Grinnell

GRINNELL MECHANICAL PRODUCTS

General Catalog

tyco

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Grinnell

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GRINNELL MECHANICAL PRODUCTS

GRINNELL, a premium brand of Tyco International, delivers quality piping solutions for a full range of mechanical, HVAC, mining, commercial, industrial, institutional, and governmental applications. Available products offer contractors, engineers, and distributors faster, more cost-effective tools for joining pipe over traditional welding methods. Innovative GRINNELL products include couplings, fittings, mechanical tees, valves, and accessories as well as complete systems for joining copper, stainless steel, plain end, G-PRESS press-fit, HDPE, and G-MINE PVC components. Comprehensive, competitively priced engineering and planning support services provide labor and cost savings. All GRINNELL products are backed by an industry-leading, 10-year limited warranty except for G-MINE products, which carry a six-month warranty. For more information, visit www.grinnell.com.

MAKING CONNECTIONS...

Global Headquarters
Lansdale, Pennsylvania, USA

Research and Development
Cranston, Rhode Island, USA

REGIONAL HEADQUARTERS

North Asia
Shanghai, China

South Asia
Singapore

Australia
Sunshine, Victoria

Middle East
Dubai, United Arab Emirates

Europe
Enschede, The Netherlands
Paris, France
Manchester, U.K.
Rodgau, Germany
Budapest, Hungary
Milan, Italy
Wien, Austria
Mechelen, Belgium
Madrid, Spain
Lørenskog, Norway
Lammhult, Sweden

South America, Central America, and Caribbean
Pompano, Florida, USA

Mexico
Tlalnepantla, Mexico

BUILDING SOLUTIONS

Refer to back cover for country-specific customer care numbers.

Why Grooved?

Reduced Installation Time and Cost

Methods such as welding and soldering are labor intensive and can be very expensive in high-cost regions. Pipe grooving reduces installation cost by up to 30%, allowing contractors to minimize labor costs and remain within budget.

Retrofits and Repairs

When an owner is faced with the issue of not being able to shut down a facility for important retrofits, GRINNELL Mechanical Products is the right solution. GRINNELL Couplings and Fittings allow an installer to fabricate on-site and around complex problems and obstacles. Fire permits are not required and building residents do not have to evacuate due to welding fumes.

Pipe Expansion Support

GRINNELL Flexible Couplings absorb linear and angular movements of pipe work due to temperature changes, eliminating or minimizing the use of braided and bellow type flex connectors. GRINNELL Mechanical Services offers customers assistance with designing flexible couplings into thermal expansion projects.

No Special Tools

Grooved Products are assembled onto a standard groove. No special tools or additional training to complete the job are required.

Compatibility With Hazardous Environments

Grooved Pipe does not require welding, threading, or cutting, eliminating cutting oils, fumes, and flames. It is the ideal method for joining pipe in enclosed, flammable, or hazardous sites like tunnels and mines. And it doesn't require burn or hot-works permits.

Connection Consistency

When construction calls for robust piping applications, GRINNELL Grooved Products maintain high pressures at each connection without sacrificing quality and reliability. GRINNELL Grooved Systems allow for quick assembly that is simple and consistent from one worker to the next. Projects are completed on time, and crews can readily move on to their next installations.

Why GRINNELL?

The Best Warranty in the Industry

GRINNELL Mechanical Products are backed by a 10-Year Limited Warranty, except for G-MINE which is 6 months. Our customers are proud to work with products manufactured by a market leader with an established brand name and a consistent history.

GRINNELL Mechanical Services

Our Services Group works seamlessly with engineers and contractors to create the most cost-effective and time-efficient piping solutions from design...to build. Our experts specialize in CAD blocks, cost comparisons, thermal movement analysis, and BIM.

Green Solutions

All GRINNELL Mechanical Products cast in our Anniston, Alabama Plant are manufactured with 90% recycled metal that would otherwise contribute to our world's solid waste stream. All waste paper, used cardboard, scrap wood, and EPDM waste from our plants is recycled.

Industry Pioneer

GRINNELL Mechanical Products has been in the pipe-joining business for over 160 years. We have strategic stocking locations throughout the world to serve our customers. We have the best channel partners who are focused, as we are, on innovation and growth.

Global Presence

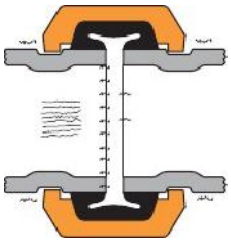
You can find our products in buildings and installations all over the world. We provide global solutions that flexibly address the challenges our customers face, including design in one country for construction in another.

Great Service

At GRINNELL Mechanical Services, the customer always comes first. We pride ourselves on providing knowledgeable sales support, timely technical service, and quality customer care to all global customers.

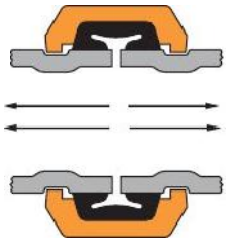
Refer to back cover for country-specific customer care numbers.

Product Features and Benefits



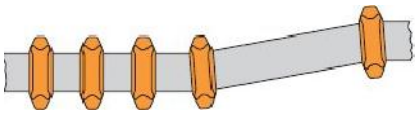
NOISE AND VIBRATION

The resiliency of GRINNELL Grooved Couplings and versatility of various available gaskets provide excellent noise and vibration dampening. The engineered design of these couplings provides for pipe end gapping that helps to dissipate, isolate, and minimize noise and vibration transmission throughout the piping system.



DEPENDABILITY

The coupling housings are designed to engage into the grooves and provide a secure joint. The pipe ends are sealed by a pressure responsive gasket that is encapsulated by the ductile iron housing.



MISALIGNMENT

GRINNELL Flexible Couplings will accommodate misalignments. The maximum deflection information per coupling can be found in this catalog.

ISO 9001 QUALITY ASSURANCE

SUPERIOR QUALITY

GRINNELL Piping Products are manufactured according to the ISO 9001:2000 Quality Assurance standard.

LONGEVITY AND PERFORMANCE

GRINNELL Piping Products are designed to last the lifetime of the pipeline and have been tested and approved by prominent approval agencies. Rolled grooving does not remove any metal from the pipe. Therefore, pipe integrity is fully maintained when grooved systems are used to join pipe.

CLEAN

Unlike with welding, GRINNELL Piping Products do not lead to hazardous fumes or to the possible introduction of foreign materials in the pipeline.

Agency Listings and Approvals

Our products bear the seal of approval from the following agencies, associations and laboratories.

General Code Groups, Associations, Laboratories, Government Agencies, and Approval Bodies

ACS

ACTIVFIRE
Active Fire Protection Product Certification

AP SAD

AMERICAN BUREAU OF SHIPPING (ABS)

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

AMERICAN WATER WORKS ASSOCIATION (AWWA)

AMERICAN PETROLEUM INSTITUTE (API)
API Std. 5L, Sect. 7.5

AMERICAN SOCIETY OF HEATING, REFRIGERATION AND AIR CONDITIONING ENGINEERS (ASHRAE)

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)
- Power Piping, B-31.1
- Chemical Plant and Petroleum Refinery Piping, B-31.3
- Refrigeration Piping, B-31.5
- Building Services Piping, B31.9
- Elevator, Escalator, A17.1

ARPA

BUILDING OFFICIALS AND CODE ADMINISTRATORS (BOCA)

BUREAU VERITAS (BV)

CNBOP
Centrum Naukowo-Badawcze Ochrony Przeciwpozarowe

COAST GUARD
Approved each vessel individually

CORPS OF ENGINEERS (COE)
GEGS 15000

CRN
Canadian Registration Number

CSTB

DNV
Det Norske Veritas

DVGW
Deutscher Verein des Gas-und Wasserfaches e.V.

FACTORY MUTUAL ENGINEERING CORP. (FM)
Approved for Fire Protection Services

FEDERAL AVIATION ADMINISTRATION (FAA)
HVAC, Plumbing and Fire Protection

FEDERAL HOUSING ADMINISTRATION (FHA)

GENERAL SERVICES ADMINISTRATION (GSA)
15000 Series

GERMANISCHER LLOYD

INTERNATIONAL ASSOCIATION OF PLUMBING AND MECHANICAL OFFICIALS (IAPMO)

ICC-ES
National Evaluation Service, Inc.

IPC
Association Connecting Electronics Industries

LLOYD'S
Lloyd's Register of Shipping

LOSS PREVENTION CERTIFICATION BOARD (LPCB)
Approved for Fire Protection Services

MATERIAL EQUIPMENT AND ACCEPTANCE (MEA)

MILITARY SPECIFICATIONS (MIL)
- MIL-P – 10388 Fittings
- MIL-C – 10387 Couplings
- MIL-P – 11087A (CE) Steel Pipe
- Grooved MIL-I – 45208 Inspection

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (NASA)

NATIONAL INSTITUTE OF HEALTH (NIH)
Department of Health – 5000 Series

NAVAL FACILITIES ENGINEERING COMMAND (NAVFAC)
NFGS 15000 Series

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NATIONAL SANITATION FOUNDATION (NSF)
The Public Health and Safety Company

PAVUS

PCT

PRESSURE EQUIPMENT DIRECTIVE

RINA
Registro Italiano Navale

T/S/U

SOUTHERN BUILDING CODE CONGRESS INTERNATIONAL (SBCCI)
Standard Plumbing

UNDERWRITERS LABORATORIES, INC. (UL)
Listed for Fire Protection Services

UNDERWRITERS LABORATORIES OF CANADA (ULC)
Listed for Fire Protection Services

UNIFORM PLUMBING CODE (UPC)

VERBAND DER SACHVERSICHERE E.V. (VDS)
Approved for Fire Protective Service

VETERANS AFFAIRS (VA)
15000 Series

WATERMARK
Pending Approved for Potable Water Service (AU)

WRAS
Water Regulations Advisory Scheme (UK)

WSD
Pending Approved for Potable Water Service (HK)

97/23/EC

97/23/EC

Product Design and Testing

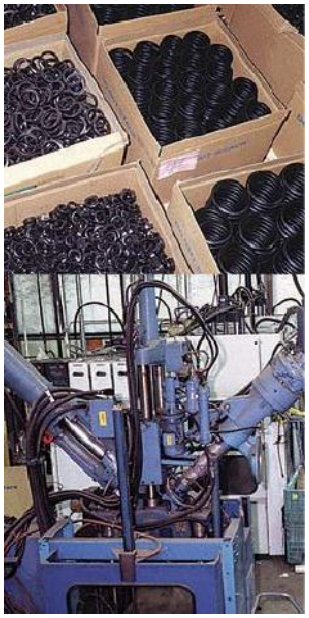
Pre-Manufactured/Product Design

All GRINNELL Mechanical Products are designed and tested at our state-of-the-art Research and Development Technology Center in Cranston, Rhode Island, USA.

Foundry and Assembly

Casting

GRINNELL castings poured at our foundry are made of ductile iron ASTM A536m, Grade 65-45-12. A rigorous quality control program monitors all steps of the manufacturing process. Samples are continuously tested chemically and physically to ensure all products meet our high material specifications.



Rubber Injection

We manufacture our gaskets using rubber injection presses and tooling to mold different types of rubber compounds specifically designed for the many applications required by our customers. Physical tests are performed on finished gasket samples to verify compliance with specifications including ASTM D 2000.

Paint Process

Using a computer controlled process, each product is spray-washed, dried, pre-heated, dipped, and fully cured prior to assembly or packaging. All integral parts are inspected to maintain consistent paint coverage and surface condition.

Tooling

Using product designs from our Research and Development Department, our pattern center and contracted pattern makers design and build patterns and molds that produce products to the highest tolerances. Tooling is continually inspected by our in-house certified specialists to ensure finished products meet our specifications and requirements of approving agencies.

ISO 9001:2000 Certified

LPCB

Certificate of Quality System Registration

TYCO FIRE & BUILDING PRODUCTS
Research & Development Center, 1467 Elmwood Avenue,
Cranston, RI 02910, USA

has complied with the requirements of the following:

ISO 9001:2008

and is authorised to use the LPCB mark on stationery and publications related to the following products and/or services

Research, design, development and manufacturing support for the fire protection equipment, pipe couplings, fittings, related piping system components and CPVC pipe and fitting manufactures of Tyco Fire & Building Products.

Tracie Hunter

T. A. HUNTER

for and on behalf of LPCB

LPCB

UKAS MANAGEMENT SYSTEMS 007

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obal Ltd and is issued subject to terms and conditions. It is maintained and held in force To check the validity of this certificate, please visit www.redbooklive.com or contact us.

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LPCB

Certificate of Quality System Registration

TYCO FLOW CONTROL (M) SDN. BHD.
(TYCO FIRE SUPPRESSION & BUILDING PRODUCTS, MALAYSIA)
Lot 886, C1 & C2, Jalan Subang 9, Taman Perindustrian Subang,
47500 Subang, Selangor, Malaysia

has complied with the requirements of the following:

ISO 9001:2008

and is authorised to use the LPCB mark on stationery and publications related to the following products and/or services

Assembly of couplings and marketing of couplings and fittings.

Tracie Hunter

T A Hunter

for and on behalf of LPCB

Certificate No: 673

Issue Number: 03

Date of Issue: 03 December 2010

Date of Expiry: 02 December 2013

LPCB

UKAS MANAGEMENT SYSTEMS 007

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GRINNELL Website

www.grinnell.com

To learn more about GRINNELL Mechanical Products, visit www.grinnell.com. Our Website provides a wide variety of tools and information at your fingertips.

Browse These Website Features

My Submittals Tab
This tool, useful in bidding, allows you to sign-up for a GRINNELL account. You can then create, save, print, and manage project submittals. Your account information is available 24/7 through our website.

Resources Tab
Useful for everyday operations, the Resources tab includes a conversion calculator to convert many units of measurement and a Product Cross Reference tool to search for GRINNELL Mechanical Product equivalents.

Literature Tab
The Literature tab showcases all marketing materials for viewing, downloading, or saving to your preferred location. Marketing literature includes catalogs, brochures, installation manuals, flyers, and price books.

Products Tab
The Products tab organizes all product information such as pricing, technical data, 3D CAD drawings, and part summary sheets. All product information is available for printing and saving to your preferred location. Searching for any product by name or figure number and downloading custom submittal sheets are also available through this tab.

Tech Data
The Tech Data icon provides direct access to technical information on all of our products. It also provides access to online registration for automatic e-mail updates.

GRINNELL Home Page

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 24" *(600mm)* 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.
- Backed by the industry's best 10-Year Limited Warranty, except for G-MINE which is 6 months. Review terms and conditions of sale on www.grinnell.com.

10 YEAR LIMITED WARRANTY

MATERIAL SPECIFICATIONS

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-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.

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 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 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 are Red 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 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 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 for copper tubing systems, have a Red and Copper stripped color code. For closed-loop heating systems from -30°F to 250°F (-34°C to 120°C) and potable water systems up to 180°F (up to 82°C). Recommended for use in low temperature and vacuum systems. They are not recommended for petroleum service.

Figure 772 Rigid Couplings

(Page 1 of 2)

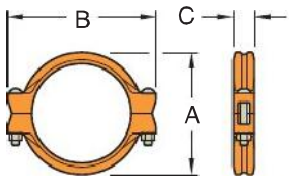
Tech Data Sheet: G141

10 YEAR LIMITED WARRANTY

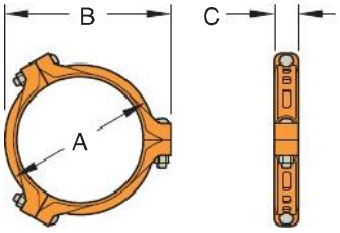
The GRINNELL Figure 772 Rigid Coupling provides a rigid joint by firmly gripping along the full 360° circumference of the pipe grooves. This coupling offers a dependable method of joining pipe and is an economical alternative to welding, threading, or using flanges. The GRINNELL Figure 772 Rigid Coupling is UL Listed for grounding and bonding, and is suitable for bonding systems with a maximum service entrance capacity of 200 amps. Sizes 1¼" – 8" *(32mm – 200mm)* feature a clamshell design that makes installation easier and faster.

UL FM

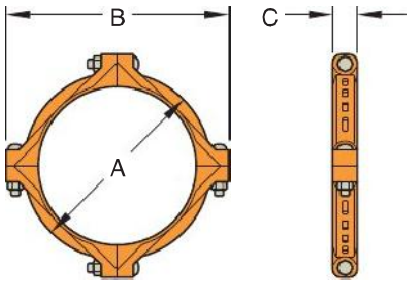
For additional listings or approvals, see page 11 or visit our website at www.grinnell.com



1¼" - 14" *(32mm - 350mm)*



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



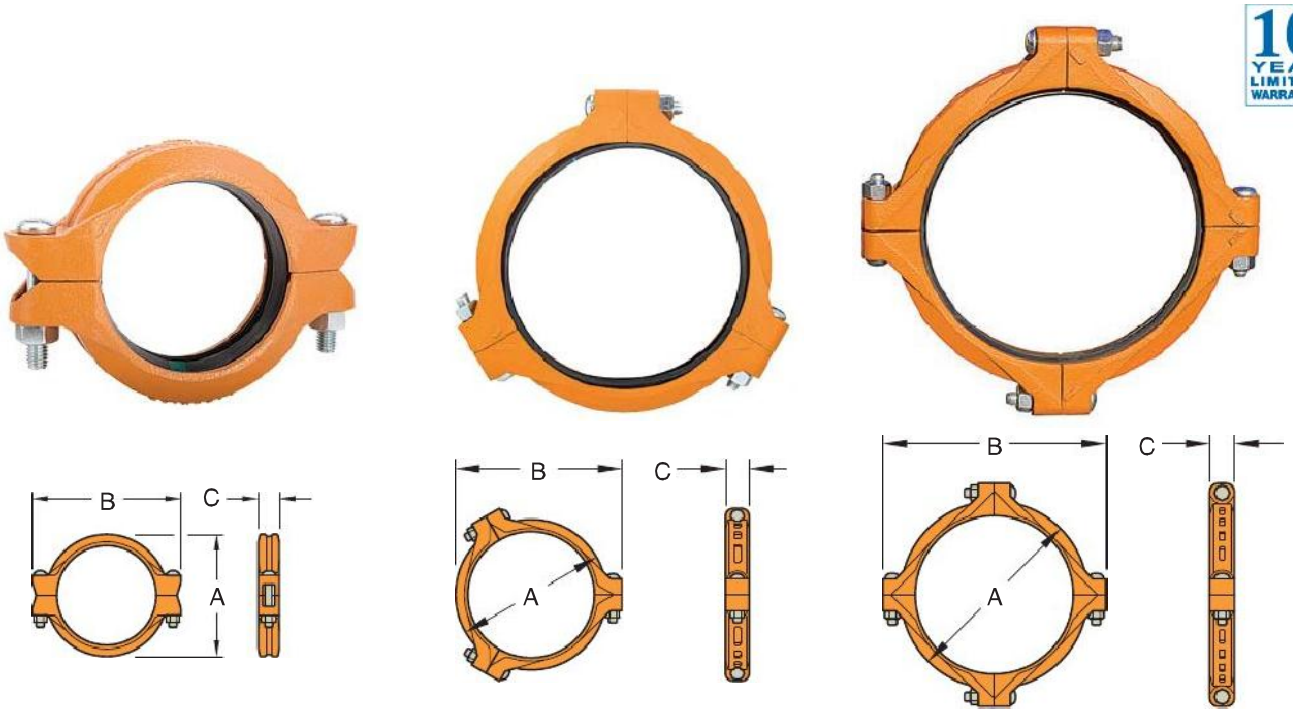
20" - 24" *(500mm - 600mm)*

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	1,623.2	0.06	2.75	4.38	1.81	2	⅜ x 2¼	2.0
32	*42,4*	*51,7*	*7,22*	*1,5*	*69,9*	*111,3*	*46,0*		*M10 x 57*	*0,9*
1½	1.900	750	2,126.5	0.08	3.00	4.62	1.81	2	⅜ x 2¼	2.2
40	*48,3*	*51,7*	*9,46*	*2,0*	*76,2*	*117,3*	*46,0*		*M10 x 57*	*1,0*
2	2.375	750	3,322.6	0.13	3.41	5.70	1.88	2	½ x 3	3.0
50	*60,3*	*51,7*	*14,78*	*3,3*	*86,6*	*145,0*	*47,8*		*M12 x 89*	*1,4*
2½	2.875	750	4,868.9	0.13	3.91	6.30	1.88	2	½ x 3	3.3
65	*73,0*	*51,7*	*21,66*	*3,3*	*99,3*	*160,0*	*47,8*		*M12 x 89*	*1,5*
76.1mm	3.000	750	5,301.4	0.13	4.19	6.43	2.00	2	-	3.4
65	*76,1*	*51,7*	*23,58*	*3,3*	*106,4*	*163,0*	*50,8*		*M12 x 89*	*1,5*
3	3.500	750	7,215.8	0.13	4.63	6.93	1.88	2	½ x 3	4.0
80	*88,9*	*51,7*	*32,10*	*3,3*	*117,6*	*176,0*	*47,8*		*M12 x 89*	*1,8*
4	4.500	750	11,928.2	0.19	5.81	8.07	1.97	2	½ x 3	4.6
100	*114,3*	*51,7*	*53,06*	*4,8*	*147,6*	*205,0*	*50,0*		*M12 x 89*	*2,1*
139.7mm	5.500	750	17,818.7	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	18,229.3	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	23,228.2	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	24,130.1	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	35,055.8	0.19	10.56	13.56	2.62	2	¾ x 4¾	16.9
200 ◗	*219,1*	*41,4*	*155,94*	*4,8*	*268,2*	*344,4*	*66,5*		*M20 x 121*	*7,7*

Figure 772 Rigid Couplings

Tech Data Sheet: G141

10 YEAR LIMITED WARRANTY



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**	**45,381.3**	**0.13**	**12.84**	**16.41**	**2.62**	**2**	**1 x 6½**	**25.9**
250◗	*273,0*	*34,5*	*201,87*	*3,3*	*326,1*	*416,8*	*66,5*		*M24 x 165*	*11,7*
12	**12.750**	**400**	**51,070.5**	**0.13**	**15.41**	**18.84**	**2.62**	**2**	**1 x 6½**	**35.4**
300◗	*323,9*	*27,6*	*227,17*	*3,3*	*391,4*	*478,5*	*66,5*		*M24 x 165*	*16,0*
14	**14.000**	**300**	**46,181.4**	**0.13**	**16.68**	**20.38**	**2.93**	**2**	**1 x 5½•**	**45.0**
350	*355,6*	*20,7*	*205,43*	*3,3*	*423,7*	*517,6*	*74,4*			*20,4*
16	**16.000**	**300**	**60,318.6**	**0.13**	**18.50**	**22.64**	**2.93**	**3**	**1 x 5½•**	**60.6**
400	*406,4*	*20,7*	*268,31*	*3,3*	*469,9*	*575,1*	*74,4*			*27,5*
18	**18.000**	**300**	**76,340.7**	**0.25**	**21.31**	**25.12**	**3.06**	**3**	**1 x 5½•**	**79.0**
450	*457,2*	*20,7*	*339,58*	*6,4*	*541,3*	*638,0*	*77,7*			*35,8*
20	**20.000**	**300**	**94,247.8**	**0.25**	**23.50**	**27.88**	**3.06**	**4**	**1⅛ x 5¾•**	**97.0**
500	*508,0*	*20,7*	*419,23*	*6,4*	*596,9*	*708,2*	*77,7*			*44,0*
24	**24.000**	**250**	**113,097.3**	**0.25**	**27.63**	**32.00**	**3.19**	**4**	**1⅛ x 5¾•**	**120.0**
600	*609,6*	*17,2*	*503,08*	*6,4*	*701,8*	*812,8*	*81,0*			*54,4*

* 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 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 191 - 198 for gasket information.

Figure 707 Heavy Duty Flexible Couplings

(Page 1 of 2)

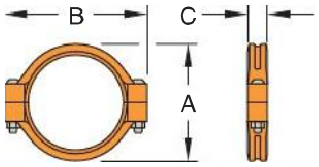
Tech Data Sheet: G130

10 YEAR LIMITED WARRANTY

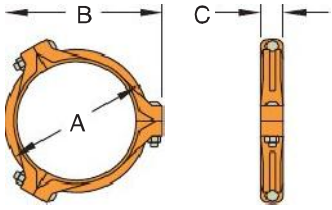
The GRINNELL Figure 707 Heavy Duty Flexible Coupling allows for angular and linear deflection, thermal expansion and contraction, and misalignments of the pipe. Flexible couplings can act as an "expansion joint", allowing linear and angular movement of the pipes when properly installed. This coupling 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.

UL FM

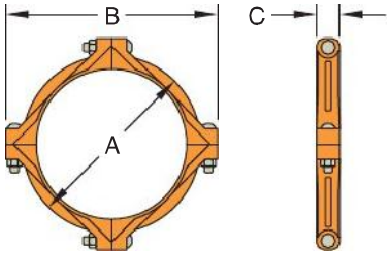
For additional listings or approvals, see page 11 or visit our website at www.grinnell.com



1" - 12" *(25mm - 300mm)*



14" - 18" *(350mm - 450mm)*



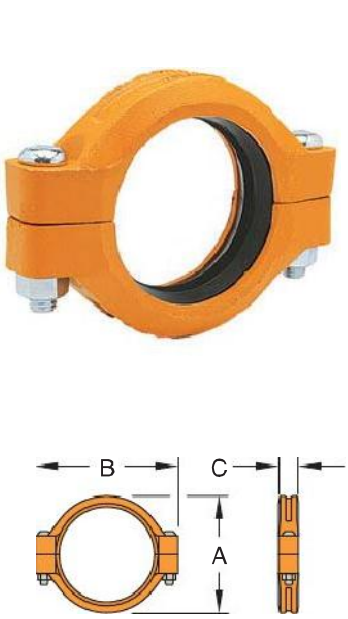
20" - 24" *(500mm - 600mm)*

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	0.13	5° 26'	1.14	2.38	4.00	1.81	2	½ x 3	2.0
25	33,7	68,9	6,10	3,3		98,4	60,5	101,6	46,0		M12 x 89	0,9
1¼	1.660	1000	2,164.9	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 89	1,0
1½	1.900	1000	2,835.3	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 89	1,1
2	2.375	1000	4,430.1	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 89	1,4
2½	2.875	1000	6,491.8	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 89	1,6
76.1mm	3.000	1000	7,068.6	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 89	1,8
3	3.500	1000	9,621.1	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 89	1,8
4	4.500	1000	15,904.3	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	23,758.3	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		43,6	178,3	254,0	51,8		M20 x 121	3,8
5	5.563	1000	24,305.7	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		45,1	179,8	254,0	52,3		M20 x 121	4,5
165.1mm	6.500	1000	33,183.1	0.25	2° 12'	0.46	8.19	11.25	2.06	2		12.0
150	165,1	68,9	147,61	6,4		38,4	208,0	285,8	52,3		M20 x 121	5,4
6	6.625	1000	34,471.6	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		37,8	210,8	285,8	52,3		M20 x 121	5,0
8	8.625	800	46,741.0	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

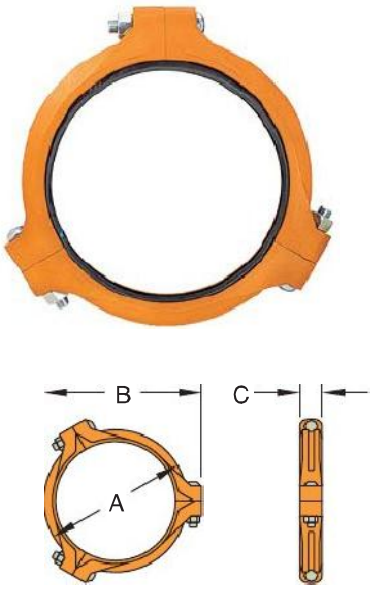
Figure 707 Heavy Duty Flexible Couplings

Tech Data Sheet: G130

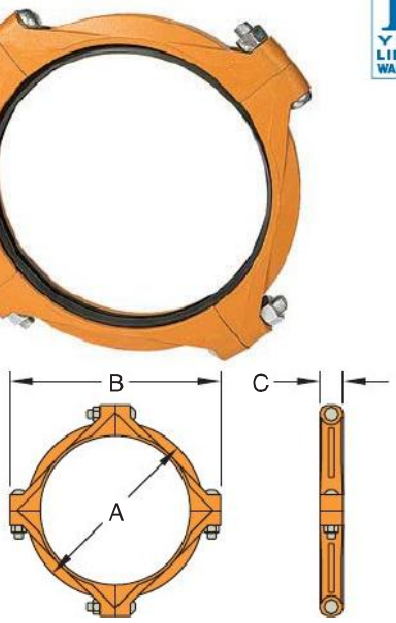
10 YEAR LIMITED WARRANTY



1" - 12" *(25mm - 300mm)*



14" - 18" *(350mm - 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**	**72,610.1**	**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**	**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*		*19,5*	*390,9*	*478,5*	*66,8*		*M24 x165*	*16,8*
14	**14.000**	**300**	**46,181.4**	**0.25**	**1° 2'**	**0.22**	**16.67**	**20.38**	**2.94**	**3**	**1 x 5½•**	**46.0**
350	*355,6*	*20,7*	*205,43*	*6,4*		*18,0*	*423,4*	*517,7*	*74,7*			*20,9*
16	**16.000**	**300**	**60,318.6**	**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**	**76,340.7**	**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*		*14,0*	*541,3*	*638,0*	*77,7*			*35,4*
20	**20.000**	**300**	**94,247.8**	**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**	**250**	**113,097.3**	**0.25**	**0° 36'**	**0.13**	**27.58**	**32.00**	**3.19**	**4**	**1⅛ x 5¾•**	**112.0**
600	*609,6*	*17,2*	*503,08*	*6,4*		*10,5*	*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.

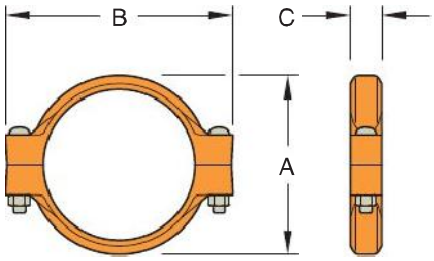
See page 17 for coupling specifications and pages 191 - 198 for gasket information.

Figure 705 Flexible Couplings

Tech Data Sheet: G110

10 YEAR LIMITED WARRANTY

The GRINNELL Figure 705 Flexible Coupling allows for angular and linear deflection, thermal expansion and contraction, and misalignments of pipe. It is capable of pressures up to 500 psi *(34,5 bar)*, depending on pipe size and wall thickness. Suitable for use in a variety of applications, the GRINNELL Figure 705 Coupling provides a dependable method of joining pipe.



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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*	
1	1.315	300	410.0	0.13	5° 30'	1.16	2.24	3.94	1.81	2	⅜ x 1¾	1.3
25	*33.7*	*20,1*	*1,86*	*3,3*		*96,7*	*56,9*	*100,1*	*46,0*		*M10 x 44*	*0,6*
1¼	1.660	500	1,082.1	0.13	4° 19'	0.90	2.56	4.19	1.81	2	⅜ x 2¼	1.8
32	*42,4*	*34,5*	*4,81*	*3,3*		*75,0*	*65,0*	*106,4*	*46,0*		*M10 x 57*	*0,8*
1½	1.900	500	1,417.6	0.13	3° 46'	0.79	2.75	4.44	1.81	2	⅜ x 2¼	1.8
40	*48,3*	*34,5*	*6,30*	*3,3*		*65,8*	*69,9*	*112,8*	*46,0*		*M10 x 57*	*0,8*
2	2.375	500	2,215.1	0.13	3° 1'	0.63	3.25	4.88	1.88	2	⅜ x 2¼	1.8
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	3,245.9	0.13	2° 29'	0.52	3.69	5.50	1.88	2	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	3,534.3	0.13	2° 23'	0.50	4.00	5.75	1.88	2	–	3.1
65	*76,1*	*34,5*	*15,72*	*3,3*		*41,7*	*101,6*	*146,10*	*47,8*		*M12 x 89*	*1,4*
3	3.500	500	4,810.6	0.13	2° 3'	0.43	4.38	6.50	1.88	2	½ x 3	3.3
80	*88,9*	*34,5*	*21,39*	*3,3*		*35,8*	*111,3*	*165,1*	*47,8*		*M12 x 89*	*1,5*
4	4.500	500	7,952.2	0.25	3° 11'	0.67	5.69	7.75	2.06	2	½ x 3	4.0
100	*114,3*	*34,5*	*35,35*	*6,4*		*55,6*	*144,5*	*196,9*	*52,3*		*M12 x 89*	*1,8*
139.7mm	5.500	450	10,691.2	0.25	2° 36'	0.55	6.81	9.75	2.06	2	–	6.6
125	*139,7*	*31*	*47,56*	*6,4*		*45,5*	*173,0*	*247,7*	*52,3*		*M16 x 83*	*3,0*
5	5.563	450	10,937.6	0.25	2° 35'	0.54	6.88	9.75	2.06	2	⅝ x 3¼	6.6
125	*141,3*	*31*	*48,63*	*6,4*		*45,0*	*174,8*	*247,7*	*52,3*		*M16 x 83*	*3,0*
165.1mm	6.500	450	14,932.4	0.25	2° 12'	0.46	7.75	10.69	2.06	2	–	7.0
150	*165,1*	*31*	*66,36*	*6,4*		*38,3*	*196,9*	*271,5*	*52,3*		*M16 x 83*	*3,2*
6	6.625	450	15,512.2	0.25	2° 10'	0.45	7.94	10.69	2.06	2	⅝ x 3¼	7.0
150	*168,3*	*31*	*68,97*	*6,4*		*37,8*	*201,7*	*271,5*	*52,3*		*M16 x 83*	*3,2*
8	8.625	450	26,291.8	0.25	1° 40'	0.35	10.19	13.56	2.50	2	¾ x 4¾	11.8
200◗	*219,1*	*31*	*116,89*	*6,4*		*29,2*	*258,8*	*344,4*	*63,5*		*M20 x 121*	*5,4*
10	10.750	350	31,766.9	0.25	1° 20'	0.28	12.69	16.38	2.63	2	1 x 6½	26.8
250◗	*273,0*	*24,1*	*141,31*	*6,4*		*23,3*	*322,3*	*416,1*	*66,8*		*M24 x 165*	*12,2*
12	12.750	350	44,686.7	0.25	1° 7'	0.23	14.94	18.88	2.63	2	1 x 6½	32.2
300◗	*323,9*	*24,1*	*198,78*	*6,4*		*19,5*	*379,5*	*479,6*	*66,8*		*M24 x 165*	*14,6*

* 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.

* Maximum available gap between pipe ends. Minimum gap = 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 17 for coupling specifications and pages 191 - 198 for gasket information.

Figure 770 High Pressure Rigid Couplings

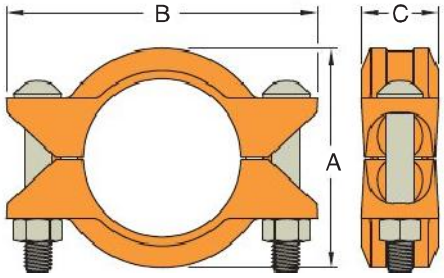
Tech Data Sheet: G138

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.

10 YEAR LIMITED WARRANTY

Additional Features:

- Full 360° gripping of the groove circumference provides a strong rigid connection.
- Tongue-and-groove design simplifies installation.
- Backed by the industry's best 10-Year Limited Warranty.



Pipe Size		Max.† Pressures psi *bar*	Max.† End Load Lbs. *kN*	Max.*‡ End Gap Inches *mm*	Dimensions - Inches *mm*			Coupling Bolts		Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*				A	B	C	Qty.	Size Inches *mm*	
2	2.375	1000	4,430.1	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	6,491.8	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	9,621.1	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	15,904.3	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	34,471.6	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	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	72,610.1	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	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.

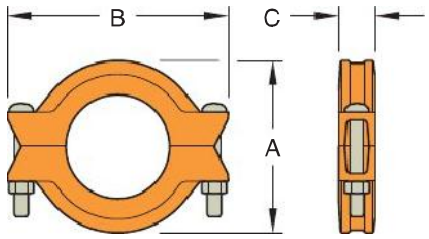
See page 17 for coupling specifications and pages 191 - 198 for gasket information.

Figure 716 Flexible Reducing Couplings

Tech Data Sheet: G120

10 YEAR LIMITED WARRANTY

The GRINNELL Figure 716 Flexible Reducing Coupling allows for 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. A flexible reducing coupling is not recommended for low-temperature applications.



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

Pipe Size		Max.† Pressures	Max.† End Load	Max.*‡ End Gap	Deflection ‡		Dimensions Inches *mm*			Coupling Bolts		Approx. Weight Lbs.
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*
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	2.8
50 x 40	*60,3 x 48,3*	*34,5*	*6,31*	*3,3*		*32,9*	*88,9*	*128,5*	*47,8*		*M10 x 57*	*1,3*
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	3.3
65 x 50	*73,0 x 60,3*	*34,5*	*9,85*	*3,3*		*27,1*	*101,6*	*139,7*	*47,8*		*M120 x 57*	*1,5*
76.1 x 2	3.000 x 2.375	500	2,215.1	0.13	1° 34'	0.33	4.19	5.88	1.88	2		3.3
65 x 50	*76,1 x 60,3*	*34,5*	*9,85*	*3,3*		*27,3*	*106,4*	*149,4*	*47,8*		*M12 x 89*	*1,5*
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	4.3
80 x 50	*88,9 x 60,3*	*34,5*	*9,85*	*3,3*		*22,4*	*119,1*	*165,1*	*47,8*		*M12 x 89*	*2,0*
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	3.9
80 x 65	*88,9 x 73,0*	*34,5*	*14,44*	*3,3*		*22,4*	*119,1*	*165,1*	*47,8*		*M12 x 89*	*1,8*
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*		*22,4*	*119,1*	*165,1*	*47,8*		*M12 x 89*	*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	5.2
100 x 60	*114,3 x 60,3*	*34,5*	*9,85*	*4,8*		*46,0*	*152,4*	*206,5*	*50,8*		*M16 x 83*	*2,4*
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	6.7
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*	*3,0*
114,3 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		6.2
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*	*2,8*
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*	*4,4*
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	9.6
125 x 100	*141,3 x 114,3*	*34,5*	*35,37*	*6,4*		*36,4*	*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		12.8
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*	*5,8*
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	12.8
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*	*5,8*
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	13.8
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*	*6,3*
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	20.0
200 x 150	*219,1 x 168,3*	*27,6*	*61,33*	*6,4*		*21,0*	*271,5*	*349,3*	*57,2*		*M22 x 165*	*9,1*

* 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 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 191 - 198 for gasket information.

Figure 780 Grooved Snap Couplings

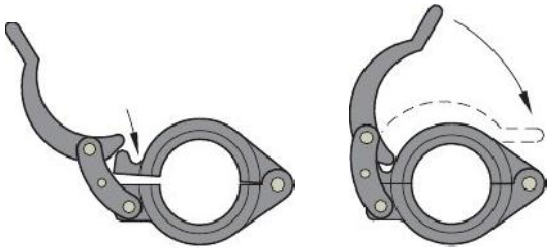
Tech Data Sheet: G145

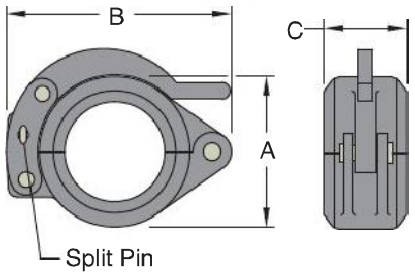
10 YEAR LIMITED WARRANTY

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 inches (DN125 to DN200) feature a cross-ribbed housing design for extra strength.
- Rated for pressures up to 300 psi (20,7 bar).
- Backed by the industry's best 10-Year Limited Warranty.





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*	
1½	1.900	300	851	0.06	2.95	4.65	1.85	3° 48'	0.80	2.2
40	*48,3*	*20,1*	*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*	*20,1*	*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*	*20,1*	*8,7*	*1,6*	*92,0*	*150,0*	*48,0*		*43,7*	*1,4*
76,1	3.000	300	2,121	0.06	3.62	5.91	1.89	2° 24'	0.50	3.1
65	*76,1*	*20,1*	*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*	*20,1*	*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*	*20,1*	*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*	*20,1*	*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*	*20,1*	*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*	*20,1*	*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*	*20,1*	*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*	*20,1*	*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 191 - 198 for gasket information.

Figure 702 Mechanical Outlet Couplings

(Page 1 of 2)

Tech Data Sheet: G220

10 YEAR LIMITED WARRANTY

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 1-½" to 6" *(40mm - 150mm)*
- Rated for pressures up to 500 psi *(34,5 bar)*
- Suitable for vacuum service up to 10" HG *(254mm HG)*

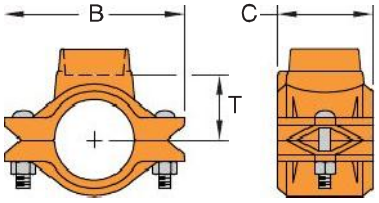


Figure 702
Outlet Coupling with Female NPT Outlet

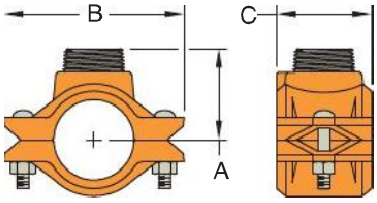


Figure 702
Outlet Coupling with Male NPT Outlet

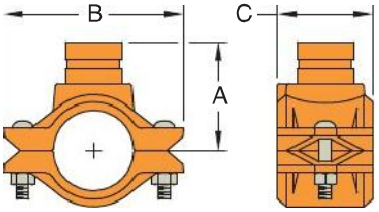


Figure 702
Outlet Coupling with Grooved Outlet

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	–	–	–	0.81-0.88	1418 *6,3*	–	4.50	2.75	2.06	⅜ x 2⅛ •	2.6
		21,3	–	–	–	*20-22*		–	*114,3*	*70,0*	*52,0*		*1,2*
		¾	–	–	–	0.81-0.88		–	4.50	2.75	2.06		2.6
		26,7	–	–	–	*20-22*		–	*114,3*	*70,0*	*52,0*		*1,2*
		1	–	–	–	0.81-0.88		–	4.50	2.75	1.94		2.9
		33,7	–	–	–	*20-22*		–	*114,3*	*70,0*	*49,0*		*1,3*
2 *50*	2.375 *60,3*	½	–	–	–	0.81-0.88	2215 *9,9*	–	5.00	2.75	2.32	⅜ x 2⅛ •	3.1
		21,3	–	–	–	*20-22*		–	*127,0*	*70,0*	*59,0*		*1,4*
		¾	–	–	–	0.81-0.88		–	5.00	2.75	2.32		3.1
		26,7	–	–	–	*20-22*		–	*127,0*	*70,0*	*59,0*		*1,4*
		1	1	1	1.315	0.81-0.88		3.50	5.00	2.75	2.20		3.3
		33,7	*33,7*	*25*	*33,7*	*20-22*		*89,0*	*127,0*	*70,0*	*56,0*		*1,5*
2½ *65*	2.875 *73,0*	½	–	–	–	1.25-1.50	3246 *14,4*	–	6.33	3.25	2.20	½ x 2⅜ •	4.8
		21,3	–	–	–	*32-38*		–	*161,0*	*83,0*	*56,0*		*2,2*
		¾	–	–	–	1.25-1.50		–	6.33	3.25	2.56		4.6
		26,7	–	–	–	*32-38*		–	*161,0*	*83,0*	*65,0*		*2,1*
		1	–	–	–	1.25-1.50		–	6.33	3.25	2.44		4.4
		33,7	–	–	–	*32-38*		–	*161,0*	*83,0*	*62,0*		*2,2*
		–	1¼	1¼	1.660	1.25-1.50		3.70	6.33	3.25	–		5.1
		–	*42,4*	*32*	*42,4*	*32-38*		*94,0*	*161,0*	*83,0*	–		*2,3*
		–	1½	1½	1.900	1.25-1.50		3.70	6.33	3.25	–		5.9
		–	*48,3*	*40*	*48,3*	*32-38*		*94,0*	*161,0*	*83,0*	–		*2,4*

Figure 702 Mechanical Outlet Couplings

Tech Data Sheet: G220

10 YEAR LIMITED WARRANTY

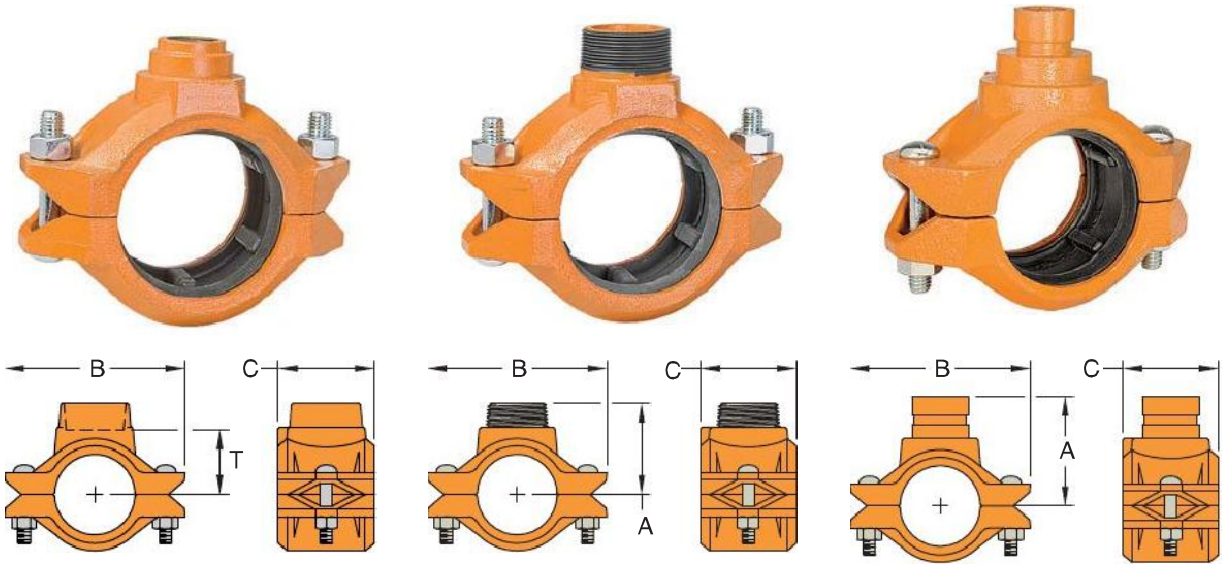


Figure 702
Outlet Coupling with Female NPT Outlet

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	3.500	¾	–	–	–	1.25-1.50	21.4	–	6.87	3.25	2.83	½ x 3 •	5.9
80	*88,9*	*26,7*	*–*	*–*	*–*	*32-38*	*4811*	*–*	*175,0*	*83,0*	*72,0*		*2,4*
		1	1	1	1.315	1.25-1.50		4.00	6.87	3.25	2.75		6.2
		33,7	*33,4*	*25*	*33,7*	*32-38*		*102,0*	*175,0*	*83,0*	*70,0*		*2,8*
		–	1½	1½	1.900	1.25-1.50		4.00	6.87	3.25	–		6.4
		–	*48,3*	*40*	*48,3*	*32-38*		*102,0*	*175,0*	*83,0*	*–*		*2,9*
4	4.500	¾	–	–	–	1.63-1.81	35.4	–	8.31	3.66	3.70	⅝ x 3½ •	9.2
100	*114,3*	*26,7*	*–*	*–*	*–*	*41-46*	*7952*	*–*	*211,0*	*93,0*	*94,0*		*4,2*
		1	–	–	–	1.63-1.81		–	8.31	3.66	3.58		9.5
		33,7	*–*	*–*	*–*	*41-46*		*–*	*211,0*	*93,0*	*91,0*		*4,3*
		1½	1½	1½	1.900	1.63-1.81		4.88	8.31	3.66	3.31		9.5
		48,3	*48,3*	*40*	*48,3*	*41-46*		*124,0*	*211,0*	*93,0*	*84,0*		*4,3*
		–	2	2	2.375	1.63-1.81		4.88	8.31	3.66	–		9.9
		–	*60,3*	*50*	*60,3*	*41-46*		*124,0*	*211,0*	*93,0*	*–*		*4,5*
6	6.625	–	–	–	–	1.63-1.81	76.7	–	10.86	3.70	–	⅝ x 3½ •	13.2
150	*168,3*	*–*	*–*	*–*	*–*	*41-46*	*17,235*	*–*	*276,0*	*94,0*	*–*		*6,0*
		1	–	–	–	1.63-1.81		–	10.86	3.70	4.76		13.2
		33,7	*–*	*–*	*–*	*41-46*		*–*	*276,0*	*94,0*	*121,0*		*6,0*
		1½	1½	1½	1.900	1.63-1.81		6.06	10.86	3.70	4.76		13.6
		48,3	*48,3*	*40*	*48,3*	*41-46*		*154,0*	*276,0*	*94,0*	*121,0*		*6,2*
		–	2	2	2.375	1.63-1.81		6.06	10.86	3.70	–		14.3
		–	*60,3*	*50*	*60,3*	*41-46*		*154,0*	*276,0*	*94,0*	*–*		*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 191 - 198 for gasket information.

Figure 71 Flange Adapters
(ANSI Class 125/150)

(Page 1 of 2)

Tech Data Sheet: G150

10 YEAR LIMITED WARRANTY

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.

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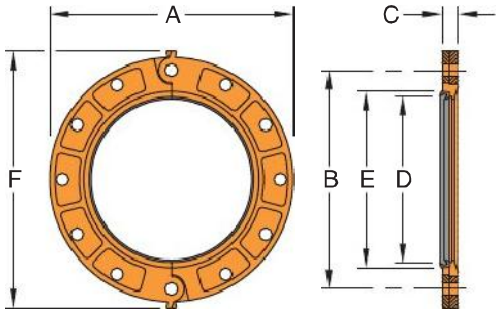
For additional listings or approvals, see page 11 or visit our website at www.grinnell.com



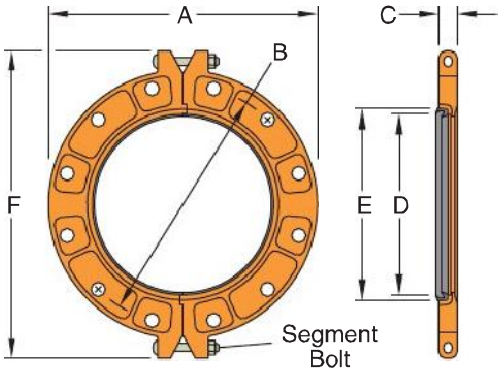
Sizes 2" - 12" *(50mm - 300mm)*

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.	Bolt Torque Range Lbs.-ft. *Nm*	
2	2.375	300	1,324	6.38	4.75	0.75	2.38	3.41	7.25	5/8 x 3	4	110-140	4.1
50	60,3	20,7	5889	162,1	120,7	19,1	60,5	86,6	184,2			149-190	1,9
2½	2.875	300	1,948	7.00	5.50	0.88	2.88	3.91	7.88	5/8 x 3	4	110-140	5.4
65	73,0	20,7	8665	178,0	140,0	22,0	73,0	99,0	200,0			149-190	2,4
76,1mm	3.000	300	2,121	7.28	5.71	0.88	3.00	4.03	8.08	5/8 x 3	4	110-140	5.8
65	76,1	20,7	9435	184,9	145,0	22,0	76,1	102,4	205,2			149-190	2,6
3	3.500	300	2,886	7.50	6.00	0.94	3.50	4.53	9.88	5/8 x 3	4	110-140	6.0
80	88,9	20,7	12,838	190,5	152,4	23,9	88,9	115,1	251,0			149-190	2,7
4	4.500	300	4,771	9.00	7.50	0.94	4.50	5.53	9.90	5/8 x 3	8	110-140	8.1
100	114,3	20,7	21,222	228,6	190,5	23,9	114,3	140,5	251,5			149-190	3,7
139,7mm	5.500	300	7,127	9.84	8.27	1.00	5.50	6.66	10.64	¾ x 3½	8	220-250	9.2
125	139,7	20,7	31,702	249,9	210,1	25,4	139,7	169,2	270,3			298-339	4,2
5	5.563	300	7,292	10.00	8.50	1.00	5.56	6.72	11.38	¾ x 3½	8	220-250	9.2
125	141,3	20,7	32,436	254,0	215,9	25,4	141,2	170,7	289,1			298-339	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	220-250	11.0
150	165,1	20,7	44,282	285,0	240,6	25,4	165,1	194,6	307,3			298-339	5,0
6	6.625	300	10,341	11.00	9.50	1.00	6.62	7.78	11.88	¾ x 3½	8	220-250	10.5
150	168,3	20,7	45,999	279,4	241,3	25,4	168,1	197,6	301,8			298-339	4,8
8	8.625	300	17,528	13.50	11.75	1.13	8.62	9.94	14.38	¾ x 3½	8	220-250	16.2
200	219,1	20,7	77,968	342,9	298,5	28,7	218,9	252,5	365,3			298-339	7,3
10	10.750	300	27,229	16.00	14.25	1.19	10.75	12.31	16.88	⅞ x 4	12	320-400	20.7
250	273,0	20,7	121,121	406,4	362,0	30,2	273,1	312,7	428,8			434-542	9,4
12	12.750	300	38,303	19.00	17.00	1.25	12.75	14.31	20.00	⅞ x 4	12	320-400	31.8
300	323,9	20,7	170,380	482,6	431,8	31,8	323,9	363,5	508,0			434-542	14,4

Figure 71 Flange Adapters
(ANSI Class 125/150)

Tech Data Sheet: G150

10 YEAR LIMITED WARRANTY



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.	Bolt Torque Range Lbs.-ft. Nm	
14**	14.000	300	46,181	21.00	18.76	1.44	14.00	15.03	24.00	1 x 4¼ •	12	360-520	46.7
350	355,6	20,7	205,423	533,4	476,5	36,5	355,6	381,8	609,6			488-705	21,2
16**	16.000	300	60,315	23.50	21.26	1.50	16.00	17.00	26.50	1 x 4¼ •	16	360-520	59.0
400	406,4	20,7	268,294	596,9	540,0	38,10	406,4	431,7	673,1			488-705	26,8
18**	18.000	300	76,455	25.00	22.76	1.63	18.00	19.01	29.00	1⅛ x 4¾ •	16	450-725	62.5
450	457,2	20,7	340,089	635,0	578,1	41,3	457,2	482,8	736,6			610-982	28,3
20**	20.000	300	94,245	27.50	25.00	1.75	20.00	21.03	31.50	1⅛ x 4¾ •	20	450-725	73.3
500	508,0	20,7	419,223	698,5	635,0	44,5	508,0	534,2	800,1			610-982	33,2
24**	24.000	250	135,720	32.00	29.50	1.93	24.00	25.05	36.00	1¼ x 5½ •	20	620-1000	100.6
600	609,6	17,2	603,713	812,8	749,3	49,0	609,6	636,3	914,4			841-1356	45,6

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

** For segment bolt torque recommendations, refer to Table A below.

• 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 191 - 198 for gasket information.
See page 33 for Flange Adapter Washers and page 226 Flange Drilling Specifications.

TABLE A SEGMENT BOLT TORQUE

Pipe Size		Segment Bolts	
Nominal Inches mm	O.D. Inches mm	Size - Dia. x Lg Inches mm	Bolt Torque Range Lbs.-ft. Nm
14	14.000	⅝ x 4¾ –	100-130 149-190
350	355,6		
16	16.000		
400	406,4		
18	18.000	¾ x 4¾ –	130-180 176-244
450	457,2		
20	20.000		
500	508,0		
24	24.000		
600	609,6		

Figure 71 Flange Adapters

(PN10/PN16)

(Page 1 of 2)

Tech Data Sheet: G150

10 YEAR LIMITED WARRANTY

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.

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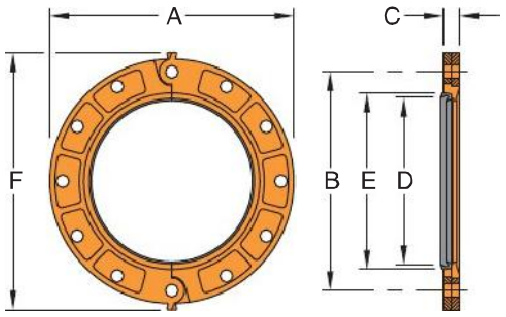
For additional listings or approvals, see page 11 or visit our website at www.grinnell.com



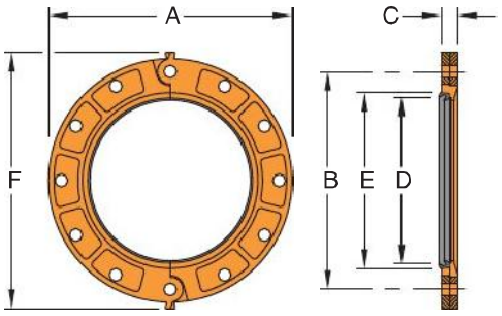
Sizes 2" - 12" *(50mm - 300mm)*

Pipe Size		PN10/ PN16	Max † End Load Lbs. *N*	Dimensions - Inches *mm*						Recommended Flange Mating Bolts ‡			Approx. Wt. kg *Lbs*
Nominal Inches *mm*	O.D. Inches *mm*			A	B	C	*D	*E	F	Size Dia. x Lg Inches *mm*	Qty.	Bolt Torque Range Nm	
2	2.375	PN10 / PN16	1,324	6.38	4.92	0.75	2.38	3.41	7.25		4	110-140	4.0
50	60,3		5889	162,1	125,0	19,1	60,5	86,6	184,2	M16 x 76		149-190	1,8
2½	2.875	PN10 / PN16	1,948	7.00	5.50	0.88	2.88	3.91	5.13		4	110-140	5.4
65	73,0		8665	177,8	139,7	22,4	73,6	99,3	130,3	M16 x 76		149-190	2,4
76,1mm	3.000	PN10	1,948	7.28	5.71	0.88	3.00	4.03	8.09		4	110-140	5.7
65**	76,1		8665	184,9	145,0	22,4	76,1	102,4	205,5	M16 x 76		149-190	2,6
76,1mm	3.000	PN16	1,948	7.28	5.70	0.88	3.00	4.03	8.08		4	110-140	5.6
65**	76,1		8665	184,9	144,8	22,4	76,1	102,4	205,2	M16 x 76		149-190	2,5
3**	3.500	PN10	2,886	7.26	5.76	0.94	3.50	4.53	7.86		4	110-140	5.4
80	88,9		12,838	184,4	146,3	23,9	88,9	115,1	199,6	M16 x 76		149-190	2,4
3**	3.500	PN16	2,886	7.88	6.30	0.94	3.50	4.53	8.76		8	110-140	5.6
80	88,9		12,838	200,2	160,0	23,9	88,9	115,1	222,5	M16 x 76		149-190	2,5
4**	4.500	PN10	4,771	8.50	7.00	0.94	4.50	5.53	9.26		8	110-140	7.8
100	114,3		21,222	215,9	177,8	23,9	114,3	140,5	235,2	M16 x 76		149-190	3,5
4**	4.500	PN16	4,771	8.66	7.09	0.94	4.50	5.53	9.43		8	110-140	8.0
100	114,3		21,222	219,9	180,1	23,9	114,3	140,5	239,5	M16 x 76		149-190	3,6
139,7mm	5.500	PN10	7,292	9.84	8.27	1.00	5.50	6.53	10.69		8	110-140	9.2
125**	139,7		32,436	249,9	210,1	25,4	139,7	165,9	271,5	M16 x 89		149-190	4,2
139,7mm	5.500	PN16	7,127	9.84	8.26	1.00	5.50	6.66	12.22		8	110-140	9.2
125**	139,7		31,702	249,9	209,8	24,5	139,7	169,2	310,4	M16 x 89		149-190	4,2
165,1mm	6.500	PN10	9,955	11.00	9.26	1.00	6.50	7.66	11.76		8	220-250	10.4
150**	165,1		44,282	279,4	234,2	24,5	165,1	194,6	298,7	M20 x 89		298-339	4,7
165,1mm	6.500	PN16	9,955	11.22	9.46	1.00	6.50	7.66	12.10		8	220-250	10.5
150**	165,1		44,282	285,0	240,3	24,5	165,1	194,6	307,3	M20 x 89		298-339	4,8
6	6.625	PN10 / PN16	17,528	11.00	9.49	1.00	6.62	7.78	11.88		8	220-250	10.6
150	168,3		77,968	279,4	241,1	25,4	168,1	197,6	301,8	M20 x 89		298-339	4,8

Figure 71 Flange Adapters
(PN10/PN16)

Tech Data Sheet: G150

10 YEAR LIMITED WARRANTY



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

Pipe Size		PN10/ PN16	Max † End Load Lbs. *N*	Dimensions - Inches *mm*						Recommended Flange Mating Bolts ‡			Approx. Wt. kg *Lbs*
Nominal Inches *mm*	O.D. Inches *mm*			A	B	C	*D	*E	F	Size Dia. x Lg Inches *mm*	Qty.	Bolt Torque Range Nm	
8**	8.625	PN10	17,528	13.26	11.50	1.125	8.62	9.94	14.12		8	220-250	15.4
200	*219,1*		*77,968*	*336,8*	*292,1*	*28,6*	*218,9*	*254,5*	*358,6*	*M20 x 89*		*298-339*	*6,9*
8**	8.625	PN16	17,528	13.38	11.62	1.125	8.62	9.94	14.28		12	220-250	16.6
200	*219,1*		*77,968*	*339,8*	*295,1*	*28,6*	*218,9*	*254,5*	*362,7*	*M20 x 89*		*298-339*	*7,5*
10**	10.750	PN10	27,229	15.56	13.78	1.188	10.75	12.31	16.50		12	220-250	21.2
250	*273,0*		*121,121*	*395,2*	*350,0*	*30,2*	*273,1*	*312,4*	*419,1*	*M20 x 102*		*298-339*	*9,6*
10**	10.750	PN16	38,303	16.00	13.98	1.188	10.75	12.31	16.88		12	320-400	22.5
250	*273,0*		*170,380*	*406,4*	*355,1*	*30,2*	*273,1*	*312,7*	*428,8*	*M22 x 102*		*434-542*	*10,2*
12**	12.750	PN10	38,303	17.52	15.74	1.25	12.75	14.31	18.52		12	320-400	24.8
300	*323,9*		*170,380*	*445,0*	*399,8*	*31,8*	*323,9*	*363,5*	*470,4*	*M22 x 102*		*434-542*	*11,2*
12**	12.750	PN16	38,303	18.12	16.14	1.25	12.75	14.31	19.14		12	320-400	28.9
300	*323,9*		*170,380*	*460,2*	*410,0*	*31,8*	*323,9*	*363,5*	*486,2*	*M22 x 102*		*434-542*	*13,1*

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 191 - 198 for gasket information.
See page 33 for Flange Adapter Washers and page 226 Flange Drilling Specifications.

Figure 71 Flange Adapters

(AS2129 Table E)

Tech Data Sheet: G150

10 YEAR LIMITED WARRANTY

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.

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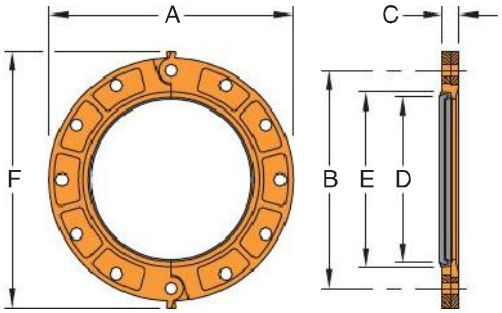
For additional listings or approvals, see page 11 or visit our website at www.grinnell.com



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.	Bolt Torque Range Nm	
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*		*149-190*	*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*		*149-190*	*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*		*298-339*	*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*		*298-339*	*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 191 - 198 for gasket information.

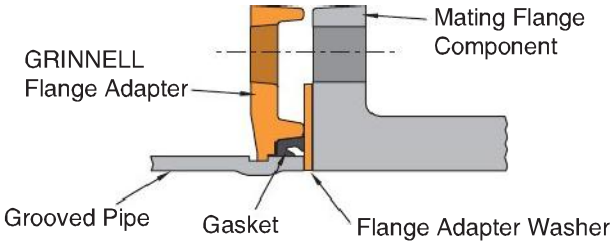
See page 33 for Flange Adapter Washers and page 226 Flange Drilling Specifications.

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:

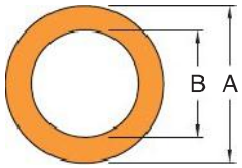
- Rubber surfaces
- Adapting to AWWA cast flanges
- Rubber faced wafer valves
- Serrated flange surfaces

Contact GRINNELL Mechanical Products for additional information.



MATERIAL 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 ASTMA666 Type 304-2B. Contact GRINNELL Mechanical Products.

See Flange Drilling Specifications on page 226.

Coupling Installation Information

Tech Data Sheet: G900
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.grinnell.com.

Bolt Torque

Bolt Size ANSI Inches	Bolt Torque Range Ft.- Lbs.
3/8	30-40
1/2	90-110
5/8	100-130
3/4	150-200
7/8	180-220
1	200-250
1 1/8	225-275

Bolt Size Metric	Bolt Torque Range Nm
M10	*40-60*
M12	*120-150*
M16	*135-175*
M20	*200-270*
M22	*245-300*
M24	*270-340*

⚠ 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 201 to 203 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)*

Grooved Fittings Table of Contents

GRINNELL Grooved Fittings in ductile iron and fabricated steel provide an economical and efficient method of changing direction, adding an outlet, and reducing or capping piping systems.

GRINNELL Grooved Fittings are rated at the pressure rating of the coupling in use.

Fittings Specifications

Tech Data Sheet: G180

10 YEAR LIMITED WARRANTY

MATERIAL SPECIFICATIONS

Ductile Iron Fitting 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

Fabricated Steel 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 *(.375)*

Coatings

- Orange – Non-lead paint (standard)
- Red – Non-lead paint (Optional, Regional)
- Hot-Dipped, Zinc Galvanized (Optional)

Threads

- NPT (standard)
- BSPT (Optional, Regional)

UL FM

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

Fitting Friction Resistance Chart

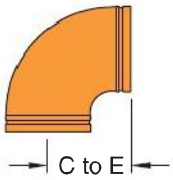
Pipe Size Nominal Inches / mm	Pipe Size O.D. Inches / mm	Elbows 90° Feet / m	Elbows 45° Feet / m	Tee Branch Feet / m	Tee Run Feet / m
1	1.315	1.6	0.7	4.3	1.6
25	33,4	0,5	0,2	1,3	0,5
1¼	1.660	1.9	1.0	4.8	1.9
32	42,4	0,6	0,3	1,5	0,6
1½	1.900	2.3	1.2	5.8	2.3
40	48,3	0,7	0,4	1,8	0,7
2	2.375	3.2	1.6	8.0	3.2
50	60,3	1,0	0,5	2,5	1,0
2½	2.875	3.9	2.0	9.8	3.9
65	73,0	1,2	0,6	3,0	1,2
76,1mm	3.000	4.1	2.1	10.3	4.1
65	76,1	1,2	0,6	3,1	1,2
3	3.500	4.9	2.4	12.2	4.9
80	88,9	1,5	0,7	3,7	1,5
4	4.500	6.5	3.3	16.3	6.5
100	114,3	2,0	1,0	5,0	2,0
139,7mm	5.500	8.0	4.1	20.0	8.0
125	139,7	2,4	1,3	6,1	2,4
5	5.563	8.2	4.1	20.5	8.2
125	141,3	2,5	1,3	6,3	2,5
165,1mm	6.500	9.5	4.8	23.8	9.5
150	165,1	2,9	1,4	7,2	2,9
6	6.625	9.9	5.0	24.8	9.9
150	168,3	3,0	1,5	7,6	3,0
8	8.625	13.1	6.6	32.8	13.1
200	219,1	4,0	2,0	10,0	4,0
10	10.750	16.5	8.3	41.3	16.5
250	273,0	5,0	2,5	12,6	5,0
12	12.750	19.9	9.9	49.7	19.9
300	323,9	6,1	3,0	15,1	6,1
14	14.000	23.0	18.0	67.9	23.0
350	355,6	7,0	5,5	20,7	7,0
16	16.000	25.9	20.0	78.1	25.9
400	406,4	7,9	6,1	23,8	7,9
18	18.000	28.9	23.0	85.0	28.9
450	457,2	8,8	7,0	25,9	8,8
20	20.000	33.1	25.9	100.1	33.1
500	508,0	10,1	7,9	30,5	10,1
24	24.000	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.

Figure 210 90° Cast Elbows

Tech Data Sheet: G180

10 YEAR LIMITED WARRANTY



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*
14	14.000	11.02	77.2
350	*355,6*	*280,0*	*35,0*
16	16.000	12.01	94.8
400	*406,4*	*305,0*	*43,0*

◗ 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.

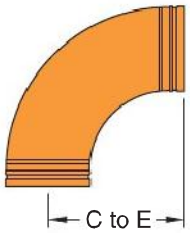
See page 37 for fitting specifications.

Figures 210LR & 310LR 90° Long Radius Elbows

Tech Data Sheet: G180

10 YEAR LIMITED WARRANTY

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*
2	2.375	4.38	2.4	–	–
50	*60,3*	*111,1*	*1,1*	–	–
2½	2.875	5.75	5.1	–	–
65	*73,0*	*146,1*	*2,3*	–	–
76,1mm	3.000	5.00	4.4	–	–
65	*76,1*	*127*	*2,0*	–	–
3	3.500	7.25	6.6	–	–
80	*88,9*	*184,5*	*3,0*	–	–
4	4.500	7.50	11.6	–	–
100	*114,3*	*190,5*	*5,3*	–	–
139,7mm	5.500	9.50	19.0	–	–
125	*139,7*	*241,3*	*8,6*	–	–
5	5.563	9.50	20.0	–	–
125	*141,3*	*241,3*	*9,1*	–	–
165,1mm	6.500	10.75	26.4	–	–
150	*165,1*	*273,1*	*12,0*	–	–
6	6.625	10.75	29.5	–	–
150	*168,3*	*273,1*	*13,4*	–	–
8	8.625	15.00	62.1	–	–
200	*219,1*	*381*	*28,2*	–	–
10	10.750	17.24	60.0	18.00	103.7
250	*273,0*	*438,0*	*27,2*	*457,2*	*47,0*
12	12.750	20.51	67.0	21.00	147.8
300	*323,9*	*521,0*	*30,4*	*533,4*	*67,0*
14	14.000	21.00	131.0	21.00	155.0
350	*355,6*	*533,4*	*59,4*	*533,4*	*70,3*
16	16.000	24.00	180.0	24.00	206.0
400	*406,4*	*609,6*	*81,6*	*609,6*	*93,4*
18	18.000	–	–	27.00	262.0
450	*457,2*	–	–	*685,8*	*118,8*
20	20.000	–	–	33.00	324.0
500	*508,0*	–	–	*838,2*	*147,0*
24	24.000	–	–	36.00	466.0
600	*609,6*	–	–	*914,4*	*211,4*

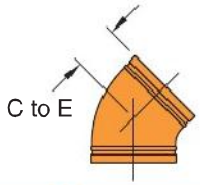
For information on larger sizes, European sizes or other alternative sizes, contact GRINNELL Mechanical Products.

See page 37 for fitting specifications.

Figure 201 45° Cast Elbows

Tech Data Sheet: G180

10 YEAR LIMITED WARRANTY



Pipe Size		C to E	Approx.
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Weight 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*
14	14.000	8.74	88.4
350	*355,6*	*222,0*	*40,1*
16	16.000	10.00	105.6
400	*406,4*	*254,0*	*47,9*

◗ 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.

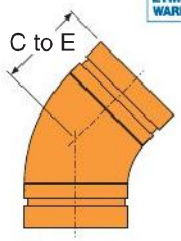
See page 37 for fitting specifications.

Figures 201LR & 301LR 45° Long Radius Elbows

Tech Data Sheet: G180

10 YEAR LIMITED WARRANTY

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	1.660	–	–	2.50	1.1
32	*42,4*	–	–	*63,5*	*0,5*
1½	1.900	–	–	2.50	1.3
40	*48,3*	–	–	*63,5*	*0,6*
2	2.375	–	–	2.75	1.8
50	*60,3*	–	–	*69,9*	*0,8*
2½	2.875	–	–	3.00	2.9
65	*73,0*	–	–	*76,2*	*1,3*
76,1mm	3.000	–	–	3.00	3.1
65	*76,1*	–	–	*76,2*	*1,4*
3	3.500	–	–	3.38	4.6
80	*88,9*	–	–	*85,9*	*2,1*
4	4.500	–	–	4.00	7.5
100	*114,3*	–	–	*101,6*	*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	–	–	5.50	12.0
150	*165,1*	–	–	*139,7*	*5,4*
6	6.625	–	–	5.50	12.0
150	*168,3*	–	–	*139,7*	*5,4*
8	8.625	–	–	7.25	34.0
200	*219,1*	–	–	*184,2*	*15,4*
10	10.750	–	–	8.50	56.0
250	*273,0*	–	–	*215,9*	*25,4*
12	12.750	–	–	10.00	98.0
300	*323,9*	–	–	*254,0*	*44,5*
14	14.000	8.75	60.0	–	–
350	*355,6*	*228,3*	*27,2*	–	–
16	16.000	10.00	97.0	–	–
400	*406,4*	*254,0*	*44,0*	–	–
18	18.000	–	–	11.25	145.0
450	*457,2*	–	–	*285,8*	*65,8*
20	20.000	–	–	12.50	180.0
500	*508,0*	–	–	*317,5*	*81,6*
24	24.000	–	–	15.00	250.0
600	*609,6*	–	–	*381,0*	*133,4*

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

See page 37 for fitting specifications.

Figures 212 & 312
22½° Elbows

Tech Data Sheet: G180

10 YEAR LIMITED WARRANTY

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	1.660	1.75	0.8	–	–
32	*42,4*	*44,5*	*0,4*	–	–
1½	1.900	1.75	1.0	–	–
40	*48,3*	*44,5*	*0,5*	–	–
2	2.375	1.88	1.3	–	–
50	*60,3*	*47,8*	*0,6*	–	–
2½	2.875	2.00	1.9	–	–
65	*73,0*	*50,8*	*0,9*	–	–
76,1mm	3.000	2.00	2.0	–	–
65	*76,1*	*50,8*	*0,9*	–	–
3	3.500	2.25	2.9	–	–
80	*88,9*	*57,2*	*1,3*	–	–
4	4.500	2.63	4.7	–	–
100	*114,3*	*66,8*	*2,1*	–	–
139,7mm	5.500	2.88	6.9	–	–
125	*139,7*	*73,2*	*3,1*	–	–
5	5.563	2.88	6.9	–	–
125	*141,3*	*73,2*	*3,1*	–	–
165,1mm	6.500	–	–	3.13	9.4
150	*165,1*	–	–	*79,5*	*4,3*
6	6.625	3.13	9.4	–	–
150	*168,3*	*79,5*	*4,3*	–	–
8	8.625	3.88	17.0	–	–
200	*219,1*	*98,6*	*7,7*	–	–
10	10.750	–	–	4.38	14.0
250	*273,0*	–	–	*111,3*	*6,4*
12	12.750	–	–	4.88	22.0
300	*323,9*	–	–	*124,0*	*10,0*
14	14.000	–	–	5.00	46.0
350	*355,6*	–	–	*127,0*	*20,9*
16	16.000	–	–	5.00	52.2
400	*406,4*	–	–	*127,0*	*23,7*
18	18.000	–	–	5.50	65.0
450	*457,2*	–	–	*139,7*	*29,5*
20	20.000	–	–	6.00	80.0
500	*508,0*	–	–	*152,4*	*36,3*
24	24.000	–	–	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 37 for fitting specifications.

Figures 211 & 311
11¼° Elbows

Tech Data Sheet: G180

10 YEAR LIMITED WARRANTY

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	1.660	1.38	0.7	–	–
32	*42,4*	*35,1*	*0,3*	–	–
1½	1.900	1.38	0.8	–	–
40	*48,3*	*35,1*	*0,4*	–	–
2	2.375	1.38	1.1	–	–
50	*60,3*	*35,1*	*0,5*	–	–
2½	2.875	1.50	1.6	–	–
65	*73,0*	*38,1*	*0,7*	–	–
76,1mm	3.000	1.50	1.7	–	–
65	*76,1*	*38,1*	*0,7*	–	–
3	3.500	1.50	2.2	–	–
80	*88,9*	*38,1*	*1,0*	–	–
4	4.500	1.75	3.4	–	–
100	*114,3*	*44,5*	*1,5*	–	–
139,7mm	5.500	2.00	5.1	–	–
125	*139,7*	*50,8*	*2,3*	–	–
5	5.563	2.00	5.2	–	–
125	*141,3*	*50,8*	*2,4*	–	–
165,1mm	6.500	2.00	6.4	–	–
150	*165,1*	*50,8*	*2,9*	–	–
6	6.625	2.00	6.5	–	–
150	*168,3*	*50,8*	*2,9*	–	–
8	8.625	2.00	9.2	–	–
200	*219,1*	*50,8*	*4,2*	–	–
10	10.750	–	–	2.13	9.1
250	*273,0*	–	–	*54,1*	*4,1*
12	12.750	–	–	2.25	16.7
300	*323,9*	–	–	*57,2*	*7,6*
14	14.000	–	–	3.50	32.1
350	*355,6*	–	–	*88,9*	*14,6*
16	16.000	–	–	4.00	42.0
400	*406,4*	–	–	*101,6*	*19,1*
18	18.000	–	–	4.50	53.2
450	*457,2*	–	–	*114,3*	*24,2*
20	20.000	–	–	5.00	65.7
500	*508,0*	–	–	*127,0*	*29,8*
24	24.000	–	–	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 37 for fitting specifications.

Figure 211
11¼° Cast Elbow

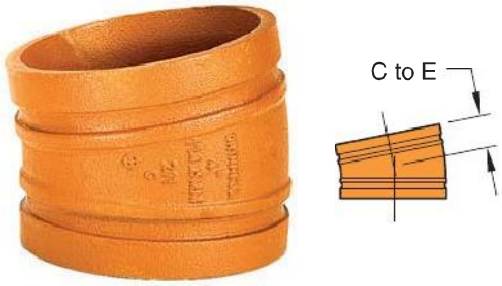
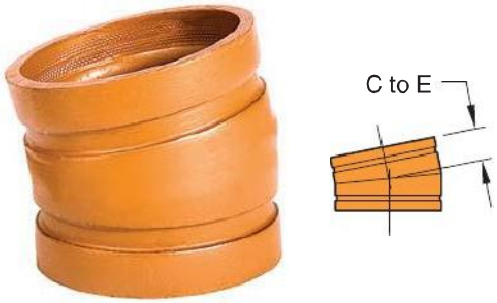


Figure 311
11¼° Fabricated Elbow

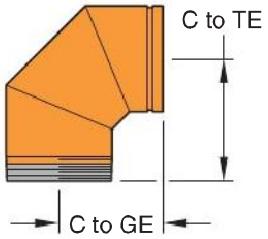


Refer to back cover for country-specific customer care numbers.

Figure 315 90° Elbows
(Groove x Male Thread)

Tech Data Sheet: G180

10 YEAR LIMITED WARRANTY



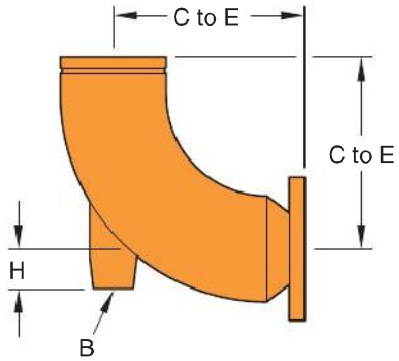
Pipe Size		C to GE	C to TE	Approx.
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Inches *mm*	Weight Lbs. *kg*
1¼	1.660	2.75	2.75	0.9
32	*42,4*	*69,9*	*69,9*	*0,4*
1½	1.900	2.75	2.75	1.2
40	*48,3*	*69,9*	*69,9*	*0,5*
2	2.375	3.25	4.25	2.0
50	*60,3*	*82,6*	*108,0*	*0,9*
2½	2.875	3.75	3.75	3.1
60	*73,0*	*95,3*	*95,3*	*1,4*
3	3.500	4.25	6.00	5.7
80	*88,9*	*108,0*	*152,4*	*2,6*
4	4.500	5.00	7.25	9.8
100	*114,3*	*127,0*	*184,2*	*4,4*
6	6.625	6.50	6.50	17.6
150	*168,3*	*165,1*	*165,1*	*8,0*

Note: Available with BSPT and NPT type threads.
For information on larger sizes, contact GRINNELL Mechanical Products.
See page 37 for fitting specifications.

Figure 316 Reducing Base Support Elbow
(Groove x Flange)

Tech Data Sheet: G180

10 YEAR LIMITED WARRANTY



Pipe Size			C to E	H	B Dia. NPSC Threaded	Approx. Wt. Ea.
Nominal Inches *mm*	Grooved End O.D. Inches *mm*	Flanged End O.D. Inches *mm*	Inches *mm*	Inches *mm*	Inches *mm*	Lbs *Kg*
6 x 4	6.625	4.500	12.0	2.5	1.5	38.5
150 x 100	*168,3*	*114,3*	*304,8*	*63,5*	*38,1*	*17,5*
6 x 5	6.625	5.563	12.5	2.5	1.5	45.4
150 x 125	*168,3*	*141,3*	*317,5*	*63,5*	*38,1*	*20,6*
8 x 5	8.625	5.563	15.5	3.0	1.5	65.5
200 x 125	*219,1*	*141,3*	*393,7*	*76,2*	*38,1*	*29,7*
8 x 6	8.625	6.625	15.5	3.0	1.5	73.0
200 x 150	*219,1*	*168,3*	*393,7*	*76,2*	*38,1*	*33,1*
10 x 6	10.750	6.625	18.5	3.5	1.5	100.0
250 x 150	*273,1*	*168,3*	*469,9*	*88,9*	*38,1*	*45,4*
10 x 8	10.750	8.625	19.0	3.5	1.5	126.5
250 x 200	*273,1*	*219,1*	*482,6*	*88,9*	*38,1*	*57,4*
12 x 8	12.750	8.625	22.0	4.0	1.5	155.0
300 x 200	*323,9*	*219,1*	*558,8*	*101,6*	*38,1*	*70,3*
12 x 10	12.750	10.750	22.0	4.0	1.5	186.0
300 x 250	*323,9*	*273,1*	*558,8*	*101,6*	*38,1*	*84,4*

For information on larger sizes, contact GRINNELL Mechanical Products.
See page 37 for fitting specifications.

Long Radius 3D Elbows

Tech Data Sheet: G180

10 YEAR LIMITED WARRANTY

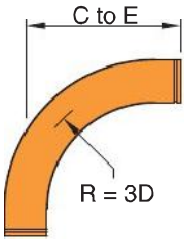


Figure 310-3D (90°)

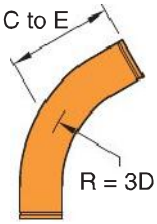


Figure 306-3D (60°)

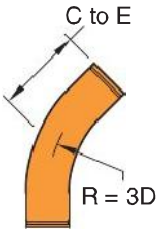


Figure 301-3D (45°)

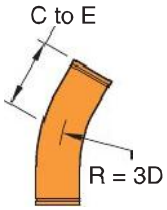


Figure 303-3D (30°)

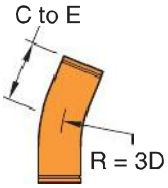


Figure 312-3D (22.5°)

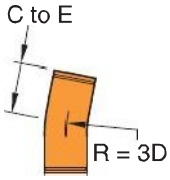


Figure 313-3D (11.25°)

Pipe Size		310-3D 90° Elbow		306-3D 60° Elbow		301-3D 45° Elbow		303-3D 30° Elbow		312-3D 22½° Elbow		313-3D 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	2.375	10	5.3	7½	4.7	6½	4.2	5¾	3.8	5¼	3.5	4½	2.9
50	*60,3*	*254*	*2,4*	*191*	*2,1*	*165*	*1,9*	*146*	*1,7*	*133*	*1,6*	*114*	*1,3*
2½	2.875	11½	9.5	8¼	8.2	7¼	7.6	6	6.4	5½	5.8	4¾	4.9
65	*73,0*	*292*	*4,3*	*210*	*3,7*	*184*	*3,4*	*152*	*2,9*	*140*	*2,6*	*121*	*2,2*
3	3.500	13	14.7	9¼	12.6	7¾	11.2	6½	9.7	5¾	8.5	5	7.3
80	*88,9*	*330*	*6,7*	*235*	*5,7*	*197*	*5,1*	*165*	*4,4*	*146*	*3,9*	*127*	*3,3*
4	4.500	16	24.1	11	20.4	9	17.8	7¼	14.8	6½	13.4	5¼	10.5
100	*114,3*	*406*	*10,9*	*279*	*9,3*	*229*	*8,1*	*184*	*6,7*	*165*	*6,1*	*133*	*4,8*
5	5.563	20	40.9	13¾	34.5	11¼	30.1	9	24.9	8	22.2	6½	17.6
125	*141,3*	*508*	*18,6*	*349*	*15,7*	*286*	*13,7*	*229*	*11,3*	*203*	*10,1*	*165*	*8*
6	6.625	24	63.7	16½	53.7	13½	46.9	10¾	38.6	9½	34.2	7¾	27.1
150	*168,3*	*610*	*28,9*	*419*	*24,4*	*343*	*21,3*	*273*	*17,5*	*241*	*15,5*	*197*	*12,3*
8	8.625	32	128.0	22	108.0	18	94.3	14½	78.7	12¾	69.3	10½	55.7
200	*219,1*	*813*	*58,1*	*559*	*49,0*	*457*	*42,8*	*368*	*35,7*	*324*	*31,4*	*267*	*25,3*
10	10.750	40	226.5	27¼	189.4	22½	166.9	18	138.2	16	123.2	13	97.3
250	*273,1*	*1016*	*102,8*	*692*	*85,9*	*572*	*75,7*	*457*	*62,7*	*406*	*55,9*	*330*	*44,1*
12	12.750	48	332.9	32¾	278.8	27	245.3	21¾	204.7	19¼	181.6	15½	141.8
300	*323,9*	*1219*	*151*	*832*	*126,5*	*686*	*111,3*	*552*	*92,9*	*489*	*82,4*	*394*	*64,3*
14	14.000	56	427.6	38¼	358.5	31½	315.0	25¼	261.4	22½	233.7	18¼	184.4
350	*355,6*	*1422*	*194*	*972*	*162,6*	*800*	*142,9*	*641*	*118,6*	*572*	*106*	*464*	*83,6*
16	16.000	64	560.3	43¾	470.1	36	412.8	29	334.5	25½	303.2	20¾	239.9
400	*406,4*	*1626*	*254,1*	*1111*	*213,2*	*914*	*187,2*	*737*	*151,7*	*648*	*137,5*	*527*	*108,8*
18	18.000	72	710.7	49¼	596.9	40½	523.7	32½	435.1	28¾	385.7	23.35	304.5
450	*457,2*	*1829*	*322,4*	*1251*	*270,7*	*1029*	*237,5*	*826*	*197,4*	*730*	*175*	*593*	*138,1*
20	20.000	80	879.3	54¾	738.7	45	647.8	36	536.4	32	478.1	26	377.7
500	*508,0*	*2032*	*398,8*	*1391*	*335,1*	*1143*	*293,8*	*914*	*243,3*	*813*	*216,9*	*660*	*171,3*
24	24.000	96	1270.3	65½	1,063.6	53¾	931.0	43¼	775.7	38¼	687.2	31	540.9
600	*609,6*	*2438*	*576,2*	*1664*	*482,4*	*1365*	*422,3*	*1099*	*351,9*	*972*	*311,8*	*787*	*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)* ± ⅛" *(3.2 mm)*; 8" - 16" *(200mm - 400mm)* ± ¼" *(6.4 mm)*; 18" - 24" *(450mm - 600mm)* ± ⅜" *(9,5mm)*.

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

For information on larger sizes, contact GRINNELL Mechanical Products.

See page 37 for fitting specifications.

Long Radius 5D Elbows

Tech Data Sheet: G180

10 YEAR LIMITED WARRANTY

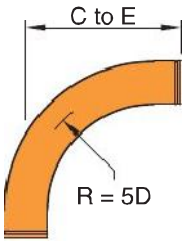


Figure 310-5D (90°)

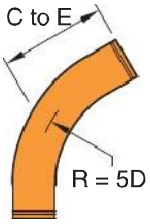


Figure 306-5D (60°)

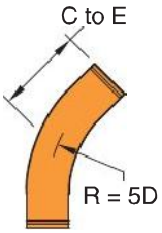


Figure 301-5D (45°)

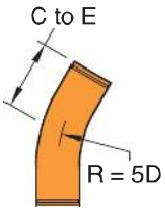


Figure 303-5D (30°)

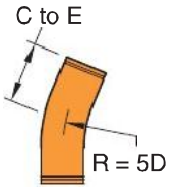


Figure 312-5D (22.5°)

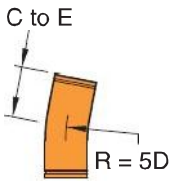


Figure 313-5D (11.25°)

Pipe Size		310-5D 90° Elbow		306-5D 60° Elbow		301-5D 45° Elbow		303-5D 30° Elbow		312-5D 22½° Elbow		313-5D 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	**2.375**	**14**	**7.2**	**9¾**	**6.1**	**8¼**	**5.5**	**6¾**	**4.6**	**6**	**4.1**	**5**	**3.3**
50	*60,3*	*356*	*3,3*	*248*	*2,8*	*210*	*2,5*	*171*	*2,1*	*152*	*1,9*	*127*	*1,5*
2½	**2.875**	**16½**	**13.3**	**11¼**	**11.2**	**9¼**	**9.8**	**7½**	**8.3**	**6½**	**7.2**	**5¼**	**5.6**
65	*73,0*	*419*	*6*	*286*	*5,1*	*235*	*4,4*	*191*	*3,8*	*165*	*3,3*	*133*	*2,5*
3	**3.500**	**19**	**21.0**	**12¾**	**17.5**	**10¼**	**15.1**	**8**	**12.3**	**7**	**10.8**	**5½**	**8.3**
80	*88,9*	*483*	*9,5*	*324*	*7,9*	*260*	*6,8*	*203*	*5,6*	*178*	*4,9*	*140*	*3,8*
4	**4.500**	**24**	**35.4**	**15½**	**28.9**	**12½**	**25.4**	**9½**	**20.1**	**8**	**17.1**	**6**	**12.5**
100	*114,3*	*610*	*16,1*	*394*	*13,1*	*318*	*11,5*	*241*	*9,1*	*203*	*7,8*	*152*	*5,7*
5	**5.563**	**30**	**60**	**19½**	**49.2**	**15½**	**42.3**	**11¾**	**33.7**	**10**	**28.9**	**7½**	**21.2**
125	*141,3*	*762*	*27,2*	*495*	*22,3*	*394*	*19,2*	*298*	*15,3*	*254*	*13,1*	*191*	*9,6*
6	**6.625**	**36**	**93.5**	**23¼**	**76.1**	**18½**	**65.5**	**14**	**52.7**	**12**	**45.0**	**9**	**32.9**
150	*168,3*	*914*	*42,4*	*591*	*34,5*	*470*	*29,7*	*356*	*23,9*	*305*	*20,4*	*229*	*14,9*
8	**8.625**	**48**	**187.9**	**31**	**152.9**	**24½**	**130.8**	**18¾**	**105.2**	**16**	**90.5**	**12**	**66.2**
200	*219,1*	*1219*	*85,2*	*787*	*69,4*	*622*	*59,3*	*476*	*47,7*	*406*	*41,1*	*305*	*30*
10	**10.750**	**60**	**332.6**	**39**	**272.5**	**30¾**	**232.5**	**23½**	**186.8**	**20**	**160.3**	**15**	**117.2**
250	*273,1*	*1524*	*150,9*	*991*	*123,6*	*781*	*105,5*	*597*	*84,7*	*508*	*72,7*	*381*	*53,2*
12	**12.750**	**72**	**488.8**	**46¾**	**400.0**	**37**	**342.7**	**28**	**272.3**	**24**	**235.5**	**18**	**172.2**
300	*323,9*	*1829*	*221,7*	*1187*	*181,4*	*940*	*155,4*	*711*	*123,5*	*610*	*106,8*	*457*	*78,1*
14	**14.000**	**84**	**627.7**	**54½**	**513.3**	**43**	**438.3**	**32¾**	**350.7**	**28**	**302.5**	**21**	**221.2**
350	*355,6*	*2134*	*284,7*	*1384*	*232,8*	*1092*	*198,8*	*832*	*159,1*	*711*	*137,2*	*533*	*100,3*
16	**16.000**	**96**	**822.5**	**62¼**	**672.2**	**49¼**	**575.6**	**37½**	**460.6**	**32**	**396.4**	**24**	**289.8**
400	*406,4*	*2438*	*373,1*	*1581*	*304,9*	*1251*	*261,1*	*953*	*208,9*	*813*	*179,8*	*610*	*131,5*
18	**18.000**	**108**	**1,043.5**	**70**	**852.5**	**55¼**	**728.2**	**42¼**	**585.3**	**36**	**506.9**	**27**	**367.8**
450	*457,2*	*2743*	*473,3*	*1778*	*386,7*	*1403*	*330,3*	*1073*	*265,5*	*914*	*229,9*	*686*	*166,8*
20	**20.000**	**120**	**1,290.9**	**77¾**	**1,054.2**	**61½**	**902.5**	**46¾**	**720.7**	**40**	**622.1**	**30**	**454.9**
500	*508,0*	*3048*	*585,5*	*1975*	*478,2*	*1562*	*409,4*	*1187*	*326,9*	*1016*	*282,2*	*762*	*206,3*
24	**24.000**	**144**	**1,864.4**	**93¼**	**1,521.8**	**73¾**	**1,302.5**	**56¼**	**1,044.0**	**48**	**898.5**	**35¾**	**651.2**
600	*609,6*	*3658*	*845,7*	*2369*	*690,3*	*1873*	*590,8*	*1429*	*473,6*	*1219*	*407,6*	*908*	*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)* ± ⅛" *(3.2 mm)*; 8" - 16" *(200mm - 400mm)* ± ¼" *(6.4 mm)*; 18" - 24" *(450mm - 600mm)* ± ⅜" *(9,5mm)*.

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

For information on larger sizes, contact GRINNELL Mechanical Products.

See page 37 for fitting specifications.

Long Radius 6D Elbows

Tech Data Sheet: G180

10 YEAR LIMITED WARRANTY

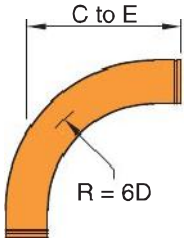


Figure 310-6D (90°)

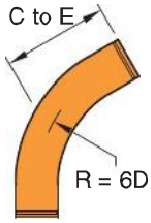


Figure 306-6D (60°)

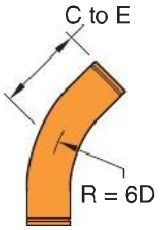


Figure 301-6D (45°)

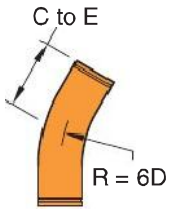


Figure 303-6D (30°)

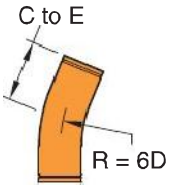


Figure 312-6D (22.5°)

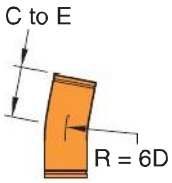


Figure 313-6D (11.25°)

Pipe Size		310-6D 90° Elbow		306-6D 60° Elbow		301-6D 45° Elbow		303-6D 30° Elbow		312-6D 22½° Elbow		313-6D 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	2.375	16	8.2	11	6.9	9	6.0	7¼	5.0	6½	4.5	5¼	3.6
50	*60,3*	*406*	*3,7*	*279*	*3,1*	*229*	*2,7*	*184*	*2,3*	*165*	*2*	*133*	*1,6*
2½	2.875	19	13.0	12¾	12.7	10¼	11.0	8	8.9	7	7.8	5½	6.0
65	*73,0*	*483*	*5,9*	*324*	*5,8*	*260*	*5*	*203*	*4*	*178*	*3,5*	*140*	*2,7*
3	3.500	22	24.1	14½	19.9	11½	17.1	8¾	13.6	7½	11.7	5¾	8.7
80	*88,9*	*559*	*10,9*	*368*	*9,0*	*292*	*7,8*	*222*	*6,2*	*191*	*5,3*	*146*	*3,9*
4	4.500	28	41.1	18	33.6	14	28.4	10½	22.5	8¾	18.9	6½	13.8
100	*114,3*	*711*	*18,6*	*457*	*15,2*	*356*	*12,9*	*267*	*10,2*	*222*	*8,6*	*165*	*6,3*
5	5.563	35	69.6	22¼	56.2	17½	48.1	13	37.7	11	32.3	8	22.9
125	*141,3*	*889*	*31,6*	*565*	*25,5*	*445*	*21,8*	*330*	*17,1*	*279*	*14,7*	*203*	*10,4*
6	6.625	42	108.4	26¾	87.7	21	74.8	15¾	59.3	13¼	50.5	9½	35.3
150	*168,3*	*1067*	*49,2*	*679*	*39,8*	*533*	*33,9*	*400*	*26,9*	*337*	*22,9*	*241*	*16*
8	8.625	56	217.8	35¾	176.7	28	150.4	21	119.2	17½	100.4	12¾	71.5
200	*219,1*	*1422*	*98,8*	*908*	*80,1*	*711*	*68,2*	*533*	*54,1*	*445*	*45,5*	*324*	*32,4*
10	10.750	70	385.6	44¾	313.1	35	266.3	26	208.9	22	178.8	16	127.1
250	*273,1*	*1778*	*174,9*	*1137*	*142*	*889*	*120,8*	*660*	*94,8*	*559*	*81,1*	*406*	*57,7*
12	12.750	84	566.7	53½	458.5	41¾	388.9	31¾	307.5	26¼	261.1	19	184.4
300	*323,9*	*2134*	*257,1*	*1359*	*208*	*1060*	*176,4*	*794*	*139,5*	*667*	*118,4*	*483*	*83,6*
14	14.000	98	727.8	62½	589.6	48¾	499.9	36½	395.4	30¾	336.9	22¼	238.0
350	*355,6*	*2489*	*330,1*	*1588*	*267,4*	*1238*	*226,8*	*927*	*179,4*	*781*	*152,8*	*565*	*108*
16	16.000	112	953.6	71½	773.3	55¾	655.5	41¾	518.6	35¼	443.0	25½	312.9
400	*406,4*	*2845*	*432,5*	*1816*	*350,8*	*1416*	*297,3*	*1060*	*235,2*	*895*	*200,9*	*648*	*141,9*
18	18.000	126	1,209.9	80½	981.9	62¾	832.7	47	658.5	39½	559.5	28¾	398.7
450	*457,2*	*3200*	*548,8*	*2045*	*445,4*	*1594*	*377,7*	*1194*	*298,7*	*1003*	*253,8*	*730*	*180,8*
20	20.000	140	1,496.6	89¼	1,212.0	69¾	1,029.8	52¼	815.0	44	694.1	31¾	488.7
500	*508,0*	*3556*	*678,8*	*2267*	*549,8*	*1772*	*467,1*	*1327*	*369,7*	*1118*	*314,8*	*806*	*221,7*
24	24.000	168	2,161.6	107¼	1,752.9	83¾	1,488.2	62½	1,173.0	52.34	992.5	38¼	709.3
600	*609,6*	*4267*	*980,5*	*2724*	*795,1*	*2127*	*675*	*1588*	*532,1*	*1329*	*450,2*	*972*	*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 37 for fitting specifications.

Figures 219 & 319 Tees

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10 YEAR LIMITED WARRANTY

Figure 219
Cast Tee

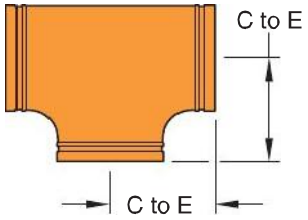
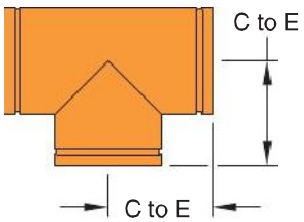


Figure 319
Fabricated Tee



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	–	–
32	*42,4*	*69,9*	*0,8*	–	–
1½	1.900	2.75	2.1	–	–
40	*48,3*	*69,9*	*1,0*	–	–
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*	–	–
216,3mm	8.500	7.75	43.0	–	–
200	*216,3*	*196,9*	*19,5*	–	–
8	8.625	7.75	43.7	–	–
200 ◗	*219,1*	*196,9*	*19,8*	–	–
10	10.750	9.00	57.0	–	–
250 ◗	*273,0*	*228,6*	*25,9*	–	–
12	12.750	10.00	110.0	–	–
300 ◗	*323,9*	*254,0*	*49,9*	–	–
14	14.000	11.00	135.0	–	–
350	*355,6*	*279,0*	*61,2*	–	–
16	16.000	12.00	136.0	–	–
400	*406,4*	*305,0*	*61,7*	–	–
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 37 for fitting specifications.

Figure 320 Tees
(Groove x Groove x Male Thread)

Tech Data Sheet: G180

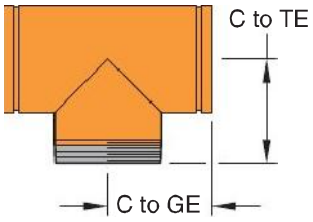
10 YEAR LIMITED WARRANTY

Pipe Size		C to GE	C to TE	Approx.
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Inches *mm*	Weight Lbs *Kg*
1¼	1.660	2.75	2.75	1.5
32	*42,4*	*69,9*	*69,9*	*0,7*
1½	1.900	2.75	2.75	1.9
40	*48,3*	*69,9*	*69,9*	*0,9*
2	2.375	3.25	4.25	3.2
50	*60,3*	*82,6*	*108,0*	*1,5*
2½	2.875	3.75	3.75	4.0
60	*73,0*	*95,3*	*95,3*	*1,8*
3	3.500	4.25	6.00	6.0
80	*88,9*	*108,0*	*152,4*	*2,7*
4	4.500	5.00	7.25	11.0
100	*114,3*	*127,0*	*184,2*	*5,0*
5	5.563	5.50	5.50	23.0
125	*141,3*	*139,7*	*139,7*	*10,5*
6	6.625	6.50	6.50	23.0
150	*168,3*	*165,1*	*165,1*	*10,5*
8	8.625	7.75	7.75	38.7
200	*219,1*	*196,9*	*196,9*	*17,6*
10	10.750	9.00	9.00	72.1
250	*273,0*	*228,6*	*228,6*	*32,8*
12	12.750	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 37 for fitting specifications.



Figures 221 & 321 Reducing Tees

(Page 1 of 3)

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10 YEAR LIMITED WARRANTY

Figure 221 Reducing Tee Cast

Figure 321 Reducing Tee Fabricated

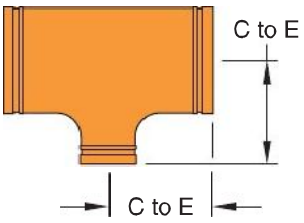

Figure 221 Reducing Tee Cast

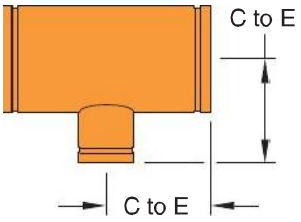

Figure 321 Reducing Tee Fabricated

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*
1½ x 1½ x 1¼	1.900 x 1.900 x 1.660	–	–	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	2.375 x 2.375 x 1.315	–	–	3.25	1.6
50 x 50 x 25	*60,3 x 60,3 x 33,4*	–	–	*88,6*	*0,74*
2 x 2 x 1½	2.375 x 2.375 x 1.900	3.25	2.7	–	–
50 x 50 x 40	*60,3 x 60,3 x 48,3*	*82,6*	*1,2*	–	–
2½ x 2½ x 1	2.875 x 2.875 x 1.315	–	–	3.75	2.3
65 x 65 x 25	*73,0 x 73,0 x 33,4*	–	–	*95,3*	*1,1*
2½ x 2½ x 1¼	2.875 x 2.875 x 1.660	–	–	3.75	4.2
65 x 65 x 32	*73,0 x 73,0 x 42,4*	–	–	*95,3*	*1,9*
2½ x 2½ x 1½	2.875 x 2.875 x 1.900	–	–	3.75	4.2
65 x 65 x 40	*73,0 x 73,0 x 48,3*	–	–	*95,3*	*1,9*
2½ x 2½ x 2	2.875 x 2.875 x 2.375	3.75	4.2	–	–
65 x 65 x 50	*73,0 x 73,0 x 60,3*	*95,3*	*1,9*	–	–
76,1mm x 76,1mm x 1½	3.000 x 3.000 x 1.900	3.75	4.5	–	–
65 x 65 x 40	*76,1 x 76,1 x 48,3*	*95,3*	*2,0*	–	–
76,1mm x 76,1mm x 2	3.000 x 3.000 x 2.375	3.75	4.3	–	–
65 x 65 x 50	*76,1 x 76,1 x 60,3*	*95,3*	*2,0*	–	–
3 x 3 x 1	3.500 x 3.500 x 1.315	4.25	5.6	–	–
80 x 80 x 25	*88,9 x 88,9 x 33,4*	*108,0*	*2,5*	–	–
3 x 3 x 1½	3.500 x 3.500 x 1.900	4.25	5.9	–	–
80 x 80 x 40	*88,9 x 88,9 x 48,3*	*108,0*	*2,7*	–	–
3 x 3 x 2	3.500 x 3.500 x 2.375	4.25	6.0	–	–
80 x 80 x 50	*88,9 x 88,9 x 60,3*	*108,0*	*2,7*	–	–
3 x 3 x 2½	3.500 x 3.500 x 2.875	4.25	6.2	–	–
80 x 80 x 65	*88,9 x 88,9 x 73,0*	*108,0*	*2,8*	–	–
3 x 3 x 76,1mm	3.500 x 3.500 x 3.000	4.25	6.0	–	–
80 x 80 x 65	*88,9 x 88,9 x 76,1*	*108,0*	*2,7*	–	–
4 x 4 x 1	4.500 x 4.500 x 1.315	–	–	3.75	8.0
100 x 100 x 25	*114,3 x 114,3 x 33,4*	–	–	*95,3*	*3,7*
4 x 4 x 1¼	4.500 x 4.500 x 1.660	–	–	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 1½	4.500 x 4.500 x 1.900	–	–	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	4.500 x 4.500 x 2.375	5.00	9.1	–	–
100 x 100 x 50	*114,3 x 114,3 x 60,3*	*127,0*	*4,1*	–	–
4 x 4 x 2½	4.500 x 4.500 x 2.875	5.00	9.5	–	–
100 x 100 x 65	*114,3 x 114,3 x 73,0*	*127,0*	*4,3*	–	–
4 x 4 x 76,1mm	4.500 x 4.500 x 3.000	5.00	9.5	–	–
100 x 100 x 65	*114,3 x 114,3 x 76,1*	*127,0*	*4,3*	–	–
4 x 4 x 3	4.500 x 4.500 x 3.500	5.00	9.7	–	–
100 x 100 x 80	*114,3 x 114,3 x 88,9*	*127,0*	*4,4*	–	–
139,7mm x 139,7mm x 3	5.500 x 5.500 x 3.500	5.50	12.7	–	–
125 x 125 x 80	*139,7 x 139,7 x 88,9*	*139,7*	*5,8*	–	–
139,7mm x 139,7mm x 4	5.500 x 5.500 x 4.500	5.50	13.4	–	–
125 x 125 x 100	*139,7 x 139,7 x 114,3*	*139,7*	*6,1*	–	–

Figures 221 & 321 Reducing Tees

Tech Data Sheet: G180

10 YEAR LIMITED WARRANTY

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*
5 x 5 x 2	5.563 x 5.563 x 2.375	–	–	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 2½	5.563 x 5.563 x 2.875	5.50	18.0	–	–
125 x 125 x 65	*141,3 x 141,3 x 73,0*	*139,7*	*8,2*	–	–
5 x 5 x 3	5.563 x 5.563 x 3.500	5.50	14.0	–	–
125 x 125 x 80	*141,3 x 141,3 x 88,9*	*139,7*	*6,4*	–	–
5 x 5 x 4	5.563 x 5.563 x 4.500	5.50	13.9	–	–
125 x 125 x 100	*141,3 x 141,3 x 114,3*	*139,7*	*6,3*	–	–
165,1mm x 165,mm x 3	6.500 x 6.500 x 3.500	6.50	18.0	–	–
150 x 150 x 80	*165,1 x 165,1 x 88,9*	*165,1*	*8,2*	–	–
165,1mm x 165,mm x 4	6.500 x 6.500 x 4.500	6.50	19.5	–	–
150 x 150 x 100	*165,1 x 165,1 x 114,3*	*165,1*	*8,9*	–	–
6 x 6 x 2	6.625 x 6.625 x 2.375	6.50	19.4	–	–
150 x 150 x 50	*168,3 x 168,3 x 60,3*	*165,1*	*8,8*	–	–
6 x 6 x 2½	6.625 x 6.625 x 2.875	6.50	21.2	–	–
150 x 150 x 65	*168,3 x 168,3 x 73,0*	*165,1*	*9,8*	–	–
6 x 6 x 76,1mm	6.625 x 6.625 x 3.000	6.50	21.2	–	–
150 x 150 x 65	*168,3 x 168,3 x 76,1*	*165,1*	*9,8*	–	–
6 x 6 x 3	6.625 x 6.625 x 3.500	6.50	21.0	–	–
150 x 150 x 80	*168,3 x 168,3 x 88,9*	*165,1*	*9,5*	–	–
6 x 6 x 4	6.625 x 6.625 x 4.500	6.50	21.8	–	–
150 x 150 x 100	*168,3 x 168,3 x 114,3*	*165,1*	*9,9*	–	–
6 x 6 x 139,7mm	6.625 x 6.625 x 5.500	6.50	23.0	–	–
150 x 150 x 125	*168,3 x 168,3 x 139,7*	*165,1*	*10,4*	–	–
6 x 6 x 5	6.625 x 6.625 x 5.563	–	–	6.50	27.0
150 x 150 x 125	*168,3 x 168,3 x 141,3*	–	–	*165,1*	*12,2*
8 x 8 x 2	8.625 x 8.625 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 2½	8.625 x 8.625 x 2.875	–	–	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 3	8.625 x 8.625 x 3.500	–	–	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	8.625 x 8.625 x 4.500	7.75	37.2	–	–
200 x 200 x 100 ◗	*219,1 x 219,1 x 114,1*	*196,9*	*16,9*	–	–
8 x 8 x 139,7mm	8.625 x 8.625 x 5.500	7.75	37.7	–	–
200 x 200 x 125 ◗	*219,1 x 219,1 x 139,7*	*196,9*	*17,1*	–	–
8 x 8 x 5	8.625 x 8.625 x 5.563	–	–	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 165,1mm	8.625 x 8.625 x 6.500	7.75	37.7	–	–
200 x 200 x 150 ◗	*219,1 x 219,1 x 165,1*	*196,9*	*17,1*	–	–
8 x 8 x 6	8.625 x 8.625 x 6.625	7.75	37.4	–	–
200 x 200 x 150 ◗	*219,1 x 219,1 x 168,3*	*196,9*	*17,0*	–	–
10 x 10 x 2	10.750 x 10.750 x 2.375	–	–	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	10.750 x 10.750 x 3.500	–	–	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	10.750 x 10.750 x 4.500	–	–	9.00	58.0
250 x 250 x 100 ◗	*273,0 x 273,0 x 114,3*	–	–	*228,6*	*26,3*
10 x 10 x 5	10.750 x 10.750 x 5.563	–	–	9.00	57.8
250 x 250 x 125 ◗	*273,0 x 273,0 x 141,3*	–	–	*228,6*	*26,2*
10 x 10 x 6	10.750 x 10.750 x 6.625	–	–	9.00	66.0
250 x 250 x 150 ◗	*273,0 x 273,0 x 168,3*	–	–	*228,6*	*27,2*
10 x 10 x 8	10.750 x 10.750 x 8.625	–	–	9.00	62.0
250 x 250 x 200 ◗	*273,0 x 273,0 x 219,1*	–	–	*228,6*	*28,1*
12 x 12 x 3	12.750 x 12.750 x 3.500	–	–	10.00	80.2
300 x 300 x 80 ◗	*323,9 x 323,9 x 88,9*	–	–	*254,0*	*36,4*
12 x 12 x 4	12.750 x 12.750 x 4.500	–	–	10.00	80.5
300 x 300 x 100 ◗	*323,9 x 323,9 x 114,3*	–	–	*254,0*	*36,5*

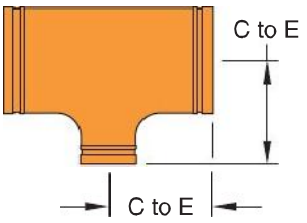

Figure 221 Reducing Tee Cast

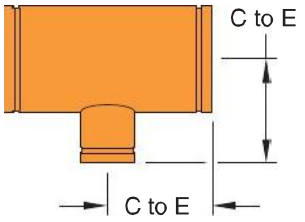

Figure 321 Reducing Tee Fabricated

Figures 221 & 321 Reducing Tees

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Tech Data Sheet: G180

10 YEAR LIMITED WARRANTY

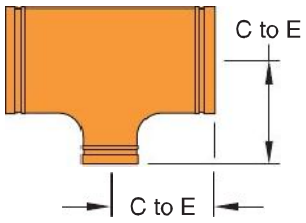


Figure 221 Reducing Tee
Cast

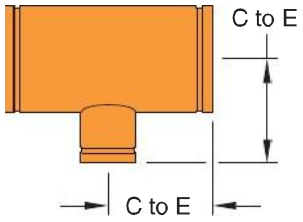


Figure 321 Reducing Tee
Fabricated

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*
12 x 12 x 5	**12.750 x 12.750 x 5.563**	–	–	**10.00**	**80.7**
300 x 300 x 125 ◗	*323,9 x 323,9 x 141,3*	–	–	*254,0*	*36,6*
12 x 12 x 6	**12.750 x 12.750 x 6.625**	–	–	**10.00**	**80.9**
300 x 300 x 150 ◗	*323,9 x 323,9 x 168,3*	–	–	*254,0*	*36,7*
12 x 12 x 8	**12.750 x 12.750 x 8.625**	–	–	**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	**12.750 x 12.750 x 10.750**	–	–	**10.00**	**77.6**
300 x 300 x 250 ◗	*323,9 x 323,9 x 273,0*	–	–	*254,0*	*35,2*
14 x 14 x 6	**14.000 x 14.000 x 6.625**	–	–	**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	**14.000 x 14.000 x 8.625**	–	–	**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	**14.000 x 14.000 x 10.750**	–	–	**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	**14.000 x 14.000 x 12.750**	–	–	**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	**16.000 x 16.000 x 4.500**	–	–	**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	**16.000 x 16.000 x 8.625**	–	–	**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	**16.000 x 16.000 x 10.750**	–	–	**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	**16.000 x 16.000 x 12.750**	–	–	**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	**16.000 x 16.000 x 14.000**	–	–	**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	**18.000 x 18.000 x 8.625**	–	–	**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	**18.000 x 18.000 x 10.750**	–	–	**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	**18.000 x 18.000 x 12.750**	–	–	**15.50**	**196.3**
450 x 450 x 300	*457,2 x 457,2 x 323,9*	–	–	*393,7*	*89,0*
18 x 18 x 14	**18.000 x 18.000 x 14.000**	–	–	**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	**18.000 x 18.000 x 16.000**	–	–	**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	**20.000 x 20.000 x 14.000**	–	–	**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	**20.000 x 20.000 x 16.000**	–	–	**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	**20.000 x 20.000 x 18.000**	–	–	**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	**24.000 x 24.000 x 10.750**	–	–	**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	**24.000 x 24.000 x 12.750**	–	–	**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	**24.000 x 24.000 x 14.000**	–	–	**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	**24.000 x 24.000 x 16.000**	–	–	**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	**24.000 x 24.000 x 18.000**	–	–	**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	**24.000 x 24.000 x 20.000**	–	–	**20.00**	**346.8**
600 x 600 x 500	*609,6 x 609,6 x 508,0*	–	–	*508,0*	*157,3*

◗ Sizes are available to JIS standards. Contact GRINNELL Mechanical Products for details.
For information on larger sizes, contact GRINNELL Mechanical Products.
See page 37 for fitting specifications.

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

Tech Data Sheet: G180

10 YEAR LIMITED WARRANTY

Pipe Size		C to GE & C to TE	Approx. Weight
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Lbs. *kg*
1½ x 1½ x 1¼	1.900 x 1.900 x 1.660	3.25	1.8
40 x 40 x 32	*48,3 x 48,3 x 42,4*	*82,6*	*0,8*
2 x 2 x 1	2.375 x 2.375 x 1.315	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 1¼	2.375 x 2.375 x 1.660	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 1½	2.375 x 2.375 x 1.900	3.25	1.4
50 x 50 x 40	*60,3 x 60,3 x 48,3*	*82,6*	*1,1*
2½ x 2½ x 1	2.875 x 2.875 x 1.315	3.75	3.6
65 x 65 x 25	*73,0 x 73,0 x 33,4*	*95,3*	*1,6*
2½ x 2½ x 1¼	2.875 x 2.875 x 1.660	3.75	3.8
65 x 65 x 32	*73,0 x 73,0 x 42,4*	*95,3*	*1,7*
2½ x 2½ x 1½	2.875 x 2.875 x 1.900	3.75	4.0
65 x 65 x 40	*73,0 x 73,0 x 48,3*	*95,3*	*1,8*
2½ x 2½ x 2	2.875 x 2.875 x 2.375	3.75	4.2
65 x 65 x 50	*73,0 x 73,0 x 60,3*	*95,3*	*1,9*
3 x 3 x 1	3.500 x 3.500 x 1.315	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 1½	3.500 x 3.500 x 1.900	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	3.500 x 3.500 x 2.375	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 2½	3.500 x 3.500 x 2.875	4.25	6.3
80 x 80 x 65	*88,9 x 88,9 x 73,0*	*108,0*	*2,9*
4 x 4 x 1	4.500 x 4.500 x 1.315	3.75	6.9
100 x 100 x 25	*114,3 x 114,3 x 33,4*	*95,3*	*3,1*
4 x 4 x 1¼	4.500 x 4.500 x 1.660	3.75	7.6
100 x 100 x 32	*114,3 x 114,3 x 42,4*	*95,3*	*3,4*
4 x 4 x 1½	4.500 x 4.500 x 1.900	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	4.500 x 4.500 x 2.375	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 2½	4.500 x 4.500 x 2.875	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 3	4.500 x 4.500 x 3.500	5.00	10.3
100 x 100 x 80	*114,3 x 114,3 x 88,9*	*127,0*	*4,7*
5 x 5 x 2	5.563 x 5.563 x 2.375	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 2½	5.563 x 5.563 x 2.875	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	5.563 x 5.563 x 3.500	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	5.563 x 5.563 x 4.500	5.50	15.1
125 x 125 x 100	*141,3 x 141,3 x 114,3*	*139,7*	*6,8*
6 x 6 x 2	6.625 x 6.625 x 2.375	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 2½	6.625 x 6.625 x 2.875	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	6.625 x 6.625 x 3.500	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	6.625 x 6.625 x 4.500	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 5	6.625 x 6.625 x 5.563	6.50	23.1
150 x 150 x 125	*168,3 x 168,3 x 141,3*	*165,1*	*10,5*

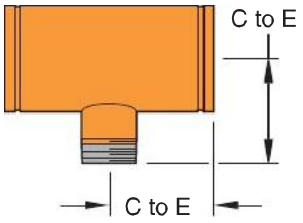
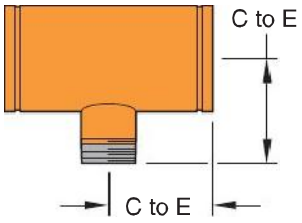


Figure 323 Reducing Tees
(Groove x Groove x Male Thread)

(Page 2 of 2)

Tech Data Sheet: G180

10 YEAR LIMITED WARRANTY



Pipe Size		C to GE & C to TE	Approx. Weight
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Lbs. *kg*
8 x 8 x 2	**8.625 x 8.625 x 2.375**	**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 3	**8.625 x 8.625 x 3.500**	**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	**8.625 x 8.625 x 4.500**	**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 5	**8.625 x 8.625 x 5.563**	**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	**8.625 x 8.625 x 6.625**	**7.75**	**35.6**
200 x 200 x 150	*219,1 x 219,1 x 168,3*	*196,9*	*16,1*
10 x 10 x 2	**10.750 x 10.750 x 2.375**	**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 3	**10.750 x 10.750 x 3.500**	**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	**10.750 x 10.750 x 4.500**	**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 5	**10.750 x 10.750 x 5.563**	**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	**10.750 x 10.750 x 6.625**	**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	**10.750 x 10.750 x 8.625**	**9.00**	**55.3**
250 x 250 x 200	*273,0 x 273,0 x 219,1*	*228,6*	*25,1*
12 x 12 x 3	**12.750 x 12.750 x 3.500**	**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	**12.750 x 12.750 x 4.500**	**10.00**	**75.1**
300 x 300 x 100	*323,9 x 323,9 x 114,3*	*254,0*	*34,1*
12 x 12 x 5	**12.750 x 12.750 x 5.563**	**10.00**	**75.6**
300 x 300 x 125	*323,9 x 323,9 x 141,3*	*254,0*	*34,3*
12 x 12 x 6	**12.750 x 12.750 x 6.625**	**10.00**	**76.2**
300 x 300 x 150	*323,9 x 323,9 x 168,3*	*254,0*	*34,6*
12 x 12 x 8	**12.750 x 12.750 x 8.625**	**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	**12.750 x 12.750 x 10.750**	**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 37 for fitting specifications.

Figures 250 & 350 Concentric Reducers

Tech Data Sheet: G180

10 YEAR LIMITED WARRANTY

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*
1¼ x 1	1.660 x 1.315	2.50	0.7	—	—
32 x 25	*42,4 x 33,4*	*63,5*	*0,3*	—	—
1½ x 1	1.900 x 1.315	—	—	2.50	0.7
40 x 25	*48,3 x 33,4*	—	—	*63,5*	*0,3*
1½ x 1¼	1.900 x 1.660	2.50	0.8	—	—
40 x 32	*48,3 x 42,4*	*63,5*	*0,3*	—	—
2 x 1	2.375 x 1.315	—	—	2.50	0.9
50 x 25	*60,3 x 33,4*	—	—	*63,5*	*0,4*
2 x 1¼	2.375 x 1.660	—	—	2.50	0.9
50 x 32	*60,3 x 42,4*	—	—	*63,5*	*0,4*
2 x 1½	2.375 x 1.900	—	—	2.50	1.0
50 x 40	*60,3 x 48,3*	—	—	*63,5*	*0,5*
2½ x 1	2.875 x 1.315	—	—	2.50	1.2
65 x 25	*73,0 x 33,4*	—	—	*63,5*	*0,5*
2½ x 1¼	2.875 x 1.660	2.50	1.4	—	—
65 x 32	*73,0 x 42,4*	*63,5*	*0,6*	—	—
2½ x 1½	2.875 x 1.900	2.50	1.4	—	—
65 x 40	*73,0 x 48,3*	*63,5*	*0,6*	—	—
2½ x 2	2.875 x 2.375	2.50	1.3	—	—
65 x 50	*73,0 x 60,3*	*63,5*	*0,6*	—	—
76,1mm x 1¼	3.000 x 1.660	2.50	1.4	—	—
65 x 32	*76,1 x 42,4*	*63,5*	*0,6*	—	—
76,1mm x 1½	3.000 x 1.900	2.50	1.4	—	—
65 x 40	*76,1 x 48,3*	*63,5*	*0,6*	—	—
76,1mm x 2	3.000 x 2.375	2.50	1.5	—	—
65 x 50	*76,1 x 60,3*	*63,5*	*0,7*	—	—
3 x 1	3.500 x 1.315	—	—	2.50	1.3
80 x 25	*88,9 x 33,4*	—	—	*63,5*	*0,6*
3 x 1¼	3.500 x 1.660	—	—	2.50	1.3
80 x 32	*88,9 x 42,4*	—	—	*63,5*	*0,6*
3 x 1½	3.500 x 1.900	2.50	1.8	—	—
80 x 40	*88,9 x 48,3*	*63,5*	*0,8*	—	—
3 x 2	3.500 x 2.375	2.50	1.7	—	—
80 x 50	*88,9 x 60,3*	*63,5*	*0,8*	—	—
3 x 2½	3.500 x 2.875	2.50	1.7	—	—
80 x 65	*88,9 x 73,0*	*63,5*	*0,8*	—	—
3 x 76,1mm	3.500 x 3.000	2.50	2.0	—	—
80 x 65	*88,9 x 76,1*	*63,5*	*0,9*	—	—
4 x 1	4.500 x 1.315	—	—	3.88	2.9
100 x 25	*114,3 x 33,4*	—	—	*98,6*	*1,1*
4 x 1¼	4.500 x 1.660	—	—	3.00	2.2
100 x 32	*114,3 x 42,4*	—	—	*76,2*	*1,0*
4 x 1½	4.500 x 1.900	—	—	3.00	2.3
100 x 40	*114,3 x 48,3*	—	—	*76,2*	*1,0*
4 x 2	4.500 x 2.375	3.00	2.4	—	—
100 x 50	*114,3 x 60,3*	*76,2*	*1,1*	—	—
4 x 2½	4.500 x 2.875	3.00	2.7	—	—
100 x 65	*114,3 x 73,0*	*76,2*	*1,2*	—	—
4 x 76,1mm	4.500 x 3.000	3.00	3.2	—	—
100 x 65	*114,3 x 76,1*	*76,2*	*1,5*	—	—
4 x 3	4.500 x 3.500	3.00	2.8	—	—
100 x 80	*114,3 x 88,9*	*76,2*	*1,3*	—	—
139,7mm x 3	5.500 x 3.500	3.50	4.2	—	—
125 x 80	*139,7 x 88,9*	*88,9*	*1,9*	—	—

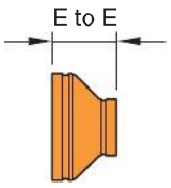


Figure 250
Concentric Reducer Cast

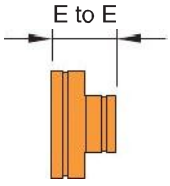


Figure 350
Concentric Reducer Fabricated

Figures 250 & 350 Concentric Reducers

(Page 2 of 3)

Tech Data Sheet: G180

10 YEAR LIMITED WARRANTY

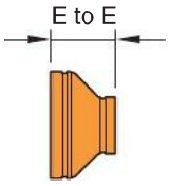


Figure 250
Cast Concentric
Reducer

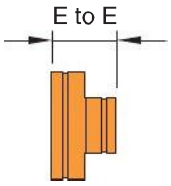


Figure 350
Fabricated Concentric
Reducer

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*
139,7mm x 4	**5.500 x 4.500**	**3.50**	**4.4**	—	—
125 x 100	*139,7 x 114,3*	*88,9*	*2,0*	—	—
5 x 2	**5.563 x 2.375**	—	—	**3.50**	**4.6**
125 x 50	*141,3 x 60,3*	—	—	*88,9*	*2,1*
5 x 2½	**5.563 x 2.875**	—	—	**3.50**	**4.5**
125 x 65	*141,3 x 73,0*	—	—	*88,9*	*2,0*
5 x 3	**5.563 x 3.500**	**3.50**	**4.2**	—	—
125 x 80	*141,3 x 88,9*	*88,9*	*1,9*	—	—
5 x 4	**5.563 x 4.500**	**3.50**	**4.4**	—	—
125 x 100	*141,3 x 114,3*	*88,9*	*2,0*	—	—
165,1mm x 3	**6.500 x 3.500**	**4.00**	**5.5**	—	—
150 x 80	*165,1 x 88,9*	*101,6*	*2,5*	—	—
165,1mm x 4	**6.500 x 4.500**	**4.00**	**6.0**	—	—
150 x 100	*165,1 x 114,3*	*101,6*	*2,7*	—	—
165,1 x 139,7mm	**6.500 x 5.500**	**4.00**	**5.6**	—	—
150 x 125	*165,1 x 139,7*	*101,6*	*2,5*	—	—
6 x 2	**6.625 x 2.375**	**4.00**	**5.3**	—	—
150 x 50	*168,3 x 60,3*	*101,6*	*2,4*	—	—
6 x 2½	**6.625 x 2.875**	**4.00**	**5.7**	—	—
150 x 65	*168,3 x 73,0*	*101,6*	*2,6*	—	—
6 x 76,1mm	**6.625 x 3.000**	**4.00**	**6.1**	—	—
150 x 65	*168,3 x 76,1*	*101,6*	*2,7*	—	—
6 x 3	**6.625 x 3.500**	**4.00**	**5.8**	—	—
150 x 80	*168,3 x 88,9*	*101,6*	*2,6*	—	—
6 x 4	**6.625 x 4.500**	**4.00**	**6.0**	—	—
150 x 100	*168,3 x 114,3*	*101,6*	*2,7*	—	—
6 x 139,7mm	**6.625 x 5.500**	**4.00**	**6.3**	—	—
150 x 125	*168,3 x 139,7*	*101,6*	*2,3*	—	—
6 x 5	**6.625 x 5.563**	**4.00**	**6.2**	—	—
150 x 125	*168,3 x 141,3*	*101,6*	*2,8*	—	—
8 x 2½	**8.625 x 2.875**	—	—	**5.00**	**12.1**
200 x 65 ◗	*219,1 x 73,0*	—	—	*127,0*	*5,5*
8 x 3	**8.625 x 3.500**	**5.00**	**11.5**	—	—
200 x 80 ◗	*219,1 x 88,9*	*127,0*	*5,2*	—	—
8 x 4	**8.625 x 4.500**	**5.00**	**10.7**	—	—
200 x 100 ◗	*219,1 x 114,3*	*127,0*	*4,9*	—	—
8 x 139,7mm	**8.625 x 5.500**	**5.00**	**10.0**	—	—
200 x 125 ◗	*219,1 x 139,7*	*127,0*	*4,5*	—	—
8 x 5	**8.625 x 5.563**	**5.00**	**10.8**	—	—
200 x 125 ◗	*219,1 x 141,3*	*127,0*	*4,9*	—	—
8 x 165,1mm	**8.625 x 6.500**	**5.00**	**11.0**	—	—
200 x 150 ◗	*219,1 x 165,1*	*127,0*	*5,0*	—	—
8 x 6	**8.625 x 6.625**	**5.00**	**11.3**	—	—
200 x 150 ◗	*219,1 x 168,3*	*127,0*	*5,1*	—	—
10 x 4	**10.750 x 4.500**	—	—	**6.00**	**20.5**
250 x 100 ◗	*273,0 x 114,3*	—	—	*152,4*	*9,3*
10 x 5	**10.750 x 5.563**	—	—	**6.00**	**20.1**
250 x 125 ◗	*273,0 x 141,3*	—	—	*152,4*	*9,1*
10 x 165,1mm	**10.750 x 6.500**	**6.00**	**17.8**	—	—
250 x 150 ◗	*273,0 x 165,1*	*152,4*	*8,0*	—	—
10 x 6	**10.750 x 6.625**	**6.00**	**16.3**	—	—
250 x 150 ◗	*273,0 x 168,3*	*152,4*	*7,4*	—	—
10 x 8	**10.750 x 8.625**	**6.00**	**18.3**	—	—
250 x 200 ◗	*273,0 x 219,1*	*152,4*	*8,3*	—	—

Figures 250 & 350 Concentric Reducers

Tech Data Sheet: G180

10 YEAR LIMITED WARRANTY

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*
12 x 4	12.750 x 4.500	7.00	22.7	—	—
300 x 100 ◗	*323,9 x 114,3*	*177,8*	*10,3*	—	—
12 x 6	12.750 x 6.625	7.00	24.2	—	—
300 x 150 ◗	*323,9 x 168,3*	*177,8*	*11,0*	—	—
12 x 8	12.750 x 8.625	7.00	25.8	—	—
300 x 200 ◗	*323,9 x 219,1*	*177,8*	*11,7*	—	—
12 x 10	12.750 x 10.750	7.00	28.2	—	—
300 x 250 ◗	*323,9 x 273,0*	*177,8*	*12,8*	—	—
14 x 6	14.000 x 6.625	—	—	13.0	54.3
350 x 150	*355,6 x 168,3*	—	—	*330,2*	*24,6*
14 x 8	14.000 x 8.625	—	—	13.0	54.5
350 x 200	*355,6 x 219,1*	—	—	*330,2*	*24,7*
14 x 10	14.000 x 10.750	—	—	13.0	55.8
350 x 250	*355,6 x 273,0*	—	—	*330,2*	*25,3*
14 x 12	14.000 x 12.750	—	—	13.0	57.3
350 x 300	*355,6 x 323,9*	—	—	*330,2*	*26,0*
16 x 8	16.000 x 8.625	—	—	14.0	65.4
400 x 200	*406,4 x 219,1*	—	—	*355,6*	*29,7*
16 x 10	16.000 x 10.750	—	—	14.0	66.7
400 x 250	*406,4 x 273,0*	—	—	*355,6*	*30,2*
16 x 12	16.000 x 12.750	—	—	14.0	68.1
400 x 300	*406,4 x 323,9*	—	—	*355,6*	*30,9*
16 x 14	16.000 x 14.000	—	—	14.0	71.0
400 x 350	*406,4 x 355,6*	—	—	*355,6*	*32,2*
18 x 12	18.000 x 12.750	—	—	15.0	83.6
450 x 300	*457,2 x 323,9*	—	—	*381,0*	*37,9*
18 x 14	18.000 x 14.000	—	—	15.0	86.2
450 x 350	*457,2 x 355,6*	—	—	*381,0*	*39,1*
18 x 16	18.000 x 16.000	—	—	15.0	87.2
450 x 400	*457,2 x 406,4*	—	—	*381,0*	*39,6*
20 x 10	20.000 x 10.750	—	—	20.0	124.7
500 x 250	*508,0 x 273,0*	—	—	*508,0*	*56,6*
20 x 12	20.000 x 12.750	—	—	20.0	124.7
500 x 300	*508,0 x 323,9*	—	—	*508,0*	*56,6*
20 x 14	20.000 x 14.000	—	—	20.0	129.0
500 x 350	*508,0 x 355,6*	—	—	*508,0*	*58,5*
20 x 16	20.000 x 16.000	—	—	20.0	131.1
500 x 400	*508,0 x 406,4*	—	—	*508,0*	*59,5*
20 x 18	20.000 x 18.000	—	—	20.0	133.4
500 x 450	*508,0 x 457,2*	—	—	*508,0*	*60,5*
24 x 10	24.000 x 10.750	—	—	20.0	149.1
600 x 250	*609,6 x 273,0*	—	—	*508,0*	*67,6*
24 x 12	24.000 x 12.750	—	—	20.0	150.4
600 x 300	*609,6 x 323,9*	—	—	*508,0*	*68,2*
24 x 14	24.000 x 14.000	—	—	20.0	151.6
600 x 350	*609,6 x 355,6*	—	—	*508,0*	*68,8*
24 x 16	24.000 x 16.000	—	—	20.0	152.8
600 x 400	*609,6 x 406,4*	—	—	*508,0*	*69,3*
24 x 18	24.000 x 18.000	—	—	20.0	154.1
600 x 450	*609,6 x 457,2*	—	—	*508,0*	*69,9*
24 x 20	24.000 x 20.000	—	—	20.0	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 37 for fitting specifications.

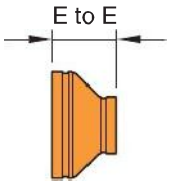


Figure 250
Cast Concentric
Reducer

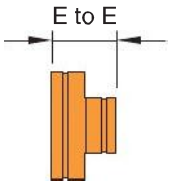


Figure 350
Fabricated Concentric
Reducer

Figures 251 & 351 Eccentric Reducers

(Page 1 of 3)

Tech Data Sheet: G180

10 YEAR LIMITED WARRANTY

Figure 251
Cast Eccentric Reducer

Figure 351
Fabricated Eccentric Reducer
(Segment Welded)

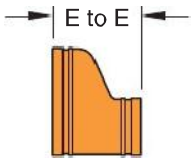


Figure 251
Cast Eccentric Reducer

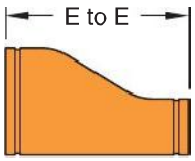


Figure 351
Fabricated Eccentric Reducer
(Segment Welded)

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*
1½ x 1	1.900 x 1.315	—	—	8.5	1.9
40 x 25	*48,3 x 33,4*	—	—	*215,9*	*0,9*
1½ x 1¼	1.900 x 1.660	—	—	8.5	2.2
40 x 32	*48,3 x 42,4*	—	—	*215,9*	*1,0*
2 x 1	2.375 x 1.315	—	—	9.0	2.2
50 x 25	*60,3 x 33,4*	—	—	*223,6*	*1,0*
2 x 1¼	2.375 x 1.660	—	—	9.0	2.4
50 x 32	*60,3 x 42,4*	—	—	*228,6*	*1,1*
2 x 1½	2.375 x 1.900	—	—	9.0	2.5
50 x 40	*60,3 x 48,3*	—	—	*228,6*	*1,1*
2½ x 1	2.875 x 1.315	—	—	9.5	3.2
65 x 25	*73,0 x 33,4*	—	—	*241,3*	*1,5*
2½ x 1¼	2.875 x 1.660	—	—	9.5	3.4
65 x 32	*73,0 x 42,4*	—	—	*241,3*	*1,5*
2½ x 1½	2.875 x 1.900	—	—	9.5	3.6
65 x 40	*73,0 x 48,3*	—	—	*241,3*	*1,6*
2½ x 2	2.875 x 2.375	—	—	9.5	4.0
65 x 50	*73,0 x 60,3*	—	—	*241,3*	*1,8*
3 x 1	3.500 x 1.315	—	—	9.5	4.0
80 x 25	*88,9 x 33,4*	—	—	*241,3*	*1,8*
3 x 1¼	3.500 x 1.660	—	—	9.5	4.3
80 x 32	*88,9 x 42,4*	—	—	*241,3*	*2,0*
3 x 1½	3.500 x 1.900	—	—	9.5	4.5
80 x 40	*88,9 x 48,3*	—	—	*241,3*	*2,0*
3 x 2	3.500 x 2.375	3.5	2.0	—	—
80 x 50	*88,9 x 60,3*	*88,9*	*0,9*	—	—
3 x 2½	3.500 x 2.875	3.5	2.2	—	—
80 x 65	*88,9 x 73,0*	*88,9*	*1,0*	—	—
4 x 1	4.500 x 1.315	—	—	10.0	5.9
100 x 25	*114,3 x 33,4*	—	—	*254,0*	*2,7*
4 x 1¼	4.500 x 1.660	—	—	10.0	6.3
100 x 32	*114,3 x 42,4*	—	—	*254,0*	*2,9*
4 x 1½	4.500 x 1.900	—	—	10.0	6.4
100 x 40	*114,3 x 48,3*	—	—	*254,0*	*2,9*
4 x 2	4.500 x 2.375	4.0	3.0	—	—
100 x 50	*114,3 x 60,3*	*101,6*	*1,4*	—	—
4 x 2½	4.500 x 2.875	4.0	3.0	—	—
100 x 65	*114,3 x 73,0*	*101,6*	*1,4*	—	—
4 x 3	4.500 x 3.500	4.0	3.3	—	—
100 x 80	*114,3 x 88,9*	*101,6*	*1,5*	—	—
5 x 2	5.563 x 2.375	—	—	11.0	9.3
125 x 50	*141,3 x 60,3*	—	—	*279,4*	*4,2*

Figures 251 & 351 Eccentric Reducers

Tech Data Sheet: G180

10 YEAR LIMITED WARRANTY

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 2½	5.563 x 2.875	—	—	11.0	9.9
125 x 65	*141,3 x 73,0*	—	—	*279,4*	*4,5*
5 x 3	5.563 x 3.500	—	—	11.0	10.7
125 x 80	*141,3 x 88,9*	—	—	*279,4*	*4,9*
5 x 4	5.563 x 4.500	5.0	5.7	—	—
125 x 100	*141,3 x 114,3*	*127,5*	*2,6*	—	—
165,1mm x 3	6.500 x 3.500	—	—	11.5	13.6
150 x 80	*165,1 x 88,9*	—	—	*292,1*	*6,2*
165,1mm x 4	6.500 x 4.500	—	—	11.5	14.9
150 x 100	*165,1 x 114,3*	—	—	*292,1*	*6,8*
6 x 2	6.625 x 2.375	—	—	11.5	12.2
150 x 50	*168,3 x 60,3*	—	—	*292,1*	*5,5*
6 x 2½	6.625 x 2.875	—	—	11.50	12.8
150 x 65	*168,3 x 73,0*	—	—	*292,1*	*5,8*
6 x 3	6.625 x 3.500	5.5	7.4	—	—
150 x 80	*168,3 x 88,9*	*139,7*	*3,4*	—	—
6 x 4	6.625 x 4.500	5.5	7.5	—	—
150 x 100	*168,3 x 114,3*	*139,7*	*3,4*	—	—
6 x 5	6.625 x 5.563	5.5	8.1	—	—
150 x 125	*168,3 x 141,3*	*139,7*	*3,7*	—	—
8 x 3	8.625 x 3.500	—	—	12.0	17.9
200 x 80	*219,1 x 88,9*	—	—	*304,8*	*8,1*
8 x 4	8.625 x 4.500	—	—	12.0	19.7
200 x 100	*219,1 x 114,3*	—	—	*304,8*	*9,8*
8 x 5	8.625 x 5.563	—	—	12.0	21.4
200 x 125	*219,1 x 141,3*	—	—	*304,8*	*9,7*
8 x 6	8.625 x 6.625	—	—	12.0	23.2
200 x 150	*219,1 x 168,3*	—	—	*304,8*	*10,5*
10 x 4	10.750 x 4.500	—	—	13.0	29.7
250 x 100	*273,0 x 114,3*	—	—	*330,2*	*13,5*
10 x 5	10.750 x 5.563	—	—	13.0	31.7
250 x 125	*273,0 x 141,3*	—	—	*330,2*	*14,4*
10 x 6	10.750 x 6.625	—	—	13.0	34.0
250 x 150	*273,0 x 168,3*	—	—	*330,2*	*15,4*
10 x 8	10.750 x 8.625	—	—	13.0	34.4
250 x 200	*273,0 x 219,1*	—	—	*330,2*	*15,6*
12 x 4	12.750 x 4.500	—	—	14.0	44.8
300 x 100	*323,9 x 114,3*	—	—	*355,6*	*20,3*
12 x 6	12.750 x 6.625	—	—	14.0	45.2
300 x 150	*323,9 x 168,3*	—	—	*355,6*	*20,5*
12 x 8	12.750 x 8.625	—	—	14.0	47.7
300 x 200	*323,9 x 219,1*	—	—	*355,6*	*21,6*
12 x 10	12.750 x 10.750	—	—	14.0	52.0
300 x 250	*323,9 x 273,0*	—	—	*355,6*	*23,6*
14 x 6	14.000 x 6.625	—	—	19.0	78.0
350 x 150	*355,6 x 168,3*	—	—	*482,6*	*35,4*
14 x 8	14.000 x 8.625	—	—	19.0	80.0
350 x 200	*355,6 x 219,1*	—	—	*482,6*	*36,3*
14 x 10	14.000 x 10.750	—	—	19.0	84.0
350 x 250	*355,6 x 273,0*	—	—	*482,6*	*38,1*
14 x 12	14.000 x 12.750	—	—	19.0	88.0
350 x 300	*355,6 x 323,9*	—	—	*482,6*	*39,9*

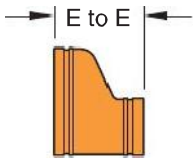


Figure 251
Cast Eccentric Reducer

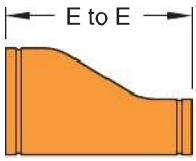


Figure 351
Fabricated Eccentric Reducer
(Segment Welded)

Grinnell

Figures 251 & 351 Eccentric Reducers

(Page 3 of 3)

Tech Data Sheet: G180

10 YEAR LIMITED WARRANTY

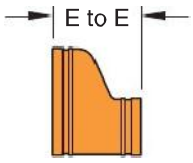


Figure 251
Cast Eccentric Reducer

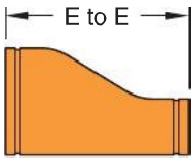


Figure 351
Fabricated Eccentric Reducer
(Segment Welded)

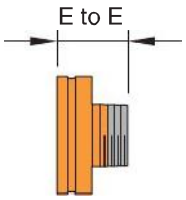
Pipe Size		Figure 251 - Cast		Figure 351 - Fabricated	
Nominal Inches *mm*	O.D. Inches *mm*	E to E Inches *mm*	Approx. Weight Lbs. *kg*	E to E Inches *mm*	Approx. Weight Lbs. *kg*
16 x 8	**16.000 x 8.625**	—	—	**20.0**	**91.0**
400 x 200	*406,4 x 219,1*	—	—	*508,0*	*41,3*
16 x 10	**16.000 x 10.750**	—	—	**20.0**	**96.0**
400 x 250	*406,4 x 273,0*	—	—	*508,0*	*43,5*
16 x 12	**16.000 x 12.750**	—	—	**20.0**	**99.0**
400 x 300	*406,4 x 323,9*	—	—	*508,0*	*44,9*
16 x 14	**16.000 x 14.000**	—	—	**20.0**	**104.0**
400 x 350	*406,4 x 355,6*	—	—	*508,0*	*47,2*
18 x 10	**18.000 x 10.750**	—	—	**21.0**	**110.0**
450 x 250	*457,2 x 273,1*	—	—	*533,0*	*49,9*
18 x 12	**18.000 x 12.750**	—	—	**21.0**	**113.0**
450 x 300	*457,2 x 323,9*	—	—	*533,0*	*51,3*
18 x 14	**18.000 x 14.000**	—	—	**21.0**	**117.0**
450 x 350	*457,2 x 355,6*	—	—	*533,0*	*53,1*
18 x 16	**18.000 x 16.000**	—	—	**21.0**	**121.0**
450 x 400	*457,2 x 406,4*	—	—	*533,0*	*54,9*
20 x 10	**20.000 x 10.750**	—	—	**26.0**	**145.0**
500 x 250	*508,0 x 273,0*	—	—	*660,4*	*65,8*
20 x 12	**20.000 x 12.750**	—	—	**26.0**	**149.0**
500 x 300	*508,0 x 323,9*	—	—	*660,4*	*67,6*
20 x 14	**20.000 x 14.000**	—	—	**26.0**	**152.0**
500 x 350	*508,0 x 355,6*	—	—	*660,4*	*68,9*
20 x 16	**20.000 x 16.000**	—	—	**26.0**	**156.0**
500 x 400	*508,0 x 406,4*	—	—	*660,4*	*70,8*
20 x 18	**20.000 x 18.000**	—	—	**26.0**	**160.0**
500 x 450	*508,0 x 457,2*	—	—	*660,4*	*72,6*
24 x 10	**24.000 x 10.750**	—	—	**26.0**	**147.0**
600 x 250	*609,6 x 273,0*	—	—	*660,4*	*78,9*
24 x 12	**24.000 x 12.750**	—	—	**26.0**	**179.0**
600 x 300	*609,6 x 323,9*	—	—	*660,4*	*81,2*
24 x 14	**24.000 x 14.000**	—	—	**26.0**	**184.0**
600 x 350	*609,6 x 355,6*	—	—	*660,4*	*83,5*
24 x 16	**24.000 x 16.000**	—	—	**26.0**	**189.0**
600 x 400	*609,6 x 406,4*	—	—	*660,4*	*85,7*
24 x 18	**24.000 x 18.000**	—	—	**26.0**	**194.0**
600 x 450	*609,6 x 457,2*	—	—	*660,4*	*88,0*
24 x 20	**24.000 x 20.000**	—	—	**26.0**	**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 37 for fitting specifications.

Figure 372 Concentric Reducers
(Small End Male Thread)

Tech Data Sheet: G180

10 YEAR LIMITED WARRANTY



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	2.50	0.6
40 x 25	*48,3 x 33,7*	*63,5*	*0,3*
2 x ¾	2.375 x 1.050	2.50	1.0
50 x 20	*60,3 x 26,7*	*63,5*	*0,5*
2 x 1	2.375 x 1.315	2.50	0.8
50 x 25	*60,3 x 33,7*	*63,5*	*0,4*
2 x 1¼	2.375 x 1.660	2.50	0.8
50 x 32	*60,3 x 42,4*	*63,5*	*0,4*
2 x 1½	2.375 x 1.900	2.50	0.8
50 x 40	*60,3 x 48,3*	*63,5*	*0,4*
2½ x 1¼	2.875 x 1.660	2.50	1.0
65 x 32	*73,0 x 42,4*	*63,5*	*0,5*
2½ x 1½	2.875 x 1.900	2.50	1.3
65 x 40	*73,0 x 48,3*	*63,5*	*0,6*
2½ x 2	2.875 x 2.375	2.50	1.2
65 x 50	*73,0 x 60,3*	*63,5*	*0,5*
3 x 1	3.500 x 1.315	2.50	1.3
80 x 25	*88,9 x 33,7*	*63,5*	*0,6*
3 x 1½	3.500 x 1.900	2.50	1.3
80 x 40	*88,9 x 48,3*	*63,5*	*0,6*
3 x 2	3.500 x 2.375	2.50	1.3
80 x 50	*88,9 x 60,3*	*63,5*	*0,6*
3 x 2½	3.500 x 2.875	2.50	1.5
80 x 65	*88,9 x 73,0*	*63,5*	*0,7*

Pipe Size		E to E	Approx.
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Weight Lbs. *kg*
4 x 1	4.500 x 1.315	3.00	1.8
100 x 25	*114,3 x 33,4*	*76,2*	*0,8*
4 x 1½	4.500 x 1.900	3.00	2.3
100 x 40	*114,3 x 48,3*	*76,2*	*1,0*
4 x 2	4.500 x 2.375	3.00	2.3
100 x 50	*114,3 x 60,3*	*76,2*	*1,0*
4 x 2½	4.500 x 2.875	3.00	2.3
100 x 65	*114,3 x 73,0*	*76,2*	*1,0*
4 x 3	4.500 x 3.500	3.00	2.6
100 x 80	*114,3 x 88,9*	*76,2*	*1,2*
5 x 4	5.563 x 4.500	3.50	4.5
125 x 100	*141,3 x 114,3*	*88,9*	*2,0*
6 x 1	6.625 x 1.315	4.00	5.2
150 x 25	*168,3 x 33,4*	*101,6*	*2,4*
6 x 2	6.625 x 2.375	4.00	6.0
150 x 50	*168,3 x 60,3*	*101,6*	*2,7*
6 x 3	6.625 x 3.500	4.00	6.0
150 x 80	*168,3 x 88,9*	*101,6*	*2,7*
6 x 4	6.625 x 4.500	4.00	5.9
150 x 100	*168,3 x 114,3*	*101,6*	*2,7*
6 x 5	6.625 x 5.563	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.

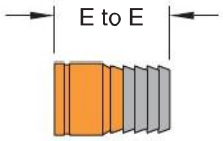
For information on larger sizes, European sizes or other alternative sizes, contact GRINNELL Mechanical Products.

See page 37 for fitting specifications.

Figure 395 Hose Adapter Nipples
(Groove x Hose)

Tech Data Sheet: G180

10 YEAR LIMITED WARRANTY



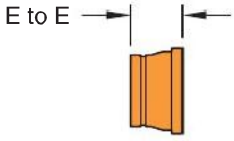
Pipe Size		E to E	Approx. Weight
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Lbs. *kg*
1	**1.315**	**3.25**	**0.4**
25	*33,4*	*82,6*	*0,2*
1¼	**1.600**	**3.63**	**0.7**
32	*42,4*	*92,1*	*0,3*
1½	**1.900**	**4.00**	**0.8**
40	*48,3*	*101,6*	*0,4*
2	**2.375**	**4.63**	**1.3**
50	*60,3*	*117,5*	*0,6*
2½	**2.875**	**5.50**	**2.1**
65	*73,0*	*139,7*	*1,0*
3	**3.500**	**6.00**	**3.3**
80	*88,9*	*152,4*	*1,5*
4	**4.500**	**7.25**	**5.5**
100	*114,3*	*184,2*	*2,5*
5	**5.563**	**9.75**	**8.1**
125	*141,3*	*247,7*	*3,7*
6	**6.625**	**11.00**	**13.2**
150	*168,3*	*279,4*	*6,0*
8	**8.625**	**12.50**	**24.0**
200	*219,1*	*317,5*	*10,9*
10	**10.750**	**14.00**	**29.0**
250	*273,0*	*355,6*	*13,2*
12	**12.750**	**16.00**	**46.0**
300	*323,9*	*406,4*	*20,9*

For information on larger sizes, contact GRINNELL Mechanical Products.
See page 37 for fitting specifications.

Figure 380 Female Thread Adapters
(Groove x Female Thread)

Tech Data Sheet: G180

10 YEAR LIMITED WARRANTY



Pipe Size		E to E	Approx. Weight
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Lbs. *kg*
1	**1.315**	**2.063**	**0.7**
25	*33,4*	*52,4*	*0,3*
1¼	**1.600**	**2.312**	**1.4**
32	*42,4*	*58,7*	*0,6*
1½	**1.900**	**2.312**	**1.5**
40	*48,3*	*58,7*	*0,7*
2	**2.375**	**2.500**	**1.6**
50	*60,3*	*63,5*	*0,7*
2½	**2.875**	**2.500**	**1.9**
65	*73,0*	*63,5*	*0,9*
76,1mm	**3.000**	**2.500**	**1.9**
65	*76,1*	*63,5*	*0,9*
3	**3.500**	**2.750**	**2.5**
80	*88,9*	*69,9*	*1,1*
4	**4.500**	**3.250**	**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 37 for fitting specifications.

Figures 391, 392 & 393 Adapter Nipples

Tech Data Sheet: G180

10 YEAR LIMITED WARRANTY

Figure 391
Fabricated Adapter Nipple
Groove x Male Thread

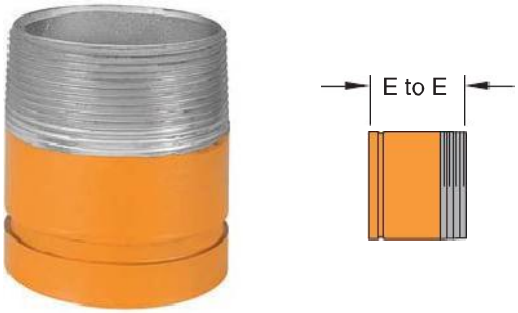


Figure 392
Fabricated Adapter Nipple
Groove x Groove

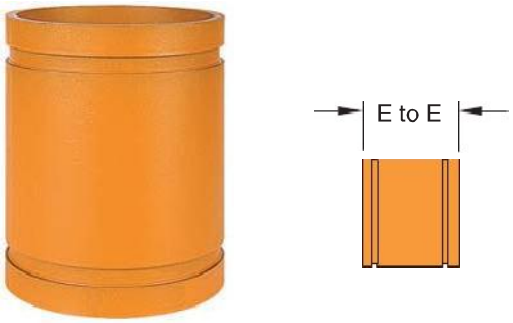
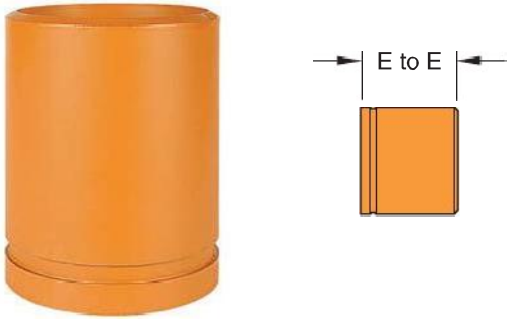


Figure 393
Fabricated Adapter Nipple
Groove x Plain



Pipe Size		E to E	Approx. Weight
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Lbs. *kg*
1¼	1.600	4.00	0.8
32	*42,4*	*101,6*	*0,4*
1½	1.900	4.00	0.9
40	*48,3*	*101,6*	*0,4*
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*
10	10.750	8.00	27.0
250	*273,0*	*203,2*	*12,2*
12	12.750	8.00	33.0
300	*323,9*	*203,2*	*15,0*

For information on larger sizes, contact GRINNELL Mechanical Products.

See page 37 for fitting specifications.

Figures 397, 398 & 399 Concentric Swaged Nipples

Tech Data Sheet: G180

10 YEAR LIMITED WARRANTY

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		E to E	Approx.
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Weight Lbs. *kg*
2 x 1	2.375 x 1.315	6.50	2.0
50 x 25	*60,3 x 33,4*	*165,1*	*0,9*
2 x 1¼	2.375 x 1.660	6.50	2.0
50 x 32	*60,3 x 42,4*	*165,1*	*0,9*
2 x 1½	2.375 x 1.900	6.50	2.0
50 x 40	*60,3 x 48,3*	*165,1*	*0,9*
2½ x 1	2.875 x 1.315	7.00	3.5
65 x 25	*73,0 x 33,4*	*177,8*	*1,6*
2½ x 1¼	2.875 x 1.660	7.00	3.5
65 x 32	*73,0 x 42,4*	*177,8*	*1,6*
2½ x 1½	2.875 x 1.900	7.00	3.5
65 x 40	*73,0 x 48,3*	*177,8*	*1,6*
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 1	3.500 x 1.315	8.00	5.0
80 x 25	*88,9 x 33,4*	*203,2*	*2,3*
3 x 1¼	3.500 x 1.600	8.00	5.0
80 x 32	*88,9 x 42,4*	*203,2*	*2,3*
3 x 1½	3.500 x 1.900	8.00	5.0
80 x 40	*88,9 x 48,3*	*203,2*	*2,3*
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 1	4.500 x 1.315	9.00	8.0
100 x 25	*114,3 x 33,4*	*228,6*	*3,6*
4 x 1¼	4.500 x 1.660	9.00	8.0
100 x 32	*114,3 x 42,4*	*228,6*	*3,6*
4 x 1½	4.500 x 1.900	9.00	8.0
100 x 40	*114,3 x 48,3*	*228,6*	*3,6*
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*

Pipe Size		E to E	Approx.
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Weight Lbs. *kg*
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 1½	5.563 x 1.900	11.00	12.0
125 x 40	*141,3 x 48,3*	*279,4*	*5,4*
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 2½	5.563 x 2.875	11.00	12.0
125 x 65	*141,3 x 73,0*	*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 1	6.625 x 1.315	12.00	19.0
150 x 25	*168,3 x 33,4*	*304,8*	*8,6*
6 x 1¼	6.625 x 1.660	12.00	19.0
150 x 32	*168,3 x 42,4*	*304,8*	*8,6*
6 x 1½	6.625 x 21.900	12.00	19.0
150 x 40	*168,3 x 48,3*	*304,8*	*8,6*
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 6	8.625 x 6.625	◆	◆
200 x 150	*219,1 x 168,3*	-	-

◆ These sizes are available. Contact GRINNELL Mechanical Products for details.

For information on larger sizes, contact GRINNELL Mechanical Products.

See page 37 for fitting specifications.

Figure 324 90° True Wyes

Tech Data Sheet: G180

10 YEAR LIMITED WARRANTY

Pipe Size		C to LE	C to SE	Approx.
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Inches *mm*	Weight Lbs. *kg*
1¼	1.660	2.75	2.50	1.4
32	*42,4*	*69,9*	*63,5*	*0,6*
1½	1.900	2.75	2.75	1.7
40	*48,3*	*69,9*	*69,9*	*0,8*
2	2.375	3.25	2.75	2.5
50	*60,3*	*82,6*	*69,9*	*1,1*
2½	2.875	3.75	3.00	4.4
65	*73,0*	*95,3*	*76,2*	*2,0*
76,1mm	3.000	3.75	3.00	4.4
65	*76,1*	*95,3*	*76,2*	*2,0*
3	3.500	4.25	3.25	6.4
80	*88,9*	*108,0*	*82,6*	*2,9*
4	4.500	5.00	3.75	10.5
100	*114,3*	*127,0*	*95,3*	*4,8*
139,7mm	5.500	5.50	4.00	15.2
125	*139,7*	*139,7*	*101,6*	*6,9*
5	5.563	5.50	4.00	15.2
125	*141,3*	*139,7*	*101,6*	*6,9*
165,1mm	6.500	6.50	4.50	22.9
150	*165,1*	*165,1*	*114,3*	*10,4*
6	6.625	6.50	4.50	22.9
150	*168,3*	*165,1*	*114,3*	*10,4*
8	8.625	7.75	6.00	41.9
200	*219,1*	*196,9*	*152,4*	*19,0*
10	10.750	9.00	6.50	66.2
250	*273,0*	*228,6*	*165,71*	*30,0*
12	12.750	10.00	7.00	87.7
300	*323,9*	*254,0*	*177,8*	*39,8*
14	14.000	11.00	7.50	105.3
350	*355,6*	*279,4*	*190,5*	*47,8*
16	16.000	12.00	8.00	129.1
400	*406,4*	*304,8*	*203,2*	*58,6*
18	18.000	15.50	8.50	184.4
450	*457,2*	*393,7*	*215,9*	*83,6*
20	20.000	17.25	9.00	225.8
500	*508,0*	*438,2*	*238,6*	*102,4*
24	24.000	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 37 for fitting specifications.

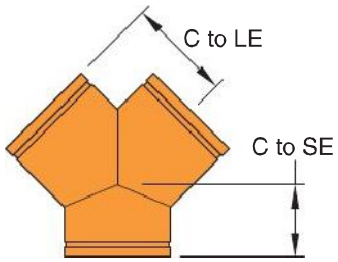
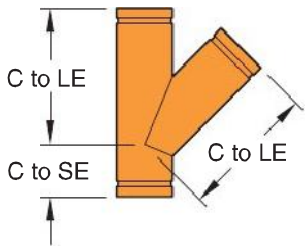


Figure 314 45° Laterals

Tech Data Sheet: G180

10 YEAR LIMITED WARRANTY



Pipe Size		C to LE	C to SE	Approx.
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Inches *mm*	Weight Lbs. *kg*
1¼	1.660	2.75	2.50	1.4
32	*42,4*	*69,9*	*63,5*	*0,6*
1½	1.900	2.75	2.75	1.7
40	*48,3*	*69,9*	*69,9*	*0,8*
2	2.375	3.25	2.75	2.5
50	*60,3*	*82,6*	*69,9*	*1,1*
2½	2.875	3.75	3.00	4.4
65	*73,0*	*95,3*	*76,2*	*2,0*
76,1mm	3.000	3.75	3.00	4.4
65	*76,1*	*95,3*	*76,2*	*2,0*
3	3.500	4.25	3.25	6.4
80	*88,9*	*108,0*	*82,6*	*2,9*
4	4.500	5.00	3.75	10.5
100	*114,3*	*127,0*	*95,3*	*4,8*
139,7mm	5.500	12.52	4.00	30.0
125	*139,7*	*318,0*	*102,0*	*13,6*
5	5.563	5.50	4.00	15.2
125	*141,3*	*139,7*	*101,6*	*6,9*
165,1mm	6.500	6.50	4.50	22.9
150	*165,1*	*165,1*	*114,3*	*10,4*
6	6.625	6.50	4.50	22.9
150	*168,3*	*165,1*	*114,3*	*10,4*
8	8.625	7.75	6.00	41.9
200	*219,1*	*196,9*	*152,4*	*19,0*
10	10.750	9.00	6.50	66.2
250	*273,0*	*228,6*	*165,71*	*30,0*
12	12.750	10.00	7.00	87.7
300	*323,9*	*254,0*	*177,8*	*39,8*
14	14.000	11.00	7.50	105.3
350	*355,6*	*279,4*	*190,5*	*47,8*
16	16.000	12.00	8.00	129.1
400	*406,4*	*304,8*	*203,2*	*58,6*
18	18.000	15.50	8.50	184.4
450	*457,2*	*393,7*	*215,9*	*83,6*
20	20.000	17.25	9.00	225.8
500	*508,0*	*438,2*	*238,6*	*102,4*
24	24.000	20.00	10.00	308.5
600	*609,6*	*508,0*	*254,0*	*139,9*

For information on larger sizes, contact GRINNELL Mechanical Products.

See page 37 for fitting specifications.

Figure 325 45° Reducing Laterals

Tech Data Sheet: G180

10 YEAR LIMITED WARRANTY

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	3.500 x 3.500 x 2.375	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 2½	3.500 x 3.500 x 2.875	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 76,1mm	3.500 x 3.500 x 3.000	8.50	3.25	11.5
80 x 80 x 76,1	*88,9 x 88,9 x 76,1*	*216,0*	*83,0*	*5,2*
4 x 4 x 2	4.500 x 4.500 x 2.375	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 2½	4.500 x 4.500 x 2.875	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 76,1mm	4.500 x 4.500 x 3.000	10.50	3.75	16.9
100 x 100 x 65	*114,3 x 114,3 x 76,1*	*267,0*	*95,0*	*7,7*
4 x 4 x 3	4.500 x 4.500 x 3.500	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*
139,7 x 139,7mm x 2	5.500 x 5.500 x 2.375	12.50	4.00	22.4
125 x 125 x 50	*139,7 x 139,7 x 60,3*	*318,1*	*102,0*	*10,2*
139,7 x 139,7mm x 3	5.500 x 5.500 x 3.500	12.50	4.00	26.5
125 x 125 x 80	*139,7 x 139,7 x 88,9*	*318,0*	*102,0*	*12,0*
139,7 x 139,7mm x 4	5.500 x 5.500 x 4.500	12.50	4.00	30.4
125 x 125 x 100	*139,7 x 139,7 x 114,3*	*318,0*	*102,0*	*13,8*
5 x 5 x 2	5.563 x 5.563 x 2.375	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 2½	5.563 x 5.563 x 2.875	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 3	5.563 x 5.563 x 3.500	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	5.563 x 5.563 x 4.500	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*
165,1 x 165,1mm x 2	6.500 x 6.500 x 2.375	14.00	4.50	33.1
150 x 150 x 50	*165,1 x 165,1 x 60,3*	*356,0*	*114,0*	*15,0*
165,1 x 165,1mm x 3	6.500 x 6.500 x 3.500	14.00	4.50	37.0
150 x 150 x 80	*165,1 x 165,1 x 88,9*	*356,0*	*114,0*	*16,8*
165,1 x 165,1mm x 4	6.500 x 6.500 x 4.500	14.00	4.50	39.9
150 x 150 x 100	*165,1 x 165,1 x 114,3*	*356,0*	*114,0*	*18,1*
165,1 x 165,1 x 139,7mm	6.500 x 6.500 x 5.500	14.00	4.50	45.0
150 x 150 x 125	*165,1 x 165,1 x 139,7*	*356,0*	*114,0*	*20,4*
6 x 6 x 2	6.625 x 6.625 x 2.375	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 2½	6.625 x 6.625 x 2.875	14.00	4.50	34.0
150 x 150 x 65	*168,3 x 168,3 x 73,0*	*355,6*	*114,3*	*15,0*
6 x 6 x 3	6.625 x 6.625 x 3.500	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	6.625 x 6.625 x 4.500	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 139,7mm	6.625 x 6.625 x 5.500	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	6.625 x 6.625 x 5.563	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*

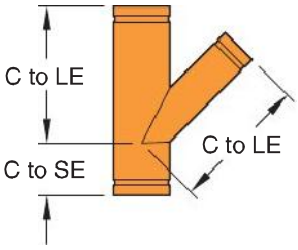
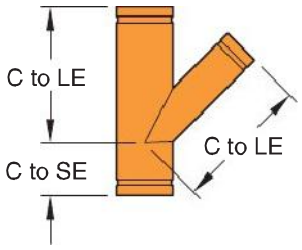


Figure 325 45° Reducing Laterals

(Page 2 of 3)

Tech Data Sheet: G180

10 YEAR LIMITED WARRANTY



Pipe Size		C to LE Inches *mm*	C to SE Inches *mm*	Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*			
8 x 8 x 4	**8.625 x 8.625 x 4.500**	**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 139,7mm	**8.625 x 8.625 x 5.500**	**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	**8.625 x 8.625 x 5.563**	**18.00**	**6.00**	**62.2**
200 x 200 x 125	*219,1 x 219,1 x 141,3*	*457,2*	*152,4*	*28,2*
8 x 8 x 6	**8.625 x 8.625 x 6.625**	**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*
10 x 10 x 4	**10.750 x 10.750 x 4.500**	**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*
10 x 10 x 139,7mm	**10.750 x 10.750 x 5.500**	**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	**10.750 x 10.750 x 5.563**	**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 6	**10.750 x 10.750 x 6.625**	**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 8	**10.750 x 10.750 x 8.625**	**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*
12 x 12 x 4	**12.750 x 12.750 x 4.500**	**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 6	**12.750 x 12.750 x 6.625**	**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 8	**12.750 x 12.750 x 8.625**	**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 10	**12.750 x 12.750 x 10.750**	**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	**14.000 x 14.000 x 4.500**	**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	**14.000 x 14.000 x 6.625**	**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	**14.000 x 14.000 x 8.625**	**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*
14 x 14 x 10	**14.000 x 14.000 x 10.750**	**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 12	**14.000 x 14.000 x 12.750**	**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	**16.000 x 16.000 x 6.625**	**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	**16.000 x 16.000 x 8.625**	**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	**16.000 x 16.000 x 10.750**	**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	**16.000 x 16.000 x 12.750**	**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	**16.000 x 16.000 x 14.000**	**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*

Figure 325 45° Reducing Laterals

Tech Data Sheet: G180

10 YEAR LIMITED WARRANTY

Pipe Size		C to LE	C to SE	Approx.
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Inches *mm*	Weight Lbs. *kg*
18 x 18 x 6	**18.000 x 18.000 x 6.625**	**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	**18.000 x 18.000 x 8.625**	**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	**18.000 x 18.000 x 10.750**	**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	**18.000 x 18.000 x 12.750**	**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	**18.000 x 18.000 x 14.000**	**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	**18.000 x 18.000 x 16.000**	**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	**20.000 x 20.000 x 12.750**	**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	**20.000 x 20.000 x 14.000**	**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	**20.000 x 20.000 x 16.000**	**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*
24 x 24 x 16	**24.000 x 24.000 x 16.000**	**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	**24.000 x 24.000 x 20.000**	**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 37 for fitting specifications.

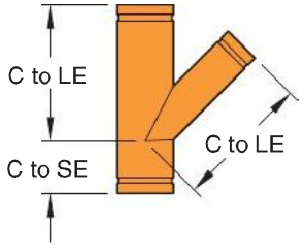


Figure 330 Tee Wyes

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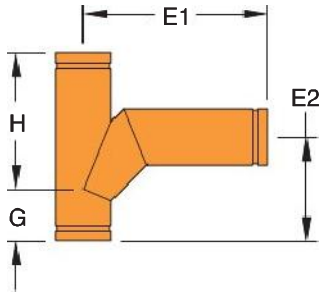
Tech Data Sheet: G180

10 YEAR LIMITED WARRANTY



Pipe Size		G	H	E1	E2	Approx
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Inches *mm*	Inches *mm*	Inches *mm*	Wt. Lbs. *kg*
2 x 2 x 2	2.375 x 2.375 x 2.375	2.75	7.00	9.00	7.37	5.7
50 x 50 x 50	*60,3 x 60,3 x 60,3*	*69,9*	*177,8*	*228,6*	*187,2*	*2,6*
2½ x 2½ x 2½	2.875 x 2.875 x 2.875	3.00	7.75	10.50	8.84	10.2
65 x 65 x 65	*73,0 x 73,0 x 73,0*	*76,2*	*196,9*	*266,7*	*224,5*	*4,6*
3 x 3 x 3	3.500 x 3.500 x 3.500	3.25	8.50	11.50	9.31	14.4
80 x 80 x 80	*88,9 x 88,9 x 88,9*	*82,6*	*215,9*	*292,1*	*236,5*	*6,5*
4 x 4 x 3	4.500 x 4.500 x 3.500	3.75	10.50	12.88	10.17	20.5
100 x 100 x 80	*114,3 x 114,3 x 88,9*	*95,3*	*266,7*	*327,2*	*258,3*	*9,3*
4 x 4 x 4	4.500 x 4.500 x 4.500	3.75	10.50	13.63	11.87	24.6
100 x 100 x 100	*114,3 x 114,3 x 114,3*	*95,3*	*266,7*	*346,2*	*301,5*	*11,2*
5 x 5 x 3	5.563 x 5.563 x 3.500	4.00	12.50	14.25	13.25	28.4
125 x 125 x 80	*141,3 x 141,3 x 88,9*	*101,6*	*317,5*	*362,0*	*336,6*	*12,9*
5 x 5 x 4	5.563 x 5.563 x 4.500	4.00	12.50	15.13	13.61	32.8
125 x 125 x 100	*141,3 x 141,3 x 114,3*	*101,6*	*317,5*	*384,3*	*345,7*	*14,9*
5 x 5 x 5	5.563 x 5.563 x 5.563	4.00	12.50	16.13	14.00	38.8
125 x 125 x 125	*141,3 x 141,3 x 141,3*	*101,6*	*317,5*	*409,7*	*355,6*	*17,6*
6 x 6 x 3	6.625 x 6.625 x 3.500	4.50	14.00	15.31	14.81	37.9
150 x 150 x 80	*168,3 x 168,3 x 88,9*	*114,3*	*355,6*	*388,9*	*376,2*	*17,2*
6 x 6 x 4	6.625 x 6.625 x 4.500	4.50	14.00	16.25	15.25	42.5
150 x 150 x 100	*168,3 x 168,3 x 114,3*	*114,3*	*355,6*	*412,8*	*387,4*	*19,3*
6 x 6 x 5	6.625 x 6.625 x 5.563	4.50	14.00	17.25	15.62	48.5
150 x 150 x 125	*168,3 x 168,3 x 141,3*	*114,3*	*355,6*	*438,2*	*396,7*	*22,0*
6 x 6 x 6	6.625 x 6.625 x 6.625	4.50	14.00	18.25	16.00	56.3
150 x 150 x 150	*168,3 x 168,3 x 168,3*	*114,3*	*355,6*	*463,6*	*406,4*	*25,5*
8 x 8 x 3	8.625 x 8.625 x 3.500	6.00	18.00	18.19	19.18	67.3
200 x 200 x 80	*219,1 x 219,1 x 88,9*	*152,4*	*457,2*	*462,0*	*487,2*	*30,5*
8 x 8 x 4	8.625 x 8.625 x 4.500	6.00	18.00	19.00	19.50	72.3
200 x 200 x 100	*219,1 x 219,1 x 114,3*	*152,4*	*457,2*	*482,6*	*495,3*	*32,8*
8 x 8 x 5	8.625 x 8.625 x 5.563	6.00	18.00	20.00	19.87	78.8
200 x 200 x 125	*219,1 x 219,1 x 141,3*	*152,4*	*457,2*	*508,0*	*504,7*	*35,7*

Figure 330 Tee Wyes

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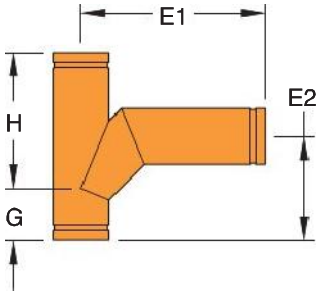
Tech Data Sheet: G180

10 YEAR LIMITED WARRANTY



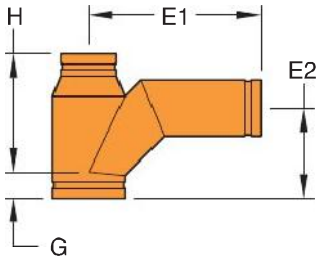
Pipe Size		G	H	E1	E2	Approx
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Inches *mm*	Inches *mm*	Inches *mm*	Wt. Lbs. *kg*
8 x 8 x 6	**8.625 x 8.625 x 6.625**	**6.00**	**18.00**	**21.13**	**20.37**	**87.4**
200 x 200 x 150	*219,1 x 219,1 x 168,3*	*152,4*	*457,2*	*536,7*	*517,4*	*39,6*
8 x 8 x 8	**8.625 x 8.625 x 8.625**	**6.00**	**18.00**	**23.25**	**21.25**	**109.0**
200 x 200 x 200	*219,1 x 219,1 x 219,1*	*152,4*	*457,2*	*590,6*	*539,8*	*49,4*
10 x 10 x 3	**10.750 x 10.750 x 3.500**	**6.50**	**20.50**	**19.88**	**21.38**	**101.7**
250 x 250 x 80	*273,0 x 273,0 x 88,9*	*165,1*	*520,7*	*505,0*	*543,1*	*46,1*
10 x 10 x 4	**10.750 x 10.750 x 4.500**	**6.50**	**20.50**	**20.75**	**21.75**	**106.9**
250 x 250 x 100	*273,0 x 273,0 x 114,3*	*165,1*	*520,7*	*527,1*	*552,5*	*48,5*
10 x 10 x 5	**10.750 x 10.750 x 5.563**	**6.50**	**20.50**	**21.88**	**22.25**	**113.8**
250 x 250 x 125	*273,0 x 273,0 x 141,3*	*165,1*	*520,7*	*555,8*	*565,2*	*51,6*
10 x 10 x 6	**10.750 x 10.750 x 6.625**	**6.50**	**20.50**	**22.88**	**22.62**	**122.1**
250 x 250 x 150	*273,0 x 273,0 x 168,3*	*165,1*	*520,7*	*581,2*	*574,6*	*55,4*
10 x 10 x 8	**10.750 x 10.750 x 8.625**	**6.50**	**20.50**	**27.25**	**23.75**	**151.1**
250 x 250 x 200	*273,0 x 273,0 x 219,1*	*165,1*	*520,7*	*692,2*	*603,3*	*68,5*
10 x 10 x 10	**10.750 x 10.750 x 10.750**	**6.50**	**20.50**	**27.25**	**24.41**	**175.1**
250 x 250 x 250	*273,0 x 273,0 x 273,0*	*165,1*	*520,7*	*692,2*	*620,0*	*79,4*
12 x 12 x 3	**12.750 x 12.750 x 3.500**	**7.00**	**23.00**	**20.75**	**22.75**	**134.5**
300 x 300 x 80	*323,9 x 323,9 x 88,9*	*177,8*	*584,2*	*527,1*	*577,9*	*61,0*
12 x 12 x 4	**12.750 x 12.750 x 4.500**	**7.00**	**23.00**	**21.50**	**23.00**	**139.4**
300 x 300 x 100	*323,9 x 323,9 x 114,3*	*177,8*	*584,2*	*546,1*	*584,2*	*63,2*
12 x 12 x 6	**12.750 x 12.750 x 6.625**	**7.00**	**23.00**	**23.75**	**24.00**	**154.5**
300 x 300 x 150	*323,9 x 323,9 x 168,3*	*177,8*	*584,2*	*603,3*	*609,6*	*70,0*
12 x 12 x 8	**12.750 x 12.750 x 8.625**	**7.00**	**23.00**	**26.00**	**25.00**	**175.8**
300 x 300 x 200	*323,9 x 323,9 x 219,1*	*177,8*	*584,2*	*660,4*	*635,0*	*79,7*
12 x 12 x 10	**12.750 x 12.750 x 10.750**	**7.00**	**23.00**	**28.00**	**25.75**	**205.4**
300 x 300 x 250	*323,9 x 323,9 x 273,0*	*177,8*	*584,2*	*711,2*	*654,1*	*93,2*
12 x 12 x 12	**12.750 x 12.750 x 12.750**	**7.00**	**23.00**	**31.00**	**27.50**	**240.1**
300 x 300 x 300	*323,9 x 323,9 x 323,9*	*177,8*	*584,2*	*787,4*	*698,5*	*108,9*

For information on larger sizes, contact GRINNELL Mechanical Products.
See page 37 for fitting specifications.

Figure 331 Reducing Tee Wyes

Tech Data Sheet: G180

10 YEAR LIMITED WARRANTY



Pipe Size		G	H	E1	E2	Approx Wt.
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Inches *mm*	Inches *mm*	Inches *mm*	Lbs. *kg*
4 x 3 x 3	**4.500 x 3.500 x 3.500**	**9.01**	**7.38**	**10.75**	**7.25**	**13.7**
100 x 80 x 80	*114,3 x 88,9 x 88,9*	*228,9*	*187,5*	*273,1*	*184,2*	*6,2*
4 x 3 x 4	**4.500 x 3.500 x 4.500**	**14.25**	**10.50**	**13.63**	**11.87**	**24.5**
100 x 80 x 100	*114,3 x 88,9 x 114,3*	*362,0*	*266,7*	*346,2*	*301,5*	*11,1*
5 x 3 x 3	**5.563 x 3.500 x 3.500**	**11.00**	**9.75**	**11.50**	**7.71**	**19.0**
125 x 80 x 80	*141,3 x 88,9 x 88,9*	*279,5*	*247,7*	*292,1*	*195,8*	*8,6*
5 x 3 x 5	**5.563 x 3.500 x 5.563**	**16.50**	**12.50**	**16.13**	**13.95**	**38.5**
125 x 80 x 125	*141,3 x 88,9 x 141,3*	*419,1*	*317,5*	*409,7*	*354,3*	*17,5*
5 x 4 x 3	**5.563 x 4.500 x 3.500**	**11.01**	**9.13**	**11.88**	**8.71**	**19.5**
125 x 100 x 80	*141,3 x 114,3 x 88,9*	*279,7*	*231,9*	*301,88*	*221,2*	*8,8*
5 x 4 x 4	**5.563 x 4.500 x 4.500**	**11.01**	**9.13**	**12.75**	**9.00**	**23.1**
125 x 100 x 100	*141,3 x 114,3 x 114,3*	*279,7*	*231,9*	*323,9*	*228,6*	*10,5*
6 x 4 x 6	**6.625 x 4.500 x 6.625**	**18.50**	**14.00**	**18.25**	**13.78**	**56.2**
150 x 100 x 150	*168,3 x 114,3 x 168,3*	*469,9*	*355,6*	*463,6*	*350,0*	*25,5*
6 x 5 x 3	**6.625 x 5.563 x 3.500**	**12.00**	**10.75**	**13.00**	**9.25**	**25.6**
150 x 125 x 80	*168,3 x 141,3 x 88,9*	*304,9*	*273,1*	*330,2*	*235,0*	*11,6*
6 x 5 x 4	**6.625 x 5.563 x 4.500**	**12.00**	**10.75**	**13.88**	**9.62**	**29.3**
150 x 125 x 100	*168,3 x 141,3 x 114,3*	*304,9*	*273,1*	*352,6*	*244,3*	*13,3*
8 x 6 x 4	**8.625 x 6.625 x 4.500**	**13.00**	**12.00**	**14.75**	**10.25**	**40.2**
200 x 150 x 100	*219,1 x 168,3 x 114,3*	*330,2*	*304,8*	*374,7*	*260,3*	*18,2*
8 x 6 x 8	**8.625 x 6.625 x 8.625**	**24.00**	**18.00**	**23.25**	**21.25**	**108.6**
200 x 150 x 200	*219,1 x 168,3 x 219,1*	*609,6*	*457,2*	*590,6*	*539,8*	*49,3*

For information on larger sizes, contact GRINNELL Mechanical Products.
See page 37 for fitting specifications.

Figures 227 & 327 Crosses

Tech Data Sheet: G180

10 YEAR LIMITED WARRANTY

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*
1¼	1.660	2.75	2.2	2.75	2.2
32	*42,4*	*69,9*	*1,0*	*69,9*	*1,0*
1½	1.900	2.75	2.5	2.75	2.5
40	*48,3*	*69,9*	*1,1*	*69,9*	*1,1*
2	2.375	3.25	3.7	3.25	3.7
50	*60,3*	*82,6*	*1,7*	*82,6*	*1,7*
2½	2.875	3.75	5.8	3.75	5.8
65	*73,0*	*95,3*	*2,6*	*95,3*	*2,6*
76,1mm	3.000	3.75	6.0	3.75	6.0
65	*76,1*	*95,3*	*2,7*	*95,3*	*2,7*
3	3.500	4.25	8.6	4.25	8.6
80	*88,9*	*108,0*	*3,9*	*108,0*	*3,9*
4	4.500	5.00	20.7	5.00	20.7
100	*114,3*	*127,0*	*9,4*	*127,0*	*9,4*
139,7mm	5.500	5.50	17.6	5.50	17.6
125	*139,7*	*139,7*	*8,0*	*139,7*	*8,0*
5	5.563	5.50	18.5	5.50	18.5
125	*141,3*	*139,7*	*8,4*	*139,7*	*8,4*
165,1mm	6.500	6.50	27.3	6.50	27.3
150	*165,1*	*165,1*	*12,4*	*165,1*	*12,4*
6	6.625	6.50	28.6	6.50	28.6
150	*168,3*	*165,1*	*13,0*	*165,1*	*13,0*
8	8.625	7.75	48.0	7.75	48.0
200	*219,1*	*196,9*	*21,7*	*196,9*	*21,7*
10	10.750	9.00	75.0	9.00	75.0
250	*273,0*	*228,6*	*34,0*	*228,6*	*34,0*
12	12.750	10.00	95.8	10.00	95.8
300	*323,9*	*254,0*	*43,4*	*254,0*	*43,4*
14	14.000	–	–	11.00	136.8
350	*355,6*	–	–	*279,4*	*62,0*
16	16.000	–	–	12.00	167.3
400	*406,4*	–	–	*304,8*	*75,9*
18	18.000	–	–	15.50	259.5
450	*457,2*	–	–	*393,7*	*117,7*
20	20.000	–	–	17.25	321.7
500	*508,0*	–	–	*438,2*	*145,9*
24	24.000	–	–	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 37.

Figure 227
Cast Cross

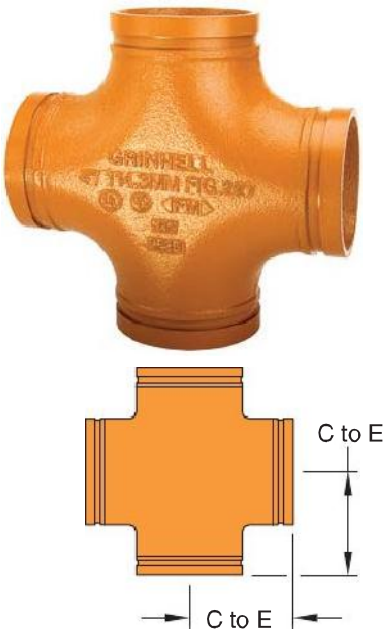
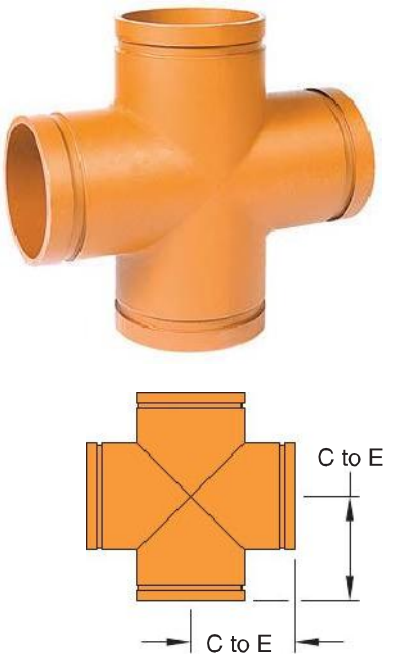


Figure 327
Fabricated Cross



Figures 260 & 360 End Caps

Tech Data Sheet: G180

10 YEAR LIMITED WARRANTY

Figure 260 Cap
Cast

Figure 360 Cap
Fabricated

Figure 260/360 Cap with Tap				
Size (in) *(mm)*	½" *(13mm)* Tap	¾" *(19mm)* Tap	1" *(25mm)* Tap	2" *(50mm)* Tap
1 *(25)*	•	–	–	–
1¼ *(32)*	•	–	–	–
1½ *(40)*	•	–	–	–
2 *(50)*	•	•	–	–
2½ *(65)*	•	•	–	–
3 *(80)*	•	•	•	•
4 *(100)*	•	•	•	•
5 *(125)*	•	•	•	•
6 *(150)*	•	•	•	•
8 *(200)*	•	•	•	•
10 *(250)*	•	•	•	•
12 *(300)*	•	•	•	–
14 *(350)*	–	–	–	–
16 *(400)*	–	–	–	–
18 *(450)*	–	–	–	–
20 *(500)*	–	–	–	–
24 *(600)*	–	–	–	–

Pipe Size		Figure 260 - Cast		Figure 360 - 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	1.315	0.83	0.2	–	–
25	*33,7*	*21,1*	*0,1*	–	–
1¼	1.660	0.83	0.3	–	–
32	*42,4*	*21,1*	*0,1*	–	–
1½	1.900	0.83	0.4	–	–
40	*48,3*	*21,1*	*0,2*	–	–
2	2.375	0.92	0.7	–	–
50	*60,3*	*23,4*	*0,3*	–	–
2½	2.875	0.92	1.0	–	–
65	*73,0*	*23,4*	*0,5*	–	–
76,1mm	3.000	0.86	1.3	–	–
65	*76,1*	*21,8*	*0,6*	–	–
3	3.500	0.92	1.4	–	–
80	*88,9*	*23,4*	*0,6*	–	–
4	4.500	1.00	2.6	–	–
100	*114,3*	*25,4*	*1,2*	–	–
139,7mm	5.500	0.92	4.7	–	–
125	*139,7*	*23,4*	*2,1*	–	–
5	5.563	1.00	5.0	–	–
125	*141,3*	*25,4*	*2,3*	–	–
165,1mm	6.500	0.92	6.4	–	–
150	*165,1*	*23,4*	*2,9*	–	–
6	6.625	1.00	6.2	–	–
150	*168,3*	*25,4*	*2,8*	–	–
8	8.625	1.06	7.1	–	–
200	*219,1*	*27,0*	*3,2*	–	–
10	10.750	1.02	24.5	–	–
250	*273,0*	*25,8*	*11,1*	–	–
12	12.750	1.02	31.0	–	–
300	*323,9*	*25,8*	*14,1*	–	–
14	14.000	–	–	8.50	36.5
350	*355,6*	–	–	*215,9*	*16,6*
16	16.000	–	–	9.00	43.5
400	*406,4*	–	–	*228,6*	*19,7*
18	18.000	–	–	10.00	57.0
450	*457,2*	–	–	*254,0*	*25,6*
20	20.000	–	–	11.00	75.7
500	*508,0*	–	–	*279,4*	*34,3*
24	24.000	–	–	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 37 for fitting specifications.

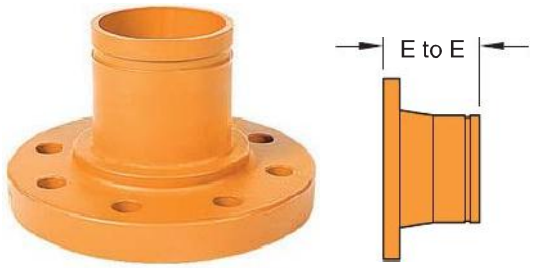
Figure 341 Flange Adapters (ANSI Class 150#)
Figure 342 Flange Adapters (ANSI Class 300#)

Tech Data Sheet: G180

10 YEAR LIMITED WARRANTY

Figure 341
Fabricated Flange Adapter
ANSI Class 150#

Figure 342
Fabricated Flange Adapter
ANSI Class 300#



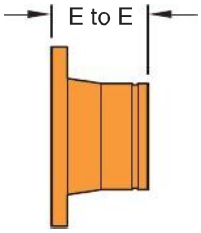
Pipe Size		Figure 341 - ANSI Class 150#			Figure 342 - ANSI Class 300#		
Nominal Inches *mm*	O.D. Inches *mm*	E to E Inches *mm*	Mating Flange Bolt Qty.	Approx. Weight Lbs. *kg*	E to E Inches *mm*	Mating Flange Bolt Qty.	Approx. Weight Lbs. *kg*
1¼	1.660	4.00	4	3.7	4.00	4	4.6
32	*42,4*	*101,6*		*1,7*	*101,6*		*2,1*
1½	1.900	4.00	4	3.9	4.00	4	7.1
40	*48,3*	*101,6*		*1,8*	*101,6*		*3,2*
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*
10	10.750	8.00	12	68.2	8.00	16	122.0
250	*273,0*	*203,2*		*30,9*	*203,2*		*55,3*
12	12.750	8.00	12	96.1	8.00	16	183.0
300	*323,9*	*203,2*		*43,6*	*203,2*		*83,0*
14	14.000	8.00	12	123.0	8.00	20	199.0
350	*355,6*	*203,2*		*55,8*	*203,2*		*90,3*
16	16.000	8.00	16	151.0	8.00	20	255.0
400	*406,4*	*203,2*		*68,5*	*203,2*		*155,7*
18	18.000	8.00	16	165.0	8.00	24	303.0
450	*457,2*	*203,2*		*74,8*	*203,2*		*137,4*
20	20.000	8.00	20	205.0	8.00	24	365.0
500	*508,0*	*203,2*		*93,0*	*203,2*		*165,6*
24	24.000	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 37 for fitting specifications.

Figure 343 Flange Adapters (PN16)
Figure 344 Flange Adapters (PN16 BS 4504)

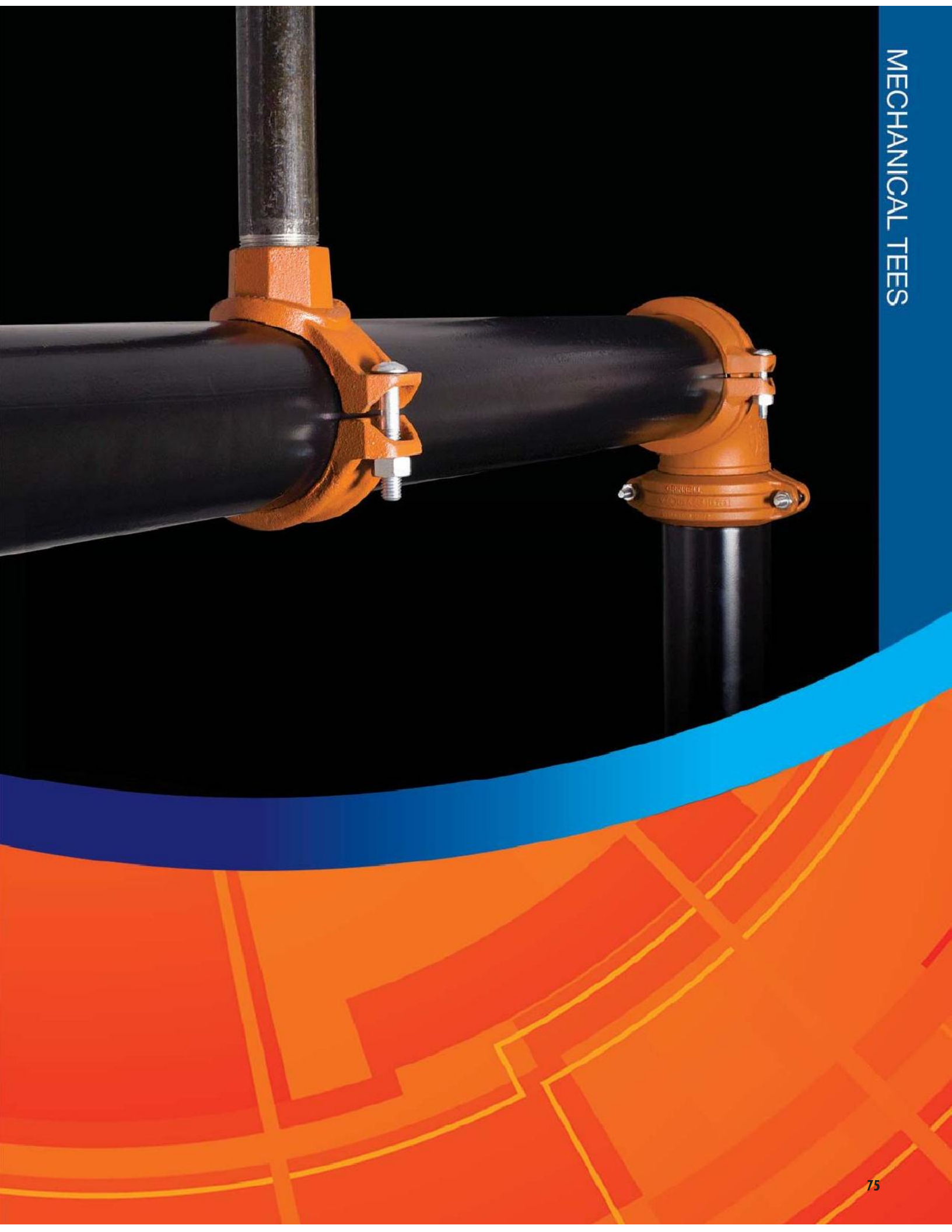
Tech Data Sheet: G180

10 YEAR LIMITED WARRANTY



Pipe Size		Figure 343 - PN16#		Figure 344 - PN16 BS 4504	
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*
2	2.375	3.74	5.07	–	–
50	*60,3*	*95,0*	*2,3*		
76,1mm	3.000	3.74	7.27	–	–
65	*76,1*	*95,0*	*3,3*		
3	3.500	3.94	8.82	–	–
80	*88,9*	*100,0*	*4,0*		
4	4.500	4.02	10.14	–	–
100	*114,3*	*102,0*	*4,6*		
139,7mm	5.500	4.13	13.23	–	–
125	*139,7*	*105,0*	*6,0*		
165,1mm	6.500	4.13	15.87	–	–
150	*165,1*	*105,0*	*7,2*		
6	6.625	4.13	15.87	–	–
150	*168,3*	*105,0*	*7,2*		
8	8.625	4.41	22.49	4.41	22.49
200	*219,1*	*112,0*	*10,2*	*112,0*	*10,2*
10	10.750	5.43	39.68	5.43	39.68
250	*273,0*	*138,0*	*18,0*	*138,0*	*18,0*
12	12.750	5.43	49.38	5.43	49.38
300	*323,9*	*138,0*	*22,4*	*138,0*	*22,4*

For information on larger sizes, contact GRINNELL Mechanical Products.
See page 37 for fitting specifications.



MECHANICAL TEES

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Female Threaded Crosses
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Grooved Tees and Crosses

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Figure 730
Grooved Crosses
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UL FM

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

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.

MATERIAL 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

10 YEAR LIMITED WARRANTY

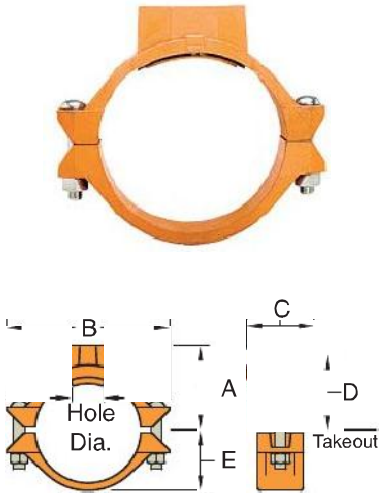

Figure 730 Branch Outlet with Female NPT/BSP Threaded Branch (Tee Configuration)

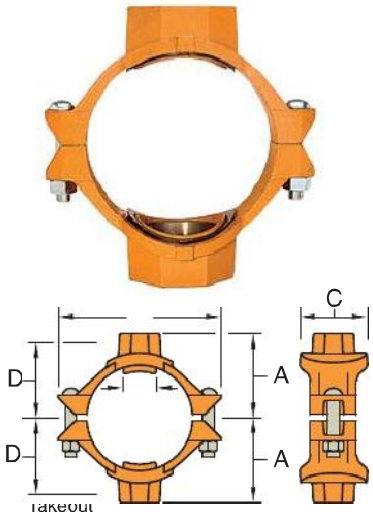

Figure 730 Branch Outlet with Female NPT/BSP Threaded Branch (Cross Configuration)

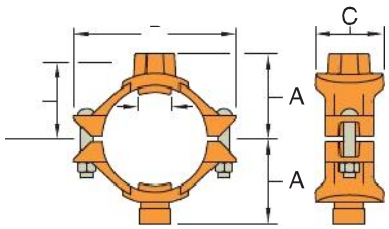

Figure 730 Branch Outlet with a Female NPT/BSP Threaded Branch and a Grooved Branch (Cross Configuration)

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*

Grinnell

Figure 730 Mechanical Tees & Crosses – Threaded

(Page 2 of 3)

Tech Data Sheet: G210

10 YEAR LIMITED WARRANTY

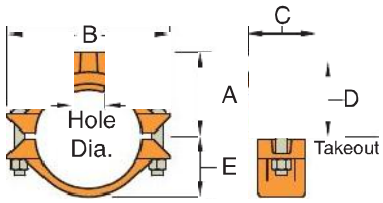

Figure 730 Branch Outlet with Female NPT/BSP Threaded Branch (Tee Configuration)

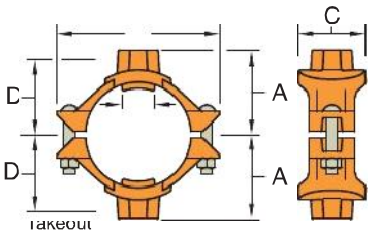

Figure 730 Branch Outlet with Female NPT/BSP Threaded Branch (Cross Configuration)

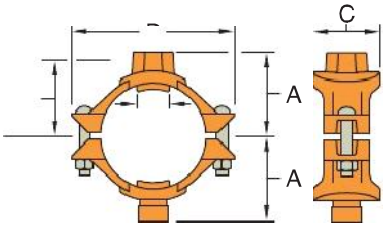

Figure 730 Branch Outlet with a Female NPT/BSP Threaded Branch and a Grooved Branch (Cross Configuration)

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

10 YEAR LIMITED WARRANTY

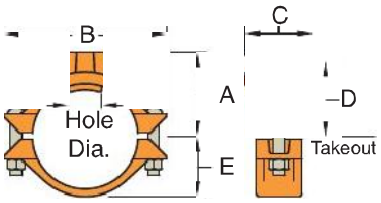

Figure 730 Branch Outlet with Female NPT/BSP Threaded Branch (Tee Configuration)

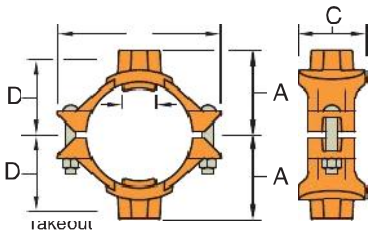

Figure 730 Branch Outlet with Female NPT/BSP Threaded Branch (Cross Configuration)

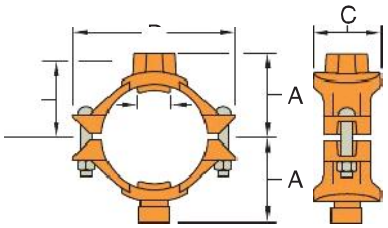

Figure 730 Branch Outlet with a Female NPT/BSP Threaded Branch and a Grooved Branch (Cross Configuration)

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 76 for mechanical tee specifications and pages 191 - 198 for gasket information.

Figure 730 Mechanical Tees & Crosses – Grooved

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10 YEAR LIMITED WARRANTY

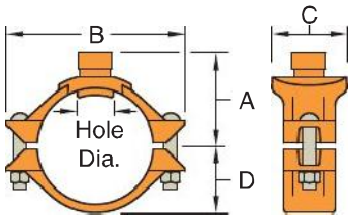

Figure 730 Branch Outlet with Grooved Branch (Tee Configuration)

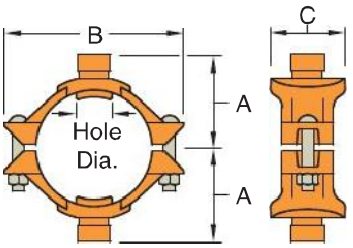

Figure 730 Branch Outlet with Grooved Branch (Cross Configuration)

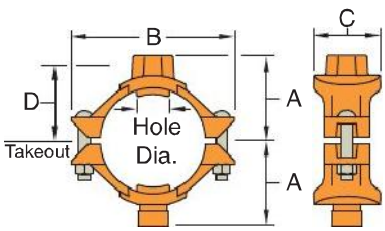

Figure 730 Branch Outlet with a Female NPT/BSP Threaded Branch and a Grooved Branch (Cross Configuration)

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*
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*

Figure 730 Mechanical Tees & Crosses – Grooved

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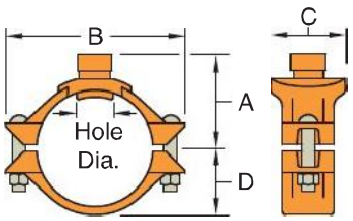

Figure 730 Branch Outlet with Grooved Branch (Tee Configuration)

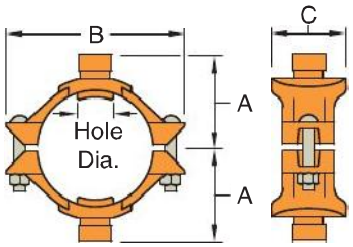

Figure 730 Branch Outlet with Grooved Branch (Cross Configuration)

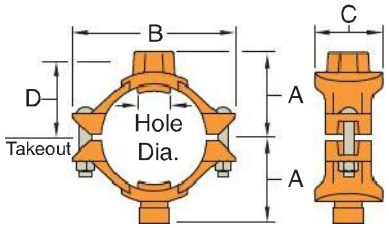

Figure 730 Branch Outlet with a Female NPT/BSP Threaded Branch and a Grooved Branch (Cross Configuration)

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			
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*
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*

Figure 730 Mechanical Tees & Crosses – Grooved

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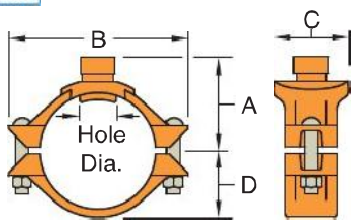


Figure 730 Branch Outlet with Grooved Branch (Tee Configuration)

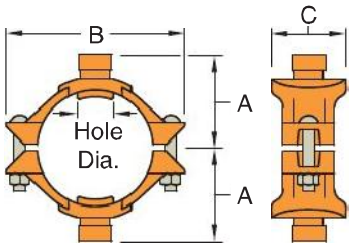


Figure 730 Branch Outlet with Grooved Branch (Cross Configuration)

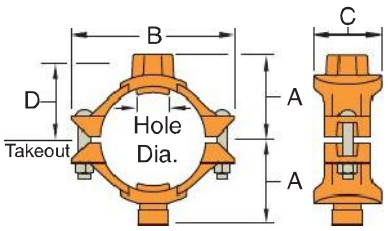


Figure 730 Branch Outlet with a Female NPT/BSP Threaded Branch and a Grooved Branch (Cross Configuration)

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			
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 76 for mechanical tee specifications and pages 191 - 198 for gasket information.

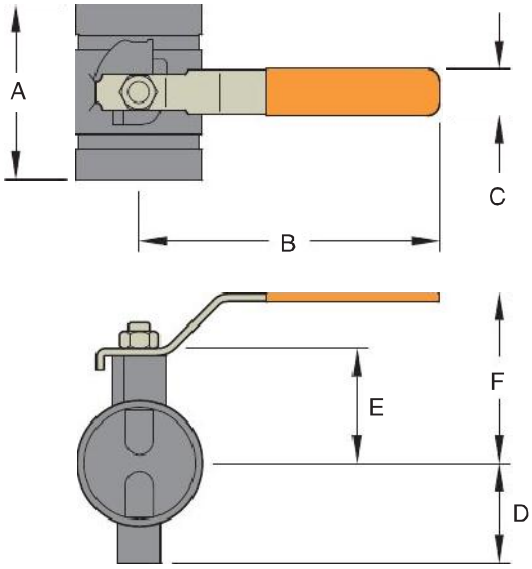
Valves Table of Contents

Model B8101 Low Profile Butterfly Valves

Tech Data Sheet: G330

10 YEAR LIMITED WARRANTY

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.



MATERIAL SPECIFICATIONS

Body
- Ductile iron

Body Coating
- Black epoxy-coated

Disc
- Ductile iron

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, splined

Stem Seal
- O-rings, upper and lower stem

Handle
- Carbon steel zinc-plated

Performance
- Pressure drop, contact GRINNELL Mechanical Products.

Pipe Size		Dimensions - Inches *mm*					
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
50	*60,3*	*86,0*	*152,0*	*25,0*	*46,0*	*50,0*	*80,0*
2½	2.875	3.78	5.98	0.98	2.05	2.40	3.58
65	*73,0*	*96,0*	*152,0*	*25,0*	*52,0*	*61,0*	*91,0*
3	3.500	3.78	8.27	0.98	2.56	2.64	4.21
80	*88,9*	*96,0*	*210,0*	*25,0*	*65,0*	*67,0*	*107,0*
4	4.500	4.53	8.27	0.98	3.27	3.27	4.84
100	*114,3*	*115,0*	*210,0*	*25,0*	*83,0*	*83,0*	*123,0*
5	5.563	5.50	12.25	1.26	4.00	4.00	6.75
125	*141,3*	*139,7*	*311,2*	*32,0*	*101,6*	*101,6*	*171,5*
6	6.625	5.20	12.01	1.26	4.29	4.29	6.85
150	*168,3*	*132,0*	*305,0*	*32,0*	*109,0*	*109,0*	*174,0*

For information on larger sizes, contact GRINNELL Mechanical Products.

Model B302 Grooved End Butterfly Valves

(Page 1 of 4)

Tech Data Sheet: G310

10 YEAR LIMITED WARRANTY

GRINNELL Model B302 Butterfly Valves are capable of pressures of 300 psi *(20,7 bar)* for sizes 2" – 8" *(50mm – 200mm)* and 200 psi *(13,8 bar)* for sizes 10" and 12" *(250mm – 300mm)*. The valves are designed for efficient control of: on/off or throttling/balancing service; fluid flow; and "bubble tight" shut-off in piping systems. Flow may be from either direction, and the valve may be positioned in any orientation. The valves are available with either a gear operator, for sizes 2" – 12" *(50mm – 300mm)*, or lever-lock operator, for sizes 2" – 8" *(50mm – 200mm)*. The valves are furnished with grooved ends for use with grooved couplings and can be easily adapted to flanged components utilizing GRINNELL Figure 71 Class 150 Flange Adapters.

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 range. (Contact GRINNELL Mechanical Products for specific recommendations on seal and coating selection).

The GRINNELL Model B302 Butterfly Valve with Gear Operator is a self-locking worm gear type. It is equipped with adjustable stops at the open and shut positions.

The GRINNELL Model B302 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 shut off service. The lever may be padlocked in any one of the positions, including opened or closed, by virtue of a locking hole located in the handle and lever.

Conforms To MSS SP-67

NSF

Model B302
with Gear Operator

Model B302
with Lever-Lock Operator

Note: replacement lever handles and gear wheels are available, contact GRINNELL Mechanical Products.

MATERIAL SPECIFICATIONS

Ductile Iron Body

- ASTM A 395 – Standard specification for ductile iron castings, Grade 60-40-18
- Tensile strength, minimum 60,000 psi *(4136,9 bar)*
- Yield strength, minimum 40,000 psi *(2757,9 bar)*
- Elongation in 2" *(50mm)*, minimum 18%

Disc

- Ductile iron ASTM A 395 w/EPDM or Buna-N encapsulation

Body Coating

- Black Polymide-Coated

O-Ring

- EPDM, Fluoroelastomer, or Buna-N

Upper and Lower Stem

- Type 416 Stainless Steel ASTM A 582

Gear Operator

- Cast iron housing

Lever-Lock Operator

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

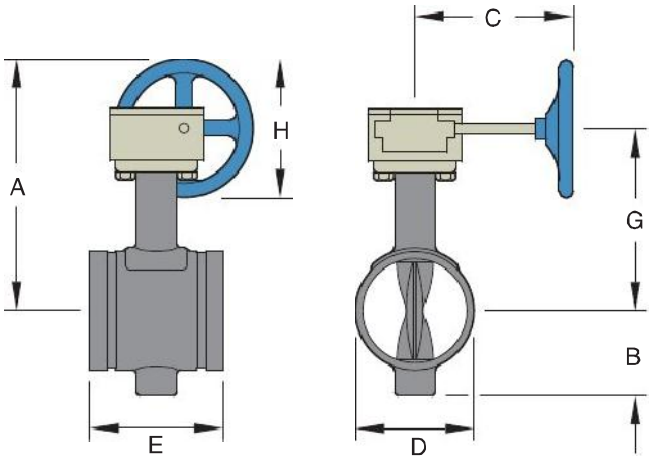
Disc Seal Specifications Encapsulated Rubber

- **EPDM** – For service temperatures from -20°F to 250°F *(-29°C to 121°C)*, intermittent service at 250°F *(121°C)* and continuous service at 225°F *(107°C)*. Recommended for hot water not to exceed the temperature ratings above, plus a variety of dilute acids, alkalines, and many chemical services. They are not recommended for petroleum oil, strong acid, strong alkaline, or compressed air services.
- **Nitrile** – For service temperatures from -20°F to 180°F *(-29°C to 82°C)*. Recommended for solvents, oils, water, and hydraulic fluid resistance. They are not recommended for highly polar solvents such as acetone and methyl ethyl ketone, cholrinated hydrocarbons, ozone, or nitro hydrocarbons and some aviation fuels.
- **Fluoroelastomer** – For service temperatures +20°F to 300°F *(-7°C to 149°C)*. Recommended for oxidizing acids, petroleum products, hydraulic fluids, lubricants, and halogenated hydrocarbons.

Model B302 Grooved End Butterfly Valves

Tech Data Sheet: G310

10 YEAR LIMITED WARRANTY



Model B302 - Gear Operator									
Pipe Size		Dimensions - Inches *mm*							Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	C	D	E	G	H	
2	2.375	8.46	3.14	7.64	2.89	3.33	5.50	5.91	14.5
50	*60,3*	*214,9*	*79,8*	*194,1*	*73,4*	*84,6*	*139,7*	*150,1*	*6,6*
2½	2.875	8.65	3.25	7.64	3.46	3.85	5.69	5.91	15.5
65	*73,0*	*219,7*	*82,6*	*194,1*	*87,9*	*97,8*	*144,5*	*150,1*	*7,0*
3	3.500	8.99	3.54	7.64	3.97	3.85	5.94	5.91	17.0
80	*88,9*	*226,1*	*89,9*	*194,1*	*100,8*	*97,8*	*150,9*	*150,1*	*7,7*
4	4.500	9.79	4.35	7.64	5.03	4.56	8.00	5.91	20.5
100	*114,3*	*248,7*	*110,5*	*194,1*	*127,8*	*115,8*	*203,2*	*150,1*	*9,3*
5	5.563	9.30	4.84	7.64	6.27	5.86	7.33	5.91	25.0
125	*141,3*	*236,2*	*122,9*	*194,1*	*159,3*	*148,8*	*186,2*	*150,1*	*11,3*
6	6.625	13.53	5.93	9.53	7.25	5.86	8.61	9.84	33.0
150	*168,3*	*343,7*	*150,6*	*242,1*	*184,2*	*148,8*	*218,7*	*249,9*	*15,0*
8	8.625	14.47	6.87	9.53	9.25	5.26	9.55	9.84	45.0
200	*219,1*	*367,5*	*174,5*	*242,1*	*235,0*	*133,6*	*242,6*	*249,9*	*20,4*
10	10.750	16.53	9.17	11.54	11.25	6.29	11.61	18.0	83.0
250	*273,1*	*418,9*	*232,9*	*293,1*	*285,6*	*159,8*	*294,9*	*457,2*	*37,6*
12	12.750	17.52	10.17	11.54	13.14	6.52	12.60	18.0	100.0
300	*323,9*	*445,0*	*258,3*	*293,1*	*333,8*	*165,6*	*320,0*	*457,2*	*45,4*

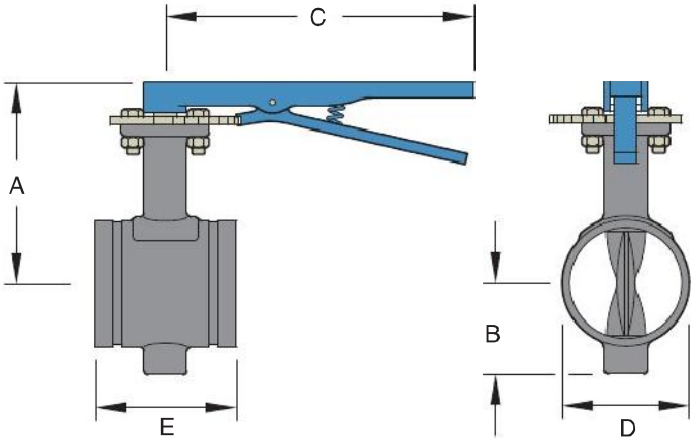
*End of disc does not extend beyond valve body.
For information on larger sizes, contact GRINNELL Mechanical Products.

Model B302 Grooved End Butterfly Valves

(Page 3 of 4)

Tech Data Sheet: G310

10 YEAR LIMITED WARRANTY



Model B302 - Lever Lock Operator							
Pipe Size		Dimensions - Inches *mm*					Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	C	D	E	
2	**2.375**	**5.31**	**3.14**	**10.50**	**2.89**	**3.33**	**6.7**
50	*60,3*	*134,9*	*79,8*	*266,7*	*73,4*	*84,6*	*3,0*
2½	**2.875**	**5.41**	**3.25**	**10.50**	**3.46**	**3.85**	**7.5**
65	*73,0*	*137,4*	*82,6*	*266,7*	*87,9*	*97,8*	*3,4*
3	**3.500**	**5.62**	**3.54**	**10.50**	**3.97**	**3.85**	**8.7**
80	*88,9*	*142,7*	*89,9*	*266,7*	*100,8*	*97,8*	*3,9*
4	**4.500**	**6.57**	**4.35**	**10.50**	**5.03**	**4.56**	**12.2**
100	*114,3*	*166,9*	*110,5*	*266,7*	*127,8*	*115,8*	*5,5*
5	**5.563**	**7.07**	**4.84**	**10.50**	**6.27**	**5.86**	**17.3**
125	*141,3*	*179,6*	*122,9*	*266,7*	*159,3*	*148,8*	*7,8*
6	**6.625**	**8.40**	**5.93**	**13.75**	**7.25**	**5.86**	**27.4**
150	*168,3*	*213,4*	*150,6*	*349,3*	*184,2*	*148,8*	*23,4*
8	**8.625**	**9.37**	**6.87**	**13.75**	**9.25**	**5.26**	**32.5**
200	*219,1*	*238,0*	*174,5*	*349,3*	*235,0*	*133,6*	*14,7*

*End of disc does not extend beyond valve body.
For information on larger sizes or availability in select regions, contact GRINNELL Mechanical Products.

Model B302 Grooved End Butterfly Valves - Options

Tech Data Sheet: G310

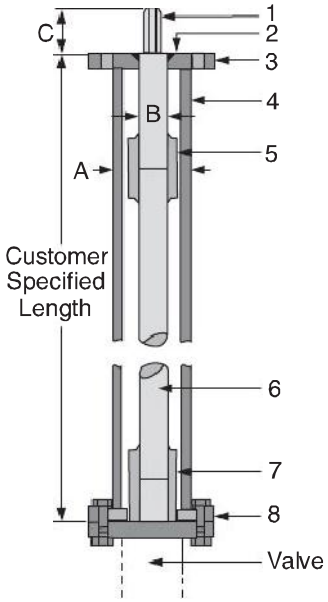
10 YEAR LIMITED WARRANTY

Stem Extensions

Stem extensions can be provided to permit remote operation of the valve in any required length. Stem extensions are available in lengths up to 10 ft. *(3 meters)*. The top flange of the extension stem, plug shaft diameter, and distance across the flats on the plug shaft are the same size as the valve selected. This design allows interchangeability of gear operators, actuators, and adapter bushings from the valve mounting flange to the extension stem top flange.

Adjustable Sprocket Rim

The Babbitt Adjustable Sprocket Rim provides for remote operation of the butterfly valves in high, out-of-reach locations. Specify the sprocket number size, and chain length. (Chain length = Height x 0,6m + 0,6m).



MATERIAL LIST	
Part	**Material**
1. Plug	Steel
2. Top Flange Bushing	Bronze
3. Top Flange	Steel
4. Housing (Steel Pipe)	Steel
5. Plug and Rod Coupling	Steel
6. Rod	Steel
7. Rod and Stem Coupling	Steel
8. Bottom Flange	Steel

Torque

Torque is the rotary effort required to operate a valve. This turning force in a butterfly valve is determined by three factors:

- Friction of the disc to seat for sealing
- Bearing friction
- Dynamic torque

Breakaway Torque is the total of the torques resulting from bearing friction and seat/disc interference friction at a given pressure differential. This value is normally the highest required torque to operate a valve, and is used in sizing actuators. The torques listed are valid for water and lubricating fluids at ambient temperature. For dry and non-lubricating fluids, contact a GRINNELL Mechanical Products representative.

Butterfly valves, sizes 8" *(200mm)* and larger, when used on liquids, show a marked increase in dynamic torque, which tends to close the valve. For this reason, gear operated or actuated valves are recommended.

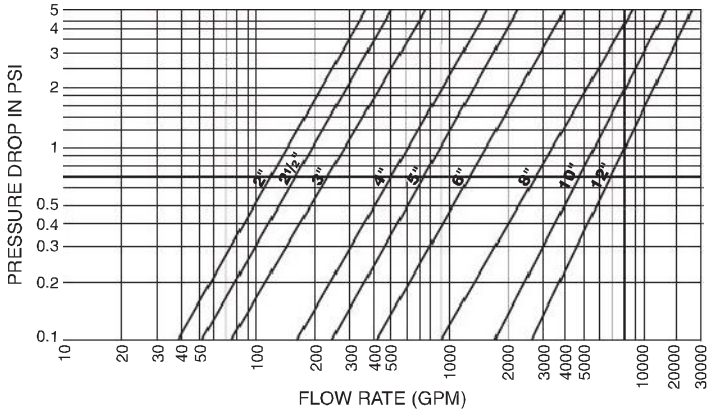
The torque listed is for EPDM. When calculating torques for Buna-N or Fluoroelastomer, multiply listed torque by 1.25.

Pipe Size Nominal Inches *mm*	Dimensions - Inches *mm*		
	A	**B**	**C**
2 - 12	**2.88**	**1.125**	**1.12**
50 - 300	*73,2*	*28,6*	*28,4*

Pipe Size		Torque Lbs - In., *N - m*		
Nominal Inches *mm*	**O.D. Inches** *mm*	**100 psi** *6,9 bar*	**200 psi** *13,8 bar*	**300 psi** *20,7 bar*
2	**2.375**	**48**	**67**	**83**
50	*60,3*	*5,42*	*7,56*	*9,38*
2½	**2.875**	**48**	**67**	**83**
65	*73,0*	*5,42*	*7,56*	*9,38*
3	**3.500**	**100**	**134**	**168**
80	*88,9*	*11,25*	*15,13*	*18,98*
4	**4.500**	**185**	**251**	**317**
100	*114,3*	*20,88*	*16,20*	*35,81*
5	**5.563**	**294**	**410**	**499**
125	*141,3*	*33,21*	*46,31*	*56,37*
6	**6.625**	**520**	**705**	**890**
150	*168,3*	*58,71*	*79,65*	*100,55*
8	**8.625**	**1,070**	**1,495**	**1,798**
200	*219,1*	*120,88*	*168,90*	*203,14*
10	**10.750**	**1,550**	**2,214**	**2,654**
250	*273,0*	*175,12*	*250,15*	*299,85*
12	**12.750**	**2,150**	**3,024**	**3,662**
300	*323,9*	*242,91*	*341,66*	*413,74*

For information on larger sizes, contact GRINNELL Mechanical Products.

Performance



Refer to back cover for country-specific customer care numbers.

Model 308 Butterfly Valves

(Page 1 of 2)

Tech Data Sheet: G320

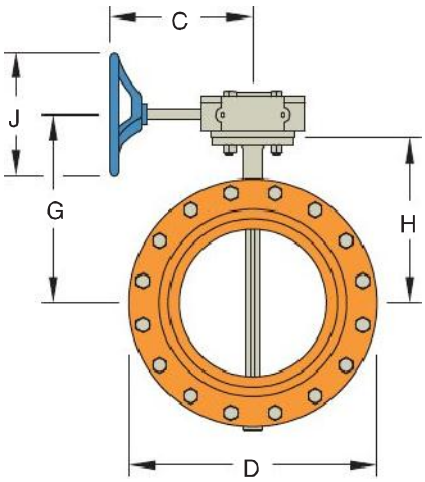
10 YEAR LIMITED WARRANTY

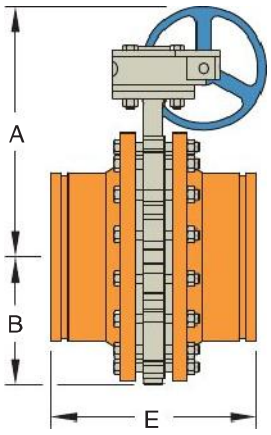
The GRINNELL Model 308 Butterfly Valve provides dependable, long-term service and superior control of fluid flow in piping systems. Flow may be from either direction, and the valve may be positioned in any orientation.

The valve is furnished with grooved ends for use with grooved couplings. The body and disc design provides exceptional flow characteristics and low operating torque. The disc has a streamlined profile that optimizes flow. The body is lined with an elastomer seat that is reinforced with a phenolic backing ring, reducing seat distortion, and wear.

The GRINNELL Model 308 Butterfly Valve includes a gear operator with adjustable stops at the open and shut positions.

The maximum Working Pressure is 150 psi *(10,3 bar)* with 316 S.S. Stem and 200 psi *(13,8 bar)* with 416 S.S. Stem. Special order is available upon request: Vacuum Service to 29.5" *(750mm)* Hg.





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	23.25	10.75	10.00	21.00	13.06	15.25	378.0
350	*355,6*	*590,6*	*273,1*	*254,0*	*533,4*	*331,7*	*387,4*	*171,8*
16	16.000	24.75	12.50	10.00	23.50	14.33	16.75	452.0
400	*406,4*	*628,7*	*317,5*	*254,0*	*596,9*	*364,0*	*425,5*	*205,5*
18	18.000	25.75	14.00	10.00	25.00	15.40	17.75	548.0
450	*457,2*	*654,1*	*355,6*	*254,0*	*635,0*	*391,2*	*450,9*	*249,1*
20	20.000	27.25	15.00	10.00	27.50	16.38	18.25	728.0
500	*508,0*	*692,2*	*381,0*	*254,0*	*698,5*	*416,1*	*463,6*	*330,9*
24	24.000	30.12	16.75	10.25	32.00	18.26	21.12	1097.0
600	*609,6*	*765,0*	*425,5*	*260,4*	*812,8*	*463,8*	*536,4*	*498,6*

For information on larger sizes, contact GRINNELL Mechanical Products.

Model 308 Butterfly Valves

Tech Data Sheet: G320

MATERIAL SPECIFICATIONS

Body
- Cast iron conforming to ASTM A 126, Class B

Body Seat (Liner)
- Grade E EPDM, grade T nitrile or fluoroelastomer Contact GRINNELL Mechanical Products for specific recommendations on seat material.

Body Coating
- Epoxy coated

Disc
- Stainless steel conforming to ASTM A 351, Grade CF8M
- Aluminum bronze conforming to ASTM B 148, C95400
- Ductile iron conforming to ASTM A 536, Grade 65-45-12

Drive and Bottom Shaft
- Stainless steel conforming to ASTM A 582, Type 416 or Stainless steel conforming to ASTM A 276, Type 316

Gear Operator
- Cast iron housing

10 YEAR LIMITED WARRANTY

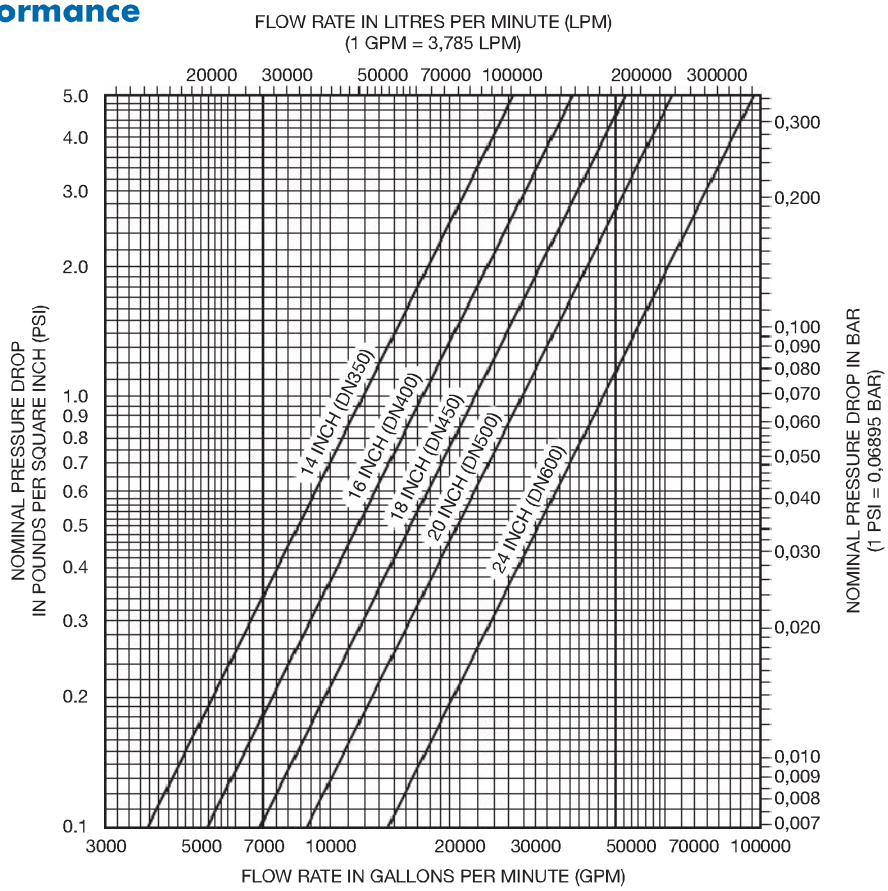
Upper and Lower Bearings
- Reinforced Teflon*

Plug
- Cast iron ASTM A 126

Seat Material
- **Grade E EPDM** – For service temperatures from -40°F to 230°F *(-40°C to 110°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 GRINNELL Mechanical Products for specific recommendations on seat material.

Performance



Note:
For design purposes, a safety factor of 15% to 20% should be applied to the values in the above table.

* Teflon is an trademark of E.I. Dupont

Model BV835 Ball Valves

(Page 1 of 2)

Tech Data Sheet: G380

10 YEAR LIMITED WARRANTY

GRINNELL Model BV835 Ball Valves 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.

The GRINNELL Model BV835 is furnished with grooved ends and features a handle that accepts a padlock device for locking in either the open or closed position. Flow may be from either direction and the valves may be positioned in any orientation.

Maximum Working Pressure
1,000 psi *(68,9 bar)* 2" – 3" *(50mm – 80mm)*
800 psi *(55,2 bar)* 4" *(100mm)*
600 psi *(41,4 bar)* 6" *(150mm)*

Shell Test
1.5 times WOG x 60 seconds, hydrostatic, at ambient temperature

Seat Test
80 psi *(5,5 bar)* x 60 seconds, pneumatic

MATERIAL SPECIFICATIONS

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

Body Coating
- Black enamel

Ball
- Type 304 Stainless Steel

Body Seal
- R-PTFE

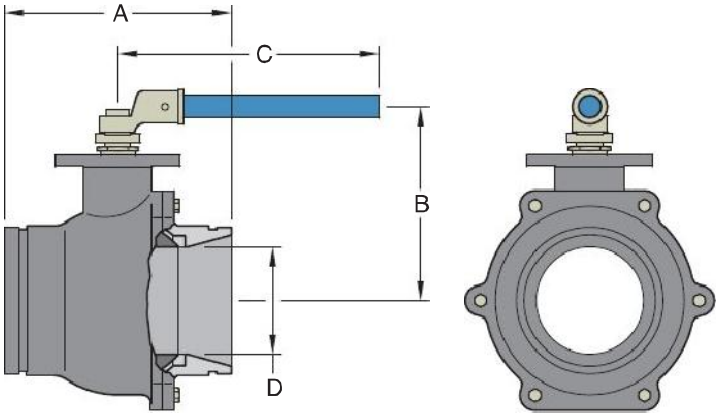
Seats
- Virgin TFE

O-Ring
- Fluoroelastomer (Viton)

Stem
- Carbon steel, nickel-plated,
  - Type 304 Stainless Steel available

Lever Handle
- Carbon steel, zinc plated with plastic grip,
  - Type 304 Stainless Steel available

Gear Operator
- Manual with handwheel, cast iron body



Pipe Size		Operating Torque *	Dimensions - Inches *mm*				Approx. Weight
Nominal Inches *mm*	O.D. Inches *mm*	Lbs - in *N-m*	A	B	C	D	Lbs. *kg*
1½	1.900	62	5.12	3.39	7.00	1.25	4.8
40	*48,3*	*7*	*130*	*86*	*178*	*32*	*2,2*
2	2.375	150	5.50	3.75	7.00	1.50	6.4
50	*60,3*	*17*	*140*	*95*	*178*	*38*	*2,9*
2½	2.875	186	6.25	5.20	10.43	2.00	10.6
65	*73,0*	*21*	*159*	*132*	*265*	*50*	*4,8*
3	3.500	248	6.56	5.63	10.43	2.50	13.4
80	*88,9*	*28*	*167*	*143*	*265*	*63*	*6,1*
4	4.500	398	9.45	3.70	10.43	3.50	55.0
100	*114,3*	*45*	*240*	*94*	*265*	*90*	*25,0*
6	6.625	531	10.15	8.70	23.60	4.92	79.2
150	*168,3*	*60*	*258*	*221*	*600*	*125*	*36,0*

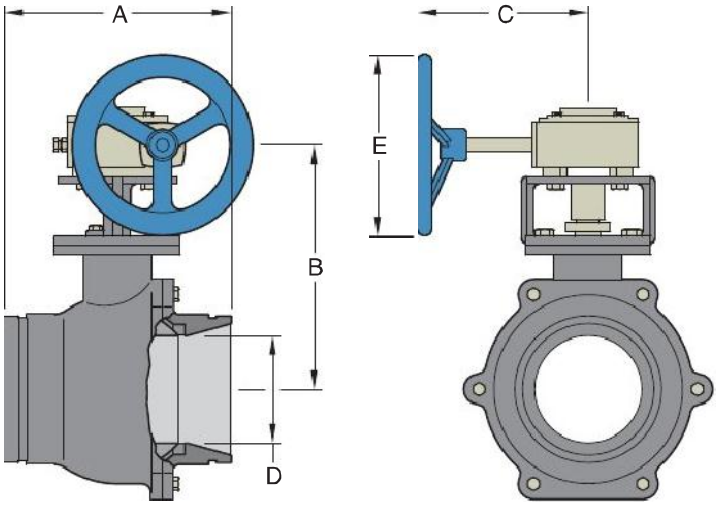
* For the first opening or closing of the valve when the valve is not continuously operated, an additional torque of 2.0 – 2.5 times the listed operating torque is normally required.

For information on larger sizes, contact GRINNELL Mechanical Products.

Model BV835 Ball Valves

Tech Data Sheet: G380

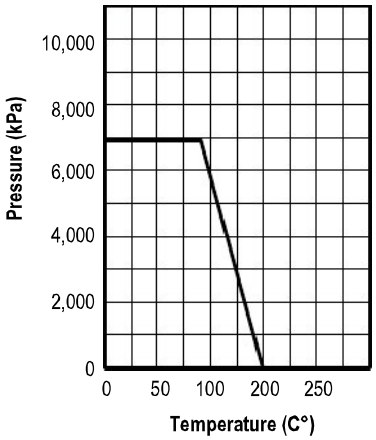
10 YEAR LIMITED WARRANTY



Pipe Size		Dimensions - Inches *mm*					Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	C	D	E	
1½	1.900	5.12	4.88	8	1.25	6	15.0
40	*48,3*	*130*	*124*	*203*	*32*	*152*	*7,0*
2	2.375	5.50	5.38	8	1.50	6	18.0
50	*60,3*	*140*	*137*	*203*	*38*	*152*	*8,0*
2½	2.875	6.25	5.68	8	2.00	6	22.0
65	*73,0*	*159*	*145*	*203*	*50*	*152*	*10,0*
3	3.500	6.56	7.16	8	2.50	6	31.0
80	*88,9*	*167*	*182*	*203*	*63*	*152*	*14,0*
4	4.500	9.45	8.00	8	3.50	6	73.0
100	*114,3*	*240*	*203*	*203*	*90*	*152*	*33,0*
6	6.625	10.15	10.89	14	4.92	12	123.4
150	*168,3*	*258*	*277*	*356*	*125*	*305*	*56,0*

For information on larger sizes, contact GRINNELL Mechanical Products.

Pressure Performance



Flow Data - C_v Values

Values for flow of water at 60°F *(16°C)*

$$C_v = \frac{Q}{\sqrt{\Delta P}}$$

Where: Cv = Flow coefficient
Q = Flow (GPM)
ΔP = Pressure drop (psi)

Pipe Size		C_v Value
Nominal Inches *mm*	O.D. Inches *mm*	
1½	1.900	130
40	*48,3*	
2	2.375	180
50	*60,3*	
2½	2.875	320
65	*73,0*	
3	3.500	600
80	*88,9*	
4	4.500	1020
100	*114,3*	
6	6.625	3300
150	*168,3*	

General 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. For additional information, contact GRINNELL Mechanical Products.
- Maximum working pressures and end loads listed are total of internal and external pressures and loads based on Schedule 40 steel pipe with roll grooves to ANSI/AWWA C606-04 specifications. For information on other pipe schedules, contact GRINNELL Mechanical Products.
- Warning: Piping systems must always be depressurized and drained before attempting disassembly and/or removal of any components.

Model 590 Grooved End Check Valves

(Page 1 of 2)

Tech Data Sheet: G350

10 YEAR LIMITED WARRANTY

GRINNELL Model 590 Check Valves are capable of pressures up to 300 psi *(20,7 bar)*. These valves are designed as 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, nickel seat, and a stainless steel clapper assembly for sizes 2" – 8" *(50mm – 200mm)*, and a ductile iron clapper assembly for sizes 10" – 12" *(250mm – 300mm)*. A resilient elastomer seal facing on the spring loaded clapper ensures a leak tight seal and a non-sticking operation. The GRINNELL Model 590 Check Valve is designed to minimize water hammer caused by flow reversal.

The valves are furnished with grooved ends and can be installed using GRINNELL Couplings. The GRINNELL Model 590 can be installed with GRINNELL Figure 71 Flange Adapters or ANSI class 300 Flange Adapters. All GRINNELL Model 590 Check Valves are designed with a removable cover for ease during field maintenance.

MATERIAL SPECIFICATIONS

Ductile Iron Body and Cap 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%

Seat

- Nickel

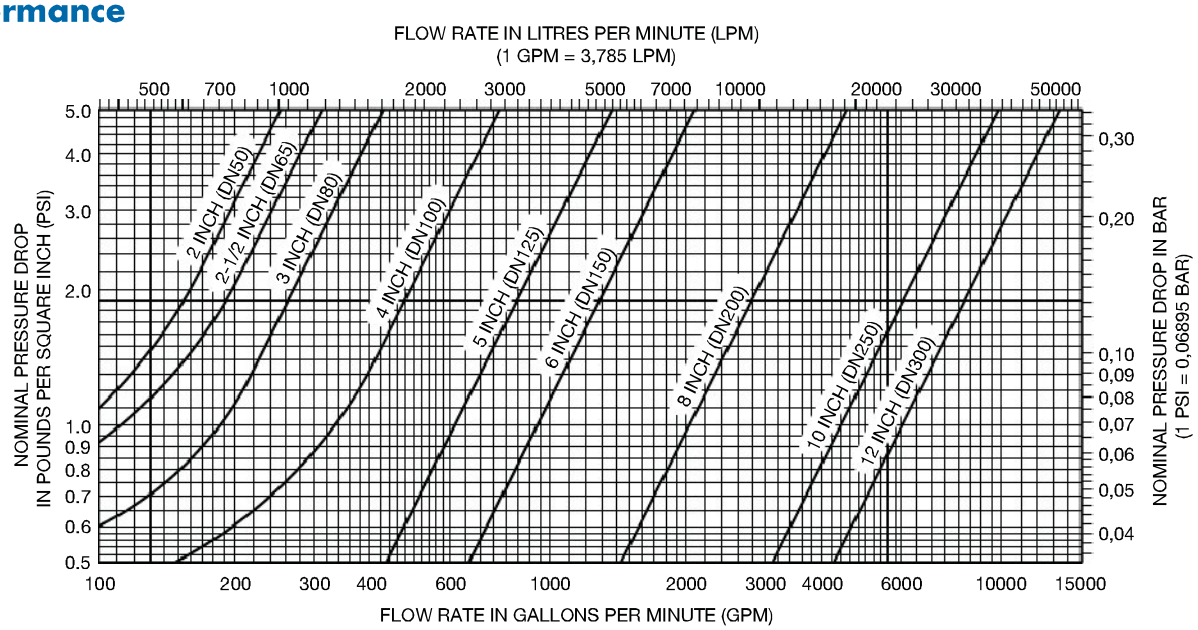
Coating

- Non-Lead paint

Seal Specifications

- **Grade "E" EPDM** seals 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** seals 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.

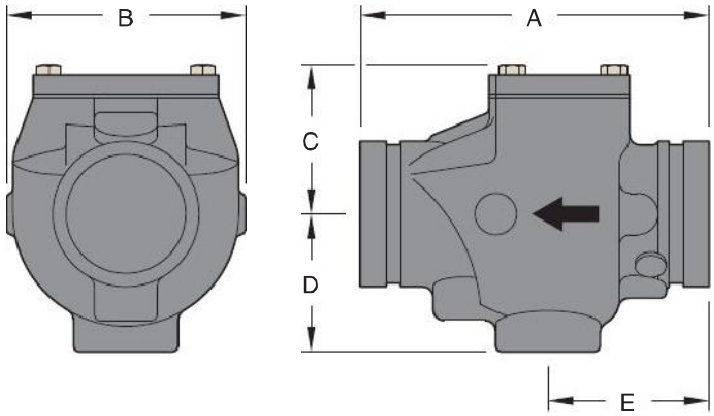
Performance



Model 590 Grooved End Check Valves

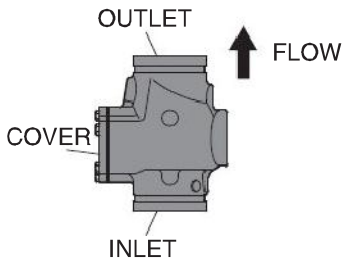
Tech Data Sheet: G350

10 YEAR LIMITED WARRANTY

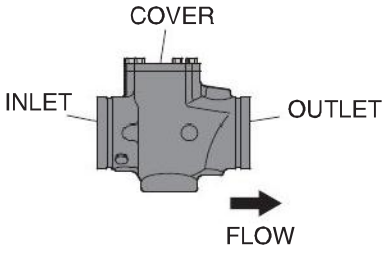


Pipe Size		Dimensions - Inches *mm*					Cover Bolt Torq. Lb.-ft. *Nm*	Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	C	D	E		
2	2.375	6.75	4.38	2.55	2.57	3.25	15	9.0
50	*60,3*	*171,5*	*111,3*	*64,8*	*65,3*	*82,3*	*21*	*4,5*
2½	2.875	8.00	5.42	3.41	3.09	3.88	39	10.0
65	*73,0*	*203,2*	*136,7*	*86,6*	*78,5*	*98,6*	*54*	*4,5*
76,1mm	3.000	8.00	5.42	3.41	3.09	3.88	39	10.0
65	*76,1*	*203,2*	*136,7*	*86,6*	*78,5*	*98,6*	*54*	*4,5*
3	3.500	8.38	5.76	3.60	3.31	3.88	39	11.0
80	*88,9*	*212,9*	*146,3*	*91,4*	*84,1*	*98,6*	*54*	*5,0*
4	4.500	9.63	6.74	4.61	3.63	4.53	39	25.0
100	*114,3*	*245,6*	*171,2*	*117,1*	*92,2*	*115,4*	*54*	*11,3*
139,7mm	5.500	10.50	7.50	5.29	4.13	4.90	39	29.0
125	*139,7*	*266,7*	*190,5*	*134,4*	*104,9*	*124,5*	*54*	*13,2*
5	5.563	10.50	7.50	5.29	4.13	4.90	39	29.0
125	*141,3*	*266,7*	*190,5*	*134,4*	*104,9*	*124,5*	*54*	*13,2*
165,1mm	6.500	11.50	8.05	5.75	4.50	5.00	60	47.0
150	*165,1*	*292,1*	*204,4*	*146,1*	*114,3*	*127,0*	*82*	*21,3*
6	6.625	11.50	8.05	5.75	4.50	5.00	60	47.0
150	*168,3*	*292,1*	*204,4*	*146,1*	*114,3*	*127,0*	*82*	*21,3*
8	8.625	14.00	10.25	7.75	5.62	5.45	120	66.0
200	*219,1*	*355,6*	*260,4*	*196,9*	*142,7*	*138,4*	*164*	*30,0*
10	10.750	18.00	13.00	10.21	6.38	7.50	120	109.7
250	*273,1*	*457,2*	*330,2*	*259,3*	*162,1*	*190,5*	*164*	*49,4*
12	12.750	21.0	14.28	11.31	7.26	7.62	120	151.0
300	*323,9*	*533,4*	*362,7*	*287,2*	*184,4*	*193,5*	*164*	*68,0*

For information on larger sizes, contact GRINNELL Mechanical Products.



VERTICAL ORIENTATION



HORIZONTAL ORIENTATION

Model TD830 Triple Duty Valves

Tech Data Sheet: G390

10 YEAR LIMITED WARRANTY

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

The GRINNELL Model TD830 Triple Duty Valve operates automatically and quietly. Line pressure of approximately 0.25 psi *(0,02 bar)* opens the disc. To prevent flow reversal and water hammer, the spring closes the disc as the line flow approaches zero in order. The flow through the valve can be adjusted from bubble tight shut-off to full-flow by the threaded rising stem.

MATERIAL SPECIFICATIONS

Body and Yoke
- Ductile iron conforming to ASTM A 395, Grade 60-40-18 or A 536

Disc
- Aluminum bronze ASTM B 142, C 950

Disc Guide and Flanged Gland
- Cast iron conforming to ASTM A 126-B

Spring
- 302 stainless steel

Stem
- Type 316 stainless steel

Stem Guide
- Ductile iron conforming to ASTM A 536 or A 395

O-Rings
- EPDM

Seat
- Bronze

Seat Guide
- Bronze conforming to ASTM B 584 (81-3-7-9)

Finish
- Black paint

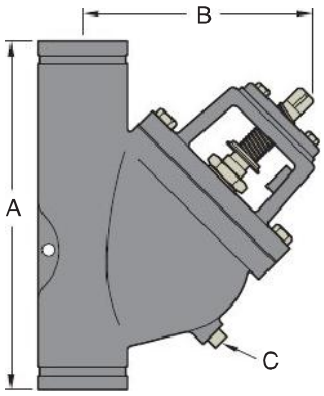
Performance
- Pressure drop, contact GRINNELL Mechanical Products.

The GRINNELL Model TD830 Triple Duty Valve can be installed quickly into grooved end piping systems using two GRINNELL Couplings. The externally guided disc has a soft seat to ensure a leak-tight seal. It lifts 1/3" *(8mm)* for each 1" *(25,4mm)* of pipe diameter. The rising stem design incorporates a graduated position indicator to ensure accurate disc positioning for throttling service.

The yoke and valve stem are unwetted external parts so they cannot be corroded or eroded by the line fluid. All mating threaded parts are made of dissimilar, non-galling metals. An NPT drain plug is provided, as well as bosses for gauge taps at the inlet and outlet.

Maximum working pressure is 640 psi *(44,1 bar)* at 100°F *(38°C)* and 565 psi *(39 bar)* at 300°F *(149°C)*.

Note: Pressure and temperature can be limited by gasket material. 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	9.38	9.63	½	23.0
50	*60,3*	*238,1*	*244,5*	*15*	*10,0*
2½	2.875	10.25	9.63	½	24.0
65	*73,0*	*260,4*	*244,5*	*15*	*10,9*
3	3.500	11.25	10.13	½	33.0
80	*88,9*	*285,8*	*257,2*	*15*	*15,0*
4	4.500	15.63	12.63	½	84.0
100	*114,3*	*397,9*	*320,8*	*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	19.63	17.50	¾	156.0
150	*168,3*	*498,5*	*444,5*	*20*	*70,0*
8	8.625	23.63	18.00	¾	300.0
200	*219,1*	*600,0*	*457,2*	*20*	*136,0*
10	10.750	28.00	21.75	1	392.0
250	*273,1*	*711,2*	*552,5*	*25*	*178,0*
12	12.750	31.63	25.00	1	496.0
300	*323,9*	*803,3*	*635,0*	*25*	*225,0*
14	14.000	33.50	25.000	1	790.0
340	*355,6*	*851,0*	*635,0*	*25*	*358,3*

For information on larger sizes, contact GRINNELL Mechanical Products.

CIRCUIT BALANCING VALVES

Circuit Balancing Valves Table of Contents

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

MATERIAL SPECIFICATIONS

Body

- Sizes ½" – 2" *(15mm – 50mm)* solder or NPT threaded connection: brass-resistant to dezincification (DZR)
- Sizes 2½" – 12" *(65mm – 300mm)*, grooved or flanged connection: Cast Iron conforming to ASME ANSI B16.5

Valve Stem and Disc

- Brass resistant to dezincification (DZR)

O Ring

- EPDM E

Handwheel

- Thermoplastic

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

Valve Sizing

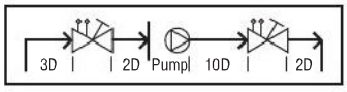
All balancing valves are sized to perform in a normal operation range between 25% and 100% of the full open position, at a minimum differential pressure between 1 – 3 ft. *(0,3m – 0,9m)* of water. It is recommended that for improved accuracy, the valve is set to open 70%+.

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.

Minimum Pipe Diameters from Fittings

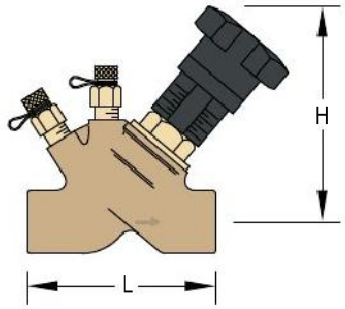


Size Inches *mm*	Flow Rate GPM *LPM*	Connection Type
½	2.6 - 4.2	Thread
15	*0,687 - 1,110*	
¾	3.4 - 6.2	
20	*0,898 - 1,638*	
1	6.2 - 9.6	
25	*1,638 - 2,536*	
1¼	9.4 - 21.0	
32	*2,483 - 5,548*	
1½	15 - 30	
40	*3,96 - 7,93*	
2	22 - 42	
50	*5,812 - 11,096*	
2½	39 - 106	Flanged or Grooved
65	*10,30 - 28,01*	
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

10 YEAR LIMITED WARRANTY



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.

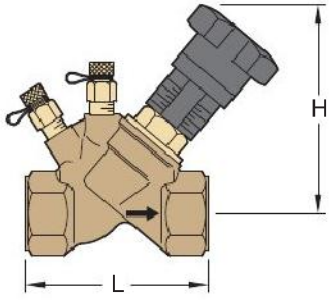
Pipe Size		Dimensions - Inches *mm*		Approx. Weight Lbs. *kg*	Limits PSI/°F *PN/°C*	Handwheel Turns
Nominal Inches *mm*	O.D. Inches *mm*	L	H			
½	0.840	3.50	4.50	1.4	235/300	7
15	*21,3*	*88,9*	*114,3*	*0,6*	*16/150*	
¾	1.050	3.81	4.56	1.4	235/300	7
20	*26,7*	*96,8*	*115,8*	*0,6*	*16/150*	
1	1.315	4.31	4.69	2.2	235/300	7
25	*33,7*	*109,5*	*119,1*	*1,0*	*16/150*	
1¼	1.660	5.06	5.38	3.0	235/300	10
32	*42,4*	*128,5*	*136,7*	*1,4*	*16/150*	
1½	1.900	5.56	5.44	3.9	235/300	10
40	*48,3*	*141,2*	*138,2*	*1,7*	*16/150*	
2	2.375	6.56	5.81	5.6	235/300	10
50	*60,3*	*166,6*	*147,6*	*2,6*	*16/150*	

For information on larger sizes, contact GRINNELL Mechanical Products.
See circuit balancing valve specifications on pages 99.

Model CB800 Circuit Balancing Valves Threaded Ends

Tech Data Sheet: G450

10 YEAR LIMITED WARRANTY



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*	L	H			
½	0.840	3.13	4.13	1.4	235/300	7
15	*21,3*	*79,5*	*104,9*	*0,6*	*16/150*	
¾	1.050	3.31	4.56	1.4	235/300	7
20	*26,7*	*84,1*	*115,8*	*0,6*	*16/150*	
1	1.315	3.38	4.69	2.2	235/300	7
25	*33,7*	*85,6*	*119,1*	*1,0*	*16/150*	
1¼	1.660	4.38	5.38	3.0	235/300	10
32	*42,4*	*111,3*	*136,7*	*1,4*	*16/150*	
1½	1.900	4.75	5.44	3.9	235/300	10
40	*48,3*	*120,7*	*138,2*	*1,7*	*16/150*	
2	2.375	5.94	5.81	5.6	235/300	10
50	*60,3*	*150,9*	*147,6*	*2,6*	*16/150*	

For information on larger sizes, contact GRINNELL Mechanical Products.
See circuit balancing valve specifications on pages 99.

Model CB800 Circuit Balancing Valves Grooved Ends

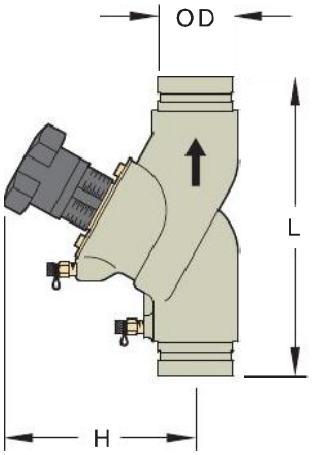
Tech Data Sheet: G450

10 YEAR LIMITED WARRANTY

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" *(65mm to 300mm)*, is composed of cast iron.

The CB800 valve serves 5 functions:

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



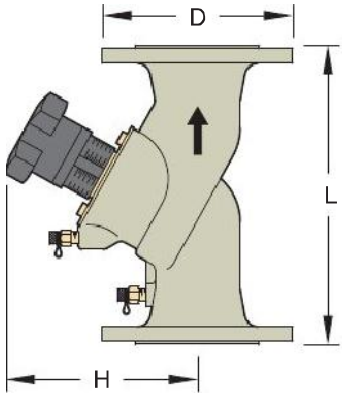
Pipe Size		Dimensions - Inches *mm*		Approx. Weight Lbs. *kg*	Limits PSI/°F *PN/°C*	Handwheel Turns
Nominal Inches *mm*	O.D. Inches *mm*	L	H			
2½	2.875	11.44	7.38	18.7	300/300	8
65	*73,0*	*290,6*	*187,5*	*8,5*	*20,7/150*	
76,1mm	3.000	11.44	7.38	18.7	300/300	8
65	*76,1*	*290,6*	*187,5*	*8,5*	*20,7/150*	
3	3.500	12.25	8.00	27.5	300/300	8
80	*88,9*	*311,2*	*203,2*	*12,5*	*20,7/150*	
4	4.500	13.75	9.44	45.1	300/300	8
100	*114,3*	*349,3*	*239,8*	*20,5*	*20,7/150*	
139,7mm	5.500	15.75	11.13	70.4	300/300	8
125	*139,7*	*400,0*	*282,7*	*32,0*	*20,7/150*	
5	5.563	15.75	11.13	70.4	300/300	8
125	*141,3*	*400,0*	*282,7*	*32,0*	*20,7/150*	
165,1mm	6.500	18.88	11.25	95.7	300/300	8
150	*165,1*	*479,6*	*285,8*	*43,5*	*20,7/150*	
6	6.625	18.88	11.25	95.7	300/300	8
150	*168,3*	*479,6*	*285,8*	*43,5*	*20,7/150*	
8	8.625	23.63	18.44	255.2	300/300	12
200	*219,1*	*600,2*	*468,4*	*116,0*	*20,7/150*	
10	10.750	28.75	18.88	376.2	300/300	12
250	*273,1*	*730,3*	*479,6*	*171,0*	*20,7/150*	
12	12.750	33.44	20.25	519.2	300/300	12
300	*323,9*	*849,4*	*514,4*	*136,0*	*20,7/150*	

For information on larger sizes, contact GRINNELL Mechanical Products.
See circuit balancing valve specifications on pages 99.

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

Tech Data Sheet: G450

10 YEAR LIMITED WARRANTY



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 inch (DN65 to DN300), is composed of cast iron.

The CB800 valve serves 5 functions:

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

Pipe Size		Dimensions - Inches *mm*			Approx. Weight Lbs. *kg*	Limits PSI/°F *PN/°C*	Handwheel Turns
Nominal Inches *mm*	O.D. Inches *mm*	L	H	D			
2½	2.875	11.4	7.4	7.3	18.7	235/300	8
65	*73,0*	*290*	*188*	*185*	*13,5*	*16/150*	
76,1mm	3.000	11.4	7.4	7.3	18.7	235/300	8
65	*76,1*	*290*	*188*	*185*	*13,5*	*16/150*	
3	3.500	12.2	8.0	7.9	39.6	235/300	8
80	*88,9*	*310*	*203*	*200*	*18,0*	*16/150*	
4	4.500	13.8	9.4	8.7	61.6	235/300	8
100	*114,3*	*350*	*240*	*220*	*28,0*	*16/150*	
139,7mm	5.500	15.7	11.1	9.8	89.1	235/300	8
125	*139,7*	*400*	*283*	*250*	*40,5*	*16/150*	
5	5.563	15.7	11.1	9.8	89.1	235/300	8
125	*141,3*	*400*	*283*	*250*	*40,5*	*16/150*	
165,1mm	6.500	18.9	11.2	11.2	113.3	235/300	8
150	*165,1*	*480*	*285*	*285*	*51,5*	*16/150*	
6	6.625	18.9	11.2	11.2	113.3	235/300	8
150	*168,3*	*480*	*285*	*285*	*51,5*	*16/150*	
8	8.625	23.6	18.4	13.4	284.9	235/300	12
200	*219,1*	*600*	*467*	*340*	*129,5*	*16/150*	
10	10.750	28.7	18.9	15.9	431.2	235/300	12
250	*273,1*	*730*	*480*	*405*	*196,0*	*16/150*	
12	12.750	33.5	20.3	19.1	580.8	235/300	12
300	*323,9*	*850*	*515*	*485*	*264,0*	*16/150*	

For information on larger sizes, contact GRINNELL Mechanical Products.
See circuit balancing valve specifications on pages 99.

Model CB800 Circuit Balancing Valves Flanged Ends, PN16/PN10

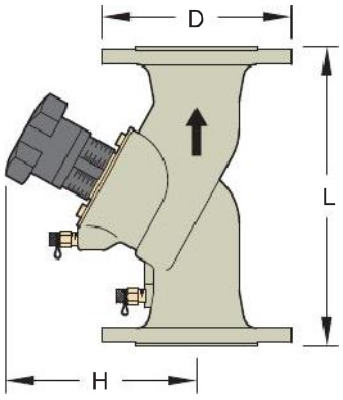
Tech Data Sheet: G450

10 YEAR LIMITED WARRANTY

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 inch (DN65 to DN300), is composed of cast iron.

The CB800 valve serves 5 functions:

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



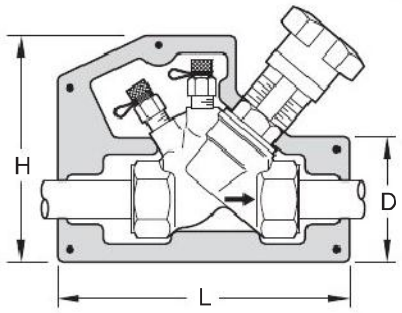
Pipe Size		Dimensions - Inches *mm*			Approx. Weight Lbs. *kg*	Limits PSI/°F *PN/°C*	Handwheel Turns
Nominal Inches *mm*	O.D. Inches *mm*	L	H	D			
2½	2.875	11.4	7.4	7.3	18.7	235/300	8
65	*73,0*	*290*	*188*	*185*	*13,5*	*16/150*	
76,1mm	3.000	11.4	7.4	7.3	18.7	235/300	8
65	*76,1*	*290*	*188*	*185*	*13,5*	*16/150*	
3	3.500	12.2	8.0	7.9	39.6	235/300	8
80	*88,9*	*310*	*203*	*200*	*18,0*	*16/150*	
4	4.500	13.8	9.4	8.7	61.6	235/300	8
100	*114,3*	*350*	*240*	*220*	*28,0*	*16/150*	
139,7mm	5.500	15.7	11.1	9.8	89.1	235/300	8
125	*139,7*	*400*	*283*	*250*	*40,5*	*16/150*	
5	5.563	15.7	11.1	9.8	89.1	235/300	8
125	*141,3*	*400*	*283*	*250*	*40,5*	*16/150*	
165,1mm	6.500	18.9	11.2	11.2	113.3	235/300	8
150	*165,1*	*480*	*285*	*285*	*51,5*	*16/150*	
6	6.625	18.9	11.2	11.2	113.3	235/300	8
150	*168,3*	*480*	*285*	*285*	*51,5*	*16/150*	
8	8.625	23.6	18.4	13.4	284.9	235/300	12
200	*219,1*	*600*	*467*	*340*	*129,5*	*16/150*	
10	10.750	28.7	18.9	15.9	431.2	235/300	12
250	*273,1*	*730*	*480*	*405*	*196,0*	*16/150*	
12	12.750	33.5	20.3	18.1	580.8	235/300	12
300	*323,9*	*850*	*515*	*460*	*264,0*	*16/150*	

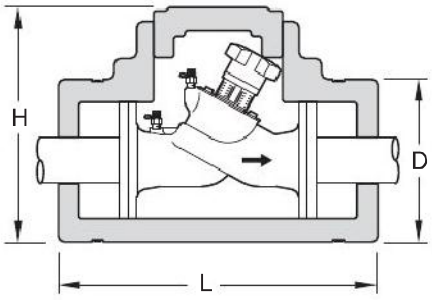
For information on larger sizes, contact GRINNELL Mechanical Products.
See circuit balancing valve specifications on pages 99.

Model CB800 Circuit Balancing Valves Insulation Kits

Tech Data Sheet: G450

10 YEAR LIMITED WARRANTY





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 ¾" – 8" *(20mm – 200mm)*. Specify size and end-connection type.

Pipe Size		Dimensions - Inches *mm*			Approx. Weight	
Nominal Inches *mm*	O.D. Inches *mm*	D	H	L	Temp up to 212°F Lbs. *kg*	Lbs. *kg*
½	0.840	2.72	5.35	7.20		
15	*21,3*	*69*	*136*	*183*		
¾	1.050	3.31	5.63	7.68		
20	*26,7*	*77*	*143*	*195*		
1	1.315	3.35	5.94	9.57		
25	*33,7*	*85*	*151*	*243*		
1¼	1.660	3.82	6.77	10.00		
32	*42,4*	*97*	*172*	*254*		
1½	1.900	4.13	7.28	9.84		
40	*48,3*	*105*	*185*	*250*		
2	2.375	4.72	8.23	10.87		
50	*60,3*	*120*	*209*	*276*		
2½	2.875	10.2	16.1	19.9		
65	*73,0*	*260*	*410*	*505*		
3	3.500	11.0	16.3	20.9		
80	*88,9*	*280*	*415*	*530*		
4	4.500	12.6	20.5	22.8		
100	*114,3*	*320*	*520*	*580*		
5	5.563	14.2	22.1	24.4		
125	*141,3*	*360*	*560*	*620*		
6	6.625	15.7	23.6	28.7		
150	*168,3*	*400*	*600*	*730*		
8	8.625	17.6	30.0	31.5		
200	*219,1*	*450*	*760*	*800*		

For information on larger sizes, contact GRINNELL Mechanical Products.

Model CB800 Circuit Balancing Valves MC2 Measuring Computer

Tech Data Sheet: G450

10 YEAR LIMITED WARRANTY

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 Table of Contents

Figure S853
"Y" Strainers
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Figure S810
Suction Diffusers
Pages 108 - 109

Figure S855
Tee Strainers
Page 110

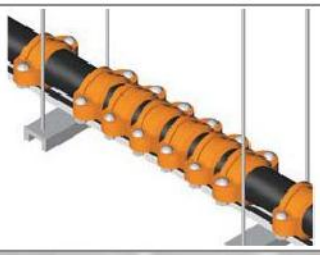


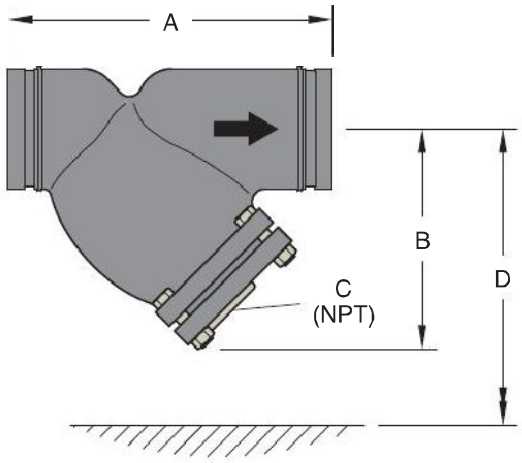
Figure 7550
Expansion Joints
Pages 111 - 116

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

10 YEAR LIMITED WARRANTY



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.

MATERIAL 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 BSPT are available upon request. Contact GRINNELL Mechanical Products.

For information on larger sizes, contact GRINNELL Mechanical Products.

Figure S810 Suction Diffusers

(Page 1 of 2)

Tech Data Sheet: G410

10 YEAR LIMITED WARRANTY

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.

MATERIAL 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

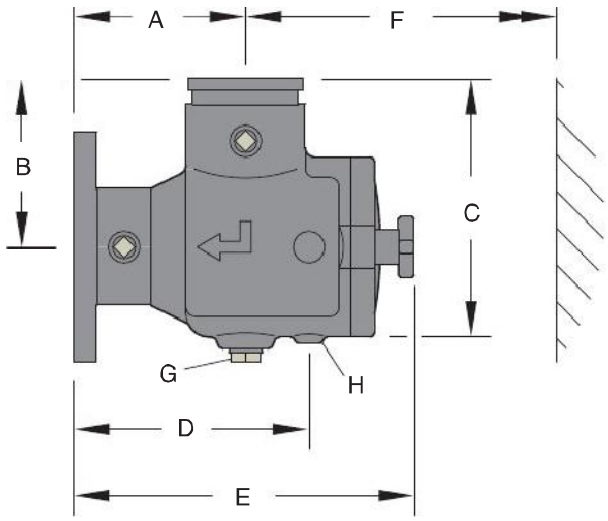
- 5/32" *(4,0mm)* perforated type 304 stainless steel for sizes 3" x 2" thru 6" x 6" *(80mm x 50mm thru 150mm x 150mm)*;
- 1/8" *(3,2mm)* perforated type 304 stainless steel for sizes 8" x 5" *(200 x 125mm)* and larger
- Sleeve is 20 mesh type 304 stainless steel

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

10 YEAR LIMITED WARRANTY

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

10 YEAR LIMITED WARRANTY

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 draining.

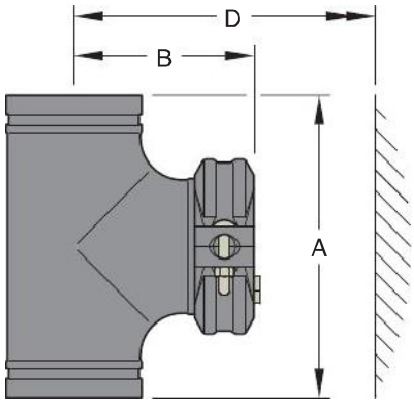
The GRINNELL Figure S855 Tee Strainer is rated for the following pressures:

- 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.



MATERIAL 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

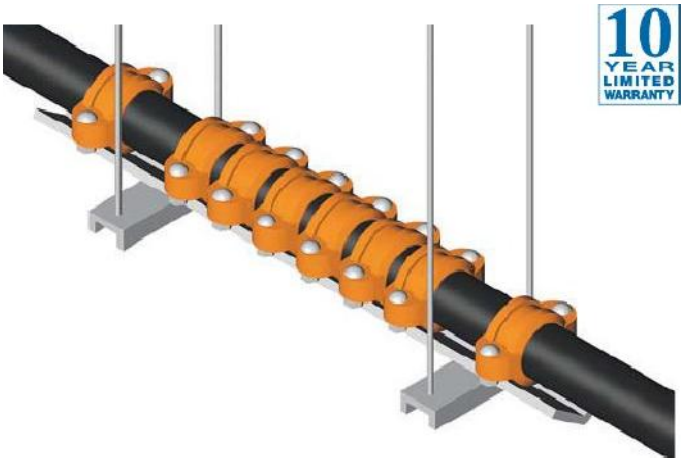
- Pressure drop, contact GRINNELL Mechanical Products.

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.

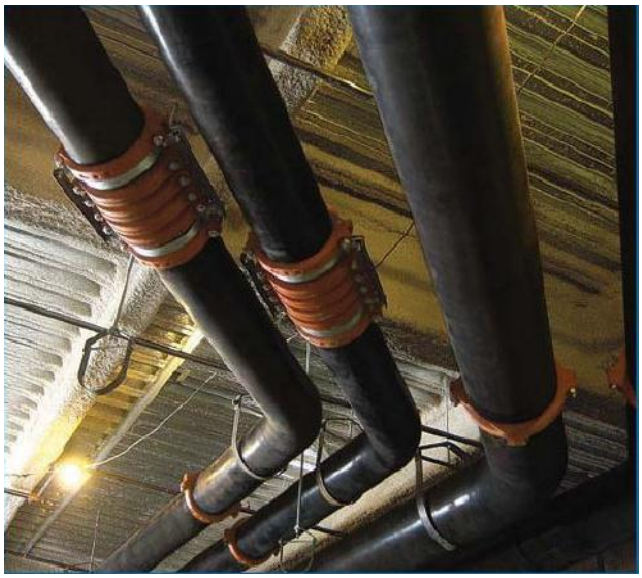
Expansion joints are designed to be used in both hot and cold applications. When pipe heats up, the expansion joint contracts to absorb the thermal expansion of the pipe. When pipe cools down, the expansion joint expands to absorb the thermal contraction of the pipe.

The expansion joints are factory fabricated and calibrated to the specific thermal movement conditions of the piping runs. The joints are manufactured from machined grooved nipples and GRINNELL Flexible Couplings, providing dependable, high pressure performance.

Expansion Joints should be anchored and guided in accordance with standard industry practices. Refer to the appropriate coupling data sheet for pressure/temperature ratings and materials of construction.

Nipples are manufactured from standard wall, A 53B black steel pipe.

Figure 7550 Expansion joints are custom designed to your specifications. Contact GRINNELL Mechanical Services for additional information.



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

(Page 2 of 6)

Tech Data Sheet: G460

10 YEAR LIMITED WARRANTY

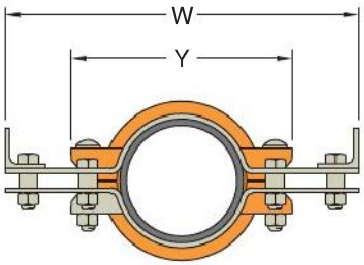
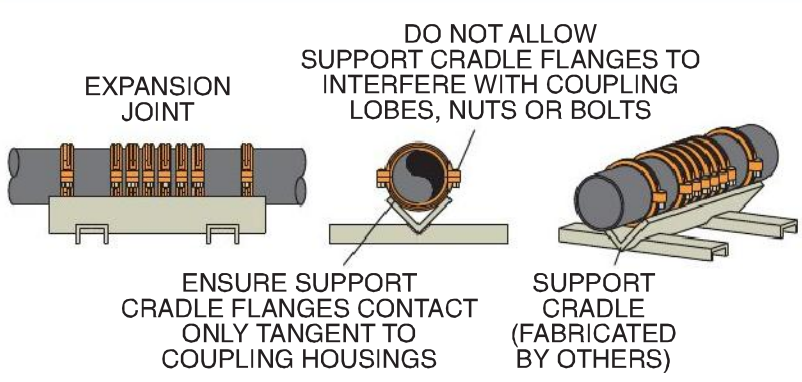


Figure 7550 Expansion Joints
Nominal Dimensions for End Elevation View

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
DN32	*42,4*	*106,4*	*247,7*	*3,18*
1½	1.900	4.440	9.625	0.125
DN40	*48,3*	*112,8*	*244,5*	*3,18*
2	2.375	4.880	10.875	0.125
DN50	*60,3*	*124,0*	*276,2*	*3,18*
2½	2.875	5.500	10.750	0.125
DN65	*73,0*	*139,7*	*273,1*	*3,18*
3	3.500	6.500	11.750	0.125
DN80	*88,9*	*165,1*	*298,5*	*3,18*
4	4.500	7.750	12.937	0.250
DN100	*114,3*	*196,9*	*328,6*	*6,35*
5	5.563	9.750	14.250	0.250
DN125	*141,3*	*247,7*	*362,0*	*6,35*
6	6.625	10.690	15.500	0.250
DN150	*168,3*	*271,5*	*393,7*	*6,35*
8	8.625	13.560	18.250	0.250
DN200	*219,1*	*344,4*	*463,6*	*6,35*
10	10.750	16.380	20.125	0.250
DN250	*273,0*	*416,1*	*511,2*	*6,35*
12	12.750	18.880	22.375	0.250
DN300	*323,9*	*479,6*	*568,3*	*6,35*
14	14.000	20.380	24.125	0.250
DN350	*355,6*	*517,7*	*612,8*	*6,35*
16	16.000	22.640	27.870	0.250
DN400	*406,4*	*575,1*	*707,9*	*6,35*

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



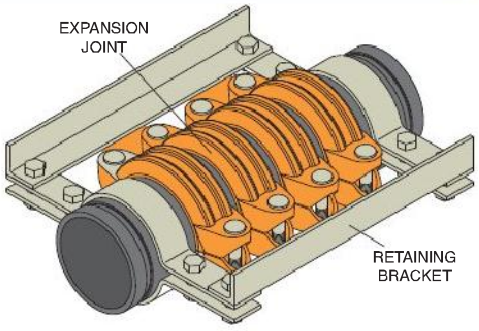


Figure 7550 Expansion Joints
Retaining Bracket Detail

Figure 7550 Expansion Joints
Typical Installation

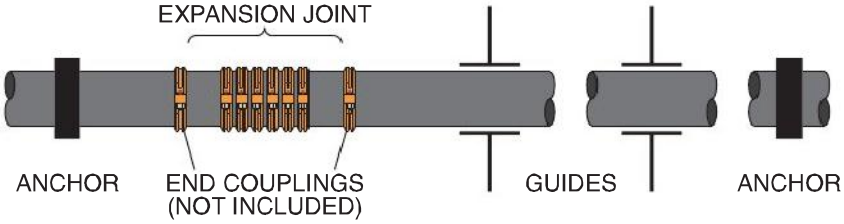


Figure 7550 Expansion Joint

Tech Data Sheet: G460

10 YEAR LIMITED WARRANTY

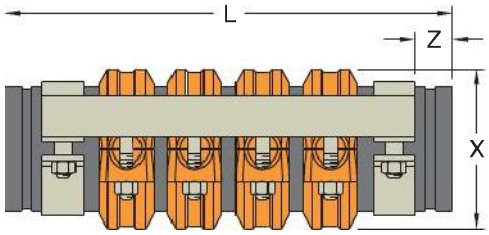


Figure 7550-1 Expansion Joints - 1" Total Movement Length

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 DN	O.D. Inches (mm)							
1¼	1.660	705 / 8	2.560	1.25	26.625	27.625	1.000	26
DN32	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
DN40	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
DN50	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
DN65	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
DN80	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
DN100	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
DN125	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
DN150	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
DN200	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
DN250	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
DN300	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
DN350	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
DN400	406,4		478,28	38,10	612,77	638,17	25,40	168,2

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

Figure 7550 Expansion Joint

(Page 4 of 6)

Tech Data Sheet: G460

10 YEAR LIMITED WARRANTY

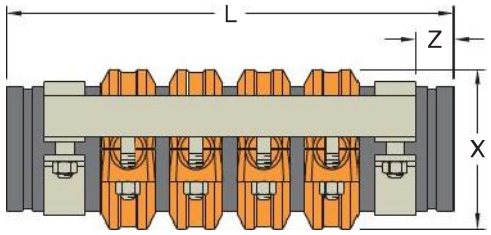


Figure 7550-13 Expansion Joints - 1¼" Total Movement Length

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 DN	O.D. Inches (mm)							
1¼	1.660	705 / 10	2.560	1.25	31.375	32.625	1.250	31
DN32	*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
DN40	*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
DN50	*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
DN65	*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
DN80	*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
DN100	*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
DN125	*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
DN150	*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
DN200	*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
DN250	*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
DN300	*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
DN350	*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
DN400	*406,4*		*478,28*	*38,10*	*698,50*	*730,25*	*31,75*	*168,2*

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

Figure 7550 Expansion Joint

Tech Data Sheet: G460

10 YEAR LIMITED WARRANTY

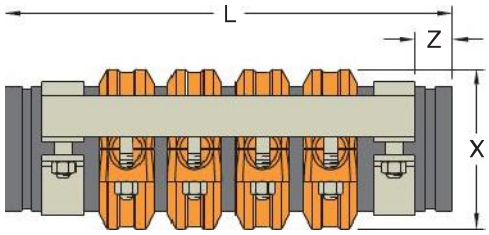


Figure 7550-15 Expansion Joints - 1½" Total Movement Length

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 DN	O.D. Inches (mm)							
1¼	1.660	705 / 12	2.560	1.25	36.125	37.625	1.500	37
DN32	*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
DN40	*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
DN50	*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
DN65	*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
DN80	*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
DN100	*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
DN125	*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
DN150	*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
DN200	*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
DN250	*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
DN300	*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
DN350	*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
DN400	*406,4*		*478,28*	*38,10*	*784,22*	*822,32*	*38,10*	*232,2*

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

Figure 7550 Expansion Joint

(Page 6 of 6)

Tech Data Sheet: G460

10 YEAR LIMITED WARRANTY

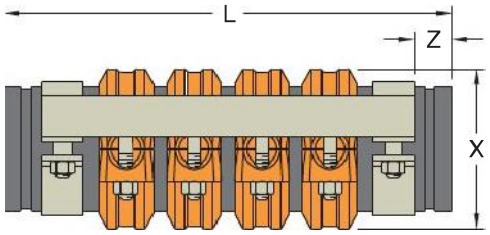


Figure 7550-75 Expansion Joints - 1¾" Total Movement Length

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 DN	O.D. Inches (mm)							
1¼	1.660	705 / 14	2.560	1.25	40.875	42.625	1.750	42
DN32	*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
DN40	*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
DN50	*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
DN65	*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
DN80	*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
DN100	*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
DN125	*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
DN150	*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
DN200	*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
DN250	*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
DN300	*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
DN350	*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
DN400	*406,4*		*478,28*	*38,10*	*869,95*	*914,40*	*44,45*	*264,4*

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


GRINNELL
FIG 521 USA R


GRINNELL
USA

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

MATERIAL 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 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 stripped color code. For closed-loop heating systems from -30°F to 250°F *(-34°C to 120°C)* and potable water systems up to 180°F *(82°C)*. Recommended for use in low temperature and vacuum systems. They are not recommended for petroleum service.

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.

Certified to NSF/ANSI 61

See Tyco Fire Protection Products Publication TFP1800

Fitting Specifications

Tech Data Sheet: G520

MATERIAL SPECIFICATIONS

Cast Copper Alloy Fittings

- Copper Alloy Conforming to CDA C89833
- UL Classified in Accordance with ANSI/NSF61 and Bears the UL Water Quality Mark

Wrot Copper Fittings

- ASTM B-75 C12200; Wall Thickness Per ASTM B 88 Type L

For Fire Protection Pressure Rating and Listing / Approval information contact Tyco Fire Protection Products.

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, or Figure 61 Flange Adapters.

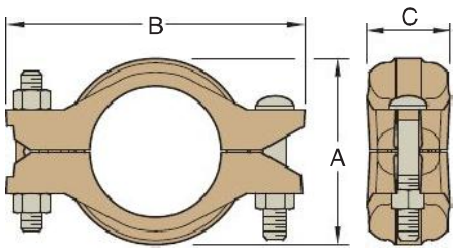
Fittings are rated at the pressure rating of the Figure 640 Couplings, Figure 672 Couplings, or Figure 61 Flange Adapters being used.

Refer to back cover for country-specific customer care numbers.

Figure 640 Pivot-Bolt Rigid Installation-Ready Coupling

Tech Data Sheet: G512

10 YEAR LIMITED WARRANTY



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See Tyco Fire & Building Products Publication TFP1800

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 119 for specifications and pages 191 - 198 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

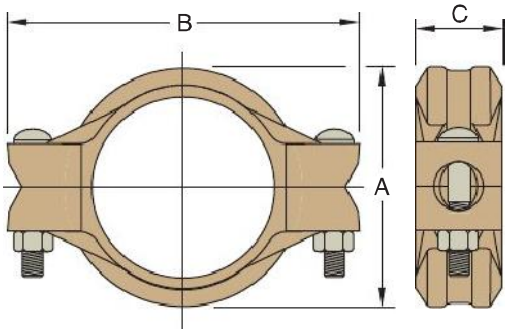
Figure 672 Rigid Coupling

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.

10 YEAR LIMITED WARRANTY



Pipe Size		Max.* Gap	Dimensions			Coupling Bolts		Approx. Weight
Nominal Inches *mm*	Copper Tubing O.D. Inches *mm*	Inches *mm*	A Inches *mm*	B Inches *mm*	C Inches *mm*	Qty.	Size Inches	lbs *kg*
2	2.125	0.06	3.09	4.65	1.76	2	3/8 x 2 1/4	1.7
50	54,0	1,5	78,6	118,1	44,7			0,8
2 1/2	2.625	0.06	3.59	5.56	1.76	2	3/8 x 2 1/4	1.9
65	66,7	1,5	91,3	141,2	44,7			0,9
3	3.125	0.06	4.12	6.25	1.76	2	1/2 x 3	3.1
80	79,4	1,5	104,7	158,8	44,7			1,4
4	4.125	0.09	5.33	7.75	1.86	2	1/2 x 3	4.3
100	104,8	2,3	135,3	196,9	47,2			2,0
5	5.125	0.09	6.48	9.25	1.86	2	5/8 x 3 1/4	6.0
125	130,7	2,3	164,6	235,0	47,2			2,7
6	6.125	0.09	7.48	10.25	1.86	2	5/8 x 3 1/4	6.6
150	155,6	2,3	190,0	260,4	47,2			3,0
8	8.125	0.09	9.64	12.75	1.86	2	3/4 x 4 3/4	10.2
200	206,4	2,3	244,8	323,9	47,2			4,6

* Maximum available gap between pipe ends, minimum gap = 0.
See page 119 for specifications and pages 191 - 198 for gasket information.

Certified to NSF/ANSI 61

See Tyco Fire Protection Products Publication TFP1800

Performance Pressure

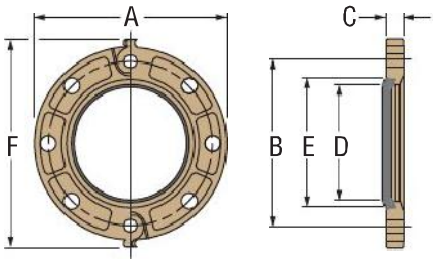
Pipe Size		Type "K" ASTM B-88			Type "L" ASTM B-88			Type "M" ASTM B-88			DWV ASTM B-306		
Nominal Size Inches *mm*	Copper Tubing O.D. Inches *mm*	Wall Thick Inches *mm*	Max. Working Pressure psi/*bar*	Max. End Load lbs/*kN*	Wall Thick Inches *mm*	Max. Working Pressure psi/*bar*	Max. End Load lbs/*kN*	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	–	–
2 1/2	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 61 Flange Adapter
(ANSI Class 125/150)

Tech Data Sheet: G515

10 YEAR LIMITED WARRANTY

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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See Tyco Fire Protection Products Publication TFP1800

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	
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	3/4 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	3/4 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 33) 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

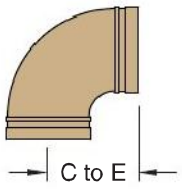
Figure 61 Flange Adapters are not recommended for applications that incorporate tie rods for anchoring or on a standard fitting within 90° of each other.

See page 119 for specifications and pages 191 - 198 for gasket information.

Figure 610 90° Elbow

Tech Data Sheet: G520

10 YEAR LIMITED WARRANTY



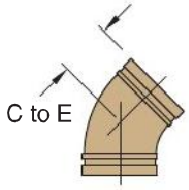
Pipe Size		C to E	Approx. Weight
Nominal Size Inches *mm*	Copper Tubing O.D. Inches *mm*	Inches *mm*	lbs *kg*
2	2.125	2.91	1.9
50	*54,0*	*73,9*	*0,9*
2½	2.625	3.31	2.7
65	*66,7*	*84,1*	*1,2*
3	3.125	3.81	3.6
80	*79,4*	*96,8*	*1,6*
4	4.125	4.75	7.1
100	*104,8*	*120,7*	*3,2*
5	5.125	5.94	11.9
125	*130,2*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

See page 117 for specifications.

Figure 601 45° Elbow

Tech Data Sheet: G520

10 YEAR LIMITED WARRANTY



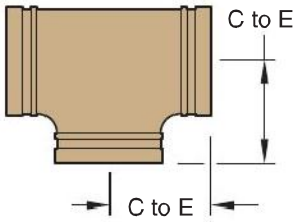
Pipe Size		C to E	Approx. Weight
Nominal Size Inches *mm*	Copper Tubing O.D. Inches *mm*	Inches *mm*	lbs *kg*
2	2.125	2.19	1.6
50	*54,0*	*55,6*	*0,7*
2½	2.625	2.31	2.1
65	*66,7*	*58,7*	*1,0*
3	3.125	2.59	2.7
80	*79,4*	*65,8*	*1,2*
4	4.125	3.19	5.5
100	*104,8*	*81,0*	*2,5*
5	5.125	3.25	7.7
125	*130,2*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

See page 117 for specifications.

Figure 619 Tee

Tech Data Sheet: G520

10 YEAR LIMITED WARRANTY



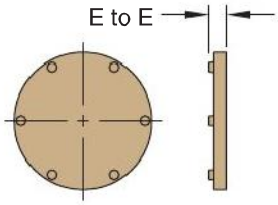
Pipe Size		C to E	Approx.
Nominal Size Inches *mm*	Copper Tubing O.D. Inches *mm*	Inches *mm*	Weight lbs *kg*
2	**2.125**	**2.69**	**2.5**
50	*54,0*	*68,3*	*1,1*
2½	**2.625**	**3.20**	**3.8**
65	*66,7*	*81,3*	*1,7*
3	**3.125**	**3.52**	**4.7**
80	*79,4*	*89,4*	*2,1*
4	**4.125**	**4.25**	**9.0**
100	*104,8*	*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*

See page 119 for specifications.

Figure 660 Cap

Tech Data Sheet: G520

10 YEAR LIMITED WARRANTY



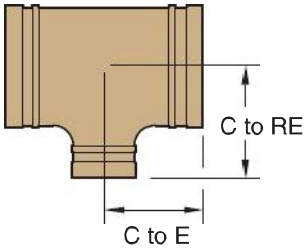
Pipe Size		E to E	Approx.
Nominal Size Inches *mm*	Copper Tubing O.D. Inches *mm*	Inches *mm*	Weight lbs *kg*
2	**2.125**	**.92**	**0.6**
50	*54,0*	*23,4*	*0,3*
2½	**2.625**	**.92**	**1.0**
65	*66,7*	*23,4*	*0,4*
3	**3.125**	**.92**	**1.3**
80	*79,4*	*23,4*	*0,6*
4	**4.125**	**.92**	**2.2**
100	*104,8*	*23,4*	*1,0*
5	**5.125**	**.92**	**5.8**
125	*130,2*	*23,4*	*2,6*
6	**6.125**	**.92**	**8.1**
150	*155,6*	*23,4*	*3,7*
8	**8.125**	**1.03**	**14.1**
200	*206,4*	*26,2*	*6,4*

See page 119 for specifications.

Figure 621 Reducing Tee

Tech Data Sheet: G520

10 YEAR LIMITED WARRANTY



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*

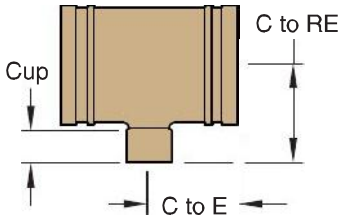
Dimensional information in this chart is for cast fittings.
See page 119 for specifications.

Figure 618 Reducing Tee

Tech Data Sheet: G520

10 YEAR LIMITED WARRANTY

Figure 618
Reducing Tee
Groove x Groove x Cup
cast



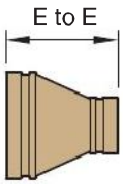
Pipe Size		C to E Inches *mm*	C to RE Inches *mm*	Cup Inches *mm*	Approx. Weight lbs *kg*
Nominal Size Inches *mm*	Copper Tubing O.D. Inches *mm*				
2 x 2 x ¾	2.125 x 2.125 x 0.825	2.20	2.04	0.75	1.6
50 x 50 x 20	*54,0 x 54,0 x 21,0*	*55,9*	*51,8*	*19,0*	*0,7*
2 x 2 x 1	2.125 x 2.125 x 1.125	2.33	2.26	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*	*94,7*	*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*	*2,5*
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*

See page 119 for specifications.

Figures 650 Concentric Reducer

Tech Data Sheet: G520

10 YEAR LIMITED WARRANTY



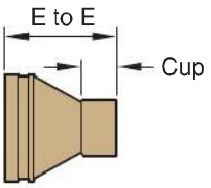
Pipe Size		E to E Inches *mm*	Approx. Weight lbs *kg*
Nominal Size Inches *mm*	Copper Tubing O.D. Inches *mm*		
2½ x 2	2.625 x 2.125	3.29	1.4
65 x 50	*66,7 x 54,0*	*83,6*	*0,6*
3 x 2	3.125 x 2.125	2.50	1.4
80 x 50	*79,4 x 54,0*	*63,5*	*0,6*
3 x 2½	3.125 x 2.625	2.50	1.4
80 x 65	*79,4 x 66,7*	*63,5*	*0,6*
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*	*1,0*
4 x 3	4.125 x 3.125	3.00	2.3
100 x 80	*104,8 x 79,4*	*76,2*	*1,0*
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*

See page 119 for specifications.

Figures 652 Concentric Reducer

Tech Data Sheet: G520

10 YEAR LIMITED WARRANTY



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*

See page 119 for specifications.

Model B680 Butterfly Valve with Lever Handle

Tech Data Sheet: G530

10 YEAR LIMITED WARRANTY

The GRINNELL Model B680 is a lever handle bronze body butterfly valve designed for use with grooved copper tubing (CTS), fittings and couplings. The valve is rated to 300 psi *(20,7 bar)* and features a 10 position locking lever handle and EPDM encapsulated ductile iron disc.

MATERIAL SPECIFICATIONS

Body

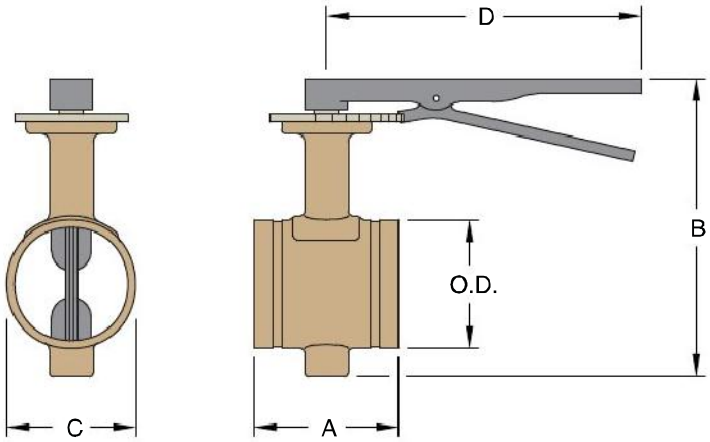
- Cast Bronze to ASTM B584-87 Copper Alloy UNS C90500

Disc

- Ductile Iron to ASTM A536 Gr. 65-45-12 Encapsulated with EPDM

Upper and Lower Shafts

- Stainless Steel Type 416 of ASTM A582
- UL Classified in Accordance with ANSI/NSF 61



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*

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 119 for specifications.

Figures 407GT & 407T Dielectric Waterways

Tech Data Sheet: G465

10 YEAR LIMITED WARRANTY

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 F 492 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

Figure 407GT
Dielectric Waterway

Pipe Size		Figure 407GT Grooved x Male Thread		Figure 407T Male Thread x Male Thread	
Nominal Inches *mm*	Copper Tubing O.D. Inches ***mm***	End to End Inches *mm*	Approx. Weight Lbs. *kg*	End to End Inches *mm*	Approx. Weight Lbs. *kg*
½	0.625	–	–	3.0	0.2
15	*15,9*			*76,2*	*0,1*
¾	0.875	–	–	3.0	0.2
20	*22,2*			*76,2*	*0,1*
1	1.125	4.0	0.3	4.0	0.3
25	*28,6*	*101,6*	*0,1*	*101,6*	*0,1*
1¼	1.375	4.0	0.6	4.0	0.6
32	*34,9*	*101,6*	*0,3*	*101,6*	*0,3*
1½	1.625	4.0	0.8	4.0	0.8
40	*41,3*	*101,6*	*0,4*	*101,6*	*0,4*
2	2.125	4.0	1.0	4.0	1.0
50	*54,0*	*101,6*	*0,5*	*101,6*	*0,5*
2½	2.625	6.0	1.6	6.0	1.6
65	*66,7*	*152,4*	*0,7*	*152,4*	*0,7*
3	3.125	6.0	2.0	6.0	2.0
80	*79,4*	*152,4*	*0,9*	*152,4*	*0,9*
4	4.125	6.0	4.5	6.0	4.5
100	*104,8*	*152,4*	*2,0*	*152,4*	*2,0*

For information on larger sizes, contact GRINNELL Mechanical Products.
See fitting specifications on page 37.

Figure 407T
Dielectric Waterway

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

Figure 407GG Dielectric Waterway Transition Fitting

Tech Data Sheet: G465

10 YEAR LIMITED WARRANTY

The GRINNELL Figure 407GG Transition Fitting protects systems through an innovative steel-to-plastic design that establishes a dielectric waterway. The transition fitting separates dissimilar metals in the electrolyte (waterway) eliminating the local galvanic cell.

The GRINNELL Figure 407GG Transition Fitting allows the connection between steel (IPS) size pipe and copper tube (CTS) size.

Pipe Size		Outside Diameter		End to End Inches *mm*	Approx. Weight lbs *kg*
Nominal Size Inches *mm*	Copper Tubing O.D. Inches *mm*	Steel (IPS)	Copper (CTS)		
2	2.125	2.375	2.125	4.00	1.3
50	*54,0*	*60,3*	*54,0*	*101,6*	*0,6*
2½	2.625	2.875	2.625	4.00	3.3
65	*66,7*	*73,0*	*66,7*	*101,6*	*1,5*
3	3.125	3.500	3.125	4.00	4.5
80	*79,4*	*88,9*	*79,4*	*101,6*	*2,1*
4	4.125	4.500	4.125	4.00	5.8
100	*104,8*	*114,3*	*104,8*	*101,6*	*2,6*
5	5.125	5.563	5.125	4.00	7.8
125	*130,2*	*141,3*	*130,2*	*101,6*	*3,5*
6	6.125	6.625	6.125	4.00	10.1
150	*155,6*	*168,3*	*155,6*	*101,6*	*4,6*

See fitting specifications on page 37.

Model 1039-66 Copper Roll Groover

Capacity:

- 2" – 8" *(50mm - 200mm)* Copper Tube K, L, M and DWV
- 1¼" – 6" *(32mm - 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" *(32mm - 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" *(23.81mm)*.

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" *(50mm - 200mm)*. Steel rolls for 1¼" – 6" *(32mm - 150mm)* may be ordered seperately.

See Preparation Equipment section on pages 199 - 212 for more information and options.

Stainless Steel Systems Table of Contents

Coupling Specifications

MATERIAL 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

MATERIAL 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.

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

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

Refer to back cover for country-specific customer care numbers.

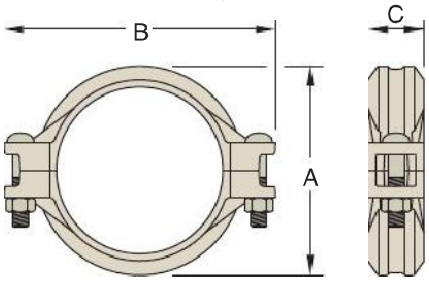
Figure 472 Stainless Steel Rigid Couplings

Tech Data Sheet: G560

10 YEAR LIMITED WARRANTY

The GRINNELL Figure 472 Rigid Coupling is made of cast 316L stainless steel and is capable of pressure up to 600 psi *(41,4 bar)*.

The GRINNELL Figure 472 Patented Coupling universal tongue-and-groove design allows the housing to grip along the full 360° of circumference of the pipe. Sizes 1¼" – 4" *(32mm – 100mm)* have gripping teeth to prevent rotation during 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*
1¼	1.660	600	1,298.5	0.06	2.75	4.38	1.81	2	⅜ x 2¼	2.0
32	*42,4*	*41,4*	*5,78*	*1,5*	*69,9*	*111,3*	*46,0*		*M10 x 57*	*0,9*
1½	1.900	600	1,701.1	0.08	3.00	4.62	1.81	2	⅜ x 2¼	2.1
40	*48,3*	*41,4*	*7,57*	*2,0*	*76,2*	*117,3*	*46,0*		*M10 x 57*	*1,0*
2	2.375	600	2,658.0	0.13	3.41	5.12	1.88	2	⅜ x 2¼	1.9
50	*60,3*	*41,4*	*11,82*	*3,3*	*86,6*	*130,0*	*47,8*		*M10 x 57*	*0,9*
2½	2.875	600	3,895.0	0.13	3.91	5.63	1.88	2	⅜ x 2¼	3.2
65	*73,0*	*41,4*	*17,32*	*3,3*	*99,3*	*143,0*	*47,8*		*M10 x 57*	*1,5*
76,1mm	3.000	600	4,241.0	0.13	4.19	5.72	2.00	2	–	3.5
65	*76,1*	*41,4*	*18,86*	*3,3*	*106,4*	*145,3*	*50,8*		*M10 x 57*	*1,6*
3	3.500	600	5,772.5	0.13	4.63	6.25	1.88	2	½ x 3	3.5
80	*88,9*	*41,4*	*25,68*	*3,3*	*117,6*	*158,8*	*47,8*		*M12 x 89*	*1,6*
4	4.500	600	9,542.3	0.19	5.81	7.50	1.97	2	½ x 3	5.6
100	*114,3*	*41,4*	*42,44*	*4,8*	*147,6*	*190,5*	*50,0*		*M12 x 89*	*2,5*
139,7mm	5.500	600	14,254.6	0.19	7.02	9.72	2.06	2	–	8.5
125	*139,7*	*41,4*	*63,40*	*4,8*	*178,3*	*246,9*	*52,3*		*M16 x 83*	*3,9*
5	5.563	600	14,583.0	0.19	7.09	9.71	2.04	2	⅝ x 3¼	8.5
125	*141,3*	*41,4*	*64,87*	*4,8*	*180,1*	*246,6*	*51,8*		*M16 x 83*	*3,9*
6	6.625	600	20,682.4	0.19	8.09	10.53	2.13	2	⅝ x 3¼	9.4
150	*168,3*	*41,4*	*92,00*	*4,8*	*205,5*	*267,5*	*54,1*		*M16 x 83*	*4,3*
8	8.625	600	35,054.7	0.19	10.56	13.56	2.62	2	¾ x 4¾	19.4
200 ◗	*219,1*	*41,4*	*155,92*	*4,8*	*268,2*	*344,4*	*66,5*		*M20 x 121*	*8,8*
10	10.750	600	54,455.9	0.13	12.84	16.41	2.62	2	1 x 6½	32.0
250 ◗	*273,0*	*41,4*	*242,22*	*3,3*	*326,1*	*416,8*	*66,5*		*M24 x 165*	*14,5*
12	12.750	600	76,603.5	0.13	15.41	18.84	2.62	2	1 x 6½	43.0
300 ◗	*323,9*	*41,4*	*340,73*	*3,3*	*391,4*	*478,5*	*66,5*		*M24 x 165*	*19,5*

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 133 for stainless steel coupling specifications and pages 191 - 198 for gasket information.

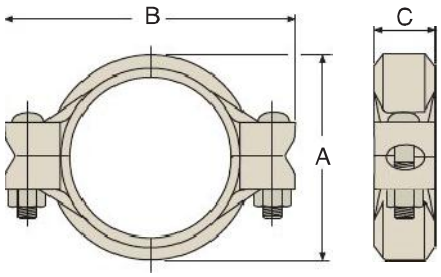
Refer to pressure ratings for Schedule 5, 10, and 40 pipe on pages 222 - 223, or contact GRINNELL Mechanical Products.

Figure 405 Stainless Steel Flexible Couplings

Tech Data Sheet: G565

The GRINNELL Figure 405 Flexible Coupling is made of 316L stainless steel and is capable of pressures up to 750 psi *(51,7 bar)*, depending on pipe size and wall thickness.

10 YEAR LIMITED WARRANTY



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	In/Ft *mm/m*	A	B	C	Qty.	Size** Inches *mm*	Lbs. *kg*
1	1.315	750	1,018.6	0.13	5° 26'	0.90	2.20	3.82	1.81	2	⅜ x 2¼	1.5
25	*33,4*	*51,7*	*4,53*	*3,3*		*95,1*	*56,0*	*97,0*	*46,0*		*M10 x 57*	*0,6*
1¼	1.660	750	1,623.1	0.13	4° 19'	0.90	2.56	4.19	1.81	2	⅜ x 2¼	1.5
32	*42,4*	*51,7*	*7,22*	*3,3*		*75,0*	*65,0*	*106,4*	*46,0*		*M10 x 57*	*0,7*
1½	1.900	750	2,126.4	0.13	3° 46'	0.79	2.75	4.44	1.81	2	⅜ x 2¼	1.6
40	*48,3*	*51,7*	*9,46*	*3,3*		*65,8*	*69,9*	*112,8*	*46,0*		*M10 x 57*	*0,7*
2	2.375	500	2,215.0	0.13	3° 1'	0.63	3.25	4.88	1.88	2	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	3,245.8	0.13	2° 29'	0.52	3.69	5.50	1.88	2	⅜ x 2¼	2.0
65	*73,0*	*34,5*	*14,44*	*3,3*		*43,3*	*93,7*	*139,7*	*47,8*		*M10 x 57*	*0,9*
76,1mm	3.000	500	3,534.2	0.13	2° 23'	0.50	4.00	5.75	1.88	2	–	3.1
65 ◗	*76,1*	*34,5*	*15,72*	*3,3*		*41,7*	*101,6*	*146,10*	*47,8*		*M12 x 89*	*1,4*
3	3.500	500	4,810.4	0.13	2° 3'	0.43	4.38	6.50	1.88	2	½ x 3	3.1
80	*88,9*	*34,5*	*21,40*	*3,3*		*35,8*	*111,3*	*165,1*	*47,8*		*M12 x 89*	*1,4*
4	4.500	325	5,168.7	0.25	3° 11'	0.67	5.69	7.75	2.06	2	½ x 3	4.0
100	*114,3*	*22,4*	*22,99*	*6,4*		*55,8*	*144,5*	*196,9*	*52,3*		*M12 x 89*	*1,8*
139,7mm	5.500	200	4,751.5	0.25	2° 36'	0.55	6.81	9.75	2.06	2	–	7.2
125 ◗	*139,7*	*13,8*	*21,13*	*6,4*		*45,5*	*173,0*	*247,7*	*52,3*		*M16 x 83*	*3,3*
5	5.563	200	4,861.0	0.25	2° 35'	0.54	6.88	9.75	2.06	2	⅝ x 3¼	7.1
125	*141,3*	*13,8*	*21,62*	*6,4*		*45,0*	*174,8*	*247,7*	*52,3*		*M16 x 83*	*3,2*
6	6.625	200	6,894.1	0.25	2° 10'	0.45	7.94	10.69	2.06	2	⅝ x 3¼	7.1
150	*168,3*	*13,8*	*30,67*	*6,4*		*37,5*	*201,7*	*271,5*	*52,3*		*M16 x 83*	*3,2*
8	8.625	200	11,684.9	0.25	1° 40'	0.35	10.19	13.56	2.50	2	¾ x 4¾	14.5
200	*219,1*	*13,8*	*51,97*	*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 133 for stainless steel coupling specifications and pages 191 - 198 for gasket information.

Refer to pressure ratings for Schedule 5, 10, and 40 pipe on pages 222 - 223, or contact GRINNELL Mechanical Products.

Figure 410 90° Stainless Steel Elbows

Tech Data Sheet: G570

10 YEAR LIMITED WARRANTY

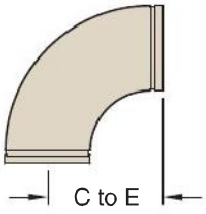


Figure 410A
Full-Flow 90° Elbow

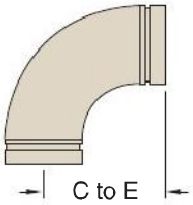


Figure 410
Fabricated 90° Elbow

Pipe Size		C to E Inches *mm*	Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*		
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 133 for stainless steel fitting specifications.

Figure 401 45° Stainless Steel Elbows

Tech Data Sheet: G570

10 YEAR LIMITED WARRANTY

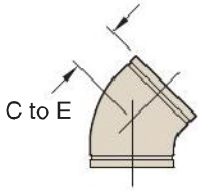


Figure 401A
Full-Flow 45° Elbow

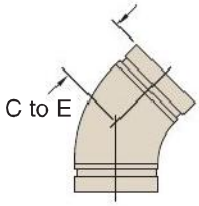


Figure 401
Fabricated 45° Elbow

Pipe Size		C to E Inches *mm*	Approx. Weight Lbs. *kg*
Nominal Inches *mm*	O.D. Inches *mm*		
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 133 for stainless steel fitting specifications.

Figure 419 Tees

Tech Data Sheet: G570

10 YEAR LIMITED WARRANTY

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**	**3.38**	**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 133 for stainless steel fitting specifications.

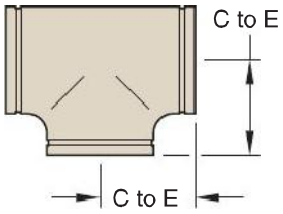


Figure 419A
Full-Flow Tee

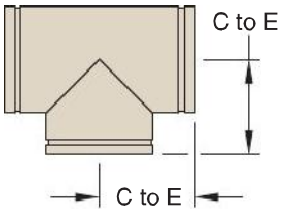
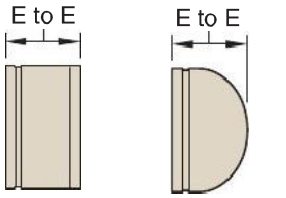


Figure 419
Fabricated Tee

Figure 460 End Caps

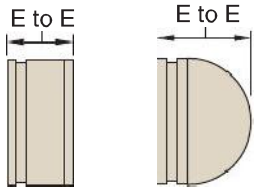
Tech Data Sheet: G570

10 YEAR LIMITED WARRANTY



1" - 4" (25 - 100mm) 5" - 12" (125 - 300mm)

Figure 460A
Full-Flow End Cap



1" - 4" (25 - 100mm) 5" - 12" (125 - 300mm)

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 133 for stainless steel fitting specifications.

Figure 421 Reducing Tees

Tech Data Sheet: G570

10 YEAR LIMITED WARRANTY

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 133 for stainless steel fitting specifications.

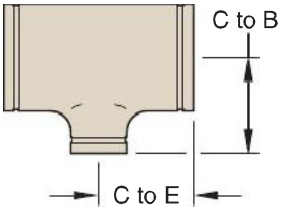


Figure 421A
Full-Flow Reducing Tee

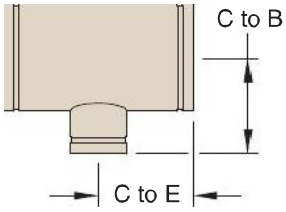


Figure 450
Fabricated Reducing Tee

Figure 450 Concentric Reducers

Tech Data Sheet: G570

10 YEAR LIMITED WARRANTY

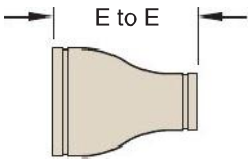


Figure 450A
Full-Flow Concentric Reducer

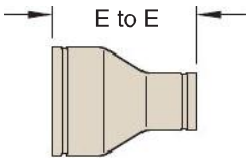


Figure 450
Fabricated Concentric Reducer

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 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 133 for stainless steel fitting specifications.

Figure 451 Eccentric Reducers

Tech Data Sheet: G570

10 YEAR LIMITED WARRANTY

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 133 for stainless steel fitting specifications.

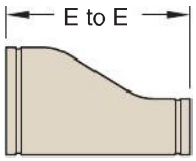


Figure 451A
Full-Flow Eccentric Reducer

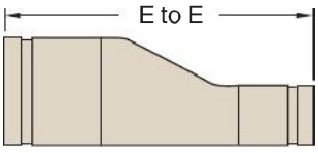


Figure 451
Fabricated Eccentric Reducer

Figure 441 Flange Adapters

(ANSI Class 150#)

Tech Data Sheet: G568

10 YEAR LIMITED WARRANTY

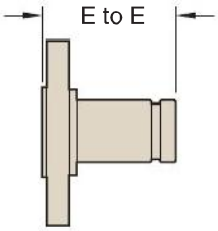


Figure 441
Fabricated Flange Adapter

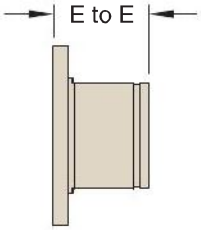


Figure 441A
Full-Flow Flange Adapter

Pipe Size		E to E	Mating Flange	Approx. Weight
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	Bolt Qty.	Lbs. *kg*
2	**2.375**	**4.00**	**4**	**6.4**
50	*60,3*	*101,6*		*2,8*
2½	**2.875**	**4.00**	**4**	**8.8**
65	*73,0*	*101,6*		*4,0*
3	**3.500**	**4.00**	**4**	**10.4**
80	*88,9*	*101,6*		*4,7*
4	**4.500**	**6.00**	**8**	**18.2**
100	*114,3*	*152,4*		*8,3*
5	**5.563**	**6.00**	**8**	**22.0**
125	*141,3*	*152,4*		*10,0*
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*

For information on larger sizes or PN16 sizes, contact GRINNELL Mechanical Products.
Schedule 40 fittings available upon request, contact GRINNELL Mechanical Products.
See page 133 for stainless steel fitting specifications.


GRINNELL
USA

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

MATERIAL 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 *(.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.

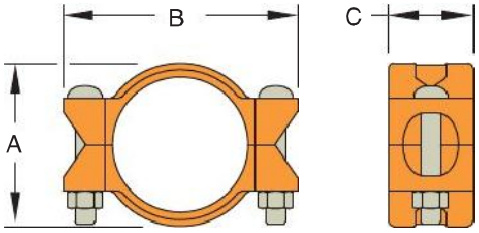
Figure 909 Plain End Couplings

Tech Data Sheet: G190

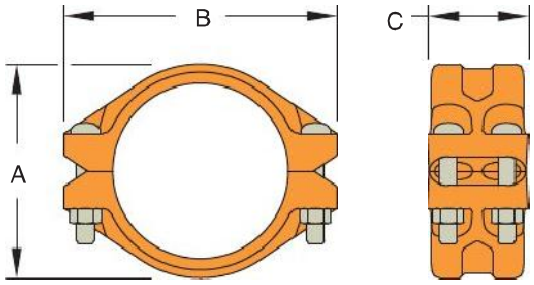
10 YEAR LIMITED WARRANTY

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



8" - 10" *(200mm - 250mm)* (4 Bolts)

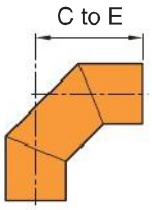
Pipe Size		Max.† Pressures	Max.† End Load	Dimensions - Inches *mm*			Coupling Bolts			Approx. Weight
Nominal Inches *mm*	O.D. Inches *mm*	psi *bar*	Lbs. *kN*	A	B	C	Qty.	Size Inches *mm*	Bolt Torque Lbs.-ft *Nm*	Lbs. *kg*
2	2.375	750	3322.6	3.69	5.75	3.31	2	5/8 x 3 1/2	150	5.4
50	60,3	51,7	14,78	93,7	146,1	84,1		M16 x 90	203,0	2,4
2 1/2	2.875	600	3895.1	4.17	6.25	3.31	2	5/8 x 3 1/2	150	5.9
65	73,0	41,4	17,33	105,9	158,8	84,1		M16 x 90	203,0	2,7
3	3.500	600	5772.7	4.81	7.56	3.31	2	3/4 x 4 3/4	200	9.0
80	88,9	41,4	25,68	122,2	192,0	84,1		M20 x 121	271,0	4,1
4	4.500	450	7,156.9	5.93	8.63	3.88	2	3/4 x 4 3/4	200	13.5
100	114,3	31	31,83	150,6	219,2	98,6		M20 x 121	271,0	6,1
6	6.625	300	10,341.5	8.19	11.68	4.25	2	1 x 6 1/2	250	23.5
150	168,3	20,7	46,00	208,0	296,7	108,0		M24 x 165	339,0	10,7
8	8.625	250	14,606.6	10.69	13.63	4.91	4	7/8 x 5 1/2	250	35.1
200	219,1	17,2	64,97	271,5	346,2	124,7		M22 x 140	339,0	15,9
10	10.750	250	22,690.6	13.13	15.88	4.91	4	7/8 x 5 1/2	300	48.5
250	273,0	17,2	100,93	333,5	403,4	124,7		M22 x 140	407,0	22,0

† 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.
For information on additional sizes or larger sizes, contact GRINNELL Mechanical Products.
See page 145 for plain end coupling specifications and pages 191 - 198 for gasket information.

Figure 910 90° Plain End Elbows

Tech Data Sheet: G192

10 YEAR LIMITED WARRANTY



Pipe Size		C to E	Approx. Weight
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	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*

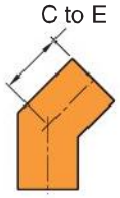
For information on larger sizes, contact GRINNELL Mechanical Products.

See page 145 for plain end fitting specifications.

Figure 901 45° Plain End Elbows

Tech Data Sheet: G192

10 YEAR LIMITED WARRANTY



Pipe Size		C to E	Approx. Weight
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	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 145 for plain end fitting specifications.

Figure 910LR 90° Plain End Long Radius Elbows

Tech Data Sheet: G192

10 YEAR LIMITED WARRANTY

Pipe Size		C to E	Approx. Weight
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	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*

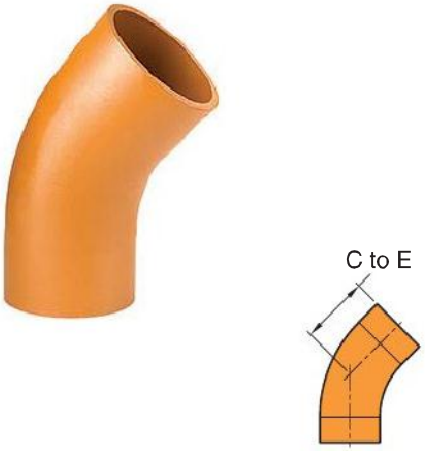
For information on larger sizes, contact GRINNELL Mechanical Products.

See page 145 for plain end fitting specifications.

Figure 901LR 45° Plain End Long Radius Elbows

Tech Data Sheet: G192

10 YEAR LIMITED WARRANTY



Pipe Size		C to E	Approx. Weight
Nominal Inches *mm*	O.D. Inches *mm*	Inches *mm*	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*

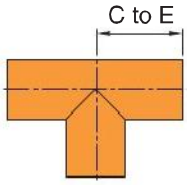
For information on larger sizes, contact GRINNELL Mechanical Products.

See page 145 for plain end fitting specifications.

Figure 919
Plain End Tees

Tech Data Sheet: G192

10 YEAR LIMITED WARRANTY



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*

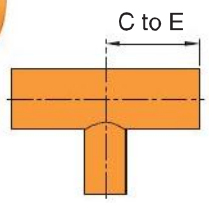
For information on larger sizes, contact GRINNELL Mechanical Products.

See page 145 for plain end fitting specifications.

Figure 921
Plain End Reducing Tees

Tech Data Sheet: G192

10 YEAR LIMITED WARRANTY



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*

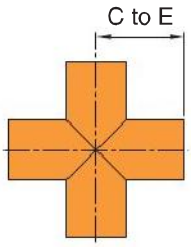
For information on larger sizes, contact GRINNELL Mechanical Products.

See page 145 for plain end fitting specifications.

Figure 927
Plain End Crosses

Tech Data Sheet: G192

10 YEAR LIMITED WARRANTY



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*

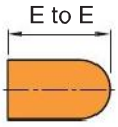
For information on larger sizes, contact GRINNELL Mechanical Products.

See page 145 for plain end fitting specifications.

Figure 960
Plain End Caps

Tech Data Sheet: G192

10 YEAR LIMITED WARRANTY



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*

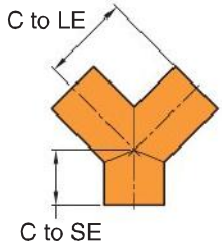
For information on larger sizes, contact GRINNELL Mechanical Products.

See page 145 for plain end fitting specifications.

Figure 924
Plain End True Wyes

Tech Data Sheet: G192

10 YEAR LIMITED WARRANTY



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*

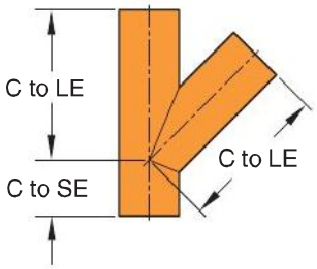
For information on larger sizes, contact GRINNELL Mechanical Products.

See page 145 for plain end fitting specifications.

Figure 914
Plain End Laterals

Tech Data Sheet: G192

10 YEAR LIMITED WARRANTY



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*

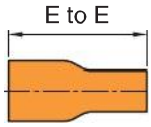
For information on larger sizes, contact GRINNELL Mechanical Products.

See page 145 for plain end fitting specifications.

Figure 999
Plain End Swaged Nipples

Tech Data Sheet: G192

10 YEAR LIMITED WARRANTY



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 145 for plain end fitting specifications.

Figures 991, 992, 993
Plain End Adapter Nipples

Tech Data Sheet: G192

10 YEAR LIMITED WARRANTY

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 145 for plain end fitting specifications.

Figure 991
Fabricated Adapter Nipple
Plain x Male Thread

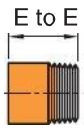


Figure 992
Fabricated Adapter Nipple
Plain x Groove

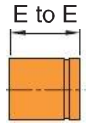


Figure 393
Fabricated Adapter Nipple
Plain x Plain

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

Tech Data Sheet: G192

10 YEAR LIMITED WARRANTY

Figure 941
Plain End Flange Adapter
ANSI Class 150#

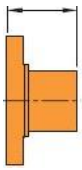
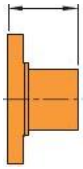


Figure 942
Plain End Flange Adapter
ANSI Class 300#



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 145 for plain end fitting specifications.

Stainless Steel G-PRESS Systems Table of Contents

Specifications

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 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.

MATERIAL SPECIFICATIONS

Fitting Housing

Stainless Steel per ANSI 316/316L with a wall thickness of 0.059" *(1.5mm)* and the following characteristics:

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

For local country potable water approvals, contact GRINNELL Mechanical Products

Working Pressure

- Pressure range from full vacuum to 300 psi *(20.7 bar)* on Schedule 5 stainless steel pipe

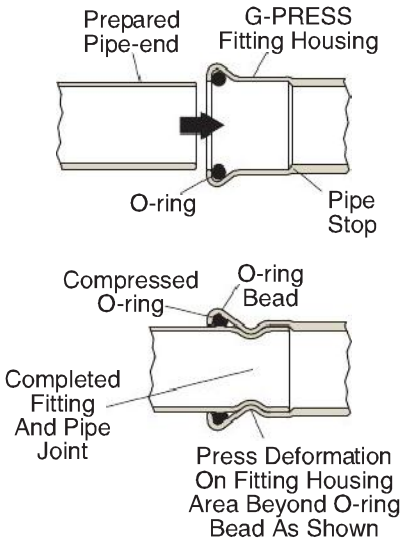
O-Ring Specifications

O-ring style gasket is resistant to hot water, ageing, and additives commonly used in drinking water.

- **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** (Brown 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.
- **FKM O-Ring** (Flouroelastomer) (Green color) 32°F to 302°F *(0°C to 150°C)* For oxidizing acids, petroleum products, hydraulic fluids, lubricants, halogenated hydrocarbons.

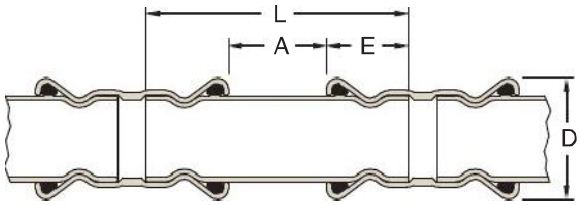
G-PRESS Systems Specifications

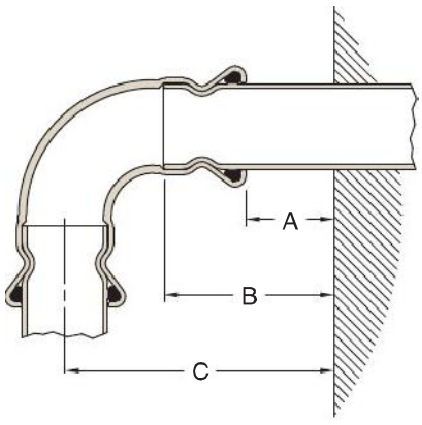
Tech Data Sheet: G550



Pipe Size		Pipe Tolerance		Pipework Support	
Nominal Inches *mm*	O.D. Inches *mm*	Pipe OD Tolerance +/- Inches *mm*	Pipe Wall Thickness Schedule 5 Inches *mm*	Vertical Intervals Inches *mm*	Horizontal Intervals Inches *mm*
½	0.840	0.008	0.065	71	47
15	*21,3*	*0,20*	*1,65*	*1800*	*1200*
¾	1.050	0.01	0.065	79	59
20	*26,7*	*0,25*	*1,65*	*2000*	*1500*
1	1.315	0.013	0.065	94	71
25	*33,4*	*0,33*	*1,65*	*2400*	*1800*
1½	1.660	0.016	0.065	118	94
40	*42,2*	*0,41*	*1,65*	*3000*	*2400*
2	2.375	0.024	0.065	118	94
50	*60,3*	*0,61*	*1,65*	*3000*	*2400*

Miminum Fitting Distances					
Pipe Size		A Minimum Distance Between Fittings Inches *mm*	L Minimum Pipe Length Between Fittings Inches *mm*	E Socket Insertion Depth Inches *mm*	D Fitting Housing Diameter Inches *mm*
Nominal Inches *mm*	O.D. Inches *mm*				
½	0.840	0.39	1.97	1.38	3.35
15	*21,3*	*10*	*50*	*35*	*85*
¾	1.050	0.39	1.97	1.38	3.50
20	*26,7*	*10*	*50*	*35*	*89*
1	1.315	0.39	1.97	1.38	3.74
25	*33,4*	*10*	*50*	*35*	*95*
1½	1.660	0.39	2.44	1.38	4.76
40	*42,2*	*10*	*62*	*35*	*121*
2	2.375	0.79	3.15	1.38	5.79
50	*60,3*	*20*	*80*	*35*	*147*



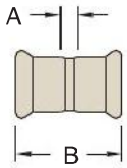


Miminum Fitting Distances				
Pipe Size		A Minimum Wall to Fitting Distance Inches *mm*	B Minimum Horizontal Pipe Distance from Wall Inches *mm*	C Minimum Vertical Pipe Distance from Wall Inches *mm*
Nominal Inches *mm*	O.D. Inches *mm*			
½	0.840	1.38	1.38	3.35
15	*21,3*	*35*	*35*	*85*
¾	1.050	1.38	1.38	3.50
20	*26,7*	*35*	*35*	*89*
1	1.315	1.38	1.38	3.74
25	*33,4*	*35*	*35*	*95*
1½	1.660	1.38	1.38	4.76
40	*42,2*	*35*	*35*	*121*
2	2.375	1.38	1.38	5.79
50	*60,3*	*35*	*35*	*147*

Figure 407 Straight Couplings
(Press x Press)

Tech Data Sheet: G550

10 YEAR LIMITED WARRANTY



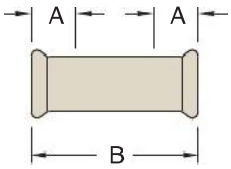
Pipe Size		Dimensions - Inches *mm*		Weight lbs *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	
½	0.840	0.42	2.09	0.13
15	*21.3*	*10,7*	*53,1*	*0,1*
¾	1.050	0.44	2.33	0.18
20	*26.7*	*11,2*	*59,2*	*0,1*
1	1.315	0.43	2.48	0.23
25	*33.4*	*10,9*	*63,0*	*0,1*
1½	1.660	0.43	2.84	0.40
40	*42.2*	*10,9*	*72,1*	*0,2*
2	2.375	0.50	4.05	0.74
50	*60.3*	*12,7*	*102,9*	*0,3*

See page 157 - 158 for G-PRESS specifications.

Figure 408 Slip Couplings
(Press x Press)

Tech Data Sheet: G550

10 YEAR LIMITED WARRANTY



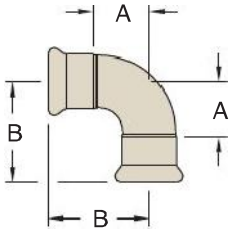
Pipe Size		Dimensions - Inches *mm*		Weight lbs *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	
½	0.840	0.83	2.95	0.18
15	*21,3*	*21,1*	*74,9*	*0,1*
¾	1.050	0.95	3.40	0.25
20	*26,7*	*24,1*	*86,4*	*0,1*
1	1.315	1.02	3.83	0.34
25	*33,4*	*25,9*	*97,3*	*0,2*
1½	1.660	1.20	4.81	0.63
40	*42,2*	*30,5*	*122,2*	*0,3*
2	2.375	1.77	6.76	1.13
50	*60,3*	*45,0*	*171,7*	*0,5*

See page 157 - 158 for G-PRESS specifications.

Figure 468 90° Elbows
(Press x Press)

Tech Data Sheet: G550

10 YEAR LIMITED WARRANTY



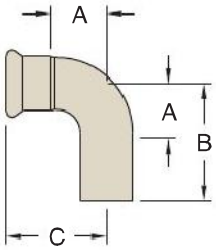
Pipe Size		Dimensions - Inches *mm*		Weight lbs *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	
½	0.840	1.57	2.41	0.22
15	*21,3*	*39,9*	*61,2*	*0,1*
¾	1.050	1.89	2.84	0.33
20	*26,7*	*48,0*	*72,1*	*0,2*
1	1.315	2.37	3.40	0.48
25	*33,4*	*60,2*	*86,4*	*0,2*
1½	1.660	2.56	3.76	0.79
40	*42,2*	*65,0*	*95,5*	*0,4*
2	2.375	3.23	5.00	1.39
50	*60,3*	*82,0*	*127,0*	*0,6*

See page 157 - 158 for G-PRESS specifications.

Figure 467 90° Elbows
(Male x Female)

Tech Data Sheet: G550

10 YEAR LIMITED WARRANTY



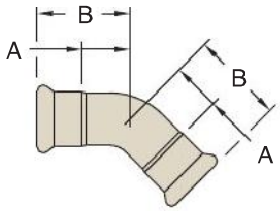
Pipe Size		Dimensions - Inches *mm*			Weight lbs *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	C	
½	0.840	1.57	2.87	2.41	0.24
15	*21,3*	*39,9*	*72,9*	*61,2*	*0,1*
¾	1.050	1.89	3.27	2.84	0.33
20	*26,7*	*48,0*	*83,1*	*72,1*	*0,2*
1	1.315	2.37	3.82	3.40	0.37
25	*33,4*	*60,2*	*97,0*	*86,4*	*0,2*
1½	1.660	2.48	4.06	3.69	0.77
40	*42,2*	*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 157 - 158 for G-PRESS specifications.

Figure 471 45° Elbows
(Press x Press)

Tech Data Sheet: G550

10 YEAR LIMITED WARRANTY



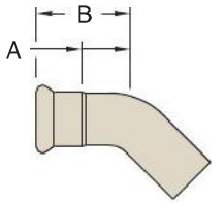
Pipe Size		Dimensions - Inches *mm*		Weight lbs *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	
½	0.840	0.79	1.62	0.18
15	*21,3*	*20,1*	*41,1*	*0,1*
¾	1.050	0.90	1.85	0.24
20	*26,7*	*22,9*	*47,0*	*0,1*
1	1.315	1.13	2.14	0.37
25	*33,4*	*28,7*	*54,4*	*0,2*
1½	1.660	1.17	2.37	0.59
40	*42,2*	*29,7*	*60,2*	*0,3*
2	2.375	1.48	3.24	1.06
50	*60,3*	*37,6*	*82,3*	*0,5*

See page 157 - 158 for G-PRESS specifications.

Figure 470 45° Elbows
(Male x Female)

Tech Data Sheet: G550

10 YEAR LIMITED WARRANTY



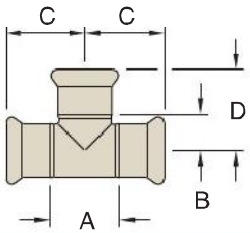
Pipe Size		Dimensions - Inches *mm*		Weight lbs *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	
½	0.840	0.79	1.62	0.20
15	*21,3*	*20,1*	*41,1*	*0,1*
¾	1.050	0.90	1.85	0.26
20	*26,7*	*22,9*	*47,0*	*0,1*
1	1.315	1.13	2.14	0.37
25	*33,4*	*28,7*	*54,4*	*0,2*
1½	1.660	1.17	2.37	0.60
40	*42,2*	*29,7*	*60,2*	*0,3*
2	2.375	1.48	3.24	1.06
50	*60,3*	*37,6*	*82,3*	*0,5*

See page 157 - 158 for G-PRESS specifications.

Figure 442 Equal Tees
(Press x Press x Press)

Tech Data Sheet: G550

10 YEAR LIMITED WARRANTY



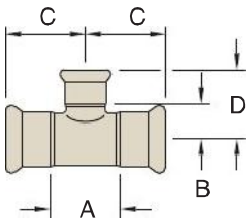
Pipe Size		Dimensions - Inches *mm*				Weight lbs *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	C	D	
½	0.840	1.28	0.80	1.48	1.64	0.24
15	*21,3*	*32,5*	*20,3*	*37,6*	*41,7*	*0,1*
¾	1.050	1.50	0.92	1.70	1.87	0.33
20	*26,7*	*38,1*	*23,4*	*43,2*	*47,5*	*0,2*
1	1.315	1.78	1.07	1.91	2.09	0.46
25	*33,4*	*45,2*	*27,2*	*48,5*	*53,1*	*0,2*
1½	1.660	2.40	1.36	2.41	2.57	0.84
40	*42,2*	*61,0*	*34,5*	*61,2*	*65,3*	*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 157 - 158 for G-PRESS specifications.

Figure 473 Reducing Tees
(Press x Press x Press)

Tech Data Sheet: G550

10 YEAR LIMITED WARRANTY



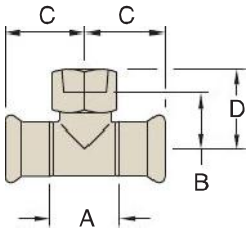
Pipe Size		Dimensions - Inches *mm*				Weight lbs *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	C	D	
¾ x ¾ x ½	1.050 x 1.050 x 0.840	1.50	0.91	1.70	1.74	0.31
20 x 20 x 15	*26,7 x 26,7 x 21,3*	*38,1*	*23,1*	*43,2*	*44,2*	*0,1*
1 x 1 x ½	1.315 x 1.315 x 0.840	1.78	1.06	1.91	1.89	0.40
25 x 25 x 15	*33,4 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	2.40	1.35	2.41	2.19	0.68
40 x 40 x 15	*48,3 x 48,3 x 21,3*	*61,0*	*34,3*	*61,2*	*55,6*	*0,3*
1½ x 1½ x ¾	1.900 x 1.900 x 1.050	2.40	1.37	2.41	2.31	0.70
40 x 40 x 20	*48,3 x 48,3 x 26,7*	*61,0*	*34,8*	*61,2*	*58,7*	*0,3*
1½ x 1½ x 1	1.900 x 1.900 x 1.315	2.40	1.36	2.41	2.39	0.75
40 x 40 x 25	*48,3 x 48,3 x 33,4*	*61,0*	*34,5*	*61,2*	*60,7*	*0,3*
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 157 - 158 for G-PRESS specifications.

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

Tech Data Sheet: G550

10 YEAR LIMITED WARRANTY



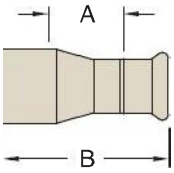
Pipe Size		Dimensions - Inches *mm*				Weight lbs *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	C	D	
½ x ½ x ½	0.840 x 0.840 x 0.840	1.28	0.93	1.48	1.52	0.26
15 x 15 x 15	*21,3 x 21,3 x 21,3*	*32,5*	*23,6*	*37,6*	*38,6*	*0,1*
½ x ½ x ¾	0.840 x 0.840 x 1.050	1.28	1.30	1.48	1.84	0.37
15 x 15 x 20	*21,3 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*	*0,2*
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 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	2.40	1.48	2.41	2.07	0.70
40 x 40 x 15	*48,3 x 48,3 x 21,3*	*61,0*	*37,6*	*61,2*	*52,6*	*0,3*
1½ x 1½ x ¾	1.900 x 1.900 x 1.050	2.40	1.71	2.41	2.25	0.77
40 x 40 x 20	*48,3 x 48,3 x 26,7*	*61,0*	*43,4*	*61,2*	*57,2*	*0,4*
1½ x 1½ x 1	1.900 x 1.900 x 1.315	2.40	1.59	2.41	2.27	0.84
40 x 40 x 25	*48,3 x 48,3 x 33,4*	*61,0*	*40,4*	*61,2*	*57,7*	*0,4*
1½ x 1½ x 1½	1.900 x 1.900 x 1.900	2.40	1.74	2.41	2.58	1.21
40 x 40 x 40	*48,3 x 48,3 x 48,3*	*61,0*	*44,2*	*61,2*	*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 157 - 158 for G-PRESS specifications.

Figure 474 Reducers
(Female Press x Male Press)

Tech Data Sheet: G550

10 YEAR LIMITED WARRANTY



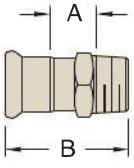
Pipe Size		Dimensions - Inches *mm*		Weight lbs *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	
¾ x ½	1.050 x 0.840	1.21	3.04	0.18
20 x 15	*26,7 x 21,3*	*30,7*	*77,2*	*0,1*
1 x ½	1.315 x 0.840	2.58	4.34	0.28
25 x 15	*33,4 x 21,3*	*65,5*	*110,2*	*0,1*
1 x ¾	1.315 x 1.050	1.75	3.76	0.26
25 x 20	*33,4 x 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	1.29	3.56	0.37
40 x 25	*48,3 x 33,4*	*32,8*	*90,4*	*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 3/4	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	2.64	5.30	0.70
50 x 40	*60,3 x 48,3*	*67,1*	*134,6*	*0,3*

See page 157 - 158 for G-PRESS specifications.

Figure 476 Straight Connectors
(Female Press x Male NPT)

Tech Data Sheet: G550

10 YEAR LIMITED WARRANTY



Pipe Size		Dimensions - Inches *mm*		Weight lbs *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	
½ x ½	0.840 x 0.840	0.72	2.14	0.15
15 x 15	*21,3 x 21,3*	*18,3*	*54,4*	*0,1*
½ x ¾	0.840 x 1.050	0.81	2.35	0.20
15 x 20	*21,3 x 26,7*	*20,6*	*59,7*	*0,1*
½ x 1	0.840 x 1.315	0.83	2.44	0.29
15 x 20	*21,3 x 33,4*	*21,1*	*62,0*	*0,1*
¾ x ¾	1.050 x 1.050	0.83	2.43	0.22
20 x 20	*26,7 x 26,7*	*21,1*	*61,7*	*0,1*
¾ x 1	1.050 x 1.315	0.85	2.52	0.31
20 x 25	*26,7 x 33,4*	*21,6*	*64,0*	*0,1*
1 x 1	1.315 x 1.315	0.83	2.64	0.29
25 x 25	*33,4 x 33,4*	*21,1*	*67,10*	*0,1*
1 x 1½	1.315 x 1.900	0.92	2.90	0.62
25 x 40	*33,4 x 48,3*	*23,4*	*73,7*	*0,3*
1½ x 1½	1.900 x 1.900	0.92	3.09	0.68
40 x 40	*48,3 x 48,3*	*23,4*	*78,5*	*0,3*
2 x 1½	2.375 x 1.900	0.91	3.17	0.97
50 x 40	*60,3 x 48,3*	*23,1*	*80,5*	*0,4*
2 x 2	2.375 x 2.375	0.91	3.74	1.01
50 x 50	*60,3 x 60,3*	*23,1*	*95,0*	*0,5*

See page 157 - 158 for G-PRESS specifications.

Figure 479 Straight Connectors
(Female Press x Female NPT)

Tech Data Sheet: G550

10 YEAR LIMITED WARRANTY

Pipe Size		Dimensions - Inches *mm*		Weight lbs *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	
½ x ¾	0.840 x 1.050	0.93	2.47	0.31
15 x 20	*21,3 x 26,7*	*23,6*	*62,7*	*0,1*
½ x 1	0.840 x 1.315	0.98	2.47	0.26
15 x 25	*21,3 x 33,4*	*24,9*	*62,7*	*0,1*
¾ x ¾	1.050 x 1.050	1.00	2.56	0.51
20 x 20	*26,7 x 26,7*	*25,4*	*65,0*	*0,2*
¾ x 1	1.050 x 1.315	1.00	2.56	0.44
20 x 25	*26,7 x 33,4*	*25,4*	*65,0*	*0,2*
1 x 1	1.315 x 1.315	0.86	2.56	0.31
25 x 25	*33,4 x 33,4*	*21,8*	*65,0*	*0,1*
1 x 1½	1.315 x 1.900	1.26	3.06	1.28
25 x 40	*33,4 x 48,3*	*32,0*	*77,7*	*0,6*
1½ x 1½	1.900 x 1.900	1.01	3.06	0.82
40 x 40	*48,3 x 48,3*	*25,7*	*77,7*	*0,4*
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 1½	2.375 x 1.900	1.36	3.98	1.83
50 x 40	*60,3 x 48,3*	*34,5*	*101,1*	*0,8*
2 x 2	2.375 x 2.375	1.15	3.98	1.17
50 x 50	*60,3 x 60,3*	*29,2*	*101,1*	*0,5*

See page 157 - 158 for G-PRESS specifications.

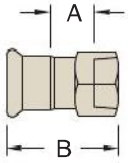
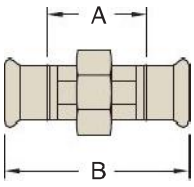


Figure 485 3-Piece Unions
(Press x Press)

Tech Data Sheet: G550

10 YEAR LIMITED WARRANTY



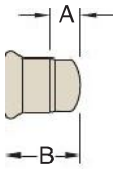
Pipe Size		Dimensions - Inches *mm*		Weight lbs *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	
½	0.840	2.35	4.02	0.62
15	*21,3*	*59,7*	*102,1*	*0,3*
¾	1.050	2.64	4.54	0.82
20	*26,7*	*67,1*	*115,3*	*0,4*
1	1.315	2.72	4.76	0.97
25	*33,4*	*69,1*	*120,9*	*0,4*
1½	1.660	3.88	6.29	2.36
40	*42,2*	*98,6*	*159,8*	*1,1*
2	2.375	4.72	8.26	3.70
50	*60,3*	*119,0*	*209,8*	*1,7*

See page 157 - 158 for G-PRESS specifications.

Figure 484 End Caps
(Female Press)

Tech Data Sheet: G550

10 YEAR LIMITED WARRANTY



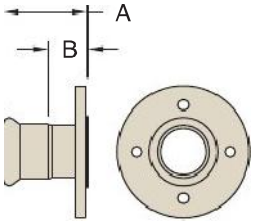
Pipe Size		Dimensions - Inches *mm*		Weight lbs *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	
½	0.840	0.72	1.56	0.09
15	*21,3*	*18,3*	*39,6*	*0,1*
¾	1.050	0.79	1.74	0.13
20	*26,7*	*20,1*	*44,2*	*0,1*
1	1.315	0.83	1.85	0.18
25	*33,4*	*21,1*	*47,0*	*0,1*
1½	1.660	0.95	2.15	0.33
40	*42,2*	*24,1*	*54,6*	*0,1*
2	2.375	1.14	2.91	0.55
50	*60,3*	*29,0*	*73,9*	*0,2*

See page 157 - 158 for G-PRESS specifications.

Figure 466 Van Stone Flange Adapters
(Female Press x Flange)

Tech Data Sheet: G550

10 YEAR LIMITED WARRANTY



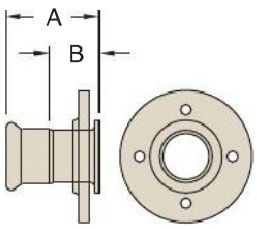
Pipe Size		Dimensions - Inches *mm*		Weight lbs *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	
½	0.840	3.11	1.17	0.93
15	*21,3*	*79,0*	*29,8*	*0,4*
¾	1.050	3.23	1.42	1.37
20	*26,7*	*82,0*	*36,1*	*0,6*
1	1.315	3.30	1.78	1.87
25	*33,4*	*83,8*	*45,2*	*0,8*
1½	1.660	3.45	2.59	2.98
40	*42,2*	*87,6*	*65,8*	*1,4*
2	2.375	4.56	3.45	4.75
50	*60,3*	*115,8*	*87,6*	*2,2*

See page 157 - 158 for G-PRESS specifications.
Flange material is AISI 304 and the body is AISI 316/316L.

Figure 475 Flange Adapters
(Female Press x Flange)

Tech Data Sheet: G550

10 YEAR LIMITED WARRANTY



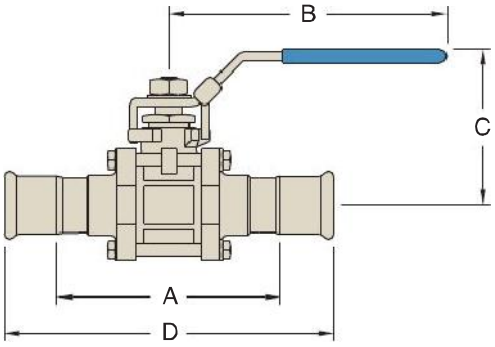
Pipe Size		Dimensions - Inches *mm*		Weight lbs *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	
½	0.840	1.95	0.94	0.90
15	*21,3*	*49,5*	*23,9*	*0,4*
¾	1.050	2.15	1.16	1.30
20	*26,7*	*54,6*	*29,5*	*0,6*
1	1.315	2.52	1.44	1.83
25	*33,4*	*64,0*	*36,6*	*0,8*
1½	1.660	3.39	2.08	3.03
40	*42,2*	*86,1*	*52,9*	*1,4*
2	2.375	4.87	2.90	4.91
50	*60,3*	*123,7*	*73,7*	*2,2*

See page 157 - 158 for G-PRESS specifications.

Figure 469 Ball Valves
(Press x Press)

Tech Data Sheet: G550

10 YEAR LIMITED WARRANTY



Pipe Size		Dimensions - Inches *mm*				Weight lbs *kg*
Nominal Inches *mm*	O.D. Inches *mm*	A	B	C	D	
½	0.840	3.16	3.94	2.44	4.84	1.24
15	*21,3*	*80,3*	*100,1*	*62,0*	*122,9*	*0,6*
¾	1.050	3.59	4.92	2.44	5.49	1.73
20	*26,7*	*91,2*	*125,0*	*62,0*	*139,4*	*0,8*
1	1.315	3.99	5.87	3.03	6.03	2.46
25	*33,4*	*101,3*	*149,1*	*77,0*	*153,2*	*1,1*
1½	1.660	5.05	7.48	3.94	7.45	5.93
40	*42,2*	*128,3*	*190,0*	*100,1*	*189,2*	*2,7*
2	2.375	5.84	7.48	4.25	9.38	8.48
50	*60,3*	*148,3*	*190,0*	*108,0*	*238,3*	*3,8*

See page 157 - 158 for G-PRESS specifications.

Notes

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MATERIAL 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)

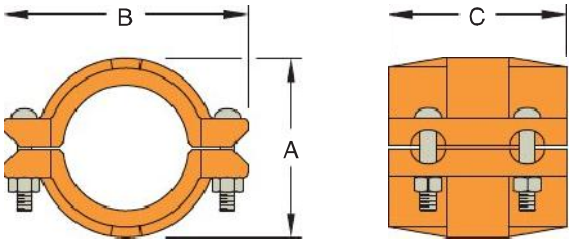
Figure 9095 HDPE Couplings

Tech Data Sheet: G580

10 YEAR LIMITED WARRANTY

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 170 for HDPE coupling specifications and pages 191 - 198 for gasket information.
See page 174 for pipe wall thickness and standard dimension ratio information.

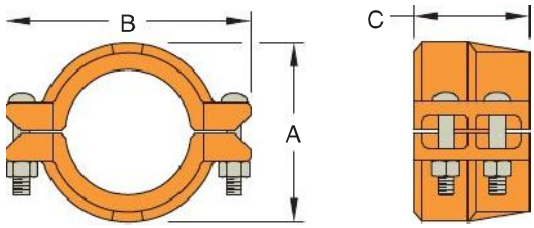
Figure 9097 HDPE Transition Couplings

Tech Data Sheet: G582

10 YEAR LIMITED WARRANTY

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*

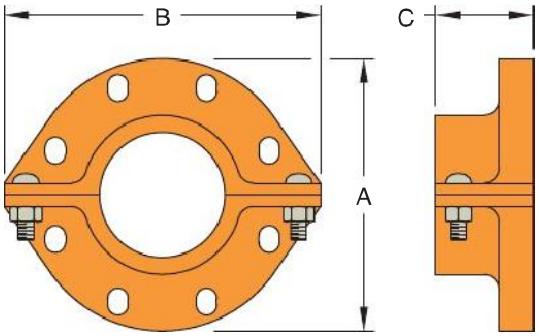
For information on larger sizes, contact GRINNELL Mechanical Products.
See page 170 for HDPE coupling specifications and pages 191 - 198 for gasket information.
See page 174 for pipe wall thickness and standard dimension ratio information.

Figure 9094 Flange Couplings

Tech Data Sheet: G584

10 YEAR LIMITED WARRANTY

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	5/8 x 3 1/4	15.0
100	*114,3*	*229,0*	*260,0*	*79,0*			*6,8*
6	6.625	11.00	12.25	3.75	8	3/4 x 3 1/2	21.5
150	*168,3*	*279,0*	*311,0*	*95,0*			*9,8*
8	8.625	13.50	14.75	3.42	8	3/4 x 3 3/4	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 170 for HDPE coupling specifications and pages 191 - 198 for gasket information.
See page 174 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.										

G-MINE PVC SYSTEMS

G-MINE PVC Systems Table of Contents

G-MINE PVC Systems

Tech Data Sheet: G590

Approvals:

- All G-MINE Pipe and Fittings are NSF-14 Compliant except for SDR 13.5 which is NSF-61.

Materials:

- Pipe and fittings are made of high- strength PVC (Poly Vinyl Chloride) conforming to ASTM D 1784.
- G-MINE PVC Joints meet the requirements of ASTM D 3139.
- O-rings are Teflon-coated, Nitrile Butadiene Rubber (NBR) or Polyisoprene Rubber conforming to ASTM F 477.
- Spline is Nylon. Available in Acid-resistant Polyvinylidene Flouride.

PVC Temperature Service Factor:

- All pressure ratings for PVC pipe are determined in a water environment of 73.4°F *(23°C)* ((±3.6°F). As the temperature of the environment increases, PVC Pipe becomes more ductile. This is represented by the graph (Figure 1).
- The PVC material's impact strength increases and the tensile strength decreases as the temperature rises. Because of this effect, the pressure rating of the pipe and fittings must be decreased to allow for safe operation of the line at elevated temperatures.

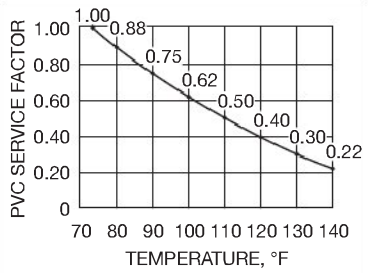


FIGURE 1
PVC TEMPERATURE SERVICE FACTOR

Pipe Specifications:

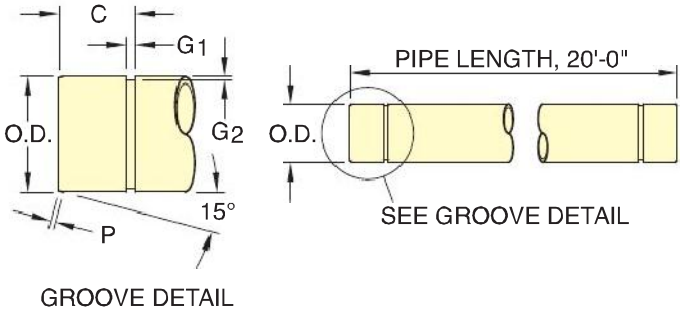
Nominal Property Values		
Pipe Property	**Test Method**	**Value**
Izod Impact	ASTM D 256	1.15 Ft.-Lbs./In. of Notch *(16.8 N/m)*
Tensile Strength	ASTM D 638	7,000 psi *(482 bar)*
Modulus of Elasticity	ASTM D 638	400,000 psi *(27579 bar)*
Deflection Temperature	ASTM D 648	158°F *(70°C)*
Flammability	ASTM D 635	Self-Extinguishing

Pipe Imact Strength Production Specification			
Nominal Size Inches	**SDR 21 (Ft. - Lbs.)** *(N/m)*	**SDR 17 (Ft. - Lbs.)** *(N/m)*	**SDR 13.5* (Ft. - Lbs.)** *(N/m)*
2	— -	**170** *2480*	**170** *2480*
3	— -	**245** *3575*	**245** *3575*
4	**255** *3721*	**320** *4670*	**320** *4670*
6	**380** *5545*	**470** *6859*	**470** *6859*
8	**495** *7223*	**610** *8902*	**610** *8902*
*High-pressure pipe			

Figure 72900 SDR Pipe
(Spline x Spline)

Tech Data Sheet: G590

The GRINNELL Figure 72900 G-MINE PVC Pipe provides a flexible piping system that is non-corrosive and resistant to harsh environments, acids, and most chemicals. Its specially formulated compound contains impact modifiers and UV (Ultraviolet) inhibitors that provide higher impact strength over an extended period of time. Pipe is available in 20 foot *(6,1m)* laying lengths (19 foot *(5.8m)* lengths are available for export from USA).



GROOVE DETAIL

Nom. Size In. *mm*	O.D. In. *mm*	SDR	Max. Pressure Rating psi *bar*	P In. *mm*	C In. *mm*	G1 Width In. *mm*	G2 Depth In. *mm*	Min. Wall Thk. In. *mm*	Approx. Pipe Weight Lbs./Ft. *Kg/M*
2	**2.375**	SDR 17	**250**	**0.188**	**1.75**	**0.250**	**0.100**	**0.140**	**0.64**
50	*60,3*		*17,2*	*4,8*	*44,5*	*6,4*	*2,5*	*3,6*	*0,3*
3	**3.50**	SDR 17	**250**	**0.188**	**2.50**	**0.375**	**0.135**	**0.206**	**1.37**
80	*88,9*		*17,2*	*4,8*	*63,5*	*9,5*	*3,4*	*5,2*	*0,6*
4 L	**4.50**	SDR 21	**200**	**0.188**	**3.00**	**0.375**	**0.135**	**0.214**	**1.86**
100	*114,3*		*13,8*	*4,8*	*76,2*	*9,5*	*3,4*	*5,4*	*0,8*
4	**4.50**	SDR 17	**250**	**0.188**	**3.00**	**0.375**	**0.135**	**0.265**	**2.25**
100	*114,3*		*17,2*	*4,8*	*76,2*	*9,5*	*3,4*	*6,7*	*1,0*
4 H	**4.50**	SDR 13.5	**315**	**0.188**	**3.00**	**0.375**	**0.135**	**0.333**	**2.85**
100	*114,3*		*21,7*	*4,8*	*76,2*	*9,5*	*3,4*	*8,5*	*1,3*
6 L	**6.625**	SDR 21	**200**	**0.313**	**3.00**	**0.375**	**0.135**	**0.316**	**3.99**
150	*168,3*		*13,8*	*8,0*	*76,2*	*9,5*	*3,4*	*8,0*	*1,8*
6	**6.625**	SDR 17	**250**	**0.313**	**3.00**	**0.375**	**0.135**	**0.390**	**4.87**
150	*168,3*		*17,2*	*8,0*	*76,2*	*9,5*	*3,4*	*9,9*	*2,2*
6 H	**6.625**	SDR 13.5	**315**	**0.313**	**3.00**	**0.375**	**0.135**	**0.491**	**6.07**
150	*168,3*		*21,7*	*8,0*	*76,2*	*9,5*	*3,4*	*12,5*	*2,8*
8 L	**8.625**	SDR 21	**200**	**0.625**	**3.16**	**0.500**	**0.145**	**0.410**	**6.71**
200	*219,1*		*13,8*	*16,7*	*80,3*	*12,7*	*3,7*	*10,4*	*3,0*
8	**8.625**	SDR 17	**250**	**0.625**	**3.16**	**0.500**	**0.145**	**0.508**	**8.16**
200	*219,1*		*17,2*	*16,7*	*80,3*	*12,7*	*3,7*	*12,9*	*3,7*
8 H	**8.625**	SDR 13.5	**315**	**0.625**	**3.16**	**0.500**	**0.145**	**0.639**	**10.30**
200	*219,1*		*21,7*	*16,7*	*80,3*	*12,7*	*3,7*	*16,2*	*4,7*

Laying length is 20 feet *(6,1 m)* (19 foot *(5.8m)* lengths are available for export from USA).

G-MINE Pipe is produced with thickened ends to accommodate the G-MINE groove while maintaining their designed pressure rating. Grooving the non-thickened pipe body will result in less-than-designed pressure rating for the new joint and ultimately the entire system. When fabrication is required for non-thickened end products, apply a Figure 72905 G-MINE x Solvent Weld Transition Coupling.

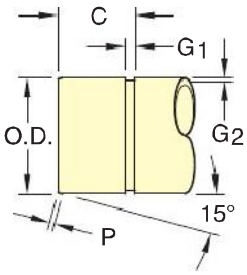
10" and 12" *(250 and 300mm)* are available upon request. Contact GRINNELL Mechanical Products.

See G-MINE specifications on page 177.

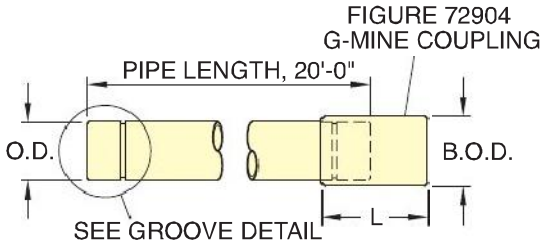
Figure 72901 SDR Pipe with Coupling
(Male Spline x Female Spline)

Tech Data Sheet: G590

The GRINNELL Figure 72901 G-MINE PVC Pipe and Coupling (packaged together) provide a flexible piping system that is non-corrosive and resistant to harsh environments, acids, and most chemicals. GRINNELL Figure 72901 includes a G-MINE PVC Pipe and Coupling, an O-ring and a Spline. Pipe laying length is 20 feet *(6,1m)* (19 foot *(5.8m)* lengths are available for export from USA).



GROOVE DETAIL



Nom. Size In. *mm*	O.D. In. *mm*	SDR	Max. Pressure Rating psi *bar*	B.O.D. In. *mm*	L In. *mm*	P In. *mm*	C In. *mm*	G1 Width In. *mm*	G2 Depth In. *mm*	Min. Wall Thk. In. *mm*	Approx. Pipe Weight Lbs./Ft. *Kg/M*
2	2.375	SDR 17	250	3.20	5.25	0.188	1.75	0.250	0.100	0.14	0.69
50	*60,3*		*17,2*	*81*	*133,4*	*4,8*	*44,5*	*6,4*	*2,5*	*3,6*	*0,31*
3	3.50	SDR 17	250	4.38	7.25	0.188	2.50	0.375	0.135	0.21	1.48
80	*88,9*		*17,2*	*111*	*184,2*	*4,8*	*63,5*	*9,5*	*3,4*	*5,2*	*0,67*
4 L*	4.50	SDR 21	200	5.47	8.25	0.188	3.00	0.375	0.135	0.21	2.11
100	*114,3*		*13,8*	*139*	*209,6*	*4,8*	*76,2*	*9,5*	*3,4*	*5,4*	*0,96*
4	4.50	SDR 17	250	5.47	8.25	0.188	3.00	0.375	0.135	0.27	2.50
100	*114,3*		*17,2*	*139*	*209,6*	*4,8*	*76,2*	*9,5*	*3,4*	*6,7*	*1,13*
4 H*	4.50	SDR 13.5	315	5.96	8.25	0.188	3.00	0.375	0.135	0.33	3.10
100	*114,3*		*21,7*	*151*	*209,6*	*4,8*	*76,2*	*9,5*	*3,4*	*8,5*	*1,41*
6 L*	6.625	SDR 21	200	7.84	8.25	0.313	3.00	0.375	0.135	0.32	4.30
150	*168,3*		*13,8*	*199*	*209,6*	*8,0*	*76,2*	*9,5*	*3,4*	*8,0*	*1,96*
6	6.625	SDR 17	250	7.84	8.25	0.313	3.00	0.375	0.135	0.39	5.18
150	*168,3*		*17,2*	*199*	*209,6*	*8,0*	*76,2*	*9,5*	*3,4*	*9,9*	*2,34*
6 H*	6.625	SDR 13.5	315	8.37	8.25	0.313	3.00	0.375	0.135	0.49	6.59
150	*168,3*		*21,7*	*213*	*209,6*	*8,0*	*76,2*	*9,5*	*3,4*	*12,5*	*2,99*
8 L*	8.625	SDR 21	200	10.19	10.13	0.625	3.16	0.500	0.145	0.41	7.26
200	*219,1*		*13,8*	*259*	*257,3*	*16,7*	*80,3*	*12,7*	*3,7*	*10,4*	*3,29*
8	8.625	SDR 17	250	10.95	10.13	0.625	3.16	0.500	0.145	0.51	8.71
200	*219,1*		*17,2*	*278*	*257,3*	*16,7*	*80,3*	*12,7*	*3,7*	*12,9*	*3,95*
8 H*	8.625	SDR 13.5	315	10.95	10.13	0.625	3.16	0.500	0.145	0.64	11.30
200	*219,1*		*21,7*	*278*	*257,3*	*16,7*	*80,3*	*12,7*	*3,7*	*16,2*	*5,13*

Laying length is 20 feet *(6,1 m)* (19 foot *(5.8m)* lengths are available for export from USA).

G-MINE Pipe is produced with thickened ends to accommodate the G-MINE groove while maintaining their designed pressure rating. Grooving the non-thickened pipe body will result in less-than-designed pressure rating for the new joint and ultimately the entire system. When fabrication is required for non-thickened end products, apply a Figure 72905 G-MINE x Solvent Weld Transition Coupling.

G-MINE Coupling, Gaskets (O-rings) and Splines included.

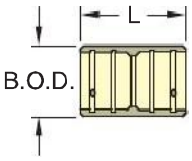
Refer to Figure 72904 for weight of G-MINE Coupling.

See G-MINE specifications on page 177.

Figure 72904 Couplings
(Spline x Spline)

Tech Data Sheet: G590

The GRINNELL Figure 72904 G-MINE Coupling provides a connection between two pieces of G-MINE PVC Pipe. G-MINE Couplings are designed for non-permanent use applications and are supplied with O-rings (gaskets) for ease of assembly and disassembly.



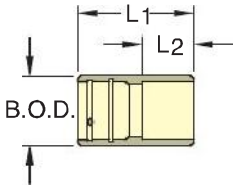
Nominal Size Inches *mm*	B.O.D. Inches *mm*	L Inches *mm*	Max. Pressure Rating psi *bar*	Approx. Weight Lbs. *Kg*
2	3.20	5.25	250	1.05
50	*81*	*133,4*	*17,2*	*0,5*
3	4.375	7.25	250	2.17
80	*111*	*184,2*	*17,2*	*1,0*
4	5.47	8.25	250	4.92
100	*139*	*209,6*	*17,2*	*2,2*
4H	5.96	8.25	315	5.00
100	*151*	*209,6*	*21,7*	*2,3*
6	7.84	8.25	250	6.20
150	*199*	*209,6*	*17,2*	*2,8*
6 H	8.37	8.25	315	10.40
150	*213*	*209,6*	*21,7*	*4,7*
8	10.19	10.125	250	10.93
200	*259*	*257,3*	*17,2*	*5,0*
8 H	10.95	10.125	315	20.00
200	*278*	*257,3*	*21,7*	*9,1*

G-MINE Gaskets (O-rings) and Splines included.
10" and 12" *(250 and 300mm)* are available upon request. Contact GRINNELL Mechanical Products.
See G-MINE specifications on page 177.

Figure 72905 Couplings
(Spline x Solvent Weld)

Tech Data Sheet: G590

The GRINNELL Figure 72905 G-MINE Transition Coupling (Female x Solvent Weld) provides an efficient transition from G-MINE PVC Pipe to plain-end PVC pipe.



Nominal Size Inches *mm*	B.O.D. Inches *mm*	Max. Pressure Rating psi *bar*	L1 Inches *mm*	L 2 Inches *mm*	Approx. Weight Lbs. *Kg*
2	3.20	250	5.50	2.375	1.00
50	*81,3*	*17,2*	*139,7*	*60,5*	*0,5*
3	4.375	250	8.00	3.50	2.20
80	*111,1*	*17,2*	*203,2*	*88,9*	*1,0*
4	5.47	250	9.00	4.00	3.50
100	*138,9*	*17,2*	*228,6*	*101,6*	*1,6*
6	7.84	250	9.00	4.00	6.40
150	*199,1*	*17,2*	*228,6*	*101,6*	*2,9*
8	10.19	250	10.125	4.50	11.30
200	*258,8*	*17,2*	*257,3*	*114,3*	*5,1*

G-MINE Gasket O-ring and Spline included.
See G-MINE specifications on page 177.

Figure 72919 Reducing Couplings
(Male Spline x Female Spline)

Tech Data Sheet: G590

Nominal Size Inches *mm*	O.D. Inches *mm*	B.O.D. Inches *mm*	Max. Pressure Rating psi *bar*	L Inches *mm*	Approx. Weight Lbs. *Kg*
4 x 2	2.375	5.47	250	15.25	5.00
100 x 50	*60,3*	*139*	*17,2*	*387,4*	*2,3*
4 x 3	3.50	5.47	250	16.56	5.70
100 x 80	*88,9*	*139*	*17,2*	*420,6*	*2,6*
6 x 2	2.375	7.84	250	15.75	10.40
150 x 50	*60,3*	*199*	*17,2*	*400,1*	*4,7*
6 x 3	3.50	7.84	250	16.50	11.00
150 x 80	*88,9*	*199*	*17,2*	*419,1*	*5,0*
6 x 4	4.50	7.84	250	17.38	11.10
150 x 100	*114,3*	*199*	*17,2*	*441,5*	*5,0*
8 x 2	2.375	10.19	250	17.00	11.10
200 x 50	*60,3*	*259*	*17,2*	*431,8*	*5,0*
8 x 4	4.50	10.19	250	15.63	24.10
200 x 100	*114,3*	*259*	*17,2*	*397,0*	*10,9*
8 x 6	6.625	10.19	250	18.50	24.60
200 x 150	*168,3*	*259*	*17,2*	*469,9*	*11,2*

G-MINE Gasket (O-ring) and Spline included.
See G-MINE specifications on page 177.

The GRINNELL Figure 72919 G-MINE Reducing Coupling (Female x Male) allows for a direct transition between two different pipe sizes.

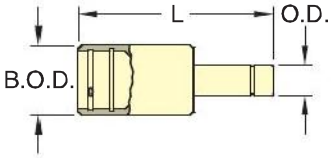


Figure 72940 Outlet Couplings
(Male Spline x Female Spline x Female Thread)

Tech Data Sheet: G590

Nominal Size Run x Outlet Inches x NPT	O.D. Inches *mm*	B.O.D. Inches *mm*	Max. Pressure Rating psi *bar*	L Inches *mm*	Approx. Weight Lbs. *Kg*
2 x ¾	2.375	3.20	250	10.13	1.60
50 x 20	*60,3*	*81*	*17,2*	*257,3*	*0,7*
2 x 1	2.375	3.20	250	10.13	1.50
50 x 25	*60,3*	*81*	*17,2*	*257,3*	*0,7*
3 x 1½	3.50	4.375	250	13.50	3.60
80 x 40	*88,9*	*111*	*17,2*	*342,9*	*1,6*
4 x 1½	4.50	5.47	250	15.00	5.80
100 x 40	*114,3*	*139*	*17,2*	*381,0*	*2,6*
6 x 1½	6.625	7.84	250	17.00	11.50
150 x 40	*168,3*	*199*	*17,2*	*431,8*	*5,2*
6 x 2	6.625	7.84	250	17.00	11.40
150 x 50	*168,3*	*199*	*17,2*	*431,8*	*5,2*
8 x 1½	8.625	10.19	250	19.00	20.60
200 x 40	*219,1*	*259*	*17,2*	*482,6*	*9,3*
8 x 2	8.625	10.19	250	19.00	21.40
200 x 50	*219,1*	*259*	*17,2*	*482,6*	*9,7*

G-MINE Gasket (O-ring) and Spline included.
See G-MINE specifications on page 177.

The GRINNELL Figure 72940 G-MINE Threaded Outlet Coupling (Female x Male x Female NPT) provides a threaded branch outlet connection.

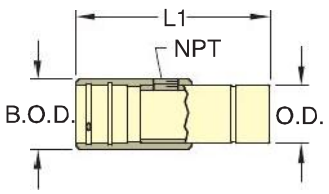
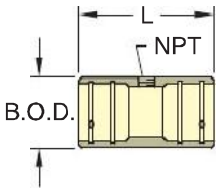


Figure 72930 Outlet Couplings
(Spline x Spline x Female Thread)

Tech Data Sheet: G590

The GRINNELL Figure 72930 G-MINE Threaded Outlet Coupling (Female x Female x Female NPT) provides a connection between two pieces of G-MINE PVC Pipe and includes a threaded branch connection.



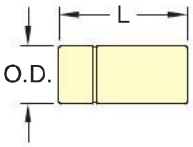
Nominal Size Run x Outlet Inches x NPT	B.O.D. Inches *mm*	Max. Pressure Rating psi *bar*	L Inches *mm*	Approx. Weight Lbs. *Kg*
2 x ¾	3.20	200	7.00	1.50
50 x 20	*81*	*13,8*	*177,8*	*0,7*
2 x 1	3.20	200	7.00	1.40
50 x 25	*81*	*13,8*	*177,8*	*0,6*
3 x ¾	4.375	200	9.50	2.60
80 x 20	*111*	*13,8*	*241,3*	*1,2*
3 x 1	4.375	200	9.50	2.90
80 x 25	*111*	*13,8*	*241,3*	*1,3*
3 x 1½	4.375	160	9.50	2.70
80 x 40	*111*	*11,0*	*241,3*	*1,2*
4 x ¾	5.47	200	10.50	4.10
100 x 20	*139*	*13,8*	*266,7*	*1,9*
4 x 1	5.47	200	10.50	4.10
100 x 25	*139*	*13,8*	*266,7*	*1,9*
4 x 1½	5.47	160	10.50	4.00
100 x 40	*139*	*11,0*	*266,7*	*1,8*
6 x ¾	7.84	200	11.25	7.90
150 x 20	*199*	*13,8*	*285,8*	*3,6*
6 x 1	7.84	200	11.25	7.90
150 x 25	*199*	*13,8*	*285,8*	*3,6*
6 x 1½	7.84	200	11.25	7.90
150 x 40	*199*	*13,8*	*285,8*	*3,6*
8 x 1	10.19	200	12.50	15.00
200 x 25	*259*	*13,8*	*317,5*	*6,8*
8 x 1½	10.19	200	12.50	15.00
200 x 40	*259*	*13,8*	*317,5*	*6,8*

G-MINE Gaskets (O-rings) and Splines included.
See G-MINE specifications on page 177.

Figure 72906 Nipples
(Spline x Plain End)

Tech Data Sheet: G590

The GRINNELL Figure 72906 G-MINE Nipple (Male x Plain-End) provides an economical and efficient method of converting a solvent weld-end pipe run to a G-MINE grooved connection.



Nominal Size Inches *mm*	O.D. Inches *mm*	Max. Pressure Rating psi *bar*	L Inches *mm*	Approx. Weight Lbs. *Kg*
2	2.375	250	7.00	0.60
50	*60,3*	*17,2*	*177,8*	*0,3*
3	3.50	250	9.00	1.40
80	*88,9*	*17,2*	*228,6*	*0,6*
4	4.50	250	10.00	2.30
100	*114,3*	*17,2*	*254*	*1,0*
6	6.625	250	12.00	5.20
150	*168,3*	*17,2*	*304,8*	*2,4*
8	8.625	250	13.00	9.70
200	*219,1*	*17,2*	*330,2*	*4,4*

See G-MINE specifications on page 177.

Figure 72907 Nipples
(Spline x Groove)

Tech Data Sheet: G590

The GRINNELL Figure 72907 G-MINE Transition Coupling (G-MINE x Grooved) provides an efficient transition from G-MINE PVC Pipe to grooved steel pipe that meets AWWA C-606 IPS Groove Standards.

Nominal Size Inches *mm*	O.D. Inches *mm*	Max. Pressure Rating psi *bar*	L Inches *mm*	Approx. Weight Lbs. *Kg*
2	2.375	250	7.00	0.60
50	*60,3*	*17,2*	*177,8*	*0,3*
3	3.50	250	9.00	1.60
80	*88,9*	*17,2*	*228,6*	*0,7*
4	4.50	250	10.00	2.50
100	*114,3*	*17,2*	*254*	*1,1*
4 H	4.50	250	10.00	3.10
100	*114,3*	*17,2*	*254*	*1,4*
6	6.625	250	12.00	5.20
150	*168,3*	*17,2*	*304,8*	*2,4*
6 H	6.625	250	12.00	7.20
150	*168,3*	*17,2*	*304,8*	*3,3*
8	8.625	250	13.50	9.00
200	*219,1*	*17,2*	*342,9*	*4,1*

Requires thrust blocking to eliminate end loads; use only with GRINNELL Flexible Couplings only.

See G-MINE specifications on page 177.

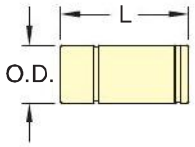


Figure 72908 Nipples
(Spline x Male Thread)

Tech Data Sheet: G590

The GRINNELL Figure 72908 G-MINE Threaded Nipple (Male x Male NPT) provides an economical and efficient method of connecting a G-MINE piping system to a female threaded adapter or device.

Nominal Size Inches *mm*	O.D. Inches *mm*	Max. Pressure Rating psi *bar*	L Inches *mm*	Approx. Weight Lbs. *Kg*
2	2.375	200	7.00	0.60
50	*60,3*	*13,8*	*177,8*	*0,3*
3	3.50	190	9.00	1.30
80	*88,9*	*13,1*	*228,6*	*0,6*
4	4.50	160	10.00	2.40
100	*114,3*	*11,0*	*254*	*1,1*
6	6.625	140	12.00	5.20
150	*168,3*	*9,7*	*304,8*	*2,4*
8	8.625	120	13.00	9.00
200	*219,1*	*8,3*	*330,2*	*4,1*

See G-MINE specifications on page 177.

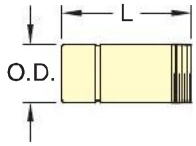
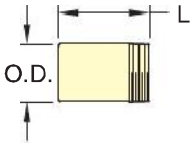


Figure 72909 Nipples
(Plain End x Male Thread)

Tech Data Sheet: G590

The GRINNELL Figure 72909 G-MINE Threaded Nipple (Plain-end x Male NPT) provides an economical and efficient method of connecting a solvent weld-end pipe run to a female threaded adapter or device.



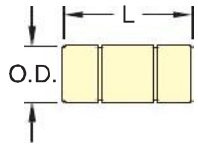
Nominal Size Inches *mm*	O.D. Inches *mm*	Max. Pressure Rating psi *bar*	L Inches *mm*	Approx. Weight Lbs. *Kg*
2	2.375	200	5.25	0.60
50	*60,3*	*13,8*	*133,4*	*0,3*
3	3.50	190	6.50	1.25
80	*88,9*	*13,1*	*165,1*	*0,6*
4	4.50	160	7.00	2.50
100	*114,3*	*11,0*	*177,8*	*1,1*
6	6.625	140	9.00	5.70
150	*168,3*	*9,7*	*228,6*	*2,6*
8	8.625	120	9.80	10.25
200	*219,1*	*8,3*	*248,9*	*4,7*

See G-MINE specifications on page 177.

Figure 72911 Nipples
(Spline x Spline)

Tech Data Sheet: G590

The GRINNELL Figure 72911 G-MINE Nipple (Male x Male) provides an economical and efficient method of connecting two female G-MINE components.



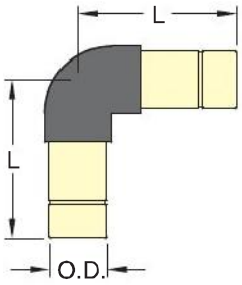
Nominal Size Inches *mm*	O.D. Inches *mm*	Max. Pressure Rating psi *bar*	L Inches *mm*	Approx. Weight Lbs. *Kg*
4	4.50	250	10.00	2.30
100	*114,3*	*17,2*	*254*	*1,0*
6	6.625	250	12.00	5.20
150	*168,3*	*17,2*	*304,8*	*2,4*
8	8.625	250	13.00	9.70
200	*219,1*	*17,2*	*330,2*	*4,4*

See G-MINE specifications on page 177.

Figure 72910 90° Elbows
(Spline x Spline)

Tech Data Sheet: G590

The GRINNELL Figure 72910 G-MINE 90° Degree Elbow (Male x Male) provides an economical and efficient method of changing pipe direction.



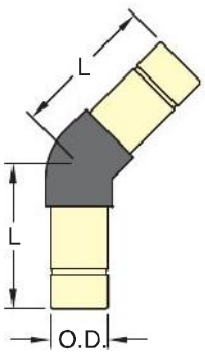
Nominal Size Inches *mm*	O.D. Inches *mm*	Max. Pressure Rating psi *bar*	L Inches *mm*	Approx. Weight Lbs. *Kg*
2	2.375	250	8.00	1.70
50	*60,3*	*17,2*	*203,2*	*0,8*
3	3.50	250	10.18	4.10
80	*88,9*	*17,2*	*258,6*	*1,9*
4	4.50	250	12.375	7.50
100	*114,3*	*17,2*	*314,5*	*3,4*
6	6.625	250	15.625	17.40
150	*168,3*	*17,2*	*397,0*	*7,9*
8	8.625	250	18.00	33.70
200	*219,1*	*17,2*	*457,2*	*15,3*

See G-MINE specifications on page 177.

Figure 72912 45° Elbows
(Spline x Spline)

Tech Data Sheet: G590

The GRINNELL Figure 72912 G-MINE 45° Degree Elbow (Male x Male) provides an economical and efficient method of changing pipe direction.



Nominal Size Inches *mm*	O.D. Inches *mm*	Max. Pressure Rating psi *bar*	L Inches *mm*	Approx. Weight Lbs. *Kg*
2	2.375	250	7.75	1.60
50	*60,3*	*17,2*	*196,9*	*0,7*
3	3.50	250	9.75	3.90
80	*88,9*	*17,2*	*247,7*	*1,8*
4	4.50	250	11.25	7.10
100	*114,3*	*17,2*	*285,8*	*3,2*
6	6.625	250	13.00	16.10
150	*168,3*	*17,2*	*330,2*	*7,3*
8	8.625	250	15.00	30.90
200	*219,1*	*17,2*	*381*	*14,0*

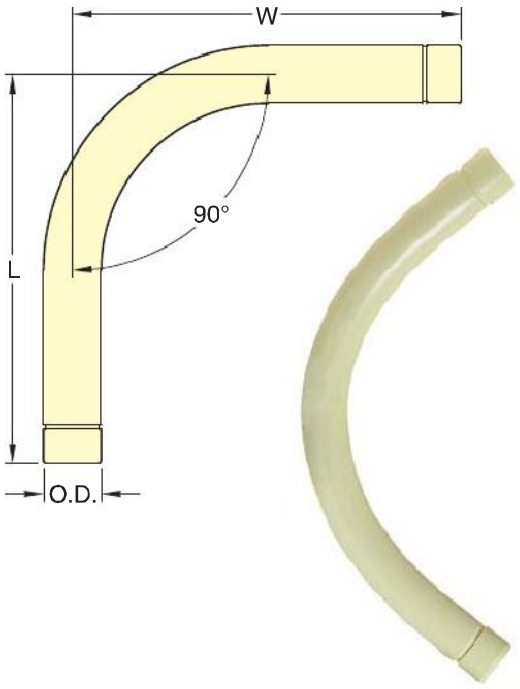
See G-MINE specifications on page 177.

Figure 72913 90° Sweep Elbows

(Spline x Spline)

Tech Data Sheet: G590

The GRINNELL Figure 72913 G-MINE 90° Degree Sweep Elbow provides an economical and efficient method of changing pipe direction.



Nominal Size Inches *mm*	O.D. Inches *mm*	Max. Pressure Rating psi *bar*	L Inches *mm*	W Inches *mm*	Approx. Weight Lbs. *Kg*
2	2.375	250	16.06	16.06	2.40
50	*60,3*	*17,2*	*408*	*408*	*1,1*
3	3.50	250	23.125	23.125	6.40
80	*88,9*	*17,2*	*587,4*	*587,4*	*2,9*
4	4.50	250	30.25	30.25	12.70
100	*114,3*	*17,2*	*408*	*408*	*5,8*
4 H	4.50	315	30.25	30.25	14.90
100	*114,3*	*21,7*	*768,4*	*768,4*	*6,8*
6	6.625	250	42.00	42.00	31.00
150	*168,3*	*17,2*	*1066,8*	*1066,8*	*14,1*
6 H	6.625	315	42.00	42.00	45.30
150	*168,3*	*21,7*	*1066,8*	*1066,8*	*20,6*
8	8.625	250	46.625	46.625	59.00
200	*219,1*	*17,2*	*1184,3*	*1184,3*	*26,8*

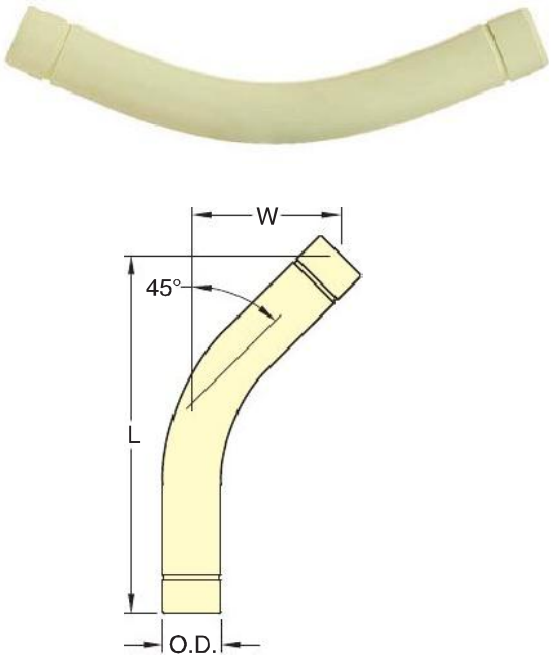
See G-MINE specifications on page 177.

Figure 72914 45° Sweep Elbows

(Spline x Spline)

Tech Data Sheet: G590

The GRINNELL Figure 72914 G-MINE 45° Degree Sweep Elbow provides an economical and efficient method of changing pipe direction.



Nominal Size Inches *mm*	O.D. Inches *mm*	Max. Pressure Rating psi *bar*	L Inches *mm*	W Inches *mm*	Approx. Weight Lbs. *Kg*
2	2.375	250	18.125	7.50	2.00
50	*60,3*	*17,2*	*460,4*	*190,5*	*0,9*
3	3.50	250	25.69	10.75	4.90
80	*88,9*	*17,2*	*652,5*	*273,1*	*2,2*
4	4.50	250	28.75	11.875	7.50
100	*114,3*	*17,2*	*730,3*	*301,6*	*3,4*
4 H	4.50	315	28.75	11.875	11.60
100	*114,3*	*21,7*	*730,3*	*301,6*	*5,3*
6	6.625	250	39.19	16.25	18.30
150	*168,3*	*17,2*	*995,4*	*412,8*	*8,3*
6 H	6.625	315	39.19	16.25	26.20
150	*168,3*	*21,7*	*995,4*	*412,8*	*11,9*
8	8.625	250	52.00	21.57	35.00
200	*219,1*	*17,2*	*1320,8*	*547,7*	*15,9*

See G-MINE specifications on page 177.

Figure 72915 Caps & Plugs
(Spline)

Tech Data Sheet: G590

Figure 72915 End Plug				
Nominal Size Inches *mm*	O.D. Inches *mm*	Max. Pressure Rating psi *bar*	L Inches *mm*	Approx. Weight Lbs. *Kg*
2	2.375	250	7.50	0.90
50	*60*	*17,2*	*190,5*	*0,4*
3	3.50	250	10.00	2.00
80	*89*	*17,2*	*254*	*0,9*

Figure 72915 End Cap*				
Nominal Size Inches *mm*	B.O.D. Inches *mm*	Max. Pressure Rating psi *bar*	L Inches *mm*	Approx. Weight Lbs. *Kg*
4	5.47	250	9.00	4.20
100	*139*	*17,2*	*228,6*	*1,9*
6	7.84	250	9.00	9.00
150	*199*	*17,2*	*228,6*	*4,1*
8	10.19	250	10.125	17.00
200	*259*	*17,2*	*257,3*	*7,7*

* G-MINE Gasket (O-ring) and Spline included.
See G-MINE specifications on page 177.

The GRINNELL Figure 72915 G-MINE End Plug and End Cap provide an economical and efficient method of capping a piping system.

Figure 72915
End Plug (Male Spline)

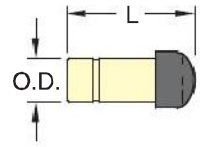


Figure 72915
End Cap (Female Spline)

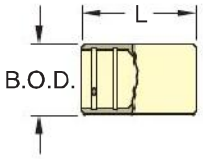


Figure 72916 Flange Adapters
(Spline x Flange 150psi)

Tech Data Sheet: G590

The GRINNELL Figure 72916 G-MINE Flange Adapter provides a direct transition from flanged components to G-MINE PVC piping components.

Nominal Size Inches *mm*	Outlet [1] O.D. Inches *mm*	Max. Pressure Rating psi *bar*	L Inches *mm*	Flange [2] O.D. Inches *mm*	R Inches *mm*	Bolt Circle Diameter Inches *mm*	Bolt Size	Bolt Holes	Approx. Weight Lbs. *Kg*
2	2.375	150	7.19	6.00	0.81	4.75	5/8	4	1.6
50	*60,3*	*10,3*	*182,6*	*152,4*	*20,6*	*120,7*			*0,7*
3	3.50	150	9.25	7.50	1.06	6.00	5/8	4	3.2
80	*88,9*	*10,3*	*235*	*190,5*	*26,9*	*152,4*			*1,5*
4	4.50	150	10.25	9.00	1.125	7.50	5/8	8	5.0
100	*114,3*	*10,3*	*260,4*	*228,6*	*28,7*	*190,5*			*2,3*
6	6.625	150	12.44	11.00	1.28	9.50	3/4	8	9.0
150	*168,3*	*10,3*	*316*	*279,4*	*32,5*	*241,3*			*4,1*
8	8.625	150	13.38	13.50	1.375	11.75	3/4	8	16.0
200	*219,1*	*10,3*	*339,9*	*342,9*	*35,1*	*298,5*			*7,3*

All flanges are Van Stone style with glass-filled PVC ring.
ANSI Class 125 and 150 bolt pattern.
See G-MINE specifications on page 177.

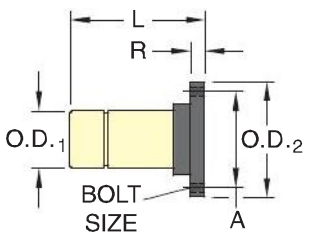
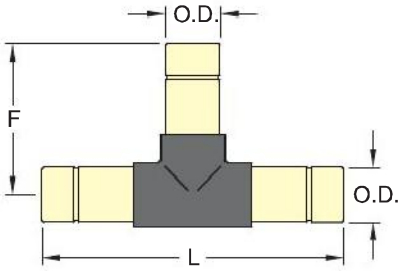


Figure 72917 Tees
(Spline x Spline x Spline)

Tech Data Sheet: G590

The GRINNELL Figure 72917 G-MINE Tee (Male) provides an economical and efficient method of adding a G-MINE PVC Branch Run to a piping system.



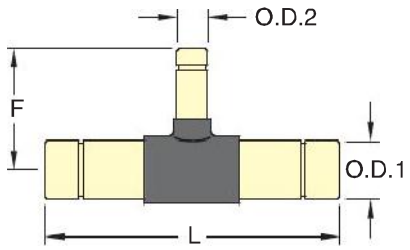
Nominal Size Inches *mm*	O.D. Inches *mm*	Max. Pressure Rating psi *bar*	L Inches *mm*	F Inches *mm*	Approx. Weight Lbs. *Kg*
2	2.375	250	16.50	10.875	2.30
50	*60,3*	*17,2*	*419,1*	*276,4*	*1,0*
3	3.50	250	21.50	11.25	5.80
80	*88,9*	*17,2*	*546,1*	*280,0*	*2,6*
4	4.50	250	24.75	12.375	10.70
100	*114,3*	*17,2*	*628,7*	*314,5*	*4,9*
6	6.625	250	31.00	15.50	25.00
150	*168,3*	*17,2*	*787,4*	*393,7*	*11,3*
8	8.625	250	36.25	17.75	48.00
200	*219,1*	*17,2*	*920,8*	*450,9*	*21,8*

See G-MINE specifications on page 177.

Figure 72918 Reducing Tees
(Spline x Spline x Spline)

Tech Data Sheet: G590

The GRINNELL Figure 72918 G-MINE Reducing Tee (Male) provides an economical and efficient method of adding a reduced diameter G-MINE PVC Branch Run to a piping system.



Nominal Size Run x Run x Branch Inches *mm*	Run O.D. 1 Inches *mm*	Outlet O.D. 2 Inches *mm*	Max. Pressure Rating psi *bar*	L Inches *mm*	F Inches *mm*	Approx. Weight Lbs. *Kg*
3 x 2	3.50	2.375	250	21.00	8.84	5.00
80 x 50	*88,9*	*60,3*	*17,2*	*533,4*	*224,5*	*2,3*
4 x 2	4.50	2.375	250	22.875	9.47	10.10
100 x 50	*114,3*	*60,3*	*17,2*	*581,2*	*240,5*	*4,6*
4 x 3	4.50	3.50	250	24.19	11.66	10.80
100 x 80	*114,3*	*88,9*	*17,2*	*614,4*	*296,2*	*4,9*
6 x 2	6.625	2.375	250	28.125	11.75	22.83
150 x 50	*168,3*	*60,3*	*17,2*	*714,5*	*298,5*	*10,4*
6 x 3	6.625	3.50	250	28.125	12.75	24.20
150 x 80	*168,3*	*88,9*	*17,2*	*714,5*	*323,9*	*11,0*
6 x 4	6.625	4.50	250	29.19	13.75	24.40
150 x 100	*168,3*	*114,3*	*17,2*	*741,4*	*349,3*	*11,1*
8 x 6	8.625	6.625	250	33.50	16.81	50.90
200 x 150	*219,1*	*168,3*	*17,2*	*850,9*	*427,0*	*23,1*

See G-MINE specifications on page 177.

Model B8200L G-MINE Butterfly Valves
(Spline x Spline)

Tech Data Sheet: G592

GRINNELL Model B8200 Butterfly Valves are designed for use with the G-MINE 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 G-MINE Coupling, allowing for the insertion of the spline to connect the GRINNELL Model B8200 Valve to the G-MINE PVC System. Flow may enter the valve from either direction and valve can be orientated in any direction.

MATERIAL SPECIFICATIONS

Maximum Working Pressure
- 350 psi *(24,1 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

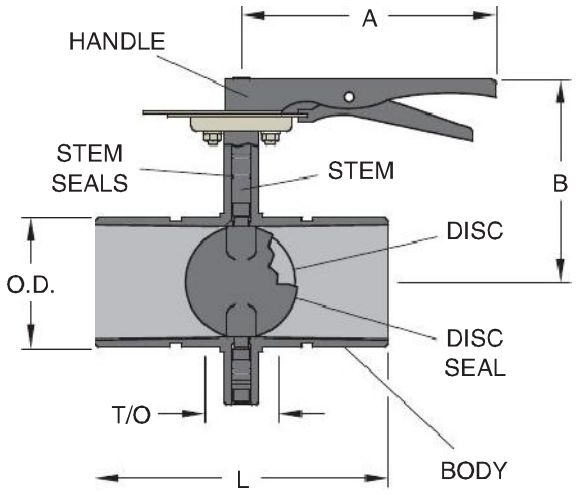
Disc
- Ductile iron conforming to ASTM A 536, Grade 65-45-12

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



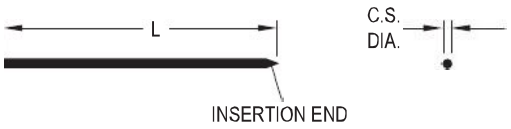
Nominal Pipe Size		Dimensions Inches *mm*			Approx. Weight Lbs *kg*
ANSI Inches *DN*	O.D. Inches *mm*	A	B	L	
2	2.375	7.95	5.16	7.50	8.8
DN50	*60,3*	*202*	*131*	*191,1*	*4,0*
3	3.500	7.95	5.75	9.18	17.6
DN80	*88,9*	*202*	*146*	*233,2*	*8,0*
4	4.500	7.95	7.05	10.18	26.4
DN100	*114,3*	*202*	*179*	*258,6*	*12,0*
6	6.625	10.28	8.39	10.41	50.6
DN100	*168,3*	*261*	*213*	*264,6*	*23,0*
8	8.625	12.40	9.37	10.96	74.8
DN200	*219,1*	*315*	*238*	*278,5*	*34,0*

See G-MINE specifications on page 177.

Figure 72999 Splines

Tech Data Sheet: G590

The GRINNELL Figure 72999 G-MINE Spline securely locks the coupling or fitting to the pipe. The spline is made of Nylon and is also available in Acid-Resistant Polypropylene.



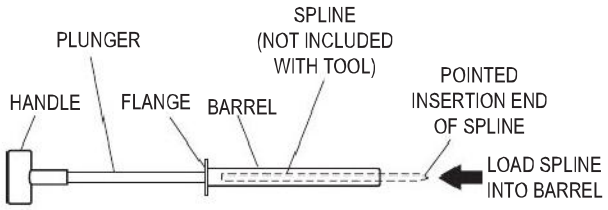
Nominal Size Inches *mm*	L Inches *mm*	Cross Section Diameter C.S. Inches *mm*	Configuration
2	10.50	0.19	ROUND
50	*266,7*	*4,8*	
3	16.00	0.25	ROUND
80	*406,4*	*6,4*	
4	18.00	0.25	ROUND
100	*457,2*	*6,4*	
4 H	18.00	0.25	SQUARE
100	*457,2*	*6,4*	
6	24.00	0.25	ROUND
150	*609,6*	*6,4*	
6 H	24.00	0.25	SQUARE
150	*609,6*	*6,4*	
8	32.00	0.31	SQUARE
200	*812,8*	*8,0*	

See G-MINE specifications on page 177.

Figure ITGM Insertion Tools

Tech Data Sheet: G590

The GRINNELL Figure ITGM G-MINE Spline Insertion Tool assists with the insertion of the spline into the groove, locking the fitting to the pipe.



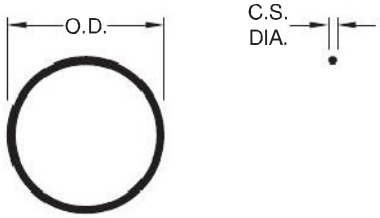
Nominal Size Inches *mm*	Part Number
3 - 6	ITGM 36
80 - 150	
8	ITGM 8
200	

See G-MINE specifications on page 177.

Figure 72899 Replacement Gaskets

Tech Data Sheet: G590

The GRINNELL Figure 72899 G-MINE Gasket (O-ring) provides a hydraulic seal. Most G-MINE Fittings and Couplings are manufactured to include an O-ring, a flexible elastomeric seal. G-MINE O-rings are Teflon-coated, Nitrile Butadiene Rubber (NBR) or Polyisoprene Rubber conforming to ASTM F 477 (Solvent weld and plain end fittings are designed for use without o-ring).



Nominal Size Inches *mm*	O.D. Inches *mm*	Cross Section Diameter C.S. Inches *mm*	Material Teflon®-Coated
2	2.770	0.210	Nitrile Butadiene Rubber
50	*70,4*	*5,3*	
3	3.895	0.210	Nitrile Butadiene Rubber
80	*98,9*	*5,3*	
4	4.895	0.210	Nitrile Butadiene Rubber
100	*124,3*	*5,3*	
6	7.176	0.275	Nitrile Butadiene Rubber
150	*182,3*	*7,0*	
8	9.350	0.375	Polyisoprene Rubber
200	*237,5*	*9,5*	

See G-MINE specifications on page 177.


GRINNELL

GRINNELL Gasket Types

Tech Data Sheet: G610

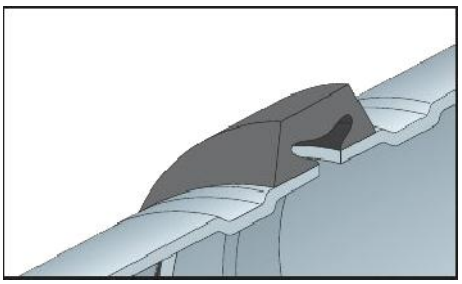
Pressure responsive gaskets are offered in a variety of types. Although they each serve a specific function they all utilize the same sealing design.

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.

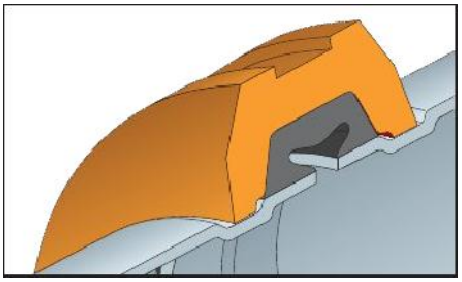
(2) The installation of the housing segments around the gasket and into the pipe groove properly positions the gasket. Tightening of the housing segments forms the gasket to the inside of the housing and compresses it around the pipe-sealing surface thus increasing the gasket's sealing against the pipe.

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



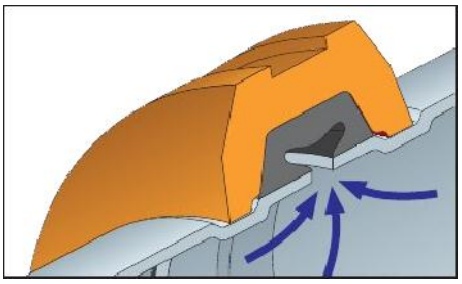
First Seal

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.grinnell.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 Figure 640 Pivot-Bolt Coupling.

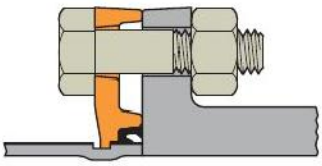
Reducing Coupling

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.



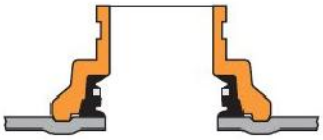
Mechanical Tee and Strap

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

Tech Data Sheet: G610

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	General Service Application
"E"	**-30°F to 230°F** *(-34°C to 110°C)*	**EPDM**	**Green**	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**	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.**
"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.**
"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.**
"EHT" Center-Stop Push-On Style Copper Tubing	**For closed-loop heating systems -30°F to 250°F (-34°C to 120°C) Potable Water up to 180°F (82°C)**	**EPDM**	**Red and Copper Striped**	**CTS Sizes Only**, NSF 61 Approved for potable water. Recommended for use in low temperature and vacuum systems **Not recommended for hydrocarbons.**
"T" and "T" Tri- Seal	**-20°F to 180°F** *(-29°C to 82°C)*	**Nitrile**	**Orange**	Compressed air, 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 systems. Not recommended for hot dry air systems.**
"O" and "O" Tri- Seal	**+20°F to 300°F** *(-7°C to 149°C)*	**Fluoroelastomer**	**Blue**	Oxidizing acids, petroleum products, hydraulic fluids, lubricants, halogenated hydrocarbons.
"L"	**-30°F to 350°F** *(-34°C to 177°C)*	**Silicone ***	**Red Gasket**	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.

Gasket Air, Water & Chemical Recommendations

Tech Data Sheet: G610

- 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.

Service	Gasket Grade
Air, (no oil vapors) Temp. **-30°F to 230°F** *(-34°C to 110°C)*	E
Air, Oil Vapor Temp. **-20°F to 150°F** *(-29°C to 66°C)*	T
Water, Temp. to **230°F** *(110°C)* (NOT RECOMMENDED FOR STEAM SERVICE)	E
Water, Acid Mine	E/T
Water, Chlorine	E
Water, Deionized	E
Water, Seawater	E
Water, Waste (NO PETROLEUM PRODUCTS)	E

Chemical Composition	Gasket Grade
ASTM #3 Oil	T
Acetaldehyde	E
Acetamide	T
Acetic Acid up to 10% 100°C/38°C	E
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
Acetylene	E/T
Adipic Acid	T
Alkalis	E
Allyl Alcohol to 96%	E
Alum Sulfuric Acid	O
Alums	E/T
Aluminum Chloride	E/T
Aluminum Fluoride	E/T
Aluminum Hydroxide	E
Aluminum Nitrate	E/T
Aluminum Oxychloride	T
Aluminum Phosphate	E
Aluminum Salts	T
Aluminum Sulfate	E/T
Ammonia Gas, Cold	E
Ammonia, Liquid	E
Ammonium Bifluoride	T
Ammonium Carbonate	E

Chemical Composition	Gasket Grade
Ammonium Chloride	E/T
Ammonium Fluoride	E
Ammonium Hydroxide	E
Ammonium Metaphosphate	E
Ammonium Nitrate	T
Ammonium Nitrite	E
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%	T
Barium Carbonate	E

Chemical Composition	Gasket Grade
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
Black Sulfate Liquor	T
Blast Furnace Gas	T
Bleach,12% Active	E
Borax Solutions	E
Bordeaux Mixture	E
Boric Acid	E/T
Bromine	O
Butane Gas	T
Butanol (see Butyl Alcohol)	E/T
Butyl Acetate Ricinoleate	E
Butyl Alcohol	E/T
Butyl "Cellosolve Adipate"	E/T
Butyl Phenol	E
Butyl Stearate	T
Butylene	T
Butylene Glycol	E
Calcium Acetate	T
Calcium Bisulphite	T
Calcium Chloride	E/T
Calcium Hydroxide	E/T

Chemical Composition	Gasket Grade
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 Bisulfide	O
Carbon Dioxide, Dry	E/T
Carbon Dioxide, Wet	E/T
Carbon Disulfide	O
Carbon Monoxide	E
Carbon Tetrachloride	O
Caustic Potash	E/T
Cellosolve Acetate	E
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

Gasket Air, Water & Chemical Recommendations

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Chemical Composition	Gasket Grade
Chloroacetone	E
Chlorobenzene	O
Chloroform	O
Chrome Alum	T
Chrome Plating Solutions	O
Chromic Acid, to 25%	O
Citric Acid	E/T
Coke Oven Gas	T/O
Copper Chloride	T
Copper Cyanide	E/T
Copper Fluoride	E
Copper Nitrate	E/T
Copper Sulfate	E/T
Creosol, Cresylic Acid	O
Creosote, Coal Tar	O
Creosote, Wood	O
Cupric Fluoride	T
Cupric Sulfate	T
Cyclohexane (Alicyclic Hydrocarbon)	O
Cyclohexanone	E
Deionized Water	E
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

Chemical Composition	Gasket Grade
Ethyl Ether	T
Ethyl Oxalate	E
Ethyl Silicate	T
Ethylene Chlorohydrin	E
Ethylene Diamine	T
Ethylene Dichloride (Dichloroethane)	O
Ethylene Glycol	E/T
Ferric Chloride, to 35%	E/T
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
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
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
Green Sulfate Liquor	T
Halon 1301	E
Heptane	T
Hexaldehyde	E
Hexane	T
Hexanol Tertiary	T
Hexyl Alcohol	T
Hexylene Glycol	T

Chemical Composition	Gasket Grade
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
Hydrofluoric Acid, to 75%, 75°F/24°C	O
Hydrofluosilicic Acid	E
Hydrogen Gas, Cold	E/T
Hydrogen Gas, Hot	E
Hydrogen Peroxide, to 50%	L
Hydrogen Peroxide, to 90%	O
Hydrogen Sulfide	E
Hydroquinone	T
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	T
Lead Chloride	E
Lead Sulfate	T
Lime and H2O	E/T
Linoleic Acid	O
Lithium Bromide	T
Lithium Chloride	T
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

Chemical Composition	Gasket Grade
Mercuric Cyanide	T
Mercurous Nitrate	E/T
Mercury	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
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
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
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	E
Palmitic Acid	T
Pentane	T
Perchloroethylene	O

Gasket Air, Water & Chemical Recommendations

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Chemical Composition	Gasket Grade
Petroleum Ether (see Benzene)	O
Petroleum Oils	T
Phenol (Carbolic Acid)	O
Phenylhydrazine	E
Phenylhydrazine Hydrochloride	E
Phosphate Ester	E
Phosphoric Acid, to 75% and 70°F	E/T
Phosphoric Acid, to 85% and 200°F	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
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
Potassium Chromate	T
Potassium Cyanide	E/T
Potassium Dichromate	E
Potassium Ferricyanide	E
Potassium Ferrocyanide	E
Potassium Fluoride	E
Potassium Hydroxide	T
Potassium Nitrate	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

Chemical Composition	Gasket Grade
Potassium Sulfate	T
Prestone	T
Propane Gas	T *
Propanol	E
Propargyl Alcohol	E
Propyl Alcohol	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
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 50%	E
Sodium Hypochlorite, to 20%	E

Chemical Composition	Gasket Grade
Sodium Metaphosphate	T
Sodium Nitrate	E
Sodium Nitrite	E/T
Sodium Perborate	E
Sodium Peroxide	E
Sodium Phosphate, Dibasic	T
Sodium Phosphate, Monobasic	T
Sodium Phosphate, Tribasic	T
Sodium Silicate	T
Sodium Sulfate	E/T
Sodium Sulfide	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	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

Chemical Composition	Gasket Grade
Tanning Liquors (50g. alum. solution, 50g. dichromate solution)	T
Tartaric Acid	E
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, 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	T
Vegetable Oils	T
Vinyl Acetate	E
Vi-Pex	T
Water, to 150°F/66°C	E/T
Water, to 200°F/93°C	E
Water, to 230°F/110°C	E
Water, Acid Mine	E/T
Water, Chlorine	E
Water, Deionized	E
Water, Potable	EN
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

Tech Data Sheet: G610

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:

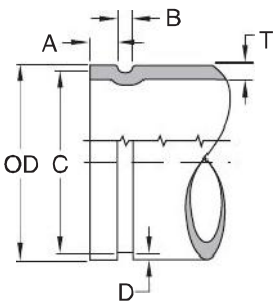
- 5.3 oz *(150 grams)* Tube
- 8 lb *(3.6 kg)* Can


CAUTION
PINCH POINT
KEEP HANDS
CLEAR

Preparation Equipment Table of Contents

Roll Groove Standard Specification for Steel & Other IPS Pipe

Tech Data Sheet: G710



Nominal Pipe Size Inches *mm*	Pipe O.D. Inches *mm*			A ±0.030" *±0,76mm* Inches *mm*	B ±0.030" *±0,76mm* 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 +	Tolerance -			Actual	Tol. +0.000			
1¼	1.660	0.016	0.016	0.625	0.281	1.535	-0.015	0.062	0.065	1.77
32	*42,4*	*0,41*	*0,41*	*15,88*	*7,14*	*38,99*	*-0,38*	*1,60*	*1,65*	*44,96*
1½	1.900	0.019	0.019	0.625	0.281	1.775	-0.015	0.062	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	0.062	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*
2½	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*
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	0.094	0.134	10.92
250	*273,0*	*1,60*	*0,79*	*19,05*	*11,91*	*268,27*	*-0,69*	*2,39*	*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	157.81	-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.

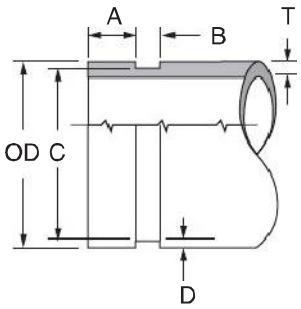
(4) Groove Depth "D" is a reference dimension only. The Groove Diameter "C" must be maintained.

(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.

Cut Groove Standard Specification for Steel & Other IPS Pipe

Tech Data Sheet: G710



Nominal Pipe Size Inches *mm*	Pipe O.D. Inches *mm*			A ±0.030" *± 0,76mm* Inches *mm*	B ±0.030" *± 0,76mm* Inches *mm*	C Groove Diameter Inches *mm*		D Groove Depth (ref. only) Inches *mm*	T Minimum Wall Inches *mm*
	O.D.	Tolerance +	Tolerance -			Actual	Tol. +0.000		
1¼	1.660	0.016	0.016	0.625	0.313	1.535	-0.015	0.062	0.062
32	*42,4*	*0,41*	*0,41*	*15,88*	*7,95*	*38,99*	*-0,38*	*1,60*	*1,60*
1½	1.900	0.019	0.019	0.625	0.313	1.775	-0.015	0.062	0.062
40	*48,3*	*0,48*	*0,48*	*15,88*	*7,95*	*45,09*	*-0,38*	*1,60*	*1,60*
2	2.375	0.024	0.024	0.625	0.313	2.250	-0.015	0.062	0.062
50	*60,3*	*0,61*	*0,61*	*15,88*	*7,95*	*57,15*	*-0,38*	*1,60*	*1,60*
2½	2.875	0.029	0.029	0.625	0.313	2.720	-0.018	0.078	0.078
65	*73,0*	*0,74*	*0,74*	*15,88*	*7,95*	*69,09*	*-0,46*	*1,98*	*1,98*
76,1mm	3.000	0.030	0.030	0.625	0.313	2.845	-0.018	0.076	0.076
65	*76,1*	*0,76*	*0,76*	*15,88*	*7,95*	*72,26*	*-0,46*	*1,93*	*1,93*
3	3.500	0.035	0.031	0.625	0.313	3.344	-0.018	0.078	0.078
80	*88,9*	*0,89*	*0,79*	*15,88*	*7,95*	*84,94*	*-0,46*	*1,98*	*1,98*
4	4.500	0.045	0.031	0.625	0.375	4.334	-0.020	0.083	0.083
100	*114,3*	*1,14*	*0,79*	*15,88*	*9,53*	*110,08*	*-0,51*	*2,11*	*2,11*
139,7mm	5.500	0.056	0.031	0.625	0.375	5.334	-0.020	0.083	0.083
125	*139,7*	*1,42*	*0,79*	*15,88*	*9,53*	*135,48*	*-0,51*	*2,11*	*2,11*
5	5.563	0.056	0.031	0.625	0.375	5.395	-0.022	0.084	0.084
125	*141,3*	*1,42*	*0,79*	*15,88*	*9,53*	*137,03*	*-0,56*	*2,13*	*2,13*
165,1mm	6.500	0.063	0.031	0.625	0.375	6.330	-0.022	0.085	0.085
150	*165,1*	*1,60*	*0,79*	*15,88*	*9,53*	*160,78*	*-0,56*	*2,16*	*2,16*
6	6.625	0.063	0.031	0.625	0.375	6.455	-0.022	0.085	0.085
150	*168,3*	*1,60*	*0,79*	*15,88*	*9,53*	*163,96*	*-0,56*	*2,16*	*2,16*
8	8.625	0.063	0.031	0.750	0.438	8.441	-0.025	0.092	0.092
200	*219,1*	*1,60*	*0,79*	*19,05*	*11,13*	*214,40*	*-0,64*	*2,34*	*2,34*
10	10.750	0.063	0.031	0.750	0.500	10.562	-0.027	0.094	0.094
250	*273,0*	*1,60*	*0,79*	*19,05*	*12,70*	*268,27*	*-0,69*	*2,39*	*2,39*
12	12.750	0.063	0.031	0.750	0.500	12.531	-0.030	0.109	0.109
300	*323,9*	*1,60*	*0,79*	*19,05*	*12,70*	*318,19*	*-0,76*	*2,77*	*2,77*
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	157.81	-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.

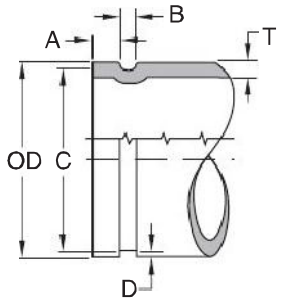
(4) Groove Depth "D" is a reference dimension only. The Groove Diameter "C" must be maintained.

(5) Minimum Wall Thickness "T" is the minimum wall thickness that should be cut grooved.

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 +	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.

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.

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 (note roll sizes on pages 201 - 203), guards and foot switch.

Additional rolls may be ordered with machines. Refer to Roll Selection Chart on pages 201 - 203, or contact GRINNELL Mechanical Products.

Pace Model	Size Range - Inches *mm*				Drive
	Schedule 40	Schedule 10	Std. Wall	Copper	
1112	1" – 12" *25mm - 300mm*	1¼" - 12" *32mm - 300mm*		2" – 6" *50mm - 150mm*	1½ HP, 110 v
1023	1¼" – 12" *32mm - 300mm*	1¼" - 24" *32mm - 600mm*	12" – 24" *300mm - 600mm*	2" – 6" *50mm - 150mm*	1½ HP, 110 v

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 and 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 Groovers 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
	Schedule 40	Schedule 10	Std. Wall	Copper	
1012	1" – 12" *25mm - 300mm*			2" – 6" *50mm - 150mm*	Ridgid® 300
1022	1¼" – 12" *32mm - 300mm*		12" – 16" *300mm - 400mm*	2" – 6" *50mm - 150mm*	Ridgid® 300
1041	1" – 6" *25mm - 150mm*	1" – 12" *25mm - 300mm*		2" – 6" *50mm - 150mm*	Ridgid® 300

* 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)
- 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

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" *50mm - 200mm*	Ridgid® 300, hand crank
1039-66	1¼" – 6" *32mm - 150mm*				Ridgid® 300, hand crank
1034	1¼" – 6" *32mm - 150mm*				Ridgid® 300
1066				2" – 8" *50mm - 200mm*	Ridgid® 300

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 Copper Tube

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

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
	Schedule 40	Schedule 10	Std. Wall	Copper	
2021	1¼" – 12" *32mm - 300mm*		12" – 24" *300mm - 600mm*	2" – 8" *50mm - 200mm*	3 HP, 220 v
2050	4" – 12" *100mm - 200mm*	4" – 30" *100mm - 800mm*			5 HP, 220 v
2112	1" – 12" *25mm - 300mm*			2" – 8" *50mm - 200mm*	1½ HP, 110 v

Model 2021 AUTOMATED ROLL GROOVERS

- 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

AUTOMATED ROLL GROOVERS

Model 2050 AUTOMATED ROLL GROOVERS

- 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

Model 2112 AUTOMATED ROLL GROOVERS

- 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" * *50mm - 300mm*		2½" – 8" *65mm - 200mm*		1 HP, 115-230 v

* 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

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.