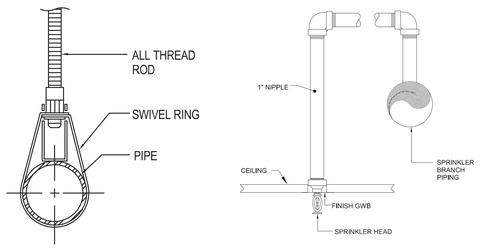
RSN: 1606973
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Sheet 1 of 56



1 Reflected Ceiling Plan
Suite 300

Scale: 1/8" = 1'-0"

North



The hydraulic design area is not being affected by the system modifications.

Scope of Work
1. Add and relocate sprinklers for new ceilings and walls in light hazard tenant space.
2. Fire sprinkler system modifications, hangers, and supports shall be installed per NFPA 13 2013 design requirements and local AHJ.
3. General contractor to coordinate with alarm contractor for system shut down to perform sprinkler modifications.
4. It is the responsibility of the owner to protect the system from freezing and maintain a minimum 40 degree temperature throughout tenant space.
5. Installer shall be responsible to confirm if sprinklers shall be installed centered in the ceiling tile TYPICAL.
6. Relocation of existing lines and mains, paint, patch, wiring, demolition work, sprinklers centered in tiles, custom sprinklers, alarm modifications, and backflow devices are excluded from scope of work.
7. Armovers 1" NPT unless specified

City of Aurora Building Division
Counter Permit intake by: WP
Date: *Feb 18, 2022*
RSN: *1606973*
Permit: *2021-2109740-CT*
2015 INTERNATIONAL CODES & 2020 NEC Scope of permit to be field

COA Adopted Codes for this project:
ICC-2015 - NEC-2020
NFPA 13-2013 - NFPA 72-2013
COA Amendments 22 & 66

Code violations that are found during inspection are required to be corrected. Permit issuance does not grant approval of a code violation.

Provide a full size set of legible approved construction documents **PRINTED IN COLOR** for review by the Field Inspector.

Howard Hansen
Digitally signed by Howard Hansen
Date: 2022.02.16 20:55:38-07'00'

Reviewed By:
Howard Hansen
Nicet Certification #074855
Water Based Systems Layout - Level III
Certification Expires 11-1-22

Room Schedule

3A01	New Board Rm.	3831	New Check-out
3A02	Exist. Hallway	3832	New Lab
3A03	Exist. Ultrasound	3833	New ADA Restroom
3A04	Exist. Office	3834	New Tech Room
3A05	Exist. Med Records	3835	New Device Check
3A06	Exist. Copy	3836	New Device Check
3A07	Exist. Office	3837	New Storage
3A08	Exist. Files	3838	New Exam
3A09	Exist. Office	3839	New Exam
3A10	----	3840	----
3A11	Exist. Print Area	3841	New Closet
3A12	Exist. Office	3842	New Office
3A13	Exist. Work Area	3843	New Exam
3A14	Exist. Exam	3844	New Exam
3A15	Exist. Work Area	3845	New Exam
3A16	Exist. Exam	3846	New Office
3A17	Exist. Work Area	3847	New Office
3A18	Exist. Exam	3848	New Office
3A19	Exist. Mail Room	3849	New Exam
3A20	----	3850	----
3A21	New ADA Restroom	3851	New Exam
3A22	Exist. Closet	3852	New Exam
3A23	Exist. Closet	3853	New ADA Restroom
3A24	Exist. Office	3854	Public Corridor
3501	Exist. Waiting	3C01	Public Corridor
3502	New Reception	3C02	Exist. Waiting
3503	New Hallway	3C03	Exist. Reception
3504	New Check-out	3C04	New MA Station
3505	New Exam	3C05	New Exam
3506	New Office	3C06	New Exam
3507	New Exam	3C07	New Exam
3508	New Office	3C08	New Office
3509	New Exam	3C09	Exist. Hallway
3510	----	3C10	Exist. Office
3511	New Office	3C11	Exist. Exam
3512	New Exam	3C12	Exist. Exam
3513	New Exam	3C13	Exist. Exam
3514	New Exam	3C14	Exist. I.T.
3515	New Print Area	3C15	Exist. Exam
3516	New Office	3C16	Exist. Exam
3517	New Exam	3C17	New Print Area
3518	New Closet	3C18	New Testing Rm.
3519	New MA Station	3C19	Exist. Restroom
3520	----	3C20	----
3521	New Office	3C21	Exist. Work Areas
3522	New Closet	3C22	Exist. Closet
3523	New Office	3C23	Exist. Call Center
3524	New Dictation	3C24	Exist. Exam
3525	New MA Station	3C25	Exist. Office
3526	New Exam	3C26	Exist. Office
3527	New Exam	3C27	Exist. Office
3528	New Exam	3D01	Exist. Break Rm.
3529	New Closet	3D02	Exist. Closet
3530	----	3D03	Exist. Closet

Codes and Regulations

Building Profile

City/ County: Aurora / Arapahoe
Fire District: Aurora Fire Rescue
Construction Classification: Type V-B
Building Height / Levels: Unknown / Three
Automatic Sprinklers Throughout

Use and Occupancy

Occupant Name: ADCA Remodel & Expansion
Occupancy Use: Owned Business Office
Occupancy Classification: Business Group B

Tenant Area

	Footage	Existing	Expansion
Jeppeson, Lifewinks SF	14,837	14,837	Yes

Applicable Codes

2015 IBC	(International Building Codes with Amendments
2015 IEBC	(International Existing Building Code)
2015 IPC	(International Plumbing Code)
2015 IMC	(International Mechanical Code)
2015 IFC	(International Fire Code)
2015 IECC	(International Energy Conservation Code)
2020 NEC	(National Electrical Code)
2009 ICC/ANSI A117.1	Accessibility Standard

Interpretations

Occupancy Load Analysis- Suite 300

Room Name & Number	Function Per 10th SBC	Floor Area (SF) Gross	Number of Occupants
Exist, Storage 3A23, 3A21, 3C22 New Closet 3515, 3823, 3825, 3847, 3849	Accessory storage	288	= 200 / (gross)
Exist, Waiting 3501, 3C02	Assembly unconcentrated	1,106	= 15 / (net)
Remainder of Suite	Business	13,323	= 100 / (gross)
		14,837	TOTAL 116

Means of Egress

	Required	Provided
Egress Width	(sec 34"	238"
Number of Exits	min. 2	4
Common Path of Travel	max. 100'	85'-0"
Exit Access Travel Distance	max. 200'	152'-0"

Interpretations

Occupancy Load Analysis- 3A01 New Board Rm

Room Name & Number	Function Per 10th SBC	Floor Area (SF) Gross	Number of Occupants
Exist, Board Rm. 3A01	Assembly unconcentrated	288	= 15 / (net) 19
		288	TOTAL 19

Means of Egress

	Required	Provided
Egress Width	(sec 44"	90"
Number of Exits	min. 1	2
Common Path of Travel	max. 100'	23-10"
Exit Access Travel Distance	max. 200'	89-0"

	SYM	CNT	POSITION	FINISH	TEMP	K	NPT	Response	MFG.	MODEL#
Add	A	15	Pendent	White	155	5.6	1/2"	Quick	Reliable	F1FR56
Relocate		71	Pendent	White	155	5.6	1/2"	Quick	Reliable	F1FR56
Plug	P	8								

REVISIONS

DATE	DESCRIPTION	BY

ADCA Remodel & Expansion

1444 South Potomac
1444 South Potomac Street
Aurora, CO 80012
Suite 300

State Contractor #: 22-S-05201

9430 E 40th Ave,
Denver, CO 80238

Frontier Fire

Job Name:
COMM-CON #:

RSN: 1606973
Permit # 2022-2109740-CO
Sheet 2 of 56

Model F1FR56 QREC Series K 5.6 (80 metric) Quick Response Extended Coverage Sprinklers

Bulletin 028 August 2021

A complete line of quick response extended coverage spray sprinklers for light hazard applications.

Horizontal Sidewall Sprinklers are approved for installation 4” to 12” (102mm - 305mm) below the ceiling.

Model F1FR56 QREC Sprinkler Types

Extended Coverage Pendent
Extended Coverage Recessed Pendent F1/F2/FP
Extended Coverage Horizontal Sidewall
Extended Coverage Recessed Horizontal Sidewall F1/F2
Extended Coverage Concealed Pendent CCP

Model F1FR56 QREC Recessed Sprinkler Types

Recessed Extended Coverage Pendent F1/F2/FP
Recessed Extended coverage Horizontal Sidewall

Model F1FR56 QREC Concealed

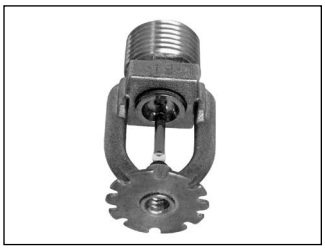
Extended Coverage Pendent

Approval Organizations

1. Listed by Underwriters Laboratories, Inc. and Certified for Canada (cULus)
2. Factory Mutual Approvals (FM) (See Application section for specific approvals)

UL Listing Category

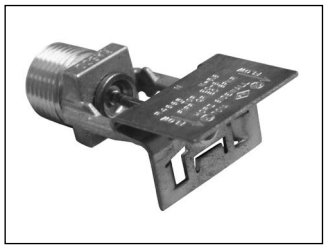
Sprinklers, Automatic & Open
Quick Response Extended Coverage Sprinkler (VNIV)



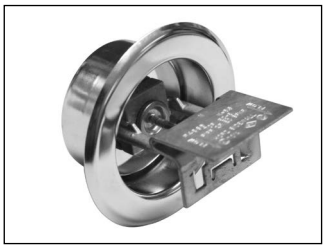
Extended Coverage Pendent



Recessed Extended Coverage Pendent F1/F2



Extended Coverage Horizontal Sidewall EC-8



Recessed Extended Coverage Horizontal Sidewall F1/F2



Extended Coverage Pendent Concealed

Product Description

Reliable Models F1FR56 QREC and F1FR56 QREC Recessed Sprinklers are quick response sprinklers which combine the durability for a standard sprinkler with the attractive low profile of a decorative sprinkler.

The Models F1FR56 QREC and F1FR56 QREC Recessed Automatic Sprinklers utilize a 3.0mm frangible glass bulb. These sprinklers have demonstrated response times in laboratory tests which are five times faster than standard response sprinklers. This quick response enables these sprinklers to apply water to a fire faster than standard response sprinklers of the same temperature rating.

Model F1FR56 QREC Quick Response Extended Coverage Concealed Sprinkler is an attractive, low profile concealed sprinkler assembly. This sprinkler assembly utilizes a Model F1FR56 QREC pendent sprinkler in a Model CCP cup and push-on thread-off cover plate assembly. The cup is securely factory threaded on the sprinkler’s inlet end. The assembly is shipped with a protective cap. The sprinkler and cup are easily installed into the sprinkler fitting using the Model W4 Sprinkler Wrench. The cover plate assembly is attached to the sprinkler cup using a flexible tooth threaded engagement. The cover plate is attached to the skirt using 135°F (57°C) ordinary temperature classification solder.

When the ceiling temperature rises, the solder holding the cover plate melts, allowing the release of this part and thus exposing the Model F1FR56 QREC sprinkler inside to the rising ambient temperature.

The Temperature rating of the sprinkler identified by the color of the glass bulb.

The glass bulb consists of an accurately controlled amount of special fluid hermetically sealed inside a precisely manufactured glass capsule. This glass bulb is specially constructed to provide fast thermal response.

Model F1FR56 QREC Pendent Sprinkler

Deflector: EC
Installation Wrench: Model W2 Sprinkler Wrench
Approval Type: Quick Response Extended Coverage - Light Hazard Occupancy



Installation Data:

Nominal Orifice	Thread Size	Nominal K- Factor		Sprinkler Length	Approval Organizations	Temperature Rating		Sprinkler Identification Numbers (SIN)
		US	Metric			°F	°C	
½" (15mm)	½" NPT (R1/2)	5.6	80	2.25" (57mm)	cULus	135 155	57 68	RA2845

Model F1FR56 QREC Recessed Pendent Sprinkler

Deflector: EC
Installation Wrench: Model W4 Sprinkler Wrench
Approval Type: Quick Response Extended Coverage - Light Hazard Occupancy

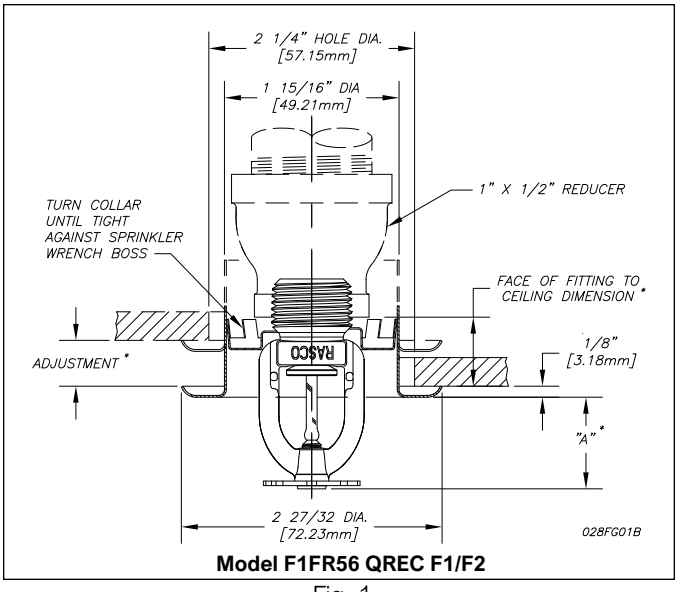
Installation Data:

Nominal Orifice	Thread Size	Nominal K- Factor		Sprinkler Length	Approval Organizations	Temperature Rating		Sprinkler Identification Numbers (SIN)
		US	Metric			°F	°C	
½" (15mm)	½" NPT (R½)	5.6	80	2.25" (57mm)	cULus	135 155	57 68	RA2845

Table 1. Model F1FR56 QREC Pendent and Recessed Pendent Sprinklers

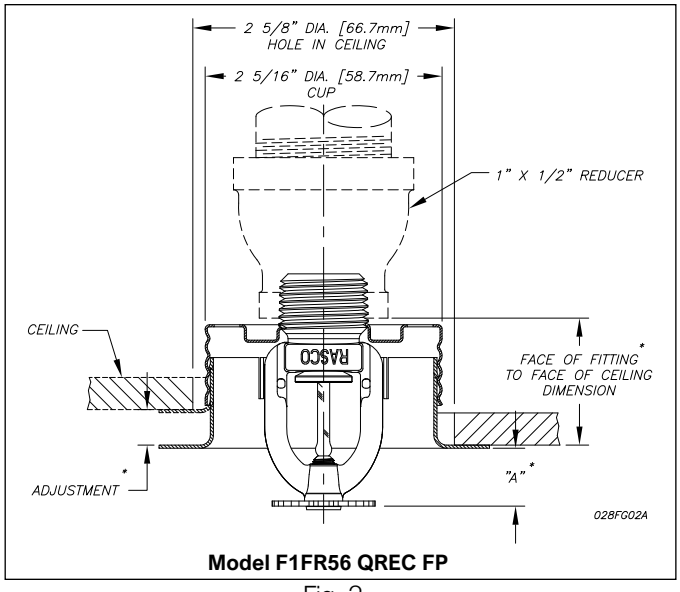
Required Min. Flow Rate/Pressure				
Flow Rate		Pressure	Max. Coverage Area Width x Length	
gpm	L/min	psi (bar)	ft. x ft.	m x m
26 33 40	98.4 125.0 151.4	21.6 (1,5) 34.7 (2,4) 51.0 (3,5)	16 x 16 18 x 18 20 x 20 (1)	4.9 x 4.9 5.5 x 5.5 6.0 x 6.0*

***Note:** 135°F (57°C) only.



Model F1FR56 QREC F1/F2

Fig. 1



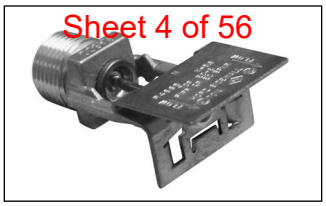
Model F1FR56 QREC FP

Fig. 2

***Note:** Refer to escutcheon data table for approvals and dimensions.

Model F1FR56 QREC Horizontal Sidewall Sprinkler

Deflector: EC-8
Installation Wrench: Model W2 Sprinkler Wrench
Approval Type: Quick Response Extended Coverage-Light Hazard Occupancy



Installation Data:

Nominal Orifice	Thread Size	Nominal K- Factor		Sprinkler Length	Approval Organizations	Temperature Rating	Sprinkler Identification Number (SIN)
		US	Metric				
½" (15mm)	½" NPT (R½)	5.6	80	2.86" (73mm)	cULus, FM	135°F (57°C) 155°F (68°C) 175°F (79°C)	RA2865

Model F1FR56 QREC Recessed Horizontal Sidewall Sprinkler

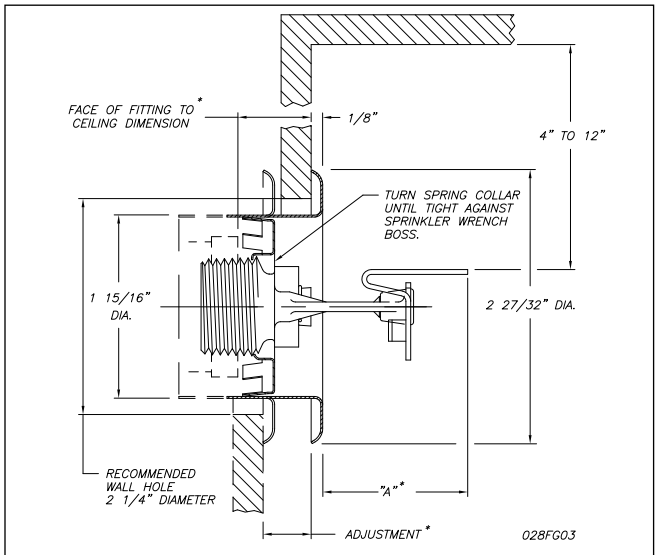
Deflector: EC-8
Installation Wrench: Model W4 Sprinkler Wrench
Approval Type: Quick Response Extended Coverage-Light Hazard Occupancy

Installation Data:

Nominal Orifice	Thread Size	Nominal K- Factor		Sprinkler Length	Approval Organizations	Temperature Rating	Sprinkler Identification Number (SIN)
		US	Metric				
½" (15mm)	½" NPT (R½)	5.6	80	2.86" (73mm)	cULus, FM cULus cULus	135°F (57°C) 155°F (68°C) 175°F (79°C)	RA2865

Table 2. Model F1FR QREC Horizontal Sidewall and Recessed Horizontal Sidewall Sprinklers

Required Min. Flow Rate/Pressure					
Flow Rate gpm (L/min)		Pressure psi (bar)		Maximum Coverage Area Width x Length ft. x ft. (m x m)	Deflector to Ceiling Dimension Min. - Max. Inches (mm)
UL	FM	UL	FM		
26 (98.4) 29 (109.8) 32 (121.1)	26 (98.4) 30 (113.6) 33 (125.0)	21.4 (1,5) 26.6 (1,8) 32.4 (2,2)	21.4 (1,5) 28.5 (2,0) 34.5 (2,4)	16 x 16 (4.9 x 4.9) 16 x 18 (4.9 x 5.5) 16 x 20 (4.9 x 6.0	4 - 12 (102 - 305) 4 - 12 (102 - 305) 4 - 12 (102 - 305)



Model F1FR56 QREC HSW EC-8

Fig. 3

***Note:** Refer to escutcheon data table for dimensions.

Model F1FR56 QREC Concealed Pendent Sprinkler

Installation Wrench: Model W4 Sprinkler Wrench
Approval Type: Quick Response Extended Coverage - Light Hazard Occupancy

Installation Data:

Nominal Orifice	Thread Size	Nominal K-Factor		Approval Organizations	Sprinkler Identification Number (SIN)
		US	Metric		
½" (15mm)	½" (R1/2)	5.6	80	cULus	RA2845

Thread Size	Model	Temp. Rating		Max. Ceiling Temp.	Bulb Color
		Sprinkler	Cover		
½" NPT (R½)	F1FR QREC	135°F 57°C	135°F 57°C	100°F 38°C	Orange
½" NPT (R½)	F1FR QREC	155°F 68°C	135°C 57°C	100°F 38°C	Red

Table 3. Model F1FR56 QREC Concealed Pendent Sprinklers

Required Min. Flow Rate/Pressure		
Flow Rate gpm (L/m)	Pressure psi (bar)	Max. Enclosure Area Width x Length ft. x ft. (m x m)
26 (98.4)	21.6 (1,5)	16 x 16 (4.9 x 4.9)
33 (125.0)	34.7 (2,4)	18 x 18 (5.5 x 5.5)
40 (151.4)	51.0 (3,5)	20 x 20 (6.0 x 6.0)*

***Note:** 135°F (57°C) Only

Application

Quick response sprinklers are used in fixed fire protection systems: Wet, Dry, Deluge or Preaction. Care must be exercised that the orifice size, temperature rating, deflector style and sprinkler type are in accordance with the latest published standards of the National Fire Protection Association or the approving authority having jurisdiction. Quick response sprinklers are intended for installation as specified in NFPA 13.

Installation

Quick response sprinkler are intended for installation as specified in NFPA 13. Quick response sprinklers and standard response sprinklers should not be intermixed.

The Model F1FR56 Recessed QREC Sprinklers are to be installed as shown. The Model F1, F2 or FP Escutcheons illustrated are the only recessed escutcheons to be used with the Model F1FR56 QREC Sprinklers. The use of any other recessed escutcheon will void all approvals and negate all warranties.

When installing Model F1FR56 QREC Sprinklers, use the Model D Sprinkler Wrench or Model W2 Sprinkler Wrench. When installing Model F1FR QREC Recessed Pendent or Recessed Sidewall Sprinklers, use the Model W4 Sprinkler Wrench. Any other type of wrench may damage these sprinklers.

Model F1FR56 QREC Concealed Sprinklers use 135°F (57°C) or 155°F (68°C) Model F1FR QREC Pendent Sprinklers with a threaded Model CCP cup which is factory attached to the sprinkler. The assembly is completed by the installation of the attractive, low profile, 135°F (57°C) rated cover plate assembly. The cover plate and sprinkler cup are joined using a flexible tooth threaded engagement. A choice of two cover plate assemblies provides either ½" (13mm) or 5/8" (8mm) of cover adjustment.

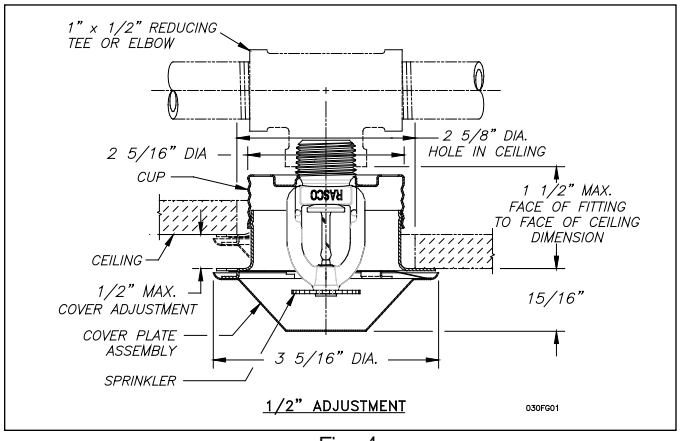


Fig. 4

Do not install these sprinklers in ceilings which have positive pressure in the space above.

The sprinkler cup is factory attached to the Model F1FR56 QREC Sprinkler. A PTFE based thread sealant should be applied to the sprinkler threads only.

After a 2 5/8 (67mm) inch diameter hole is cut in the ceiling, the sprinkler is easily installed with the Model W4 Wrench. When installing a sprinkler, the protective cap is removed and the wrench is positioned into the sprinkler/cup assembly until the two wrench faces engage the wrenching flats on the Model F1FR56 QREC Sprinkler. The sprinkler is then tightened into the pipe fitting. When inserting or removing the wrench from the sprinkler/cup assembly, care should be taken to prevent damage to the sprinkler. DO NOT WRENCH ON ANY OTHER PART OF THE SPRINKLER. The cover plate assembly is then pressed into the cup. Final adjustment is made by turning the cover plate until the skirt flange makes full contact with the ceiling surface. Cover plate removal requires turning in the counter clockwise direction.

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Permit # 2022-2109740 -CT
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After installation, inspect all sprinklers to ensure that there is a gap between the cover plate and ceiling and that the four cup slots are open and free from any air flow impediment to the space above.

Concealed cover plate/cup assemblies are listed only for use with specific sprinklers. The use of any other concealed cover plate/cup assembly with the Model F1FR56 QREC Pendent Sprinkler or the use of the Model CCP concealed cover plate assembly on any sprinkler with which it is not specifically listed may prevent good fire protection and will void all guarantees, warranties, listings and approvals.

Glass bulb sprinklers have orange bulb protectors to minimize bulb damage during shipping, handling and installation. REMOVE THIS PROTECTION AT THE TIME THE SPRINKLER SYSTEM IS PLACED IN SERVICE FOR FIRE PROTECTION. Removal of the protectors before this time may leave the bulb vulnerable to damage. RASCO wrenches are designed to install sprinklers when covers are in place. REMOVE PROTECTORS BY UNDOING THE CLASP BY HAND. DO NOT USE TOOLS TO REMOVE THE PROTECTORS.

Maintenance

The Models F1FR56 QREC and F1FR56 QREC Recessed Sprinklers should be inspected and maintained in accordance with NFPA 25. Do not clean sprinklers with soap and water, ammonia or any other cleaning fluids. Remove dust by gentle vacuuming. Replace any sprinkler which has been painted (other than factory applied) or damaged in any way. A stock of spare sprinklers should be maintained to allow quick replacement of damaged or operated sprinklers. Prior to installation, sprinklers should be maintained in the original cartons and packaging until used to minimize the potential for damage to sprinklers that would cause improper operation or non-operation.

Escutcheon Data:

Escutcheon Model	Adjustment	"A" Dimension	Face of Fitting to Ceiling Wall Dimension
F1	Max Recessed Min Recessed	1 1/2" (38.1mm) (1) 3/4" (19.1mm) (2)	3/16" - 15/16" (5m - 24mm)
F2	Max Recessed Min Recessed	1 1/2" (38.1mm) (1) 1" (25mm) (2)	3/16" - 11/16" (5m - 17mm)
FP Push-on/ Thread-off	Max Recessed Min Recessed	7/16" (11mm) 15/16" (24mm)	1 1/2" (38.1mm) 1" (25mm)

(1) EC Pendent.
(2) EC HSW.

Temperature Rating

Classification	Sprinkler Temperature		Maximum Ambient Temperature		Bulb Color
	°F	°C	°F	°C	
Ordinary	135	57	100	38	Orange
Ordinary	155	68	100	38	Red
Intermediate	175	79	150	66	Yellow

Maximum Working Pressure

175 psi (12 bar)
SIN RA2845 cULus listed for 250 psi (17 bar)
100% Factory tested hydrostatically to 500 psi (34.5 bar)

Finishes (1)

Standard Finishes		
Sprinkler (2)	**Escutcheon**	**Coverplate**
Bronze Chrome Plated White & Black Polyester Coated(3)	Brass Chrome Plated White Painted	Chrome White
Special Application Finishes		
Sprinkler (2)	**Escutcheon**	**Coverplate**
Electroless Nickel PTFE(3) Bright Brass Black Paint Off White Chrome Dull	Bright Brass Black Paint Off White Chrome Dull	Bright Brass Black Paint Off White

(1) Other colors and finishes are available on special order. Consult factory for details.
(2) FM Approvals limited to Bronze, Bright Brass, Satin Chrome Plated, Black Plated and Polyester Coated.
(3) cULus Listed Corrosion Resistant Sprinkler.
Note: Paint or any other coating applied over the factory finish will void approvals and warranties.

Ordering Information

Specify:
1. Sprinkler Model: F1FR56 QREC
2. Sprinkler Type
3. Temperature Rating
4. Sprinkler Finish
5. Sprinkler Thread Type: [½" NPT] [ISO 7-1R½]
6. Escutcheon Finish (where applicable)
7. Coverplate Finish (where applicable)
8. Coverplate Temperature Rating

Note: When Model F1FR56 QREC Recessed sprinklers are ordered, the sprinklers, escutcheons and coverplates are packaged separately.

The equipment presented in this bulletin is to be installed in accordance with the latest published Standards of the National Fire Protection Association, Factory Mutual Research Corporation, or other similar organizations and also with the provisions of governmental codes or ordinances whenever applicable.
Products manufactured and distributed by Reliable have been protecting life and property for over 100 years.

Manufactured by
Reliable®

Reliable Automatic Sprinkler Co., Inc.
(800) 431-1588 Sales Offices
(800) 848-6051 Sales Fax
(914) 829-2042 Corporate Offices
www.reliablesprinkler.com Internet Address

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Revision lines indicate updated or new data.

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RSN: 1606973
Permit # 2022-2109740 CT
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SCHEDULE 10 & 40



Always ready to protect your most valuable assets.

As the leading supplier of steel sprinkler pipe, we understand that there are no second chances in fire suppression. You need products of enduring quality and exceptional strength–plus reliable service. You need Bull Moose.

Bull Moose Fire Sprinkler Pipe Product Information

	Nominal Pipe Size (Inches)	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"	6"	8"
SCHEDULE 10	O.D. (in)	1.315	1.660	1.900	2.375	2.875	3.500	4.500	6.625	8.625
	I.D. (in)	1.097	1.442	1.682	2.157	2.635	3.260	4.260	6.357	8.249
	Empty Weight (lb/ft)	1.410	1.810	2.090	2.640	3.530	4.340	5.620	9.290	16.940
	Water Filled Weight (lb/ft)	1.820	2.518	3.053	4.223	5.893	7.957	11.796	23.038	40.086
	C.R.R.	15.27	9.91	7.76	6.27	4.92	3.54	2.50	1.158	1.805
	Pieces per Lift	91	61	61	37	30	19	19	10	7
	Lift Weight (lbs) 21' lengths	2,695	2,319	2,677	2,051	2,224	1,732	2,242	1,951	2,490
	Lift Weight (lbs) 24' lengths	3,079	2,650	3,060	2,344	2,542	1,979	2,563	2,230	2,848
	Lift Weight (lbs) 25' lengths	3,208	2,760	3,187	2,442	2,648	2,062	2,670		

	NPS (In.)	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"
SCHEDULE 40		1.315	1.660	1.900	2.375	2.875	3.500	4.500
		1.049	1.380	1.610	2.067	2.469	3.068	4.026
		1.680	2.270	2.720	3.660	5.800	7.580	10.800
		2.055	2.918	3.602	5.114	7.875	10.783	16.316
		1.00	1.00	1.00	1.00	1.00	1.00	1.00
		70	51	44	30	30	19	19
		2,470	2,431	2,513	2,306	3,654	3,024	4,309
		2,822	2,778	2,872	2,635	4,176	3,456	4,925
		2,940	2,894	2,992	2,745	4,350	3,601	5,130

SCHEDULE 10 & 40 ADVANTAGES:

- UL listed (US & Canada) and FM approved
- ASTM A135 and A795 Type E, Grade A Certified
- Complies with NFPA-13, 13R and 14
- Industry-leading hydraulic characteristics
- CRR of 1.0 and greater
- All pipe NDT weld tested

OTHER BENEFITS/SERVICES:

- We have the most stocking locations in the industry, for best delivery and availability
- Plain end or roll groove
- Eddy Guard II™ bacterial-resistant internal coating
- Custom length options
- Hot dipped galvanization
- Reddi-Pipe® red or black pipe eliminates field painting
- Compatible for use in wet, dry, preaction and deluge sprinkler systems
- The only maker with EPDs (to help earn LEED points).

Exclusive maker of Reddi-Pipe®
RED OR BLACK PAINTED PIPE.

UL CERTIFIED ENVIRONMENTAL PRODUCT DECLARATION UL.COM/EPD
cULus LISTED
FM APPROVED
NFPA
AFSA American Fire Sprinkler Association
NFSA The Voice of the Fire Sprinkler Industry

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Rod couplers

Material Specifications

Material	ASTM A563, Grade A carbon steel;
Finish	Zinc electroplated to ASTM B 633-98, SC 1, Type I
Thread	Class 2A fit; Class 2B thread



Ordering Information

Description	Length	Width across flats	Qty	Item No.	MSS-SP-58[1] Allowable Tensile Load at 650°F	AISC[2] Allowable Load (lb)
1/4" Rod Coupler	7/8"	3/8"	100	411746	300	780
3/8" Rod Coupler	1-1/8"	1/2"	50	411747	730	1750
1/2" Rod Coupler	1-1/4"	5/8"	50	411748	1350	3110
5/8" Rod Coupler	2-1/8"	13/16"	50	411749	2160	4860
3/4" Rod Coupler	2-1/4"	1"	25	411750	3230	6700

1 Per MSS-SP-58-2002, the ultimate tensile loads are based on a tensile stress of 50,000 psi multiplied by the threaded rod root area based on coarse thread UNC.
2 AISC Allowable Tensile load = 0.33 x Fu x Anom
AISC Allowable Shear load = 0.17 x Fu x Anom

3.2.11.1 Product description
3.2.11.2 Material specifications
3.2.11.3 Technical data
3.2.11.4 Installation instructions
3.2.11.5 Ordering information

3.2.11 STUD FASTENERS FOR ATTACHMENT TO CONCRETE

3.2.11.1 PRODUCT DESCRIPTION

The Hilti threaded stud program is for use with Hilti powder-actuated tools to provide a faster and more reliable solution for making attachments to concrete base materials. Threaded studs are available in standard carbon steel. The X-W6 and W10 threaded studs have varying shank lengths to provide more reliable fastenings to standard and high strength concrete. Thread diameters of 1/4" have thread lengths ranging from 1/2" through 1-1/2". The 3/8" thread diameter has a single thread length of 1-3/16".



X-W6



W10

Listings/Approvals

ICC-ES (International Code Council)
ESR-1663 with LABC/LARC Supplement

FM (Factory Mutual)
W10-30-27P10, W10-30-32P10 and W10-30-42P10 Fasteners for Sprinkler Pipe Hangers

UL (Underwriters Laboratories)
W10-30-32P10 and W10-30-42P10, Fasteners for Sprinkler Pipe Hangers - Up to 2-1/2" diameter pipe

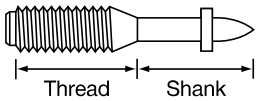
3.2.11.2 Material specifications

Fastener designation	Fastener material	Fastener plating
X-W6	Carbon Steel	5 µm Zinc[1]
W10	Carbon Steel	5 µm Zinc[1]

1 ASTM B633, SC1, Type III. Refer to Section 2.3.3.1 for more information.

3.2.11.3 Technical data

Fastener designation	Thread designation	Thread length in. (mm)	Shank length in. (mm)
X-W6-20-22	UNC 1/4-inch	**3/4** (20)	**7/8** (22)
X-W6-20-27	UNC 1/4-inch	**3/4** (20)	**1** (27)
X-W6-38-27	UNC 1/4-inch	**1-1/2** (38)	**1** (27)
W10-30-27	UNC 3/8-inch	**1-3/16** (30)	**1** (27)
W10-30-32	UNC 3/8-inch	**1-3/16** (30)	**1-1/4** (32)
W10-30-42	UNC 3/8-inch	**1-3/16** (30)	**1-5/8** (42)



Allowable loads in normal weight concrete[1,2]

Description	Fastener	Shank diameter in. (mm)	Minimum embedment in. (mm)	Concrete compressive strength			
				2000 psi		4000 psi	
				Tension lb (kN)	Shear lb (kN)	Tension lb (kN)	Shear lb (kN)
1/4–20 Threaded stud	X-W6	**0.145** (3.7)	**3/4** (19)	**40** (0.18)	**55** (0.24)	**40** (0.18)	**55** (0.24)
			1 (25)	**85** (0.38)	**195** (0.87)	**110** (0.49)	**225** (1.00)
3/8–16 Threaded stud	W10	**0.205** (5.2)	**1** (25)	**85** (0.38)	**95** (0.42)	**100** (0.44)	**105** (0.47)
			1-1/4 (32)	**175** (0.78)	**345** (1.53)	**200** (0.89)	**380** (1.69)
			1-5/8 (41)	**285** (1.27)	**380** (1.69)	**385** (1.71)	**395** (1.76)

1 The tabulated allowable load values are for the low-velocity fasteners only, using a safety factor that is greater than or equal to 5.0, calculated in accordance with ICC-ES AC70. Wood or steel members connected to the substrate must be investigated in accordance with accepted design criteria.

2 Multiple fasteners are recommended for any attachment.

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Allowable Loads in Minimum f'_c = 3000 psi Structural Lightweight Concrete[1,4]

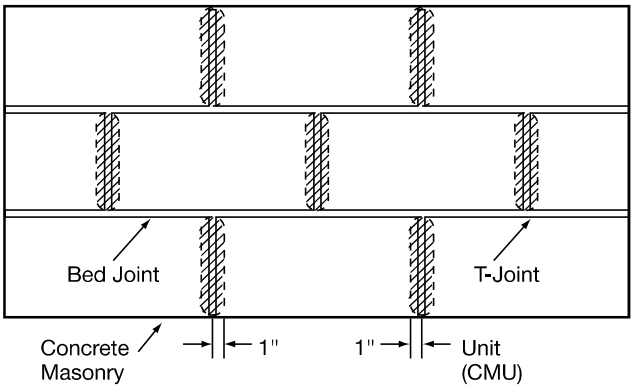
Fastener description	Fastener	Shank dia. in. (mm)	Min. embed. in. (mm)	Fastener location				
				Installed into concrete		Installed through 3" deep metal deck into concrete[2,3]		
				Tension lb (kN)	Shear lb (kN)	Tension lb (kN)		Shear lb (kN)
						Upper flute	Lower flute	
1/4–20 Threaded Stud	X-W6	0.145 (3.7)	3/4 (20)	125 (0.56)	185 (0.82)	125 (0.56)	115 (0.54)	185 (0.82)
			1 (25)	175 (0.78)	185 (0.82)	160 (0.71)	180 (0.80)	185 (0.82)
3/8–16 Threaded Stud	W10	0.205 (5.2)	1 (25)	265 (1.18)	190 (0.85)	160 (0.71)	–	185 (0.82)
			1-1/4 (32)	280 (1.25)	380 (1.69)	160 (0.71)	210 (0.93)	470 (2.09)
			1-5/8 (41)	445 (1.98)	540 (2.40)	435 (1.93)	325 (1.45)	675 (3.00)

1 The tabulated allowable load values are for the low-velocity fasteners only, using a safety factor that is greater than or equal to 5.0, calculated in accordance with ICC-ES AC70. Wood or steel members connected to the substrate must be investigated in accordance with accepted design criteria.
2 The steel deck profile is 3" deep composite floor deck with a thickness of 20 gauge (0.0358"). Figure 1 (Section 3.2.1.6) shows the nominal flute dimensions, fastener locations and load orientations for the deck profile.
3 Structural lightweight concrete fill above top of metal deck shall be a minimum of 3-1/4" deep.
4 Multiple fasteners are recommended for any attachment.

Allowable Loads in Concrete Masonry Units[1,2,3,4,5,8]

Fastener description	Fastener	Shank diameter in. (mm)	Minimum embedment in. (mm)	Hollow CMU				Grout filled CMU			
				Face shell[6]		Mortar joint[6]		Face shell[6]		Mortar joint[6]	
				Tension lb (kN)	Shear lb (kN)	Tension lb (kN)	Shear[7] lb (kN)	Tension lb (kN)	Shear lb (kN)	Tension lb (kN)	Shear[7] lb (kN)
1/4-20 Threaded Stud	X-W6	0.145 (3.7)	1 (25)	105 (0.47)	175 (0.78)	80 (0.36)	110 (0.49)	125 (0.56)	175 (0.78)	135 (0.60)	150 (0.67)

1 The tabulated allowable load values are for the low-velocity fastener only, using a safety factor of 5.0 or higher. Wood or steel members connected to the substrate must be investigated in accordance with accepted design criteria.
2 The tabulated allowable load values are for low-velocity fasteners installed in normal weight or lightweight concrete masonry units conforming to ASTM C90.
3 The tabulated allowable load values are for low-velocity fasteners installed in concrete masonry units with mortar conforming to ASTM C270, Type N.
4 The tabulated allowable load values are for low-velocity fasteners installed in concrete masonry units with grout conforming to ASTM C476, as coarse grout.
5 The tabulated allowable load values are for one low-velocity fastener installed in an individual masonry unit cell and at least 4" from the edge of the wall.
6 Fastener can be located anywhere on the face shell or mortar joint as shown in the figure to the right.
7 Shear direction can be horizontal or vertical (Bed Joint or T-Joint) along the CMU wall plane.
8 Multiple fasteners are recommended for any attachment.



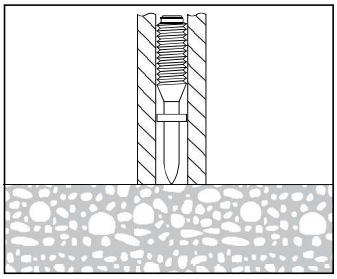
Acceptable locations (NON-SHADED AREAS) for threaded studs in CMU walls

Allowable bending moments for threaded stud fasteners installed in minimum 2,000 psi concrete[1,2]

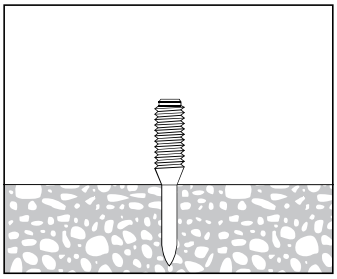
Fastener designation	M_{rec} ft-lb (Nm)
X-W6	3.6 (4.9)
W10	10.0 (13.6)

1 Based on a safety factor greater than or equal to 2.0.
2 For more information on bending moments, reference Section 3.2.2.7.

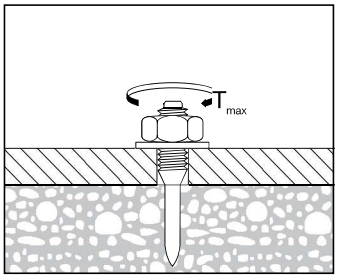
3.2.11.4 INSTALLATION INSTRUCTIONS*



1. Press tip of fastener to concrete base material. Drive fastener with Hilti powder-actuated tool.



2. Ensure proper threaded stud embedment.



3. Make attachment. Do not exceed Maximum Tightening Torque, T_{max}.

* These are abbreviated instructions which may vary by application. **ALWAYS** review/follow the instructions accompanying the product.

Maximum tightening torque, T_{max}, for threaded studs driven into concrete, ft-lb (Nm)

Stud type	
X-W6	W10
3.0 (4.0)	**4.5** (6.0)

3.2.11.5 ORDERING INFORMATION

Fastener description	Shank length in. (mm)	Shank Ø in. (mm)	Thread length in. (mm)	Thread Ø	Guidance washer Ø	Packaging quantity
X-W6-20-22 FP8	**7/8** (22)	**0.145** (3.7)	**3/4** (20)	UNC 1/4-inch	8 mm plastic	100 pcs
X-W6-20-27 FP8	**1** (27)	**0.145** (3.7)	**3/4** (20)	UNC 1/4-inch	8 mm plastic	100 pcs
X-W6-38-27 FP8	**1** (27)	**0.145** (3.7)	**1-1/2** (38)	UNC 1/4-inch	8 mm plastic	100 pcs
W10-30-27 P10	**1** (27)	**0.205** (5.2)	**1-3/16** (30)	UNC 3/8-inch	10 mm plastic	100 pcs
W10-30-32 P10	**1-1/4** (32)	**0.205** (5.2)	**1-3/16** (30)	UNC 3/8-inch	10 mm plastic	100 pcs
W10-30-42 P10	**1-5/8** (42)	**0.205** (5.2)	**1-3/16** (30)	UNC 3/8-inch	10 mm plastic	100 pcs





X-W6



W10*

* W10 threaded stud installation requires a 10mm fastener base plate.

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Fasteners

Anchors, expansion shields, concrete inserts, explosive-driven fasteners and threaded head screws provide anchorage to building structural members for supporting pipe hangers. See PIPE HANGER listing for other components and minimum rod sizes. Unless specifically noted in the listing, the following fasteners are FM Approved for vertical installation only.

Explosive-Driven Fasteners

Explosive-driven fasteners provide anchorage to concrete or steel building members for supporting pipe hangers. The powder-actuated tool used for driving these fasteners may represent an ignition source; therefore, it should not be used in classified hazardous locations or near easily ignited materials. Fasteners should not be used for support of pipe hangers to structural members in Earthquake Zones 500 or less as defined by FM Global Property Loss Prevention Data Sheet 1-2.

A coupling and locknut are provided with each fastener for attaching a pipe hanger to the fastener.

Explosive-Driven Fasteners

Fastener, Cat. No.	*Coupling, Cat. No.*	*For Use In*	*Max Pipe Size, in. (mm)*
W10-30-27P10	D1025	Concrete	2 (51)
W10-30-27P10	ACI-F	"	3 1⁄2 (89)
W10-30-27P10	ACI-H	"	5 (127)
W10-30-32P10	D1025	"	2 (51)
W10-30-32P10	ACI-F	"	3 1⁄2 (89)
W10-30-32P10	ACI-H	"	5 (127)
W10-30-42P10	D1025	"	2 (51)
W10-30-42P10	ACI-F	"	3 1⁄2 (89)
W10-30-42P10	ACI-H	"	5 (127)
W10-30-47P10	D1025	"	2 (51)
W10-30-47P10	ACI-F	"	3 1⁄2 (89)
W10-30-47P10	ACI-H	"	5 (127)
EW10-30-15P10	D1025	Steel	2 (51)
EW10-30-15P10	ACI-F	"	3 1⁄2 (89)
EW10-30-15P10	ACI-H	"	5 (127)

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Fastener, Cat. No.	*Rod Size, in.*	*For Use In*	*Max Pipe Size, in. (mm)*
X-EW6H-11-9 FP8	1/4	Steel	3 1/2 (89)
X-EW6H-11-9 P12	1/4	Steel	3 1/2 (89)
X-EW6H-20-9 FP8	1/4	Steel	3 1/2 (89)
X-EW6H-20-9 P12	1/4	Steel	3 1/2 (89)
X-EW6H-28-9 FP8	1/4	Steel	3 1/2 (89)
X-EW6H-28-9 P12	1/4	Steel	3 1/2 (89)
X-EW6H-38-9 FP8	1/4	Steel	3 1/2 (89)
X-EW6H-38-9 P12	1/4	Steel	3 1/2 (89)
X-HS W6 U19 P8 S15	1/4	Steel	3 1/2 (89)
X-HS W10 U19 P8 S15	3/8	Steel	5 (127)
X-EW10H-30-14 P10	3/8	Steel	5 (127)

These fasteners are also FM Approved for horizontal installation. Max pipe size 3 1/2 in. (89 mm).

Company Name:	Hilti Inc
Company Address:	5400 S 122nd East Ave, Tulsa, Oklahoma 74146, USA
Company Website:	http://www.hilti.com
New/Updated Product Listing:	No
Listing Country:	United States of America
Certification Type:	FM Approved

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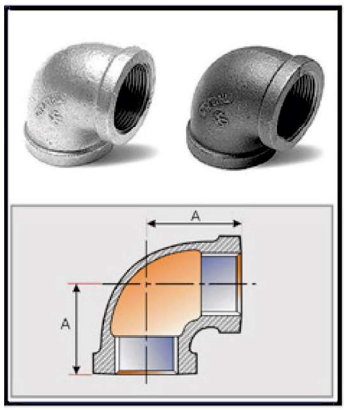
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ELBOWS 90°

AL 90, BL 90

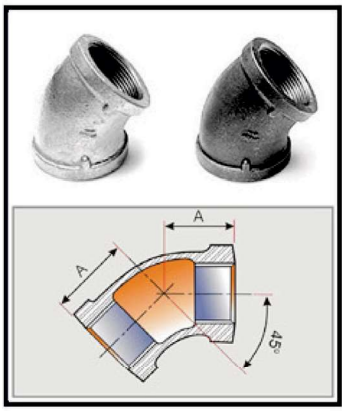


Size (inch)	Dimensions A	Inner Box Pcs./Box	Master Ctn. Pcs./Ctn.	NO.of Inner Box	Weight/Pcs.	N.W./Ctn. (Kgs.)
1/8	17.5	50	600	12	0.0306	18
1/4	20.6	35	420	12	0.0515	22
3/8	24.1	90	360	4	0.0710	26
1/2	28.4	50	200	4	0.1195	24
3/4	33.3	35	105	3	0.1865	20
1	38.1	20	60	3	0.2838	17
1 1/4	44.5	20	40	2	0.4504	18
1 1/2	49.3	15	30	2	0.5736	17
2	57.2	8	16	2	0.8932	14
2 1/2	68.6	-	12	1	1.4816	18
3	78.2	-	8	1	2.2560	20
3 1/2	86.9	-	4	1	3.1930	13
4	96.3	-	2	1	4.2200	8
5	114.3	-	2	1	6.7980	14
6	132.0	-	1	1	8.8690	9

*** THE ACTUAL WEIGHT CAN VARY BY ± 3%**

ELBOWS 45°

AL 45, BL 45

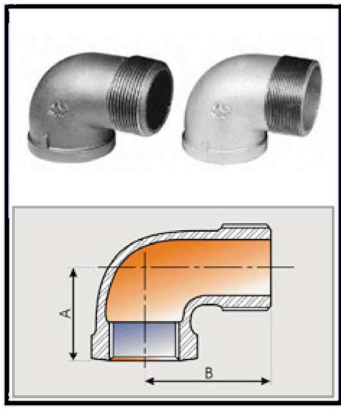


Size (inch)	Dimensions A	Inner Box Pcs./Box	Master Ctn. Pcs./Ctn.	NO.of Inner Box	Weight/Pcs.	N.W./Ctn. (Kgs.)
1/8	16.0	50	600	12	0.0245	15
1/4	18.5	30	360	12	0.0464	17
3/8	20.3	75	300	4	0.0676	20
1/2	22.3	50	200	4	0.1024	20
3/4	24.9	40	120	3	0.1628	20
1	28.4	20	60	3	0.2503	15
1 1/4	32.8	20	40	2	0.3467	14
1 1/2	36.3	10	30	3	0.5098	15
2	42.7	12	24	2	0.8008	19
2 1/2	49.5	-	12	1	1.2640	15
3	55.1	-	10	1	1.9436	19
4	66.3	-	4	1	3.4280	14
5	77.5	-	2	1	4.8500	10
6	87.9	-	1	1	6.7660	7

*** THE ACTUAL WEIGHT CAN VARY BY ± 3%**

STREET ELBOWS 90°

ASL 90, BSL 90



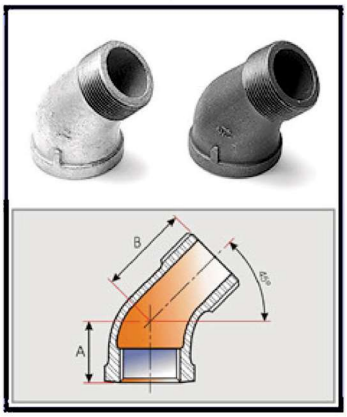
Size (inch)	Dimensions A	B	Inner Box Pcs./Box	Master Ctn. Pcs./Ctn.	NO.of Inner Box	Weight/Pcs.	N.W./Ctn. (Kgs.)
1/8	17.5	25.4	60	720	12	0.0256	18
1/4	20.6	30.2	35	420	12	0.0440	18
3/8	24.1	36.6	60	240	4	0.0720	17
1/2	28.4	41.4	60	180	3	0.1070	19
3/4	33.3	48.0	35	105	3	0.1740	18
1	38.1	54.3	45	90	2	0.2693	24
1 1/4	44.5	62.2	25	50	2	0.4216	21
1 1/2	49.3	68.3	9	27	3	0.5734	15
2	57.2	82.8	8	16	2	1.0092	16
2 1/2	68.6	98.0	5	10	2	1.6400	16
3	78.2	114.5	-	8	1	2.4160	19
4	96.3	144.5	-	4	1	4.2400	17
5	114.3	174.2	-	1	1	5.5000	6
6	130.3	204.0	-	1	1	12.3666	12

*** THE ACTUAL WEIGHT CAN VARY BY ± 3%**

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STREET ELBOWS 45°

ASL 45, BSL 45

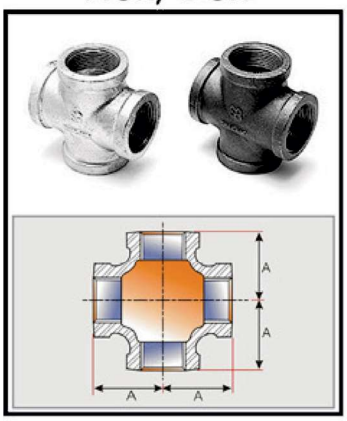


Size (inch)	Dimensions A	Dimensions B	Inner Box Pcs./Box	Master Ctn. Pcs./Ctn.	NO.of Inner Box	Weight/Pcs.	N.W./Ctn. (Kgs.)
1/8	16.0	21.0	70	840	12	0.0243	20
1/4	18.5	23.9	40	480	12	0.0395	19
3/8	20.3	26.2	100	400	4	0.0582	23
1/2	22.3	33.0	75	225	3	0.0996	22
3/4	24.9	37.5	40	120	3	0.1436	17
1	28.4	43.0	25	75	3	0.2540	19
1 1/4	32.8	47.4	10	40	4	0.3546	14
1 1/2	36.3	51.7	10	30	3	0.5104	15
2	42.7	60.4	12	24	2	0.7944	19
2 1/2	49.5	69.0	6	12	2	1.3512	16
3	55.1	80.2	3	6	2	2.1280	13
4	66.3	99.0	-	4	1	3.3770	14

*** THE ACTUAL WEIGHT CAN VARY BY ± 3%**

CROSSES

ACR, BCR

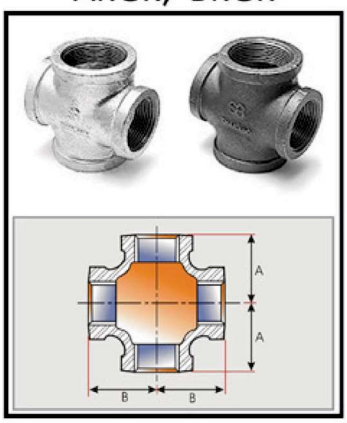


Size (inch)	Dimensions A	Inner Box B	Master Ctn. Pcs./Box	NO.of Pcs./Ctn.	Weight/Pcs. Inner Box	N.W./Ctn. (Kgs.)
1/8	17.5	30	360	12	0.0520	19
1/4	20.6	60	240	4	0.0881	21
3/8	24.1	50	150	3	0.1310	20
1/2	28.4	30	90	3	0.1980	18
3/4	33.3	20	60	3	0.3006	18
1	38.1	15	30	2	0.4642	14
1 1/4	44.5	10	20	2	0.7200	14
1 1/2	49.3	8	16	2	0.9384	15
2	57.2	5	10	2	1.4200	14
2 1/2	68.6	3	6	2	2.4520	15
3	78.2	2	4	2	3.7440	15
4	96.3	1	2	2	6.2900	13

*** THE ACTUAL WEIGHT CAN VARY BY ± 3%**

REDUCING CROSSES

ARCR, BRCR



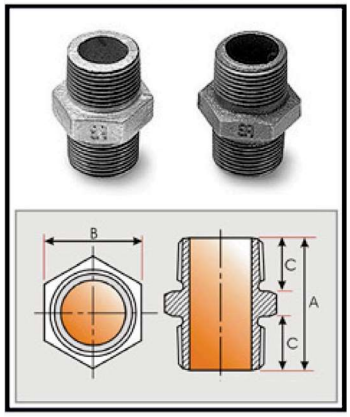
Size (inch)	Dimensions A	Dimensions B	Inner Box Pcs./Box	Master Ctn. Pcs./Ctn.	NO.of Inner Box	Weight/Pcs.	N.W./Ctn. (Kgs.)
1 1/2 X 1 1/4	46.2	47.8	9	18	2	0.9060	16
2 X 1 1/4	48.3	53.3	5	10	2	1.1380	11
2 1/2 X 1 1/4	52.0	62.0	4	8	2	1.4510	12
2 1/2 X 1 1/2	56.0	63.0	4	8	2	1.5430	12

*** THE ACTUAL WEIGHT CAN VARY BY ± 3%**

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NIPPLES

NI

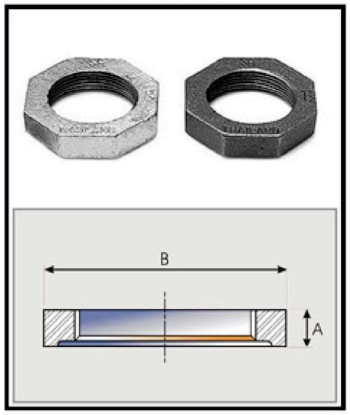


Size (inch)	Dimensions A	B	C	Inner Box Pcs./Box	Master Ctn. Pcs./Ctn.	NO.of Inner Box	Weight/Pcs.	N.W./Ctn. (Kgs.)
1/8	32	14	11.0	240	960	4	0.0220	21
1/4	34	17	12.0	200	800	4	0.0260	21
3/8	36	21	13.0	150	600	4	0.0410	25
1/2	45	27	18.5	80	320	4	0.0692	22
3/4	48	32	19.5	60	180	3	0.1056	20
1	53	38	21.5	40	120	3	0.1560	19
1 1/4	56	48	23.0	35	70	2	0.2226	19
1 1/2	60	55	24.0	25	50	2	0.3360	17
2	70	70	28.0	18	36	2	0.6112	22
2 1/2	76	85	31.0	10	20	2	0.8636	17
3	84	100	34.0	6	12	2	1.2865	15
4	95	130	38.5	3	6	2	1.8512	11

*** THE ACTUAL WEIGHT CAN VARY BY ± 3%**

LOCKNUTS

ALN, LN

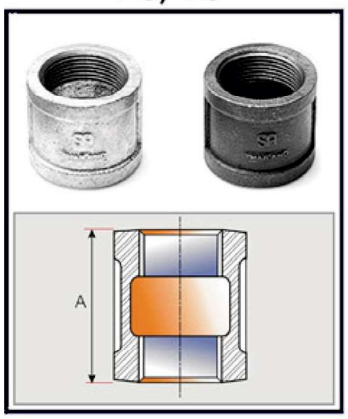


Size (inch)	Dimensions A	B	Inner Box Pcs./Box	Master Ctn. Pcs./Ctn.	NO.of Inner Box	Weight/Pcs.	N.W./Ctn. (Kgs.)
1/8	5.0	17.5	250	3000	12	0.0080	24
1/4	6.6	21.3	125	1500	12	0.0117	18
3/8	7.3	25.4	125	1500	12	0.0150	23
1/2	8.1	30.0	150	600	4	0.0387	23
3/4	8.8	36.3	90	360	4	0.0526	19
1	9.9	44.5	60	240	4	0.0826	20
1 1/4	10.9	53.3	45	180	4	0.1220	22
1 1/2	12.1	59.7	45	135	3	0.2084	28
2	13.7	73.2	25	75	3	0.2680	19
2 1/2	15.2	98.0	20	40	2	0.5150	21
3	17.2	117.3	20	40	2	0.6090	24
4	20.5	147.1	7	14	2	0.7530	11

*** THE ACTUAL WEIGHT CAN VARY BY ± 3%**

COUPLINGS

AS, BS



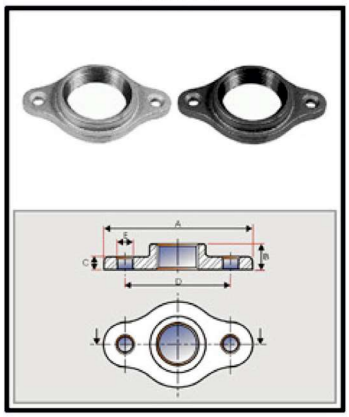
Size (inch)	Dimensions A	Inner Box Pcs./Box	Master Ctn. Pcs./Ctn.	NO.of Inner Box	Weight/Pcs.	N.W./Ctn. (Kgs.)
1/8	24.4	70	840	12	0.0250	21
1/4	26.9	40	480	12	0.0399	19
3/8	29.5	40	480	12	0.0574	28
1/2	34.0	60	240	4	0.0920	22
3/4	38.6	50	150	3	0.1330	20
1	42.4	25	100	4	0.2077	21
1 1/4	49.0	16	64	4	0.3164	20
1 1/2	54.6	18	36	2	0.4196	15
2	64.3	12	24	2	0.6556	16
2 1/2	73.2	8	16	2	1.0320	17
3	80.8	-	12	1	1.6377	20
4	93.7	3	6	2	2.6060	16

*** THE ACTUAL WEIGHT CAN VARY BY ± 3%**

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WASTENUTS

AWN

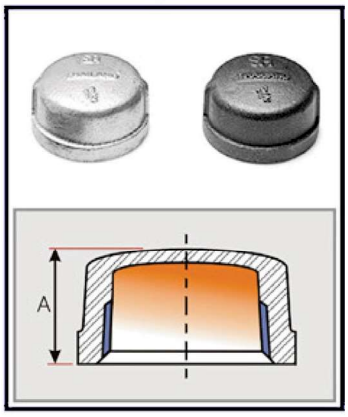


Size (inch)	Dimensions A	B	C	D	E	Inner Box Pcs./Box	Master Ctn. Pcs./Ctn.	NO.of Inner Box	Weight. /Pcs	N.W./Ctn. (Kgs.)
1/2	62.0	6.0	4.4	46.0	6.0	90	360	4	0.0540	19
3/4	73.0	10.5	5.0	54.0	7.3	80	240	3	0.0800	19
1	84.1	11.2	4.8	65.1	7.2	50	200	4	0.0960	19
1 1/4	100.0	12.7	5.6	77.8	8.7	30	120	4	0.1450	17
1 1/2	109.5	14.3	6.4	87.3	8.7	50	100	2	0.1890	19
2	130.2	16.0	7.2	104.8	8.7	30	60	2	0.2850	17

*** THE ACTUAL WEIGHT CAN VARY BY ± 3%**

CAPS

ACA, BCA

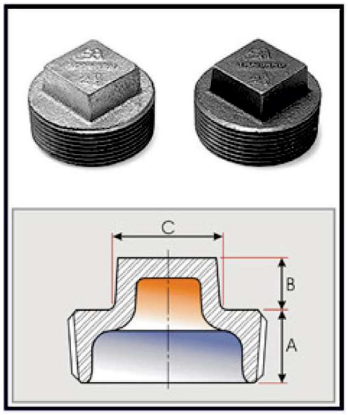


Size (inch)	Dimensions A	Inner Box Pcs./Box	Master Ctn. Pcs./Ctn.	NO.of Inner Box	Weight/Pcs.	N.W./Ctn. (Kgs.)
1/8	13.5	120	1440	12	0.0161	23
1/4	16.0	80	960	12	0.0245	24
3/8	18.8	60	720	12	0.0347	25
1/2	22.1	75	300	4	0.0575	17
3/4	24.6	40	160	4	0.0966	15
1	29.5	25	100	4	0.1424	14
1 1/4	32.5	20	80	4	0.2008	16
1 1/2	33.8	18	54	3	0.2528	14
2	36.8	12	36	3	0.4220	15
2 1/2	43.2	20	40	2	0.7270	29
3	45.7	-	24	1	1.0684	26
3 1/2	48.3	6	12	2	1.4680	18
4	52.8	6	12	2	1.7672	21

*** THE ACTUAL WEIGHT CAN VARY BY ± 3%**

PLUGS

AP, P



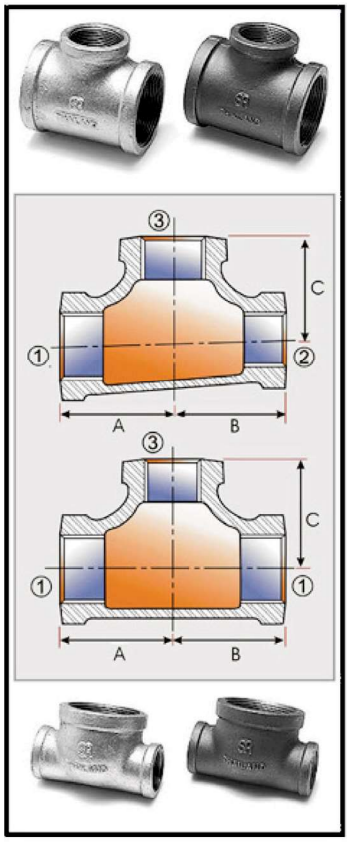
Size (inch)	Dimensions A	B	C	Inner Box Pcs./Box	Master Ctn. Pcs./Ctn.	NO.of Inner Box	Weight/Pcs.	N.W./Ctn. (Kgs.)
1/8	9.8	6.1	7.1	300	3.600	12	0.0058	21
1/4	11.6	7.1	9.5	150	1.800	12	0.0149	27
3/8	12.6	8.0	11.0	100	1.200	12	0.0220	26
1/2	14.7	9.7	14.3	50	600	12	0.0414	22
3/4	16.5	11.2	15.9	30	360	12	0.0660	21
1	19.1	12.7	20.9	20	240	12	0.1100	22
1 1/4	20.9	14.2	23.8	40	120	3	0.1840	21
1 1/2	21.7	15.8	28.6	30	90	3	0.2500	20
2	23.2	17.3	33.3	20	60	3	0.3840	21
2 1/2	32.0	18.8	38.1	16	32	2	0.5091	16
3	29.4	20.3	42.9	16	32	2	0.7532	24
4	31.0	25.4	58.0	6	12	2	1.4873	18

*** THE ACTUAL WEIGHT CAN VARY BY ± 3%**

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REDUCING TEES

ART, BRT



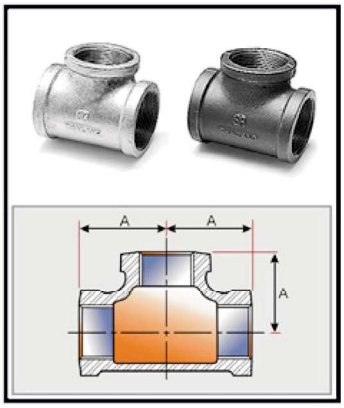
Size 1 x 2 x 3 (inch)	Dimensions A	B	C	Inner Box Pcs./Box	Master Ctn. Pcs./Ctn.	NO.of Inner Box	Weight/Pcs.	N.W./Ctn. (Kgs.)
1/4 X 1/8	18.8	18.8	19.3	25	300	12	0.0601	18
3/8 X 1/8	22.4	20.6	21.6	90	360	4	0.0730	26
3/8 X 1/4	22.4	22.4	22.9	60	240	4	0.0979	23
1/2 X 1/8	21.9	21.9	23.5	40	160	4	0.1080	17
1/2 X 1/4	24.6	24.6	24.9	40	160	4	0.1248	20
1/2 X 3/8	25.9	25.9	25.7	40	160	4	0.1350	22
3/4 X 1/8	24.0	24.0	25.7	32	128	4	0.1520	19
3/4 X 1/4	26.7	26.7	27.4	25	100	4	0.1746	17
3/4 X 3/8	27.9	27.9	28.1	25	100	4	0.1800	18
3/4 X 1/2	29.9	29.9	30.4	20	80	4	0.2239	18
1 X 1/4	27.6	27.6	30.4	20	80	4	0.2398	19
1 X 3/8	30.0	30.0	32.3	15	60	4	0.2730	16
1 X 1/2	31.4	31.4	34.8	15	60	4	0.3060	18
1 X 3/4	34.8	34.8	36.8	12	48	4	0.3484	17
1 1/4 X 1/4	30.0	30.0	36.6	20	40	2	0.3450	14
1 1/4 X 3/8	32.0	32.0	36.6	20	40	2	0.4009	16
1 1/4 X 1/2	34.0	34.0	38.9	20	40	2	0.4206	17
1 1/4 X 3/4	36.8	36.8	41.2	20	40	2	0.4719	19
1 1/4 X 1	40.1	40.1	42.2	20	40	2	0.5369	21
1 1/2 X 3/8	40.1	40.1	40.2	18	36	2	0.4450	16
1 1/2 X 1/2	35.8	35.8	42.2	18	36	2	0.4840	17
1 1/2 X 3/4	35.8	35.8	44.5	15	30	2	0.5320	16
1 1/2 X 1	41.9	41.9	45.7	10	30	3	0.6168	19
1 1/2 X 11/4	41.9	41.9	47.8	12	24	2	0.6906	17
2 X 3/8	46.2	46.2	-	10	20	2	0.6600	13
2 X 1/2	37.9	37.9	47.8	10	20	2	0.6768	14
2 X 3/4	40.6	40.6	50.0	10	20	2	0.7980	16
2 X 1	43.9	43.9	51.3	10	20	2	0.8096	16
2 X 11/4	47.3	47.3	52.2	8	16	2	0.9056	14
2 X 11/2	50.3	50.3	53.8	8	16	2	1.0662	17
2 1/2 X 1/2	40.2	40.2	55.9	6	12	2	1.2800	3
2 1/2 X 3/4	44.2	44.2	58.9	6	12	2	1.2680	15
2 1/2 X 1	46.5	46.5	59.0	5	10	2	1.3776	14
2 1/2 X 1 1/4	47.5	47.5	62.2	5	10	2	1.4808	15
2 1/2 X 1 1/2	54.9	54.9	63.8	5	10	2	1.5068	15
2 1/2 X2	60.7	60.7	66.0	4	8	2	1.7044	14
3 X 1/2	46.5	46.5	65.0	4	8	2	1.7130	14
3 X 3/4	45.5	45.5	65.3	3	6	2	1.3280	8
3 X 1	50.8	50.8	67.6	3	6	2	1.9765	12
3 X 1 1/4	55.1	55.1	69.6	3	6	2	1.6976	10
3 X 1 1/2	58.2	58.2	71.1	3	6	2	2.1740	13
3 X 2	64.0	64.0	73.4	3	6	2	2.3873	14
3 X 2 1/2	71.9	71.9	76.0	3	6	2	2.7200	16
4 X 1/2	53.5	53.5	79.2	2	4	2	2.5000	10
4 X 3/4	53.5	53.5	79.2	2	4	2	2.7500	11
4 X 1	-	-	-	2	4	2	3.0466	12
4 X 1 1/4	61.0	61.0	86.5	2	4	2	3.1120	12
4 X 1 1/2	62.5	62.5	82.6	2	4	2	3.4200	14
4 X 2	68.2	68.2	84.9	-	3	1	3.6770	11
4 X 2 1/2	77.5	77.5	89.2	-	3	1	4.1900	13
4 X 3	82.1	82.1	89.6	1	2	2	4.1920	8

' THE ACTUAL WEIGHT CAN VARY BY ± 3%

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TEES

AT, BT

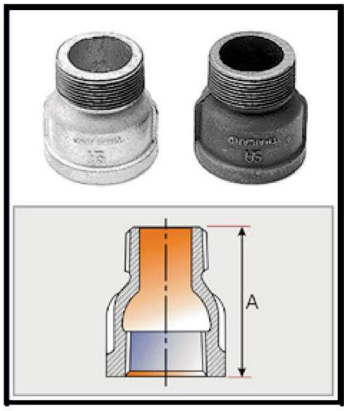


Size (inch)	Dimensions A	Inner Box Pcs./Box	Master Ctn. Pcs./Ctn.	NO.of Inner Box	Weight/Pcs.	N.W./Ctn. (Kgs.)
1/8	17.5	120	480	4	0.0452	22
1/4	20.6	75	300	4	0.0702	21
3/8	24.1	45	180	4	0.1087	20
1/2	28.4	40	120	3	0.1686	20
3/4	33.3	35	70	2	0.2542	18
1	38.1	20	40	2	0.3998	16
1 1/4	44.5	14	28	2	0.6020	17
1 1/2	49.3	12	24	2	0.7254	17
2	57.2	8	16	2	1.2100	19
2 1/2	68.6	4	8	2	2.2133	18
3	78.2	-	6	1	2.9500	18
4	96.3	1	2	2	5.2920	11
5	114.3	-	1	1	9.1200	9
6	132.0	-	1	1	11.8133	12

*** THE ACTUAL WEIGHT CAN VARY BY ± 3%**

EXTENSION

AX, BX

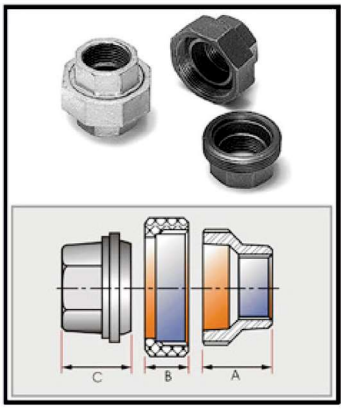


Size (inch)	Dimensions A	Inner Box Pcs./Box	Master Ctn. Pcs./Ctn.	NO.of Inner Box	Weight/Pcs.	N.W./Ctn. (Kgs.)
3/8	32	40	480	12	0.0480	23
1/2	40	75	300	4	0.0712	5
3/4	48	40	160	4	0.1400	20
1	55	30	90	3	0.1892	17
1 1/4	60	30	60	2	0.2872	17
1 1/2	65	20	40	2	0.3902	16
2	70	15	30	2	0.5990	18

*** THE ACTUAL WEIGHT CAN VARY BY ± 3%**

UNIONS CONICAL IRON TO IRON SEAT

U340



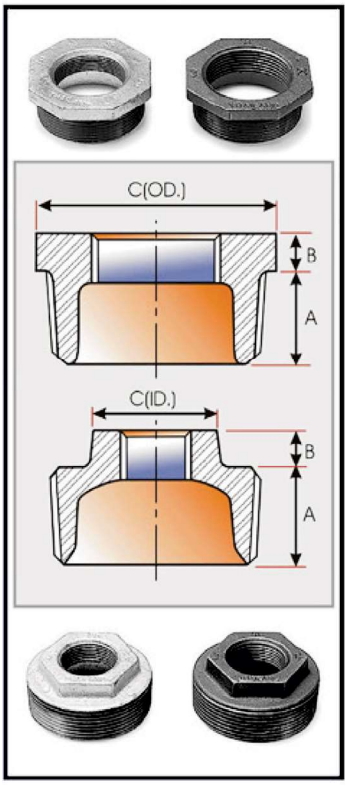
Size (inch)	Dimensions A	B	C	Inner Box Pcs./Box	Master Ctn. Pcs./Ctn.	NO.of Inner Box	Weight/Pcs.	N.W./Ctn. (Kgs.)
1/2	26.0	19.0	30.0	50	100	2	0.1990	20
3/4	28.0	20.0	30.5	35	70	2	0.2860	20
1	31.0	22.0	34.0	20	40	2	0.3480	14
1 1/4	33.0	24.0	40.0	15	30	2	0.6040	18
1 1/2	36.0	25.0	42.5	10	20	2	0.7180	14
2	42.0	27.0	46.0	6	12	2	1.0740	13
2 1/2	44.0	33.5	51.5	4	8	2	2.0000	16

*** THE ACTUAL WEIGHT CAN VARY BY ± 3%**

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BUSHINGS

ABU, BU



Size (inch)	Dimensions A	B	C(id)	C(od)	Inner Box Pcs./Box	Master Ctn. Pcs./Ctn.	NO.of Inner Box	Weight/Pcs.	N.W./Ctn. (Kgs.)
1/4 X 1/8	13.2	3.8	-	16.3	120	1440	12	0.0130	19
3/8 X 1/8	12.2	4.1	-	21.6	75	900	12	0.0250	23
3/8 X 1/4	12.2	4.1	-	21.1	75	900	12	0.0201	18
1/2 X 1/8	16.4	4.8	-	26.2	150	600	4	0.0492	30
1/2 X 1/4	14.2	4.8	-	26.2	150	600	4	0.0425	26
1/2 X 3/8	14.2	4.8	-	26.2	150	600	4	0.0352	21
3/4 X 1/8	16.0	5.6	-	29.2	75	300	4	0.0758	23
3/4 X 1/4	16.0	5.6	-	29.2	75	300	4	0.0616	18
3/4 X 3/8	16.0	5.6	-	29.2	75	300	4	0.0524	16
3/4 X 1/2	18.0	5.6	-	29.2	75	300	4	0.0500	15
1 X 1/8	19.1	9.6	28.5	-	50	200	4	0.0938	19
1 X 1/4	19.1	9.6	28.5	-	50	200	4	0.0910	18
1 X 3/8	19.1	9.6	28.5	-	50	200	4	0.0862	17
1 X 1/2	21.6	6.4	-	36.1	50	200	4	0.1044	21
1 X 3/4	21.6	6.4	-	36.1	50	200	4	0.0844	17
1 1/4 X 1/4	22.8	8.6	28.5	-	30	120	4	0.1338	16
1 1/4 X 3/8	22.8	8.6	28.5	-	30	120	4	0.1200	14
1 1/4 X 1/2	22.8	8.6	31.5	-	30	120	4	0.1474	18
1 1/4 X 3/4	20.3	7.1	-	44.7	30	120	4	0.1864	22
1 1/4 X 1	20.3	7.1		44.7	30	120	4	0.1350	16
1 1/2 X 1/8	21.1	9.4	28.4	-	25	75	3	0.2950	22
1 1/2 X 1/4	23.6	9.4	28.5	-	25	75	3	0.1790	13
1 1/2 X 3/8	23.6	9.4	28.5	-	25	75	3	0.1740	13
1 1/2 X 1/2	23.6	9.4	34.0	-	25	75	3	0.1936	15
1 1/2 X 3/4	23.6	9.4	36.5	-	25	75	3	0.1892	14
1 1/2 X 1	23.3	7.9	-	50.8	25	75	3	0.2160	16
1 1/2 X 1 1/4	23.3	7.9	-	50.8	25	75	3	0.1471	11
2 X1/4	21.8	10.6	28.5	-	20	60	3	0.2732	16
2 X 3/8	22.4	10.0	28.5	-	20	60	3	0.2784	26
2 X 1/2	24.9	10.4	34.0	-	20	60	3	0.2832	17
2 X 3/4	24.9	10.4	41.4	-	20	60	3	0.3150	19
2 X 1	24.9	10.4	45.0	-	20	60	3	0.3080	18
2 X 1 1/4	27.0	11.0	-	63.0	20	60	3	0.3840	23
2 X 1 1/2	27.0	11.0	-	63.0	20	60	3	0.3155	19
2 1/2 X 1/2	27.2	11.2	34.0	-	15	30	2	0.7130	21
2 1/2 X 3/4	27.2	11.2	41.4	-	15	30	2	0.4328	13
2 1/2 X 1	27.2	11.2	49.5	-	15	30	2	0.4576	14
2 1/2 X 1 1/4	27.2	11.2	60.7	-	15	30	2	0.4973	15
2 1/2 X 1 1/2	27.2	11.2	-	75.7	15	30	2	0.6208	19
2 1/2 X 2	29.7	9.4	-	75.7	15	30	2	0.4460	13
3 X 1/2	28.7	12.2	34.0	-	12	24	2	1.0100	24
3 X 3/4	28.7	12.2	41.4	-	12	24	2	0.6180	15
3 X 1	28.7	12.2	49.5	-	12	24	2	0.6536	16
3 X 1 1/4	28.7	12.2	60.7	-	12	24	2	0.7950	19
3 X 1 1/2	28.7	12.2	68.1	-	12	24	2	0.7576	18
3 X 2	28.7	12.2	-	98.0	12	24	2	0.9220	22
3 X 2 1/2	28.7	12.2	-	98.0	12	24	2	0.8360	20
3 1/2 X 1 1/2	30.0	13.2	70.0	-	8	16	2	1.0000	16
3 1/2 X 2	33.0	13.2	83.3	-	8	16	2	1.1500	18
3 1/2 X 3	30.0	10.9	-	117.3	8	16	2	0.8488	14
4 X 1/2	39.8	14.2	-	121.0	5	10	2	1.6600	17
4 X 3/4	38.0	13.0	-	121.0	5	10	2	1.4650	15
4 X 1	31.0	15.2	-	-	5	10	2	1.1620	12
4 X 1 1/4	31.0	15.2	60.7	-	5	10	2	1.3712	14
4 X 1 1/2	31.0	15.2	68.1	-	5	10	2	1.0866	11
4 X 2	36.0	15.2	83.3	-	5	10	2	1.3592	14
4 X 2 1/2	31.0	15.2	98.0	-	5	10	2	1.5376	15
4 X 3	37.0	14.0	-	126.0	5	10	2	1.6804	17

*** THE ACTUAL WEIGHT CAN VARY BY ± 3%**

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BAND HANGERS

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NFPA SWIVEL RING HANGER — FIG. 141 & 141F

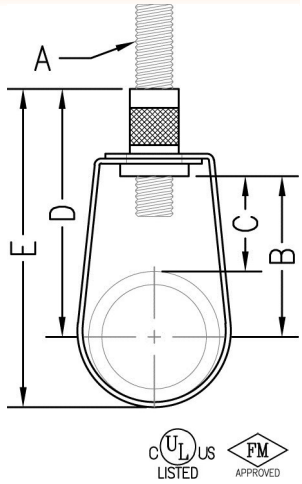
Function: Designed for the suspension of non-insulated stationary pipe lines. The knurled insert nut that allows a vertical adjustment after installation, is tapped to NFPA reduced rod size standards. Captured knurled insert nut present on pipe sizes ½" (15mm) to 2" (50mm). The capture is permanent in the bottom portion of the band, allowing the hanger to be opened during installation if desired, but preventing the knurled insert nut from falling completely out. Fig. 141F has a layer of felt which separates the pipe from the hanger to reduce vibration and sound.

Material: Carbon steel

Finish: Pre-galvanized **(Fig. 141)** or pre-galvanized with felt lining **(Fig. 141F)**

Approvals: Underwriters' Laboratories Listed in the U.S. (UL), Canada (CUL), for use with standard steel pipe sizes ¾" (20mm) to 8" (200mm) and CPVC pipe size ¾" (20mm) to 4" (100mm). Factory Mutual Approved for steel pipe sizes ¾" (20mm) to 8" (200mm). Complies with Federal Specifications A-A-1192A (Type 10), and Manufacturers' Standardization Society ANSI/MSS SP-58 (Type 10) which supersedes ANSI/MSS SP-69.

Ordering: Specify figure number and pipe size.



NOTE: If ordering Fig. 141F felt lined hangers for pipe sizes of 3½"(90mm) or under, order the next largest size to allow for the thickness of the felt lining. Metric knurl insert nuts available upon request.

Pipe Size		Rod Size	B		Adj. C		D		E		Max. Rec. Load		Wt. Each	
											lbs.	kN	lbs.	kg
½	(15)	⅜	1 7/8	(47.63)	1 7/16	(36.51)	2 3/4	(69.85)	3 1/16	(77.79)	300	(1.33)	.10	(.05)
¾	(20)	⅜	1 11/16	(42.86)	1 1/8	(28.58)	2 1/2	(63.50)	3 1/16	(77.79)	300	(1.33)	.10	(.05)
1	(25)	⅜	1 5/8	(41.28)	1	(25.40)	2 1/2	(63.50)	3 3/16	(80.96)	300	(1.33)	.10	(.05)
1¼	(32)	⅜	1 15/16	(49.21)	1 1/16	(26.99)	2 13/16	(71.44)	3 9/16	(90.49)	300	(1.33)	.11	(.05)
1½	(40)	⅜	2 1/8	(53.98)	1 1/16	(26.99)	3 1/8	(79.38)	3 7/8	(98.43)	300	(1.33)	.11	(.05)
2	(50)	⅜	2 7/16	(61.91)	1 1/8	(28.58)	3 5/16	(84.14)	4 3/8	(111.13)	300	(1.33)	.14	(.06)
2½	(65)	⅜	3 1/16	(77.79)	1 5/8	(41.28)	3 15/16	(100.01)	5 3/8	(136.53)	525	(2.34)	.19	(.09)
3	(80)	⅜	3 11/16	(93.66)	1 7/8	(47.63)	4 9/16	(115.89)	6 5/16	(160.34)	525	(2.34)	.23	(.10)
3½	(90)	⅜	3 3/4	(95.25)	1 7/8	(47.63)	4 5/8	(117.48)	6 5/8	(168.28)	525	(2.34)	.25	(.11)
4	(100)	⅜	4 3/16	(106.36)	1 7/8	(47.63)	5 1/16	(128.59)	7 5/16	(185.74)	650	(2.89)	.30	(.14)
5	(125)	½	4 5/8	(117.48)	1 5/8	(41.28)	5 5/8	(142.88)	8 3/8	(212.73)	1000	(4.45)	.50	(.23)
6	(150)	½	5 5/8	(142.88)	2 1/4	(57.15)	6 1/2	(165.10)	9 13/16	(249.24)	1000	(4.45)	.58	(.26)
8	(200)	½	6 13/16	(173.04)	2 7/16	(61.91)	7 15/16	(201.61)	12 1/4	(311.15)	1000	(4.45)	.90	(.41)

Unless otherwise specified, all dimensions on drawings and in charts are in inches and dimensions shown in parentheses are in millimeters.

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SURGE RESTRAINT — FIG. 055

Function: Designed to restrict the upward movement of activated fire sprinkler systems. Grips ring hanger, NOT THE NUT, and allows for fine tuning adjustments. Listed for use with PHD Manufacturing, Inc. Figure 141 ring hangers only.
Material: Spring Steel
Finish: Powder Coated
Install: Installs easily before or after pipe installation and without tools. Simply clip Fig. 055 onto Fig. 141 ring hanger and run the hanger rod down to the bottom plate surface to ensure proper restraint.
Approvals: Underwriters Laboratories listed for US and Canada.
Ordering: Specify figure number.
NOTE: For use up to 2" (50) pipe, one size fits all.

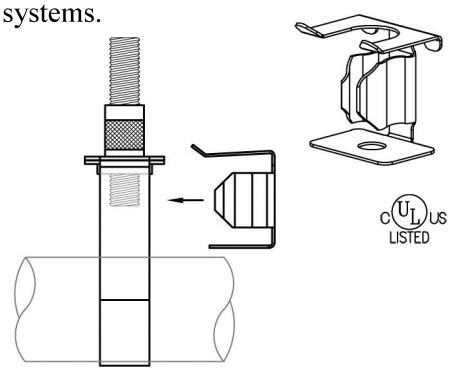


Fig. 055
(Pictured With Fig. 141)

PHD Manufacturing, Inc.
44018 Columbiana-Waterford Road
Columbiana, Ohio 44408-9481
Phone: 800-321-2736 • 330-482-9256
Fax: 330-482-2763
Web: www.phd-mfg.com

FIG. 055 SURGE RESTRAINT

PIPE SIZES: 3/4" through 2"

FUNCTION: Designed to restrict the upward movement of activated fire sprinkler systems. Grips ring hanger, NOT THE NUT, and allows for fine tuning adjustments. Listed for use with PHD Manufacturing, Inc. Figure 141 ring hangers only.

ORIENTATIONS:

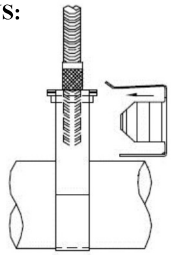


Illustration 1

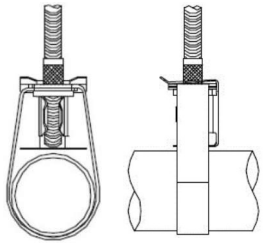


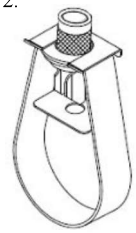
Illustration 1

APPROVALS: Underwriters Laboratories listed for US and Canada

MATERIAL: Spring Steel

FINISH: Black E-Coat

INSTALLATION: Installs easily before or after pipe installation and without tools. Simply clip Fig. 055 onto Fig. 141 ring hanger as shown above in Illustration 1. Run the hanger rod down to the bottom plate surface to ensure proper restraint as seen in Illustration 2.



TITUS

GROOVED TECHNICAL BULLENTINS

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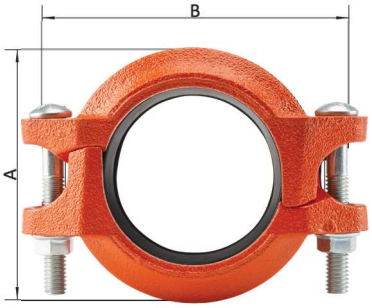
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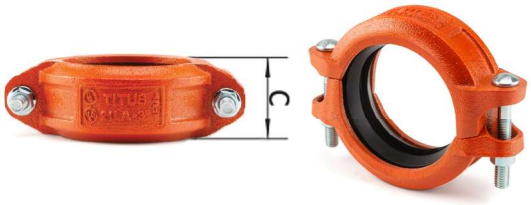
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21LA LIGHT WEIGHT RIGID COUPLING

ANGLE-PAD DESIGN

- Maximum working pressure up to 300psi (34.5 bar). MWP varies based on coupling size and pipe schedule
- Branded with TITUS or T
- Gasket: Pre-Lubricated Grade E – EPDM with operating temperature of -30F to 230F (-34C to 110C) and is marked by a green stripe
- Bolts are SAE J429 Grade 5
- All Groove dimensions conform to AWWA-C606
- All coupling housings conform to ASTM A-536 Grade 65-45-12
- Finish available in standard orange paint or hot dipped galvanized (ASTM A-153)
- Designed to meet metal to metal when properly installed
- For current listing/approval details contact a Titus representative







C - Style

C-Style gasket is approved for wet and dry fire protection applications to -40˚C. Petroleum free silicone lubricant is required in freezing applications.

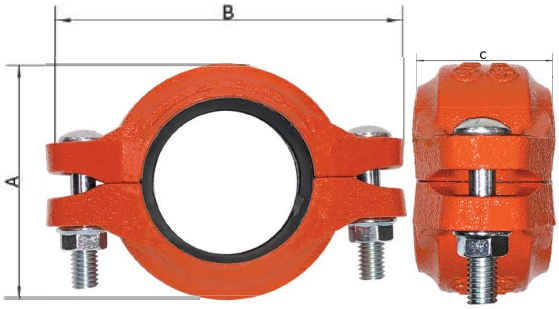
Nominal Size in/mm	Pipe O.D. in/mm	Max.Working Pressure PSI/Bar	Max.End Load Lbs/KN	Axial Displacement in/mm	Dimensions			Bolts Size in/mm
					A in/mm	B in/mm	C in/mm	
1	**1.327**	**300**	**405**	**0-0.06**	**2.20**	**3.78**	**1.85**	**3/8×2-1/8**
25	33.7	20	1.80	0-1.6	56	96	47	M10×55
1-1/4	**1.669**	**300**	**656**	**0-0.06**	**2.52**	**4.17**	**1.85**	**3/8×2-3/8**
32	42.4	20	2.92	0-1.6	64	106	47	M10×60
1-1/2	**1.9**	**300**	**852**	**0-0.06**	**2.72**	**4.45**	**1.85**	**3/8×2-3/8**
40	48.3	20	3.79	0-1.6	69	113	47	M10×60
2	**2.375**	**300**	**1327**	**0-0.06**	**3.46**	**4.80**	**1.85**	**3/8×2-3/8**
50	60.3	20	5.91	0-1.6	88	122	47	M10×60
2-1/2	**2.875**	**300**	**1945**	**0-0.06**	**3.94**	**5.39**	**1.85**	**3/8×2-3/4**
65	73	20	8.66	0-1.6	100	137	47	M10×70
2-1/2	**3**	**300**	**2114**	**0-0.06**	**3.94**	**5.39**	**1.85**	**3/8×2-3/4**
65	76.1	20	9.41	0-1.6	100	137	47	M10×70
3	**3.5**	**300**	**2885**	**0-1.7**	**4.57**	**6.06**	**1.85**	**3/8×2-3/4**
80	88.9	20	12.84	0-1.6	116	154	47	M10×70
4	**4.5**	**300**	**4769**	**0-0.16**	**5.59**	**7.40**	**2.05**	**1/2×3**
100	114.3	20	21.22	0-4.1	142	188	52	M12×75
5	**5.5**	**300**	**7124**	**0-0.16**	**6.69**	**8.62**	**2.05**	**1/2×3-1/8**
125	139.7	20	31.70	0-4.1	170	219	52	M12×80
5	**5.563**	**300**	**7288**	**0-0.16**	**6.69**	**8.62**	**2.05**	**1/2×3-1/8**
125	141.3	20	32.43	0-4.1	170	219	52	M12×80
6	**6.25**	**300**	**9229**	**0-0.16**	**7.72**	**9.61**	**2.05**	**1/2×3-1/8**
150	159	20	41.06	0-4.1	196	244	52	M12×80
6	**6.5**	**300**	**9950**	**0-0.16**	**7.76**	**9.61**	**2.05**	**1/2×3-1/8**
150	165.1	20	44.27	0-4.1	197	244	52	M12×80
6	**6.625**	**300**	**10340**	**0-0.16**	**7.83**	**9.69**	**2.05**	**1/2×3-1/8**
150	168.3	20	46.00	0-4.1	199	246	52	M12×80
8	**8.625**	**300**	**17524**	**0-0.16**	**10.31**	**12.68**	**2.60**	**5/8×4-3/4**
200	219.1	20	77.97	0-4.1	262	322	66	M16×120
10	**10.75**	**300**	**27206**	**0-0.16**	**12.80**	**15.75**	**2.60**	**3/4×6-7/10**
250	273	20	121.05	0-4.1	325	400	66	M20×170
12	**12.75**	**300**	**38297**	**0-0.16**	**14.80**	**18.43**	**2.64**	**7/8×7-1/4**
300	323.9	20	170.39	0-4.1	376	468	67	M22×190
14	**14**	**300**	**46150**	**0-0.16**	**16.14**	**19.69**	**2.95**	**7/8×7-1/2**
350	355.6	20	198.53	0-4.1	410	500	75	M22×190
16	**16**	**300**	**60280**	**0-0.16**	**18.07**	**21.65**	**2.95**	**7/8×7-1/2**
400	406.4	20	259.30	0-4.1	459	550	75	M22×190

- Working pressure and/or end load are based on schedule 7/10/40 steel pipe, cut or roll grooved.
- For a one time field test, working pressure may be increased 1.5 times the figures listed above.
- For bolt torque recommendtion, see installation instructions or technical data sheets.

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21LF LIGHT WEIGHT FLEXIBLE COUPLING

- Maximum working pressure up to 300psi (34.5 bar). MWP varies based on coupling size and pipe schedule
- Branded with TITUS or T
- Gasket: Pre-Lubricated Grade E – EPDM with operating temperature of -30F to 230F (-34C to 110C) and is marked by a green stripe
- Bolts are SAE J429 Grade 5
- All Groove dimensions conform to AWWA-C606
- All coupling housings conform to ASTM A-536 Grade 65-45-12
- Finish available in standard orange paint or hot dipped galvanized (ASTA-153)
- For current listing/approval details contact a Titus representative





C - Style

C-Style gasket is approved for wet and dry fire protection applications to -40˚C. Petroleum free silicone lubricant is required in freezing applications.

c UL us FM APPROVED

Nominal Size in/mm	Actual O.D. in/mm	Max. Working Pressure PSI/Bar	Max.End Load Lbs/KN	Axial Displacement in/mm	Angular Movement		Dimensions			Bolt
					Per Coupling Degree (°)	Per Pipe ft/in	A in/mm	B in/mm	C in/mm	Size in/mm
1	**1.327**	**300**	**405**	**0.0625**	2°-45′	**48**	**2.17**	**3.82**	**1.77**	**3/8×1-1/2**
25	33.7	20	1.80	1.6		0.58	55	97	45	M10×40
1-1/4	**1.669**	**300**	**656**	**0.0625**	2°-10′	**38**	**2.50**	**4.23**	**1.77**	**3/8×1-3/4**
32	42.4	20	2.92	1.6		0.46	63.5	107.5	45	M10×45
1-1/2	**1.9**	**300**	**852**	**0.0625**	1°-54′	**33**	**2.72**	**4.49**	**1.77**	**3/8×1-3/4**
40	48.3	20	3.79	1.6		0.4	69	114	45	M10×45
2	**2.375**	**300**	**1327**	**0.0625**	1°-31′	**27**	**3.29**	**4.88**	**1.81**	**3/8×2-1/8**
50	60.3	20	5.91	1.6		0.32	83.6	124	46	M10×55
2-1/2	**2.875**	**300**	**1945**	**0.0625**	1°-15′	**22**	**3.86**	**5.39**	**1.81**	**3/8×2-1/8**
65	73	20	8.66	1.6		0.26	98	137	46	M10×55
2-1/2	**3**	**300**	**2114**	**0.0625**	1°-12′	**21**	**3.86**	**5.47**	**1.81**	**3/8×2-1/8**
65	76.1	20	9.41	1.6		0.25	98	139	46	M10×55
3	**3.5**	**300**	**2885**	**0.0625**	1°-02′	**18**	**4.49**	**6.14**	**1.81**	**3/8×2-1/8**
80	88.9	20	12.84	1.6		0.22	114	156	46	M10×55
4	**4.25**	**300**	**4258**	**0.125**	1°-42′	**30**	**5.43**	**7.32**	**1.97**	**1/2×2-5/8**
100	108	20	18.94	3.2		0.36	138	186	50	M12×65
4	**4.5**	**300**	**4769**	**0.125**	1°-36′	**28**	**5.59**	**7.44**	**1.97**	**1/2×2-5/8**
100	114.3	20	21.22	3.2		0.34	142	189	50	M12×65
5	**5.25**	**300**	**6457**	**0.125**	1°-23′	**24**	**6.46**	**8.39**	**1.97**	**1/2×2-5/8**
125	133	20	28.73	3.2		0.29	164	213	50	M12×65
5	**5.5**	**300**	**7124**	**0.125**	1°-18′	**23**	**6.69**	**8.74**	**1.97**	**1/2×2-5/8**
125	139.7	20	31.70	3.2		0.27	170	222	50	M12×65
5	**5.563**	**300**	**7288**	**0.125**	1°-18′	**23**	**6.69**	**8.58**	**1.97**	**1/2×2-5/8**
125	141.3	20	32.43	3.2		0.27	170	218	50	M12×65
6	**6.25**	**300**	**9229**	**0.125**	1°-09′	**20**	**7.56**	**9.61**	**1.97**	**1/2×2-5/8**
150	159	20	41.06	3.2		0.24	192	244	50	M12×65
6	**6.5**	**300**	**9950**	**0.125**	1°-07′	**20**	**7.72**	**9.61**	**1.97**	**1/2×2-5/8**
150	165.1	20	44.27	3.2		0.24	196	244	50	M12×65
6	**6.625**	**300**	**10340**	**0.125**	1°-05′	**19**	**7.80**	**9.88**	**1.97**	**1/2×2-5/8**
150	168.3	20	46.00	3.2		0.23	198	251	50	M12×65
8	**8.515**	**300**	**17079**	**0.125**	0°-50′	**15**	**10.00**	**13.39**	**2.44**	**3/4×3-1/2**
200	216.3	20	75.99	3.2		0.18	254	340	62	M20×90
8	**8.625**	**300**	**17524**	**0.125**	0°-50′	**15**	**10.08**	**12.44**	**2.36**	**5/8×3-1/8**
200	219.1	20	77.97	3.2		0.18	256	316	60	M16×80
10	**10.527**	**300**	**26101**	**0.125**	0°-50′	**12**	**12.32**	**15.75**	**2.52**	**3/4×3-1/2**
250	267.4	20	116.13	3.2		0.14	313	400	64	M20×90
10	**10.75**	**300**	**27206**	**0.125**	0°-50′	**12**	**12.56**	**15.47**	**2.52**	**3/4×3-1/2**
250	273.0	20	121.05	3.2		0.14	319	393	64	M20×90
12	**12.539**	**300**	**37031**	**0.125**	0°-50′	**10**	**14.49**	**18.27**	**2.52**	**7/8×4-1/3**
300	318.5	20	164.76	3.2		0.12	368	464	64	M22×110
12	**12.75**	**300**	**38297**	**0.125**	0°-50′	**10**	**14.72**	**17.83**	**2.56**	**3/4×4-1/3**
300	323.9	20	170.39	3.2		0.12	374	453	65	M20×110
14	**14**	**300**	**46150**	**0.125**	0°-31′	**4.5**	**16.14**	**20.08**	**2.95**	**7/8×4-1/3**
350	355.6	20	198.53	3.2		0.06	410	510	75	M22×110
14	**14.843**	**300**	**51883**	**0.125**	0°-29'	**4.5**	**16.85**	**20.47**	**2.95**	**7/8×5-1/2**
350	377	20	230.84	3.2		0.06	428	520	75	M22×140
16	**16**	**300**	**60280**	**0.125**	0°-27′	**4**	**18.07**	**21.85**	**2.95**	**7/8×5-1/2**
400	406.4	20	259.30	3.2		0.05	459	555	75	M22×140
16	**16.771**	**300**	**66246**	**0.125**	0°-25′	**4**	**18.90**	**22.52**	**2.95**	**7/8×5-1/2**
400	426	20	294.74	3.2		0.05	480	572	75	M22×140
18	**18**	**300**	**76300**	**0.125**	0°-24′	**3.5**	**20.31**	**23.86**	**3.07**	**7/8×5-1/2**
450	457.2	20	327.89	3.2		0.04	516	606	78	M22×140
18	**18.9**	**300**	**84106**	**0.125**	0°-22′	**3**	**21.26**	**24.84**	**3.07**	**7/8×6-1/3**
450	480.0	20	374.20	3.2		0.04	540	631	78	M22×160
20	**20**	**300**	**113980**	**0.125**	0°-19′	**3**	**22.32**	**26.54**	**3.07**	**7/8×5-1/2**
500	508.0	20	490.60	3.2		0.04	567	674	78	M22×140
22	**22**	**300**	**135640**	**0.125**	0°-18′	**2.5**	**24.49**	**28.66**	**3.07**	**7/8×5-1/2**
550	558.8	20	584.20	3.2		0.03	622	728	78	M22×140
24	**24**	**300**	**159190**	**0.125**	0°-17′	**2.5**	**26.54**	**30.63**	**3.07**	**1×5-9/10**
600	609.6	20	684.72	3.2		0.03	674	778	78	M24×150

• Working pressure and/or end load are based on schedule 7/10/40 steel pipe, cut or roll grooved.

• For a one time field test, working pressure may be increased 1.5 times the figures listed above.

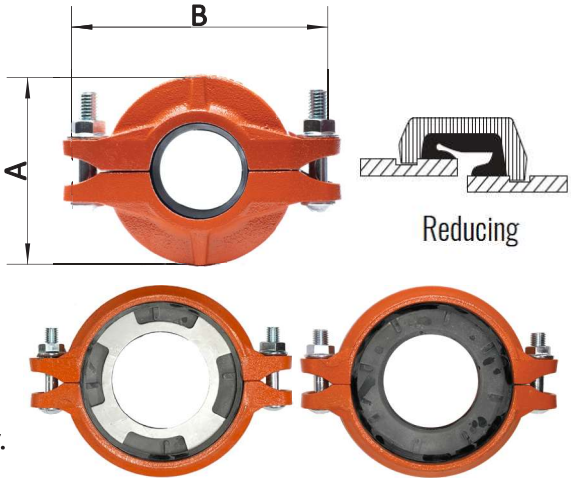
• For bolt torque recommendtion, see installation instructions or technical data sheets.

* Deflection or angular movement is the maximim value that a coupling allows under no internal pressure.

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21RC REDUCING COUPLING

- Maximum working pressure up to 300psi (34.5 bar). MWP varies based on coupling size and pipe schedule
- Branded with TITUS or T
- All Groove dimensions conform to AWWA-C606
- All coupling housings conform to ASTM A-536 Grade 65-45-12
- Finish available in standard orange paint or hot dipped galvanized (ASTA-153)
- The steel washer (optional) prevents telescoping of the smaller pipe inside larger pipe. Only recommended during vertical system assembly.
- For current listing/approval details contact a Titus representative



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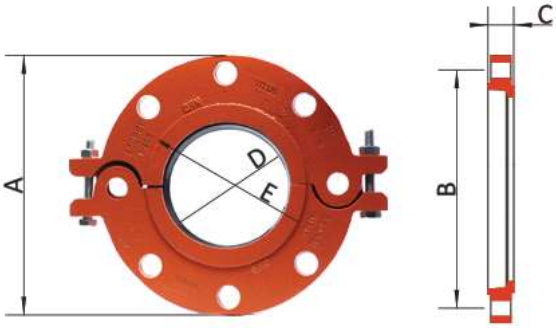
Nominal Size in/mm	Actual O.D. in/mm	Max. Working Pressure PSI/Bar	Max.End Load Lbs/KN	Axial Displacement in/mm	Deflection*		Dimensions			Bolt Size in/mm
					Degree Per Coupling(°)	Pipe in/ft mm/m	A in/mm	B in/mm	C ** in/mm	
1-1/2x1-1/4	**1.9x1.669**	**300**	**852**	**0.0625**	1°-54′	**33**	**2.76**	**4.45**	**1.77**	**3/8x2**
40x32	48.3x42.4	20	3.79	1.6		0.4	70	113	45	M10x50
2x1-1/2	**2.375x1.9**	**300**	**1327**	**0.0625**	1°-31′	**27**	**3.23**	**5.12**	**1.81**	**3/8x2-1/8**
50x40	60.3x48.3	20	5.91	1.6		0.32	82	130	46	M10x55
2-1/2x1	**2.875x1.327**	**300**	**1945**	**0.0625**	1°-15′	**22**	**3.82**	**5.94**	**1.81**	**3/8x2-1/8**
65x25	73x33.7	20	8.66	1.6		0.26	97	151	46	M10x55
2-1/2x1-1/4	**2.875x1.669**	**300**	**1945**	**0.0625**	1°-15′	**22**	**3.82**	**5.94**	**1.81**	**3/8x2-1/8**
65x32	73x42.4	20	8.66	1.6		0.26	97	151	46	M10x55
2-1/2x1-1/2	**2.875x1.9**	**300**	**1945**	**0.0625**	1°-15′	**22**	**3.82**	**5.94**	**1.81**	**3/8x2-1/8**
65x40	73x48.3	20	8.66	1.6		0.26	97	151	46	M10x55
2-1/2x2	**2.875x2.375**	**300**	**1945**	**0.0625**	1°-15′	**22**	**3.82**	**5.94**	**1.81**	**3/8x2-1/8**
65x50	73x60.3	20	8.66	1.6		0.26	97	151	46	M10x55
2-1/2x2	**3x2.375**	**300**	**2114**	**0.0625**	1°-12′	**21**	**3.82**	**5.94**	**1.81**	**3/8x2-1/8**
65x50	76.1x60.3	20	9.41	1.6		0.25	97	151	46	M10x55
2-1/2x2-1/2	**3x2.875**	**300**	**2114**	**0.0625**	1°-12′	**21**	**3.82**	**5.94**	**1.81**	**3/8x2-1/8**
65x65	76.1x73	20	9.41	1.6		0.25	97	151	46	M10x55
3x1-1/2	**3.5x1.9**	**300**	**2885**	**0.0625**	1°-02′	**18**	**4.41**	**6.56**	**1.81**	**1/2x2-5/8**
80x40	88.9x48.3	20	12.84	1.6		0.22	112	166.6	46	M12x65
3x2	**3.5x2.375**	**300**	**2885**	**0.0625**	1°-02′	**18**	**4.41**	**6.56**	**1.81**	**1/2x2-5/8**
80x50	88.9x60.3	20	12.84	1.6		0.22	112	166.6	46	M12x65
3x2-1/2	**3.5x2.875**	**300**	**2885**	**0.0625**	1°-02′	**18**	**4.41**	**6.56**	**1.81**	**1/2x2-5/8**
80x65	88.9x73.0	20	12.84	1.6		0.22	112	166.6	46	M12x65
3x2-1/2	**3.5x3**	**300**	**2885**	**0.0625**	1°-02′	**18**	**4.49**	**6.56**	**1.81**	**1/2x2-5/8**
80x65	88.9x76.1	20	12.84	1.6		0.22	114	166.6	46	M12x65
4x2	**4.5x2.375**	**300**	**4769**	**0.125**	1°-36′	**28**	**5.55**	**7.87**	**1.97**	**1/2x2-5/8**
100x50	114.3x60.3	20	21.22	3.2		0.34	141	200	50	M12x65
4x2-1/2	**4.5x2.875**	**300**	**4769**	**0.125**	1°-36′	**28**	**5.55**	**7.87**	**1.97**	**1/2x2-5/8**
100x65	114.3x73.0	20	21.22	3.2		0.34	141	200	50	M12x65
4x2-1/2	**4.5x3.0**	**300**	**4769**	**0.125**	1°-36′	**28**	**5.95**	**7.87**	**1.97**	**1/2x2-5/8**
100x65	114.3x76.1	20	21.22	3.2		0.34	151.2	200	50	M12x65
4x3	**4.5x3.5**	**300**	**4769**	**0.125**	1°-36′	**28**	**5.58**	**7.87**	**1.97**	**1/2x2-5/8**
100x80	114.3x88.9	20	21.22	3.2		0.34	141.8	200	50	M12x65
5x4	**5.5x4.5**	**300**	**7124**	**0.125**	1°-18′	**23**	**6.65**	**9.25**	**2.05**	**5/8x3-1/8**
125x100	139.7x114.3	20	31.70	3.2		0.27	169	235	52	M16x80
5x4	**5.563x4.5**	**300**	**7288**	**0.125**	1°-18′	**23**	**6.57**	**9.06**	**2.05**	**5/8x3-1/8**
125x100	141.3x114.3	20	32.43	3.2		0.27	167	230	52	M16x80
6x3	**6.5x3.5**	**300**	**9950**	**0.125**	1°-07′	**20**	**7.76**	**10.83**	**2.05**	**5/8x3-1/8**
150x80	165.1x88.9	20	44.27	3.2		0.24	197	275	52	M16x80
6x4	**6.5x4.5**	**300**	**9950**	**0.125**	1°-07′	**20**	**7.76**	**10.83**	**2.05**	**5/8x3-1/8**
150x100	165.1x114.3	20	44.27	3.2		0.24	197	275	52	M16x80
6x2-1/2	**6.525x2.875**	**300**	**10340**	**0.125**	1°-06′	**19**	**7.85**	**10.83**	**2.05**	**5/8x3-1/8**
150x65	168.3x73	20	46.00	3.2		0.23	199.4	275	52	M16x80
6x3	**6.525x3.5**	**300**	**10340**	**0.125**	1°-06′	**19**	**7.85**	**10.83**	**2.05**	**5/8x3-1/8**
150x80	168.3x88.9	20	46.00	3.2		0.23	199.4	275	52	M16x80
6x4	**6.525x4.5**	**300**	**10340**	**0.125**	1°-06′	**19**	**7.85**	**10.83**	**2.05**	**5/8x3-1/8**
150x100	168.3x114.3	20	46.00	3.2		0.23	199.4	275	52	M16x80
6x5	**6.625x5.563**	**300**	**10340**	**0.125**	1°-06′	**19**	**7.85**	**10.83**	**2.05**	**5/8x3-1/8**
150x100	168.3x141.3	20	46.00	3.2		0.23	199.4	275	52	M16x80
6x6	**6.625x6.5**	**300**	**10340**	**0.125**	1°-06′	**19**	**7.85**	**10.83**	**2.05**	**5/8x3-1/8**
150x150	168.3x165.1	20	46.00	3.2		0.23	199.4	275	52	M16x80
8x4	**8.625x4.5**	**300**	**17524**	**0.125**	0°-50′	**15**	**10.08**	**13.23**	**2.28**	**3/4x4-1/3**
200x100	219.1x114.3	20	77.97	3.2		0.18	256	336	58	M20x110
8x6	**8.625x6.525**	**300**	**17524**	**0.125**	0°-50′	**15**	**10.08**	**13.23**	**2.28**	**3/4x4-1/3**
200x150	219.1x168.3	20	77.97	3.2		0.18	256	336	58	M20x110

- Working pressure and/or end load are based on schedule 7/10/40 steel pipe, cut or roll grooved.
- For a one time field test, working pressure may be increased 1.5 times the figures listed above.
- For bolt torque recommendation, see installation instructions or technical data sheets.

* Deflection or angular movement is the maximim value that a coupling allows under no internal pressure.
** Dimension C is axial thickness of coupling.

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31FH GROOVED HINGED FLANGE ADAPTER



- Maximum working pressure 250 psi (17 bar) depending on flange size and schedule of pipe
- Matches flange dimensions of Class 125/150, latch bolts included
- Branded with TITUS or T
- Gasket: Grade E – EPDM with operating temperature of -30F to 230F (-34C to 110C) and is marked by a green stripe
- Bolts are SAE J429 Grade 5
- All Groove dimensions conform to AWWA-C606
- All Ductile Iron housing materials conform to ASTM A-536 Grade 65-45-12
- Finish available in standard orange paint or hot dipped galvanized (ASTM A-153)
- Steel adapter insert required when used against wafer/lug valves, with rubber or irregular surfaces
- For current listing/approval details contact a Titus representative

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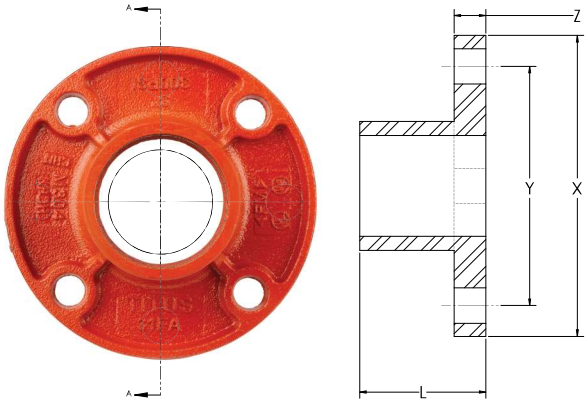
Nominal Size in/mm	Pipe O.D. in/mm	Max.Working Pressure PSI/Bar	Max. End Load Lbs/KN	Dimensions					Bolt	
				A in/mm	B in/mm	C in/mm	D in/mm	E in/mm	No.	Size in/mm
2	**2.375**	**300**	**1330**	**6.10**	**4.74**	**0.98**	**2.36**	**3.07**	4	**5/8**
50	60.3	20	5.71	155	120.5	25	60	78		M16
2.5	**2.875**	**300**	**1950**	**7.09**	**5.51**	**0.98**	**2.87**	**3.66**	4	**5/8**
65	73.0	20	8.37	180	140	25	73	93		M16
3	**3.500**	**300**	**2880**	**7.48**	**6.02**	**0.98**	**3.50**	**4.21**	4	**5/8**
80	88.9	20	12.41	190	153	25	89	107		M16
4	**4.500**	**300**	**4770**	**9.06**	**7.52**	**0.98**	**4.49**	**5.16**	8	**5/8**
100	114.3	20	20.51	230	191	25	114	131		M16
5	**5.563**	**300**	**7290**	**10.04**	**8.50**	**0.98**	**5.55**	**6.18**	8	**3/4**
125	141.3	20	31.35	255	216	25	141	157		M20
6	**6.625**	**300**	**10340**	**11.02**	**9.49**	**0.98**	**6.61**	**7.28**	8	**3/4**
150	168.3	20	44.47	280	241	25	168	185		M20
8	**8.625**	**300**	**17520**	**13.58**	**11.77**	**1.06**	**8.62**	**9.21**	8	**3/4**
200	219.1	20	75.37	345	299	27	219	234		M20
10	**10.750**	**300**	**27210**	**15.94**	**14.25**	**1.18**	**10.75**	**11.57**	12	**1**
250	273.0	20	164.71	405	362	30	273	294		M24
12	**12.75**	**300**	**38280**	**19.09**	**17.01**	**1.26**	**12.76**	**13.43**	12	**1**
300	323.9	20	164.71	485	432	32	324	341		M24

- Working pressure and/or end load are based on schedule 7/10/40 steel pipe, cut or roll grooved.
- For a one time field test, working pressure may be increased 1.5 times the figures listed above.
- For bolt torque recommendtion, see installation instructions or technical data sheets.

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31FA GROOVED X FLANGE ADAPTER

- Ductile Iron ASTM A-536 Grade 65-45-12.
- Finish available in standard orange paint or hot dipped galvanized (ASTM A-153)
- For current listing/approval details contact a Titus representative

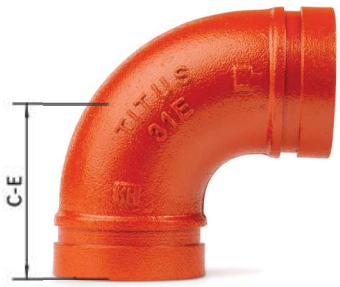


Nominal Size in/mm	Pipe O.D. in/mm	Max.Working Pressure PSI/Bar	X in/mm	Y in/mm	Z in/mm	L in/mm	Bolts Size in/mm	Bolts No.
2	**2.375**	**300**	**6.10**	**4.74**	**0.63**	**2.56**	**5/8**	4
50	60.3	20	155	120.5	16	65	M16	
2-1/2	**2.875**	**300**	**7.09**	**5.51**	**0.63**	**2.56**	**5/8**	4
65	73.00	20	180	140	16	65	M16	
3	**3.50**	**300**	**7.48**	**6.02**	**0.71**	**2.56**	**5/8**	4
80	88.90	20	190	153	18	65	M16	
4	**4.50**	**300**	**9.06**	**7.52**	**0.87**	**2.76**	**5/8**	8
100	114.30	20	230	191	22	70	M16	
5	**5.563**	**300**	**10.04**	**8.50**	**0.87**	**2.76**	**3/4**	8
125	141.3	20	255	216	22	70	M20	
6	**6.625**	**300**	**11.02**	**9.49**	**0.87**	**2.76**	**3/4**	8
150	168.30	20	280	241	22	70	M20	
8	**8.625**	**300**	**13.58**	**11.77**	**0.98**	**3.15**	**3/4**	8
200	219.1	20	345	299	25	80	M20	
10	**10.75**	**300**	**15.94**	**14.25**	**1.02**	**3.35**	**7/8**	12
250	273	20	405	362	26	85	M22	
12	**12.75**	**300**	**19.09**	**17.01**	**1.10**	**3.54**	**7/8**	12
300	323.9	20	485	432	28	90	M22	

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31E 90° ELBOW

- Ductile Iron ASTM A-536 Grade 65-45-12.
- Finish available in standard orange paint or hot dipped galvanized (ASTM A-153)
- For current listing/approval details contact a Titus representative



Nominal Size in/mm	Pipe O.D. in/mm	Max.Working Pressure PSI/Bar	90° Elbow Standard in/mm
			C- E
1	**1.327**	**300**	**2.24**
25	33.7	20	57
1-1/4	**1.669**	**300**	**2.76**
32	42.4	20	70
1-1/2	**1.9**	**300**	**2.76**
40	48.3	20	70
2	**2.375**	**300**	**3.27**
50	60.3	20	83
2-1/2	**2.875**	**300**	**3.74**
65	73	20	95
2-1/2	**3**	**300**	**3.74**
65	76.1	20	95
3	**3.5**	**300**	**4.25**
80	88.9	20	108
4	**4.25**	**300**	**5**
100	108	20	127
4	**4.5**	**300**	**5**
100	114.3	20	127
5	**5.25**	**300**	**5.51**
125	133	20	140
5	**5.5**	**300**	**5.51**
125	139.7	20	140
5	**5.563**	**300**	**5.51**
125	141.3	20	140
6	**6.25**	**300**	**6.5**
150	159	20	165
6	**6.5**	**300**	**6.5**
150	165.1	20	165
6	**6.625**	**300**	**6.5**
150	168.3	20	165
8	**8.625**	**300**	**7.76**
200	219.1	20	197
10	**10.75**	**300**	**9.02**
250	273	20	229
12	**12.75**	**300**	**10**
300	323.9	20	254

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31F 45° ELBOW



- Ductile Iron ASTM A-536 Grade 65-45-12.
- Finish available in standard orange paint or hot dipped galvanized (ASTM A-153)
- For current listing/approval details contact a Titus representative

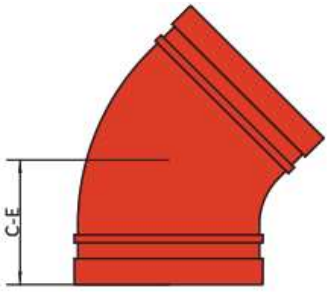
c UL us FM APPROVED

Nominal Size in/mm	Pipe O.D. in/mm	Max.Working Pressure PSI/Bar	45° Elbow Standard in/mm
			C- E
1	**1.327**	**300**	**1.77**
25	33.7	20	45
1-1/4	**1.669**	**300**	**1.77**
32	42.4	20	45
1-1/2	**1.9**	**300**	**1.77**
40	48.3	20	45
2	**2.375**	**300**	**2.01**
50	60.3	20	51
2-1/2	**2.875**	**300**	**2.44**
65	73	20	62
2-1/2	**3**	**300**	**2.44**
65	76.1	20	62
3	**3.5**	**300**	**2.76**
80	88.9	20	70
4	**4.25**	**300**	**2.99**
100	108	20	76
4	**4.5**	**300**	**2.99**
100	114.3	20	76
5	**5.25**	**300**	**3.27**
125	133	20	83
5	**5.5**	**300**	**3.27**
125	139.7	20	83
5	**5.563**	**300**	**3.27**
125	141.3	20	83
6	**6.25**	**300**	**3.50**
150	159	20	89
6	**6.5**	**300**	**3.50**
150	165.1	20	89
6	**6.625**	**300**	**3.50**
150	168.3	20	89
8	**8.625**	**300**	**4.25**
200	219.1	20	108
10	**10.75**	**300**	**4.76**
250	273	20	121
12	**12.75**	**300**	—
300	323.9	20	—

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31TT 22-1/2° ELBOW

- Ductile Iron ASTM A-536 Grade 65-45-12.
- Finish available in standard orange paint or hot dipped galvanized (ASTM A-153)
- For current listing/approval details contact a Titus representative

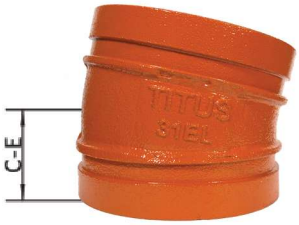


Nominal Size in/mm	Pipe O.D. in/mm	Max.Working Pressure PSI/Bar	22-1/2° Elbow in/mm
			C- E
1	**1.327**	**300**	**1.77**
25	33.7	20	45
1-1/4	**1.669**	**300**	**1.77**
32	42.4	20	45
1-1/2	**1.9**	**300**	**1.77**
40	48.3	20	45
2	**2.375**	**300**	**1.89**
50	60.3	20	48
2-1/2	**2.875**	**300**	**2.01**
65	73	20	51
2-1/2	**3**	**300**	**2.01**
65	76.1	20	51
3	**3.5**	**300**	**2.24**
80	88.9	20	57
4	**4.25**	**300**	**2.87**
100	108	20	73
4	**4.5**	**300**	**2.87**
100	114.3	20	73
5	**5.25**	**300**	**2.87**
125	133	20	73
5	**5.5**	**300**	**2.87**
125	139.7	20	73
5	**5.563**	**300**	**2.87**
125	141.3	20	73
6	**6.25**	**300**	**3.11**
150	159	20	79
6	**6.5**	**300**	**3.11**
150	165.1	20	79
6	**6.625**	**300**	**3.11**
150	168.3	20	79
8	**8.625**	**300**	**3.86**
200	219.1	20	98
10	**10.75**	**300**	**4.88**
250	273	20	124
12	**12.75**	**300**	—
300	323.9	20	—

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31EL 11-1/4° ELBOW

- Ductile Iron ASTM A-536 Grade 65-45-12.
- Finish available in standard orange paint or hot dipped galvanized (ASTM A-153)
- For current listing/approval details contact a Titus representative

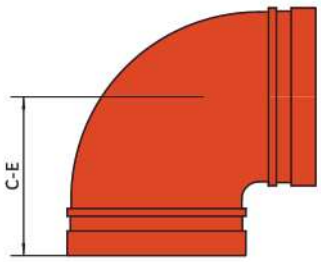


c UL us FM APPROVED

Nominal Size in/mm	Pipe O.D. in/mm	Max.Working Pressure PSI/Bar	11-1/4° Elbow in/mm
			C- E
1	**1.327**	**300**	**1.38**
25	33.7	20	35
1-1/4	**1.669**	**300**	**1.38**
32	42.4	20	35
1-1/2	**1.9**	**300**	**1.38**
40	48.3	20	35
2	**2.375**	**300**	**1.50**
50	60.3	20	38
2-1/2	**2.875**	**300**	**1.50**
65	73	20	38
2-1/2	**3**	**300**	**1.50**
65	76.1	20	38
3	**3.5**	**300**	**1.50**
80	88.9	20	38
4	**4.25**	**300**	**1.77**
100	108	20	45
4	**4.5**	**300**	**1.77**
100	114.3	20	45
5	**5.25**	**300**	**2.01**
125	133	20	51
5	**5.5**	**300**	**2.01**
125	139.7	20	51
5	**5.563**	**300**	**2.01**
125	141.3	20	51
6	**6.25**	**300**	**2.01**
150	159	20	51
6	**6.5**	**300**	**2.01**
150	165.1	20	51
6	**6.625**	**300**	**2.01**
150	168.3	20	51
8	**8.625**	**300**	**2.01**
200	219.1	20	51
10	**10.75**	**300**	**2.24**
250	273	20	57
12	**12.75**	**300**	—
300	323.9	20	—

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31E+ SHORT PATTERN 90° ELBOW

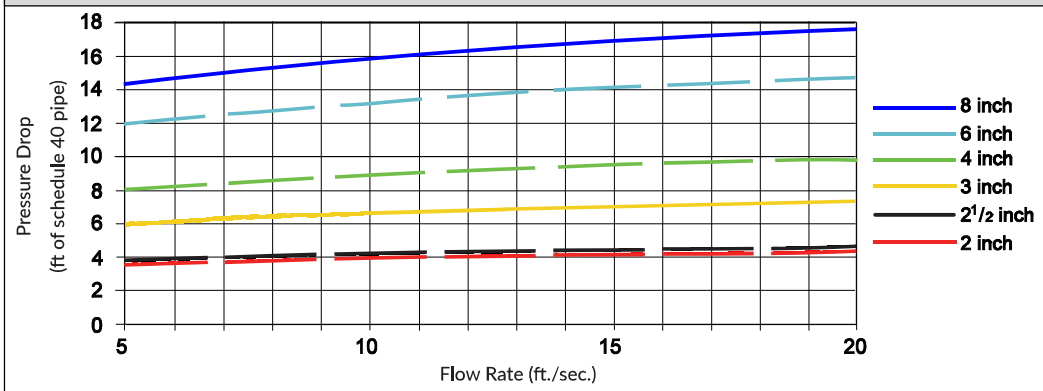


- Ductile Iron ASTM A-536 Grade 65-45-12.
- Finish available in standard orange paint or hot dipped galvanized (ASTM A-153)
- For current listing/approval details contact a Titus representative

c UL us FM APPROVED

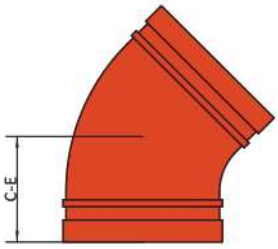
Nominal Size in/mm	Pipe O.D. in/mm	Max.Working Pressure PSI/Bar	SR 90° Elbow C- E (in/mm)
2	**2.375**	**300**	**2.76**
50	60.3	20	70
2-1/2	**2.875**	**300**	**2.99**
65	73	20	76
2-1/2	**3**	**300**	**2.99**
65	76.1	20	76
3	**3.5**	**300**	**3.35**
80	88.9	20	85
4	**4.25**	**300**	**4.02**
100	108	20	102
4	**4.5**	**300**	**4.02**
100	114.3	20	102
5	**5.25**	**300**	**4.76**
125	133	20	121
5	**5.5**	**300**	**4.76**
125	139.7	20	121
5	**5.563**	**300**	**4.76**
125	141.3	20	121
6	**6.25**	**300**	**5.12**
150	159	20	130
6	**6.5**	**300**	**5.12**
150	165.1	20	130
6	**6.625**	**300**	**5.51**
150	168.3	20	140
8	**8.625**	**300**	**6.89**
200	219.1	20	175
10	**10.75**	**300**	**8.46**
250	273	20	215
12	**12.75**	**300**	**8.66**
300	323.9	20	220

SHORT PATTERN 90° ELBOW PRESSURE DROP



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31F+ SHORT PATTERN 45° ELBOW

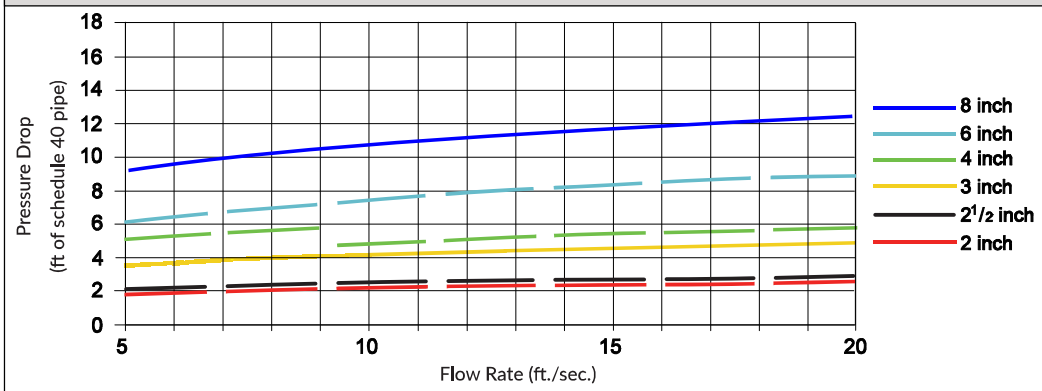


- Ductile Iron ASTM A-536 Grade 65-45-12.
- Finish available in standard orange paint or hot dipped galvanized (ASTM A-153)
- For current listing/approval details contact a Titus representative

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Nominal Size in/mm	Pipe O.D. in/mm	Max.Working Pressure PSI/Bar	45° Elbow C- E (in/mm)
2	**2.375**	**300**	—
50	60.3	20	—
2-1/2	**2.875**	**300**	**1.89**
65	73	20	48
2-1/2	**3**	**300**	**1.89**
65	76.1	20	48
3	**3.5**	**300**	**2.09**
80	88.9	20	53
4	**4.25**	**300**	**2.36**
100	108	20	60
4	**4.5**	**300**	**2.36**
100	114.3	20	60
5	**5.25**	**300**	**2.68**
125	133	20	68
5	**5.5**	**300**	**2.68**
125	139.7	20	68
5	**5.563**	**300**	**2.68**
125	141.3	20	68
6	**6.25**	**300**	**2.97**
150	159	20	75.5
6	**6.5**	**300**	**2.97**
150	165.1	20	75.5
6	**6.625**	**300**	**2.97**
150	168.3	20	75.5
8	**8.625**	**300**	**3.74**
200	219.1	20	95
10	**10.75**	**300**	**4.41**
250	273	20	112
12	**12.75**	**300**	**5.31**
300	323.9	20	135

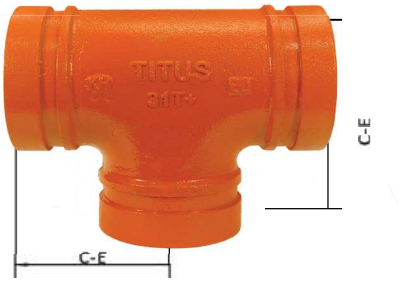
SHORT PATTERN 45° ELBOW PRESSURE DROP



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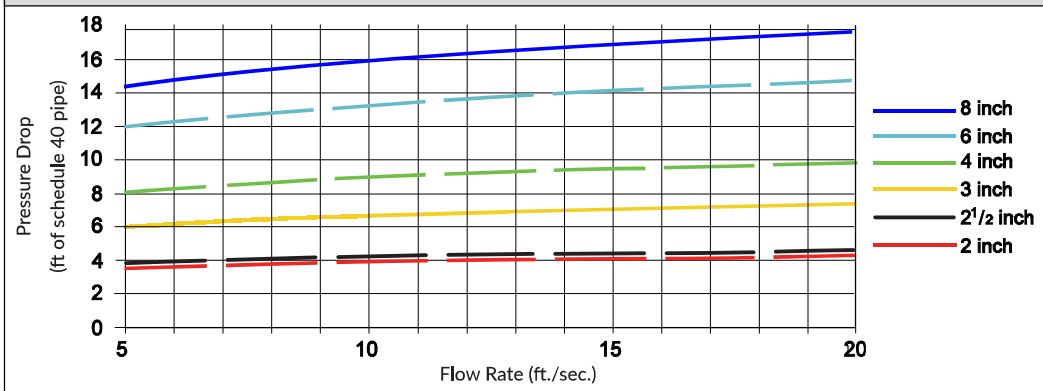
31T+ SHORT PATTERN TEE

- Ductile Iron ASTM A-536 Grade 65-45-12.
- Finish available in standard orange paint or hot dipped galvanized (ASTM A-153)
- For current listing/approval details contact a Titus representative



Nominal Size in/mm	Pipe O.D. in/mm	Max.Working Pressure PSI/Bar	SR Straight Tee C- E (in/mm)
2	**2.375**	**300**	**2.76**
50	60.3	20	70
2-1/2	**2.875**	**300**	**2.99**
65	73	20	76
2-1/2	**3**	**300**	**2.99**
65	76.1	20	76
3	**3.5**	**300**	**3.35**
80	88.9	20	85
4	**4.25**	**300**	**4.02**
100	108	20	102
4	**4.5**	**300**	**4.02**
100	114.3	20	102
5	**5.25**	**300**	**4.76**
125	133	20	121
5	**5.5**	**300**	**4.76**
125	139.7	20	121
5	**5.563**	**300**	**4.76**
125	141.3	20	121
6	**6.25**	**300**	**5.12**
150	159	20	130
6	**6.5**	**300**	**5.12**
150	165.1	20	130
6	**6.625**	**300**	**5.51**
150	168.3	20	140
8	**8.625**	**300**	**6.89**
200	219.1	20	175
10	**10.75**	**300**	**8.46**
250	273	20	215
12	**12.75**	**300**	**8.66**
300	323.9	20	220

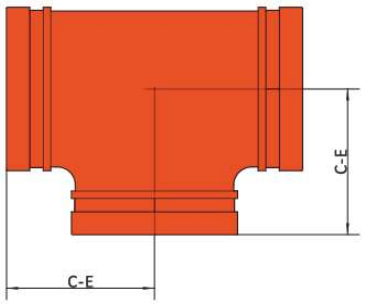
SHORT PATTERN TEE PRESSURE DROP



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31T STRAIGHT TEE

- Ductile Iron ASTM A-536 Grade 65-45-12.
- Finish available in standard orange paint or hot dipped galvanized (ASTM A-153)
- For current listing/approval details contact a Titus representative

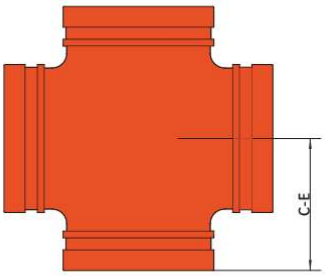


Nominal Size in/mm	Pipe O.D. in/mm	Max.Working Pressure PSI/Bar	Tee
			C- E
1	**1.327**	**300**	**2.24**
25	33.7	20	57
1-1/4	**1.669**	**300**	**2.76**
32	42.4	20	70
1-1/2	**1.9**	**300**	**2.76**
40	48.3	20	70
2	**2.375**	**300**	**3.31**
50	60.3	20	84
2-1/2	**2.875**	**300**	**3.74**
65	73	20	95
2-1/2	**3**	**300**	**3.74**
65	76.1	20	95
3	**3.5**	**300**	**4.25**
80	88.9	20	108
4	**4.25**	**300**	**5.00**
100	108	20	127
4	**4.5**	**300**	**5.00**
100	114.3	20	127
5	**5.25**	**300**	**5.51**
125	133	20	140
5	**5.5**	**300**	**5.51**
125	139.7	20	140
5	**5.563**	**300**	**5.51**
125	141.3	20	140
6	**6.25**	**300**	**6.50**
150	159	20	165
6	**6.5**	**300**	**6.50**
150	165.1	20	165
6	**6.625**	**300**	**6.50**
150	168.3	20	165
8	**8.625**	**300**	**7.76**
200	219.1	20	197
10	**10.75**	**300**	**9.02**
250	273	20	229
12	**12.75**	**300**	**10.00**
300	323.9	20	254

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31X GROOVED CROSS

- Ductile Iron ASTM A-536 Grade 65-45-12.
- Finish available in standard orange paint or hot dipped galvanized (ASTM A-153)
- For current listing/approval details contact a Titus representative

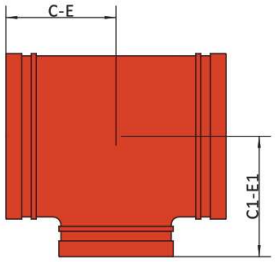


Nominal Size in/mm	Pipe O.D. in/mm	Max.Working Pressure PSI/Bar	Cross
			C- E
1	**1.327**	**300**	—
25	33.7	20	—
1-1/4	**1.669**	**300**	—
32	42.4	20	—
1-1/2	**1.9**	**300**	—
40	48.3	20	—
2	**2.375**	**300**	**2.76**
50	60.3	20	70
2-1/2	**2.875**	**300**	**2.99**
65	73	20	76
2-1/2	**3**	**300**	**2.99**
65	76.1	20	76
3	**3.5**	**300**	**3.39**
80	88.9	20	86
4	**4.25**	**300**	**4.02**
100	108	20	102
4	**4.5**	**300**	**4.02**
100	114.3	20	102
5	**5.25**	**300**	**4.76**
125	133	20	121
5	**5.5**	**300**	**4.76**
125	139.7	20	121
5	**5.563**	**300**	**4.76**
125	141.3	20	121
6	**6.25**	**300**	**5.12**
150	159	20	130
6	**6.5**	**300**	**5.12**
150	165.1	20	130
6	**6.625**	**300**	**5.51**
150	168.3	20	140
8	**8.625**	**300**	**6.85**
200	219.1	20	174
10	**10.75**	**300**	**8.46**
250	273	20	215
12	**12.75**	**300**	**9.65**
300	323.9	20	245

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31RT GROOVED REDUCING TEE

- Ductile Iron ASTM A-536 Grade 65-45-12.
- Finish available in standard orange paint or hot dipped galvanized (ASTM A-153)
- For current listing/approval details contact a Titus representative

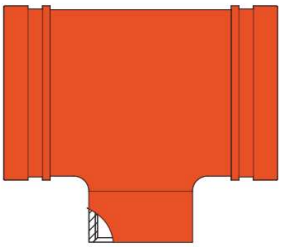


Nominal Size in/mm	Pipe O.D. in/mm	Max.Working Pressure PSI/Bar	Dimensions	
			C-E in/mm	C1-E1 in/mm
2×1-1/4	**2.375×1.669**	**300**	**2.76**	**2.76**
50×32	60.3×42.4	20	70	70
2×1-1/2	**2.375×1.9**	**300**	**2.76**	**2.76**
50×40	60.3×48.3	20	70	70
2-1/2x1-1/4	**2.875×1.669**	**300**	**2.99**	**2.99**
65×32	73×42.4	20	76	76
2-1/2x1-1/2	**2.875×1.9**	**300**	**2.99**	**2.99**
65×40	73×48.3	20	76	76
2-1/2x2	**2.875×2.375**	**300**	**2.99**	**2.99**
65×50	73×60.3	20	76	76
2-1/2x1-1/4	**3×1.669**	**300**	**2.99**	**2.99**
65×32	76.1×42.4	20	76	76
2-1/2x1-1/2	**3×1.9**	**300**	**2.99**	**2.99**
65×40	76.1×48.3	20	76	76
2-1/2x2	**3×2.375**	**300**	**2.99**	**2.99**
65×50	76.1×60.3	20	76	76
3x1-1/4	**3.5×1.669**	**300**	**3.39**	**3.39**
80×32	88.9×42.4	20	86	86
3x1-1/2	**3.5×1.9**	**300**	**3.39**	**3.39**
80×40	88.9×48.3	20	86	86
3×2	**3.5×2.375**	**300**	**3.39**	**3.39**
80×50	88.9×60.3	20	86	86
3x2-1/2	**3.5×2.875**	**300**	**3.39**	**3.39**
80×65	88.9×73	20	86	86
3x2-1/2	**3.5×3**	**300**	**3.39**	**3.39**
80×65	88.9×76.1	20	86	86
4x1-1/4	**4.5×1.669**	**300**	**3.54**	**3.86**
100×32	114.3×42.4	20	90	98*
4x1-1/2	**4.5×1.9**	**300**	**3.54**	**3.86**
100×40	114.3×48.3	20	90	98*
4×2	**4.5×2.375**	**300**	**4.02**	**4.02**
100×50	114.3×60.3	20	102	102
4x2-1/2	**4.5×2.875**	**300**	**4.02**	**4.02**
100×65	114.3×73	20	102	102
4x2-1/2	**4.5×3**	**300**	**4.02**	**4.02**
100×65	114.3×76.1	20	102	102
4×3	**4.5×3.5**	**300**	**4.02**	**4.02**
100×80	114.3×88.9	20	102	102
5×2	**5.5×2.375**	**300**	**4.13**	**4.13**
125×50	139.7×60.3	20	105	105
5x2-1/2	**5.5×3**	**300**	**4.13**	**4.13**
125×65	139.7×76.1	20	105	105
5×3	**5.5×3.5**	**300**	**4.13**	**4.13**
125×80	139.7×88.9	20	105	105
5×4	**5.5×4.25**	**300**	**4.13**	**4.13**
125×100	139.7×108	20	105	105
5×4	**5.5×4.5**	**300**	**4.13**	**4.13**
125×100	139.7×114.3	20	105	105
5×5	**5.5×5.25**	**300**	**4.13**	**4.13**
125×125	139.7×133	20	105	105
5×2	**5.563×2.375**	**300**	**4.13**	**4.13**
125×50	141.3×60.3	20	105	105
5x2-1/2	**5.563×2.875**	**300**	**4.13**	**4.13**
125×65	141.3×73	20	105	105
5×3	**5.563×3.5**	**300**	**4.13**	**4.13**
125×80	141.3×88.9	20	105	105
5×4	**5.563×4.5**	**300**	**4.13**	**4.13**
125×100	141.3×114.3	20	105	105
6x2-1/2	**6.25×3**	**300**	**4.33**	**4.72**
150×65	159×76.1	20	110	120*
6×3	**6.25×3.5**	**300**	**4.33**	**4.72**
150×80	159×88.9	20	110	120*

Nominal Size in/mm	Pipe O.D. in/mm	Max.Working Pressure PSI/Bar	Dimensions	
			C-E in/mm	C1-E1 in/mm
6×2	**6.5×2.375**	**300**	**5.12**	**5.12**
150×50	165.1×60.3	20	130	130
6x2-1/2	**6.5×3**	**300**	**5.12**	**5.12**
150×65	165.1×76.1	20	130	130
6×3	**6.5×3.5**	**300**	**5.12**	**5.12**
150×80	165.1×88.9	20	130	130
6×4	**6.5×4.5**	**300**	**5.12**	**5.12**
150×100	165.1×114.3	20	130	130
6×5	**6.5×5.5**	**300**	**5.12**	**5.12**
150×125	165.1×139.7	20	130	130
6×2	**6.625×2.375**	**300**	**5.51**	**5.51**
150×50	168.3×60.3	20	140	140
6x2-1/2	**6.625×3**	**300**	**5.51**	**5.51**
150×65	168.3×76.1	20	140	140
6×3	**6.625×3.5**	**300**	**5.51**	**5.51**
150×80	168.3×88.9	20	140	140
6×4	**6.625×4.5**	**300**	**5.51**	**5.51**
150×100	168.3×114.3	20	140	140
6×5	**6.625×5.5**	**300**	**5.51**	**5.51**
150×125	168.3×139.7	20	140	140
8x2-1/2	**8.625×3**	**300**	**6.85**	**6.85**
200×65	219.1×76.1	20	174	174
8×3	**8.625×3.5**	**300**	**6.85**	**6.85**
200×80	219.1×88.9	20	174	174
8×4	**8.625×4.5**	**300**	**6.85**	**6.85**
200×100	219.1×114.3	20	174	174
8×5	**8.625×5.5**	**300**	**6.85**	**6.85**
00×125	219.1×139.7	20	174	174
8×6	**8.625×6.25**	**300**	**6.85**	**6.85**
200×150	219.1×159	20	174	174
8×6	**8.625×6.5**	**300**	**6.85**	**6.85**
200×150	219.1×165.1	20	174	174
10×3	**10.75×3.5**	**300**	**7.48**	**7.48**
250×80	273×88.9	20	190	190
10×4	**10.75×4.5**	**300**	**7.48**	**7.48**
250×100	273×114.3	20	190	190
10×5	**10.75×5.25**	**300**	**7.48**	**7.48**
250×125	273×133	20	190	190
10×5	**10.75×5.5**	**300**	**7.48**	**7.48**
250×125	273×139.7	20	190	190
10×5	**10.75×5.563**	**300**	**7.48**	**7.48**
250×125	273×141.3	20	190	190
10×6	**10.75×6.25**	**300**	**7.48**	**7.48**
250×150	273×159	20	190	190
10×6	**10.75×6.5**	**300**	**7.48**	**7.48**
250×150	273×165.1	20	190	190
10×6	**10.75×6.625**	**300**	**7.48**	**7.48**
250×150	273×168.3	20	190	190
10×8	**10.75×8.625**	**300**	**7.48**	**7.48**
250×200	273×219.1	20	190	190
12×6	**12.75×6.25**	**300**	**8.66**	**8.66**
300×150	323.9×159	20	220	220
12×6	**12.75×6.5**	**300**	**8.66**	**8.66**
300×150	323.9×165.1	20	220	220
12×6	**12.75×6.625**	**300**	**8.66**	**8.66**
300×150	323.9×168.3	20	220	220
12×8	**12.75×8.625**	**300**	**8.66**	**8.66**
300×200	323.9×219.1	20	220	220
12×10	**12.75×10.75**	**300**	**8.66**	**8.66**
300×250	323.9×273	20	220	220

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21RTS THREADED REDUCING TEE



- Ductile Iron ASTM A-536 Grade 65-45-12.
- Finish available in standard orange paint or hot dipped galvanized (ASTM A-153)
- For current listing/approval details contact a Titus representative

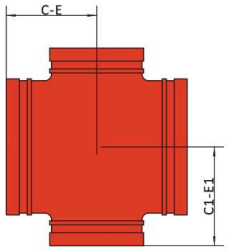
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Nominal Size in/mm	Pipe O.D. in/mm	Max.Working Pressure PSI/Bar	Dimensions	
			C-E in/mm	C1-E1 in/mm
2×1	**2.375×1.327**	**300**	**2.76**	**2.76**
50×25	60.3×33.7	20	70	70
2×1-1/4	**2.375×1.669**	**300**	**2.76**	**2.76**
50×32	60.3×42.4	20	70	70
2×1-1/2	**2.375×1.9**	**300**	**2.76**	**2.76**
50×40	60.3×48.3	20	70	70
2-1/2×1	**2.875×1.327**	**300**	**2.99**	**2.99**
65×25	73.0×33.7	20	76	76
2-1/2x1-1/4	**2.875×1.669**	**300**	**2.99**	**2.99**
65×32	73.0×42.4	20	76	76
2-1/2x1-1/2	**2.875×1.9**	**300**	**2.99**	**2.99**
65×40	73.0×48.3	20	76	76
2-1/2x2	**2.875×2.375**	**300**	**2.99**	**2.99**
65×50	73.0×60.3	20	76	76
2-1/2x1	**3×1.327**	**300**	**2.99**	**2.99**
65×25	76.1×33.7	20	76	76
2-1/2x1-1/4	**3×1.669**	**300**	**2.99**	**2.99**
65×32	76.1×42.4	20	76	76
2-1/2x1-1/2	**3×1.9**	**300**	**2.99**	**2.99**
65×40	76.1×48.3	20	76	76
2-1/2x2	**3×2.375**	**300**	**2.99**	**2.99**
65×50	76.1×60.3	20	76	76
3×1	**3.5×1.327**	**300**	**3.39**	**3.39**
80×25	88.9×33.7	20	86	86
3x1-1/4	**3.5×1.669**	**300**	**3.39**	**3.39**
80×32	88.9×42.4	20	86	86
3x1-1/2	**3.5×1.9**	**300**	**3.39**	**3.39**
80×40	88.9×48.3	20	86	86
3×2	**3.5×2.375**	**300**	**3.39**	**3.39**
80×50	88.9×60.3	20	86	86
3×2-1/2	**3.5×3**	**300**	**3.39**	**3.39**
80×65	88.9×76.1	20	86	86
4×1-1/2	**4.25×1.9**	**300**	**3.54**	**3.86**
100×40	108.0×48.3	20	90	98*
4×2	**4.25×2.375**	**300**	**3.54**	**3.86**
100×50	108.0×60.3	20	90	98*
4×2-1/2	**4.25×3**	**300**	**3.54**	**3.86**
100×65	108.0×76.1	20	90	98*
4×3	**4.25×3.5**	**300**	**3.54**	**3.86**
100×80	108×88.9	20	90	98*
4×1	**4.5×1.327**	**300**	**3.54**	**3.86**
100×25	114.3×33.7	20	90	98*
4×1-1/4	**4.5×1.669**	**300**	**3.54**	**3.86**
100×32	114.3×42.4	20	90	98*
4×1-1/2	**4.5×1.9**	**300**	**3.54**	**3.86**
100×40	114.3×48.3	20	90	98*
4×2	**4.5×2.375**	**300**	**3.54**	**3.86**
100×50	114.3×60.3	20	90	98*
4×2-1/2	**4.5×3**	**300**	**3.54**	**3.86**
100×65	114.3×76.1	20	90	98*
4×3	**4.5×3.5**	**300**	**3.54**	**3.86**
100×80	114.3×88.9	20	90	98*
5×2	**5.25×2.375**	**300**	**4.13**	**4.13**
125×50	133.0×60.3	20	105	105
5×2-1/2	**5.25×3**	**300**	**4.13**	**4.13**
125×65	133.0×76.1	20	105	105
5×3	**5.25×3.5**	**300**	**4.13**	**4.13**
125×80	133.0×88.9	20	105	105
5×4	**5.25×4.5**	**300**	**4.13**	**4.13**
125×100	133.0×114.3	20	105	105

Nominal Size in/mm	Pipe O.D. in/mm	Max.Working Pressure PSI/Bar	Dimensions	
			C-E in/mm	C1-E1 in/mm
5×1-1/2	**5.5×1.9**	**300**	**4.13**	**4.13**
125×40	139.7×48.3	20	105	105
5×2	**5.5×2.375**	**300**	**4.13**	**4.13**
125×50	139.7×60.3	20	105	105
5×2-1/2	**5.5×3**	**300**	**4.13**	**4.13**
125×65	139.7×76.1	20	105	105
5×3	**5.5×3.5**	**300**	**4.13**	**4.13**
125×80	139.7×88.9	20	105	105
5×4	**5.5×4.5**	**300**	**4.13**	**4.13**
125×100	139.7×114.3	20	105	105
5×1-1/2	**5.563×1.9**	**300**	**4.13**	**4.13**
125×40	141.3×48.3	20	105	105
5×2	**5.563×2.375**	**300**	**4.13**	**4.13**
125×50	141.3×60.3	20	105	105
5×2-1/2	**5.563×3**	**300**	**4.13**	**4.13**
125×65	141.3×76.1	20	105	105
5×3	**5.563×3.5**	**300**	**4.13**	**4.13**
125×80	141.3×88.9	20	105	105
5×4	**5.563×4.5**	**300**	**4.13**	**4.13**
125×100	141.3×114.3	20	105	105
6×1-1/2	**6.25×1.9**	**300**	**4.33**	**4.72**
150×40	159.0×48.3	20	110	120*
6×2	**6.25×2.375**	**300**	**4.33**	**4.72**
150×50	159.0×60.3	20	110	120*
6×2-1/2	**6.25×3**	**300**	**4.33**	**4.72**
150×65	159.0×76.1	20	110	120*
6×3	**6.25×3.5**	**300**	**4.33**	**4.72**
150×80	159.0×88.9	20	110	120*
6×4	**6.25×4.5**	**300**	**4.33**	**4.72**
150×100	159.0×114.3	20	110	120*
6×1-1/2	**6.5×1.9**	**300**	**4.33**	**4.72**
150×40	165.1×48.3	20	110	120*
6×2	**6.5×2.375**	**300**	**4.33**	**4.72**
150×50	165.1×60.3	20	110	120*
6×2-1/2	**6.5×3**	**300**	**4.33**	**4.72**
150×65	165.1×76.1	20	110	120*
6×3	**6.5×3.5**	**300**	**4.33**	**4.72**
150×80	165.1×88.9	20	110	120*
6×4	**6.5×4.5**	**300**	**4.33**	**4.72**
150×100	165.1×114.3	20	110	120*
6×1-1/2	**6.625×1.9**	**300**	**4.33**	**4.72**
150×40	168.3×48.3	20	110	120*
6×2	**6.625×2.375**	**300**	**4.33**	**4.72**
150×50	168.3×60.3	20	110	120*
6×2-1/2	**6.625×3**	**300**	**4.33**	**4.72**
150×65	168.3×76.1	20	110	120*
6×3	**6.625×3.5**	**300**	**4.33**	**4.72**
150×80	168.3×88.9	20	110	120*
6×4	**6.625×4.5**	**300**	**4.33**	**4.72**
150×100	168.3×114.3	20	110	120*
8×2	**8.625×2.375**	**300**	**5.75**	**5.75**
200×50	219.1×60.3	20	146	146
8×2-1/2	**8.625×3**	**300**	**5.75**	**5.75**
200×50	219.1×76.1	20	146	146
8×3	**8.625×3.5**	**300**	**5.75**	**5.75**
200×80	219.1×88.9	20	146	146
8×4	**8.625×4.5**	**300**	**5.75**	**5.75**
200×100	219.1×114.3	20	146	146

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31X GROOVED REDUCING CROSS



- Ductile Iron ASTM A-536 Grade 65-45-12.
- Finish available in standard orange paint or hot dipped galvanized (ASTM A-153)
- For current listing/approval details contact a Titus representative

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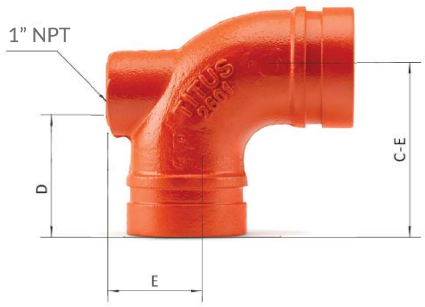
Nominal Size in/mm	Pipe O.D. in/mm	Max.Working Pressure PSI/Bar	Dimensions	
			C-E in/mm	C1-E1 in/mm
2-1/2x1-1/4	**2.875×1.669**	**300**	**2.99**	**2.99**
65×32	73×42.4	20	76	76
2-1/2x1-1/2	**2.875×1.9**	**300**	**2.99**	**2.99**
65×40	73×48.3	20	76	76
2-1/2x2	**2.875×2.375**	**300**	**2.99**	**2.99**
65×50	73×60.3	20	76	76
2-1/2x1/4	**3×1.669**	**300**	**2.99**	**2.99**
65×32	76.1×42.4	20	76	76
2-1/2x1-1/2	**3×1.9**	**300**	**2.99**	**2.99**
65×40	76.1×48.3	20	76	76
2-1/2x2	**3×2.375**	**300**	**2.99**	**2.99**
65×50	76.1×60.3	20	76	76
3x1-1/4	**3.5×1.669**	**300**	**3.39**	**3.39**
80×32	88.9×42.4	20	86	86
3x1-1/2	**3.5×1.9**	**300**	**3.39**	**3.39**
80×40	88.9×48.3	20	86	86
3×2	**3.5×2.375**	**300**	**3.39**	**3.39**
80×50	88.9×60.3	20	86	86
3x2-1/2	**3.5×3**	**300**	**3.39**	**3.39**
80×65	88.9×76.1	20	86	86
4×2	**4.25×2.375**	**300**	**3.54**	**3.86**
100×50	108×60.3	20	90	98
4x2-1/2	**4.25×3**	**300**	**3.54**	**3.86**
100×65	108×76.1	20	90	98
4×3	**4.25×3.5**	**300**	**3.54**	**3.86**
100×80	108×88.9	20	90	98
4x1-1/4	**4.5×1.669**	**300**	**3.54**	**3.86**
100×32	114.3×42.4	20	90	98
4x1-1/2	**4.5×1.9**	**300**	**3.54**	**3.86**
100×40	114.3×48.3	20	90	98
4×2	**4.5×2.375**	**300**	**3.54**	**3.86**
100×50	114.3×60.3	20	90	98
4x2-1/2	**4.5×3**	**300**	**3.54**	**3.86**
100×65	114.3×76.1	20	90	98
4×3	**4.5×3.5**	**300**	**3.54**	**3.86**
100×80	114.3×88.9	20	90	98
5x2-1/2	**5.25×3**	**300**	**4.13**	**4.13**
125×65	133×76.1	20	105	105
5×3	**5.25×3.5**	**300**	**4.13**	**4.13**
125×80	133×88.9	20	105	105
5×4	**5.25×4.25**	**300**	**4.13**	**4.13**
125×100	133×108	20	105	105
5×4	**5.25×4.5**	**300**	**4.13**	**4.13**
125×100	133×114.3	20	105	105
5×2	**5.5×2.375**	**300**	**4.13**	**4.13**
125×50	139.7×60.3	20	105	105
5x2-1/2	**5.5×3**	**300**	**4.13**	**4.13**
125×65	139.7×76.1	20	105	105
5×3	**5.5×3.5**	**300**	**4.13**	**4.13**
125×80	139.7×88.9	20	105	105
5×4	**5.5×4.25**	**300**	**4.13**	**4.13**
125×100	139.7×108	20	105	105
5×4	**5.5×4.5**	**300**	**4.13**	**4.13**
125×100	139.7×114.3	20	105	105
5×2	**5.563×2.375**	**300**	**4.13**	**4.13**
125×50	141.3×60.3	20	105	105
5x2-1/2	**5.563×2.875**	**300**	**4.13**	**4.13**
125×65	141.3×73	20	105	105
5×3	**5.563×3.5**	**300**	**4.13**	**4.13**
125×80	141.3×88.9	20	105	105

Nominal Size in/mm	Pipe O.D. in/mm	Max.Working Pressure PSI/Bar	Dimensions	
			C-E in/mm	C1-E1 in/mm
5×4	**5.563×4.25**	**300**	**4.13**	**4.13**
125×100	141.3×108	20	105	105
5×4	**5.563×4.5**	**300**	**4.13**	**4.13**
125×100	141.3×114.3	20	105	105
6x2-1/2	**6.25×3**	**300**	**4.33**	**4.72**
150×65	159×76.1	20	110	120
6×3	**6.25×3.5**	**300**	**4.33**	**4.72**
150×80	159×88.9	20	110	120
6×4	**6.25×4.25**	**300**	**4.33**	**4.72**
150×100	159×108	20	110	120
6×4	**6.25×4.5**	**300**	**4.33**	**4.72**
150×100	159×114.3	20	110	120
6×5	**6.25×5.25**	**300**	**4.33**	**4.72**
150×125	159×133	20	110	120
6×2	**6.5×2.375**	**300**	**4.33**	**4.72**
150×50	165.1×60.3	20	110	120
6x2-1/2	**6.5×3**	**300**	**4.33**	**4.72**
150×65	165.1×76.1	20	110	120
6×3	**6.5×3.5**	**300**	**4.33**	**4.72**
150×80	165.1×88.9	20	110	120
6×4	**6.5×4.25**	**300**	**4.33**	**4.72**
150×100	165.1×108	20	110	120
6×4	**6.5×4.5**	**300**	**4.33**	**4.72**
150×100	165.1×114.3	20	110	120
6×5	**6.5×5.25**	**300**	**4.33**	**4.72**
150×125	165.1×133	20	110	120
6×5	**6.5×5.5**	**300**	**4.33**	**4.72**
150×125	165.1×139.7	20	110	120
6×2	**6.625×2.375**	**300**	**4.33**	**4.72**
150×50	168.3×60.3	20	110	120
6x2-1/2	**6.625×3**	**300**	**4.33**	**4.72**
150×65	168.3×76.1	20	110	120
6×3	**6.625×3.5**	**300**	**4.33**	**4.72**
150×80	168.3×88.9	20	110	120
6×4	**6.625×4.25**	**300**	**4.33**	**4.72**
150×100	168.3×108	20	110	120
6×4	**6.625×4.5**	**300**	**4.33**	**4.72**
150×100	168.3×114.3	20	110	120
6×5	**6.625×5.25**	**300**	**4.33**	**4.72**
150×125	168.3×133	20	110	120
6×5	**6.625×5.5**	**300**	**4.33**	**4.72**
150×125	168.3×139.7	20	110	120
8x2-1/2	**8.625×3**	**300**	**5.75**	**5.75**
200×65	219.1×76.1	20	146	146
8×3	**8.625×3.5**	**300**	**5.75**	**5.75**
200×80	219.1×88.9	20	146	146
8×4	**8.625×4.25**	**300**	**5.75**	**5.75**
200×100	219.1×108	20	146	146
8×4	**8.625×4.5**	**300**	**5.75**	**5.75**
200×100	219.1×114.3	20	146	146
8×5	**8.625×5.25**	**300**	**5.75**	**5.75**
200×125	219.1×133	20	146	146
8×5	**8.625×5.5**	**300**	**5.75**	**5.75**
200×125	219.1×139.7	20	146	146
8×6	**8.625×6.25**	**300**	**5.75**	**5.75**
200×150	219.1×159	20	146	146
8×6	**8.625×6.5**	**300**	**5.75**	**5.75**
200×150	219.1×165.1	20	146	146

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2601 DRAIN ELBOW

- Ductile Iron ASTM A-536 Grade 65-45-12.
- Finish available in standard orange paint or hot dipped galvanized (ASTM A-153)
- For current listing/approval details contact a Titus representative





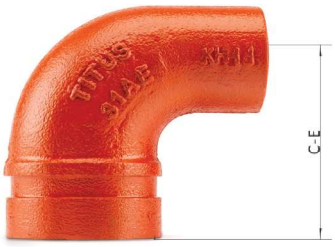


Nominal Size in/mm	Pipe O.D. in/mm	Max.Working Pressure PSI/Bar	Dimensions		
			C - E in/mm	D in/mm	E in/mm
2	**2.375**	**300**	**3.27**	**2.76**	**1.48**
50	60.3	20	83	70	37.5
2-1/2	**2.875**	**300**	**3.74**	**2.76**	**1.77**
65	73	20	95	70	45
3	**3.5**	**300**	**4.25**	**2.76**	**2.17**
80	88.9	20	108	70	55
4	**4.5**	**300**	**5.00**	**2.76**	**2.70**
100	114.3	20	127	70	68.5
5	**5.563**	**300**	**5.51**	**2.76**	**3.23**
125	141.3	20	140	70	82
6	**6.625**	**300**	**6.50**	**2.76**	**3.76**
150	168.3	20	165	70	95.5

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31AE REDUCING END OF LINE ELBOW

- Ductile Iron ASTM A-536 Grade 65-45-12.
- Female NPT Threads conform to ASME B1.20.1
- Finish available in standard orange paint or hot dipped galvanized (ASTM A-153)
- For current listing/approval details contact a Titus representative





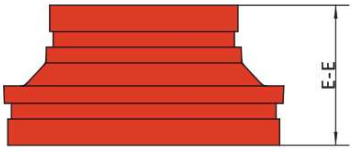


Nominal Size in/mm	BSP/NPT	Max.Working Pressure PSI/Bar	C - E in/mm
1-1/4×1/2	**1/2**	**300**	**2.40**
32×15	15	20	61
1-1/4×3/4	**3/4**	**300**	**2.40**
32×20	20	20	61
1-1/4×1	**1**	**300**	**2.40**
32×25	25	20	61
1-1/2×1/2	**1/2**	**300**	**2.52**
40×15	15	20	64
1-1/2×3/4	**3/4**	**300**	**2.52**
40×20	20	20	64
1-1/2×1	**1**	**300**	**2.52**
40×25	25	20	64
2×1/2	**1/2**	**300**	**2.76**
50×15	15	20	70
2×3/4	**3/4**	**300**	**2.76**
50×20	20	20	70
2×1	**1**	**300**	**2.76**
50×25	25	20	70
2-1/2×1/2	**1/2**	**300**	**2.99**
65×15	15	20	76
2-1/2×3/4	**3/4**	**300**	**2.99**
65×20	20	20	76
2-1/2×1	**1**	**300**	**2.99**
65×25	25	20	76

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21CR GROOVED CONCENTRIC REDUCER

- Ductile Iron ASTM A-536 Grade 65-45-12.
- Finish available in standard orange paint or hot dipped galvanized (ASTM A-153)
- For current listing/approval details contact a Titus representative



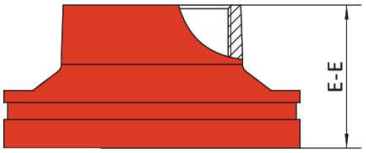
c UL us FM APPROVED

Nominal Size in/mm	Pipe O.D. in/mm	Max.Working Pressure PSI/Bar	E - E in/mm
1-1/2×1-1/4	**1.9×1.669**	**300**	**2.52**
40×32	48.3×42.4	20	64
2×1-1/4	**2.375×1.669**	**300**	**2.52**
50×32	60.3×42.4	20	64
2×1-1/2	**2.375×1.9**	**300**	**2.52**
50×40	60.3×48.3	20	64
2-1/2×1-1/4	**2.875×1.669**	**300**	**2.52**
65×32	73×42.4	20	64
2-1/2×1-1/2	**2.875×1.9**	**300**	**2.52**
65×40	73×48.3	20	64
2-1/2×2	**2.875×2.375**	**300**	**2.52**
65×50	73×60.3	20	64
2-1/2×1-1/2	**3×1.9**	**300**	**2.52**
65×40	76.1×48.3	20	64
2-1/2×2	**3×2.375**	**300**	**2.52**
65×50	76.1×60.3	20	64
3×1-1/4	**3.5×1.669**	**300**	**2.52**
80×32	88.9×42.4	20	64
3×1-1/2	**3.5×1.9**	**300**	**2.52**
80×40	88.9×48.3	20	64
3×2	**3.5×2.375**	**300**	**2.52**
80×50	88.9×60.3	20	64
3×2-1/2	**3.5×2.875**	**300**	**2.52**
80×65	88.9×73	20	64
3×2-1/2	**3.5×3**	**300**	**2.52**
80×65	88.9×76.1	20	64
4×1-1/4	**4.5×1.669**	**300**	**2.99**
100×32	114.3×42.4	20	76
4×1-1/2	**4.5×1.9**	**300**	**2.99**
100×40	114.3×48.3	20	76
4×2	**4.5×2.375**	**300**	**2.99**
100×50	114.3×60.3	20	76
4×2-1/2	**4.5×2.875**	**300**	**2.99**
100×65	114.3×73	20	76
4×2-1/2	**4.5×3**	**300**	**2.99**
100×65	114.3×76.1	20	76
4×3	**4.5×3.5**	**300**	**2.99**
100×80	114.3×88.9	20	76
5×2	**5.25×2.375**	**300**	**3.35**
125×50	133×60.3	20	85
5×2	**5.5×2.375**	**300**	**3.35**
125×50	139.7×60.3	20	85
5×2-1/2	**5.5×2.875**	**300**	**3.35**
125×65	139.7×73	20	85
5×2-1/2	**5.5×3**	**300**	**3.35**
125×65	139.7×76.1	20	85
5×3	**5.5×3.5**	**300**	**3.35**
125×80	139.7×88.9	20	85
5×4	**5.5×4.25**	**300**	**3.35**
125×100	139.7×108	20	85
5×4	**5.5×4.5**	**300**	**3.35**
125×100	139.7×114.3	20	85
5×2	**5.563×2.375**	**300**	**3.35**
125×50	141.3×60.3	20	85
5×2-1/2	**5.563×2.875**	**300**	**3.35**
125×65	141.3×73	20	85
5×2-1/2	**5.563×3**	**300**	**3.35**
125×65	141.3×76.1	20	85
5×3	**5.563×3.5**	**300**	**3.35**
125×80	141.3×88.9	20	85
5×4	**5.563×4.5**	**300**	**3.35**
125×100	141.3×114.3	20	85
6×2	**6.25×2.375**	**300**	**3.35**
150×50	159×60.3	20	85
6×4	**6.25×4.25**	**300**	**3.35**
150×100	159×108	20	85

Nominal Size in/mm	Pipe O.D. in/mm	Max.Working Pressure PSI/Bar	E - E in/mm
6×4	**6.25×4.5**	**300**	**3.35**
150×100	159×114.3	20	85
6×5	**6.25×5.5**	**300**	**3.35**
150×125	159×139.7	20	85
6×2	**6.5×2.375**	**300**	**3.35**
150×50	165.1×60.3	20	85
6×2-1/2	**6.5×2.875**	**300**	**3.35**
150×65	165.1×73	20	85
6×2-1/2	**6.5×3**	**300**	**3.35**
150×65	165.1×76.1	20	85
6×4	**6.5×4.25**	**300**	**3.35**
150×100	165.1×108	20	85
6×4	**6.5×4.5**	**300**	**3.35**
150×100	165.1×114.3	20	85
6×5	**6.5×5.25**	**300**	**3.35**
150×125	165.1×133	20	85
6×5	**6.5×5.5**	**300**	**3.35**
150×125	165.1×139.7	20	85
6×2	**6.63×2.375**	**300**	**3.35**
150×50	168.3×60.3	20	85
6×2-1/2	**6.625×2.875**	**300**	**3.35**
150×65	168.3×73	20	85
6×2-1/2	**6.625×2.375**	**300**	**3.35**
150×65	168.3×76.1	20	85
6×3	**6.625×3.5**	**300**	**3.35**
150×80	168.3×88.9	20	85
6×4	**6.625×4.5**	**300**	**3.35**
150×100	168.3×114.3	20	85
6×5	**6.625×5.5**	**300**	**3.35**
150×125	168.3×139.7	20	85
8×2-1/2	**8.63×3**	**300**	**3.35**
200×65	219.1×76.1	20	85
8×3	**8.625×3.5**	**300**	**3.35**
200×80	219.1×88.9	20	85
8×4	**8.625×4.5**	**300**	**3.35**
200×100	219.1×114.3	20	85
8×5	**8.625×5.5**	**300**	**3.35**
200×125	219.1×139.7	20	85
8×6	**8.625×6.25**	**300**	**3.35**
200×150	219.1×159	20	85
8×6	**8.63×6.5**	**300**	**3.35**
200×150	219.1×165.1	20	85
8×6	**8.625×6.63**	**300**	**3.35**
200×150	219.1×168.3	20	85
10×4	**10.75×4.5**	**300**	**3.54**
250×100	273×114.3	20	90
10×5	**10.75×5.5**	**300**	**3.54**
250×125	273×139.7	20	90
10×6	**10.75×6.25**	**300**	**3.54**
250×150	273×159	20	90
10×6	**10.75×6.5**	**300**	**3.54**
250×150	273×165.1	20	90
10×8	**10.75×8.625**	**300**	**3.54**
250×200	273×219.1	20	90
12×4	**12.75×4.5**	**300**	**3.54**
300×100	323.9×114.3	20	90
12×5	**12.75×5.5**	**300**	**3.54**
300×125	323.9×139.7	20	90
12×6	**12.75×6.25**	**300**	**3.54**
300×150	323.9×159	20	90
12×6	**12.75×6.625**	**300**	**3.54**
300×150	323.9×165.1	20	90
12×8	**12.75×8.63**	**300**	**3.54**
300×200	323.9×219.1	20	90
12×10	**12.75×10.75**	**300**	**3.54**
300×250	323.9×273	20	90

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21MG THREADED CONCENTRIC REDUCER



- Ductile Iron ASTM A-536 Grade 65-45-12
- Finish available in standard orange paint or hot dipped galvanized (ASTM A-153)
- For current listing/approval details contact a Titus representative

c UL us FM APPROVED

Nominal Size in/mm	Pipe O.D. in/mm	Max. Working Pressure PSI/Bar	E - E in/mm
2×1	**2.375×1.327**	**230**	**2.52**
50×25	60.3×33.7	16	64
2x1-1/4	**2.375×1.669**	**230**	**2.52**
50×32	60.3x42.4	16	64
2x1-1/2	**2.375×1.9**	**230**	**2.52**
50×40	60.3x48.3	16	64
2-1/2x1	**2.875×1.327**	**230**	**2.52**
65×25	73x33.7	16	64
2-1/2x1-1/4	**2.875×1.669**	**230**	**2.52**
65×32	73x42.4	16	64
2-1/2x1-1/2	**2.875×1.9**	**230**	**2.52**
65×40	73x48.3	16	64
2-1/2x2	**2.875×2.375**	**230**	**2.52**
65×50	73x60.3	16	64
2-1/2x1	**3×1.327**	**230**	**2.52**
65×25	76.1x33.7	16	64
2-1/2x1-1/4	**3×1.669**	**230**	**2.52**
65×32	76.1x42.4	16	64
2-1/2x1-1/2	**3×1.9**	**230**	**2.52**
65×40	76.1x48.3	16	64
2-1/2x2	**3×2.375**	**230**	**2.52**
65×50	76.1x60.3	16	64
3×1	**3.5×1.327**	**230**	**2.52**
80×25	88.9x33.7	16	64
3x1-1/4	**3.5×1.669**	**230**	**2.52**
80×32	88.9x42.4	16	64
3x1-1/2	**3.5×1.9**	**230**	**2.52**
80×40	88.9x48.3	16	64
3×2	**3.5×2.375**	**230**	**2.52**
80×50	88.9x60.3	16	64
3x2-1/2	**3.5×3**	**230**	**2.52**
80×65	88.9x76.1	16	64
4×1	**4.25×1.327**	**230**	**2.99**
100×25	108.0×33.7	16	76
4x1-1/4	**4.25×1.669**	**230**	**2.99**
100×32	108.0×42.4	16	76
4x1-1/2	**4.25×1.9**	**230**	**2.99**
100×40	108.0×48.3	16	76
4×2	**4.25×2.375**	**230**	**2.99**
100×50	108.0×60.3	16	76
4x2-1/2	**4.25×3**	**230**	**2.99**
100×65	108.0×76.1	16	76
4×3	**4.25×3.5**	**230**	**2.99**
100×80	108×88.9	16	76
4×1	**4.5×1.327**	**230**	**2.99**
100×25	114.3×33.7	16	76
4x1-1/4	**4.5×1.669**	**230**	**2.99**
100×32	114.3×42.4	16	76
4x1-1/2	**4.5×1.9**	**230**	**2.99**
100×40	114.3×48.3	16	76
4×2	**4.5×2.375**	**230**	**2.99**
100×50	114.3×60.3	16	76
4x2-1/2	**4.5×2.875**	**230**	**2.99**
100×65	114.3×73	16	76
4x2-1/2	**4.5×3**	**230**	**2.99**
100×65	114.3×76.1	16	76
4×3	**4.5×3.5**	**230**	**2.99**
100×80	114.3×88.9	16	76
5×1	**5.5×1.327**	**230**	**3.35**
125×25	139.7×33.7	16	85
5x1-1/4	**5.5×1.669**	**230**	**3.35**
125×32	139.7×42.4	16	85
5x1-1/2	**5.5×1.9**	**230**	**3.35**
125×40	139.7×48.3	16	85
5×2	**5.5×2.375**	**230**	**3.35**
125×50	139.7×60.3	16	85

Nominal Size in/mm	Pipe O.D. in/mm	Max. Working Pressure PSI/Bar	E - E in/mm
5x2-1/2	**5.5×3**	**230**	**3.35**
125×65	139.7×76.1	16	85
5×3	**5.5×3.5**	**230**	**3.35**
125×80	139.7×88.9	16	85
5×4	**5.5×4.5**	**230**	**3.35**
125×100	139.7×114.3	16	85
5×1	**5.563×1.327**	**230**	**3.35**
125×25	141.3×33.7	16	85
5x1-1/4	**5.563×1.669**	**230**	**3.35**
125×32	141.3×42.4	16	85
5x1-1/2	**5.563×1.9**	**230**	**3.35**
125×40	141.3×48.3	16	85
5×2	**5.563×2.375**	**230**	**3.35**
125×50	141.3×60.3	16	85
5x2-1/2	**5.563×2.875**	**230**	**3.35**
125×65	141.3×73	16	85
5×3	**5.563×3.5**	**230**	**3.35**
125×80	141.3×88.9	16	85
5×3	**5.563×4.5**	**230**	**3.35**
125×80	141.3×114.3	16	85
6×1	**6.5×1.327**	**230**	**3.35**
150×25	165.1×33.7	16	85
6x1-1/4	**6.5×1.669**	**230**	**3.35**
150×32	165.1×42.4	16	85
6x1-1/2	**6.5×1.9**	**230**	**3.35**
150×40	165.1×48.3	16	85
6×2	**6.5×2.375**	**230**	**3.35**
150×50	165.1×60.3	16	85
6x2-1/2	**6.5×3**	**230**	**3.35**
150×65	165.1×76.1	16	85
6×3	**6.5×3.5**	**230**	**3.35**
150×80	165.1×88.9	16	85
6×4	**6.5×4.5**	**230**	**3.35**
150×100	165.1×114.3	16	85
6×1	**6.625×1.327**	**230**	**3.35**
150×25	168.3×33.7	16	85
6x1-1/4	**6.625×1.669**	**230**	**3.35**
150×32	168.3×42.4	16	85
6x1-1/2	**6.625×1.9**	**230**	**3.35**
150×40	168.3×48.3	16	85
6×2	**6.625×2.375**	**230**	**3.35**
150×50	168.3×60.3	16	85
6x2-1/2	**6.625×2.875**	**230**	**3.35**
150×65	168.3×73	16	85
6x2-1/2	**6.625×3**	**230**	**3.35**
150×65	168.3×76.1	16	85
6×3	**6.625×3.5**	**230**	**3.35**
150×80	168.3×88.9	16	85
6×4	**6.625×4.5**	**230**	**3.35**
150×100	168.3×114.3	16	85
8×1	**8.625×1.327**	**230**	**3.35**
200×25	219.1×33.7	16	85
8x1-1/4	**8.625×1.669**	**230**	**3.35**
200×32	219.1×42.4	16	85
8x1-1/2	**8.625×1.9**	**230**	**3.35**
200×40	219.1×48.3	16	85
8×2	**8.625×2.375**	**230**	**3.35**
200×50	219.1×60.3	16	85
8x2-1/2	**8.625×2.875**	**230**	**3.35**
200×65	219.1×73	16	85
8x2-1/2	**8.625×3**	**230**	**3.35**
200×65	219.1×76.1	16	85
8×3	**8.625×3.5**	**230**	**3.35**
200×80	219.1×88.9	16	85
8×4	**8.625×4.5**	**230**	**3.35**
200×100	219.1×114.3	16	85

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21C GROOVED END CAP

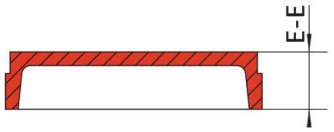
- Ductile Iron ASTM A-536 Grade 65-45-12.
- Finish available in standard orange paint or hot dipped galvanized (ASTM A-153)
- For current listing/approval details contact a Titus representative





Nominal Size in/mm	Pipe O.D. in/mm	Max. Working Pressure PSI/Bar	E - E in/mm
1	**1.327**	**300**	**0.94**
25	33.7	20	23.8
1-1/4	**1.669**	**300**	**0.94**
32	42.4	20	23.8
1-1/2	**1.9**	**300**	**0.94**
40	48.3	20	23.8
2	**2.375**	**300**	**0.94**
50	60.3	20	23.8
2-1/2	**3**	**300**	**0.94**
65	76.1	20	23.8
3	**3.5**	**300**	**0.94**
80	88.9	20	23.8
4	**4.25**	**300**	**1.00**
100	108	20	25.4
4	**4.5**	**300**	**1.00**
100	114.3	20	25.4
5	**5.25**	**300**	**1.00**
125	133	20	25.4
5	**5.5**	**300**	**1.00**
125	139.7	20	25.4
5	**5.563**	**300**	**1.00**
125	141.3	20	25.4
5	**6.25**	**300**	**1.00**
150	159	20	25.4
6	**6.5**	**300**	**1.00**
150	165.1	20	25.4
6	**6.625**	**300**	**1.00**
150	168.3	20	25.4
8	**8.625**	**300**	**1.19**
200	219.1	20	30.2
10	**10.750**	**300**	**1.26**
250	273	20	32
12	**12.75**	**300**	**1.26**
300	323.9	20	32

31DC ECCENTRIC DRAIN CAP



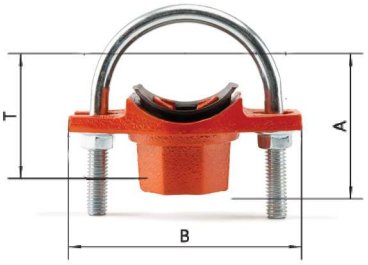
Nominal Size Grooved X Threaded in/mm	Pipe O.D. in/mm	Max. Working Pressure PSI/Bar	E - E in/mm
2×1	**2.375×1.327**	**300**	**0.94**
50×25	60.3×33.7	20	23.8
2x1-1/4	**2.375×1.669**	**300**	**0.94**
50×32	60.3×42.4	20	23.8
2x1-1/2	**2.375×1.9**	**300**	**0.94**
50×40	60.3×48.3	20	23.8
2-1/2x1	**2.875×1.327**	**300**	**0.94**
65×25	73x33.7	20	23.8
2-1/2x1-1/4	**2.875×1.669**	**300**	**0.94**
65×32	73x42.4	20	23.8
2-1/2x1-1/2	**2.875×1.9**	**300**	**0.94**
65×40	73x48.3	20	23.8
2-1/2x2	**2.875×2.375**	**300**	**0.94**
65×50	73.0×60.3	20	23.8
2-1/2x1	**3×1.327**	**300**	**0.94**
65×25	76.1×33.7	20	23.8
2-1/2x1-1/4	**3×1.669**	**300**	**0.94**
65×32	76.1×42.4	20	23.8
2-1/2x1-1/2	**3×1.9**	**300**	**0.94**
65×40	76.1×48.3	20	23.8
2-1/2x2	**3×2.375**	**300**	**0.94**
65×50	76.1×60.3	20	23.8
3×1	**3.5×1.327**	**300**	**0.94**
80×25	88.9×33.7	20	23.8
3x1-1/4	**3.5×1.669**	**300**	**0.94**
80×32	88.9×42.4	20	23.8
3x1-1/2	**3.5×1.9**	**300**	**0.94**
80×40	88.9×48.3	20	23.8
3×2	**3.5×2.375**	**300**	**0.94**
80×50	88.9×60.3	20	23.8
4x1	**4.5×1.327**	**300**	**1.00**
100×25	114.3×33.7	20	25.4
4x1-1/2	**4.5×1.669**	**300**	**1.00**
100×32	114.3×42.4	20	25.4
4x1-1/2	**4.5×1.9**	**300**	**1.00**
100×40	114.3×48.3	20	25.4
4×2	**4.5×2.375**	**300**	**1.00**
100×50	114.3×60.3	20	25.4
5×2	**5.5×2.375**	**300**	**1.00**
125×50	139.7×60.3	20	25.4
5×2	**5.563×2.375**	**300**	**1.00**
125×50	141.3×60.3	20	25.4
6×1	**6.5×1.327**	**300**	**1.00**
150×25	165.1×33.7	20	25.4
6×2	**6.5×2.375**	**300**	**1.00**
150×50	165.1×60.3	20	25.4
6x1-1/4	**6.625×1.669**	**300**	**1.00**
150×32	168.3×42.4	20	25.4
6x1-1/2	**6.63×1.9**	**300**	**1.00**
150×40	168.3×48.3	20	25.4
6×2	**6.63×2.375**	**300**	**1.00**
150×50	168.3×60.3	20	25.4
8×2	**8.625×2.375**	**300**	**1.19**
200×50	219.1×60.3	20	30.2

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41 SADDLE-LET OUTLET TEE

U BOLT MECHANICAL TEE

- Ductile Iron ASTM A-536 Grade 65-45-12.
- Female NPT Threads conform to ASME B1.20.1
- Finish available in electro zinc plated or orange epoxy paint
- Gasket: Grade E – EPDM with operating temperature of -30F to 230F (-34C to 110C) and is marked by a green stripe
- Bolts are SAE J429 Grade 5
- Pressure rated up to 300p
- For current listing/approval details contact a Titus representative





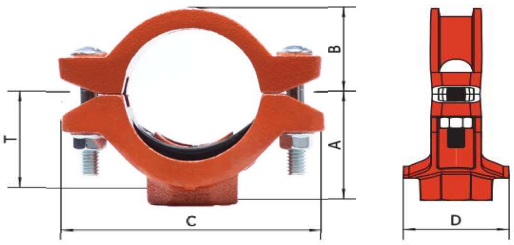
Nominal Size in/mm	Hole Dia.∓ +0.04,-0 /+1,-0	Dimensions - in/mm			Take-Out T in/mm	Bolt Size in	Bolt Torque Lbs-Ft/N-M
		A	B	C			
1×1/2 25×15	**0.95** 24	**1.81** 46	**2.91** 74	**1.73** 44	**1.57** 40	**U-Bolt** 5/16Φ	**18-22** 25-30
1×3/4 25×20	**0.95** 24	**1.81** 46	**2.91** 74	**1.73** 44	**1.57** 40	**U-Bolt** 5/16Φ	**18-22** 25-30
1-1/4x1/2 32×15	**1.18** 30	**2.09** 53	**3.50** 89	**2.20** 56	**1.73** 44	**U-Bolt** 3/8Φ	**22-29** 30-40
1-1/4x3/4 32×20	**1.18** 30	**2.09** 53	**3.50** 89	**2.20** 56	**1.73** 44	**U-Bolt** 3/8Φ	**22-29** 30-40
1-1/4x1 32×25	**1.18** 30	**2.20** 56	**3.50** 89	**2.20** 56	**1.85** 47	**U-Bolt** 3/8Φ	**22-29** 30-40
1-1/2x1/2 40×15	**1.18** 30	**2.17** 55	**3.50** 89	**2.20** 56	**1.81** 46	**U-Bolt** 3/8Φ	**22-29** 30-40
1-1/2x3/4 40×20	**1.18** 30	**2.17** 55	**3.50** 89	**2.20** 56	**1.81** 46	**U-Bolt** 3/8Φ	**22-29** 30-40
1-1/2x1 40×25	**1.18** 30	**2.28** 58	**3.50** 89	**2.20** 56	**1.93** 49	**U-Bolt** 3/8Φ	**22-29** 30-40
2x1/2 50×15	**1.18** 30	**2.52** 64	**3.86** 98	**2.20** 56	**2.09** 53	**U-Bolt** 3/8Φ	**22-29** 30-40
2x3/4 50×20	**1.18** 30	**2.52** 64	**3.86** 98	**2.20** 56	**2.09** 53	**U-Bolt** 3/8Φ	**22-29** 30-40
2×1 50×25	**1.18** 30	**2.64** 67	**3.86** 98	**2.20** 56	**2.20** 56	**U-Bolt** 3/8Φ	**22-29** 30-40
2-1/2x1/2 65×15	**1.18** 30	**2.72** 69	**4.37** 111	**2.20** 56	**2.28** 58	**U-Bolt** 3/8Φ	**22-29** 30-40
2-1/2x3/4 65×20	**1.18** 30	**2.72** 69	**4.37** 111	**2.20** 56	**2.28** 58	**U-Bolt** 3/8Φ	**22-29** 30-40
2-1/2x1 65×25	**1.18** 30	**2.83** 72	**4.37** 111	**2.20** 56	**2.40** 61	**U-Bolt** 3/8Φ	**22-29** 30-40
3×1 80×25	**1.18** 30	**3.17** 80.5	**5.04** 128	**2.20** 56	**2.64** 67	**U-Bolt** 3/8Φ	**22-29** 30-40

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31MT MECHANICAL TEE - THREADED

- Ductile Iron ASTM A-536 Grade 65-45-12.
- Female NPT Threads conform to ASME B1.20.1
- Finish available in standard orange paint or hot dipped galvanized (ASTM A-153)
- Gasket: Grade E – EPDM with operating temperature of -30F to 230F (-34C to 110C) and is marked by a green stripe
- Bolts are SAE J429 Grade 5
- Pressure rated up to 300psi
- For current listing/approval details contact a Titus representative

c UL us FM APPROVED



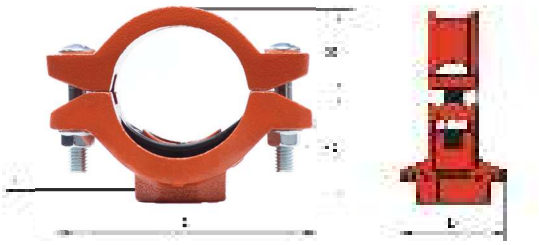
Nominal Size in/mm	Pipe O.D.	Hole Dia.∓ +0.13,-0 /+3.2,-0	Dimensions - in/mm					Bolt Size in/mm
			T‡	A	B	C	D	
2x1/2	**2.375×0.825**	**1.50**	**1.97**	**2.20**	**1.65**	**4.72**	**2.99**	**3/8×2-3/8**
50×15	60.3×21.3	38	50	56	42	120	76	M10×60
2x3/4	**2.375×1.05**	**1.50**	**1.97**	**2.20**	**1.65**	**4.72**	**2.99**	**3/8×2-3/8**
50×20	60.3×26.7	38	50	56	42	120	76	M10×60
2×1	**2.375×1.327**	**1.50**	**1.85**	**2.20**	**1.65**	**4.72**	**2.99**	**3/8×2-3/8**
50×25	60.3×33.7	38	47	56	42	120	76	M10×60
2x1-1/4	**2.375×1.669**	**1.75**	**2.05**	**2.68**	**1.65**	**4.72**	**3.31**	**3/8×2-3/8**
50×32	60.3×42.4	44.5	52	68	42	120	84	M10×60
2x1-1/2	**2.375×1.9**	**1.75**	**2.05**	**2.80**	**1.65**	**4.72**	**3.31**	**3/8×2-3/8**
50×40	60.3×48.3	44.5	52	71	42	120	84	M10×60
2-1/2x1/2	**2.375×0.825**	**1.50**	**2.20**	**2.42**	**1.85**	**5.63**	**2.99**	**1/2×2-5/8**
65×15	73×21.3	38	56	61.5	47	143	76	M12×65
2-1/2x3/4	**2.875×1.05**	**1.50**	**2.20**	**2.42**	**1.85**	**5.63**	**2.99**	**1/2×2-5/8**
65×20	73×26.7	38	56	61.5	47	143	76	M12×65
2-1/2x1	**2.875×1.327**	**1.50**	**2.09**	**2.42**	**1.85**	**5.63**	**2.99**	**1/2×2-5/8**
65×25	73.0×33.7	38	53	61.5	47	143	76	M12×65
2-1/2x1-1/4	**2.875×1.669**	**1.75**	**2.28**	**2.89**	**1.85**	**5.63**	**3.31**	**1/2×2-5/8**
65×32	73.0×42.4	44.5	58	73.5	47	143	84	M12×65
2-1/2x1-1/2	**2.875×1.9**	**2.00**	**2.28**	**2.89**	**1.85**	**5.63**	**3.54**	**1/2×2-5/8**
65×40	73.0×48.3	50.8	58	73.5	47	143	90	M12×65
2-1/2x1/2	**3×0.825**	**1.50**	**2.20**	**2.42**	**1.89**	**5.63**	**2.99**	**1/2×2-5/8**
65×15	76.1×21.3	38	56	61.5	48	143	76	M12×65
2-1/2x3/4	**3×1.05**	**1.50**	**2.20**	**2.42**	**1.89**	**5.63**	**2.99**	**1/2×2-5/8**
65×20	76.1×26.7	38	56	61.5	48	143	76	M12×65
2-1/2x1	**3×1.327**	**1.50**	**2.09**	**2.42**	**1.89**	**5.63**	**2.99**	**1/2×2-5/8**
65×25	76.1×33.7	38	53	61.5	48	143	76	M12×65
2-1/2x1-1/4	**3×1.669**	**1.75**	**2.28**	**2.89**	**1.89**	**5.63**	**3.31**	**1/2×2-5/8**
65×32	76.1×42.4	44.5	58	73.5	48	143	84	M12×65
2-1/2x1-1/2	**3×1.9**	**2.00**	**2.28**	**2.95**	**1.89**	**5.63**	**3.54**	**1/2×2-5/8**
65×40	76.1×48.3	50.8	58	75	48	143	90	M12×65
3x1/2	**3.5×0.825**	**1.50**	**2.52**	**2.74**	**2.17**	**6.22**	**2.99**	**1/2×2-5/8**
80×15	88.9×21.3	38	64	69.5	55	158	76	M12×65
3x3/4	**3.5×1.05**	**1.50**	**2.48**	**2.74**	**2.17**	**6.22**	**2.99**	**1/2×2-5/8**
80×20	88.9×26.7	38	63	69.5	55	158	76	M12×65
3×1	**3.5×1.327**	**1.50**	**2.40**	**2.74**	**2.17**	**6.22**	**2.99**	**1/2×2-5/8**
80×25	88.9×33.7	38	61	69.5	55	158	76	M12×65
3x1-1/4	**3.5×1.669**	**1.75**	**2.56**	**3.19**	**2.17**	**6.22**	**3.31**	**1/2×2-5/8**
80×32	88.9×42.4	44.5	65	81	55	158	84	M12×65
3x1-1/2	**3.5×1.9**	**2.00**	**2.80**	**3.19**	**2.17**	**6.22**	**3.54**	**1/2×2-5/8**
80×40	88.9×48.3	50.8	71	81	55	158	90	M12×65
3×2	**3.5×2.375**	**2.50**	**2.76**	**3.19**	**2.17**	**6.22**	**3.98**	**1/2×2-5/8**
80×50	88.9×60.3	63.5	70	81	55	158	101	M12×65
4×1	**4.250×1.327**	**1.50**	**2.87**	**2.99**	**2.44**	**6.57**	**2.99**	**1/2×2-5/8**
100×25	108.1×33.7	38	73	76	62	167	76	M12×65
4x1-1/4	**4.25×1.669**	**1.81**	**3.07**	**2.99**	**2.44**	**6.57**	**3.27**	**1/2×2-5/8**
100×32	108.0×42.4	46	78	76	62	167	83	M12×65
4x1-1/2	**4.25×1.9**	**2.09**	**3.27**	**2.99**	**2.44**	**6.57**	**3.54**	**1/2×2-5/8**
100×40	108.0×48.3	53	83	76	62	167	90	M12×65
4×2	**4.25×2.375**	**2.52**	**3.27**	**3.07**	**2.44**	**6.57**	**3.94**	**1/2×2-5/8**
100×50	108.0×60.3	64	83	78	62	167	100	M12×65
4x2-1/2	**4.25×3**	**3.15**	**2.87**	**4.13**	**2.44**	**6.57**	**4.61**	**1/2×2-5/8**
100×65	108.0×76.1	80	73	105	62	167	117	M12×65
4x1/2	**4.5×0.825**	**1.50**	**3.03**	**3.11**	**2.56**	**7.13**	**2.99**	**1/2×2-3/4**
100×15	114.3×21.3	38	77	79	65	181	76	M12×70
4x3/4	**4.5×1.05**	**1.50**	**2.99**	**3.11**	**2.56**	**7.13**	**2.99**	**1/2×2-3/4**
100×20	114.3×26.7	38	76	79	65	181	76	M12×70
4×1	**4.5×1.327**	**1.50**	**2.87**	**3.23**	**2.56**	**7.13**	**2.99**	**1/2×2-3/4**
100×25	114.3×33.7	38	73	82	65	181	76	M12×70
4x1-1/4	**4.5×1.669**	**1.75**	**3.07**	**3.70**	**2.56**	**7.13**	**3.31**	**1/2×2-3/4**
100×32	114.3×42.4	44.5	78	94	65	181	84	M12×70
4x1-1/2	**4.5×1.9**	**2.00**	**3.27**	**3.70**	**2.56**	**7.13**	**3.54**	**1/2×2-3/4**
100×40	114.3×48.3	50.8	83	94	65	181	90	M12×70
4×2	**4.5×2.375**	**2.50**	**3.27**	**3.70**	**2.56**	**7.13**	**3.98**	**1/2×2-3/4**
100×50	114.3×60.3	63.5	83	94	65	181	101	M12×70
4x2-1/2	**4.5×3**	**2.76**	**2.87**	**3.90**	**2.56**	**7.13**	**4.61**	**1/2×2-3/4**
100×65	114.3×76.1	70	73	99	65	181	117	M12×70
4×3	**4.5×3.5**	**3.50**	**3.31**	**3.94**	**2.56**	**7.13**	**5.35**	**1/2×2-3/4**
100×80	114.3×88.9	89	84	100	65	181	136	M12×70
5×1	**5.250×1.327**	**1.50**	**3.35**	**3.50**	**2.91**	**8.07**	**2.99**	**1/2×3**
125×25	133.0×33.7	38	85	89	74	205	76	M12×75
5x1-1/4	**5.25×1.669**	**1.81**	**3.54**	**3.50**	**2.91**	**8.07**	**3.27**	**1/2×3**
125×32	133.0×42.4	46	90	89	74	205	83	M12×75
5x1-1/2	**5.25×1.9**	**2.09**	**3.74**	**3.50**	**2.91**	**8.07**	**3.54**	**1/2×3**
125×40	133.0×48.3	53	95	89	74	205	90	M12×75

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31MT MECHANICAL TEE - THREADED

(CONTINUED)

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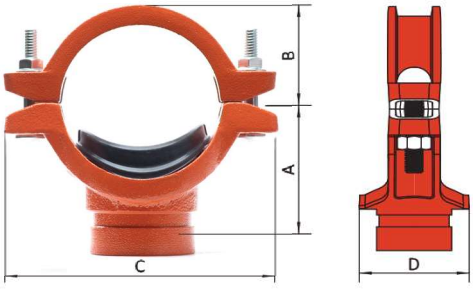
Nominal Size in/mm	Pipe O.D.	Hole Dia.∓ +0.13,-0 /+3.2,-0	Dimensions - in/mm					Bolt Size in/mm
			T‡	A	B	C	D	
5×2	**5.25×2.375**	**2.52**	**3.74**	**3.50**	**2.91**	**8.07**	**3.94**	**1/2×3**
125×50	133.0×60.3	64	95	89	74	205	100	M12×75
5x2-1/2	**5.25×3**	**3.15**	**3.82**	**3.62**	**2.91**	**8.07**	**4.61**	**1/2×3**
125×65	133.0×76.1	80	97	92	74	205	117	M12×75
5×3	**5.25×3.5**	**3.62**	**4.17**	**3.70**	**2.91**	**8.07**	**5.08**	**1/2×3**
125×80	133.0×88.9	92	106	94	74	205	129	M12×75
5×1	**5.5×1.327**	**1.50**	**3.82**	**3.80**	**3.03**	**8.62**	**2.99**	**5/8×3-1/3**
125×25	139.7×33.7	38	97	96.5	77	219	76	M16×85
5x1-1/4	**5.5×1.669**	**1.75**	**3.82**	**4.21**	**3.03**	**8.62**	**3.31**	**5/8×3-1/3**
125×32	139.7×42.4	44.5	97	107	77	219	84	M16×85
5x1-1/2	**5.5×1.9**	**2.00**	**4.02**	**4.21**	**3.03**	**8.62**	**3.54**	**5/8×3-1/3**
125×40	139.7×48.3	50.8	102	107	77	219	90	M16×85
5×2	**5.5×2.375**	**2.50**	**4.02**	**4.25**	**3.03**	**8.62**	**3.98**	**5/8×3-1/3**
125×50	139.7×60.3	63.5	102	108	77	219	101	M16×85
5x2-1/2	**5.5×3**	**2.76**	**3.62**	**4.53**	**3.03**	**8.62**	**4.61**	**5/8×3-1/3**
125×65	139.7×76.1	70	92	115	77	219	117	M16×85
5×3	**5.5×3.5**	**3.50**	**3.82**	**4.65**	**3.03**	**8.62**	**5.35**	**5/8×3-1/3**
125×80	139.7×88.9	89	97	118	77	219	136	M16×85
5×1	**5.563×1.327**	**1.50**	**3.03**	**3.80**	**3.03**	**8.62**	**2.99**	**5/8×3-1/3**
125×25	141.3×33.7	38	77	96.5	77	219	76	M16×85
5x1-1/4	**5.563×1.669**	**1.75**	**3.03**	**4.21**	**3.03**	**8.62**	**3.31**	**5/8×3-1/3**
125×32	141.3×42.4	44.5	77	107	77	219	84	M16×85
5x1-1/2	**5.563×1.9**	**2.00**	**3.27**	**4.21**	**3.03**	**8.62**	**3.54**	**5/8×3-1/3**
125×40	141.3×48.3	50.8	83	107	77	219	90	M16×85
5×2	**5.563×2.375**	**2.50**	**3.27**	**4.25**	**3.03**	**8.62**	**3.98**	**5/8×3-1/3**
125×50	141.3×60.3	63.5	83	108	77	219	101	M16×85
5x2-1/2	**5.563×3**	**2.76**	**3.66**	**4.53**	**3.03**	**8.62**	**4.61**	**5/8×3-1/3**
125×65	141.3×76.1	70	93	115	77	219	117	M16×85
5×3	**5.563×3.5**	**3.50**	**3.82**	**4.65**	**3.03**	**8.62**	**5.35**	**5/8×3-1/3**
125×80	141.3×88.9	89	97	118	77	219	136	M16×85
6×1	**6.250×1.327**	**1.50**	**4.45**	**4.00**	**3.58**	**9.17**	**2.99**	**9/16×3**
150×25	159×33.7	38	113	101.5	91	233	76	M14×75
6x1-1/4	**6.250×1.669**	**1.81**	**4.45**	**4.00**	**3.58**	**9.17**	**3.27**	**9/16×3**
150×32	159.0×42.4	46	113	101.5	91	233	83	M14×75
6x1-1/2	**6.250×1.9**	**2.09**	**4.41**	**4.00**	**3.58**	**9.17**	**3.54**	**9/16×3**
150×40	159.0×48.3	53	112	101.5	91	233	90	M14×75
6×2	**6.250×2.375**	**2.52**	**4.37**	**4.00**	**3.58**	**9.17**	**3.94**	**9/16×3**
150×50	159.0×60.3	64	111	101.5	91	233	100	M14×75
6x2-1/2	**6.250×3**	**3.15**	**4.37**	**4.15**	**3.58**	**9.17**	**4.61**	**5/8×3-1/3**
150×65	159.0×76.1	80	111	105.5	91	233	117	M16×85
6×3	**6.250×3.5**	**3.62**	**4.33**	**4.15**	**3.58**	**9.17**	**5.08**	**5/8×3-1/3**
150×80	159.0×88.9	92	110	105.5	91	233	129	M16×85
6×4	**6.250×4.5**	**4.65**	**3.81**	**4.33**	**3.58**	**9.17**	**6.18**	**5/8×3-1/3**
150×100	159.0×114.3	118	96.8	110	91	233	157	M16×85
6×1	**6.5×1.327**	**1.50**	**3.90**	**4.27**	**3.7**	**9.76**	**2.99**	**5/8×3-1/3**
150×25	165.1×33.7	38	99	108.5	94	248	76	M16×85
6x1-1/4	**6.5×1.669**	**1.75**	**4.41**	**4.72**	**3.7**	**9.76**	**3.31**	**5/8×3-1/3**
150×32	165.1×42.4	44.5	112	120	94	248	84	M16×85
6x1-1/2	**6.5×1.9**	**2.00**	**4.41**	**4.72**	**3.7**	**9.76**	**3.54**	**5/8×3-1/3**
150×40	165.1×48.3	50.8	112	120	94	248	90	M16×85
6×2	**6.5×2.375**	**2.50**	**4.37**	**4.76**	**3.7**	**9.76**	**3.98**	**5/8×3-1/3**
150×50	165.1×60.3	63.5	111	121	94	248	101	M16×85
6x2-1/2	**6.5×3**	**2.76**	**4.33**	**4.98**	**3.7**	**9.76**	**4.61**	**5/8×3-1/3**
150×65	165.1×76.1	70	110	126.5	94	248	117	M16×85
6×3	**6.5×3.5**	**3.50**	**4.33**	**5.10**	**3.7**	**9.76**	**5.35**	**5/8×3-1/3**
150×80	165.1×88.9	89	110	129.5	94	248	136	M16×85
6×4	**6.5×4.5**	**4.49**	**3.82**	**5.35**	**3.7**	**9.76**	**6.38**	**5/8×3-1/3**
150×100	165.1×114.3	114	97	136	94	248	162	M16×85
6×1	**6.625×1.327**	**1.50**	**4.41**	**4.27**	**3.82**	**9.76**	**2.99**	**5/8×3-1/3**
150×25	168.3×33.7	38	112	108.5	97	248	76	M16×85
6x1-1/4	**6.625×1.669**	**1.75**	**4.41**	**4.72**	**3.82**	**9.76**	**3.31**	**5/8×3-1/3**
150×32	168.3×42.4	44.5	112	120	97	248	84	M16×85
6x1-1/2	**6.625×1.9**	**2.00**	**4.41**	**4.72**	**3.82**	**9.76**	**3.54**	**5/8×3-1/3**
150×40	168.3×48.3	50.8	112	120	97	248	90	M16×85
6×2	**6.625×2.375**	**2.50**	**4.37**	**4.76**	**3.82**	**9.76**	**3.98**	**5/8×3-1/3**
150×50	168.3×60.3	63.5	111	121	97	248	101	M16×85
6x2-1/2	**6.625×3**	**2.76**	**4.33**	**5.04**	**3.82**	**9.76**	**4.61**	**5/8×3-1/3**
150×65	168.3×76.1	70	110	128	97	248	117	M16×85
6×3	**6.625×3.5**	**3.50**	**4.33**	**5.16**	**3.82**	**9.76**	**5.35**	**5/8×3-1/3**
150×80	168.3×88.9	89	110	131	97	248	136	M16×85
6×4	**6.625×4.5**	**4.49**	**3.82**	**5.49**	**3.82**	**9.76**	**6.38**	**5/8×3-1/3**
150×100	168.3×114.3	114	97	139.5	97	248	162	M16×85
8×1	**8.625×1.327**	**1.50**	**5.98**	**5.35**	**1.92**	**12.68**	**2.99**	**5/8×3-1/2**
200×25	219.1×33.7	38	152	136	125	322	76	M20×90
8x1-1/4	**8.625×1.669**	**1.75**	**5.98**	**5.79**	**1.92**	**12.68**	**3.31**	**5/8×3-1/2**
200×32	219.1×42.4	44.5	152	147	125	322	84	M20×90
8x1-1/2	**8.625×1.9**	**2.00**	**5.98**	**5.79**	**1.92**	**12.68**	**3.54**	**5/8×3-1/2**
200×40	219.1×48.3	50.8	152	147	125	322	90	M20×90
8×2	**8.625×2.375**	**2.50**	**5.43**	**5.79**	**1.92**	**12.68**	**3.98**	**5/8×3-1/2**
200×50	219.1×60.3	63.5	138	147	125	322	101	M20×90
8x2-1/2	**8.625×3**	**2.76**	**5.08**	**6.14**	**1.92**	**12.68**	**4.61**	**5/8×3-1/2**
200×65	219.1×76.1	70	129	156	125	322	117	M20×90
8×3	**8.625×3.5**	**3.50**	**5.31**	**6.24**	**1.92**	**12.68**	**5.35**	**5/8×3-1/2**
200×80	219.1×88.9	89	135	158.5	125	322	136	M20×90
8×4	**8.625×4.5**	**4.49**	**4.80**	**6.57**	**1.92**	**12.68**	**6.38**	**5/8×3-1/2**
200×100	219.1×114.3	114	122	167	125	322	162	M20×90

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31MG MECHANICAL TEE - GROOVED

- Ductile Iron ASTM A-536 Grade 65-45-12
- All grooved dimensions conform to ASME B1.20.1
- Finish available in standard orange paint or hot dipped galvanized (ASTM A-153)
- Gasket: Grade E – EPDM with operating temperature of -30F to 230F (-34C to 110C) and is marked by a green stripe
- Bolts are SAE J429 Grade 5
- Pressure rated up to 300psi
- For current listing/approval details contact a Titus representative

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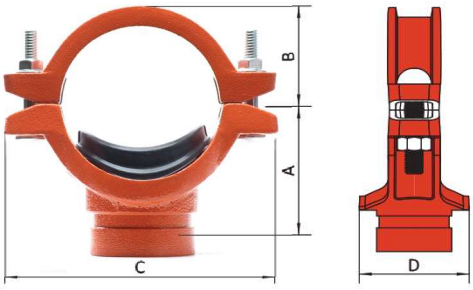
Nominal Size in/mm	Pipe O.D.	Hole Dia.∓ +0.13,-0 /+3.2,-0	Dimensions - in/mm				Bolt Size in/mm
			A	B	C	D	
2×1	**2.375×1.327**	**1.50**	**2.83**	**1.65**	**4.72**	**2.99**	**3/8×2-3/8**
50×25	60.3×33.7	38	72	42	120	76	M10×60
2x1-1/4	**2.375×1.669**	**1.75**	**2.85**	**1.65**	**4.72**	**3.31**	**3/8×2-3/8**
50×32	60.3×42.4	44.5	72.5	42	120	84	M10×60
2x1-1/2	**2.375×1.9**	**1.75**	**2.85**	**1.65**	**4.72**	**3.31**	**3/8×2-3/8**
50×40	60.3×48.3	44.5	72.5	42	120	84	M10×60
2-1/2x1	**2.875×1.327**	**1.50**	**3.07**	**1.85**	**5.63**	**2.99**	**1/2×2-5/8**
65×25	73×33.7	38	78	47	143	76	M12×65
2-1/2x1-1/4	**2.875×1.669**	**1.75**	**3.09**	**1.85**	**5.63**	**3.31**	**1/2×2-5/8**
65×32	73×42.4	44.5	78.5	47	143	84	M12×65
2-1/2x1-1/2	**2.875×1.9**	**2.00**	**3.09**	**1.85**	**5.63**	**3.54**	**1/2×2-5/8**
65×40	73×48.3	50.8	78.5	47	143	90	M12×65
2-1/2x1	**3×1.327**	**1.50**	**3.13**	**1.89**	**5.63**	**2.99**	**1/2×2-5/8**
65×25	76.1×33.7	38	79.5	48	143	76	M12×65
2-1/2x1-1/4	**3×1.669**	**1.75**	**3.15**	**1.89**	**5.63**	**3.31**	**1/2×2-5/8**
65×32	76.1×42.4	44.5	80	48	143	84	M12×65
2-1/2x1-1/2	**3×1.9**	**2.00**	**3.15**	**1.89**	**5.63**	**3.54**	**1/2×2-5/8**
65×40	76.1×48.3	50.8	80	48	143	90	M12×65
3×1	**3.5×1.327**	**1.50**	**3.37**	**2.17**	**6.22**	**2.99**	**1/2×2-5/8**
80×25	88.9×33.7	38	85.5	55	158	76	M12×65
3x1-1/4	**3.5×1.669**	**1.75**	**3.39**	**2.17**	**6.22**	**3.31**	**1/2×2-5/8**
80×32	88.9×42.4	44.5	86	55	158	84	M12×65
3x1-1/2	**3.5×1.9**	**2.00**	**3.39**	**2.17**	**6.22**	**3.54**	**1/2×2-5/8**
80×40	88.9×48.3	50.8	86	55	158	90	M12×65
3×2	**3.5×2.375**	**2.50**	**3.43**	**2.17**	**6.22**	**3.98**	**1/2×2-5/8**
80×50	88.9×60.3	63.5	87	55	158	101	M12×65
4×2	**4.25×2.375**	**2.52**	**3.64**	**2.44**	**6.77**	**3.54**	**1/2×2-5/8**
100×50	108×60.3	64	92.5	62	172	90	M12×65
4x2-1/2	**4.25×3**	**3.15**	**3.64**	**2.44**	**6.77**	**4.21**	**1/2×2-5/8**
100×65	108×76.1	80	92.5	62	172	107	M12×65
4×1	**4.5×1.327**	**1.50**	**3.86**	**2.56**	**7.13**	**2.99**	**1/2×2-3/4**
100×25	114.3×33.7	38	98	65	181	76	M12×70
4x1-1/4	**4.5×1.669**	**1.75**	**3.90**	**2.56**	**7.13**	**3.31**	**1/2×2-3/4**
100×32	114.3×42.4	44.5	99	65	181	84	M12×70
4x1-1/2	**4.5×1.9**	**2.00**	**3.90**	**2.56**	**7.13**	**3.54**	**1/2×2-3/4**
100×40	114.3×48.3	50.8	99	65	181	90	M12×70
4×2	**4.5×2.375**	**2.50**	**3.90**	**2.56**	**7.13**	**3.98**	**1/2×2-3/4**
100×50	114.3×60.3	63.5	99	65	181	101	M12×70
4x2-1/2	**4.5×2.875**	**2.76**	**3.90**	**2.56**	**7.13**	**4.61**	**1/2×2-3/4**
100×65	114.3×73	70	99	65	181	117	M12×70
4x2-1/2	**4.5×3**	**2.76**	**3.90**	**2.56**	**7.13**	**4.61**	**1/2×2-3/4**
100×65	114.3×76.1	70	99	65	181	117	M12×70
4×3	**4.5×3.5**	**3.50**	**3.90**	**2.56**	**7.13**	**5.35**	**1/2×2-3/4**
100×80	114.3×88.9	89	99	65	181	136	M12×70
5x1-1/2	**5.25×1.9**	**2.09**	**4.15**	**2.91**	**8.07**	**3.54**	**1/2×3**
125×40	133×48.3	53	105.5	74	205	90	M12×75
5×2	**5.25×2.375**	**2.52**	**4.15**	**2.91**	**8.07**	**3.94**	**1/2×3**
125×50	133×60.3	64	105.5	74	205	100	M12×75
5x2-1/2	**5.25×3**	**3.15**	**4.15**	**2.91**	**8.07**	**4.61**	**1/2×3**
125×65	133×76.1	80	105.5	74	205	117	M12×75
5×3	**5.25×3.5**	**3.62**	**4.15**	**2.91**	**8.07**	**5.08**	**1/2×3**
125×80	133×88.9	92	105.5	74	205	129	M12×75
5x1-1/4	**5.5×1.669**	**1.75**	**4.41**	**3.03**	**8.62**	**3.31**	**5/8×3-1/3**
125×32	139.7×42.4	44.5	112	77	219	84	M16×85
5x1-1/2	**5.5×1.9**	**2.00**	**4.41**	**3.03**	**8.62**	**3.54**	**5/8×3-1/3**
125×40	139.7×48.3	50.8	112	77	219	90	M16×85
5×2	**5.5×2.375**	**2.50**	**4.45**	**3.03**	**8.62**	**3.98**	**5/8×3-1/3**
125×50	139.7×60.3	63.5	113	77	219	101	M16×85
5x2-1/2	**5.5×2.875**	**2.76**	**4.45**	**3.03**	**8.62**	**4.61**	**5/8×3-1/3**
125×65	139.7×73	70	113	77	219	117	M16×85
5x2-1/2	**5.5×3**	**2.76**	**4.45**	**3.03**	**8.62**	**4.61**	**5/8×3-1/3**
125×65	139.7×76.1	70	113	77	219	117	M16×85
5×3	**5.5×3.5**	**3.50**	**4.45**	**3.03**	**8.62**	**5.35**	**5/8×3-1/3**
125×80	139.7×88.9	89	113	77	219	136	M16×85

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TITUS

31MG MECHANICAL TEE - GROOVED

(CONTINUED)



Nominal Size in/mm	Pipe O.D.	Hole Dia.∓ +0.13,-0 /+3.2,-0	Dimensions - in/mm				Bolt Size in/mm
			A	B	C	D	
5x1-1/2	**5.563×1.669**	**1.75**	**4.41**	**3.03**	**8.62**	**3.31**	**5/8×3-1/3**
125×40	141.3×42.4	44.5	112	77	219	84	M16×85
5x1-1/2	**5.563×1.9**	**2.00**	**4.41**	**3.03**	**8.62**	**3.54**	**5/8×3-1/3**
125×40	141.3×48.3	50.8	112	77	219	90	M16×85
5×2	**5.563×2.375**	**2.50**	**4.45**	**3.03**	**8.62**	**3.98**	**5/8×3-1/3**
125×50	141.3×60.3	63.5	113	77	219	101	M16×85
5×2-1/2	**5.563×2.875**	**2.76**	**4.45**	**3.03**	**8.62**	**4.61**	**5/8×3-1/3**
125×65	141.3×73	70	113	77	219	117	M16×85
5×2-1/2	**5.563×3**	**2.76**	**4.45**	**3.03**	**8.62**	**4.61**	**5/8×3-1/3**
125×65	141.3×76.1	70	113	77	219	117	M16×85
5×3	**5.563×3.5**	**3.50**	**4.45**	**3.03**	**8.62**	**5.35**	**5/8×3-1/3**
125×80	141.3×88.9	89	113	77	219	136	M16×85
6×2	**6.25×2.375**	**2.52**	**4.65**	**3.58**	**9.17**	**3.94**	**9/16×3**
150×50	159×60.3	64	118	91	233	100	M14×75
6x2-1/2	**6.25×3**	**3.15**	**4.65**	**3.58**	**9.17**	**4.61**	**9/16×3**
150×65	159×76.1	80	118	91	233	117	M14×75
6×3	**6.25×3.5**	**3.62**	**4.65**	**3.58**	**9.17**	**5.08**	**9/16×3**
150×80	159×88.9	92	118	91	233	129	M14×75
6×4	**6.25×4.25**	**4.09**	**4.70**	**3.58**	**9.17**	**5.63**	**9/16×3**
150×100	159.0×108.0	104	119.5	91	233	143	M14×75
6×4	**6.25×4.5**	**4.37**	**4.70**	**3.58**	**9.17**	**6.02**	**9/16×3**
150×100	159.0×114.3	111	119.5	91	233	153	M14×75
6×1-1/4	**6.5×1.669**	**1.75**	**4.92**	**3.7**	**9.76**	**3.31**	**5/8×3-1/3**
150×32	165.1×42.4	44.5	125	94	248	84	M16×85
6x1-1/2	**6.5×1.9**	**2.00**	**4.92**	**3.7**	**9.76**	**3.54**	**5/8×3-1/3**
150×40	165.1×48.3	50.8	125	94	248	90	M16×85
6×2	**6.5×2.375**	**2.50**	**4.92**	**3.7**	**9.76**	**3.98**	**5/8×3-1/3**
150×50	165.1×60.3	63.5	125	94	248	101	M16×85
6×2-1/2	**6.5×2.875**	**2.76**	**4.92**	**3.7**	**9.76**	**4.61**	**5/8×3-1/3**
150×65	165.1×73	70	125	94	248	117	M16×85
6×2-1/2	**6.5×3**	**2.76**	**4.92**	**3.7**	**9.76**	**4.61**	**5/8×3-1/3**
150×65	165.1×76.1	70	125	94	248	117	M16×85
6×3	**6.5×3.5**	**3.50**	**4.92**	**3.7**	**9.76**	**5.35**	**5/8×3-1/3**
150×80	165.1×88.9	89	125	94	248	136	M16×85
6×4	**6.5×4.25**	**4.49**	**5.08**	**3.7**	**9.76**	**6.38**	**5/8×3-1/3**
150×100	165.1×108	114	129	94	248	162	M16×85
6×4	**6.5×4.5**	**4.49**	**5.08**	**3.7**	**9.76**	**6.38**	**5/8×3-1/3**
150×100	165.1×114.3	114	129	94	248	162	M16×85
6x1-1/4	**6.625×1.669**	**1.75**	**4.92**	**3.82**	**9.76**	**3.31**	**5/8×3-1/3**
150×32	168.3×42.4	44.5	125	97	248	84	M16×85
6x1-1/2	**6.625×1.9**	**2.00**	**4.92**	**3.82**	**9.76**	**3.54**	**5/8×3-1/3**
150×40	168.3×48.3	50.8	125	97	248	90	M16×85
6×2	**6.625×2.375**	**2.50**	**4.92**	**3.82**	**9.76**	**3.98**	**5/8×3-1/3**
150×50	168.3×60.3	63.5	125	97	248	101	M16×85
6x2-1/2	**6.625×2.875**	**2.76**	**5.00**	**3.82**	**9.76**	**4.61**	**5/8×3-1/3**
150×65	168.3×73	70	127	97	248	117	M16×85
6x2-1/2	**6.625×3**	**2.76**	**5.00**	**3.82**	**9.76**	**4.61**	**5/8×3-1/3**
150×65	168.3×76.1	70	127	97	248	117	M16×85
6×3	**6.625×3.5**	**3.50**	**5.00**	**3.82**	**9.76**	**5.35**	**5/8×3-1/3**
150×80	168.3×88.9	89	127	97	248	136	M16×85
6×4	**6.625×4.5**	**4.49**	**5.08**	**3.82**	**9.76**	**6.38**	**5/8×3-1/3**
150×100	168.3×114.3	114	129	97	248	162	M16×85
8×2	**8.625×2.375**	**2.50**	**5.98**	**1.92**	**12.68**	**3.98**	**5/8×3-1/2**
200×50	219.1×60.3	63.5	152	125	322	101	M20×90
8x2-1/2	**8.625×2.875**	**2.76**	**6.06**	**1.92**	**12.68**	**4.61**	**5/8×3-1/2**
200×65	219.1×73	70	154	125	322	117	M20×90
8x2-1/2	**8.625×3**	**2.76**	**6.06**	**1.92**	**12.68**	**4.61**	**5/8×3-1/2**
200×65	219.1×76.1	70	154	125	322	117	M20×90
8×3	**8.625×3.5**	**3.50**	**6.06**	**1.92**	**12.68**	**5.35**	**5/8×3-1/2**
200×80	219.1×88.9	89	154	125	322	136	M20×90
8×4	**8.625×4.25**	**4.49**	**6.14**	**1.92**	**12.68**	**6.38**	**5/8×3-1/2**
200×100	219.1×108	114	156	125	322	162	M20×90
8×4	**8.625×4.5**	**4.49**	**6.14**	**1.92**	**12.68**	**6.38**	**5/8×3-1/2**
200×100	219.1×114.3	114	156	125	322	162	M20×90