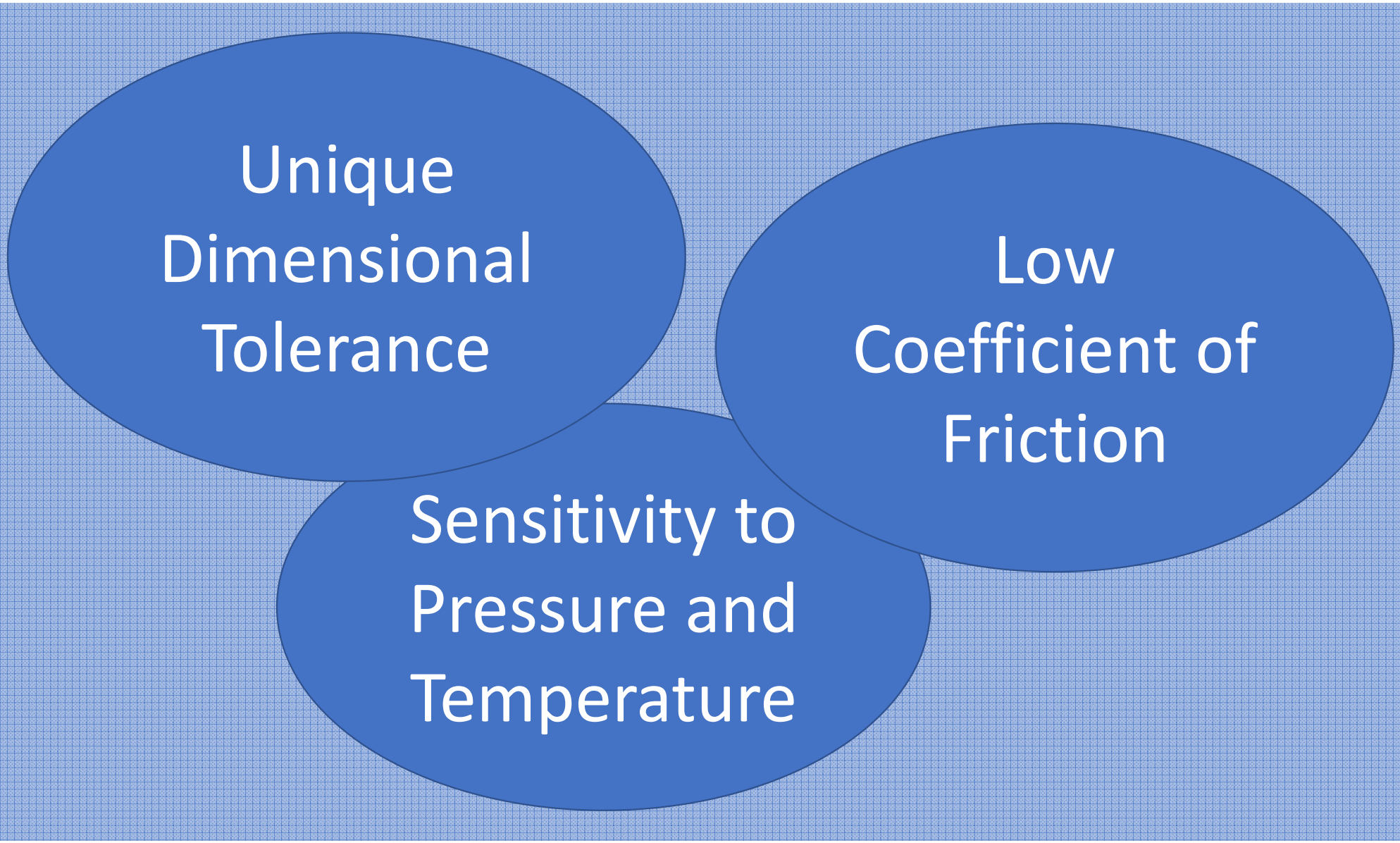
Mechanical Fittings and Repairs for High Density Polyethylene Pipe

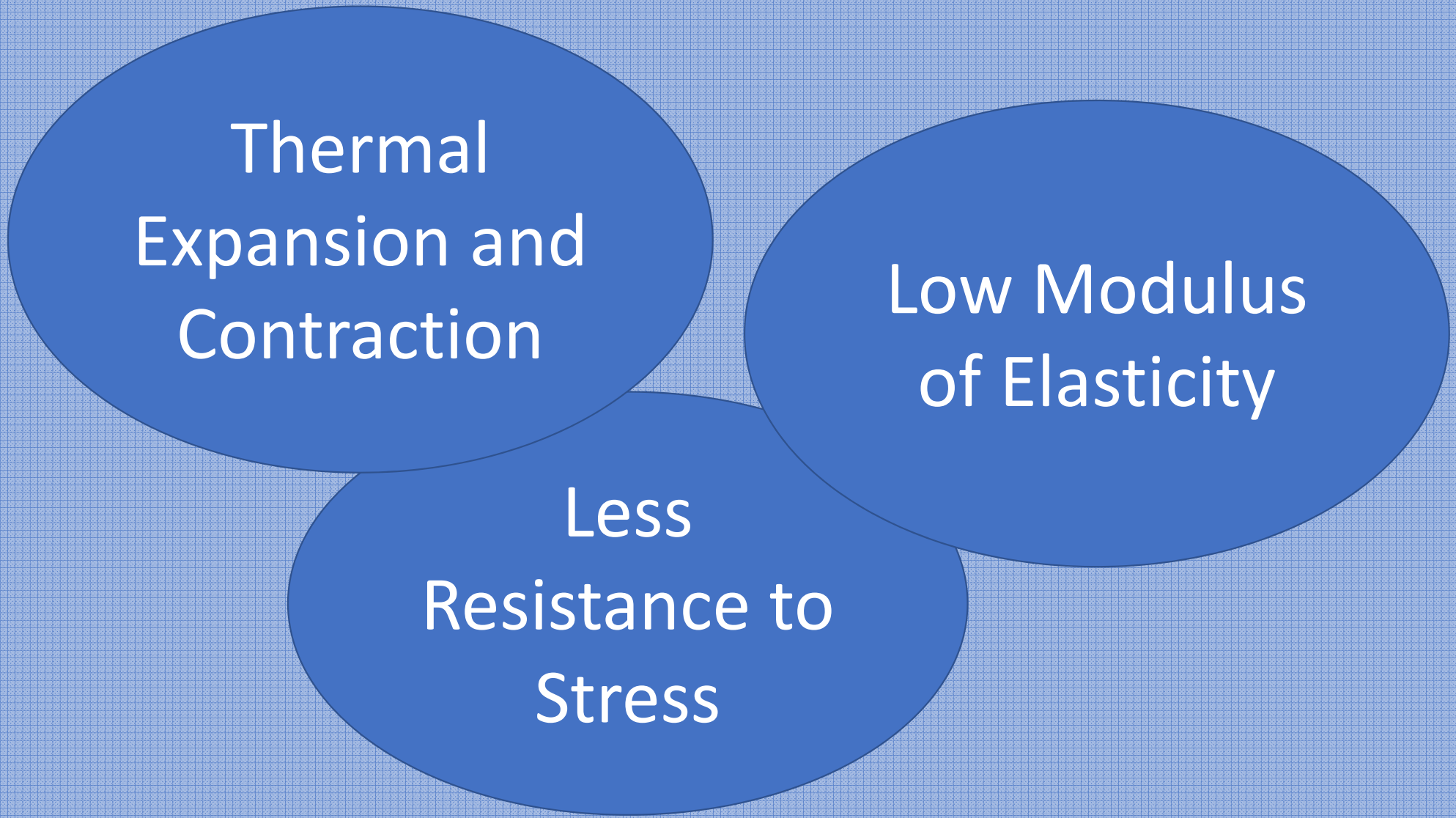
Mike Scholz
Western Regional Sales Manager
(916) 803-2888 Cell
mscholz@jcmind.com

Agenda

- Working Characteristics of HDPE Pipe
- Testing
- General Application Information
- Mechanical Products for HDPE
- Case Studies

Working Characteristics of HDPE


Unique Dimensional Tolerance
Low Coefficient of Friction
Sensitivity to Pressure and Temperature


Thermal Expansion and Contraction
Low Modulus of Elasticity
Less Resistance to Stress

Common Problems

- Not Using Insert Stiffeners
- Lack of Restraint
- Fusion Joints
- Third Party Damage
- Incorrect Fitting or Application

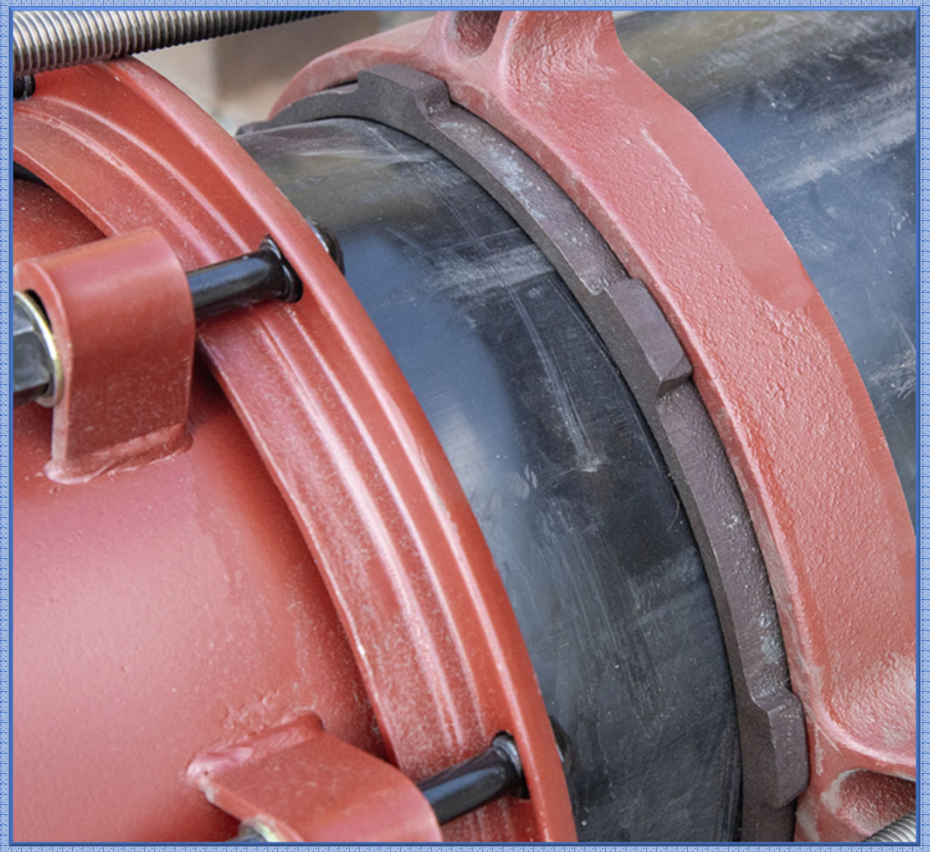
Testing and Evaluation

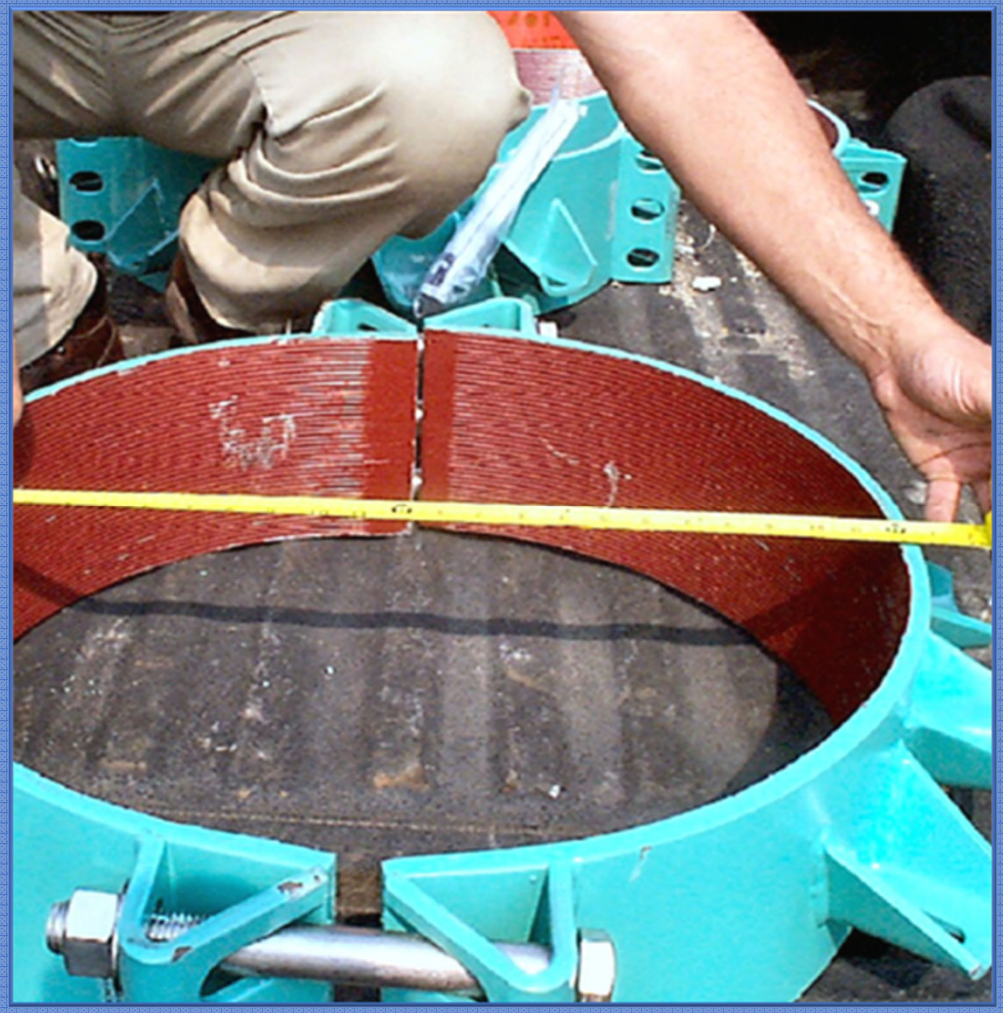

END OF
1000 HRS
6-14-93
200 PSI
END OF 1000 HRS
8-14-93

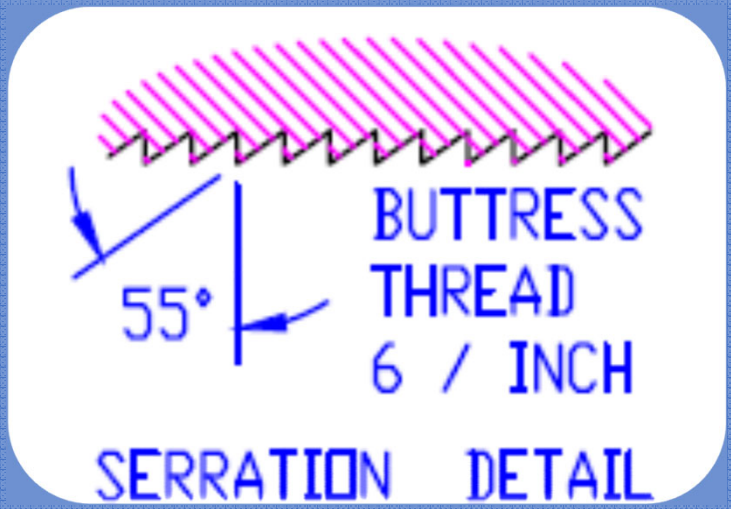

412-2400
6-14-93
200 PSI

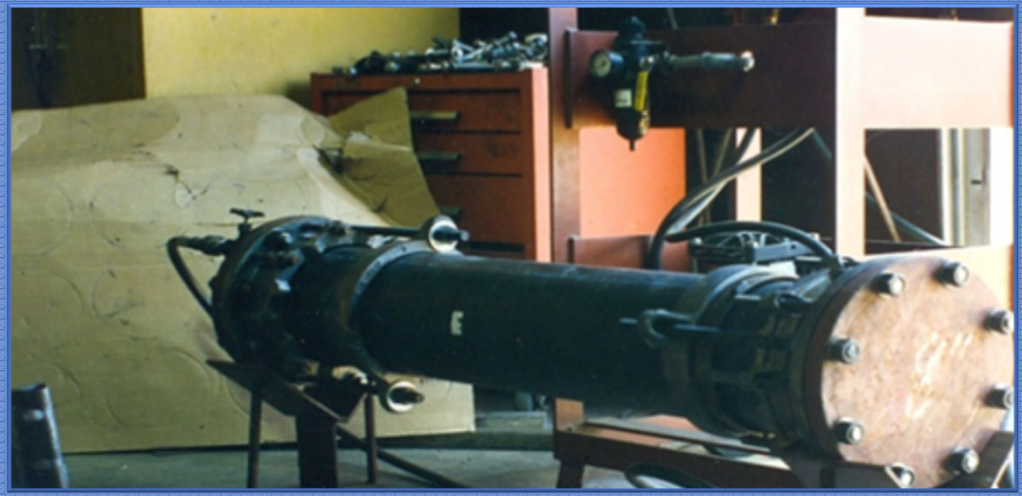

END OF
1000 HRS
6-14-93
200 PSI
END OF 1000 HRS
8-14-93

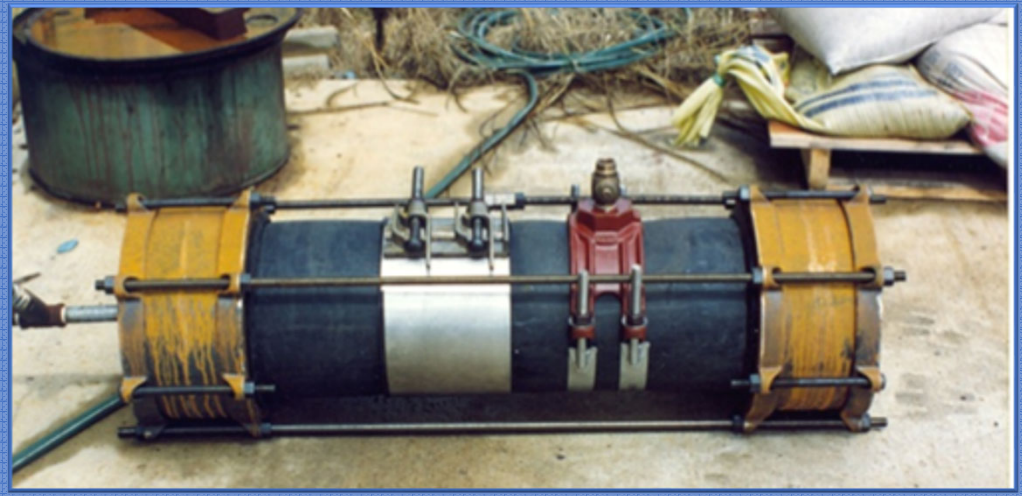

24” SDR9 Tested @ 500psi
16” SDR9 Tested @ 500psi
12” SDR17 Tested @ 250psi

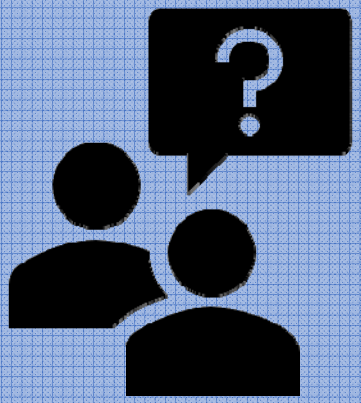





55°
BUTTRESS
THREAD
6 / INCH
SERRATION DETAIL





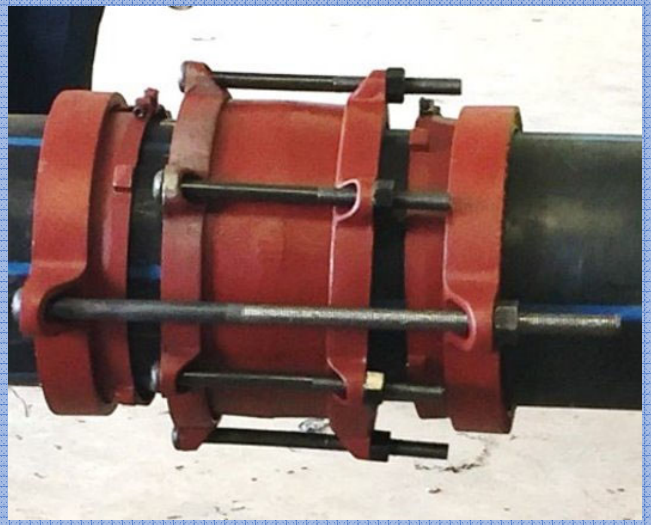


What are the most likely causes of mechanical application failures on HDPE pipe?

1. Third Party Damage
2. Incorrect fittings used
3. Lack of Pipe Stiffeners and proper Restraint
4. Fusion Joints

General Application & Design Considerations

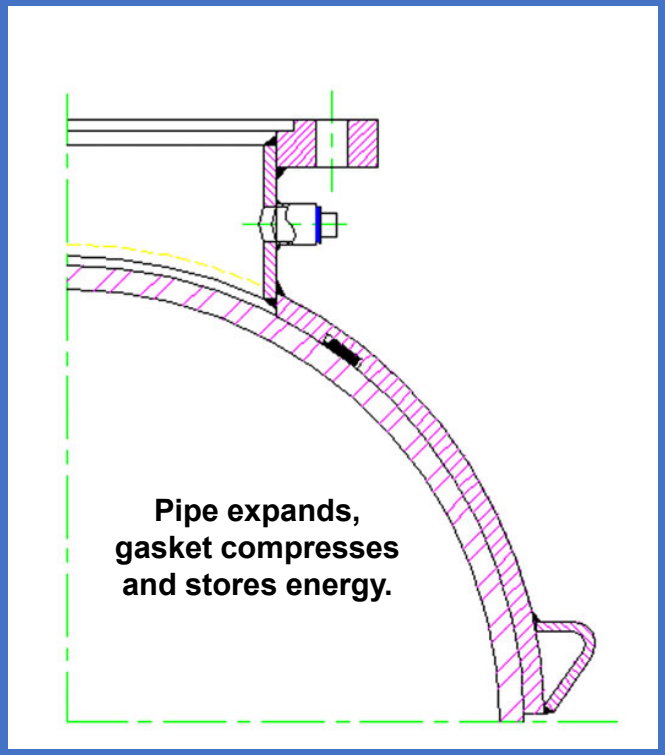
Recommended Design Parameters for mechanical fittings on HDPE pipe

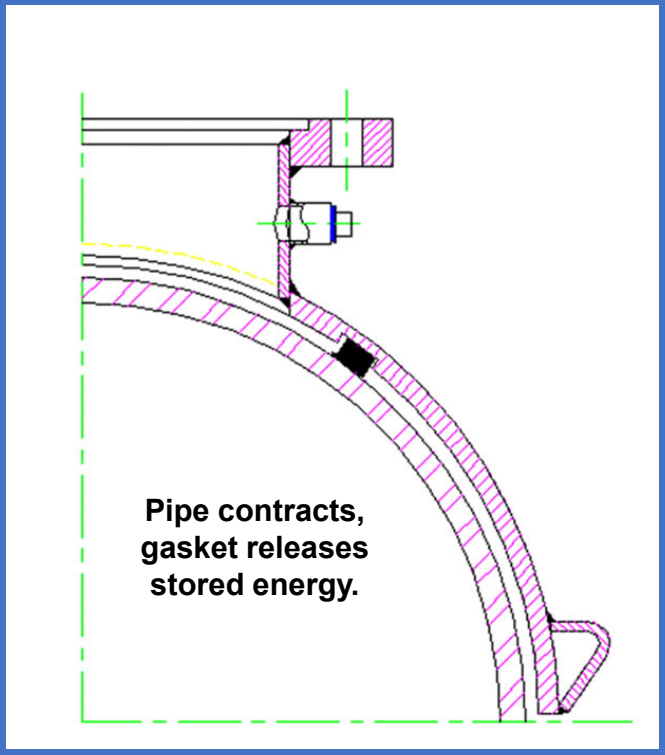


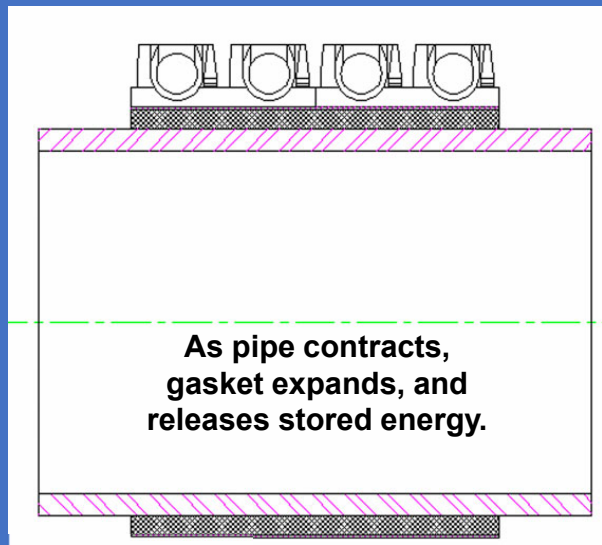
Pipe Dimension Ratio (DR)	PE4710 PE100	PE3608 PE3408
DR 7.3	317	265
DR 9	250	200
DR 11	200	160
DR 13.5	160	130
DR 17	125	100
DR 21	100	80
DR 26	80	65
DR 32.5	63	50

Note: JCM recommends fusion joints as a primary method of connection. When correctly implemented, fused joints are self-restraining and leak proof. In some instance's 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.

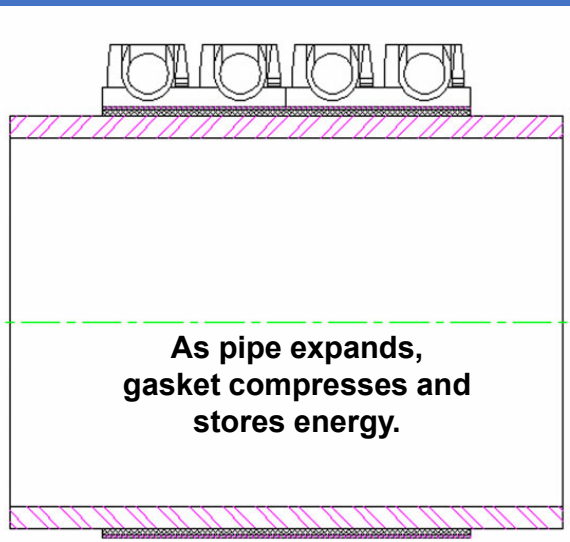
Recommended Design Parameters for mechanical fittings on HDPE pipe


Pipe expands,
gasket compresses
and stores energy.

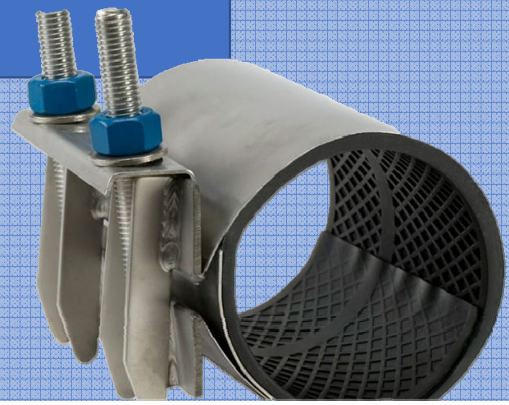

Pipe contracts,
gasket releases
stored energy.



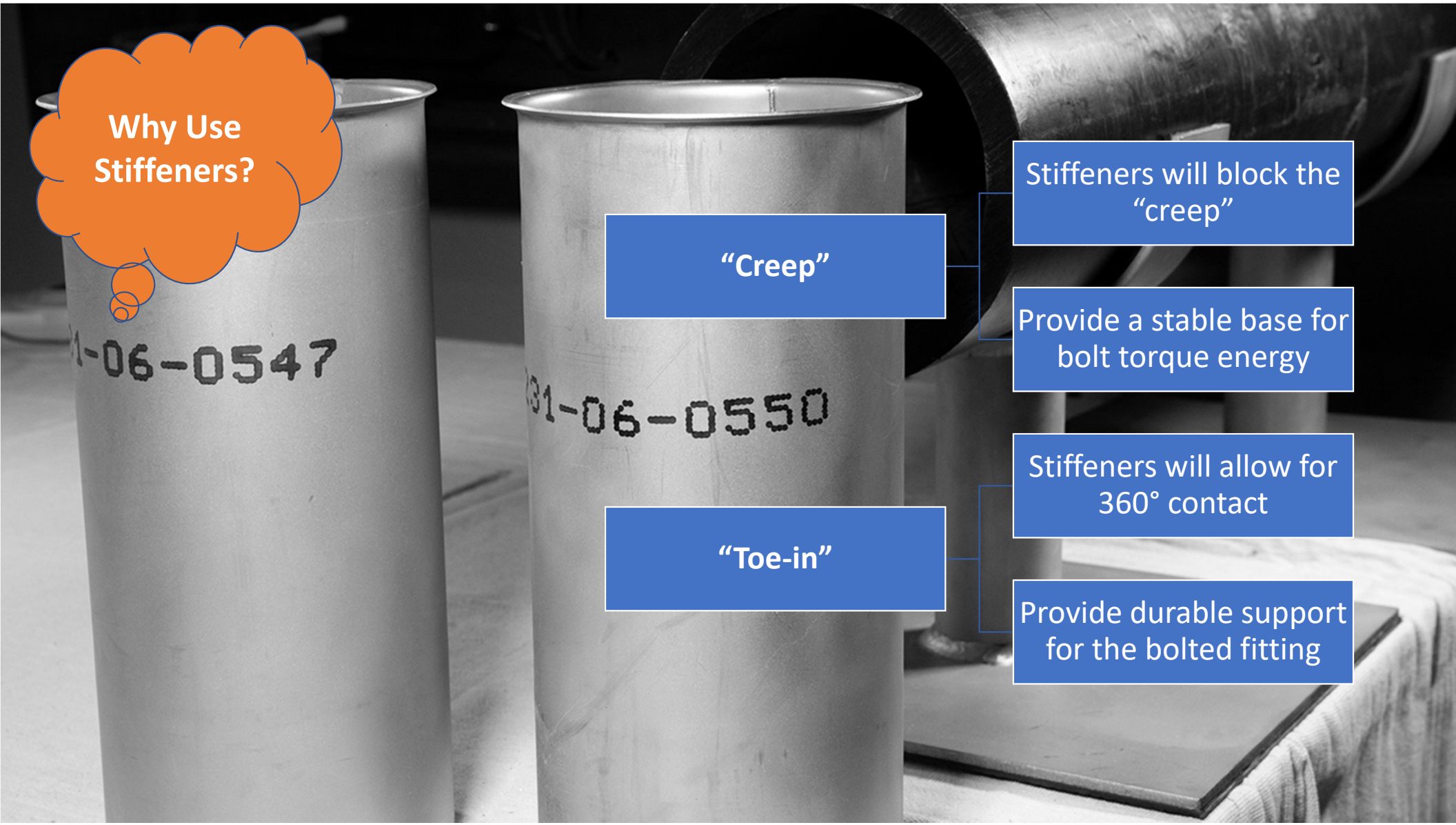
As pipe contracts,
gasket expands, and
releases stored energy.

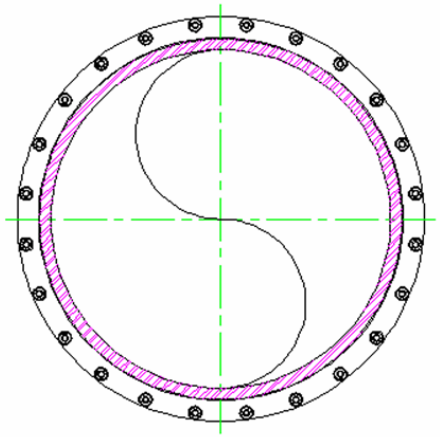


As pipe expands,
gasket compresses and
stores energy.

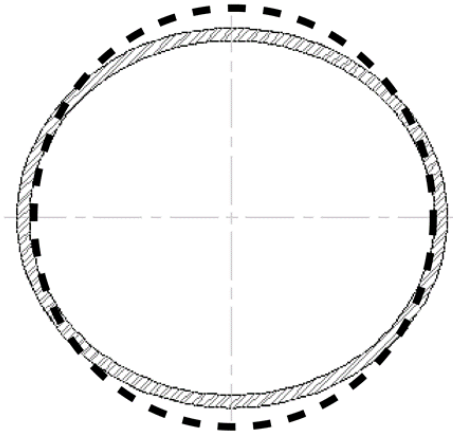


Frequently Asked Questions

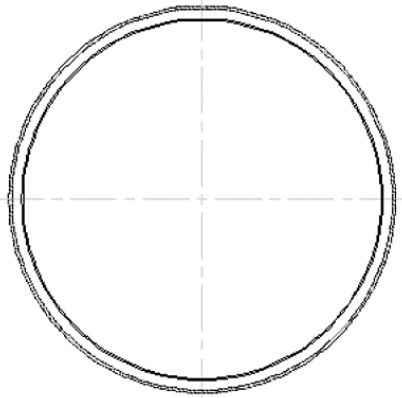

Why Use Stiffeners?
1-06-0547
31-06-0550
“Creep”
Stiffeners will block the “creep”
Provide a stable base for bolt torque energy
“Toe-in”
Stiffeners will allow for 360° contact
Provide durable support for the bolted fitting



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



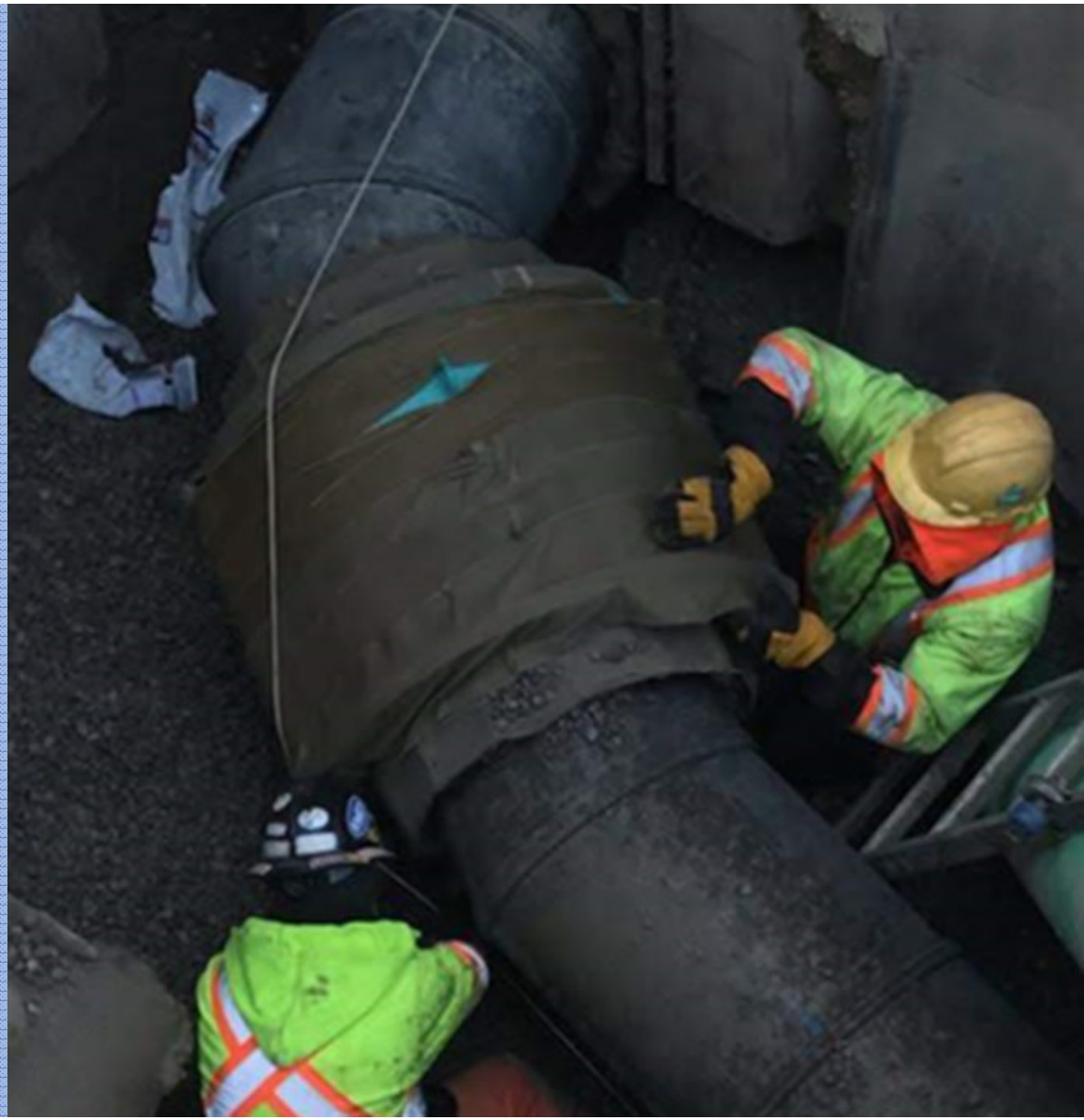
Field cut HDPE can experience an “egging or necking down” and be out of round beyond mechanical fitting tolerances

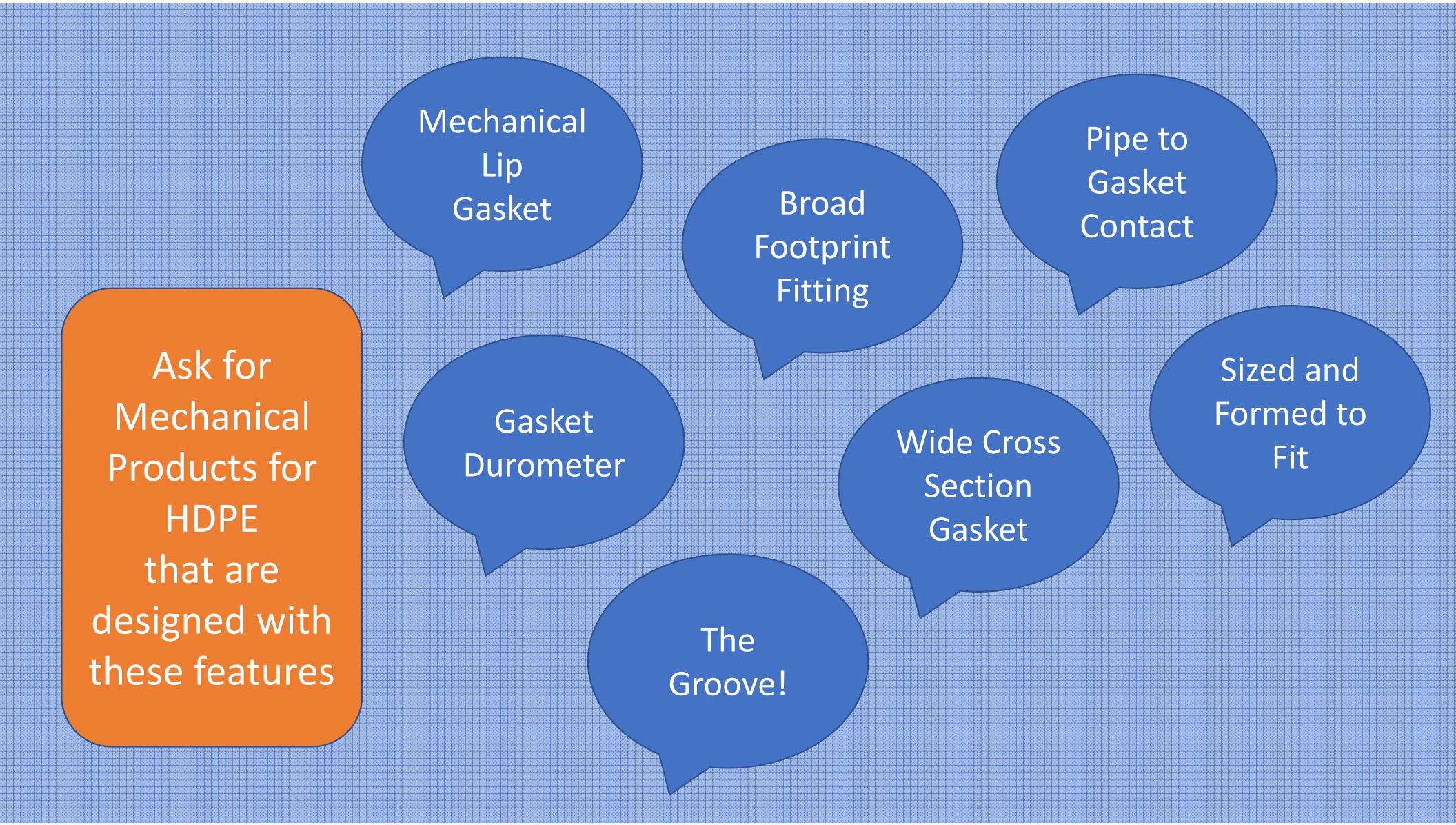


Installation of stiffeners brings pipe “into round” and pipe provides good fit for mechanical fitting

Do Spring Washers Work?

Polyethylene Encasement

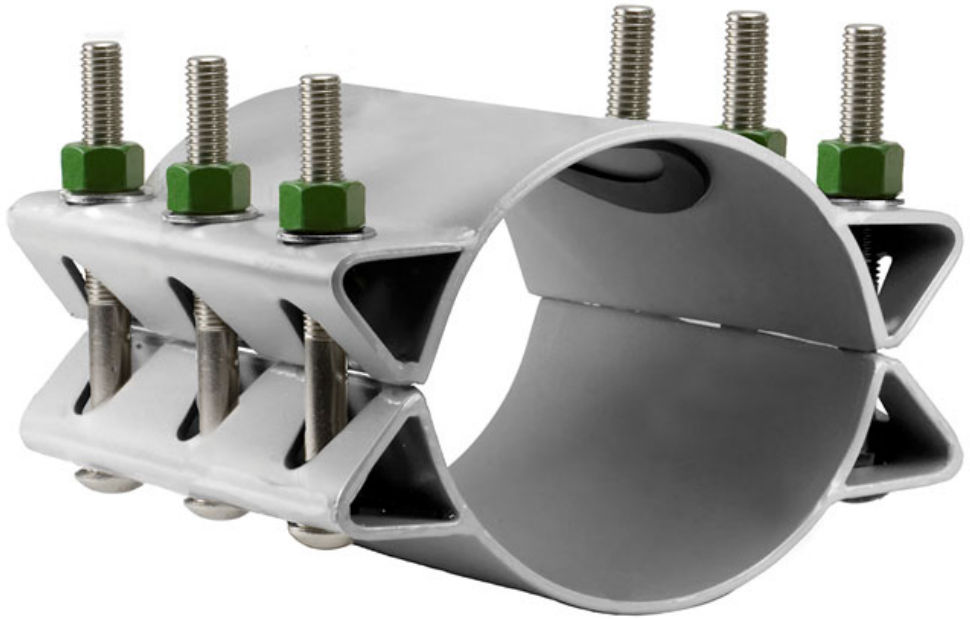


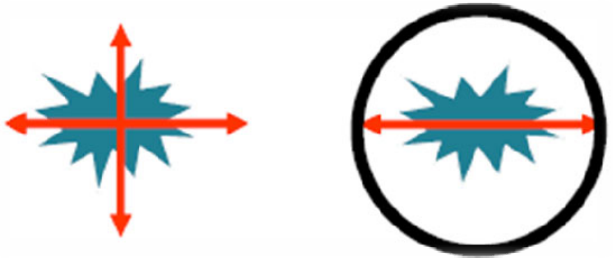

Ask for Mechanical Products for HDPE that are designed with these features
Mechanical Lip Gasket
Broad Footprint Fitting
Pipe to Gasket Contact
Gasket Durometer
Wide Cross Section Gasket
Sized and Formed to Fit
The Groove!

Mechanical Products for HDPE

Universal Clamp Couplings

Repair Sleeves

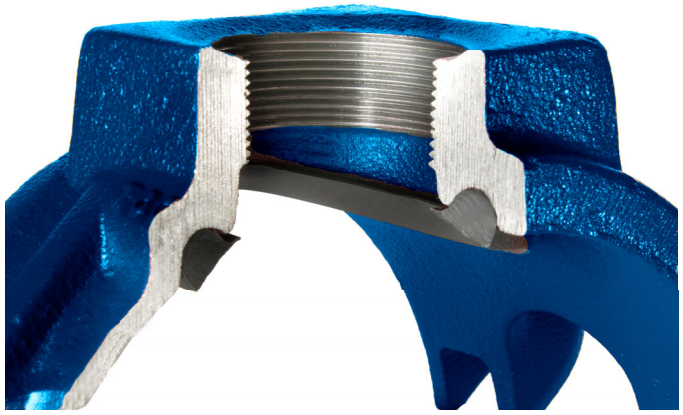




Repair Sleeves

Couplings and FCAs

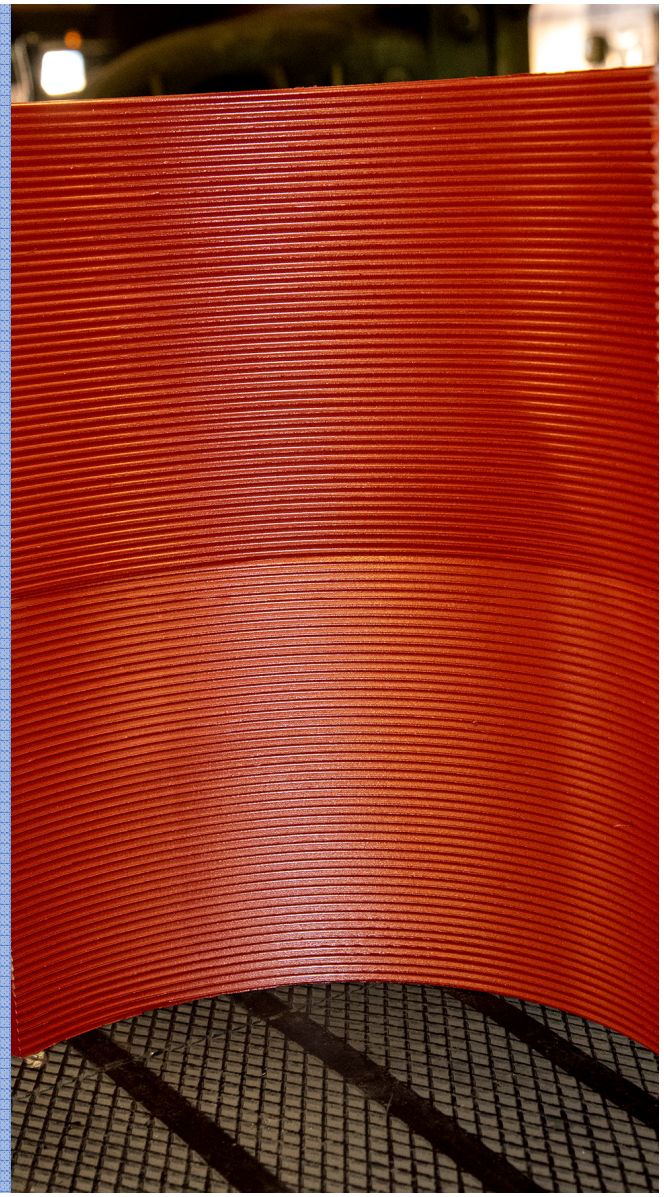
Service Saddles

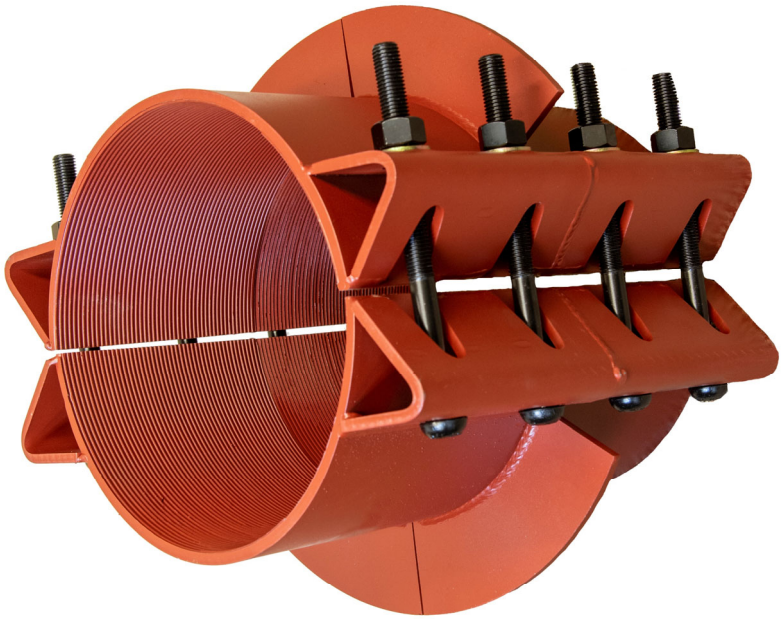


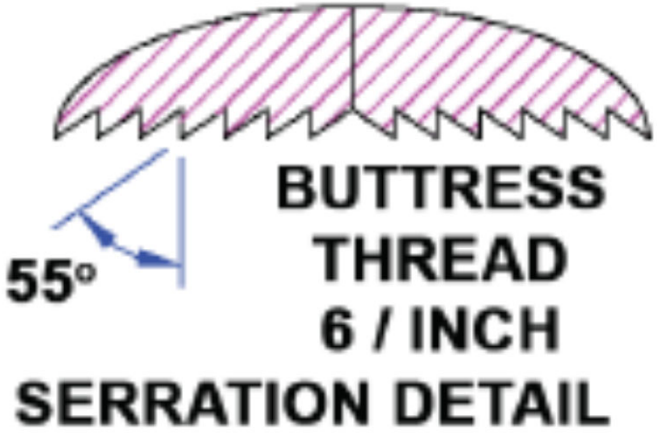
Tapping Sleeves

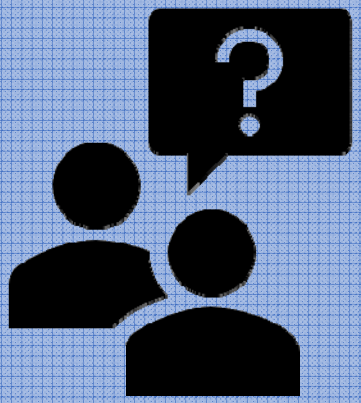
Line Stops

Wall Anchor Restraint





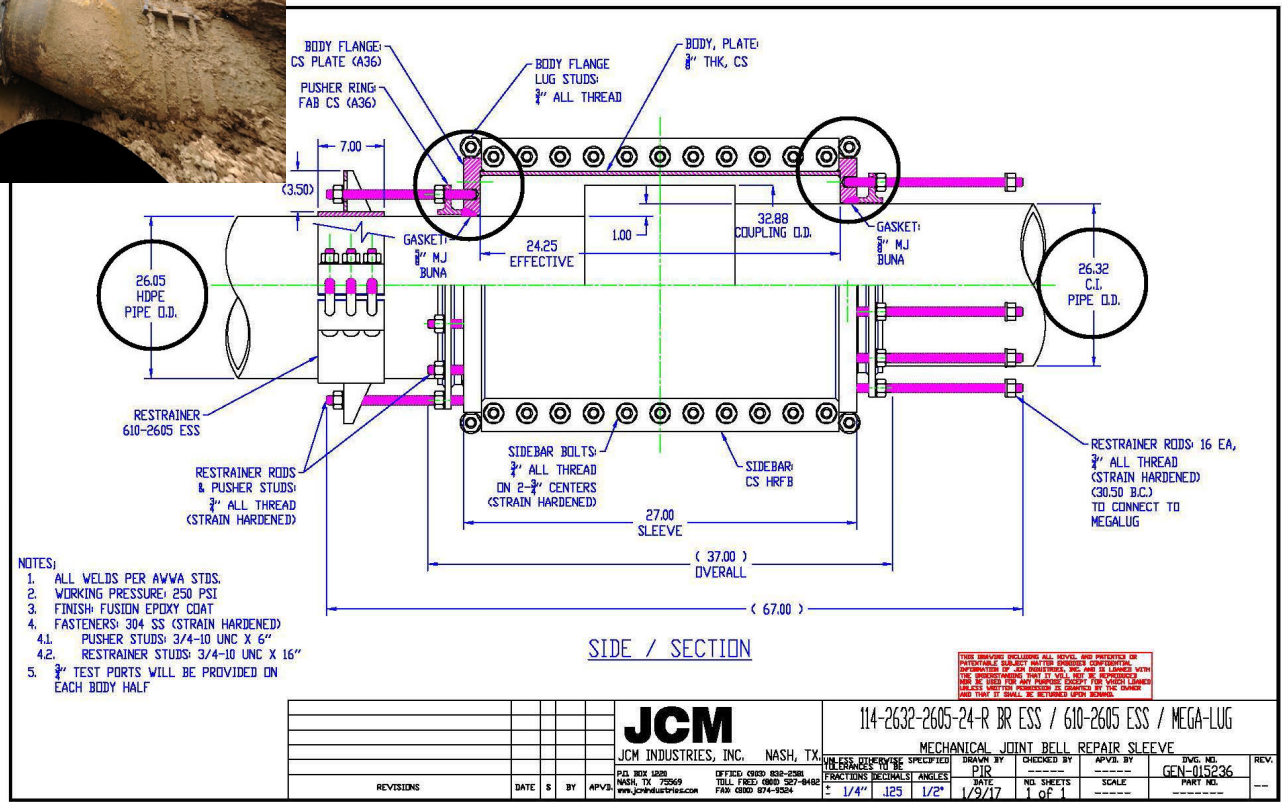




What are the key design features for mechanical fittings manufactured for HDPE pipe?

1. Wide cross section gasket set in a groove
2. Gasket durometer soft enough to flex with pipe expansion and contraction
3. Sized and formed to the exact OD of the HDPE pipe
4. All the Above

Case Studies



NOTES:
1. ALL WELDS PER AWWA STDS.
2. WORKING PRESSURE: 250 PSI
3. FINISH: FUSION EPOXY COAT
4. FASTENERS: 304 SS (STRAIN HARDENED)
   - 4.1. PUSHER STUDS: 3/4-10 UNC X 6"
   - 4.2. RESTRAINER STUDS: 3/4-10 UNC X 16"
5. 3/4" TEST PORTS WILL BE PROVIDED ON EACH BODY HALF

SIDE / SECTION

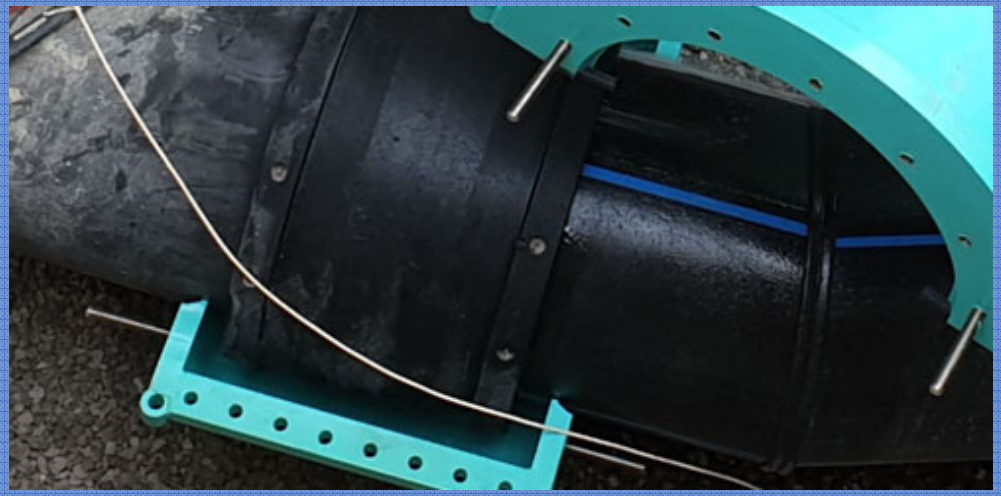
REVISIONS	DATE	$	BY	APVD.

JCM INDUSTRIES, INC. NASH, TX.
P.O. BOX 1220
NASH, TX. 75569
www.jcmindustries.com
OFFICE (903) 832-2581
TOLL FREE (800) 527-8482
FAX (800) 874-9524

114-2632-2605-24-R BR ESS / 610-2605 ESS / MEGA-LUG

MECHANICAL JOINT BELL REPAIR SLEEVE

UNLESS OTHERWISE SPECIFIED TOLERANCES TO BE			DRAWN BY	CHECKED BY	APVD. BY	DWG. NO.	REV.
FRACTIONS	DECIMALS	ANGLES	PJR	-------	-------	GEN-015236	--
± 1/4"	.125	1/2°	DATE 1/9/17	NO. SHEETS 1 of 1	SCALE -----	PART NO. -------	



To Sum it Up!


600
500
400
300
1750
1700
1650
1600
1550
1500
1450
1400
1350
1300
1250
Volume
Opening price
High price
Low price
Closing price

Recommendations

- Correct Application and Design
- Spread Sheet of Crucial Facts
- Project Details and Specifications
- Verify the Application
- Value Experience

Mike Scholz
Western Regional Sales Manager
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The information included in this program is based on the most recent available in the piping industry. It is presented for the viewers use and education. Information provided should not considered formal recommendations for product application. For specific product recommendation, end user should provide application information, including pipe size, SDR number, working pressure, and specific information as to application (i.e. repair, connection, branching).

JCM Industries invites inquiries concerning the application of our products. Viewers may contact us at:

800-527-8482 or 903-832-2581
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