

Model 330B

Diaphragm Seals for Flanged Off-Line Process Connections 2" (50.80mm) and Larger

Process Connection Sizes

2" through 3"

ASME/ANSI Flange Ratings Up to 2500#

Maximum Working Pressure

Conforms to Flange Pressure-Temperature Ratings per ASME/ANSI B16.5

Flange Faces (125 - 250 R_A Spiral Finish is Standard)

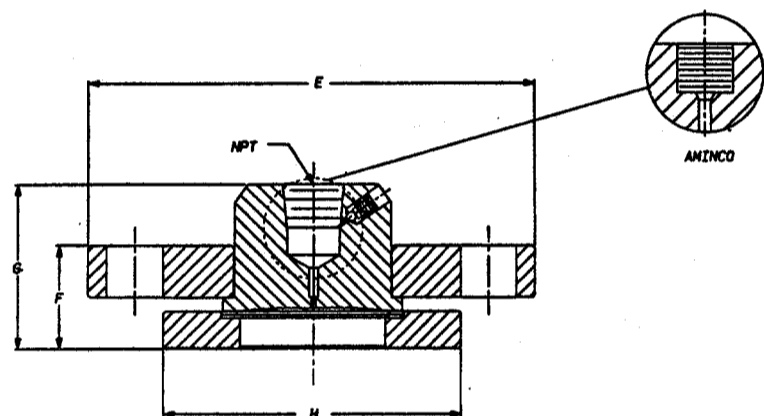
Raised Face, Flat Face, Ring Type Joint, and Special Flange Faces are available. Consult the Factory

Dimensional Data

Process Connection Size

	2"	3"
150#	E (1.52)	7.50 (190)
	F (35)	1.64 (51)
	G (56)	2.25 (67)
	H (102)	5.00 (127)
300#	E (165)	8.25 (210)
	F (60)	2.25 (84)
	G (53)	1.87 (56)
	H (102)	5.00 (127)

() Dimensions in millimeters



Standard Features and Options

This flanged connection, off-line seal has a diaphragm welded to the upper housing. This design allows for the use of diaphragm materials that are of a weldable grade. The displacement capability of this series of diaphragm seal is 0.15 cubic inches utilizing a 3" (76mm) diameter diaphragm.

These seals are designed for direct connection to standard ANSI flanges in 2" through 3" sizes and up to 2500 # ratings. Larger sizes are available upon request.

Due to the material strength of non-metallics, the maximum pressure and temperature rating for this series seal is 200 PSIG (1.38 MPa) at 140°F (60°C), when non-metallic lowers are required (See Note 1 below). Flushing connections in metallic lowers are optional. The seal-off features is standard.

Standard instrument connections are 1/4" NPTF and 1/2" NPTF with the 1/4" Aminco as an option. The 1/4" Aminco is a straight thread and cone seat style instrument connection that reduces the amount of fill fluid in the body cavity reducing the amount of error caused by thermal expansion and contraction of fill fluid.

Offerings

Lower Materials: All metallic and non-metallic (See Note 10)

Upper Materials: Carbon Steel or 316 Stainless Steel. Optional materials are Carpenter 20, Titanium and Monel - Refer to Control Engineering Data for Details.

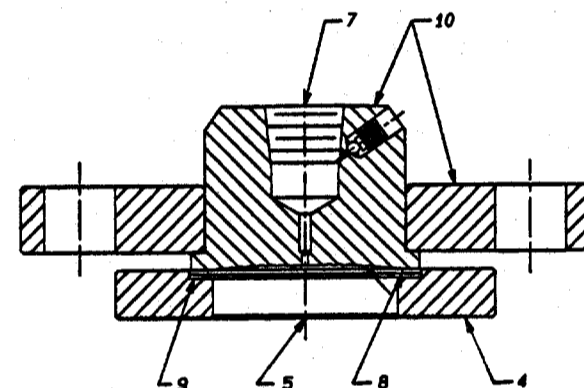
Diaphragm Materials: All metallic

CONTROL ENGINEERING DATA

D8HC9 4 4 H G C 0 0 0 0 N

- (15) FILL LIQUID
N = (Standard)
- (14) PLATING OPTION
0 = None (Standard)
G = Gold Plating Diaphragm Only (See Note 12)
- (13) TEFLON COATINGS (See Note 13)
0 = None (Standard)
A = Teflon Coated Diaphragm Only
B = Teflon Coated Diaphragm and Lower Housing
- (12) FUTURE OPTION
0 = Not Applicable
- (11) FLUSH CONNECTION (See Note 7) (Not Shown)
0 = None
1 = 1/8" NPTF
2 = 1/4" NPTF
3 = 1/4" NPTF-DUAL
- (10) UPPER HOUSING MATERIAL
B = Carbon Steel - N.A.C.E. (No Weld Ring)
F = 316 Stainless Steel - N.A.C.E. (No Weld Ring)
N = Monel - N.A.C.E. (No Weld Ring)
C = Carbon Steel (Standard)
S = 316 Stainless Steel
M = Monel (See Note 6)
2 = Carpenter 20 CB-3 (See Notes 2 and 6)
T = Titanium (See Notes 9 and 10)
- (9) SEAL GASKET MATERIAL
0 = None
3 = 316 Stainless Steel - Silver Plated (See Note 5)
B = Buna N
H = Hastelloy C - Silver Plated (See Note 5)
G = Grafoil
T = Teflon (See Note 4)
V = Viton
S = CGR2750 (See Note 3)
- (8) SEAL DIAPHRAGM MATERIAL
C = Carpenter 20 CB-3 (See Notes 2 and 6)
H = Hastelloy B3
D = Hastelloy C-276
I = Inconel 600
M = Monel 400 (See Note 6)
N = Nickel 200
J = 316L Stainless Steel (See Note 1)
T = Tantalum (See Note 2)
E = Titanium - Grade 2 (See Notes 2 and 6)
- (7) SEAL INSTRUMENT CONNECTION
1 = 1/4" NPTF with bleed
2 = 1/2" NPTF with bleed
4 = 1/4" AMINCO with bleed (Formerly 824B Series)
- (6) SEAL FLANGE PRESSURE RATING (See Note 11)
1 = 150#RF
X = 150#FF
3 = 150#RTJ
4 = 300#RF
W = 300#FF
6 = 300#RTJ
7 = 600#RF
8 = 600#FF
9 = 600#RTJ
A = 900#RF
D = 900#RTJ
B = 1500#RF
E = 1500#RTJ
5 = 2500#RF
F = 2500#RTJ
- (5) SEAL PROCESS CONNECTION
9 = 2"
B = 3"
- (3-4) LOWER HOUSING MATERIAL (WETTED)
C2 = Carpenter 20 CB-3
CS = Carbon Steel
HB = Hastelloy B3
HC = Hastelloy C-276
I6 = Inconel 600
M4 = Monel 400
N2 = Nickel 200
KN = Kynar
PP = Polypropylene
PV = PVC
S4 = 304 Stainless Steel
S6 = 316 Stainless Steel
SF = 304L Stainless Steel
SL = 316L Stainless Steel
TC = Teflon-Carbon Filled
TG = Teflon-Glass Filled
TI = Titanium - Grade 4
TP = Tantalum Clad (Wetted Surface Only) (See Note 8)
00 = No Lower Housing (Upper Housing Only)
- (1-2) DIAPHRAGM SEAL DESIGN
D8 = 330B- Flanged Off-Line
*D6 = 330BR Flanged Off-Line (Ring Type Joint)
*D9 = 330BZ Flanged Off-Line (Customer to Specify Pipe Style)
*For Metallic Lower Housings Only

CATALOG NUMBERS AS RECEIVED
FOR THE 330B SERIES MUST CONTAIN
FIFTEEN (15) CHARACTERS



Notes:

- Standard diaphragm material is 316L Stainless Steel for seals with lower housing manufactured of CS, S4, S6, SL and SF.
- Standard diaphragm material is Tantalum for seals with lower housing manufactured of C2, TI, PV, TC, PP, KN, TP and TG.
- CGR2750 Gaskets are standard for all seals rated to 300# (2.07 MPa).
- Standard gasket material for seals with lower housing manufactured of non-metallic material is Teflon.
- 316 Stainless Steel and Hastelloy - Silver Plated gaskets are offered for seals with ratings 600# (4.14 MPa) and higher.
- When a Monel, Carpenter 20 or Titanium diaphragm is chosen in Position 8, then an equivalent upper housing is required.
- Flushing connections are not available with lower housings manufactured of a non-metallic material.
- Tantalum clad lower housings will be supplied with a raised face - smooth flange face - no serrations. Tantalum plated lowers cannot be supplied with flush connections.
- N.A.C.E. - Welded diaphragm seals with Hastelloy C-276 or Monel wetted materials of construction will meet the requirements of N.A.C.E. International Document MR-0175-1995. 316 Stainless Steel construction will NOT BE offered in a welded design as meeting N.A.C.E. MR-0175-1995 requirements as the weld area of the diaphragm seal will not meet the maximum hardness specifications within this document.
- Non-metallic lower housings are not available for flange ratings greater than 300 # (2.07 MPa). The maximum temperature and pressure rating for non-metallic lowers is 200 PSIG (1.38 MPa) at 140°F (60°C), regardless of the mating flange size.
- Refer to Miscellaneous Data Section for Pressure-Temperature Rating Guide.
- Tantalum and Titanium materials cannot be gold plated.
- Teflon-S® Coating (FEP Grade).

Model 330B

Diaphragm Seals for Flanged Off-Line Process Connections Less than 1-1/2" (38.10mm)

Process Connection Sizes

1/2" through 1-1/2"
ASME/ANSI Flange Ratings Up to 2500#

Maximum Working Pressure

Conforms to Flange Pressure-Temperature Ratings per ASME/ANSI B16.5 (See Notes 8, 9, 10, 13 and 14)

Flange Faces (125 - 150 R, Spiral Finish is Standard)

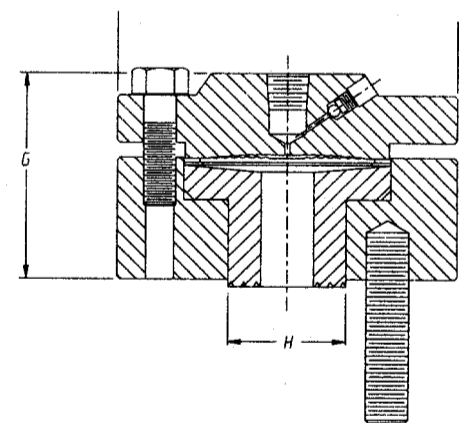
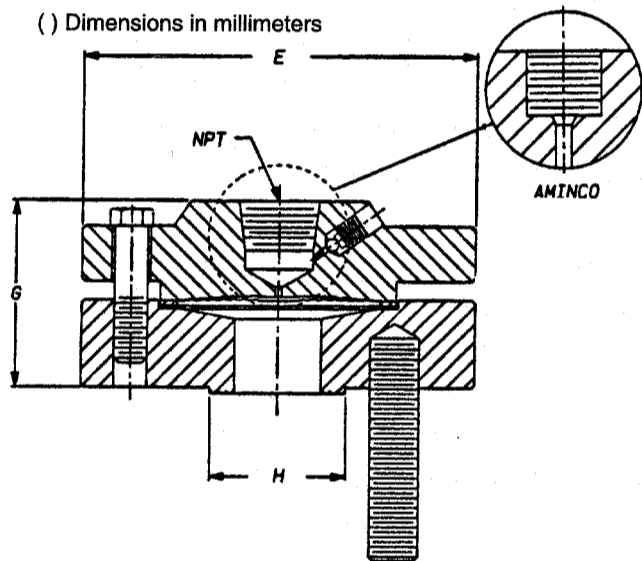
Raised Face, Flat Face, Ring Type Joint and Special Flange Faces are available. Consult the Factory

Dimensional Data

Process Connection Size

	1/2"	3/4"	1"	1-1/2"		
150#	E	4.25 (108)	4.25 (108)	4.25 (108)	5.00 (127)	
	F	0.06 (1.5)	0.06 (1.5)	0.06 (1.5)	0.06 (1.5)	
	G	2.05 (52)	2.05 (52)	2.05 (52)	2.05 (52)	
	H	1.38 (35)	1.69 (43)	2.00 (51)	2.88 (73)	
	K	1.75 (44)	2.00 (51)	2.00 (51)	2.25 (57)	
	L	0.50 (13)	0.50 (13)	0.50 (13)	0.50 (13)	
	B.C. DIAMETER	2.38 (60)	2.75 (70)	3.12 (79)	3.88 (99)	
	NO. OF BOLTS/STUDS	4	4	4	4	
	300#	E	4.25 (108)	4.62 (117)	5.88 (149)	6.12 (155)
		F	0.06 (1.5)	0.06 (1.5)	0.06 (1.5)	0.06 (1.5)
G		2.05 (52)	2.05 (52)	2.36 (60)	2.76 (70)	
H		1.38 (35)	1.69 (43)	2.00 (51)	2.25 (57)	
K		2.00 (51)	2.38 (60)	2.38 (60)	2.75 (70)	
L		0.50 (13)	0.62 (16)	0.62 (16)	0.75 (19)	
B.C. DIAMETER		2.62 (67)	3.25 (83)	3.50 (89)	4.50 (114)	
NO. OF BOLTS/STUDS		4	4	4	4	

() Dimensions in millimeters



NON-METALLIC LOWER HOUSING

Standard Features and Options

This flanged connection, off-line seal has a diaphragm welded to the upper housing. This design allows for the use of diaphragm materials that are of a weldable grade. The displacement capability of this series of diaphragm seal is 0.15 cubic inches utilizing a 3.0" (76.20 mm) diameter diaphragm.

These seals are designed for direct connection to standard ASME/ANSI flanges in 1/2" (12.70mm) through 1-1/2" (38.10 mm) and up to 2500# ratings. The upper housing is bolted to the lower housing with sufficient load to maintain ANSI B16.5 pressure and temperature ratings (See Notes 8, 9, 10, 11, 13 and 14). Because of the bolt circle location, as defined by ANSI B16.5, threaded flange studs are provided.

Due to the material strength of non-metallics, the maximum pressure and temperature rating for this series seal is 200 PSIG (1.38 MPa) at 140°F (60°C), when non-metallic lowers are required. Flushing connections in metallic lowers are optional. The seal-off feature is standard.

Standard instrument connections are 1/4" NPTF and 1/2" NPTF with the 1/4" Aminco as an option. The 1/4" Aminco is a straight thread and cone seat style instrument connection that reduces the amount of fill fluid in the body cavity reducing the amount of error caused by thermal expansion and contraction of fill fluid.

Offerings

Lower Materials: All metallic and non-metallic (See Note 13)

Upper Materials: Carbon Steel or 316 Stainless Steel. Optional materials are Carpenter 20, Titanium and Monel - Refer to Control Engineering Data for Details.

Diaphragm Materials: All metallic

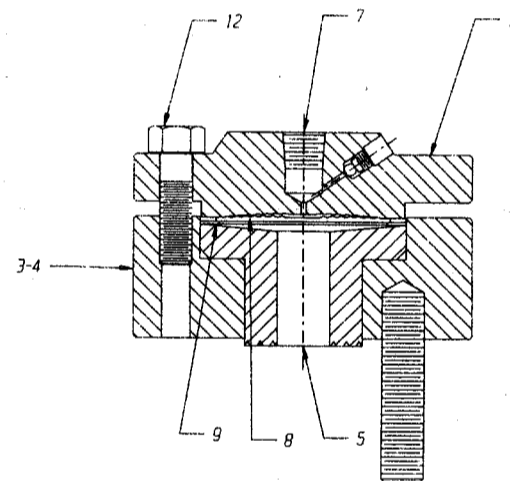
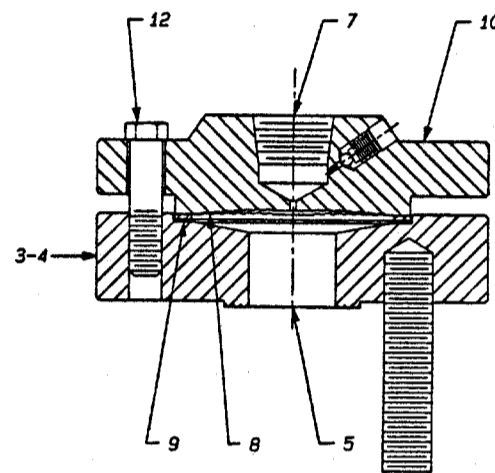
Bolting: Carbon Steel or 316 Stainless Steel (See Notes 8, 9, 10 and 14)

CONTROL ENGINEERING DATA

D8TI 5 4 2 H 3 T I C A G 4

- (15) FILL LIQUID
N = (Standard)
- (14) PLATING OPTION
0 = None (Standard)
G = Gold Plating Diaphragm Only (See Note 15)
- (13) TEFLON COATINGS (See Note 16)
0 = None (Standard)
A = Teflon Coated Diaphragm Only
B = Teflon Coated Diaphragm and Lower Housing
- (12) BOLTING
0 = None
C = Carbon Steel - Grade 5 (See Note 8)
S = 300 Series Stainless Steel (See Note 9)
H = 300 Series Stainless Steel Hi-Strength (See Note 10)
- (11) FLUSH CONNECTION (See Note 7) (Not Shown)
0 = None
1 = 1/8" NPTF
2 = 1/4" NPTF
3 = 1/4" NPTF-DUAL
- (10) UPPER HOUSING MATERIAL
B = Carbon Steel - N.A.C.E. (No Weld Ring)
F = 316 Stainless Steel - N.A.C.E. (No Weld Ring)
N = Monel - N.A.C.E. (No Weld Ring)
C = Carbon Steel (Standard)
S = 316 Stainless Steel
M = Monel (See Note 6)
2 = Carpenter 20 CB-3 (See Notes 2 and 6)
T = Titanium (See Notes 2 and 6)
- (9) SEAL GASKET MATERIAL
0 = None
3 = 316 Stainless Steel - Silver Plated (See Note 5)
B = Buna N
H = Hastelloy C - Silver Plated (See Note 5)
G = Grafoil
T = Teflon (See Note 4)
V = Viton
S = CGR2750 (See Note 3)
- (8) SEAL DIAPHRAGM MATERIAL
C = Carpenter 20 CB-3 (See Notes 2 and 6)
H = Hastelloy B3
D = Hastelloy C-276
I = Inconel 600
M = Monel 400 (See Note 6)
N = Nickel 200
J = 316L Stainless Steel (See Note 1)
T = Tantalum (See Note 2)
E = Titanium - Grade 2 (See Notes 2 and 6)
- (7) SEAL INSTRUMENT CONNECTION
1 = 1/4" NPTF with bleed
2 = 1/2" NPTF with bleed
4 = 1/4" AMINCO with bleed
- (6) SEAL FLANGE PRESSURE RATING (See Note 14)
1 = 150#RF
X = 150#FF
3 = 150#RTJ
4 = 300#RF
W = 300#FF
6 = 300#RTJ
7 = 600#RF
8 = 600#FF
9 = 600#RTJ
A = 900#RF
D = 900#RTJ
B = 1500#RF
E = 1500#RTJ
5 = 2500#RF
F = 2500#RTJ
- (5) SEAL PROCESS CONNECTION
4 = 1/2"
5 = 3/4"
6 = 1"
8 = 1-1/2"
- (3-4) LOWER HOUSING MATERIAL (WETTED)
C2 = Carpenter 20 CB-3
CS = Carbon Steel
HB = Hastelloy B3
HC = Hastelloy C-276
I6 = Inconel 600
M4 = Monel 400
N2 = Nickel 200
KN = Kynar
PP = Polypropylene
PV = PVC
S4 = 304 Stainless Steel
S6 = 316 Stainless Steel
SF = 304L Stainless Steel
SL = 316L Stainless Steel
TC = Teflon-Carbon Filled
TG = Teflon-Glass Filled
TI = Titanium - Grade 4
TP = Tantalum Clad (Wetted Surface Only) (See Note 11)
00 = No Lower Housing (Upper Housing Only)
- (1-2) DIAPHRAGM SEAL DESIGN
D8 = 330B- Flanged Off-Line
*DL = 330BR Flanged Off-Line (Ring Type Joint)
*DM = 330BZ Flanged Off-Line (Customer to Specify Pipe Style)
*For Metallic Lower Housings Only.

CATALOG NUMBERS AS RECEIVED FOR THE 330B SERIES MUST CONTAIN FIFTEEN (15) CHARACTERS.



NON-METALLIC LOWER HOUSING

Notes:

- Standard diaphragm material is 316L Stainless Steel for seals with lower housing manufactured of CS, S4, S6, SL and SF.
- Standard diaphragm material is Tantalum for seals with lower housing manufactured of C2, TI, PV, TC, PP, KN, TP and TG.
- CGR2750 Gaskets are standard for all seals rated to 300#.
- Standard gasket material for seals with lower housing manufactured of non-metallic material is Teflon.
- 316 Stainless Steel and Hastelloy - Silver Plated gaskets are offered for seals with ratings 600# and higher.
- When a Monel, Carpenter 20 or Titanium diaphragm is chosen in Position 8, then an equivalent upper housing is required.
- Flushing connections are not available with lower housings manufactured of a non-metallic material.
- Using Grade 5 bolts will maintain the pressure rating chosen in Position 6.
- When using 300 Series Stainless Steel bolts, the pressure rating will be reduced by 50% when the flange rating is 600# or higher.
- To maintain the pressure rating chosen in Position 6 when 300 Series Stainless Steel bolts are required, then high-strength stainless steel bolts will be necessary. Flange ratings 600# and higher will be supplied with high-strength stainless steel bolting to maintain ANSI pressure rating when 300 Series Stainless Steel bolts are required.
- Tantalum clad lower housings will be supplied with a raised face - smooth flange face - no serrations. Tantalum plated lowers cannot be supplied with flush connections.
- N.A.C.E. - Welded diaphragm seals with Hastelloy C-276 or Monel wetted materials of construction will meet the requirements of N.A.C.E. International Document MR-0175-1995. 316 Stainless Steel construction will NOT BE offered in a welded design as meeting N.A.C.E. MR-0175-1995 requirements as the weld area of the diaphragm seal will not meet the maximum hardness specifications within this document.
- Non-metallic lower housings are not available for flange ratings greater than 300#. The maximum temperature and pressure rating for non-metallic lowers is 200 PSIG (1.38 MPa) at 140°F (60°C), regardless of the mating flange size.
- Refer to Miscellaneous Data Section for Pressure-Temperature Rating Guide.
- Tantalum and Titanium materials cannot be gold plated.
- Teflon-S® Coating (FEP Grade).