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JCN INDUSTRIES

Fittings and Fabrications Designed and Engineered for HIGH DENSITY POLYETHYLENE PIPE



JCM Industries, Inc. P. O. Box 1220 Nash, TX 75569-1220 www.jcmindustries.com Call Toll Free 800-527-8482 Fax Toll Free 800-874-9524 Call Outside U.S. 903-832-2581 Fax Outside U.S. 903-838-6260

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JCM FEATURED PRODUCTS FOR POLYETHYLENE PIPE

JCM Industries manufactures a number of products which have proven to be very applicable to HDPE Pipe. Working characteristics of polyethylene pipe require special attention to the repair, connection and tapping procedures performed in systems using this type of pipe.

JCM Industries products especially applicable to HDPE pipe include:

REPAIR CLAMPS, SLEEVES AND COUPLINGS

101 - 102 Universal Clamp Couplings
171 - 172 Universal Clamp Coupling with Removeable Lug
131 - 132 All Stainless Steel Universal Clamp Couplings
161 - 162 Fabricated Lug Stainless Steel Repair Clamp
136 Heavy Duty All Stainless Steel Repair Clamp
118 Large Diameter and Non-Standard Contour Pipe Repair Sleeve
201 Steel Couplings
210 Ductile Iron Couplings
241 - 242 Optimum Range Couplings
301 - 303 Flanged Coupling Adapters

404 - 406 Service Saddle with Double Stainless Steel Straps (3/4" thru 2-1/2" outlets, 2" - 24" sizes)
412 - 422 Tapping Sleeves (6" size and larger, contact JCM for smaller sizes)
419 - 429 Tapping Sleeves with Mechanical Joint Outlet*
452 - 464 Stainless Steel Tapping Sleeve with Outlet Seal Gasket
459 - 465 Stainless Steel Tapping Sleeve with Mechanical Joint Outlet*
418 Fabricated Threaded Outlet Tapping Sleeve (1/2" - 4" Outlets)
438 Stainless Steel Threaded Outlet Tapping Sleeve

OTHER PRODUCTS

610 - 621 Sur-Grip Restrainers 230 HDPE Pipe Stiffeners

Success in these products is largely due to the design criteria that took the working characteristics of HDPE Pipe into consideration. Design characteristics inherent to JCM clamps, couplings, tapping sleeves, saddles and other products are as follows:

GASKETS - Tapping sleeve and service saddle gaskets should have wide cross section with enough volume to store compression energy. Gaskets should be of a hardness which will flex with pipe pressure fluctuations. Outlet seals should have a mechanical sealing lip that utilizes line pressure to increase seal. Outlet gaskets should be externally and internally confined.

TAPPING SLEEVE OR CLAMP BODY - Tapping sleeve or clamp coupling body should conform to the HDPE pipe and support it and the branch (in cases of outlets). Width of sleeve should be such that it spreads the load to prevent point loading or deformation of the pipe.

BOLTING - Bolts and bolting should be replaceable, self-aligning and heavy enough to properly load the gasket and assure an adequate safety factor.

*Licensed by PowerSeal Corporation U.S. Patent No. 6,227,234.

JCM INDUSTRIES, INC, General Application Information Fittings and Fabrications for High Density Polyethylene Pipe

JCM Products for repairing, connecting and tapping Polyethylene pipe have been tested and evaluated for their suitability and design capability. In each case JCM products have performed satisfactorily in respect to their design application. Test criteria range from short-term for special applications to long-term 1000 hour evaluations with the most common applications. Temperature and pressure cycles are also incorporated to fully address the pipe characteristics and full range of occurrences. Special monitoring equipment is utilized to produce accurate test data and for historical reference.

High Density Polyethylene Pipe (HDPE) has several unique characteristics which are taken into consideration in the following guidelines. The disregard of these guidelines and/or the installation instructions supplied with each fitting may cause unsatisfactory results and void the expressed product warranty.

HDPE Pipe considered for use must be manufactured to the recommendations set forth in the ANSI/AWWA Standard C906 and complies with criteria in reference to size.

HDPE has a high coefficient of thermal expansion and contraction along with a low modulus of elasticity. This sensitivity to pressure and temperature causes HDPE to expand and contract more than traditional water and sewer piping materials. The potential pipe expansion or contraction must be considered when assembling bolt on fittings.

HDPE will relax ("creep") at lower stress levels than other piping materials. Due to these special characteristics, the following parameters should be adhered to when utilizing JCM products for HDPE (ANSI/AWWA C901, C906).

- HDPE and bolt-on fitting connections are vulnerable to forces experienced with expansion/contraction of the pipe and require special consideration. Restraint must be considered when joining plain end pipe to ensure against pipe pull out. HDPE is manufactured with a smooth pipe wall surface resulting in a low coefficient of friction that can enable fittings to slide, shift, move, rotate and/or travel on the pipe after installation. JCM products are limited in the tolerance of axial movement of the pipe.
- JCM products for HDPE are designed for underground pressurized fluid service and are pressure rated to match the pipe SDR pressure rating or with a maximum service rating of 150 PSI (Temperature 35^o - 75^o F/Maximum test pressure limited to rated pipe pressure or fitting, whichever is lower). For above ground applications, contact JCM Industries Technical Services.
- Pipe stiffeners must be used when joining, or connecting to, HDPE. Pipe systems must be engineered to prevent movement causing fittings to slide or rotate on the pipe. Cutting HDPE can cause the pipe to ovate or "neck" down and become egg shaped. This pipe movement can interfere with the assembly of bolt on fittings.

Thirty years of successful performance has been one of the most stringent proving grounds for JCM products and their application with Polyethylene Pipe. Generally speaking, most common potable water pressure applications utilize HDPE SDR 17 through 11. For applications on thinner wall pipe, special applications, higher pressure ratings and product usage recommendations, please contact JCM.

Note: JCM recommends fusion joints as a primary method of connection. When correctly implemented, fused joints are self-restraining and leak proof. In some instances conditions are not conducive to properly fuse the joint per manufacturers' recommendations. Mechanical fittings to join or repair HDPE are a secondary and limiting choice. The information included on this page is provided to address the known factors when repairing, joining or tapping HDPE with mechanical fittings.

Applications of JCM Products on High Density Polyethylene Pipe Frequently Asked Questions

Why does JCM not use Spring Washers?

"A Belleville washer, also known as a cupped spring washer, is a type of non-flat washer with a slight conical shape which gives the washer a spring characteristic." These washers are used both singularly and in multiple "stacks" for maintaining uniform tension load on a bolt. Basically, these metal curved disks are manufactured to a predetermined tension level that will accommodate thermal or pressure expansion and contractions. There are numerous formulas and design criteria to determine the material, size, curve, number and method of installation of these washers in various industries (industrial piping, automotive, electrical, construction, etc.), more data than space allows for here. A simple search on the internet provides a wealth of information on these items. <u>How they relate to installation on underground (buried) fittings is what JCM will address here.</u>

The theory behind the spring washer is that when installed, the "spring" in the washer will provide the uniform load on the fitting's bolting assembly should the pipe expand/contract – so as HDPE pipe shrinks and expands on the circumference, the spring washers will flex and absorb the expansion/contraction. That theory is applicable in above ground, vault or gallery piping installations in which the assembly has freedom of movement. It is JCM's opinion that when installed on a fitting that is buried underground, the ability of the washers to move or "flex" with the fitting is eliminated due to the site backfill bedding material. The spring washers perform no significant function in that environment. The space, voids and gaps around the assembly are filled with dirt, clay, mud, gravel and other soil matter that compacts around the fitting resulting in a solid, compressed environment (similar to concrete). The factors of compaction, debris between washers, rocks between fitting halves and various other backfill material fragments will encase the assembly in earthen "material" and prevent any chance of movement, no matter how slight.

JCM Industries has worked closely with HDPE manufacturers and contractors to engineer fittings that are specifically designed to accommodate the unique characteristics of HDPE – the thermal expansion and contraction is one of the major features of the pipe. The design criteria that makes JCM fittings extremely successful on HDPE is the gasket and the machined groove. JCM implements a unique gasket design in all of our products that are especially recommended for use on HDPE pipe. This thick cross section of gasket, of a specific profile, is where the pipe expansion/contraction finds accommodation. The special gasket is compressed during installation of the fitting with specified bolt torque. As the bolts are tightened, the bolt torque is directly transferred through the bolting system and into the gasket, compressing and storing "flexing" the appropriate amount of energy between the pipe and fitting. The ability to accommodate the expansion/contraction energy through the exterior of the fitting by washers.

Therefore, based on this mechanical philosophy, JCM does not furnish spring washers – the energy stored in the gasket which is in direct contact with the pipe wall is a more effective and efficient application.

Compression of the gasket and a true "bolt torque" reading at the completion of the fitting installation is critical. As HDPE goes through the varying changes of the thermal dynamics, the secure seal of the gasket on the pipe is the key to the watertight connection.

Frequently Asked Questions (Continued)

Are ALL JCM products suitable for HDPE?

No. JCM recommends particular products to be installed in applications on HDPE because of certain distinctive design features that make them most suitable for HDPE characteristics. HDPE's high coefficient of thermal expansion/contraction and the low modulus of elasticity present two important working traits to consider when selecting bolt on pipe fittings. Generally, products that provide a broad footprint on the pipe wall with extensive gasket to pipe contact and a wide cross section gasket with enough volume to store compression energy are most desirable for HDPE. The gasket should be of hardness (durometer) which will flex with pipe pressure fluctuations. Outlet seals should have a mechanical sealing lip that utilizes line pressure to increase the seal. Outlet gaskets, such as on tapping sleeves and service saddles, should be externally and internally confined in a groove. Fittings should be sized and formed to fit the HDPE pipe outside diameter to ensure the sleeve or body conforms to the HDPE pipe and prevents undue stress. A wide stance design provides pipe wall support and spreads the "load" to prevent point loading or deformation of the pipe.

Why do bolt on pipe fitting manufacturers insist on the use of "stiffeners" in a connection application?

Under pressure, HDPE will move or "creep" (cold flow of material) away from the point of pressure, a trait that works against the typical bolted coupling design. As pressure is applied by the tightening of the bolts, HDPE will relax and move away from the pressure, preventing the bolt torque from fully compressing the gasket and complete a water tight, long term installation. The use of an internal pipe stiffener will block the "creep" or movement and provide a stable base for the bolt torque energy.

Another associated issue is commonly known as "toe-in." This is when a plain end of HDPE will "neck down" or ovate after cutting. If left uncorrected, the ovation (egging, necking down) of the pipe will hinder the bolt on fitting gasket from making proper 360° contact and in some cases prevent the fitting from being installed. The internal stainless steel stiffener used in the pipe ends will provide a durable support for the bolted fitting and the bolt torque to fully compress the gasket for a watertight, long term seal.

Are restraint devices or anchorage systems really necessary when using bolt-on clamps or couplings with HDPE?

Yes, they are really necessary. Without incorporating a physics lesson, simply put, the HDPE pipe surface is smooth and without texture (unlike asbestos cement or cast iron pipe), thus the surface produces a "low coefficient of friction." The coefficient of friction is the relative amount of force required to make two surface materials slide past each other. A low number reflects low resistance and smooth action (i.e. lubricated bearings, Teflon finishes, etc.). So with the lower coefficient of friction, the HDPE can more easily slide in various soils and out of bolt-on fittings if the pipe is not restrained to prevent axial (linear) movement that causes pipe movement, pull out from the bolted fitting can occur. HDPE fused joints are "self-restraining" and according to HDPE manufacturers, do not require external restraint methods – as long as the fusion procedure was done correctly. *Refer to the PPI (Plastic Pipe Institute). PPI provides a complete Handbook of PE Pipe that specifically addresses designing and installing PE piping systems and methods of restraint.*

How much of a consideration is thermal expansion and contraction?

HDPE has a high thermal coefficient of expansion/contraction. When subjected to a temperature change, unrestrained, above and below grade, polyethylene pipe will experience expansion and contraction. As a rule of thumb, a change of 1" per 100' of pipe per 10°F change in temperature. This is especially important in installations in which the HDPE is laid along the trench site. Forces encountered due to thermal expansion and contraction can be significant. Properly designed systems that account for the potential expansion/contraction will be required.

Frequently Asked Questions (Continued)

What factors should be taken into account before tapping HDPE Pipe?

An important factor for consideration is the SDR (Standard Dimension Ratio) of the pipe to be tapped. HDPE pipe with an SDR number greater than 17 (SDR 19, 21, 26, 32.5) have a lesser wall thickness and can be subject to flexing. This limits the type and size of branch that can be provided.

Conversely, other factors must be considered with increased wall thickness. Calculations should be completed prior to the branching procedure that include the wall thickness of the pipe, travel distance of the tapping machine and the size of the tapping machine cutter. In some instances a size on size branch with a full opening may not be possible due to the wall thickness and the inability of the cutter to make a clean cut through the "shoulder" of the pipe wall. This can be overcome by reducing the size of the cutter (reducing the size of the cut opening in the pipe). JCM provides various sleeve types and designs that provide an array of options that can overcome critical size-on-size requirements.

These factors should be included with the standard branching considerations such as size of pipe, size of branch outlet, working/test pressure requirements, line content and any environmental factors such as hot or acidic soils.

What is Unique about JCM gaskets performance on HDPE?

JCM gasket design was conceived based on the working characteristics of HDPE and the distinctive fluctuations that transform the pipe through thermal dynamics. Within the JCM Tapping Sleeves and Service Saddles, the gasket durometer (hardness of the gasket material) formulation is pliable enough to accommodate compression and storage of energy with thermal changes in pipe diameter, yet hard enough to withstand high working pressures - the working features of the gasket durometer, the broad. hydromechanical lip design and the confinement in a recessed groove around the outlet join together to provide a secure, active watertight seal at the pipe/gasket interface. The drawing right demonstrates the system of the gasket storing and releasing energy as the pipe contracts and expands.

JCM Universal Clamp Couplings share the same gasket compression "stored energy" theory. This working energy is the reason JCM does not use "spring washers" to store energy. (Once backfilled and buried, the ability of the spring washer to perform as designed can be limited.) JCM uses a 1/4", or thicker in some cases, gasket for Universal Clamp Coupling (thickest in the industry). This thick gasket stores the energy as the pipe diameter increases and releases the energy back as the diameter decreases. The image right reflects the compression and release of the stored energy along the body of the clamp.











As pipe expands, gasket compresses and stores energy.

JCM Universal Clamp Couplings for Polyethylene Pipe

JCM recommends the featured models for use on High Density Polyethylene Pipe

JCM 101 Universal Clamp Coupling JCM 102 Extended Range Universal Clamp Coupling JCM 171 Removeable Lug Universal Clamp Coupling JCM 172 Removeable Lug Extended Range Universal Clamp Coupling JCM 131 All Stainless Steel Universal Clamp Coupling JCM 132 All Stainless Steel Extended Range Universal Clamp Coupling JCM 161 Fabricated Lug All Stainless Steel Universal Clamp Coupling JCM 162 Fabricated Lug Extended Range Universal Clamp Coupling For other Universal Clamp Coupling applications, contact JCM Industries, Inc.

Built-In Advantages of JCM Universal Clamp Couplings for HDPE

Low Profile Lugs - efficient transfer of bolt torque energy. Replaceable bolts in most models.

Certifiable 304 Stainless Steel Band - practical, long-term corrosion resistance. Heavier gauge stainless in sizes 10" and larger.

Thick, gridded gasket - 1/4" thick gasket stores compression energy and adapts to the thermal expansion/contraction characteristic of HDPE.

Broad range - accommodates pipe OD. and fluctuating pipe diameter characteristic.



Application Guidelines for JCM Universal Clamp Couplings on HDPE:

- 1. Universal Clamp Couplings do not prevent lateral movement of pipe. Applications in which the pipe may move out of the clamp, proper anchorage of the pipe must be provided.
- 2. Pipe Stiffeners are required for applications joining plain end HDPE Pipe.
- 3. Universal Clamp Couplings should be 1-1/2 times greater in length than the nominal pipe size through 16" nominal pipe size.
- 4. Universal Clamp Couplings are not for the repair of Polyethylene Gas Pipe. Clamps are suitable for reshaping and marking squeeze off locations.
- 5. In Universal Clamp Coupling applications for repairing or reinforcing a fused joint, the fused weld (bead) must be removed to eliminate interference with consistent gasket compression.
- 6. See JCM General Application Information for Products on HDPE Pipe, page 3.

Common applications on HDPE pressure applications utilize HDPE SDR 17 - SDR 11. For applications on thinner wall pipe, please contact JCM Industries.

Maximum service rating of fittings is 150 PSI or the rating of the pipe.

Operating temperature range 35^o - 75^o F/Maximum test pressure limited to rated pipe pressure. For other temperature ranges or higher pressure applications, contact JCM for product selection and installation recommendations.

JCM Universal Clamp Couplings for Polyethylene Pipe

JCM recommends the featured models for use on High Density Polyethylene Pipe For other Universal Clamp Coupling applications, contact JCM Industries, Inc.

JCM Universal Clamp Couplings have several design features which specifically address the working characteristics of HDPE. These fittings have been time proven in the field on Polyethylene Pipe applications including repair and connection. Design features include:

- Stainless steel band which conforms to and supports HDPE on the full circumference of the pipe.
- Manufactured to accommodate the pipe outside diameter and the characteristic fluctuations.
- Thick gasket (1/4") stores compressed energy and flexes with pipe pressure.
- Low profile lugs perform an efficient transfer of energy from the bolting system directly to gasket compression. Low profile lugs stay close to the pipe, facilitating slip lining applications when a fusion machine is unavailable.
- Mutually supporting sliding fingers with **self-aligning bolts** evenly compress gasket with distortion free tightening eliminating undue stress on thin wall pipe.
- Large diameter clamps increase lug, bolt and stainless thickness to provide the sealing pressure and gasket compression required to successfully repair or join large O.D. pipe.
- Removeable lug system of Models 171-172 allow installation in rockbound soils or crowded piping infrastructure environments.
- All stainless steel construction of the Models 131-132 and 161-162 provides superior corrosion resistance in hot soils or corrosive environments.
- Various gasket materials are available for acidic or corrosive line contents. Includes: Buna-N, EPDM, Hypalon and Viton.
- Nominal sizes 1-1/2" through 54".

"Stored Energy Works with the Pipe"

JCM Universal Clamp Couplings incorporates the gasket compression "stored energy" theory. This working energy is the reason JCM does not use "spring washers" to store energy. (Once backfilled and buried, the ability of the spring washer to perform as designed can be limited.)

JCM uses a 1/4" this gasket for Universal Clamp Coupling (thickest in the industry). This thick gasket stores the energy as the pipe diameter increases and releases the energy back as the diameter decreases. The image below reflects the compression and release of the stored energy along the body of the clamp.

When installing a Universal Clamp Coupling to repair or reinforce a fused joint, the fused bead must be filed off or removed prior to installing the clamp.





As pipe contracts, gasket expands and releases stored energy.

As pipe expands, gasket compresses and stores energy.

JCM Universal Clamp Couplings Standard Material Specifications

	JCM 101 - 10	02 Universal Clamp Couplings
	Band:	18-8 Type 304 Certifiable Prime Stainless Steel
	Lugs:	Ductile Iron ASTM A-536, 60-40-18
	Bolts:	Corrosion resistant low alloy per ASTM A242, ANSI A21.11, AWWA
		C111. National coarse rolled thread and heavy hex nut.
	Gasket:	Virgin Styrene-Butadiene Rubber (SBR) - Compounded for use with
		water, salt solutions, mild acids and bases. Per ASTM D-2000.
		Standard temperature range from -40° to 150°F (-40° to 65°C)
		constant, maximum intermittent 180° F (82 °C).
	Coating:	Corrosion resistant shop coat paint primer.
	JCM 171 - 17	72 Removeable Lug Universal Clamp Couplings
	Band:	18-8 Type 304 Certifiable Prime Stainless Steel
	Lugs:	Ductile Iron ASTM A-536, 60-40-18
	Bolts:	Corrosion resistant low alloy per ASTM A242, ANSI A21.11, AWWA
	Orabati	C111. National coarse rolled thread and neavy nex nut.
	Gasket:	Virgin Styrene-Butadiene Rubber (SBR) - Compounded for use with
		water, sait solutions, mild acids and bases. Per ASTM D-2000.
		Standard temperature range from -40° to 150° F (-40° to 65° C)
ABBAR		constant, maximum intermittent 180° F (82°C).
	Contingu	Corregion registent abon goot point primer
	Coating:	Corrosion resistant shop coat paint primer.
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1	Coating: JCM 131 - 13 Band:	Corrosion resistant shop coat paint primer. 32 All Stainless Steel Universal Clamp Couplings 18-8 Type 304 Stainless Steel
	Coating: JCM 131 - 13 Band: Lugs:	Corrosion resistant shop coat paint primer. 32 All Stainless Steel Universal Clamp Couplings 18-8 Type 304 Stainless Steel CF-8 Cast Stainless Steel (equivalent to 304 Stainless Steel)
	Coating: JCM 131 - 13 Band: Lugs: Bolts:	Corrosion resistant shop coat paint primer. 32 All Stainless Steel Universal Clamp Couplings 18-8 Type 304 Stainless Steel CF-8 Cast Stainless Steel (equivalent to 304 Stainless Steel) 18-8 Type 304 Stainless Steel
	Coating: JCM 131 - 13 Band: Lugs: Bolts: Gasket:	Corrosion resistant shop coat paint primer. 32 All Stainless Steel Universal Clamp Couplings 18-8 Type 304 Stainless Steel CF-8 Cast Stainless Steel (equivalent to 304 Stainless Steel) 18-8 Type 304 Stainless Steel Virgin Styrene-Butadiene Rubber (SBR) - Compounded for use with
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	Coating: JCM 131 - 13 Band: Lugs: Bolts: Gasket:	Corrosion resistant shop coat paint primer. 32 All Stainless Steel Universal Clamp Couplings 18-8 Type 304 Stainless Steel CF-8 Cast Stainless Steel (equivalent to 304 Stainless Steel) 18-8 Type 304 Stainless Steel Virgin Styrene-Butadiene Rubber (SBR) - Compounded for use with water, salt solutions, mild acids and bases. Per ASTM D-2000. Standard temperature range from -40° to 150°F (-40° to 65 C) standard temperature range from -40° to 0.000 F
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	Coating: JCM 131 - 13 Band: Lugs: Bolts: Gasket:	Corrosion resistant shop coat paint primer. 32 All Stainless Steel Universal Clamp Couplings 18-8 Type 304 Stainless Steel CF-8 Cast Stainless Steel (equivalent to 304 Stainless Steel) 18-8 Type 304 Stainless Steel Virgin Styrene-Butadiene Rubber (SBR) - Compounded for use with water, salt solutions, mild acids and bases. Per ASTM D-2000. Standard temperature range from -40° to 150°F (-40° to 65 C) constant, maximum intermittent 180° F (82 °C). Optional 316 Stainless Steel Available
	Coating: JCM 131 - 13 Band: Lugs: Bolts: Gasket: JCM 161 - 10	Corrosion resistant shop coat paint primer. 32 All Stainless Steel Universal Clamp Couplings 18-8 Type 304 Stainless Steel CF-8 Cast Stainless Steel (equivalent to 304 Stainless Steel) 18-8 Type 304 Stainless Steel Virgin Styrene-Butadiene Rubber (SBR) - Compounded for use with water, salt solutions, mild acids and bases. Per ASTM D-2000. Standard temperature range from -40° to 150°F (-40° to 65 C) constant, maximum intermittent 180° F (82 °C). Optional 316 Stainless Steel Available 52 Fabricated Lug All Stainless Steel Universal Clamp Couplings
	Coating: JCM 131 - 13 Band: Lugs: Bolts: Gasket: JCM 161 - 16 Band:	Corrosion resistant shop coat paint primer. 32 All Stainless Steel Universal Clamp Couplings 18-8 Type 304 Stainless Steel CF-8 Cast Stainless Steel (equivalent to 304 Stainless Steel) 18-8 Type 304 Stainless Steel Virgin Styrene-Butadiene Rubber (SBR) - Compounded for use with water, salt solutions, mild acids and bases. Per ASTM D-2000. Standard temperature range from -40° to 150°F (-40° to 65 C) constant, maximum intermittent 180° F (82 °C). Optional 316 Stainless Steel Available 52 Fabricated Lug All Stainless Steel 18-8 Type 304 Stainless Steel 18-8 Type 304 Stainless Steel
	Coating: JCM 131 - 13 Band: Lugs: Bolts: Gasket: JCM 161 - 10 Band: Lugs:	Corrosion resistant shop coat paint primer. 32 All Stainless Steel Universal Clamp Couplings 18-8 Type 304 Stainless Steel CF-8 Cast Stainless Steel (equivalent to 304 Stainless Steel) 18-8 Type 304 Stainless Steel Virgin Styrene-Butadiene Rubber (SBR) - Compounded for use with water, salt solutions, mild acids and bases. Per ASTM D-2000. Standard temperature range from -40° to 150°F (-40° to 65 C) constant, maximum intermittent 180° F (82 °C). Optional 316 Stainless Steel Available 52 Fabricated Lug All Stainless Steel Universal Clamp Couplings 18-8 Type 304 Stainless Steel 18-8 Type 304 Stainless Steel 18-8 Type 304 Stainless Steel
	Coating: JCM 131 - 13 Band: Lugs: Bolts: Gasket: JCM 161 - 10 Band: Lugs: Bolts:	Corrosion resistant shop coat paint primer. 32 All Stainless Steel Universal Clamp Couplings 18-8 Type 304 Stainless Steel CF-8 Cast Stainless Steel (equivalent to 304 Stainless Steel) 18-8 Type 304 Stainless Steel Virgin Styrene-Butadiene Rubber (SBR) - Compounded for use with water, salt solutions, mild acids and bases. Per ASTM D-2000. Standard temperature range from -40° to 150°F (-40° to 65 C) constant, maximum intermittent 180° F (82 °C). Optional 316 Stainless Steel Available 52 Fabricated Lug All Stainless Steel Universal Clamp Couplings 18-8 Type 304 Stainless Steel 18-8 Type 304 Stainless Steel 18-8 Type 304 Stainless Steel 18-8 Type 304 Stainless Steel Virgin Styrene Butadiene Bubber (SBR). Compounded for use with
	Coating: JCM 131 - 13 Band: Lugs: Bolts: Gasket: JCM 161 - 16 Band: Lugs: Bolts: Gasket:	Corrosion resistant shop coat paint primer. 32 All Stainless Steel Universal Clamp Couplings 18-8 Type 304 Stainless Steel CF-8 Cast Stainless Steel (equivalent to 304 Stainless Steel) 18-8 Type 304 Stainless Steel Virgin Styrene-Butadiene Rubber (SBR) - Compounded for use with water, salt solutions, mild acids and bases. Per ASTM D-2000. Standard temperature range from -40° to 150°F (-40° to 65 C) constant, maximum intermittent 180° F (82 °C). Optional 316 Stainless Steel Available 52 Fabricated Lug All Stainless Steel 18-8 Type 304 Stainless Steel 18-8 Type 304 Stainless Steel 18-8 Type 304 Stainless Steel 18-8 Type 304 Stainless Steel Virgin Styrene-Butadiene Rubber (SBR) - Compounded for use with water salt solutions, mild acids and bases. Per ASTM D-2000 M44A
	Coating: JCM 131 - 13 Band: Lugs: Bolts: Gasket: JCM 161 - 10 Band: Lugs: Bolts: Gasket:	Corrosion resistant shop coat paint primer. 32 All Stainless Steel Universal Clamp Couplings 18-8 Type 304 Stainless Steel CF-8 Cast Stainless Steel (equivalent to 304 Stainless Steel) 18-8 Type 304 Stainless Steel Virgin Styrene-Butadiene Rubber (SBR) - Compounded for use with water, salt solutions, mild acids and bases. Per ASTM D-2000. Standard temperature range from -40° to 150°F (-40° to 65 C) constant, maximum intermittent 180° F (82 °C). Optional 316 Stainless Steel Available 52 Fabricated Lug All Stainless Steel Universal Clamp Couplings 18-8 Type 304 Stainless Steel 18-8 Type 304 Stainless Steel 18-8 Type 304 Stainless Steel 18-8 Type 304 Stainless Steel Virgin Styrene-Butadiene Rubber (SBR) - Compounded for use with water, salt solutions, mild acids and bases. Per ASTM D-2000 M4AA 607. Standard temperature range from -40° to 150°E (-40° to 65°C)
	Coating: JCM 131 - 13 Band: Lugs: Bolts: Gasket: JCM 161 - 16 Band: Lugs: Bolts: Gasket:	Corrosion resistant shop coat paint primer. 32 All Stainless Steel Universal Clamp Couplings 18-8 Type 304 Stainless Steel CF-8 Cast Stainless Steel (equivalent to 304 Stainless Steel) 18-8 Type 304 Stainless Steel Virgin Styrene-Butadiene Rubber (SBR) - Compounded for use with water, salt solutions, mild acids and bases. Per ASTM D-2000. Standard temperature range from -40° to 150°F (-40° to 65 C) constant, maximum intermittent 180° F (82 °C). Optional 316 Stainless Steel Available 52 Fabricated Lug All Stainless Steel Universal Clamp Couplings 18-8 Type 304 Stainless Steel 18-8 Type 304 Stainless Steel 18-8 Type 304 Stainless Steel Virgin Styrene-Butadiene Rubber (SBR) - Compounded for use with water, salt solutions, mild acids and bases. Per ASTM D-2000 M4AA 607. Standard temperature range from -40° to 150°F (-40° to 65°C) constant maximum intermittent 180° F (82 °C).

For applications on high temperatures or chemical pipelines, contact JCM Industries Technical Services. Other gaskets, hardware and materials (304, 316 stainless steel) available. Contact JCM Sales Team. For use of product information, refer to JCM Application Guidelines for JCM Universal Clamp Couplings on HDPE.

JCM 101 Universal Clamp Coupling Typical Specification

JCM 101 Universal Clamp Couplings (sizes 1-1/2 - 8")

All full circumferential single band repair clamps 1-1/2" and larger shall have a minimum material standard of certifiable prime 304 Stainless Steel band; heavy duty, low profile Ductile Iron Lugs per ASTM A536 with mutually supporting sliding fingers; 5/8" corrosion resistant alloy bolts, per ASTM A242/ANSI 21.11/AWWA C111, and a Styrene-Butadiene Rubber (SBR) gridded gasket with tapered lap joint ends and a 304 stainless steel bridge plate molded flush into the gasket. Gaskets in sizes 3" and larger shall be 1/4" thick. To provide extra tightening capability, the band shall be permanently attached to the lugs by crimping the lug and locking it in place with a minimum of three stainless welds per lug. Clamp shall be similar to JCM 101 Universal Clamp Coupling or approved equal. Optional features available; see material specification.



JCM 101 Universal Clamp Couplings (sizes 10" and larger)

All full circumferential single band repair clamps 10" and larger shall have a minimum

material of 17 gauge certifiable prime 304 Stainless Steel band; heavy duty Ductile Iron Lugs per ASTM A536 with mutually supporting sliding fingers; 3/4" corrosion resistant alloy bolts, per ASTM A242/ANSI 21.11/AWWA C111, and a 1/4" thick Styrene-Butadiene Rubber (SBR) gridded gasket with tapered stainless steel bridge plate molded flush into the gasket. To provide extra tightening capability, the band shall be permanently attached to the lugs. The attachment shall withstand a minimum of 100 ft. Ibs. of torque per bolt. Clamp shall be similar to JCM 101 Universal Clamp Coupling or approved equal. Optional features available; see material specification.

JCM 102 Extended Range Universal Clamp Coupling Typical Specification

JCM 102 Multi-Band Clamps (sizes 4" through 8")

All full circumferential multi-band repair clamps 4" - 8" shall have a minimum material standard of certifiable prime 304 Stainless Steel band; heavy duty, low profile Ductile Iron Lugs per ASTM A536 with mutually supporting sliding fingers; 5/8" corrosion resistant alloy bolts, per ASTM A242/ANSI 21.11/AWWA C111, and a 1/4" thick StyreneC111Butadiene Rubber (SBR) gridded gasket with tapered lap joint ends and a 304 stainless steel bridge plate molded flush into the gasket. Gaskets shall be 1/4" thick. To provide extra tightening capability, the bands shall be permanently attached to the lugs by crimping the lug and locking it in place with a minimum of three stainless welds per lug. Clamp shall be similar to JCM 102 Extended Universal Clamp Coupling or approved equal. Optional features available; see material specification.



JCM 102 Multi-Band Clamps (sizes 10" and larger)

All full circumferential multi-band repair clamps 10" and larger shall have a minimum material of 17 gauge certifiable prime 304 Stainless Steel band; heavy duty Ductile Iron Lugs per ASTM A536 with mutually supporting sliding fingers; 3/4" corrosion resistant alloy bolts, per ASTM A242/ANSI 21.11/AWWA C111, and a 1/4" thick Styrene-Butadiene Rubber (SBR) gridded gasket with tapered stainless steel bridge plate molded flush into the gasket. To provide extra tightening capability, the bands shall be permanently attached to the lugs. The attachment shall withstand a minimum of 100 ft. lbs. of torque per bolt. Clamp shall be similar to JCM 102 Extended Range Universal Clamp Coupling or approved equal. Optional features available; see material specification.

For use of product information, refer to JCM Application Guidelines for JCM Universal Clamp Couplings on HDPE. JCM 100 Series Universal Clamp Couplings are ANSI/NSF Standard 61, Annex G and ANSI/NSF 372 Certified.

JCM 171 Removeable Lug Universal Clamp Coupling Typical Specification

JCM 171 Removeable Lug Universal Clamp Couplings

All full circumferential single and multi-band repair clamps 1-1/2" and larger shall have a minimum material standard of certifiable prime 304 Stainless Steel band; heavy duty, low profile Ductile Iron Lugs per ASTM A536 with mutually supporting sliding fingers. Open ear lug shall be removeable from the band to facilitate sliding band under pipe or installing in confined spaces; 5/8" corrosion resistant alloy bolts, per ASTM A242/ANSI 21.11/AWWA C111, and a Styrene-Butadiene Rubber (SBR) diamond grid gasket with tapered lap joint ends and a 304 stainless steel bridge plate molded flush into the gasket. Gaskets in sizes 3" and larger shall be 1/4" thick. Clamp shall be similar to JCM 171 Universal Clamp Coupling with Removeable Lug or approved equal.



JCM 171 Removeable Lug Universal Clamp Couplings (sizes 10" and larger)

All full circumferential single and multi-band repair clamps 10" and larger shall have a minimum material of 17 gauge certifiable prime 304 Stainless Steel band; heavy duty Ductile Iron Lugs per ASTM A536 with mutually supporting sliding fingers. Open ear lug shall be removeable from the band to facilitate sliding band under pipe or installing in confined spaces; 3/4" corrosion resistant alloy bolts, per ASTM A242/ANSI 21.11/AWWA C111 and a1/4" thick Styrene-Butadiene Rubber (SBR) diamond grid gasket with tapered stainless steel bridge plate molded flush into the gasket. The attachment shall withstand a minimum of 100 ft. lbs. of torque per bolt. Clamp shall be similar to JCM 171 Universal Clamp Coupling with Removeable Lug or approved equal.

JCM 172 Removeable Lug Extended Range Universal Clamp Coupling Typical Specification

JCM 172 Removeable Lug Multi-Band Clamps (sizes 4" through 8")

All full circumferential multi-band repair clamps 4" - 8" shall have a minimum material standard of certifiable prime 304 Stainless

Steel band; heavy duty, low profile Ductile Iron Lugs per ASTM A536 with mutually supporting sliding fingers; open ear lug shall be removable from the band to facilitate sliding band under pipe or installing in confined spaces; 5/8" corrosion resistant alloy bolts, per ASTM A242/ANSI 21.11/AWWA C111, and a 1/4 " thick Styrene-Butadiene Rubber (SBR) gridded gasket with tapered lap joint ends and a 304 stainless steel bridge plate molded flush into the gasket. Gaskets shall be 1/4" thick. Clamp shall be similar to JCM 172 Removeable Lug Extended Universal Clamp Coupling or approved equal.

JCM 172 Multi-Band Clamps (sizes 10" and larger)



All full circumferential multi-band repair clamps 10" and larger shall have a minimum material of 17 gauge certifiable prime 304 Stainless Steel band; heavy duty Ductile Iron Lugs per ASTM A536 with mutually supporting sliding fingers; open ear lug shall

be removable from the band to facilitate sliding band under pipe or installing in confined spaces; 3/4" corrosion resistant alloy bolts, per ASTM A242/ANSI 21.11/AWWA C111, and a 1/4" thick Styrene-Butadiene Rubber (SBR) gridded gasket with tapered stainless steel bridge plate molded flush into the gasket. Clamp shall be similar to JCM 172 Removeable Extended Range Universal Clamp Coupling or approved equal.

For use of product information, refer to JCM Application Guidelines for JCM Universal Clamp Couplings on HDPE. JCM 100 Series Universal Clamp Couplings are ANSI/NSF Standard 61, Annex G and ANSI/NSF 372 Certified

JCM 131 All Stainless Universal Clamp Coupling Typical Specification

JCM 131 All Stainless Universal Clamp Couplings (sizes 1-1/2" - 8")

All full circumferential single band repair clamps 1-1/2" and larger shall have a minimum material standard of certifiable prime 304 stainless steel band; low profile CF-8 Cast Stainless Steel lugs (equivalent to 304 stainless steel) with mutually supporting sliding fingers; minimum 5/8" 304 stainless steel, oval neck track head, replaceable bolts and nuts, and a Styrene-Butadiene Rubber (SBR) gridded gasket with tapered lap joint ends and a 304 stainless steel bridge plate molded flush into the gasket. Gaskets in sizes 3" and larger shall be 1/4" thick. Clamps shall be JCM 131 All Stainless Steel Universal Clamp Coupling or approved equal.



JCM 131 All Stainless Universal Clamp Couplings (sizes 10" and larger)

All full circumferential single band repair clamps 10" and larger shall have a minimum material standard of 17 gauge certifiable prime 304 stainless steel band; heavy duty, low profile CF-8 Cast Stainless Steel lugs (equivalent to 304 stainless steel) with mutually supporting sliding fingers; minimum 3/4" 304 stainless steel, oval neck track head, replaceable bolts and nuts, and a Styrene-Butadiene Rubber (SBR) gridded gasket with tapered lap joint ends and a 304 stainless steel bridge plate molded flush into the gasket. To provide extra tightening capability, the band shall be permanently attached to the lugs. The attachment shall withstand a minimum of 100 ft. lbs. of torque per bolt. Clamp shall be similar to JCM 131 All Stainless Steel Universal Clamp Coupling or approved equal.

JCM 132 All Stainless Extended Range Universal Clamp Coupling Typical Specification

JCM 132 All Stainless Multi-Band Clamps (sizes through 8")

All full circumferential multi-band repair clamps 4" through 8" shall have a minimum material standard of certifiable prime 304 stainless steel band; low profile CF-8 Cast Stainless Steel lugs (equivalent to 304 stainless steel) with mutually supporting sliding fingers; minimum 5/8" replaceable, 304 stainless steel oval neck track head bolts and nuts, and a Styrene-Butadiene Rubber (SBR) gridded gasket with tapered lap joint ends and a 304 stainless steel bridge plate molded flush into the gasket. Gaskets in sizes 4" and larger shall be 1/4" thick. Clamps shall be JCM 132 All Stainless Clamp or approved equal.



JCM 132 All Stainless Multi-Band Clamps (sizes 10" and larger)

All full circumferential multi-band repair clamps 10" and larger shall have a minimum material standard of 17 gauge certifiable prime 304 stainless steel band; heavy duty, low profile CF-8 Cast Stainless Steel lugs (equivalent to 304 stainless steel) with mutually supporting sliding fingers; minimum 3/4" replaceable, 304 stainless steel oval neck track head bolts and nuts, and a Styrene-Butadiene Rubber (SBR) gridded gasket with tapered lap joint ends and a 304 stainless steel bridge plate molded flush into the gasket. Lugs shall be heavy duty design providing a minimum 1/2" working range. Clamps shall be JCM 132 All Stainless Universal Clamp Coupling or approved equal.

For use of product information, refer to JCM Application Guidelines for JCM Universal Clamp Couplings on HDPE. JCM 130 Series Universal Clamp Couplings are ANSI/NSF Standard 61, Annex G and ANSI/NSF 372 Certified.

JCM 161 Fabricated Lug All Stainless Universal Clamp Coupling Typical Specification

JCM 161 Fabricated Lug All Stainless Steel Clamp Coupling

Full circumferential single band repair clamps shall have a minimum material standard of 304 stainless steel band, bolt assembly and hardware. Fabricated lug shall have permanently attached mutually supporting fingers and strong stainless steel lifter bar plate. The gasket shall be gridded with tapered lap joint ends and a 304 stainless steel bridge plate molded flush into the gasket. Gaskets in sizes 3" and larger shall be 1/4" thick. Clamps shall be JCM 161, 163 or approved equal.



JCM 162 Fabricated Lug Extended Range All Stainless Universal Clamp Coupling Typical Specification

JCM 162 Fabricated Lug Multi Band All Stainless Steel Clamp Coupling

Full circumferential multi band repair clamps shall have a minimum material standard of 304 stainless steel band, bolt assembly and hardware. Fabricated lugs shall have permanently attached mutually supporting fingers and strong stainless steel lifter bar plate. The gasket shall be gridded with tapered lap joint ends and a 304 stainless steel bridge plate molded flush into the gasket. Gaskets in sizes 4" and larger shall be 1/4" thick. Clamps shall be JCM 162 or approved equal.



Application Guidelines for JCM Universal Clamp Couplings on HDPE:

- 1. Universal Clamp Couplings do not prevent lateral movement of pipe. Applications in which the pipe may move out of the clamp, proper anchorage of the pipe must be provided.
- 2. Pipe Stiffeners are required for applications joining plain end HDPE Pipe.
- 3. Universal Clamp Couplings should be 1-1/2 times greater in length than the nominal pipe size through 16" nominal pipe size.
- 4. Universal Clamp Couplings are not for the repair of Polyethylene Gas Pipe. Clamps are suitable for reshaping and marking squeeze off locations.
- 5. For universal clamp coupling applications for repairing or reinforcing a fused joint, the fused weld (bead) must be removed to eliminate interference with consistent gasket compression.
- 6. See JCM General Application Information for Products on HDPE Pipe, page 3.

Common applications on HDPE pressure applications utilize HDPE SDR 17 - SDR 11. For applications on thinner wall pipe, please contact JCM Industries.

Maximum service rating of fittings is 150 PSI or the rating of the pipe.

Operating temperature range 35^o - 75^o F/Maximum test pressure limited to rated pipe pressure. For other temperature ranges or higher pressure applications, contact JCM for product selection and installation recommendations.

JCM Fittings are for use in underground applications. Contact JCM for above ground, underwater or pipe gallery applications. Failure to follow application guidelines will result in voided product warranty. JCM 160 Series Universal Clamp Couplings are ANSI/NSF Standard 61, Annex G and ANSI/NSF 372 Certified.

JCM 118 Large Diameter and Non-Standard Contour Pipe Repair Sleeve

The JCM 118 Repair Sleeve repairs large diameter HDPE pipe in systems which require high working pressure capability. Engineered specifically for the internal pressure forces involved with large diameter pipe and its working characteristics. The JCM 118 Sleeve is available in pipe sizes up through 60" and larger and provides several design options for the specific application.

Minimal Pipe Excavation - the 118 sleeve requires limited pipe exposure around the damaged area. Full section joint exposure is eliminated.

Reinforcement Pipe Wall - strong and lightweight steel directly reinforces the pipe wall on the circumference of the pipe.

Heavy Duty Design - large fitting components, spacious bolt holes and heavy hardware combine to make installations in less than ideal environments easy and fast. The 118 especially lends itself for easy underwater and low visibility applications.

Maximum Gasket Sealing - heavy duty bolts and material provides high levels of bolt torque which is transferred directly to gasket sealing compression. Higher bolt torques maintain greater working pressures.

Low Profile Stance - the hydro-mechanical lip gasket is trapped both internally and externally in a recessed groove that provides a low profile stance on the pipe eliminating the chance of gasket displacement or "blow-out" in high pressure applications.

Availability - the JCM 118 Repair Sleeve is available from JCM on both an emergency and a contingency basis. Timely delivery and installation prevents extensive pipe damage, content loss and environmental violations.

JCM 118 Large Diameter Repair Sleeve Offers Application Specific Options

JCM 118 is available fabricated of 304 stainless steel or 316 stainless steel

The JCM 118 Repair Sleeve is recommended for applications on large diameter pipe, high working pressure systems and critical service applications. The 118 provides a variety of fabrication options for consideration such as space limitations, environment and service requirements. These special fabrication options include:

Laying Length Pipe Range Gasket Coating Body Material Damaged area accommodation Hardware



Typical Application: Repair Temporary/Permanent Especially Recommended for Large Diameter Pipe High Working Pressures

> Splits Holes Punctures Corroded Areas Gouges





JCM 118 Repair Sleeve - Available in Carbon Steel or Stainless Steel (304-316)

JCM 118 Large Diameter and Non-Standard Contour Pipe Repair Sleeve

JCM provides various options for the JCM 118 Large Diameter Pipe Repair Sleeve. For special engineered fittings, contact the JCM Technical Services Sales Team and provide the application parameters. JCM will provide recommendations for the application and custom design the fitting to accommodate those parameters.



JCM 118 Large Diameter Repair Sleeve - Standard Design

HOW TO ORDER

For pricing and engineering, the following information must be furnished:

Type of Pipe	Dimension of Damaged Area
Pipe Outside Diameter	Space Limitations
Line Content	Coating Requirements
Line Working Pressure	Optional Material Requirements

JCM 118 Fabricated Repair Sleeve - Standard Fitting Typical Specification

Repair fittings shall be the high strength type fabricated of ASTM A285 Grade C or ASTM A-36 Steel or equal, which conforms to and reinforces the pipe. Sleeve shall be minimum 8" wide and be sized to fit and reinforce the pipe circumference. Sleeve repair area shall have a minimum 3/4" wide Buna-N gasket recessed in a machined groove. Repair fitting shall have a 3/4" outlet for venting and test purposes. Repair fitting shall be furnished with a corrosion resistant shop coat paint primer with high strength, low alloy corrosion resistant bolts and nuts (AWWA C-111, ANSI 21.11). Repair Sleeves shall be ANSI/NSF Standard 61, Annex G and ANSI/AWWA 372 Certified.

JCM 118 Large Diameter Pipe Repair Sleeve - Material Specifications

- BODY: ASTM A285 Grade C, ASTM A-36 Steel or equal. Optional 304 or 316 Stainless Steel.
- **BOLTS:** Corrosion resistant, high strength low alloy A242. Optional Stainless Steel, 18-8 Type 304 or 316; Epoxy Coated Bolts.
- **GASKET:** Nitrile rubber compounded for use with water, salt solutions, mild acids and bases.
- **COATING:** Heavy coat of corrosion resistant shop coat primer, an excellent base for bitumastic coal tar or similar field coatings. Optional Fusion Epoxy Coating (per ANSI/AWWA C-213) available.

JCM Bolted Couplings for Polyethylene Pipe

JCM recommends the featured models for use on High Density Polyethylene Pipe

JCM 201 Steel Coupling JCM 210 Series Ductile Iron Coupling JCM 241 Optimum Range Coupling JCM 242 Optimum Range Coupling JCM 230 Stainless Steel Stiffeners JCM 301 Flanged Coupling Adapter JCM 303 Fabricated Flanged Coupling Adapter For other Bolted Coupling applications, contact JCM Industries, Inc.

Built-In Advantages of Bolted Couplings

Wide Gasket - provides maximum gasket to pipe contact and stores compression energy.

Maximum number of bolts - ensures consistent gasket compression on the circumference of the fitting.

Bolted design - allow system to be dismantled for maintenance or interior inspection.

Versatile - available in variety of materials, coatings, hardware and gaskets.



JCM Couplings use the mechanical joint principle for joining plain end pipe. Several features are designed with Polyethylene Pipe in mind. Working characteristics of Polyethylene systems require specific criteria to be met when joining pipe ends, or meeting up to a flanged connection. JCM Couplings design criteria includes:

- Wide gasket profile provides maximum gasket to pipe contact. The broad surface gasket provides a secure seal on the pipe at the joint and adapts to HDPE fluctuations during thermal changes.
- The bolted mechanical joint principle design allows the systems to be disassembled for maintenance and reassembled. This portable connection also lends itself to accommodate a temporary installation.
- · Various gasket materials are available for unique line contents.
- Also available with the above design criteria are transition couplings, reducing couplings, flanged coupling adapters straight and reducing.
- Meets or exceeds ANSI/AWWA C219 Standard for Bolted Couplings. JCM 200 Series Couplings are ANSI/NSF Standard 61, Annex G and ANSI/NSF 372 Certified.

Application Guidelines for JCM Bolted Couplings on HDPE:

- 1. Bolted Couplings do not prevent lateral movement of pipe. Applications in which the pipe may move out of the coupling, proper anchorage of the pipe must be provided.
- 2. Pipe Stiffeners are required for applications using a bolted fitting to join HDPE Pipe.
- 3. See JCM General Application Information for Products on HDPE Pipe, page 3.

Common applications on HDPE pressure applications utilize HDPE SDR 17 - SDR 11. For applications on thinner wall pipe, please contact JCM Industries.

Maximum service rating of fittings is 150 PSI or the rating of the pipe.

Operating temperature range 35^o - 75^o F/Maximum test pressure limited to rated pipe pressure. For other temperature ranges or higher pressure applications, contact JCM for product selection and installation recommendations.

JCM Bolted Couplings & Flanged Adapter Standard Material Specifications

JCM 200 Series Steel Couplings Sizes 3" - 12" MIDDLE RING: Steel per ASTM A-36 FOLLOWERS: Ductile Iron ASTM A536 Sizes 14" and Larger MIDDLE RING: Steel per ASTM A-36 FOLLOWERS: Steel per ASTM A-36 Gaskets: Nitrile Butadiene Rubber (NBR, Buna-N) per ASTM D2000. Molded virgin rubber. Gasket temperature range -40°F to 212°F (-40°C - 100°C) Recommended for water, salt solutions, mild acids, bases, sewage and natural gas. Bolts & Nuts: Nominal sizes 2" and larger: minimum 5/8" bolts ASTM A242/ANSI 21.11/AWWA C111 corrosion resistant, high strength low alloy; heavy hex nuts A563 per ANSI/ AWWA C219. Finish: Heavy coat of corrosion resistant shop coat primer. Working Pressure: Rated for 250 PSI working pressure when installed per manufacturer's instructions.
 JCM 200 Series Ductile Iron Couplings - 210, 211, 212 Sleeve & Flanges: Ductile Iron Per ASTM A536 65-45-12 Gaskets: Styrene-Butadiene Rubber (SBR) has good physical properties. Compounded for use with water, salt solutions, mild acids and bases; has excellent abrasion resistance. Per ASTM D-2000. Standard temperature range from -40° to 150°F (-40° to 65°C) constant, maximum intermittent 180° F (82°C). The material is not recommended for use on oil, ozone or weather resistant applications. Bolts: 5/8" Corrosion resistant, high strength low alloy oval neck track head bolts per ASTM A242/ANSI 21.11/AWWA C111 and heavy hex nuts per A563 or equal per ANSI/AWWA C219. Coating: Corrosion resistant shop coat paint primer. Optional fusion applied epoxy coating per ANSI/AWWA C213. Working Pressure: Rated for 150 PSI working pressure when installed per manufacturer's instructions.
JCM 200 Series Ductile Iron Couplings - 241 - 242 Sleeve & Flanges: Ductile Iron Per ASTM A536 65-45-12 Gaskets: Nitrile Butadiene Rubber (NBR, Buna-N) per ASTM D2000. Gasket temperature range -40°F to 212°F (-40°C - 100°C) Gasket suitable for water, salt solutions, mild acids, bases, and sewage. Bolts: 5/8" Corrosion resistant, high strength low alloy oval neck track head bolts per ASTM A242/ANSI 21.11/AWWA C111 and heavy hex nuts per A563 or equal per ANSI/AWWA C219. Coating: Corrosion resistant shop coat paint primer. Working Pressure: Rated for 250 PSI working pressure when installed per manufacturer's instructions.
JCM 301 Series Flanged Coupling Adapter - 301 Sleeve & Flanges: Sleeve - Ductile Iron Per ASTM A536 80-55-06. Flange - Ductile Iron with ANSI Class 125 & 150 bolt pattern Gaskets: Styrene-Butadiene Rubber (SBR) has good physical properties. Per ASTM D- 2000. Standard temperature range from -40° to 150°F (-40° to 65°C) constant, maximum intermittent 180° F (82°C). The material is not recommended for use on oil, ozone or weather resistant applications. Bolts: 5/8" Corrosion resistant, high strength Iow alloy oval neck track head bolts per ASTM A242/ANSI 21.11/AWWA C111 and heavy hex nuts per A563 or equal. Coating: Corrosion resistant shop coat paint primer. Working Pressure: Rated for 150 PSI working pressure when installed per manufacturer's instructions.
JCM 303 Series Flanged Coupling Adapter - 303 Sizes 3" - 12": MIDDLE RING: Steel per ASTM A-36 FOLLOWERS: Ductile Iron ASTM A536 Sizes 14" and Larger: MIDDLE RING: Steel per ASTM A-36 FOLLOWERS: Steel per ASTM A-36 Gaskets: Nitrile Butadiene Rubber (NBR, Buna-N) per ASTM D2000. Molded virgin rubber. Gasket temperature range -40°F to 212°F (-40°C - 100°C). Recommended for water, salt solutions, mild acids, bases, sewage and natural gas. Bolts & Nuts: Nominal sizes 2" and larger: minimum 5/8" bolts ASTM A242/ANSI 21.11/AWWA C111 corrosion resistant, high strength low alloy; heavy hex nuts A563 per ANSI/ AWWA C219. Finish: Heavy coat of corrosion resistant shop coat primer. Working Rated for 250 PSI working pressure when installed per manufacturer's instructions.

For applications on high temperatures or chemical pipelines, contact JCM Industries Technical Services. Other gaskets, hardware, and materials (304, 316 stainless steel) available. Contact JCM Sales Team. For use of product information, refer to JCM Application Guidelines for JCM Bolted Couplings on HDPE. Please contact JCM concerning pressure rating on specific sizes.

Joining Plain End HDPE Recommendations

JCM Industries recommends fusion as the primary method to join plain end HDPE. However, logistics of the job site can eliminate this process as a option and mechanical, bolted fittings are selected. To effectively join plain end HDPE pipe with mechanical bolted fittings, JCM recommends two additional elements which are critical to a successful, permanent application.

First, stiffeners should be inserted into the HDPE pipe ends. Stiffeners reinforce the pipe and prevent "necking down" under compression of the bolted fitting. They also bring cut HDPE into "round" to better match the bolted fitting (coupling, flanged adapter, dismantling joint, etc.). Mechanical fittings are manufactured within certain tolerance dimensions. Out of round pipe that goes beyond the tolerance will not insert into the bolted fitting correctly and will set up the application to fail.

Secondly, standard bolted fittings do not provide for lateral or linear movement of the pipe. Applications in which pipe may move or pull out of the bolted fitting must be restrained. Correct anchorage of the pipe must be provided to prevent the pipe from moving or dislodging (interrupting the gasket compression/watertight seal on the pipe wall). During installation and exposure to temperature fluctuations, the thermal expansion/contraction characteristic of HDPE can disturb the installation application.



Mechanical Bolted Fittings are manufactured to certain "fit" tolerances (i.e. round +/- xx)



Field cut HDPE can experience an "egging or necking down" and be out of round beyond mechanical fitting tolerances.



Installation of stiffeners brings pipe "into round" and pipe provides good fit for mechanical fitting.

Example of a typical installation of a bolted mechanical coupling joining to pieces of plain end HDPE incorporating the use of pipe stiffeners and mechanical external restraints.



For product selection and installation recommendation assistance, contact JCM Industries Sales Team at 1-800-527-8482 or 903-832-2581, sales@jcmind.com

JCM 230 and 231 HDPE Pipe Stiffeners Advanced Design Provides...

- Corrosion Resistance
- Rigid Reinforcement of Pipe Wall for Pipe Connections
- Accurate Pipe I.D. Sizing maintains proper Outside Diameter
- 1/8" Tapered Insert End provides for Easy Installation
- 90° 1/8" Flared End Secures Stiffener to End of Pipe
- Positive Reinforcement without interference

JCM HDPE Pipe Stiffeners are designed to support the interior wall of HDPE for critical pipe joining applications. Recommended for all pipe end connections utilizing mechanical bolt-on fittings, the JCM Pipe Stiffeners support the pipe's end and controls the "necking down"



reaction to the pressure applied during normal installation of fittings used in pipe joining applications.

The JCM HDPE Pipe Stiffeners are formed of stainless steel, 304 or 316 material, to the **actual inside pipe diameter provided by the customer**. This accurate formation provides for ease of installation and maintains the proper outside diameter for a successful, trouble free application that provides long-term service.

Nominal Pipe Size	230 Stiffener 6" Width xxxx (add pipe I.D.)	231 Stiffener 12" Width xxxx (add pipe I.D.)
4	230-04-xxxx	231-04-xxxx
6	230-06-xxxx	231-06-xxxx
8	230-08-xxxx	231-08-xxxx
10	230-10-xxxx	231-10-xxxx
12	230-12-xxxx	231-12-xxxx
14	230-14-xxxx	231-14-xxxx
16	230-16-xxxx	231-16-xxxx
18	230-18-xxxx	231-18-xxxx
20	230-20-xxxx	231-20-xxxx
22	230-22-xxxx	231-22-xxxx
24	230-24-xxxx	231-24-xxxx
30	230-30-xxxx	231-30-xxxx
36	230-36-xxxx	231-36-xxxx

JCM Pipe Stiffeners are available for Steel Size and Ductile Iron Size HDPE in SDR11,13.5, 17, 21, 26, 32.5 JCM Pipe Stiffeners Material Specifications: ASTM - 240 - TP 304 Stainless Steel or 316 Stainless Steel

Smallest I.D./O.D. available 3.65 - Sizes larger than 36" available upon request

Stiffeners provided as 304 Stainless Steel. Optional 316 Stainless Steel available.

Nominal Size Stiffeners 4" - 22" are 17 Gauge Stainless Steel Material

Nominal Size Stiffeners 24" - 36" are 12 Gauge Stainless Steel Material

Note: JCM recommends fusion joints as a primary method of connection. Mechanical fittings are a secondary and limiting choice. JCM 230 Pipe Stiffeners are designed for use with mechanical couplings, clamps and fittings where stiffening of the pipe is necessary for proper gasket seal. Caution needs to be taken to prevent (1) shear loading on the joint, (2) migration of the stiffener out of the end of the pipe from lack of a back load on stiffener rim or load on the stiffener. Applications in which pipe may move out of the fitting, correct anchorage of the pipe must be provided.

JCM 201 Steel Couplings Typical Specification

Couplings shall consist of one steel middle ring, length and thickness to be specified, two follower flanges, two compounded wedged gaskets and a proper amount of bolts to correctly compress the gaskets into the coupling for the application.

Each coupling shall be assembled on the job in a manner to assure a permanent joint under reasonable conditions, shifting and settlement, unavoidable variations in trench gradient and any other unforeseen changes in environment.



Sizes 3" - 12"

MIDDLE RING:	Steel per ASTM A-36
FOLLOWERS:	Ductile Iron ASTM A536

Sizes 14" and Larger

MIDDLE RING:	Steel per ASTM A-36
FOLLOWERS:	Steel per ASTM A-36

Gaskets: Nitrile Butadiene Rubber (NBR, Buna-N) per ASTM D2000. Molded virgin rubber. Gasket temperature range -40°F to 212°F (-40°C - 100°C). Recommended for water, salt solutions, mild acids, bases, sewage and natural gas.

Bolts & Nuts:Nominal sizes 2" and larger: minimum 5/8" bolts ASTM A242/ANSI 21.11/AWWA C111
corrosion resistant, high strength low alloy; heavy hex nuts A563 per ANSI/AWWA C219.Finish:Heavy coat of corrosion resistant shop coat primer.

Working

Pressure: Rated for 250 PSI working pressure when installed per manufacturer's instructions.

JCM 200 Series Steel Couplings are ANSI/NSF Standard 61, Annex G and ANSI/NSF 372 Certified. JCM 200 Series Steel Couplings meet or exceed the ANSI/AWWA C219 Standard as applicable.

Application Guidelines for JCM Bolted Couplings on HDPE:

- 1. Bolted Couplings do not prevent lateral movement of pipe. Applications in which the pipe may move out of the coupling, proper anchorage of the pipe must be provided.
- 2. Pipe Stiffeners are required for applications using a bolted fitting to join HDPE Pipe.
- 3. See JCM General Application Information for Products on HDPE Pipe, page 3.

Common applications on HDPE pressure applications utilize HDPE SDR 17 - SDR 11. For applications on thinner wall pipe, please contact JCM Industries.

Maximum service rating of fittings is 150 PSI or the rating of the pipe.

Operating temperature range 35° - 75° F/Maximum test pressure limited to rated pipe pressure. For other temperature ranges or higher pressure applications, contact JCM for product selection and installation recommendations.

JCM 210 - 211 - 212 Series Ductile Iron Couplings Typical Specification

Couplings for pipe sizes 2" - 24" shall be of ductile iron construction. Couplings shall be of the wide range type to fit Steel, Cast Iron, Ductile Iron, PVC, HDPE and Asbestos-Cement with only a change of gaskets. Coupling sleeves shall be 5" in length on 2" - 2-1/2" nominal sizes, 6" in length on nominal sizes 3" - 12". Ductile Iron couplings shall be JCM 210, 211, 212, or approved equal.



Nominal Pipe	Sleeve Length	Number of Bolts
2	5	2
2-1/2	5	2
3	6	3
4	6	4
6	6	5
8	6	6
10	6	7
12	6	8
14	7	9
16	7	10
18	7	12
20	7	12
22	7	13
24	10	14

Sleeve & Flanges:	Ductile Iron Per ASTM A536 65-45-12
Gaskets:	Styrene-Butadiene Rubber (SBR) has good physical properties. Compounded for use with water, salt
	solutions, mild acids and bases; has excellent abrasion resistance. Per ASTM D-2000. Standard
	temperature range from -40° to 150°F (-40° to 65° C) constant, maximum intermittent 180° F (82° C). The
	material is not recommended for use on oil, ozone or weather resistant applications.
Bolts:	5/8" Corrosion resistant, high strength low alloy oval neck track head bolts per ASTM A242/ANSI 21.11/
	AWWA C111 and heavy hex nuts per A563 or equal per ANSI/AWWA C219.
Coating:	Corrosion resistant shop coat paint primer. Optional fusion applied epoxy coating per ANSI/AWWA C213.
Working Pressure:	Fittings are rated for 150 PSI working pressure when installed per manufacturer's instructions.

JCM 200 Series Ductile Iron Couplings are ANSI/NSF Standard 61, Annex G and ANSI/NSF 372 Certified. JCM 200 Series Couplings meet or exceed the ANSI/AWWA C219 Standard as applicable.

Application Guidelines for JCM Bolted Couplings on HDPE:

- 1. Bolted Couplings do not prevent lateral movement of pipe. Applications in which the pipe may move out of the coupling, proper anchorage of the pipe must be provided.
- 2. Pipe Stiffeners are required for applications using a bolted fitting to join HDPE Pipe.
- 3. See JCM General Application Information for Products on HDPE Pipe, page 3.

Common applications on HDPE pressure applications utilize HDPE SDR 17 - SDR 11. For applications on thinner wall pipe, please contact JCM Industries.

Maximum service rating of fittings is 150 PSI or the rating of the pipe.

Operating temperature range 35^o - 75^o F/Maximum test pressure limited to rated pipe pressure. For other temperature ranges or higher pressure applications, contact JCM for product selection and installation recommendations.

JCM 241 - 242 Optimum Range Ductile Iron Coupling Typical Specification

Couplings for pipe sizes 3" - 16" shall be of ductile iron construction. Couplings shall be of the optimum range type to fit Steel, Cast Iron, Ductile Iron, PVC, HDPE, Asbestos Cement and other common types of pipe within a nominal size without modification. Coupling sleeve shall be minimum 6" in length for standard coupling and 10" for long coupling with bolt quantities as follows:



Nominal Pipe Size (IN)	Number of Bolts
3	3
4	4
6	5
8	6
10	8
12	8
14	10
16	11

Ductile Iron Couplings shall be JCM 241, 242 Optimum Range Coupling or approved equal.

Sleeve & Flanges: Ductile Iron Per ASTM A536 65-45-12

- **Gaskets:** Nitrile Butadiene Rubber (NBR, Buna-N) per ASTM D2000. Gasket temperature range 40°F to 212°F (-40°C 100°C) Gasket suitable for water, salt solutions, mild acids, bases, and sewage.
 - **Bolts:** 5/8" Corrosion resistant, high strength low alloy oval neck track head bolts per ASTM A242/ANSI 21.11/AWWA C111 and heavy hex nuts per A563 or equal per ANSI/AWWA C219.
- **Coating:** Corrosion resistant shop coat paint primer.
- **Working Pressure:** Fittings are rated for 250 PSI working pressure when installed per manufacturer's instructions.

JCM 200 Series Ductile Iron Couplings are ANSI/NSF Standard 61, Annex G and ANSI/NSF 372 Certified. JCM 200 Series Couplings meet or exceed the ANSI/AWWA C219 Standard as applicable.

Application Guidelines for JCM Bolted Couplings on HDPE:

- 1. Bolted Couplings do not prevent lateral movement of pipe. Applications in which the pipe may move out of the coupling, proper anchorage of the pipe must be provided.
- 2. Pipe Stiffeners are required for applications using a bolted fitting to join HDPE Pipe.
- 3. See JCM General Application Information for Products on HDPE Pipe, page 3.

Common applications on HDPE pressure applications utilize HDPE SDR 17 - SDR 11. For applications on thinner wall pipe, please contact JCM Industries.

Maximum service rating of fittings is 150 PSI or the rating of the pipe.

Operating temperature range 35^o - 75^o F/Maximum test pressure limited to rated pipe pressure. For other temperature ranges or higher pressure applications, contact JCM for product selection and installation recommendations.

JCM 301 Ductile Iron Flanged Coupling Adapters Typical Specification

Flanged Coupling Adapters 3" - 12" shall be of a design which utilizes separate flange and coupling end gaskets, same number of bolts on coupling end as flange end. FCA flange shall be ductile iron with ANSI Class 125 & 150 bolt pattern, suitable for use with the standard and wafer type valves. Flanged Coupling Adapter shall be of ductile iron construction. Flanged Coupling Adapter shall be JCM 301 or approved equal.



Sleeve & Flanges: Sleeve - Ductile Iron Per ASTM A536 60-45-12.

Flange - Ductile Iron with ANSI Class 125 & 150 bolt pattern

- **Gaskets:** Styrene-Butadiene Rubber (SBR) has good physical properties. Compounded for use with water, salt solutions, mild acids and bases; has excellent abrasion resistance. Per ASTM D-2000. Standard temperature range from -40° to 150°F (-40° to 65°C) constant, maximum intermittent 1800 F (82°C). For applications on high temperatures or chemical pipelines, contact JCM Industries Technical Services. The material is not recommended for use on oil, ozone or weather resistant applications.
 - **Bolts:** 5/8" Corrosion resistant, high strength low alloy oval neck track head bolts per ASTM A242/ANSI 21.11/AWWA C111 and heavy hex nuts per A563 or equal.

Optional Hardware: Stainless Steel 18-8 Type 304 or 316

Epoxy Coated Alloy Hardware, Powercron 590-534 black cationic electrocoat.

- **Coating:** Corrosion resistant shop coat paint primer. Optional fusion applied epoxy coating per ANSI/ AWWA C213. Other coatings available upon request.
- **Working Pressure:** Fittings are rated for 150 PSI working pressure when installed per manufacturer's instructions. Inspection of pipe integrity is the responsibility of the end user. For higher working pressure applications, contact JCM Industries.

JCM 300 Series Flange Coupling Adapters (FCA) are ANSI/NSF Standard 61, Annex G and ANSI/NSF 372 Certified. JCM 300 Series Flanged Coupling Adapters meet or exceed the ANSI/AWWA C219 Standard as applicable.

Application Guidelines for JCM Flanged Adapters on HDPE:

- 1. Bolted Couplings do not prevent lateral movement of pipe. Applications in which the pipe may move out of the coupling, proper anchorage of the pipe must be provided.
- 2. Pipe Stiffeners are required for applications using a bolted fitting to join HDPE Pipe.
- 3. See JCM General Application Information for Products on HDPE Pipe, page 3.

Common applications on HDPE pressure applications utilize HDPE SDR 17 - SDR 11. For applications on thinner wall pipe, please contact JCM Industries.

Maximum service rating of fittings is 150 PSI or the rating of the pipe.

Operating temperature range 35^o - 75^o F/Maximum test pressure limited to rated pipe pressure. For other temperature ranges or higher pressure applications, contact JCM for product selection and installation recommendations.

JCM 303 Fabricated Flanged Coupling Adapter Typical Specification

Flanged Coupling Adapters shall be of a design which utilizes separate flange and coupling end gaskets and provides a means for joining plain end pipe to flanged fittings, valves, meters and equipment. FCA's shall be manufactured from steel with a flange of the same bolt pattern as the flanged fittings. Coupling bolts shall be to AWWA C111/ANSI 21.11. Flanged Coupling Adapters shall be JCM 303 Flanged Coupling Adapter or approved equal.



Sizes 3" - 12"

Middle Ring: Steel per ASTM A-36 Follower: Ductile Iron ASTM A536

Sizes 14" and Larger

- Middle Ring: Steel per ASTM A-36 Follower: Steel per ASTM A-36
 - Flange: AWWA C207 Class D Flange with ANSI 150 lb. drilling.
 Gaskets: Nitrile Butadiene Rubber (NBR, Buna-N) per ASTM D2000. Molded virgin rubber. Gasket temperature range -40°F to 212°F (-40°C - 100°C) Recommended for water, salt solutions, mild acids, bases, sewage and natural gas. Available Options: EPDM
 - **Bolts:** Nominal sizes 2" and larger: minimum 5/8" bolts ASTM A242/ANSI 21.11/AWWA C111 corrosion resistant, high strength low alloy; heavy hex nuts A563 per ANSI/AWWA C219.
 - Available Options: epoxy coated, Powercron 590-534; Stainless Steel 18-8 Type 304.
 - **Finish:** Heavy coat of corrosion resistant shop coat primer. Optional fusion epoxy coating per AWWA C213.

JCM 300 Series Flange Coupling Adapters (FCA) are ANSI/NSF Standard 61, Annex G and ANSI/NSF 372 Certified. JCM 300 Series Flanged Coupling Adapters meet or exceed the ANSI/AWWA C219 Standard as applicable.

Application Guidelines for JCM Flanged Adapters on HDPE:

- 1. Bolted Couplings do not prevent lateral movement of pipe. Applications in which the pipe may move out of the coupling, proper anchorage of the pipe must be provided.
- 2. Pipe Stiffeners are required for applications using a bolted fitting to join HDPE Pipe.
- 3. See JCM General Application Information for Products on HDPE Pipe, page 3.

Common applications on HDPE pressure applications utilize HDPE SDR 17 - SDR 11. For applications on thinner wall pipe, please contact JCM Industries.

Maximum service rating of fittings is 150 PSI or the rating of the pipe.

Operating temperature range 35^o - 75^o F/Maximum test pressure limited to rated pipe pressure. For other temperature ranges or higher pressure applications, contact JCM for product selection and installation recommendations.

JCM Service Saddles and Tapping Sleeves

JCM gasket system works in conjunction with HDPE and its fluctuations. The gasket is specially designed and manufactured to accommodate HPDE working characteristics and provide a permanent, water tight seal. Other designs have attempted to duplicate the JCM gasket theory by using a wedged gasket design - the result has been a "hard" gasket, which has a narrow footprint at the gasket to pipe contact location that does not conform to pipe surface irregularities.

JCM incorporates this gasket design with the internal groove in the metal pipe fitting which:

- 1. Traps the gasket internally/externally to prevent gasket displacement or blow out.
- 2. Lowers the profile of the fitting on the pipe to trap the gasket in the groove, thus preventing gasket displacement and increasing high pressure holding capability.
- 3. Prevents the gasket from being torn from its seat during installation (provided all installation instructions are followed).

Durometer and why is it important?

A Durometer gauge is an instrument for measuring the degree of hardness of a plastic or rubber material. The term "Durometer" has become the international standard for identifying hardness of rubber or elastomers.

Specifying and maintaining the durometer of gasket material is critical in pipe fittings because they incorporate a "bolted, compression" application for the fitting. When put under pressure (bolt torque) rubber gaskets take on the characteristics of fluid - the rubber will flow or move away from the pressure/compression. Therefore, determining the hardness/softness of a gasket material is directly related to how the fitting will be installed and its intended usage.

For example, the gasket material used in the JCM 200 Series Coupling has a durometer of 70 - 75. This hardness can stand up to the compression of the bolt torque to create a water tight seal and not "cold flow" or extrude out of the coupling, but yet has a softness to conform to pipe surface irregularities such as gouges and pitted areas. In comparison to the gasket used in the JCM Service Saddles - this gasket has a softer durometer 55 - 60 (lower durometer numbers indicate softer gasket) to compress and "store energy" to accommodate pressure and pipe fluctuations.

The difference in the designs of the metal fittings is that the service saddle has a "groove" that traps the gasket both internally and externally on the gasket circumference and does not allow the gasket to cold flow away from pressure.

The Groove...

The gasket groove is a rigid channel that is cast into the saddle body. This groove allows the gasket to seat "up" into the saddle body which lowers the profile of the fitting on the pipe. The narrow space between pipe and saddle eliminates the possibility of the gasket, under pressure, to creep or cold flow into the space and "blow out" causing fitting failure. Other designs available in the industry attempt to incorporate one of these three design features, but limit themselves by discarding one or the other – a groove with a standard O-ring with a tapered lip; a flat hard gasket without a groove or wedge type gasket with minimum pipe gasket contact. JCM combines these three design theories into a variety of body and strap designs that follow along with suggested applications.



Gasket In Groove

JCM Service Saddles

JCM recommends the featured models for use on High Density Polyethylene Pipe

JCM 404 Wide Body Service Saddle with Stainless Steel Straps JCM 406 Coated Wide Body Service Saddle with Stainless Steel Straps JCM 418 Threaded Outlet Tapping Sleeve JCM 438 All Stainless Steel Threaded Outlet Tapping Sleeve For other Service Saddle applications, contact JCM Industries, Inc.

Built-In Advantages of JCM Service Saddles and Threaded Outlet Tapping Sleeves

Wide wrap around body 4" through 12" pipe sizes - provides support to pipe wall with 160° - 180° pipe contact.

Wide, double stainless steel straps - increases the load bearing area of the fitting and prevent point loading on the circumference of the pipe.

Broad, pressure activated gasket - set in a retaining cavity, which traps the gasket both internally and externally, the gasket provides high performance on low and high pressure applications. Gasket uses the "stored energy" concept.

Exact formation of the service saddle - formed to fit HDPE outside diameter, the JCM Service Saddles provide a custom fit to the pipe and a low profile stance. Exact formation prevent stress and tension caused by dragging large range fittings down to the pipe O.D.

Threaded Outlet Tapping Sleeves for large diameter and high pressure applications - wide fabricated body provides stable, supportive stance on the pipe (8" wide minimum body width) at the tap area. JCM Threaded Outlet Tapping Sleeves are fabricated to specific HDPE Pipe Diameters and provide working ranges that accommodate HDPE working characteristics.

Broad cross section gasket - set in retaining groove stores gasket compression energy. The hydromechnical lip increases seal pressure with the increase in line pressure. Gasket uses the "stored energy" concept.





JCM Service Saddles

JCM Service Saddles provide a dependable and economical method of making taps 1/2" - 2-1/2" in Polyethylene Pipe. JCM Saddles are designed for maximum safety and performance, especially on HDPE. JCM recommends using the Models 404 and 406 for service taps on Polyethylene Pipe



Several design features makes using these JCM Saddles the quickest and safest procedure. These include:

- Wide body wrap around design supports and reinforces the pipe while providing excellent stability for the outlet area.
- Wide stainless steel straps increase the load bearing area and prevent point loading on the circumference of the pipe.
- The broad pressure activated gasket provides high performance on both low and high pressure applications. Permanently set in a retaining cavity, the contoured gasket produces a positive seal which increases with increase in line pressure.
- Exact formation of the saddle to the Polyethylene Pipe's outside diameter provides a custom fit to the pipe circumference and a low profile stance. This exact formation eliminates the need for pulling a large range saddle down to the pipe O.D. which puts unnecessary stress on the pipe wall.
- Saddles through 12" have 160° 180° contact. The wide stainless steel strap makes for 350° pipe contact.
- Optional Fusion Plastic Coating provides superior corrosion resistance in hot or acidic environments. Stainless steel straps compliment this corrosion resistance.
- Nominal sizes 4" 24".

JCM 400 Series Service Saddles are ANSI/NSF Standard 61, Annex G and ANSI/NSF 372 Certified.

Application Factors for JCM Service Saddles on HDPE:

- 1. Service Saddles for HDPE pipe must utilize double, wide stainless steel straps to prevent point loading the pipe and provide a broad stance.
- 2. See JCM General Application Information for Products on HDPE Pipe, page 3.

Common applications on HDPE pressure applications utilize HDPE SDR 17 - SDR 11. For applications on thinner wall pipe, please contact JCM Industries.

Maximum service rating of fittings is 150 PSI or the rating of the pipe.

Operating temperature range 35^o - 75^o F/Maximum test pressure limited to rated pipe pressure. For other temperature ranges or higher pressure applications, contact JCM for product selection and installation recommendations.

JCM 404 Service Saddle with Double Stainless Steel Straps - sizes 4" - 24" Typical Specification

Service Saddles for pipe sizes 4" through 12" shall have a wrap around design with a ductile iron body coated with a shop primer. The gasket shall be a broad pressure activated design, molded of virgin rubber and bonded into a cavity in the saddle body, which provides internal as well as external gasket retention.

The straps, bolts, nuts and washers shall be 18-8 stainless steel with all welds passivated for resistance to corrosion. The combined strap width shall be 3-1/4" to provide a wide stance on the pipe.

Service saddles for pipe sizes 14" through 24" shall have two (2) 2-3/4" wide stainless steel straps.

Service Saddles shall be JCM 404 or approved equal.

JCM 400 Series Service Saddles meet or exceed ANSI/AWWA C800 Standard for Underground Service Line Valve and Fittings. Meets Uni-Bell Handbook of PVC Pipe/AWWA Manual M23 Design and Installation of PVC Pipe.

JCM 400 Series Service Saddles are ANSI/NSF Standard 61, Annex G and ANSI/NSF 372 Certified.

JCM 406 Coated Service Saddle with Double Stainless Steel Straps - sizes 4" - 24" Typical Specification

Service Saddles for pipe sizes 4" through 12" shall have a wrap around design with a ductile iron body, fusion plastic coated. The coating thickness shall be a minimum of 12 mils with a dielectric strength of over 12,000 volts. The gasket shall be a broad pressure activated design, molded of virgin rubber and bonded into a cavity in the saddle body which provides internal as well as external gasket retention.

The straps, bolts, nuts and washers shall be 18-8 stainless steel with all welds passivated for resistance to corrosion. The combined strap width shall be 3-1/4" to provide a wide stance on the pipe.

Service saddles for pipe sizes 14" through 24" shall have two (2) 2-3/4" wide stainless steel straps.

Service Saddles shall be JCM 406 or approved equal.

JCM 400 Series Service Saddles meet or exceed ANSI/AWWA C800 Standard for Underground Service Line Valve and Fittings. Meets Uni-Bell Handbook of PVC Pipe/AWWA Manual M23 Design and Installation of PVC Pipe.

JCM 400 Series Service Saddles are ANSI/NSF Standard 61, Annex G and ANSI/NSF 372 Certified.





JCM 418 Fabricated Threaded Outlet Tapping Sleeve Typical Specification

Service fittings shall be the high strength type fabricated of a minimum of ASTM A283, ASTM A285 Grade C or ASTM A36 Steel, which conforms to and reinforces the pipe. Sleeve shall be minimum 8" wide and be sized to fit and reinforce the pipe circumference. Sleeve outlet shall have a minimum 3/4" wide Buna-N gasket recessed in a machined groove around the threaded outlet. Service fitting shall be furnished with a corrosion resistant shop coat paint primer with high strength, low alloy corrosion resistant bolts and nuts ASTM A242/ ANSI 21.11/AWWA C111. Optional Fusion applied epoxy coating (ANSI/AWWA C213) and stainless steel bolts and nuts available.

Service fittings shall be JCM 418 Threaded Outlet Tapping Sleeve or approved equal.

JCM 400 Series Tapping Sleeves are ANSI/NSF Standard 61, Annex G and ANSI/NSF 372 Certified. JCM 400 Series Tapping Sleeves meet ANSI/AWWA Standard C223 Fabricated Steel and Stainless Steel Tapping Sleeves where applicable.

JCM 438 Stainless Steel Threaded Outlet Tapping Sleeve Typical Specification

Service fittings shall be the high strength Stainless Steel 18-8 Type 304 (optional 316 stainless steel), which conforms to and reinforces the pipe. Sleeve shall be minimum 8" wide and be sized to fit and reinforce the pipe circumference. Sleeve outlet shall have a minimum 3/4" wide Buna-N gasket recessed in a machined groove around the threaded outlet. Service fitting shall be furnished with 18-8 Type 304 stainless steel bolts, nuts and washers.

Service fittings shall be JCM 438 Stainless Steel Threaded Outlet Tapping Sleeve or approved equal.

JCM 400 Series Tapping Sleeves are ANSI/NSF Standard 61, Annex G and ANSI/NSF 372 Certified. JCM 400 Series Tapping Sleeves meet ANSI/AWWA Standard C223 Fabricated Steel and Stainless Steel Tapping Sleeves where applicable.



JCM Tapping Sleeves for Polyethylene Pipe

JCM recommends the featured models for use on High Density Polyethylene Pipe

JCM 412 - 422 Fabricated Tapping Sleeve JCM 419 - 429 Fabricated Tapping Sleeve with Mechanical Joint Outlet* JCM 418 - 438 Threaded Outlet Tapping Sleeve JCM 452 - 464 Stainless Steel Tapping Sleeve with Outlet Seal Gasket JCM 459 - 465 Stainless Steel Tapping Sleeve with Mechanical Joint Outlet* For other Tapping Sleeve applications, contact JCM Industries, Inc.

JCM's full line of tapping sleeves offer more selection, more benefits and tremendous availability. JCM Tapping Sleeves are manufactured in a variety of sizes and styles to accommodate each application on Polyethylene Pipe. Success with these fittings on HDPE is due largely to the fact the JCM's design criteria took into consideration the working characteristics of Polyethylene Pipe. Generally, the features of these tapping sleeves for Polyethylene Pipe include:

- Wide body design distributes weight load over large area of pipe surface providing direct support and stability at the tap area while eliminating point loading and stress.
- Broad cross section gasket set in retaining groove confines the gasket both internally and externally eliminating gasket displacement from pressure or vacuum. The hydromechanical gasket is of a hardness which will store compressed energy and increases sealing capability with increases in line pressure.
- JCM Tapping Sleeves can be manufactured to the exact pipe diameter to assure a custom fit and a working range which accommodates the flexing characteristics of Polyethylene Pipe.
- Self-aligning bolts evenly load the tapping sleeve and provide compression of the gasket with distortion free tightening.
- Various gaskets are available for unique line content.
- Optional Fusion Epoxy Coating and stainless steel bolts are available for carbon steel tapping sleeves. All stainless construction is available for corrosive environments.
- JCM Tapping Sleeves have an immediate availability. Emergency sleeves can usually ship within 24 hours.

*Licensed by PowerSeal Corporation U.S. Patent No. 6,227,234

Application Factors for JCM Tapping Sleeves on HDPE:

- 1. JCM provides tapping sleeve ranges specifically for HDPE IPS and DI pipe diameters. See chart on pages 30 32.
- 2. See JCM General Application Information for Products on HDPE Pipe, page 3.

Common applications on HDPE pressure applications utilize HDPE SDR 17 - SDR 11. For applications on thinner wall pipe, please contact JCM Industries.

Maximum service rating of fittings is 150 PSI or the rating of the pipe.

Operating temperature range 35^o - 75^o F/Maximum test pressure limited to rated pipe pressure. For other temperature ranges or higher pressure applications, contact JCM for product selection and installation recommendations.

JCM Tapping Sleeves for High Density Polyethylene Pipe

 JCM 422 - 429 Fabricated Tapping Sleeve Designed for the exact O.D. of Polyethylene Pipe in nominal sizes 6" through 12" (IPS and DI). Supports and reinforces the pipe at the tap area, especially important with HDPE such as SDR 26 and 21. Standard Fusion Epoxy Coated sleeve and hardware. Optional stainless steel bolts available for hot soils or corrosive environments. JCM 429 furnishes a true mechanical joint outlet* meeting the AWWA C111/ANSI 21.11 Standard Dimensions. Special gaskets available for unique line contents.
 JCM 412 - 419 Fabricated Tapping Sleeve JCM 412 and 419 are sized for exact HDPE pipe diameters with a tolerance range to accommodate the changes in Polyethylene Pipe in extreme thermal conditions. Available in larger pipe sizes and millimeter pipe sizes available. JCM 419 features a true mechanical joint outlet* meeting the AWWA C111/ANSI 21.11 Standard Dimensions. Larger pipe sizes are manufactured with thicker gaskets to provide additional energy storage for absorption of pipe fluctuations.
 JCM 418 Threaded Outlet Tapping Sleeve JCM 438 All Stainless Steel Threaded Outlet Tapping Sleeve The best saddle for nominal sizes 4" through 54" for taps 1/2" through 4". Constructed of fabricated steel, the 418 provides a wide body stance on the pipe (8" wide minimum). Furnished with a broad pressure activated gasket with a 4" I.D. Wide design provides full sleeve support, stability and pipe reinforcement. Especially recommended for larger service connections and air relief valves. JCM 438 incorporates the same design as the 418 and is constructed of all stainless steel for corrosive and acidic environments.
 JCM 452 - 464 Stainless Steel Tapping Sleeve With Outlet Seal Gasket Manufactured of ALL stainless steel, the 452 has been designed for installations involving large diameter pipe with higher working pressures in corrosive or aggressive environments. 452 All Stainless steel Tapping Sleeve combines the design features of the 412 with the superior corrosion resistance of stainless steel. Heavy duty construction and thicker metal provide extra reinforcement of the pipe and outlet. Extra bolting power and body thickness eliminate problems inherent with light weight stainless sleeves. JCM 464 is fabricated of the same heavy duty stainless material and incorporates a cost savings carbon steel flange.
 JCM 459 - 465 Stainless Steel Tapping Sleeve - Outlet Seal Gasket with Mechanical Joint Outlet* Manufactured of stainless steel, the 459 - 465 combines the design for installations involving large diameter pipe with the cost saving, simple to install Mechanical Joint Outlet meeting the AWWA C111/ANSI 21.11 Standard Dimensions. Mechanical outlets are available in stainless steel or carbon steel. *Licensed by PowerSeal Corporation U.S. Patent No. 6,227,234

JCM Outlet Seal Tapping Sleeves for HDPE Pipe Model Numbers 412, 419, 452, 464, 459, 465

Ranges and Part Numbers provided specifically for High Density Polyethylene Pipe. For other types of pipe see JCM General Products Directory.

NOM. PIPE SIZE (IN.)	SLEEVE O.D. RANGE (IN.)	SLEEVE NUMBER X ANY OUTLET	OUTLET SIZES AVAILABLE
14	13.60 - 14.09 14.99 - 15.49	1392 1520	X 2 X 3 X 4 X 6 X 8 X 10 X 12
16	15.68 - 16.18 17.05 - 17.55	1590 1730	X 2 X 3 X 4 X 6 X 8 X 10 X 12
18	17.64 - 18.14 19.11 - 19.61	1790 1940	X 2 X 3 X 4 X 6 X 8 X 10 X 12
20	19.60 - 20.10 21.17 - 21.67	1990 2150	X 2 X 3 X 4 X 6 X 8 X 10 X 12
21 22	20.60 - 21.10 21.60 - 22.10	2090 2190	X 2 X 3 X 4 X 6 X 8 X 10 X 12
24	23.46 - 24.16 25.30 - 25.80	2400 2570	X 2 X 3 X 4 X 6 X 8 X 10 X 12
27 28	26.50 - 27.00 27.50 - 28.00	2690 2790	X 2 X 3 X 4 X 6 X 8 X 10 X 12
30	29.50 - 30.00 31.50 - 32.00	2990 3190	X 2 X 3 X 4 X 6 X 8 X 10 X 12

JCM Outlet Seal Tapping Sleeves for HDPE Pipe Model Numbers 412, 419, 452, 454, 459, 465

Ranges and Part Numbers provided specifically for High Density Polyethylene Pipe.

For other types of pipe see JCM General Products Directory

NOM. PIPE SIZE (IN.)	SLEEVE O.D. RANGE (IN.)	SLEEVE NUMBER X ANY OUTLET	OUTLET SIZES AVAILABLE
36	35.50 - 36.00 37.80 - 38.30	3590 3820	X 2 X 3 X 4 X 6 X 8 X 10 X 12
42	41.50 - 42.00 44.00 - 44.50	4190 4440	X 2 X 3 X 4 X 6 X 8 X 10 X 12
48	47.50 - 48.00 50.30 - 50.80	4790 5070	X 2 X 3 X 4 X 6 X 8 X 10 X 12
54	53.50 - 54.00 57.06 - 57.56	5390 5746	X 2 X 3 X 4 X 6 X 8 X 10 X 12
60	59.50 - 60.00 61.11 - 61.61	5990 6151	X 2 X 3 X 4 X 6 X 8 X 10 X 12

2" Mechanical Joint Outlets Not Available

14" and Larger Flanged Outlets Available.

14" & 16" Mechanical Joint Outlets Available. Stainless Steel Only (Model 459)

JCM Flanged and Mechanical Joint Outlet Tapping Sleeves furnished with test plugs unless otherwise specified.

How to Order:

- 1. Determine outside diameter of HDPE Pipe (IPS, DI), provide SDR#.
- 2. Select sleeve material (carbon, stainless) and proper outlet material & type (flange, mechanical joint).
- 3. Select model number. For full product description, see JCM Catalog.
- 4. Select proper sleeve O.D. Range and sleeve number.

Specify Model Number-Sleeve Number x Outlet Size.
 Example: For 24" HDPE SDR 17 IPS O.D. pipe, with 8" flanged outlet, carbon steel, order: 412-2400 x 8
 Example: For 24" HDPE SDR 17 IPS O.D. Pipe, with 8" mechanical joint outlet, All Stainless Steel, order: 459-2400 x 8

For sizes not listed, contact JCM Inside Sales Team at 800-527-8482 or 903-832-2581.

JCM Outlet Seal Threaded Outlet Tapping Sleeves for HDPE Pipe Model Numbers 418, 438

NOM. PIPE SIZE (IN.)	SLEEVE O.D. RANGE (IN.)	SLEEVE NUMBER X ANY OUTLET	OUTLET SIZE	ORDER CODE IP
14	13.60 - 14.09 14.99 - 15.49	1392 1520		
16	15.68 - 16.18 17.05 - 17.55	1590 1730		
18	17.64 - 18.14 19.11 - 19.61	1790 1940	3/4"	06
20	19.60 - 20.10 21.17 - 21.67	1990 2150	1"	08
21 22	20.60 - 21.10 21.60 - 22.10	2090 2190	1-1/4"	10
24	23.46 - 24.16 25.30 - 25.80	2400 2570	1 1/3"	13
27 28	26.50 - 27.00 27.50 - 28.00	2690 2790	0"	14
30	29.50 - 30.00 31.50 - 32.00	2990 3190	2	14
36	35.50 - 36.00 37.80 - 38.30	3590 3820	2-1/2	16
42	41.50 - 42.00 44.00 - 44.50	4190 4440	3	17
48	47.50 - 48.00 50.30 - 50.80	4790 5070	4	18
54	53.50 - 54.00 57.06 - 57.56	5390 5746		
60	59.50 - 60.00 61.11 - 61.61	5990 6151		

Ranges and Part Numbers provided specifically for High Density Polyethylene Pipe. For other types of pipe see JCM General Products Directory.

How to Order:

- 1. Determine outside diameter of HDPE Pipe (IPS, DI), provide SDR#.
- 2. Select sleeve material (carbon, stainless) and proper size outlet.
- 3. Select model number (418, 438). For full product description see JCM Catalog.
- 4. Select proper sleeve O.D. Range and sleeve number.
- 5. Specify Model Number-Sleeve Number x Outlet Size Example: For 24" HDPE SDR 17 IPS O.D. pipe, with 2" threaded outlet, carbon steel, order: 418-2400 x 14IP Example: For 24" HDPE SDR 17 IPS O.D. Pipe, with 2" threaded outlet, All Stainless Steel, order: 438-2400 x 14IP

Available Options for JCM 418 & 438 Threaded Outlet Tapping Sleeves

- 418 available Epoxy Coated with Stainless Steel Hardware
- 418 and 438 available with CC Threaded Outlet.
- 438 available in all 316 Stainless Steel construction
- · various gasket materials for unique line contents



For sizes not listed, contact JCM Inside Sales Team at 800-527-8482 or 903-832-2581.

JCM 412 Fabricated Tapping Sleeve - Shop Coat Primer, Alloy Hardware Typical Specification

Tapping Sleeves shall be the high strength type having a wide body, made of a minimum material strength of ASTM 285 Grade C, ASTM A-36 Steel or equal, which conforms to and reinforces the pipe. The sleeve shall have as a minimum 7/8" wide gasket of Nitrile Butadiene Rubber (NBR, Buna-N) per ASTM D2000 with hydromechancial activated lip, captured in a recessed groove around the outlet; 3/4" corrosion resistant alloy bolts per ASTM A242/ANSI 21.11/AWWA C111 and nuts (per A563) or equal, and a 3/4" forged steel test outlet. Flanged outlet shall be AWWA C207 Class D, ANSI 150 lb. drilling, recessed for tapping valve per MSS-SP60, outlets 2" - 12" rated for 175 PSI* maximum operating pressure. Tapping Sleeve shall be furnished with corrosion resistant shop coat paint primer.

For outlet sizes 14" and larger, the gasket groove must be consistently positioned about throat of tapping waterway. Inside diameter of the gasket groove must be set back a minimum of 1" from the waterway to allow dispersal of forces generated by gasket compression. Gasket grooves machined in a circle and formed to an elliptical shape will not be an accepted equal.

Nominal pipe sizes 36" and larger shall be of the heavy duty type. Tapping Sleeves shall be JCM 412 or approved equal.

*Higher test and working pressure ratings available upon request, contact JCM Industries.

JCM 400 Series Tapping Sleeves are ANSI/NSF Standard 61, Annex G and ANSI/NSF 372 Certified.JCM 400 Series Tapping Sleeves meet MSS-SP124 and ANSI/AWWA Standard C223 Fabricated Steel and Stainless Steel Tapping Sleeves as applicable.

Material Specification

- Body: ASTM 283 Grade C, ASTM 285 Grade C, ASTM A-36 Steel or equal.
- Flange: AWWA C207 Class D, ANSI 150 lb. Drilling, recessed for tapping valve per MSS-SP60. Optional flanges available upon request.
- **Gasket:** Nitrile Butadiene Rubber (NBR, Buna-N) per ASTM D2000. Molded virgin rubber with a pressure activated hydromechanical design. Gasket is bonded into a cavity for internal and external retention. Gasket temperature range -40°F to 212°F (-40°C 100°C) Gasket suitable for water, salt solutions, mild acids, bases, and sewage. Optional gasket materials available.
 - **Bolts:** Corrosion resistant, high strength low alloy oval neck track head bolts per ASTM A242/ANSI 21.11/AWWA C111 and heavy hex nuts per A563 or equal.
- Finish: Heavy coat of corrosion resistant shop coat primer.
- **Rating:** 2" to 12" Outlets: 175 PSI. Higher service rating available for specific applications and sizes.

Available 412 Tapping Sleeve Options - Contact JCM Industries for Specifications

Fusion applied Epoxy Coated per ANSI/AWWA C213 Epoxy Coated Hardware 304 or 316 Stainless Steel Hardware



JCM 422 Fabricated Tapping Sleeve for HDPE, PVC and Steel Pipe Typical Specification

Tapping sleeves for 4" through 12" HDPE, PVC and steel pipe shall be the high strength type having a wide body, made of a minimum material strength of ASTM 285 Grade C Steel, which conforms to and reinforces the pipe. The sleeve shall be sized to fit the exact dimension of the pipe and have 5/8" bolts on 3" centers. The sleeve shall have a Nitrile Butadiene Rubber (NBR, Buna-N) per ASTM D2000 gasket with hydromechancial activated lip, captured in a recessed groove around the outlet. Flanged outlets shall be AWWA C207 Class D, ANSI 150 lb. Drilling, recessed for tapping valve per MSS-SP60. The sleeve shall be fusion epoxy coated to a minimum 12 mils thickness, per ANSI/AWWA C213 and furnished with a type 304 stainless steel plug in the test outlet. Tapping Sleeves shall be JCM 422 or approved equal.

Material Specification

- Body: ASTM 285 Grade C, ASTM A-36 Steel or equal.
- **Bolts:** 5/8" Corrosion resistant, high strength low alloy oval neck track head bolt per ASTM A242/ANSI 21.11/AWWA C111 and heavy hex nut per A563 epoxy coated, Powercron 590-534. Optional: Stainless Steel 18-8 304 or 316 available.
- Flange: AWWA C207 Class D, ANSI 150 lb. Drilling, recessed for tapping valve MSS-SP60.
- **Gasket:** Nitrile Butadiene Rubber (NBR, Buna-N) per ASTM D2000. Molded virgin rubber with a pressure activated hydro mechanical design. Gasket is bonded into a cavity for internal and external retention. Gasket temperature range -40°F to 212°F (-40°C 100°C) Gasket suitable for water, salt solutions, mild acids, bases, and sewage.
- Finish: Fusion applied epoxy coating, minimum 12 mils thickness per ANSI/AWWA C213.
- **Service Rating:** 4" to 12" Outlets: 175 PSI. Higher service rating available for specific applications and sizes.

JCM 400 Series Tapping Sleeves are ANSI/NSF Standard 61, Annex G and ANSI/NSF 372 Certified.

JCM 400 Series Tapping Sleeves meet MSS-SP124 and ANSI/AWWA Standard C223 Fabricated Steel and Stainless Steel Tapping Sleeves as applicable.



JCM 418 Fabricated Threaded Outlet Tapping Sleeve Typical Specification

Service fittings shall be the high strength type fabricated of a minimum of ASTM A283, ASTM A285 Grade C or ASTM A36 Steel, which conforms to and reinforces the pipe. Sleeve shall be minimum 8" wide and be sized to fit and reinforce the pipe circumference. Sleeve outlet shall have a minimum 3/4" wide Buna-N gasket recessed in a machined groove around the threaded outlet. Service fitting shall be furnished with a corrosion resistant shop coat paint primer with high strength, low alloy corrosion resistant bolts and nuts per ASTM A242/ANSI 21.11/AWWA C111. Optional Fusion applied epoxy coating (ANSI/AWWA C213) and stainless steel bolts and nuts available.

Service fittings shall be JCM 418 Threaded Outlet Tapping Sleeve or approved equal.

JCM 400 Series Tapping Sleeves are ANSI/NSF Standard 61 Certified. JCM 400 Series Tapping Sleeves meet ANSI/AWWA Standard C223 Fabricated Steel and Stainless Steel Tapping Sleeves where applicable.

JCM 438 Stainless Steel Threaded Outlet Tapping Sleeve Typical Specification

Service fittings shall be the high strength Stainless Steel 18-8 Type 304 (optional 316 stainless steel), which conforms to and reinforces the pipe. Sleeve shall be minimum 8" wide and be sized to fit and reinforce the pipe circumference. Sleeve outlet shall have a minimum 3/4" wide Buna-N gasket recessed in a machined groove around the threaded outlet. Service fitting shall be furnished with 18-8 Type 304 stainless steel bolts, nuts and washers.

Service fittings shall be JCM 438 Stainless Steel Threaded Outlet Tapping Sleeve or approved equal.

JCM 400 Series Tapping Sleeves are ANSI/NSF Standard 61, Annex G and ANSI/NSF 372 Certified. JCM 400 Series Tapping Sleeves meet ANSI/AWWA Standard C223 Fabricated Steel and Stainless Steel Tapping Sleeves where applicable.



JCM 419 Fabricated Tapping Sleeve with Mechanical Joint Outlet Shop Coat Primer, Alloy Hardware Typical Specification

Tapping Sleeves shall be the high strength type having a wide body, made of a minimum material strength of ASTM 285 Grade C, ASTM A-36 Steel or equal, which conforms to and reinforces the pipe. The sleeve shall have as a minimum 7/8" wide gasket of Nitrile Butadiene Rubber (NBR, Buna-N) per ASTM D2000 with hydromechancial activated lip, captured in a recessed groove around the outlet; 3/4" corrosion resistant alloy bolts per ASTM A242/ ANSI 21.11/AWWA C111 and nuts (per A563) or equal, and a forged steel test outlet. Tapping Sleeve shall be furnished with corrosion resistant shop coat paint primer.

Mechanical Joint Outlet* shall meet the ANSI 21.11/AWWA C111 Standards for Mechanical Joint Dimensions. Outlets 3" - 12" shall be of one unit "monocast" design without separate or affixed components. Outlet shall be furnished with load bearing alignment set pins to prevent movement of the tapping assembly before or during the tapping process.

For outlet sizes 14" and larger, the gasket groove must be consistently positioned about throat of tapping waterway. Inside diameter of the gasket groove must be set back a minimum of 1" from the waterway to allow dispersal of forces generated by gasket compression. Gasket grooves machined in a circle and formed to an elliptical shape will not be an accepted equal.

Nominal pipe sizes 36" and larger shall be of the heavy duty type. Tapping Sleeves shall be JCM 419 or approved equal.

JCM 400 Series Tapping Sleeves are ANSI/NSF Standard 61, Annex G and ANSI/NSF 372 Certified. JCM 400 Series Tapping Sleeves meet MSS-SP124 and ANSI/AWWA Standard C223 Fabricated Steel and Stainless Steel Tapping Sleeves as applicable. *Licensed by PowerSeal Corporation U. S. Patent No. 6,227,234

Material Specification

- **Body:** ASTM 285 Grade C, ASTM A-36 Steel or equal.
- Outlet: Carbon Steel meets ANSI 21.11/AWWA C111 Standard Dimensions Outlets 3" & 4" furnished with 1/4" test outlet, outlets 6" and larger furnished with 3/4" test outlet
- **Gasket:** Nitrile Butadiene Rubber (NBR, Buna-N) per ASTM D2000. Molded virgin rubber with a pressure activated hydromechanical design. Gasket is bonded into a cavity for internal and external retention. Gasket temperature range -40°F to 212°F (-40°C 100°C) Gasket suitable for water, salt solutions, mild acids, bases, and sewage. Optional gasket materials available.
 - **Bolts:** Corrosion resistant, high strength low alloy oval neck track head bolts per ASTM A242/ANSI 21.11/ AWWA C111and heavy hex nuts per A563 or equal.

Finish: Heavy coat of corrosion resistant shop coat primer.

Service

Rating: 3" to 12" Outlets: 175 PSI. Higher service rating available for specific applications and sizes.

Available 419Tapping Sleeve Options - Contact JCM Industries for Specifications Fusion applied Epoxy Coated per ANSI/AWWA C213 Epoxy Coated Hardware 304 or 316 Stainless Steel Hardware

For additional information, contact JCM Industries at 1-800-527-8482 or 903-832-2581.

JCM 429 Fabricated Tapping Sleeve for HDPE, PVC & Steel Pipe with Mechanical Joint Outlet **Typical Specification**

Tapping sleeves for 4" through 12" HDPE, PVC, steel pipe shall be the high strength type having a wide body, made of a minimum material strength of ASTM 285 Grade C Steel, which conforms to and reinforces the pipe. The sleeve shall be sized to fit the exact dimension of the pipe and have 5/8" bolts on 3" centers. The sleeve shall have a Nitrile Butadiene Rubber (NBR, Buna-N) per ASTM D2000 gasket with hydromechancial activated lip, captured in a recessed groove around the outlet. The sleeve shall be fusion epoxy coated to a minimum 12 mils thickness, per ANSI/AWWA C213 and furnished with a type 304 stainless steel plug in the test outlet.

Mechanical Joint Outlet* shall meet the ANSI 21.11/AWWA C111 Standards for Mechanical Joint Dimensions. Outlets 3" - 12" shall be of one unit "monocast" design without separate or affixed components. Outlet shall be furnished with load bearing alignment set pins to prevent movement of the tapping assembly before or during the tapping process. Tapping Sleeves shall be JCM 429 or approved equal.

JCM 400 Series Tapping Sleeves are ANSI/NSF Standard 61, Annex G and ANSI/NSF 372 Certified. JCM 400 Series Tapping Sleeves meet MSS-SP124 and ANSI/AWWA Standard C223 Fabricated Steel and Stainless Steel Tapping Sleeves as applicable.

*Licensed by PowerSeal Corporation U. S. Patent No. 6,227,234

Material Specification

- Body: ASTM 285 Grade C, ASTM A-36 Steel or equal
- Bolts: 5/8" Corrosion resistant, high strength low alloy oval neck track head bolt per ASTM A242/ANSI 21.11/ AWWA C111 and heavy hex nut per A563 epoxy coated, Powercron 590-534. Optional: Stainless Steel 18-8 304 or 316 available.
- Outlet*: Carbon Steel meets ANSI 21.11/AWWA C111C219 Standard Dimensions Outlets 3" & 4" furnished with 1/4" test outlet Outlets 6" and larger furnished with 3/4" test outlet
- Gasket: Nitrile Butadiene Rubber (NBR, Buna-N) per ASTM D2000. Molded virgin rubber with a pressure activated hydromechanical design. Gasket is bonded into a cavity for internal and external retention. Gasket temperature range -40°F to 212°F (-40°C - 100°C) Gasket suitable for water, salt solutions, mild acids, bases, and sewage.
- Finish: Fusion applied epoxy coating, minimum 12 mils thickness per ANSI/AWWA C213.

Service

Rating: 3" to 12" Outlets: 175 PSI. Higher service rating available for specific applications and sizes.

JCM 452 All Stainless Steel Tapping Sleeve JCM 464 Stainless Steel Tapping Sleeve with Carbon Steel Flange Typical Specification

Tapping Sleeve shall be of the high strength type having a wide body, made of corrosion resistant 304 stainless steel, which conforms to and reinforces the pipe. The sleeve shall have as a wide gasket of Nitrile Butadiene Rubber (NBR, Buna-N) per ASTM D2000 with hydromechancial activated lip, captured in a recessed groove around the outlet; 18-8 Type 304 Stainless steel hardware and nuts. Flanged outlets shall be indexed per MSS-SP60 to accept tapping valve and have the equivalent O.D. and drilling as Class 125 Cast-Iron Flanges (ANSI/ASME B16.1) and Class 150 Steel-Ring Flanges (ANSI/ASME B16.5). Outlets 2" - 12" rated for 175 PSI* maximum operating pressure. Stainless steel tapping sleeve shall be furnished with a 3/4" stainless steel test plug in the test outlet. Sleeve shall be fully passivated to return the stainless steel to its highest corrosion resistance. Tapping Sleeve shall be JCM or approved equal.

For outlet sizes 14" and larger, the gasket groove must be consistently positioned about throat of tapping waterway. Inside diameter of the gasket groove must be set back a minimum of 1" from the waterway to allow dispersal of forces generated by gasket compression. Gasket grooves machined in a circle and formed to an elliptical shape will not be an accepted equal.

Nominal pipe sizes 36" and larger shall be of the heavy duty type. Tapping Sleeves shall be JCM 452 or approved equal.

*Higher test and working pressure ratings available upon request, contact JCM Industries. JCM 400 Series Tapping Sleeves are ANSI/NSF Standard 61, Annex G and ANSI/NSF 372 Certified. JCM 400 Series Tapping Sleeves meet ANSI/AWWA Standard C223 Fabricated Steel and Stainless Steel Tapping Sleeves and MSS SP-124 as applicable.

Material Specification

Body: Stainless Steel 18-8 Type 304.

- Bolts: Stainless Steel 18-8 Type 304.
- **452 Flange:** CF8 Cast Stainless Steel or equivalent 304 Stainless Steel. Flange outlets shall be indexed per MSS-SP60 to accept tapping valve and have the equivalent O.D. and drilling as Class 125 Cast-Iron Flanges (ANSI/ASME B16.1) and Class 150 Steel-Ring Flanges (ANSI/ASME B16.5). Other flanges available upon request.
- **464 Flange:** AWWA C207 Class D, ANSI 150 lb. Drilling, recessed for tapping valve per MSS-SP60. Optional flanges available upon request.
 - **Gasket:** Nitrile Butadiene Rubber (NBR, Buna-N) per ASTM D2000. Molded virgin rubber with a pressure activated hydromechanical design. Gasket is bonded into a cavity for internal and external retention. Gasket temperature range -40°F to 212°F (-40°C 100°C) Gasket suitable for water, salt solutions, mild acids, bases, and sewage. Optional gasket materials available.

Service

Rating: 2" - 12" Outlets: 175 PSI. For service rating of 250 PSI or higher contact JCM Technical Services.

JCM 459 All Stainless Steel Tapping Sleeve with Mechanical Joint Outlet JCM 465 Stainless Steel Tapping Sleeve with Carbon Steel Mechanical Joint Outlet Typical Specification

Tapping Sleeve shall be of the high strength type having a wide body, made of corrosion resistant 304 stainless steel, which conforms to and reinforces the pipe. The sleeve shall have as a wide gasket of Nitrile Butadiene Rubber (NBR, Buna-N) per ASTM D2000 with hydromechancial activated lip, captured in a recessed groove around the outlet; 18-8 Type 304 Stainless steel hardware and nuts. Mechanical joint outlet* shall meet the ANSI 21.11/AWWA C111 Standards for Mechanical Joint Dimensions. Outlets 3" - 12" shall be of one unit "monocast" design without separate or affixed components. Outlet shall be furnished with load bearing alignment set pins to prevent movement of the tapping assembly before or during the tapping process. Outlets 3" - 12" rated for 175 PSI** maximum operating pressure. Stainless steel tapping sleeve shall be furnished with a 3/4" stainless steel test plug in the test outlet. Sleeve shall be fully passivated to return the stainless steel to its highest corrosion resistance. Tapping Sleeve shall be JCM 459 or approved equal.

For outlet sizes 14" and larger, the gasket groove must be consistently positioned about throat of tapping waterway. Inside diameter of the gasket groove must be set back a minimum of 1" from the waterway to allow dispersal of forces generated by gasket compression. Gasket grooves machined in a circle and formed to an elliptical shape will not be an accepted equal.

Nominal pipe sizes 36" and larger shall be of the heavy duty type. Tapping Sleeves shall be JCM 459 or approved equal.

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**Higher test and working pressure ratings available upon request, contact JCM Industries. JCM 400 Series Tapping Sleeves are ANSI/NSF Standard 61, Annex G and ANSI/NSF 372 Certified.

JCM 400 Series Tapping Sleeves meet ANSI/AWWA Standard C223 Fabricated Steel and Stainless Steel Tapping Sleeves and MSS SP-124 as applicable.

Material Specification

- Body: Stainless Steel 18-8 Type 304.
- Bolts: Stainless Steel 18-8 Type 304.
- **459 Outlet:** CF8 Cast Stainless Steel equivalent to 18-8 Type 304 Stainless Steel meets ANSI 21.11/ AWWA C111 Standard Dimensions Outlets 3" & 4" furnished with 1/4" test outlet Outlets 6" and larger furnished with 3/4" test outlet
- **465 Outlet:** Carbon Steel meets ANSI 21.11/AWWA C111 Standard Dimensions Outlets 3" & 4" furnished with 1/4" test outlet Outlets 6" and larger furnished with 3/4" test outlet
 - **Gasket:** Nitrile Butadiene Rubber (NBR, Buna-N) per ASTM D2000. Molded virgin rubber with a pressure activated hydro mechanical design. Gasket is bonded into a cavity for internal and external retention. Gasket temperature range -40°F to 212°F (-40°C 100°C) Gasket suitable for water, salt solutions, mild acids, bases, and sewage.

Service

Rating: 3" - 12" Outlets: 175 PSI. For service rating of 250 PSI or higher contact JCM Technical Services.

JCM Sur-Grip Restrainers for Polyethylene Pipe

JCM 610 Sur-Grip Fitting Restrainers JCM 621 Sur-Grip Joint Restrainers

JCM 610 – 620 Restrainers – Nominal sizes 4" – 12"

Restraint for IPS PVC, C-900 PVC, Ductile Iron Pipe 4" - 12" and HDPE shall be provided by mechanical means separate from the mechanical joint gasket sealing gland. The restrainer shall provide wide, supportive contact around the full circumference of the pipe and be equal to the listed widths. Means of restraint

shall be machined serrations on the inside surface of the restrainer equal to or greater than the listed serrations per inch and width. Loading of the restrainer shall be by a ductile iron follower that provides even circumferential loading over the entire restrainer. Design shall be such that restraint shall be increased with increases in line pressure.

Serrated restrainer shall be Ductile Iron ASTM A-536-80 with a ductile iron follower; bolts and nuts shall be corrosion resistant, high strength alloy steel.

The restrainers shall have a pressure rating of 350 PSI or equal to that of the PVC, HDPE or ductile iron pipe on which it is used, which ever is lesser, and be capable of withstanding a minimum test pressure of 2 times the pressure rating. Restrainers shall be JCM Industries Sur-Grip or equal.

Nominal Size	Restraint Width	Serrations per inch
4", 6"	1-1/2"	8
8", 10", 12"	1-3/4"	8



JCM Restrainers for pipe sizes 14" and larger

Restrainers for C-905 PVC and HDPE pipe 14" and larger shall be provided by mechanical means separate from the mechanical joint gasket sealing gland.

The restrainer shall be a split, two piece configuration with a serrated inside surface and provide a wide supportive contact around the full circumference of the pipe. Restrainer body shall be manufactured from steel per ASTM A-285 Grade C and be fusion epoxy coated on all surfaces except the serrations. Width and serrations per inch shall be as listed. The restrainer fasteners shall be per A242/ANSI 21.11/AWWA C111. Restrainers shall have a pressure rating equal to that of PVC and HDPE pipe on which it is used and be capable of withstanding a minimum test pressure of 2 times the pressure rating. Restrainers shall be JCM Industries Sur-Grip or equal.

Nominal Size	Restraint Width	Serrations per inch
14", 16", 18	5	6
20", 24"	7	6
30"	10	6

JCM recommends the use of pipe stiffeners for HDPE when using bolted mechanical fittings.



JCM 610 Sur-Grip Fitting Restrainer 4" - 12" for use on DIPS (Ductile Iron Pipe Size) 4" - 8" for use on IPS (Iron Pipe Size)



Anchors IPS HDPE and DIPS HDPE to mechanical joint and other type fittings provided with anchor lugs.

PIPE	SIZE	CATALOG NUMBER	SERRATED COMPRESSION RING BODY	T-HEAD BOLTS		APPR. WT.EA.
NOM.	O. D.		WIDTH	SIZE	QTY	(LD3.)
4	4.50	610-0450	2-1/2"	3/4 X 9-1/2	2	12
4	4.80	610-0480	2-1/2"	3/4 X 9-1/2	2	12
6	6.63	610-0663	2-1/2"	3/4 X 9-1/2	2	15
6	6.90	610-0690	2-1/2"	3/4 X 9-1/2	2	15
8	8.63	610-0863	2-3/4"	3/4 X 9-1/2	2	22
8	9.05	610-0905	2-3/4"	3/4 X 9-1/2	2	22
10	11.10	610-1110	2-3/4"	3/4 X 9-1/2	4	31
12	13.20	610-1320	2-3/4"	3/4 X 9-1/2	4	41

JCM 620 Sur-Grip Joint Restrainer 4" - 12" for use on DIPS (Ductile Iron Pipe Size) 4" - 8" for use on IPS (Iron Pipe Size)



Anchors IPS HDPE and DIPS HDPE over flexible couplings, mechanical bolt-on fittings, suspect fused joints and other low profile joints.

PIPE	SIZE	CATALOG NUMBER	SERRATED COMPRESSION RING BODY	COMPRESSION FOLLOWER RING		BOLTS		APPR. WT. EA. (LBS.)
NOM.	O. D.		WIDTH	WIDTH	QTY.	SIZE	QTY	(200.)
4	4.50	620-0450	2-1/2"	1-3/8"	2	3/4 X 12	2	16
4	4.80	620-0480	2-1/2"	1-3/8"	2	3/4 X 12	2	16
6	6.63	620-0663	2-1/2"	1-1/2"	2	3/4 X 12	2	21
6	6.90	620-0690	2-1/2"	1-1/2"	2	3/4 X 12	2	21
8	8.63	620-0863	2-3/4"	1-3/4"	2	3/4 X 14	2	32
8	9.05	620-0905	2-3/4"	1-3/4"	2	3/4 X 14	2	32
10	11.10	620-1110	2-3/4"	1-3/4"	2	3/4 X 18-1/2	4	49
12	13.20	620-1320	2-3/4"	1-3/4"	2	3/4 X 18-1/2	4	63

JCM 610 and 620 Sur-Grip Restrainers offers a 2:1 safety factor.

JCM Sur-Grip Restrainers for HDPE Pipe

JCM 610 Sur-Grip Restrainer

14" - 30"

Anchors pipe to mechanical joint and other types of fittings provided with anchor lugs.



PIPE	SIZE	CATALOG	BODY	RESTRAINING RODS BOLTS APPR.		BOLTS		APPR.
NOM.	O. D.	NUMBER	WIDTH	SIZE	QTY.	SIZE	QTY.	WT. EA. (LBS.)
14	15.30	610-1530	5"	3/4 X 14	6	1 X 9	4	60
16	17.40	610-1740	5"	3/4 X 14	6	1 X 9	4	63
18	19.50	610-1950	5"	3/4 X 14	8	1 X 9	4	73
20	21.60	610-2160	7"	3/4 X 16	8	1 X 9	6	120
24	25.80	610-2580	7"	3/4 X 16	12	1 X 9	6	150
30	32.00	610-3200	10"	1 X 18	14	1 X 9	8	330



14" - 30"

For restraint over bolt-on mechanical fittings, suspect fused joints or to stabilize exposed joints.



PIPI	E SIZE	CATALOG	BODY	RESTRAININ	G RODS	BOLTS.		APPR.
NOM.	O. D.	NUMBER	WIDTH	SIZE	QTY.	SIZE	QTY.	WT. EA. (LBS.)
14	15.30	621-1530	5"	3/4 X 26	6	1 X 9	8	113
16	17.40	621-1740	5"	3/4 X 26	6	1 X 9	8	120
18	19.50	621-1950	5"	3/4 X 26	8	1 X 9	8	137
20	21.60	621-2160	7"	3/4 X 32	8	1 X 9	12	230
24	25.80	621-2580	7"	3/4 X 32	12	1 X 9	12	280
30	32.00	621-3200	10"	1 X 36	14	1 X 9	16	660

For quotation, contact JCM Inside Sales Team. JCM 610, 611and 621 Sur-Grip Restrainers sizes 14" - 30" are not for use on ductile iron, cast iron, asbestos cement, steel or any other rigid types of pipe. For application recommendations, contact JCM Inside Sales Team at 1-800-527-8482 or 903-832-2581.

Notes:

JCM Sur-Grip Restrainers are provided for HDPE in IPS/Steel and DI/Ductile Iron Pipe diameters. Application guidelines, price and delivery for these items are quoted at the time of inquiry.

In applications incorporating mechanical, bolted compression fittings, the use of pipe stiffeners is required per JCM Application Guidelines. See JCM 230 Stiffeners.

Tools from JCM

JCM 905 Torque Wrench DESIGNED FOR FIELD USE

Correct torque levels for bolted products on HDPE are critical. HDPE has a high coefficient of thermal expansion and a low modulus of elasticity. This sensitivity to pressure and temperature causes HDPE to expand and contract more than traditional water and sewer piping materials. HDPE will also relax ("creep"). Ensure the proper torque has been reached with at JCM 905 Torque Wrench.

Knurled Grip provides a rugged No-Slip Grip that allows continual pull on the wrench during tighten process. Manual wrench allows for more accurate levels or torque to be achieved.

1/2" Standard Drive* accepts any 1/2" standard square socket.

Audible Torque Indicator provides "click" sound that provides immediate confirmation the proper toque level has been met. Audible click eliminates the necessity of watching or protecting fragile dials and pointers.

Reverse Action Lever make use simple, the same motion both tightens and loosens with just a flip of the lever.

No Handles to Align. One strong hand eases use, especially in harsh environments and inclement weather.

Designed for field use conditions, the JCM 905 is equipped with an "audible torque indicator" that provides immediate confirmation that the correct level of torque has been applied. The simple, one handle design with a reverse action lever makes installation and adjustments of bolted fittings fast, simple and accurate.

*Sockets not included.



The JCM 905 comes with its own storage case to protect the wrench when not in use.

The JCM 905 meets the Federal Specification GGG-W-00686C and is delivered calibrated with an accuracy of $\pm 4\%$.

Adjusts from 10 - 150 Ft. Lbs. accommodates most common pipe fitting installation torque level recommendations.



JCM 910 Extra Deep Socket Set

Available from JCM this four piece deep socket set includes the popular 1/2" drive sockets sizes 15/16", 1-1/16", 1-1/8", 1-1/4" with a plastic storage case to protect and store sockets when not in use.



	INC. IND	0011(11	KODU(
JCM Industries Product Description	Smith-Blair	Dresser	Ford Meter Box	Romac	PowerSeal	Mueller	Cascade
REPAIR FITTINGS							
101 UCC - Standard Range	226	360	F1	CL1	3121	500	CDR1
102 UCC - Extended Range	227, 228	361	F2, F3	CL2, CL3	3122	510	CDR2 -3
103 Tapped UCC - Std. Range	238	360	F1	CI 1	3131	501-509	02112 0
104 Tapped UCC - Ext. Range	239	361	F2 F3		3132	511 519	
131 All Stainless Steel UCC - Std Range	256 261	001	FLS1	*\$\$1	3121CS	011, 010	
132 All Stainless Steel LICC - Ext. Range	257 262		FLS2	*\$\$2 *\$\$3	012100		
133 Tapped All Stainless LICC - Std. Rng	207,202		1102	*\$\$1			
133 Tapped All Stainless UCC - Std. King.	204			*001			
134 Tapped All Stallless OCC - Ext. Rig.	205	-	-	332, 333		212246	
136 Heavy Duty Stanless Repair Clamp	001	0004	F04	001	242440	5122A5	0.01
101 All SS Fabricated Clamp	261	8364	F51	551	3121AS	540	
162 All SS Fabricated Clamp - Ext. Rng.	262			552	3122AS		CR2
168 - 169 All SS Fabricated Sewer Clamp				LSS1, LSS2	3121ASLW		CSS1, CSS2
171- 172 UCC - Removeable Lug							
105 PVC Collar Leak UCC	229		FCC	CLC	3141	773	CCLC
106 Bell Joint - IPS PVC			FBC	517			
108 UCC Sewer Pipe				LSS1	3541		
110 Patch Clamp	245	118	FSC	SC	3151A	220-221	
111 Full-Repair Clamp	244		FSCR	SCC	3152	230, 231	CFC
112 Heavy Duty Patch Clamp					3151HD	220	
113 Heavy Duty Patch Clamp	246						
114 Mechanical Joint Repair Sleeve							
116 Repair Slv for CSCP							
142 Bell Joint Clamp - DI, CI	274	60S	FBC	516	3231, 3232	200	
143 Bell Joint Clamp - DI, CI, C-900 PVC	274			516	3231, 3232		
COUPLINGS - FLANGED ADAPTERS	•						
201 Steel Coupling	411	38	FC3-7	400		MAXI	
202 Long Steel Coupling	411	40	FLC	-	3540		
203 Steel Transition Coupling	413	162	FC5	TC400			
204 Steel Reducing Coupling	415	62	FC6	RC400	3562		
210 Ductile Iron Coupling	441, 431	253, 153	FC1	501	3503		CDC
211 Ductile Iron Cplg - Stl, IPS PVC	-	-	FC1	501			CDC
212 Ductile Iron Transition Cplg	433	-	FC2	501	3501		CDC
214 Pipe End Cap Coupling	481, 482	31	FEC	EC501	3501ES		CDCEC
215 Long Ductile Iron Couplings	442	-	-	501	3501LB		
219 Restrained Ductile Cplg	-	-	-	-			
220 Compression Coupling	525	65	-	702	3504		
225 Insulating Adapter Gasket	-	3065	-	-			
230 HDPE Pipe Stiffener				206	3530		SCP
241 Standard - Optimum Coupling	461	-	FC2W	XR501	3506		
242 Long - Optimum Coupling	462	10-	FC2W	XR501			
301 Cast Flanged Coupling Adapter	912	127	FFCA	FCA501	3521		CFCA
303 Fabricated Fig Cpig Adapter	913	128	FCA	FC400	3528		
306 Ephricated ECA	914	128	FCA	FC400	-		+
307 Poducing Ephricated ECA	913	120		-			
309 Eabricated Dismantling Joint	914	120	ED I	- D 1400-05			
	3/1	-	- DJ - T	D3400-03			
JCM Industries Product Description	Smith-Blair	Dresser	⁻ ord Meter Bo	Romac	PowerSeal	Mueller	Cascade

JCM INDUSTRIES, INC. INDUSTRY PRODUCT COMPARISON CHART

Compiled from information available at time of printing. Product comparisons are provided for reference purposes. Design material criteria should be confirmed prior to specification or purchase.

JCM INDUSTRIES, INC. INDUSTRY PRODUCT COMPARISON CHART

JCM Industries Product Description	Smith-Blair	Dresser	Ford Meter Box	Romac	PowerSeal	Mueller	Cascade
SERVICE SADDLES - TAPPING SLEEVES							
401 Single Strap Service Saddle	311	291	F101	101	6411DI	DR1A	
402 Double Strap Service Saddle	313	291	F202	202	3413	DR2A	
403 Wide Body Service Saddle - SS Strap	315	194	-	101S		DR1S	
404 Service Saddle - Double SS Straps	317	-	FS202	202S		DR2S	
405 Ctd Wide Service Saddle - SS Strap	315	-	-	101N	3415		CNS1
406 Ctd Service Saddle - Dbl SS Straps	317	-	FC202	202N	3417DI		CNS2
407 Ctd ServSdl - Electro Galv Strap	311	-	-	-			CDS1
408 Ctd Serv Sdl - Dbl Elctro Galv Straps	313						CDS2
411 Fab Tapping Sleeve - Plain End Outlet	-						
412 Fab Tapping Sleeve - Flanged Outlet	622	610	FTS	FTS420	3160		CFT
419 Fab Tap Slv - Mechanical Joint Outlet	622MJ						
422 Fab Tapping Sleeve for PVC/Stl/HDPE	-	615	-	FTS419		*H612	CFTLP
429 Fab Tap Slv - PVC/Stl/HDPE - MJ Outlet							
414 Fab Mechanical Joint Tapping Sleeve	*623	-	-	*FTS425		*H615	
415 Tap Slv for CSCP	625	-		FTS435			
416 Fab Weld-On Tapping Outlet - Partial	626	-	FWS	FTS445	3428		CRTWO
417 Fab Weld-On Tapping Sleeve	627	-	-	-	3428		
418 Fab Threaded Outlet Tap Slv	366		-	-			CFTTO
425 Service Saddle for CSCP	362	-	-	-			
432 All Stainless Steel Tapping Sleeve	665	630	FTSS	SSTIII	3490	H304	CSTEX
438 All SS Threaded Outlet Tap Slv	-	-	-	STS420T			
439 All SS Tap Slv - MJ Outlet	665	-	-	-	3490MJ		
440 Line Stop Fitting	680	640	-	-			
452 All SS Tap Slv - Outlet Seal Gasket	-	-	FTSAS	STS420	3460AS	*H300	CFTSS
462 All SS Tap Slv - Carbon Steel Flange	664	630	FTSS	SSTIII		H304	
464 SS Tap Slv - Outlet Gskt - Carbon Flg							
465 SS Tap Slv - Outlet Seal Gskt - Carbon MJ							
469 SS Tap Slv - Full Gskt- Carbon MJ							
459 All SS Tapping Sleeve - MJ Outlet	-	-	-	-			
FABRICATIONS							
801 Expansion Joint - Single End	611	63	FEJ	EJ400	3563		
802 Expansion Joint - Double End	612	63	FEJ	EJ400	3563		
JCM Industries Product Description	Smith-Blair	Dresser	Ford Meter Bc	Romac	PowerSeal	Mueller	Cascade

*Items of similar materials, designs vary

Compiled from information available at time of printing. Product comparisons are provided for reference purposes. Design material criteria should be confirmed prior to specification or purchase.

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