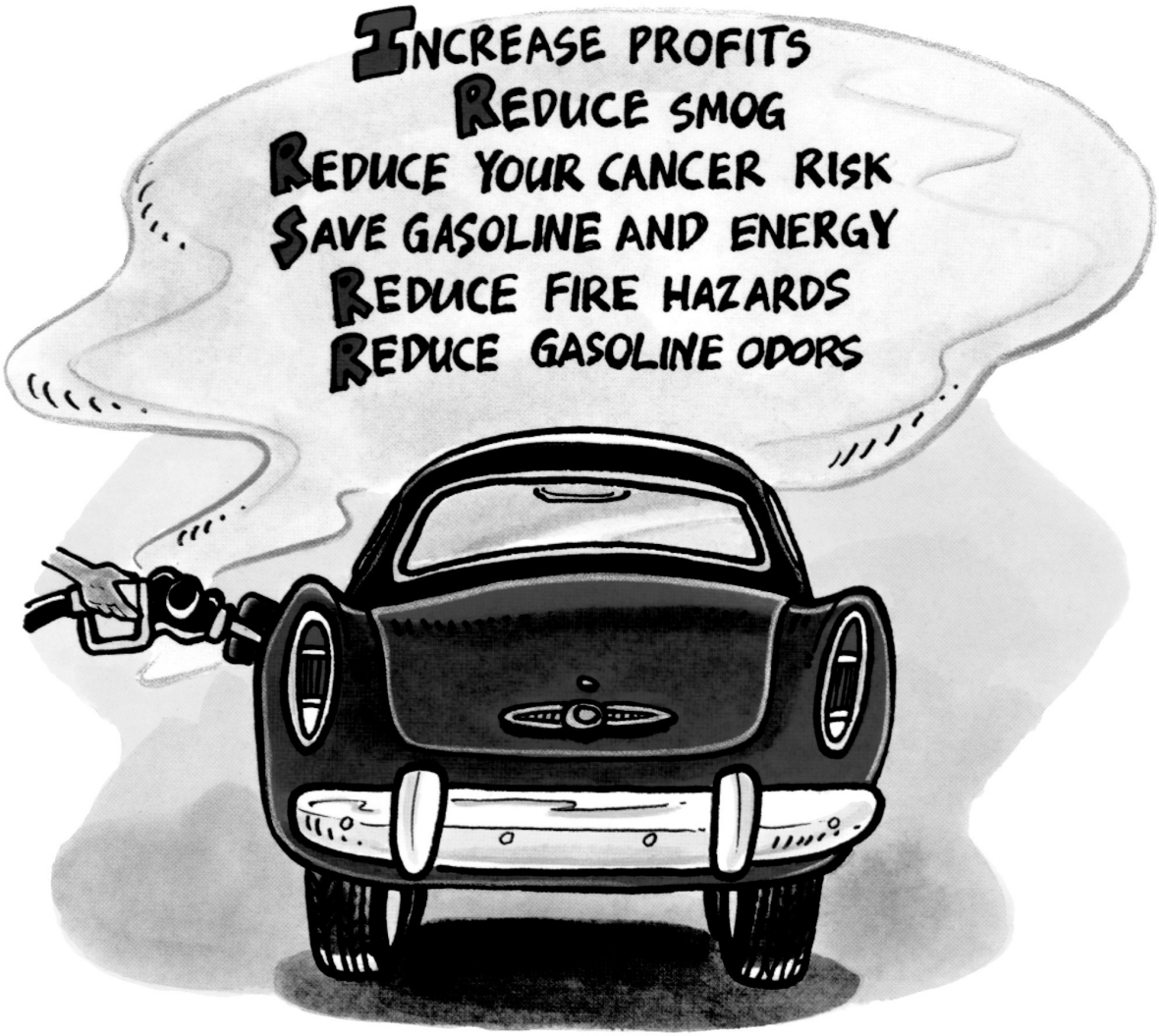
SELF-INSPECTION HANDBOOK

GASOLINE FACILITIES

STAGE I & II VAPOR RECOVERY

VAPOR RECOVERY SYSTEMS...



Because gasoline vapors contain air pollutants, the Pennsylvania Department of Environmental Protection, Philadelphia Department of Public Health, Air Management Services and Delaware Department of Natural Resources and Environmental Control regulate gasoline vapor recovery systems in the Greater Philadelphia Area.

Vapor recovery systems save millions of gallons of gasoline per year, increasing your profits while reducing the formation of lung damaging smog. Capturing gasoline vapors also decreases fire hazards, gasoline odors, and your cancer risk, by keeping these toxic fumes out of the air you breathe.

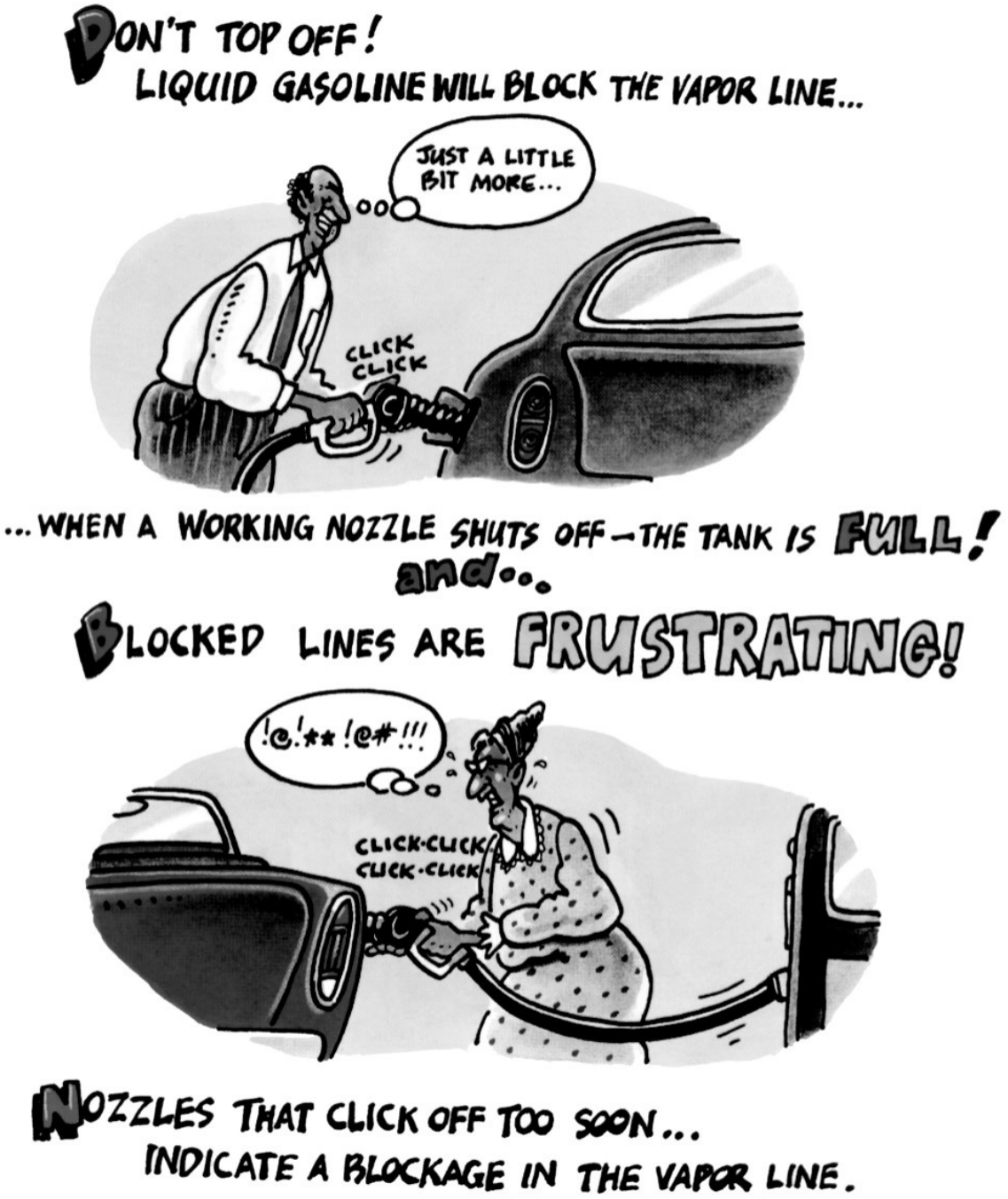
COMPLIANCE ASSISTANCE?

SELF INSPECTIONS CAN SAVE YOU MONEY,
HELP THE ENVIRONMENT
AND IMPROVE CUSTOMER SATISFACTION!

This handbook is designed to help you know what the vapor recovery regulations are and how you can benefit from compliance. Read on, and see how easy it is to improve your working conditions and make your customers happy.

The penalties for violating air pollution regulations can be $25,000 per day or more. Use this handbook to help you inspect your equipment daily to be sure you are in compliance. Remember, the benefit of keeping your equipment in good condition is not simply avoiding penalties...but also providing a safer workplace, a healthier environment and greater profit.

When a customer has a problem with the equipment, take time to check it out. In most cases, just by showing the customer the correct way to operate the equipment, the problem can be solved. By inspecting your vapor recovery equipment every day and keeping it in good working condition, you can improve customer satisfaction while cleaning up the air. If you find a problem, remove the equipment from service until you can fix or replace it.

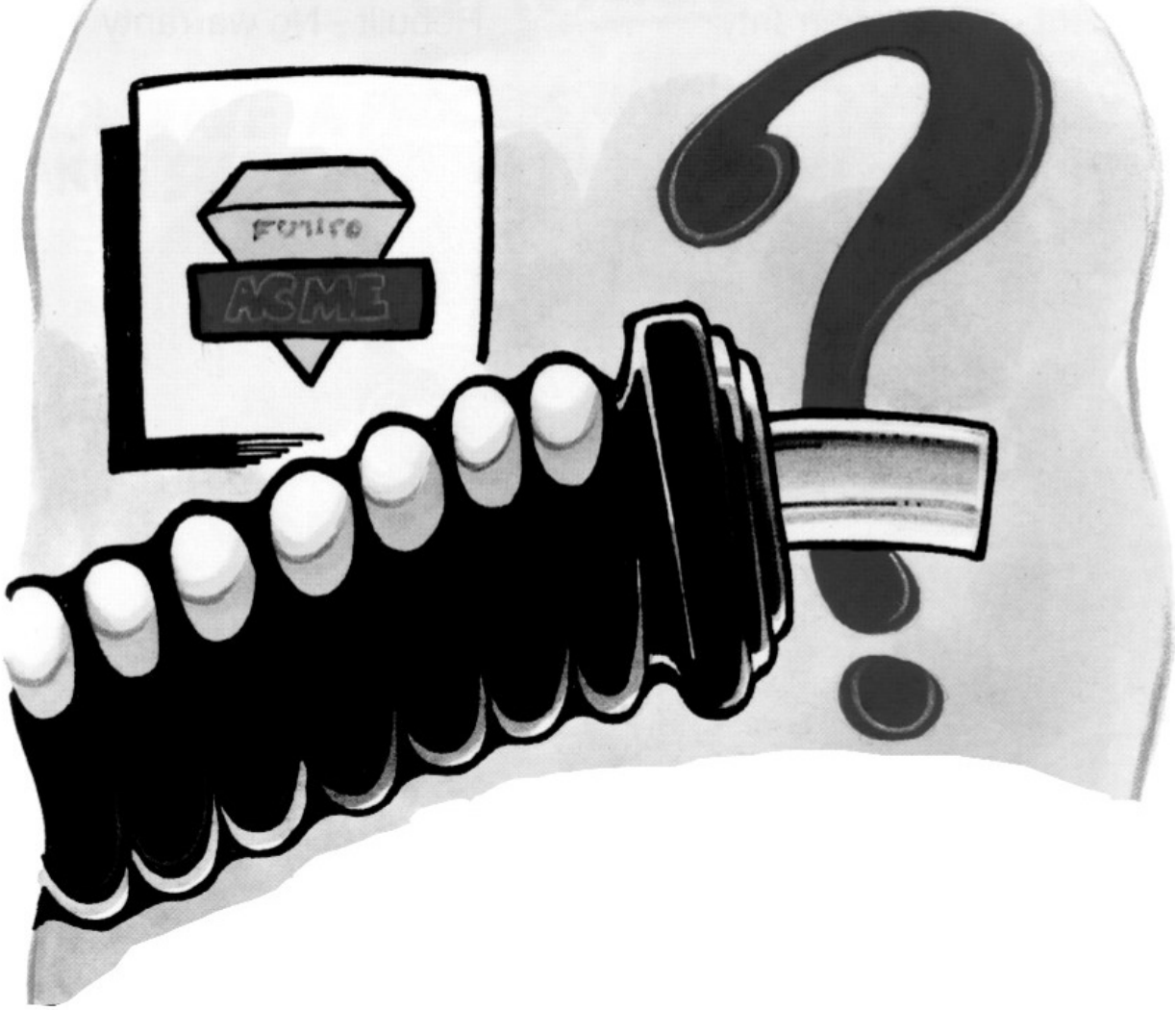


The most common cause of blocked vapor lines is customers topping off their gas tank. When a gas tank overfills, gas travels back down the vapor hose and blocks the line. Unless the line is cleared, the next customer will have trouble keeping the nozzle from automatically shutting off while pumping gas. Please warn your customers not to top off their tanks!

When a nozzle continually shuts off when trying to fill an empty tank, this indicates either: 1) a liquid blockage in the vapor line; or 2) a broken or improperly installed nozzle component. You can clear the line by raising and extending the hose (This technique will not work with high hanging hoses.) If the nozzle continues to shut off, contact your service representative. Remove a malfunctioning nozzle from service until the problem is fixed.

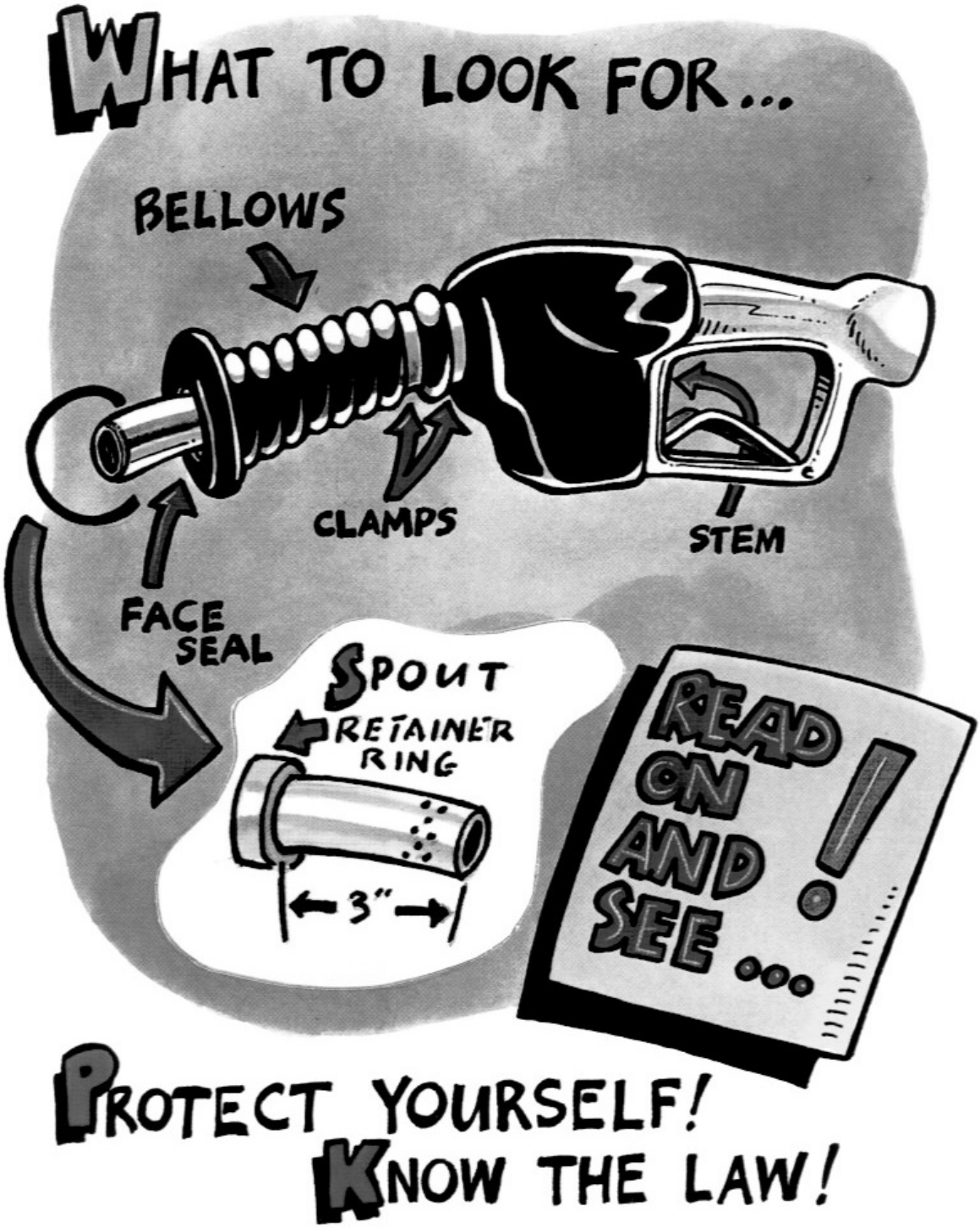
Your local air pollution control inspector will visit your station periodically throughout the year to conduct a complete inspection. The inspector will check your vapor recovery system to see that it is in good working order. This will include checking all components to see that they are certified and defect-free, and that operating instructions are posted in plain view of the general public.

TESTING, REPORTING AND RECORDKEEPING



In additon to the self-inspection described in this booklet, Stage II equipment must be tested at installation and as often as annually thereafter. See the chart in the back of this book for the regulatory requirements in your geographic area.

Recordkeeping is very important. Gasoline stations must keep a copy of the Stage II equipment test results on site for the entire time between tests, and must also keep bulk delivery records showing the quantity of gasoline delivered to the station on site for 2 years. Inspectors will ask to review a copy of your records during an inspection. If you are unable to provide these records, you may be issued a notice of violation (NOV) that could result in a civil penalty of $25,000 or more.



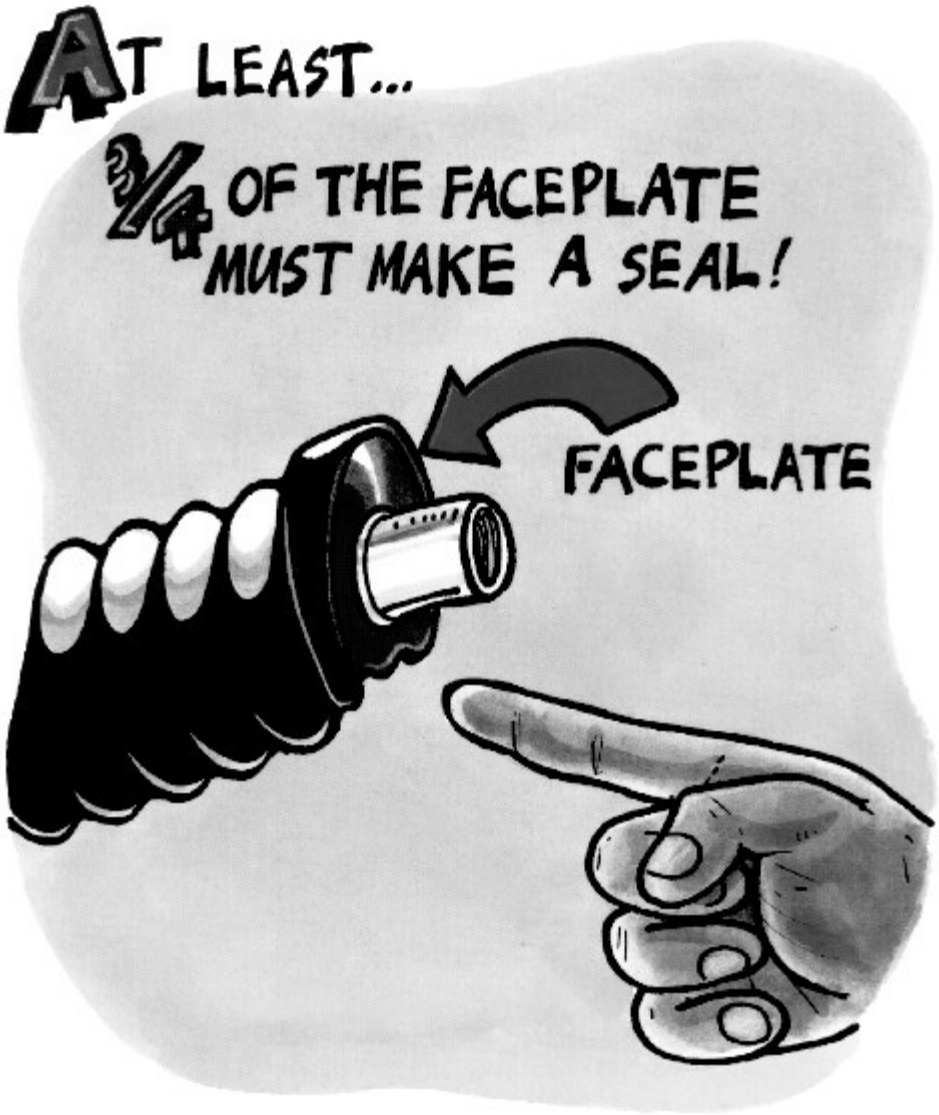
Fix your defects immediately! To avoid penalties, lock the nozzles out of service until the defects are corrected. Common "taggable" defects are shown on the next few pages. These defects warrant the issuance of a **NOV** and are tagged out of service until repaired and reinspected.

Stage II

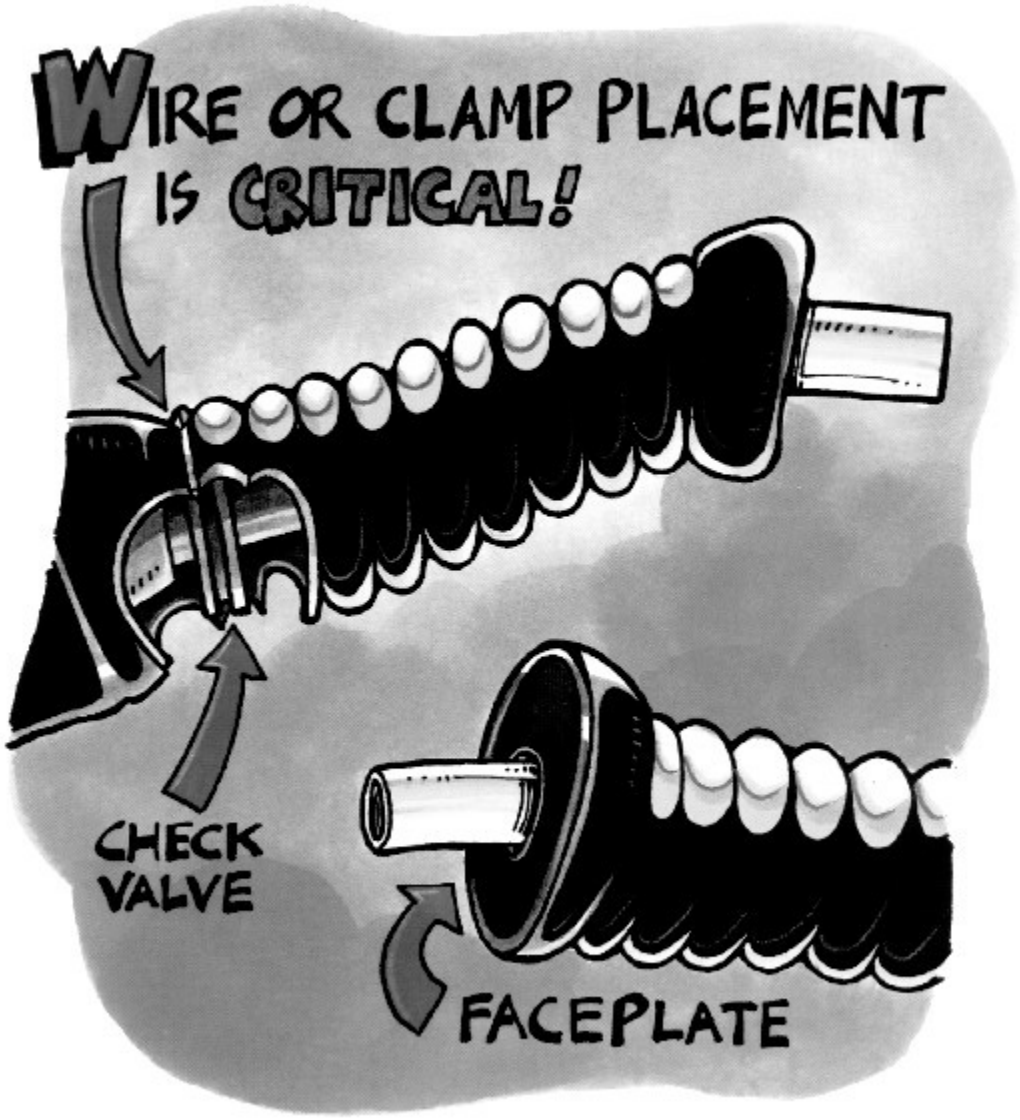
BALANCE NOZZLES

Sometimes customers catch the boot fabric on a sharp object near the gas cap. When this happens, the boot fabric can tear, usually in the shape of a triangle. Any tear longer than 1/2 inch on one side of the triangle is a defect and the boot must be replaced or repaired.

Wear and tear may cause slits to form in the folds of the boot fabric, which will cause a vapor leak. Use your thumbs to separate the ribs of the boot to check for these slits. Replace or repair all boots that have a slit one inch or longer. It's a good practice to replace any torn boot. **You cannot repair hoses or bellows with tape or duct tape.**



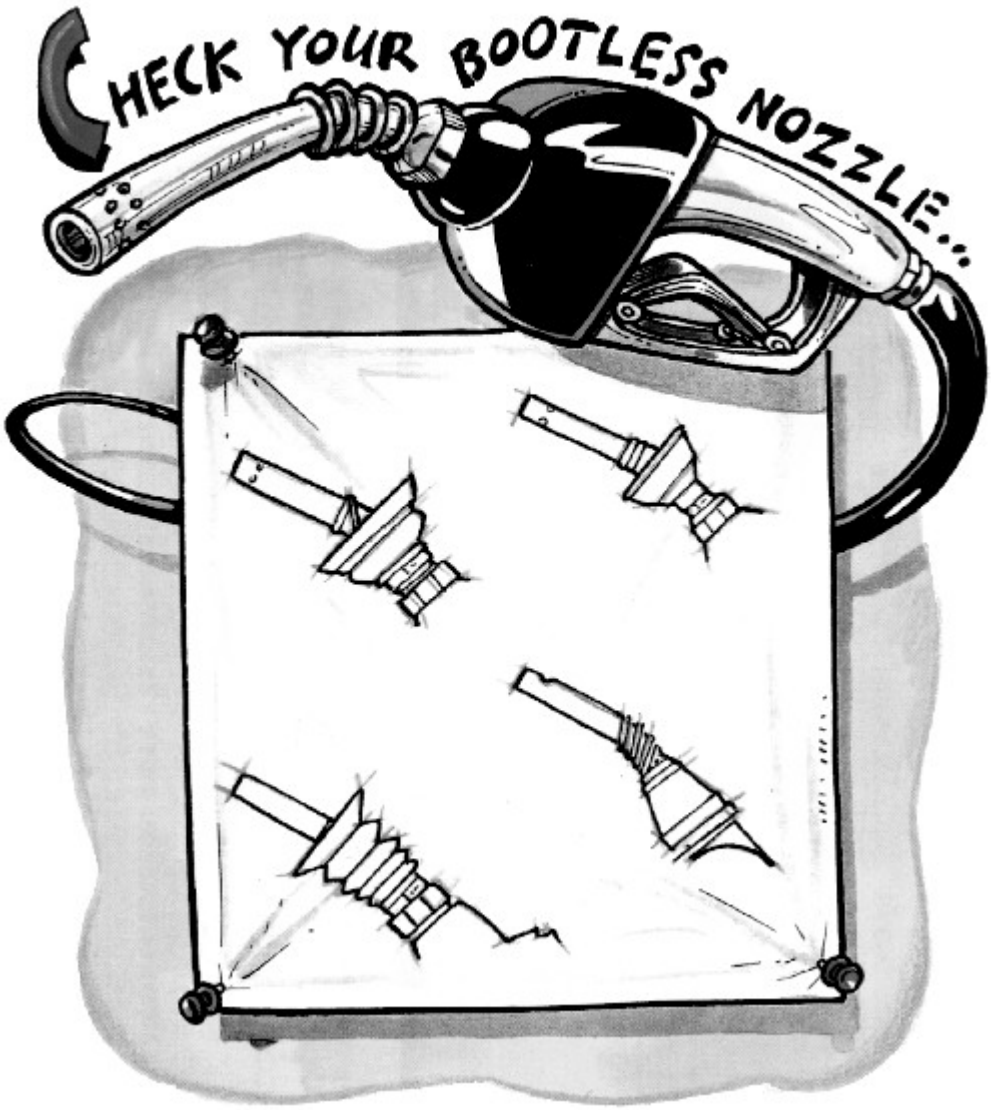
If your vapor recovery system nozzles have faceplates (balance system), replace any damaged or warped faceplates. The law requires that at least 3/4 of the faceplate circumference must make a good seal when used to dispense gasoline. Examine each nozzle faceplate daily to ensure that a good seal will occur and that at least 3/4 of the faceplate is intact. Again, it's best to replace any faceplate which does not provide a good seal with the automobile gas tank.



Install your boots correctly! Compression of the boot operates the vapor "check valve" in many nozzles equipped with a faceplate (not a flexible cone). In some older models, the wire or clamp on the upper portion of the boot attaches the boot snugly to the check valve inside. If the wire or clamp is too low, the valve will not open and the nozzle will click off. If the wire or clamp is too high, the valve will stay open and vapors will escape.

Watch for vapors exiting the idle nozzles when someone is fueling nearby. Should you see vapors, be sure your check valves are operating properly!

BOOTLESS NOZZLES



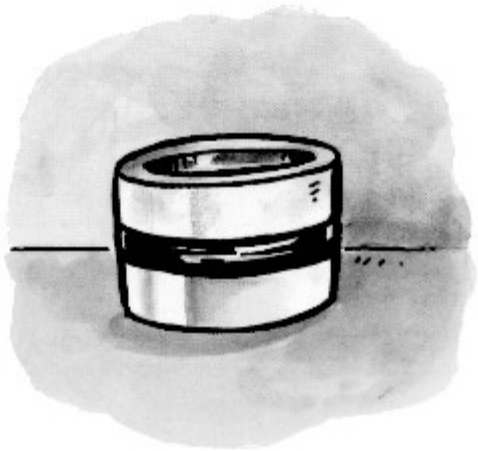
SPOUT MUST BE COMPLETELY ROUND
WITH NO DENTS OR BENDS

The vaccum assist nozzle design improvements have eliminated the need for a bellows. These bootless "coaxial spout" nozzles have small holes around the circumference of the spout tip to suck the saturated vapor from the vehicle as the fuel is being delivered. Some nozzles do require a shroud-like device at the base of the spout in order to effectively collect vapor.

INSPECTIONS YOU CAN PERFORM AT THE PUMP

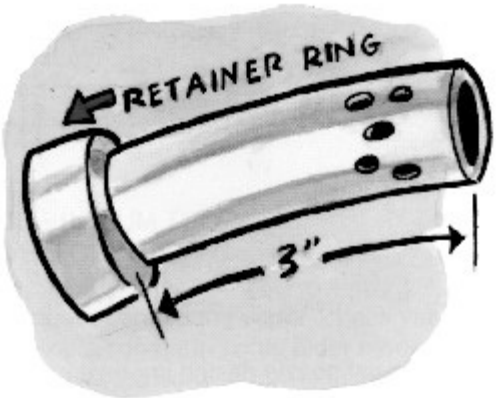
Ring Gauge Inspection

The ring test is the use of an industry standard round gauge to check the roundness of the spout. No dents or bends should be present. Try to pass the gauge from the tip to beyond the vapor collection holes of the spout. Passing the ring test ensures the Air-to-Liquid Test adapter will fit onto the spout, and that the spout will not damage car fill pipes



Retainer Spring or Ring

A spring or ring around the spout should be visible and be positioned about 3 inches from the nozzle tip.



INSPECTIONS *YOU* CAN PERFORM AT THE PUMP

Nozzle Inspection Procedure - This procedure checks to see if there is an air leak in the vapor recovery system. **THIS TEST IS ONLY TO BE USED AS A DIAGNOSTIC TOOL, AND DOES NOT REPLACE OTHER TESTING REQUIREMENTS.**

Use a bag large enough to enclose the entire vapor recovery nozzle. The bag should be between 10-12 inches wide and 18-20 inches long. The bag should be between 1.5 ml to 4 ml thick.

Inspection Procedure

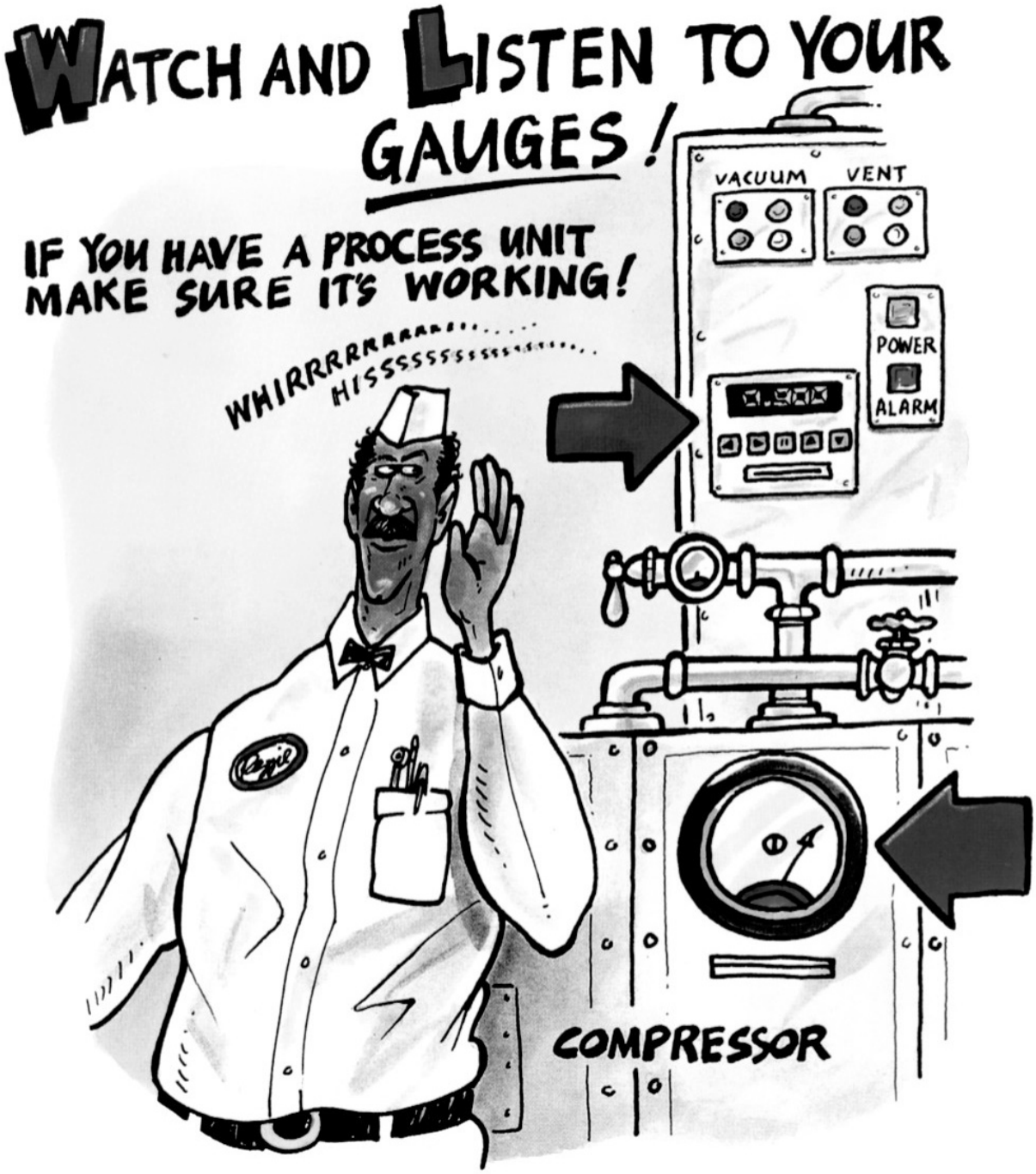
Remove the nozzle to be tested from the dispenser holster. Carefully drain any liquid retained in the nozzle/hose assembly into an approved gas can. Cut a small hole (0.75 inches diameter) into the sealed end of the bag. Slip the bag over the nozzle, inserting the spout through the small hole in the end of the bag. Use a flexible connector to secure the bag to the nozzle spout, ensuring that at least 3 inches of spout length is exposed. Ensure that some air is in the bag and use your hand, or a flexible connector, to provide a tight seal between the bag and the nozzle/hose connection. Insert the spout into the vehicle tank and begin dispensing. Watch the bag for any signs of collapse. If the bag does not show a definite collapse due to air being removed after 2.5 gallons, the nozzle is probably vapor tight and the test is over. If the bag collapses, it verifies that there is air sucking into the nozzle and the nozzle must be repaired or replaced.

The Emergency Breakaway Assembly protects the dispenser and provides safety by reducing the risk of fire in the event of a drive-off. After a drive-off, inspect the nozzle, hose and breakaway for damage. Replacement or reconnection of the breakaway assembly should be performed by a qualified person. The use of a maintenance contractor can ensure that components are intact and working when the breakaway assembly is reattached. If no breakaway assembly exists, the dispenser cabinet should also be inspected for damage.

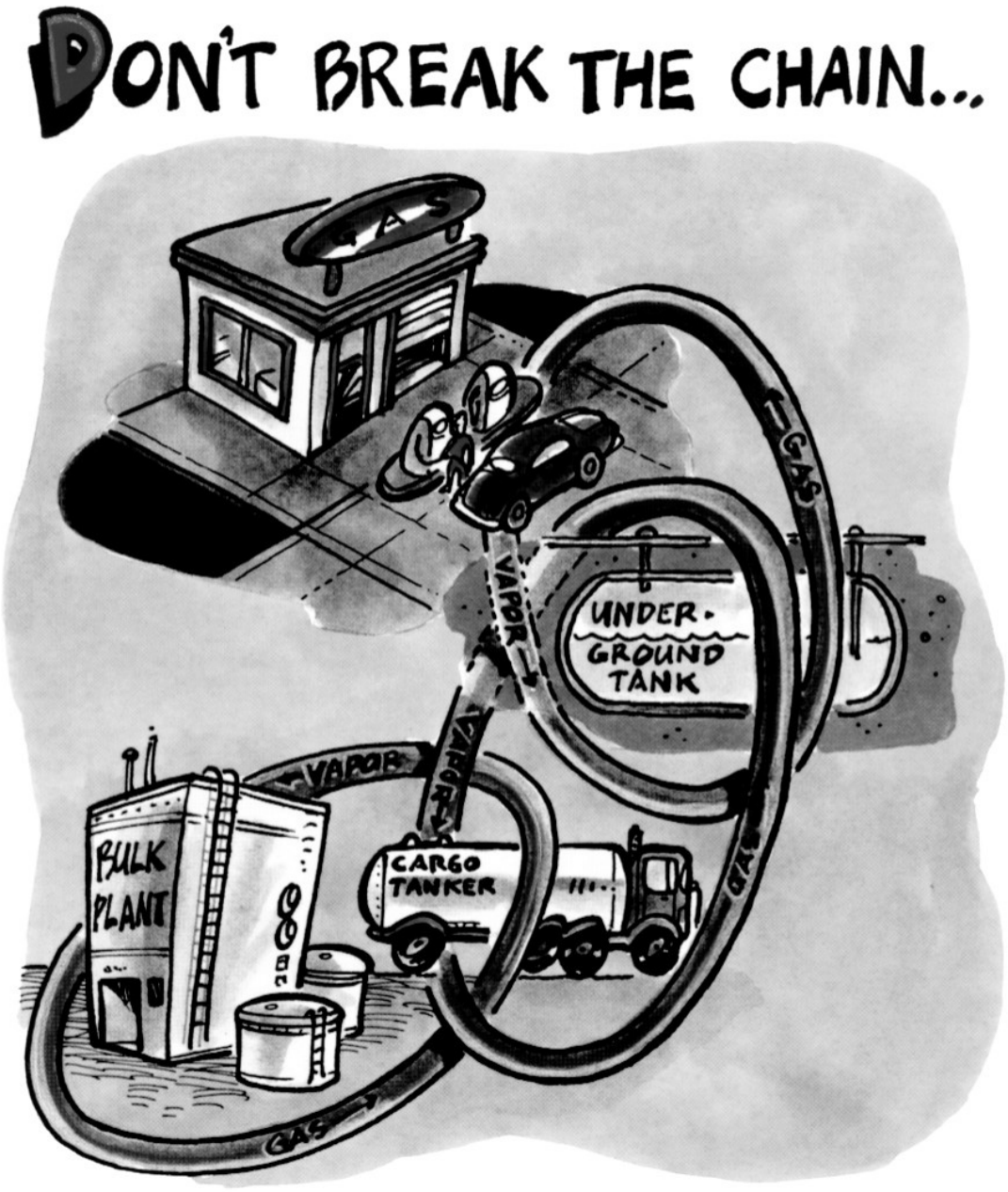
Sometimes the interior components of the nozzle can fail. When a micro-switch is broken the nozzle will not automatically shut off. This can cause overfilling of the tank and, as with topping off, result in liquid gasoline blocking the vapor line. Remove these malfunctioning nozzles from service and lock out the pump until repairs are made.

The newer hoses carry the fuel and the vapors in a hose-within-a-hose system. The "coaxial" type carries vapors to the underground tank through the outer compartment and fuel to the vehicle in the inner compartment. The "inverted coaxial" type is the reverse. If a coaxial hose or single vapor line is torn, vapors escape into the air, exposing you and your customers to air pollutants. An internal tear in an inverted coaxial hose may leak fuel from the nozzle.

Hoses that are kinked, flattened or full of gasoline cause the nozzle to constantly shut off while fueling, making customers very unhappy. Some hoses contain liquid removal systems, which must be installed in the correct direction to work properly. Check your hoses daily for damage and proper installation. Replace any damaged lines.

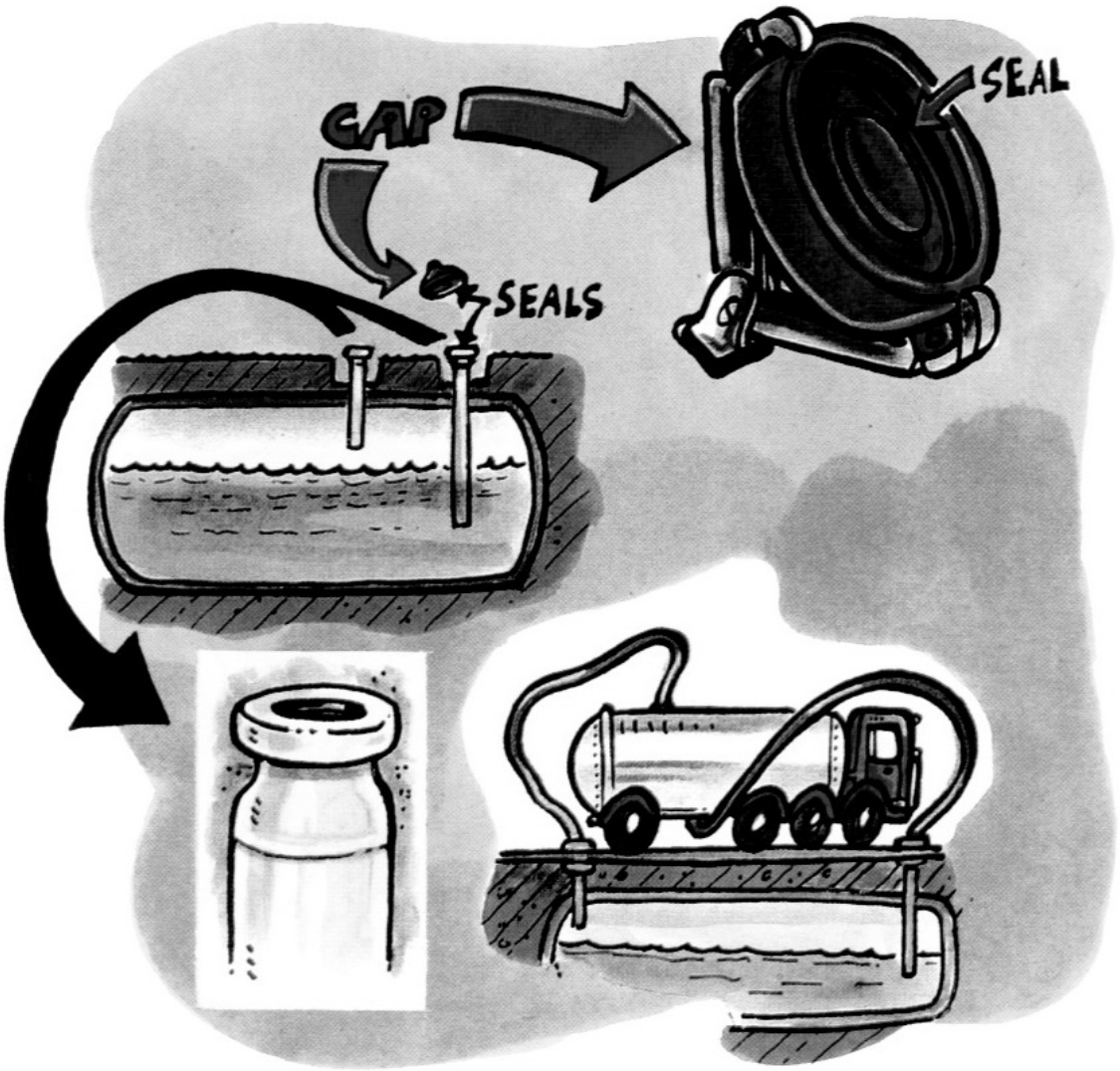


Make sure your process unit (if you have one) is operating while gas is being pumped. For Hirt, Hasstech, Healy and similar systems, the process lights on the control panel must be lit. This will indicate that the power is on to the system and that the pilot light is lit. When a customer pumps gas, you should hear a "whirring" sound and the hiss of combustion from inside the process unit. In the event of a malfunction or an abnormal operating condition, an audible alarm shall be located such that it can easily be heard by station personnel in the area most likely to be occupied during normal station operation.



The reason your station is equipped with a vapor recovery system is to collect vapors fromyour customers' gasoline tanks and return them to a petroleum terminal to be recovered as gasoline. This process involves your customers, you, the delivery truck which delivers your gasoline, and the facilities where the delivery trucks got the gasoline. At any location along this chain, if someone fails to use the vapor recovery equipment or forgets to keep it in good working order, these harmful vapors escape and contribute to our air pollution. The station owner, as well as the driver, are liable if the delivery truck does not hook up to the vapor return line.

CHECK YOUR: TANKS, SEALS & CAPS!



Check drop tube collar for tightness and presence of gasket. New collar designs may incorporate a rotating feature while properly installed. Check to make sure the vapor adapter is securely tightened to the riser pipe. Check to be sure your seals are in good operating condition and the caps are on your underground tanks. This is especially important after a gasoline delivery is made. Also, be sure that the driver of the delivery truck hooks up both the gasoline line and the vapor line. The proper delivery hook-up sequence is - before delivery, hook up the vapor line first, then the product delivery line. After delivery, the product line should be removed first and the vapor return line second.

Every morning when you unlock the pumps, or better yet at each shift change, give your vapor recovery system the "once over." Check each piece of vapor recovery equipment for wear and damage, making sure everything is in good working condition. Identify any potential problems and tag equipment out of service until repair or replacement occurs. Do your part to help yourself, your customers, and the environment.

This example of a self inspection checklist is a good way to protect yourself from large penalties and loss of business. This checklist, used with your vapor recovery handbook, will help you prepare for your periodic air pollution control inspection. The information contained in the handbook covers the basic requirements you need to know.

Experience tells us that the best way to comply with air pollution regulations is to know the law and inspect your equipment daily!!

Summary of Stage II Requirements in the Greater Philadelphia Area

Owners and/or operators of gasoline dispensing facilities shall meet the following testing and certification requirements for their Stage II Systems.

		Stage II testing frequency in Delaware	Stage II testing frequency in Philadelphia, Bucks County, Montgomery County, Chester County and Delaware County, Pennsylvania
Balance Systems	Leak Test	At time of installation and annually thereafter	At time of installation, upon major modification, and every 5 years thereafter
			At time of installation, upon major modification, and every 5 years thereafter
	Dynamic Back Pressure Test	At time of installation and annually thereafter	At time of installation, upon major modification, and every 5 years thereafter
Assist Systems	Leak Test	At time of installation and annually thereafter	At time of installation, upon major modification, and once in every 12-month period
	Air to Liquid Ratio Test	At time of installation and annually thereafter	At time of installation, upon major modification, and once in every 12-month period

NEED MORE INFORMATION?

LET US HELP YOU

This booklet is brought to you by the City of Philadelphia Air Management Services, Delaware Department of Natural Resources and Environmental Control, Pennsylvania Department of Environmental Protection and the U.S. Environmental Protection Agency. We're looking forward to helping you comply with the Stage I and Stage II gasoline vapor recovery requirements.

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