



Grinnell



G-FIRE Grooved Products Catalogue

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GRINNELL PRODUCTS

GRINNELL, a premium brand of Tyco International, delivers quality piping solutions for a full range of fire applications. Available products offer contractors, engineers, and distributors faster, more cost-effective tools for joining pipe over traditional welding methods. Innovative GRINNELL products include couplings, fittings, mechanical tees, valves, and accessories. Comprehensive, competitively priced engineering and planning support services provide labor and cost savings. All GRINNELL products are backed by an industry-leading, 10-year limited warranty. For more information, visit www.tfpemea.com.



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BUILDING SOLUTIONS

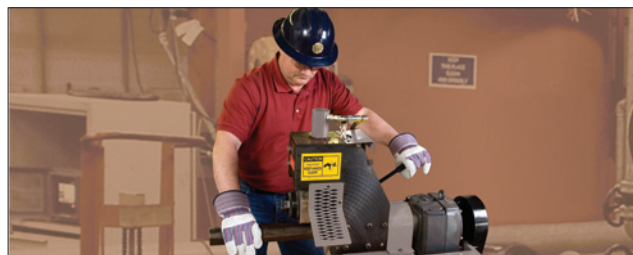


Why Grooved?

General Data

Reduced Installation Time and Cost

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



Flexible Retrofits and Repairs

When an owner cannot afford to shut down a facility for important retrofits, GRINNELL Products solves the problem. GRINNELL Couplings and Fittings allow an installer to fabricate on-site and around complex problems and obstacles. Fire permits are not required and building residents do not have to evacuate due to welding fumes.



Pipe Expansion Support

GRINNELL Flexible Couplings absorb linear and angular movements of pipe work due to temperature changes, eliminating or minimizing the use of expansion joints. Tyco Technical Services offers customers assistance with designing flexible couplings into thermal expansion projects.



No Special Tools

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



Compatibility With Hazardous Environments

Grooved Pipe does not require welding, threading, or cutting, eliminating cutting oils, fumes, and flames.

It is the ideal method for joining pipe in enclosed, flammable, or hazardous sites like tunnels and mines.

And it doesn't require burn or hot-works permits.



Connection Consistency

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



Why GRINNELL?

General
Data



The Best Warranty in the Industry

GRINNELL Products are backed by a 10-year limited warranty. Our customers are proud to work with products manufactured by a market leader with an established brand name and a consistent history.



Industry Pioneer

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



Green Solutions

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



Global Presence

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



Great Service

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

Tyco Technical Services

Tyco Technical Services

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P.O. Box 198, 7500 AD Enschede,
The Netherlands
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Email: info-NL@tyco-bspd.com

Agency Listings and Approvals

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

General
Data

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 OFFICIALS AND CODE ADMINISTRATORS (BOCA)

BUREAU VERITAS (BV)



CERTIFICATION TO EUROPEAN PRESSURE EQUIPMENT DIRECTIVE



CNBOP

Centrum Naukowo-Badawcze Ochrony Przeciwpowazrowe



CNPP APSAD

National Centre for Prevention and Protection (FR)



COAST GUARD

Approved each vessel individually

CORPS OF ENGINEERS (COE) GEGS 15000

CRN

Canadian Registration Number

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



LOSS PREVENTION CERTIFICATION BOARD (LPCB)

Approved for Fire Protection Services



MATERIAL EQUIPMENT AND ACCEPTANCE (MEA)

MILITARY SPECIFICATIONS (MIL)

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

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (NASA)

NATIONAL INSTITUTE OF HEALTH (NIH)

Department of Health – 5000 Series

NAVAL FACILITIES ENGINEERING COMMAND (NAVFAC)

NFGS 15000 Series

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

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

General
Data



Certificate of Quality System Registration

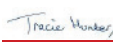
TYCO FLOW CONTROL (M) SDN. BHD.
(TYCO FIRE SUPPRESSION & BUILDING PRODUCTS, MALAYSIA)
Lot 886, C1 & C2, Jalan Subang 9, Taman Perindustrian Subang,
47500 Subang, Selangor, Malaysia

has complied with the requirements of the following:

ISO 9001:2008

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

Assembly of couplings and marketing of couplings and fittings.



T A Hunter
for and on behalf of LPCB

Certificate No: 673

Issue Number: 03

Date of Issue: 03 December 2010

Date of Expiry: 02 December 2013





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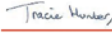
TYCO FIRE & BUILDING PRODUCTS
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Cranston, RI 02910, USA

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ISO 9001:2008

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and/or services

**Research, design, development and manufacturing support for the fire protection
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and fitting manufactures of Tyco Fire and Building Products.**



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260 Central Castings Drive, Anniston, AL 36206 USA

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ISO 9001:2008

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

**Design and manufacture of pipe couplings, fittings, related piping systems
components and castings.**



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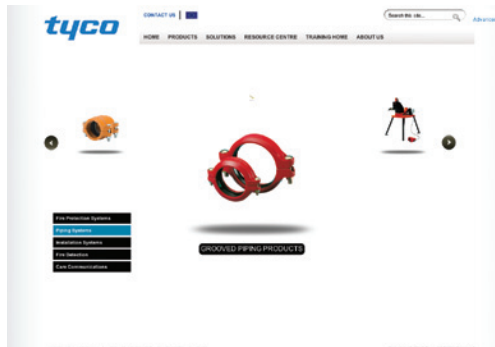
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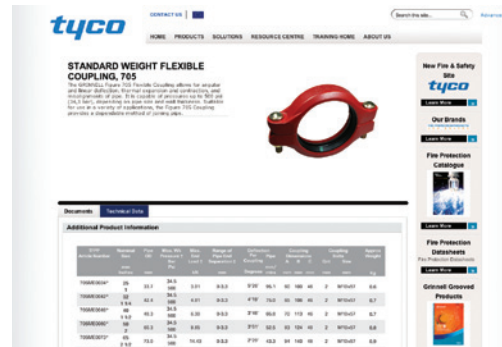
GRINNELL Website
www.tfppemea.com

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

General Data



GRINNELL EMEA Homepage



GRINNELL EMEA Product Page

How to Build GRINNELL G-FIRE Part Numbers

Figure No.

5 7 7 M A 0 0 8 9 1

Internal Code Gasket Size Finish

Digits 01, 02, & 03: Figure number
 Digit 04: Internal Code
 Digit 05: Gasket - A for C-style EPDM (Grade A)
 T for Tri-Seal EPDM (Grade E)
 E for C-style EPDM (Grade E)
 D for C-style EPDM (Grade EN, approved for potable water applications)
 Digits 06 thru 09: Size (See Table to Right)
 Digit 10: Finish - 0 for Painted orange
 1 for Painted red
 2 for Galvanised
 3 for Unpainted
 5 for Painted White (RAL 9010)

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

Standard Figure Numbers

Outlet Fitting Example:

7 3 0 A G 6 3 2 6 1 :

Fig. number Internal Code Outlet Size Finish

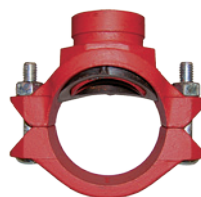


Figure number: 730 - Mechanical Tee
Internal Code: A
Outlet: G - Grooved (T for BSP Thread; N for NPT Thread)
Size: 6326 - 168.3 x 76.1mm (6" x 2 1/2") (Biggest Size First)
Finish: 1 - Painted Red

"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 Fitting & 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		



G-FIRE GROOVED COUPLINGS

Grooved Couplings

Grooved
Couplings



Figure 577
G-FIRE Rigid Couplings
Page – 15



Figure 705
Flexible Couplings
Page – 16



Figure 707
Heavy Duty Flexible Couplings
Page – 17

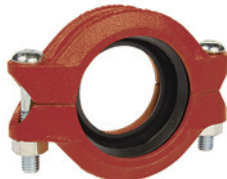


Figure 716
Flexible Reducing Couplings
Page – 18



Figure 702
Mechanical Outlet Couplings
Pages – 19 - 20

GRINNELL Couplings are designed for grooved end pipe and are available in nominal sizes of 25mm (1") to 300mm (12") including BS, and ISO outside diameters.

The GRINNELL Coupling Design provides economical advantages when compared to welded or flanged systems. GRINNELL Couplings provide a universal means for the connection of 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 Products as the couplings can be easily rotated, eliminated and/or added to facilitate necessary modifications.

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 depressurizing and draining the system. Material should be verified to be compatible for the specific application.

Grooved Coupling Specifications

Rigid Connection

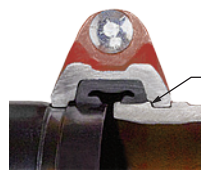
The Figure 577 G-FIRE Rigid Coupling has a patented design that grips the full 360° circumference of the pipe grooves. This design provides a more rigid and stronger connection through a range of pipe tolerances. The coupling design eliminates distortion of the gasket as the housing sections come together.

Trouble-Free Design

The patented universal tongue-and-groove design of the coupling housings assures trouble-free installation by avoiding the misalignment of the housings that could lead to a joint failure.

Quick Installation

GRINNELL Figures 577 and 705 Couplings, in sizes up to 300mm (12"), feature a clamshell design that allows for an easy one-bolt installation, thus saving time during field installations.



Full contact between Figure 577 Coupling key and groove diameter



Grooved Couplings

Additional Features:

- Two-piece, tongue-and-groove design allows for fast and easy installation
- Standard industry groove does not require special tools
- Backed by the industry's best 10-Year Limited Warranty



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

For detailed Listing and Approval information see pages 101 - 108 or contact Tyco Fire Protection Products.

MATERIAL SPECIFICATIONS

Ductile Iron Housing Specifications

- ASTM A 536 – Standard specification for ductile iron castings, Grade 65-45-12
- Tensile strength, minimum 4,481 bar (65,000 psi)
- Yield strength, minimum 3,102 bar (45,000psi)
- 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 7,584 bar (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)
- White – Non-lead paint RAL 9010 (optional)
- Hot-Dipped, Zinc Galvanised (Optional)

Gasket Specifications

- **Grade "A" EPDM** pre-lubricated gaskets have a violet stripped colour code identification and conform to ASTM D 2000 for service temperatures from -34°C to 66°C (-30°F to 150°F). They are not recommended for hot water systems.
- **Grade "E" EPDM** gaskets have a green stripped colour code 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 "E" EPDM Tri-Seal** gaskets have a green stripped colour code 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 dry pipe freezer systems.

Coupling Installation Information

Installation Handbook: IH-1000FP

Grooved
Couplings

• WARNING

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

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

1. Always read and understand the instructions.
2. To avoid serious personal injury always wear appropriate personal protective equipment (ppe), such as safety glasses, hard hat and foot protection.
3. Never remove any piping component without verifying that the system is de-pressurized and drained. Failure to 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 89 to 90 or Tech Data Sheet TFP1898 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-1000FP). 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 Tyco Technical Services or visiting www.tfppea.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 on page nine of 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)

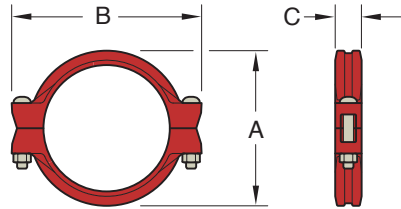
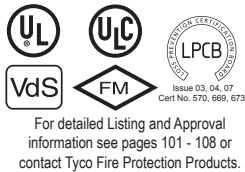
Figure 577 G-FIRE Rigid Couplings

Tech Data Sheet: TFP1854

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The GRINNELL Figure 577 G-FIRE Rigid Coupling provides a rigid joint by firmly gripping along the full circumference of the pipe grooves. Figure 577 G-FIRE 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 24,1 bar (350 psi) depending on pipe size and wall thickness when used in fire protection services.

The Figure 577 G-FIRE Rigid Coupling features a EPDM gasket for fire applications.



Grooved
Couplings

Part Number		Pipe Size		Max.† Pressures Bar psi	Max.† End Load kN Lbs.	Max.*‡ End Gap mm In.	Dimensions - mm In.			Coupling Bolts Size ** (Qty 2) mm In.	Approx. Weight kg Lbs.
Grade "A" Gasket	Grade "A" Tri-Seal Gasket	Nominal mm In.	O.D. mm In.				A	B	C		
577MA0034*	577AT0034*	25	33.7	24.1	2.11	1.5	41	100	42	M10 x 57	0.55
		1	1.315	350	475	0.06	1.63	3.92	1.65	3/8 x 2 1/4	1.2
577MA0042*	577AT0042*	32	42.4	24.1	3.37	1.5	68	112	42	M10 x 57	0.59
		1 1/4	1.660	350	757	0.06	2.66	4.40	1.64	3/8 x 2 1/4	1.3
577MA0048*	577AT0048*	40	48.3	24.1	4.41	1.5	74	118	42	M10 x 57	0.68
		1 1/2	1.900	350	992	0.06	2.90	4.66	1.66	3/8 x 2 1/4	1.5
577MA0060*	577AT0060*	50	60.3	24.1	6.90	1.5	86	132	43	M10 x 57	0.82
		2	2.375	350	1,551	0.06	3.38	5.20	1.70	3/8 x 2 1/4	1.8
577MA0073*	577AT0073*	65	73.0	24.1	10.11	1.5	99	143	44	M10 x 57	0.91
		2 1/2	2.875	350	2,272	0.06	3.88	5.64	1.75	3/8 x 2 1/4	2.0
577MA0076*	577AT0076*	65	76.1	24.1	11.01	1.5	102	147	44	M10 x 57	0.91
		76.1mm	3.000	350	2,474	0.06	4.00	5.78	1.75	—	2.0
577MA0089*	577AT0089*	80	88.9	20.7	14.98	1.5	114	161	44	M10 x 57	1.50
		3	3.500	300	3,367	0.06	4.50	6.33	1.75	3/8 x 2 1/4	3.3
577MA0114*	577AT0114*	100	114.3	20.7	21.22	1.5	145	191	46	M10 x 57	1.50
		4	4.500	300	4,771	0.06	5.70	7.50	1.83	3/8 x 2 1/4	3.3
577MA0139*	577AT0139*	125	139.7	20.7	31.71	3.2	173	222	49	M12 x 76	2.41
		139.7mm	5.500	300	7,127	0.125	6.80	8.75	1.91	—	5.3
577MA0141*	577AT0141*	125	141.3	20.7	32.43	3.2	174	224	49	M12 x 76	2.41
		5	5.563	300	7,290	0.125	6.86	8.82	1.91	1/2 x 3	5.3
577MA0165*	577AT0165*	150	165.1	20.7	44.28	3.2	198	248	49	M12 x 76	2.59
		165.1mm	6.500	300	9,955	0.125	7.80	9.75	1.91	—	5.7
577MA0168*	577AT0168*	150	168.3	20.7	46.00	3.2	215	251	49	M12 x 76	2.69
		6	6.625	300	10,341	0.125	8.47	9.88	1.91	1/2 x 3	5.9
577MA0219*	577AT0219*	200	219.1	20.7	77.97	3.2	260	325	61	M16 x 83	5.32
		8	8.625	300	17,528	0.125	10.25	12.78	2.40	5/8 x 3 1/4	11.7
577MA0273*	577AT0273*	250 ♦	273.0	12.1	70.7	6.4	318	419	65	M20 x 108	8.86
		10	10.750	175	15,883	0.25	12.50	16.50	2.56	3/4 x 4 1/4	19.5
577MA0324*	577AT0324*	300 ♦	323.9	12.1	99.4	6.4	368	470	65	M20 x 108	10.00
		12	12.750	175	22,343	0.25	14.50	18.50	2.56	3/4 x 4 1/4	22.0

* = 1 for red paint (RAL 3000) 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 Tyco Technical Services for details.

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

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

♦ 250mm and 300mm (10" and 12") couplings requiring VdS approval, Use GRINNELL Figure # 772 Mechanical Coupling

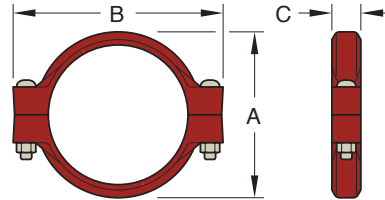
For information on other alternative sizes, contact Tyco Technical Services

See page 13 for general notes, and see pages 76 - 82 for gasket information.

Figure 705 Flexible Couplings

Tech Data Sheet: TFP1820

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For detailed Listing and Approval
information see pages 101 - 108 or
contact Tyco Fire Protection Products.

Grooved
Couplings

Part Number		Pipe Size		Max.† Pressure bar psi	Max.† End Load N Lbs.	Max.*‡ End Gap mm In.	Deflection ‡		Dimensions - mm In.			Coupling Bolts Size (Qty 2) mm In.	Approx. Weight kg Lbs.
Grade "A" EPDM Gasket	Grade "E" EPDM Tri-Seal Gasket	Nominal mm In.	O.D. mm In.				Degrees Per Coupling	mm/m In./Ft	A	B	C		
705MA0034*	705MT0034*	25 1	33.7 1.315	20.7 300	1.823 410	3.3 0.13	5° 30'	96.7 1.16	56.9 2.24	100.1 3.94	46.0 1.81	M10 x 57 3/8 x 2-1/4	0.6 1.3
705MA0042*	705MT0042*	32 1-1/4	42.4 1.660	20.7 300	2.887 649	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	0.8 1.8
705MA0048*	705MT0048*	40 1-1/2	48.3 1.900	20.7 300	3.781 850	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	0.8 1.8
705MA0060*	705MT0060*	50 2	60.3 2.375	20.7 300	5.907 1,328	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 1.8
705MA0073*	705MT0073*	65 2-1/2	73.0 2.875	20.7 300	8.660 1,947	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
705MA0076*	705MT0076*	65 76.1mm	76.1 3.000	20.7 300	9.430 2,120	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
705MA0089*	705MT0089*	80 3	88.9 3.500	20.7 300	12.832 2,885	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	1.5 3.3
705MA0108*	705MT0108*	100 108.0mm	108.0 4.252	20.7 300	18.931 4,256	6.4 0.25	3° 22'	58.3 0.70	140.0 5.51	191.0 7.52	52.0 2.05	M12 x 76 —	1.9 4.2
705MA0114*	705MT0114*	100 4	114.3 4.500	20.7 300	21.213 4,769	6.4 0.25	3° 11'	55.6 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
705MA0133*	705MT0133*	125 133.0mm	133.0 5.236	20.7 300	28.885 6,494	6.4 0.25	2° 44'	46.7 0.56	167.0 6.57	241.0 9.49	52 2.05	M16 x 83 —	3.3 7.3
705MA0139*	705MT0139*	125 139.7mm	139.7 5.500	20.7 300	31.701 7,127	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 —	3.0 6.6
705MA0141*	705MT0141*	125 5	141.3 5.563	20.7 300	32.417 7,288	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	3.0 6.6
705MA0159*	705MT0159*	150 159.0mm	159.0 6.260	20.7 300	40.939 9,204	6.4 0.25	2° 35'	45.0 0.54	175.0 6.89	248.0 9.76	52.0 2.05	M16 x 83 —	3.2 7.0
705MA0165*	705MT0165*	150 165.1mm	165.1 6.500	20.7 300	44.258 9,950	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 7.0
705MA0168*	705MT0168*	150 6	168.3 6.625	20.7 300	45.975 10,336	6.4 0.25	2° 10'	37.8 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 7.0
705MA0219*	705MT0219*	200 8	219.1 8.625	20.7 300	77.925 17,519	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	5.4 11.8
705MA0273*	705MT0273*	250 10	273.0 10.750	17.2 250	100.876 22,676	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	12.2 26.8
705MA0324*	705MT0324*	300 12	323.9 12.750	17.2 250	141.905 31,903	6.4 0.25	1° 7'	19.5 0.23	379.5 14.94	479.6 18.88	66.8 2.63	M24 x 165 1 x 6-1/2	14.6 32.2

* = 1 for red paint (RAL 3000) 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 Tyco Technical Services 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 other alternative sizes, contact Tyco Technical Services

See page 13 for general notes, and see pages 76 - 82 for gasket information.

Figure 707 Heavy Duty Flexible Couplings

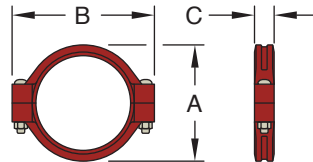
Tech Data Sheet: TFP1840

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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 34.5 Bar (500 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 and Approval information see pages 101 - 108 or contact Tyco Fire Protection Products.



Grooved
Couplings

Part Number		Pipe Size		Max.† Pressure Bar psi	Max.† End Load N Lbs.	Max.‡ End Gap mm In.	Deflection ‡		Dimensions - mm In.			Coupling Bolts Size (Qty 2) mm In.	Approx. Weight kg Lbs.
Grade "E" Gasket	Grade "E" Tri-Seal Gasket	Nominal mm In.	O.D. mm In.				Degrees Per Coupling	mm/m In./Ft	A	B	C		
707AE0034*	707AT0034*	25	33.7	34.5	3,021	3.3	5° 26'	98.4	60.5	101.6	46.0	M12 x 89	0.9
		1	1.315	500	679	0.13		1.14	2.38	4.00	1.81	1/2 x 3	2.0
707ME0042*	707MT0042*	32	42.4	34.5	4,814	3.3	4° 19'	75.0	70.0	111.0	46.0	M12 x 89	1.0
		1-1/4	1.660	500	1,082	0.13		0.90	2.76	4.37	1.81	1/2 x 3	2.2
707AE0048*	707AT0048*	40	48.3	34.5	6,803	3.3	3° 46'	65.8	75.4	117.6	46.0	M12 x 89	1.1
		1-1/2	1.900	500	1,418	0.13		0.79	2.97	4.63	1.81	1/2 x 3	2.5
707AE0060*	707AT0060*	50	60.3	34.5	9,853	3.3	3° 1'	52.5	89.9	133.4	47.8	M12 x 89	1.4
		2	2.375	500	2,215	0.13		0.63	3.54	5.25	1.88	1/2 x 3	3.0
707AE0073*	707AT0073*	65	73.0	34.5	14,439	3.3	2° 29'	43.3	103.1	146.1	47.8	M12 x 89	1.6
		2-1/2	2.875	500	3,246	0.13		0.52	4.06	5.75	1.88	1/2 x 3	3.5
707AE0076*	707AT0076*	65	76.1	20.7	9,435	3.3	2° 23'	41.7	106.4	146.1	47.8	M12 x 89	1.8
		76.1mm	3.000	300	2,121	0.13		0.50	4.19	5.75	1.88		4.0
707AE0089*	707AT0089*	80	88.9	34.5	21,400	3.3	2° 3'	35.8	119.1	162.1	47.8	M12 x 89	1.8
		3	3.500	500	4,811	0.13		0.43	4.69	6.38	1.88	1/2 x 3	4.0
707AE0114*	707AT0114*	100	114.3	34.5	35,372	6.4	3° 11'	55.8	151.1	209.6	52.3	M16 x 83	3.2
		4	4.500	500	7,952	0.25		0.67	5.95	8.25	2.06	5/8 x 3-1/4	7.0
707AE0139*	707AT0139*	125	139.7	34.5	52,841	6.4	2° 30'	43.6	178.3	254.0	51.8	M20 x 121	3.8
		139.7mm	5.500	500	11,879	0.25		0.52	7.02	10.00	2.04	3/4 x 4-3/4	8.3
707AE0141*	707AT0141*	125	141.3	34.5	54,059	6.4	2° 35'	45.1	179.8	254.0	52.3	M20 x 121	4.5
		5	5.563	500	12,153	0.25		0.54	7.08	10.00	2.06	3/4 x 4-3/4	10.0
707AE0165*	707AT0165*	150	165.1	20.7	44,282	6.4	2° 12'	38.4	208.0	285.8	52.3	M20 x 121	5.4
		165.1mm	6.500	300	9,955	0.25		0.46	8.19	11.25	2.06		12.0
707AE0168*	707AT0168*	150	168.3	34.5	76,670	6.4	2° 10'	37.8	210.8	285.8	52.3	M20 x 121	5.0
		6	6.625	500	17,236	0.25		0.45	8.30	11.25	2.06	3/4 x 4-3/4	11.1
707AE0219*	707AT0219*	200	219.1	34.5	129,946	6.4	1° 40'	29.2	271.3	355.6	62.7	M22 x 165	9.7
		8	8.625	500	29,213	0.25		0.35	10.68	14.00	2.47	7/8 x 6-1/2	21.4
707AE0273*	707AT0273*	250	273.0	34.5	201,864	6.4	1° 20'	23.3	331.7	417.6	66.8	M24 x 165	13.2
		10	10.750	500	45,381	0.25		0.28	13.06	16.44	2.63	1 x 6-1/2	29.0
707AE0324*	707AT0324*	300	323.9	34.5	283,966	6.4	1° 7'	19.5	390.9	478.5	66.8	M24 x 165	16.8
		12	12.750	500	63,838	0.25		0.23	15.39	18.84	2.63	1 x 6-1/2	37.0

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

† 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 Tyco Technical Services for details.

‡ Max available end gap and deflection is for cut grooved standard weight pipe. Minimum gap = 0.
Values for roll grooved pipe will be half that of cut grooved.

• Only available in ANSI bolt sizes.

For information on other alternative sizes, contact Tyco Technical Services

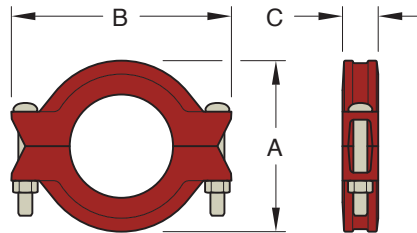
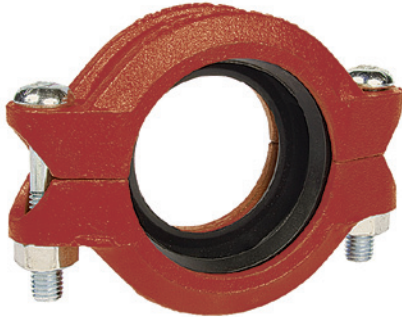
See page 13 for general notes, and see pages 76 - 82 for gasket information.

Figure 716 Flexible Reducing Couplings

Tech Data Sheet: TFP1830

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Grooved
Couplings



For detailed Listing and Approval
information see pages 101 - 108 or
contact Tyco Fire Protection Products.

Part Number	Pipe Size		Max.† Pressure Bar psi	Max.† End Load N/Lbs.	Max.*‡ End Gap mm In.	Deflection ‡		Dimensions mm In.			Coupling Bolts Size (Qty 2) mm In.	Approx. Weight kg Lbs.
	Nominal mm In.	O.D. mm In.				Degrees Per Coupling	mm/m In./Ft	A	B	C		
716AE2015*	50 x 40 2 x 1-1/2	60.3 x 48.3 2.375 x 1.900	24.1 350	4.412 992	3.3 0.13	1° 53'	32.9 0.39	88.9 3.50	128.5 5.06	47.8 1.88	M10 x 57 3/8 x 2-1/4	1.3 2.8
716AE2520*	65 x 50 2-1/2 x 2	73.0 x 60.3 2.875 x 2.375	24.1 350	6.894 1,550	3.3 0.13	1° 33'	27.1 0.32	101.6 4.00	139.7 5.50	47.8 1.88	M120 x 57 3/8 x 2-1/4	1.5 3.3
716ME2620*	65 x 50 76.1mm x 2	76.1 x 60.3 3.000 x 2.375	24.1 350	6.894 1,550	3.3 0.13	1° 34'	27.3 0.33	106.4 4.19	149.4 5.88	47.8 1.88	M12 x 89	1.5 3.3
716AE3020*	80 x 50 3 x 2	88.9 x 60.3 3.500 x 2.375	24.1 350	6.894 1,550	3.3 0.13	1° 17'	22.4 0.27	119.1 4.69	165.1 6.50	47.8 1.88	M12 x 89 1/2 x 3	2.0 4.3
716AE3025*	80 x 65 3 x 2-1/2	88.9 x 73.0 3.500 x 2.875	24.1 350	10.101 2,271	3.3 0.13	1° 17'	22.4 0.27	119.1 4.69	165.1 6.50	47.8 1.88	M12 x 89 1/2 x 3	1.8 3.9
716ME3026*	80 x 65 3 x 76.1mm	88.9 x 76.1 3.500 x 3.000	24.1 350	11.004 2,474	3.3 0.13	1° 17'	22.4 0.27	119.1 4.69	165.1 6.50	47.8 1.88	M12 x 89	1.9 4.2
716AE4220*	100 x 60 4 x 2	114.3 x 60.3 4.500 x 2.375	24.1 350	6.894 1,550	4.8 0.19	2° 38'	46.0 0.55	152.4 6.00	206.5 8.13	50.8 2.00	M16 x 83 5/8 x 3-1/4	2.4 5.2
716AE4225*	100 x 65 4 x 2-1/2	114.3 x 73.0 4.500 x 2.875	24.1 350	10.101 2,271	4.8 0.19	2° 38'	46.0 0.55	152.4 6.00	206.5 8.13	50.8 2.00	M16 x 83 5/8 x 3-1/4	3.0 6.7
716ME4226*	100 x 65 4 x 76.1mm	114.3 x 76.1 4.500 x 3.000	24.1 350	11.004 2,474	4.8 0.19	2° 38'	46.0 0.55	152.4 6.00	206.5 8.13	50.8 2.00	M16 x 83	2.8 6.2
716AE4230*	100 x 80 4 x 3	114.3 x 88.9 4.500 x 3.500	24.1 350	14.972 3,366	4.8 0.19	2° 38'	46.0 0.55	152.4 6.00	206.5 8.13	50.8 2.00	M16 x 83 5/8 x 3-1/4	2.8 6.2
716ME5242*	125 x 100 139.7mm x 4	139.7 x 114.3 5.500 x 4.500	24.1 350	24.749 5,564	6.4 0.25	2° 38'	46.0 0.55	179.3 7.06	241.3 9.50	52.3 2.06	M20 x 121	4.4 9.6
716AE5342*	125 x 100 5 x 4	141.3 x 114.3 5.563 x 4.500	24.1 350	24.749 5,564	6.4 0.25	2° 5'	36.4 0.44	181.1 7.13	242.8 9.56	52.3 2.06	M20 x 121 3/4 x 4-3/4	4.4 9.6
716ME6242*	150 x 100 165.1mm x 4	165.1 x 114.3 6.500 x 4.500	20.7 300	21.221 4,771	6.4 0.25	1° 50'	32.0 0.38	207.8 8.18	274.6 10.81	52.3 2.06	M20 x 121	5.8 12.8
716AE6342*	150 x 100 6 x 4	168.3 x 114.3 6.625 x 4.500	20.7 300	21.213 4,769	6.4 0.25	1° 44'	30.0 0.36	212.9 8.38	276.4 10.88	52.3 2.06	M20 x 121 3/4 x 4-3/4	5.8 12.8
716AE6353*	150 x 125 6 x 5	168.3 x 141.3 6.625 x 5.563	20.7 300	32.417 7,288	6.4 0.25	1° 44'	30.0 0.36	212.9 8.38	276.4 10.88	52.3 2.06	M20 x 121 3/4 x 4-3/4	6.3 13.8
716AE8063*	200 x 150 8 x 6	219.1 x 168.3 8.625 x 6.625	20.7 300	45.975 10,336	6.4 0.25	1° 15'	21.0 0.26	271.5 10.69	349.3 13.75	57.2 2.25	M22 x 165 7/8 x 6-1/2	9.1 20.0

* = 1 for red paint (RAL 3000) 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 Tyco Technical Services 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 other alternative sizes, contact Tyco Technical Services

See page 13 for general notes, and see pages 76 - 82 for gasket information.

Figure 702 Outlet Couplings

(Page 1 of 2)

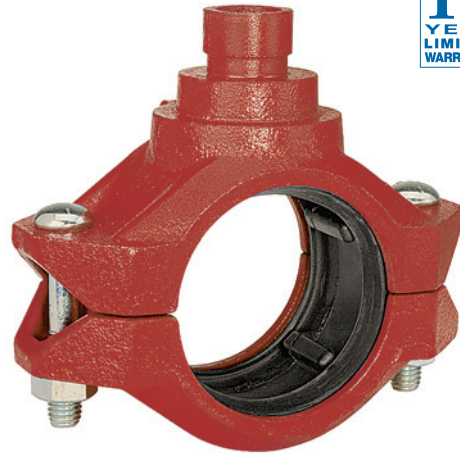
Tech Data Sheet: G220

10
YEAR
LIMITED
WARRANTY

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

Additional features:

- Available in sizes 40mm - 150mm (1½" to 6")
- Rated for pressures up to 34.5 Bar (500 psi)
- Suitable for vacuum service up to 254mm HG (10" HG)



Grooved
Couplings

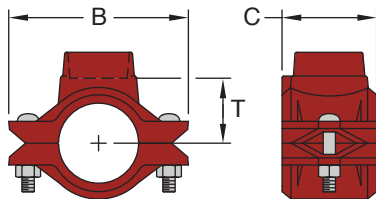


Figure 702
Outlet Coupling with Female BSP Outlet

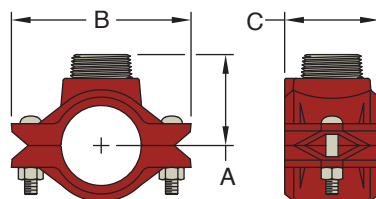


Figure 702
Outlet Coupling with Male BSP Outlet

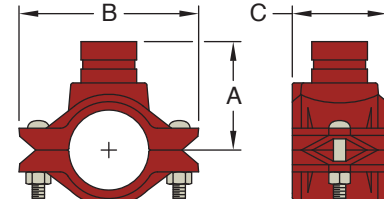


Figure 702
Outlet Coupling with Grooved Outlet

Run Pipe Size		Branch Size				End Gap Range mm In.	Max. Run End Load kN Lbs.	Dimensions mm In.				Bolt Size In.	Approx. Weight kg Lbs.
Nominal mm In.	O.D. mm In.	Female  Thread mm In.	Male  Thread mm In.	Grooved				A	B	C	T		
				Nominal mm In.	O.D. mm In.								
40 1-1/2	48.3 1.900	21.3	—	—	—	20-22	6.3 1418	—	114.3	70.0	52.0	3/8 X 2-1/8 •	1.2
		1/2	—	—	—	0.81-0.88		—	4.50	2.75	2.06		2.6
		26.7	—	—	—	20-22		—	114.3	70.0	52.0		1.2
		3/4	—	—	—	0.81-0.88		—	4.50	2.75	2.06		2.6
		33.7	—	—	—	20-22		—	114.3	70.0	49.0		1.3
		1	—	—	—	0.81-0.88		4.50	2.75	1.94		2.9	
50 2	60.3 2.375	21.3	—	—	—	20-22	9.9 2215	—	127.0	70.0	59.0	3/8 X 2-1/8 •	1.4
		1/2	—	—	—	0.81-0.88		—	5.00	2.75	2.32		3.1
		26.7	—	—	—	20-22		—	127.0	70.0	59.0		1.4
		3/4	—	—	—	0.81-0.88		—	5.00	2.75	2.32		3.1
		33.7	33.7	25	33.7	20-22		89.0	127.0	70.0	56.0		1.5
		1	1	1	1.315	0.81-0.88		3.50	5.00	2.75	2.20		3.3
65 2-1/2	73.0 2.875	21.3	—	—	—	32-38	14.4 3246	—	161.0	83.0	56.0	1/2 X 2-3/8 •	2.2
		1/2	—	—	—	1.25-1.50		—	6.33	3.25	2.20		4.8
		26.7	—	—	—	32-38		—	161.0	83.0	65.0		2.1
		3/4	—	—	—	1.25-1.50		—	6.33	3.25	2.56		4.6
		33.7	—	—	—	32-38		—	161.0	83.0	62.0		4.4
		1	—	—	—	1.25-1.50		—	6.33	3.25	2.44		2.2
		42.4	42.4	32	42.4	32-38		94.0	161.0	83.0	—		2.3
		1-1/4	1-1/4	1-1/4	1.660	1.25-1.50		3.70	6.33	3.25	—		5.1
		48.3	48.3	40	48.3	32-38		94.0	161.0	83.0	—		5.9
		1-1/2	1-1/2	1-1/2	1.900	1.25-1.50		3.70	6.33	3.25	—		2.4

Refer to back cover for country-specific contact information.

Figure 702 Outlet Couplings

(Page 2 of 2)

Tech Data Sheet: G220



Grooved
Couplings

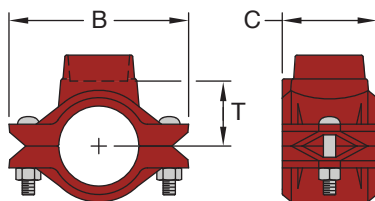
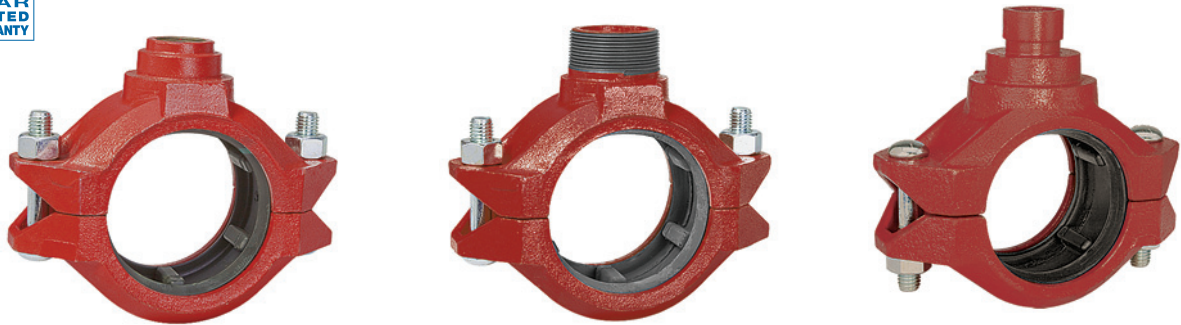


Figure 702
Outlet Coupling with Female BSP Outlet

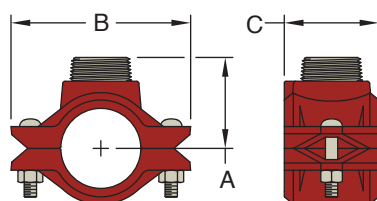


Figure 702
Outlet Coupling with Male BSP Outlet

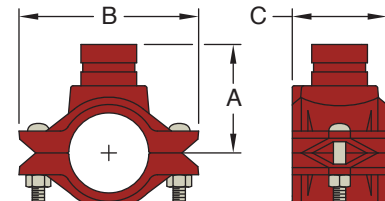


Figure 702
Outlet Coupling with Grooved Outlet

Run Pipe Size		Branch Size				End Gap Range mm In.	Max. Run End Load kN Lbs.	Dimensions mm In.				Bolt Size In.	Approx. Weight kg Lbs.
Nominal mm In.	O.D. mm In.	Female Thread mm In.	Male Thread mm In.	Grooved				A	B	C	T		
				Nominal mm In.	O.D. mm In.								
80 3	88.9 3.500	26.7	—	—	—	32-38	21.4 4811	—	175.0	83.0	72.0	1/2 x 3•	2.7
		3/4	—	—	—	1.25-1.50		—	6.87	3.25	2.83		5.9
		33.7	33.4	25	33.7	32-38		102.0	175.0	83.0	70.0		2.8
		1	1	1	1.315	1.25-1.50		4.00	6.87	3.25	2.75		6.2
		42.4	—	—	—	◆		◆	◆	◆	◆		◆
		1-1/4	—	—	—	◆		◆	◆	◆	◆		◆
100 4	114.3 4.500	48.3	48.3	40	48.3	32-38	35.4 7952	102.0	175.0	83.0	—	5/8 x 3-1/2•	2.9
		1-1/2	1-1/2	1-1/2	1.900	1.25-1.50		4.00	6.87	3.25	—		6.4
		26.7	—	◆	◆	41-46		◆	211.0	93.0	94.0		4.2
		3/4	—	◆	◆	1.63-1.81		◆	8.31	3.66	3.70		9.2
		33.7	—	◆	◆	41-46		◆	211.0	93.0	91.0		4.3
		1	—	◆	◆	1.63-1.81		◆	8.31	3.66	3.58		9.5
150 6	168.3 6.625	48.3	48.3	40	48.3	41-46	76.7 17,235	124.0	211.0	93.0	84.0	5/8 x 3-1/2•	4.3
		1-1/2	1-1/2	1-1/2	1.900	1.63-1.81		4.88	8.31	3.66	3.31		9.5
		60.3	60.3	50	60.3	41-46		124.0	211.0	93.0	—		4.5
		2	2	2	2.375	1.63-1.81		4.88	8.31	3.66	—		9.9
		33.7	—	25	33.7	41-46		—	276.0	94.0	121.0		6.0
		1	—	1	1.315	1.63-1.81		—	10.86	3.70	4.76		13.2
150 6	168.3 6.625	—	—	32	42.4	◆	76.7 17,235	◆	◆	◆	◆	5/8 x 3-1/2•	◆
		—	—	1-1/4	1.660	◆		◆	◆	◆	◆		◆
		48.3	48.3	40	48.3	41-46		154.0	276.0	94.0	121.0		6.2
		1-1/2	1-1/2	1-1/2	1.900	1.63-1.81		6.06	10.86	3.70	4.76		13.6
		60.3	60.3	50	60.3	41-46		154.0	276.0	94.0	—		6.5
		2	2	2	2.375	1.63-1.81		6.06	10.86	3.70	—		14.3

Contact local sales rep or customer service regarding part numbers and availability

■ Threads are BSP. Some size outlets are available with NPT threads. Contact Tyco Technical Services for details.

• Only available in ANSI bolt sizes.

♦ Contact Tyco Technical Services for dimension details.

For information on other alternative sizes, contact Tyco Technical Services

See page 13 for general notes, and see pages 76 - 82 for gasket information.



G-FIRE FLANGE ADAPTERS

Flange Adapters Pictorial Table of Contents

	Figure 71 Flange Adaptors PN10/PN16 Page – 23
	Figure 71 Flange Adaptors ANSI Class 125/150 Page – 24
	Flange Adapter Washer Pages – 25 - 26
	Figure 343 & 344 Flange Adaptors (PN10/PN16 BS 4504) Page – 26

Flange
Adapters



For detailed Listing and Approval
information see pages 101 - 108 or
contact Tyco Fire Protection Products.

MATERIAL SPECIFICATIONS

Ductile Iron Housing Specifications

- ASTM A 536 – Standard specification for ductile iron castings, Grade 65-45-12
- Tensile strength, minimum 4,481 bar (65,000 psi)
- Yield strength, minimum 3,102 bar (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 7,584 bar (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)
- Hot-Dipped, Zinc Galvanised (Optional)

Gasket Specifications

- **Grade "A" EPDM** pre-lubricated gaskets have a violet stripped colour code identification and conform to ASTM D 2000 for service temperatures from -34°C to 66°C (-30°F to 150°F). They are not recommended for hot water systems.
- **Grade "E" EPDM** gaskets have a green stripped colour code 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.

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 depressurizing and draining the system. Material should be verified to be compatible for the specific application.

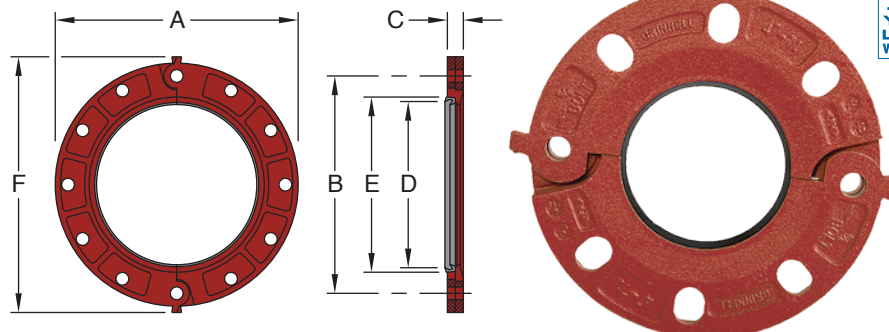
Figure 71 Flange Adaptors (PN10/PN16)

(Page 1 of 4)

Tech Data Sheet: TFP1880

10
YEAR
LIMITED
WARRANTY


For detailed Listing and Approval
information see pages 101 - 108 or
contact Tyco Fire Protection Products.


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 mm In.	O.D. mm In.			A	B	C	*D	*E	F	Size Dia. x Lg mm In.	Qty.	Bolt Torque Range Nm	
71DAE0060*	50	60.3	PN10 / PN16	5889	162.1	125.0	19.1	60.5	86.6	184.2	M16 x 76	4	149-190	1.8
	2	2.375		1,324	6.38	4.92	0.75	2.38	3.41	7.25				4.0
71DAE0073*	65	73.0	PN10 / PN16	8665	177.8	139.7	22.4	73.6	99.3	130.3	M16 x 76	4	149-190	2.4
	2-1/2	2.875		1,948	7.00	5.50	0.88	2.88	3.91	5.13				5.4
71DAE0076*	65	76.1	PN10 / PN16	8665	184.9	145.0	22.4	76.1	102.4	205.5	M16 x 76	4	149-190	2.6
	76.1mm	3.000		1,948	7.28	5.71	0.88	3.00	4.03	8.09				5.7
71DAE0089*	80	88.9	PN10 / PN16	12,838	200.2	160.0	23.9	88.9	115.1	222.5	M16 x 76	8	149-190	2.5
	3	3.500		2,886	7.88	6.30	0.94	3.50	4.53	8.76				5.6
71DAE0114*	100	114.3	PN10 / PN16	21,222	219.9	180.1	23.9	114.3	140.5	239.5	M16 x 76	8	149-190	3.6
	4	4.500		4,771	8.66	7.09	0.94	4.50	5.53	9.43				8.0
71DME0139*	125	139.7	PN10 / PN16	32,436	249.9	210.1	25.4	139.7	165.9	271.5	M16 x 89	8	149-190	4.2
	139.7mm	5.500		7,292	9.84	8.27	1.00	5.50	6.53	10.69				9.2
71DAE0165*	150	165.1	PN10 / PN16	44,282	285.0	240.3	24.5	165.1	194.6	307.3	M20 x 89	8	298-339	4.8
	165.1mm	6.500		9,955	11.22	9.46	1.00	6.50	7.66	12.10				10.5
71DAE0168*	150	168.3	PN10 / PN16	45,999	279.4	241.1	25.4	168.1	197.6	301.8	M20 x 89	8	298-339	4.8
	6	6.625		10,341	11.00	9.49	1.00	6.62	7.78	11.88				10.6
71DME8219*	200 8**	219.1 8.625	PN10	77,968	336.8	292.1	28.6	218.9	254.5	358.6	M20 x 89	8	298-339	6.9
				17,528	13.26	11.50	1.125	8.62	9.94	14.12				15.4
71DME0219*	200 8**	219.1 8.625	PN16	77,968	339.8	295.1	28.6	218.9	254.5	362.7	M20 x 89	12	298-339	7.5
				17,528	13.38	11.62	1.125	8.62	9.94	14.28				16.6
71DAE8273*	250 10**	273.0 10.750	PN10	121,121	395.2	350.0	30.2	273.1	312.4	419.1	M20 x 102	12	298-339	9.6
				27,229	15.56	13.78	1.188	10.75	12.31	16.50				21.2
71DAE0273*	250 10**	273.0 10.750	PN16	170,380	406.4	355.1	30.2	273.1	312.7	428.8	M22 x 102	12	434-542	10.2
				38,303	16.00	13.98	1.188	10.75	12.31	16.88				22.5
71DME8324*	300 12**	323.9 12.750	PN10	170,380	445.0	399.8	31.8	323.9	363.5	470.4	M22 x 102	12	434-542	11.2
				38,303	17.52	15.74	1.25	12.75	14.31	18.52				24.8
71DME0324*	300 12**	323.9 12.750	PN16	170,380	460.2	410.0	31.8	323.9	363.5	486.2	M22 x 102	12	434-542	13.1
				38,303	18.12	16.14	1.25	12.75	14.31	19.14				28.9

* = 1 for red paint (RAL 3000) 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.

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

† Maximum end load is total from all loads based on standard weight steel pipe. Pressure ratings and end loads may differ on other pipe materials and/or wall thickness. Contact Tyco Technical Services 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 other alternative sizes, contact Tyco Technical Services

See page 22 for general notes, and see pages 76 - 82 for gasket information.

See page 25 for flange washer Adaptor and page 110 flange drilling specifications

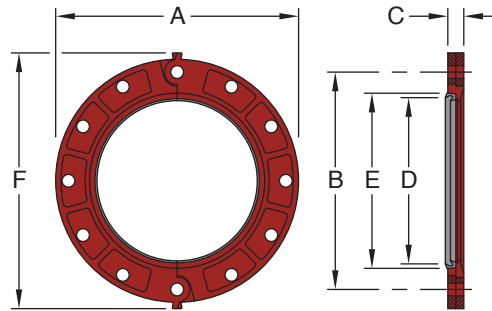
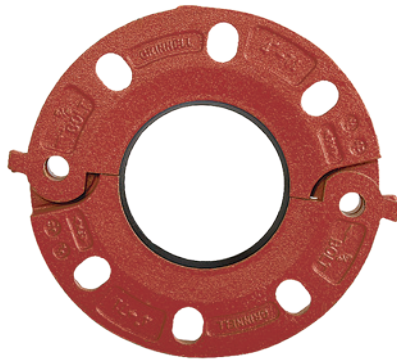
Figure 71 Flange Adapters (ANSI Class 125/150)

Tech Data Sheet: TFP1880



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 ANSI Class 125 and 150.

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



For detailed Listing and Approval information see pages 101 - 108 or contact Tyco Fire Protection Products.

Flange
Adapters

Part Number	Pipe Size		Max † Pressure Bar psi	Max End Load † N Lbs.	Dimensions - mm Inches						Recommended Flange Mating Bolts ‡			Approx. Wt. Kg. Lbs.
	Nominal mm Inches	O.D. mm Inches			A	B	C	*D	*E	F	Size Dia. x Lg mm Inches	Qty.	Bolt Torque Range Nm Lbs.-ft	
71AAE0060*	50	60.3	20.7	5889	162.1	120.7	19.1	60.5	86.6	184.2	—	4	149-190	1.9
	2	2.375	300	1,324	6.38	4.75	0.75	2.38	3.41	7.25	5/8 x 3	4	110-140	4.1
71AAE0073*	65	73.0	20.7	8665	178.0	140.0	22.0	73.0	99.0	200.0	—	4	149-190	2.4
	2½	2.875	300	1,948	7.00	5.50	0.88	2.88	3.91	7.88	5/8 x 3	4	110-140	5.4
71AAE0076*	65	76.1	20.7	9435	184.9	145.0	22.0	76.1	102.4	205.2	—	4	149-190	2.6
	76,1mm	3.000	300	2,121	7.28	5.71	0.88	3.00	4.03	8.08	5/8 x 3	4	110-140	5.8
71AAE0089*	80	88.9	20.7	12.838	190.5	152.4	23.9	88.9	115.1	251.0	—	4	149-190	2.7
	3	3.500	300	2,886	7.50	6.00	0.94	3.50	4.53	9.88	5/8 x 3	4	110-140	6.0
71AAE0114*	100	114.3	20.7	21.222	228.6	190.5	23.9	114.3	140.5	251.5	—	8	149-190	3.7
	4	4.500	300	4,771	9.00	7.50	0.94	4.50	5.53	9.90	5/8 x 3	8	110-140	8.1
71AAE0139*	125	139.7	20.7	31.702	249.9	210.1	25.4	139.7	169.2	270.3	—	8	298-339	4.2
	139,7mm	5.500	300	7,127	9.84	8.27	1.00	5.50	6.66	10.64	¾ x 3½	8	220-250	9.2
71AAE0141*	125	141.3	20.7	32.436	254.0	215.9	25.4	141.2	170.7	289.1	—	8	298-339	4.2
	5	5.563	300	7,292	10.00	8.50	1.00	5.56	6.72	11.38	¾ x 3½	8	220-250	9.2
71AAE0165*	150	165.1	20.7	44.282	285.0	240.6	25.4	165.1	194.6	307.3	—	8	298-339	5.0
	165,1mm	6.500	300	9,955	11.22	9.45	1.00	6.50	7.66	12.10	¾ x 3½	8	220-250	11.0
71AAE0168*	150	168.3	20.7	45.999	279.4	241.3	25.4	168.1	197.6	301.8	—	8	298-339	4.8
	6	6.625	300	10,341	11.00	9.50	1.00	6.62	7.78	11.88	¾ x 3½	8	220-250	10.5
71AAE0219*	200	219.1	20.7	77.968	342.9	298.5	28.7	218.9	252.5	365.3	—	8	298-339	7.3
	8	8.625	300	17,528	13.50	11.75	1.13	8.62	9.94	14.38	¾ x 3½	8	220-250	16.2
71AAE0273*	250	273.0	20.7	121.121	406.4	362.0	30.2	273.1	312.7	428.8	—	12	434-542	9.4
	10	10.750	300	27,229	16.00	14.25	1.19	10.75	12.31	16.88	7/8 x 4	12	320-400	20.7
71AAE0324*	300	323.9	20.7	170.380	482.6	431.8	31.8	323.9	363.5	508.0	—	12	434-542	14.4
	12	12.750	300	38,303	19.00	17.00	1.25	12.75	14.31	20.00	7/8 x 4	12	320-400	31.8

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

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

• Metric segment bolt are available upon request.

† Maximum Pressure and End Load are total from all loads based on standard weight steel pipe. Pressure ratings and end loads may differ on other pipe materials and/or wall thickness. Contact Tyco Technical Services 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 other alternative sizes, contact Tyco Technical Services

See page 22 for general notes, and see pages 76 - 82 for gasket information.

See page 25 for Flange Adapter Washers and page 110 Flange Drilling Specifications.

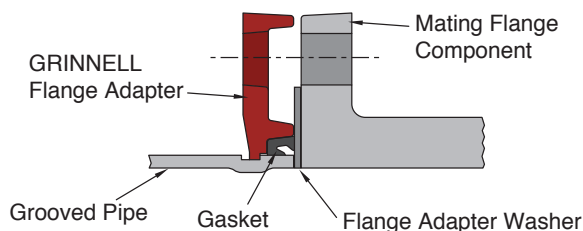
Flange Adapter Washers



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

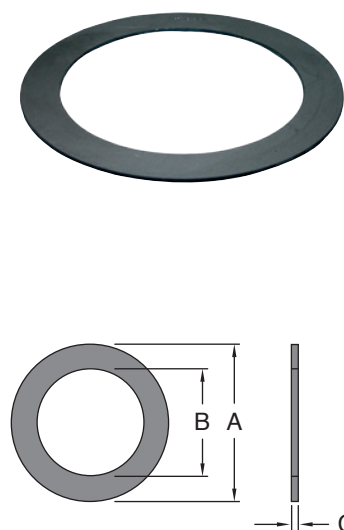
Contact Tyco Technical Services for additional information.



Flange
Adapters

Part Number		Pipe Size		Dimensions - mm <i>Inches</i>		
PN10/PN16	ANSI	Nominal mm <i>Inches</i>	O.D. mm <i>Inches</i>	A	B	C
INSDIN060M	INS060M	50 <i>2</i>	60.3 <i>2.375</i>	100.1 <i>3.94</i>	57.2 <i>2.25</i>	3.0 <i>0.12</i>
INSDIN073M	INS073M	65 <i>2½</i>	73.0 <i>2.875</i>	119.1 <i>4.69</i>	69.9 <i>2.75</i>	3.0 <i>0.12</i>
INSDIN076M	INS076M	65 <i>76,1mm</i>	76.1 <i>3.000</i>	124.2 <i>4.89</i>	73.2 <i>2.88</i>	3.0 <i>0.12</i>
INSDIN089M	INS089M	80 <i>3</i>	88.9 <i>3.500</i>	131.8 <i>5.19</i>	85.9 <i>3.38</i>	3.0 <i>0.12</i>
INSDIN114M	INS114M	100 <i>4</i>	114.3 <i>4.500</i>	169.9 <i>6.69</i>	111.3 <i>4.38</i>	3.0 <i>0.12</i>
INSDIN139M	INS139M	125 <i>139,7mm</i>	139.7 <i>5.500</i>	189.2 <i>7.45</i>	135.1 <i>5.32</i>	3.0 <i>0.12</i>
INSDIN141M	INS141M	125 <i>5</i>	141.3 <i>5.563</i>	192.0 <i>7.56</i>	136.7 <i>5.38</i>	3.0 <i>0.12</i>
INSDIN165M	INS165M	150 <i>165,1mm</i>	165.1 <i>6.500</i>	215.1 <i>8.47</i>	160.5 <i>6.32</i>	3.0 <i>0.12</i>
INSDIN168M	INS168M	150 <i>6</i>	168.3 <i>6.625</i>	217.4 <i>8.56</i>	163.6 <i>6.44</i>	3.0 <i>0.12</i>
INSDIN219M	INS219M	200 <i>8</i>	219.1 <i>8.625</i>	274.6 <i>10.81</i>	214.4 <i>8.44</i>	3.0 <i>0.12</i>
INSDIN273M	INS273M	250 <i>10</i>	273.0 <i>10.750</i>	335.0 <i>13.19</i>	266.7 <i>10.50</i>	3.0 <i>0.12</i>
INSDIN324M	INS324M	300 <i>12</i>	323.9 <i>12.750</i>	404.9 <i>15.94</i>	317.5 <i>12.50</i>	3.0 <i>0.12</i>

For information on other alternative sizes, contact Tyco Technical Services
Plate material: stainless steel ASTM A666 Type 304-2B
See Flange Drilling Specifications on page 110.



Flange Adapter Technical Data

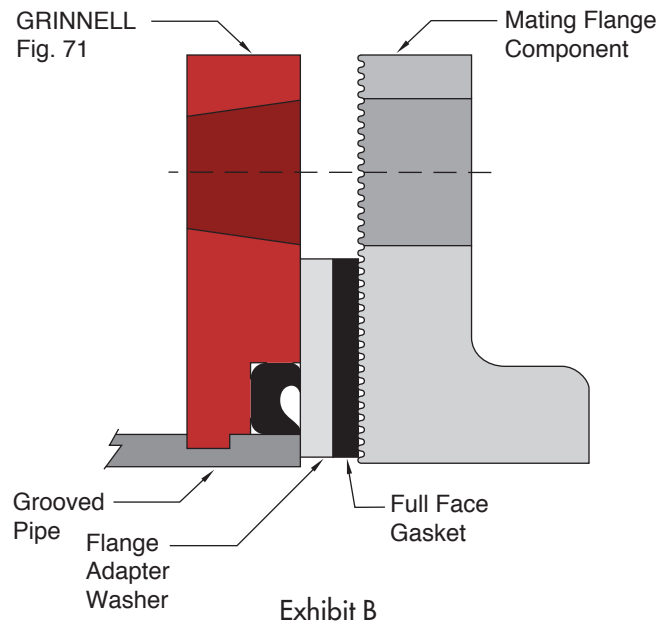
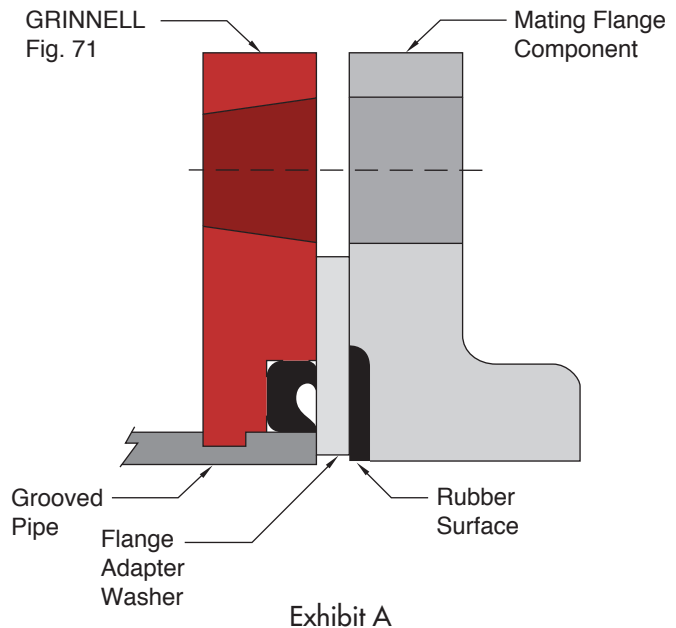
Fig 71 GRINNELL Flange Notes:

- 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 Tyco FPP 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 Tyco FPP 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.

Flange
Adapters

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

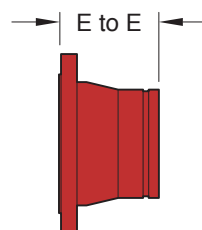
1. Rubber Surfaces
(see exhibit A)
2. Adapting AwwA Cast Flanges
3. Rubber Faced Wafer Valves
4. Serrated Flange Surfaces
(see exhibit B)



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)



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	6.0 13.23
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	7.2 15.87
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

* = 1 for red paint (RAL 3000) finish, 2 for hot dipped galvanised finish
For information on other alternative sizes, contact Tyco Technical Services
See specifications on page 22 and page 110 Flange Drilling Specifications.

Flange
Adapters



G-FIRE GROOVED FITTINGS

Grooved Fittings Pictorial Table of Contents

Grooved
Fittings

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	Figure 501 45° Cast Elbows Page – 32		Figures 211 & 311 11¼° Elbows Page – 36
	Figure 519 Tees Page – 33		Figures 221 & 321 Reducing Tees Pages – 37 - 39
	Figures 260 End Caps Page – 33		Figures 361, 362, 363, 364, & 365 Tapped End Caps Pages – 40 - 41
	Figure 510S Short Pattern 90° Cast Elbows Page – 34		Figures 250 & 350 Concentric Reducers Pages – 42 - 43
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			Figure 222 Hydrant Tee Page – 44

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 depressurizing and draining the system. Material should be verified to be compatible for the specific application.

Fittings Specifications

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For detailed Listing and Approval information see pages 101 - 108 or contact Tyco Fire Protection Products.

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

G-FIRE 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 4,481 bar (65,000 psi)
- Yield Strength, minimum 3,102 bar (45,000 psi)
- Elongation in 50mm (2"), minimum 12%
- ASTM A 153 - Standard specification for hot-dip galvanising

Fabricated Steel Fitting Specifications

- Carbon Steel: According to ASTM A 53, Grade B
- Tensile Strength, minimum 4,136 bar (60,000 psi)
- Yield Strength, minimum 2,413 bar (35,000 psi)
- Sizes 32mm - 250mm (1 1/4" - 10") Schedule 40
- Sizes 300mm (12") STD (.375)

Coatings

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

Threads

- BSP
- NPT

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

For reducing tee branches, use value corresponding to the branch size.

For example, for a 200mm x 200mm 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.

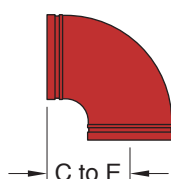
Expressed as Equivalent Straight Pipe.

Grooved
Fittings

Figure 510 90° Cast Elbows

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Grooved
Fittings

Part Number	Pipe Size		C to E mm In.	Approx. Weight kg Lbs.
	Nominal mm In.	O.D. mm In.		
510A00034*	25	33.4	57.0	0.3
	1	1.315	2.24	0.7
510A00042*	32	42.4	69.9	0.5
	1-1/4	1.660	2.75	1.0
510A00048*	40	48.3	69.9	0.6
	1-1/2	1.900	2.75	1.3
510A00060*	50	60.3	82.6	0.8
	2	2.375	3.25	1.8
510A00073*	65	73.0	95.3	1.4
	2-1/2	2.875	3.75	3.1
510A00076*	65	76.1	95.3	1.5
	76.1mm	3.000	3.75	3.2
510A00089*	80	88.9	108.0	2.2
	3	3.500	4.25	4.8
510A00114*	100	114.3	127.0	3.4
	4	4.500	5.00	7.5
510A00139*	125	139.7	139.7	5.1
	139.7mm	5.500	5.50	11.3
510A00141*	125	141.3	139.7	5.3
	5	5.563	5.50	11.6
510A00165*	150	165.1	165.1	7.7
	165.1mm	6.500	6.50	16.9
510A00168*	150	168.3	165.1	7.5
	6	6.625	6.50	16.6
510A00219*	200	219.1	196.9	13.4
	8	8.625	7.75	29.6
510A00273*	250	273.0	228.6	22.0
	10	10.750	9.00	48.5
510A00324*	300	323.9	254.0	30.1
	12	12.750	10.00	66.4

* = 1 for red paint (RAL 3000) finish, 2 for hot dipped galvanised finish, and 5 for white paint (RAL 9010) finish

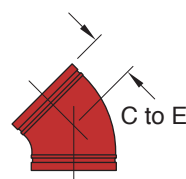
For information on other alternative sizes, contact Tyco Technical Services

See fitting specifications on page 31.

Figure 501 45° Cast Elbows

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Part Number	Pipe Size		C to E mm In.	Approx. Weight kg Lbs.
	Nominal mm In.	O.D. mm In.		
501A00034*	25	33.4	44.5	0.3
	1	1.315	1.75	0.6
501A00042*	32	42.4	44.5	0.4
	1-1/4	1.660	1.75	0.9
501A00048*	40	48.3	44.5	0.4
	1-1/2	1.900	1.75	0.9
501A00060*	50	60.3	50.8	0.6
	2	2.375	2.00	1.3
501A00073*	65	73.0	57.2	1.0
	2-1/2	2.875	2.25	2.1
501A00076*	65	76.1	57.2	1.0
	76.1mm	3.000	2.25	2.2
501A00089*	80	88.9	63.5	1.6
	3	3.500	2.50	3.5
501A00114*	100	114.3	76.2	2.5
	4	4.500	3.00	5.5
501A00139*	125	139.7	82.6	3.5
	139.7mm	5.500	3.25	7.7
501A00141*	125	141.3	82.6	3.7
	5	5.563	3.25	8.1
501A00165*	150	165.1	88.9	5.0
	165.1mm	6.500	3.50	11.0
501A00168*	150	168.3	88.9	5.1
	6	6.625	3.50	11.2
501A00219*	200	219.1	108.0	8.6
	8	8.625	4.25	19.0
501A00273*	250	273.0	120.7	12.7
	10	10.750	4.75	28.0
501A00324*	300	323.9	133.4	22.0
	12	12.750	5.25	48.0

* = 1 for red paint (RAL 3000) finish, 2 for hot dipped galvanised finish, and 5 for white paint (RAL 9010) finish

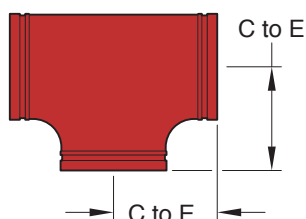
For information on other alternative sizes, contact Tyco Technical Services

See fitting specifications on page 31.

Figure 519 Tees

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Part Number	Pipe Size		C to E mm In.	Approx Weight Kg Lbs.
	Nominal mm In.	O.D. mm In.		
519A00034*	25	33.4	57.0	0.5
	1	1.315	2.24	1.1
519A00042*	32	42.4	69.9	0.8
	1-1/4	1.660	2.75	1.7
519A00048*	40	48.3	69.9	0.9
	1-1/2	1.900	2.75	1.9
519A00060*	50	60.3	82.6	1.3
	2	2.375	3.25	2.8
519A00073*	65	73.0	95.3	2.0
	2-1/2	2.875	3.75	4.5
519A00076*	65	76.1	95.3	2.0
	76.1mm	3.000	3.75	4.5
519A00089*	80	88.9	108.0	2.7
	3	3.500	4.25	5.9
519A00114*	100	114.3	127.0	4.3
	4	4.500	5.00	9.5
519A00139*	125	139.7	139.7	6.3
	139.7mm	5.500	5.50	13.9
519A00141*	125	141.3	139.7	6.3
	5	5.563	5.50	13.9
519A00165*	150	165.1	165.1	8.9
	165.1mm	6.500	6.50	19.7
519A00168*	150	168.3	165.1	9.3
	6	6.625	6.50	20.4
519A00219*	200	219.1	196.9	14.1
	8	8.625	7.75	31.0
519A00273*	250	273.0	228.6	25.9
	10	10.750	9.00	57.0
519A00324*	300	323.9	254.0	49.9
	12	12.750	10.00	110.0

* = 1 for red paint (RAL 3000) finish, 2 for hot dipped galvanised finish, and 5 for white paint (RAL 9010) finish

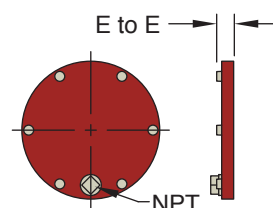
For information on other alternative sizes, contact Tyco Technical Services

See fitting specifications on page 31.

Figure 260 End Caps

Tech Data Sheet: TFP1815

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Part Number	Pipe Size		E to E mm In.	Approx Weight Kg Lbs.
	Nominal mm In.	O.D. mm In.		
260M00034*	25	33.7	21.1	0.1
	1	1.315	0.83	0.2
260M00042*	32	42.4	21.1	0.1
	1-1/4	1.660	0.83	0.3
260M00048*	40	48.3	21.1	0.2
	1-1/2	1.900	0.83	0.4
260M00060*	50	60.3	23.4	0.3
	2	2.375	0.92	0.7
260M00073*	65	73.0	23.4	0.5
	2-1/2	2.875	0.92	1.0
260M00076*	65	76.1	21.8	0.6
	76.1mm	3.000	0.86	1.3
260M00089*	80	88.9	23.4	0.6
	3	3.500	0.92	1.4
260M00114*	100	114.3	25.4	1.2
	4	4.500	1.00	2.6
260M00139*	125	139.7	23.4	2.1
	139.7mm	5.500	0.92	4.7
260M00141*	125	141.3	25.4	2.3
	5	5.563	1.00	5.0
260M00159*	125	159.0	25.0	3.8
	159.0mm	6.260	0.98	8.4
260M00165*	150	165.1	23.4	2.9
	165.1mm	6.500	0.92	6.4
260M00168*	150	168.3	25.4	2.8
	6	6.625	1.00	6.2
260M00219*	200	219.1	27.0	3.2
	8	8.625	1.06	7.1
260M00273*	250	273.0	25.8	11.1
	10	10.750	1.02	24.5
260M00324*	300	323.9	25.8	14.1
	12	12.750	1.02	31.0

* = 1 for red paint (RAL 3000) finish, 2 for hot dipped galvanised finish, and 5 for white paint (RAL 9010) finish

For information on other alternative sizes, contact Tyco Technical Services

See fitting specifications on page 31.

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Fittings

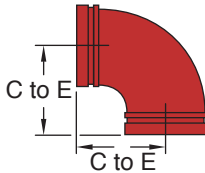
Figure 510S Short Pattern 90° Cast Elbows

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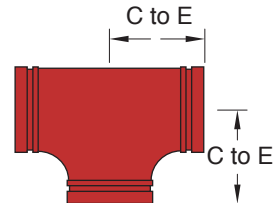
Part Number	Pipe Size		C to E mm In.	Approx. Weight kg Lbs.
	Nominal mm In.	O.D. mm In.		
510SA0060*	50	60.3	69.9	0.7
	2	2.375	2.75	1.5
510SA0073*	65	73.0	76.2	1.0
	2½	2.875	3.00	2.1
510SA0076*	65	76.1	76.2	1.0
	76.1mm	3.000	3.00	2.3
510SA0089*	80	88.9	85.9	1.3
	3	3.500	3.38	3.0
510SA0114*	100	114.3	101.6	2.3
	4	4.500	4.00	5.0
510SA0139*	125	139.7	124.0	3.9
	139.7mm	5.500	4.88	8.6
510SA0165*	150	165.1	139.7	5.0
	165.1mm	6.500	5.50	11.0
510SA0168*	150	168.3	139.7	5.1
	6	6.625	5.50	11.2
510SA0219*	200	219.1	174.8	10.6
	8	8.625	6.88	23.4

* = 1 for red paint (RAL 3000) finish, 2 for hot dipped galvanised finish, and 5 for white paint (RAL 9010) finish
For information on other alternative sizes, contact Tyco Technical Services
See fitting specifications on page 31.

Figure 519S Short Pattern Tees

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Part Number	Pipe Size		C to E mm In.	Approx Weight Kg Lbs.
	Nominal mm In.	O.D. mm In.		
519SA0060*	50	60.3	69.9	1.0
	2	2.375	2.75	2.1
519SA0073*	65	73.0	76.2	1.4
	2½	2.875	3.00	3.1
519SA0076*	65	76.1	76.2	1.4
	76.1mm	3.000	3.00	3.1
519SA0089*	80	88.9	85.9	1.9
	3	3.500	3.38	4.1
519SA0114*	100	114.3	101.6	3.0
	4	4.500	4.00	6.7
519SA0139*	125	139.7	124.0	5.0
	139.7mm	5.500	4.88	11.0
519SA0165*	150	165.1	139.7	6.8
	165.1mm	6.500	5.50	14.9
519SA0168*	150	168.3	139.7	6.8
	6	6.625	5.50	15.0
519SA0219*	200	219.1	174.8	11.8
	8	8.625	6.88	26.1

* = 1 for red paint (RAL 3000) finish, 2 for hot dipped galvanised finish, and 5 for white paint (RAL 9010) finish
For information on other alternative sizes, contact Tyco Technical Services
See fitting specifications on page 31.

Figures 212 & 312 22½° Elbows

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Figure 212
22½° Cast Elbow

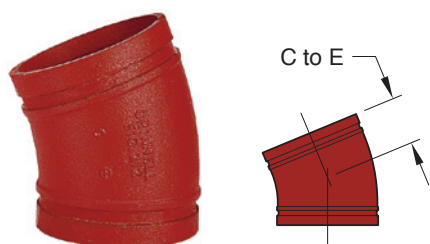
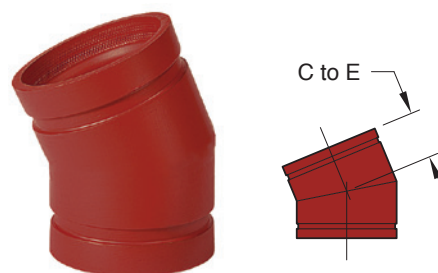


Figure 312
22½° Fabricated Elbow



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Fittings

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 1¼	42.4 1.660	212A00042*	44.5 1.75	0.4 0.8	—	—	—
40 1½	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 2½	73.0 2.875	212A00073*	50.8 2.00	0.9 1.9	—	—	—
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	—	—	—
125 129,7mm	139.7 5.500	212M00139*	73.2 2.88	3.1 6.9	—	—	—
125 5	141.3 5.563	212A00141*	73.2 2.88	3.1 6.9	—	—	—
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	212A00219*	98.6 3.88	7.7 16.9	—	—	—
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

* = 1 for red paint (RAL 3000) finish, 2 for hot dipped galvanised finish
For information on other alternative sizes, contact Tyco Technical Services
See fitting specifications on page 31.

Figures 211 & 311 11¼° Elbows

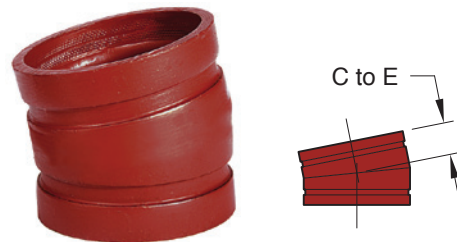
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Figure 211
11¼° Cast Elbow



Figure 311
11¼° Fabricated Elbow



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Fittings

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	42.4	211A00042*	35.1	0.3	-	-	-
1¼	1.660		1.38	0.7		-	-
40	48.3	211A00048*	35.1	0.4	-	-	-
1½	1.900		1.38	0.8		-	-
50	60.3	211A00060*	35.1	0.5	-	-	-
2	2.375		1.38	1.1		-	-
65	73.0	211A00073*	38.1	0.7	-	-	-
2½	2.875		1.50	1.6		-	-
65	76.1	211M00076*	38.1	0.7	-	-	-
76,1mm	3.000		1.50	1.7		-	-
80	88.9	211A00089*	38.1	1.0	-	-	-
3	3.500		1.50	2.2		-	-
100	114.3	211A00114*	44.5	1.5	-	-	-
4	4.500		1.75	3.4		-	-
125	139.7	211M00139*	50.8	2.3	-	-	-
139,7mm	5.500		2.00	5.1		-	-
125	141.3	211A00141*	50.8	2.4	-	-	-
5	5.563		2.00	5.2		-	-
150	165.1	211M00165*	50.8	2.9	-	-	-
165,1mm	6.500		2.00	6.4		-	-
150	168.3	211A00168*	50.8	2.9	-	-	-
	6.625		2.00	6.5		-	-
200	219.1	211A00219*	50.8	4.2	-	-	-
8	8.625		2.00	9.2		-	-
250	273.0	-	-	-	311F00273*	54.1	4.1
10	10.750		-	-		2.13	9.1
300	323.9	-	-	-	311F00324*	57.2	7.6
12	12.750		-	-		2.25	16.7

* = 1 for red paint (RAL 3000) finish, 2 for hot dipped galvanised finish
For information on other alternative sizes, contact Tyco Technical Services
See fitting specifications on page 31.

Figures 221 & 321 Reducing Tees

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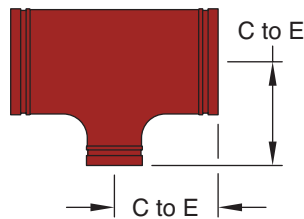


Figure 221 Reducing Tee Cast

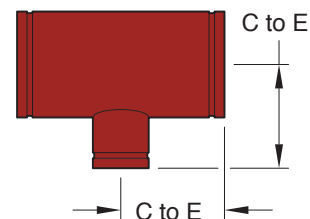


Figure 321 Reducing Tee Fabricated

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.
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 1½	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 2½ x 2½ 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 1½	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 1½	88.9 x 88.9 x 48.3 3.500 x 3.500 x 1.900	221A03015*	108.0 4.25	2.7 5.9	-	- -	- -
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 2½	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 2½	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	-	- -	- -
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	-	- -	- -

Refer to back cover for country-specific contact information.

Figures 221 & 321 Reducing Tees

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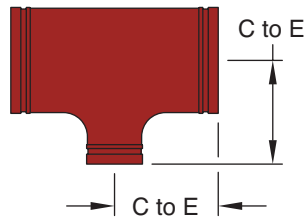


Figure 221 Reducing Tee
Cast

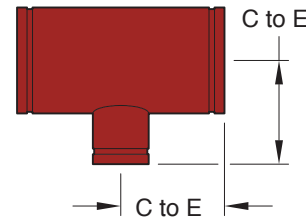


Figure 321 Reducing Tee
Fabricated

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.
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	221A05325*	139.7 5.50	8.2 18.0	-	-	-
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	221A05330*	139.7 5.50	6.4 14.0	-	-	-
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	221A05342*	139.7 5.50	6.3 13.9	-	-	-
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 114.3 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 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	-	-	-

Figures 221 & 321 Reducing Tees

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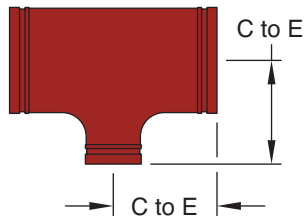


Figure 221 Reducing Tee
Cast

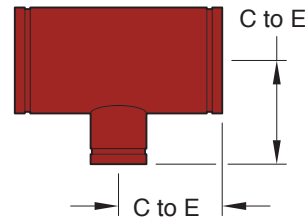


Figure 321 Reducing Tee
Fabricated

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.
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
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	-	228.6 9.00	27.2 66.0
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	-	228.6 9.00	28.1 62.0
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	-	-	-	321F01330*	254.0 10.00	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	-	-	-	321F01342*	254.0 10.00	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	-	-	-	321F01363*	254.0 10.00	36.7 80.9
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	-	-	-	321F01380*	254.0 10.00	34.6 76.3
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	-	-	-	321F01311*	254.0 10.00	35.2 77.6

* = 1 for red paint (RAL 3000) finish, 2 for hot dipped galvanised finish
For information on other alternative sizes, contact Tyco Technical Services
See fitting specifications on page 31.

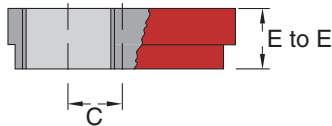
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Fittings

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

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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

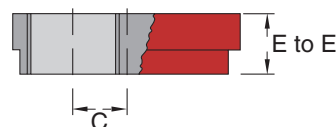
* = 1 for red paint (RAL 3000) finish, 2 for hot dipped galvanised finish
See fitting specifications on page 31.

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
See fitting specifications on page 31.

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

(Page 2 of 2)


 Grooved
Fittings

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
See fitting specifications on page 31.

Figures 250 & 350 Concentric Reducers

(Page 1 of 2)

Tech Data Sheet: TFP1815



Figure 250
Concentric Reducer Cast

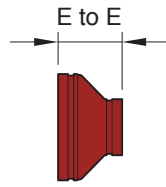
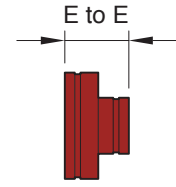


Figure 350
Concentric Reducer Fabricated



Pipe Size		Figure 250 - Cast			Figure 350 - Fabricated		
Nominal mm 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

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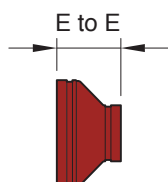


Figure 250
Cast Concentric
Reducer

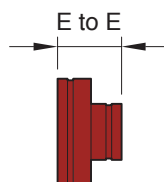


Figure 350
Fabricated Concentric
Reducer

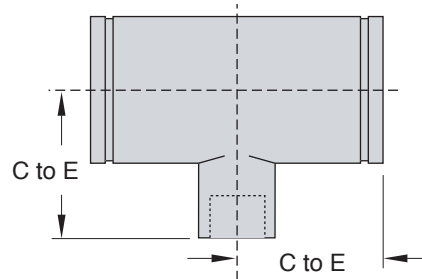
Pipe Size		Figure 250 - Cast			Figure 350 - Fabricated		
Nominal mm In.	O.D. mm In.	Part Number	E to E mm In.	Approx. Weight kg Lbs.	Part Number	E to E mm In.	Approx. Weight kg Lbs.
150 x 125 165.1 x 139.7mm	165.1 x 139.7 6.500 x 5.500	250M06252*	101.6 4.00	2.5 5.6	-	—	—
150 x 65 6 x 76.1mm	168.3 x 76.1 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 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	250A01342*	177.8 7.00	10.3 22.7	-	—	—
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	250A01363*	177.8 7.00	11.0 24.2	-	—	—
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	-	—	—

* = 1 for red paint (RAL 3000) finish, 2 for hot dipped galvanised finish
For information on other alternative sizes, contact Tyco Technical Services
See fitting specifications on page 31.

Grooved
Fittings

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

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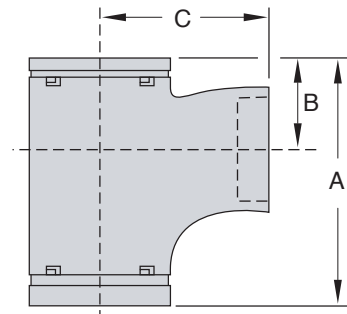
Grooved
Fittings

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 other alternative sizes, contact Tyco Technical Services
See fitting specifications on page 31.

Figure 222 Hydrant Tee

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YEAR
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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 mm In.	Pipe OD mm In.						
22V42262	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 galvanizing only.
See fitting specifications on page 31.



/ G-FIRE OUTLET / FITTINGS

Outlet Fittings Pictorial Table of Contents

Threaded Tees



Figure 522
G-FIRE Sprinkler Outlet
Page – 47



Figure 730
Female Threaded Tees
Pages – 48 - 49

Grooved Tees



Figure 730
Grooved Tees
Pages – 50 - 51

Outlet
Fittings

All GRINNELL Outlet Fittings are provided with a ductile iron lower housing section for increased strength and dependability. This provides stability, rigidity, and inhibits damage to the pipe during tightening, as compared to U-Bolts provided by other manufacturers.

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



For detailed Listing and Approval
information see pages 101 - 108 or
contact Tyco Fire Protection Products.

The Figure 730 Outlet Fitting 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.

All Figure 730 Outlet Fittings 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 4,481 bar (65,000 psi)
- Yield Strength, minimum 3,102 bar (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 7,584 bar (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 to UL requirements. Bolts conform to ASTM A 193M, Class 2, Austenitic Stainless Steel. Nuts conform to ASTM A 194 Type 316, Grade 8M.

Gasket Specifications

- **Grade "E" EPDM** gaskets have a green stripped colour code 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.

Coatings

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

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 depressurizing and draining the system. Material should be verified to be compatible for the specific application.

Figure 522 G-FIRE Threaded Sprinkler Outlet

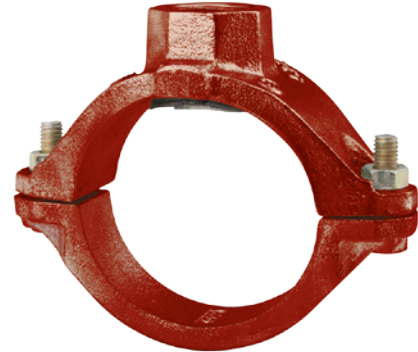
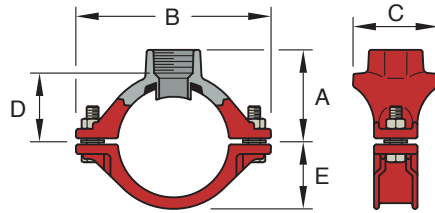
Tech Data Sheet: TFP1865

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The GRINNELL Figure 522 Sprinkler Outlet is an economical alternative to welded pipe outlets on steel pipe. The Figure 522 Sprinkler Outlet may be used with full lengths of pipe and eliminates threading and welding, decreasing waste and installation time. The Figure 522 Sprinkler Outlet may be used in wet pipe, dry pipe, and deluge systems.



For detailed Listing and Approval information see pages 101 - 108 or contact Tyco Fire Protection Products.



Part Number	Nominal Pipe Size		Outlet Size ISO 7/1 or NPT Threads	Max. ± Outlet End Load Lbs. kN	Dimensions - In. mm					Approx. Weight Lbs. kg
	Size In. mm	O.D. In. mm			A	B	C	D	E	
522F1005*	25 1	33.7 1.315	15	0.738	25.4	86.4	49.3	14.3	25.4	0.4
522F1007*			1/2	165.9	1.00	3.40	1.94	0.56	1.00	0.9
522F1010*			20	1.156	41.7	86.4	49.3	29.0	25.4	0.5
522F1010*			3/4	259.9	1.64	3.40	1.94	1.14	1.00	1.1
522F1203*	32 1 1/4	42.4 1.660	25	1.156	46.5	86.4	57.2	32.0	25.4	0.5
522F1203*			1	259.9	1.83	3.40	2.25	1.26	1.00	1.1
522F1203*			10	0.738	31.0	96.0	57.2	23.1	26.9	0.4
522F1203*			3/8	165.9	1.22	3.78	2.25	0.91	1.06	0.9
522F1205*	32 1 1/4	42.4 1.660	15	0.738	31.0	96.0	57.2	19.8	26.9	0.4
522F1205*			1/2	165.9	1.22	3.78	2.25	0.78	1.06	0.9
522F1207*			20	1.156	46.5	96.0	57.2	33.8	26.9	0.5
522F1207*			3/4	259.9	1.83	3.78	2.25	1.33	1.06	1.1
522F1210*	32 1 1/4	42.4 1.660	25	1.81	50.8	96.0	57.2	36.6	26.9	0.6
522F1210*			1	406.9	2.00	3.78	2.25	1.44	1.06	1.3
522F1505*	40 1 1/2	48.3 1.900	15	0.738	33.5	101.6	57.2	22.4	31.8	0.5
522F1505*			1/2	165.9	1.32	4.00	2.25	0.88	1.25	1.1
522F1507*			20	1.156	49.0	101.6	57.2	36.3	31.8	0.5
522F1507*			3/4	259.9	1.93	4.00	2.25	1.43	1.25	1.1
522F1510*	40 1 1/2	48.3 1.900	25	1.81	53.6	101.6	57.2	39.4	31.8	0.6
522F1510*			1	406.9	2.11	4.00	2.25	1.55	1.25	1.3
522F2005*	50 2	60.3 2.375	15	0.738	39.6	113.3	57.2	28.4	38.1	0.6
522F2005*			1/2	165.9	1.56	4.46	2.25	1.12	1.50	1.3
522F2007*			20	1.156	55.1	113.3	57.2	42.4	38.1	0.7
522F2007*			3/4	259.9	2.17	4.46	2.25	1.67	1.50	1.5
522F2010*	50 2	60.3 2.375	25	1.81	60.0	113.3	63.5	45.5	38.1	0.7
522F2010*			1	406.9	2.35	4.46	2.50	1.79	1.50	1.5
522F2605*	65 76,1mm	76.1 3.000	15	0.738	50.8	130.0	57.2	39.6	46.2	0.7
522F2605*			1/2	165.9	2.00	5.12	2.25	1.56	1.82	1.5
522F2607*			20	1.156	63.5	130.0	57.2	50.8	46.2	0.8
522F2607*			3/4	259.9	2.50	5.12	2.25	2.00	1.82	1.8
522F2610*	65 76,1mm	76.1 3.000	25	1.81	69.9	130.0	63.5	55.6	46.2	0.8
522F2610*			1	406.9	2.75	5.12	2.50	2.19	1.82	1.8

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

See page 46 for specifications, and see pages 76 - 82 for gasket information.

Available with BSP or NPT threads. Contact Tyco Technical Services for details.

Each branch connection can be made by drilling a one size hole: 24.0mm; +0.5mm/-0.0mm, with the exception of 50 x 25mm (2" x 1") and 76.1 x 25mm which requires an hole with diameter 34.9 mm; +0.5 / -0.0 mm.

Outlet
Fittings

Figure 730 Mechanical Tees – Threaded

(Page 1 of 2)

Tech Data Sheet: TFP1860

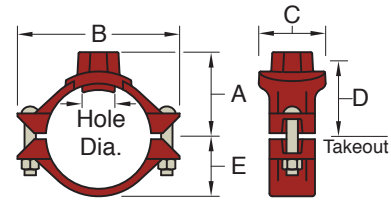


Figure 730 Branch Outlet with
Female BSP Threaded Branch

Outlet
Fittings

Part Number	Nominal Size Run x Branch mm 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
730MT3005*	80 x 15	38.1	41.3	1.2	81.0	155.7	78.0	65.0	56.1	M12 x 89	1.7
	3 x 1/2	1.50	1.63	277.1	3.19	6.13	3.07	2.56	2.21	1/2 x 3	3.7
730MT3007*	80 x 20	38.1	41.3	1.9	81.0	155.7	78.0	65.0	56.1	M12 x 89	1.7
	3 x 3/4	1.50	1.63	433.0	3.19	6.13	3.07	2.56	2.21	1/2 x 3	3.7
730MT3010*	80 x 25	38.1	41.3	3.0	81.0	155.7	78.0	65.0	56.1	M12 x 89	1.7
	3 x 1	1.50	1.63	679.1	3.19	6.13	3.07	2.56	2.21	1/2 x 3	3.7
730MT3012*	80 x 32	44.5	47.6	4.8	84.8	155.7	84.3	63.5	56.1	M12 x 89	1.6
	3 x 1-1/4	1.75	1.88	1082.1	3.34	6.13	3.32	2.50	2.21	1/2 x 3	3.5
730MT3015*	80 x 40	50.8	54.0	6.3	85.9	155.7	90.4	63.0	56.1	M12 x 89	1.7
	3 x 1-1/2	2.00	2.13	1417.6	3.38	6.13	3.56	2.48	2.21	1/2 x 3	3.7
730MT3020*	80 x 50	63.5	66.7	9.9	88.9	155.7	103.9	69.9	56.1	M12 x 89	2.1
	3 x 2	2.50	2.63	2215.1	3.50	6.13	4.09	2.75	2.21	1/2 x 3	4.7
730MT4205*	100 x 15	38.1	41.3	1.2	93.7	181.1	78.0	77.7	70.6	M12 x 89	2.2
	4 x 1/2	1.50	1.63	277.1	3.69	7.13	3.07	3.06	2.78	1/2 x 3	4.8
730MT4207*	100 x 20	38.1	41.3	1.9	93.7	181.1	78.0	77.7	70.6	M12 x 89	2.2
	4 x 3/4	1.50	1.63	433.0	3.69	7.13	3.07	3.06	2.78	1/2 x 3	4.8
730MT4210*	100 x 25	38.1	41.3	3.0	93.7	181.1	78.0	77.7	70.6	M12 x 89	2.2
	4 x 1	1.50	1.63	679.1	3.69	7.13	3.07	3.06	2.78	1/2 x 3	4.8

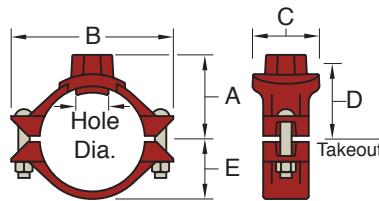
Figure 730 Mechanical Tees – Threaded

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10
YEAR
LIMITED
WARRANTY

Figure 730 Branch Outlet with
Female BSP Threaded Branch



Part Number	Nominal Size Run x Branch mm 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		
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	M12 x 89 —	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
730AT6215*	150 x 40 165.1mm x 1-1/2	50.8 2.00	54.0 2.13	6.3 1417.6	130.3 5.13	235.0 9.25	90.4 3.56	102.6 4.04	99.1 3.90	M16 x 121 —	3.5 7.7
730AT6220*	150 x 50 165.1mm x 2	63.5 2.50	66.7 2.63	9.9 2215.1	130.3 5.13	235.0 9.25	103.1 4.06	109.5 4.31	99.1 3.90	M16 x 121 —	3.7 8.2
730AT6226*	150 x 65 165.1mm x 76.1mm	69.9 2.75	73.0 2.88	15.7 3584.3	130.3 5.13	235.0 9.25	111.3 4.38	106.2 4.18	99.1 3.90	M16 x 121 —	4.1 9.0
730AT6230*	150 x 80 165.1mm x 3	88.9 3.50	92.1 3.63	21.4 4810.6	139.7 5.50	235.0 9.25	130.3 5.13	111.0 4.37	99.1 3.90	M16 x 121 —	4.8 10.5
730MT6312*	150 x 32 6 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 5/8 x 4-3/4	3.4 7.5
730AT6315*	150 x 40 6 x 1-1/2	50.8 2.00	54.0 2.13	6.3 1417.6	130.3 5.13	235.0 9.25	90.4 3.56	102.6 4.04	99.1 3.90	M16 x 121 5/8 x 4-3/4	3.4 7.5
730AT6320*	150 x 50 6 x 2	63.5 2.50	66.7 2.63	9.9 2215.1	130.3 5.13	235.0 9.25	103.1 4.06	109.5 4.31	99.1 3.90	M16 x 121 5/8 x 4-3/4	3.5 7.7
730AT6326*	150 x 65 6 x 76.1mm	69.9 2.75	73.0 2.88	14.4 3245.9	130.3 5.13	235.0 9.25	111.3 4.38	106.2 4.18	99.1 3.90	M16 x 121 5/8 x 4-3/4	4.0 8.9
730AT6330*	150 x 80 6 x 3	88.9 3.50	92.1 3.63	21.4 4810.6	139.7 5.50	235.0 9.25	130.3 5.13	111.0 4.37	99.1 3.90	M16 x 121 5/8 x 4-3/4	4.7 10.3
730AT8020*	200 x 50 8 x 2	69.9 2.75	73.0 2.88	14.4 3245.9	158.8 6.25	317.5 12.50	103.1 4.06	130.0 5.12	124.5 4.90	M20 x 121 3/4 x 4-3/4	5.5 12.1
730AT8026*	200 x 65 8 x 76.1mm	69.9 2.75	73.0 2.88	15.7 3534.3	158.8 6.25	317.5 12.50	111.3 4.38	130.0 5.12	124.5 4.90	M20 x 121 —	5.7 12.6
730AT8030*	200 x 80 8 x 3	88.9 3.50	92.1 3.63	21.4 4810.6	165.1 6.50	317.5 12.50	130.3 5.13	136.4 5.37	124.5 4.90	M20 x 121 3/4 x 4-3/4	6.1 13.6

* = 1 for red paint (RAL 3000) 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 Tyco Technical Services.

‡ 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 Tyco Technical Services for details.

Threads are BSP. Some size outlets are available with NPT threads. Contact Tyco Technical Services for details.

For information on other alternative sizes, contact Tyco Technical Services

See page 46 for specifications, and see pages 76 - 82 for gasket information.

Figure 730 Mechanical Tees – Grooved

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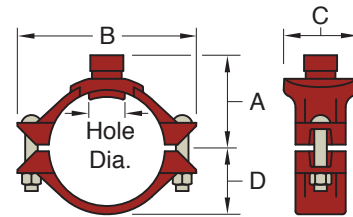


Figure 730 Branch Outlet with Grooved Branch

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
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

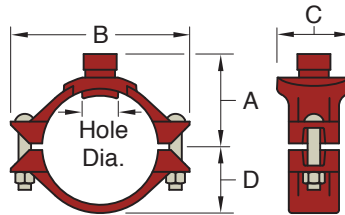
Figure 730 Mechanical Tees – Grooved

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Figure 730 Branch Outlet with Grooved Branch



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		
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
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
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	69.9	73.0	9.9	158.8	317.5	111.3	124.5	M20 x 121	5.5
	8 x 2	2.75	2.88	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 (RAL 3000) 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.

‡ 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 Tyco Technical Services for details.

For information on other alternative sizes, contact Tyco Technical Services

See page 46 for specifications, and see pages 76 - 82 for gasket information.

Outlet
Fittings

Outlet
Fittings



VALLVES

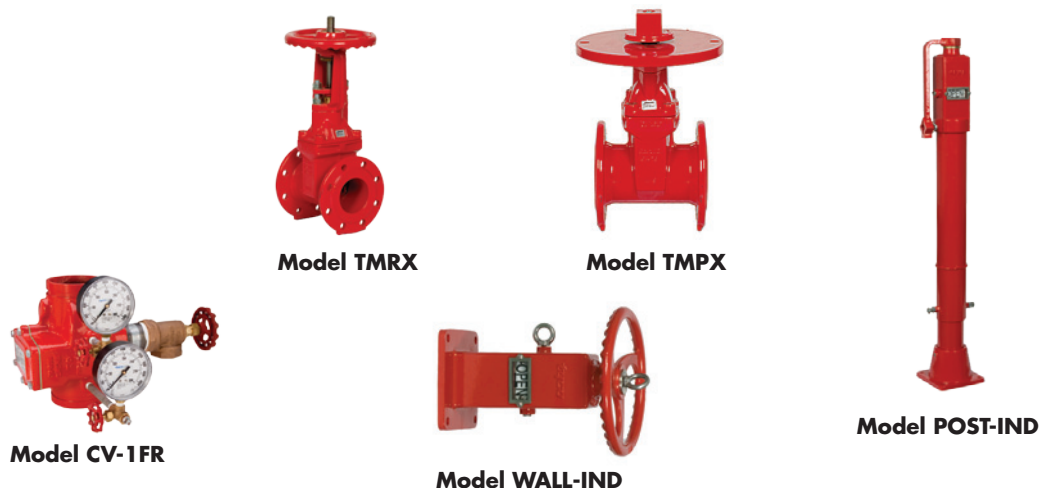
Valves Pictorial Table of Contents

 Model JPL 39109S Butterfly Valves Groove x Groove Page – 55	 Model TMRG Resilient-Seated Gate Valves, OS&Y, Groove x Groove Pages – 58, 60
 Model JPL 39109A Butterfly Valves Groove x Groove Page – 55	 Model TMPT-P Resilient-Seated Gate Valves, NRS, Flange x Groove Pages – 61, 62
 Model BFV-N Butterfly Valves Groove x Groove Page – 57	 Model TMPG-P Resilient-Seated Gate Valves, NRS, Groove x Groove Pages – 61, 62
 Model TMRT Resilient-Seated Gate Valves, OS&Y, Flange x Groove Pages – 58, 59	 Model CV-1 Grooved Check Valves Pages – 63 - 64

Valves

Additional Valves Options Available

Contact TYCO for more information



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 depressurizing and draining the system. Material should be verified to be compatible for the specific application.

Model JPL 39109S Butterfly Valves



For detailed Listing and Approval information see pages 101 - 108 or contact Tyco Fire Protection Products.



SPECIFICATIONS

Max Working Pressure

- 12,1 Bar (175 psi)

Body

- Ductile iron ASTM A-395

Bushing

- PTFE Bronze sintered on steel

Disc

- Ductile iron / EPDM coating

Control Shaft & Spindle

- Stainless Steel AISI-420

Retainer Plug

- Plated Steel ASTM A-283 Gr B

O-Ring

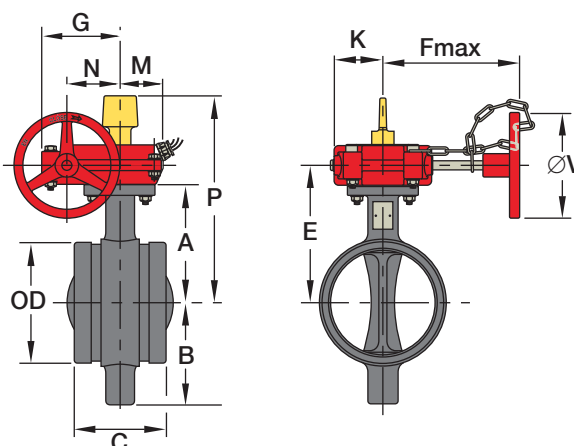
- Nitrile NBR

Locking Ring

- Spring Steel

Performance

- Contact Tyco Technical Services



Part Number		Pipe Size		Dimensions mm /in.											Approx. Weight kg Lbs.
With Switch	Without Switch	Nominal mm In.	O.D. mm In.	A	B	C	E	F	G	K	M	N	P	ØV	
39109SC060	39109S060	50	60.3	100	77.5	81	130	208	111	75	60	75	227	150	8.4
		2	2.375	3.94	3.05	3.19	5.12	8.19	4.37	2.95	2.36	2.95	8.94	5.91	18.5
39109SC073	39109S073	65	73.0	105	82	97	135	208	111	75	60	75	232	150	9.5
		2-1/2	2.875	4.13	3.23	3.82	5.31	8.19	4.37	2.95	2.36	2.95	9.13	5.91	20.9
39109SC076	39109S076	65	76.1	105	82	97	135	208	111	75	60	75	232	150	9.5
		76.1mm	3.000	4.13	3.23	3.82	5.31	8.19	4.37	2.95	2.36	2.95	9.13	5.91	20.9
39109SC089	39109S089	80	88.9	112	90	97	142	208	111	75	60	75	232	150	9.9
		3	3.500	4.41	3.54	3.82	5.59	8.19	4.37	2.95	2.36	2.95	9.13	5.91	21.8
39109SC114	39109S114	100	114.3	135	107	116	165	208	111	75	60	75	239	150	11.6
		4	4.500	5.31	4.21	4.57	6.50	8.19	4.37	2.95	2.36	2.95	9.41	5.91	25.6
39109SC139	39109S139	125	139.7	147	121	148	177	208	111	75	60	75	262	150	14.8
		139.7mm	5.500	5.79	4.76	5.83	6.97	8.19	4.37	2.95	2.36	2.95	10.31	5.91	32.6
39109SC141	39109S141	125	141.3	147	121	148	177	208	111	75	60	75	262	150	14.8
		5	5.563	5.79	4.76	5.83	6.97	8.19	4.37	2.95	2.36	2.95	10.31	5.91	32.6
39109SC165	39109S165	150	165.1	180	150	148	210	215	111	75	60	75	274	225	18.2
		165.1mm	6.500	7.09	5.91	5.83	8.27	8.46	4.37	2.95	2.36	2.95	10.79	8.86	40.1
39109SC168	39109S168	150	168.3	180	150	148	210	215	111	75	60	75	274	225	18.2
		6	6.625	7.09	5.91	5.83	8.27	8.46	4.37	2.95	2.36	2.95	10.79	8.86	40.1
39109SC219	39109S219	200	219.1	204	172	133	234	215	111	75	60	75	274	225	20.5
		8	8.625	8.03	6.77	5.24	9.21	8.46	4.37	2.95	2.36	2.95	10.79	8.86	45.2
39109SC273	39109S273	250	273.1	250	233	159	301	276	179	138	104	132	307	300	46.3
		10	10.750	9.84	9.17	6.26	11.85	10.87	7.05	5.43	4.09	5.20	12.09	11.81	102.1
39109SC324	39109S324	300	323.9	275	258	165	326	276	179	138	104	132	307	300	55.0
		12	12.750	10.83	10.16	6.50	12.83	10.87	7.05	5.43	4.09	5.20	12.09	11.81	121.3

* = for valves without switch replace SC by S.

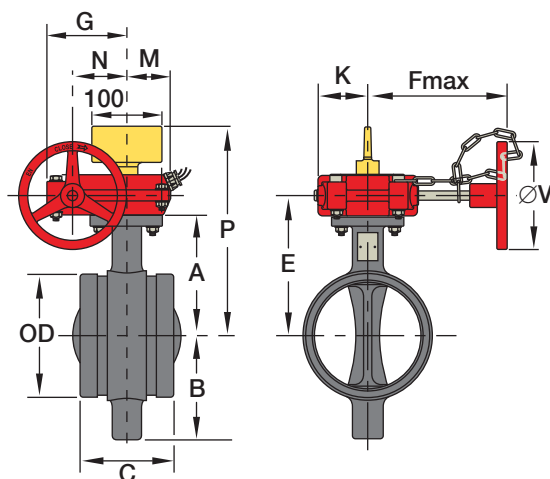
Note: recommended for mounting with GRINNELL G-FIRE Rigid couplings working temperature range is -15°C to 80°C (5°F to 176°F)

Option: Silicon free valves for automotive industry. Because of the special grease, the agency approvals do not apply.

Valves

Model JPL 39109A Butterfly Valves APSAD Approved

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SPECIFICATIONS

Body

- Ductile iron ASTM A-395

Bushing

- PTFE Bronze sintered on steel

Disc

- Ductile iron / EPDM coating

Control Shaft & Spindle

- Stainless Steel AISI-420

Retainer Plug

- Plated Steel ASTM A-283 Gr B

O-Ring

- Nitrile NBR

Locking Ring

- Spring Steel

Performance

- Contact Tyco Technical Services

Part Number	Pipe Size		Max Work Pressure Bar psi	Dimensions mm In.											Approx. Weight kg Lbs.
	Nominal mm In.	O.D. mm In.		A	B	C	E	F	G	K	M	N	P	ØV	
39109AC060	50	60.3	16.0	100	77.5	81	130	208	111	75	60	75	226	150	8.4
	2	2.375	230	3.94	3.05	3.19	5.12	8.19	4.37	2.95	2.36	2.95	8.90	5.91	18.5
39109AC076	65	76.1	16.0	105	82	97	135	208	111	75	60	75	231	150	9.5
	76.1mm	3.000	230	4.13	3.23	3.82	5.31	8.19	4.37	2.95	2.36	2.95	9.09	5.91	20.9
39109AC089	80	88.9	16.0	112	90	97	142	208	111	75	60	75	238	150	9.9
	3	3.500	230	4.41	3.54	3.82	5.59	8.19	4.37	2.95	2.36	2.95	9.37	5.91	21.8
39109AC114	100	114.3	16.0	135	107	116	165	208	111	75	60	75	261	150	11.6
	4	4.500	230	5.31	4.21	4.57	6.50	8.19	4.37	2.95	2.36	2.95	10.28	5.91	25.6
39109AC139	125	139.7	16.0	147	121	148	177	208	111	75	60	75	273	150	14.8
	139.7mm	5.500	230	5.79	4.76	5.83	6.97	8.19	4.37	2.95	2.36	2.95	10.75	5.91	32.6
39109AC168	150	168.3	16.0	180	150	148	210	215	111	75	60	75	306	225	18.2
	6	6.625	230	7.09	5.91	5.83	8.27	8.46	4.37	2.95	2.36	2.95	12.05	8.86	40.1
39109AC219	200	219.1	16.0	204	172	133	234	215	111	75	60	75	330	225	20.5
	8	8.625	230	8.03	6.77	5.24	9.21	8.46	4.37	2.95	2.36	2.95	12.99	8.86	45.2
39109AC273	250	273.1	10.0	250	233	159	301	276	179	138	104	132	417	300	46.3
	10	10.750	145	9.84	9.17	6.26	11.85	10.87	7.05	5.43	4.09	5.20	16.42	11.81	102.1
39109AC324	300	323.9	10.0	275	258	165	326	276	179	138	104	132	442	300	55.0
	12	12.750	145	10.83	10.16	6.50	12.83	10.87	7.05	5.43	4.09	5.20	17.40	11.81	121.3

Note: recommended for mounting with GRINNELL G-FIRE Rigid couplings
working temperature range is -18°C to 80°C (-0.4°F to 176°F)

Model BFV-N G-FIRE Butterfly Valves Groove x Groove

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The Model BFV-N Grooved End Butterfly Valves are indicating type valves designed for use in fire protection systems where a visual indication is required as to whether the valve is open or closed. They are used, for example, as system, sectional, and pump water control valves. They have cut groove inlet and outlet connections that are suitable for use with grooved end pipe couplings that are listed and approved for fire protection systems.



For detailed Listing and Approval information see pages 101 - 108 or contact Tyco Fire Protection Products.



SPECIFICATIONS

Body & Disc

- Ductile iron conforming to ASTM A-536

Body Coating

- Polyamide

Disc Seal

- Grade EPDM "E" encapsulated rubber conforming to ASTM D-200

Upper & Lower Stem

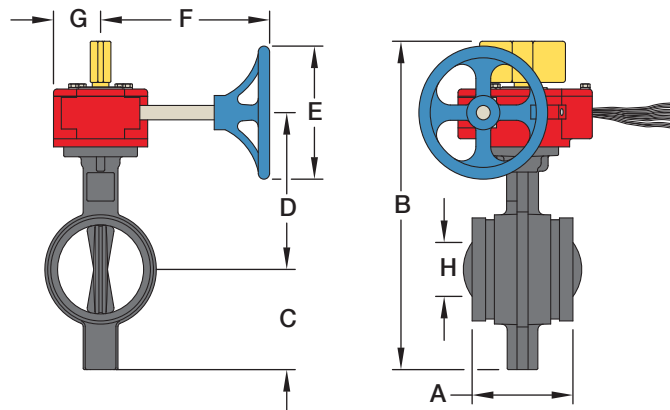
- Type 416 Stainless Steel conforming to ASTM 582

Lower Plug

- PVC

Performance

- Contact Tyco Technical Services



Valves

Part Number	Pipe Size		Max Work Pressure Bar psi	Dimensions mm In.								Approx. Weight kg Lbs.
	Nominal mm In.	O.D. mm In.		A	B	C	D	E	F	G	H	
59300F025N	65	73.0	20.7	98.0	297.4	83.0	137.9	152.4	198.4	63.5	0	10.0
	2-1/2	2.88	300	3.85	11.71	3.25	5.43	6.00	7.81	2.50	0	22
59300F076N	65	76.1	20.7	98.0	297.4	83.0	137.9	152.4	198.4	63.5	0	10.0
	76.1mm	3.000	300	3.85	11.71	3.25	5.43	6.00	7.81	2.50	0	22
59300F030N	80	88.9	20.7	98.0	311.1	90.0	144.2	152.4	198.4	63.5	0	10.4
	3	3.50	300	3.85	12.25	3.54	5.68	6.00	7.81	2.50	0	23
59300F040N	100	114.3	20.7	116.0	354.3	110.0	167.1	152.4	198.4	63.5	0	12.7
	4	4.50	300	4.56	13.95	4.35	6.58	6.00	7.81	2.50	0	28
59300F165N	150	165.1	20.7	149.0	439.7	151.0	212.0	152.4	198.4	63.5	17.0	18.6
	165.1mm	6.500	300	5.86	17.31	5.93	8.35	6.00	7.81	2.50	0.67	41
59300F060N	150	168.3	20.7	149.0	439.7	151.0	212.0	152.4	198.4	63.5	17.0	18.6
	6	6.63	300	5.86	17.31	5.93	8.35	6.00	7.81	2.50	0.67	41
59300F080N	200	219.1	20.7	134.0	487.7	174.0	236.0	152.4	198.4	63.5	148.8	24.1
	8	8.63	300	5.26	19.20	6.87	9.29	6.00	7.81	2.50	5.86	53
59300F100N	250	273.1	12.1	160.0	637.8	233.0	292.1	228.6	195.1	76.2	188.2	40.0
	10	10.75	175	6.29	25.11	9.17	11.50	9.00	7.68	3.00	7.41	88

Note: recommended for mounting with GRINNELL G-FIRE Rigid couplings maximum working temperature is 80°C (176°F).

Model TMR Resilient-Seated Gate Valves Outside Screw & Yoke (OS&Y)

(Page 1 of 3)

Tech Data Sheet: TFP1540



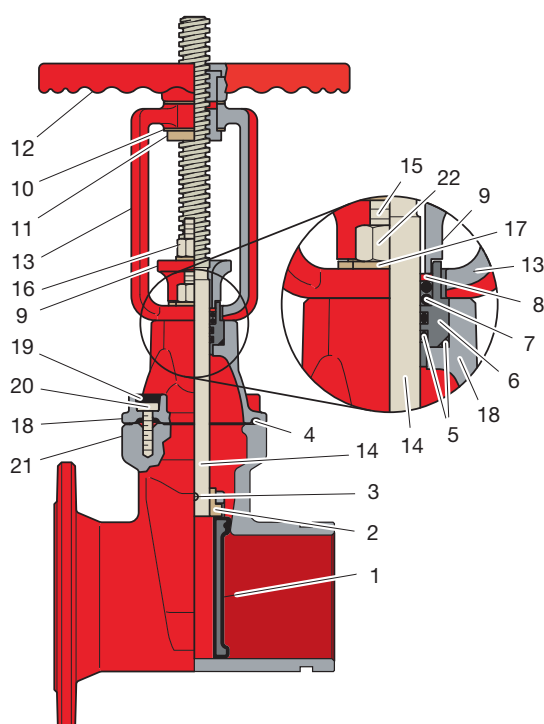
Flange by Groove

Groove by Groove



For detailed Listing and Approval information see pages 101 - 108 or contact Tyco Fire Protection Products.

Valves



Resilient-Seated Gate Valves are used in Fire Protection Systems for on/off operation. End connection configurations including Flange by Groove, and Groove by Groove are available.

The ductile Iron body weighs approximately 50% less than conventional cast iron valves, which allows easier handling on site and reduced shipping costs.

Valve components are either inherently corrosion-resistant or protected with fusion-bonded epoxy resin coating for a long, reliable service life and enhanced UV protection in exposed installations.

This valve is one of the lightest, most durable gate valves on the market today. Its design features and material selection criteria fulfill the need for a reliable, long life and easy to operate gate valve.

SPECIFICATIONS

Max Working Pressure

FM - 16.0 bar (232 psi)

UL - 20.7 bar (300 psi)

Max Test Pressure

24.0 bar (348 psi)

Type Tested to 80 Bar (1,160 psi)

Flange

- ASME B16.1/ASME B16.42 EN 1092-2/ISO 7005-2 Drilled to ANSI 125/150, PN10/PN16,

Performance

- Contact Tyco Technical Services

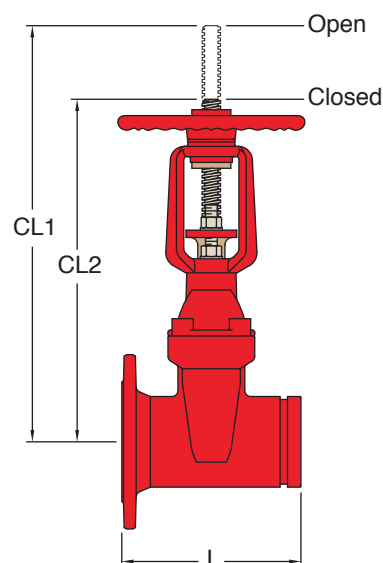
Valve Material Specifications		
Item No.	Description	Material
1	Wedge, Rubber Encapsulated	Ductile Iron EN-GJS-450-10
2	Wedge Nut	Copper Alloy CW602N-H070
3	Stem Pin	Stainless Steel 1.4034
4	Sealing Gasket	EPDM
5	Sealing O Rings	NBR
6	Stem Guide	Copper Alloy CW602N-H070
7	Stem Gland	NBR
8	Compression Washer	Stainless Steel 1.4034
9	Top Gland	Ductile Iron EN-GJS-450-10
10	Bearings	Copper Alloy CW602N-H070
11	Top Nut	Copper Alloy CW602N-H070
12	Hand Wheel	Ductile Iron EN-GJS-450-10
13	Yoke	Ductile Iron EN-GJS-450-10
14	Stem	Stainless Steel 1.4034
15	Gland Stud	Carbon Steel
16	Gland Nut	Carbon Steel
17	Gland Washers	Carbon Steel
18	Bonnet Casting	Ductile Iron EN-GJS-450-10
19	Screw Grouting	Activated resin
20	Bonnet Screws	Carbon Steel
21	Body Casting	Ductile Iron EN-GJS-450-10
22	Yoke Hex Nut	Carbon Steel

Model TMRT Resilient-Seated Gate Valves Outside Screw & Yoke Flange x Groove, PN16

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Valves

Part Number	Valve Size		Dimensions mm In.			Turns to Open	Approx. Weight kg Lbs
	Nominal mm In.	O.D. mm In.	L	CL1	CL2		
TMRT0060T	50	60.3	178	395	332	12	12.5
	2	2.375	7.00	15.55	13.07		27.6
TMRT0076T	65	76.1	190	410	228	16	14.0
	76.1mm	3.000	7.48	16.14	8.98		30.9
TMRT0089T	80	88.9	203	480	380	20	16.5
	3	3.500	8.00	18.90	14.96		36.4
TMRT0114T	100	114.3	229	573	450	20	23.0
	4	4.500	9.00	22.56	17.72		50.7
TMRT0139T	125	139.7	254	638	508	25	28.0
	139.7mm	5.500	10.00	25.12	20.00		61.7
TMRT0168T	150	168.3	267	750	592	25	40.0
	6	6.625	10.50	29.53	23.31		88.2
TMRT0219T	200	219.1	292	956	748	34	65.0
	8	8.625	11.50	37.64	29.45		143.3
TMRT0273T	250	273.1	330	1175	888	42	110.0
	10	10.750	13.00	46.26	34.96		242.6
TMRT0324T	300	323.9	356	1318	1005	50	135.0
	12	12.750	14.00	51.89	39.57		297.7

See Valve Specifications on page 58

Model TMRG Resilient-Seated Gate Valves Outside Screw & Yoke Groove x Groove

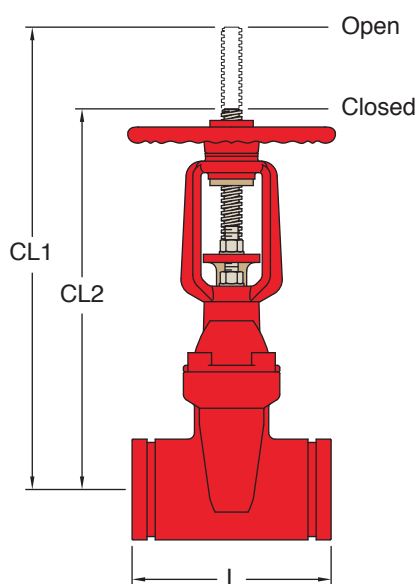
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Valves



Part Number	Valve Size		Dimensions mm / in.			Turns to open	Approx. Weight kg Lbs
	Nominal mm In.	O.D. mm In.	L	CL1	CL2		
TMRG0060G	50	60.3	178	395	332	12	11.5
	2	2.375	7.00	15.55	13.07		25.4
TMRG0073G	65	73.0	190	410	338	16	12.0
	2-1/2	2.875	7.50	16.14	13.31		26.5
TMRG0076G	65	76.1	190	410	228	16	12.0
	76.1mm	3.000	7.48	16.14	8.98		26.5
TMRG0089G	80	88.9	203	480	380	20	14.0
	3	3.500	8.00	18.90	14.96		30.9
TMRG0114G	100	114.3	229	573	450	20	20.0
	4	4.500	9.00	22.56	17.72		44.1
TMRG0139G	125	139.7	254	638	508	25	25.0
	139.7mm	5.500	10.00	25.12	20.00		55.1
TMRG0141G	125	141.3	254	638	508	25	25.0
	5	5.563	10.00	25.12	20.00		55.1
TMRG0165G	150	165.1	267	750	592	25	36.0
	165.1mm	6.500	10.51	29.53	23.31		79.4
TMRG0168G	150	168.3	267	750	592	25	36.0
	6	6.625	10.50	29.53	23.31		79.4
TMRG0219G	200	219.1	292	956	748	34	50.0
	8	8.625	11.50	37.64	29.45		110.3
TMRG0273G	250	273.1	330	1175	888	42	100.0
	10	10.750	13.00	46.26	34.96		220.5
TMRG0324G	300	323.9	356	1318	1005	50	125.0
	12	12.750	14.00	51.89	39.57		275.6

See Valve Specifications on page 58

Model TMPT-P & TMPG-P Non Rising Stem Resilient-Seated Gate Valves

(Page 1 of 2)

Tech Data Sheet: TFP1545



Resilient-Seated Gate Valves with Vertical and Cross Wall Indicators are used in fire protection systems for on/off operation. End connection configurations including Flange by Groove, and Groove by Groove are available.

The ductile iron body weighs approximately 50% less than conventional cast iron valves, which allows easier handling on site and reduced shipping costs.

The fully encapsulated EPDM ductile iron wedge ensures drop-tight sealing.

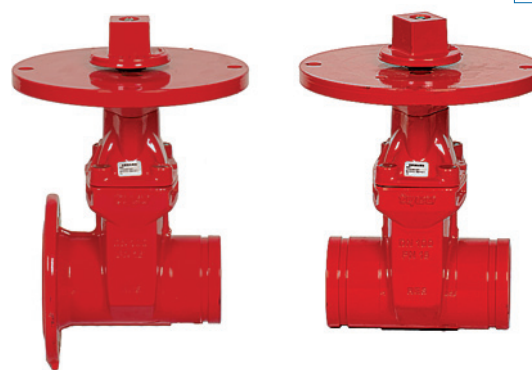
Valve components are either inherently corrosion-resistant or protected with fusion-bonded epoxy resin coating for a long, reliable service life and enhanced UV protection in exposed installations.

This valve is one of the lightest, most durable gate valves on the market today. Its design features and material selection criteria fulfill the need for a reliable, long life and easy to operate gate valve.

These valves are available with either Vertical Indicators for underground water supplies or Cross Wall Indicators for interior water systems. Both indicators provide external visual indication of the open or shut valve condition as well as a locking mechanism to secure a particular wedge position.



For detailed Listing and Approval information see pages 101 - 108 or contact Tyco Fire Protection Products.



Flange by Groove

Groove by Groove

SPECIFICATIONS

Max Working Pressure

FM - 16.0 bar (232 psi)

UL - 20.7 bar (300 psi)

Max Test Pressure

24.0 bar (348 psi)

Type Tested to 80 Bar (1,160 psi)

Flange

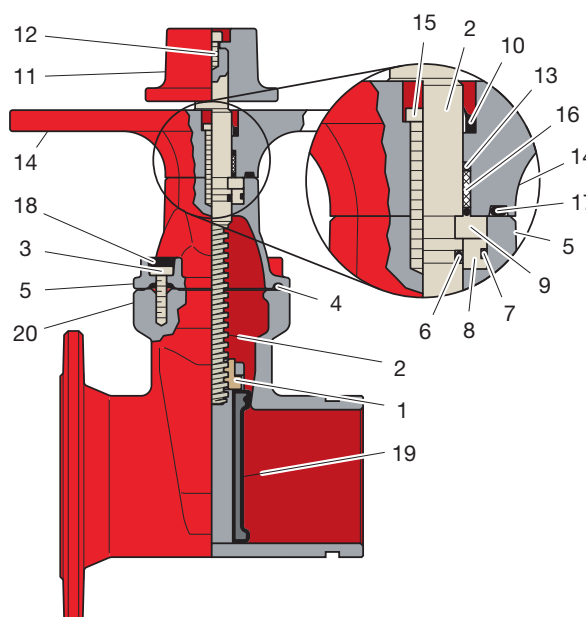
- ASME B16.1/ASME B16.42 EN 1092-2/ISO 7005-2
- Drilled to ANSI 125/150 or PN10/PN16

Performance

- Contact Tyco Technical Services

Valves

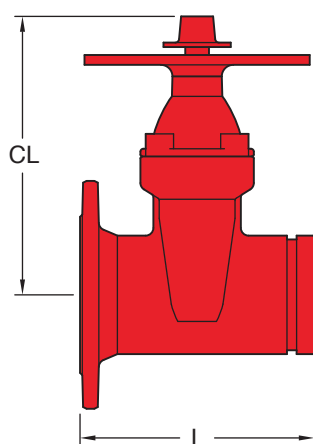
Valve Material Specifications			
Item No.	Description	Qty	Material
1	Wedge Nut	1	Bronze
2	Stem	1	Stainless
3	Bonnet Screw	4	Black Oxide Carbon Steel
4	Sealing Gasket	1	EPDM
5	Bonnet	1	FBE Coated Ductile Iron
6	Sealing O-Ring	1	NBR
7	Sealing O-Ring	1	NBR
8	Stem Ring	1	Stainless Steel
9	Stem Bearing	1	Bronze
10	Dust Guard	1	EPDM
11	Top Cap	1	FBE Coated Ductile Iron
12	Cap Screw	1	Black Oxide Carbon Steel
13	Sealing O-Ring	2	NBR
14	Indicator Flange	1	FBE Coated Ductile Iron
15	Indicator Top Screw	2	Black Oxide Carbon Steel
16	Bushing	1	Nylon
17	Sealing O-Ring	1	NBR
18	Screw Grouting	1	Activated Resin
19	Wedge	1	EPDM Coated Ductile Iron
20	Body	1	FBE Coated Ductile Iron



Model TMPT-P Resilient-Seated Gate Valves Flange x Groove ANSI Class #150 & PN16

(Page 2 of 2)

Tech Data Sheet: TFP1545



Part Number		Valve Size		Face to face (L)	Centre Height (CL)	Approx. Weight
PN16 (ISO 7005-2)	ANSI (Class #150)	Nominal mm In.	O.D. mm In.	mm In.	mm In.	kg Lbs
TMPT-100-114-1	TMPT-100-114-3	100 4	114.3 4.500	229 9.00	332 13.07	25 55.1
TMPT-150-165-1	TMPT-150-165-3	150 165.1mm	165.1 6.500	267 10.50	436 17.17	38 83.8
TMPT-150-168-1	TMPT-150-168-3	150 6	168.3 6.625	267 10.50	436 17.17	38 83.8
TMPT-200-219-1	TMPT-200-219-3	200 8	219.1 8.625	292 11.50	520 20.47	61 134.5
TMPT-250-273-1	TMPT-250-273-3	250 10	273.1 10.750	330 13.00	620 24.41	92 202.8
TMPT-300-324-1	TMPT-300-324-3	300 12	323.9 12.750	356 14.00	670 26.38	119 262.4

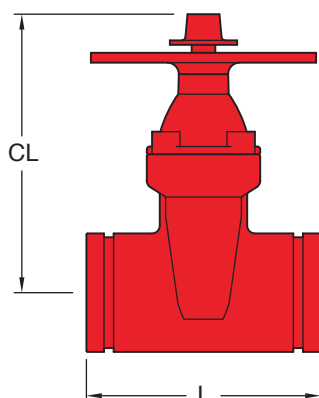
See Valve Specifications on page 61

Valves

Model TMPG-P Resilient-Seated Gate Valves Groove x Groove

(Page 2 of 2)

Tech Data Sheet: TFP1545



Part Number	Valve Size		Face to face (L)	Centre Height (CL)	Approx. Weight
	Nominal mm In.	O.D. mm In.	mm In.	mm In.	kg Lbs
TMPG-100-114-4	100 4	114.3 4.500	229 9.00	332 13.07	22 48.5
TMPG-150-165-4	150 165.1mm	165.1 6.500	267 10.50	436 17.17	34 75.0
TMPG-150-168-4	150 6	168.3 6.625	267 10.50	436 17.17	34 75.0
TMPG-200-219-4	200 8	219.1 8.625	292 11.50	520 20.47	56 123.5
TMPG-250-273-4	250 10	273.1 10.750	330 13.00	620 24.41	82 180.8
TMPG-300-324-4	300 12	323.9 12.750	356 14.00	670 26.38	107 235.9

See Valve Specifications on page 61

Model CV-1 G-FIRE Grooved Check Valves

(Page 1 of 2)

Tech Data Sheet: TFP1550

10
YEAR
LIMITED
WARRANTY

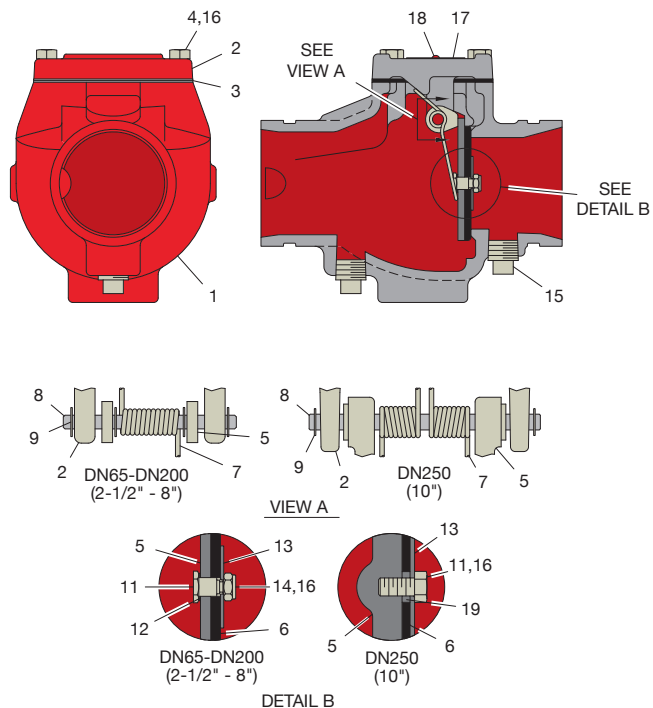
The Model CV-1 Check Valve is a compact and rugged swing-type unit that allows water flow in one direction and prevents flow in the opposite direction. A resilient elastomer seal facing on the spring-loaded clapper ensures a leak-tight seal and non-sticking operation. The Model CV-1 Check Valves are designed to minimize water hammer caused by flow reversal.



For detailed Listing and Approval information see pages 101 - 108 or contact Tyco Fire Protection Products.



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- $\frac{1}{2}$ "-14 NPT	Cast Iron	2
16	Adhesive	Thread Sealer	AR
17	Nameplate	Aluminium	1
18	Rivet	Steel	2
19	Spacer	Stainless Steel	1



Valves

Model CV-1 G-FIRE Grooved Check Valves

(Page 2 of 2)

Tech Data Sheet: TFP1550



SPECIFICATIONS

Valve Assembly Finish

- Red, non-lead paint

Max Working Pressure

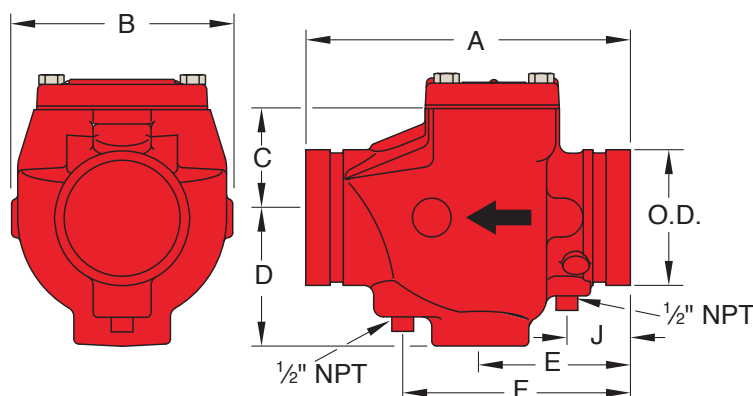
- 20,7 bar (300 psi)

Clapper

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

Performance

- Contact Tyco Technical Services



Valves

Part Number	Pipe Size		Dimensions mm In.							Approx. Weight kg Lbs
	Nominal mm 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
	2½	2.875	8.00	5.80	3.41	3.40	3.88	6.00	1.70	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	7.26	193.5	269.7	69.9	68.0
	12	12.750	21.00	14.28	11.31	184.4	7.62	10.62	2.75	151.0



ADDITIONAL
PRODUCTS

Additional Products Pictorial Table of Contents

 Model FastFlex Flexible Sprinkler Hose Page – 67	 Fire Suppression Systems Sprinkler & Valves Product Overview Page – 72
 Model UFBX Flexible Hoses Pages – 68 - 69	 Fire Suppression Systems Dry Risers, Valve Cabinets, Foam Systems, & Design Software Product Overview Page – 73
 Figure Hercules Fix Point Page – 70	 Fire Suppression Systems Support System Product Overview Page – 74
 Figure FAZ Anchor Page – 70	
 Figure Venturi Flow Meter Page – 71	

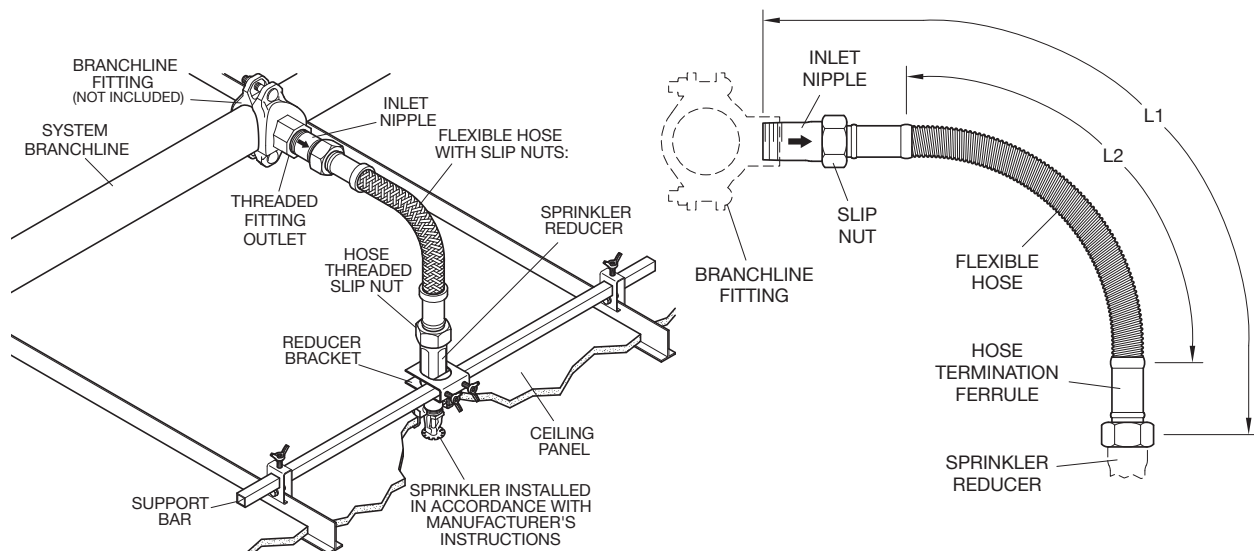
FASTFLEX Model YN25, YB25, and YB28 Flexible Sprinkler Hose

Tech Data Sheet: TFP720

10
YEAR
LIMITED
WARRANTY

The Tyco® FASTFLEX is a unique sprinkler drop assembly comprised of the following: branchline adapter nipple, stainless steel flexible hose with two slip nuts, sprinkler reducer, and several different lightweight ceiling bracket components.

Using FASTFLEX can save time and costs since the system can be installed in false ceilings without cutting and threading pipes associated with installing a drop, armover, and elbows. FASTFLEX makes it possible to test and charge the system with water before the ceiling grid is installed. Once the ceiling grid is in position, the FASTFLEX hoses can be reshaped to suit the final sprinkler location without draining the system.

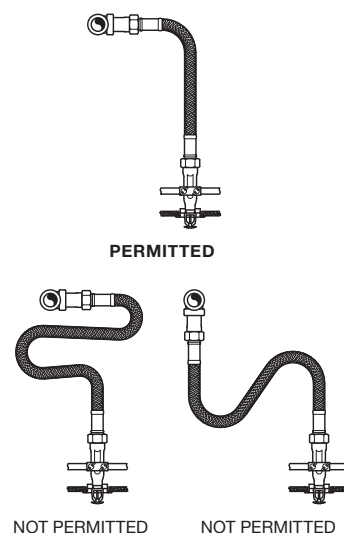


Part Number		Hose Length mm In.	Nominal Length mm (In.)			Approx. Weight kg Lbs.
Un-Braided	Braided		L1 (YN or YB)	L2 (YN)	L2 (YB)	
YN25700	YB25700	700 27.56	580 22.83	390 15.35	370 14.57	0.7 1.5
YN251000	YB251000	1000 39.37	880 34.65	690 27.17	670 26.38	0.9 2.0
YN251200	YB251200	1200 47.24	1080 42.52	890 35.04	870 34.25	1.0 2.2
YN251500	YB251500	1500 59.06	1380 54.33	1190 46.85	1380 54.33	1.2 2.6
YN251800	YB251800	1800 70.87	1680 66.14	1490 58.66	1470 57.87	1.4 3.1
YN252000	YB252000	2000 78.74	1880 74.02	1690 66.54	1670 65.75	1.6 3.5
YN252500	YB252500	2500 98.43	2380 93.70	2190 86.22	2170 85.43	1.9 4.2
YN252700	-	2700 106.30	2580 101.57	2390 94.09	2370 93.31	2.1 4.6
YN253100	-	3100 122.05	2980 117.32	2790 109.84	2770 109.06	2.4 5.3
YN253700	-	3700 145.67	3580 140.94	3390 133.46	3370 132.68	2.8 6.2

Available with BSP or NPT threads. Contact Tyco Technical Services for details.

Max Working Pressure

- 12,0 bar (175 psi)



Additional
Products

Refer to back cover for country-specific contact information.

Figure UFBX Flexible Hoses

(Page 1 of 2)



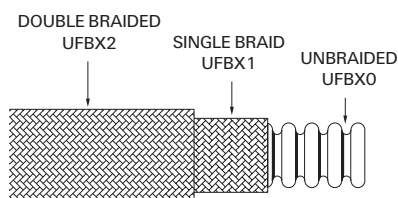
Specifically designed to meet the requirements of ISO 10380 flexibility class 1. Applications:

- Static installations (connect pipe work out of alignment)
- Occasional flexing
- Constant flexing
- Vibration (high frequency, low amplitude movement - compressor or pump)

These products are not approved for Sprinkler applications

Construction

The hoses are annularly corrugated formed from butt weld rigid tube. Depending on the application, required working pressure and conditions of operation, a single or double layer of wire braid is applied externally to the hose restrain to it, increasing its ability to withstand the pressure, increasing hoop strength and protection from abrasion. The extent of braiding, gauge and angle of lay is calculated carefully to maximize performance.



MATERIAL SPECIFICATIONS

Tube:

- BS1449 Part 2 (1983) 321S31 or 316S11, EN 10088-2 1.4541 or 14401 Monel 400 nickel alloy or bronze

Discs:

- 304 or BS154 (1990) 304S31 or 316S19

Shaft

- Carbon Steel

Part Number	ISO 10380		Hose Type	Max. OD mm In.	Bend Radius		Maximum Pressure			Approx. Weight Kg/M Lbs./Ft.
	mm	Nominal Pressure PN			Static mm In.	Flexing mm In.	Working bar psi	Test bar psi	Burst bar psi	
UFBX1-034	25	4	UFBX0	33.7 1.33	44 1.73	200 7.87	4.1 59.5	6.2 89.9	16.4 237.9	0.3 0.2
		50	UFBX1	35.8 1.41	85 3.35	200 7.87	50.0 725.2	75.0 1,087.8	200.0 2,900.8	0.7 0.5
		63	UFBX2	37.9 1.49	85 3.35	200 7.87	76.0 1,102.3	114.0 1,653.4	304.0 4,409.1	1.1 0.7
UFBX1-042	32	2.5	UFBX0	41.4 1.63	55 2.17	250 9.84	3.4 49.3	5.1 74.0	13.6 197.3	0.4 0.3
		25	UFBX1	43.2 1.70	105 4.13	250 9.84	39.0 565.6	59.0 855.7	156.0 2,262.6	0.9 0.6
		50	UFBX2	45.3 1.78	105 4.13	250 9.84	57.0 826.7	85.0 1,232.8	228.0 3,306.9	1.3 0.9
UFBX1-048	40	0.5	UFBX0	47.9 1.89	70 2.76	250 9.84	2.4 34.8	3.6 52.2	9.6 139.2	0.7 0.5
		25	UFBX1	50 1.97	127 5.00	250 9.84	35.0 507.6	53.0 768.7	140.0 2,030.5	1.2 0.8
		50	UFBX2	52.2 2.06	127 5.00	250 9.84	55.0 797.7	82.0 1,189.3	220.0 3,190.8	1.7 1.1
UFBX1-060	50	0.5	UFBX0	62.1 2.44	90 3.54	350 13.78	1.0 14.5	1.5 21.8	4.0 58.0	0.8 0.6
		25	UFBX1	64.2 2.53	160 6.30	350 13.78	30.0 435.1	45.0 652.7	120.0 1,740.5	1.5 1.0
		40	UFBX2	66.3 2.61	160 6.30	350 13.78	44.0 638.2	66.0 957.2	176.0 2,552.7	2.3 1.5
UFBX1-076	65	0.5	UFBX0	76.5 3.01	110 4.33	410 16.14	1.0 14.5	1.5 21.8	4.0 58.0	1.9 1.3
		25	UFBX1	78.6 3.09	200 7.87	410 16.14	26.0 377.1	39.0 565.6	104.0 1,508.4	2.8 1.9
		40	UFBX2	80.7 3.18	200 7.87	410 16.14	46.0 667.2	69.0 1,000.8	184.0 2,668.7	3.7 2.5

Additional
Products

Shock Pressure

Pulsating, surge of shock pressures considerably affect hose longevity and if encountered, peak pressure must not exceed 50% of the maximum working pressure.

Pressure Loss

To achieve the same pressure loss as in steel pipes, the diameter of the corrugated hose should be increased by 15%.

Design and Installation Considerations

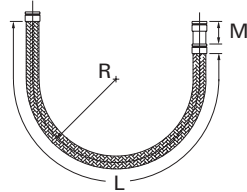
Flexing is usually in accordance with one or a combination of the types of motion shown below.

The formula given are provide to help determine the length of hose required to prevent flexing below the minimum bend radius, thereby ensuring maximum reliability.

Design

Avoid sharp bends and torsional twisting. Keep flexing in one plane.

- L = Minimum live length excluding end fitting
- R = minimum bend radius
- M = Movement
- $\pi = 3.142$
- X = Extra non-flexed length of hose (given below)



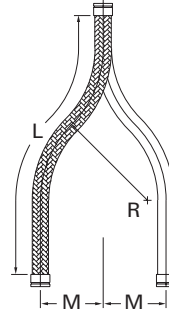
Offset or lateral movement

$$L = X + \sqrt{(R \times M \times N)}$$

N for static offset = 5

N for dynamic one way = 10

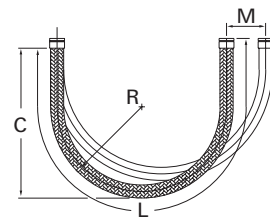
N for dynamic two way = 20



Vertical loop - Vertical travel

$$L = X + \pi R + \frac{1}{2}M$$

$$L = \frac{1}{2}L + \frac{1}{2}\pi R + R$$



Vertical loop - Vertical travel $\Rightarrow L = X + \sqrt{R + \frac{1}{2}M}$

ID	6	10	15	20	25	32	40	50	65	80
x	50	75	100	125	150	175	200	250	275	300

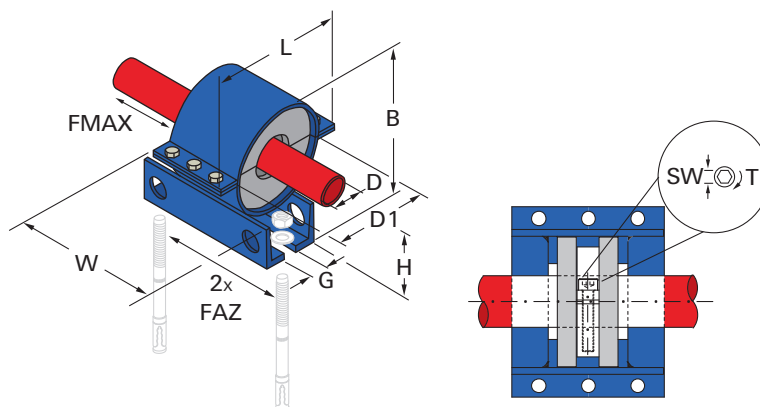
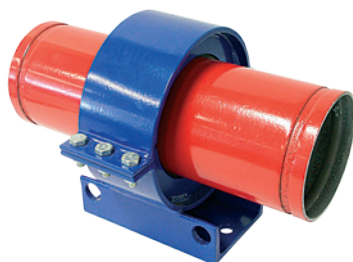
Part Number	ISO 10380		Hose Type	Max. OD mm In.	Bend Radius		Maximum Pressure			Approx. Weight Kg/M Lbs./Ft.
	mm	Nominal Pressure PN			Static mm In.	Flexing mm In.	Working bar psi	Test bar psi	Burst bar psi	
UFBX1-089	80	0.5	UFBX0	89.8 3.54	130 5.12	450 17.72	1.0 14.5	1.5 21.8	4.0 58.0	2.3 1.5
		20	UFBX1	91.9 3.62	230 9.06	450 17.72	22.0 319.1	33.0 478.6	88.0 1,276.3	3.4 2.3
		40	UFBX2	94.1 3.70	230 9.06	450 17.72	40.0 580.2	60.0 870.2	160.0 2,320.6	4.5 3.0
UFBX1-114	100	0.5	UFBX0	126 4.96	200 7.87	560 22.05	0.7 10.0	1.0 15.1	2.8 40.6	2.8 1.9
		16	UFBX1	129 5.08	230 9.06	560 22.05	18.4 266.9	27.6 400.3	73.6 1,067.5	4.6 3.1
		25	UFBX2	132 5.20	230 9.06	560 22.05	33.0 478.6	49.5 717.9	132.0 1,914.5	6.4 4.3
UFBX1-139	125	0.5	UFBX0	151 5.94	250 9.84	710 27.95	0.7 10.0	1.0 15.1	2.8 40.6	4.7 3.2
		10	UFBX1	153 6.02	280 11.02	710 27.95	11.5 166.8	17.3 250.9	46.0 667.2	6.6 4.4
		20	UFBX2	156 6.14	280 11.02	710 27.95	20.7 300.2	31.0 449.6	82.8 1,200.9	8.5 5.7
UFBX1-168	150	0.5	UFBX0	178 7.01	290 11.42	815 32.09	0.6 8.0	0.8 12.0	2.2 31.9	5.5 3.7
		10	UFBX1	180 7.09	320 12.60	815 32.09	11.2 162.4	16.8 243.7	44.8 649.8	7.7 5.2
		20	UFBX2	183 7.20	320 12.60	815 32.09	20.0 290.1	30.0 435.1	80.0 1,160.3	9.9 6.7
UFBX1-219	200	-	UFBX0	232 9.13	40 1.57	1015 39.96	0.3 4.5	0.5 6.7	1.2 18.0	7.3 4.9
		6	UFBX1	235 9.25	435 17.13	1015 39.96	7.0 101.5	11.0 159.5	28.0 406.1	10.0 6.7
		10	UFBX2	237 9.33	435 17.13	1015 39.96	10.0 145.0	15.0 217.6	40.0 580.2	13.0 8.7
UFBX1-273	250	-	UFBX0	287 11.30	490 19.29	1220 48.03	0.3 3.6	0.4 5.4	1.0 14.5	9.2 6.2
		6	UFBX1	292 11.50	560 22.05	1220 48.03	9.6 139.2	14.4 208.9	38.4 556.9	14.7 9.9
		-	UFBX2	-	-	-	-	-	-	-

Note: The values given above are for factory braided and assembled units and are given as an aid to hose selection. For unbraided applications or if the hose is to form an assembly used at the extreme of one or more of the characteristics below, please discuss the application with our application engineering department.

Additional
Products

Figure HERCULES Fix Point

10
YEAR
LIMITED
WARRANTY

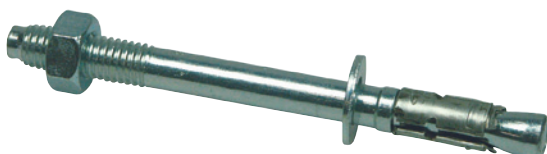


Part Number		Nominal Size mm In.	Fmax kN lbs	Dimensions - mm In.					Type (2 Required)	SW mm In.	T Nm Lbf/Ft
T < +120° C	T < +220° C			H mm In.	W mm In.	L mm In.	B mm In.	D1 mm In.			
1501151	1502151	15 -	5 1,124	72 2.83	140 5.51	120 4.72	115 4.53	74 2.91	FAZ 12/10	5 0.20	15 1.03
1501181	1502181	18 3/8	5 1,124	72 2.83	140 5.51	120 4.72	115 4.53	74 2.91	FAZ 12/10	5 0.20	15 1.03
1501221	1502221	22 1/2	5 1,124	72 2.83	140 5.51	120 4.72	115 4.53	74 2.91	FAZ 12/10	5 0.20	15 1.03
1501281	1502281	28 3/4	5 1,124	72 2.83	140 5.51	120 4.72	115 4.53	74 2.91	FAZ 12/10	5 0.20	15 1.03
1501352	1502352	35 1	5 1,124	85 3.35	140 5.51	140 5.51	135 5.31	92 3.62	FAZ 12/10	5 0.20	15 1.03
1501422	1502422	42 1 1/4	5 1,124	85 3.35	140 5.51	140 5.51	135 5.31	92 3.62	FAZ 12/10	5 0.20	15 1.03
1501483	1502483	48 1 1/2	8 1,798	100 3.94	160 6.30	175 6.89	170 6.69	125 4.92	FAZ 16/20	6 0.24	30 2.06
1501543	1502543	54 -	8 1,798	100 3.94	160 6.30	175 6.89	170 6.69	125 4.92	FAZ 16/20	6 0.24	30 2.06
1501573	1502573	57 -	8 1,798	100 3.94	160 6.30	175 6.89	170 6.69	125 4.92	FAZ 16/20	6 0.24	30 2.06
1501603	1502603	60 2	8 1,798	100 3.94	160 6.30	175 6.89	170 6.69	125 4.92	FAZ 16/20	6 0.24	30 2.06
1501764	1502764	76 2 1/2	11 2,473	115 4.53	180 7.09	205 8.07	190 7.48	150 5.91	FAZ 16/20	6 0.24	30 2.06
1501894	1502894	89 3	11 2,473	115 4.53	180 7.09	205 8.07	190 7.48	150 5.91	FAZ 16/20	6 0.24	30 2.06
1501145	1502145	114 4	10 2,248	158 6.22	200 7.87	280 11.02	260 10.24	205 8.07	FAZ 16/20	8 0.31	60 4.11
1501405	1502405	140 5	10 2,248	158 6.22	200 7.87	280 11.02	260 10.24	205 8.07	FAZ 16/20	8 0.31	60 4.11
1501686	1502686	150 6	30 6,744	310 12.20	200 7.87	355 13.98	- -	275 10.83	FAZ 20/60	- -	- -
1501197	1502197	200 8	30 6,744	330 12.99	200 7.87	404 15.91	- -	324 12.76	FAZ 20/60	- -	- -
150738	1502738	250 10	30 6,744	370 14.57	200 7.87	487 19.17	- -	407 16.02	FAZ 20/60	- -	- -

Additional
Products

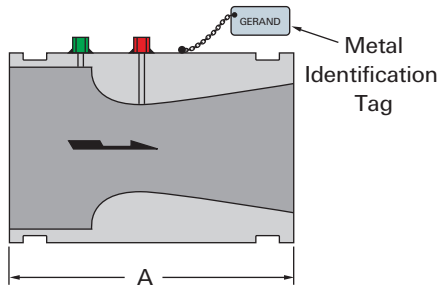
Figure FAZ Anchor

10
YEAR
LIMITED
WARRANTY



Part Number	Type	Approx. Weight Kg. Lbs.
1761201	FAZ 12/10	0.096 0.212
1761602	FAZ 16/20	0.223 0.492
1772003	FAZ 20/60	0.421 0.928

Figure Venturi, Flow Meter Butt Weld with Grooved Ends

10
 YEAR
 LIMITED
 WARRANTY


Part Number	Pipe Size		Max. Wk Pressure psi bar	Pump Capacity LPM GPM	Flow Range LPM GPM	A mm In.	Required straight pipe length		Approx Weight Kg. Lbs.
	Nominal mm In.	O.D. mm In.					Before mm In.	After mm In.	
K010000734	65	73.0	34.5	379	189-757	101.6	365	146	4.0
	2-1/2	2.875	500	100	50-200	4.00	14.37	5.75	8.8
K015000894	80	88.9	34.5	568	284-1135	111.1	445	178	8.0
K020000894				150	75-300	4.37	17.52	7.01	17.6
	3	3.500	500	757	378-1514	111.1	445	178	8.0
				200	100-400	4.37	17.52	7.01	17.6
K025001144	100	114.3	34.5	946	473-1892	95.3	570	228	8.0
				250	125-500	3.75	22.44	8.98	17.6
K030001144				1.136	567-2271	95.3	570	228	8.0
				300	150-600	3.75	22.44	8.98	17.6
K045001144				1.703	851-3406	95.3	570	228	8.0
				450	225-900	3.75	22.44	8.98	17.6
K050001414	125	141.3	34.5	1.893	946-3785	127	695	278	8.5
	5	5.563	500	500	250-1000	5.00	27.36	10.94	18.7
K075001684	150	168.3	34.5	2.839	1419-5677	152.4	840	336	8.5
				750	375-1500	6.00	33.07	13.23	18.7
K100001684				3.785	1892-7570	152.4	840	336	8.5
				1,000	500-2000	6.00	33.07	13.23	18.7
K125001684				4.731	2365-9462	152.4	840	336	8.5
				1,250	625-2500	6.00	33.07	13.23	18.7
K150002194	200	219.1	34.5	5.678	2838-11355	177.8	1095	438	10.5
				1,500	750-3000	7.00	43.11	17.24	23.1
K200002194				7.570	3785-15140	177.8	1095	438	10.5
				2,000	1000-4000	7.00	43.11	17.24	23.1
K250002194				9.463	4731-18925	177.8	1095	438	10.5
	8	8.625	500	2,500	1250-5000	7.00	43.11	17.24	23.1
K300002194				11.355	5677-22710	177.8	1095	438	10.5
				3,000	1500-6000	7.00	43.11	17.24	23.1
K350002734	250	273.0	34.5	13.248	6623-26495	203.2	1365	546	13.0
				3,500	1750-7000	8.00	53.74	21.50	28.7
K400002734				15.140	7570-30280	203.2	1365	546	13.0
				4,000	2000-8000	8.00	53.74	21.50	28.7
K450002734				17.033	8516-34065	203.2	1365	546	13.0
				4,500	2250-9000	8.00	53.74	21.50	28.7
K500003244	300	323.9	34.5	18.925	9462-37850	304.8	1620	648	18.0
	12	12.750	500	5,000	2500-10000	12.00	63.78	25.51	39.7

Note: End Connections: provided with butt weld and grooved ends
 Gauge: 114mm (4 1/2") dual scale LPM/GPM
 Body material: Steel
 Approval: FM

 Additional
 Products

Fire Suppression Systems Sprinklers & Valves Overview

(Page 1 of 3)

Tyco Fire Protection Products is the leading manufacturer and distributor of water-based fire suppression systems and components, offering one of the broadest lines of fire protection system equipment worldwide. Continually expanding our capabilities through proactive research and product development, it provides its customers with effective fire protection and construction solutions for residential, commercial, industrial, and institutional buildings. If required, products can be engraved, assembled or otherwise modified according to your own specifications. In our Assembly Shop we can pre-trim any type of alarm valve to local specific requirement. Each valve assembly is functionally and hydrostatically tested before it leaves

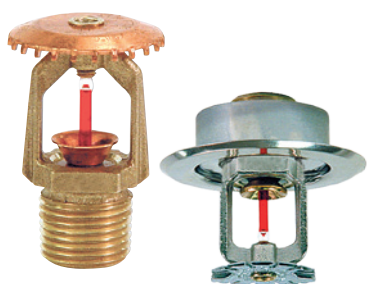
our facilities. We can assist you to find safe and efficient solutions when using our products. We can provide technical support, training and courses.

Tyco Fire Protection Products manufactures and supplies, for installation by others, all necessary components for dry and wet riser systems. The dry riser system is only charged with water when in use, whereas the wet riser system is permanently connected to a water supply. All components are manufactured strictly to relevant British Standards.

For the latest and more detailed information about our product approvals or innovations, please visit us at:

**www.tfppea.com or www.tyco-fire.com or
order our complete water based fire protection catalogue.**

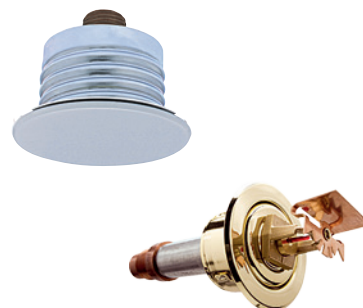
Standard/Extended Coverage Sprinklers



Storage Sprinklers



Residential Sprinklers & Dry Sprinklers



Special Sprinklers & Multiple Jet Controls



Nozzles & Sprinkler Accessories



AquaMist Systems



Wet & Dry System Alarm Valves



Deluge & Pre-Action System Alarm Valves



Accessories, Measuring & Electrical Devices



Additional
Products

Fire Suppression Systems Dry Risers, Valve Cabinets, Foam Systems, & Design Software

(Page 2 of 3)

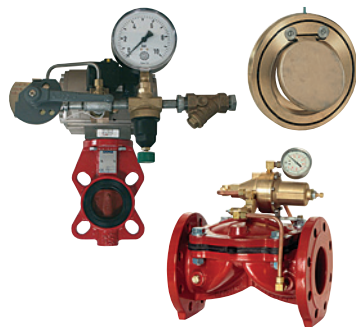
Tyco Fire Protection Products supplies pre-assembled fire protection valve package enclosed within a free-standing cabinet designed to occupy minimal floor space and to provide an aesthetically pleasing enclosure for a fire protection valve riser. The entire package is custom designed by our engineers, pre-wired, tested and the water inlet and outlets to the valve riser are grooved to provide minimal installation time.

As the leading fire protection company we are able to solve almost every challenge in fire protection, good examples are our foam systems for challenges where water based systems are not an option, hydrants for use by the fire fighters and even software like sprinkCAD to help our customers designing the best systems.

For the latest and more detailed information about our product approvals or innovations, please visit us at:

**www.tfppea.com or www.tyco-fire.com or www.sprinkcad.com
or order our complete water based fire protection catalogue.**

Shut-off, Check, & General Purpose Valves



Modular Sprinkler Valve Cabinets



Hydrants and Postindicators



CPVC Pipes & Fittings / MLC-S Pipe Systems



Dry Riser Inlet Breeching



Gate Valves (BSP) & Fire Connections



Foam Agents & Proportioning Equipment



Tanks & Inductors Foam Discharge Devices



Technical Support, Project Design & Analysis



Additional
Products

Fire Suppression Systems Support Systems Overview

(Page 3 of 3)

Tyco Fire Protection Products' new range of Standard Sprinkler Supports is the result of close co-operation between manufacturer, engineer, distributor and client. This complete range of Sprinkler Support products comes with approvals including FM, UL, VdS or LPCB, based on the requirements of your market.

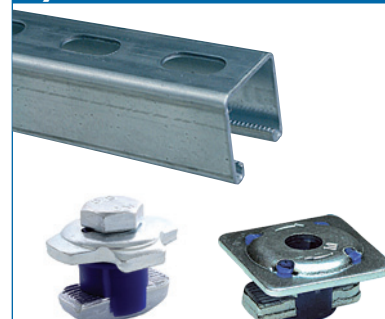
These products offer innovative solutions to many problems you encounter to support Fire Protection services. The standard Sprinkler Supports can be pre-assembled in house and our Technical and Design Services department can assist you in finding the best Sprinkler Support Solution. Detailed technical Catalogue and CD-ROM are available on request.

The Standard Sprinkler Support Systems range contains the following product lines:



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

Kwikstrut Framing System



Cantilever & Angel Brackets



Sprinkler Hangers



Base Plates & Side Beam Attachments



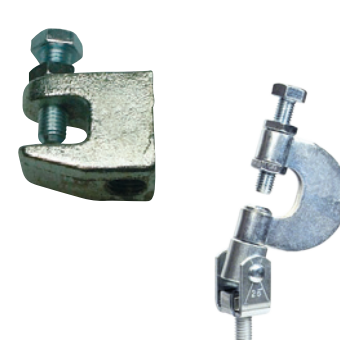
U-Bolts & Channel Pipe Clips



Seismic Bracing Products



Fixings onto Steel Beams & Roofs



Anchors & Holesaw



Sammy Screws



Bolts, Nuts & Threaded rods



Additional
Products



/ G-FIRE GASKETS /

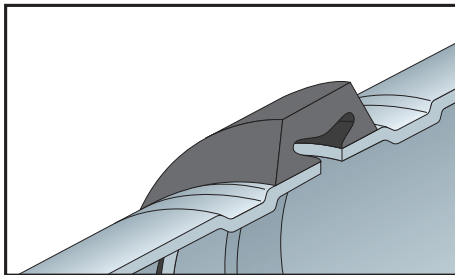
GRINNELL Gasket Seal

Tech Data Sheet: TFP1895

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

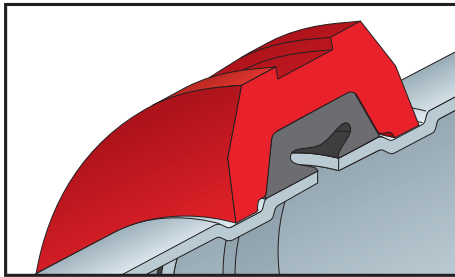
The GRINNELL gasket is designed to provide a three-way sealing action.

- (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.



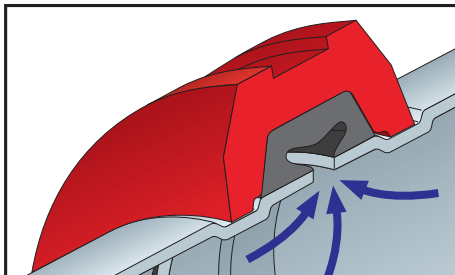
First Seal

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.



For detailed Listing and Approval information see pages 101 - 108 or contact Tyco Fire Protection Products.

Gaskets



Gasket Styles

Tech Data Sheet: TFP1895

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 577, 705, and 707 GRINNELL G-FIRE Couplings. The gasket is available in Grade "A" EPDM. Grade "E" is also available for certain applications



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 577, 705, and 707 GRINNELL Couplings. It is recommended for use in low temperature and vacuum services (greater than 250mm Hg (10" 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.

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



Reducing Coupling

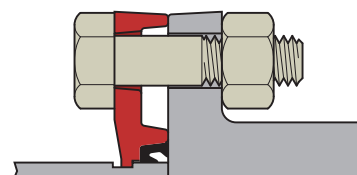
The reducing gasket is provided with ribs used to position the larger pipe so that the sealing lip is located on the sealing surface of the pipe. This gasket is used only with the Figure 716 GRINNELL Reducing Coupling and is available in Grade "E" EPDM.

Reducing couplings are not recommended for low temperature applications.



Flange Adaptor

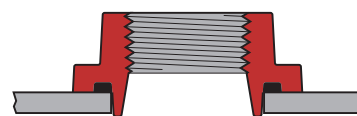
This gasket is specifically designed for use with the Figure 71 Flange Adaptor. The gasket has an optimum amount of rubber to provide a dependable seal between both the pipe and mating surface. The gasket is available in Grade "E" EPDM.



Outlet Fittings

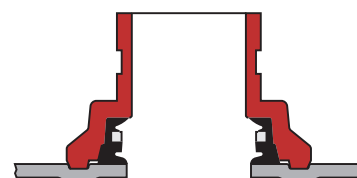
The gasket provides a compression type seal, which is designed to conform to the exterior curve (OD) of the pipe. This design is unique to both the Figure 730 Outlet Fittings (threaded and grooved). The gasket is available in Grade "E" EPDM.

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



Outlet Coupling

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



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

Gaskets

GRINNELL Gasket Grade & Recommendations

Tech Data Sheet: TFP1895

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 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.

Contact Tyco Technical Services for recommendations for services not listed.

Gasket recommendations apply to GRINNELL gaskets and valves only.

Grade	Temperature Range	Compound	Colour Stripe Code	General Service Application
"A" Pre-Lubricated	-34°C to 66°C (-30°F to 150°F)	EPDM	Violet	Fire Protection systems Not recommended for hot water systems.
"E" Tri- Seal	-34°C to 110°C (-30°F to 230°F)	EPDM	Green	Fire Protection systems. For dry pipe or freezer systems
"E"	-34°C to 110°C (-30°F to 230°F)	EPDM	Green	Mechanical applications and Fire Protection systems
For local country potable water approvals contact Tyco Technical Services				



For detailed Listing and Approval information see pages 101 - 108 or contact Tyco Fire Protection Products.

Figure 702 Replacement Gaskets

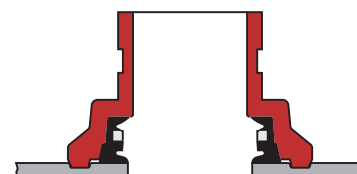
Run Pipe Size		Branch Size mm In.
Nominal mm In.	O.D. mm In.	
40 1-1/2	48.3 1.900	21.3 1/2
		26.7 3/4
		33.7 1
		42.4 1-1/4
		48.3 1-1/2
50 2	60.3 2.375	21.3 1/2
		26.7 3/4
		33.7 1
		42.4 1-1/4
		48.3 1-1/2
65 2-1/2	73.0 2.875	21.3 1/2
		26.7 3/4
		33.7 1
		42.4 1-1/4
		48.3 1-1/2
		60.3 2
		63.5 2-1/2

Run Pipe Size		Branch Size mm In.
Nominal mm In.	O.D. mm In.	
80 3	88.9 3.500	26.7 3/4
		33.7 1
		42.4 1-1/4
		48.3 1-1/2
		60.3 2
100 4	114.3 4.500	26.7 3/4
		33.7 1
		48.3 1-1/2
		60.3 2
		63.5 2-1/2

Run Pipe Size		Branch Size mm <i>In.</i>
Nominal mm <i>In.</i>	O.D. mm <i>In.</i>	
150 6	168.3 6.625	33.7 1
		32 1- ¹ / ₄
		48.3 1- ¹ / ₂
		60.3
		2
Contact local sales rep or customer service regarding part numbers and availability		

Outlet Coupling

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



Gaskets

Figures 577, 705, and 707 Replacement gaskets

Style C



Tri-Seal

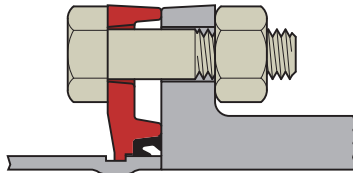


Pipe Size		EPDM		
Nominal mm <i>Inches</i>	O.D. mm <i>Inches</i>	Grade A EPDM C-Style PreLube Gasket	Grade E Tri-Seal	Grade E C-Style
25 1	33.7 1.315	034EPDMAPL	10EPDM-TRI	10EPDM
32 1¼	42.4 1.660	042EPDMAPL	12EPDM-TRI	12EPDM
40 1½	48.3 1.900	048EPDMAPL	15EPDM-TRI	15EPDM
50 2	60.3 2.375	060EPDMAPL	20EPDM-TRI	20EPDM
65 2½	73.0 2.875	073EPDMAPL	25EPDM-TRI	25EPDM
65 76.1mm	76.1 3.000	076EPDMAPL	26EPDM-TRI	26EPDM
80 3	88.9 3.500	089EPDMAPL	30EPDM-TRI	30EPDM
100 108.0mm	108.0 4.252	108EPDMAPL	41EPDM-TRI	41EPDM
100 4	114.3 4.500	114EPDMAPL	42EPDM-TRI	42EPDM
125 133.0mm	133.0 5.236	133EPDMAPL	51EPDM-TRI	51EPDM
125 139.7mm	139.7 5.500	139EPDMAPL	52EPDM-TRI	52EPDM
125 5	141.3 5.563	141EPDMAPL	52EPDM-TRI	52EPDM
150 159.0mm	159.0 6.260	159EPDMAPL	61EPDM-TRI	61EPDM
150 165.1mm	165.1 6.500	165EPDMAPL	62EPDM-TRI	62EPDM
150 6	168.3 6.625	168EPDMAPL	63EPDM-TRI	63EPDM
200 8	219.1 8.625	219EPDMAPL	80EPDM-TRI	80EPDM
250 10	273.0 10.750	273EPDMAPL	11EPDM-TRI	11EPDM
300 12	323.9 12.750	324EPDMAPL	13EPDM-TRI	13EPDM

Figure 71 Replacement Gaskets

Flange Adaptor

This gasket is specifically designed for use with the Figure 71 Flange Adaptor. 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.



Pipe Size		EPDM Grade E 71-Style
Nominal mm Inches	O.D. mm Inches	
50 2	60.3 2.375	20EPDM71
65 2½	73.0 2.875	25EPDM71
65 76,1mm	76.1 3.000	26EPDM71
80 3	88.9 3.500	30EPDM71
100 4	114.3 4.500	42EPDM71
125 139.7mm	139.7 5.500	52EPDM71
125 5	141.3 5.563	53EPDM71
150 165.1mm	165.1 6.500	62EPDM71
150 6	168.3 6.625	63EPDM71
200 8	219.1 8.625	80EPDM71
250 10	273.0 10.750	11EPDM71
300 12	323.9 12.750	13EPDM71

Gaskets

Figure 716 Replacement Gaskets

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.



Pipe Size		EPDM Grade E 716-Style
Nominal mm Inches	O.D. mm Inches	
50 x 40 2 x 1½	60.3 x 48.3 2.375 x 1.900	EPDM2015
65 x 50 2½ x 2	73.0 x 60.3 2.875 x 2.375	EPDM2520
65 x 50 76.1 x 2	76.1 x 60.3 3.000 x 2.375	EPDM2620
80 x 50 3 x 2	88.9 x 60.3 3.500 x 2.375	EPDM3020
80 x 65 3 x 2½	88.9 x 73.0 3.500 x 2.875	EPDM3025
80 x 65 3 x 76,1mm	88.9 x 76.1 3.500 x 3.000	EPDM3026
100 x 60 4 x 2	114.3 x 60.3 4.500 x 2.375	EPDM4220
100 x 65 4 x 2½	114.3 x 73.0 4.500 x 2.875	EPDM4225
100 x 65 114,3 x 76,1mm	114.3 x 76.1 4.500 x 3.000	EPDM4226
100 x 80 4 x 3	114.3 x 88.9 4.500 x 3.500	EPDM4230
125 x 100 139,7mm x 4	139.7 x 114.3 5.500 x 4.500	EPDM5242
125 x 100 5 x 4	141.3 x 114.3 5.563 x 4.500	EPDM5342
150 x 100 165mm x 4	165.1 x 114.3 6.500 x 4.500	EPDM6242
150 x 100 6 x 4	168.3 x 114.3 6.625 x 4.500	EPDM6342
150 x 125 6 x 5	168.3 x 141.3 6.625 x 5.563	EPDM6553
200 x 150 8 x 6	219.1 x 168.3 8.625 x 6.625	EPDM8063

Figure 730 & 522 Replacement Gaskets

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) and Figure 522 Sprinkler Outlet.

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.

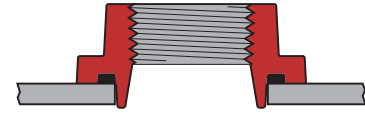
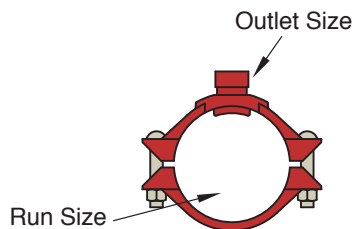
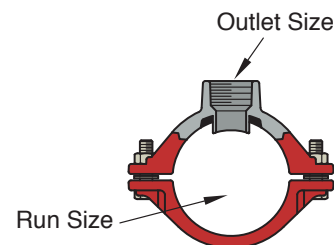


Figure 730 Gaskets



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

Figure 522 Gaskets



Run Size mm Inches	Outlet Size mm Inches	EPDM Grade E 522-Style
32 1 1/4	10 3/8	976-001
25. 32. 40 1, 1 1/4, 1 1/2	15. 20. 25 1/2, 3/4, 1	976-001
50 2	15. 20 1/2, 3/4	976-001
65 2 1/2	15. 20 1/2, 3/4	976-001
25 1	15. 20. 25 1/2, 3/4, 1	976-290
50 2	25 1	976-304
65 2 1/2	25 1	976-304

Gaskets

Miscellaneous, Lubricant

Tech Data Sheet: TFP1895

10
YEAR
LIMITED
WARRANTY



During installation of a GRINNELL G-FIRE 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 outlet fittings when used in low temperature applications, use a petroleum-free silicone based lubricant, otherwise no lubricant is required. For information on health safety, contact Tyco Technical Services 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

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)			•

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

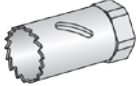
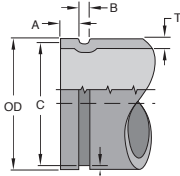
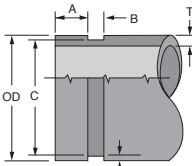
Gasket Size mm In.	Traditional Lubricant	Quick Dry Lubricant	GETL (GRINNELL Extreme Temperature Lubricant)
50 2	440	440	1000
80 3	300	300	700
100 4	220	220	500
150 6	135	135	300
200 8	110	110	250
250 10	85	85	200
300 12	65	65	160

Gaskets



PREPARATION EQUIPMENT

Preparation Equipment Pictorial Table of Contents

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 Figure Groover 02 Automatic Groover Pages – 85	 Hole Cutting Tools Page – 86
 Figure Groover 10A Portable Groover Pages – 85	 Pipe Tape Page – 87
 Figure STAND Pipestand Page – 85	 Figure PUNCH Hole Punch Page – 87
 Figure RJ624 Pipestand Page – 85	 Figure GAUGE Groove Gauge Page – 88
	 Roll Grooving Specifications Pages – 89
	 Cut Grooving Specifications Pages – 90

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	42.4mm thru 457.2mm 1¼ thru 18	380VAC 50Hz	Portable Groover with Pipestand	207 456.4
GROOVER 02	42.4mm thru 457.2mm 1¼ thru 18	380VAC 50Hz	Automatic Groover with Pipestand	297 654.8
GROOVER 10A	33.7mm thru 219.1mm 1 thru 8	220VAC 50Hz	Portable Groover with Pipestand	107 235.9
GROO10A-UK	33.7mm thru 219.1mm 1 thru 8	110VAC 50Hz	Portable Groover with Pipestand	107 235.9

*Note: Other voltages on request.

Pipe Stands



Figure STAND



Figure RJ-624

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

Figure HCTOOL Hole Cutting Tool



Figure HCTOOL
(Drill not included)

Part Number	Pipe Size mm In.	Max. Hole Ø Supply mm In.	Description	Approx Weight Kg
HCTOOL	21.0 - 273.0 ½ - 10	125 5	Hole cutting Tool	8.0 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 (½" thru 12").

With the optional base and beam adapter, the support can also be attached to standard steel beams.

Hole Cutting Tool Spare Parts

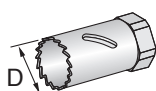


Figure HOLESAP
(Available sizes
show in table)

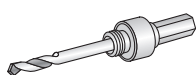


Figure HOLESAPCP
(For dia. 14.3mm
thru 30.2mm)
(0.56" thru 1.19")

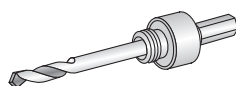


Figure HOLESAPCP5
(For dia. 31.8mm
thru 152.4mm)
(1.25" thru 6.00")



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 In.	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

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!

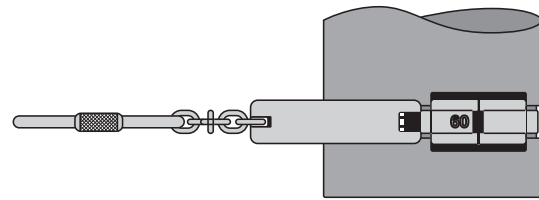
Pull the tape tightly on the pipe. Through the clear view window one should see the indicator line and a small 'block' showing the tolerance area for the groove. The indicator line in the window must fall within the dark coloured block or groove tolerance area.

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:

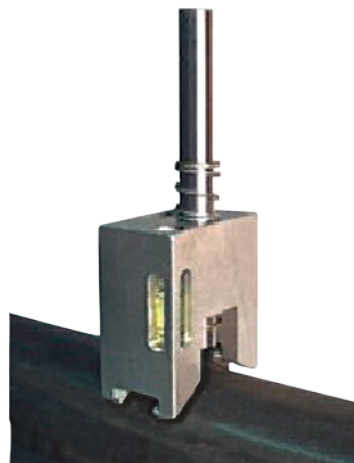
This tape is not a calibrated tool and is to be used for reference only. To ensure accuracy, always check grooved end pipe with calibrated gauges or calipers.

For Roll Groove Standard Specifications for Steel Pipe and Other IPS Pipe, refer to Data Sheet TFP1898.



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
	33.7 – 609.6 1 – 24		
ZKLM024	33.7 – 609.6 1 – 24	Pipe Measuring Tape	0.100

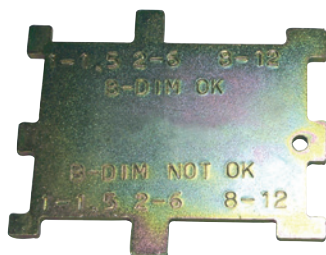
Part Number	Description
PUNCH	Centre Punch



**Figure PUNCH
Centre Punch**

Preparation
Equipment

GRINNELL Gauges



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

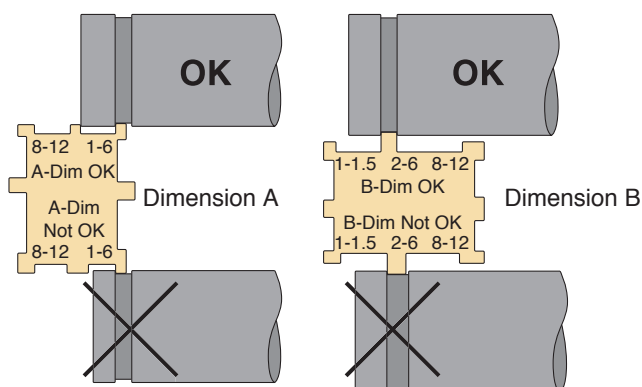
A Dimension - Gasket seat

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.

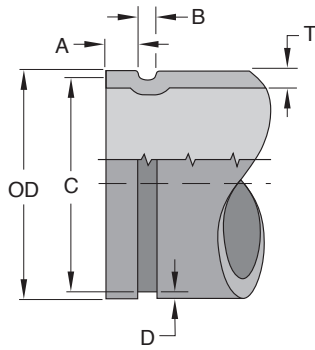
Please note: This gauge is not a calibrated tool and is to be used for reference only. To ensure accuracy, always check grooved end pipe with calibrated gauges or calibers.



Part Number	Pipe Size mm In.	Description Hole Drill	Use with Drive Plate
GAUGE	33.7 – 323.9 1 – 12	Gauge	0.250

Roll Groove Standard Specification for Steel & Other IPS Pipe

Tech Data Sheet: TFP1898



Nominal Pipe Size mm Inches	Pipe O.D. mm Inches			A ±0.030" ±0.76mm mm Inches	B ±0.030" ±0.76mm mm Inches	C Groove Diameter mm Inches		D Groove Depth (ref. only) mm Inches	T Minimum Wall mm Inches	Maximum Allow Flare Diameter mm Inches
	O.D.	Tolerance				Actual	Tol. +0.000			
		+	-							
25	33.4	0.33	0.33	15.88	7.14	30.23	-0.38	1.60	1.65	36.32
1	1.315	0.013	0.013	0.625	0.281	1.190	-0.015	0.063	0.065	1.743
32	42.4	0.41	0.41	15.88	7.14	38.99	-0.38	1.60	1.65	44.96
1¼	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
1½	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
2½	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
150	165.1	1.60	0.79	15.88	8.74	160.78	-0.56	2.16	2.77	167.64
165,1mm	6.500	0.063	0.031	0.625	0.344	6.330	-0.022	0.085	0.109	6.60
150	168.3	1.60	0.79	15.88	8.74	163.96	-0.56	2.16	2.77	170.94
6	6.625	0.063	0.031	0.625	0.344	6.455	-0.022	0.085	0.109	6.73
200	219.1	1.60	0.79	19.05	11.91	214.40	-0.64	2.34	2.77	223.52
8	8.625	0.063	0.031	0.750	0.469	8.441	-0.025	0.092	0.109	8.80
250	273.0	1.60	0.79	19.05	11.91	268.27	-0.69	2.39	3.40	277.37
10	10.750	0.063	0.031	0.750	0.469	10.562	-0.027	0.094	0.134	10.92
300	323.9	1.60	0.79	19.05	11.91	318.19	-0.76	2.77	3.96	328.17
12	12.750	0.063	0.031	0.750	0.469	12.531	-0.030	0.109	0.156	12.92

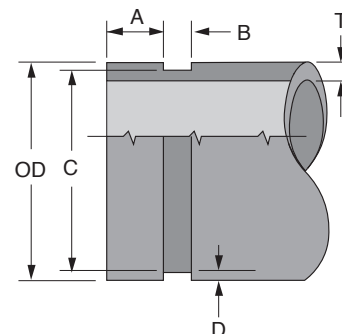
- (1) The maximum allowable tolerances for IPS Pipe from square cut ends is:
0.76mm (0.030") for sizes 32mm – 80mm (1¼" thru 3");
1.14mm (0.045") for sizes 100mm – 150mm (4" – 6"); and
1.52mm (0.060") for sizes 200mm (8") and above.
- (2) Gasket Seating Surface "A" must be free from score marks, ridges, 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 roll grooved.
- (6) Maximum allowable pipe end flare diameter is measured at the pipe end diameter.

Refer to back cover for country-specific contact information.

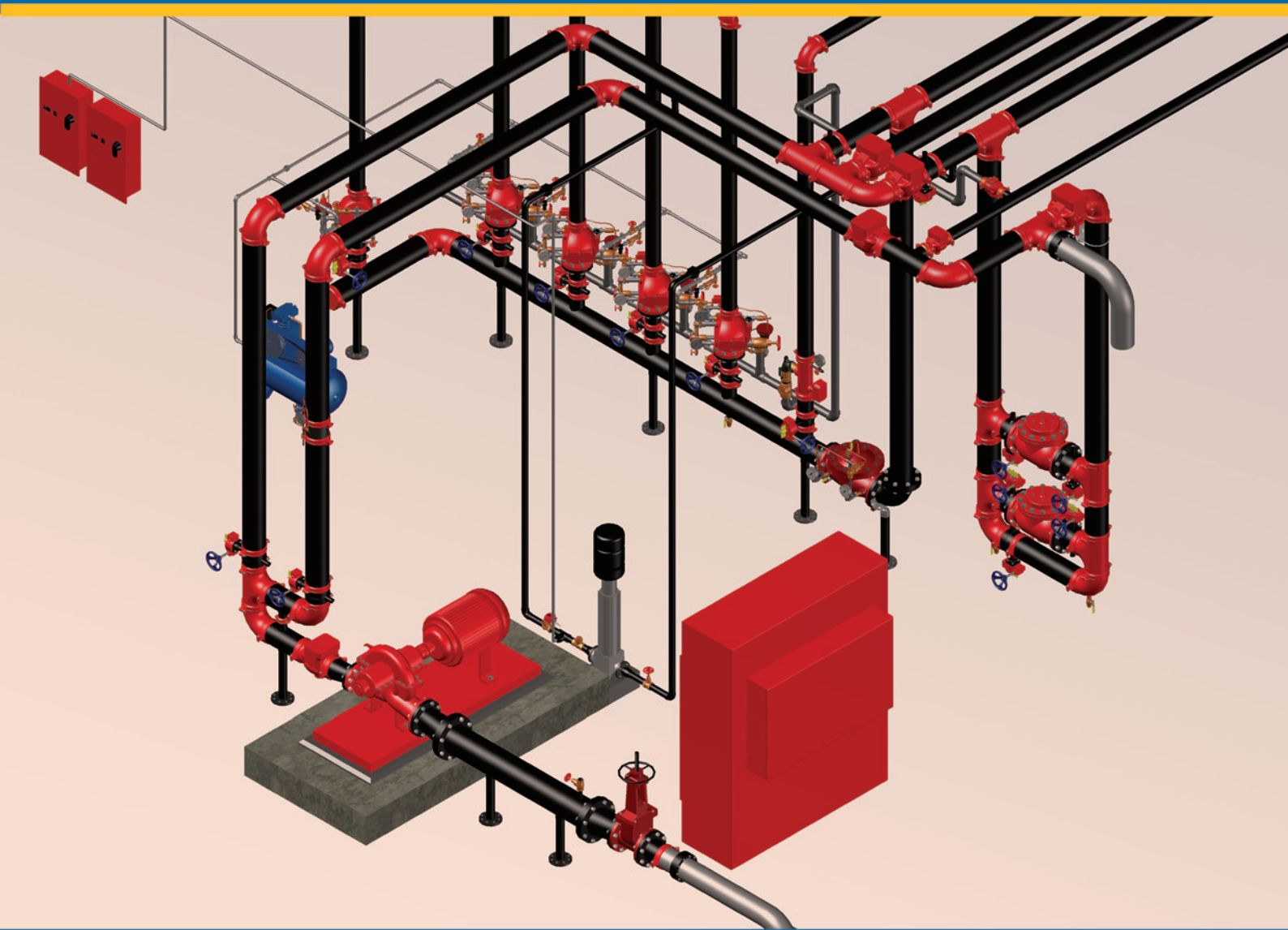
Cut Groove Standard Specification for Steel & Other IPS Pipe

Tech Data Sheet: TFP1898



Nominal Pipe Size mm <i>Inches</i>	Pipe O.D. mm <i>Inches</i>			A ±0.030" ± 0.76mm mm <i>Inches</i>	B ±0.030" ± 0.76mm 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		
		+	-						
25	33.4	0.33	0.33	15.88	7.95	30.23	-0.38	1.57	3.38
1	1.315	0.013	0.013	0.625	0.313	1.190	-0.015	0.062	0.133
32	42.4	0.41	0.41	15.88	7.95	38.99	-0.38	1.60	3.56
1¼	1.660	0.016	0.016	0.625	0.313	1.535	-0.015	0.062	0.140
40	48.3	0.48	0.48	15.88	7.95	45.09	-0.38	1.60	3.68
1½	1.900	0.019	0.019	0.625	0.313	1.775	-0.015	0.062	0.145
50	60.3	0.61	0.61	15.88	7.95	57.15	-0.38	1.60	3.91
2	2.375	0.024	0.024	0.625	0.313	2.250	-0.015	0.062	0.154
65	73.0	0.74	0.74	15.88	7.95	69.09	-0.46	1.98	4.78
2½	2.875	0.029	0.029	0.625	0.313	2.720	-0.018	0.078	0.188
65	76.1	0.76	0.76	15.88	7.95	72.26	-0.46	1.93	4.78
76,1mm	3.000	0.030	0.030	0.625	0.313	2.845	-0.018	0.076	0.188
80	88.9	0.89	0.79	15.88	7.95	84.94	-0.46	1.98	4.78
3	3.500	0.035	0.031	0.625	0.313	3.344	-0.018	0.078	0.188
100	108.0	1.07	0.79	15.88	9.53	103.73	-0.51	2.11	5.16
108.0mm	4.252	0.042	0.031	0.625	0.375	4.084	-0.020	0.083	0.203
100	114.3	1.14	0.79	15.88	9.53	110.08	-0.51	2.11	5.16
4	4.500	0.045	0.031	0.625	0.375	4.334	-0.020	0.083	0.203
125	133.0	1.35	0.79	15.88	9.53	129.13	-0.51	2.11	5.16
133.0mm	5.236	0.052	0.031	0.625	0.375	5.084	-0.020	0.083	0.203
125	139.7	1.42	0.79	15.88	9.53	135.48	-0.51	2.11	5.16
139,7mm	5.500	0.056	0.031	0.625	0.375	5.334	-0.020	0.083	0.203
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

- The maximum allowable tolerances for IPS Pipe from square cut ends is:
0.76mm (0.030") for sizes 32mm – 80mm (1¼" 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.



PRESSURE &
DESIGN DATA

Design

Tech Data Sheets: TFP1800, G820, G830

Rigid Joints

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

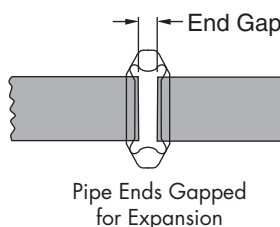


Flexible Joints

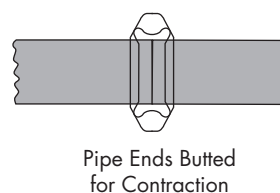
GRINNELL Flexible Couplings act as an "expansion joint", allowing linear and angular movement of the pipe. They are designed with the coupling keys engaging the pipe without gripping on the bottom of the grooves, while still providing for a restrained mechanical joint. This is particularly useful to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

Linear Movement (Flexible Couplings)

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



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



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

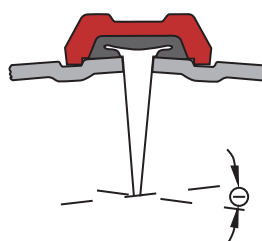
End Gap Reduction	
Pipe Size mm Inches	Maximum Pipe End Gap
42,4 – 88,9 1 1/4 – 3	50%
114,3 – 610,0 4 – 24	25%

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

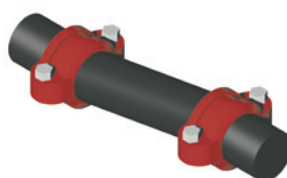
GRINNELL Flexible Couplings are capable of accommodating angular deflection.



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 practices 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: TFP1800, G820, G830

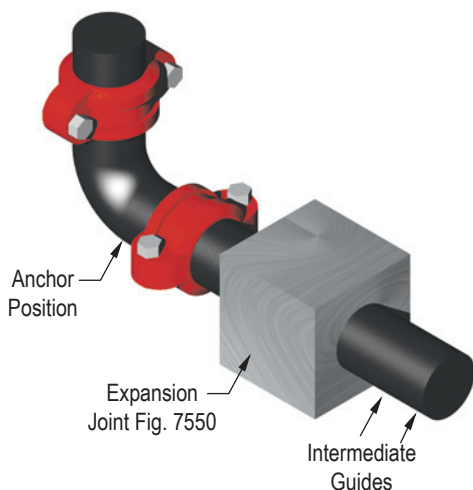
The following guidelines are similar to any expansion joint:

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

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

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

(1) Design the system with rigid couplings and place expansion joints at the proper locations. Expansion joints may be a series of flexible grooved couplings of a sufficient quantity to accommodate the movement.



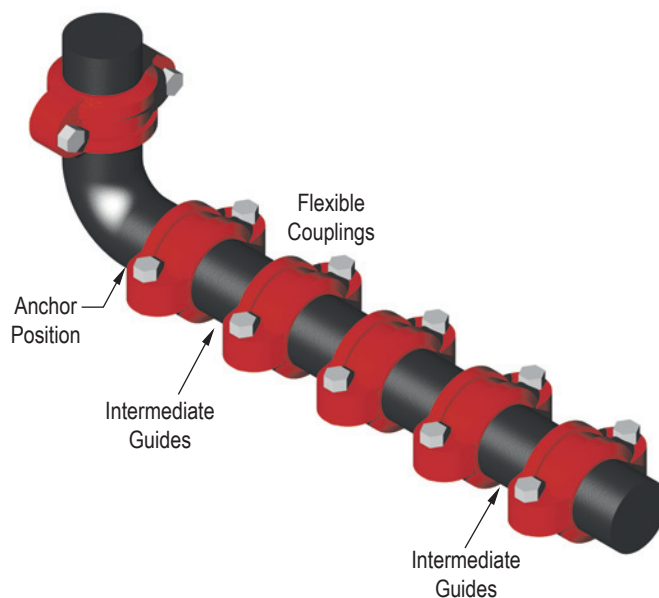
(2) Design the system with flexible and/or rigid couplings and allow the pipe to move in directions desired, with the use of anchors and guides if so required. With this method, it is important to ensure that movement at branch connections, changes of direction, equipment hookup, etc., will not cause damage or harmful stresses.

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

Activation Force	
Pipe Size mm Inches	Activation Force N Lbs.
42,4 1 1/4	156 35
48,3 1 1/2	200 45
60,3 2	311 70
73,0 2 1/2	645 100
76,1 76,1mm	489 110
88,9 3	645 145
114,3 4	1068 240
141,3 5	1668 375
165,1 165,1mm	2224 500
168,3 6	2313 520
219,1 8	3914 880
273,0 10	6072 1365
323,9 12	8518 1915

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)



Thermal Movement

Tech Data Sheets: TFP1800, G820, G830

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

(1) Thermal Contraction

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

26.6°C = 15,5mm per 30,5m
 4.4°C = 7,6mm per 30,5m
 Difference = 7,9mm per 30,5m
 For 45,7m of pipe = 7,9mm x 1.5 = 11,9mm per 45,7m
 (80°F = 0.61" per 100'
 40°F = 0.30" per 100'
 Difference = 0.31" per 100'
 For 150' of pipe = 0.31" x 1.5 = 0.47" per 150')

(2) Thermal Expansion

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

93.3°C = 38,6mm per 30,5m
 26.6°C = 15,5mm per 30,5m
 Difference = 23,1mm per 30,5m
 For 45,7m of pipe = 23,1mm x 1.5 = 34,5mm per 45,7m
 (200°F = 1.52" per 100'
 80°F = 0.61" per 100'
 Difference = 0.91" per 100'
 For 150' of pipe = 0.91 x 1.5 = 1.36" per 150')

(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:

- 11,9mm / 2,4mm per coupling = 4.96
 (0.47" / 0.094" 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:
- 34,5mm / 2,4mm per coupling = 14.38
 (1.36" / 0.094" per coupling = 14.47)



- Use 15 Figure 707 Flexible Couplings for pipe expansion

Thermal Expansion of Carbon Steel in millimeters/30.5 Meters (Inches/100 Feet) Between 0°F (-18°C) and Indicated Temperature

Temperature C° F°	Thermal Expansion mm/30.5m Inches/100 Feet
-40.0	-7.72
-40	-0.30
-34.4	-5.79
-30	-0.23
-28.9	-3.86
-20	-0.15
-23.3	-1.93
-10	-0.08
-17.8	0.00
0	0.00
-12.2	1.93
10	0.08
-6.7	3.86
20	0.15
-1.1	5.79
30	0.23
4.4	7.72
40	0.30
10.0	9.65
50	0.38
15.6	11.58
60	0.46
21.1	13.51
70	0.53
26.7	15.44
80	0.61
32.2	17.37
90	0.68
37.8	19.30
100	0.76
43.3	21.23
110	0.84
48.9	23.16
120	0.91
54.4	25.09
130	0.99
60.0	27.02
140	1.06
65.6	28.95
150	1.14
71.1	30.88
160	1.22
76.7	32.81
170	1.29
82.2	34.74
180	1.37
87.8	36.67
190	1.44
93.3	38.60
200	1.52
98.9	40.53
210	1.60
104.4	42.46
220	1.67
110.0	44.39
230	1.75

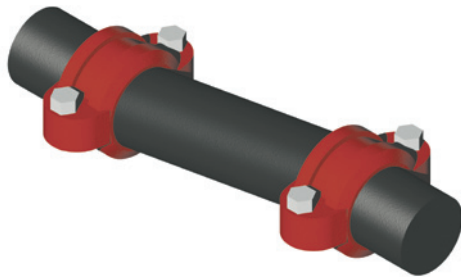
Mean Coef. of thermal expansion = 0.00001139 mm/mm/°C
 Source: ASME B31.9

Misalignment and Deflection

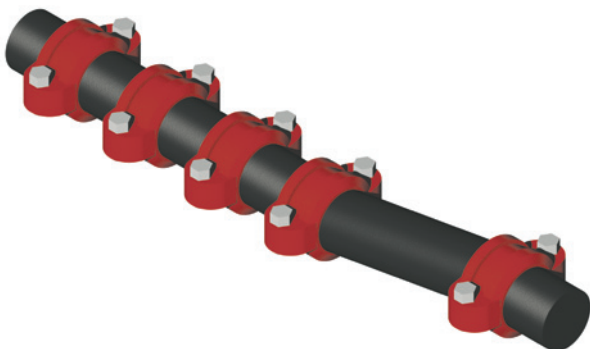
Tech Data Sheets: TFP1800, G820, G830

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.

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

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

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

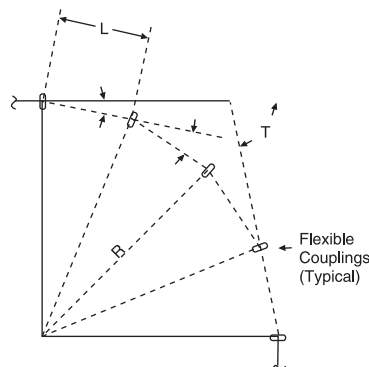
R = Radius of curve

L = Pipe length

Θ = Deflection from centreline, 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 practices (50% for sizes 32mm - 80mm (1 1/4" - 3") and 25% for sizes 100mm - 300mm (4" - 12")).	

Pipe Support

Tech Data Sheets: TFP1800, 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:

Pipe Size mm Inches	Number of Hangers Per Pipe Length							
	Pipe Length in Meters 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

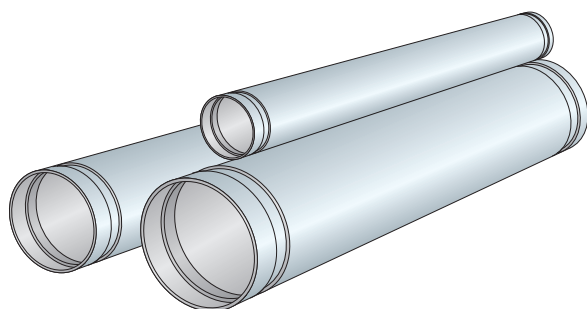
For pipe runs when linear movement is not required:

Distance Between Supports	
Nominal Size mm Inches	Maximum Distance Between Supports Meters 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
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 – Meters 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
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)							



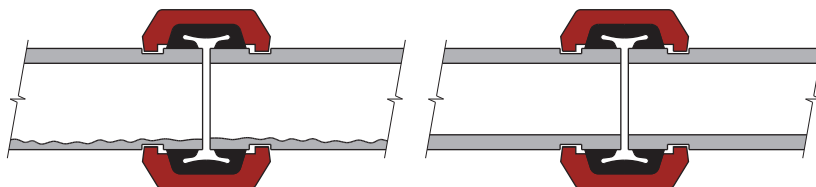
Pipe Support

Tech Data Sheets: TFP1800, G820, G830

Rotational Movement

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

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



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

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

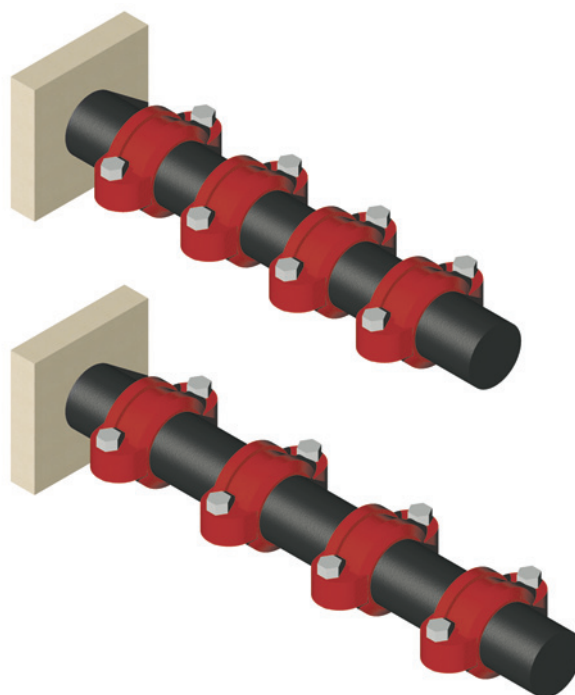
Linear Movement

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



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

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



Pressure &
Design Data

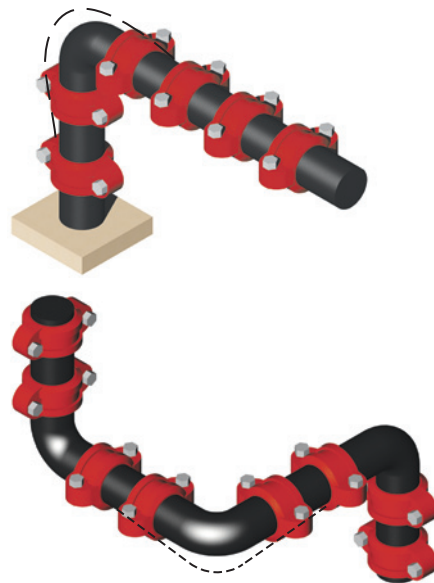
Pipe Support

Tech Data Sheets: TFP1800, G820, G830

Angular Movement

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

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

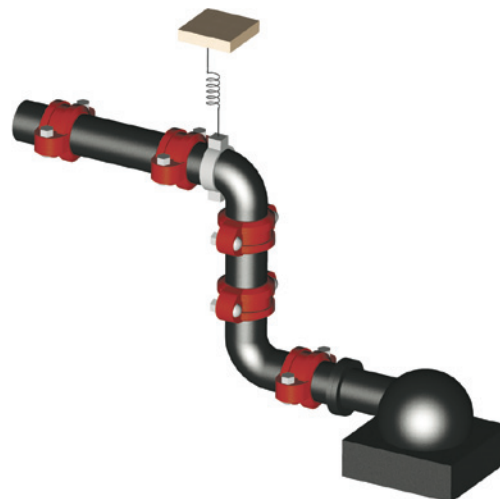
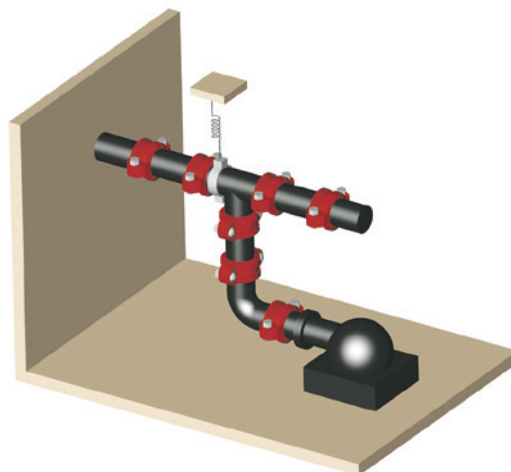
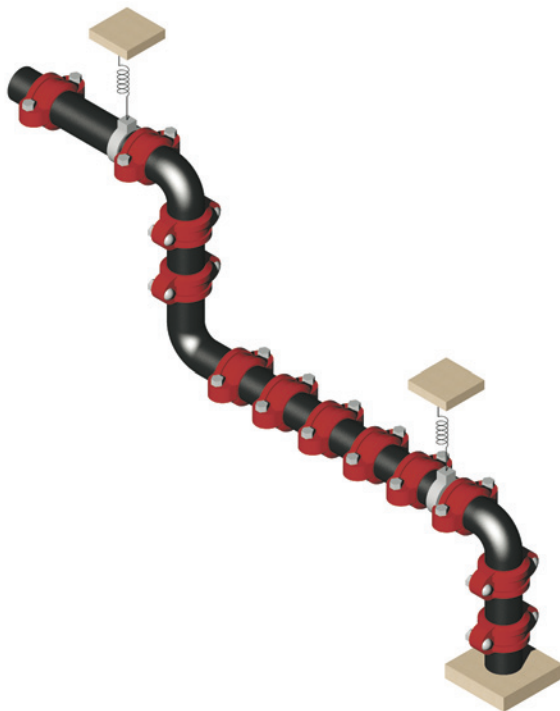


Pipe Support

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

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

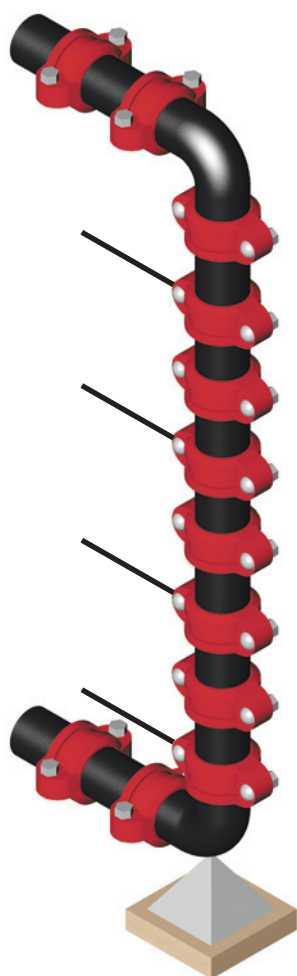
The use of rigid couplings can be considered to reduce the movement available with flexible couplings. Consideration of other methods of accommodation of pipe movements may be required.



Vertical Piping

Tech Data Sheets: TFP1800, G820, G830

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



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

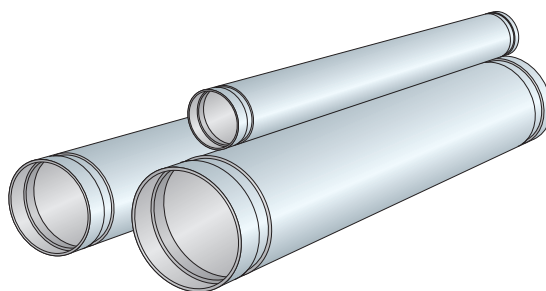
Should the riser contain branch connections, the movement which occurs at these locations with flexible couplings will also need to be considered.

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

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

Pipe Conversion Table

Wall Thickness



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
3/4	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
1 1/4	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
1 1/2	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	—	—	—
2 1/2	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

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Figure	Nominal Size mm Inches	Pipe Schedule	Rated Pressure - Bar psi (UL, ULC, FM, LPCB, and VdS)				
			UL	ULC	FM	VdS	LPCB
 Fig. 577	42.4, 48.3, 60.3 1 1/4, 1 1/2, 2	FLF, MF, XL, GL, 10, 40, CT, DF, TL, WLS, MT, MLT	20.7 300	20.7 300	20.7 300	-	-
	73.0, 88.9, 114.3 2 1/2, 3, 4	FLF, MF, DF	20.7 300	20.7 300	20.7 300	-	-
	73.0, 88.9 2 1/2, 3	FF, XL	20.7 300	20.7 300	20.7 300	-	-
	42.4, 48.3, 60.3, 73.0, 88.9, 114.3, 168.3, 219.1 1 1/4, 1 1/2, 2, 2 1/2, 3, 4, 6, 8	10	20.7 300	20.7 300	20.7 300	-	-
	42.4, 48.3, 60.3, 73.0, 88.9, 114.3, 168.3 1 1/4, 1 1/2, 2, 2 1/2, 3, 4, 6	40	20.7 300	20.7 300	20.7 300	-	-
	33.7, 42.4, 48.3, 60.3 1, 1 1/4, 1 1/2, 2	5	12.1 175	12.1 175	12.1 175	-	-
	88.9, 114.3, 168.3 3, 4, 6	EZF	20.7 300	20.7 300	20.7 300	-	-
	42.4 1 1/4	EZT	20.7 300	20.7 300	20.7 300	-	-
	48.3, 60.3 1 1/2, 2	EZT, FF	20.7 300	20.7 300	20.7 300	-	-
	48.3, 60.3, 73.0, 88.9, 114.3 1 1/2, 2, 2 1/2, 3, 4	STF	20.7 300	20.7 300	20.7 300	-	-
	114.3 4	STF	17.2 250	17.2 250	17.2 250	-	-
	219.1 8	0.188 in. wall	20.7 300	20.7 300	20.7 300	-	-
	33.7 1	10, 40, XL, TL, DF, BLT, DL, DT, MT, WLS, WST, GL, MLT, EZT, ET, EL, 5, BS1387M, ISO 4200	20.7 300	20.7 300	20.7 300	-	-
	141.3 5	10, 40	20.7 300	20.7 300	20.7 300	-	-
	76.1mm, 165mm 76.1mm, 165.1mm	BS1387M, ISO 4200	20.7 300	-	20.7 300	-	-
	139.7mm 139.7mm	ISO 4200	20.7 300	-	20.7 300	-	-
	33.7, 42.4, 48.3, 60.3, 76.1, 88.9, 114.3, 165.1 1, 1 1/4, 1 1/2, 2, 76.1mm, 3, 4, 165.1mm	BS1387M, ISO 4200	-	-	-	-	20.7 300
	168.3, 219.1 6, 8	ISO 4200	-	-	-	-	20.7 300
	33.7, 42.4, 48.3, 60.3, 88.9, 114.3, 168.3, 219.1 1, 1 1/4, 1 1/2, 2, 3, 4, 6, 8	ISO 4200	-	-	-	16 232	-
	76.1, 139.7 76.1mm, 139.7mm	ISO 4200	-	-	-	16 232	-
 Fig. 705	42.4, 48.3, 60.3 1 1/4, 1 1/2, 2	Sch 5, ID, WST	12.1 175	12.1 175	12.1 175	-	-
	42.4, 48.3, 60.3, 73.0 1 1/4, 1 1/2, 2, 2 1/2	Sch 10, Sch 40	20.7 300	20.7 300	20.7 300	-	-
	88.9, 114.3, 141.3, 168.3, 219.1 3, 4, 5, 6, 8	Sch 10, Sch 40	20.7 300	20.7 300	20.7 300	-	-
	273.0, 323.9 10, 12	Sch 10, Sch 40	17.2 250	17.2 250	17.2 250	-	-
	42.4, 48.3, 60.3, 73.0, 88.9 1 1/4, 1 1/2, 2, 2 1/2, 3	MF	20.7 300	20.7 300	20.7 300	-	-
	114.3 4	MF	-	-	20.7 300	-	-
	42.4, 48.3, 60.3, 73.0, 88.9, 114.3 1 1/4, 1 1/2, 2, 2 1/2, 3, 4	DF	20.7 300	20.7 300	20.7 300	-	-
	42.4, 48.3, 60.3, 73.0, 88.9, 114.3 1 1/4, 1 1/2, 2, 2 1/2, 3, 4	FLF	20.7 300	20.7 300	-	-	-

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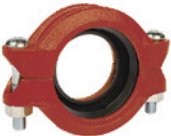
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Figure	Nominal Size mm Inches	Pipe Schedule	Rated Pressure - Bar psi (UL, ULC, FM, LPCB, and VdS)				
			UL	ULC	FM	VdS	LPCB
 Fig. 705 (Cont.)	48.3, 60.3, 73.0, 88.9, 114.3 1½, 2, 2½, 3, 4	FF	20.7 300	20.7 300	20.7 300	— —	— —
	33.7, 42.4, 48.3, 60.3 1, 1¼, 1½, 2	MLT, EZT	20.7 300	20.7 300	20.7 300	— —	— —
	88.9 3	EZ	20.7 300	20.7 300	20.7 300	— —	— —
	114.3 4	EZ	17.2 250	17.2 250	20.7 300	— —	— —
	168.3 6	EZ	17.2 250	17.2 250	12.1 175	— —	— —
	42.4, 48.3, 60.3 1¼, 1½, 2	BLT, DT, TL, Gal 7, Gal Flo	20.7 300	20.7 300	20.7 300	— —	— —
	42.4, 48.3, 60.3 1¼, 1½, 2	GL, MLT, MT, SL, WLS	20.7 300	20.7 300	— —	— —	— —
	42.4, 48.3, 60.3 1¼, 1½, 2	UE	— —	— —	12.1 175	— —	— —
	76.1, 165.1 76.1mm, 165.1mm	BS1387	20.7 300	20.7 300	20.7 300	— —	— —
	42.4, 48.3, 60.3, 76.1, 88.9, 114.3 1¼, 1½, 2, 76.1mm, 3, 4	BS1387, ISO 4200	— —	— —	— —	16 232	20.7 300
	139.7 139.7mm	BS1387, ISO 4200	— —	— —	— —	16 232	— —
	165.1 165.1mm	BS1387, ISO 4200	— —	— —	— —	— —	20.7 300
	168.3, 219.1 6, 8	ISO 4200	— —	— —	— —	16 232	20.7 300
	108.0, 133.0, 159.0 108.0mm, 133.0mm, 159.0mm	ISO 4200	20.7 300	— —	20.7 300	— —	— —
 Fig. 707	48.3, 60.3, 73.0 1½, 2, 2½	Sch 5, UE, WST	12.1 175	12.1 175	12.1 175	— —	— —
	48.3, 60.3, 73.0, 88.9, 114.3, 141.3 1½, 2, 2½, 3, 4, 5	Sch 10	31.0 450	31.0 450	31.0 450	— —	— —
	168.3, 219.1, 273.0, 323.9 6, 8, 10, 12	Sch 10	31.0 450	31.0 450	31.0 450	— —	— —
	48.3, 60.3, 73.0, 88.9, 114.3, 141.3 1½, 2, 2½, 3, 4, 5	Sch 40	34.5 500	34.5 500	34.5 500	— —	— —
	168.3, 219.1, 273.0, 323.9 6, 8, 10, 12	Sch 40	34.5 500	34.5 500	34.5 500	— —	— —
	48.3, 60.3, 73.0, 88.9, 114.3 1½, 2, 2½, 3, 4	MF, DF, FF, SF, STF	20.7 300	20.7 300	20.7 300	— —	— —
	60.3 2	EZT	20.7 300	— —	— —	— —	— —
	88.9 3	EZ	20.7 300	20.7 300	20.7 300	— —	— —
	114.3 4	EZ	17.2 250	17.2 250	20.7 300	— —	— —
	168.3 6	EZ	17.2 250	17.2 250	12.1 175	— —	— —
	48.3, 60.3, 73.0, 88.9 1½, 2, 2½, 3	XL	20.7 300	20.7 300	20.7 300	— —	— —
	48.3, 60.3 1½, 2	GL, MT, MLT, TL	20.7 300	20.7 300	20.7 300	— —	— —
	48.3, 60.3 1½, 2	Gal 7, Gal Flo	20.7 300	20.7 300	20.7 300	— —	— —
	48.3, 60.3 1½, 2	BLT, DT	— —	— —	20.7 300	— —	— —
	76.1, 165.1 76.1mm, 165.1mm	BS1387, ISO 4200	20.7 300	— —	20.7 300	— —	20.7 300

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Figure	Nominal Size mm Inches	Pipe Schedule	Rated Pressure - Bar psi (UL, ULC, FM, LPCB, and VdS)				
			UL	ULC	FM	VdS	LPCB
Fig. 707 (cont.)	48.3, 60.3, 88.9, 114.3, 168.3	BS1387, ISO 4200	—	—	—	—	20.7
	1½, 2, 3, 4, 6		—	—	—	—	300
	219.1, 273.0, 323.9	ISO 4200	—	—	—	16	20.7
	8, 10, 12		—	—	—	232	300
	60.3 x 48.3, 73.0 x 60.3, 88.9 x 60.3	Sch 5	12.1	12.1	12.1	—	—
	2 x 1½, 2½ x 2, 3 x 2		175	175	175	—	—
	88.9 x 73.0, 114.3 x 60.3, 114.3 x 73.0	Sch 5	12.1	12.1	12.1	—	—
	3 x 2½, 4 x 2, 4 x 2½		175	175	175	—	—
	60.3 x 48.3, 73.0 x 60.3, 88.9 x 60.3	Sch 10, Sch 40	24.1	24.1	24.1	—	—
	2 x 1½, 2½ x 2, 3 x 2		350	350	350	—	—
	88.9 x 73.0, 114.3 x 60.3, 114.3 x 73.0	Sch 10, Sch 40	24.1	24.1	24.1	—	—
	3 x 2½, 4 x 2, 4 x 2½		350	350	350	—	—
	114.3 x 88.9, 141.3 x 114.3, 168.3 x 114.3, 141.3	Sch 10, Sch 40	24.1	24.1	20.7	—	—
	4 x 3, 5 x 4, 6 x 4, 5		350	350	300	—	—
	219.1 x 168.3	Sch 40	24.1	24.1	20.7	—	—
	8 x 6		350	350	300	—	—
	60.3 x 48.3, 73.0 x 60.3, 88.9 x 60.3	DF, EZT, FF, GL, MF, MT, MLT, SF, STF, TL	20.7	20.7	20.7	—	—
	2 x 1½, 2½ x 2, 3 x 2		300	300	300	—	—
	114.3 x 60.3	DF, EZT, FF, GL, MF, MT, MLT, SF, STF, TL	20.7	20.7	20.7	—	—
	4 x 2		300	300	300	—	—
	88.9 x 73.0, 114.3 x 73.0, 114.3 x 88.9	DF, MF, SF	20.7	20.7	20.7	—	—
	3 x 2½, 4 x 2½, 4 x 3		300	300	300	—	—
	114.3 x 73.0, 114.3 x 88.9	FF, STF	20.7	20.7	20.7	—	—
	4 x 2½, 4 x 3		300	300	300	—	—
	141.3 x 114.3, 168.3 x 114.3	DF, FF, SF, STF	20.7	20.7	20.7	—	—
	5 x 4, 6 x 4		300	300	300	—	—
	88.9 x 60.3, 88.9 x 73.0	EZ	20.7	20.7	20.7	—	—
	3 x 2, 3 x 2½		300	300	300	—	—
	60.3 x 48.3	Gal 7, Gal Flo	20.7	20.7	20.7	—	—
	2 x 1½		300	300	300	—	—
	60.3 x 48.3, 73.0 x 60.3, 88.9 x 60.3	BS1387, ISO 4200	20.7	—	20.7	16	20.7
	2 x 1½, 2½ x 2, 3 x 2		300	—	300	232	300
	88.9 x 76.1, 114.3 x 60.3, 76.1, 88.9	BS1387, ISO 4200	20.7	—	20.7	16	20.7
	3 x 76.1mm, 4 x 2, 76.1mm, 3		300	—	300	232	300
	168.3 x 114.3, 219.1 x 168.3	ISO 4200	20.7	—	20.7	16	20.7
	6 x 4, 8 x 6		300	—	300	232	300
	139.7 x 114.3	BS1387, ISO 4200	20.7	—	20.7	16	—
	139.7mm x 4		300	—	300	232	—
	165.1 x 114.3	BS1387, ISO 4200	20.7	—	20.7	—	20.7
	165.1mm x 4		300	—	300	—	300
	60.3, 76.1, 88.9, 114.3, 168.3	BS1387, ISO 4200	17.2	—	17.2	16	20.7
	2, 76.1mm, 3, 4, 6		250	—	250	232	300
	139.7	BS1387, ISO 4200	17.2	—	17.2	16	—
	139.7mm		250	—	250	232	—
	165.1	BS1387, ISO 4200	17.2	—	17.2	—	20.7
	165.1mm		250	—	250	—	300
	219.1, 273.0	ISO 4200	17.2	—	17.2	—	20.7
	8, 10		250	—	250	—	300
	323.9	ISO 4200	17.2	—	17.2	—	16
	12		250	—	250	—	232
	60.3	Sch 5, ID, UE, WST	12.1	12.1	12.1	—	—
	2		175	175	175	—	—
	60.3, 73.0, 88.9, 114.3, 141.3, 168.3, 219.1	Sch 10, Sch 40	17.2	17.2	17.2	—	—
	2, 2½, 3, 4, 5, 6, 8		250	250	250	—	—
	273.0, 323.9	Sch 40	17.2	17.2	17.2	—	—
	10, 12		250	250	250	—	—
	60.3	BLT, DT, EZT, FF, GL, LS, MT, MLT, TL, WLS, XL, Gal 7, Gal Flo	17.2	17.2	17.2	—	—
	2		250	250	250	—	—

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Figure	Nominal Size mm Inches	Pipe Schedule	Rated Pressure - Bar <i>psi</i> (UL, ULC, FM, LPCB, and VdS)				
			UL	ULC	FM	VdS	LPCB
 Fig. 71 (ANSI) (Cont.)	60.3	MF, FF	—	—	17.2	—	—
	2		—	—	250	—	—
	60.3, 73.0, 88.9, 114.3	DF, FF, MF, SF	17.2	17.2	17.2	—	—
	2, 2½, 3, 4		250	250	250	—	—
	88.9, 114.3	EZ	17.2	17.2	17.2	—	—
	3, 4		250	250	250	—	—
	168.3	EZ	17.2	17.2	12.1	—	—
 Fig. 522	6		250	250	175	—	—
	60.3, 88.9, 114.3	STF	17.2	17.2	17.2	—	—
	2, 3, 4		250	250	250	—	—
	73.0, 88.9	XL	17.2	17.2	17.2	—	—
	2½, 3		250	250	250	—	—
	33.7, 42.4, 48.3, 60.3, 76.1 x 15, 20, 25	a, b, c, d, e, g, h	—	—	20.7	—	—
	1, 1¼, 1½, 2, & 76.1mm x ½, ¾, 1	j, l, m, n, p, q, r, s, t, u	—	—	300	—	—
	42.4 x 10	a, b, c, d, e, g, h	—	—	20.7	—	—
	1¼ x ⅜	j, l, m, n, p, q, r, s, t, u	—	—	300	—	—
	33.7, 42.4, 48.3, 60.3, 76.1 x 15, 20, 25	c, k	—	—	20.7	—	—
	1, 1¼, 1½, 2, & 76.1mm x ½, ¾, 1		—	—	300	—	—
	42.4 x 10	XL, XL-II, DT, CT, SuXL, Su40, DF, EF, SF, BLT, 5, TL, STF, ST, EL, ET40, 10, 40, G7, GF, FLF, FLT, FLTL, WLS, MFGF, GL, MLT, MT, MTGT, EZT	20.7	20.7	—	—	—
	1¼ x ⅜		300	300	—	—	—
	42.4 x 10, 42.4, 48.3, 60.3, 76.1 x 15, 20, 25	EF	12.1	—	—	—	—
	1¼ x ⅜, 1¼, 1½, 2, & 76.1mm x ½, ¾, 1		175	—	—	—	—
	33.7, 42.4, 48.3, 60.3 x 15, 20, 25	EF	—	12.1	—	—	—
	1, 1¼, 1½, & 2 x ½, ¾, 1		—	175	—	—	—
	33.7, 42.4, 48.3, 60.3, 76.1 x 15, 20, 25	10, 40, XL, XL-II, SuXL, Su40, DF, SF, FLF	20.7	—	—	—	—
	1, 1¼, 1½, 2, & 76.1mm x ½, ¾, 1		300	—	—	—	—
	33.7, 42.4, 48.3, 60.3 x 15, 20, 25	10, 40, XL, XL-II, SuXL, Su40, DF, SF, FLF	—	20.7	—	—	—
	1, 1¼, 1½, & 2 x ½, ¾, 1		—	300	—	—	—
	33.7, 42.4, 48.3, 60.3 x 15, 20, 25	DT, CT, BLT, TL, STF, ST, EL, ET40, G7, GF, FLT, FLTL, WLS, GL, MLT, MT, MTGT, SL, EZT	20.7	20.7	—	—	—
	1, 1¼, 1½, & 2 x ½, ¾, 1		300	300	—	—	—
	33.7, 42.4, 48.3, 60.3 x 15, 20, 25	5	12.1	12.1	—	—	—
	1, 1¼, 1½, & 2 x ½, ¾, 1		175	175	—	—	—
	76.1 x 15, 20, 25	TF	20.7	—	—	—	—
	76.1mm x ½, ¾, 1		300	—	—	—	—
	42.4, 48.3, 60.3, 76.1 x 15, 20, 25	MF, MFGF	20.7	—	—	—	—
	1¼, 1½, 2, & 76.1mm x ½, ¾, 1		300	—	—	—	—
	42.4, 48.3, 60.3 x 15, 20, 25	MF, MFGF	—	20.7	—	—	—
	1¼, 1½, & 2 x ½, ¾, 1		—	300	—	—	—
	48.3, 60.3, 76.1 x 15, 20, 25	FF	20.7	—	—	—	—
	1½, 2, & 76.1mm x ½, ¾, 1		300	—	—	—	—
	33.7, 42.4, 48.3, 60.3, 76.1 x 15, 20, 25	BS1378M, ISO 4200	20.7	20.7	—	—	—
	1, 1¼, 1½, 2, & 76.1mm x ½, ¾, 1		300	300	—	—	—

- Min schedule cut groove pipe: (6") or smaller - Sch. 40.
- Min schedule rolled groove pipe: (6") or smaller - Sch. 10.
- With EPDM gasket (green stripe) Grade E or (purple stripe) Grade A.
- Allied Tube & Conduit Corp Thinwall Pipe, "BLT" and "Dyna-Thread (1-2)", "XL", "XL-II", "Super-XL" and "Super-40" (1-2½") 20.7 Bar (300 psi).
- Allied Tube & Conduit Corp Lightwall Pipe, "Dyna-Flow" and "Super-Flu" (1-2½") 20.7 Bar (300 psi).
- Allied Tube & Conduit Corp Sch. 5 Pipe, Dyna-Light (1-2") 12.1 Bar (175 psi).
- Bull Moose Thinwall Pipe, "EDDY-Lite" and "EDDY-Thread", (1-2") 20.7 Bar (300 psi).
- Bull Moose Sch. 5 Pipe, "Ultra-EDDY" (1-2") 12.1 Bar (175 psi).
- Bull Moose Lightwall Pipe, "EDDY-Flu" (1¼ - 2½") 20.7 Bar (300 psi).
- BS 1387 pipe, medium and heavy wall and ISO 4200 pipe, (1-2½" (76.1mm)) 20.7 Bar (300 psi).

- Welded Tube-Berkeley LLC Lightwall Pipe, Steady-Flow (1¼ - 2½") 20.7 Bar (300 psi).
- Welded Tube-Berkeley LLC Thinwall Pipe, Steady-Thread (1¼ - 2") 20.7 Bar (300 psi).
- Western International Forest Products Thinwall Pipe, Rapid-Thread and Rapid Thread Light (1-2") 20.7 Bar (300 psi).
- Western International Forest Products Lightwall Pipe, Fire-Flow (1-2½") 20.7 Bar (300 psi).
- Wheatland Tube Co. Lightwall pipe, "Mega-Flow" (1-2½") 20.7 Bar (300 psi).
- Wheatland Tube Co. Thinwall pipe, "WLS", "Mega-Thread", "MLT" "GL" and EZ Thread (1¼ - 2") 20.7 Bar (300 psi).
- Wheatland Tube Co Schedule 5 Pipe, pipe . "WST" (1-2") 12.1 Bar (175 psi).
- Youngstown Tube Lightwall Pipe, Fire-Flu (1½ - 2½") 20.7 Bar (300 psi).
- Youngstown Tube Thinwall Pipe, EZ-Thread (1 - 2") 20.7 Bar (300 psi).

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Figure	Nominal Size mm Inches	Pipe Schedule	Rated Pressure - Bar psi (UL, ULC, FM, LPCB, and VdS)				
			UL	ULC	FM	VdS	LPCB
	60.3 x 21.3, 26.7, 33.7, 42.4, 48.3 2 x 1/2, 3/4, 1, 1 1/4, 1 1/2	Sch 5	12.1 175	12.1 175	12.1 175	—	—
	60.3 x 21.3, 26.7, 33.7, 42.4, 48.3 2 x 1/2, 3/4, 1, 1 1/4, 1 1/2	Sch 10, Sch 40	20.7 300	20.7 300	20.7 300	—	—
	73.0 x 21.3, 26.7, 33.7, 42.4, 48.3, 60.3 2 1/2 x 1/2, 3/4, 1, 1 1/4, 1 1/2, 2	Sch 10, Sch 40	20.7 300	20.7 300	20.7 300	—	—
	88.9, 114.3 x 21.3, 26.7, 33.7 3, & 4 x 1/2, 3/4, 1	Sch 10, Sch 40	20.7 300	20.7 300	20.7 300	—	—
	114.3 x 73.0, 4 x 88.9 4 x 2 1/2, 4 x 3	Sch 10, Sch 40	20.7 300	20.7 300	20.7 300	—	—
	141.3 x 60.3, 141.3 x 73.0 5 x 2, 5 x 2 1/2	Sch 10, Sch 40	20.7 300	20.7 300	20.7 300	—	—
	168.3 x 48.3, 60.3, 73.0, 88.9, 114.3 6 x 1 1/2, 2, 2 1/2, 3, 4	Sch 10, Sch 40	20.7 300	20.7 300	20.7 300	—	—
	60.3 x 21.3, 26.7, 33.7, 42.4, 48.3 2 x 1/2, 3/4, 1, 1 1/4, 1 1/2	BLT, DT, EZT, FF, GL, MF	20.7 300	20.7 300	20.7 300	—	—
	60.3 x 21.3, 26.7, 33.7, 42.4, 48.3 2 x 1/2, 3/4, 1, 1 1/4, 1 1/2	MT, MLT, STF, TL, WLS	20.7 300	20.7 300	20.7 300	—	—
	60.3 x 21.3, 26.7, 33.7, 42.4, 48.3 2 x 1/2, 3/4, 1, 1 1/4, 1 1/2	Gal 7, Gal Flo	20.7 300	20.7 300	20.7 300	—	—
	60.3 x 21.3, 26.7, 33.7 2 x 1/2, 3/4, 1	DF	20.7 300	20.7 300	20.7 300	—	—
	73.0, 88.9, 114.3 x 21.3, 26.7, 33.7 2 1/2, 3, & 4 x 1 1/2, 3/4, 1	DF, FF, MF, STF	20.7 300	20.7 300	20.7 300	—	—
	60.3 x 42.4, 48.3 2 x 1 1/4, 1 1/2	DF	20.7 300	20.7 300	20.7 300	—	—
	88.9, 114.3 x 60.3 3, & 4 x 2	DF, FF, MF, STF	20.7 300	20.7 300	20.7 300	—	—
	114.3 x 73.0 4 x 2 1/2	DF, FF, MF, STF	20.7 300	20.7 300	20.7 300	—	—
	114.3 x 88.9 4 x 3	FF, MF, STF	20.7 300	20.7 300	20.7 300	—	—
	76.1 x 21.3, 26.7, 33.7 76.1mm x 1/2, 3/4, 1	BS1387, ISO 4200	20.7 300	—	20.7 300	16 232	20.7 300
	139.7 x 48.3, 88.9 139.7mm x 1 1/2, 3	BS1387, ISO 4200	20.7 300	—	20.7 300	16 232	20.7 300
	165.1 x 42.4 165.1mm x 1 1/4	BS1387, ISO 4200	20.7 300	—	20.7 300	16 232	20.7 300
	60.3 x 21.3, 26.7, 33.7, 42.4, 48.3 2 x 1/2, 3/4, 1, 1 1/4, 1 1/2	BS1387, ISO 4200	—	—	—	16 232	20.7 300
	76.1 x 42.4, 48.3, 60.3 76.1mm x 1 1/4, 1 1/2, 2	BS1387, ISO 4200	—	—	—	16 232	20.7 300
	88.9 x 21.3, 26.7, 33.7, 42.4, 48.3, 60.3 3 x 1/2, 3/4, 1, 1 1/4, 1 1/2, 2	BS1387, ISO 4200	—	—	—	16 232	20.7 300
	114.3 x 21.3, 26.7, 33.7, 42.4, 48.3, 76.1, 88.9 4 x 1/2, 3/4, 1, 1 1/4, 1 1/2, 2, 76.1mm, 3	BS1387, ISO 4200	—	—	—	16 232	20.7 300
	165.1 x 48.3, 60.3, 76.1, 88.9, 114.3 165.1mm x 1 1/2, 2, 76.1mm, 3, 4	BS1387, ISO 4200	—	—	—	—	20.7 300
	139.7 x 60.3, 76.1 139.7mm x 2, 76.1mm	BS1387, ISO 4200	—	—	—	16 232	—
	168.3 x 48.3, 60.3, 73.0 6 x 1 1/2, 2, 2 1/2	ISO 4200	—	—	—	16 232	20.7 300
	168.3, 219.1 x 76.1, 88.9, 114.3 6, & 8 x 76.1mm, 3, 4	ISO 4200	—	—	—	16 232	20.7 300

Fig. 730
Threaded * ‡

* Figure 730 Threaded Mechanical Outlets are UL and ULC Listed and FM Approved in both the Tee and Cross configuration with NPT and ISO threaded outlets as specified in the chart.

** Figure 730 Grooved Mechanical Outlets are UL and ULC Listed and FM Approved in both the Tee and Cross configuration.

‡ Figure 730 Threaded and Grooved Mechanical Outlets are VdS Approved in the Tee configuration only.

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Figure	Nominal Size mm Inches	Pipe Schedule	Rated Pressure - Bar psi (UL, ULC, FM, LPCB, and VdS)				
			UL	ULC	FM	VdS	LPCB
 Fig. 730 Grooved ** †	60.3 x 48.3 2 x 1½	Sch 5	12.1 175	12.1 175	12.1 175	—	—
	60.3, 73.0, 88.9, 114.3, 141.3, 168.3 x 48.3 2, 2½, 3, 4, 5, & 6 x 1½	Sch 10, Sch 40	20.7 300	20.7 300	20.7 300	—	—
	88.9, 114.3, 141.3 x 60.3, 73.0 3, 4, & 5 x 2, 2½	Sch 10, Sch 40	20.7 300	20.7 300	20.7 300	—	—
	114.3 x 88.9, 141.3 x 88.9 4 x 3, 5 x 3	Sch 10, Sch 40	20.7 300	20.7 300	20.7 300	—	—
	168.3 x 48.3, 73.0, 88.9, 114.3 6 x 1½, 2½, 3, 4	Sch 10, Sch 40	17.2 250	17.2 250	17.2 250	—	—
	219.1 x 73.0, 88.9, 114.3 8 x 2½, 3, 4	Sch 10, Sch 40	20.7 300	20.7 300	20.7 300	—	—
	60.3, 73.0, 88.9, 114.3 x 48.3 2, 2½, 3, & 4 x 1½	DF	20.7 300	20.7 300	20.7 300	—	—
	88.9, 114.3 x 60.3 3, & 4 x 2	DF	20.7 300	20.7 300	20.7 300	—	—
	60.3 x 48.3 2 x 1½	BLT, TL	20.7 300	20.7 300	20.7 300	—	—
	88.9 x 48.3 3 x 1½	EZ	20.7 300	20.7 300	20.7 300	—	—
	139.7 x 48.3, 88.9 139.7mm x 1½, 3	BS1387, ISO 4200	20.7 300	—	20.7 300	16 232	20.7 300
	165.1 x 42.4, 48.3, 60.3, 76.1 165.1mm x 1¼, 1½, 2, 76.1mm	BS1387, ISO 4200	20.7 300	—	20.7 300	16 232	20.7 300
	60.3 x 42.4, 48.3 2 x 1¼, 1½	BS1387, ISO 4200	—	—	—	16 232	20.7 300
	76.1 x 42.4, 48.3, 60.3 76.1mm x 1¼, 1½, 2	BS1387, ISO 4200	—	—	—	16 232	20.7 300
	88.9 x 42.4, 48.3, 60.3 3 x 1¼, 1½, 2	BS1387, ISO 4200	—	—	—	16 232	20.7 300
	114.3 x 42.4, 48.3, 60.3, 76.1, 88.9 4 x 1¼, 1½, 2, 76.1mm, 3	BS1387, ISO 4200	—	—	—	16 232	20.7 300
	165.1 x 48.3, 60.3, 76.1, 88.9, 114.3 165.1mm x 1½, 2, 76.1mm, 3, 4	BS1387, ISO 4200	—	—	—	—	20.7 300
	139.7 x 60.3, 76.1 139.7mm x 2, 76.1mm	BS1387, ISO 4200	—	—	—	16 232	—
	168.3 x 48.3, 60.3, 73.0 6 x 1½, 2, 2½	ISO 4200	—	—	—	16 232	20.7 300
	168.3, 219.1 x 76.1, 88.9, 114.3 6, & 8 x 76.1mm, 3, 4	ISO 4200	—	—	—	—	16 232
 Fig. 260	42.4, 48.3, 60.3, 88.9, 114.3 1¼, 1½, 2, 3, 4	—	34.5 500	34.5 500	34.5 500	16 232	20.7 300
	168.3, 219.1 6, 8	—	34.5 500	34.5 500	34.5 500	16 232	20.7 300
	273.0 10	—	31.0 450	31.0 450	31.0 450	16 232	20.7 300
	323.9 12	—	31.0 450	31.0 450	27.6 400	16 232	20.7 300
	73.0, 141.3 2½, 5	—	34.5 500	34.5 500	34.5 500	—	—
	76.1 76.1mm	—	34.5 500	—	34.5 500	16 232	20.7 300
	165.1 165.1mm	—	34.5 500	—	34.5 500	—	20.7 300
	139.7 139.7mm	—	34.5 500	—	34.5 500	16 232	—

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Figure	Nominal Size mm Inches	Pipe Schedule	Rated Pressure - Bar psi (UL, ULC, FM, LPCB, and VdS)				
			UL	ULC	FM	VdS	LPCB
 Fig. 500	48.3 x 33.7, 60.3 x 33.7 1½ x 1, 2 x 1	-	34.5 500	34.5 500	34.5 500	16 232	-
	60.3 x 42.4, 60.3 x 48.3 2 x 1¼, 2 x 1½	-	34.5 500	34.5 500	34.5 500	16 232	20.7 300
	73.0 x 60.3, 88.9 x 73.0, 114.3 x 73.0 2½ x 2, 3 x 2½, 4 x 2½	-	34.5 500	34.5 500	34.5 500	16 232	20.7 300
	114.3 x 60.3, 168.3 x 60.3 4 x 2, 6 x 2	-	34.5 500	34.5 500	34.5 500	16 232	-
	88.9 x 60.3, 114.3 x 88.9, 168.3 x 114.3 3 x 2, 4 x 3, 6 x 4	-	34.5 500	34.5 500	34.5 500	16 232	20.7 300
	141.3 x 114.3, 168.3 x 141.3 5 x 4, 6 x 5	-	34.5 500	34.5 500	34.5 500	-	-
	76.1 x 48.3, 76.1 x 60.3 76.1mm x 1½, 76.1mm x 2	-	34.5 500	34.5 500	34.5 500	16 232	20.7 300
	88.9 x 76.1, 114.3 x 76.1 3 x 76.1mm, 4 x 76.1mm	-	34.5 500	34.5 500	34.5 500	16 232	20.7 300
	139.7 x 88.9, 139.7 x 114.3 139.7mm x 3, 139.7mm x 4	-	34.5 500	34.5 500	34.5 500	16 232	-
	165.1 x 114.3 165.1mm x 4	-	34.5 500	34.5 500	34.5 500	-	20.7 300
	168.3 x 76.1, 168.3 x 139.7 6 x 76.1mm, 6 x 139.7mm	-	34.5 500	34.5 500	34.5 500	16 232	-
	165.1 x 88.9, 165.1 x 139.7 165.1mm x 3, 165.1mm x 4	-	34.5 500	-	34.5 500	-	-
 Fig. 501	42.4, 48.3, 60.3, 88.9, 114.3 1¼, 1½, 2, 3, 4	-	20.7 300	20.7 300	20.7 300	16 232	20.7 300
	168.3, 219.1 6, 8	-	20.7 300	20.7 300	20.7 300	16 232	20.7 300
	73.0, 141.3 2½, 5	-	20.7 300	20.7 300	20.7 300	-	-
	76.1 76.1mm	-	20.7 300	20.7 300	20.7 300	16 232	20.7 300
	139.7 139.7mm	-	20.7 300	20.7 300	20.7 300	16 232	-
	165.1 165.1mm	-	20.7 300	20.7 300	20.7 300	-	20.7 300
 Fig. 510	42.4, 48.3, 60.3, 88.9, 114.3 1¼, 1½, 2, 3, 4	-	20.7 300	20.7 300	20.7 300	16 232	20.7 300
	168.3, 219.1 6, 8	-	20.7 300	20.7 300	20.7 300	16 232	20.7 300
	73.0, 141.3 2½, 5	-	20.7 300	20.7 300	20.7 300	-	-
	76.1 76.1mm	-	20.7 300	20.7 300	20.7 300	16 232	20.7 300
	139.7 139.7mm	-	20.7 300	20.7 300	20.7 300	16 232	-
	165.1 165.1mm	-	20.7 300	20.7 300	20.7 300	-	20.7 300
 Fig. 519	42.4, 48.3, 60.3, 88.9, 114.3 1¼, 1½, 2, 3, 4	-	20.7 300	20.7 300	20.7 300	16 232	20.7 300
	168.3, 219.1 6, 8	-	20.7 300	20.7 300	20.7 300	16 232	20.7 300
	73.0, 141.3 2½, 5	-	20.7 300	20.7 300	20.7 300	-	-
	76.1 76.1mm	-	20.7 300	20.7 300	20.7 300	16 232	20.7 300
	139.7 139.7mm	-	20.7 300	20.7 300	20.7 300	16 232	-
	165.1 165.1mm	-	20.7 300	20.7 300	20.7 300	-	20.7 300

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Figure	Nominal Size mm Inches	Pipe Schedule	Rated Pressure - Bar psi (UL, ULC, FM, LPCB, and VdS)				
			UL	ULC	FM	VdS	LPCB
 Fig. 510S	60.3, 88.9, 114.3, 168.3, 219.1 2, 3, 4, 6, 8	-	20.7 300	20.7 300	20.7 300	16 232	20.7 300
	73.0, 141.3 2 1/2, 5	-	20.7 300	20.7 300	20.7 300	-	-
	76.1 76.1mm	-	20.7 300	20.7 300	20.7 300	16 232	20.7 300
	139.7 139.7mm	-	20.7 300	20.7 300	20.7 300	16 232	-
	165.1 165.1mm	-	20.7 300	20.7 300	20.7 300	-	20.7 300
 Fig. 519S	60.3, 88.9, 114.3, 168.3, 219.1 2, 3, 4, 6, 8	-	20.7 300	20.7 300	20.7 300	16 232	20.7 300
	73.0, 141.3 2 1/2, 5	-	20.7 300	20.7 300	20.7 300	-	-
	76.1 76.1mm	-	20.7 300	20.7 300	20.7 300	16 232	20.7 300
	139.7 139.7mm	-	20.7 300	20.7 300	20.7 300	16 232	-
	165.1 165.1mm	-	20.7 300	20.7 300	20.7 300	-	20.7 300

* Figure 730 Threaded Mechanical Outlets are UL and ULC Listed and FM Approved in both the Tee and Cross configuration with NPT and ISO threaded outlets as specified in the chart.

** Figure 730 Grooved Mechanical Outlets are UL and ULC Listed and FM Approved in both the Tee and Cross configuration.

‡ Figure 730 Threaded and Grooved Mechanical Outlets are VdS Approved in the Tee configuration only.

STF Steady Flow Listed/Approved steel sprinkler pipe manufactured by AMS Tube Corp.

BLT Black Light Wall Threadable Listed/Approved steel sprinkler pipe manufactured by Allied Tube and Conduit.

DF Dyna-Flow Listed/Approved steel sprinkler pipe manufactured by Allied Tube and Conduit.

DT Dyna-Thread Listed/Approved steel sprinkler pipe manufactured by Allied Tube and Conduit.

SF Super-Flow Listed/Approved steel sprinkler pipe manufactured by Allied Tube and Conduit.

XL Extra Light Weight Listed/Approved steel sprinkler pipe manufactured by Allied Tube and Conduit.

UE Ultra-Eddy Listed/Approved steel sprinkler pipe manufactured by Bull Moose Tube Company.

TL TL Listed/Approved steel sprinkler pipe manufactured by Central Grooved Piping Products.

LS Listed/Approved steel sprinkler pipe manufactured by Century Tube Corporation.

ID IDOD Listed/Approved steel sprinkler pipe manufactured by IDOD Systems.

GAL-FLO Listed/Approved steel sprinkler pipe manufactured by IDOD Systems.

GAL-7 Listed/Approved steel sprinkler pipe manufactured by IDOD Systems.

EZ EZ-Flow Listed/Approved steel sprinkler pipe manufactured by Northwest Pipe and Casting Company.

FLF Fire Line Flow Listed/Approved steel sprinkler pipe manufactured by Western International Forest Products.

MF Mega Flow Listed/Approved steel sprinkler pipe manufactured by Wheatland Tube Company.

MLT Mega Light Listed/Approved steel sprinkler pipe manufactured by Wheatland Tube Company.

MT Mega Thread Listed/Approved steel sprinkler pipe manufactured by Wheatland Tube Company.

SL Listed/Approved steel sprinkler pipe manufactured by Wheatland Tube Company.

WLS WLS Listed/Approved steel sprinkler pipe manufactured by Wheatland Tube Company.

WST WST Listed/Approved steel sprinkler pipe manufactured by Wheatland Tube Company.

GL GL Listed/Approved steel sprinkler pipe manufactured by Wheatland Tube Company.

EZT EZ Thread Listed/Approved steel sprinkler pipe manufactured by Youngstown Tube Company.

FF Fire-Flo Listed/Approved steel sprinkler pipe manufactured by Youngstown Tube Company.

5 Schedule 5 steel sprinkler pipe

10 Schedule 10 steel sprinkler pipe

20 Schedule 20 steel sprinkler pipe

30 Schedule 30 steel sprinkler pipe

40 Schedule 40 steel sprinkler pipe

BS1387m British Standard Medium Listed/Approved steel sprinkler tube.

ISO4200 ISO Standard Listed/Approved steel sprinkler tube.

Note: Cut and roll grooved references are for pipe runs and also grooved outlets.

Global Pipe Size Designations

GRINNELL 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 (mm)		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	254mm	–	–	–	–	–	–	–	–
10	250	267.4mm JIS	–	–	–	267.4mm	–	–	–	–
		273mm	DN 250	DN 250	DN 250	–	10	DN 250	DN 250	DN 250
–	304.8mm	304.8mm	–	–	–	–	–	–	–	–
12	300	318.5mm JIS	–	–	–	318.5mm	–	–	–	–
		323.9mm	DN 300	DN 300	DN 300	–	12	–	–	–

IMPORTANT NOTE:

Nominal designations are used where the actual OD of the pipe matches the ANSI size. Otherwise both the nominal and actual OD are listed.

China sizes are listed as actual OD in mm.

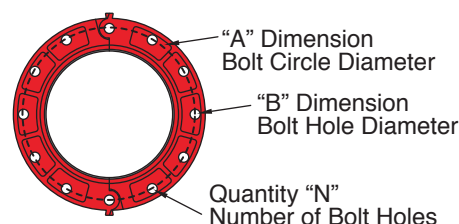
** China sizes are tubing sizes.

Metric/Imperial Conversion Chart

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

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

Flange Drilling Specifications



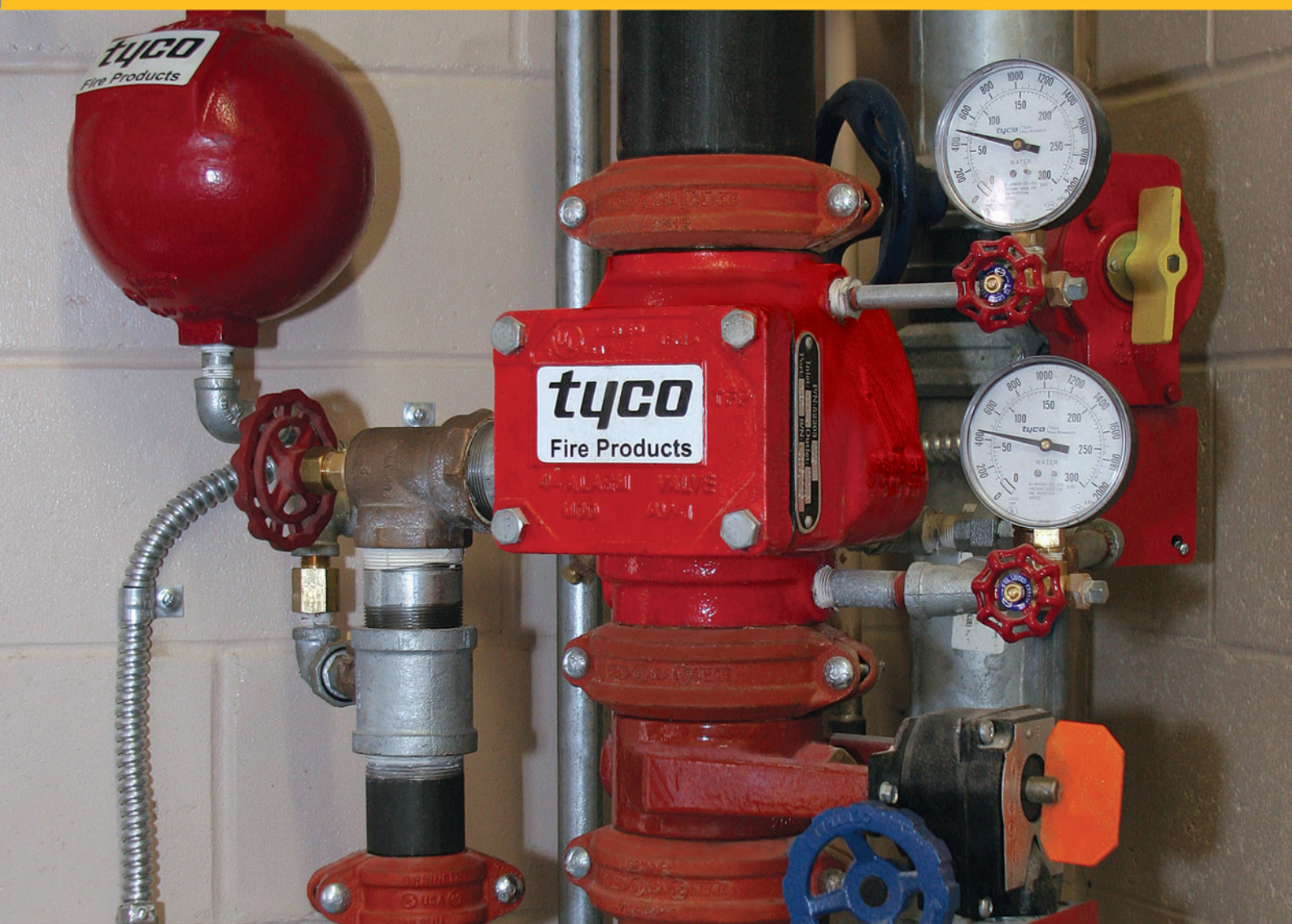
Flange Size		ANSI B16.1 (Class 125#) ¹			ISO 2084 (PN10) ²			ISO 2084 (PN16) ³		
Nominal mm <i>In.</i>	O.D. mm <i>In.</i>	Dimensions - mm <i>In.</i>								
		A	B	Qty. N	A	B	Qty. N	A	B	Qty. N
50	60.3	120.6	19.0	4	125.0	18.0	4	125.0	18.0	4
2	2.375	4.75	0.75		4.92	0.71		4.92	0.71	
65	73.0	139.7	19.0	4	145.0	18.0	4	145.0	18.0	4
2-1/2	2.875	5.50	0.75		5.71	0.71		5.71	0.71	
80	88.9	152.4	19.0	4	160.0	18.0	8	160.0	18.0	8
3	3.500	6.00	0.75		6.30	0.71		6.30	0.71	
100	114.3	190.5	19.1	8	180.0	18.0	8	180.0	18.0	8
4	4.500	7.50	0.75		7.09	0.71		7.09	0.71	
125	141.3	215.9	22.4	8	210.0	18.0	8	210.0	18.0	8
5	5.563	8.50	0.88		8.27	0.71		8.27	0.71	
150	168.3	241.3	22.4	8	240.0	22.0	8	240.0	22.0	8
6	6.625	9.50	0.88		9.45	0.87		9.45	0.87	
200	219.1	298.5	22.2	8	295.0	22.0	8	295.0	22.0	12
8	8.625	11.75	0.88		11.61	0.87		11.61	0.87	
250	273.0	362.0	25.4	12	350.0	22.0	12	355.0	26.0	12
10	10.750	14.25	1.00		13.78	0.87		13.98	1.02	
300	323.9	431.8	25.4	12	400.0	22.0	12	410.0	26.0	12
12	12.750	17.00	1.00		15.75	0.87		16.14	1.02	

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 Tyco Technical Services.



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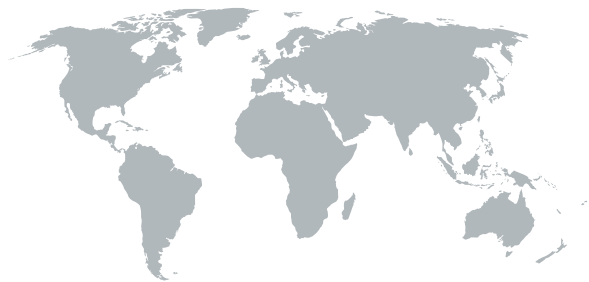
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