Pressure-Temperature Rating Guide

NOTE:
All pressure ratings are maximum working pressures and are subject to derating depending upon choice of optional materials of construction.

The maximum operating temperature is also dependent upon materials of construction and the fill fluid selected.

LOW PRESSURE UNITS
Threaded Off-Line
(Models A, AC and K)

Process Temp. °F	Maximum Working Pressure PSIG at Temp. °F			
-20 to 100	200	750	1000	2000
125	145	725	965	1930
150	180	700	930	1860
200	—	645	860	1720
300	—	585	780	1560
400	—	540	720	1440
500	—	500	670	1340
650	—	465	620	1240

MEDIUM PRESSURE UNITS
Threaded Off-Line (Models A, AC and K)
Threaded In-Line (Model AM)

Process Temp. °F	Maximum Working Pressure PSIG at Temp. °F		
-20 to 100	1250	1500	2500
200	1075	1290	2150
300	975	1170	1950
400	900	1080	1800
500	835	1000	1670
650	775	930	1550

HIGH PRESSURE UNITS
Threaded Off-Line
(Models A, AC and K)

Process Temp. °F	Maximum Working Pressure PSIG at Temp. °F	
-20 to 100	5000	10000
200	4300	8500
300	3900	7700
400	3550	7000
500	3100	6000
650	2550	45000

SANITARY DIAPHRAGM SEALS
Sanitary Seals
(Models 700A, 700C, 700C-7 and 700D)

Process Temp. °F	Maximum Working Pressure PSIG at Temp. °F		
-20 to 100	250	500	600
125	235	460	550
150	220	420	500
200	190	340	405
250	150	250	300

ASME/ANSI CARBON STEEL FLANGED UNITS
Flanged Off-Line (Models B, BP, BT and BX)

Process Temp. °F	Maximum Working Pressure PSIG at Temp. °F		
	Class 150	Class 300	Class 600
-20 to 100	285	740	1480
200	260	675	1350
300	230	655	1315
400	200	635	1270
500	170	600	1200
650	125	535	1075

ASME/ANSI 316SS FLANGED UNITS
Flanged Off-Line
(Models B, BP, BT and BX)

Process Temp. °F	Maximum Working Pressure PSIG at Temp. °F		
	Class 150	Class 300	Class 600
-20 to 100	275	720	1440
200	240	620	1240
300	215	560	1120
400	195	515	1030
500	170	480	955
650	125	445	890

Saddle Welded In-Line (Models J3/J4)
Butt Welded In-Line (Model L)
Socket Welded In-Line (Model M)
Flanged In-Line (Model N)
Socket Welded Off-Line (Model S)

Publishing maximum working pressures for all possible lower housing materials, bolting materials and pipe sizes and schedule combinations is beyond the scope of this catalog. The design of this series of diaphragm seal allows for a maximum working pressure equivalent to the 3" nominal pipe size and schedule rating as calculated by ASME/ANSI Piping Code B31.1 Equation "4."

For other pipe sizes and models (i.e., L, M, N, & S), use the appropriate dimensions and proceed with using ASME/ANSI piping code B31.1 equation "4" as indicated above.

The user can calculate the approximate maximum working pressure indicated on the diaphragm seal nameplate if desired (Maximum working pressures for a specified flange rating (i.e., 150 CL) can be located in ASME/ANSI B16.5). To calculate the approximate working pressure use the pipe schedule dimensions associated with a 3" nominal pipe per ASME/ANSI B36.10 or B36.19 and the formula of ASME/ANSI Piping Code B31.1 Equation "4" (Refer to Table 1 below).

Per ASME/ANSI B31.1 Equation "4":
$P = (2SEt)/D-(2Yt)$
Where:

- P = Maximum allowable working pressure (PSIG @ 100°F)
- S = Allowable stress value for lower housing material per Appendix A of the code (PSIG @ 100°F) (See Table1)
- E = Joint efficiency factor = 1.0 (unitless)
- t = Minimum wall thickness (inches) per pipe schedule specified in ASME/ANSI B36.10 or B36.19 minus 12.5% wall thickness tolerance and 0.02" corrosion allowance
- D = 3.50 inches O.D. for 3" nominal pipe size
- Y = 0.4 when $t < D/6$ (unitless)
- Y = $(D-2t)/[D-(2t + D)]$ when $t > D/6$ (unitless)

TABLE 1.

Material	Maximum Allowable Stress Value (PSI) for Metal Temperature (°F)						
	-20 to 100	200	300	400	500	600	650
C2 = Carpenter 20CB3	23300	20000	19800	19400	19300	19300	19200
CS = Carbon Steel	20000	20000	20000	20000	18900	17300	17000
HB = Hastelloy B	34000	34000	34000	34000	34000	34000	34000
HC = Hastelloy C	27300	27300	27300	27300	26900	25400	24700
I6 = Inconel 600	20000	20000	20000	20000	20000	20000	20000
M4 = Monel 400	18700	16400	15400	14800	14800	14800	14800
N2 = Nickel 200	8000	7700	7500	7500	7500	7500	7500
S4 = 304 Stainless Steel	20000	2000	20000	18700	17500	16400	16200
S6 = 316 Stainless Steel	20000	20000	20000	19300	17900	17000	16700
SF = 304L Stainless Steel	16700	16700	16700	15800	14800	14000	13700
SL = 316L Stainless Steel	16700	16700	16700	15500	14400	13500	13200