

# **FACTION FUSION**

CONNECTION PRODUCTS

We are only as good as  
our **Connections.**



**Faction-Saddle**™

HDPE BRANCH CONNECTION SYSTEM

Brochure and Technical Manual

**Welded  
HDPE Saddles**

## **HDPE is amazing.....**

But it lacks the adaptable configurations that you may find with (for instance) PVC. With this in mind Faction Fusion has developed the "Faction Saddle" which we believe is the start in our journey to make HDPE more versatile and convenient to use in the gravity sewer market.



# The Faction-Saddle™ Advantage

*The welded HDPE Faction Saddle connection creates a long term solution that is leak free, root proof, and durable. The Fusion process for gravity flow connections are manufactured in-ditch, in the field. The patented fusion process uses heat and vacuum to produce a convenient and consistent fusion weld that is easily verifiable by visual inspection as well as a vacuum test that is incorporated as part of the fusion process.*



- **FUSION WELDED CONNECTION**
- **LEAK PROOF AND ROOT PROOF**
- **IN-DITCH FUSION**
- **NON-PROTRUDING DESIGN**
- **SMOOTH FLOW LINE**
- **EASE OF USE**
- **RESTRAINED**
- **DURABLE**
- **COMPATIBLE**
- **LIFESPAN**

Not only can the Faction-Saddle be welded at angles up to 45 degrees, but can also be welded in smaller spaces than conventional sidewall fusion equipment. The Saddle can conveniently be welded within excavations. There is no need to dig all the way around the pipe, just dig down to the side of the pipe where the connection is needed and fusion weld the saddle in place. Faction-Saddle saves time and money. The average 4 inch saddle can be welded in approx 10-15 minutes getting quality connections back in service quickly. Once again, each saddle

is vacuum tested during the process and is easily verifiable by a visual inspection. The Faction-Saddle is durable, homogenous connection with Zero Leakage. Equally as important as the saddle itself is the internal bore of the connection. Our boring and clean-up tools have been designed to open the connection to its maximum ID while providing a smooth flow line. Many of these connections will be very closely inspected by a CCTV Camera on most projects, so its important to install a Faction-Saddle . . . every time!

# HOW IT WORKS

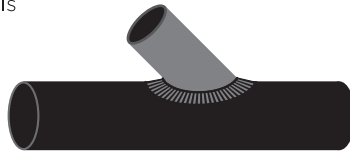
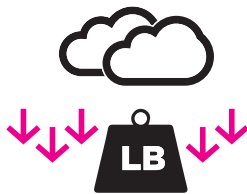
**Fusion Welded  
Connection in less  
than 15 minutes**

## Why Vacuum?

**VACUUM = ATMOSPHERIC PRESSURE = FUSION PRESSURE**

Vacuum pressure will be obtained from within the saddle connection by means of a vacuum pump causing the external forces of our Atmospheric Pressure to be applied to the saddle in a consistent and unobstructed manner.

Without fixtures or clamping devices, the saddle has the ability to equalize and adjust to the most consistent distribution of pressure. Connection is held under constant pressure while the plastic cools and stabilizes.



1



**Scrape Pipe**

Clean and scrape pipe to prepare surface for fusion.

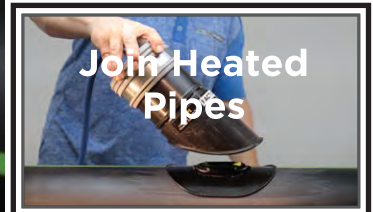
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**Heat pipe and  
Faction Saddle**

Heat pipe and saddle to designated fusion temperatures.

3



**Join Heated  
Pipes**

When pipes have reached fusion temperatures, join the two heated surfaces together.

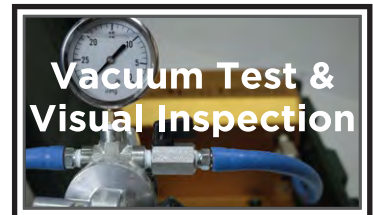
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**Apply Vacuum  
Fusion Pressure**

Apply vacuum within the saddle to engage atmospheric fusion forces.

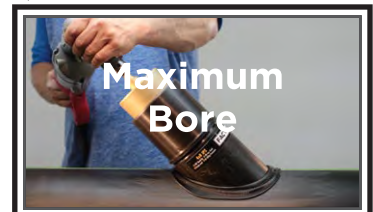
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**Vacuum Test &  
Visual Inspection**

Verification of weld quality by visual inspection and/or in process vacuum test.

6



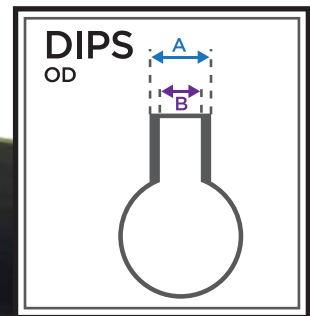
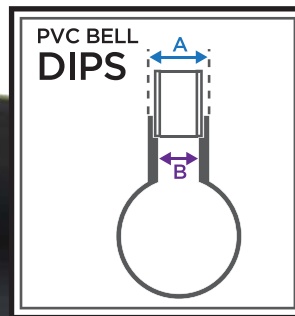
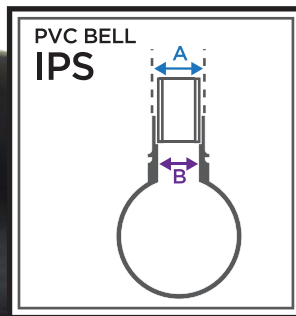
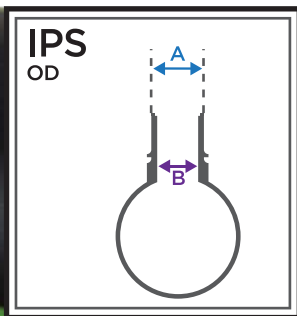
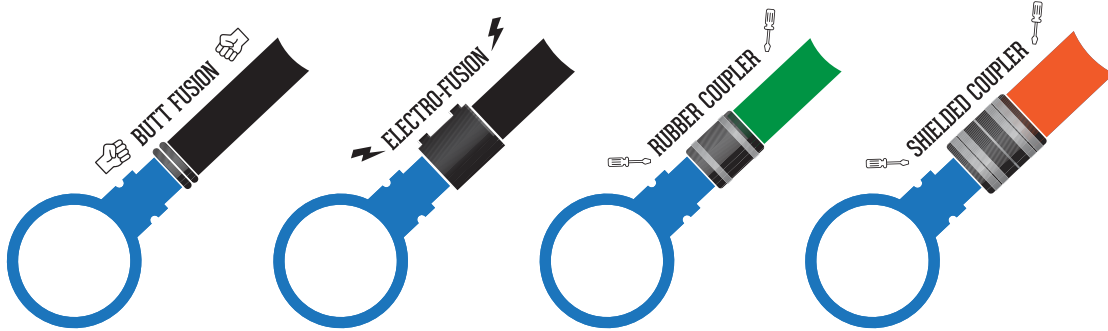
**Maximum  
Bore**

Faction Fusion drill bits open a clean internal bore to the maximum ID.



# INLET CONNECTION OPTIONS

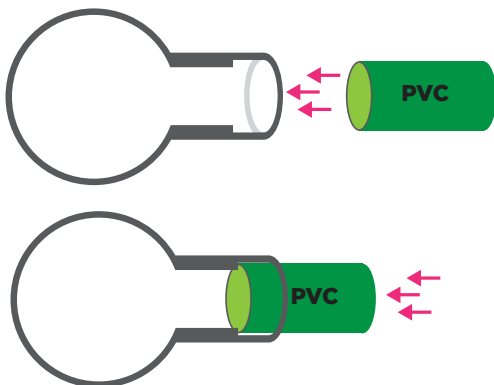
After welding the Faction Saddle to the HDPE main, the connection from the side service piping is made to the inlet side of the Faction Saddle by means of Butt Fusion, Electro-Fusion, or Rubber/Calder Couplings.



STYLE	4" Connection End		6" Connection End	
	A/OD	B/ID	A/OD	B/ID
IPS OD	4.5	3.9	6.625	5.8
PVC Bell IPS	4.5	3.9	NA	NA
PVC Bell DIPS	4.8	3.9	6.9	5.8
DIPS OD	4.8	3.9	6.9	5.8

Refer to dimension "A" for coupling size compatibility.

## PVC Bell Connections



The Faction-Saddle HDPE/PVC Bell adaptor quickly transitions from HDPE to SDR 35 PVC. This adapter eliminates the risk of an offset joint by incorporating a machined, oversized bell fitting into the HDPE saddle. Sealing between the saddle and PVC is accomplished by means of a rubber transition coupler. There is no need for expensive shielded couplings as the PVC will protrude inside of the HDPE saddle.

# TRENCHLESS SPECIALTY SADDLE

*We've got you covered!*

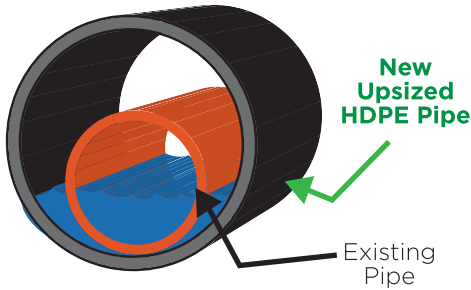
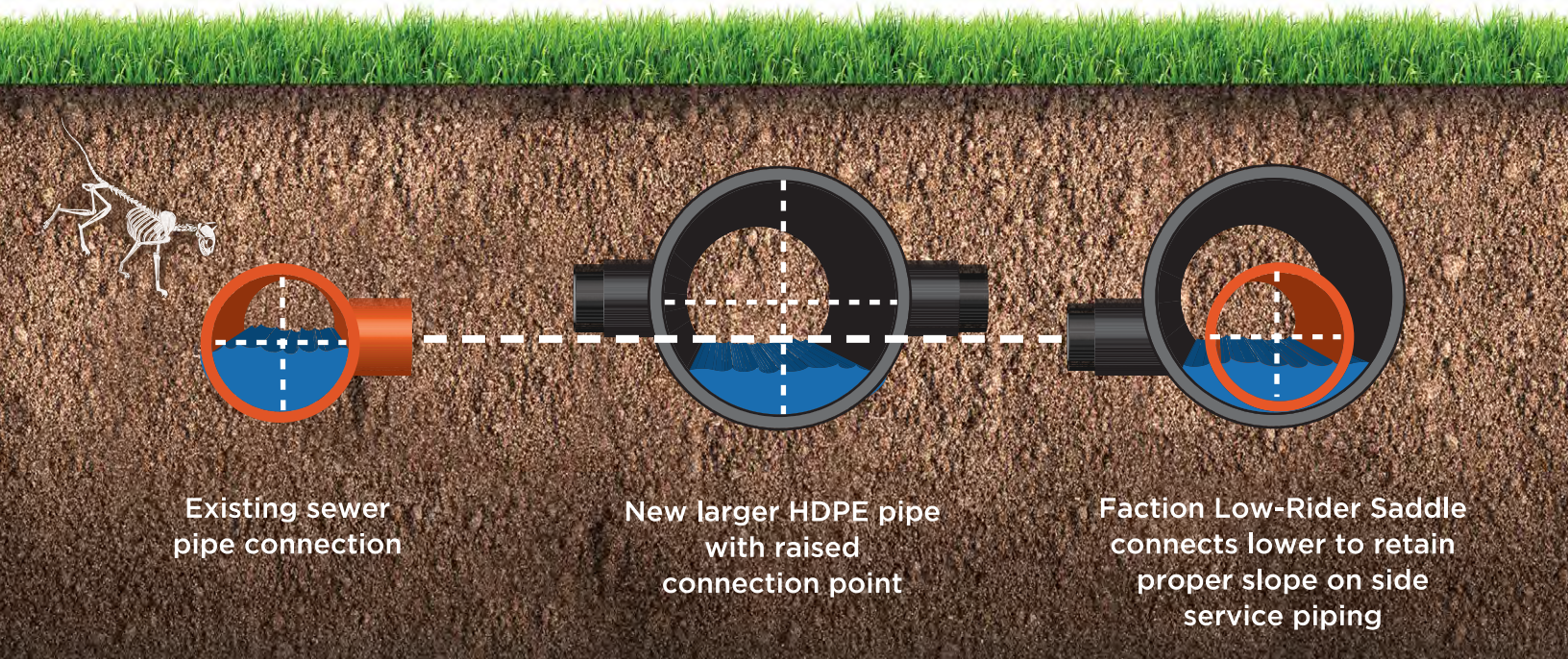


Fig. A

During the trenchless process of pipe bursting, the flow line of the new HDPE pipe most commonly remains at the same elevation as the existing pipe being replaced. In cases of major upsizing in pipe diameter, it is common for the new larger HDPE pipe to expand in an upward direction as shown in Fig A.

## Low-Rider Saddle



Because the new HDPE pipe is larger, the connection point on the side of the pipe will be higher in elevation than the connection point on a smaller pipe. To solve this problem, the Faction Low-Rider saddle connects slightly lower than the horizontal centerline (approx. 1"-2") which will accommodate more downward flow for the side service piping and may even eliminate the need to Re-Grade side service piping in some cases.

### LOW-RIDER OFFSET

MAINLINE	8"	10"	12"	14"	16"	18"	20"
4"	1"	1.25"	1.5"	1.75"	2"	2.25"	2.5"
6"	NA	1.25"	1.5"	1.75"	2"	2.25"	2.5"

# Faction-Saddle™

HDPE BRANCH CONNECTION SYSTEM

## Specifications

### 45 Degree Wye Saddle

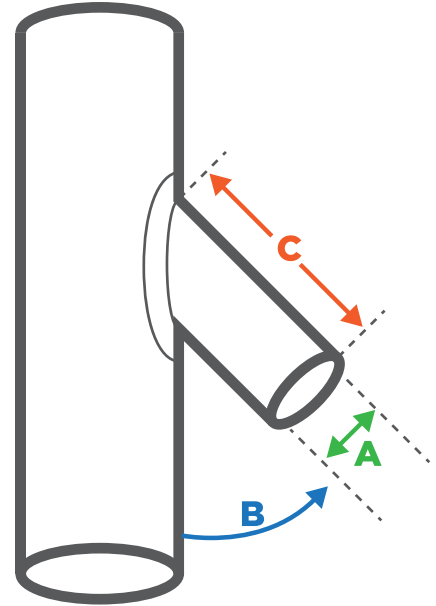
Saddle Size	A/ID	B/Angle	C/Length
4 inch	3.9	45	10
6 inch	5.8	45	13

### 22.5 Degree Wye Saddle

Saddle Size	A/ID	B/Angle	C/Length
4 inch	3.9	67.5	8
6 inch	5.8	67.5	10

### 90 Degree "T" Saddle

Saddle Size	A/ID	B/Angle	C/Length
4 inch	3.9	90	6
6 inch	5.8	90	8



*Faction-Saddle™ connections are manufactured from pressure rated polyethylene compounds that meet or exceed pipe material designation codes PE3408/PE3608 and PE4710.P*

PHYSICAL PROPERTIES	TEST METHOD	TYPICAL VALUE
Cell Classification(Black)	ASTM D3350	PE445574C
Melt Index (190/2.16)	ASTM D1238	<0.1 G / 10 min
High Load Melt Index (190/21.6)	ASTM D1238	4 - 20 g / 10 min
Density 2% Carbon Black	ASTM D792/D1505	0.96 g / cm <sup>3</sup>
Tensile Strength at yield	ASTM D638	3500 to 4000 psi
Tensile Elongation	ASTM D638	>400%
Flexural Modulus, 2% Secant	ASTM D790	120,000 to 160,000 psi
SCG Resistance, PENT	ASTM F1473	>500 h

Made from ASTM F714 pipe stock

# Faction-Saddle™

HDPE BRANCH CONNECTION SYSTEM

## Gravity flow HDPE Fusion Connections



### 90 DEGREE “T” FITTING

✓	SIZE (inches)
	4 x 6
	4 x 8
	4 x 10
	4 x 12
	4 x 14 to 24
	6 x 8
	6 x 10
	6 x 12
	6 x 14 to 24

### 22 DEGREE “WYE” FITTING

✓	SIZE (inches)
	4 x 6
	4 x 8
	4 x 10
	4 x 12
	4 x 14 to 24
	6 x 8
	6 x 10
	6 x 12
	6 x 14 to 24

### 45 DEGREE “WYE” FITTING

✓	SIZE (inches)
	4 x 6
	4 x 8
	4 x 10
	4 x 12
	4 x 14 to 24
	6 x 8 *
	6 x 10 *
	6 x 12 *
	6 x 14 to 24 *

### INLET CONNECTION END PIPE

✓	STYLE
	DR17 IPS OD
	PVC BELL IPS
	PVC BELL DIPS
	DIPS OD

### MAINLINE PIPE

✓	STYLE
	IPS
	DIPS

✓	Low-Rider Saddle SIZE (inches)
	4" Low-Rider Saddle to be utilized in field as needed
	6" Low-Rider Saddle to be utilized in field as needed

\* May require special equipment and additional training.

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# FACTION FUSION

CONNECTION PRODUCTS

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