



**PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION**

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**CITY OF CHICO ENGINEERING
DESIGN BULLETIN**

**CATEGORY: 3 Improvement Plans, Sewer
TITLE: 3.3.2 R2 Lateral Connection**

DATE: December 5, 2014

The Chico Municipal Code (C.M.C.) currently provides no approved method for connecting a new sewer lateral to an existing sewer main. The following are the approved methods. A revision to the C.M.C. will be submitted to the City Council in the near future codifying these methods.

Under no circumstances will products be accepted that project past the inner wall of the pipe.

Fernco Flexible Tap Saddles – Allowed for all diameters and types of pipe material. Pressure kit is required.

Romac Industries, Inc. Style “CB” Sewer Saddle. - Allowed for all diameters and types of pipe material.

Inserta Tee – Allowed for thick walled pipe (i.e. clay and concrete) with diameters of 15-inches or greater

JM Eagle PVC Tees and Wyes – Allowed for P.V.C. pipe with diameters of 6-inches through 12-inches.

Mission Rubber Company LLC T-Flex Sewer Saddle – Allowed for all diameters and types of pipe material.

Other products may be submitted to the City for consideration. However, the City reserves the right to devote as much time as it deems necessary to make the determination.

ROMAC INDUSTRIES, INC.

STYLE "CB"™ SEWER SADDLE*

SUBMITTAL INFORMATION

MATERIALS

Casting	The saddle body is cast from ductile (nodular) iron, meeting or exceeding ASTM A 536, Grade 65-45-12.
Gasket	Gasket is made from virgin Styrene Butadiene Rubber (SBR) compounded for water and sewer service in accordance with ASTM D 2000 MBA 710.
Pipe Stop	A pipe stop is molded into the inside wall of the gasket. This pipe stop can hold up to 1000 lbs of force along the branch.
Strap	Type 304 (18-8) Stainless Steel, 3 1/2 inches wide to spread out clamping forces on the pipe. M.I.G. and T.I.G welds. Passivated for corrosion resistance.
Bolts and Nuts	Type 304 (18-8) Stainless Steel, passivated for resistance to corrosion. 1/2" National Coarse roll thread. Nuts coated to prevent galling.
Coatings	Shop coat applied to cast parts for corrosion protection in transit. Fusion bonded epoxy, liquid epoxy and other coatings available on request.
Washers	Acetyl and stainless steel washers are used to reduce friction.

PRESSURE RATING Designed for sewer service, the Style CB saddle will hold a 7 psi air test when properly installed on a pipe within the correct outside diameter range.

SIZES See catalog.

* Patent #4494780

Romac Document Number 20-8-0011

9/04

This information is based on the best data available at the date printed above, please check with Romac Engineering Department for any updates or changes.



A ROMAC ORIGINAL
- 1981 -



Patent #4494780

Design Advantages:

- **Inventory Reduction:** Unique gaskets fit wide range of diameters.
- **Ease of Installation:** Saddle can be installed by unskilled labor, using a socket or open end wrench. Built-in stop prevents blockages due to inadvertant insertion of branch into main.
- **Superior Strap:** Strong 304 stainless steel band GMAW & GTAW welded to roll threaded 304 stainless bolts adjusts over a wide range. Clamping force is well distributed by 3 1/2" width.
- **Flexibility:** Gasket allows considerable deflection due to earth movement, while large sealing surface and wide band strongly resist displacement.
- **Reliability:** Continuous rubber connection between rim and branch eliminates potential leak spots. Saddles have been tested to pressures well in excess of typical service test requirements.

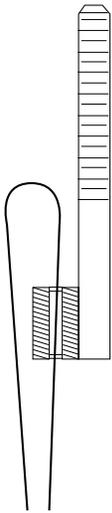
Note: A pipe stop capable of withstanding 1000 pounds of thrust is molded into the CB saddle gasket. Care must be taken during system design and installation to assure that this thrust limit is not exceeded.



Detail Specifications for Romac "CB"™ Sewer Saddles

Adjustable Strap

Bolts are 1/2" UNC rolled thread, lubricant coated bolt or nut, stainless steel per ASTM A 193, type 304. Nuts are stainless steel per ASTM A 194, type 304. Washers are stainless steel per ASTM A 240, type 304. Band is 3 1/2" wide for spreading out clamp force on pipe. The stainless welds are fully passivated¹. Excess strap goes between pipe and band.



Gasket

SBR per ASTM D 2000 MBA 710, compounded for water and sewer service. Gaskets are especially formulated with antioxidant/antiozonant agent to increase shelf life.

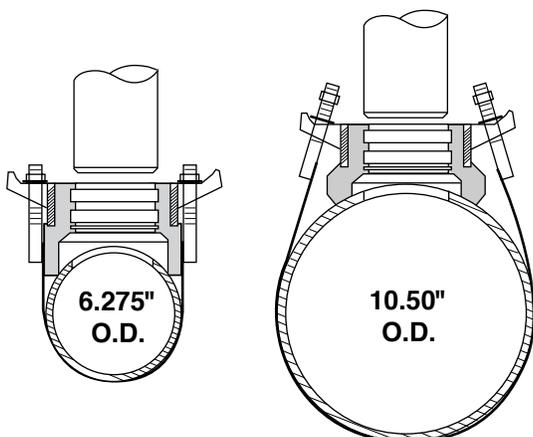


Saddle Casting

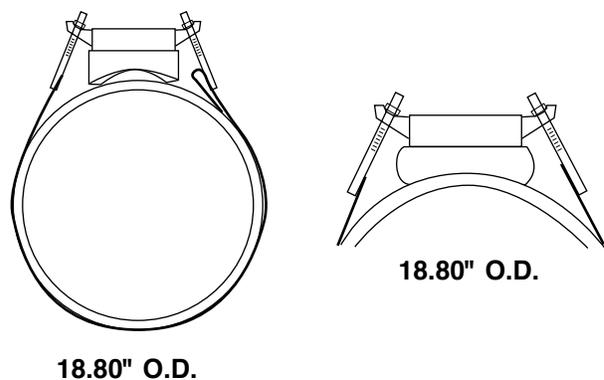
Ductile iron per ASTM 536, Grade 65-45-12. Protected with a yellow corrosion-resistant paint.

¹ **Passivated:** chemically treated after welding to produce a highly corrosion resistant coating.

Same saddle conforming to different outside diameters.



Saddle conforming to pipe.





Style "CB"™ Sewer Saddle

Material Specifications

Castings: Ductile iron per ASTM 536, Grade 65-45-12. Protected with a yellow shopcoat.

Adjustable Strap: 3 1/2" wide, stainless steel per ASTM A 240, type 304.

Bolts: 1/2" UNC rolled thread, lubricant coated, stainless steel per ASTM A 193, type 304.

Nuts: Stainless steel per ASTM A 194, type 304.

Washers: Stainless steel per ASTM A 240, type 304 and plastic lubricating washers.

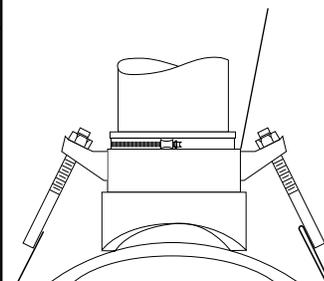
Gasket: SBR per ASTM D 2000 MBA 710, compounded for water and sewer service. Other compounds available on request.



CB-4.63UN
Patent #4494780

NOM. BRANCH SIZE	NOM. PIPE SIZE	RANGE	BRANCH TYPE	BRANCH O.D.	CATALOG NUMBER	LIST PRICE	ADD-ON EPOXY	APPROX. WEIGHT (lbs.)
4"	6"-12" 48" Strap	2 6.27-14.40 Regular Gasket	PVC Sewer	4.215	CB-4.215	\$113.96		10 #
			Tyseal	4.28	CB-4.28			
			C.I. Soil-No Hub	4.38	CB-4.38			
			PVC	4.50	CB-4.50			
			Universal ¹	4.20-4.80	CB-4.80UN ¹			
			Clay ¹	5.00-5.38	CB-5.38 ¹			
	14"-24" 96" Strap	14.40-25.80 Large O.D. Gasket	PVC Sewer	4.215	CB-4.215LS	144.91	\$34.66	11 #
			Tyseal	4.28	CB-4.28LS			
			C.I. Soil-No Hub	4.38	CB-4.38LS			
			PVC	4.50	CB-4.50LS			
			Universal ¹	4.20-4.80	CB-4.80UNLS ¹			
			Clay ¹	5.00-5.38	CB-5.38LS ¹			
	24"-48" 192" Strap	25.80-54.00 Large O.D. Gasket	PVC Sewer	4.215	CB-4.215XLS	268.96		13 #
			Tyseal	4.28	CB-4.28XLS			
			C.I. Soil-No Hub	4.38	CB-4.38XLS			
PVC			4.50	CB-4.50XLS				
Universal ¹			4.20-4.80	CB-4.80UNXLS ¹				
Clay ¹			5.00-5.38	CB-5.38XLS ¹				
6"	8"-12" 48" Strap	2 8.00-14.40 Regular Gasket	PVC Sewer	6.27-6.30	CB-6.30	151.91		12 #
			C.I. Soil-No Hub					
			A/C M.E. Sewer	6.66	CB-6.66			
			Universal ¹	6.27-6.66	CB-6.66UN ¹			
			Cast Iron-D.I.	6.90	CB-6.90			
			Clay ¹	7.19-7.56	CB-7.56 ¹			
	14"-24" 96" Strap	14.40-25.80 Large O.D. Gasket	PVC Sewer	6.27-6.30	CB-6.30LS	181.40	52.43	13 #
			C.I. Soil-No Hub					
			A/C M.E. Sewer	6.66	CB-6.66LS			
			Universal ¹	6.27-6.66	CB-6.66UNLS ¹			
			Cast Iron-D.I.	6.90	CB-6.90LS			
			Clay ¹	7.19-7.56	CB-7.56LS ¹			
	24"-48" 192" Strap	25.80-54.00 Large O.D. Gasket	PVC Sewer	6.27-6.30	CB-6.30XLS	305.45		15 #
			C.I. Soil-No Hub					
			A/C M.E. Sewer	6.66	CB-6.66XLS			
Universal ¹			6.27-6.66	CB-6.66UNXLS ¹				
Cast Iron-D.I.			6.90	CB-6.90XLS				
Clay ¹			7.19-7.56	CB-7.56XLS ¹				

Stainless Steel
Hose Clamp



¹ CB Sewer Saddles for Universal and Clay pipe include stainless steel hose clamp.

² Regular gaskets are NOT interchangeable with large gaskets.

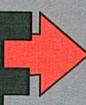
PARTS LIST

BRANCH SIZE	SIZE	GASKET	SADDLE CASTING	SLIDING BOLT	STRAP
4"	6-12"	\$37.15	\$39.96	\$13.58	REG (48") \$36.85
	14-24"	50.67			LS (96") 54.28
	24-48"	50.67			
6"	8-12"	65.42	49.64	13.58	
	14-24"	77.48			XLS (192") 178.33
	24-48"	77.48			

To Order: Specify catalog number.

Example: To fit 4" branch to 6" -12" nominal pipe with branch 4.20 - 4.80, order

CB-4.80UN

INSERTA TEE 



THE LATERAL CONNECTION SOLUTION[®]

INSERTA TEE® DESCRIPTION

INSERTA TEE is a three piece service connection consisting of a PVC Hub, Rubber Sleeve and Stainless Steel Band. INSERTA TEE is compression fit into the cored wall of a mainline and requires no special tooling. INSERTA TEEs are designed to connect 4" (100 mm) through 30" (750 mm) laterals to all known solidwall, profile, closed profile, corrugated pipe and manhole structures manufactured today.

INSERTA TEE for NEW & REHAB installations allows:

- Reduction in labor hours and pipe materials
- Services to be connected where needed
- Easier grading of mainline
- Matching of the internal radius of your pipe or structure for minimal penetration

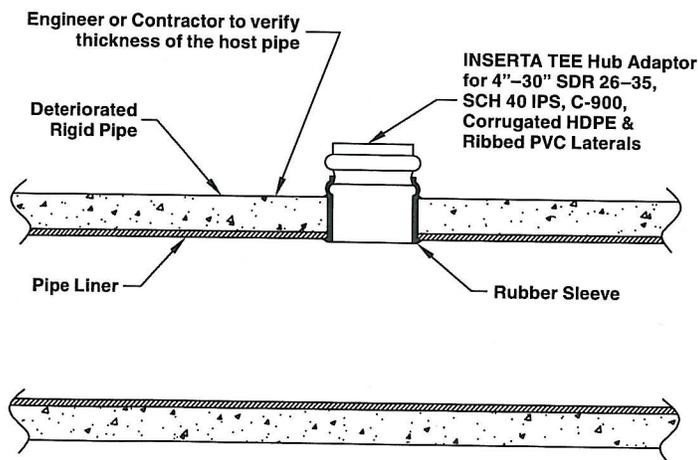
INSERTA TEE for TAPPING EXISTING LINES without disturbing the bedding while eliminating:

- Glues, epoxies and grout
- Tightening and retightening of bands around mainline
- Awkward gaskets

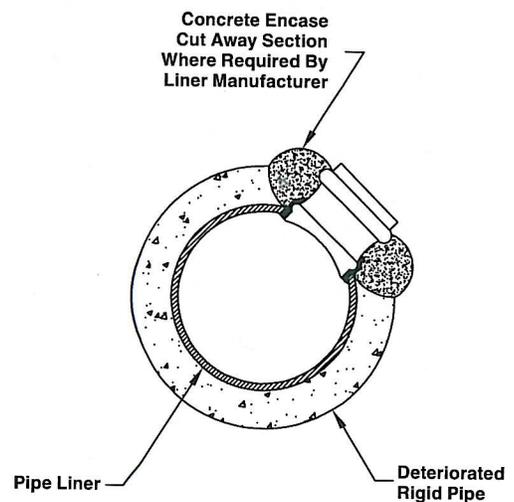
When Sliplining, Pipe Bursting and Relining, INSERTA TEE allows the following:

- Compression fitting directly into both mainline and new liner or just into new liner
- Simple installation with no special equipment required
- For Pipe Bursting the connection is made directly into solid wall PE and PVC pipe

Detail for coring—both the host pipe and the liner



Detail for coring—directly into the liner



Applications:

- | | |
|----------------------------|---------------------------|
| ■ Sanitary Sewers | ■ Storm Sewers |
| ■ Pipe Bursting (HDPE/PVC) | ■ Sliplining |
| ■ Fold-and-Formed Products | ■ Cured-In-Place Products |
| ■ Manholes | ■ Wet Wells |
| ■ Drainage | ■ Irrigation |
| ■ Catch Basins | ■ Electrical Vaults |

FITS ANY MAINLINE OR STRUCTURE

Stainless Steel Band



Rubber Sleeve

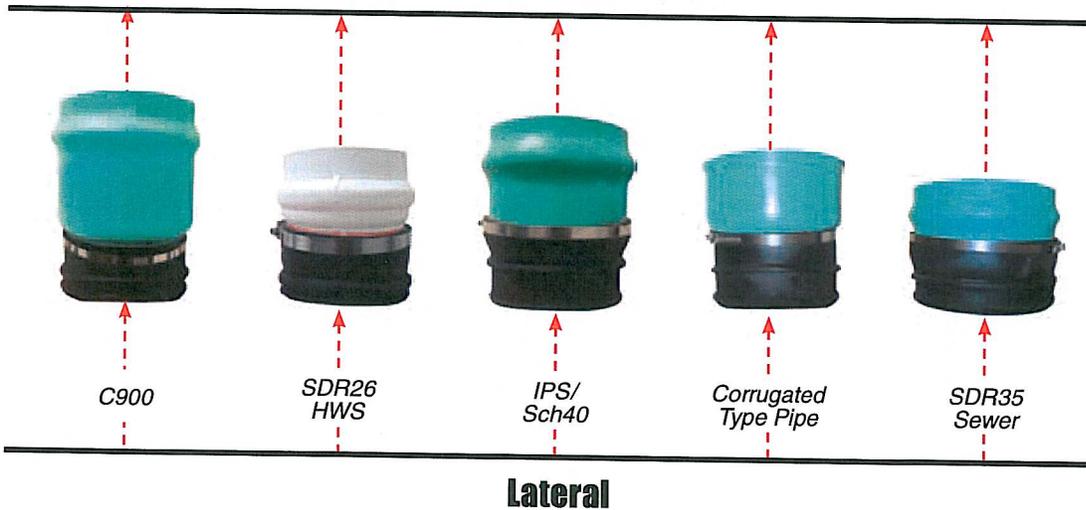


Gasketed PVC Hub

SPECIFICATIONS

- Rubber SleeveASTM F477
- Band301 SS
- Screw305 SS
- Housing301 SS
- GasketASTM F477

Any Mainline or Structure



Allow longer lead times for custom fittings such as cast iron or ductile iron.

INSERTA TEE fittings for all gravity flow pipe and manholes

- | | | | |
|--------------|-----------------|------------------|--------------|
| Ductile Iron | Spirolite | Ultra Rib™ | Pro 21® |
| Fiberglass | Hi Q®/Sure-Lok® | PermaLok® | Polyethylene |
| PVC | Vylon® | Corrugated Metal | Truss® |
| Ultra Corr™ | N-12® | Solflo® Max | A2000® |
| GOLDFLO® | Kor-Flo™ | Concrete | Clay |
| Weholite® | Asbestos Cement | N-12® HP | SaniTite® HP |
| DuroMaxx® | | | |

INSERTA TEE construction varies with pipe type and size.
For pipe not listed, contact our engineering department.

EASY, FAST & WATERTIGHT

Coring Machine

INSERTA FITTING's electric coring machine is designed for fast and efficient operation for coring hole sizes up to 30" (750 mm) in any type of pipe.

Recommended for all concrete, clay, fiberglass, ductile iron and also works well with plastic pipe connections over 10".



Coring Machine

Diamond Bits

Our diamond bits are of the highest quality to ensure maximum holes per bit.

Diamond bits are recommended for concrete, clay, fiberglass and ductile iron.

Hole Saws

Our unique designed hole saws allow the user to core fast, smooth and clean holes.

For more detailed information on hole saws, refer to the INSERTA TEE Hole Saws Brochure (#10791).



Handheld Drills



Hole Saw Sizing Chart

INSERTA TEE Size	Hole Saw Size
4" (100 mm)	4 1/2" (114 mm)
6" (150 mm)	6 1/2" (165 mm)
8" (200 mm)	8 3/4" (222 mm)
10" (250 mm)	10 7/8" (276 mm)
12" (300 mm)	12 7/8" (327 mm)
15" (375 mm)	15 13/16" (402 mm)
18" (450 mm)	19 3/16" (503 mm)
21" (525 mm)	22 9/16" (573 mm)
24" (600 mm)	25 5/16" (643 mm)
27" (675 mm)	28 1/2" (724 mm)
30" (750 mm)	32 17/32" (826 mm)



TESTING INFORMATION*

Northwest Testing Laboratory; Portland, Oregon

Reference Document: ASTM D3212

A 4" INSERTA TEE was installed into an 8" profile pipe with the following results:

- Pressure @ 16.5 psig for 10 minutes
- Vacuum to 22" Hg for 10 minutes
- Back to room pressure
- Vacuum to 22" Hg for 10 minutes
- No leakage
 - Pipe Deflected 5%
 - Pressure @ 10.8 psig for 10 minutes
 - No leakage

A 4" INSERTA TEE was installed into an 8" smooth wall PVC pipe with the following results:

- Pressure @ 28 psig for 5 minutes
- No leakage

INSERTA TEEs were installed into smooth wall PVC and concrete pipe with the following results:

- Pressure @ 13 psig for 10 minutes
- No leakage

Independent Testing by Major Pipe Manufacturers

Reference Document: ASTM D3212

A 4" INSERTA TEE was installed into a 10" profile pipe with the following results:

- Pressure @ 12 psig for 50 hours
- No leakage

A 6" INSERTA TEE was installed into a 12" profile pipe with the following results:

- Pressure @ 12 psig for 24 hours
- No leakage

A 4" INSERTA TEE installed in 6"-12" solid wall PVC, a 6" INSERTA TEE installed in 8"-12" solid wall PVC and an 8" INSERTA TEE installed in 10"-12" solid wall PVC with the following results:

- Pressure @ 10.8 psig for 10 minutes
- No leakage

INSERTA TEEs (4", 6" and 8") installed in SaniTite HP pipe with the following results:

- Pressure @ 10.8 psig for 10 minutes
- No leakage

**This is highlighted testing on common sizes. Testing on additional size combinations available on request.*

THE LATERAL CONNECTION SOLUTION®



INSERTA TEE® PRODUCT SPECIFICATION

Scope

This specification describes 4- through 30-inch (100 to 750 mm) INSERTA TEE service connections for use in gravity-flow sewer and drainage applications.

Product Requirements

INSERTA TEE service connections shall consist of a PVC hub, rubber sleeve and stainless steel band. Connection shall be a compression fit into the cored wall of a mainline pipe. Hub shall be made from heavy-duty PVC material. Stainless steel clamping assembly shall be made from minimum 301 grade steel. Rubber sleeve and gasket, when applicable, shall meet the requirements of ASTM F477. Gaskets shall be installed by the manufacturer. The water-based solution provided by the manufacturer shall be used during assembly. *Do not use pipe lube.*

The INSERTA TEE can be installed into any mainline pipe or structure. Connection hubs are available to connect to: corrugated polyethylene, corrugated polypropylene, PVC C900, SDR 26 HWS, SDR 35 (gasketed bell, SWR spigot & solvent weld bell), IPS/Sch 40 (gasketed bell & solvent weld bell) and corrugated PVC. Custom pipe types available.

Joint Performance

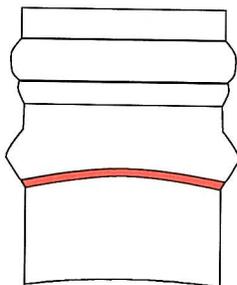
INSERTA TEE product includes a watertight bell connection meeting the requirements of ASTM D3212.

Field Pipe and Joint Performance

To assure watertightness, field performance verification may be accomplished by testing in accordance with ASTM F2487, ASTM C969 or ASTM F1417. Appropriate safety precautions must be used when field-testing any pipe material. Contact the manufacturer for recommended leakage rates.

Installation

Installation shall be in accordance with manufacturer's recommended installation guidelines. Backfill around the INSERTA TEE service connection shall be of the same material type and compaction level as specified for the mainline pipe installation. Contact your local representative or visit the website at www.insertatee.com for a copy of the latest installation guidelines.



Product configuration & availability subject to change without notice. Product detail may differ slightly from actual product appearance.

Inserta Fittings Co. p 503.357.2110 | f 503.359.5417 | sales@insertatee.com | insertatee.com

Inserta Fittings' Terms and Condition of Sale are available on the website, www.insertatee.com. INSERTA TEE is a registered trademark Inserta Fittings Co. N-12, N-12 HP and SaniTite HP are registered trademarks of Advanced Drainage Systems, Inc. Hi-O and Sure-Lok are registered trademarks of Hancor, Inc. Truss, A2000 and DuroMaxx are registered trademarks of Contech. GOLDFLO is a registered trademark of Prinsco, Inc. Ultra Corr™ and Ultra Rib™ are registered trademarks of JM Eagle™. Kor-Flo™ is a registered trademark of Royal Group. Permalok is a registered trademark of Permalok Corporation. Pro-21 is a registered trademark of Diamond Plastics Corporation. Vylon is a registered trademark of Prime Conduit. Weholite is a registered trademark of KWH Pipe. Sofflo Max is a registered trademark of Soleno. © 2011 Inserta Fittings Co. (AD390511) BRO #10790_05.11

PVC GASKETED SEWER FITTINGS

MEETS ASTM D3034

PRICE LIST



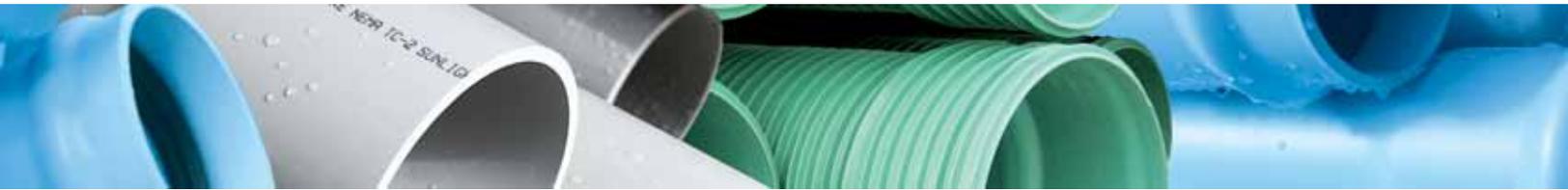
*Building essentials
for a better tomorrow™*



PVC GASKETED SEWER FITTINGS

MEETS ASTM D3034

PRICE LIST



PVC GASKETED SEWER FITTINGS

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01

PVC GASKETED SEWER FITTINGS

DESCRIPTION

JM Eagle™ offers a complete line of Polyvinyl Chloride (PVC) sewer fittings for use with JM Eagle™ PVC Ring-Tite™ Gravity Sewer pipe. Our line of injection molded PVC fittings is available in sizes 4" through 8". JM Eagle™ PVC sewer fittings are assembled with gasketed bell to spigot joint configurations and are available in a variety of shapes including Tees, Wyes, Elbows and other designs.



APPLICATIONS

JM Eagle™ PVC sewer pipe and fittings are suitable for conveying domestic sanitary sewage as well as certain industrial wastes within the chemical compatibility of PVC.

The growing demand for an effective all-out attack on water pollution highlights the need for improved sanitary sewage collection systems. A modern system needs pipe and fittings with improved design for reserve strength.

QUALITY CONTROL

JM Eagle™ fittings are tested in accordance with the provisions of ASTM D3034 and subject to inspection by our quality control inspectors, throughout every step of the manufacturing process.

JM Eagle's quality management system is ISO 9001:2000 registered. Copies of the registration certificates are available on our website at <http://www.jmeagle.com>.

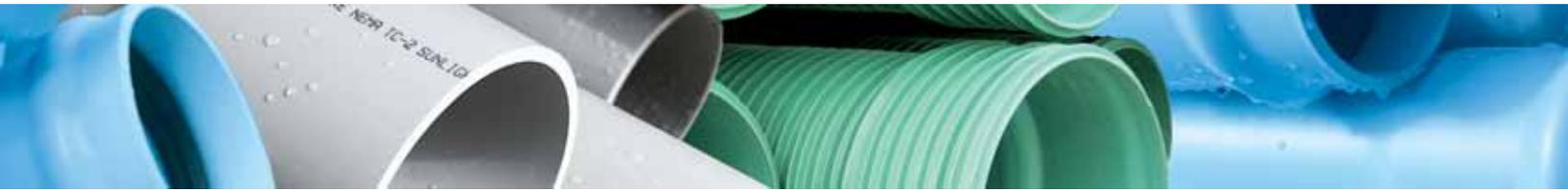
CORROSION RESISTANCE

JM Eagle™ PVC sewer fittings are unaffected by fluids found in ordinary domestic sewage. They are immune to domestic sewer gases including sulfuric acid generated by the completion of the hydrogen sulfide cycle.

Additionally, they are not affected by corrosive soil, either alkaline or acidic. JM Eagle™ PVC sewer fittings have excellent resistance to abrasion, gouging and scoring as compared to most common piping materials.

FLOW CAPACITY

JM Eagle™ Ring-Tite™ PVC sewer fittings offer a smooth interior and factory-made close tolerance joints providing a Manning "n" coefficient of .009. High-carrying capacity makes possible the use of flatter grades or smaller diameter pipe.



SAVE IN HANDLING COSTS

All sizes can easily be handled manually, so there is no need for costly installation equipment. Our “locked-in” Ring-Tite™ joint prevents rolled gaskets and makes assembly quick and easy.

LIGHT WEIGHT

A 4" SDR 35 Tee weighs approximately 1.5 pounds. That makes it easy to load, easy to transport, and easy to handle because it goes into the ground quickly - thus saving on installation costs.

JM Eagle™ lightweight fittings allow for easier, faster, and less costly installations, while PVC’s flow resistance provides higher flow capacity in contrast to other fitting products.

For these reasons, it is easily understandable why JM Eagle™ is the only name you need to know when choosing fittings.

SERVICE LIFE

Because it is nonmetallic, the fitting does not lose strength due to either water corrosion or external galvanic soil conditions.

A uniform minimum pipe stiffness means no weak links. Pipe stiffness provides the strength needed at that critical time when the pipe is first being installed in the trench and undergoing bedding and backfill. This allows for the design and construction of PVC gravity sewer systems (4"–8") consistent with best engineering practices.

INSTALLATION

JM Eagle™ offers a line of PVC SDR 35 sewer fittings to be used with PVC Ring-Tite™ SDR 35 sewer pipe. Rubber “locked-in” gasketed Tee saddles and Wye saddles are available for field service line taps into previously installed PVC sewer lines, which minimize the need for field solvent welding. Through the large network of JM Eagle™ distributors, adaptors are available to connect JM Eagle™ Ring-Tite™ PVC sewer pipe to other pipe materials. Products should be installed in accordance with JM Eagle™ Publication JME-05B, “Ring-Tite™ Gravity Sewer Installation Guide.”



02

SHORT FORM SPECIFICATION

SCOPE

This specification designates general requirements for unplasticized polyvinyl chloride (PVC) Plastic Gravity Sewer Fittings with integral bell and/or spigot joints for the conveyance of domestic sewage in accordance with ASTM D3034.

MATERIALS

All fittings meet the requirements of ASTM specification D3034 for 4" through 8" SDR 35 and are listed to the Uniform Plumbing (U.P.) code. All fittings shall be made from virgin PVC compound and/or the manufacturer's own clean reworked material to provide physical and mechanical properties that equal or exceed cell class 12454 as defined in ASTM D1784.

FITTINGS

All fittings shall be suitable for use as gravity sewer conduit. Provisions must be made for expansion and contraction at each joint with an elastomeric ring. The joint design meets qualification requirements of ASTM D3212, under both 25 ft of head pressure and 22 in. Hg vacuum. All fittings and accessories are manufactured and furnished by the pipe supplier or approved equal and have bell and/or spigot configurations compatible with that of the pipe. Sizes and dimensions shall be as shown in this specification. Pipe installation and usage shall be in compliance with the JM Eagle™ Publication JME-05B, "Ring-Tite™ Gravity Sewer Installation Guide."

DROP IMPACT TEST

Fittings are subjected to impact testing from a free falling Top A (20-lb.) and flat plate holder B in accordance with ASTM method of test D2444. No shattering or splitting (denting is not a failure) that can be seen by the naked eye is acceptable when the impact energy is applied. Fittings are exposed to ongoing heat reversion tests as well.

SIZE (IN)	IMPACT STRENGTH (FT/LBF)
4	50
6	75
8	75

PIPE LOAD SUPPORT

Fittings are subjected to this test requirement per ASTM Specification F1336. There shall be no cracking or separation of the fitting, and the pipe spigot shall not protrude into the waterway of the fitting.

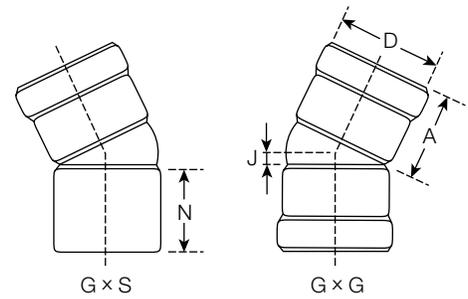
SIZE (IN)	LOAD (LBM)
4	1320
6	1970
8	2630

HEAT REVERSION

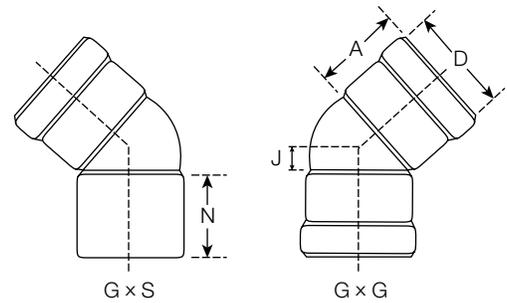
Fittings are subjected to this test requirement per test method ASTM F610. The fitting shall not split, delaminate, or show weld line separation of more than 50% of the wall thickness at the point of penetration.

DIMENSIONS

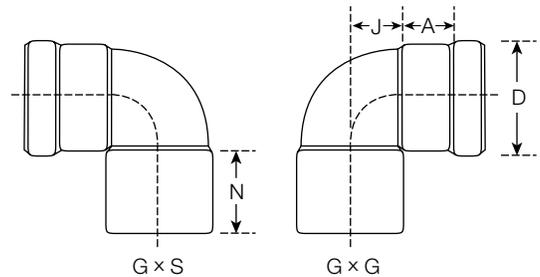
22.5° ELBOW			
D	A	J	N
4	2.900	0.750	2.920
6	3.500	1.125	4.500
8	4.100	—	—



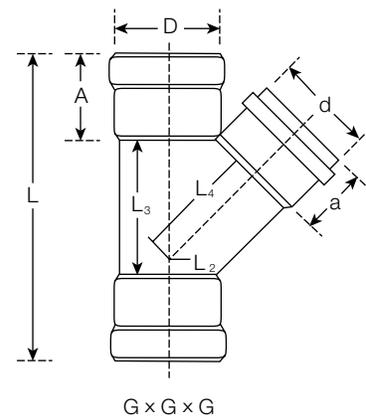
45° ELBOW			
D	A	J	N
4	2.900	1.125	3.370
6	3.500	1.875	5.160
8	4.100	2.000	6.250



90° ELBOW			
D	A	J	N
4	2.900	2.215	4.635
6	3.500	3.292	7.042
8	4.100	4.394	8.640



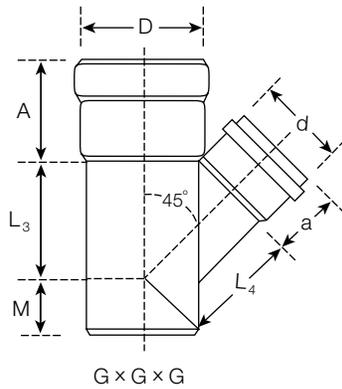
45° WYE						
Dxd	L ₄	L ₃	L ₂	L	A	a
4x4x4	5.298	5.123	1.000	11.923	2.900	2.900
6x6x4	6.968	6.280	0.315	13.595	3.500	2.900
6x6x6	7.688	7.875	1.750	16.615	3.500	3.500
8x8x4	9.125	8.875	—	17.075	4.100	2.900
8x8x6	9.660	8.875	0.868	17.942	4.100	3.500
8x8x8	10.535	10.190	2.200	20.590	4.100	4.100



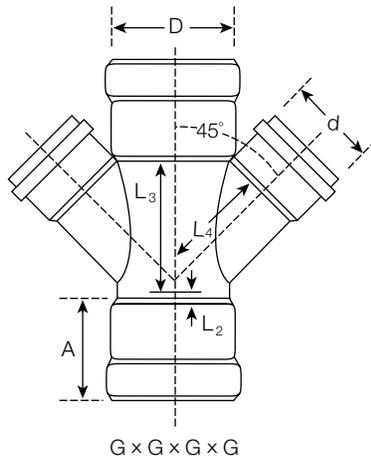


DIMENSIONS

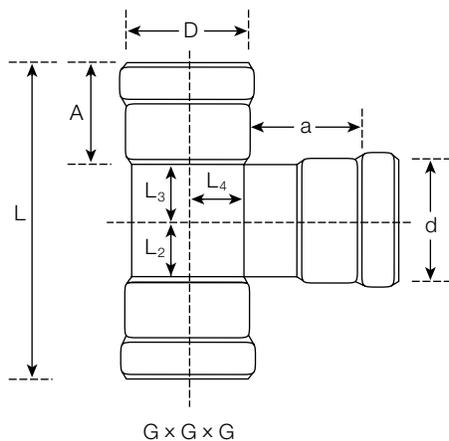
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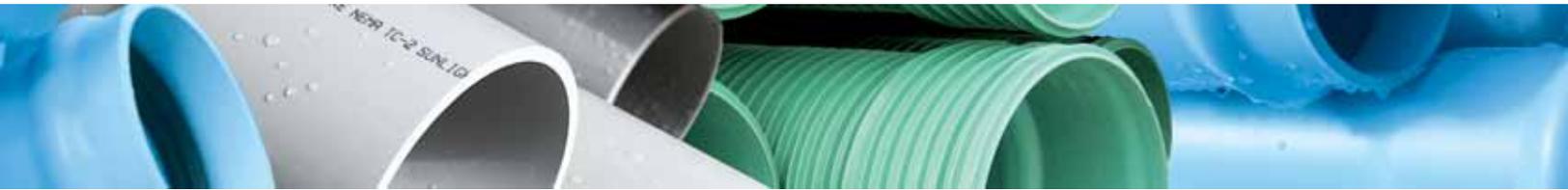
45° WYE					
Dxd	M	L ₃	L ₄	A	a
6x6x6	5.500	7.875	7.688	3.500	3.500
6x6x4	4.063	6.280	6.968	3.500	2.900
8x8x4	4.934	8.875	9.125	4.100	2.900
8x8x6	4.934	8.875	9.660	4.100	3.500



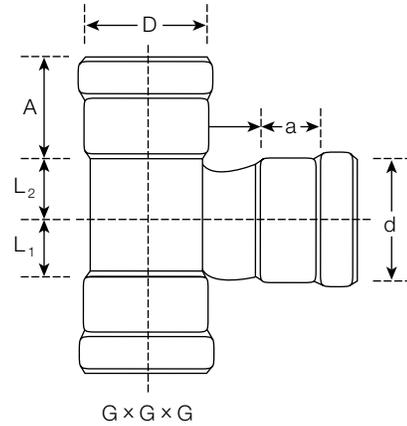
DOUBLE 45° WYE						
Dxd	L	L ₂	L ₃	L ₄	A	a
6x6x4x4	13.595	0.315	6.280	6.968	3.500	2.900
6x6x6x6	16.625	1.750	7.875	7.688	3.500	3.500



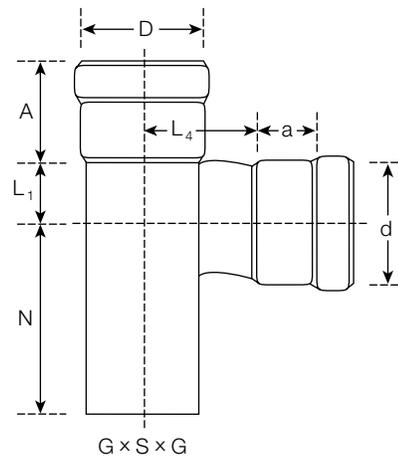
TEE					
Dxd	L ₁	L ₂	L ₄	A	a
4x4x4	2.250	2.250	10.30	2.900	2.900
6x6x4	2.300	3.250	11.60	3.500	2.900
6x6x6	3.370	3.370	13.74	3.500	3.500
8x8x4	2.310	4.310	12.82	4.100	2.900
8x8x6	3.310	4.310	14.82	4.100	3.500
8x8x8	4.500	4.500	17.20	4.100	4.100



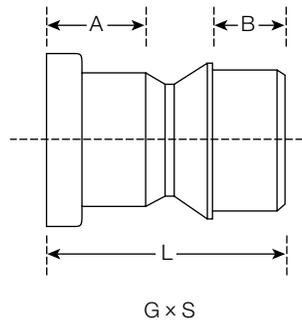
TEE WYE					
Dxd	L ₁	L ₂	L ₄	A	a
4x4x4	1.813	3.187	3.440	2.900	2.900
6x6x4	1.784	3.125	4.360	3.500	2.900
8x8x4	1.844	3.625	5.562	4.100	2.900
8x8x6	2.750	5.125	6.321	4.100	3.500



TEE WYE					
Dxd	L ₁	N	L ₄	A	a
8x8x4	1.784	7.871	4.360	4.100	2.900
8x8x6	1.844	8.746	5.562	4.100	3.500



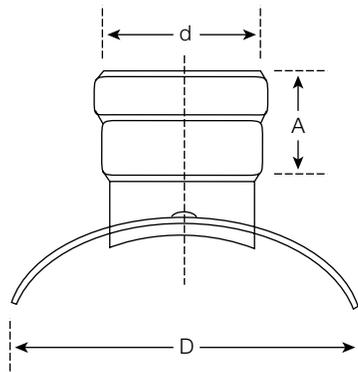
INCREASER			
Dxd	L	A	B
4x6	7.900	2.900	3.500
6x8	8.781	3.500	4.100



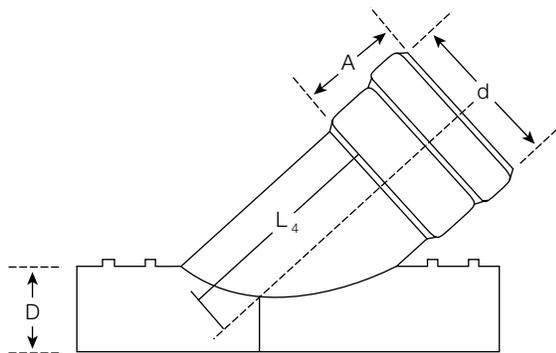


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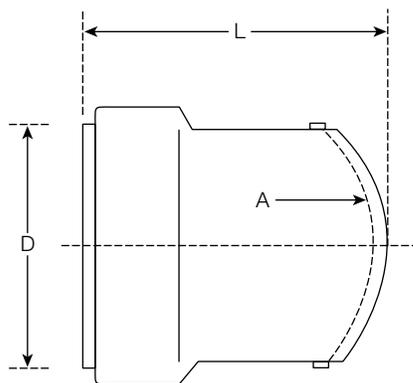
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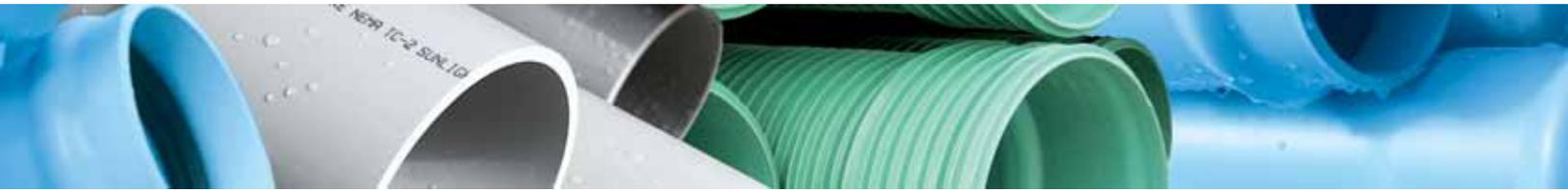
SADDLE TEE & GASKET	
Dxd	A
6x4	2.900
8x4	2.900
8x6	3.500
10 x4	2.900
10 x6	3.500
12 x4	2.900
12 x6	3.500



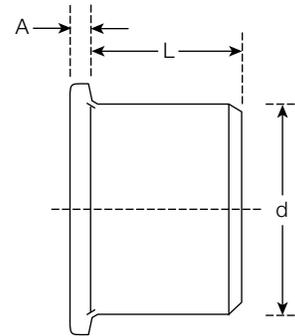
45° SADDLE WYE & GASKET		
Dxd	A	L ₄
6x4	2.900	7.530
8x4	2.900	9.010
8x6	3.500	10.320
10 x4	2.900	10.500
10 x6	3.500	11.810
12 x4	2.900	11.910
12 x6	3.500	13.220



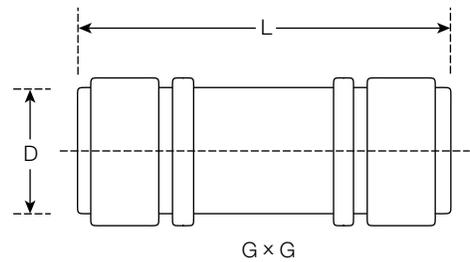
CAP		
D	L	A
4	3.497	5.000
6	4.437	7.000
8	5.500	8.500



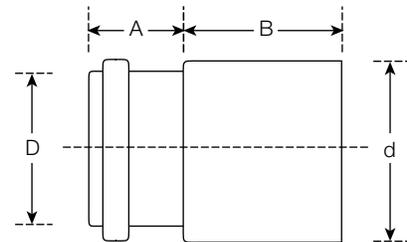
PLUG			
D	A	L	d
4	0.120	2.310	4.219
6	0.180	3.300	6.280
8	0.240	4.500	8.400



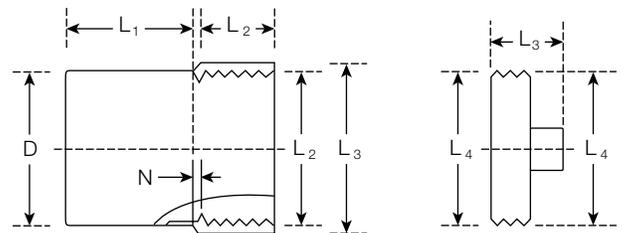
STOP REPAIR COUPLING	
D	L
4	5.925
6	7.180
8	8.400



ADAPTER TO D.W.V., X-HVY C.I. AND SER. WT. C.I.			
D	A	B	d
4	2.900	4.000	5.000



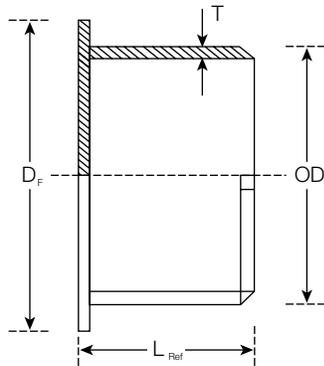
CLEAN OUT ADAPTER				
D	D ₁	d ₂	d ₃	d ₄
4	4.235	4.387	4.750	3.750
6	6.305	6.516	7.000	5.800
N	L ₁	L ₂	L ₃	L ₄
0.220	1.875	1.400	1.960	4.480
0.220	3.185	1.250	2.125	6.509



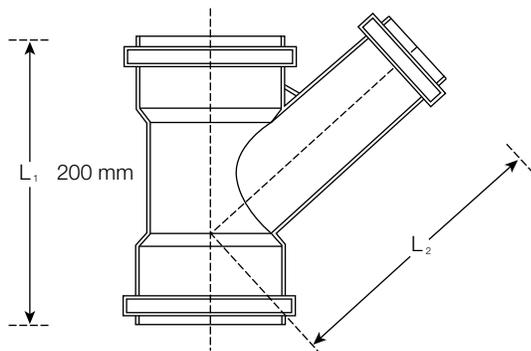


DIMENSIONS

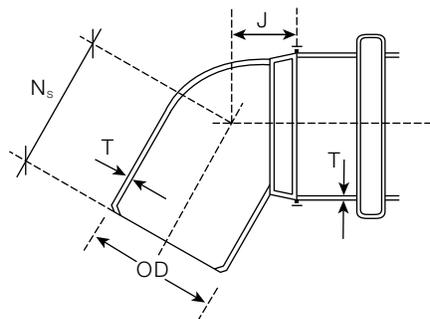
METRIC FITTINGS



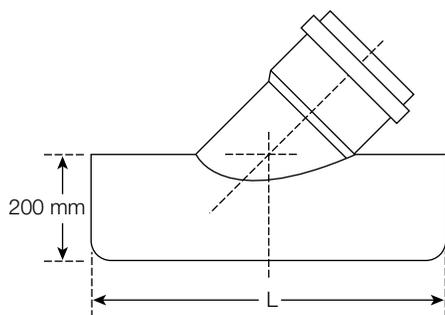
SIZE (MM)	OD	T _{min}	D _F (Ref)	L (Ref)
110	4.331 +0.012 -0.000	0.126	4.961	1.662
160	6.299 +0.020 -0.000	0.157	7.087	2.087



SIZE (MM)	L ₁ (Ref)	L ₂ (Ref)
200 x 110	14.724	11.142
200 x 160	19.882	13.425



SIZE (MM)	OD	T _{min}	N _S (Ref)	J (Ref)
110	4.331 +0.012 -0.000	0.126	3.346	1.535
160	6.299 +0.020 -0.000	0.157	4.606	1.969



SIZE (MM)	L (Ref)
200 x 160	15.354

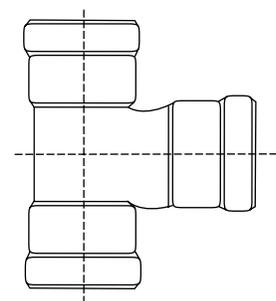
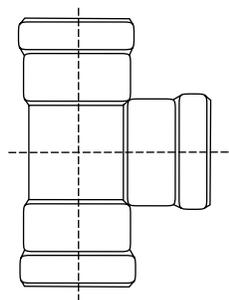
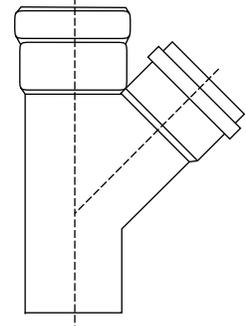
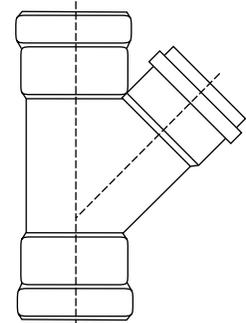
PRICE LIST

45° WYE G×G×G				
SIZE	UPC	PRODUCT CODE	LIST PRICE	PIECES PER CRATE*
6" x 6"	730143	Y0606	31.50	40 L
8" x 4"	730671	Y0804	41.50	30 L
8" x 6"	730697	Y0806	49.50	26 L
8" x 8"	730713	Y0808	86.25	16 L

45° WYE G×S×G				
SIZE	UPC	PRODUCT CODE	LIST PRICE	PIECES PER CRATE*
6" x 6"	730150	Y0606 S	33.75	40 L
8" x 4"	730689	Y0804 S	41.00	30 L
8" x 6"	730705	Y0806 S	49.50	26 L

TEE G×G×G				
SIZE	UPC	PRODUCT CODE	LIST PRICE	PIECES PER CRATE*
4" x 4"	729970	T0404	12.80	135 L
6" x 4"	730184	T0604	27.00	84 L
6" x 6"	730200	T0606	27.50	48 L
8" x 4"	730721	T0804	41.75	42 L
8" x 6"	730739	T0806	43.00	30 L
8" x 8"	730747	T0808	66.70	24 L

TEE WYE G×G×G				
SIZE	UPC	PRODUCT CODE	LIST PRICE	PIECES PER CRATE*
4" x 4"	729954	TY0404	15.30	120 L
6" x 4"	730119	TY0604	33.10	68 L
8" x 4"	730630	TY0804	42.00	30 L
8" x 6"	730655	TY0806	48.25	26 L



* L = Large Size Crate

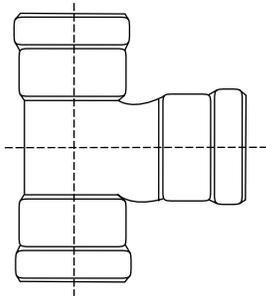
S = Small Size Crate

Price list is subject to change without notice.

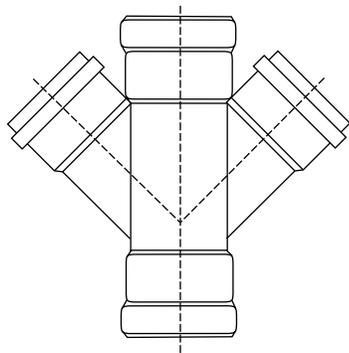


PRICE LIST

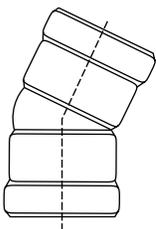
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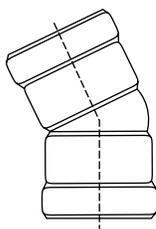
TEE WYE G×S×G				
SIZE	UPC	PRODUCT CODE	LIST PRICE	PIECES PER CRATE*
8" × 4"	730648	TY0804 S	42.00	30 L
8" × 6"	730663	TY0806 S	48.25	26 L



DOUBLE WYE G×G×G×G				
SIZE	UPC	PRODUCT CODE	LIST PRICE	PIECES PER CRATE*
6" × 4"	730168	YY0604	39.00	43 L
6" × 6"	730176	YY0606	75.10	28 L



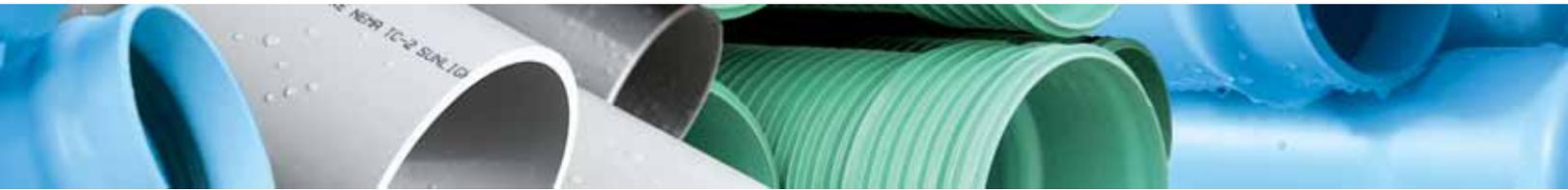
22.5° ELBOW G×G				
SIZE	UPC	PRODUCT CODE	LIST PRICE	PIECES PER CRATE*
4"	729988	EL2204	7.85	103 S
6"	730226	EL2206	15.60	90 L
8"	730754	EL2208	45.60	44 L



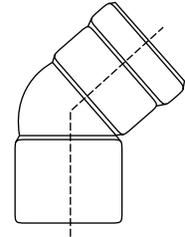
22.5° ELBOW G×S				
SIZE	UPC	PRODUCT CODE	LIST PRICE	PIECES PER CRATE*
4"	729996	EL2204 S	7.50	120 S
6"	730234	EL2206 S	14.88	106 L
8"	730861	EL2208 S	47.66	48 L

* L = Large Size Crate
S = Small Size Crate

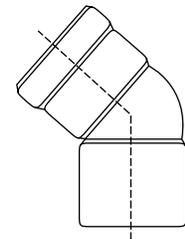
Price list is subject to change without notice.



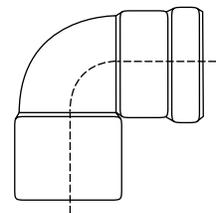
45° ELBOW G×G				
SIZE	UPC	PRODUCT CODE	LIST PRICE	PIECES PER CRATE*
4"	730002	EL4504	7.85	100 S
6"	730242	EL4506	16.00	78 L
8"	730762	EL4508	45.30	40 L



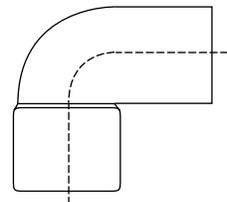
45° ELBOW G×S				
SIZE	UPC	PRODUCT CODE	LIST PRICE	PIECES PER CRATE*
4"	730010	EL4504 S	7.00	110 S
6"	730259	EL4506 S	14.30	90 L
8"	730770	EL4508 S	43.00	44 L



90° ELBOW G×G				
SIZE	UPC	PRODUCT CODE	LIST PRICE	PIECES PER CRATE*
4"	730028	EL9004	9.90	82 S
6"	730267	EL9006	18.25	72 L
8"	730788	EL9008	50.50	33 L



90° ELBOW G×S				
SIZE	UPC	PRODUCT CODE	LIST PRICE	PIECES PER CRATE*
4"	730036	EL9004 S	9.20	90 S
6"	730275	EL9006 S	19.25	72 L
8"	730796	EL9008 S	52.00	33 L



* L = Large Size Crate

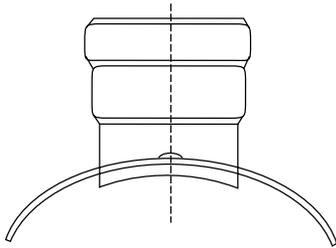
S = Small Size Crate

Price list is subject to change without notice.

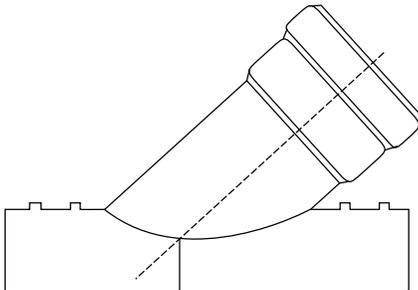


PRICE LIST

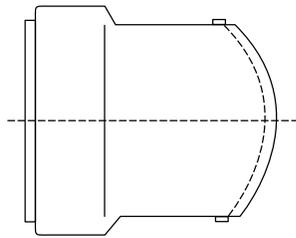
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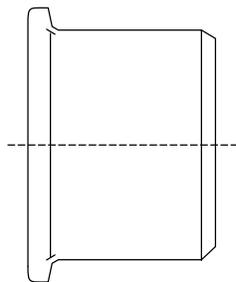
SADDLE TEE (with gasket branch, gasket skirt and straps)				
SIZE	UPC	PRODUCT CODE	LIST PRICE	PIECES PER CRATE*
6" x 4"	730317	TS0604	22.50	84 L
8" x 4"	730325	TS0804	28.25	74 L
8" x 6"	730358	TS0806	32.25	100 L
10" x 4"	730333	TS1004	49.90	82 S
10" x 6"	730366	TS1006	59.75	100 L
12" x 4"	730341	TS1204	62.10	96 S
12" x 6"	730374	TS1206	70.00	100 L



SADDLE WYE (with gasket branch, gasket skirt and straps)				
SIZE	UPC	PRODUCT CODE	LIST PRICE	PIECES PER CRATE*
6" x 4"	730382	YS0604	20.30	144 L
8" x 4"	730390	YS0804	28.10	126 L
8" x 6"	730424	YS0806	29.00	67 L
10" x 4"	730408	YS1004	56.25	153 L
10" x 6"	730432	YS1006	60.10	66 L
12" x 4"	730416	YS1204	62.50	154 L
12" x 6"	730440	YS1206	70.25	66 L



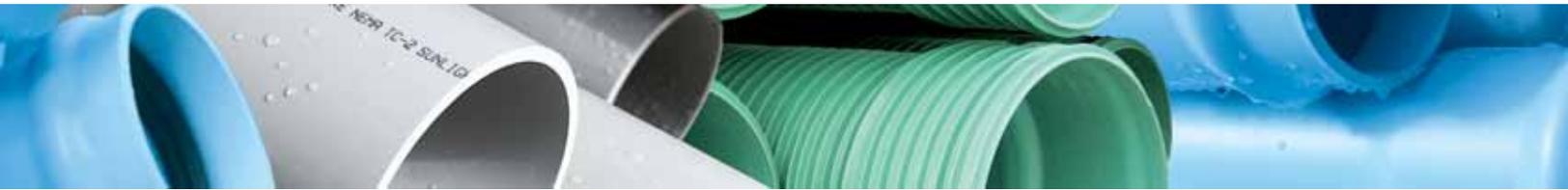
CAP (gasketed)				
SIZE	UPC	PRODUCT CODE	LIST PRICE	PIECES PER CRATE*
4"	729939	CAP04	5.00	288 S
6"	730093	CAP06	9.25	108 S
8"	730622	CAP08	25.50	114 L



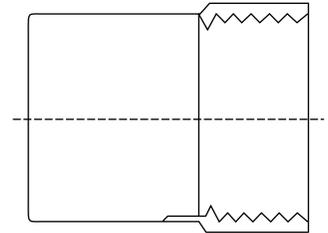
PLUG (spigot end)				
SIZE	UPC	PRODUCT CODE	LIST PRICE	PIECES PER CRATE*
4"	730457	PLG04	3.88	245 S
6"	730465	PLG06	5.90	300 L
8"	730804	PLG08	21.00	112 L

* L = Large Size Crate
S = Small Size Crate

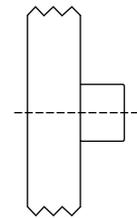
Price list is subject to change without notice.



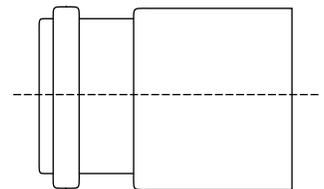
CLEAN OUT ADAPTER HUB FEMALE THREADED WITH RING (fits outside the pipe)				
SIZE	UPC	PRODUCT CODE	LIST PRICE	PIECES PER CRATE*
4"	730473	COA04	3.75	256 S
6"	730481	COA06	17.50	90 S



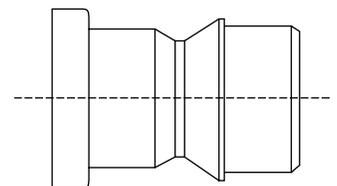
CLEAN OUT PLUG MALE THREADED (raised)				
SIZE	UPC	PRODUCT CODE	LIST PRICE	PIECES PER CRATE*
4"	730499	COP04	2.25	900 S
6"	730507	COP06	11.00	420 S



DUPLEX ADAPTER (SDR 35/SCH 40 DWV)				
SIZE	UPC	PRODUCT CODE	LIST PRICE	PIECES PER CRATE*
4"	730051	DPA04	6.00	128 S



CONCENTRIC INCREASER GxS				
SIZE	UPC	PRODUCT CODE	LIST PRICE	PIECES PER CRATE*
4" x 6"	729947	CINC0406 S	13.50	84 S
6" x 8"	730101	CINC0608 S	40.00	120 L



* L = Large Size Crate

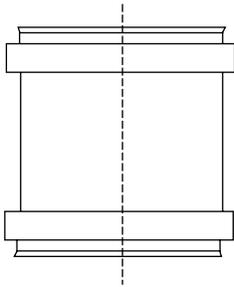
S = Small Size Crate

Price list is subject to change without notice.

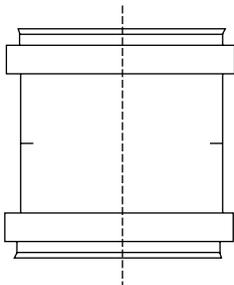


PRICE LIST

(CONTINUED)



REPAIR COUPLINGS G×G				
SIZE	UPC	PRODUCT CODE	LIST PRICE	PIECES PER CRATE*
6"	730077	RC06	19.25	138 L
8"	730614	RC08	33.10	66 L



STOP COUPLINGS G×G				
SIZE	UPC	PRODUCT CODE	LIST PRICE	PIECES PER CRATE*
6"	730085	SC06	19.25	138 L
8"	730853	SC08	33.10	66 L

* L = Large Size Crate
S = Small Size Crate

Price list is subject to change without notice.

Van sizes are 48' and 53' long. We stack two (2) large and one (1) small crate high. 48' vans have a fittings crate capacity of 52 large and 26 small. 53' vans have a crate capacity of 56 large and 28 small. Two small crates = one large crate.

On truckloads of pipe we can still stack typically four (4) large or eight (8) small crates of fittings. This is up to 12" pipe dimension.

WARRANTY

JM EAGLE™ PRODUCTS LIMITED WARRANTY

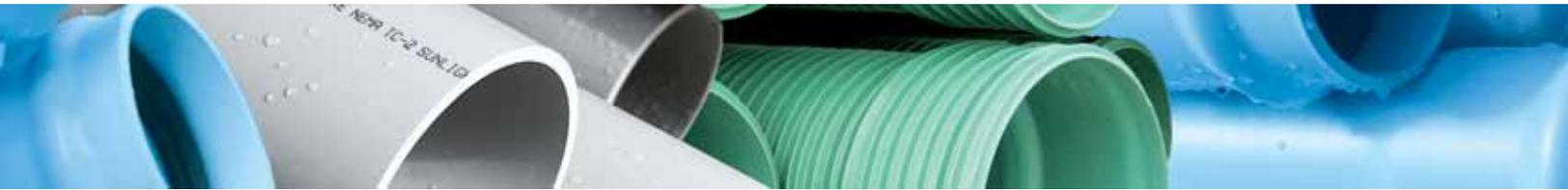
J-M Manufacturing Co., Inc. (JM Eagle™) warrants that its standard polyvinyl chloride (PVC), polyethylene (PE), conduit/plumbing/solvent weld and Acrylonitrile-Butadiene-Styrene (ABS) pipe Products (“Products”) are manufactured in accordance with applicable industry specifications referenced on the Product and are free from defects in workmanship and materials. Every claim under this warranty shall be void unless in writing and received by JM Eagle™ within thirty (30) days of the date the defect was discovered, and within one (1) year of the date of shipment from the JM Eagle™ plant. Claims for Product appearance defects, such as sun-bleached pipe etc., however, must be made within thirty (30) days of the date of the shipment from the JM Eagle™ plant. This warranty specifically excludes any Products allowed to become sun-bleached after shipment from the JM Eagle™ plant. Proof of purchase with the date thereof must be presented to the satisfaction of JM Eagle™, with any claim made pursuant to this warranty. JM Eagle™ must first be given an opportunity to inspect the alleged defective Products in order to determine if it meets applicable industry standards, if the handling and installation have been satisfactorily performed in accordance with JM Eagle™ recommended practices and if operating conditions are within standards. Written permission and/or a Return Goods Authorization (RGA) must be obtained along with instructions for return shipment to JM Eagle™ of any Products claimed to be defective.

The limited and exclusive remedy for breach of this Limited Warranty shall be, at JM Eagle’s sole discretion, the replacement of the same type, size and like quantity of non-defective Product, or credits, offsets, or combination of thereof, for the wholesale purchase price of the defective unit.

This Limited Warranty does not apply for any Product failures caused by user’s flawed designs or specifications, unsatisfactory applications, improper installations, use in conjunction with incompatible materials, contact with aggressive chemical agents, freezing or overheating of liquids in the product and any other misuse causes not listed here. This Limited Warranty also excludes failure or damage caused by fire stopping materials, tread sealants, plasticized vinyl products or damage caused by the fault or negligence of anyone other than JM Eagle™, or any other act or event beyond the control of JM Eagle™.

JM Eagle’s liability shall not, at any time, exceed the actual wholesale purchase price of the Product. The warranties in this document are the only warranties applicable to the Product and there are no other warranties, expressed or implied. This Limited Warranty specifically excludes any liability for general damages, consequential or incidental damages, including without limitation, costs incurred from removal, reinstallation, or other expenses resulting from any defect. IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE SPECIFICALLY DISCLAIMED AND JM EAGLE™ SHALL NOT BE LIABLE IN THIS RESPECT NOTWITHSTANDING JM EAGLE’S ACTUAL KNOWLEDGE THE PRODUCT’S INTENDED USE.

JM Eagle’s Products should be used in accordance with standards set forth by local plumbing and building laws, codes, or regulations and the applicable standards. Failure to adhere to these standards shall void this Limited Warranty. Products sold by JM Eagle™ that are manufactured by others are warranted only to the extent and limits of the warranty of the manufacturer. No statement, conduct or description by JM Eagle™ or its representative, in addition to or beyond this Limited Warranty, shall constitute a warranty. This Limited Warranty may only be modified in writing signed by an officer of JM Eagle™.



PLANT LOCATIONS

ADEL

2101 J-M Drive
Adel, Georgia 31620

BATCHELOR

2894 Marion Monk Road
Batchelor, Louisiana 70715

BUCKHANNON

Old Drop 33, Mudlick Road
Buckhannon, West Virginia 26201

BUTNER

2602 West Lyon Station Road
Creedmoor, North Carolina 27522

CAMERON PARK

3500 Robin Lane
Cameron Park, California 95682

COLUMBIA

6500 North Brown Station Road
Columbia, Missouri 65202

CONROE

101 East Avenue M
Conroe, Texas 77301

FONTANA

10990 Hemlock Avenue
Fontana, California 92337

HASTINGS

146 North Maple Avenue
Hastings, Nebraska 68901

KINGMAN

4620 Olympic Way
Kingman, Arizona 86401

MAGNOLIA

2220 Duracrete Drive
Magnolia, Arkansas 71753

M McNARY

31240 Roxbury Road
Umatilla, Oregon 97882

MEADVILLE

15661 Delano Road
Cochran, Pennsylvania 16314

PERRIS

23711 Rider Street
Perris, California 92570

PUEBLO

1742 E. Platteville Boulevard
Pueblo West, Colorado 81007

STOCKTON

1051 Sperry Road
Stockton, California 95206

SUNNYSIDE

1820 South First Street
Sunnyside, Washington 98944

TACOMA

2330 Port of Tacoma Road
Tacoma, Washington 98421

TULSA

4501 West 49th Street
Tulsa, Oklahoma 74107

VISALIA

8875 Avenue 304
Visalia, California 93291

WHARTON

10807 US 59 RD
Wharton, Texas 77488

WILTON

1314 W. Third Street
Wilton, Iowa 52778

MEXICO

PLASTICS TECHNOLOGY
DE MÉXICO S DE R.L. DE S.A.
Av. Montes Urales No. 8 y 10
Parque Industrial Opción, Carretera
57 Qro. -S.L.P. Km. 57.8
C.P. 37980 San José Iturbide,
Guanajuato México

** Our Mexico location is a joint
venture between JM Eagle™ and
Plastics Technology*

GLOBAL HEADQUARTERS

5200 West Century Boulevard
Los Angeles, California 90045

REGIONAL OFFICE

Nine Peach Tree Hill Road
Livingston, New Jersey 07039

J-M Manufacturing Co., Inc. and PW Eagle, Inc. are doing business as JM Eagle™.

JM Eagle

- THE LEADER IN PIPE INNOVATION
- THE HIGHEST LEVEL OF QUALITY
- THE LARGEST BREADTH OF PRODUCT
- THE WIDEST CAPACITY
- EXPRESS DELIVERY



PLANT LOCATIONS

Revised January 2009
JME-05F
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*Building essentials
for a better tomorrow™*

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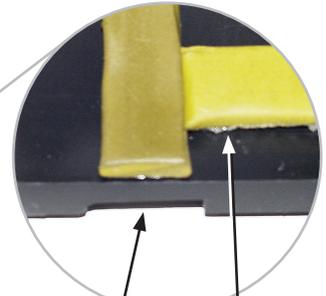
www.JMEagle.com

REGIONAL OFFICE:

Nine Peach Tree Hill Road
Livingston, NJ 07039
T: 973.535.1633
F: 973.533.4185

TSPK-46 Tap Saddle Pressure Kit

Installation Instructions: ONE SIZE For Use With Fernco Flexible Tap Saddle Models: TST-4, TST-6, TSW-4, TSW-6



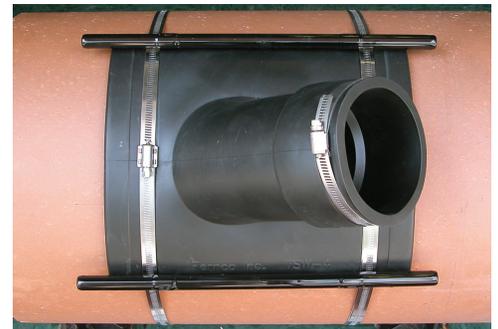
DETAIL

Tape centered under band area.

Tape 1/2" from the edge of the saddle. **Butt the strips, do not overlap.**

1. Bentonite placement - first two strips. Cut the first two strips of the bentonite sealing tape. Remove the protective paper. Apply the tape to the underside of the saddle keeping it centered under the band areas. **SEE DETAIL.**

2. Bentonite placement - second two strips. Cut the second two strips of bentonite sealing tape. Remove the protective paper. Apply the tape to the underside of the saddle, 1/2" from each edge. Butt up to the first two strips. **DO NOT overlap.**



3. Install the appropriate Fernco Flexible Tap Saddle as needed. Tighten clamps to 60 inch-lbs. torque.

4. Attach the reinforcing bars to the saddle by sliding the clips under the saddle.

5. Bars must be centered and positioned overlapping the initial set of clamps.



OR

6. Install the 2 clamps provided around the host pipe near the saddle inlet, **INSIDE** of the tap saddle bands.

NOTE: For TSW-4 ONLY
Due to space restrictions, install the 2 clamps provided around the host pipe **OUTSIDE** of the tap saddle bands.



7. Tighten clamps to 60 inch-lbs. torque. Test for leaks prior to backfilling.



Flexible Tap Saddles Installation

The faster and less costly way to make sewer main connections.



1. Excavate the trench exposing the outside diameter of the sewer main
 2. Core a hole in the sewer main of appropriate diameter matching the contour of the Tap Saddle locating ring
 - a. Use a 5" Coring Bit or Hole Saw for TST-4 and TSW-4
 - b. Use a 7" Coring Bit or Hole Saw for TST-6 and TSW-6
 3. Clean the pipe surface and remove any sharp edges
 4. Wrap the clamps around the pipe, engage, and slide one to each side of the cored hole
- *Refer to and follow the installation instructions for TSPK-46 when using the Fernco Tap Saddle Pressure Kit*
5. Position the Tap Saddle gasket over the pipe with the locating ring inside the cored hole
 6. Holding the Tap Saddle firmly against the pipe and slide clamps in place and snug the clamps by pulling on the tail
 7. Tighten clamps to 60"lbs. torque
 8. Connect lateral pipe of appropriate size, tighten to 60"lbs. torque



Flexible Tap Saddles

The faster & less costly way to make sewer main connections

One **Fernco** Saddle will fit ALL 6" and larger sewer mains.

- Manufactured from a specially formulated high durometer PVC.
- Rigid, yet flexible enough for one saddle to fit 6" or larger sewer mains.
- Includes special "slip-lock" clamps of 300 series stainless steel that make for fast and simple installations on any type of pipe from 6" to 15".
- Larger apron with locating ring fits 4½" or 6½" standard shell cutters.
- Large band grooves



TSW-4

Available for all 4" or 6" plastic or cast iron drain pipe inlets in **Tee or Wye** configurations.



TST-4

PART #	Description
TST-4	4" Cast Iron or Plastic Inlet - Tee Tap Saddle
TST-6	6" Cast Iron or Plastic Inlet - Tee Tap Saddle
TSW-4	4" Cast Iron or Plastic Inlet - Wye Tap Saddle
TSW-6	6" Cast Iron or Plastic Inlet - Wye Tap Saddle
312-300	Extension Clamps - For larger than 15" sewer mains



For PVC or Cast Iron Lateral Pipe

Product Name	Description	Type	Angle	Sewer Main (O.D.)	Core (I.D.)
1404 629	TF-400 Saddle	Tee	90°±15°	6.27" - 15.75"	4.60" - 4.90"
1404 649	4Y/C 4" Flex Wye	Saddle Wye	45°±15°	6.27" - 15.75"	N/A
1406 634	TF-600 Saddle	Tee	90°±15°	8.16" - 21.25"	6.60" - 6.90"
1406 644	6Y/C 6" Flex Wye	Saddle Wye	45°±15°	8.16" - 21.25"	N/A



T-FLEX® SEWER SADDLES

Installation Instructions



1. Core a hole using:
 - 4.5" bit for 4" T-Flex Saddle
 - 6.5" bit for 6" T-Flex Saddle
2. After making sure the pipe surface is clean and free of debris, place the T-Flex Saddle skirt over the cored opening, making sure the internal flange is centered in the hole.
3. Place the stainless steel skirt over the rubber gasket, and run the stainless steel clamps through the slots on the skirt and around the circumference of the pipe.
4. Tighten the clamps to 60 inch pounds.
5. Insert the lateral pipe into the saddle outlet and tighten the clamp to 60 inch pounds.

The aforementioned is intended to be a guideline of general installation requirements for the Mission T-Flex® Sewer Saddle for standard connections. These instructions are to be used in accordance with engineering criteria and municipal trade practices in the field.

If we put our name on it -
you can depend on it!

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