13}{16}$ " | (46) |

Type 302 – Flanged
 $\frac{1}{2}$ ", 1", 2", 3"



| Flange Size | Rating # | A | | B | |
|-----------------|-------------|------------------|-------|--------------------|------|
| | | in | mm | in | mm |
| 150 | | $3\frac{1}{2}$ " | (89) | $2\frac{15}{16}$ " | (75) |
| $\frac{1}{2}$ " | 300 or 600 | $3\frac{3}{4}$ " | (95) | 3" | (76) |
| | 900 or 1500 | $4\frac{3}{4}$ " | (121) | $3\frac{3}{16}$ " | (81) |
| $\frac{3}{4}$ " | 150 | $3\frac{7}{8}$ " | (98) | $2\frac{13}{16}$ " | (71) |
| | 300 or 600 | $4\frac{1}{8}$ " | (117) | 3" | (76) |
| 900 or 1500 | | $5\frac{1}{8}$ " | (130) | $3\frac{3}{16}$ " | (81) |

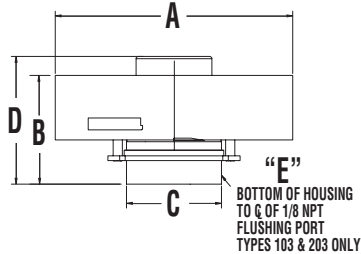
Type 302 – Flanged 1" (raised face only)
 one piece bottom housing, with and without flushing connection



| Flange Size | Rating # | A | | B | | C | |
|-------------|-------------------|------------------------------|----------------|--------------------------|------|---------------------------|------|
| | | in | mm | in | mm | in | mm |
| 1 | 150 300 or 600 | $4\text{-}1\frac{1}{4}$ 5 | (100) (127) | $2\text{-}9\frac{1}{16}$ | (65) | $1\text{-}23\frac{3}{32}$ | (69) |

| Flange | | D | | E | |
|--------|-------------------|-------------------------|------|---------------|-----|
| Size | Rating # | in. | mm | in. | mm |
| 1 | 150 300 or 600 | $1\text{-}5\frac{1}{8}$ | (41) | $\frac{3}{8}$ | (9) |

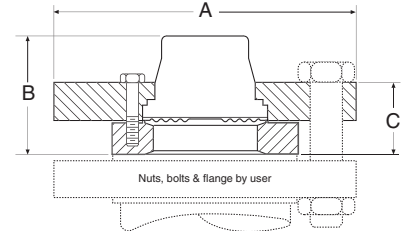
Type 302 – Flanged 1" (raised face only)
 one piece bottom housing, with and without flushing connection



| Flange Size | Rating # | A | | B | | C | |
|-------------|---------------------|--|----------------|-------------------------|------|-------------------------|------|
| | | in. | mm | in. | mm | in. | mm |
| 1 | 900 or 1500 2500 | $5\text{-}7\frac{7}{8}$ $6\text{-}1\frac{1}{4}$ | (149) (159) | $2\text{-}7\frac{7}{8}$ | (73) | $2\text{-}1\frac{1}{4}$ | (57) |

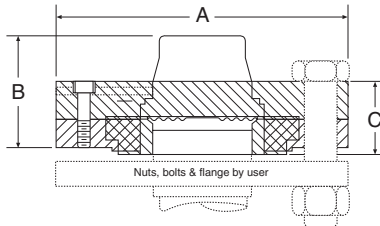
| Flange | | D | | E | |
|--------|---------------------|-------------------------|------|---------------|-----|
| Size | Rating # | in. | mm | in. | mm |
| 1 | 900 or 1500 2500 | $3\text{-}3\frac{3}{8}$ | (86) | $\frac{3}{8}$ | (9) |

Type 302 – Flanged (raised face only)
 $1\frac{1}{2}$ ", 2", 3" one piece bottom housing - all materials except PVC, Teflon and Kynar



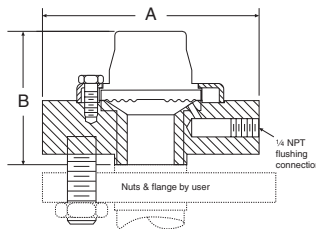
| Flange Size | Rating # | A | | B | | C | |
|------------------|-------------|-------------------|-------|--------------------|------|------------------|------|
| | | in | mm | in | mm | in | mm |
| 150 | | 5 | (127) | $1\frac{1}{2}$ " | (38) | | |
| $1\frac{1}{2}$ " | 300 or 600 | $6\frac{1}{4}$ " | (159) | $2\frac{3}{8}$ " | (61) | $1\frac{1}{2}$ " | (38) |
| | 900 or 1500 | 7 | (178) | | | $1\frac{1}{2}$ " | (38) |
| 150 | | 6 | (152) | $1\frac{3}{8}$ " | (35) | | |
| 2" | 300 or 600 | $6\frac{1}{2}$ " | (165) | $1\frac{15}{16}$ " | (49) | $1\frac{1}{2}$ " | (38) |
| | 900 or 1500 | $8\frac{1}{2}$ " | (216) | $2\frac{1}{8}$ " | (54) | | |
| 150 | | $7\frac{1}{2}$ " | (191) | 2 | (51) | $1\frac{7}{8}$ " | (41) |
| 3" | 300 or 600 | $8\frac{1}{4}$ " | (206) | $2\frac{1}{4}$ " | (52) | $1\frac{7}{8}$ " | (47) |
| | 900 or 1500 | $10\frac{1}{2}$ " | (267) | $2\frac{11}{16}$ " | (68) | $3\frac{1}{4}$ " | (82) |

Type 302 – Flanged 1" (raised face only)
 two piece bottom housing, $1\frac{1}{2}$ ", 2", - PVC, Teflon and Kynar



| Flange Size | Rating # | A | | B | | C | |
|------------------|----------|----|-------|-------------------|------|--------------------|------|
| | | in | mm | in | mm | in | mm |
| $1\frac{1}{2}$ " | 150 | 5 | (127) | $2\frac{5}{16}$ " | (59) | $1\frac{13}{32}$ " | (39) |
| 2" | 150 | 6 | (152) | $2\frac{1}{8}$ " | (54) | $1\frac{9}{16}$ " | (40) |

Type 303 – Flanged
 $\frac{1}{2}$ ", $\frac{3}{4}$ " (with flushing connection)

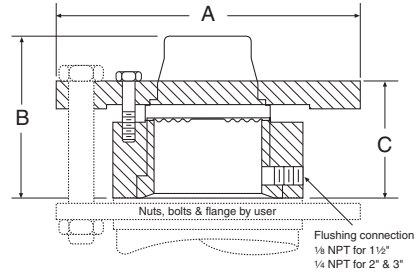


| Flange Size | Rating # | A | | B | |
|-----------------|-------------|------------------|-------|--------------------|------|
| | | in | mm | in | mm |
| 150 | | $3\frac{1}{2}$ " | (89) | $2\frac{15}{16}$ " | (75) |
| $\frac{1}{2}$ " | 300 or 600 | $3\frac{3}{4}$ " | (95) | 3" | (76) |
| | 900 or 1500 | $4\frac{3}{4}$ " | (121) | $3\frac{3}{16}$ " | (81) |
| 150 | | $3\frac{7}{8}$ " | (98) | $2\frac{13}{16}$ " | (71) |
| $\frac{3}{4}$ " | 300 or 600 | $4\frac{1}{8}$ " | (117) | 3" | (76) |

Type 300 Clamped Diaphragm Seal

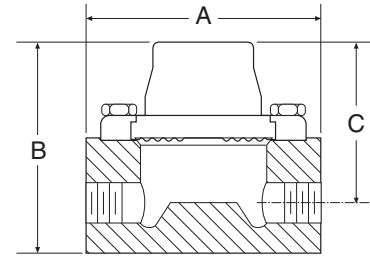
DIMENSIONS

Type 303 – Flanged 1½," 2," 3" (raised face only)
one piece bottom housing with flushing connection



| Flange Size | Rating # | A | | B | | C | |
|-------------|-------------|-----|-------|--------|------|-------|------|
| | | in | mm | in | mm | in | mm |
| 1½" | 150 | 5 | (127) | | | | |
| | 300 or 600 | 6¼ | (159) | 3 | (76) | 2½/16 | (52) |
| | 900 or 1500 | 7 | (178) | | | | |
| 2" | 150 | 6 | (152) | | | | |
| | 300 or 600 | 6½ | (165) | 3½/16 | (84) | 2¾ | (60) |
| | 900 or 1500 | 8½ | (215) | | | | |
| 3" | 150 | 7½ | (191) | 3¾/16 | (79) | 2½/16 | (56) |
| | 300 or 600 | 8¼ | (210) | 3¾/16 | (81) | 2½/16 | (57) |
| | 900 | 9½ | (241) | | | | |
| | 1500 | 10½ | (267) | 3²³/₃₂ | (94) | 2¾ | (70) |

Type 304 – In-Line Threaded
¼, ½, ¾, 1 NPT



| Process Connection | A | B | C |
|--------------------|----|---------|---------|
| | in | mm | mm |
| ¼ NPT | 4 | 2¾ (67) | 2½ (54) |
| ½ NPT | | 3¾ (92) | 2¾ (70) |
| ¾ NPT | | 3¾ (98) | 3 (76) |
| 1 NPT | | 3¾ (98) | 3 (76) |