4”-8”Supraflow High Volume Tapping Tee

PLCS

www.plcsusa.com | (856) 722-1333

v6. 03/2025

Supraflow High Volume Tapping Tee

Overview and Benefits

Video Link: www.plcsusa.com/supraflow

Current Branch Option Limitations

Typical methods for installing branch connections:

1. Inline Tee Installation

2. High Volume Tapping Tee (HVTT)

3. PE Side Wall Lateral Hot Tap

1. Inline Tee

Inline Tee installation requires multiple squeeze-offs to stop the gas on live mains.

Disadvantages:

- Temporary bypass may be needed, adding labor, time, and material cost.
- Potential damage to PE at squeeze points, decreases pipeline integrity.
- Larger excavations increasing reinstatement cost.
- Lifting equipment to maneuver squeeze off tools in place.
- Squeeze-off may not completely stop the gas.

2. HVTT (High Volume Tapping Tee)

The HVTT is easy to install for lateral connections, but have flow limitations.

Disadvantages:

- Size: Only available in 2" and smaller.
- Does not have enough flow for large projects.

3. PE Side Wall Lateral Hot Tap

Hot tapping through a branch saddle requires specialized equipment.

Disadvantages:

- Multiple steps required.
- Typically performed by a specialty trained crew.
- Requires a large excavation.
- Connection between new pipe and valve cannot be pressure tested prior to energizing the new lateral.

Supraflow Solution

Intrinsically safe and easy PE main branching operating up to 125 psi.

Live gas-free 4"-8" branching on 4"-18" main for:

- ***Main Connections***
- ***High Flow Services***
- ***Large Diameter By-pass Installations***

Large tapping tee is simple and quick using ultra light “one size fits all” drilling equipment.

Pressure test the entire project BEFORE energizing.

The internal tubular cutter retains the coupon and shavings.

Supraflow Solution

Developed by Grupo Torre, serving the industry for 145 years.

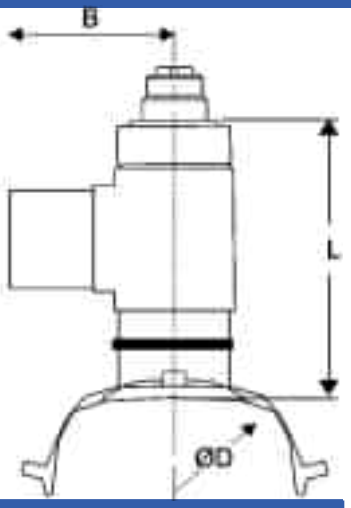
Why?

- ***In response to growing concerns over the lack of cost-efficient large diameter PE hot tapping systems.***

- ***Safety issues over the potential damage that squeeze-off causes to PE pipes.***

- ***Over 15,000+ Supraflow tees installed and growing.***

Supraflow Solution



Saddle not included.

SIZES, REFERENCES, AND APPLICATION RANGE

PART#	ØD	SDR	ØE	B	L	ØK	UT/BOX	Wt. (lbs)
90-TSP4IPS10	4" IPS	11	4" IPS	6.6"	15.65"-16.50"	3.11"	2	10.2
90-TSP4IPS9	6"-12" IPS	11	4" IPS	6.6"	15.80"-18.60"	3.11"	2	10.5
90-TSP6IPS2	6"-18" IPS	11	6" IPS	8.2"	19.65"-23.80"	4.53"	1	21.9
90-TSP8IPS2	8"-18" IPS	11	8" IPS	12"	27.25"-30.35"	6.30"	1	50.7

* øK for cutter diameter

* Saddle not included.

* 90-TSP4IPS10 for use on 4" mains only, with 4" x 4" saddle from GF CP. Other saddles use 90-TSP4IPS8

COMPONENTS	MATERIALS
TEE	PE4710
BODY	SAE4140 + Bichromated
BODY CAP	SAE1024 + Bichromated
PIN	SAE12L13 + Bichromated
SLEEVE	SAE1024 + Bichromated
CUTTER	SAE4140
O-RINGS	NBR, Rubber (ISO 6447 / 6448)

Part#	Pressure Rating	Wt. (lbs.)	Dimensions
90-ES36	125 psi	46	38.9" x 16.3" x 6.2"

Supraflow Solution

The SUPRAFLOW Tee offers a unique alternative to traditional hot-tap procedures for branching, by-pass, and main extension projects requiring a high flow. The cutter is in the tee, simplifying installation and reducing excavation size. The design lets the operator perform a pressure test on all connections before tapping, saving significant time and money.

No other solution offers live gas-free 4”-8” branching on 4”-18” main.

Tapping is fast and easy using Supraflow’s ultra light drilling equipment.

Its exclusive tubular cutter retains the coupon and shavings.

ADVANTAGES

Meets ASTM D2513.

Minimal Training.

Rated to 125 PSI.

360 Degree Axial Rotation Installation.

Branch connections without squeeze-off.

Significant cost savings compared to traditional PE sidewall hot tapping.

No bypass needed.

INSTALLATION

Tap into a 6” main in 6 minutes.

Fast connection with existing approved fittings.

Compact drill assembly.

One-person operation.

SAFETY

Intrinsic operation.

Modular drilling and installation.

Gas-free.

Supraflow Solution

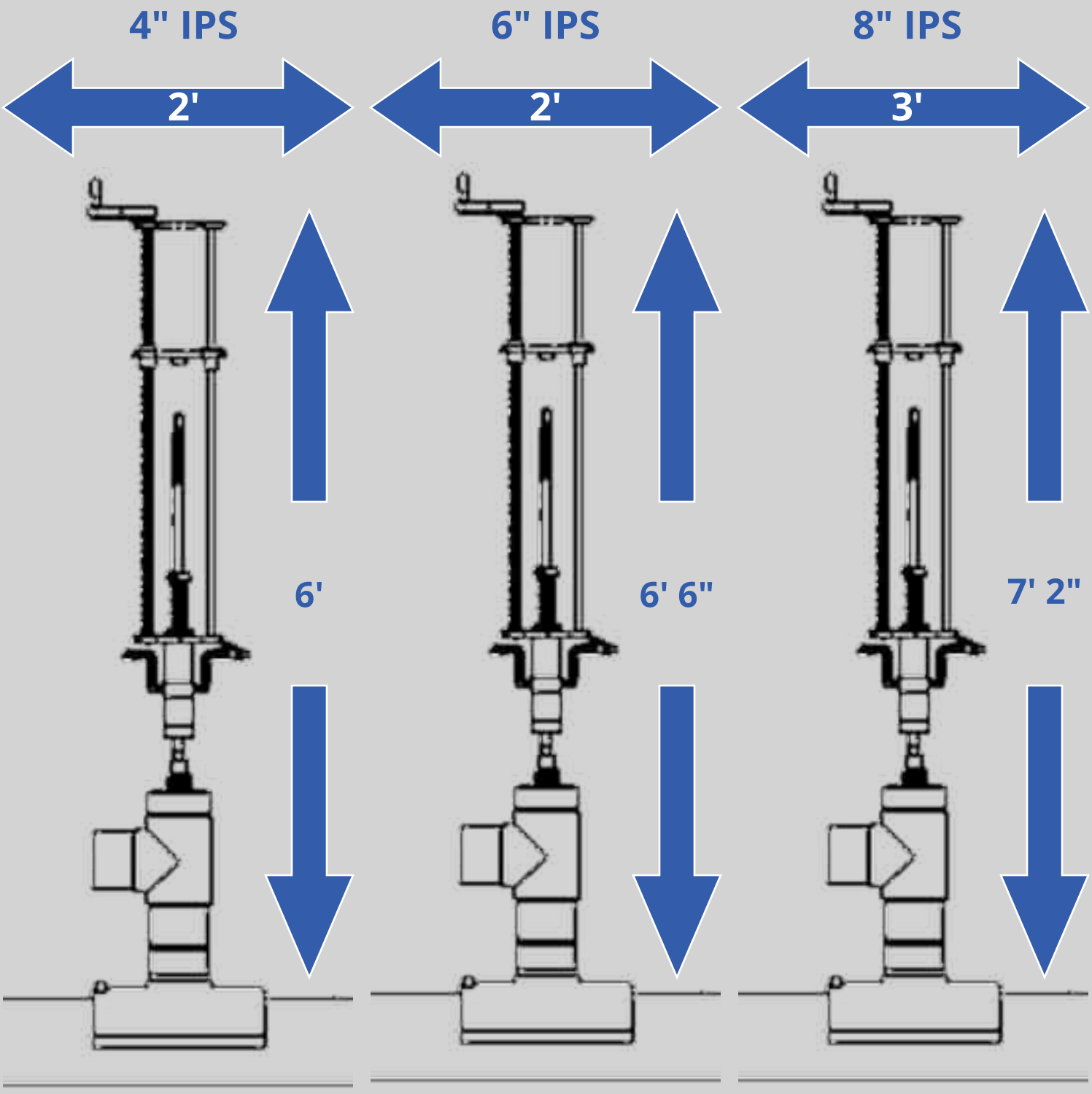
360º X & Y Axial Rotation Installation

Supraflow Solution

Smaller Excavation = Lower Restoration Cost

- Requires less room to install than other lateral installation methods.
- Installs in a typical utility excavation.

Supraflow Solution - Excavation Size



Current Users

Ameren, IL

Baltimore Gas & Electric

Bay City Gas Company, TX

CenterPoint Energy, MN

Central Hudson Gas & Electric, NY

Chesapeake Utilities Corporation, DE, MD

Delmarva Power, DE

Dominion Energy Ohio

DTE/Michcon, MI

Elizabethtown Gas, NJ

Eversource Energy, CT, MA, NH

Jackson Energy Authority, TN

Knoxville Utility Board, Knoxville, TN

Memphis Light, Gas and Water, TN

Metropolitan Utilities of Omaha, NE

National Grid, NY, MA

NorthWestern Energy

Pacific Gas & Electric Company, CA

Peoples Gas – Chicago, IL

Philadelphia Gas Works, PA

PSE&G, NJ

Rhode Island Energy, RI

Sevier County Utility District, TN

Unitil Corporation, MA, NH, ME

Valley Energy, Sayre, PA

WE Energies, WI

Supraflow Operation

Uses existing approved saddle fittings.

Supraflow Operation

Supraflow Operation

Simple to use drill assembly taps the pipe.

Uniquely designed cutter makes zero shavings and retains the coupon.

Color Coded Drill Shaft System

Tool Kit

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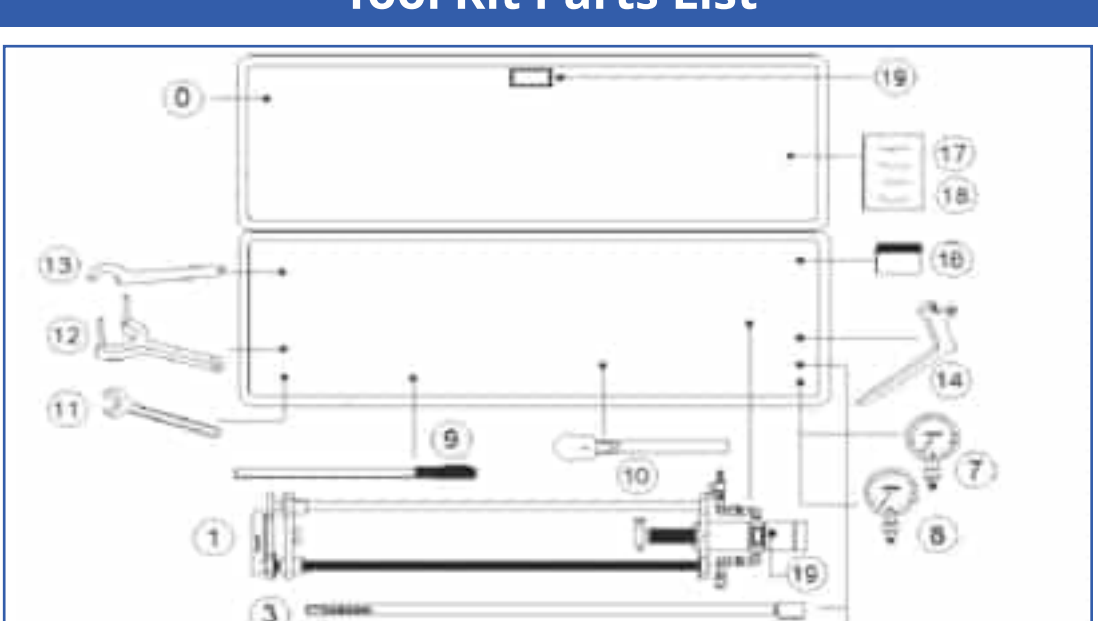
Supraflow Operation

Tool Kit Parts List



#	NAME	PART#	90-ES36
0	Supraflow™ tool box	90-11211/11232	1
1	Drilling machine (150 psi)	90-11212	1
3	8" IPS shaft with sleeve	90-11216	1
4	6" shaft with sleeve	90-11215	1
5	4" shaft with sleeve	90-11214	1
6	4x4" shaft with sleeve	90-11222	1
7	Pressure gauge (150 psi)	90-11220	1
8	Pressure gauge (30 psi)	90-11221	1
9	Ratchet wrench extension	90-10522	1
10	17mm ratchet wrench	90-10771	1
11	17mm wrench	90-10519	1
12	Unlocking tool	90-11314	1
13	34-36 hook spanner	90-10517	1
14	Steel cap wrench (extended version)	90-11305	1
16	Spare parts	90-11219	1
17	User instructions	90-11217	1
18	Check list		1
19	Equipment ID		1
WEIGHT:		**46 lb**	
DIMENSIONS:		**38.9"x 16.3"x 6.2"**	

Supraflow Operation

Tapping Tool Illustration (125 psi)

Supraflow Operation

Summary procedure shown for illustration purposes only.

1. Remove Cap

2. Fit Drill Drill Shaft

3. Attach Drill Feed.

4. Release Integral Cutter.

5.Tap Tee

6. Retract Shaft with Safety Plate.

7. Return Cutter to Start Position.

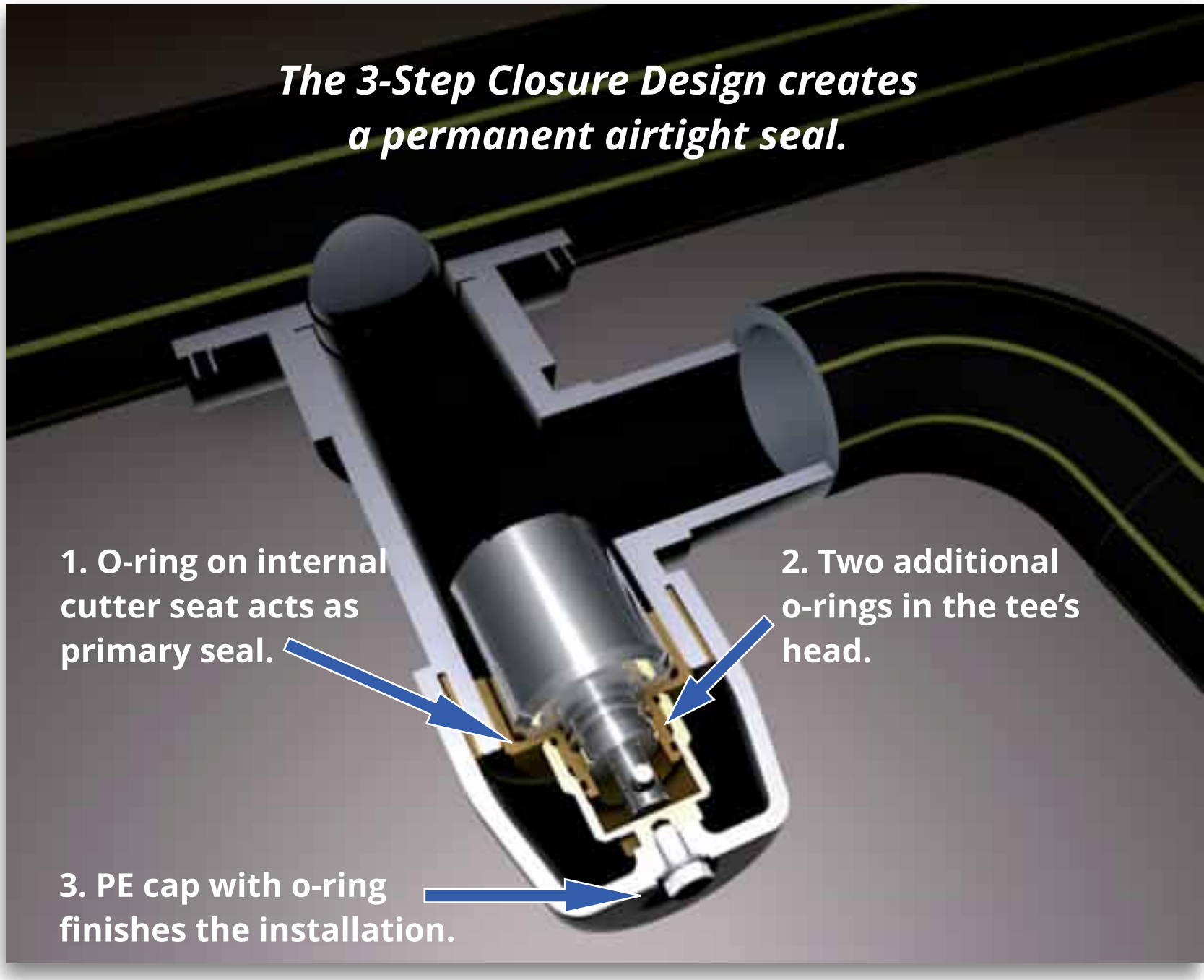
8. Remove Drill Feed.

9. Complete by Installing Cap.

These are not instructions. For the actual installation procedure, refer to manufacturer's instructions and your company procedures.

Supraflow Operation

Cutter withdrawn to the top of tee, after tapping.



Supraflow Testing

Tee pressure loss tested at up to 33 ft/sec with <0.1 psi drop.

OUTLET		Internal Pressure		Average Speed		Volumetric Flow		Pressure Drop		K-Factor	L_{eq}		L/D_{eq}
IPS	mm	psi	bar	ft/s	m/s	ft^3/s	m^3/h	psi	mbar	adim.	ft	m	adim
4" IPS	DN110	0,36	0,025	6,6	2	0,5	49,3	0,000	0,03	3,48	18,1	5,5	59,2
				16,4	5	1,2	123,4	0,002	0,16	3,29	42,7	13,0	139,1
				32,8	10	2,4	246,8	0,013	0,90	3,20	55,0	16,8	179,3
		4,35	0,3	6,6	2	0,5	49,3	0,001	0,04	3,54	20,0	6,1	65,4
				16,4	5	1,2	123,4	0,004	0,26	3,33	44,5	13,6	145,1
				32,8	10	2,4	246,8	0,018	1,25	3,21	56,8	17,3	185,1
		29,01	2	6,6	2	0,5	49,3	0,001	0,05	3,60	24,2	7,4	79,1
				16,4	5	1,2	123,4	0,012	0,84	3,36	55,8	17,0	182,0
				32,8	10	2,4	246,8	0,050	3,43	3,43	67,9	20,7	221,1
		58,02	4	6,6	2	0,5	49,3	0,002	0,14	3,71	31,0	9,4	101,1
				16,4	5	1,2	123,4	0,022	1,53	3,69	69,2	21,1	225,5
				32,8	10	2,4	246,8	0,087	6,01	3,58	80,7	24,6	263,3
6" IPS	DN160	0,36	0,025	6,6	2	1,1	107,1	0,001	0,04	3,82	99,8	30,4	220,7
				16,4	5	2,6	267,9	0,005	0,32	3,51	76,3	23,3	168,8
				32,8	10	5,3	535,8	0,017	1,14	3,28	80,8	24,6	178,7
		4,35	0,3	6,6	2	1,1	107,1	0,001	0,06	3,88	104,7	31,9	231,6
				16,4	5	2,6	267,9	0,006	0,42	3,56	80,4	24,5	177,9
				32,8	10	5,3	535,8	0,022	1,48	3,32	85,4	26,0	188,8
		29,01	2	6,6	2	1,1	107,1	0,003	0,20	3,85	124,5	38,0	275,4
				16,4	5	2,6	267,9	0,015	1,00	3,61	106,5	32,5	235,6
				32,8	10	5,3	535,8	0,052	3,60	3,52	113,8	34,7	251,6
		58,02	4	6,6	2	1,1	107,1	0,008	0,56	3,99	174,3	53,1	385,5
				16,4	5	2,6	267,9	0,028	1,90	3,68	137,9	42,0	305,1
				32,8	10	5,3	535,8	0,085	5,86	3,45	126,4	38,5	279,6
8" IPS	DN225	0,36	0,025	6,6	2	1,8	180,9	0,001	0,08	4,19	138,7	42,3	235,8
				16,4	5	4,4	452,5	0,005	0,34	3,99	115,0	35,0	195,4
				32,8	10	8,9	905,1	0,017	1,15	3,38	114,8	35,0	195,1
		4,35	0,3	6,6	2	1,8	180,9	0,002	0,11	4,16	147,9	45,1	251,4
				16,4	5	4,4	452,5	0,006	0,43	3,96	119,3	36,4	202,8
				32,8	10	8,9	905,1	0,021	1,43	3,25	118,6	36,2	201,7
		29,01	2	6,6	2	1,8	180,9	0,004	0,27	4,76	204,5	62,3	347,6
				16,4	5	4,4	452,5	0,014	0,97	3,88	145,9	44,5	248,0
				32,8	10	8,9	905,1	0,046	3,20	3,19	142,5	43,4	242,3
		58,02	4	6,6	2	1,8	180,9	0,007	0,47	4,68	271,1	82,6	460,8
				16,4	5	4,4	452,5	0,023	1,61	3,74	177,2	54,0	301,1
				32,8	10	8,9	905,1	0,076	5,27	3,15	170,7	52,0	290,1

Flow conditions immediately before and after any device may alter its pressure drop characteristics. In order to achieve accurate predictions, all conditions must be carefully reviewed when evaluating total pressure drop in the system.

Supraflow Testing

Fully meets **ASTM 2513** test requirements.

Test conditions follows **ASTM 01598**, and assembly electrofusion following procedure qualified under **49CFR 192.283.**

The tapping head assembly located inside the tee undergoes factory testing according to **ASTM F1973**.

“Standard Specification for Factory Assembled Anodeless Risers and Transitions Fittings in Polyethylene Fuel Gas Distribution Systems.”

Supraflow Testing

SUPRAFLOW™ COMPLIANCE WITH 49 CFR Part 192

TORRE GAS

TORRE GAS S.L. hereby certificates that:

SUPRAFLOW™ HOT TAPPING TEE for large diameters and up to 150 PSI PE gas pipe operations fully meets requirements of ASTM D2513, as a result of tests performed according to ASTM D2513 and test conditions following ASTM D1598, and assembly electrofusion following procedure qualified under 49CFR 192.283.

General Manager
Daniel Guilló Vivé

Technical Product Manager
Josep Mª Ripoll Puertas

SGS

Large Diameter, Full Pressure, Polyethylene Tapping Tee

By: Julie Maupin, Peoples Gas
Steve Gauthier, Energy Experts International

https://nastt.org/wp-content/uploads/2020/06/trenchless-gas-infrastructure-2020.pdf (pages 56-58)

BACKGROUND

Peoples Gas is the first and oldest utility in the city of Chicago and delivers natural gas to about 870,000 customers within the city limits through 4,500 miles of gas mains and 500,000 services. Since 2011, Peoples Gas has been pursuing an aggressive system modernization program. This includes the replacement of 2,000 miles of cast iron and ductile iron mains operating at 7 inches water column with modern polyethylene operating at 22 psi. This program also includes relocating regulators and meters outside and installing excess flow valves in service lines and shut-off valves in readily accessible locations. At the end of 2019, the program had retired 550 miles of main, installed 1,016 miles of distribution main, 21 miles of high pressure main, 78,000 services and moved 170,000 customer meters.

The total cost of large scale infrastructure projects is dominated by labor and restoration expenses. Reductions in either of these areas can result in significant savings over the duration of the program and early adoption can create a compounding effect. Peoples Gas (PGL) looks to reduce costs through adjustments in construction methods and adoption of tooling and technological advancements. Potential solutions are evaluated for applicability and suitability before moving to field trials. Field trials are the true litmus test where practicality is explored, field employee interest is gauged, and the range of applications is discovered.

SUPRAFLOW

One advancement that PGL has evaluated is the large diameter, full port, full pressure, polyethylene (PE) tapping tee developed by Torre Gas called Supraflow (Figure 1). Supraflow was developed in Europe as an alternative to squeezing pipe in order to install inline tees on larger diameter mains. It has been tested and qualified to relevant ASTM standards and each one is individually factory tested to 225 psi, 150 per cent of maximum operating pressure. Supraflow tees have been installed over 10,000 times in Europe and Latin America over the last decade.

Figure 1 – Supraflow Tapping Tee

The fitting is available with outlet sizes of 3-, 4-, 6-, and 8-inch diameters. The diameter of the main it can be installed on is only limited by the commercial availability of branch saddles. Once installed on the main, the tapping operation is carried out under live conditions and in less than 15 minutes. The fitting has been tested and rated for operation up to 150 psi. The design of the fitting allows for the use of a single small excavation by eliminating a double squeeze and vent mowers for back fed mains. It has lower associated risks than shutdown operations.

Figure 2 – Supraflow Excavation Pit

PGL typically butt fuses the Supraflow to an electrofusion branch saddle then installs the saddle on the main. It is possible to fuse the branch saddle, then electrofuse the Supraflow to the branch, if the crew has an electrofusion clamp that can be adjusted to clamp just outside of the coupling. Typically the new pipe segment is joined to the Supraflow and pressure tested prior to tapping. One feature of the combination of a branch saddle and the Supraflow tee is the ability to install it 360 degrees around the main or the axis of the tee. (Figure 3)

Figure 3 – Multiple Orientation Options

The tapping cutter inside the Supraflow is factory assembled inside a traditional butt fusion PE tee. Much like a service tapping tee, the cutter is housed in the top of the fitting (Figure 4) and is driven down to perforate the active pipe, then withdrawn back into the tower. The coupon is fully retained in the cutter and the shavings from a 4-inch tap could fit on a quarter.

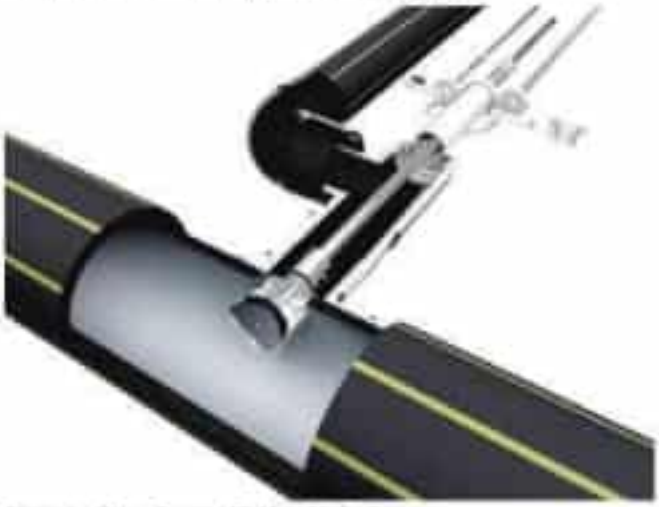


Figure 4 – Cutter Tapping PE Main Under Pressure

A squeeze off operation on larger diameter main requires a distribution crew, equipment operator, two fusers, and a large excavation. The tapping of the Supraflow tee can be completed by one person in a significantly smaller opening. PGL is able to use the compact Supraflow tapping tool with a max pressure of 30 psi (Figure 5). This is especially useful in crowded underground areas with poor horizontal separation from other utilities. Although the tool is manual, operation takes less than 15 minutes and removes the need for a compressor.

FIELD TRIALS

Peoples Gas conducted four field trials on mains ranging from 6 to 12 inches. All installations were to connect new services with large loads although the Supraflow lends itself to system expansion and branch connections missed during the design phase. Energy Experts International (EEI), the US technical representative of Supraflow, was on site for installations and provided table top reviews and training of the procedure prior to any tapping. The avoided costs for labor, excavation, and restoration were around $30k.

Figure 5 - Compact Installation Tool Design

Tapping time for all four trials was under 15 minutes.

Figure 6 – Table Top Demonstration of Operation

Site 1- 12- x 4-inch installation (Figure 7)

- Limited horizontal clearance for traditional hot tap which requires 7 feet.
- Eliminated two squeeze points and air movers, the need for a distribution crew and equipment operator, and a 16-foot opening.
- Less work performed to cut out the old 24-inch cast iron main the 12-inch PE was inserted in.

Figure 7 – Site 1: New Service for Large Residential Development

Figure 8 – Site 2: Main Extension for New Service

Site 2 – 6- x 4-inch Installation (Figure 8)

- 5- by 8-foot excavation was sufficient with Supraflow.
- Performing a traditional tie in would have resulted in extending the opening an additional 10 feet in order to get the specified squeezing distance from joints and fittings. This would have also resulted in the loss of a large industrial customer.

Figure 9 – Site 3: Horizontal Service Installed on an Inclined Main

Site 3 – 12- x 6-inch Installation (Figure 9)

- Installation took place on a very busy one-way street.
- Supraflow installed in a 6- X 5-foot excavation instead of a 16- X 6-foot trench for a double squeeze off with loss of a customer.
- No requirements for a formalized shut down procedure, distribution crew or equipment operator.
- Small rotation of the Supraflow tee made it seamless to install the service horizontal from a main on an incline.

Figure 10 – Site 4: New Service to a Famous Landmark

Site 4 – 8- x 4-inch Installation (Figure 10)

- Trench width only needed to be 5 feet, rather than 12 feet for a double squeeze.
- No requirements for a formalized shut down procedure, distribution crew or equipment operator.
- High visibility project requiring a new gas service.

CONCLUSIONS

1. Peoples Gas conducted four successful field trials of the Supraflow Large Diameter High Pressure Live PE Tapping Tee with support from EEI.
2. Tapping time for all four trials was under 15 minutes.
3. Each trial allowed for the use of a reduced size excavation.
   a. Decreased costs for small excavation and restoration.
   b. Increased safety and reduced disruption to the public.
4. Simplified gassing-in operation from needing a large crew performing a shut down to one fuser performing a simplified tie-in.
5. Reduced need for heavy equipment and elimination of pipe squeeze tools.
6. Supraflow is approved for standard operation at Peoples Gas.

ABOUT ENERGY EXPERTS INTERNATIONAL:

Steve Gauthier *is the Vice President & General Manager of the Energy Experts International Midwest Region. He oversees the business interests in the Midwest including clients in the southeastern and southwestern states. Steve has served the Natural Gas Industry for over 30 years. He is a licensed Professional Engineer in the state of Illinois and a graduate of Stevens Institute of Technology with a BS in Mechanical Engineering. He earned his MBA from the University of Illinois.*

ABOUT PEOPLES GAS:

Julie Maupin *started her career at the Gas Technology Institute in 2003 where she enjoyed working on a wide range of subject matters related to the transportation of natural gas. In her later years with GTI, she became heavily involved in plastic piping systems including associated risks and failures. In 2010, Julie joined Peoples Gas. She has held multiple positions within the organization including Compliance, Vision and Technology, Materials, and Capital Construction. Her current role is Engineering Manager where she oversees the evaluation of emerging technologies, material standardization initiatives and development of testing protocols for new materials.*

Field Installations

8" x 4" ME

6" x 4" NJ

4" x 4" NH

8" x 4" NY

4" x 4" NY

6" x 4" NJ

8" x 6" NY

4" x 4" NJ

8" X 6" CT

Field Photos

Field Photos

Field Photos

Field Photos

Field Photos

Field Photos

Get Started Today!

4”-8” branching on 4”-18” PE mains operating up to 125 psi made simple.

- No squeezing off.
- Easy to install.
- No flow restriction.
- Saves excavation.
- Use current approved fittings.
- Simple ultra light drilling equipment.
- Cutter retains the coupon and shavings.

The Supraflow saves money and enhances safety when expanding the PE system with large PE branch connections.

PLCS is the Exclusive Supraflow Distributor for North America

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UNIQUE PRODUCTS FOR GAS DISTRIBUTION

102 Gaither Drive, Unit 1
Mount Laurel, NJ 08054

PHONE: (856)722-1333
FAX (856) 273-9723

info@plcsusa.com