Grinnell

Mechanical Grooved Products

2017

GENERAL
PRODUCTS
CATALOG

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Grinnell

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GROOVED COUPLINGS

Grooved Couplings Table of Contents

GRINNELL Couplings are designed for grooved end pipe and are available in nominal sizes of 1" *(25mm)* to 42" *(1,200mm)* including BS, ISO, and JIS outside diameters.

The GRINNELL Coupling Design provides economical advantages when compared to welded or flanged systems. GRINNELL Couplings provide a universal method for connecting pipe, fittings, and pipe system components.

GRINNELL Couplings and Gaskets permit a wide selection of combinations for specific applications.

Field modifications are easily accommodated with GRINNELL Mechanical Products as the couplings can be easily rotated, eliminated and/or added to facilitate necessary modifications.

Full contact between Figure 772 Coupling key and groove diameter

Additional Features:

- Two-piece, tongue-and-groove design allows for fast and easy installation.
- Standard industry groove does not require special tools.

SPECIFICATIONS

Ductile Iron Housing Specifications

- ASTM A 536 – Standard specification for ductile iron castings, Grade 65-45-12
- Tensile strength, minimum 65,000 psi *(4482 bar)*
- Yield strength, minimum 45,000 psi *(3103 bar)*
- Elongation in 2" *(50mm)*, minimum 12%
- ASTM A 153 – Standard specification for hot-dip galvanizing

Bolt/Nut Specifications

- **ANSI:** Carbon steel oval neck bolts and nuts are heat-treated and conform to the physical properties of ASTM A 183 Grade 2 and SAE J429 Grade 5 with a minimum tensile strength of 110,000 psi *(7584 bar)*. Carbon Steel heavy hex nuts conform to the physical properties of ASTM A 183 Grade 2 and SAE J995 Grade 5. Bolts and nuts are zinc-electroplated conforming to ASTM B 633.
- **Metric:** Carbon steel oval neck track head bolts (Gold color coded) are heat treated and conform to the physical properties of ASTM F 568 M with a minimum tensile strength of 760 MPa.
  Carbon Steel heavy hex nuts conform to the physical properties of ASTM A 563 M Class 9. Bolts and nuts are zinc-electroplated conforming to ASTM B 633.
- Stainless steel nuts and bolts are available upon request.

Coatings

- Orange – Non-lead paint (standard)
- Red – Non-lead paint (optional, regional)
- Hot-Dipped, Zinc Galvanized (optional)

Warning: For a one time field test only the maximum joint working pressure may be increased to 1½ x the figures shown.

Gasket Specifications

- **Grade "E" EPDM** gaskets have a Green striped color code identification and conform to ASTM D 2000 for service temperatures from -30°F to 230°F *(-34°C to 110°C)*. They are recommended for hot water not to exceed 230°F *(110°C)*, plus a variety of dilute acids, oil free air, and many chemical services. They are not recommended for petroleum services. For low temperature and vacuum systems, a Tri-Seal Grade "E" EPDM gasket with a rigid coupling is recommended.
- **Grade "T" Nitrile** gaskets have an Orange striped color code identification and conform to ASTM D 2000 for service temperatures from -20°F to 180°F *(-29°C to 82°C)*. They are recommended for petroleum products, vegetable oils, mineral oils, and air with oil vapors.
- **Grade "L" Silicone** gaskets have a Red striped color code and conform to ASTM D 2000 for service temperatures from -30°F to 350°F *(-34°C to 177°C)*. They are recommended for air without hydrocarbons, or dry heat.
- **Grade "O" Fluoroelastomer** gaskets have a Blue striped color code and conform to ASTM D 2000 for service temperatures from +20°F to 300°F *(-7°C to 149°C)*. They are recommended for oxidizing acids, petroleum products, hydraulic fluids, lubricants, and halogenated hyrdrocarbons.
- **Grade "EN" NSF-61 Approved** gaskets have a Copper striped color code and are for potable water systems up to 180°F *(82°C)*. They are not recommended for petroleum service.
- **Grade "EHT" EPDM NSF-61 Certified** center-stop, push-on style gaskets have a Red and Copper, and Red and Green striped color code. For closed-loop heating systems from -30°F to 250°F (-34°C to 120°C) NSF 61 Approved for potable water systems up to 180°F (up to 82°C). Recommended for use in low temperature and vacuum systems. Not for use with hydrocarbons. Designed for use with Figures 740 & 640 Couplings

Figure 772 Rigid Couplings

(Page 1 of 2)

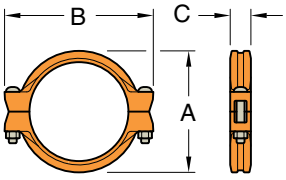
Tech Data Sheet: G141

The GRINNELL Figure 772 Grooved Rigid Coupling provides a rigid joint by firmly gripping along the circumference of the pipe grooves. An economical alternative to welding, threading or using flanges, the Figure 772 Grooved Rigid Coupling is a proven dependable method of joining pipe. It is capable of pressures up to 750 psi (51,7 bar) depending on pipe size and wall thickness.

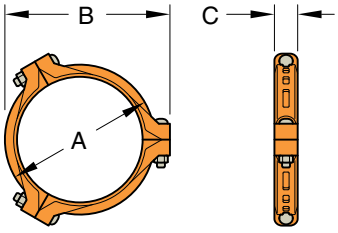
The Figure 772 Grooved Rigid Coupling is UL Listed for grounding and bonding; it is suitable for bonding systems with a maximum service entrance capacity of 200 amps.
Contact your Anvil Representative.

Issue 03, 04, 07
Cert No. 570, 669, 673

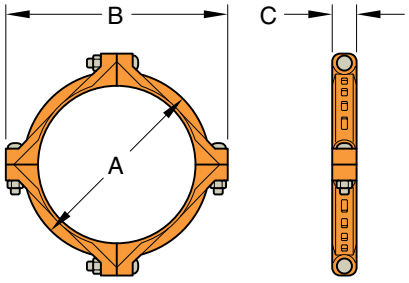
For detailed Listing / Approval information contact GRINNELL Mechanical Products.



1¼" - 14" *(32mm - 350mm)*



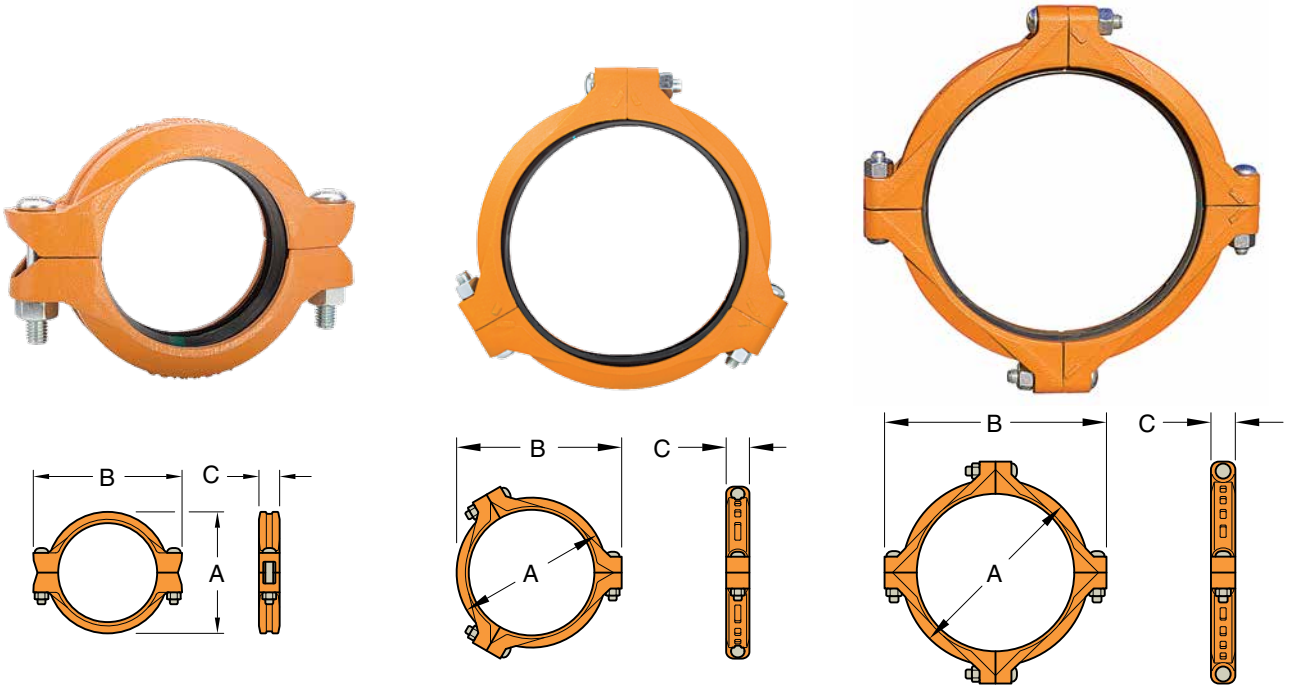
16" - 18" *(400mm - 450mm)*



20" - 24" *(500mm - 600mm)*

Pipe Size		Max.† Pressures	Max.† End Load	Max.*‡ End Gap	Dimensions - Inches *mm*			Coupling Bolts		Approx. Weight
Nominal Inches *mm*	O.D. Inches *mm*	psi *bar*	Lbs. *kN*	Inches *mm*	A	B	C	Qty.	Size Inches *mm*	Lbs. *kg*
1¼	1.660	750	1,623	0.06	2.75	4.38	1.81	2	⅜ x 2¼	1.0
32	*42,4*	*51,7*	*7,22*	*1,5*	*69,9*	*111,3*	*46,0*		*M10 x 57*	*0,5*
1½	1.900	750	2,127	0.08	3.00	4.62	1.81	2	⅜ x 2¼	1.0
40	*48,3*	*51,7*	*9,46*	*2,0*	*76,2*	*117,3*	*46,0*		*M10 x 57*	*0,5*
2	2.375	750	3,323	0.188	3.41	5.70	1.9	2	½ x 3	2.9
50	*60,3*	*51,7*	*14,78*	*4,8*	*86,6*	*145,0*	*48,0*		*M12 x 76*	*1,3*
2½	2.875	750	4,869	0.188	3.97	6.30	1.9	2	½ x 3	3.3
65	*73,0*	*51,7*	*21,66*	*4,8*	*101*	*160,0*	*48,0*		*M12 x 76*	*1,5*
76,1mm	3.000	750	5,301	0.188	4.10	6.43	1.9	2	½ x 3	3.6
65	*76,1*	*51,7*	*23,58*	*4,8*	*104*	*163,0*	*48,0*		*M12 x 76*	*1,6*
3	3.500	750	7,216	0.188	4.60	6.93	1.9	2	½ x 3	3.7
80	*88,9*	*51,7*	*32,10*	*4,8*	*117*	*176,0*	*48,0*		*M12 x 76*	*1,7*
4	4.500	750	11,928	0.188	5.80	8.07	1.9	2	½ x 3	4.3
100	*114,3*	*51,7*	*53,06*	*4,8*	*147*	*205,0*	*48,0*		*M12 x 76*	*2,0*
139,7mm	5.500	750	17,819	0.19	7.02	9.72	2.06	2	–	7.5
125	*139,7*	*51,7*	*79,26*	*4,8*	*178,3*	*246,9*	*52,3*		*M16 x 83*	*3,4*
5	5.563	750	18,229	0.19	7.09	9.71	2.04	2	⅝ x 3¼	7.5
125	*141,3*	*51,7*	*81,09*	*4,8*	*180,1*	*246,6*	*51,8*		*M16 x 83*	*3,4*
165,1mm	6.500	700	23,228	0.19	8.09	10.53	2.13	2	–	7.6
150	*165,1*	*48,3*	*103,18*	*4,8*	*205,5*	*267,5*	*54,1*		*M16 x 83*	*3,4*
6	6.625	700	24,130	0.19	8.09	10.53	2.13	2	⅝ x 3¼	7.6
150	*168,3*	*48,3*	*107,34*	*4,8*	*205,5*	*267,5*	*54,1*		*M16 x 83*	*3,4*
8	8.625	600	35,056	0.19	10.56	13.56	2.62	2	¾ x 4¾	18.0
200◗	*219,1*	*41,4*	*155,94*	*4,8*	*268,2*	*344,4*	*66,5*		*M20 x 121*	*8,2*

Figure 772 Rigid Couplings



1¼" - 14" *(32mm - 350mm)* | 16" - 18" *(400mm - 450mm)* | 20" - 24" *(500mm - 600mm)*

Pipe Size		Max.† Pressures	Max.† End Load	Max.*‡ End Gap	Dimensions - Inches *mm*			Coupling Bolts		Approx. Weight
Nominal Inches *mm*	O.D. Inches *mm*	psi *bar*	Lbs. *kN*	Inches *mm*	A	B	C	Qty.	Size Inches *mm*	Lbs. *kg*
10	**10.750**	**500**	**45,381**	**0.13**	**12.84**	**16.41**	**2.62**	**2**	**1 x 6½**	**24.6**
250◗	*273,0*	*34,5*	*201,87*	*3,3*	*326,1*	*416,8*	*66,5*		*M24 x 165*	*11,2*
12	**12.750**	**400**	**51,071**	**0.13**	**15.41**	**18.84**	**2.62**	**2**	**1 x 6½**	**42.0**
300◗	*323,9*	*27,6*	*227,17*	*3,3*	*391,4*	*478,5*	*66,5*		*M24 x 165*	*19,1*
14	**14.000**	**350**	**53,878**	**0.13**	**16.68**	**20.38**	**2.93**	**2**	**1 x 5½•**	**48.0**
350	*355,6*	*24,1*	*239,66*	*3,3*	*423,7*	*517,6*	*74,4*		*–*	*21,7*
16	**16.000**	**350**	**70,372**	**0.13**	**18.50**	**22.64**	**2.93**	**3**	**1 x 5½•**	**52.1**
400	*406,4*	*24,1*	*313,03*	*3,3*	*469,9*	*575,1*	*74,4*		*–*	*23,6*
18	**18.000**	**350**	**89,064**	**0.25**	**21.31**	**25.12**	**3.06**	**3**	**1 x 5½•**	**68.0**
450	*457,2*	*24,1*	*396,18*	*6,4*	*541,3*	*638,0*	*77,7*		*–*	*30,8*
20	**20.000**	**350**	**109,956**	**0.25**	**23.50**	**27.88**	**3.06**	**4**	**1⅛ x 5¾•**	**89.0**
500	*508,0*	*24,1*	*489,11*	*6,4*	*596,9*	*708,2*	*77,7*		*–*	*40,4*
24	**24.000**	**350**	**158,336**	**0.25**	**27.63**	**32.00**	**3.19**	**4**	**1⅛ x 5¾•**	**96.0**
600	*609,6*	*24,1*	*704,31*	*6,4*	*701,8*	*812,8*	*81,0*		*–*	*43,5*

* Maximum available gap between pipe ends. Minimum gap = 0.

† Maximum Pressure and End Load are total from all loads based on standard weight steel pipe. Pressure ratings and end loads may differ for other pipe materials and/or wall thicknesses. Contact GRINNELL Mechanical Products for details.

‡ Max End Gap is for cut grooved standard weight pipe. Values for roll grooved pipe will be half that of cut grooved.

• Only available in ANSI bolt sizes.

◗ Sizes are available to JIS standards. Contact GRINNELL Mechanical Products for details.

For information on larger sizes, European sizes or other alternative sizes, contact GRINNELL Mechanical Products.

See page 17 for coupling specifications and pages 224 - 230 for gasket information.

Figure 740 Rapid Installation Pivot-Bolt (GRIP) Rigid Couplings

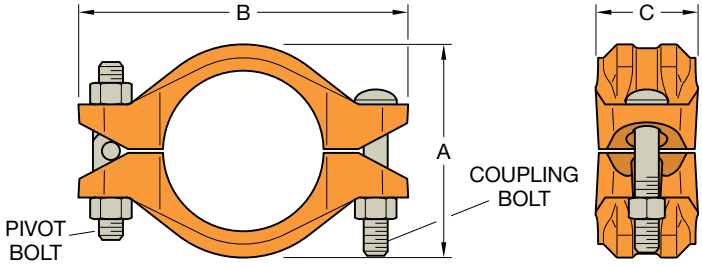
Tech Data Sheet: G144

Figure 740 GRINNELL Rapid Installation Pivot-Bolt (GRIP) Rigid Couplings are a proven, dependable, and more efficient method of joining pipe than standard couplings. Simply push the gasket onto the pipe, swing the coupling body over the gasket, and tighten only one bolt. In comparison with other installation-ready couplings, the Figure 740 GRIP Coupling allows clear visual confirmation that the gasket is properly seated on the gasket sealing surfaces.

The Figure 740 GRIP Coupling saves installation time in two ways:

- Only one bolt on the coupling requires tightening
- The gasket is specially designed for an easy push-on installation.

The Figure 740 GRIP Coupling is capable of pressures up to 750 psi (51,7 bar).



For detailed Listing / Approval information contact GRINNELL Mechanical Products.

Pipe Size		Max.† Pressures	Max.† End Load	Max. End ‡ Gap	Dimensions			Pivot Bolts Size	Coupling Bolts Size	Approx. Weight
Nominal Inches *mm*	O.D. Inches *mm*	psi *bar*	Lbs. *kN*	Inches *mm*	A Inches *mm*	B Inches *mm*	C Inches *mm*	*Inches* Dia x Lg.	*Inches* Dia x Lg.	Lbs. *kg*
2	**2.375**	**750**	**3,323**	**0.33**	**3.33**	**5.82**	**2.12**	½ x 3¾	½ x 3⅝	**3.3**
50	*60,3*	*51,7*	*14,78*	*8,3*	*84,5*	*147,8*	*53,8*			*1,5*
2½	**2.875**	**750**	**4,869**	**0.33**	**3.83**	**6.31**	**2.12**	½ x 3¾	½ x 3⅝	**3.5**
65	*73,0*	*51,7*	*21,66*	*8,3*	*97,3*	*160,3*	*53,8*			*1,6*
76.1mm	**3.000**	**750**	**5,301**	**0.33**	**3.96**	**6.44**	**2.13**	½ x 3¾	½ x 3⅝	**3.6**
65	*76,1*	*51,7*	*23,58*	*8,3*	*100,5*	*163,5*	*54,1*			*1,6*
3	**3.500**	**750**	**7,216**	**0.33**	**4.44**	**6.92**	**2.14**	½ x 3¾	½ x 3⅝	**3.7**
80	*88,9*	*51,7*	*32,10*	*8,3*	*112,8*	*175,8*	*54,4*			*1,7*
4	**4.500**	**750**	**11,928**	**0.39**	**5.73**	**8.10**	**2.22**	½ x 3¾	½ x 3⅝	**5.0**
100	*114,3*	*51,7*	*53,06*	*9,8*	*145,6*	*205,7*	*56,4*			*2,3*
139.7mm	**5.500**	**750**	**17,819**	**0.39**	**6.68**	**9.64**	**2.31**	⅝ x 4½	⅝ x 4½	**7.7**
125	*139,7*	*51,7*	*79,26*	*9,8*	*169,7*	*244,9*	*58,7*			*3,5*
5	**5.563**	**750**	**18,229**	**0.39**	**6.79**	**9.71**	**2.31**	⅝ x 4½	⅝ x 4½	**7.7**
125	*141,3*	*51,7*	*81,09*	*9,8*	*172,4*	*246,6*	*58,7*			*3,5*
165.1mm	**6.500**	**700**	**23,228**	**0.39**	**7.81**	**10.66**	**2.32**	⅝ x 4½	⅝ x 4½	**8.6**
150	*165,1*	*48,2*	*103,18*	*9,8*	*198,4*	*270,8*	*58,9*			*3,9*
6	**6.625**	**700**	**24,130**	**0.39**	**7.94**	**10.79**	**2.32**	⅝ x 4½	⅝ x 4½	**8.6**
150	*168,3*	*48,2*	*107,34*	*9,8*	*201,7*	*274,1*	*58,9*			*3,9*
8	**8.625**	**600**	**35,056**	**0.45**	**10.09**	**12.84**	**2.83**	⅝ x 4½	⅝ x 4½	**12.8**
200	*219,1*	*41,4*	*155,94*	*11,3*	*256,3*	*326,1*	*71,9*			*5,8*

‡ Maximum available gap between pipe ends. Minimum gap = 0.120

† Maximum Pressure and End Load are total from all loads based on standard weight steel pipe. Pressure ratings and end loads may differ for other pipe materials and/or wall thickness. Contact GRINNELL Mechanical Products for details.

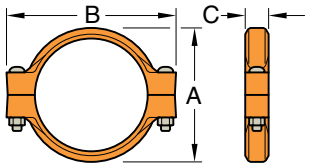
For information on larger sizes, European sizes or other alternative sizes, contact GRINNELL Mechanical Products.

See page 17 for coupling specifications and pages 224 - 230 for gasket information.

Figure 705 Flexible Couplings

Tech Data Sheet: G110

The GRINNELL Figure 705 Flexible Coupling is capable of pressures ranging from full vacuum to 500 psi (*34,5 bar*) depending on pipe size and wall thickness. Up to 40% lighter than the Figure 707 coupling, and available with various gasket materials, it provides a proven dependable method of joining pipe and is suitable for use in a variety of applications ranging from -30°F to 350°F *(-34°C to 177°C)*.



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Cert No. 570, 669, 673

For detailed Listing / Approval information contact GRINNELL Mechanical Products.

Pipe Size		Max.† Pressures psi *bar*	Max.† End Load Lbs. *kN*	Max.*‡ End Gap Inches *mm*	Deflection ‡		Dimensions - Inches *mm*			Coupling Bolts Size (Qty. 2) Inches *mm*	Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*				Degrees Per Coupling	Inches/Ft *mm/m*	A	B	C		
1	**1.315**	**500**	**410**	**0.13**	**5° 30'**	**1.16**	**2.24**	**3.94**	**1.81**	**⅜ x 1¾**	**1.3**
25	*33,7*	*34,5*	*1,86*	*3,3*		*96,7*	*56,9*	*100,1*	*46,0*	*M10 x 44*	*0,6*
1¼	**1.660**	**500**	**1,082**	**0.13**	**4° 19'**	**0.90**	**2.56**	**4.19**	**1.81**	**⅜ x 2¼**	**1.5**
32	*42,4*	*34,5*	*4,81*	*3,3*		*75,0*	*65,0*	*106,4*	*46,0*	*M10 x 57*	*0,7*
1½	**1.900**	**500**	**1,418**	**0.13**	**3° 46'**	**0.79**	**2.75**	**4.44**	**1.81**	**⅜ x 2¼**	**1.6**
40	*48,3*	*34,5*	*6,30*	*3,3*		*65,8*	*69,9*	*112,8*	*46,0*	*M10 x 57*	*0,7*
2	**2.375**	**500**	**2,215**	**0.13**	**3° 1'**	**0.63**	**3.25**	**4.88**	**1.88**	**⅜ x 2¼**	**1.7**
50	*60,3*	*34,5*	*9,85*	*3,3*		*52,5*	*82,6*	*124,0*	*47,8*	*M10 x 57*	*0,8*
2½	**2.875**	**500**	**3,246**	**0.13**	**2° 29'**	**0.52**	**3.69**	**5.50**	**1.88**	**⅜ x 2¼**	**2.0**
65	*73,0*	*34,5*	*14,43*	*3,3*		*43,3*	*93,7*	*139,7*	*47,8*	*M10 x 57*	*0,9*
76,1mm	**3.000**	**500**	**3,534**	**0.13**	**2° 23'**	**0.50**	**4.00**	**5.75**	**1.88**	**–**	**3.1**
65	*76,1*	*34,5*	*15,72*	*3,3*		*41,7*	*101,6*	*146,10*	*47,8*	*M12 x 76*	*1,4*
3	**3.500**	**500**	**4,811**	**0.13**	**2° 3'**	**0.43**	**4.38**	**6.50**	**1.88**	**½ x 3**	**3.1**
80	*88,9*	*34,5*	*21,39*	*3,3*		*35,8*	*111,3*	*165,1*	*47,8*	*M12 x 76*	*1,4*
108,0mm	**4.250**	**500**	**7,093**	**0.25**	**3° 22'**	**0.70**	**5.50**	**7.50**	**2.06**	**–**	**4.2**
100	*108,0*	*34,5*	*31,55*	*6,4*		*58,3*	*139,7*	*190,5*	*52,3*	*M12 x 76*	*1,9*
4	**4.500**	**500**	**7,952**	**0.25**	**3° 11'**	**0.67**	**5.69**	**7.75**	**2.06**	**½ x 3**	**4.0**
100	*114,3*	*34,5*	*35,35*	*6,4*		*55,8*	*144,5*	*196,9*	*52,3*	*M12 x 76*	*1,8*
133,0mm	**5.250**	**450**	**9,741**	**0.25**	**2° 44'**	**0.56**	**6.56**	**9.50**	**2.06**	**–**	**7.2**
125	*133,0*	*31,0*	*43,33*	*6,4*		*46,7*	*166,6*	*241,3*	*52,3*	*M16 x 83*	*3,3*
139,7mm	**5.500**	**450**	**10,691**	**0.25**	**2° 36'**	**0.55**	**6.81**	**9.75**	**2.06**	**–**	**7.2**
125	*139,7*	*31,0*	*47,56*	*6,4*		*45,5*	*173,0*	*247,7*	*52,3*	*M16 x 83*	*3,3*
5	**5.563**	**450**	**10,938**	**0.25**	**2° 35'**	**0.54**	**6.88**	**9.75**	**2.06**	**⅝ x 3¼**	**7.1**
125	*141,3*	*31,0*	*48,63*	*6,4*		*45,0*	*174,8*	*247,7*	*52,3*	*M16 x 83*	*3,2*
159,0mm	**6.250**	**450**	**13,806**	**0.25**	**2° 17'**	**0.48**	**7.56**	**10.31**	**2.06**	**–**	**7.4**
150	*159,0*	*31,0*	*61,41*	*6,4*		*40,0*	*192,0*	*261,9*	*52,3*	*M16 x 83*	*3,4*
165,1mm	**6.500**	**450**	**14,932**	**0.25**	**2° 12'**	**0.46**	**7.75**	**10.69**	**2.06**	**–**	**7.1**
150	*165,1*	*31,0*	*66,36*	*6,4*		*38,3*	*196,9*	*271,5*	*52,3*	*M16 x 83*	*3,2*
6	**6.625**	**450**	**15,512**	**0.25**	**2° 10'**	**0.45**	**7.94**	**10.69**	**2.06**	**⅝ x 3¼**	**7.1**
150	*168,3*	*31,0*	*68,97*	*6,4*		*37,5*	*201,7*	*271,5*	*52,3*	*M16 x 83*	*3,2*
216,3mm	**8.500**	**450**	**25,535**	**0.25**	**1° 40'**	**0.35**	**10.07**	**13.50**	**2.31**	**–**	**12.4**
200	*216,3*	*31,0*	*113,59*	*6,4*		*29,2*	*255,8*	*342,9*	*58,7*	*M20 x 121*	*5,6*
8	**8.625**	**450**	**26,292**	**0.25**	**1° 40'**	**0.35**	**10.19**	**13.56**	**2.50**	**¾ x 4¾**	**14.5**
200	*219,1*	*31,0*	*116,89*	*6,4*		*29,2*	*258,8*	*344,4*	*63,5*	*M20 x 121*	*6,6*
10	**10.750**	**350**	**31,767**	**0.25**	**1° 20'**	**0.28**	**12.69**	**16.38**	**2.63**	**1 x 6½**	**23.0**
250◗	*273,0*	*24,1*	*141,31*	*6,4*		*23,3*	*322,3*	*416,1*	*66,8*	*M24 x 165*	*12,7*
12	**12.750**	**350**	**44,687**	**0.25**	**1° 7'**	**0.23**	**14.94**	**18.88**	**2.63**	**1 x 6½**	**36.5**
300◗	*323,9*	*24,1*	*198,78*	*6,4*		*19,5*	*379,5*	*479,6*	*66,8*	*M24 x 165*	*16,6*

* Maximum available gap between pipe ends. Minimum gap = 0.

† Maximum Pressure and End Load are total from all loads based on standard weight steel pipe. Pressure ratings and end loads may differ for other pipe materials and/or wall thickness. Contact GRINNELL Mechanical Products for details.

‡ Max End Gap and Deflection is for cut grooved standard weight pipe. Values for roll grooved pipe will be half that of cut grooved.

◗ Sizes are available to JIS standards. Contact GRINNELL Mechanical Products for details.

For information on larger sizes, European sizes or other alternative sizes, contact GRINNELL Mechanical Products.

See page 17 for coupling specifications and pages 224 - 230 for gasket information.

Figure 707 Heavy Duty Flexible Couplings

(Page 1 of 2)

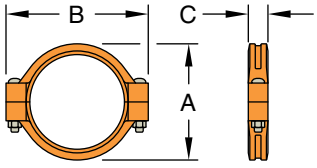
Tech Data Sheet: G130

The GRINNELL Figure 707 Heavy Duty Flexible Coupling allows for angular and linear deflection, thermal expansion and contraction, and misalignments of the pipe. Flexible couplings can act as an "expansion joint", allowing linear and angular movement of the pipes when properly installed. This coupling is capable of pressures up to 1,000 psi *(68,9 bar)*, depending on pipe size and wall thickness.

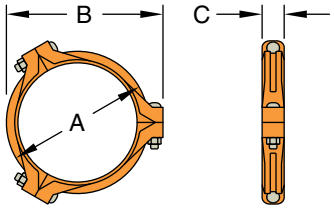
Suitable for use in a variety of applications, the Figure 707 Coupling provides a dependable method of joining pipe.

Issue 03, 04, 07
Cert No. 570, 669, 673

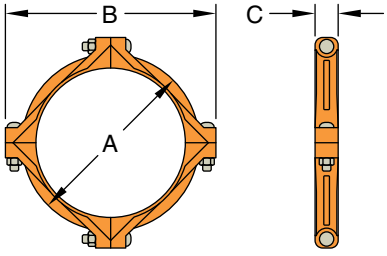
For detailed Listing / Approval information contact GRINNELL Mechanical Products.



1" - 14" *(25mm - 350mm)*



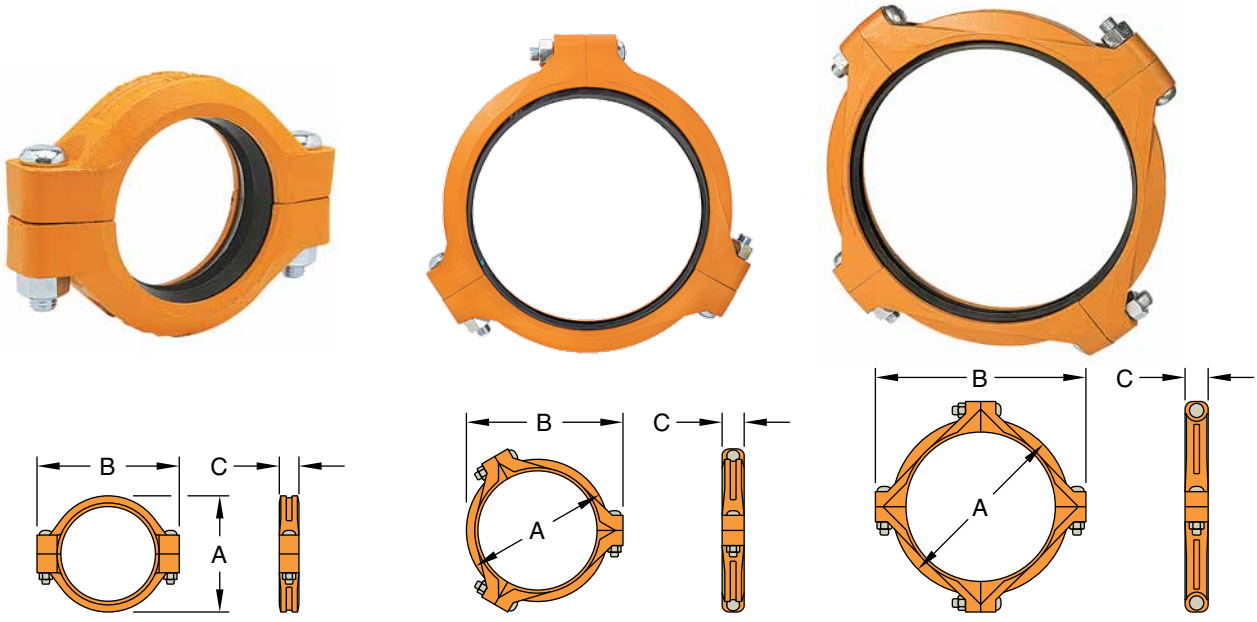
16" - 18" *(400mm - 450mm)*



20" - 24" *(500mm - 600mm)*

Pipe Size		Max.† Pressures	Max.† End Load	Max.*‡ End Gap	Deflection ‡		Dimensions - Inches *mm*			Coupling Bolts		Approx. Weight
Nominal Inches *mm*	O.D. Inches *mm*	psi *bar*	Lbs *kN*	Inches *mm*	Degrees Per Coupling	Inches/Ft *mm/m*	A	B	C	Qty.	Size Inches *mm*	Lbs. *kg*
1	1.315	1000	1,360	0.13	5° 26'	1.14	2.38	4.00	1.81	2	⅜ x 2¼	2.0
25	33,7	68,9	6,10	3,3		98,4	60,5	101,6	46,0		M10 x 57	0,9
1¼	1.660	1000	2,165	0.13	4° 19'	0.90	2.76	4.37	1.81	2	½ x 3	2.2
32	42,4	68,9	9,63	3,3		75,0	70,0	111,0	46,0		M12 x 76	1,0
1½	1.900	1000	2,835	0.13	3° 46'	0.79	2.97	4.63	1.81	2	½ x 3	2.5
40	48,3	68,9	12,61	3,3		65,8	75,4	117,6	46,0		M12 x 76	1,1
2	2.375	1000	4,430	0.13	3° 1'	0.63	3.54	5.25	1.88	2	½ x 3	3.0
50	60,3	68,9	19,71	3,3		52,5	89,9	133,4	47,8		M12 x 76	1,4
2½	2.875	1000	6,492	0.13	2° 29'	0.52	4.06	5.75	1.88	2	½ x 3	3.5
65	73,0	68,9	28,88	3,3		43,3	103,1	146,1	47,8		M12 x 76	1,6
76,1mm	3.000	1000	7,069	0.13	2° 23'	0.50	4.19	5.75	1.88	2	–	4.0
65	76,1	68,9	31,44	3,3		41,7	106,4	146,1	47,8		M12 x 76	1,8
3	3.500	1000	9,621	0.13	2° 3'	0.43	4.69	6.38	1.88	2	½ x 3	4.0
80	88,9	68,9	42,80	3,3		35,8	119,1	162,1	47,8		M12 x 76	1,8
4	4.500	1000	15,904	0.25	3° 11'	0.67	5.95	8.25	2.06	2	⅝ x 3¼	7.0
100	114,3	68,9	70,75	6,4		55,8	151,1	209,6	52,3		M16 x 83	3,2
139,7mm	5.500	1000	23,758	0.25	2° 30'	0.52	7.02	10.00	2.04	2	¾ x 4¾	8.3
125	139,7	68,9	105,6	6,4		45,1	178,3	254,0	51,8		M20 x 121	3,8
5	5.563	1000	24,306	0.25	2° 35'	0.54	7.08	10.00	2.06	2	¾ x 4¾	10.0
125	141,3	68,9	108,12	6,4		45,0	179,8	254,0	52,3		M20 x 121	4,5
165,1mm	6.500	1000	33,183	0.25	2° 12'	0.46	8.19	11.25	2.06	2	–	12.0
150	165,1	68,9	147,61	6,4		38,3	208,0	285,8	52,3		M20 x 121	5,4
6	6.625	1000	34,472	0.25	2° 10'	0.45	8.30	11.25	2.06	2	¾ x 4¾	11.1
150	168,3	68,9	153,34	6,4		37,5	210,8	285,8	52,3		M20 x 121	5,0
8	8.625	800	46,741	0.25	1° 40'	0.35	10.68	14.00	2.47	2	⅞ x 6½	21.4
200◗	219,1	55,2	207,91	6,4		29,2	271,3	355,6	62,7		M22 x 165	9,7

Figure 707 Heavy Duty Flexible Couplings



1" - 14" *(25mm - 350mm)* 16" - 18" *(400mm - 450mm)* 20" - 24" *(500mm - 600mm)*

Pipe Size		Max.†	Max.†	Max.*‡	Deflection ‡		Dimensions - Inches *mm*			Coupling Bolts		Approx.
Nominal Inches *mm*	O.D. Inches *mm*	Pressures psi *bar*	End Load Lbs *kN*	End Gap Inches *mm*	Degrees Per Coupling	Inches/Ft *mm/m*	A	B	C	Qty.	Size Inches *mm*	Weight Lbs. *kg*
10	**10.750**	**800**	**72,610**	**0.25**	**1° 20'**	**0.28**	**13.06**	**16.44**	**2.63**	**2**	**1 x 6½**	**29.0**
250◗	*273,0*	*55,2*	*322,99*	*6,4*		*23,3*	*331,7*	*417,6*	*66,8*		*M24 x 165*	*13,2*
12	**12.750**	**800**	**102,141**	**0.25**	**1° 7'**	**0.23**	**15.39**	**18.84**	**2.63**	**2**	**1 x 6½**	**37.0**
300◗	*323,9*	*55,2*	*454,35*	*6,4*		*19,2*	*390,9*	*478,5*	*66,8*		*M24 x165*	*16,8*
14	**14.000**	**300**	**46,181**	**0.25**	**1° 2'**	**0.22**	**16.67**	**20.38**	**2.94**	**2**	**1 x 5½•**	**46.0**
350	*355,6*	*20,7*	*205,43*	*6,4*		*18,3*	*423,4*	*517,7*	*74,7*		–	*20,9*
16	**16.000**	**300**	**60,319**	**0.25**	**0° 54'**	**0.19**	**18.83**	**22.64**	**2.94**	**3**	**1 x 5½•**	**59.0**
400	*406,4*	*20,7*	*268,31*	*6,4*		*15,8*	*478,3*	*575,1*	*74,7*		–	*26,8*
18	**18.000**	**300**	**76,341**	**0.25**	**0° 48'**	**0.17**	**21.31**	**25.12**	**3.06**	**3**	**1 x 5½•**	**78.0**
450	*457,2*	*20,7*	*339,58*	*6,4*		*14,2*	*541,3*	*638,0*	*77,7*		–	*35,4*
20	**20.000**	**300**	**94,248**	**0.25**	**0° 43'**	**0.15**	**23.47**	**27.88**	**3.06**	**4**	**1⅛ x 5¾•**	**89.0**
500	*508,0*	*20,7*	*419,23*	*6,4*		*12,5*	*596,1*	*708,2*	*77,7*		–	*40,4*
24	**24.000**	**300**	**135,717**	**0.25**	**0° 36'**	**0.13**	**27.58**	**32.00**	**3.19**	**4**	**1⅛ x 5¾•**	**112.0**
600	*609,6*	*20,7*	*603,7*	*6,4*		*10,8*	*700,5*	*812,8*	*81,0*		–	*50,8*

* Maximum available gap between pipe ends. Minimum gap = 0.

† Maximum Pressure and End Load are total from all loads based on standard weight steel pipe. Pressure ratings and end loads may differ for other pipe materials and/or wall thicknesses. Contact GRINNELL Mechanical Products for details.

‡ Max End Gap and Deflection is for cut grooved standard weight pipe. Values for roll grooved pipe will be half that of cut grooved.

• Only available in ANSI bolt sizes.

◗ Sizes are available to JIS standards. Contact GRINNELL Mechanical Products for details.

For information on larger sizes, European sizes or other alternative sizes, contact GRINNELL Mechanical Products.

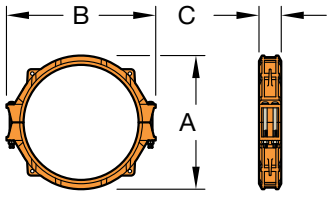
See page 17 for coupling specifications and pages 224 - 230 for gasket information.

Figure 707L Large Diameter Couplings

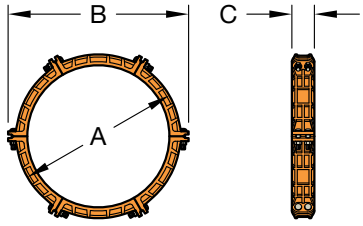
Tech Data Sheet: G133

GRINNELL Figure 707L Large Diameter Coupling is designed for joining large diameter IPS roll grooved pipes. The coupling castings are a two to eight segment design and utilize two bolts at each segment joint to ensure proper connection and seal.

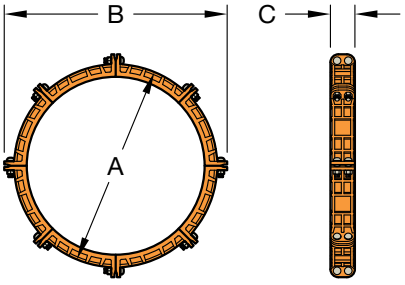
Suitable for use in a variety of applications where there is a need to move large volumes of fluids, the Figure 707L Large Diameter Coupling provides a dependable method of joining pipe.



26" *(DN650)*



28" - 36" *(DN700 - DN900)*



40" - 42" *(DN1000 - DN1050)*

Pipe Size		Max. † Working Pressure	Max. † End Load	Max.* ‡ End Gap	Dimensions			Bolts		Approx. Weight
Nominal Inches *mm*	O.D. Inches *mm*	psi *bar*	Lbs. *kN*	Inches *mm*	A Inches *mm*	B Inches *mm*	C Inches *mm*	No	Size in	Lbs. *kg*
26	**26.0**	**300**	**159,279**	**0.34**	**29.68**	**33.15**	**4.94**	**4**	**⅞ x 9⅝**	**147.0**
650	*660,4*	*20,7*	*708*	*8,6*	*754,0*	*842,0*	*125,6*			*67,0*
28	**28.0**	**175**	**107,757**	**0.34**	**32.00**	**36.30**	**5.00**	**12**	**⅞ x 4**	**180.0**
700	*711,2*	*12,1*	*479*	*8,6*	*813*	*920*	*127,0*			*82,0*
30	**30.0**	**175**	**123,700**	**0.34**	**34.00**	**38.30**	**5.00**	**12**	**⅞ x 4**	**209.0**
750	*762,0*	*12,1*	*550*	*8,6*	*864*	*972*	*127,0*			*95,0*
32	**32.0**	**175**	**140,743**	**0.34**	**36.00**	**40.30**	**5.00**	**12**	**⅞ x 4**	**207.0**
800	*812,8*	*12,1*	*626*	*8,6*	*914*	*1022*	*127,0*			*94,0*
36	**36.0**	**175**	**178,128**	**0.34**	**40.00**	**44.30**	**5.00**	**12**	**⅞ x 4**	**212.0**
900	*914,4*	*12,1*	*792*	*8,6*	*1016*	*1124*	*127,0*			*96,0*
40	**40.0**	**175**	**219,911**	**0.34**	**43.50**	**49.00**	**5.50**	**16**	**1 x 3½**	**271.0**
1000	*1016,0*	*12,1*	*978*	*8,6*	*1105*	*1245*	*140,0*			*123,0*
42	**42.0**	**175**	**242,452**	**0.34**	**45.50**	**51.50**	**5.50**	**16**	**1 x 3½**	**367.5**
1050	*1066,8*	*12,1*	*1078*	*8,6*	*1156*	*1295*	*140,0*			*166,7*

† Maximum pressure and end load are total from all loads based on standard weight steel pipe. Pressure ratings and end loads may differ for other pipe materials and/or wall thickness. Contact GRINNELL Mechanical Products for details.

* Maximum available gap between pipe ends. Minimum gap = 0.

‡ Max End Gap is for rolled grooved standard weight pipe.

For information on larger sizes, European sizes or other alternative sizes, contact GRINNELL Mechanical Products.

See page 17 for coupling specifications and pages 224 - 230 for gasket information.

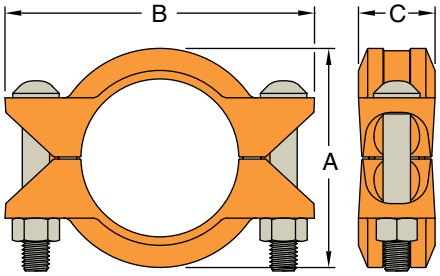
Figure 770 High Pressure Rigid Couplings

Tech Data Sheet: G138

The Figure 770 Rigid Coupling provides a rigid joint by firmly gripping along the circumference of the pipe grooves. This coupling offers a dependable method for joining pipe and is an economical alternative to welding, threading, or using flanges. It is capable of pressures up to 1000 psi *(68,9 bar)* depending on pipe size and wall thickness.

Additional Features:

- Full 360° gripping of the groove circumference provides a strong rigid connection.
- Tongue-and-groove design simplifies installation.



Pipe Size		Max.† Pressures	Max.† End Load	Max.*‡ End Gap	Dimensions - Inches *mm*			Coupling Bolts		Approx. Weight
Nominal Inches *mm*	O.D. Inches *mm*	psi *bar*	Lbs. *kN*	Inches *mm*	A	B	C	Qty.	Size Inches *mm*	Lbs. *kg*
2	**2.375**	**1000**	**4,430**	**0.14**	**3.53**	**5.72**	**1.88**	**2**	**⅝ x 2¾**	**3.4**
50	*60,3*	*68,9*	*19,71*	*3,6*	*89,7*	*145,3*	*47,8*		*M16 x 70*	*1,5*
2½	**2.875**	**1000**	**6,492**	**0.14**	**4.06**	**6.00**	**1.88**	**2**	**⅝ x 3½**	**4.0**
65	*73,0*	*68,9*	*28,88*	*3,6*	*103,1*	*152,4*	*47,8*		*M16 x 89*	*1,8*
3	**3.500**	**1000**	**9,621**	**0.14**	**4.78**	**6.76**	**1.88**	**2**	**⅝ x 3½**	**5.3**
80	*88,9*	*68,9*	*42,79*	*3,6*	*121,4*	*171,7*	*47,8*		*M16 x 89*	*2,4*
4	**4.500**	**1000**	**15,904**	**0.25**	**6.01**	**8.50**	**2.10**	**2**	**¾ x 4¼**	**7.3**
100	*114,3*	*68,9*	*70,74*	*6,4*	*152,7*	*215,9*	*53,3*		*M20 x 108*	*3,3*
6	**6.625**	**1000**	**34,472**	**0.25**	**8.51**	**11.25**	**2.10**	**2**	**⅞ x 5½**	**15.0**
150	*168,3*	*68,9*	*153,33*	*6,4*	*216,2*	*285,8*	*53,3*		*M22 x 140*	*6,8*
8	**8.625**	**800**	**46,741**	**0.25**	**10.93**	**13.75**	**2.60**	**2**	**1 x 5½**	**25.0**
200	*219,1*	*55,2*	*207,90*	*6,4*	*277,6*	*349,3*	*66,0*		*M24 x 140*	*11,3*
10	**10.750**	**800**	**72,610**	**0.25**	**13.46**	**16.00**	**2.60**	**2**	**1 x 6½**	**34.0**
250	*273,0*	*55,2*	*322,97*	*6,4*	*341,9*	*406,4*	*66,0*		*M24 x165*	*15,4*
12	**12.750**	**800**	**102,141**	**0.25**	**15.52**	**18.00**	**2.60**	**2**	**1 x 6½**	**40.0**
300	*323,9*	*55,2*	*454,32*	*6,4*	*394,2*	*457,2*	*66,0*		*M24 x165*	*18,1*

* Maximum available gap between pipe ends. Minimum gap = 0.

† Maximum Pressure and End Load are total from all loads based on standard weight steel pipe. Pressure ratings and end loads may differ for other pipe materials and/or wall thickness. Contact GRINNELL Mechanical Products for details.

‡ Max End Gap and Deflection is for cut grooved standard weight pipe. Values for roll grooved pipe will be half that of cut grooved.

For information on larger sizes, contact GRINNELL Mechanical Products.

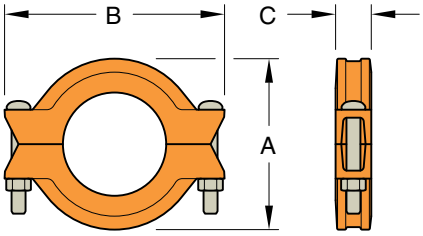
See page 17 for coupling specifications and pages 224 - 230 for gasket information.

Figure 716 Flexible Reducing Couplings

Tech Data Sheet: G120

The GRINNELL Figure 716 Flexible Reducing Coupling allows a direct transition between two different pipe sizes, and replaces two couplings and a reducing fitting. It is capable of pressures up to 500 psi (34,5 bar) depending on pipe size and wall thickness.

Note: Reducing Couplings are not recommended for low temperature applications.



UL VdS FM APPROVED LPCB Issue 03, 04, 07 Cert No. 570, 669, 673

For detailed Listing / Approval information contact GRINNELL Mechanical Products.

Pipe Size		Max.† Pressures psi *bar*	Max.† End Load Lbs./*kN*	Max.*‡ End Gap Inches *mm*	Deflection ‡		Dimensions Inches *mm*			Coupling Bolts		Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*				Degrees Per Coupling	Inches/Ft *mm/m*	A	B	C	Qty.	Size Inches *mm*	
2 x 1½	**2.375 x 1.900**	**500**	**1,417.6**	**0.13**	**1° 53'**	**0.39**	**3.50**	**5.06**	**1.88**	**2**	**⅜ x 2¼**	**2.0**
50 x 40	*60,3 x 48,3*	*34,5*	*6,31*	*3,3*		*32,5*	*88,9*	*128,5*	*47,8*		*M10 x 57*	*0,9*
2½ x 2	**2.875 x 2.375**	**500**	**2,215.1**	**0.13**	**1° 33'**	**0.32**	**4.00**	**5.50**	**1.88**	**2**	**⅜ x 2¼**	**2.5**
65 x 50	*73,0 x 60,3*	*34,5*	*9,85*	*3,3*		*26,7*	*101,6*	*139,7*	*47,8*		*M120 x 57*	*1,1*
76.1mm x 2	**3.000 x 2.375**	**500**	**2,215.1**	**0.13**	**1° 34'**	**0.32**	**4.19**	**5.88**	**1.88**	**2**	**–**	**3.1**
65 x 50	*76,1 x 60,3*	*34,5*	*9,85*	*3,3*		*26,7*	*106,4*	*149,4*	*47,8*		*M12 x 76*	*1,4*
3 x 2	**3.500 x 2.375**	**500**	**2,215.1**	**0.13**	**1° 17'**	**0.27**	**4.69**	**6.50**	**1.88**	**2**	**½ x 3**	**4.1**
80 x 50	*88,9 x 60,3*	*34,5*	*9,85*	*3,3*		*22,5*	*119,1*	*165,1*	*47,8*		*M12 x 76*	*1,9*
3 x 2½	**3.500 x 2.875**	**500**	**3,245.9**	**0.13**	**1° 17'**	**0.27**	**4.69**	**6.50**	**1.88**	**2**	**½ x 3**	**4.3**
80 x 65	*88,9 x 73,0*	*34,5*	*14,44*	*3,3*		*22,5*	*119,1*	*165,1*	*47,8*		*M12 x 76*	*2,0*
3 x 76,1mm	**3.500 x 3.000**	**500**	**3,534.3**	**0.13**	**1° 17'**	**0.27**	**4.69**	**6.50**	**1.88**	**2**	**–**	**4.2**
80 x 65	*88,9 x 76,1*	*34,5*	*15,72*	*3,3*		*22,5*	*119,1*	*165,1*	*47,8*		*M12 x 76*	*1,9*
4 x 2	**4.500 x 2.375**	**500**	**2,215.1**	**0.19**	**2° 38'**	**0.55**	**6.00**	**8.13**	**2.00**	**2**	**⅝ x 3¼**	**5.5**
100 x 60	*114,3 x 60,3*	*34,5*	*9,85*	*4,8*		*45,8*	*152,4*	*206,5*	*50,8*		*M16 x 83*	*2,5*
4 x 2½	**4.500 x 2.875**	**500**	**3,245.9**	**0.19**	**2° 38'**	**0.55**	**6.00**	**8.13**	**2.00**	**2**	**⅝ x 3¼**	**6.4**
100 x 65	*114,3 x 73,0*	*34,5*	*14,44*	*4,8*		*46,0*	*152,4*	*206,5*	*50,8*		*M16 x 83*	*2,9*
4 x 76,1mm	**4.500 x 3.000**	**500**	**3,534.3**	**0.19**	**2° 38'**	**0.55**	**6.00**	**8.13**	**2.00**	**2**	**–**	**6.3**
100 x 65	*114,3 x 76,1*	*34,5*	*15,72*	*4,8*		*46,0*	*152,4*	*206,5*	*50,8*		*M16 x 83*	*2,9*
4 x 3	**4.500 x 3.500**	**500**	**4,810.6**	**0.19**	**2° 38'**	**0.55**	**6.00**	**8.13**	**2.00**	**2**	**⅝ x 3¼**	**6.2**
100 x 80	*114,3 x 88,9*	*34,5*	*21,40*	*4,8*		*46,0*	*152,4*	*206,5*	*50,8*		*M16 x 83*	*2,8*
139,7mm x 4	**5.500 x 4.500**	**500**	**7,952.2**	**0.25**	**2° 38'**	**0.55**	**7.06**	**9.50**	**2.06**	**2**	**–**	**9.6**
125 x 100	*139,7 x 114,3*	*34,5*	*35,37*	*6,4*		*46,0*	*179,3*	*241,3*	*52,3*		*M20 x 121*	*4,3*
5 x 4	**5.563 x 4.500**	**500**	**7,952.2**	**0.25**	**2° 5'**	**0.44**	**7.13**	**9.56**	**2.06**	**2**	**¾ x 4¾**	**9.8**
125 x 100	*141,3 x 114,3*	*34,5*	*35,37*	*6,4*		*36,7*	*181,1*	*242,8*	*52,3*		*M20 x 121*	*4,4*
165mm x 4	**6.500 x 4.500**	**400**	**6,361.7**	**0.25**	**1° 50'**	**0.38**	**8.18**	**10.81**	**2.06**	**2**	**–**	**12.5**
150 x 100	*165,1 x 114,3*	*27,6*	*28,30*	*6,4*		*32,0*	*207,8*	*274,6*	*52,3*		*M20 x 121*	*5,7*
6 x 4	**6.625 x 4.500**	**400**	**6,361.7**	**0.25**	**1° 44'**	**0.36**	**8.38**	**10.88**	**2.06**	**2**	**¾ x 4¾**	**12.5**
150 x 100	*168,3 x 114,3*	*27,6*	*28,30*	*6,4*		*30,0*	*212,9*	*276,4*	*52,3*		*M20 x 121*	*5,7*
6 x 5	**6.625 x 5.563**	**400**	**9,722.3**	**0.25**	**1° 44'**	**0.36**	**8.38**	**10.88**	**2.06**	**2**	**¾ x 4¾**	**11.5**
150 x 125	*168,3 x 141,3*	*27,6*	*43,25*	*6,4*		*30,0*	*212,9*	*276,4*	*52,3*		*M20 x 121*	*5,2*
8 x 6	**8.625 x 6.625**	**400**	**13,788.6**	**0.25**	**1° 15'**	**0.26**	**10.69**	**13.75**	**2.25**	**2**	**⅞ x 6½**	**20.7**
200 x 150	*219,1 x 168,3*	*27,6*	*61,33*	*6,4*		*21,7*	*271,5*	*349,3*	*57,2*		*M22 x 165*	*9,4*

* Maximum available gap between pipe ends. Minimum gap = 0.

† Maximum Pressure and End Load are total from all loads based on standard weight steel pipe. Pressure ratings and end loads may differ on other pipe materials and/or wall thickness. Contact GRINNELL Mechanical Products for details.

‡ Max End Gap and Deflection is for cut grooved standard weight pipe. Values for roll grooved pipe will be half that of cut grooved.

For information on larger sizes, contact GRINNELL Mechanical Products.

See page 17 for coupling specifications and pages 224 - 230 for gasket information.

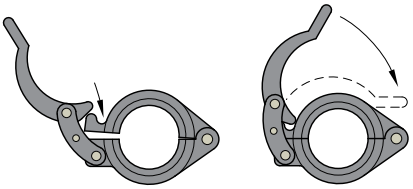
Figure 780 Grooved Snap Couplings

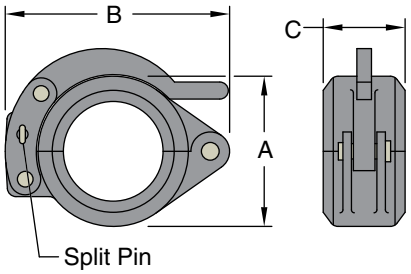
Tech Data Sheet: G145

The GRINNELL Figure 780 Grooved Snap Coupling is designed for quickly connecting and disconnecting cut or rolled grooved piping systems. It utilizes a hinged lever mechanism for quickly joining grooved piping segments securely without nuts and bolts. Coupling housing segments are locked in place using a split pin.

Additional Features:

- Unique two-step closing feature allows for safe and quick installation.
- Sizes 5" to 8" *(125mm to 200mm)* feature a cross-ribbed housing design for extra strength.
- Rated for pressures up to 300 psi *(20,7 bar)*.





Pipe Size		Max. † * Working Pressure psi *bar*	Max. * End Load Lbs. *kN*	Max. End Gap Inches *mm*	Dimensions - Inches *mm*			Deflection		Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*				A	B	C	Degrees Per Coupling	Inches/Ft *mm/m*	
1¼	1.660	300	650	0.06	3.28	5.14	1.75	3° 6'	0.65	1.6
32	*42,4*	*20,7*	*2,9*	*1,6*	*83,2*	*130,5*	*44,5*		*54,3*	*0,7*
1½	1.900	300	851	0.06	2.95	4.65	1.85	3° 48'	0.80	2.2
40	*48,3*	*20,7*	*3,8*	*1,6*	*75,0*	*118,0*	*47,0*		*66,4*	*1,0*
2	2.375	300	1,329	0.06	3.39	4.76	1.89	3° 31'	0.74	2.4
50	*60,3*	*20,7*	*5,9*	*1,6*	*86,0*	*121,0*	*48,0*		*61,5*	*1,1*
2½	2.875	300	1,947	0.06	3.62	5.91	1.89	2° 30'	0.52	3.1
65	*73,0*	*20,7*	*8,7*	*1,6*	*92,0*	*150,0*	*48,0*		*43,7*	*1,4*
76,1mm	3.000	300	2,121	0.06	3.62	5.91	1.89	2° 24'	0.50	3.1
65	*76,1*	*20,7*	*9,4*	*1,6*	*92,0*	*150,0*	*48,0*		*41,9*	*1,4*
3	3.500	300	2,886	0.06	4.69	6.42	1.89	2° 24'	0.50	4.0
80	*88,9*	*20,7*	*12,8*	*1,6*	*119,0*	*163,0*	*48,0*		*41,9*	*1,8*
4	4.500	300	4,771	0.13	6.50	8.07	2.05	3° 12'	0.67	5.9
100	*114,3*	*20,7*	*21,2*	*3,2*	*165,0*	*205,0*	*52,0*		*55,9*	*2,7*
139,7mm	5.500	300	7,127	0.13	7.44	9.96	2.05	2° 37'	0.55	10.8
125	*139,7*	*20,7*	*31,7*	*3,2*	*189,0*	*253,0*	*52,0*		*45,7*	*4,9*
5	5.565	300	7,289	0.13	7.44	9.96	2.05	2° 36'	0.54	10.8
125	*141,3*	*20,7*	*32,4*	*3,2*	*189,0*	*253,0*	*52,0*		*45,4*	*4,9*
165,1mm	6.500	300	9,955	0.13	8.39	10.94	2.05	2° 14'	0.47	12.8
150	*165,1*	*20,7*	*44,3*	*3,2*	*213,0*	*278,0*	*52,0*		*39,0*	*5,8*
6	6.625	300	10,341	0.13	8.50	11.06	2.05	2° 10'	0.45	12.8
150	*168,3*	*20,7*	*46,0*	*3,2*	*216,0*	*281,0*	*52,0*		*37,8*	*5,8*
8	8.625	300	17,528	0.13	10.95	14.02	2.44	1° 40'	0.35	20.5
200	*219,1*	*20,7*	*78,0*	*3,2*	*278,0*	*356,0*	*62,0*		*29,1*	*9,3*

† Pressure ratings listed are cold water pressure or maximum working pressure within the service temperature range of the gasket used in the coupling.

* Maximum working pressures and end loads listed are total of internal and external pressures and loads based on Schedule 40 steel pipe grooved in accordance with Standard Cut Groove or Roll Groove Specifications.

For information on larger sizes, contact GRINNELL Mechanical Products.

See page 17 for coupling specifications and pages 224 - 230 for gasket information.

Figure 702 Mechanical Outlet Couplings

(Page 1 of 2)

Tech Data Sheet: G220

The GRINNELL Figure 702 Mechanical Outlet Coupling has the combined features of a coupling and a reducing outlet, eliminating the need for a mechanical tee or other associated couplings. The coupling is available in grooved, male-threaded, or female-threaded outlets. This design makes installation faster, safer, and more cost effective on the job site.

Additional features:

- Available in sizes 1½" to 6" *(40mm - 150mm)*
- Rated for pressures up to 500 psi *(34,5 bar)*
- Suitable for vacuum service up to 10" HG *(254mm HG)*

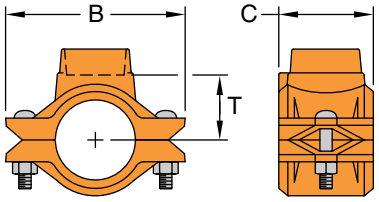


Figure 702
Outlet Coupling with Female NPT Outlet

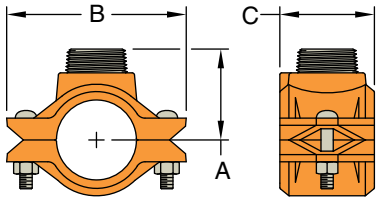


Figure 702
Outlet Coupling with Male NPT Outlet

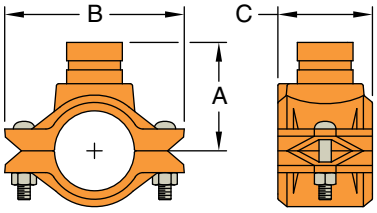


Figure 702
Outlet Coupling with Grooved Outlet

Run Pipe Size		Branch Size				End Gap Range Inches *mm*	Max. Run End Load Lbs. *kN*	Dimensions Inches *mm*				Coupling Bolt Size Inches	Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*	Female ◆ Thread Inches *mm*	Male ◆ Thread Inches *mm*	Grooved Nominal Inches *mm*	Grooved O.D. Inches *mm*			A	B	C	T		
1½ *40*	1.900 *48,3*	½ *21,3*	– –	– –	– –	0.81-0.88 *20-22*	1418 *6,3*	– –	4.50 *114,3*	2.75 *70,0*	2.06 *52,0*	⅜ x 2⅛ •	2.6 *1,2*
		¾ *26,7*	– –	– –	– –	0.81-0.88 *20-22*		– –	4.50 *114,3*	2.75 *70,0*	2.06 *52,0*		2.6 *1,2*
		1 *33,7*	– –	– –	– –	0.81-0.88 *20-22*		– –	4.50 *114,3*	2.75 *70,0*	1.94 *49,0*		2.9 *1,3*
2 *50*	2.375 *60,3*	½ *21,3*	– –	– –	– –	0.81-0.88 *20-22*	2215 *9,9*	– –	5.00 *127,0*	2.75 *70,0*	2.32 *59,0*	⅜ x 2⅛ •	3.1 *1,4*
		¾ *26,7*	– –	– –	– –	0.81-0.88 *20-22*		– –	5.00 *127,0*	2.75 *70,0*	2.32 *59,0*		3.1 *1,4*
		1 *33,7*	1 *33,7*	1 *25*	1.315 *33,7*	0.81-0.88 *20-22*		3.50 *89,0*	5.00 *127,0*	2.75 *70,0*	2.20 *56,0*		3.3 *1,5*
2½ *65*	2.875 *73,0*	½ *21,3*	– –	– –	– –	1.25-1.50 *32-38*	3246 *14,4*	– –	6.33 *161,0*	3.25 *83,0*	2.20 *56,0*	½ x 2⅜ •	4.8 *2,2*
		¾ *26,7*	– –	– –	– –	1.25-1.50 *32-38*		– –	6.33 *161,0*	3.25 *83,0*	2.56 *65,0*		4.6 *2,1*
		1 *33,7*	– –	– –	– –	1.25-1.50 *32-38*		– –	6.33 *161,0*	3.25 *83,0*	2.44 *62,0*		4.4 *2,2*
		– –	1¼ *42,4*	1¼ *32*	1.660 *42,4*	1.25-1.50 *32-38*		3.70 *94,0*	6.33 *161,0*	3.25 *83,0*	– –		5.1 *2,3*
		– –	1½ *48,3*	1½ *40*	1.900 *48,3*	1.25-1.50 *32-38*		3.70 *94,0*	6.33 *161,0*	3.25 *83,0*	– –		5.9 *2,4*

Figure 702 Mechanical Outlet Couplings

Tech Data Sheet: G220

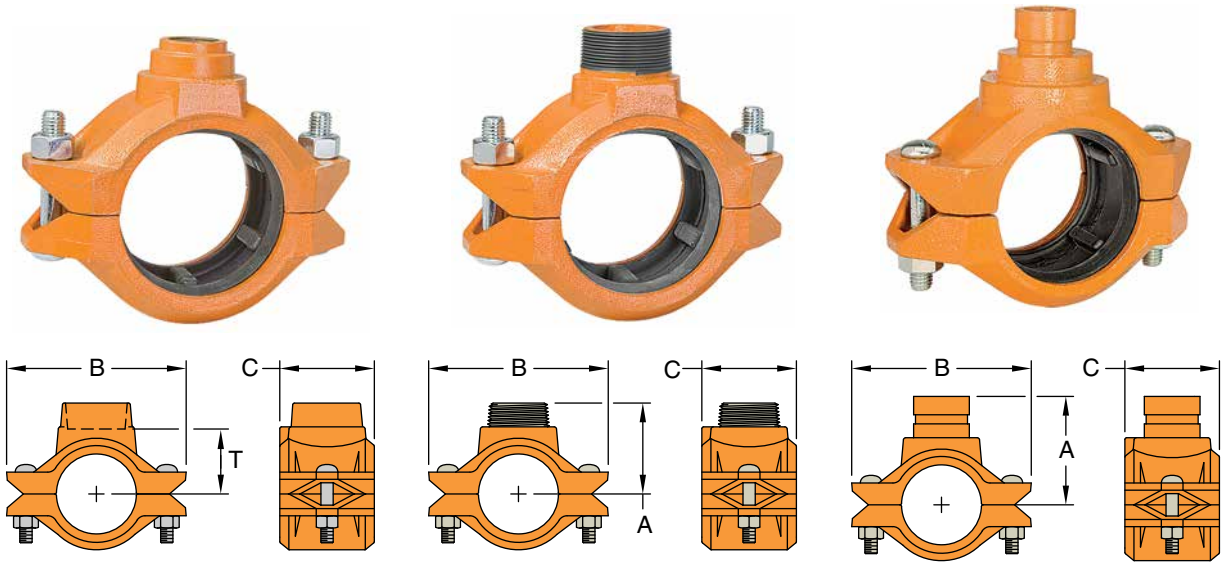


Figure 702
Outlet Coupling with Female NPT Outlet

Figure 702
Outlet Coupling with Male NPT Outlet

Figure 702
Outlet Coupling with Grooved Outlet

Run Pipe Size		Branch Size				End Gap Range Inches *mm*	Max. Run End Load Lbs. *kN*	Dimensions Inches *mm*				Coupling Bolt Size Inches	Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*	Female ◆ Thread Inches *mm*	Male ◆ Thread Inches *mm*	Grooved Nominal Inches *mm*	Grooved O.D. Inches *mm*			A	B	C	T		
3 *80*	3.500 *88,9*	¾ *26,7*	– –	– –	– –	1.25-1.50 *32-38*	21.4 *4811*	– –	6.87 *175,0*	3.25 *83,0*	2.83 *72,0*	½ x 3 •	5.9 *2,4*
		1 *33,7*	1 *33,4*	1 *25*	1.315 *33,7*	1.25-1.50 *32-38*		4.00 *102,0*	6.87 *175,0*	3.25 *83,0*	2.75 *70,0*		6.2 *2,8*
		– –	1½ *48,3*	1½ *40*	1.900 *48,3*	1.25-1.50 *32-38*		4.00 *102,0*	6.87 *175,0*	3.25 *83,0*	– –		6.4 *2,9*
4 *100*	4.500 *114,3*	¾ *26,7*	– –	– –	– –	1.63-1.81 *41-46*	35.4 *7952*	– –	8.31 *211,0*	3.66 *93,0*	3.70 *94,0*	⅝ x 3½ •	9.2 *4,2*
		1 *33,7*	– –	– –	– –	1.63-1.81 *41-46*		– –	8.31 *211,0*	3.66 *93,0*	3.58 *91,0*		9.5 *4,3*
		1½ *48,3*	1½ *48,3*	1½ *40*	1.900 *48,3*	1.63-1.81 *41-46*		4.88 *124,0*	8.31 *211,0*	3.66 *93,0*	3.31 *84,0*		9.5 *4,3*
		– –	2 *60,3*	2 *50*	2.375 *60,3*	1.63-1.81 *41-46*		4.88 *124,0*	8.31 *211,0*	3.66 *93,0*	– –		9.9 *4,5*
6 *150*	6.625 *168,3*	– –	– –	– –	– –	1.63-1.81 *41-46*	76.7 *17,235*	– –	10.86 *276,0*	3.70 *94,0*	– –	⅝ x 3½ •	13.2 *6,0*
		1 *33,7*	– –	– –	– –	1.63-1.81 *41-46*		– –	10.86 *276,0*	3.70 *94,0*	4.76 *121,0*		13.2 *6,0*
		1½ *48,3*	1½ *48,3*	1½ *40*	1.900 *48,3*	1.63-1.81 *41-46*		6.06 *154,0*	10.86 *276,0*	3.70 *94,0*	4.76 *121,0*		13.6 *6,2*
		– –	2 *60,3*	2 *50*	2.375 *60,3*	1.63-1.81 *41-46*		6.06 *154,0*	10.86 *276,0*	3.70 *94,0*	– –		14.3 *6,5*

◆ Threads are NPT. Some size outlets are available with BSP threads. Contact GRINNELL Mechanical products for details.
• Only available in ANSI bolt sizes.
Flow characteristics chart is available in technical data sheet G220.
For information on larger sizes, contact GRINNELL Mechanical Products.
See page 17 for coupling specifications and pages 224 - 230 for gasket information.

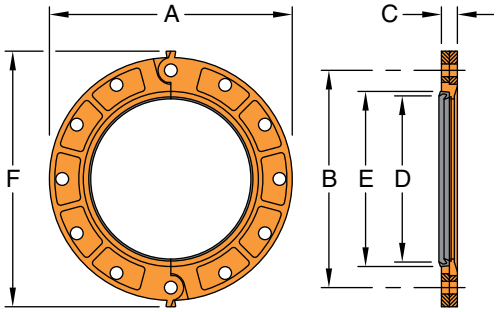
Figure 71 Flange Adapters
(ANSI Class 125/150)

(Page 1 of 2)

Tech Data Sheet: G150

The Figure 71 Flange Adapter is capable of pressures up to 300 psi *(20,7 bar)* depending on pipe size and wall thickness. It provides a direct transition from flanged components to a grooved piping system. I.P.S. size flange bolt patterns conform to ANSI Class 125 and 150.

The gasket seal is designed with an optimal amount of rubber to provide a dependable seal and to avoid the gasket pocket from overfilling, which may cause assembly difficulties.

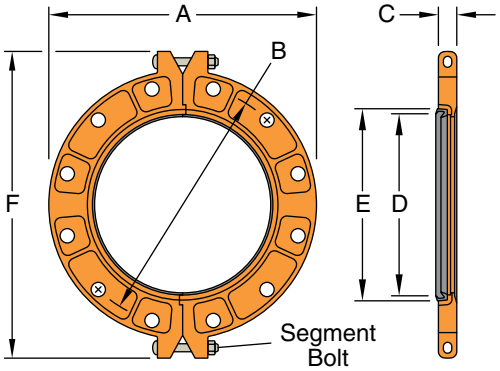


Sizes 2" - 12" *(50mm - 300mm)*

Pipe Size		Max † Pressure psi *bar*	Max End Load † Lbs. *N*	Dimensions - Inches *mm*						Recommended Flange Mating Bolts ‡		Approx. Wt. Lbs *kg*
Nominal Inches *mm*	O.D. Inches *mm*			A	B	C	*D	*E	F	Size Dia. x Lg Inches *mm*	Qty.	
2	**2.375**	**300**	**1,324**	**6.38**	**4.75**	**0.75**	**2.38**	**3.41**	**7.25**	**⅝ x 3**	**4**	**30**
50	*60,3*	*20,7*	*5889*	*162,1*	*120,7*	*19,1*	*60,5*	*86,6*	*184,2*	–		*1,4*
2½	**2.875**	**300**	**1,948**	**7.00**	**5.50**	**0.88**	**2.88**	**3.91**	**7.88**	**⅝ x 3**	**4**	**5.0**
65	*73,0*	*20,7*	*8665*	*178,0*	*140,0*	*22,0*	*73,0*	*99,0*	*200,0*	–		*2,3*
76,1mm	**3.000**	**300**	**2,121**	**7.28**	**5.71**	**0.88**	**3.00**	**4.03**	**8.08**	**⅝ x 3**	**4**	**5.8**
65	*76,1*	*20,7*	*9435*	*184,9*	*145,0*	*22,0*	*76,1*	*102,4*	*205,2*	–		*2,6*
3	**3.500**	**300**	**2,886**	**7.50**	**6.00**	**0.94**	**3.50**	**4.53**	**9.88**	**⅝ x 3**	**4**	**5.6**
80	*88,9*	*20,7*	*12838*	*190,5*	*152,4*	*23,9*	*88,9*	*115,1*	*251,0*	–		*2,5*
4	**4.500**	**300**	**4,771**	**9.00**	**7.50**	**0.94**	**4.50**	**5.53**	**9.90**	**⅝ x 3**	**8**	**7.0**
100	*114,3*	*20,7*	*21,222*	*228,6*	*190,5*	*23,9*	*114,3*	*140,5*	*251,5*	–		*3,2*
139,7mm	**5.500**	**300**	**7,127**	**9.84**	**8.27**	**1.00**	**5.50**	**6.66**	**10.64**	**¾ x 3½**	**8**	**9.2**
125	*139,7*	*20,7*	*31,702*	*249,9*	*210,1*	*25,4*	*139,7*	*169,2*	*270,3*	–		*4,2*
5	**5.563**	**300**	**7,292**	**10.00**	**8.50**	**1.00**	**5.56**	**6.72**	**11.38**	**¾ x 3½**	**8**	**9.2**
125	*141,3*	*20,7*	*32,436*	*254,0*	*215,9*	*25,4*	*141,2*	*170,7*	*289,1*	–		*4,2*
165,1mm	**6.500**	**300**	**9,955**	**11.22**	**9.45**	**1.00**	**6.50**	**7.66**	**12.10**	**¾ x 3½**	**8**	**11.0**
150	*165,1*	*20,7*	*44,282*	*285,0*	*240,6*	*25,4*	*165,1*	*194,6*	*307,3*	–		*5,0*
6	**6.625**	**300**	**10,341**	**11.00**	**9.50**	**1.00**	**6.62**	**7.78**	**11.88**	**¾ x 3½**	**8**	**10.0**
150	*168,3*	*20,7*	*45,999*	*279,4*	*241,3*	*25,4*	*168,1*	*197,6*	*301,8*	–		*4,5*
8	**8.625**	**300**	**17,528**	**13.50**	**11.75**	**1.13**	**8.62**	**9.94**	**14.38**	**¾ x 3½**	**8**	**16.6**
200	*219,1*	*20,7*	*77,968*	*342,9*	*298,5*	*28,7*	*218,9*	*252,5*	*365,3*	–		*7,5*
10	**10.750**	**300**	**27,229**	**16.00**	**14.25**	**1.19**	**10.75**	**12.31**	**16.88**	**⅞ x 4**	**12**	**21.8**
250	*273,0*	*20,7*	*121,121*	*406,4*	*362,0*	*30,2*	*273,1*	*312,7*	*428,8*	–		*9,9*
12	**12.750**	**300**	**38,303**	**19.00**	**17.00**	**1.25**	**12.75**	**14.31**	**20.00**	**⅞ x 4**	**12**	**24.2**
300	*323,9*	*20,7*	*170,380*	*482,6*	*431,8*	*31,8*	*323,9*	*363,5*	*508,0*	–		*11,0*

Figure 71 Flange Adapters
(ANSI Class 125/150)

For detailed Listing / Approval information contact GRINNELL Mechanical Products.



Sizes 14" - 24" *(350mm - 600mm)*

Pipe Size		Max † Pressure psi *bar*	Max End Load † Lbs. *N*	Dimensions - Inches *mm*						Recommended Flange Mating Bolts ‡		Approx. Wt. Lbs *kg*
Nominal Inches *mm*	O.D. Inches *mm*			A	B	C	*D	*E	F	Size Dia. x Lg Inches *mm*	Qty.	
14	**14.000**	**300**	**46,181**	**21.00**	**18.76**	**1.44**	**14.00**	**15.03**	**24.00**	**1 x 4¼ •**	**12**	**25.0**
350	*355,6*	*20,7*	*205,423*	*533,4*	*476,5*	*36,5*	*355,6*	*381,8*	*609,6*	–		*11,3*
16	**16.000**	**300**	**60,315**	**23.50**	**21.26**	**1.50**	**16.00**	**17.00**	**26.50**	**1 x 4¼ •**	**16**	**31.0**
400	*406,4*	*20,7*	*268,294*	*596,9*	*540,0*	*38,10*	*406,4*	*431,7*	*673,1*	–		*14,0*
18	**18.000**	**300**	**76,455**	**25.00**	**22.76**	**1.63**	**18.00**	**19.01**	**29.00**	**1⅛ x 4¾ •**	**16**	**35.0**
450	*457,2*	*20,7*	*340,089*	*635,0*	*578,1*	*41,3*	*457,2*	*482,8*	*736,6*	–		*15,8*
20	**20.000**	**300**	**94,245**	**27.50**	**25.00**	**1.75**	**20.00**	**21.03**	**31.50**	**1⅛ x 4¾ •**	**20**	**45.0**
500	*508,0*	*20,7*	*419,223*	*698,5*	*635,0*	*44,5*	*508,0*	*534,2*	*800,1*	–		*20,4*
24	**24.000**	**250**	**135,720**	**32.00**	**29.50**	**1.93**	**24.00**	**25.05**	**36.00**	**1¼ x 5½ •**	**20**	**59.0**
600	*609,6*	*17,2*	*603,713*	*812,8*	*749,3*	*49,0*	*609,6*	*636,3*	*914,4*	–		*26,8*

* Dimensions D and E represent minimum and maximum sealing surfaces.

• Metric segment bolt are available upon request.

† Maximum Pressure and End Load are total from all loads based on standard weight steel pipe. Pressure ratings and end loads may differ on other pipe materials and/or wall thickness. Contact GRINNELL Mechanical Products for details.

‡ Mating bolts and nuts are not supplied. Flange mating bolts must be at least SAE J429, Grade 5 or stronger. Bolt lengths are standard; responsibility lies with the purchaser to verify the correct length for the intended application.

For information on larger sizes, contact GRINNELL Mechanical Products.

See page 17 for coupling specifications and pages 224 - 230 for gasket information.
See page 36 for Flange Adapter Washers and page 270 Flange Drilling Specifications.

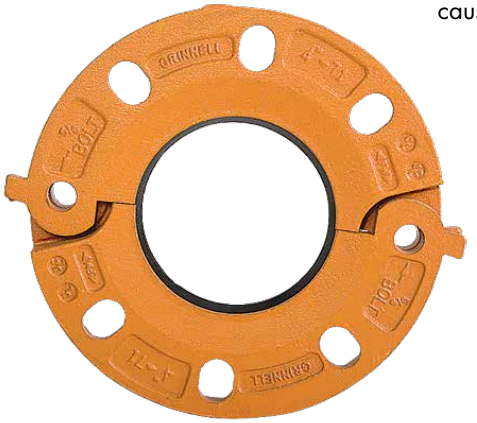
Figure 71 Flange Adapters

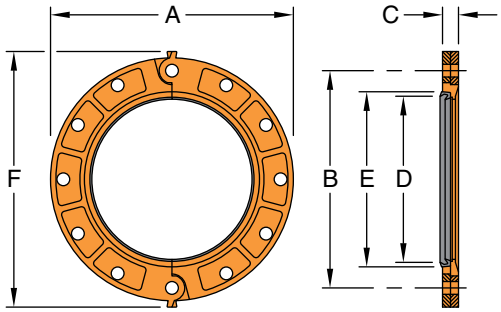
(PN10/PN16)

Tech Data Sheet: G150

The Figure 71 Flange Adapter is capable of pressures up to 300 psi *(20,7 bar)* depending on pipe size and wall thickness. It provides a direct transition from flanged components to a grooved piping system. I.P.S. size flange bolt patterns conform to PN10/PN16

The gasket seal is designed with an optimal amount of rubber to provide a dependable seal and to avoid the gasket pocket from overfilling, which may cause assembly difficulties.





Sizes 2" - 12" *(50mm - 300mm)*

Pipe Size		PN10/ PN16	Max † End Load Lbs. *N*	Dimensions - Inches *mm*						Recommended Flange Mating Bolts ‡		Approx. Wt. Lbs *kg*
Nominal Inches *mm*	O.D. Inches *mm*			A	B	C	*D	*E	F	Size Dia. x Lg Inches *mm*	Qty.	
2	2.375	PN10 / PN16	1,324	6.38	4.92	0.75	2.38	3.41	7.25	–	4	3.0
50	60,3		5889	162,1	125,0	19,1	60,5	86,6	184,2	M16 x 76		1,4
2½	2.875	PN10 / PN16	1,948	7.00	5.50	0.88	2.88	3.91	5.13	–	4	5.4
65	73,0		8665	177,8	139,7	22,4	73,6	99,3	130,3	M16 x 76		2,4
76,1mm	3.000	PN10 / PN16	1,948	7.28	5.70	0.88	3.00	4.03	8.09	–	4	5.0
65	76,1		8665	184,9	144,8	22,4	76,1	102,4	205,5	M16 x 76		2,3
3**	3.500	PN10	2,886	7.88	6.30	0.94	3.50	4.53	8.75	–	4	5.6
80	88,9		12,838	200,2	160,0	23,9	88,9	115,1	222,3	M16 x 76		2,5
3**	3.500	PN16	2,886	7.88	6.30	0.94	3.50	4.53	8.75	–	8	5.6
80	88,9		12,838	200,2	160,0	23,9	88,9	115,1	222,3	M16 x 76		2,5
4	4.500	PN10 / PN16	4,771	9.00	7.09	0.94	4.50	5.53	9.90	–	8	7.0
100	114,3		21,222	228,6	180,1	23,9	114,3	140,5	251,5	M16 x 76		3,2
139,7mm	5.500	PN10 / PN16	7,292	9.84	8.27	1.00	5.50	6.53	10.69	–	8	9.2
125	139,7		32,436	249,9	210,1	25,4	139,7	165,9	271,5	M16 x 89		4,2
165,1mm	6.500	PN10 / PN16	10,341	11.25	9.45	1.00	6.50	7.53	12.12	–	8	10.0
150	165,1		45,999	285,8	240,0	24,5	165,1	191,3	307,8	M20 x 89		4,5
6	6.625	PN10 / PN16	17,528	11.00	9.49	1.00	6.62	7.78	11.88	–	8	16.6
150	168,3		77,968	279,4	241,1	25,4	168,1	197,6	301,8	M20 x 89		7,5
8**	8.625	PN10	27,229	13.38	11.61	1.13	8.62	9.94	14.31	–	8	21.8
200	219,1		121,121	339,9	294,9	28,7	218,9	254,5	363,5	M20 x 89		9,9
8**	8.625	PN16	27,229	13.38	11.61	1.13	8.62	9.94	14.31	–	12	21.8
200	219,1		121,121	339,9	294,9	28,7	218,9	254,5	363,5	M20 x 89		9,9

Figure 71 Flange Adapters (PN10/PN16)

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Cert No. 570, 669, 673

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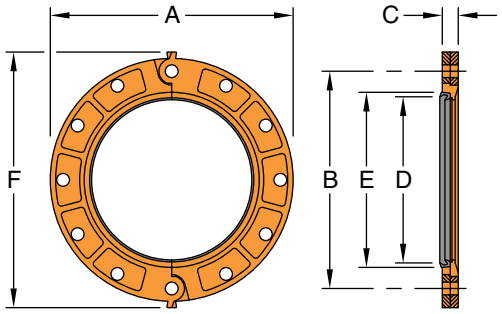
For detailed Listing / Approval information contact GRINNELL Mechanical Products.



Sizes 2" - 12" *(50mm - 300mm)*

Pipe Size		PN10/ PN16	Max † End Load Lbs. *N*	Dimensions - Inches *mm*						Recommended Flange Mating Bolts ‡		Approx. Wt. Lbs *kg*
Nominal Inches *mm*	O.D. Inches *mm*			A	B	C	*D	*E	F	Size Dia. x Lg Inches *mm*	Qty.	
10**	**10.750**	**PN10**	**38,303**	**15.56**	**13.78**	**1.19**	**10.75**	**12.31**	**16.50**	**–**	**12**	**22.5**
250	*273,0*		*170,380*	*395,2*	*350,0*	*30,2*	*273,1*	*312,4*	*419,1*	*M20 x 102*		*10,2*
10**	**10.750**	**PN16**	**38,303**	**16.00**	**13.98**	**1.19**	**10.75**	**12.31**	**16.88**	**–**	**12**	**24.2**
250	*273,0*		*170,380*	*406,4*	*355,1*	*30,2*	*273,1*	*312,7*	*428,8*	*M22 x 102*		*11,0*
12**	**12.750**	**PN10**	**29,621**	**17.52**	**17.52**	**1.25**	**12.75**	**14.31**	**16.56**	**–**	**12**	**27.5**
300	*323,9*		*131,754*	*445,0*	*445,0*	*31,8*	*323,9*	*363,5*	*420,6*	*M20 x 102*		*12,5*
12**	**12.750**	**PN16**	**29,621**	**18.12**	**18.12**	**1.25**	**12.75**	**14.31**	**19.14**	**–**	**12**	**28.0**
300	*323,9*		*131,754*	*460,2*	*460,2*	*31,8*	*323,9*	*363,5*	*486,2*	*M22 x 102*		*12,7*

Maximum Pressure rating is 300 psi *(20,7 bar)*.

* Dimensions D and E represent minimum and maximum sealing surfaces.

** For noted sizes, PN10 and PN16 dimensional values differ.

† Maximum End Load is total from all loads based on standard weight steel pipe. Pressure ratings and end loads may differ on other pipe materials and/or wall thickness. Contact GRINNELL Mechanical Products for details.

‡ Mating Bolts and Nuts are not supplied. Flange Mating Bolts must be at least SAE J429, Grade 5 or stronger. Bolt lengths are standard; responsibility lies with the purchaser to verify the correct length for the intended application.

For information on larger sizes, contact GRINNELL Mechanical Products.

See page 17 for coupling specifications and pages 224 - 230 for gasket information.
See page 36 for Flange Adapter Washers and page 270 Flange Drilling Specifications.

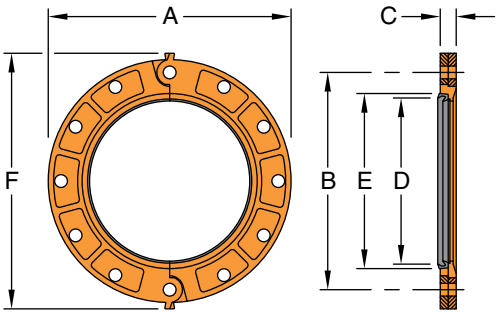
Figure 71 Flange Adapters

(AS2129 Table E)

Tech Data Sheet: G150

The Figure 71 Flange Adapter is capable of pressures up to 300 psi *(20,7 bar)* depending on pipe size and wall thickness. It provides a direct transition from flanged components to a grooved piping system. I.P.S. size flange bolt patterns conform to AS2129 Table E.

The gasket seal is designed with an optimal amount of rubber to provide a dependable seal and to avoid the gasket pocket from overfilling, which may cause assembly difficulties.



Sizes 3" - 8" *(80mm - 200mm)*

Pipe Size		Max † End Load Lbs. *N*	Dimensions - Inches *mm*						Recommended Flange Mating Bolts ‡		Approx. Wt. Lbs *kg*
Nominal Inches *mm*	O.D. Inches *mm*		A	B	C	*D	*E	F	Size Dia. x Lg Inches *mm*	Qty.	
3	**3.500**	**2,886**	**7.88**	**6.30**	**0.94**	**3.50**	**4.53**	**8.75**	**–**	**8**	**6.4**
80	*88,9*	*12,838*	*200,2*	*160,0*	*23,9*	*88,9*	*115,1*	*222,3*	*M16 x 76*		*2,9*
4	**4.500**	**4,771**	**9.00**	**7.09**	**0.94**	**4.50**	**5.53**	**9.90**	**–**	**8**	**7.7**
100	*114,3*	*21,222*	*228,6*	*180,1*	*23,9*	*114,3*	*140,5*	*251,5*	*M16 x 76*		*3,5*
6	**6.625**	**10,341**	**11.25**	**9.45**	**1.00**	**6.50**	**7.53**	**12.12**	**–**	**8**	**10.6**
150	*168,3*	*45,999*	*285,8*	*240,0*	*25,4*	*165,1*	*191,3*	*307,8*	*M20 x 89*		*4,8*
8	**8.625**	**27,229**	**13.38**	**11.61**	**1.13**	**8.62**	**9.94**	**14.31**	**–**	**12**	**15.0**
200	*219,1*	*121,121*	*339,9*	*294,9*	*28,7*	*218,9*	*252,5*	*363,5*	*M20 x 89*		*6,8*

* Dimensions D and E represent minimum and maximum sealing surfaces.

† Maximum End Load is total from all loads based on standard weight steel pipe. Pressure ratings and end loads may differ on other pipe materials and/or wall thickness. Contact GRINNELL Mechanical Products for details.

‡ Mating Bolts and Nuts are not supplied. Flange Mating Bolts must be at least SAE J429, Grade 5 or stronger. Bolt lengths are standard; responsibility lies with the purchaser to verify the correct length for the intended application.

Maximum Pressure rating is 300 psi *(20,7 bar)*.

For information on larger sizes, contact GRINNELL Mechanical Products.

See page 17 for coupling specifications and pages 224 - 230 for gasket information.

See page 36 for Flange Adapter Washers and page 270 Flange Drilling Specifications.

Figure 71H Flange Adapters - Hinged
(ANSI Class 125/150)

Tech Data Sheet: G155

The GRINNELL Figure 71H Hinged Flange Adapter allows a direct transition from flanged components to GRINNELL grooved components. The two segments design comes with a pre-pressed ring at one of the mating ends which facilitates a hinged action. This allows for an easy and quick installation. The specially designed gasket enables the transition from a grooved system to a flanged system with a single flange adapter. The flange bolt patterns conform to ANSI Class 125 and 150.

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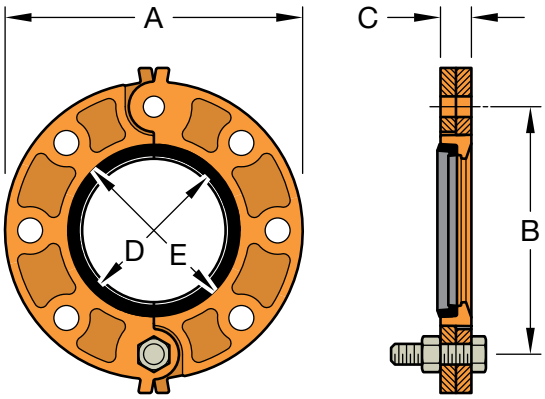
NSF Certified to NSF/ANSI 61

For detailed Listing / Approval information contact GRINNELL Mechanical Products.



Pipe Size		Max † Pressure psi *bar*	Max End Load † Lbs. *N*	Dimensions - Inches *mm*					Recommended Flange Mating Bolts		Approx. Wt. Lbs *kg*
Nominal Inches *mm*	O.D. Inches *mm*			A	B	C	*D	*E	Size Dia. x Lg Inches *mm*	Qty.	
2	**2.375**	**500**	**1,330**	**6.00**	**4.75**	**0.87**	**2.36**	**3.42**	**⅝ x 3**	**4**	**4.0**
50	*60,3*	*34,5*	*5,92*	*152*	*121*	*22*	*60*	*87*	*–*		*1,8*
2½	**2.875**	**500**	**1,950**	**7.00**	**5.50**	**0.88**	**2.87**	**4.00**	**⅝ x 3**	**4**	**5.1**
65	*73,0*	*34,5*	*8,67*	*178*	*140*	*22*	*73*	*102*	*–*		*2,3*
3	**3.500**	**500**	**2,880**	**7.50**	**6.00**	**0.94**	**3.50**	**4.56**	**⅝ x 3**	**4**	**6.2**
80	*88,9*	*34,5*	*12,81*	*190*	*152*	*24*	*89*	*116*	*–*		*2,8*
4	**4.500**	**500**	**4,770**	**9.00**	**7.50**	**0.94**	**4.50**	**5.56**	**⅝ x 3**	**8**	**8.3**
100	*114,3*	*34,5*	*21,22*	*229*	*191*	*24*	*114*	*141*	*–*		*3,8*
5	**5.563**	**500**	**7,290**	**10.00**	**8.50**	**1.00**	**5.56**	**6.73**	**¾ x 3½**	**8**	**10.3**
125	*141,3*	*34,5*	*32,43*	*254*	*216*	*25*	*141*	*171*	*–*		*4,7*
6	**6.625**	**500**	**10,340**	**11.00**	**9.50**	**1.00**	**6.62**	**7.78**	**¾ x 3½**	**8**	**11.1**
150	*168,3*	*34,5*	*44,47*	*279*	*241*	*25*	*168*	*198*	*–*		*5,0*
8	**8.625**	**400**	**17,520**	**13.50**	**11.75**	**1.12**	**8.62**	**9.94**	**¾ x 3½**	**8**	**17.2**
200	*219,1*	*27,6*	*75,37*	*343*	*298*	*28*	*219*	*253*	*–*		*7,8*
10	**10.750**	**400**	**27,210**	**16.00**	**14.25**	**1.18**	**10.75**	**12.31**	**⅞ x 4**	**12**	**25.7**
250	*273,0*	*27,6*	*117,01*	*406*	*362*	*30*	*273*	*313*	*–*		*11,7*
12	**12.750**	**400**	**38,280**	**19.00**	**17.00**	**1.25**	**12.75**	**14.31**	**⅞ x 4**	**12**	**37.6**
300	*323,9*	*27,6*	*164,71*	*482*	*432*	*32*	*324*	*364*	*–*		*17,1*

* Dimensions D and E represent minimum and maximum sealing surfaces.

† Maximum Pressure and End Load are total from all loads based on standard weight steel pipe. Pressure ratings and end loads may differ on other pipe materials and/or wall thickness. Contact GRINNELL Mechanical Products for details.

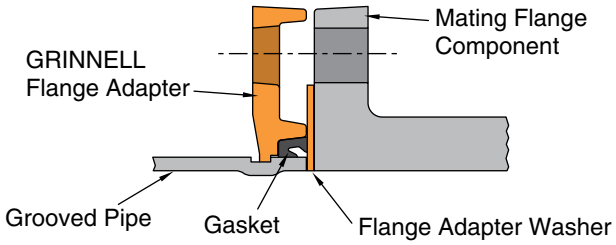
See page 17 for coupling specifications and pages 224 - 230 for gasket information.
See page 36 for Flange Adapter Washers and page 270 Flange Drilling Specifications.

Flange Adapter Washers

Carbon steel Flange Adapter Washers are required when the Figure 61 and Figure 71 Flange Adapter is used against surfaces such as:

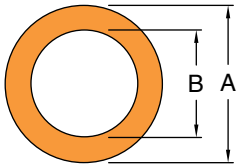
- Rubber surfaces
- Adapting to AWWA cast flanges
- Rubber faced wafer valves
- Serrated flange surfaces

Contact GRINNELL Mechanical Products for additional information.



SPECIFICATIONS

- Cold rolled steel sheet per ASTM A 1008-00 CS Types A, B, or C
- Zinc Electrodeposited coating per ASTM B 633-07 SC2 Type III



Pipe Size		Dimensions - Inches *mm*	
Nominal Inches *mm*	O.D. Inches *mm*	A	B
2	**2.375**	**3.94**	**2.25**
50	*60,3*	*100,1*	*57,2*
2½	**2.875**	**4.69**	**2.75**
65	*73,0*	*119,1*	*69,9*
76,1mm	**3.000**	**4.89**	**2.88**
65	*76,1*	*124,2*	*73,2*
3	**3.500**	**5.19**	**3.38**
80	*88,9*	*131,8*	*85,9*
4	**4.500**	**6.69**	**4.38**
100	*114,3*	*169,9*	*111,3*
139,7mm	**5.500**	**7.45**	**5.32**
125	*139,7*	*189,2*	*135,1*
5	**5.563**	**7.56**	**5.38**
125	*141,3*	*192,0*	*136,7*
165,1mm	**6.500**	**8.47**	**6.32**
150	*165,1*	*215,1*	*160,5*
6	**6.625**	**8.56**	**6.44**
150	*168,3*	*217,4*	*163,6*
8	**8.625**	**10.81**	**8.44**
200	*219,1*	*274,6*	*214,4*

Pipe Size		Dimensions - Inches *mm*	
Nominal Inches *mm*	O.D. Inches *mm*	A	B
10	**10.750**	**13.19**	**10.50**
250	*273,0*	*335,0*	*266,7*
12	**12.750**	**15.94**	**12.50**
300	*323,9*	*404,9*	*317,5*
14	**14.000**	**17.50**	**13.50**
350	*355,6*	*444,5*	*342,9*
16	**16.000**	**20.00**	**15.50**
400	*406,4*	*508,0*	*393,7*
18	**18.000**	**21.38**	**17.50**
450	*457,2*	*542,9*	*444,5*
20	**20.000**	**23.63**	**19.50**
500	*508,0*	*600,1*	*495,3*
24	**24.000**	**28.00**	**23.50**
600	*609,6*	*711,2*	*596,9*

For information on additional sizes, PN10, PN16, and AS2129 Table E sizes, contact GRINNELL Mechanical Products.

Available in stainless steel ASTM A 666 Type 304-2B. Contact GRINNELL Mechanical Products.

See Flange Drilling Specifications on page 270.

Coupling Installation Information

Tech Data Sheet: G901 and G903
Installation Handbook: IH-1000M

These installation instructions do not take the place of nor do they eliminate the need for the installer to fully read and understand the complete GRINNELL Mechanical Products Installation Handbook (refer to IH-1000M). Always review the GRINNELL Mechanical Products Installation Handbook and individual product tech data sheets for the latest instructions, techniques, and care and maintenance information. This document does not supersede or replace the GRINNELL Mechanical Products Installation Handbook or individual product tech data sheets. Current documentation can be obtained by contacting GRINNELL Mechanical Products or visiting www.anvilintl.com.

⚠ WARNING

Failure to follow these instructions may result in improper product installation, joint failure or leakage, serious personal injury, and/or property damage.

The following instructions should be used as a guideline for the proper installation of GRINNELL Grooved Products.

1. Always read and understand the instructions.
2. To avoid serious personal injury always wear appropriate personal protective equipment (ppe), such as safety glasses, hard hat and foot protection.
3. Never remove any piping component without verifying that the system is de-pressurized and drained. Failure to due so may result in serious personal injury.
4. Ensure that the supplied gasket is suitable for the intended application. To prevent deterioration of the gasket material, a petroleum lubricant should never be used. Use a recommended lubricant to install the gasket.
5. The pipe groove dimensions must be in accordance with Standard Roll Groove or Cut Groove Specifications. Refer to Pages 240 - 245 or Tech Data Sheet G710 for additional information.
6. Ensure that the coupling keys are engaged in the grooves.
7. Always tighten nuts evenly by alternating sides. Uneven tightening can cause the gasket to pinch or bind. If a gasket becomes pinched, replace it immediately.
8. Torque values are supplied as a guideline and may be used when setting the torque on power impact wrenches. Always refer to the power impact wrench manufacturer's instructions for settings.
9. Exceeding the suggested torque values may cause damage to the coupling and/or result in pipe-joint failure. Minimum bolt torque is required for coupling to meet the published performance parameters.
10. Always inspect each joint to ensure that the coupling is properly installed.

EDPM, Tri-Seal gaskets are recommended for freezer applications. Reducing Couplings are not recommended for freezer applications. For dry pipe and freezer applications, use the Tri-Seal freezer gasket with a petroleum-free silicone lubricant. Standard lube is not recommended for this application as it freezes and can cause leakage.

ASME Standard Note

*Note: The samples that were tested contained the GRINNELL Figure 707 high pressure flexible couplings, and the GRINNELL Figure 260 end caps of the appropriate size. These were used on the assembly to test system components as related in a field environment. The rated or working pressure of these items is 1,000 psi *(68.9 bar)*

*Note: The material of both the fittings and couplings used in this testing is found on page nine of the GRINNELL Mechanical Handbook. This material is Ductile Iron Casting Grade 65-45-12, which has an elongation in 2" *(51mm)* of 12%.

The **Component Proof Test** in ASME A17.1 – 2004, section 3.19.1.3 requires testing to section 8.2.8.5, or five times the rated pressure.

The calculation of the factor of safety located in section 8.2.8.5 would then be calculated as F = (5.04 / 12 – 2.8) + 2.7. This then, according to section 8.2.8.5, would be a requirement safety factor of 3.25. The minimum pressure requirement of these components then would be 3,250 psig *(224.1 bar)*

Notes

GROOVED FITTINGS

Grooved Fittings Table of Contents

Fittings Specifications

Tech Data Sheet: G180

Fitting Friction Resistance Chart

Pipe Size		Elbows 90°	Elbows 45°	Tee Branch	Tee Run
Nominal Inches *mm*	O.D. Inches *mm*	Feet *m*	Feet *m*	Feet *m*	Feet *m*
1¼	1.66	1.9	1.0	4.8	1.9
32	*42,4*	*0,6*	*0,3*	*1,5*	*0,6*
1½	1.90	2.3	1.2	5.8	2.3
40	*48,3*	*0,7*	*0,4*	*1,8*	*0,7*
2	2.38	3.2	1.6	8.0	3.2
50	*60,3*	*1,0*	*0,5*	*2,5*	*1,0*
2½	2.88	3.9	2.0	9.8	3.9
65	*73,0*	*1,2*	*0,6*	*3,0*	*1,2*
76,1mm	3.00	4.1	2.1	10.3	4.1
65	*76,1*	*1,2*	*0,6*	*3,1*	*1,2*
3	3.50	4.9	2.4	12.2	4.9
80	*88,9*	*1,5*	*0,7*	*3,7*	*1,5*
108,0mm	4.25	6.5	3.3	16.3	6.5
100	*108,0*	*2,0*	*1,0*	*5,0*	*2,0*
4	4.50	6.5	3.3	16.3	6.5
100	*114,3*	*2,0*	*1,0*	*5,0*	*2,0*
133,0mm	5.25	8.0	4.0	20.0	8.0
125	*133,0*	*2,4*	*1,2*	*6,1*	*2,4*
139,7mm	5.50	8.0	4.1	20.0	8.0
125	*139,7*	*2,4*	*1,3*	*6,1*	*2,4*
5	5.56	8.2	4.1	20.5	8.2
125	*141,3*	*2,5*	*1,3*	*6,3*	*2,5*
159,0mm	6.25	9.5	4.8	23.8	9.5
150	*159,0*	*2,9*	*1,4*	*7,2*	*2,9*
165,1mm	6.50	9.5	4.8	23.8	9.5
150	*165,1*	*2,9*	*1,4*	*7,2*	*2,9*
6	6.63	9.9	5.0	24.8	9.9
150	*168,3*	*3,0*	*1,5*	*7,6*	*3,0*
216,3mm	8.52	13.1	6.6	32.8	13.1
200	*216,3*	*4,0*	*2,0*	*10,0*	*4,0*
8	8.63	13.1	6.6	32.8	13.1
200	*219,1*	*4,0*	*2,0*	*10,0*	*4,0*
10	10.75	16.5	8.3	41.3	16.5
250	*273,0*	*5,0*	*2,5*	*12,6*	*5,0*
12	12.75	19.9	9.9	49.7	19.9
300	*323,9*	*6,1*	*3,0*	*15,1*	*6,1*
14	14.00	23.0	18.0	67.9	23.0
350	*355,6*	*7,0*	*5,5*	*20,7*	*7,0*
16	16.00	25.9	20.0	78.1	25.9
400	*406,4*	*7,9*	*6,1*	*23,8*	*7,9*
18	18.00	28.9	23.0	85.0	28.9
450	*457,2*	*8,8*	*7,0*	*25,9*	*8,8*
20	20.00	33.1	25.9	100.1	33.1
500	*508,0*	*10,1*	*7,9*	*30,5*	*10,1*
24	24.00	40.0	29.9	115.2	40.0
600	*609,6*	*12,2*	*9,1*	*35,1*	*12,2*

For reducing tee branches, use value corresponding to the branch size.
For example, for a 8" x 8" x 2" *(200mm x 200mm x 50mm)* tee, use a branch value of 2" *(50mm)* is 8.0' *(2,5m)*.
For sizes not listed, interpolate from the values shown.
Expressed as Equivalent Straight Pipe.

SPECIFICATIONS

Approvals

UL, ULC, FM, VdS, LPCB and BV*

*Bureau Veritas (BV) Approval under certificate number 13377/BO BV applies only to Figures 201, 210, 219, 260, 301, 303, 311, 312, 321, 327, 341, and 350.

Note: Grooved Fittings fabricated in Asia for the APAC market are not approved under the UL/FM/VdS/LPCD Approvals listing and are not recommended for use in the American market.

Maximum Working Pressure

- Refer to tech data sheet for coupling pressure rating.

Material

Cast

- Ductile iron conforming to ASTM A 536, Grade 65-45-12. Figures: 201, 210, 211, 212, 219, 221, 227, 250, 251, and 260, Long Radius Elbows: 201LR and 210LR

Fabricated Steel

- Carbon Steel conforming to ASTM A 53, ASTM A 135, and ASTM A 795. Figures: 310, 311, 312, 314, 315, 319, 320, 321, 323, 324, 325, 327, 330, 331, 341, 342, 350, 351, 360, 372, 380, 391, 392, 393, 395, 397, 398, 399, Long Radius Elbows: 301LR and 310LR, 3D, 5D, and 6D

Wall Thickness

- Sizes 1" – 10" *(25 – 250mm)* Schedule 40
- Sizes 12" – 24" *(300 – 600mm)* Standard Wall 0.375

Protective Coatings

- Orange – Non-lead paint (standard)
- Red – Non-lead paint (optional, regional)
- Hot-Dipped, Zinc Galvanized conforming to ASTM A 153 (optional)

Threads

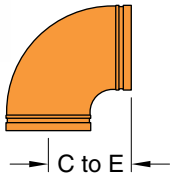
- NPT (standard)
- BSPT (optional, regional)

Issue 03, 04, 07
Cert No. 570, 669, 673

For detailed Listing / Approval information contact GRINNELL Mechanical Products.

Figure 210 90° Cast Elbows

Tech Data Sheet: G180



Pipe Size		C to E	Approx. Weight
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Lbs. *kg*
1¼	**1.660**	**2.75**	**1.0**
32	*42,4*	*69,9*	*0,5*
1½	**1.900**	**2.75**	**1.3**
40	*48,3*	*69,9*	*0,6*
2	**2.375**	**3.25**	**1.8**
50	*60,3*	*82,6*	*0,8*
2½	**2.875**	**3.75**	**3.1**
65	*73,0*	*95,3*	*1,4*
76,1mm	**3.000**	**3.75**	**3.2**
65	*76,1*	*95,3*	*1,5*
3	**3.500**	**4.25**	**4.8**
80	*88,9*	*108,0*	*2,2*
4	**4.500**	**5.00**	**7.5**
100	*114,3*	*127,0*	*3,4*
139,7mm	**5.500**	**5.50**	**11.3**
125	*139,7*	*139,7*	*5,1*
5	**5.563**	**5.50**	**11.6**
125	*141,3*	*139,7*	*5,3*
165,1mm	**6.500**	**6.50**	**16.9**
150	*165,1*	*165,1*	*7,7*
6	**6.625**	**6.50**	**16.6**
150	*168,3*	*165,1*	*7,5*
8	**8.625**	**7.75**	**29.6**
200◗	*219,1*	*196,9*	*13,4*
10	**10.750**	**9.00**	**48.5**
250◗	*273,0*	*228,6*	*22,0*
12	**12.750**	**10.00**	**66.4**
300◗	*323,9*	*254,0*	*30,1*

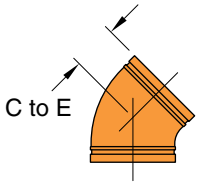
◗ Sizes are available to JIS standards. Contact GRINNELL Mechanical Products for details.

For information on larger sizes, European sizes or other alternative sizes, contact GRINNELL Mechanical Products.

See page 41 for fitting specifications.

Figure 201 45° Cast Elbows

Tech Data Sheet: G180



Pipe Size		C to E	Approx. Weight
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Lbs. *kg*
1¼	**1.660**	**1.75**	**0.9**
32	*42,4*	*44,5*	*0,4*
1½	**1.900**	**1.75**	**0.9**
40	*48,3*	*44,5*	*0,4*
2	**2.375**	**2.00**	**1.3**
50	*60,3*	*50,8*	*0,6*
2½	**2.875**	**2.25**	**2.1**
65	*73,0*	*57,2*	*1,0*
76,1mm	**3.000**	**2.25**	**2.2**
65	*76,1*	*57,2*	*1,0*
3	**3.500**	**2.50**	**3.5**
80	*88,9*	*63,5*	*1,6*
4	**4.500**	**3.00**	**5.5**
100	*114,3*	*76,2*	*2,5*
139,7mm	**5.500**	**3.25**	**7.7**
125	*139,7*	*82,6*	*3,5*
5	**5.563**	**3.25**	**8.1**
125	*141,3*	*82,6*	*3,7*
165,1mm	**6.500**	**3.50**	**11.0**
150	*165,1*	*88,9*	*5,0*
6	**6.625**	**3.50**	**11.2**
150	*168,3*	*88,9*	*5,1*
8	**8.625**	**4.25**	**19.0**
200◗	*219,1*	*108,0*	*8,6*
10	**10.750**	**4.75**	**28.0**
250◗	*273,0*	*120,7*	*12,7*
12	**12.750**	**5.25**	**48.0**
300◗	*323,9*	*133,4*	*22,0*

◗ Sizes are available to JIS standards. Contact GRINNELL Mechanical Products for details.

For information on larger sizes, European sizes or other alternative sizes, contact GRINNELL Mechanical Products.

See page 41 for fitting specifications.

Figures 210LR & 310LR
90° Long Radius Elbows

Tech Data Sheet: G180

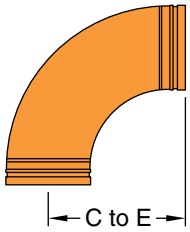


Figure 310LR
90° Fabricated Elbow
(Shown)

Pipe Size		Figure 210LR - Cast		Figure 310LR - Fabricated	
Nominal Inches *mm*	O.D. Inches *mm*	C to E Inches *mm*	Approx. Weight Lbs. *kg*	C to E Inches *mm*	Approx. Weight Lbs. *kg*
1¼	1.66	–	–	3.38	1.1
32	*42,4*	–	–	*85,7*	*0.5*
1½	1.90	–	–	3.75	1.4
40	*48,3*	–	–	*95,25*	*0.6*
2	2.38	–	–	4.38	2.1
50	*60,3*	–	–	*111,3*	*0.9*
2½	2.88	–	–	5.00	3.9
65	*73,0*	–	–	*127,0*	*1.3*
76,1mm	3.00	–	–	5.00	3.9
65	*76,1*	–	–	*127,0*	*1.3*
3	3.50	–	–	5.88	6.1
80	*88,9*	–	–	*149,4*	*2.8*
108,0mm	4.25	–	–	7.50	–
100	*108,0*	–	–	*190,5*	–
4	4.50	–	–	7.50	11.0
100	*114,3*	–	–	*190,5*	*4.9*
133,0mm	5.25	–	–	9.50	–
125	*133,0*	–	–	*241,3*	–
139,7mm	5.50	–	–	9.50	–
125	*139,7*	–	–	*241,3*	–
5	5.56	–	–	9.50	18.7
125	*141,3*	–	–	*241,3*	*8.5*
159,0mm	6.25	–	–	10.75	–
150	*159,0*	–	–	*273,1*	–
165,1mm	6.50	–	–	10.75	27.3
150	*165,1*	–	–	*273,1*	*12.4*
6	6.63	–	–	10.75	27.3
150	*168,3*	–	–	*273,1*	*12.4*

Pipe Size		Figure 210LR - Cast		Figure 310LR - Fabricated	
Nominal Inches *mm*	O.D. Inches *mm*	C to E Inches *mm*	Approx. Weight Lbs. *kg*	C to E Inches *mm*	Approx. Weight Lbs. *kg*
216,3mm	8.52	–	–	14.25	–
200	*216,3*	–	–	*362,0*	–
8	8.63	–	–	14.25	53.8
200	*219,1*	–	–	*362,0*	*24.4*
267,4mm	10.53	–	–	18.00	–
250	*267,4*	–	–	*457,2*	–
10	10.75	–	–	18.00	103.7
250	*273,0*	–	–	*457,2*	*47,0*
318,5mm	12.54	–	–	21.00	–
300	*318,5*	–	–	*533,4*	–
12	12.75	–	–	21.00	147.8
300	*323,9*	–	–	*533,4*	*67,0*
14	14.00	21.00	131.0	21.00	155.0
350	*355,6*	*533,4*	*59,4*	*533,4*	*70,3*
16	16.00	24.00	180.0	24.00	206.0
400	*406,4*	*609,6*	*81,6*	*609,6*	*93,4*
18	18.00	–	–	27.00	262.0
450	*457,2*	–	–	*685,8*	*118,8*
20	20.00	–	–	33.00	324.0
500	*508,0*	–	–	*838,2*	*147,0*
24	24.00	–	–	36.00	466.0
600	*609,6*	–	–	*914,4*	*211,4*

For information on larger sizes, European sizes or other alternative sizes, contact GRINNELL Mechanical Products.

See page 41 for fitting specifications.

Figures 201LR & 301LR
45° Long Radius Elbows

Tech Data Sheet: G180

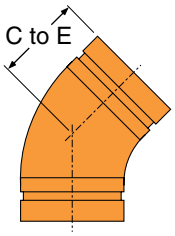


Figure 301LR
45° Fabricated Elbow
(Shown)

Pipe Size		Figure 201LR - Cast		Figure 301LR - Fabricated	
Nominal Inches *mm*	O.D. Inches *mm*	C to E Inches *mm*	Approx. Weight Lbs. *kg*	C to E Inches *mm*	Approx. Weight Lbs. *kg*
1¼	1.66	–	–	2.50	1.1
32	*42,4*	–	–	*63,5*	*0,5*
1½	1.90	–	–	2.50	1.3
40	*48,3*	–	–	*63,5*	*0,6*
2	2.38	–	–	2.75	1.8
50	*60,3*	–	–	*69,9*	*0,8*
2½	2.88	–	–	3.00	2.9
65	*73,0*	–	–	*76,2*	*1,3*
76,1mm	3.00	–	–	3.00	3.1
65	*76,1*	–	–	*76,2*	*1,4*
3	3.50	–	–	3.38	4.6
80	*88,9*	–	–	*85,9*	*2,1*
108,0mm	4.25	–	–	4.00	–
100	*108,0*	–	–	*101,6*	–
4	4.50	–	–	4.00	7.5
100	*114,3*	–	–	*101,6*	*3,4*
133,0mm	5.25	–	–	5.00	–
125	*133,0*	–	–	*127,0*	–
139,7mm	5.50	–	–	5.00	12.5
125	*139,7*	–	–	*127,5*	*5,7*
5	5.56	–	–	5.00	12.5
125	*141,3*	–	–	*127,5*	*5,7*
159,0mm	6.25	–	–	5.50	–
150	*159,0*	–	–	*139,7*	–
165,1mm	6.50	–	–	5.50	12.0
150	*165,1*	–	–	*139,7*	*5,4*
6	6.63	–	–	5.50	12.0
150	*168,3*	–	–	*139,7*	*5,4*

Pipe Size		Figure 201LR - Cast		Figure 301LR - Fabricated	
Nominal Inches *mm*	O.D. Inches *mm*	C to E Inches *mm*	Approx. Weight Lbs. *kg*	C to E Inches *mm*	Approx. Weight Lbs. *kg*
216,3mm	8.52	–	–	7.25	–
200	*216,3*	–	–	*184,2*	–
8	8.63	–	–	7.25	34.0
200	*219,1*	–	–	*184,2*	*15,4*
267,4mm	10.53	–	–	8.50	–
250	*267,4*	–	–	*215,9*	–
10	10.75	–	–	8.50	56.0
250	*273,0*	–	–	*215,9*	*25,4*
318,5mm	12.54	–	–	10.00	–
300	*318,5*	–	–	*254,0*	–
12	12.75	–	–	10.00	98.0
300	*323,9*	–	–	*254,0*	*44,5*
14	14.00	8.75	60.0	533.4	–
350	*355,6*	*228,3*	*27,2*	*11,25*	–
16	16.00	10.00	97.0	24.00	–
400	*406,4*	*254,0*	*44,0*	*609,6*	–
18	18.00	–	–	27.00	145.0
450	*457,2*	–	–	*685,8*	*65,8*
20	20.00	–	–	33.00	180.0
500	*508,0*	–	–	*838,2*	*81,6*
24	24.00	–	–	36.00	250.0
600	*609,6*	–	–	*914,4*	*133,4*

For information on larger sizes, European sizes or other alternative sizes, contact GRINNELL Mechanical Products.

See page 41 for fitting specifications.

Figures 212 & 312
22½° Elbows

Tech Data Sheet: G180

Figure 212
22½° Cast Elbow

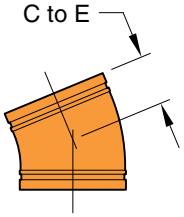
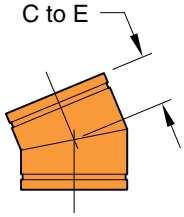


Figure 312
22½° Fabricated Elbow



Pipe Size		Figure 212 - Cast		Figure 312 - Fabricated	
Nominal Inches *mm*	O.D. Inches *mm*	C to E Inches *mm*	Approx. Weight Lbs. *kg*	C to E Inches *mm*	Approx. Weight Lbs. *kg*
1¼	1.66	1.75	0.8	1.75	–
32	*42,4*	*44,5*	*0,4*	*44,5*	–
1½	1.90	1.75	1.0	1.75	–
40	*48,3*	*44,5*	*0,5*	*44,5*	–
2	2.38	1.88	1.3	1.88	–
50	*60,3*	*47,8*	*0,6*	*47,8*	–
2½	2.88	2.00	1.9	2.00	–
65	*73,0*	*50,8*	*0,9*	*50,8*	–
76,1mm	3.00	2.00	2.0	2.00	–
65	*76,1*	*50,8*	*0,9*	*50,8*	–
3	3.50	2.25	2.9	2.25	–
80	*88,9*	*57,2*	*1,3*	*57,2*	–
108,0mm	4.25	–	–	2.63	–
100	*108,0*	–	–	*66,8*	–
4	4.50	2.63	4.7	2.63	–
100	*114,3*	*66,8*	*2,1*	*66,8*	–
133,0mm	5.25	–	–	2.88	–
125	*133,0*	–	–	*73,2*	–
139,7mm	5.50	2.88	6.9	2.88	–
125	*139,7*	*73,2*	*3,1*	*73,2*	–
5	5.56	2.88	6.9	2.88	–
125	*141,3*	*73,2*	*3,1*	*73,2*	–
159,0mm	6.25	–	–	3.13	–
150	*159,0*	–	–	*79,5*	–
165,1mm	6.50	–	–	3.13	9.4
150	*165,1*	–	–	*79,5*	*4,3*
6	6.63	3.13	9.4	3.13	–
150	*168,3*	*79,5*	*4,3*	*79,5*	–

Pipe Size		Figure 212 - Cast		Figure 312 - Fabricated	
Nominal Inches *mm*	O.D. Inches *mm*	C to E Inches *mm*	Approx. Weight Lbs. *kg*	C to E Inches *mm*	Approx. Weight Lbs. *kg*
216,3mm	8.52	–	–	3.88	–
200	*216,3*	–	–	*98,6*	–
8	8.63	3.88	17.0	3.88	–
200	*219,1*	*98,6*	*7,7*	*98,6*	–
267,4mm	10.53	–	–	4.38	–
250	*267,4*	–	–	*111,3*	–
10	10.75	–	–	4.38	14.0
250	*273,0*	–	–	*111,3*	*6,4*
318,5mm	12.54	–	–	4.88	–
300	*318,5*	–	–	*124,0*	–
12	12.75	–	–	4.88	22.0
300	*323,9*	–	–	*124,0*	*10,0*
14	14.00	–	–	5.00	46.0
350	*355,6*	–	–	*127,0*	*20,9*
16	16.00	–	–	5.00	52.2
400	*406,4*	–	–	*127,0*	*23,7*
18	18.00	–	–	5.50	65.0
450	*457,2*	–	–	*139,7*	*29,5*
20	20.00	–	–	6.00	80.0
500	*508,0*	–	–	*152,4*	*36,3*
24	24.00	–	–	7.00	112.0
600	*609,6*	–	–	*177,8*	*50,8*

For information on larger sizes, European sizes or other alternative sizes, contact GRINNELL Mechanical Products.

See page 41 for fitting specifications.

Figures 211 & 311
11¼° Elbows

Tech Data Sheet: G180

Figure 211
11¼° Cast Elbow

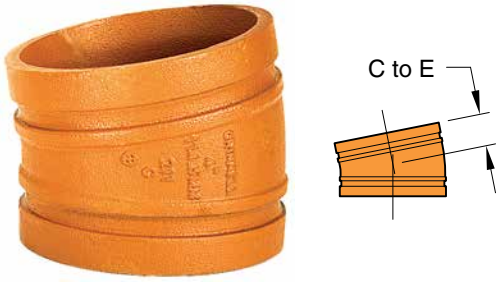
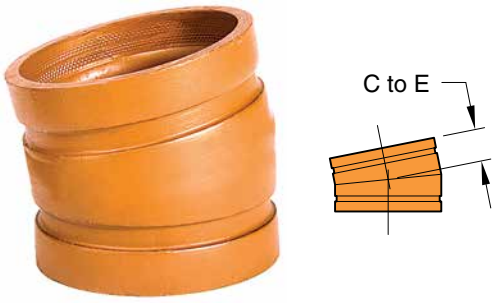


Figure 311
11¼° Fabricated Elbow



Pipe Size		Figure 211 - Cast		Figure 311 - Fabricated	
Nominal Inches *mm*	O.D. Inches *mm*	C to E Inches *mm*	Approx. Weight Lbs. *kg*	C to E Inches *mm*	Approx. Weight Lbs. *kg*
1¼	1.66	1.38	0.7	1.38	–
32	*42,4*	*35,1*	*0,3*	*35,1*	–
1½	1.90	1.38	0.8	1.38	–
40	*48,3*	*35,1*	*0,4*	*35,1*	–
2	2.38	1.38	1.1	1.38	–
50	*60,3*	*35,1*	*0,5*	*35,1*	–
2½	2.88	1.50	1.6	1.50	–
65	*73,0*	*38,1*	*0,7*	*38,1*	–
76,1mm	3.00	1.50	1.7	1.50	–
65	*76,1*	*38,1*	*0,7*	*38,1*	–
3	3.50	1.50	2.2	1.50	–
80	*88,9*	*38,1*	*1,0*	*38,1*	–
108,0mm	4.25	–	–	1.75	–
100	*108,0*	–	–	*44,5*	–
4	4.50	1.75	3.4	1.75	–
100	*114,3*	*44,5*	*1,5*	*44,5*	–
133,0mm	5.25	–	–	2.00	–
125	*133,0*	–	–	*50,8*	–
139,7mm	5.50	2.00	5.1	2.00	–
125	*139,7*	*50,8*	*2,3*	*50,8*	–
5	5.56	2.00	5.2	2.00	–
125	*141,3*	*50,8*	*2,4*	*50,8*	–
159,0mm	6.25	–	–	2.00	–
150	*159,0*	–	–	*50,8*	–
165,1mm	6.50	2.00	6.4	2.00	–
150	*165,1*	*50,8*	*2,9*	*50,8*	–
6	6.63	2.00	6.5	2.00	–
150	*168,3*	*50,8*	*2,9*	*50,8*	–

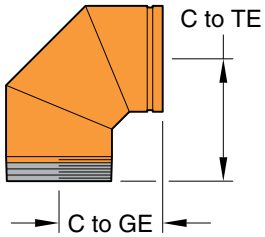
Pipe Size		Figure 211 - Cast		Figure 311 - Fabricated	
Nominal Inches *mm*	O.D. Inches *mm*	C to E Inches *mm*	Approx. Weight Lbs. *kg*	C to E Inches *mm*	Approx. Weight Lbs. *kg*
216,3mm	8.52	–	–	2.00	–
200	*216,3*	–	–	*50,8*	–
8	8.63	2.00	9.2	2.00	–
200	*219,1*	*50,8*	*4,2*	*50,8*	–
267,4mm	10.53	–	–	2.13	–
250	*267,4*	–	–	*54,1*	–
10	10.75	–	–	2.13	9.1
250	*273,0*	–	–	*54,1*	*4,1*
318,5mm	12.54	–	–	2.25	–
300	*318,5*	–	–	*57,2*	–
12	12.75	–	–	2.25	16.7
300	*323,9*	–	–	*57,2*	*7,6*
14	14.00	–	–	3.50	32.1
350	*355,6*	–	–	*88,9*	*14,6*
16	16.00	–	–	4.00	42.0
400	*406,4*	–	–	*101,6*	*19,1*
18	18.00	–	–	4.50	53.2
450	*457,2*	–	–	*114,3*	*24,2*
20	20.00	–	–	5.00	65.7
500	*508,0*	–	–	*127,0*	*29,8*
24	24.00	–	–	6.00	96.0
600	*609,6*	–	–	*152,4*	*43,5*

For information on larger sizes, European sizes or other alternative sizes, contact GRINNELL Mechanical Products.

See page 41 for fitting specifications.

Figure 315 90° Elbows
(Groove x Male Thread)

Tech Data Sheet: G180



Pipe Size		C to GE	C to TE	Approx.
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Inches *mm*	Weight Lbs. *kg*
1¼	**1.66**	**2.75**	**2.75**	**0.9**
32	*42,4*	*69,9*	*69,9*	*0,4*
1½	**1.90**	**2.75**	**2.75**	**1.2**
40	*48,3*	*69,9*	*69,9*	*0,5*
2	**2.38**	**3.25**	**4.25**	**2.0**
50	*60,3*	*82,6*	*108,0*	*0,9*
2½	**2.88**	**3.75**	**3.75**	**3.1**
60	*73,0*	*95,3*	*95,3*	*1,4*
76,1mm	**3.00**	**3.75**	**3.75**	**–**
65	*76,1*	*95,3*	*95,3*	*–*
3	**3.50**	**4.25**	**6.00**	**5.7**
80	*88,9*	*108,0*	*152,4*	*2,6*
108,0mm	**4.25**	**5.00**	**7.25**	**–**
100	*108,0*	*127,0*	*184,2*	*–*
4	**4.50**	**5.00**	**7.25**	**9.8**
100	*114,3*	*127,0*	*184,2*	*4,4*

Pipe Size		C to GE	C to TE	Approx.
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Inches *mm*	Weight Lbs. *kg*
159,0mm	**6.25**	**6.50**	**6.50**	**–**
150	*159,0*	*165,1*	*165,1*	*–*
165,1mm	**6.50**	**6.50**	**6.50**	**–**
150	*165,1*	*165,1*	*165,1*	*–*
6	**6.63**	**6.50**	**6.50**	**17.6**
150	*168,3*	*165,1*	*165,1*	*8,0*

Note: Available with BSP and NPT type threads.

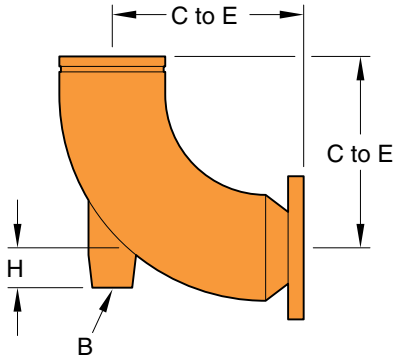
For information on larger sizes, contact GRINNELL Mechanical Products.

See page 41 for fitting specifications.

Figure 316 Reducing Base Support Elbow
(Groove x Flange)

(Page 1 of 2)

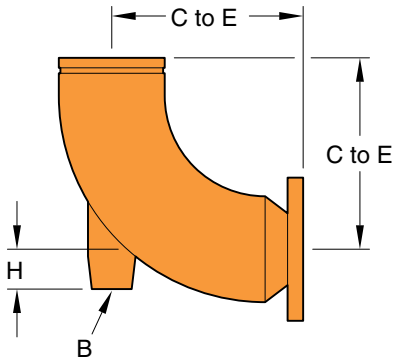
Tech Data Sheet: G180



Pipe Size			C to E	H	B	Approx.
Nominal Inches *mm*	Grooved End O.D. Inches *mm*	Flanged End O.D. Inches *mm*	Inches *mm*	Inches *mm*	Diameter NPSC Threaded Inches *mm*	Wt. Ea. Lbs *Kg*
165mm x 4	**6.50**	**4.50**	**12.00**	**2.50**	**1.50**	**–**
150 x 100	*165,1*	*114,3*	*304,8*	*63,5*	*38,1*	*–*
6 x 4	**6.63**	**4.50**	**12.00**	**2.50**	**1.50**	**38.5**
150 x 100	*168,3*	*114,3*	*304,8*	*63,5*	*38,1*	*17,5*
165mm x 5	**6.50**	**5.56**	**12.50**	**2.50**	**1.50**	**–**
150 x 125	*165,1*	*141,3*	*317,5*	*63,5*	*38,1*	*–*
6 x 5	**6.63**	**5.56**	**12.50**	**2.50**	**1.50**	**45.4**
150 x 125	*168,3*	*141,3*	*317,5*	*63,5*	*38,1*	*20,6*
165 x 139mm	**6.50**	**5.48**	**12.50**	**2.50**	**1.50**	**–**
150 x 125	*165,1*	*139,1*	*317,5*	*63,5*	*38,1*	*–*
8 x 139mm	**8.63**	**5.48**	**15.50**	**3.00**	**1.50**	**–**
200 x 125	*219,1*	*139,1*	*393,7*	*76,2*	*38,1*	*–*
8 x 5	**8.63**	**5.56**	**15.50**	**3.00**	**1.50**	**65.5**
200 x 150	*219,1*	*141,3*	*393,7*	*76,2*	*38,1*	*29,7*
8 x 165mm	**8.63**	**6.50**	**15.50**	**3.00**	**1.50**	**–**
200 x 150	*219,1*	*165,1*	*393,7*	*76,2*	*38,1*	*–*
8 x 6	**8.63**	**6.63**	**15.50**	**3.00**	**1.50**	**73.0**
200 x 150	*219,1*	*168,3*	*393,7*	*76,2*	*38,1*	*33,1*
216mm x 5	**8.52**	**5.56**	**15.50**	**3.00**	**1.50**	**–**
200 x 125	*216,3*	*141,3*	*393,7*	*76,2*	*38,1*	*–*
216mm x 6	**8.52**	**6.63**	**15.50**	**3.00**	**1.50**	**–**
200 x 150	*216,3*	*168,3*	*393,7*	*76,2*	*38,1*	*–*
216 x 139mm	**8.52**	**5.48**	**15.50**	**3.00**	**1.50**	**–**
200 x 125	*216,3*	*139,1*	*393,7*	*76,2*	*38,1*	*–*
216 x 165mm	**8.52**	**6.50**	**15.50**	**3.00**	**1.50**	**–**
200 x 150	*216,3*	*165,1*	*393,7*	*76,2*	*38,1*	*–*
267 x 165mm	**10.53**	**6.50**	**18.50**	**3.50**	**1.50**	**–**
250 x 150	*267,4*	*165,1*	*469,9*	*88,9*	*38,1*	*–*
267mm x 6	**10.53**	**6.63**	**18.50**	**3.50**	**1.50**	**–**
250 x 150	*267,4*	*168,3*	*469,9*	*88,9*	*38,1*	*–*
10 x 165mm	**10.75**	**6.50**	**18.50**	**3.50**	**1.50**	**–**
250 x 150	*273,0*	*165,1*	*469,9*	*88,9*	*38,1*	*–*

Figure 316 Reducing Base Support Elbow
(Groove x Flange)

Tech Data Sheet: G180



Pipe Size			C to E	H	B	Approx.
Nominal Inches *mm*	Grooved End O.D. Inches *mm*	Flanged End O.D. Inches *mm*	Inches *mm*	Inches *mm*	Diameter NPSC Threaded Inches *mm*	Wt. Ea. Lbs *Kg*
10 x 6	**10.75**	**6.63**	**18.50**	**3.50**	**1.50**	**100.0**
250 x 150	*273,0*	*168,3*	*469,9*	*88,9*	*38,1*	*45,4*
267mm x 8	**10.53**	**8.63**	**19.00**	**3.50**	**1.50**	**–**
250 x 200	*267,4*	*219,1*	*482,6*	*88,9*	*38,1*	*–*
267 x 216mm	**10.53**	**8.52**	**19.00**	**3.50**	**1.50**	**–**
250 x 200	*267,4*	*216,3*	*482,6*	*88,9*	*38,1*	*–*
10 x 216mm	**10.75**	**8.52**	**19.00**	**3.50**	**1.50**	**–**
250 x 200	*273,0*	*216,3*	*482,6*	*88,9*	*38,1*	*–*
10 x 8	**10.75**	**8.63**	**19.00**	**3.50**	**1.50**	**126.5**
250 x 200	*273,0*	*219,1*	*482,6*	*88,9*	*38,1*	*57,4*
12 x 216mm	**12.75**	**8.52**	**22.00**	**4.00**	**1.50**	**–**
300 x 200	*323,9*	*216,3*	*558,8*	*101,6*	*38,1*	*–*
318 x 216mm	**12.54**	**8.52**	**22.00**	**4.00**	**1.50**	**–**
300 x 200	*318,5*	*216,3*	*558,8*	*101,6*	*38,1*	*–*
318mm x 8	**12.54**	**8.63**	**22.00**	**4.00**	**1.50**	**–**
300 x 200	*318,5*	*219,1*	*558,8*	*101,6*	*38,1*	*–*
12 x 8	**12.75**	**8.63**	**22.00**	**4.00**	**1.50**	**155.0**
300 x 200	*323,9*	*219,1*	*558,8*	*101,6*	*38,1*	*70,3*
12 x 267mm	**12.75**	**10.53**	**22.00**	**4.00**	**1.50**	**–**
300 x 250	*323,9*	*267,4*	*558,8*	*101,6*	*38,1*	*–*
12 x 10	**12.75**	**10.75**	**22.00**	**4.00**	**1.50**	**186.0**
300 x 250	*323,9*	*273,1*	*558,8*	*101,6*	*38,1*	*84,4*
318 x 267mm	**12.54**	**10.53**	**22.00**	**4.00**	**1.50**	**–**
300 x 250	*318,5*	*267,4*	*558,8*	*101,6*	*38,1*	*–*
318mm x 10	**12.54**	**10.75**	**22.00**	**4.00**	**1.50**	**–**
300 x 200	*318,5*	*273,1*	*558,8*	*101,6*	*38,1*	*–*

For information on larger sizes, contact GRINNELL Mechanical Products.
See page 41 for fitting specifications.

Long Radius 3D Elbows

(Page 1 of 2)

Tech Data Sheet: G180

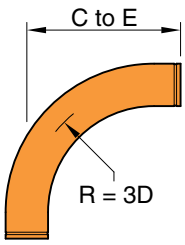


Figure 310-3D (90°)

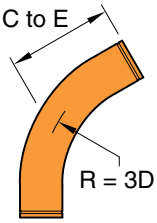


Figure 306-3D (60°)

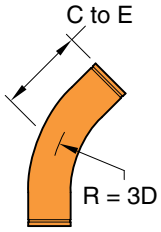


Figure 301-3D (45°)

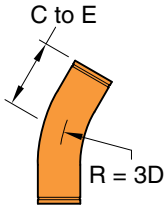


Figure 303-3D (30°)

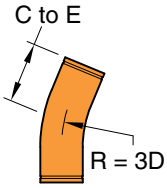


Figure 312-3D (22.5°)

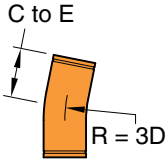


Figure 311-3D (11.25°)

Pipe Size		310-3D 90° Elbow		306-3D 60° Elbow		301-3D 45° Elbow		303-3D 30° Elbow		312-3D 22½° Elbow		311-3D 11¼° Elbow	
Nominal Inches *mm*	O.D. Inches *mm*	C to E Inches *mm*	Approx Weight Lbs *Kg*	C to E Inches *mm*	Approx Weight Lbs *Kg*	C to E Inches *mm*	Approx Weight Lbs *Kg*	C to E Inches *mm*	Approx Weight Lbs *Kg*	C to E Inches *mm*	Approx Weight Lbs *Kg*	C to E Inches *mm*	Approx Weight Lbs *Kg*
2	**2.37**	**10.00**	**5.3**	**7.50**	**4.7**	**6.50**	**4.2**	**5.75**	**3.8**	**5.25**	**3.5**	**4.50**	**2.9**
50	*60,3*	*254,0*	*2,4*	*191,0*	*2,1*	*165,0*	*1,9*	*146,0*	*1,7*	*133,0*	*1,6*	*114,0*	*1,3*
2½	**2.87**	**11.50**	**9.5**	**8.25**	**8.2**	**7.25**	**7.6**	**6.00**	**6.4**	**5.50**	**5.8**	**4.75**	**4.9**
65	*73,0*	*292,0*	*4,3*	*210,0*	*3,7*	*184,0*	*3,4*	*152,0*	*2,9*	*140,0*	*2,6*	*121,0*	*2,2*
76,1mm	**3.00**	**11.50**	**–**	**8.25**	**–**	**7.25**	**–**	**6.00**	**–**	**5.50**	**–**	**4.75**	**–**
65	*76,1*	*292,0*	*–*	*210,0*	*–*	*184,0*	*–*	*152,0*	*–*	*140,0*	*–*	*121,0*	*–*
3	**3.50**	**13.00**	**14.7**	**9.25**	**12.6**	**7.75**	**11.2**	**6.50**	**9.7**	**5.75**	**8.5**	**5.00**	**7.3**
80	*88,9*	*330,0*	*6,7*	*235,0*	*5,7*	*197,0*	*5,1*	*165,0*	*4,4*	*146,0*	*3,9*	*127,0*	*3,3*
3½	**4.000**	**–**	**–**	**10.00**	**14.4**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
90	*101,6*	*–*	*–*	*254,0*	*6,5*	*–*	*–*	*–*	*–*	*–*	*–*	*–*	*–*
108,0mm	**4.50**	**16.00**	**–**	**11.00**	**–**	**9.00**	**–**	**7.25**	**–**	**6.50**	**–**	**5.25**	**–**
100	*114,3*	*406,0*	*–*	*279,0*	*–*	*229,0*	*–*	*184,0*	*–*	*165,0*	*–*	*133,0*	*–*
4	**4.25**	**16.00**	**24.1**	**11.00**	**20.4**	**9.00**	**17.8**	**7.25**	**14.8**	**6.50**	**13.4**	**5.25**	**10.5**
100	*108,0*	*406,0*	*10,9*	*279,0*	*9,3*	*229,0*	*8,1*	*184,0*	*6,7*	*165,0*	*6,1*	*133,0*	*4,8*
133,0mm	**5.56**	**20.00**	**–**	**13.75**	**–**	**11.25**	**–**	**9.00**	**–**	**8.00**	**–**	**6.50**	**–**
125	*141,3*	*508,0*	*–*	*349,0*	*–*	*286,0*	*–*	*229,0*	*–*	*203,0*	*–*	*165,0*	*–*
139,7mm	**5.25**	**20.00**	**–**	**13.75**	**–**	**11.25**	**–**	**9.00**	**–**	**8.00**	**–**	**6.50**	**–**
125	*133,0*	*508,0*	*–*	*349,0*	*–*	*286,0*	*–*	*229,0*	*–*	*203,0*	*–*	*165,0*	*–*
5	**5.50**	**20.00**	**40.9**	**13.75**	**34.5**	**11.25**	**30.1**	**9.00**	**24.9**	**8.00**	**22.2**	**6.50**	**17.6**
125	*139,7*	*508,0*	*18,6*	*349,0*	*15,7*	*286,0*	*13,7*	*229,0*	*11,3*	*203,0*	*10,1*	*165,0*	*8*
159,0mm	**6.63**	**24.00**	**–**	**16.50**	**–**	**13.50**	**–**	**10.75**	**–**	**9.50**	**–**	**7.75**	**–**
150	*168,3*	*610,0*	*–*	*419,0*	*–*	*343,0*	*–*	*273,0*	*–*	*241,0*	*–*	*197,0*	*–*
165,1mm	**6.25**	**24.00**	**–**	**16.50**	**–**	**13.50**	**–**	**10.75**	**–**	**9.50**	**–**	**7.75**	**–**
150	*159,0*	*610,0*	*–*	*419,0*	*–*	*343,0*	*–*	*273,0*	*–*	*241,0*	*–*	*197,0*	*–*
6	**6.50**	**24.00**	**63.7**	**16.50**	**53.7**	**13.50**	**46.9**	**10.75**	**38.6**	**9.50**	**34.2**	**7.75**	**27.1**
150	*165,1*	*610,0*	*28,9*	*419,0*	*24,4*	*343,0*	*21,3*	*273,0*	*17,5*	*241,0*	*15,5*	*197,0*	*12,3*
216,3mm	**8.63**	**32.00**	**–**	**22.00**	**–**	**18.00**	**–**	**14.50**	**–**	**12.75**	**–**	**10.50**	**–**
200	*219,1*	*813,0*	*–*	*559,0*	*–*	*457,0*	*–*	*368,0*	*–*	*324,0*	*–*	*267,0*	*–*
8	**8.52**	**32.00**	**128.0**	**22.00**	**108.0**	**18.00**	**94.3**	**14.50**	**78.7**	**12.75**	**69.3**	**10.50**	**55.7**
200	*216,3*	*813,0*	*58,1*	*559,0*	*49,0*	*457,0*	*42,8*	*368,0*	*35,7*	*324,0*	*31,4*	*267,0*	*25,3*

Long Radius 3D Elbows

Tech Data Sheet: G180

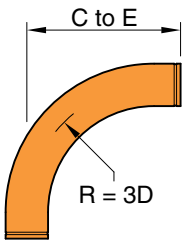


Figure 310-3D (90°)

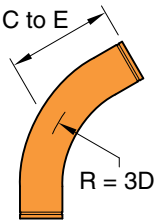


Figure 306-3D (60°)

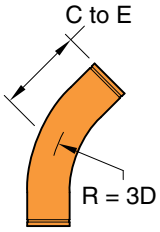


Figure 301-3D (45°)

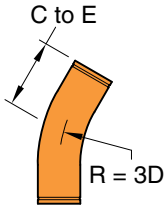


Figure 303-3D (30°)

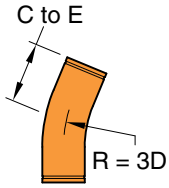


Figure 312-3D (22.5°)

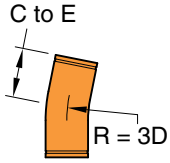


Figure 311-3D (11.25°)

Pipe Size		310-3D 90° Elbow		306-3D 60° Elbow		301-3D 45° Elbow		303-3D 30° Elbow		312-3D 22½° Elbow		311-3D 11¼° Elbow	
Nominal Inches *mm*	O.D. Inches *mm*	C to E Inches *mm*	Approx Weight Lbs *Kg*	C to E Inches *mm*	Approx Weight Lbs *Kg*	C to E Inches *mm*	Approx Weight Lbs *Kg*	C to E Inches *mm*	Approx Weight Lbs *Kg*	C to E Inches *mm*	Approx Weight Lbs *Kg*	C to E Inches *mm*	Approx Weight Lbs *Kg*
267,4mm	**10.75**	**40.00**	**–**	**27.25**	**–**	**22.50**	**–**	**18.00**	**–**	**16.00**	**–**	**13.00**	**–**
250	*273,0*	*1016,0*	*–*	*692,0*	*–*	*572,0*	*–*	*457,0*	*–*	*406,0*	*–*	*330,0*	*–*
10	**10.53**	**40.00**	**226.4**	**27.25**	**189.4**	**22.50**	**166.9**	**18.00**	**138.2**	**16.00**	**123.2**	**13.00**	**97.3**
250	*267,4*	*1016,0*	*102,7*	*692,0*	*85,9*	*572,0*	*75,7*	*457,0*	*62,7*	*406,0*	*55,9*	*330,0*	*44,1*
318,5mm	**12.75**	**48.00**	**–**	**32.75**	**–**	**27.00**	**–**	**21.75**	**–**	**19.25**	**–**	**15.50**	**–**
300	*323,9*	*1219,0*	*–*	*832,0*	*–*	*686,0*	*–*	*552,0*	*–*	*489,0*	*–*	*394,0*	*–*
12	**12.54**	**48.00**	**332.9**	**32.75**	**278.8**	**27.00**	**245.3**	**21.75**	**204.7**	**19.25**	**181.6**	**15.51**	**141.8**
300	*318,5*	*1219,0*	*151*	*832,0*	*126,5*	*686,0*	*111,3*	*552,0*	*92,9*	*489,0*	*82,4*	*394,0*	*64,3*
14	**14.00**	**56.00**	**427.6**	**38.25**	**358.5**	**31.50**	**315.0**	**25.25**	**261.4**	**22.50**	**233.7**	**18.25**	**184.4**
350	*355,6*	*1422,0*	*194*	*972,0*	*162,6*	*800,0*	*142,9*	*641,0*	*118,6*	*572,0*	*106*	*464,0*	*83,6*
16	**16.00**	**64.00**	**560.3**	**43.75**	**470.1**	**36.00**	**412.8**	**29.00**	**334.5**	**25.50**	**303.2**	**20.75**	**239.9**
400	*406,4*	*1626,0*	*254,1*	*1111,0*	*213,2*	*914,0*	*187,2*	*737,0*	*151,7*	*648,0*	*137,5*	*527,0*	*108,8*
18	**18.00**	**72.00**	**710.7**	**49.25**	**596.9**	**40.50**	**523.7**	**32.50**	**435.1**	**28.75**	**385.7**	**23.35**	**304.5**
450	*457,2*	*1829,0*	*322,4*	*1251,0*	*270,7*	*1029,0*	*237,5*	*826,0*	*197,4*	*730,0*	*175*	*593,0*	*138,1*
20	**20.00**	**80.00**	**879.3**	**54.75**	**738.7**	**45.00**	**647.8**	**36.00**	**536.4**	**32.00**	**478.1**	**26.00**	**377.7**
500	*508,0*	*2032,0*	*398,8*	*1391,0*	*335,1*	*1143,0*	*293,8*	*914,0*	*243,3*	*813,0*	*216,9*	*660,0*	*171,3*
24	**24.00**	**96.00**	**1270.3**	**65.50**	**1,063.6**	**53.75**	**931.0**	**43.25**	**775.7**	**38.25**	**687.2**	**31.00**	**540.9**
600	*609,6*	*2438,0*	*576,2*	*1664,0*	*482,4*	*1365,0*	*422,3*	*1099,0*	*351,9*	*972,0*	*311,8*	*787,0*	*245,3*

Long radius Elbows 3D, 5D, and 6D, in sizes up to and including 4" *(100mm)*, are provided with 4" *(100mm)* long integral tangent. Remaining sizes provided with integral tangents with lengths equal to nominal pipe size.

Grooved or plain-end available; specify choice on order.

Material is standard wall steel pipe to ASTM A 53, Grade B. (Other materials available on request).

Elbow bends to conform to above radii.

C to E tolerances: 2" - 6" *(50mm - 150mm)* ± 1/8" *(3,2 mm)*; 8" - 16" *(200mm - 400mm)* ± 1/4" *(6,4 mm)*; 18" - 24" *(450mm - 600mm)* ± 3/8" *(9,5mm)*.

All weights are approximate, based on calculated weight of pipe.

For information on larger sizes, contact GRINNELL Mechanical Products.

See page 41 for fitting specifications.

Long Radius 5D Elbows

(Page 1 of 2)

Tech Data Sheet: G180

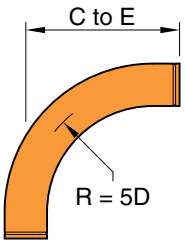


Figure 310-5D (90°)

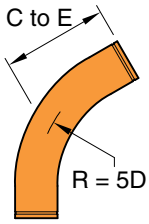


Figure 306-5D (60°)

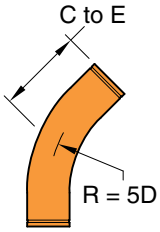


Figure 301-5D (45°)

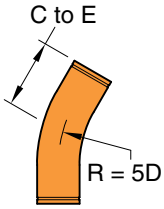


Figure 303-5D (30°)

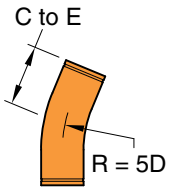


Figure 312-5D (22.5°)

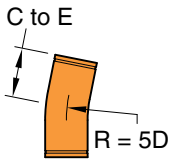


Figure 311-5D (11.25°)

Pipe Size		310-5D 90° Elbow		306-5D 60° Elbow		301-5D 45° Elbow		303-5D 30° Elbow		312-5D 22½° Elbow		311-5D 11¼° Elbow	
Nominal Inches *mm*	O.D. Inches *mm*	C to E Inches *mm*	Approx Weight Lbs *Kg*	C to E Inches *mm*	Approx Weight Lbs *Kg*	C to E Inches *mm*	Approx Weight Lbs *Kg*	C to E Inches *mm*	Approx Weight Lbs *Kg*	C to E Inches *mm*	Approx Weight Lbs *Kg*	C to E Inches *mm*	Approx Weight Lbs *Kg*
2	**2.37**	**14.00**	**7.2**	**9.75**	**6.1**	**8.25**	**5.5**	**6.75**	**4.6**	**6.00**	**4.1**	**5.00**	**3.3**
50	*60,3*	*356,0*	*3,3*	*248,0*	*2,8*	*210,0*	*2,5*	*171,0*	*2,1*	*152,0*	*1,9*	*127,0*	*1,5*
2½	**2.87**	**16.50**	**13.3**	**11.25**	**11.2**	**9.25**	**9.8**	**7.50**	**8.3**	**6.50**	**7.2**	**5.25**	**5.6**
65	*73,0*	*419,0*	*6*	*286,0*	*5,1*	*235,0*	*4,4*	*191,0*	*3,8*	*165,0*	*3,3*	*133,0*	*2,5*
76,1mm	**3.00**	**16.50**	**–**	**11.25**	**–**	**9.25**	**–**	**7.50**	**–**	**6.50**	**–**	**5.25**	**–**
65	*76,1*	*419,0*	*–*	*286,0*	*–*	*235,0*	*–*	*191,0*	*–*	*165,0*	*–*	*133,0*	*–*
3	**3.50**	**19.00**	**21.0**	**12.75**	**17.5**	**10.25**	**15.1**	**8.00**	**12.3**	**7.00**	**10.8**	**5.51**	**8.3**
80	*88,9*	*483,0*	*9,5*	*324,0*	*7,9*	*260,0*	*6,8*	*203,0*	*5,6*	*178,0*	*4,9*	*140,0*	*3,8*
3½	**4.000**	**–**	**–**	**12.25**	**20**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
90	*101,6*	*–*	*–*	*311,0*	*9,1*	*–*	*–*	*–*	*–*	*–*	*–*	*–*	*–*
108,0mm	**4.50**	**24.00**	**–**	**15.50**	**–**	**12.50**	**–**	**9.50**	**–**	**8.00**	**–**	**6.00**	**–**
100	*114,3*	*610,0*	*–*	*394,0*	*–*	*318,0*	*–*	*241,0*	*–*	*203,0*	*–*	*152,0*	*–*
4	**4.25**	**24.00**	**35.4**	**15.50**	**28.9**	**12.50**	**25.4**	**9.50**	**20.1**	**8.00**	**17.1**	**6.00**	**12.5**
100	*108,0*	*610,0*	*16,1*	*394,0*	*13,1*	*318,0*	*11,5*	*241,0*	*9,1*	*203,0*	*7,8*	*152,0*	*5,7*
133,0mm	**5.56**	**30.00**	**–**	**19.50**	**–**	**15.50**	**–**	**11.75**	**–**	**10.00**	**–**	**7.25**	**–**
125	*141,3*	*762,0*	*–*	*495,0*	*–*	*394,0*	*–*	*298,0*	*–*	*254,0*	*–*	*191,0*	*–*
139,7mm	**5.25**	**30.00**	**–**	**19.50**	**–**	**15.50**	**–**	**11.75**	**–**	**10.00**	**–**	**7.25**	**–**
125	*133,0*	*762,0*	*–*	*495,0*	*–*	*394,0*	*–*	*298,0*	*–*	*254,0*	*–*	*191,0*	*–*
5	**5.50**	**30.00**	**60**	**19.50**	**49.2**	**15.50**	**42.3**	**11.75**	**33.7**	**10.00**	**28.9**	**7.51**	**21.2**
125	*139,7*	*762,0*	*27,2*	*495,0*	*22,3*	*394,0*	*19,2*	*298,0*	*15,3*	*254,0*	*13,1*	*191,0*	*9,6*
159,0mm	**6.63**	**36.00**	**–**	**23.25**	**–**	**18.50**	**–**	**14.00**	**–**	**12.00**	**–**	**9.00**	**–**
150	*168,3*	*914,0*	*–*	*591,0*	*–*	*470,0*	*–*	*356,0*	*–*	*305,0*	*–*	*229,0*	*–*
165,1mm	**6.25**	**36.00**	**–**	**23.25**	**–**	**18.50**	**–**	**14.00**	**–**	**12.00**	**–**	**6.00**	**–**
150	*159,0*	*914,0*	*–*	*591,0*	*–*	*470,0*	*–*	*356,0*	*–*	*305,0*	*–*	*229,0*	*–*
6	**6.50**	**36.00**	**93.5**	**23.25**	**76.1**	**18.50**	**65.5**	**14.00**	**52.7**	**12.00**	**45.0**	**9.02**	**32.9**
150	*165,1*	*914,0*	*42,4*	*591,0*	*34,5*	*470,0*	*29,7*	*356,0*	*23,9*	*305,0*	*20,4*	*229,0*	*14,9*
216,3mm	**8.63**	**48.00**	**–**	**31.00**	**–**	**24.50**	**–**	**18.75**	**–**	**16.00**	**–**	**12.00**	**–**
200	*219,1*	*1219,0*	*–*	*787,0*	*–*	*622,0*	*–*	*476,0*	*–*	*406,0*	*–*	*305,0*	*–*
8	**8.52**	**48.00**	**187.9**	**31.00**	**152.9**	**24.50**	**130.8**	**18.75**	**105.2**	**16.00**	**90.5**	**12.00**	**66.2**
200	*216,3*	*1219,0*	*85,2*	*787,0*	*69,4*	*622,0*	*59,3*	*476,0*	*47,7*	*406,0*	*41,1*	*305,0*	*30,0*
267,4mm	**10.75**	**60.00**	**–**	**39.00**	**–**	**30.75**	**–**	**23.50**	**–**	**20.00**	**–**	**15.00**	**–**
250	*273,0*	*1524,0*	*–*	*991,0*	*–*	*781,0*	*–*	*597,0*	*–*	*508,0*	*–*	*381,0*	*–*

Long Radius 5D Elbows

Tech Data Sheet: G180

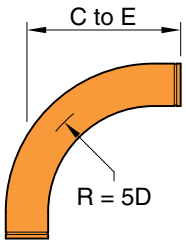


Figure 310-5D (90°)

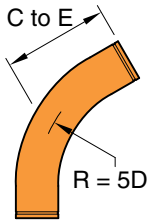


Figure 306-5D (60°)

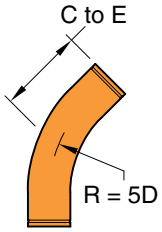


Figure 301-5D (45°)

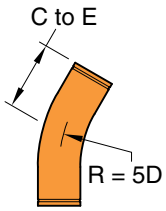


Figure 303-5D (30°)

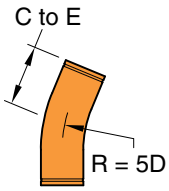


Figure 312-5D (22.5°)

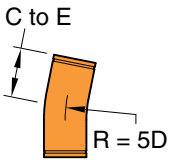


Figure 311-5D (11.25°)

Pipe Size		310-5D 90° Elbow		306-5D 60° Elbow		301-5D 45° Elbow		303-5D 30° Elbow		312-5D 22½° Elbow		311-5D 11¼° Elbow	
Nominal Inches *mm*	O.D. Inches *mm*	C to E Inches *mm*	Approx Weight Lbs *Kg*	C to E Inches *mm*	Approx Weight Lbs *Kg*	C to E Inches *mm*	Approx Weight Lbs *Kg*	C to E Inches *mm*	Approx Weight Lbs *Kg*	C to E Inches *mm*	Approx Weight Lbs *Kg*	C to E Inches *mm*	Approx Weight Lbs *Kg*
10	**10.53**	**60.00**	**332.6**	**39.00**	**272.5**	**30.75**	**232.5**	**23.50**	**186.8**	**20.00**	**160.3**	**15.00**	**117.2**
250	*267,4*	*1524,0*	*150,9*	*991,0*	*123,6*	*781,0*	*105,5*	*597,0*	*84,7*	*508,0*	*72,7*	*381,0*	*53,2*
318,5mm	**12.75**	**72.00**	**–**	**46.75**	**–**	**37.00**	**–**	**28.00**	**–**	**24.00**	**–**	**18.00**	**–**
300	*323,9*	*1929,0*	*–*	*1187,0*	*–*	*940,0*	*–*	*711,0*	*–*	*610,0*	*–*	*457,0*	*–*
12	**12.54**	**72.00**	**488.8**	**46.75**	**400.0**	**37.00**	**342.7**	**28.00**	**272.3**	**24.00**	**235.5**	**18.00**	**172.2**
300	*318,5*	*1829,0*	*221,7*	*1187,0*	*181,4*	*940,0*	*155,4*	*711,0*	*123,5*	*610,0*	*106,8*	*457,0*	*78,1*
14	**14.00**	**84.00**	**627.7**	**54.50**	**513.3**	**43.00**	**438.3**	**32.75**	**350.7**	**28.00**	**302.5**	**21.00**	**221.2**
350	*355,6*	*2134,0*	*284,7*	*1384,0*	*232,8*	*1092,0*	*198,8*	*832,0*	*159,1*	*711,0*	*137,2*	*533,0*	*100,3*
16	**16.00**	**96.00**	**822.5**	**62.25**	**672.2**	**49.25**	**575.6**	**37.50**	**460.6**	**32.00**	**396.4**	**24.00**	**289.8**
400	*406,4*	*2436,0*	*373,1*	*1581,0*	*304,9*	*1251,0*	*261,1*	*953,0*	*208,9*	*813,0*	*179,8*	*610,0*	*131,5*
18	**18.00**	**108.00**	**1,043.5**	**70.00**	**852.5**	**55.25**	**728.2**	**42.25**	**585.3**	**36.00**	**506.9**	**27.00**	**367.8**
450	*457,2*	*2743,0*	*473,3*	*1778,0*	*386,7*	*1403,0*	*330,3*	*1073,0*	*265,5*	*914,0*	*229,9*	*686,0*	*166,8*
20	**20.00**	**120.00**	**1,290.9**	**77.75**	**1,054.2**	**61.50**	**902.5**	**46.75**	**720.7**	**40.00**	**622.1**	**30.00**	**454.9**
500	*508,0*	*3048,0*	*585,5*	*1975,0*	*478,2*	*1562,0*	*409,4*	*1187,0*	*326,9*	*1016,0*	*282,2*	*762,0*	*206,3*
24	**24.00**	**144.00**	**1,864.4**	**93.25**	**1,521.8**	**73.75**	**1,302.5**	**56.25**	**1,044.0**	**48.00**	**898.5**	**35.75**	**651.2**
600	*609,6*	*3658,0*	*845,7*	*2369,0*	*690,3*	*1873,0*	*590,8*	*1429,0*	*473,6*	*1219,0*	*407,6*	*908,0*	*295,4*

Long radius Elbows 3D, 5D, and 6D, in sizes up to and including 4" *(100mm)*, are provided with 4" *(100mm)* long integral tangent. Remaining sizes provided with integral tangents with lengths equal to nominal pipe size.

Grooved or plain-end available; specify choice on order.

Material is standard wall steel pipe to ASTM A 53, Grade B. (Other materials available on request).

Elbow bends to conform to above radii.

C to E tolerances: 2" - 6" *(50mm - 150mm)* ± 1/8" *(3,2 mm)*; 8" - 16" *(200mm - 400mm)* ± 1/4" *(6,4 mm)*; 18" - 24" *(450mm - 600mm)* ± 3/8" *(9,5mm)*.

All weights are approximate, based on calculated weight of pipe.

For information on larger sizes, contact GRINNELL Mechanical Products.

See page 41 for fitting specifications.

Long Radius 6D Elbows

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Tech Data Sheet: G180

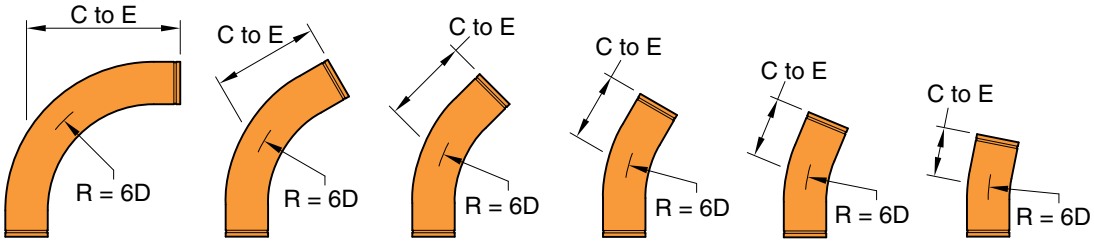


Figure 310-6D (90°) | Figure 306-6D (60°) | Figure 301-6D (45°) | Figure 303-6D (30°) | Figure 312-6D (22.5°) | Figure 311-6D (11.25°)

Pipe Size		310-6D 90° Elbow		306-6D 60° Elbow		301-6D 45° Elbow		303-6D 30° Elbow		312-6D 22½° Elbow		311-6D 11¼° Elbow	
Nominal Inches *mm*	O.D. Inches *mm*	C to E Inches *mm*	Approx Weight Lbs *Kg*	C to E Inches *mm*	Approx Weight Lbs *Kg*	C to E Inches *mm*	Approx Weight Lbs *Kg*	C to E Inches *mm*	Approx Weight Lbs *Kg*	C to E Inches *mm*	Approx Weight Lbs *Kg*	C to E Inches *mm*	Approx Weight Lbs *Kg*
2	**2.37**	**16.00**	**8.2**	**11.00**	**6.9**	**9.00**	**6.0**	**7.25**	**5.0**	**6.50**	**4.5**	**5.25**	**3.6**
50	*60,3*	*406,0*	*3,7*	*279,0*	*3,1*	*229,0*	*2,7*	*18,04*	*2,3*	*165,0*	*2,0*	*133,0*	*1,6*
2½	**2.87**	**19.00**	**13.0**	**12.75**	**12.7**	**10.25**	**11.0**	**8.00**	**8.9**	**7.00**	**7.8**	**5.51**	**6.0**
65	*73,0*	*483,0*	*5,9*	*324,0*	*5,8*	*260,0*	*5,0*	*203,0*	*4,0*	*178,0*	*3,5*	*140,0*	*2,7*
76,1mm	**3.00**	**19.00**	**–**	**12.75**	**–**	**10.25**	**–**	**8.00**	**–**	**7.00**	**–**	**5.50**	**–**
65	*76,1*	*483,0*	*–*	*324,0*	*–*	*260,0*	*–*	*203,0*	*–*	*178,0*	*–*	*140,0*	*–*
3	**3.50**	**22.00**	**24.1**	**14.50**	**19.9**	**11.50**	**17.1**	**8.75**	**13.6**	**7.50**	**11.7**	**5.75**	**8.7**
80	*88,9*	*559,0*	*10,9*	*368,0*	*9,0*	*292,0*	*7,8*	*222,0*	*6,2*	*191,0*	*5,3*	*146,0*	*3,9*
3½	**4.000**	**–**	**–**	**16.25**	**22.8**	**–**	**–**	**-**	**–**	**–**	**–**	**–**	**–**
90	*101,6*	*–*	*–*	*413,0*	*10,3*	*–*	*–*		*–*	*–*	*–*	*–*	*–*
108,0mm	**4.50**	**28.00**	**–**	**18.00**	**–**	**14.00**	**–**	**10.50**	**–**	**8.75**	**–**	**6.50**	**–**
100	*114,3*	*711,0*	*–*	*457,0*	*–*	*356,0*	*–*	*267,0*	*–*	*222,0*	*–*	*165,0*	*–*
4	**4.25**	**28.00**	**41.1**	**18.00**	**33.6**	**14.00**	**28.4**	**10.50**	**22.5**	**8.75**	**18.9**	**6.50**	**13.8**
100	*108,0*	*711,0*	*18,6*	*457,0*	*15,2*	*356,0*	*12,9*	*267,0*	*10,2*	*222,0*	*8,6*	*165,0*	*6,3*
133,0mm	**5.56**	**35.00**	**–**	**22.25**	**–**	**17.50**	**–**	**13.00**	**–**	**11.00**	**–**	**8.00**	**–**
125	*141,3*	*889,0*	*–*	*565,0*	*–*	*445,0*	*–*	*330,0*	*–*	*279,0*	*–*	*203,0*	*–*
139,7mm	**5.25**	**35.00**	**–**	**22.25**	**–**	**17.50**	**–**	**13.00**	**–**	**11.00**	**–**	**8.00**	**–**
125	*133,0*	*889,0*	*–*	*565,0*	*–*	*445,0*	*–*	*330,0*	*–*	*279,0*	*–*	*203,0*	*–*
5	**5.50**	**35.00**	**69.6**	**22.25**	**56.2**	**17.50**	**48.1**	**13.00**	**37.7**	**11.00**	**32.3**	**8.00**	**22.9**
125	*139,7*	*889,0*	*31,6*	*565,0*	*25,5*	*445,0*	*21,8*	*330,0*	*17,1*	*279,0*	*14,7*	*203,0*	*10,4*
159,0mm	**6.63**	**42.00**	**–**	**26.75**	**–**	**21.00**	**–**	**15.75**	**–**	**13.25**	**–**	**9.50**	**–**
150	*168,3*	*1067,0*	*–*	*679,0*	*–*	*533,0*	*–*	*400,0*	*–*	*337,0*	*–*	*241,0*	*–*
165,1mm	**6.25**	**42.00**	**–**	**26.75**	**–**	**21.00**	**–**	**15.75**	**–**	**13.25**	**–**	**9.50**	**–**
150	*159,0*	*1067,0*	*–*	*679,0*	*–*	*533,0*	*–*	*400,0*	*–*	*337,0*	*–*	*241,0*	*–*
6	**6.50**	**42.00**	**108.4**	**26.75**	**87.7**	**21.00**	**74.8**	**15.75**	**59.3**	**13.25**	**50.5**	**9.50**	**35.3**
150	*165,1*	*1067,0*	*49,2*	*679,0*	*39,8*	*533,0*	*33,9*	*400,0*	*26,9*	*337,0*	*22,9*	*241,0*	*16,0*
216,3mm	**8.63**	**45.00**	**–**	**35.75**	**–**	**28.00**	**–**	**21.00**	**–**	**17.50**	**–**	**12.75**	**–**
200	*219,1*	*1422,0*	*–*	*908,0*	*–*	*711,0*	*–*	*533,0*	*–*	*445,0*	*–*	*324,0*	*–*
8	**8.52**	**56.00**	**217.8**	**35.75**	**176.7**	**28.00**	**150.4**	**21.00**	**119.2**	**17.50**	**100.4**	**12.75**	**71.5**
200	*216,3*	*1422,0*	*98,8*	*908,0*	*80,1*	*711,0*	*68,2*	*533,0*	*54,1*	*445,0*	*45,5*	*324,0*	*32,4*

Long Radius 6D Elbows

Tech Data Sheet: G180

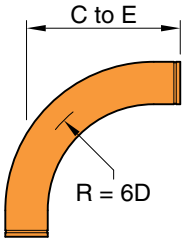


Figure 310-6D (90°)

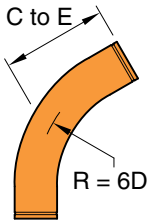


Figure 306-6D (60°)

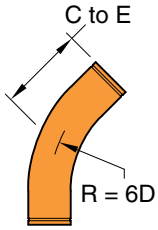


Figure 301-6D (45°)

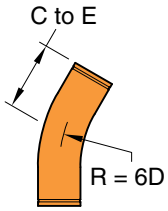


Figure 303-6D (30°)

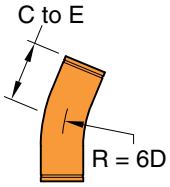


Figure 312-6D (22.5°)

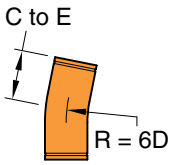


Figure 311-6D (11.25°)

Pipe Size		310-6D 90° Elbow		306-6D 60° Elbow		301-6D 45° Elbow		303-6D 30° Elbow		312-6D 22½° Elbow		311-6D 11¼° Elbow	
Nominal Inches *mm*	O.D. Inches *mm*	C to E Inches *mm*	Approx Weight Lbs *Kg*	C to E Inches *mm*	Approx Weight Lbs *Kg*	C to E Inches *mm*	Approx Weight Lbs *Kg*	C to E Inches *mm*	Approx Weight Lbs *Kg*	C to E Inches *mm*	Approx Weight Lbs *Kg*	C to E Inches *mm*	Approx Weight Lbs *Kg*
267,4mm	**10.75**	**70.00**	**–**	**44.75**	**–**	**35.00**	**–**	**26.00**	**–**	**22.00**	**–**	**16.00**	**–**
250	*273,0*	*1778,0*	*–*	*1137,0*	*–*	*889,0*	*–*	*660,0*	*–*	*559,0*	*–*	*406,0*	*–*
10	**10.53**	**70.00**	**385.6**	**44.75**	**313.1**	**35.00**	**266.3**	**26.00**	**208.9**	**22.00**	**178.8**	**16.00**	**127.1**
250	*267,4*	*1778,0*	*174,9*	*1137,0*	*142,0*	*889,0*	*120,8*	*660,0*	*94,8*	*559,0*	*81,1*	*406,0*	*57,7*
318,5mm	**12.75**	**84.00**	**–**	**53.50**	**–**	**41.75**	**–**	**31.25**	**–**	**26.25**	**–**	**19.00**	**–**
300	*323,9*	*2134,0*	*–*	*1359,0*	*–*	*1060,0*	*–*	*794,0*	*–*	*667,0*	*–*	*483,0*	*–*
12	**12.54**	**84.00**	**566.7**	**53.50**	**458.5**	**41.75**	**388.9**	**31.25**	**307.5**	**26.25**	**261.1**	**19.00**	**184.4**
300	*318,5*	*2134,0*	*257,1*	*1359,0*	*208,0*	*1060,0*	*176,4*	*794,0*	*139,5*	*667,0*	*118,4*	*483,0*	*83,6*
14	**14.00**	**98.00**	**727.8**	**62.50**	**589.6**	**48.75**	**499.9**	**36.50**	**395.4**	**30.75**	**336.9**	**22.25**	**238.0**
350	*355,6*	*2489,0*	*330,1*	*1588,0*	*267,4*	*1238,0*	*226,8*	*927,0*	*179,4*	*781,0*	*152,8*	*565,0*	*108,0*
16	**16.00**	**112.00**	**953.6**	**71.50**	**773.3**	**55.75**	**655.5**	**41.75**	**518.6**	**35.25**	**443.0**	**25.51**	**312.9**
400	*406,4*	*2845,0*	*432,5*	*1816,0*	*350,8*	*1416,0*	*297,3*	*1060,0*	*235,2*	*895,0*	*200,9*	*648,0*	*141,9*
18	**18.00**	**126.00**	**1,209.9**	**80.50**	**981.9**	**62.75**	**832.7**	**47.00**	**658.5**	**39.50**	**559.5**	**28.75**	**398.7**
450	*457,2*	*3200,0*	*548,8*	*2045,0*	*445,4*	*1594,0*	*377,7*	*1194,0*	*298,7*	*1003,0*	*253,8*	*730,0*	*180,8*
20	**20.00**	**140.00**	**1,496.6**	**89.25**	**1,212.0**	**69.75**	**1,029.8**	**52.25**	**815.0**	**44.00**	**694.1**	**31.75**	**488.7**
500	*508,0*	*3556,0*	*678,8*	*2267,0*	*549,8*	*1772,0*	*467,1*	*1327,0*	*369,7*	*1118,0*	*314,8*	*806,0*	*221,7*
24	**24.00**	**168.00**	**2,161.6**	**107.25**	**1,752.9**	**83.75**	**1,488.2**	**62.50**	**1,173.0**	**52.34**	**992.5**	**38.25**	**709.3**
600	*609,6*	*4267,0*	*980,5*	*2724,0*	*795,1*	*2127,0*	*675,0*	*1588,0*	*532,1*	*1329,0*	*450,2*	*972,0*	*321,7*

Long radius Elbows 3D, 5D, and 6D, in sizes up to and including 4" *(100mm)*, are provided with 4" *(100mm)* long integral tangent. Remaining sizes provided with integral tangents with lengths equal to nominal pipe size.

Grooved or plain-end available; specify choice on order.

Material is standard wall steel pipe to ASTM A 53, Grade B. (Other materials available on request).

Elbow bends to conform to above radii.

C to E tolerances: 2" - 6" *(50mm - 150mm)* ± 1/8" *(3,2 mm)*; 8" - 16" *(200mm - 400mm)* ± 1/4" *(6,4 mm)*; 18" - 24" *(450mm - 600mm)* ± 3/8" *(9,5mm)*.

All weights are approximate, based on calculated weight of pipe.

For information on larger sizes, contact GRINNELL Mechanical Products.

See page 41 for fitting specifications.

Figures 219 & 319 Tees

Tech Data Sheet: G180

Figure 219
Cast Tee

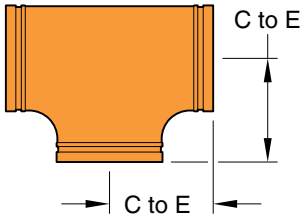
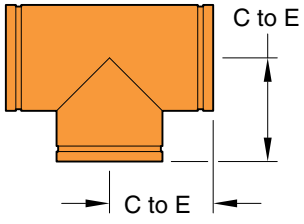


Figure 319
Fabricated Tee



Pipe Size		Figure 219 - Cast		Figure 319 - Fabricated	
Nominal Inches *mm*	O.D. Inches *mm*	C to E Inches *mm*	Approx Weight Lbs *Kg*	C to E Inches *mm*	Approx Weight Lbs *Kg*
1¼	1.660	2.75	1.7	2.75	–
32	*42,4*	*69,9*	*0,8*	*69,9*	–
1½	1.900	2.75	2.1	2.75	–
40	*48,3*	*69,9*	*1,0*	*69,9*	–
2	2.375	3.25	2.7	3.25	–
50	*60,3*	*82,6*	*1,2*	*82,6*	–
2½	2.875	3.75	4.4	3.75	–
65	*73,0*	*95,3*	*2,0*	*95,3*	–
76,1mm	3.000	3.75	6.5	3.75	–
65	*76,1*	*95,3*	*2,9*	*95,3*	–
3	3.500	4.25	6.5	4.25	–
80	*88,9*	*108,0*	*2,9*	*108,0*	–
4	4.500	5.00	10.7	5.00	–
100	*114,3*	*127,0*	*4,8*	*127,0*	–
139,7mm	5.500	5.50	15.2	5.50	–
125	*139,7*	*139,7*	*6,9*	*139,7*	–
5	5.563	5.50	15.5	5.50	–
125	*141,3*	*139,7*	*7,0*	*139,7*	–
165,1mm	6.500	6.50	24.2	6.50	–
150	*165,1*	*165,1*	*11,0*	*165,1*	–
6	6.625	6.50	23.0	6.50	–
150	*168,3*	*165,1*	*10,4*	*165,1*	–
216,3mm	8.500	7.75	43.0	7.75	–
200	*216,3*	*196,9*	*19,5*	*196,9*	–
8	8.625	7.75	43.7	7.75	–
200 ◗	*219,1*	*196,9*	*19,8*	*196,9*	–
267,4mm	10.53	–	–	9.00	–
250	*267,4*	–	–	*228,6*	–
10	10.750	9.00	57.0	9.00	–
250 ◗	*273,0*	*228,6*	*25,9*	*228,6*	–
318,5mm	12.54	–	–	10.00	–
300	*318,5*	–	–	*254,0*	–
12	12.750	10.00	110.0	10.00	–
300 ◗	*323,9*	*254,0*	*49,9*	*254,0*	–
14	14.000	11.00	135.0	11.00	–
350	*355,6*	*279,0*	*61,2*	*279,0*	–
16	16.000	12.00	136.0	12.00	–
400	*406,4*	*305,0*	*61,7*	*305,0*	–
18	18.000	–	–	15.50	218.0
450	*457,2*	–	–	*394,0*	*98,9*
20	20.000	–	–	17,25	275.0
500	*508,0*	–	–	*438,0*	*125,0*
24	24.000	–	–	20.00	379.0
600	*609,6*	–	–	*508,0*	*172,0*

◗ Sizes are available to JIS standards. Contact GRINNELL Mechanical Products for details.

For information on larger sizes, European sizes or other alternative sizes, contact GRINNELL Mechanical Products.

See page 41 for fitting specifications.

Figure 320 Tees
(Groove x Groove x Male Thread)

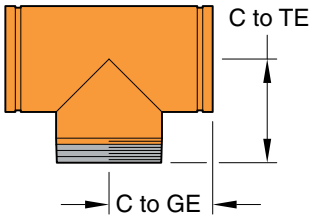
Tech Data Sheet: G180

Pipe Size		C to GE	C to TE	Approx.
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Inches *mm*	Weight Lbs *Kg*
1¼	**1.66**	**2.75**	**2.75**	**1.5**
32	*42,4*	*69,9*	*69,9*	*0,7*
1½	**1.90**	**2.75**	**2.75**	**1.9**
40	*48,3*	*69,9*	*69,9*	*0,9*
2	**2.37**	**3.25**	**4.25**	**3.2**
50	*60,3*	*82,6*	*108,0*	*1,5*
2½	**2.87**	**3.75**	**3.75**	**4.0**
60	*73,0*	*95,3*	*95,3*	*1,8*
76,1mm	**3.00**	**3.75**	**3.75**	**–**
65	*76,1*	*95,3*	*95,3*	*–*
3	**3.50**	**4.25**	**6.00**	**6.0**
80	*88,9*	*108,0*	*152,4*	*2,7*
4	**4.50**	**5.00**	**7.25**	**11.0**
100	*114,3*	*127,0*	*184,2*	*5,0*
139,7mm	**5.50**	**5.50**	**5.50**	**–**
125	*139,7*	*139,7*	*139,7*	*–*
5	**5.56**	**5.50**	**5.50**	**23.0**
125	*141,3*	*139,7*	*139,7*	*10,5*
165,1mm	**6.50**	**6.50**	**6.50**	**–**
150	*165,1*	*165,1*	*165,1*	*–*
6	**6.63**	**6.50**	**6.50**	**23.0**
150	*168,3*	*165,1*	*165,1*	*10,5*
8	**8.63**	**7.75**	**7.75**	**38.7**
200	*219,1*	*196,9*	*196,9*	*17,6*
10	**10.75**	**9.00**	**9.00**	**72.1**
250	*273,0*	*228,6*	*228,6*	*32,8*
12	**12.75**	**10.00**	**10.00**	**92.5**
300	*323,9*	*254,0*	*254,0*	*42,0*

For information on larger sizes, European sizes or other alternative sizes, contact GRINNELL Mechanical Products.

Available with BSP threads. Contact GRINNELL Mechanical Products for details.

See page 41 for fitting specifications.



Figures 221 & 321 Reducing Tees

(Page 1 of 6)

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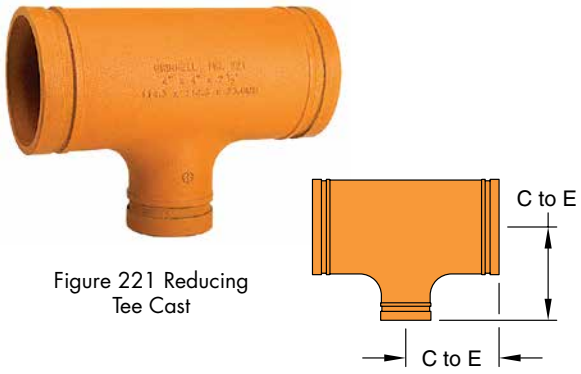


Figure 221 Reducing Tee Cast

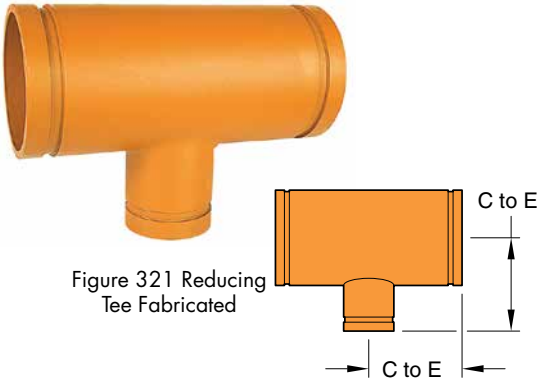


Figure 321 Reducing Tee Fabricated

Pipe Size		Figure 221 - Cast		Figure 321 - Fabricated	
Nominal Inches *mm*	O.D. Inches *mm*	C to E Inches *mm*	Approx. Weight Lbs *Kg*	C to E Inches *mm*	Approx. Weight Lbs *Kg*
1-1/2 x 1-1/2 x 1-1/4	**1.90 x 1.90 x 1.66**	-	-	**2.75**	**1.5**
40 x 40 x 32	*48,3 x 48,3 x 42,4*			*69,9*	*0,7*
2 x 2 x 1	**2.37 x 2.37 x 1.32**	-	-	**3.25**	**1.6**
50 x 50 x 25	*60,3 x 60,3 x 33,4*			*82,6*	*0,7*
2 x 2 x 1-1/2	**2.37 x 2.37 x 1.90**	**3.25**	**2.7**	**3.25**	-
50 x 50 x 40	*60,3 x 60,3 x 48,3*	*82,6*	*1,2*	*82,6*	
2-1/2 x 2-1/2 x 1	**2.87 x 2.87 x 1.32**	-	-	**3.75**	**2.3**
65 x 65 x 25	*73,0 x 73,0 x 33,4*			*95,3*	*1,1*
2-1/2 x 2-1/2 x 1-1/4	**2.87 x 2.87 x 1.66**	-	-	**3.75**	**4.2**
65 x 65 x 32	*73,0 x 73,0 x 42,4*			*95,3*	*1,9*
2-1/2 x 2-1/2 x 1-1/2	**2.87 x 2.87 x 1.90**	-	-	**3.75**	**4.2**
65 x 65 x 40	*73,0 x 73,0 x 48,3*			*95,3*	*1,9*
2-1/2 x 2-1/2 x 2	**2.87 x 2.87 x 2.37**	**3.75**	**4.2**	**3.75**	-
65 x 65 x 50	*73,0 x 73,0 x 60,3*	*95,3*	*1,9*	*95,3*	
76mm x 76mm x 1	**3.00 x 3.00 x 1.32**	-	-	**3.75**	-
65 x 65 x 25	*76,1 x 76,1 x 33,4*			*95,3*	
76mm x 76mm x 1-1/4	**3.00 x 3.00 x 1.66**	-	-	**3.75**	-
65 x 65 x 32	*76,1 x 76,1 x 42,4*			*95,3*	
76mm x 76mm x 1-1/2	**3.00 x 3.00 x 1.90**	**3.75**	**4.5**	**3.75**	-
65 x 65 x 40	*76,1 x 76,1 x 48,3*	*95,3*	*2,0*	*95,3*	
76mm x 76mm x 2	**3.00 x 3.00 x 2.37**	**3.75**	**4.3**	**3.75**	-
65 x 65 x 50	*76,1 x 76,1 x 60,3*	*95,3*	*2,0*	*95,3*	
3 x 3 x 1	**3.50 x 3.50 x 1.32**	**4.25**	**5.6**	**4.25**	-
80 x 80 x 25	*88,9 x 88,9 x 33,4*	*108,0*	*2,5*	*108,0*	
3 x 3 x 1-1/2	**3.50 x 3.50 x 1.90**	**4.25**	**5.9**	**4.25**	-
80 x 80 x 40	*88,9 x 88,9 x 48,3*	*108,0*	*2,7*	*108,0*	
3 x 3 x 2	**3.50 x 3.50 x 2.37**	**4.25**	**6.0**	**4.25**	-
80 x 80 x 50	*88,9 x 88,9 x 60,3*	*108,0*	*2,7*	*108,0*	
3 x 3 x 2-1/2	**3.50 x 3.50 x 2.87**	**4.25**	**6.2**	**4.25**	-
80 x 80 x 65	*88,9 x 88,9 x 73,0*	*108,0*	*2,8*	*108,0*	
3 x 3 x 76mm	**3.50 x 3.50 x 3.00**	**4.25**	**6.0**	**4.25**	-
80 x 80 x 65	*88,9 x 88,9 x 76,1*	*108,0*	*2,7*	*108,0*	
108mm x 108mm x 2	**4.25 x 4.25 x 2.37**	-	-	**5.00**	-
100 x 100 x 50	*108,0 x 108,0 x 60,3*			*127,0*	
108mm x 108mm x 2-1/2	**4.25 x 4.25 x 2.88**	-	-	**5.00**	-
100 x 100 x 65	*108,0 x 108,0 x 73,0*			*127,0*	
108mm x 108mm x 76mm	**4.25 x 4.25 x 3.00**	-	-	**5.00**	-
100 x 100 x 65	*108,0 x 108,0 x 76,1*			*127,0*	
108mm x 108mm x 3	**4.25 x 4.25 x 3.50**	-	-	**5.00**	-
100 x 100 x 80	*108,0 x 108,0 x 88,9*			*127,0*	

Figures 221 & 321 Reducing Tees

Tech Data Sheet: G180

Figure 221 Reducing Tee Cast

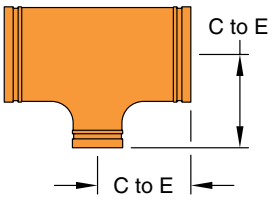
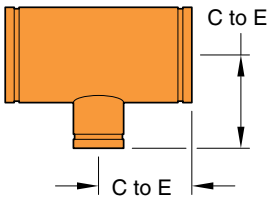


Figure 321 Reducing Tee Fabricated



Pipe Size		Figure 221 - Cast		Figure 321 - Fabricated	
Nominal Inches *mm*	O.D. Inches *mm*	C to E Inches *mm*	Approx. Weight Lbs *Kg*	C to E Inches *mm*	Approx. Weight Lbs *Kg*
4 x 4 x 1	**4.50 x 4.50 x 1.32**	-	-	**5.00**	**8.0**
100 x 100 x 25	*114,3 x 114,3 x 33,4*			*127,0*	*3,7*
4 x 4 x 1-1/4	**4.50 x 4.50 x 1.66**	-	-	**5.00**	**9.8**
100 x 100 x 32	*114,3 x 114,3 x 42,4*			*127,0*	*4,4*
4 x 4 x 1-1/2	**4.50 x 4.50 x 1.90**	-	-	**5.00**	**9.9**
100 x 100 x 40	*114,3 x 114,3 x 48,3*			*127,0*	*4,5*
4 x 4 x 2	**4.50 x 4.50 x 2.37**	**5.00**	**9.1**	**5.00**	-
100 x 100 x 50	*114,3 x 114,3 x 60,3*	*127,0*	*4,1*	*127,0*	
4 x 4 x 2-1/2	**4.50 x 4.50 x 2.88**	**5.00**	**9.5**	**5.00**	-
100 x 100 x 65	*114,3 x 114,3 x 73,0*	*127,0*	*4,3*	*127,0*	
4 x 4 x 76mm	**4.50 x 4.50 x 3.00**	**5.00**	**9.5**	**5.00**	-
125 x 125 x 65	*114,3 x 114,3 x 76,1*	*127,0*	*4,3*	*127,0*	
4 x 4 x 3	**4.50 x 4.50 x 3.50**	**5.00**	**9.7**	**5.00**	-
100 x 100 x 80	*114,3 x 114,3 x 88,9*	*127,0*	*4,4*	*127,0*	
133mm x 133mm x 2	**5.25 x 5.25 x 2.37**	-	-	**5.50**	-
125 x 125 x 50	*133,0 x 133,0 x 60,3*			*139,7*	
133mm x 133mm x 2-1/2	**5.25 x 5.25 x 2.88**	-	-	**5.50**	-
125 x 125 x 65	*133,0 x 133,0 x 73,0*			*139,7*	
133mm x 133mm x 76mm	**5.25 x 5.25 x 3.00**	-	-	**5.50**	-
125 x 125 x 65	*133,0 x 133,0 x 76,1*			*139,7*	
133mm x 133mm x 3	**5.25 x 5.25 x 3.50**	-	-	**5.50**	-
125 x 125 x 80	*133,0 x 133,0 x 88,9*			*139,7*	
133mm x 133mm x 108mm	**5.25 x 5.25 x 4.25**	-	-	**5.50**	-
125 x 125 x 100	*133,0 x 133,0 x 108,0*			*139,7*	
133mm x 133mm x 4	**5.25 x 5.25 x 4.50**	-	-	**5.50**	-
125 x 125 x 100	*133,0 x 133,0 x 114,3*			*139,7*	
139mm x 139mm x 2	**5.50 x 5.50 x 2.37**	-	-	**5.50**	-
125 x 125 x 50	*139,7 x 139,7 x 60,3*			*139,7*	
139mm x 139mm x 2-1/2	**5.50 x 5.50 x 2.88**	-	-	**5.50**	-
125 x 125 x 65	*139,7 x 139,7 x 73,0*			*139,7*	
139mm x 139mm x 76mm	**5.50 x 5.50 x 3.00**	-	-	**5.50**	-
125 x 125 x 65	*139,7 x 139,7 x 76,1*			*139,7*	
139,7mm x 139,7mm x 3	**5.50 x 5.50 x 3.50**	**5.50**	**12.7**	**5.50**	-
125 x 125 x 80	*139,7 x 139,7 x 88,9*	*139,7*	*5,8*	*139,7*	
139,7mm x 139,7mm x 4	**5.50 x 5.50 x 4.50**	**5.50**	**13.4**	**5.50**	-
125 x 125 x 100	*139,7 x 139,7 x 114,3*	*139,7*	*6,1*	*139,7*	
5 x 5 x 2	**5.56 x 5.56 x 2.37**	-	-	**5.50**	**14.5**
125 x 125 x 50	*141,3 x 141,3 x 60,3*			*139,7*	*6,6*
5 x 5 x 2-1/2	**5.56 x 5.56 x 2.87**	**5.50**	**18.0**	**5.50**	-
125 x 125 x 65	*141,3 x 141,3 x 73,0*	*139,7*	*8,2*	*139,7*	
5 x 5 x 76mm	**5.56 x 5.56 x 3.00**	-	-	**5.50**	-
125 x 125 x 65	*141,3 x 141,3 x 76,1*			*139,7*	
5 x 5 x 3	**5.56 x 5.56 x 3.50**	**5.50**	**14.0**	**5.50**	-
125 x 125 x 80	*141,3 x 141,3 x 88,9*	*139,7*	*6,4*	*139,7*	
5 x 5 x 4	**5.56 x 5.56 x 4.50**	**5.50**	**13.9**	**5.50**	-
125 x 125 x 100	*141,3 x 141,3 x 114,3*	*139,7*	*6,3*	*139,7*	
159mm x 159mm x 2-1/2	**6.25 x 6.25 x 2.88**	-	-	**6.50**	-
150 x 150 x 65	*159,0 x 159,0 x 73,0*			*165,1*	

Figures 221 & 321 Reducing Tees

Tech Data Sheet: G180

Figure 221 Reducing Tee Cast

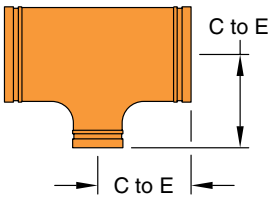
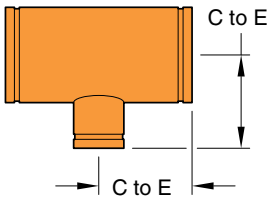


Figure 321 Reducing Tee Fabricated



Pipe Size		Figure 221 - Cast		Figure 321 - Fabricated	
Nominal Inches *mm*	O.D. Inches *mm*	C to E Inches *mm*	Approx. Weight Lbs *Kg*	C to E Inches *mm*	Approx. Weight Lbs *Kg*
159mm x 159mm x 76mm *150 x 150 x 65*	**6.25 x 6.25 x 3.00** *159,0 x 159,0 x 76,1*	-	-	**6.50** *165,1*	-
159mm x 159mm x 3 *150 x 150 x 80*	**6.25 x 6.25 x 3.50** *159,0 x 159,0 x 88,9*	-	-	**6.50** *165,1*	-
159mm x 159mm x 108mm *150 x 150 x 100*	**6.25 x 6.25 x 4.25** *159,0 x 159,0 x 108,0*	-	-	**6.50** *165,1*	-
159mm x 159mm x 4 *150 x 150 x 100*	**6.25 x 6.25 x 4.50** *159,0 x 159,0 x 114,3*	-	-	**6.50** *165,1*	-
159mm x 159mm x 133mm *150 x 150 x 125*	**6.25 x 6.25 x 5.25** *159,0 x 159,0 x 133,0*	-	-	**6.50** *165,1*	-
159mm x 159mm x 139mm *150 x 150 x 125*	**6.25 x 6.25 x 6.50** *159,0 x 159,0 x 139,7*	-	-	**6.50** *165,1*	-
159mm x 159mm x 5 *150 x 150 x 125*	**6.25 x 6.25 x 5.63** *159,0 x 159,0 x 141,3*	-	-	**6.50** *165,1*	-
165mm x 165mm x 2-1/2 *150 x 150 x 65*	**6.50 x 6.50 x 2.88** *165,1 x 165,1 x 73,0*	-	-	**6.50** *165,1*	-
165mm x 165mm x 76mm *150 x 150 x 65*	**6.50 x 6.50 x 3.00** *165,1 x 165,1 x 76,1*	-	-	**6.50** *165,1*	-
165mm x 165mm x 139mm *150 x 150 x 125*	**6.50 x 6.50 x 5.50** *165,1 x 165,1 x 139,7*	-	-	**6.50** *165,1*	-
165mm x 165mm x 3 *150 x 150 x 80*	**6.50 x 6.50 x 3.50** *165,1 x 165,1 x 88,9*	**6.50** *165,1*	**18.0** *8,2*	**6.50** *165,1*	-
165mm x 165mm x 4 *150 x 150 x 100*	**6.50 x 6.50 x 4.50** *165,1 x 165,1 x 114,3*	**6.50** *165,1*	**19.5** *8,9*	**6.50** *165,1*	-
165mm x 165mm x 5 *150 x 150 x 125*	**6.50 x 6.50 x 5.56** *165,1 x 165,1 x 141,3*	-	-	**6.50** *165,1*	-
6 x 6 x 2 *150 x 150 x 50*	**6.63 x 6.63 x 2.37** *168,3 x 168,3 x 60,3*	**6.50** *165,1*	**19.4** *8,8*	**6.50** *165,1*	-
6 x 6 x 2-1/2 *150 x 150 x 65*	**6.63 x 6.63 x 2.87** *168,3 x 168,3 x 73,0*	**6.50** *165,1*	**21.2** *9,8*	**6.50** *165,1*	-
6 x 6 x 76mm *150 x 150 x 65*	**6.63 x 6.63 x 3.00** *168,3 x 168,3 x 76,1*	**6.50** *165,1*	**21.2** *9,8*	**6.50** *165,1*	-
6 x 6 x 3 *150 x 150 x 80*	**6.63 x 6.63 x 3.50** *168,3 x 168,3 x 88,9*	**6.50** *165,1*	**21.0** *9,5*	**6.50** *165,1*	-
6 x 6 x 4 *150 x 150 x 100*	**6.63 x 6.63 x 4.50** *168,3 x 168,3 x 114,3*	**6.50** *165,1*	**21.8** *9,9*	**6.50** *165,1*	-
6 x 6 x 139mm *150 x 150 x 125*	**6.63 x 6.63 x 5.50** *168,3 x 168,3 x 139,7*	**6.50** *165,1*	**23.0** *10,4*	**6.50** *165,1*	-
6 x 6 x 5 *150 x 150 x 125*	**6.63 x 6.63 x 5.56** *168,3 x 168,3 x 141,3*	-	-	**6.50** *165,1*	**27.0** *12,2*
216mm x 216mm x 2 *200 x 200 x 50*	**8.52 x 8.52 x 2.37** *216,3 x 216,3 x 60,3*	-	-	**7.75** *196,9*	-
216mm x 216mm x 2-1/2 *200 x 200 x 65*	**8.52 x 8.52 x 2.88** *216,3 x 216,3 x 73,0*	-	-	**7.75** *196,9*	-
216mm x 216mm x 76mm *200 x 200 x 65*	**8.52 x 8.52 x 3.00** *216,3 x 216,3 x 76,1*	-	-	**7.75** *196,9*	-
216mm x 216mm x 3 *200 x 200 x 80*	**8.52 x 8.52 x 3.50** *216,3 x 216,3 x 88,9*	-	-	**7.75** *196,9*	-

Figures 221 & 321 Reducing Tees

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Figure 221 Reducing Tee Cast

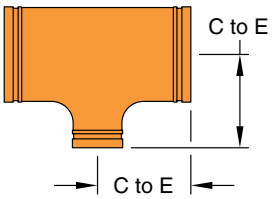
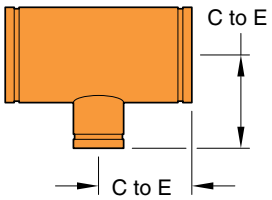


Figure 321 Reducing Tee Fabricated



Pipe Size		Figure 221 - Cast		Figure 321 - Fabricated	
Nominal Inches *mm*	O.D. Inches *mm*	C to E Inches *mm*	Approx. Weight Lbs *Kg*	C to E Inches *mm*	Approx. Weight Lbs *Kg*
216mm x 216mm x 4	**8.52 x 8.52 x 4.50**	-	-	**7.75**	-
200 x 200 x 100	*216,3 x 216,3 x 114,1*			*196,9*	
216mm x 216mm x 139mm	**8.52 x 8.52 x 5.50**	-	-	**7.75**	-
200 x 200 x 125	*216,3 x 216,3 x 139,7*			*196,9*	
216mm x 216mm x 5	**8.52 x 8.52 x 5.56**	-	-	**7.75**	-
200 x 200 x 125	*216,3 x 2165,3 x 141,3*			*196,9*	
216mm x 216mm x 165mm	**8.52 x 8.52 x 6.50**	-	-	**7.75**	-
200 x 200 x 150	*216,3 x 216,3 x 165,1*			*196,9*	
216mm x 216mm x 6	**8.52 x 8.52 x 6.63**	-	-	**7.75**	-
200 x 200 x 150	*216,3 x 216,3 x 168,3*			*196,9*	
8 x 8 x 2	**8.63 x 8.63 x 2.375**	-	-	**7.75**	**36.2**
200 x 200 x 50	*219,1 x 219,1 x 60,3*			*196,9*	*16,4*
8 x 8 x 2-1/2	**8.63 x 8.63 x 2.88**	-	-	**7.75**	**36.4**
200 x 200 x 65	*219,1 x 219,1 x 73,0*			*196,9*	*16,5*
8 x 8 x 76mm	**8.63 x 8.63 x 3.00**	-	-	**7.75**	-
200 x 200 x 65	*216,1 x 219,1 x 76,1*			*196,9*	
8 x 8 x 3	**8.63 x 8.63 x 3.50**	-	-	**7.75**	**36.5**
200 x 200 x 80	*219,1 x 219,1 x 88,9*			*196,9*	*16,6*
8 x 8 x 4	**8.63 x 8.63 x 4.50**	**7.75**	**37.2**	**7.75**	-
200 x 200 x 100	*219,1 x 219,1 x 114,1*	*196,9*	*16,9*	*196,9*	
8 x 8 x 139mm	**8.63 x 8.63 x 5.56**	**7.75**	**37.7**	**7.75**	-
200 x 200 x 125	*219,1 x 219,1 x 139,7*	*196,9*	*17,1*	*196,9*	
8 x 8 x 5	**8.63 x 8.63 x 5.50**	-	-	**7.75**	**36.8**
200 x 200 x 125	*219,1 x 219,1 x 141,3*			*196,9*	*16,7*
8 x 8 x 165mm	**8.63 x 8.63 x 6.50**	**7.75**	**37.7**	**7.75**	-
200 x 200 x 150	*219,1 x 219,1 x 165,1*	*196,9*	*17,1*	*196,9*	
8 x 8 x 6	**8.63 x 8.63 x 6.63**	**7.75**	**37.4**	**7.75**	-
200 x 200 x 150	*219,1 x 219,1 x 168,3*	*196,9*	*17,0*	*196,9*	
267mm x 267mm x 4	**10.53 x 10.53 x 4.50**	-	-	**9.00**	-
250 x 250 x 100	*267,4 x 267,4 x 114,3*			*228,6*	
267mm x 267mm x 139mm	**10.53 x 10.53 x 5.50**	-	-	**9.00**	-
250 x 250 x 125	*267,4 x 267,4 x 139,7*			*228,6*	
267mm x 267mm x 5	**10.53 x 10.53 x 5.56**	-	-	**9.00**	-
250 x 250 x 125	*267,4 x 267,4 x 141,3*			*228,6*	
267mm x 267mm x 165mm	**10.53 x 10.53 x 6.50**	-	-	**9.00**	-
250 x 250 x 150	*267,4 x 267,4 x 165,1*			*228,6*	
267mm x 267mm x 6	**10.53 x 10.53 x 6.63**	-	-	**9.00**	-
250 x 250 x 150	*267,4 x 267,4 x 168,3*			*228,6*	
267mm x 267mm x 216mm	**10.53 x 10.53 x 8.52**	-	-	**9.00**	-
250 x 250 x 200	*267,4 x 267,4 x 216,3*			*228,6*	
267mm x 267mm x 8	**10.53 x 10.53 x 8.63**	-	-	**9.00**	-
250 x 250 x 200	*267,4 x 267,4 x 219,1*			*228,6*	
10 x 10 x 2	**10.75 x 10.75 x 2.37**	-	-	**9.00**	**57.1**
250 x 250 x 50	*273,0 x 273,0 x 60,3*			*228,6*	*25,9*
10 x 10 x 3	**10.75 x 10.75 x 3.50**	-	-	**9.00**	**57.4**
250 x 250 x 80	*273,0 x 273,0 x 88,9*			*228,6*	*26,0*
10 x 10 x 4	**10.75 x 10.75 x 4.50**	-	-	**9.00**	**58.0**
250 x 250 x 100	*273,0 x 273,0 x 114,3*			*228,6*	*26,3*

Figures 221 & 321 Reducing Tees

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Figure 221 Reducing Tee Cast

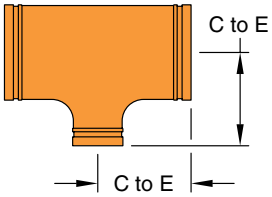
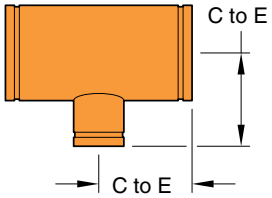


Figure 321 Reducing Tee Fabricated



Pipe Size		Figure 221 - Cast		Figure 321 - Fabricated	
Nominal Inches *mm*	O.D. Inches *mm*	C to E Inches *mm*	Approx. Weight Lbs *Kg*	C to E Inches *mm*	Approx. Weight Lbs *Kg*
10 x 10 x 139mm *250 x 250 x 125*	**10.75 x 10.75 x 5.50** *273,0 x 273,0 x 139,7*	-	-	**9.00** *228,6*	-
10 x 10 x 5 *250 x 250 x 125*	**10.75 x 10.75 x 5.56** *273,0 x 273,0 x 141,3*	-	-	**9.00** *228,6*	**57.8** *26,2*
10 x 10 x 165mm *250 x 250 x 150*	**10.75 x 10.75 x 6.50** *273,0 x 273,0 x 165,1*	-	-	**9.00** *228,6*	-
10 x 10 x 6 *250 x 250 x 150*	**10.75 x 10.75 x 6.63** *273,0 x 273,0 x 168,3*	-	-	**9.00** *228,6*	**66.0** *27,2*
10 x 10 x 216mm *250 x 250 x 200*	**10.75 x 10.75 x 8.52** *273,0 x 273,0 x 216,3*	-	-	**9.00** *228,6*	-
10 x 10 x 8 *250 x 250 x 200*	**10.75 x 10.75 x 8.63** *273,0 x 273,0 x 219,1*	-	-	**9.00** *228,6*	**62.0** *28,1*
318mm x 318mm x 4 *300 x 300 x 100*	**12.54 x 12.54 x 4.50** *318,5 x 318,5 x 114,3*	-	-	**10.00** *254,0*	-
318mm x 318mm x 139mm *300 x 300 x 125*	**12.54 x 12.54 x 5.50** *318,5 x 318,5 x 139,7*	-	-	**10.00** *254,0*	-
318mm x 318mm x 5 *300 x 300 x 125*	**12.54 x 12.54 x 5.56** *318,5 x 318,5 x 141,3*	-	-	**10.00** *254,0*	-
318mm x 318mm x 165mm *300 x 300 x 150*	**12.54 x 12.54 x 6.50** *318,5 x 318,5 x 165,1*	-	-	**10.00** *254,0*	-
318mm x 318mm x 6 *300 x 300 x 150*	**12.54 x 12.54 x 6.63** *318,5 x 318,5 x 168,3*	-	-	**10.00** *254,0*	-
318mm x 318mm x 216mm *300 x 300 x 200*	**12.54 x 12.54 x 8.52** *318,5 x 318,5 x 216,3*	-	-	**10.00** *254,0*	-
318mm x 318mm x 8 *300 x 300 x 200*	**12.54 x 12.54 x 8.63** *318,5 x 318,5 x 219,1*	-	-	**10.00** *254,0*	-
318mm x 318mm x 267mm *300 x 300 x 250*	**12.54 x 12.54 x 10.53** *318,5 x 318,5 x 267,4*	-	-	**10.00** *254,0*	-
318mm x 318mm x 10 *300 x 300 x 250*	**12.54 x 12.54 x 10.75** *318,5 x 318,5 x 273,0*	-	-	**10.00** *254,0*	-
12 x 12 x 3 *300 x 300 x 80*	**12.75 x 12.75 x 3.50** *323,9 x 323,9 x 88,9*	-	-	**10.00** *254,0*	**80.2** *36,4*
12 x 12 x 4 *300 x 300 x 100*	**12.75 x 12.75 x 4.50** *323,9 x 323,9 x 114,3*	-	-	**10.00** *254,0*	**80.5** *36,5*
12 x 12 x 139mm *300 x 300 x 125*	**12.75 x 12.75 x 5.50** *323,9 x 323,9 x 139,7*	-	-	**10.00** *254,0*	-
12 x 12 x 5 *300 x 300 x 125*	**12.75 x 12.75 x 5.56** *323,9 x 323,9 x 141,3*	-	-	**10.00** *254,0*	**80.7** *36,6*
12 x 12 x 165mm *300 x 300 x 150*	**12.75 x 12.75 x 6.50** *323,9 x 323,9 x 165,1*	-	-	**10.00** *254,0*	-
12 x 12 x 6 *300 x 300 x 150*	**12.75 x 12.75 x 6.63** *323,9 x 323,9 x 168,3*	-	-	**10.00** *254,0*	**80.9** *36,7*
12 x 12 x 216mm *300 x 300 x 200*	**12.75 x 12.75 x 8.52** *323,9 x 323,9 x 216,3*	-	-	**10.00** *254,0*	-
12 x 12 x 8 *300 x 300 x 200*	**12.75 x 12.75 x 8.63** *323,9 x 323,9 x 219,1*	-	-	**10.00** *254,0*	**76.3** *34,6*
12 x 12 x 267mm *300 x 300 x 250*	**12.75 x 12.75 x 10.53** *323,9 x 323,9 x 267,4*	-	-	**10.00** *254,0*	-
12 x 12 x 10 *300 x 300 x 250*	**12.75 x 12.75 x 10.75** *323,9 x 323,9 x 273,0*	-	-	**10.00** *254,0*	**77.6** *35,2*

Figures 221 & 321 Reducing Tees

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Figure 221 Reducing Tee Cast

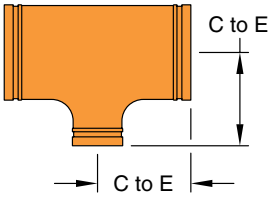
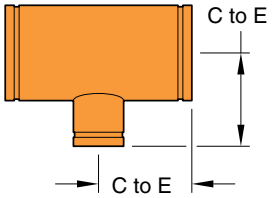


Figure 321 Reducing Tee Fabricated



Pipe Size		Figure 221 - Cast		Figure 321 - Fabricated	
Nominal Inches *mm*	O.D. Inches *mm*	C to E Inches *mm*	Approx. Weight Lbs *Kg*	C to E Inches *mm*	Approx. Weight Lbs *Kg*
14 x 14 x 6	**14.00 x 14.00 x 6.63**	-	-	**11.00**	**103.3**
350 x 350 x 150	*355,6 x 355,6 x 168,3*			*279,4*	*46,9*
14 x 14 x 8	**14.00 x 14.00 x 8.63**	-	-	**11.00**	**103.4**
350 x 350 x 200	*355,6 x 355,6 x 219,1*			*279,4*	*46,9*
14 x 14 x 10	**14.00 x 14.00 x 10.75**	-	-	**11.00**	**104.3**
350 x 350 x 250	*355,6 x 355,6 x 273,0*			*279,4*	*47,3*
14 x 14 x 12	**14.00 x 14.00 x 12.75**	-	-	**11.00**	**105.3**
350 x 350 x 300	*355,6 x 355,6 x 323,9*			*279,4*	*47,8*
16 x 16 x 4	**16.00 x 16.00 x 4.50**	-	-	**12.00**	**110.7**
400 x 400 x 100	*406,4 x 406,4 x 114,3*			*304,8*	*50,2*
16 x 16 x 8	**16.00 x 16.00 x 8.63**	-	-	**12.00**	**128.5**
400 x 400 x 200	*406,4 x 406,4 x 219,1*			*304,8*	*58,3*
16 x 16 x 10	**16.00 x 16.00 x 10.75**	-	-	**12.00**	**129.3**
400 x 400 x 250	*406,4 x 406,4 x 273,0*			*304,8*	*58,6*
16 x 16 x 12	**16.00 x 16.00 x 12.75**	-	-	**12.00**	**130.2**
400 x 400 x 300	*406,4 x 406,4 x 323,9*			*304,8*	*59,1*
16 x 16 x 14	**16.00 x 16.00 x 14.00**	-	-	**12.00**	**140.4**
400 x 400 x 350	*406,4 x 406,4 x 355,6*			*304,8*	*63,7*
18 x 18 x 8	**18.00 x 18.00 x 8.63**	-	-	**15.50**	**192.7**
450 x 450 x 200	*457,2 x 457,2 x 219,1*			*393,7*	*87,4*
18 x 18 x 10	**18.00 x 18.00 x 10.75**	-	-	**15.50**	**193.6**
450 x 450 x 250	*457,2 x 457,2 x 273,0*			*393,7*	*87,8*
18 x 18 x 12	**18.00 x 18.00 x 12.75**	-	-	**15.50**	**196.3**
450 x 450 x 300	*457,2 x 457,2 x 323,9*			*393,7*	*89,3*
18 x 18 x 14	**18.00 x 18.00 x 14.00**	-	-	**15.50**	**201.3**
450 x 450 x 350	*457,2 x 457,2 x 355,6*			*393,7*	*91,3*
18 x 18 x 16	**18.00 x 18.00 x 16.00**	-	-	**15.50**	**203.2**
450 x 450 x 400	*457,2 x 457,2 x 406,4*			*393,7*	*92,2*
20 x 20 x 14	**20.00 x 20.00 x 14.00**	-	-	**17.25**	**247.9**
500 x 500 x 350	*508,0 x 508,0 x 355,6*			*450,9*	*112,4*
20 x 20 x 16	**20.00 x 20.00 x 16.00**	-	-	**17.25**	**250.1**
500 x 500 x 400	*508,0 x 508,0 x 406,4*			*450,9*	*113,4*
20 x 20 x 18	**20.00 x 20.00 x 18.00**	-	-	**17.25**	**252.2**
500 x 500 x 450	*508,0 x 508,0 x 457,2*			*450,9*	*114,4*
24 x 24 x 10	**24.00 x 24.00 x 10.75**	-	-	**20.00**	**330.9**
600 x 600 x 250	*609,6 x 609,6 x 273,0*			*508,0*	*150,1*
24 x 24 x 12	**24.00 x 24.00 x 12.75**	-	-	**20.00**	**334.5**
600 x 600 x 300	*609,6 x 609,6 x 323,9*			*508,0*	*151,7*
24 x 24 x 14	**24.00 x 24.00 x 14.00**	-	-	**20.00**	**340.3**
600 x 600 x 350	*609,6 x 609,6 x 355,6*			*508,0*	*154,4*
24 x 24 x 16	**24.00 x 24.00 x 16.00**	-	-	**20.00**	**342.6**
600 x 600 x 400	*609,6 x 609,6 x 406,4*			*508,0*	*155,4*
24 x 24 x 18	**24.00 x 24.00 x 18.00**	-	-	**20.00**	**344.7**
600 x 600 x 450	*609,6 x 609,6 x 457,2*			*508,0*	*156,4*
24 x 24 x 20	**24.00 x 24.00 x 20.00**	-	-	**20.00**	**346.8**
600 x 600 x 500	*609,6 x 609,6 x 508,0*			*508,0*	*157,8*

◗ Sizes are available to JIS standards. Contact GRINNELL Mechanical Products for details.

For information on larger sizes, contact GRINNELL Mechanical Products.

See page 41 for fitting specifications.

Figure 323 Reducing Tees
(Groove x Groove x Male Thread)

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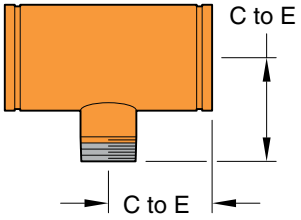
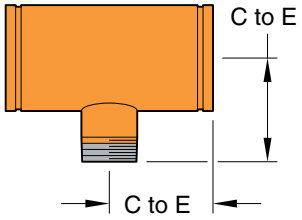


Pipe Size		C to GE & C to TE	Approx. Weight
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Lbs. *kg*
2 x 2 x 1	**2.37 x 2.37 x 1.31**	**3.25**	**2.2**
50 x 50 x 25	*60,3 x 60,3 x 33,4*	*82,6*	*1,0*
2 x 2 x 1-1/4	**2.37 x 2.37 x 1.66**	**3.25**	**2.3**
50 x 50 x 32	*60,3 x 60,3 x 42,4*	*82,6*	*1,0*
2 x 2 x 1-1/2	**2.37 x 2.37 x 1.90**	**3.25**	**1.4**
50 x 50 x 40	*60,3 x 60,3 x 48,3*	*82,6*	*1,1*
2-1/2 x 2-1/2 x 1	**2.87 x 2.87 x 1.31**	**3.75**	**3.6**
65 x 65 x 25	*73,0 x 73,0 x 33,4*	*95,3*	*1,6*
2-1/2 x 2-1/2 x 1-1/4	**2.87 x 2.87 x 1.66**	**3.75**	**3.8**
65 x 65 x 32	*73,0 x 73,0 x 42,4*	*95,3*	*1,7*
2-1/2 x 2-1/2 x 1-1/2	**2.87 x 2.87 x 1.90**	**3.75**	**4.0**
65 x 65 x 40	*73,0 x 73,0 x 48,3*	*95,3*	*1,8*
2-1/2 x 2-1/2 x 2	**2.87 x 2.87 x 2.37**	**3.75**	**4.2**
65 x 65 x 50	*73,0 x 73,0 x 60,3*	*95,3*	*1,9*
76mm x 76mm x 1	**3.00 x 3.00 x 1.31**	**3.75**	**-**
65 x 65 x 25	*76,1 x 76,1 x 33,4*	*95,3*	
76mm x 76mm x 1-1/4	**3.00 x 3.00 x 1.66**	**3.75**	**-**
65 x 65 x 32	*76,1 x 76,1 x 42,4*	*95,3*	
76mm x 76mm x 1-1/2	**3.00 x 3.00 x 1.90**	**3.75**	**-**
65 x 65 x 40	*76,1 x 76,1 x 48,3*	*95,3*	
76mm x 76mm x 2	**3.00 x 3.00 x 2.37**	**3.75**	**-**
65 x 65 x 50	*76,1 x 76,1 x 60,3*	*95,3*	
3 x 3 x 1	**3.50 x 3.50 x 1.31**	**4.25**	**5.7**
80 x 80 x 25	*88,9 x 88,9 x 33,4*	*108,0*	*2,6*
3 x 3 x 1-1/2	**3.50 x 3.50 x 1.90**	**4.25**	**5.8**
80 x 80 x 40	*88,9 x 88,9 x 48,3*	*108,0*	*2,6*
3 x 3 x 2	**3.50 x 3.50 x 2.37**	**4.25**	**5.9**
80 x 80 x 50	*88,9 x 88,9 x 60,3*	*108,0*	*2,7*
3 x 3 x 2-1/2	**3.50 x 3.50 x 2.87**	**4.25**	**6.3**
80 x 80 x 65	*88,9 x 88,9 x 73,0*	*108,0*	*2,9*
3 x 3 x 76mm	**3.50 x 3.50 x 3.00**	**4.25**	**-**
80 x 80 x 65	*88,9 x 88,9 x 76,1*	*108,0*	
108mm x 108mm x 1	**4.25 x 4.25 x 1.31**	**5.00**	**-**
100 x 100 x 25	*108,0 x 108,0 x 33,4*	*127,0*	
108mm x 108mm x 1-1/4	**4.25 x 4.25 x 1.66**	**5.00**	**-**
100 x 100 x 32	*108,0 x 108,0 x 42,4*	*127,0*	
108mm x 108mm x 1-1/2	**4.25 x 4.25 x 1.90**	**5.00**	**-**
100 x 100 x 40	*108,0 x 108,0 x 48,3*	*127,0*	
108mm x 108mm x 2	**4.25 x 4.25 x 2.37**	**5.00**	**-**
100 x 100 x 50	*108,0 x 108,0 x 60,3*	*127,0*	
108mm x 108mm x 2-1/2	**4.25 x 4.25 x 2.87**	**5.00**	**-**
100 x 100 x 65	*108,0 x 108,0 x 73,0*	*127,0*	

Figure 323 Reducing Tees
(Groove x Groove x Male Thread)

Tech Data Sheet: G180



Pipe Size		C to GE & C to TE	Approx. Weight
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Lbs. *kg*
108mm x 108mm x 76mm	**4.25 x 4.25 x 3.00**	**5.00**	**-**
100 x 100 x 65	*108,0 x 108,0 x 76,1*	*127,0*	
108mm x 108mm x 3	**4.25 x 4.25 x 3.50**	**5.00**	**-**
100 x 100 x 80	*108,0 x 108,0 x 88,9*	*127,0*	
4 x 4 x 1	**4.50 x 4.50 x 1.31**	**5.00**	**6.9**
100 x 100 x 25	*114,3 x 114,3 x 33,4*	*127,0*	*3,1*
4 x 4 x 1-1/4	**4.50 x 4.50 x 1.66**	**5.00**	**7.6**
100 x 100 x 32	*114,3 x 114,3 x 42,4*	*127,0*	*3,4*
4 x 4 x 1-1/2	**4.50 x 4.50 x 1.90**	**5.00**	**8.3**
100 x 100 x 40	*114,3 x 114,3 x 48,3*	*127,0*	*3,8*
4 x 4 x 2	**4.50 x 4.50 x 2.37**	**5.00**	**9.6**
100 x 100 x 50	*114,3 x 114,3 x 60,3*	*127,0*	*4,4*
4 x 4 x 2-1/2	**4.50 x 4.50 x 2.87**	**5.00**	**10.0**
100 x 100 x 65	*114,3 x 114,3 x 73,0*	*127,0*	*4,5*
4 x 4 x 76mm	**4.50 x 4.50 x 3.00**	**5.00**	**-**
100 x 100 x 65	*114,3 x 114,3 x 76,1*	*127,0*	
4 x 4 x 3	**4.50 x 4.50 x 3.50**	**5.00**	**10.3**
100 x 100 x 80	*114,3 x 114,3 x 88,9*	*127,0*	*4,7*
133mm x 133mm x 2	**5.25 x 5.25 x 2.37**	**5.50**	**-**
125 x 125 x 50	*133,0 x 133,0 x 60,3*	*139,7*	
133mm x 133mm x 2-1/2	**5.25 x 5.25 x 2.87**	**5.50**	**-**
125 x 125 x 65	*133,0 x 133,0 x 73,0*	*139,7*	
133mm x 133mm x 76mm	**5.25 x 5.25 x 3.00**	**5.50**	**-**
125 x 125 x 65	*133,0 x 133,0 x 76,1*	*139,7*	
133mm x 133mm x 3	**5.25 x 5.25 x 3.50**	**5.50**	**-**
125 x 125 x 80	*133,0 x 133,0 x 88,9*	*139,7*	
133mm x 133mm x 4	**5.25 x 5.25 x 4.50**	**5.50**	**-**
125 x 125 x 100	*133,0 x 133,0 x 114,3*	*139,7*	
139mm x 139mm x 2	**5.50 x 5.50 x 2.37**	**5.50**	**-**
125 x 125 x 50	*139,7 x 139,7 x 60,3*	*139,7*	
139mm x 139mm x 2-1/2	**5.50 x 5.50 x 2.87**	**5.50**	**-**
125 x 125 x 65	*139,7 x 139,7 x 73,0*	*139,7*	
139mm x 139mm x 76mm	**5.50 x 5.50 x 3.00**	**5.50**	**-**
125 x 125 x 65	*139,7 x 139,7 x 76,1*	*139,7*	
139mm x 139mm x 3	**5.50 x 5.50 x 3.50**	**5.50**	**-**
125 x 125 x 80	*139,7 x 139,7 x 88,9*	*139,7*	
139mm x 139mm x 4	**5.50 x 5.50 x 4.50**	**5.50**	**-**
125 x 125 x 100	*139,7 x 139,7 x 114,3*	*139,7*	
5 x 5 x 2	**5.56 x 5.56 x 2.37**	**5.50**	**14.0**
125 x 125 x 50	*141,3 x 141,3 x 60,3*	*139,7*	*6,4*
5 x 5 x 76mm	**5.56 x 5.56 x 3.00**	**5.50**	**-**
125 x 125 x 65	*141,3 x 141,3 x 76,1*	*139,7*	
5 x 5 x 2-1/2	**5.56 x 5.56 x 2.87**	**5.50**	**14.3**
125 x 125 x 65	*141,3 x 141,3 x 73,0*	*139,7*	*6,5*
5 x 5 x 3	**5.56 x 5.56 x 3.50**	**5.50**	**14.6**
125 x 125 x 80	*141,3 x 141,3 x 88,9*	*139,7*	*6,6*
5 x 5 x 4	**5.56 x 5.56 x 4.50**	**5.50**	**15.1**
125 x 125 x 100	*141,3 x 141,3 x 114,3*	*139,7*	*6,8*

Figure 323 Reducing Tees
(Groove x Groove x Male Thread)

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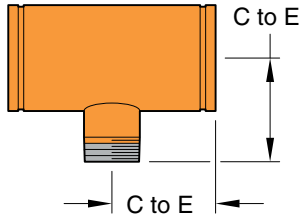
Tech Data Sheet: G180



Pipe Size		C to GE & C to TE	Approx. Weight
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Lbs. *kg*
159mm x 159mm x 2	**6.25 x 6.25 x 2.37**	**6.50**	-
150 x 150 x 50	*159,0 x 159,0 x 60,3*	*165,1*	
159mm x 159mm x 76mm	**6.25 x 6.25 x 3.00**	**6.50**	-
150 x 150 x 65	*159,0 x 159,0 x 76,1*	*165,1*	
159mm x 159mm x 2-1/2	**6.25 x 6.25 x 2.87**	**6.50**	-
150 x 150 x 65	*159,0 x 159,0 x 73,0*	*165,1*	
159mm x 159mm x 3	**6.25 x 6.25 x 3.50**	**6.50**	-
150 x 150 x 80	*159,0 x 159,0 x 88,9*	*165,1*	
159mm x 159mm x 4	**6.25 x 6.25 x 4.50**	**6.50**	-
150 x 150 x 100	*159,0 x 159,0 x 114,3*	*165,1*	
159mm x 159mm x 139mm	**6.25 x 6.25 x 5.50**	**6.50**	-
150 x 150 x 125	*159,0 x 159,0 x 139,7*	*165,1*	
159mm x 159mm x 5	**6.25 x 6.25 x 5.56**	**6.50**	-
150 x 150 x 125	*159,0 x 159,0 x 141,3*	*165,1*	
165mm x 165mm x 2	**6.50 x 6.50 x 2.37**	**6.50**	-
150 x 150 x 50	*165,1 x 165,1 x 60,3*	*165,1*	
165mm x 165mm x 76mm	**6.50 x 6.50 x 3.00**	**6.50**	-
150 x 150 x 65	*165,1 x 165,1 x 76,1*	*165,1*	
165mm x 165mm x 2-1/2	**6.50 x 6.50 x 2.87**	**6.50**	-
150 x 150 x 65	*165,1 x 165,1 x 73,0*	*165,1*	
165mm x 165mm x 3	**6.50 x 6.50 x 3.50**	**6.50**	-
150 x 150 x 80	*165,1 x 165,1 x 88,9*	*165,1*	
165mm x 165mm x 4	**6.50 x 6.50 x 4.50**	**6.50**	-
150 x 150 x 100	*165,1 x 165,1 x 114,3*	*165,1*	
165mm x 165mm x 139mm	**6.50 x 6.50 x 5.50**	**6.50**	-
150 x 150 x 125	*165,1 x 165,1 x 139,7*	*165,1*	
165mm x 165mm x 5	**6.50 x 6.50 x 5.56**	**6.50**	-
150 x 150 x 125	*165,1 x 165,1 x 141,3*	*165,1*	
6 x 6 x 2	**6.63 x 6.63 x 2.37**	**6.50**	**21.3**
150 x 150 x 50	*168,3 x 168,3 x 60,3*	*165,1*	*9,7*
6 x 6 x 2-1/2	**6.63 x 6.63 x 2.87**	**6.50**	**21.7**
150 x 150 x 65	*168,3 x 168,3 x 73,0*	*165,1*	*9,8*
6 x 6 x 3	**6.63 x 6.6 x 3.50**	**6.50**	**22.0**
150 x 150 x 80	*168,3 x 168,3 x 88,9*	*165,1*	*10,0*
6 x 6 x 4	**6.63 x 6.63 x 4.50**	**6.50**	**22.5**
150 x 150 x 100	*168,3 x 168,3 x 114,3*	*165,1*	*10,2*
6 x 6 x 139mm	**6.63 x 6.63 x 5.50**	**6.50**	-
150 x 150 x 125	*168,3 x 168,3 x 139,7*	*165,1*	
6 x 6 x 5	**6.63 x 6.63 x 5.56**	**6.50**	**23.1**
150 x 150 x 125	*168,3 x 168,3 x 141,3*	*165,1*	*10,5*
216mm x 216mm x 2	**8.52 x 8.52 x 2.37**	**7.75**	-
200 x 200 x 50	*216,3 x 216,3 x 60,3*	*196,9*	
216mm x 216mm x 76mm	**8.52 x 8.52 x 3.00**	**7.75**	-
200 x 200 x 65	*216,3 x 216,3 x 76,1*	*196,9*	
216mm x 216mm x 3	**8.52 x 8.52 x 3.50**	**7.75**	-
200 x 200 x 80	*216,3 x 216,3 x 88,9*	*196,9*	
216mm x 216mm x 4	**8.52 x 8.52 x 4.50**	**7.75**	-
200 x 200 x 100	*216,3 x 216,3 x 114,3*	*196,9*	
216mm x 216mm x 139mm	**8.52 x 8.52 x 5.50**	**7.75**	-
200 x 200 x 125	*216,3 x 216,3 x 139,7*	*196,9*	

Figure 323 Reducing Tees
(Groove x Groove x Male Thread)

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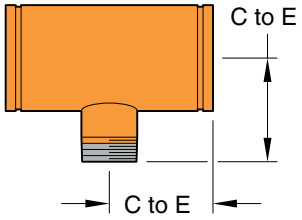
Tech Data Sheet: G180



Pipe Size		C to GE & C to TE	Approx. Weight
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Lbs. *kg*
216mm x 216mm x 165mm	**8.52 x 8.52 x 6.50**	**7.75**	**-**
200 x 200 x 150	*216,3 x 216,3 x 165,1*	*196,9*	
216mm x 216mm x 5	**8.52 x 8.52 x 5.56**	**7.75**	**-**
200 x 200 x 125	*216,3 x 216,3 x 141,3*	*196,9*	
216mm x 216mm x 6	**8.52 x 8.52 x 6.63**	**7.75**	**-**
200 x 200 x 150	*216,3 x 216,3 x 168,3*	*196,9*	
8 x 8 x 2	**8.63 x 8.63 x 2.37**	**7.75**	**32.7**
200 x 200 x 50	*219,1 x 219,1 x 60,3*	*196,9*	*14,8*
8 x 8 x 76mm	**8.63 x 8.63 x 3.00**	**7.75**	**-**
200 x 200 x 65	*219,1 x 219,1 x 76,1*	*196,9*	
8 x 8 x 3	**8.63 x 8.63 x 3.50**	**7.75**	**33.5**
200 x 200 x 80	*219,1 x 219,1 x 88,9*	*196,9*	*15,2*
8 x 8 x 4	**8.63 x 8.63 x 4.50**	**7.75**	**34.5**
200 x 200 x 100	*219,1 x 219,1 x 114,1*	*196,9*	*15,6*
8 x 8 x 139mm	**8.63 x 8.63 x 5.50**	**7.75**	**-**
200 x 200 x 125	*219,1 x 219,1 x 139,7*	*196,9*	
8 x 8 x 165mm	**8.63 x 8.63 x 6.50**	**7.75**	**-**
200 x 200 x 150	*219,1 x 219,1 x 165,1*	*196,9*	
8 x 8 x 5	**8.63 x 8.63 x 5.56**	**7.75**	**34.7**
200 x 200 x 125	*219,1 x 219,1 x 141,3*	*196,9*	*15,7*
8 x 8 x 6	**8.63 x 8.63 x 6.63**	**7.75**	**35.6**
200 x 200 x 150	*219,1 x 219,1 x 168,3*	*196,9*	*16,1*
267mm x 267mm x 2	**10.53 x 10.53 x 2.37**	**9.00**	**-**
250 x 250 x 50	*267,4 x 267,4 x 60,3*	*228,6*	
267mm x 267mm x 76mm	**10.53 x 10.53 x 3.00**	**9.00**	**-**
250 x 250 x 65	*267,4 x 267,4 x 76,1*	*228,6*	
267mm x 267mm x 3	**10.53 x 10.53 x 3.50**	**9.00**	**-**
250 x 250 x 80	*267,4 x 267,4 x 88,9*	*228,6*	
267mm x 267mm x 4	**10.53 x 10.53 x 4.50**	**9.00**	**-**
250 x 250 x 100	*267,4 x 267,4 x 114,3*	*228,6*	
267mm x 267mm x 139mm	**10.53 x 10.53 x 5.50**	**9.00**	**-**
250 x 250 x 125	*267,4 x 267,4 x 139,7*	*228,6*	
267mm x 267mm x 165mm	**10.53 x 10.53 x 6.50**	**9.00**	**-**
250 x 250 x 150	*267,4 x 267,4 x 165,1*	*228,6*	
267mm x 267mm x 5	**10.53 x 10.53 x 5.56**	**9.00**	**-**
250 x 250 x 125	*267,4 x 267,4 x 141,3*	*228,6*	
267mm x 267mm x 6	**10.53 x 10.53 x 6.63**	**9.00**	**-**
250 x 250 x 150	*267,4 x 267,4 x 168,3*	*228,6*	
267mm x 267mm x 8	**10.53 x 10.53 x 8.63**	**9.00**	**-**
250 x 250 x 200	*267,4 x 267,4 x 219,1*	*228,6*	
10 x 10 x 2	**10.75 x 10.75 x 2.37**	**9.00**	**52.2**
250 x 250 x 50	*273,0 x 273,0 x 60,3*	*228,6*	*23,7*
10 x 10 x 76mm	**10.75 x 10.75 x 3.00**	**9.00**	**-**
250 x 250 x 65	*273,0 x 273,0 x 76,1*	*228,6*	
10 x 10 x 3	**10.75 x 10.75 x 3.50**	**9.00**	**53.0**
250 x 250 x 80	*273,0 x 273,0 x 88,9*	*228,6*	*24,0*
10 x 10 x 4	**10.75 x 10.75 x 4.50**	**9.00**	**53.6**
250 x 250 x 100	*273,0 x 273,0 x 114,3*	*228,6*	*24,3*
10 x 10 x 139mm	**10.75 x 10.75 x 5.50**	**9.00**	**-**
250 x 250 x 125	*273,0 x 273,0 x 139,7*	*228,6*	

Figure 323 Reducing Tees
(Groove x Groove x Male Thread)

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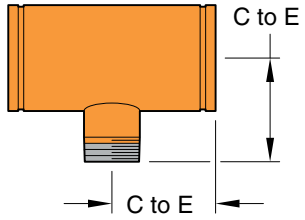
Tech Data Sheet: G180



Pipe Size		C to GE & C to TE	Approx. Weight
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Lbs. *kg*
10 x 10 x 165mm	**10.75 x 10.75 x 6.50**	**9.00**	**-**
250 x 250 x 150	*273,0 x 273,0 x 165,1*	*228,6*	
10 x 10 x 5	**10.75 x 10.75 x 5.56**	**9.00**	**54.2**
250 x 250 x 125	*273,0 x 273,0 x 141,3*	*228,6*	*24,6*
10 x 10 x 6	**10.75 x 10.75 x 6.63**	**9.00**	**54.9**
250 x 250 x 150	*273,0 x 273,0 x 168,3*	*228,6*	*24,9*
10 x 10 x 8	**10.75 x 10.75 x 8.63**	**9.00**	**55.3**
250 x 250 x 200	*273,0 x 273,0 x 219,1*	*228,6*	*25,1*
318mm x 318mm x 3	**12.54 x 12.54 x 3.50**	**10.00**	**-**
300 x 300 x 80	*318,5 x 318,5 x 88,9*	*254,0*	
318mm x 318mm x 4	**12.54 x 12.54 x 4.50**	**10.00**	**-**
300 x 300 x 100	*318,5 x 318,5 x 114,3*	*254,0*	
318mm x 318mm x 139mm	**12.54 x 12.54 x 5.50**	**10.00**	**-**
300 x 300 x 125	*318,5 x 318,5 x 139,7*	*254,0*	
318mm x 318mm x 5	**12.54 x 12.54 x 5.56**	**10.00**	**-**
300 x 300 x 125	*318,5 x 318,5 x 141,3*	*254,0*	
318mm x 318mm x 165mm	**12.54 x 12.54 x 6.50**	**10.00**	**-**
300 x 300 x 150	*318,5 x 318,5 x 165,1*	*254,0*	
318mm x 318mm x 6	**12.54 x 12.54 x 6.63**	**10.00**	**-**
300 x 300 x 150	*318,5 x 318,5 x 168,3*	*254,0*	
318mm x 318mm x 8	**12.54 x 12.54 x 8.63**	**10.00**	**-**
300 x 300 x 200	*318,5 x 318,5 x 219,1*	*254,0*	
318mm x 318mm x 10	**12.54 x 12.54 x 10.75**	**10.00**	**-**
300 x 300 x 250	*318,5 x 318,5 x 273,0*	*254,0*	
12 x 12 x 3	**12.75 x 12.75 x 3.50**	**10.00**	**74.6**
300 x 300 x 80	*323,9 x 323,9 x 88,9*	*254,0*	*33,8*
12 x 12 x 4	**12.75 x 12.75 x 4.50**	**10.00**	**75.1**
300 x 300 x 100	*323,9 x 323,9 x 141,3*	*254,0*	*34,1*
12 x 12 x 139mm	**12.75 x 12.75 x 5.50**	**10.00**	**-**
300 x 300 x 125	*323,9 x 323,9 x 139,7*	*254,0*	
12 x 12 x 5	**12.75 x 12.75 x 5.56**	**10.00**	**75.6**
300 x 300 x 125	*323,9 x 323,9 x 114,3*	*254,0*	*34,3*
12 x 12 x 165mm	**12.75 x 12.75 x 6.50**	**10.00**	**-**
300 x 300 x 150	*323,9 x 323,9 x 139,7*	*254,0*	
12 x 12 x 6	**12.75 x 12.75 x 6.63**	**10.00**	**76.2**
300 x 300 x 150	*323,9 x 323,9 x 219,1*	*254,0*	*34,6*
12 x 12 x 8	**12.75 x 12.75 x 8.63**	**10.00**	**76.3**
300 x 300 x 200	*323,9 x 323,9 x 219,1*	*254,0*	*34,6*
12 x 12 x 10	**12.75 x 12.75 x 10.75**	**10.00**	**77.6**
300 x 300 x 250	*323,9 x 323,9 x 273,0*	*254,0*	*35,2*

Available with BSP threads. Contact GRINNELL Mechanical Products for details.
For information on larger sizes, contact GRINNELL Mechanical Products.
See page 41 for fitting specifications.

Figures 250 & 350 Concentric Reducers

Tech Data Sheet: G180

Pipe Size		Figure 250 - Cast		Figure 350 - Fabricated	
Nominal Inches *mm*	O.D. Inches *mm*	E to E Inches *mm*	Approx. Weight Lbs. *kg*	E to E Inches *mm*	Approx. Weight Lbs. *kg*
1-1/4 x 1	**1.66 x 1.31**	**2.50**	**0.7**	**2.50**	**-**
32 x 25	*42,4 x 33,4*	*63,5*	*0,3*	*63,5*	
1-1/2 x 1	**1.90 x 1.31**	**-**	**-**	**2.50**	**0.7**
40 x 25	*48,3 x 33,4*			*63,5*	*0,3*
1-1/2 x 1-1/4	**1.90 x 1.66**	**2.50**	**0.8**	**2.50**	**-**
40 x 32	*48,3 x 42,4*	*63,5*	*0,3*	*63,5*	
2 x 1	**2.37 x 1.31**	**-**	**-**	**2.50**	**0.9**
50 x 25	*60,3 x 33,4*			*63,5*	*0,4*
2 x 1-1/4	**2.37 x 1.66**	**-**	**-**	**2.50**	**0.9**
50 x 32	*60,3 x 42,4*			*63,5*	*0,4*
2 x 1-1/2	**2.37 x 1.90**	**-**	**-**	**2.50**	**1.0**
50 x 40	*60,3 x 48,3*			*63,5*	*0,5*
2-1/2 x 1	**2.87 x 1.31**	**-**	**-**	**2.50**	**1.2**
65 x 25	*73,0 x 33,4*			*63,5*	*0,5*
2-1/2 x 1-1/4	**2.87 x 1.66**	**2.50**	**1.4**	**2.50**	**-**
65 x 32	*73,0 x 42,4*	*63,5*	*0,6*	*63,5*	
2-1/2 x 1-1/2	**2.87 x 1.90**	**2.50**	**1.4**	**2.50**	**-**
65 x 40	*73,0 x 48,3*	*63,5*	*0,6*	*63,5*	
2-1/2 x 2	**2.87 x 2.37**	**2.50**	**1.3**	**2.50**	**-**
65 x 50	*73,0 x 60,3*	*63,5*	*0,6*	*63,5*	
76mm x 1	**3.00 x 1.31**	**-**	**-**	**2.50**	**-**
65 x 25	*76,1 x 33,4*			*63,5*	
76mm x 1-1/4	**3.00 x 1.66**	**2.50**	**1.4**	**2.50**	**-**
65 x 32	*76,1 x 42,4*	*63,5*	*0,6*	*63,5*	
76mm x 1-1/2	**3.00 x 1.90**	**2.50**	**1.4**	**2.50**	**-**
65 x 40	*76,1 x 48,3*	*63,5*	*0,6*	*63,5*	
76mm x 2	**3.00 x 2.37**	**2.50**	**1.5**	**2.50**	**-**
65 x 50	*76,1 x 60,3*	*63,5*	*0,7*	*63,5*	
3 x 1	**3.50 x 1.31**	**-**	**-**	**2.50**	**1.3**
80 x 25	*88,9 x 33,4*			*63,5*	*0,6*
3 x 1-1/4	**3.50 x 1.66**	**-**	**-**	**2.50**	**1.3**
80 x 32	*88,9 x 42,4*			*63,5*	*0,6*
3 x 1-1/2	**3.50 x 1.90**	**2.50**	**1.8**	**2.50**	**-**
80 x 40	*88,9 x 48,3*	*63,5*	*0,8*	*63,5*	
3 x 2	**3.50 x 2.37**	**2.50**	**1.7**	**2.50**	**-**
80 x 50	*88,9 x 60,3*	*63,5*	*0,8*	*63,5*	
3 x 2-1/2	**3.50 x 2.87**	**2.50**	**1.7**	**2.50**	**-**
80 x 65	*88,9 x 70,3*	*63,5*	*0,8*	*63,5*	
3 x 76mm	**3.50 x 3.00**	**2.50**	**2.0**	**2.50**	**-**
80 x 65	*88,9 x 76,1*	*63,5*	*0,9*	*63,5*	
108mm x 1	**4.25 x 1.31**	**-**	**-**	**3.00**	**-**
100 x 25	*108,0 x 33,4*			*76,2*	
108mm x 1-1/4	**4.25 x 1.66**	**-**	**-**	**3.00**	**-**
100 x 32	*108,0 x 42,4*			*76,2*	
108mm x 1-1/2	**4.25 x 1.90**	**-**	**-**	**3.00**	**-**
100 x 40	*108,0 x 48,3*			*76,2*	

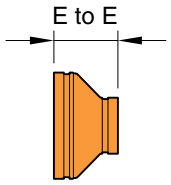


Figure 250
Concentric Reducer Cast

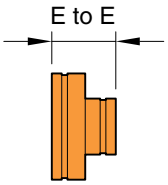


Figure 350
Concentric Reducer Fabricated

Figures 250 & 350 Concentric Reducers

(Page 2 of 6)

Tech Data Sheet: G180

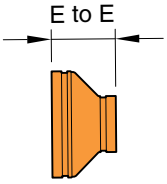


Figure 250
Cast Concentric
Reducer

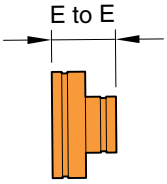


Figure 350
Fabricated Concentric
Reducer

Pipe Size		Figure 250 - Cast		Figure 350 - Fabricated	
Nominal Inches *mm*	O.D. Inches *mm*	E to E Inches *mm*	Approx. Weight Lbs. *kg*	E to E Inches *mm*	Approx. Weight Lbs. *kg*
108mm x 2	**4.25 x 2.37**	-	-	**3.00**	-
100 x 50	*108,0 x 60,3*			*76,2*	
108mm x 2-1/2	**4.25 x 2.87**	-	-	**3.00**	-
100 x 65	*108,0 x 73,0*			*76,2*	
108mm x 76mm	**4.25 x 3.00**	-	-	**3.00**	-
100 x 65	*108,0 x 76,1*			*76,2*	
108mm x 3	**4.25 x 3.50**	-	-	**3.00**	-
100 x 80	*108,0 x 88,9*			*76,2*	
108mm x 4	**4.25 x 4.50**	-	-	**3.00**	-
100 x 100	*108,0 x 114,3*			*76,2*	
4 x 1	**4.50 x 1.31**	-	-	**3.00**	**2.9**
100 x 25	*114,3 x 33,4*			*76,2*	*1,1*
4 x 1-1/4	**4.50 x 1.66**	-	-	**3.00**	**2.2**
100 x 32	*114,3 x 42,4*			*76,2*	*1,0*
4 x 1-1/2	**4.50 x 1.90**	-	-	**3.00**	**2.3**
100 x 40	*114,3 x 48,3*			*76,2*	*1,0*
4 x 2	**4.50 x 2.37**	**3.00**	**2.4**	**3.00**	-
100 x 50	*114,3 x 60,3*	*76,2*	*1,1*	*76,2*	
4 x 2-1/2	**4.50 x 2.87**	**3.00**	**2.7**	**3.00**	-
100 x 65	*114,3 x 73,0*	*76,2*	*1,2*	*76,2*	
4 x 76mm	**4.50 x 3.00**	**3.00**	**3.2**	**3.00**	-
100 x 65	*114,3 x 76,1*	*76,2*	*1,5*	*76,2*	
4 x 3	**4.50 x 3.50**	**3.00**	**2.8**	**3.00**	-
100 x 80	*114,3 x 88,9*	*76,2*	*1,3*	*76,2*	
133mm x 2	**5.25 x 2.37**	-	-	**3.50**	-
125 x 50	*133,0 x 60,3*			*88,9*	
133mm x 2-1/2	**5.25 x 2.87**	-	-	**3.50**	-
125 x 65	*133,0 x 73,0*			*88,9*	
133mm x 76mm	**5.25 x 3.00**	-	-	**3.50**	-
125 x 65	*133,0 x 76,1*			*88,9*	
133mm x 3	**5.25 x 3.50**	-	-	**3.50**	-
125 x 80	*133,0 x 88,9*			*88,9*	
133mm x 108mm	**5.25 x 4.25**	-	-	**3.50**	-
125 x 100	*133,0 x 108,0*			*88,9*	
133mm x 4	**5.25 x 4.50**	-	-	**3.50**	-
125 x 100	*133,0 x 114,3*			*88,9*	
139mm x 2	**5.50 x 2.37**	-	-	**3.50**	-
125 x 50	*139,7 x 60,3*			*88,9*	
139mm x 2-1/2	**5.50 x 2.87**	-	-	**3.50**	-
125 x 65	*139,7 x 73,0*			*88,9*	
139mm x 76mm	**5.50 x 3.00**	-	-	**3.50**	-
125 x 65	*139,7 x 76,1*			*88,9*	
139mm x 3	**5.50 x 3.50**	**3.50**	**4.2**	**3.50**	-
125 x 80	*139,7 x 88,9*	*88,9*	*1,9*	*88,9*	
139mm x 4	**5.50 x 4.50**	**3.50**	**4.4**	**3.50**	-
125 x 100	*139,7 x 114,3*	*88,9*	*2,0*	*88,9*	
5 x 2	**5.56 x 2.37**	-	-	**3.50**	**4.6**
125 x 50	*141,3 x 60,3*			*88,9*	*2,1*
5 x 2-1/2	**5.56 x 2.87**	-	-	**3.50**	**4.5**
125 x 65	*141,3 x 73,0*			*88,9*	*2,0*

Figures 250 & 350 Concentric Reducers

Pipe Size		Figure 250 - Cast		Figure 350 - Fabricated	
Nominal Inches *mm*	O.D. Inches *mm*	E to E Inches *mm*	Approx. Weight Lbs. *kg*	E to E Inches *mm*	Approx. Weight Lbs. *kg*
5 x 76mm	**5.56 x 3.00**	-	-	**3.50**	-
125 x 65	*141,3 x 76,1*			*88,9*	
5 x 3	**5.56 x 3.50**	**3.50**	**4.2**	**3.50**	-
125 x 80	*141,3 x 88,9*	*88,9*	*1,9*	*88,9*	
5 x 108mm	**5.56 x 4.25**	-	-	**3.50**	-
125 x 100	*141,3 x 108,0*			*88,9*	
5 x 4	**5.56 x 4.50**	**3.50**	**4.4**	**3.50**	-
125 x 100	*141,3 x 114,3*	*88,9*	*2,0*	*88,9*	
5 x 139mm	**5.56 x 5.50**	-	-	**3.50**	-
125 x 125	*141,3 x 139,7*			*88,9*	
159mm x 3	**6.25 x 3.50**	-	-	**4.00**	-
150 x 80	*159,0 x 88,9*			*101,6*	
159mm x 108mm	**6.25 x 4.25**	-	-	**4.00**	-
150 x 108	*159,0 x 108,0*			*101,6*	
159mmx 4	**6.25 x 4.50**	-	-	**4.00**	-
150 x 100	*159,0 x 114,3*			*101,6*	
159mm x 133mm	**6.25 x 5.25**	-	-	**4.00**	-
150 x 125	*159,0 x 133,0*			*101,6*	
159mm x 139mm	**6.25 x 5.50**	-	-	**4.00**	-
150 x 125	*159,0 x 139,7*			*101,6*	
165mm x 3	**6.50 x 3.50**	**4.00**	**5.5**	**4.00**	-
150 x 80	*165,1 x 88,9*	*101,6*	*2,5*	*101,6*	
165mm x 4	**6.50 x 4.50**	**4.00**	**6.0.**	**4.00**	-
150 x 100	*165,1 x 114,3*	*101,6*	*2,7*	*101,6*	
165mm x 139mm	**6.50 x 5.50**	**4.00**	**5.6**	**4.00**	-
150 x 125	*165,1 x 139,7*	*101,6*	*2,5*	*101,6*	
165mm x 5	**6.50 x 5.56**	-	-	**4.00**	-
150 x 125	*165,1 x 141,3*			*101,6*	
6 x 2	**6.63 x 2.37**	**4.00**	**5.3**	**4.00**	-
150 x 50	*168,3 x 60,3*	*101,6*	*2,4*	*101,6*	
6 x 2-1/2	**6.63 x 2.87**	**4.00**	**5.7**	**4.00**	-
150 x 65	*168,3 x 73,0*	*101,6*	*2,6*	*101,6*	
6 x 76mm	**6.63 x 3.00**	**4.00**	**6.1**	**4.00**	-
150 x 65	*168,3 x 76,1*	*101,6*	*2,7*	*101,6*	
6 x 3	**6.63 x 3.50**	**4.00**	**5.8**	**4.00**	-
150 x 80	*168,3 x 88,9*	*101,6*	*2,6*	*101,6*	
6 x 108mm	**6.63 x 4.25**	-	-	**4.00**	-
150 x 100	*168,3 x 108,0*			*101,6*	
6 x 4	**6.63 x 4.50**	**4.00**	**6.0**	**4.00**	-
150 x 100	*168,3 x 114,3*	*101,6*	*2,7*	*101,6*	
6 x 133mm	**6.63 x 5.25**	-	-	**4.00**	-
150 x 125	*168,3 x 133,0*			*101,6*	
6 x 139mm	**6.63 x 5.50**	**4.00**	**6.3**	**4.00**	-
150 x 100	*168,3 x 139,7*	*101,6*	*2,3*	*101,6*	
6 x 5	**6.63 x 5.56**	**4.00**	**6.2**	**4.00**	-
150 x 125	*168,3 x 141,3*	*101,6*	*2,8*	*101,6*	
216mm x 2-1/2	**8.52 x 2.87**	-	-	**5.00**	-
200 x 65	*216,3 x 73,0*			*127,0*	
216mm x 3	**8.52 x 3.50**	-	-	**5.00**	-
200 x 80	*216,3 x 88,9*			*127,0*	

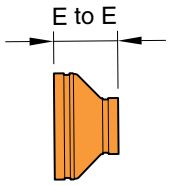


Figure 250
Cast Concentric
Reducer

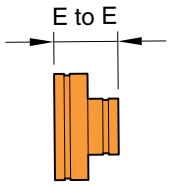


Figure 350
Fabricated Concentric
Reducer

Figures 250 & 350 Concentric Reducers

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Tech Data Sheet: G180

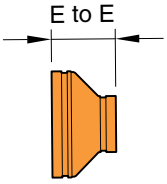

Figure 250
Cast Concentric
Reducer

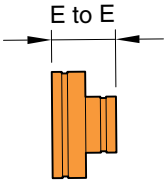

Figure 350
Fabricated Concentric
Reducer

Pipe Size		Figure 250 - Cast		Figure 350 - Fabricated	
Nominal Inches *mm*	O.D. Inches *mm*	E to E Inches *mm*	Approx. Weight Lbs. *kg*	E to E Inches *mm*	Approx. Weight Lbs. *kg*
216mm x 4	**8.52 x 4.50**	-	-	**5.00**	-
200 x 100	*216,3 x 114,3*			*127,0*	
216mm x 139mm	**8.52 x 5.50**	-	-	**5.00**	-
200 x 125	*216,3 x 139,7*			*127,0*	
216mm x 5	**8.52 x 5.56**	-	-	**5.00**	-
200 x 125	*216,3 x 141,3*			*127,0*	
216mm x 165mm	**8.52 x 6.50**	-	-	**5.00**	-
200 x 165	*216,3 x 165,1*			*127,0*	
216mm x 6	**8.52 x 6.63**	-	-	**5.00**	-
200 x 150	*216,3 x 168,3*			*127,0*	
8 x 2-1/2	**8.63 x 2.87**	-	-	**5.00**	-
200 x 65	*219,1 x 73,0*			*127,0*	
8 x 3	**8.63 x 3.50**	**5.00**	**11.5**	**5.00**	-
200 x 80	*219,1 x 88,9*	*127,0*	*5,2*	*127,0*	
8 x 4	**8.63 x 4.50**	**5.00**	**10.7**	**5.00**	-
200 x 100	*219,1 x 114,3*	*127,0*	*4,9*	*127,0*	
8 x 133mm	**8.63 x 5.25**	-	-	**5.00**	-
200 x 125	*219,1 x 133,0*			*127,0*	
8 x 139mm	**8.63 x 5.50**	**5.00**	**10.0**	**5.00**	-
200 x 125	*219,1 x 139,7*	*127,0*	*4,5*	*127,0*	
8 x 5	**8.63 x 5.56**	**5.00**	**10.8**	**5.00**	-
200 x 125	*219,1 x 141,3*	*127,0*	*4,9*	*127,0*	
8 x 159mm	**8.63 X 6.25**	-	-	**5.00**	-
200 x 150	*219,1 X 159,0*			*127,0*	
8 x 165mm	**8.63 x 6.50**	**5.00**	**11.0**	**5.00**	-
200 x 150	*219,1 x 165,1*	*127,0*	*5,0*	*127,0*	
8 x 6	**8.63 x 6.63**	**5.00**	**11.3**	**5.00**	-
200 x 150	*219,1 x 168,3*	*127,0*	*5,1*	*127,0*	
267mm x 4	**10.53 x 4.50**	-	-	**6.00**	-
250 x 100	*267,4 x 114,3*			*152,4*	
267mm x 5	**10.53 x 5.56**	-	-	**6.00**	-
250 x 125	*267,4 x 141,3*			*152,4*	
267mm x 165mm	**10.53 x 6.50**	-	-	**6.00**	-
250 x 125	*267,4 x 165,1*			*152,4*	
267mm x 6	**10.53 x 6.63**	-	-	**6.00**	-
250 x 150	*267,4 x 168,3*			*152,4*	
267mm x 216mm	**10.53 x 8.52**	-	-	**6.00**	-
250 x 216	*267,4 x 216,3*			*152,4*	
267mm x 8	**10.53 x 8.63**	-	-	**6.00**	-
250 x 200	*267,4 x 219,1*			*152,4*	
10 x 4	**10.75 x 4.50**	-	-	**6.00**	**20.5**
250 x 100	*273,0 x 114,3*			*152,4*	*9,3*
10 x 5	**10.75 x 5.56**	-	-	**6.00**	**20.1**
250 x 125	*273,0 x 141,3*			*152,4*	*9,1*
10 x 159mm	**10.75 x 6.25**	-	-	**6.00**	-
250 x 125	*273,0 x 159,0*			*152,4*	
10 x 165mm	**10.75 x 6.50**	**6.00**	**17.8**	**6.00**	-
250 x 150	*273,0 x 165,1*	*152,4*	*8,0*	*152,4*	
10 x 6	**10.75 x 6.63**	**6.00**	**16.3**	**6.00**	-
250 x 150	*273,0 x 168,3*	*152,4*	*7,4*	*152,4*	
10 x 216mm	**10.75 x 8.52**	-	-	**6.00**	-
250 x 200	*273,0 x 216,3*			*152,4*	

Figures 250 & 350 Concentric Reducers

Tech Data Sheet: G180

Pipe Size		Figure 250 - Cast		Figure 350 - Fabricated	
Nominal Inches *mm*	O.D. Inches *mm*	E to E Inches *mm*	Approx. Weight Lbs. *kg*	E to E Inches *mm*	Approx. Weight Lbs. *kg*
10 x 8	**10.75 x 8.63**	**6.00**	**18.3**	**6.00**	-
250 x 200	*273,0 x 219,1*	*152,4*	*8,3*	*152,4*	
318mm x 4	**12.54 x 4.50**	-	-	**7.00**	-
300 x 100	*318,5 x 114,3*			*177,8*	
318mm x 6	**12.54 x 6.63**	-	-	**7.00**	-
300 x 150	*318,5 x 168,3*			*177,8*	
318mm x 216mm	**12.54 x 8.52**	-	-	**7.00**	-
300 x 200	*318,5 x 216,3*			*177,8*	
318mm x 8	**12.54 x 8.63**	-	-	**7.00**	-
300 x 200	*318,5 x 219,1*			*177,8*	
318mm x 267mm	**12.54 x 10.53**	-	-	**7.00**	-
300 x 250	*318,5 x 267,4*			*177,8*	
318mm x 10	**12.54 x 10.75**	-	-	**7.00**	-
300 x 250	*318,5 x 273,0*			*177,8*	
12 x 4	**12.75 x 4.50**	**7.00**	**22.7**	**7.00**	-
300 x 100	*323,9 x 114,3*	*177,8*	*10,3*	*177,8*	
12 x 6	**12.75 x 6.63**	**7.00**	**24.2**	**7.00**	-
300 x 150	*323,9 x 168,3*	*177,8*	*11,0*	*177,8*	
12 x 216mm	**12.75 x 8.52**	-	-	**7.00**	-
300 x 200	*323,9 x 216,3*			*177,8*	
12 x 8	**12.75 x 8.63**	**7.00**	**25.8**	**7.00**	-
300 x 200	*323,9 x 219,1*	*177,8*	*11,7*	*177,8*	
12 x 267mm	**12.75 x 10.53**	-	-	**7.00**	-
300 x 250	*323,9 x 267,4*			*177,8*	
12 x 10	**12.75 x 10.75**	**7.00**	**28.2**	**7.00**	-
300 x 250	*323,9 x 273,0*	*177,8*	*12,8*	*177,8*	
14 x 6	**14.00 x 6.63**	-	-	**13.00**	**54.3**
350 x 150	*355,6 x 168,3*			*330,2*	*24,6*
14 x 8	**14.00 x 8.63**	-	-	**13.00**	**54.5**
350 x 200	*355,6 x 219,1*			*330,2*	*24,7*
14 x 267mm	**14.00 x 10.53**	-	-	**13.00**	-
350 x 250	*355,6 x 267,4*			*330,2*	
14 x 10	**14.00 x 10.75**	-	-	**13.00**	**55.8**
350 x 250	*355,6 x 273,0*			*330,2*	*25,3*
14 x 318mm	**14.00 x 12.54**	-	-	**13.00**	-
350 x 300	*355,6 x 318,5*			*330,2*	
14 x 12	**14.00 x 12.75**	-	-	**13.00**	**57.3**
350 x 300	*355,6 x 323,9*			*330,2*	*26,0*
377mm x 6	**14.84 x 6.63**	-	-	**13.50**	-
350 x 150	*377,0 x 168,3*			*342,9*	
377mm x 216mm	**14.84 x 10.53**	-	-	**13.50**	-
350 x 250	*377,0 x 267,4*			*342,9*	
377mm x 8	**14.84 x 8.63**	-	-	**13.50**	-
350 x 200	*377,0 x 219,1*			*342,9*	
377mm x 267mm	**14.84 x 10.53**	-	-	**13.50**	-
350 x 250	*377,0 x 267,4*			*342,9*	
377mm x 10	**14.84 x 10.75**	-	-	**13.50**	-
350 x 250	*377,0 x 273,0*			*342,9*	
377mm x 318mm	**14.84 x 12.54**	-	-	**13.50**	-
350 x 300	*377,0 x 318,5*			*342,9*	
377mm x 12	**14.84 x 12.75**	-	-	**13.50**	-
350 x 300	*377,0 x 323,9*			*342,9*	

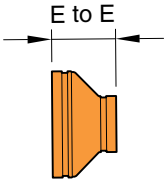

Figure 250
Cast Concentric
Reducer

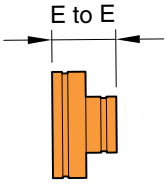

Figure 350
Fabricated Concentric
Reducer

Figures 250 & 350 Concentric Reducers

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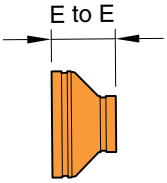

Figure 250
Cast Concentric
Reducer

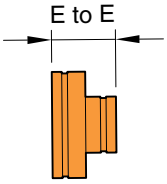

Figure 350
Fabricated Concentric
Reducer

Pipe Size		Figure 250 - Cast		Figure 350 - Fabricated	
Nominal Inches *mm*	O.D. Inches *mm*	E to E Inches *mm*	Approx. Weight Lbs. *kg*	E to E Inches *mm*	Approx. Weight Lbs. *kg*
16 x 8	**16.00 x 8.63**	-	-	**14.00**	**65.4**
400 x 200	*406,4 x 219,1*			*355,6*	*29,7*
16 x 267mm	**16.00 x 10.53**	-	-	**14.00**	-
400 x 250	*406,4 x 267,4*			*355,6*	
16 x 10	**16.00 x 10.75**	-	-	**14.00**	**66.7**
400 x 250	*406,4 x 273,0*			*355,6*	*30,2*
16 x 318mm	**16.00 x 12.54**	-	-	**14.00**	-
400 x 300	*406,4 x 318,5*			*355,6*	
16 x 12	**16.00 x 12.75**	-	-	**14.00**	**68.1**
400 x 300	*406,4 x 323,9*			*355,6*	*30,9*
16 x 14	**16.00 x 14.00**	-	-	**14.00**	**71.0**
400 x 350	*406,4 x 355,6*			*355,6*	*32,2*
18 x 12	**18.00 x 12.75**	-	-	**15.00**	**83.6**
450 x 300	*457,2 x 323,9*			*381,0*	*37,9*
18 x 14	**18.00 x 14.00**	-	-	**15.00**	**86.2**
450 x 350	*457,2 x 355,6*			*381,0*	*39,1*
18 x 16	**18.00 x 16.00**	-	-	**15.00**	**87.2**
450 x 400	*457,2 x 406,4*			*381,0*	*39,6*
20 x 10	**20.00 x 10.75**	-	-	**20.00**	**124.7**
500 x 250	*508,0 x 273,0*			*508,0*	*56,6*
20 x 12	**20.00 x 12.75**	-	-	**20.00**	**124.7**
500 x 300	*508,0 x 323,9*			*508,0*	*56,6*
20 x 14	**20.00 x 14.00**	-	-	**20.00**	**129.0**
500 x 350	*508,0 x 355,6*			*508,0*	*58,5*
20 x 16	**20.00 x 16.00**	-	-	**20.00**	**131.1**
500 x 400	*508,0 x 406,4*			*508,0*	*59,5*
20 x 18	**20.00 x 18.00**	-	-	**20.00**	**133.4**
500 x 450	*508,0 x 457,2*			*508,0*	*60,5*
24 x 10	**24.00 x 10.75**	-	-	**20.00**	**149.1**
600 x 250	*609,6 x 273,0*			*508,0*	*67,6*
24 x 12	**24.00 x 12.75**	-	-	**20.00**	**150.4**
600 x 300	*609,6 x 323,9*			*508,0*	*68,2*
24 x 14	**24.00 x 14.00**	-	-	**20.00**	**151.6**
600 x 350	*609,6 x 355,6*			*508,0*	*68,8*
24 x 16	**24.00 x 16.00**	-	-	**20.00**	**152.8**
600 x 400	*609,6 x 406,4*			*508,0*	*69,3*
24 x 18	**24.00 x 18.00**	-	-	**20.00**	**154.1**
600 x 450	*609,6 x 457,2*			*508,0*	*69,9*
24 x 20	**24.00 x 20.00**	-	-	**20.00**	**155.5**
600 x 500	*609,6 x 508,0*			*508,0*	*70,5*

◗ Sizes are available to JIS standards. Contact GRINNELL Mechanical Products for details.
For information on larger sizes, contact GRINNELL Mechanical Products.
See page 41 for fitting specifications.

Figures 251 & 351 Eccentric Reducers

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Figure 251
Cast Eccentric Reducer

Figure 351
Fabricated Eccentric Reducer
(Segment Welded)

Pipe Size		Figure 251 - Cast		Figure 351 - Fabricated	
Nominal Inches *mm*	O.D. Inches *mm*	E to E Inches *mm*	Approx. Weight Lbs. *kg*	E to E Inches *mm*	Approx. Weight Lbs. *kg*
1-1/2 x 1	**1.90 x 1.31**	**–**	**–**	**8.50**	**1.9**
40 x 25	*48,3 x 33,4*	–	–	*215,9*	*0,9*
1-1/2 x 1-1/4	**1.90 x 1.66**	**–**	**–**	**8.50**	**2.2**
40 x 32	*48,3 x 42,4*	–	–	*215,9*	*1,0*
2 x 1	**2.37 x 1.31**	**–**	**–**	**9.00**	**2.2**
50 x 25	*60,3 x 33,4*	–	–	*228,6*	*1,0*
2 x 1-1/4	**2.37 x 1.66**	**–**	**–**	**9.00**	**2.4**
50 x 32	*60,3 x 42,4*	–	–	*228,6*	*1,1*
2 x 1-1/2	**2.37 x 1.90**	**–**	**–**	**9.00**	**2.5**
50 x 40	*60,3 x 48,3*	–	–	*228,6*	*1,1*
2-1/2 x 1	**2.87 x 1.31**	**–**	**–**	**9.50**	**3.2**
65 x 25	*73,0 x 33,4*	–	–	*241,3*	*1,5*
2-1/2 x 1-1/4	**2.87 x 1.66**	**–**	**–**	**9.50**	**3.4**
65 x 32	*73,0 x 42,4*	–	–	*241,3*	*1,5*
2-1/2 x 1-1/2	**2.87 x 1.90**	**–**	**–**	**9.50**	**3.6**
65 x 40	*73,0 x 48,3*	–	–	*241,3*	*1,6*
2-1/2 x 2	**2.87 x 2.37**	**–**	**–**	**9.50**	**4.0**
65 x 50	*73,0 x 60,3*	–	–	*241,3*	*1,8*
76mm x 1	**3.00 x 1.31**	**–**	**–**	**9.50**	**–**
65 x 25	*76,1 x 33,4*	–	–	*241,3*	–
76mm x 1-1/4	**3.00 x 1.66**	**–**	**–**	**9.50**	**–**
65 x 32	*76,1 x 42,4*	–	–	*241,3*	–
76mm x 1-1/2	**3.00 x 1.90**	**–**	**–**	**9.50**	**–**
65 x 40	*76,1 x 48,3*	–	–	*241,3*	–
76mm x 2	**3.00 x 2.37**	**–**	**–**	**9.50**	**–**
65 x 50	*76,1 x 60,3*	–	–	*241,3*	–
3 x 1	**3.50 x 1.31**	**–**	**–**	**9.50**	**4.0**
80 x 25	*88,9 x 33,4*	–	–	*241,3*	*1,8*
3 x 1-1/4	**3.50 x 1.66**	**–**	**–**	**9.50**	**4.3**
80 x 32	*88,9 x 42,4*	–	–	*241,3*	*2,0*
3 x 1-1/2	**3.50 x 1.90**	**–**	**–**	**9.50**	**4.5**
80 x 40	*88,9 x 48,3*	–	–	*241,3*	*2,0*
3 x 2	**3.50 x 2.37**	**3.50**	**2.0**	**9.50**	**–**
80 x 50	*88,9 x 60,3*	*88,9*	*0,9*	*241,3*	–
3 x 2-1/2	**3.50 x 2.88**	**3.50**	**2.2**	**9.50**	**–**
80 x 65	*88,9 x 73,0*	*88,9*	*1,0*	*241,3*	–
3 x 76mm	**3.50 x 3.00**	**–**	**–**	**9.50**	**–**
80 x 65	*88,9 x 76,1*	–	–	*241,3*	–
108mm x 1	**4.25 x 1.31**	**–**	**–**	**10.00**	**–**
100 x 25	*108,0 x 33,4*	–	–	*254,0*	–

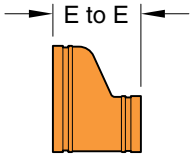

Figure 251
Cast Eccentric Reducer

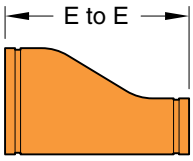

Figure 351
Fabricated Eccentric Reducer
(Segment Welded)

Figures 251 & 351 Eccentric Reducers

Tech Data Sheet: G180

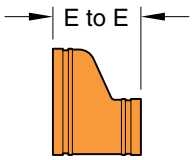

Figure 251
Cast Eccentric Reducer

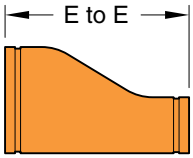

Figure 351
Fabricated Eccentric Reducer
(Segment Welded)

Pipe Size		Figure 251 - Cast		Figure 351 - Fabricated	
Nominal Inches *mm*	O.D. Inches *mm*	E to E Inches *mm*	Approx. Weight Lbs. *kg*	E to E Inches *mm*	Approx. Weight Lbs. *kg*
108mm x 1-1/4	**4.25 x 1.66**	**–**	**–**	**10.00**	**–**
100 x 32	*108,0 x 42,4*	–	–	*254,0*	–
108mm x 1-1/2	**4.25 x 1.90**	**–**	**–**	**10.00**	**–**
100 x 40	*108,0 x 48,3*	–	–	*254,0*	–
108mm x 2	**4.25 x 2.37**	**–**	**–**	**10.00**	**–**
100 x 50	*108,0 x 60,3*	–	–	*254,0*	–
108mm x 2-1/2	**4.25 x 2.88**	**–**	**–**	**10.00**	**–**
100 x 65	*108,0 x 73,0*	–	–	*254,0*	–
108mm x 76mm	**4.25 x 3.00**	**–**	**–**	**10.00**	**–**
100 x 65	*108,0 x 76,1*	–	–	*254,0*	–
4 x 1	**4.50 x 1.31**	**–**	**–**	**10.00**	**5.9**
100 x 25	*114,3 x 33,4*	–	–	*254,0*	*2,7*
4 x 1-1/4	**4.50 x 1.66**	**–**	**–**	**10.00**	**6.3**
100 x 32	*114,3 x 42,4*	–	–	*254,0*	*2,9*
4 x 1-1/2	**4.50 x 1.90**	**–**	**–**	**10.00**	**6.4**
100 x 40	*114,3 x 48,3*	–	–	*254,0*	*2,9*
4 x 2	**4.50 x 2.37**	**4.00**	**3.0**	**10.00**	**–**
100 x 50	*114,3 x 60,3*	*101,6*	*1,4*	*254,0*	–
4 x 2-1/2	**4.50 x 2.88**	**4.00**	**3.0**	**10.00**	**–**
100 x 65	*114,3 x 73,0*	*101,6*	*1,4*	*254,0*	–
4 x 76mm	**4.50 x 3.00**	**–**	**–**	**10.00**	**–**
100 x 65	*114,3 x 76,1*	–	–	*254,0*	–
4 x 3	**4.50 x 3.50**	**4.00**	**3.3**	**10.00**	**–**
100 x 80	*114,3 x 88,9*	*101,6*	*1,5*	*254,0*	–
133mm x 2	**5.25 x 2.37**	**–**	**–**	**11.00**	**–**
125 x 50	*133,0 x 60,3*	–	–	*279,4*	–
133mm x 2-1/2	**5.25 x 2.87**	**–**	**–**	**11.00**	**–**
125 x 65	*133,0 x 73,0*	–	–	*279,4*	–
133mm x 76mm	**5.25 x 3.00**	**–**	**–**	**11.00**	**–**
125 x 65	*133,0 x 76,1*	–	–	*279,4*	–
133mm x 3	**5.25 x 3.50**	**–**	**–**	**11.00**	**–**
125 x 80	*133,0 x 88,9*	–	–	*279,4*	–
133mm x 108mm	**5.25 x 4.25**	**–**	**–**	**11.00**	**–**
125 x 100	*133,0 x 108,0*	–	–	*279,4*	–
139mm x 2	**5.50 x 2.37**	**–**	**–**	**11.00**	**–**
125 x 50	*139,7 x 60,3*	–	–	*279,4*	–
139mm x 2-1/2	**5.50 x 2.87**	**–**	**–**	**11.00**	**–**
125 x 65	*139,7 x 73,0*	–	–	*279,4*	–
139mm x 76mm	**5.50 x 3.00**	**–**	**–**	**11.00**	**–**
125 x 65	*139,7 x 76,1*	–	–	*279,4*	–
139mm x 3	**5.50 x 3.50**	**–**	**–**	**11.00**	**–**
125 x 80	*139,7 x 88,9*	–	–	*279,4*	–
139mm x 108mm	**5.50 x 4.25**	**–**	**–**	**11.00**	**–**
125 x 100	*139,7 x 108,0*	–	–	*279,4*	–
5 x 2	**5.56 x 2.37**	**–**	**–**	**11.00**	**9.3**
125 x 50	*141,3 x 60,3*	–	–	*279,4*	*4,2*
5 x 2-1/2	**5.56 x 2.87**	**–**	**–**	**11.00**	**9.9**
125 x 65	*141,3 x 73,0*	–	–	*279,4*	*4,5*

Figures 251 & 351 Eccentric Reducers

Tech Data Sheet: G180

Pipe Size		Figure 251 - Cast		Figure 351 - Fabricated	
Nominal Inches *mm*	O.D. Inches *mm*	E to E Inches *mm*	Approx. Weight Lbs. *kg*	E to E Inches *mm*	Approx. Weight Lbs. *kg*
5 x 76mm	**5.56 x 3.00**	–	–	**11.00**	–
125 x 65	*141,3 x 76,1*	–	–	*279,4*	–
5 x 3	**5.56 x 3.50**	–	–	**11.00**	**10.7**
125 x 80	*141,3 x 88,9*	–	–	*279,4*	*4,9*
5 x 108mm	**5.56 x 4.25**	–	–	**11.00**	–
125 x 100	*141,3 x 108,0*	–	–	*279,4*	–
5 x 4	**5.56 x 4.50**	**5.00**	**5.7**	**11.00**	–
125 x 100	*141,3 x 114,3*	*127,5*	*2,6*	*279,4*	–
159mm x 2	**6.25 x 2.37**	–	–	**11.50**	–
150 x 50	*159,0 x 60,3*	–	–	*292,1*	–
159mm x 2-1/2	**6.25 x 2.87**	–	–	**11.50**	–
150 x 65	*159,0 x 73,0*	–	–	*292,1*	–
159mm x 76mm	**6.25 x 3.00**	–	–	**11.50**	–
150 x 65	*159,0 x 76,1*	–	–	*292,1*	–
159mm x 3	**6.25 x 3.50**	–	–	**5.50**	–
150 x 80	*159,0 x 88,9*	–	–	*139,7*	–
159mm x 108mm	**6.25 x 4.25**	–	–	**5.50**	–
150 x 100	*159,0 x 108,0*	–	–	*139,7*	–
159mm x 4	**6.25 x 4.50**	–	–	**5.50**	–
150 x 100	*159,0 x 114,3*	–	–	*139,7*	–
159mm x 133mm	**6.25 x 5.25**	–	–	**5.50**	–
150 x 125	*159,0 x 133,0*	–	–	*139,7*	–
159mm x 139mm	**6.25 x 5.50**	–	–	**5.50**	–
150 x 125	*159,0 x 139,7*	–	–	*139,7*	–
165mm x 2	**6.50 x 2.37**	–	–	**11.50**	–
150 x 50	*165,1 x 60,3*	–	–	*292,1*	–
165mm x 2-1/2	**6.50 x 2.87**	–	–	**11.50**	–
150 x 65	*165,1 x 73,0*	–	–	*292,1*	–
165mm x 76mm	**6.50 x 3.00**	–	–	**11.50**	–
150 x 65	*165,1 x 76,1*	–	–	*292,1*	–
165mm x 3	**6.50 x 3.50**	–	–	**5.50**	**13.6**
150 x 80	*165,1 x 88,9*	–	–	*139,7*	*6,2*
165mm x 108mm	**6.50 x 4.25**	–	–	**5.50**	**14.9**
150 x 100	*165,1 x 108,0*	–	–	*139,7*	*6,8*
165mm x 4	**6.50 x 4.50**	–	–	**5.50**	**14.9**
150 x 100	*165,1 x 114,3*	–	–	*139,7*	*6,8*
165mm x 133mm	**6.50 x 5.25**	–	–	**5.50**	–
150 x 125	*165,1 x 133,0*	–	–	*139,7*	–
165mm x 139mm	**6.50 x 5.50**	–	–	**5.50**	–
150 x 125	*165,1 x 139,7*	–	–	*139,7*	–
165mm x 5	**6.50 x 5.56**	–	–	**5.50**	–
150 x 125	*165,1 x 141,3*	–	–	*139,7*	–
6 x 2	**6.63 x 2.37**	–	–	**11.50**	**12.2**
150 x 50	*168,3 x 60,3*	–	–	*292,1*	*5,5*
6 x 2-1/2	**6.63 x 2.87**	–	–	**11.50**	**12.8**
150 x 65	*168,3 x 73,0*	–	–	*292,1*	*5,8*
6 x 76mm	**6.63 x 3.00**	–	–	**11.50**	–
150 x 65	*168,3 x 76,1*	–	–	*292,1*	–

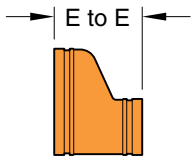

Figure 251
Cast Eccentric Reducer

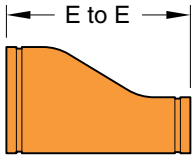

Figure 351
Fabricated Eccentric Reducer
(Segment Welded)

Figures 251 & 351 Eccentric Reducers

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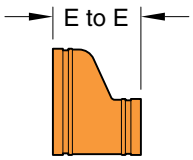

Figure 251
Cast Eccentric Reducer

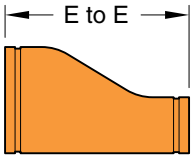

Figure 351
Fabricated Eccentric Reducer
(Segment Welded)

Pipe Size		Figure 251 - Cast		Figure 351 - Fabricated	
Nominal Inches *mm*	O.D. Inches *mm*	E to E Inches *mm*	Approx. Weight Lbs. *kg*	E to E Inches *mm*	Approx. Weight Lbs. *kg*
6 x 3	**6.63 x 3.50**	**5.50**	**7.4**	**5.50**	**–**
150 x 80	*168,3 x 88,9*	*139,7*	*3,4*	*139,7*	–
6 x 108mm	**6.63 x 4.25**	**–**	**–**	**5.50**	**–**
150 x 100	*168,3 x 108,0*	–	–	*139,7*	–
6 x 4	**6.63 x 4.50**	**5.50**	**7.5**	**5.50**	**–**
150 x 100	*168,3 x 114,3*	*139,7*	*3,4*	*139,7*	–
6 x 133mm	**6.63 x 5.25**	**–**	**–**	**5.50**	**–**
150 x 125	*168,3 x 133,0*	–	–	*139,7*	–
6 x 139mm	**6.63 x 5.50**	**–**	**–**	**5.50**	**–**
150 x 125	*168,3 x 139,7*	–	–	*139,7*	–
6 x 5	**6.63 x 5.56**	**5.50**	**8.1**	**5.50**	**–**
150 x 125	*168,3 x 141,3*	*139,7*	*3,7*	*139,7*	–
216mm x 3	**8.52 x 3.50**	**–**	**–**	**12.00**	**–**
200 x 80	*216,3 x 88,9*	–	–	*304,8*	–
216mm x 108mm	**8.52 x 4.25**	**–**	**–**	**12.00**	**–**
200 x 100	*216,3 x 108,0*	–	–	*304,8*	–
216mm x 4	**8.52 x 4.50**	**–**	**–**	**12.00**	**–**
200 x 100	*216,3 x 114,3*	–	–	*304,8*	–
216mm x 133mm	**8.52 x 5.25**	**–**	**–**	**12.00**	**–**
200 x 125	*216,3 x 133,0*	–	–	*304,8*	–
216mm x 139mm	**8.52 x 5.50**	**–**	**–**	**12.00**	**–**
200 x 125	*216,3 x 139,7*	–	–	*304,8*	–
216mm x 5	**8.52 x 5.56**	**–**	**–**	**12.00**	**–**
200 x 125	*216,3 x 141,3*	–	–	*304,8*	–
216mm x 159mm	**8.52 x 6.25**	**–**	**–**	**12.00**	**–**
200 x 150	*216,3 x 159,0*	–	–	*304,8*	–
216mm x 165mm	**8.52 x 6.50**	**–**	**–**	**12.00**	**–**
200 x 150	*216,3 x 165,1*	–	–	*304,8*	–
216mm x 6	**8.52 x 6.63**	**–**	**–**	**12.00**	**–**
200 x 150	*216,3 x 168,3*	–	–	*304,8*	–
8 x 3	**8.63 x 3.50**	**–**	**–**	**12.00**	**17.9**
200 x 80	*219,1 x 88,9*	–	–	*304,8*	*8,1*
8 x 108mm	**8.63 x 4.25**	**–**	**–**	**12.00**	**–**
200 x 100	*219,1 x 108,0*	–	–	*304,8*	–
8 x 4	**8.63 x 4.50**	**–**	**–**	**12.00**	**19.7**
200 x 100	*219,1 x 114,3*	–	–	*304,8*	*9,8*
8 x 133mm	**8.63 x 5.25**	**–**	**–**	**12.00**	**–**
200 x 125	*219,1 x 133,0*	–	–	*304,8*	–
8 x 139mm	**8.63 x 5.50**	**–**	**–**	**12.00**	**–**
200 x 125	*219,1 x 139,7*	–	–	*304,8*	–
8 x 5	**8.63 x 5.56**	**–**	**–**	**12.00**	**21.4**
200 x 125	*219,1 x 141,3*	–	–	*304,8*	*9,7*
8 x 159mm	**8.63 x 6.25**	**–**	**–**	**12.00**	**–**
200 x 150	*219,1 x 159,0*	–	–	*304,8*	–
8 x 165mm	**8.63 x 6.50**	**–**	**–**	**12.00**	**–**
200 x 150	*219,1 x 165,1*	–	–	*304,8*	–
8 x 6	**8.63 x 6.63**	**–**	**–**	**12.00**	**23.2**
200 x 150	*219,1 x 168,3*	–	–	*304,8*	*10,5*

Figures 251 & 351 Eccentric Reducers

Pipe Size		Figure 251 - Cast		Figure 351 - Fabricated	
Nominal Inches *mm*	O.D. Inches *mm*	E to E Inches *mm*	Approx. Weight Lbs. *kg*	E to E Inches *mm*	Approx. Weight Lbs. *kg*
267mm x 4	**10.53 x 4.50**	–	–	**13.00**	–
250 x 100	*267,4 x 114,3*	–	–	*330,2*	–
267mm x 133mm	**10.53 x 5.25**	–	–	**13.00**	–
250 x 125	*267,4 x 133,0*	–	–	*330,2*	–
267mm x 139mm	**10.53 x 5.50**	–	–	**13.00**	–
250 x 125	*267,4 x 139,7*	–	–	*330,2*	–
267mm x 5	**10.53 x 5.56**	–	–	**13.00**	–
250 x 125	*267,4 x 141,3*	–	–	*330,2*	–
267mm x 159mm	**10.53 x 6.25**	–	–	**13.00**	–
250 x 150	*267,4 x 159,0*	–	–	*330,2*	–
267mm x 165mm	**10.53 x 6.50**	–	–	**13.00**	–
250 x 150	*267,4 x 165,1*	–	–	*330,2*	–
267mm x 6	**10.53 x 6.63**	–	–	**13.00**	–
250 x 150	*267,4 x 168,3*	–	–	*330,2*	–
267mm x 8	**10.53 x 8.63**	–	–	**13.00**	–
250 x 200	*267,4 x 219,1*	–	–	*300,2*	–
10 x 4	**10.75 x 4.50**	–	–	**13.00**	**29.7**
250 x 100	*273,0 x 114,3*	–	–	*330,2*	*13,5*
10 x 133mm	**10.75 x 5.25**	–	–	**13.00**	–
250 x 125	*273,0 x 133,0*	–	–	*330,2*	–
10 x 139mm	**10.75 x 5.50**	–	–	**13.00**	–
250 x 125	*273,0 x 139,7*	–	–	*330,2*	–
10 x 5	**10.75 x 5.56**	–	–	**13.00**	**31.7**
250 x 125	*273,0 x 141,3*	–	–	*330,2*	*14,4*
10 x 159mm	**10.75 x 6.25**	–	–	**13.00**	–
250 x 150	*273,0 x 159,0*	–	–	*330,2*	–
10 x 165mm	**10.75 x 6.50**	–	–	**13.00**	–
250 x 150	*273,0 x 165,1*	–	–	*330,2*	–
10 x 6	**10.75 x 6.63**	–	–	**13.00**	**34.0**
250 x 150	*273,0 x 168,3*	–	–	*330,2*	*15,4*
10 x 216mm	**10.75 x 8.52**	–	–	**13.00**	–
250 x 200	*273,0 x 216,3*	–	–	*330,2*	–
10 x 8	**10.75 x 8.63**	–	–	**13.00**	**34.4**
250 x 200	*273,0 x 219,1*	–	–	*330,2*	*15,6*
318mm x 4	**12.54 x 4.50**	–	–	**14.00**	–
300 x 100	*318,5 x 114,3*	–	–	*355,6*	–
318mm x 133mm	**12.54 x 5.25**	–	–	**14.00**	–
300 x 125	*318,5 x 133,0*	–	–	*355,6*	–
318mm x 139mm	**12.54 x 5.50**	–	–	**14.00**	–
300 x 125	*318,5 x 139,7*	–	–	*355,6*	–
318mm x 5	**12.54 x 5.56**	–	–	**14.00**	–
300 x 125	*318,5 x 141,3*	–	–	*355,6*	–
318mm x 159mm	**12.54 x 6.25**	–	–	**14.00**	–
300 x 150	*318,5 x 159,0*	–	–	*355,6*	–
318mm x 165mm	**12.54 x 6.50**	–	–	**14.00**	–
300 x 150	*318,5 x 165,1*	–	–	*355,6*	–
318mm x 6	**12.54 x 6.63**	–	–	**14.00**	–
300 x 150	*318,5 x 168,3*	–	–	*355,6*	–

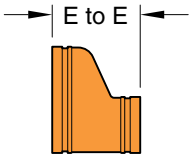

Figure 251
Cast Eccentric Reducer

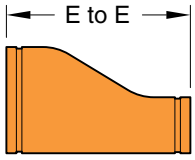

Figure 351
Fabricated Eccentric Reducer
(Segment Welded)

Figures 251 & 351 Eccentric Reducers

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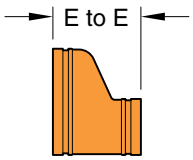


Figure 251
Cast Eccentric Reducer

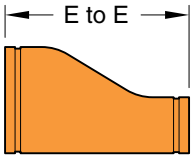


Figure 351
Fabricated Eccentric Reducer
(Segment Welded)

Pipe Size		Figure 251 - Cast		Figure 351 - Fabricated	
Nominal Inches *mm*	O.D. Inches *mm*	E to E Inches *mm*	Approx. Weight Lbs. *kg*	E to E Inches *mm*	Approx. Weight Lbs. *kg*
318mm x 216mm	**12.54 x 8.52**	–	–	**14.00**	–
300 x 200	*318,5 x 216,3*	–	–	*355,6*	–
318mm x 8	**12.54 x 8.63**	–	–	**14.00**	–
300 x 200	*318,5 x 219,1*	–	–	*355,6*	–
318mm x 267mm	**12.54 x 10.53**	–	–	**14.00**	–
300 x 250	*318,5 x 267,4*	–	–	*355,6*	–
318mm x 10	**12.54 x 10.75**	–	–	**14.00**	–
300 x 250	*318,5 x 273,0*	–	–	*355,6*	–
12 x 4	**12.75 x 4.50**	–	–	**14.00**	**44.8**
300 x 100	*323,9 x 114,3*	–	–	*355,6*	*20,3*
12 x 133mm	**12.75 x 5.25**	–	–	**14.00**	–
300 x 125	*323,9 x 133,0*	–	–	*355,6*	–
12 x 139mm	**12.75 x 5.50**	–	–	**14.00**	–
300 x 125	*323,9 x 139,7*	–	–	*355,6*	–
12 x 5	**12.75 x 5.56**	–	–	**14.00**	–
300 x 125	*323,9 x 141,3*	–	–	*355,6*	–
12 x 159mm	**12.75 x 6.25**	–	–	**14.00**	–
300 x 150	*323,9 x 159,0*	–	–	*355,6*	–
12 x 165mm	**12.75 x 6.50**	–	–	**14.00**	–
300 x 150	*323,9 x 165,1*	–	–	*355,6*	–
12 x 6	**12.75 x 6.63**	–	–	**14.00**	**45.2**
300 x 150	*323,9 x 168,3*	–	–	*355,6*	*20,5*
12 x 216mm	**12.75 x 8.52**	–	–	**14.00**	–
300 x 200	*323,9 x 216,3*	–	–	*355,6*	–
12 x 8	**12.75 x 8.63**	–	–	**14.00**	**47.7**
300 x 200	*323,9 x 219,1*	–	–	*355,6*	*21,6*
12 x 267mm	**12.75 x 10.53**	–	–	**14.00**	–
300 x 250	*323,9 x 267,4*	–	–	*355,6*	–
12 x 10	**12.75 x 10.75**	–	–	**14.00**	**52.0**
300 x 250	*323,9 x 273,0*	–	–	*355,6*	*23,6*
14 x 6	**14.00 x 6.63**	–	–	**19.00**	**78.0**
350 x 150	*355,6 x 168,3*	–	–	*482,6*	*35,4*
14 x 216mm	**14.00 x 8.52**	–	–	**19.00**	–
350 x 200	*355,6 x 216,3*	–	–	*482,6*	–
14 x 8	**14.00 x 8.63**	–	–	**19.00**	**80.0**
350 x 200	*355,6 x 219,1*	–	–	*482,6*	*36,3*
14 x 267mm	**14.00 x 10.53**	–	–	**19.00**	–
350 x 250	*355,6 x 267,4*	–	–	*482,6*	–
14 x 10	**14.00 x 10.75**	–	–	**19.00**	**84.0**
350 x 250	*355,6 x 273,0*	–	–	*482,6*	*38,1*
14 x 318mm	**14.00 x 12.54**	–	–	**19.00**	–
350 x 300	*355,6 x 318,5*	–	–	*482,6*	–
14 x 12	**14.00 x 12.75**	–	–	**19.00**	**88.0**
350 x 300	*355,6 x 323,9*	–	–	*482,6*	*39,9*
16 x 8	**16.00 x 8.63**	–	–	**20.00**	**91.0**
400 x 200	*406,4 x 219,1*	–	–	*508,0*	*41,3*
16 x 267mm	**16.00 x 10.53**	–	–	**20.00**	–
400 x 250	*406,4 x 267,4*	–	–	*508,0*	–

Figures 251 & 351 Eccentric Reducers

Tech Data Sheet: G180

Pipe Size		Figure 251 - Cast		Figure 351 - Fabricated	
Nominal Inches *mm*	O.D. Inches *mm*	E to E Inches *mm*	Approx. Weight Lbs. *kg*	E to E Inches *mm*	Approx. Weight Lbs. *kg*
16 x 10	**16.00 x 10.75**	–	–	**20.00**	**96.0**
400 x 250	*406,4 x 273,0*	–	–	*508,0*	*43,5*
16 x 318mm	**16.00 x 12.54**	–	–	**20.00**	–
400 x 300	*406,4 x 318,5*	–	–	*508,0*	–
16 x 12	**16.00 x 12.75**	–	–	**20.00**	**99.0**
400 x 300	*406,4 x 323,9*	–	–	*508,0*	*44,9*
16 x 14	**16.00 x 14.00**	–	–	**20.00**	**104.0**
400 x 350	*406,4 x 355,6*	–	–	*508,0*	*47,2*
18 x 318mm	**18.00 x 12.54**	–	–	**21.00**	–
450 x 300	*457,2 x 318,5*	–	–	*533,0*	–
18 x 12	**18.00 x 12.75**	–	–	**21.00**	**113.0**
450 x 300	*457,2 x 323,9*	–	–	*533,0*	*51,3*
18 x 14	**18.00 x 14.00**	–	–	**21.00**	**117.0**
450 x 350	*457,2 x 355,6*	–	–	*533,0*	*53,1*
18 x 16	**18.00 x 16.00**	–	–	**21.00**	**121.0**
450 x 400	*457,2 x 406,4*	–	–	*533,0*	*54,9*
20 x 12	**20.00 x 12.75**	–	–	**26.00**	**149.0**
500 x 300	*508,0 x 323,9*	–	–	*660,4*	*67,6*
20 x 14	**20.00 x 14.00**	–	–	**26.00**	**152.0**
500 x 350	*508,0 x 355,6*	–	–	*660,4*	*68,9*
20 x 16	**20.00 x 16.00**	–	–	**26.00**	**156.0**
500 x 400	*508,0 x 406,4*	–	–	*660,4*	*70,8*
20 x 18	**20.00 x 18.00**	–	–	**26.00**	**160.0**
500 x 450	*508,0 x 457,2*	–	–	*660,4*	*72,6*
24 x 10	**24.00 x 10.75**	–	–	**26.00**	**147.0**
600 x 250	*609,6 x 273,0*	–	–	*660,4*	*78,9*
24 x 12	**24.00 x 12.75**	–	–	**26.00**	**179.0**
600 x 300	*609,6 x 323,9*	–	–	*660,4*	*81,2*
24 x 14	**24.00 x 14.00**	–	–	**26.00**	**184.0**
600 x 350	*609,6 x 355,6*	–	–	*660,4*	*83,5*
24 x 16	**24.00 x 16.00**	–	–	**26.00**	**189.0**
600 x 400	*609,6 x 406,4*	–	–	*660,4*	*85,7*
24 x 18	**24.00 x 18.00**	–	–	**26.00**	**194.0**
600 x 450	*609,6 x 457,2*	–	–	*660,4*	*88,0*
24 x 20	**24.00 x 20.00**	–	–	**26.00**	**199.0**
600 x 500	*609,6 x 508,0*	–	–	*660,4*	*90,3*

For information on larger sizes, contact GRINNELL Mechanical Products.
See page 41 for fitting specifications.

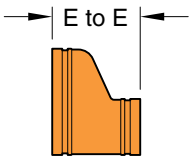


Figure 251
Cast Eccentric Reducer

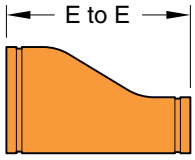
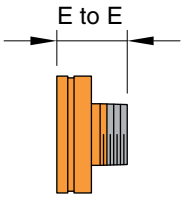


Figure 351
Fabricated Eccentric Reducer
(Segment Welded)

Figure 372 Concentric Reducers
(Small End Male Thread)

(Page 1 of 2)

Tech Data Sheet: G180

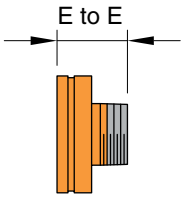


Pipe Size		E to E	Approx. Weight
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Lbs. *kg*
1-1/2 x 1	**1.90 x 1.31**	**2.50**	**0.6**
40 x 25	*48,3 x 33,7*	*63,5*	*0,3*
2 x 3/4	**2.37 x 1.05**	**2.50**	**1.0**
50 x 20	*60,3 x 26,7*	*63,5*	*0,5*
2 x 1	**2.37 x 1.31**	**2.50**	**0.8**
50 x 25	*60,3 x 33,4*	*63,5*	*0,4*
2 x 1-1/4	**2.37 x 1.66**	**2.50**	**0.8**
50 x 32	*60,3 x 42,4*	*63,5*	*0,4*
2 x 1-1/2	**2.37 x 1.90**	**2.50**	**0.8**
50 x 40	*60,3 x 48,3*	*63,5*	*0,4*
2-1/2 x 1-1/4	**2.87 x 1.66**	**2.50**	**1.0**
65 x 32	*73,0 x 42,4*	*63,5*	*0,5*
2-1/2 x 1-1/2	**2.87 x 1.90**	**2.50**	**1.3**
65 x 40	*73,0 x 48,3*	*63,5*	*0,6*
2-1/2 x 2	**2.87 x 2.37**	**2.50**	**1.2**
65 x 50	*73,0 x 60,3*	*63,5*	*0,5*
76mm x 1-1/4	**3.00 x 1.66**	**2.50**	**–**
65 x 32	*76,1 x 42,4*	*63,5*	*–*
76mm x 1-1/2	**3.00 x 1.90**	**2.50**	**–**
65 x 40	*76,1 x 48,3*	*63,5*	*–*
76mm x 2	**3.00 x 2.37**	**2.50**	**–**
65 x 50	*76,1 x 60,3*	*63,5*	*–*
3 x 1	**3.50 x 1.31**	**2.50**	**1.3**
80 x 25	*88,9 x 33,4*	*63,5*	*0,6*
3 x 1-1/4	**3.50 x 1.66**	**2.5**	**–**
80 x 32	*88,9 x 42,4*	*63,5*	*–*
3 x 1-1/2	**3.50 x 1.90**	**2.50**	**1.3**
80 x 40	*88,9 x 48,3*	*63,5*	*0,6*
3 x 2	**3.50 x 2.37**	**2.50**	**1.3**
80 x 50	*88,9 x 60,3*	*63,5*	*0,6*

Pipe Size		E to E	Approx. Weight
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Lbs. *kg*
3 x 2-1/2	**3.50 x 2.87**	**2.50**	**1.5**
80 x 65	*88,9 x 73,0*	*63,5*	*0,7*
3 x 76mm	**3.50 x 3.00**	**2.50**	**–**
80 x 65	*88,9 x 76,1*	*63,5*	*–*
108mm x 1	**4.25 x 1.31**	**3.00**	**–**
100 x 25	*108,0 x 33,4*	*76,2*	*–*
108mm x 1-1/4	**4.25 x 1.66**	**3.00**	**–**
100 x 32	*108,0 x 42,4*	*76,2*	*–*
108mm x 1-1/2	**4.25 x 1.90**	**3.00**	**–**
100 x 40	*108,0 x 48,3*	*76,2*	*–*
108mm x 2	**4.25 x 2.37**	**3.00**	**–**
100 x 50	*108,0 x 60,3*	*76,2*	*–*
108mm x 2-1/2	**4.25 x 2.87**	**3.00**	**–**
100 x 65	*108,0 x 73,0*	*76,2*	*–*
108mm x 76mm	**4.25 x 3.50**	**3.00**	**–**
100 x 65	*108,0 x 76,1*	*76,2*	*–*
108mm x 3	**4.25 x 3.50**	**3.00**	**–**
100 x 80	*108,0 x 88,9*	*76,2*	*–*
4 x 1	**4.50 x 1.31**	**3.00**	**1.8**
100 x 25	*114,3 x 33,4*	*76,2*	*0,8*
4 x 1-1/4	**4.50 x 1.66**	**3.00**	**–**
100 x 32	*114,3 x 42,4*	*76,2*	*–*
4 x 1-1/2	**4.50 x 1.90**	**3.00**	**2.3**
100 x 40	*114,3 x 48,3*	*76,2*	*1,0*
4 x 2	**4.50 x 2.37**	**3.00**	**2.3**
100 x 50	*114,3 x 60,3*	*76,2*	*1,0*
4 x 2-1/2	**4.50 x 2.87**	**3.00**	**2.3**
100 x 65	*114,3 x 73,0*	*76,2*	*1,0*
4 x 76mm	**4.50 x 3.00**	**3.00**	**–**
100 x 65	*114,3 x 76,1*	*76,2*	*–*

Figure 372 Concentric Reducers
(Small End Male Thread)

Tech Data Sheet: G180



Pipe Size		E to E	Approx. Weight
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Lbs. *kg*
4 x 3	**4.50 x 3.50**	**3.00**	**2.6**
100 x 80	*114,3 x 88,9*	*76,2*	*1,2*
133mm x 76mm	**5.25 x 3.00**	**3.50**	**–**
125 x 65	*133,0 x 76,1*	*88,9*	*–*
133mm x 3	**5.25 x 3.50**	**3.50**	**–**
125 x 80	*133,0 x 88,9*	*88,9*	*–*
133mm x 4	**5.25 x 4.50**	**3.50**	**–**
125 x 100	*133,0 x 114, 3*	*88,9*	*–*
139mm x 76mm	**5.50 x 3.00**	**3.50**	**–**
125 x 65	*139,7 x 76,1*	*88,9*	*–*
139mm x 3	**5.50 x 3.50**	**3.50**	**–**
125 x 80	*139,7 x 88,9*	*88,9*	*–*
139mm x 4	**5.50 x 4.50**	**3.50**	**–**
125 x 100	*139,7 x 114,3*	*88,9*	*–*
5 x 76mm	**5.56 x 3.00**	**3.50**	**–**
125 x 65	*141,3 x 76,1*	*88,9*	*–*
5 x 3	**5.56 x 3.50**	**3.50**	**–**
125 x 80	*141,3 x 88,9*	*88,9*	*–*
5 x 4	**5.56 x 4.50**	**3.50**	**4.5**
125 x 100	*141,3 x 114,3*	*88,9*	*2,0*
159mm x 1	**6.25 x 1.31**	**4.00**	**–**
150 x 25	*159,0 x 33,4*	*101,6*	*–*
159mm x 2	**6.25 x 2.37**	**4.00**	**–**
150 x 50	*159,0 x 60,3*	*101,6*	*–*
159mm x 76mm	**6.25 x 3.00**	**4.00**	**–**
150 x 65	*159,0 x 76,1*	*101,6*	*–*
159mm x 3	**6.25 x 3.50**	**4.00**	**–**
150 x 80	*159,0 x 88,9*	*101,6*	*–*
159mm x 4	**6.25 x 4.50**	**4.00**	**–**
150 x 100	*159,0 x 114,3*	*101,6*	*–*

Pipe Size		E to E	Approx. Weight
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Lbs. *kg*
159mm x 5	**6.25 x 5.56**	**4.00**	**–**
150 x 125	*159,0 x 141,3*	*101,6*	*–*
165mm x 1	**6.50 x 1.31**	**4.00**	**–**
150 x 25	*165,1 x 33,4*	*101,6*	*–*
165mm x 2	**6.50 x 2.37**	**4.00**	**–**
150 x 50	*165,1 x 60,3*	*101,6*	*–*
165mm x 76mm	**6.50 x 3.00**	**4.00**	**–**
150 x 65	*165,1 x 76,1*	*101,6*	*–*
165mm x 3	**6.50 x 3.50**	**4.00**	**–**
150 x 80	*165,1 x 88,9*	*101,6*	*–*
165mm x 4	**6.50 x 4.50**	**4.00**	**–**
150 x 100	*165,1 x 114,3*	*101,6*	*–*
165mm x 5	**6.50 x 5.56**	**4.00**	**–**
150 x 125	*165,1 x 141,3*	*101,6*	*–*
6 x 1	**6.63 x 1.31**	**4.00**	**5.2**
150 x 25	*168,3 x 33,4*	*101,6*	*2,4*
6 x 2	**6.63 x 2.37**	**4.00**	**6.0.**
150 x 50	*168,3 x 60,3*	*101,6*	*2,7*
6 x 76mm	**6.63 x 3.00**	**4.00**	**–**
150 x 65	*168,3 x 76,1*	*101,6*	*–*
6 x 3	**6.63 x 3.50**	**4.00**	**6.0.**
150 x 80	*168,3 x 88,9*	*101,6*	*2,7*
6 x 4	**6.63 x 4.50**	**4.00**	**5.9**
150 x 100	*168,3 x 114,3*	*101,6*	*2,7*
6 x 5	**6.63 x 5.56**	**4.00**	**5.8**
150 x 125	*168,3 x 141,3*	*101,6*	*2,6*

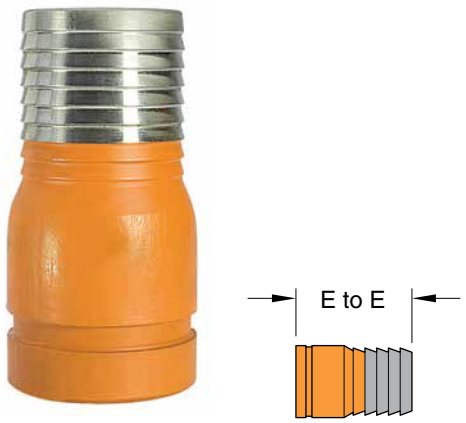
Available with BSP threads. Contact GRINNELL Mechanical Products for details.

For information on larger sizes, European sizes or other alternative sizes, contact GRINNELL Mechanical Products.

See page 41 for fitting specifications.

Figure 395 Hose Adapter Nipples
(Groove x Hose)

Tech Data Sheet: G180



Pipe Size		E to E	Approx.
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Weight Lbs. *kg*
1	**1.31**	**3.25**	**0.4**
25	*33,4*	*82,6*	*0,2*
1-1/4	**1.66**	**3.63**	**0.7**
32	*42,4*	*92,1*	*0,3*
1-1/2	**1.90**	**4.00**	**0.8**
40	*48,3*	*101,6*	*0,4*
2	**2.37**	**4.63**	**1.3**
50	*60,3*	*117,5*	*0,6*
2-1/2	**2.87**	**5.50**	**2.1**
65	*73,0*	*139,7*	*1,0*
76mm	**3.00**	**5.50**	**–**
65	*76,1*	*139,7*	*–*
3	**3.50**	**6.00**	**3.3**
80	*88,9*	*152,4*	*1,5*
108mm	**4.25**	**7.25**	**–**
100	*108,0*	*184,2*	*–*
4	**4.50**	**7.25**	**5.5**
100	*114,3*	*184,2*	*2,5*
133mm	**5.25**	**9.75**	**–**
125	*133,0*	*247,7*	*–*
139mm	**5.50**	**9.75**	**–**
125	*139,7*	*247,7*	*–*
5	**5.56**	**9.75**	**8.1**
125	*141,3*	*247,7*	*3,7*

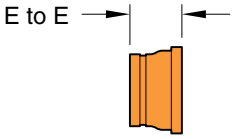
Pipe Size		E to E	Approx.
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Weight Lbs. *kg*
159mm	**6.25**	**11.00**	**–**
150	*159,0*	*279,4*	*–*
165mm	**6.50**	**11.00**	**–**
150	*165,1*	*279,4*	*–*
6	**6.63**	**11.00**	**13.2**
150	*168,3*	*279,4*	*6,0*
216mm	**8.52**	**12.50**	**–**
200	*216,3*	*317,5*	*–*
8	**8.63**	**12.50**	**24.0**
200	*219,1*	*317,5*	*10,9*
267mm	**10.53**	**14.00**	**–**
250	*267,4*	*355,6*	*–*
10	**10.75**	**14.00**	**29.0**
250	*273,0*	*355,6*	*13,2*
318mm	**12.54**	**16.00**	**–**
300	*318,5*	*406,4*	*–*
12	**12.75**	**16.00**	**46.0**
300	*323,9*	*406,4*	*20,9*

For information on larger sizes, contact GRINNELL Mechanical Products.

See page 41 for fitting specifications.

Figure 380 Female Thread Adapters
(Groove x Female Thread)

Tech Data Sheet: G180



Pipe Size		E to E	Approx. Weight
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Lbs. *kg*
1	**1.31**	**2.06**	**0.7**
25	*33,4*	*52,4*	*0,3*
1-1/4	**1.66**	**2.31**	**1.4**
32	*42,4*	*58,7*	*0,6*
1-1/2	**1.90**	**2.31**	**1.5**
40	*48,3*	*58,7*	*0,7*
2	**2.37**	**2.50**	**1.6**
50	*60,3*	*63,5*	*0,7*
2-1/2	**2.87**	**2.50**	**1.9**
65	*73,0*	*63,5*	*0,9*
76mm	**3.00**	**2.50**	**–**
65	*76,1*	*63,5*	*–*
3	**3.50**	**2.75**	**2.5**
80	*88,9*	*69,9*	*1,1*
108mm	**4.25**	**3.25**	**–**
100	*108,0*	*82,5*	*–*
4	**4.50**	**3.25**	**4.5**
100	*114,3*	*82,5*	*2,0*

Available with BSP threads. Contact GRINNELL Mechanical Products for details.

For information on larger sizes, contact GRINNELL Mechanical Products.

See page 41 for fitting specifications.

Figures 391, 392 & 393 Adapter Nipples

Tech Data Sheet: G180

Figure 391
Fabricated Adapter Nipple
Groove x Male Thread

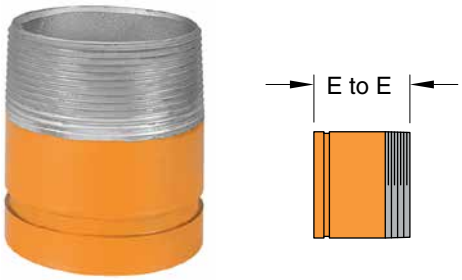


Figure 392
Fabricated Adapter Nipple
Groove x Groove

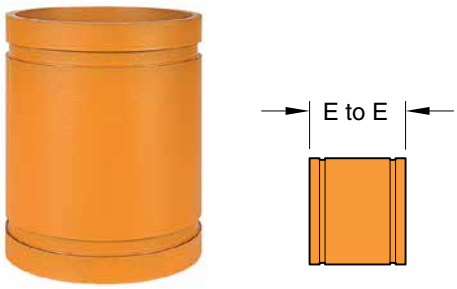
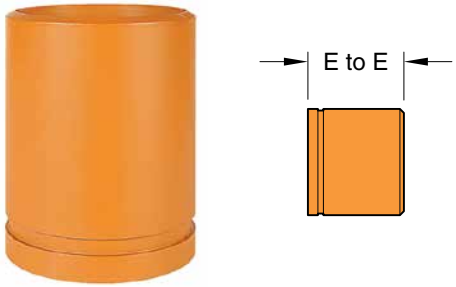


Figure 393
Fabricated Adapter Nipple
Groove x Plain



Pipe Size		Figure 391		Figure 392 & 393	
Nominal Inches *mm*	O.D. Inches *mm*	E to E Inches *mm*	Approx. Weight Lbs. *kg*	E to E Inches *mm*	Approx. Weight Lbs. *kg*
1-1/4	**1.66**	**4.00**	**0.8**	**4.00**	**0.8**
32	*42,4*	*101,6*	*0,4*	*101,6*	*0,4*
1-1/2	**1.90**	**4.00**	**0.9**	**4.00**	**0.9**
40	*48,3*	*101,6*	*0,4*	*101,6*	*0,4*
2	**2.37**	**4.00**	**1.2**	**4.00**	**1.2**
50	*60,3*	*101,6*	*0,5*	*101,6*	*0,5*
2-1/2	**2.87**	**4.00**	**1.9**	**4.00**	**1.9**
65	*73,0*	*101,6*	*0,9*	*101,6*	*0,9*
76mm	**3.00**	**4.00**	**–**	**4.00**	**–**
65	*76,1*	*101,6*	*–*	*101,6*	*–*
3	**3.50**	**4.00**	**2.5**	**4.00**	**2.5**
80	*88,9*	*101,6*	*1,1*	*101,6*	*1,1*
108mm	**4.25**	**–**	**–**	**6.00**	**–**
100	*108,0*	*–*	*–*	*154,4*	*–*
4	**4.50**	**6.00**	**5.4**	**6.00**	**5.4**
100	*114,3*	*154,4*	*2,5*	*154,4*	*2,5*
133mm	**5.25**	**–**	**–**	**6.00**	**–**
125	*133,0*	*–*	*–*	*154,4*	*–*
139mm	**5.50**	**6.00**	**–**	**6.00**	**–**
125	*139,7*	*154,4*	*–*	*154,4*	*–*
5	**5.56**	**6.00**	**7.3**	**6.00**	**7.3**
125	*141,3*	*154,4*	*3,4*	*154,4*	*3,4*
159mm	**6.25**	**–**	**–**	**6.00**	**–**
150	*159,0*	*–*	*–*	*154,4*	*–*
165mm	**6.50**	**6.00**	**–**	**6.00**	**–**
150	*165,1*	*154,4*	*–*	*154,4*	*–*
6	**6.63**	**6.00**	**9.4**	**6.00**	**9.4**
150	*168,3*	*154,4*	*4,3*	*154,4*	*4,3*
216mm	**8.52**	**–**	**-**	**6.00**	**–**
200	*216,3*	*–*		*154,4*	*–*
8	**8.63**	**6.00**	**14.2**	**6.00**	**14.2**
200	*219,1*	*154,4*	*6,4*	*154,4*	*6,4*
267mm	**10.53**	**–**	**–**	**8.00**	**–**
250	*267,4*	*–*	*–*	*203,2*	*–*
10	**10.75**	**8.00**	**27.0**	**8.00**	**27.0**
250	*273,0*	*203,2*	*12,2*	*203,2*	*12,2*
318mm	**12.54**	**–**	**–**	**8.00**	**–**
300	*318,5*	*–*	*–*	*203,2*	*–*
12	**12.75**	**8.00**	**33.0**	**8.00**	**33.0**
300	*323,9*	*203,2*	*15,0*	*203,2*	*15,0*

For information on larger sizes, contact GRINNELL Mechanical Products.
See page 41 for fitting specifications.

Figures 397, 398 & 399 Concentric Swaged Nipples

Tech Data Sheet: G180

Figure 397
Fabricated Swaged Nipple
Groove x Groove

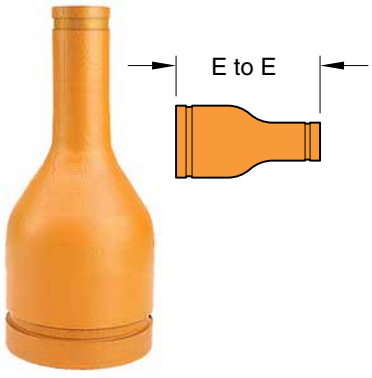
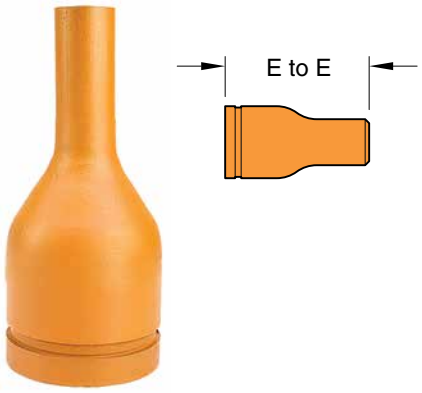


Figure 398
Fabricated Swaged Nipple
Groove x Male Thread

Figure 399
Fabricated Swaged Nipple
Groove x Plain End



Pipe Size		Figure 397 Groove x Groove		Figure 398 Groove x Male Thread		Figure 399 Groove x Plain End	
Nominal Inches *mm*	O.D. Inches *mm*	E to E Inches *mm*	Approx. Weight Lbs. *kg*	E to E Inches *mm*	Approx. Weight Lbs. *kg*	E to E Inches *mm*	Approx. Weight Lbs. *kg*
2 x 1	**2.37 x 1.31**	**6.50**	**2.0**	**6.50**	**2.0**	**6.50**	**2.0**
50 x 25	*60,3 x 33,4*	*165,1*	*0,9*	*165,1*	*0,9*	*165,1*	*0,9*
2 x 1-1/4	**2.37 x 1.66**	**6.50**	**2.0**	**6.50**	**2.0**	**6.50**	**2.0**
50 x 32	*60,3 x 42,4*	*165,1*	*0,9*	*165,1*	*0,9*	*165,1*	*0,9*
2 x 1-1/2	**2.37 x 1.90**	**6.50**	**2.0**	**6.50**	**2.0**	**6.50**	**2.0**
50 x 40	*60,3 x 48,3*	*165,1*	*0,9*	*165,1*	*0,9*	*165,1*	*0,9*
2-1/2 x 1	**2.87 x 1.31**	**7.00**	**3.5**	**7.00**	**3.5**	**7.00**	**3.5**
65 x 25	*73,0 x 33,4*	*177,8*	*1,6*	*177,8*	*1,6*	*177,8*	*1,6*
2-1/2 x 1-1/4	**2.87 x 1.66**	**7.00**	**3.5**	**7.00**	**3.5**	**7.00**	**3.5**
65 x 32	*73,0 x 42,4*	*177,8*	*1,6*	*177,8*	*1,6*	*177,8*	*1,6*
2-1/2 x 1-1/2	**2.87 x 1.90**	**7.00**	**3.5**	**7.00**	**3.5**	**7.00**	**3.5**
65 x 40	*73,0 x 48,3*	*177,8*	*1,6*	*177,8*	*1,6*	*177,8*	*1,6*
2-1/2 x 2	**2.87 x 2.37**	**7.00**	**3.5**	**7.00**	**3.5**	**7.00**	**3.5**
65 x 50	*73,0 x 60,3*	*177,8*	*1,6*	*177,8*	*1,6*	*177,8*	*1,6*
76mm x 1	**3.00 x 1.31**	**7.00**	**–**	**7.00**	**–**	**7.00**	**–**
65 x 25	*76,1 x 33,4*	*177,8*	*–*	*177,8*	*–*	*177,8*	*–*
76mm x 1-1/4	**3.00 x 1.66**	**7.00**	**–**	**7.00**	**–**	**7.00**	**–**
65 x 32	*76,1 x 42,4*	*177,8*	*–*	*177,8*	*–*	*177,8*	*–*
76mm x 1-1/2	**3.00 x 1.90**	**7.00**	**–**	**7.00**	**–**	**7.00**	**–**
65 x 40	*76,1 x 48,3*	*177,8*	*–*	*177,8*	*–*	*177,8*	*–*
76mm x 2	**3.00 x 2.37**	**7.00**	**–**	**7.00**	**–**	**7.00**	**–**
65 x 50	*76,1 x 60,3*	*177,8*	*–*	*177,8*	*–*	*177,8*	*–*
3 x 1	**3.50 x 1.31**	**8.00**	**5.0**	**8.00**	**5.0**	**8.00**	**5.0**
80 x 25	*88,9 x 33,4*	*203,2*	*2,3*	*203,2*	*2,3*	*203,2*	*2,3*
3 x 1-1/4	**3.50 x 1.60**	**8.00**	**5.0**	**8.00**	**5.0**	**8.00**	**5.0**
80 x 32	*88,9 x 42,4*	*203,2*	*2,3*	*203,2*	*2,3*	*203,2*	*2,3*
3 x 1-1/2	**3.50 x 1.90**	**8.00**	**5.0**	**8.00**	**5.0**	**8.00**	**5.0**
80 x 40	*88,9 x 48,3*	*203,2*	*2,3*	*203,2*	*2,3*	*203,2*	*2,3*
3 x 2	**3.50 x 2.37**	**8.00**	**5.0**	**8.00**	**5.0**	**8.00**	**5.0**
80 x 50	*88,9 x 60,3*	*203,2*	*2,3*	*203,2*	*2,3*	*203,2*	*2,3*

Figures 397, 398 & 399 Concentric Swaged Nipples

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Figure 397
Fabricated Swaged Nipple
Groove x Groove

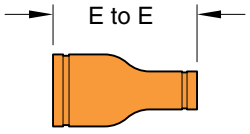


Figure 398
Fabricated Swaged Nipple
Groove x Male Thread

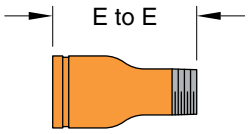
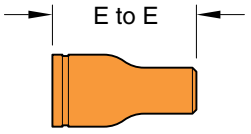


Figure 399
Fabricated Swaged Nipple
Groove x Plain End



Pipe Size		Figure 397 Groove x Groove		Figure 398 Groove x Male Thread		Figure 399 Groove x Plain End	
Nominal Inches *mm*	O.D. Inches *mm*	E to E Inches *mm*	Approx. Weight Lbs. *kg*	E to E Inches *mm*	Approx. Weight Lbs. *kg*	E to E Inches *mm*	Approx. Weight Lbs. *kg*
3 x 2-1/2	**3.50 x 2.87**	**8.00**	**5.0**	**8.00**	**5.0**	**8.00**	**5.0**
80 x 65	*88,9 x 73,0*	*203,2*	*2,3*	*203,2*	*2,3*	*203,2*	*2,3*
3 x 76mm	**3.50 x 3.00**	**8.00**	**–**	**8.00**	**–**	**8.00**	**–**
80 x 65	*88,9 x 76,1*	*203,2*	*–*	*203,2*	*–*	*203,2*	*–*
108mm x 1	**4.25 x 1.31**	**9.00**	**–**	**9.00**	**–**	**9.00**	**–**
100 x 25	*108,0 x 33,4*	*228,6*	*–*	*228,6*	*–*	*228,6*	*–*
108mm x 1-1/4	**4.25 x 1.66**	**9.00**	**–**	**9.00**	**–**	**9.00**	**–**
100 x 32	*108,0 x 42,4*	*228,6*	*–*	*228,6*	*–*	*228,6*	*–*
108mm x 1-1/2	**4.25 x 1.90**	**9.00**	**–**	**9.00**	**–**	**9.00**	**–**
100 x 40	*108,0 x 48,3*	*228,6*	*–*	*228,6*	*–*	*228,6*	*–*
108mm x 2	**4.25 x 2.37**	**9.00**	**–**	**9.00**	**–**	**9.00**	**–**
100 x 50	*108,0 x 60,3*	*228,6*	*–*	*228,6*	*–*	*228,6*	*–*
108mm x 2-1/2	**4.25 x 2.87**	**9.00**	**–**	**9.00**	**–**	**9.00**	**–**
100 x 65	*108,0 x 73,0*	*228,6*	*–*	*228,6*	*–*	*228,6*	*–*
108mm x 76mm	**4.25 x 3.00**	**9.00**	**–**	**9.00**	**–**	**9.00**	**–**
100 x 65	*108,0 x 76,1*	*228,6*	*–*	*228,6*	*–*	*228,6*	*–*
108mm x 3	**4.25 x 3.50**	**9.00**	**–**	**9.00**	**–**	**9.00**	**–**
100 x 80	*108,0 x 88,9*	*228,6*	*–*	*228,6*	*–*	*228,6*	*–*
4 x 1	**4.50 x 1.31**	**9.00**	**8.0**	**9.00**	**8.0**	**9.00**	**8.0**
100 x 25	*114,3 x 33,4*	*228,6*	*3,6*	*228,6*	*3,6*	*228,6*	*3,6*
4 x 1-1/4	**4.50 x 1.66**	**9.00**	**8.0**	**9.00**	**8.0**	**9.00**	**8.0**
100 x 32	*114,3 x 42,4*	*228,6*	*3,6*	*228,6*	*3,6*	*228,6*	*3,6*
4 x 1-1/2	**4.50 x 1.90**	**9.00**	**8.0**	**9.00**	**8.0**	**9.00**	**8.0**
100 x 40	*114,3 x 48,3*	*228,6*	*3,6*	*228,6*	*3,6*	*228,6*	*3,6*
4 x 2	**4.50 x 2.37**	**9.00**	**8.0**	**9.00**	**8.0**	**9.00**	**8.0**
100 x 50	*114,3 x 60,3*	*228,6*	*3,6*	*228,6*	*3,6*	*228,6*	*3,6*
4 x 2-1/2	**4.50 x 2.87**	**9.00**	**8.0**	**9.00**	**8.0**	**9.00**	**8.0**
100 x 65	*114,3 x 73,0*	*228,6*	*3,6*	*228,6*	*3,6*	*228,6*	*3,6*
4 x 76mm	**4.50 x 3.00**	**9.00**	**–**	**9.00**	**–**	**9.00**	**–**
100 x 65	*114,3 x 76,1*	*228,6*	*–*	*228,6*	*–*	*228,6*	*–*
4 x 3	**4.50 x 3.50**	**9.00**	**8.0**	**9.00**	**8.0**	**9.00**	**8.0**
100 x 80	*114,3 x 88,9*	*228,6*	*3,6*	*228,6*	*3,6*	*228,6*	*3,6*
133mm x 1-1/2	**5.25 x 1.90**	**11.00**	**–**	**11.00**	**–**	**–**	**–**
125 x 40	*133,0 x 48,3*	*279,4*	*–*	*279,4*	*–*	*–*	*–*
133mm x 2	**5.25 x 2.37**	**11.00**	**–**	**11.00**	**–**	**11.00**	**–**
125 x 50	*133,0 x 60,3*	*279,4*	*–*	*279,4*	*–*	*279,4*	*–*
133mm x 2-1/2	**5.25 x 2.87**	**11.00**	**–**	**11.00**	**–**	**11.00**	**–**
125 x 65	*133,0 x 73,0*	*279,4*	*–*	*279,4*	*–*	*279,4*	*–*
133mm x 76mm	**5.25 x 3.00**	**11.00**	**–**	**11.00**	**–**	**11.00**	**–**
125 x 65	*133,0 x 76,1*	*279,4*	*–*	*279,4*	*–*	*279,4*	*–*
133mm x 3	**5.25 x 3.50**	**11.00**	**–**	**11.00**	**–**	**11.00**	**–**
125 x 80	*133,0 x 88,9*	*279,4*	*–*	*279,4*	*–*	*279,4*	*–*

Figures 397, 398 & 399 Concentric Swaged Nipples

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Figure 397
Fabricated Swaged Nipple
Groove x Groove

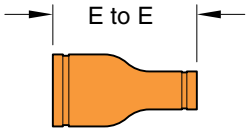


Figure 398
Fabricated Swaged Nipple
Groove x Male Thread

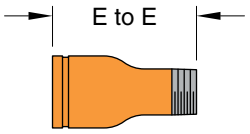
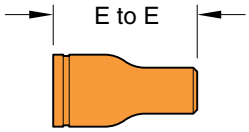


Figure 399
Fabricated Swaged Nipple
Groove x Plain End



Pipe Size		Figure 397 Groove x Groove		Figure 398 Groove x Male Thread		Figure 399 Groove x Plain End	
Nominal Inches *mm*	O.D. Inches *mm*	E to E Inches *mm*	Approx. Weight Lbs. *kg*	E to E Inches *mm*	Approx. Weight Lbs. *kg*	E to E Inches *mm*	Approx. Weight Lbs. *kg*
133mm x 108mm	**5.25 x 4.25**	**11.00**	**–**	**–**	**–**	**11.00**	**–**
125 x 100	*133,0 x 108,0*	*279,4*	*–*	*–*	*–*	*279,4*	*–*
133mm x 4	**5.25 x 4.50**	**11.00**	**–**	**11.00**	**–**	**11.00**	**–**
125 x 100	*133,0 x 114,3*	*279,4*	*–*	*279,4*	*–*	*279,4*	*–*
139mm x 1-1/2	**5.50 x 1.90**	**11.00**	**–**	**11.00**	**–**	**11.00**	**–**
125 x 40	*139,7 x 48,3*	*279,4*	*–*	*279,4*	*–*	*279,4*	*–*
139mm x 2	**5.50 x 2.37**	**11.00**	**–**	**11.00**	**–**	**11.00**	**–**
125 x 50	*139,7 x 60,3*	*279,4*	*–*	*279,4*	*–*	*279,4*	*–*
139mm x 2-1/2	**5.50 x 2.87**	**11.00**	**–**	**11.00**	**–**	**11.00**	**–**
125 x 65	*139,7 x 73,0*	*279,4*	*–*	*279,4*	*–*	*279,4*	*–*
139mm x 76mm	**5.50 x 3.00**	**11.00**	**–**	**11.00**	**–**	**11.00**	**–**
125 x 65	*139,7 x 76,1*	*279,4*	*–*	*279,4*	*–*	*279,4*	*–*
139mm x 3	**5.50 x 3.50**	**11.00**	**–**	**11.00**	**–**	**11.00**	**–**
125 x 80	*139,7 x 88,9*	*279,4*	*–*	*279,4*	*–*	*279,4*	*–*
139mm x 108mm	**5.50 x 4.25**	**11.00**	**–**	**–**	**–**	**11.00**	**–**
125 x 100	*139,7 x 108,0*	*279,4*	*–*	*–*	*–*	*279,4*	*–*
139mm x 4	**5.50 x 4.50**	**11.00**	**–**	**11.00**	**–**	**11.00**	**–**
125 x 100	*139,7 x 114,3*	*279,4*	*–*	*279,4*	*–*	*279,4*	*–*
5 x 1-1/2	**5.56 x 1.90**	**11.00**	**–**	**11.00**	**–**	**11.00**	**–**
125 x 40	*141,3 x 48,3*	*279,4*	*–*	*279,4*	*–*	*279,4*	*–*
5 x 2	**5.56 x 2.37**	**11.00**	**12.0**	**11.00**	**12.0**	**11.00**	**12.0**
125 x 50	*141,3 x 60,3*	*279,4*	*5,4*	*279,4*	*5,4*	*279,4*	*5,4*
5 x 2-1/2	**5.56 x 2.87**	**11.00**	**12.0**	**11.00**	**12.0**	**11.00**	**12.0**
125 x 65	*141,3 x 73,0*	*279,4*	*5,4*	*279,4*	*5,4*	*279,4*	*5,4*
5 x 76mm	**5.56 x 3.00**	**11.00**	**–**	**11.00**	**–**	**11.00**	**–**
125 x 65	*141,3 x 76,1*	*279,4*	*–*	*279,4*	*–*	*279,4*	*–*
5 x 3	**5.56 x 3.50**	**11.00**	**12.0**	**11.00**	**12.0**	**11.00**	**12.0**
125 x 80	*141,3 x 88,9*	*279,4*	*5,4*	*279,4*	*5,4*	*279,4*	*5,4*
5 x 108mm	**5.56 x 4.25**	**11.00**	**–**	**–**	**–**	**11.00**	**–**
125 x 100	*141,3 x 108,0*	*279,4*	*–*	*–*	*–*	*279,4*	*–*
5 x 4	**5.56 x 4.50**	**11.00**	**12.0**	**11.00**	**12.0**	**11.00**	**12.0**
125 x 100	*141,3 x 114,3*	*279,4*	*5,4*	*279,4*	*5,4*	*279,4*	*5,4*
159mm x 1	**6.25 x 1.31**	**12.00**	**–**	**12.00**	**–**	**12.00**	**–**
150 x 25	*159,0 x 33,4*	*304,8*	*–*	*304,8*	*–*	*304,8*	*–*
159mm x 1-1/4	**6.25 x 1.66**	**12.00**	**–**	**12.00**	**–**	**12.00**	**–**
150 x 32	*159,0 x 42,4*	*304,8*	*–*	*304,8*	*–*	*304,8*	*–*
159mm x 1-1/2	**6.25 x 1.90**	**12.00**	**–**	**12.00**	**–**	**12.00**	**–**
150 x 40	*159,0 x 48,3*	*304,8*	*–*	*304,8*	*–*	*304,8*	*–*
159mm x 2	**6.25 x 2.37**	**12.00**	**–**	**12.00**	**–**	**12.00**	**–**
150 x 50	*159,0 x 60,3*	*304,8*	*–*	*304,8*	*–*	*304,8*	*–*
159mm x 2-1/2	**6.25 x 2.87**	**12.00**	**–**	**12.00**	**–**	**12.00**	**–**
150 x 65	*159,0 x 73,0*	*304,8*	*–*	*304,8*	*–*	*304,8*	*–*

Figures 397, 398 & 399 Concentric Swaged Nipples

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Figure 397
Fabricated Swaged Nipple
Groove x Groove

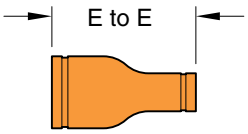


Figure 398
Fabricated Swaged Nipple
Groove x Male Thread

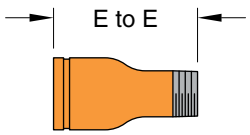
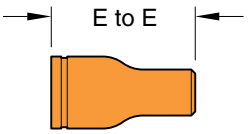


Figure 399
Fabricated Swaged Nipple
Groove x Plain End



Pipe Size		Figure 397 Groove x Groove		Figure 398 Groove x Male Thread		Figure 399 Groove x Plain End	
Nominal Inches *mm*	O.D. Inches *mm*	E to E Inches *mm*	Approx. Weight Lbs. *kg*	E to E Inches *mm*	Approx. Weight Lbs. *kg*	E to E Inches *mm*	Approx. Weight Lbs. *kg*
159mm x 76mm	**6.25 x 3.00**	**12.00**	**–**	**12.00**	**–**	**12.00**	**–**
150 x 65	*159,0 x 76,1*	*304,8*	*–*	*304,8*	*–*	*304,8*	*–*
159mm x 3	**6.25 x 3.50**	**12.00**	**–**	**12.00**	**–**	**12.00**	**–**
150 x 80	*159,0 x 88,9*	*304,8*	*–*	*304,8*	*–*	*304,8*	*–*
159mm x 108mm	**6.25 x 4.25**	**12.00**	**–**	**–**	**–**	**12.00**	**–**
150 x 100	*159,0 x 108,0*	*304,8*	*–*	*–*	*–*	*304,8*	*–*
159mm x 4	**6.25 x 4.50**	**12.00**	**–**	**12.00**	**–**	**12.00**	**–**
150 x 100	*159,0 x 114,3*	*304,8*	*–*	*304,8*	*–*	*304,8*	*–*
159mm x 133mm	**6.25 x 5.25**	**12.00**	**–**	**–**	**–**	**12.00**	**–**
150 x 125	*159,0 x 133,0*	*304,8*	*–*	*–*	*–*	*304,8*	*–*
159mm x 139mm	**6.25 x 5.50**	**–**	**–**	**12.00**	**–**	**–**	**–**
150 x 125	*159,0 x 139,7*	*–*	*–*	*304,8*	*–*	*–*	*–*
159mm x 5	**6.25 x 5.56**	**12.00**	**–**	**12.00**	**–**	**12.00**	**–**
150 x 125	*159,0 x 141,3*	*304,8*	*–*	*304,8*	*–*	*304,8*	*–*
165mm x 1	**6.50 x 1.31**	**12.00**	**–**	**12.00**	**–**	**12.00**	**–**
150 x 25	*165,1 x 33,4*	*304,8*	*–*	*304,8*	*–*	*304,8*	*–*
165mm x 1-1/4	**6.50 x 1.66**	**12.00**	**–**	**12.00**	**–**	**12.00**	**–**
150 x 32	*165,1 x 42,4*	*304,8*	*–*	*304,8*	*–*	*304,8*	*–*
165mm x 1-1/2	**6.50 x 1.90**	**12.00**	**–**	**12.00**	**–**	**12.00**	**–**
150 x 40	*165,1 x 48,3*	*304,8*	*–*	*304,8*	*–*	*304,8*	*–*
165mm x 2	**6.50 x 2.37**	**12.00**	**–**	**12.00**	**–**	**12.00**	**–**
150 x 50	*165,1 x 60,3*	*304,8*	*–*	*304,8*	*–*	*304,8*	*–*
165mm x 2-1/2	**6.50 x 2.87**	**12.00**	**–**	**12.00**	**–**	**12.00**	**–**
150 x 65	*165,1 x 73,0*	*304,8*	*–*	*304,8*	*–*	*304,8*	*–*
165mm x 76mm	**6.50 x 3.00**	**12.00**	**–**	**12.00**	**–**	**12.00**	**–**
150 x 65	*165,1 x 76,1*	*304,8*	*–*	*304,8*	*–*	*304,8*	*–*
165mm x 3	**6.50 x 3.50**	**12.00**	**–**	**12.00**	**–**	**12.00**	**–**
150 x 80	*165,1 x 88,9*	*304,8*	*–*	*304,8*	*–*	*304,8*	*–*
165mm x 108mm	**6.50 x 4.25**	**12.00**	**–**	**-**	**–**	**12.00**	**–**
150 x 100	*165,1 x 108,0*	*304,8*	*–*		*–*	*304,8*	*–*
165mm x 4	**6.50 x 4.50**	**12.00**	**–**	**12.00**	**–**	**12.00**	**–**
150 x 100	*165,1 x 114,3*	*304,8*	*–*	*304,8*	*–*	*304,8*	*–*
165mm x 133mm	**6.50 x 5.25**	**12.00**	**–**	**–**	**–**	**12.00**	**–**
150 x 125	*165,1 x 133,0*	*304,8*	*–*	*–*	*–*	*304,8*	*–*
165mm x 139mm	**6.50 x 5.50**	**12.00**	**–**	**12.00**	**–**	**12.00**	**–**
150 x 125	*165,1 x 139,7*	*304,8*	*–*	*304,8*	*–*	*304,8*	*–*
165mm x 5	**6.50 x 5.56**	**12.00**	**–**	**12.00**	**–**	**12.00**	**–**
150 x 125	*165,1 x 141,3*	*304,8*	*–*	*304,8*	*–*	*304,8*	*–*
6 x 1	**6.63 x 1.31**	**12.00**	**19.0**	**12.00**	**19.0**	**12.00**	**19.0**
150 x 25	*168,3 x 33,4*	*304,8*	*8,6*	*304,8*	*8,6*	*304,8*	*8,6*

Figures 397, 398 & 399 Concentric Swaged Nipples

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Figure 397
Fabricated Swaged Nipple
Groove x Groove

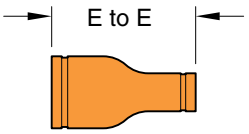


Figure 398
Fabricated Swaged Nipple
Groove x Male Thread

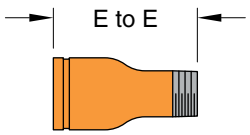
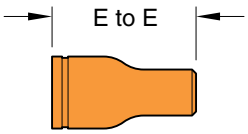


Figure 399
Fabricated Swaged Nipple
Groove x Plain End

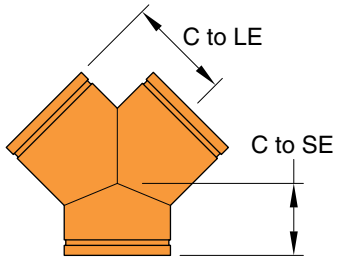


Pipe Size		Figure 397 Groove x Groove		Figure 398 Groove x Male Thread		Figure 399 Groove x Plain End	
Nominal Inches *mm*	O.D. Inches *mm*	E to E Inches *mm*	Approx. Weight Lbs. *kg*	E to E Inches *mm*	Approx. Weight Lbs. *kg*	E to E Inches *mm*	Approx. Weight Lbs. *kg*
6 x 1-1/4	**6.63 x 1.66**	**12.00**	**19.0**	**12.00**	**19.0**	**12.00**	**19.0**
150 x 32	*168,3 x 42,4*	*304,8*	*8,6*	*304,8*	*8,6*	*304,8*	*8,6*
6 x 1-1/2	**6.63 x 1.90**	**12.00**	**19.0**	**12.00**	**19.0**	**12.00**	**19.0**
150 x 40	*168,3 x 48,3*	*304,8*	*8,6*	*304,8*	*8,6*	*304,8*	*8,6*
6 x 2	**6.63 x 2.37**	**12.00**	**19.0**	**12.00**	**19.0**	**12.00**	**19.0**
150 x 50	*168,3 x 60,3*	*304,8*	*8,6*	*304,8*	*8,6*	*304,8*	*8,6*
6 x 2-1/2	**6.63 x 2.87**	**12.00**	**19.0**	**12.00**	**19.0**	**12.00**	**19.0**
150 x 65	*168,3 x 73,0*	*304,8*	*8,6*	*304,8*	*8,6*	*304,8*	*8,6*
6 x 76mm	**6.63 x 3.00**	**12.00**	**19.0**	**12.00**	**19.0**	**12.00**	**19.0**
150 x 65	*168,3 x 76,1*	*304,8*	*8,6*	*304,8*	*8,6*	*304,8*	*8,6*
6 x 3	**6.63 x 3.50**	**12.00**	**19.0**	**12.00**	**19.0**	**12.00**	**19.0**
150 x 80	*168,3 x 88,9*	*304,8*	*8,6*	*304,8*	*8,6*	*304,8*	*8,6*
6 x 108mm	**6.63 x 4.50**	**12.00**	**19.0**	**–**	**–**	**12.00**	**19.0**
150 x 100	*168,3 x 108,0*	*304,8*	*8,6*	*–*	*–*	*304,8*	*8,6*
6 x 4	**6.63 x 4.50**	**12.00**	**19.0**	**12.00**	**19.0**	**12.00**	**19.0**
150 x 100	*168,3 x 114,3*	*304,8*	*8,6*	*304,8*	*8,6*	*304,8*	*8,6*
6 x 133mm	**6.63 x 5.25**	**12.00**	**19.0**	**–**	**–**	**12.00**	**19.0**
150 x 125	*168,3 x 133,0*	*304,8*	*8,6*	*–*	*–*	*304,8*	*8,6*
6 x 139mm	**6.63 x 5.50**	**12.00**	**19.0**	**12.00**	**19.0**	**12.00**	**19.0**
150 x 125	*168,3 x 139,7*	*304,8*	*8,6*	*304,8*	*8,6*	*304,8*	*8,6*
6 x 5	**6.63 x 5.56**	**12.00**	**19.0**	**12.00**	**19.0**	**12.00**	**19.0**
150 x 125	*168,3 x 141,3*	*304,8*	*8,6*	*304,8*	*8,6*	*304,8*	*8,6*
216mm x 165mm	**8.52 x 6.50**	**12.00**	**–**	**12.00**	**–**	**12.00**	**–**
200 x 150	*216,3 x 165,1*	*304,8*	*–*	*304,8*	*–*	*304,8*	*–*
216mm x 6	**8.52 x 6.63**	**12.00**	**–**	**12.00**	**–**	**12.00**	**–**
200 x 150	*216,3 x 168,3*	*304,8*	*–*	*304,8*	*–*	*304,8*	*–*
8 x 165mm	**8.63 x 6.50**	**12.00**	**–**	**12.00**	**–**	**12.00**	**–**
200 x 150	*219,1 x 165,1*	*304,8*	*–*	*304,8*	*–*	*304,8*	*–*
8 x 6	**8.63 x 6.63**	**12.00**	**–**	**12.00**	**–**	**12.00**	**–**
200 x 150	*219,1 x 168,3*	*304,8*	*–*	*304,8*	*–*	*304,8*	*–*

For information on larger sizes, contact GRINNELL Mechanical Products.
See page 41 for fitting specifications.

Figure 324 90° True Wyes

Tech Data Sheet: G180



Pipe Size		C to LE	C to SE	Approx.
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Inches *mm*	Weight Lbs. *kg*
1-1/4	**1.66**	**2.75**	**2.50**	**1.4**
32	*42,4*	*69,9*	*63,5*	*0,6*
1-1/2	**1.90**	**2.75**	**2.75**	**1.7**
40	*48,3*	*69,9*	*69,9*	*0,8*
2	**2.37**	**3.25**	**2.75**	**2.5**
50	*60,3*	*82,6*	*69,9*	*1,1*
2-1/2	**2.87**	**3.75**	**3.00**	**4.4**
65	*73,0*	*95,3*	*76,2*	*2,0*
76mm	**3.00**	**3.75**	**3.00**	**4.4**
65	*76,1*	*95,3*	*76,2*	*2,0*
3	**3.50**	**4.25**	**3.25**	**6.4**
80	*88,9*	*108,0*	*82,6*	*2,9*
108mm	**4.25**	**5.00**	**3.75**	**–**
100	*108,0*	*127,0*	*95,3*	*–*
4	**4.50**	**5.00**	**3.75**	**10.5**
100	*114,3*	*127,0*	*95,3*	*4,8*
133mm	**5.25**	**5.50**	**4.00**	**–**
125	*133,0*	*139,7*	*101,6*	*–*
139mm	**5.50**	**5.50**	**4.00**	**–**
125	*139,7*	*139,7*	*101,6*	*–*
5	**5.56**	**5.50**	**4.00**	**15.2**
125	*141,3*	*139,7*	*101,6*	*6,9*
159mm	**6.25**	**6.50**	**4.50**	**–**
150	*159,0*	*165,1*	*114,3*	*–*
165mm	**6.50**	**6.50**	**4.50**	**22.9**
150	*165,1*	*165,1*	*114,3*	*10,4*
6	**6.63**	**6.50**	**4.50**	**22.9**
150	*168,3*	*165,1*	*114,3*	*10,4*

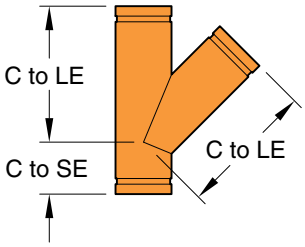
Pipe Size		C to LE	C to SE	Approx.
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Inches *mm*	Weight Lbs. *kg*
216mm	**8.52**	**7.75**	**6.00**	**–**
200	*216,3*	*196,9*	*152,4*	*–*
8	**8.63**	**7.75**	**6.00**	**41.9**
200	*219,1*	*196,9*	*152,4*	*19,0*
267mm	**10.53**	**9.00**	**6.50**	**–**
250	*267,4*	*228,6*	*165,71*	*–*
10	**10.75**	**9.00**	**6.50**	**66.2**
250	*273,0*	*228,6*	*165,71*	*30,0*
318mm	**12.54**	**10.00**	**7.00**	**–**
300	*318,5*	*254,0*	*177,8*	*–*
12	**12.75**	**10.00**	**7.00**	**87.7**
300	*323,9*	*254,0*	*177,8*	*39,8*
14	**14.00**	**11.00**	**7.50**	**105.3**
350	*355,6*	*279,4*	*190,5*	*47,8*
16	**16.00**	**12.00**	**8.00**	**129.1**
400	*406,4*	*304,8*	*203,2*	*58,6*
18	**18.00**	**15.50**	**8.50**	**184.4**
450	*457,2*	*393,7*	*215,9*	*83,6*
20	**20.00**	**17.25**	**9.00**	**225.8**
500	*508,0*	*438,2*	*238,6*	*102,4*
24	**24.00**	**20.00**	**10.00**	**308.5**
600	*609,6*	*508,0*	*254,0*	*139,9*

For information on larger sizes, European sizes or other alternative sizes, contact GRINNELL Mechanical Products.

See page 41 for fitting specifications.

Figure 314 45° Laterals

Tech Data Sheet: G180



Pipe Size		C to LE	C to SE	Approx.
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Inches *mm*	Weight Lbs. *kg*
1-1/4	**1.66**	**5.75**	**2.50**	**1.4**
32	*42,4*	*146,1*	*63,5*	*0,6*
1-1/2	**1.90**	**6.25**	**2.75**	**1.7**
40	*48,3*	*158,8*	*69,9*	*0,8*
2	**2.37**	**7.00**	**2.75**	**2.5**
50	*60,3*	*177,8*	*69,9*	*1,1*
2-1/2	**2.87**	**7.75**	**3.00**	**4.4**
65	*73,0*	*196,9*	*76,2*	*2,0*
76mm	**3.00**	**7.75**	**3.00**	**4.4**
65	*76,1*	*196,9*	*76,2*	*2,0*
3	**3.50**	**8.50**	**3.25**	**6.4**
80	*88,9*	*215,9*	*82,6*	*2,9*
108mm	**4.25**	**10.50**	**3.75**	**–**
100	*108,0*	*266,7*	*95,3*	*–*
4	**4.50**	**10.50**	**3.75**	**10.5**
100	*114,3*	*266,7*	*95,3*	*4,8*
133mm	**5.25**	**12.50**	**4.00**	**–**
125	*133,0*	*317,5*	*102,0*	*–*
139mm	**5.50**	**12.50**	**4.00**	**30.0**
125	*139,7*	*317,5*	*102,0*	*13,6*
5	**5.56**	**12.50**	**4.00**	**15.2**
125	*141,3*	*317,5*	*101,6*	*6,9*
159mm	**6.25**	**14.00**	**4.50**	**–**
150	*159,0*	*355,6*	*114,3*	*–*
165mm	**6.50**	**14.00**	**4.50**	**22.9**
150	*165,1*	*355,6*	*114,3*	*10,4*
6	**6.63**	**14.00**	**4.50**	**22.9**
150	*168,3*	*355,6*	*114,3*	*10,4*

Pipe Size		C to LE	C to SE	Approx.
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Inches *mm*	Weight Lbs. *kg*
216mm	**8.52**	**18.00**	**6.00**	**–**
200	*216,3*	*457,2*	*152,4*	*–*
8	**8.63**	**18.00**	**6.00**	**41.9**
200	*219,1*	*457,2*	*152,4*	*19,0*
267mm	**10.53**	**20.50**	**6.50**	**–**
250	*267,4*	*520,7*	*165,7*	*–*
10	**10.75**	**20.50**	**6.50**	**66.2**
250	*273,0*	*520,7*	*165,7*	*30,0*
318mm	**12.54**	**23.00**	**7.00**	**–**
300	*318,5*	*584,2*	*177,8*	*–*
12	**12.75**	**23.00**	**7.00**	**87.7**
300	*323,9*	*584,2*	*177,8*	*39,8*
14	**14.00**	**26.50**	**7.50**	**105.3**
350	*355,6*	*673,1*	*190,5*	*47,8*
16	**16.00**	**29.00**	**8.00**	**129.1**
400	*406,4*	*736,6*	*203,2*	*58,6*
18	**18.00**	**32.00**	**8.50**	**184.4**
450	*457,2*	*812,8*	*215,9*	*83,6*
20	**20.00**	**35.00**	**9.00**	**225.8**
500	*508,0*	*889,0*	*238,6*	*102,4*
24	**24.00**	**40.00**	**10.00**	**308.5**
600	*609,6*	*1016,0*	*254,0*	*139,9*

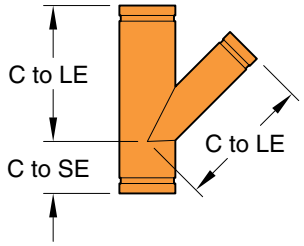
For information on larger sizes, contact GRINNELL Mechanical Products.

See page 41 for fitting specifications.

Figure 325 45° Reducing Laterals

(Page 1 of 5)

Tech Data Sheet: G180



Pipe Size		C to LE Inches *mm*	C to SE Inches *mm*	Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*			
3 x 3 x 2	**3.50 x 3.50 x 2.37**	**8.50**	**3.25**	**9.0**
80 x 80 x 50	*88,9 x 88,9 x 60,3*	*215,9*	*82,6*	*4,1*
3 x 3 x 2-1/2	**3.50 x 3.50 x 2.87**	**8.50**	**3.25**	**10.0**
80 x 80 x 65	*88,9 x 88,9 x 73,0*	*215,9*	*82,6*	*4,5*
3 x 3 x 76mm	**3.50 x 3.50 x 3.00**	**8.50**	**3.25**	**11.5**
80 x 80 x 65	*88,9 x 88,9 x 76,1*	*216,0*	*83,0*	*5,2*
108mm x 108mm x 2	**4.25 x 4.25 x 2.37**	**10.50**	**3.75**	**–**
100 x 100 x 50	*108,0 x 108,0 x 60,3*	*266,7*	*95,3*	*–*
108mm x 108mm x 2-1/2	**4.25 x 4.25 x 2.87**	**10.50**	**3.75**	**–**
100 x 100 x 65	*108,0 x 108,0 x 73,0*	*266,7*	*95,3*	*–*
108mm x 108mm x 76mm	**4.25 x 4.25 x 3.00**	**10.50**	**3.75**	**–**
100 x 100 x 65	*108,0 x 108,0 x 76,1*	*266,7*	*95,3*	*–*
108mm x 108mm x 3	**4.25 x 4.25 x 3.50**	**10.50**	**3.75**	**–**
100 x 100 x 80	*108,0 x 108,0 x 88,9*	*266,7*	*95,3*	*–*
4 x 4 x 2	**4.50 x 4.50 x 2.37**	**10.50**	**3.75**	**14.7**
100 x 100 x 50	*114,3 x 114,3 x 60,3*	*266,7*	*95,3*	*6,7*
4 x 4 x 2-1/2	**4.50 x 4.50 x 2.87**	**10.50**	**3.75**	**16.0**
100 x 100 x 65	*114,3 x 114,3 x 73,0*	*266,7*	*95,3*	*7,3*
4 x 4 x 76mm	**4.50 x 4.50 x 3.00**	**10.50**	**3.75**	**16.0**
100 x 100 x 65	*114,3 x 114,3 x 76,1*	*266,7*	*95,3*	*7,3*
4 x 4 x 3	**4.50 x 4.50 x 3.50**	**10.50**	**3.75**	**16.9**
100 x 100 x 80	*114,3 x 114,3 x 88,9*	*266,7*	*95,3*	*7,7*
133mm x 133mm x 2	**5.25 x 5.25 x 2.37**	**12.50**	**4.00**	**–**
1225 x 125 x 50	*133,0 x 133,0 x 60,3*	*317,5*	*102,0*	*–*
133mm x 133mm x 2-1/2	**5.25 x 5.25 x 2.88**	**12.50**	**4.00**	**–**
125 x 125 X 65	*133,0 x 133,0 x 73,0*	*317,5*	*102,0*	*–*
133mm x 133mm x 76mm	**5.25 x 5.25 x 2.88**	**12.50**	**4.00**	**–**
125 x 125 X 65	*133,0 x 133,0 x 76,1*	*317,5*	*102,0*	*–*
133mm x 133mm x 3	**5.25 x 5.25 x 3.50**	**12.50**	**4.00**	**–**
1225 x 125 x 80	*133,0 x 133,0 x 88,9*	*317,5*	*102,0*	*–*
133mm x 133mm x 4	**5.25 x 5.25 x 4.50**	**12.50**	**4.00**	**–**
1225 x 125 x 100	*133,0 x 133,0 x 114,3*	*317,5*	*102,0*	*–*
139mm x 139mm x 2	**5.50 x 5.50 x 2.37**	**12.50**	**4.00**	**22.4**
125 x 125 x 50	*139,7 x 139,7 x 60,3*	*317,5*	*102,0*	*10,2*

Figure 325 45° Reducing Laterals

Pipe Size		C to LE	C to SE	Approx. Weight
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Inches *mm*	Lbs. *kg*
1399mm x 139mm x 2-1/2	**5.25 x 5.25 x 2.88**	**12.50**	**4.00**	**–**
125 x 125 X 65	*139,7 x 139,7 x 73,0*	*317,5*	*102,0*	*–*
133mm x 133mm x 76mm	**5.25 x 5.25 x 2.88**	**12.50**	**4.00**	**–**
125 x 125 X 65	*139,7 x 139,7 x 76,1*	*317,5*	*102,0*	*–*
139,7mm x 139,7mm x 3	**5.50 x 5.50 x 3.50**	**12.50**	**4.00**	**26.5**
125 x 125 x 80	*139,7 x 139,7 x 88,9*	*317,5*	*102,0*	*12,0*
139mm x 139mm x 4	**5.50 x 5.50 x 4.50**	**12.50**	**4.00**	**30.4**
125 x 125 x 100	*139,7 x 139,7 x 114,3*	*317,5*	*102,0*	*13,8*
5 x 5 x 2	**5.56 x 5.56 x 2.37**	**12.50**	**4.00**	**22.4**
125 x 125 x 50	*141,3 x 141,3 x 60,3*	*317,5*	*101,6*	*10,2*
5 x 5 x 2-1/2	**5.56 x 5.56 x 2.87**	**12.50**	**4.00**	**23.5**
125 x 125 x 65	*141,3 x 141,3 x 73,0*	*317,5*	*101,6*	*10,7*
5 x 5 x 76mm	**5.56 x 5.56 x 3.00**	**12.50**	**4.00**	**–**
125 x 125 x 65	*141,3 x 141,3 x 76,1*	*317,5*	*101,6*	*–*
5 x 5 x 3	**5.56 x 5.56 x 3.50**	**12.50**	**4.00**	**24.9**
125 x 125 x 80	*141,3 x 141,3 x 88,9*	*317,5*	*101,6*	*11,3*
5 x 5 x 4	**5.56 x 5.56 x 4.50**	**12.50**	**4.00**	**26.9**
125 x 125 x 100	*141,3 x 141,3 x 114,3*	*317,5*	*101,6*	*12,2*
159mm x 159mm x 2	**6.25 x 6.25 x 2.37**	**14.00**	**4.50**	**–**
150 x 150 x 50	*159,0 x 159,0 x 60,3*	*355,6*	*114,0*	*–*
159mm x 159mm x 76mm	**6.25 x 6.25 x 3.00**	**14.00**	**4.50**	**–**
150 x 150 x 65	*159,0 x 159,0 x 76,1*	*355,6*	*114,0*	*–*
159mm x 159mm x 3	**6.25 x 6.25 x 3.50**	**14.00**	**4.50**	**–**
150 x 150 x 80	*159,0 x 159,0 x 88,9*	*355,6*	*114,0*	*–*
159mm x 159mm x 4	**6.25 x 6.25 x 4.50**	**14.00**	**4.50**	**–**
150 x 150 x 100	*159,0 x 159,0 x 114,3*	*355,6*	*114,0*	*–*
159mm x 159mm x 133mm	**6.25 x 6.25 x 5.25**	**14.00**	**4.50**	**–**
150 x 150 x 125	*159,0 x 159,0 x 133,0*	*355,6*	*114,0*	*–*
159mm x 159mm x 139mm	**6.25 x 6.25 x 5.50**	**14.00**	**4.50**	**–**
150 x 150 x 125	*159,0 x 159,0 x 139,7*	*355,6*	*114,0*	*–*
165mm x 165mm x 2	**6.50 x 6.50 x 2.37**	**14.00**	**4.50**	**33.1**
150 x 150 x 50	*165,1 x 165,1 x 60,3*	*355,6*	*114,0*	*15,0*
165mm x 165mm x 76mm	**6.50 x 6.50 x 3.00**	**14.00**	**4.50**	**–**
150 x 150 x 65	*165,1 x 165,1 x 76,1*	*355,6*	*114,0*	*–*
165mm x 165mm x 3	**6.50 x 6.50 x 3.50**	**14.00**	**4.50**	**37.0**
150 x 150 x 80	*165,1 x 165,1 x 88,9*	*355,6*	*114,0*	*16,8*
165mm x 165mm x 4	**6.50 x 6.50 x 4.50**	**14.00**	**4.50**	**39.9**
150 x 150 x 100	*165,1 x 165,1 x 114,3*	*355,6*	*114,0*	*18,1*
165mm x 165mm x 133mm	**6.50 x 6.50 x 5.25**	**14.00**	**4.50**	**–**
150 x 150 x 125	*165,1 x 165,1 x 133,0*	*355,6*	*114,0*	*–*
165mm x 165mm x 139mm	**6.50 x 6.50 x 5.50**	**14.00**	**4.50**	**45.0**
150 x 150 x 125	*165,1 x 165,1 x 139,7*	*355,6*	*114,0*	*20,4*
6 x 6 x 2	**6.63 x 6.63 x 2.37**	**14.00**	**4.50**	**31.7**
150 x 150 x 50	*168,3 x 168,3 x 60,3*	*355,6*	*114,3*	*14,4*
6 x 6 x 2-1/2	**6.63 x 6.63 x 2.87**	**14.00**	**4.50**	**34.0**
150 x 150 x 65	*168,3 x 168,3 x 73,0*	*355,6*	*114,3*	*15,4*

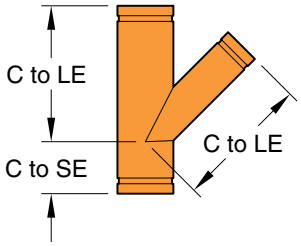


Figure 325 45° Reducing Laterals

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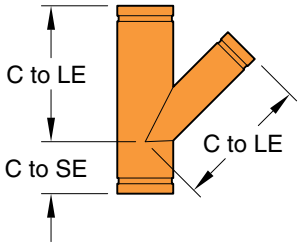
Tech Data Sheet: G180



Pipe Size		C to LE Inches *mm*	C to SE Inches *mm*	Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*			
6 x 6 x 76mm	**6.63 x 6.63 x 3.00**	**14.00**	**4.50**	**–**
150 x 150 x 65	*168,3 x 168,3 x 76,1*	*355,6*	*114,3*	*–*
6 x 6 x 3	**6.63 x 6.63 x 3.50**	**14.00**	**4.50**	**34.4**
150 x 150 x 80	*168,3 x 168,3 x 88,9*	*355,6*	*114,3*	*15,6*
6 x 6 x 4	**6.63 x 6.63 x 4.50**	**14.00**	**4.50**	**36.5**
150 x 150 x 100	*168,3 x 168,3 x 114,3*	*355,6*	*114,3*	*16,6*
6 x 6 x 139mm	**6.63 x 6.63 x 5.50**	**14.00**	**4.50**	**45.0**
150 x 150 x 125	*168,3 x 168,3 x 139,7*	*356,0*	*114,0*	*20,4*
6 x 6 x 5	**6.63 x 6.63 x 5.56**	**14.00**	**4.50**	**39.1**
150 x 150 x 125	*168,3 x 168,3 x 141,3*	*355,6*	*114,3*	*17,7*
216mm x 216mm x 4	**8.52 x 8.52 x 4.50**	**18.00**	**6.00**	**–**
200 x 200 x 100	*216,3 x 216,3 x 114,3*	*457,2*	*152,4*	*–*
216mm x 216mm x 139mm	**8.52 x 8.52 x 5.50**	**18.00**	**6.00**	**–**
200 x 200 x 125	*216,3 x 216,3 x 139,7*	*457,2*	*152,4*	*–*
216mm x 216mm x 5	**8.52 x 8.52 x 5.56**	**18.00**	**6.00**	**–**
200 x 200 x 125	*216,3 x 216,3 x 141,3*	*457,2*	*152,4*	*–*
216mm x 216mm x 165mm	**8.52 x 8.52 x 6.50**	**18.00**	**6.00**	**–**
200 x 200 x 150	*216,3 x 216,3 x 165,1*	*457,2*	*152,4*	*–*
216mm x 216mm x 6	**8.52 x 8.52 x 6.63**	**18.00**	**6.00**	**–**
200 x 200 x 150	*216,3 x 216,3 x 168,3*	*457,2*	*152,4*	*–*
8 x 8 x 4	**8.63 x 8.63 x 4.50**	**18.00**	**6.00**	**58.9**
200 x 200 x 100	*219,1 x 219,1 x 114,1*	*457,2*	*152,4*	*26,7*
8 x 8 x 139mm	**8.63 x 8.63 x 5.50**	**18.00**	**6.00**	**67.9**
200 x 200 x 125	*219,1 x 219,1 x 139,7*	*457,0*	*152,0*	*30,8*
8 x 8 x 5	**8.63 x 8.63 x 6.50**	**18.00**	**6.00**	**62.2**
200 x 200 x 125	*219,1 x 219,1 x 165,1*	*457,2*	*152,4*	*28,2*
8 x 8 x 165mm	**8.63 x 8.63 x 6.63**	**18.00**	**6.00**	**–**
200 x 200 x 150	*219,1 x 219,1 x 168,3*	*457,2*	*152,4*	*–*
8 x 8 x 6	**8.63 x 8.63 x 6.63**	**18.00**	**6.00**	**66.1**
200 x 200 x 150	*219,1 x 219,1 x 168,3*	*457,2*	*152,4*	*30,0*
267mm x 267mm x 4	**10.53 x 10.53 x 4.50**	**20.50**	**6.50**	**–**
250 x 250 x 100	*267,4 x 267,4 x 114,3*	*520,7*	*165,1*	*–*
267mm x 267mm x 139mm	**10.53 x 10.53 x 5.50**	**20.50**	**6.50**	**–**
250 x 250 x 125	*267,4 x 267,4 x 139,7*	*520,7*	*165,1*	*–*
267mm x 267mm x 5	**10.53 x 10.53 x 5.56**	**20.50**	**6.50**	**–**
250 x 250 x 125	*267,4 x 267,4 x 141,3*	*520,7*	*165,1*	*–*
267mm x 267mm x 165mm	**10.53 x 10.53 x 6.50**	**20.50**	**6.50**	**–**
250 x 250 x 150	*267,4 x 267,4 x 165,1*	*520,7*	*165,1*	*–*
267mm x 267mm x 6	**10.53 x 10.53 x 6.63**	**20.50**	**6.50**	**–**
250 x 250 x 150	*267,4 x 267,4 x 168,3*	*520,7*	*165,1*	*–*
267mm x 267mm x 216mm	**10.53 x 10.53 x 8.52**	**20.50**	**6.50**	**–**
250 x 250 x 200	*267,4 x 267,4 x 216,3*	*520,7*	*165,1*	*–*
267mm x 267mm x 8	**10.53 x 10.53 x 8.63**	**20.50**	**6.50**	**–**
250 x 250 x 200	*267,4 x 267,4 x 219,1*	*520,7*	*165,1*	*–*
10 x 10 x 4	**10.75 x 10.75 x 4.50**	**20.50**	**6.50**	**87.3**
250 x 250 x 100	*273,0 x 273,0 x 114,3*	*520,7*	*165,1*	*39,6*

Figure 325 45° Reducing Laterals

Pipe Size		C to LE	C to SE	Approx. Weight
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Inches *mm*	Lbs. *kg*
10 x 10 x 139mm	**10.75 x 10.75 x 5.50**	**20.50**	**6.50**	**100.1**
250 x 250 x 125	*273,0 x 273,0 x 139,7*	*521,0*	*165,0*	*45,4*
10 x 10 x 5	**10.75 x 10.75 x 5.56**	**20.50**	**6.50**	**90.7**
250 x 250 x 125	*273,0 x 273,0 x 141,3*	*520,7*	*165,1*	*41,1*
10 x 10 x 165mm	**10.75 x 10.75 x 6.50**	**20.50**	**6.50**	**–**
250 x 250 x 150	*273,0 x 273,0 x 165,1*	*520,7*	*165,1*	*–*
10 x 10 x 6	**10.75 x 10.75 x 6.63**	**20.50**	**6.50**	**94.7**
250 x 250 x 150	*273,0 x 273,0 x 168,3*	*520,7*	*165,1*	*43,0*
10 x 10 x 216mm	**10.75 x 10.75 x 8.52**	**20.50**	**6.50**	**–**
250 x 250 x 200	*273,0 x 273,0 x 216,3*	*520,7*	*165,1*	*–*
10 x 10 x 8	**10.75 x 10.75 x 8.63**	**20.50**	**6.50**	**99.2**
250 x 250 x 200	*273,0 x 273,0 x 219,1*	*520,7*	*165,1*	*45,0*
318mm x 318mm x 4	**12.54 x 12.54 x 4.50**	**23.00**	**7.00**	**–**
300 x 300 x 100	*318,5 x 318,5 x 114,3*	*584,2*	*177,8*	*–*
318mm x 318mm x 165mm	**12.54 x 12.54 x 6.50**	**23.00**	**7.00**	**–**
300 x 300 x 150	*318,5 x 318,5 x 165,1*	*584,2*	*177,8*	*–*
318mm x 318mm x 6	**12.54 x 12.54 x 6.63**	**23.00**	**7.00**	**–**
300 x 300 x 150	*318,5 x 318,5 x 168,3*	*584,2*	*177,8*	*–*
318mm x 318mm x 216mm	**12.54 x 12.54 x 8.52**	**23.00**	**7.00**	**–**
300 x 300 x 200	*318,5 x 318,5 x 2196,3*	*584,2*	*177,8*	*–*
318mm x 318mm x 8	**12.54 x 12.54 x 8.63**	**23.00**	**7.00**	**–**
300 x 300 x 200	*318,5 x 318,5 x 219,1*	*584,2*	*177,8*	*–*
318mm x 318mm x 267mm	**12.54 x 12.54 x 10.53**	**23.00**	**7.00**	**–**
300 x 300 x 250	*318,5 x 318,5 x 267,4*	*584,2*	*177,8*	*–*
318mm x 318mm x 10	**12.54 x 12.54 x 10.75**	**23.00**	**7.00**	**–**
300 x 300 x 250	*318,5 x 318,5 x 273,0*	*584,2*	*177,8*	*–*
12 x 12 x 4	**12.75 x 12.75 x 4.50**	**23.00**	**7.00**	**120.6**
300 x 300 x 100	*323,9 x 323,9 x 114,3*	*584,2*	*177,8*	*54,7*
12 x 12 x 165mm	**12.75 x 12.75 x 6.50**	**23.00**	**7.00**	**–**
300 x 300 x 150	*323,9 x 323,9 x 165,1*	*584,2*	*177,8*	*–*
12 x 12 x 6	**12.75 x 12.75 x 6.63**	**23.00**	**7.00**	**128.5**
300 x 300 x 150	*323,9 x 323,9 x 168,3*	*584,2*	*177,8*	*58,3*
12 x 12 x 216mm	**12.75 x 12.75 x 8.52**	**23.00**	**7.00**	**–**
300 x 300 x 200	*323,9 x 323,9 x 216,3*	*584,2*	*177,8*	*–*
12 x 12 x 8	**12.75 x 12.75 x 8.63**	**23.00**	**7.00**	**133.1**
300 x 300 x 200	*323,9 x 323,9 x 219,1*	*584,2*	*177,8*	*60,4*
12 x 12 x 267mm	**12.75 x 12.75 x 10.53**	**23.00**	**7.00**	**–**
300 x 300 x 250	*323,9 x 323,9 x 267,4*	*584,2*	*177,8*	*–*
12 x 12 x 10	**12.75 x 12.75 x 10.75**	**23.00**	**7.00**	**142.3**
300 x 300 x 250	*323,9 x 323,9 x 273,0*	*584,2*	*177,8*	*64,5*
14 x 14 x 4	**14.00 x 14.00 x 4.50**	**26.50**	**7.50**	**167.9**
350 x 350 x 100	*355,6 x 355,6 x 114,3*	*673,1*	*190,5*	*76,2*
14 x 14 x 6	**14.00 x 14.00 x 6.63**	**26.50**	**7.50**	**177.2**
350 x 350 x 150	*355,6 x 355,6 x 168,3*	*673,1*	*190,5*	*80,4*
14 x 14 x 8	**14.00 x 14.00 x 8.63**	**26.50**	**7.50**	**182.5**
350 x 350 x 200	*355,6 x 355,6 x 219,1*	*673,1*	*190,5*	*82,8*

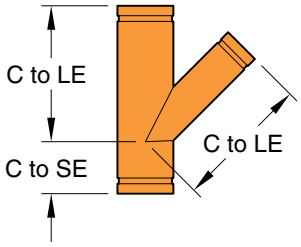


Figure 325 45° Reducing Laterals

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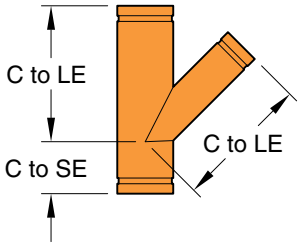
Tech Data Sheet: G180

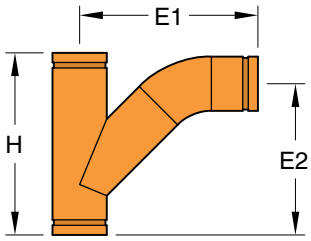


Pipe Size		C to LE	C to SE	Approx. Weight
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Inches *mm*	Lbs. *kg*
14 x 14 x 267mm	**14.00 x 14.00 x 10.53**	**26.50**	**7.50**	**–**
350 x 350 x 250	*355,6 x 355,6 x 267,4*	*673,1*	*190,5*	*–*
14 x 14 x 10	**14.00 x 14.00 x 10.75**	**26.50**	**7.50**	**193.0**
350 x 350 x 250	*355,6 x 355,6 x 273,0*	*673,1*	*190,5*	*87,5*
14 x 14 x 318mm	**14.00 x 14.00 x 12.54**	**26.50**	**7.50**	**–**
350 x 350 x 300	*355,6 x 355,6 x 318,5*	*673,1*	*190,5*	*–*
14 x 14 x 12	**14.00 x 14.00 x 12.75**	**26.50**	**7.50**	**203.8**
350 x 350 x 300	*355,6 x 355,6 x 323,9*	*673,1*	*190,5*	*92,4*
16 x 16 x 6	**16.00 x 16.00 x 6.63**	**29.00**	**8.00**	**217.2**
400 x 400 x 150	*406,4 x 406,4 x 168,3*	*736,6*	*203,0*	*98,5*
16 x 16 x 8	**16.00 x 16.00 x 8.63**	**29.00**	**8.00**	**223.0**
400 x 400 x 200	*406,4 x 406,4 x 219,1*	*736,6*	*203,0*	*101,2*
16 x 16 x 10	**16.00 x 16.00 x 10.75**	**29.00**	**8.00**	**234.1**
400 x 400 x 250	*406,4 x 406,4 x 273,0*	*736,6*	*203,0*	*106,2*
16 x 16 x 12	**16.00 x 16.00 x 12.75**	**29.00**	**8.00**	**245.4**
400 x 400 x 300	*406,4 x 406,4 x 323,9*	*736,6*	*203,0*	*111,3*
16 x 16 x 14	**16.00 x 16.00 x 14.00**	**29.00**	**8.00**	**261.0**
400 x 400 x 350	*406,4 x 406,4 x 355,6*	*736,6*	*203,0*	*118,4*
18 x 18 x 6	**18.00 x 18.00 x 6.63**	**32.00**	**8.50**	**265.1**
450 x 450 x 150	*457,2 x 457,2 x 168,3*	*812,8*	*215,9*	*120,2*
18 x 18 x 8	**18.00 x 18.00 x 8.63**	**32.00**	**8.50**	**271.5**
450 x 450 x 200	*457,2 x 457,2 x 219,1*	*812,8*	*215,9*	*123,2*
18 x 18 x 10	**18.00 x 18.00 x 10.75**	**32.00**	**8.50**	**283.7**
450 x 450 x 250	*457,2 x 457,2 x 273,0*	*812,8*	*215,9*	*128,7*
18 x 18 x 12	**18.00 x 18.00 x 12.75**	**32.00**	**8.50**	**296.0**
450 x 450 x 300	*457,2 x 457,2 x 323,9*	*812,8*	*215,9*	*134,3*
18 x 18 x 14	**18.00 x 18.00 x 14.00**	**32.00**	**8.50**	**312.6**
450 x 450 x 350	*457,2 x 457,2 x 355,6*	*812,8*	*215,9*	*141,8*
18 x 18 x 16	**18.00 x 18.00 x 16.00**	**32.00**	**8.50**	**322.6**
450 x 450 x 400	*457,2 x 457,2 x 406,4*	*812,8*	*215,9*	*146,3*
20 x 20 x 12	**20.00 x 20.00 x 12.75**	**35.00**	**9.00**	**351.4**
500 x 500 x 300	*508,0 x 508,0 x 323,9*	*889,0*	*228,6*	*159,4*
20 x 20 x 14	**20.00 x 20.00 x 14.00**	**35.00**	**9.00**	**369.1**
500 x 500 x 350	*508,0 x 508,0 x 355,6*	*889,0*	*228,6*	*167,4*
20 x 20 x 16	**20.00 x 20.00 x 16.00**	**35.00**	**9.00**	**379.7**
500 x 500 x 400	*508,0 x 508,0 x 406,4*	*889,0*	*228,6*	*172,2*
530mm x 530mm x 12	**20.87 x 10.87 x 12.75**	**35.00**	**9.00**	**–**
500 x 500 x 300	*530,0 x 530,0 x 323,9*	*889,0*	*228,6*	*–*
530mm x 530mm x 14	**20.87 x 10.87 x 14.00**	**35.00**	**9.00**	**–**
500 x 500 x 350	*530,0 x 530,0 x 355,6*	*889,0*	*228,6*	*–*
530mm x 530mm x 16	**20.87 x 10.87 x 16.00**	**35.00**	**9.00**	**–**
500 x 500 x 400	*530,0 x 530,0 x 406,4*	*889,0*	*228,6*	*–*
24 x 24 x 16	**24.00 x 24.00 x 16.00**	**40.00**	**10.00**	**495.6**
600 x 600 x 400	*609,6 x 609,6 x 406,4*	*1016,0*	*254,0*	*224,8*
24 x 24 x 20	**24.00 x 24.00 x 20.00**	**40.00**	**10.00**	**518.4**
600 x 600 x 500	*609,6 x 609,6 x 508,0*	*1016,0*	*254,0*	*235,1*

For information on larger sizes, contact GRINNELL Mechanical Products.
See page 41 for fitting specifications.

Figure 330 Tee Wyes

Tech Data Sheet: G180



Pipe Size		H	E1	E2	Approx
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Inches *mm*	Inches *mm*	Wt. Lbs. *kg*
2 x 2 x 2	**2.37 x 2.37 x 2.37**	**9.75**	**9.00**	**7.37**	**5.7**
50 x 50 x 50	*60,3 x 60,3 x 60,3*	*247,7*	*228,6*	*187,2*	*2,6*
2-1/2 x 2-1/2 x 2-1/2	**2.87 x 2.87 x 2.87**	**10.75**	**10.50**	**8.84**	**10.2**
65 x 65 x 65	*73,0 x 73,0 x 73,0*	*273,1*	*266,7*	*224,5*	*4,6*
76mm x 76mm x 2-1/2	**3.00 X 3.00 X 3.00**	**10.75**	**10.50**	**8.84**	**–**
65 X 65 X 65	*76,1 x 76,1 x 76,1*	*273,1*	*266,7*	*224,5*	*–*
3 x 3 x 76mm	**3.50 x 3.50 x 3.00**	**11.75**	**11.50**	**9.31**	**–**
80 x 80 x 65	*88,9 x 88,9 x 76,1*	*298,5*	*292,1*	*236,5*	*–*
3 x 3 x 3	**3.50 x 3.50 x 3.50**	**11.75**	**11.50**	**9.31**	**14.4**
80 x 80 x 80	*88,9 x 88,9 x 88,9*	*298,5*	*292,1*	*236,5*	*6,5*
108mm X 108mm X 76mm	**4.25 x 4.25 x 3.00**	**14.25**	**12.88**	**10.17**	**–**
100 X 100 X 65	*108,0 x 108,0, x 76,1*	*362,0*	*327,2*	*258,3*	*–*
108mm X 108mm X 3	**4.25 x 4.25 x 3.50**	**14.25**	**12.88**	**10.17**	**–**
100 X 100 X 80	*108,0 x 108,0, x 88,9*	*362,0*	*327,2*	*258,3*	*–*
108mm X 108mm X 108mm	**4.25 x 4.25 x 4.50**	**14.25**	**13.63**	**11.87**	**–**
100 X 100 X 100	*108,0 x 108,0, x 108,0*	*362,0*	*346,2*	*301,5*	*–*
4 x 4 x 3	**4.50 x 4.50 x 3.50**	**14.25**	**12.88**	**10.17**	**20.5**
100 x 100 x 80	*114,3 x 114,3 x 88,9*	*362,0*	*327,2*	*258,3*	*9,3*
4 x 4 x 4	**4.50 x 4.50 x 4.50**	**14.25**	**13.63**	**11.87**	**24.6**
100 x 100 x 100	*114,3 x 114,3 x 114,3*	*362,0*	*346,2*	*301,5*	*11,2*
133mm x 133mm x 3	**5.25 X 5.25 X 3.50**	**16.50**	**14.25**	**13.25**	**–**
125 X 125 X 80	*133,0 X 133,0 X 88,9*	*419,1*	*362,0*	*336,6*	*–*
133mm x 133mm x 108mm	**5.25 X 5.25 X 4.25**	**16.50**	**15.13**	**13.63**	**–**
125 X 125 X 100	*133,0 X 133,0 X 108,0*	*419,1*	*384,3*	*346,1*	*–*
133mm x 133mm x 4	**5.25 X 5.25 X 4.50**	**16.50**	**15.13**	**13.63**	**–**
125 X 125 X 100	*133,0 X 133,0 X 114,3*	*419,1*	*384,3*	*346,1*	*–*
139mm x 139mm x 3	**5.50 X 5.50 X 3.50**	**16.50**	**14.25**	**13.25**	**–**
125 X 125 X 80	*139,7 X 139,7 X 88,9*	*419,1*	*362,0*	*336,6*	*–*
139mm x 139mm x 108mm	**5.50 X 5.50 X 4.25**	**16.50**	**15.13**	**13.63**	**–**
125 X 125 X 100	*139,7 X 139,7 X 108,0*	*419,1*	*384,3*	*346,1*	*–*
139mm x 139mm x 4	**5.50 X 5.50 X 4.50**	**16.50**	**15.13**	**13.63**	**–**
125 X 125 X 100	*139,7 X 139,7 X 114,3*	*419,1*	*384,3*	*346,1*	*–*

Figure 330 Tee Wyes

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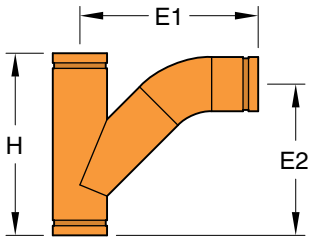
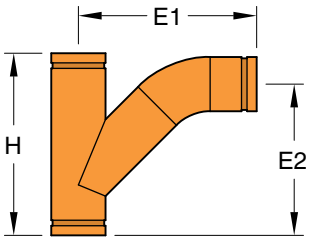
Tech Data Sheet: G180



Pipe Size		H	E1	E2	Approx
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Inches *mm*	Inches *mm*	Wt. Lbs. *kg*
139mm x 139mm x 133mm	**5.50 X 5.50 X 5.25**	**16.50**	**16.13**	**14.00**	**–**
125 X 125 X 125	*139,7 X 139,7 X 133,0*	*419,1*	*409,7*	*355,6*	*–*
139mm x 139mm x 139mm	**5.50 X 5.50 X 5.50**	**16.50**	**16.13**	**14.00**	**–**
125 X 125 X 125	*139,7 X 139,7 X 139,7*	*419,1*	*409,7*	*355,6*	*–*
5 x 5 x 3	**5.56 x 5.56 x 3.50**	**16.50**	**14.25**	**13.25**	**28.4**
125 x 125 x 80	*141,3 x 141,3 x 88,9*	*419,1*	*362,0*	*336,6*	*12,9*
5 x 5 x 4	**5.56 x 5.56 x 4.50**	**16.50**	**15.13**	**13.63**	**32.8**
125 x 125 x 100	*141,3 x 141,3 x 114,3*	*418,6*	*384,3*	*346,1*	*14,9*
5 x 5 x 139mm	**5.56 x 5.56 x 5.50**	**16.50**	**16.13**	**14.00**	**–**
125 x 125 x D125	*141,3 x 141,3 x 139,7*	*418,6*	*409,7*	*355,6*	*–*
5 x 5 x 5	**5.56 x 5.56 x 5.56**	**16.50**	**16.13**	**14.00**	**38.8**
125 x 125 x D125	*141,3 x 141,3 x 141,3*	*418,6*	*409,7*	*355,6*	*17,6*
159mm x 159mm x 3	**6.25 x 6.25 x 3.50**	**18.50**	**15.31**	**14.81**	**–**
150 X 150 X 80	*159,0 x 159,0 x 88,9*	*469,9*	*388,9*	*376,2*	*–*
159mm x 159mm x 108mm	**6.25 x 6.25 x 4.25**	**18.50**	**16.25**	**15.25**	**–**
150 X 150 X 100	*159,0 x 159,0 x 108,0*	*469,9*	*412,8*	*387,4*	*–*
159mm x 159mm X 4	**6.25 x 6.25 x 4.50**	**18.50**	**16.25**	**15.25**	**–**
150 X 150 X 100	*159,0 x 159,0 x 114,3*	*469,9*	*412,8*	*387,4*	*–*
159mm x 159mm x 133mm	**6.25 x 6.25 x 5.25**	**18.50**	**17.25**	**15.63**	**–**
150 X 150 X 125	*159,0 x 159,0 x 133,0*	*469,9*	*438,2*	*396,9*	*–*
159mm x 159mm X 5	**6.25 x 6.25 x 5.56**	**18.50**	**17.25**	**15.63**	**–**
150 X 150 X 125	*159,0 x 159,0 x 141,3*	*469,9*	*438,2*	*396,9*	*–*
159mm x 159mm x 159mm	**6.25 x 6.25 x 6.25**	**18.50**	**18.25**	**16.00**	**–**
150 X 150 X 150	*159,0 x 159,0 x 159,0*	*469,9*	*463,6*	*406,4*	*–*
165mm x 165mm X 3	**6.50 x 6.50 x 3.50**	**18.50**	**15.31**	**14.81**	**–**
150 X 150 X 80	*165,1 x 165,1 x 88,9*	*469,9*	*388,9*	*376,2*	*–*
165mm x 165mm X 4	**6.50 x 6.50 x 4.50**	**18.50**	**16.25**	**15.25**	**–**
150 X 150 X 100	*165,1 x 165,1 x 114,3*	*469,9*	*412,8*	*387,4*	*–*
165mm x 165mm x 139mm	**6.50 x 6.50 x 5.50**	**18.50**	**17.25**	**15.63**	**–**
150 X 150 X 125	*165,1 x 165,1 x 139,7*	*469,9*	*438,2*	*396,9*	*–*
165mm x 165mm x 5	**6.50 x 6.50 x 5.56**	**18.50**	**17.25**	**15.63**	**–**
150 X 150 X 125	*165,1 x 165,1 x 141,3*	*469,9*	*438,2*	*396,9*	*–*
165mm x 165mm X 165mm	**6.50 x 6.50 x 6.50**	**18.50**	**18.25**	**16.00**	**–**
150 X 150 X 150	*165,1 x 165,1 x 165,1*	*469,9*	*463,6*	*406,4*	*–*
6 x 6 x 3	**6.63 x 6.63 x 3.50**	**18.50**	**15.31**	**14.81**	**37.9**
150 x 150 x 80	*168,3 x 168,3 x 88,9*	*469,9*	*388,9*	*376,2*	*17,2*
6 x 6 x 4	**6.63 x 6.63 x 4.50**	**18.50**	**16.25**	**15.25**	**42.5**
150 x 150 x 100	*168,3 x 168,3 x 114,3*	*469,9*	*412,8*	*387,4*	*19,3*
6 x 6 x 139mm	**6.63 x 6.63 x 5.50**	**18.50**	**17.25**	**15.63**	**–**
150 x 150 x 125	*168,3 x 168,3 x 139,7*	*469,9*	*438,2*	*396,9*	*–*

Figure 330 Tee Wyes

Tech Data Sheet: G180



Pipe Size		H	E1	E2	Approx Wt.
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Inches *mm*	Inches *mm*	Lbs. *kg*
6 x 6 x 5	**6.63 x 6.63 x 5.56**	**18.50**	**17.25**	**15.63**	**48.5**
150 x 150 x 125	*168,3 x 168,3 x 141,3*	*469,9*	*438,2*	*396,9*	*22,0*
6 x 6 x 165mm	**6.63 x 6.63 x 6.50**	**18.50**	**18.25**	**16.00**	**–**
150 x 150 x 150	*168,3 x 168,3 x 165,1*	*469,9*	*463,6*	*406,4*	*–*
6 x 6 x 6	**6.63 x 6.63 x 6.63**	**18.50**	**18.25**	**16.00**	**56.3**
150 x 150 x 150	*168,3 x 168,3 x 168,3*	*469,9*	*463,6*	*406,4*	*25,5*
216mm x 216mm x 3	**8.52 x 8.52 x 3.50**	**24.00**	**18.19**	**19.18**	**–**
200 x 200 x 80	*216,3 x 216,3 x 88,9*	*609,6*	*462,0*	*487,2*	*–*
216mm x 216mm x 4	**8.52 x 8.52 x 4.50**	**24.00**	**19.00**	**19.50**	**–**
200 x 200 x 100	*216,3 x 216,3 x 114,3*	*609,6*	*482,6*	*495,3*	*–*
216mm x 216mm x 139mm	**8.52 x 8.52 x 5.50**	**24.00**	**20.00**	**19.87**	**–**
200 x 200 x 125	*216,3 x 216,3 x 139,7*	*609,6*	*508,0*	*504,7*	*–*
216mm x 216mm x 5	**8.52 x 8.52 x 5.56**	**24.00**	**20.00**	**19.87**	**–**
200 x 200 x 125	*216,3 x 216,3 x 141,3*	*609,6*	*508,0*	*504,7*	*–*
216mm x 216mm x 165mm	**8.52 x 8.52 x 6.50**	**24.00**	**21.13**	**20.37**	**–**
200 x 200 x 150	*216,3 x 216,3 x 165,1*	*609,6*	*536,7*	*517,4*	*–*
216mm x 216mm x 6	**8.52 x 8.52 x 6.63**	**24.00**	**21.13**	**20.37**	**–**
200 x 200 x 150	*216,3 x 216,3 x 168,3*	*609,6*	*536,7*	*517,4*	*–*
216mm x 216mm x 216mm	**8.52 x 8.52 x 8.52**	**24.00**	**23.25**	**21.25**	**–**
200 x 200 x 200	*216,3 x 216,3 x 216,3*	*609,6*	*590,6*	*539,8*	*–*
8 x 8 x 3	**8.63 x 8.63 x 3.50**	**24.00**	**18.19**	**19.18**	**67.3**
200 x 200 x 80	*219,1 x 219,1 x 88,9*	*609,6*	*462,0*	*487,2*	*30,5*
8 x 8 x 4	**8.63 x 8.63 x 4.50**	**24.00**	**19.00**	**19.50**	**72.3**
200 x 200 x 100	*219,1 x 219,1 x 114,3*	*609,6*	*482,6*	*495,3*	*32,8*
8 x 8 x 139mm	**8.63 x 8.63 x 5.50**	**24.00**	**20.00**	**19.87**	**–**
200 x 200 x 125	*219,1 x 219,1 x 139,7*	*609,6*	*508,0*	*504,7*	*–*
8 x 8 x 5	**8.63 x 8.63 x 5.56**	**24.00**	**20.00**	**19.87**	**78.8**
200 x 200 x 125	*219,1 x 219,1 x 141,3*	*609,6*	*508,0*	*504,7*	*35,7*
8 x 8 x 165mm	**8.63 x 8.63 x 6.50**	**24.00**	**21.13**	**20.37**	**–**
200 x 200 x 150	*219,1 x 219,1 x 165,1*	*609,6*	*536,7*	*517,4*	*–*
8 x 8 x 6	**8.63 x 8.63 x 6.63**	**24.00**	**21.13**	**20.37**	**87.4**
200 x 200 x 150	*219,1 x 219,1 x 168,3*	*609,6*	*536,7*	*517,4*	*39,6*
8 x 8 x 216mm	**8.63 x 8.63 x 8.52**	**24.00**	**23.25**	**21.25**	**–**
200 x 200 x 200	*219,1 x 219,1 x 216,3*	*609,6*	*590,6*	*539,8*	*–*
8 x 8 x 8	**8.63 x 8.63 x 8.63**	**24.00**	**23.25**	**21.25**	**109.0**
200 x 200 x 200	*219,1 x 219,1 x 219,1*	*609,6*	*590,6*	*539,8*	*49,4*
267mm x 267mm x 3	**10.53 x 10.53 x 3.50**	**27.00**	**19.88**	**21.38**	**–**
250 x 250 x 80	*267,4 x 267,4 x 88,9*	*685,8*	*505,0*	*543,1*	*–*
267mm x 267mm x 4	**10.53 x 10.53 x 4.50**	**27.00**	**20.75**	**21.75**	**–**
250 x 250 x 100	*267,4 x 267,4 x 114,3*	*685,8*	*527,1*	*552,5*	*–*

Figure 330 Tee Wyes

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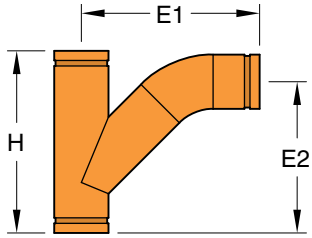
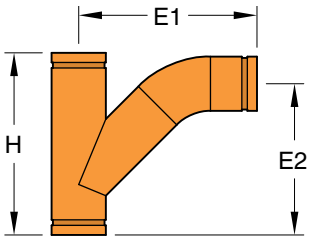
Tech Data Sheet: G180



Pipe Size		H	E1	E2	Approx
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Inches *mm*	Inches *mm*	Wt. Lbs. *kg*
267mm x 267mm x 139mm	**10.53 x 10.53 x 5.50**	**27.00**	**21.88**	**22.25**	**–**
250 x 250 x 125	*267,4 x 267,4 x 139,7*	*685,8*	*555,8*	*565,2*	*–*
267mm x 267mm x 5	**10.53 x 10.53 x 5.56**	**27.00**	**21.88**	**22.25**	**–**
250 x 250 x 125	*267,4 x 267,4 x 141,3*	*685,8*	*555,8*	*565,2*	*–*
267mm x 267mm x 165mm	**10.53 x 10.53 x 6.50**	**27.00**	**22.88**	**22.63**	**–**
250 x 250 x 150	*267,4 x 267,4 x 165,1*	*685,8*	*581,2*	*574,7*	*–*
267mm x 267mm x 6	**10.53 x 10.53 x 6.63**	**27.00**	**22.88**	**22.63**	**–**
250 x 250 x 150	*267,4 x 267,4 x 168,3*	*685,8*	*581,2*	*574,7*	*–*
267mm x 267mm x 216mm	**10.53 x 10.53 x 8.52**	**27.00**	**27.25**	**25.75**	**–**
250 x 250 x 200	*267,4 x 267,4 x 216,3*	*685,8*	*692,2*	*654,1*	*–*
267mm x 267mm x 8	**10.53 x 10.53 x 8.63**	**27.00**	**27.25**	**25.75**	**–**
250 x 250 x 200	*267,4 x 267,4 x 219,1*	*685,8*	*692,2*	*654,1*	*–*
267mm x 267mm x 267mm	**10.53 x 10.53 x 10.75**	**27.00**	**27.25**	**24.38**	**–**
250 x 250 x 250	*267,4 x 267,4 x 273,0*	*685,8*	*692,2*	*619,1*	*–*
10 x 10 x 3	**10.75 x 10.75 x 3.50**	**27.00**	**19.88**	**21.38**	**101.7**
250 x 250 x 80	*273,0 x 273,0 x 88,9*	*685,8*	*505,0*	*543,1*	*46,1*
10 x 10 x 4	**10.75 x 10.75 x 4.50**	**27.00**	**20.75**	**21.75**	**106.9**
250 x 250 x 100	*273,0 x 273,0 x 114,3*	*685,8*	*527,1*	*552,5*	*48,5*
10 x 10 x 139mm	**10.75 x 10.75 x 5.50**	**27.00**	**21.88**	**22.25**	**–**
250 x 250 x 125	*273,0 x 273,0 x 139,7*	*685,8*	*555,8*	*565,2*	*–*
10 x 10 x 5	**10.75 x 10.75 x 5.56**	**27.00**	**21.88**	**22.25**	**113.8**
250 x 250 x 125	*273,0 x 273,0 x 141,3*	*685,8*	*555,8*	*565,2*	*51,6*
10 x 10 x 165mm	**10.75 x 10.75 x 6.50**	**27.00**	**22.88**	**22.63**	**–**
250 x 250 x 150	*273,0 x 273,0 x 165,1*	*685,8*	*581,2*	*574,7*	*–*
10 x 10 x 6	**10.75 x 10.75 x 6.63**	**27.00**	**22.88**	**22.63**	**122.1**
250 x 250 x 150	*273,0 x 273,0 x 168,3*	*685,8*	*581,2*	*574,7*	*55,4*
10 x 10 x 216mm	**10.75 x 10.75 x 8.52**	**27.00**	**27.25**	**25.75**	**–**
250 x 250 x 200	*273,0 x 273,0 x 216,3*	*685,8*	*692,2*	*654,1*	*–*
10 x 10 x 8	**10.75 x 10.75 x 8.63**	**27.00**	**27.25**	**25.75**	**151.1**
250 x 250 x 200	*273,0 x 273,0 x 219,1*	*685,8*	*692,2*	*654,1*	*68,5*
10 x 10 x 267mm	**10.75 x 10.75 x 10.53**	**27.00**	**27.25**	**24.38**	**–**
250 x 250 x 250	*273,0 x 273,0 x 267,4*	*685,8*	*692,2*	*619,1*	*–*
10 x 10 x 10	**10.75 x 10.75 x 10.75**	**27.00**	**27.25**	**24.38**	**175.1**
250 x 250 x 250	*273,0 x 273,0 x 273,0*	*685,8*	*692,2*	*619,1*	*79,4*
318mm x 318mm x 3	**12.54 x 12.54 x 3.50**	**30.00**	**22.75**	**22.75**	**–**
300 x 300 x 80	*318,5 x 318,5 x 88,9*	*762,0*	*527,1*	*577,9*	*–*
318mm x 318mm x 4	**12.54 x 12.54 x 4.50**	**30.00**	**21.50**	**23.00**	**–**
300 x 300 x 100	*318,5 x 318,5 x 114,3*	*762,0*	*546,1*	*584,2*	*–*
318mm x 318mm x 165mm	**12.54 x 12.54 x 6.50**	**30.00**	**23.75**	**24.00**	**–**
300 x 300 x 150	*318,5 x 318,5 x 165,1*	*762,0*	*603,3*	*609,6*	*–*

Figure 330 Tee Wyes



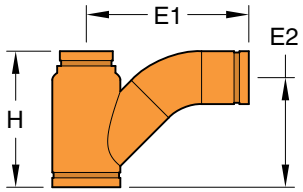
Pipe Size		H	E1	E2	Approx
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Inches *mm*	Inches *mm*	Wt. Lbs. *kg*
318mm x 318mm x 6	**12.54 x 12.54 x 6.63**	**30.00**	**23.75**	**24.00**	**–**
300 x 300 x 150	*318,5 x 318,5 x 168,3*	*762,0*	*603,3*	*609,6*	*–*
318mm x 318mm x 216mm	**12.54 x 12.54 x 8.52**	**30.00**	**26.00**	**25.00**	**–**
300 x 300 x 200	*318,5 x 318,5 x 216,3*	*762,0*	*660,4*	*635,0*	*–*
318mm x 318mm x 8	**12.54 x 12.54 x 8.63**	**30.00**	**26.00**	**25.00**	**–**
300 x 300 x 200	*318,5 x 318,5 x 219,1*	*762,0*	*660,4*	*635,0*	*–*
318mm x 318mm x 267mm	**12.54 x 12.54 x 10.53**	**30.00**	**28.00**	**25.75**	**–**
300 x 300 x 250	*318,5 x 318,5 x 267,4*	*762,0*	*771,2*	*654,1*	*–*
318mm x 318mm x 10	**12.54 x 12.54 x 10.75**	**30.00**	**28.00**	**25.75**	**–**
300 x 300 x 250	*318,5 x 318,5 x 273,0*	*762,0*	*771,2*	*654,1*	*–*
318mm x 318mm x 318mm	**12.54 x 12.54 x 12.54**	**30.00**	**31.00**	**27.50**	**–**
300 x 300 x 300	*318,5 x 318,5 x 318,5*	*762,0*	*787,4*	*698,5*	*–*
12 x 12 x 3	**12.75 x 12.75 x 3.50**	**30.00**	**22.75**	**22.75**	**134.5**
300 x 300 x 80	*323,9 x 323,9 x 88,9*	*762,0*	*527,1*	*577,9*	*61,0*
12 x 12 x 4	**12.75 x 12.75 x 4.50**	**30.00**	**21.50**	**23.00**	**139.4**
300 x 300 x 100	*323,9 x 323,9 x 114,3*	*762,0*	*546,1*	*584,2*	*63,2*
12 x 12 x 165mm	**12.75 x 12.75 x 6.50**	**30.00**	**23.75**	**24.00**	**–**
300 x 300 x 150	*323,9 x 323,9 x 165,1*	*762,0*	*603,3*	*609,6*	*–*
12 x 12 x 6	**12.75 x 12.75 x 6.63**	**30.00**	**23.75**	**24.00**	**154.5**
300 x 300 x 150	*323,9 x 323,9 x 168,3*	*762,0*	*603,3*	*609,6*	*70,0*
12 x 12 x 216mm	**12.75 x 12.75 x 8.52**	**30.00**	**26.00**	**25.00**	**–**
300 x 300 x 200	*323,9 x 323,9 x 216,3*	*762,0*	*660,4*	*635,0*	*–*
12 x 12 x 8	**12.75 x 12.75 x 8.63**	**30.00**	**26.00**	**25.00**	**175.8**
300 x 300 x 200	*323,9 x 323,9 x 219,1*	*762,0*	*660,4*	*635,0*	*79,7*
12 x 12 x 267mm	**12.75 x 12.75 x 10.53**	**30.00**	**28.00**	**25.75**	**–**
300 x 300 x 250	*323,9 x 323,9 x 267,4*	*762,0*	*711,2*	*654,1*	*–*
12 x 12 x 10	**12.75 x 12.75 x 10.75**	**30.00**	**28.00**	**25.75**	**205.4**
300 x 300 x 250	*323,9 x 323,9 x 273,0*	*762,0*	*711,2*	*654,1*	*93,2*
12 x 12 x 318mm	**12.75 x 12.75 x 12.54**	**30.00**	**31.00**	**27.50**	**–**
300 x 300 x 300	*323,9 x 323,9 x 318,5*	*762,0*	*787,4*	*698,5*	*–*
12 x 12 x 12	**12.75 x 12.75 x 12.75**	**30.00**	**31.00**	**27.50**	**240.1**
300 x 300 x 300	*323,9 x 323,9 x 323,9*	*762,0*	*787,4*	*698,5*	*108,9*

For information on larger sizes, contact GRINNELL Mechanical Products.
See page 41 for fitting specifications.

Figure 331 Reducing Tee Wyes

(Page 1 of 3)

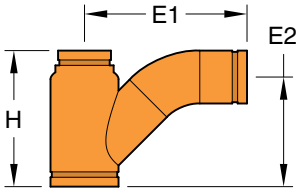
Tech Data Sheet: G180



Pipe Size		H	E1	E2	Approx
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Inches *mm*	Inches *mm*	Wt. Lbs. *kg*
108mm x 3 x 3	**4.25 x 3.50 x 3.50**	**9.01**	**10.75**	**7.25**	**–**
100 x 80 x 80	*108,0 x 88,9 x 88,9*	*228,9*	*273,1*	*184,2*	*–*
108mm x 3 x 108mm	**4.25 x 3.50 x 4.25**	**9.01**	**10.75**	**7.25**	**–**
100 x 80 x 100	*108,0 x 88,9 x 108,0*	*228,9*	*273,1*	*184,2*	*–*
4 x 3 x 3	**4.50 x 3.50 x 3.50**	**9.01**	**10.75**	**7.25**	**13.7**
100 x 80 x 80	*114,3 x 88,9 x 88,9*	*228,9*	*273,1*	*143,0*	*6,2*
4 x 3 x 108mm	**4.50 x 3.50 x 4.25**	**14.25**	**13.63**	**11.87**	**–**
100 x 80 x 100	*114,3 x 88,9 x 108,0*	*362,0*	*346,2*	*301,5*	*–*
4 x 3 x 4	**4.50 x 3.50 x 4.50**	**14.25**	**13.63**	**11.87**	**24.5**
100 x 80 x 100	*114,3 x 88,9 x 114,3*	*362,0*	*346,2*	*301,5*	*11,1*
133mm x 3 x 3	**5.25 x 3.50 x 3.50**	**11.00**	**11.50**	**7.71**	**–**
125 x 80 x 80	*133,0 x 88,9 x 88,9*	*279,5*	*292,1*	*195,8*	*–*
133mm x 3 x 133mm	**5.25 x 3.50 x 5.25**	**11.01**	**11.88**	**8.71**	**–**
125 x 80 x 125	*133,0 x 88,9 x 88,9*	*279,7*	*301,88*	*221,2*	*–*
133mm x 4 x 3	**5.25 x 4.50 x 3.50**	**11.01**	**11.88**	**8.71**	**–**
125 x 100 x 80	*133,0 x 114,3 x 88,9*	*279,7*	*301,88*	*221,2*	*–*
133mm x 108mm x 3	**5.25 x 4.25 x 3.50**	**11.01**	**11.88**	**8.71**	**–**
125 x 100 x 80	*133,0 x 108,0 x 88,9*	*279,7*	*301,88*	*221,2*	*–*
133mm x 4 x 4	**5.25 x 4.50 x 4.50**	**11.01**	**12.75**	**9.00**	**–**
125 x 100 x 100	*133,0 x 114,3 x 114,3*	*279,7*	*323,9*	*228,6*	*–*
133mm x 108mm x 108mm	**5.25 x 4.25 x 4.25**	**11.01**	**12.75**	**9.00**	**–**
125 x 100 x 100	*133,0 x 108,0 x 108,0*	*279,7*	*323,9*	*228,6*	*–*
133mm x 108mm x 4	**5.25 x 4.25 x 4.50**	**11.01**	**12.75**	**9.00**	**–**
125 x 100 x 100	*133,0 x 108,0 x 114,3*	*279,7*	*323,9*	*228,6*	*–*
133mm x 4 x 108mm	**5.25 x 4.50 x 4.25**	**11.01**	**12.75**	**9.00**	**–**
125 x 100 x 100	*133,0 x 114,3 x 108,0*	*279,7*	*323,9*	*228,6*	*–*
139mm x 3 x 3	**5.50 x 3.50 x 3.50**	**11.00**	**11.50**	**7.71**	**–**
125 x 80 x 80	*139,7 x 88,9 x 88,9*	*279,5*	*292,1*	*195,8*	*–*
139mm x 3 x 4	**5.50 x 3.50 x 4.50**	**11.00**	**11.50**	**7.71**	**–**
125 x 80 x 100	*139,7 x 88,9 x 114,3*	*279,5*	*292,1*	*195,8*	*–*
139mm x 3 x 139mm	**5.50 x 3.50 x 5.50**	**11.00**	**11.50**	**7.71**	**–**
125 x 80 x 125	*139,7 x 88,9 x 139,7*	*279,5*	*292,1*	*195,8*	*–*
139mm x 4 x 3	**5.50 x 4.50 x 3.50**	**11.01**	**11.88**	**8.71**	**–**
125 x 100 x 80	*139,7 x 114,3 x 88,9*	*279,7*	*301,88*	*221,2*	*–*

Figure 331 Reducing Tee Wyes

Tech Data Sheet: G180

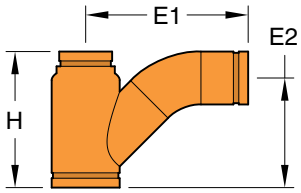


Pipe Size		H	E1	E2	Approx Wt.
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Inches *mm*	Inches *mm*	Lbs. *kg*
139mm x 4 x 4	**5.50 x 4.50 x 4.50**	**11.01**	**12.75**	**9.00**	**–**
125 x 100 x 100	*139,7 x 114,3 x 114,3*	*279,7*	*323,9*	*228,6*	*–*
139mm x 4 x 139mm	**5.50 x 4.50 x 5.50**	**11.01**	**12.75**	**9.00**	**–**
125 x 100 x 125	*139,7 x 114,3 x 139,7*	*279,7*	*323,9*	*228,6*	*–*
5 x 3 x 3	**5.56 x 3.50 x 3.50**	**11.00**	**11.50**	**7.71**	**19.0**
125 x 80 x 80	*141,3 x 88,9 x 88,9*	*279,5*	*292,1*	*195,8*	*8,6*
5 x 3 x 133mm	**5.56 x 3.50 x 5.25**	**16.50**	**16.13**	**13.95**	**–**
125 x 80 x 125	*141,3 x 88,9 x 133,0*	*419,1*	*409,7*	*254,0*	*–*
5 x 3 x 139mm	**5.56 x 3.50 x 5.50**	**16.50**	**16.13**	**13.95**	**–**
125 x 80 x 125	*141,3 x 88,9 x 139,7*	*419,1*	*409,7*	*254,0*	*–*
5 x 3 x 5	**5.56 x 3.50 x 5.56**	**16.50**	**16.13**	**13.95**	**38.5**
125 x 80 x 125	*141,3 x 88,9 x 141,3*	*419,1*	*409,7*	*254,0*	*17,5*
5 x 4 x 3	**5.56 x 4.50 x 3.50**	**11.01**	**11.88**	**8.71**	**19.5**
125 x 100 x 80	*141,3 x 114,3 x 88,9*	*279,7*	*301,88*	*221,2*	*8,8*
5 x 4 x 4	**5.56 x 4.50 x 4.50**	**11.01**	**12.75**	**9.00**	**23.1**
125 x 100 x 100	*141,3 x 114,3 x 114,3*	*279,7*	*323,9*	*228,6*	*10,5*
5 x 4 x 139mm	**5.56 x 4.50 x 5.50**	**11.01**	**12.75**	**9.00**	**–**
125 x 100 x 125	*141,3 x 114,3 x 139,7*	*279,7*	*323,9*	*228,6*	*–*
159mm x 4 x 159mm	**6.25 x 4.50 x 6.25**	**12.00**	**13.00**	**9.25**	**–**
150 x 100 x 150	*159,0 x 114,3 x 159,0*	*304,9*	*330,2*	*235,0*	*–*
159mm x 108mm x 108mm	**6.25 x 4.25 x 4.25**	**12.00**	**13.00**	**9.25**	**–**
150 x 100 x 100	*159,0 x 108,0 x 108,0*	*304,9*	*330,2*	*235,0*	*–*
159mm x 108mm x 133mm	**6.25 x 4.25 x 5.25**	**12.00**	**13.00**	**9.25**	**–**
150 x 100 x 125	*159,0 x 108,0 x 133,0*	*304,9*	*330,2*	*235,0*	*–*
159mm x 108mm x 159mm	**6.25 x 4.25 x 6.25**	**12.00**	**13.00**	**9.25**	**–**
150 x 100 x 150	*159,0 x 108,0 x 159,0*	*304,9*	*330,2*	*235,0*	*–*
159mm x 133mm x 108mm	**6.25 x 5.25 x 4.25**	**12.00**	**13.00**	**9.25**	**–**
150 x 125 x 100	*159,0 x 133,0 x 108,0*	*304,9*	*330,2*	*235,0*	*–*
159mm x 133mm x 133mm	**6.25 x 5.25 x 5.25**	**12.00**	**13.00**	**9.25**	**–**
150 x 125 x 125	*159,0 x 133,0 x 133,0*	*304,9*	*330,2*	*235,0*	*–*
159mm x 5 x 3	**6.25 x 5.56 x 3.50**	**12.00**	**13.00**	**9.25**	**–**
150 x 125 x 80	*159,0 x 141,3 x 88,9*	*304,9*	*330,2*	*235,0*	*–*
159mm x 5 x 4	**6.25 x 5.56 x 4.50**	**12.00**	**13.88**	**9.62**	**–**
150 x 125 x 100	*159,0 x 141,3 x 114,3*	*304,9*	*352,6*	*244,3*	*–*
159mm x 5 x 108mm	**6.25 x 5.56 x 4.25**	**12.00**	**13.88**	**9.62**	**–**
150 x 125 x 100	*159,0 x 141,3 x 108,0*	*304,9*	*352,6*	*244,3*	*–*
165mm x 3 x 165mm	**6.25 x 3.50 x 6.25**	**12.00**	**13.00**	**9.25**	**–**
150 x 80 x 150	*159,0 x 88,9 x 159,0*	*304,9*	*330,2*	*235,0*	*–*
165mm x 4 x 165mm	**6.25 x 4.50 x 6.25**	**12.00**	**13.00**	**9.25**	**–**
150 x 100 x 150	*159,0 x 114,3 x 159,0*	*304,9*	*330,2*	*235,0*	*–*
165mm x 139mm x 3	**6.25 x 5.50 x 3.50**	**12.00**	**13.00**	**9.25**	**–**
150 x 1250 x 80	*159,0 x 139,7 x 88,9*	*304,9*	*330,2*	*235,0*	*–*
165mm x 139mm x 4	**6.25 x 5.50 x 4.50**	**12.00**	**13.00**	**9.25**	**–**
150 x 125 x 100	*159,0 x 139,7 x 114,3*	*304,9*	*330,2*	*235,0*	*–*

Figure 331 Reducing Tee Wyes

(Page 3 of 3)

Tech Data Sheet: G180



Pipe Size		H	E1	E2	Approx
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Inches *mm*	Inches *mm*	Wt. Lbs. *kg*
165mm x 5 x 3	**6.50 x 5.56 x 3.50**	**12.00**	**13.00**	**9.25**	**–**
150 x 125 x 80	*165,1 x 141,3 x 88,9*	*304,9*	*330,2*	*235,0*	*–*
165mm x 5 x 4	**6.50 x 5.56 x 4.50**	**12.00**	**13.88**	**9.62**	**–**
150 x 125 x 100	*165,1 x 141,3 x 114,3*	*304,9*	*352,6*	*244,3*	*–*
6 x 3 x 139mm	**6.63 x 3.50 x 5.50**	**18.50**	**18.25**	**13.75**	**–**
150 x 80 x 125	*168,3 x 88,9 x 139,7*	*469,9*	*463,6*	*349,3*	*–*
6 x 4 x 159mm	**6.63 x 4.50 x 6.25**	**18.50**	**18.25**	**13.75**	**–**
150 x 100 x 150	*168,3 x 114,3 x 159,0*	*469,9*	*463,6*	*349,3*	*–*
6 x 4 x 165mm	**6.63 x 4.50 x 6.50**	**18.50**	**18.25**	**13.75**	**–**
150 x 100 x 150	*168,3 x 114,3 x 165,1*	*469,9*	*463,6*	*349,3*	*–*
6 x 4 x 6	**6.63 x 4.50 x 6.63**	**18.50**	**18.25**	**13.75**	**56.2**
150 x 100 x 150	*168,3 x 114,3 x 168,3*	*469,9*	*463,6*	*349,3*	*25,5*
6 x 139mm x 3	**6.63 x 5.50 x 3.50**	**12.00**	**13.00**	**9.25**	**–**
150 x 125 x 80	*168,3 x 139,7 x 88,9*	*304,9*	*330,2*	*235,0*	*–*
6 x 5 x 3	**6.63 x 5.56 x 3.50**	**12.00**	**13.00**	**9.25**	**25.6**
150 x 125 x 80	*168,3 x 141,3 x 88,9*	*304,9*	*330,2*	*235,0*	*11,6*
6 x 5 x 4	**6.63 x 5.56 x 4.50**	**12.00**	**13.88**	**9.62**	**29.3**
150 x 125 x 100	*168,3 x 141,3 x 114,3*	*304,9*	*352,6*	*244,3*	*13,3*
6 x 159mm x 3	**6.63 x 6.25 x 3.50**	**12.00**	**13.88**	**9.62**	**–**
150 x 150 x 80	*168,3 x 159,0 x 88,9*	*304,9*	*352,6*	*244,3*	*–*
6 x 165mm x 3	**6.63 x 4.50 x 3.50**	**12.00**	**13.88**	**9.62**	**–**
150 x 150 x 80	*168,3 x 114,3 x 88,9*	*304,9*	*352,6*	*244,3*	*–*
6 x 159mm x 4	**6.63 x 6.25 x 4.50**	**12.00**	**13.88**	**9.62**	**–**
150 x 150 x 100	*168,3 x 159,0 x 114,3*	*304,9*	*352,6*	*244,3*	*–*
6 x 165mm x 4	**6.63 x 4.50 x 4.50**	**12.00**	**13.88**	**9.62**	**–**
150 x 150 x 100	*168,3 x 114,3 x 114,3*	*304,9*	*352,6*	*244,3*	*–*
216mm x 6 x 4	**8.52 x 6.63 x 4.50**	**13.00**	**14.75**	**10.25**	**–**
200 x 150 x 100	*216,3 x 168,3 x 114,3*	*330,2*	*374,7*	*260,3*	*–*
216mm x 6 x 216mm	**8.52 x 6.63 x 8.52**	**13.00**	**14.75**	**10.25**	**–**
200 x 150 x 200	*216,3 x 168,3 x 216,3*	*330,2*	*374,7*	*260,3*	*–*
216mm x 165mm x 4	**8.52 x 4.50 x 4.50**	**13.00**	**14.75**	**10.25**	**–**
200 x 150 x 100	*216,3 x 114,3 x 114,3*	*330,2*	*374,7*	*260,3*	*–*
216mm x 165mm x 216mm	**8.52 x 4.50 x 8.52**	**13.00**	**14.75**	**10.25**	**–**
200 x 150 x 200	*216,3 x 114,3 x 216,3*	*330,2*	*374,7*	*260,3*	*–*
8 x 6 x 4	**8.63 x 6.63 x 4.50**	**13.00**	**14.75**	**10.25**	**40.2**
200 x 150 x 100	*219,1 x 168,3 x 114,3*	*330,2*	*374,7*	*260,3*	*18,2*
8 x 6 x 8	**8.63 x 6.63 x 8.63**	**24.00**	**23.25**	**21.25**	**108.6**
200 x 150 x 200	*219,1 x 168,3 x 219,1*	*609,6*	*590,6*	*539,8*	*49,3*
8 x 165mm x 4	**8.63 x 4.50 x 4.50**	**13.00**	**14.75**	**10.25**	**–**
200 x 150 x 100	*219,1 x 114,3 x 114,3*	*330,2*	*374,7*	*260,3*	*–*
8 x 165mm x 8	**8.63 x 4.50 x 8.63**	**24.00**	**23.25**	**21.25**	**–**
200 x 150 x 200	*219,1 x 114,3 x 219,1*	*609,6*	*590,6*	*539,8*	*–*

For information on larger sizes, contact GRINNELL Mechanical Products.
See page 41 for fitting specifications.

Figures 227 & 327 Crosses

Tech Data Sheet: G180

Figure 227
Cast Cross

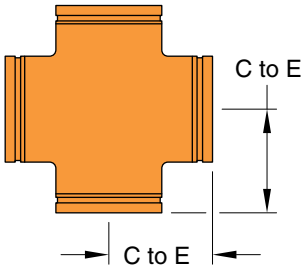
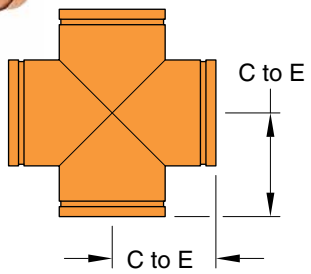


Figure 327
Fabricated Cross



Pipe Size		Figure 227 - Cast		Figure 327 - Fabricated	
Nominal Inches *mm*	O.D. Inches *mm*	C to E Inches *mm*	Approx Weight Lbs. *kg*	C to E Inches *mm*	Approx Weight Lbs. *kg*
1-1/4	**1.66**	**2.75**	**2.2**	**2.75**	**2.2**
32	*42,4*	*69,9*	*1,0*	*69,9*	*1,0*
1-1/2	**1.90**	**2.75**	**2.5**	**2.75**	**2.5**
40	*48,3*	*69,9*	*1,1*	*69,9*	*1,1*
2	**2.37**	**3.25**	**3.7**	**3.25**	**3.7**
50	*60,3*	*82,6*	*1,7*	*82,6*	*1,7*
2-1/2	**2.87**	**3.75**	**5.8**	**3.75**	**5.8**
65	*73,0*	*95,3*	*2,6*	*95,3*	*2,6*
76mm	**3.00**	**3.75**	**6.0**	**3.75**	**6.0**
65	*76,1*	*95,3*	*2,7*	*95,3*	*2,7*
3	**3.50**	**4.25**	**8.6**	**4.25**	**8.6**
80	*88,9*	*108,0*	*3,9*	*108,0*	*3,9*
108mm	**4.25**	**–**	**–**	**5.00**	**–**
100	*108,0*	*–*	*–*	*127,0*	*–*
4	**4.50**	**5.00**	**20.7**	**5.00**	**20.7**
100	*114,3*	*127,0*	*9,4*	*127,0*	*9,4*
133mm	**5.25**	**–**	**–**	**5.50**	**–**
125	*133,0*	*–*	*–*	*139,7*	*–*
139mm	**5.50**	**–**	**–**	**5.50**	**–**
125	*139,7*	*–*	*–*	*139,7*	*–*
5	**5.56**	**5.50**	**18.5**	**5.50**	**18.5**
125	*141,3*	*139,7*	*8,4*	*139,7*	*8,4*
159mm	**6.25**	**-**	**–**	**6.50**	**–**
150	*159,0*	*-*	*–*	*165,1*	*–*
165mm	**6.50**	**6.50**	**18.5**	**6.50**	**18.5**
150	*165,1*	*165,1*	*8,4*	*165,1*	*8,4*
6	**6.63**	**6.50**	**27.3**	**6.50**	**27.3**
150	*168,3*	*165,1*	*12,4*	*165,1*	*12,4*

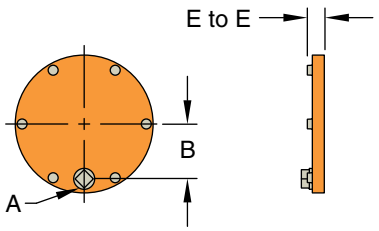
Pipe Size		Figure 227 - Cast		Figure 327 - Fabricated	
Nominal Inches *mm*	O.D. Inches *mm*	C to E Inches *mm*	Approx Weight Lbs. *kg*	C to E Inches *mm*	Approx Weight Lbs. *kg*
216mm	**8.52**	**–**	**–**	**7.75**	**–**
200	*216,3*	*–*	*–*	*196,9*	*–*
8	**8.63**	**7.75**	**48.0**	**7.75**	**48.0**
200	*219,1*	*196,9*	*21,7*	*196,9*	*21,7*
267mm	**10.53**	**–**	**–**	**9.00**	**–**
250	*267,4*	*–*	*–*	*228,6*	*–*
10	**10.75**	**9.00**	**75.0**	**9.00**	**75.0**
250	*273,0*	*228,6*	*34,0*	*228,6*	*34,0*
318mm	**12.54**	**–**	**–**	**10.00**	**–**
300	*318,5*	*–*	*–*	*254,0*	*–*
12	**12.75**	**10.00**	**95.8**	**10.00**	**95.8**
300	*323,9*	*254,0*	*43,4*	*254,0*	*43,4*
14	**14.00**	**–**	**–**	**11.00**	**136.8**
350	*355,6*	*–*	*–*	*279,4*	*62,0*
16	**16.00**	**–**	**–**	**12.00**	**167.3**
400	*406,4*	*–*	*–*	*304,8*	*75,9*
18	**18.00**	**–**	**–**	**12.00**	**259.5**
450	*457,2*	*–*	*–*	*304,8*	*117,7*
20	**20.00**	**–**	**–**	**17.25**	**321.7**
500	*508,0*	*–*	*–*	*438,2*	*145,9*
24	**24.00**	**–**	**–**	**20.00**	**442.7**
600	*609,6*	*–*	*–*	*508,0*	*200,8*

For information on larger sizes, European sizes or other alternative sizes, contact GRINNELL Mechanical Products.

See fitting specifications on page 41.

Figures 260 End Caps

Tech Data Sheet: G180



Pipe Size		Figure 260 Cast End Cap			
Nominal Inches *mm*	O.D. Inches *mm*	E to E Inches *mm*	A Available NPT Sizes	B Inches *mm*	Approx Weight Lbs. *kg*
1	**1.315**	**0.83**	-	-	**0.2**
25	*33,4*	*21,1*			*0,1*
1¼	**1.660**	**0.83**	½"	On Center	**0.3**
32	*42,4*	*21,1*			*0,1*
1½	**1.900**	**0.83**	½"	On Center	**0.4**
40	*48,3*	*21,1*			*0,2*
2	**2.375**	**0.92**	½", ¾"	**0.50**	**0.7**
50	*60,3*	*23,4*		*12,7*	*0,3*
2½	**2.875**	**0.92**	½", ¾"	**0.69**	**1.0**
65	*73,0*	*23,4*		*17,5*	*0,5*
76,1mm	**3.000**	**0.86**	½", ¾"	**0.69**	**1.3**
65	*76,1*	*21,8*		*17,5*	*0,6*
3	**3.500**	**0.92**	½", ¾", 1"	**0.94**	**1.4**
80	*88,9*	*23,4*		*23,9*	*0,6*
4	**4.500**	**1.00**	½", ¾", 1"	**1.44**	**2.6**
100	*114,3*	*25,4*		*36,6*	*1,2*
139,7mm	**5.500**	**0.92**	½", ¾", 1"	**1.44**	**4.7**
125	*139,7*	*23,4*		*36,6*	*2,1*
5	**5.563**	**1.00**	½", ¾", 1"	**1.94**	**5.0**
125	*141,3*	*25,4*		*49,3*	*2,3*
165,1mm	**6.500**	**0.92**	½", ¾", 1"	**1.94**	**6.4**
150	*165,1*	*23,4*		*49,3*	*2,9*
6	**6.625**	**1.00**	½", ¾", 1"	**2.50**	**6.2**
150	*168,3*	*25,4*		*63,5*	*2,8*
8	**8.625**	**1.06**	½", ¾", 1"	**3.44**	**7.1**
200	*219,1*	*27,0*		*87,4*	*3,2*
10	**10.750**	**1.02**	½", ¾", 1"	**4.50**	**24.5**
250	*273,0*	*25,8*		*114,3*	*11,1*
12	**12.750**	**1.02**	½", ¾", 1"	**5.44**	**31.0**
300	*323,9*	*25,8*		*138,2*	*14,1*

For information on larger sizes, European sizes or other alternative sizes, contact GRINNELL Mechanical Products.

See page 41 for fitting specifications.

Figures 360 End Caps

Tech Data Sheet: G180

Figure 360 Cap
Fabricated

Pipe Size		Figure 360 - Fabricated	
Nominal Inches *mm*	O.D. Inches *mm*	E to E Inches *mm*	Approx Weight Lbs. *kg*
1	**1.31**	**0.83**	**–**
25	*33,4*	*21,1*	–
1-1/4	**1.66**	**1.57**	**–**
32	*42,4*	*40,0*	–
1-1/2	**1.90**	**1.57**	**–**
40	*48,3*	*40,0*	–
2	**2.37**	**1.57**	**–**
50	*60,3*	*40,0*	–
2-1/2	**2.87**	**1.57**	**–**
65	*73,0*	*40,0*	–
76mm	**3.00**	**1.57**	**–**
65	*76,1*	*40,0*	–
3	**3.50**	**1.97**	**–**
80	*88,9*	*50,0*	–
4	**4.50**	**2.56**	**–**
100	*114,3*	*65,0*	–
108mm	**4.25**	**2.56**	**–**
100	*708,0*	*65,0*	–
5	**5.56**	**3.15**	**–**
125	*141,3*	*80,0*	–
133mm	**5.25**	**3.15**	**–**
125	*133,0*	*80,0*	–
139mm	**5.50**	**3.15**	**–**
125	*139,7*	*80,0*	–
6	**6.62**	**3.50**	**–**
150	*168,3*	*89,0*	–
159mm	**6.25**	**3.50**	**–**
150	*159,0*	*89,0*	–

Pipe Size		Figure 360 - Fabricated	
Nominal Inches *mm*	O.D. Inches *mm*	E to E Inches *mm*	Approx Weight Lbs. *kg*
165mm	**6.50**	**3.50**	**–**
150	*165,1*	*89,0*	–
8	**8.63**	**3.94**	**–**
200	*219,1*	*100,0*	–
216mm	**8.52**	**3.94**	**–**
200	*216,3*	*100,0*	–
10	**10.75**	**4.92**	**–**
250	*273,0*	*125,0*	–
267mm	**10.53**	**4.92**	**–**
250	*267,4*	*125,0*	–
12	**12.75**	**5.90**	**–**
300	*323,9*	*150,0*	–
318mm	**12.54**	**5.90**	**–**
300	*318,5*	*150,0*	–
14	**14.00**	**8.50**	**36.5**
350	*355,6*	*215,9*	*16,6*
16	**16.00**	**9.00**	**43.5**
400	*406,4*	*228,6*	*19,7*
18	**18.00**	**10.00**	**57.0**
450	*457,2*	*254,0*	*25,6*
20	**20.00**	**11.00**	**75.7**
500	*508,0*	*279,4*	*34,3*
24	**24.00**	**12.50**	**101.0**
600	*609,6*	*317,5*	*45,8*

For information on larger sizes, European sizes or other alternative sizes, contact GRINNELL Mechanical Products.

See page 41 for fitting specifications.

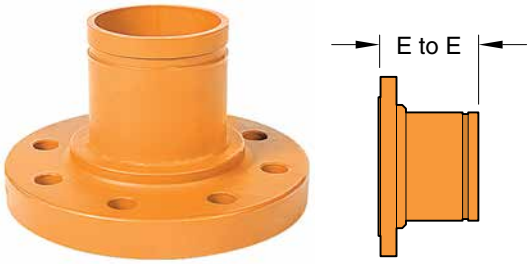
Figure 341 Flange Adapters (ANSI Class 150#)
Figure 342 Flange Adapters (ANSI Class 300#)

(Page 1 of 2)

Tech Data Sheet: G180

Figure 341
Fabricated Flange Adapter
ANSI Class 150#

Figure 342
Fabricated Flange Adapter
ANSI Class 300#



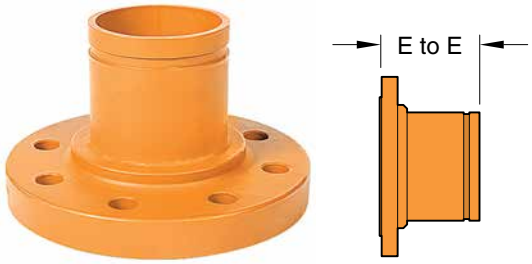
Pipe Size		Figure 341 - ANSI Class 150#			Figure 342 - ANSI Class 300#		
Nominal Inches *mm*	O.D. Inches *mm*	E to E Inches *mm*	Mating Flange Bolt Qty.	Approx. Weight Lbs. *kg*	E to E Inches *mm*	Mating Flange Bolt Qty.	Approx. Weight Lbs. *kg*
1-1/4	**1.66**	**4.00**	**4**	**3.7**	**4.00**	**4**	**4.6**
32	*42,4*	*101,6*		*1,7*	*101,6*		*2,1*
1-1/2	**1.90**	**4.00**	**4**	**3.9**	**4.00**	**4**	**7.1**
40	*48,3*	*101,6*		*1,8*	*101,6*		*3,2*
2	**2.37**	**4.00**	**4**	**6.4**	**4.00**	**8**	**8.2**
50	*60,3*	*101,6*		*2,8*	*101,6*		*3,7*
2-1/2	**2.87**	**4.00**	**4**	**8.8**	**4.00**	**8**	**11.9**
65	*73,0*	*101,6*		*4,0*	*101,6*		*5,4*
76mm	**3.00**	**4.00**	**4**	**–**	**4.00**	**8**	**–**
65	*76,1*	*101,6*		*–*	*101,6*		*–*
3	**3.50**	**4.00**	**4**	**10.4**	**4.00**	**8**	**15.5**
80	*88,9*	*101,6*		*4,7*	*101,6*		*7,0*
108mm	**4.25**	**6.00**	**8**	**–**	**6.00**	**8**	**–**
100	*108,0*	*152,4*		*–*	*152,4*		*–*
4	**4.50**	**6.00**	**8**	**18.2**	**6.00**	**8**	**28.0**
100	*114,3*	*152,4*		*8,3*	*152,4*		*12,7*
133mm	**5.25**	**6.00**	**8**	**–**	**6.00**	**8**	**–**
125	*133,0*	*152,4*		*–*	*152,4*		*–*
139mm	**5.50**	**6.00**	**8**	**–**	**6.00**	**8**	**–**
125	*139,7*	*152,4*		*–*	*152,4*		*–*
5	**5.56**	**6.00**	**8**	**22.0**	**6.00**	**8**	**37.0**
125	*141,3*	*152,4*		*10,0*	*152,4*		*16,8*
159mm	**6.25**	**6.00**	**8**	**–**	**6.00**	**12**	**–**
150	*159,0*	*152,4*		*–*	*152,4*		*–*
165mm	**6.50**	**6.00**	**8**	**–**	**6.00**	**12**	**–**
150	*165,1*	*152,4*		*–*	*152,4*		*–*
6	**6.63**	**6.00**	**8**	**28.1**	**6.00**	**12**	**48.0**
150	*168,3*	*152,4*		*12,7*	*152,4*		*21,8*

Figure 341 Flange Adapters (ANSI Class 150#)
Figure 342 Flange Adapters (ANSI Class 300#)

Tech Data Sheet: G180

Figure 341
Fabricated Flange Adapter
ANSI Class 150#

Figure 342
Fabricated Flange Adapter
ANSI Class 300#

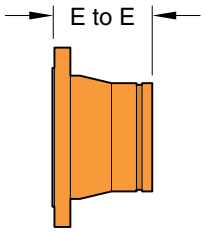


Pipe Size		Figure 341 - ANSI Class 150#			Figure 342 - ANSI Class 300#		
Nominal Inches *mm*	O.D. Inches *mm*	E to E Inches *mm*	Mating Flange Bolt Qty.	Approx. Weight Lbs. *kg*	E to E Inches *mm*	Mating Flange Bolt Qty.	Approx. Weight Lbs. *kg*
216mm	**8.52**	**6.00**	**8**	**–**	**6.00**	**12**	**–**
200	*216,3*	*152,4*		*–*	*152,4*		*–*
8	**8.63**	**6.00**	**8**	**43.7**	**6.00**	**12**	**79.0**
200	*219,1*	*152,4*		*19,8*	*152,4*		*35,8*
267mm	**10.53**	**8.00**	**12**	**–**	**8.00**	**16**	**–**
250	*267,4*	*203,2*		*–*	*203,2*		*–*
10	**10.75**	**8.00**	**12**	**68.2**	**8.00**	**16**	**122.0**
250	*273,0*	*203,2*		*30,9*	*203,2*		*55,3*
318mm	**12.54**	**8.00**	**12**	**–**	**8.00**	**16**	**–**
300	*318,5*	*203,2*		*–*	*203,2*		*–*
12	**12.75**	**8.00**	**12**	**96.1**	**8.00**	**16**	**183.0**
300	*323,9*	*203,2*		*43,6*	*203,2*		*83,0*
14	**14.00**	**8.00**	**12**	**123.0**	**8.00**	**20**	**199.0**
350	*355,6*	*203,2*		*55,8*	*203,2*		*90,3*
16	**16.00**	**8.00**	**16**	**151.0**	**8.00**	**20**	**255.0**
400	*406,4*	*203,2*		*68,5*	*203,2*		*155,7*
18	**18.00**	**8.00**	**16**	**165.0**	**8.00**	**24**	**303.0**
450	*457,2*	*203,2*		*74,8*	*203,2*		*137,4*
20	**20.00**	**8.00**	**20**	**205.0**	**8.00**	**24**	**365.0**
500	*508,0*	*203,2*		*93,0*	*203,2*		*165,6*
24	**24.00**	**8.00**	**20**	**265.0**	**8.00**	**24**	**550.0**
600	*609,6*	*203,2*		*120,2*	*203,2*		*249,5*

For information on larger sizes, contact GRINNELL Mechanical Products.
See page 41 for fitting specifications.

Figure 343 Flange Adapters (PN16)
Figure 344 Flange Adapters (PN10)

Tech Data Sheet: G180



Pipe Size		Figure 343 - PN16			Figure 344 - PN10		
Nominal Inches *mm*	O.D. Inches *mm*	E to E Inches *mm*	Mating Flange Bolt Qty.	Approx. Weight Lbs. *kg*	E to E Inches *mm*	Mating Flange Bolt Qty.	Approx. Weight Lbs. *kg*
2	**2.37**	**3.74**	**4**	**–**	**–**	**–**	**–**
50	*60,3*	*95,0*		–	–		–
2-1/2	**2.87**	**3.74**	**4**	**–**	**–**	**–**	**–**
65	*73,0*	*95,0*		–	–		–
76mm	**3.00**	**3.74**	**4**	**–**	**–**	**–**	**–**
65	*76,1*	*95,0*		–	–		–
3	**3.50**	**3.94**	**8**	**–**	**–**	**–**	**–**
80	*88,9*	*100,0*		–	–		–
108mm	**4.25**	**4.02**	**8**	**–**	**–**		**–**
100	*108,0*	*102,0*		–	–		–
4	**4.50**	**4.02**	**8**	**–**	**–**		**–**
100	*114,3*	*102,0*		–	–		–
133mm	**5.25**	**4.13**	**8**	**–**	**–**	**–**	**–**
125	*133,0*	*105,0*		–	–		–
139mm	**5.50**	**4.13**	**8**	**–**	**–**	**–**	**–**
125	*139,7*	*105,0*		–	–		–
5	**5.56**	**4.13**	**8**	**–**	**–**	**–**	**–**
125	*141,3*	*105,0*		–	–		–
159mm	**6.25**	**4.13**	**8**	**–**	**–**	**–**	**–**
150	*159,0*	*105,0*		–	–		–
165mm	**6.50**	**4.13**	**8**	**–**	**–**	**–**	**–**
150	*165,1*	*105,0*		–	–		–
6	**6.63**	**4.13**	**8**	**–**	**–**	**–**	**–**
150	*168,3*	*105,0*		–	–		–
216mm	**8.52**	**4.40**	**12**	**–**	**4.40**	**8**	**–**
200	*216,3*	*112,0*		–	*112,0*		–
8	**8.63**	**4.40**	**12**	**–**	**4.40**	**8**	**–**
200	*219,1*	*112,0*		–	*112,0*		–
267mm	**10.53**	**5.43**	**12**	**–**	**5.43**	**12**	**–**
250	*267,4*	*138,0*		–	*138,0*		–
10	**10.75**	**5.43**	**12**	**–**	**5.43**	**12**	**–**
250	*273,0*	*138,0*		–	*138,0*		–
318mm	**12.54**	**5.43**	**12**	**–**	**5.43**	**12**	**–**
300	*318,5*	*138,0*		–	*138,0*		–
12	**12.75**	**5.43**	**12**	**–**	**5.43**	**12**	**–**
300	*323,9*	*138,0*		–	*138,0*		–

For information on larger sizes, contact GRINNELL Mechanical Products.
See page 41 for fitting specifications.

MECHANICAL TEES

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Threaded Tees and Crosses

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Female Threaded Tees
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Figure 730
Female Threaded Crosses
Pages 115 - 117

Grooved Tees and Crosses

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Grooved Tees
Pages 118 - 120

Figure 730
Grooved Crosses
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UL VdS ULC FM APPROVED LPCB Issue 03, 04, 07 Cert No. 570, 669, 673

For detailed Listing / Approval information contact GRINNELL Mechanical Products.

Coatings

- Orange – Non-lead paint (standard)
- Red – Non-lead paint (optional, regional)
- Hot-Dipped, Zinc Galvanized (optional)

The GRINNELL Figure 730 Mechanical Tee is rated at 500 psi *(34,5 bar)* on standard weight pipe. It can be used in place of a tee, a cross connection, or a welded outlet where a threaded or grooved outlet is needed. The Mechanical Tee is ideal for use in retrofit or equipment hookup installations as it can be positioned along the pipe at the proper location in the field, ensuring exact lineup of the branch outlet connection. The GRINNELL Figure 730 can be used on steel or HDPE pipe.

All GRINNELL Figure 730 Mechanical Tees are provided with a ductile iron lower housing section for increased strength and dependability. This design provides stability and rigidity while inhibiting damage to the pipe during tightening.

SPECIFICATIONS

Housing Specifications

- ASTM A 536 – Standard specification for ductile iron castings, Grade 65-45-12
- Tensile Strength, minimum *65,000 psi (*4481,6 bar*)*
- Yield Strength, minimum *45,000 psi (*3102,6 bar*)*
- Elongation in *2" (*50mm*)*, minimum 12%
- ASTM A 153 – Standard specification for hot-dip galvanizing

Bolt/Nut Specifications

- **ANSI:** Carbon steel oval neck bolts and nuts are heat-treated and conform to the physical properties of ASTM A 183 Grade 2 and SAE J429 Grade 5 with a minimum tensile strength of 110,000 psi *(7584.2 bar)*. Carbon Steel heavy hex nuts conform to the physical properties of ASTM A 183 Grade 2 and SAE J995 Grade 5. Bolts and nuts are zinc-electroplated conforming to ASTM B 633.
- **Metric:** Carbon steel oval neck track head bolts (Gold color coded) are heat treated and conform to the physical properties of ASTM F 568 M with a minimum tensile strength of 760 MPa. Carbon steel heavy hex nuts conform to the physical properties of ASTM A 563 M Class 9. Bolts and nuts are zinc-electroplated conforming to ASTM B 633.
- Stainless steel bolts and nuts are available upon request.

Gasket Specifications

- **Grade "E" EPDM** gaskets have a Green color code identification and conform to ASTM D 2000 for service temperatures from -30°F to 230°F *(-34°C to 110°C)*. They are recommended for hot water not to exceed 230°F *(110°C)*, plus a variety of dilute acids, oil free air, and many chemical services. They are not recommended for petroleum services.
- **Grade "T" Nitrile** gaskets have an Orange color code identification and conform to ASTM D 2000 for service temperatures from -20°F to 180°F *(-29°C to 82°C)*. They are recommended for petroleum products, vegetable oils, mineral oils, and air with oil vapors.

Figure 730 Mechanical Tees & Crosses – Threaded

Tech Data Sheet: G210

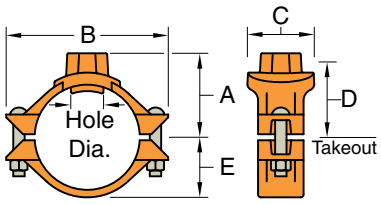

Figure 730 Branch Outlet with Female NPT/BSP Threaded Branch (Tee Configuration)

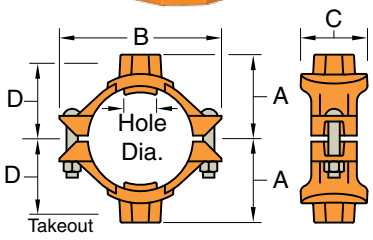

Figure 730 Branch Outlet with Female NPT/BSP Threaded Branch (Cross Configuration)

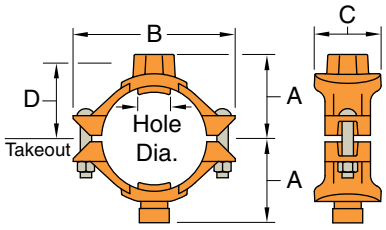

Figure 730 Branch Outlet with a Female NPT/BSP Threaded Branch and a Grooved Branch (Cross Configuration)

Nominal Size Run x Branch Inches *mm*	Hole Dia.†		Max.‡ Branch End Load Lbs. *kN*	Dimensions - Inches *mm*					Bolt Size Inches *mm*	Tee Approx. Weight Lbs. *kg*	Cross Approx. Weight Lbs. *kg*
	Min. Inches *mm*	Max. Inches *mm*		A	B	C	D	E			
2 x ½	**1.50**	**1.63**	**277.1**	**2.62**	**4.88**	**3.07**	**2.12**	**1.59**	**⅜ x 2¼**	**2.5**	**3.4**
50 x 15	*38,1*	*41,3*	*1,2*	*66,5*	*124,0*	*78,0*	*53,8*	*40,4*	*M10 x 57*	*1,1*	*1,5*
2 x ¾	**1.50**	**1.63**	**433.0**	**2.62**	**4.88**	**3.07**	**2.12**	**1.59**	**⅜ x 2¼**	**2.3**	**3.0**
50 x 20	*38,1*	*41,3*	*1,9*	*66,5*	*124,0*	*78,0*	*53,8*	*40,4*	*M10 x 57*	*1,0*	*1,4*
2 x 1	**1.50**	**1.63**	**679.1**	**2.62**	**4.88**	**3.07**	**2.12**	**1.59**	**⅜ x 2¼**	**2.2**	**3.2**
50 x 25	*38,1*	*41,3*	*3,0*	*66,5*	*124,0*	*78,0*	*53,8*	*40,4*	*M10 x 57*	*1,0*	*1,5*
2 x 1¼	**1.75**	**1.88**	**1082.1**	**2.78**	**4.88**	**3.32**	**1.93**	**1.59**	**⅜ x 2¼**	**2.4**	**3.4**
50 x 32	*44,5*	*47,6*	*4,8*	*70,6*	*124,0*	*84,3*	*49,0*	*40,4*	*M10 x 57*	*1,1*	*1,5*
2 x 1½	**1.75**	**1.88**	**1417.6**	**2.75**	**4.88**	**3.32**	**1.93**	**1.59**	**⅜ x 2¼**	**2.5**	**3.9**
50 x 40	*44,5*	*47,6*	*6,3*	*69,9*	*124,0*	*84,3*	*49,0*	*40,4*	*M10 x 57*	*1,1*	*1,8*
2½ x ½	**1.50**	**1.63**	**277.1**	**2.88**	**5.25**	**3.07**	**2.38**	**1.81**	**⅜ x 2¼**	**2.4**	**3.4**
65 x 15	*38,1*	*41,3*	*1,2*	*73,2*	*133,4*	*78,0*	*60,5*	*46,0*	*M10 x 57*	*1,1*	*1,5*
2½ x ¾	**1.50**	**1.63**	**433.0**	**2.88**	**5.25**	**3.07**	**2.38**	**1.81**	**⅜ x 2¼**	**2.4**	**3.4**
65 x 20	*38,1*	*41,3*	*1,9*	*73,2*	*133,4*	*78,0*	*60,5*	*46,0*	*M10 x 57*	*1,1*	*1,5*
2½ x 1	**1.50**	**1.63**	**679.1**	**2.88**	**5.25**	**3.07**	**2.38**	**1.81**	**⅜ x 2¼**	**2.4**	**3.4**
65 x 25	*38,1*	*41,3*	*3,0*	*73,2*	*133,4*	*78,0*	*60,5*	*46,0*	*M10 x 57*	*1,1*	*1,5*
2½ x 1¼	**2.00**	**2.13**	**1082.1**	**3.00**	**5.25**	**3.56**	**2.19**	**1.81**	**⅜ x 2¼**	**2.5**	**3.8**
65 x 32	*50,8*	*54,0*	*4,8*	*76,2*	*133,4*	*90,4*	*55,6*	*46,0*	*M10 x 57*	*1,1*	*1,7*
2½ x 1½	**2.00**	**2.13**	**1417.6**	**3.07**	**5.25**	**3.59**	**2.17**	**1.81**	**⅜ x 2¼**	**2.6**	**4.1**
65 x 40	*50,8*	*54,0*	*6,3*	*78,0*	*133,4*	*91,2*	*55,1*	*46,0*	*M10 x 57*	*1,2*	*1,9*
2½ x 2	**2.00**	**2.13**	**2215.1**	**3.19**	**5.25**	**4.00**	**2.44**	**1.81**	**⅜ x 2¼**	**2.7**	**4.1**
65 x 50	*50,8*	*54,0*	*9,9*	*81,0*	*133,4*	*101,6*	*62,0*	*46,0*	*M10 x 57*	*1,2*	*1,9*
76,1mm x ½	**1.50**	**1.63**	**277.1**	**2.94**	**5.62**	**3.07**	**2.44**	**1.87**	**–**	**2.5**	**3.5**
65 x 15	*38,1*	*41,3*	*1,2*	*74,5*	*142,7*	*78,0*	*62,0*	*47,5*	*M10 x 57*	*1,1*	*1,6*
76,1mm x ¾	**1.50**	**1.63**	**433.0**	**2.94**	**5.62**	**3.07**	**2.44**	**1.87**	**–**	**2.5**	**3.5**
65 x 20	*38,1*	*41,3*	*1,9*	*74,5*	*142,7*	*78,0*	*62,0*	*47,5*	*M10 x 57*	*1,1*	*1,6*
76,1mm x 1	**1.50**	**1.63**	**679.1**	**2.94**	**5.62**	**3.07**	**2.44**	**1.87**	**–**	**2.5**	**3.5**
65 x 25	*38,1*	*41,3*	*3,0*	*74,5*	*142,7*	*78,0*	*62,0*	*47,5*	*M10 x 57*	*1,1*	*1,6*
76,1mm x 1¼	**2.00**	**2.13**	**1082.1**	**3.06**	**5.62**	**3.56**	**2.25**	**1.87**	**–**	**3.3**	**5.1**
65 x 32	*50,8*	*54,0*	*4,8*	*77,7*	*142,7*	*90,4*	*57,2*	*47,5*	*M10 x 57*	*1,5*	*2,3*
76,1mm x 1½	**2.00**	**2.13**	**1417.6**	**3.13**	**5.62**	**3.56**	**2.25**	**1.87**	**–**	**3.6**	**5.7**
65 x 40	*50,8*	*54,0*	*6,3*	*79,5*	*142,7*	*90,4*	*57,2*	*47,5*	*M10 x 57*	*1,6*	*2,6*
76,1mm x 2	**2.00**	**2.13**	**2215.1**	**3.25**	**5.62**	**4.00**	**2.50**	**1.87**	**–**	**3.7**	**5.8**
65 x 50	*50,8*	*54,0*	*9,9*	*82,6*	*142,7*	*101,6*	*63,5*	*47,5*	*M10 x 57*	*1,7*	*2,6*
3 x ½	**1.50**	**1.63**	**277.1**	**3.19**	**6.13**	**3.07**	**2.56**	**2.21**	**½ x 3**	**3.7**	**5.2**
80 x 15	*38,1*	*41,3*	*1,2*	*81,0*	*155,7*	*78,0*	*65,0*	*56,1*	*M12 x 89*	*1,7*	*2,4*

Figure 730 Mechanical Tees & Crosses – Threaded

Tech Data Sheet: G210

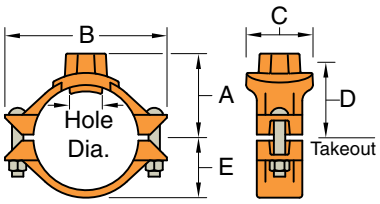

Figure 730 Branch Outlet with Female NPT/BSP Threaded Branch (Tee Configuration)

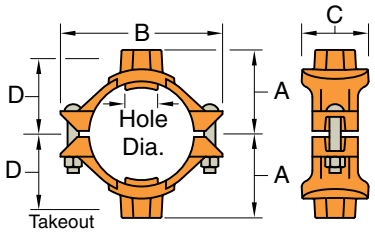

Figure 730 Branch Outlet with Female NPT/BSP Threaded Branch (Cross Configuration)

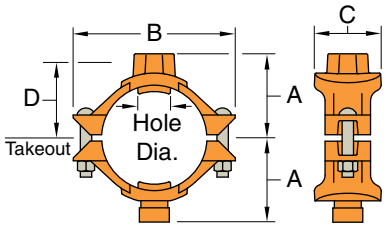

Figure 730 Branch Outlet with a Female NPT/BSP Threaded Branch and a Grooved Branch (Cross Configuration)

Nominal Size Run x Branch Inches *mm*	Hole Dia.†		Max.‡ Branch End Load Lbs. *kN*	Dimensions - Inches *mm*					Bolt Size Inches *mm*	Tee Approx. Weight Lbs. *kg*	Cross Approx. Weight Lbs. *kg*
	Min. Inches *mm*	Max. Inches *mm*		A	B	C	D	E			
3 x ¾	**1.50**	**1.63**	**433.0**	**3.19**	**6.13**	**3.07**	**2.56**	**2.21**	**½ x 3**	**3.7**	**5.2**
80 x 20	*38,1*	*41,3*	*1,9*	*81,0*	*155,7*	*78,0*	*65,0*	*56,1*	*M12 x 89*	*1,7*	*2,4*
3 x 1	**1.50**	**1.63**	**679.1**	**3.19**	**6.13**	**3.07**	**2.56**	**2.21**	**½ x 3**	**3.7**	**5.2**
80 x 25	*38,1*	*41,3*	*3,0*	*81,0*	*155,7*	*78,0*	*65,0*	*56,1*	*M12 x 89*	*1,7*	*2,4*
3 x 1¼	**1.75**	**1.88**	**1082.1**	**3.34**	**6.13**	**3.32**	**2.50**	**2.21**	**½ x 3**	**3.5**	**4.6**
80 x 32	*44,5*	*47,6*	*4,8*	*84,8*	*155,7*	*84,3*	*63,5*	*56,1*	*M12 x 89*	*1,6*	*2,1*
3 x 1½	**2.00**	**2.13**	**1417.6**	**3.38**	**6.13**	**3.56**	**2.48**	**2.21**	**½ x 3**	**3.7**	**5.2**
80 x 40	*50,8*	*54,0*	*6,3*	*85,9*	*155,7*	*90,4*	*63,0*	*56,1*	*M12 x 89*	*1,7*	*2,4*
3 x 2	**2.50**	**2.63**	**2215.1**	**3.50**	**6.13**	**4.09**	**2.75**	**2.21**	**½ x 3**	**4.7**	**6.8**
80 x 50	*63,5*	*66,7*	*9,9*	*88,9*	*155,7*	*103,9*	*69,9*	*56,1*	*M12 x 89*	*2,1*	*3,1*
4 x ½	**1.50**	**1.63**	**277.1**	**3.69**	**7.13**	**3.07**	**3.06**	**2.78**	**½ x 3**	**4.8**	**5.6**
100 x 15	*38,1*	*41,3*	*1,2*	*93,7*	*181,1*	*78,0*	*77,7*	*70,6*	*M12 x 89*	*2,2*	*2,5*
4 x ¾	**1.50**	**1.63**	**433.0**	**3.69**	**7.13**	**3.07**	**3.06**	**2.78**	**½ x 3**	**4.8**	**5.6**
100 x 20	*38,1*	*41,3*	*1,9*	*93,7*	*181,1*	*78,0*	*77,7*	*70,6*	*M12 x 89*	*2,2*	*2,5*
4 x 1	**1.50**	**1.63**	**679.1**	**3.69**	**7.13**	**3.07**	**3.06**	**2.78**	**½ x 3**	**4.8**	**5.6**
100 x 25	*38,1*	*41,3*	*3,0*	*93,7*	*181,1*	*78,0*	*77,7*	*70,6*	*M12 x 89*	*2,2*	*2,5*
4 x 1¼	**1.75**	**1.88**	**1082.1**	**3.92**	**7.13**	**3.32**	**3.00**	**2.78**	**½ x 3**	**4.8**	**5.6**
100 x 32	*44,5*	*47,6*	*4,8*	*99,6*	*181,1*	*84,3*	*76,2*	*70,6*	*M12 x 89*	*2,2*	*2,5*
4 x 1½	**2.00**	**2.13**	**1417.6**	**4.00**	**7.13**	**3.56**	**2.98**	**2.78**	**½ x 3**	**5.1**	**6.4**
100 x 40	*50,8*	*54,0*	*6,3*	*101,6*	*181,1*	*90,4*	*75,7*	*70,6*	*M12 x 89*	*2,3*	*2,5*
4 x 2	**2.50**	**2.63**	**2215.1**	**4.00**	**7.13**	**4.06**	**3.25**	**2.78**	**½ x 3**	**5.5**	**7.3**
100 x 50	*63,5*	*66,7*	*9,9*	*101,6*	*181,1*	*103,1*	*82,6*	*70,6*	*M12 x 89*	*2,5*	*3,3*
4 x 2½	**2.75**	**2.88**	**3245.9**	**4.00**	**7.13**	**4.38**	**3.12**	**2.78**	**½ x 3**	**6.2**	**8.7**
100 x 65	*69,9*	*73,0*	*14,4*	*101,6*	*181,1*	*111,3*	*79,2*	*70,6*	*M12 x 89*	*2,8*	*3,9*
4 x 76,1mm	**2.75**	**2.88**	**3534.3**	**4.00**	**7.13**	**4.38**	**3.12**	**2.78**	**–**	**6.2**	**8.7**
100 x 65	*69,9*	*73,0*	*15,7*	*101,6*	*181,1*	*111,3*	*79,2*	*70,6*	*M12 x 89*	*2,8*	*3,9*
4 x 3	**3.50**	**3.63**	**4810.6**	**4.13**	**7.13**	**5.13**	**3.31**	**2.78**	**½ x 3**	**7.8**	**11.9**
100 x 80	*88,9*	*92,1*	*21,4*	*104,9*	*181,1*	*130,3*	*84,1*	*70,6*	*M12 x 89*	*3,5*	*5,4*
5 x 1½	**2.00**	**2.13**	**1417.6**	**4.63**	**8.13**	**3.56**	**4.00**	**3.37**	**⅝ x 4¾**	**7.8**	**9.4**
125 x 40	*50,8*	*54,0*	*6,3*	*117,6*	*206,5*	*90,4*	*101,6*	*85,6*	*M16 x 121*	*3,5*	*4,3*
5 x 2	**2.50**	**2.63**	**2215.1**	**4.63**	**8.13**	**4.06**	**3.88**	**3.37**	**⅝ x 4¾**	**7.8**	**9.4**
125 x 50	*63,5*	*66,7*	*9,9*	*117,6*	*206,5*	*103,1*	*98,6*	*85,6*	*M16 x 121*	*3,5*	*4,3*
5 x 2½	**2.75**	**2.88**	**3245.9**	**4.75**	**8.13**	**4.38**	**3.88**	**3.37**	**⅝ x 4¾**	**8.9**	**11.5**
125 x 65	*69,9*	*73,0*	*14,4*	*120,7*	*206,5*	*111,3*	*98,6*	*85,6*	*M16 x 121*	*4,0*	*5,2*
5 x 76,1mm	**2.75**	**2.88**	**3534.3**	**4.75**	**8.13**	**4.38**	**3.88**	**3.37**	**–**	**8.9**	**11.5**
125 x 65	*69,9*	*73,0*	*15,7*	*120,7*	*206,5*	*111,3*	*98,6*	*85,6*	*M16 x 121*	*4,0*	*5,2*
5 x 3	**3.50**	**3.63**	**4810.6**	**5.00**	**8.13**	**5.13**	**4.06**	**3.37**	**⅝ x 4¾**	**12.7**	**13.3**
125 x 80	*88,9*	*92,1*	*21,4*	*127,0*	*206,5*	*130,3*	*103,1*	*85,6*	*M16 x 121*	*5,8*	*6,0*
165,1mm x 1¼	**2.00**	**2.13**	**1082.1**	**5.13**	**9.25**	**3.56**	**4.25**	**3.90**	**–**	**7.7**	**9.5**
150 x 32	*50,8*	*54,0*	*4,8*	*130,3*	*235,0*	*90,4*	*108,0*	*99,1*	*M16 x 121*	*3,5*	*4,3*
165,1mm x 1½	**2.00**	**2.13**	**1417.6**	**5.13**	**9.25**	**3.56**	**4.04**	**3.90**	**–**	**7.7**	**9.5**
150 x 40	*50,8*	*54,0*	*6,3*	*130,3*	*235,0*	*90,4*	*102,6*	*99,1*	*M16 x 121*	*3,5*	*4,3*
165,1mm x 2	**2.50**	**2.63**	**2215.1**	**5.13**	**9.25**	**4.06**	**4.31**	**3.90**	**–**	**8.2**	**9.5**
150 x 50	*63,5*	*66,7*	*9,9*	*130,3*	*235,0*	*103,1*	*109,5*	*99,1*	*M16 x 121*	*3,7*	*4,3*

Figure 730 Mechanical Tees & Crosses – Threaded

Tech Data Sheet: G210

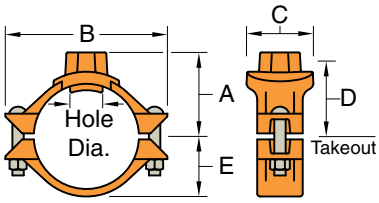

Figure 730 Branch Outlet with Female NPT/BSP Threaded Branch (Tee Configuration)

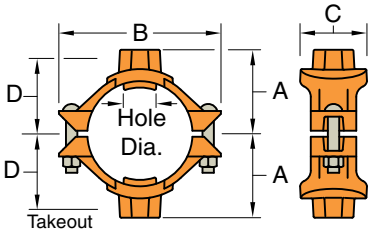

Figure 730 Branch Outlet with Female NPT/BSP Threaded Branch (Cross Configuration)

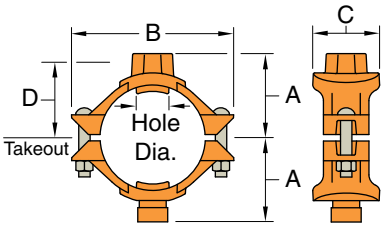

Figure 730 Branch Outlet with a Female NPT/BSP Threaded Branch and a Grooved Branch (Cross Configuration)

Nominal Size Run x Branch Inches *mm*	Hole Dia.†		Max.‡ Branch End Load Lbs. *kN*	Dimensions - Inches *mm*					Bolt Size Inches *mm*	Tee Approx. Weight Lbs. *kg*	Cross Approx. Weight Lbs. *kg*
	Min. Inches *mm*	Max. Inches *mm*		A	B	C	D	E			
165,1mm x 2½	**2.75**	**2.88**	**3245.9**	**5.13**	**9.25**	**4.38**	**4.18**	**3.90**	**–**	**9.0**	**11.3**
150 x 65	*69,9*	*73,0*	*14,4*	*130,3*	*235,0*	*111,3*	*106,2*	*99,1*	*M16 x 121*	*4,1*	*5,1*
165,1mm x 76,1mm	**2.75**	**2.88**	**3584.3**	**5.13**	**9.25**	**4.38**	**4.18**	**3.90**	**–**	**9.0**	**11.3**
150 x 65	*69,9*	*73,0*	*15,7*	*130,3*	*235,0*	*111,3*	*106,2*	*99,1*	*M16 x 121*	*4,1*	*5,1*
165,1mm x 3	**3.50**	**3.63**	**4810.6**	**5.50**	**9.25**	**5.13**	**4.37**	**3.90**	**–**	**10.5**	**14.1**
150 x 80	*88,9*	*92,1*	*21,4*	*139,7*	*235,0*	*130,3*	*111,0*	*99,1*	*M16 x 121*	*4,8*	*6,4*
165,1mm x 4	**4.50**	**4.63**	**7952.2**	**5.38**	**9.25**	**6.13**	**4.56**	**3.90**	**–**	**12.1**	**17.3**
150 x 100	*114,3*	*117,5*	*35,4*	*136,7*	*235,0*	*155,7*	*115,8*	*99,1*	*M16 x 121*	*5,5*	*7,8*
6 x 1¼	**2.00**	**2.13**	**1082.1**	**5.13**	**9.25**	**3.56**	**4.25**	**3.90**	**⅝ x 4¾**	**7.5**	**8.7**
150 x 32	*50,8*	*54,0*	*4,8*	*130,3*	*235,0*	*90,4*	*108,0*	*99,1*	*M16 x 121*	*3,4*	*3,9*
6 x 1½	**2.00**	**2.13**	**1417.6**	**5.13**	**9.25**	**3.56**	**4.04**	**3.90**	**⅝ x 4¾**	**7.5**	**8.7**
150 x 40	*50,8*	*54,0*	*6,3*	*130,3*	*235,0*	*90,4*	*102,6*	*99,1*	*M16 x 121*	*3,4*	*3,9*
6 x 2	**2.50**	**2.63**	**2215.1**	**5.13**	**9.25**	**4.06**	**4.31**	**3.90**	**⅝ x 4¾**	**7.7**	**9.5**
150 x 50	*63,5*	*66,7*	*9,9*	*130,3*	*235,0*	*103,1*	*109,5*	*99,1*	*M16 x 121*	*3,5*	*4,3*
6 x 2½	**2.75**	**2.88**	**3245.9**	**5.13**	**9.25**	**4.38**	**4.18**	**3.90**	**⅝ x 4¾**	**8.9**	**11.3**
150 x 65	*69,9*	*73,0*	*14,4*	*130,3*	*235,0*	*111,3*	*106,2*	*99,1*	*M16 x 121*	*4,0*	*5,1*
6 x 76,1mm	**2.75**	**2.88**	**3245.9**	**5.13**	**9.25**	**4.38**	**4.18**	**3.90**	**⅝ x 4¾**	**8.9**	**11.3**
150 x 65	*69,9*	*73,0*	*14,4*	*130,3*	*235,0*	*111,3*	*106,2*	*99,1*	*M16 x 121*	*4,0*	*5,1*
6 x 3	**3.50**	**3.63**	**4810.6**	**5.50**	**9.25**	**5.13**	**4.37**	**3.90**	**⅝ x 4¾**	**10.3**	**14.1**
150 x 80	*88,9*	*92,1*	*21,4*	*139,7*	*235,0*	*130,3*	*111,0*	*99,1*	*M16 x 121*	*4,7*	*6,4*
6 x 4	**4.50**	**4.63**	**7952.2**	**5.38**	**9.25**	**6.13**	**4.56**	**3.90**	**⅝ x 4¾**	**11.9**	**17.3**
150 x 100	*114,3*	*117,5*	*35,4*	*136,7*	*235,0*	*155,7*	*115,8*	*99,1*	*M16 x 121*	*5,4*	*7,8*
8 x 2	**2.75**	**2.88**	**3245.9**	**6.25**	**12.50**	**4.06**	**5.12**	**4.90**	**¾ x 4¾**	**12.1**	**14.1**
200 x 50	*69,9*	*73,0*	*14,4*	*158,8*	*317,5*	*103,1*	*130,0*	*124,5*	*M20 x 121*	*5,5*	*6,4*
8 x 2½	**2.75**	**2.88**	**3245.9**	**6.25**	**12.50**	**4.38**	**5.12**	**4.90**	**¾ x 4¾**	**12.6**	**15.0**
200 x 65	*69,9*	*73,0*	*14,4*	*158,8*	*317,5*	*111,3*	*130,0*	*124,5*	*M20 x 121*	*5,7*	*6,8*
8 x 76,1mm	**2.75**	**2.88**	**3534.3**	**6.25**	**12.50**	**4.38**	**5.12**	**4.90**	**–**	**12.6**	**15.0**
200 x 65	*69,9*	*73,0*	*15,7*	*158,8*	*317,5*	*111,3*	*130,0*	*124,5*	*M20 x 121*	*5,7*	*6,8*
8 x 3	**3.50**	**3.63**	**4810.6**	**6.50**	**12.50**	**5.13**	**5.37**	**4.90**	**¾ x 4¾**	**13.6**	**16.9**
200 x 80	*88,9*	*92,1*	*21,4*	*165,1*	*317,5*	*130,3*	*136,4*	*124,5*	*M20 x 121*	*6,1*	*7,7*
8 x 4	**4.50**	**4.63**	**7952.2**	**6.38**	**12.50**	**6.13**	**5.56**	**4.90**	**¾ x 4¾**	**15.2**	**20.0**
200 x 100	*114,3*	*117,5*	*35,4*	*162,1*	*317,5*	*155,7*	*141,2*	*124,5*	*M20 x 121*	*6,9*	*9,1*

† Proper hole preparation is required for effective sealing and performance. Check the pipe seal surface within ⅝" *(15,9mm)* of the hole to ensure it is free from conditions affecting proper gasket sealing. Remove any sharp or rough edges from the hole or upper housing contact area that might affect assembly, proper seating of the locating collar, or flow from the outlet. For crosses, ensure double outlet holes are aligned on opposite sides of the pipe. The use of threaded products other than steel pipe, such as dry pendent sprinklers, may not be compatible with the female threaded outlet on the Mechanical Tee. Always confirm compatibility by contacting GRINNELL Mechanical Products.

‡ Maximum pressures and end loads are total from all loads based on standard weight steel pipe. Pressure ratings and end loads may differ on other pipe materials and/or wall thickness. Contact GRINNELL Mechanical Products for details.

Threads are NPT. Some size outlets are available with BSP threads. Contact GRINNELL Mechanical Products for details.

For information on larger sizes, European sizes or other alternative sizes, contact GRINNELL Mechanical Products.

See page 114 for mechanical tee specifications and pages 224 - 230 for gasket information.

Figure 730 Mechanical Tees & Crosses – Grooved

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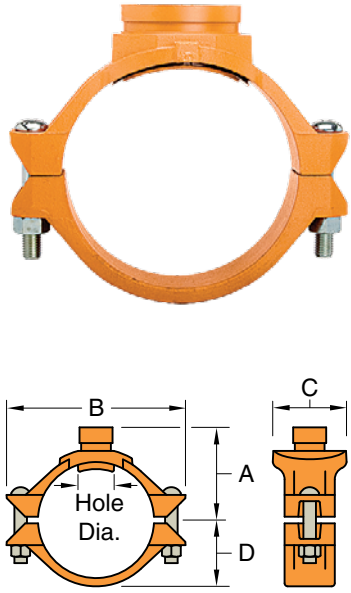


Figure 730 Branch Outlet with Grooved Branch (Tee Configuration)

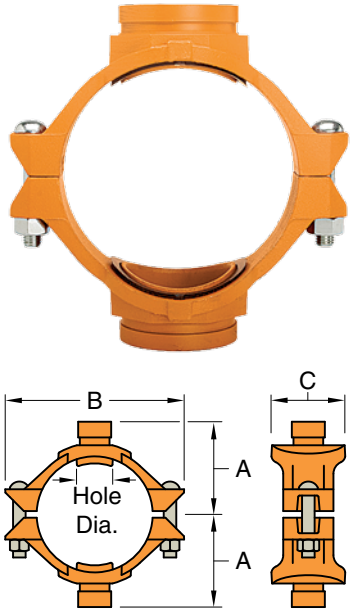


Figure 730 Branch Outlet with Grooved Branch (Cross Configuration)

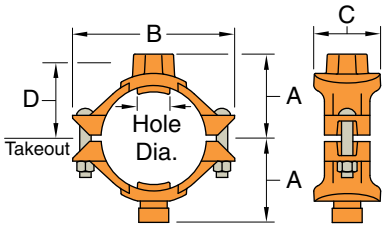


Figure 730 Branch Outlet with a Female NPT/BSP Threaded Branch and a Grooved Branch (Cross Configuration)

Nominal Size Run x Branch Inches *mm*	Hole Dia.†		Max.‡ End Load Branch Lbs. *kN*	Dimensions - Inches *mm*				Bolt Size Inches *mm*	Tee Approx. Weight Lbs. *kg*	Cross Approx. Weight Lbs. *kg*
	Min. Inches *mm*	Max. Inches *mm*		A	B	C	D			
2 x 1¼	**1.75**	**1.88**	**1082.1**	**2.78**	**4.88**	**3.32**	**1.59**	**⅜ x 2¼**	**2.5**	**3.3**
50 x 32	*44,5*	*47,6*	*4,8*	*70,6*	*124,0*	*84,3*	*40,4*	*M10 x 57*	*1,1*	*1,5*
2 x 1½	**1.75**	**1.88**	**1417.6**	**2.62**	**4.88**	**3.32**	**1.59**	**⅜ x 2¼**	**2.4**	**3.7**
50 x 40	*44,5*	*47,6*	*6,3*	*66,5*	*124,0*	*84,3*	*40,4*	*M10 x 57*	*1,1*	*1,7*
2½ x 1¼	**2.00**	**2.13**	**1082.1**	**3.00**	**5.25**	**3.56**	**1.81**	**⅜ x 2¼**	**2.5**	**3.8**
65 x 32	*50,8*	*54,0*	*4,8*	*76,2*	*133,4*	*90,4*	*46,0*	*M10 x 57*	*1,1*	*1,7*
2½ x 1½	**2.00**	**2.13**	**1417.6**	**3.07**	**5.25**	**3.59**	**1.81**	**⅜ x 2¼**	**2.5**	**3.9**
65 x 40	*50,8*	*54,0*	*6,3*	*78,0*	*133,4*	*91,2*	*46,0*	*M10 x 57*	*1,1*	*1,8*
2½ x 2	**2.00**	**2.13**	**2215.1**	**3.19**	**5.25**	**4.00**	**1.81**	**⅜ x 2¼**	**2.5**	**3.8**
65 x 50	*50,8*	*54,0*	*9,9*	*81,0*	*133,4*	*101,6*	*46,0*	*M10 x 57*	*1,1*	*1,7*
76,1mm x 1¼	**2.00**	**2.13**	**1082.1**	**3.06**	**5.62**	**3.56**	**1.87**	**–**	**2.5**	**3.8**
65 x 32	*50,8*	*54,0*	*4,8*	*77,7*	*142,7*	*90,4*	*47,5*	*M10 x 57*	*1,1*	*1,7*
76,1mm x 1½	**2.00**	**2.13**	**1417.6**	**3.13**	**5.62**	**3.56**	**1.87**	**–**	**2.5**	**3.9**
65 x 40	*50,8*	*54,0*	*6,3*	*79,5*	*142,7*	*90,4*	*47,5*	*M10 x 57*	*1,1*	*1,8*
76,1mm x 2	**2.00**	**2.13**	**2215.1**	**3.25**	**5.62**	**4.00**	**1.87**	**–**	**2.5**	**3.8**
65 x 50	*50,8*	*54,0*	*9,9*	*82,6*	*142,7*	*101,6*	*47,5*	*M10 x 57*	*1,1*	*1,7*
3 x 1¼	**1.75**	**1.88**	**1082.1**	**3.34**	**6.13**	**3.32**	**2.21**	**½ x 3**	**3.5**	**4.6**
80 x 32	*44,5*	*47,6*	*4,8*	*84,8*	*155,7*	*84,3*	*56,1*	*M12 x 89*	*1,6*	*2,1*
3 x 1½	**2.00**	**2.13**	**1417.6**	**3.38**	**6.13**	**3.56**	**2.21**	**½ x 3**	**3.6**	**5.0**
80 x 40	*50,8*	*54,0*	*6,3*	*85,9*	*155,7*	*90,4*	*56,1*	*M12 x 89*	*1,6*	*2,3*
3 x 2	**2.50**	**2.63**	**2215.1**	**3.50**	**6.13**	**4.09**	**2.21**	**½ x 3**	**4.5**	**6.4**
80 x 50	*63,5*	*66,7*	*9,9*	*88,9*	*155,7*	*103,9*	*56,1*	*M12 x 89*	*2,0*	*2,9*

Figure 730 Mechanical Tees & Crosses – Grooved

Tech Data Sheet: G210

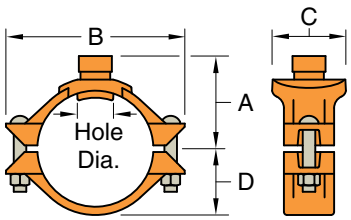


Figure 730 Branch Outlet with Grooved Branch (Tee Configuration)

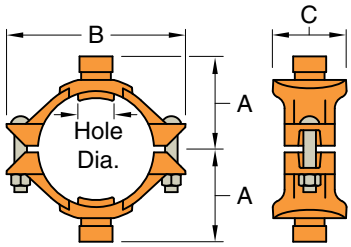


Figure 730 Branch Outlet with Grooved Branch (Cross Configuration)

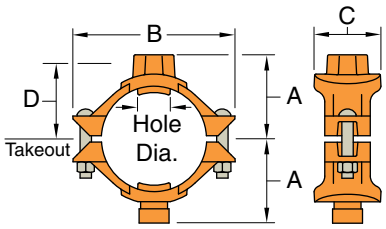


Figure 730 Branch Outlet with a Female NPT/BSP Threaded Branch and a Grooved Branch (Cross Configuration)

Nominal Size Run x Branch Inches *mm*	Hole Dia.†		Max.‡ End Load Branch Lbs. *kN*	Dimensions - Inches *mm*				Bolt Size Inches *mm*	Tee Approx. Weight Lbs. *kg*	Cross Approx. Weight Lbs. *kg*
	Min. Inches *mm*	Max. Inches *mm*		A	B	C	D			
4 x 1¼	**1.75**	**1.88**	**1082.1**	**3.92**	**7.13**	**3.32**	**2.78**	**½ x 3**	**4.8**	**5.6**
100 x 32	*44,5*	*47,6*	*4,8*	*99,6*	*181,1*	*84,3*	*70,6*	*M12 x 89*	*2,2*	*2,5*
4 x 1½	**2.00**	**2.13**	**1417.6**	**4.00**	**7.13**	**3.56**	**2.78**	**½ x 3**	**5.0**	**6.2**
100 x 40	*50,8*	*54,0*	*6,3*	*101,6*	*181,1*	*90,4*	*70,6*	*M12 x 89*	*2,3*	*2,8*
4 x 2	**2.50**	**2.63**	**2215.1**	**4.00**	**7.13**	**4.06**	**2.78**	**½ x 3**	**5.3**	**6.9**
100 x 50	*63,5*	*66,7*	*9,9*	*101,6*	*181,1*	*103,1*	*70,6*	*M12 x 89*	*2,4*	*3,1*
4 x 2½	**2.75**	**2.88**	**3245.9**	**4.00**	**7.13**	**4.38**	**2.78**	**½ x 3**	**5.9**	**8.2**
100 x 65	*69,9*	*73,0*	*14,4*	*101,6*	*181,1*	*111,3*	*70,6*	*M12 x 89*	*2,7*	*3,7*
4 x 76,1mm	**2.75**	**2.88**	**3534.3**	**4.00**	**7.13**	**4.38**	**2.78**	**–**	**5.9**	**8.2**
100 x 65	*69,9*	*73,0*	*15,7*	*101,6*	*181,1*	*111,3*	*70,6*	*M12 x 89*	*2,7*	*3,7*
4 x 3	**3.50**	**3.63**	**4810.6**	**4.13**	**7.13**	**5.13**	**2.78**	**½ x 3**	**7.4**	**11.1**
100 x 80	*88,9*	*92,1*	*21,4*	*104,9*	*181,1*	*130,3*	*70,6*	*M12 x 89*	*3,4*	*5,0*
5 x 1½	**2.00**	**2.13**	**1417.6**	**4.63**	**8.13**	**3.56**	**3.37**	**⅝ x 4¾**	**7.7**	**9.2**
125 x 40	*50,8*	*54,0*	*6,3*	*117,6*	*206,5*	*90,4*	*85,6*	*M16 x 121*	*3,5*	*4,2*
5 x 2	**2.50**	**2.63**	**2215.1**	**4.63**	**8.13**	**4.06**	**3.37**	**⅝ x 4¾**	**7.6**	**9.0**
125 x 50	*63,5*	*66,7*	*9,9*	*117,6*	*206,5*	*103,1*	*85,6*	*M16 x 121*	*3,4*	*4,1*
5 x 2½	**2.75**	**2.88**	**3245.9**	**4.75**	**8.13**	**4.38**	**3.37**	**⅝ x 4¾**	**8.6**	**11.0**
125 x 65	*69,9*	*73,0*	*14,4*	*120,7*	*206,5*	*111,3*	*85,6*	*M16 x 121*	*3,9*	*5,0*
5 x 76,1mm	**2.75**	**2.88**	**3534.3**	**4.75**	**8.13**	**4.38**	**3.37**	**–**	**8.6**	**11.0**
125 x 65	*69,9*	*73,0*	*15,7*	*120,7*	*206,5*	*111,3*	*85,6*	*M16 x 121*	*3,9*	*5,0*
5 x 3	**3.50**	**3.63**	**4810.6**	**5.00**	**8.13**	**5.13**	**3.37**	**⅝ x 4¾**	**12.3**	**12.5**
125 x 80	*88,9*	*92,1*	*21,4*	*127,0*	*206,5*	*130,3*	*85,6*	*M16 x 121*	*5,6*	*5,7*
165,1mm x 1¼	**2.00**	**2.13**	**1082.1**	**5.13**	**9.25**	**3.56**	**3.90**	**–**	**7.7**	**9.5**
150 x 32	*50,8*	*54,0*	*4,8*	*130,3*	*235,0*	*90,4*	*99,1*	*M16 x 121*	*3,5*	*4,3*
165,1mm x 1½	**2.00**	**2.13**	**1417.6**	**5.13**	**9.25**	**3.56**	**3.90**	**–**	**7.6**	**9.3**
150 x 40	*50,8*	*54,0*	*6,3*	*130,3*	*235,0*	*90,4*	*99,1*	*M16 x 121*	*3,4*	*4,2*
165,1mm x 2	**2.50**	**2.63**	**2215.1**	**5.13**	**9.25**	**4.06**	**3.90**	**–**	**8.0**	**9.1**
150 x 50	*63,5*	*66,7*	*9,9*	*130,3*	*235,0*	*103,1*	*99,1*	*M16 x 121*	*3,6*	*4,1*
165,1mm x 2½	**2.75**	**2.88**	**3245.9**	**5.13**	**9.25**	**4.38**	**3.90**	**–**	**8.8**	**10.8**
150 x 65	*69,9*	*73,0*	*14,4*	*130,3*	*235,0*	*111,3*	*99,1*	*M16 x 121*	*4,0*	*4,9*
165,1mm x 76,1mm	**2.75**	**2.88**	**3534.3**	**5.13**	**9.25**	**4.38**	**3.90**	**–**	**8.8**	**10.8**
150 x 65	*69,9*	*73,0*	*15,7*	*130,3*	*235,0*	*111,3*	*99,1*	*M16 x 121*	*4,0*	*4,9*

Figure 730 Mechanical Tees & Crosses – Grooved

Tech Data Sheet: G210

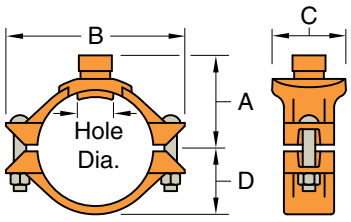


Figure 730 Branch Outlet with Grooved Branch (Tee Configuration)

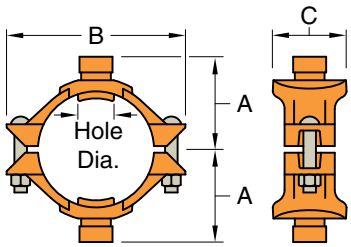


Figure 730 Branch Outlet with Grooved Branch (Cross Configuration)

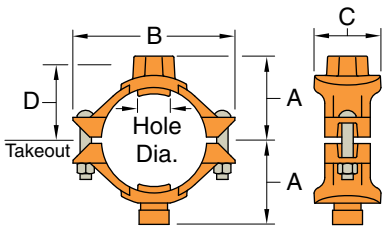


Figure 730 Branch Outlet with a Female NPT/BSP Threaded Branch and a Grooved Branch (Cross Configuration)

Nominal Size Run x Branch Inches *mm*	Hole Dia.†		Max.‡ End Load Branch Lbs. *kN*	Dimensions - Inches *mm*				Bolt Size Inches *mm*	Tee Approx. Weight Lbs. *kg*	Cross Approx. Weight Lbs. *kg*
	Min. Inches *mm*	Max. Inches *mm*		A	B	C	D			
165,1mm x 3	**3.50**	**3.63**	**4810.6**	**5.50**	**9.25**	**5.13**	**3.90**	**–**	**10.1**	**13.3**
150 x 80	*88,9*	*92,1*	*21,4*	*139,7*	*235,0*	*130,3*	*99,1*	*M16 x 121*	*4,6*	*6,0*
165,1mm x 4	**4.50**	**4.63**	**7952.2**	**5.38**	**9.25**	**6.13**	**3.90**	**–**	**11.6**	**16.3**
150 x 100	*114,3*	*117,5*	*35,4*	*136,7*	*235,0*	*155,7*	*99,1*	*M16 x 121*	*5,3*	*7,4*
6 x 1¼	**2.00**	**2.13**	**1082.1**	**5.13**	**9.25**	**3.56**	**3.90**	**⅝ x 4¾**	**7.7**	**9.5**
150 x 32	*50,8*	*54,0*	*4,8*	*130,3*	*235,0*	*90,4*	*99,1*	*M16 x 121*	*3,5*	*4,3*
6 x 1½	**2.00**	**2.13**	**1417.6**	**5.13**	**9.25**	**3.56**	**3.90**	**⅝ x 4¾**	**7.6**	**9.3**
150 x 40	*50,8*	*54,0*	*6,3*	*130,3*	*235,0*	*90,4*	*99,1*	*M16 x 121*	*3,4*	*4,2*
6 x 2	**2.50**	**2.63**	**2215.1**	**5.13**	**9.25**	**4.06**	**3.90**	**⅝ x 4¾**	**8.0**	**9.1**
150 x 50	*63,5*	*66,7*	*9,9*	*130,3*	*235,0*	*103,1*	*99,1*	*M16 x 121*	*3,6*	*4,1*
6 x 2½	**2.75**	**2.88**	**3245.9**	**5.13**	**9.25**	**4.38**	**3.90**	**⅝ x 4¾**	**8.8**	**10.8**
150 x 65	*69,9*	*73,0*	*14,4*	*130,3*	*235,0*	*111,3*	*99,1*	*M16 x 121*	*4,0*	*4,9*
6 x 3	**3.50**	**3.63**	**4810.6**	**5.50**	**9.25**	**5.13**	**3.90**	**⅝ x 4¾**	**10.1**	**13.3**
150 x 80	*88,9*	*92,1*	*21,4*	*139,7*	*235,0*	*130,3*	*99,1*	*M16 x 121*	*4,6*	*6,0*
6 x 4	**4.50**	**4.63**	**7952.2**	**5.38**	**9.25**	**6.13**	**3.90**	**⅝ x 4¾**	**11.6**	**16.3**
150 x 100	*114,3*	*117,5*	*35,4*	*136,7*	*235,0*	*155,7*	*99,1*	*M16 x 121*	*5,3*	*7,4*
8 x 2½	**2.75**	**2.88**	**3245.9**	**6.25**	**12.50**	**4.38**	**4.90**	**¾ x 4¾**	**12.3**	**14.5**
200 x 65	*69,9*	*73,0*	*14,4*	*158,8*	*317,5*	*111,3*	*124,5*	*M20 x 121*	*5,6*	*6,6*
8 x 76,1mm	**2.75**	**2.88**	**3534.3**	**6.25**	**12.50**	**4.38**	**4.90**	**–**	**12.3**	**14.5**
200 x 65	*69,9*	*73,0*	*15,7*	*158,8*	*317,5*	*111,3*	*124,5*	*M20 x 121*	*5,6*	*6,6*
8 x 3	**3.50**	**3.63**	**4810.6**	**6.50**	**12.50**	**5.13**	**4.90**	**¾ x 4¾**	**13.2**	**16.1**
200 x 80	*88,9*	*92,1*	*21,4*	*165,1*	*317,5*	*130,3*	*124,5*	*M20 x 121*	*6,0*	*7,3*
8 x 4	**4.50**	**4.63**	**7952.2**	**6.38**	**12.50**	**6.13**	**4.90**	**¾ x 4¾**	**14.7**	**19.0**
200 x 100	*114,3*	*117,5*	*35,4*	*162,1*	*317,5*	*155,7*	*124,5*	*M20 x 121*	*6,7*	*8,6*

† Proper hole preparation is required for effective sealing and performance. Check the pipe seal surface within ⅝" *(15,9mm)* of the hole to ensure it is free from conditions affecting proper gasket sealing. Remove any sharp or rough edges from the hole or upper housing contact area that might affect assembly, proper seating of the locating collar, or flow from the outlet. For crosses, ensure double outlet holes are aligned on opposite sides of the pipe.

‡ Maximum pressures and end loads are total from all loads based on standard weight steel pipe. Pressure ratings and end loads may differ on other pipe materials and/or wall thickness. Contact GRINNELL Mechanical Products for details.

For information on larger sizes, European sizes or other alternative sizes, contact GRINNELL Mechanical Products.

See page 114 for mechanical tee specifications and pages 224 - 230 for gasket information.

VALVES

Valves Table of Contents

Model B8101 Low Profile Butterfly Valves

Tech Data Sheet: G330

The GRINNELL Model B8101 Low Profile Butterfly Valve has a rated working pressure of 200 psi *(13,8 bar)* and provides efficient control of fluid in piping systems. Flow can be from either direction and the valve may be positioned in any orientation. The ductile iron body is epoxy-coated to resist atmospheric corrosion. The disc is EPDM encapsulated ductile iron compatible with a variety of chemicals and temperature ranges.

SPECIFICATIONS

Body

- Ductile iron conforming to ASTM A 536

Body Coating

- Black epoxy-coated

Disc

- Ductile iron conforming to ASTM A 536

Disc Seal

- **Grade "E" EPDM** encapsulated rubber -20°F to 250°F (*-29°C to 121°C*) with intermittent service at 250°F (*121°C*) and continuous service at 225°F (*107°C*)
- Optional: **Grade "T" Nitrile** encapsulated rubber -20°F to 180°F (*-29°C to 82°C*)

Stem

- Two-piece stainless steel, splines conforming to AISI 420

Stem Seal

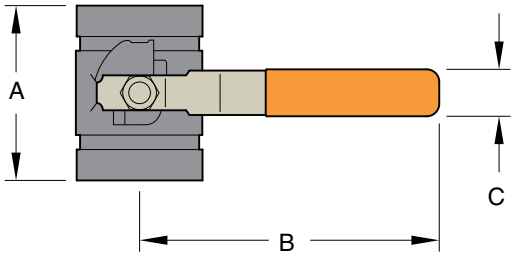
- EDPM O-rings, upper and lower stem

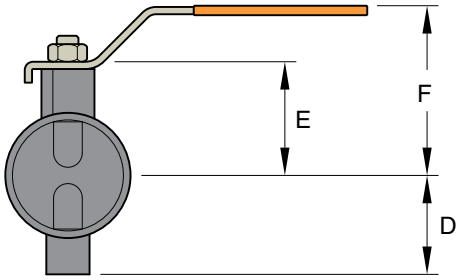
Handle

- Zinc-plated carbon steel

Performance

- Pressure drop, contact GRINNELL Mechanical Products.





Pipe Size		Dimensions - Inches *mm*						Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	C	D	E	F	
2	**2.375**	**3.39**	**5.98**	**0.98**	**1.81**	**1.97**	**3.15**	**4.2**
50	*60,3*	*86,0*	*152,0*	*25,0*	*46,0*	*50,0*	*80,0*	*1,9*
2½	**2.875**	**3.78**	**5.98**	**0.98**	**2.05**	**2.40**	**3.58**	**6.4**
65	*73,0*	*96,0*	*152,0*	*25,0*	*52,0*	*61,0*	*91,0*	*2,9*
3	**3.500**	**3.78**	**8.27**	**0.98**	**2.56**	**2.64**	**4.21**	**7.5**
80	*88,9*	*96,0*	*210,0*	*25,0*	*65,0*	*67,0*	*107,0*	*3,4*
4	**4.500**	**4.53**	**8.27**	**0.98**	**3.27**	**3.27**	**4.84**	**11.7**
100	*114,3*	*115,0*	*210,0*	*25,0*	*83,0*	*83,0*	*123,0*	*5,3*
5	**5.563**	**5.50**	**12.25**	**1.26**	**4.00**	**4.00**	**6.75**	**12.7**
125	*141,3*	*139,7*	*311,2*	*32,0*	*101,6*	*101,6*	*171,5*	*5,8*
6	**6.625**	**5.20**	**12.01**	**1.26**	**4.29**	**4.29**	**6.85**	**26.6**
150	*168,3*	*132,0*	*305,0*	*32,0*	*109,0*	*109,0*	*174,0*	*12,1*

For information on larger sizes, contact GRINNELL Mechanical Products.

Model B303 Grooved End Butterfly Valves

(Page 1 of 4)

Tech Data Sheet: G315

Lever-Lock Operator

Gear Operator

The GRINNELL Model B303 Butterfly Valves provide for efficient control in piping systems of on/off or throttling/ balancing service, fluid flow, and bubble-tight shut-off. The valves are furnished with grooved ends for use with grooved couplings and can be easily adapted to flanged components utilizing GRINNELL Figure 71 and Figure 71H Class 150 Flange Adapters.

Flow may be from either direction and the valve may be positioned in any orientation. The body and disc construction provides for increased strength and durability. The disc seal and body coatings are compatible with a variety of chemicals and temperature ranges. Contact your Anvil Representative for specific recommendations on seal and coating selections.

Approvals

- The Model B303 Butterfly Valves conform to MSS SP-67.

Maximum Working Pressure

- 2" to 8" (50 to 200mm)**:** 300 psi (20,7 bar)
- 10" to 12" (250 to 300mm): 175 psi (12 bar)

Body:

- Ductile Iron conforming to ASTM A 536, Grade 65-45-12.

Body Coating:

- Nylon: Rilson Pine Powder (PA11), Black

Disc:

- Ductile Iron conforming to ASTM A 395, Grade 60-40-18

Upper and Lower Stem:

- Type 410 Stainless Steel conforming to ASTM A479

Lever-Lock Operator:

- Handle . . . . . .Polymer-Coated Iron
- Lever-Lock . . . . . .Zinc-Plated Steel
- Throttling Plate . . . .Zinc-Plated Steel

Gear Operator:

- 2" to 8" (50 to 200mm)**:** bronze traveling nut gearbox in ductile iron housing.
- 10" to 12" (250 to 300mm): segmented gearbox in ductile iron housing.

Encapsulated Disc Material & Temperature Rating:

See chart below

Butterfly Valve Torque

- Contact a GRINNELL Sales Representative.

Performance

- Pressure drop see page 127

Grade "E" EPDM [a]	Grade "T" Nitrile [b]	Grade "O" Flouroelastomer [c]
-30°F to 230°F -34°C to 110°C	-20°F to 180°F -29°C to 82°C	-20°F to 200°F -29°C to 93°C

a. Recommended for hot water, dilute acids, alkalis, oil free air, and many chemical services not involving petroleum products. Not recommended for hydrocarbons or steam service.

b. Recommended for petroleum products, vegetable oils, mineral oils, and air with oils. High-end oil vapor temperature decreases to 150°F (66°C) Not recommended for hot water or hot dry air systems.

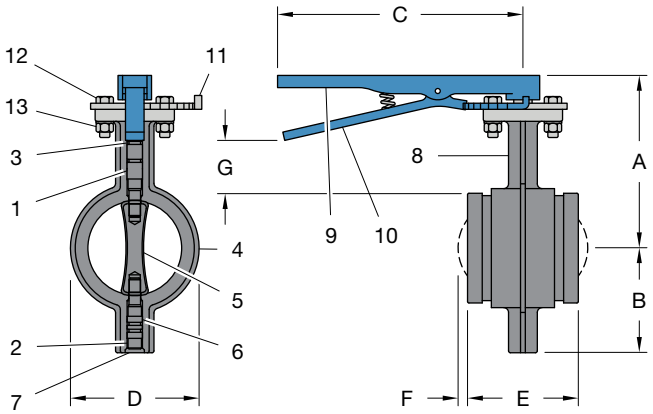
c. Recommended for oxidizing acids, petroleum products, hydraulic fluids, lubricants, halogenated hydrocarbons. Not recommended for hot water.

Model B303 Grooved End Butterfly Valves

Tech Data Sheet: G315

The 2" through 8" (50 through 200mm) Model B303 Butterfly Valve with Lever-Lock Operator has a throttling plate that provides throttling notches every 10° for manual control in balancing up to 90° or to shut off service. The Lever may be pad-locked in any one of the positions, including opened or closed, by virtue of a locking hole located in the handle and lever.

Valve Material Specifications			
Item No.	Description	Material	Qty.
1	Upper Stem	Stainless Steel	1
2	Bearing	Polyacetal	4
3	O-ring	EPDM, Nitrile, or Fluoroelastomer	4
4	Body	Ductile Iron RILSAN Coated	1
5	Disc	Ductile Iron Encapsulation per Table	1
6	Lower Stem	Stainless Steel	1
7	Dust Plug	EPDM, Nitrile, or Fluoroelastomer	1
8	Nameplate	Aluminium	1
9	Handle	Ductile Iron	1
10	Lever	Zinc-Plated Steel	1
11	Throttle Plate	Zinc-Plated Steel	1
12	Hex. Bolt	Zinc-Plated Steel	2
13	Hex. Nut	Zinc-Plated Steel	2



Pipe Size		Dimensions - Inches *mm*							Approx Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	C	D	E	F	G	
2	**2.375**	**5.16**	**2.85**	**11.18**	**2.76**	**3.80**	**0**	**2.00**	**4.0**
50	*60.3*	*131,0*	*72,5*	*284,0*	*70.0*	*96,4*		*50,8*	*1,8*
2½	**2.875**	**5.76**	**3.35**	**11.18**	**3.03**	**3.80**	*0*	**2.34**	**8.4**
65	*73.0*	*146,0*	*85,0*	*284,0*	*77,0*	*96,4*		*59,4*	*3,8*
76,1mm	**3.000**	**5.76**	**3.35**	**11.18**	**3.03**	**3.80**	*0*	**2.28**	**8.4**
65	*76.1*	*146,0*	*85,0*	*284,0*	*77,0*	*96,4*		*57,9*	*3,8*
3	**3.500**	**6.02**	**3.58**	**11.18**	**3.78**	**3.80**	*0*	**2.29**	**9.5**
80	*88.9*	*153,0*	*91,0*	*284,0*	*96.0*	*96,4*		*58,2*	*4,3*
4	**4.500**	**7.01**	**4.29**	**11.18**	**4.88**	**4.54**	*0*	**2.78**	**13.2**
100	*114.3*	*178,0*	*109,0*	*284,0*	*124.0*	*115,4*		*70,6*	*6,0*
139,7mm	**5.500**	**7.83**	**4.16**	**11.18**	**5.75**	**5.21**	*0*	**2.34**	**19.4**
125	*139.7*	*199,0*	*131,0*	*284,0*	*146,0*	*132,4*		*59,4*	*8,8*
5	**5.563**	**7.83**	**4.16**	**11.18**	**5.75**	**5.21**	*0*	**2.31**	**19.4**
125	*141.3*	*199,0*	*131,0*	*284,0*	*146,0*	*132,4*		*58,7*	*8,8*
165,1mm	**6.500**	**8.35**	**5.71**	**11.18**	**6.89**	**5.21**	**0.27**	**2.35**	**23.4**
150	*165.1*	*212,0*	*145,0*	*284,0*	*175,0*	*132,4*	*6,8*	*59,7*	*10,6*
6	**6.625**	**8.35**	**5.71**	**11.18**	**6.89**	**5.21**	**0.27**	**2.29**	**23.4**
150	*168.3*	*212,0*	*145,0*	*284,0*	*175.0*	*132,4*	*6,8*	*58,2*	*10,6*
8	**8.625**	**9.33**	**6.69**	**11.18**	**8.82**	**5.80**	**0.94**	**2.27**	**34.4**
200	*219.1*	*237,0*	*170,0*	*284,0*	*224.0*	*147,4*	*24,0*	*57,7*	*15,6*

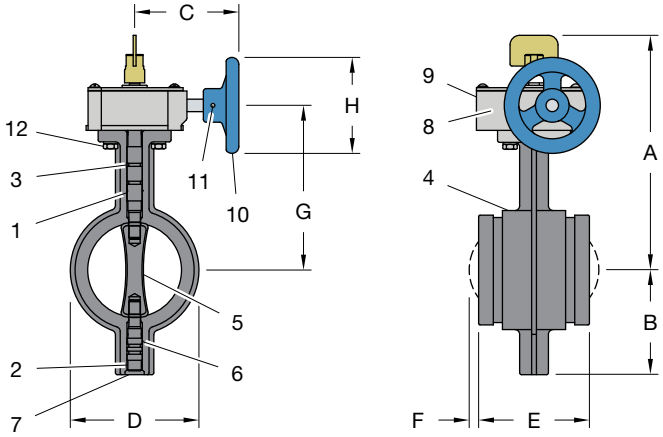
Note: recommended for mounting with GRINNELL Rigid couplings
For information on alternative sizes, contact an Anvil Sales Representative.
For instructions on part numbers, ordering information, and availability, contact an Anvil Sales Representative.

Model B303 Grooved End Butterfly Valves

(Page 3 of 4)

Tech Data Sheet: G315

The 2" through 12" (50 through 300mm) Model B303 Butterfly Valve with Gear Operator is a self-locking, traveling nut gear operator (50 through 200mm) and segmented gearbox (250 through 300mm) type. It is equipped with adjustable stop screws to lock the valve at the full open and shut positions.



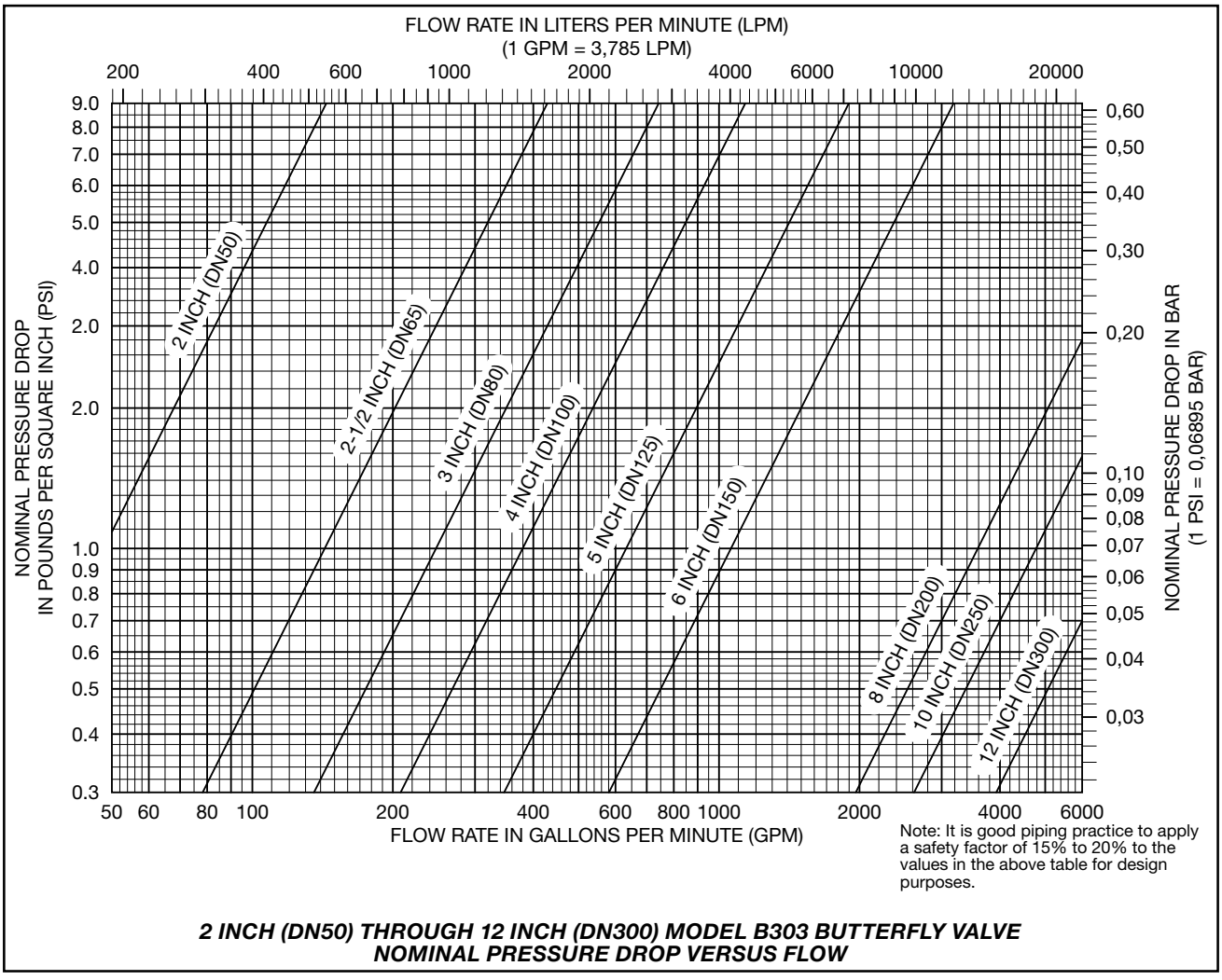
Valve Material Specifications			
Item No.	Description	Material	Qty.
1	Upper Stem	Stainless Steel	1
2	Bearing	Polyacetal	4
3	O-ring	EPDM, Nitrile, or Fluoroelastomer	4
4	Body	Ductile Iron RILSAN Coated	1
5	Disc	Ductile Iron Encapsulation per Table	1
6	Lower Stem	Stainless Steel	1
7	Dust Plug	EPDM, Nitrile, or Fluoroelastomer	1
8	Nameplate	Aluminium	1
9	Gear Operator	Ductile Iron, Steel	1
10	Handwheel	Ductile Iron	1
11	Spring Pin	Steel	1
12	Hex. Bolt	Zinc-Plated Steel	2

Pipe Size		Dimensions - Inches *mm*								Approx Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	C	D	E	F	G	H	
2	**2.375**	**8.43**	**2.85**	**4.28**	**2.76**	**3.80**	**0**	**4.9**	**4.92**	**15.9**
50	*60.3*	*214,0*	*72,5*	*108,6*	*70.0*	*96,4*		*124,5*	*125,0*	*7,2*
2½	**2.875**	**9.34**	**3.35**	**4.28**	**3.03**	**3.80**	*0*	**5.50**	**4.92**	**19.2**
65	*73.0*	*237,3*	*85,0*	*108,6*	*77,0*	*96,4*		*139,8*	*125,0*	*8,7*
76,1mm	**3.000**	**9.34**	**3.35**	**4.28**	**3.03**	**3.80**	*0*	**5.50**	**4.92**	**19.2**
65	*76.1*	*237,3*	*85,0*	*108,6*	*77,0*	*96,4*		*139,8*	*125,0*	*8,7*
3	**3.500**	**9.60**	**3.58**	**4.28**	**3.78**	**3.80**	*0*	**5.76**	**4.92**	**21.0**
80	*88.9*	*243,8*	*91,0*	*108,6*	*96.0*	*96,4*		*146,3*	*125,0*	*9,5*
4	**4.500**	**10.59**	**4.29**	**4.28**	**4.88**	**4.54**	*0*	**6.75**	**4.92**	**24.3**
100	*114.3*	*269,0*	*109,0*	*108,6*	*124.0*	*115,4*		*171,5*	*125,0*	*11,0*
139,7mm	**5.500**	**11.42**	**4.16**	**5.79**	**5.75**	**5.21**	*0*	**7,93**	**5.91**	**32.0**
125	*139.7*	*290,0*	*131,0*	*147,0*	*146,0*	*132,4*		*201,5*	*150,0*	*14,5*
5	**5.563**	**11.42**	**4.16**	**5.79**	**5.75**	**5.21**	*0*	**7,93**	**5.91**	**32.0**
125	*141.3*	*290,0*	*131,0*	*147,0*	*146,0*	*132,4*		*201,5*	*150,0*	*14,5*
165,1mm	**6.500**	**11.93**	**5.71**	**5.79**	**6.89**	**5.21**	**0.27**	**8,44**	**5.91**	**35.7**
150	*165.1*	*303,0*	*145,0*	*147,0*	*175,0*	*132,4*	*6,8*	*214,5*	*150,0*	*16,2*
6	**6.625**	**11.93**	**5.71**	**5.79**	**6.89**	**5.21**	**0.27**	**8,44**	**5.91**	**35.7**
150	*168.3*	*303,0*	*145,0*	*147,0*	*175.0*	*132,4*	*6,8*	*214,5*	*150,0*	*16,2*
8	**8.625**	**12.91**	**6.69**	**8.19**	**8.82**	**5.80**	**0.94**	**9.29**	**8.86**	**49.6**
200	*219.1*	*328,0*	*170,0*	*208,0*	*224.0*	*147,4*	*24,0*	*236,0*	*225,0*	*22,5*
10	**10.750**	**14.72**	**7.68**	**8.19**	**10.83**	**6.26**	**1.65**	**11.10**	**8.86**	**72.8**
250	*273.0*	*374,0*	*195,0*	*208,0*	*275,0*	*159,0*	*41,8*	*282,0*	*225,0*	*33,0*
12	**12.750**	**402,0**	**9.51**	**8.19**	**13.15**	**6.50**	**2.70**	**12.20**	**8.86**	**89.3**
300	*323.9*	*15.83*	*241,5*	*208,0*	*339,0*	*165,0*	*68,5*	*310,0*	*225,0*	*40.4*

Note: recommended for mounting with GRINNELL Rigid couplings
For information on alternative sizes, contact an Anvil Sales Representative.
For instructions on part numbers, ordering information, and availability, contact an Anvil Sales Representative.

Model B303 Grooved End Butterfly Valves

Tech Data Sheet: G315



Note: It is good piping practice to apply a safety factor of 15% to 20% to the values in the above table for design purposes.

2 INCH (DN50) THROUGH 12 INCH (DN300) MODEL B303 BUTTERFLY VALVE NOMINAL PRESSURE DROP VERSUS FLOW

Figure B333 Large Diameter Butterfly Valve

(Page 1 of 2)

Tech Data Sheet: G325

The GRINNELL Model B333 Large Diameter Butterfly Valve provides efficient control of fluid flow in piping systems. It is a grooved-end bubble tight shut-off valve with end-to-end dimensions that meet MSS SP-67, Table 4 and a mounting pad that meets ISO 5211 for the mounting of power actuators. The valve is capable of bidirectional fluid flow at working pressures to 300 psi (*20 bar*) and may be positioned in any orientation.

The 14" to 24" (*350 to 600mm*) Model B333 Butterfly Valve is configured with a worm type gear operator and consists of an epoxy powder coated ductile iron body and EPDM or Nitrile (NBR) rubber encapsulation dual-seal disc. The body and disc construction provides for increased strength and durability. The disc seal and body coating are compatible with a variety of chemicals and temperature ranges. Contact your Anvil Representative for specific recommendations on seal and coating selections.

SPECIFICATIONS

Valve Body & Disc

- Ductile iron conforming to ASTM A536, Gr. 65-45-12 and/or to ASTM A395 Gr. 65-45-15

Stem Seals

- O-Ring, EPDM

Body Coating

- Epoxy powder coating, black color

Disc Encapsulation

- Grade "E" EPDM
- Grade "T" Nitrile (NBR)

Upper and Lower Shafts

- Stainless steel conforming to ASTM A582, Type 410

Gear Operator Housing

- Cast iron, conforming to ASTM A126-B

Set Screw

- Cr-Mo Steel

Hex Nut

- Carbon Steel

Spring Pin

- Spring Steel

Maximum Working Pressure

- 300 psi *(20 Bar)*, non-shock cold water

Seat Material

- **Grade "E" EPDM** – For service temperatures from -30°F to 200°F *(-34°C to 93°C)*. Recommended for water service, dilute acids, alkalies, oil-free air, and many chemical services. THEY ARE NOT RECOMMENDED FOR USE IN PETROLEUM SERVICES.
- **Grade "T" Nitrile** – For service temperatures from -20°F to 180°F *(-29°C to 82°C)*. Recommended for petroleum products, air with oil vapors, vegetable oils, and mineral oils. THEY ARE NOT RECOMMENDED FOR USE IN HOT WATER SERVICES.

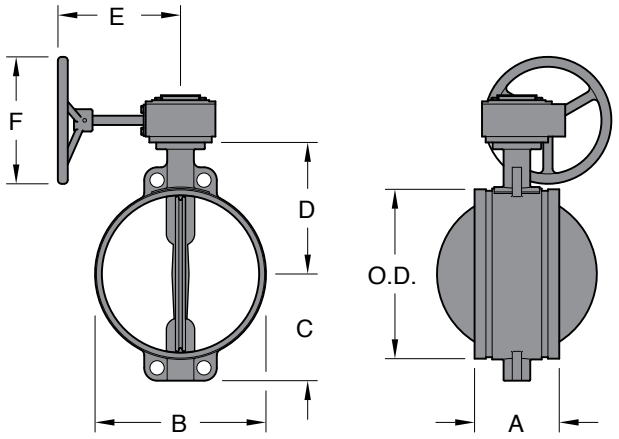
Contact a Anvil Sales Representative for specific recommendations on seat material.

Performance

- Pressure drop, contact a Anvil Sales Representative.

Figure B333 Large Diameter Butterfly Valve

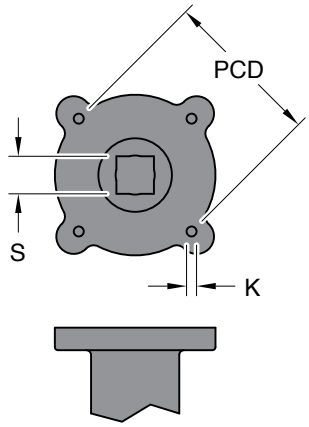
Tech Data Sheet: G325



Pipe Size		Dimensions - Inches *mm*						Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	C	D	E	F	
14	**14.000**	**7.00**	**14.37**	**8.82**	**10.86**	**9.50**	**12.00**	**130.0**
350	*355.6*	*178*	*365*	*224*	*276*	*242*	*305*	*59*
16	**16.000**	**7.00**	**16.38**	**9.76**	**11.89**	**9.50**	**12.00**	**147.4**
400	*406.4*	*178*	*416*	*248*	*302*	*242*	*305*	*67*
18	**18.000**	**8.00**	**18.50**	**11.14**	**13.78**	**11.40**	**16.20**	**223.5**
450	*457.2*	*203*	*470*	*283*	*350*	*290*	*412*	*101.4*
20	**20.000**	**8.50**	**20.75**	**12.36**	**15.08**	**11.40**	**16.20**	**292.6**
500	*508.0*	*216*	*527*	*314*	*383*	*290*	*412*	*133.0*
24	**24.000**	**10.00**	**24.76**	**14.49**	**17.83**	**11.40**	**16.20**	**352.0**
600	*609.6*	*254*	*629*	*368*	*463*	*290*	*412*	*160.0*

For information on alternative sizes, contact an Anvil Sales Representative.

Worm Gear Operator



Nominal Inches *mm*	PCD Dia. Inches *mm*	Dimensions		Approx. Weight Lbs. *kg*
		Bolt Size K *mm*	S Inches *mm*	
14	**4.90**	**M12**	**0.94**	**32.8**
350	*125*		*24,0*	*14,9*
16	**5.50**	**M16**	**1.44**	**32.8**
400	*140*		*36,6*	*14,9*
18	**5.50**	**M16**	**1.736**	**67.1**
450	*140*		*44,1*	*30,5*
20	**6.50**	**M20**	**2.04**	**67.1**
500	*165*		*52,0*	*30,5*
24	**6.50**	**M20**	**2.04**	**67.1**
600	*165*		*52,0*	*30,5*

For information on alternative sizes, contact a Anvil Sales Representative.

Model BV835 Ball Valves

(Page 1 of 2)

Tech Data Sheet: G380

The Model BV835 is a ductile iron, grooved end, regular port, two-piece ball valve that provides for efficient control of fluid in piping systems. The Model BV835 is designed and tested in conformance with MSS SP-110 and MSS SP-72. Flow may be from either direction, and the valves may be positioned in any orientation. The valves are furnished with grooved ends for use with GRINNELL grooved couplings. The handle is provided with a device for padlocking in either the open or closed position. The mounting pad is made to ISO 5211 to allow for mounting of power actuators.

SPECIFICATIONS

Maximum Working Pressure

1,000 psi *(68,9 bar)* 2" – 3" *(50 – 80mm)*
800 psi *(55,1 bar)* 4" – 6" *(100 – 150mm)*

Body

- Ductile iron conforming to ASTM A 536, Grade 65-45-12

Body Coating

- Black enamel

Body Seal

- PTFE

Ball

- Type 304 Stainless Steel

Ball Seat

- 2" - 4" – Glass-filled TFE
  6" – Carbon-filled TFE

Stem

- Carbon steel, nickle-plated
  Optional: Type 304 Stainless Steel

Stem O-Ring

- Fluroelastomer

Stem Seal

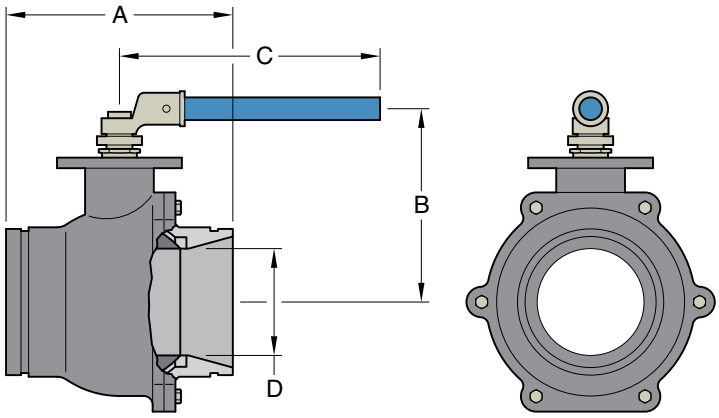
- PTFE

Lever Handle:

- 2" – 3" (50 – 80mm): Carbon Steel, Zinc Plated with PVC Plastic
- 4" – 6" (100 – 150mm): Ductile Iron and Carbon Steel

Bracket & Extension Sleeve

- Ductile Iron conforming to ASTM A536, Grade 65-45-12 and/or ASTM A395, Grade 65-45-15



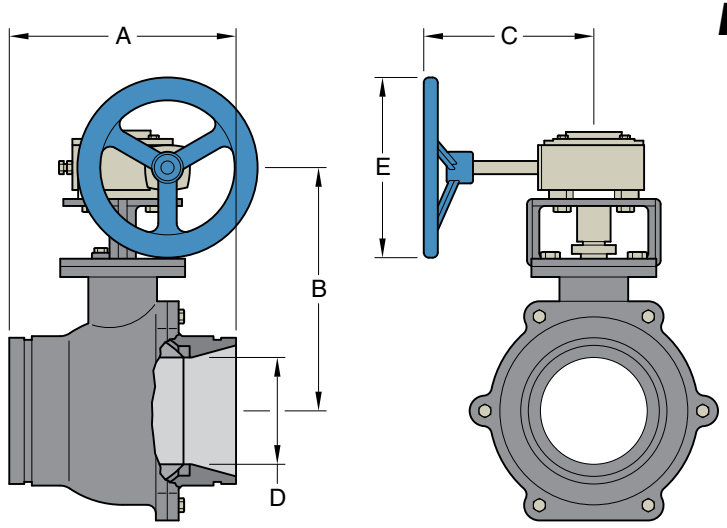
Pipe Size		Dimensions - Inches *mm*				Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	C	D	
2	**2.375**	**5.50**	**3.75**	**7.00**	**1.50**	**6.4**
50	*60,3*	*140,0*	*95,0*	*178,0*	*38,1*	*2,9*
2½	**2.875**	**6.25**	**5.20**	**10.43**	**2.00**	**10.6**
65	*73,0*	*159,0*	*132,0*	*265,0*	*51,0*	*4,8*
3	**3.500**	**6.56**	**5.63**	**10.43**	**2.50**	**13.4**
80	*88,9*	*167,0*	*143,0*	*265,0*	*63,5*	*6,1*
4	**4.500**	**9.45**	**5.35**	**23.60**	**3.50**	**60.0**
100	*114,3*	*240,0*	*135,8*	*600,0*	*90,0*	*27,2*
6	**6.625**	**10.15**	**8.68**	**23.60**	**4.92**	**79.2**
150	*168,3*	*258,0*	*220,5*	*600,0*	*125,0*	*36,0*

* For the first opening or closing of the valve when the valve is not continuously operated, an additional torque of 2.0 – 2.5 times the listed operating torque is normally required.

For information on larger sizes, contact GRINNELL Mechanical Products.

Model BV835 Ball Valves

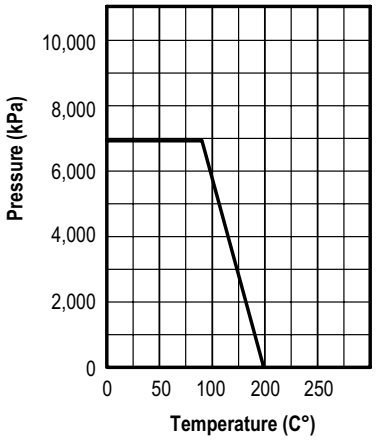
Tech Data Sheet: G380



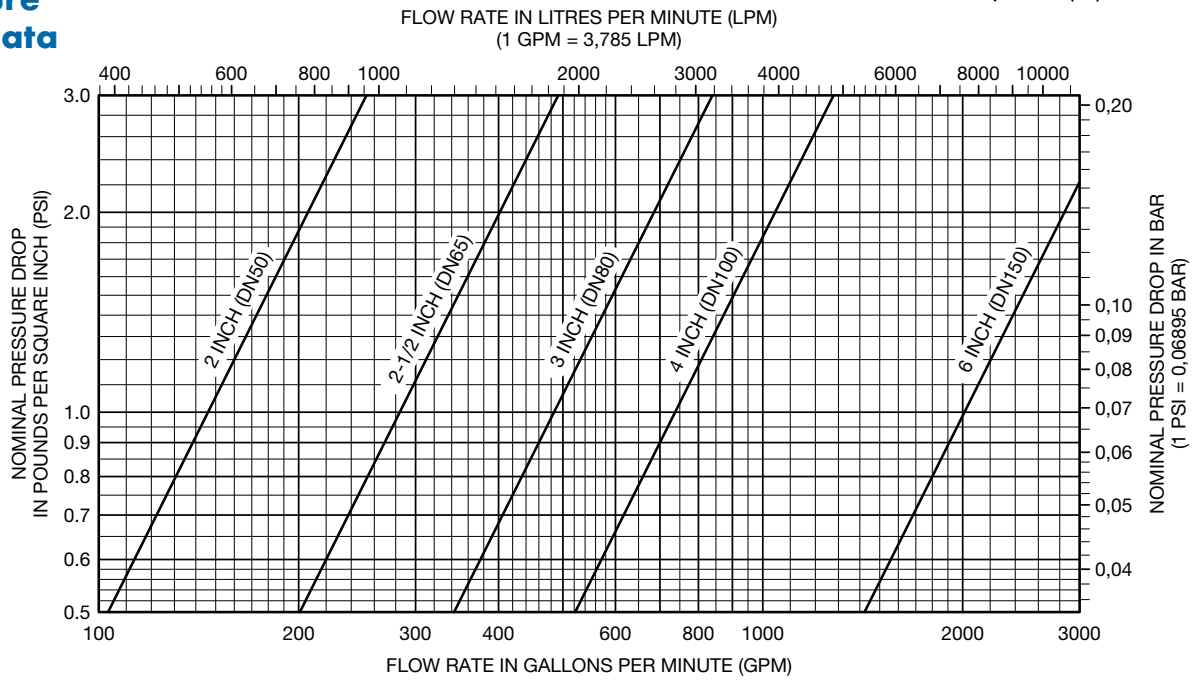
Pipe Size		Dimensions - Inches *mm*					Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	C	D	E	
2	**2.375**	**5.50**	**5.38**	**8.00**	**1.50**	**6.00**	**18.0**
50	*60,3*	*140,0*	*137,0*	*203,2*	*38,1*	*152,4*	*8,0*
2½	**2.875**	**6.25**	**5.68**	**8.00**	**2.00**	**6.00**	**22.0**
65	*73,0*	*159,0*	*144,2*	*203,2*	*51,0*	*152,4*	*10,0*
3	**3.500**	**6.56**	**7.16**	**8.00**	**2.50**	**6.00**	**31.0**
80	*88,9*	*167,0*	*182,0*	*203,2*	*63,5*	*152,4*	*14,0*
4	**4.500**	**9.45**	**8.00**	**8.00**	**3.50**	**6.00**	**73.0**
100	*114,3*	*240,0*	*203,2*	*203,2*	*90,0*	*152,4*	*33,0*
6	**6.625**	**10.15**	**10.89**	**14.00**	**4.92**	**12.00**	**123.4**
150	*168,3*	*258,0*	*277,0*	*356,0*	*125,0*	*305,0*	*56,0*

For information on larger sizes, contact GRINNELL Mechanical Products.

Pressure Performance



Pressure Loss Data



Model 590 Grooved End Check Valves

(Page 1 of 2)

Tech Data Sheet: G350

The GRINNELL Model 590 Grooved End Swing Check Valves are compact and rugged swing-type units that allow water flow in one direction and prevent flow in the opposite direction. They are manufactured with a ductile iron body and a nickel-plated seat.

- Sizes 2" to 8" (*50 - 200mm*) have a stainless steel clapper assembly.
- Sizes 10" to 12" (*250 - 300mm*) have a ductile iron clapper assembly.

A resilient elastomer seal facing on the spring-loaded clapper ensures a leaktight seal and a non-sticking operation. The Model 590 Check Valves are designed to minimize water hammer caused by flow reversal.

The Model 590 Check Valve is furnished with grooved ends and can be installed using GRINNELL Grooved Couplings or Flanged Adapters. The Model 590 Check Valves have been designed with a removable cover for ease of field maintenance. These valves can be installed horizontally (with cover in the upward position) or vertically with the flow in the upward direction.

SPECIFICATIONS

Body and Cover

- Ductile iron conforming to ASTM A 536, Grade 65-45-12

Clapper

- 2" to 8" (*50 - 200mm*) Stainless Steel
- 10" to 12" (*250 - 300mm*) Ductile Iron

Clapper Facing

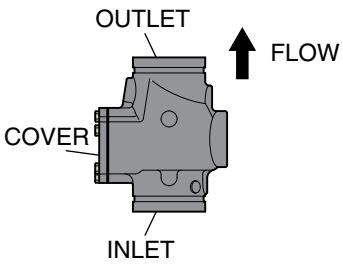
- Grade "E" EPDM or Grade "T" Nitrile

Seat

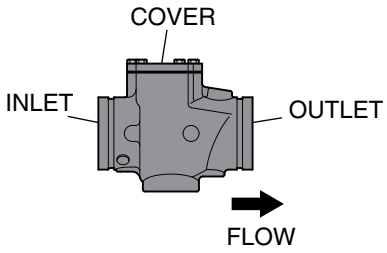
- Nickel-Plated

Coating

- Black, non-lead paint

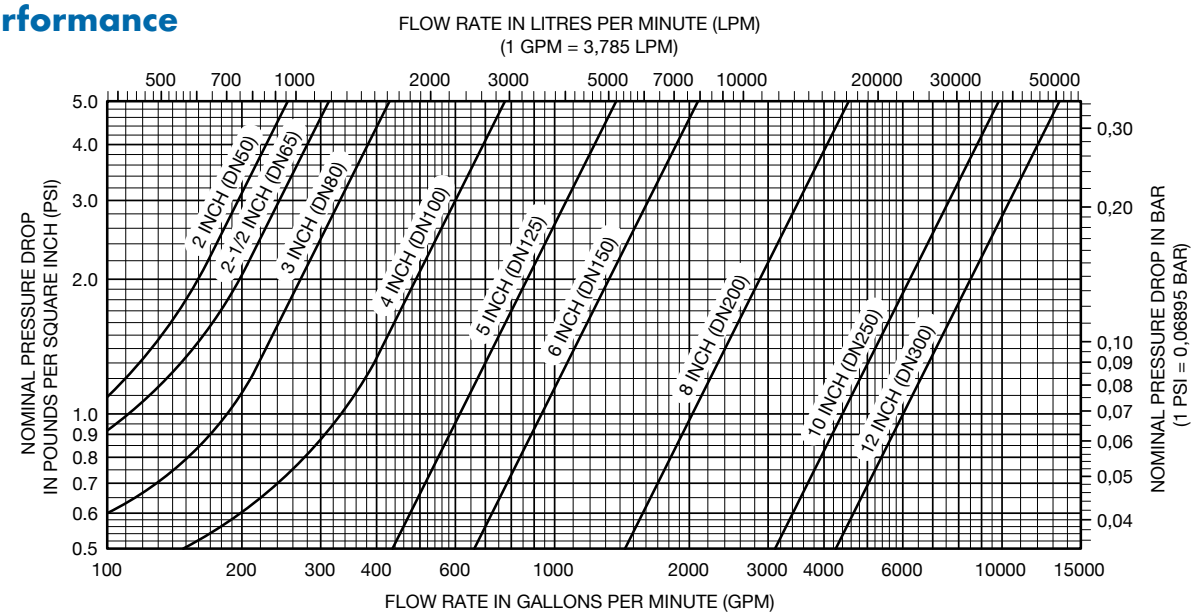


VERTICAL ORIENTATION



HORIZONTAL ORIENTATION

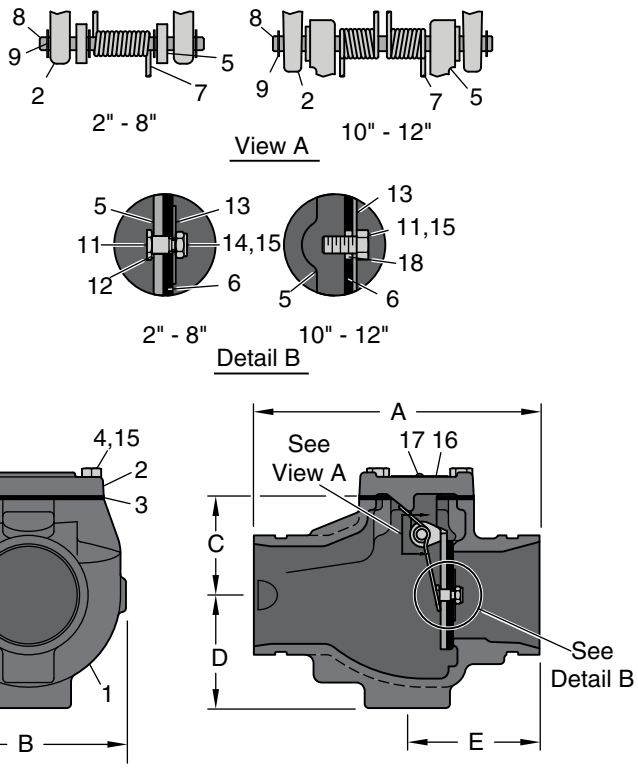
Performance



Model 590 Grooved End Check Valves

Tech Data Sheet: G350

Detail	Part	Material	Qty.
1	Body	Ductile Iron	1
2	Cover	Ductile Iron	1
3	Cover Gasket	Nitrile Rubber	1
4	Hex Cap Screw	Steel, Zinc Plated	AR
5	Clapper 2" - 8"	Stainless Steel	1
	Clapper 10"-12"	Ductile Iron	
6	Clapper Facing	EPDM Grade "E"	1
7	Spring	Stainless Steel	1
8	Hinge Shaft	Stainless Steel	1
9	Retaining Ring	Stainless Steel	AR
11	Retention Bolt	Stainless Steel	1
13	Retaining Disc	Stainless Steel	1
14	Locknut	Stainless Steel	1
15	Adhesive	Thread Sealer	AR
16	Nameplate	Aluminum	1
17	Rivet	Steel	2
18	Spacer	Stainless Steel	1



Pipe Size		Dimensions - Inches *mm*					Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	C	D	E	
2	**2.375**	**6.75**	**4.38**	**1.96**	**2.57**	**3.25**	**9.0**
50	*60,3*	*171,5*	*111,3*	*49,8*	*65,3*	*82,3*	*4,5*
2½	**2.875**	**8.00**	**5.38**	**2.63**	**3.09**	**3.87**	**10.0**
65	*73,0*	*203,2*	*136,7*	*66,7*	*78,5*	*98,3*	*4,5*
76,1mm	**3.000**	**8.00**	**5.38**	**2.63**	**3.09**	**3.87**	**10.0**
65	*76,1*	*203,2*	*136,7*	*66,7*	*78,5*	*98,3*	*4,5*
3	**3.500**	**8.37**	**5.72**	**2.81**	**3.31**	**3.87**	**11.0**
80	*88,9*	*212,6*	*145,3*	*71,4*	*84,1*	*98,3*	*5,0*
4	**4.500**	**9.63**	**6.68**	**3.80**	**3.63**	**4.53**	**25.0**
100	*114,3*	*245,6*	*169,7*	*96,5*	*92,2*	*115,4*	*11,3*
139,7mm	**5.500**	**10.50**	**7.40**	**4.46**	**4.13**	**4.90**	**29.0**
125	*139,7*	*266,7*	*188,0*	*113,3*	*104,9*	*124,5*	*13,2*
5	**5.563**	**10.50**	**7.40**	**4.46**	**4.13**	**4.90**	**29.0**
125	*141,3*	*266,7*	*188,0*	*113,3*	*104,9*	*124,5*	*13,2*
165,1mm	**6.500**	**11.50**	**8.00**	**4.62**	**4.50**	**5.00**	**47.0**
150	*165,1*	*292,1*	*203,2*	*117,3*	*114,3*	*127,0*	*21,3*
6	**6.625**	**11.50**	**8.00**	**4.62**	**4.50**	**5.00**	**47.0**
150	*168,3*	*292,1*	*203,2*	*117,3*	*114,3*	*127,0*	*21,3*
8	**8.625**	**14.00**	**10.14**	**6.67**	**5.52**	**5.46**	**66.0**
200	*219,1*	*355,6*	*257,6*	*169,4*	*140,2*	*138,7*	*30,0*
10	**10.750**	**18.00**	**12.38**	**8.62**	**6.41**	**7.50**	**109.7**
250	*273,1*	*457,2*	*314.,5*	*218,9*	*162,8*	*190,5*	*49,4*
12	**12.750**	**21.0**	**14.28**	**9.93**	**7.27**	**7.62**	**151.0**
300	*323,9*	*533,4*	*362,7*	*252,2*	*184,7*	*193,5*	*68,0*

For information on larger sizes, contact GRINNELL Mechanical Products.

Model TD830 Triple Duty Valves

Tech Data Sheet: G390

The GRINNELL Model TD830 Triple-Duty Valve is primarily designed for installation in pump discharge piping where it functions as a spring-loaded silent check valve, flow-control valve, and shut-off valve.

The Model TD830 Triple-Duty Valve operates automatically and silently. Line pressure of approximately 1/4 psi (*0,02 bar*) will open the disc. The spring closes the disc as the line flow approaches zero in order to prevent flow reversal and water hammer.

The flow through the valve can be adjusted from bubble-tight shut-off to full-flow by the acme threaded rising stem.

SPECIFICATIONS

Maximum Working Pressure

- Sizes 2" to 12" (*50 to 300mm*)
  640 psi (*44 bar*) at 100°F (*38°C*)
  565 psi (*39 bar*) at 300°F (*149°C*)
- Size 14" (*350mm*)
  500 psi (*34 bar*) at 100°F (*38°C*)
  400 psi (*28 bar*) at 300°F (*149°C*)

Body and Yoke

- Ductile iron conforming to ASTM A 395 or A 536

Disc

- Cast Iron conforming to ASTM A 126B

Seat Guide

- Bronze conforming to ASTM B 62, 85/5/5/5

Spring

- 302 stainless steel

Stem

- Bronze conforming to ASTM B 21

Seat, Disc, and Stem O-Rings

- EPDM

Seat

- Bronze

Flanged Gland

- Cast Iron conforming to ASTM A 126B

Stem Guide

- Ductile iron conforming to ASTM A 536 or A 395

Cover Gasket & Packing

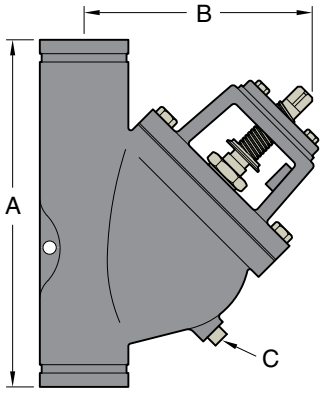
- Non-Asbestos

Finish

- Black paint

Performance

- Pressure drop, contact GRINNELL Mechanical Products.



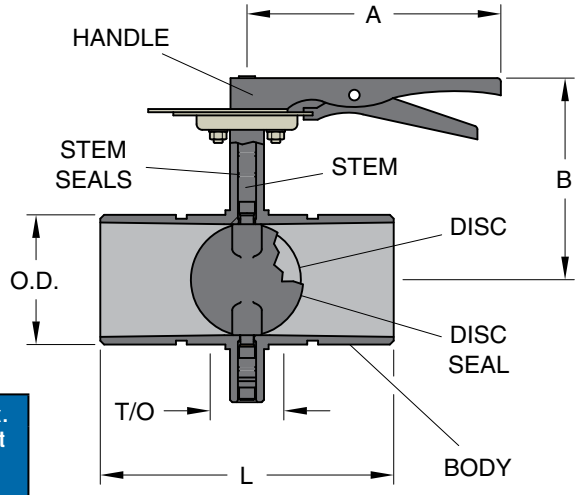
Pipe Size		Dimensions - Inches *mm*			Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B OPEN	C NPT	
2	**2.375**	**9.375**	**9.625**	**½**	**23.0**
50	*60,3*	*238,1*	*244,5*	*15*	*10,0*
2½	**2.875**	**10.250**	**9.625**	**½**	**24.0**
65	*73,0*	*260,4*	*244,5*	*15*	*10,9*
3	**3.500**	**11.250**	**10.125**	**½**	**33.0**
80	*88,9*	*285,8*	*257,2*	*15*	*15,0*
4	**4.500**	**15.625**	**11.125**	**½**	**84.0**
100	*114,3*	*397,9*	*282,6*	*15*	*38,0*
5	**5.563**	**15.625**	**11.125**	**½**	**84.0**
125	*141,3*	*397,9*	*282,6*	*15*	*38,0*
6	**6.625**	**19.625**	**17.500**	**¾**	**156.0**
150	*168,3*	*498,5*	*444,5*	*20*	*70,0*
8	**8.625**	**23.625**	**18.000**	**¾**	**300.0**
200	*219,1*	*600,0*	*457,2*	*20*	*136,0*
10	**10.750**	**28.000**	**19.875**	**1**	**392.0**
250	*273,1*	*711,2*	*504,8*	*25*	*178,0*
12	**12.750**	**31.625**	**25.000**	**1**	**496.0**
300	*323,9*	*803,3*	*635,0*	*25*	*225,0*
14	**14.000**	**33.500**	**25.000**	**1**	**790.0**
340	*355,6*	*851,0*	*635,0*	*25*	*358,3*

For information on larger sizes, contact GRINNELL Mechanical Products.

Model B8200L PVC Butterfly Valves
(Spline x Spline)

Tech Data Sheet: G592

GRINNELL Model B8200 Butterfly Valves are designed for use with the PVC Piping System. Available sizes include 2" to 8" *(50 to 200mm)* diameters. Precision machined grooves in the valve body provide easy alignment of the valve and PVC Coupling, allowing for the insertion of the spline to connect the GRINNELL Model B8200 Valve to the PVC System. Flow may enter the valve from either direction and valve can be orientated in any direction.



SPECIFICATIONS

Maximum Working Pressure
- 320 psi *(22 bar)*

Working Temperature Range
- 32°F to 140°F *(0°C to 60°C)*

Body
- Ductile iron conforming to ASTM A 536, Grade 65-45-12

Body Coating
- Black epoxy-coated

Disc
- Ductile iron conforming to ASTM A 536, Grade 65-45-12

Disc Seal
- Grade "T" Nitrile encapsulated rubber

Stem
- Two-piece Type 316 Stainless Steel Splines

Stem Seal
- EPDM O-rings, upper and lower stem

Handle
- Zinc-plated carbon steel

Nominal Pipe Size		Dimensions Inches *mm*				Approx. Weight Lbs *kg*
ANSI Inches *mm*	O.D. Inches *mm*	A	B	L	T/O	
2	**2.375**	**7.95**	**5.16**	**7.50**	**2.40**	**8.8**
50	*60,3*	*202,0*	*131,0*	*191,1*	*61,0*	*4,0*
3	**3.500**	**7.95**	**5.75**	**9.18**	**2.17**	**17.6**
80	*88,9*	*202,0*	*146,0*	*233,2*	*55,1*	*8,0*
4	**4.500**	**7.95**	**7.05**	**10.18**	**2.08**	**26.4**
100	*114,3*	*202,0*	*179,0*	*258,6*	*52,8*	*12,0*
6	**6.625**	**10.28**	**8.39**	**10.41**	**2.31**	**50.6**
150	*168,3*	*261,0*	*213,0*	*264,6*	*58,7*	*23,0*
8	**8.625**	**12.40**	**9.37**	**10.96**	**2.00**	**74.8**
200	*219,1*	*314,9*	*238,0*	*278,4*	*50,8*	*34,0*

10" and 12" *(250 and 300mm)* are available upon request. Contact GRINNELL Mechanical Products.

Notes:

CIRCUIT BALANCING VALVES

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Flanged Ends
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GRINNELL Model CB800 Circuit Balancing Valves are designed to achieve accurate and efficient balancing of hydronic heating or cooling systems. Circuit Balancing Valves provide superior accuracy in measuring flows rather than ball type circuit setters.

The CB800 valve serves 5 functions:

- Throttling
- Measuring differential pressure
- Draining
- Filling
- Positive shutoff

These valves are rated at 300 psi *(20,7 bar)* at 300°F (150°C).

The valve is made of dezincification-resistant brass and bronze components. Threaded and solder connections are available for sizes ½" – 2" *(15mm – 50mm)* sizes with bronze bodies. Flanged (125#) and grooved connections are available for sizes 2½" – 12" *(65mm – 300mm)* with cast iron bodies.

The Y-Pattern style provides low pressure drop. The globe style valve allows for precise throttling. The easy-to-adjust digital/vernier handwheel provides a minimum of 70 unique handwheel positions. The handwheel and test ports are located on one side for easy access. A built-in memory stop ensures the setting can be returned to a balanced position after shutoff. The self-sealing pressure/temperature test ports use standard insertion probes to eliminate additional components.

The GRINNELL Circuit Balancing Valve is installed with flow in the direction of the arrow, and may be in the horizontal or vertical position. The handwheel can be positioned up or down, or on either side.

CB800 Circuit Balancing Valves

Tech Data Sheet: G450

SPECIFICATIONS

Body

- Sizes ½" – 2" *(15mm – 50mm)* solder or NPT threaded connection: Dezincification resistant brass
- Sizes 2½" – 12" *(65mm – 300mm)*, grooved or flanged connection: Cast Iron

Stem

- Dezincification resistant brass

Valve Disc

- Sizes ½" – 2" *(15mm – 50mm)*: Dezincification resistant brass
- Sizes 2½" – 12" *(65mm – 300mm)*: Bronze

O-Ring

- EPDM

Handwheel

- Thermoplastic

Maximum Working Pressure

- 300 psi *(20,7 bar)* Grooved Connection
- 235 psi *(16,0 bar)* Flanged, NPT, Solder Connection

For accessories and replacement parts contact GRINNELL Mechanical Products for details.

Valve Sizing

All balancing valves are sized to perform in a normal operation range between 25% and 100% of the full open position, at a minimum differential pressure between 1 – 3 ft. *(0,3m – 0,9m)* of water. It is recommended that for improved accuracy, the valve is set to open 70%+.

When maximum flow is known but a pressure drop through the balancing valve is unknown, select a balancing valve for a maximum pressure drop of 2 ft. *(0,6m)* water 0.8 psi *(0,06 bar)* in the full open position as shown in the table to the right.

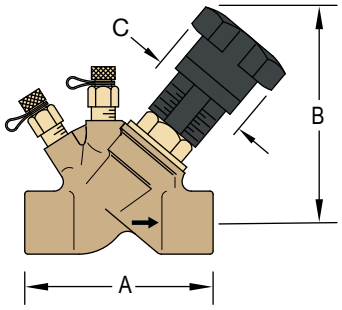
Accurate flow measurement requires that the velocity distribution near the balancing valve remains constant, regardless of the total flow through the pipe. Fittings, such as elbows and tees, disturb the normal flow profile which is established through straight pipe. Pumps create even greater disturbances. Failure to allow water flows around fittings and pumps to normalize can affect measuring accuracy by as much as 20% when the valve is in the fully open position. Minimum lengths (diameters, D) of straight pipe before and after the balancing valve prevent these errors.

Valves are designed for vertical, horizontal, or inclined installation.

Size Inches *mm*	Flow Rate GPM *LPM*	Connection Type
½	**2.6 - 4.2**	**Thread**
15	*0,687 - 1,110*	
¾	**3.4 - 6.2**	
20	*0,898 - 1,638*	
1	**6.2 - 9.6**	
25	*1,638 - 2,536*	
1¼	**9.4 - 21.0**	
32	*2,483 - 5,548*	
1½	**15 - 30**	
40	*3,96 - 7,93*	
2	**22 - 42**	
50	*5,812 - 11,096*	
2½	**39 - 106**	**Flanged or Grooved**
65	*10,30 - 28,01*	
76,1mm	**39 - 106**	
65	*10,30 - 28,01*	
3	**60 - 132**	
80	*15,85 - 34,87*	
4	**100 - 217**	
100	*26,42 - 57,33*	
139,7mm	**112 - 317**	
125	*29,59 - 83,75*	
5	**112 - 317**	
125	*29,59 - 83,75*	
165,1mm	**220 - 437**	
150	*58,12 - 115,46*	
6	**220 - 437**	
150	*58,12 - 115,46*	
8	**223 - 881**	
200	*58,92 - 232,76*	
10	**292 - 1298**	
250	*77,15 - 342,93*	
12	**616 - 1731**	
300	*162,75 - 457,33*	

Model CB800 Circuit Balancing Valves Solder Ends

Tech Data Sheet: G450



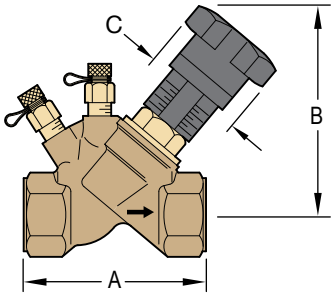
The GRINNELL Model CB800 Balancing Valve provides features for achieving accurate and efficient balancing of hydronic heating or cooling systems. One valve serves five functions: throttling, measuring (pressure and temperature), positive shutoff, draining and filling. The GRINNELL Solder-by-Solder Model CB800 Valve, available in sizes ½" to 2" *(15mm to 50mm)*, is composed of dezincification resistant brass.

Pipe Size		Dimensions - Inches *mm*			Approx. Weight Lbs. *kg*	Limits PSI/°F *PN/°C*	Handwheel Turns
Nominal Inches *mm*	O.D. Inches *mm*	A	B	C			
½	0.840	3.50	4.50	2.75	1.6	235/300	7
15	*21,3*	*88,9*	*114,3*	*70,0*	*0,7*	*16/150*	
¾	1.050	3.81	4.56	2.75	1.4	235/300	7
20	*26,7*	*96,8*	*115,8*	*70,0*	*0,6*	*16/150*	
1	1.315	4.31	4.69	2.75	1.8	235/300	7
25	*33,7*	*109,5*	*119,1*	*70,0*	*0,8*	*16/150*	
1¼	1.660	5.06	5.38	2.75	3.1	235/300	10
32	*42,4*	*128,5*	*136,7*	*70,0*	*1,4*	*16/150*	
1½	1.900	5.56	5.44	2.75	3.8	235/300	10
40	*48,3*	*141,2*	*138,2*	*70,0*	*1,7*	*16/150*	
2	2.375	6.56	5.81	2.75	5.2	235/300	10
50	*60,3*	*166,6*	*147,6*	*70,0*	*2,4*	*16/150*	

For information on larger sizes, contact GRINNELL Mechanical Products.
See circuit balancing valve specifications on page 139.

Model CB800 Circuit Balancing Valves Threaded Ends

Tech Data Sheet: G450



The GRINNELL Model CB800 Balancing Valve provides features for achieving accurate and efficient balancing of hydronic heating or cooling systems. One valve serves five functions: throttling, measuring (pressure and temperature), positive shutoff, draining and filling. The GRINNELL Thread-by-Thread Model CB800 Valve, available in sizes ½" to 2" *(15mm to 50mm)*, is composed of dezincification resistant brass.

Pipe Size		Dimensions - Inches *mm*			Approx. Weight Lbs. *kg*	Limits PSI/°F *PN/°C*	Handwheel Turns
Nominal Inches *mm*	O.D. Inches *mm*	A	B	C			
½	0.840	3.13	4.49	2.75	1.6	235/300	7
15	*21,3*	*79,5*	*114,0*	*70,0*	*0,7*	*16/150*	
¾	1.050	3.31	4.56	2.75	1.8	235/300	7
20	*26,7*	*84,1*	*115,8*	*70,0*	*0,8*	*16/150*	
1	1.315	3.84	4.69	2.75	2.5	235/300	7
25	*33,7*	*97,5*	*119,1*	*70,0*	*1,1*	*16/150*	
1¼	1.660	4.38	5.38	2.75	3.0	235/300	10
32	*42,4*	*111,3*	*136,7*	*70,0*	*1,4*	*16/150*	
1½	1.900	4.75	5.44	2.75	4.0	235/300	10
40	*48,3*	*120,7*	*138,2*	*70,0*	*1,8*	*16/150*	
2	2.375	5.94	5.81	2.75	6.0	235/300	10
50	*60,3*	*150,9*	*147,6*	*70,0*	*2,7*	*16/150*	

For information on larger sizes, contact GRINNELL Mechanical Products.
See circuit balancing valve specifications on page 139.

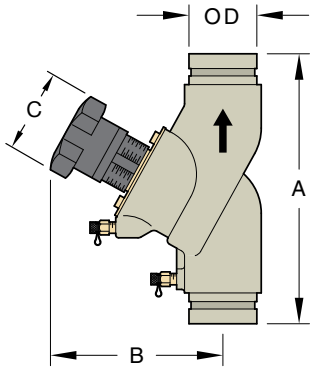
Model CB800 Circuit Balancing Valves Grooved Ends

Tech Data Sheet: G450

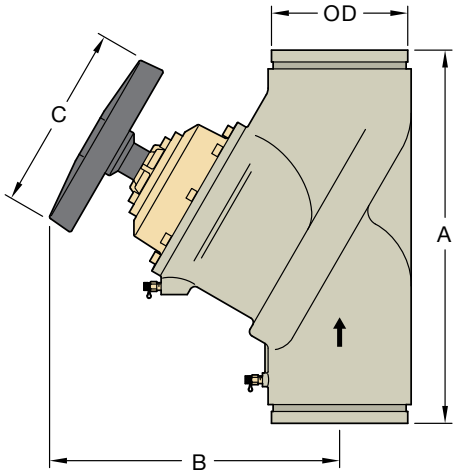
The GRINNELL Model CB800 Balancing Valve provides features for achieving accurate and efficient balancing of hydronic heating or cooling systems. The GRINNELL Groove-by-Groove Model CB800 Valve, available sizes 2½" to 12" *(65 to 300mm)*, is composed of cast iron.

The CB800 valve serves 5 functions:

- Throttling
- Measuring differential pressure
- Draining
- Filling
- Positive shutoff



2½" to 6" *(65 to 150mm)*



8" to 12" *(200 to 300mm)*

Pipe Size		Dimensions - Inches *mm*			Approx. Weight Lbs. *kg*	Limits PSI/°F *PN/°C*	Handwheel Turns
Nominal Inches *mm*	O.D. Inches *mm*	A	B	C			
2½	**2.875**	**11.44**	**7.38**	**4.33**	**19.7**	**300/300**	**8**
65	*73,0*	*290,6*	*187,5*	*110,0*	*8,9*	*20,7/150*	
76,1mm	**3.000**	**11.44**	**7.38**	**4.33**	**19.7**	**300/300**	**8**
65	*76,1*	*290,6*	*187,5*	*110,0*	*8,9*	*20,7/150*	
3	**3.500**	**12.25**	**8.00**	**4.33**	**27.8**	**300/300**	**8**
80	*88,9*	*311,2*	*203,2*	*110,0*	*12,6*	*20,7/150*	
4	**4.500**	**13.75**	**9.44**	**6.30**	**45.3**	**300/300**	**8**
100	*114,3*	*349,3*	*239,8*	*160,0*	*20,6*	*20,7/150*	
139,7mm	**5.500**	**15.75**	**11.13**	**6.30**	**70.0**	**300/300**	**8**
125	*139,7*	*400,0*	*282,7*	*160,0*	*31,8*	*20,7/150*	
5	**5.563**	**15.75**	**11.13**	**6.30**	**70.0**	**300/300**	**8**
125	*141,3*	*400,0*	*282,7*	*160,0*	*31,8*	*20,7/150*	
165,1mm	**6.500**	**18.88**	**11.25**	**6.30**	**95.7**	**300/300**	**8**
150	*165,1*	*479,6*	*285,8*	*160,0*	*43,5*	*20,7/150*	
6	**6.625**	**18.88**	**11.25**	**6.30**	**95.7**	**300/300**	**8**
150	*168,3*	*479,6*	*285,8*	*160,0*	*43,5*	*20,7/150*	
8	**8.625**	**23.63**	**18.44**	**11.80**	**255.2**	**300/300**	**12**
200	*219,1*	*600,2*	*468,4*	*300,0*	*116,0*	*20,7/150*	
10	**10.750**	**28.75**	**18.88**	**11.80**	**377.3**	**300/300**	**12**
250	*273,1*	*730,3*	*479,6*	*300,0*	*171,5*	*20,7/150*	
12	**12.750**	**33.44**	**20.25**	**11.80**	**520.3**	**300/300**	**12**
300	*323,9*	*849,4*	*514,4*	*300,0*	*236,5*	*20,7/150*	

For information on larger sizes, contact GRINNELL Mechanical Products.
See circuit balancing valve specifications on page 139.

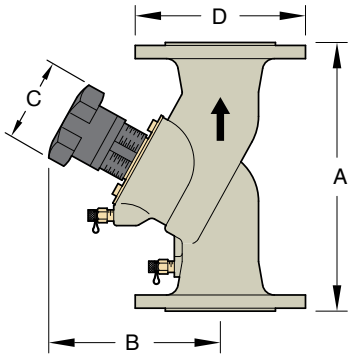
Model CB800 Circuit Balancing Valves Flanged Ends, ANSI Class 125#

Tech Data Sheet: G450

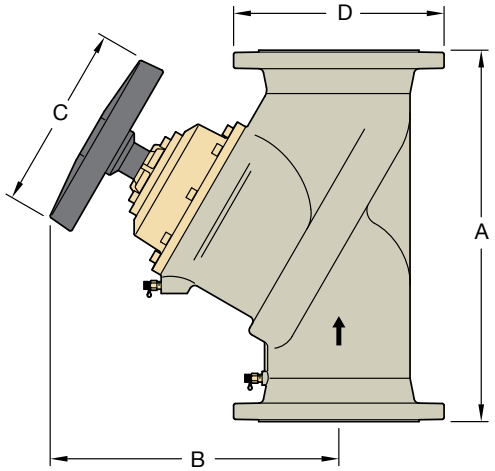
The GRINNELL Model CB800 Balancing Valve provides features for achieving accurate and efficient balancing of hydronic heating or cooling systems. One valve serves five functions: throttling, measuring (pressure and temperature), positive shutoff, draining, and filling. The GRINNELL Flange-by-Flange Model CB800 Valve, available in sizes 2½" to 12" *(65mm to 300mm)*, is composed of cast iron.

The CB800 valve serves 5 functions:

- Throttling
- Measuring differential pressure
- Draining
- Filling
- Positive shutoff



2½" to 6" *(65 to 150mm)*



8" to 12" *(200 to 300mm)*

Pipe Size		Dimensions - Inches *mm*				Approx. Weight Lbs. *kg*	Limits PSI/°F *PN/°C*	Handwheel Turns
Nominal Inches *mm*	O.D. Inches *mm*	A	B	C	D			
2½	2.875	11.44	7.38	4.33	7.25	31.7	235/300	8
65	*73,0*	*290,6*	*187,5*	*110,0*	*184,2*	*14,4*	*16/150*	
76,1mm	3.000	11.44	7.38	4.33	7.25	31.7	235/300	8
65	*76,1*	*290,6*	*187,5*	*110,0*	*184,2*	*14,4*	*16/150*	
3	3.500	12.25	8.00	4.33	7.88	39.8	235/300	8
80	*88,9*	*311,2*	*203,2*	*110,0*	*200,2*	*18,0*	*16/150*	
4	4.500	13.75	9.50	6.30	8.69	61.3	235/300	8
100	*114,3*	*349,3*	*241,3*	*160,0*	*220,7*	*27,8*	*16/150*	
139,7mm	5.500	15.75	11.13	6.30	9.88	89.9	235/300	8
125	*139,7*	*400,1*	*282,7*	*160,0*	*250,9*	*40,9*	*16/150*	
5	5.563	15.75	11.13	6.30	9.88	89.9	235/300	8
125	*141,3*	*400,1*	*282,7*	*160,0*	*250,9*	*40,9*	*16/150*	
165,1mm	6.500	18.88	11.25	6.30	11.25	113.9	235/300	8
150	*165,1*	*479,6*	*285,8*	*160,0*	*285,8*	*51,8*	*16/150*	
6	6.625	18.88	11.25	6.30	11.25	113.9	235/300	8
150	*168,3*	*479,6*	*285,8*	*160,0*	*285,8*	*51,8*	*16/150*	
8	8.625	23.63	18.38	11.80	13.38	361.9	235/300	12
200	*219,1*	*600,2*	*466,9*	*300,0*	*339,9*	*164,5*	*16/150*	
10	10.750	28.75	18.94	11.80	15.94	431.2	235/300	12
250	*273,1*	*730,3*	*481,1*	*300,0*	*404,9*	*196,0*	*16/150*	
12	12.750	33.50	20.25	11.80	18.13	581.9	235/300	12
300	*323,9*	*850,9*	*514,4*	*300,0*	*460,5*	*264,5*	*16/150*	

For information on larger sizes, contact GRINNELL Mechanical Products.
See circuit balancing valve specifications on page 139.

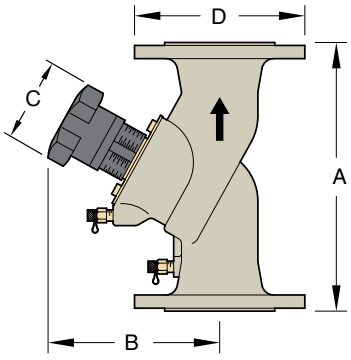
Model CB800 Circuit Balancing Valves Flanged Ends, PN16/PN10

Tech Data Sheet: G450

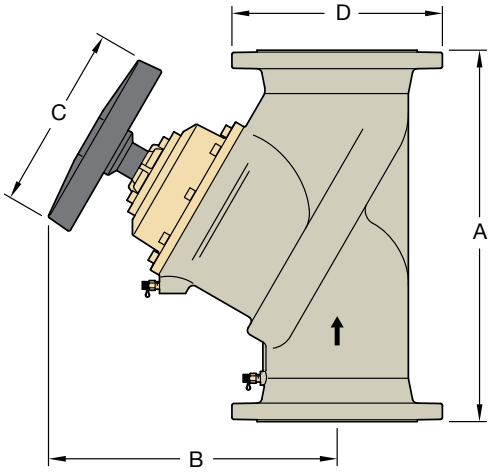
The GRINNELL Model CB800 Balancing Valve provides features for achieving accurate and efficient balancing of hydronic heating or cooling systems. One valve serves five functions: throttling, measuring (pressure and temperature), positive shutoff, draining, and filling. The GRINNELL Flange-by-Flange Model CB800 Valve, available in sizes 2½" to 12" *(65mm to 300mm)*, is composed of cast iron.

The CB800 valve serves 5 functions:

- Throttling
- Measuring differential pressure
- Draining
- Filling
- Positive shutoff



2½" to 6" *(65 to 150mm)*



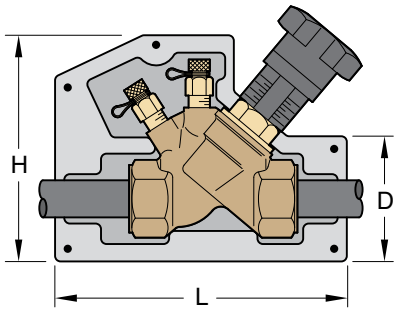
8" to 12" *(200 to 300mm)*

Pipe Size		Dimensions - Inches *mm*				Approx. Weight Lbs. *kg*	Limits PSI/°F *PN/°C*	Handwheel Turns
Nominal Inches *mm*	O.D. Inches *mm*	A	B	C	D			
2½	**2.875**	**11.44**	**7.38**	**4.33**	**7.25**	**31.7**	**235/300**	**8**
65	*73,0*	*290,6*	*187,5*	*110,0*	*184,2*	*14,4*	*16/150*	
76,1mm	**3.000**	**11.44**	**7.38**	**4.33**	**7.25**	**31.7**	**235/300**	**8**
65	*76,1*	*290,6*	*187,5*	*110,0*	*184,2*	*14,4*	*16/150*	
3	**3.500**	**12.25**	**8.00**	**4.33**	**7.88**	**39.8**	**235/300**	**8**
80	*88,9*	*311,2*	*203,2*	*110,0*	*200,2*	*18,0*	*16/150*	
4	**4.500**	**13.75**	**9.50**	**6.30**	**8.69**	**61.3**	**235/300**	**8**
100	*114,3*	*349,3*	*241,3*	*160,0*	*220,7*	*27,8*	*16/150*	
139,7mm	**5.500**	**15.75**	**11.13**	**6.30**	**9.88**	**89.9**	**235/300**	**8**
125	*139,7*	*400,1*	*282,7*	*160,0*	*250,9*	*40,9*	*16/150*	
5	**5.563**	**15.75**	**11.13**	**6.30**	**9.88**	**89.9**	**235/300**	**8**
125	*141,3*	*400,1*	*282,7*	*160,0*	*250,9*	*40,9*	*16/150*	
165,1mm	**6.500**	**18.88**	**11.25**	**6.30**	**11.25**	**113.9**	**235/300**	**8**
150	*165,1*	*479,6*	*285,8*	*160,0*	*285,8*	*51,8*	*16/150*	
6	**6.625**	**18.88**	**11.25**	**6.30**	**11.25**	**113.9**	**235/300**	**8**
150	*168,3*	*479,6*	*285,8*	*160,0*	*285,8*	*51,8*	*16/150*	
8	**8.625**	**23.63**	**18.38**	**11.80**	**13.38**	**361.9**	**235/300**	**12**
200	*219,1*	*600,2*	*466,9*	*300,0*	*339,9*	*164,5*	*16/150*	
10	**10.750**	**28.75**	**18.94**	**11.80**	**15.94**	**431.2**	**235/300**	**12**
250	*273,1*	*730,3*	*481,1*	*300,0*	*404,9*	*196,0*	*16/150*	
12	**12.750**	**33.50**	**20.25**	**11.80**	**18.13**	**581.9**	**235/300**	**12**
300	*323,9*	*850,9*	*514,4*	*300,0*	*460,5*	*264,5*	*16/150*	

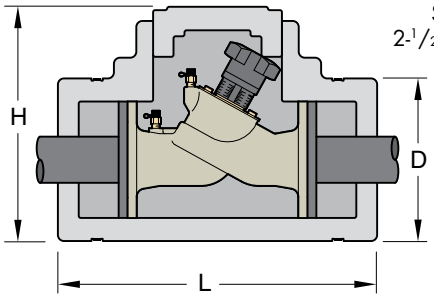
For information on larger sizes, contact GRINNELL Mechanical Products.
See circuit balancing valve specifications on page 139.

Model CB800 Circuit Balancing Valves Insulation Kits

Tech Data Sheet: G450



Sizes ½" thru 2"



Sizes 2-½" thru 8"

The insulation shells have a CFC-free inner core made of polyurethane foam with a 0.06" *(1,5mm)* plastic coat. It consists of two double shells which are tightened by two metal straps.

Available for sizes ½" – 8" *(15mm – 200mm)*. Specify size and end-connection type.

Pipe Size		Dimensions - Inches *mm*			Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*	D	H	L	
½	0.840	2.72	5.35	7.20	0.3
15	*21,3*	*69*	*136*	*183*	*0,15*
¾	1.050	3.31	5.63	7.68	0.4
20	*26,7*	*77*	*143*	*195*	*0,18*
1	1.315	3.35	5.94	9.57	0.5
25	*33,7*	*85*	*151*	*243*	*0,22*
1¼	1.660	3.82	6.77	10.00	0.4
32	*42,4*	*97*	*172*	*254*	*0,20*
1½	1.900	4.13	7.28	9.84	0.7
40	*48,3*	*105*	*185*	*250*	*0,33*
2	2.375	4.72	8.23	10.87	0.9
50	*60,3*	*120*	*209*	*276*	*0,43*
2½	2.875	10.2	16.1	19.9	6.7
65	*73,0*	*260*	*410*	*505*	*3,06*
3	3.500	11.0	16.3	20.9	7.2
80	*88,9*	*280*	*415*	*530*	*3,25*
4	4.500	12.6	20.5	22.8	11.4
100	*114,3*	*320*	*520*	*580*	*5,16*
5	5.563	14.2	22.1	24.4	11.6
125	*141,3*	*360*	*560*	*620*	*5,24*
6	6.625	15.7	23.6	28.7	13.2
150	*168,3*	*400*	*600*	*730*	*5,97*
8	8.625	17.6	30.0	31.5	◆
200	*219,1*	*450*	*760*	*800*	-

For information on larger sizes, contact GRINNELL Mechanical Products.
◆ Contact GRINNELL Mechanical Products for details.

Model CB800 Circuit Balancing Valves MC2 Measuring Computer

Tech Data Sheet: G450

The GRINNELL Model MC2 computer is a hand-held computer-balancing instrument designed to measure the flow in GRINNELL Balancing Valves from ½" – 12" *(15mm – 300mm)*. The GRINNELL Model MC2 computer:

- Automatically calculates the flow rate for a valve.
- Measures differential pressure and temperature.
- Compares the actual and nominal flow values.
- Displays the required presetting value.

All results may be saved in the hand-held computer and can be downloaded to a PC at a later time.

The easy-to-operate touch button keypad protects against water and dirt particles. The hand-held computer is supplied with a rechargeable power pact. All parts of the hand-held computer are stored in a convenient carrying case.

Note: Only available in select regions, contact GRINNELL Mechanical Products.

ACCESSORIES

Accessories Table of Contents

GRINNELL accessories are designed to provide protection for Mechanical piping system equipment. GRINNELL Suction Diffusers and Strainers reduce maintenance time and labor and allow easy access to the piping system.

Figure S853 "Y" Strainers

Tech Data Sheet: G420

The GRINNELL Figure S853 "Y" Strainer is rated for 640 psi *(44,1 bar)* at 100°F *(38°C)* and 150 psi *(10,3 bar)* at 565°F *(296°C)*. The "Y" Strainer provides economical strainer protection for piping equipment such as pumps, meters, valves, compressors, and traps. The inlet and outlet ends are suitable for installation with Figure 705, 707, and 772 Couplings.

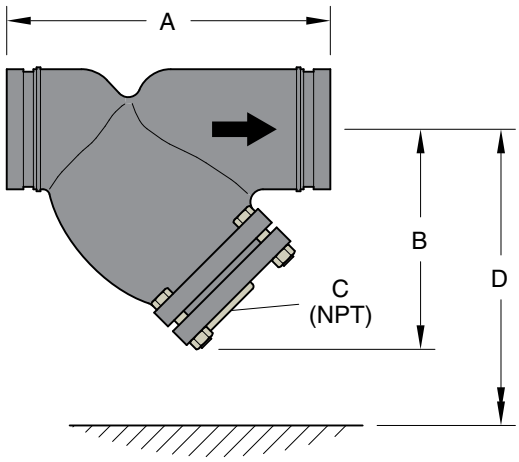
The Figure S853 "Y" Strainer screen has the following standard perforations:

- Sizes 2" – 4" *(50mm – 100mm)* = 1/16" *(1,6mm)*
- Sizes 5" – 12" *(125mm – 300mm)* = 1/8" *(3,2mm)*

All covers have an NPT blow-off outlet (pipe plugs not included) and recessed seat in the cover to ensure screen alignment.

Self-cleaning occurs by opening the valve (not supplied) connected to the blow-off outlet. Indicate when ordering strainers that are mounted in vertical piping so that the cover will be rotated to position the blow-off at the lowest point.

Note: Pressure and temperature can be limited by gasket material. Contact GRINNELL Mechanical Products.



SPECIFICATIONS

Ductile Iron Body and Cover Specifications

- ASTM A 536, Grade 65-45-12 – Standard specification for ductile iron castings
- Tensile strength, minimum 65,000 psi *(4481,6 bar)*
- Yield strength, minimum 45,000 psi *(3102,6 bar)*
- Elongation in 2" *(50mm)*, minimum 12%

Screen

- Type 304 Stainless Steel ASTM A 240. (Other alloys are available, contact GRINNELL Mechanical Products)

Gasket

- Non-asbestos

Coating

- Black enamel paint

Performance

- Pressure drop, contact GRINNELL Mechanical Products.

Pipe Size		Dimensions - Inches *mm*				Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	C*	D Screen Removal	
2	**2.375**	**7.88**	**5.25**	**0.50**	**7.00**	**12.0**
50	*60,3*	*200,2*	*133,4*	*12,7*	*177,8*	*5,4*
2½	**2.875**	**10.00**	**6.50**	**1.00**	**9.75**	**18.0**
65	*73,0*	*254,0*	*165,1*	*25,4*	*247,7*	*8,2*
3	**3.500**	**10.13**	**7.00**	**1.00**	**10.00**	**23.0**
80	*88,9*	*257,3*	*177,8*	*25,4*	*254,0*	*10,4*
4	**4.500**	**12.13**	**8.25**	**1.50**	**12.00**	**42.0**
100	*114,3*	*308,1*	*209,6*	*38,1*	*304,8*	*19,1*
5	**5.563**	**15.63**	**11.25**	**2.00**	**17.00**	**80.0**
125	*141,3*	*397,0*	*285,8*	*50,8*	*431,8*	*36,3*
6	**6.625**	**18.50**	**13.50**	**2.00**	**20.00**	**112.0**
150	*168,3*	*469,9*	*342,9*	*50,8*	*508,0*	*50,8*
8	**8.625**	**21.63**	**15.50**	**2.00**	**22.75**	**205.0**
200	*219,1*	*549,4*	*393,7*	*50,8*	*577,9*	*93,0*
10	**10.750**	**29.13**	**19.25**	**2.00**	**29.25**	**277.0**
250	*273,1*	*739,8*	*489,0*	*50,8*	*743,0*	*125,6*
12	**12.750**	**33.75**	**22.88**	**2.00**	**35.24**	**470.0**
300	*323,9*	*857,3*	*581,0*	*50,8*	*895,4*	*213,2*

* Blow-off outlet threads conforming to BSP are available upon request. Contact GRINNELL Mechanical Products.

For information on larger sizes, contact GRINNELL Mechanical Products.

Figure S810 Suction Diffusers

Tech Data Sheet: G410

The GRINNELL Figure S810 Suction Diffuser is compact and rugged for direct mounting to the suction side of a pump in either a horizontal or vertical position. In addition to removing foreign particles, this diffuser also provides proper flow conditions to the pump. Where space is limited, this diffuser can be used to replace the straight pipe normally required to reduce turbulence.

The GRINNELL Figure S810 Suction Diffuser's permanent perforated stainless steel screen helps remove foreign particles. The inlet end is suitable for installation with GRINNELL Couplings. The outlet end is provided with a 150# ANSI flat face flange. Integral straightening vanes in the diffuser outlet reduce turbulence so that stress and erosion on the pump is minimized.

Maximum working pressure is 300 psi *(20,7 bar)* at 100°F *(38°C)* and 165 psi *(11,4 bar)* at 300°F *(149°C)*.

Note: Pressure and temperature can be limited by O-ring material. Contact GRINNELL Mechanical Products.

SPECIFICATIONS

Body and Cover

- Ductile iron conforming to ASTM A 126B

Knobs

- Ductile iron conforming to ASTM A 536, Grade 65-45-12 for sizes 3" x 2" thru 10" x 8" *(80mm x 50mm thru 250mm x 200mm)*
  Stud/nuts carbon steel conforming to ASTM A 193-4, for sizes 10" x 10" *(250mm x 250mm)* and larger

Screen

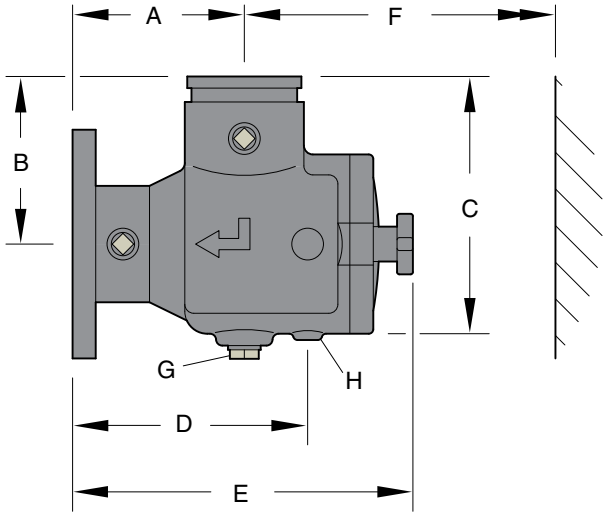
- 5/32" *(4,0mm)* perforated type 304 stainless steel for sizes 3" x 2" thru 6" x 6" *(80mm x 50mm thru 150mm x 150mm)*;
- 1/8" *(3,2mm)* perforated type 304 stainless steel for sizes 8" x 5" *(200 x 125mm)* and larger
- Sleeve is 20 mesh type 304 stainless steel

Coating

- Black enamel paint

Performance

- Pressure drop, contact GRINNELL Mechanical Products.



Pipe Size		Dimensions - Inches *mm*								Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	C	D	E	F Screen Removal	G Plug NPT	H Pipe Support ID	
2 x 2	**2.375 x 2.375**	**4.50**	**4.50**	**6.69**	**6.13**	**10.19**	**8.81**	**0.75**	**0.824**	**19**
50 x 50	*60,3 x 60,3*	*114,3*	*114,3*	*169,9*	*155,7*	*258,8*	*223,8*	*20*	*20,9*	*8,6*
2½ x 2	**2.875 x 2.375**	**5.00**	**5.00**	**7.50**	**6.56**	**10.88**	**9.13**	**0.75**	**1.38**	**20**
65 x 50	*73,0 x 60,3*	*127,0*	*127,0*	*190,5*	*166,6*	*276,4*	*231,9*	*20*	*35,1*	*9,1*
2½ x 2½	**2.875 x 2.875**	**5.00**	**5.00**	**7.50**	**6.56**	**10.88**	**9.13**	**0.75**	**1.38**	**22**
65 x 65	*73,0 x 73,0*	*127,0*	*127,0*	*190,5*	*166,6*	*276,4*	*231,9*	*20*	*35,1*	*10,0*
3 x 2	**3.500 x 2.375**	**5.50**	**5.50**	**8.44**	**7.38**	**11.56**	**9.63**	**0.75**	**1.38**	**38.0**
80 x 50	*88,9 x 60,3*	*139,7*	*139,7*	*214,4*	*187,5*	*293,6*	*244,6*	*20*	*35,1*	*17,2*
3 x 2½	**3.500 x 2.875**	**5.50**	**5.50**	**8.44**	**7.38**	**11.56**	**9.63**	**0.75**	**1.38**	**39.0**
80 x 65	*88,9 x 73,0*	*139,7*	*139,7*	*214,4*	*187,5*	*293,6*	*244,6*	*20*	*35,1*	*17,7*

Figure S810 Suction Diffusers

Tech Data Sheet: G410

Pipe Size		Dimensions - Inches *mm*								Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	C	D	E	F Screen Removal	G Plug NPT	H Pipe Support ID	
3 x 3	**3.500 x 3.500**	**5.50**	**5.50**	**8.44**	**7.38**	**11.56**	**9.63**	**0.75**	**1.38**	**40.0**
80 x 80	*88,9 x 88,9*	*139,7*	*139,7*	*214,4*	*187,5*	*293,6*	*244,6*	*20*	*35,1*	*18,1*
4 x 2	**4.500 x 2.375**	**5.75**	**5.75**	**9.13**	**7.63**	**11.81**	**11.18**	**0.75**	**1.38**	**48.0**
100 x 50	*114,3 x 60,3*	*146,1*	*146,1*	*231,9*	*193,8*	*300,0*	*284,0*	*20*	*35,1*	*21,8*
4 x 2½	**4.500 x 2.875**	**6.50**	**6.50**	**10.48**	**8.75**	**13.13**	**9.63**	**1.00**	**1.38**	**49.0**
100 x 65	*114,3 x 73,0*	*165,1*	*165,1*	*266,2*	*222,3*	*333,5*	*244,6*	*25*	*35,1*	*22,2*
4 x 3	**4.500 x 3.500**	**6.50**	**6.81**	**10.44**	**8.75**	**13.13**	**11.50**	**1.00**	**1.38**	**50.0**
100 x 80	*114,3 x 88,9*	*165,1*	*173,0*	*265,2*	*222,3*	*333,5*	*292,1*	*25*	*35,1*	*22,7*
4 x 4	**4.500 x 4.500**	**6.50**	**6.81**	**10.44**	**8.75**	**13.13**	**11.50**	**1.00**	**1.38**	**52.0**
100 x 100	*114,3 x 114,3*	*165,1*	*173,0*	*265,2*	*222,3*	*333,5*	*292,1*	*25*	*35,1*	*23,6*
5 x 3	**5.563 x 3.500**	**6.50**	**6.50**	**10.48**	**8.75**	**13.13**	**11.50**	**1.00**	**1.38**	**94.0**
125 x 80	*141,3 x 88,9*	*165,1*	*165,1*	*266,2*	*222,3*	*333,5*	*292,1*	*25*	*35,1*	*42,6*
5 x 4	**5.563 x 4.500**	**6.50**	**6.50**	**11.94**	**10.00**	**15.75**	**14.00**	**1.00**	**1.38**	**96.0**
125 x 100	*141,3 x 114,3*	*165,1*	*165,1*	*303,3*	*254,0*	*400,1*	*355,6*	*25*	*35,1*	*43,5*
5 x 5	**5.563 x 5.563**	**7.50**	**7.50**	**11.94**	**10.00**	**15.75**	**14.88**	**1.00**	**1.38**	**101.0**
125 x 125	*141,3 x 141,3*	*190,5*	*190,5*	*303,3*	*254,0*	*400,1*	*378,0*	*25*	*35,1*	*45,8*
6 x 3	**6.625 x 3.500**	**8.00**	**8.00**	**13.31**	**10.50**	**16.88**	**16.56**	**1.00**	**1.38**	**103.0**
150 x 80	*168,3 x 88,9*	*203,2*	*203,2*	*338,1*	*266,7*	*428,8*	*420,6*	*25*	*35,1*	*46,7*
6 x 4	**6.625 x 4.500**	**8.00**	**8.00**	**13.31**	**10.50**	**16.88**	**16.56**	**1.00**	**1.38**	**106.0**
150 x 100	*168,3 x 114,3*	*203,2*	*203,2*	*338,1*	*266,7*	*428,8*	*420,6*	*25*	*35,1*	*48,1*
6 x 5	**6.625 x 5.563**	**8.00**	**8.00**	**13.31**	**10.50**	**16.88**	**16.56**	**1.00**	**1.38**	**110.0**
150 x 125	*168,3 x 141,3*	*203,2*	*203,2*	*338,1*	*266,7*	*428,8*	*420,6*	*25*	*35,1*	*49,9*
6 x 6	**6.625 x 6.625**	**8.00**	**8.00**	**13.31**	**10.50**	**16.88**	**16.56**	**1.00**	**1.38**	**113.0**
150 x 150	*168,3 x 168,3*	*203,2*	*203,2*	*338,1*	*266,7*	*428,8*	*420,6*	*25*	*35,1*	*51,2*
8 x 5	**8.625 x 5.563**	**9.00**	**9.00**	**14.38**	**11.50**	**17.88**	**16.88**	**1.00**	**1.38**	**135.0**
200 x 125	*219,1 x 141,3*	*228,6*	*228,6*	*365,3*	*292,1*	*454,2*	*428,8*	*25*	*35,1*	*61,2*
8 x 6	**8.625 x 6.625**	**9.00**	**10.00**	**15.31**	**11.50**	**17.88**	**16.88**	**1.00**	**1.38**	**137.0**
200 x 150	*219,1 x 168,3*	*228,6*	*254,0*	*388,9*	*292,1*	*454,2*	*428,8*	*25*	*35,1*	*62,1*
8 x 8	**8.625 x 8.625**	**9.00**	**10.00**	**16.31**	**11.75**	**20.75**	**22.88**	**1.25**	**1.38**	**222.0**
200 x 200	*219,1 x 219,1*	*228,6*	*254,0*	*414,3*	*298,5*	*527,1*	*581,2*	*32*	*35,1*	*100,7*
10 x 6	**10.750 x 6.625**	**9.48**	**9.48**	**15.50**	**11.94**	**18.31**	**16.88**	**1.25**	**1.38**	**230.0**
250 x 150	*273,1 x 168,3*	*240,8*	*240,8*	*393,7*	*303,3*	*465,1*	*428,8*	*32*	*35,1*	*104,3*
10 x 8	**10.750 x 8.625**	**9.00**	**11.75**	**18.44**	**11.75**	**20.75**	**22.88**	**1.25**	**1.38**	**236.0**
250 x 200	*237,1 x 219,1*	*228,6*	*298,5*	*468,4*	*298,5*	*527,1*	*581,2*	*32*	*35,1*	*107,0*
10 x 10	**10.750 x 10.750**	**11.00**	**11.75**	**20.00**	**14.00**	**26.38**	**30.75**	**1.25**	**1.38**	**343.0**
250 x 250	*273,1 x 273,1*	*279,4*	*298,5*	*508,0*	*355,6*	*670,1*	*781,1*	*32*	*35,1*	*155,6*
12 x 8	**12.000 x 8.625**	**9.00**	**9.00**	**19.63**	**11.75**	**20.75**	**22.88**	**1.25**	**1.38**	**357.0**
300 x 200	*323,9 x 219,1*	*228,6*	*228,6*	*498,6*	*298,5*	*527,1*	*581,2*	*32*	*35,1*	*161,9*
12 x 10	**12.000 x 10.750**	**11.00**	**12.88**	**21.00**	**14.00**	**26.38**	**30.75**	**1.25**	**1.38**	**357.0**
300 x 250	*323,9 x 273,1*	*279,4*	*327,2*	*533,4*	*355,6*	*670,1*	*781,1*	*32*	*35,1*	*161,9*
12 x 12	**12.000 x 12.000**	**12.00**	**12.00**	**22.06**	**15.25**	**26.18**	**30.75**	**1.25**	**1.38**	**357.0**
300 x 300	*323,9 x 323,9*	*304,8*	*304,8*	*560,3*	*387,4*	*665,0*	*781,1*	*32*	*35,1*	*161,9*
14 x 10	**14.000 x 10.750**	**11.00**	**11.00**	**22.50**	**14.00**	**26.38**	**30.75**	**1.25**	**1.38**	**507.0**
350 x 250	*355,6 x 273,1*	*279,4*	*279,4*	*571,5*	*355,6*	*670,1*	*781,1*	*32*	*35,1*	*229,9*
14 x 12	**14.000 x 12.000**	**12.00**	**12.00**	**22.38**	**15.25**	**26.18**	**31.00**	**1.25**	**1.38**	**601.0**
350 x 300	*355,6 x 323,9*	*304,8*	*304,8*	*568,5*	*387,4*	*665,0*	*787,4*	*32*	*35,1*	*272,6*
14 x 14	**14.000 x 14000**	**14.00**	**14.00**	**25.00**	**17.50**	**27.75**	**33.13**	**2.00**	**1.38**	**706.0**
350 x 350	*355,6 x 355,6*	*355,6*	*355,6*	*635,0*	*444,5*	*704,9*	*841,5*	*50*	*35,1*	*320,2*
16 x 14	**16.000 x 14.000**	**14.00**	**14.00**	**26.00**	**17.50**	**27.88**	**31.00**	**2.00**	**1.38**	**750.0**
400 x 350	*406,4 x 355,6*	*355,6*	*355,6*	*660,4*	*444,5*	*708,2*	*787,4*	*50*	*35,1*	*340,1*

For information on larger sizes, contact GRINNELL Mechanical Products.

Figure S855 Tee Strainers

Tech Data Sheet: G430

The Tee Strainer is designed to remove particles from pipelines where a compact, accessible strainer is needed for the protection of pumps, meters, valves, and similar mechanical equipment. The inlet and outlet ends are suitable for installation with GRINNELL Couplings that provide quick and easy installation.

The cover is secured by a GRINNELL Figure 772 Coupling for easy access to the screen. The cover is tapped and plugged to allow for drainage.

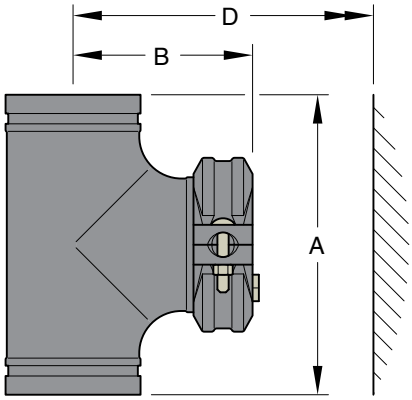
The GRINNELL Figure S855 Tee Strainer is rated for the following pressures:

- Sizes 2" – 5" *(50mm – 125mm)*: 750 psi *(51,7 bar)* at 100°F *(38°C)*
- Size 6" *(150mm)*: 700 psi *(48,3 bar)* at 100°F *(38°C)*
- Size 8" *(200mm)*: 600 psi *(41,7 bar)* at 100°F *(38°C)*
- Size 10" *(250mm)*: 500 psi *(34,5 bar)* at 100°F *(38°C)*
- Size 12" *(300mm)*: 400 psi *(27,6 bar)* at 100°F *(38°C)*

The Figure S855 Tee Strainer perforated screen has the following perforations:

- Sizes 2" – 6" *(50mm – 150mm)* = 1/8" *(3,2mm)*
- Sizes 8" – 12" *(200mm – 300mm)* = 5/32" *(4,0mm)*

Note: Other perforation screen sizes are available upon request. Specify particle retention size when ordering nonstandard screens.



SPECIFICATIONS

Ductile Iron Body and Cover

- ASTM A 395, Grade 60-40-18 or A 536 – Standard specification for ductile iron castings
- Tensile strength, minimum 65,000 psi *(4481,6 bar)*
- Yield strength, minimum 45,000 psi *(3102,6 bar)*
- Elongation in 2" *(50mm)*, minimum 12%

Screen

- 20 gauge type 304 stainless steel ASTM A 240 for Sizes 2" – 6" *(50mm – 150mm)*
- 18 gauge type 304 stainless steel ASTM A 240 for Sizes 8" – 12" *(200mm – 300mm)*

Coating

- Black enamel paint
- Orange – Non-lead paint
- Red – Non-lead paint (optional, regional)

Performance

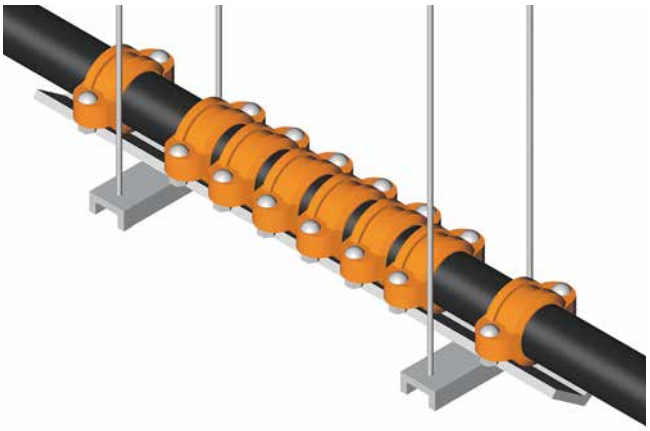
- Pressure drop, contact GRINNELL Mechanical Products.

Pipe Size		Dimensions - Inches *mm*			Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	D Screen Removal	
2	**2.375**	**6.50**	**4.25**	**7.50**	**6.0**
50	*60,3*	*165,0*	*108,0*	*191,0*	*2,7*
2½	**2.875**	**7.50**	**4.75**	**8.75**	**11.0**
65	*73,0*	*191,0*	*110,0*	*222,0*	*5,0*
3	**3.500**	**8.50**	**5.25**	**10.00**	**12.0**
80	*88,9*	*216,0*	*133,0*	*254,0*	*5,4*
4	**4.500**	**10.00**	**6.13**	**12.00**	**20.0**
100	*114,3*	*254,0*	*156,0*	*305,0*	*9,0*
5	**5.563**	**11.00**	**6.63**	**13.50**	**30.0**
125	*141,3*	*279,0*	*168,0*	*342,0*	*13,0*
6	**6.625**	**13.00**	**7.63**	**16.00**	**40.0**
150	*168,3*	*330,0*	*194,0*	*406,0*	*18,0*
8	**8.625**	**15.50**	**9.13**	**19.44**	**81.0**
200	*219,1*	*394,0*	*232,0*	*494,0*	*36,0*
10	**10.750**	**18.00**	**10.38**	**22.94**	**126.0**
250	*273,0*	*457,0*	*264,0*	*583,0*	*57,0*
12	**12.750**	**20.00**	**11.38**	**25.94**	**174.0**
300	*323,9*	*508,0*	*289,0*	*659,0*	*79,0*

For information on larger sizes, contact GRINNELL Mechanical Products.

Figure 7550 Expansion Joint

Tech Data Sheet: G460



GRINNELL Grooved Expansion Joints are custom-designed, thermal movement solutions that utilize the proven design characteristics of GRINNELL Flexible Couplings.

Expansion joints are designed to be used in both hot and cold applications. When pipe heats up, the expansion joint contracts to absorb the thermal expansion of the pipe. When pipe cools down, the expansion joint expands to absorb the thermal contraction of the pipe.

SPECIFICATIONS

Maximum Pressure

Refer to the appropriate technical data sheet for the coupling in use.

- G110 for the Figure 705 Grooved Flexible Coupling
- G130 for the Figure 707 Grooved Flexible Coupling
- G565 for the Figure 405 Grooved Stainless Steel Flexible Coupling

Coupling Housing

- Ductile iron conforming to ASTM A 536, Grade 65-45-12
- Type 316 Stainless Steel conforming to ASTM A 743/A 743M (CF8M) (optional)

Pipe

- Standard wall black steel pipe per ASTM A53
- Galvanized or Stainless Steel pipe (optional)

Gasket Specifications

- **Grade "E" EPDM**, Green striped color code, -30°F to 230°F (*-34°C to 110°C*)
- **Grade "L" Silicone**, Red striped color code -30°F to 350°F (*-34°C to 177°C*)
- **Grade "O" Fluoroelastomer**, Blue striped color code, 20°F to 300°F (*-7°C to 149°C*)
- **Grade "T" Nitrile**, Orange striped color code, -20°F to 180°F (*-29°C to 82°C*)

Coupling Finishes

- Orange non-lead paint
- Red RAL non-lead paint
- Hot dipped Galvanized conforming to ASTM A 153
- Type 316 Stainless Steel

Ordering Procedure

GRINNELL Mechanical Products are available globally through a network of distribution centers. Visit www.grinnell.com for the nearest distributor. When placing an order, indicate the full product name.

Use the worksheet shown below to specify information required for ordering expansion joints.

Specify quantity, nominal pipe size, (ANSI or O.D.), figure number (Figure 7550 Flexible Coupling), and type of gasket:

- Grade "E" EPDM
- Grade "L" Silicone
- Grade "O" Fluoroelastomer
- Grade "T" Nitrile

Nominal Pipe Size 1¼" to 16" *(32mm to 400mm)*: **Inches** *mm*				
Pipe Finish	☐ Black	☐ Galvanized	☐ Stainless Steel	
Coupling Finish	☐ Orange Paint	☐ RAL Red	☐ Galvanized	☐ Stainless Steel
Gasket Material*	☐ Grade "E" EPDM	☐ Grade "T" Nitrile	☐ Grade "O" Fluoroelastomer	☐ Grade "L" Silicone
Factory Preset	☐ Fully Expanded	☐ Fully Compressed	Intermediate** ____ %	
Total Required Movement:	☐ 1.00"	☐ 1.25"	☐ 1.50"	☐ 1.75"

* These products are assembled with a silicone-based lubricant.

** For intermediate factory preset indicate percentage of movement from compressed position.

Figure 7550 Expansion Joint

Tech Data Sheet: G460

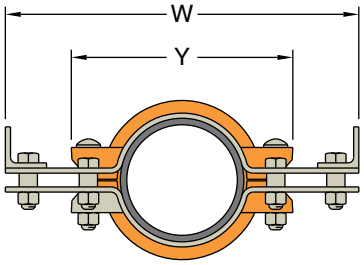


Figure 7550 Expansion Joints
Nominal Dimensions for End Elevation View

Pipe Size		Dimensions - Inches *mm*		Coupling Movement Capability Inches *mm*
Nominal Inches *mm*	O.D. Inches *mm*	Y Coupling Length	W Overall Width	
1¼	**1.660**	**4.190**	**9.750**	**0.125**
32	*42,4*	*106,4*	*247,7*	*3,18*
1½	**1.900**	**4.440**	**9.625**	**0.125**
40	*48,3*	*112,8*	*244,5*	*3,18*
2	**2.375**	**4.880**	**10.875**	**0.125**
50	*60,3*	*124,0*	*276,2*	*3,18*
2½	**2.875**	**5.500**	**10.750**	**0.125**
65	*73,0*	*139,7*	*273,1*	*3,18*
3	**3.500**	**6.500**	**11.750**	**0.125**
80	*88,9*	*165,1*	*298,5*	*3,18*
4	**4.500**	**7.750**	**12.937**	**0.250**
100	*114,3*	*196,9*	*328,6*	*6,35*
5	**5.563**	**9.750**	**14.250**	**0.250**
125	*141,3*	*247,7*	*362,0*	*6,35*
6	**6.625**	**10.690**	**15.500**	**0.250**
150	*168,3*	*271,5*	*393,7*	*6,35*
8	**8.625**	**13.560**	**18.250**	**0.250**
200	*219,1*	*344,4*	*463,6*	*6,35*
10	**10.750**	**16.380**	**20.125**	**0.250**
250	*273,0*	*416,1*	*511,2*	*6,35*
12	**12.750**	**18.880**	**22.375**	**0.250**
300	*323,9*	*479,6*	*568,3*	*6,35*
14	**14.000**	**20.380**	**24.125**	**0.250**
350	*355,6*	*517,7*	*612,8*	*6,35*
16	**16.000**	**22.640**	**27.870**	**0.250**
400	*406,4*	*575,1*	*707,9*	*6,35*

Refer to Technical Data Sheet G460 for additional dimensions and information.

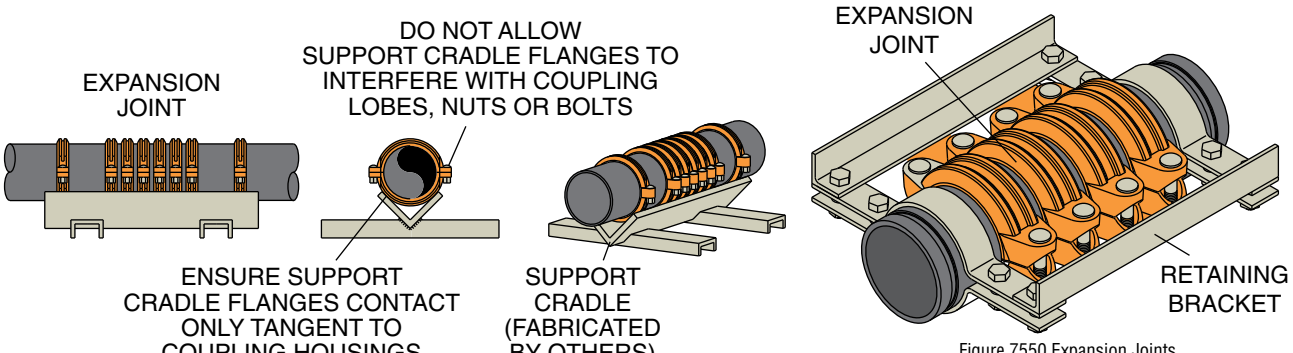


Figure 7550 Expansion Joints
Retaining Bracket Detail

Figure 7550 Expansion Joints
Typical Installation

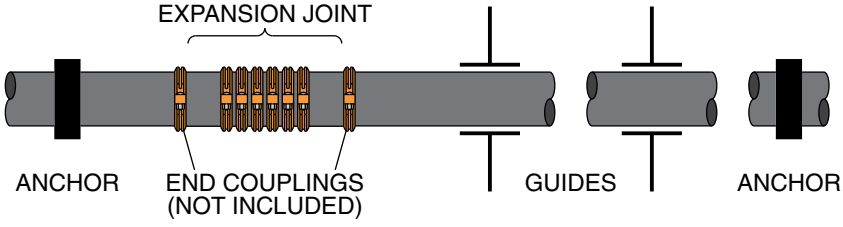


Figure 7550 Expansion Joint

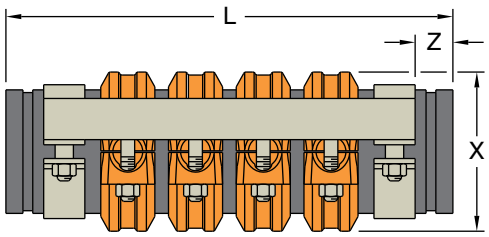


Figure 7550-1 Expansion Joints - 1" Total Movement Length

Nominal Dimensions for Side Elevation View

Nominal Pipe Size		Flexible* Coupling Figure / Quantity	X Coupling Height Inches *mm*	Z Tie Location Inches *mm*	L Compressed Length Inches *mm*	L Expanded Length Inches *mm*	Total Movement Capability Inches *mm*	Approx. Weight Lbs. *kg*
ANSI Inches *mm*	O.D. Inches *mm*							
1¼	1.660	705 / 8	2.560	1.25	26.625	27.625	1.000	26
32	*42,4*		*65,02*	*31,75*	*676,27*	*701,67*	*25,40*	*11,8*
1½	1.900	705 / 8	2.750	1.25	26.625	27.625	1.000	28
40	*48,3*		*69,85*	*31,75*	*676,27*	*701,67*	*25,40*	*12,7*
2	2.375	705 / 8	3.250	1.25	26.625	27.625	1.000	31
50	*60,3*		*82,55*	*31,75*	*676,27*	*701,67*	*25,40*	*14,1*
2½	2.875	705 / 8	3.690	1.25	26.625	27.625	1.000	37
65	*73,0*		*93,73*	*31,75*	*676,27*	*701,67*	*25,40*	*16,8*
3	3.500	705 / 8	4.380	1.25	26.625	27.625	1.000	49
80	*88,9*		*111,25*	*31,75*	*676,27*	*701,67*	*25,40*	*22,2*
4	4.500	705 / 4	5.690	1.25	17.500	18.500	1.000	36
100	*114,3*		*144,53*	*31,75*	*444,50*	*469,90*	*25,40*	*16,3*
5	5.563	705 / 4	6.880	1.25	17.500	18.500	1.000	53
125	*141,3*		*174,75*	*31,75*	*444,50*	*469,90*	*25,40*	*24,0*
6	6.625	705 / 4	7.940	1.25	17.500	18.500	1.000	59
150	*168,3*		*201,68*	*31,75*	*444,50*	*469,90*	*25,40*	*26,8*
8	8.625	705 / 4	10.190	1.375	19.125	20.125	1.000	104
200	*219,1*		*258,83*	*34,93*	*488,95*	*511,17*	*25,40*	*47,2*
10	10.750	705 / 4	12.690	1.375	21.500	22.500	1.000	179
250	*273,0*		*322,33*	*34,93*	*546,10*	*571,50*	*25,40*	*81,2*
12	12.750	705 / 4	14.940	1.375	21.500	22.500	1.000	235
300	*323,9*		*379,48*	*34,93*	*546,10*	*571,50*	*25,40*	*106,6*
14	14.000	707 / 4	16.670	1.500	23.125	24.125	1.000	305
350	*355,6*		*423,42*	*38,10*	*587,40*	*612,77*	*25,40*	*138,4*
16	16.000	707 / 4	18.830	1.500	24.125	25.125	1.000	371
400	*406,4*		*478,28*	*38,10*	*612,77*	*638,17*	*25,40*	*168,2*

* 1¼" - 8" Figure 405 Stainless Steel Couplings available upon request.

Figure 7550 Expansion Joint

Tech Data Sheet: G460

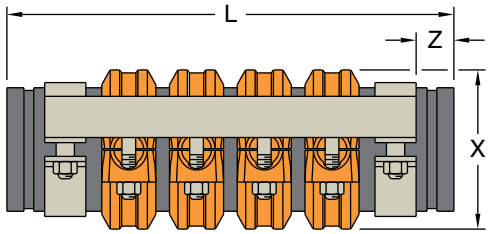


Figure 7550-13 Expansion Joints - 1¼" Total Movement Length

Nominal Dimensions for Side Elevation View

Nominal Pipe Size		Flexible* Coupling Figure / Quantity	X Coupling Height Inches *mm*	Z Tie Location Inches *mm*	L Compressed Length Inches *mm*	L Expanded Length Inches *mm*	Total Movement Capability Inches *mm*	Approx. Weight Lbs. *kg*
ANSI Inches *mm*	O.D. Inches *mm*							
1¼	1.660	705 / 10	2.560	1.25	31.375	32.625	1.250	31
32	*42,4*		*65,02*	*31,75*	*796,92*	*828,67*	*31,75*	*14,1*
1½	1.900	705 / 10	2.750	1.25	31.375	32.625	1.250	33
40	*48,3*		*69,85*	*31,75*	*796,92*	*828,67*	*31,75*	*15,0*
2	2.375	705 / 10	3.250	1.25	31.375	32.625	1.250	37
50	*60,3*		*82,55*	*31,75*	*796,92*	*828,67*	*31,75*	*16,8*
2½	2.875	705 / 10	3.690	1.25	31.375	32.625	1.250	45
65	*73,0*		*93,73*	*31,75*	*796,92*	*828,67*	*31,75*	*20,4*
3	3.500	705 / 10	4.380	1.25	31.375	32.625	1.250	59
80	*88,9*		*111,25*	*31,75*	*796,92*	*828,67*	*31,75*	*26,8*
4	4.500	705 / 5	5.690	1.25	20.000	21.250	1.250	43
100	*114,3*		*144,53*	*31,75*	*508,00*	*539,75*	*31,75*	*19,5*
5	5.563	705 / 5	6.880	1.25	20.000	21.250	1.250	64
125	*141,3*		*174,75*	*31,75*	*508,00*	*539,75*	*31,75*	*29,0*
6	6.625	705 / 5	7.940	1.25	20.000	21.250	1.250	70
150	*168,3*		*201,68*	*31,75*	*508,00*	*539,75*	*31,75*	*31,8*
8	8.625	705 / 5	10.190	1.375	22.000	23.250	1.250	125
200	*219,1*		*258,83*	*34,93*	*558,80*	*590,55*	*31,75*	*56,7*
10	10.750	705 / 5	12.690	1.375	24.500	25.750	1.250	215
250	*273,0*		*322,33*	*34,93*	*622,30*	*654,05*	*31,75*	*97,5*
12	12.750	705 / 5	14.940	1.375	24.500	25.750	1.250	281
300	*323,9*		*379,48*	*34,93*	*622,30*	*654,05*	*31,75*	*127,5*
14	14.000	707 / 5	16.670	1.500	26.500	27.750	1.250	365
350	*355,6*		*423,42*	*38,10*	*673,10*	*704,85*	*31,75*	*138,4*
16	16.000	707 / 5	18.830	1.500	27.500	28.750	1.250	441
400	*406,4*		*478,28*	*38,10*	*698,50*	*730,25*	*31,75*	*168,2*

* 1¼" - 8" Figure 405 Stainless Steel Couplings available upon request.

Figure 7550 Expansion Joint

Tech Data Sheet: G460

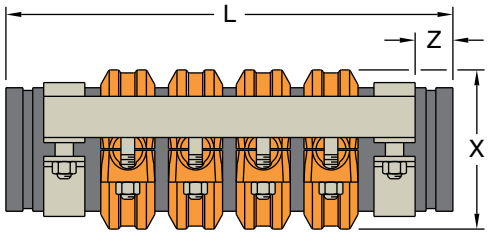


Figure 7550-15 Expansion Joints - 1½" Total Movement Length

Nominal Dimensions for Side Elevation View

Nominal Pipe Size		Flexible* Coupling Figure / Quantity	X Coupling Height Inches *mm*	Z Tie Location Inches *mm*	L Compressed Length Inches *mm*	L Expanded Length Inches *mm*	Total Movement Capability Inches *mm*	Approx. Weight Lbs. *kg*
ANSI Inches *mm*	O.D. Inches *mm*							
1¼	1.660	705 / 12	2.560	1.25	36.125	37.625	1.500	37
32	*42,4*		*65,02*	*31,75*	*917,57*	*955,68*	*38,10*	*16,8*
1½	1.900	705 / 12	2.750	1.25	36.125	37.625	1.500	39
40	*48,3*		*69,85*	*31,75*	*917,57*	*955,68*	*38,10*	*17,7*
2	2.375	705 / 12	3.250	1.25	36.125	37.625	1.500	43
50	*60,3*		*82,55*	*31,75*	*917,57*	*955,68*	*38,10*	*19,5*
2½	2.875	705 / 12	3.690	1.25	36.125	37.625	1.500	52
65	*73,0*		*93,73*	*31,75*	*917,57*	*955,68*	*38,10*	*23,6*
3	3.500	705 / 12	4.380	1.25	36.125	37.625	1.500	69
80	*88,9*		*111,25*	*31,75*	*917,57*	*955,68*	*38,10*	*31,3*
4	4.500	705 / 6	5.690	1.25	22.500	24.000	1.500	50
100	*114,3*		*144,53*	*31,75*	*571,50)*	*609,60)*	*38,10*	*22,7)*
5	5.563	705 / 6	6.880	1.25	22.500	24.000	1.500	74
125	*141,3*		*174,75*	*31,75*	*571,50*	*609,60*	*38,10*	*33,6*
6	6.625	705 / 6	7.940	1.25	22.500	24.000	1.500	81
150	*168,3*		*201,68*	*31,75*	*571,50*	*609,60*	*38,10*	*36,7*
8	8.625	705 / 6	10.190	1.375	24.875	26.375	1.500	145
200	*219,1*		*258,83*	*34,93*	*631,82*	*669,93*	*38,10*	*65,8*
10	10.750	705 / 6	12.690	1.375	27.500	29.000	1.500	251
250	*273,0*		*322,33*	*34,93*	*698,50*	*736,60*	*38,10*	*113,8*
12	12.750	705 / 6	14.940	1.375	27.500	29.000	1.500	328
300	*323,9*		*379,48*	*34,93*	*698,50*	*736,60*	*38,10*	*148,8*
14	14.000	707/ 6	16.670	1.500	29.875	31.375	1.500	425
350	*355,6*		*423,42*	*38,10*	*758,82*	*796,93*	*38,10*	*192,8*
16	16.000	707 / 6	18.830	1.500	30.875	32.375	1.500	512
400	*406,4*		*478,28*	*38,10*	*784,22*	*822,32*	*38,10*	*232,2*

* 1¼" - 8" Figure 405 Stainless Steel Couplings available upon request.

Figure 7550 Expansion Joint

Tech Data Sheet: G460

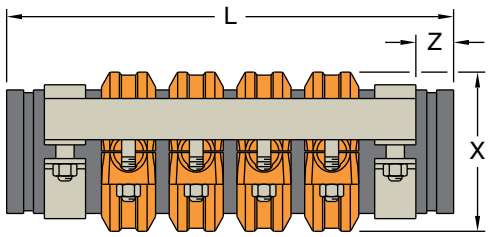
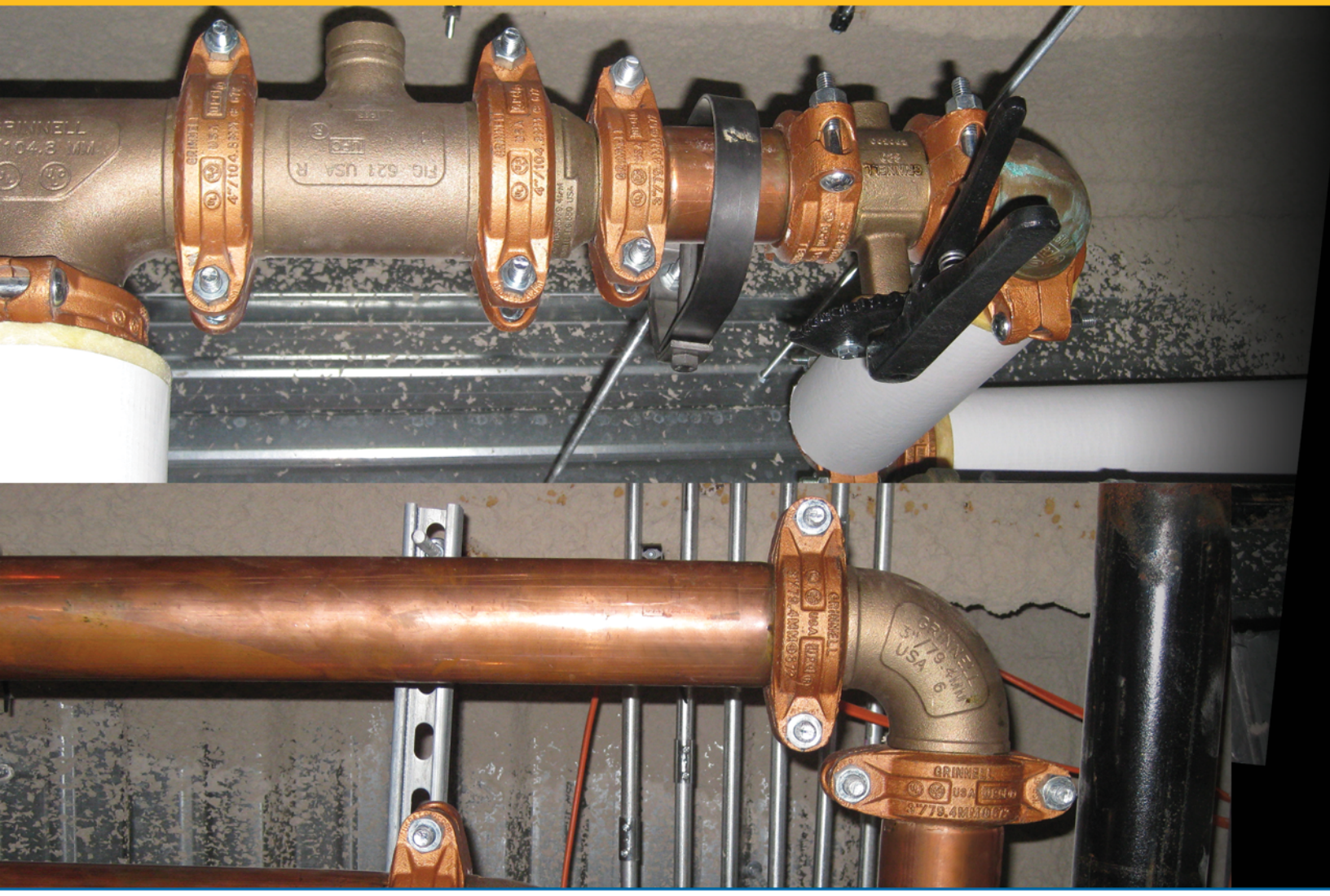


Figure 7550-75 Expansion Joints - 1¾" Total Movement Length

Nominal Dimensions for Side Elevation View

Nominal Pipe Size		Flexible* Coupling Figure / Quantity	X Coupling Height Inches *mm*	Z Tie Location Inches *mm*	L Compressed Length Inches *mm*	L Expanded Length Inches *mm*	Total Movement Capability Inches *mm*	Approx. Weight Lbs. *kg*
ANSI Inches *mm*	O.D. Inches *mm*							
1¼	1.660	705 / 14	2.560	1.25	40.875	42.625	1.750	42
32	*42,4*		*65,02*	*31,75*	*1038,22*	*1082,67*	*44,45*	*19,0*
1½	1.900	705 / 14	2.750	1.25	40.875	42.625	1.750	45
40	*48,3*		*69,85*	*31,75*	*1038,22*	*1082,67*	*44,45*	*20,4*
2	2.375	705 / 14	3.250	1.25	40.875	42.625	1.750	49
50	*60,3*		*82,55*	*31,75*	*1038,22*	*1082,67*	*44,45*	*22,2*
2½	2.875	705 / 14	3.690	1.25	40.875	42.625	1.750	60
65	*73,0*		*93,73*	*31,75*	*1038,22*	*1082,67*	*44,45*	*27,2*
3	3.500	705 / 14	4.380	1.25	40.875	42.625	1.750	79
80	*88,9*		*111,25*	*31,75*	*1038,22*	*1082,67*	*44,45*	*35,8*
4	4.500	705 / 7	5.690	1.25	25.000	26.750	1.750	57
100	*114,3*		*144,53*	*31,75*	*635,00*	*679,45*	*44,45*	*25,9*
5	5.563	705 / 7	6.880	1.25	25.000	26.750	1.750	84
125	*141,3*		*174,75*	*31,75*	*635,00*	*679,45*	*44,45*	*38,1*
6	6.625	705 / 7	7.940	1.25	25.000	26.750	1.750	92
150	*168,3*		*201,68*	*31,75*	*635,00*	*679,45*	*44,45*	*41,7*
8	8.625	705 / 7	10.190	1.375	27.750	29.500	1.750	166
200	*219,1*		*258,83*	*34,93*	*704,85*	*749,30*	*44,45*	*75,3*
10	10.750	705 / 7	12.690	1.375	30.500	32.250	1.750	287
250	*273,0*		*322,33*	*34,93*	*774,70*	*819,15*	*44,45*	*130,2*
12	12.750	705 / 7	14.940	1.375	30.500	32.250	1.750	375
300	*323,9*		*379,48*	*34,93*	*774,70*	*819,15*	*44,45*	*170,1*
14	14.000	707 / 7	16.670	1.500	33.250	35.000	1.750	486
350	*355,6*		*423,42*	*38,10*	*844,55*	*889,00*	*44,45*	*220,5*
16	16.000	707 / 7	18.830	1.500	34.250	36.000	1.750	583
400	*406,4*		*478,28*	*38,10*	*869,95*	*914,40*	*44,45*	*264,4*

* 1¼" - 8" Figure 405 Stainless Steel Couplings available upon request.



COPPER SYSTEMS

Copper Systems Table of Contents

GRINNELL Copper Grooved Systems are designed for joining copper tube size components 2" to 8" (DN 50 to DN 200) type K, L, M, and DWV. All couplings and fittings are rated for working pressures up to 300 psi *(20,7 bar)* depending on copper tubing size and type (see pressure rating chart).

Coupling Specifications

SPECIFICATIONS

The applicable material specifications for ductile iron and rubber gaskets apply:

Ductile Iron Housing Specifications

- ASTM A 536 – Standard Specification for Ductile Iron Castings Grade 65-45-12

Coatings

- Copper – Acrylic Enamel

Gasket Specifications

- **Tri-Seal Grade "EN" EPDM, NSF 61 Approved** compound, has a Copper striped color code, for potable water systems up to 180°F *(82°C)*. Not recommended for petroleum service.
- **Grade "EHT" EPDM NSF-61 Certified** Center-Stop, Push-On Style gaskets for copper tubing systems, have a Red and Copper, and Red and Green striped color code. For closed-loop heating systems from -30°F to 250°F *(-34°C to 120°C)*. NSF 61 Approved for potable water systems up to 180°F (up to 82°C). Recommended for use in low temperature and vacuum systems. Not for use with hydrocarbons. Designed for use with Figures 740 and 640 Pivot-Bolt Couplings

Bolt/Nut Specifications

- **ANSI:** Carbon steel oval neck bolts and nuts are heat-treated and conform to the physical properties of ASTM A 183 Grade 2 and SAE J429 Grade 5 with a minimum tensile strength of 110,000 psi *(7584 bar)*. Carbon Steel heavy hex nuts conform to the physical properties of ASTM A 183 Grade 2 and SAE J995 Grade 5. Bolts and nuts are zinc-electroplated conforming to ASTM B 633.
  Carbon Steel pivot bolts are heat treated with a minimum tensile strength of 130,000 psi (8963 bar).
- **Metric:** Carbon steel oval neck track head bolts (Gold color coded) are heat treated and conform to the physical properties of ASTM F 568 M with a minimum tensile strength of 760 MPa.
  Carbon Steel heavy hex nuts conform to the physical properties of ASTM A 563 M Class 9. Bolts and nuts are zinc-electroplated conforming to ASTM B 633.
- Stainless steel bolts and nuts are available upon request.

CLASSIFIED UL WATER QUALITY

NSF

UPC

NSF Certified to NSF/ANSI 61

UL

ULC

For additional listings or approvals, see page 11 or visit our website at www.grinnell.com

Fitting Specifications

Tech Data Sheet: G520

SPECIFICATIONS

Cast Copper Alloy Fittings

- Copper Alloy conforming to CDA C89833 or C83470;
- UL Classified in accordance with ANSI / NSF-61 and bears the UL Water Quality Mark.

Wrought Copper Fittings

- (For Figure 652 Groove by Copper Fittings Only) ASTM B 75 C12200; wall thickness per ASTM B 88 Type L.

Maximum Working Pressure

Fittings are rated at the pressure rating of the GRINNELL Coupling or Adapter in use:

Figure 672 Couplings,
Figure 640 Pivot-Bolt Couplings,
Figure 616 Reducing Couplings,
Figure 617 Transition Couplings,
Figure 61H Hinged Flange Adapters
Figure 61 Flange Adapters.

GRINNELL Full-Flow Grooved Fittings for Copper Piping Systems provide an economical and efficient method of changing direction. These copper fittings are available in sizes 2" to 8" (*50 - 200mm*).

Cast fittings in 90° and 45° elbows, tees, caps, concentric reducers, and reducing tees are cast with a copper alloy conforming to CDA C89833. Cast fittings are stronger and more durable than wrot copper fittings and are less susceptible to damage in transit or during installation. Reducing fittings are available with Groove x Groove or Groove x Cup End configurations.

Fittings are standard radius, full flow, designed for installation with GRINNELL Copper System Figure 640 Couplings, Figure 672 Couplings, Figure 616 Reducing Coupling, Figure 617 Transition Coupling, Figure 61H, or Figure 61 Flange Adapters.

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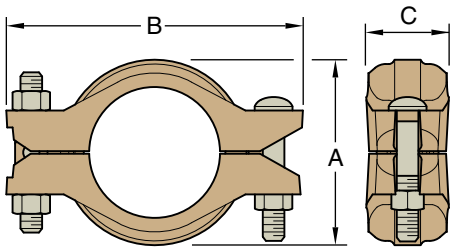
For detailed Listing / Approval information contact GRINNELL Mechanical Products.

Figure 640 Pivot-Bolt Rigid Installation-Ready Coupling

Tech Data Sheet: G512



Certified to NSF/ANSI 61

For additional listings or approvals, see page 11 or visit our website at www.grinnell.com

The GRINNELL Figure 640 Pivot-Bolt Rigid Coupling joins rolled grooved, hard-drawn copper tubing systems (CTS). It provides a rigid joint by firmly gripping the entire circumference of the copper tube groove.

GRINNELL Pivot-Bolt Couplings have been tested and proven to install in less than half the time of other standard grooved couplings. Simply push the gasket onto the pipe, swing the coupling body over the gasket, and tighten only one bolt. In comparison with other installation-ready couplings, the GRINNELL Pivot-Bolt Coupling allows clear visual confirmation that the gasket is properly seated on the gasket sealing surfaces.

The Figure 640 Pivot-Bolt Rigid Coupling is capable of pressures up to 300 psi *(20,7 bar)*.

Pipe Size		Dimensions			Pivot Bolt Size Dia. x Lg.	Coupling Bolt Size Dia. x Lg.	Approx. Weight lbs *kg*
Nominal Inches *mm*	Copper Tubing O.D. Inches *mm*	A Inches *mm*	B Inches *mm*	C Inches *mm*			
2	2.125	3.34	5.86	1.90	½ x 3¾	½ x 3⅝	3.1
50	*54,0*	*84,9*	*148,8*	*48,3*			*1,4*
2½	2.625	3.85	6.36	1.90	½ x 3¾	½ x 3⅝	3.2
65	*66,7*	*97,8*	*161,5*	*48,3*			*1,5*
3	3.125	4.35	6.86	1.91	½ x 3¾	½ x 3⅝	3.6
80	*79,4*	*110,5*	*174,2*	*48,5*			*1,6*
4	4.125	5.48	7.99	1.93	½ x 3¾	½ x 3⅝	4.2
100	*104,8*	*139,2*	*202,9*	*49,0*			*1,9*
5	5.125	6.57	9.73	2.00	⅝ x 4½	⅝ x 4½	6.9
125	*130,7*	*166,9*	*247,1*	*50,8*			*3,1*
6	6.125	7.57	10.73	2.02	⅝ x 4½	⅝ x 4½	7.5
150	*155,6*	*192,3*	*272,5*	*51,3*			*3,4*
8	8.125	9.57	12.73	2.04	⅝ x 4½	⅝ x 4½	8.8
200	*206,4*	*243,1*	*323,3*	*51,8*			*4,0*

See page 159 for specifications and pages 224 - 230 for gasket information.

Performance Pressure

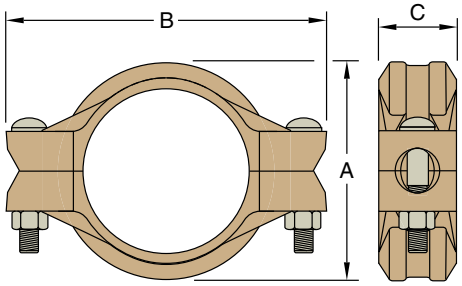
Pipe Size		Type "K" ASTM B-88			Type "L" ASTM B-88			Type "M" ASTM B-88			DWV ASTM B-306		
Nominal Size Inches *mm*	Copper Tubing O.D. Inches *mm*	Wall Thick Inches *mm*	Max. Working Pressure psi/*bar*	Max. End Load lbs/*kN*	Wall Thick Inches *mm*	Max. Working Pressure psi/*bar*	Max. End Load lbs/*kN*	Wall Thick Inches *mm*	Max. Working Pressure psi/*bar*	Max. End Load lbs/*kN*	Wall Thick Inches *mm*	Max. Working Pressure psi/*bar*	Max. End Load lbs/*kN*
2	2.125	0.083	300	1.065	0.070	300	1.065	0.058	250	890	–	–	–
50	*54,0*	*2,1*	*20,7*	*4,74*	*1,8*	*20,7*	*4,74*	*1,5*	*17,2*	*3,96*	–	–	–
2½	2.625	0.095	300	1.625	0.080	300	1.625	0.065	250	1.350	–	–	–
65	*66,7*	*2,4*	*20,7*	*7,23*	*2,0*	*20,7*	*7,23*	*1,7*	*17,2*	*6,01*	–	–	–
3	3.125	0.109	300	2.300	0.090	300	2.300	0.072	250	1.415	0.045	100	765
80	*79,4*	*2,8*	*20,7*	*10,23*	*2,3*	*20,7*	*10,23*	*1,8*	*17,2*	*6,30*	*1,1*	*6,9*	*3,40*
4	4.125	0.134	300	4.005	0.110	300	4.005	0.095	250	3.340	0.058	100	1.335
100	*104,8*	*3,4*	*20,7*	*17,82*	*2,8*	*20,7*	*17,82*	*2,4*	*17,2*	*14,86*	*1,5*	*6,9*	*5,94*
5	5.125	0.160	300	6.190	0.125	300	6.190	0.109	200	4.125	0.072	100	2.060
125	*130,7*	*4,1*	*20,7*	*27,55*	*3,2*	*20,7*	*27,55*	*2,8*	*13,8*	*18,36*	*1,8*	*6,9*	*9,17*
6	6.125	0.192	300	8.840	0.140	300	8.840	0.122	200	5.890	0.083	100	2.945
150	*155,6*	*4,9*	*20,7*	*39,34*	*3,6*	*20,7*	*39,34*	*3,1*	*13,8*	*26,21*	*2,1*	*6,9*	*13,10*
8	8.125	0.271	300	15.550	0.200	300	15.550	0.170	200	10.370	0.109	100	5.180
200	*206,4*	*6,9*	*20,7*	*69,2*	*5,1*	*20,7*	*69,20*	*4,3*	*13,8*	*46,10*	*2,8*	*6,9*	*23,0*

Figure 672 Rigid Coupling

Tech Data Sheet: G510

The GRINNELL Figure 672 Rigid Coupling, size range 2" to 8" *(50mm - 200mm)* is capable of pressures up to 300 PSI *(20,7 bar)* depending on copper tubing size and type. It provides a rigid joint by firmly gripping along the circumference of the copper tube grooves. The GRINNELL Figure 672 Coupling is supplied with a NSF61 approved grade EPDM EN tri-seal gasket.

GRINNELL Figure 672 Rigid Couplings are a proven dependable method of joining copper tubing and are an economical alternative to soldering (sweating) joints and can be used on type K, L, M, DWV copper tube.



Pipe Size		Dimensions			Coupling Bolt Size (2 Required) Inches	Approx. Weight lbs *kg*
Nominal Inches *mm*	Copper Tubing O.D. Inches *mm*	A Inches *mm*	B Inches *mm*	C Inches *mm*		
2	**2.125**	**3.09**	**4.65**	**1.76**	**⅜ x 2¼**	**1.7**
50	*54,0*	*78,6*	*118,1*	*44,7*		*0,8*
2½	**2.625**	**3.59**	**5.56**	**1.76**	**⅜ x 2¼**	**1.9**
65	*66,7*	*91,3*	*141,2*	*44,7*		*0,9*
3	**3.125**	**4.12**	**6.25**	**1.76**	**½ x 3**	**3.1**
80	*79,4*	*104,7*	*158,8*	*44,7*		*1,4*
4	**4.125**	**5.33**	**7.75**	**1.86**	**½ x 3**	**4.3**
100	*104,8*	*135,3*	*196,9*	*47,2*		*2,0*
5	**5.125**	**6.48**	**9.25**	**1.86**	**⅝ x 3¼**	**6.0**
125	*130,7*	*164,6*	*235,0*	*47,2*		*2,7*
6	**6.125**	**7.48**	**10.25**	**1.86**	**⅝ x 3¼**	**6.6**
150	*155,6*	*190,0*	*260,4*	*47,2*		*3,0*
8	**8.125**	**9.64**	**12.75**	**1.86**	**¾ x 4¾**	**10.2**
200	*206,4*	*244,8*	*323,9*	*47,2*		*4,6*

* Maximum available gap between pipe ends, minimum gap = 0.

See page 159 for specifications and pages 224 - 230 for gasket information.

Certified to NSF/ANSI 61

For additional listings or approvals, see page 11 or visit our website at www.grinnell.com

Performance Pressure

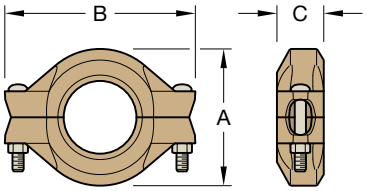
Pipe Size		Type "K" ASTM B-88			Type "L" ASTM B-88			Type "M" ASTM B-88			DWV ASTM B-306		
Nominal Size Inches *mm*	Copper Tubing O.D. Inches *mm*	Wall Thick Inches *mm*	Max. Working Pressure psi/*bar*	Max. End Load lbs/*kN*	Wall Thick Inches *mm*	Max. Working Pressure psi/*bar*	Max. End Load lbs/*kN*	Wall Thick Inches *mm*	Max. Working Pressure psi/*bar*	Max. End Load lbs/*kN*	Wall Thick Inches *mm*	Max. Working Pressure psi/*bar*	Max. End Load lbs/*kN*
2	**2.125**	**0.083**	**300**	**1.065**	**0.070**	**300**	**1.065**	**0.058**	**250**	**890**	**0.042**	**–**	**–**
50	*54,0*	*2,1*	*20,7*	*4,74*	*1,8*	*20,7*	*4,74*	*1,5*	*17,2*	*3,96*	*1,1*	*–*	*–*
2½	**2.625**	**0.095**	**300**	**1.625**	**0.080**	**300**	**1.625**	**0.065**	**250**	**1.350**	**–**	**–**	**–**
65	*66,7*	*2,4*	*20,7*	*7,23*	*2,0*	*20,7*	*7,23*	*1,7*	*17,2*	*6,01*	*–*	*–*	*–*
3	**3.125**	**0.109**	**300**	**2.300**	**0.090**	**300**	**2.300**	**0.072**	**250**	**1.415**	**0.045**	**100**	**765**
80	*79,4*	*2,8*	*20,7*	*10,23*	*2,3*	*20,7*	*10,23*	*1,8*	*17,2*	*6,30*	*1,1*	*6,9*	*3,40*
4	**4.125**	**0.134**	**300**	**4.005**	**0.110**	**300**	**4.005**	**0.095**	**250**	**3.340**	**0.058**	**100**	**1.335**
100	*104,8*	*3,4*	*20,7*	*17,82*	*2,8*	*20,7*	*17,82*	*2,4*	*17,2*	*14,86*	*1,5*	*6,9*	*5,94*
5	**5.125**	**0.160**	**300**	**6.190**	**0.125**	**300**	**6.19**	**0.109**	**200**	**4.125**	**0.072**	**100**	**2.060**
125	*130,7*	*4,1*	*20,7*	*27,55*	*3,2*	*20,7*	*27,55*	*2,8*	*13,8*	*18,36*	*1,8*	*6,9*	*9,17*
6	**6.125**	**0.192**	**300**	**8.840**	**0.140**	**300**	**8.840**	**0.122**	**200**	**5.890**	**0.083**	**100**	**2.945**
150	*155,6*	*4,9*	*20,7*	*39,34*	*3,6*	*20,7*	*39,34*	*3,1*	*13,8*	*26,21*	*2,1*	*6,9*	*13,10*
8	**8.125**	**0.271**	**300**	**15.550**	**0.200**	**300**	**15.550**	**0.170**	**200**	**10.370**	**0.109**	**100**	**5.180**
200	*206,4*	*6,9*	*20,7*	*69,2*	*5,1*	*20,7*	*69,20*	*4,3*	*13,8*	*46,10*	*2,8*	*6,9*	*23,0*

Figure 616 Reducing Coupling for Joining Copper Tubing Systems

Tech Data Sheet: G511

Figure 616 Reducing Coupling for Joining Copper Tubing Systems The GRINNELL Figure 616 Reducing Coupling allows a direct reduction between two different CTS copper tubing sizes and eliminates the need for a concentric reducer and couplings. The epoxy coated ductile iron coupling housings help to eliminate galvanic local cell and stray current problems, and a specially designed rubber gasket prevents the smaller tube from telescoping into the larger tube during vertical installation.

For Fire Protection pressure rating, listing, and approval information, contact your GRINNELL Representative.



Nominal Pipe Size		Max. Working Pressure (CWP*) PSI *bar*	Max.* Gap Inches *mm*	Deflection		Dimensions			Coupling Bolts Size Inches	Approx. Weight lbs *kg*
ANSI Inches *mm*	O.D. Inches *mm*			Degree Per Coupling	Pipe In/ft *mm/m*	A Inches *mm*	B Inches *mm*	C Inches *mm*		
2½ x 2	**2.625 x 2.125**	**300**	**0.06**	**1° - 22'**	**0.29**	**3.70**	**5.55**	**1.77**	**½ x 3**	**2.9**
65 x 50	*66,7 x 54,0*	*20*	*1,6*		*24,0*	*94*	*141*	*45*		*1,3*
3 x 2	**3.125 x 2.125**	**300**	**0.06**	**1° - 09'**	**0.24**	**4.21**	**5.98**	**1.77**	**½ x 3**	**3.3**
80 x 50	*79,4 x 54,0*	*20*	*1,6*		*20,0*	*107*	*152*	*45*		*1,5*
3 x 2½	**3.125 x 2.625**	**300**	**0.06**	**1° - 09'**	**0.24**	**4.21**	**5.98**	**1.77**	**½ x 3**	**3.0**
80 x 65	*79,4 x 66,7*	*20*	*1,6*		*20,0*	*107*	*152*	*45*		*1,4*
4 x 2½	**4.125 x 2.625**	**300**	**0.06**	**0° - 53'**	**0.18**	**5.20**	**7.20**	**1.77**	**½ x 3**	**4.2**
100 x 65	*104,8 x 66,7*	*20*	*1,6*		*15,0*	*132*	*183*	*45*		*1,9*
4 x 3	**4.125 x 3.125**	**300**	**0.06**	**0° - 53'**	**0.18**	**5.20**	**7.20**	**1.77**	**½ x 3**	**4.0**
100 x 68	*104,8 x 79,4*	*20*	*1,6*		*15,0*	*132*	*183*	*45*		*1,8*
5 x 4	**5.125 x 4.125**	**200**	**0.06**	**0° - 42'**	**0.15**	**6.30**	**8.82**	**1.77**	**⅝ x 3¼**	**5.5**
125 x 100	*130,7 x 104,8*	*14*	*1,6*		*12,0*	*160*	*224*	*45*		*2,5*
6 x 4	**6.125 x 4.125**	**200**	**0.06**	**0° - 36'**	**0.13**	**7.28**	**9.88**	**1.77**	**⅝ x 3¼**	**7.3**
150 x 100	*155,6 x 104,8*	*14*	*1,6*		*10,3*	*185*	*251*	*45*		*3,3*

*The maximum cold water pressure for general piping services tested to ASTM F1476 and/or AWWA C606 methods. Figures listed are based on roll-grooved Type K-ASTM B-88 copper tubing. For more information on other types, contact GRINNELL Technical Services.

Couplings with rubber gaskets are likely to function as a insulator. Where electrical continuity is required, GRINNELL Continunity Clip will restore electrical continuity to the system. The continunity clip satisfies IEE Wiring Regualtions.

See page 159 for specifications and pages 224 - 230 for gasket information.

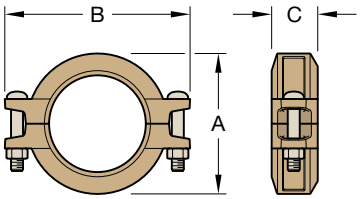
Figure 617 Transition Coupling for Joining IPS to Copper Tubing Systems

Tech Data Sheet: G513

The GRINNELL Figure 617 Transition Coupling provides for a direct connection between grooved end IPS steel pipe, fittings or valves, and grooved end CTS copper tubing eliminating the need for a dielectric waterway transition fitting and couplings. The coupling is comprised of two ductile iron housings, a specially designed pressure responsive rubber transition gasket, and track bolts and nuts. The rubber gasket isolates the fluid from the coupling housings and the epoxy coated housings help to eliminate galvanic local cell and stray current problems.

Certified to NSF/ANSI 61-G

For Fire Protection pressure rating, listing, and approval information, contact your GRINNELL Representative.

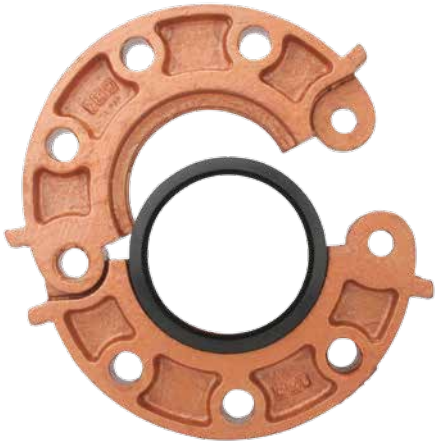


Pipe Size		Max Working Pressure (CWP) PSI *bar*	Axial Displacement Inches *mm*	Deflection Degree	Dimensions			Coupling Bolts Size Inches	Approx. Weight lbs *kg*
Nominal Inches *mm*	O.D. IPS x CTS Inches *mm*				A Inches *mm*	B Inches *mm*	C Inches *mm*		
2	**2.375 x 2.125**	**300**	**0 - 0.06**	**1° - 31'**	**3.31**	**5.08**	**1.89**	**½ x 2⅛**	**2.0**
50	*60,3 x 54,0*	*20*	*0 - 1,6*		*84*	*129*	*48*		*0,9*
2½	**2.875 x 2.625**	**300**	**0 - 0.06**	**1° - 15'**	**3.90**	**5.59**	**1.89**	**⅜ x 2⅛**	**2.2**
65	*73,0 x 66,7*	*20*	*0 - 1,6*		*99*	*142*	*48*		*1,0*
3	**3.500 x 3.125**	**300**	**0 - 0.06**	**1° - 02'**	**4.57**	**6.65**	**1.89**	**½ x 3**	**3.0**
80	*88,9 x 79,4*	*20*	*0 - 1,6*		*116*	*169*	*48*		*1,4*
4	**4.500 x 4.125**	**300**	**0 - 0.06**	**1° - 36'**	**7.76**	**7.76**	**2.05**	**½ x 3**	**4.2**
100	*114,3 x 104,8*	*20*	*0 - 1,6*		*197*	*197*	*52*		*1,9*

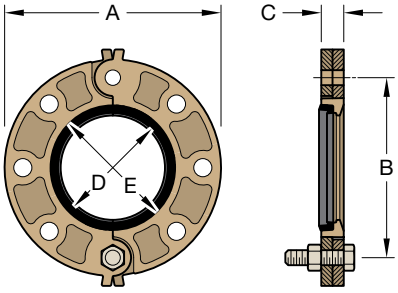
See page 159 for specifications and pages 224 - 230 for gasket information.

Figure 61H Hinged Flange Adapter
(ANSI Class 125/150)

Tech Data Sheet: G516



The Figure 61H Hinged Flange Adapter allows for a direct connection of grooved-end copper tubing with ANSI class 125/150 (steel) or ASME B16.24 (copper) class 150 flanged components without the need for heat or lead. Available in sizes 2 to 6 inches *(50 mm to 150 mm)*, the Figure 61H is comprised of two identical ductile iron flange segments, and a pressure responsive gasket. The pressure responsive gasket seals on the outside diameter of the copper tubing and isolates the flange segments from the internal fluid. Pressure rating of up to 300 psi *(20 bar)* can be achieved depending on the size and type of copper tubing being used.



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For Fire Protection pressure rating, listing, and approval information, contact your GRINNELL Representative.

Pipe Size		Max Working Pressure (CWP) PSI *bar*	Dimensions					Bolts**		Approx. Weight lbs *kg*
Nominal Size Inches *mm*	Copper Tubing O.D. Inches *mm*		A Inches *mm*	B Inches *mm*	C Inches *mm*	D* Inches *mm*	E* Inches *mm*	Qty.	Size Inches *mm*	
2	**2.125**	**300**	**6.38**	**4.75**	**0.75**	**2.13**	**3.41**	**4**	**⅝ x 3**	**4.1**
50	*54,0*	*20*	*162,1*	*120,7*	*19,1*	*54,0*	*86,6*			*1,9*
2½	**2.625**	**300**	**7.00**	**5.50**	**0.88**	**2.63**	**3.91**	**4**	**⅝ x 3**	**5.7**
65	*66,7*	*20*	*178,0*	*140,0*	*22,0*	*67,0*	*99,0*			*2,6*
3	**3.125**	**300**	**7.50**	**6.00**	**0.94**	**3.13**	**4.53**	**4**	**⅝ x 3**	**6.7**
80	*79,4*	*20*	*190,5*	*152,4*	*23,9*	*80,0*	*115,1*			*3,0*
4	**4.125**	**300**	**9.00**	**7.70**	**0.94**	**4.13**	**5.53**	**4**	**⅝ x 3**	**8.5**
100	*104,8*	*20*	*228,6*	*190,5*	*23,9*	*105,0*	*140,5*			*3,9*
5	**5.125**	**300**	**10.00**	**8.50**	**1.00**	**5.13**	**6.72**	**8**	**¾ x 3½**	**10.3**
125	*130,2*	*20*	*254,0*	*215,9*	*25,4*	*130,0*	*170,7*			*4,7*
6	**6.125**	**300**	**11.00**	**9.50**	**1.00**	**6.13**	**7.78**	**8**	**¾ x 3½**	**11.5**
150	*155,6*	*20*	*279,4*	*241,3*	*25,4*	*156,0*	*197,6*			*5,2*

* Dimensions D and E represent minimum and maximum sealing surfaces.

** Bolts are not supplied. Bolt lengths shown are standard; it is the responsibility of the purchaser to verify correct length for the intended application.

Note: Phenolic Type "F" Flange Adapter Washer are required when the Figure 61H Flange Adapter is used against surfaces such as:

- Rubber surfaces
- Adapting to AWWA cast flanges
- Rubber faced wafer valves
- Serrated flange surfaces

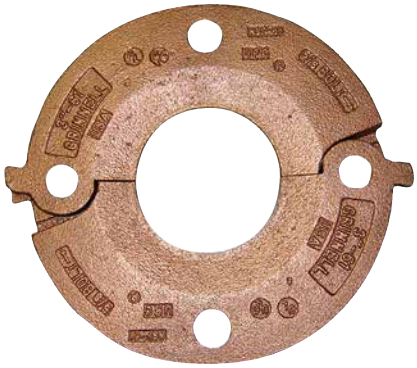
Figure 61H Flange Adapters are not recommended for applications that incorporate tie rods for anchoring or on a standard fitting within 90° of each other.

For information on larger sizes, contact GRINNELL Mechanical Products.

Figure 61 Flange Adapter
(ANSI Class 125/150)

Tech Data Sheet: G515

The GRINNELL Figure 61 Flange Adapter is capable of pressures up to 300 PSI *(20,7 bar)* depending on copper tubing size and type. It provides a direct transition from flanged components to a grooved copper tube system. I.P.S. size flange bolt patterns conform to ANSI Class 125 and 150. The GRINNELL Figure 61 Flange Adapter is supplied with NSF 61 approved grade EPDM EN Gasket.



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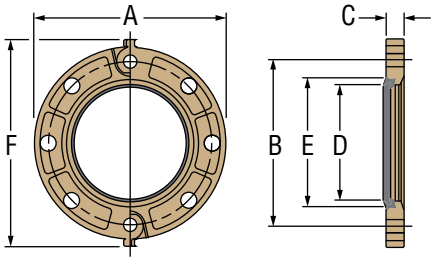


Pipe Size		Dimensions						Bolts**		Approx. Weight lbs *kg*
Nominal Size Inches *mm*	Copper Tubing O.D. Inches *mm*	A Inches *mm*	B Inches *mm*	C Inches *mm*	D* Inches *mm*	E* Inches *mm*	F Inches *mm*	Qty.	Size Inches *mm*	
2	2.125	6.38	4.75	0.75	2.3	2.83	7.25	4	5/8 x 3	3.7
50	*54,0*	*162,1*	*120,7*	*19,1*	*58,4*	*71,9*	*184,2*		–	*1,7*
2½	2.625	7.00	5.50	0.88	2.79	3.33	7.88	4	5/8 x 3	5.4
65	*66,7*	*178,0*	*140,0*	*22,0*	*70,9*	*84,6*	*200,0*		–	*2,4*
3	3.125	7.50	6.00	0.94	3.28	3.85	8.38	4	5/8 x 3	6.1
80	*79,4*	*190,5*	*152,4*	*23,9*	*83,3*	*97,8*	*212,9*		–	*2,8*
4	4.125	9.00	7.50	0.94	4.24	4.85	9.90	8	5/8 x 3	7.6
100	*104,8*	*228,6*	*190,5*	*23,9*	*107,7*	*123,2*	*251,5*		–	*3,4*
5	5.125	10.00	8.50	1.00	5.24	5.84	10.88	8	¾ x 3½	9.5
125	*130,2*	*254,0*	*215,9*	*25,4*	*133,1*	*148,3*	*276,4*		–	*4,3*
6	6.125	11.00	9.50	1.00	6.24	6.96	11.88	8	¾ x 3½	10.9
150	*155,6*	*279,4*	*241,3*	*25,4*	*158,5*	*176,8*	*301,8*		–	*4,9*

* Dimensions D and E represent minimum and maximum sealing surfaces.

** Bolts are not supplied. Bolt lengths shown are standard; it is the responsibility of the purchaser to verify correct length for the intended application.

Note: Phenolic Type "F" Flange Adapter Washer (page 35) are required when the Figure 61 Flange Adapter is used against surfaces such as:

- Rubber surfaces
- Adapting to AWWA cast flanges
- Rubber faced wafer valves
- Serrated flange surfaces

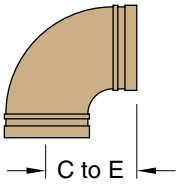
Figure 61 Flange Adapters are not recommended for applications that incorporate tie rods for anchoring or on a standard fitting within 90° of each other.

For information on larger sizes, contact GRINNELL Mechanical Products.

See page 159 for specifications and pages 224 - 230 for gasket information.

Figure 610 90° Elbow

Tech Data Sheet: G520



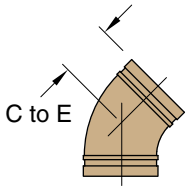
Pipe Size		C to E	Approx. Weight
Nominal Size Inches *mm*	Copper Tubing O.D. Inches *mm*	Inches *mm*	lbs *kg*
2	**2.125**	**2.91**	**1.9**
50	*54,0*	*73,9*	*0,9*
2½	**2.625**	**3.31**	**2.7**
65	*66,7*	*84,1*	*1,2*
3	**3.125**	**3.81**	**3.6**
80	*79,4*	*96,8*	*1,6*
4	**4.125**	**4.75**	**7.1**
100	*104,8*	*120,7*	*3,2*
5	**5.125**	**5.94**	**11.9**
125	*130,2*	*150,9*	*5,4*
6	**6.125**	**6.94**	**16.7**
150	*155,6*	*176,7*	*7,6*
8	**8.125**	**7.75**	**25.3**
200	*206,4*	*196,9*	*11,5*

For information on larger sizes, contact GRINNELL Mechanical Products.

See page 159 for specifications.

Figure 601 45° Elbow

Tech Data Sheet: G520



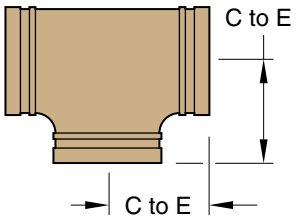
Pipe Size		C to E	Approx. Weight
Nominal Size Inches *mm*	Copper Tubing O.D. Inches *mm*	Inches *mm*	lbs *kg*
2	**2.125**	**2.19**	**1.6**
50	*54,0*	*55,6*	*0,7*
2½	**2.625**	**2.31**	**2.1**
65	*66,7*	*58,7*	*1,0*
3	**3.125**	**2.59**	**2.7**
80	*79,4*	*65,8*	*1,2*
4	**4.125**	**3.19**	**5.5**
100	*104,8*	*81,0*	*2,5*
5	**5.125**	**3.25**	**7.7**
125	*130,2*	*82,6*	*3,5*
6	**6.125**	**3.5**	**10.1**
150	*155,6*	*88,9*	*4,6*
8	**8.125**	**4.25**	**16.6**
200	*206,4*	*108,0*	*7,5*

For information on larger sizes, contact GRINNELL Mechanical Products.

See page 159 for specifications.

Figure 619 Tee

Tech Data Sheet: G520



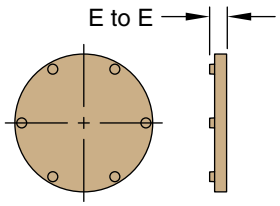
Pipe Size		C to E	Approx.
Nominal Size Inches *mm*	Copper Tubing O.D. Inches *mm*	Inches *mm*	Weight lbs *kg*
2	**2.125**	**2.69**	**2.5**
50	*54,0*	*68,3*	*1,1*
2½	**2.625**	**3.20**	**3.8**
65	*66,7*	*81,3*	*1,7*
3	**3.125**	**3.52**	**4.7**
80	*79,4*	*89,4*	*2,1*
4	**4.125**	**4.25**	**9.0**
100	*104,8*	*108,0*	*4,1*
5	**5.125**	**5.94**	**17.7**
125	*130,2*	*150,9*	*8,0*
6	**6.125**	**6.94**	**24.8**
150	*155,6*	*176,3*	*11,3*
8	**8.125**	**7.75**	**46.2**
200	*206,4*	*196,9*	*21,0*

For information on larger sizes, contact GRINNELL Mechanical Products.

See page 159 for specifications.

Figure 660 Cap

Tech Data Sheet: G520



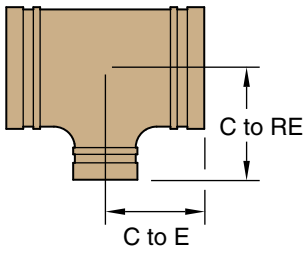
Pipe Size		E to E	Approx.
Nominal Size Inches *mm*	Copper Tubing O.D. Inches *mm*	Inches *mm*	Weight lbs *kg*
2	**2.125**	**0.92**	**0.6**
50	*54,0*	*23,4*	*0,3*
2½	**2.625**	**0.92**	**1.0**
65	*66,7*	*23,4*	*0,4*
3	**3.125**	**0.92**	**1.3**
80	*79,4*	*23,4*	*0,6*
4	**4.125**	**0.92**	**2.2**
100	*104,8*	*23,4*	*1,0*
5	**5.125**	**0.92**	**5.8**
125	*130,2*	*23,4*	*2,6*
6	**6.125**	**0.92**	**8.1**
150	*155,6*	*23,4*	*3,7*
8	**8.125**	**1.03**	**14.1**
200	*206,4*	*26,2*	*6,4*

For information on larger sizes, contact GRINNELL Mechanical Products.

See page 159 for specifications.

Figure 621 Reducing Tee

Tech Data Sheet: G520



Pipe Size		C to E Inches *mm*	C to RE Inches *mm*	Approx. Weight lbs *kg*
Nominal Size Inches *mm*	Copper Tubing O.D. Inches *mm*			
2½ x 2½ x 2	**2.625 x 2.625 x 2.125**	**3.28**	**3.38**	**3.5**
65 x 65 x 50	*66,7 x 66,7 x 54,0*	*83,3*	*85,9*	*1,6*
3 x 3 x 2	**3.125 x 3.125 x 2.125**	**3.00**	**3.38**	**3.8**
80 x 80 x 50	*79,4 x 79,4 x 54,0*	*76,2*	*85,9*	*1,7*
3 x 3 x 2½	**3.125 x 3.125 x 2.625**	**3.25**	**3.5**	**4.3**
80 x 80 x 65	*79,4 x 79,4 x 66,7*	*82,6*	*88,9*	*2,0*
4 x 4 x 2	**4.125 x 4.125 x 2.125**	**3.66**	**4.13**	**6.9**
100 x 100 x 50	*104,8 x 104,8 x 54,0*	*93,0*	*104,9*	*3,2*
4 x 4 x 2½	**4.125 x 4.125 x 2.625**	**3.94**	**4.06**	**7.5**
100 x 100 x 65	*104,8 x 104,8 x 66,7*	*100,1*	*103,1*	*3,4*
4 x 4 x 3	**4.125 x 4.125 x 3.125**	**4.19**	**4.16**	**8.7**
100 x 100 x 80	*104,8 x 104,8 x 79,4*	*106,4*	*105,7*	*4,0*
5 x 5 x 3	**5.125 x 5.125 x 3.125**	**3.75**	**4.63**	**10.0**
125 x 125 x 80	*130,2 x 130,2 x 79,4*	*95,3*	*117,6*	*4,5*
5 x 5 x 4	**5.125 x 5.125 x 4.125**	**4.25**	**4.56**	**11.4**
125 x 125 x 100	*130,2 x 130,2 x 104,8*	*108,0*	*115,8*	*5,2*
6 x 6 x 2½	**6.125 x 6.125 x 2.625**	**3.63**	**5.13**	**11.5**
150 x 150 x 65	*155,6 x 155,6 x 66,7*	*92,2*	*130,3*	*5,2*
6 x 6 x 3	**6.125 x 6.125 x 3.125**	**3.69**	**5.19**	**11.9**
150 x 150 x 80	*155,6 x 155,6 x 79,4*	*93,7*	*131,8*	*5,4*
6 x 6 x 4	**6.125 x 6.125 x 4.125**	**4.19**	**5.13**	**13.7**
150 x 150 x 100	*155,6 x 155,6 x 104,8*	*106,4*	*130,3*	*6,2*
6 x 6 x 5	**6.125 x 6.125 x 5.125**	**4.69**	**5.19**	**15.9**
150 x 150 x 125	*155,6 x 155,6 x 130,2*	*119,1*	*131,8*	*7,2*

For information on larger sizes, contact GRINNELL Mechanical Products.
Dimensional information in this chart is for cast fittings.
See page 159 for specifications.

Figure 618 Reducing Tee

Tech Data Sheet: G520

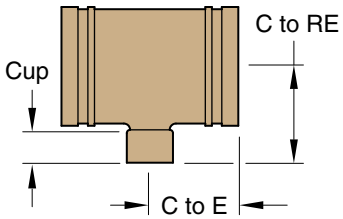


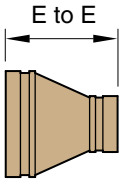
Figure 618
Reducing Tee
Groove x Groove x Cup

Pipe Size		C to E Inches *mm*	C to RE Inches *mm*	Cup Inches *mm*	Approx. Weight lbs *kg*
Nominal Size Inches *mm*	Copper Tubing O.D. Inches *mm*				
2 x 2 x ¾	**2.125 x 2.125 x 0.825**	**2.20**	**2.04**	**0.75**	**1.6**
50 x 50 x 20	*54,0 x 54,0 x 21,0*	*55,9*	*51,8*	*19,0*	*0,7*
2 x 2 x 1	**2.125 x 2.125 x 1.125**	**2.33**	**2.26**	**0.91**	**1.8**
50 x 50 x 25	*54,0 x 54,0 x 25,4*	*59,1*	*57,4*	*23,1*	*0,8*
2 x 2 x 1¼	**2.125 x 2.125 x 1.375**	**2.48**	**2.41**	**0.97**	**2.0**
50 x 50 x 32	*54,0 x 54,0 x 34,9*	*63,0*	*61,2*	*24,6*	*0,9*
2 x 2 x 1½	**2.125 x 2.125 x 1.625**	**2.55**	**2.34**	**1.09**	**2.0**
50 x 50 x 40	*54,0 x 54,0 x 38,1*	*64,7*	*59,4*	*27,7*	*0,9*
2½ x 2½ x ¾	**2.625 x 2.625 x 0.875**	**2.27**	**2.24**	**0.75**	**2.2**
65 x 65 x 20	*66,7 x 66,7 x 21,0*	*57,7*	*57,0*	*19,0*	*1,0*
2½ x 2½ x 1	**2.625 x 2.625 x 1.125**	**2.40**	**2.46**	**0.91**	**2.3**
65 x 65 x 25	*66,7 x 66,7 x 25,4*	*61,0*	*62,5*	*23,1*	*1,0*
2½ x 2½ x 1¼	**2.625 x 2.625 x 1.375**	**2.52**	**2.63**	**0.97**	**2.5**
65 x 65 x 32	*66,7 x 66,7 x 34,9*	*64,0*	*66,8*	*24,6*	*1,1*
2½ x 2½ x 1½	**2.625 x 2.625 x 1.625**	**2.70**	**2.74**	**1.09**	**2.7**
65 x 65 x 40	*66,7 x 66,7 x 38,1*	*68,6*	*69,6*	*27,7*	*1,2*
3 x 3 x ¾	**3.125 x 3.125 x 0.875**	**2.45**	**2.64**	**0.75**	**2.9**
80 x 80 x 20	*79,4 x 79,4 x 21,0*	*62,2*	*67,1*	*19,0*	*1,3*
3 x 3 x 1	**3.125 x 3.125 x 1.125**	**2.54**	**2.85**	**0.91**	**3.0**
80 x 80 x 25	*79,4 x 79,4 x 25,4*	*64,5*	*72,4*	*23,1*	*1,4*
3 x 3 x 1¼	**3.125 x 3.125 x 1.375**	**2.63**	**2.95**	**0.97**	**3.1**
80 x 80 x 32	*79,4 x 79,4 x 34,9*	*66,8*	*74,9*	*24,6*	*1,4*
3 x 3 x 1½	**3.125 x 3.125 x 1.625**	**2.85**	**3.06**	**1.09**	**3.4**
80 x 80 x 40	*79,4 x 79,4 x 38,1*	*72,4*	*77,7*	*27,7*	*1,5*
4 x 4 x ¾	**4.125 x 4.125 x 0.875**	**2.95**	**3.06**	**0.75**	**5.2**
100 x 100 x 20	*104,8 x 104,8 x 21,0*	*74,9*	*77,7*	*19,0*	*2,4*
4 x 4 x 1	**4.125 x 4.125 x 1.125**	**3.10**	**3.28**	**0.91**	**5.5**
100 x 100 x 25	*104,8 x 104,8 x 25,4*	*78,7*	*83,3*	*23,1*	*2,6*
4 x 4 x 1¼	**4.125 x 4.125 x 1.375**	**3.25**	**3.53**	**0.97**	**5.7**
100 x 100 x 32	*104,8 x 104,8 x 34,9*	*82,5*	*89,7*	*24,6*	*2,6*
4 x 4 x 1½	**4.125 x 4.125 x 1.625**	**3.35**	**3.71**	**1.09**	**6.1**
100 x 100 x 40	*104,8 x 104,8 x 38,1*	*85,1*	*94,2*	*27,7*	*2,8*

For information on larger sizes, contact GRINNELL Mechanical Products.
See page 159 for specifications.

Figures 650
Concentric Reducer

Tech Data Sheet: G520



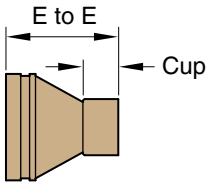
Pipe Size		E to E Inches *mm*	Approx. Weight lbs *kg*
Nominal Size Inches *mm*	Copper Tubing O.D. Inches *mm*		
2½ x 2	**2.625 x 2.125**	**3.29**	**1.4**
65 x 50	*66,7 x 54,0*	*83,6*	*0,6*
3 x 2	**3.125 x 2.125**	**2.50**	**1.4**
80 x 50	*79,4 x 54,0*	*63,5*	*0,6*
3 x 2½	**3.125 x 2.625**	**2.50**	**1.4**
80 x 65	*79,4 x 66,7*	*63,5*	*0,6*
4 x 2	**4.125 x 2.125**	**4.75**	**3.0**
100 x 50	*104,8 x 54,0*	*120,7*	*1,4*
4 x 2½	**4.125 x 2.625**	**3.00**	**2.3**
100 x 65	*104,8 x 66,7*	*76,2*	*1,1*
4 x 3	**4.125 x 3.125**	**3.00**	**2.3**
100 x 80	*104,8 x 79,4*	*76,2*	*1,1*
5 x 3	**5.125 x 3.125**	**3.88**	**3.7**
125 x 80	*130,2 x 79,4*	*98,6*	*1,7*
5 x 4	**5.125 x 4.125**	**3.38**	**3.7**
125 x 100	*130,2 x 104,8*	*85,9*	*1,7*
6 x 3	**6.125 x 3.125**	**4.38**	**5.1**
150 x 80	*155,6 x 79,4*	*111,3*	*2,3*
6 x 4	**6.125 x 4.125**	**3.88**	**5.2**
150 x 100	*155,6 x 104,8*	*98,6*	*2,4*
6 x 5	**6.125 x 5.125**	**3.38**	**4.8**
150 x 125	*155,6 x 130,2*	*85,9*	*2,2*
8 x 6	**8.125 x 6.125**	**5.00**	**9.7**
200 x 150	*206,4 x 155,6*	*127,0*	*4,4*

For information on larger sizes, contact GRINNELL Mechanical Products.

See page 159 for specifications.

Figures 652
Concentric Reducer

Tech Data Sheet: G520



Pipe Size		E to E Inches *mm*	Cup Inches *mm*	Approx. Weight lbs *kg*
Nominal Size Inches *mm*	Copper Tubing O.D. Inches *mm*			
2 x 1	**2.125 x 1.125**	**2.70**	**0.91**	**0.5**
50 x 25	*54,0 x 25,4*	*68,6*	*23,1*	*0,2*
2 x 1¼	**2.125 x 1.375**	**3.00**	**0.97**	**0.4**
50 x 32	*54,0 x 34,9*	*76,2*	*24,6*	*0,2*
2 x 1½	**2.125 x 1.625**	**2.94**	**1.09**	**0.4**
50 x 40	*54,0 x 38,1*	*74,7*	*27,7*	*0,2*
2½ x 1	**2.625 x 1.125**	**3.25**	**0.91**	**0.5**
65 x 25	*66,7 x 25,4*	*82,6*	*23,1*	*0,2*
2½ x 1¼	**2.625 x 1.375**	**3.52**	**0.97**	**0.6**
65 x 32	*66,7 x 34,9*	*89,4*	*24,6*	*0,3*
2½ x 1½	**2.625 x 1.625**	**3.45**	**1.09**	**0.6**
65 x 40	*66,7 x 38,1*	*87,6*	*27,7*	*0,3*
2½ x 2	**2.625 x 2.125**	**3.38**	**1.34**	**0.6**
65 x 50	*66,7 x 54,0*	*85,9*	*34,0*	*0,3*
3 x 1½	**3.125 x 1.625**	**3.68**	**1.09**	**0.7**
80 x 40	*79,4 x 38,1*	*93,5*	*27,7*	*0,3*
3 x 2	**3.125 x 2.125**	**4.10**	**1.34**	**1.0**
80 x 50	*79,4 x 54,0*	*104,1*	*34,0*	*0,5*
4 x 2	**4.125 x 2.125**	**4.75**	**1.34**	**1.4**
100 x 50	*104,8 x 54,0*	*120,7*	*34,0*	*0,6*

For information on larger sizes, contact GRINNELL Mechanical Products.

See page 159 for specifications.

Model B680 Butterfly Valve with Lever Handle

Tech Data Sheet: G530

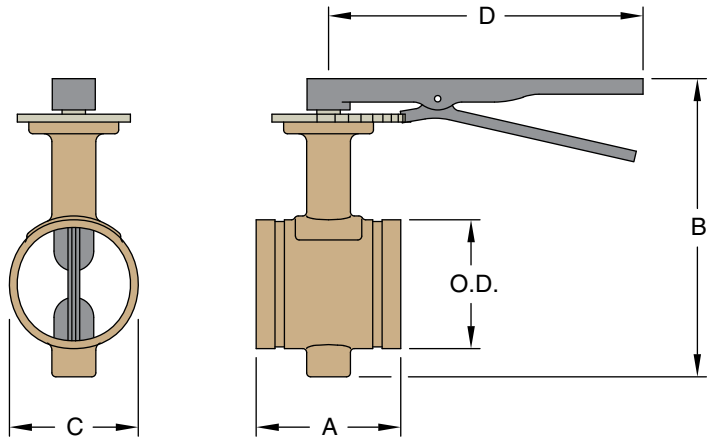
The GRINNELL Model 680 Butterfly Valve is for use in piping systems with grooved copper tubing (CTS). It provides for efficient control of fluid in piping systems with a 10 position locking lever handle. Flow may be from either direction, and the valve may be positioned in any orientation.

The Model 680 Butterfly Valve features a bronze body and a disc that is fully encapsulated with EPDM rubber for potable water service. The Model 680 Valve is ANSI/NSF 61 classified.

The Model 680 Valve is also available with a factory-installed gear operator on request.

Pressure Ratings

Up to 300 psi *(20,7 bar)*



Pipe Size		Dimensions				Weight lbs *kg*
Nominal Size Inches *mm*	Copper Tubing O.D. Inches *mm*	A Inches *mm*	B Inches *mm*	C Inches *mm*	D Inches *mm*	
2	**2.125**	**3.19**	**5.31**	**2.45**	**10.0**	**4.9**
50	*54,0*	*81,0*	*135,0*	*57,0*	*254,0*	*2,2*
2½	**2.625**	**3.75**	**5.91**	**2.63**	**10.0**	**5.9**
65	*66,7*	*96,0*	*150,0*	*67,0*	*254,0*	*2,7*
3	**3.125**	**3.75**	**7.68**	**3.13**	**10.0**	**6.6**
80	*79,4*	*96,0*	*195,0*	*79,0*	*254,0*	*3,0*
4	**4.125**	**4.63**	**8.78**	**4.13**	**10.0**	**11.0**
100	*104,8*	*118,0*	*223,0*	*105,0*	*254,0*	*5,0*
5	**5.125**	**5.88**	**9.80**	**5.13**	**10.0**	**17.6**
125	*130,2*	*149,0*	*249,0*	*130,0*	*254,0*	*8,0*
6	**6.125**	**5.88**	**10.86**	**6.13**	**10.0**	**21.6**
150	*155,6*	*149,0*	*276,0*	*156,0*	*254,0*	*9,8*

For information on larger sizes, contact GRINNELL Mechanical Products.

Notes: Pressure ratings listed are CWP (cold water pressure) or maximum working pressure within the service temperature range of the gasket used in the coupling.

Maximum working pressures and end loads listed are total of internal and external pressures and loads based on roll-grooved Type K – ASTM B 88 copper tubing.

See page 159 for specifications.

SPECIFICATIONS

Body

- Bronze per ASTM B 584 (UNS C90500)

Disc

- EPDM encapsulated ductile iron, ductile iron per ASTM A 536, Grade 65-45-12

Upper and Lower Shafts

- Stainless Steel Type 416 of ASTM A 582
- UL Classified in Accordance with ANSI/NSF 61

Operator

- Lever with locking device

CLASSIFIED UL WATER QUALITY

NSF Certified to NSF/ANSI 61

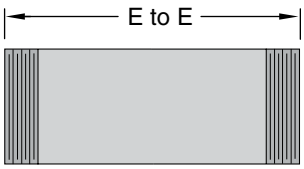
For additional listings or approvals, see page 11 or visit our website at www.grinnell.com

Figures 407GT & 407T Dielectric Waterways

Tech Data Sheet: G465

Figure 407GT
Dielectric Waterway

Figure 407T
Dielectric Waterway



** Clearflow is a Registered Trademark of Perfection Corp.*

Clearflow* Fittings protect plumbing systems through an innovative steel-to-plastic design that establishes a dielectric waterway. The dielectric fittings separate dissimilar metals in the electrolyte (waterway), eliminating the local galvanic cell.

The Clearflow Fittings metal-to-metal joint design maintains external electrical continuity, thereby preventing stray current corrosion. This feature is critical when stray current is present due to intentional or non-intentional grounding of direct current (DC) sources, such as phone systems and appliances.

Fittings meet the requirements of ASTM D 4140 for continuous use at temperatures up to 230°F *(110°C)*.

Test data/results and listings by Pittsburgh Testing Laboratory can be provided upon request. Contact GRINNELL Mechanical Products

Pressure Ratings

Up to 300 psi *(20,7 bar)*

Certified to NSF/ANSI 61

For additional listings or approvals, see page 11 or visit our website at www.grinnell.com

Pipe Size		Figure 407GT Grooved x Male Thread		Figure 407T Male Thread x Male Thread	
Nominal Inches *mm*	Pipe O.D. Inches *mm*	End to End Inches *mm*	Approx. Weight Lbs. *kg*	End to End Inches *mm*	Approx. Weight Lbs. *kg*
½	0.840	–	–	3.0	0.2
15	*21,3*	–	–	*76,2*	*0,1*
¾	1.050	–	–	3.0	0.2
20	*26,7*	–	–	*76,2*	*0,1*
1	1.315	4.0	0.3	4.0	0.3
25	*33,7*	*101,6*	*0,1*	*101,6*	*0,1*
1¼	1.660	4.0	0.6	4.0	0.6
32	*42,4*	*101,6*	*0,3*	*101,6*	*0,3*
1½	1.900	4.0	0.8	4.0	0.8
40	*48,3*	*101,6*	*0,4*	*101,6*	*0,4*
2	2.375	4.0	1.0	4.0	1.0
50	*60,3*	*101,6*	*0,5*	*101,6*	*0,5*
2½	2.875	6.0	1.6	6.0	1.6
65	*73,0*	*152,4*	*0,7*	*152,4*	*0,7*
3	3.500	6.0	2.0	6.0	2.0
80	*88,9*	*152,4*	*0,9*	*152,4*	*0,9*
3½	4.000	6.0	2.3	6.0	2.3
90	*101,6*	*152,4*	*1,0*	*152,4*	*1,0*
4	4.500	6.0	4.5	6.0	4.5
100	*114,3*	*152,4*	*2,0*	*152,4*	*2,0*

For information on larger sizes, contact GRINNELL Mechanical Products.
See fitting specifications on page 159.

Figure 407GG Dielectric Transition Fitting (IPS x CTS)

Tech Data Sheet: G465

The GRINNELL Figure 407GG Dielectric Transition Fitting provides a direct transition between a grooved-end steel pipe (IPS) and grooved end copper tubing (CTS). The fittings internal lining effectively eliminates galvanic local cell and stray current problems. The Figure 407GG is designed for use at temperatures from -40°F to 230°F (*-40°C to 110°C*) and pressures up to 300 psi (*20 bar*).

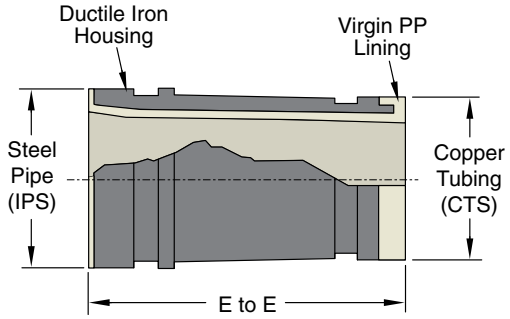
SPECIFICATIONS

Housing:

- Ductile Iron conforming to ASTM A536, electro-deposition coated.

Liner:

- Virgin polypropylene to ASTM D4140.



Nominal Size Inches *mm*	Outside Diameter Inches *mm*		End to End Inches *mm*	Approx. Weight lbs *kg*
	Steel Pipe (IPS)	Copper Tubing (CTS)		
2	**2.375**	**2.125**	**4.00**	**1.3**
50	*60,3*	*54,0*	*102*	*0,6*
2½	**2.875**	**2.625**	**4.00**	**1.9**
65	*73,0*	*66,7*	*102*	*0,9*
3	**3.500**	**3.125**	**4.00**	**2.9**
80	*88,9*	*79,4*	*102*	*1,3*
4	**4.500**	**4.125**	**4.00**	**3.3**
100	*114,3*	*104,8*	*102*	*1,5*
5	**5.563**	**5.125**	**4.00**	**5.2**
125	*141,3*	*130,2*	*102*	*2,4*
6	**6.625**	**6.125**	**4.00**	**6.9**
150	*168,3*	*155,6*	*102*	*3,1*
8	**8.625**	**8.125**	**4.00**	**9.4**
200	*219,1*	*206,4*	*102*	*4,3*

For information on larger sizes, contact GRINNELL Mechanical Products.
See fitting specifications on page 159.

Model 1039-66 Copper Roll Groover

Capacity:

- 2" – 8" *(50 - 200mm)* Copper Tube K, L, M and DWV
- 1¼" – 6" *(32 - 150mm)* SCH 40 *(7mm)*

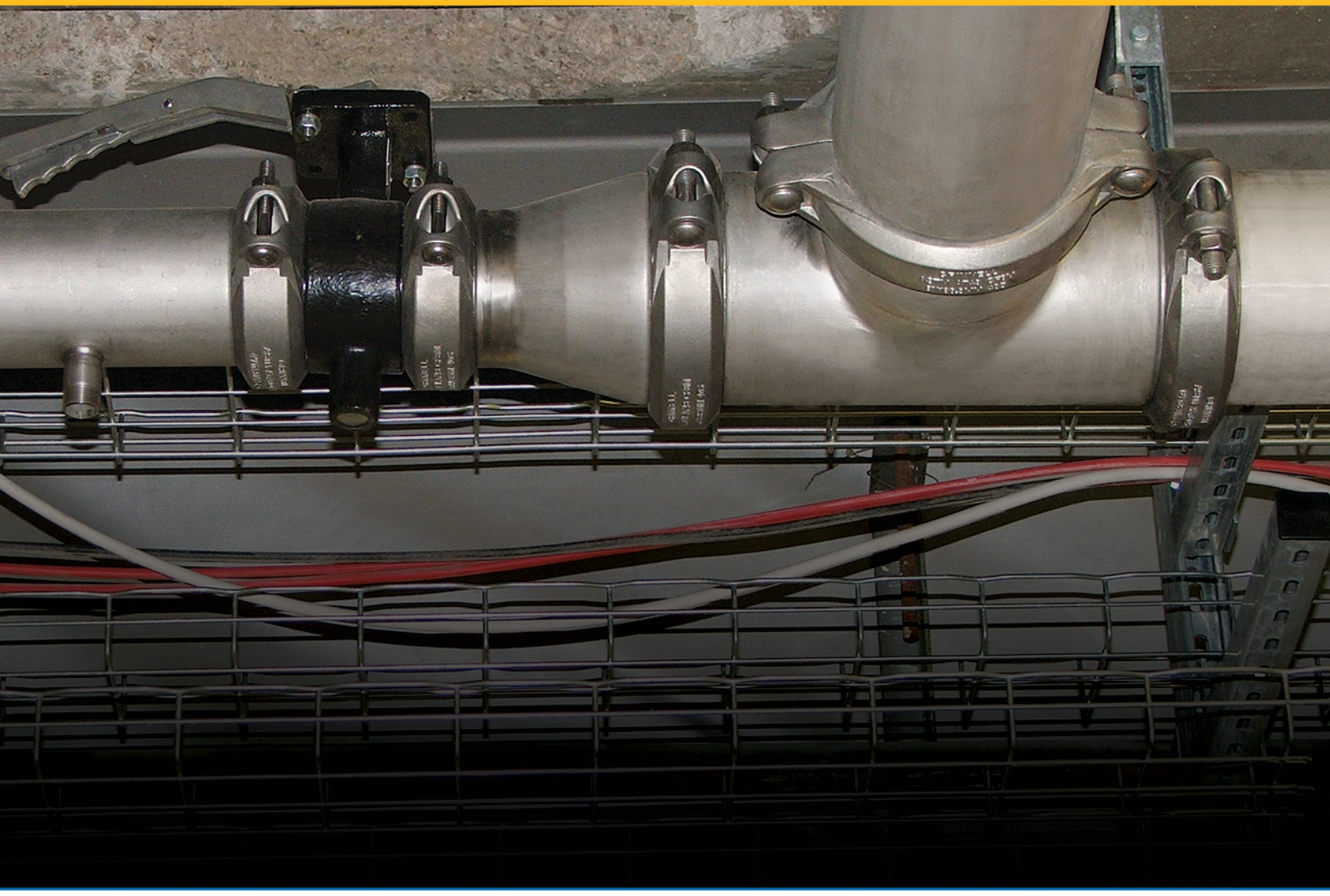
Model 1039 – 66 Mini-Mite Roll Groover service tool goes from in-place grooving and can be chucked in a Ridgid Model 300 in seconds with no gearbox removal.

Model 1039 – 66 Mini-Mite is self contained and can be entirely operated with its own multi-function crank. No additional tools are required. With ratchet hand crank, roll grooves 1¼" – 6" *(32 - 150mm)*, Schedule 40 or thin wall steel pipe on the scaffold or anywhere power is unavailable. All hex drives on Model 1039 – 66 Mini-Mite are 15/16" *(23,8mm)*.

Mini-Mites require no modifications or parts changes to groove any pipe or tubing in their size range.

Standard equipment includes a multi-step depth gauge, copper rolls for 2" – 8" *(50 - 200mm)*. Steel rolls for 1¼" – 6" *(32 - 150mm)* may be ordered separately.

See Preparation Equipment section on pages 232 - 245 for more information and options.



STAINLESS STEEL SYSTEMS

Stainless Steel Systems Table of Contents

Coupling Specifications

SPECIFICATIONS

Stainless Steel Housing Specifications

- Type 316L, ASTM A 743/A 743M – Standard specification for castings, iron-chromium, iron-chromium-nickel, corrosion resistant; for general application Grade CR-8M.
- Tensile strength, minimum 70,000 psi *(4826,3 bar)*
- Yield strength, minimum 30,000 psi *(2068,4 bar)*
- Elongation in 2" *(50mm)* minimum 30%

Bolt/Nut Specifications

- Stainless steel bolts are metric track head bolts conforming to ASTM A 193M Class 2, Type 316 Grade B8M
- Class 2 stainless steel nuts are heavy hex nuts conforming to ASTM A 194M, Type 316, Grade 8M
- Bolts are coated with an anti-galling agent

Gasket Specifications

- **Grade "E" EPDM** gaskets have a Green color code identification and conform to ASTM D 2000 for service temperatures from -30°F to 230°F *(-34°C to 110°C)*. They are recommended for hot water not to exceed 230°F *(110°C)* plus a variety of dilute acids, oil free air, and many chemical services. They are not recommended for petroleum services.
- **Grade "EN" EPDM** gaskets have a Copper color code identification and are NSF-61 approved for cold and hot portable water up to 180°F *(82°C)*.
- **Grade "T" Nitrile** gaskets have an Orange color code identification and conform to ASTM D 2000 for service temperatures from -20°F to 180°F *(-29°C to 82°C)*. They are recommended for petroleum products, vegetable oils, mineral oils, and air with oil vapors.
- **Grade "O" Fluoroelastomer** gaskets have a Blue color code and conform to ASTM D 2000. They are recommended for oxidizing acids, petroleum products, hydraulic fluids, lubricants, and halogenated hydrocarbons.

Fitting Specifications

Tech Data Sheet: G570

SPECIFICATIONS

- Fabricated: 304/316L stainless steel conforming to ASTM A 312, Schedule 10 and Schedule 40
- Full-flow: 304/316L stainless steel conforming to ASTM A 403 WPW or A 403 CR

Fittings are available in full-flow and fabricated versions in 304 and 316L S.S. Fabricated fittings are available with Schedule 10 or Schedule 40 wall thickness.

For pressure ratings of fittings, refer to data sheet G570.

GRINNELL Stainless Steel, Full-Flow Grooved fittings are made of lightweight, corrosion-resistant Type 304 and 316 stainless steel. The assortment of available fittings provides economical and efficient methods to change direction in, add outlets to, reduce, or cap piping systems.

Maximum Working Pressure

See specific data sheet for rating of coupling in use.

For local country potable water approvals, contact GRINNELL Mechanical Products.

Certified to NSF/ANSI 61

For Fire Protection pressure rating, listing, and approval information, contact your GRINNELL Representative.

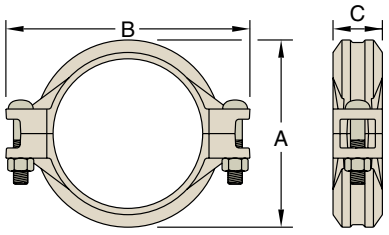
Caution

Pressure performance values shown for GRINNELL couplings on light wall (Sch. 5 & Sch. 10 ISO Metric) stainless steel pipe are dependent on the use of required special rolls for roll grooving light-wall stainless steel pipe. Failure to utilize the required special rolls for roll grooving light-wall stainless steel pipe may result in equipment failure.

Figure 472 Stainless Steel Rigid Couplings

Tech Data Sheet: G560

The Figure 472 Rigid Coupling is a Stainless Steel coupling made of ASTM A-743/ A743M cast stainless Steel which is the cast equivalent to 316 Stainless Steel. It is designed for installation on grooved Stainless Steel Schedules 5, 10, and 40 pipe and grooved fittings. The stainless steel material is suitable for a variety of aggressive corrosive environments. The Figure 472 provides a rigid joint connection by firmly gripping along the circumference of the pipe grooves. It is capable of pressures up to 750 psi (41,4 bar) depending on pipe size and wall thickness. For additional information on pressure ratings see data sheets G810 and G815.



Pipe Size		Max.† Pressures	Max.† End Load	Max.*‡ End Gap	Dimensions - Inches *mm*			Coupling Bolts		Approx. Weight
Nominal Inches *mm*	O.D. Inches *mm*	psi *bar*	Lbs. *kN*	Inches *mm*	A	B	C	Qty.	Size** Inches *mm*	Lbs. *kg*
1¼	1.660	750	1,623	0.06	2.75	4.38	1.81	2	⅜ x 2¼	1.0
32	*42,4*	*51,7*	*7,22*	*1,5*	*69,9*	*111,3*	*46,0*		*M10 x 57*	*0,5*
1½	1.900	750	2,127	0.08	3.00	4.62	1.81	2	⅜ x 2¼	1.0
40	*48,3*	*51,7*	*9,46*	*2,0*	*76,2*	*117,3*	*46,0*		*M10 x 57*	*0,5*
2	2.375	750	3,323	0.13	3.41	5.12	1.88	2	⅜ x 2¼	1.5
50	*60,3*	*51,7*	*14,78*	*3,3*	*86,6*	*130,0*	*47,8*		*M10 x 57*	*0,7*
2½	2.875	600	3,895	0.13	3.91	5.63	1.88	2	⅜ x 2¼	2.5
65	*73,0*	*41,4*	*17,3*	*3,3*	*99,3*	*143,0*	*47,8*		*M10 x 57*	*1,1*
76,1mm	3.000	600	4,241	0.13	4.19	5.72	2.00	2	–	2.6
65	*76,1*	*41,4*	*18,9*	*3,3*	*106,4*	*145,3*	*50,8*		*M10 x 57*	*1,2*
3	3.500	600	5,772	0.13	4.63	6.25	1.88	2	½ x 3	2.6
80	*88,9*	*41,4*	*25,7*	*3,3*	*117,6*	*158,8*	*47,8*		*M12 x 76*	*1,2*
4	4.500	600	9,542	0.19	5.81	7.50	1.97	2	½ x 3	3.5
100	*114,3*	*41,4*	*42,4*	*4,8*	*147,6*	*190,5*	*50,0*		*M12 x 76*	*1,6*
139,7mm	5.500	600	14,254	0.19	7.02	9.72	2.06	2	–	7.5
125	*139,7*	*41,4*	*63,4*	*4,8*	*178,3*	*246,9*	*52,3*		*M16 x 83*	*3,4*
5	5.563	600	14,583	0.19	7.09	9.71	2.04	2	⅝ x 3¼	7.5
125	*141,3*	*41,4*	*64,9*	*4,8*	*180,1*	*246,6*	*51,8*		*M16 x 83*	*3,4*
6	6.625	600	20,682	0.19	8.09	10.53	2.13	2	⅝ x 3¼	7.6
150	*168,3*	*41,4*	*92,0*	*4,8*	*205,5*	*267,5*	*54,1*		*M16 x 83*	*3,4*
8	8.625	600	35,054	0.19	10.56	13.56	2.62	2	¾ x 4¾	18.0
200◗	*219,1*	*41,4*	*156*	*4,8*	*268,2*	*344,4*	*66,5*		*M20 x 121*	*8,2*
10	10.750	600	54,455	0.13	12.84	16.41	2.62	2	1 x 6½	24.6
250◗	*273,0*	*41,4*	*242*	*3,3*	*326,1*	*416,8*	*66,5*		*M24 x 165*	*11,2*
12	12.750	600	76,603	0.13	15.41	18.84	2.62	2	1 x 6½	42.0
300◗	*323,9*	*41,4*	*340*	*3,3*	*391,4*	*478,5*	*66,5*		*M24 x 165*	*19,1*

Figure 472 Rigid Couplings have an Anti-Rotation Feature of "gripping teeth" along the coupling keys in sizes 1¼" - 4" *(32mm - 100mm)*, making the Figure 472 perfectly suited for installations where the likelihood of rotation is greatest.

* Maximum available gap between pipe ends. Minimum gap = 0.

† Maximum Pressure and End Load are total from all loads based on standard weight stainless steel pipe. Pressure ratings and end loads may differ for other pipe materials and/or wall thickness. Contact GRINNELL Mechanical Products for details.

‡ Max end gap is for cut grooved standard weight stainless steel pipe. Values for roll grooved pipe will be half that of cut grooved.

** Contact GRINNELL Mechanical Products for availability of inch bolt sizes vs. metric bolt sizes.

◗ Sizes are available to JIS standards. Contact GRINNELL Mechanical Products for details.

For information on larger sizes, contact GRINNELL Mechanical Products.

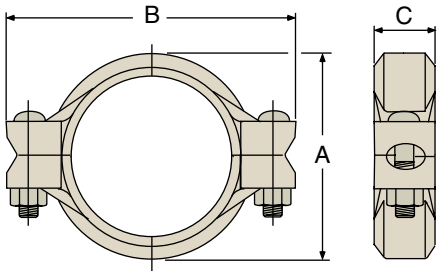
See page 177 for stainless steel coupling specifications and pages 224 - 230 for gasket information.

Refer to pressure ratings for Schedule 5, 10, and 40 pipe on pages 257 - 267, or contact GRINNELL Mechanical Products.

Figure 405 Stainless Steel Flexible Couplings

Tech Data Sheet: G565

The Figure 405 Flexible Coupling is a Stainless Steel coupling made of ASTM A-743/A743M cast stainless steel which is the cast equivalent to 316 Stainless Steel. It is designed for installation on Stainless Steel schedule 5, 10, and 40 pipe and fittings. The stainless steel material is suitable for a variety of aggressive corrosive environments. The Figure 405 flexible coupling can accommodate some angular, rotational and axial pipe movement. It is capable of pressures up to 750 psi (41,4 bar) depending on pipe size and wall thickness. For additional information on pressure ratings see data sheets G810 and G815.



Pipe Size		Max.† Pressures psi bar	Max.† End Load Lbs. kN	Max.*‡ End Gap Inches mm	Deflection ‡		Dimensions - Inches mm			Coupling Bolts		Approx. Weight Lbs. kg
Nominal Inches mm	O.D. Inches mm				Degrees per coupling	In/Ft mm/m	A	B	C	Qty.	Size** Inches mm	
1	1.315	750	1,019	0.13	5° 26'	0.90	2.20	3.82	1.81	2	3/8 x 2 1/4	1.5
25	33,4	51,7	4,5	3,3		95,1	56,0	97,0	46,0		M10 x 57	0,6
1 1/4	1.660	750	1,623	0.13	4° 19'	0.90	2.56	4.19	1.81	2	3/8 x 2 1/4	1.5
32	42,4	51,7	7,2	3,3		75,0	65,0	106,4	46,0		M10 x 57	0,7
1 1/2	1.900	750	2,127	0.13	3° 46'	0.79	2.75	4.44	1.81	2	3/8 x 2 1/4	1.6
40	48,3	51,7	9,5	3,3		65,8	69,9	112,8	46,0		M10 x 57	0,7
2	2.375	500	2,215	0.13	3° 1'	0.63	3.25	4.88	1.88	2	3/8 x 2 1/4	1.7
50	60,3	34,5	9,9	3,3		52,5	82,6	124,0	47,8		M10 x 57	0,8
2 1/2	2.875	500	3,246	0.13	2° 29'	0.52	3.69	5.50	1.88	2	3/8 x 2 1/4	2.0
65	73,0	34,5	14,4	3,3		43,3	93,7	139,7	47,8		M10 x 57	0,9
76,1mm	3.000	500	3,534	0.13	2° 23'	0.50	4.00	5.75	1.88	2	–	3.1
65◗	76,1	34,5	15,7	3,3		41,7	101,6	146,10	47,8		M12 x 76	1,4
3	3.500	500	4,810	0.13	2° 3'	0.43	4.38	6.50	1.88	2	1/2 x 3	3.1
80	88,9	34,5	21,4	3,3		35,8	111,3	165,1	47,8		M12 x 76	1,4
4	4.500	500	7,952	0.25	3° 11'	0.67	5.69	7.75	2.06	2	1/2 x 3	4.0
100	114,3	34,5	35,3	6,4		55,8	144,5	196,9	52,3		M12 x 76	1,8
139,7mm	5.500	450	10,691	0.25	2° 36'	0.55	6.81	9.75	2.06	2	–	7.2
125◗	139,7	31,0	47,6	6,4		45,5	173,0	247,7	52,3		M16 x 83	3,3
5	5.563	450	10,933	0.25	2° 35'	0.54	6.88	9.75	2.06	2	5/8 x 3 1/4	7.1
125	141,3	31,0	48,7	6,4		45,0	174,8	247,7	52,3		M16 x 83	3,2
6	6.625	450	15,512	0.25	2° 10'	0.45	7.94	10.69	2.06	2	5/8 x 3 1/4	7.1
150	168,3	31,0	69,0	6,4		37,5	201,7	271,5	52,3		M16 x 83	3,2
8	8.625	450	29,261	0.25	1° 40'	0.35	10.19	13.56	2.50	2	3/4 x 4 3/4	14.5
200	219,1	31,0	117	6,4		29,2	258,8	344,4	63,5		M20 x 121	6,6

Values for roll grooved pipe will be half that of cut grooved.

* Maximum available gap between pipe ends. Minimum gap = 0.

† Maximum Pressure and end load are total from all loads based on standard weight stainless steel pipe. Pressure ratings and end loads may differ for other pipe materials and/or wall thickness. Contact GRINNELL Mechanical Products for details.

‡ Max End Gap and Deflection is for cut grooved standard weight stainless steel pipe.

** Contact GRINNELL Mechanical Products for availability of inch bolt sizes vs. metric bolt sizes.

◗ Sizes are available to JIS standards. Contact GRINNELL Mechanical Products for details.

For information on larger sizes, contact GRINNELL Mechanical Products.

See page 177 for stainless steel coupling specifications and pages 224 - 230 for gasket information.

Refer to pressure ratings for Schedule 5, 10, and 40 pipe on pages 257 - 267, or contact GRINNELL Mechanical Products.

Figure 410 90° Stainless Steel Elbows

Tech Data Sheet: G570

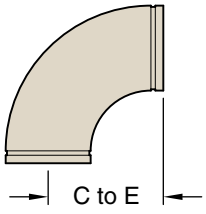


Figure 410A
Full-Flow 90° Elbow

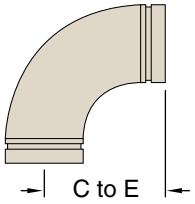


Figure 410
Fabricated 90° Elbow

Pipe Size		C to E	Approx.
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Weight Lbs. *kg*
1	**1.315**	**2.88**	**1.0**
25	*33,4*	*73,2*	*0,45*
1¼	**1.660**	**3.13**	**1.0**
32	*42,4*	*79,5*	*0,45*
1½	**1.900**	**3.50**	**1.0**
40	*48,3*	*88,9*	*0,45*
2	**2.375**	**4.50**	**1.1**
50	*60,3*	*114,3*	*0,50*
2½	**2.875**	**5.00**	**1.7**
65	*73,0*	*127,0*	*0,77*
76,1mm	**3.000**	**5.12**	**3.1**
65	*76,1*	*130,0*	*1,41*
3	**3.500**	**4.50**	**2.6**
80	*88,9*	*114,3*	*1,18*
4	**4.500**	**6.00**	**4.7**
100	*114,3*	*152,4*	*2,13*
5	**5.563**	**7.50**	**8.4**
125	*141,3*	*190,5*	*3,81*
6	**6.625**	**9.00**	**10.3**
150	*168,3*	*228,6*	*4,67*
8	**8.625**	**12.00**	**17.6**
200	*219,1*	*304,8*	*7,98*
10	**10.750**	**15.00**	**49.2**
250	*273,0*	*381,0*	*22,32*
12	**12.750**	**18.00**	**78.4**
300	*323,9*	*457,2*	*35,56*

For information on larger sizes, contact GRINNELL Mechanical Products.

Schedule 40 fittings available upon request, contact GRINNELL Mechanical Products.

See page 177 for stainless steel fitting specifications.

Figure 401 45° Stainless Steel Elbows

Tech Data Sheet: G570

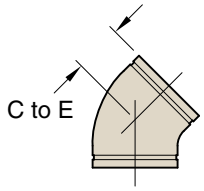


Figure 401A
Full-Flow 45° Elbow

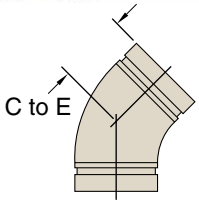


Figure 401
Fabricated 45° Elbow

Pipe Size		C to E	Approx.
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Weight Lbs. *kg*
1	**1.315**	**2.00**	**0.6**
25	*33,4*	*50,8*	*0,27*
1¼	**1.660**	**2.00**	**0.8**
32	*42,4*	*50,8*	*0,36*
1½	**1.900**	**3.50**	**1.0**
40	*48,3*	*88,9*	*0,45*
2	**2.375**	**2.75**	**1.2**
50	*60,3*	*69,9*	*0,54*
2½	**2.875**	**2.81**	**1.7**
65	*73,0*	*71,4*	*0,77*
76,1mm	**3.000**	**2.87**	**3.1**
65	*76,1*	*73,0*	*1,41*
3	**3.500**	**2.00**	**1.3**
80	*88,9*	*50,8*	*0,59*
4	**4.500**	**2.50**	**2.3**
100	*114,3*	*63,5*	*1,04*
5	**5.563**	**3.13**	**4.2**
125	*141,3*	*79,4*	*1,90*
6	**6.625**	**3.75**	**5.1**
150	*168,3*	*95,3*	*2,31*
8	**8.625**	**5.00**	**13.8**
200	*219,1*	*127,0*	*6,26*
10	**10.750**	**6.25**	**24.6**
250	*273,0*	*158,8*	*11,16*
12	**12.750**	**7.50**	**39.2**
300	*323,9*	*190,5*	*17,78*

For information on larger sizes, contact GRINNELL Mechanical Products.

Schedule 40 fittings available upon request, contact GRINNELL Mechanical Products.

See page 177 for stainless steel fitting specifications.

Figure 419 Tees

Tech Data Sheet: G570

Pipe Size		C to E	Approx. Weight
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Lbs. *kg*
1	**1.315**	**2.88**	**1.0**
25	*33,4*	*73,2*	*0,45*
1¼	**1.660**	**3.38**	**1.5**
32	*42,4*	*85,9*	*0,68*
1½	**1.900**	**3.38**	**1.6**
40	*48,3*	*85,9*	*0,73*
2	**2.375**	**2.75**	**2.3**
50	*60,3*	*69,9*	*1,04*
2½	**2.875**	**3.07**	**2.2**
65	*73,0*	*78,0*	*1,00*
76,1mm	**3.000**	**2.99**	**3.1**
65	*76,1*	*76,0*	*1,41*
3	**3.500**	**3.77**	**3.1**
80	*88,9*	*95,8*	*1,41*
4	**4.500**	**4.47**	**4.9**
100	*114,3*	*113,5*	*2,22*
5	**5.563**	**5.91**	**7.1**
125	*141,3*	*150,1*	*3,49*
6	**6.625**	**5.91**	**11.7**
150	*168,3*	*150,1*	*5,31*
8	**8.625**	**7.79**	**20.0**
200	*219,1*	*197,9*	*9,07*
10	**10.750**	**8.89**	**34.4**
250	*273,0*	*225,8*	*15,60*
12	**12.750**	**10.39**	**52.5**
300	*323,9*	*263,9*	*23,81*

For information on larger sizes, contact GRINNELL Mechanical Products.

Schedule 40 fittings available upon request, contact GRINNELL Mechanical Products.

See page 177 for stainless steel fitting specifications.

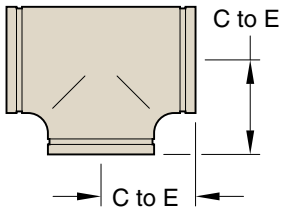


Figure 419A
Full-Flow Tee

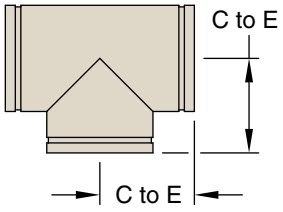


Figure 419
Fabricated Tee

Figure 460 End Caps

Tech Data Sheet: G570

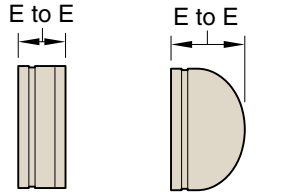


Figure 460A
Full-Flow End Cap

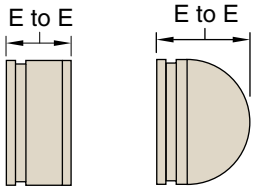


Figure 460
Fabricated End Cap

Pipe Size		Nominal E to E Inches *mm*	Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*		
1	**1.315**	**1.08**	**0.2**
25	*33,4*	*27,5*	*0,09*
1¼	**1.660**	**1.08**	**0.4**
32	*42,4*	*27,5*	*0,09*
1½	**1.900**	**1.08**	**0.5**
40	*48,3*	*27,5*	*0,09*
2	**2.375**	**1.08**	**0.7**
50	*60,3*	*27,5*	*0,09*
2½	**2.875**	**1.08**	**1.0**
65	*73,0*	*27,5*	*0,45*
76,1mm	**3.000**	**2.36**	**3.1**
65	*76,1*	*60,0*	*1,41*
3	**3.500**	**1.08**	**2.0**
80	*88,9*	*27,5*	*0,91*
4	**4.500**	**1.13**	**3.1**
100	*114,3*	*28,7*	*1,41*
5	**5.563**	**3.00**	**1.5**
*125 **	*141,3*	*76,2*	*0,68*
6	**6.625**	**3.50**	**1.5**
*150 **	*168,3*	*88,9*	*0,68*
8	**8.625**	**4.00**	**3.1**
*200 **	*219,1*	*101,6*	*1,41*
10	**10.750**	**5.00**	**6.0**
*250 **	*273,0*	*127,0*	*2,72*
12	**12.750**	**6.00**	**7.8**
*300 **	*323,9*	*152,4*	*3,54*

* Dished Cap
For information on larger sizes, contact GRINNELL Mechanical Products.
Schedule 40 fittings available upon request, contact GRINNELL Mechanical Products.
See page 177 for stainless steel fitting specifications.

Figure 421 Reducing Tees

Tech Data Sheet: G570

Pipe Size		C to E	C to B	Approx.
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Inches *mm*	Weight Lbs. *kg*
1½ x 1½ x 1	**1.900 x 1.900 x 1.315**	**3.38**	**3.38**	**1.6**
40 x 40 x 25	*48,3 x 48,3 x 33,4*	*85,9*	*85,9*	*0,73*
1½ x 1½ x 1¼	**1.900 x 1.900 x 1.660**	**3.38**	**3.38**	**1.6**
40 x 40 x 32	*48,3 x 48,3 x 42,4*	*85,9*	*85,9*	*0,73*
2 x 2 x 1	**2.375 x 2.375 x 1.315**	**3.25**	**3.38**	**2.2**
50 x 50 x 25	*60,3 x 60,3 x 33,4*	*82,6*	*69,9*	*1,00*
2 x 2 x 1¼	**2.375 x 2.375 x 1.660**	**3.25**	**3.25**	**2.4**
50 x 50 x 32	*60,3 x 60,3 x 42,4*	*82,6*	*82,6*	*1,09*
2 x 2 x 1½	**2.375 x 2.375 x 1.900**	**2.75**	**2.75**	**2.4**
50 x 50 x 40	*60,3 x 60,3 x 48,3*	*69,9*	*69,9*	*1,09*
2½ x 2½ x 1	**2.375 x 2.375 x 1.315**	**3.75**	**3.75**	**3.1**
50 x 50 x 40	*60,3 x 60,3 x 33,4*	*95,3*	*95,3*	*1,41*
2½ x 2½ x 1½	**2.375 x 2.375 x 1.900**	**3.75**	**3.75**	**3.4**
50 x 50 x 40	*60,3 x 60,3 x 48,3*	*95,3*	*95,3*	*1,54*
2½ x 2½ x 2	**2.375 x 2.375 x 2.375**	**3.07**	**3.07**	**3.6**
50 x 50 x 40	*60,3 x 60,3 x 60,3*	*78,0*	*78,0*	*1,63*
3 x 3 x 1	**3.500 x 3.500 x 1.315**	**4.25**	**4.25**	**4.3**
80 x 80 x 25	*88,9 x 88,9 x 33,4*	*108,0*	*108,0*	*1,95*
3 x 3 x 1¼	**3.500 x 3.500 x 1.660**	**4.25**	**4.25**	**4.3**
80 x 80 x 32	*88,9 x 88,9 x 42,2*	*108,0*	*108,0*	*1,95*
3 x 3 x 1½	**3.500 x 3.500 x 1.900**	**4.25**	**4.25**	**4.4**
80 x 80 x 40	*88,9 x 88,9 x 48,3*	*108,0*	*108,0*	*2,00*
3 x 3 x 2	**3.500 x 3.500 x 2.375**	**3.77**	**3.23**	**4.4**
80 x 80 x 50	*88,9 x 88,9 x 60,3*	*95,8*	*82,0*	*2,00*
3 x 3 x 2½	**3.500 x 3.500 x 2.875**	**3.77**	**3.23**	**4.4**
80 x 80 x 65	*88,9 x 88,9 x 73,0*	*95,8*	*82,0*	*2,00*
4 x 4 x 2	**4.500 x 4.500 x 2.375**	**4.47**	**3.82**	**4.4**
100 x 100 x 50	*114,3 x 114,3 x 60,3*	*113,5*	*97,0*	*2,00*
4 x 4 x 2½	**4.500 x 4.500 x 2.875**	**5.00**	**5.00**	**4.4**
100 x 100 x 65	*114,3 x 114,3 x 73,0*	*113,5*	*113,5*	*2,00*
4 x 4 x 3	**4.500 x 4.500 x 3.500**	**4.47**	**3.38**	**4.9**
100 x 100 x 80	*114,3 x 114,3 x 88,9*	*113,5*	*69,9*	*2,22*
6 x 6 x 1½	**6.625 x 6.625 x 1.900**	**5.91**	**5.91**	**9.3**
150 x 150 x 40	*168,3 x 168,3 x 48,3*	*150,1*	*150,1*	*4,22*
6 x 6 x 2	**6.625 x 6.625 x 2.375**	**5.91**	**5.91**	**9.3**
150 x 150 x 50	*168,3 x 168,3 x 88,9*	*150,1*	*150,1*	*4,22*
6 x 6 x 3	**6.625 x 6.625 x 3.500**	**5.91**	**4.88**	**9.3**
150 x 150 x 80	*168,3 x 168,3 x 60,3*	*150,1*	*124,0*	*4,22*
6 x 6 x 4	**6.625 x 6.625 x 4.500**	**5.91**	**5.12**	**9.3**
150 x 150 x 100	*168,3 x 168,3 x 114,3*	*150,1*	*130,0*	*4,22*
8 x 8 x 4	**8.625 x 8.625 x 4.500**	**7.79**	**6.31**	**18.1**
200 x 200 x 100	*219,1 x 219,1 x 114,1*	*197,9*	*160,3*	*8,21*
8 x 8 x 6	**8.625 x 8.625 x 6.625**	**7.79**	**6.62**	**18.1**
200 x 200 x 150	*219,1 x 219,1 x 168,3*	*197,9*	*168,1*	*8,21*
10 x 10 x 6	**10.750 x 10.750 x 6.625**	**8.89**	**7.70**	**29.3**
250 x 250 x 150	*273,0 x 273,0 x 168,3*	*225,8*	*195,6*	*13,29*
10 x 10 x 8	**10.750 x 10.750 x 8.625**	**8.89**	**8.59**	**31.7**
250 x 250 x 200	*273,0 x 273,0 x 219,1*	*225,8*	*218,2*	*14,38*
12 x 12 x 8	**12.750 x 12.750 x 8.625**	**10.39**	**9.51**	**44.0**
300 x 300 x 200	*323,9 x 323,9 x 219,1*	*263,9*	*242,0*	*19,96*
12 x 12 x 10	**12.750 x 12.750 x 10.750**	**10.39**	**9.89**	**44.0**
300 x 300 x 250	*323,9 x 323,9 x 273,0*	*263,9*	*251,2*	*19,96*

For information on larger sizes, contact GRINNELL Mechanical Products.
Schedule 40 fittings available upon request, contact GRINNELL Mechanical Products.
See page 177 for stainless steel fitting specifications.

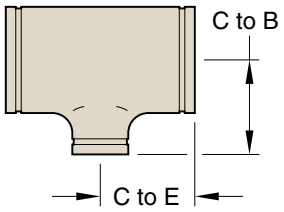


Figure 421A
Full-Flow Reducing Tee

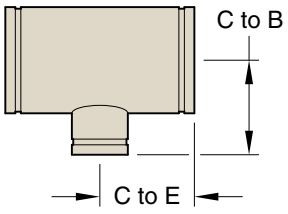


Figure 450
Fabricated Reducing Tee

Figure 450 Concentric Reducers

Tech Data Sheet: G570

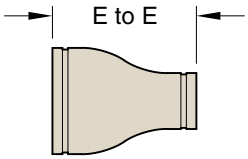


Figure 450A
Full-Flow Concentric Reducer

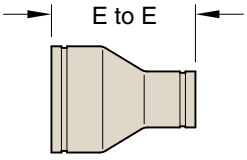


Figure 450
Fabricated Concentric Reducer

Pipe Size		E to E	Approx. Weight
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Lbs. *kg*
1½ x 1	**1.900 x 1.315**	**3.75**	**1.4**
40 x 25	*48,3 x 33,7*	*95,3*	*0,64*
1½ x 1¼	**1.900 x 1.660**	**3.75**	**1.4**
40 x 32	*48,3 x 42,4*	*95,3*	*0,64*
2 x 1	**2.375 x 1.315**	**3.75**	**1.5**
50 x 25	*60,3 x 33,7*	*95,3*	*0,68*
2 x 1¼	**2.375 x 1.660**	**3.75**	**2.5**
50 x 32	*60,3 x 42,4*	*95,3*	*1,13*
2 x 1½	**2.375 x 1.900**	**5.00**	**2.5**
50 x 40	*60,3 x 48,3*	*127,0*	*1,13*
2½ x 1½	**2.875 x 1.900**	**5.00**	**3.5**
65 x 40	*73,0 x 48,3*	*127,0*	*1,59*
2½ x 2	**2.875 x 2.375**	**5.00**	**3.5**
65 x 50	*73,0 x 60,3*	*127,0*	*1,59*
3 x 1	**3.500 x 1.315**	**5.00**	**4.0**
80 x 25	*88,9 x 33,7*	*127,0*	*1,81*
3 x 1¼	**3.500 x 1.660**	**5.00**	**4.3**
80 x 32	*88,9 x 42,4*	*127,0*	*1,95*
3 x 1½	**3.500 x 1.900**	**5.00**	**4.4**
80 x 40	*88,9 x 48,3*	*127,0*	*2,00*
3 x 2	**3.500 x 2.375**	**5.00**	**4.8**
80 x 50	*88,9 x 60,3*	*127,0*	*2,17*
3 x 2½	**3.500 x 2.875**	**5.00**	**4.8**
80 x 65	*88,9 x 73,0*	*127,0*	*2,17*
4 x 2	**4.500 x 2.375**	**5.00**	**4.8**
100 x 50	*114,3 x 60,3*	*127,0*	*2,17*
4 x 2½	**4.500 x 2.875**	**5.00**	**4.8**
100 x 65	*114,3 x 73,0*	*127,0*	*2,17*
4 x 3	**4.500 x 3.500**	**5.00**	**5.0**
100 x 80	*114,3 x 88,9*	*127,0*	*2,27*
5 x 3	**5.563 x 3.500**	**9.00**	**7.0**
125 x 80	*141,3 x 88,9*	*228,6*	*3,18*
5 x 4	**5.563 x 4.500**	**9.00**	**7.0**
125 x 100	*141,3 x 114,3*	*228,6*	*3,18*
6 x 2	**6.625 x 2.375**	**9.00**	**7.0**
150 x 50	*168,3 x 60,3*	*228,6*	*3,18*
6 x 2½	**6.625 x 2.875**	**15.00**	**7.0**
150 x 65	*168,3 x 73,0*	*381,0*	*3,18*
6 x 3	**6.625 x 3.500**	**5.50**	**6.9**
150 x 80	*168,3 x 88,9*	*139,7*	*3,13*
6 x 4	**6.625 x 4.500**	**5.50**	**7.0**
150 x 100	*168,3 x 114,3*	*139,7*	*3,18*
8 x 4	**8.625 x 4.500**	**6.00**	**9.6**
200 x 100	*219,1 x 114,3*	*152,4*	*4,35*
8 x 6	**8.625 x 6.625**	**6.00**	**9.6**
200 x 150	*219,1 x 168,3*	*152,4*	*4,35*
10 x 4	**10.750 x 4.500**	**10.00**	**12.4**
250 x 100	*273,0 x 114,3*	*254,0*	*5,62*
10 x 6	**10.750 x 6.625**	**7.00**	**12.4**
250 x 150	*273,0 x 168,3*	*177,8*	*5,62*
10 x 8	**10.750 x 8.625**	**7.00**	**14.9**
250 x 200	*273,0 x 219,1*	*177,8*	*6,76*
12 x 6	**12.750 x 6.625**	**14.00**	**22.0**
300 x 150	*323,9 x 168,3*	*355,6*	*9,98*
12 x 8	**12.750 x 8.625**	**14.00**	**22.0**
300 x 200	*323,9 x 219,1*	*355,6*	*9,98*
12 x 10	**12.750 x 10.750**	**14.00**	**26.0**
300 x 250	*323,9 x 273,0*	*355,6*	*11,79*

For information on larger sizes, contact GRINNELL Mechanical Products.
Schedule 40 fittings available upon request, contact GRINNELL Mechanical Products.
See page 177 for stainless steel fitting specifications.

Figure 451 Eccentric Reducers

Tech Data Sheet: G570

Pipe Size		E to E	Approx.
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Weight Lbs. *kg*
1½ x 1	**1.900 x 1.315**	**3.75**	**1.4**
40 x 25	*48,3 x 33,7*	*95,3*	*0,64*
1½ x 1¼	**1.900 x 1.660**	**3.75**	**1.4**
40 x 32	*48,3 x 42,4*	*95,3*	*0,64*
2 x 1	**2.375 x 1.315**	**3.75**	**1.5**
50 x 25	*60,3 x 33,7*	*95,3*	*0,68*
2 x 1¼	**2.375 x 1.660**	**3.75**	**2.5**
50 x 32	*60,3 x 42,4*	*95,3*	*1,13*
2 x 1½	**2.375 x 1.900**	**5.00**	**2.5**
50 x 40	*60,3 x 48,3*	*127,0*	*1,13*
2½ x 2	**2.875 x 2.375**	**5.00**	**3.5**
65 x 50	*73,0 x 60,3*	*127,0*	*1,59*
3 x 1	**3.500 x 1.315**	**5.00**	**4.3**
80 x 25	*88,9 x 33,4*	*127,0*	*1,95*
3 x 2	**3.500 x 2.375**	**5.00**	**4.3**
80 x 50	*88,9 x 60,3*	*127,0*	*1,95*
3 x 2½	**3.500 x 2.875**	**5.00**	**4.5**
80 x 65	*88,9 x 73,0*	*127,0*	*1,95*
4 x 2	**4.500 x 2.375**	**5.00**	**4.8**
100 x 50	*114,3 x 60,3*	*127,0*	*2,18*
4 x 2½	**4.500 x 2.875**	**5.00**	**5.8**
100 x 65	*114,3 x 73,0*	*127,0*	*2,63*
4 x 3	**4.500 x 3.500**	**5.00**	**5.9**
100 x 80	*114,3 x 88,9*	*127,0*	*2,68*
5 x 3	**5.563 x 3.500**	**9.00**	**5.9**
125 x 80	*141,3 x 88,9*	*228,6*	*2,68*
5 x 4	**5.563 x 4.500**	**9.00**	**7.0**
125 x 100	*141,3 x 114,3*	*228,6*	*3,18*
6 x 2	**6.625 x 2.375**	**9.00**	**7.0**
150 x 50	*168,3 x 60,3*	*228,6*	*3,17*
6 x 2½	**6.625 x 2.875**	**9.00**	**7.0**
150 x 65	*168,3 x 73,0*	*228,6*	*3,17*
6 x 3	**6.625 x 3.500s**	**9.00**	**7.0**
150 x 80	*168,3 x 88,9*	*228,6*	*3,18*
6 x 4	**6.625 x 4.500**	**5.00**	**7.0**
150 x 100	*168,3 x 114,3*	*127,0*	*3,18*
8 x 3	**8.625 x 3.500**	**10.00**	**9.3**
200 x 80	*219,1 x 88,9*	*254,0*	*4,22*
8 x 4	**8.625 x 4.500**	**12.00**	**9.3**
200 x 100	*219,1 x 114,3*	*304,8*	*4,22*
8 x 6	**8.625 x 6.625**	**8.00**	**7.0**
200 x 150	*219,1 x 168,3*	*203,2*	*3,18*
10 x 6	**10.750 x 6.625**	**13.00**	**12.4**
250 x 150	*273,0 x 168,3*	*330,2*	*5,62*
10 x 8	**10.750 x 8.625**	**13.00**	**11.5**
250 x 200	*273,0 x 219,1*	*330,2*	*5,22*
12 x 6	**12.750 x 6.625**	**14.00**	**21.1**
300 x 150	*323,9 x 168,3*	*355,6*	*9,57*
12 x 8	**12.750 x 8.625**	**14.00**	**21.1**
300 x 200	*323,9 x 219,1*	*355,6*	*9,57*
12 x 10	**12.750 x 10.750**	**14.00**	**21.1**
300 x 250	*323,9 x 273,0*	*355,6*	*9,57*

For information on larger sizes, contact GRINNELL Mechanical Products.
Schedule 40 fittings available upon request, contact GRINNELL Mechanical Products.
See page 177 for stainless steel fitting specifications.

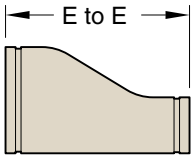


Figure 451A
Full-Flow Eccentric Reducer

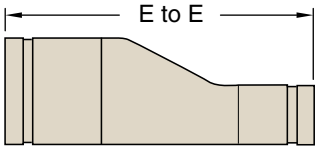


Figure 451
Fabricated Eccentric Reducer

Figure 441 Flange Adapters
(ANSI Class 150#)

Tech Data Sheet: G568

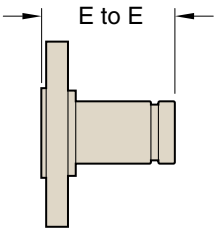


Figure 441
Fabricated Flange Adapter

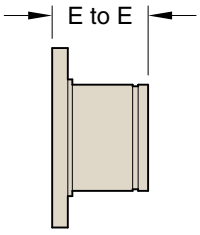


Figure 441A
Full-Flow Flange Adapter

Pipe Size		E to E	Mating Flange Bolt	Approx. Weight
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Qty.	Lbs. *kg*
1	**1.315**	**3.00**	**4**	**2.5**
25	*33,4*	*76,2*		*1,1*
1¼	**1.660**	**4.00**	**4**	**3.8**
32	*42,4*	*101,6*		*1,7*
1½	**1.900**	**4.00**	**4**	**4.1**
40	*48,3*	*101,6*		*1,9*
2	**2.375**	**4.00**	**4**	**6.0**
50	*60,3*	*101,6*		*2,7*
2½	**2.875**	**4.00**	**4**	**9.2**
65	*73,0*	*101,6*		*4,2*
3	**3.500**	**4.00**	**4**	**10.4**
80	*88,9*	*101,6*		*4,7*
3½	**4.000**	**4.00**	**4**	**14.0**
90	*101,6*	*101,6*		*6,4*
4	**4.500**	**6.00**	**8**	**19.1**
100	*114,3*	*152,4*		*8,7*
5	**5.563**	**6.00**	**8**	**23.0**
125	*141,3*	*152,4*		*10,4*
6	**6.625**	**6.00**	**8**	**28.1**
150	*168,3*	*152,4*		*12,7*
8	**8.625**	**6.00**	**8**	**43.7**
200	*219,1*	*152,4*		*19,8*
10	**10.750**	**8.00**	**12**	**68.2**
250	*273,0*	*203,2*		*30,9*
12	**12.750**	**8.00**	**12**	**96.1**
300	*323,9*	*203,2*		*43,6*

For information on larger sizes or PN16 sizes, contact GRINNELL Mechanical Products.

Schedule 40 fittings available upon request, contact GRINNELL Mechanical Products.

See page 177 for stainless steel fitting specifications.

Figure B480 Stainless Steel Butterfly Valve with Lever Handle Grooved End

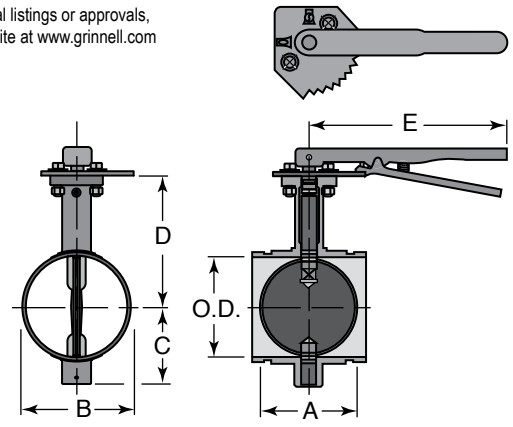
Tech Data Sheet: G340

The GRINNELL Model B480 Grooved End Stainless Steel Butterfly Valve with Lever Handle is a grooved-end stainless steel butterfly valve designed for 300 psi service, supplied with a 10-position locking lever handle. The end-to-end dimensions conform to MSS SP-67. The body is investment cast in grade CF8M (Type 316) to ASTM A743 with integral neck and ISO mounting top flange. The neck height allows for pipe insulation up to two inches thick. The disc is a dual-seal type, encapsulated either with Grade "EN" EPDM for cold water services or with Grade "T" Nitrile for oil services. The Model B480 Stainless Steel Butterfly Valves with standard disc and Grade "EN" EPDM seat are UL classified to ANSI/NSF 61 and ANSI/NSF 372.

NSF

Certified to NSF/ANSI 61 & 372

For additional listings or approvals, visit our website at www.grinnell.com



Pipe Size		Dimensions - Inches *mm*					Approx. Weight Lbs. *kg* *
Nominal Inches *mm*	O.D. Inches *mm*	A	B	C	D	E	
2	**2.375**	**3.19**	**2.756**	**2.480**	**4.17**	**7.56**	**5.0**
50	*60,3*	*81*	*70*	*63*	*106*	*192*	*2.,3*
2½	**2.875**	**3.81**	**3.386**	**2.677**	**4.28**	**7.56**	**7.0**
65	*73,0*	*97*	*86*	*68*	*111*	*192*	*3,2*
76,1mm	**3.000**	**3.81**	**3.386**	**2.677**	**4.28**	**7.56**	**7.0**
65	*76,1*	*97*	*86*	*68*	*111*	*192*	*3,2*
3	**3.500**	**3.81**	**3.858**	**2.992**	**4.97**	**7.56**	**6.6**
80	*88,9*	*97*	*98*	*76*	*126*	*192*	*3,5*
4	**4.500**	**4.56**	**4.882**	**3.504**	**5.33**	**9.92**	**11.0**
100	*114,3*	*116*	*124*	*89*	*135*	*252*	*5,0*
165,1mm	**6.500**	**5.81**	**7.008**	**4.488**	**6.62**	**9.92**	**20.2**
150	*165,1*	*148*	*178*	*114*	*168*	*252*	*9,2*
6	**6.625**	**5.81**	**7.008**	**4.488**	**7.25**	**13.46**	**20.2**
150	*168,3*	*148*	*178*	*114*	*184*	*342*	*9,2*

* Weight includes the lever handle.

Materials of Construction

Valve Body:
CF8M (Type 316) Stainless Steel conforming to ASTM A743 or A351, or A744 which is UL Classified in accordance with ANSI/NSF 61 and ANSI/NSF 372 for potable water use up to 180°F *(82°C)*

Stems
Stainless Steel Type 410 conforming to ASTM A582

Disc
CF8M (Type 316) Stainless Steel conforming to ASTM A743 or A351, or A744 which is UL Classified in accordance with ANSI/NSF 61 and Annex G for potable water use up to 180°F *(82°C)*

Disc Encapsulation
Grade "EN" EPDM Rubber Classified in accordance with ANSI/NSF 61 and ANSI/NSF 372 for potable water use up to 180°F *(82°C)*, or Grade "T" Nitrile

O-rings
EPDM

MATERIAL SPECIFICATIONS

- Grade "EN" EPDM seat material: -30°F *(-34°C)* to 230°F *(110°C)*
- Grade "T" Nitrile seat material: -20°F *(-29°C)* to 180°F *(82°C)*

For pressure ratings of fittings, refer to data sheet G340.

Maximum Working Pressure

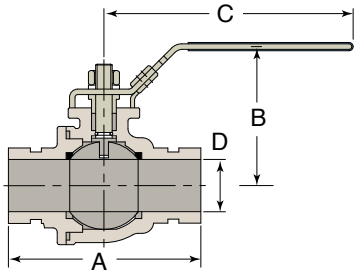
300 psi *(20 bar)*

Figure BV435 Grooved End Stainless Steel Ball Valve with Lever Handle

Tech Data Sheet: G370

4" Size

The GRINNELL Model BV435 Grooved End Stainless Steel Ball Valves with Lever Handle provide for efficient control of fluid in piping systems. Flow may be from either direction, and the valves may be positioned in any orientation. The valves are furnished with grooved ends for use with Grinnell grooved couplings. The handle is provided with a device for padlocking in either the open or closed position.



Materials of Construction

Body
Cast Stainless Steel per ASTM A351-CF8M

Ball
Cast Stainless Steel per ASTM A351-CF8M

Upper Stems
Stainless steel per ASTM A276, Type 316

Operator
Stainless Steel Lever per ASTM A-276, Type 304

Seats
1 1/2 to 3 Inches: Virgin PTFE
4 Inches: Glass Filled PTFE

Seals
PTFE

O-Rings
EPDM

For pressure ratings of fittings, refer to data sheet G370.

Pipe Size		Dimensions - Inches *mm*				Approx. Weight Lbs. *kg* *
Nominal Inches *mm*	O.D. Inches *mm*	A	B	C	D	
1½	1.900	5.50	3.70	7.60	1.50	6.6
40	*48,3*	*140*	*94*	*193*	*38*	*3,0*
2	2.375	6.15	4.13	7.60	1.97	8.8
50	*60,3*	*156*	*105*	*193*	*50*	*4,0*
2½	2.875	7.09	4.33	9.84	2.36	15.4
65	*73,0*	*180*	*110*	*250*	*60*	*7,0*
3	3.500	8.42	6.00	9.84	2.99	20.7
80	*88,9*	*214*	*152*	*250*	*76*	*9,4*
4	4.500	9.45	6.57	11.42	3.94	55.0
100	*114,3*	*240*	*167*	*290*	*100*	*25,0*

* Weight includes the lever handle.

Maximum Working Pressure

600 psi *(41,4 bar)*

Refer to technical datasheet G815 for additional pressure ratings.

PLAIN END SYSTEMS

Plain End Systems Table of Contents

The GRINNELL Plain End Piping System is designed for use in both maintenance and new system applications and eliminates the need for pipe end preparation. The GRINNELL Figure 909 Plain End Coupling features case-hardened gripping teeth that securely grip onto the pipe surface. The coupling is designed for schedule 40 steel pipe and is not for use with steel pipe with a Brinell hardness greater than 150 HB, nor is it switchable for plastic pipe, cast, or ductile iron pipe.

Contact GRINNELL Mechanical Products about other materials and pipe schedules. Follow bolt torque ratings to ensure a properly assembled coupling.

Coupling Specifications

Tech Data Sheet: G190

SPECIFICATIONS

Coupling Ductile Iron Housing Specifications

- ASTM A 536 – Standard specification for ductile iron castings, Grade 65-45-12
- Tensile strength, minimum 65,000 psi *(4481,6 bar)*
- Yield strength, minimum 45,000 psi *(3102,6 bar)*
- Elongation in 2" *(50mm)*, minimum 12%
- ASTM A 153 – Standard specification for hot-dipped galvanizing

Coatings

- Orange – Non-lead paint (standard)
- Red – Non-lead paint (optional, regional)
- Hot-Dipped, Zinc galvanized (optional)

Bolt/Nut Specifications

- **ANSI:** Carbon steel oval neck bolts and nuts are heat-treated and conform to the physical properties of ASTM A 183 Grade 2 and SAE J429 Grade 5 with a minimum tensile strength of 110,000 psi *(7584.2 bar)*. Carbon Steel heavy hex nuts conform to the physical properties of ASTM A 183 Grade 2 and SAE J995 Grade 5. Bolts and nuts are zinc-electroplated conforming to ASTM B 633.
- **Metric:** Carbon steel oval neck track head bolts (Gold color coded) are heat treated and conform to the physical properties of ASTM F 568 M with a minimum tensile strength of 760 MPa.
  Carbon Steel heavy hex nuts conform to the physical properties of ASTM A 563 M Class 9. Bolts and nuts are zinc-electroplated conforming to ASTM B 633.
- Stainless steel bolts and nuts are available upon request.

Gasket Specifications

- **Grade "E" EPDM** gaskets have a Green color code identification and conform to ASTM D 2000 for service temperatures from -30°F to 230°F *(-34°C to 110°C)*. They are recommended for hot water not to exceed 230°F *(110°C)*, plus a variety of dilute acids, oil free air, and many chemical services. They are not recommended for petroleum services. For low temperature and vacuum systems, a Tri-Seal Grade "E" EPDM gasket with rigid coupling is recommended.
- **Grade "T" Nitrile** gaskets have an Orange color code identification and conform to ASTM D 2000 for service temperatures from -20°F to 180°F *(-29°C to 82°C)*. They are recommended for petroleum products, vegetable oils, mineral oils, and air with oil vapors.

Fitting Specifications

Tech Data Sheet: G192

Fitting Specifications

- Carbon steel: according to ASTM A 53, Grade B
- Tensile strength, minimum 60,000 psi *(4136,9 bar)*
- Yield strength, minimum 35,000 psi *(2413,2 bar)*
- Sizes 1¼" – 10" *(32mm – 250mm)* – Schedule 40
- Sizes 12" – 24" *(300mm – 600mm)* – Std. Wall *(0.375)*

Coatings

- Orange – Non-lead paint (standard)
- Red – Non-lead paint (optional, regional)
- Hot-Dipped, Zinc galvanized (optional)

Plain end fittings are manufactured to provide minimum pressure drop and uniform flow. Fittings are designed for use with the Figure 909 Plain End Couplings only.

Plain end fittings are available in a variety of styles.

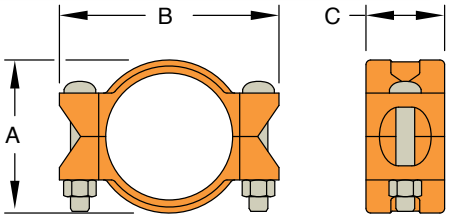
Fitting dimensions may vary, contact GRINNELL Mechanical Products.

Figure 909 Plain End Couplings

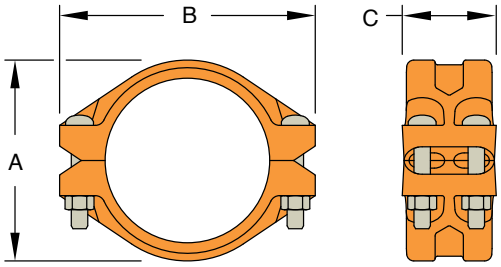
Tech Data Sheet: G190

The GRINNELL Figure 909 Plain End Coupling utilizes hardened gripping teeth to securely grip onto plain and beveled end pipe surfaces. It is capable of pressures up to 750 psi *(51,7 bar)* depending on pipe size and wall thickness.

The GRINNELL Figure 909 Plain End Coupling is designed for Schedule 40 steel pipe and is not for use with steel pipe with a Brinnell hardness greater than 150 HB, plastic, cast, or ductile iron pipes. Contact GRINNELL Mechanical Products for recommendations on other materials and pipe schedules.



2" - 6" *(50 - 150mm)* (2 Bolts)



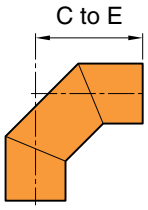
8" - 16" (200 - 400mm) (4 Bolts)

Pipe Size		Max.† Pressures	Max.† End Load	Dimensions - Inches *mm*			Coupling Bolts		Approx. Weight
Nominal Inches *mm*	O.D. Inches *mm*	psi *bar*	Lbs. *kN*	A	B	C	Qty.	Size Inches *mm*	Lbs. *kg*
2	**2.375**	**750**	**3322.6**	**3.69**	**5.75**	**3.31**	**2**	**⅝ x 3½**	**5.4**
50	*60,3*	*51,7*	*14,78*	*93,7*	*146,1*	*84,1*		*M16 x 90*	*2,4*
2½	**2.875**	**600**	**3895.1**	**4.17**	**6.25**	**3.31**	**2**	**⅝ x 3½**	**5.9**
65	*73,0*	*41,4*	*17,33*	*105,9*	*158,8*	*84,1*		*M16 x 90*	*2,7*
3	**3.500**	**600**	**5772.7**	**4.81**	**7.56**	**3.31**	**2**	**¾ x 4¾**	**9.0**
80	*88,9*	*41,4*	*25,68*	*122,2*	*192,0*	*84,1*		*M20 x 121*	*4,1*
4	**4.500**	**450**	**7,156.9**	**5.93**	**8.63**	**3.88**	**2**	**¾ x 4¾**	**13.5**
100	*114,3*	*31*	*31,83*	*150,6*	*219,2*	*98,6*		*M20 x 121*	*6,1*
5	**5.563**	**350**	**8.504**	**7.08**	**10.62**	**4.20**	**2**	**1 x 6½**	**7.8**
125	*141.3*	*24.1*	*37.83*	*179.8*	*269.7*	*106.7*		*M24 x 165*	*3.5*
6	**6.625**	**300**	**10,341.5**	**8.19**	**11.68**	**4.25**	**2**	**1 x 6½**	**23.5**
150	*168,3*	*20,7*	*46,00*	*208,0*	*296,7*	*108,0*		*M24 x 165*	*10,7*
8	**8.625**	**250**	**14,606.6**	**10.69**	**13.63**	**4.91**	**4**	**⅞ x 5½**	**35.1**
200	*219,1*	*17,2*	*64,97*	*271,5*	*346,2*	*124,7*		*M22 x 140*	*15,9*
10	**10.750**	**250**	**22,690.6**	**13.13**	**15.88**	**4.91**	**4**	**⅞ x 5½**	**48.5**
250	*273,0*	*17,2*	*100,93*	*333,5*	*403,4*	*124,7*		*M22 x 140*	*22,0*
12	**12.750**	**250**	**31,919**	**15.44**	**16.00**	**4.76**		**1 x 6**	**62.6**
300	*323.9*	*17.2*	*141.99*	*392.2*	*406.4*	*120.9*	*4*	*M24 x 152*	*28.4*
14	**14.000**	**200**	**30,788**	**16.74**	**17.06**	**4.76**		**1 x 6**	**90.2**
350	*355.6*	*13.8*	*136.96*	*425.2*	*433.3*	*120.9*	*6*	*M24 x 152*	*40.9*
16	**16.000**	**150**	**30,159**	**18.74**	**18.75**	**4.76**		**1 x 6**	**105.6**
400	*406.4*	*10.3*	*134.16*	*476.0*	*476.3*	*120.9*	*6*	*M24 x 152*	*47.9*

† Maximum Pressure and End Load are total from all loads based on standard weight steel pipe.
Pressure ratings and end loads may differ for other pipe materials and/or wall thickness. Contact GRINNELL Mechanical Products for details.
For information on additional sizes or larger sizes, contact GRINNELL Mechanical Products.
See page 191 for plain end coupling specifications and pages 224 - 230 for gasket information.

Figure 910 90° Plain End Elbows

Tech Data Sheet: G192



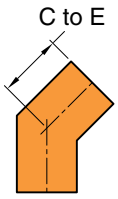
Pipe Size		C to E	Approx.
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Weight Lbs. *kg*
2	**2.375**	**4.75**	**1.8**
50	*60,3*	*120,7*	*0,8*
2½	**2.875**	**5.50**	**3.1**
65	*73,0*	*139,7*	*1,4*
76,1mm	**3.000**	**5.50**	**3.2**
65	*76,1*	*139,7*	*1,5*
3	**3.500**	**6.25**	**4.8**
80	*88,9*	*158,8*	*2,2*
4	**4.500**	**7.75**	**7.5**
100	*114,3*	*196,9*	*3,4*
139,7mm	**5.500**	**9.75**	**11.3**
125	*139,7*	*248,0*	*5,1*
5	**5.563**	**9.75**	**11.6**
125	*141,3*	*248,0*	*5,3*
165,1mm	**6.500**	**10.00**	**16.9**
150	*165,1*	*254,0*	*7,7*
6	**6.625**	**10.00**	**16.6**
150	*168,3*	*254,0*	*7,5*
8	**8.625**	**11.00**	**29.6**
200	*219,1*	*279,4*	*13,4*
10	**10.750**	**11.50**	**48.5**
250	*273,0*	*292,1*	*22,0*
12	**12.750**	**13.50**	**66.4**
300	*323,9*	*342,9*	*30,1*

For information on larger sizes, contact GRINNELL Mechanical Products.

See page 191 for plain end fitting specifications.

Figure 901 45° Plain End Elbows

Tech Data Sheet: G192



Pipe Size		C to E	Approx.
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Weight Lbs. *kg*
2	**2.375**	**3.13**	**1.3**
50	*60,3*	*79,5*	*0,6*
2½	**2.875**	**3.50**	**2.1**
65	*73,0*	*88,9*	*1,0*
76,1mm	**3.000**	**3.50**	**2.2**
65	*76,1*	*88,9*	*1,0*
3	**3.500**	**3.75**	**3.5**
80	*88,9*	*95,3*	*1,6*
4	**4.500**	**4.25**	**5.5**
100	*114,3*	*108,0*	*2,5*
139,7mm	**5.500**	**5.00**	**7.7**
125	*139,7*	*127,0*	*3,5*
5	**5.563**	**5.00**	**8.1**
125	*141,3*	*127,0*	*3,7*
165,1mm	**6.500**	**5.75**	**11.0**
150	*165,1*	*146,1*	*5,0*
6	**6.625**	**5.75**	**11.2**
150	*168,3*	*146,1*	*5,1*
8	**8.625**	**6.00**	**19.0**
200	*219,1*	*152,4*	*8,6*
10	**10.750**	**6.50**	**28.0**
250	*273,0*	*165,1*	*12,7*
12	**12.750**	**7.00**	**48.0**
300	*323,9*	*177,8*	*22,0*

For information on larger sizes, contact GRINNELL Mechanical Products.

See page 191 for plain end fitting specifications.

Figure 910LR 90° Plain End Long Radius Elbows

Tech Data Sheet: G192

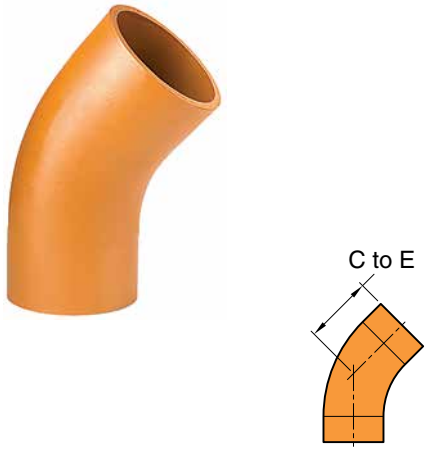
Pipe Size		C to E	Approx.
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Weight Lbs. *kg*
2	**2.375**	**4.25**	**2.7**
50	*60,3*	*108,0*	*1,2*
2½	**2.875**	**5.50**	**4.2**
65	*73,0*	*139,7*	*1,9*
76,1mm	**3.000**	**5.50**	**4.4**
65	*76,1*	*139,7*	*2,0*
3	**3.500**	**6.25**	**6.5**
80	*88,9*	*158,8*	*2,9*
4	**4.500**	**8.00**	**11.5**
100	*114,3*	*203,3*	*5,2*
139,7mm	**5.500**	**9.75**	**19.0**
125	*139,7*	*248,0*	*8,6*
5	**5.563**	**9.75**	**19.4**
125	*141,3*	*248,0*	*8,8*
165,1mm	**6.500**	**11.13**	**26.4**
150	*165,1*	*282,7*	*12,0*
6	**6.625**	**11.13**	**27.9**
150	*168,3*	*282,7*	*12,6*
8	**8.625**	**14.13**	**54.5**
200	*219,1*	*358,9*	*24,7*
10	**10.750**	**17.13**	**103.7**
250	*273,0*	*435,1*	*47,0*
12	**12.750**	**20.13**	**147.8**
300	*323,9*	*511,3*	*67,0*

For information on larger sizes, contact GRINNELL Mechanical Products.

See page 191 for plain end fitting specifications.

Figure 901LR 45° Plain End Long Radius Elbows

Tech Data Sheet: G192



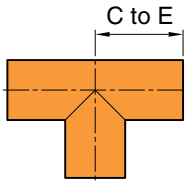
Pipe Size		C to E	Approx.
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Weight Lbs. *kg*
2	**2.375**	**3.13**	**1.8**
50	*60,3*	*79,5*	*0,8*
2½	**2.875**	**3.50**	**2.9**
65	*73,0*	*88,9*	*1,3*
76,1mm	**3.000**	**3.50**	**3.1**
65	*76,1*	*88,9*	*1,4*
3	**3.500**	**3.75**	**4.6**
80	*88,9*	*95,3*	*2,1*
4	**4.500**	**4.50**	**7.5**
100	*114,3*	*114,3*	*3,4*
139,7mm	**5.500**	**5.00**	**12.5**
125	*139,7*	*127,0*	*5,7*
5	**5.563**	**5.00**	**12.5**
125	*141,3*	*127,0*	*5,7*
165,1mm	**6.500**	**5.88**	**12.0**
150	*165,1*	*149,4*	*5,4*
6	**6.625**	**5.88**	**12.0**
150	*168,3*	*149,4*	*5,4*
8	**8.625**	**7.13**	**34.0**
200	*219,1*	*181,1*	*15,4*
10	**10.750**	**8.38**	**56.0**
250	*273,0*	*212,9*	*25,4*
12	**12.750**	**9.36**	**98.0**
300	*323,9*	*244,6*	*44,5*

For information on larger sizes, contact GRINNELL Mechanical Products.

See page 191 for plain end fitting specifications.

Figure 919
Plain End Tees

Tech Data Sheet: G192



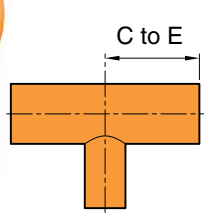
Pipe Size		C to E Inches *mm*	Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*		
2	**2.375**	**3.25**	**2.7**
50	*60,3*	*82,6*	*1,2*
2½	**2.875**	**3.75**	**4.4**
65	*73,0*	*95,3*	*2,0*
76,1mm	**3.000**	**3.75**	**6.5**
65	*76,1*	*95,3*	*2,9*
3	**3.500**	**4.25**	**6.5**
80	*88,9*	*108,0*	*2,9*
4	**4.500**	**5.00**	**10.7**
100	*114,3*	*127,0*	*4,8*
139,7mm	**5.500**	**5.50**	**15.2**
125	*139,7*	*139,7*	*6,9*
5	**5.563**	**5.50**	**15.5**
125	*141,3*	*139,7*	*7,0*
165,1mm	**6.500**	**6.50**	**24.2**
150	*165,1*	*165,1*	*11,0*
6	**6.625**	**6.50**	**23.0**
150	*168,3*	*165,1*	*10,4*
8	**8.625**	**10.00**	**43.7**
200	*219,1*	*254,0*	*19,8*
10	**10.750**	**11.50**	**57.0**
250	*273,0*	*292,1*	*25,9*
12	**12.750**	**13.50**	**110.0**
300	*323,9*	*342,9*	*49,9*

For information on larger sizes, contact GRINNELL Mechanical Products.

See page 191 for plain end fitting specifications.

Figure 921
Plain End Reducing Tees

Tech Data Sheet: G192



Pipe Size		C to E Inches *mm*	Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*		
3 x 3 x 2	**3.500 x 3.500 x 2.375**	**5.13**	**7.1**
80 x 80 x 50	*88,9 x 88,9 x 60,3*	*130,3*	*3,2*
4 x 4 x 2	**4.500 x 4.500 x 2.375**	**5.88**	**9.1**
100 x 100 x 50	*114,3 x 114,3 x 60,3*	*149,4*	*4,1*
4 x 4 x 2½	**4.500 x 4.500 x 2.875**	**5.88**	**9.5**
100 x 100 x 65	*114,3 x 114,3 x 73,0*	*149,4*	*4,3*
4 x 4 x 3	**4.500 x 4.500 x 3.500**	**5.88**	**9.7**
100 x 100 x 80	*114,3 x 114,3 x 88,9*	*149,4*	*4,4*
6 x 6 x 2	**6.625 x 6.625 x 2.375**	**7.63**	**19.4**
150 x 150 x 50	*168,3 x 168,3 x 60,3*	*193,8*	*8,8*
6 x 6 x 3	**6.625 x 6.625 x 3.500**	**7.63**	**21.0**
150 x 150 x 80	*168,3 x 168,3 x 88,9*	*193,8*	*9,5*
6 x 6 x 4	**6.625 x 6.625 x 4.500**	**7.63**	**21.8**
150 x 150 x 100	*168,3 x 168,3 x 114,3*	*193,8*	*9,9*
8 x 8 x 2	**8.625 x 8.625 x 2.375**	**10.00**	**36.2**
200 x 200 x 50	*219,1 x 219,1 x 60,3*	*254,0*	*16,4*
8 x 8 x 3	**8.625 x 8.625 x 3.500**	**10.00**	**36.5**
200 x 200 x 80	*219,1 x 219,1 x 88,9*	*254,0*	*16,6*
8 x 8 x 4	**8.625 x 8.625 x 4.500**	**10.00**	**37.2**
200 x 200 x 100	*219,1 x 219,1 x 114,1*	*254,0*	*16,9*
8 x 8 x 5	**8.625 x 8.625 x 5.563**	**10.00**	**36.8**
200 x 200 x 125	*219,1 x 219,1 x 141,3*	*254,0*	*16,7*
8 x 8 x 6	**8.625 x 8.625 x 6.625**	**10.00**	**37.4**
200 x 200 x 150	*219,1 x 219,1 x 168,3*	*254,0*	*17,0*
10 x 10 x 4	**10.750 x 10.750 x 4.500**	**11.50**	**58.0**
250 x 250 x 100	*273,0 x 273,0 x 114,3*	*292,1*	*26,3*
10 x 10 x 6	**10.750 x 10.750 x 6.625**	**11.50**	**66.0**
250 x 250 x 150	*273,0 x 273,0 x 168,3*	*292,1*	*27,2*
10 x 10 x 8	**10.750 x 10.750 x 8.625**	**11.50**	**62.0**
250 x 250 x 200	*323,9 x 323,9 x 219,1*	*292,1*	*28,1*
12 x 12 x 6	**12.750 x 12.750 x 6.625**	**13.50**	**80.9**
250 x 250 x 100	*323,9 x 323,9 x 168,3*	*342,9*	*36,7*
12 x 12 x 8	**12.750 x 12.750 x 8.625**	**13.50**	**76.3**
250 x 250 x 150	*323,9 x 323,9 x 219,1*	*342,9*	*34,6*
12 x 12 x 10	**12.750 x 12.750 x 10.750**	**13.50**	**77.6**
250 x 250 x 200	*323,9 x 323,9 x 273,0*	*342,9*	*35,2*

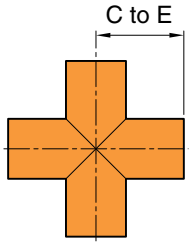
For information on larger sizes, contact GRINNELL Mechanical Products.

See page 191 for plain end fitting specifications.

Grinnell

Figure 927
Plain End Crosses

Tech Data Sheet: G192



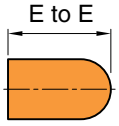
Pipe Size		E to E	Approx. Weight
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Lbs. *kg*
2	**2.375**	**4.25**	**3.7**
50	*60,3*	*108,0*	*1,7*
2½	**2.875**	**4.75**	**5.8**
65	*73,0*	*120,7*	*2,6*
76,1mm	**3.000**	**4.75**	**6.0**
65	*76,1*	*120,7*	*2,7*
3	**3.500**	**5.13**	**8.6**
80	*88,9*	*130,3*	*3,9*
4	**4.500**	**5.88**	**20.7**
100	*114,3*	*149,4*	*9,4*
5	**5.563**	**6.88**	**18.5**
125	*141,3*	*175,0*	*8,4*
165,1mm	**6.500**	**7.63**	**27.3**
150	*165,1*	*193,8*	*12,4*
6	**6.625**	**7.63**	**28.6**
150	*168,3*	*193,8*	*13,0*
8	**8.625**	**10.00**	**48.0**
200	*219,1*	*254,0*	*21,7*
10	**10.750**	**11.50**	**75.0**
250	*273,0*	*292,1*	*34,0*
12	**12.750**	**13.50**	**95.8**
300	*323,9*	*342,9*	*43,4*

For information on larger sizes, contact GRINNELL Mechanical Products.

See page 191 for plain end fitting specifications.

Figure 960
Plain End Caps

Tech Data Sheet: G192



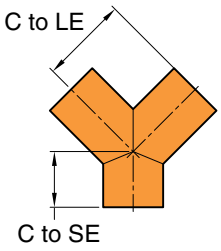
Pipe Size		E to E	Approx. Weight
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Lbs. *kg*
2	**2.375**	**4.00**	**2.3**
50	*60,3*	*102,0*	*1,0*
2½	**2.875**	**5.00**	**3.0**
65	*73,0*	*127,0*	*1,4*
3	**3.500**	**6.00**	**4.5**
80	*88,9*	*152,4*	*2,0*
4	**4.500**	**7.00**	**7.5**
100	*114,3*	*178,0*	*3,4*
5	**5.563**	**8.50**	**12.5**
125	*141,3*	*216,0*	*5,7*
6	**6.625**	**10.00**	**17.0**
150	*168,3*	*254,0*	*7,7*
8	**8.625**	**11.00**	**29.0**
200	*219,1*	*279,4*	*13,2*
10	**10.750**	**13.00**	**24.5**
250	*273,0*	*330,2*	*11,1*
12	**12.750**	**14.00**	**31.0**
300	*323,9*	*355,6*	*14,1*

For information on larger sizes, contact GRINNELL Mechanical Products.

See page 191 for plain end fitting specifications.

Figure 924
Plain End True Wyes

Tech Data Sheet: G192



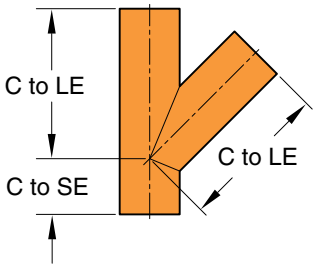
Pipe Size		C to LE	C to SE	Approx.
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Inches *mm*	Weight Lbs. *kg*
2	**2.375**	**4.25**	**2.75**	**2.5**
50	*60,3*	*108,0*	*69,9*	*1,1*
2½	**2.875**	**4.75**	**3.00**	**4.4**
65	*73,0*	*120,7*	*76,2*	*2,0*
3	**3.500**	**5.13**	**3.25**	**6.4**
80	*88,9*	*130,3*	*82,6*	*2,9*
4	**4.500**	**5.88**	**3.75**	**10.5**
100	*114,3*	*149,4*	*95,3*	*4,8*
5	**5.563**	**6.88**	**4.00**	**15.2**
125	*141,3*	*175,0*	*101,6*	*6,9*
6	**6.625**	**7.63**	**4.50**	**22.9**
150	*168,3*	*193,8*	*114,3*	*10,4*
8	**8.625**	**10.00**	**6.00**	**41.9**
200	*219,1*	*254,0*	*152,4*	*19,0*
10	**10.750**	**11.50**	**6.50**	**66.2**
250	*273,0*	*292,1*	*165,1*	*30,0*
12	**12.750**	**13.50**	**7.00**	**87.7**
300	*323,9*	*342,9*	*177,8*	*39,8*

For information on larger sizes, contact GRINNELL Mechanical Products.

See page 191 for plain end fitting specifications.

Figure 914
Plain End Laterals

Tech Data Sheet: G192



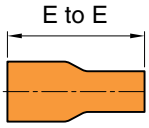
Pipe Size		C to LE	C to SE	Approx.
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Inches *mm*	Weight Lbs. *kg*
2	**2.375**	**7.25**	**2.75**	**4.5**
50	*60,3*	*184,2*	*69,9*	*2,0*
2½	**2.875**	**7.75**	**3.00**	**7.7**
65	*73,0*	*197,0*	*76,2*	*3,5*
3	**3.500**	**8.75**	**3.25**	**11.0**
80	*88,9*	*222,3*	*82,6*	*5,0*
4	**4.500**	**10.75**	**3.75**	**18.7**
100	*114,3*	*273,1*	*95,3*	*8,5*
5	**5.563**	**12.75**	**4.00**	**29.4**
125	*141,3*	*324,0*	*101,6*	*13,3*
6	**6.625**	**14.00**	**4.50**	**42.2**
150	*168,3*	*355,6*	*114,3*	*19,1*
8	**8.625**	**18.00**	**6.00**	**70.9**
200	*219,1*	*457,2*	*152,4*	*32,2*
10	**10.750**	**20.75**	**6.50**	**66.2**
250	*273,0*	*527,1*	*165,1*	*30,0*
12	**12.750**	**24.50**	**7.00**	**87.7**
300	*323,9*	*622,3*	*177,8*	*39,8*

For information on larger sizes, contact GRINNELL Mechanical Products.

See page 191 for plain end fitting specifications.

Figure 999
Plain End Swaged Nipples

Tech Data Sheet: G192



Pipe Size		E to E	Approx.
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Weight Lbs. *kg*
2½ x 2	**2.875 x 2.375**	**7.00**	**3.5**
65 x 50	*73,0 x 60,3*	*177,8*	*1,6*
3 x 2	**3.500 x 2.375**	**8.00**	**5.0**
80 x 50	*88,9 x 60,3*	*203,2*	*2,3*
3 x 2½	**3.500 x 2.875**	**8.00**	**5.0**
80 x 65	*88,9 x 73,0*	*203,2*	*2,3*
4 x 2	**4.500 x 2.375**	**9.00**	**8.0**
100 x 50	*114,3 x 60,3*	*228,6*	*3,6*
4 x 2½	**4.500 x 2.875**	**9.00**	**8.0**
100 x 65	*114,3 x 73,0*	*228,6*	*3,6*
4 x 3	**4.500 x 3.500**	**9.00**	**8.0**
100 x 80	*114,3 x 88,9*	*228,6*	*3,6*
5 x 2	**5.563 x 2.375**	**11.00**	**12.0**
125 x 50	*141,3 x 60,3*	*279,4*	*5,4*
5 x 3	**5.563 x 3.500**	**11.00**	**12.0**
125 x 80	*141,3 x 88,9*	*279,4*	*5,4*
5 x 4	**5.563 x 4.500**	**11.00**	**12.0**
125 x 100	*141,3 x 114,3*	*279,4*	*5,4*
6 x 2	**6.625 x 2.375**	**12.00**	**19.0**
150 x 50	*168,3 x 60,3*	*304,8*	*8,6*
6 x 2½	**6.625 x 2.875**	**12.00**	**19.0**
150 x 65	*168,3 x 73,0*	*304,8*	*8,6*
6 x 3	**6.625 x 3.500**	**12.00**	**19.0**
150 x 80	*168,3 x 88,9*	*304,8*	*8,6*
6 x 4	**6.625 x 4.500**	**12.00**	**19.0**
150 x 100	*168,3 x 114,3*	*304,8*	*8,6*
6 x 5	**6.625 x 5.563**	**12.00**	**19.0**
150 x 125	*168,3 x 141,3*	*304,8*	*8,6*
8 x 3	**8.625 x 3.500**	**13.00**	◆
200 x 80	*219,1 x 88,9*	*330,2*	-
8 x 4	**8.625 x 4.500**	**13.00**	◆
200 x 100	*219,1 x 114,3*	*330,2*	-
8 x 6	**8.625 x 6.625**	**13.00**	◆
200 x 150	*219,1 x 168,3*	*330,2*	-
10 x 3	**10.750 x 3.500**	**15.00**	◆
250 x 80	*273,0 x 88,9*	*381,0*	-
10 x 4	**10.750 x 4.500**	**15.00**	◆
250 x 100	*273,0 x 114,3*	*381,0*	-
10 x 6	**10.750 x 6.625**	**15.00**	◆
250 x 150	*273,0 x 168,3*	*381,0*	-
10 x 8	**10.750 x 8.625**	**15.00**	◆
250 x 200	*273,0 x 219,1*	*381,0*	-
12 x 6	**12.750 x 6.625**	**16.00**	◆
300 x 150	*323,9 x 168,3*	*406,4*	-
12 x 8	**12.750 x 8.625**	**16.00**	◆
300 x 200	*323,9 x 219,1*	*406,4*	-
12 x 10	**12.750 x 10.750**	**16.00**	◆
300 x 250	*323,9 x 273,0*	*406,4*	-

◆ These sizes are available. Contact GRINNELL Mechanical Products for details.
For information on larger sizes, contact GRINNELL Mechanical Products.
See page 191 for plain end fitting specifications.

Figures 991, 992, 993
Plain End Adapter Nipples

Tech Data Sheet: G192

Pipe Size		E to E	Approx.
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Weight Lbs. *kg*
2	**2.375**	**4.00**	**1.2**
50	*60,3*	*101,6*	*0,5*
2½	**2.875**	**4.00**	**1.9**
65	*73,0*	*101,6*	*0,9*
3	**3.500**	**4.00**	**2.5**
80	*88,9*	*101,6*	*1,1*
4	**4.500**	**6.00**	**5.4**
100	*114,3*	*154,4*	*2,4*
5	**5.563**	**6.00**	**7.3**
125	*141,3*	*154,4*	*3,3*
6	**6.625**	**6.00**	**9.4**
150	*168,3*	*154,4*	*4,3*
8	**8.625**	**6.00**	**14.2**
200	*219,1*	*154,4*	*6,4*

For information on larger sizes, contact GRINNELL Mechanical Products.

See page 191 for plain end fitting specifications.

Figure 991
Fabricated Adapter Nipple
Plain x Male Thread

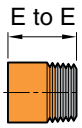


Figure 992
Fabricated Adapter Nipple
Plain x Groove

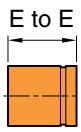


Figure 993
Fabricated Adapter Nipple
Plain x Bevel

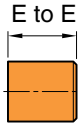


Figure 941 Plain End Flange Adapters (ANSI Class 150#)
Figure 942 Plain End Flange Adapters (ANSI Class 300#)

Tech Data Sheet: G192

Figure 941
Plain End Flange Adapter
ANSI Class 150#

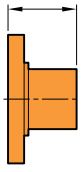
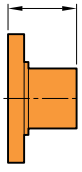


Figure 942
Plain End Flange Adapter
ANSI Class 300#



Pipe Size		Figure 941 ANSI Class 150#			Figure 942 ANSI Class 300#		
Nominal Inches *mm*	O.D. Inches *mm*	E to E Inches *mm*	Mating Flange Bolt Qty.	Approx. Weight Lbs. *kg*	E to E Inches *mm*	Mating Flange Bolt Qty.	Approx. Weight Lbs. *kg*
2	2.375	4.00	4	6.4	4.00	8	8.2
50	*60,3*	*101,6*		*2,8*	*101,6*		*3,7*
2½	2.875	4.00	4	8.8	4.00	8	11.9
65	*73,0*	*101,6*		*4,0*	*101,6*		*5,4*
3	3.500	4.00	4	10.4	4.00	8	15.5
80	*88,9*	*101,6*		*4,7*	*101,6*		*7,0*
4	4.500	6.00	8	18.2	6.00	8	28.0
100	*114,3*	*152,4*		*8,3*	*152,4*		*12,7*
5	5.563	6.00	8	22.0	6.00	8	37.0
125	*141,3*	*152,4*		*10,0*	*152,4*		*16,8*
6	6.625	6.00	8	28.1	6.00	12	48.0
150	*168,3*	*152,4*		*12,7*	*152,4*		*21,8*
8	8.625	6.00	8	43.7	6.00	12	79.0
200	*219,1*	*152,4*		*19,8*	*152,4*		*35,8*

For information on larger sizes, contact GRINNELL Mechanical Products.
See page 191 for plain end fitting specifications.

STAINLESS STEEL G-PRESS SYSTEMS

Stainless Steel G-PRESS Systems Table of Contents

Stainless Steel G-PRESS Systems Technical Data

Tech Data Sheet: G550

The GRINNELL G-PRESS Stainless Steel Press-Fitting System provides a complete line of mechanically joined press fittings in the ½" to 2" *(15 to 50mm)* sizes. This press system is designed to work with Schedule 5 and 10 Stainless Steel IPS pipe sizes. Press joints can be readily achieved using several commercially available press tools. Several press by male and female threaded options are available to connect threaded components. Conversion to flanged connections can be made with the Class 125/150 Flange Adapter. Where breaks in the system may be needed, the Union Coupling can make connections / disconnections easily.

This system makes it easy to quickly and safely install a wide range of civil, industrial, and naval systems. The GRINNELL G-PRESS Stainless Steel System has a highly corrosion resistant 316 Stainless Steel housing and a variety of O-Ring Seal materials making it suitable for use in numerous installations such as HVAC, plumbing, and industrial applications.

SPECIFICATIONS

Fitting Housing

Stainless Steel per ANSI 316/316L with a wall thickness of 0.065" *(1,65mm)* and the following characteristics:

- Hygienic material often used in food, beverage, and pharmaceutical industry
- Higher surface roughness friction factor resulting in less flow loss
- Excellent corrosion resistance

For local country potable water approvals, contact GRINNELL Mechanical Products

Working Pressure

- The working pressure range is from full vacuum to 300 psi (*20,7 bar*) on Schedule 5 and 10 Stainless Steel Pipe.

O-Ring Specifications

O-ring style gasket is resistant to hot water, ageing, and additives commonly used in drinking water.
EPDM and Nitrile are certified to all requirements of NSF/ANSI 61, Annex G and NSF/ANSI 372.

- **EPDM O-Ring** (Black color), Grade "E"
  -4°F to 230°F *(-20°C to 110°C)* For Hot water, dilute acids, alkalies, oil free air and many chemical services. Excellent oxidation resistance. NOT FOR USE WITH HYDROCARBONS.
- **Nitrile O-Ring** (Gray color), Grade "T"
  -13°F to 230°F *(-25°C to 110°C)* Petroleum products, vegetable oils, mineral oils and air with oils. NOT FOR USE WITH HOT WATER OR HOT DRY AIR.
- **Fluoroelastomer O-Ring** (Green color), Grade "O" -22°F to 300°F *(-30°C to 149°C)* For oxidizing acids, petroleum products, hydraulic fluids, lubricants, halogenated hydrocarbons.

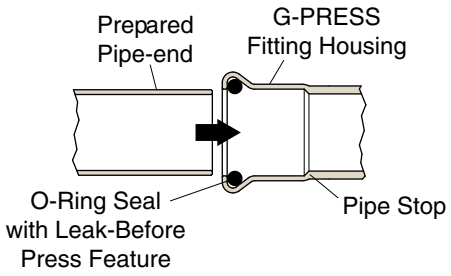
Stainless Steel G-PRESS Systems Technical Data

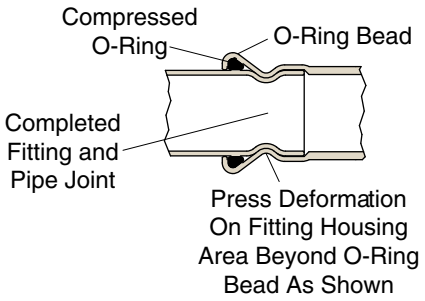
(Page 2 of 3)

Tech Data Sheet: G550

These fittings make it easy to quickly and safely install a wide range of civil, industrial, and marine systems. The G-PRESS Stainless Steel Fittings have a highly corrosion-resistant 316 Stainless Steel housing and a variety of O-Ring Seals that make these fittings suitable for use in numerous installations such as HVAC, plumbing, municipal, and industrial applications.

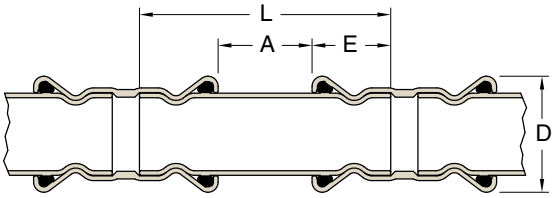
As shown in the drawings to the right, the G-PRESS O-Ring Seal design provides a unique Leak-Before-Press feature that quickly identifies during pressure testing any fittings not properly pressed. Fittings pressed incorrectly will allow liquids and gases to bypass the seal. The Leak-Before-Press feature significantly reduces the chance of improper joints, helping to ensure a leak-free system.

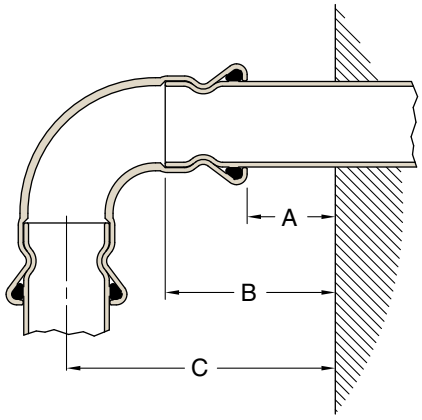




Minimum Fitting Distances

Pipe Size		A	L	E	D
Nominal Inches *mm*	O.D. Inches *mm*	Minimum Distance Between Fittings Inches *mm*	Minimum Pipe Length Between Fittings Inches *mm*	Socket Insertion Depth Inches *mm*	Fitting Housing Diameter Inches *mm*
½	0.840	0.39	2.05	0.83	1.26
15	*21,3*	*10*	*52*	*21*	*32*
¾	1.050	0.39	2.28	0.94	1.46
20	*26,7*	*10*	*58*	*24*	*37*
1	1.315	0.39	2.44	1.02	1.73
25	*33,4*	*10*	*62*	*26*	*44*
1½	1.900	0.39	3.23	1.22	2.48
40	*48,3*	*10*	*82*	*31*	*63*
2	2.375	0.79	4.33	1.22	3.08
50	*60,3*	*20*	*110*	*31*	*78*





Minimum Wall Clearance for Perpendicular Runs

Pipe Size		A	B	C
Nominal Inches *mm*	O.D. Inches *mm*	Minimum Wall to Fitting Distance Inches *mm*	Minimum Horizontal Pipe Distance from Wall -Inches *mm*	Minimum Vertical Pipe Distance from Wall - Inches *mm*
½	0.840	1.38	2.20	3.78
15	*21,3*	*35*	*56*	*96*
¾	1.050	1.38	2.32	4.21
20	*26,7*	*35*	*59*	*107*
1	1.315	1.38	2.40	4.76
25	*33,4*	*35*	*61*	*121*
1½	1.900	1.38	2.60	5.08
40	*48,3*	*35*	*66*	*129*
2	2.375	1.38	3.15	6.38
50	*60,3*	*35*	*80*	*162*

Stainless Steel G-PRESS Systems Technical Data

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Pipe Size	
Nominal Inches *mm*	O.D. Inches *mm*
½	0.840
15	*21,3*
¾	1.050
20	*26,7*
1	1.315
25	*33,4*
1½	1.900
40	*48,3*
2	2.375
50	*60,3*

Pipe Tolerance	
Pipe OD Tolerance +/- Inches *mm*	Pipe Wall Thickness Sch. 5 - Inches *mm*
0.004	0.065
0,10	*1,65*
0.006	0.065
0,14	*1,65*
0.006	0.065
0,14	*1,65*
0.008	0.065
0,20	*1,65*
0.011	0.065
0,28	*1,65*

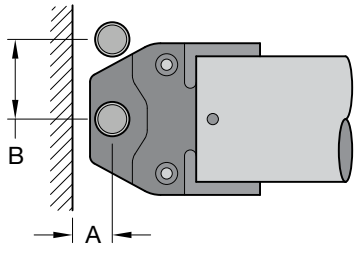
Pipework Support	
Vertical Intervals Feet *m*	Horizontal Intervals Feet *m*
6	4
1,8	*1,2*
6	5
1,8	*1,5*
8	6
2,4	*1,8*
10	8
3,1	*2,4*
10	8
3,1	*2,4*

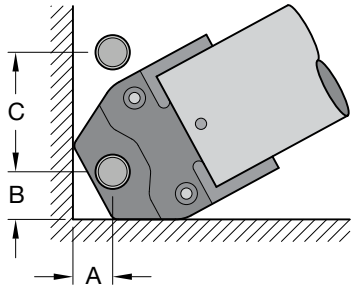
Minimum Fitting Distance

Recommended minimum distances between fittings to permit mechanical forming of the pipe during the pressing process.

Pipe Clearances

For locations where there is insufficient access to accommodate the pressing tool, consider pre-fabricating the pipework or using an alternate joining solution. Tables below show the minimum clearances required for wall and corner installations.





Wall and Pipe Clearances

Pipe Size		A	B
Nominal Inches *mm*	Pipe OD Inches *mm*	Wall Clearance Inches *mm*	Pipe Clearance Inches *mm*
½	0.840	0.875	2.25
15	*21,3*	*22*	*57*
¾	1.050	0.875	2.375
20	*26,7*	*22*	*60*
1	1.315	1.00	2.625
25	*33,4*	*25*	*67*
1½	1.900	1.188	3.00
40	*48,3*	*30*	*76*
2	2.375	2.375	5.625
50	*60,3*	*60*	*143*
2 *	2.375	3.00	4.625
50	*60,3*	*76*	*117*

* Loop-Type Jaw clearances

Dimensions may vary based on pressing tool. Refer to pressing tool manufacturer's instructions for specific dimensions

See Tech Data Sheet G550 for installation instructions.

Corner and Pipe Clearances

Pipe Size		A	B	C
Nominal Inches *mm*	Pipe OD Inches *mm*	Wall Clearance Inches *mm*	Wall Clearance Inches *mm*	Parallel Pipe Clearance Inches *mm*
½	0.840	0.875	1.25	3.00
15	*21,3*	*22*	*32*	*76*
¾	1.050	1.00	1.125	3.00
20	*26,7*	*25*	*29*	*76*
1	1.315	1.25	1.375	2.625
25	*33,4*	*32*	*35*	*80*
1½	1.900	1.25	1.75	3.00
40	*48,3*	*32*	*44*	*76*
2	2.375	2.375	4.375	5.625
50	*60,3*	*60*	*111*	*143*
2 *	2.375	3.00	3.00	4.625
50	*60,3*	*76*	*76*	*117*

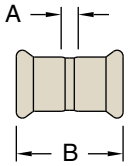
* Loop-Type Jaw clearances

Dimensions may vary based on pressing tool. Refer to pressing tool manufacturer's instructions for specific dimensions

See Tech Data Sheet G550 for installation instructions.

Figure 407 Straight Couplings
(Press x Press)

Tech Data Sheet: G550

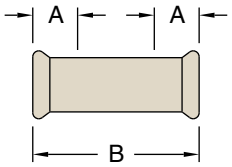


Pipe Size		Dimensions - Inches *mm*		Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	
½	0.840	0.42	2.09	0.13
15	*21,3*	*10,7*	*53,1*	*0,1*
¾	1.050	0.44	2.33	0.18
20	*26,7*	*11,2*	*59,2*	*0,1*
1	1.315	0.43	2.48	0.23
25	*33,4*	*10,9*	*63,0*	*0,1*
1½	1.900	0.43	2.84	0.40
40	*48,3*	*10,9*	*72,1*	*0,2*
2	2.375	0.50	4.05	0.74
50	*60,3*	*12,7*	*103*	*0,3*

See page 203 - 205 for G-PRESS specifications.

Figure 408 Slip Couplings
(Press x Press)

Tech Data Sheet: G550

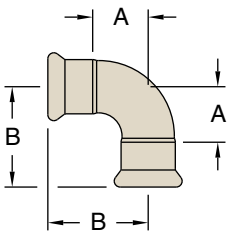


Pipe Size		Dimensions - Inches *mm*		Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	
½	0.840	0.83	2.95	0.18
15	*21,3*	*21,1*	*74,9*	*0,1*
¾	1.050	0.95	3.40	0.25
20	*26,7*	*24,1*	*86,4*	*0,1*
1	1.315	1.02	3.83	0.34
25	*33,4*	*25,9*	*97,3*	*0,2*
1½	1.900	1.20	4.81	0.63
40	*48,3*	*30,5*	*122,2*	*0,3*
2	2.375	1.77	6.76	1.13
50	*60,3*	*45,0*	*171,7*	*0,5*

See page 203 - 205 for G-PRESS specifications.

Figure 468 90° Elbows
(Press x Press)

Tech Data Sheet: G550

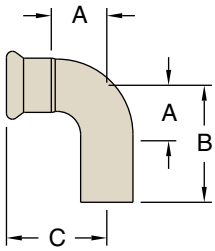


Pipe Size		Dimensions - Inches *mm*		Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	
½	0.840	1.57	2.41	0.22
15	*21,3*	*39,9*	*61,2*	*0,1*
¾	1.050	1.89	2.84	0.33
20	*26,7*	*48,0*	*72,1*	*0,2*
1	1.315	2.37	3.40	0.48
25	*33,4*	*60,2*	*86,4*	*0,2*
1½	1.900	2.56	3.76	0.79
40	*48,3*	*65,0*	*95,5*	*0,4*
2	2.375	3.23	5.00	1.39
50	*60,3*	*82,0*	*127,0*	*0,6*

See page 203 - 205 for G-PRESS specifications.

Figure 467 90° Elbows
(Male x Female)

Tech Data Sheet: G550

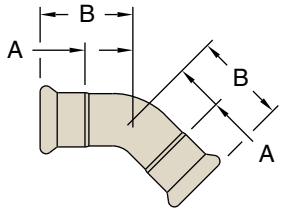


Pipe Size		Dimensions - Inches *mm*			Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	C	
½	0.840	1.57	2.87	2.41	0.24
15	*21,3*	*39,9*	*72,9*	*61,2*	*0,1*
¾	1.050	1.89	3.27	2.84	0.33
20	*26,7*	*48,0*	*83,0*	*72,1*	*0,2*
1	1.315	2.37	3.82	3.40	0.37
25	*33,4*	*60,2*	*97,0*	*86,4*	*0,2*
1½	1.900	2.48	4.06	3.69	0.77
40	*48,3*	*63,0*	*103,1*	*93,7*	*0,4*
2	2.375	3.23	5.52	5.00	1.34
50	*60,3*	*82,0*	*140,2*	*127,0*	*0,6*

See page 203 - 205 for G-PRESS specifications.

Figure 471 45° Elbows
(Press x Press)

Tech Data Sheet: G550

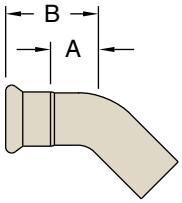


Pipe Size		Dimensions - Inches *mm*		Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	
½	0.840	0.79	1.62	0.18
15	*21,3*	*20,1*	*41,1*	*0,1*
¾	1.050	0.90	1.85	0.24
20	*26,7*	*22,9*	*47,0*	*0,1*
1	1.315	1.13	2.14	0.37
25	*33,4*	*28,7*	*54,4*	*0,2*
1½	1.900	1.17	2.37	0.59
40	*48,3*	*29,7*	*60,2*	*0,3*
2	2.375	1.48	3.24	1.06
50	*60,3*	*37,6*	*82,3*	*0,5*

See page 203 - 205 for G-PRESS specifications.

Figure 470 45° Elbows
(Male x Female)

Tech Data Sheet: G550

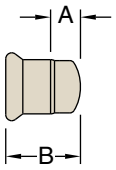


Pipe Size		Dimensions - Inches *mm*		Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	
½	0.840	0.79	1.62	0.20
15	*21,3*	*20,1*	*41,1*	*0,1*
¾	1.050	0.90	1.85	0.26
20	*26,7*	*22,9*	*47,0*	*0,1*
1	1.315	1.13	2.14	0.37
25	*33,4*	*28,7*	*54,4*	*0,2*
1½	1.900	1.17	2.37	0.60
40	*48,3*	*29,7*	*60,2*	*0,3*
2	2.375	1.48	3.24	1.06
50	*60,3*	*37,6*	*82,3*	*0,5*

See page 203 - 205 for G-PRESS specifications.

Figure 484 End Caps
(Female Press)

Tech Data Sheet: G550

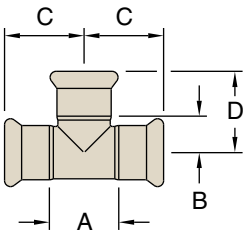


Pipe Size		Dimensions - Inches *mm*		Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	
½	0.840	0.72	1.56	0.09
15	*21,3*	*18,3*	*39,6*	*0,1*
¾	1.050	0.79	1.74	0.13
20	*26,7*	*20,1*	*44,2*	*0,1*
1	1.315	0.83	1.85	0.18
25	*33,4*	*21,1*	*47,0*	*0,1*
1½	1.900	0.95	2.15	0.33
40	*48,3*	*24,1*	*54,6*	*0,1*
2	2.375	1.14	2.91	0.55
50	*60,3*	*29,0*	*73,9*	*0,2*

See page 203 - 205 for G-PRESS specifications.

Figure 442 Equal Tees
(Press x Press x Press)

Tech Data Sheet: G550

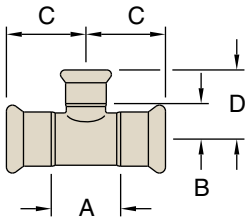


Pipe Size		Dimensions - Inches *mm*				Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	C	D	
½	0.840	1.28	0.80	1.48	1.64	0.24
15	*21,3*	*32,5*	*20,3*	*37,6*	*41,7*	*0,1*
¾	1.050	1.50	0.92	1.70	1.87	0.33
20	*26,7*	*38,1*	*23,4*	*43,2*	*47,5*	*0,2*
1	1.315	1.78	1.07	1.91	2.09	0.46
25	*33,4*	*45,2*	*27,2*	*48,5*	*53,1*	*0,2*
1½	1.900	3.19	1.42	2.80	2.63	0.84
40	*48,3*	*81,0*	*36,1*	*71,1*	*66,8*	*0,4*
2	2.375	3.22	1.61	3.39	3.39	1.48
50	*60,3*	*81,8*	*40,9*	*86,1*	*86,1*	*0,7*

See page 203 - 205 for G-PRESS specifications.

Figure 473 Reducing Tees
(Press x Press x Press)

Tech Data Sheet: G550

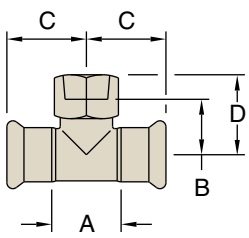


Pipe Size		Dimensions - Inches *mm*				Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	C	D	
¾ x ¾ x ½	**1.050 x 1.050 x 0.840**	**1.50**	**0.91**	**1.70**	**1.74**	**0.31**
20 x 20 x 15	*26,7 x 26,7 x 21,3*	*38,1*	*23,1*	*43,2*	*44,2*	*0,1*
1 x 1 x ½	**1.315 x 1.315 x 0.840**	**1.78**	**1.06**	**1.91**	**1.89**	**0.40**
25 x 25 x 15	*33,4 x 33,4 x 21,3*	*45,2*	*26,9*	*48,5*	*48,0*	*0,2*
1 x 1 x ¾	**1.315 x 1.315 x 1.050**	**1.78**	**1.07**	**1.91**	**2.02**	**0.42**
25 x 25 x 20	*33,4 x 33,4 x 26,7*	*45,2*	*27,2*	*48,5*	*51,3*	*0,2*
1½ x 1½ x ½	**1.900 x 1.900 x 0.840**	**3.19**	**1.35**	**2.80**	**2.19**	**0.79**
40 x 40 x 15	*48,3 x 48,3 x 21,3*	*81,0*	*34,3*	*71,1*	*55,6*	*0,34*
1½ x 1½ x ¾	**1.900 x 1.900 x 1.050**	**2.40**	**1.37**	**2.80**	**2.31**	**0.81**
40 x 40 x 20	*48,3 x 48,3 x 26,7*	*61,0*	*34,8*	*71,1*	*58,7*	*0,4*
1½ x 1½ x 1	**1.900 x 1.900 x 1.315**	**3.19**	**1.42**	**2.80**	**2.45**	**0.84**
40 x 40 x 25	*48,3 x 48,3 x 33,4*	*81,0*	*36,1*	*71,1*	*62,2*	*0,4*
2 x 2 x ½	**2.375 x 2.375 x 0.840**	**3.22**	**1.60**	**3.39**	**2.44**	**1.17**
50 x 50 x 15	*60,3 x 60,3 x 21,3*	*81,8*	*40,6*	*86,1*	*62,0*	*0,5*
2 x 2 x ¾	**2.375 x 2.375 x 1.050**	**3.22**	**1.62**	**3.39**	**2.56**	**1.19**
50 x 50 x 20	*60,3 x 60,3 x 26,7*	*81,8*	*41,1*	*86,1*	*65,0*	*0,5*
2 x 2 x 1	**2.375 x 2.375 x 1.315**	**3.22**	**1.61**	**3.39**	**2.62**	**1.23**
50 x 50 x 25	*60,3 x 60,3 x 33,4*	*81,8*	*40,9*	*86,1*	*66,5*	*0,6*
2 x 2 x 1½	**2.375 x 2.375 x 1.900**	**3.22**	**1.61**	**3.39**	**2.82**	**1.32**
50 x 50 x 40	*60,3 x 60,3 x 48,3*	*81,8*	*40,9*	*86,1*	*71,6*	*0,6*

See page 203 - 205 for G-PRESS specifications.

Figure 478 Tee and Reducing Tee Adapters
(Press x Press x Female NPT)

Tech Data Sheet: G550

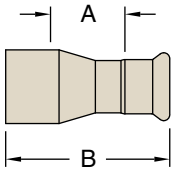


Pipe Size		Dimensions - Inches *mm*				Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	C	D	
½ x ½ x ½	0.840 x 0.840 x 0.840	1.28	0.93	1.48	1.52	0.26
15 x 15 x 15	*21,3 x 21,3 x 21,3*	*32,5*	*23,6*	*37,6*	*38,6*	*0,1*
½ x ½ x ¾	0.840 x 0.840 x 1.050	1.28	1.30	1.48	1.84	0.37
15 x 15 x 20	*21,3 x 21,3 x 26,7*	*32,5*	*33,0*	*37,6*	*46,7*	*0,2*
¾ x ¾ x ½	1.050 x 1.050 x 0.840	1.50	1.04	1.70	1.63	0.33
20 x 20 x 15	*26,7 x 26,7 x 21,3*	*38,1*	*26,4*	*43,2*	*41,4*	*0,1*
¾ x ¾ x ¾	1.050 x 1.050 x 1.050	1.50	1.27	1.70	1.81	0.40
20 x 20 x 20	*26,7 x 26,7 x 26,7*	*38,1*	*32,3*	*43,2*	*46,0*	*0,2*
¾ x ¾ x 1	1.050 x 1.050 x 1.315	1.50	1.29	1.70	1.97	0.46
20 x 20 x 25	*26,7 x 26,7 x 33,4*	*38,1*	*32,8*	*43,2*	*50,0*	*0,2*
1 x 1 x ½	1.315 x 1.315 x 0.840	1.78	1.19	1.91	1.78	0.42
25 x 25 x 15	*33,4 x 33,4 x 21,3*	*45,2*	*30,2*	*48,5*	*45,2*	*0,2*
1 x 1 x ¾	1.315 x 1.315 x 1.050	1.78	1.42	1.91	1.96	0.48
25 x 25 x 20	*33,4 x 33,4 x 26,7*	*45,2*	*36,1*	*48,5*	*49,8*	*0,2*
1 x 1 x 1	1.315 x 1.315 x 1.315	1.78	1.23	1.92	2.01	0.65
25 x 25 x 25	*33,4 x 33,4 x 33,4*	*45,2*	*31,2*	*48,8*	*51,1*	*0,3*
1 x 1 x 1¼	1.315 x 1.315 x 1.660	1.78	1.38	1.91	2.13	0.66
25 x 25 x 32	*33,4 x 33,4 x 42,2*	*45,2*	*35,1*	*48,5*	*54,1*	*0,3*
1½ x 1½ x ½	1.900 x 1.900 x 0.840	3.19	1.48	2.80	2.07	0.85
40 x 40 x 15	*48,3 x 48,3 x 21,3*	*81,0*	*37,6*	*71,1*	*52,6*	*0,4*
1½ x 1½ x ¾	1.900 x 1.900 x 1.050	3.19	1.71	2.80	2.25	0.91
40 x 40 x 20	*48,3 x 48,3 x 26,7*	*81,0*	*43,4*	*71,1*	*57,2*	*0,4*
1½ x 1½ x 1	1.900 x 1.900 x 1.315	3.19	1.59	2.80	2.27	1.03
40 x 40 x 25	*48,3 x 48,3 x 33,4*	*81,0*	*40,4*	*71,1*	*57,7*	*0,45*
1½ x 1½ x 1½	1.900 x 1.900 x 1.900	3.19	1.74	2.80	2.58	1.27
40 x 40 x 40	*48,3 x 48,3 x 48,3*	*81,0*	*44,2*	*71,1*	*65,5*	*0,6*
2 x 2 x ½	2.375 x 2.375 x 0.840	3.22	1.73	3.39	2.32	1.19
50 x 50 x 15	*60,3 x 60,3 x 21,3*	*81,8*	*43,9*	*86,1*	*58,9*	*0,5*
2 x 2 x ¾	2.375 x 2.375 x 1.050	3.22	1.96	3.39	2.50	1.26
50 x 50 x 20	*60,3 x 60,3 x 26,7*	*81,8*	*49,8*	*86,1*	*63,5*	*0,6*
2 x 2 x 1	2.375 x 2.375 x 1.315	3.22	1.84	3.39	2.52	1.32
50 x 50 x 25	*60,3 x 60,3 x 33,4*	*81,8*	*46,7*	*86,1*	*64,0*	*0,6*
2 x 2 x 2	2.375 x 2.375 x 2.375	3.22	2.14	3.39	3.19	1.90
50 x 50 x 50	*60,3 x 60,3 x 60,3*	*81,8*	*54,4*	*86,1*	*81,0*	*0,9*

See page 203 - 205 for G-PRESS specifications.

Figure 474 Reducers
(Female Press x Male Press)

Tech Data Sheet: G550

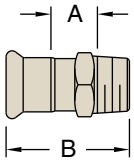


Pipe Size		Dimensions - Inches *mm*		Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	
¾ x ½	1.050 x 0.840	1.21	3.04	0.18
20 x 15	*26,7 x 21,3*	*30,7*	*77,2*	*0,1*
1 x ½	1.315 x 0.840	1.30	3.19	0.28
25 x 15	*33,4 x 21,3*	*33,0*	*81,0*	*0,1*
1 x ¾	1.315 x 1.050	1.75	3.76	0.26
25 x 20	*33,4 x 26,7*	*44,5*	*95,5*	*0,1*
1½ x ½	1.900 x 0.840	1.15	3.42	0.33
40 x 15	*48,3 x 21,3*	*29,2*	*86,9*	*0,1*
1½ x ¾	1.900 x 1.050	1.60	3.55	0.55
40 x 20	*48,3 x 26,7*	*40,6*	*90,2*	*0,2*
1½ x 1	1.900 x 1.315	2.03	4.25	0.37
40 x 25	*48,3 x 33,4*	*51,6*	*108,0*	*0,2*
2 x ½	2.375 x 0.840	1.62	4.23	0.53
50 x 15	*60,3 x 21,3*	*41,1*	*107,4*	*0,2*
2 x ¾	2.375 x 1.050	1.59	4.34	0.35
50 x 20	*60,3 x 26,7*	*40,4*	*110,2*	*0,2*
2 x 1	2.375 x 1.315	1.55	4.37	0.57
50 x 25	*60,3 x 33,4*	*39,4*	*111,0*	*0,3*
2 x 1½	2.375 x 1.900	1.79	4.77	0.70
50 x 40	*60,3 x 48,3*	*45,5*	*121,0*	*0,3*

See page 203 - 205 for G-PRESS specifications.

Figure 476 Straight Connectors
(Female Press x Male NPT)

Tech Data Sheet: G550



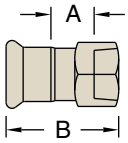
Pipe Size		Dim. - Inches *mm*		Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	
½ x ½	0.840 x 0.840	0.78	2.21	0.15
15 x 15	*21,3 x 21,3*	*19,8*	*56,1*	*0,1*
½ x ¾	0.840 x 1.050	0.80	2.30	0.20
15 x 20	*21,3 x 26,7*	*20,3*	*58,4*	*0,1*
½ x 1	0.840 x 1.315	0.87	2.44	0.34
15 x 20	*21,3 x 33,4*	*22,1*	*62,0*	*0,2*
¾ x ½	1.050 x 0.840	0.81	2.35	0.22
20 x 15	*26,7 x 21,3*	*20,6*	*59,7*	*0,1*
¾ x ¾	1.050 x 1.050	0.81	2.43	0.22
20 x 20	*26,7 x 26,7*	*20,6*	*61,7*	*0,1*
¾ x 1	1.050 x 1.315	0.87	2.56	0.29
20 x 25	*26,7 x 33,4*	*22,1*	*65,0*	*0,1*
¾ x 1¼	1.050 x 1.660	0.90	2.66	0.52
20 x 32	*26,7 x 42,2*	*22,9*	*67,6*	*0,2*
1 x ¾	1.315 x 1.050	0.83	2.52	0.28
25 x 20	*33,4 x 26,7*	*21,1*	*64,0*	*0,1*
1 x 1	1.315 x 1.315	0.83	2.64	0.32
25 x 25	*33,4 x 33,4*	*21,1*	*67,1*	*0,1*
1 x 1¼	1.315 x 1.660	0.92	2.77	0.52
25 x 32	*33,4 x 42,2*	*23,4*	*70,4*	*0,2*
1 x 1½	1.315 x 1.900	0.90	2.74	0.58
25 x 40	*33,4 x 48,3*	*22,9*	*69,6*	*0,3*
1½ x ¾	1.900 x 1.050	0.91	2.78	0.55
40 x 20	*48,3 x 26,7*	*23,1*	*70,6*	*0,2*
1½ x 1	1.900 x 1.315	0.91	2.90	0.62
40 x 25	*48,3 x 33,4*	*23,1*	*73,7*	*0,3*
1½ x 1¼	1.900 x 1.660	0.90	2.92	0.55
40 x 32	*48,3 x 42,2*	*22,9*	*74,2*	*0,2*
1½ x 1½	1.900 x 1.900	0.90	2.92	0.64
40 x 40	*48,3 x 48,3*	*22,9*	*74,2*	*0,3*
2 x 1½	2.375 x 1.900	0.90	3.48	0.94
50 x 40	*60,3 x 48,3*	*22,9*	*88,4*	*0,4*
2 x 2	2.375 x 2.375	0.98	3.78	1.04
50 x 50	*60,3 x 60,3*	*24,9*	*96,0*	*0,5*

See page 203 - 205 for G-PRESS specifications.

Figure 479 Straight Connectors

(Female Press x Female NPT)

Tech Data Sheet: G550



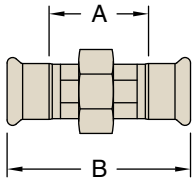
Pipe Size		Dim. - Inches *mm*		Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	
½ x ½	0.840 x 0.840	0.66	2.17	0.28
15 x 15	*21,3 x 21,3*	*16,7*	*55,1*	*0,1*
½ x ¾	0.840 x 1.050	0.92	2.44	0.28
15 x 20	*21,3 x 26,7*	*23,4*	*62,0*	*0,1*
½ x 1	0.840 x 1.315	0.89	2.56	0.43
15 x 25	*21,3 x 33,4*	*22,6*	*65,0*	*0,2*
¾ x ½	1.050 x 0.840	0.84	2.47	0.32
20 x 15	*26,7 x 21,3*	*21,3*	*62,7*	*0,1*
¾ x ¾	1.050 x 1.050	0.70	2.45	0.28
20 x 20	*26,7 x 26,7*	*17,8*	*62,2*	*0,1*
¾ x 1	1.050 x 1.315	0.66	2.59	0.43
20 x 25	*26,7 x 33,4*	*16,8*	*65,8*	*0,2*
¾ x 1¼	1.050 x 1.660	1.10	3.03	0.72
20 x 32	*26,7 x 42,2*	*27,9*	*77,0*	*0,3*
1 x ½	1.315 x 0.840	0.86	2.56	0.50
25 x 25	*33,4 x 21,3*	*21,8*	*65,0*	*0,2*
1 x ¾	1.315 x 1.050	0.86	2.56	0.43
25 x 25	*33,4 x 26,7*	*21,8*	*65,0*	*0,2*
1 x 1	1.315 x 1.315	0.72	2.56	0.43
25 x 25	*33,4 x 33,4*	*18,3*	*65,0*	*0,2*
1 x 1¼	1.315 x 1.660	1.09	2.95	0.69
25 x 32	*33,4 x 42,2*	*27,7*	*74,9*	*0,3*
1 x 1½	1.315 x 1.900	1.05	3.13	0.80
25 x 40	*33,4 x 48,3*	*26,7*	*79,5*	*0,4*
1½ x 1	1.900 x 1.315	1.01	3.06	1.26
40 x 25	*48,3 x 33,4*	*25,7*	*77,7*	*0,6*
1½ x 1¼	1.900 x 1.660	0.66	2.70	0.63
40 x 32	*48,3 x 42,2*	*16,8*	*68,6*	*0,3*
1½ x 1½	1.900 x 1.900	0.80	3.05	0.64
40 x 40	*48,3 x 48,3*	*20,3*	*77,5*	*0,32*
1½ x 2	1.900 x 2.375	1.39	3.65	1.21
40 x 50	*48,3 x 60,3*	*35,3*	*92,7*	*0,5*
2 x 1¼	2.375 x 1.660	0.87	3.39	1.48
50 x 32	*60,3 x 42,2*	*22,1*	*86,1*	*0,7*
2 x 1½	2.375 x 1.900	1.20	3.90	1.83
50 x 40	*60,3 x 48,3*	*30,5*	*99,1*	*0,8*
2 x 2	2.375 x 2.375	1.18	3.94	1.04
50 x 50	*60,3 x 60,3*	*30,0*	*100,1*	*0,5*

See page 203 - 205 for G-PRESS specifications.

Figure 485 3-Piece Unions

(Press x Press)

Tech Data Sheet: G550



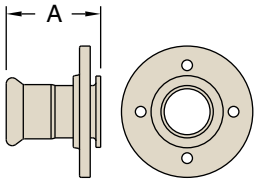
Pipe Size		Dimensions - Inches *mm*		Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	
½	0.840	2.35	4.02	0.62
15	*21,3*	*59,7*	*102,1*	*0,3*
¾	1.050	2.64	4.54	0.82
20	*26,7*	*67,1*	*115,3*	*0,4*
1	1.315	2.72	4.76	0.97
25	*33,4*	*69,1*	*120,9*	*0,4*
1½	1.900	3.88	6.29	2.36
40	*48,3*	*98,6*	*159,8*	*1,1*
2	2.375	4.72	8.26	3.70
50	*60,3*	*119,0*	*209,8*	*1,7*

See page 203 - 205 for G-PRESS specifications.

Figure 466 Van Stone Flange Adapters

(Female Press x ANSI 125/150 Flange)

Tech Data Sheet: G550



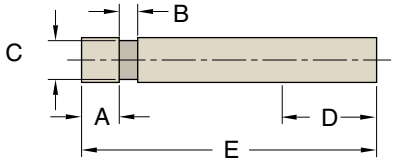
Pipe Size		Dimensions - Inches *mm*	Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	
½	0.840	3.07	0.93
15	*21,3*	*77,9*	*0,4*
¾	1.050	3.19	1.39
20	*26,7*	*81,0*	*0,6*
1	1.315	3.27	1.84
25	*33,4*	*823,1*	*0,8*
1½	1.900	3.44	2.98
40	*48,3*	*87,4*	*1,4*
2	2.375	4.53	4.79
50	*60,3*	*115,1*	*2,2*

See page 203 - 205 for G-PRESS specifications.
Flange material is AISI 304 and the body is AISI 316/316L.

Figure 477 Transition Nipple Grooved

(Groove x Male Press)

Tech Data Sheet: G550

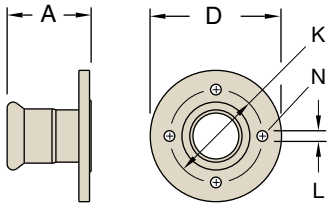


Pipe Size		Dimensions - Inches *mm*					Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	C	D	E	
¾	1.050	0.625	0.313	0.938	1.57	4.94	0.32
20	*26,7*	*15,9*	*7,9*	*23,8*	*39,9*	*125,5*	*0,1*
1	1.315	0.625	0.313	1.190	1.18	5.02	0.42
25	*33,4*	*15,9*	*7,9*	*30,2*	*30,0*	*127,5*	*0,2*
1½	1.900	0.625	0.313	1.775	1.57	5.20	0.64
40	*48,3*	*15,9*	*7,9*	*45,1*	*39,9*	*132,1*	*0,3*
2	2.375	0.625	0.313	2.250	2.36	5.77	0.87
50	*60,3*	*15,9*	*7,9*	*57,2*	*59,9*	*146,6*	*0,4*

See page 203 - 205 for G-PRESS specifications.

Figure 475 Flange Adapters
(Female Press x ANSI 125/150 Flange)
(Female Press x AS4087 PN16 Flange)
(Female Press x BS 10 Table E Flange)

Tech Data Sheet: G550



Pipe Size														Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	D	K	L Bolt Holes (4-Holes)	A	D	K	L Bolt Holes (4-Holes)	A	D	K	L Bolt Holes (4-Holes)	
½	0.840	1.85	3.50	2.37	0.62	1.85	3.74	2.56	0.55	1.85	3.75	2.64	0.55	0.90
15	*21,3*	*47,0*	*88,9*	*60,2*	*15,8*	*47,0*	*95,0*	*65,0*	*14*	*47,0*	*95,3*	*67,1*	*14*	*0,4*
¾	1.050	2.23	3.94	2.75	0.62	2.20	4.13	2.95	0.55	2.20	3.94	2.87	0.55	1.30
20	*26,7*	*56,6*	*100,1*	*69,9*	*15,8*	*55,9*	*105*	*74,9*	*14*	*55,9*	*100,1*	*72,9*	*14*	*0,6*
1	1.315	2.52	4.33	3.13	0.62	2.52	4.52	3.35	0.55	2.52	4.53	3.27	0.55	1.83
25	*33,4*	*64,0*	*110,0*	*79,5*	*15,8*	*64,0*	*115*	*85,1*	*14*	*64,0*	*115,1*	*83,1*	*14*	*0,8*
1½	1.900	3.40	4.92	3.87	0.62	2.48	5.90	4.33	0.71	2.48	5.31	3.86	0.71	3.03
40	*48,3*	*86,4*	*125,0*	*98,3*	*15,8*	*63,0*	*150*	*110*	*18*	*63,0*	*134,9*	*98,0*	*18*	*1,4*
2	2.375	4.71	5.91	4.75	0.75	3.46	6.50	4.92	0.71	3.46	5.91	4.49	0.71	4.91
50	*60,3*	*119,6*	*150,1*	*120.7*	*19,1*	*87,9*	*165*	*125*	*18*	*87,9*	*150,1*	*114,0*	*18*	*2,2*

See page 203 - 205 for G-PRESS specifications.

Figure 461 Weld Adaptor
(Male Weld x Female Press)

Tech Data Sheet: G550

Pipe Size		Dimensions - Inches *mm*		Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*	E	U	
½	0.840	5.13	4.00	0.25
15	*21,3*	*130,3*	*101,6*	*0,1*
¾	1.050	5.27	4.00	0.33
20	*26,7*	*133,9*	*101,6*	*0,1*
1	1.315	5.34	4.00	0.42
25	*33,4*	*135,6*	*101,6*	*0,2*
1½	1.900	5.52	4.00	0.65
40	*48,3*	*140,2*	*101,6*	*0,3*
2	2.375	6.09	4.00	0.92
50	*60,3*	*154,7*	*101,6*	*0,4*

See page 203 - 205 for G-PRESS specifications.

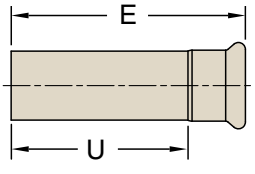


Figure 469 Ball Valves
(Press x Press)

Tech Data Sheet: G551

The Grinnell G-PRESS Figure 469 Ball Valve is a Teflon seated full port ball made of stainless steel and the cast equivalent to 316 Stainless Steel, CF8M. The full port, commonly called full bore, ball valve creates an unrestricted flow reducing head loss through the valve. The flow can enter the valve from either direction which allows the valve to be oriented in different positions in tight spaces. The valve is a 1/4 turn open/close with a latch lock in both the full open and closed positions. The inline direction of the handle when the valve is open lets you see whether the valve is opened or closed. The lock latch has a lock-out feature to pad lock the valve in the open or closed position.

Item	Part	Material
1	Body	ASTM A351-C8M
2	Cap	
3	Ball	
4	Stem	ASTM A276-316
5	Ball Seat	PTFE/RTFE
6	Body Seal	
7	Thrust Washer	
8	Packing	
9	Gland Nut	AISI 304
10	Handle	
11	Spring Washer	

Item	Part	Material
12	Nut	AISI 304
13	Latch Lock	
14	Bolt	
15	Spring Washer	
16	Nut	
17	Handle Sleeve	PVC
18	O-Ring	EPDM, Nitrile, Fluoroelastomer
19	G-Press Ends	316L

SPECIFICATIONS

Approvals
- WaterMark Approval for valves installed with EPDM O-Ring Seals

Maximum Working Pressure
- 300 psi (*20,7 bar*)

Body, Cap & Ball
- Cast Stainless Steel per ASTM A351-CF8M

Stem
- Stainless Steel per ASTM A276-316

Ball Seat, Body Seal, Thrust Washer & Packing
- PTFE/RTFE

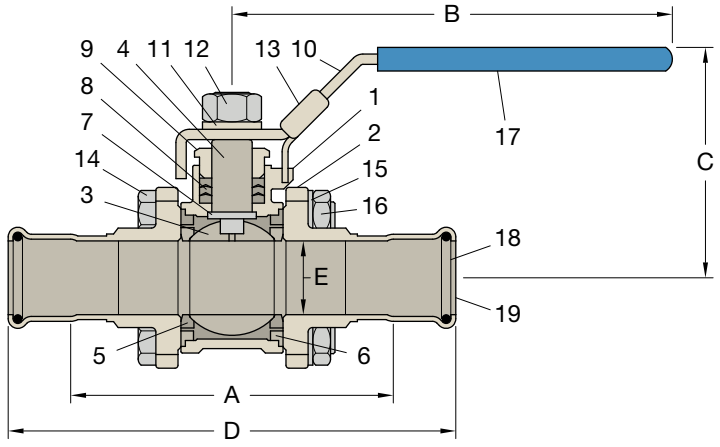
Handle, Spring Washer, Nuts, Lock Nut, Bolts & Spring Washer
- Stainless Steel per AISI Type 304L

Handle Sleeve
- PVC

G-PRESS Ends
- Stainless Steel per AISI Type 316L

O-Ring Specifications
For O-Ring Seal compound applications, refer to Technical Data Sheet G610

- **EPDM O-Ring** (Black color) -4°F to 230°F *(-20°C to 110°C)* For Hot water, dilute acids, alkalies, oil free air and many chemical services. Excellent oxidation resistance. NOT FOR USE WITH HYDROCARBONS.
- **Nitrile O-Ring** (Gray color) -13°F to 230°F *(-25°C to 110°C)* Petroleum products, vegetable oils, mineral oils and air with oils. NOT FOR USE WITH HOT WATER OR HOT DRY AIR.
- **Fluoroelastomer O-Ring** (Green color) -22°F to 300°F *(-30°C to 149°C)* For oxidizing acids, petroleum products, hydraulic fluids, lubricants, and halogenated hydrocarbons.



Pipe Size		Dimensions - Inches *mm*					Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	C	D	E	
½	0.840	3.16	3.94	2.44	4.84	0.59	1.24
15	*21,3*	*80,3*	*100,1*	*62,0*	*122,9*	*15,0*	*0,6*
¾	1.050	3.59	4.92	2.44	5.49	0.79	1.73
20	*26,7*	*91,2*	*125,0*	*62,0*	*139,4*	*20,0*	*0,8*
1	1.315	3.99	5.87	3.03	6.03	0.98	2.46
25	*33,4*	*101,3*	*149,1*	*77,0*	*153,2*	*24,9*	*1,1*
1½	1.900	5.05	7.48	3.94	7.45	1.50	5.93
40	*48,3*	*128,3*	*190,0*	*100,1*	*189,2*	*38,1*	*2,7*
2	2.375	5.84	7.48	4.25	9.38	2.01	8.48
50	*60,3*	*148,3*	*190,0*	*108,0*	*238,3*	*51,0*	*3,8*

See page 203 - 205 for G-PRESS specifications.

HDPE SYSTEMS

HDPE Systems Table of Contents

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HDPE Transition Couplings
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Figure 9094
HDPE Flange Couplings
Page 221

SPECIFICATIONS

Coupling Ductile Iron Housing Specifications

- ASTM A 536 – Standard specification for ductile iron castings, Grade 65-45-12

Bolt/Nut Specifications

- **ANSI:** Carbon steel oval neck bolts & nuts are heat-treated and conform to the physical properties of ASTM A 183 Grade 2 and SAE J429 Grade 5 with a minimum tensile strength of 110,000 psi *(7584,2 bar)*. Carbon Steel heavy hex nuts conform to the physical properties of ASTM A 183 Grade 2 and SAE J995 Grade 5. Bolts and nuts are zinc-electroplated conforming to ASTM B 633.
- **Metric:** Carbon steel oval neck track head bolts (Gold color coded) are heat treated and conform to the physical properties of ASTM F 568 M with a minimum tensile strength of 760 MPa.
  Carbon Steel heavy hex nuts conform to the physical properties of ASTM A 563 M Class 9. Bolts and nuts are zinc-electroplated conforming to ASTM B 633.
- Stainless steel bolts and nuts are available upon request.

Gasket Specifications

- **Grade "E" EPDM** gaskets have a Green color code identification and conform to ASTM D 2000 for service temperatures from -30°F to 230°F *(-34°C to 110°C)*. They are recommended for hot water not to exceed 230°F *(110°C)*, plus a variety of dilute acids, oil free air, and many chemical services. They are not recommended for petroleum services.
- **Grade "T" Nitrile** (Color code: Orange stripe) Recommended for petroleum products, air with oil vapors, vegetable and mineral oils within the specified temperature range. Also good for water services under 150°F (66°C). Temperature range: -20°F to +180°F *(-29°C to +82°C)*.
  Do not use for HOT WATER above 150°F *(66°C)* or HOT DRY AIR above 140°F *(60°C)*.

Coatings

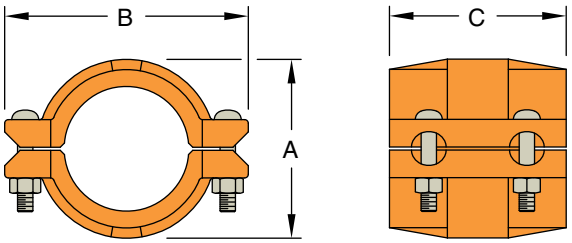
- Orange – Non-lead paint (standard)
- Red – Non-lead paint (optional, regional)
- Hot-Dipped, Zinc galvanized (optional)

Figure 9095 HDPE Couplings

Tech Data Sheet: G580

The GRINNELL Figure 9095 HDPE Coupling is specially designed for joining sections of high-density polyethylene (HDPE) piping. The GRINNELL Figure 9095 features a four-bolt coupling design with machined gripping teeth to positively secure high-density polyethylene piping and create a leak-tight joint.

The contoured housing features an integrated ramp design that helps avoid obstacles while relocating pipe runs. This coupling is ideal for mining, irrigation, and tunnelling applications.



Pipe Size		Dimensions - Inches *mm*			Coupling Bolt Size Inches	Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	C		
2	**2.375**	**3.39**	**5.24**	**4.61**	**½ x 2⅜**	**5.7**
50	*60,3*	*86,0*	*133,0*	*117,0*	–	*2,6*
3	**3.500**	**4.61**	**6.50**	**4.02**	**½ x 2¾**	**7.9**
80	*88,9*	*117,0*	*165,0*	*102,0*	–	*3,6*
4	**4.500**	**5.75**	**7.99**	**5.75**	**½ x 3**	**11.4**
100	*114,3*	*146,0*	*203,0*	*146,0*	–	*5,2*
6	**6.625**	**7.87**	**10.75**	**5.87**	**⅝ x 3½**	**18.0**
150	*168,3*	*200,0*	*273,0*	*149,0*	–	*8,2*
8	**8.625**	**10.39**	**13.11**	**5.98**	**⅝ x 3½**	**27.5**
200	*219,1*	*264,0*	*333,0*	*152,0*	–	*12,5*
10	**10.750**	**12.52**	**15.63**	**6.50**	**¾ x 4¾**	**44.0**
250	*273,0*	*318,0*	*397,0*	*165,0*	–	*20,0*
12	**12.750**	**14.37**	**17.64**	**7.87**	**¾ x 4¾**	**56.1**
300	*323,9*	*365,0*	*448,0*	*200,0*	–	*25,5*
14	**14.000**	**16.26**	**19.37**	**10.12**	**1 x 6**	**90.6**
350	*355,6*	*413,0*	*492,0*	*257,0*	–	*41,2*
16	**16.000**	**18.39**	**21.38**	**10.12**	**1 x 6**	**97.2**
400	*406,4*	*467,0*	*543,0*	*257,0*	–	*44,2*
18	**18.000**	**20.28**	**23.43**	**10.24**	**1 x 6**	**111.1**
450	*457,2*	*515,0*	*595,0*	*260,0*	–	*50,5*
20	**20.000**	**22.36**	**25.63**	**10.24**	**1 x 6**	**136.0**
500	*508,0*	*568,0*	*651,0*	*260,0*	–	*61,8*

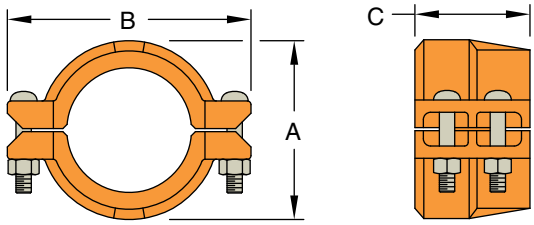
For information on larger sizes, contact GRINNELL Mechanical Products.
See page 218 for HDPE coupling specifications and pages 224 - 230 for gasket information.
See page 222 for pipe wall thickness and standard dimension ratio information.

Figure 9097 HDPE Transition Couplings

Tech Data Sheet: G582

The GRINNELL Figure 9097 HDPE Transition Coupling provides for an efficient transition from grooved piping systems to high-density polyethylene (HDPE) piping. The GRINNELL Figure 9097 features a four-bolt coupling design with one side of machine gripping teeth and a grooved end creating a leak-tight joint between high-density polyethylene and grooved piping systems.

The contoured housing features the same integrated ramp design as the GRINNELL Figure 9095, which helps avoid obstacles while relocating pipe runs. This coupling is ideal for mining, irrigation, and tunnelling applications.



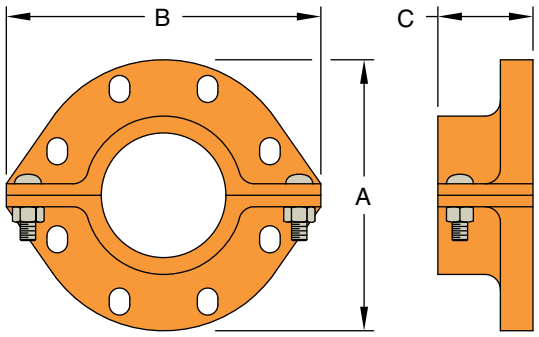
Pipe Size		Dimensions - Inches *mm*			Coupling Bolt Size Inches	Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	C		
2	**2.375**	**3.39**	**5.99**	**3.11**	**½ x 2⅜**	**4.4**
50	*60,3*	*86,0*	*152,0*	*79,0*	–	*2,0*
3	**3.500**	**4.49**	**7.13**	**3.11**	**½ x 3**	**5.9**
80	*88,9*	*114,0*	*181,0*	*79,0*	–	*2,7*
4	**4.500**	**5.75**	**8.50**	**3.74**	**½ x 3**	**8.4**
100	*114,3*	*146,0*	*216,0*	*95,0*	–	*3,8*
6	**6.625**	**8.00**	**11.26**	**3.74**	**⅝ x 3½**	**12.5**
150	*168,3*	*203,0*	*286,0*	*95,0*	–	*5,7*
8	**8.625**	**10.51**	**13.63**	**4.25**	**⅝ x 3½**	**21.3**
200	*219,1*	*267,0*	*346,0*	*108,0*	–	*9,7*
10	**10.750**	**12.64**	**17.00**	**5.00**	**¾ x 4¾**	**35.2**
250	*273,0*	*321,0*	*432,0*	*127,0*	–	*16,0*
12	**12.750**	**14.76**	**19.49**	**5.00**	**¾ x 4¾**	**43.1**
300	*323,9*	*375,0*	*495,0*	*127,0*	–	*19,6*

For information on larger sizes, contact GRINNELL Mechanical Products.
See page 218 for HDPE coupling specifications and pages 224 - 230 for gasket information.
See page 222 for pipe wall thickness and standard dimension ratio information.

Figure 9094 Flange Couplings

Tech Data Sheet: G584

The GRINNELL Figure 9094 HDPE Flange Coupling provides for an efficient transition from high-density polyethylene (HDPE) piping to ANSI class 125# or 150# flanged piping system. This coupling is ideal for mining, irrigation, and tunnelling applications.



Pipe Size		Dimensions - Inches *mm*			Coupling Bolts ‡		Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	C	Quantity	Bolt Size Inches	
4	**4.500**	**9.00**	**10.25**	**3.10**	**8**	**⅝ x 3¼**	**15.0**
100	*114,3*	*229,0*	*260,0*	*79,0*		–	*6,8*
6	**6.625**	**11.00**	**12.25**	**3.75**	**8**	**¾ x 3½**	**21.5**
150	*168,3*	*279,0*	*311,0*	*95,0*		–	*9,8*
8	**8.625**	**13.50**	**14.75**	**3.42**	**8**	**¾ x 3¾**	**28.8**
200	*219,1*	*343,0*	*375,0*	*87,0*		–	*13,1*

‡ Mating bolts and nuts are not supplied. Flange mating bolts must be at least SAE J429, Grade 5 or stronger. It is the responsibility of the purchaser to verify correct length for the intended application.

For information on larger sizes, contact GRINNELL Mechanical Products.

See page 218 for HDPE coupling specifications and pages 224 - 230 for gasket information.

See page 222 for pipe wall thickness and standard dimension ratio information.

HDPE Pipe Wall Thickness and Standard Dimension Ratios

Tech Data Sheet: G580, G582, G584

Pipe Size				Pipe Wall Thickness and Standard Dimension Ratio						
Nominal Inches *mm*	O.D. Inches *mm*	Tol. +/- Inches *mm*	Max. Pipe Ovality +/- Inches *mm*	SDR 7.3 Inches *mm*	SDR 9 Inches *mm*	SDR 11 Inches *mm*	SDR 15.5 Inches *mm*	SDR 17 Inches *mm*	SDR 21 Inches *mm*	SDR 32.5 Inches *mm*
2	**2.375**	**0.006**	**0.035**	**0.325**	**0.264**	**0.216**	**0.153**	**0.140**	**0.113**	**–**
50	*60,3*	*0,15*	*0,89*	*8,3*	*6,7*	*5,5*	*3,9*	*3,6*	*2,9*	*–*
3	**3.500**	**0.016**	**0.040**	**0.479**	**0.389**	**0.318**	**0.226**	**0.206**	**0.167**	**0.108**
80	*88,9*	*0,41*	*1,02*	*12,2*	*9,9*	*8,1*	*5,7*	*5,2*	*4,2*	*2,7*
4	**4.500**	**0.020**	**0.040**	**0.616**	**0.500**	**0.409**	**0.290**	**0.265**	**0.214**	**0.138**
100	*114,3*	*0,51*	*1,02*	*15,6*	*12,7*	*10,4*	*7,4*	*6,7*	*5,4*	*3,5*
6	**6.625**	**0.030**	**0.050**	**0.908**	**0.736**	**0.602**	**0.427**	**0.327**	**0.265**	**0.204**
150	*168,3*	*0,76*	*1,27*	*23,1*	*18,7*	*15,3*	*10,8*	*8,3*	*6,7*	*5,2*
8	**8.625**	**0.039**	**0.075**	**1.182**	**0.958**	**0.784**	**0.556**	**0.507**	**0.340**	**0.265**
200	*219,1*	*0,99*	*1,91*	*30,0*	*24,3*	*19,9*	*14,1*	*12,9*	*8,6*	*6,7*
10	**10.750**	**0.048**	**0.075**	**1.473**	**1.194**	**0.977**	**0.694**	**0.632**	**0.512**	**0.331**
250	*273,0*	*1,22*	*1,91*	*37,4*	*30,3*	*24,8*	*17,6*	*16,1*	*13,0*	*8,4*
12	**12.750**	**0.057**	**0.075**	**1.747**	**1.417**	**1.159**	**0.823**	**0.750**	**0.607**	**0.392**
300	*323,9*	*1,45*	*1,91*	*44,4*	*36,0*	*29,4*	*20,9*	*19,1*	*15,4*	*10,0*

Per Specification for Polyethylene (P.E.) Plastic Pipe ASTM F714, D2447, D3035.

GASKETS

GRINNELL Gasket Seals

Tech Data Sheet: G610

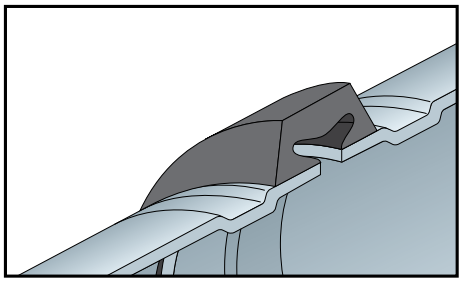
Pressure responsive gaskets are offered in a variety of types. Although they each serve a specific function they all utilize the same sealing design.

The GRINNELL gasket is designed to provide a three-way sealing action.

(1) Installation of the gasket over the outside sealing surface of the pipe compresses the lip seal and forms the initial seal.

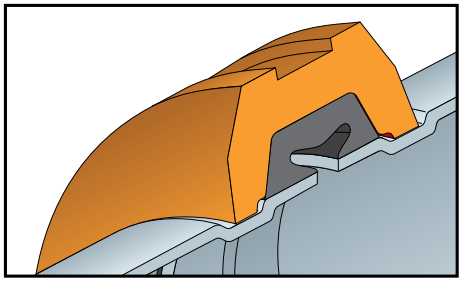
(2) The installation of the housing segments around the gasket and into the pipe groove properly positions the gasket. Tightening of the housing segments forms the gasket to the inside of the housing and compresses it around the pipe-sealing surface thus increasing the gasket's sealing against the pipe.

(3) The introduction of the system pressure energizes the pressure responsive seal of the gasket and further enhances the sealing action.



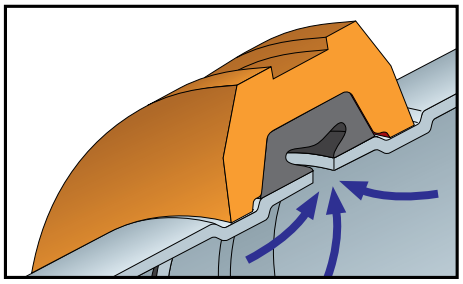
First Seal

C-shaped rubber gasket seals on pipe ends.



Second Seal

The housings compress the gasket to increase the sealing capacity.



Third Seal

The system pressure or vacuum will then maximize the leak-tight seal.

For additional listings or approvals, see page 11 or visit our website at www.anvilintl.com

Gasket Styles

Tech Data Sheet: G610

Standard

The standard style gasket, with a "C" shape configuration, is the most commonly used. It is provided as the standard gasket in the Figure 705, 707, 770, 772, 405, and 472 GRINNELL Couplings. The gasket is available in Grade "E" and "EN" EPDM, Grade "T" Nitrile, Grade "L" Silicone, and Grade "O" Fluoroelastomer.

Tri-Seal

The tri-seal gasket is designed to close off the gap or gasket cavity. This is accomplished by positioning the center "rib" of the gasket over the gap between the pipes. The tri-seal gasket has two tapered sealing edges in addition to the center rib for additional strength and sealing.

The Tri-Seal gasket can be used with the Figure 705, 707, 770, 772, 672, 405, and 472 GRINNELL Couplings. It is recommended for use in low temperature and vacuum services (greater than 10" Hg *(250mm Hg)*) applications and potable water systems. Note only a petroleum-free silicone based lubricant is recommended for low temperature applications. The gasket is available in Grade "E", "EN" EPDM, and Grade "T" Nitrile.

Note: Rigid couplings are recommended for vacuum and low temperature applications.

Center-Stop, Push-On

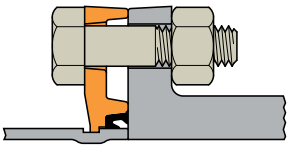
The Grade "EHT" EPDM Center-Stop, Push-On Style Gasket is specially designed for easy installation of the GRINNELL Rapid Installation Pivot-bolt Couplings.

Reducing Coupling

The reducing gasket is provided with ribs used to position the larger pipe so that the sealing lip is located on the sealing surface of the pipe. This gasket is used only with the Figure 716 GRINNELL Reducing Coupling and is available in Grade "E" EPDM and Grade "T" Nitrile.

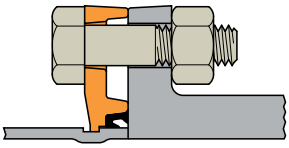
Reducing couplings are not recommended for low temperature applications.

Flange Adapter



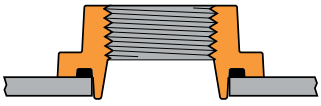
This gasket is specifically designed for use with the Figure 61 and 71 Flange Adapter. The gasket has an optimum amount of rubber to provide a dependable seal between both the pipe and mating surface. The gasket is available in Grade "E" EPDM and Grade "T" Nitrile.

Hinged Flange Adapter



This gasket is specifically designed for use with the Figure 71H Hinged Flange Adapter. The gasket has an optimum amount of rubber to provide a dependable seal between both the pipe and mating surface. The gasket is available in Grade "E" EPDM , Grade "T" Nitrile, and Grade "O" Fluoroelastomer.

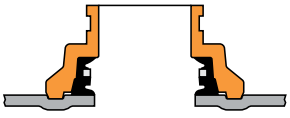
Mechanical Tee and Strap



The gasket provides a compression type seal, which is designed to conform to the exterior curve (OD) of the pipe. This design is unique to both the Figure 730 Mechanical Tee (threaded and grooved) and Figure 40-5 Strap. The gasket is available in Grade "E" EPDM and Grade "T" Nitrile.

Note: When used in low temperature applications, use a petroleum-free silicone based lubricant, otherwise no lubricant is required on Mechanical Tee and Strap gaskets.

Outlet Coupling



This gasket is specifically designed for use with the GRINNELL Figure 702 Outlet Coupling.

Plain End Coupling

This gasket is designed for use with the Figure 909 Plain End Coupling.

GRINNELL gaskets are designed exclusively for use with GRINNELL manufactured coupling housings. The mixing of other manufacturer's gaskets or housings with GRINNELL gaskets or housings may result in pipe joint leakage or failure and will void the GRINNELL Mechanical Products Limited Warranty.

GRINNELL Gasket Grade & Recommendations

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The Gasket Recommendation Table has been developed to assure maximum service life. The table was developed from information supplied by the material manufacturers of the elastomer, technical reference literature, and testing conducted by GRINNELL Mechanical Products.

In evaluating the gasket grade for intended service applications the following consideration must be reviewed: system operating temperature, fluid or solution concentration, and duration of service.

All gasket recommendations are based on a temperature of 70°F *(21°C)* unless otherwise noted.

Technical and Engineering Services should be consulted if combinations of service solutions are being considered.

Middle East email: Mechserv-EMEA@GRINNELL.com
U.S.A.: Phone 866-500-4768 or 1-401-781-8220

Contact GRINNELL Mechanical Products for recommendations for services not listed.

Gasket recommendations apply to GRINNELL gaskets and valves only.

Grade	Temperature Range	Compound	Color Code Stripe	General Service Application
"E"	**-30°F to 230°F** *(-34°C to 110°C)*	**EPDM**	**Green Stripe**	Hot water, dilute acids, alkalies, oil free air, and many chemical services not involving petroleum products. Excellent oxidation resistance. **Not for use with hydrocarbons. Not recommended for steam service.**
"E" Tri- Seal	**-30°F to 230°F** *(-34°C to 110°C)*	**EPDM**	**Green Stripe**	Hot water, dilute acids, alkalies, and many chemical services not involving petroleum products. Excellent oxidation resistance. **Not for use with hydrocarbons. Recommended for low temperature and vacuum services.**
"EHT" Center-Stop Push-On Style	**-30°F to 250°F (-34°C to 120°C) Potable Water up to 180°F (82°C)**	**EPDM**	**Red & Copper, and Red & Green Striped**	Closed-loop heating systems up to 250°F (*121°C*) NSF 61 approved for Potable Water up to 180°F (*82°C*) Recommended for use in low temperature and vacuum systems **Not recommended for hydrocarbons.** Designed for use with GRINNELL Figures 640 and 740 Rapid Installation Pivot-bolt Couplings
"EN" Tri-Seal for Copper Tubing	**Potable Water up to 180°F** *(82°C)*	**EPDM**	**Copper**	**CTS Sizes Only**, NSF 61 Approved for potable water. **Not recommended for hydrocarbons.**
"EN" and "EN" Tri-Seal for IPS Pipe	**Potable Water up to 180°F** *(82°C)*	**EPDM**	**Green/ Yellow Stripe**	**IPS Sizes Only**, NSF 61 Approved for potable water. **Not recommended for hydrocarbons.**
"T" and "T" Tri- Seal	**-20°F to 180°F** *(-29°C to 82°C)*	**Nitrile**	**Orange Stripe**	Petroleum products, vegetable oils, mineral oils, and air with oils. High-End oil vapor temperature, decrease to 150°F *(66°C)*. **Not recommended for hot water or hot dry air systems.**
"O" and "O" Tri- Seal	**+20°F to 300°F** *(-7°C to 149°C)*	**Fluoroelastomer**	**Blue Stripe**	Oxidizing acids, petroleum products, hydraulic fluids, lubricants, halogenated hydrocarbons.
"L"	**-30°F to 350°F** *(-34°C to 177°C)*	**Silicone ***	**Red Stripe**	Air without hydrocarbons, dry heat.

* To prevent gasket from deteriorating, NEVER use silicone-based lubricants with Grade "L" Silicone gaskets.
For local country potable water approvals contact GRINNELL Mechanical Products.

Tri-Seal Gaskets

Tri-Seal Gaskets differ from Standard Gaskets by having a closed-off gap or gasket cavity between pipe sections. This gap is closed by positioning the center "rib" of the gasket over the gap between the pipes. The Tri-Seal Gasket has two tapered sealing edges, in addition to the center rib, for additional strength and sealing. They are intended primarily for low temperature and vacuum applications greater than 10 inches of mercury.

Gasket Air, Water & Chemical Recommendations

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- Contact GRINNELL Mechanical Products for an engineering evaluation and recommendation where the gasket grade is shown in parenthesis.
- Specify gasket grade when ordering.
- For vacuum or low temperature systems, use tri-seal gasket. For low temperature applications, use a petroleum-free silicone lubricant.
- Gasket Grade "EHT" can be used where "E" is marked.
- Check gasket color code to be certain it is recommended for the service intended.
- Unless otherwise noted, all gasket listings are based upon a temperature of 70°F *(21°C)*.
- For services not listed, contact GRINNELL Mechanical Products for recommendation.
- Where more than one gasket is shown, the preferred gasket grade is listed first.

Chemical Composition	Gasket Grade
ASTM #3 Oil	T
Acetaldehyde	E
Acetamide	T
Acetic Acid up to 10% 100°C/38°C	E/L
Acetic Acid up to 10-50% 100°C/38°C	L
Acetic Acid, Glacial 100°C/38°C	L
Acetic Anhydride	E
Acetone	E
Acetonitrile	T
Acetophenone	E
Acetylene	E/T
Adipic Acid	T
Air, oil free	E
Air with vapored oil	T
Alkalis	E
Allyl Alcohol to 96%	E
Alum Sulfuric Acid	O
Alums	E/T
Aluminum Chloride	E/T
Aluminum Fluoride	E/T/O
Aluminum Hydroxide	E/O
Aluminum Nitrate	E/T
Aluminum Oxychloride	T
Aluminum Phosphate	E
Aluminum Salts	E/T
Aluminum Sulfate	E/T
Ammonia Gas, Cold	E
Ammonia, Aqua, 10-25%	E
Ammonia, Liquid	E
Ammonium Bifluoride	T
Ammonium Carbonate	E
Ammonium Chloride	E/T
Ammonium Fluoride	E
Ammonium Hydroxide	E
Ammonium Metaphosphate	E
Ammonium Nitrate	E/T
Ammonium Nitrite	E

Chemical Composition	Gasket Grade
Ammonium Persulfate, to 10%	E
Ammonium Phosphate	T
Ammonium Sulfamate	T
Ammonium Sulfate	E/T
Ammonium Sulfide	E
Ammonium Thiocyanate	E
Amyl Acetate	E
Amyl Alcohol	E
Amyl Chloronaphthalene	T
Anderol	O
Aniline	E
Aniline Dyes	E
Aniline Hydrochloride	E
Aniline Oil	E
Antimony Chloride	E
Antimony Trichloride	E
Argon Gas	E/O
Aroclor(S)	O
Arsenic Acid, to 75%	E/T/O
ASTM #1, 2 & 3 Oil	T
Barium Carbonate	E
Barium Chloride	E/T
Barium Hydroxide	E/T
Barium Sulfide	T
Benzaldehyde	E
Benzene	O
Benzine (see Petroleum Ether)	O
Benzoic Acid	E
Benzol	O
Benzyl Alcohol	E
Benzyl Benzoate	E
Benzyl Chloride	E
Black Sulfate Liquor	T
Blast Furnace Gas	T
Bleach,12% Active	E
Borax Solutions	E
Bordeaux Mixture	E

Chemical Composition	Gasket Grade
Boric Acid	E/T
Bromine	O
Butane Gas	T
Butanol (see Butyl Alcohol)	E/T
Butyl Acetate Ricinoleate	E/T
Butyl Alcohol	E/T
Butyl "Cellosolve Adipate"	E/T
Butyl Phenol	E
Butyl Stearate	T/O
Butylene	T/O
Butylene Glycol	E
Calcium Acetate	T
Calcium Bisulfate	T/O
Calcium Bisulfide	T/O
Calcium Bisulphite	T/O
Calcium Carbonate	E/T
Calcium Chlorate	E/T
Calcium Chloride	E/T
Calcium Hydroxide	E/T
Calcium Hypochlorite	E
Calcium Hypochloride	E
Calcium Nitrate	E/T
Calcium Sulfate	E/T
Calcium Sulfide	E/T
Caliche Liquors	T
Carbitol	E/T
Carbonic Acid, Phenol	O
Carbon Bisulphide	O
Carbon Dioxide, Dry	E/T
Carbon Dioxide, Wet	E/T
Carbon Disulphide	O
Carbon Monoxide	E
Carbon Tetrachloride	O
Carbonic Acid, Dry	O
Caster Oil	T
Caustic Potash	E/T
Cellosolve Acetate	E

Chemical Composition	Gasket Grade
Cellosolve (Alcohol Ether)	E
Cellulose Acetate	E
Cellulube 220 (Tri-Aryl-Phosphate)	E
Cellulube Hydraulic Fluids	E
China Wood Oil, Tung Oil	T
Chloric Acid to 20%	E
Chlorine, Dry	O
Chlorine, Water 4000 PPM (max.)	E
Chlorinated Paraffin (Chlorocosane)	T
Chloroacetic Acid	E
Chloroacetone	E
Chlorobenzene	O
Chloroform	O
Chrome Alum	E/T
Chrome Plating Solutions	O
Chromic Acid, to 10%	O
Chromic Acid, to 25%	O
Citric Acid	E/T
Citric Acid, Saturated	E
Coke Oven Gas	T/O
Copper Carbonate	E/T
Copper Chloride	E/T
Copper Cyanide	E/T
Copper Fluoride	E
Copper Nitrate	E/T
Copper Sulfate	E/T
Creosol, Cresylic Acid	O
Creosote, Coal Tar	T/O
Creosote, Wood	T/O
Cupric Fluoride	E/T
Cupric Sulfate	E/T
Cyclohexane (Alicyclic Hydrocarbon)	O
Cyclohexanone	E
Deionized Water	E

Gasket Air, Water & Chemical Recommendations

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Chemical Composition	Gasket Grade
Dextrim	T
Dibutyl Phthalate	E
Dichloro Difloro Methane	T
Dicyclohexylamine	T
Diesel Oil	T
Diethyl Ether	T
Diethyl Sebacate	E
Diethylamine	T
Diethylene Glycol	E/T
Digester Gas	T
Dimethylamine	T
Dioctyl Phthalate	E
Dioxane	E
Dipentene (Terpene-Hydrocarbon)	T
Dipropylene Glycol	T
Dowtherm A	O
Dowtherm E	O
Dowtherm SR-1	T/E
Ethane	E
Ethanolamine	E
Ethyl Acetoacetate	E
Ethyl Acrylate	L
Ethyl Alcohol	E
Ethyl Cellulose	E
Ethyl “Cellusolve”	E
Ethyl Chloride	E/T
Ethyl Ether	T
Ethyl Oxalate	E
Ethyl Silicate	T
Ethylene Chlorohydrin	E
Ethylene Diamine	E/T
Ethylene Dichloride (Dichloroethane)	O
Ethylene Glycol	E/T
Ferric Chloride, to 35%	E/T/O
Ferric Chloride, Saturated	E
Ferric Hydroxide	E
Ferric Sulfate	T
Fire Fighting Foam Concentrate	E/O
Fluboric Acid	E/T
Fly Ash	E
FM200 HFC-227ea	E
Foam	E
Fog Oil	T
Formaldehyde	E/T
Formamide	E/T
Formic Acid	E
Freon 11, 130°F/54°C	T
Freon 12, 130°F/54°C	T
Freon 113 130°F/54°C	T
Freon 114, 130°F/54°C	T
Freon 134a, 176°/80°C	E/T
Freon F-12	T
Fructose	E/T
Fuel Oil	T
Fumaric Acid	E
Furfuryl Alcohol	E
Gasoline, Refined	T
Gasoline, Refined, Unleaded	O
Glue	E/T
Glycerin	E/T
Glycerol	E/T
Glycol	E/T
Glycolic Acid	E
Grease	T/O
Green Sulfate Liquor	T
Halon 1301	E
Heptane	T
Hexaldehyde	E
Hexane	T
Hexanol	T
Hexanol Tertiary	T
Hexyl Alcohol	T
Hexylene Glycol	T
Hydrobromic Acid, to 40%	E
Hydrochloric Acid, to 36%, 75°F/24°C	E
Hydrochloric Acid, to 36%,158°F/70°C	O
Hydrocyanic Acid	E
Hydrocyanic Acid, to 10%	E
Hydrofluoric Acid, to 30%	O
Hydrofluoric Acid, to 75%, 75°F/24°C	O
Hydrofluosilicic Acid	E
Hydrofluosilicic Acid, to 50%	T
Hydrogen Gas, Cold	E/T
Hydrogen Gas, Hot	E
Hydrogen Peroxide, to 50%	L
Hydrogen Peroxide, to 90%	O
Hydrogen Sulfide	E
Hydroquinone	T/O
Hydroxylamine Sulfate	E
Hypochlorous Acid, Dilute	E
Iso Octane, 100°F/38°C	T
Isobutyl Alcohol	E
Isopropyl Acetate	E
Isopropyl Alcohol	E
Isopropyl Ether	T
JP-3	T
JP-4	T
JP-5, 6, 7, 8	T
Kerosene	T
Ketones	E
Latex (1% Styrene & Butadiene)	O
Lauric Acid	T
Lavender Oil	T
Lead Acetate	E/T
Lead Chloride	E
Lead Sulfate	T
Lime and H2O	E/T
Lime Sulfur	O
Linoleic Acid	O
Lithium Bromide	T
Lithium Bromide (Brine)	T/O
Lithium Chloride	T/O
Lubricating Oil, Refined	T
Lubricating Oil, Sour	T
Lubricating Oil, to 150°F/66°C	T
Magnesium Chloride	E/T
Magnesium Hydroxide	E/T
Magnesium Sulfate	E/T
Maleic Acid	T
Malic Acid	T
Mercuric Chloride	E/T
Mercuric Cyanide	E/T
Mercurous Nitrate	E/T
Mercury	E/T
Methane	T
Methyl Alcohol, Methanol	E/T
Methyl Chloride	O
Methyl Ethyl Ketone	E
Methyl Isobutyl Carbinol	E
Methylene Chloride	O
Methylene Dichloride 100°F/38°C	O
MIL-L7808	O
MIL-05606	O
MIL-08515	O
Mineral Oils	T
Naphta	O
Naptha, 160°F/71°C	O
Napthenic Acid	T
Natural Gas	T
Nevoil	E
Nickel Chloride	E/T
Nickel Plating Solution 125°F/52°C	E/T
Nickel Sulfate	E/T
Nitric Acid to 10%, 75°F/24°C	E
Nitric Acid, 10-50%, 75°F/24°C	O
Nitric Acid, 50-86%, 75°F/24°C	O
Nitric Acid, Red Fuming	O
Nitrogen	E
Nitromethane	E
Nitrous Oxide	E
NOVEC 1230 FK-5-1-12	E
Ogisogiric Acid, to 75%, 150°F/66°C	O
Oil, Crude Sour	T
Oil, Motor	T
Oleic Acid	T
Olive Oil	T
Oronite 8200 Silicate Ester Fluid	O
Orthodichloro-benzene	O
OS-45 Silicate Ester Fluid	O
OS-45-1	O
Oxalic Acid	E
Oxygen, Cold	E
Ozone (100ppm)	E
Palm Oil	T
Palmitic Acid	T
Pentane	T
Perchloroethylene	O
Petroleum Ether (see Benzene)	O
Petroleum Oils	T

Gasket Air, Water & Chemical Recommendations

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Chemical Composition	Gasket Grade
Phenol (Carbolic Acid)	O
Phenylhydrazine	E
Phenylhydrazine Hydrochloride	E
Phosphate Ester	E
Phosphoric Acid, to 50%	E
Phosphoric Acid, to 75% and 70°F/21°C	E/T
Phosphoric Acid, to 85% and 200°F/93°C	O
Photographic Solutions	T
Phthalic Anhydride	E
Polybutene	T
Polyvinyl Acetate, Solid (In Liquid State is 50% solution of Methanol or 60% solution of H_2O)	E
Potash	E
Potassium Alum	E/T
Potassium Bicarbonate	E/T
Potassium Bichromate	E/T
Potassium Borate	E
Potassium Bromate	E
Potassium Bromide	E/T
Potassium Carbonate	E/T
Potassium Chlorate	E
Potassium Chloride	E/T
Potassium Chromate	T
Potassium Cyanide	E/T
Potassium Dichromate	E
Potassium Ferricyanide	E
Potassium Ferrocyanide	E
Potassium Fluoride	E
Potassium Hydroxide	T
Potassium Nitrate	E/T
Potassium Perborate	E
Potassium Perchlorate	T
Potassium Permanganate, Saturated to 10%	E
Potassium Permaganate Saturate 10-25%	E
Potassium Persulfate	T
Potassium Silicate	E/T
Potassium Sulfate	E/T
Prestone	T
Propane Gas	T *
Propanol	E
Propargyl Alcohol	E

Chemical Composition	Gasket Grade
Propyl Alcohol	E/T
Propylene Dichloride	L
Propylene Glycol	E
Pyranol 1467	T
Pyranol 1476	T
Pyroguard "C"	T
Pyroguard "D"	T
Pyroguard 55	E
Pyrrole	E
Ref. Fuel (70 ISO Octane, 30 Toluene)	T
Rosin Oil	T
Salicylic Acid	E
Secondary Butyl Alcohol	T
Sewage	E/T
Silver Nitrate	E
Silver Sulfate	E
Skydrol, 200°F/93°C	L
Skydrol 500 Phosphate Ester	E
Soap Solutions	E/T
Soda Ash, Sodium Carbonate	E/T
Sodium Acetate	E
Sodium Alum	T
Sodium Benzoate	E/T
Sodium Bicarbonate	E/T
Sodium Bisulfate	E/T
Sodium Bisulfite (Black Liquor)	E/T
Sodium Bromide	E/T
Sodium Carbonate	E/T
Sodium Chlorate	E
Sodium Chloride	E/T
Sodium Cyanide	E/T
Sodium Dichromate, to 20%	E/T
Sodium Ferricyanide	E/T
Sodium Ferrocyanide	E/T
Sodium Fluoride	E/T
Sodium Hydro Sulfide	T
Sodium Hydroxide, to 15%	E
Sodium Hydroxide to 50%	E
Sodium Hypochlorite, to 20%	E
Sodium Metaphosphate	T
Sodium Nitrate	E
Sodium Nitrite	E/T

Chemical Composition	Gasket Grade
Sodium Perborate	E
Sodium Peroxide	E
Sodium Phosphate	T
Sodium Phosphate, Dibasic	T
Sodium Phosphate, Monobasic	T
Sodium Phosphate, Tribasic	T
Sodium Silicate	T
Sodium Sulfate	E/T
Sodium Sulfide	E/T
Sodium Sulfite Solution, to 20%	T
Sodium Thiosulfate, "Hypo"	T
Sohovis 47	T
Sohovis 78	T
Solvasol #1	T
Solvasol #2	T
Solvasol #3	T
Solvasol #73	T
Spindle Oil	T
Stannic Chloride	T
Stannous Chloride, to 15%	T
Starch	E/T
Stearic Acid	T
Stoddard Solvent	T
Styrene	O
Sulfonic Acid	E
Sulphite Acid Liquor	E
Sulfur	E
Sulfur Chloride	O
Sulfur Dioxide, Dry	E/T
Sulfur Dioxide, Liquid	E
Sulfur Trioxide, Dry	O
Sulfuric Acid, to 25%, 150°F/66°C	E
Sulfuric Acid, 25-50%, 200°F/93°C	O
Sulfuric Acid, 50-95%, 150°F/66°C	O
Sulfuric Acid, Fuming	O
Sulfuric Acid, Oleum	O
Sulfurous Acid	O
Tall Oil	T
Tanning Liquors (50g. alum. solution, 50g. dichromate solution)	T
Tartaric Acid	E

Chemical Composition	Gasket Grade
Tertiary Butyl Alcohol	E/T
Tetrabutyl Titanate	E
Tetrachloroethylene	O
Thionyl Chloride	T
Terpineol	T
Titanium Tetrachloride	O
Toluene, 30%	T
Transmission Fluid, Type A	O
Triacetin	T
Trichloroethane	O
Trichloroethylene	O
Trichloroethylene, to 200°F/93°	O
Tricresyl Phosphate	E
Triethanolamine	E/T
Trisodium Phosphate	E
Tung Oil	T
Turbo Oil #15 Diester Lubricant	O
Turpentine	T
Urea	E/T
Vegetable Oils	T
Vinyl Acetate	E
Vinyl Chloride	O
Vi-Pex	T
Water, to 150°F/66°C	E/T/EHT
Water, to 200°F/93°C	E/EHT
Water, to 230°F/110°C	E/EHT
Water, to 250°F/121°C	EHT
Water, Acid Mine	E/T
Water, Bromine	O
Water, Chlorinated, to 3500ppm	E
Water, Chlorine	E
Water, Deionized	E
Water, Potable	EN/EHT
Water, Seawater	E
Water, Waste	E/T
White Liquor	E
Wood Oil	T
Xylene	O
Zinc Chloride, to 50%	E
Zinc Nitrate	E
Zinc Sulfate	E/T

* Conditional, contact GRINNELL Mechanical Products

GRINNELL Gasket Lubricants

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During installation of a GRINNELL Coupling, always lubricate the gasket. For couplings using the tri-seal gasket in a low temperature application, use a petroleum-free silicone based lubricant. For mechanical tees and straps when used in low temperature applications, use a petroleum-free silicone based lubricant, otherwise no lubricant is required.

Application	La-Co Industries Lubri-Joint	Dow Corning* 7 Release Compound (Silicone)
Chilled Water	•	•
Heating	•	•
Compressed Air	•	•
Drainage	•	•
Sewage	•	•
Low Temp./Vacuum	•	•
Fire Protection	•	•

The table below will give an indication on the approximate number of gaskets which can be lubricated with one container of lubricant.

Gasket Size	Lubri-Joint 1 qt *(946 ml)* Container	Silicone 5.3 oz *(150 g)* Tube
1¼" / *32mm*	650	116
1½" / *40mm*	570	94
2" / *50mm*	440	73
3" / *80mm*	300	50
4" / *100mm*	220	36
6" / *150mm*	135	22
8" / *200mm*	110	18
10" / *250mm*	85	14
12" / *300mm*	65	10
14" / *350mm*	55	9
16" / *400mm*	50	8
18" / *450mm*	38	6
20" / *500mm*	33	5
24" / *600mm*	20	3

* Dow Corning is a registered trademark of Dow Corning Corporation.

GRINNELL Mechanical Piping Products recommends two kinds of lubricant:

- La-Co Industries Lubri-Joint
- Dow Corning* 7 Release Compound (Silicone)

Check lubricant chart to be certain the proper lubricant is recommended for the service intended. For information on health safety, contact GRINNELL Mechanical Products for Material Safety Data Sheets (MSDS).

Available in:

- 1 Quart *(0,95 Liter)*
- 1 Gallon *(3,8 Liter)*

Silicone Gasket Lubricant recommended for use with tri-seal gasket (Dow Corning D.C. No. 7)* available in:

- 5.3 oz *(150 grams)* Tube
- 8 lb *(3,6 kg)* Can

PREPARATION EQUIPMENT

Preparation Equipment Table of Contents

Portable Roll Groovers With Electric Motor

Self-contained portable roll grooving machines are supplied with electric motors for roll grooving pipe on the job site. Each machine comes in a shipping/storage box and includes a hydraulic hand pump, top and bottom rolls, guards and foot switch.

Additional rolls may be ordered with machines. Contact GRINNELL Mechanical Products.

Pace Model	Size Range - Inches *mm*				Drive
	Schedule 40	Schedule 10	Std. Wall	Copper	
1112	**1" – 12"**	**1¼" - 12"**	**–**	**2" – 6"**	*1 ½ HP, 110 v*
	25mm - 300mm	*32mm - 300mm*	–	*50mm - 150mm*	
1023	**1¼" – 12"**	**1¼" - 24"**	**12" – 24"**	**2" – 6"**	*1 ½ HP, 110 v*
	32mm - 300mm	*32mm - 600mm*	*300mm - 600mm*	*50mm - 150mm*	

Roll Grooving Machines are available for rent. Contact your GRINNELL Mechanical Products representative for details and availability.
*Please specify power outlet when ordering

Model 1112 Portable Roll Groovers With Electric Motor

- Schedule 40 Capacity 1" – 12" *(25mm - 300mm)*
- Copper Tube 2" – 6" *(50mm - 150mm)* (K, L, M & DWV)
- Pipe Rotation Speed of 35 RPM
- Spindle height from floor is 35" *(889mm)*
- Hydraulic Pressure at Roller is 15,000 PSI *(1034,2 bar)* Max
- Electric Motor 1½ HP, 60 Hz, 110 v.1 PH*

Floor Space Required: 32" x 32" *(813mm x 813mm)*

Weight: 220 lbs *(99,8 kg)*

Standard Equipment:
Electric Drive Motor, Groove Depth Gauge, Hydraulic Hand Pump, Top and Bottom Rolls 1" – 12" (25mm - 300mm), Shipping/Storage Box, Guards, Foot Switch

Optional Equipment:
Top and Bottom copper Rolls, Nipple Bracket, Mounting Feet

* Other current characteristics available contact GRINNELL Mechanical Products.

Model 1023 Portable Roll Groover With Electric Motor

- Schedule 40 1¼" – 12" *(32mm – 300mm)*
- Standard Wall 12" – 24" *(300mm – 600mm)*
- Copper Tube 2" – 6" *(50mm - 150mm)* (K, L, M and DWV)
- Pipe Rotation Speed of 30 RPM
- Spindle height from floor is 33" *(838mm)*
- Hydraulic Pressure at Roller is 16,000 PSI *(1103,2 bar)* Max
- Electric Motor 1½ HP, 60 Hz, 110 v or 220v

Floor Space Required: 31½" x 33½" *(800mm - 851mm)*

Weight: 430 lbs *(195 kg)*

Standard Equipment:
Electric Motor, Groove Depth Gauge, Hydraulic Pump, Shipping/Storage Box, Rolls as Specified on Price List, Guards, Foot Switch

Optional Equipment:
Top and Bottom Copper Rolls, Nipple Bracket, Mounting Feet

Portable Roll Groovers For Ridgid® 300 Pipe Threader

Models 1012, 1022 and 1041 Roll Grooving Machines are designed to be mounted quickly and easily on a Ridgid® Model 300 unit.*

Pace Model	Size Range - Inches *mm*					Drive
	SS Schedule 10	Schedule 40	Schedule 10	Std. Wall	Copper	
1012	–	**1" – 12"**	–	–	**2" – 6"**	*Ridgid® 300*
	–	*25mm - 300mm*	–	–	*50mm - 150mm*	
1022	**2" – 24"**	**1¼" – 12"**	–	**12" – 16"**	**2" – 6"**	*Ridgid® 300*
	50mm – 600mm	*32mm - 300mm*	–	*300mm - 400mm*	*50mm - 150mm*	
1041	–	**1" – 6"**	**1" – 12"**	–	**2" – 6"**	*Ridgid® 300*
	–	*25mm - 150mm*	*25mm - 300mm*	–	*50mm - 150mm*	

* Ridgid is a registered trademark of Ridgid Tool Company.

Model 1012 Portable Roll Groovers

- Schedule 40 1" – 12" *(25mm - 300mm)*
- Copper Tube Capacity 2" – 6" *(50mm - 150mm)* (K, L, M and DWV)
- Hydraulic Hand Pump

Weight: 125 lbs *(56,7 kg)*

Standard Equipment:
Top and Bottom Rolls 1" – 12" (25mm - 300mm), Groove Depth Gauge, Hydraulic Hand Pump, Guards

Optional Equipment:
Top and Bottom Copper Rolls, Pipe Nipple, and Stabilizer Bracket

Model 1022 Portable Roll Groovers

- Schedule 40 Capacity 1¼" – 12" *(32mm - 300mm)*
- Standard Wall Capacity 12" – 16" *(300mm - 400mm)*
- Copper Tube Capacity 2" – 6" *(50mm - 150mm)* (K, L, M)
- Stainless Steel Schedule 10 Capacity 2" – 24" *(50mm - 600mm) (Bottom Rollers)*
- Hydraulic Pressure at Roller is 16,000 PSI *(1103,2 bar)* Max

Weight: 285 lbs *(129 kg)*

Standard Equipment:
Top and Bottom Rolls 1¼" – 16" (32mm - 400mm), Hydraulic Hand Pump, Grooved Depth Gauge, Shipping/Storage Box, Pipe Nipple and Stabilizer Bracket, Guards

Optional Equipment:
Top and Bottom Copper Rolls,
Bottom Stainless Steel Schedule 10 Rollers 2" – 24" *(50mm - 600mm)*

Model 1041 Portable Roll Groovers

- Schedule 40 Capacity 1" – 6" *(25mm - 150mm)*
- Schedule 10 Capacity 1" – 12" *(25mm - 300mm)*
- Copper Tube Capacity 2" – 6" *(50mm - 150mm)* (K, L, M and DWV)
- Hydraulic Pressure at Roller is 8,000 PSI *(551,6 bar)* Max

Weight: 94 lbs *(42 kg)*

Standard Equipment:
Top and Bottom Rolls 1" – 12" (25mm - 300mm), Hydraulic Hand Pump, Grooved Depth Gauge and Guards

Optional Equipment:
Top and Bottom Copper Rolls

MINI-MITES Field Portable

Field Portable Mini-Mites are designed to be adapted for use with Ridgid® Model 300 machines. Model 1039-66 can be operated with its own hand ratchet so that no other tools are required.

Pace Model	Size Range - Inches *mm*				Drive
	Schedule 40	Schedule 10	Std. Wall	Copper	
1039-66	–	–	–	**2" – 8"**	*Ridgid® 300, hand crank*
	–	–	–	*50mm - 200mm*	
1039	**1¼" – 6"**	–	–	**2" – 8" *(Optional)***	*Ridgid® 300, hand crank*
	32mm - 150mm	–	–	*50mm - 200mm*	
1034	**1¼" – 6"**	–	–	–	*Ridgid® 300*
	32mm - 150mm	–	–	–	
1066	–	–	–	**2" – 8"**	*Ridgid® 300*
	–	–	–	*50mm - 200mm*	

Model 1039-66 MINI-MITES Field Portable

- Copper Tube Capacity 2" – 8" *(50mm - 200mm)* (K, L, M and DWV)
- Manual Grooving With Ratchet Hand Crank
- Can be Used with Ridgid® Model 300 With No Gearbox Removal
- Self-contained

Standard Equipment:
Copper Rolls 2" – 8" *(50mm - 200mm)*, Multi-Function Ratchet Hand Crank

Optional Equipment:
Top and Bottom Rolls Steel Pipe

Model 1039 MINI-MITES Field Portable

- Schedule 40 Capacity 1¼" – 6" *(32mm - 150mm)*
- Manual Grooving With Ratchet Hand Crank
- Can be Used with Ridgid® Model 300 With No Gearbox Removal
- Self-contained

Standard Equipment:
Steel Rolls 1¼" – 6" *(32mm - 150mm)*, Multi-Function Ratchet Hand Crank

Optional Equipment:
Top and Bottom Rolls for Copper Tube
(Copper Tube Capacity 2" – 8" *(50mm - 200mm)* (K, L, M and DWV)

Model 1034 MINI-MITES Field Portable

- Schedule 40 Capacity 1¼" – 6" *(32mm - 150mm)*
- Used with the Ridgid® Model 300 Threader

Standard Equipment:
Steel Pipe Rolls 1¼" – 6" (32mm - 150mm)

Model 1066 MINI-MITES Field Portable

- Copper Tube Capacity 2" – 8" *(50mm - 200mm)* (K, L, M and DWV)
- Used With the Ridgid® Model 300 Threader

Standard Equipment:
Copper Rolls 2" – 8" (50mm - 200mm)

AUTOMATED ROLL GROOVERS

(Page 1 of 2)

The Automated Roll Grooving Machines are designed for use in the shop. The machines have a self-contained hydraulic system that produces consistent quality roll grooves in high production runs.

Pace Model	Size Range - Inches *mm*					Drive
	SS Schedule 10	Schedule 40	Schedule 10	Std. Wall	Copper	
2021	**2" – 24"**	**1¼" – 12"**	**–**	**12" – 24"**	**2" – 8"**	*3 HP, 220 v*
	50mm – 600mm	*32mm - 300mm*	–	*300mm - 600mm*	*50mm - 200mm*	
2050	**–**	**4" – 12"**	**4" – 30"**	**–**	**–**	**5** *HP, 220 v*
	–	*100mm - 200mm*	*100mm - 800mm*	–	–	
2112	**–**	**1" – 12"**	**–**	**–**	**2" – 8"**	**1½** *HP, 110 v*
	–	*25mm - 300mm*	–	–	*50mm - 200mm*	

Model 2021 AUTOMATED ROLL GROOVER

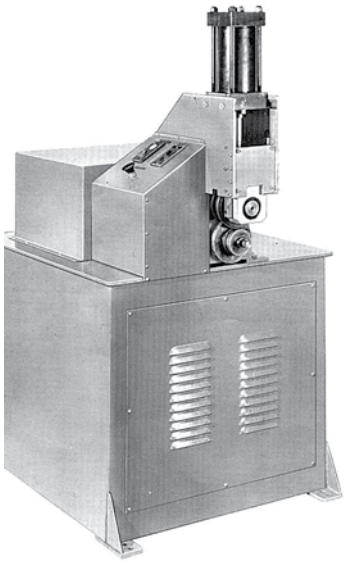
- Schedule 40 1¼" – 12" *(32mm - 300mm)*
- Standard Wall 12" – 24" *(300mm - 600mm)*
- Copper Tubing 2" – 8" *(50mm - 200mm)* (K, L, M and DWV)
- Pipe Rotation Speed of 30 RPM
- Hydraulic Pressure at the Roller is 16,000 PSI *(1103,2 bar)* Max
- Electric Motor 3 HP, 60 Hz, 220 v, 3 PH
- Hydraulic Pump Motor 1 HP, 60 Hz, 220 v, 3 PH
- Ships Completely Assembled With 4" – 6" *(100m - 150mm)* Top and Bottom Rollers

Floor Space Required: 30" x 20" *(762mm - 508mm)*

Standard Equipment:
Electric Drive Motor, Limit Switch for Depth Gauging, Groove Depth Gauge, Hydraulic Pump, Model 4037 Nipple Bracket, Rolls As Specified in Price List, Guards, Foot Switch

Optional Equipment:
Bottom Stainless Steel Schedule 10 Rolls 2" – 24" *(50mm - 600mm)*

Model 2050 AUTOMATED ROLL GROOVER



- Schedule 40 4" – 12" *(100mm - 300mm)*
- Schedule 10 4" – 30" *(100mm - 800mm)*
- Pipe Rotation Speed of 30 RPM
- Hydraulic Pressure at the Roller is 20,000 PSI *(1378 Bar)* Max
- Spindle height from floor is 36" *(914mm)*
- Electric Drive Motor 5 HP, 60 Hz, 220 V.3PH
- Hydraulic Pump Motor 2 HP, 60 Hz, 220 V.3PH
- Ships Completely Assembled With 4" – 6" *(100mm - 150mm)* Top and Bottom rollers

Floor Space Required: 40" x 36" *(1016mm - 914mm)*

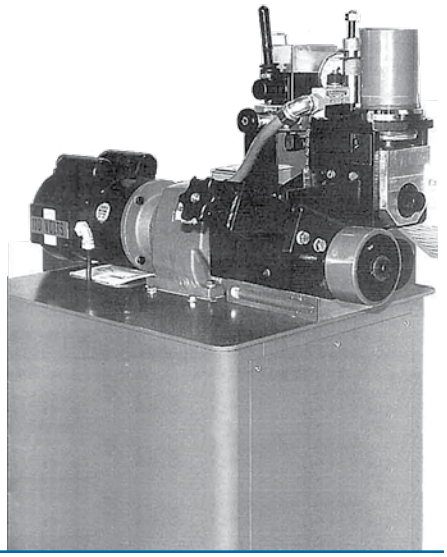
Weight: 1,500 lbs *(680 kg)*

Standard Equipment:
Electric Drive Motor, Limit Switch for Depth Gauging, Groove Depth Gauge, Hydraulic Pump Motor, Hydraulic Pump , Rolls As Specified in Price List, Guards, Foot Switch

AUTOMATED ROLL GROOVERS

Model 2112 AUTOMATED ROLL GROOVER

- Schedule 40 1" – 12" *(40mm - 150mm)*
- Copper Tubing 2" – 8" *(50mm - 200mm)* (K, L, M and DWV)
- Pipe Rotation Speed of 35 RPM
- Spindle height from floor is 35" *(889mm)*
- Hydraulic Pressure at the Roller is 15,000 PSI *(1034 bar)* Max
- Electric Motor ½ HP, 60 Hz, 110 v, 1 PH
- Hydraulic Pump Motor 1 HP, 60 Hz, 110 v, 1 PH
- Ships Completely Assembled With 1" – 12" *(100mm - 150mm)* Top and Bottom rollers



Floor Space Required: 30" x 22" *(762mm - 559mm)*

Weight: 470 lbs *(213 kg)*

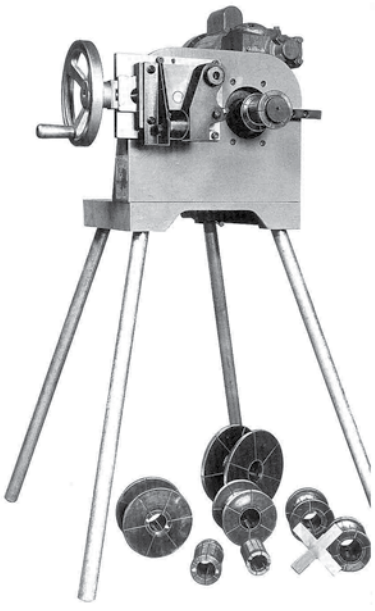
Standard Equipment:

Electric Drive Motor, Limit Switch for Depth Gauging, Groove Depth Gauge, Hydraulic Pump, Model 4037 Nipple Bracket, Rolls As Specified in Price List, Guards, Foot Switch

Model 1000 PORTABLE CUT GROOVER

Pace Model	Size Range - Inches *mm*				Drive
	Schedule 40	Schedule 10	Schedule 80	Std. Wall	
1000	**2" – 12" ***	–	**2½" – 8"**	–	*1 HP, 115-230 v*
	50mm - 300mm	–	*65mm - 200mm*	–	
* With optional collet chucks for 10" – 12" *(250mm - 300mm)* pipe.					

- Schedule 40 2" – 12" *(50mm - 300mm)*
- Schedule 80 2½" – 8" *(65mm - 200mm)*
- Tooling for Cut Grooving Ductile Iron Pipe Also Available
- Special collet chucks for Non-Standard Dimension Pipe Can Be Supplied
- Motor is 1 HP, 115-230 v, 1 PH



Weight: 185 lbs *(84 kg)*

Height: 38" *(965,2 mm)*

Standard Equipment:

Collet chucks for 2" – 8" (50mm - 200mm), 4 High Speed Steel Grooving Blades, Groove Gauge, Shipping/Storage Box

ACCESSORIES

(Page 1 of 2)

Model 4031 Pipe Support Stands

Capacity: 1" – 4" *(25mm - 100mm)* Pipe; 600 lbs *(272,2 kg)* max

A 22" *(559mm)* diameter base with 2" *(50mm)* column gives this stand plenty of strength for supporting any pipe size in its size range. The saddle has two roller bar bearings for free rotation of the pipe, and absorbs vibration to ensure a smooth, uniform groove. Saddle height is adjustable over a 10" *(250mm)* range.

Model 4000 Pipe Support Stands

Capacity: 2" – 8" *(50mm - 200mm)* Pipe; 900 lbs *(408,2 kg)* max

The base of this stand is the same as used in the Model 4031. A saddle with four roller bearings provides greater side support for the pipe and increases dampening of vibration without impairing the unit's free-rolling characteristics. Saddle height is adjustable over a 10" *(250mm)* range.

Model 4033 Pipe Support Stands

Capacity: 2" – 14" *(50mm - 350mm)* Pipe; 1,200 lbs *(544,3 kg)* max

This extra-heavy-duty pipe support stand uses two 2" *(50mm)* columns on a 22" *(550mm)* diameter base to give it exceptional stability and resistance to vibration and pendulum effect. Each column incorporates a sturdy, threaded post infinitely adjustable over a 10" *(250mm)* range. The saddle utilizes six roller bearings in an array that provides excellent support for all pipes in its size range.

Model 4040 Pipe Support Stands

Capacity: 12" – 24" *(300mm - 600mm)* Pipe; 4,000 lbs *(1814,4 kg)* max

Fabricated of 6" *(150mm)* diameter steel pipe welded to a 36" *(914,4mm)* base, the stand can support up to two tons of pipe during grooving operations. Pipe saddle height is adjustable over a 5" *(127mm)* range.

ACCESSORIES

Model 3013 Porta-Bore

- Solid Alloy Aluminum Construction
- Motor is a 10 Amp draw industrial drill motor 110 v with internal 4-speed gear box 110, 175, 245, 385 RPM
- Circuit breaker assures no safety hazard to the operator or machine
- Chain clamp is standard on all units and clamps to 1¼" – 12" *(32mm - 300mm)* pipe diameters
- Optional speed toggle clamps; 1¼" – 6" *(32mm - 150mm)* pipe
- Oil feed

Weight: 42 lbs *(19 kg)*

Model 4037 Nipple Bracket

- Capacity: 8" – 24" *(200mm - 600mm)* Pipe
- Fits Models 1020, 1021, 1023, 2020, 2021, and 2050 Roll Groovers

Pipe Tape

Model PT 1000 was developed to check the groove diameter in roll-grooved pipe. The tape measures the groove in steel pipe 1" – 12" *(25mm - 305mm)* and copper tube 2" – 8" *(50mm - 200mm)*.

The loop extending from the metal housing consists of a clear-plastic window with a vertical indicator line and the adjustable metal measuring tape. The adjustable measuring tape has groove tolerance blocks (thick black lines) that are visible through the plastic view window. The groove tolerance blocks are marked with the associated pipe diameters.

Model PT 2000 measures the groove in steel pipe from 1" – 36" *(25mm - 915mm)* in 100th's of inches.

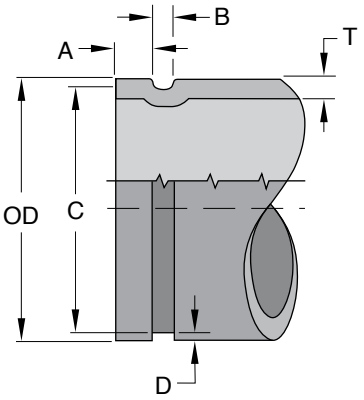
Note: The GRINNELL Roll Pipe Measuring Tape is not a calibrated tool and is to be used for reference only. To ensure accuracy, always check grooved pipe dimensions with calibrated gauges or calipers. For Roll Groove Standard Specifications for Steel Pipe and Other IPS Pipe, refer to Data Sheet G710. For Roll Groove Standard Specification for Copper Tube, refer to Data Sheet G720.

Roll Groove Standard Specification for Steel & Other IPS Pipe

(Page 1 of 2)

Tech Data Sheet: G710

GRINNELL Roll Grooves conform to AWWA C-606 specification.



Nominal Pipe Size Inches *mm*	Pipe O.D. Inches *mm*			A ±0,76mm *±0.030"* Inches *mm*	B ±0,76mm *±0.030"* Inches *mm*	C Groove Diameter Inches *mm*		D Groove Depth (ref. only) Inches *mm*	T Minimum Wall Inches *mm*	Maximum Allow Flare Diameter Inches *mm*
	O.D.	Tolerance				Actual	Tol. +0.000			
		+	-							
1	**1.315**	**0.028**	**0.015**	**0.625**	**0.281**	**1.190**	**-0.015**	**0.063**	**0.065**	**1.43**
25	*33,7*	*0,71*	*0,38*	*15,88*	*7,14*	*30,23*	*-0,38*	*1,60*	*1,65*	*36,3*
1 ¼	**1.660**	**0.029**	**0.016**	**0.625**	**0.281**	**1.535**	**-0.015**	**0.063**	**0.065**	**1.77**
32	*42,4*	*0,74*	*0,41*	*15,88*	*7,14*	*38,99*	*-0,38*	*1,60*	*1,65*	*44,96*
1 ½	**1.900**	**0.019**	**0.019**	**0.625**	**0.281**	**1.775**	**-0.015**	**0.063**	**0.065**	**2.01**
40	*48,3*	*0,48*	*0,48*	*15,88*	*7,14*	*45,09*	*-0,38*	*1,60*	*1,65*	*51,05*
2	**2.375**	**0.024**	**0.024**	**0.625**	**0.344**	**2.250**	**-0.015**	**0.063**	**0.065**	**2.48**
50	*60,3*	*0,61*	*0,61*	*15,88*	*8,74*	*57,15*	*-0,38*	*1,60*	*1,65*	*62,99*
2 ½	**2.875**	**0.029**	**0.029**	**0.625**	**0.344**	**2.720**	**-0.018**	**0.078**	**0.083**	**2.98**
65	*73,0*	*0,74*	*0,74*	*15,88*	*8,74*	*69,09*	*-0,46*	*1,98*	*2,11*	*75,69*
76.1mm	**3.000**	**0.030**	**0.030**	**0.625**	**0.344**	**2.845**	**-0.018**	**0.076**	**0.083**	**3.10**
65	*76,1*	*0,76*	*0,76*	*15,88*	*8,74*	*72,26*	*-0,46*	*1,93*	*2,11*	*78,74*
3	**3.500**	**0.035**	**0.031**	**0.625**	**0.344**	**3.344**	**-0.018**	**0.078**	**0.083**	**3.60**
80	*88,9*	*0,89*	*0,79*	*15,88*	*8,74*	*84,94*	*-0,46*	*1,98*	*2,11*	*91,44*
4	**4.500**	**0.045**	**0.031**	**0.625**	**0.344**	**4.334**	**-0.020**	**0.083**	**0.083**	**4.60**
100	*114,3*	*1,14*	*0,79*	*15,88*	*8,74*	*110,08*	*-0,51*	*2,11*	*2,11*	*116,84*
139.7mm	**5.500**	**0.056**	**0.031**	**0.625**	**0.344**	**5.334**	**-0.022**	**0.083**	**0.109**	**5.60**
125	*139,7*	*1,42*	*0,79*	*15,88*	*8,74*	*135,48*	*-0,56*	*2,11*	*2,77*	*142,24*
5	**5.563**	**0.056**	**0.031**	**0.625**	**0.344**	**5.395**	**-0.022**	**0.084**	**0.109**	**5.66**
125	*141,3*	*1,42*	*0,79*	*15,88*	*8,74*	*137,03*	*-0,56*	*2,13*	*2,77*	*143,76*

(1) The maximum allowable tolerances for IPS Pipe from square cut ends is:
0.030" *(0.76mm)* for sizes 1¼" thru 3" *(32mm – 80mm)*;
0.045" *(1.14mm)* for sizes 4" – 6" *(100mm – 150mm)*; and
0.060" *(1.52mm)* for sizes 8" *(200mm)* and above.

(2) Gasket Seating Surface "A" must be free from score marks, ridges, indentations, projections, loose paint, scale, dirt chips, grease, rust, etc. that would prevent a positive seal.

(3) Groove Diameter "C" must be of uniform depth around the circumference of the pipe.

(4) Groove Depth "D" is a reference dimension only. The Groove Diameter "C" must be maintained.

(5) Minimum Wall Thickness "T" is the minimum wall thickness that should be roll grooved.

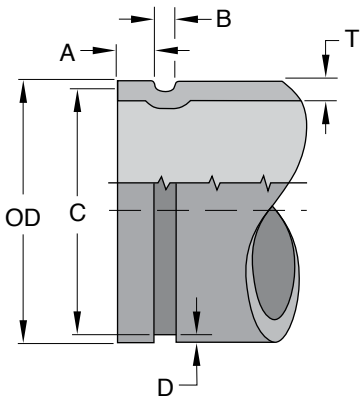
(6) Maximum allowable pipe end flare diameter is measured at the pipe end diameter.

Caution: Pressure performance values shown for GRINNELL couplings on light wall (Sch. 5 & Sch. 10 ISO Metric) stainless steel pipe are dependent on the use of required special rolls for roll grooving light-wall stainless steel pipe. Failure to utilize the required special rolls for roll grooving light-wall stainless steel pipe may result in equipment failure.

Roll Groove Standard Specification for Steel & Other IPS Pipe

Tech Data Sheet: G710

GRINNELL Roll Grooves conform to AWWA C-606 specification.



Nominal Pipe Size Inches *mm*	Pipe O.D. Inches *mm*			A ±0,76mm *±0.030"* Inches *mm*	B ±0,76mm *±0.030"* Inches *mm*	C Groove Diameter Inches *mm*		D Groove Depth (ref. only) Inches *mm*	T Minimum Wall Inches *mm*	Maximum Allow Flare Diameter Inches *mm*
	O.D.	Tolerance				Actual	Tol. +0.000			
		+	-							
165.1mm	**6.500**	**0.063**	**0.031**	**0.625**	**0.344**	**6.330**	**-0.022**	**0.085**	**0.109**	**6.60**
150	*165,1*	*1,60*	*0,79*	*15,88*	*8,74*	*160,78*	*-0,56*	*2,16*	*2,77*	*167,64*
6	**6.625**	**0.063**	**0.031**	**0.625**	**0.344**	**6.455**	**-0.022**	**0.085**	**0.109**	**6.73**
150	*168,3*	*1,60*	*0,79*	*15,88*	*8,74*	*163,96*	*-0,56*	*2,16*	*2,77*	*170,94*
8	**8.625**	**0.063**	**0.031**	**0.750**	**0.469**	**8.441**	**-0.025**	**0.092**	**0.109**	**8.80**
200	*219,1*	*1,60*	*0,79*	*19,05*	*11,91*	*214,40*	*-0,64*	*2,34*	*2,77*	*223,52*
10	**10.750**	**0.063**	**0.031**	**0.750**	**0.469**	**10.562**	**-0.027**	**0.092**	**0.134**	**10.92**
250	*273,0*	*1,60*	*0,79*	*19,05*	*11,91*	*268,27*	*-0,69*	*2,34*	*3,40*	*277,37*
12	**12.750**	**0.063**	**0.031**	**0.750**	**0.469**	**12.531**	**-0.030**	**0.109**	**0.156**	**12.92**
300	*323,9*	*1,60*	*0,79*	*19,05*	*11,91*	*318,19*	*-0,76*	*2,77*	*3,96*	*328,17*
14	**14.000**	**0.063**	**0.031**	**0.938**	**0.469**	**13.781**	**-0.030**	**0.109**	**0.156**	**14.10**
350	*355,6*	*1,60*	*0,79*	*23,83*	*11,91*	*350,04*	*-0,76*	*2,77*	*3,96*	*358,14*
16	**16.000**	**0.063**	**0.031**	**0.938**	**0.469**	**15.781**	**-0.030**	**0.109**	**0.165**	**16.10**
400	*406,4*	*1,60*	*0,79*	*23,83*	*11,91*	*400,84*	*-0,76*	*2,77*	*4,19*	*408,94*
18	**18.000**	**0.063**	**0.031**	**1.000**	**0.469**	**17.781**	**-0.030**	**0.109**	**0.165**	**18.16**
450	*457,2*	*1,60*	*0,79*	*25,40*	*11,91*	*451,64*	*-0,76*	*2,77*	*4,19*	*461,26*
20	**20.000**	**0.063**	**0.031**	**1.000**	**0.469**	**19.781**	**-0.030**	**0.109**	**0.188**	**20.16**
500	*508,0*	*1,60*	*0,79*	*25,40*	*11,91*	*502,44*	*-0,76*	*2,77*	*4,78*	*512,06*
24	**24.000**	**0.063**	**0.031**	**1.000**	**0.500**	**23.656**	**-0.030**	**0.172**	**0.218**	**24.20**
600	*609,6*	*1,60*	*0,79*	*25,40*	*12,70*	*600,86*	*-0,76*	*4,37*	*5,54*	*614,68*

(1) The maximum allowable tolerances for IPS Pipe from square cut ends is:
0.030" *(0.76mm)* for sizes 1¼" thru 3" *(32mm – 80mm)*;
0.045" *(1.14mm)* for sizes 4" – 6" *(100mm – 150mm)*; and
0.060" *(1.52mm)* for sizes 8" *(200mm)* and above.

(2) Gasket Seating Surface "A" must be free from score marks, ridges, indentations, projections, loose paint, scale, dirt chips, grease, rust, etc. that would prevent a positive seal.

(3) Groove Diameter "C" must be of uniform depth around the circumference of the pipe.

(4) Groove Depth "D" is a reference dimension only. The Groove Diameter "C" must be maintained.

(5) Minimum Wall Thickness "T" is the minimum wall thickness that should be roll grooved.

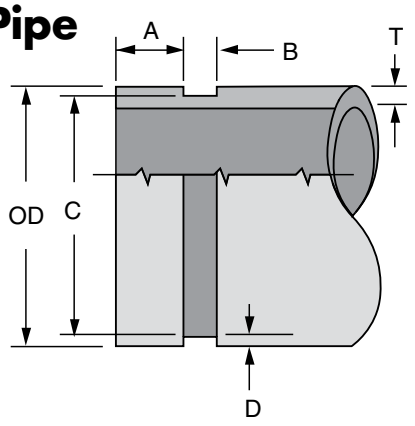
(6) Maximum allowable pipe end flare diameter is measured at the pipe end diameter.

Caution: Pressure performance values shown for GRINNELL couplings on light wall (Sch. 5 & Sch. 10 ISO Metric) stainless steel pipe are dependent on the use of required special rolls for roll grooving light-wall stainless steel pipe. Failure to utilize the required special rolls for roll grooving light-wall stainless steel pipe may result in equipment failure.

Cut Groove Standard Specification for Steel & Other IPS Pipe

(Page 1 of 2)

Tech Data Sheet: G710



Nominal Pipe Size Inches *mm*	Pipe O.D. Inches *mm*			A ±0,76mm *±0.030"* Inches *mm*	B ±0,76mm *±0.030"* Inches *mm*	C Groove Diameter Inches *mm*		D Groove Depth (ref. only) Inches *mm*	T Minimum Wall Inches *mm*
	O.D.	Tolerance				Actual	Tol. +0.000		
		+	-						
1	**1.315**	**0.028**	**0.015**	**0.625**	**0.313**	**1.190**	**-0.015**	**0.063**	**0.133**
25	*33,7*	*0,71*	*0,38*	*15,88*	*7,95*	*30,23*	*-0,38*	*1,60*	*3,38*
1¼	**1.660**	**0.029**	**0.016**	**0.625**	**0.313**	**1.535**	**-0.015**	**0.063**	**0.140**
32	*42,4*	*0,74*	*0,41*	*15,88*	*7,95*	*38,99*	*-0,38*	*1,60*	*3,56*
1½	**1.900**	**0.019**	**0.019**	**0.625**	**0.313**	**1.775**	**-0.015**	**0.063**	**0.145**
40	*48,3*	*0,48*	*0,48*	*15,88*	*7,95*	*45,09*	*-0,38*	*1,60*	*3,68*
2	**2.375**	**0.024**	**0.024**	**0.625**	**0.313**	**2.250**	**-0.015**	**0.063**	**0.154**
50	*60,3*	*0,61*	*0,61*	*15,88*	*7,95*	*57,15*	*-0,38*	*1,60*	*3,91*
2½	**2.875**	**0.029**	**0.029**	**0.625**	**0.313**	**2.720**	**-0.018**	**0.078**	**0.188**
65	*73,0*	*0,74*	*0,74*	*15,88*	*7,95*	*69,09*	*-0,46*	*1,98*	*4,78*
76.1mm	**3.000**	**0.030**	**0.030**	**0.625**	**0.313**	**2.845**	**-0.018**	**0.076**	**0.188**
65	*76,1*	*0,76*	*0,76*	*15,88*	*7,95*	*72,26*	*-0,46*	*1,93*	*4,78*
3	**3.500**	**0.035**	**0.031**	**0.625**	**0.313**	**3.344**	**-0.018**	**0.078**	**0.188**
80	*88,9*	*0,89*	*0,79*	*15,88*	*7,95*	*84,94*	*-0,46*	*1,98*	*4,78*
4	**4.500**	**0.045**	**0.031**	**0.625**	**0.375**	**4.334**	**-0.020**	**0.083**	**0.203**
100	*114,3*	*1,14*	*0,79*	*15,88*	*9,53*	*110,08*	*-0,51*	*2,11*	*5,16*
139.7mm	**5.500**	**0.056**	**0.031**	**0.625**	**0.375**	**5.334**	**-0.020**	**0.083**	**0.203**
125	*139,7*	*1,42*	*0,79*	*15,88*	*9,53*	*135,48*	*-0,51*	*2,11*	*5,16*
5	**5.563**	**0.056**	**0.031**	**0.625**	**0.375**	**5.395**	**-0.022**	**0.084**	**0.203**
125	*141,3*	*1,42*	*0,79*	*15,88*	*9,53*	*137,03*	*-0,56*	*2,13*	*5,16*

(1) The maximum allowable tolerances for IPS Pipe from square cut ends is:
0.030" *(0.76mm)* for sizes 1¼" thru 3" *(32mm – 80mm)*;
0.045" *(1.14mm)* for sizes 4" – 6" *(100mm – 150mm)*; and
0.060" *(1.52mm)* for sizes 8" *(200mm)* and above.

(2) Gasket Seating Surface "A" must be free from score marks, ridges, indentations, projections, loose paint, scale, dirt chips, grease, rust, etc. that would prevent a positive seal.

(3) Groove Diameter "C" must be of uniform depth around the circumference of the pipe.

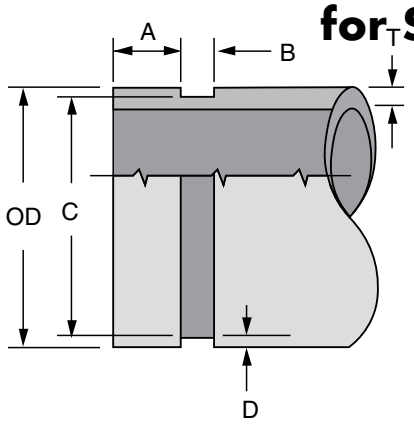
(4) Groove Depth "D" is a reference dimension only. The Groove Diameter "C" must be maintained.

(5) Minimum Wall Thickness "T" is the minimum wall thickness that should be cut grooved.

Caution: Pressure performance values shown for GRINNELL couplings on light wall (Sch. 5 & Sch. 10 ISO Metric) stainless steel pipe are dependent on the use of required special rolls for roll grooving light-wall stainless steel pipe. Failure to utilize the required special rolls for roll grooving light-wall stainless steel pipe may result in equipment failure.

Cut Groove Standard Specification for Steel & Other IPS Pipe

Tech Data Sheet: G710



Nominal Pipe Size Inches *mm*	Pipe O.D. Inches *mm*			A ±0,76mm *±0.030"* Inches *mm*	B ±0,76mm *±0.030"* Inches *mm*	C Groove Diameter Inches *mm*		D Groove Depth (ref. only) Inches *mm*	T Minimum Wall Inches *mm*
	O.D.	Tolerance				Actual	Tol. +0.000		
		+	-						
165.1mm	**6.500**	**0.063**	**0.031**	**0.625**	**0.375**	**6.330**	**-0.022**	**0.085**	**0.219**
150	*165,1*	*1,60*	*0,79*	*15,88*	*9,53*	*160,78*	*-0,56*	*2,16*	*5,56*
6	**6.625**	**0.063**	**0.031**	**0.625**	**0.375**	**6.455**	**-0.022**	**0.085**	**0.219**
150	*168,3*	*1,60*	*0,79*	*15,88*	*9,53*	*163,96*	*-0,56*	*2,16*	*5,56*
8	**8.625**	**0.063**	**0.031**	**0.750**	**0.438**	**8.441**	**-0.025**	**0.092**	**0.238**
200	*219,1*	*1,60*	*0,79*	*19,05*	*11,13*	*214,40*	*-0,64*	*2,34*	*6,05*
10	**10.750**	**0.063**	**0.031**	**0.750**	**0.500**	**10.562**	**-0.027**	**0.094**	**0.250**
250	*273,0*	*1,60*	*0,79*	*19,05*	*12,70*	*268,27*	*-0,69*	*2,39*	*6,35*
12	**12.750**	**0.063**	**0.031**	**0.750**	**0.500**	**12.531**	**-0.030**	**0.109**	**0.279**
300	*323,9*	*1,60*	*0,79*	*19,05*	*12,70*	*318,19*	*-0,76*	*2,77*	*7,09*
14	**14.000**	**0.063**	**0.031**	**0.938**	**0.500**	**13.781**	**-0.030**	**0.109**	**0.281**
350	*355,6*	*1,60*	*0,79*	*23,83*	*12,70*	*350,04*	*-0,76*	*2,77*	*7,14*
16	**16.000**	**0.063**	**0.031**	**0.938**	**0.500**	**15.781**	**-0.030**	**0.109**	**0.312**
400	*406,4*	*1,60*	*0,79*	*23,83*	*12,70*	*400,84*	*-0,76*	*2,77*	*7,92*
18	**18.000**	**0.063**	**0.031**	**1.000**	**0.500**	**17.781**	**-0.030**	**0.109**	**0.312**
450	*457,2*	*1,60*	*0,79*	*25,40*	*12,70*	*451,64*	*-0,76*	*2,77*	*7,92*
20	**20.000**	**0.063**	**0.031**	**1.000**	**0.500**	**19.781**	**-0.030**	**0.109**	**0.312**
500	*508,0*	*1,60*	*0,79*	*25,40*	*12,70*	*502,44*	*-0,76*	*2,77*	*7,92*
24	**24.000**	**0.063**	**0.031**	**1.000**	**0.562**	**23.656**	**-0.030**	**0.172**	**0.375**
600	*609,6*	*1,60*	*0,79*	*25,40*	*14,27*	*600,86*	*-0,76*	*4,37*	*9,53*

(1) The maximum allowable tolerances for IPS Pipe from square cut ends is:
0.030" *(0.76mm)* for sizes 1¼" thru 3" *(32mm – 80mm)*;
0.045" *(1.14mm)* for sizes 4" – 6" *(100mm – 150mm)*; and
0.060" *(1.52mm)* for sizes 8" *(200mm)* and above.

(2) Gasket Seating Surface "A" must be free from score marks, ridges, indentations, projections, loose paint, scale, dirt chips, grease, rust, etc. that would prevent a positive seal.

(3) Groove Diameter "C" must be of uniform depth around the circumference of the pipe.

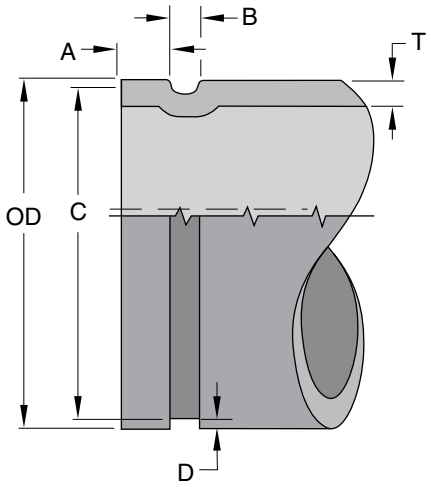
(4) Groove Depth "D" is a reference dimension only. The Groove Diameter "C" must be maintained.

(5) Minimum Wall Thickness "T" is the minimum wall thickness that should be cut grooved.

Caution: Pressure performance values shown for GRINNELL couplings on light wall (Sch. 5 & Sch. 10 ISO Metric) stainless steel pipe are dependent on the use of required special rolls for roll grooving light-wall stainless steel pipe. Failure to utilize the required special rolls for roll grooving light-wall stainless steel pipe may result in equipment failure.

Roll Groove Standard Specification for Large Diameter IPS Pipe

Tech Data Sheet: G710



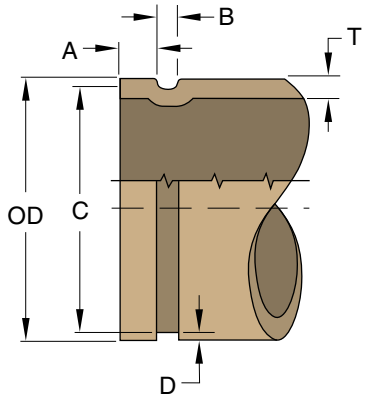
Nominal Size Inches *mm*	Pipe Outside Diameter Inches *mm*			A ±0.03mm *±0.8"* Inches *mm*	B ±0.03mm *±0.8"* Inches *mm*	C +0, -0.063mm *+0, -1.6"* Inches *mm*	D Nominal Groove Depth Inches *mm*	T Min. Allow Wall Thickness		Max Allowed Flare Dia. mm *Inches*
	O.D.	Tolerance +	Tolerance -					Roll Grooved Inches *mm*	Cut Grooved Inches *mm*	
26	**26.0**	**0.093**	**0.031**	**1.75**	**0.625**	**25.5**	**0.25**	**0.375**	**0.625**	**26.2**
650	*660,4*	*2,36*	*0,79*	*44,5*	*15,9*	*647,7*	*6,4*	*9,5*	*15,9*	*665,5*
28	**28.0**	**0.093**	**0.031**	**1.75**	**0.625**	**27.5**	**0.25**	**0.375**	**0.625**	**28.2**
700	*711,2*	*2,36*	*0,79*	*44,5*	*15,9*	*698,5*	*6,4*	*9,5*	*15,9*	*716,3*
30	**30.0**	**0.093**	**0.031**	**1.75**	**0.625**	**29.5**	**0.25**	**0.375**	**0.625**	**30.2**
750	*762,0*	*2,36*	*0,79*	*44,5*	*15,9*	*749,3*	*6,4*	*9,5*	*15,9*	*767,1*
32	**32.0**	**0.093**	**0.031**	**1.75**	**0.625**	**31.5**	**0.25**	**0.375**	**0.625**	**32.2**
800	*812,8*	*2,36*	*0,79*	*44,5*	*15,9*	*800,1*	*6,4*	*9,5*	*15,9*	*817,9*
36	**36.0**	**0.093**	**0.031**	**1.75**	**0.625**	**35.5**	**0.25**	**0.375**	**0.625**	**36.2**
900	*914,4*	*2,36*	*0,79*	*44,5*	*15,9*	*901,7*	*6,4*	*9,5*	*15,9*	*919,5*
40	**40.0**	**0.093**	**0.031**	**1.75**	**0.625**	**39.5**	**0.25**	**0.375**	**0.625**	**40.4**
1000	*1016,0*	*2,36*	*0,79*	*44,5*	*15,9*	*1003,3*	*6,4*	*9,5*	*15,9*	*1026,2*
42	**42.0**	**0.093**	**0.031**	**2.00**	**0.625**	**41.5**	**0.25**	**0.375**	**0.625**	**42.2**
1050	*1066,8*	*2,36*	*0,79*	*50,8*	*15,9*	*1054,1*	*6,4*	*9,5*	*15,9*	*1071,9*

1. Square cut: Max. allowable tolerances from square cut are 0.060" (*1.6mm*).
2. The gasket seating surface 'A' shall be free from deep scores, marks, or ridges that would prevent a positive seal.
3. The 'C' dimensions are average values. The groove must be of uniform depth around the entire circumference. Use a GRINNELL groove or rule to check the groove diameter.
4. The 'T' is the minimum allowable wall thickness that may be roll-grooved.
5. The 'D' is for reference use only. The groove depth shall be determined by the groove diameter 'C'.
6. Flare Diameter: The pipe end that may flare when the groove is rolled shall be within this limit when measured at the extreme end of the pipe.

Caution: Pressure performance values shown for GRINNELL couplings on light wall (Sch. 5 & Sch. 10 ISO Metric) stainless steel pipe are dependent on the use of required special rolls for roll grooving light-wall stainless steel pipe. Failure to utilize the required special rolls for roll grooving light-wall stainless steel pipe may result in equipment failure.

Roll Groove Standard Specification for Copper Tubing

Tech Data Sheet: G720



Nominal Tubing Size Inches *mm*	Tubing O.D. Inches *mm*			A ±0.030" ±0.76mm Inches *mm*	B ±0.030" ±0.76mm Inches *mm*	C Groove Diameter Inches *mm*		D Nominal Groove Depth Inches *mm*	T Minimum Wall Inches *mm*	Maximum Flare Diameter Inches *mm*
	O.D.	Tolerance				Actual	Tol. 0.000			
		+	-							
2"	**2.125**	**0.002**	**0.002**	**0.610**	**0.300**	**2.029**	**-0.020**	**0.048**	**0.058**	**2.220**
50	*54,0*	*0,05*	*0,05*	*15,5*	*7,6*	*51,5*	*-0,51*	*1,2*	*1,5*	*56,4*
2½"	**2.625**	**0.002**	**0.002**	**0.610**	**0.300**	**2.525**	**-0.020**	**0.050**	**0.065**	**2.720**
65	*66,7*	*0,05*	*0,05*	*15,5*	*7,6*	*64,1*	*-0,51*	*1,2*	*1,7*	*69,1*
3"	**3.125**	**0.002**	**0.002**	**0.610**	**0.300**	**3.025**	**-0.020**	**0.050**	**DWV**	**3.220**
80	*79,4*	*0,05*	*0,05*	*15,5*	*7,6*	*76,8*	*-0,51*	*1,2*	*–*	*81,8*
4"	**4.125**	**0.002**	**0.002**	**0.610**	**0.300**	**4.019**	**-0.020**	**0.053**	**DWV**	**4.220**
100	*104,8*	*0,05*	*0,05*	*15,5*	*7,6*	*102,1*	*-0,51*	*1,4*	*–*	*107,2*
5"	**5.125**	**0.002**	**0.002**	**0.610**	**0.300**	**4.999**	**-0.020**	**0.053**	**DWV**	**5.220**
125	*130,2*	*0,05*	*0,05*	*15,5*	*7,6*	*127,0*	*-0,51*	*1,4*	*–*	*132,6*
6"	**6.125**	**0.002**	**0.002**	**0.610**	**0.300**	**5.999**	**-0.020**	**0.063**	**DWV**	**6.220**
150	*155,6*	*0,05*	*0,05*	*15,5*	*7,6*	*152,3*	*-0,51*	*1,6*	*–*	*158,0*
8"	**8.125**	**0.002**	**0.004**	**0.610**	**0.300**	**7.959**	**-0.020**	**0.083**	**DWV**	**8.220**
200	*206,4*	*0,05*	*0,10*	*15,5*	*7,6*	*202,2*	*-0,51*	*2,1*	*–*	*208,8*

(1) Nominal Tubing, ASTM B-88 drawn copper tubing size.

(2) Outside Diameter "OD", of roll grooved tubing shall not vary more than the tolerance listed. The maximum tolerance from square cut ends is: 0.030" (0,76mm) for sizes 2" – 3" (54,0 – 79,4mm); 0.045" (1,14mm) for sizes 4" – 6" (104,8 – 155,6mm); measured from true square line.

(3) Gasket Seating Surface "A", must be free from roll marks, indentations, projections, loose scale, dirt, chips, grease, etc. that would prevent a positive seal.

(4) Groove Width Bottom "B", to be free of loose dirt, chips and scale that may interfere with proper coupling assembly.

(5) The Groove Diameter "C", must be uniform in depth for the entire circumference of the tubing. Groove must be maintained within the tolerance listed.

(6) Groove Depth "D", is a reference dimension only. The Groove Diameter "C" must be maintained.

(7) Minimum Wall Thickness "T", per ASTM B-306 drain waste and vent (DWV) is minimum wall thickness copper tubing, which may be roll grooved.

(8) Maximum Flare Diameter is the O.D. at the most extreme tubing diameter.

Notes

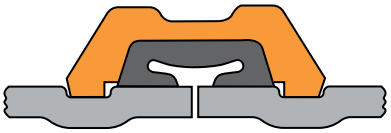
PRESSURE & DESIGN DATA

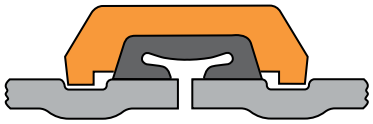
Design

Tech Data Sheets: G810, G820, G830

Rigid Joints

GRINNELL Rigid Couplings provide rigid gripping of the pipe. They are designed to bring the pipe ends close together and to ensure the coupling clamps firmly onto the pipe OD and the bottom of the grooves. Because rigid couplings clamp around the entire pipe surface, they provide resistance to flexural and torsional loads and therefore permit longer spacing to ASME/ANSI B 31.1 (Power Piping) and ASME/ANSI B 39.1 (Building Services) requirements.



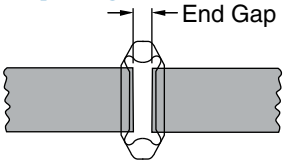


Flexible Joints

GRINNELL Flexible Couplings act as an "expansion joint", allowing linear and angular movement of the pipe. They are designed with the coupling keys engaging the pipe without gripping on the bottom of the grooves, while still providing for a restrained mechanical joint. This is particularly useful to allow for pipe expansion/contraction and piping misalignment.

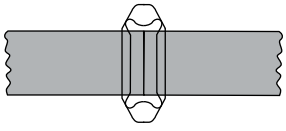
Linear Movement (Flexible Couplings)

For thermal expansion with flexible couplings, the pipe ends at each joint should be fully gapped to the maximum amount. This can be accomplished by pressurizing the system and then anchoring the system.



Pipe Ends Gapped for Expansion

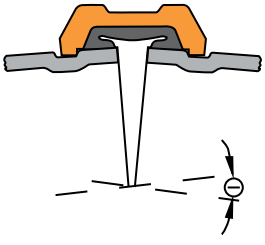
For thermal contraction with flexible couplings, the pipe ends at each joint should be fully butted. The system can then be anchored in place to prevent the pipe ends from opening up to the maximum end gap when pressurized.



Pipe Ends Butted for Contraction

Angular Deflection

GRINNELL Flexible Couplings are capable of accommodating angular deflection.



Expansion/Contraction

GRINNELL Flexible Couplings are capable of accommodating pipe thermal movements provided they are properly gapped and a sufficient quantity of flexible couplings are used. Note that flexible couplings will not accommodate both full maximum linear movement and the maximum available angular deflection concurrently at the same joint.

If it is desired to have both deflection and linear movement available, then the system should have sufficient flexible joints to accommodate the requirement.

For design purposes, the maximum pipe end gap should be reduced to account for field practices as follows:

End Gap Reduction	
Pipe Size Inches *mm*	**Maximum Pipe End Gap**
1¼ – 3 *42,4 – 88,9*	**50%**
4 – 24 *114,3 – 610,0*	**25%**

The following values should be used as available pipe end movements for GRINNELL Figure 705, 707, and 716 Flexible Couplings:

Pipe End Movements		
Pipe Size Inches *mm*	**Cut Grooved Inches** *mm*	**Roll Grooved Inches** *mm*
1¼ – 3 *42,4 – 88,9*	**0 – 0.063** *0 – 1,6*	**0 – 0.031** *0 – 0,8*
4 – 24 *114,3 – 610,0*	**0 – 0.188** *0 – 4,8*	**0 – 0.094** *0 – 2,4*

* Roll grooved joints provide half the available movement of cut grooved joints.

The deflection published is a maximum value. For design purposes the maximum deflection should be reduced to account for field practices as shown:

Deflection	
Pipe Size Inches *mm*	**Maximum Pipe Deflection Reduction**
1¼ – 3 *42,4 – 88,9*	**50%**
4 – 24 *114,3 – 610,0*	**25%**

Thermal Movement

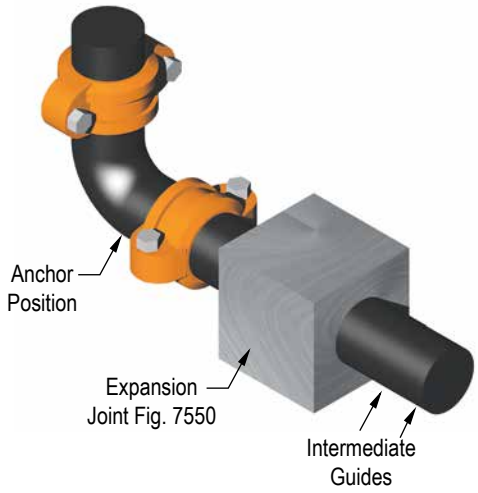
Tech Data Sheets: G810, G820, G830

The following guidelines are similar to any expansion joint:

It is recommended that anchors be installed at changes of direction on the pipe lines to control the pipe movement. The thermal expansion/contraction in the piping system can be accommodated using GRINNELL Flexible Couplings. In designing anchoring systems, it is suggested that the following be taken into consideration:

- Pressure Thrusts
- Frictional Resistance of Any Guides or Supports
- Centrifugal Thrust Due to Velocity at Changes of Direction
- Activation Force Required to Compress or Expand a Flexible Coupling

Three methods are available as examples to accommodate thermal expansion/contraction:



(1) Design the system with rigid couplings and place expansion joints at the proper locations. Expansion joints may be a series of flexible grooved couplings of a sufficient quantity to accommodate the movement.

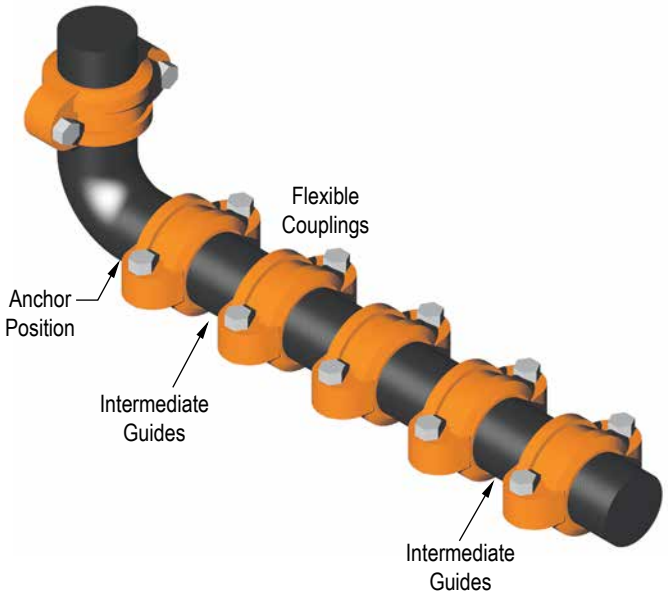
(2) Design the system with flexible and/or rigid couplings and allow the pipe to move in directions desired, with the use of anchors and guides if so required. With this method, it is important to ensure that movement at branch connections, changes of direction, equipment hookup, etc., will not cause damage or harmful stresses.

(3) Design the system with flexible couplings utilizing the expansion/contraction capabilities of these products.

Activation Force	
Pipe Size Inches *mm*	**Activation Force lbs** *N*
1¼	**35**
42,4	*156*
1½	**45**
48,3	*200*
2	**70**
60,3	*311*
2½	**100**
73,0	*645*
76,1mm	**110**
76,1	*489*
3	**145**
88,9	*645*
4	**240**
114,3	*1068*
5	**375**
141,3	*1668*
165,1mm	**500**
165,1	*2224*
6	**520**
168,3	*2313*
8	**880**
219,1	*3914*
10	**1365**
273,0	*6072*
12	**1915**
323,9	*8518*

The following example illustrates this method:

- 6" *(150mm)* Schedule 40 steel pipe, roll grooved, 150' *(45,7m)* long, anchored at each end
- Maximum Temperature = 200°F *(93.3°C)*
- Minimum Temperature = 40°F *(4.4°C)*
- Install Temperature = 80°F *(26.6°C)*



Thermal Movement

Tech Data Sheets: G810, G820, G830

Directions to calculate the number of couplings required to compensate for the thermal expansion and contraction of pipe (by example):

(1) Thermal Contraction

Utilize the Thermal Expansion Table. Allowance for the minimum installation temperature, in this case 80°F to 40°F *(26.6°C to 4.4°C)*, is calculated as:

80°F = 0.61" per 100'
40°F = 0.30" per 100'
Difference = 0.31" per 100'
For 150' of pipe = 0.31" x 1.5 = 0.47" per 150'

(26.6°C = 15,5mm per 30,5m
4.4°C = 7,6mm per 30,5m
Difference = 7,9mm per 30,5m
For 45,7m of pipe = 7,9mm x 1.5 = 11,9mm per 45,7m)

(2) Thermal Expansion

Utilize the Thermal Expansion Table. Allowance for the minimum installation temperature, in this case 26.6°C to 93.3°C *(80°F to 200°F)*, is calculated as:

200°F = 1.52" per 100'
80°F = 0.61" per 100'
Difference = 0.91" per 100'
For 150' of pipe = 0.91 x 1.5 = 1.36" per 150'

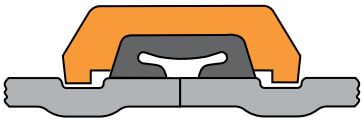
(93.3°C = 38,6mm per 30,5m
26.6°C = 15,5mm per 30,5m
Difference = 23,1mm per 30,5m
For 45,7m of pipe = 23,1mm x 1.5 = 34,5mm per 45,7m)

(3) Couplings Required

Available linear movement for a 6" *(150mm)* Figure 707 Flexible Coupling on roll grooved pipe = 0.094" *(2,4mm)* per coupling.

Fully butted together for contraction only. Therefore the number of Figure 707 Flexible Couplings required:

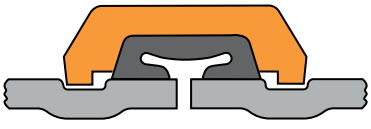
- 0.47" / 0.094" per coupling = 5.0
  (11,9mm / 2,4mm per coupling = 4.96)



- Use 5 Figure 707 couplings for pipe contraction

(b) Fully gapped apart for expansion only. Therefore the number of Figure 707 Flexible Couplings required:

- 1.36" / 0.094" per coupling = 14.47
  (34,5mm / 2,4mm per coupling = 14.38)
- Use 15 Figure 707 Flexible Couplings for pipe expansion



Thermal Expansion of Carbon Steel in Inches/100 Feet
(milliMeters/30.5 Meters)
Between 0°F *(-18°C)* **and Indicated Temperature**

Temperature F° / C°	Thermal Expansion Inches/100 Feet / mm/30.5m
-40 / *-40,0*	**-0.30** / *-7,72*
-30 / *-34,4*	**-0.23** / *-5,79*
-20 / *-28,9*	**-0.15** / *-3,86*
-10 / *-23,3*	**-0.08** / *-1,93*
0 / *-17,8*	**0.00** / *0,00*
10 / *-12,2*	**0.08** / *1,93*
20 / *-6,7*	**0.15** / *3,86*
30 / *-1,1*	**0.23** / *5,79*
40 / *4,4*	**0.30** / *7,72*
50 / *10,0*	**0.38** / *9,65*
60 / *15,6*	**0.46** / *11,58*
70 / *21,1*	**0.53** / *13,51*
80 / *26,7*	**0.61** / *15,44*
90 / *32,2*	**0.68** / *17,37*
100 / *37,8*	**0.76** / *19,30*
110 / *43,3*	**0.84** / *21,23*
120 / *48,9*	**0.91** / *23,16*
130 / *54,4*	**0.99** / *25,09*
140 / *60,0*	**1.06** / *27,02*
150 / *65,6*	**1.14** / *28,95*
160 / *71,1*	**1.22** / *30,88*
170 / *76,7*	**1.29** / *32,81*
180 / *82,2*	**1.37** / *34,74*
190 / *87,8*	**1.44** / *36,67*
200 / *93,3*	**1.52** / *38,60*
210 / *98,9*	**1.60** / *40,53*
220 / *104,4*	**1.67** / *42,46*
230 / *110,0*	**1.75** / *44,39*

Mean Coef. of thermal expansion = 0.00001139 mm/mm/°C Source: ASME B31.9

Misalignment and Deflection

Tech Data Sheets: G810, G820, G830

GRINNELL Flexible Couplings provide for restrained joints and allow for deflection to aid where the pipe or equipment is misaligned.

Note that flexible couplings will not accommodate both full maximum linear movement and the maximum available angular deflection concurrently at the same joint.

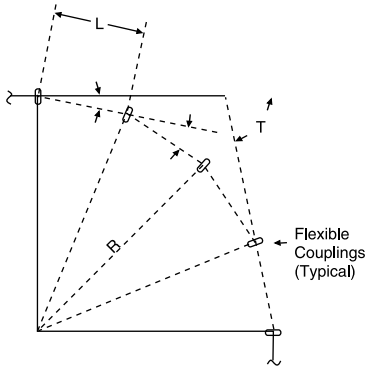
If it is desired to have both deflection and linear movement available, then the system should have sufficient flexible joints to accommodate the requirement.

Flexible couplings are also useful in laying out curved piping systems.

$$R = \frac{L}{(2)\ (\text{Sin}\frac{\theta}{2})}$$

$$L = (2)\ (R)\ (\text{Sin}\frac{\theta}{2})$$

$$N = \frac{T}{\theta}$$



R = Radius of curve

L = Pipe length

θ = Deflection from centerline, in degrees, for each coupling (see table)

N = Number of flexible couplings needed

T = Total deflection, in degrees, required

Design Deflection for Roll Grooved Pipe

Deflection O (Roll Grooved Pipe)	
Pipe Size Inches ***mm***	**Figures 705 & 707**
1¼ *42,4*	**1.08°**
1½ *48,3*	**0.94°**
2 *60,3*	**0.75°**
2½ *73,0*	**0.62°**
76,1mm *76,1*	**0.60°**
3 *88,9*	**0.51°**
4 *114,3*	**1.19°**
5 *141,3*	**0.97°**
165,1mm *165,1*	**0.83°**
6 *168,3*	**0.81°**
8 *219,1*	**0.63°**
10 *273,0*	**0.50°**
12 *323,9*	**0.42°**

Incorporates the recommended safety factor reduction for field practices (50% for sizes 1¼ – 3" *(32mm - 80mm)* and 25% for sizes 4" – 12" *(100mm - 300mm)*).

Pipe Support

Tech Data Sheets: G810, G820, G830

All piping systems require that the support system accommodate the weight of the pipe, joint connections, fluid, and other system components. In addition, consideration may be necessary in reducing stresses, accommodating thermal expansion or contraction, building settlement, seismic movement, etc. The following tables provide guidelines for grooved steel piping products without concentrated loads between supports.

Flexible Joints

For pipe runs when linear movement is accommodated by the flexible coupling:

Number of Hangers Per Pipe Length								
Pipe Size Inches *mm*	Pipe Length in Feet *Meters*							
	3.3	3.7	4.6	6.7	7.6	9.1	10.7	12.2
	10	*12*	*15*	*22*	*25*	*30*	*35*	*40*
	Average Number of Hangers Per Pipe Length							
1¼ - 2	2	2	2	3	4	4	5	6
42,4 – 60,3								
2½ - 4	1	2	2	2	2	3	4	4
73,0 – 114,3								
5 - 24	1	1	2	2	2	3	3	3
141,3 – 609,6								

For pipe runs when linear movement is not required:

Distance Between Supports	
Nominal Size Inches *mm*	Maximum Distance Between Supports Feet *Meters*
1¼ - 1½	12
42,4 - 48,3	*3,7*
2 - 8	15
60,3 - 219,1	*4,6*
10 - 12	16
273,0 - 323,9	*4,9*
14 - 16	18
355,6 - 406,4	*5,5*
18 - 24	20
457,2 - 609,6	*6,1*

Note: The requirements of ANSI, ASME or other code groups may require additional supports.

Rigid Joints

For pipe runs with rigid couplings:

Pipe Size		Suggested Maximum Span Between Supports – Feet *Meters*					
Nominal Inches *mm*	O.D. Inches *mm*	Water Service			Air Service		
		I	II	III	I	II	III
1	1.315	7	9	12	9	2.7	12
25	*33,4*	*2,1*	*2,7*	*3,7*	*2,7*	*9*	*3,7*
1¼	1.660	7	11	12	9	3.4	12
32	*42,4*	*2,1*	*3,4*	*3,7*	*2,7*	*11*	*3,7*
1½	1.900	7	12	15	9	4.0	15
40	*48,3*	*2,1*	*3,7*	*4,6*	*2,7*	*13*	*4,6*
2	2.375	10	13	15	13	4.6	15
50	*60,3*	*3,0*	*4,0*	*4,6*	*4,0*	*15*	*4,6*
2½	2.875	11	14	15	14	4.9	15
65	*73,0*	*3,4*	*4,3*	*4,6*	*4,3*	*16*	*4,6*
76.1mm	3.000	11	14	15	14	4.9	15
65	*76,1*	*3,4*	*4,3*	*4,6*	*4,3*	*16*	*4,6*
3	3.500	12	15	15	15	5.2	15
80	*88,9*	*3,7*	*4,6*	*4,6*	*4,6*	*17*	*4,6*
4	4.500	14	17	15	17	6.4	15
100	*114,3*	*4,3*	*5,2*	*4,6*	*5,2*	*21*	*4,6*
139.7mm	5.500	15	18	15	19	7	15
125	*139,7*	*4,6*	*5,5*	*4,6*	*5,2*	*23*	*4,6*
5	5.563	16	19	15	20	7.3	15
125	*141,3*	*4,9*	*5,8*	*4,6*	*6,1*	*24*	*4,6*
165.1mm	6.500	17	20	15	21	7.6	15
150	*165,1*	*5,2*	*6,1*	*4,6*	*6,4*	*25*	*4,6*
6	6.625	17	20	15	21	7.6	15
150	*168,3*	*5,2*	*6,1*	*4,6*	*6,4*	*25*	*4,6*
8	8.625	19	21	15	24	8.5	15
200	*219,1*	*5,8*	*6,4*	*4,6*	*7,3*	*28*	*4,6*
10	10.750	19	21	15	24	9.4	15
250	*273,0*	*5,8*	*6,4*	*4,6*	*7,3*	*31*	*4,6*
12	12.750	23	21	15	30	10.1	15
300	*323,9*	*7*	*6,4*	*4,6*	*9,1*	*33*	*4,6*
14	14.000	23	21	15	30	10.1	15
350	*355,6*	*7*	*6,4*	*4,6*	*9,1*	*33*	*4,6*
16	16.000	27	21	15	35	10.1	15
400	*406,4*	*8,2*	*6,4*	*4,6*	*10,7*	*33*	*4,6*
18	18.000	27	21	15	35	10.1	15
450	*457,2*	*8,2*	*6,4*	*4,6*	*10,7*	*33*	*4,6*
20	20.000	30	21	15	39	10.1	15
500	*508,0*	*9,1*	*6,4*	*4,6*	*11,9*	*33*	*4,6*
24	24.000	32	21	15	42	10.1	15
600	*609,6*	*9,8*	*6,4*	*4,6*	*12,8*	*33*	*4,6*

I - Spacing by ANSI B31.1 Power Piping Code
II - Spacing by ANSI B39.1 Building Piping Code
III - Spacing by NFPA 13 Sprinkler Systems (Steel Pipe except Threaded Lightwall)

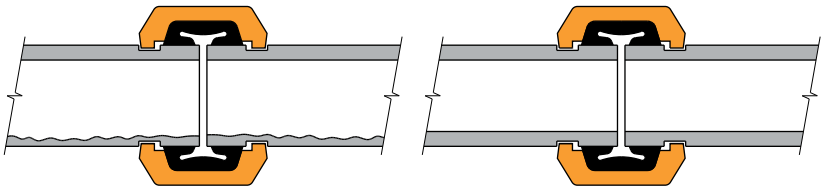
Pipe Support

Tech Data Sheets: G810, G820, G830

Rotational Movement

GRINNELL Flexible Couplings are suitable for use in seismic as well as mining applications. The inherent capability of the flexible coupling to allow for linear movement, angular deflection, and rotational movement make it an excellent choice for reducing stresses in a piping system and to increase pipe life in slurry applications.

For mining applications where the pipe needs to be rotated, the system should be depressurized. The pipe coupling bolts/nuts can be loosened, pipe rotated, the bolts/nuts re-tightened, and the system be put back in service.

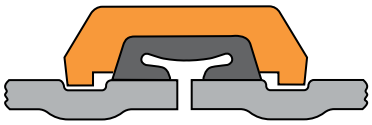


Even distribution of pipe wear can be achieved with this method on the inner service of the pipe.

Note: Precautions are necessary to monitor pipe wall thickness to evaluate pressure capability of the pipe with reduced wall.

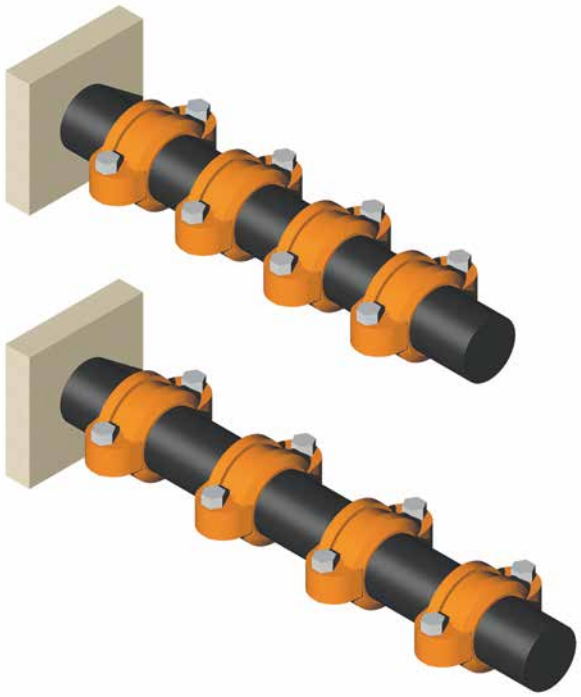
Linear Movement

Flexible couplings are designed with the couplings keys engaging the pipe without gripping on the bottom of the groove while still providing for a restrained mechanical joint.



The inherent flexibility of the coupling must be considered when deciding on support arrangements for the piping system as movement can occur in more than one plane (linear movement, angular deflection, and rotational movement).

Upon system pressurization, each pipe end within the flexible couplings will expand to the maximum published value. The coupling keys make contact with the face of the groove and restrain the joint. In piping systems, this movement will be accumulative.



Pipe Support

Tech Data Sheets: G810, G820, G830

Angular Movement

System movement can be accommodated by providing for sufficient offset lengths. Temperature increases/decreases can further increase this movement.

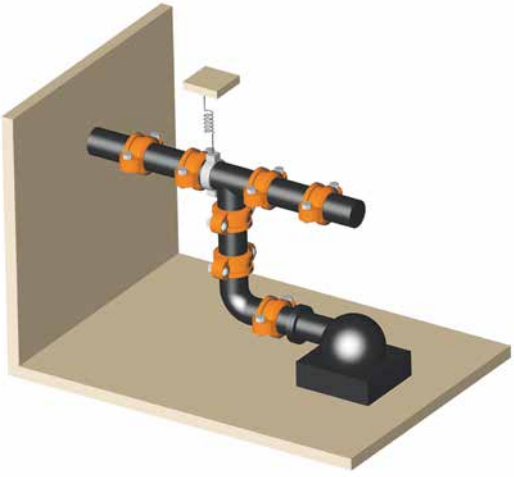
When systems are anchored with partially deflected joints, the system can move to the fully deflected condition upon pressurization resulting in the "snaking" of the piping system. Lightweight hangers may not be suitable to prevent the lateral motion.

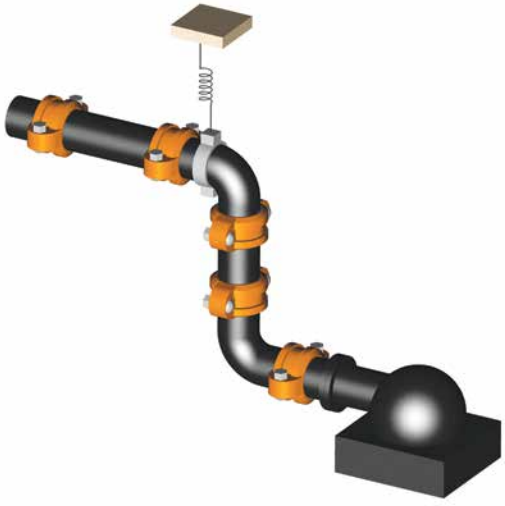
Pipe Support

Pipe hanger positioning is important when considering pipe "sagging" due to the flexible nature of the piping system. Proper positioning of hangers near the elbow, for example, should be considered.

The use of spring hangers or other methods can be considered to accommodate vibrations. Base supports, pressure thrust anchors, and pipe offsets can be used to direct pipe movement.

The use of rigid couplings can be considered to reduce the movement available with flexible couplings. Consideration of other methods of accommodation of pipe movements may be required.

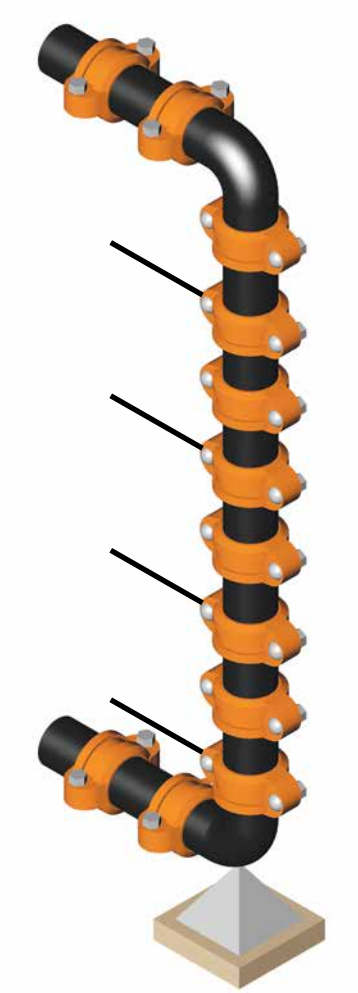




Vertical Piping

Tech Data Sheets: G810, G820, G830

Risers comprised of rigid couplings can be considered instead of welded or flanged systems. Where thermal movement exists, expansion joints and/or flexible couplings with offsets may be required.



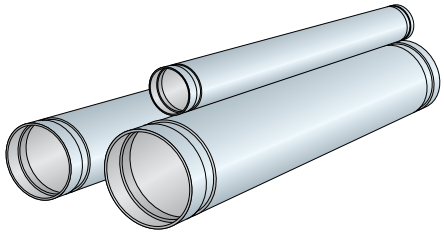
When using flexible couplings, the movement that occurs in long lengths of piping needs to be considered. Each joint can move up to the maximum pipe end separation published. This movement can accumulate and result in the growth of the piping system, for example at the top. Offsets may be necessary.

Should the riser contain branch connections, the movement which occurs at these locations with flexible couplings will also need to be considered.

One solution would be to anchor the vertical piping at appropriate locations to prevent movement which can cause stresses at the branches or equipment. The use of rigid couplings can be an advantage.

As always, good piping practice should prevail. It is the designer's responsibility to select products suitable for the intended service and to ensure that pressure ratings and performance data is not exceeded. Never remove any piping component or correct or modify any piping deficiencies without first depressurizing and draining the system. Material and gasket selection should be verified to be compatible for the specific application.

Pipe Data



Pipe Size		Conversion Table Wall Thickness - mm *inches*								
Nominal DN In.	O.D. mm In.	Pipe ANSI B36.10						Pipe DIN Norm		
		Sch. 5	Sch. 10	Sch. 20	Sch. 30	Sch. 40	Sch. 80	DIN 2440	DIN 2448	DIN 2458
¾	1.050	0.06	0.11	–	–	0.11	0.15	0.10	0.09	0.08
20	*26,9*	*1,65*	*2,77*	–	–	*2,87*	*3,91*	*2,65*	*2,3*	*2*
1	1.315	0.06	0.11	–	–	0.13	0.18	0.13	0.10	0.08
25	*33,4*	*1,65*	*2,77*	–	–	*3,38*	*4,55*	*3,25*	*2,6*	*2*
1¼	1.660	0.06	0.11	–	–	0.14	0.19	0.13	0.10	0.09
32	*42,4*	*1,65*	*2,77*	–	–	*3,56*	*4,83*	*3,25*	*2,6*	*2,3*
1½	1.900	0.06	0.11	–	–	0.14	0.20	0.13	0.10	0.09
40	*48,3*	*1,65*	*2,77*	–	–	*3,68*	*5,08*	*3,25*	*2,6*	*2,3*
2	2.375	0.06	0.11	–	–	0.15	0.22	0.14	0.11	0.10
50	*60,3*	*1,65*	*2,77*	–	–	*3,91*	*5,54*	*3,65*	*2,9*	*2,6*
2½	2.875	0.08	0.12	–	–	0.20	0.28	–	–	–
65	*73,0*	*2,11*	*3,05*	–	–	*5,16*	*7,01*	–	–	–
76.1mm	3.000	–	–	–	–	–	–	0.14	0.11	0.10
65	*76,1*	–	–	–	–	–	–	*3,65*	*2,9*	*2,6*
3	3.500	0.08	0.12			0.22	0.30	0.16	0.13	0.11
80	*88,9*	*2,11*	*3,05*			*5,49*	*7,61*	*4,05*	*3,2*	*2,9*
4	4.500	0.08	0.12	–	–	0.24	0.34	0.18	0.14	0.13
100	*114,3*	*2,11*	*3,05*	–	–	*6,02*	*8,56*	*4,5*	*3,6*	*3,2*
139.7mm	5.500	–	–	–	–	–	–	0.19	–	–
125	*139,7*	–	–	–	–	–	–	*4,85*	–	–
5	5.563	0.11	0.13	–	–	0.26	0.38	–	–	–
125	*141,3*	*2,77*	*3,4*	–	–	*6,55*	*9,53*	–	–	–
165.1mm	6.500	–	–	–	–	–	–	0.19	0.18	0.16
150	*165,1*	–	–	–	–	–	–	*4,85*	*4,5*	*4*
6	6.625	0.11	0.13	–	–	0.28	0.43	–	–	0.18
150	*168,3*	*2,77*	*3,4*	–	–	*7,11*	*10,97*	–	–	*4,5*
8	8.625	0.11	0.15	0.25	0.28	0.32	0.50	–	0.25	0.18
200	*219,1*	*2,77*	*3,76*	*6,35*	*7,04*	*8,18*	*12,7*	–	*6,3*	*4,5*
10	10.750	0.13	0.16	0.25	0.31	0.36	0.59	–	0.25	0.20
250	*273,0*	*3,4*	*4,19*	*6,35*	*7,8*	*9,27*	*15,06*	–	*6,3*	*5*
12	12.750	0.16	0.18	0.25	0.33	0.41	0.69	–	0.28	0.22
300	*323,9*	*3,96*	*4,57*	*6,35*	*8,38*	*10,31*	*17,45*	–	*7,1*	*5,6*
14	14.000	0.16	0.25	0.31	0.38	0.44	0.75	–	0.31	0.22
350	*355,6*	*4,19*	*6,35*	*7,94*	*9,53*	*11,1*	*19,05*	–	*8*	*5,6*
16	16.000	–	0.25	0.31	0.38	0.50	0.84	–	0.35	0.25
400	*406,4*	–	*6,35*	*7,94*	*9,53*	*12,7*	*21,41*	–	*8,8*	*6,3*
18	18.000	–	0.25	0.31	0.44	0.56	0.94	–	0.39	0.25
450	*457,2*	–	*6,35*	*7,94*	*11,13*	*14,28*	*23,8*	–	*10*	*6,3*
20	20.000	–	0.25	0.38	0.50	0.59	1.03	–	0.43	0.25
500	*508,0*	–	*6,35*	*9,53*	*12,7*	*15,06*	*26,19*	–	*11*	*6,3*
24	24.000	–	0.25	0.38	0.56	0.69	1.22	–	0.49	0.25
600	*609,6*	–	*6,35*	*9,53*	*14,28*	*17,45*	*30,94*	–	*12,5*	*6,3*

Working Pressure Ratings psi *(Bar)* on ISO Size Steel Pipe

Pipe Size		Nominal Wall Thickness Inches *mm*	GRINNELL Coupling Working Pressure Ratings psi *(Bar)* on Roll Grooved ISO Size Steel Pipe						
Inches *mm*	O.D.		Fig. 705 Flexible	Fig. 707 Flexible	Fig. 740 Rigid	Fig. 772 Rigid	Fig. 770 Rigid	Fig. 716 Reducing	Fig. 71 Flange
1 *25*	1.315 *33,7*	0.071	300	750	–	–	–	–	–
		1,8	*20,7*	*51,7*	–	–	–	–	–
		0.114	500	750	–	–	–	–	–
		2,9	*34,5*	*51,7*	–	–	–	–	–
		0.126	500	1001	–	–	–	–	–
		3,2	*34,5*	*69,0*	–	–	–	–	–
1¼ *32*	1.660 *42,4*	0.071	300	750	–	750	–	–	–
		1,8	*20,7*	*51,7*	–	*51,7*	–	–	–
		0.114	500	750	–	750	–	–	–
		2,9	*34,5*	*51,7*	–	*51,7*	–	–	–
		0.142	500	1001	–	750	–	–	–
		3,6	*34,5*	*69,0*	–	*51,7*	–	–	–
1½ *40*	1.900 *48,3*	0.071	500	500	–	500	–	–	–
		1,8	*34,5*	*34,5*	–	*34,5*	–	–	–
		0.114	500	750	–	750	–	–	–
		2,9	*34,5*	*51,7*	–	*51,7*	–	–	–
		0.142	500	1001	–	750	–	–	–
		3,6	*34,5*	*69,0*	–	*51,7*	–	–	–
2 *50*	2.375 *60,3*	0.071	500	500	–	500	500	350	200
		1,8	*34,5*	*34,5*	–	*34,5*	*34,5*	*24,1*	*13,8*
		0.114	500	750	600	750	750	350	249
		2,9	*34,5*	*51,7*	*41,4*	*51,7*	*51,7*	*24,1*	*17,2*
		0.142	500	1001	750	750	1001	500	300
		3,6	*34,5*	*69,0*	*51,7*	*51,7*	*69,0*	*34,5*	*20,7*
2½ *65*	2.875 *73,0*	0.079	500	500	–	500	500	350	200
		2,0	*34,5*	*34,5*	–	*34,5*	*34,5*	*24,1*	*13,8*
		0.126	500	599	600		599	350	249
		3,2	*34,5*	*41,3*	*41,4*	*41,3*	*41,3*	*24,1*	*17,2*
		0.197	500	1001	750	750	1001	500	300
		5,0	*34,5*	*69,0*	*51,7*	*51,7*	*69,0*	*34,5*	*20,7*
76.1mm *65*	3.000 *76,1*	0.079	500	500	–	500	–	350	200
		2,0	*34,5*	*34,5*	–	*34,5*	–	*24,1*	*13,8*
		0.126	500	599	–	599	–	350	249
		3,2	*34,5*	*41,3*	–	*41,3*	–	*24,1*	*17,2*
		0.197	500	1001	–	750	–	500	300
		5,0	*34,5*	*69,0*	–	*51,7*	–	*34,5*	*20,7*
3 *80*	3.500 *88,9*	0.079	500	500	–	500	500	350	200
		2,0	*34,5*	*34,5*	–	*34,5*	*34,5*	*24,1*	*13,8*
		0.126	500	599	600	599	599	350	249
		3,2	*34,5*	*41,3*	*41,4*	*41,3*	*41,3*	*24,1*	*17,2*
		0.220	500	1001	750	750	1001	500	300
		5,6	*34,5*	*69,0*	*51,7*	*51,7*	*69,0*	*34,5*	*20,7*

Working Pressure Ratings psi *(Bar)* on ISO Size Steel Pipe

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Pipe Size		Nominal Wall Thickness Inches *mm*	GRINNELL Coupling Working Pressure Ratings psi *(Bar)* on Roll Grooved ISO Size Steel Pipe						
Inches *mm*	O.D.		Fig. 705 Flexible	Fig. 707 Flexible	Fig. 740 Rigid	Fig. 772 Rigid	Fig. 770 Rigid	Fig. 716 Reducing	Fig. 71 Flange
4 *100*	4.500 *114,3*	0.079	400	400	–	400	400	350	200
		2,0	*27,6*	*27,6*	–	*27,6*	*27,6*	*24,1*	*13,8*
		0.126	500	599	500	599	599	350	249
		3,2	*34,5*	*41,3*	*34,5*	*41,3*	*41,3*	*24,1*	*17,2*
		0.220	300	300	300	300	300	300	300
		5,6	*34,5*	*69,0*	*51,7*	*51,7*	*69,0*	*34,5*	*20,7*
139.7mm *125*	5.500 *139,7*	0.114	300	300	–	300	–	–	300
		2,9	*24,1*	*24,1*	–	*24,1*	–	–	*13,8*
		0.142	300	300	–	300	–	–	300
		3,6	*31,0*	*34,5*	–	*31,0*	–	–	*17,2*
		0.248	300	300	–	300	–	–	300
		6,3	*31,0*	*69,0*	–	*51,7*	–	–	*20,7*
5 *125*	5.563 *141,3*	0.114	300	300	–	300	–	300	300
		2,9	*24,1*	*24,1*	–	*24,1*	–	*24,1*	*13,8*
		0.142	300	300	300	300	–	300	300
		3,6	*31,0*	*34,5*	*34,5*	*31,0*	–	*24,1*	*17,2*
		0.248	300	300	300	300	–	300	300
		6,3	*31,0*	*69,0*	*51,7*	*51,7*	–	*34,5*	*20,7*
165.1mm *150*	6.500 *165,1*	0.114	300	300	–	300	–	300	300
		2,9	*24,1*	*24,1*	–	*24,1*	–	*24,1*	*13,8*
		0.142	300	300	–	300	–	300	300
		3,6	*31,0*	*31,0*	–	*34,5*	–	*24,1*	*17,2*
		0.280	300	300	–	300	–	300	300
		7,1	*31,0*	*69,0*	–	*48,2*	–	*27,6*	*20,7*
6 *150*	6.625 *168,3*	0.114	300	300	–	300	300	300	300
		2,9	*24,1*	*24,1*	–	*24,1*	*24,1*	*24,1*	*13,8*
		0.142	300	300	300	300	300	300	300
		3,6	*31,0*	*31,0*	*34,5*	*34,5*	*34,5*	*24,1*	*17,2*
		0.280	300	300	300	300	300	300	300
		7,1	*31,0*	*69,0*	*48,3*	*48,2*	*69,0*	*27,6*	*20,7*
8 *200*	8.625 *219,1*	0.114	300	300	–	300	300	300	300
		2,9	*17,2*	*17,2*	–	*17,2*	*17,2*	*13,8*	*13,8*
		0.197	300	300	300	300	300	300	300
		5,0	*20,7*	*20,7*	*20,7*	*20,7*	*20,7*	*20,7*	*13,8*
		0.315	300	300	300	300	300	300	300
		8,0	*31,0*	*55,1*	*41,4*	*41,3*	*55,1*	*27,6*	*20,7*
10 *250*	10.750 *273,0*	0.142	300	300	–	300	300	–	300
		3,6	*20,7*	*17,2*	–	*17,2*	*17,2*	–	*13,8*
		0.197	300	300	–	300	300	–	300
		5,0	*24,1*	*20,7*	–	*20,7*	*20,7*	–	*13,8*
		0.315	300	300	–	300	300	–	300
		8,0	*24,1*	*34,5*	–	*27,6*	*55,1*	–	*17,2*

Working Pressure Ratings psi *(Bar)* on ISO Size Steel Pipe

Pipe Size		Nominal Wall Thickness Inches *mm*	GRINNELL Coupling Working Pressure Ratings psi *(Bar)* on Roll Grooved ISO Size Steel Pipe						
Inches *mm*	O.D.		Fig. 705 Flexible	Fig. 707 Flexible	Fig. 740 Rigid	Fig. 772 Rigid	Fig. 770 Rigid	Fig. 716 Reducing	Fig. 71 Flange
12 *300*	12.750 *323,9*	0.157	300	300	–	300	300	–	300
		4,0	*13,8*	*13,8*	–	*13,8*	*13,8*	–	*13,8*
		0.197	300	300	–	300	300	–	300
		5,0	*20,7*	*20,7*	–	*13,8*	*13,8*	–	*13,8*
		0.315	300	300	–	300	300	–	300
		8,0	*24,1*	*34,5*	–	*27,6*	*55,1*	–	*17,2*
14 *350*	14.000 *355,6*	0.157	–	300	–	300	–	–	300
		4,0	–	*8,6*	–	*8,6*	–	–	*8,6*
		0.248	–	300	–	300	–	–	300
		6,3	–	*17,2*	–	*24,1*	–	–	*13,8*
		0.346	–	300	–	300	–	–	300
		8,8	–	*20,7*	–	*24,1*	–	–	*13,8*
		0.374	–	300	–	300	–	–	300
		9,5	–	*24,1*	–	*24,1*	–	–	*20,7*
16 *400*	16.000 *406,4*	0.157	–	300	–	300	–	–	300
		4,0	–	*6,9*	–	*6,9*	–	–	*6,9*
		0.248	–	300	–	300	–	–	300
		6,3	–	*20,7*	–	*24,1*	–	–	*13,8*
		0.346	–	300	–	300	–	–	300
		8,8	–	*20,7*	–	*24,1*	–	–	*13,8*
		0.374	–	300	–	300	–	–	300
		9,5	–	*24,1*	–	*24,1*	–	–	*20,7*
18 *450*	18.000 *457,2*	0.197	–	300	–	300	–	–	300
		5,0	–	*6,9*	–	*24,1*	–	–	*13,8*
		0.248	–	300	–	300	–	–	300
		6,3	–	*15,5*	–	*24,1*	–	–	*13,8*
		0.346	–	300	–	300	–	–	300
		8,8	–	*20,7*	–	*24,1*	–	–	*20,7*
20 *500*	20.000 *508,0*	0.197	–	300	–	300	–	–	300
		5,0	–	*3,4*	–	*3,4*	–	–	*3,4*
		0.248	–	300	–	300	–	–	300
		6,3	–	*6,9*	–	*13,8*	–	–	*6,9*
		0.346	–	300	–	300	–	–	300
		8,8	–	*20,7*	–	*24,1*	–	–	*20,7*
24 *600*	24.000 *609,6*	0.197	–	300	–	300	–	–	300
		5,0	–	*1,7*	–	*1,7*	–	–	*1,7*
		0.248	–	300	–	300	–	–	300
		6,3	–	*5,2*	–	*13,8*	–	–	*6,9*
		0.346	–	300	–	300	–	–	300
		8,8	–	*17,2*	–	*24,1*	–	–	*17,2*

Working Pressure Ratings psi *(Bar)* on Light Wall Roll Grooved Steel Pipe

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Pipe Size		Pipe Schedule	Nominal Wall Thickness Inches *mm*	GRINNELL Coupling Working Pressure Ratings psi *(Bar)* on Light Wall Roll Grooved Steel Pipe				
Inches *mm*	O.D.			Fig. 705 Flexible	Fig. 707 Flexible	Fig. 772 Rigid	Fig. 716 Reducing	Fig. 71 Flange
1 *25*	1.315 *33,7*	5	0.065 *1,7*	– –	– –	– –	– –	– –
		10	0.109 *2,8*	– –	– –	– –	– –	– –
1 ¼ *32*	1.660 *42,4*	5	0.065 *1,7*	300 *20,7*	– –	750 *51,7*	– –	– –
		10	0.109 *2,8*	500 *34,5*	– –	750 *51,7*	– –	– –
1 ½ *40*	1.900 *48,3*	5	0.065 *1,7*	500 *34,5*	500 *34,5*	500 *34,5*	350 *24,1*	– –
		10	0.109 *2,8*	500 *34,5*	750 *51,7*	750 *51,7*	350 *24,1*	– –
2 *50*	2.375 *60,3*	5	0.065 *1,7*	500 *34,5*	500 *34,5*	500 *34,5*	350 *24,1*	200 *13,8*
		10	0.109 *2,8*	500 *34,5*	750 *51,7*	750 *51,7*	350 *24,1*	250 *17,2*
2 ½ *65*	2.875 *73,0*	5	0.083 *2,1*	500 *34,5*	500 *34,5*	500 *34,5*	350 *24,1*	200 *13,8*
		10	0.12 *3,0*	500 *34,5*	600 *41,4*	600 *41,4*	350 *24,1*	250 *17,2*
3 *80*	3.500 *88,9*	5	0.083 *2,1*	500 *34,5*	500 *34,5*	500 *34,5*	350 *24,1*	200 *13,8*
		10	0.12 *3,0*	500 *34,5*	600 *41,4*	600 *41,4*	350 *24,1*	250 *17,2*
4 *100*	4.500 *114,3*	5	0.083 *2,1*	400 *27,6*	400 *27,6*	400 *27,6*	350 *24,1*	200 *13,8*
		10	0.12 *3,0*	500 *34,5*	600 *41,4*	600 *41,4*	350 *24,1*	250 *17,2*
5 *125*	5.563 *141,3*	5	0.109 *2,8*	350 *24,1*	350 *24,1*	350 *24,1*	350 *24,1*	200 *13,8*
		10	0.134 *3,4*	450 *31,0*	500 *34,5*	450 *31,0*	350 *24,1*	250 *17,2*
6 *150*	6.625 *168,3*	5	0.109 *2,8*	350 *24,1*	350 *24,1*	350 *24,1*	– –	200 *13,8*
		10	0.134 *3,4*	450 *31,0*	450 *31,0*	500 *34,5*	– –	250 *17,2*
8 *200*	8.625 *219,1*	5	0.109 *2,8*	250 *17,2*	250 *17,2*	250 *17,2*	– –	200 *13,8*
		10	0.148 *3,8*	300 *20,7*	300 *20,7*	300 *20,7*	– –	200 *13,8*

Working Pressure Ratings psi *(Bar)* on Light Wall Roll Grooved Steel Pipe

Pipe Size		Pipe Schedule	Nominal Wall Thickness Inches *mm*	GRINNELL Coupling Working Pressure Ratings psi *(Bar)* on Light Wall Roll Grooved Steel Pipe				
Inches *mm*	O.D.			Fig. 705 Flexible	Fig. 707 Flexible	Fig. 772 Rigid	Fig. 716 Reducing	Fig. 71 Flange
10 *250*	**10.750** *273,0*	**5**	**0.134** *3,4*	**300** *20,7*	**250** *17,2*	**250** *17,2*	**–** –	**200** *13,8*
		10	**0.165** *4,2*	**350** *24,1*	**300** *20,7*	**300** *20,7*	**–** –	**200** *13,8*
12 *300*	**12.750** *323,9*	**5**	**0.156** *4,0*	**300** *20,7*	**200** *13,8*	**200** *13,8*	**–** –	**200** *13,8*
		10	**0.18** *4,6*	**350** *24,1*	**300** *20,7*	**200** *13,8*	**–** –	**200** *13,8*
14 *350*	**14.000** *355,6*	**5**	**0.156** *4,0*	**–** –	**125** *8,6*	**–** –	**–** –	**–** –
		10	**0.25** *6,4*	**–** –	**250** *17,2*	**–** –	**–** –	**–** –
		20	**0.312** *7,9*	**–** –	**275** *19,0*	**–** –	**–** –	**–** –
16 *400*	**16.000** *406,4*	**5**	**0.165** *4,2*	**–** –	**100** *6,9*	**–** –	**–** –	**–** –
		10	**0.25** *6,4*	**–** –	**175** *12,1*	**–** –	**–** –	**–** –
		20	**0.312** *7,9*	**–** –	**275** *19,0*	**–** –	**–** –	**–** –
18 *450*	**18.000** *457,2*	**10**	**0.25** *6,4*	**–** –	**100** *6,9*	**–** –	**–** –	**–** –
		20	**0.312** *7,9*	**–** –	**175** *12,1*	**–** –	**–** –	**–** –
20 *500*	**20.000** *508,0*	**10**	**0.25** *6,4*	**–** –	**100** *6,9*	**–** –	**–** –	**–** –
		20 (Std.)	**0.375** *9,5*	**–** –	**300** *20,7*	**–** –	**–** –	**–** –
24 *600*	**24.000** *609,6*	**10**	**0.25** *6,4*	**–** –	**75** *5,2*	**–** –	**–** –	**–** –
		20 (Std.)	**0.375** *9,5*	**–** –	**250** *17,2*	**–** –	**–** –	**–** –

Maximum Pressure Ratings psi *(Bar)* on ANSI 304/316 Stainless Steel

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Pipe Size		Pipe Schedule	Wall Thickness Inches *mm*	Maximum Pressure Ratings psi *(Bar)* on ANSI 304/316 Stainless Steel						
Nominal Inches *mm*	O.D. Inches *mm*			Figure 705	Figure 707	Figure 772	Figure 405	Figure 472	Figure 770	Figure 71
1 *25*	1.315 *33,7*	5	0.065 *1,7*	350 *24,1*	400 *27,6*	– –	350 *24,1*	– –	– –	– –
		10	0.109 *2,8*	500 *34,5*	500 *34,5*	– –	500 *34,5*	– –	– –	– –
		40	0.133 *3,4*	750 *51,7*	750 *51,7*	– –	750 *51,7*	– –	– –	– –
1¼ *32*	1.660 *42,4*	5	0.065 *1,7*	325 *22,4*	400 *27,6*	400 *27,6*	350 *24,1*	350 *24,1*	– –	– –
		10	0.109 *2,8*	500 *34,5*	500 *34,5*	750 *51,7*	500 *34,5*	500 *34,5*	– –	– –
		40	0.140 *3,6*	750 *51,7*	750 *51,7*	750 *51,7*	750 *51,7*	750 *51,7*	– –	– –
1½ *40*	1.900 *48,3*	5	0.065 *1,7*	325 *22,4*	400 *27,6*	400 *27,6*	350 *24,1*	350 *24,1*	– –	– –
		10	0.109 *2,8*	500 *34,5*	500 *34,5*	750 *51,7*	500 *34,5*	500 *34,5*	– –	– –
		40	0.145 *3,7*	650 *44,8*	750 *51,7*	750 *51,7*	750 *51,7*	750 *51,7*	– –	– –
2 *50*	2.375 *60,3*	5	0.065 *1,7*	250 *17,2*	325 *22,4*	350 *24,1*	350 *24,1*	350 *24,1*	350 *24,1*	175 *12,1*
		10	0.109 *2,8*	500 *34,5*	500 *34,5*	700 *48,3*	500 *34,5*	500 *34,5*	750 *51,7*	275 *19,0*
		40	0.154 *3,9*	500 *34,5*	750 *51,7*	750 *51,7*	500 *34,5*	600 *41,4*	750 *51,7*	275 *19,0*
2½ *65*	2.875 *73,0*	5	0.083 *2,1*	250 *17,2*	325 *22,4*	350 *24,1*	350 *24,1*	350 *24,1*	350 *24,1*	175 *12,1*
		10	0.120 *3,0*	500 *34,5*	500 *34,5*	700 *48,3*	500 *34,5*	500 *34,5*	750 *51,7*	275 *19,0*
		40	0.203 *5,2*	500 *34,5*	750 *51,7*	750 *51,7*	500 *34,5*	600 *41,4*	750 *51,7*	275 *19,0*
3 *80*	3.500 *88,9*	5	0.083 *2,1*	250 *17,2*	325 *22,4*	350 *24,1*	350 *24,1*	350 *24,1*	350 *24,1*	175 *12,1*
		10	0.120 *3,0*	400 *27,6*	500 *34,5*	500 *34,5*	500 *34,5*	500 *34,5*	750 *51,7*	275 *19,0*
		40	0.216 *5,5*	500 *34,5*	750 *51,7*	750 *51,7*	500 *34,5*	600 *41,4*	750 *51,7*	275 *19,0*
4 *100*	4.500 *114,3*	5	0.083 *2,1*	200 *13,8*	250 *17,2*	300 *20,7*	300 *20,7*	300 *20,7*	300 *20,7*	175 *12,1*
		10	0.120 *3,0*	400 *27,6*	500 *34,5*	500 *34,5*	400 *27,6*	400 *27,6*	750 *51,7*	275 *19,0*
		40	0.237 *6,0*	500 *34,5*	750 *51,7*	750 *51,7*	500 *34,5*	600 *41,4*	750 *51,7*	275 *19,0*

Maximum Pressure Ratings psi *(Bar)* on ANSI 304/316 Stainless Steel

Pipe Size		Pipe Schedule	Wall Thickness Inches *mm*	Maximum Pressure Ratings psi *(Bar)* on ANSI 304/316 Stainless Steel						
Nominal Inches *mm*	O.D. Inches *mm*			Figure 705	Figure 707	Figure 772	Figure 405	Figure 472	Figure 770	Figure 71
5 *125*	5.563 *141,3*	5	0.109 *2,8*	125 *8,6*	200 *13,8*	250 *17,2*	250 *17,2*	250 *17,2*	250 *17,2*	125 *8,6*
		10	0.134 *3,4*	350 *24,1*	500 *34,5*	500 *34,5*	350 *24,1*	350 *24,1*	350 *24,1*	200 *13,8*
		40	0.258 *6,6*	450 *31,0*	650 *44,8*	650 *44,8*	450 *31,0*	600 *41,4*	750 *51,7*	250 *17,2*
6 *150*	6.625 *168,3*	5	0.109 *2,8*	75 *5,2*	125 *8,6*	250 *17,2*	250 *17,2*	250 *17,2*	250 *17,2*	75 *5,2*
		10	0.134 *3,4*	200 *13,8*	300 *20,7*	300 *20,7*	250 *17,2*	300 *20,7*	350 *24,1*	125 *8,6*
		40	0.280 *7,1*	300 *20,7*	500 *34,5*	450 *31,0*	450 *31,0*	600 *41,4*	750 *51,7*	150 *10,3*
8 *200*	8.625 *219,1*	5	0.109 *2,8*	50 *3,4*	75 *5,2*	100 *6,9*	100 *6,9*	100 *6,9*	100 *6,9*	50 *3,4*
		10	0.148 *3,8*	200 *13,8*	300 *20,7*	300 *20,7*	200 *13,8*	300 *20,7*	350 *24,1*	75 *5,2*
		40	0.322 *8,2*	300 *20,7*	400 *27,6*	450 *31,0*	450 *31,0*	600 *41,4*	650 *44,8*	125 *8,6*
10 *250*	10.750 *273,0*	5	0.134 *3,4*	N/R *N/R*	N/R *N/R*	N/R *N/R*	– *–*	N/R *N/R*	N/R *N/R*	N/R *N/R*
		10	0.165 *4,2*	75 *5,2*	125 *8,6*	300 *20,7*	– *–*	300 *20,7*	300 *20,7*	75 *5,2*
		40	0.365 *9,3*	75 *5,2*	325 *22,4*	450 *31,0*	– *–*	600 *41,4*	600 *41,4*	125 *8,6*
12 *300*	12.750 *323,9*	5	0.156 *4,0*	N/R *N/R*	N/R *N/R*	150 *10,3*	– *–*	150 *10,3*	300 *20,7*	N/R *N/R*
		10	0.180 *4,6*	50 *3,4*	125 *8,6*	150 *10,3*	– *–*	150 *10,3*	250 *17,2*	50 *3,4*
		40	0.375 *9,5*	50 *3,4*	250 *17,2*	400 *27,6*	– *–*	600 *41,4*	600 *41,4*	125 *8,6*

Caution: Pressure performance values shown for GRINNELL couplings on light wall (Sch. 5 & Sch. 10 ISO Metric) stainless steel pipe are dependent on the use of required special rolls for roll grooving light-wall stainless steel pipe. Failure to utilize the required special rolls for roll grooving light-wall stainless steel pipe may result in equipment failure.

Maximum Pressure Ratings psi *(Bar)* on ISO 304/316 Stainless Steel

(Page 1 of 2)

Pipe Size		Pipe Thickness Wall	Maximum Pressure Ratings psi *(Bar)* on ISO 304/316 Stainless Steel						
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Figure 705	Figure 707	Figure 772	Figure 405	Figure 472	Figure 770	Figure 71
1 *25*	1.315 *33,7*	0.079	350	400	–	350	–	–	–
		2,0	*24*	*28*	–	*24*	–	–	–
		0.110	500	500	–	500	–	–	–
		2,8	*34*	*34*	–	*34*	–	–	–
		0.134	750	750	–	750	–	–	–
		3,4	*52*	*52*	–	*52*	–	–	–
1¼ *32*	1.660 *42,4*	0.079	325	400	400	350	350	–	–
		2,0	*22*	*28*	*28*	*24*	*24*	–	–
		0.110	500	500	750	500	500	–	–
		2,8	*34*	*34*	*52*	*34*	*34*	–	–
		0.142	750	750	750	750	750	–	–
		3,6	*52*	*52*	*52*	*52*	*52*	–	–
1½ *40*	1.900 *48,3*	0.079	325	400	400	350	350	–	–
		2,0	*22*	*28*	*28*	*24*	*24*	–	–
		0.110	500	500	750	500	500	–	–
		2,8	*34*	*34*	*52*	*34*	*34*	–	–
		0.146	650	750	750	750	750	–	–
		3,7	*45*	*52*	*52*	*52*	*52*	–	–
2 *50*	2.375 *60,3*	0.079	250	325	350	350	350	350	175
		2,0	*17*	*22*	*24*	*24*	*24*	*24*	*12*
		0.110	500	500	700	500	500	750	275
		2,8	*34*	*34*	*48*	*34*	*34*	*52*	*19*
		0.154	500	750	750	500	600	750	275
		3,9	*34*	*52*	*52*	*34*	*41*	*52*	*19*
2½ *65*	2.875 *73,0*	0.079	250	325	350	350	350	350	175
		2,0	*17*	*22*	*24*	*24*	*24*	*24*	*12*
		0.118	500	500	700	500	500	750	275
		3,0	*34*	*34*	*48*	*34*	*34*	*52*	*19*
		0.205	500	750	750	500	600	750	275
		5,2	*34*	*52*	*52*	*34*	*41*	*52*	*19*
76.1mm *65*	3.000 *76,1*	0.079	250	325	350	350	350	–	175
		2,0	*17*	*22*	*24*	*24*	*24*	–	*12*
		0.118	400	500	500	500	500	–	275
		3,0	*28*	*34*	*34*	*34*	*34*	–	*19*
		0.205	500	750	750	500	600	–	275
		5,2	*34*	*52*	*52*	*34*	*41*	–	*19*
3 *80*	3.500 *88,9*	0.079	250	325	350	350	350	350	175
		2,0	*17*	*22*	*24*	*24*	*24*	*24*	*12*
		0.118	400	500	500	500	500	750	275
		3,0	*28*	*34*	*34*	*34*	*34*	*52*	*19*
		0.217	500	750	750	500	600	750	275
		5,5	*34*	*52*	*52*	*34*	*41*	*52*	*19*
4 *100*	4.500 *114,3*	0.079	200	250	300	300	300	300	175
		2,0	*14*	*17*	*21*	*21*	*21*	*21*	*12*
		0.118	400	500	500	400	400	750	275
		3,0	*28*	*34*	*34*	*28*	*28*	*52*	*19*
		0.236	500	750	750	500	600	750	275
		6,0	*34*	*52*	*52*	*34*	*41*	*52*	*19*

Maximum Pressure Ratings psi *(Bar)* on ISO 304/316 Stainless Steel

Pipe Size		Pipe Thickness Wall	Maximum Pressure Ratings psi *(Bar)* on ISO 304/316 Stainless Steel						
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Figure 705	Figure 707	Figure 772	Figure 405	Figure 472	Figure 770	Figure 71
139.7mm *125*	5.500 *139,7*	0.110	125	200	250	250	250	–	125
		2,8	*9*	*14*	*17*	*17*	*17*	*–*	*9*
		0.134	350	500	500	350	350	–	200
		3,4	*24*	*34*	*34*	*24*	*24*	*–*	*14*
		0.252	450	650	650	450	600	–	250
		6,4	*31*	*45*	*45*	*31*	*41*	*–*	*17*
5 *125*	5.563 *141,3*	0.110	125	200	250	250	250	250	125
		2,8	*9*	*14*	*17*	*17*	*17*	*17*	*9*
		0.134	350	500	500	350	350	350	200
		3,4	*24*	*34*	*34*	*24*	*24*	*24*	*14*
		0.260	450	650	650	450	600	750	250
		6,6	*31*	*45*	*45*	*31*	*41*	*52*	*17*
165.1mm *150*	6.500 *165,1*	0.110	75	125	250	250	250	–	75
		2,8	*5*	*9*	*17*	*17*	*17*	*–*	*5*
		0.134	200	300	300	250	300	–	125
		3,4	*14*	*21*	*21*	*17*	*21*	*–*	*9*
		0.280	300	500	450	450	600	–	150
		7,1	*21*	*34*	*31*	*31*	*41*	*–*	*10*
6 *150*	6.625 *168,3*	0.110	75	125	250	250	250	250	75
		2,8	*5*	*9*	*17*	*17*	*17*	*17*	*5*
		0.134	200	300	300	250	300	350	125
		3,4	*14*	*21*	*21*	*17*	*21*	*24*	*9*
		0.280	300	500	450	450	600	750	150
		7,1	*21*	*34*	*31*	*31*	*41*	*52*	*10*
8 *200*	8.625 *219,1*	0.110	50	75	100	100	100	100	50
		2,8	*3*	*5*	*7*	*7*	*7*	*7*	*3*
		0.150	200	300	300	200	300	350	75
		3,8	*14*	*21*	*21*	*14*	*21*	*24*	*5*
		0.323	300	400	450	450	600	650	125
		8,2	*21*	*28*	*31*	*31*	*41*	*45*	*9*
10 *250*	10.750 *273,0*	0.134	N/R	N/R	N/R	–	N/R	N/R	N/R
		3,4	*N/R*	*N/R*	*N/R*	*–*	*N/R*	*N/R*	*N/R*
		0.165	75	125	300	–	300	300	75
		4,2	*5*	*9*	*21*	*–*	*21*	*21*	*5*
		0.366	75	325	450	–	600	600	125
		9,3	*5*	*22*	*31*	*–*	*41*	*41*	*9*
12 *300*	12.750 *323,9*	0.157	N/R	N/R	150	–	150	300	
		4,0	*N/R*	*N/R*	*10*	*–*	*10*	*21*	*NR*
		0.181	50	125	150	–	150	250	50
		4,6	*3*	*9*	*10*	*–*	*10*	*17*	*3*
		0.374	50	250	400	–	600	600	125
		9,5	*3*	*17*	*28*	*–*	*41*	*41*	*9*

Caution: Pressure performance values shown for GRINNELL couplings on light wall (Sch. 5 & Sch. 10 ISO Metric) stainless steel pipe are dependent on the use of required special rolls for roll grooving light-wall stainless steel pipe. Failure to utilize the required special rolls for roll grooving light-wall stainless steel pipe may result in equipment failure.

Stainless Steel Pipe per EN20217-7 316 Ti and EN10217-7 304L Design Data Pressure Rating

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Tech Data Sheets: G815

Nominal Pipe Size ANSI Inches DN	Pipe O.D. mm	Pipe Wall Thickness mm	Fig. 705 Flexible Coupling bar	Fig. 707 Heavy Duty Flexible Coupling bar	Fig. 716[a] Flexible Reducing Coupling bar	Fig. 71 Flange bar	Fig. 740 Pivot Bolt (GRIP) Rigid Coupling bar	Fig. 772 Rigid Coupling bar	Fig. 770 Rigid Coupling bar	Fig. 405 Flexible Coupling bar	Fig. 472 Rigid Coupling bar
1 25	1.315 33.7	0.079 2,0	500 34	750 52	N/A	N/A	N/A	N/A	N/A	750 52	N/A
		0.110 2,8	500 34	750 52						750 52	
		0.134 3,4	500 34	750 52						750 52	
1 1/4 32	1.660 42,4	0.079 2,0	500 34	750 52	N/A	N/A	N/A	750 52	N/A	750 52	750 52
		0.110 2,8	500 34	750 52				750 52		750 52	750 52
		0.142 3,6	500 34	750 52				750 52		750 52	750 52
1 1/2 40	1.660 48,3	0.079 2,0	500 34	650 45	N/A	N/A	N/A	650 45	N/A	650 45	650 45
		0.110 2,8	500 34	650 45				750 52		650 45	750 52
		0.146 3,7	500 34	750 52				750 52		750 52	750 52
2 50	2.375 60,3	0.079 2,0	400 28	400 28	N/A	300 21	400 28	400 28	400 28	400 28	400 28
		0.110 2,8	500 34	500 34		300 21	700 48	750 52	750 52	500 34	750 52
		0.154 3,9	500 34	750 52		300 21	750 52	750 52	750 52	500 34	750 52
76.1mm 65	3.000 76,1	0.079 2,0	400 28	400 28	400 28	300 21	400 28	400 28	N/A	400 28	400 28
		0.118 3,0	400 28	500 34	400 28	300 21	500 34	500 34		500 34	500 34
		0.205 5,2	500 34	750 52	500 34	300 21	750 52	750 52		500 34	600 41
3 80	3.500 88,9	0.079 2,0	400 28	400 28	400 28	300 21	400 28	400 28	400 28	400 28	400 28
		0.118 3,0	400 28	500 34	400 28	300 21	500 34	500 34	750 52	500 34	500 34
		0.217 5,5	500 34	750 52	500 34	300 21	750 52	750 52	750 52	500 34	600 41
4 100	4.500 114,3	0.118 3,0	360 25	360 25	360 25	300 21	360 25	360 25	360 25	360 25	360 25
		0.118 3,0	400 28	500 34	400 28	300 21	500 34	500 34	750 52	400 28	400 28
		0.236 6,0	500 34	750 52	500 34	300 21	750 52	750 52	750 52	500 34	600 41

Stainless Steel Pipe per EN20217-7 316 Ti and EN10217-7 304L Design Data Pressure Rating

Tech Data Sheets: G815

Nominal Pipe Size ANSI Inches DN	Pipe O.D. mm	Pipe Wall Thickness mm	Fig. 705 Flexible Coupling bar	Fig. 707 Heavy Duty Flexible Coupling bar	Fig. 716[a] Flexible Reducing Coupling bar	Fig. 71 Flange bar	Fig. 740 Pivot Bolt (GRIP) Rigid Coupling bar	Fig. 772 Rigid Coupling bar	Fig. 770 Rigid Coupling bar	Fig. 405 Flexible Coupling bar	Fig. 472 Rigid Coupling bar
5 *125*	5.500 *139,7*	0.110 *2,8*	300 *21*	300 *21*	300 *21*	300 *21*	300 *21*	300 *21*	N/A	300 *21*	300 *21*
		0.134 *3,4*	350 *24*	500 *34*	350 *24*	300 *21*	500 *34*	500 *34*		350 *24*	350 *24*
		0.252 *6,4*	450 *31*	650 *45*	450 *31*	300 *21*	650 *45*	650 *45*		450 *31*	600 *41*
6 *150*	6.500 *165,1*	0.110 *2,8*	300 *21*	500 *34*	300 *21*	300 *21*	500 *34*	500 *34*	N/A	300 *21*	500 *34*
		0.134 *3,4*	300 *21*	500 *34*	300 *21*	300 *21*	500 *34*	500 *34*		300 *21*	500 *34*
		0.280 *7,1*	300 *21*	500 *34*	300 *21*	300 *21*	500 *34*	500 *34*		450 *31*	600 *41*
6 *150*	6.625 *168,3*	0.110 *2,8*	300 *21*	500 *34*	300 *21*	300 *21*	500 *34*	500 *34*	500 *34*	300 *21*	500 *34*
		0.134 *3,4*	300 *21*	500 *34*	300 *21*	300 *21*	500 *34*	500 *34*	500 *34*	300 *21*	500 *34*
		0.280 *7,1*	300 *21*	500 *34*	300 *21*	300 *21*	500 *34*	500 *34*	750 *52*	450 *31*	600 *41*
8 *200*	219,1	0.110 *2,8*	150 *10*	150 *10*	150 *10*	150 *10*	150 *10*	290 *20*	290 *20*	150 *10*	2290 *20*
		0.150 *3,8*	200 *14*	300 *21*	200 *14*	200 *14*	300 *21*	300 *21*	350 *24*	200 *14*	300 *21*
		0.323 *8,2*	300 *21*	400 *28*	300 *21*	300 *21*	450 *31*	300 *21*	650 *45*	450 *31*	600 *41*
10 *250*	273	0.150 *3,8*	N/A	N/A	N/A	N/A	N/A	290 *20*	290 *20*	N/A	290 *20*
		0.165 *4,2*	75 *5*	125 *9*		75 *5*		300 *21*	300 *21*		300 *21*
		0.366 *9,3*	300 *21*	300 *21*		300 *21*		300 *21*	600 *41*		600 *41*
12 *300*	323,9	0.150 *3.8*	N/A	N/A	N/A	N/A	N/A	290 *20*	175 *12*	N/A	290 *20*
		0.181 *4,6*						290 *20*	175 *12*		290 *20*
		0.374 *9,5*	250 *17*	300 *21*		250 *17*		400 *28*	600 *41*		600 *41*

a. Figure 716 Maximum Working Pressure based on larger pipe connection nominal pipe size. Use only grooving machine rollers designed for stainless steel pipe.
b. Figure 774 is available in Europe, Middle East, and Africa only. Use only grooving machine rollers designed for stainless steel pipe.

Caution: Pressure performance values shown for GRINNELL couplings on light wall (Sch. 5 & Sch. 10 ISO Metric) stainless steel pipe are dependent on the use of required special rolls for roll grooving light-wall stainless steel pipe. Failure to utilize the required special rolls for roll grooving light-wall stainless steel pipe may result in equipment failure.

Global Pipe Size Designations

GRINNELL Mechanical Products product data is utilized worldwide and all technical data is shown in both metric and imperial terms. The following chart shows a comparison between typical metric and IPS pipe sizes.

Nominal Size (DN)		Outside Diameter (OD)								
Inches (Imperial)	*mm (Metric)*	mm (Specification Reference)	DIN mm	BS mm	ISO mm	JIS mm	ANSI Inches	GB China mm	India	
									IS 1239	IS3589
½	*15*	*21,3mm*	*DN 15*	*DN 15*	*DN 15*	*21,7mm*	½	*DN 15*	*DN 15*	–
¾	*20*	*26,7mm*	*26,9mm*	*DN 20*	*DN 20*	*27,2mm*	¾	*DN 20*	*DN 20*	–
1	*25*	*33,4mm*	*33,7mm*	*DN 25*	*DN 25*	*34mm*	**1**	*DN 25*	*DN 25*	–
1¼	*32*	*42,2mm*	*42,4mm*	*DN 32*	*DN 32*	*42,7mm*	**1¼**	*DN 32*	*DN 32*	–
1½	*40*	*48,3mm*	*DN 40*	*DN 40*	*DN 40*	*48,6mm*	**1½**	*DN 40*	*DN 40*	–
2	*50*	*60,3mm*	*DN 50*	*DN 50*	*DN 50*	*60,5mm*	**2**	*DN 50*	*DN 50*	–
2½	*65*	*73,1mm*	–	–	–	–	**2½**	–	–	–
		76,1mm BS/ISO	*76,1mm*	*76,1mm*	*76,1mm*	*76,3mm*	–	*76,1mm* **	*76,1mm*	–
3	*80*	*88,9mm*	*DN 80*	*DN 80*	*DN 80*	*DN 80*	**3**	*DN 80*	*DN 80*	–
3½	*90*	*101,6mm*	–	–	–	–	–	–	–	–
4	*100*	*108mm China (& old DIN)*	*DIN 133mm*	–	–	–	–	*108mm* **	–	–
		114,3mm	*DN 100*	*DN 100*	*DN 101*	*DN 100*	**4**	*DN 100*	*DN 100*	–
–	*127mm*	*127mm*	–	–	–	–	–	–	–	–
5	*125*	*133mm China*	–	–	–	–	–	*133mm* **	–	–
		139,7mm BS/ISO	*DN 125*	*139,7mm*	*139,7mm*	*139,8mm*	–	*139,7mm*	*139,7mm*	–
		141,3mm	–	–	–	–	**5**	–	–	–
–	*152,4mm*	*152,4mm*	–	–	–	–	–	–	–	–
6	*150*	*159mm China*	–	–	–	–	–	*159mm*	–	
		165,1mm JIS/BS	–	*165,1mm*	–	*165,2mm*	–	–	*165,1mm*	–
		168,3mm	*DN 150*	–	*DN 150*	–	**6**	*DN 150*	–	*DN 150*
–	*175*	*193,7mm*	–	–	–	–	–	–	–	*193,7mm*
–	*203,2mm*	*203,2mm*	–	–	–	–	–	–	–	–
8	*200*	*216,3mm JIS*	–	–	–	*216,3mm*	–	–	–	–
		219,1mm	*DN 200*	*DN 200*	*DN 200*	–	**8**	*DN 200*	*DN 200*	*DN 200*
–	*254mm*	*254mm*	–	–	–	–	–	–	–	–
10	*250*	*267,4mm JIS*	–	–	–	*267,4mm*	–	–	–	–
		273mm	*DN 250*	*DN 250*	*DN 250*	–	**10**	*DN 250*	*DN 250*	*DN 250*
–	*304,8mm*	*304,8mm*	–	–	–	–	–	–	–	–
12	*300*	*318,5mm JIS*	–	–	–	*318,5mm*	–	–	–	–
		323,9mm	*DN 300*	*DN 300*	*DN 300*	–	**12**	–	–	–
14	*350*	*355,6mm*	*DN 350*	*DN 350*	*DN 350*	*DN 350*	**14**	*DN 350*	–	–
		377mm China	–	–	–	–	–	*377mm*	–	–
16	*400*	*406,4mm*	*DN 400*	*DN 400*	*DN 400*	*DN 400*	**16**	*DN 400*	–	–
		426mm China	–	–	–	–	–	*426mm*	–	–
18	*450*	*457,2mm*	*DN 450*	*DN 450*	*DN 450*	*DN 450*	**18**	*DN 450*	–	–
		480mm China	–	–	–	–	–	*480mm*	–	–
20	*500*	*508mm*	*DN 500*	*DN 500*	*DN 500*	*DN 500*	**20**	*DN 500*	–	–
		530mm China	–	–	–	–	–	*530mm*	–	–
22	*550*	*558,8mm*	–	–	–	*DN 550*	**22**	*559mm*	–	–
		580mm China	–	–	–	–	–	*580mm*	–	–
24	*600*	*610mm*	*DN 600*	*DN 600*	*DN 600*	*DN 600*	**24**	*DN 600*	–	–
		630mm China	–	–	–	–	–	*630mm*	–	–

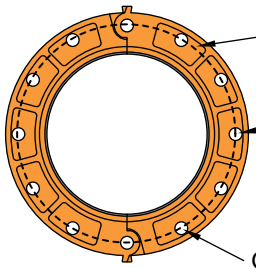
IMPORTANT NOTE:
Nominal designations are used where the actual OD of the pipe matches the ANSI size.
Otherwise both the nominal and actual OD are listed.
China sizes are listed as actual OD in mm.
** China sizes are tubing sizes.

Metric/Imperial Conversion Chart

This chart is provided as a guide for converting metric and imperial measurements.

Convert Metric to Imperial				Convert Imperial to Metric		
Millimeters (mm)	X	**0.03937**		**Inches (in)**	X	*25,4*
Meters (m)	X	**3.281**		**Feet (ft)**	X	*0,3048*
Kilograms (kg)	X	**2.205**		**Pounds (lb)**	X	*0,4536*
Grams (g)	X	**0.03527**		**Ounces (oz)**	X	*28,35*
Kilopascals (kPa)	X	**0.145**		**Pressure (psi)**	X	*6,894*
Bar	X	**14.5**		**Pressure (psi)**	X	*0,069*
Newtons (N)	X	**0.2248**		**End Load (lb)**	X	*4,45*
Newton Meters (N•m)	X	**0.738**		**Torque (lbft)**	X	*1,356*
Celsius (°C)		**C + 17.78 × 1.8**		**Temp. (°F)**		*F – 32 ÷ 1,8*
Watts (w)	X	**1.341 × 10-3**		**Horsepower (hp)**	X	*745,7*
Liters per min. (L/M)	X	**0.2642**		**Gal. per Min. (gpm)**	X	*3,785*
Cubic Meters per min. (m3/m)	X	**264.2**		**10^{-3} Gal. per Min. (gpm)**	X	*3,7865*

Flange Drilling Specifications



Valve Size		ANSI B16.1 (Class 125#) [1]			ISO 2084 (PN10) [2]			ISO 2084 (PN16) [3]			JIS B 2210 (10K)			AS 2129 (Table E)		
		Dimensions - Inches *mm*														
Nominal Inches *mm*	O.D. Inches *mm*	A	B	Qty. N	A	B	Qty. N	A	B	Qty. N	A	B	Qty. N	A	B	Qty. N
2	2.375	4.75	0.75	4	4.92	0.71	4	4.92	0.71	4	4.72	0.75	4	4.49	0.71	4
50	*60,3*	*120,6*	*19,0*		*125,0*	*18,0*		*125,0*	*18,0*		*120,0*	*19,0*		*114,0*	*18,0*	
2½	2.875	5.50	0.75	4	5.71	0.71	4	5.71	0.71	4	5.51	0.75	4	5.00	0.71	4
65	*73,0*	*139,7*	*19,0*		*145,0*	*18,0*		*145,0*	*18,0*		*140,0*	*19,0*		*127,0*	*18,0*	
3	3.500	6.00	0.75	4	6.30	0.71	8	6.30	0.71	8	5.91	0.75	8	5.75	0.71	4
80	*88,9*	*152,4*	*19,0*		*160,0*	*18,0*		*160,0*	*18,0*		*150,0*	*19,0*		*146,0*	*18,0*	
4	4.500	7.50	0.75	8	7.09	0.71	8	7.09	0.71	8	6.89	0.75	8	7.00	0.71	8
100	*114,3*	*190,5*	*19,1*		*180,0*	*18,0*		*180,0*	*18,0*		*175,0*	*19,0*		*178,0*	*18,0*	
5	5.563	8.50	0.88	8	8.27	0.71	8	8.27	0.71	8	8.27	0.91	8	8.27	0.71	8
125	*141,3*	*215,9*	*22,4*		*210,0*	*18,0*		*210,0*	*18,0*		*210,0*	*23,0*		*210,0*	*18,0*	
6	6.625	9.50	0.88	8	9.45	0.87	8	9.45	0.87	8	9.45	0.91	8	9.25	0.87	8
150	*168,3*	*241,3*	*22,4*		*240,0*	*22,0*		*240,0*	*22,0*		*240,0*	*23,0*		*235,0*	*22,0*	
8	8.625	11.75	0.88	8	11.61	0.87	8	11.61	0.87	12	11.42	0.91	12	11.50	0.87	8
200	*219,1*	*298,5*	*22,2*		*295,0*	*22,0*		*295,0*	*22,0*		*290,0*	*23,0*		*292,0*	*22,0*	
10	10.750	14.25	1.00	12	13.78	0.87	12	13.98	1.02	12	13.98	0.87	12	14.02	0.87	12
250	*273,0*	*362,0*	*25,4*		*350,0*	*22,0*		*355,0*	*26,0*		*355,0*	*22,0*		*356,0*	*22,0*	
12	12.750	17.00	1.00	12	15.75	0.87	12	16.14	1.02	12	15.75	0.98	16	15.98	1.02	12
300	*323,9*	*431,8*	*25,4*		*400,0*	*22,0*		*410,0*	*26,0*		*400,0*	*25,0*		*406,0*	*26,0*	
14	14.000	18.76	1.12	12	18.11	0.87	16	18.50	1.02	16	17.52	0.98	16	18.50	1.02	12
350	*355,6*	*476,5*	*28,4*		*460,0*	*22,0*		*470,0*	*26,0*		*445,0*	*25,0*		*470,0*	*26,0*	
16	16.000	21.25	1.12	16	20.28	1.02	16	20.67	1.18	16	20.08	1.06	16	20.51	1.02	12
400	*406,4*	*539,8*	*28,4*		*515,0*	*26,0*		*525,0*	*30,0*		*510,0*	*27,0*		*521,0*	*26,0*	
18	18.000	22.75	1.25	16	22.24	1.02	20	23.03	1.18	20	22.24	1.06	20	22.99	1.02	16
450	*457,2*	*577,9*	*31,8*		*565,0*	*26,0*		*585,0*	*30,0*		*565,0*	*27,0*		*584,0*	*26,0*	
20	20.000	25.00	1.25	20	24.41	1.02	20	25.59	1.30	20	24.41	1.06	20	25.24	1.02	16
500	*508,0*	*635,0*	*31,8*		*620,0*	*26,0*		*650,0*	*33,0*		*620,0*	*27,0*		*641,0*	*26,0*	
24	24.000	29.50	1.38	20	28.54	1.18	20	30.31	1.42	20	28.74	1.30	24	29.76	1.30	16
600	*609,6*	*749,3*	*35,1*		*725,0*	*30,0*		*770,0*	*36,0*		*730,0*	*33,0*		*756,0*	*33,0*	

[1] Same drilling as for B16.5 (Class 150#) and B16.42 (Class 250#).
[2] Same drilling as for BS 4504 Section 3.2 (PN10) and DIN 2532 (PN10).
[3] Same drilling as for BS 4504 Section 3.2 (PN16) and DIN 2532 (PN16).
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