Municipal Advisory Board

Established May 1, 2008 at the University of Texas, Arlington

Mechanically Joining HDPE Pipe

April 7, 2016

Victaulic

World's leading provider of pipe joining technologies

Established 1919

Global Corporate and Manufacturing Facilities with over 3500 people worldwide

Municipal Advisory Board

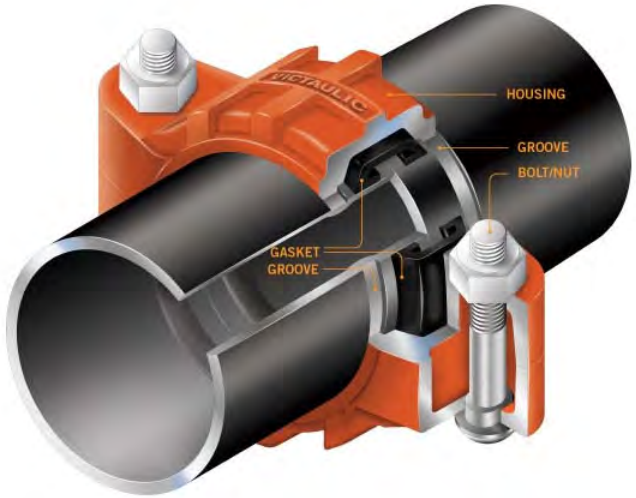
Established May 1, 2008 at the University of Texas, Arlington

Where we came from.

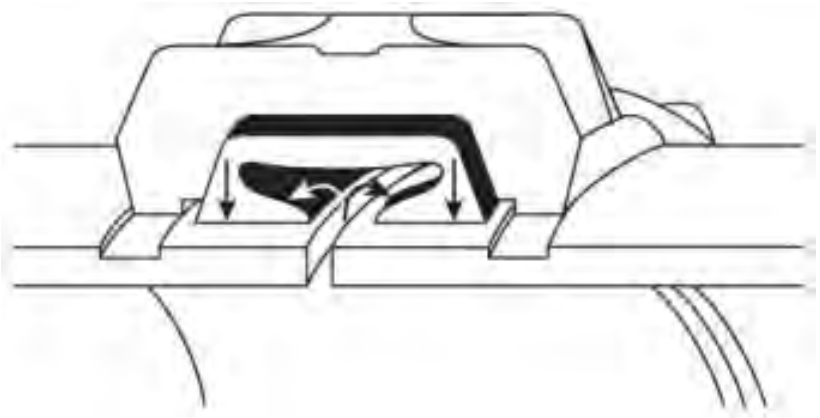
victory + hydraulic = Victaulic

Anatomy of a Victaulic Joint

- Features 4 major components:
  - Victaulic Groove
  - Elastomer Gasket
  - Coupling Housing
  - Track Head Bolts & Nuts



Triple Seal Design



- Pressure responsive gasket forms triple seal
- Capable of a Full Vacuum
- Seals between the pipe ends and the groove
- Coupling housing encompasses gasket and secure gasket lips in a firm seat on the pipe
- Line pressure enhances seal through combination of gasket resilience and housing reinforcing downward pressure on the gasket.

HDPE PRODUCTS

S/905
2-8”

S/908
8 – 36”

Global Coupling Solution

Fittings 2-12”

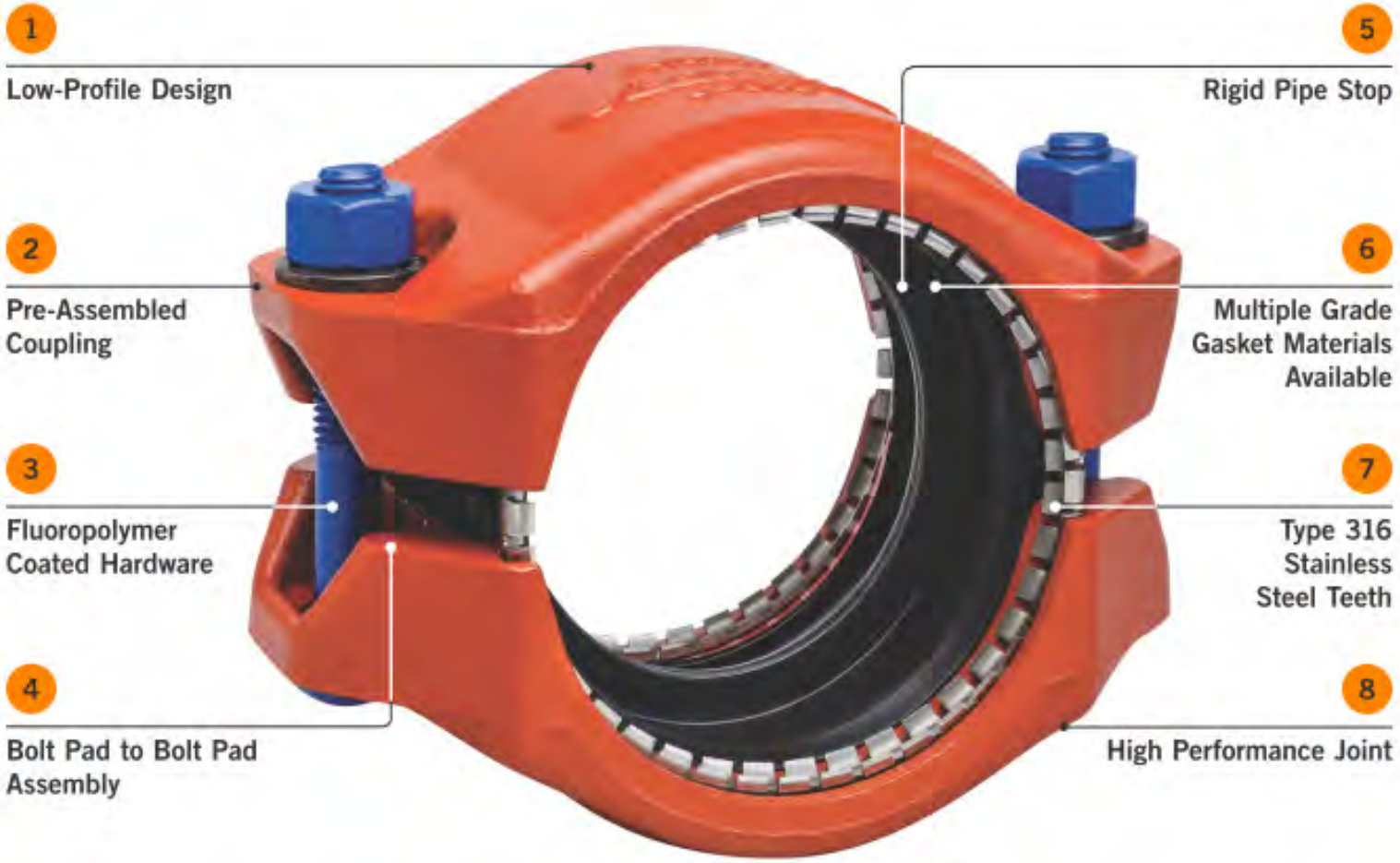
Coatings / Fasteners
(Buried)

S/926 Outlets
2-48”, 4 & 6” outlets

S/907
2-8”

S/904
3 – 8”

Transitions: Groove and Flange


1
Low-Profile Design
2
Pre-Assembled Coupling
3
Fluoropolymer Coated Hardware
4
Bolt Pad to Bolt Pad Assembly
5
Rigid Pipe Stop
6
Multiple Grade Gasket Materials Available
7
Type 316 Stainless Steel Teeth
8
High Performance Joint

HDPE Process Piping: 6 days vs. 4 weeks

DESIGN QUALIFICATION

- Pressure
  - Vacuum, air, hydrostatic
  - Short & long term, cyclic
- Bending
- End pull

Hydrostatic pressure test set up

24" DR17: pipe failure, coupling in place

Bend test rig

HDPE Specification References

PPI

- Handbook for Polyethylene Pipe
- Polyethylene Piping System Field Manual
- TR-22/01 Guidelines for Qualification Testing of Mechanical Couplings for PE Pipes in Pressurized Water or Sewer Service
- TN-27 FAQs HDPE Pipe for Water Distribution and Transmission Applications

AWWA

- C906-15 Polyethylene (PE) Pressure Pipe and Fittings, 4 In. through 65 In. (100 mm through 1,650 mm), for Waterworks
- M55 Manual PE Pipe – Design and Installation

ASTM

- D1598 Time-to-Failure of Plastic Pipe Under Constant Internal Pressure
- D3035 Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter
- D3139 Joints for Plastic Pipe Using Flexible Elastomeric Seals
- F714 Polyethylene (PE) Plastic Pipe (DR-PR) Based on Outside Diameter
- F1804 Determining Allowable Tensile Load for Polyethylene (PE) Gas Pipe During Pull-In Installation

AS NZS

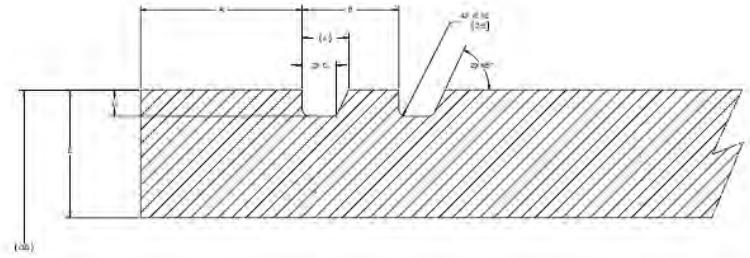
- AS 1462.24:2003 Method 24: determination of resistance to crack propagation – Test methods for slow crack growth in notched pipe (notch test)
- AS NZS 4130:2009 Polyethylene (PE) pipes for pressure applications

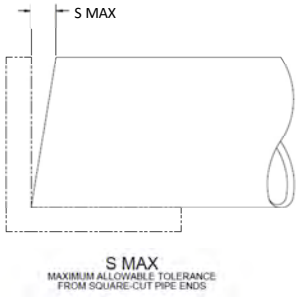
ASTM F714 vs AS NZS 4130
Elevated temperature sustained pressure test

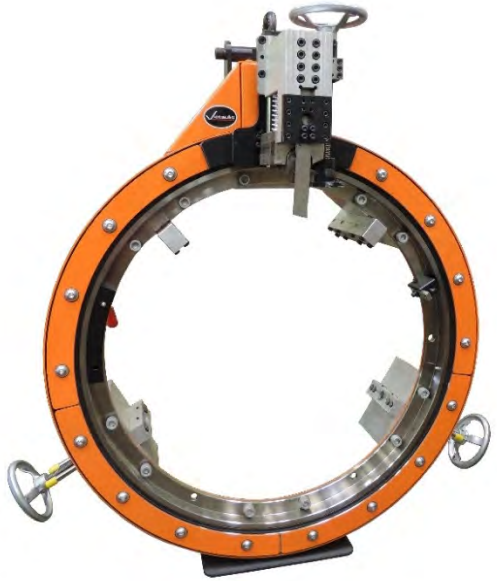
	ASTM F714	AS NZS 4130
Test method	ASTM D1598	AS NZS 1462.6
Test conditioning	ASTM D1598, sec 8.	AS NZS 4130 sec10.1 table 5
Test temperature	80 ±2°C (176 ±3.6°F)	80 ±1°C (176 ±3.6°F)
Compound	PE4710	PE 100
Minimum Time to Failure, hours *Applied Stress:* *750 psi (5.17 MPa)* *660 psi (4.57 MPa)* *(780 psi) 5.4 MPa* *(720 psi) 5.0 MPa*	ASTM F714 sec 6.2 table 8 200 1000	AS NZS 4130 sec10.1 table 6 165 1000
DR11 Test Pressure, psi *Applied Stress:* *750 psi (5.17 MPa)* *660 psi (4.57 MPa)* *(780 psi) 5.4 MPa* *(720 psi) 5.0 MPa*	 150 132	 157 145

PIPE PREPARATION

Groove specification





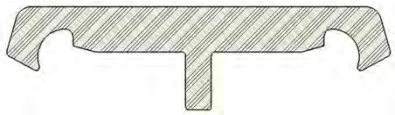


Grooving methods

- Field: CG3100/3300/3500 HDPE cut grooving tools
- Distributor / Shop: high production grooving workstations
- Pipe extruder: pre-grooved pipe to Victaulic specifications

GASKETS

Grade	Temp. Range[1]	Compound	Color Code	General Service Guidelines
E	–30°F to +230°F –34°C to +110°C	EPDM	Green Stripe	May be specified for hot water service within the specified temperature range plus a variety of dilute acids, oil-free air and many chemical services. UL Classified in accordance with ANSI/NSF 61 for cold +73°F/+23°C and hot +180°F/+82°C potable water service and ANSI/NSF 372. **NOT COMPATIBLE FOR USE WITH PETROLEUM SERVICES OR STEAM SERVICES.**
T	–20°F to +180°F –29°C to +82°C	Nitrile	Orange Stripe	May be specified for petroleum products, hydrocarbons, air with oil vapors, vegetable and mineral oils within the specified temperature range; not compatible for hot dry air over +140°F/+60°C and water over +150°F/+66°C. **NOT COMPATIBLE FOR USE WITH HOT WATER SERVICES OR STEAM SERVICES.**



style 905 gasket cross section

style 908 gasket cross section

Contact information

Aidan Niggel, Product Management Director, Tools and Materials
Easton, PA
Tel. 484/541-1466
Email aidan.niggel@Victaulic.com

Mike Griffin, Engineering Director, Tools and Materials
Easton, PA
Tel. 610/923-3110
Email mike.griffin@Victaulic.com

Steve Morrison
Frisco, TX
Tel. 972/561-0611
Email steve.morrison@Victaulic.com

Victaulic website: www.Victaulic.com

Municipal Advisory Board

Established May 1, 2008 at the University of Texas, Arlington

Mechanically Joining HDPE Pipe

April 7, 2016