

Type 200 Series Welded or Bonded Diaphragm Seal



TYPE 200 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

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

FEATURES

- A metal diaphragm is welded to the top housing. Elastomeric diaphragms are bonded to the top housing. Either provides a double 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.
- A thin Teflon PTFE gasket between the diaphragm and bottom housing ensures a leak-tight corrosion resistant seal even at high pressure.
- Top housing and pressure instrument are removable.
- Continuous-duty design will prevent loss of process fluid if pressure instrument is removed or fails.

SPECIFICATIONS

Model Number: Type 200, 201, 202, 203, 204, 205, 206, 207, 208

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 Threaded inlet and 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-10-200)
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)

Typical Code: 10-200SS-02T-CG

Type 200 Series Welded or Bonded Diaphragm Seal

TYPE 200 SERIES WELDED OR BONDED SEAL TYPES

Type 200 – Threaded
 ¼, ½, ¾, 1 NPT



Type 201 – Threaded with flushing connection
 ¼, ½, ¾, 1 NPT



Type 202 – Raised Face Flanged
 ½, ¾, 1, 1½, 2, 3"



Type 203 – Raised Face Flanged with flushing connection
 ½, ¾, 1, 1½, 2, 3"
 (raised face only)
 1 piece with flushing connection



Type 204 – In-line Threaded
 ¼, ½, ¾, 1 NPT



Type 205 – Saddle
 3, 4" pipe only



Type 206 – In-line Flanged
 ½, ¾, 1, 1½, 2, 3, 4, 6, 8"



Type 207 – In-line Socket Weld
 ½, ¾, 1, 1½, 2"



Type 208 – In-line Butt Weld
 ¼, ½, ¾, 1, 1½, 2"



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 | Code |
| Threaded—female NPT | | * | * | * | * | * | | | | | | 200 |
| Threaded—female NPT (with flushing conn.) | | * | * | * | * | * | | | | | | 201 |
| Flanged ⁽¹⁾ | | | * | * | * | * | * | * | | | | 202 |
| Flanged (with flushing conn.) | | | * | * | * | * | * | * | | | | 203 |
| In-line—threaded NPT | | * | * | * | * | * | | | | | | 204 |
| Saddle | | | | | | | | * | AND LARGER | | | 205 |
| In-line—butt weld | | * | * | * | * | * | * | * | | | | 208 |
| In-line—flanged ⁽²⁾ | | * | * | * | * | * | * | * | * | * | * | 206 |
| In-line—socket weld | | * | * | * | * | * | * | * | | | | 207 |

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 |
|--------------------------------|------|
| 316L stainless steel | S |
| 304 stainless steel | C |
| Monel 400 | P |
| Nickel | N |
| Carpenter 20 | D |
| Tantalum | U |
| Hastelloy B | G |
| Hastelloy C 22 ⁽⁶⁾ | J |
| Hastelloy C 276 ⁽⁶⁾ | H |
| Teflon ⁽⁴⁾ | T |
| Viton ⁽⁵⁾ | Y |
| Kalrez ⁽¹²⁾ | K |
| Titanium ⁽¹⁴⁾ | TI |

Table C – Housing Materials

| Material | Code |
|--------------------------------------|------|
| Steel | B |
| 304L stainless steel | C |
| 316L stainless steel | S |
| Hastelloy B | G |
| Hastelloy C 22 ⁽⁶⁾ | J |
| Hastelloy C 276 ⁽⁶⁾ | H |
| Carpenter 20 | D |
| Monel “400” | M |
| Inconel “600” | W |
| Nickel | N |
| PVC ⁽⁷⁾⁽¹⁵⁾ | V |
| Tantalum clad SS ⁽⁶⁾ | SU |
| Halar coated SS ⁽⁹⁾ | BH |
| Teflon flanged steel ⁽¹⁰⁾ | T |
| Kynar ⁽¹³⁾⁽¹⁵⁾ | KY |
| Titanium | 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 | -40/500 | CK |
| Halocarbon | Pressure/Vacuum in presence of strong oxidizing agent | Direct or Flexible Line | -70/300 | CF, DJ |
| Syltherm | Pressure/Vacuum | Direct or Flexible Line | -40/750 | HA |

Notes:

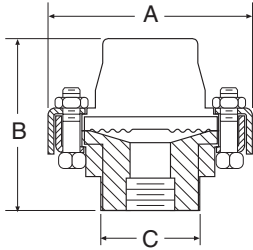
- (1) 150, 300, 600, 900, 1500 & 2500 class flanges.
- (2) 1" 150 thru 8" 300 class flanges only.
- (3) Metal diaphragms welded; Teflon, Kalrez & Viton diaphragms bonded.
- (4) Temp limits: -40/400°F.
- (5) Max. pressure: 500 psi, Temp. limits: -40/350°F.
- (6) Use on applications where NACE standard MR-01-75 2003 is standard.
- (7) Maximum press./temp. Threaded: 200 psi/74°F, 125 psi/125°F, 80 psi/150°F. Flanged: 75 psi/100°F.
- (8) Type 202 only.
- (9) Temp. Limits: -40/300°F.
- (10) Only available in 1", 1½", & 2" 150 class, Types 202 max. press./temp. - 270 psi and 150°F. Consult factory for conditions beyond these limits.
- (11) Max. pressure: 500 psi, Temp. limits: 30/212°F.
- (12) Maximum pressure/temp.: 200 psi and 180°F.
- (13) Type 200: ¼ or ½ NPT only. Larger sizes offered with solvent weld joint. N/A in 201 or 203 design.
- (14) Includes Titanium top housing.
- (15) Type 200 only available in 1/4 NPT or 1/2 NPT. 3/4" & 1" size available as solvent welded joint only.

Type 200 Series Welded or Bonded Diaphragm Seal

DIMENSIONS

Type 200 – Threaded

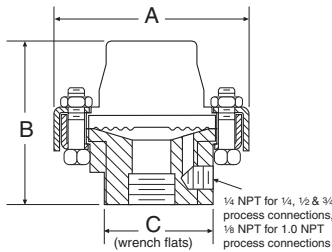
¼, ½, ¾, 1 NPT



| A | | B | | C | |
|----|------|--------|------|----------|------|
| in | mm | in | mm | in | mm |
| ¾" | (95) | 2 7/8" | (73) | 1 13/16" | (46) |

Type 201 – Threaded

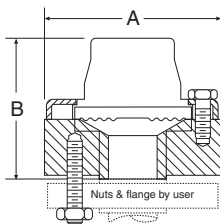
¼, ½, ¾, 1 NPT (with flushing connection)



| A | | B | | C | |
|----|------|--------|------|----------|------|
| in | mm | in | mm | in | mm |
| ¾" | (95) | 2 7/8" | (73) | 1 13/16" | (46) |

Type 202 – Flanged

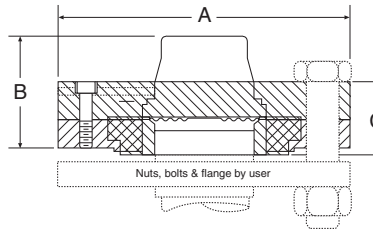
½, ¾, 1"



| Flange Size | Rating # | A | | B | |
|-------------|-------------|--------|-------|----------|------|
| | | in | mm | in | mm |
| 150 | | 3 1/2" | (89) | 2 15/16" | (75) |
| ½" | 300 or 600 | 3 3/4" | (95) | 3" | (76) |
| | 900 or 1500 | 4 3/4" | (121) | 3 3/4" | (81) |
| 150 | | 3 7/8" | (98) | 2 13/16" | (71) |
| ¾" | 300 or 600 | 4 5/8" | (117) | 3" | (76) |
| | 900 or 1500 | 5 1/8" | (130) | 3 3/4" | (81) |

Type 202 – Flanged 1" (raised face only)

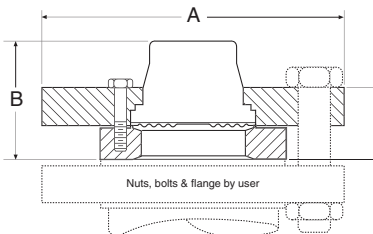
two piece bottom housing, 1 ½, 2, 3" - PVC, Teflon and Kynar



| Flange Size | Rating # | A | | B | | C | |
|-------------|----------|----|-------|---------|------|----------|------|
| | | in | mm | in | mm | in | mm |
| 1 ½" | 150 | 5" | (127) | 2 5/16" | (59) | 1 13/32" | (39) |
| 2" | 150 | 6" | (152) | 2 1/8" | (54) | 1 9/16" | (40) |

Type 202 – Flanged (raised face only)

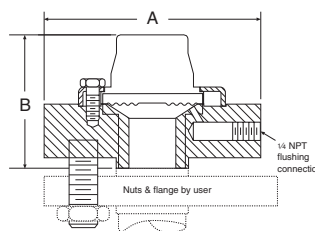
1 ½, 2, 3" one piece bottom housing - all materials except PVC, Teflon and Kynar



| Flange Size | Rating # | A | | B | | C | |
|-------------|-------------|---------|-------|----------|------|--------|------|
| | | in | mm | in | mm | in | mm |
| 1 ½" | 150 | 5" | (127) | 1 1/2" | (38) | 1 1/2" | (38) |
| | 300 or 600 | 6 1/4" | (159) | 2 3/8" | (61) | 1 1/2" | (38) |
| | 900 or 1500 | 7" | (178) | 1 1/2" | (38) | 1 1/2" | (38) |
| 2" | 150 | 6" | (152) | 1 3/8" | (35) | 1 1/2" | (38) |
| | 300 or 600 | 6 1/2" | (165) | 1 15/16" | (49) | 1 1/2" | (38) |
| | 900 or 1500 | 8 1/2" | (216) | 2 1/8" | (54) | 1 1/2" | (38) |
| 3" | 150 | 7 1/2" | (191) | 2" | (51) | 1 5/8" | (41) |
| | 300 or 600 | 8 1/4" | (206) | 2 1/4" | (52) | 1 7/8" | (47) |
| | 900 or 1500 | 10 1/2" | (267) | 2 11/16" | (68) | 3 1/4" | (82) |

Type 203 – Flanged

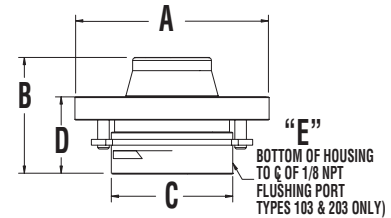
½, ¾" (with flushing connection)



| Flange Size | Rating # | A | | B | |
|-------------|-------------|--------|-------|----------|------|
| | | in | mm | in | mm |
| 150 | | 3 1/2" | (89) | 2 15/16" | (75) |
| ½" | 300 or 600 | 3 3/4" | (95) | 3" | (76) |
| | 900 or 1500 | 4 3/4" | (121) | 3 3/4" | (81) |
| 150 | | 3 7/8" | (98) | 2 13/16" | (71) |
| ¾" | 300 or 600 | 4 5/8" | (117) | 3" | (76) |

Type 202/203 – Flanged 1" (raised face only)

one piece bottom housing, with and without flushing connection. Class 150, 300, 600

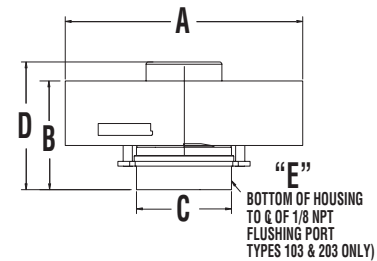


| Flange Size | Rating # | A | | B | | C | |
|-------------|------------|--------|-------|---------|------|----------|------|
| | | in | mm | in | mm | in | mm |
| 1 | 150 | 4-1/4" | (100) | 2-9/16" | (65) | 1-23/32" | (69) |
| | 300 or 600 | 5" | (127) | | | | |

| Flange Size | Rating # | 103 & 203 only | |
|-------------|------------|----------------|-------|
| | | in. D | in. E |
| 1 | 150 | 1-5/8" | (41) |
| | 300 or 600 | 3/8" | (9) |

Type 202/203 – Flanged 1" (raised face only)

one piece bottom housing, with and without flushing connection. Class 900, 1500, 2000



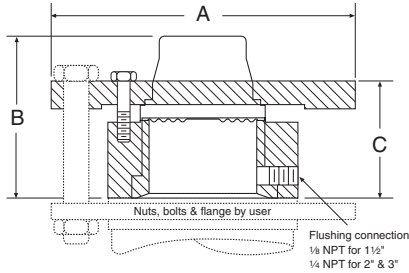
| Flange Size | Rating # | A | | B | | C | |
|-------------|-------------|--------|-------|--------|------|--------|------|
| | | in. | mm | in. | mm | in. | mm |
| 1 | 900 or 1500 | 5-7/8" | (149) | 2-7/8" | (73) | 2-1/4" | (57) |
| | 2500 | 6-1/4" | (159) | | | | |

| Flange Size | Rating # | 103 & 203 only | |
|-------------|-------------|----------------|-------|
| | | in. D | in. E |
| 1 | 900 or 1500 | 3-3/8" | (86) |
| | 2500 | 3/8" | (9) |

Type 200 Series Welded or Bonded Diaphragm Seal

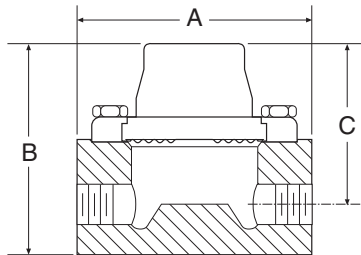
DIMENSIONS

Type 203 – Flanged 1½," 2," 3" (raised face only)
one piece bottom housing with flushing connection



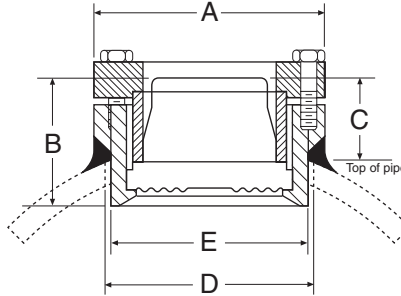
| Flange Size | Rating # | A in | A mm | B in | B mm | C in | C mm |
|-------------|-------------|------|-------|------|------|------|------|
| 150 | | 5 | (127) | | | | |
| 1½" | 300 or 600 | 6¼ | (159) | 3 | (76) | 2½ | (64) |
| | 900 or 1500 | 7 | (178) | | | | |
| 2" | 300 or 600 | 6 | (152) | 3½ | (89) | 2¾ | (71) |
| | 900 or 1500 | 8½ | (216) | | | | |
| 3" | 150 | 7½ | (191) | 3¾ | (94) | 2¾ | (71) |
| | 300 or 600 | 8¼ | (210) | 3¾ | (94) | 2¾ | (71) |
| | 900 | 9½ | (241) | | | | |
| | 1500 | 10½ | (267) | | | | |

Type 204 – In-Line Threaded
¼, ½, ¾, 1 NPT



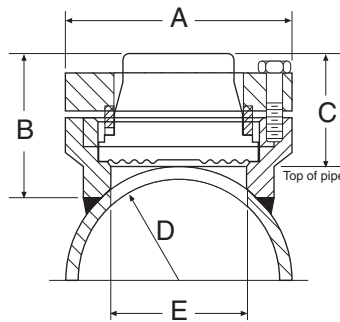
| Process Connection | A in | A mm | B in | B mm | C in | C mm |
|--------------------|------|-------|------|------|------|------|
| ¼ NPT | 4 | (102) | 2½ | (64) | 2½ | (64) |
| ½ NPT | | | 3¾ | (92) | 2¾ | (71) |
| ¾ NPT | | | 3¾ | (92) | 3 | (76) |
| 1 NPT | | | 3¾ | (92) | 3 | (76) |

Type 205 – Saddle
4" Pipe only



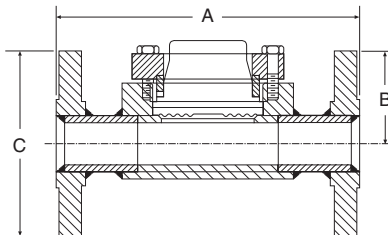
| A in | A mm | B in | B mm | C in | C mm | D in | D mm | E in | E mm |
|------|------|------|------|------|------|------|------|------|------|
| 3½ | (89) | 1½ | (38) | 1¾ | (48) | 3 | (76) | 2¾ | (71) |

Type 205 – Saddle
3" Pipe only



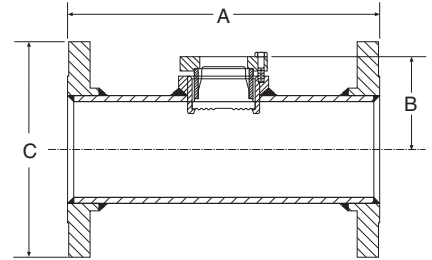
| A in | A mm | B in | B mm | C in | C mm | D in | D mm | E in | E mm |
|------|------|------|------|------|------|------|------|------|------|
| 3½ | (89) | 2¼ | (57) | 1¾ | (44) | 1¾ | (44) | 2½ | (64) |

Type 206 – In-Line Flanged
½, 1, 1½, 2, 3"



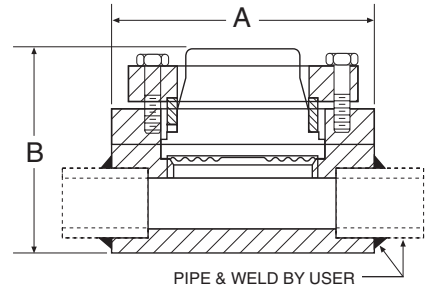
| Flange Size | Rating # | A in | A mm | B in | B mm | C in | C mm |
|-------------|----------|------|-------|------|------|------|-------|
| ½" | 150 | 7 | (178) | | | 3½ | (89) |
| | 300 | 7 | (178) | 2½ | (62) | 3¾ | (92) |
| 1" | 150 | 7 | (178) | 2½ | (62) | 4¼ | (108) |
| | 300 | 8 | (203) | | | 4¾ | (120) |
| 1½" | 150 | 8 | (203) | 2½ | (62) | 5 | (127) |
| | 300 | 9 | (229) | | | 6½ | (165) |
| 2" | 150 | 9 | (229) | 2½ | (62) | 6 | (152) |
| | 300 | 10 | (254) | | | 6½ | (165) |
| 3" | 150 | 11 | (279) | 3 | (76) | 7½ | (190) |
| | 300 | 12 | (305) | | | 8¼ | (210) |

Type 206 – In-Line Flanged
4," 6," 8"



| Flange Size | Rating # | A in | A mm | B in | B mm | C in | C mm |
|-------------|----------|------|-------|------|-------|------|-------|
| 4" | 150 | 13 | (330) | 3¾ | (92) | 9 | (229) |
| | 300 | 14 | (356) | | | 10 | (254) |
| 6" | 150 | 16 | (406) | 4¾ | (119) | 11 | (279) |
| | 300 | 17 | (432) | | | 12½ | (318) |
| 8" | 150 | 16 | (406) | 5¾ | (146) | 13½ | (343) |

Type 207 – In-Line Welded
¼, ½, ¾, 1, 1½, 2"



| Pipe Size | A in | A mm | B in | B mm |
|-----------|------|-------|------|------|
| ¼" | 4 | (102) | 2½ | (64) |
| ½, ¾" | | | 2½ | (64) |
| 1" | | | 2½ | (64) |
| 1½" | | | 2¾ | (71) |
| 2" | | | 2¾ | (71) |