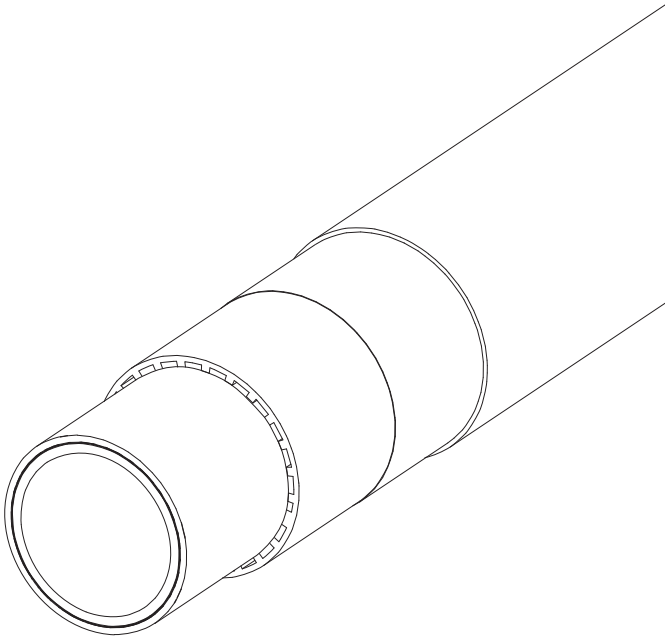
Franklin Electric
FUELING SYSTEMS

APT® XP FLEXIBLE PIPEWORK

INSTALL GUIDE

FFS-0029 r16

MODEL NUMBER
XP-XXX-SC-XXX
XP-XXX-SC-XXXX
XP-XXX-D-XXX
XP-XXX-D-XXXX



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For technical support, please contact:
Franklin Electric Technical Support
Web: franklinfueling.freshdesk.com/support/home
Tel: +1 800 984 6266

For additional questions and concerns, please contact:
Franklin Electric
3760 Marsh Rd
Madison, WI 53718 USA
Web: franklinfueling.com
Tel: USA & Canada +1 800 225 9787 • Tel: UK +44 (0) 1473 243300
Tel: Mex 001 800 738 7610 • Tel: DE +49 6571 105 380 • Tel: CN +86 10 8565 4566

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FFS-0029 r16

CONVENTIONS USED IN THIS DOCUMENT

This document includes safety precautions and other important information presented in the following format:

NOTE: This provides helpful supplementary information.

IMPORTANT: This provides important supplementary information and instructions to avoid damaging hardware or a potential hazard.

⚠ **CAUTION**: This indicates a potentially hazardous situation that could result in minor or moderate injury if not avoided. This may also be used to alert against unsafe practices.

⚠ **WARNING**: This indicates a potentially hazardous situation that could result in severe injury or death if not avoided.

⚠ **DANGER**: This indicates an imminently hazardous situation that will result in death if not avoided.

OPERATING PRECAUTIONS

Franklin Electric equipment is designed to be installed in areas where volatile liquids such as gasoline and diesel fuel are present. Working in such a hazardous environment presents a risk of severe injury or death if you do not follow standard industry practices and the instructions in this document. Before working with or installing the equipment covered in this document, or any related equipment, read this entire document, particularly the following precautions:

IMPORTANT: To help prevent spillage from an underground storage tank, make sure the delivery equipment is well-maintained, that there is a proper connection, and that the fill adaptor is tight. Delivery personnel should inspect delivery elbows and hoses for damage and missing parts.

⚠ **CAUTION**: Use only original Franklin Electric parts. Substituting non-Franklin Electric parts could cause the device to fail, which could create a hazardous condition and/or harm the environment.

⚠ **WARNING**: Follow all codes that govern the installation and service of this product and the entire system. Always lock out and tag electrical circuit breakers while installing or servicing this equipment and related equipment. A potentially lethal electrical shock hazard and the possibility of an explosion or fire from a spark can result if the electrical circuit breakers are accidentally turned on while installing or servicing this product. Refer to this document (and documentation for related equipment) for complete installation and safety information.

⚠ **WARNING**: Before entering a containment sump, check for the presence of hydrocarbon vapors. Inhaling these vapors may cause dizziness/unconsciousness, and if ignited, can explode causing serious injury or death. Containment sumps are designed to trap hazardous liquid spills and prevent environmental contamination, so they can accumulate dangerous amounts of hydrocarbon vapors. Check the atmosphere in the sump regularly while work is in process. If vapors reach unsafe levels, exit the sump and ventilate it with fresh air before resuming work. Always have another person standing by for assistance.

⚠ **WARNING**: Follow all federal, state, and local laws governing the installation of this product and its associated systems. When no other regulations apply, follow NFPA codes 30, 30A, and 70 from the National Fire Protection Association. Failure to follow these codes could result in severe injury, death, serious property damage, and/or environmental contamination.

⚠ **WARNING**: Always secure the work area from moving vehicles. The equipment in this document is usually mounted underground, so reduced visibility puts service personnel working on it in danger from moving vehicles that enter the work area. To help prevent this safety hazard, secure the area by using a service truck or other vehicle to block access to the work area.

⚠ **DANGER**: Inspect the installation location for potential ignition sources such as flames, sparks, radio waves, ionizing radiation, and ultrasound sonic waves. If any potential ignition sources are identified, implement proper safety measures.

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1 Introduction

APT® XP pipework provides a highly flexible pipework solution that makes installation simple and easy in any weather condition or site configuration. XP pipework can be used in both pressure and suction applications, and is ideal for underground service station fuel delivery systems. XP pipe is offered in 1", 1½", 1¾", and 2" diameters in a variety of lengths.

1.1 Documentation

- This document contains the procedure and related information for installing APT® XP pipework. The content herein is intended for personnel who are qualified (certified) in the installation of XP pipework (see §2.5).
- Instructions of this document are in English. All other language versions are translations of this original document.
- Information given in this document is provided as a guide only.
  - The Illustrations depict a typical setup and are for instruction and description purposes only.
  - It is the installer's responsibility to ensure that correct and safe procedures are followed at the worksite.
- This document and related documents are available from Franklin Electric at www.franklinfueling.com.

1.1.1 Symbol Legend

Wear Protective Headwear

Wear Eye Protection

Wear Protective Clothing

Wear High-Visibility Clothing

Wear Protective Gloves

Wear Safety Footwear

Refer to instruction guide

Ventilate Before & During Entering

Ensure Continuous Ventilation

Connect an earth terminal to the ground

Lockout/Tagout Electrical Equipment

Disconnect main plug from electrical outlet

Disconnect before carrying out maintenance or repair

General Warning

Warning: Industrial vehicles

Warning: Electricity

Warning: Flammable Material

No open flame; Fire, open ignition source and smoking prohibited

2 Safety/Security

2.1 General Safety Information

- Procedures in this document are only to be performed by people qualified and certified to perform them (see §2.5).
- Personnel working on or with energized equipment must be authorized by relevant regulatory bodies to carry out such work and must have the appropriate training. Check with your employer and relevant regulatory body's rules for working with energized equipment.
- Obey all local laws, rules, regulations, and instructions in this document. In case of inconsistency or contradiction between information contained in this document and any laws, rules and regulations, obey the stricter of the two.
- Keep unqualified personnel at a safe distance during installation.
- If it is necessary to remove safety/security devices, immediately reinstall the safety/security devices after completing the work.

2.2 Gas Station Owner or Operator

- Site Owner/Operator – Save this guide for future use, and make sure to provide it to anyone who services this equipment.
- Always reference the guide(s) that came with the equipment for a complete list of installation and safety precautions. The most current Franklin Electric documentation can be found online at www.franklinfueling.com.

2.3 Hazard Assessment

Prior to beginning work and prior to recommencing work after leaving and returning to the worksite, a worksite, *pre-job hazard assessment* must be performed to identify safety and environmental needs. At a minimum, this hazard assessment should:

- Identify possible hazards and risks.
- Identify the safety needs of the job.
- Identify the correct procedures, practices and equipment.
- Eliminate unsafe conditions and actions from the worksite.
- Identify the need for personal protective equipment.
- Inspect equipment before use.
- Confirm sheaths of all cables are secured and undamaged.
- Confirm plugs and connectors are properly connected and serviceable.
- Perform ongoing risk assessment during the project.

2.4 Required Personal Protective Equipment (PPEs)

These PPEs are required during all phases of installation.

Wear Protective Clothing

Wear Eye Protection

Wear High-Visibility Clothing

Wear Protective Gloves

Wear Protective Headwear

Wear Safety Footwear

2.5 Qualifications and Responsibilities

2.5.1 Qualifications for APT® Installation Certification

FE Online or Live Certification Training

SCAN / CLICK

To be considered “qualified”, individuals shall pass training from the following certification training course (online or live):

- Fuel System Installation Safety
- Pipework & Containment (APT® Brand) – Forecourt Specialist Track

2.5.2 Responsibilities

The following responsibilities are for guidance only and are not limited to those listed here.

It is the responsibility of:

- The owner of the install site(s) to ensure that all APT® XP pipework installers shall be certified (see § 2.5.1), follow all local laws, rules and regulations, along with the instructions and the specifications listed in this document.
- The certified installer(s) to know APT® XP pipework and its safe use.
- The certified installer(s) to have and maintain valid Franklin Electric training certification(s) (see § 2.5.1).

3 Installation

NOTE: When the installation is complete, make sure this guide is left with the service station owner or operator.

3.1 Overview

Franklin Electric manufactures XP series piping systems, which are designed to provide containment and transfer of product in your fueling system. XP series piping can be used in either pressure or suction applications.

XP series piping systems are installed in accordance with published Franklin Electric installation instructions by factory certified installers only. Franklin Electric cannot guarantee against leakage if the installation process is not followed properly or if the maintenance program is not adhered to. To ensure your system integrity, it is essential that an inspection program be in place and adhered to as outlined in our warranty. Refer to this installation guide, individual installation instructions, the APT® product catalog, or visit the APT® website at www.franklinfueling.com for proper product and installation practices for your site design. In Canada, there are two official languages, English and French. All safety warnings must be in French and English. Attention is drawn to the possibility that some Canadian authorities may require additional markings and/or installation instructions to be in both official languages. If further assistance is needed, contact Franklin Electric or a Franklin Electric sales representative immediately to ensure a proper system design and installation.

IMPORTANT: This guide is a system installation overview, and should be used in conjunction with part-specific installation instructions. Refer to the installation documentation for the equipment described in this guide and any other related equipment for complete installation and safety information. To ensure your system integrity, it is essential that all applicable installation instructions and federal, state, and local codes are followed.

⚠ **WARNING**: XP fittings must be installed in conjunction with XP piping. *Using P-series clamshell fittings with XP pipe will result in improper assembly and potential fitting failure.*

3.2 Preparation & Materials

3.2.1 Inspection of Materials

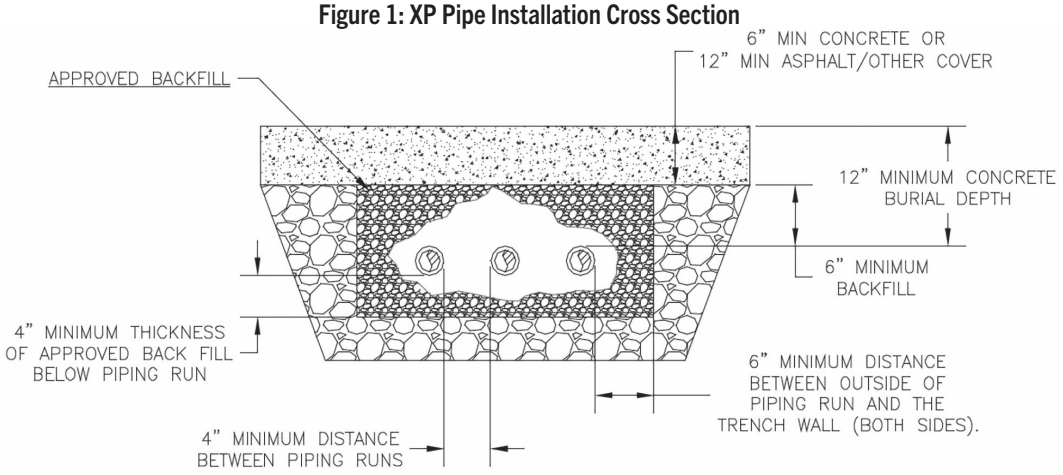
Upon Receipt of Item(s)

- Verify all items are in accordance with the order.
- Check all items for damage (punctures, deep cuts, kinking or any other visible damage). Do not use any component of the XP series piping system that shows signs of damage.
- If any item shows damage, raises questions in regards to potential damage or is not in accordance with the order, inform Franklin Electric *immediately*.
- Remove the packaging material.
    - Follow all local laws, rules and regulations regarding disposal of discarded parts, packaging material or items and any subsequent components.

3.2.2 Storing and Handling Materials

APT® piping primary and secondary jackets should not be exposed to direct sunlight, or excessive temperatures and rough handling during storage and transit that may cause damage and leaking. APT® pipe is delivered on reels with a protective wrap which inhibits UV damage to the pipe during shipping. APT® Secondary Contained (SC) pipe incorporates a scuff guard layer which protects the pipe in transit and adds a degree of UV protection to the pipe jackets. *Franklin Electric recommends that the scuff guard layer not be exposed to direct sunlight for longer than three months or UV degradation may occur. It is the contractor's responsibility to cover entry boots installed above grade with a UV resistant cover or lid in order to eliminate UV exposure.* To avoid damage to pipe when handling reels with forklifts, ensure proper forklift placement as illustrated in Pipe Reel Handling Guide, p/n 77112100 that is attached to each reel prior to shipment. Keep sump lids and sump bases together, do not mix parts; number the lids and bases to avoid confusion. Do not store lids separate from sump bases for long periods of time. Install tank sump lids completely when work is not being performed inside sumps (especially during backfilling).

Figure 1: XP Pipe Installation Cross Section



3.2.3 Installation Temperature Range

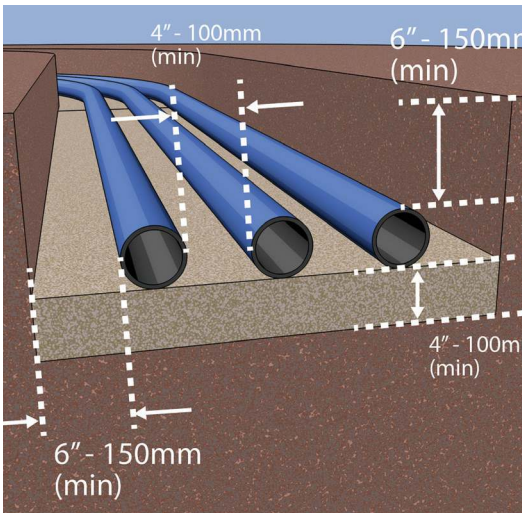
APT® flexible piping construction can be installed at a maximum recommended temperature of 135° F (57° C). Below 25° F (-4° C), APT® flexible piping may become difficult to work with. *When working with APT® flexible piping below 25°F (-4°C), avoid pipe kinking or impacting because this may create damage to the primary and/or secondary layers. When working with APT® flexible piping in cold temperatures, the pipe may stiffen which may increase the potential to kink the pipe during installation.* ***Below 25°F (-4°C), the minimum bend radii may have to be increased to prevent kinking.***

3.2.4 Trenches

Trenches should be dug straight when possible. If changes in direction are required, trench corners should be cut at 45° angles to allow for the piping run's proper bend radius. *There must be a minimum of 6" (15.24 cm) of space between the outside of a piping run and a trench wall.* ***The minimum allowable pipe bend radius for all XP series piping is 36" (92 cm).***

IMPORTANT: If a section of pipe is kinked, do not use that section of pipe.

Figure 1a

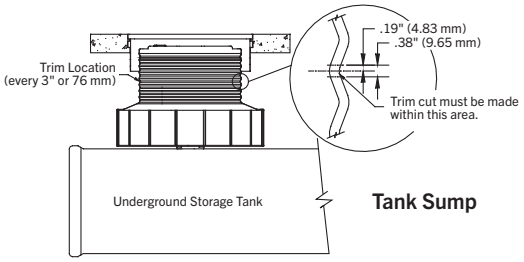


3.2.5 Backfill Materials

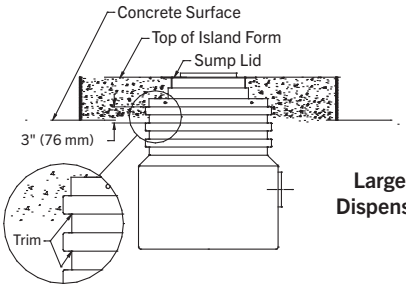
Clean, compacted sand, pea gravel, or ⅛ to ¾" (3.2 to 19 mm) or smaller crushed rock (without sharp edges) should be used as backfill material. *There must be a minimum of 4" (10.16 cm) of approved backfill material under, and between, piping runs.* ***Backfill material must not be contaminated with any petroleum product or other contaminant and must meet the requirements published in APT® warranty.*** If XP pipe is installed within ducting, adjacent ducting runs must be separated by a minimum of 2" (51 mm) ensuring that the XP pipe maintains the 4" (102 mm) minimum separation distance.

NOTE: Reference publication TB-0616-03 – Backfill Requirements and Specifications Available at www.franklinfueling.com > Support > Tech Docs Portal (under TECH UPDATES section).

Figure 2: Sump Preparation



Tank Sump



Large Mouth Dispenser Sump

3.2.6 Spacing Requirements (Crossovers)

Avoid pipe crosses, but, if they are unavoidable, try to keep them close to, but not over, the tanks. *Always maintain a minimum of 4" (101.6 mm) of backfill material under, and between, the piping runs.* The backfill above the highest crossover pipe and each side of the piping *must be a minimum of 4" (101.6 mm).*

3.2.7 XP Burial Depths

In installations with traffic meeting AASHTO H20 wheel loading requirements, *the pipe must be buried at least 12" (30.48 cm) deep with a minimum of 6" (15.24 cm) of backfill above the pipe and 6" (15.24 cm) of concrete above the backfill*. For installations using asphalt or other burial material, *the pipe must be buried at least 18" (45.72 cm) deep with a minimum of 6" (15.24 cm) of backfill above the pipe and 12" (30.48 cm) of asphalt and/or other burial material above the backfill.*

3.2.8 XP Piping Slopes

As a common recommended practice, underground piping can be sloped back to underground tank for natural drainage of fuel inside pipe to drain back to the tank. *Franklin Electric does not require the sloping of APT® XP piping as a warranty or installation requirement but recommends the sloping of pipe at ⅛ inch per foot as a best practice.* ***The sloping or non-sloping of piping is to be determined by Certified APT® XP installer at time of installation and reflect any local code or marketer preference.***

3.3 Instructions

⚠ **WARNING**: Any mechanical connection or fitting shall not be directly buried and should be contained in sumps.

3.3.1 Sump Cutdown

APT® tank sumps come in a variety of models, but all sumps can be cut down in 3" (7.62 cm) increments to adjust to different burial depths and layouts. After cutting the sump, deburr and sand the cut edge to create a proper sealing surface.

3.3.2 Sump Lids / Manholes

APT® transition sumps, intermediate piping sumps, and one piece tank sumps all have a factory installed nitrile gasket to maintain a watertight seal between the sump and the cover. Ensure proper manhole installation to facilitate proper tank sump lid operation. Center the manhole skirt around the sump riser and lid - there should be a 1" (2.54 cm) minimum clearance between the bottom of the manhole lid and the top of the sump lid. In addition, there should be a minimum 1" (2.54 cm) clearance around the sides of the sump.

The manhole skirt should extend below the tank sump lid to ensure proper operation of the sump lid and to keep backfill and debris from the lid sealing area. *When installing a sump, make sure to leave the lid on during the backfill process to help prevent the sump from distorting.* Pour a minimum of four inches of concrete around the manhole skirt.

3.3.3 Installing Straight Sections of XP Pipe

- Inspect the pipe as it is removed from the crate.
- Prepare the piping with proper cutback as outlined in §3.3.7.

3.3.4 Fittings

Franklin Electric requires that OEM fittings be used in all XP series piping systems. A variety of options are offered by Franklin Electric for XP series pipe fittings, each with its own unique installation instructions. Each XP series fitting package will have detailed installation instructions specific to that design to ensure a proper, leak-tight assembly.

Fittings that have NPT threads should be sealed with a gas and oil resistant pipe sealant. When completing the installation of a clamshell fitting, tighten the clamps so that they are metal to metal.

Franklin Electric offers galvanized pipe connectors to prevent corrosion. Pipe connectors can be purchased locally as long as they are 150 lb malleable, standard with NPT threads.

Table 1 – Recommended torque for pipe thread size.

Pipe Thread Size	Minimum Recommended Torque Setting*
1"	75 ft-lb
1½"	100 ft-lb
2"	150 ft-lb

*Provided values are recommended minimums. Pipe threads are designed to seal when tightened with a wrench 2–3 turns past hand tight. All installed pipe fittings should be confirmed leak tight before placed into service.

3.3.5 Boots

Entry boots come in sizes made to accommodate all pipe sizes including conduit and rigid pipe from ½" to 4" (13 mm to 10.16 cm). When installing pipe into flexible entry boots (FEB), piping must not be more than 15° from perpendicular to the sump walls. Entry angles in excess of 15° from perpendicular can cause excessive stress, which may damage entry boots, kink pipe and/or cause environmental contamination. *Entry boots should also not be installed in the bottom of any containment sump.* When installing rigid entry boots (REB) piping must be less than 2° from perpendicular to the sump walls.

NOTE: When using flexible entry boots (FEB) pipe must enter a sump at an angle less than 15° to eliminate strain on entry boots. When using rigid entry boots (REB) pipe must enter a sump less than 2° to eliminate strain on entry boots. Piping and fittings must be inline with the mating.

Figure 3
FEB Entry Boot (Turbine Sump).

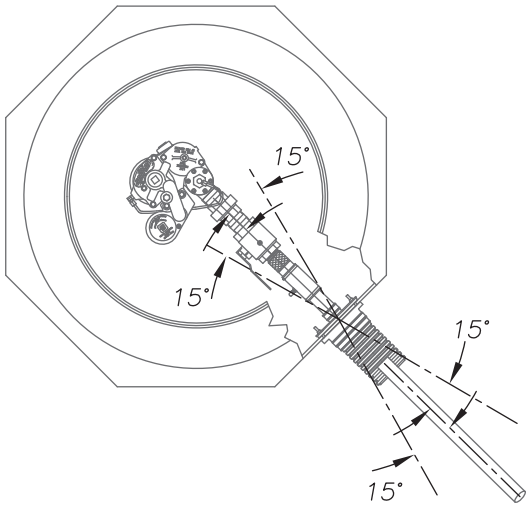


Figure 4
FEB Entry Boot (Dispenser Sump).

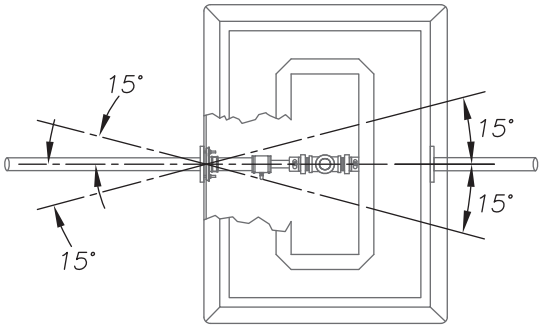


Figure 4a
Pipe through rigid entry boot into turbine sump.

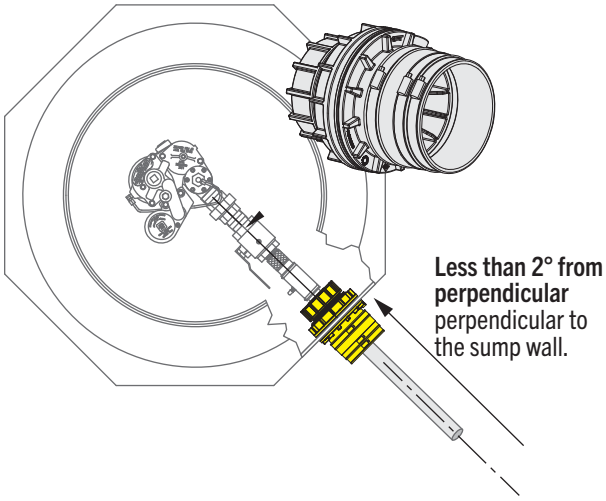
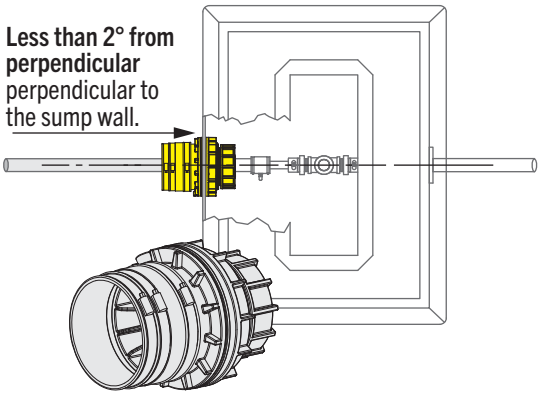


Figure 4b
Pipe through rigid entry boot into dispenser sump.



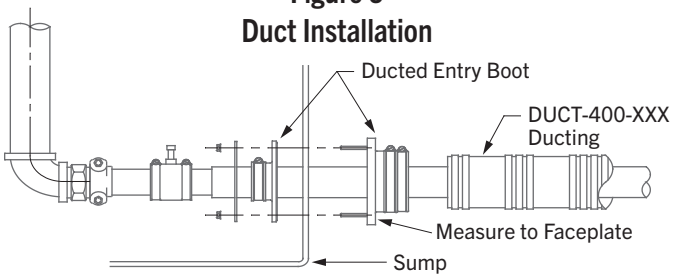
IMPORTANT: Install pipe into an entry boot straight to termination with little or no angle, perpendicular to the sump wall. *Piping and fittings must be in-line with the mating.*

NOTE: For more information on installing pipe with REB, reference document: p/n 771-244-00 Single and Double Wall Rigid Entry Boots Install Guide, available at www.franklinfueling.com > Support > Tech Docs Portal (under MANUALS section).

3.3.6 Ducting

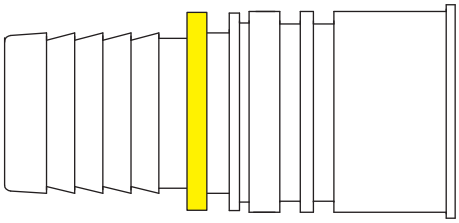
Ducting is available as a piping chase, which allows for pipe removal after installation. APT® ducting is not a containment layer, but it is air-testable.

Figure 5
Duct Installation



1. Pull the ducting and cut it to the length measured from faceplate to faceplate of the entry boots. Set it on the entry boots at this time.
2. Run a measuring tape / line through the duct, pull it tight and measure the distance from the Pipe Termination Collars.

Figure 5a
Pipe termination collar location.



⚠ **CAUTION**: DO NOT cut the pipe longer than required. Excess pipe inside of ducting can cause pipe movement due to line shock.

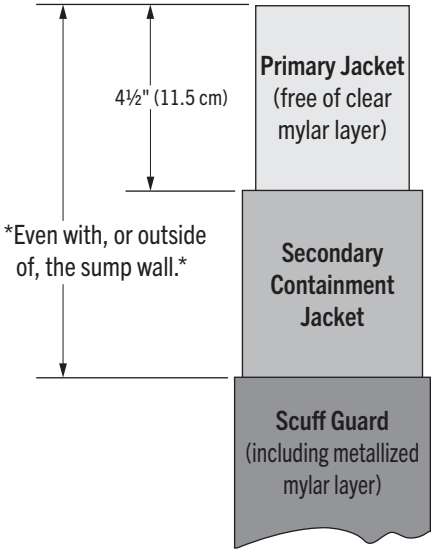
3. Cut the pipe to the measurement from Step 1.
4. Remove the duct from the entry boots.
5. Extend the pipe through the ducting.

   NOTE: Attach a rounded object to the end of the pipe to keep it from catching on the ducting ribs as it moves through.
6. Push the pipe through the entry boots.
7. If the necessary fitting connections or test boots have not already been installed, then do so now.
8. Attach the piping to the fitting.

3.3.7 Pipe Cutback

Once the pipe run is pulled and each section is cut to length, square off the end of the pipe, de-burr it, and then proceed with the cutback. If using SC (Secondary Contained) piping, cut back the scuff guard layer even with or outside of the sump wall. Using an auto-retractable hook blade knife, slide the hook blade under the scuff guard so the blade is laying flat under the scuff guard. *DO NOT cut the edge that is in contact with the secondary layer of XP pipe.* For further cutback details, see the process's complete description in the DWC-XP-XXX Double Wall Cutter (SC) Installation Instructions, available at: www.franklinfueling.com > Support > Tech Docs Portal (under MANUALS section).

Figure 6: Pipe Layers.



*The scuff guard must be cut back to be even with, or outside of, the sump wall ensuring that the entry boot seals on the SC jacket and not on the scuff guard layer.

3.3.8 Installing XP Clamshell Fittings

1. Coat the NPT thread of the pipe (that the clamshell fitting will mate to) with a gas and oil-resistant sealing compound.
2. Hand-tighten the pipe to the clamshell fitting connection.
   a. Tighten additional 2.5 revolutions or to 60 ft·lbs (81.35 N·m) to ensure a tight seal.
3. Push the squared and properly cut back XP pipe primary layer onto the barbed portion of the clamshell fitting until the end of pipe is flush with the flange.
4. Apply a thin layer of petroleum jelly to the first 3" (90 mm) of the outside of the pipe to be covered by the clamp.
5. For 1", 1½", 1¾", and 2" clamshell fittings, insert two hex bolts with washers through drilled clamps and thread into tapped clamp halves.
   a. Use ⅜" bolts for 1", 1½", and 1¾" clamshell fittings.
      - Use 9/16" socket wrench for 1", 1½", and 1¾" clamshell fittings.
   b. Use 7⁄16" bolts for 2" clamshell fittings.
      - Use ⅝" socket for 2" clamshell fittings.
6. Tighten bolts in an alternating pattern until clamps are touching metal-to-metal.

   IMPORTANT: Tighten bolts no more than one turn at a time.

3.3.9 Installing APT® Pipe Within an Existing Pipe Chase / Duct

Prepare the site in advance by closing or restricting access to the work area. All equipment should be checked to ensure that it is in operational condition.

During any modification or repair work to APT® pipework, the safety of on-site personnel is paramount and all national, regional, and local health and safety

codes should always be adhered to and must take precedence over any conflicting instructions below.

1. Switch off – shut down submersible pump and dispenser in work area.
2. Lockout and tagout electrical circuit breakers – or remove fuses to isolate connection to pumps and dispensers.
3. Prepare to empty product into an approved sealable containment vessel.
4. Operate the hose of the product dispenser closest to the underground storage tank to release pipeline pressure and empty product into container. *Continue this process until no further liquid petroleum is discharged.*
5. Check the sump where the repair is to be made with an O_2 meter and record the presence of sufficient Oxygen (~21% O_2) before any personnel enter the sump. *Air exchange if necessary.*
6. Isolate the submersible pump by closing the isolation valve (ball valve), if available.
7. Disconnect the product supply line at the tank sump, allowing for any residual petroleum liquid contained within the product line to flow out into the approved sealable containment vessel.
8. Open shear valve access ports of the affected lines to allow the petroleum liquid to drain down to the tank sump.
9. Shut (close) all the shear valve access ports once no further fuel flows out of the product line.
10. Installations that do not maintain pitch to the turbine sump may require the line to be "blown back" using an inert gas to remove gasoline from the lines.
11. The sump air supply should be exchanged until the O_2 meter records the presence of sufficient Oxygen (~21% O_2) before any personnel re-enter the sump.
12. Remove the petroleum liquid containment vessel from the tank sump.
13. Flush existing fuel lines using inert gas (Nitrogen or Helium).
14. Disconnect existing pipe and remove from site.
15. Thoroughly flush existing duct using a mixture of non-foaming soap and water. *Complete this action at least twice.*
16. Bundle together several oil absorbent towels (i.e. Sorbent pads) and pull them through the entire length of the existing ducting several times until all traces of hydrocarbons are removed. Be sure to wipe all areas inside of the ducting.
17. Pull new APT® pipe through clean ducting.
18. Complete the APT® pipe installation by following all applicable steps pertaining to installation of APT® components, electrofusion welding guidelines, and testing requirements. Refer to APT® installation and welding documentation for complete information.
19. All contaminated product and materials generated during the cleaning process must be disposed of following all state, local and federal guidelines.

4 Testing

All federal, state and local codes and governmental requirements for inspecting, testing, monitoring, and maintaining the system and property on which APT® products are installed must be followed at all times. Refer to local codes for required pressures, test durations, and all other applicable codes. Test regulator kits and bypass tubes are available to aid in testing. Entry boots are equipped with Schrader (tire) valve hardware for simple, standard connections.

After completing testing, relieve pressure from all elements of the piping system. The APT® secondary test boot can be installed with the test tube removed or left in place.

4.1 Removing Test Tubes From Dispenser / Turbine Sump

- After the secondary pipe testing has been completed, remove the test tube (BPT-200).
- Loosen the clamps from around the test boot and (STB) and slide the test boot towards the XP fitting so the secondary is open and available for visual inspection.

4.2 Leaving Test Tubes in Place in the Dispenser Sump

- After the secondary pipe testing has been completed on site, loosen the clamps from around the test boot (STB) in the turbine sump only and slide the test boot towards the XP fitting so the secondary is open and available for visual inspection. Leave the test tubes and test boots in place and tight in the dispenser sumps.

NOTE: Please refer to the Franklin Electric Fueling Systems Warranty documentation for additional details on the requirements for monitoring the containment sumps.

4.3 Operating Maximum

Primary pipe is cULus listed for a 100 PSI (6.89 bar) maximum operating pressure.

4.4 Installation Testing

4.4.1 Primary Minimum/Maximum Test Pressure

Apply an air source to the XP piping. Pressurize the line to between 50 and 100 PSI (3.45 and 6.89 bar) and allow the pressure to settle. After piping is pressurized, soap all joints and fittings. If a leak in the termination fitting is discovered relieve the air pressure, retighten, and repressurize. The duration of the test may vary, check with the local authority or inspector to verify requirements. If no local requirements are

specified, APT® recommends a minimum of a 1 hour pressure test should be observed with no pressure loss. Upon completion of a passing pressure test, pressure can be relieved or pressure may be held until backfill and concrete is poured.

NOTE: If pressure is left on the piping system for an extended period of time, thermal expansion or contraction may cause the piping pressure to fluctuate.

4.4.2 Secondary Piping Test Pressure

It is critical to verify that the scuff guard has been properly cut back outside of the containment sump so that the test boot seals to the outside of the ribbed secondary layer for this pressure test. *If the test boots is not sealed directly onto the ribbed secondary layer, you could get false readings.*

Once the test boots are in place, pressurize the piping to between 5 and 8 PSI (0.34 and 0.55 bar). After the pressure has stabilized, disconnect the air supply and monitor the system for leakage. The line needs to remain pressurized for a minimum of one hour with no pressure loss detected in order for the piping to pass.

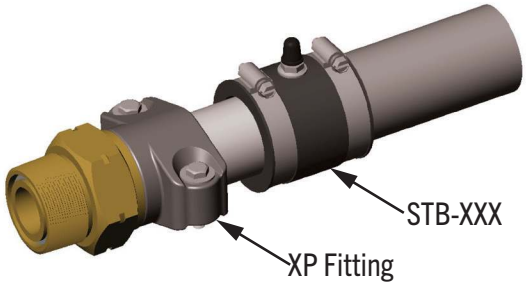
More detailed instructions on to how to perform this test can be found in our TRK-200 Test Regulator Kit Installation Instructions (p/n 771-115-00), available at www.franklinfueling.com > Support > Tech Docs Portal (under MANUALS section).

NOTE:

- XP-150-SC piping is UL listed for up to 50 PSI for use in closed system monitoring.
- "XP only" is etched on the collar of MS-XP-SW series fittings.
- Testing of the APT® ducting is not required by Franklin Electric Fueling Systems. *APT ducting is NOT a containment layer, but it is considered a pull chase.*

Figure 7

Clamshell SC Test Configuration



Swage SC Test Configuration

4.4.3 Sumps

Hydrostatically testing sumps is required to ensure that all sump penetrations are tight. Fill the sump with a water-based test solution so that every penetration into the sump is below the water line. Franklin Electric offers two methods to hydrostatically test an APT® sump:

- TS-STS Sump Test System – This system measures level changes up to .002" (.05 mm) and will automatically pass or fail a sump in 15 minutes if the level drops more than the leak limit during the test.

- Manual measurement – Place a mark at the current water line after filling above all of the penetration fittings. Cover the sump so that no fluid can enter or evaporate out its top. Leave the sump for 1 hour and verify that water line has not moved. If the water line has not dropped below the mark in 1 hour, the sump has passed.

4.5 Monthly/Annual/Semi-Annual Testing

4.5.1 Primary Minimum/Maximum Test Pressure

Franklin Electric does not require that piping be pressure tested for warranty compliance after the installation testing procedures above have been passed. However, in some cases, there are federal, state, and/or local pressure testing schedules that must be followed.

For pressure tests, it is recommended that XP series primary carrier piping be tested at a minimum of 50 PSI (3.45 bar). Franklin Electric recommends not exceeding 100 PSI (6.89 bar) on the primary carrier piping.

⚠ **WARNING**: Isolate piping from tanks and dispensers before air testing. Installation of valves or extractor fittings provides a convenient means of isolation. *DO NOT test lines with air that have contained hazardous, flammable or combustible liquids or vapors unless the lines are purged and made safe beforehand.* If purging is not feasible, an inert gas such as nitrogen or helium may be used to pressurize piping.

4.5.2 Secondary Test Pressure

Franklin Electric does not require pressure testing of the secondary containment layer for warranty compliance after the installation testing above has passed. However, in some cases, there are federal, state, and/or local pressure testing schedules that must be followed. For pressure tests, it is recommended that the XP series open system secondary containment be tested to between 5 and 8 PSI (0.34 and 0.55 bar) for a minimum of one hour with no pressure loss. APT® piping is an "open system" unless otherwise required by local code or as part of a continuously monitored secondary system.

4.5.3 Sumps

Franklin Electric recommends hydrostatic testing of all containment vessels upon completion of the installation. Please follow all federal, state, or local codes.

5 Procedures to Inert Interstitial Layer of XP Pipe

⚠ **WARNING**: Site safety must come first when conducting these procedures.

- Follow all federal, state and local laws governing the installation of all components in the system.
- Reference NEC, NFPA, PEI and API codes and practices.
- Refer to the Installation and Owner's manuals for the most current safety and installation information.
- Be cautious of the presence of highly flammable vapors and liquids at all times.
- Ventilate and test for vapors in the work zone.
- Make every provision to remove any liquid present.
- Never enter a containment sump with hazardous vapors or liquids present.
- Have assistance when working on containment sumps.
- Do not smoke or use sparking tools.
- Always secure the entire work area.
- Lockout and tagout circuit breakers.
- Bag off nozzles.
- Use safety cones.
- Park vehicle in work zone.

5.1 Procedure for XP Pipe

Isolate XP line that contains fluid in the interstitial area of the pipe.

1. On the XP product line you want to inert, reinstall the test boot on one end of the XP line. The secondary space of the XP line opposite the test boot must remain open to the atmosphere.
2. Install he TRK-100 on the test boot.
3. Install a confined space exhaust fan in the sump that contains the open interstitial end of the XP pipe. The fan will vent all hazardous vapors to the atmosphere and help to prevent an explosive area. Do not vent the exhaust fan directly under the canopy.
4. Install a containment system inside of the sump to catch any free product that will exit the interstitial space of the XP pipe.
5. Slowly introduce an inert gas through the TRK-100 making sure that there is not a buildup of pressure in the line. Free product should begin to flow through the open end of the interstitial line. The flow rate of inert gas may be increased as product flow decreases. Once product flow has stopped, allow inert gas to continue to flow through interstitial area of pipe. The amount of time allowed for inert gas flow through the interstitial area of the pipe depends on the length of the pipe and the diameter of the pipe.
6. Slide the test boot away that was installed in Step 1.

6 Records

6.1 Checklist

The Installation Checklist and Warranty Start-Up Form (F-8388) must be properly completed, signed by the APT® factory certified installer and an authorized representative of the Purchaser/End User, and returned to Franklin Electric no later than 60 days after the installation of the APT® product for which a warranty claim is being made.

The "Sump Inspection Register" form or an EPA recommended/required check list form must be properly completed. *This checklist must be kept on-site where the APT® products are installed, and made available for Franklin Electric's inspection and copying upon request.* Once the installation is complete, this installation guide shall be transferred to the owner, operator or other qualified party of the site where the installation is done.

6.2 Inspections

Liquid sensors must be properly installed in each containment sump located on the property at which APT® products are installed, or monthly visual inspections of all tank and dispenser sumps must be performed. Monthly visual inspections must be logged on Sump Inspection Register or an EPA recommended/required check list form at the time they are performed.

Inspections should include, but are not limited to, the following points:

- Looking for evidence of infiltration since the last inspection.
- Checking for liquids or staining (new staining).
- Looking for excessive dirt/debris and corrosion.
- Ensuring that lids are properly sealed.
- Examining sumps for structural damage.
- Verifying the condition of boots, piping, and other equipment.

Sump sensors, if installed, must be tested annually and these test results logged on Sump Inspection Register immediately after they are performed. *Any leaks detected by liquid sensors, inspections or other observations must be immediately corrected*. ***Any leaks that are detected but not acted upon immediately to correct are considered negligence on the part of the Purchaser/End User and will void Franklin Electric's obligation under our warranty.***

Submersible pumping systems that use electronic or mechanical line leak detection equipment *must be properly installed, operated, and maintained in proper working order on the property at which APT® products are installed at all times after APT® products are first installed on the property.*

7 Appendix

7.1 Certification

All APT® products must only be installed by Franklin Electric certified installers (see §2.5) and in accordance with published Franklin Electric installation instructions.

7.2 APT® Warranty Registration Procedure

This Certification Package contains the documents needed to properly register your APT® warranty and includes the following:

- Piping and Containment Limited Warranty – APT®, which outlines the warranty period, remedies, conditions and exclusions.
- APT® Installation Checklist & Warranty Startup Form, which must be completed and mailed to APT® Technical Support no later than 60 days after installation.
- APT® Sump Inspection Register to record monthly inspection records.

To register your warranty, complete and return the APT® Installation Checklist & Warranty Startup Form within 60 days of installation date to:

Franklin Electric | Fueling Systems
Attn: APT® Technical Support
3760 Marsh Road
Madison, WI 53718
Fax: 608-838-6433

7.3 Checklists / Forms / Registers

See the following page(s) for full page forms.

APT® Installation Checklist & Warranty Start-up Form

Site Owner: _____
Site Address: _____
Site Phone Number: _____
City: _____ State: _____ Zip: _____
Owner/Operator: _____

Installation Completion Date: _____
Installation Contractor: _____
Address: _____
City: _____ State: _____ Zip: _____
Telephone: _____

[ ] Complete Fuel Transfer & Containment System are all APT® Products

Pre-Installation Check:
[ ] Installer has copy of Installation Guide
[ ] Installer has visually inspected all materials for shipping and storage damage

Tank Information:
[ ] New Tanks
UST Manufacturer:

Tank Installation Information:
[ ] Tanks Anchored
[ ] Deadman Anchoring [ ] Tank Tie-Down Slab

Tank Excavation Information:
[ ] High Water
[ ] Has site ever been Contaminated/Remediated

Trenching:
[ ] Excavation depth allows for 4" bedding
[ ] Bedding installed, graded, and has proper slope
[ ] Width is sufficient to accommodate all runs of pipe with proper spacing
[ ] Minimum pipe burial depth verified
[ ] Direction changes wide enough to accommodate proper bend radii

Bedding and Backfill:
[ ] Clean sand
[ ] Pea gravel
[ ] Crushed stone (1/8" to 3/4")

Tank Sumps, Dispenser Sumps, Intermediate Sumps, Etc.:
[ ] Tank sumps mounted to tanks using approved method
APT® Tank Sump: _____
Model #: _____
APT® Dispenser Sump: _____
Model #: _____

Sump Inspection:
[ ] Visual Inspection (every 30 days)
[ ] Sump Sensors
[ ] Installer verifies they have properly tested the turbine sumps and dispenser sump 4" above the side seam or highest penetration point

APT® Factory Certified Installer

Print Name: _____

Signature: _____

As owner / operator I have read and comprehend the APT® warranty document FFS-0079.

Print Name: _____

Signature: _____ **Date:** _____

This form must be properly completed and signed by a certified contractor on site during installation. It must also be returned to Franklin Electric no later than 60 days after the installation of the APT® products.

Fittings:
[ ] Clamshell

Entry Boots:
[ ] Rubber Entry Boot
[ ] Rigid Entry Boot

Piping:
[ ] Straight Stick [ ] Coiled Pipe
Total footage installed at this site:
Straight Stick: _____ Coiled Pipe: _____
Flexpipe Model #: _____ Date Code: _____

Primary Piping:
[ ] Fittings installed properly with clamps tightened metal to metal
[ ] All 45 degree, 90 degree, elbows and T's rated at 150 LB scedule 40 or greater
[ ] Primary pipe tested (not to exceed 100 PSI)
[ ] All metal fittings installed in accessible sumps

Secondary Containment:
[ ] Scuff guard cut outside of sump wall
[ ] Secondary containment jacket has been stripped to proper length
[ ] All secondary containment air test boots properly installed
[ ] Secondary containment air test performed between 5-8 PSI

Ducting:
[ ] Ducting installed

Installation Procedures:
[ ] All piping runs installed with proper spacing

Final Inspection:
[ ] Air relieved from secondary containment jacket
[ ] Secondary air test boots loosened to allow free flow
[ ] Removing test tubes from dispenser / turbine sump:
  [ ] After the secondary pipe testing has been completed, remove the test tube (BPT-200).
  [ ] Loosen the clamps from around the test boot and (STB) and slide the test boot towards the XP fitting so the secondary is open and available for visual inspection.
[ ] Leaving test tubes in place in the dispenser sump:
  [ ] After the secondary pipe testing has been completed on site, loosen the clamps from around the test boot (STB) in the turbine sump only and slide the test boot towards the XP fitting so the secondary is open and available for visual inspection. Leave the test tubes and test boots in place and tight in the dispenser sumps.
[ ] Air relieved from primary lines
[ ] Back filled to grade with finish surface installed

Site Completion:
[ ] Concrete
  [ ] Total inches over pipes _____
[ ] Asphalt
  [ ] Total inches over pipes _____

Line Leak Detection:
[ ] Mechanical
[ ] Electronic

Franklin Electric
FUELING SYSTEMS
www.franklinfueling.com
3760 Marsh Road • Madison, WI 53718, U.S.A.
Tel: +1 608 838 8786 • Fax: +1 608 838 6433
Tel: USA & Canada 1 800 225 9787 • Tel: México 001 800 738 7610

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Franklin Electric
FUELING SYSTEMS

APT® SUMP INSPECTION REGISTER

Date of Inspection or Test	Results of Inspection or Test	Signature of Inspector or Tester

Required Monthly And/Or Annual Inspection: Containment sumps located on the property at which the APT® products are installed must be visually inspected for liquid monthly. Sump sensors, if installed, must be tested annually. Any leaks must be corrected at the time they are found.

Recommended Monthly Inspection: Verify sump lids are tight and sealed. Inspect sumps for dirt, debris, liquid or any physical cracks or holes that would allow leakage. Check for evidence of staining or new staining. Verify penetration boots are in good condition and the pipe entry into the sump is positioned properly (near perpendicular entry). Verify sump liquid sensors are positioned correctly if installed. Verify the piping and other equipment in the sump are in good condition.

Record any faults on this Sump Inspection Register and have the fault(s) corrected at the time found.

Additional copies of this form can be downloaded from franklinfueling.com

End user proprietary inspection check register log formats or any form to record these inspections is acceptable.

APT® Sump Inspection Register

Date of Inspection or Test	Results of Inspection or Test	Signature of Inspector or Tester

Required Monthly And/Or Annual Inspection: Containment sumps located on the property at which the APT® products are installed must be visually inspected for liquid monthly. Sump sensors, if installed, must be tested annually. Any leaks must be corrected at the time they are found.

Recommended Monthly Inspection: Verify sump lids are tight and sealed. Inspect sumps for dirt, debris, liquid or any physical cracks or holes that would allow leakage. Check for evidence of staining or new staining. Verify penetration boots are in good condition and the pipe entry into the sump is positioned properly (near perpendicular entry). Verify sump liquid sensors are positioned correctly if installed. Verify the piping and other equipment in the sump are in good condition.

Record any faults on this Sump Inspection Register and have the fault(s) corrected at the time found.

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Franklin Electric
FUELING SYSTEMS
www.franklinfueling.com
3760 Marsh Road • Madison, WI 53718, U.S.A.
Tel: +1 608 838 8786 • Fax: +1 608 838 6433
Tel: USA & Canada 1 800 225 9787 • Tel: México 001 800 738 7610

Franklin Fueling Systems GmbH
Rudolf-Diesel-Strasse 20 • 54516 Wittlich, GERMANY
Tel: +49-6571-105-380 • Fax: +49-6571-105-510

7.4 Important Reference Items

- All XP series flexible piping systems are UL 971 approved (File # MH17457) for use with A&M Fuels, CT Fuels, HB Fuels, and MV Fuels.
- XP series piping systems are for underground use only with the rated operating pressures and bend radii given in this document. XP series piping is not intended for use as connector pipe or with aboveground or marine applications.
- XP series piping systems are for use in normal soil applications.
- Sumps should be monitored to be kept free of debris and spilled product at all times; please refer to the XP Warranty for further details.

Table 2 – XP Piping Information.

Direct Bury (D)	Primary Pipe Rating psi (bar)	Secondary Pipe Rating psi (bar)	Minimum Bend Radius
XP-100-D	100 (6.89)	N/A	36" (92 cm)
XP-150-D	100 (6.89)	N/A	36" (92 cm)
XP-175-D	100 (6.89)	N/A	36" (92 cm)
XP-200-D	100 (6.89)	N/A	36" (92 cm)
XP-200-D	100 (6.89)	N/A	36" (92 cm)
XP-100-SC	100 (6.89)	8 (0.55)	36" (92 cm)
XP-150-SC	100 (6.89)	50 (3.45)	36" (92 cm)
XP-175-SC	100 (6.89)	8 (0.55)	36" (92 cm)
XP-200-SC	100 (6.89)	8 (0.55)	36" (92 cm)

7.5 Related Documents

Documentation can be found online at www.franklinfueling.com.

TABLE 5.1 – Related Documents

Part Number	Description
771-115-00	TRK-200 Test Regulator Kit Installation Instructions
771-121-00	Pipe Reel Handling Guide
771-206-00	Duct Systems Installation Instructions
771-244-00	Single and Double Wall Rigid Entry Boots Installation Guide
F-8388	Installation Checklist and Warranty Start-Up Form
TB-0616-03	Backfill Requirements and Specifications

7.6 Glossary

Fuels

Aviation and Marine (A&M) – Motor vehicle and speciality aviation or marine use fuels for up to 100% kerosene or leaded gasoline.

Concentrated (CT) – Motor vehicle and alternate unblended fuels for up to 100% concentrations of Toluene, Methanol and Ethanol.

High Blend Fuels (HB) – Motor vehicle fuels with higher than normal gasoline blends with a maximum of 50% Methanol or 50% Ethanol.

Motor Vehicle (MV) – Petroleum-based hydrocarbon fuel typically found in consumer dispensing stations, such as gasoline or diesel, including blended fuels with a maximum of 15% MTBE, 15% Methanol or 30% Ethanol.

Integral Primary/Secondary (PS) – A single pipe and/or fitting constructed at the manufacturer that combines both primary carrier and secondary containment with an interstitial space that can be monitored for leakage. Normal Vent (NV) – Pipe and/or fittings intended to transfer displaced air or fuel vapors from an underground tank to grade during filling and provide atmospheric pressure equalization.

Primary Carrier (PC) – Pipe and/or fittings intended for continuous contact with the flammable liquids in a system under normal use conditions.

Underground Nonmetallic (UGN)

Vapor Recovery (VR) – Pipe and/or fittings intended to transfer collected air and fuel vapors in a pressure vacuum system to an underground tank during dispensing.

NOTE: XP series piping with a SC suffix in the part number indicates that the piping is designed to be used as a PS, NV, or a VR system.

NOTE: XP series piping with a D suffix in the part number indicates that the piping is designed to be used as a PC, NV, or a VR system.

FFS-0029 r16

August 20, 2025