

# PIPING: PRESSURIZED PUMPING SYSTEMS

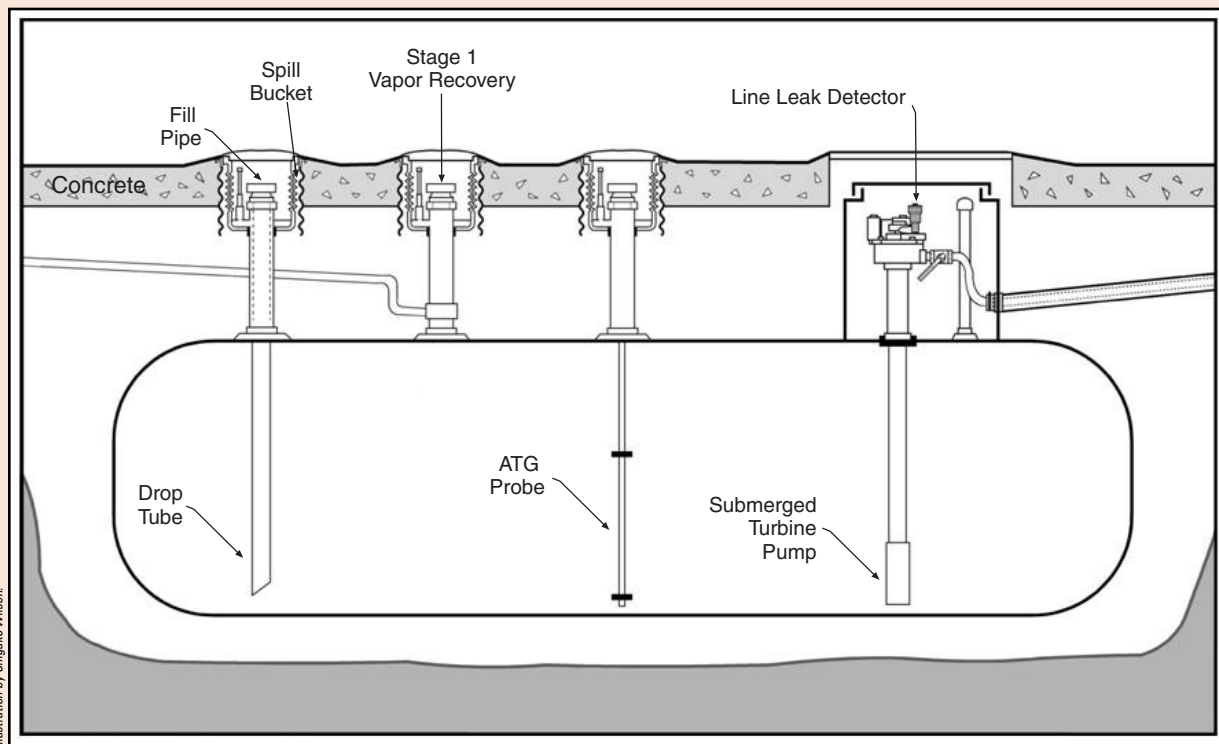
**P**ressurized pumping systems are the predominant fuel-pumping method used at today's retail motor-fuel operations. The pumping mechanism is located near the bottom of the underground tank, submerged in the fuel. The pump (known as a pressure pump or submerged turbine pump (STP)) moves the fuel through the piping under a pressure of about 30 pounds per square inch. One pump typically provides fuel to several nozzles.

Because the pumps are located inside the tank and operate under positive pressure, even large leaks in the piping do not affect the operation of the fuel-dispensing system and therefore often go unnoticed. (Just as with a garden hose, you can water your lawn perfectly well even if the hose has several leaks in it.) For this reason, leaks from pressurized pumping systems account for the majority of significant subsurface fuel releases.

Because of the environmental hazards they pose, pressurized pumping systems must have two types of release detection:

- ▶ one that finds big leaks (3 gallons per hour (gph)) within an hour, and
- ▶ one that finds smaller leaks (0.2 gph) within a month.

In pressurized pumping system, the pumping mechanism is located near the bottom of the underground tank, submerged in the fuel.



**DIAGRAM OF UST WITH DOUBLE-WALLED PRESSURIZED PUMPING SYSTEM.**

*The pump that moves the fuel is located near the bottom of the tank. A single pump can supply fuel to several dispensers.*

## HOW DO YOU FIND THE BIG LEAKS IN PRESSURIZED PIPING?

To find the big leaks in pressurized piping, you must use a device called a line leak detector (LLD). There are two types of LLDs: mechanical and electronic. It is important that you know which kind you have so that you can respond appropriately to indications of a leak. If you do not know what type you have, ask your service technician, certified installer, or certified inspector.

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**Mechanical LLD** – If you have a mechanical LLD, a leak will be indicated by a reduction in the flow of fuel (normal flow is 7 to 10 gpm, a leak is indicated by a flow of about 3 gpm).

**If you have a mechanical LLD, you must respond immediately to customer complaints of slow fuel flow!!!**

If you have a mechanical LLD, you should be aware of the following:

- Things other than leaks can cause slow flow (e.g., plugged filters, defective pump motors). You must call a service technician immediately to determine the cause. It could be a serious leak!
- Cold temperatures overnight may cause a mechanical LLD to go into slow flow first thing in the morning. If the slow flow only affects the first customer in the morning, it is likely because of temperature effects. If the slow flow persists after the first customer, call a service technician immediately.
- Mechanical LLDs wear out and typically need to be replaced every few years. They are tested as part of your annual inspection to verify that they are still working.

**Electronic LLDs** – If you have an electronic LLD, the LLD will shut down the pump when a big leak is detected. This is a much more reliable indicator of a problem than the slow flow that is the leak indicator for the mechanical line leak detector. Electronic LLDs are usually connected to an automatic tank gauge (ATG), though they may also be controlled by a separate console.

**Both mechanical and electronic LLDs must be tested annually by a qualified technician as part of your annual inspection.**

## HOW DO YOU FIND THE SMALL LEAKS IN PRESSURIZED PIPING?

You have several options for finding smaller leaks (0.1 gph within a year) in your pressurized pumping system:

- ▶ For single-walled piping you can either:
  - Perform daily inventory and annual statistical inventory analysis (SIA). (See the *TankSmart* Daily Inventory & Statistical Inventory Analysis module.)
  - Install an electronic LLD that conducts a 0.2 gph test at least once every 30 days. You must keep documentation of the results of the test for at least 3 years.
- ▶ For double-walled piping you must have interstitial monitoring. (See the *TankSmart* Piping: Double-Walled Systems module.)

## WHAT MUST YOU DO IF YOU THINK YOUR PIPING HAS A LEAK?

**If you have a mechanical LLD and are experiencing slow flow that does not return to normal after the first customer of the day, OR if you have an electronic LLD and have a pump-shutdown event, you must do the following:**

- ▶ **If you have a mechanical LLD, stop using the grade of fuel that is experiencing slow flow.**
- ▶ **Call a Certified Tank Installer immediately to investigate the problem.**
- ▶ **Call the DEP within 24 hours of suspecting a problem. Call 207-287-2651 during business hours or 1-800-482-0777 anytime.**

## WHAT ABOUT THOSE CRASH VALVES?

In pressurized pumping systems, crash valves are located at the base of the dispenser to prevent fuel releases should a vehicle crash into the dispenser or in case there is a fire inside the dispenser. Crash valves must be tested annually as part of your annual inspection. (See the *TankSmart* Dispensers module.)

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