

© **G-RANGE**
PIPE CONNECTIONS



© *Making The Right Connection*

G-RANGE PIPE CONNECTIONS

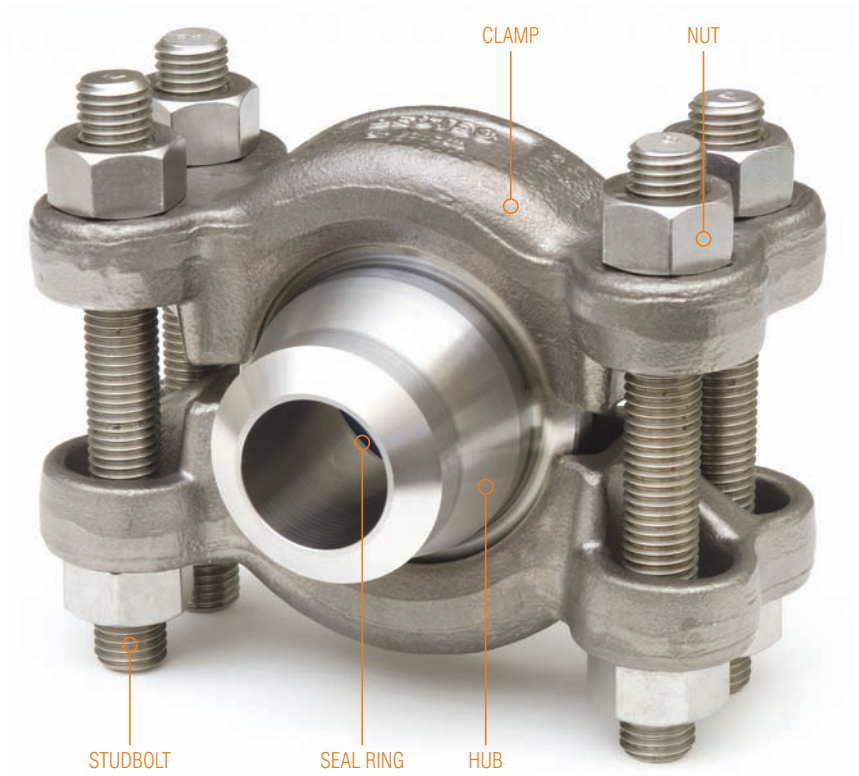
Designed to meet the requirements of plant operators.

Due to their efficiency, lightness and reliability, together with extreme qualities of leak tightness, the G-Range pipe connection offers significant benefits for use in industrial plant in a wide variety of applications. Although designed primarily for adverse pressure and temperature conditions, more modest applications can be considered due to ease-of-installation and assembly, particularly when compared with the alignment and tightening of standard flanges.

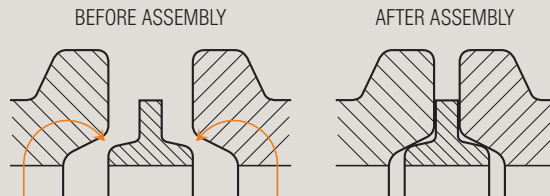
The G-Range pipe connection comprises: a pair of hubs for welding to the pipe (similar to a flange); a clamp set, which can be rotated around the hubs to suit the most practical positions; and a seal ring.

The seal ring is a modified cone ring giving excellent leak tightness properties under the most severe conditions of pressure and/or thermal shock.

On assembly the taper joint faces compress the seal ring radially. The sealing force is provided by the stored energy in the stressed seal ring, any internal pressure intensifies the sealing action.

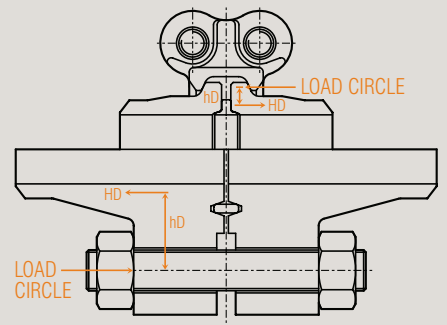


On assembly the taper joint faces compress the seal ring radially. The sealing force is provided by the stored energy in the stressed seal ring, any internal pressure intensifies the sealing action.



Weight Saving

Using high strength alloy clamps and flush bore seal rings, minimum fluid seals areas and low make up loads are achieved allowing smaller and more compact units than flanges of equivalent pressure ratings.



Standard Destec G-Range Connection

- **SIZE:** G2-14 BW SCHXXS
- **PRESSURE RATING:** 12541lb/in² (865 bars)
- **WEIGHT:** 21lb (10kg)

Standard ANSI 2in 2,500lb Flange

- **PRESSURE RATING:** 6,000lb/in² (at ambient temperature)
- **WEIGHT:** 97lb (44kg)



High Pressure Containment

The higher the pressure, the more effective the G-Range connection becomes, as internal pressure intensifies the seal.

High Temperatures

The standard 'all-metal' seal ring is suitable for most applications - maximum temperatures are limited only by the connection materials selected.

Extreme Leak Tightness

The seals remain leak tight under the most arduous conditions of pressure, temperature and vacuum conditions, even after many thousand hours of operation.

Resistance to Pressure and Thermal Shock

Cold quench conditions and thermal cycling are the cause of most leakage problems, where conventional compressible type joints and seal materials are used. The flexibility of the seal ring compensates for this during thermal transient conditions.



Materials

Destec G-Range connections are supplied in these standard materials. Destec Seal Rings are supplied coated with either PTFE, Molybdenum Disulphide or Graphite, depending on the application. Special G-Range connections are manufactured in many materials including Duplex steels and Nickel-based alloys.

(For chemical analysis and mechanical properties refer to pages 14 & 15).

| Pipe Material | Carbon Steel / Carbon Manganese Steel | Stainless Steel 316 Type | |
|---------------|---------------------------------------|--------------------------|-------------|
| | | up to 300 °C | over 300 °C |
| HUBS | A350-LF2 (modified) | A182-F316 | A182-F316 |
| CLAMPS | A193-B7 | A193-B7 | A182-F304 |
| STUDBOLTS | A193-B7 | A193-B7 | A193-B8 |
| NUTS | A194-2H | A194-2H | A194-GR8 |
| SEAL RINGS | AISI 4140 | A564-630 | A638-660 |

Special Connections and Fittings.

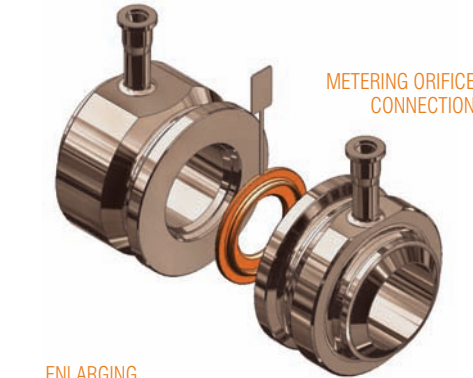
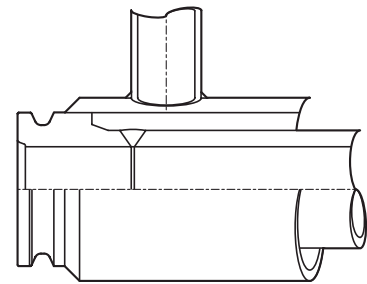
Many special connections, in a variety of materials, are manufactured to enhance the standard range, for example:

- SHROUDED BORE
- JACKETED
- FLOW THROUGH JACKETED
- EXTREME PRESSURE
- QUICK RELEASE
- REMOTELY OPERATED
- HINGED VESSEL CLOSURES
- ORIFICES CONNECTIONS

Individual components can be supplied in the following forms:

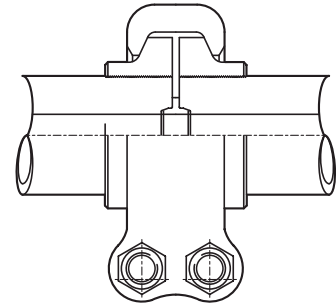


JACKETED CONNECTION



METERING ORIFICE CONNECTION

EXTREME PRESSURE CONNECTION



Seal Rings -

Orifice, transition, blind.

Clamp Sets -

Heavy duty, quick release.

Hubs -

Heavy Duty. Tees and Elbows.
Nozzles. Adaptors.
Threaded.
Socket weld.
Reducing.
Enlarging.

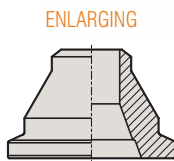
Destec will design special G-Range connections to meet customers' requirements.

Re-Usable Seal Rings

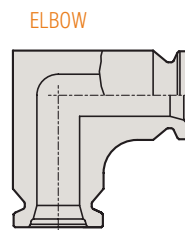
The 'all-metal' seal ring is elastic in design, and, on dismantling, reverts to its original form, ready for re-use. All seals of given size are interchangeable without any pre-fitting.

Special Connections

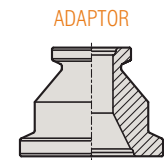
Existing troublesome flange joints can usually be converted on site to incorporate the Destec seal ring, as can vessel and heat exchanger closures. Destec seal rings are currently in use up to 2m diameter (2000mm).



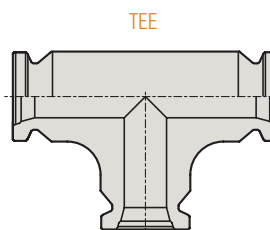
ENLARGING



ELBOW



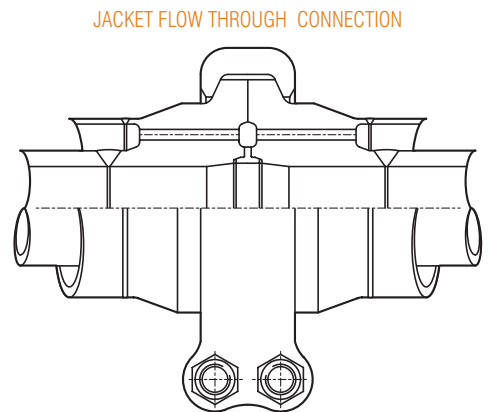
ADAPTOR



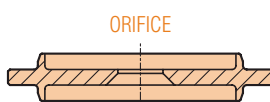
TEE



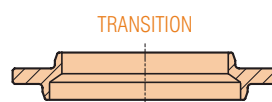
REDUCING



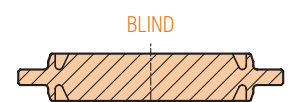
JACKET FLOW THROUGH CONNECTION



ORIFICE

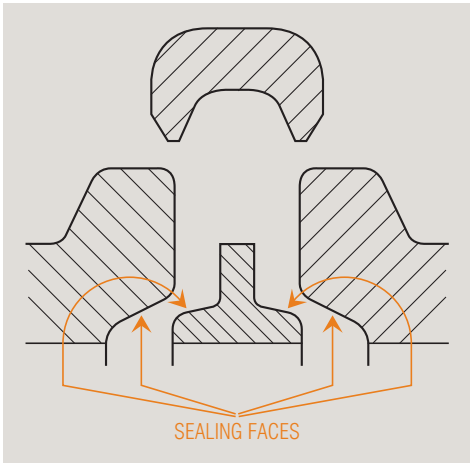


TRANSITION



BLIND

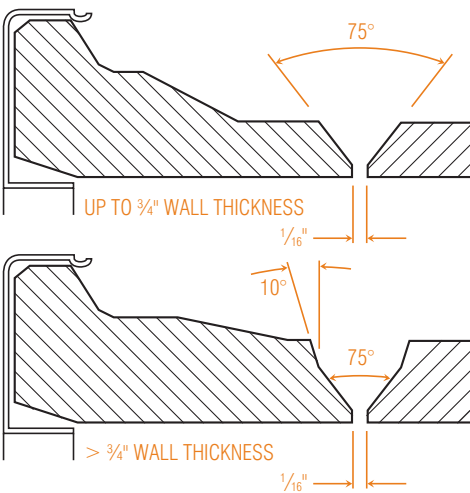
INSTALLATION & ASSEMBLY



1.

Welding of Hubs to Pipe Ends

The standard hub is provided with a weld preparation for welding from outside only. protect the hub seat with the metal guards provided, and against oxidation, by using Berkatect No.12 or equivalent. If hubs welded to pipe lengths are not to be assembled immediately, remove the metal guards and coat hubs with grease or lanolin preservative. Replace metal guard for storage.



2.

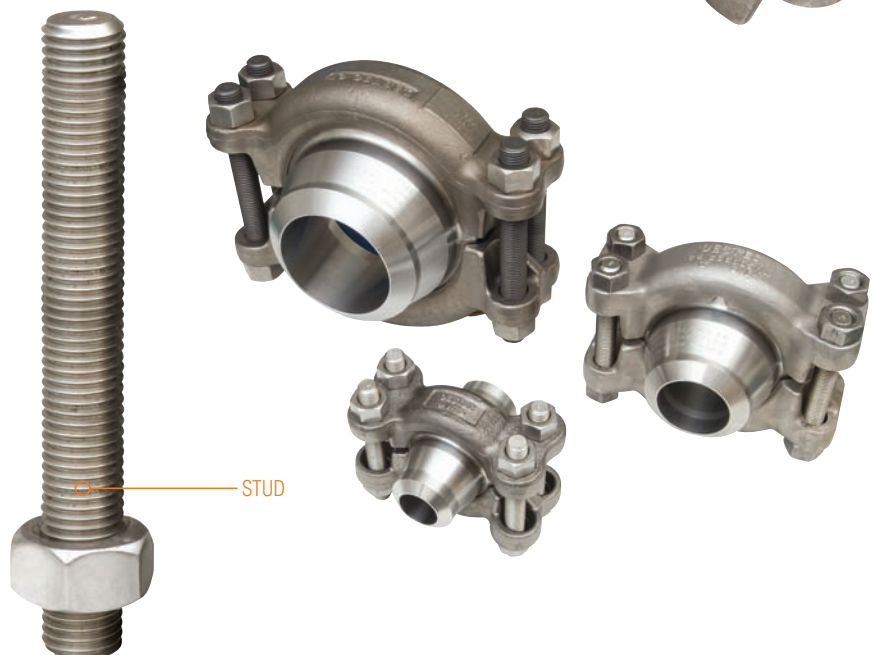
Clean

Remove grease and preservative from hub and seat faces. If faces are tarnished, the hub seat should be polished in a circular motion to a bright finish with fine emery cloth.

3.

Inspect

Check all sealing surfaces for mechanical damage and rust. Small scratches should be removed by polishing, more serious defects may require on-site machining or component replacement. Contact us for further advice and information.

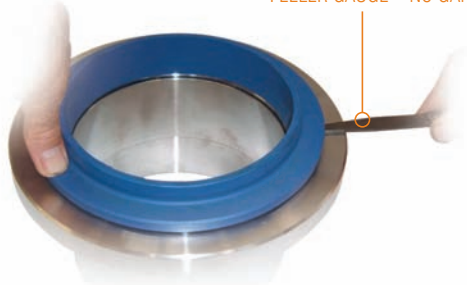
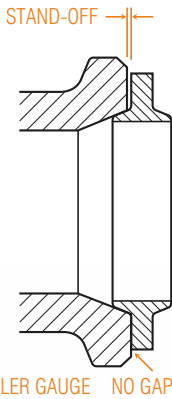




4.

Check for Stand-Off

When a seal ring is placed in the seat by hand there should be stand-off as illustrated. If the stand-off is less than given in the table the seal will need replacing.



5.

Lubricate

PTFE coated seal rings should be assembled into clean bright hub seats. Remove preservative from uncoated seal rings before spraying with molybdenum disulphide lubricant and assembly - the spray coating may also be applied to the hub seat. The bolting and clamp / hub mating surfaces should be lubricated with clean light oil or grease.

6.

Fitting

Fit the clamps with the spherical faces of the nuts located in the special seating on the clamps. Tighten the bolting evenly to the torques recommended, ensure the gaps between the clamps are similar.



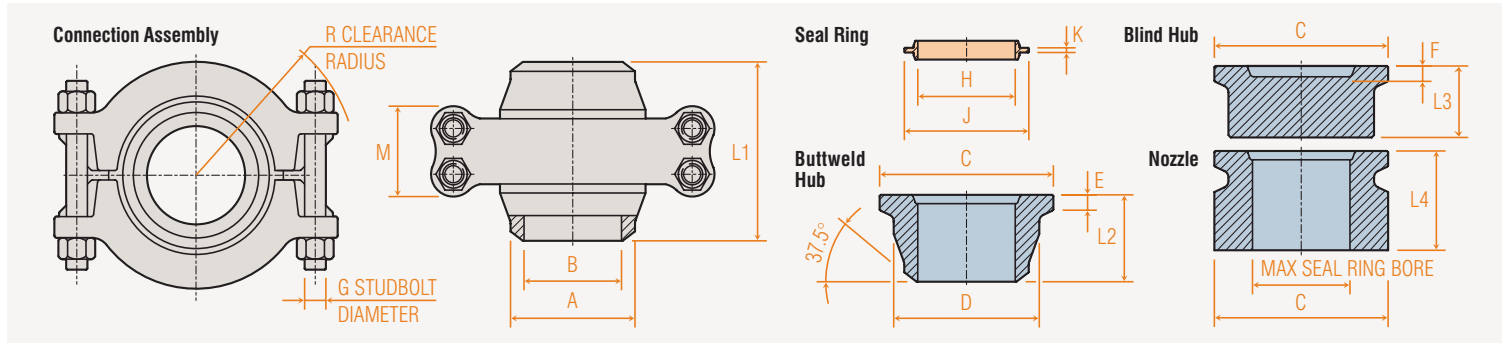
| Seal Ring SIZE | Stand-Off (") | | Seal Ring SIZE | Stand-Off (") | |
|----------------|----------------|--------------------|----------------|----------------|--------------------|
| | New Seal Rings | Minimum for Re-Use | | New Seal Rings | Minimum for Re-Use |
| 4 | 0.016 | 0.008 | 91 | 0.127 | 0.063 |
| 5 | 0.012 | 0.006 | 94 | 0.127 | 0.063 |
| 7 | 0.015 | 0.008 | 97 | 0.130 | 0.065 |
| 11 | 0.012 | 0.006 | 102 | 0.134 | 0.067 |
| 14 | 0.021 | 0.010 | 106 | 0.142 | 0.071 |
| 16 | 0.017 | 0.009 | 110 | 0.142 | 0.071 |
| 20 | 0.022 | 0.011 | 112 | 0.145 | 0.073 |
| 23 | 0.022 | 0.011 | 120 | 0.153 | 0.076 |
| 25 | 0.028 | 0.014 | 122 | 0.157 | 0.078 |
| 27 | 0.030 | 0.015 | 125 | 0.157 | 0.078 |
| 31 | 0.030 | 0.015 | 130 | 0.164 | 0.082 |
| 34 | 0.036 | 0.018 | 134 | 0.172 | 0.086 |
| 40 | 0.037 | 0.018 | 137 | 0.175 | 0.088 |
| 42 | 0.057 | 0.029 | 140 | 0.175 | 0.088 |
| 44 | 0.038 | 0.019 | 144 | 0.179 | 0.089 |
| 46 | 0.042 | 0.021 | 152 | 0.179 | 0.089 |
| 52 | 0.047 | 0.023 | 154 | 0.190 | 0.095 |
| 54 | 0.053 | 0.027 | 160 | 0.254 | 0.127 |
| 62 | 0.090 | 0.045 | 170 | 0.211 | 0.105 |
| 64 | 0.093 | 0.047 | 180 | 0.222 | 0.111 |
| 66 | 0.089 | 0.045 | 184 | 0.226 | 0.113 |
| 67 | 0.078 | 0.039 | 192 | 0.237 | 0.119 |
| 72 | 0.101 | 0.050 | 210 | 0.252 | 0.126 |
| 76 | 0.108 | 0.054 | 232 | 0.256 | 0.128 |
| 82 | 0.108 | 0.054 | 244 | 0.293 | 0.147 |
| 84 | 0.116 | 0.058 | 264 | 0.315 | 0.158 |
| 87 | 0.119 | 0.060 | 292 | 0.289 | 0.145 |

Recommended Studbolt Tightening Torques

| Studbolt Material | | Low Alloy A193-B7 | Low Alloy A193-B7 PTFE Coated | Stainless Steel A193-B8 | Stainless Steel A193-B8 PTFE Coated |
|-------------------|---------------|-------------------|-------------------------------|-------------------------|-------------------------------------|
| Clamp SIZE | Studbolt SIZE | Nm (lb. ft.) | Nm (lb. ft.) | Nm (lb. ft.) | Nm (lb. ft.) |
| G1 | ½" UNC | 16 (12) | 11 (8) | 16 (12) | 11 (8) |
| G1 ½ | ⅝" UNC | 31 (23) | 22 (16) | 31 (23) | 22 (16) |
| G2, G3 | ¾" UNC | 54 (40) | 38 (28) | 54 (40) | 38 (28) |
| G4, C, B | ⅞" UNC | 139 (102) | 98 (72) | 130 (96) | 92 (68) |
| G5, D, E | 1" UNC | 207 (153) | 146 (108) | 194 (143) | 137 (101) |
| G6, GX6, F | 1⅛" -8UN | 303 (223) | 213 (157) | 285 (210) | 200 (147) |
| G8 | 1¼" -8UN | 530 (391) | 371 (274) | 399 (294) | 279 (206) |
| GX8, GG | 1⅜" -8UN | 718 (530) | 500 (369) | 540 (398) | 376 (277) |
| G10, GZ14 | 1⅝" -8UN | 1216 (897) | 842 (621) | 914 (674) | 633 (467) |
| GX10, G12 | 1¾" -8UN | 1533 (1131) | 1059 (781) | 1153 (851) | 796 (587) |
| GZ16, G18, GZ18 | 1⅞" -8UN | 1902 (1403) | 1310 (967) | 1430 (1055) | 985 (727) |
| GX12, GP, GZ20 | 2" -8UN | 2324 (1715) | 1599 (1179) | 1748 (1289) | 1202 (887) |
| G3V, G30 | 2¼" -8UN | 3348 (2470) | 2295 (1693) | 2518 (1857) | 1726 (1273) |
| GS, GU, G5P, G24S | 2½" -8UN | 4635 (3419) | 3169 (2338) | 3486 (2571) | 2383 (1758) |
| GY | 2¾" -8UN | 5718 (4218) | 3901 (2878) | 4674 (3448) | 3189 (2352) |
| G3Y | 3¼" -8UN | 9544 (7040) | 6490 (4788) | 7801 (5755) | 5305 (3913) |

Tightened properly the connection will remain tight and leak-proof under the most severe conditions of vibration and temperature change. Periodic retightening may be necessary on connections operating at elevated temperatures.

INTEGRATED SPECIFICATIONS

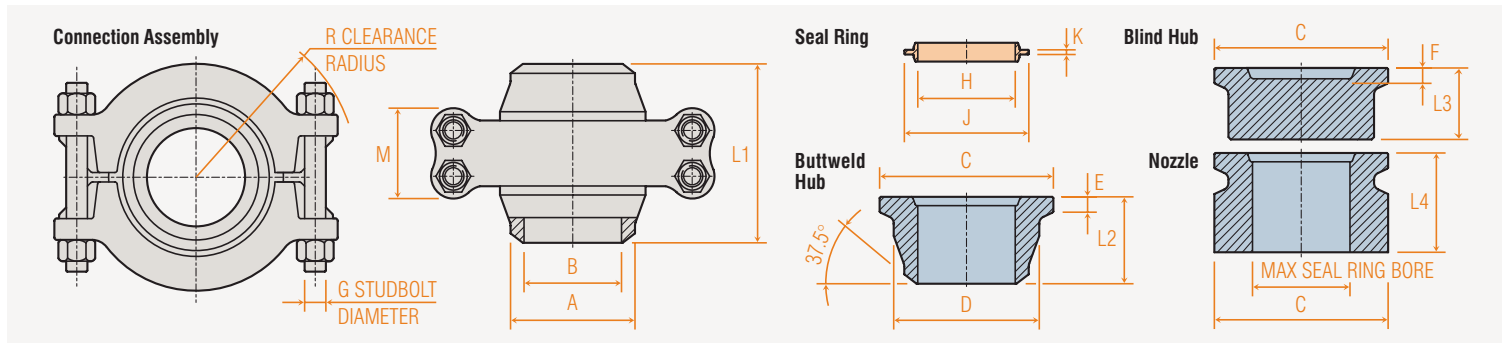


| NOM. SIZE | Pipe Size | | | G-Range Connection ³ | Connection Assembly | | | | | Seal Ring | | | Hub | | | | Hub Lengths | | |
|-----------|-----------|--------------|--------------|---------------------------------|---------------------|--------------|----------|--------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|-----------|
| | SCH. | O.D. A | Bore B | | Length L1 | Clearance R | M | Bolt G | Weight kg | Bore H | O.D. J | Rib K | C | D | E | F | Buttweld L2 | Blind L3 | Nozzle L4 |
| 1/2" | 40 | 0.840 (21.3) | 0.622 (15.8) | 3.625 (92.1) | 2.625 (66.7) | 2.313 (58.8) | 1/2" UNC | 2.14 | 0.625 (15.9) | 1.094 (27.8) | 0.125 (3.18) | 2.000 (50.8) | 1.500 (38.1) | 0.313 (8) | 0.219 (5.6) | 1.750 (44.4) | 1.750 (44.4) | 9.000 (229) | |
| | 80 | | 0.546 (13.9) | | | | | | | | | | | | | | | | 2.16 |
| | 160 | | 0.466 (11.8) | | | | | | | | | | | | | | | | 2.17 |
| | XXS | | 0.252 (6.4) | | | | | | | | | | | | | | | | 2.21 |
| 3/4" | 40 | 1.050 (26.7) | 0.824 (20.9) | 3.625 (92.1) | 2.625 (66.7) | 2.313 (58.8) | 1/2" UNC | 2.02 | 0.905 (23) | 1.375 (34.9) | 0.125 (3.18) | 2.000 (50.8) | 1.500 (38.1) | 0.313 (8) | 0.219 (5.6) | 1.750 (44.4) | 1.750 (44.4) | 9.000 (229) | |
| | 80 | | 0.742 (18.8) | | | | | | | | | | | | | | | | 2.10 |
| | 160 | | 0.614 (15.6) | | | | | | | | | | | | | | | | 2.16 |
| | XXS | | 0.434 (11) | | | | | | | | | | | | | | | | 2.23 |
| 1" | 40 | 1.315 (33.4) | 1.049 (26.6) | 3.625 (92.1) | 2.625 (66.7) | 2.313 (58.8) | 1/2" UNC | 2.01 | 1.125 (28.6) | 1.750 (44.4) | 0.125 (3.18) | 2.000 (50.8) | 1.500 (38.1) | 0.313 (8) | 0.219 (5.6) | 1.750 (44.4) | 1.750 (44.4) | 9.000 (229) | |
| | 80 | | 0.957 (24.3) | | | | | | | | | | | | | | | | 2.07 |
| | 160 | | 0.815 (20.7) | | | | | | | | | | | | | | | | 2.14 |
| | XXS | | 0.599 (15.2) | | | | | | | | | | | | | | | | 2.28 |
| 1 1/2" | 40 | 1.900 (48.3) | 1.610 (40.9) | 5.000 (127) | 4.000 (102) | 3.125 (79.4) | 5/8" UNC | 3.83 | 1.610 (40.9) | 2.625 (66.7) | 0.250 (6.4) | 3.125 (79.4) | 2.375 (60.3) | 0.437 (11.1) | 0.437 (11.1) | 2.375 (60.3) | 2.125 (54) | 9.000 (229) | |
| | 80 | | 1.500 (38.1) | | | | | | | | | | | | | | | | 3.99 |
| | 160 | | 1.338 (34) | | | | | | | | | | | | | | | | 4.21 |
| | XXS | | 1.100 (27.9) | | | | | | | | | | | | | | | | 4.47 |
| | | | | | | | | | | | | | | | | | | | 4.53 |
| | | | | | | | | | | | | | | | | | | | |



| NOM. SIZE | Pipe Size | | | G-Range Connection ³ | Connection Assembly | | | | | Seal Ring | | | Hub | | | | Hub Lengths | | |
|-----------|-----------|--------------|--------------|---------------------------------|---------------------|-------------|--------------|----------|-----------|--------------|--------------|-------------|--------------|-------------|--------------|--------------|--------------|--------------|--------------|
| | SCH. | O.D. A | Bore B | | Length L1 | Clearance R | M | Bolt G | Weight kg | Bore H | O.D. J | Rib K | C | D | E | F | Buttweld L2 | Blind L3 | Nozzle L4 |
| 2" | 40 | 2.375 (60.3) | 2.063 (52.4) | G2-20 | 5.750 (146) | 4.500 (114) | 3.500 (88.9) | 3/4" UNC | 8.17 | 2.063 (52.4) | 3.250 (82.5) | 0.250 (6.4) | 3.625 (92.1) | 2.875 (73) | 0.437 (11.1) | 0.500 (12.7) | 2.750 (69.8) | 2.000 (50.8) | 9.000 (229) |
| | 80 | | 1.939 (49.3) | | | | | | 8.45 | | | | | | | | | | |
| | 160 | | 1.689 (42.9) | G2-16 | | | | | 8.79 | 1.870 (47.5) | 2.688 (68.3) | | | | | | | | |
| | XXS | | 1.503 (38.2) | G2-14 | | | | | 9.09 | 1.610 (40.9) | 2.625 (66.7) | | | | | | | | |
| | | | | G2-11R | | | | | 9.95 | 1.125 (28.6) | 1.750 (44.4) | | | | | | | | |
| 2 1/2" | 40 | 2.875 (73) | 2.469 (62.7) | G3-25 | 6.750 (171) | 5.250 (133) | 3.500 (88.9) | 3/4" UNC | 14.5 | 2.672 (67.9) | 4.000 (102) | 0.250 (6.4) | 5.000 (127) | 4.000 (102) | 0.500 (12.7) | 0.500 (12.7) | 3.250 (82.5) | 2.500 (63.5) | 9.000 (229) |
| | 80 | | 2.323 (59) | | | | | | 14.8 | | | | | | | | | | |
| | 160 | | 2.125 (54) | G3-20 | | | | | 15.5 | 2.063 (52.4) | 3.250 (82.5) | | | | | | | | |
| | XXS | | 1.771 (45) | | | | | | 16.0 | | | | | | | | | | |
| 3" | 40 | 3.500 (88.9) | 3.063 (77.8) | G3-27 | 6.750 (171) | 5.250 (133) | 3.500 (88.9) | 3/4" UNC | 12.9 | 3.065 (77.9) | 4.250 (108) | 0.25 (6.4) | 5.000 (127) | 4.000 (102) | 0.500 (12.7) | 0.500 (12.7) | 3.250 (82.5) | 2.500 (63.5) | 9.000 (229) |
| | 80 | | 2.900 (73.7) | | | | | | 13.9 | | | | | | | | | | |
| | 160 | | 2.626 (66.7) | G3-27 | | | | | 14.9 | 2.672 (67.9) | 4.000 (102) | | | | | | | | |
| | XXS | | 2.300 (58.4) | G3-23 | | | | | 15.2 | 2.375 (60.3) | 3.500 (88.9) | | | | | | | | |
| 4" | 40 | 4.500 (114) | 4.026 (102) | G4-40 | 7.500 (191) | 6.000 (152) | 3.813 (96.9) | 7/8" UNC | 18.6 | 4.057 (103) | 5.500 (140) | 0.250 (6.4) | 6.000 (152) | 5.000 (127) | 0.500 (12.7) | 3.625 (92.1) | 2.875 (73) | 12.000 (305) | |
| | 80 | | 3.826 (97.2) | | | | | | 19.7 | | | | | | | | | | 0.688 (17.5) |
| | 160 | | 3.438 (87.3) | G4-34 | | | | | 21.6 | 3.688 (93.7) | 5.000 (127) | | | | | | | | |
| | XXS | | 3.152 (80.1) | G4-31 | | | | | 23.1 | 3.250 (82.5) | 4.500 (114) | | | | | | | | |
| | | | | G4-27 | | | | | 23.1 | 3.065 (77.9) | 4.250 (108) | | | | | | | | 0.500 (12.7) |
| | | G4-25 | 24.9 | 2.672 (67.9) | 4.000 (102) | | | | | | | | | | | | | | |

INTEGRATED SPECIFICATIONS

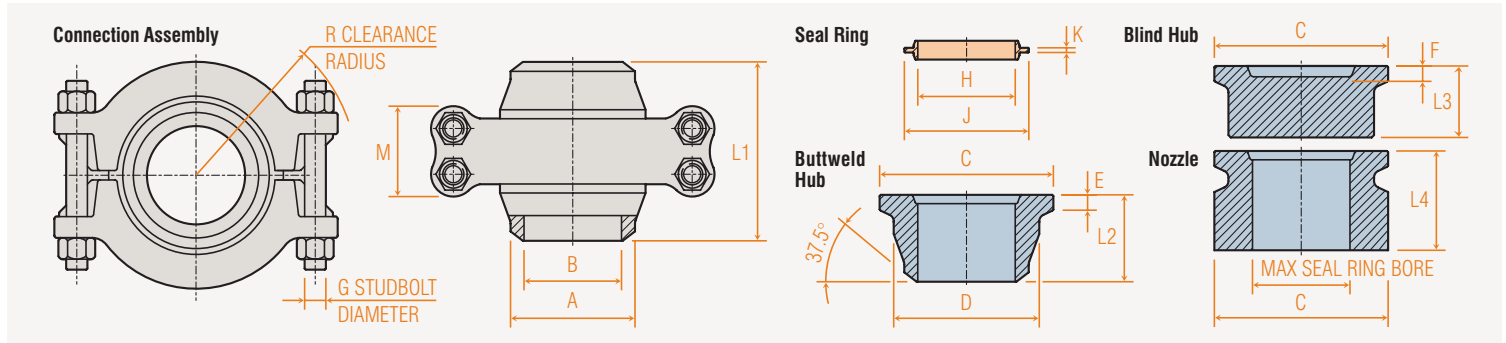


| NOM. SIZE | Pipe Size | | | G-Range Connection ³ | Connection Assembly | | | | | Seal Ring | | | Hub | | | | Hub Lengths | | | | | | | | |
|-----------|-----------|-------------|-------------|---------------------------------|---------------------|-------------|------------|--------------|--------------|--------------|-------------|--------------|--------------|--------------|--------------|-------------|--------------|--------------|--------------|-------------|-------------|--------------|--------------|-------------|--------------|
| | SCH. | O.D. A | Bore B | | Length L1 | Clearance R | M | Bolt G | Weight kg | Bore H | O.D. J | Rib K | C | D | E | F | Butt Weld L2 | Blind L3 | Nozzle L4 | | | | | | |
| 5" | 40 | 5.563 (141) | 5.047 (128) | 9.000 (229) | 7.375 (187) | 4.437 (113) | 1" UNC | 31.9 | 5.313 (135) | 6.625 (168) | 0.250 (6.4) | 7.500 (191) | 6.500 (165) | 0.625 (15.9) | 0.688 (17.5) | 4.375 (111) | 2.875 (73) | 12.000 (305) | | | | | | | |
| | 80 | | 4.813 (122) | | | | | | 33.3 | 4.745 (121) | | | | | | | | | 6.188 (157) | | | | | | |
| | 160 | | 4.313 (110) | | | | | | 37.3 | 4.057 (103) | | | | | | | | | 5.500 (140) | | | | | | |
| | XXS | | 4.063 (103) | | | | | | 39.4 | 3.688 (93.7) | | | | | | | | | 5.000 (127) | | | | | | |
| | | | | | | | | | 41.6 | 3.250 (82.5) | | | | | | | | | 4.500 (114) | | | | | | |
| 6" | 40 | 6.625 (168) | 6.063 (154) | 9.500 (241) | 8.750 (222) | 4.813 (122) | 1 1/8" 8UN | 50.3 | 6.063 (154) | 7.875 (200) | 0.250 (6.4) | 9.250 (235) | 7.750 (197) | 0.813 (20.7) | 0.688 (17.5) | 4.625 (118) | 3.500 (88.9) | 12.000 (305) | | | | | | | |
| | 80 | | 52.6 | | | | | 5.500 (140) | 6.813 (173) | | | | | | | | | | | | | | | | |
| | 120 | | 54.4 | | | | | 5.189 (132) | 5.313 (135) | 6.625 (168) | | | | | | | | | | | | | | | |
| | 160 | | 58.5 | | | | | 4.745 (121) | 6.188 (157) | | | | | | | | | | | | | | | | |
| | XXS | | 60.8 | | | | | 4.187 (106) | 6.625 (168) | | | | | | | | | | | | | | | | |
| | | | 62.9 | | | | | 4.057 (103) | 5.500 (140) | | | | | | | | | | | | | | | | |
| | | | 66.8 | | | | | 9.000 (229) | 5.000 (127) | 78.5 | | | | | | | | | 4.057 (103) | 5.500 (140) | | | | | |
| | | | 78.5 | | | | | 4.057 (103) | 5.500 (140) | | | | | | | | | | | | | | | | |
| 8" | 40 | 8.625 (219) | 7.981 (203) | 11.125 (283) | 9.875 (251) | 5.875 (149) | 1 1/4" 8UN | 80.3 | 8.250 (210) | 10.125 (257) | 0.375 (9.5) | 11.500 (292) | 10.000 (254) | 0.750 (19.1) | 0.875 (22.2) | 5.375 (137) | 3.500 (88.9) | 12.000 (305) | | | | | | | |
| | 80 | | 85.8 | | | | | 7.750 (197) | 10.000 (254) | | | | | | | | | | | | | | | | |
| | 160 | | 97.4 | | | | | 7.250 (184) | 9.500 (241) | | | | | | | | | | | | | | | | |
| | XXS | | 99.1 | | | | | 6.875 (175) | 8.750 (222) | | | | | | | | | | | | | | | | |
| | | | 105 | | | | | 6.063 (154) | 7.875 (200) | | | | | | | | | | | | | | | | |
| | | | 118 | | | | | 10.500 (267) | 6.437 (164) | 135 | | | | | | | | | 5.313 (135) | 6.625 (168) | 0.250 (6.4) | 0.938 (23.8) | 0.813 (20.7) | 5.500 (140) | 3.875 (98.4) |
| | | | 135 | | | | | 5.313 (135) | 6.625 (168) | 0.250 (6.4) | | | | | | | | | | | | | | | |
| | | | | | | | | 0.938 (23.8) | 0.813 (20.7) | 5.500 (140) | | | | | | | | | 3.875 (98.4) | | | | | | |



| NOM. SIZE | Pipe Size | | | G-Range Connection ³ | Connection Assembly | | | | | Seal Ring | | | Hub | | | | Hub Lengths | | | | | |
|-----------|-----------|--------------|--------------|---------------------------------|---------------------|--------------|-------------|------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|-------------|--------------|--------------|-------------|-------------|
| | SCH. | O.D. A | Bore B | | Length L1 | Clearance R | M | Bolt G | Weight kg | Bore H | O.D. J | Rib K | C | D | E | F | Buttweld L2 | Blind L3 | Nozzle L4 | | | |
| 10" | 40 | 10.750 (273) | 10.020 (255) | G10-102 | 12.375 (314) | 12.625 (321) | 6.750 (171) | 1 5/8" 8UN | 149 | 10.250 (260) | 12.000 (305) | 0.375 (9.5) | 13.625 (346) | 11.625 (295) | 1.250 (31.8) | 0.875 (22.2) | 6.000 (152) | 4.250 (108) | 14.000 (356) | | | |
| | 60 | | 9.750 (248) | G10-97 | | | | | 156 | 9.875 (251) | 12.000 (305) | | | | | | | | | 3.500 (88.9) | | |
| | 80 | | 9.560 (243) | | | | | | 159 | 9.125 (232) | 12.000 (305) | | | | | | | | | 4.000 (102) | | |
| | 120 | | 9.064 (230) | G10-91 | | | | | 171 | 8.500 (216) | 11.125 (283) | | | | | | | | | 4.250 (108) | | |
| | 160 | | 8.500 (216) | G10-84 | | | | | 182 | 7.250 (184) | 9.500 (241) | | | | | | | | | 5.000 (127) | | |
| | | | | G10-72 | | | | | 203 | 8.250 (210) | 10.125 (257) | | | | | | | | | 4.750 (121) | | |
| | | | | GX10-82 | | | | | 201 | 7.250 (184) | 9.500 (241) | | | | | | | | | 5.000 (127) | | |
| | | | | GX10-72 | | | | | 229 | 6.063 (154) | 7.875 (200) | | | | | | | | | 4.500 (114) | | |
| | | GX10-62R | 16.000 (406) | 296 | | | | | | | | | | | | | | | | | | |
| 12" | STD | 12.750 (324) | 12.000 (305) | G12-120 | 13.625 (346) | 14.500 (368) | 7.250 (184) | 1 3/4" 8UN | 195 | 12.000 (305) | 13.875 (352) | 0.375 (9.5) | 16.000 (406) | 14.000 (356) | 1.375 (34.9) | 0.875 (22.2) | 6.625 (168) | 4.250 (108) | 14.000 (356) | | | |
| | XS | | 11.750 (298) | | | | | | 199 | 11.250 (286) | 14.125 (359) | | | | | | | | | 0.625 (15.9) | | |
| | 80 | | 11.375 (289) | G12-112 | | | | | 207 | 10.750 (273) | 12.625 (321) | | | | | | | | | 1.375 (34.9) | | |
| | 120 | | 10.750 (273) | G12-106 | | | | | 223 | 10.250 (260) | 12.000 (305) | | | | | | | | | 1.375 (34.9) | | |
| | 160 | | 10.125 (257) | G12-102 | | | | | 246 | 9.500 (241) | | | | | | | | | | 5.250 (133) | | |
| | | | | G12-94 | | | | | 291 | 8.250 (210) | 10.125 (257) | | | | | | | | | 8.000 (203) | | |
| | | | | GX12-82R | | | | | 16.000 (406) | 401 | | | | | | | | | | | 5.000 (127) | |
| 14" | 40 | 14.000 (356) | 13.124 (333) | GZ14-132 | 14.500 (368) | 14.250 (362) | 7.375 (187) | 1 5/8" 8UN | 223 | 13.250 (337) | 15.250 (387) | 0.500 (12.7) | 17.250 (438) | 15.750 (400) | 0.750 (19.1) | 0.633 (16.1) | 7.000 (178) | 4.250 (108) | AS SPECIFIED | | | |
| | 80 | | 12.500 (318) | GZ14-130 | | | | | 246 | 13.000 (330) | 15.000 (381) | | | | | | | | | 0.813 (20.7) | 7.063 (179) | |
| | 120 | | 11.812 (300) | GZ14-120 | | | | | 269 | 12.000 (305) | 13.875 (352) | | | | | | | | | 0.375 (9.5) | 7.063 (179) | 4.500 (114) |
| | 160 | | 11.188 (284) | GZ14-112R | | | | | 302 | 11.250 (286) | 14.125 (359) | | | | | | | | | 0.625 (15.9) | 7.250 (184) | 5.500 (140) |
| 16" | 40 | 16.000 (406) | 15.000 (381) | GZ16-152R | 16.000 (406) | 15.750 (400) | 7.750 (197) | 1 7/8" 8UN | 294 | 15.250 (387) | 17.750 (451) | 0.500 (12.7) | 19.500 (495) | 18.000 (457) | 1.000 (25.4) | 0.875 (22.2) | 8.000 (203) | 6.000 (152) | AS SPECIFIED | | | |
| | 80 | | 14.314 (364) | GZ16-144R | | | | | 327 | 14.500 (368) | 17.000 (432) | | | | | | | | | 1.000 (25.4) | 6.000 (152) | |
| | 120 | | 13.562 (345) | GZ16-137R | | | | | 359 | 13.875 (352) | 16.500 (419) | | | | | | | | | 0.625 (15.9) | 6.000 (152) | |
| | 160 | | 12.814 (326) | GZ16-130R | | | | | 393 | 13.000 (330) | 15.000 (381) | | | | | | | | | 0.500 (12.7) | 6.500 (165) | |

INTEGRATED SPECIFICATIONS



| NOM. SIZE | Pipe Size | | | G-Range Connection ³ | Connection Assembly | | | | | Seal Ring | | | Hub | | | | Hub Lengths | | | AS SPECIFIED |
|-----------|-----------|--------------|--------------|---------------------------------|---------------------|--------------|--------------|------------|-----------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|-------------|--------------|
| | SCH. | O.D. A | Bore B | | Length L1 | Clearance R | M | Bolt G | Weight kg | Bore H | O.D. J | Rib K | C | D | E | F | Butt Weld L2 | Blind L3 | Nozzle L4 | |
| 18" | 30 | | 17.125 (435) | GZ18-180 | | | | | 355 | 18.000 (457) | 20.500 (521) | | | | 0.750 (19.1) | | 4.750 (121) | | | |
| | 60 | 18.000 (457) | 16.500 (419) | GZ18-164 | 17.000 (432) | 16.125 (410) | 9.250 (235) | 1 7/8" 8UN | 395 | 16.500 (419) | 19.000 (483) | 0.500 (12.7) | 21.750 (552) | 20.250 (514) | 0.750 (19.1) | 1.000 (25.4) | 8.250 (210) | 5.750 (146) | | |
| | 120 | | 15.250 (387) | GZ18-152R | | | | | 468 | 15.250 (387) | 17.750 (451) | | | | 1.000 (25.4) | 0.875 (22.2) | 8.500 (216) | 6.625 (168) | | |
| 20" | 30 | | 19.000 (483) | GZ20-192 | | | | | 457 | 19.250 (489) | 22.000 (559) | | | | 0.750 (19.1) | 1.125 (28.6) | 8.750 (222) | 6.000 (152) | | |
| | 60 | 20.000 (508) | 18.375 (467) | GZ20-184 | 18.000 (457) | 18.000 (457) | 8.375 (213) | 2" 8UN | 498 | 18.500 (470) | 21.000 (533) | 0.500 (12.7) | 24.500 (622) | 23.000 (584) | 0.750 (19.1) | 1.375 (34.9) | 9.000 (229) | 7.000 (178) | 6.000 (152) | |
| | 120 | | 17.000 (432) | GZ20-170R | | | | | 595 | 17.000 (432) | 19.500 (495) | | | | 1.000 (25.4) | 1.375 (34.9) | 9.000 (229) | 7.000 (178) | | |
| 24" | 30 | | 22.876 (581) | G24S-232 | | | | | 457 | 23.250 (591) | 26.375 (670) | | | | 1.250 (31.8) | 1.000 (25.4) | 10.000 (254) | 6.000 (152) | | |
| | 60 | 24.000 (610) | 22.062 (560) | G24S-222 | 20.500 (521) | 22.000 (559) | 13.250 (337) | 2 1/2" 8UN | 498 | 22.250 (565) | 26.375 (670) | 0.500 (12.7) | 29.500 (749) | 27.500 (699) | 1.250 (31.8) | 1.250 (31.8) | 10.250 (260) | 6.500 (165) | 6.000 (152) | |
| | 120 | | 20.376 (518) | G24S-206R | | | | | 595 | 20.750 (527) | 24.250 (616) | | | | 1.500 (38.1) | 1.250 (31.8) | 10.250 (260) | 6.500 (165) | | |



HEAVY DUTY CONNECTORS

| NOM. SIZE | Pipe Size | | | G-Range Connection ³ | Connection Assembly | | | | | Seal Ring | | | Hub | | | | Hub Lengths | | |
|-----------|--------------|--------------|--------------|---------------------------------|---------------------|--------------|--------------|------------|-----------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| | SCH. | O.D. A | Bore B | | Length L1 | Clearance R | M | Bolt G | Weight kg | Bore H | O.D. J | Rib K | C | D | E | F | Buttweld L2 | Blind L3 | Nozzle L4 |
| 2" | | | 2.063 (52.4) | GB-20 | 6.750 (171) | 5.500 (140) | 3.750 (95.2) | 7/8" UNC | | 2.063 (52.4) | 3.250 (82.5) | 0.250 (6.4) | 4.750 (121) | 3.750 (95.2) | 0.625 (15.9) | 0.500 (12.7) | 3.250 (82.5) | | 2.750 (69.8) |
| | | | 1.870 (47.5) | GB-16 | | | | | | 1.870 (47.5) | 2.688 (68.3) | | | | | | | | 2.938 (74.6) |
| 3" | | | 2.672 (67.9) | GC-25 | 7.250 (184) | 6.000 (152) | 4.062 (103) | 7/8" UNC | | 2.672 (67.9) | 4.000 (102) | 0.250 (6.4) | 5.500 (140) | 4.500 (114) | 0.625 (15.9) | 0.500 (12.7) | 3.500 (88.9) | | 2.500 (63.5) |
| | | | 2.063 (67.9) | GC-20 | | | | | | 2.063 (67.9) | 3.250 (82.5) | | | | | | | | 2.500 (63.5) |
| 4" | | | 3.688 (93.7) | GD-34 | 8.250 (210) | 7.000 (178) | 4.437 (113) | 1" UNC | | 3.688 (93.7) | 5.000 (127) | 0.250 (6.4) | 6.750 (171) | 5.750 (146) | 0.625 (15.9) | 0.625 (15.9) | 4.000 (102) | | 3.250 (82.5) |
| | | | 3.250 (82.5) | GD-31 | | | | | | 3.250 (82.5) | 4.500 (114) | | | | | | | | |
| 6" | AS SPECIFIED | AS SPECIFIED | 6.063 (154) | GG-62 | 11.125 (283) | 10.000 (254) | 6.000 (152) | 1 3/8" 8UN | | 6.063 (154) | 7.875 (200) | 0.375 (9.5) | 11.500 (292) | 9.500 (241) | 1.000 (25.4) | 0.813 (20.7) | 5.375 (137) | 3.500 (88.9) | |
| | | | 4.057 (103) | GG-40R | | | | | | 4.057 (103) | 5.500 (140) | 0.250 (6.4) | | | 1.188 (30.2) | | | | 5.563 (141) |
| 14" | | | 12.250 (311) | GP-122 | 14.500 (368) | 14.800 (376) | 8.250 (210) | 2" 8UN | | 12.250 (311) | 14.125 (359) | 0.375 (9.5) | 18.500 (470) | 16.500 (419) | 1.250 (31.8) | 0.875 (22.2) | 7.063 (179) | 6.000 (152) | |
| | | | 11.250 (286) | GP-112R | | | | | | 11.250 (286) | 14.125 (359) | 0.625 (15.9) | | | 1.437 (36.5) | 1.187 (30.1) | 7.250 (184) | | |
| 16" | | | 15.250 (387) | GS-152 | 15.750 (400) | 19.000 (483) | 10.500 (267) | 2 1/2" 8UN | | 15.250 (387) | 17.750 (451) | 0.500 (12.7) | 21.000 (533) | 19.000 (483) | 1.438 (36.5) | 0.875 (22.2) | 7.625 (194) | 5.750 (146) | |
| | | | 13.500 (343) | GS-134R | | | | | | 13.500 (343) | 15.500 (394) | | | | 1.688 (42.9) | 1.000 (25.4) | 7.875 (200) | 6.625 (168) | |
| 20" | | | 17.000 (432) | GU-170 | 18.000 (457) | 21.000 (533) | 11.000 (279) | 2 1/2" 8UN | | 17.000 (432) | 19.500 (495) | 0.500 (12.7) | 25.000 (635) | 23.000 (584) | 1.625 (41.3) | 1.125 (28.6) | 9.250 (235) | 7.000 (178) | |
| | | | 16.000 (406) | GU-160R | | | | | | 16.000 (406) | 18.500 (470) | | | | 1.875 (47.6) | 1.000 (25.4) | 9.000 (229) | 7.625 (194) | |

Note:

- Hub length and blind thickness are for reference only and may vary with material and pressure rating.
- The following sizes are identical:

Heavy Duty

- GE
- GF
- GH
- GM

Standard Size

- G5
- G6
- G10
- G12

- The 'R' designation indicates that the Rib of the Seal Ring is RECESSED INTO the Hub Face. e.g. GX8-52R
- Other bore sizes are available on request.

© PRESSURE TEMPERATURE RATINGS bars

| Hubs: Carbon Steel A350-LF2 (Modified) Clamps: Low Alloy Steel A193-B7 | | | | | | | | Hubs: Stainless Steel A182-F316 Clamps: Low Steel Alloy A193-B7 | | | |
|--|-------------|-------|-------|-------|-------|-------|-------|---|-------------|-------|-------|
| SIZE | -46 to 20°C | 100°C | 200°C | 250°C | 300°C | 350°C | 400°C | SIZE | -46 to 20°C | 100°C | 200°C |
| G1-4 | 1324 | 1237 | 1172 | 1113 | 1035 | 986 | 816 | G1-4 | 1103 | 1103 | 1068 |
| G1-5 | 1165 | 1089 | 1032 | 979 | 911 | 868 | 719 | G1-5 | 971 | 971 | 940 |
| G1-7 | 770 | 720 | 682 | 647 | 602 | 573 | 475 | G1-7 | 642 | 642 | 621 |
| G1-11 | 381 | 356 | 337 | 320 | 298 | 284 | 235 | G1-11 | 317 | 317 | 307 |
| G1½-11 | 1048 | 980 | 928 | 881 | 820 | 781 | 646 | G1½-11 | 874 | 874 | 845 |
| G1½-14 | 447 | 417 | 395 | 375 | 349 | 333 | 275 | G1½-14 | 372 | 372 | 360 |
| G2-11R | 1215 | 1136 | 1076 | 1021 | 950 | 905 | 749 | G2-11R | 1013 | 1013 | 980 |
| G2-14 | 865 | 808 | 766 | 727 | 676 | 644 | 533 | G2-14 | 721 | 721 | 697 |
| G2-20 | 309 | 289 | 273 | 259 | 241 | 230 | 190 | G2-20 | 257 | 257 | 249 |
| G3-20 | 959 | 897 | 849 | 806 | 750 | 714 | 592 | G3-20 | 799 | 799 | 774 |
| G3-25 | 468 | 437 | 414 | 393 | 366 | 348 | 288 | G3-25 | 390 | 390 | 377 |
| G3-27 | 254 | 237 | 225 | 213 | 198 | 189 | 156 | G3-27 | 211 | 211 | 204 |
| G4-25 | 920 | 859 | 814 | 773 | 719 | 685 | 567 | G4-25 | 766 | 766 | 742 |
| G4-27 | 708 | 662 | 627 | 595 | 554 | 527 | 437 | G4-27 | 590 | 590 | 571 |
| G4-31 | 571 | 534 | 505 | 480 | 446 | 425 | 352 | G4-31 | 476 | 476 | 460 |
| G4-34 | 330 | 308 | 292 | 277 | 258 | 246 | 203 | G4-34 | 275 | 275 | 266 |
| G4-40 | 164 | 153 | 145 | 138 | 128 | 122 | 101 | G4-40 | 137 | 137 | 132 |
| G5-31 | 993 | 928 | 879 | 834 | 776 | 739 | 612 | G5-31 | 827 | 827 | 801 |
| G5-34 | 849 | 793 | 752 | 713 | 664 | 632 | 523 | G5-34 | 707 | 707 | 685 |
| G5-40 | 693 | 656 | 622 | 590 | 549 | 523 | 433 | G5-40 | 585 | 585 | 566 |
| G5-46 | 378 | 353 | 334 | 317 | 295 | 281 | 233 | G5-46 | 315 | 315 | 305 |
| G5-52 | 201 | 188 | 178 | 169 | 158 | 150 | 124 | G5-52 | 168 | 168 | 162 |
| G6-40R | 865 | 846 | 828 | 791 | 736 | 701 | 580 | G6-40R | 784 | 784 | 759 |
| G6-42 | 792 | 775 | 758 | 750 | 709 | 675 | 559 | G6-42 | 756 | 756 | 732 |
| G6-46R | 647 | 633 | 619 | 613 | 587 | 559 | 463 | G6-46R | 626 | 626 | 606 |
| G6-52 | 508 | 474 | 449 | 427 | 397 | 378 | 313 | G6-52 | 423 | 423 | 409 |
| G6-54 | 439 | 411 | 389 | 369 | 344 | 327 | 271 | G6-54 | 366 | 366 | 354 |
| G6-62 | 238 | 223 | 211 | 200 | 186 | 178 | 147 | G6-62 | 199 | 199 | 192 |
| GX6-40R | 941 | 880 | 833 | 791 | 736 | 701 | 580 | GX6-40R | 784 | 784 | 759 |
| G8-62 | 584 | 571 | 559 | 553 | 547 | 541 | 469 | G8-62 | 584 | 571 | 559 |
| G8-72 | 384 | 359 | 340 | 323 | 300 | 286 | 237 | G8-72 | 320 | 320 | 310 |
| G8-76 | 271 | 254 | 240 | 228 | 212 | 202 | 167 | G8-76 | 226 | 226 | 219 |
| G8-82 | 181 | 169 | 160 | 152 | 142 | 135 | 112 | G8-82 | 151 | 151 | 146 |
| GX8-52R | 926 | 866 | 820 | 778 | 724 | 690 | 571 | GX8-52R | 772 | 772 | 747 |
| GX8-62 | 744 | 715 | 677 | 643 | 598 | 569 | 472 | GX8-62 | 637 | 637 | 617 |
| G10-72 | 599 | 586 | 573 | 567 | 561 | 542 | 449 | G10-72 | 599 | 586 | 573 |
| G10-84 | 432 | 404 | 382 | 363 | 338 | 322 | 266 | G10-84 | 360 | 360 | 348 |
| G10-91 | 299 | 280 | 265 | 252 | 234 | 223 | 185 | G10-91 | 249 | 249 | 241 |
| G10-97 | 180 | 168 | 159 | 151 | 141 | 134 | 111 | G10-97 | 150 | 150 | 145 |
| G10-102 | 132 | 123 | 117 | 111 | 103 | 98 | 81 | G10-102 | 110 | 110 | 106 |
| GX10-72 | 728 | 680 | 645 | 612 | 569 | 542 | 449 | GX10-72 | 607 | 607 | 587 |
| GX10-82 | 497 | 464 | 440 | 417 | 388 | 370 | 306 | GX10-82 | 414 | 414 | 401 |
| G12-94 | 478 | 467 | 457 | 452 | 447 | 441 | 377 | G12-94 | 478 | 467 | 457 |
| G12-102 | 417 | 408 | 399 | 383 | 356 | 339 | 281 | G12-102 | 380 | 380 | 367 |
| G12-106 | 361 | 336 | 318 | 301 | 279 | 265 | 218 | G12-106 | 298 | 298 | 288 |
| G12-112 | 259 | 242 | 229 | 218 | 202 | 193 | 160 | G12-112 | 216 | 216 | 209 |
| G12-120 | 178 | 167 | 158 | 150 | 139 | 133 | 110 | G12-120 | 149 | 149 | 144 |
| GX12-82R | 802 | 749 | 710 | 674 | 627 | 597 | 494 | GX12-82R | 668 | 668 | 647 |
| GZ14-130 | 203 | 189 | 179 | 169 | 157 | 149 | 121 | GZ14-130 | 159 | 159 | 153 |
| GZ14-112R | 449 | 447 | 422 | 399 | 370 | 351 | 287 | GZ14-112R | 396 | 396 | 382 |



Note:

Ratings have been calculated using the following:

1. Allowable stresses taken from ASME B31-3.
2. Zero corrosion allowance.
3. Maximum bore through the hub.
4. Stress analysis based on ASME VIII, Appendix 24.
5. Pipe O/D taken as dimension D.

| | | Hubs: Stainless Steel A182-F316 Clamps: Stainless Steel A182-F304 | | | | | | | | | | |
|-------|-------|---|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 250°C | 300°C | SIZE | -46 to 20°C | 100°C | 200°C | 250°C | 300°C | 350°C | 400°C | 450°C | 500°C | 550°C |
| 1001 | 952 | G1-4 | 1103 | 1103 | 1068 | 1001 | 952 | 916 | 888 | 868 | 851 | 825 |
| 881 | 838 | G1-5 | 943 | 943 | 887 | 835 | 788 | 762 | 735 | 705 | 682 | 617 |
| 582 | 554 | G1-7 | 518 | 518 | 487 | 459 | 433 | 418 | 403 | 387 | 375 | 339 |
| 288 | 274 | G1-11 | 317 | 317 | 307 | 288 | 274 | 264 | 255 | 247 | 239 | 216 |
| 793 | 754 | G1 1/2 -11 | 874 | 874 | 845 | 793 | 754 | 725 | 703 | 687 | 674 | 653 |
| 338 | 321 | G1 1/2-14 | 372 | 372 | 360 | 338 | 321 | 309 | 299 | 293 | 287 | 264 |
| 919 | 874 | G2-11R | 1013 | 1013 | 980 | 919 | 874 | 841 | 815 | 797 | 782 | 757 |
| 654 | 622 | G2-14 | 586 | 586 | 551 | 519 | 490 | 473 | 457 | 438 | 424 | 384 |
| 233 | 222 | G2-20 | 257 | 257 | 249 | 233 | 222 | 214 | 207 | 202 | 199 | 189 |
| 726 | 690 | G3-20 | 673 | 673 | 633 | 596 | 562 | 544 | 524 | 503 | 487 | 257 |
| 354 | 336 | G3-25 | 390 | 390 | 377 | 354 | 335 | 324 | 312 | 299 | 290 | 262 |
| 192 | 182 | G3-27 | 211 | 211 | 204 | 192 | 182 | 175 | 170 | 166 | 163 | 158 |
| 695 | 661 | G4-25 | 654 | 654 | 615 | 580 | 547 | 529 | 510 | 489 | 474 | 429 |
| 535 | 509 | G4-27 | 520 | 520 | 489 | 460 | 434 | 420 | 405 | 388 | 376 | 340 |
| 432 | 410 | G4-31 | 460 | 460 | 433 | 408 | 385 | 372 | 359 | 344 | 333 | 301 |
| 249 | 237 | G4-34 | 275 | 275 | 266 | 249 | 237 | 228 | 221 | 216 | 212 | 205 |
| 124 | 118 | G4-40 | 137 | 137 | 132 | 124 | 118 | 113 | 110 | 107 | 105 | 102 |
| 751 | 714 | G5-31 | 666 | 666 | 626 | 590 | 557 | 538 | 519 | 498 | 482 | 436 |
| 642 | 610 | G5-34 | 530 | 530 | 498 | 469 | 443 | 428 | 413 | 396 | 383 | 347 |
| 531 | 505 | G5-40 | 416 | 416 | 391 | 369 | 348 | 336 | 324 | 311 | 301 | 272 |
| 286 | 271 | G5-46 | 303 | 303 | 285 | 268 | 253 | 244 | 236 | 226 | 219 | 198 |
| 152 | 145 | G5-52 | 168 | 168 | 162 | 152 | 145 | 139 | 135 | 132 | 130 | 125 |
| 712 | 677 | G6-40R | 519 | 519 | 488 | 460 | 434 | 419 | 405 | 388 | 376 | 340 |
| 686 | 652 | G6-42 | 475 | 475 | 447 | 421 | 397 | 384 | 370 | 355 | 344 | 311 |
| 568 | 540 | G6-46R | 388 | 388 | 365 | 344 | 324 | 314 | 303 | 290 | 281 | 254 |
| 384 | 365 | G6-52 | 317 | 317 | 298 | 281 | 265 | 256 | 247 | 237 | 229 | 207 |
| 332 | 316 | G6-54 | 296 | 296 | 279 | 262 | 248 | 239 | 231 | 221 | 214 | 194 |
| 180 | 171 | G6-62 | 199 | 199 | 192 | 180 | 171 | 165 | 160 | 156 | 153 | 144 |
| 712 | 677 | GX6-40R | 784 | 784 | 759 | 712 | 677 | 651 | 631 | 617 | 599 | 542 |
| 553 | 547 | G8-62 | 351 | 351 | 330 | 310 | 293 | 283 | 273 | 262 | 254 | 230 |
| 291 | 276 | G8-72 | 249 | 249 | 234 | 220 | 208 | 201 | 194 | 186 | 180 | 163 |
| 205 | 195 | G8-76 | 216 | 216 | 203 | 191 | 180 | 174 | 168 | 161 | 156 | 141 |
| 137 | 130 | G8-82 | 151 | 151 | 146 | 137 | 130 | 125 | 121 | 119 | 116 | 113 |
| 701 | 666 | GX8-52R | 602 | 602 | 566 | 533 | 503 | 486 | 469 | 450 | 436 | 394 |
| 578 | 550 | GX8-62 | 446 | 446 | 420 | 396 | 373 | 361 | 348 | 334 | 323 | 292 |
| 551 | 523 | G10-72 | 360 | 360 | 338 | 318 | 300 | 290 | 280 | 269 | 260 | 235 |
| 327 | 310 | G10-84 | 266 | 266 | 250 | 235 | 222 | 214 | 207 | 198 | 192 | 174 |
| 226 | 215 | G10-91 | 227 | 227 | 214 | 202 | 190 | 184 | 177 | 170 | 165 | 149 |
| 136 | 129 | G10-97 | 150 | 150 | 145 | 136 | 129 | 125 | 121 | 118 | 116 | 112 |
| 100 | 95 | G10-102 | 110 | 110 | 106 | 100 | 95 | 91 | 88 | 86 | 85 | 82 |
| 551 | 523 | GX10-72 | 508 | 508 | 477 | 450 | 424 | 410 | 396 | 380 | 367 | 333 |
| 376 | 357 | GX10-82 | 398 | 398 | 374 | 352 | 332 | 321 | 310 | 297 | 288 | 261 |
| 452 | 439 | G12-94 | 280 | 280 | 262 | 246 | 230 | 222 | 214 | 204 | 197 | 177 |
| 345 | 328 | G12-102 | 250 | 250 | 235 | 222 | 209 | 202 | 195 | 187 | 181 | 164 |
| 270 | 256 | G12-106 | 222 | 222 | 208 | 195 | 184 | 177 | 170 | 163 | 157 | 141 |
| 196 | 186 | G12-112 | 200 | 200 | 188 | 177 | 167 | 162 | 156 | 149 | 145 | 131 |
| 135 | 128 | G12-120 | 149 | 149 | 144 | 135 | 128 | 123 | 120 | 117 | 115 | 111 |
| 606 | 576 | GX12-82R | 581 | 581 | 546 | 515 | 485 | 469 | 453 | 434 | 420 | 380 |
| 143 | 136 | GZ14-130 | 145 | 145 | 145 | 143 | 136 | 130 | 126 | 123 | 121 | 117 |
| 357 | 338 | GZ14-112R | 201 | 201 | 201 | 201 | 201 | 201 | 201 | 190 | 184 | 117 |

© PRESSURE TEMPERATURE RATINGS bars

| Hubs: Carbon Steel A350-LF2 (Modified) Clamps: Low Alloy Steel A193-B7 | | | | | | | | Hubs: Stainless Steel A182-F316 Clamps: Low Steel Alloy A193-B7 | | | |
|--|-------------|-------|-------|-------|-------|-------|-------|---|-------------|-------|-------|
| SIZE | -46 to 20°C | 100°C | 200°C | 250°C | 300°C | 350°C | 400°C | SIZE | -46 to 20°C | 100°C | 200°C |
| GZ16-144R | 352 | 328 | 311 | 294 | 273 | 260 | 213 | GZ16-144R | 256 | 256 | 248 |
| GZ16-130R | 437 | 407 | 386 | 365 | 339 | 323 | 265 | GZ16-130R | 362 | 362 | 350 |
| GZ18-164 | 250 | 233 | 220 | 209 | 194 | 184 | 151 | GZ18-164 | 207 | 207 | 200 |
| GZ18-152R | 346 | 339 | 320 | 304 | 282 | 268 | 221 | GZ18-152R | 301 | 301 | 291 |
| GZ20-184 | 236 | 221 | 209 | 198 | 184 | 174 | 143 | GZ20-184 | 196 | 196 | 189 |
| GZ20-170R | 319 | 319 | 303 | 287 | 267 | 254 | 209 | GZ20-170R | 285 | 285 | 275 |
| Heavy Duty Connectors | | | | | | | | Heavy Duty Connectors | | | |
| GB-20 | 886 | 828 | 784 | 744 | 693 | 660 | 546 | GB-20 | 738 | 738 | 714 |
| GC-25 | 792 | 740 | 701 | 664 | 611 | 577 | 462 | GC-25 | 657 | 657 | 633 |
| GD-31 | 853 | 798 | 756 | 717 | 667 | 635 | 526 | GD-31 | 711 | 711 | 688 |
| GG-62 | 597 | 583 | 570 | 552 | 511 | 485 | 395 | GG-62 | 547 | 547 | 528 |
| GP-112R | 548 | 535 | 524 | 508 | 473 | 450 | 372 | GP-112R | 504 | 504 | 488 |
| GS-134R | 544 | 509 | 482 | 458 | 426 | 405 | 336 | GS-134R | 454 | 454 | 439 |
| GU-160R | 508 | 474 | 449 | 426 | 396 | 376 | 310 | GU-160R | 422 | 422 | 408 |

© MATERIAL ANALYSIS & MECHANICAL PROPERTIES

| Component | Hubs | | | Seal Rings | | | | Clamps | |
|--------------------------|-------------------|-----------|-----------------|------------|-------------------|-----------------|--------------------|-----------|-----------|
| | A350 LF2 Modified | A182-F316 | A182-F51 S31803 | AISI 4140 | A564-630 (17.4ph) | A638-660 (A286) | INC X750 ASTM B637 | A193-B7 | A182-F304 |
| Chemical Analysis | | | | | | | | | |
| C | 0.18 max | 0.08 max | 0.03 max | 0.38/0.43 | 0.07 max | 0.08 max | 0.08 max | 0.37/0.49 | 0.08 max |
| Si | 0.50 max | 1.0 max | 1.0 max | 0.15/0.35 | 1.0 max | 0.4/1.0 | 0.5 max | 0.15/0.35 | 1.0 max |
| Mn | 1.55 max | 2.0 max | 2.0 max | 0.75/1.0 | 1.0 max | 1.0/2.0 | 1.0 max | 0.65/1.10 | 2.0 max |
| Ni | | 10.0/14.0 | 4.5/6.5 | | 3.0/5.0 | 24.0/27.0 | 70 min | | 8.0/11.0 |
| Cr | | 16.0/18.0 | 21.0/23.0 | 0.80/1.10 | 15.0/17.5 | 13.5/16.0 | 14.0/17.0 | 0.75/1.20 | 18.0/20.0 |
| Mo | | 2.0/3.0 | 2.5/3.5 | 0.15/0.25 | | 1.0/1.75 | | 0.15/0.25 | |
| S | 0.010 max | 0.030 max | 0.02 max | 0.040 max | 0.030 max | 0.030 max | 0.01 max | 0.040 max | 0.030 max |
| P | 0.025 max | 0.040 max | 0.03 max | 0.035 max | 0.040 max | 0.040 max | | 0.040 max | 0.040 max |
| Cu | | | | | 3.0/5.0 | | 0.50 max | | |
| V | 0.05 max | | | | | 0.10/0.50 | | | |
| Al | | | | | | 0.35 max | 0.40/1.0 | | |
| Ti | | | | | | 1.9/2.3 | 2.25/2.75 | | |
| Co | | | | | | | 1.0 max | | |
| B | | | | | | 0.003/0.010 | | | |
| Fe | Balance | Balance | Balance | Balance | Balance | Balance | 5.0/9.0 | Balance | Balance |
| Other | C.E. 0.43 max | | N. 0.08/0.2 | | Ta. 0.15/0.45 | | Cb. 0.7/1.2 | | |



| | | Hubs: Stainless Steel A182-F316 Clamps: Stainless Steel A182-F304 | | | | | | | | | | |
|------------------------------|-------|--|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 250°C | 300°C | SIZE | -46 to 20°C | 100°C | 200°C | 250°C | 300°C | 350°C | 400°C | 450°C | 500°C | 550°C |
| 232 | 220 | GZ16-144R | 173 | 173 | 173 | 173 | 173 | 173 | 173 | 164 | 159 | 153 |
| 328 | 311 | GZ16-130R | 215 | 215 | 215 | 215 | 215 | 215 | 215 | 204 | 198 | 191 |
| 187 | 177 | GZ18-164 | 136 | 136 | 136 | 136 | 136 | 136 | 136 | 129 | 125 | 120 |
| 272 | 258 | GZ18-152R | 158 | 158 | 158 | 158 | 158 | 158 | 158 | 150 | 146 | 140 |
| 177 | 168 | GZ20-184 | 124 | 124 | 124 | 124 | 124 | 124 | 124 | 118 | 114 | 110 |
| 258 | 245 | GZ20-170R | 146 | 146 | 146 | 146 | 146 | 146 | 146 | 139 | 135 | 129 |
| Heavy Duty Connectors | | | | | | | | | | | | |
| 670 | 637 | GB-20 | 738 | 738 | 698 | 650 | 606 | 581 | 556 | 528 | 507 | 447 |
| 588 | 544 | GC-25 | 619 | 619 | 577 | 538 | 502 | 483 | 642 | 440 | 423 | 374 |
| 645 | 613 | GD-31 | 572 | 572 | 534 | 499 | 468 | 450 | 432 | 412 | 397 | 353 |
| 493 | 467 | GG-62 | 344 | 344 | 322 | 301 | 282 | 272 | 261 | 249 | 240 | 214 |
| 457 | 435 | GP-112R | 321 | 321 | 301 | 282 | 265 | 255 | 246 | 235 | 227 | 203 |
| 412 | 391 | GS-134R | 376 | 376 | 376 | 376 | 370 | 358 | 345 | 330 | 320 | 288 |
| 382 | 363 | GU-160R | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 257 | 249 | 226 |

| Component | Hubs | | | Seal Rings | | | | Clamps | |
|---|--------------------|--------------------|--------------------|---------------------|---------------------|---------------------|---------------------|---------------------|--------------------|
| | A350 LF2 Modified | A182-F316 | A182-F51 S31803 | AISI 4140 | A564-630 (17.4ph) | A638-660 (A286) | INC X750 ASTM B637 | A193-B7 | A182-F304 |
| Mechanical Properties | | | | | | | | | |
| Tensile (Rm) N/mm ² (lb/in ²) | 496 min (72000) | 517 min (75000) | 620 min (90000) | 689 min (100000) | 724 min (105000) | 896 min (130000) | 965 min (140000) | 690 min (100000) | 517 min (75000) |
| Yield (Re) N/mm ² (lb/in ²) | 358 min (52000) | 207 min (30000) | 450 min (65000) | 517 min (75000) | 655 min (95000) | 585 min (85000) | 655 min (95000) | 552 min (80000) | 207 min (30000) |
| Elongation % | 22 min | 30 min | 25 min | 15 min | 16 min | 15 min | 8 min | 18 min | 30 min |
| Red of Area % | 30 min | | 45 min | 40 min | 50 min | 18 min | 12 min | 50 min | |
| Impact Charpy V | 27 J-46°C | | 70 J- 40°C | | | 86 J | 50 J | 47 J-10°C | |
| HRB HRC | 235 max 22 max | | 286/332 30/35 | 235 max 22 max | 277/311 29/33 | 248 min | 286/332 30/35 | 201/235 15/22 | |



Quality Assured.

Destec Engineering operate a Quality System approved by Lloyds Register of Quality Assurance to BS EN ISO 9001: 2000.

Full traceability of all materials and conformance with exacting standards is ensured by a system operated by dedicated personnel backed up with the latest high technology equipment.



After Sales Service

Destec Engineering Ltd. have a team of technicians available to assist clients with site supervision or assembly and repair of G-Range connections and flanges.

By using our extensive range of portable machines we are able to re-cut any joint face on site and, if required, stainless steel weld overlay joint faces and re-machine.





Ordering Procedure.

If standard pipe is being used select connection size from integrated specification table.

Check pressure/temperature ratings for the materials required from tables.

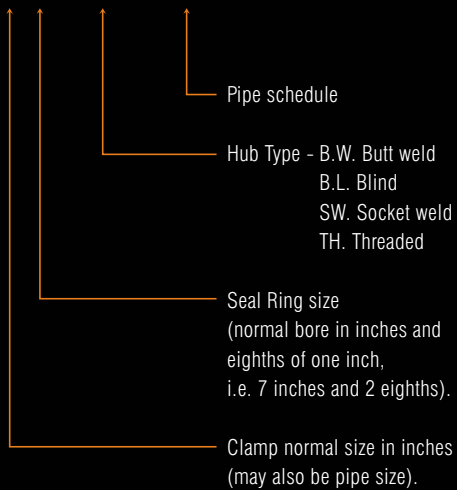
Destec Engineering manufacture an extensive range of connections and should sizing be required, please supply the following information:

- DESIGN PRESSURE AND TEMPERATURE
- EXTERNAL PIPE FORCES
- PIPE MATERIALS AND CONTAINED FLUID
- PIPE OR PRESSURE VESSEL CODE
- PIPE BORE AND OUTSIDE DIAMETER
- QUANTITY INVOLVED
- ANY OTHER INFORMATION CONSIDERED RELEVANT TO DESIGN eg. CORROSION ALLOWANCE

Designation

Example

G8-72 BW Sch.160



Destec Engineering Ltd

Five Mile Lane, Washingborough,
Lincoln, LN4 1AF. UK

TEL: +44 (0)1522 791 721

FAX: +44 (0)1522 790 033

EMAIL: sales@destec.co.uk

