

VICTAULIC[®] SOLUTIONS

FOR THE UPSTREAM OIL INDUSTRY



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Production Manifold



Prefabricated Header

“USING VICTAULIC’S PRE-FABRICATED DESIGN APPROACH HAS GREATLY IMPROVED CONSTRUCTION EFFICIENCIES AND HAS DECREASED THE AMOUNT OF FIELD TIME. REDUCING THE AMOUNT OF TIME ON LOCATION NOT ONLY SAVES MONEY, BUT HELPS TO MITIGATE THE CHANCE OF A SAFETY INCIDENT OCCURRING.”

Justin Crump, Facilities Engineer

UPSTREAM APPLICATIONS



SWD Piping



Tank Piping

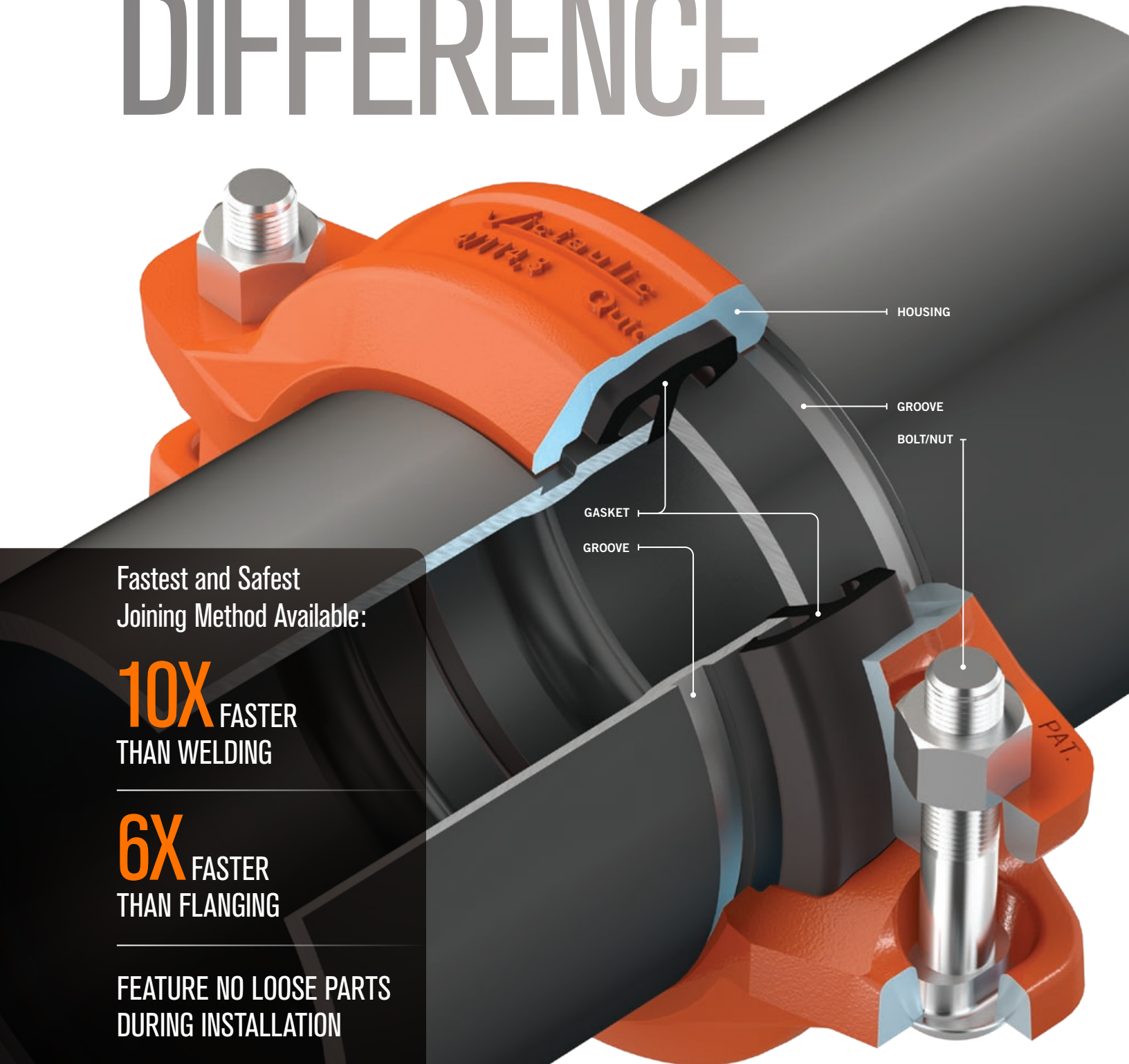
THE VICTAULIC® DIFFERENCE

Fastest and Safest
Joining Method Available:

10X FASTER
THAN WELDING

6X FASTER
THAN FLANGING

FEATURE NO LOOSE PARTS
DURING INSTALLATION



VICTAULIC UTILIZES **VERTICALLY INTEGRATED MANUFACTURING** TECHNIQUES TO CREATE AND MAINTAIN QUALITY, RELIABILITY AND REPUTATION. EACH STEP OF THE MANUFACTURING PROCESS IS CONTROLLED AND MONITORED BY VICTAULIC. ACHIEVE ON-TIME, ON-BUDGET COMPLETION AND THE HIGHEST SAFETY STANDARDS ON INSTALLATION.

Gasket Reliability

Victaulic's gasket process includes controlling raw materials selection, developing and compounding exclusive gasket materials, and ensuring the highest possible quality through state of the art material testing and validation processes. Victaulic incorporates the combined efforts of their Material Technologists, Design Engineers, Process Control Engineers, Quality Assurance Engineers and Manufacturing Professionals to be the only grooved coupling manufacturer that is fully vertically integrated in gasket development and production.

- Durometer/Hardness: **ASTM D2240 Testing**
- Tensile Strength and Elongation: **ASTM D412**
- Compression Set: **ASTM D395**
- Stress Relaxation: **Victaulic® Proprietary Tests and ISO 3384**
- Volume Swell: **ASTM D471**
- Accelerated Aging: **ASTM D573**

TESTING

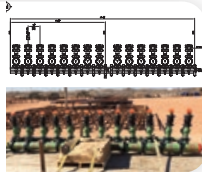
EXPERIENCE YOU CAN COUNT ON

QUALITY INSTALLATION AND SAFETY TRAINING

In order to increase productivity, minimize rework and keep the crew safe your Victaulic sales representative provides thorough on-site training.

Verification

Size of line, coupling, and gasket grade.



Inspection/Preparation of Pipe

Ensure pipe is free from debris. Square pipe ends.



Grooving of Pipe

Proper roll set per pipe size range. Grooving demonstration and groove measurement with Go/No-Go tape.



Pre-Lubrication

Lubricate gasket with approved lubrication



Key Objectives

- Tooling Steps and Safety
- Product Installation
- Proper Pipe Preparation
- Documentation

Installation

Properly align pre-lubed gasket over pipe ends followed by placement of housing keys with grooves in pipe



Tightening

Tightened until bolt pad is metal to metal



Inspection of Joint

Bolt pad to bolt pad



Review

Every person on site must pass previously listed steps



Additional Benefit

Bilingual Trainers available at every job site.



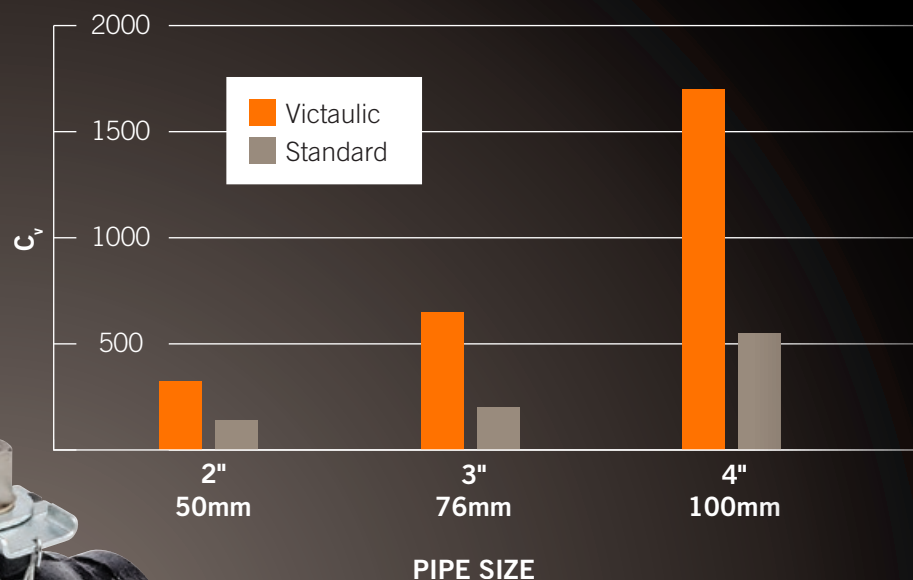
Valve Testing

Victaulic puts each product through substantial testing requirements before going to market. These procedures test reliability and durability of the joints. General list of test performed:

- Pressure Tests
- Pressure Cycling Tests
- Flexure
- Vibration
- Water Hammer
- Vibration/Pulsation
- Low and High Temperature Exposure
- Fire
- Air Pressure
- Vacuum



Series 727 Ball Valve Flow Values vs Standard Trim Valve



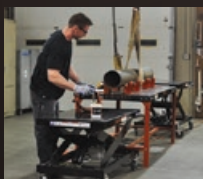
**"WE WERE ABLE TO SAVE THOUSANDS OF DOLLARS
IN MATERIAL EXPENDITURE AND LABOR COSTS
WHILE LOWERING RISK FACTORS."**

Stacey Cunningham, Purchasing Manager

EVERY STEP OF THE WAY

FROM PRE-CONSTRUCTION TO COMMISSIONING

Victaulic ensures speed to market, drastically reducing fabrication time and increased global availability and deliveries through lean manufacturing techniques and the support of Victaulic employees on a world wide scale.



PREFABRICATION



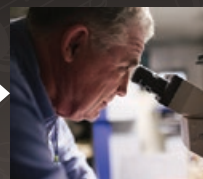
SHIPPING AND
TRANSPORTATION



SAFETY AND
TRAINING



JOBSITE
INSTALLATION



QA/QC VISUAL
INSPECTION



VICTAULIC®
AUDITS/
QUESTIONNAIRE

Installation Process

65% MORE MAN-HOURS
ON AVERAGE NEEDED FOR WELDED
INSTALLATIONS OVER GROOVED.

Grooved

Groove
Pipe

Stage
grooved pipe
and fittings

Center
gasket, seat
housing in
grooves

Bolt
couplings
metal-to-metal

Grooved
joint is
complete

Threaded

Start die on
end of pipe

Apply
cutting oil

Cut threads

Reverse
machine once
completed

Wipe pipe
clean

Apply PTFE or
Pipe dope

Insert threads
into fitting

Flanged

Weld, Braze or
Thread flange
to pipe

Insure flange
is clean and
free of burrs

Mate up
bolts

Install two
bolts opposite
each other for
retaining gasket

Slip gasket
between
flanges

Tighten
remaining
bolts in star
pattern

Apply load
gradually

Tighten to full
torque level
until nuts
cease to move

Welded

Put on
safety gear

Prep weld area

Set up
machine

Clean metal
before welding

Set the joint

Start the weld

Build up a
weld pool

Fill bevel
between
pipe ends

Repeat until
fully filled

Victaulic® grooved systems have been the system of choice since 1919.

APPLICATIONS:

Bulk Systems
Central Gathering Facilities
Desilters/Desanders
Electric Treater Hook-ups
Flow Lines
Free Water Knockout
Gun Barrel
Heater Treaters
Injection Lines
Mud Lines
Produced Water Lines
Production Headers
Salt Water Disposal
Secondary Recovery
Separator/Water Knockout
Skim and Volume Tanks
Suction/Discharge Manifolds
Tank Battery
Tank Hook-ups
Tertiary Recovery
Well Head Hook-ups

Finish
weld

Clean the slag

Allow metal
to cool



QEP Energy Company Mandaree, North Dakota

QEP faced tight construction schedules due to increased drilling activity as well as having other jobs in various stages of construction. Working with our Victaulic® Virtual Design and Construction (VDC) group and local contractors and consultants, the treaters were constructed off-site and installed in the field using a minimum number of field joints.

MULTI-WELL PAD



Tesoro Oil Refinery Los Angeles, California

Due to increasing demands and more stringent environmental regulations Tesoro had to install and replace a water loop that circled the refinery. After a thorough study of various joining methods Victaulic was selected because of the breadth of product from a single supplier and because of the safety advantages of the system.

REFINERY PIPING



Atlas Resources Hammon Jacksboro, Texas

Prior to construction, the contractor knew the project would face challenges associated with schedule constraints. Fusing HDPE pipe is very time consuming. New Victaulic HDPE products and prefab options offered a controlled cost and vastly reduced completion date.

SALT WATER DISPOSAL



Chesterfield Oil Battery Hobbs, New Mexico

For Apache Corporation construction of a new oil battery provided the opportunity to evaluate the best pipe joining methods for oil and water lines. Apache required a system that was not only dependable, but also easy to maintain. When it came time to specify and purchase the piping system Apache selected Victaulic.

OIL BATTERY



J. Cleo Thompson Means Andrews, Texas

Constructing a central tank battery and five new satellite locations at its oil handling facility required coordinated construction schedules to ensure the system went on-line and was receiving oil as quickly as possible. Working with the Victaulic VDC team to create detailed drawings and a comprehensive materials list allowed the project to finish ahead of schedule.

TANK BATTERY



West Fire Energy Snipe Lake, Saskatchewan, Canada

Speed was of paramount importance to Westfire Energy when installing for brand new well headers. Past experience with threaded joints led Westfire on a search for faster joining technologies. Using Victaulic Installation-Ready™ Style 107 rigid couplings allowed the system to be installed in half the time.

HEADER SYSTEMS

SYSTEM SOLUTION FOR HDPE PIPE

INSTALLATION-READY™ MECHANICAL PIPE JOINING
FOR HIGH-DENSITY POLYETHYLENE



INSTALLS
UP TO
10× FASTER



INSTALLATION
IS WEATHER
INDEPENDENT



MEETS OR EXCEEDS
PRESSURE RATINGS
OF HDPE PIPE



INSTALLS
WITH SIMPLE
TOOLS



Style 905 Installation-Ready™ Plain End Coupling

For joining plain end HDPE systems. Dual rows of stainless steel teeth sink into HDPE pipe and don't let go. Available for sizes 2–14" IPS | 63–355 mm ISO.

Style 907/W907 Installation-Ready Transition Coupling

Provides a single transition from plain end HDPE pipe to grooved pipe, valves or fittings. The Style 907 gives you access to the entire Victaulic® toolbox of existing grooved products such as valves, strainers and fittings. Available in sizes 2–14" IPS | 63–355 mm ISO.

Style 904 Installation-Ready Flange Adapter

Provides a single transition from plain end HDPE pipe to flanged piping system components. Available for sizes 3–8" IPS HDPE pipe to ANSI Class 150 Flange.

Full Flow, Plain End HDPE Fittings

2–8" IPS | 63–225 mm ISO plain end HDPE connections.

A full complement of couplings, fittings, and valves are available for all your HDPE system needs.



Style 908 Double Grooved Coupling

The large diameter solution for joining HDPE pipe systems, the Style 908 coupling brings speed and strength to the table. Available in sizes 8–36" IPS | 250–900mm ISO.

CG3000 Cut Grooving Tool

The CG3000 tools are designed to cut groove 8–36" IPS | 250–900mm ISO HDPE pipe. Providing the only grooved pipe end solution for joining large diameter HDPE pipe, these tools face and groove the end of the pipe in preparation for installation.



Style 926 Mechanical-T

This *Mechanical-T* spigot outlet provides a grooved outlet for direct connection to grooved steel pipe, valves, fittings or other equipment.

Simple, hole-cut branch connections for HDPE systems. Available for 10–32" IPS with 4" outlets and 26–48" IPS with 6" outlets.

For ISO sizes please reference publication 11.07.

Style 906 Installation-Ready™ Knife Gate Valve

This knife gate valve is designed for use on fluid lines containing solids, slurry, and/or abrasive media. All wear parts can be replaced in-line without removing the valve from the system. Available for 3–8" IPS HDPE.

SALT WATER DISPOSAL

When used in corrosive environments, the Victaulic® System Solution for HDPE pipe with couplings, fittings and valves will reduce overall construction costs and provide a reliable system for the life of your facility.

Challenge: Constructing a facility with HDPE pipe

Solution: Utilizing Victaulic® System Solutions for HDPE allows the full containment system to be constructed from HDPE pipe. Reduce your construction time and material handling by eliminating fusion from the job site.

**“VICTAULIC COUPLINGS
SAVE TIME AND MONEY”**

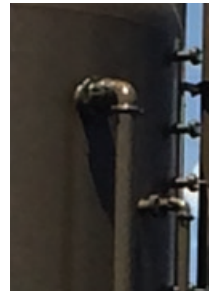
Bruce Allen, Production Foreman

APPLICATIONS AT WORK

Separators

Products used : Pressure ratings

HP-70 Couplings : 1000 psi | 6895 kPa | 69 bar
HP-70ES Couplings : 2500 psi | 17237 kPa | 172 bar
107N Installation-Ready™ Couplings : 750 psi | 5171 kPa | 52 bar
Series 727 Ball Valves : 1500 psi | 10342 kPa | 103 bar
Series 712 Check Valves : 1000 psi | 6895 kPa | 69 bar
Series 713 Check Valves : 1000 psi | 6895 kPa | 69 bar



Flow Lines

Products used : Pressure ratings

HP-70 Couplings : 1000 psi | 6895 kPa | 69 bar
HP-70ES Couplings : 2500 psi | 17237 kPa | 172 bar
107N *Installation-Ready* Couplings : 750 psi | 5171 kPa | 52 bar
Style 905 HDPE Couplings : 1000 psi | 6895 kPa | 69 bar
Style 907 HDPE to Carbon Steel : 1000 psi | 6895 kPa | 69 bar
Transition Couplings : 1000 psi | 6895 kPa | 69 bar



WHY USE VICTAULIC ON YOUR NEXT PROJECT?

- Quick and easy joint alignment
- Visual verification of joint integrity
- Designed for buried services
- Pre-grooved pipe available from select pipe manufacturers
- Installation in rain, sleet, snow, wind, blowing dust, cold weather, hot weather — adverse conditions do not stop installations.



Storage Tanks

Products used : Pressure ratings

HP-70 Couplings : 1000 psi | 6895 kPa | 69 bar
 HP-70ES Couplings : 2500 psi | 17237 kPa | 172 bar
 Style 107N Installation-Ready™ Couplings : 750 psi | 5171 kPa | 52 bar
 Series 761 Butterfly Valves : 300 psi | 2068 kPa | 21 bar



Heater Treaters

Products used : Pressure ratings

HP-70 Couplings : 1000 psi | 6895 kPa | 69 bar
 HP-70ES Couplings : 2500 psi | 17237 kPa | 172 bar
 Style 107N Installation-Ready Couplings : 750 psi | 5171 kPa | 52 bar
 Series 727 Ball Valves : 1500 psi | 10342 kPa | 103 bar
 Series 712 Check Valves : 1000 psi | 6895 kPa | 69 bar
 Series 713 Check Valves : 1000 psi | 6895 kPa | 69 bar



Well Heads/Production Manifold

Products used : Pressure ratings

HP-70ES Couplings : 2500 psi | 17237 kPa | 172 bar
 Style 107N Installation-Ready Couplings : 750 psi | 5171 kPa | 52 bar
 Series 727 Ball Valves : 1500 psi | 10342 kPa | 103 bar
 Series 712 Check Valves : 1000 psi | 6895 kPa | 69 bar





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