



# Grinnell

## Mechanical Grooved Products



### 2018

GENERAL  
PRODUCTS  
CATALOGUE

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General notes: Additional information is included in our data sheets and is available upon request. It is the Designer's responsibility to select products suitable for the intended service and to ensure that pressure ratings and performance data is not exceeded. Always read and understand the installation constructions. Never remove any piping components nor correct or modify any piping deficiencies without first depressurising and draining the system. Material and gasket selection should be verified with the gasket recommendation listing for the specific application.



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## Notes





## GENERAL DATA

## GRINNELL MECHANICAL PRODUCTS

GRINNELL, a premium brand of Johnson Controls International, delivers reliable and cost-effective 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 grooved couplings, fittings, mechanical tees, valves, and accessories as well as complete systems for joining stainless steel. All-inclusive, 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. For more information, visit [www.grinnell.com](http://www.grinnell.com).



# MAKING CONNECTIONS...

### North America 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

### Mexico

Tlalnepantla, Mexico

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## BUILDING SOLUTIONS



**Riverside Quarter**  
London, United Kingdom



**Audi N50 Paint Plant**  
Ingolstadt, Germany



**Airedale International**  
Leeds, United Kingdom



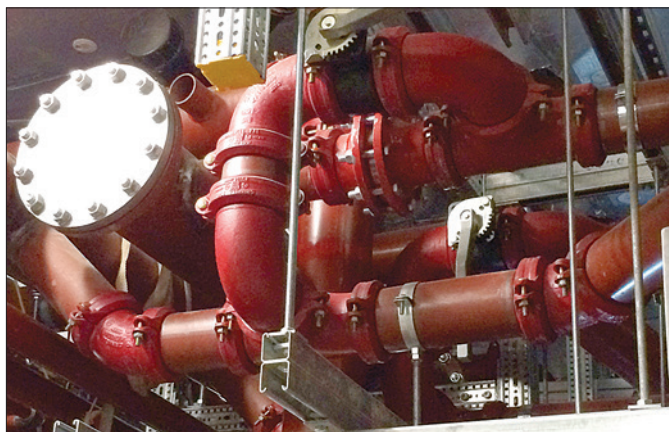
**Providence Tower**  
London, United Kingdom



## Why Grooved?

### Efficient and Cost-Effective

- 30% installation cost savings compared to traditional methods, such as welding
- Helps minimize labor costs, while optimizing project time schedules
- Faster and easier installation, removing the need for special tool



### Safe Pipe Joining Method

- No hot works; no welding, threading, cutting oils, fumes or flames
- Ideal method for joining pipe in enclosed, flammable or hazardous environments



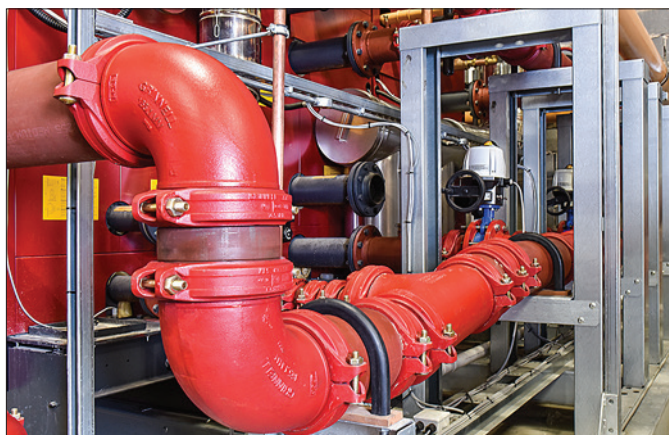
### For Reliable System Connections

- Durable connections with rapid assembly
- Helps maintain high pressure at connection points, without sacrificing quality and reliability



### Flexible Retrofits and Repairs

- Ease of Use. Does not require special tools or skilled workers
- Removes the need for training on site
- Helps assist trouble free retrofitting
- Helps assist pipe expansion support
- Allows for fabrication on site and troubleshoots complex problems and obstacles





## Why GRINNELL?

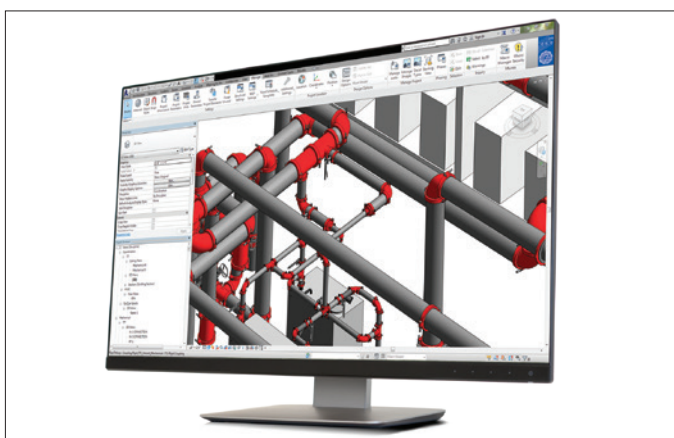
General  
Data



**10**  
YEAR  
LIMITED  
WARRANTY

### Best Warranty in the Industry

- 10 – Year Limited Warranty
- 160 Year reputation for quality, backed by GRINNELL's established global brand
- Full range of products to provide sustainable pipe joining solutions



### Technical Services

- Dedicated Engineering team that provides technical support service and solutions for our customers



### Green Solutions

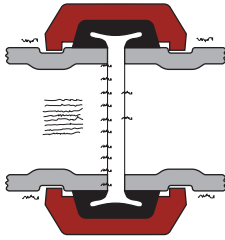
- Committed to the environment through sustainable manufacturing practices
- All waste paper, used cardboard, scrap wood, and EPDM waste from our plants are recycled



### Global Presence / Local Service

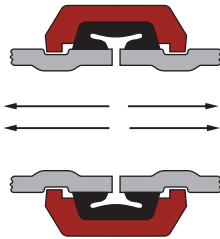
- Your committed partner and advisor from design to build
- Strategic global locations improve service to our customers
- Committed to meet our customer needs and focus on your requirements

## Product Features and Benefits



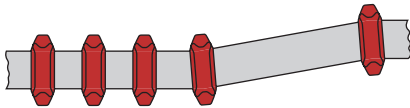
### NOISE AND VIBRATION

GRINNELL Grooved Couplings provide excellent noise and vibration dampening. The engineered design of these couplings and gaskets offers pipe end gapping that helps to dissipate, isolate, and minimise 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 which is encapsulated by the ductile iron housing.



### VERSATILITY

GRINNELL flexible couplings will accommodate misalignments. The maximum deflection information per coupling can be found in this catalogue.



### SUPERIOR QUALITY

GRINNELL Piping Products are manufactured according to the ISO 9001:2008 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 the release of hazardous fumes or to the possible introduction of foreign materials in the pipeline.




## Agency Listings and Approvals

General  
Data

Our products are associated with the following agencies, associations and laboratories.  
contact GRINNELL for specific listings, approvals and certifications.

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

#### ACTIVFIRE

Active Fire Protection   
Product Certification

#### AMERICAN BUREAU OF SHIPPING (ABS)



#### AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

#### AMERICAN WATER WORKS ASSOCIATION (AWWA) AWWA C-606

#### AMERICAN PETROLEUM INSTITUTE (API) API Std. 5L

#### 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

#### ASTM

American Society of Testing Materials.  
F-1476 Couplings,  
F-1548 Fittings

#### BUILDING CONFIDENCE Empowered by Achilles



#### BUILDING OFFICIALS AND CODE ADMINISTRATORS (BOCA)


#### BUREAU VERITAS (BV)



#### CERTIFICATION TO EUROPEAN PRESSURE EQUIPMENT DIRECTIVE



#### CNBOP

Centrum Naukowo-Badawcze  
Ochrony Przeciwpowarowe 

#### CNPP APSAD

National Centre for  
Prevention and Protection (FR) 

#### COAST GUARD

Approved each vessel individually

#### CORPS OF ENGINEERS (COE)

GECS 15000

#### CRN

Canadian Registration Number

#### CSTB

French Scientific and  
Technical Centre for Building



#### 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

  
Germanischer Lloyd

#### INTERNATIONAL ASSOCIATION OF PLUMBING AND MECHANICAL OFFICIALS (IAPMO)



#### ICC-ES

National Evaluation Service, Inc.

#### LLOYD'S

Lloyd's Register of Shipping



#### (LPCB) LOSS PREVENTION CERTIFICATION BOARD

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)

#### NSF INTERNATIONAL

The Public Health and  
Safety Company



#### PRESSURE EQUIPMENT DIRECTIVE (PED)

#### RINA

Registro Italiano Navale



#### 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

Standards Australia Limited



#### WRAS

Water Regulations  
Advisory Scheme (UK)



#### WSD

Pending Approved for Potable  
Water Service (HK)

## ISO 9001:2008 Certified

LPCB®

www.redbooklive.com

Certificate of Management  
System Registration

Certificate Number: 570

Issue: 08

Tyco Fire &amp; Building Products

having complied with the requirements of:

ISO 9001:2008

Quality Management Systems – Requirements

are authorised to use the LPCB Certification Mark on stationery and publications related to the following products and/or services:

## Tyco Fire &amp; Building Products

Research & Development Centre  
1467 Elmwood Avenue  
Cranston  
RI 02910  
USA

## Scope:

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 and Building Products.

This certificate is maintained and held in force through regular surveillance activities.



Signed for LPCB

Tracie Hunter

Technical Manager

16 August 2014

Date of This Issue

15 August 2017

Expiry Date

16 August 2002

Date of First Issue



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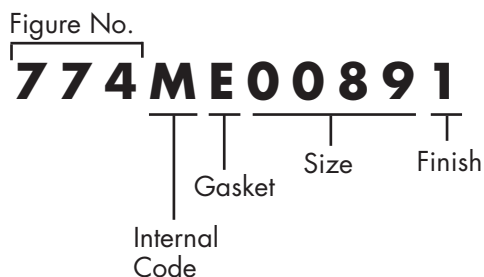
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## How to Build GRINNELL Part Numbers

General  
Data



Digits 01, 02, & 03: Figure number

Digit 04: Internal Code

Digit 05: Gasket: E for C-style EPDM (Grade E)

T for Tri-Seal EPDM (Grade E)

B for C-style Nitrile/Buna-N (Grade T)

D for C-style EPDM

(Grade EN, suitable for potable water applications)

V for C-style Fluoro Elastomer (Grade O)

S for C-style Silicone (Grade L)

Outlet Fitting  
DIGIT 05  
T = BSP thread  
N = NPT thread  
G = Grooved

Digits 06 thru 09: Size

Digit 10: Finish: 0 for Painted Orange  
1 for Painted Red (RAL 3000)  
2 for Galvanised  
3 for Unpainted  
4 for Stainless Steel 316  
5 for Painted White (RAL 9010)  
R for Rilsan

Coupling Part Number Example:

**774ME00891:**

Fig. Number      Internal Code      Gasket      Size      Finish

**Figure Number:** 774 - Rigid Standard Weight Coupling

**Internal Code:** M

**Gasket:** E - EPDM C-style

**Size:** 0089 - 88.9mm (3")

**Finish:** 1 - Painted Red



Outlet Fitting Part Number Example:

**730AG63261:**

Fig. Number      Internal Code      Outlet      Size      Finish

**Figure number:** 730 - Mechanical Tee

**Internal Code:** A

**Outlet:** G - Grooved (T for BSP Thread; N for NPT Thread)

**Size:** 6326 - 168.3 x 76.1mm (6" x 2 1/2")

**Finish:** 1 - Painted Red



"All Mechanical Tees have standard EPDM Gaskets. Nitrile (Buna-N) optional"

Pipe Size		Digits 06-07-08-09	
Nominal mm Inches	O.D. mm Inches	Sizes Codes for Outlet Fittings & Reducers Example: 4" x 2" 4220 (Biggest Size First)	Sizes Codes for Couplings & Fittings
15	21.3	05	n/a
1/2	0.840		
20	26.9	07	n/a
3/4	1.050		
25	33.7	10	0034
1	1.315		
32	42.4	12	0042
1 1/4	1.660		
40	48.3	15	0048
1 1/2	1.900		
50	60.3	20	0060
2	2.375		
65	73.0	25	0073
2 1/2	2.875		
65	76.1	26	0076
76.1mm	3.000		
80	88.9	30	0089
3	3.500		
100	108.0	41	0108
108.0mm	4.252		
100	114.3	42	0114
4	4.500		
125	133.0	51	0133
133.0mm	5.236		
125	139.7	52	0139
139.7mm	5.500		
125	141.3	53	0141
5	5.563		
150	159.0	61	0159
159.0mm	6.260		
150	165.1	62	0165
165.1mm	6.500		
150	168.3	63	0168
6	6.625		
200	219.1	80	0219
8	8.625		
250	273.0	11	0273
10	10.750		
300	323.9	13	0324
12	12.750		
350	355.6	14	0355
14	14.000		
400	406.4	16	0406
16	16.000		
450	457.2	18	0457
18	18.000		
500	508.0	21	0508
20	20.000		
600	609.6	24	0610
24	24.000		

## GRINNELL Website

[www.grinnell.com](http://www.grinnell.com)

To learn more about GRINNELL Mechanical Products, visit [www.grinnell.com](http://www.grinnell.com). Our Website provides a wide variety of tools and information at your fingertips.

Please select the EMEA region on the map to see region specific information.

### Browse These Website Features

#### 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 catalogues, brochures, installation manuals, flyers, and price books.

#### Products Tab

The Products tab organises all product information such as pricing, technical data, 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.

#### 3D CAD Library

The CAD icon provides direct access to 3D CAD drawings and the GRINNELL Mechanical Suite for Revit. It also provides access to on-line 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 25 to 600mm (1" to 24") 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.

### Grooved Couplings



**Figure 772**  
Rigid Couplings  
Pages 18 - 19



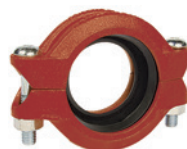
**Figure 774**  
Rigid Couplings  
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**Figure 705**  
Flexible Couplings  
Page 21



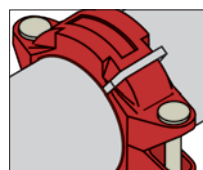
**Figure 707**  
Heavy Duty  
Flexible Couplings  
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**Figure 716**  
Flexible Reducing Couplings  
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**Figure 7706T**  
Transition Couplings  
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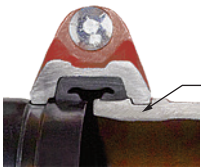
**Electrical Continuity**  
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General notes: Additional information is included in our data sheets and is available upon request. It is the Designer's responsibility to select products suitable for the intended service and to ensure that pressure ratings and performance data is not exceeded. Always read and understand the installation constructions. Never remove any piping components nor correct or modify any piping deficiencies without first depressurising and draining the system. Material and gasket selection should be verified with the gasket recommendation listing for the specific application.





Grooved  
Couplings



Full contact between Figure 772  
Coupling key and groove diameter

## Additional Features:

- Standard industry groove does not require special tools.
- Backed by the industry's best 10-Year Limited Warranty. Review terms and conditions of sale on [www.grinnell.com](http://www.grinnell.com).



## MATERIAL SPECIFICATIONS

### Ductile Iron Housing Specifications

- ASTM A 536 – Standard specification for ductile iron castings, Grade 65-45-12
- Tensile strength, minimum 4481.6 Bar (65,000 psi)
- Yield strength, minimum 3102.6 Bar (45,000 psi)
- Elongation minimum 12%
- ASTM A 153 – Standard specification for hot-dip galvanising

### Bolt/Nut Specifications

- **Metric:** Carbon steel oval neck track head bolts (Gold colour coded) are heat treated and conform to the physical properties of ASTM F 568M 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.
- **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 7584 Bar (110,000 psi). 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.
- Stainless steel bolts and nuts are available upon request.

### Coatings

- Red – Non-lead paint RAL 3000 (standard)
- White – Non-lead paint RAL 9010 (optional)
- Hot-Dipped, Zinc Galvanised (optional)

## GRINNELL Coupling Gasket Specifications

- **Grade "E" EPDM** gaskets have a Green colour code stripe identification and conform to ASTM D 2000 for service temperatures from -34°C to 110°C (-30°F to 230°F). They are recommended for hot water not to exceed 110°C (230°F), 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 colour code stripe identification and conform to ASTM D 2000 for service temperatures from -29°C to 82°C (-20°F to 180°F). They are recommended for petroleum products, vegetable oils, mineral oils, and air with oil vapours.
- **Grade "L" Silicone** gaskets are Red colour code stripe and conform to ASTM D 2000 for service temperatures from -34°C to 177°C (-30°F to 350°F). They are recommended for air without hydrocarbons, or dry heat.
- **Grade "O" Fluoroelastomer** gaskets have a Blue colour code stripe and conform to ASTM D 2000 for service temperatures from -7°C to 149°C (+20°F to 300°F). They are recommended for oxidizing acids, petroleum products, hydraulic fluids, lubricants, and halogenated hydrocarbons.
- **Grade "EN" NSF-61 Approved** gaskets have a Yellow and Green colour code stripe and are for potable water systems up to 82°C (180°F). They are not recommended for petroleum service.

## Figure 772 Rigid Couplings

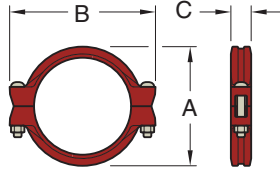
(Page 1 of 2)

Tech Data Sheet: G141

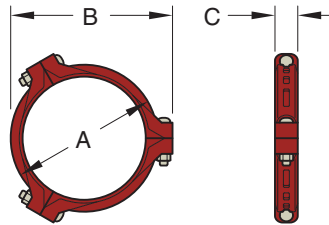


Grooved  
Couplings

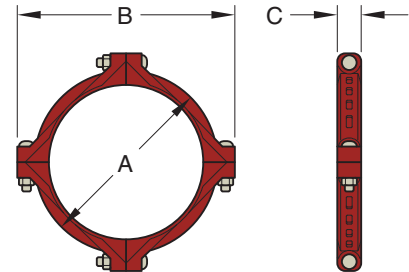
The GRINNELL Figure 772 Rigid Coupling provides a rigid joint by firmly gripping along the full 360° circumference of the pipe grooves. This coupling offers a dependable method of joining pipe and is an economical alternative to welding, threading, or using flanges. The GRINNELL Figure 772 Rigid Coupling is UL Listed for grounding and bonding, and is suitable for bonding systems with a maximum service entrance capacity of 200 amps. Sizes 32 – 200mm (1 1/4" – 8") feature a clamshell design that makes installation easier and faster.




32mm - 300mm (1 1/4" - 12")



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



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

Part Number			Pipe Size		Max.† Pres- sure Bar psi	Max.† End Load kN Lbs.	Max. *‡ End Gap mm In.	Dimensions			Coupling Bolts		Approx. Weight Kg. Lbs.
Grade "E" Gasket	Grade "E" Tri-Seal Gasket	DVGW Approved 	Nominal mm Inches	O.D. mm Inches				A mm In.	B mm In.	C mm In.	Qty.	Size mm Inches	
772ME0042*	772MT0042*	—	32 1 1/4	42.4 1.660	51.7 750	7.22 1,623	1.5 0.06	69.9 2.75	111.3 4.38	46.0 1.81	2	M10 x 57 3/8 x 2 1/4	0.5 1.0
772ME0048*	772MT0048*	—	40 1 1/2	48.3 1.900	51.7 750	9.46 2,127	2.0 0.08	76.2 3.00	117.3 4.62	46.0 1.81	2	M10 x 57 3/8 x 2 1/4	0.5 1.0
772ME0060*	772MT0060*	772MT0060*D	50 2	60.3 2.375	51.7 750	14.78 3,323	4.8 0.188	87 3.41	145.0 5.70	48 1.9	2	M12 x 76 1/2 x 3	1.3 2.9
772ME0073*	772MT0073*	—	65 2 1/2	73.0 2.875	51.7 750	21.66 4,869	4.8 0.188	101 3.97	160.0 6.30	48 1.9	2	M12 x 76 1/2 x 3	1.5 3.3
772ME0076*	772MT0076*	772MT0076*D	65 76,1mm	76.1 3.000	51.7 750	23.58 5,301	4.8 0.188	104 4.10	163.0 6.43	48 1.9	2	M12 x 76 —	1.6 3.6
772ME0089*	772MT0089*	772MT0089*D	80 3	88.9 3.500	51.7 750	32.10 7,216	4.8 0.188	117 4.60	176.0 6.93	48 1.9	2	M12 x 76 1/2 x 3	1.7 3.7
772ME0114*	772MT0114*	772MT0114*D	100 4	114.3 4.500	51.7 750	53.06 11,928	4.8 0.188	147 5.81	205.0 8.07	48 1.9	2	M12 x 76 1/2 x 3	2.0 4.3
772ME0139*	772MT0139*	772MT0139*D	125 139,7mm	139.7 5.500	51.7 750	79.26 17,819	4.8 0.19	178.3 7.02	246.9 9.72	52.3 2.06	2	M16 x 83 —	3.4 7.5
772ME0141*	772MT0141*	—	125 5	141.3 5.563	51.7 750	81.09 18,229	4.8 0.19	180.1 7.09	246.6 9.71	51.8 2.04	2	M16 x 83 5/8 x 3 1/4	3.4 7.5
772ME0165*	772MT0165*	—	150 165,1mm	165.1 6.500	48.2 700	103.18 23,228	4.8 0.19	205.5 8.09	267.5 10.53	54.1 2.13	2	M16 x 83 —	3.4 7.6
772ME0168*	772MT0168*	772MT0168*D	150 6	168.3 6.625	48.2 700	107.34 24,130	4.8 0.19	205.5 8.09	267.5 10.53	54.1 2.13	2	M16 x 83 5/8 x 3 1/4	3.4 7.6
772ME0219*	772MT0219*	772MT0219*D	200 8	219.1 8.625	41.4 600	155.94 35,056	4.8 0.19	268.2 10.56	344.4 13.56	66.5 2.62	2	M20 x 121 3/4 x 4 3/4	8.2 18.0



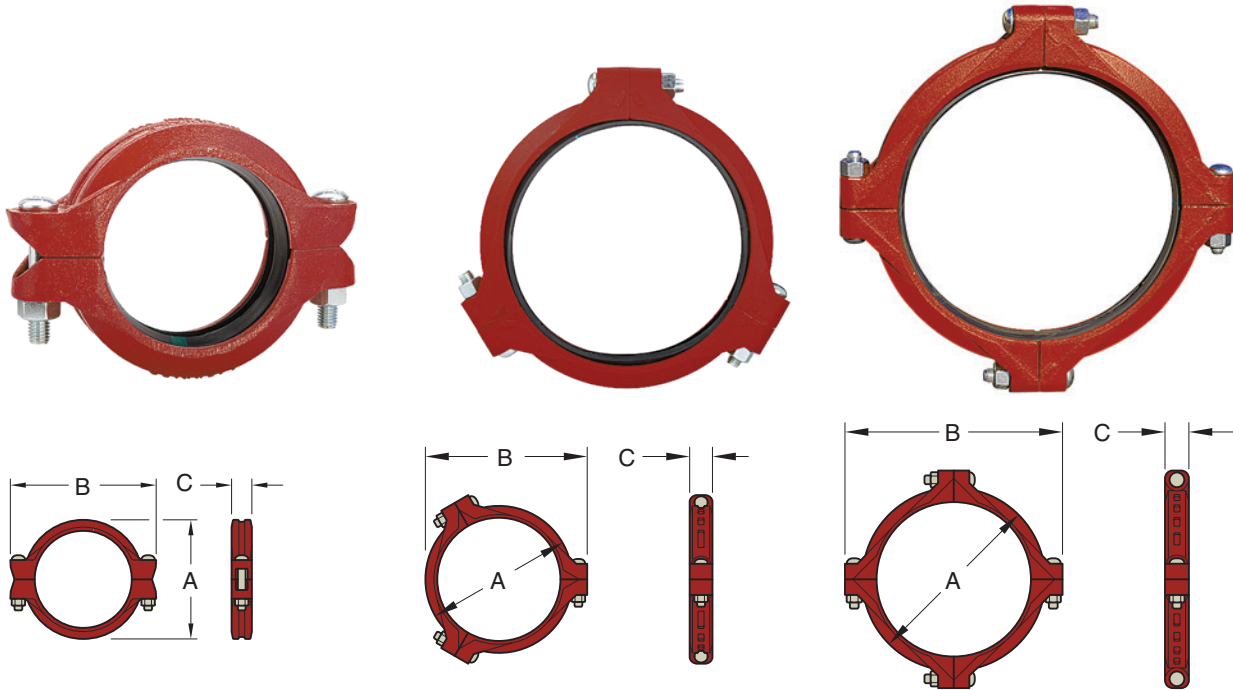
## Figure 772 Rigid Couplings

(Page 2 of 2)

Tech Data Sheet: G141

**10**  
YEAR  
LIMITED  
WARRANTY


Grooved  
Couplings



32mm - 300mm (1¼" - 12")

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

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

Part Number			Pipe Size		Max.† Pressure Bar psi	Max.† End Load kN Lbs.	Max. ‡ End Gap mm In.	Dimensions			Coupling Bolts		Approx. Weight Kg. Lbs.
Grade "E" Gasket	Grade "E" Tri-Seal Gasket	DVGW Approved 	Nominal mm Inches	O.D. mm Inches				A mm In.	B mm In.	C mm In.	Qty.	Size mm Inches	
772ME0273*	772MT0273*	772MT0273*D	250 10	273.0 10.750	34.5 500	201.87 45,381	3.3 0.13	326.1 12.84	416.8 16.41	66.5 2.62	2	M24 x 165 1 x 6½"	11.2 24.6
772ME0324*	772MT0324*	—	300 12	323.9 12.750	27.6 400	227.17 51,071	3.3 0.13	391.4 15.41	478.5 18.84	66.5 2.62	2	M24 x 165 1 x 6½"	19.1 42.0
772AE0355*	772AE0355*	—	350 14	355.6 14.000	24.1 350	239.66 53,878	3.3 0.13	423.7 16.68	517.6 20.38	74.4 2.93	3	— 1 x 5½"	21.7 48.0
772AE0406*	772AE0406*	—	400 16	406.4 16.000	24.1 350	313.03 70,372	3.3 0.13	469.9 18.50	575.1 22.64	74.4 2.93	3	— 1 x 5½"	23.6 52.1
772AE0457*	772AE0457*	—	450 18	457.2 18.000	24.1 350	396.18 89,064	6.4 0.25	541.3 21.31	638.0 25.12	77.7 3.06	3	— 1 x 5½"	30.8 68.0
772AE0508*	772AE0508*	—	500 20	508.0 20.000	24.1 350	489.11 109,956	6.4 0.25	596.9 23.50	708.2 27.88	77.7 3.06	4	— 1 ⅞ x 5¾"	40.4 89.0
772AE0610*	772AE0610*	—	600 24	609.6 24.000	24.1 350	704.31 158,336	6.4 0.25	701.8 27.63	812.8 32.00	81.0 3.19	4	— 1 ⅞ x 5¾"	43.5 96.0

\* = 1 for red paint finish, 2 for hot dipped galvanised finish

\* 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 a GRINNELL Sales Representative 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.

The Fig. 772 Heavy Duty Rigid Coupling does not provide compensation for pipe system expansion and/or contraction associated with pipe system temperature changes.

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

See page 17 for coupling specifications and pages 116 - 127 for gasket information.

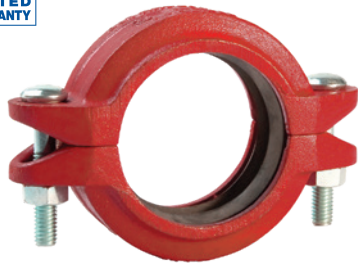
For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

## Figure 774 Rigid Couplings

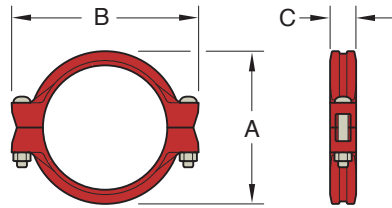
Tech Data Sheet: G142

**10**  
YEAR  
LIMITED  
WARRANTY

Grooved  
Couplings



The GRINNELL Figure 774 Grooved Rigid Coupling provides a rigid joint by firmly gripping along the full circumference of the pipe grooves. Figure 774 Grooved Rigid Couplings are a proven dependable method of joining pipe and are an economical alternative to welding, threading, or using flanges. It is capable of pressures up to 34.5 Bar (500 psi) depending on pipe size and wall thickness.



Part Number		Pipe Size		Max.† Pressures Bar psi	Max.† End Load kN Lbs.	Max.‡ End Gap mm Inches	Dimensions			Coupling Bolts Size ** (Qty 2) mm Inches	Approx. Weight kg Lbs.
Grade "E" Gasket	Grade "E" Tri-Seal Gasket	Nominal mm Inches	O.D. mm Inches				A mm Inches	B mm Inches	C mm Inches		
774ME0034*	774MT0034*	25 1	33.4 1.315	34.5 500	2.11 475	1.5 0.06	41 1.63	100 3.92	42 1.65	M10 x 57 3/8 x 2 1/4	0.55 1.2
774ME0042*	774MT0042*	32 1 1/4	42.4 1.660	34.5 500	4.81 1,082	1.5 0.06	68 2.66	112 4.40	42 1.64	M10 x 57 3/8 x 2 1/4	0.59 1.3
774ME0048*	774MT0048*	40 1 1/2	48.3 1.900	34.5 500	6.31 1,418	1.5 0.06	74 2.90	118 4.66	42 1.66	M10 x 57 3/8 x 2 1/4	0.68 1.5
774ME0060*	774MT0060*	50 2	60.3 2.375	34.5 500	9.85 2,215	1.5 0.06	86 3.38	132 5.20	43 1.70	M10 x 57 3/8 x 2 1/4	0.82 1.8
774ME0073*	774MT0073*	65 2 1/2	73.0 2.875	34.5 500	14.44 3,246	1.5 0.06	99 3.88	143 5.64	44 1.75	M10 x 57 3/8 x 2 1/4	0.91 2.0
774ME0076*	774MT0076*	65 76.1mm	76.1 3.000	34.5 500	15.72 3,534	1.5 0.06	102 4.00	147 5.78	44 1.75	M10 x 57 —	0.91 2.0
774ME0089*	774MT0089*	80 3	88.9 3.500	34.5 500	21.40 4,811	1.5 0.06	114 4.50	161 6.33	44 1.75	M10 x 57 3/8 x 2 1/4	1.50 3.3
774ME0114*	774MT0114*	100 4	114.3 4.500	34.5 500	35.37 7,952	1.5 0.06	145 5.70	191 7.50	46 1.83	M10 x 57 3/8 x 2 1/4	1.50 3.3
774ME0139*	774MT0139*	125 139.7mm	139.7 5.500	34.5 500	52.84 11,879	3.2 0.125	173 6.80	222 8.75	49 1.91	M12 x 76 —	2.41 5.3
774ME0141*	774MT0141*	125 5	141.3 5.563	34.5 500	54.06 12,153	3.2 0.125	174 6.86	224 8.82	49 1.91	M12 x 76 1/2 x 3	2.41 5.3
774ME0165*	774MT0165*	150 165.1mm	165.1 6.500	34.5 500	73.80 16,592	3.2 0.125	198 7.80	248 9.75	49 1.91	M12 x 76 —	2.59 5.7
774ME0168*	774MT0168*	150 6	168.3 6.625	34.5 500	76.67 17,236	3.2 0.125	215 8.47	251 9.88	49 1.91	M12 x 76 1/2 x 3	2.69 5.9
774ME0219*	774MT0219*	200 8	219.1 8.625	27.5 400	103.96 23,371	3.2 0.125	260 10.25	325 12.78	61 2.40	M16 x 83 5/8 x 3 1/4	5.32 11.7
774ME0273*	774MT0273*	250 10	273.0 10.750	16.0 233	94.07 21,148	6.4 0.25	318 12.50	419 16.50	65 2.56	M20 x 121 3/4 x 4 3/4	8.86 19.5
774ME0324*	774MT0324*	300 12	323.9 12.750	12.0 175	99.39 22,343	6.4 0.25	368 14.50	470 18.50	65 2.56	M20 x 121 3/4 x 4 3/4	10.00 22.0

\* = 1 for red paint finish, 2 for hot dipped galvanised finish, or 5 for painted white RAL 9010 coating

† 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 a GRINNELL Sales Representative 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.

\*\* Gold colour coded metric bolt sizes for 25mm - 300mm couplings are available upon request.

The Fig. 774 Standard Weight Rigid Coupling does not provide compensation for pipe system expansion and/or contraction associated with pipe system temperature changes.

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

See page 17 for coupling specifications and pages 116 - 127 for gasket information.

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.



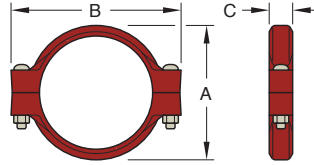
## Figure 705 Flexible Couplings


Tech Data Sheet: G110

**10**  
YEAR  
LIMITED  
WARRANTY

Grooved  
Couplings

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 34.5 Bar (500 psi), 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.



Part Number			Pipe Size		Max.† Pressure Bar psi	Max.† End Load kN Lbs.	Max.*‡ End Gap mm In.	Deflection ‡		Dim. - mm In.			Coupling Bolts Size (Qty 2) mm, In.	App. Wt. kg Lbs.
Grade “E” Gasket	Grade “E” Tri-Seal Gasket	DVGW Approved 	Nominal DN In.	O.D. mm In.				Deg. Per Cplg	mm/m In./Ft	A	B	C		
705ME0034*	705MT0034*	-	25 1	33.7 1.315	34.5 500	1.86 410	3.3 0.13	5° 30'	96.7 1.16	56.9 2.24	100.1 3.94	46.0 1.81	M10 x 44 3⁄8 x 1 3⁄4	0.6 1.3
705ME0042*	705MT0042*	-	32 1 1⁄4	42.4 1.660	34.5 500	4.81 1,082	3.3 0.13	4° 19'	75.0 0.90	65.0 2.56	106.4 4.19	46.0 1.81	M10 x 57 3⁄8 x 2 1⁄4	0.7 1.5
705ME0048*	705MT0048*	-	40 1 1⁄2	48.3 1.900	34.5 500	6.30 1,418	3.3 0.13	3° 46'	65.8 0.79	69.9 2.75	112.8 4.44	46.0 1.81	M10 x 57 3⁄8 x 2 1⁄4	0.7 1.6
705ME0060*	705MT0060*	705MT0060*D	50 2	60.3 2.375	34.5 500	9.85 2,215	3.3 0.13	3° 1'	52.5 0.63	82.6 3.25	124.0 4.88	47.8 1.88	M10 x 57 3⁄8 x 2 1⁄4	0.8 1.7
705ME0073*	705MT0073*	-	65 2 1⁄2	73.0 2.875	34.5 500	14.43 3,246	3.3 0.13	2° 29'	43.3 0.52	93.7 3.69	139.7 5.50	47.8 1.88	M10 x 57 3⁄8 x 2 1⁄4	0.9 2.0
705ME0076*	705MT0076*	705MT0076*D	65 76.1mm	76.1 3.000	34.5 500	15.72 3,534	3.3 0.13	2° 23'	41.7 0.50	101.6 4.00	146.10 5.75	47.8 1.88	M12 x 76	1.4 3.0
705ME0089*	705MT0089*	705MT0089*D	80 3	88.9 3.500	34.5 500	21.39 4,811	3.3 0.13	2° 3'	35.8 0.43	111.3 4.38	165.1 6.50	47.8 1.88	M12 x 76 1⁄2 x 3	1.4 3.1
705ME0108*	705MT0108*	-	100 108.0mm	108.0 4.252	34.5 500	31.55 7,093	6.4 0.25	3° 22'	58.3 0.70	139.7 5.50	190.5 7.50	52.3 2.06	M12 x 76	1.9 4.2
705ME0114*	705MT0114*	705MT0114*D	100 4	114.3 4.500	34.5 500	35.35 7,952	6.4 0.25	3° 11'	55.8 0.67	144.5 5.69	196.9 7.75	52.3 2.06	M12 x 89 1⁄2 x 3	1.8 4.0
705ME0133*	705MT0133*	-	125 133.0mm	133.0 5.236	31.0 450	43.33 9,741	6.4 0.25	2° 44'	46.7 0.56	166.6 6.56	241.3 9.50	52.3 2.06	M16 x 83 —	3.3 7.2
705ME0139*	705MT0139*	705MT0139*D	125 139.7mm	139.7 5.500	31.0 450	47.56 10,691	6.4 0.25	2° 36'	45.5 0.55	173.0 6.81	247.7 9.75	52.3 2.06	M16 x 83 —	3.3 7.2
705ME0141*	705MT0141*	-	125 5	141.3 5.563	31.0 450	48.63 10,938	6.4 0.25	2° 35'	45.0 0.54	174.8 6.88	247.7 9.75	52.3 2.06	M16 x 83 5⁄8 x 3 1⁄4	3.2 7.1
705ME0159*	705MT0159*	-	150 159.0mm	159.0 6.260	31.0 450	61.41 13,806	6.4 0.25	2° 17'	40.0 0.48	192.0 7.56	261.9 10.31	52.3 2.06	M16 x 83 —	3.4 7.4
705ME0165*	705MT0165*	-	150 165.1mm	165.1 6.500	31.0 450	66.36 14,932	6.4 0.25	2° 12'	38.3 0.46	196.9 7.75	271.5 10.69	52.3 2.06	M16 x 83 —	3.2 7.1
705ME0168*	705MT0168*	705MT0168*D	150 6	168.3 6.625	31.0 450	68.97 15,512	6.4 0.25	2° 10'	37.5 0.45	201.7 7.94	271.5 10.69	52.3 2.06	M16 x 83 5⁄8 x 3 1⁄4	3.2 7.1
705ME0200*	705MT0200*	-	200 216.3mm	216.3 8.500	31.0 450	113.59 25,535	6.4 0.25	1° 40'	29.2 0.35	255.8 10.07	342.9 13.50	58.7 2.31	M20 x 121 —	5.6 12.4
705ME0219*	705MT0219*	705MT0219*D	200 8	219.1 8.625	31.0 450	116.89 26,292	6.4 0.25	1° 40'	29.2 0.35	258.8 10.19	344.4 13.56	63.5 2.50	M20 x 121 3⁄4 x 4 3⁄4	6.6 14.5
705ME0273*	705MT0273*	705MT0273*D	250 10	273.0 10.750	24.1 350	141.31 31,767	6.4 0.25	1° 20'	23.3 0.28	322.3 12.69	416.1 16.38	66.8 2.63	M24 x 165 1 x 6 1⁄2	12.7 28.0
705ME0324*	705MT0324*	-	300 12	323.9 12.750	24.1 350	198.78 44,687	6.4 0.25	1° 7'	19.2 0.23	379.5 14.94	479.6 18.88	66.8 2.63	M24 x 165 1 x 6 1⁄2	16.6 36.5

\* = 1 for red paint finish, 2 for hot dipped galvanised finish, or 5 for painted white RAL9010 coating

† 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 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 alternative sizes, contact a GRINNELL Sales Representative.

See page 17 for coupling specifications and pages 116 - 127 for gasket information.

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

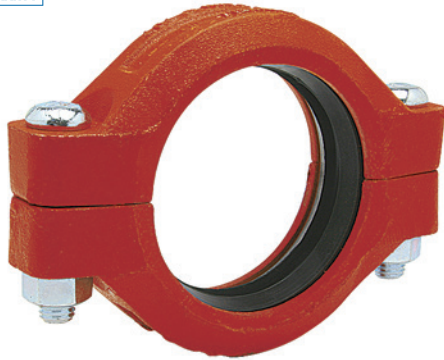
## Figure 707 Heavy Duty Flexible Couplings

(Page 1 of 2)

Tech Data Sheet: G130



Grooved  
Couplings

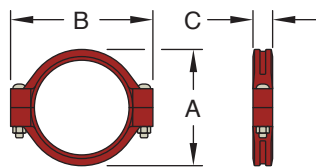


The GRINNELL Figure 707 Heavy Duty Flexible Coupling allows for angular and linear deflection, thermal expansion and contraction, and misalignments of the pipe. Flexible couplings can act as an "expansion joint", allowing linear and angular movement of the pipes when properly installed. This coupling is capable of pressures up to 68.9 Bar (1,000 psi), depending on pipe size and wall thickness.

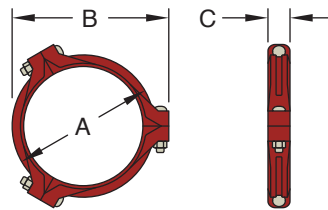
Suitable for use in a variety of applications, the Figure 707 Coupling provides a dependable method of joining pipe.



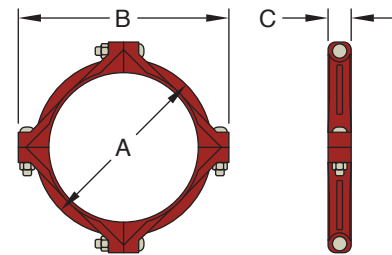
For detailed Listing / Approval information contact GRINNELL Mechanical Products.



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



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



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

Part Number	Pipe Size		Max.† Pressure Bar psi	Max.† End Load kN Lbs.	Max.*‡ End Gap mm Inches	Deflection ‡		Dimensions - mm In.			Coupling Bolts		Approx. Weight Kg. Lbs.
	Nominal mm Inches	O.D. mm Inches				Degrees Per Coupling	mm/m Inches/Ft	A	B	C	Qty.	Size mm Inches	
707AE0034*	25	33.7	68.9	6.10	3.3	5° 26'	98.4	60.5	101.6	46.0	2	M12 x 57	0.9
	1	1.315	1000	1,360	0.13		1.14	2.38	4.00	1.81		1/2 x 2-1/4	2.0
707ME0042*	32	42.4	68.9	9.63	3.3	4° 19'	75.0	70.0	111.0	46.0	2	M12 x 76	1.0
	1 1/4	1.660	1000	2,165	0.13		0.90	2.76	4.37	1.81		1/2 x 3	2.2
707AE0048*	40	48.3	68.9	12.61	3.3	3° 46'	65.8	75.4	117.6	46.0	2	M12 x 76	1.1
	1 1/2	1.900	1000	2,835	0.13		0.79	2.97	4.63	1.81		1/2 x 3	2.5
707AE0060*	50	60.3	68.9	19.71	3.3	3° 1'	52.5	89.9	133.4	47.8	2	M12 x 76	1.4
	2	2.375	1000	4,430	0.13		0.63	3.54	5.25	1.88		1/2 x 3	3.0
707AE0073*	65	73.0	68.9	28.88	3.3	2° 29'	43.3	103.1	146.1	47.8	2	M12 x 76	1.6
	2 1/2	2.875	1000	6,492	0.13		0.52	4.06	5.75	1.88		1/2 x 3	3.5
707AE0076*	65	76.1	68.9	31.44	3.3	2° 23'	41.7	106.4	146.1	47.8	2	M12 x 76	1.8
	76,1mm	3.000	1000	7,069	0.13		0.50	4.19	5.75	1.88		—	4.0
707AE0089*	80	88.9	68.9	42.80	3.3	2° 3'	35.8	119.1	162.1	47.8	2	M12 x 76	1.8
	3	3.500	1000	9,621	0.13		0.43	4.69	6.38	1.88		1/2 x 3	4.0
707AE0114*	100	114.3	68.9	70.75	6.4	3° 11'	55.8	151.1	209.6	52.3	2	M16 x 83	3.2
	4	4.500	1000	15,904	0.25		0.67	5.95	8.25	2.06		5/8 x 3 1/4	7.0
707AE0139*	125	139.7	68.9	105.6	6.4	2° 30'	43.3	178.3	254.0	51.8	2	M20 x 121	3.8
	139,7mm	5.500	1000	23,758	0.25		0.52	7.02	10.00	2.04		3/4 x 4 3/4	8.3
707AE0141*	125	141.3	68.9	108.12	6.4	2° 35'	45.0	179.8	254.0	52.3	2	M20 x 121	4.5
	5	5.563	1000	24,306	0.25		0.54	7.08	10.00	2.06		3/4 x 4 3/4	10.0
707AE0165*	150	165.1	68.9	147.61	6.4	2° 12'	38.4	208.0	285.8	52.3	2	M20 x 121	5.4
	165,1mm	6.500	1000	33,183	0.25		0.46	8.19	11.25	2.06		—	12.0
707AE0168*	150	168.3	68.9	153.34	6.4	2° 10'	37.5	210.8	285.8	52.3	2	M20 x 121	5.0
	6	6.625	1000	34,472	0.25		0.45	8.30	11.25	2.06		3/4 x 4 3/4	11.1



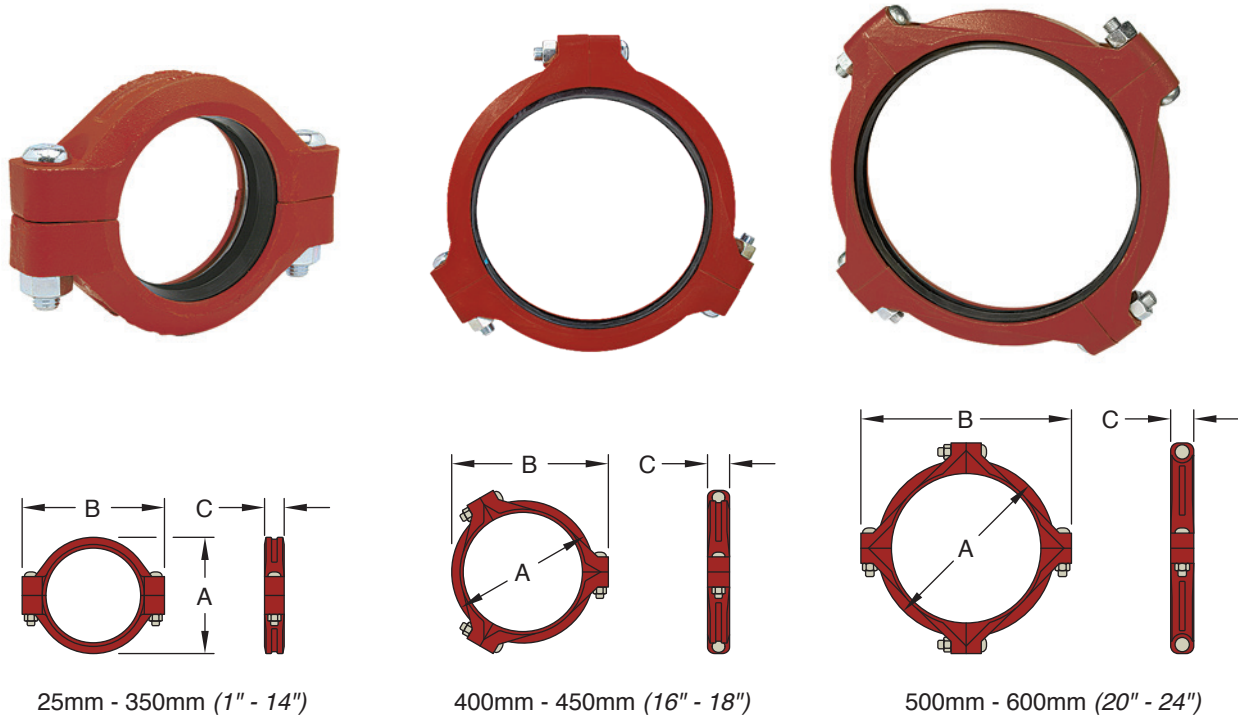
## Figure 707 Heavy Duty Flexible Couplings

(Page 2 of 2)

Tech Data Sheet: G130

**10**  
YEAR  
LIMITED  
WARRANTY

Grooved  
Couplings



Part Number	Pipe Size		Max.† Pressure Bar psi	Max.† End Load kN Lbs.	Max.*‡ End Gap mm Inches	Deflection ‡		Dimensions - mm /in.			Coupling Bolts		Approx. Weight Kg. Lbs.
	Nominal mm Inches	O.D. mm Inches				Degrees Per Coupling	mm/m Inches/Ft	A	B	C	Qty.	Size mm Inches	
707AE0219*	200	219.1	55.2	207.91	6.4	1° 40'	29.2	271.3	355.6	62.7	2	M22 x 165	9.7
	8	8.625	800	46,741	0.25		0.35	10.68	14.00	2.47		7/8 x 6 1/2	21.4
707AE0273*	250	273.0	55.2	322.99	6.4	1° 20'	23.3	331.7	417.6	66.8	2	M24 x 165	13.2
	10	10.750	800	72,610	0.25		0.28	13.06	16.44	2.63		1 x 6 1/2	29.0
707AE0324*	300	323.9	55.2	454.35	6.4	1° 7'	19.2	390.9	478.5	66.8	2	M24 x 165	16.8
	12	12.750	800	102,141	0.25		0.23	15.39	18.84	2.63		1 x 6 1/2	37.0
707AE0355*	350	355.6	24.1	239.66	6.4	1° 2'	18.3	423.4	517.7	74.7	2	—	20.9
	14	14.000	350	53,878	0.25		0.22	16.67	20.38	2.94		1 x 5 1/2 •	46.0
707AE0406*	400	406.4	24.1	313.03	6.4	0° 54'	15.8	478.3	575.1	74.7	3	—	26.8
	16	16.000	350	70,372	0.25		0.19	18.83	22.64	2.94		1 x 5 1/2 •	59.0
707AE0457*	450	457.2	20.7	339.58	6.4	0° 48'	14.2	541.3	638.0	77.7	3	—	35.4
	18	18.000	300	76,341	0.25		0.17	21.31	25.12	3.06		1 x 5 1/2 •	78.0
707AE0508*	500	508.0	20.7	419.23	6.4	0° 43'	12.5	596.1	708.2	77.7	4	—	40.4
	20	20.000	300	94,248	0.25		0.15	23.47	27.88	3.06		1 1/8 x 5 3/4 •	89.0
707AE0610*	600	609.6	24.1	704.31	6.4	0° 36'	10.8	700.5	812.8	81.0	4	—	50.8
	24	24.000	350	158,336	0.25		0.13	27.58	32.00	3.19		1 1/8 x 5 3/4 •	112.0

\* = 1 for red paint finish, 2 for hot dipped galvanised finish

\* 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 a GRINNELL Sales Representative 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 alternative sizes, contact a GRINNELL Sales Representative.

For coupling sizes above 300mm (12") bolt sizes only available in ANSI.

See page 17 for coupling specifications and pages 116 - 127 for gasket information.

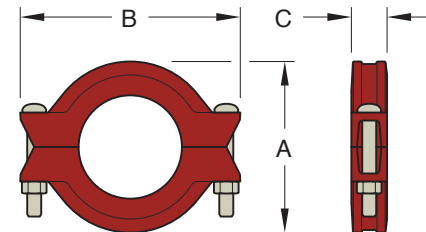
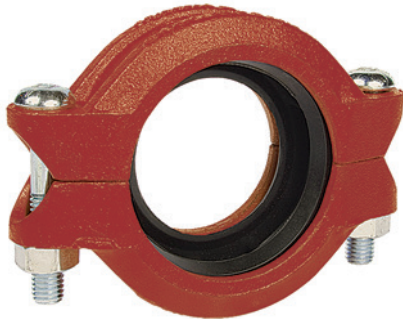
For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

## Figure 716 Flexible Reducing Couplings

Tech Data Sheet: G120

**10**  
YEAR  
LIMITED  
WARRANTY

Grooved  
Couplings



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 34.5 Bar (500 psi) depending on pipe size and wall thickness. A flexible reducing coupling is not recommended for low-temperature applications.

Part Number	Pipe Size		Max.† Pressure Bar	Max.† End Load kN	Max.‡ End Gap mm	Deflection ‡		Dimensions mm			Coupling Bolts Size (Qty 2) mm	Approx. Weight kg
	Nominal DN	O.D. mm				Degrees Per Coupling	mm/m	A	B	C		
716AE2015*	50 x 40	60.3 x 48.3	34.5	6.31	3.3	1° 53'	32.9	88.9	128.5	47.8	M10 x 57	1.3
716AE2520*	65 x 50	73.0 x 60.3	34.5	9.85	3.3	1° 33'	27.1	101.6	139.7	47.8	M10 x 57	1.5
716ME2620*	65 x 50	76.1 x 60.3	34.5	9.85	3.3	1° 34'	26.7	106.4	149.4	47.8	M12 x 76	1.4
716AE3020*	80 x 50	88.9 x 60.3	34.5	9.85	3.3	1° 17'	22.5	119.1	165.1	47.8	M12 x 76	1.9
716AE3025*	80 x 65	88.9 x 73.0	34.5	14.44	3.3	1° 17'	22.5	119.1	165.1	47.8	M12 x 76	2.0
716ME3026*	80 x 65	88.9 x 76.1	34.5	15.72	3.3	1° 17'	22.5	119.1	165.1	47.8	M12 x 76	1.9
716AE4220*	100 x 60	114.3 x 60.3	34.5	9.85	4.8	2° 38'	45.8	152.4	206.5	50.8	M16 x 83	2.5
716AE4225*	100 x 65	114.3 x 73.0	34.5	14.44	4.8	2° 38'	45.8	152.4	206.5	50.8	M16 x 83	2.9
716ME4226*	100 x 65	114.3 x 76.1	34.5	15.72	4.8	2° 38'	45.8	152.4	206.5	50.8	M16 x 83	2.9
716AE4230*	100 x 80	114.3 x 88.9	34.5	21.40	4.8	2° 38'	45.8	152.4	206.5	50.8	M16 x 83	2.8
716ME5242*	125 x 100	139.7 x 114.3	34.5	35.37	6.4	2° 38'	45.8	179.3	241.3	52.3	M20 x 121	4.3
716AE5342*	125 x 100	141.3 x 114.3	34.5	35.37	6.4	2° 5'	36.7	181.1	242.8	52.3	M20 x 121	4.4
716ME6242*	150 x 100	165.1 x 114.3	27.6	28.30	6.4	1° 50'	31.7	207.8	274.6	52.3	M20 x 121	5.7
716AE6342*	150 x 100	168.3 x 114.3	27.6	28.30	6.4	1° 44'	30.0	212.9	276.4	52.3	M20 x 121	5.7
716AE6353*	150 x 125	168.3 x 141.3	27.6	43.25	6.4	1° 44'	30.0	212.9	276.4	52.3	M20 x 121	5.2
716AE8063*	200 x 150	219.1 x 168.3	27.6	61.33	6.4	1° 15'	21.7	271.5	349.3	57.2	M22 x 165	9.4

\* = 1 for red paint finish, 2 for hot dipped galvanised finish

† 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 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 alternative sizes, contact a GRINNELL Sales Representative.

See page 17 for coupling specifications and pages 116 - 127 for gasket information.

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

## Figure 7706T Transition Couplings

**10**  
 YEAR  
 LIMITED  
 WARRANTY

 Grooved  
 Couplings

### Ductile Iron Housing

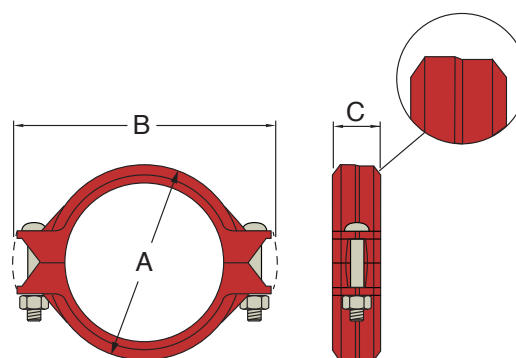
- ASTM A 536 – Standard specification for ductile iron castings, Grade 65-45-12

### Finish

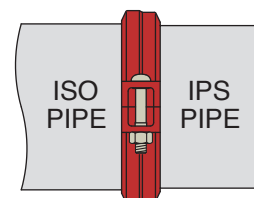
- Standard painted finishes in orange or RAL 3000 red.
- Hot dip zinc galvanised (Option)
- Epoxy Coatings in RAL 3000 red or other colours (Option)

### Gaskets

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



Model 7706-T Transition Couplings allows for a direct transition from IPS pipe sizes to ISO pipe sizes.



Part Number	Pipe Size		Max. End Load kN Lbs.	Axial Displacement mm Inches	Angular Movement		Dim.- mm /in			Bolt / Nut Size in	Approx. Weight Kg. Lbs.
	Nominal mm Inches	O.D. mm Inches			Per Coupling Degree	Per Pipe mm/m in/ft.	A	B	C		
7706T2526✱	65 x 65	73.0 x 76.1	5.90	0 ~ 3.2	2° -24'	21.0	102	138	48	M10 x 55	1.2
	2 1/2 x 76.1mm	2.875 x 3.000	1330	- ~ 0.13		0.25	4.02	5.43	1.89		2.6
7706T6362✱	150 x 150	168.3 x 165.1	44.29	0 ~ 6.4	1° - 06'	19.0	200	270	53	M16 x 90	3.5
	6 x 165.1mm	6.625 x 6.500	9960	0 ~ 0.25		0.23	7.87	10.63	2.09		7.7

\*Deflection or angular movement is the maximum value that a coupling allows with no internal pressure.

Refer to the technical data sheet for complete technical information and installation instructions.

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

In the mechanical catalog, See page 17 for coupling specifications and pages 116 - 127 for gasket information.

For instructions on part numbers, ordering information, and availability, refer to page 13 in the mechanical catalog or contact a GRINNELL Sales Representative.



## Electrical Continuity

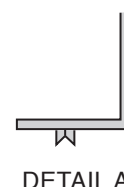
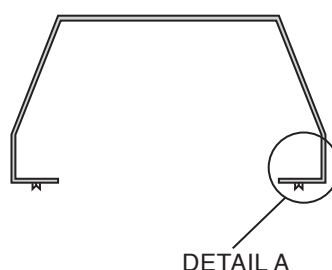
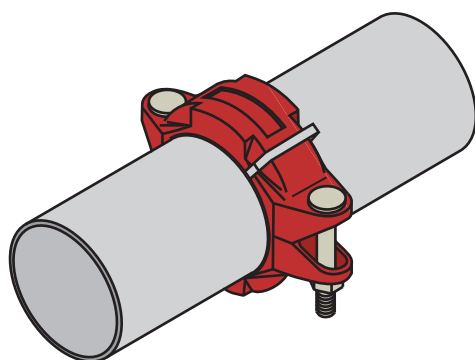


Grooved  
Couplings

### Couplings in Painted Finish

Earth bonding of the GRINNELL couplings in painted finish can be made in steel pipework systems with an electrical continuity clip. This clip, manufactured from 301-grade stainless steel, is designed to ensure electrical continuity in situations of high current loading and/or corrosive environments, providing equipotential bonding of the conductive parts. It is recommended that the pipework is assembled and installed as recommended and that

the pipework is bonded to the electrical earth and tested in accordance with the I.E.E. regulations for bonding (earthing). Installation should be regularly checked for equipotential bonding (earthing) in case of accidental damage or unauthorised pipework modifications. Following any future modification, electrical continuity clips must be used and the installation re-tested for equipotential bonding.



Part Number	Suitable for size Coupling Inches	Approx Weight kg
CLIP0103	1 - 3	0.005
CLIP0406	4 - 6	0.005
CLIP0812	8 - 12	0.005

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

### Couplings in Galvanised Finish

Most GRINNELL Grooved Couplings in galvanised finish comply to the electric conductivity according to clause 11.1.2 of EN 61537-2007. Tests were performed by TÜV Rheinland® and test reports are available upon request.



Test pipe at TÜV Rheinland®

## GRINNELL Coupling Installation Information

*Installation Handbook: IH-1000M*

### • 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-pressurised and drained. Failure to do 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 117 to 121 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.

EPDM, 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.

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 Products Installation Handbook (refer to IH-1000M). Always review the GRINNELL 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 Products Installation Handbook or individual product tech data sheets. Current documentation can be obtained by contacting your GRINNELL sales Representative or visiting [www.grinnell.com](http://www.grinnell.com).

### 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 68.9 bar (1,000 psi)

\*Note: The material of both the fittings and couplings used in this testing is found in the GRINNELL Handbook. This material is Ductile Iron Casting Grade 65-45-12, which has an elongation in 51mm (2") 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 224.1 bar (3,250 psig)

## Notes

Grooved  
Couplings

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## FLANGE ADAPTERS

## Flange Adapters Table of Contents

Flange  
Adapters

	<b>Figure 71</b> Flange Adapters PN10/PN16 BS 4504 Page 31
	<b>Flange Adapter</b> Washers Page 32
	<b>Flange Adapter</b> Technical Data Page 33
	<b>Figure 343 &amp; 344</b> Flange Adapters (PN10/PN16 BS 4504) Pages 34 - 35

## MATERIAL SPECIFICATIONS

### Ductile Iron Housing Specifications

- ASTM A 536 – Standard specification for ductile iron castings, Grade 65-45-12
- Tensile strength, minimum 448,159 kPa (65,000 psi)
- Yield strength, minimum 310,264 kPa (45,000 psi)
- Elongation in 50mm (2"), minimum 12%
- ASTM A 153 – Standard specification for hot-dip galvanising

### Bolt/Nut Specifications

- Carbon steel oval neck bolts and nuts are heat-treated and conform to the physical properties of ASTM A 183 with a minimum tensile strength of 758,422 kPa (110,000 psi). Bolts and nuts are zinc electroplated to ASTM B 633.
- Gold colour coded metric bolts conforming to the physical properties of ASTM F 568M are available upon request. Contact GRINNELL Products.
- Stainless Steel nuts and bolts are UL Listed and comply with UL requirements. Bolts conform to ASTM A 193M, Class 2, Austenitic Stainless Steel. Nuts conform to ASTM A 194 Type 316, Grade 8M.

### Coatings

- Red – Non-lead paint RAL 3000(standard)
- Orange – Non-lead paint (Optional)
- Hot-Dipped, Zinc Galvanised (Optional)

### Gasket Specifications

- **Grade "E" EPDM** gaskets have a green colour code stripe identification and conform to ASTM D 2000 for service temperatures from -34°C to 110°C (-30°F to 230°F). They are recommended for hot water not to exceed 110°C (230°F). They are not recommended for petroleum services.
- **Grade "T" Nitrile** gaskets have an Orange colour code stripe identification and conform to ASTM D 2000 for service temperatures from -29°C to 82°C (-20°F to 180°F). They are recommended for petroleum products, vegetable oils, mineral oils, and air with oil vapours.



General notes: It is the Designer's responsibility to select products suitable for the intended service and to ensure that pressure ratings and performance data is not exceeded. Always read and understand the installation constructions. Never remove any piping components nor correct or modify any piping deficiencies without first depressurising and draining the system. Material should be verified to be compatible for the specific application.

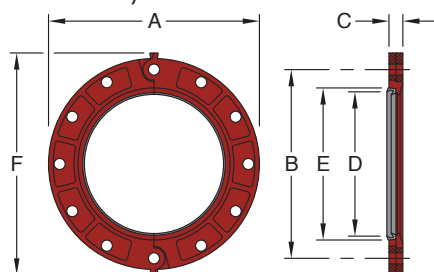
## Figure 71 Flange Adapters (PN10/PN16 BS 4504)

Tech Data Sheet: G150

**10**  
YEAR  
LIMITED  
WARRANTY

The Figure 71 Flange Adapter is capable of pressures up to 20.7 Bar (300 psi) 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.



Flange  
Adapters

Part Number	Pipe Size		Flange Type	Max † End Load N Lbs.	Dimensions - mm /in.						Recommended Flange Mating Bolts ‡		Approx. Wt. kg Lbs
	Nominal DN In.	O.D. mm In.			A	B	C	*D	*E	F	Size Dia. x Lg mm In.	Qty.	
71DAE0060*	50 2	60.3 2.375	PN10 / PN16	5889 1,324	162.1 6.38	125.0 4.92	19.1 0.75	60.5 2.38	86.6 3.41	184.2 7.25	M16 x 76	4	1.4 3.0
71DAE0076*	65 76.1mm	76.1 3.000	PN10 / PN16	8665 1,948	184.9 7.28	145.0 5.71	22.4 0.88	76.1 3.00	102.4 4.03	205.5 8.09	M16 x 76	4	2.3 5.0
71DAE0089*	80 3	88.9 3.500	PN10 / PN16	12,838 2,886	200.2 7.88	160.0 6.30	23.9 0.94	88.9 3.50	115.1 4.53	222.5 8.76	M16 x 76	8	2.5 5.6
71DAE0114*	100 4	114.3 4.500	PN10 / PN16	21,222 4,771	219.9 8.66	180.1 7.09	23.9 0.94	114.3 4.50	140.5 5.53	239.5 9.43	M16 x 76	8	3.2 7.0
71DME0139*	125 139.7mm	139.7 5.500	PN10 / PN16	32,436 7,292	249.9 9.84	210.1 8.27	25.4 1.00	139.7 5.50	165.9 6.53	271.5 10.69	M16 x 89	8	4.2 9.2
71DAE0165*	150 165.1mm	165.1 6.500	PN10 / PN16	44,282 9,955	285.0 11.22	240.3 9.46	24.5 1.00	165.1 6.50	194.6 7.66	307.3 12.10	M20 x 89	8	4.5 10.0
71DAE0168*	150 6	168.3 6.625	PN10 / PN16	45,999 10,341	279.4 11.00	241.1 9.49	25.4 1.00	168.1 6.62	197.6 7.78	301.8 11.88	M20 x 89	8	7.5 16.6
71DME8219*	200 8	219.1 8.625	PN10	77,968 17,528	336.8 13.26	292.1 11.50	28.6 1.125	218.9 8.62	254.5 9.94	358.6 14.12	M20 x 89	8	9.9 21.8
71DME0219*			PN16	77,968 17,528	339.8 13.38	295.1 11.62	28.6 1.125	218.9 8.62	254.5 9.94	362.7 14.28	M20 x 89	12	9.9 21.8
71DAE8273*	250 10	273.0 10.750	PN10	121,121 27,229	395.2 15.56	350.0 13.78	30.2 1.188	273.1 10.75	312.4 12.31	419.1 16.50	M20 x 102	12	10.2 22.5
71DAE0273*			PN16	170,380 38,303	406.4 16.00	355.1 13.98	30.2 1.188	273.1 10.75	312.7 12.31	428.8 16.88	M22 x 102	12	11.0 24.2
71DME8324*	300 12	323.9 12.750	PN10	170,380 38,303	445.0 17.52	399.8 15.74	31.8 1.25	323.9 12.75	363.5 14.31	470.4 18.52	M22 x 102	12	12.5 27.5
71DME0324*			PN16	170,380 38,303	460.2 18.12	410.0 16.14	31.8 1.25	323.9 12.75	363.5 14.31	486.2 19.14	M22 x 102	12	12.7 28.0

\* = 1 for red paint finish, 2 for hot dipped galvanised finish

Maximum Pressure rating is 20.7 Bar (300 psi).

\* 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 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 alternative sizes, contact a GRINNELL Sales Representative.

See page 30 for specifications and pages 116 - 127 for gasket information.

See page 32 for flange washer Adaptor and page 144 Flange Drilling Specifications

The effective sealing area of the mating flange must be free from gouges, undulations or deformities of any type to ensure proper sealing of the gasket. The Fig. 71 Flange provides a rigid joint when used on standard grooved pipe in accordance with GRINNELL specifications, therefore, no linear or angular movement at the joint is allowed.

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.



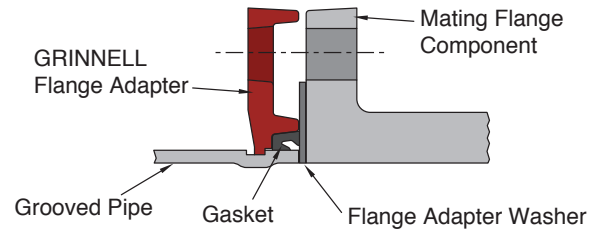
## Flange Adapter Washers



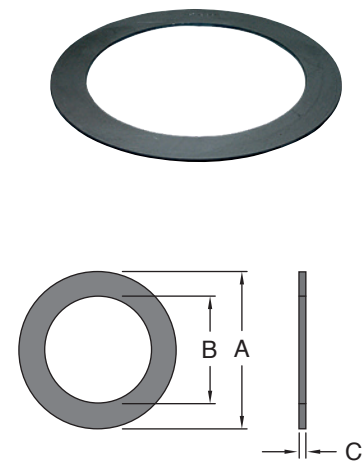
Carbon steel Flange Adapter Washers are required when the Figure 71 Flange Adapter is used against surfaces such as:

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

Contact a GRINNELL Sales Representative for additional information.



Part Number	Pipe Size		Dimensions		
PN10/PN16	Nominal mm Inches	O.D. mm Inches	A mm Inches	B mm Inches	C mm Inches
INS DIN 060M	50 2	60.3 2.375	100.1 3.94	57.2 2.25	3.0 0.12
—	65 2 1/2	73.0 2.875	119.1 4.69	69.9 2.75	3.0 0.12
INS DIN 076M	65 76,1mm	76.1 3.000	124.2 4.89	73.2 2.88	3.0 0.12
INS DIN 089M	80 3	88.9 3.500	131.8 5.19	85.9 3.38	3.0 0.12
INS DIN 114M	100 4	114.3 4.500	169.9 6.69	111.3 4.38	3.0 0.12
INS DIN 139M	125 139,7mm	139.7 5.500	189.2 7.45	135.1 5.32	3.0 0.12
—	125 5	141.3 5.563	192.0 7.56	136.7 5.38	3.0 0.12
INS DIN 165M	150 165,1mm	165.1 6.500	215.1 8.47	160.5 6.32	3.0 0.12
INS DIN 168M	150 6	168.3 6.625	217.4 8.56	163.6 6.44	3.0 0.12
INS DIN 219M	200 8	219.1 8.625	274.6 10.81	214.4 8.44	3.0 0.12
INS DIN 273M	250 10	273.0 10.750	335.0 13.19	266.7 10.50	3.0 0.12
INS DIN 324M	300 12	323.9 12.750	404.9 15.94	317.5 12.50	3.0 0.12
—	350 14	355.6 14.000	444.5 17.50	342.9 13.50	3.2 0.13
—	400 16	406.4 16.000	508.0 20.00	393.7 15.50	3.2 0.13
—	450 18	457.2 18.000	542.9 21.38	444.5 17.50	3.2 0.13
—	500 20	508.0 20.000	600.1 23.63	495.3 19.50	3.2 0.13
—	600 24	609.6 24.000	711.2 28.00	596.9 23.50	3.2 0.13



For information on alternative sizes, contact a GRINNELL Sales Representative.  
 Plate material: stainless steel ASTM A666 Type 304-2B  
 See Flange Drilling Specifications on page 144.  
 For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

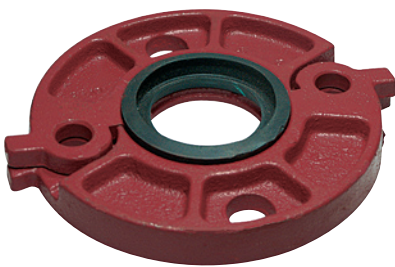
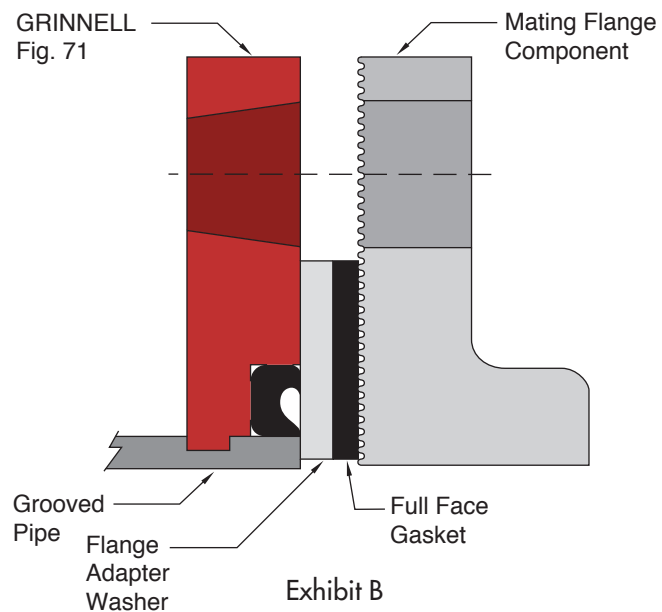
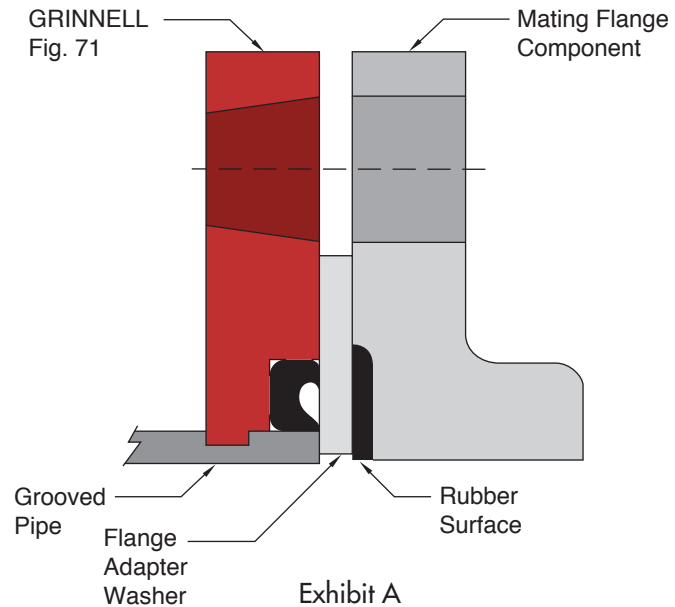
## Flange Adapter Technical Data

Fig 71 GRINNELL Flange Notes:

- A. Fig 71 Flange Adapters have an anti-rotational feature or "Gripping Teeth" cast inside the shoulder.
- B. GRINNELL grooved Flanges are to be assembled on butterfly valves so as not to interfere with actuator, or handle operation.  
The Flange might not fit all Grooved butterfly valve sizes.  
Contact a GRINNELL Sales Representative for details
- C. Figure 71 Flange Adapters are not recommended for application which incorporate tierods for anchoring or on a standard fitting within 90° of each other.  
Contact a GRINNELL Sales Representative for recommendations prior to using with plastic pipe.
- D. Fig 71 GRINNELL Flange sealing gaskets require a hard flat surface for adequate sealing. The use of a metal adaptor insert is required for applications against rubber faced valves or other equipment. The adaptor insert is installed between the GRINNELL Flange sealing gasket and the mating flange or surface to provide an effective sealing surface area.

Metal Flange Washer Adapters are required when Figure 71 Flange Adapter is used against surfaces such as:

1. Rubber Surfaces  
(see exhibit A)
2. Adapting AWWA Cast Flanges
3. Rubber Faced Wafer Valves
4. Serrated Flange Surfaces  
(see exhibit B)



Special attention required during installation to ensure that the gasket is installed correctly with the small side on the inside.

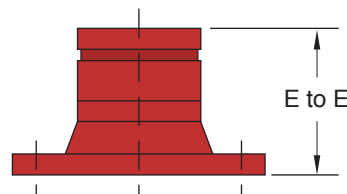
See the picture on the left side.

## Figure 343 & 344 Flange Adapters (PN10/PN16 BS 4504)

(Page 1 of 2)



Flange  
Adapters

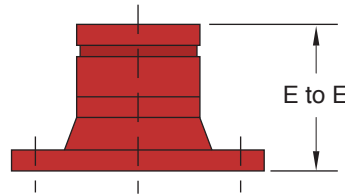


Part Number	Pipe Size		Flange Drilling	E to E mm Inches	Mating Flange		Approx. Weight Kg. Lbs.
	Nominal mm Inches	O.D. mm Inches			Bolt Qty.	Bolt Size mm	
343F00060✕	50 2	60.3 2.375	PN10 & PN16	95.0 3.74	4	M16 x 65	2.3 5.07
343F00076✕	65 76.1mm	76.1 3.000	PN10 & PN16	95.0 3.74	4	M16 x 65	3.3 7.27
343F00089✕	80 3	88.9 3.500	PN10 & PN16	100.0 3.94	4	M16 x 70	4.0 8.82
343F00108✕	100 108.0mm	108.0 4.252	PN10 & PN16	102.0 4.02	8	M16 x 70	4.5 9.92
343F00114✕	100 4	114.3 4.500	PN10 & PN16	102.0 4.02	8	M16 x 70	4.6 10.14
343F00133✕	125 133.0mm	133.0 5.236	PN10 & PN16	105.0 4.13	8	M16 x 75	5.9 13.00
343F00139✕	125 139.7mm	139.7 5.500	PN10 & PN16	105.0 4.13	8	M16 x 75	6.0 13.23
343F00159✕	125 159.0mm	159.0 6.260	PN10 & PN16	105.0 4.13	8	M16 x 75	7.1 15.65
343F00165✕	150 165.1mm	165.1 6.500	PN10 & PN16	105.0 4.13	8	M20 x 80	7.2 15.87
343F00168✕	150 6	168.3 6.625	PN10 & PN16	105.0 4.13	8	M20 x 80	7.2 15.87
344F00219✕	200 8**	219.1 8.625	PN10	112.0 4.41	8	M20 x 80	10.2 22.49
343F00219✕			PN16	112.0 4.41	12	M20 x 90	10.2 22.49
344F00273✕	250 10**	273.0 10.750	PN10	138.0 5.43	12	M20 x 90	18.0 39.68
343F00273✕			PN16	138.0 5.43		M24 x 100	18.0 39.68
344F00324✕	300 12**	323.9 12.750	PN10	138.0 5.43	12	M20 x 90	22.4 49.38
343F00324✕			PN16	138.0 5.43		M24 x 100	22.4 49.38



## Figure 343 & 344 Flange Adapters (PN10/PN16 BS 4504)

(Page 2 of 2)



Flange  
Adapters

Part Number	Pipe Size		Flange Drilling	E to E mm Inches	Mating Flange		Approx. Weight Kg. Lbs.
	Nominal mm Inches	O.D. mm Inches			Bolt Qty.	Bolt Size mm	
344T00355✕	350 14	355.6 14.000	PN10	203.2 8.00	16	M20 x 100	55.3 121.9
343T00355✕			PN16	132.0 5.20		M24 x 115	38.0 83.8
344T00406✕	400 16	406.4 16.000	PN10	203.2 8.00	16	M24 x 110	61.7 136.0
343T00406✕			PN16	135.0 5.31		M27 x 125	48.0 105.8
344T00457✕	450 18	457.2 18.000	PN10	203.2 8.00	20	M24 x 115	76.2 168.0
343T00457✕			PN16	203.2 8.00		M27 x 140	76.2 168.0
344T00508✕	500 20	508.0 20.000	PN10	125.0 4.92	20	M24 x 115	94.3 207.9
343T00508✕			PN16	134.0 5.28		M30 x 160	94.3 207.9
344T00610✕	600 24	609.6 24.000	PN10	132.0 5.20	20	M24 x 115	124.3 274.0
343T00610✕			PN16	138.0 5.43		M33 x 180	124.3 274.0

✕ = 1 for red paint finish, 2 for hot dipped galvanised finish

♦ Contact GRINNELL Sales Representative for dimension details.

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

See Flange Drilling Specifications on page 144.

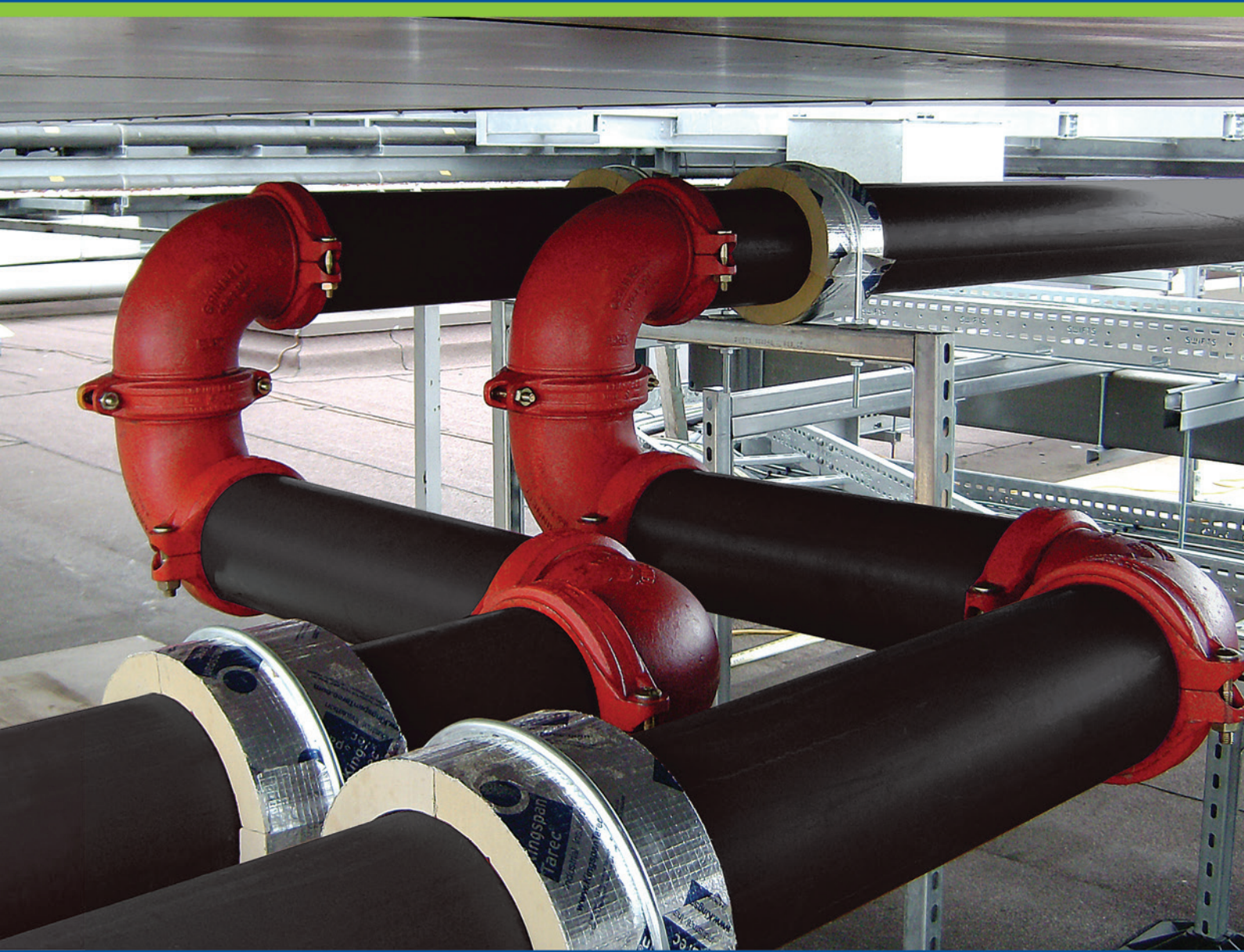
See specifications on page 30.

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

## Notes

Flange  
Adapters

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## GROOVED FITTINGS



## Grooved Fittings Table of Contents

Grooved  
Fittings

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 <p><b>Figures 210LR &amp; 310LR</b> 90° Long Radius Elbows Page 41</p>	 <p><b>Figures 361, 362, 363, 364 &amp; 365</b> End Caps with BSP Threaded Outlets Pages 48 - 49</p>	 <p><b>Figure 314</b> 45° Laterals Page 61</p>
 <p><b>Figure 201, 301 &amp; 201LR</b> 45° Elbows Page 42</p>	 <p><b>Figures 221 &amp; 321</b> Reducing Tees Pages 50 - 53</p>	 <p><b>Figure 325</b> 45° Reducing Laterals Page 62</p>
 <p><b>Figures 212 &amp; 312</b> 22 1/2° Elbows Page 43</p>	 <p><b>Figure 322</b> Reducing Tees Page 54</p>	
 <p><b>Figures 211 &amp; 311</b> 11 1/4° Elbows Page 44</p>	 <p><b>Figure 222</b> Hydrant Tee Page 54</p>	 <p><b>Figure 304</b> Groove x Male BSP Thread Nipple Machined Page 63</p>
 <p><b>Figure 219 &amp; 319</b> Tees Page 45</p>	 <p><b>Figures 250 &amp; 350</b> Concentric Reducers Pages 55 - 57</p>	 <p><b>Figure 305</b> Groove x Female BSP Thread Nipple Machined Page 63</p>
 <p><b>Figure 227</b> Cross Page 46</p>		

General notes: Additional information is included in our data sheets and is available upon request. It is the Designer's responsibility to select products suitable for the intended service and to ensure that pressure ratings and performance data is not exceeded. Always read and understand the installation constructions. Never remove any piping components nor correct or modify any piping deficiencies without first depressurising and draining the system. Material and gasket selection should be verified with the gasket recommendation listing for the specific application.

## Fittings Specifications

Tech Data Sheet: G180



### Fitting Friction Resistance Chart

Pipe Size		Elbows 90° m Feet	Elbows 45° m Feet	Tee Branch m Feet	Tee Run m Feet
Nominal mm Inches	O.D. mm Inches				
25	33.7	0.5	0.2	1.3	0.5
1	1.315	1.6	0.7	4.3	1.6
32	42.4	0.6	0.3	1.5	0.6
1 1/4	1.660	1.9	1.0	4.8	1.9
40	48.3	0.7	0.4	1.8	0.7
1 1/2	1.900	2.3	1.2	5.8	2.3
50	60.3	1.0	0.5	2.5	1.0
2	2.375	3.2	1.6	8.0	3.2
65	73.0	1.2	0.6	3.0	1.2
2 1/2	2.875	3.9	2.0	9.8	3.9
65	76.1	1.2	0.6	3.1	1.2
76,1mm	3.000	4.1	2.1	10.3	4.1
80	88.9	1.5	0.7	3.7	1.5
3	3.500	4.9	2.4	12.2	4.9
100	108.0	2.0	1.0	5.0	2.0
108.0mm	4.252	6.5	3.3	16.3	6.5
100	114.3	2.0	1.0	5.0	2.0
4	4.500	6.5	3.3	16.3	6.5
125	133.0	2.4	1.3	6.1	2.4
133.0mm	5.236	8.0	4.1	20.0	8.0
125	139.7	2.4	1.3	6.1	2.4
139,7mm	5.500	8.0	4.1	20.0	8.0
125	141.3	2.5	1.3	6.3	2.5
5	5.563	8.2	4.1	20.5	8.2
125	159.0	2.9	1.4	7.2	2.9
159.0mm	6.260	9.5	4.8	23.8	9.5
150	165.1	2.9	1.4	7.2	2.9
165,1mm	6.500	9.5	4.8	23.8	9.5
150	168.3	3.0	1.5	7.6	3.0
6	6.625	9.9	5.0	24.8	9.9
200	219.1	4.0	2.0	10.0	4.0
8	8.625	13.1	6.6	32.8	13.1
250	273.0	5.0	2.5	12.6	5.0
10	10.750	16.5	8.3	41.3	16.5
300	323.9	6.1	3.0	15.1	6.1
12	12.750	19.9	9.9	49.7	19.9
350	355.6	7.0	3.5	17.7	7.0
14	14.000	23.0	11.0	57.9	23.0
400	406.4	7.9	4.0	19.8	7.9
16	16.000	25.9	12.0	67.1	25.9
450	457.2	8.8	4.5	21.9	8.8
18	18.000	28.9	13.0	75.0	28.9
500	508.0	10.1	5.0	24.5	10.1
20	20.000	33.1	15.0	80.1	33.1
600	609.6	12.2	6.1	27.6	12.2
24	24.000	40.0	19.0	91.5	40.0

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

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.

## MATERIAL SPECIFICATIONS

### Ductile Iron Fitting Specifications

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

### Fabricated Steel Fitting Specifications

- Conform Standard EN 10253
- Carbon Steel: According to ASTM A 53, Grade B
- Tensile Strength, minimum 4137 Bar (60,000 psi)
- Yield Strength, minimum 2413 Bar (35,000 psi)
- Sizes 32mm – 250mm (1 1/4" – 10") Schedule 40
- Sizes 300mm – 600mm (12" – 24") STD (.375)

### Coatings

- Red – Non-lead paint (RAL 3000) (standard)
- White – Non-lead paint (RAL 9010) (optional)
- Hot-Dipped, Zinc Galvanised (optional)

### Threads

- BSP (standard)



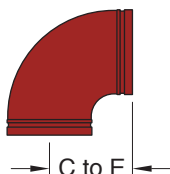
For detailed Listing / Approval  
information contact  
GRINNELL Mechanical Products

Grooved  
Fittings

## Figure 210 90° Elbows

Tech Data Sheet: G180

**10**  
YEAR  
LIMITED  
WARRANTY



Grooved  
Fittings

Part Number	Pipe Size		C to E mm Inches	Approx. Weight Kg. Lbs.
	Nominal mm Inches	O.D. mm Inches		
210M00034*	25 1	33.7 1.315	57.0 2.24	0.4 0.9
210M00042*	32 1 1/4	42.4 1.660	69.9 2.75	0.5 1.0
210M00048*	40 1 1/2	48.3 1.900	69.9 2.75	0.6 1.3
210M00060*	50 2	60.3 2.375	82.6 3.25	0.8 1.8
210M00073*	65 2 1/2	73.0 2.875	95.3 3.75	1.4 3.1
210M00076*	65 76,1mm	76.1 3.000	95.3 3.75	1.5 3.2
210M00089*	80 3	88.9 3.500	108.0 4.25	2.2 4.8
210M00108*	100 108,0mm	108.0 4.252	121.0 4.76	3.9 86
210M00114*	100 4	114.3 4.500	127.0 5.00	3.4 7.5
210M00133*	125 133.0mm	133.0 5.236	133.0 5.24	5.1 11.3
210M00139*	125 139,7mm	139.7 5.500	139.7 5.50	5.1 11.3
210M00141*	125 5	141.3 5.563	139.7 5.50	5.3 11.6
210M00159*	150 159,0mm	159.0 6.260	152.0 5.98	6.6 14.6
210M00165*	150 165,1mm	165.1 6.500	165.1 6.50	7.7 16.9
210M00168*	150 6	168.3 6.625	165.1 6.50	7.5 16.6
210M00219*	200 8	219.1 8.625	196.9 7.75	13.4 29.6
210M00273*	250 10	273.0 10.750	228.6 9.00	22.0 48.5
210M00324*	300 12	323.9 12.750	254.0 10.00	30.1 66.4

\* = 1 for red paint finish, 2 for hot dipped galvanised finish .

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

See page 39 for fitting specifications.

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.



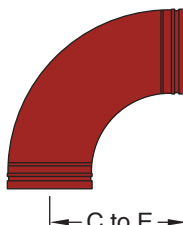
## Figures 210LR & 310LR 90° Long Radius Elbows

Tech Data Sheet: G180

**10**  
YEAR  
LIMITED  
WARRANTY



Figure 310LR  
90° Fabricated Elbow  
(Shown)



Grooved  
Fittings

Pipe Size		Figure 210LR - Cast			Figure 310LR - Fabricated		
Nominal mm Inches	O.D. mm Inches	Part Number	C to E mm Inches	Approx. Weight Kg. Lbs.	Part Number	C to E mm Inches	Approx. Weight Kg. Lbs.
50 2	60.3 2.375	210LR0060*	111.3 4.38	1.1 2.4	-	-	-
65 2½	73.0 2.875	210LR0073*	127.0 5.00	2.3 5.1	-	-	-
65 76,1mm	76.1 3.000	210LR0076*	127.0 5.00	2.0 4.4	-	-	-
80 3	88.9 3.500	210LR0089*	149.4 5.88	3.0 6.6	-	-	-
100 4	114.3 4.500	210LR0114*	190.5 7.50	5.3 11.6	-	-	-
125 139,7mm	139.7 5.500	210LR0139*	241.3 9.50	8.6 19.0	-	-	-
125 5	141.3 5.563	210LR0141*	241.3 9.50	9.1 20.0	-	-	-
150 165,1mm	165.1 6.500	210LR0165*	273.1 10.75	12.0 26.4	-	-	-
150 6	168.3 6.625	210LR0168*	273.1 10.75	13.4 29.5	-	-	-
200 8	219.1 8.625	210LR0219*	362.0 14.25	28.2 62.1	-	-	-
250 10	273.0 10.750	210LR0273*	438.0 17.24	27.2 60.0	-	-	-
300 12	323.9 12.750	210LR0324*	521.0 20.51	30.4 67.0	-	-	-
350 14	355.6 14.000	210LR0355*	533.4 21.00	59.4 131.0	310T00355*	583.0 22.95	76.7 169.1
400 16	406.4 16.000	210LR0406*	609.6 24.00	81.6 180.0	310T00406*	660.0 25.98	100.7 222.0
450 18	457.2 18.000	-	-	-	310T00457*	736.0 28.98	127.0 280.0
500 20	508.0 20.000	-	-	-	310T00508*	812.0 31.97	156.0 343.9
600 24	609.6 24.000	-	-	-	310T00610*	964.0 37.95	222.3 490.1

\* = 1 for red paint finish, 2 for hot dipped galvanised finish.

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

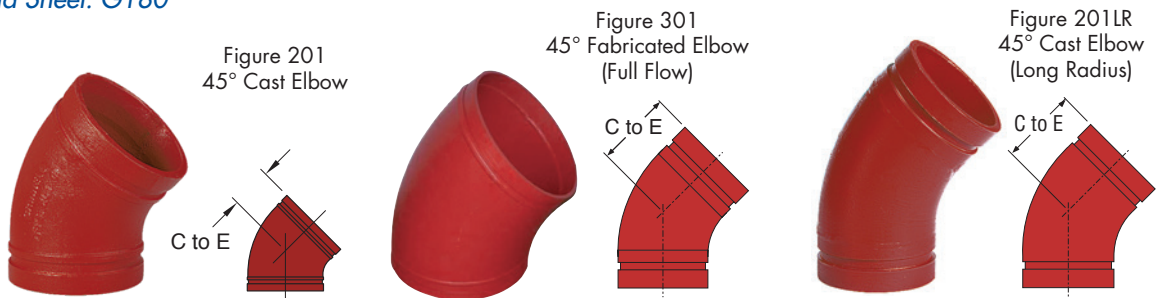
See page 39 for fitting specifications.

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

## Figure 201, 301 & 201LR 45° Elbows

Tech Data Sheet: G180

**10**  
YEAR  
LIMITED  
WARRANTY



Pipe Size		Figure 201 - Cast			Figure 301 - Fabricated			Figure 201LR - Long Radius, Cast		
Nominal mm Inches	O.D. mm Inches	Part Number	C to E mm Inches	Approx. Weight Kg. Lbs.	Part Number	C to E mm Inches	Approx. Weight Kg. Lbs.	Part Number	C to E mm Inches	Approx. Weight Kg. Lbs.
25	33.7	201M00034*	45.0	0.3	-			-		
1	1.315		1.77	0.7						
32	42.4	201M00042*	44.5	0.4	-			-		
1 1/4	1.660		1.75	0.8						
40	48.3	201M00048*	44.5	0.4	-			-		
1 1/2	1.900		1.75	0.9						
50	60.3	201M00060*	50.8	0.6	-			-		
2	2.375		2.00	1.3						
65	73.0	201M00073*	57.2	1.0	-			-		
2 1/2	2.875		2.25	2.1						
65	76.1	201M00076*	57.2	1.0	-			-		
76,1mm	3.000		2.25	2.2						
80	88.9	201M00089*	63.5	1.6	-			-		
3	3.500		2.50	3.5						
100	108.0	201M00108*	73.0	2.5	-			-		
108,0mm	4.252		2.87	5.5						
100	114.3	201M00114*	76.2	2.5	-			-		
4	4.500		3.00	5.5						
125	133.0	201M00133*	82.6	3.5	-			-		
133,0mm	5.236		3.25	7.7						
125	139.7	201M00139*	82.6	3.5	-			-		
139,7mm	5.500		3.25	7.7						
125	141.3	201M00141*	82.6	3.7	-			-		
5	5.563		3.25	8.1						
150	159.0	201M00159*	88.9	5.4	-			-		
159,0mm	6.260		3.50	11.9						
150	165.1	201M00165*	88.9	5.4	-			-		
165,1mm	6.500		3.50	11.9						
150	168.3	201M00168*	88.9	5.4	-			-		
6	6.625		3.50	11.9						
200	219.1	201M00219*	108.0	8.6	-			-		
8	8.625		4.25	19.0						
250	273.0	201M00273*	120.7	12.7	-			-		
10	10.750		4.75	28.0						
300	323.9	201M00324*	133.4	22.0	-			-		
12	12.750		5.25	48.0						
350	355.6	-			301T00355*	271.0	41.7	201LR00355*	379.0	40.1
14	14.000					10.67	91.9		14.92	88.4
400	406.4	-			301T00406*	303.0	53.1	201LR00406*	434.0	47.9
16	16.000					11.93	117.1		17.09	105.6
450	457.2	-			301T00457*	340.0	66.2	-		
18	18.000					13.39	145.9			
500	508.0	-			301T00508*	366.0	81.2	-		
20	20.000					14.41	179.0			
600	609.6	-			301T00610*	429.0	115.7	-		
24	24.000					16.89	255.1			

\* = 1 for red paint finish, 2 for hot dipped galvanised finish and 5 (201 only) for white paint finish

Note: Fabricated Full Flow 1.5D. C to E Dimensions differ from DIN 2605/01 to allow for insulation.

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

See page 39 for fitting specifications.

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

## Figures 212 & 312 22 1/2° Elbows

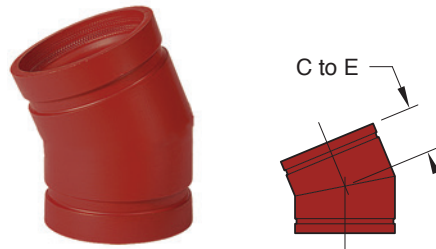
Tech Data Sheet: G180

**10**  
YEAR  
LIMITED  
WARRANTY

Figure 212  
22 1/2° Cast Elbow



Figure 312  
22 1/2° Fabricated Elbow



Pipe Size		Figure 212 - Cast			Figure 312 - Fabricated		
Nominal mm Inches	O.D. mm Inches	Part Number	C to E mm Inches	Approx. Weight Kg. Lbs.	Part Number	C to E mm Inches	Approx. Weight Kg. Lbs.
32 1 1/4	42.4 1.660	212A00042*	44.5 1.75	0.4 0.8	—	—	—
40 1 1/2	48.3 1.900	212A00048*	44.5 1.75	0.5 1.0	—	—	—
50 2	60.3 2.375	212A00060*	47.8 1.88	0.6 1.3	—	—	—
65 2 1/2	73.0 2.875	—	—	—	312F00073*	50.8 2.00	0.8 1.8
65 76,1mm	76.1 3.000	212M00076*	50.8 2.00	0.9 2.0	—	—	—
80 3	88.9 3.500	212A00089*	57.2 2.25	1.3 2.9	—	—	—
100 4	114.3 4.500	212A00114*	66.8 2.63	2.1 4.7	—	—	—
125 139,7mm	139.7 5.500	212M00139*	73.2 2.88	3.1 6.9	—	—	—
125 5	141.3 5.563	—	—	—	312F00141*	73.2 2.88	3.0 6.7
150 165,1mm	165.1 6.500	—	—	—	312F00165*	79.5 3.13	4.3 9.4
150 6	168.3 6.625	212A00168*	79.5 3.13	4.3 9.4	—	—	—
200 8	219.1 8.625	—	—	—	312F00219*	98.6 3.88	8.1 17.8
250 10	273.0 10.750	—	—	—	312F00273*	111.3 4.38	6.4 14.0
300 12	323.9 12.750	—	—	—	312F00324*	124.0 4.88	10.0 22.0
350 14	355.6 14.000	—	—	—	312T00355*	127.0 5.00	20.9 46.0
400 16	406.4 16.000	—	—	—	312T00406*	127.0 5.00	23.7 52.2
450 18	457.2 18.000	—	—	—	312T00457*	139.7 5.50	29.5 65.0
500 20	508.0 20.000	—	—	—	312T00508*	152.4 6.00	36.3 80.0
600 24	609.6 24.000	—	—	—	312T00610*	177.8 7.00	50.8 112.0

\* = 1 for red paint finish, 2 for hot dipped galvanised finish

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

See page 39 for fitting specifications.

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

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Fittings

## Figures 211 & 311 11 1/4° Elbows

Tech Data Sheet: G180



Figure 211  
11 1/4° Cast Elbow

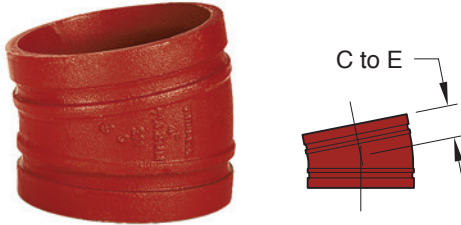


Figure 311  
11 1/4° Fabricated Elbow



Pipe Size		Figure 211 - Cast			Figure 311 - Fabricated		
Nominal mm Inches	O.D. mm Inches	Part Number	C to E mm Inches	Approx. Weight Kg. Lbs.	Part Number	C to E mm Inches	Approx. Weight Kg. Lbs.
32 1 1/4	42.4 1.660	211A00042*	35.1 1.38	0.3 0.7	-	- -	- -
40 1 1/2	48.3 1.900	211A00048*	35.1 1.38	0.4 0.8	-	- -	- -
50 2	60.3 2.375	211A00060*	35.1 1.38	0.5 1.1	-	- -	- -
65 2 1/2	73.0 2.875	-	- -	- -	311F00073*	38.1 1.50	0.6 1.3
65 76,1mm	76.1 3.000	211M00076*	38.1 1.50	0.7 1.7	-	- -	- -
80 3	88.9 3.500	211A00089*	38.1 1.50	1.0 2.2	-	- -	- -
100 4	114.3 4.500	211A00114*	44.5 1.75	1.5 3.4	-	- -	- -
125 139,7mm	139.7 5.500	211M00139*	50.8 2.00	2.3 5.1	-	- -	- -
125 5	141.3 5.563	-	- -	- -	311F00141*	50.8 2.00	2.0 4.4
150 165,1mm	165.1 6.500	211M00165*	50.8 2.00	2.9 6.4	-	- -	- -
150 6.625	168.3 6.625	211A00168*	50.8 2.00	2.9 6.5	-	- -	- -
200 8	219.1 8.625	-	- -	- -	311F00219*	50.8 2.00	4.0 8.6
250 10	273.0 10.750	-	- -	- -	311F00273*	54.1 2.13	4.1 9.1
300 12	323.9 12.750	-	- -	- -	311F00324*	57.2 2.25	7.6 16.7
350 14	355.6 14.000	-	- -	- -	311F00355*	88.9 3.50	14.6 32.1
400 16	406.4 16.000	-	- -	- -	311F00406*	101.6 4.00	19.1 42.0
450 18	457.2 18.000	-	- -	- -	311F00457*	114.3 4.50	24.2 53.2
500 20	508.0 20.000	-	- -	- -	311F00508*	127.0 5.00	29.8 65.7
600 24	609.6 24.000	-	- -	- -	311F00610*	152.4 6.00	43.5 96.0

\* = 1 for red paint finish, 2 for hot dipped galvanised finish

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

See page 39 for fitting specifications.

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.



## Figures 219 & 319 Tees

Tech Data Sheet: G180



Figure 219  
Cast Tee



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Fittings

Pipe Size		Figure 219 - Cast			Figure 319 - Fabricated		
Nominal mm Inches	O.D. mm Inches	Part Number	C to E mm Inches	Approx Weight Kg. Lbs.	Part Number	C to E mm Inches	Approx Weight Kg. Lbs.
32 1 1/4	42.4 1.660	219M00042*	69.9 2.75	0.8 1.7	-	-	-
40 1 1/2	48.3 1.900	219M00048*	69.9 2.75	1.0 2.1	-	-	-
50 2	60.3 2.375	219M00060*	82.6 3.25	1.3 2.7	-	-	-
65 2 1/2	73.0 2.875	219M00073*	95.3 3.75	2.0 4.4	-	-	-
65 76,1mm	76.1 3.000	219M00076*	95.3 3.75	2.9 6.5	-	-	-
80 3	88.9 3.500	219M00089*	108.0 4.25	2.9 6.5	-	-	-
100 4	114.3 4.500	219M00114*	127.0 5.00	4.8 10.7	-	-	-
125 139,7mm	139.7 5.500	219M00139*	139.7 5.50	6.9 15.2	-	-	-
125 5	141.3 5.563	219M00141*	139.7 5.50	7.0 15.5	-	-	-
150 165,1mm	165.1 6.500	219M00165*	165.1 6.50	11.0 24.2	-	-	-
150 6	168.3 6.625	219M00168*	165.1 6.50	10.4 23.0	-	-	-
200 8	219.1 8.625	219M00219*	196.9 7.75	19.8 43.7	-	-	-
250 10	273.0 10.750	219M00273*	228.6 9.00	25.9 57.0	-	-	-
300 12	323.9 12.750	219M00324*	254.0 10.00	49.9 110.0	-	-	-
350 14	355.6 14.000	219M00355*	279.0 11.00	61.2 135.0	319T00355*	329.0 12.95	53.6 118.2
400 16	406.4 16.000	219M00406*	305.0 12.00	61.7 136.0	319T00406*	355.0 13.98	66.3 146.2
450 18	457.2 18.000	-	-	-	319T00457*	393.0 15.47	99.0 218.3
500 20	508.0 20.000	-	-	-	319T00508*	431.0 16.97	125.0 275.6
600 24	609.6 24.000	-	-	-	319T00610*	482.0 18.98	172.0 379.2

\* = 1 for red paint finish, 2 for hot dipped galvanised finish

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

See page 39 for fitting specifications.

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

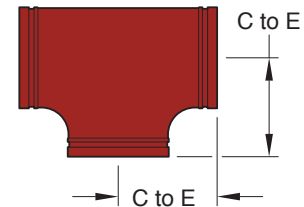
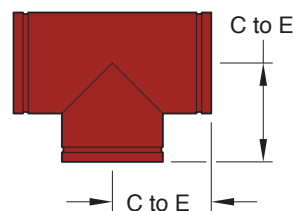


Figure 319  
Fabricated Tee



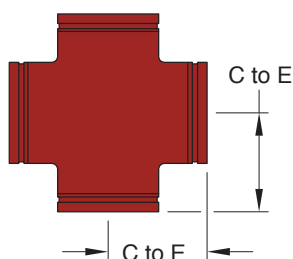
## Figure 227 Cross

Tech Data Sheet: G180

**10**  
YEAR  
LIMITED  
WARRANTY



Grooved  
Fittings



Part Number	Pipe Size		C to E mm Inches	Approx Weight Kg. Lbs.
	Nominal mm Inches	O.D. mm Inches		
227M00042*	32 1 ¼	42.4 1.660	69.9 2.75	1.0 2.2
227M00048*	40 1 ½	48.3 1.900	69.9 2.75	1.1 2.5
227M00060*	50 2	60.3 2.375	82.6 3.25	1.7 3.7
227M00073*	65 2 ½	73.0 2.875	95.3 3.75	2.6 5.8
227M00076*	65 76,1mm	76.1 3.000	95.3 3.75	2.7 6.0
227M00089*	80 3	88.9 3.500	108.0 4.25	3.9 8.6
227M00108*	100 108.0mm	108.0 4.252	121.0 4.76	5.3 11.7
227M00114*	100 4	114.3 4.500	127.0 5.00	9.4 20.7
222M0139*	125 139,7mm	139.7 5.500	139.7 5.50	6.8 15.0
327F00141*	125 5	141.3 5.563	139.7 5.50	8.0 17.6
327F00165*	150 165,1mm	165.1 6.500	165.1 6.50	12.4 27.3
227M00168*	150 6	168.3 6.625	165.1 6.50	13.0 28.6
227M00219*	200 8	219.1 8.625	196.9 7.75	21.7 48.0
227M002732	250 10	273.0 10.750	228.6 9.00	34.0 75.0
227M003242	300 12	323.9 12.750	254.0 10.00	43.4 95.8

\* = 1 for red paint finish, 2 for hot dipped galvanised finish

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

See page 39 for fitting specifications.

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

## Figures 260 & 360 End Caps

Tech Data Sheet: G180

**10**  
YEAR  
LIMITED  
WARRANTY

Figure 260 Cap  
Cast

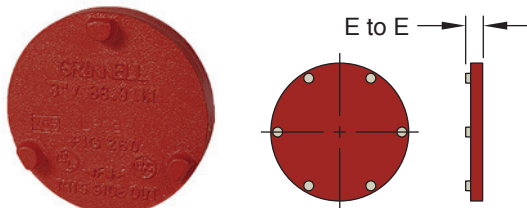


Figure 360 Cap  
Fabricated



Pipe Size		Figure 260 - Cast			Figure 360 - Fabricated		
Nominal mm Inches	O.D. mm Inches	Part Number	E to E mm Inches	Approx Weight Kg. Lbs.	Part Number	E to E mm Inches	Approx Weight Kg. Lbs.
25	33.7	260M00034*	21.1	0.1	-	-	-
1	1.315		0.83	0.2	-	-	-
32	42.4	260M00042*	21.1	0.1	-	-	-
1 1/4	1.660		0.83	0.3	-	-	-
40	48.3	260M00048*	21.1	0.2	-	-	-
1 1/2	1.900		0.83	0.4	-	-	-
50	60.3	260M00060*	23.4	0.3	-	-	-
2	2.375		0.92	0.7	-	-	-
65	73.0	260M00073*	23.4	0.5	-	-	-
2 1/2	2.875		0.92	1.0	-	-	-
65	76.1	260M00076*	21.8	0.6	-	-	-
76,1mm	3.000		0.86	1.3	-	-	-
80	88.9	260M00089*	23.4	0.6	-	-	-
3	3.500		0.92	1.4	-	-	-
100	114.3	260M00114*	25.4	1.2	-	-	-
4	4.500		1.00	2.6	-	-	-
125	139.7	260M00139*	23.4	2.1	-	-	-
139,7mm	5.500		0.92	4.7	-	-	-
125	141.3	260M00141*	25.4	2.3	-	-	-
5	5.563		1.00	5.0	-	-	-
125	159.0	260M00159*	25.0	3.8	-	-	-
159,0mm	6.260		0.98	8.4	-	-	-
150	165.1	260M00165*	23.4	2.9	-	-	-
165,1mm	6.500		0.92	6.4	-	-	-
150	168.3	260M00168*	25.4	2.8	-	-	-
6	6.625		1.00	6.2	-	-	-
200	219.1	260M00219*	27.0	3.2	-	-	-
8	8.625		1.06	7.1	-	-	-
250	273.0	260M00273*	25.8	11.1	-	-	-
10	10.750		1.02	24.5	-	-	-
300	323.9	260M00324*	25.8	14.1	-	-	-
12	12.750		1.02	31.0	-	-	-
350	355.6	-	-	-	360T00355*	154.0	16.6
14	14.000		-	-		6.06	36.6
400	406.4	-	-	-	360T00406*	228.6	19.7
16	16.000		-	-		9.00	43.5
450	457.2	-	-	-	360T00457*	173.0	25.6
18	18.000		-	-		6.81	56.4
500	508.0	-	-	-	360T00508*	279.4	34.3
20	20.000		-	-		11.00	75.7
600	609.6	-	-	-	360T00610*	205.0	45.8
24	24.000		-	-		8.07	101.0

\* = 1 for red paint (RAL 3000) finish, 2 for hot dipped galvanised finish

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

See page 39 for fitting specifications.

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

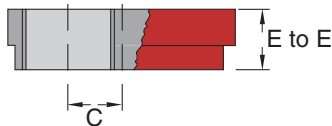
Grooved  
Fittings

## Figures 361, 362, 363, 364 & 365 End Caps with ISO R7 Threaded Outlets

(Page 1 of 2)



Grooved  
Fittings



Pipe Size		E to E mm In.	Fig. 363 – DN20 3/4"			
Nominal mm In.	O.D. mm In.		Part Number	C mm In.	Outlet size ISO R7 In.	Approx. Weight Kg. Lbs.
50	60.3	25	363M00060*	-	DN20	0.2
2	2.375	0.98		-	3/4	0.4
65	76.1	25	363M00076*	9	DN20	0.4
76.1mm	3.000	0.98		0.35	3/4	0.9
80	88.9	25	363M00089*	15	DN20	0.5
3	3.500	0.98		0.59	3/4	1.1
100	114.3	25	363M00114*	28	DN20	1.3
4	4.500	0.98		1.10	3/4	2.9
125	139.7	25	363M00139*	40	DN20	1.8
139.7mm	5.500	0.98		1.57	3/4	4.0
125	141.3	25	363M00141*	41	DN20	1.8
5	5.563	0.98		1.61	3/4	4.0
150	165.1	25	363M00165*	53	DN20	2.7
165.1mm	6.500	0.98		2.09	3/4	6.0
150	168.3	25	363M00168*	54	DN20	2.7
6	6.625	0.98		2.13	3/4	6.0
200	219.1	31	363M00219*	79	DN20	5.0
8	8.625	1.22		3.11	3/4	11.0

\* = 1 for red paint (RAL 3000) finish, 2 for hot dipped galvanised finish  
For information on alternative sizes, contact a GRINNELL Sales Representative.  
See page 39 for fitting specifications.  
For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

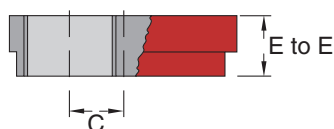
Pipe Size		E to E mm In.	Fig. 364 – DN25 1"				Fig. 365 – DN32 1 1/4"			
Nominal mm In.	O.D. mm In.		Part Number	C mm In.	Outlet size ISO R7 In.	Approx. Weight Kg. Lbs.	Part Number	C mm In.	Outlet size ISO R7 In.	Approx. Weight Kg. Lbs.
50	60.3	25	364M00060*	-	DN25	0.2	365M00060*	-	DN32	0.2
2	2.375	0.98		-	1	0.4		-	1 1/4	0.4
65	76.1	25	364M00076*	9	DN25	0.4	365M00076*	9	DN32	0.4
76.1mm	3.000	0.98		0.35	1	0.9		0.35	1 1/4	0.9
80	88.9	25	364M00089*	15	DN25	0.5	365M00089*	15	DN32	0.5
3	3.500	0.98		0.59	1	1.1		0.59	1 1/4	1.1
100	114.3	25	364M00114*	28	DN25	1.3	365M00114*	28	DN32	1.3
4	4.500	0.98		1.10	1	2.9		1.10	1 1/4	2.9
125	139.7	25	364M00139*	40	DN25	1.8	365M00139*	40	DN32	1.8
139.7mm	5.500	0.98		1.57	1	4.0		1.57	1 1/4	4.0
125	141.3	25	364M00141*	41	DN25	1.8	-	-	-	-
5	5.563	0.98		1.61	1	4.0		-	-	-
150	165.1	25	364M00165*	53	DN25	2.7	365M00165*	53	DN32	2.7
165.1mm	6.500	0.98		2.09	1	6.0		2.09	1 1/4	6.0
150	168.3	25	364M00168*	54	DN25	2.7	365M00168*	54	DN32	2.7
6	6.625	0.98		2.13	1	6.0		2.13	1 1/4	6.0
200	219.1	31	364M00219*	79	DN25	5.0	365M00219*	79	DN32	5.0
8	8.625	1.22		3.11	1	11.0		3.11	1 1/4	11.0

\* = 1 for red paint (RAL 3000) finish, 2 for hot dipped galvanised finish  
For information on alternative sizes, contact a GRINNELL Sales Representative.  
See page 39 for fitting specifications.  
For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.



## Figures 361, 362, 363, 364 & 365 End Caps with ISO R7 Threaded Outlets

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Pipe Size		E to E mm In.	Fig. 361 – DN40 1 1/2"				Fig. 362 – DN50 2"			
Nominal mm In.	O.D. mm In.		Part Number	C mm In.	Outlet size ISO R7 In.	Approx. Weight Kg. Lbs.	Part Number	C mm In.	Outlet size ISO R7 In.	Approx. Weight Kg. Lbs.
50	60.3	25	361M00060*	-	DN40	0.2	-	-	-	-
2	2.375	0.98		-	1 1/2	0.4		-	-	-
65	76.1	25	361M00076*	9	DN40	0.4	362M00076*	4	DN50	0.3
76.1mm	3.000	0.98		0.35	1 1/2	0.9		0.16	2	0.7
80	88.9	25	361M00089*	15	DN40	0.5	362M00089*	9	DN50	1.3
3	3.500	0.98		0.59	1 1/2	1.1		0.35	2	2.9
100	114.3	25	361M00114*	28	DN40	1.3	362M00114*	22	DN50	1.3
4	4.500	0.98		1.10	1 1/2	2.9		0.87	2	2.9
125	139.7	25	361M00139*	40	DN40	1.8	362M00139*	34	DN50	1.8
139.7mm	5.500	0.98		1.57	1 1/2	4.0		1.34	2	4.0
125	141.3	25	361M00141*	41	DN40	1.8	362M00141*	34	DN50	1.8
5	5.563	0.98		1.61	1 1/2	4.0		1.34	2	4.0
150	165.1	25	361M00165*	53	DN40	2.7	362M00165*	47	DN50	2.7
165.1mm	6.500	0.98		2.09	1 1/2	6.0		1.85	2	6.0
150	168.3	25	361M00168*	54	DN40	2.7	362M00168*	48	DN50	2.7
6	6.625	0.98		2.13	1 1/2	6.0		1.89	2	6.0
200	219.1	31	361M00219*	79	DN40	5.0	362M00219*	73	DN50	5.0
8	8.625	1.22		3.11	1 1/2	11.0		2.87	2	11.0
250	273.0	31	361M00273*	90	DN40	7.2	362M00273*	90	DN50	7.2
10	10.750	1.22		3.54	1 1/2	15.9		3.54	2	15.9

\* = 1 for red paint (RAL 3000) finish, 2 for hot dipped galvanised finish

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

See page 39 for fitting specifications.

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

## Figures 221 & 321 Reducing Tees

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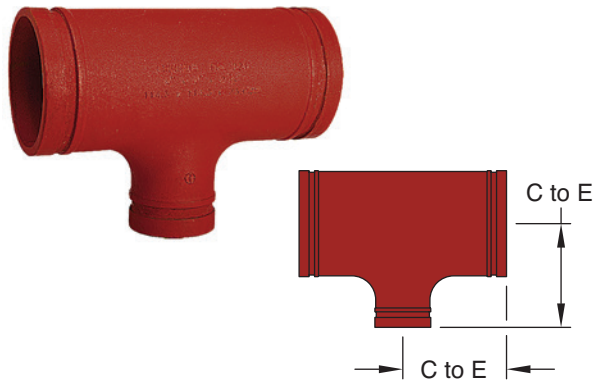


Figure 221 Reducing Tee Cast

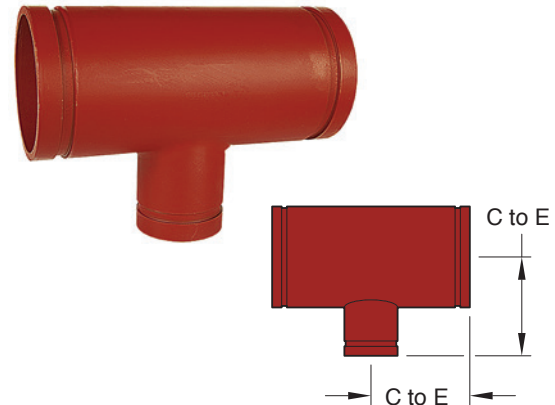


Figure 321 Reducing Tee Fabricated

Pipe Size		Figure 221 - Cast			Figure 321 - Fabricated		
Nominal mm Inches	O.D. mm Inches	Part Number	C to E mm Inches	Approx. Weight Kg. Lbs.	Part Number	C to E mm Inches	Approx. Weight Kg. Lbs.
50 x 50 x 25 2 x 2 x 1	60.3 x 60.3 x 33.7 2.375 x 2.375 x 1.315	-	- -	- -	321F02010*	88.6 3.25	0.74 1.6
50 x 50 x 40 2 x 2 x 1 1/2	60.3 x 60.3 x 48.3 2.375 x 2.375 x 1.900	221M02015*	82.6 3.25	1.2 2.7	-	- -	- -
65 x 65 x 50 2 1/2 x 2 1/2 x 2	73.0 x 73.0 x 60.3 2.875 x 2.875 x 2.375	221M02520*	95.3 3.75	1.9 4.2	-	- -	- -
65 x 65 x 40 76,1mm x 76,1mm x 1 1/2	76.1 x 76.1 x 48.3 3.000 x 3.000 x 1.900	221M02615*	95.3 3.75	2.0 4.5	-	- -	- -
65 x 65 x 50 76,1mm x 76,1mm x 2	76.1 x 76.1 x 60.3 3.000 x 3.000 x 2.375	221M02620*	95.3 3.75	2.0 4.3	-	- -	- -
80 x 80 x 25 3 x 3 x 1	88.9 x 88.9 x 33.7 3.500 x 3.500 x 1.315	221M03010*	108.0 4.25	2.5 5.6	-	- -	- -
80 x 80 x 40 3 x 3 x 1 1/2	88.9 x 88.9 x 48.3 3.500 x 3.500 x 1.900	-	- -	- -	321F03015*	108.0 4.25	2.5 5.6
80 x 80 x 50 3 x 3 x 2	88.9 x 88.9 x 60.3 3.500 x 3.500 x 2.375	221M03020*	108.0 4.25	2.7 6.0	-	- -	- -
80 x 80 x 65 3 x 3 x 2 1/2	88.9 x 88.9 x 73.0 3.500 x 3.500 x 2.875	221M03025*	108.0 4.25	2.8 6.2	-	- -	- -
80 x 80 x 65 3 x 3 x 76,1mm	88.9 x 88.9 x 76.1 3.500 x 3.500 x 3.000	221M03026*	108.0 4.25	2.7 6.0	-	- -	- -
100 x 100 x 50 4 x 4 x 2	114.3 x 114.3 x 60.3 4.500 x 4.500 x 2.375	221M04220*	127.0 5.00	4.1 9.1	-	- -	- -
100 x 100 x 65 4 x 4 x 2 1/2	114.3 x 114.3 x 73.0 4.500 x 4.500 x 2.875	221M04225*	127.0 5.00	4.3 9.5	-	- -	- -
100 x 100 x 65 4 x 4 x 76,1mm	114.3 x 114.3 x 76.1 4.500 x 4.500 x 3.000	221M04226*	127.0 5.00	4.3 9.5	-	- -	- -
100 x 100 x 80 4 x 4 x 3	114.3 x 114.3 x 88.9 4.500 x 4.500 x 3.500	221M04230*	127.0 5.00	4.4 9.7	-	- -	- -
125 x 125 x 80 139,7 x 139,7 x 76,1mm	139.7 x 139.7 x 76.1 5.500 x 5.500 x 3.000	-	- -	- -	321F05226*	139.7 5.50	6.6 14.5
125 x 125 x 80 139,7 x 139,7mm x 3	139.7 x 139.7 x 88.9 5.500 x 5.500 x 3.500	221M05230*	139.7 5.50	5.8 12.7	-	- -	- -

## Figures 221 & 321 Reducing Tees

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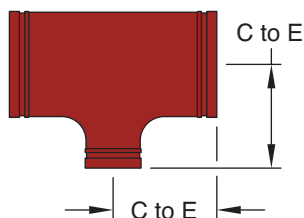


Figure 221 Reducing Tee  
Cast

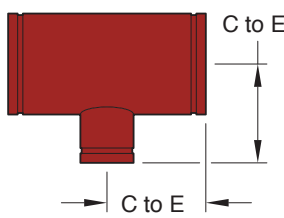


Figure 321 Reducing Tee  
Fabricated

Pipe Size		Figure 221 - Cast			Figure 321 - Fabricated		
Nominal mm Inches	O.D. mm Inches	Part Number	C to E mm Inches	Approx. Weight Kg. Lbs.	Part Number	C to E mm Inches	Approx. Weight Kg. Lbs.
125 x 125 x 100 139,7 x 139,7mm x 4	139.7 x 139.7 x 114.3 5.500 x 5.500 x 4.500	221M05242*	139.7 5.50	6.1 13.4	-	-	-
125 x 125 x 65 5 x 5 x 2½	141.3 x 141.3 x 73.0 5.563 x 5.563 x 2.875	-	-	-	321F05325*	139.7 5.50	6.4 14.0
125 x 125 x 80 5 x 5 x 3	141.3 x 141.3 x 88.9 5.563 x 5.563 x 3.500	-	-	-	321F05330*	139.7 5.50	6.5 14.3
125 x 125 x 100 5 x 5 x 4	141.3 x 141.3 x 114.3 5.563 x 5.563 x 4.500	-	-	-	321F05342X	139.7 5.50	6.7 14.8
150 x 150 x 50 165,1 x 165,1mm x 2	165.1 x 165.1 x 60.3 6.500 x 6.500 x 2.375	-	-	-	321F06220*	165.1 6.50	11.9 26.2
150 x 150 x 65 165,1 x 165,1 x 76,1mm	165.1 x 165.1 x 76.1 6.500 x 6.500 x 3.000	-	-	-	321F06226*	165.1 6.50	12.1 26.7
150 x 150 x 80 165,1 x 165,mm x 3	165.1 x 165.1 x 88.9 6.500 x 6.500 x 3.500	221M06230*	165.1 6.50	8.2 18.0	-	-	-
150 x 150 x 100 165,1 x 165,mm x 4	165.1 x 165.1 x 114.3 6.500 x 6.500 x 4.500	221M06242*	165.1 6.50	8.9 19.5	-	-	-
150 x 150 x 50 6 x 6 x 2	168.3 x 168.3 x 60.3 6.625 x 6.625 x 2.375	221M06320*	165.1 6.50	8.8 19.4	-	-	-
150 x 150 x 65 6 x 6 x 2½	168.3 x 168.3 x 73.0 6.625 x 6.625 x 2.875	221M06325*	165.1 6.50	9.8 21.2	-	-	-
150 x 150 x 65 6 x 6 x 76,1mm	168.3 x 168.3 x 76.1 6.625 x 6.625 x 3.000	221M06326*	165.1 6.50	9.8 21.2	-	-	-
150 x 150 x 80 6 x 6 x 3	168.3 x 168.3 x 88.9 6.625 x 6.625 x 3.500	221M06330*	165.1 6.50	9.5 21.0	-	-	-
150 x 150 x 100 6 x 6 x 4	168.3 x 168.3 x 114.3 6.625 x 6.625 x 4.500	221M06342*	165.1 6.50	9.9 21.8	-	-	-
150 x 150 x 125 6 x 6 x 139,7mm	168.3 x 168.3 x 139.7 6.625 x 6.625 x 5.500	221M06352*	165.1 6.50	10.4 23.0	-	-	-
200 x 200 x 100 8 x 8 x 4	219.1 x 219.1 x 114.1 8.625 x 8.625 x 4.500	221A08042*	196.9 7.75	16.9 37.2	-	-	-
200 x 200 x 125 8 x 8 x 139,7mm	219.1 x 219.1 x 139.7 8.625 x 8.625 x 5.500	221M08052*	196.9 7.75	17.1 37.7	-	-	-
200 x 200 x 150 8 x 8 x 165,1mm	219.1 x 219.1 x 165.1 8.625 x 8.625 x 6.500	221M08062*	196.9 7.75	17.1 37.7	-	-	-
200 x 200 x 150 8 x 8 x 6	219.1 x 219.1 x 168.3 8.625 x 8.625 x 6.625	221A08063*	196.9 7.75	17.0 37.4	-	-	-
250 x 250 x 50 10 x 10 x 2	273.0 x 273.0 x 60.3 10.750 x 10.750 x 2.375	-	-	-	321T01120*	228.0 8.98	29.0 63.9
250 x 250 x 80 10 x 10 x 3	273.0 x 273.0 x 88.9 10.750 x 10.750 x 3.500	-	-	-	321T01130*	228.0 8.98	29.0 63.9
250 x 250 x 100 10 x 10 x 4	273.0 x 273.0 x 114.3 10.750 x 10.750 x 4.500	221M01142*	228.6 9.00	29.9 65.9	321T01142*	228.0 8.98	29.0 63.9
250 x 250 x 125 10 x 10 x 139,7mm	273.0 x 273.0 x 139.7 10.750 x 10.750 x 5.500	-	-	-	321F01152*	228.6 9.00	26.2 57.8

Grooved  
Fittings

## Figures 221 & 321 Reducing Tees

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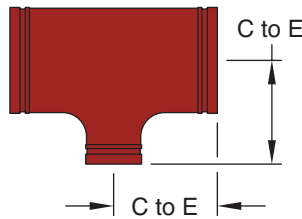


Figure 221 Reducing Tee  
Cast

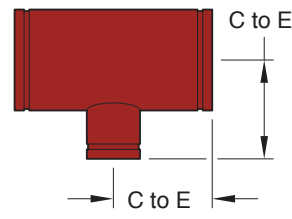


Figure 321 Reducing Tee  
Fabricated

Grooved  
Fittings

Pipe Size		Figure 221 - Cast			Figure 321 - Fabricated		
Nominal mm Inches	O.D. mm Inches	Part Number	C to E mm Inches	Approx. Weight Kg. Lbs.	Part Number	C to E mm Inches	Approx. Weight Kg. Lbs.
250 x 250 x 150 10 x 10 x 165,1mm	273.0 x 273.0 x 165.1 10.750 x 10.750 x 6.500	-	- -	- -	321F01162*	228.6 9.00	26.2 57.8
250 x 250 x 150 10 x 10 x 6	273.0 x 273.0 x 168.3 10.750 x 10.750 x 6.625	221M01163*	228.6 9.00	30.8 67.9	321T01163*	228.0 8.98	29.0 63.9
250 x 250 x 200 10 x 10 x 8	273.0 x 273.0 x 219.1 10.750 x 10.750 x 8.625	221M01180*	228.6 9.00	31.8 70.1	321T01180*	228.0 8.98	29.0 63.9
300 x 300 x 80 12 x 12 x 3	323.9 x 323.9 x 88.9 12.750 x 12.750 x 3.500	-	- -	- -	321T01330*	253.0 9.96	40.0 88.2
300 x 300 x 100 12 x 12 x 4	323.9 x 323.9 x 114.3 12.750 x 12.750 x 4.500	-	- -	- -	321T01342*	253.0 9.96	40.0 88.2
300 x 300 x 125 12 x 12 x 139,7mm	323.9 x 323.9 x 139.7 12.750 x 12.750 x 5.500	-	- -	- -	321F01352*	254.0 10.00	40.0 88.2
300 x 300 x 150 12 x 12 x 165,1mm	323.9 x 323.9 x 165.1 12.750 x 12.750 x 6.500	-	- -	- -	321F01362*	254.0 10.00	36.7 80.9
300 x 300 x 150 12 x 12 x 6	323.9 x 323.9 x 168.3 12.750 x 12.750 x 6.625	-	- -	- -	321T01363*	253.0 9.96	40.0 88.2
300 x 300 x 200 12 x 12 x 8	323.9 x 323.9 x 219.1 12.750 x 12.750 x 8.625	-	- -	- -	321T01380*	253.0 9.96	40.0 88.2
300 x 300 x 250 12 x 12 x 10	323.9 x 323.9 x 273.0 12.750 x 12.750 x 10.750	-	- -	- -	321T01311*	253.0 9.96	40.0 88.2
350 x 350 x 100 14 x 14 x 4	355.6 x 355.6 x 114.3 14.000 x 14.000 x 4.500	-	- -	- -	321T01442*	279.4 11.00	46.9 103.3
350 x 350 x 150 14 x 14 x 6	355.6 x 355.6 x 168.3 14.000 x 14.000 x 6.625	-	- -	- -	321T01463*	380.0 14.96	45.2 99.6
350 x 350 x 200 14 x 14 x 8	355.6 x 355.6 x 219.1 14.000 x 14.000 x 8.625	-	- -	- -	321T01480*	380.0 14.96	45.2 99.6
350 x 350 x 250 14 x 14 x 10	355.6 x 355.6 x 273.0 14.000 x 14.000 x 10.750	-	- -	- -	321T01411*	380.0 14.96	45.2 99.6
350 x 350 x 300 14 x 14 x 12	355.6 x 355.6 x 323.9 14.000 x 14.000 x 12.750	-	- -	- -	321T01413*	380.0 14.96	45.2 99.6
400 x 400 x 100 16 x 16 x 4	406.4 x 406.4 x 114.3 16.000 x 16.000 x 4.500	-	- -	- -	321T01642*	406.0 15.98	59.2 130.5
400 x 400 x 150 16 x 16 x 6	406.4 x 406.4 x 168.3 16.000 x 16.000 x 6.625	-	- -	- -	321T01663*	406.0 15.98	59.2 130.5
400 x 400 x 200 16 x 16 x 8	406.4 x 406.4 x 219.1 16.000 x 16.000 x 8.625	-	- -	- -	321T01680*	406.0 15.98	59.2 130.5
400 x 400 x 250 16 x 16 x 10	406.4 x 406.4 x 273.0 16.000 x 16.000 x 10.750	-	- -	- -	321T01611*	406.0 15.98	59.2 130.5
400 x 400 x 300 16 x 16 x 12	406.4 x 406.4 x 323.9 16.000 x 16.000 x 12.750	-	- -	- -	321T01613*	406.0 15.98	59.2 130.5
400 x 400 x 350 16 x 16 x 14	406.4 x 406.4 x 355.6 16.000 x 16.000 x 14.000	-	- -	- -	321T01614*	406.0 15.98	59.2 130.5
450 x 450 x 150 18 x 18 x 6	457.2 x 457.2 x 168.3 18.000 x 18.000 x 6.625	-	- -	- -	321T01863*	431.0 16.97	85.0 187.4



## Figures 221 & 321 Reducing Tees

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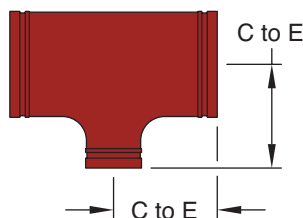


Figure 221 Reducing Tee  
Cast

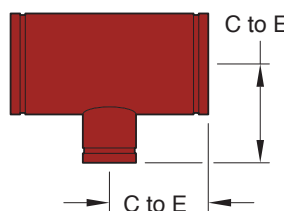


Figure 321 Reducing Tee  
Fabricated

Grooved  
Fittings

Pipe Size		Figure 221 - Cast			Figure 321 - Fabricated		
Nominal mm Inches	O.D. mm Inches	Part Number	C to E mm Inches	Approx. Weight Kg. Lbs.	Part Number	C to E mm Inches	Approx. Weight Kg. Lbs.
450 x 450 x 200 18 x 18 x 8	457.2 x 457.2 x 219.1 18.000 x 18.000 x 8.625	-	-	-	321T01880*	431.0 16.97	85.0 187.4
450 x 450 x 250 18 x 18 x 10	457.2 x 457.2 x 273.0 18.000 x 18.000 x 10.750	-	-	-	321T01811*	431.0 16.97	85.0 187.4
450 x 450 x 300 18 x 18 x 12	457.2 x 457.2 x 323.9 18.000 x 18.000 x 12.750	-	-	-	321T01813*	431.0 16.97	85.0 187.4
450 x 450 x 350 18 x 18 x 14	457.2 x 457.2 x 355.6 18.000 x 18.000 x 14.000	-	-	-	321T01814*	431.0 16.97	85.0 187.4
450 x 450 x 400 18 x 18 x 16	457.2 x 457.2 x 406.4 18.000 x 18.000 x 16.000	-	-	-	321T01816*	431.0 16.97	85.0 187.4
500 x 500 x 150 20 x 20 x 6	508.0 x 508.0 x 168.3 20.000 x 20.000 x 6.625	-	-	-	321T02163*	558.0 21.97	120.0 264.6
500 x 500 x 200 20 x 20 x 8	508.0 x 508.0 x 219.1 20.000 x 20.000 x 8.625	-	-	-	321T02180*	558.0 21.97	120.0 264.6
500 x 500 x 250 20 x 20 x 10	508.0 x 508.0 x 273.0 20.000 x 20.000 x 10.750	-	-	-	321T02111*	558.0 21.97	120.0 264.6
500 x 500 x 300 20 x 20 x 12	508.0 x 508.0 x 323.9 20.000 x 20.000 x 12.750	-	-	-	321T02113*	558.0 21.97	120.0 264.6
500 x 500 x 350 20 x 20 x 14	508.0 x 508.0 x 355.6 20.000 x 20.000 x 14.000	-	-	-	321T02114*	558.0 21.97	120.0 264.6
500 x 500 x 400 20 x 20 x 16	508.0 x 508.0 x 406.4 20.000 x 20.000 x 16.000	-	-	-	321T02116*	558.0 21.97	120.0 264.6
500 x 500 x 450 20 x 20 x 18	508.0 x 508.0 x 457.2 20.000 x 20.000 x 18.000	-	-	-	321T02118*	558.0 21.97	120.0 264.6
600 x 600 x 200 24 x 24 x 8	609.6 x 609.6 x 219.1 24.000 x 24.000 x 8.625	-	-	-	321T02480*	558.0 21.97	162.0 357.1
600 x 600 x 250 24 x 24 x 10	609.6 x 609.6 x 273.0 24.000 x 24.000 x 10.750	-	-	-	321T02411*	558.0 21.97	162.0 357.1
600 x 600 x 300 24 x 24 x 12	609.6 x 609.6 x 323.9 24.000 x 24.000 x 12.750	-	-	-	321T02413*	558.0 21.97	162.0 357.1
600 x 600 x 350 24 x 24 x 14	609.6 x 609.6 x 355.6 24.000 x 24.000 x 14.000	-	-	-	321T02414*	558.0 21.97	162.0 357.1
600 x 600 x 400 24 x 24 x 16	609.6 x 609.6 x 406.4 24.000 x 24.000 x 16.000	-	-	-	321T02416*	558.0 21.97	162.0 357.1
600 x 600 x 450 24 x 24 x 18	609.6 x 609.6 x 457.2 24.000 x 24.000 x 18.000	-	-	-	321T02418*	558.0 21.97	162.0 357.1
600 x 600 x 500 24 x 24 x 20	609.6 x 609.6 x 508.0 24.000 x 24.000 x 20.000	-	-	-	321T02421*	558.0 21.97	162.0 357.1

\* = 1 for red paint finish, 2 for hot dipped galvanised finish

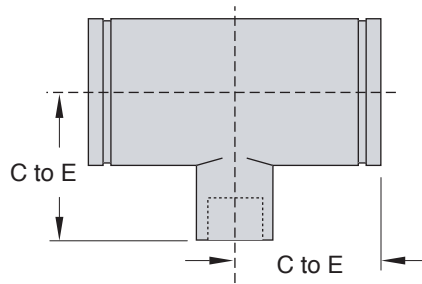
For information on alternative sizes, contact a GRINNELL Sales Representative.

See page 39 for fitting specifications.

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

**Figure 322 Reducing Tees**  
(Groove x Groove x Female BSP Thread)

**10**  
YEAR  
LIMITED  
WARRANTY



Grooved  
Fittings

Part Number	Pipe Size		C to GE & C to TE mm Inches	Approx. Weight Kg. Lbs.
	Nominal mm Inches	O.D. mm Inches		
322F020202	50 x 50 x 50	60.3 x 60.3 x 60.3 ISO R7	82.6	1.2
	2 x 2 x 2	2.375 x 2.375 x 2.375	3.25	2.6
322F026202	65 x 65 x 50	76.1 x 76.1 x 60.3 ISO R7	95.2	1.8
	76.1 x 76.1mm x 2	3.000 x 3.000 x 2.375	3.75	4.0
322F026252	65 x 65 x 50	76.1 x 76.1 x 76.1 ISO R7	95.2	1.9
	76.1 x 76.1 x 76.1mm	3.000 x 3.000 x 3.000	3.75	4.2
322F030202	80 x 80 x 50	88.9 x 88.9 x 60.3 ISO R7	108.0	2.2
	3 x 3 x 2	3.500 x 3.500 x 2.375	4.25	4.9
322F030252	80 x 80 x 65	88.9 x 88.9 x 73.0 ISO R7	108.0	2.3
	3 x 3 x 2½	3.500 x 3.500 x 2.875	4.25	5.1
322F042202	100 x 100 x 50	114.3 x 114.3 x 60.3 ISO R7	127.0	2.6
	4 x 4 x 2	4.500 x 4.500 x 2.375	5.00	5.7
322F042262	100 x 100 x 65	114.3 x 114.3 x 76.1 ISO R7	127.0	2.8
	4 x 4 x 76.1mm	4.500 x 4.500 x 3.00	5.00	6.2

Only available in hot dipped galvanised finish

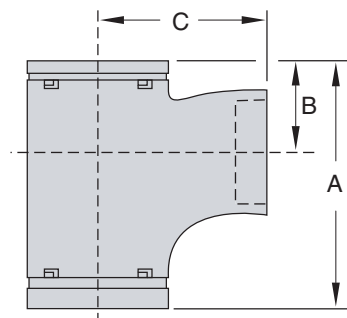
For information on alternative sizes, contact a GRINNELL Sales Representative.

See page 39 for fitting specifications.

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

**Figure 222 Hydrant Tee**  
(Groove x Groove X Female BSP Thread)

**10**  
YEAR  
LIMITED  
WARRANTY



Part Number	Pipe Size		Hydrant Outlet ISO	Max. Working Pressure psi Bar	A mm In.	B mm In.	C mm In.	Approx. Weight Kg. Lbs.
	Nominal Size DN In.	Pipe OD mm In.						
222V42262	100	114.3	R7	20.7	190	70	133	4.6
	4	4.500	DN65	300	7.48	2.76	5.24	10.1

Available in hot dipped galvanising only.

See page 39 for fitting specifications.

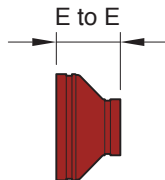
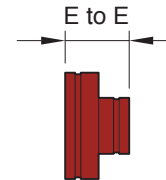
For information on alternative sizes, contact a GRINNELL Sales Representative.

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

## Figures 250 & 350 Concentric Reducers

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**10**  
YEAR  
LIMITED  
WARRANTY

 Figure 250  
Concentric Reducer Cast

 Figure 350  
Concentric Reducer Fabricated

Pipe Size		Figure 250 - Cast			Figure 350 - Fabricated		
Nominal DN In.	O.D. mm In.	Part Number	E to E mm In.	Approx. Weight kg Lbs.	Part Number	E to E mm In.	Approx. Weight kg Lbs.
32 x 25 1-1/4 x 1	42.4 x 33.7 1.660 x 1.315	250M01210*	63.5 2.50	0.3 0.7	-	-	-
40 x 25 1-1/2 x 1	48.3 x 33.7 1.900 x 1.315	250M01510*	63.5 2.50	0.3 0.7	-	-	-
40 x 32 1-1/2 x 1-1/4	48.3 x 42.4 1.900 x 1.660	250A01512*	63.5 2.50	0.3 0.8	-	-	-
50 x 25 2 x 1	60.3 x 33.7 2.375 x 1.315	250M02010*	63.5 2.50	0.4 0.9	-	-	-
50 x 32 2 x 1-1/4	60.3 x 42.4 2.375 x 1.660	250M02012*	63.5 2.50	0.4 0.9	-	-	-
50 x 40 2 x 1-1/2	60.3 x 48.3 2.375 x 1.900	250M02015*	63.5 2.50	0.5 1.0	-	-	-
65 x 25 2-1/2 x 1	73.0 x 33.7 2.875 x 1.315	-	-	-	350F02610*	63.5 2.50	0.5 1.2
65 x 50 2-1/2 x 2	73.0 x 60.3 2.875 x 2.375	250M02520*	63.5 2.50	0.6 1.3	-	-	-
65 x 32 76.1mm x 1-1/4	76.1 x 42.4 3.000 x 1.660	250M02612*	63.5 2.50	0.6 1.4	-	-	-
65 x 40 76.1mm x 1-1/2	76.1 x 48.3 3.000 x 1.900	250M02615*	63.5 2.50	0.6 1.4	-	-	-
65 x 50 76.1mm x 2	76.1 x 60.3 3.000 x 2.375	250M02620*	63.5 2.50	0.7 1.5	-	-	-
80 x 40 3 x 1-1/2	88.9 x 48.3 3.500 x 1.900	250A03015*	63.5 2.50	0.8 1.8	-	-	-
80 x 50 3 x 2	88.9 x 60.3 3.500 x 2.375	250M03020*	63.5 2.50	0.8 1.7	-	-	-
80 x 65 3 x 2-1/2	88.9 x 73.0 3.500 x 2.875	250M03025*	63.5 2.50	0.8 1.7	-	-	-
80 x 65 3 x 76.1mm	88.9 x 76.1 3.500 x 3.000	250M03026*	63.5 2.50	0.9 2.0	-	-	-
100 x 50 4 x 2	114.3 x 60.3 4.500 x 2.375	250M04220*	76.2 3.00	1.1 2.4	-	-	-
100 x 65 4 x 2-1/2	114.3 x 73.0 4.500 x 2.875	250M04225*	76.2 3.00	1.2 2.7	-	-	-
100 x 65 4 x 76.1mm	114.3 x 76.1 4.500 x 3.000	250M04226*	76.2 3.00	1.5 3.2	-	-	-
100 x 80 4 x 3	114.3 x 88.9 4.500 x 3.500	250M04230*	76.2 3.00	1.3 2.8	-	-	-
100 x 100 4 x 108.0mm	114.3 x 108.0 4.500 x 4.252	-	-	-	350F04241*	140.0 5.51	1.5 3.3
125 x 80 139.7mm x 3	139.7 x 88.9 5.500 x 3.500	250M05230*	88.9 3.50	1.9 4.2	-	-	-
125 x 100 139.7mm x 4	139.7 x 114.3 5.500 x 4.500	250M05242*	88.9 3.50	2.0 4.4	-	-	-
125 x 100 5 x 4	141.3 x 114.3 5.563 x 4.500	250M05342*	88.9 3.50	2.0 4.4	-	-	-
150 x 80 165.1mm x 3	165.1 x 88.9 6.500 x 3.500	250M06230*	101.6 4.00	2.5 5.5	-	-	-
150 x 100 165.1mm x 4	165.1 x 114.3 6.500 x 4.500	250M06242*	101.6 4.00	2.7 6.0	-	-	-

 Grooved  
Fittings

## Figures 250 & 350 Concentric Reducers

(Page 2 of 3)

Tech Data Sheet: G180

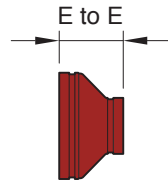


Figure 250  
Cast Concentric  
Reducer

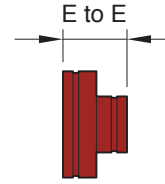


Figure 350  
Fabricated Concentric  
Reducer

Pipe Size		Figure 250 - Cast			Figure 350 - Fabricated		
Nominal DN In.	O.D. mm In.	Part Number	E to E mm In.	Approx. Weight kg Lbs.	Part Number	E to E mm In.	Approx. Weight kg Lbs.
150 x 125 165.1 x 139.7mm	165.1 x 139.7 6.500 x 5.500	250M06252*	101.6 4.00	2.5 5.6	-	-	-
150 x 50 6 x 2	168.3 x 60.3 6.625 x 2.375	250M06320*	101.6 4.00	2.7 6.1	-	-	-
150 x 65 6 x 76.1mm	168.3 x 76.1 6.625 x 3.000	250M06326*	101.6 4.00	2.7 6.1	-	-	-
150 x 80 6 x 3	168.3 x 88.9 6.625 x 3.500	250A06330*	101.6 4.00	2.6 5.8	-	-	-
150 x 100 6 x 4	168.3 x 114.3 6.625 x 4.500	250M06342*	101.6 4.00	2.7 6.0	-	-	-
150 x 125 6 x 139.7mm	168.3 x 139.7 6.625 x 5.500	250M06352*	101.6 4.00	2.3 6.3	-	-	-
150 x 125 6 x 5	168.3 x 141.3 6.625 x 5.563	250M06353*	101.6 4.00	2.8 6.2	-	-	-
150 x 125 6 x 159.0mm	168.3 x 159.0 6.625 x 6.260	-	-	-	350F06361*	140.0 5.00	3.2 7.1
150 x 150 6 x 165.1mm	168.3 x 165.1 6.625 x 6.500	-	-	-	350F06362*	127.0 5.00	5.5 12.1
200 x 100 8 x 4	219.1 x 114.3 8.625 x 4.500	250A08042*	127.0 5.00	4.9 10.7	-	-	-
200 x 125 8 x 139.7mm	219.1 x 139.7 8.625 x 5.500	250M08052*	127.0 5.00	4.5 10.0	-	-	-
200 x 125 8 x 5	219.1 x 141.3 8.625 x 5.563	-	127.0 5.00	4.9 10.8	350F08053*	-	-
200 x 150 8 x 165.1mm	219.1 x 165.1 8.625 x 6.500	250M08062*	127.0 5.00	5.0 11.0	-	-	-
200 x 150 8 x 6	219.1 x 168.3 8.625 x 6.625	250A08063*	127.0 5.00	5.1 11.3	-	-	-
250 x 100 10 x 4	273.0 x 114.3 10.750 x 4.500	-	-	-	350F01142*	152.4 6.00	9.3 20.5
250 x 125 10 x 139.7mm	273.0 x 139.7 10.750 x 5.500	-	-	-	350F01152*	152.4 6.00	9.1 20.1
250 x 150 10 x 165.1mm	273.0 x 165.1 10.750 x 6.500	250M01162*	152.4 6.00	8.0 17.8	-	-	-
250 x 150 10 x 6	273.0 x 168.3 10.750 x 6.625	250A01163*	152.4 6.00	7.4 16.3	-	-	-
250 x 200 10 x 8	273.0 x 219.1 10.750 x 8.625	250A01180*	152.4 6.00	8.3 18.3	-	-	-
300 x 100 12 x 4	323.9 x 114.3 12.750 x 4.500	-	-	-	350F01342*	177.8 7.00	12.5 27.5
300 x 150 12 x 165.1mm	323.9 x 165.1 12.750 x 6.500	-	-	-	350F01362*	303.0 7.00	11.3 24.9
300 x 150 12 x 6	323.9 x 168.3 12.750 x 6.625	-	-	-	350F01363*	177.8 7.00	12.7 28.1
300 x 200 12 x 8	323.9 x 219.1 12.750 x 8.625	250A01380*	177.8 7.00	11.7 25.8	-	-	-
300 x 250 12 x 10	323.9 x 273.0 12.750 x 10.750	250A01311*	177.8 7.00	12.8 28.2	-	-	-
350 x 150 14 x 165.1mm	355.6 x 165.1 14.000 x 6.500	-	-	-	350T01462*	330.2 13.0	24.6 54.3
350 x 150 14 x 6	355.6 x 168.3 14.000 x 6.625	-	-	-	350T01463*	380.0 14.96	26.4 58.2
350 x 200 14 x 8	355.6 x 219.1 14.000 x 8.625	-	-	-	350T01480*	330.2 13.0	24.7 54.5

Grooved  
Fittings



## Figures 250 & 350 Concentric Reducers

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Tech Data Sheet: G180

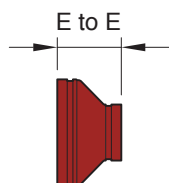


Figure 250  
Cast Concentric  
Reducer

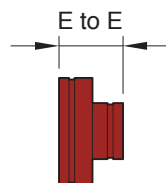


Figure 350  
Fabricated Concentric  
Reducer

Pipe Size		Figure 250 - Cast			Figure 350 - Fabricated		
Nominal DN In.	O.D. mm In.	Part Number	E to E mm In.	Approx. Weight kg Lbs.	Part Number	E to E mm In.	Approx. Weight kg Lbs.
350 x 250	355.6 x 273.0	-	—	—	350T01411*	380.0	27.0
14 x 10	14.000 x 10.750	-	—	—		14.96	59.5
350 x 300	355.6 x 323.9	-	—	—	350T01413*	380.0	27.3
14 x 12	14.000 x 12.750	-	—	—		14.96	60.2
400 x 200	406.4 x 219.1	-	—	—	350T01680*	406.0	31.1
16 x 8	16.000 x 8.625	-	—	—		15.98	68.6
400 x 250	406.4 x 273.0	-	—	—	350T01611*	406.0	31.1
16 x 10	16.000 x 10.750	-	—	—		15.98	68.6
400 x 300	406.4 x 323.9	-	—	—	350T01613*	406.0	31.8
16 x 12	16.000 x 12.750	-	—	—		15.98	70.1
400 x 350	406.4 x 355.6	-	—	—	350T01614*	406.0	32.3
16 x 14	16.000 x 14.000	-	—	—		15.98	71.2
450 x 300	457.2 x 323.9	-	—	—	350T01813*	381.0	37.9
18 x 12	18.000 x 12.750	-	—	—		15.0	83.6
450 x 350	457.2 x 355.6	-	—	—	350T01814*	431.0	38.2
18 x 14	18.000 x 14.000	-	—	—		16.97	84.2
450 x 400	457.2 x 406.4	-	—	—	350T01816*	381.0	39.6
18 x 16	18.000 x 16.000	-	—	—		15.0	87.2
500 x 250	508.0 x 273.0	-	—	—	350T02111*	508.0	56.6
20 x 10	20.000 x 10.750	-	—	—		20.0	124.7
500 x 300	508.0 x 323.9	-	—	—	350T02113*	508.0	56.6
20 x 12	20.000 x 12.750	-	—	—		20.0	124.7
500 x 350	508.0 x 355.6	-	—	—	350T02114*	508.0	58.5
20 x 14	20.000 x 14.000	-	—	—		20.0	129.0
500 x 400	508.0 x 406.4	-	—	—	350T02116*	558.0	56.4
20 x 16	20.000 x 16.000	-	—	—		21.97	124.3
500 x 450	508.0 x 457.2	-	—	—	350T02118*	508.0	60.5
20 x 18	20.000 x 18.000	-	—	—		20.0	133.4
600 x 250	609.6 x 273.0	-	—	—	350T02411*	508.0	67.6
24 x 10	24.000 x 10.750	-	—	—		20.0	149.1
600 x 300	609.6 x 323.9	-	—	—	350T02413*	508.0	68.2
24 x 12	24.000 x 12.750	-	—	—		20.0	150.4
600 x 350	609.6 x 355.6	-	—	—	350T02414*	508.0	68.8
24 x 14	24.000 x 14.000	-	—	—		20.0	151.6
600 x 400	609.6 x 406.4	-	—	—	350T02416*	508.0	69.3
24 x 16	24.000 x 16.000	-	—	—		20.0	152.8
600 x 450	609.6 x 457.2	-	—	—	350T02418*	508.0	69.9
24 x 18	24.000 x 18.000	-	—	—		20.0	154.1
600 x 500	609.6 x 508.0	-	—	—	350T02421*	508.0	70.5
24 x 20	24.000 x 20.000	-	—	—		20.0	155.5

\* = 1 for red paint finish, 2 for hot dipped galvanised finish

♦ Contact GRINNELL Sales Representative for dimension details.

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

See page 39 for fitting specifications.

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

Grooved  
Fittings

## Figures 251 & 351 Eccentric Reducers

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Tech Data Sheet: G180

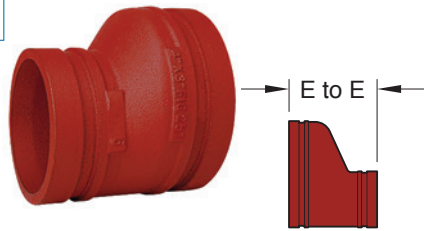


Figure 251  
Cast Eccentric Reducer



Figure 351  
Fabricated Eccentric Reducer  
(Segment Welded)

Pipe Size		Figure 251 - Cast			Figure 351 - Fabricated		
Nominal mm Inches	O.D. mm Inches	Part Number	E to E mm Inches	Approx. Weight Kg. Lbs.	Part Number	E to E mm Inches	Approx. Weight Kg. Lbs.
50 x 25 2 x 1	60.3 x 33.7 2.375 x 1.315	-	— —	— —	351F02010*	223.6 9.0	1.0 2.2
50 x 32 2 x 1 1/4	60.3 x 42.4 2.375 x 1.660	-	— —	— —	351F02012*	228.6 9.0	1.1 2.4
50 x 40 2 x 1 1/2	60.3 x 48.3 2.375 x 1.900	-	— —	— —	351F02015*	228.6 9.0	1.1 2.5
65 x 40 76,1mm x 1 1/2	76.1 x 48.3 3.000 x 1.900	-	— —	— —	351F02615*	241.3 9.5	1.6 3.6
65 x 50 76,1mm x 2	76.1 x 60.3 3.000 x 2.375	-	— —	— —	351F02620*	241.3 9.5	1.8 4.0
80 x 50 3 x 2	88.9 x 60.3 3.500 x 2.375	-	— —	— —	351F03020*	241.3 9.5	2.1 4.8
80 x 65 3 x 2 1/2	88.9 x 73.0 3.500 x 2.875	251A03025*	88.9 3.5	1.0 2.2	-	— —	— —
80 x 65 3 x 76,1mm	88.9 x 76.1 3.500 x 3.000	-	— —	— —	351F03026*	241.3 9.5	2.8 6.1
100 x 50 4 x 2	114.3 x 60.3 4.500 x 2.375	-	— —	— —	351F04220*	254.0 10.0	3.1 6.9
100 x 65 4 x 2 1/2	114.3 x 73.0 4.500 x 2.875	251A04225*	101.6 4.0	1.4 3.1	-	— —	— —
100 x 65 4 x 76,1mm	114.3 x 76.1 4.500 x 3.000	-	— —	— —	351F04226*	254.0 10.0	3.7 8.2
100 x 80 4 x 3	114.3 x 88.9 4.500 x 3.500	-	— —	— —	351F04230*	254.0 10.0	3.6 7.9
125 x 80 139.7mm x 3	139.7 x 88.9 5.500 x 3.500	-	— —	— —	351F05230*	279.4 11.0	5.7 12.6
125 x 100 139.7mm x 4	139.7 x 114.3 5.500 x 4.500	-	— —	— —	351F05242*	279.4 11.0	5.9 13.0
125 x 100 5 x 4	141.3 x 114.3 5.563 x 4.500	251A05342*	127.5 5.0	2.6 5.7	-	— —	— —
150 x 50 165,1mm x 2	165.1 x 60.3 6.500 x 2.375	-	— —	— —	351F06220*	292.1 11.5	6.7 14.8
150 x 80 165,1mm x 3	165.1 x 88.9 6.500 x 3.500	-	— —	— —	351F06230*	292.1 11.5	6.2 14.7
150 x 100 165,1mm x 4	165.1 x 114.3 6.500 x 4.500	-	— —	— —	351F06242*	292.1 11.5	7.1 14.9
150 x 100 165,1 x 139.7mm	165.1 x 139.7 6.500 x 5.500	-	— —	— —	351F06252*	292.1 11.5	7.2 15.9
150 x 50 6 x 2	168.3 x 60.3 6.625 x 2.375	-	— —	— —	351F06320*	292.1 11.5	5.5 12.2
150 x 80 6 x 3	168.3 x 88.9 6.625 x 3.500	-	— —	— —	351F06330*	292.1 11.50	6.1 13.5

## Figures 251 & 351 Eccentric Reducers

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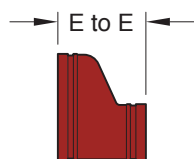


Figure 251  
Cast Eccentric Reducer

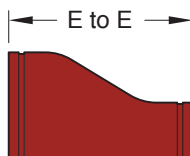


Figure 351  
Fabricated Eccentric Reducer  
(Segment Welded)

Pipe Size		Figure 251 - Cast			Figure 351 - Fabricated		
Nominal mm Inches	O.D. mm Inches	Part Number	E to E mm Inches	Approx. Weight Kg. Lbs.	Part Number	E to E mm Inches	Approx. Weight Kg. Lbs.
150 x 100 6 x 4	168.3 x 114.3 6.625 x 4.500	-	— —	— —	351F06342*	292.1 11.50	6.7 14.8
150 x 125 6 x 139.7mm	168.3 x 139.7 6.625 x 5.500	-	— —	— —	351F06352*	292.1 11.5	7.2 15.9
150 x 125 6 x 5	168.3 x 141.3 6.625 x 5.563	251A06353*	139.7 5.5	3.7 8.1	-	— —	— —
200 x 80 8 x 3	219.1 x 88.9 8.625 x 3.500	-	— —	— —	351F08030*	304.8 12.0	8.1 17.9
200 x 100 8 x 4	219.1 x 114.3 8.625 x 4.500	-	— —	— —	351F08042*	304.8 12.0	9.8 19.7
200 x 125 8 x 139.7mm	219.1 x 139.7 8.625 x 5.500	-	— —	— —	351F08052*	304.8 12.0	9.7 21.4
200 x 125 8 x 5	219.1 x 141.3 8.625 x 5.563	-	— —	— —	351F08053*	304.8 12.0	9.7 21.4
200 x 150 8 x 165.1mm	219.1 x 165.1 8.625 x 6.500	-	— —	— —	351F08062*	304.8 12.0	10.9 24.0
200 x 150 8 x 6	219.1 x 168.3 8.625 x 6.625	-	— —	— —	351F08063*	304.8 12.0	10.9 24.0
250 x 100 10 x 4	273.0 x 114.3 10.750 x 4.500	-	— —	— —	351F01142*	330.2 13.0	13.5 29.7
250 x 125 10 x 139.7mm	273.0 x 139.7 10.750 x 5.500	-	— —	— —	351F01152*	330.2 13.0	14.4 31.7
250 x 125 10 x 5	273.0 x 141.3 10.750 x 5.563	-	— —	— —	351F01153*	330.2 13.0	14.4 31.7
250 x 150 10 x 165.1mm	273.0 x 165.1 10.750 x 6.500	-	— —	— —	351F01162*	330.2 13.0	15.4 34.0
250 x 150 10 x 6	273.0 x 168.3 10.750 x 6.625	-	— —	— —	351F01163*	330.2 13.0	15.4 34.0
250 x 200 10 x 8	273.0 x 219.1 10.750 x 8.625	-	— —	— —	351F01180*	330.2 13.0	15.6 34.4
300 x 100 12 x 4	323.9 x 114.3 12.750 x 4.500	-	— —	— —	351F01342*	355.6 14.0	20.3 44.8
300 x 150 12 x 165.1mm	323.9 x 165.1 12.750 x 6.500	-	— —	— —	351F01362*	355.6 14.0	20.5 45.2
300 x 150 12 x 6	323.9 x 168.3 12.750 x 6.625	-	— —	— —	351F01363*	355.6 14.0	20.5 45.2
300 x 200 12 x 8	323.9 x 219.1 12.750 x 8.625	-	— —	— —	351F01380*	355.6 14.0	21.6 47.7
300 x 250 12 x 10	323.9 x 273.0 12.750 x 10.750	-	— —	— —	351F01411*	355.6 14.0	23.6 52.0
350 x 150 14 x 165.1mm	355.6 x 165.1 14.000 x 6.500	-	— —	— —	351T01462*	482.6 19.0	35.4 78.0
350 x 150 14 x 6	355.6 x 168.3 14.000 x 6.625	-	— —	— —	351T01463*	482.6 19.0	35.4 78.0
350 x 200 14 x 8	355.6 x 219.1 14.000 x 8.625	-	— —	— —	351T01480*	482.6 19.0	36.3 80.0

Grooved  
Fittings

## Figures 251 & 351 Eccentric Reducers

(Page 3 of 3)

Tech Data Sheet: G180

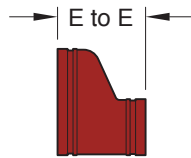


Figure 251  
Cast Eccentric Reducer

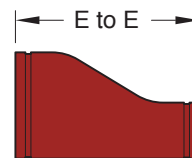


Figure 351  
Fabricated Eccentric Reducer  
(Segment Welded)

Grooved  
Fittings

Pipe Size		Figure 251 - Cast			Figure 351 - Fabricated		
Nominal mm Inches	O.D. mm Inches	Part Number	E to E mm Inches	Approx. Weight Kg. Lbs.	Part Number	E to E mm Inches	Approx. Weight Kg. Lbs.
350 x 250 14 x 10	355.6 x 273.0 14.000 x 10.750	-	— —	— —	351T01411*	482.6 19.0	38.1 84.0
350 x 300 14 x 12	355.6 x 323.9 14.000 x 12.750	-	— —	— —	351T01413*	380.0 14.96	27.3 60.2
400 x 200 16 x 8	406.4 x 219.1 16.000 x 8.625	-	— —	— —	351T01680*	508.0 20.0	41.3 91.0
400 x 250 16 x 10	406.4 x 273.0 16.000 x 10.750	-	— —	— —	351T01611*	508.0 20.0	43.5 96.0
400 x 300 16 x 12	406.4 x 323.9 16.000 x 12.750	-	— —	— —	351T01613*	406.0 15.98	31.8 70.1
400 x 350 16 x 14	406.4 x 355.6 16.000 x 14.000	-	— —	— —	351T01614*	406.0 15.98	32.3 71.2
450 x 300 18 x 12	457.2 x 323.9 18.000 x 12.750	-	— —	— —	351T01813*	533.0 21.0	51.3 113.0
450 x 350 18 x 14	457.2 x 355.6 18.000 x 14.000	-	— —	— —	351T01814*	533.0 21.0	53.1 117.0
450 x 400 18 x 16	457.2 x 406.4 18.000 x 16.000	-	— —	— —	351T01816*	533.0 21.0	54.9 121.0
500 x 250 20 x 10	508.0 x 273.0 20.000 x 10.750	-	— —	— —	351T02111*	660.4 26.0	65.8 145.0
500 x 300 20 x 12	508.0 x 323.9 20.000 x 12.750	-	— —	— —	351T02113*	660.4 26.0	67.6 149.0
500 x 350 20 x 14	508.0 x 355.6 20.000 x 14.000	-	— —	— —	351T02114*	660.4 26.0	68.9 152.0
500 x 400 20 x 16	508.0 x 406.4 20.000 x 16.000	-	— —	— —	351T02116*	660.4 26.0	70.8 156.0
500 x 450 20 x 18	508.0 x 457.2 20.000 x 18.000	-	— —	— —	351T02118*	660.4 26.0	72.6 160.0
600 x 250 24 x 10	609.6 x 273.0 24.000 x 10.750	-	— —	— —	351T02411*	660.4 26.0	78.9 147.0
600 x 300 24 x 12	609.6 x 323.9 24.000 x 12.750	-	— —	— —	351T02413*	660.4 26.0	81.2 179.0
600 x 350 24 x 14	609.6 x 355.6 24.000 x 14.000	-	— —	— —	351T02414*	660.4 26.0	83.5 184.0
600 x 400 24 x 16	609.6 x 406.4 24.000 x 16.000	-	— —	— —	351T02416*	660.4 26.0	85.7 189.0
600 x 450 24 x 18	609.6 x 457.2 24.000 x 18.000	-	— —	— —	351T02418*	660.4 26.0	88.0 194.0
600 x 500 24 x 20	609.6 x 508.0 24.000 x 20.000	-	— —	— —	351T02421*	660.4 26.0	90.3 199.0

\* = 1 for red paint finish, 2 for hot dipped galvanised finish

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

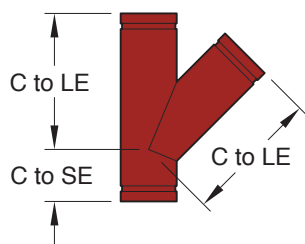
See page 39 for fitting specifications.

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.



## Figure 314 45° Laterals

Tech Data Sheet: G180



Grooved  
Fittings

Part Number	Pipe Size		C to LE mm Inches	C to SE mm Inches	Approx. Weight Kg. Lbs.
	Nominal mm Inches	O.D. mm Inches			
314F00034✱	25	33.7	127.0	57.0	0.7
	1	1.315	5.00	2.24	1.5
314F00042✱	32	42.4	146.1	63.5	1.11
	1 ¼	1.660	5.75	2.50	2.4
314F00048✱	40	48.3	158.8	69.9	1.6
	1 ½	1.900	6.25	2.75	3.5
314F00060✱	50	60.3	177.8	69.9	2.0
	2	2.375	7.00	2.75	4.4
314F00076✱	65	76.1	196.9	76.2	4.5
	76,1mm	3.000	7.75	3.00	9.9
314F00089✱	80	88.9	215.9	82.6	5.0
	3	3.500	8.50	3.25	11.0
314F00114✱	100	114.3	266.7	95.3	8.3
	4	4.500	10.50	3.75	18.3
314F00139✱	125	139.7	317.5	102.0	13.6
	139,7mm	5.500	12.50	4.00	30.0
314F00165✱	150	165.1	355.6	114.3	21.1
	165,1mm	6.500	14.00	4.50	46.5
314F00168✱	150	168.3	355.6	114.3	21.1
	6	6.625	14.00	4.50	46.5
314F00219✱	200	219.1	457.2	152.4	37.6
	8	8.625	18.00	6.00	82.9
314F00273✱	250	273.0	520.7	165.71	57.4
	10	10.750	20.50	6.50	126.5
314F00324✱	300	323.9	584.2	177.8	74.8
	12	12.750	23.00	7.00	164.9

✱ = 1 for red paint finish, 2 for hot dipped galvanised finish

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

See page 39 for fitting specifications.

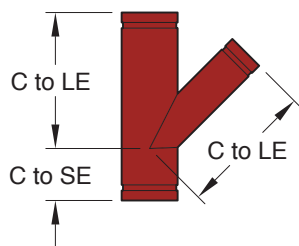
For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

## Figure 325 45° Reducing Laterals

Tech Data Sheet: G180

**10**  
YEAR  
LIMITED  
WARRANTY

Grooved  
Fittings



Part Number	Pipe Size		C to LE mm Inches	C to SE mm Inches	Approx. Weight Kg. Lbs.
	Nominal mm Inches	O.D. mm Inches			
325F03020*	80 x 50 3 x 2	88.9 x 60.3 3.500 x 2.375	215.9 8.50	82.6 3.25	4.1 9.0
325F03026*	80 x 76.1 3 x 76,1mm	88.9 x 76.1 3.500 x 3.000	216.0 8.50	83.0 3.25	5.2 11.5
325F04220*	100 x 50 4 x 2	114.3 x 60.3 4.500 x 2.375	266.7 10.50	95.3 3.75	6.7 14.7
325F04226*	100 x 65 4 x 76,1mm	114.3 x 76.1 4.500 x 3.000	267.0 10.50	95.0 3.75	7.7 16.9
325F04230*	100 x 80 4 x 3	114.3 x 88.9 4.500 x 3.500	266.7 10.50	95.3 3.75	7.7 16.9
325F05220*	125 x 50 139,7mm x 2	139.7 x 60.3 5.500 x 2.375	318.1 12.50	102.0 4.00	10.2 22.4
325F05230*	125 x 80 139,7mm x 3	139.7 x 88.9 5.500 x 3.500	318.0 12.50	102.0 4.00	12.0 26.5
325F05242*	125 x 100 139,7mm x 4	139.7 x 114.3 5.500 x 4.500	318.0 12.50	102.0 4.00	13.8 30.4
325F06220*	150 x 50 165,1mm x 2	165.1 x 60.3 6.500 x 2.375	356.0 14.00	114.0 4.50	15.0 33.1
325F06230*	150 x 80 165,1mm x 3	165.1 x 88.9 6.500 x 3.500	356.0 14.00	114.0 4.50	16.8 37.0
325F06242*	150 x 100 165,1mm x 4	165.1 x 114.3 6.500 x 4.500	356.0 14.00	114.0 4.50	18.1 39.9
325F06252*	150 x 125 165,1 x 139,7mm	165.1 x 139.7 6.500 x 5.500	356.0 14.00	114.0 4.50	20.4 45.0
325F06320*	150 x 50 6 x 2	168.3 x 60.3 6.625 x 2.375	355.6 14.00	114.3 4.50	14.4 31.7
325F06330*	150 x 80 6 x 3	168.3 x 88.9 6.625 x 3.500	355.6 14.00	114.3 4.50	15.6 34.4
325F06342*	150 x 100 6 x 4	168.3 x 114.3 6.625 x 4.500	355.6 14.00	114.3 4.50	16.6 36.5
325F06352*	150 x 125 6 x 139,7mm	168.3 x 139.7 6.625 x 5.500	356.0 14.00	114.0 4.50	20.4 45.0
325F08042*	200 x 100 8 x 4	219.1 x 114.1 8.625 x 4.500	457.2 18.00	152.4 6.00	26.7 58.9
325F08052*	200 x 125 8 x 139,7mm	219.1 x 139.7 8.625 x 5.500	457.0 18.00	152.0 6.00	30.8 67.9
325F08063*	200 x 150 8 x 6	219.1 x 168.3 8.625 x 6.625	457.2 18.00	152.4 6.00	30.0 66.1
325F01042*	250 x 100 10 x 4	273.0 x 114.3 10.750 x 4.500	520.7 20.50	165.1 6.50	39.6 87.3
325F01052*	250 x 125 10 x 139,7mm	273.0 x 139.7 10.750 x 5.500	521.0 20.50	165.0 6.50	45.4 100.1
325F01063*	250 x 150 10 x 6	273.0 x 168.3 10.750 x 6.625	520.7 20.50	165.1 6.50	43.0 94.7
325F01080*	250 x 200 10 x 8	273.0 x 219.1 10.750 x 8.625	520.7 20.50	165.1 6.50	45.0 99.2
325F01242*	300 x 100 12 x 4	323.9 x 114.3 12.750 x 4.500	584.2 23.00	177.8 7.00	54.7 120.6
325F01263*	300 x 150 12 x 6	323.9 x 168.3 12.750 x 6.625	584.2 23.00	177.8 7.00	58.3 128.5
325F01280*	300 x 200 12 x 8	323.9 x 219.1 12.750 x 8.625	584.2 23.00	177.8 7.00	60.4 133.1

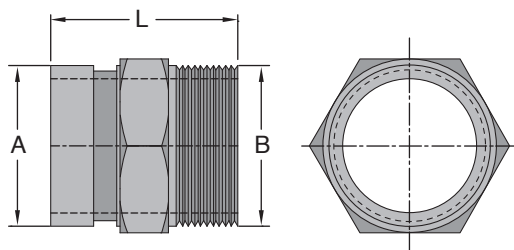
\* = 1 for red paint finish, 2 for hot dipped galvanised finish

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

See page 39 for fitting specifications.

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

## Figure 304 Groove x Male BSP Thread Nipple, Machined



**10**  
YEAR  
LIMITED  
WARRANTY

Part Number	Nominal Size mm Inches	ØA mm Inches	B mm Inches	L mm Inches	Approx. Weight Kg. Lbs.
304H000342	25	33.7	33.2	55	0.1
	1	1.315	1.31	2.17	0.2
304H000422	32	42.4	41.9	63	0.2
	1 ¼	1.660	1.65	2.48	0.4
304H000482	40	48.3	47.8	59	0.3
	1 ½	1.900	1.88	2.32	0.7
304H000602	50	60.3	59.6	68	0.5
	2	2.375	2.35	2.68	1.1
304H000762	65	76.1	75.2	75	0.8
	76.1mm	3.000	2.96	2.95	1.8
304H000892	80	88.9	87.9	80	1.4
	3	3.500	3.46	3.15	3.1

Only available in galvanised finish.

a range of fabricated adaptor nipple; grooved to plain or BSP is also available on request.

Please contact your GRINNELL sales representative or Sales Office for further information

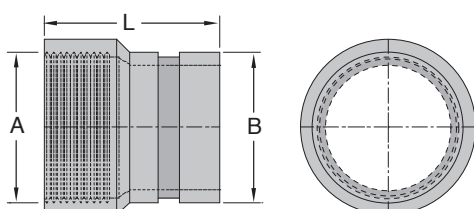
See page 39 for fitting specifications.

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.



Grooved  
Fittings

## Figure 305 Groove x Female BSP Thread Nipple, Machined



**10**  
YEAR  
LIMITED  
WARRANTY

Part Number	Nominal Size mm Inches	ØA mm Inches	B mm Inches	L mm Inches	Approx. Weight Kg. Lbs.
305H000342	25	33.7	33.2	50	0.1
	1	1.315	1.31	1.97	0.2
305H000422	32	42.4	41.9	50	0.2
	1 ¼	1.660	1.65	1.97	0.4
305H000482	40	48.3	47.8	50	0.3
	1 ½	1.900	1.88	1.97	0.7
305H000602	50	60.3	59.6	100	0.5
	2	2.375	2.35	3.94	1.1
305H000762	65	76.1	75.1	100	0.8
	76.1mm	3.000	2.96	3.94	1.8
305H000892	80	88.9	88.5	100	1.2
	3	3.500	3.48	3.94	2.6

Only available in galvanised finish.

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

See page 39 for fitting specifications.

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.



## Notes





## OUTLET FITTINGS

## Outlet Fittings Table of Contents



**Figure 730**  
Female Threaded Tees  
Pages 67 - 69



**Figure 730**  
Grooved Tees  
Pages 70 - 72

The GRINNELL Figure 730 Mechanical Tee is rated at 34.5 Bar (500 psi) 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 4482 Bar (65,000 psi)
- Yield Strength, minimum 3103 Bar (45,000 psi)
- Elongation in 50mm (2"), minimum 12%
- ASTM A 153 – Standard specification for hot-dip galvanising

### Bolt/Nut Specifications

- **Metric:** Carbon steel oval neck track head bolts (Gold colour 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.
- **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 7584 Bar (110,000 psi). 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.
- Stainless steel bolts and nuts are available upon request.

### Gasket Specifications

- **Grade "E" EPDM** gaskets have a Green colour code stripe identification and conform to ASTM D 2000 for service temperatures from -34°C to 110°C (-30°F to 230°F). They are recommended for hot water not to exceed 110°C (230°F), 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 colour code stripe identification and conform to ASTM D 2000 for service temperatures from -29°C to 82°C (-20°F to 180°F). They are recommended for petroleum products, vegetable oils, mineral oils, and air with oil vapours.

### Coatings

- Red – Non-lead paint (standard)
- Hot-Dipped, Zinc Galvanised (optional)

In addition, all sizes can be made into a cross configuration, threaded x threaded, groove x groove, and groove x threaded.



For detailed Listing / Approval information contact GRINNELL Mechanical Products.

General notes: Additional information is included in our data sheets and is available upon request. It is the Designer's responsibility to select products suitable for the intended service and to ensure that pressure ratings and performance data is not exceeded. Always read and understand the installation constructions. Never remove any piping components nor correct or modify any piping deficiencies without first depressurising and draining the system. Material and gasket selection should be verified with the gasket recommendation listing for the specific application.

## Figure 730 Mechanical Tees – Threaded

(Page 1 of 3)

Tech Data Sheet: G210

**10**  
YEAR  
LIMITED  
WARRANTY

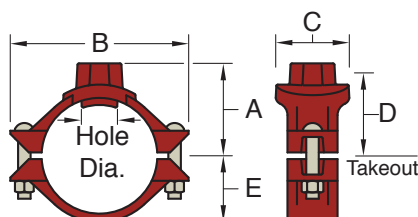


Figure 730 Branch Outlet with Female  
BSP Threaded Branch  
(Tee Configuration)

Outlet  
Fittings

Part Number	Nominal Size Run x Branch DN In.	Hole Dia.†		Max.‡ Branch End Load kN Lbs.	Dimensions - mm In.					Bolt Size mm In.	Approx. Weight kg Lbs.
		Min. mm In.	Max. mm In.		A	B	C	D	E		
730AT2005*	50 x 15	38.1	41.3	1.2	66.5	124.0	78.0	53.8	40.4	M10 x 57	1.1
	2 x 1/2	1.50	1.63	277.1	2.62	4.88	3.07	2.12	1.59	3/8 x 2-1/4	2.5
730AT2007*	50 x 20	38.1	41.3	1.9	66.5	124.0	78.0	53.8	40.4	M10 x 57	1.0
	2 x 3/4	1.50	1.63	433.0	2.62	4.88	3.07	2.12	1.59	3/8 x 2-1/4	2.3
730AT2010*	50 x 25	38.1	41.3	3.0	66.5	124.0	78.0	53.8	40.4	M10 x 57	1.0
	2 x 1	1.50	1.63	679.1	2.62	4.88	3.07	2.12	1.59	3/8 x 2-1/4	2.2
730AT2012*	50 x 32	44.5	47.6	4.8	70.6	124.0	84.3	49.0	40.4	M10 x 57	1.1
	2 x 1-1/4	1.75	1.88	1082.1	2.78	4.88	3.32	1.93	1.59	3/8 x 2-1/4	2.4
730AT2015*	50 x 40	44.5	47.6	6.3	69.9	124.0	84.3	49.0	40.4	M10 x 57	1.1
	2 x 1-1/2	1.75	1.88	1417.6	2.75	4.88	3.32	1.93	1.59	3/8 x 2-1/4	2.5
730AT2505*	65 x 15	38.1	41.3	1.2	73.2	133.4	78.0	60.5	46.0	M10 x 57	1.1
	2-1/2 x 1/2	1.50	1.63	277.1	2.88	5.25	3.07	2.38	1.81	3/8 x 2-1/4	2.4
730AT2507*	65 x 20	38.1	41.3	1.9	73.2	133.4	78.0	60.5	46.0	M10 x 57	1.1
	2-1/2 x 3/4	1.50	1.63	433.0	2.88	5.25	3.07	2.38	1.81	3/8 x 2-1/4	2.4
730AT2510*	65 x 25	38.1	41.3	3.0	73.2	133.4	78.0	60.5	46.0	M10 x 57	1.1
	2-1/2 x 1	1.50	1.63	679.1	2.88	5.25	3.07	2.38	1.81	3/8 x 2-1/4	2.4
730AT2512*	65 x 32	50.8	54.0	4.8	76.2	133.4	90.4	55.6	46.0	M10 x 57	1.1
	2-1/2 x 1-1/4	2.00	2.13	1082.1	3.00	5.25	3.56	2.19	1.81	3/8 x 2-1/4	2.5
730AT2515*	65 x 40	50.8	54.0	6.3	78.0	133.4	91.2	55.1	46.0	M10 x 57	1.2
	2-1/2 x 1-1/2	2.00	2.13	1417.6	3.07	5.25	3.59	2.17	1.81	3/8 x 2-1/4	2.6
730MT2520*	65 x 50	50.8	54.0	9.9	81.0	133.4	101.6	62.0	46.0	M10 x 57	1.2
	2-1/2 x 2	2.00	2.13	2215.1	3.19	5.25	4.00	2.44	1.81	3/8 x 2-1/4	2.7
730AT2605*	65 x 15	38.1	41.3	1.2	74.5	142.7	78.0	62.0	47.5	M10 x 57	1.1
	76.1mm x 1/2	1.50	1.63	277.1	2.94	5.62	3.07	2.44	1.87	—	2.5
730AT2607*	65 x 20	38.1	41.3	1.9	74.5	142.7	78.0	62.0	47.5	M10 x 57	1.1
	76.1mm x 3/4	1.50	1.63	433.0	2.94	5.62	3.07	2.44	1.87	—	2.5
730AT2610*	65 x 25	38.1	41.3	3.0	74.5	142.7	78.0	62.0	47.5	M10 x 57	1.1
	76.1mm x 1	1.50	1.63	679.1	2.94	5.62	3.07	2.44	1.87	—	2.5
730MT2612*	65 x 32	50.8	54.0	4.8	77.7	142.7	90.4	57.2	47.5	M10 x 57	1.5
	76.1mm x 1-1/4	2.00	2.13	1082.1	3.06	5.62	3.56	2.25	1.87	—	3.3
730MT2615*	65 x 40	50.8	54.0	6.3	79.5	142.7	90.4	57.2	47.5	M10 x 57	1.6
	76.1mm x 1-1/2	2.00	2.13	1417.6	3.13	5.62	3.56	2.25	1.87	—	3.6
730MT2620*	65 x 50	50.8	54.0	9.9	82.6	142.7	101.6	63.5	47.5	M10 x 57	1.7
	76.1mm x 2	2.00	2.13	2215.1	3.25	5.62	4.00	2.50	1.87	—	3.7

## Figure 730 Mechanical Tees – Threaded

(Page 2 of 3)

Tech Data Sheet: G210

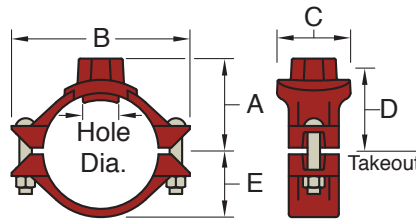


Figure 730 Branch Outlet with Female  
BSP Threaded Branch  
(Tee Configuration)

Part Number	Nominal Size Run x Branch DN In.	Hole Dia.†		Max.‡ Branch End Load kN Lbs.	Dimensions - mm In.					Bolt Size mm In.	Approx. Weight kg Lbs.
		Min. mm In.	Max. mm In.		A	B	C	D	E		
730MT3005*	80 x 15 3 x 1/2	38.1 1.50	41.3 1.63	1.2 277.1	81.0 3.19	155.7 6.13	78.0 3.07	65.0 2.56	56.1 2.21	M12 x 89 1/2 x 3	1.7 3.7
730MT3007*	80 x 20 3 x 3/4	38.1 1.50	41.3 1.63	1.9 433.0	81.0 3.19	155.7 6.13	78.0 3.07	65.0 2.56	56.1 2.21	M12 x 89 1/2 x 3	1.7 3.7
730MT3010*	80 x 25 3 x 1	38.1 1.50	41.3 1.63	3.0 679.1	81.0 3.19	155.7 6.13	78.0 3.07	65.0 2.56	56.1 2.21	M12 x 89 1/2 x 3	1.7 3.7
730MT3012*	80 x 32 3 x 1-1/4	44.5 1.75	47.6 1.88	4.8 1082.1	84.8 3.34	155.7 6.13	84.3 3.32	63.5 2.50	56.1 2.21	M12 x 89 1/2 x 3	1.6 3.5
730MT3015*	80 x 40 3 x 1-1/2	50.8 2.00	54.0 2.13	6.3 1417.6	85.9 3.38	155.7 6.13	90.4 3.56	63.0 2.48	56.1 2.21	M12 x 89 1/2 x 3	1.7 3.7
730MT3020*	80 x 50 3 x 2	63.5 2.50	66.7 2.63	9.9 2215.1	88.9 3.50	155.7 6.13	103.9 4.09	69.9 2.75	56.1 2.21	M12 x 89 1/2 x 3	2.1 4.7
730MT4205*	100 x 15 4 x 1/2	38.1 1.50	41.3 1.63	1.2 277.1	93.7 3.69	181.1 7.13	78.0 3.07	77.7 3.06	70.6 2.78	M12 x 89 1/2 x 3	2.2 4.8
730MT4207*	100 x 20 4 x 3/4	38.1 1.50	41.3 1.63	1.9 433.0	93.7 3.69	181.1 7.13	78.0 3.07	77.7 3.06	70.6 2.78	M12 x 89 1/2 x 3	2.2 4.8
730MT4210*	100 x 25 4 x 1	38.1 1.50	41.3 1.63	3.0 679.1	93.7 3.69	181.1 7.13	78.0 3.07	77.7 3.06	70.6 2.78	M12 x 89 1/2 x 3	2.2 4.8
730AT4212*	100 x 32 4 x 1-1/4	44.5 1.75	47.6 1.88	4.8 1082.1	99.6 3.92	181.1 7.13	84.3 3.32	76.2 3.00	70.6 2.78	M12 x 89 1/2 x 3	2.2 4.8
730AT4215*	100 x 40 4 x 1-1/2	50.8 2.00	54.0 2.13	6.3 1417.6	101.6 4.00	181.1 7.13	90.4 3.56	75.7 2.98	70.6 2.78	M12 x 89 1/2 x 3	2.3 5.1
730MT4220*	100 x 50 4 x 2	63.5 2.50	66.7 2.63	9.9 2215.1	101.6 4.00	181.1 7.13	103.1 4.06	82.6 3.25	70.6 2.78	M12 x 89 1/2 x 3	2.5 5.5
730MT4226*	100 x 65 4 x 76.1mm	69.9 2.75	73.0 2.88	15.7 3534.3	101.6 4.00	181.1 7.13	111.3 4.38	79.2 3.12	70.6 2.78	—	2.8 6.2
730MT4230*	100 x 80 4 x 3	88.9 3.50	92.1 3.63	21.4 4810.6	104.9 4.13	181.1 7.13	130.3 5.13	84.1 3.31	70.6 2.78	M12 x 89 1/2 x 3	3.5 7.8
730MT5315*	125 x 40 139.7mm/5 x 1-1/2	50.8 2.00	54.0 2.13	6.3 1417.6	117.6 4.63	206.5 8.13	90.4 3.56	101.6 4.00	85.6 3.37	M16 x 121 5/8 x 4-3/4	3.5 7.8
730MT5320*	125 x 50 139.7mm/5 x 2	63.5 2.50	66.7 2.63	9.9 2215.1	117.6 4.63	206.5 8.13	103.1 4.06	98.6 3.88	85.6 3.37	M16 x 121 5/8 x 4-3/4	3.5 7.8
730MT5326*	125 x 65 139.7mm/5 x 76.1mm	69.9 2.75	73.0 2.88	15.7 3534.3	120.7 4.75	206.5 8.13	111.3 4.38	98.6 3.88	85.6 3.37	M16 x 121 —	4.0 8.9
730MT5330*	125 x 80 139.7mm/5 x 3	88.9 3.50	92.1 3.63	21.4 4810.6	127.0 5.00	206.5 8.13	130.3 5.13	103.1 4.06	85.6 3.37	M16 x 121 5/8 x 4-3/4	5.8 12.7
730MT6212*	150 x 32 165.1mm x 1-1/4	50.8 2.00	54.0 2.13	4.8 1082.1	130.3 5.13	235.0 9.25	90.4 3.56	108.0 4.25	99.1 3.90	M16 x 121 —	3.5 7.7



## Figure 730 Mechanical Tees – Threaded

(Page 3 of 3)

Tech Data Sheet: G210

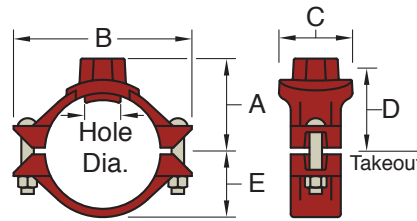


Figure 730 Branch Outlet with Female  
BSP Threaded Branch  
(Tee Configuration)

Part Number	Nominal Size Run x Branch DN In.	Hole Dia.†		Max.‡ Branch End Load kN Lbs.	Dimensions - mm In.					Bolt Size mm In.	Approx. Weight kg Lbs.
		Min. mm In.	Max. mm In.		A	B	C	D	E		
730AT6215*	150 x 40	50.8	54.0	6.3	130.3	235.0	90.4	102.6	99.1	M16 x 121	3.5
	165.1mm x 1-1/2	2.00	2.13	1417.6	5.13	9.25	3.56	4.04	3.90	—	7.7
730AT6220*	150 x 50	63.5	66.7	9.9	130.3	235.0	103.1	109.5	99.1	M16 x 121	3.7
	165.1mm x 2	2.50	2.63	2215.1	5.13	9.25	4.06	4.31	3.90	—	8.2
730AT6226*	150 x 65	69.9	73.0	15.7	130.3	235.0	111.3	106.2	99.1	M16 x 121	4.1
	165.1mm x 76.1mm	2.75	2.88	3584.3	5.13	9.25	4.38	4.18	3.90	—	9.0
730AT6230*	150 x 80	88.9	92.1	21.4	139.7	235.0	130.3	111.0	99.1	M16 x 121	4.8
	165.1mm x 3	3.50	3.63	4810.6	5.50	9.25	5.13	4.37	3.90	—	10.5
730MT6312*	150 x 32	50.8	54.0	4.8	130.3	235.0	90.4	108.0	99.1	M16 x 121	3.4
	6 x 1-1/4	2.00	2.13	1082.1	5.13	9.25	3.56	4.25	3.90	5/8 x 4-3/4	7.5
730AT6315*	150 x 40	50.8	54.0	6.3	130.3	235.0	90.4	102.6	99.1	M16 x 121	3.4
	6 x 1-1/2	2.00	2.13	1417.6	5.13	9.25	3.56	4.04	3.90	5/8 x 4-3/4	7.5
730AT6320*	150 x 50	63.5	66.7	9.9	130.3	235.0	103.1	109.5	99.1	M16 x 121	3.5
	6 x 2	2.50	2.63	2215.1	5.13	9.25	4.06	4.31	3.90	5/8 x 4-3/4	7.7
730AT6326*	150 x 65	69.9	73.0	14.4	130.3	235.0	111.3	106.2	99.1	M16 x 121	4.0
	6 x 76.1mm	2.75	2.88	3245.9	5.13	9.25	4.38	4.18	3.90	5/8 x 4-3/4	8.9
730AT6330*	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 x 3	3.50	3.63	4810.6	5.50	9.25	5.13	4.37	3.90	5/8 x 4-3/4	10.3
730AT8020*	200 x 50	63.5	66.7	14.4	158.8	317.5	103.1	130.0	124.5	M20 x 121	5.5
	8 x 2	2.50	2.63	3245.9	6.25	12.50	4.06	5.12	4.90	3/4 x 4-3/4	12.1
730AT8026*	200 x 65	69.9	73.0	15.7	158.8	317.5	111.3	130.0	124.5	M20 x 121	5.7
	8 x 76.1mm	2.75	2.88	3534.3	6.25	12.50	4.38	5.12	4.90	—	12.6
730AT8030*	200 x 80	88.9	92.1	21.4	165.1	317.5	130.3	136.4	124.5	M20 x 121	6.1
	8 x 3	3.50	3.63	4810.6	6.50	12.50	5.13	5.37	4.90	3/4 x 4-3/4	13.6

\* = 1 for red paint finish, 2 for hot dipped galvanised finish

† Proper hole preparation is required for effective sealing and performance. Check the pipe seal surface within 15.9mm (5/8") 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 a GRINNELL Sales Representative.

‡ 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 a GRINNELL Sales Representative for details.

Threads are BSP. Some size outlets are available with NPT threads. Contact a GRINNELL Sales Representative for details.

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

See page 66 for mechanical tee specifications, and see pages 116 - 127 for gasket information.

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

Outlet  
Fittings

## Figure 730 Mechanical Tees – Grooved

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Tech Data Sheet: G210

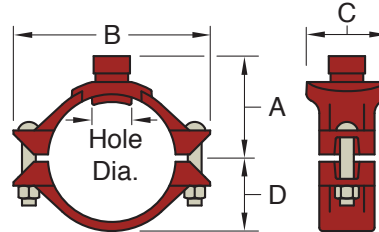


Figure 730 Branch Outlet  
with Grooved Branch  
(Tee Configuration)

Outlet  
Fittings

Part Number	Nominal Size Run x Branch DN In.	Hole Dia.†		Max.‡ End Load Branch kN Lbs.	Dimensions - mm In.				Bolt Size mm In.	Approx. Weight kg Lbs.
		Min. mm In.	Max. mm In.		A	B	C	D		
730AG2012✖	50 x 32	44.5	47.6	4.8	70.6	124.0	84.3	40.4	M10 x 57	1.1
	2 x 1-1/4	1.75	1.88	1082.1	2.78	4.88	3.32	1.59	3/8 x 2-1/4	2.5
730AG2015✖	50 x 40	44.5	47.6	6.3	66.5	124.0	84.3	40.4	M10 x 57	1.1
	2 x 1-1/2	1.75	1.88	1417.6	2.62	4.88	3.32	1.59	3/8 x 2-1/4	2.4
730AG2512✖	65 x 32	50.8	54.0	4.8	76.2	133.4	90.4	46.0	M10 x 57	1.1
	2-1/2 x 1-1/4	2.00	2.13	1082.1	3.00	5.25	3.56	1.81	3/8 x 2-1/4	2.5
730MG2520✖	65 x 50	50.8	54.0	9.9	81.0	133.4	101.6	46.0	M10 x 57	1.1
	2-1/2 x 2	2.00	2.13	2215.1	3.19	5.25	4.00	1.81	3/8 x 2-1/4	2.5
730MG2612✖	65 x 32	50.8	54.0	4.8	77.7	142.7	90.4	47.5	M10 x 57	1.1
	76.1mm x 1-1/4	2.00	2.13	1082.1	3.06	5.62	3.56	1.87	–	2.5
730MG2615✖	65 x 40	50.8	54.0	6.3	79.5	142.7	90.4	47.5	M10 x 57	1.1
	76.1mm x 1-1/2	2.00	2.13	1417.6	3.13	5.62	3.56	1.87	–	2.5
730MG2620✖	65 x 50	50.8	54.0	9.9	82.6	142.7	101.6	47.5	M10 x 57	1.1
	76.1mm x 2	2.00	2.13	2215.1	3.25	5.62	4.00	1.87	–	2.5
730MG3012✖	80 x 32	44.5	47.6	4.8	84.8	155.7	84.3	56.1	M12 x 89	1.6
	3 x 1-1/4	1.75	1.88	1082.1	3.34	6.13	3.32	2.21	1/2 x 3	3.5
730MG3015✖	80 x 40	50.8	54.0	6.3	85.9	155.7	90.4	56.1	M12 x 89	1.6
	3 x 1-1/2	2.00	2.13	1417.6	3.38	6.13	3.56	2.21	1/2 x 3	3.6
730MG3020✖	80 x 50	63.5	66.7	9.9	88.9	155.7	103.9	56.1	M12 x 89	2.0
	3 x 2	2.50	2.63	2215.1	3.50	6.13	4.09	2.21	1/2 x 3	4.5
730AG4212✖	100 x 32	44.5	47.6	4.8	99.6	181.1	84.3	70.6	M12 x 89	2.2
	4 x 1-1/4	1.75	1.88	1082.1	3.92	7.13	3.32	2.78	1/2 x 3	4.8
730AG4215✖	100 x 40	50.8	54.0	6.3	101.6	181.1	90.4	70.6	M12 x 89	2.3
	4 x 1-1/2	2.00	2.13	1417.6	4.00	7.13	3.56	2.78	1/2 x 3	5.0
730MG4220✖	100 x 50	63.5	66.7	9.9	101.6	181.1	103.1	70.6	M12 x 89	2.4
	4 x 2	2.50	2.63	2215.1	4.00	7.13	4.06	2.78	1/2 x 3	5.3
730MG4225✖	100 x 65	69.9	73.0	14.4	101.6	181.1	111.3	70.6	M12 x 89	2.7
	4 x 2-1/2	2.75	2.88	3245.9	4.00	7.13	4.38	2.78	1/2 x 3	5.9
730MG4226✖	100 x 65	69.9	73.0	15.7	101.6	181.1	111.3	70.6	M12 x 89	2.7
	4 x 76.1mm	2.75	2.88	3534.3	4.00	7.13	4.38	2.78	–	5.9
730MG4230✖	100 x 80	88.9	92.1	21.4	104.9	181.1	130.3	70.6	M12 x 89	3.4
	4 x 3	3.50	3.63	4810.6	4.13	7.13	5.13	2.78	1/2 x 3	7.4
730MG5315✖	125 x 40	50.8	54.0	6.3	117.6	206.5	90.4	85.6	M16 x 121	3.5
	139.7mm/5 x 1-1/2	2.00	2.13	1417.6	4.63	8.13	3.56	3.37	5/8 x 4-3/4	7.7

## Figure 730 Mechanical Tees – Grooved

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Tech Data Sheet: G210

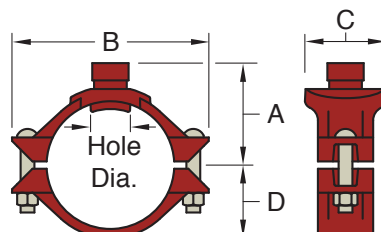


Figure 730 Branch Outlet  
with Grooved Branch  
(Tee Configuration)

Outlet  
Fittings

Part Number	Nominal Size Run x Branch DN In.	Hole Dia.†		Max.‡ End Load Branch kN Lbs.	Dimensions - mm In.				Bolt Size mm In.	Approx. Weight kg Lbs.
		Min. mm In.	Max. mm In.		A	B	C	D		
730MG5320*	125 x 50	63.5	66.7	9.9	117.6	206.5	103.1	85.6	M16 x 121	3.4
	139.7mm/5 x 2	2.50	2.63	2215.1	4.63	8.13	4.06	3.37	5/8 x 4-3/4	7.6
730MG5325*	125 x 65	69.9	73.0	14.4	120.7	206.5	111.3	85.6	M16 x 121	3.9
	139.7mm/5 x 2-1/2	2.75	2.88	3245.9	4.75	8.13	4.38	3.37	5/8 x 4-3/4	8.6
730MG5326*	125 x 65	69.9	73.0	15.7	120.7	206.5	111.3	85.6	M16 x 121	3.9
	139.7mm/5 x 76.1mm	2.75	2.88	3534.3	4.75	8.13	4.38	3.37	—	8.6
730MG5330*	125 x 80	88.9	92.1	21.4	127.0	206.5	130.3	85.6	M16 x 121	5.6
	139.7mm/5 x 3	3.50	3.63	4810.6	5.00	8.13	5.13	3.37	5/8 x 4-3/4	12.3
730MG6212*	150 x 32	50.8	54.0	4.8	130.3	235.0	90.4	99.1	M16 x 121	3.5
	165.1mm x 1-1/4	2.00	2.13	1082.1	5.13	9.25	3.56	3.90	—	7.7
730MG6215*	150 x 40	50.8	54.0	6.3	130.3	235.0	90.4	99.1	M16 x 121	3.4
	165.1mm x 1-1/2	2.00	2.13	1417.6	5.13	9.25	3.56	3.90	—	7.6
730AG6220*	150 x 50	63.5	66.7	9.9	130.3	235.0	103.1	99.1	M16 x 121	3.6
	165.1mm x 2	2.50	2.63	2215.1	5.13	9.25	4.06	3.90	—	8.0
730AG6225*	150 x 65	69.9	73.0	14.4	130.3	235.0	111.3	99.1	M16 x 121	4.0
	165.1mm x 2-1/2	2.75	2.88	3245.9	5.13	9.25	4.38	3.90	—	8.8
730AG6226*	150 x 65	69.9	73.0	15.7	130.3	235.0	111.3	99.1	M16 x 121	4.0
	165.1mm x 76.1mm	2.75	2.88	3534.3	5.13	9.25	4.38	3.90	—	8.8
730AG6230*	150 x 80	88.9	92.1	—	139.7	235.0	130.3	99.1	M16 x 121	4.6
	165.1mm x 3	3.50	3.63	—	5.50	9.25	5.13	3.90	—	10.1
730AG6242*	150 x 100	114.3	117.5	35.4	136.7	235.0	155.7	99.1	M16 x 121	5.3
	165.1mm x 4	4.50	4.63	7952.2	5.38	9.25	6.13	3.90	—	11.6
730MG6312*	150 x 32	50.8	54.0	4.8	130.3	235.0	90.4	99.1	M16 x 121	3.5
	6 x 1-1/4	2.00	2.13	1082.1	5.13	9.25	3.56	3.90	5/8 x 4-3/4	7.7
730AG6315*	150 x 40	50.8	54.0	6.3	130.3	235.0	90.4	99.1	M16 x 121	3.4
	6 x 1-1/2	2.00	2.13	1417.6	5.13	9.25	3.56	3.90	5/8 x 4-3/4	7.6
730AG6320*	150 x 50	63.5	66.7	9.9	130.3	235.0	103.1	99.1	M16 x 121	3.6
	6 x 2	2.50	2.63	2215.1	5.13	9.25	4.06	3.90	5/8 x 4-3/4	8.0
730AG6325*	150 x 65	69.9	73.0	14.4	130.3	235.0	111.3	99.1	M16 x 121	4.0
	6 x 2-1/2	2.75	2.88	3245.9	5.13	9.25	4.38	3.90	5/8 x 4-3/4	8.8
730AG6326*	150 x 65	69.9	73.0	14.4	130.3	235.0	111.3	99.1	M16 x 121	4.0
	6 x 76.1mm	2.75	2.88	3245.9	5.13	9.25	4.38	3.90	5/8 x 4-3/4	8.8
730AG6330*	150 x 80	88.9	92.1	21.4	139.7	235.0	130.3	99.1	M16 x 121	4.6
	6 x 3	3.50	3.63	4810.6	5.50	9.25	5.13	3.90	5/8 x 4-3/4	10.1

## Figure 730 Mechanical Tees – Grooved

(Page 3 of 3)

Tech Data Sheet: G210

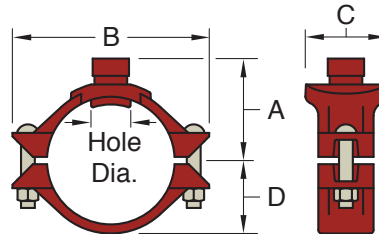


Figure 730 Branch Outlet  
with Grooved Branch  
(Tee Configuration)

Outlet  
Fittings

Part Number	Nominal Size Run x Branch DN In.	Hole Dia.†		Max.‡ End Load Branch kN Lbs.	Dimensions - mm In.				Bolt Size mm In.	Approx. Weight kg Lbs.
		Min. mm In.	Max. mm In.		A	B	C	D		
730AG6342*	150 x 100	114.3	117.5	35.4	136.7	235.0	155.7	99.1	M16 x 121	5.3
	6 x 4	4.50	4.63	7952.2	5.38	9.25	6.13	3.90	5/8 x 4-3/4	11.6
730AG8020*	200 x 50	63.5	66.7	9.9	158.8	317.5	111.3	124.5	M20 x 121	5.5
	8 x 2	2.50	2.63	2215.1	6.25	12.50	4.38	4.90	3/4 x 4-3/4	12.1
730AG8025*	200 x 65	69.9	73.0	14.4	158.8	317.5	111.3	124.5	M20 x 121	5.6
	8 x 2-1/2	2.75	2.88	3245.9	6.25	12.50	4.38	4.90	3/4 x 4-3/4	12.3
730AG8026*	200 x 65	69.9	73.0	15.7	158.8	317.5	111.3	124.5	M20 x 121	5.6
	8 x 76.1mm	2.75	2.88	3534.3	6.25	12.50	4.38	4.90	—	12.3
730AG8030*	200 x 80	88.9	92.1	21.4	165.1	317.5	130.3	124.5	M20 x 121	6.0
	8 x 3	3.50	3.63	4810.6	6.50	12.50	5.13	4.90	3/4 x 4-3/4	13.2
730AG8042*	200 x 100	114.3	117.5	35.4	162.1	317.5	155.7	124.5	M20 x 121	6.7
	8 x 4	4.50	4.63	7952.2	6.38	12.50	6.13	4.90	3/4 x 4-3/4	14.7

\* = 1 for red paint finish, 2 for hot dipped galvanised finish

◆ Contact a GRINNELL Sales Representative for dimension details.

† Proper hole preparation is required for effective sealing and performance. Check the pipe seal surface within 15.9mm (5/8") 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 a GRINNELL Sales Representative for details.

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

See page 66 for mechanical tee specifications, and see pages 116 - 127 for gasket information.

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.





## VALVES & ACCESSORIES

## Valves & Accessories Table of Contents

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 <p><b>Model CV-1</b> Grooved End Check Valves Pages 78 - 79</p>	 <p><b>Model CB800</b> Threaded Balancing Valves Page 85</p>	 <p><b>Figure ALG</b> Expansion Joint Page 89</p>
 <p><b>Figure 760P</b> "Y" Strainer Pages 80 - 81</p>	 <p><b>Model CB800</b> Circuit Balancing Insulation Kits Page 86</p>	 <p><b>Figure ANS</b> Expansion Joint Page 90</p>
 <p><b>Figure 725G</b> Suction Diffuser Page 82</p>	 <p><b>Model CB800</b> Circuit Balancing Valves MC2 Measuring Computer Page 86</p>	 <p><b>Figure FSF</b> Flanged Rubber Bellows Page 91</p>
 <p><b>Model CB800</b> Balancing Valves Overview Page 83</p>	 <p><b>Figure 70607</b> Groove Ended Metering Station Page 87</p>	 <p><b>Figures 407GT &amp; 407T</b> Dielectric Waterways Page 92</p>



## Model B303 Grooved End Butterfly Valves Gear and Lever-Lock Operators

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*Tech Data Sheet: G315*

**10**  
YEAR  
LIMITED  
WARRANTY

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

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



**Lever-Lock  
Operator**

**Gear  
Operator**

### Approvals

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

### Maximum Working Pressure

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

### Body:

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

### Body Coating:

- Nylon: Rilson Pine Powder (PA11), Black

### Disc:

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

### Upper and Lower Stem:

- Type 410 Stainless Steel conforming to ASTM A479

### Lever-Lock Operator:

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

### Gear Operator:

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

### Encapsulated Disc Material & Temperature Rating:

See chart below

### Butterfly Valve Torque

- Pressure drop, contact a GRINNELL Sales Representative.

### Performance

- Pressure drop, contact a GRINNELL Sales Representative.

Valves & Accessories

Grade "E" EPDM <sup>(a)</sup>	Grade "T" Nitrile <sup>(b)</sup>	Grade "O" Fluoroelastomer <sup>(c)</sup>
-30°F to 230°F -34°C to 110°C	-20°F to 180°F -29°C to 82°C	-20°F to 200°F -29°C to 93°C
<p>a. Recommended for hot water, dilute acids, alkalis, oil free air, and many chemical services not involving petroleum products. Not recommended for hydrocarbons or steam service.</p> <p>b. Recommended for petroleum products, vegetable oils, mineral oils, and air with oils. High-end oil vapour temperature decreases to 150°F (66°C) Not recommended for hot water or hot dry air systems.</p> <p>c. Recommended for oxidizing acids, petroleum products, hydraulic fluids, lubricants, halogenated hydrocarbons. Not recommended for hot water.</p>		

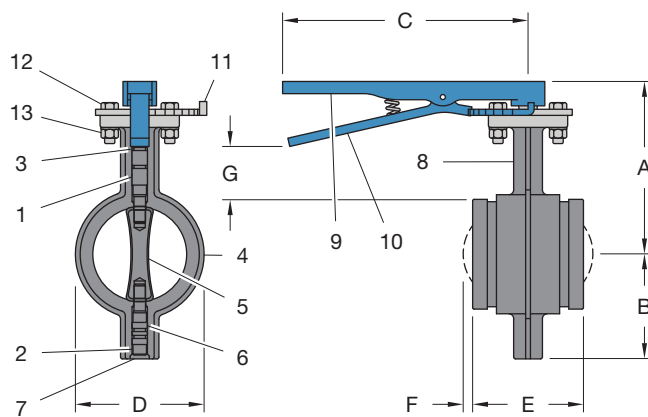
## Model B303 Grooved End Butterfly Valves Lever-Lock Operator

(Page 2 of 3)

Tech Data Sheet: G315



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



Valve Material Specifications			
Item No.	Description	Material	Qty.
1	Upper Stem	Stainless Steel	1
2	Bearing	Polyacetal	4
3	O-ring	EPDM, Nitrile, or Fluoroelastomer	4
4	Body	Ductile Iron RILSAN Coated	1
5	Disc	Ductile Iron Encapsulation per Table on page 96	1
6	Lower Stem	Stainless Steel	1
7	Dust Plug	EPDM, Nitrile, or Fluoroelastomer	1
8	Nameplate	Aluminium	1
9	Handle	Ductile Iron	1
10	Lever	Zinc-Plated Steel	1
11	Throttle Plate	Zinc-Plated Steel	1
12	Hex. Bolt	Zinc-Plated Steel	2
13	Hex. Nut	Zinc-Plated Steel	2

Valves & Accessories

Part Number		Pipe Size		Dimensions - mm Inches							Approx Weight Kg. Lbs.
EPDM	Nitrile	Nominal mm Inches	O.D. mm Inches	A	B	C	D	E	F	G	
B30320EL	B30320TL	50 2	60.3 2.375	131,0 5.16	72,5 2.85	284,0 11.18	70,0 2.76	96,4 3.80	0	50,8 2.00	1,8 4.0
B30325EL	B30325TL	65 2½	73.0 2.875	146,0 5.76	85,0 3.35	284,0 11.18	77,0 3.03	96,4 3.80	0	59,4 2.34	3,8 8.4
B30326EL	B30326TL	65 76,1mm	76.1 3.000	146,0 5.76	85,0 3.35	284,0 11.18	77,0 3.03	96,4 3.80	0	57,9 2.28	3,8 8.4
B30330EL	B30330TL	80 3	88.9 3.500	153,0 6.02	91,0 3.58	284,0 11.18	96,0 3.78	96,4 3.80	0	58,2 2.29	4,3 9.5
B30340EL	B30340TL	100 4	114.3 4.500	178,0 7.01	109,0 4.29	284,0 11.18	124,0 4.88	115,4 4.54	0	70,6 2.78	6,0 13.2
B30356EL	B30356TL	125 139,7mm	139.7 5.500	199,0 7.83	131,0 4.16	284,0 11.18	146,0 5.75	132,4 5.21	0	59,4 2.34	8,8 19.4
B30350EL	B30350TL	125 5	141.3 5.563	199,0 7.83	131,0 4.16	284,0 11.18	146,0 5.75	132,4 5.21	0	58,7 2.31	8,8 19.4
B30366EL	B30366TL	150 165,1mm	165.1 6.500	212,0 8.35	145,0 5.71	284,0 11.18	175,0 6.89	132,4 5.21	6,8 0.27	59,7 2.35	10,6 23.4
B30360EL	B30360EL	150 6	168.3 6.625	212,0 8.35	145,0 5.71	284,0 11.18	175,0 6.89	132,4 5.21	6,8 0.27	58,2 2.29	10,6 23.4
B30380EL	B30380TL	200 8	219.1 8.625	237,0 9.33	170,0 6.69	284,0 11.18	224,0 8.82	147,4 5.80	24,0 0.94	57,7 2.27	15,6 34.4

Note: recommended for mounting with GRINNELL Rigid couplings

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

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

## Model B303 Grooved End Butterfly Valves Gear Operator

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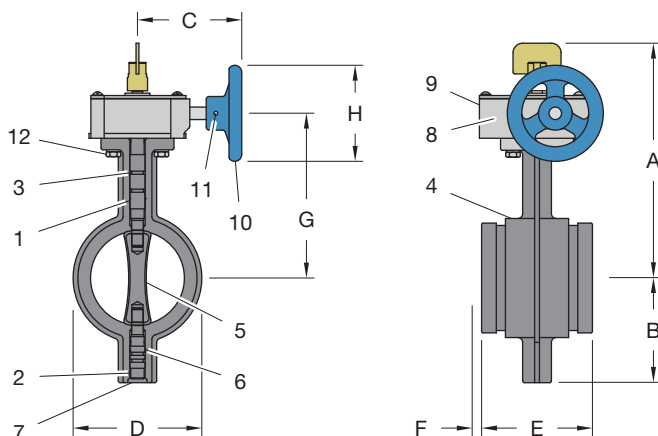
Tech Data Sheet: G315



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



Valve Material Specifications			
Item No.	Description	Material	Qty.
1	Upper Stem	Stainless Steel	1
2	Bearing	Polyacetal	4
3	O-ring	EPDM, Nitrile, or Fluoroelastomer	4
4	Body	Ductile Iron RILSAN Coated	1
5	Disc	Ductile Iron Encapsulation per Table on page 96	1
6	Lower Stem	Stainless Steel	1
7	Dust Plug	EPDM, Nitrile, or Fluoroelastomer	1
8	Nameplate	Aluminium	1
9	Gear Operator	Ductile Iron, Steel	1
10	Handwheel	Ductile Iron	1
11	Spring Pin	Steel	1
12	Hex. Bolt	Zinc-Plated Steel	2



Valves &amp; Accessories

Part Number		Pipe Size		Dimensions - mm Inches								Approx Weight Kg. Lbs.
EPDM	Nitrile	Nominal mm Inches	O.D. mm Inches	A	B	C	D	E	F	G	H	
B30320EG	B30320TG	50	60.3	214,0	72,5	108,6	70,0	96,4	0	124,5	125,0	7,2
		2	2.375	8.43	2.85	4.28	2.76	3.80	0	4.9	4.92	15.9
B30325EG	B30325TG	65	73.0	237,3	85,0	108,6	77,0	96,4	0	139,8	125,0	8,7
		2 1/2	2.875	9.34	3.35	4.28	3.03	3.80	0	5.50	4.92	19.2
B30326EG	B30326TG	65	76.1	237,3	85,0	108,6	77,0	96,4	0	139,8	125,0	8,7
		76,1mm	3.000	9.34	3.35	4.28	3.03	3.80	0	5.50	4.92	19.2
B30330EG	B30330TG	80	88.9	243,8	91,0	108,6	96,0	96,4	0	146,3	125,0	9,5
		3	3.500	9.60	3.58	4.28	3.78	3.80	0	5.76	4.92	21.0
B30340EG	B30340TG	100	114.3	269,0	109,0	108,6	124,0	115,4	0	171,5	125,0	11,0
		4	4.500	10.59	4.29	4.28	4.88	4.54	0	6.75	4.92	24.3
B30356EG	B30356TG	125	139.7	290,0	131,0	147,0	146,0	132,4	0	201,5	150,0	14,5
		139,7mm	5.500	11.42	4.16	5.79	5.75	5.21	0	7.93	5.91	32.0
B30350EG	B30350TG	125	141.3	290,0	131,0	147,0	146,0	132,4	0	201,5	150,0	14,5
		5	5.563	11.42	4.16	5.79	5.75	5.21	0	7.93	5.91	32.0
B30366EG	B30366TG	150	165.1	303,0	145,0	147,0	175,0	132,4	6,8	214,5	150,0	16,2
		165,1mm	6.500	11.93	5.71	5.79	6.89	5.21	0.27	8.44	5.91	35.7
B30360EG	B30360TG	150	168.3	303,0	145,0	147,0	175,0	132,4	6,8	214,5	150,0	16,2
		6	6.625	11.93	5.71	5.79	6.89	5.21	0.27	8.44	5.91	35.7
B30380EG	B30380TG	200	219.1	328,0	170,0	208,0	224,0	147,4	24,0	236,0	225,0	22,5
		8	8.625	12.91	6.69	8.19	8.82	5.80	0.94	9.29	8.86	49.6
B30310EG	B30310TG	250	273.0	374,0	195,0	208,0	275,0	159,0	41,8	282,0	225,0	33,0
		10	10.750	14.72	7.68	8.19	10.83	6.26	1.65	11.10	8.86	72.8
B30312EG	B30312TG	300	323.9	402,0	241,5	208,0	339,0	165,0	68,5	310,0	225,0	40,4
		12	12.750	15.83	9.51	8.19	13.15	6.50	2.70	12.20	8.86	89.3

Note: recommended for mounting with GRINNELL Rigid couplings

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

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.



## Model CV-1 Grooved End Check Valves

(Page 1 of 2)

Tech Data Sheet: G352



### SPECIFICATIONS

#### Valve Assembly Finish

- Red, non-lead paint

#### Max Working Pressure

- 20.7 Bar (300 psi)

#### Clapper

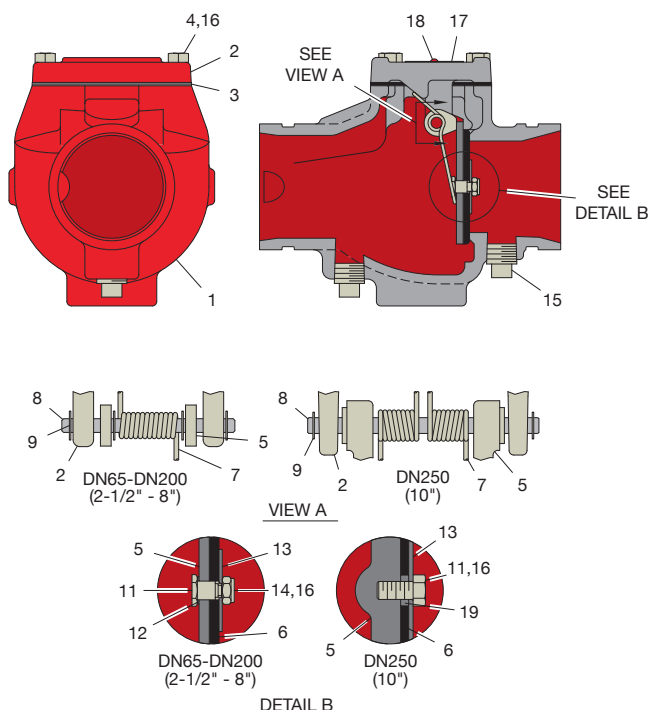
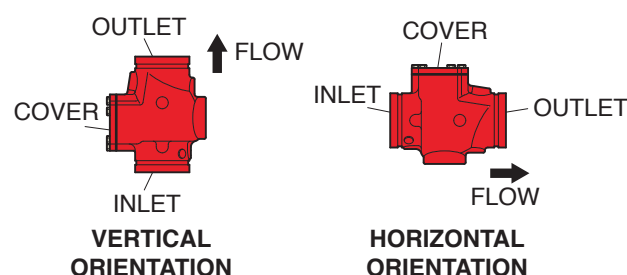
- 50 - 200mm (2" - 8") - Stainless Steel,  
250mm (10") - Ductile iron

The GRINNELL Model CV-1 Grooved End Swing Check Valves are compact and rugged swing-type units that allow water flow in one direction and prevent flow in the opposite direction. They are manufactured with a ductile iron body and a nickel-plated seat.

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

A resilient elastomer seal facing on the spring-loaded clapper ensures a leaktight seal and a non-sticking operation.

The Model CV-1 Check Valves are designed to minimise water hammer caused by flow reversal. The Model CV-1 Check Valve is furnished with grooved ends and can be installed using GRINNELL Grooved Couplings or Flanged Adapters. The Model CV-1 Check Valves have been designed with a removable cover for ease of field maintenance. These valves can be installed horizontally (with cover in the upward position) or vertically with the flow in the upward direction.

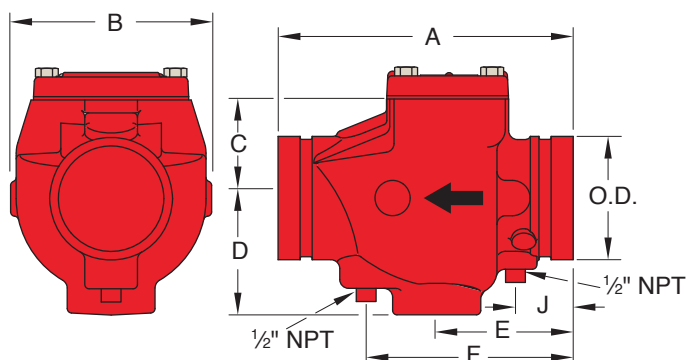


Valve Material Specifications			
Item No.	Description	Material	Qty.
1	Body	Ductile Iron	1
2	Cap	Ductile Iron	1
3	Gasket	Synthetic Fibre	1
4	Hex Cap Screw	Steel, Zinc Plated	AR
5	Clapper	Stainless Steel or Ductile Iron	1
6	Seal Facing	EPDM Grade "E"	1
7	Spring	Stainless Steel	1
8	Hinge Shaft	Stainless Steel	1
9	Retaining Ring	Stainless Steel	AR
10	Washer	Teflon	2
11	Retention Bolt	Stainless Steel	1
12	Seal Ring	Neoprene	1
13	Retaining Disc	Stainless Steel	1
14	Locknut	Stainless Steel	1
15	Plug- 1/2"-14 NPT	Cast Iron	2
16	Adhesive	Thread Sealer	AR
17	Nameplate	Aluminium	1
18	Rivet	Steel	2
19	Spacer	Stainless Steel	1

## Model CV-1 Grooved End Check Valves

(Page 2 of 2)

Tech Data Sheet: G352



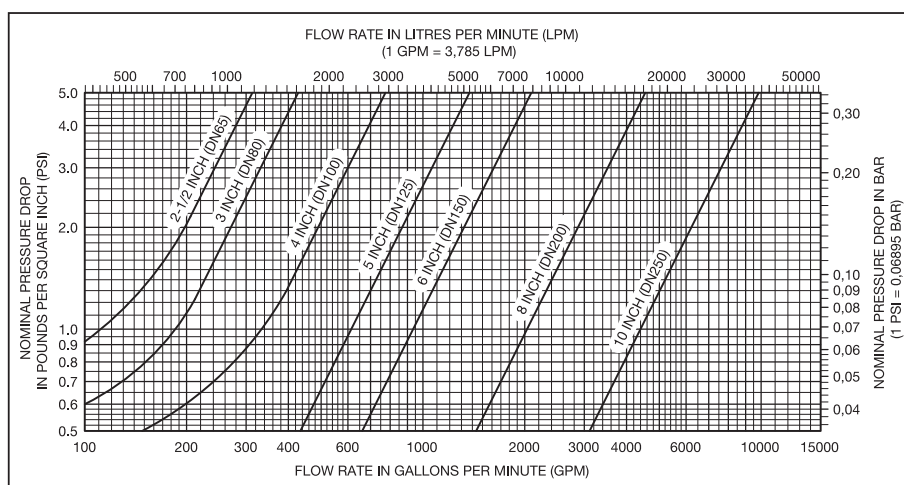
Part Number	Pipe Size		Dimensions mm In.							Approx. Weight kg Lbs
	Nominal DN In.	O.D. mm In.	A mm In.	B mm In.	C mm In.	D mm In.	E mm In.	F mm In.	J mm In.	
595900020	50	60.3	171.5	111.3	64.8	65.3	82.3	120.7	41.5	4.1
	2	2.375	6.75	4.38	2.55	2.57	3.25	4.75	1.62	9.0
595900025	65	73.0	203.2	147.3	86.6	86.4	98.6	152.4	43.2	4.5
	2-1/2	2.875	8.00	5.80	3.41	3.40	3.88	6.00	17.0	10.0
595900076	65	76.1	203.2	147.3	86.6	86.4	98.6	152.4	43.2	4.5
	76.1mm	3.000	8.00	5.80	3.41	3.40	3.88	6.00	1.70	10.0
595900030	80	88.9	212.6	146.3	91.4	86.4	98.6	152.4	43.2	5.0
	3	3.500	8.37	5.76	3.60	3.40	3.88	6.00	1.70	11.0
595900040	100	114.3	245.6	171.2	117.1	92.2	115.1	181.1	46.7	11.3
	4	4.500	9.63	6.74	4.61	3.63	4.56	7.13	1.84	25.0
595900139	125	139.7	266.7	190.5	134.4	106.7	124.5	193.0	48.3	13.2
	139.7mm	5.500	10.50	7.50	5.29	4.20	4.90	7.60	1.90	29.0
595900050	125	141.3	266.7	190.5	134.4	106.7	124.5	193.0	48.3	13.2
	5	5.563	10.50	7.50	5.29	4.20	4.90	7.60	1.90	29.0
595900165	150	165.1	292.1	204.4	146.1	114.3	127.0	193.0	37.6	21.3
	165.1mm	6.500	11.50	8.05	5.75	4.50	5.00	7.60	1.48	47.0
595900060	150	168.3	292.1	204.4	146.1	114.3	127.0	193.0	37.6	21.3
	6	6.625	11.50	8.05	5.75	4.50	5.00	7.60	1.48	47.0
595900080	200	219.1	355.6	260.4	196.9	142.7	138.4	213.4	58.9	29.9
	8	8.625	14.00	10.25	7.75	5.62	5.45	8.40	2.20	66.0
595900100	250	273.0	457.2	330.2	259.3	162.1	190.5	266.7	76.2	49.4
	10	10.750	18.00	13.00	10.21	6.38	7.50	10.50	3.00	109.7
595900120	300	323.9	533.4	362.7	287.2	184.4	193.5	269.7	69.9	68.0
	12	12.750	21.00	14.28	11.31	7.26	7.62	10.62	2.75	2.68

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

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

Valves &amp; Accessories

### Model CV-1 Pressure Loss Data



Refer to back cover for country-specific contact information

## Figure 760P "Y" Strainer

(Page 1 of 2)

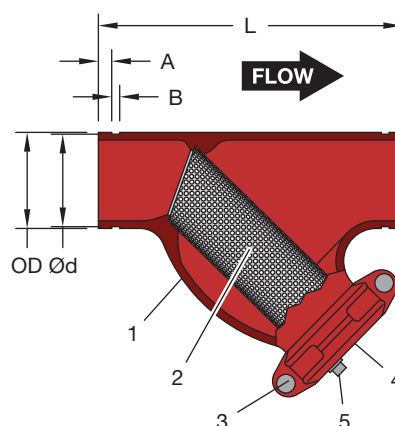
Tech Data Sheet: G422



The Figure 760P "Y" Strainer provides economical strainer protection for piping equipment such as pumps, meters, valves, compressors, traps and similar equipment, from debris and foreign matter.

This Strainer features a 304 Stainless Steel screen that is secured with an end cap and a mechanical coupling. Cleaning and maintenance of the screen can be accomplished easily by removing the coupling. The Figure 760P Strainer is suitable for vertical and horizontal installation.

"Y" Strainer - Material Specifications		
Item No.	Description	Material
1	Valve Body	ASTM A536, 65-45-12
2	Screen	AISI 304
3	Rigid Coupling	ASTM A536, 65-45-12
4	Cap	ASTM A536, 65-45-12
5	Plug	Malleable Iron Galvanized or Bronze ASTM B564



Valves & Accessories

Part Number	Pipe Size		Ød Bar psi	A mm Inches	B mm Inches	L mm Inches	Screen Perforation Detail (See Next Page)	Drain Plug Size Selection Inches NPT
	Nominal mm Inches	O.D. mm Inches						
760P000601	50 2	60.3 2.375	57.2 2.25	15.9 0.63	7.9 0.31	247.5 9.74	Fig. A	1½"
760P000731	65 2-½	73.0 2.875	69.1 2.72	15.9 0.63	7.9 0.31	273.0 10.75		
760P000761	65 76,1mm	73.0 2.875	69.1 2.72	15.9 0.63	7.9 0.31	273.0 10.75		
760P000881	80 3	88.9 3.500	84.9 3.34	15.9 0.63	7.9 0.31	298.5 11.75	Fig. B	
760P001141	100 4	114.3 4.500	110.1 4.33	15.9 0.63	9.6 0.37	362.0 14.25		
760P001391	125 139,7mm	139.7 5.500	137.0 5.39	15.9 0.63	9.6 0.37	419.0 16.50	Fig. C	1"
760P001651	150 165,1mm	165.7 6.500	164.0 6.46	15.9 0.63	9.6 0.37	470.0 18.50	Fig. D	
760P001681	150 6	168.3 6.625	164.0 6.46	15.9 0.63	9.6 0.37	470.0 18.50		
760P002191	200 8	219.1 8.625	214.4 8.44	19.1 0.75	11.1 0.44	609.5 24.00		
760P002731	250 10	273.1 10.750	268.3 10.56	19.1 0.75	12.7 0.50	686.0 27.00		
760P003241	300 12	323.9 12.750	318.3 12.53	19.1 0.75	12.7 0.50	762.0 30.00		

Maximum working pressure is based upon the performance capability of the GRINNELL "Y"-Strainer.

Maximum system working pressure is dependant upon the rigid couplings used for installation and the pressure capacity of the system components.

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

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

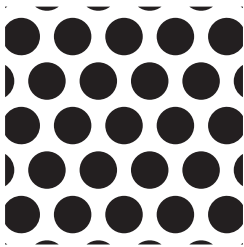
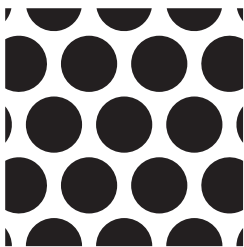


## Figure 760P "Y" Strainer

(Page 2 of 2)

Tech Data Sheet: G422



### Figure 760P "Y" Strainer Screen Perforations

<p><b>A</b></p> <p>2" – 2-1/2" (DN50 – DN65) STRAINERS: 0.16" (4,0 mm) DIA. HOLES 24 HOLES SQ. IN. 48% OPEN AREA</p> 	<p><b>C</b></p> <p>5" (DN125) STRAINER: 0.24" (6,0 mm) DIA. HOLES 13 HOLES SQ. IN. 58% OPEN AREA</p> 
<p><b>B</b></p> <p>3" – 4" (DN80 – DN100) STRAINERS: 0.20" (5,0 mm) DIA. HOLES 17 HOLES SQ. IN. 53% OPEN AREA</p> 	<p><b>D</b></p> <p>6" – 12" (DN150 – DN300) STRAINERS: 0.25" (6,3 mm) DIA. HOLES 11 HOLES SQ. IN. 56% OPEN AREA</p> 

Valves &  
Accessories

## SPECIFICATIONS

### Maximum Working Pressure

- 20 bar (300 psi)

### Strainer Screen

- AISI 304

### Temperature Range

- 0° to 100°C (32° to 200° F)

### Body and Cover

- ASTM A-536, Grade 65-45-12

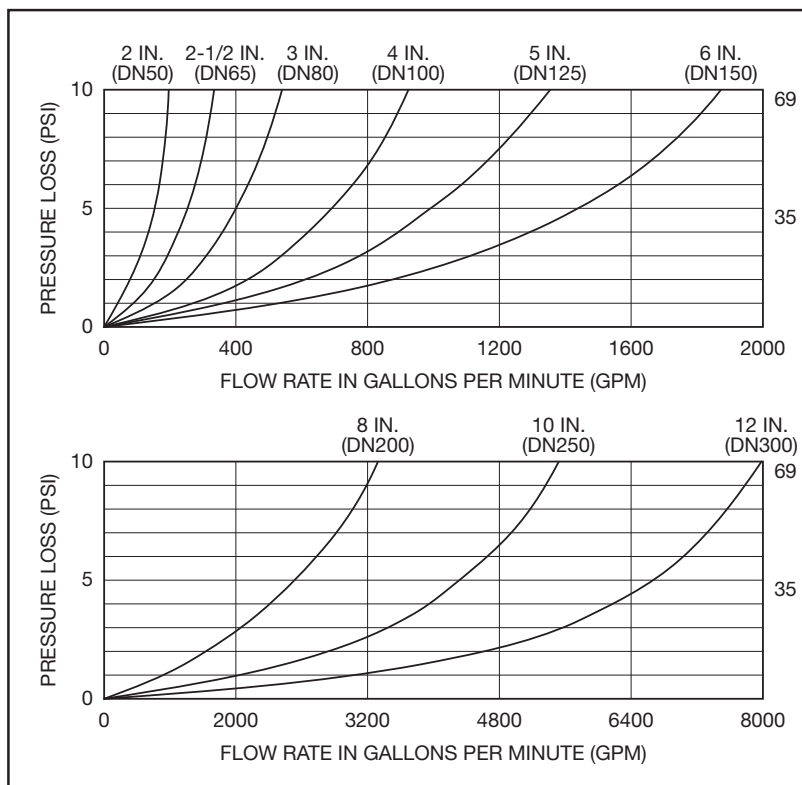
### Coating

- Fusion bonded Epoxy Coating in accordance with ANSI/AWWA C550 or painting upon request

### Performance

- See chart or contact a GRINNELL Sales Representative.

### Figure 760P "Y" Strainer Performance





## Figure 725G Suction Diffuser

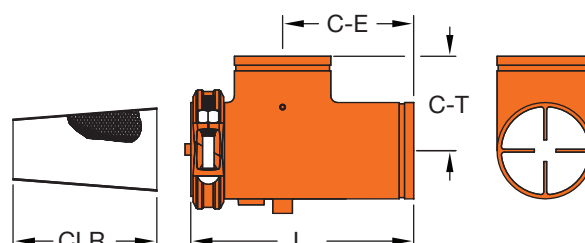
**10**  
YEAR  
LIMITED  
WARRANTY



The Model 725G Suction Diffuser features a space saving design, ductile iron body and integral vanes that effectively reduce turbulence and provide optimum flow conditions at the inlet side of the pump.

The suction diffuser's inlet is supplied with a grooved end to AWWA C606-04. The 725G can be connected directly to grooved end pump or to a flanged end pump if used in combination with a Model 7041 Flange Adapter or a Model 7180 Universal Flange Adapter.

The Model 725G is supplied with a 304 stainless steel running strainer and a disposable fine mesh screen to protect the pump during start-up operation.



Valves &  
Accessories

Part Number	Nominal Size - mm <i>Inches</i>				Max. Wk Pressure*  Bar <i>psi</i>	Dimensions - mm <i>Inches</i>				Drain <i>Inches</i>	Approx Weight Kg. <i>Lbs.</i>
	Suction Side		Pump Side			L	C-E	CLR	C-T		
	Nominal DN <i>In.</i>	O.D. mm <i>In.</i>	Nominal mm <i>In.</i>	O.D. mm <i>In.</i>							
725G2X2✱	50	60.3	50	60.3	20.7	224	127	147	95	½	3.6
	2	2.375	2	2.375	300	8.82	5.00	5.79	3.75		7.9
725G25X25✱	65	76.1	65	76.1	20.7	224	127	147	95	½	4.0
	76.1mm	3.000	76.1mm	3.000	300	8.82	5.00	5.79	3.75		8.8
725G3X3✱	80	88.9	80	88.9	20.7	265	160	176	108	1	5.9
	3	3.500	3	3.500	300	10.43	6.30	6.93	5.51		13.0
725G4X4✱	100	114.3	100	114.3	20.7	312	187	218	127	1	9.4
	4	4.500	4	4.500	300	12.28	7.36	8.58	5.00		20.9
725G5X5✱	125	139.7	125	139.7	20.7	352	260	248	229	1	17.7
	139,7mm	5.500	139,7mm	5.500	300	13.86	10.24	9.76	9.02		38.9
725G6X6✱	150	165.1	150	165.1	20.7	385	229	265	165	1	19.7
	165,1mm	6.500	165,1mm	6.500	300	15.16	9.02	10.43	6.50		43.3
725G8X8 ✱	200	219.1	200	219.1	20.7	464	260	320	229	1-¼	34.3
	8	8.625	8	8.625	300	18.27	10.24	12.60	9.02		75.5
725G10X10✱	250	273.1	250	273.1	20.7	562	315	410	229	1-¼	56.0
	10	10.750	10	10.750	300	22.11	12.40	16.14	9.02		123.2
725G12X12✱	300	323.9	300	323.9	20.7	668	392	490	254	1-¼	76.4
	12	12.750	12	12.750	300	26.30	15.43	19.29	10.00		168.1

\* = 1 for red paint finish, 2 for hot dipped galvanised finish

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

\* Working pressure is based on connection with roll or cut grooved standard wall carbon steel pipe

See pages 116 - 127 for gasket information.

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

## CB800 Circuit Balancing Valves

Tech Data Sheet: G450

**10**  
YEAR  
LIMITED  
WARRANTY

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 20.7 Bar (300 psi) at 150°C (300°F).

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.



### MATERIAL SPECIFICATIONS

#### Body

- Sizes 15 – 50mm (1/2" – 2") solder or BSP threaded connection: brass-resistant to dezincification (DZR)
- Sizes 65 – 300mm (2 1/2" – 12"), grooved or flanged connection: Cast Iron conforming to ASME ANSI B 16.5

#### Valve Stem and Disc

- Brass resistant to dezincification (DZR)

#### O-Ring

- EPDM E

#### Handwheel

- Thermoplastic

For accessories and replacement parts contact a GRINNELL Sales Representative for details.

### Valve Sizing

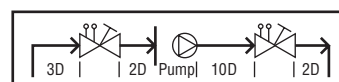
All balancing valves are sized to perform in a normal operation range between 25% and 100% of the full open position, at a minimum differential pressure between 0.3 – 0.9m (1 – 3 ft.) of water. It is recommended that for improved accuracy, the valve is set to open 70%+.

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 0.6m (2 ft.) water 0.06 Bar (0.8 psi) 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 normalise 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 mm Inches	Flow Rate GPM LPM	Connection Type
15	0.687 - 1.110	Thread
1/2	2.6 - 4.2	
20	0.898 - 1.638	
3/4	3.4 - 6.2	
25	1.638 - 2.536	
1	6.2 - 9.6	
32	2.483 - 5.548	
1 1/4	9.4 - 21.0	
40	3.96 - 7.93	Grooved
1 1/2	15 - 30	
50	5.812 - 11.096	
2	22 - 42	
65	10.30 - 28.01	
2 1/2	39 - 106	
65	10.30 - 28.01	
76,1mm	39 - 106	
80	15.85 - 34.87	
3	60 - 132	
100	26.42 - 57.33	
4	100 - 217	
125	29.59 - 83.75	
139,7mm	112 - 317	
125	29.59 - 83.75	
5	112 - 317	
150	58.12 - 115.46	
165,1mm	220 - 437	
150	58.12 - 115.46	
6	220 - 437	
200	58.92 - 232.76	
8	223 - 881	
250	77.15 - 342.93	
10	292 - 1298	
300	162.75 - 457.33	
12	616 - 1731	

## Model CB800 Circuit Balancing Valves Grooved Ends

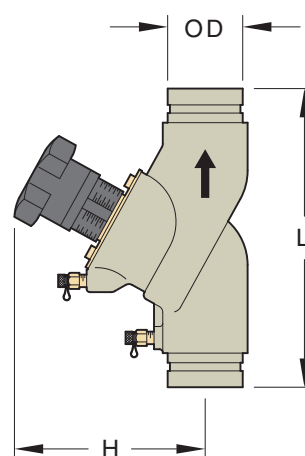
Tech Data Sheet: G450



The GRINNELL Model CB800 Balancing Valve provides features for achieving accurate and efficient balancing of hydronic heating or cooling systems. The GRINNELL Groove-by-Groove Model CB800 Valve, available sizes 65 to 300mm (2 1/2" to 12"), is composed of cast iron.

The CB800 valve serves 5 functions:

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



Valves &  
Accessories

Part Number	Pipe Size		Dimensions		Approx. Weight Kg. Lbs.	Limits PN/°C PSI/°F	Handwheel Turns
	Nominal mm Inches	O.D. mm Inches	L mm Inches	H mm Inches			
CB8002504	65	73.0	290.6	187.5	8.5	20.7/150	8
	2 1/2	2.875	11.44	7.38	18.7	300/300	
CB8007604	65	76.1	290.6	187.5	8.5	20.7/150	8
	76,1mm	3.000	11.44	7.38	18.7	300/300	
CB8003004	80	88.9	311.2	203.2	12.5	20.7/150	8
	3	3.500	12.25	8.00	27.5	300/300	
CB8004004	100	114.3	349.3	239.8	20.5	20.7/150	8
	4	4.500	13.75	9.44	45.1	300/300	
CB8001394	125	139.7	400.0	282.7	32.0	20.7/150	8
	139,7mm	5.500	15.75	11.13	70.4	300/300	
CB8005004	125	141.3	400.0	282.7	32.0	20.7/150	8
	5	5.563	15.75	11.13	70.4	300/300	
CB8001654	150	165.1	479.6	285.8	43.5	20.7/150	8
	165,1mm	6.500	18.88	11.25	95.7	300/300	
CB8006004	150	168.3	479.6	285.8	43.5	20.7/150	8
	6	6.625	18.88	11.25	95.7	300/300	
CB8008004	200	219.1	600.2	468.4	116.0	20.7/150	12
	8	8.625	23.63	18.44	255.2	300/300	
CB8001104	250	273.1	730.3	479.6	171.0	20.7/150	12
	10	10.750	28.75	18.88	376.2	300/300	
CB8001204	300	323.9	849.4	514.4	136.0	20.7/150	12
	12	12.750	33.44	20.25	519.2	300/300	

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

See circuit balancing valve specifications on pages 83.

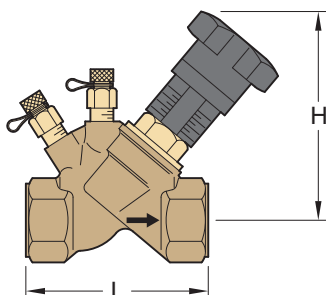
For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

## Model CB800 Circuit Balancing Valves BSP Threaded Ends

Tech Data Sheet: G450



The GRINNELL Model CB800 Balancing Valve provides features for achieving accurate and efficient balancing of hydronic heating or cooling systems. One valve serves five functions: throttling, measuring (pressure and temperature), positive shutoff, draining and filling. The GRINNELL Thread-by-Thread Model CB800 Valve, available in sizes 15 to 50mm ( $\frac{1}{2}$ " to 2"), is composed of zinc retaining brass.



Valves &  
Accessories

Part Number	Pipe Size		Dimensions		Approx. Weight Kg. Lbs.	Limits PN/°C PSI/°F	Handwheel Turns
	Nominal mm Inches	O.D. mm Inches	L mm Inches	H mm Inches			
CB8000505	15	21.3	79.5	104.9	0.6	16/150	7
	$\frac{1}{2}$	0.840	3.13	4.13	1.4	235/300	
CB8000755	20	26.9	84.1	115.8	0.6	16/150	7
	$\frac{3}{4}$	1.050	3.31	4.56	1.4	235/300	
CB8001005	25	33.7	85.6	119.1	1.0	16/150	7
	1	1.315	3.38	4.69	2.2	235/300	
CB8001255	32	42.4	111.3	136.7	1.4	16/150	10
	1 $\frac{1}{4}$	1.660	4.38	5.38	3.0	235/300	
CB8001505	40	48.3	120.7	138.2	1.7	16/150	10
	1 $\frac{1}{2}$	1.900	4.75	5.44	3.9	235/300	
CB8002005	50	60.3	150.9	147.6	2.6	16/150	10
	2	2.375	5.94	5.81	5.6	235/300	

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

See circuit balancing valve specifications on pages 83.

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

## Model CB800 Circuit Balancing Valves Insulation Kits

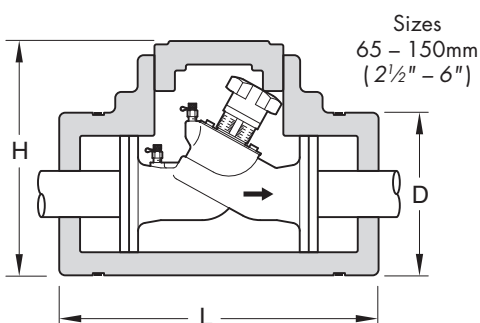
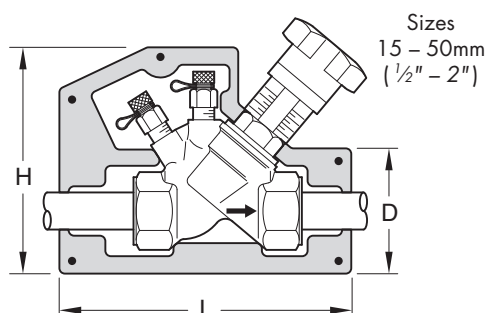
Tech Data Sheet: G450

**10**  
YEAR  
LIMITED  
WARRANTY



The insulation shells have a CFC-free inner core made of polyurethane foam with a 1.5mm (0.06") plastic coat. It consists of two double shells which are tightened by two metal straps.

Available for sizes 15 – 150mm (½" – 6"). Specify size and end-connection type.



Valves &  
Accessories

Pipe Size		Dimensions			Approx. Weight Kg. Lbs.
Nominal mm Inches	O.D. mm Inches	D mm Inches	H mm Inches	L mm Inches	
15 ½	21.3 0.840	69 2.72	136 5.35	183 7.20	0.15 0.3
20 ¾	26.9 1.050	77 3.31	143 5.63	195 7.68	0.18 0.4
25 1	33.7 1.315	85 3.35	151 5.94	243 9.57	0.22 0.5
32 1¼	42.4 1.660	97 3.82	172 6.77	254 10.00	0.20 0.4
40 1½	48.3 1.900	105 4.13	185 7.28	250 9.84	0.33 0.7
50 2	60.3 2.375	120 4.72	209 8.23	276 10.87	0.43 0.9
65 2½	73.0 2.875	260 10.2	410 16.1	505 19.9	3.06 6.7
80 3	88.9 3.500	280 11.0	415 16.3	530 20.9	3.25 7.2
100 4	114.3 4.500	320 12.6	520 20.5	580 22.8	5.16 11.4
125 5	141.3 5.563	360 14.2	560 22.1	620 24.4	5.24 11.6
150 6	168.3 6.625	400 15.7	600 23.6	730 28.7	5.97 13.2

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

◆ Contact a GRINNELL Sales Representative for details.

See circuit balancing valve specifications on pages 83.

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

## 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 15 – 300mm (½" – 12"). 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 pack. All parts of the hand-held computer are stored in a convenient carrying case.

Note: Only available in select regions, contact a GRINNELL Sales Representative.



## Figure 70607 Groove Ended Metering Station

**10**  
YEAR  
LIMITED  
WARRANTY

### Description:

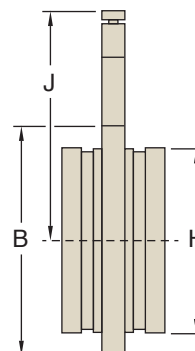
- Oventrop groove ended metering station PN16 complete with 2 extended pressure test points.

### Application:

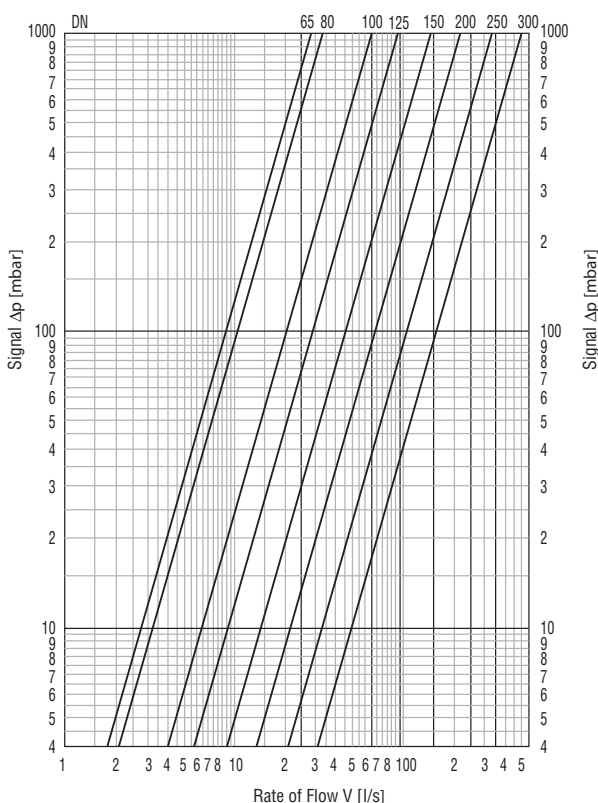
- Oventrop groove ended metering stations are installed in the pipework of hot water heating and chilled water systems to obtain flow measurements.
- Non-aggressive fluids
- Maximum pressure: 16 bar (232 psi)
- Temperature range: -10°C to 150°C (14°F to 302°F)

### Materials:

- Nickel plated steel body
- DZR test points
- Note: To obtain an accuracy of +/- 5%, we recommended a minimum of 5 diameters of straight, valve sized, pipe on the inlet of the metering station and 3 diameters on the outlet.



Valves &  
Accessories



Part Number	Pipe Size		Dimensions - mm Inches				Kv
	Nominal mm Inches	O.D. mm Inches	A	B	H	J	
7060751	65 76.1mm	76.1 3.000	80 3.15	108 4.25	76.1 3.00	195 7.68	102
7060752	80 3	88.9 3.500	80 3.15	125 4.92	88.9 3.50	212 8.35	120
7060753	100 4	114.3 4.500	80 3.15	147 5.79	114.3 4.50	234 9.21	234
7060754	125 139.7mm	139.7 5.500	80 3.15	175 6.89	139.7 5.50	262 10.31	335
7060755	150 165.1mm	165.1 6.500	80 3.15	202 7.95	165.1 6.50	289 11.38	522
7060756	200 8	219.1 8.625	100 3.94	251 9.88	219.1 8.63	338 13.31	780
7060757	250 10	273.1 10.750	100 3.94	300 11.81	273.1 10.75	387 15.24	1197
7060758	300 12	323.9 12.750	100 3.94	345 13.58	323.9 12.75	432 17.01	1810

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

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

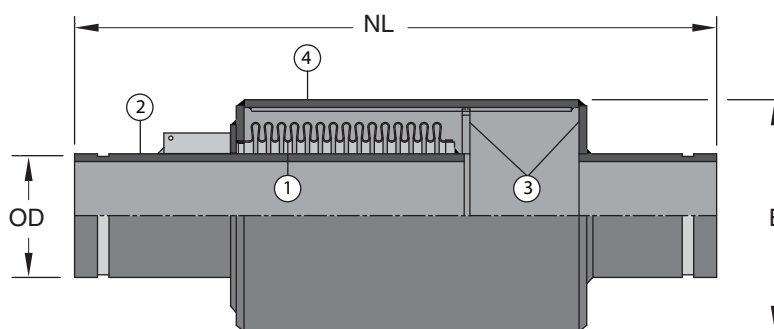
## Figure RXAG Expansion Joint

**10**  
YEAR  
LIMITED  
WARRANTY



An expansion joint with steel grooved ends for use within grooved end pipe systems. Using these couplings and fittings, combines a number of advantages. The ease and swiftness of installation reduces the actual time needed "on site". For applications in mainly heating systems, where a thermal expansion of the piping has to be absorbed. This type of expansion joint is basically meant for axial movements, and has an outer protection sleeve. The shown type is recommended for mounting with GRINNELL Rigid couplings.

RXAG - Material Specifications		
Item No.	Description	Material
1	Bellow	AISI 316Ti
2	Grooved Ends	Carbon Steel
3	End/Guide Ring	Carbon Steel
4	Outer Protection Sleeve	AISI 304



Part Number	Pipe Size		Max. Wk Pressure 20°C (68°F) Bar psi	Max. Wk Pressure 200°C (392°F) Bar psi	NL Neutral Length mm Inches	E mm Inches	Axial Compression mm Inches	Axial Extension mm Inches	Approx. Weight Kg. Lbs.
	Nominal mm Inches	O.D. mm Inches							
RXAG034	25	33.7	16.0	10.0	525	88.9	-70	+10	4.8
	1	1.315	230	145	20.67	3.50	-2.76	+0.39	10.6
RXAG042	32	42.4	16.0	10.0	525	101.6	-70	+10	6.0
	1 ¼	1.660	230	145	20.67	4.00	-2.76	+0.39	13.2
RXAG048	40	48.3	16.0	10.0	525	114.3	-70	+10	7.3
	1 ½	1.900	230	145	20.67	4.50	-2.76	+0.39	16.1
RXAG060	50	60.3	16.0	10.0	525	115.0	-70	+10	7.8
	2	2.375	230	145	20.67	4.52	-2.76	+0.39	17.2
RXAG076	65	76.1	16.0	10.0	525	127.0	-70	+10	10.3
	76,1mm	3.000	230	145	20.67	5.00	-2.76	+0.39	22.7
RXAG089	80	88.9	16.0	10.0	525	166.0	-70	+10	14.6
	3	3.500	230	145	20.67	6.54	-2.76	+0.39	32.2
RXAG114	100	114.3	16.0	10.0	525	178.0	-70	+10	16.3
	4	4.500	230	145	20.67	7.00	-2.76	+0.39	35.9
RXAG139	125	139.7	16.0	10.0	525	219.0	-70	+10	22.3
	139,7mm	5.500	230	145	20.67	8.63	-2.76	+0.39	49.2
RXAG168	150	168.3	16.0	10.0	525	273.0	-70	+10	30.6
	6	6.625	230	145	20.67	10.75	-2.76	+0.39	67.5
RXAG219	200	219.1	16.0	10.0	525	324.0	-70	+10	44.4
	8	8.625	230	145	20.67	12.75	-2.76	+0.39	97.9
RXAG273	250	273.0	16.0	10.0	525	400.0	-70	+10	-
	10	10.750	230	145	20.67	15.75	-2.76	+0.39	-
RXAG300	300	323.9	16.0	10.0	525	457.0	-70	+10	-
	12	12.750	230	145	20.67	18.00	-2.76	+0.39	-

Note: recommended for mounting with GRINNELL Rigid couplings

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

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

## Figure ALG Expansion Joint



### MATERIAL SPECIFICATIONS

#### Bellow

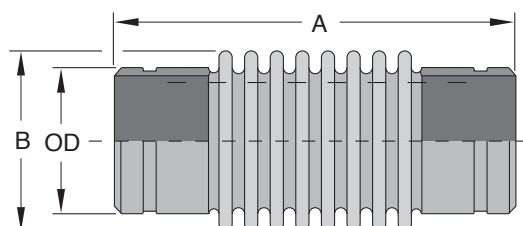
- Stainless steel AISI 321/Ws No 1.4541

#### Pipe Ends

- Carbon steel - ST 35.8

#### Internal Sleeves

- Stainless steel AISI 304/Ws No 1.4301



Part Number	Pipe Size		Max. Wk Pressure Bar psi	A mm Inches	B mm Inches	Rated Movement L mm Inches	Spring Rate N/mm Lbs/In.	Approx. Weight Kg. Lbs.
	Nominal mm Inches	O.D. mm Inches						
ALG0034	25	33.7	16.0	200	39	+20 / -20	14	0.4
	1	1.315	230	7.87	1.54	+0.79/-0.79	80	0.9
ALG0042	32	42.4	16.0	205	46	+20 / -20	16	0.5
	1 1/4	1.660	230	8.07	1.81	+0.79/-0.79	91	1.2
ALG0048	40	48.3	16.0	234	58	+25 / -25	26	0.8
	1 1/2	1.900	230	9.21	2.28	+0.98/-0.98	148	1.7
ALG0060	50	60.3	16.0	276	69	+30 / -30	22	1.3
	2	2.375	230	10.87	2.72	+1.18/-1.18	126	2.8
ALG0073	65	73.0	16.0	261	87	+30 / -30	24	1.6
	2 1/2	2.875	230	10.28	3.43	+1.18/-1.18	137	3.4
ALG0076	65	76.1	16.0	261	87	+30 / -30	24	1.6
	76,1mm	3.000	230	10.28	3.43	+1.18/-1.18	137	3.4

Note: recommended for mounting with GRINNELL Rigid couplings

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

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

Valves &  
Accessories

## Figure ANS Expansion Joint

**10**  
 YEAR  
 LIMITED  
 WARRANTY

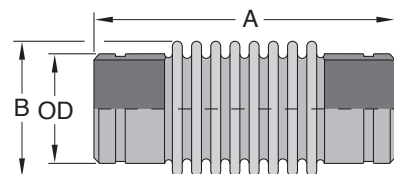

### MATERIAL SPECIFICATIONS

#### Bellow

- Stainless steel AISI 321/Ws No 1.4541

#### Pipe Ends

- Carbon steel - ST 35.8



Part Number	Pipe Size		Max. Wk Pressure Bar psi	A mm Inches	B mm Inches	Rated Movement L mm Inches	Spring Rate N/mm Lbs/in	Approx. Weight Kg. Lbs.
	Nominal mm Inches	O.D. mm Inches						
ANS0089	80	88.9	16.0	205	104	+20 / -20	46	1.9
	3	3.500	230	8.07	4.09	+0.79/-0.79	263	4.1
ANS0114	100	114.3	16.0	200	127	+20 / -20	49	2.4
	4	4.500	230	7.87	5.00	+0.79/-0.79	280	5.3
ANS0139	125	139.7	16.0	210	155	+25 / -25	93	3.2
	139,7mm	5.500	230	8.27	6.10	+0.98/-0.98	531	7.1
ANS0141	125	141.3	16.0	210	155	+25 / -25	93	3.2
	5	5.563	230	8.27	6.10	+0.98/-0.98	531	7.1
ANS0165	150	165.1	16.0	245	184	+25 / -25	83	5.0
	165,1mm	6.500	230	9.65	7.24	+0.98/-0.98	474	11.0
ANS0168	150	168.3	16.0	245	184	+25 / -25	83	5.0
	6	6.625	230	9.65	7.24	+0.98/-0.98	474	11.0
ANS0219	200	219.1	16.0	275	235	+25 / -25	89	8.7
	8	8.625	230	10.83	9.25	+0.98/-0.98	508	19.1

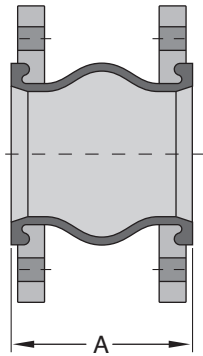
Note: recommended for mounting with GRINNELL Rigid couplings

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

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

## Figure FSF Flanged Rubber Bellows

**10**  
YEAR  
LIMITED  
WARRANTY



### MATERIAL SPECIFICATIONS

#### Flange

- Galvanised carbon steel - ST 35.8, with hardened steel flange ring.

#### Bellow

- EPDM, nylon reinforced.



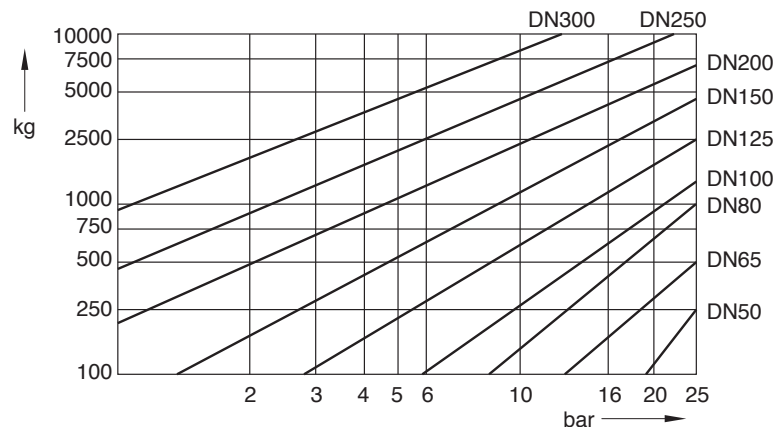
Part Number	Pipe Size		Max. Wk Pressure Bar psi	Flange Dimension	A mm Inches	Axial Movement $\Delta L$ mm Inches	Lateral Movement mm Inches	Max. Deflection	Approx. Weight Kg. Lbs.
	Nominal mm Inches	O.D. mm Inches							
FSF0050E	50	60.3	16.0	PN10/16	130	+20 / -30	+20	35°	3.8
	2	2.375	230		5.12	+0.79 / -1.18	+0.79		8.4
FSF0065E	65	76.1	16.0	PN10/16	130	+20 / -30	+20	35°	4.7
	76,1mm	3.000	230		5.12	+0.79 / -1.18	+0.79		10.4
FSF0080E	80	88.9	16.0	PN10/16	130	+20 / -30	+20	35°	5.1
	3	3.500	230		5.12	+0.79 / -1.18	+0.79		11.2
FSF0100E	100	114.3	16.0	PN10/16	130	+20 / -30	+20	35°	7.0
	4	4.500	230		5.12	+0.79 / -1.18	+0.79		15.4
FSF0125E	125	139.7	16.0	PN10/16	130	+20 / -30	+20	35°	8.9
	139,7mm	5.500	230		5.12	+0.79 / -1.18	+0.79		19.6
FSF0150E	150	165.1	16.0	PN10/16	130	+20 / -30	+20	35°	10.6
	165,1mm	6.500	230		5.12	+0.79 / -1.18	+0.79		23.4
FSF0200E	200	219.1	10.0	PN10	130	+20 / -30	+20	35°	15.2
			150		5.12	+0.79 / -1.18	+0.79		33.5
FSF0250E	8	8.625	16.0	PN16	130	+20 / -30	+20	35°	15.2
			230		5.12	+0.79 / -1.18	+0.79		33.5
FSF0300E	250	273.0	10.0	PN10	130	+20 / -30	+20	35°	31.5
			150		5.12	+0.79 / -1.18	+0.79		69.4
FSF1200E	10	10.750	16.0	PN16	130	+20 / -30	+20	35°	31.5
			230		5.12	+0.79 / -1.18	+0.79		69.4
FSF1250E	300	323.9	10.0	PN10	130	+20 / -30	+20	35°	98.6
			150		5.12	+0.79 / -1.18	+0.79		217.4
FSF1300E	12	12.750	16.0	PN16	130	+20 / -30	+20	35°	98.6
			230		5.12	+0.79 / -1.18	+0.79		217.4

Note: Max. working temperature: 104° C (219.2°F) maximum Vacuum: 400 mm Hg

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

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

Reaction Force FSF Rubber Expansion Joints





## Figures 407GT & 407T Dielectric Waterways

Tech Data Sheet: G465



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

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

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

Test data/results and listings by Pittsburgh Testing Laboratory can be provided upon request. Contact a GRINNELL Sales Representative

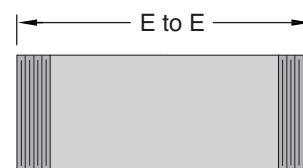
\* Clearflow is a Registered  
Trademark of Perfection Corp.



Figure 407GT  
Dielectric Waterway



Figure 407T  
Dielectric Waterway



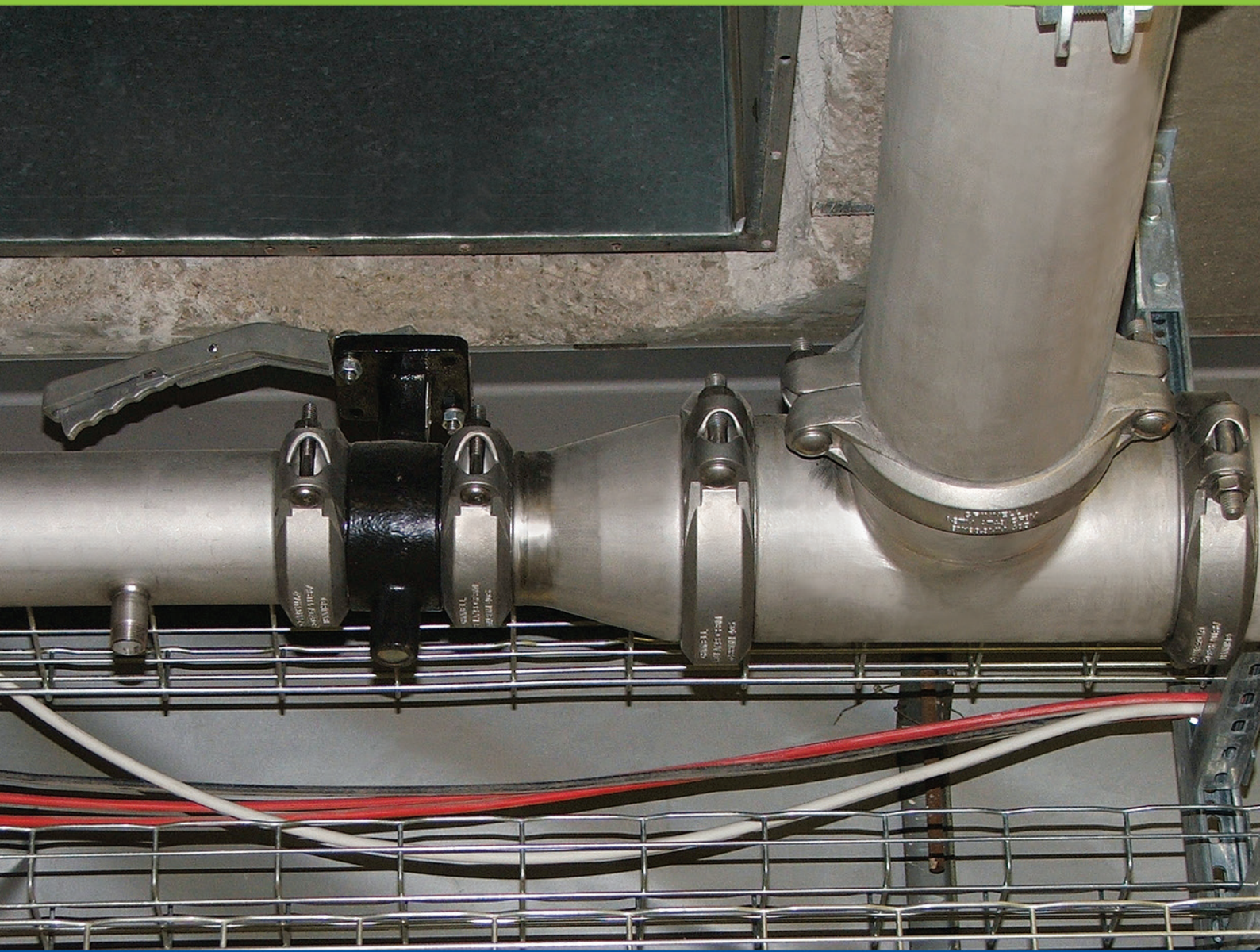
Valves &  
Accessories

Pipe Size		Figure 407GT Grooved x Male Thread			Figure 407T Male Thread x Male Thread		
Nominal mm Inches	O.D. mm Inches	Part Number	End to End mm Inches	Approx. Weight kg Lbs.	Part Number	End to End mm Inches	Approx. Weight kg Lbs.
15 1/2	21.3 0.840	—	— —	— —	407T000212	76.2 3.0	0.1 0.2
20 3/4	26.9 1.050	—	— —	— —	407T000262	76.2 3.0	0.1 0.2
25 1	33.7 1.315		101.6 4.0	0.1 0.3	407T000342	101.6 4.0	0.1 0.3
32 1 1/4	42.4 1.660	407GT00422	101.6 4.0	0.3 0.6	407T000422	101.6 4.0	0.3 0.6
40 1 1/2	48.3 1.900	407GT00482	101.6 4.0	0.4 0.8	407T000482	101.6 4.0	0.4 0.8
50 2	60.3 2.375	407GT00602	101.6 4.0	0.5 1.0	407T000602	101.6 4.0	0.5 1.0
65 2 1/2	73.0 2.875	407GT00732	152.4 6.0	0.7 1.6	407T000732	152.4 6.0	0.7 1.6
80 3	88.9 3.500	407GT00892	152.4 6.0	0.9 2.0	407T000892	152.4 6.0	0.9 2.0
100 4	114.3 4.500	407GT01142	152.4 6.0	2.0 4.5	407T001142	152.4 6.0	2.0 4.5

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

See fitting specifications on page 39.

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.



## STAINLESS STEEL SYSTEMS



## Stainless Steel Systems Table of Contents

	<b>Figure 472</b> Stainless Steel Rigid Couplings Page 96		<b>Figure 401</b> Stainless Steel 45° Elbows Page 100
	<b>Figure 405</b> Stainless Steel Flexible Couplings Page 97		<b>Figure 419</b> Stainless Steel Tees Page 101
	<b>Figure 705R</b> Rilsan Coated Flexible Coupling Page 98		<b>Figure 460</b> Stainless Steel End Caps Page 102
	<b>Figure 443 &amp; 444</b> Flange Adapters (PN16/PN10 BS 4504) Page 99		<b>Figure 421</b> Stainless Steel Reducing Tees Page 103
	<b>Figure 410</b> Stainless Steel 90° Elbows Page 100		<b>Figure 450</b> Stainless Steel Concentric Reducers Page 104

### Caution

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

General notes: Additional information is included in our data sheets and is available upon request. It is the Designer's responsibility to select products suitable for the intended service and to ensure that pressure ratings and performance data is not exceeded. Always read and understand the installation constructions. Never remove any piping components nor correct or modify any piping deficiencies without first depressurising and draining the system. Material and gasket selection should be verified with the gasket recommendation listing for the specific application.

Reference pages 140 - 142 will have recent pressure testing and ISO on ISO metric stainless steel pipe.  
Tech Data G815.

## 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 4826 Bar (70,000 psi)
- Yield strength, minimum 2068 Bar (30,000 psi)
- Elongation in 50mm (2") 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 colour code stripe identification and conform to ASTM D 2000 for service temperatures from -34°C to 110°C (-30°F to 230°F). They are recommended for hot water not to exceed 110°C (230°F) 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 Yellow and Green colour code stripe identification and are NSF-61 approved for cold and hot portable water up to 82°C (180°F).
- **Grade "T" Nitrile** gaskets have an Orange colour code stripe identification and conform to ASTM D 2000 for service temperatures from -29°C to 82°C (-20°F to 180°F). They are recommended for petroleum products, vegetable oils, mineral oils, and air with oil vapours.
- **Grade "L" Silicone** gaskets are Red colour code stripe and conform to ASTM D 2000 for service temperatures from -34°C to 177°C (-30°F to 350°F). They are recommended for air without hydrocarbons, or dry heat.
- **Grade "O" Fluoroelastomer** gaskets have a Blue colour code stripe and conform to ASTM D 2000. They are recommended for oxidizing acids, petroleum products, hydraulic fluids, lubricants, and halogenated hydrocarbons.

Stainless  
Steel

## Fitting Specifications

*Tech Data Sheet: G571*

### 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
- Pipe wall thickness in groove area of standard stainless steel fittings are"
  - 2.0mm (0.08") for sizes 25 to 100mm (1" to 4");
  - 3.0mm (0.12") for 125 to 200mm (5" to 8"); and
  - 4.0mm (0.16") for 250 to 300mm (10" and 12").
 Fittings are fabricated from SS316Ti / 1.4571

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 G571.

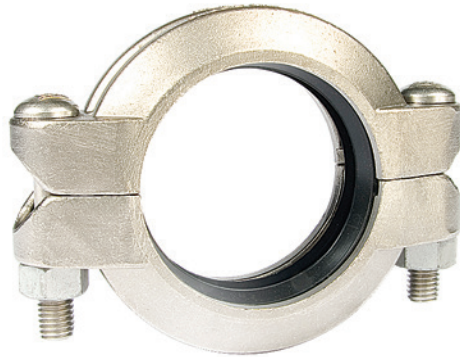


For detailed Listing / Approval  
information contact  
GRINNELL Mechanical Products

For local country potable water approvals, contact a GRINNELL Sales Representative.

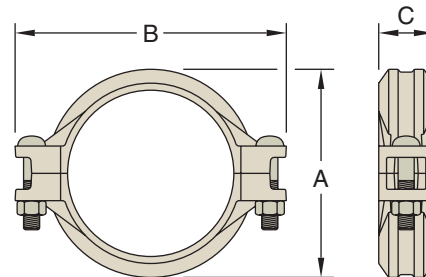
## Figure 472 Stainless Steel Rigid Couplings

Tech Data Sheet: G560



The GRINNELL Figure 472 Rigid Coupling is made of cast 316L stainless steel and is capable of pressure up to 41.4 Bar (600 psi).

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 32mm – 100mm (1 1/4" – 4") have gripping teeth to prevent rotation during installation.




Part Number		Pipe Size		Max.† Pressures Bar psi	Max.† End Load kN Lbs.	Max.*‡ End Gap Inches mm Inches	Dimensions			Coupling Bolts Size** mm Inches	Approx. Weight kg Lbs.
Standard Coupling	DVGW Approved 	Nominal mm Inches	O.D. mm Inches				A mm Inches	B mm Inches	C mm Inches		
472MD00424	–	32 1 1/4	42.4 1.660	41.4 600	5.78 1,298.5	1.5 0.06	69.9 2.75	111.3 4.38	46.0 1.81	M10 x 57 3/8 x 2 1/4	0.9 2.0
472MD00484	–	40 1 1/2	48.3 1.900	41.4 600	7.57 1,701.1	2.0 0.08	76.2 3.00	117.3 4.62	46.0 1.81	M10 x 57 3/8 x 2 1/4	1.0 2.1
472MD00604	472MD00604D	50 2	60.3 2.375	41.4 600	11.82 2,658.0	3.3 0.13	86.6 3.41	130.0 5.12	47.8 1.88	M10 x 57 3/8 x 2 1/4	0.9 1.9
472MD00734	–	65 2 1/2	73.0 2.875	41.4 600	17.32 3,895.0	3.3 0.13	99.3 3.91	143.0 5.63	47.8 1.88	M10 x 57 3/8 x 2 1/4	1.5 3.2
472MD00764	472MD00764D	65 76.1mm	76.1 3.000	41.4 600	18.86 4,241.0	3.3 0.13	106.4 4.19	145.3 5.72	50.8 2.00	M10 x 57 –	1.6 3.5
472MD00894	472MD00894D	80 3	88.9 3.500	41.4 600	25.68 5,772.5	3.3 0.13	117.6 4.63	158.8 6.25	47.8 1.88	M12 x 89 1/2 x 3	1.6 3.5
472MD01144	472MD01144D	100 4	114.3 4.500	41.4 600	42.44 9,542.3	4.8 0.19	147.6 5.81	190.5 7.50	50.0 1.97	M12 x 89 1/2 x 3	2.5 5.6
472MD01394	472MD01394D	125 139.7mm	139.7 5.500	41.4 600	63.40 14,254.6	4.8 0.19	178.3 7.02	246.9 9.72	52.3 2.06	M16 x 83 –	3.9 8.5
472MD01414	–	125 5	141.3 5.563	41.4 600	64.87 14,583.0	4.8 0.19	180.1 7.09	246.6 9.71	51.8 2.04	M16 x 83 5/8 x 3 1/4	3.9 8.5
472MD01684	472MD01684D	150 6	168.3 6.625	41.4 600	92.00 20,682.4	4.8 0.19	205.5 8.09	267.5 10.53	54.1 2.13	M16 x 83 5/8 x 3 1/4	4.3 9.4
472MD02194	472MD02194D	200 8	219.1 8.625	41.4 600	155.92 35,054.7	4.8 0.19	268.2 10.56	344.4 13.56	66.5 2.62	M20 x 121 3/4 x 4 3/4	8.8 19.4
472MD02734	472MD02734D	250 10	273.0 10.750	41.4 600	242.22 54,455.9	3.3 0.13	326.1 12.84	416.8 16.41	66.5 2.62	– 1 x 6 1/2	14.5 32.0
472MD03244	–	300 12	323.9 12.750	41.4 600	340.73 76,603.5	3.3 0.13	391.4 15.41	478.5 18.84	66.5 2.62	– 1 x 6 1/2	19.5 43.0

Figure 472 Rigid Couplings have an Anti-Rotation Feature of "gripping teeth" along the coupling keys in sizes 1 1/4" - 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 a GRINNELL Sales Representative 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 a GRINNELL Sales Representative for availability of inch bolt sizes vs. metric bolt sizes.

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

See page 95 for stainless steel coupling specifications and pages 116 - 127 for gasket information.

Note: The Fig. 472 Stainless Steel Heavy Duty Rigid Coupling does not provide compensation for pipe system expansion and/or contraction associated with pipe system temperature changes.

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

Stainless  
Steel

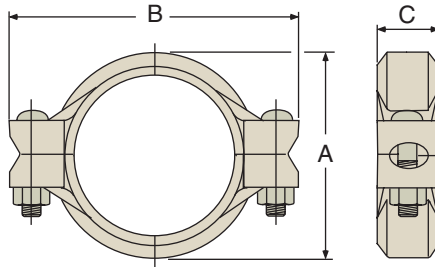



## Figure 405 Stainless Steel Flexible Couplings

Tech Data Sheet: G565



The GRINNELL Figure 405 Flexible Coupling is made of 316L stainless steel and is capable of pressures up to 51.7 Bar (750 psi), depending on pipe size and wall thickness.



Part Number		Pipe Size		Max.† Pressures Bar psi	Max.† End Load kN Lbs.	Max.*‡ End Gap mm In.	Deflection ‡		Dimensions			Coupling Bolts Size** (Qty. 2)mm Inches	Approx. Weight kg Lbs.
Standard Coupling	DVGW Approved 	Nominal mm Inches	O.D. mm Inches				Degrees per coupling	mm/m In/Ft	A mm In.	B mm In.	C mm In.		
405MD00344	—	25 1	33.7 1.315	51.7 750	4.53 1,018.6	3.3 0.13	5° 26'	95.1 0.90	56.0 2.20	97.0 3.82	46.0 1.81	M10 x 57 3/8 x 2 1/4	0.6 1.5
405MD00424	—	32 1 1/4	42.4 1.660	51.7 750	7.22 1,623.1	3.3 0.13	4° 19'	75.0 0.90	65.0 2.56	106.4 4.19	46.0 1.81	M10 x 57 3/8 x 2 1/4	0.7 1.5
405MD00484	—	40 1 1/2	48.3 1.900	51.7 750	9.46 2,126.4	3.3 0.13	3° 46'	65.8 0.79	69.9 2.75	112.8 4.44	46.0 1.81	M10 x 57 3/8 x 2 1/4	0.7 1.6
405MD00604	405MD00604D	50 2	60.3 2.375	34.5 500	9.85 2,215.0	3.3 0.13	3° 1'	52.5 0.63	82.6 3.25	124.0 4.88	47.8 1.88	M10 x 57 3/8 x 2 1/4	0.8 1.7
405MD00734	—	65 2 1/2	73.0 2.875	34.5 500	14.44 3,245.8	3.3 0.13	2° 29'	43.3 0.52	93.7 3.69	139.7 5.50	47.8 1.88	M10 x 57 3/8 x 2 1/4	0.9 2.0
405MD00764	405MD00764D	65 76,1mm	76.1 3.000	34.5 500	15.72 3,534.2	3.3 0.13	2° 23'	41.7 0.50	101.6 4.00	146.10 5.75	47.8 1.88	M12 x 89 —	1.4 3.1
405MD00894	405MD00894D	80 3	88.9 3.500	34.5 500	21.40 4,810.4	3.3 0.13	2° 3'	35.8 0.43	111.3 4.38	165.1 6.50	47.8 1.88	M12 x 89 1/2 x 3	1.4 3.1
405MD01144	405MD01144D	100 4	114.3 4.500	22.4 325	22.99 5,168.7	6.4 0.25	3° 11'	55.8 0.67	144.5 5.69	196.9 7.75	52.3 2.06	M12 x 89 1/2 x 3	1.8 4.0
405MD01394	405MD01394D	125 139,7mm	139.7 5.500	13.8 200	21.13 4,751.5	6.4 0.25	2° 36'	45.5 0.55	173.0 6.81	247.7 9.75	52.3 2.06	M16 x 83 —	3.3 7.2
405MD01414	—	125 5	141.3 5.563	13.8 200	21.62 4,861.0	6.4 0.25	2° 35'	45.0 0.54	174.8 6.88	247.7 9.75	52.3 2.06	M16 x 83 5/8 x 3 1/4	3.2 7.1
405MD01684	405MD01684D	150 6	168.3 6.625	13.8 200	30.67 6,894.1	6.4 0.25	2° 10'	37.5 0.45	201.7 7.94	271.5 10.69	52.3 2.06	M16 x 83 5/8 x 3 1/4	3.2 7.1
405MD02194	405MD02194D	200 8	219.1 8.625	13.8 200	51.97 11,684.9	6.4 0.25	1° 40'	29.2 0.35	258.8 10.19	344.4 13.56	63.5 2.50	M20 x 121 3/4 x 4 3/4	6.6 14.5

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 a GRINNELL Sales Representative for details.

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

\*\* Contact a GRINNELL Sales Representative for availability of inch bolt sizes vs. metric bolt sizes.

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

See page 95 for stainless steel coupling specifications and pages 116 - 127 for gasket information.

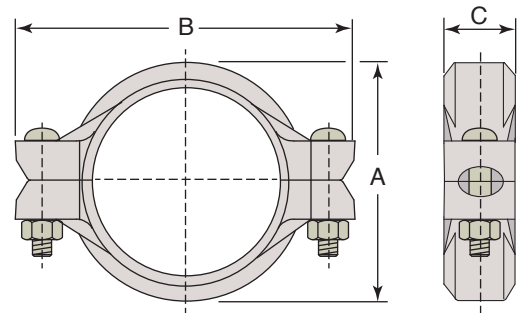
For fire protection equipment listing and approval pressure ratings contact Tyco FFP.

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

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## Figure 705R Rilsan Coated Flexible Coupling

**10**  
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Part Number	Pipe Size		Max. Wk Pressure † Bar Psi	Max. End Load † kN Lbs	Max. End Separation ‡ mm Inches	Deflection		Dimensions			Coupling Bolt Size (Qty 2) mm Inches	Approx Weight kg Lbs.
	Nominal mm Inches	O.D. mm Inches				Per Coupling Degrees	Pipe mm/m in/ft	A mm Inches	B mm Inches	C mm Inches		
705MES042R	32 1 1/4	42.4 1.660	16.0 230	2.21 496.8	3.3 0.13	4° 19'	75.0 0.90	65 2.56	106 4.17	46 1.81	M10x60	0.7 1.5
705MES048R	40 1 1/2	48.3 1.900	16.0 230	2.90 651.9	3.3 0.13	3° 46'	65.8 0.79	70 2.76	113 4.45	46 1.81	M10x60	0.7 1.5
705MES060R	50 2	60.3 2.375	16.0 230	4.53 1,018.4	3.3 0.13	3° 01'	52.5 0.63	83 3.27	124 4.88	48 1.89	M10x60	0.8 1.8
705MES076R	65 2 1/2	76.1 3.000	16.0 230	7.23 1,625.4	3.3 0.13	2° 23'	41.7 0.50	102 4.02	146 5.75	48 1.89	M12x80	1.4 3.1
705MES089R	80 3	88.9 3.500	16.0 230	9.84 2,212.1	3.3 0.13	2° 03'	35.8 0.43	111 4.37	165 6.50	48 1.89	M12x80	1.4 3.1
705MES114R	100 4	114.3 4.500	16.0 230	16.27 3,657.6	6.4 0.25	3° 11'	55.8 0.67	145 5.71	197 7.76	52 2.05	M12x80	1.8 4.0
705MES139R	125 5	139.7 5.500	16.0 230	24.31 5,465.1	6.4 0.25	2° 36'	45.0 0.54	173 6.81	248 9.76	52 2.05	M16x90	3.3 7.3
705MES141R	125 5	141.3 5.563	16.0 230	24.87 5,591.0	6.4 0.25	2° 35'	45.0 0.54	175 6.89	248 9.76	52 2.05	M16x90	3.2 7.1
705MES165R	150 6	165.1 6.500	16.0 230	33.95 7,632.3	6.4 0.25	2° 12'	38.3 0.46	197 7.76	272 10.71	52 2.05	M16x90	3.2 7.1
705MES168R	150 6	168.3 6.625	16.0 230	35.27 7,929.0	6.4 0.25	2° 10'	37.5 0.45	202 7.95	272 10.71	52 2.05	M16x90	3.2 7.1
705MES219R	200 8	219.1 8.625	16.0 230	59.78 13,439.1	6.4 0.25	1° 40'	29.2 0.35	259 10.20	344 13.54	64 2.52	M20x120	6.6 14.6

†: Maximum pressure and end load are total from all loads based on standard weight steel pipe. Pressure ratings and end loads may differ on pipe materials and/or wall thickness. Contact a GRINNELL Sales Representative for details. For fire protection equipment listing and approval pressure ratings contact a GRINNELL Sales Representative.

‡: Maximum pipe end separation is for cut grooved standard weight pipe. Values for roll grooved will be 1/2 that of cut grooved. Standard Stainless Steel 316 Bolt, Nuts and Washer.

Standard Stainless Steel 316 Bolt, Nuts and Washer.

Always use washers in combination with Fig 705R Rilsan Coated Couplings

Because of the Rilsan coating FM/UL/VDS/LPC approvals do not apply.

Also available with zinc plated bolts and nuts. Part code: 705ME...R (e.g. 705ME114R)

See page 95 for stainless steel coupling specifications and pages 116 - 127 for gasket information.

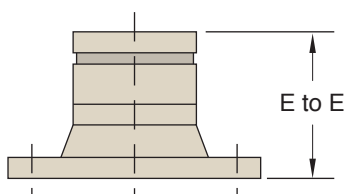
For information on alternative sizes, contact a GRINNELL Sales Representative.

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

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## Figure 443 & 444 Flange Adapters (PN16/PN10 BS 4504)

**10**  
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Pipe Size		Figure 443 - PN16					Figure 444 - PN10 BS 4504				
Nominal mm Inches	O.D. mm Inches	Part Number	E to E mm Inches	Mating Flange Bolt		Approx. Weight kg Lbs.	Part Number	E to E mm Inches	Mating Flange Bolt		Approx. Weight kg Lbs.
				Qty.	Size *				Qty.	Size *	
32 1 1/4	42.4 1.660	443H000424	90 3.54	4	M16 x 65	1.8 4.0	-	-	-	-	-
40 1 1/2	48.3 1.900	443H000484	92 3.62	4	M16 x 65	2.0 4.4	-	-	-	-	-
50 2	60.3 2.375	443H000604	95 3.74	4	M16 x 65	2.7 6.0	-	-	-	-	-
65 76,1mm	76.1 3.000	443H000764	95 3.74	4	M16 x 65	3.3 7.3	-	-	-	-	-
80 3	88.9 3.500	443H000894	100 3.94	8	M16 x 70	4.0 8.8	-	-	-	-	-
100 4	114.3 4.500	443H001144	102 4.02	8	M16 x 70	4.6 10.1	-	-	-	-	-
125 139.7mm	139.7 5.500	443H001394	105 4.13	8	M16 x 75	6.0 13.2	-	-	-	-	-
150 6	168.3 6.625	443H001684	105 4.13	8	M20 x 80	7.2 15.9	-	-	-	-	-
200 8	219.1 8.625	-	-	-	-	-	444H002194	112.0 4.41	8	M20 x 80	10.2 22.5
250 10	273.0 10.750	-	-	-	-	-	444H002734	128.0 5.04	12	M20 x 90	18.0 39.7
300 12	323.9 12.750	-	-	-	-	-	444H003244	117.0 4.61	12	M20 x 90	22.4 49.4

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

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

Schedule 40 fittings available upon request, contact a GRINNELL Sales Representative.

See page 32 for flange washer Adaptor and page 144 Flange Drilling Specifications

See page 95 for stainless steel specifications.

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

Stainless  
Steel

## Figure 410 90° Stainless Steel Elbows

Tech Data Sheet: G571

**10**  
YEAR  
LIMITED  
WARRANTY



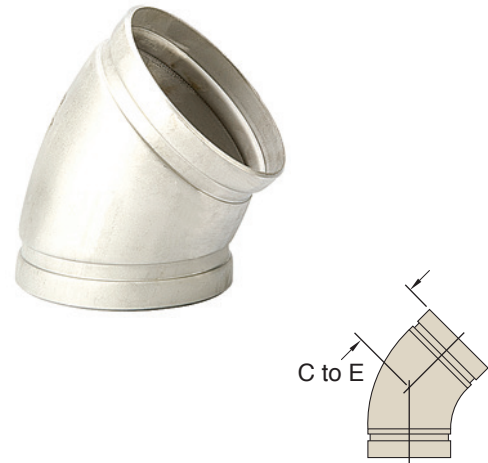
Part Number	Pipe Size		C to E mm Inches	Approx. Weight kg Lbs.
	Nominal mm Inches	O.D. mm Inches		
410H000344	25	33.7	73.0	0.5
	1	1.315	2.87	1.1
410H000424	32	42.4	82.0	0.5
	1 ¼	1.660	3.23	1.1
410H000484	40	48.3	92.0	0.5
	1 ½	1.900	3.62	1.1
410H000604	50	60.3	111.0	0.9
	2	2.375	4.37	2.0
410H000764	65	76.1	130.0	1.4
	76,1mm	3.000	5.12	3.1
410H000894	80	88.9	149.0	2.0
	3	3.500	5.87	4.4
410H001144	100	114.3	187.0	3.9
	4	4.500	7.36	8.6
410H001394	125	139.7	225.0	6.1
	139.7mm	5.500	8.86	13.4
410H001684	150	168.3	263.0	8.4
	6	6.625	10.35	18.5
410H002194	200	219.1	345.0	16.6
	8	8.625	13.58	36.6
410H002734	250	273.0	440.0	27.2
	10	10.750	17.32	60.0
410H003244	300	323.9	517.0	30.4
	12	12.750	20.35	67.0

For information on alternative sizes, contact a GRINNELL Sales Representative.  
Schedule 40 fittings available upon request, contact a GRINNELL Sales Representative.  
See page 95 for stainless steel fitting specifications.  
For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

## Figure 401 45° Stainless Steel Elbows

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**10**  
YEAR  
LIMITED  
WARRANTY



Part Number	Pipe Size		C to E mm Inches	Approx. Weight kg Lbs.
	Nominal mm Inches	O.D. mm Inches		
401H000344	25	33.7	50.0	0.5
	1	1.315	1.97	1.1
401H000424	32	42.4	54.0	0.5
	1 ¼	1.660	2.13	1.1
401H000484	40	48.3	58.0	0.5
	1 ½	1.900	2.28	1.1
401H000604	50	60.3	65.0	0.9
	2	2.375	2.56	2.0
401H000764	65	76.1	73.0	1.4
	76,1mm	3.000	2.87	3.1
401H000894	80	88.9	80.0	2.0
	3	3.500	3.15	4.4
401H001144	100	114.3	95.0	3.9
	4	4.500	3.74	8.6
401H001394	125	139.7	110.0	6.1
	139.7mm	5.500	4.33	13.4
401H001684	150	168.3	125.0	8.4
	6	6.625	4.92	18.5
401H002194	200	219.1	166.0	16.6
	8	8.625	6.54	36.6
401H002734	250	273.0	210.0	27.2
	10	10.750	8.27	60.0
401H003244	300	323.9	349.0	30.4
	12	12.750	13.74	67.0

For information on alternative sizes, contact a GRINNELL Sales Representative.  
Schedule 40 fittings available upon request, contact a GRINNELL Sales Representative.  
See page 95 for stainless steel fitting specifications.  
For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

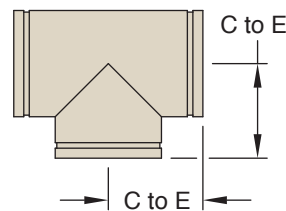
Stainless  
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## Figure 419 Tees

Tech Data Sheet: G571



Part Number	Pipe Size		C to E mm Inches	Approx. Weight kg Lbs.
	Nominal mm Inches	O.D. mm Inches		
419H000344	25	33.7	73.0	0.5
	1	1.315	2.87	1.1
419H000424	32	42.4	60.0	0.5
	1 ¼	1.660	2.36	1.1
419H000484	40	48.3	62.0	0.5
	1 ½	1.900	2.44	1.1
419H000604	50	60.3	68.0	0.9
	2	2.375	2.68	2.0
419H000764	65	76.1	76.0	1.4
	76,1mm	3.000	2.99	3.1
419H000894	80	88.9	86.0	2.0
	3	3.500	3.39	4.4
419H001144	100	114.3	105.0	3.9
	4	4.500	4.13	8.6
419H001394	125	139.7	160.0	6.1
	139.7mm	5.500	6.30	13.4
419H001684	150	168.3	178.0	8.4
	6	6.625	7.01	18.5
419H002194	200	219.1	178.0	16.6
	8	8.625	7.01	36.6
419H002734	250	273.0	250.0	27.2
	10	10.750	9.84	60.0
419H003244	300	323.9	255.0	30.4
	12	12.750	10.04	67.0



Stainless  
Steel

For information on alternative sizes, contact a GRINNELL Sales Representative.  
Schedule 40 fittings available upon request, contact a GRINNELL Sales Representative.  
See page 95 for stainless steel fitting specifications.  
For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.



## Figure 460 End Caps

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Stainless  
Steel

Part Number	Pipe Size		Nominal E to E mm Inches	Approx. Weight kg Lbs.
	Nominal mm Inches	O.D. mm Inches		
460H000344	25 1	33.7 1.315	50.0 1.97	0.5 1.1
460H000424	32 1 1/4	42.4 1.660	51.0 2.01	0.5 1.1
460H000484	40 1 1/2	48.3 1.900	54.0 2.13	0.5 1.1
460H000604	50 2	60.3 2.375	57.0 2.24	0.9 2.0
460H000764	65 76.1mm	76.1 3.000	62.0 2.44	1.4 3.1
460H000894	80 3	88.9 3.500	62.0 2.44	2.0 4.4
460H001144	100 4	114.3 4.500	64.0 2.52	3.9 8.6
460H001394	125 139.7mm	139.7 5.500	74.0 2.91	6.1 13.4
460H001684	150 * 6	168.3 6.625	86.0 3.39	8.4 18.5
460H002194	200 * 8	219.1 8.625	98.0 3.86	16.6 36.6
460H002734	250 * 10	273.0 10.750	114.0 4.49	27.2 60.0
460H003244	300 * 12	323.9 12.750	150.0 5.91	30.4 67.0

\* Dished Cap

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

Schedule 40 fittings available upon request, contact a GRINNELL Sales Representative.

See page 95 for stainless steel fitting specifications.

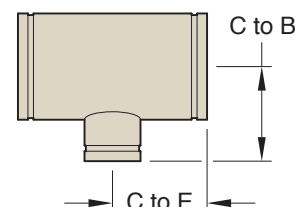
For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

## Figure 421 Reducing Tees

Tech Data Sheet: G571

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WARRANTY

Part Number	Pipe Size		C to E mm Inches	C to B mm Inches	Approx. Weight kg Lbs.
	Nominal mm Inches	O.D. mm Inches			
421H020104	50 x 50 x 25 2 x 2 x 1	60.3 x 60.3 x 33.7 2.375 x 2.375 x 1.315	68.0 2.68	68.0 2.68	1.0 2.2
421H020124	50 x 50 x 32 2 x 2 x 1 ¼	60.3 x 60.3 x 42.4 2.375 x 2.375 x 1.660	100.0 3.94	83.0 3.27	1.1 2.4
421H020154	50 x 50 x 40 2 x 2 x 1 ½	60.3 x 60.3 x 48.3 2.375 x 2.375 x 1.900	68.0 2.68	68.0 2.68	1.1 2.4
421H026154	50 x 50 x 40 76.1 x 76.1mm x 1 ½	76.1 x 76.1 x 48.3 3.000 x 3.000 x 1.900	76.0 2.99	76.0 2.99	1.2 2.6
421H026204	50 x 50 x 50 76.1 x 76.1mm x 2	76.1 x 76.1 x 60.3 3.000 x 3.000 x 2.375	76.0 2.99	76.0 2.99	2.0 4.4
421H030204	80 x 80 x 50 3 x 3 x 2	88.9 x 88.9 x 60.3 3.500 x 3.500 x 2.375	86.0 3.39	83.0 3.27	2.5 5.5
421H030264	80 x 80 x 65 3 x 3 x 76.1mm	88.9 x 88.9 x 76.1 3.500 x 3.500 x 3.000	86.0 3.39	83.0 3.27	2.6 5.7
421H042204	100 x 100 x 50 4 x 4 x 2	114.3 x 114.3 x 60.3 4.500 x 4.500 x 2.375	105.0 4.13	95.0 3.74	4.6 10.1
421H042264	100 x 100 x 65 4 x 4 x 76.1mm	114.3 x 114.3 x 76.1 4.500 x 4.500 x 3.000	105.0 4.13	95.0 3.74	5.1 11.2
421H042304	100 x 100 x 80 4 x 4 x 3	114.3 x 114.3 x 88.9 4.500 x 4.500 x 3.500	105.0 4.13	95.0 3.74	5.2 11.5
421H052304	125 x 125 x 80 139.7 x 139.7mm x 3	139.7 x 139.7 x 88.9 5.000 x 5.000 x 3.500	160.0 6.30	160.0 6.30	6.7 14.8
421H052424	125 x 125 x 100 139.7 x 139.7mm x 3	139.7 x 139.7 x 114.3 5.000 x 5.000 x 4.500	160.0 6.30	160.0 6.30	6.7 14.8
421H063204	150 x 150 x 50 6 x 6 x 2	168.3 x 168.3 x 88.9 6.625 x 6.625 x 2.375	143.0 5.63	122.0 4.80	11.8 26.0
421H063264	150 x 150 x 65 6 x 6 x 76.1mm	168.3 x 168.3 x 76.1 6.625 x 6.625 x 3.000	143.0 5.63	122.0 4.80	12.0 26.5
421H063304	150 x 150 x 80 6 x 6 x 3	168.3 x 168.3 x 60.3 6.625 x 6.625 x 3.500	143.0 5.63	122.0 4.80	12.1 26.7
421H063424	150 x 150 x 100 6 x 6 x 4	168.3 x 168.3 x 114.3 6.625 x 6.625 x 4.500	143.0 5.63	122.0 4.80	12.2 26.9
421H063524	150 x 150 x 125 6 x 6 x 139.7	168.3 x 168.3 x 139.7 6.625 x 6.625 x 5.000	178.0 7.01	178.0 7.01	17.5 38.6
421H080424	200 x 200 x 100 8 x 8 x 4	219.1 x 219.1 x 114.1 8.625 x 8.625 x 4.500	178.0 7.01	148.0 5.83	18.0 39.7
421H080524	200 x 200 x 125 8 x 8 x 139.7	219.1 x 219.1 x 139.7 8.625 x 8.625 x 5.000	178.0 7.01	178.0 7.01	23.5 51.8
421H080634	200 x 200 x 150 8 x 8 x 6	219.1 x 219.1 x 168.3 8.625 x 8.625 x 6.625	218.0 8.58	203.0 7.99	24.2 53.4
421H011634	250 x 250 x 150 10 x 10 x 6	273.0 x 273.0 x 168.3 10.750 x 10.750 x 6.625	250.0 9.84	216.0 8.50	25.0 55.1
421H011804	250 x 250 x 200 10 x 10 x 8	273.0 x 273.0 x 219.1 10.750 x 10.750 x 8.625	250.0 9.84	216.0 8.50	30.0 66.1
421H013804	300 x 300 x 200 12 x 12 x 8	323.9 x 323.9 x 219.1 12.750 x 12.750 x 8.625	255.0 10.04	230.0 9.06	34.0 75.0
421H013114	300 x 300 x 250 12 x 12 x 10	323.9 x 323.9 x 273.0 12.750 x 12.750 x 10.750	255.0 10.04	230.0 9.06	35.0 77.2



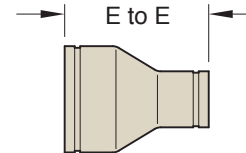
Stainless  
Steel

For information on alternative sizes, contact a GRINNELL Sales Representative.  
Schedule 40 fittings available upon request, contact a GRINNELL Sales Representative.  
See page 95 for stainless steel fitting specifications.  
For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

## Figure 450 Concentric Reducers

Tech Data Sheet: G571

**10**  
YEAR  
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Stainless  
Steel

Part Number	Pipe Size		E to E mm Inches	Approx. Weight kg Lbs.
	Nominal mm Inches	O.D. mm Inches		
450H012104	32 x 25	42.4 x 33.7	85.0	0.7
	1 ¼ x 1	1.660 x 1.315	3.35	1.5
450H015104	40 x 25	48.3 x 33.7	134.0	0.5
	1 ½ x 1	1.900 x 1.315	5.28	1.1
450H015124	40 x 32	48.3 x 42.4	135.0	0.9
	1 ½ x 1 ¼	1.900 x 1.660	5.31	2.0
450H020154	50 x 40	60.3 x 48.3	111.0	1.0
	2 x 1 ½	2.375 x 1.900	4.37	2.2
450H026154	65 x 40	76.1 x 48.3	125.0	1.0
	76.1mm x 1 ½	3.000 x 1.900	4.92	2.2
450H026204	65 x 50	76.1 x 60.3	125.0	1.1
	76.1mm x 2	3.000 x 2.375	4.92	2.4
450H030154	80 x 40	88.9 x 48.3	125.0	1.1
	3 x 1 ½	3.500 x 1.900	4.92	2.4
450H030204	80 x 50	88.9 x 60.3	125.0	1.1
	3 x 2	3.500 x 2.375	4.92	2.4
450H030264	80 x 65	88.9 x 76.1	125.0	1.1
	3 x 76.1mm	3.500 x 3.000	4.92	2.4
450H042204	100 x 50	114.3 x 60.3	135.0	1.1
	4 x 2	4.500 x 2.375	5.31	2.4
450H042264	100 x 65	114.3 x 76.1	135.0	1.3
	4 x 76.1mm	4.500 x 3.000	5.31	2.9
450H042304	100 x 80	114.3 x 88.9	135.0	1.3
	4 x 3	4.500 x 3.500	5.31	2.9
450H052304	125 x 80	139.7 x 88.9	162.0	1.3
	139.7mm x 3	5.500 x 3.500	6.38	2.9
450H052424	125 x 100	139.7 x 114.3	162.0	1.6
	139.7mm x 4	5.500 x 4.500	6.38	3.5

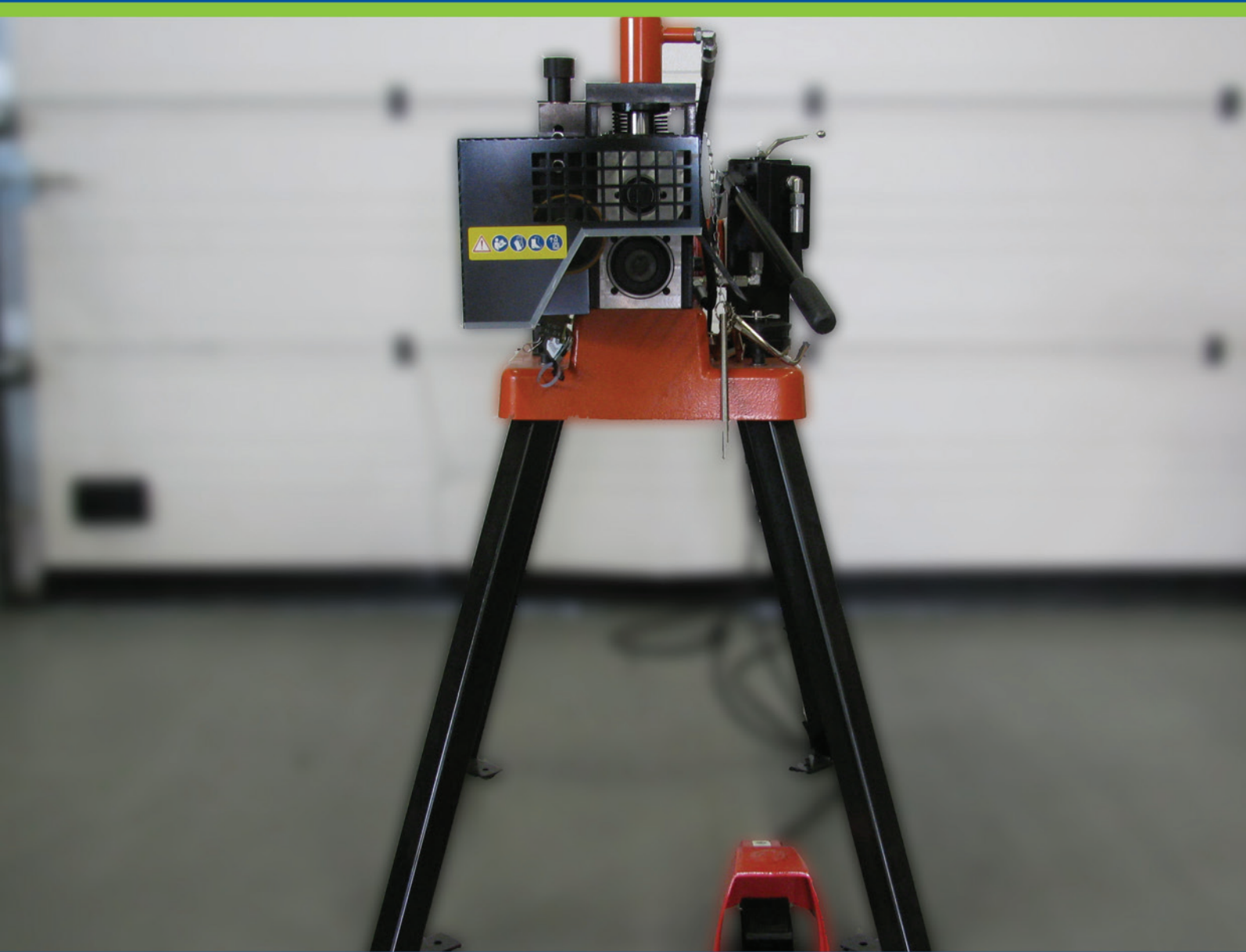
Part Number	Pipe Size		E to E mm Inches	Approx. Weight kg Lbs.
	Nominal mm Inches	O.D. mm Inches		
450H063424	150 x 100	168.3 x 114.3	175.0	1.6
	6 x 4	6.625 x 4.500	6.89	3.5
450H063524	150 x 125	168.3 x 139.7	210.0	1.7
	6 x 139.7mm	6.625 x 5.500	8.27	3.7
450H080424	200 x 100	219.1 x 114.3	227.0	1.7
	8 x 4	8.625 x 4.500	8.94	3.7
450H080524	200 x 125	219.1 x 139.7	227.0	2.5
	8 x 139.7mm	8.625 x 5.500	8.94	5.5
450H080634	200 x 150	219.1 x 168.3	227.0	2.5
	8 x 6	8.625 x 6.625	8.94	5.5
450H011634	250 x 150	273.0 x 168.3	278.0	2.5
	10 x 6	10.750 x 6.625	10.94	5.5
450H011804	250 x 200	273.0 x 219.1	278.0	3.4
	10 x 8	10.750 x 8.625	10.94	7.5
450H013804	300 x 200	323.9 x 219.1	300.0	4.7
	12 x 8	12.750 x 8.625	11.81	10.4
450H013114	300 x 250	323.9 x 273.0	300.0	5.2
	12 x 10	12.750 x 10.750	11.81	11.5

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

Schedule 40 fittings available upon request, contact a GRINNELL Sales Representative.


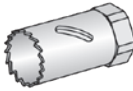







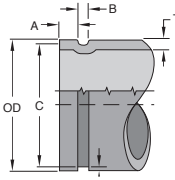

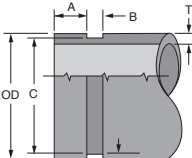
See page 95 for stainless steel fitting specifications.

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.



## PREPARATION EQUIPMENT

## Preparation Equipment Table of Contents

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 <p><b>Figure STAND</b> Pipestand Page – 107</p>	 <p><b>Figure GAUGE</b> Groove Gauge Page – 110</p>
 <p><b>Figure RJ624</b> Pipestand Page – 107</p>	 <p><b>Roll Grooving Specifications</b> Pages 111– 112</p>
 <p><b>Figure HCTOOL</b> Hole Cutting Tool Page – 108</p>	 <p><b>Cut Grooving Specifications</b> Pages – 113 - 114</p>

General notes: Additional information is included in our data sheets and is available upon request. It is the Designer's responsibility to select products suitable for the intended service and to ensure that pressure ratings and performance data is not exceeded. Always read and understand the installation constructions. Never remove any piping components nor correct or modify any piping deficiencies without first depressurising and draining the system. Material and gasket selection should be verified with the gasket recommendation listing for the specific application.



## Pipe Preparation Tools



Figure GROOVER 01



Figure GROOVER 02



Figure GROOVER 10A

Part Number	Nominal Size mm In.	Power Supply*	Description	Approx. Weight kg Lbs
GROOVER 01	32mm thru 450mm	400VAC 50Hz	Portable Groover with Pipestand	225
	1 1/4" thru 18"			496
	Supplied with standard roll sizes until 300mm (12") . For larger sizes, contact a GRINNELL Sales Representative to purchase spare bottom and top rollers. Stainless steel bottom and top rollers are available in sizes 25 - 600mm (1" – 24"). GRINNELL can supply the tool as a standard tools to include stainless steel rollers. Contact a GRINNELL Sales Representative for more information.			
GROOVER 02	32mm thru 450mm	400VAC 50Hz	Automatic Groover with Pipestand	425
	1 1/4" thru 18"			936
	Supplied with standard roll sizes until 300mm (12") . For larger sizes, contact a GRINNELL Sales Representative to purchase spare bottom and top rollers. Stainless steel bottom and top rollers are available in sizes 25 - 600mm (1" – 24"). GRINNELL can supply the tool as a standard tools to include stainless steel rollers. Contact a GRINNELL Sales Representative for more information.			
GROOVER 10A	25mm thru 200mm	230VAC 50Hz	Portable Groover with Pipestand	125
	1" thru 8"			275
	Stainless steel bottom rollers are available in sizes 50 - 150mm (2" – 6"). GRINNELL can supply the tool as a standard tool to include stainless steel bottom rollers. Contact a GRINNELL Sales Representative for more information.			
GROO10A-UK	25mm thru 200mm	110VAC 50Hz	Portable Groover with Pipestand	125
	1" thru 8"			275
*Note: Other voltages on request. For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.				

\*Note: Other voltages on request.

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

Preparation  
Equipment

## Pipe Stands

Part Number	Description	Size Range mm In.	Approx. Weight kg Lbs
STAND	Pipe stand for pipes	33.7mm thru 219.1mm	15
		1" thru 8"	33.1
RJ-624	Pipe stand for pipes	168.3mm thru 609.6mm	40
		6" thru 24"	88.2

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.



Figure STAND



Figure RJ-624

## Figure HCTOOL Hole Cutting Tool



Figure HCTOOL  
(Drill not included)

Part Number	Pipe Size mm <i>In.</i>	Max. Hole Ø Supply mm <i>In.</i>	Description	Approx Weight Kg
HCTOOL	21.0-273.0	125	Hole cutting Tool	8.0
	$\frac{1}{2}$ -10	5		17.6

Note: The HCT Hole Cutting Tool is a great help when drilling holes in pipe. Almost any standard hole saw machine [i.e. electric drill] can be mounted on the HCT. With the HCT the hole saw can be fixed, secured and used as a leveling tool to ensure accurate hole alignment. For pipes of 12mm thru 250mm ( $\frac{1}{2}$ " thru 12"). With the optional base and beam adapter, the support can also be attached to standard steel beams.

Contact a GRINNELL Sales Representative for missing part numbers and ordering information.

## Hole Cutting Tool Spare Parts

Preparation  
Equipment

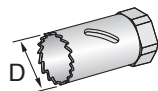


Figure HOLESAP  
(Available sizes  
show in table)

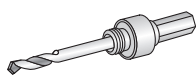


Figure HOLESAPCP  
(For dia. 14.3mm  
thru 30.2mm)  
(0.56" thru 1.19")

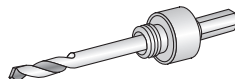


Figure HOLESAPCP5  
(For dia. 31.8mm  
thru 152.4mm)  
(1.25" thru 6.00")



Figure HOLESAPDP  
(Drive plate for  
dia. 76.2mm  
thru 152.4mm)  
(3.00" thru 6.00")



Figure HOLESAPCD  
(Spare drill for  
HOLESAPCP &  
HOLESAPCP5)

Part Number	D mm <i>In.</i>	Use with Hole Drill	Use with Drive Plate
HOLESAP22	22.2 0.87	HOLESAPCP	—
HOLESAP24	23.8 0.94	HOLESAPCP	—
HOLESAP25	25.4 1.00	HOLESAPCP	—
HOLESAP35	34.9 1.37	HOLESAPCP5	—
HOLESAP38	38.1 1.50	HOLESAPCP5	—
HOLESAP44	44.5 1.75	HOLESAPCP5	—
HOLESAP50	50.8 2.00	HOLESAPCP5	—
HOLESAP63	63.5 2.50	HOLESAPCP5	—
HOLESAP70	69.9 2.75	HOLESAPCP5	—
HOLESAP89	88.9 3.50	HOLESAPCP5	HOLESAPDP
HOLESAP114	114.3 4.50	HOLESAPCP5	HOLESAPDP

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

## GRINNELL Groove Measurement Tapes

This dimensional measurement tape has been developed to check the groove diameter (C-size) of grooved pipe from 33.7mm up to 609.6mm (1" up to 24").

The loop extending from the metal housing consist of a clear-view plastic window with an indicator line and a metal measuring tape. Through the window one can see the various markings (groove tolerance areas) on the tape.

First, verify which size pipe is to be checked. As shown on the drawing, the metal tape will show the diameter of a particular steel pipe size. Slide the loop over the grooved end of the pipe and place the tape in the groove.

*Please note: Check whether the tape is placed in the groove over the entire circumference of the pipe!*

Pull the tape tightly on the pipe. Through the clear view window one should see the indicator line and a small 'block' showing the tolerance area for the groove. The indicator line in the window must fall within the dark coloured block or groove tolerance area.

If the indicator line is not within the groove tolerance area, first check if the tape is pulled back tightly, and whether the tape is correctly placed in the groove. If the tape is placed properly, this particular groove is not correct. Make sure that the settings on the GRINNELL grooving tool are corrected to obtain the correct groove dimensions.

**Please note:**

This tape is not a calibrated tool and is to be used for reference only. To ensure accuracy, always check grooved end pipe with calibrated gauges or calipers.

For Roll Groove Standard Specifications for Steel Pipe and Other IPS Pipe, refer to Data Sheet G710.

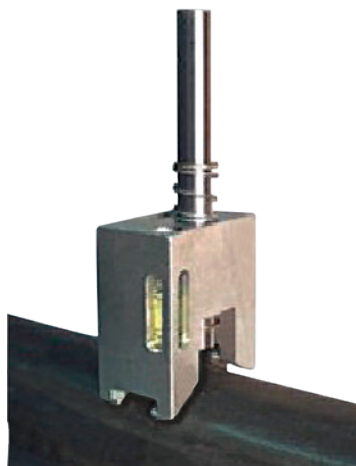


Part Number	Pipe Size mm In.	Description Hole Drill	Use with Drive Plate
GRINTAPE	33.7 – 323.9 1 – 12	Pipe Measuring Tape	0.100
ZKLM024	33.7 – 609.6 1 – 24	Pipe Measuring Tape	0.100

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

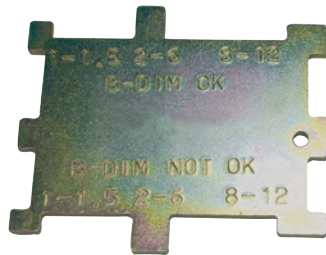
Preparation  
Equipment

Part Number
<b>PUNCH</b>
For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.



**Figure PUNCH  
Centre Punch**

## GRINNELL Gauges



This dimensional gauge is developed to check the A dimension (gasket seat) and B dimension (groove width) of grooved pipe.

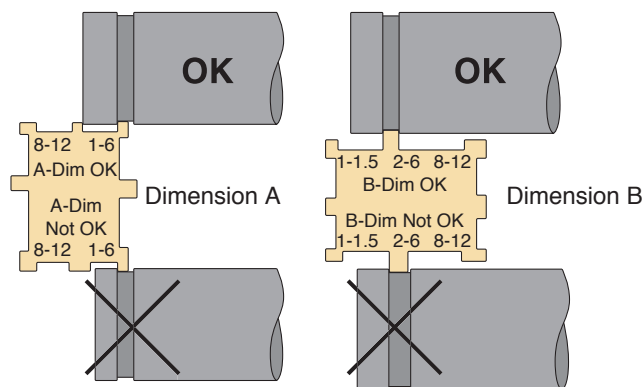
### A Dimension - Gasket seat

Select the proper size of pipe on the gauge. Place the gauge with the DIM A OK side on the grooved end of the pipe as shown on the drawing. If the gauge fits the groove should be acceptable. If the DIM A NOT OK side fits the grooved end, this groove is not made in accordance with GRINNELL specifications.

### B Dimension - Groove width

Select the proper size of the pipe on the gauge. Place the gauge with the DIM B OK side in the groove of the pipe as shown on the drawing. If the gauge fits, the groove should be acceptable. If the DIM B NOT OK side fits the groove, this groove is not made in accordance with GRINNELL specifications.

**Please note:** This gauge is not a calibrated tool and is to be used for reference only. To ensure accuracy, always check grooved end pipe with calibrated gauges or calibers.



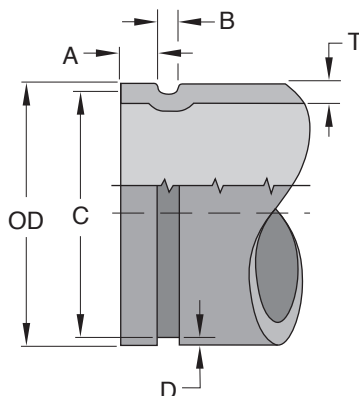
Part Number	Pipe Size mm In.	Description Hole Drill	Use with Drive Plate
<b>GAUGE</b>	<b>33.7 – 323.9</b> 1 – 12	<b>Gauge</b>	<b>0.250</b>
For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.			

## Roll Groove Standard Specification for Steel & Other IPS Pipe

(Page 1 of 2)

Tech Data Sheet: G710

GRINNELL Roll Grooves  
conform to AWWA  
C-606 specification.



Nominal Pipe Size mm <i>Inches</i>	Pipe O.D. mm <i>Inches</i>			A ±0.76mm ±0.030" mm <i>Inches</i>	B ±0.76mm ±0.030" mm <i>Inches</i>	C Groove Diameter mm <i>Inches</i>		D Groove Depth (ref. only) mm <i>Inches</i>	T Minimum Wall mm <i>Inches</i>	Maximum Allow Flare Diameter mm <i>Inches</i>
	O.D.	Tolerance				Actual	Tol. +0.000			
		+	-							
32	42.4	0.41	0.41	15.88	7.14	38.99	-0.38	1.60	1.65	44.96
1 ¼	1.660	0.016	0.016	0.625	0.281	1.535	-0.015	0.062	0.065	1.77
40	48.3	0.48	0.48	15.88	7.14	45.09	-0.38	1.60	1.65	51.05
1 ½	1.900	0.019	0.019	0.625	0.281	1.775	-0.015	0.062	0.065	2.01
50	60.3	0.61	0.61	15.88	8.74	57.15	-0.38	1.60	1.65	62.99
2	2.375	0.024	0.024	0.625	0.344	2.250	-0.015	0.062	0.065	2.48
65	73.0	0.74	0.74	15.88	8.74	69.09	-0.46	1.98	2.11	75.69
2 ½	2.875	0.029	0.029	0.625	0.344	2.720	-0.018	0.078	0.083	2.98
65	76.1	0.76	0.76	15.88	8.74	72.26	-0.46	1.93	2.11	78.74
76.1mm	3.000	0.030	0.030	0.625	0.344	2.845	-0.018	0.076	0.083	3.10
80	88.9	0.89	0.79	15.88	8.74	84.94	-0.46	1.98	2.11	91.44
3	3.500	0.035	0.031	0.625	0.344	3.344	-0.018	0.078	0.083	3.60
100	108.0	1.09	0.79	15.88	8.74	103.73	-0.51	2.11	2.11	110.49
108.0mm	4.252	0.043	0.031	0.625	0.344	4.084	-0.020	0.083	0.083	4.35
100	114.3	1.14	0.79	15.88	8.74	110.08	-0.51	2.11	2.11	116.84
4	4.500	0.045	0.031	0.625	0.344	4.334	-0.020	0.083	0.083	4.60
125	133.0	1.35	0.79	15.88	8.74	129.13	-0.56	2.11	2.77	135.89
133.0mm	5.236	0.053	0.031	0.625	0.344	5.084	-0.022	0.083	0.109	5.35
125	139.7	1.42	0.79	15.88	8.74	135.48	-0.56	2.11	2.77	142.24
139.7mm	5.500	0.056	0.031	0.625	0.344	5.334	-0.022	0.083	0.109	5.60
125	141.3	1.42	0.79	15.88	8.74	137.03	-0.56	2.13	2.77	143.76
5	5.563	0.056	0.031	0.625	0.344	5.395	-0.022	0.084	0.109	5.66
150	159.0	1.60	0.79	15.88	8.74	154.53	-0.76	2.11	2.77	161.29
159.0mm	6.260	0.063	0.031	0.625	0.344	6.084	-0.030	0.083	0.109	6.35

Preparation  
Equipment

- The maximum allowable tolerances for IPS Pipe from square cut ends is:  
0.76mm (0.030") for sizes 32mm – 80mm (1 1/4" thru 3");  
1.14mm (0.045") for sizes 100mm – 150mm (4" – 6"); and  
1.52mm (0.060") for sizes 200mm (8") and above.
- 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.
- Groove Diameter "C" must be of uniform depth around the circumference of the pipe.
- Groove Depth "D" is a reference dimension only. The Groove Diameter "C" must be maintained.
- Minimum Wall Thickness "T" is the minimum wall thickness that should be roll grooved.
- Maximum allowable pipe end flare diameter is measured at the pipe end diameter.

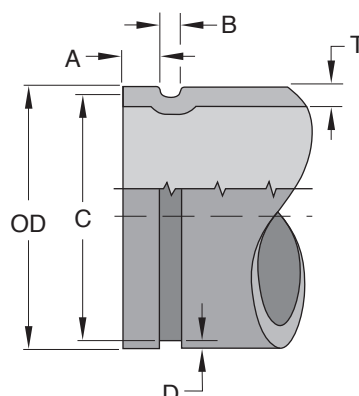
**Caution:** Pressure performance values shown for GRINNELL couplings on light wall (Sch. 5 & Sch. 10 ISO Metric) stainless steel pipe are dependent on the use of required special rolls for roll grooving light-wall stainless steel pipe. Failure to utilize the required special rolls for roll grooving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



## Roll Groove Standard Specification for Steel & Other IPS Pipe

(Page 2 of 2)

Tech Data Sheet: G710



Nominal Pipe Size mm <i>Inches</i>	Pipe O.D. mm <i>Inches</i>			A ±0.76mm ±0.030" mm <i>Inches</i>	B ±0.76mm ±0.030" mm <i>Inches</i>	C Groove Diameter mm <i>Inches</i>		D Groove Depth (ref. only) mm <i>Inches</i>	T Minimum Wall mm <i>Inches</i>	Maximum Allow Flare Diameter mm <i>Inches</i>
	O.D.	Tolerance				Actual	Tol. +0.000			
		+	-							
150 <i>165.1mm</i>	165.1 <i>6.500</i>	1.60 <i>0.063</i>	0.79 <i>0.031</i>	15.88 <i>0.625</i>	8.74 <i>0.344</i>	160.78 <i>6.330</i>	-0.56 <i>-0.022</i>	2.16 <i>0.085</i>	2.77 <i>0.109</i>	167.64 <i>6.60</i>
150 <i>6</i>	168.3 <i>6.625</i>	1.60 <i>0.063</i>	0.79 <i>0.031</i>	15.88 <i>0.625</i>	8.74 <i>0.344</i>	163.96 <i>6.455</i>	-0.56 <i>-0.022</i>	2.16 <i>0.085</i>	2.77 <i>0.109</i>	170.94 <i>6.73</i>
200 <i>8</i>	219.1 <i>8.625</i>	1.60 <i>0.063</i>	0.79 <i>0.031</i>	19.05 <i>0.750</i>	11.91 <i>0.469</i>	214.40 <i>8.441</i>	-0.64 <i>-0.025</i>	2.34 <i>0.092</i>	2.77 <i>0.109</i>	223.52 <i>8.80</i>
250 <i>10</i>	273.0 <i>10.750</i>	1.60 <i>0.063</i>	0.79 <i>0.031</i>	19.05 <i>0.750</i>	11.91 <i>0.469</i>	268.27 <i>10.562</i>	-0.69 <i>-0.027</i>	2.39 <i>0.094</i>	3.40 <i>0.134</i>	277.37 <i>10.92</i>
300 <i>12</i>	323.9 <i>12.750</i>	1.60 <i>0.063</i>	0.79 <i>0.031</i>	19.05 <i>0.750</i>	11.91 <i>0.469</i>	318.19 <i>12.531</i>	-0.76 <i>-0.030</i>	2.77 <i>0.109</i>	3.96 <i>0.156</i>	328.17 <i>12.92</i>
350 <i>14</i>	355.6 <i>14.000</i>	1.60 <i>0.063</i>	0.79 <i>0.031</i>	23.83 <i>0.938</i>	11.91 <i>0.469</i>	350.04 <i>13.781</i>	-0.76 <i>-0.030</i>	2.77 <i>0.109</i>	3.96 <i>0.156</i>	358.14 <i>14.10</i>
400 <i>16</i>	406.4 <i>16.000</i>	1.60 <i>0.063</i>	0.79 <i>0.031</i>	23.83 <i>0.938</i>	11.91 <i>0.469</i>	400.84 <i>157.81</i>	-0.76 <i>-0.030</i>	2.77 <i>0.109</i>	4.19 <i>0.165</i>	408.94 <i>16.10</i>
450 <i>18</i>	457.2 <i>18.000</i>	1.60 <i>0.063</i>	0.79 <i>0.031</i>	25.40 <i>1.000</i>	11.91 <i>0.469</i>	451.64 <i>17.781</i>	-0.76 <i>-0.030</i>	2.77 <i>0.109</i>	4.19 <i>0.165</i>	461.26 <i>18.16</i>
500 <i>20</i>	508.0 <i>20.000</i>	1.60 <i>0.063</i>	0.79 <i>0.031</i>	25.40 <i>1.000</i>	11.91 <i>0.469</i>	502.44 <i>19.781</i>	-0.76 <i>-0.030</i>	2.77 <i>0.109</i>	4.78 <i>0.188</i>	512.06 <i>20.16</i>
600 <i>24</i>	609.6 <i>24.000</i>	1.60 <i>0.063</i>	0.79 <i>0.031</i>	25.40 <i>1.000</i>	12.70 <i>0.500</i>	600.86 <i>23.656</i>	-0.76 <i>-0.030</i>	4.37 <i>0.172</i>	5.54 <i>0.218</i>	614.68 <i>24.20</i>

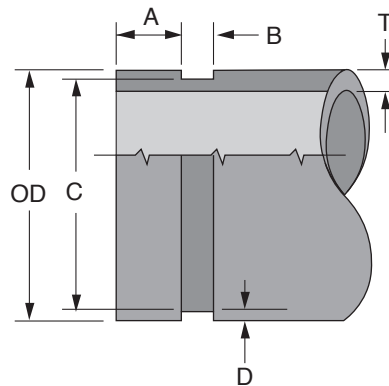
- The maximum allowable tolerances for IPS Pipe from square cut ends is:  
0.76mm (0.030") for sizes 32mm – 80mm (1 ¼" thru 3");  
1.14mm (0.045") for sizes 100mm – 150mm (4" – 6"); and  
1.52mm (0.060") for sizes 200mm (8") and above.
- Gasket Seating Surface "A" must be free from score marks, ridges, indentations, projections, loose paint, scale, dirt chips, grease, rust, etc. that would prevent a positive seal.
- Groove Diameter "C" must be of uniform depth around the circumference of the pipe.
- Groove Depth "D" is a reference dimension only. The Groove Diameter "C" must be maintained.
- Minimum Wall Thickness "T" is the minimum wall thickness that should be roll grooved.
- Maximum allowable pipe end flare diameter is measured at the pipe end diameter.

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

## Cut Groove Standard Specification for Steel & Other IPS Pipe

(Page 1 of 2)

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Nominal Pipe Size mm <i>Inches</i>	Pipe O.D. mm <i>Inches</i>			A ±0.76mm ±0.030" mm <i>Inches</i>	B ±0.76mm ±0.030" mm <i>Inches</i>	C Groove Diameter mm <i>Inches</i>		D Groove Depth (ref. only) mm <i>Inches</i>	T Minimum Wall mm <i>Inches</i>
	O.D.	Tolerance				Actual	Tol. +0.000		
		+	-						
32 <i>1 ¼</i>	42.4 <i>1.660</i>	0.41 <i>0.016</i>	0.41 <i>0.016</i>	15.88 <i>0.625</i>	7.95 <i>0.313</i>	38.99 <i>1.535</i>	-0.38 <i>-0.015</i>	1.60 <i>0.062</i>	3.56 <i>0.140</i>
40 <i>1 ½</i>	48.3 <i>1.900</i>	0.48 <i>0.019</i>	0.48 <i>0.019</i>	15.88 <i>0.625</i>	7.95 <i>0.313</i>	45.09 <i>1.775</i>	-0.38 <i>-0.015</i>	1.60 <i>0.062</i>	3.68 <i>0.145</i>
50 <i>2</i>	60.3 <i>2.375</i>	0.61 <i>0.024</i>	0.61 <i>0.024</i>	15.88 <i>0.625</i>	7.95 <i>0.313</i>	57.15 <i>2.250</i>	-0.38 <i>-0.015</i>	1.60 <i>0.062</i>	3.91 <i>0.154</i>
65 <i>2 ½</i>	73.0 <i>2.875</i>	0.74 <i>0.029</i>	0.74 <i>0.029</i>	15.88 <i>0.625</i>	7.95 <i>0.313</i>	69.09 <i>2.720</i>	-0.46 <i>-0.018</i>	1.98 <i>0.078</i>	4.78 <i>0.188</i>
65 <i>76.1mm</i>	76.1 <i>3.000</i>	0.76 <i>0.030</i>	0.76 <i>0.030</i>	15.88 <i>0.625</i>	7.95 <i>0.313</i>	72.26 <i>2.845</i>	-0.46 <i>-0.018</i>	1.93 <i>0.076</i>	4.78 <i>0.188</i>
80 <i>3</i>	88.9 <i>3.500</i>	0.89 <i>0.035</i>	0.79 <i>0.031</i>	15.88 <i>0.625</i>	7.95 <i>0.313</i>	84.94 <i>3.344</i>	-0.46 <i>-0.018</i>	1.98 <i>0.078</i>	4.78 <i>0.188</i>
100 <i>108.0mm</i>	108.0 <i>4.252</i>	1.07 <i>0.042</i>	0.79 <i>0.031</i>	15.88 <i>0.625</i>	9.53 <i>0.375</i>	103.73 <i>4.084</i>	-0.51 <i>-0.020</i>	2.11 <i>0.083</i>	5.16 <i>0.203</i>
100 <i>4</i>	114.3 <i>4.500</i>	1.14 <i>0.045</i>	0.79 <i>0.031</i>	15.88 <i>0.625</i>	9.53 <i>0.375</i>	110.08 <i>4.334</i>	-0.51 <i>-0.020</i>	2.11 <i>0.083</i>	5.16 <i>0.203</i>
125 <i>133.0mm</i>	133.0 <i>5.236</i>	1.35 <i>0.052</i>	0.79 <i>0.031</i>	15.88 <i>0.625</i>	9.53 <i>0.375</i>	129.13 <i>5.084</i>	-0.51 <i>-0.020</i>	2.11 <i>0.083</i>	5.16 <i>0.203</i>
125 <i>139.7mm</i>	139.7 <i>5.500</i>	1.42 <i>0.056</i>	0.79 <i>0.031</i>	15.88 <i>0.625</i>	9.53 <i>0.375</i>	135.48 <i>5.334</i>	-0.51 <i>-0.020</i>	2.11 <i>0.083</i>	5.16 <i>0.203</i>

Preparation  
Equipment

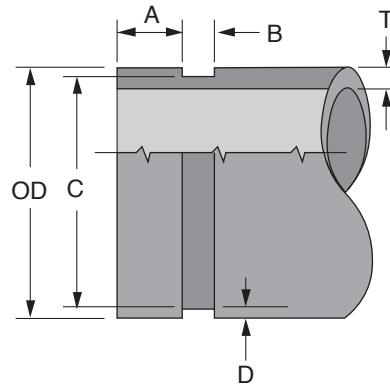
- (1) The maximum allowable tolerances for IPS Pipe from square cut ends is:  
0.76mm (0.030") for sizes 32mm – 80mm (1 1/4" thru 3");  
1.14mm (0.045") for sizes 100mm – 150mm (4" – 6"); and  
1.52mm (0.060") for sizes 200mm (8") and above.
- (2) Gasket Seating Surface "A" must be free from score marks, ridges, indentations, projections, loose paint, scale, dirt chips, grease, rust, etc. that would prevent a positive seal.
- (3) Groove Diameter "C" must be of uniform depth around the circumference of the pipe.
- (4) Groove Depth "D" is a reference dimension only. The Groove Diameter "C" must be maintained.
- (5) Minimum Wall Thickness "T" is the minimum wall thickness that should be cut grooved.

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

## Cut Groove Standard Specification for Steel & Other IPS Pipe

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Tech Data Sheet: G710



Nominal Pipe Size mm <i>Inches</i>	Pipe O.D. mm <i>Inches</i>			A ±0.76mm ±0.030" mm <i>Inches</i>	B ±0.76mm ±0.030" mm <i>Inches</i>	C Groove Diameter mm <i>Inches</i>		D Groove Depth (ref. only) mm <i>Inches</i>	T Minimum Wall mm <i>Inches</i>
	O.D.	Tolerance				Actual	Tol. +0.000		
		+	-						
125	141.3	1.42	0.79	15.88	9.53	137.03	-0.56	2.13	5.16
5	5.563	0.056	0.031	0.625	0.375	5.395	-0.022	0.084	0.203
150	159.0	1.60	0.79	15.88	9.53	154.53	-0.56	2.11	5.56
159.0mm	6.260	0.063	0.031	0.625	0.375	6.084	-0.022	0.083	0.219
150	165.1	1.60	0.79	15.88	9.53	160.78	-0.56	2.16	5.56
165.1mm	6.500	0.063	0.031	0.625	0.375	6.330	-0.022	0.085	0.219
150	168.3	1.60	0.79	15.88	9.53	163.96	-0.56	2.16	5.56
6	6.625	0.063	0.031	0.625	0.375	6.455	-0.022	0.085	0.219
200	219.1	1.60	0.79	19.05	11.13	214.40	-0.64	2.34	6.05
8	8.625	0.063	0.031	0.750	0.438	8.441	-0.025	0.092	0.238
250	273.0	1.60	0.79	19.05	12.70	268.27	-0.69	2.39	6.35
10	10.750	0.063	0.031	0.750	0.500	10.562	-0.027	0.094	0.250
300	323.9	1.60	0.79	19.05	12.70	318.19	-0.76	2.77	7.09
12	12.750	0.063	0.031	0.750	0.500	12.531	-0.030	0.109	0.279
350	355.6	1.60	0.79	23.83	12.70	350.04	-0.76	2.77	7.14
14	14.000	0.063	0.031	0.938	0.500	13.781	-0.030	0.109	0.281
400	406.4	1.60	0.79	23.83	12.70	400.84	-0.76	2.77	7.92
16	16.000	0.063	0.031	0.938	0.500	157.81	-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
18	18.000	0.063	0.031	1.000	0.500	17.781	-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
20	20.000	0.063	0.031	1.000	0.500	19.781	-0.030	0.109	0.312
600	609.6	1.60	0.79	25.40	14.27	600.86	-0.76	4.37	9.53
24	24.000	0.063	0.031	1.000	0.562	23.656	-0.030	0.172	0.375

- The maximum allowable tolerances for IPS Pipe from square cut ends is:  
0.76mm (0.030") for sizes 32mm – 80mm (1 1/4" thru 3");  
1.14mm (0.045") for sizes 100mm – 150mm (4" – 6"); and  
1.52mm (0.060") for sizes 200mm (8") and above.
- 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.
- Groove Diameter "C" must be of uniform depth around the circumference of the pipe.
- Groove Depth "D" is a reference dimension only. The Groove Diameter "C" must be maintained.
- Minimum Wall Thickness "T" is the minimum wall thickness that should be cut grooved.

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



## GASKETS

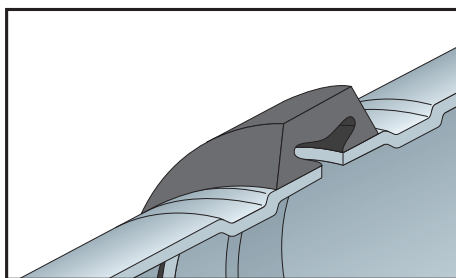
## GRINNELL Gasket Seal

*Tech Data Sheet: G610*

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

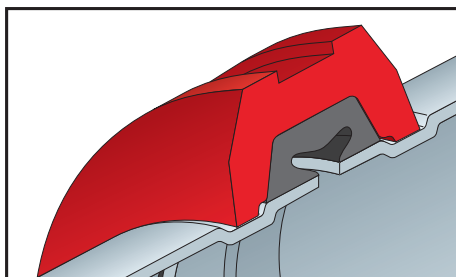
The GRINNELL gasket is designed to provide a three-way sealing action.

- (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 energises the pressure responsive seal of the gasket and further enhances the sealing action.



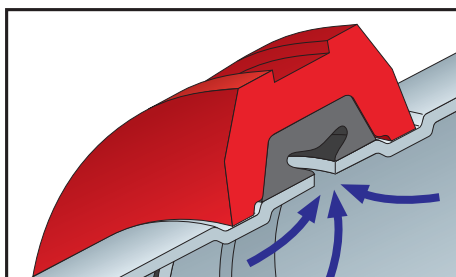
### First Seal

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 maximise the leak-tight seal.

Gaskets



For detailed Listing / Approval  
information contact  
GRINNELL Mechanical Products



NSF Approved for Potable Water  
Applications, contact a GRINNELL  
Sales Representative for details





## GRINNELL 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, 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 centre "rib" of the gasket over the gap between the pipes. The tri-seal gasket has two tapered sealing edges in addition to the centre rib for additional strength and sealing.



The Tri-Seal gasket can be used with the Figure 705, 707, 772, 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.

### Reducing Coupling

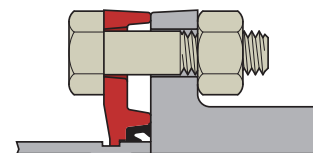
The reducing gasket is provided with ribs used to position the larger pipe so that the sealing lip is located on the sealing surface of the pipe. This gasket is used only with the Figure 716 GRINNELL Reducing Coupling and is available in Grade "E" EPDM and Grade "T" Nitrile.



**Reducing couplings are not recommended for low temperature applications.**

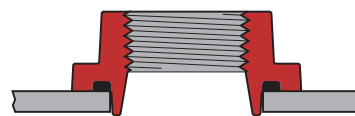
### Flange Adapter

This gasket is specifically designed for use with the Figure 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.



### Outlet Fittings

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 the Figure 730 Mechanical Tee (threaded and grooved). 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.

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 21°C (70°F) unless otherwise noted.

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

**Email:** info-NL@tyco-bspd.com

**Phone:** +31 (0)53 428 4444

**Fax:** +31 (0)53 428 3377

Contact a GRINNELL Sales Representative for recommendations for services not listed.

Gasket recommendations apply to GRINNELL gaskets and valves only.

Grade	Temperature Range	Compound	Colour Code	General Service Application
"E"	-34°C to 110°C (-30°F to 230°F)	EPDM	Green Stripe	Hot water, dilute acids, alkalies, oil free air, and many chemical services not involving petroleum products. Excellent oxidation resistance. <b>Not for use with hydrocarbons.</b> <b>Not recommended for steam service.</b>
"E" Tri-Seal	-34°C to 110°C (-30°F to 230°F)	EPDM	Green Stripe	Hot water, dilute acids, alkalies, and many chemical services not involving petroleum products. Excellent oxidation resistance. <b>Not for use with hydrocarbons.</b> <b>Recommended for low temperature and vacuum services.</b>
"EN" and "EN" Tri-Seal for IPS Pipe	Potable Water up to 82°C (180°F)	EPDM	Green/Yellow Stripe	<b>IPS Sizes Only,</b> Approved for Potable Water Applications, contact a GRINNELL Sales Representative for details <b>Not recommended for hydrocarbons.</b>
"T" and "T" Tri-Seal	-29°C to 82°C (-20°F to 180°F)	Nitrile	Orange Stripe	Compressed air, petroleum products, vegetable oils, mineral oils, and air with oils. High-End oil vapour temperature, decrease to 66°C (150°F). <b>Not recommended for hot water systems.</b> <b>Not recommended for hot dry air systems.</b>
"O" and "O" Tri-Seal	-7°C to 149°C (+20°F to 300°F)	Fluoroelastomer	Blue Stripe	Oxidizing acids, petroleum products, hydraulic fluids, lubricants, halogenated hydrocarbons.
"L"	-34°C to 177°C (-30°F to 350°F)	Silicone *	Red Stripe	Air without hydrocarbons, dry heat.
* To prevent gasket from deteriorating, NEVER use silicone-based lubricants with Grade "L" Silicone gaskets. For local country potable water approvals contact a GRINNELL Sales Representative.				

## Tri-Seal Freezer Gasket



The Tri-Seal freezer gasket is used primarily for dry pipe fire protection systems, vacuum service, and freezer applications. The Tri-Seal freezer gasket differs from standard gaskets by closing off the gap of gasket cavity. This is accomplished by positioning the centre "rib" of the gasket over the gap between the pipes. The Tri-Seal freezer gasket has two tapered sealing edges in addition to the centre rib for additional strength and sealing.

The Tri-Seal Grade E freezer gasket is used primarily for dry

The Tri-Seal freezer gasket is available in sizes 32mm to 300mm (1 1/4" to 12") and is designed for use with GRINNELL Figure 705, 705R, 707, 774, 772, 405 and 472 Couplings. A petroleum-free silicone based lubricant is recommended for all dry pipe systems.

They are intended primarily for low-temperature, dry systems in cold storage, freezer applications and vacuum applications greater than 10 inches of mercury.

Note: Rigid couplings are preferred for vacuum, dry pipe and freezer applications.

## GRINNELL Gasket Air, Water & Chemical Recommendations

(Page 1 of 3)

*Tech Data Sheet: G610*

- Contact a GRINNELL Sales Representative 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.

- Check gasket colour code to be certain it is recommended for the service intended.
- Unless otherwise noted, all gasket listings are based upon a temperature of 21°C (70°F).
- For services not listed, contact a GRINNELL Sales Representative for recommendation.
- Where more than one gasket is shown, the preferred gasket grade is listed first.

### Water & Air

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

### Petroleum Products

Service	Gasket Grade
Crude Oil - Sour	T
Diesel Oil	T
Fuel Oil	T
Gasoline, Leaded	T
Hydraulic Oil	T
Kerosene	T
Lube Oil, to <b>66°C</b> (150°F)	T
Motor Oil	T
Tar and Tar Oil	T

Chemical Composition	Gasket Grade
ASTM #3 Oil	T
Acetaldehyde	E
Acetamide	T
Acetic Acid up to 10% 38°C (100°F)	E
Acetic Acid up to 10-50% 38°C (100°F)	L
Acetic Acid, Glacial 38°C (100°F)	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
Aluminium Chloride	E/T
Aluminium Fluoride	E/T
Aluminium Hydroxide	E
Aluminium Nitrate	E/T
Aluminium Oxichloride	T
Aluminium Phosphate	E
Aluminium Salts	T
Aluminium Sulphate	E/T
Ammonia Gas, Cold	E
Ammonia, Liquid	E
Ammonium Bifluoride	T
Ammonium Carbonate	E
Ammonium Chloride	E/T

Chemical Composition	Gasket Grade
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 Sulphate	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
Barium Chloride	E/T
Barium Hydroxide	E/T

Chemical Composition	Gasket Grade
Barium Sulfide	T
Benzaldehyde	E
Benzene	O
Benzine (see Petroleum Ether)	O
Benzoic Acid	E
Benzol	O
Benzyl Alcohol	E
Benzyl Benzoate	E
Black Sulphate 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

Chemical Composition	Gasket Grade
Calcium Hydroxide	E/T
Calcium Hypochlorite	E
Calcium Hypochloride	E
Calcium Nitrate	E/T
Calcium Sulphate	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 (Chlorococane)	T

Gaskets

# GRINNELL Gasket Air, Water & Chemical Recommendations

(Page 2 of 3)

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Chemical Composition	Gasket Grade
Chloroacetic Acid	E
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 Sulphate	E/T
Creosol, Cresylic Acid	O
Creosote, Coal Tar	O
Creosote, Wood	O
Cupric Fluoride	T
Cupric Sulphate	T
Cyclohexane (Alicyclic Hydrocarbon)	O
Cyclohexanone	E
Deionised Water	E
Dextrin	T
Dibutyl Phthalate	E
Dichloro Difluoro Methane	T
Dicyclohexylamine	T
Diesel Oil	T
Diethyl Ether	T
Diethyl Sebacate	E
Diethylamine	T
Diethylene Glycol	E/T
Digester Gas	T
Dimethylamine	T
Diethyl 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

Chemical Composition	Gasket Grade
Ethyl "Cellusolve"	E
Ethyl Chloride	E
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 Sulphate	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, 54°C (130°F)	T
Freon 12, 54°C (130°F)	T
Freon 113 54°C (130°F)	T
Freon 114, 54°C (130°F)	T
Freon 134a, 80°C (176°F)	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 Sulphate 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%, 24°C (75°F)	E
Hydrochloric Acid, to 36%, 70°C (158°F)	O
Hydrocyanic Acid	E
Hydrofluoric Acid, to 75%, 24°C (75°F)	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 Sulphate	E
Hypochlorous Acid, Dilute	E
Iso Octane, 38°C (100°F)	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 Sulphate	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 66°C (150°F)	T
Magnesium Chloride	E/T
Magnesium Hydroxide	E/T
Magnesium Sulphate	E/T
Maleic Acid	T

Chemical Composition	Gasket Grade
Malic Acid	T
Mercuric Chloride	E/T
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 38°C (100°F)	O
MIL-L7808	O
MIL-05606	O
MIL-08515	O
Mineral Oils	T
Naptha, 71°C (160°F)	O
Napthenic Acid	T
Natural Gas	T
Nevoil	E
Nickel Chloride	E/T
Nickel Plating Solution 52°C (125°F)	E/T
Nickel Sulphate	E/T
Nitric Acid to 10%, 24°C (75°F)	E
Nitric Acid, 10-50%, 24°C (75°F)	O
Nitric Acid, 50-86%, 24°C (75°F)	O
Nitric Acid, Red Fuming	O
Nitromethane	E
Nitrous Oxide	E
NOVEC 1230 FK-5-1-12	E
Ogisogiric Acid, to 75%, 66°C (150°F)	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

## GRINNELL Gasket Air, Water & Chemical Recommendations

(Page 3 of 3)

Tech Data Sheet: G610

Chemical Composition	Gasket Grade
Palmitic Acid	T
Pentane	T
Perchloroethylene	O
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 21°C (70°F)	E/T
Phosphoric Acid, to 85% and 93°C (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 <sub>2</sub> O)	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 Permanganate Saturate 10-25%	E
Potassium Persulfate	T
Potassium Silicate	E/T
Potassium Sulphate	T
Prestone	T

Chemical Composition	Gasket Grade
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 Sulphate	E
Skydrol, 93°C (200°F)	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
Sodium Metaphosphate	T
Sodium Nitrate	E

Chemical Composition	Gasket Grade
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 Sulphate	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%, 66°C (150°F)	E
Sulfuric Acid, 25-50%, 93°C (200°F)	O
Sulfuric Acid, 50-95%, 66°C (150°F)	O
Sulfuric Acid, Fuming	O
Sulfuric Acid, Oleum	O
Sulfurous Acid	O
Tall Oil	T
Tanning Liquors (50g. alum. solution, 50g. dichromate solution)	T
Tartaric Acid	E
Tertiary Butyl Alcohol	E/T

Chemical Composition	Gasket Grade
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 93°C (200°F)	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 66°C (150°F)	E/T
Water, to 93°C (200°F)	E
Water, to 110°C (230°F)	E
Water, Acid Mine	E/T
Water, Chlorine	E
Water, Deionised	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 Sulphate	E/T

Note:  
Contact GRINNELL for an Engineering evaluation and recommendation where the gasket grade is shown in parenthesis. For dry pipe systems or freezer systems, use Tri-Seal freezer gasket and petroleum free silicone lubricant. Check gasket colour code to be certain it is recommended for the service intended. Unless otherwise noted, all gasket listings are based upon a temperature of 21°C (70°F). For services not listed contact GRINNELL for recommendation. Where more than one gasket is shown, the preferred gasket grade is listed first.

Gaskets



## 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.



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 a GRINNELL Sales Representative for Material Safety Data Sheets (MSDS).

Part Number	Traditional Lubricant	Approx. Weight kg Lbs.
70006E	English Label	0.5 1.1
70008E	English Label	1.0 2.2
70009E	German Label	1.0 2.2
70010E	French Label	1.0 2.2
70011E	Dutch Label	1.0 2.2
70013E	Spanish Label	1.0 2.2
70015E	Swedish Label	1.0 2.2

Part Number	Quick Dry Lubricant	Approx. Weight kg Lbs.
70006B	English Label	0.5 1.1
70008B	English Label	1.0 2.2
70009B	German Label	1.0 2.2
70010B	French Label	1.0 2.2
70011B	Dutch Label	1.0 2.2
70013B	Spanish Label	1.0 2.2
70015B	Swedish Label	1.0 2.2

Part Number	GETL (GRINNELL Extreme Temperature Lubricant)	Approx. Weight kg Lbs.
8000B	English Label	0.5 1.1

Part Number	Lubricant for Potable Water	Approx. Weight kg Lbs.
VR69-252	With KTW Certificate	1.0 2.2

The below table will give an indication on the number of gaskets which can be lubricated with 1 kg lubricant

Gasket Size DN In.	Traditional Lubricant	Quick Dry Lubricant	GETL (GRINNELL Extreme Temperature Lubricant)
32 1 1/4	650	650	1000
40 1 1/2	570	570	1000
50 2	440	440	1000
80 3	300	300	700
100 4	220	220	500
150 6	135	135	300
200 8	110	110	250
250 10	85	85	200
300 12	65	65	160
350 14	55	55	140
400 16	50	50	120
450 18	38	38	90
500 20	33	33	80
600 24	20	20	50

Application	Traditional Lubricant	Quick Dry Lubricant	GETL (GRINNELL Extreme Temperature Lubricant)
Fire Protection	•	•	•
Chilled Water	•		•
Heating			•
Compressed Air	•	•	•
Drainage	•	•	•
Sewage	•	•	•
Process < 66°C (150°F)	•		•
Process > 66°C (150°F)			•

\* Dow Corning is a registered trademark of Dow Corning Corporation.

## GRINNELL Replacement Gaskets for Figure 705, 774, 707 and 772


(Page 1 of 2)

### Standard "C" Style Gaskets



### Tri-Seal Style Gaskets



Pipe Size		EPDM			DVGW Approved
Nominal mm Inches	O.D. mm Inches	Grade E C-Style	Grade E Tri-Seal	EPDM Grade EN+ C-Style	
25 1	33.7 1.315	10EPDM	—	10EPDM-PW	10EPDM-DVGW
32 1 ¼	42.4 1.660	12EPDM	12EPDM-TRI	12EPDM-PW	12EPDM-DVGW
40 1 ½	48.3 1.900	15EPDM	15EPDM-TRI	15EPDM-PW	15EPDM-DVGW
50 2	60.3 2.375	20EPDM	20EPDM-TRI	20EPDM-PW	20EPDM-DVGW
65 2 ½	73.0 2.875	25EPDM	25EPDM-TRI	25EPDM-PW	—
65 76.1mm	76.1 3.000	26EPDM	26EPDM-TRI	26EPDM-PW	26EPDM-DVGW
80 3	88.9 3.500	30EPDM	30EPDM-TRI	30EPDM-PW	30EPDM-DVGW
100 108.0mm	108.0 4.252	41EPDM	—	—	—
100 4	114.3 4.500	42EPDM	42EPDM-TRI	42EPDM-PW	42EPDM-DVGW
125 133.0mm	133.0 5.236	51EPDM	—	—	—
125 139.7mm	139.7 5.500	52EPDM	52EPDM-TRI	52EPDM-PW	52EPDM-DVGW
125 5	141.3 5.563	52EPDM	52EPDM-TRI	52EPDM-PW	—
150 159.0mm	159.0 6.260	61EPDM	—	—	—
150 165.1mm	165.1 6.500	62EPDM	62EPDM-TRI	62EPDM-PW	—
150 6	168.3 6.625	63EPDM	63EPDM-TRI	63EPDM-PW	63EPDM-DVGW
200 8	219.1 8.625	80EPDM	80EPDM-TRI	80EPDM-PW	80EPDM-DVGW
250 10	273.0 10.750	11EPDM	11EPDM-TRI	11EPDM-PW	11EPDM-DVGW
300 12	323.9 12.750	13EPDM	13EPDM-TRI	13EPDM-PW	13EPDM-DVGW
350 14	355.6 14.000	14EPDM	—	—	—
400 16	406.4 16.000	16EPDM	—	—	—
450 18	457.2 18.000	18EPDM	—	—	—
500 20	508.0 20.000	21EPDM	—	—	—
600 24	609.6 24.000	24EPDM	—	—	—

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

Gaskets

## GRINNELL Replacement Gaskets for Figure 705, 774, 707 and 772

(Page 2 of 2)



Standard "C" Style Gaskets



Tri-Seal Style Gaskets



Pipe Size		Nitrile		Fluoro Elastomer		Silicone
Nominal mm Inches	O.D. mm Inches	Grade T C-Style	Grade T Tri-Seal	Grade O C-Style	Grade O Tri-Seal	Grade L C-Style
25 1	33.7 1.315	10BUNA	—	10VITON	—	10SILICONE
32 1 ¼	42.4 1.660	12BUNA	—	12VITON	—	12SILICONE
40 1 ½	48.3 1.900	15BUNA	—	15VITON	—	15SILICONE
50 2	60.3 2.375	20BUNA	—	20VITON	—	20SILICONE
65 2 ½	73.0 2.875	25BUNA	—	25VITON	—	25SILICONE
65 76.1mm	76.1 3.000	26BUNA	—	26VITON	—	26SILICONE
80 3	88.9 3.500	30BUNA	—	30VITON	—	30SILICONE
100 108.0mm	108.0 4.252	41BUNA	—	—	—	—
100 4	114.3 4.500	42BUNA	—	42VITON	—	42SILICONE
125 133.0mm	133.0 5.236	51BUNA	—	—	—	—
125 139.7mm	139.7 5.500	52BUNA	—	52VITON	—	52SILICONE
125 5	141.3 5.563	52BUNA	—	52VITON	—	52SILICONE
150 159.0mm	159.0 6.260	61BUNA	—	—	—	—
150 165.1mm	165.1 6.500	62BUNA	—	62VITON	—	62SILICONE
150 6	168.3 6.625	63BUNA	—	63VITON	—	63SILICONE
200 8	219.1 8.625	80BUNA	—	80VITON	—	80SILICONE
250 10	273.0 10.750	11BUNA	—	11VITON	—	11SILICONE
300 12	323.9 12.750	13BUNA	—	13VITON	—	13SILICONE
350 14	355.6 14.000	—	—	14VITON	—	14SILICONE
400 16	406.4 16.000	—	—	16VITON	—	16SILICONE
450 18	457.2 18.000	—	—	18VITON	—	—
500 20	508.0 20.000	—	—	21VITON	—	—
600 24	609.6 24.000	—	—	24VITON	—	—

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

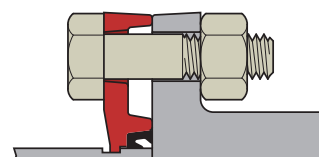
## GRINNELL Replacement Gaskets for Figure 71



Pipe Size		Figure 71 Flange Adapter	
Nominal mm <i>Inches</i>	O.D. mm <i>Inches</i>	EPDM Grade E	Nitrile Grade T
<b>50</b>	<b>60.3</b>	<b>20EPDM71</b>	<b>20BUNA71</b>
<i>2</i>	<i>2.375</i>		
<b>65</b>	<b>73.0</b>	<b>25EPDM71</b>	<b>25BUNA71</b>
<i>2½</i>	<i>2.875</i>		
<b>65</b>	<b>76.1</b>	<b>26EPDM71</b>	<b>26BUNA71</b>
<i>76.1mm</i>	<i>3.000</i>		
<b>80</b>	<b>88.9</b>	<b>30EPDM71</b>	<b>30BUNA71</b>
<i>3</i>	<i>3.500</i>		
<b>100</b>	<b>114.3</b>	<b>42EPDM71</b>	<b>42BUNA71</b>
<i>4</i>	<i>4.500</i>		
<b>125</b>	<b>139.7</b>	<b>52EPDM71</b>	<b>52BUNA71</b>
<i>139.7mm</i>	<i>5.500</i>		
<b>125</b>	<b>141.3</b>	<b>53EPDM71</b>	<b>53BUNA71</b>
<i>5</i>	<i>5.563</i>		
<b>150</b>	<b>165.1</b>	<b>62EPDM71</b>	<b>62BUNA71</b>
<i>165.1mm</i>	<i>6.500</i>		
<b>150</b>	<b>168.3</b>	<b>63EPDM71</b>	<b>63BUNA71</b>
<i>6</i>	<i>6.625</i>		
<b>200</b>	<b>219.1</b>	<b>80EPDM71</b>	<b>80BUNA71</b>
<i>8</i>	<i>8.625</i>		
<b>250</b>	<b>273.0</b>	<b>11EPDM71</b>	<b>11BUNA71</b>
<i>10</i>	<i>10.750</i>		
<b>300</b>	<b>323.9</b>	<b>13EPDM71</b>	<b>13BUNA71</b>
<i>12</i>	<i>12.750</i>		

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

**Figure 71 Gaskets**



## GRINNELL Replacement Gaskets for Figure 716

**10**  
 YEAR  
 LIMITED  
 WARRANTY


### 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.

Pipe Size		EPDM Grade E 716-Style	Nitrile Grade T 716-Style
Nominal mm <i>Inches</i>	O.D. mm <i>Inches</i>		
<b>50 x 40</b> <i>2 x 1 ½</i>	<b>60.3 x 48.3</b> <i>2.375 x 1.900</i>	EPDM2015	BUNA2015
<b>65 x 50</b> <i>2 ½ x 2</i>	<b>73.0 x 60.3</b> <i>2.875 x 2.375</i>		
<b>65 x 50</b> <i>76.1 x 2</i>	<b>76.1 x 60.3</b> <i>3.000 x 2.375</i>	EPDM2620	BUNA2620
<b>80 x 50</b> <i>3 x 2</i>	<b>88.9 x 60.3</b> <i>3.500 x 2.375</i>		
<b>80 x 65</b> <i>3 x 2 ½</i>	<b>88.9 x 73.0</b> <i>3.500 x 2.875</i>	EPDM3025	BUNA3025
<b>80 x 65</b> <i>3 x 76.1mm</i>	<b>88.9 x 76.1</b> <i>3.500 x 3.000</i>		
<b>100 x 60</b> <i>4 x 2</i>	<b>114.3 x 60.3</b> <i>4.500 x 2.375</i>	EPDM4220	BUNA4220
<b>100 x 65</b> <i>4 x 2 ½</i>	<b>114.3 x 73.0</b> <i>4.500 x 2.875</i>		
<b>100 x 65</b> <i>114.3 x 76.1mm</i>	<b>114.3 x 76.1</b> <i>4.500 x 3.000</i>	EPDM4226	BUNA4226
<b>100 x 80</b> <i>4 x 3</i>	<b>114.3 x 88.9</b> <i>4.500 x 3.500</i>		
<b>125 x 100</b> <i>139.7mm x 4</i>	<b>139.7 x 114.3</b> <i>5.500 x 4.500</i>	EPDM5242	BUNA5242
<b>125 x 100</b> <i>5 x 4</i>	<b>141.3 x 114.3</b> <i>5.563 x 4.500</i>		
<b>150 x 100</b> <i>165mm x 4</i>	<b>165.1 x 114.3</b> <i>6.500 x 4.500</i>	EPDM6242	BUNA6242
<b>150 x 100</b> <i>6 x 4</i>	<b>168.3 x 114.3</b> <i>6.625 x 4.500</i>		
<b>150 x 125</b> <i>6 x 5</i>	<b>168.3 x 141.3</b> <i>6.625 x 5.563</i>	EPDM6353	BUNA6353
<b>200 x 150</b> <i>8 x 6</i>	<b>219.1 x 168.3</b> <i>8.625 x 6.625</i>		
For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.			



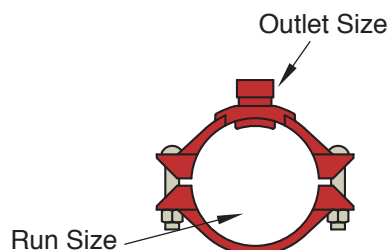
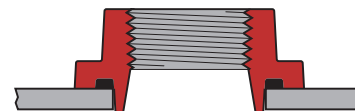
## GRINNELL Replacement Gaskets for Figure 730



### Outlet Fittings

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 the Figure 730 Mechanical Tee (threaded and grooved).

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



Run Size mm Inches	Outlet Size mm Inches	EPDM Grade E 730-Style	Nitrile Grade T 730-Style
50. 65. 80. 100 2, 2 1/2, 3, 4	15. 20. 25 1/2, 3/4, 1	1EPDM730	1BUNA730
50. 80. 100 2, 3, 4	32 1 1/4	2EPDM730	2BUNA730
50 2	40 1 1/2	2EPDM730	2BUNA730
65. 80. 100. 150 2 1/2, 3, 4, 5, 6	40 1 1/2	3EPDM730	3BUNA730
65 2 1/2	32 1 1/4	3EPDM730	3BUNA730
150 6	32 1 1/4	3EPDM730	3BUNA730
65 2 1/2	50 2	3EPDM730	3BUNA730
80. 100. 125. 150. 200 3, 4, 5, 6, 8	50 2	4EPDM730	4BUNA730
100. 125 4, 5	65 2 1/2	5EPDM730	5BUNA730
150. 200 6, 8	65 2 1/2	6EPDM730	6BUNA730
100. 125 4, 5	80 3	7EPDM730	7BUNA730
150. 200 6, 8	80 3	8EPDM730	8BUNA730
150. 200 6, 8	100 4	9EPDM730	9BUNA730

For instructions on part numbers, ordering information, and availability, refer to page 13 or contact a GRINNELL Sales Representative.

## Notes



## PRESSURE & DESIGN DATA

## Design

*Tech Data Sheets: G810, G820, G830*

### Rigid Joints

GRINNELL Rigid Couplings provide rigid gripping of the pipe. They are designed to bring the pipe ends close together and to ensure the coupling clamps firmly onto the pipe OD and the bottom of the grooves. Because rigid couplings clamp around the entire pipe surface, they provide resistance to flexural and torsional loads and therefore permit longer spacing to ASME/ANSI B 31.1 (Power Piping) and ASME/ANSI B 39.1 (Building Services) requirements.

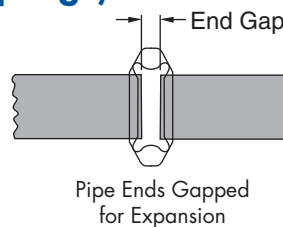


### Flexible Joints

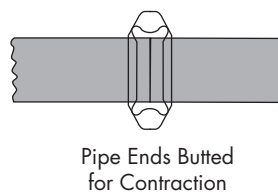
GRINNELL Flexible Couplings act as an "expansion joint", allowing linear and angular movement of the pipe. They are designed with the coupling keys engaging the pipe without gripping on the bottom of the grooves, while still providing for a restrained mechanical joint. This is particularly useful to allow for pipe expansion/contraction and piping misalignment.

### Linear Movement (Flexible Couplings)

For thermal expansion with flexible couplings, the pipe ends at each joint should be fully gapped to the maximum amount. This can be accomplished by pressurising the system and then anchoring the system.



For thermal contraction with flexible couplings, the pipe ends at each joint should be fully butted. The system can then be anchored in place to prevent the pipe ends from opening up to the maximum end gap when pressurised.



For design purposes, the maximum pipe end gap should be reduced to account for field practises as follows:

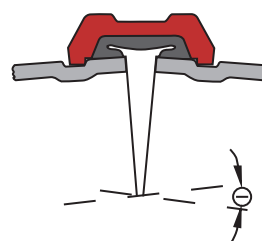
End Gap Reduction	
Pipe Size mm Inches	Maximum Pipe End Gap
42.4 – 88.9 1 1/4 – 3	50%
114.3 – 610.0 4 – 24	25%

The following values should be used as available pipe end movements for GRINNELL Figure 705, 707, and 716 Flexible Couplings:

Pipe End Movements		
Pipe Size mm Inches	Cut Grooved mm Inches	Roll Grooved mm Inches
42.4 – 88.9 1 1/4 – 3	0 – 1.6 0 – 0.063	0 – 0.8 0 – 0.031
114.3 – 610.0 4 – 24	0 – 2.4 0 – 0.188	0 – 2.4 0 – 0.094
* Roll grooved joints provide half the available movement of cut grooved joints.		

### Angular Deflection

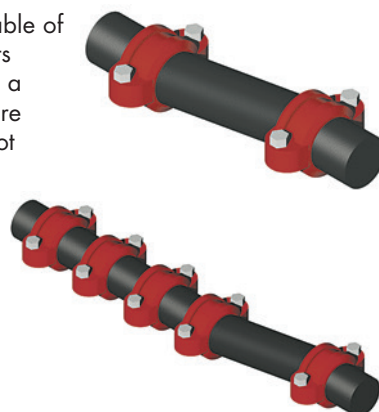
GRINNELL Flexible Couplings are capable of accommodating angular deflection.



### Expansion/Contraction

GRINNELL Flexible Couplings are capable of accommodating pipe thermal movements provided they are properly gapped and a sufficient quantity of flexible couplings are used. Note that flexible couplings will not accommodate both full maximum linear movement and the maximum available angular deflection concurrently at the same joint.

If it is desired to have both deflection and linear movement available, then the system should have sufficient flexible joints to accommodate the requirement.



The deflection published is a maximum value. For design purposes the maximum deflection should be reduced to account for field practises as shown:

Deflection	
Pipe Size mm Inches	Maximum Pipe Deflection Reduction
42.4 – 88.9 1 1/4 – 3	50%
114.3 – 610.0 4 – 24	25%



## Thermal Movement

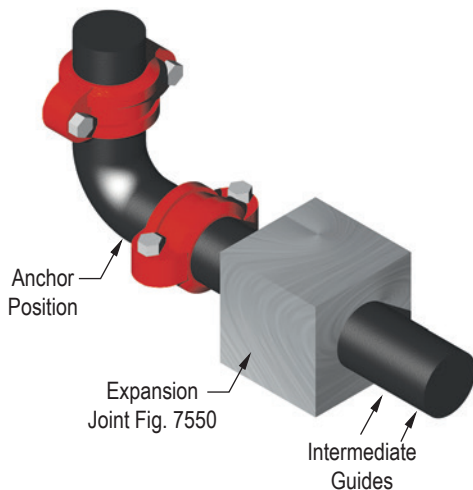
Tech Data Sheets: G810, G820, G830

### The following guidelines are similar to any expansion joint:

It is recommended that anchors be installed at changes of direction on the pipe lines to control the pipe movement. The thermal expansion/contraction in the piping system can be accommodated using GRINNELL Flexible Couplings. In designing anchoring systems, it is suggested that the following be taken into consideration:

- Pressure Thrusts
- Frictional Resistance of Any Guides or Supports
- Centrifugal Thrust Due to Velocity at Changes of Direction
- Activation Force Required to Compress or Expand a Flexible Coupling

### Three methods are available as examples to accommodate thermal expansion/contraction:

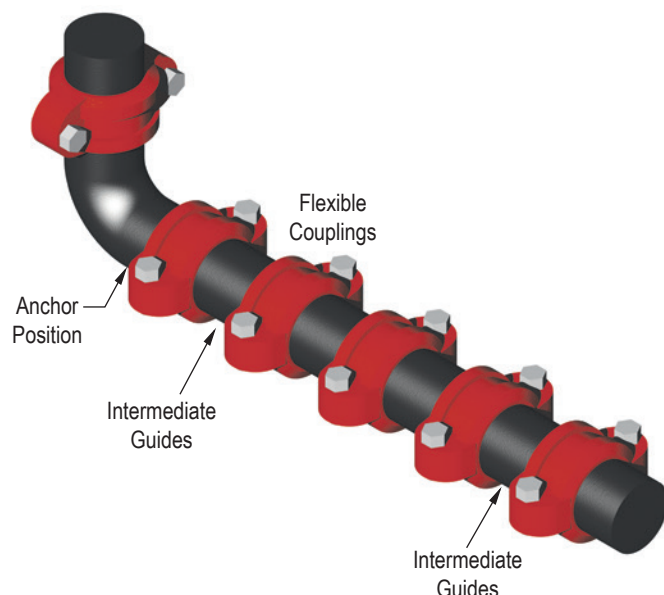


- (1) Design the system with rigid couplings and place expansion joints at the proper locations. Expansion joints may be a series of flexible grooved couplings of a sufficient quantity to accommodate the movement.
- (2) Design the system with flexible and/or rigid couplings and allow the pipe to move in directions desired, with the use of anchors and guides if so required. With this method, it is important to ensure that movement at branch connections, changes of direction, equipment hookup, etc., will not cause damage or harmful stresses.

- (3) Design the system with flexible couplings utilising the expansion/contraction capabilities of these products.

### The following example illustrates this method:

- 150mm (6") Schedule 40 steel pipe, roll grooved, 45.7m (150') long, anchored at each end
- Maximum Temperature = 93.3°C (200°F)
- Minimum Temperature = 4.4°C (40°F)
- Install Temperature = 26.6°C (80°F)



Activation Force	
Pipe Size mm Inches	Activation Force N Lbs.
42.4	156
1 1/4	35
48.3	200
1 1/2	45
60.3	311
2	70
73.0	645
2 1/2	100
76.1	489
76,1mm	110
88.9	645
3	145
114.3	1068
4	240
141.3	1668
5	375
165.1	2224
165,1mm	500
168.3	2313
6	520
219.1	3914
8	880
273.0	6072
10	1365
323.9	8518
12	1915



## Thermal Movement

Tech Data Sheets: G810, G820, G830

Directions to calculate the number of couplings required to compensate for the thermal expansion and contraction of pipe (by example):

### (1) Thermal Contraction

Utilise the Thermal Expansion Table. Allowance for the minimum installation temperature, in this case 26.6°C to 4.4°C (80°F to 40°F), is calculated as:

$$\begin{aligned} 26.6^{\circ}\text{C} &= 15.5\text{mm per } 30.5\text{m} \\ 4.4^{\circ}\text{C} &= 7.6\text{mm per } 30.5\text{m} \\ \text{Difference} &= 7.9\text{mm per } 30.5\text{m} \\ \text{For } 45.7\text{m of pipe} &= 7.9\text{mm} \times 1.5 = 11.9\text{mm per } 45.7\text{m} \\ (80^{\circ}\text{F} &= 0.61" \text{ per } 100') \\ 40^{\circ}\text{F} &= 0.30" \text{ per } 100' \\ \text{Difference} &= 0.31" \text{ per } 100' \\ \text{For } 150' \text{ of pipe} &= 0.31" \times 1.5 = 0.47" \text{ per } 150' \end{aligned}$$

### (2) Thermal Expansion

Utilise the Thermal Expansion Table. Allowance for the minimum installation temperature, in this case 26.6°C to 93.3°C (80°F to 200°F), is calculated as:

$$\begin{aligned} 93.3^{\circ}\text{C} &= 38.6\text{mm per } 30.5\text{m} \\ 26.6^{\circ}\text{C} &= 15.5\text{mm per } 30.5\text{m} \\ \text{Difference} &= 23.1\text{mm per } 30.5\text{m} \\ \text{For } 45.7\text{m of pipe} &= 23.1\text{mm} \times 1.5 = 34.5\text{mm per } 45.7\text{m} \\ (200^{\circ}\text{F} &= 1.52" \text{ per } 100') \\ 80^{\circ}\text{F} &= 0.61" \text{ per } 100' \\ \text{Difference} &= 0.91" \text{ per } 100' \\ \text{For } 150' \text{ of pipe} &= 0.91 \times 1.5 = 1.36" \text{ per } 150' \end{aligned}$$

### (3) Couplings Required

Available linear movement for a 150mm (6") Figure 707 Flexible Coupling on roll grooved pipe = 2.4mm (0.094") per coupling.

Fully butted together for contraction only. Therefore the number of Figure 707 Flexible Couplings required:

- $11.9\text{mm} / 2.4\text{mm per coupling} = 4.96$   
( $0.47" / 0.094" \text{ per coupling} = 5.0$ )



- Use 5 Figure 707 couplings for pipe contraction

(b) Fully gapped apart for expansion only. Therefore the number of Figure 707 Flexible Couplings required:

- $34.5\text{mm} / 2.4\text{mm per coupling} = 14.38$   
( $1.36" / 0.094" \text{ per coupling} = 14.47$ )



- Use 15 Figure 707 Flexible Couplings for pipe expansion

**Thermal Expansion of Carbon Steel in millimetres per Metres Between 0°C (-32°F) and Indicated Temperature**

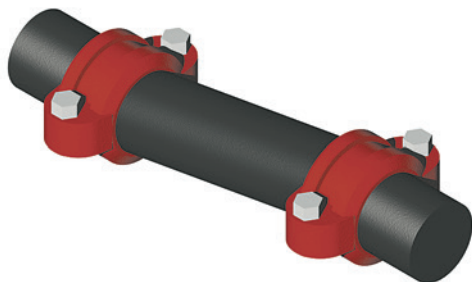
Temperature C° F°	Thermal Expansion mm/30.5m
-40	-0.500
-30	-0.375
-20	-0.250
-10	-0.125
0	0.000
10	0.125
20	0.250
30	0.375
40	0.500
50	0.625
60	0.750
70	0.875
80	1.000
90	1.125
100	1.250
120	1.500
Based on coefficient of thermal expansion = 0.0000125 mm/mm/°C carbon steel	

## Misalignment and Deflection

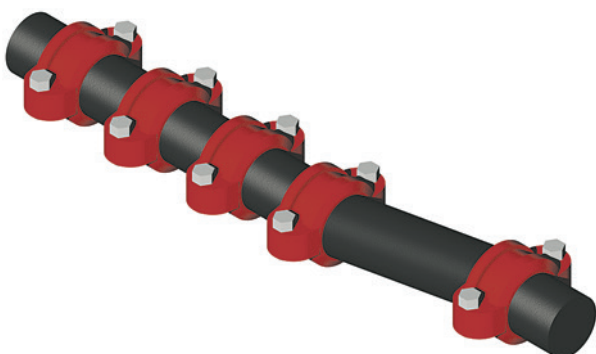
*Tech Data Sheets: G810, G820, G830*

GRINNELL Flexible Couplings provide for restrained joints and allow for deflection to aid where the pipe or equipment is misaligned.

Note that flexible couplings will not accommodate both full maximum linear movement and the maximum available angular deflection concurrently at the same joint.



If it is desired to have both deflection and linear movement available, then the system should have sufficient flexible joints to accommodate the requirement.



Flexible couplings are also useful in laying out curved piping systems.

$$R = \frac{L}{(2) \left(\sin \frac{\Theta}{2}\right)}$$

$$L = (2) (R) \left(\sin \frac{\Theta}{2}\right)$$

$$N = \frac{T}{\Theta}$$

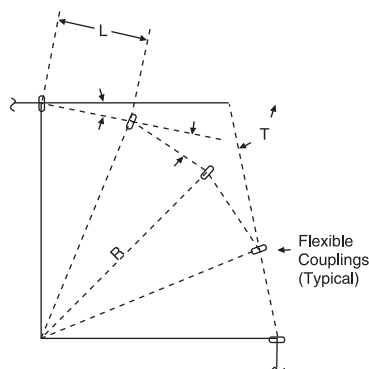
R = Radius of curve

L = Pipe length

Θ = Deflection from centre line, in degrees, for each coupling (see table)

N = Number of flexible couplings needed

T = Total deflection, in degrees, required



### Design Deflection for Roll Grooved Pipe

Deflection Θ (Roll Grooved Pipe)	
Pipe Size mm Inches	Figures 705 & 707
42.4 1 1/4	1.08°
48.3 1 1/2	0.94°
60.3 2	0.75°
73.0 2 1/2	0.62°
76.1 76,1mm	0.60°
88.9 3	0.51°
114.3 4	1.19°
141.3 5	0.97°
165.1 165,1mm	0.83°
168.3 6	0.81°
219.1 8	0.63°
273.0 10	0.50°
323.9 12	0.42°
Incorporates the recommended safety factor reduction for field practises (50% for sizes 32mm - 80mm (1 1/4" - 3") and 25% for sizes 100mm - 300mm (4" - 12")).	

## Pipe Support

Tech Data Sheets: G810, G820, G830

All piping systems require that the support system accommodate the weight of the pipe, joint connections, fluid, and other system components. In addition, consideration may be necessary in reducing stresses, accommodating thermal expansion or contraction, building settlement, seismic movement, etc. The following tables provide guidelines for grooved steel piping products without concentrated loads between supports.

### Flexible Joints

For pipe runs when linear movement is accommodated by the flexible coupling:

Number of Hangers Per Pipe Length								
Pipe Size mm Inches	Pipe Length in Metres Feet							
	10 3.3	12 3.7	15 4.6	22 6.7	25 7.6	30 9.1	35 10.7	40 12.2
	Average Number of Hangers Per Pipe Length							
42.4 – 60.3 1 1/4 - 2	2	2	2	3	4	4	5	6
73.0 – 114.3 2 1/2 - 4	1	2	2	2	2	3	4	4
141.3 – 609.6 5 - 24	1	1	2	2	2	3	3	3

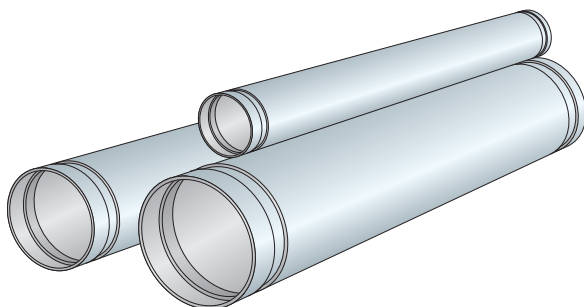
For pipe runs when linear movement is not required:

Distance Between Supports	
Nominal Size mm Inches	Maximum Distance Between Supports Metres Feet
42.4 - 48.3 1 1/4 - 1 1/2	3.7 12
60.3 - 219.1 2 - 8	4.6 15
273.0 - 323.9 10 - 12	4.9 16
355.6 - 406.4 14 - 16	5.5 18
457.2 - 609.6 18 - 24	6.1 20
Note: The requirements of ANSI, ASME or other code groups may require additional supports.	

### Rigid Joints

For pipe runs with rigid couplings:

Pipe Size		Suggested Maximum Span Between Supports – Metres Feet					
Nominal DN In.	O.D. mm In.	Water Service			Air Service		
		I	II	III	I	II	III
25	33.4	2.1	2.7	3.7	2.7	9	3.7
1	1.315	7	9	12	9	2.7	12
32	42.4	2.1	3.4	3.7	2.7	11	3.7
1 1/4	1.660	7	11	12	9	3.4	12
40	48.3	2.1	3.7	4.6	2.7	13	4.6
1 1/2	1.900	7	12	15	9	4.0	15
50	60.3	3.0	4.0	4.6	4.0	15	4.6
2	2.375	10	13	15	13	4.6	15
65	73.0	3.4	4.3	4.6	4.3	16	4.6
2 1/2	2.875	11	14	15	14	4.9	15
65	76.1	3.4	4.3	4.6	4.3	16	4.6
76.1mm	3.000	11	14	15	14	4.9	15
80	88.9	3.7	4.6	4.6	4.6	17	4.6
3	3.500	12	15	15	15	5.2	15
100	114.3	4.3	5.2	4.6	5.2	21	4.6
4	4.500	14	17	15	17	6.4	15
125	133.0	4.9	5.8	4.6	6.1	24	4.6
133.0mm	5.236	16	19	15	20	7.3	15
125	139.7	4.6	5.5	4.6	5.2	23	4.6
139.7mm	5.500	15	18	15	19	7	15
125	141.3	4.9	5.8	4.6	6.1	24	4.6
5	5.563	16	19	15	20	7.3	15
150	165.1	5.2	6.1	4.6	6.4	25	4.6
165.1mm	6.500	17	20	15	21	7.6	15
150	168.3	5.2	6.1	4.6	6.4	25	4.6
6	6.625	17	20	15	21	7.6	15
200	219.1	5.8	6.4	4.6	7.3	28	4.6
8	8.625	19	21	15	24	8.5	15
250	273.0	5.8	6.4	4.6	7.3	31	4.6
10	10.750	19	21	15	24	9.4	15
300	323.9	7	6.4	4.6	9.1	33	4.6
12	12.750	23	21	15	30	10.1	15
350	355.6	7	6.4	4.6	9.1	33	4.6
14	14.000	23	21	15	30	10.1	15
400	406.4	8.2	6.4	4.6	10.7	33	4.6
16	16.000	27	21	15	35	10.1	15
450	457.2	8.2	6.4	4.6	10.7	33	4.6
18	18.000	27	21	15	35	10.1	15
500	508.0	9.1	6.4	4.6	11.9	33	4.6
20	20.000	30	21	15	39	10.1	15
600	609.6	9.8	6.4	4.6	12.8	33	4.6
24	24.000	32	21	15	42	10.1	15
I - Spacing by ANSI B31.1 Power Piping Code II - Spacing by ANSI B39.1 Building Piping Code III - Spacing by NFPA 13 Sprinkler Systems (Steel Pipe except Threaded Lightwall)							



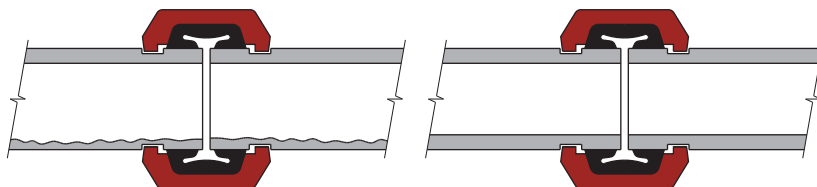
## Pipe Support

*Tech Data Sheets: G810, G820, G830*

### Rotational Movement

GRINNELL Flexible Couplings are suitable for use in seismic as well as mining applications. The inherent capability of the flexible coupling to allow for linear movement, angular deflection, and rotational movement make it an excellent choice for reducing stresses in a piping system and to increase pipe life in slurry applications.

For mining applications where the pipe needs to be rotated, the system should be depressurised. The pipe coupling bolts/nuts can be loosened, pipe rotated, the bolts/nuts re-tightened, and the system be put back in service.



Even distribution of pipe wear can be achieved with this method on the inner service of the pipe.

**Note:** Precautions are necessary to monitor pipe wall thickness to evaluate pressure capability of the pipe with reduced wall.

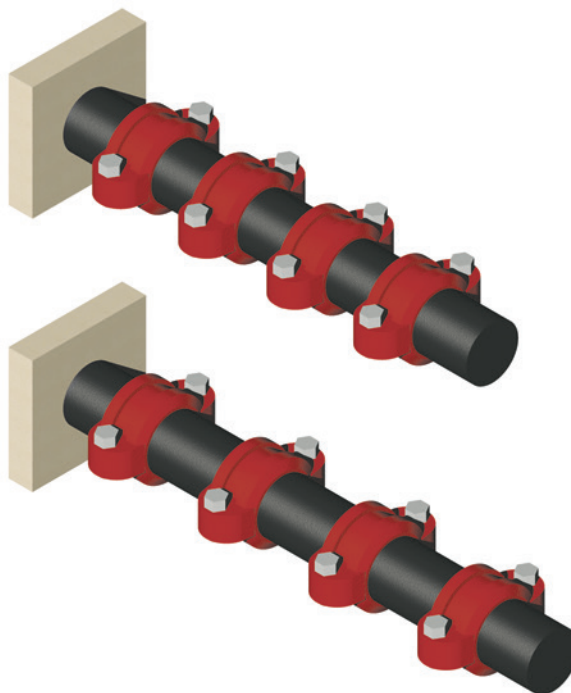
### Linear Movement

Flexible couplings are designed with the couplings keys engaging the pipe without gripping on the bottom of the groove while still providing for a restrained mechanical joint.



The inherent flexibility of the coupling must be considered when deciding on support arrangements for the piping system as movement can occur in more than one plane (linear movement, angular deflection, and rotational movement).

Upon system pressurization, each pipe end within the flexible couplings will expand to the maximum published value. The coupling keys make contact with the face of the groove and restrain the joint. In piping systems, this movement will be accumulative.



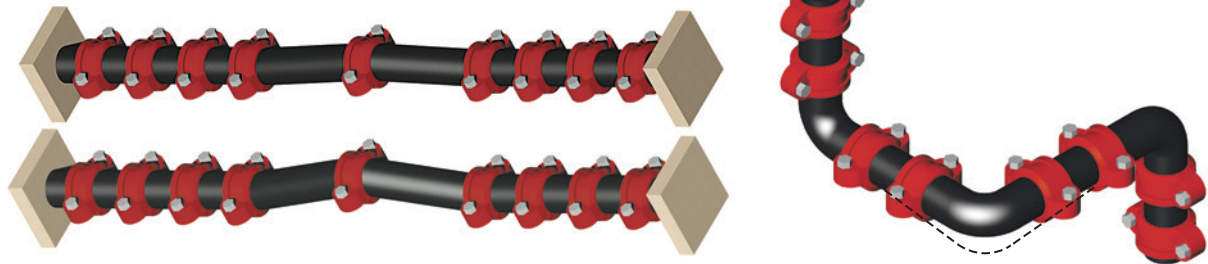
## Pipe Support

*Tech Data Sheets: G810, G820, G830*

### Angular Movement

System movement can be accommodated by providing for sufficient offset lengths. Temperature increases/decreases can further increase this movement.

When systems are anchored with partially deflected joints, the system can move to the fully deflected condition upon pressurization resulting in the "snaking" of the piping system. Lightweight hangers may not be suitable to prevent the lateral movement.

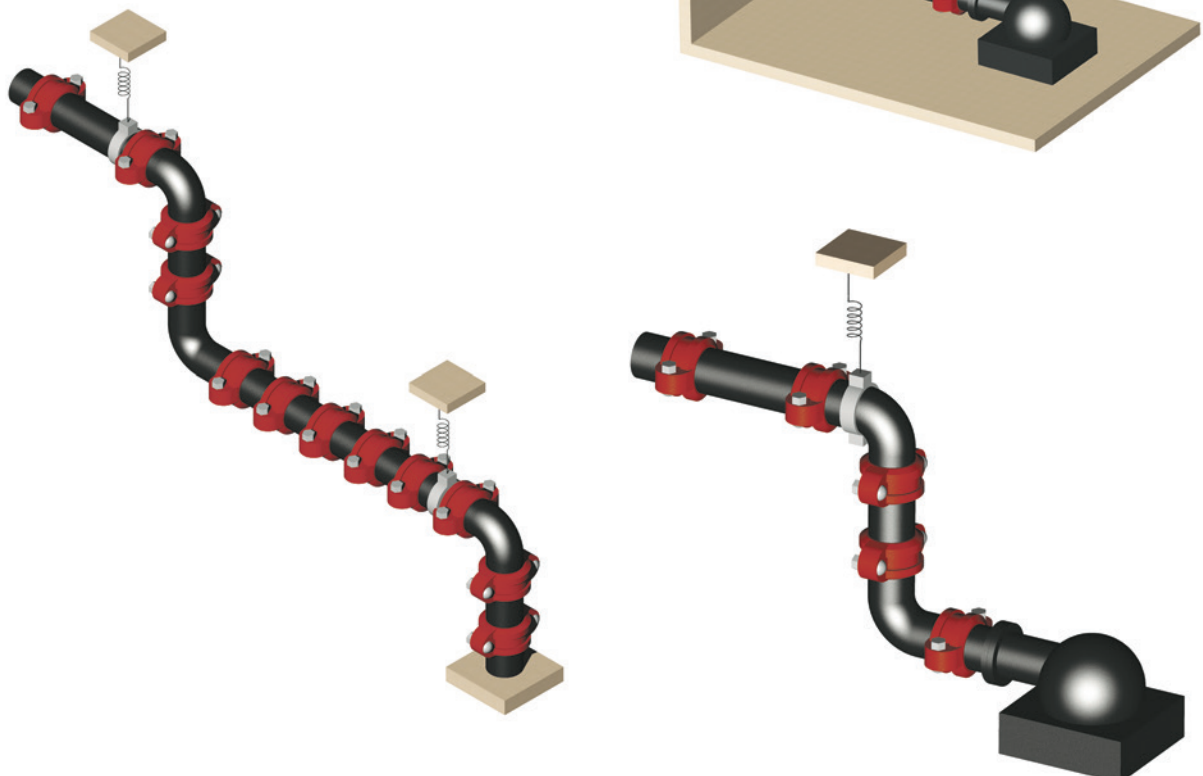


### Pipe Support

Pipe hanger positioning is important when considering pipe "sagging" due to the flexible nature of the piping system. Proper positioning of hangers near the elbow, for example, should be considered.

The use of spring hangers or other methods can be considered to accommodate vibrations. Base supports, pressure thrust anchors, and pipe offsets can be used to direct pipe movement.

The use of rigid couplings can be considered to reduce the movement available with flexible couplings. Consideration of other methods of accommodation of pipe movements may be required.

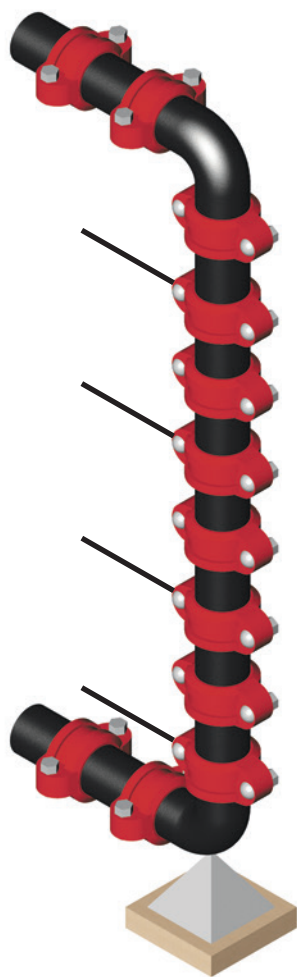




## Vertical Piping

*Tech Data Sheets: G810, G820, G830*

Risers comprised of rigid couplings can be considered instead of welded or flanged systems. Where thermal movement exists, expansion joints and/or flexible couplings with offsets may be required.



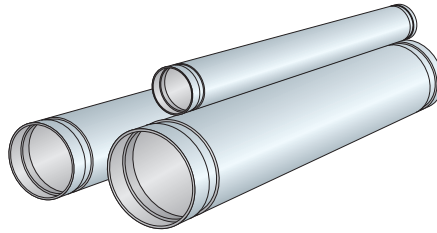
When using flexible couplings, the movement that occurs in long lengths of piping needs to be considered. Each joint can move up to the maximum pipe end separation published. This movement can accumulate and result in the growth of the piping system, for example at the top. Offsets may be necessary.

Should the riser contain branch connections, the movement which occurs at these locations with flexible couplings will also need to be considered.

One solution would be to anchor the vertical piping at appropriate locations to prevent movement which can cause stresses at the branches or equipment. The use of rigid couplings can be an advantage.

As always, good piping practise should prevail. It is the designer's responsibility to select products suitable for the intended service and to ensure that pressure ratings and performance data is not exceeded. Never remove any piping component or correct or modify any piping deficiencies without first depressurising and draining the system. Material and gasket selection should be verified to be compatible for the specific application.

## Pipe Data



Pipe Size		Conversion Table Wall Thickness - mm inches								
Nominal DN In.	O.D. mm In.	Pipe ANSI B36.10						Pipe DIN Norm		
		Sch. 5	Sch. 10	Sch. 20	Sch. 30	Sch. 40	Sch. 80	DIN 2440	DIN 2448	DIN 2458
20	26.9	1.65	2.77	—	—	2.87	3.91	2.65	2.3	2
¾	1.050	0.06	0.11	—	—	0.11	0.15	0.10	0.09	0.08
25	33.4	1.65	2.77	—	—	3.38	4.55	3.25	2.6	2
1	1.315	0.06	0.11	—	—	0.13	0.18	0.13	0.10	0.08
32	42.4	1.65	2.77	—	—	3.56	4.83	3.25	2.6	2.3
1¼	1.660	0.06	0.11	—	—	0.14	0.19	0.13	0.10	0.09
40	48.3	1.65	2.77	—	—	3.68	5.08	3.25	2.6	2.3
1½	1.900	0.06	0.11	—	—	0.14	0.20	0.13	0.10	0.09
50	60.3	1.65	2.77	—	—	3.91	5.54	3.65	2.9	2.6
2	2.375	0.06	0.11	—	—	0.15	0.22	0.14	0.11	0.10
65	73.0	2.11	3.05	—	—	5.16	7.01	—	—	—
2½	2.875	0.08	0.12	—	—	0.20	0.28	—	—	—
65	76.1	—	—	—	—	—	—	3.65	2.9	2.6
76.1mm	3.000	—	—	—	—	—	—	0.14	0.11	0.10
80	88.9	2.11	3.05	—	—	5.49	7.61	4.05	3.2	2.9
3	3.500	0.08	0.12	—	—	0.22	0.30	0.16	0.13	0.11
100	108.0	—	—	—	—	—	—	—	3.6	2.9
108.0mm	4.252	—	—	—	—	—	—	—	0.14	0.11
100	114.3	2.11	3.05	—	—	6.02	8.56	4.5	3.6	3.2
4	4.500	0.08	0.12	—	—	0.24	0.34	0.18	0.14	0.13
125	133.0	—	—	—	—	—	—	—	4	3.6
133.0mm	5.236	—	—	—	—	—	—	—	0.16	0.14
125	139.7	—	—	—	—	—	—	4.85	—	—
139.7mm	5.500	—	—	—	—	—	—	0.19	—	—
125	141.3	2.77	3.4	—	—	6.55	9.53	—	—	—
5	5.563	0.11	0.13	—	—	0.26	0.38	—	—	—
150	159.0	—	—	—	—	—	—	—	4.5	4
159.0mm	6.260	—	—	—	—	—	—	—	0.18	0.16
150	165.1	—	—	—	—	—	—	4.85	4.5	4
165.1mm	6.500	—	—	—	—	—	—	0.19	0.18	0.16
150	168.3	2.77	3.4	—	—	7.11	10.97	—	—	4.5
6	6.625	0.11	0.13	—	—	0.28	0.43	—	—	0.18
200	219.1	2.77	3.76	6.35	7.04	8.18	12.7	—	6.3	4.5
8	8.625	0.11	0.15	0.25	0.28	0.32	0.50	—	0.25	0.18
250	273.0	3.4	4.19	6.35	7.8	9.27	15.06	—	6.3	5
10	10.750	0.13	0.16	0.25	0.31	0.36	0.59	—	0.25	0.20
300	323.9	3.96	4.57	6.35	8.38	10.31	17.45	—	7.1	5.6
12	12.750	0.16	0.18	0.25	0.33	0.41	0.69	—	0.28	0.22
350	355.6	4.19	6.35	7.94	9.53	11.1	19.05	—	8	5.6
14	14.000	0.16	0.25	0.31	0.38	0.44	0.75	—	0.31	0.22
400	406.4	—	6.35	7.94	9.53	12.7	21.41	—	8.8	6.3
16	16.000	—	0.25	0.31	0.38	0.50	0.84	—	0.35	0.25
450	457.2	—	6.35	7.94	11.13	14.28	23.8	—	10	6.3
18	18.000	—	0.25	0.31	0.44	0.56	0.94	—	0.39	0.25
500	508.0	—	6.35	9.53	12.7	15.06	26.19	—	11	6.3
20	20.000	—	0.25	0.38	0.50	0.59	1.03	—	0.43	0.25
600	609.6	—	6.35	9.53	14.28	17.45	30.94	—	12.5	6.3
24	24.000	—	0.25	0.38	0.56	0.69	1.22	—	0.49	0.25

## Working Pressure Ratings (psi ) on Light Wall Roll Grooved Steel Pipe

*Tech Data Sheets: G810*

Nominal Pipe Size ANSI Inches DN	Pipe Schedule	Pipe Wall Thickness Inches	Fig. 705 Flexible Coupling Max.	Fig. 707 Heavy Duty Flexible Coupling	Fig. 772 Rigid Coupling	Fig. 774 Grooved Rigid Coupling	Fig. 716a Flexible Reducing Coupling	Fig. 71 Flange
1 25	5	0.065	500	500	N/A	500	N/A	N/A
	10	0.109	500	750		500		
	40	0.133	500	1000		500		
1-1/4 32	5	0.065	500	500	750	500	N/A	N/A
	10	0.109	500	750	750	500		
	40	0.140	500	1000	750	500		
1-1/2 40	5	0.065	500	500	500	500	N/A	N/A
	10	0.109	500	750	750	500		
	40	0.145	500	1000	750	500		
2 50	5	0.065	500	500	500	500	N/A	300
	10	0.109	500	750	750	500		300
	40	0.154	500	1000	750	500		300
2-1/2 65	5	0.083	500	500	500	500	500	300
	10	0.120	500	600	600	500	500	300
	40	0.203	500	1000	750	500	500	300
3 80	5	0.083	500	500	500	500	500	250
	10	0.120	500	600	600	500	500	300
	40	0.216	500	1000	750	500	500	300
4 100	5	0.083	400	400	400	400	400	200
	10	0.120	500	600	600	500	500	300
	40	0.237	500	1000	750	500	500	300
5 125	5	0.109	350	350	350	350	350	200
	10	0.134	450	500	500	450	500	300
	40	0.258	450	1000	750	500	500	300
6 150	5	0.109	350	350	350	350	350	200
	10	0.134	450	450	500	450	500	300
	40	0.280	450	1000	700	500	500	300
8 200	5	0.109	250	250	250	250	250	200
	10	0.148	300	300	300	300	400	250
	40	0.322	450	800	600	400	400	300
10 250	5	0.134	150	250	250	150	N/A	200
	10	0.165	300	300	300	233		200
	40	0.365	350	800	500	233		300
12 300	5	0.156	150	200	125	125	N/A	200
	10	0.180	300	300	300	175		200
	40	0.375	350	800	400	175		300
14 350	10	0.250	N/A	300	300	N/A	N/A	200
	20	0.312		300	300			250
	Std	0.375		350	350			300
16 400	10	0.250	N/A	300	300	N/A	N/A	200
	20	0.312		300	300			250
	Std	0.375		350	350			250
18 450	10	0.250	N/A	200	200	N/A	N/A	200
	20	0.312		300	350			250
	Std	0.375		300	350			300
20 500	10	0.250	N/A	200	200	N/A	N/A	200
	Std (20)	0.375		300	350			300
24 600	10	0.250	N/A	200	200	N/A	N/A	200
	Std (20)	0.375		350	350			250

a. Figure 716 Maximum Working Pressure based on larger pipe connection nominal pipe size.

\* Maximum line pressure including surge to which a joint should be subjected on pipe roll groove to standard roll grooving specification with coupling properly assembled.

Pressure &  
Design Data

## Working Pressure Ratings (Bar) on ISO Size Steel Pipe

(Page 1 of 2)

Tech Data Sheets: G810

Nominal Pipe Size ANSI Inches DN	Pipe O.D. mm	Pipe Wall Thickness mm	Fig. 705 Flexible Coupling	Fig. 707 Heavy Duty Flexible Coupling	Fig. 772 Rigid Coupling	Fig. 774 Grooved Rigid Coupling	Fig. 716a Flexible Reducing Coupling	Fig. 71 Flange
1 25	33,7	2,0	34	34	N/A	34	N/A	N/A
		2,8	34	52		34		
		3,4	34	69		34		
1-1/4 32	42,4	2,0	34	34	52	34	N/A	N/A
		2,8	34	52	52	34		
		3,6	34	69	52	34		
1-1/2 40	48,3	2,0	34	34	34	34	N/A	N/A
		2,8	34	52	52	34		
		3,7	34	69	52	34		
2 50	60,3	2,0	34	34	34	34	N/A	21
		2,8	34	52	52	34		21
		3,9	34	69	52	34		21
2-1/2 65	73	2,0	34	34	34	34	34	21
		3,0	34	41	41	34	34	21
		5,2	34	69	52	34	34	21
65	76,1	2,0	34	22	34	34	34	12
		3,0	34	34	41	34	34	19
		5,2	34	52	52	34	34	19
3 80	88,9	2,0	34	34	34	34	34	17
		3,0	34	41	41	34	34	21
		5,5	34	69	52	34	34	21
4 100	114,3	2,0	28	28	28	28	28	14
		3,0	34	41	41	34	34	21
		6,0	34	69	52	34	34	21
5 125	139,7	2,8	24	24	24	24	24	14
		3,4	31	34	34	31	34	21
		6,4	31	69	52	34	34	21
5 125	141,3	2,8	24	24	24	24	24	14
		3,4	31	34	34	31	34	21
		6,6	31	69	52	34	34	21
6 150	165,1	2,8	24	24	24	24	24	14
		3,4	31	31	34	31	34	21
		7,1	31	69	48	34	34	21
6 150	168,3	2,8	24	24	24	24	24	14
		3,4	31	31	34	31	34	21
		7,1	31	69	48	34	34	21

a. Figure 716 Maximum Working Pressure based on larger pipe connection nominal pipe size.

\* Maximum line pressure including surge to which a joint should be subjected on pipe roll groove to standard roll grooving specification with coupling properly assembled.

## Working Pressure Ratings (Bar) on ISO Size Steel Pipe

(Page 2 of 2)

*Tech Data Sheets: G810*

Nominal Pipe Size ANSI Inches DN	Pipe O.D. mm	Pipe Wall Thickness mm	Fig. 705 Flexible Coupling	Fig. 707 Heavy Duty Flexible Coupling	Fig. 772 Rigid Coupling	Fig. 774 Grooved Rigid Coupling	Fig. 716a Flexible Reducing Coupling	Fig. 71 Flange
<b>8 200</b>	<b>219,1</b>	2,8	17	17	17	17	17	14
		3,8	21	21	21	21	28	17
		8,2	31	55	41	28	28	21
<b>10 250</b>	<b>273</b>	3,4	10	17	17	10	N/A	14
		4,2	21	21	21	16		14
		9,3	24	55	34	16		21
<b>12 300</b>	<b>323,9</b>	4,0	10	14	9	9	N/A	14
		4,6	21	21	21	12		14
		9,5	24	55	28	12		21
<b>14 350</b>	<b>355,6</b>	6,4	N/A	21	21	N/A	N/A	14
		7,9		21	20			17
		9,5		24	24			21
<b>16 400</b>	<b>406,4</b>	6,4	N/A	21	21	N/A	N/A	14
		7,9		21	21			17
		9,5		24	24			17
<b>18 450</b>	<b>457,2</b>	6,4	N/A	14	14	N/A	N/A	14
		7,9		21	24			17
		9,5		21	24			21
<b>20 500</b>	<b>508,0</b>	6,4	N/A	14	14	N/A	N/A	14
		9,5		21	24			21
<b>24 600</b>	<b>609,6</b>	6,4	N/A	14	14	N/A	N/A	14
		9,5		24	24			17

a. Figure 716 Maximum Working Pressure based on larger pipe connection nominal pipe size.

\* Maximum line pressure including surge to which a joint should be subjected on pipe roll groove to standard roll grooving specification with coupling properly assembled.



## GRINNELL Mechanical Products

### Stainless Steel Pipe per EN20217-7 316 Ti and EN10217-7 304L Design Data Pressure Rating

Tech Data Sheets: G815

Nominal Pipe Size ANSI Inches DN	Pipe O.D. mm	Pipe Wall Thickness mm	Fig. 705 Flexible Coupling	Fig. 707 Heavy Duty Flexible Coupling	Fig. 716 <sup>a</sup> Flexible Reducing Coupling	Fig. 71 Flange	Fig. 772 Rigid Coupling	Fig. 774 <sup>b</sup> Grooved Rigid Coupling	Fig. 405 Flexible Coupling	Fig. 472 Rigid Coupling
1 25	33,7	2,0	34	52	N/A	N/A	N/A	34	52	N/A
		2,8	34	52				34	52	
		3,4	34	52				34	52	
1-1/4 32	42,4	2,0	34	52	N/A	N/A	52	34	52	52
		2,8	34	52			52	34	52	52
		3,6	34	52			52	34	52	52
1-1/2 40	48,3	2,0	34	45	N/A	N/A	45	34	45	45
		2,8	34	45			52	34	45	52
		3,7	34	52			52	34	52	52
2 50	60,3	2,0	28	28	N/A	21	28	28	28	28
		2,8	34	34		21	52	34	34	52
		3,9	34	52		21	52	34	34	52
65	76,1	2,0	28	28	28	21	28	28	28	28
		3,0	28	34	28	21	34	28	34	34
		5,2	34	52	34	21	52	34	34	41
3 80	88,9	2,0	28	28	28	21	28	28	28	28
		3,0	28	34	28	21	34	28	34	34
		5,5	34	52	34	21	52	34	34	41
4 100	114,3	2,0	25	25	25	21	25	25	25	25
		3,0	28	34	28	21	34	28	28	28
		6,0	34	52	34	21	52	34	34	41
5 125	139,7	2,8	21	21	21	21	21	21	21	21
		3,4	24	34	24	21	34	24	24	24
		6,4	31	45	31	21	45	31	31	41
6 150	165,1	2,8	21	34	21	21	34	21	21	34
		3,4	21	34	21	21	34	21	21	34
		7,1	21	34	21	21	34	21	31	41
6 150	168,3	2,8	21	34	21	21	34	21	21	34
		3,4	21	34	21	21	34	21	21	34
		7,1	21	34	21	21	34	34	31	41
8 200	219,1	2,8	10	10	10	10	20	10	10	20
		3,8	14	21	14	14	21	14	14	21
		8,2	21	28	21	21	21	21	31	41
10 250	273	3,8	N/A	N/A	N/A	N/A	20	N/A	N/A	20
		4,2	5	9		5	21	5		21
		9,3	21	21		21	21	16		41
12 300	323,9	3,8	N/A	N/A	N/A	N/A	20	N/A	N/A	20
		4,6					20			20
		9,5					17			41

a. Figure 716 Maximum Working Pressure based on larger pipe connection nominal pipe size. Use only grooving machine rollers designed for stainless steel pipe.  
b. Figure 774 is available in Europe, Middle East, and Africa only. Use only grooving machine rollers designed for stainless steel pipe.

## Global Pipe Size Designations

GRINNELL Mechanical Products product data is utilised worldwide and all technical data is shown in both metric and imperial terms. The following chart shows a comparison between typical metric and IPS pipe sizes.

Nominal Size (DN)		Outside Diameter (OD)								
Inches (Imperial)	mm (Metric)	mm (Specification Reference)	DIN mm	BS mm	ISO mm	JIS mm	ANSI Inches	GB China mm	India	
									IS 1239	IS3589
1/2	15	21.3mm	DN 15	DN 15	DN 15	21.7mm	1/2	DN 15	DN 15	—
3/4	20	26.7mm	26.9mm	DN 20	DN 20	27.2mm	3/4	DN 20	DN 20	—
1	25	33.4mm	33.7mm	DN 25	DN 25	34mm	1	DN 25	DN 25	—
1 1/4	32	42.2mm	42.4mm	DN 32	DN 32	42.7mm	1 1/4	DN 32	DN 32	—
1 1/2	40	48.3mm	DN 40	DN 40	DN 40	48.6mm	1 1/2	DN 40	DN 40	—
2	50	60.3mm	DN 50	DN 50	DN 50	60.5mm	2	DN 50	DN 50	—
2 1/2	65	73.1mm	—	—	—	—	2 1/2	—	—	—
		76.1mm BS/ISO	76.1mm	76.1mm	76.1mm	76.3mm	—	76.1mm **	76.1mm	—
3	80	88.9mm	DN 80	DN 80	DN 80	DN 80	3	DN 80	DN 80	—
3 1/2	90	101.6mm	—	—	—	—	—	—	—	—
4	100	108mm China (& old DIN)	DIN 133mm	—	—	—	—	108mm **	—	—
		114.3mm	DN 100	DN 100	DN 101	DN 100	4	DN 100	DN 100	—
—	127mm	127mm	—	—	—	—	—	—	—	—
5	125	133mm China	—	—	—	—	—	133mm **	—	—
		139.7mm BS/ISO	DN 125	139.7mm	139.7mm	139.8mm	—	139.7mm	139.7mm	—
		141.3mm	—	—	—	—	5	—	—	—
—	152.4mm	152.4mm	—	—	—	—	—	—	—	—
6	150	159mm China	—	—	—	—	—	159mm	—	—
		165.1mm JIS/BS	—	165.1mm	—	165.2mm	—	—	165.1mm	—
		168.3mm	DN 150	—	DN 150	—	6	DN 150	—	DN 150
—	175	193.7mm	—	—	—	—	—	—	—	193.7mm
—	203.2mm	203.2mm	—	—	—	—	—	—	—	—
8	200	216.3mm JIS	—	—	—	216.3mm	—	—	—	—
		219.1mm	DN 200	DN 200	DN 200	—	8	DN 200	DN 200	DN 200
		254mm	—	—	—	—	—	—	—	—
10	250	267.4mm JIS	—	—	—	267.4mm	—	—	—	—
		273mm	DN 250	DN 250	DN 250	—	10	DN 250	DN 250	DN 250
		304.8mm	—	—	—	—	—	—	—	—
12	300	318.5mm JIS	—	—	—	318.5mm	—	—	—	—
		323.9mm	DN 300	DN 300	DN 300	—	12	—	—	—
14	350	355.6mm	DN 350	DN 350	DN 350	DN 350	14	DN 350	—	—
		377mm China	—	—	—	—	—	377mm	—	—
16	400	406.4mm	DN 400	DN 400	DN 400	DN 400	16	DN 400	—	—
		426mm China	—	—	—	—	—	426mm	—	—
18	450	457.2mm	DN 450	DN 450	DN 450	DN 450	18	DN 450	—	—
		480mm China	—	—	—	—	—	480mm	—	—
20	500	508mm	DN 500	DN 500	DN 500	DN 500	20	DN 500	—	—
		530mm China	—	—	—	—	—	530mm	—	—
22	550	558.8mm	—	—	—	DN 550	22	559mm	—	—
		580mm China	—	—	—	—	—	580mm	—	—
24	600	610mm	DN 600	DN 600	DN 600	DN 600	24	DN 600	—	—
		630mm China	—	—	—	—	—	630mm	—	—

### IMPORTANT NOTE:

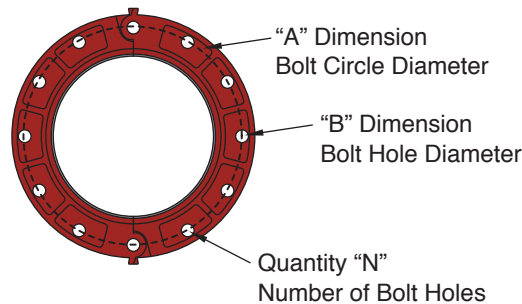
Nominal designations are used where the actual OD of the pipe matches the ANSI size.

Otherwise both the nominal and actual OD are listed.

China sizes are listed as actual OD in mm.

\*\* China sizes are tubing sizes.

## Flange Drilling Specifications



Valve Size		ANSI B16.1 (Class 125#) <sup>1</sup>			ISO 2084 (PN10) <sup>2</sup>			ISO 2084 (PN16) <sup>3</sup>		
		Dimensions - mm <i>Inches</i>								
Nominal mm <i>Inches</i>	O.D. mm <i>Inches</i>	A	B	Qty. N	A	B	Qty. N	A	B	Qty. N
50 <i>2</i>	60.3 <i>2.375</i>	120.6 <i>4.75</i>	19.0 <i>0.75</i>	4	125.0 <i>4.92</i>	18.0 <i>0.71</i>	4	125.0 <i>4.92</i>	18.0 <i>0.71</i>	4
65 <i>2½</i>	73.0 <i>2.875</i>	139.7 <i>5.50</i>	19.0 <i>0.75</i>	4	145.0 <i>5.71</i>	18.0 <i>0.71</i>	4	145.0 <i>5.71</i>	18.0 <i>0.71</i>	4
80 <i>3</i>	88.9 <i>3.500</i>	152.4 <i>6.00</i>	19.0 <i>0.75</i>	4	160.0 <i>6.30</i>	18.0 <i>0.71</i>	8	160.0 <i>6.30</i>	18.0 <i>0.71</i>	8
100 <i>4</i>	114.3 <i>4.500</i>	190.5 <i>7.50</i>	19.1 <i>0.75</i>	8	180.0 <i>7.09</i>	18.0 <i>0.71</i>	8	180.0 <i>7.09</i>	18.0 <i>0.71</i>	8
125 <i>5</i>	141.3 <i>5.563</i>	215.9 <i>8.50</i>	22.4 <i>0.88</i>	8	210.0 <i>8.27</i>	18.0 <i>0.71</i>	8	210.0 <i>8.27</i>	18.0 <i>0.71</i>	8
150 <i>6</i>	168.3 <i>6.625</i>	241.3 <i>9.50</i>	22.4 <i>0.88</i>	8	240.0 <i>9.45</i>	22.0 <i>0.87</i>	8	240.0 <i>9.45</i>	22.0 <i>0.87</i>	8
200 <i>8</i>	219.1 <i>8.625</i>	298.5 <i>11.75</i>	22.2 <i>0.88</i>	8	295.0 <i>11.61</i>	22.0 <i>0.87</i>	8	295.0 <i>11.61</i>	22.0 <i>0.87</i>	12
250 <i>10</i>	273.0 <i>10.750</i>	362.0 <i>14.25</i>	25.4 <i>1.00</i>	12	350.0 <i>13.78</i>	22.0 <i>0.87</i>	12	355.0 <i>13.98</i>	26.0 <i>1.02</i>	12
300 <i>12</i>	323.9 <i>12.750</i>	431.8 <i>17.00</i>	25.4 <i>1.00</i>	12	400.0 <i>15.75</i>	22.0 <i>0.87</i>	12	410.0 <i>16.14</i>	26.0 <i>1.02</i>	12
350 <i>14</i>	355.6 <i>14.000</i>	476.5 <i>18.76</i>	28.4 <i>1.12</i>	12	460.0 <i>18.11</i>	22.0 <i>0.87</i>	16	470.0 <i>18.50</i>	26.0 <i>1.02</i>	16
400 <i>16</i>	406.4 <i>16.000</i>	539.8 <i>21.25</i>	28.4 <i>1.12</i>	16	515.0 <i>20.28</i>	26.0 <i>1.02</i>	16	525.0 <i>20.67</i>	30.0 <i>1.18</i>	16
450 <i>18</i>	457.2 <i>18.000</i>	577.9 <i>22.75</i>	31.8 <i>1.25</i>	16	565.0 <i>22.24</i>	26.0 <i>1.02</i>	20	585.0 <i>23.03</i>	30.0 <i>1.18</i>	20
500 <i>20</i>	508.0 <i>20.000</i>	635.0 <i>25.00</i>	31.8 <i>1.25</i>	20	620.0 <i>24.41</i>	26.0 <i>1.02</i>	20	650.0 <i>25.59</i>	33.0 <i>1.30</i>	20
600 <i>24</i>	609.6 <i>24.000</i>	749.3 <i>29.50</i>	35.1 <i>1.38</i>	20	725.0 <i>28.54</i>	30.0 <i>1.18</i>	20	770.0 <i>30.31</i>	36.0 <i>1.42</i>	20

1 Same drilling as for B16.5 (Class 150#) and B16.42 (Class 250#).

2 Same drilling as for BS 4504 Section 3.2 (PN10) and DIN 2532 (PN10).

3 Same drilling as for BS 4504 Section 3.2 (PN16) and DIN 2532 (PN16).

For additional information, contact a GRINNELL Sales Representative.

## Metric/Imperial Conversion Chart

This chart is provided as a guide for converting metric and imperial measurements.

Convert Metric to Imperial			Convert Imperial to Metric		
Millimetres (mm)	X	0.03937	Inches (in)	X	25.4
Metres (m)	X	3.281	Feet (ft)	X	0.3048
Kilogrammes (kg)	X	2.205	Pounds (lb)	X	0.4536
Grammes (g)	X	0.03527	Ounces (oz)	X	28.35
Kilopascals (kPa)	X	0.145	Pressure (psi)	X	6.894
Bar	X	14.5	Pressure (psi)	X	0.069
Newtons (N)	X	0.2248	End Load (lb)	X	4.45
Newton Metres (N·m)	X	0.738	Torque (lbft)	X	1.356
Celsius (°C)		$(C + 17.78) \times 1.8$	Temp. (°F)		$(F - 32) \div 1.8$
Watts (w)	X	$1.341 \times 10^{-3}$	Horsepower (hp)	X	745.7
Litres per min. (L/M)	X	0.2642	Gal. per Min. (gpm)	X	3.785
Cubic Metres per min. (m3/m)	X	264.2	10 <sup>-3</sup> Gal. per Min. (gpm)	X	3.7865

## Typical General Specification (CSI - Div. 15, Section A Info., Methods, & Instructions)

### Section 1 - Grooved Piping Method

GRINNELL grooved pipe couplings, grooved end fittings, grooved end butterfly and check valves, and other system components as manufactured or supplied by GRINNELL Mechanical Products shall be used to install piping systems and make mechanical equipment connections in systems within specified operating conditions and working pressures as shown in the coupling manufacturer's product specification. GRINNELL grooved pipe couplings shall be used for the following systems (subject to applicable local code approval).

### Heating / Air Conditioning

Chilled Water  
Hot Water  
Condenser  
Water Heating  
Cooling Tower  
Dual Temperature  
Machinery Room  
Utility Water

### Plumbing

Domestic Hot Water  
Domestic Cold Water  
Roof Drains/Storm Drains

### Other

Vacuum  
Lubrication  
Air  
Pneumatic Conveyor  
Elevator Hydraulic  
Low Temperature

## Typical Guide Specification

### Basic Materials & Methods (CSI - Div. 15 Section 15050)

#### Section 1 - Materials - Pipe & Pipe Fittings

**1.1 Pipe** - Pipe shall conform to GRINNELL published tolerance specifications. Steel pipe shall be black or galvanised, conforming to ASTM A-135, A-795 or A-53.

**1.2 Couplings** - Couplings shall be GRINNELL Figures 705, 707, 772 and 716 cast in ductile iron as specified in ASTM A-536. Couplings shall have nuts and bolts. Couplings shall be coated with a lead free paint as standard, or hot-dipped galvanised in accordance with ASTM A-153 as an option. Couplings shall be GRINNELL Figures 405 and 472 cast in Stainless Steel as specified in ASTM A-743/A-743M. Couplings shall have nuts and bolts.

**1.2.1 Gaskets** - Gaskets shall be a pressure responsive design, moulded of synthetic elastomer as designated by ASTM D-2000, and shall conform to the coupling housing and pipe outside diameter. Reference shall be made to the latest published GRINNELL gasket selection guide for proper gasket selection for the intended service.

**1.2.1.1 Water Service** - Gasket shall be Grade "E" EPDM with green colour code identification, for service temperatures from -34°C to 110°C (-30°F to 230°F). Recommended for hot water not to exceed 110°C (230°F), plus a variety of dilute acids, oil free air and many chemical services. Not recommended for petroleum services or steam.

**1.2.1.2 Oil Service** - Gasket shall be grade "T" Nitrile with orange colour code identification, for service temperatures from -29°C to 82°C (-20°F to 180°F). Recommended for petroleum products, vegetable oils, mineral oils, and air with oil vapours

**1.2.1.3 Other Services** - Refer to the latest published GRINNELL gasket selection guide for other service recommendations.

**1.2.2 Bolts and Nuts** - Shall be heat treated carbon steel, ovalneck track head bolts and heavy hex nuts, conforming to the physical properties of ASTM A-183 with a minimum tensile strength of 7584 Bar (110,000 psi). Bolts and nuts shall be zinc electroplated.

**1.3 Flanges** - Shall be GRINNELL Figure 71 Flange, casting in ductile iron in accordance with ASTM A-536. Flange shall conform to ANSI Class 125 and 150 bolt patterns and shall be coated with a lead-free paint as standard, or hot dipped galvanised in accordance to ASTM A-153.

**1.4 Fittings** - Shall be ASTM A-536 ductile iron or fabricated from steel pipe, 32mm - 600mm (1 1/4" - 24"). All fittings shall be coated with a lead-free paint as standard, or hot-dipped galvanised as an option in accordance to ASTM A-153.

**1.5 Branch Outlets** - Shall be GRINNELL Figure 730 mechanical tees or crosses with integral gasket. Figure 730 shall be coated with a lead-free paint as standard, or hot-dipped galvanised as an option.

**1.6 Butterfly Valves** - Shall be with grooved ends. Valves shall have encapsulated Grade "E" EPDM or Grade "T" Nitrile disc and rated at 20.7 Bar (300 psi) bubble-tight-shut-off. Reference shall be made to the latest published GRINNELL gasket selection guide for proper disc seal selection for the intended service. Valve bodies shall be ductile iron, and upper stems shall be stainless steel.

**1.7 Check Valves** - Shall be with grooved ends. Valves shall have a resilient elastomer seal Grade "E" EPDM or Grade "T" Nitrile and rated at 20.7 Bar (300 psi). Reference shall be made to the latest published GRINNELL gasket selection guide for proper seal selection for the intended service. Valve bodies shall be ductile iron with a nickel seat. The caps shall be ductile iron with an attached stainless steel clapper assembly for 60.3mm - 219.1mm (2" - 8") and a ductile iron clapper assembly for 273.0mm - 323.9mm (10" - 12"). All bodies and caps shall be coated with a lead-free paint as standard.

#### Section 2 - Materials - Pipe Preparation

Pipe shall be prepared according to GRINNELL published specifications, ANSI/AWWA C-606, or other applicable standards.

**2.1 Pipe Ends** - Shall be clean and free from indentations, projections, burrs, rust or roll marks in the area from pipe end to groove.

**2.1.1 Standard Weight Pipe** - Shall be roll grooved without removing metal, or cut grooved in accordance with GRINNELL published standard roll groove or standard cut groove specifications.

**2.1.2 Lightwall Pipe** - Shall be roll grooved without metal removal in accordance with GRINNELL published standard roll groove specifications.

#### SECTION 3 - ASSEMBLY

**3.1 GRINNELL** couplings, fittings, flanges and valves shall be assembled in accordance with instructions published

by GRINNELL Mechanical Products.

**3.1.1 Pipe** - Ends shall be clean and free from indentations, projections, burrs, roll marks, etc., in the area from pipe end to groove. Pipe ends shall be square cut and prepared in accordance with standard GRINNELL specifications.

**3.1.2 Gasket** - Shall be of pressure responsive design verified as proper style and grade suitable for the intended service as published in the latest GRINNELL gasket recommendation technical literature.

**3.1.3 Lubrication** - A thin, uniform coat of GRINNELL lubricant shall be applied to the entire exterior of the gasket, including the gasket lips. Complete lubrication is essential to prevent gasket pinching and to ease installation and alignment. Petroleum-free silicone gasket lubricant is recommended when gaskets are subject to low temperature conditions. Petroleum lubricants shall not be used for EPDM gaskets.

#### SECTION 4 - SUPPORT

**4.1 Horizontal Piping:** ( Contact GRINNELL Mechanical Products for support recommendations)

**4.1.1 Flexible Connections** - No pipe length shall be left unsupported between any two couplings, nor shall any pipe be left unsupported whenever a change in direction of line flow takes place. Supports shall meet the requirements stated above, but in no case shall the distance between supports exceed the following for systems where linear movement is not required:

Distance Between Supports	
Nominal Size mm Inches	Span Metres Feet
42.4 - 48.3 1 1/4 - 1 1/2	3.7 12
60.3 - 219.1 2 - 8	4.6 15
273.0 - 323.9 10 - 12	4.9 16
355.6 - 406.4 14 - 16	5.5 18
457.2 - 609.6 18 - 24	6.1 20
Note: The requirements of ANSI, ASME or other code groups may require additional supports.	

**4.1.2 Rigid Connections** - Pipe connections formed with the Figure 772 shall be supported in accordance with applicable ANSI B31.1, Power Piping Code; ANSI B31.9, Building Service Pipe Code.



## Typical Specifications

### Building Service Systems - Plumbing

#### Plumbing Specifications

#### (CSI - Div. 15 Section 15-E Plumbing)

#### SECTION 1 - DOMESTIC WATER SYSTEMS

(CSI - Div. 15, Section 15-E Water Supply Systems) GRINNELL Mechanical Grooved Pipe couplings, fittings and butterfly valves as manufactured or supplied by GRINNELL Mechanical Products shall be used for all water supply systems under operating conditions not to exceed 110°C (230°F) temperature. The coupling gasket and encapsulated disc on butterfly valves shall be Grade "E" EPDM.

##### 1.1 Materials:

**1.1.1 Pipe** - Pipe shall be galvanised steel pipe, conforming to ASTM A-135, A-795 or A-53. All pipe shall be prepared according to GRINNELL published specifications, or to ANSI/AWWA C-606 grooved end pipe. Pipe ends shall be prepared as detailed in Basic Materials and Methods and to the latest GRINNELL published specifications.

**1.1.2 Couplings** - All GRINNELL grooved couplings and fittings shall be painted or galvanised Figure 705, 707, 772 or 716 with Grade "E" EPDM gaskets and zinc plated bolts and nuts.

**1.1.3 Branch Connections** - Shall be made with Figure 730 and/or Figure 522.

**1.1.4 Flange Connections** - Flange connections shall be GRINNELL Figure 71 Flanges incorporating Grade "E" EPDM gasket.

**1.1.5 Fittings** - Fittings shall be painted or galvanised GRINNELL standard ductile iron or segmentally welded steel fittings, with grooved ends.

**1.1.6 Butterfly Valves** - Shall be of grooved end design with a Grade "E" EPDM encapsulated disc. Upper stem shall be stainless steel. Valves shall have pressure assisted double seal and be capable of 300 psi, bubble-tight-shutoff. Butterfly valves shall be with gear actuator or hand lever. Operating conditions not to exceed -34°C to 110°C (-30°F to 230°F).

**1.1.7 Check Valves** - Shall be of grooved end design with a clapper seal of Grade "E" EPDM. Valves shall be capable of pressures of 300 psi. The valves shall have a spring loaded clapper to ensure a leak tight seal and a nonsticking operation. The clapper seat in the valve body shall be nickel. Operating conditions not to exceed -34°C to 110°C (-30°F to 230°F).

#### SECTION 2 - STORM DRAINS / ROOF DRAINS

GRINNELL mechanical grooved pipe couplings and fittings as manufactured by GRINNELL Mechanical Products shall be used for all storm and roof drainage systems.

##### 2.1 Materials:

**2.1.1 Pipe** - Pipe shall be galvanised steel pipe, conforming to ASTM A-135, A-795 or A-53. All pipe shall be prepared according to GRINNELL published specifications, or to ANSI/AWWA grooved end pipe. Pipe

ends shall be prepared as detailed in Basic Materials and Methods and to the latest GRINNELL published specifications.

**2.1.2 Couplings** - Couplings shall be galvanised Figure 705, 707, 772 or 716 with Grade "E" EPDM gaskets and zinc plated bolts and nuts.

##### 2.1.3 Flange Connections

- Flange connections shall be galvanised GRINNELL Figure 71 Flanges incorporating Grade "E" EPDM gasket.

**2.1.4 Fittings** - Fittings shall be galvanised GRINNELL standard ductile iron or segmentally welded steel fittings, with grooved ends.

#### 2.2 Plastic Pipe Systems

**2.2.1 Pipe** - Pipe with material and dimensions conforming to ASTM D-1785 Type 1, Grade 1 with cut grooves and joint pressure ratings conforming to grooved manufacturer's specifications or recommendations; or Type 2, Grade 1 with rolled or radius cut grooves and joint ratings conforming to grooved manufacturer's specifications and recommendations.

**2.2.2 Couplings** - Flexible type couplings shall be used.

**2.2.3 Flange Connections** - Same as in 2.1.3

**2.2.4 Fittings** - Same as in 2.1.4

#### SECTION 3 - VENT PIPING

(Same as in Section 2 - Storm Drains / Roof Drains)

## Typical Specifications

### Building Service Systems - Cooling

#### Cooling System Specifications

#### (CSI - Div. 15 Section 15-N Refrigeration Systems)

##### SECTION 1 - CHILLED WATER - SUPPLY & RETURN

GRINNELL Mechanical Grooved Pipe couplings, fittings and butterfly and check valves as manufactured or supplied by GRINNELL Mechanical Products shall be used for cooling system chilled water piping, including risers, mains, equipment connection, branches, supply and return lines under operating conditions not to exceed  $-34^{\circ}\text{C}$  to  $110^{\circ}\text{C}$  ( $-30^{\circ}\text{F}$  to  $230^{\circ}\text{F}$ ) temperature. Calculations shall be made based on coupling manufacturers latest literature to determine expansion/ contraction allowance available, enabling elimination of special movement compensators, swing joints, flexible connections and vibration isolators where possible.

##### 1.1 Materials:

**1.1.1 Pipe** - Shall be steel pipe, conforming to ASTM A-135, A-795 or A-53. All pipe shall be prepared according to GRINNELL published specifications, or to ANSI/AWWA C-606 grooved end pipe. Pipe ends shall be prepared as detailed in Basic Materials and Methods.

**1.1.2 Couplings** - All flexible couplings shall be GRINNELL Figure 705 and 707 with Grade "E" EPDM gaskets and zinc plated bolts and nuts. All rigid couplings shall be GRINNELL Figure 772 with Grade "E" EPDM gaskets and zinc plated bolts and nuts.

**1.1.3 Branch Connections** - Branch stub-in connections shall be made with Figure 730 with Grade "E" EPDM gaskets and zinc plated bolts and nuts.

**1.1.4 Flange Connections** - Shall be GRINNELL Figure 71 Flange incorporating Grade "E" EPDM gasket.

**1.1.5 Fittings** - Shall be GRINNELL ductile iron or segmentally welded steel fittings, with grooved ends.

**1.1.6 Butterfly Valves** - Shall be of grooved end design with EPDM encapsulated disc. Neck design shall readily accommodate insulation. Valves shall have pressure assisted double seal and stainless steel upper stems, and be capable of 20.7 Bar (300 psi), bubble-tight-shut-off, with an actuator or hand lever.

**1.1.7 Check Valves** - Shall be of grooved end design with a clapper seal of EPDM. The valves shall have a spring loaded clapper to ensure a leak tight seal and a non-sticking operation. The clapper seat in the valve body shall be nickel. Valves shall be capable of pressures of 20.7 Bar (300 psi).

##### SECTION 2 - COOLING TOWER PIPING

Same as Section 1, except pipe, couplings and fittings shall be galvanised.

##### SECTION 3 - DUAL TEMPERATURE SYSTEMS PIPING

Same as Section 1.

##### SECTION 4 - CONDENSER WATER PIPING

Same as Section 1.

## Typical Specifications

### Building Service Systems - Heating

### Heating System Specifications

### (CSI - Div. 15 Section 15-L Water Piping)

#### SECTION 1 - HOT WATER HEATING SYSTEMS - SUPPLY & RETURN

GRINNELL Mechanical Grooved Pipe couplings, fittings and butterfly and check valves as manufactured or supplied by GRINNELL Mechanical Products shall be used for hot water systems, including boiler manifolds, mains, risers, branches, supply and return lines, under operating conditions not to exceed 110°C (230°F). Calculations shall be based on coupling manufacturers latest literature to determine expansion allowance available, enabling elimination of special expansion compensators, swing joints, flexible connections and vibration isolators where possible.

##### 1.1 Materials:

**1.1.1 Pipe** - Shall be steel pipe, conforming to ASTM A-135, A-795 or A-53. All pipe shall be prepared according to GRINNELL published specifications, or to ANSI/AWWA C-606 grooved end pipe. Pipe ends shall be prepared as detailed in Basic Materials and Methods.

**1.1.2 Couplings** - All flexible couplings shall be GRINNELL Figure 705 and 707 with Grade "E" EPDM gaskets and zinc plated bolts and nuts. All rigid couplings shall be GRINNELL Figure 772 with Grade "E" EPDM gaskets and zinc plated bolts and nuts. All reducing couplings shall be GRINNELL Figure 716 with Grade "E" EPDM gaskets and zinc plated bolts and nuts.

**1.1.3 Branch Connections** - Branch stub-in connections shall be made with GRINNELL Figure 730 with Grade "E" EPDM gaskets and zinc plated bolts and nuts.

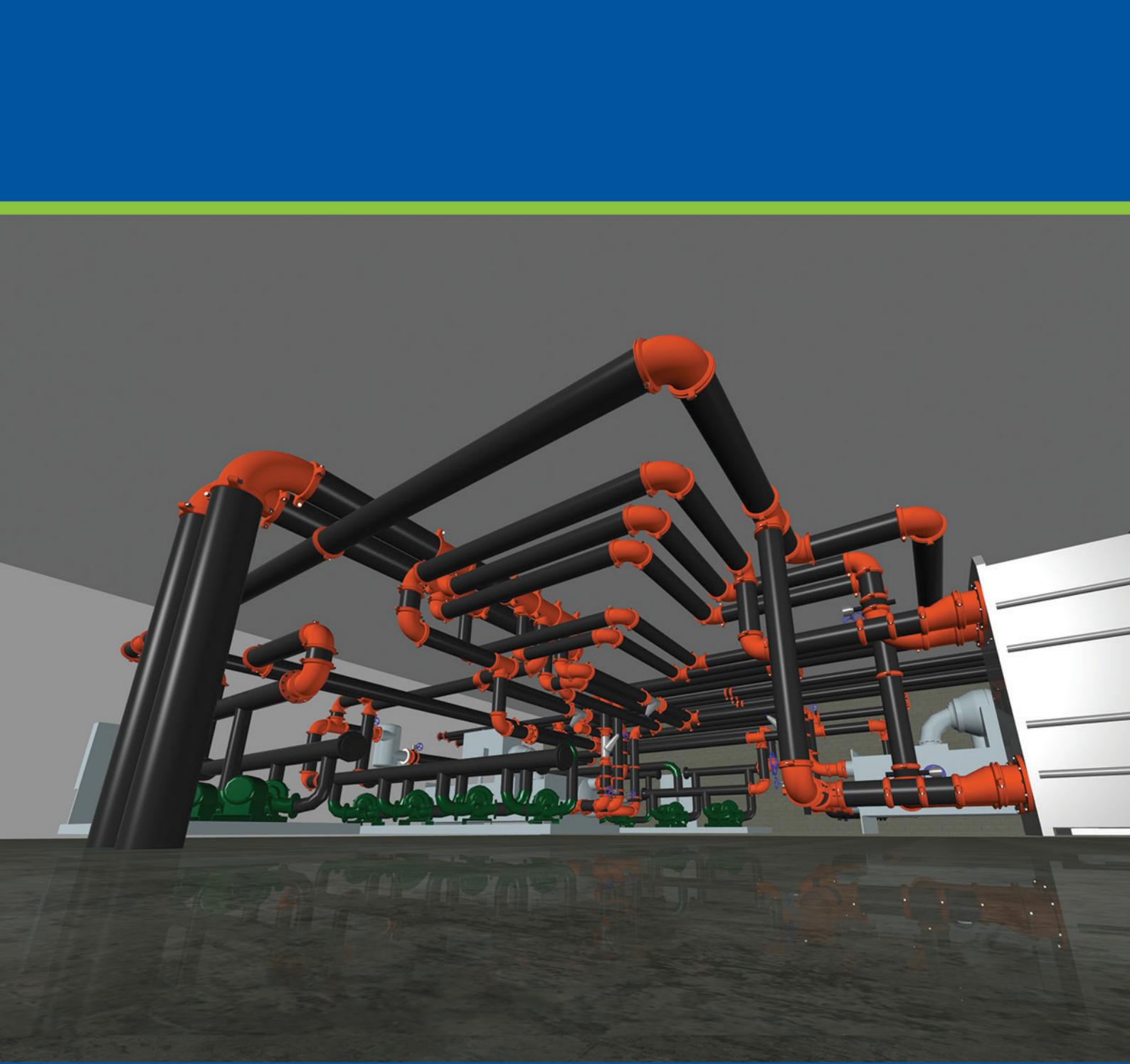
**1.1.4 Flange Connections** - Flange connections shall be GRINNELL Figure 71 Flange incorporating Grade "E" EPDM gasket.

**1.1.5 Fittings** - Fittings shall be GRINNELL ductile iron or segmentally welded steel fittings, with grooved ends.

**1.1.6 Butterfly Valves** - Shall be of grooved end design with EPDM encapsulated disc. Neck design shall readily accommodate insulation. Valves shall have pressure assisted double seal and stainless steel upper stems, and be capable of 20.7 Bar (300 psi), bubble-tight-shut-off, with an actuator or hand lever.

**1.1.7 Check Valves** - Shall be of grooved end design with a clapper seal of EPDM. The valves shall have a spring loaded clapper to ensure a leak tight seal and a nonsticking operation. Valves shall be capable of pressures of 20.7 Bar (300 psi).

## Notes



## TECHNICAL SERVICES



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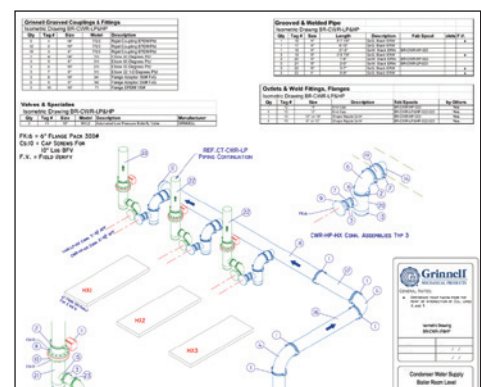
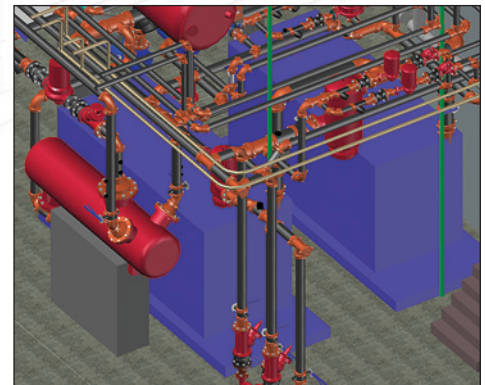
Our Technical Services team partner seamlessly with your designers, engineers and contractors to help ensure your project runs efficiently. From design to build our team of product specialists can provide your business with technical expertise, drawing services and cost saving solutions to overcome common project challenges.

## Common Challenges You Face

- 
- High Material Handling Costs
  - Material Backorders
  - High Installation Costs
  - Excessive Material Leftovers
  - Piping Interferences and Clashes
  - Space Constraints
  - Lack of Skilled Labor
  - Compressed Delivery Schedules

## Services We Provide

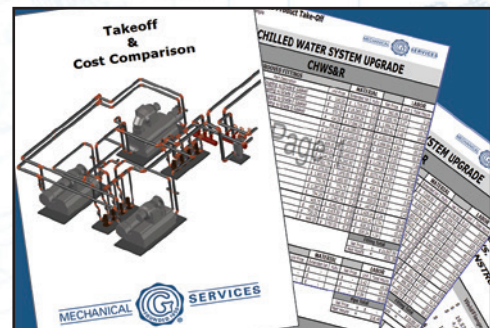
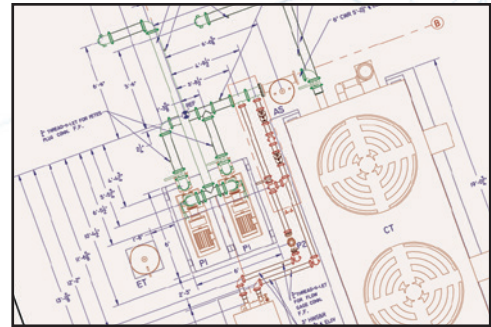
**Technical Expertise** – Our product specialists are available to assist with your enquiries and provide accurate recommendations to help you find the best grooved mechanical solution to fit your project needs and requirements



## Project Planning and Development

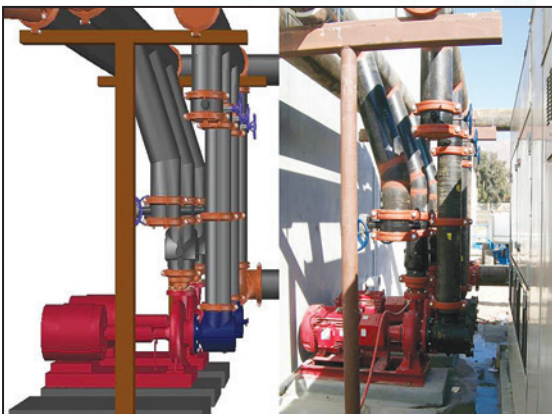
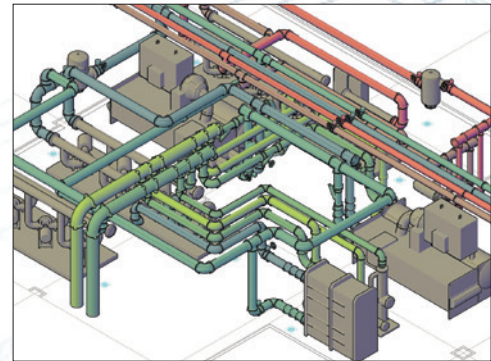
We offer a range of services during the project planning phase including;

- Analysis of thermic expansion and development of expansion concepts - We assist specifiers and installers on the proper use of grooved couplings for thermal expansion and compensation in piping systems. Our assessments of your systems aim to provide cost-effective design solutions, reduce error and help you meet Key Performance Indicators (KPI's)
- 2D and 3D AutoCAD® blocks – We offer traditional AutoCAD® blocks and STEP-files
- Expansion and Contraction Calculations – Our technical project team are also adept at providing accurate riser calculations and anchor load and movement calculations
- Material take offs (MTO) with full Bill of Material (BOM) provision
- Cost Comparisons – Using industry-standard, man-hour data estimations and our BOMs, we compare the cost savings of grooved piping solutions over traditional welded/flanged joining techniques.



## Training

Our Product Specialists can provide training demonstrations on the manual grooving process to help upskill your employees. Demonstrations may be given on site at your convenience or in our custom built technical training facilities. Advanced product training is also available to provide wider education on grooved mechanical systems.



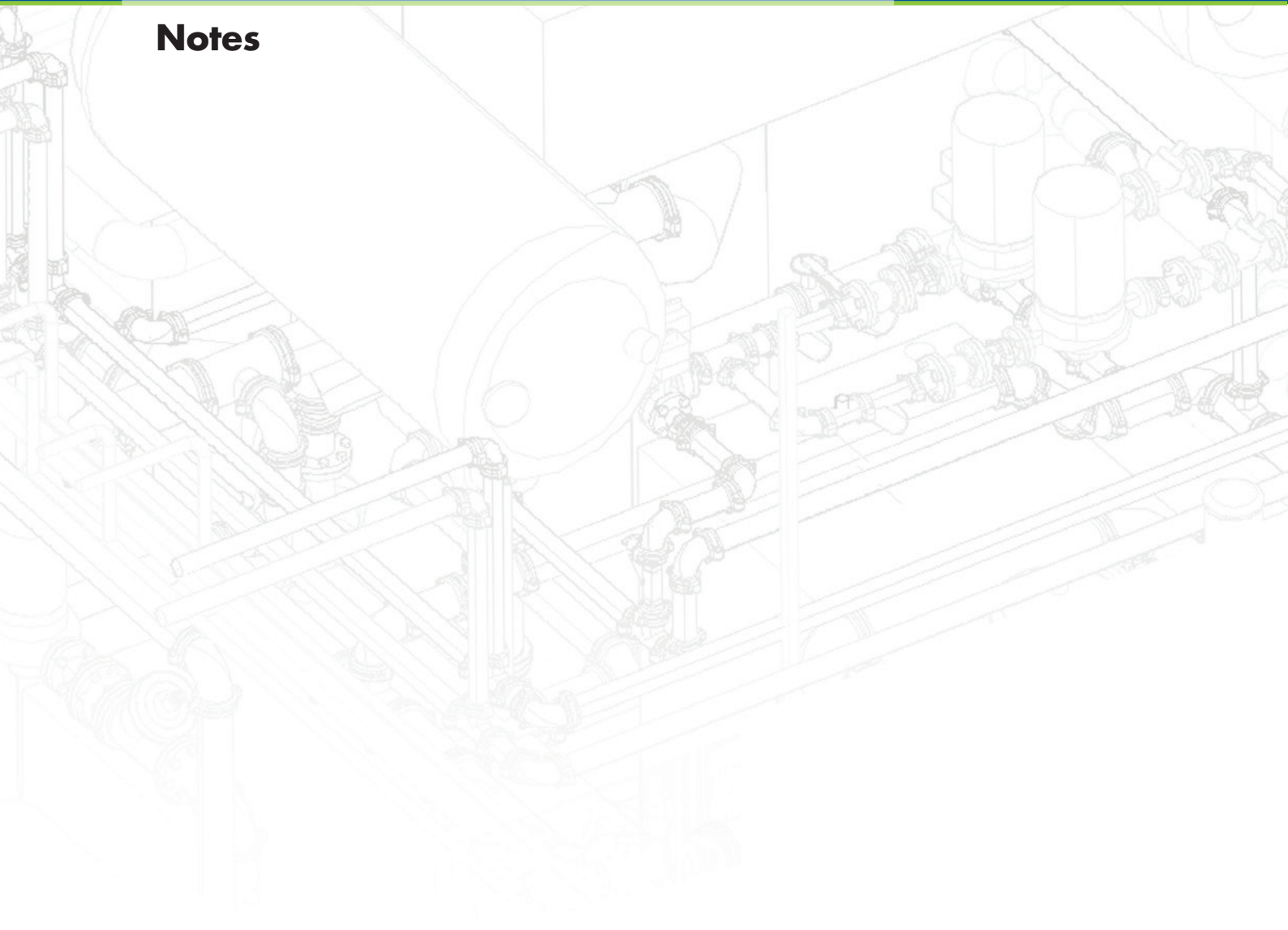
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\* = 1 for red paint finish (RAL 3000), 2 for hot dipped galvanised finish, or 5 for painted white RAL9010 coating (where available)

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## 10-Year Limited Warranty

### Limited Warranty

Products manufactured by Johnson Controls International Plc. ("JCI") under the GRINNELL brand are warranted solely to the original Buyer for ten (10) years against defects in material and workmanship when paid for and properly installed and maintained under normal use and service, against defects in material and workmanship when paid for and properly installed and maintained under normal use and service. This warranty will expire ten (10) years from date of shipment by JCI. No warranty is given for products or components manufactured by companies not affiliated by ownership with JCI or for products and components which have been subject to misuse, improper installation or maintenance, corrosion, or other external sources of damage. Materials found by JCI to be defective shall be either repaired or replaced, at JCI's sole option. JCI neither assumes, nor authorises any person to assume for it, any other obligation in connection with the sale of products or parts of products. JCI shall not be responsible for system design errors or inaccurate or incomplete information supplied by Buyer or Buyer's representatives.



In no event shall JCI be liable, in contract, tort, strict liability or under any other legal theory, for incidental, indirect, special or consequential damages, including but not limited to labour charges, regardless of whether JCI was informed about the possibility of such damages, and in no event shall JCI's liability exceed an amount equal to the sales price.

*The foregoing warranty is made in lieu of any and all other warranties, express or implied, including warranties of merchantability and fitness for a particular purpose.*

This Limited Warranty sets forth the exclusive remedy for claims based on failure of or defect in products, materials or components, whether the claim is made in contract, tort, strict liability or any other legal theory.

This warranty will apply to the full extent permitted by law. The invalidity, in whole or part, of any portion of this warranty will not affect the remainder.

# Global Strength. Local Expertise.

## At your service.



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