Model 300A

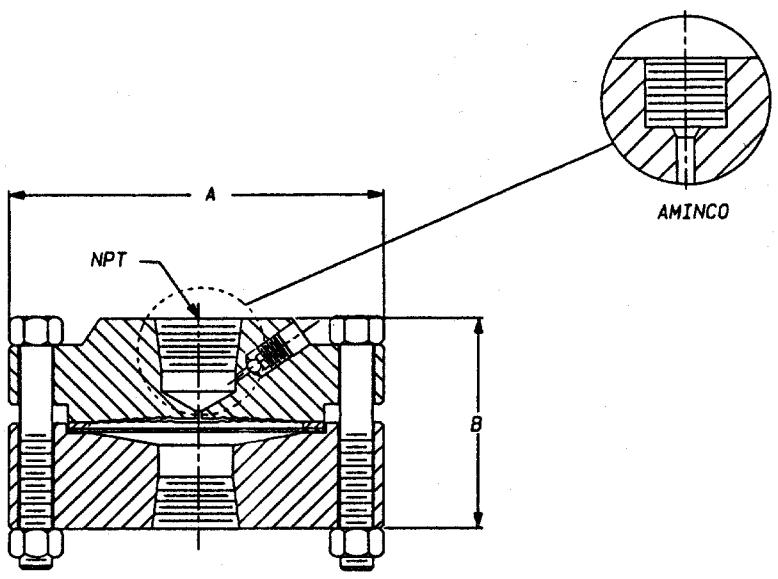
Diaphragm Seals for Threaded Off-Line Process Connections Standard Pressure Rating with Metal Lower Housings

Process Connection Sizes
1/4" NPT through 1-1/2" NPT
Maximum Working Pressure
1250, 2500 PSIG (8.63, 17.25 MPa)
@100°F (38°C) (See Notes 1, 2, 3 and 10)

Dimensional Data
Process Connection Size

	1/8" - 1/4"	3/8" - 1"	1-1/4" - 1-1/2"
A	3.50 (89)	3.50 (89)	3.50 (89)
B	1.56 (40)	2.00 (51)	2.00 (51)

( ) Dimensions in millimeters



Standard Features and Options

This threaded 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 0.05 cubic inches utilizing a 2.4" (60.96 mm) diameter diaphragm.

The standard pressure rating is 2500 PSIG (17.25 MPa) when Stainless Steel bolting is not required (See Note 2). The Seal-off and Continuous Duty feature is standard and flushing ports are optional.

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. The 1/4" Aminco instrument connection was originally called the 824A Series.

Offerings

Lower Materials: All metallic
Upper Materials: Carbon Steel or 316 Stainless Steel
Optional materials are Carpenter 20, Titanium and Monel - Refer to Control Engineering Data for Details.
Diaphragm Material: All metallic
Bolting: Carbon Steel or 300 Series Stainless Steel (See Notes 1, 2, 3 and 10)

CONTROL ENGINEERING DATA

D1C2 2C 2 J 3 T 0 S 0 0 N

CATALOG NUMBERS AS RECEIVED FOR THE 300A SERIES MUST CONTAIN FIFTEEN (15) CHARACTERS

(15) FILL LIQUID
N = (Standard)

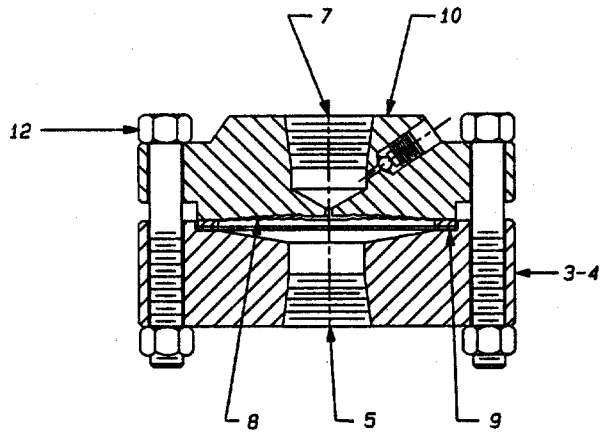
(14) PLATING OPTIONS
0 = None (Standard)
G = Gold Plating Diaphragm Only (See Note 12)

(13) TEFLON COATINGS (See Note 13)
0 = None (Standard)
A = Teflon Coated Diaphragm Only
B = Teflon Coated Diaphragm and Lower Housing

(12) BOLTING
0 = None
C = Carbon Steel, Grade 5 (See Note 1)
S = 300 Series Stainless Steel (See Note 2)
H = 300 Series Stainless Steel (Hi-Strength) (See Note 3)

(11) FLUSH CONNECTION (Not Shown)
0 = None (Standard)
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 7)
2 = Carpenter 20 CB-3 (See Notes 6 and 7)
T = Titanium (See Notes 6 and 7)



(9) SEAL GASKET MATERIAL
0 = None
B = Buna "N"
G = Grafoil
T = Teflon (See note 4)
V = Viton
S = CGR 2750 (Standard)

(8) SEAL DIAPHRAGM MATERIAL
C = Carpenter 20 CB-3(See Notes 6 and 7)
D = Hastelloy C-276
H = Hastelloy B3
I = Inconel 600
M = Monel 400 (See Note 7)
N = Nickel 200
J = 316L Stainless Steel (See Note 5)
T = Tantalum
E = Titanium - Grade 2

(7) SEAL INSTRUMENT CONNECTION
1 = 1/4" NPTF with bleed
2 = 1/2" NPTF with bleed
4 = 1/4" AMINCO with bleed (Formerly 824A Series)

(6) SEAL PRESSURE RATING @ 100°F (38°C) (See Note 10)
C = 1250 PSIG (8.62 MPa) (See Note 2)
U = 2500 PSIG (17.25 MPa) (See Notes 1 and 3)

(5) SEAL PROCESS CONNECTION (See Note 11)
2 = 1/4" NPTF
3 = 3/8" NPTF
4 = 1/2" NPTF
5 = 3/4" NPTF
6 = 1" NPTF
7 = 1-1/4" NPTF
8 = 1-1/2" NPTF
D = 1/4" Aminco
0 = No Lower Housing Provided (Upper Housing Only)

(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 (See Note 11)
S4 = 304 Stainless Steel
S6 = 316 Stainless Steel
SF = 304L Stainless Steel
SL = 316L Stainless Steel
TI = Titanium - Grade 4 (See Note 11)
TP = Tantalum Plate (Wetted Surfaces Only)(See Note 8)
00 = No Lower Housing Required (Upper Housing Only)

(1-2) DIAPHRAGM SEAL DESIGN
D1 = 300A- Threaded Off-Line

Notes:

1. Using Grade 5 bolts and Grade 5 nuts will maintain the pressure standard 2500 PSIG (17.25 MPa) rating chosen in Option 6.
2. When using 300 Series Stainless Steel bolts and nuts, the standard 2500 PSIG (17.25 MPa) pressure rating will be reduced by 50% to 1250 PSIG (8.63 MPa), refer to Option 6.
3. To maintain the standard 2500 PSIG (17.25 MPa) pressure rating chosen in Option 6 when 300 Series Stainless Steel bolts and nuts are required, then stainless steel high-strength bolts and nuts will be necessary.
4. Teflon Gasket is standard for seals with lower housing manufactured of C2, TI and TP.
5. Standard diaphragm material is 316L Stainless Steel for seals with lower housing manufactured of CS, S4, S6, SF and SL.
6. Standard diaphragm material is tantalum for seals with lower housing manufactured of C2, TP and TI. When customer requires a Carpenter 20, Monel or Titanium diaphragm, refer to Position 10 for proper upper housing material.
7. When a Carpenter 20, Monel or Titanium diaphragm is chosen and equivalent upper housing is required.
8. Adequate plating coverage of threaded connections cannot be guaranteed due to limitations and nature of the plating/coating process. Tantalum plated lowers cannot be supplied with flush connections.
9. 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.
10. Refer to Miscellaneous Data Section for Pressure-Temperature Rating Guide.
11. Maximum working pressure limited to 1250 PSIG (8.63 MPa) @ 100°F (38°C) for all lower housings with pipe threads larger than 1/4" NPTF that are constructed of Nickel 200 or with pipe threads larger than 3/4" NPTF that are constructed of Titanium Grade 4 due to connection thread strength limitations.
12. Tantalum and Titanium materials cannot be gold plated.
13. Teflon-S® Coating (FEP Grade).

Model 300A

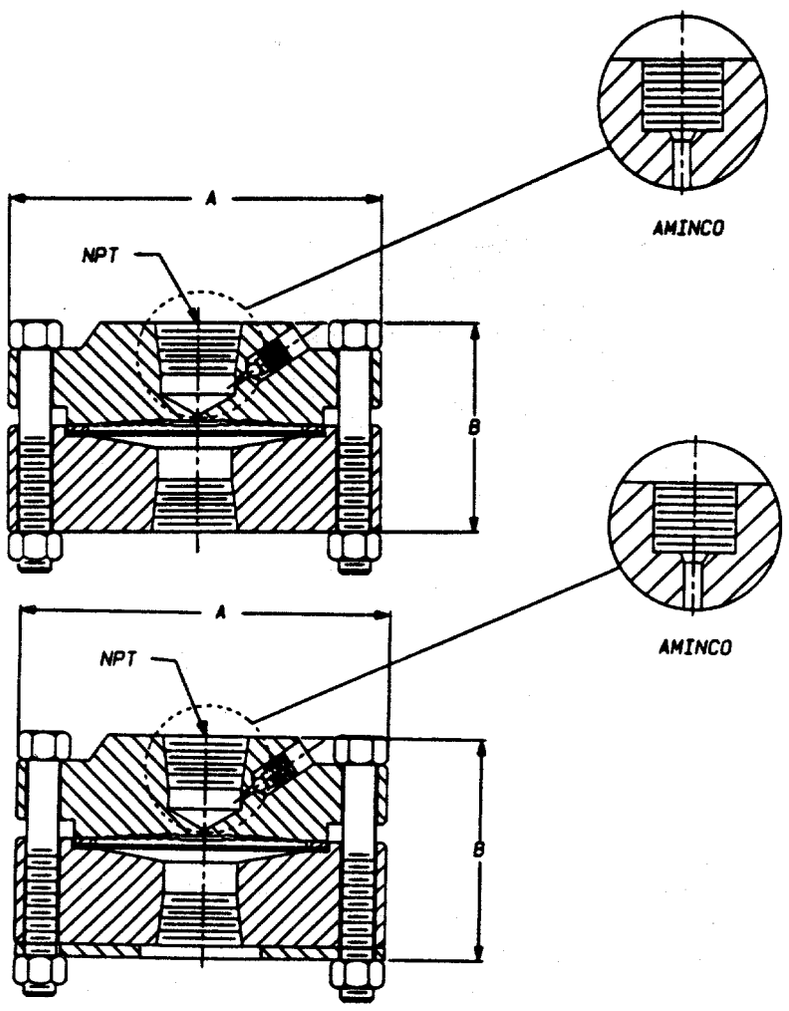
Diaphragm Seals for Threaded Off-Line Process Connections
Reduced Pressure Rating for Non-Metallic Lower Housings

Process Connection Sizes
1/4" NPTF through 1-1/2" NPTF
Maximum Working Pressure
200 PSIG (1.38 MPa) at 140°F (60°C) maximum temperature rating (See Note 4)

Dimensional Data
Process Connection Size

	PVC-Kynar-Polypropylene		
	1/8" - 1/4"	3/8" - 1"	1-1/4" - 1-1/2"
A	4.00 (102)	4.00 (102)	4.00 (102)
B	2.00 (51)	2.00 (51)	2.00 (51)
	Teflon-Glass/Carbon Filled		
A	4.00 (102)	4.00 (102)	4.00 (102)
B	2.12 (54)	2.12 (54)	2.12 (54)

( ) Dimensions in millimeters



TEFLON LOWER HOUSING

Standard Features and Options

This threaded 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 0.05 cubic inches utilizing a 2.4" (60.96 mm) diameter diaphragm.

The standard pressure rating is 200 PSIG (1.38 MPa) with a maximum temperature of 140°F (60°C). Because of the strength of material, flushing ports are not available. Teflon glass fill lowers, Teflon carbon filled and Teflon Virgin will be supplied with a 316 Stainless Steel lower metal support plate to distribute bolt load and minimize cold flow. A Seal-off feature is standard.

Standard instrument connections are in 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.

CONTROL ENGINEERING DATA

D1TC 6 G 4 N B C O S R A N

CATALOG NUMBERS AS RECEIVED FOR THE 300A SERIES MUST CONTAIN FIFTEEN (15) CHARACTERS

(15) FILL LIQUID
N = (Standard)

(14) PLATING OPTIONS
0 = None (Standard)
G = Gold Plating Diaphragm Only (See Note 5)

(13) TEFLON COATINGS (See Note 6)
0 = None (Standard)
A = Teflon Coated Diaphragm Only
B = Teflon Coated Diaphragm and Lower Housing

(12) BOLTING
0 = None
C = Carbon Steel, grade 5
S = 300 Series Stainless Steel

(11) FUTURE OPTIONS
0 = Not Applicable

(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 3)
2 = Carpenter 20 CB-3(See Notes 1 and 3)
T = Titanium (See Notes 1 and 3)

(9) SEAL GASKET MATERIAL
0 = None
B = Buna "N"
G = Grafoil
T = Teflon (See Note 2)
V = Viton
S = CGR 2750

(8) SEAL DIAPHRAGM MATERIAL
C = Carpenter 20 CB-3(See Notes 1 and 3)
H = Hastelloy B3
D = Hastelloy C-276
I = Inconel 600
M = Monel 400 (See Note 3)
N = Nickel 200
J = 316L Stainless Steel
T = Tantalum (See Note 1)
E = Titanium - Grade 2 (See Notes 1 and 3)

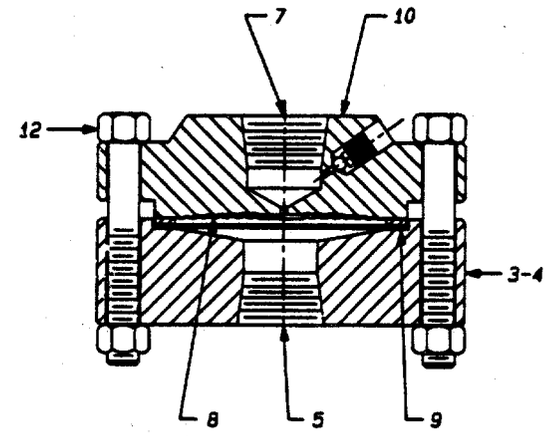
(7) SEAL INSTRUMENT CONNECTION
1 = 1/4" NPTF with bleed
2 = 1/2" NPTF with bleed
4 = 1/4" AMINCO with bleed (Formerly 824A Series)

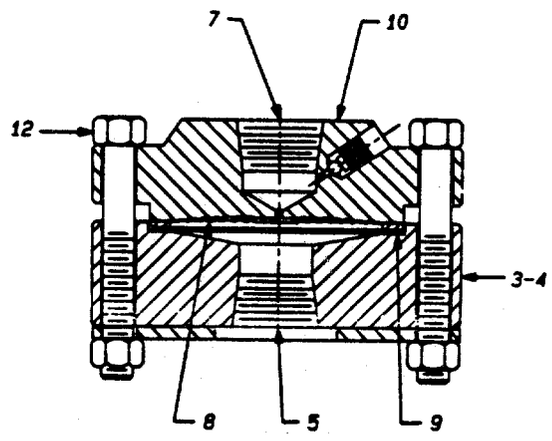
(6) SEAL PRESSURE RATING @ 140°F (60°C) (See Note 4)
G = 200 PSIG (1.38 MPa)

(5) SEAL PROCESS CONNECTION
2 = 1/4" NPTF
3 = 3/8" NPTF
4 = 1/2" NPTF
5 = 3/4" NPTF
6 = 1" NPTF
7 = 1-1/4" NPTF
8 = 1-1/2" NPTF
D = 1/4" Aminco
0 = No Lower Housing Required (Upper Housing Only)

(3-4) LOWER HOUSING MATERIAL (WETTED)
KN = Kynar
PP = Polypropylene
PV = PVC
TC = Teflon-Carbon Filled
TG = Teflon-Glass Filled
00 = No Lower Housing Required (Upper Housing Only)

(1-2) DIAPHRAGM SEAL DESIGN
D1 = 300A- Threaded Off-Line





TEFLON LOWER HOUSING

Notes:
1. Standard diaphragm material is Tantalum for seal lower housings manufactured of KN, PV, PP, TC and TG. When customer requires a Carpenter 20, Monel or Titanium diaphragm, refer to Position 10 for proper upper housing material.
2. Teflon Gasket is standard for seals with lower housing manufactured of KN, PP, PV, TC and TG.
3. When a Monel, Carpenter 20 or Titanium diaphragm is chosen in Position 8, then an equivalent upper housing is required.
4. Refer to Miscellaneous Data Section for Pressure-Temperature Rating Guide.
5. Tantalum and Titanium materials cannot be gold plated.
6. Teflon-S® Coating (FEP Grade)

Offerings

Lower Materials: All non-metallic
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 300 Series Stainless Steel
Note: The use of 300 Series Stainless Steel bolts and nuts will not affect the maximum pressure rating.

Model 300A

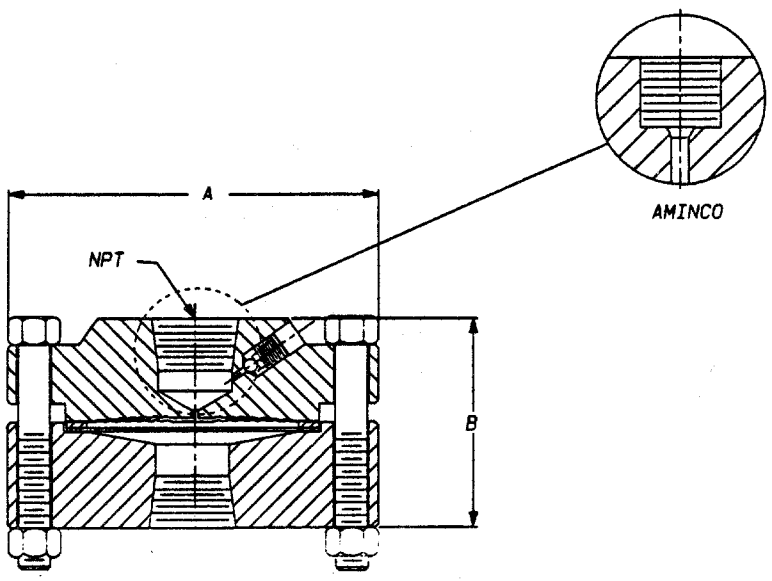
Diaphragm Seals for Threaded Off-Line Process Connections Elevated Pressure Rating with Metal Lower Housings

Process Connection Sizes
1/4" NPTF through 1/2" NPTF
Maximum Working Pressure
5000, 10000, 20000 PSIG (34.50, 69.00, 138.00 MPa) @ 100°F (38°C) (See Notes 5, 6, 7, 10 and 11)

Dimensional Data
Process Connection Size

Pressure Rating		1/8" - 1/4"	3/8" - 1/2"
5000	A	4.00 (102)	4.00 (102)
	B	2.25 (57)	2.25 (57)
10000	A	4.00 (102)	4.00 (102)
	B	2.31 (59)	2.31 (59)
20000	A	5.00 (127)	5.00 (127)
	B	2.25 (57)	2.25 (57)

( ) Dimensions in millimeters



Standard Features and Options
This threaded connection, off-line seal has a diaphragm welded to the upper housing. This design allows for the use diaphragm materials that are of a weldable grade. The displacement capability of this series of diaphragm seal is 0.05 cubic inches utilizing a 2.4" (60.96 mm) diameter diaphragm.

Pressure ratings of 5000, 10000, and 20000 PSIG (34.50, 69.00 and 138 MPa) are offered when 300 Series Stainless Steel bolting is not required (See Note 6.) The Seal-off feature is standard for these pressure ratings. Also available are flushing ports for the 5000 PSIG (34.50 MPa) rating only.

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
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 300 Stainless Steel (See Notes 5, 6, 7 and 10)

CONTROL ENGINEERING DATA

D1CS 2 Y 4 H 3 T O S A G N

CATALOG NUMBERS AS RECEIVED FOR THE 300A SERIES MUST CONTAIN FIFTEEN (15) CHARACTERS

(15) FILL LIQUID
N = (Standard)

(14) PLATING OPTIONS
0 = None (Standard)
G = Gold Plating Diaphragm Only (See Note 12)

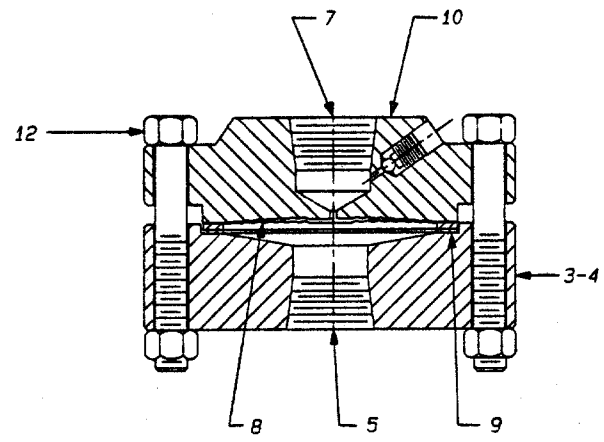
(13) TEFLON COATINGS (See Note 13)
0 = None (Standard)
A = Teflon Coated Diaphragm Only
B = Teflon Coated Diaphragm and Lower Housing

(12) BOLTING
0 = None
C = Carbon Steel, grade 5 (See Note 5)
S = 300 Series Stainless Steel (See Note 6)
H = 300 Series Stainless Steel (Hi-Strength) (See Note 7)

(11) FLUSH CONNECTION (Not Shown)
0 = None (Standard)
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 3)
2 = Carpenter 20 CB-3 (See Notes 2 and 3)
T = Titanium (See Notes 2 and 3)

(9) SEAL GASKET MATERIAL
0 = None
3 = 316 Stainless Steel / Silver Plated
H = Hastelloy C / Silver Plated



(8) SEAL DIAPHRAGM MATERIAL
C = Carpenter 20 CB-3 (See Notes 2 and 3)
H = Hastelloy B3
D = Hastelloy C-276
I = Inconel 600
M = Monel 400 (See Note 3)
N = Nickel 200
J = 316L Stainless Steel (See Note 1)
T = Tantalum (See Note 2)
E = Titanium - Grade 2 (See Notes 2 and 3)

(7) SEAL INSTRUMENT CONNECTION
1 = 1/4" NPTF with bleed
2 = 1/2" NPTF with bleed
4 = 1/4" AMINCO with bleed (Formerly 824A Series)

(6) SEAL PRESSURE RATING @100°F (38°C) (See Notes 5, 6, 7, 10 and 11)
U = 2500 PSIG (17.25 MPa)
W = 5000 PSIG (34.50 MPa)
Y = 10000 PSIG (69.00 MPa)
Z = 20000 PSIG (138.00 MPa)

(5) SEAL PROCESS CONNECTION (See Note 11)
2 = 1/4" NPTF
3 = 3/8" NPTF
4 = 1/2" NPTF
D = 1/4" AMINCO
0 = No Lower Housing Required (Upper Housing Only)

(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
S6 = 316 Stainless Steel
TP = Tantalum Plate (Wetted Surfaces Only) (See Note 8)
00 = No Lower Housing Required (Upper Housing Only)

(1-2) DIAPHRAGM SEAL DESIGN
D1 = 300A- Threaded Off-Line

Notes:
1. Standard diaphragm material is 316L Stainless Steel for seals with lower housing manufactured of CS, S4, S6, SF and SL.
2. Standard diaphragm material is Tantalum for seals with lower housing manufactured of C2, TP and TI. When customer requires a Carpenter 20, Monel or Titanium diaphragm, refer to Position 10 for proper upper housing material.
3. When a Monel, Carpenter 20 or Titanium diaphragm is chosen in Positioner 8, then an equivalent upper housing material is required.
4. For 5000 PSIG (34.50 MPa) rated seals only.
5. Using Grade 5 bolts and Grade 5 nuts will maintain the pressure rating chosen in Option 6.
6. When using 300 Series Stainless Steel bolts and nuts, the pressure rating will be reduced by 50%, refer to Option 6.
6A. When Stainless Steel bolts and nuts (NOT HIGH-STRENGTH) are required, then a de-rated option is required when developing a catalog number.
7. To maintain the pressure rating chosen in Option 6 when 300 Series Stainless Steel bolts and nuts are required, then stainless steel high-strength bolts and nuts will be necessary.
8. Adequate plating coverage of threaded connections cannot be guaranteed due to limitations and nature of the plating/coating process. Tantalum plated lowers cannot be supplied with flush connections.
9. 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.
10. Refer to Miscellaneous Data Section for Pressure-Temperature Rating Guide.
11. Maximum working pressures listed are the ratings for the diaphragm seal design NOT for the process connection pipe threads. Pipe threads are not recommended for high pressure systems experiencing dynamic loads. Refer to applicable industry codes and standards for guidelines.
12. Tantalum and Titanium materials cannot be gold plated.
13. Teflon-S® Coating (FEP Grade).