California Environmental Protection Agency

Air Resources Board

ARB Approved
Installation, Operation and Maintenance Manual

For

Executive Order

VR-501-A

Balance Phase II Enhanced Vapor Recovery (EVR) System for Protected Aboveground Storage Tanks (AST) with Remote Dispensing

NOTICE:

The **ARB Approved Installation, Operation and Maintenance Manual (IOM) for VR-501** describe the tools, methods, and skill levels required to install the **Balance Phase II EVR Systems.**

Unless specified otherwise, only skilled technicians that are trained, certified, and licensed by Hirt Combustion Engineers, Inc. (HCE or Hirt) are able to perform installation, maintenance, or repairs of components manufactured by HCE or the warranty will be void. Unless specified otherwise, only skilled technicians that are trained, certified and licensed by EMCO Wheaton Retail (i.e. EMCO Certified Technicians) are able to perform installation, maintenance or repairs of components manufactured by EMCO or Goodyear hoses manufactured by Veyance Technologies or warranty will be void.

NOTE: GDF Owner / Operator can remove and install hanging hardware (nozzle, curb hose, breakaway, and whip hose). Additional certifications may be required in accordance with local district requirements.

It is the responsibility of each Hirt Technician and EMCO Certified Technician to be familiar with the current requirements of state, federal, and local codes for installation and repair of gasoline dispensing equipment.

It is also the responsibility of the Hirt Technician and EMCO Certified Technician to be aware of all the manuals, necessary safety precautions, and site safety requirements to assure a safe and trouble-free installation.

To confirm Hirt training, a person should contact Hirt below with the Name (and company) of the technician.

Contact Information:
Customer Service Department
Hirt Combustion Engineers, Inc.
Phone: (562) 692-6970
email: HirtVCS@aol.com

To confirm the status of an EMCO Certified Technician, please visit the EMCO Wheaton Retail's website at www.emcoretail.com or contact:

Jose E. Rodriguez
Manager of Technical Services & Support
EMCO Wheaton Retail
Phone: 619-421-1743
Email: JERodriguezSD@aol.com

EMCO Wheaton Retail
2300 Industrial Park Drive
Wilson, North Carolina 27893
Phone: 252-243-4394
Fax: 252-243-4759
Email: ewrc@emcoretail.com

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Contractor Requirements

The following are contractor training requirements for installing, maintaining, and repairing manufacturer's enhanced vapor recovery (EVR) equipment. Unless otherwise specified below, installation, maintenance and repair of system components, including removal and installation of such components in the course of any required tests, shall be performed by technicians certified by the appropriate manufacturer.

In addition to the training requirements below, the contractor is responsible for providing the warranty tag, included with each component, to the service station owner/operator at the time of installation.

EMCO Contractor Requirements

Level	Component	Authorized Tasks	Training Pre-Requisites
A Must be re-certified every two-years	• EMCO Hanging Hardware • Veyance Maxxim Premier Plus Hose	• Installation • Functional Testing • Preventive Maintenance • Repair	No pre-requisite
Note: **Depending on local codes, in addition to EMCO training, contractors may be required to take air district training or ICC certification as an approved vapor recovery installer.** **Provided that there are no other local district requirements, a GDF owner/operator can, without obtaining contractor/installer certification from EMCO, remove and install ARB-certified EMCO nozzles and breakaways and Veyance curb hoses and whip hoses.**			

- EMCO certification training is given in a classroom environment.
- EMCO Certified Technicians must be able to show proof of certification if asked. Carry the wallet card or have a copy of your certification on file with the gasoline dispensing facility.
- EMCO Certified Technicians must record his or her certification number on the applicable paperwork for all warranties to be deemed valid.
- To verify EMCO contractor training go to the following website and click on contractors: http://www.emcoretail.com

EMCO Certified Technician should **ALWAYS** verify training and certifications requirements with the air district staff **BEFORE** beginning installation of EVR systems or components.

Hirt Contractor Requirements

Technician Certification	Contractors holding valid Installer Certification is approved to perform Hirt VCS 100-2 VaporTek® Processor and indicator panel installation; wiring and conduit routing; start-up; maintenance; troubleshooting; and parts replacement.
NOTE: **Depending on local codes, in addition to the Hirt training, contractors may be required to take air-district training or ICC certification as an approved vapor-recovery installer.**	

- Hirt installer certification training is given in a classroom environment.
- To verify contractor training call (562) 692-1490.

Weekly Inspections – Hanging Hardware

HANGING HARDWARE SYSTEM					
Component	**Procedure**	**Fail Criteria**	**Corrective Action**	**Reference Manuals**	***Authorized Personnel**
Nozzle Hose Breakaway	Inspect each hose, breakaway, and nozzle for loose connections or leaks	Presence of a leak	Tighten connections or replace with new product	IOM-6	**Nozzle, hose, or breakaway replacement**: GDF owner/operator or EMCO Level A **Component repair:** EMCO Level A
		Presence of residue from a leak	Tighten connections or replace with new product	IOM-8	
		Visible o-ring between any component connection	Tighten connections or replace with new product	IOM-9	

CO-AXIAL HOSES					
Component	**Procedure**	**Fail Criteria**	**Corrective Action**	**Reference Manuals**	***Authorized Personnel**
Coaxial Hose	Inspect hoses for wear, severe kinks, cracks, splitting, and functional swivels	Kinks, cracks, splitting, non-functional swivels, or any visible openings	Replace with new hose	IOM-8	**Hose replacement:** GDF owner/operator or EMCO Level A

BREAKAWAY					
Component	**Procedure**	**Fail Criteria**	**Corrective Action**	**Reference Manuals**	***Authorized Personnel**
Breakaway	Inspect breakaway for leaks around the scuff	Presence of a leak around the scuff	Replace with new breakaway	IOM-9	**Replace breakaway:** EMCO Level A

* Contact the local County Sealer for any requirements when replacing or repairing the vapor recovery nozzle, hoses, and breakaways

EMCO NOZZLE					
Nozzle Component	**Procedure**	**Fail Criteria**	**Corrective Action**	**Reference Manuals**	***Authorized Personnel**
Lever, Hold Open Latch, Lever Guard	Inspect for defects, cuts or damage to the: Lever Hold Open Latch Lever Guard Spout	Damaged or missing	Replace with new EMCO latch kit or nozzle	IOM – 6	**Latch Kit Repair:** EMCO Certified Technician Level A **Nozzle Replacement:** GDF Owner/Operator or EMCO Certified Technician Level A
Spout		Sheared or bent	Replace with new EMCO Spout Kit or nozzle	IOM – 6 IOM - 7	**Spout Kit Repair:** EMCO Certified Technician Level A **Nozzle Replacement:** GDF Owner/ Operator or EMCO Certified Technician Level A
Spout Vent Hole	Inspect for defects, cuts or damage to the: Spout Vent Hole Boot Face Bellows	Vent hole blocked	Clear blockage	IOM – 6	**Blockage Repair:** GDF Owner/Operator or EMCO Certified Technician Level A
Boot Face		> than 0.4 sq. inches of boot face material is missing (e.g. A triangular or similar shape in which greater than 7/16 inches of the boot face circumference is missing [accumulated])	Replace with new EMCO boot face kit or nozzle	IOM – 6 IOM - 7	**Boot Face Kit Repair:** EMCO Certified Technician Level A **Nozzle Replacement:** GDF Owner/Operator or EMCO Certified Technician Level A
Bellows		A cut across 7 consecutive bellows convolutions	Replace with new EMCO bellows kit or nozzle	IOM – 6 IOM - 7	**Bellows Kit Repair:** EMCO Certified Technician Level A **Nozzle Replacement:** GDF Owner/Operator or EMCO Certified Technician Level A

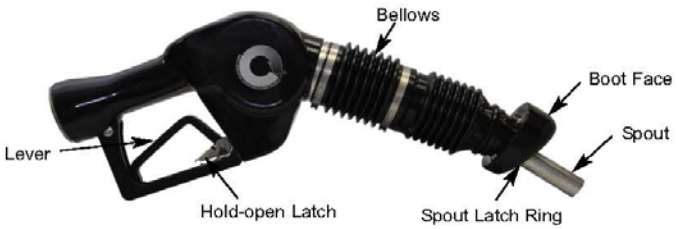
*Contact the local County Sealer for any requirements when replacing or repairing the vapor recovery nozzle, hoses, and breakaways

EMCO NOZZLE					
Nozzle Component	**Procedure**	**Fail Criteria**	**Corrective Action**	**Reference Manuals**	***Authorized Personnel**
Insertion Interlock Rod	Inspect for defects, cuts or damage to the: Insertion Interlock Rod Band Clamps Serial Plate Security Rivet	Insertion interlock rod sticks during engagement or disengagement	Replace with new EMCO Spout Kit or nozzle	IOM – 6 IOM - 7	**Spout Kit Repair:** EMCO Certified Technician Level A **Nozzle Replacement:** GDF Owner/Operator or EMCO Certified Technician Level A
Band Clamps		Damaged or missing	Replace with new EMCO band clamp kit or nozzle	IOM – 6 IOM - 7	**Band Clamp Kit Repair:** EMCO Certified Technician Level A **Nozzle Replacement:** GDF Owner/Operator or EMCO Certified Technician Level A
Serial Plate, Security Rivet		Damaged or missing	Replace with new EMCO nozzle	IOM – 6	**Nozzle Replacement:** GDF Owner/Operator or EMCO Certified Technician Level A

*Contact the local County Sealer for any requirements when replacing or repairing the vapor recovery nozzle, hoses, and breakaways

EMCO® WHEATON RETAIL

Models A4005EVR & RA4005EVR Balance Vapor Recovery Nozzles Weekly Insertion Interlock Test Procedure



Objective: The purpose of this test procedure is to verify proper field operation of the Model A4005EVR nozzle insertion interlock during engagement or disengagement.

Service Tools Required:

- Gasoline Approved Container
- Protective Gloves

CAUTION:

1. Always barricade work area to keep pedestrians and vehicles from accessing the dispenser during testing of the nozzle.
2. Always use a gasoline approved container when performing any type of testing or preventive maintenance on hanging hardware components. (nozzle, hose swivel, breakaway and hoses)
3. Always point the end of the spout downwards into a gasoline approved container when performing the Weekly Insertion Interlock Test Procedure. Failure may result in a hazardous gasoline spill or personal injury and/ or death.
4. Always make sure the dispenser is de-activated (off) while performing the Weekly Insertion Interlock Test Procedure. Failure may result in a hazardous gasoline spill or personal injury and/ or death.

Lever Verification:

1. Remove the nozzle from the dispenser cradle without touching the lever. If the hold-open latch is engaged, the nozzle fails. The nozzle shall not be used and must be immediately taken out of service.

2. Point the end of the spout downwards into a gasoline approval container. Engage (squeeze) the lever without compressing the bellows. Perform this step a minimum of three times to assure the lever has free motion and no tension (dead lever).

IMPORTANT: If at any time while performing step 2 the lever exhibits tension (live lever), the nozzle fails. The nozzle shall not be used and must be immediately taken out of service.

3. If the lever exhibits no tension (dead lever) while performing step 2, the nozzle has successfully passed. Record the results on the Lever Verification Form and proceed to step 4.

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EMCO® WHEATON RETAIL

Models A4005EVR & RA4005EVR
Balance Vapor Recovery Nozzles
Weekly Insertion Interlock Test Procedure

Insertion Interlock Verification:

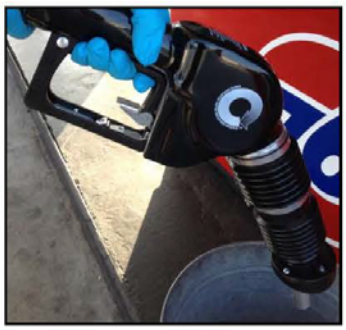
4. While pointing the end of the spout downwards into a gasoline approved container compress the bellows from its "free" extended position, and engage (squeeze) the lever. If the lever exhibits no tension (dead lever), the nozzle fails. The nozzle shall not be used and must be immediately taken out of service.

IMPORTANT: When compressing the bellows, the lever will exhibit tension (live lever) allowing both the fuel and vapor valves inside the nozzle to open to atmosphere.

7. If the lever exhibits no tension (dead lever) while performing step 6, the nozzle has successfully passed. Place the nozzle back on the dispenser cradle and record the results on the Insertion Interlock Verification Form.

5. While keeping the lever engaged, slowly allow the bellows to extend to its "free" position in a controlled manner that simulates removing the nozzle from a vehicle fill pipe. Make sure that the boot face is not caught on the spout latch ring.

IMPORTANT: The fuel and vapor valves will close once the bellows reaches its extended position. A "click" will indicate both valves are closed and the insertion interlock is disengaged.



6. While pointing the end of the spout downwards into a gasoline approved container, engage (squeeze) the lever without compressing the bellows. Perform this step a minimum of three times to assure the lever has free motion and no tension (dead lever).

IMPORTANT: If at any time while performing step 6 the lever exhibits tension (live lever), the nozzle fails. The nozzle shall not be used and must be immediately taken out of service.

Emco Wheaton Retail Corp.
2300 Industrial Park Dr. • Wilson, NC 27893 • 252-243-0150 • 252-243-4759 (fax)

p/n 570166
Rev. B, 08/14

EMCO® WHEATON RETAIL

Models A4005EVR & RA4005EVR Balance Vapor Recovery Nozzles
Weekly Insertion Interlock Test Procedure

Facility: _____ Facility Address: _____

Lever Verification Form

Fueling Point #																	
Pass																	
Fail																	

Insertion Interlock Verification Form

Fueling Point #																	
Pass																	
Fail																	

Date: _____ Performed by: _____

Lever Verification Form

Fueling Point #																	
Pass																	
Fail																	

Insertion Interlock Verification Form

Fueling Point #																	
Pass																	
Fail																	

Date: _____ Performed by: _____

Lever Verification Form

Fueling Point #																	
Pass																	
Fail																	

Insertion Interlock Verification Form

Fueling Point #																	
Pass																	
Fail																	

Date: _____ Performed by: _____

Lever Verification Form

Fueling Point #																	
Pass																	
Fail																	

Insertion Interlock Verification Form

Fueling Point #																	
Pass																	
Fail																	

Date: _____ Performed by: _____

Weekly Inspection and Testing Checklist

Checklist results may be used to assist with filling out GDF maintenance log.			Date:	Page: _____of_____
Dispenser Number	Unihose or Fuel Grade (circle one)	Nozzle Inspection (circle one)	Hose Inspection (circle one)	Breakaway (circle one)
	Unihose 87 89 91 other _____	Pass Fail	Pass Fail	Pass Fail
	Unihose 87 89 91 other _____	Pass Fail	Pass Fail	Pass Fail
	Unihose 87 89 91 other _____	Pass Fail	Pass Fail	Pass Fail
	Unihose 87 89 91 other _____	Pass Fail	Pass Fail	Pass Fail
	Unihose 87 89 91 other _____	Pass Fail	Pass Fail	Pass Fail
	Unihose 87 89 91 other _____	Pass Fail	Pass Fail	Pass Fail
	Unihose 87 89 91 other _____	Pass Fail	Pass Fail	Pass Fail
	Unihose 87 89 91 other _____	Pass Fail	Pass Fail	Pass Fail
	Unihose 87 89 91 other _____	Pass Fail	Pass Fail	Pass Fail
	Unihose 87 89 91 other _____	Pass Fail	Pass Fail	Pass Fail
	Unihose 87 89 91 other _____	Pass Fail	Pass Fail	Pass Fail
	Unihose 87 89 91 other _____	Pass Fail	Pass Fail	Pass Fail
	Unihose 87 89 91 other _____	Pass Fail	Pass Fail	Pass Fail
	Unihose 87 89 91 other _____	Pass Fail	Pass Fail	Pass Fail

Table 1: Annual Inspection Requirements/Checklist for Hirt VCS 100-2 VaporTek® Processor

DATE OF TEST:

SERVICE COMPANY NAME	SERVICE COMPANY'S TELEPHONE
SERVICE TECHNICIAN	HIRT TECHNICIAN CERTIFICATION # (as applicable) ICC or DISTRICT TRAINING CERTIFICATION (as applicable)
STATION NAME	DISTRICT PERMIT #

STATION ADDRESS	CITY	STATE ZIP

Instructions: Perform each step and check each box after step is completed. File completed checklist with station's Maintenance Records.

1.	Turn OFF electrical power to processor. **CAUTION:** The processor can be hot from operation. Use caution when removing Weather Cover, Shell, and raising Inner Stack; they are HOT!	☐
2.	Remove Weather Cover. Look inside stack and burner chamber to check for debris. Remove any debris.	☐
3.	Remove padlocks, if any, and remove Shell from processor.	☐
4.	Loosen stack bolt and raise Inner Stack. The pilot and igniter/sensor are now exposed. The internals should be checked for foreign material. Remove any foreign material.	☐
5.	Check igniter/sensor for carbon buildup. Replace Pilot Tip assembly if excessive buildup. See instructions that come with replacement Pilot Tip for installation details.	☐

6.	Visually check all processor piping and tubing for leaks (this is checked when conducting TP-206.3 and Exhibit 4 of Executive Order VR-501). Check metal tubing and piping for kinks, worn areas, and cracks, or deterioration. Check piping and metal tubing fittings to insure that they are strong and tight sealing. Replace any components that show any wear, cracks, or deterioration.	☐
7.	Conduct Exhibit 8 of Executive Order VR-501 "Hirt VCS 100-2 VaporTek® Processor with Indicator Panel Operability Test Procedure"	☐
8.	Check setting of Pilot Needle Valve adjustmet (section 8.8 of HIRT VCS 100-2 VaporTek® IOM).	☐
9.	Lower Inner Stack and Tighten bolt. Replace Shell, Weather Cover, and padlocks removed for visual inspection.	☐
10.	Verify handle on 3-way valve is in down position – Processor to AST Ullage.	☐
11.	Turn ON electrical power to processor.	☐

Alarm Troubleshooting Summary For Hirt VCS 100-2 VaporTek® Processor

VCS 100 Indicator Panel	Description	Light Indicator	Recommended Troubleshooting
MALFUNCTION LIGHT	AST ullage pressure is positive for at least 1 continuous hour. Power is turned off to the processor or disconnected.	Red	GDF Owner/Operator Responsibilities: • "Weekly Inspections" of Hanging Hardware as specified in section 2 of Installation, Operation, and Maintenance Manual. • "Drive-Offs and Other Customer Abuse" as specified in section 5 of Installation, Operation, and Maintenance Manual. • Exhibit 7 of Executive Order VR-501 • Record findings in GDF Owner/Operator Maintenance Log. Certified Contractor Responsibilities: • Follow HIRT VCS 100-2 VaporTek® Troubleshooting Guide (Contact Hirt by either Phone: (562) 692-6970 or by email: HirtVCS@aol.com to get Guide) • TP-206.3 and Exhibit 4 of Executive Order VR-501 • Exhibit 7 of Executive Order VR-501 • Exhibit 8 of Executive Order VR-501 • Record findings in GDF Owner/Operator Maintenance Log.

Drive-Offs and Other Customer Abuse

If the hanging hardware components are involved in a drive-off or if they incur some customer abuse, and they are not replaced as new, each individual component of the hanging hardware **must be visually inspected and functionally tested** before the components can return to dispensing fuel.

- A visual assessment and functional tests are outlined in the following pages.

ANY COMPONENT THAT DOES NOT PASS A VISUAL INSPECTION OR FUNCTIONAL TEST MUST BE REPLACED.

IF THE EMCO BREAKAWAY IS INVOLVED IN A DRIVEOFF, IT MUST BE REPLACED. THESE BREAKAWAYS ARE NON-RECONNECTABLE.

Before beginning work, barricade the work area to block customer use.

Drive Offs & Other Customer Abuse: Perform a Visual Assessment

Visually inspect the hanging hardware system as follows to determine the extent of the damage:

Action	Test Procedure	Corrective Action	Reference Material	*Authorized Personnel
Perform a thorough visual examination of the exterior of the whip hose and the curb hose for any obvious imperfections.	Obvious imperfections include, but are not limited to: Damage to the swivels Damage to the couplings Kinks / flat spots Tears to the outer hose	Replace with new hose(s).	IOM-8	**Hose replacement**: GDF Owner/Operator or EMCO Level A for Goodyear Hose
	If there are no imperfections to the whip and curb hose, those hoses may be reused.	Reassemble hose(s).	IOM-8	GDF Owner/Operator or EMCO Level A for Goodyear Hose
Perform a thorough visual inspection of the nozzle for any obvious imperfections.	Obvious imperfections include, but are not limited to: <u>EMCO Nozzle:</u> Damage spout, broken or bent; Damage to the insertion interlock rod; Torn boot face or bellows; Damage to the lever, hold open latch and lever guard; Missing band clamp, serial plate and security rivet.	Replace damaged components where applicable.	IOM-7	**Nozzle repair:** EMCO Level A
		Replace with new nozzle.	IOM-6	**Nozzle replacement**: EMCO Level A
Perform a thorough visual inspection of the breakaway for any obvious imperfections.	<u>EMCO Breakaway</u> Non-re-connectable. Breakaway separated.	Replace with new breakaway	IOM-9	**Breakaway replacement:** EMCO Level A
If no imperfection or damage is visibly evident, proceed to functional testing.				

* Contact the local County Sealer for any requirements when replacing or repairing the vapor recovery nozzle, hoses, and breakaways

Function Testing Description

Perform the following functional tests prior to re-using a hose, breakaway or a nozzle following a drive-off:

Test	Test Procedure	Corrective Action	*Authorized Personnel
Leak Check	Verify that there are no liquid leaks in all components. Dispense fuel and check each connection between the components. A visual inspection of the nozzle can determine any obvious liquid leaks.	Any component that does not pass the functional test must be replaced. Go to IOM 6, 8, and 9	GDF Owner/Operator or EMCO Level A
Meter Creep	Checking for meter creep will verify the integrity of the connections. Dispense 1/10 to 2/10 of a gallon of fuel into an approved container then release lever and move components around and/or gently shake the hose and verify if the displaced amount on the dispenser changes.	Any component that does not pass the functional test must be replaced. Go to IOMs 6, 8, and 9	GDF Owner/Operator or EMCO Level A
Automatic Shut-Off and Insertion Interlock	The insertion interlock mechanism shall not allow dispensing when the bellows is uncompressed as determined by direct observation or GDF-09 (See Vapor Recovery Defects list).	Repair or replace the nozzle Go to IOM-6 or IOM-7	**Nozzle replacement** EMCO Level A **Nozzle repair** EMCO Level A
Resistance	IOM-6	Any component that does not pass the functional test must be replaced. Go to IOM 6, 8, and 9	GDF Owner/Operator or EMCO Level A

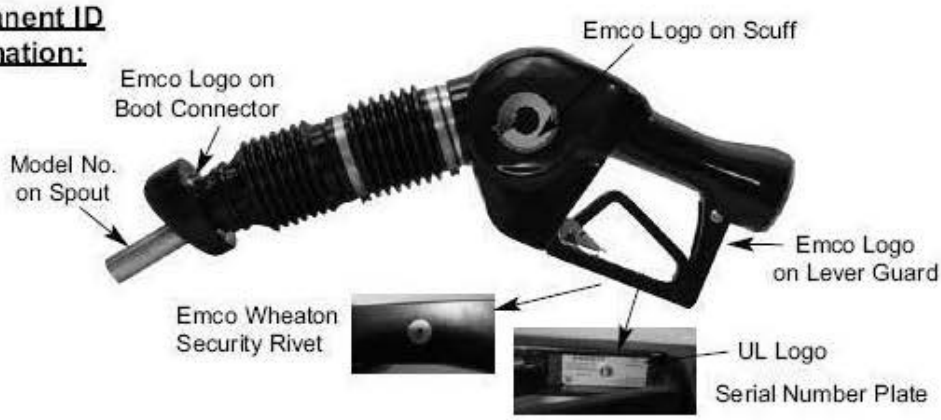
* Contact the local County Sealer for any requirements when replacing or repairing the vapor recovery nozzle, hoses, and breakaways

EMCO®
WHEATON RETAIL

A4005EVR

Balance Vapor Recovery Nozzle
RA4005EVR = Rebuilt
XXX = Scuff Guard Color

Permanent ID Information:



INSTALLATION INSTRUCTIONS

Service Tools Required:

- 1 7/8" Crows Foot
- Torque Wrench w/ 50 ft-lbs Setting
- Pipe Wrench w/ Flat Jaws
- Gasoline Approved Container
- Petroleum Jelly or Other Suitable Lubricant

CAUTION:

1. Always barricade work area to keep pedestrians and vehicles from accessing the dispenser.
2. Always use a gasoline approved container or test can when performing any type of preventive maintenance.
3. Before attempting to install, remove or service the A4005EVR nozzle, turn off and tag out power to the corresponding dispenser.
4. Before attempting to install, remove or service the A4005EVR nozzle, close the emergency impact valves located inside the base of the dispenser. Relieve the line pressure and standing fuel through the nozzle spout into a gasoline approved container by compressing the bellows and squeezing the lever.

IMPORTANT: Failure to perform cautions 3 and 4 may result in a hazardous gasoline spill, damage to equipment, personal injury and/or death.

1

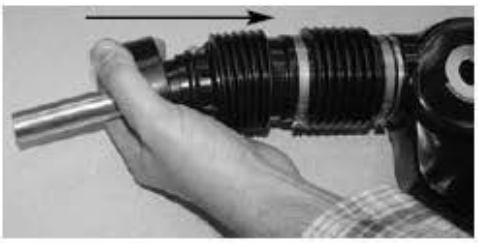
Pre-Inspection:

1. Carefully unpack and remove the A4005EVR nozzle from the shipping container. Evaluate the following components for damage: scuff guard, lever guard, lever, hold open latch, serial number plate, security rivet, bellows, band clamps, boot face and spout.

2. Verify the automatic shutoff located at the end of the spout. The vent hole must be free and clear of all debris.

3. Verify the fuel path o-rings located at the hose end of the A4005EVR nozzle. Both o-rings must be properly secured inside the factory machined grooves.

Pre-Functional Test:



4. Functional test the insertion interlock of the A4005EVR nozzle by compressing the bellows and then squeezing the lever. The A4005EVR nozzle will not function unless the insertion interlock is properly engaged.

Pre-Installation:

5. Lightly lubricate both fuel path o-rings using petroleum jelly or other suitable lubricant.

2

6. Before attempting to install the A4005EVR nozzle onto the curb hose, verify the vapor path o-ring is properly secured onto the connector, and in good working condition. Lightly lubricate the o-ring using petroleum jelly or other suitable lubricant.

IMPORTANT: Do not use pipe thread sealant compound or Teflon tape when installing the A4005EVR nozzle. Failure to comply will void warranty.

Installation:

IMPORTANT: If this is a new facility installation, the fueling point must be flushed into a gasoline approved container before installing the A4005EVR nozzle. Failure to perform this procedure could result in foreign material becoming lodged inside the nozzle's fuel path causing it not to shut off or a reduction in fuel flow.

7. Attach the A4005EVR nozzle onto the curb hose connector. Tighten by hand to avoid cross threading. Take caution to avoid pinching the vapor path o-ring.

8. Using a 1 7/8" crows foot and torque wrench tighten the curb hose connector to 50 ft-lbs of torque.

Post Functional Tests:

9. Carefully purge the trapped air from the fueling point. Begin dispensing by compressing the bellows and then squeezing the lever. Dispense one gallon of fuel into a gasoline approved container.

10. Functional test the automatic shutoff of the A4005EVR nozzle. Begin dispensing by compressing the bellows and then squeezing the lever. Place the hold-open latch in "high" clip position to secure the lever. Dispense one gallon of fuel into a gasoline approved container. At the same time, lower the spout tip into the standing fuel until the vent hole is completely submersed. The main valve of the A4005EVR nozzle will automatically close causing fuel flow to stop.

IMPORTANT: Perform step 10 a minimum of three times to assure the insertion interlock, hold open latch and the automatic shutoff of the A4005EVR nozzle are operating properly.

According to UL requirement 842, the fuel flow rate must be greater than 3 gallons per minute for the automatic shutoff to operate properly. A common cause of low flow rates are dirty or clogged dispenser filters.

Post Inspection:

11. Before placing the A4005EVR nozzle onto the dispenser cradle, inspect all hanging hardware connections for potential fuel leaks. Make proper adjustments if necessary.

PREVENTIVE MAINTENANCE

1. Weekly inspect the A4005EVR nozzle, evaluate the following components for damage: scuff guard, lever guard, lever, hold open latch, serial number plate, security rivet, bellows, band clamps, boot face and spout. Damage components must be replaced with factory authorized service kits.

Part Number	Description
492775EVR	Bellows & Boot Face Kit
492776EVR	Boot Face Kit
492834EVR	Spout Kit
494150EVR	Latch Kit
494748EVR	Fuel Path O-ring Kit
494750EVR	Bellows Band Clamps Kit
A0557EVR-XXX	Scuff Guard Kit

IMPORTANT: Do not remove the serial number plate and security rivet from the A4005EVR nozzle. Failure to comply will void warranty.

2. Weekly inspect the automatic shutoff located at the end of the spout. The vent hole must be free and clear of all debris.
3. Weekly inspect all hanging hardware connections for potential fuel leaks.

IMPORTANT: Should a drive-off or incidence of customer abuse occur, follow the initial inspection and function instructions found in the installation section.

PERFORMANCE STANDARDS & SPECIFICATIONS

This component was factory tested to, and met the following specifications:

1. Meets ARB Material Compatibility with Fuel Blends as per Section 3.8 of CP-201.
2. Meets ARB Capable of Refueling Any Vehicle Standards as per Section 4.7.1 of CP-201.
3. Meets ARB Spout Dimension Standards as per Section 4.7.3 of CP-201.
4. Meets ARB Nozzle and Dispenser Compatibility Standards as per Section 4.9 of CP-201.
5. Meets ARB Balance Nozzle Criteria Standards as per Section 5.1 of CP-201.
6. TP-201.2B – Complies with the maximum allowable leak rate of 0.07 CFH @ 2.00 inches of water column pressure.
7. TP-201.2C – Complies with the maximum allowable spillage factor of 0.24 pounds/ 1,000 gallons.
8. TP-201.2D – Complies with the maximum allowable average of 3 post fuel drips.
9. TP-201.2E – Complies with the maximum allowable average of 100mL liquid retention and 1mL liquid spit-back.
10. TP-201.2J – Complies with the maximum allowable component pressure drop of 0.08 inches of water column @ 60 CFH.

IMPORTANT: Leave these installation instructions with the station owner and/or operator.

EMCO®
WHEATON RETAIL

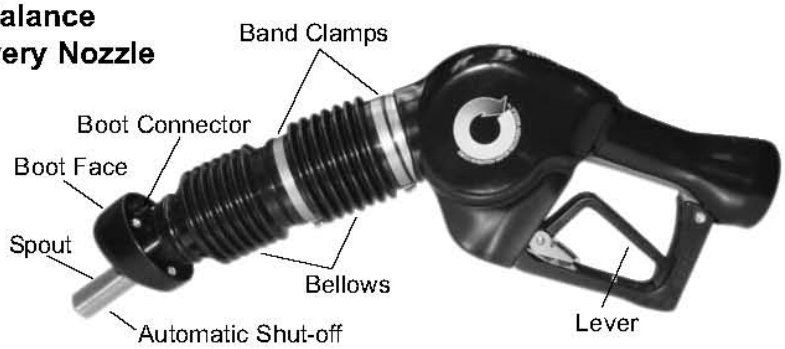
492775EVR

Bellows & Boot Face Kit

Packing List:

(1) Bellows & Boot Face
(1) Bellows O-ring
(2) Bellows Band Clamps

A4005EVR Balance Vapor Recovery Nozzle



INSTALLATION INSTRUCTIONS

Service Tools Required:

- Flat Head Screw Driver w/ Fine Tip
- Scribe Tool w/ 90 degree tip
- Bench Vise w/ 5" Jaw Width
- Gasoline Approved Container
- Bellows Retainer Plate Tool p/n 494712EVR
- Bellows Band Clamp Crimp Tool p/n 494652EVR

CAUTION:

1. Always barricade work area to keep pedestrians and vehicles from accessing the dispenser.
2. Always use a gasoline approved container or test can when performing any type of preventive maintenance.
3. Before attempting to install, remove or service the A4005EVR nozzle, turn off and tag out power to the corresponding dispenser.
4. Before attempting to install, remove or service the A4005EVR nozzle, close the emergency impact valves located inside the base of the dispenser. Relieve the line pressure and standing fuel through the nozzle spout into a gasoline approved container by compressing the bellows and squeezing the lever.

IMPORTANT: Failure to perform cautions 3 and 4 may result in a hazardous gasoline spill, damage to equipment, personal injury and/or death.

Pre-Inspection:

1. Carefully unpack and remove all kitted parts from the shipping container and evaluate for any kind of damage. Verify that no parts are missing from the packing list before proceeding with the installation.

Pre-Installation:

2. Empty all standing fuel within the spout and bellows into a gasoline approved container before attempting to service the bellows and boot face.

3. It is unnecessary to remove the A4005EVR nozzle from the fueling point during the removal and installation of the bellows and boot face. Use the bench vise to properly secure the A4005EVR nozzle during service.

Installation:

Removing the Existing Bellows & Boot Face

4. Locate the top bellows band clamp. Use the flat head screw driver to dislodge the locking mechanism and remove the band clamp from the bellows.

2

5. Locate the bottom bellows band clamp. Use the flat head screw driver to dislodge the locking mechanism and remove the band clamp from the bellows.

6. Remove the bellows and boot face from the A4005EVR nozzle. Grab the bellows and pull away from the nozzle body.

7. Use the scribe tool to remove the bellows o-ring.

IMPORTANT: Properly discard all removed components.

Installing the New Bellows & Boot Face

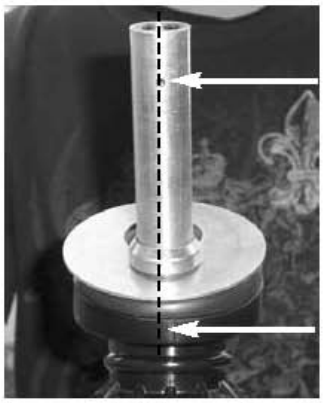
8. Before attempting to install the new bellows and boot face verify that the top of the interlock push rod is properly aligned with the bottom edge of the interlock guide.

3

9. Install the new bellows o-ring. Verify that the o-ring seats properly into the machined groove.

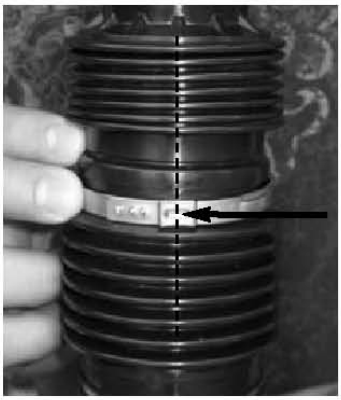
10. Slide the new bellows over the spout until the end reaches the nozzle body. Push down over the bellows o-ring until properly seated.

11. Use the bellows retainer plate tool p/n 494712EVR to secure and lock the bellows and boot face in place.



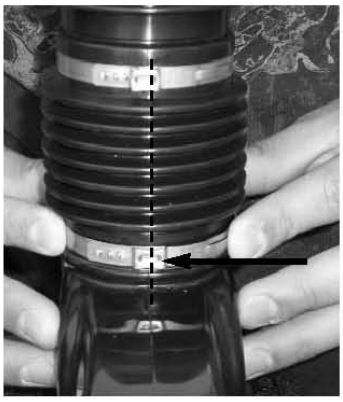
12. Slowly rotate the bellows until the parting line of the boot connector is aligned with the spout and automatic shut-off.

4



13. Install the new top bellows band clamp into the groove of the bellows. Lock and align the crimp portion with the parting line of the bellows.

14. Use the bellows band clamp crimp tool p/n 494652EVR to crimp and secure into place.



15. Install the new bottom bellows band clamp into the groove of the bellows. Lock and align the crimp portion with the parting line of the bellows.

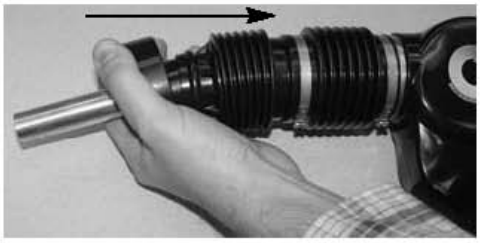
5

16. Use the bellows band clamp crimp tool p/n 494652EVR to crimp and secure into place.

17. Remove the bellows retainer plate tool p/n 494712EVR from bellows and spout.

18. Remove the A4005EVR nozzle from the bench vise.

Post-Functional Test:



19. Functional test the insertion interlock of the A4005EVR nozzle by compressing the bellows and then squeezing the lever. The A4005EVR nozzle will not function unless the insertion interlock is properly engaged.

Post-Installation:

20. Place the A4005EVR nozzle back onto the dispenser cradle.

6

PREVENTIVE MAINTENANCE

1. Weekly inspect the bellows & boot face for tears, cuts and slits. Replace with factory authorized service kits.

Part Number	Description
492775EVR	Bellows & Boot Face Kit

PERFORMANCE STANDARDS & SPECIFICATIONS

This component was factory tested to, and met the following specifications:

1. Meets ARB Material Compatibility with Fuel Blends as per Section 3.8 of CP-201.
2. Meets ARB Capable of Refueling Any Vehicle Standards as per Section 4.7.1 of CP-201.

IMPORTANT: Leave these installation instructions with the station owner and/ or operator.

7

EMCO®
WHEATON RETAIL

492776EVR
Boot Face Kit

Packing List:

(1) Boot Face
(4) Mounting Screws

A4005EVR
Balance Vapor Recovery Nozzle

INSTALLATION INSTRUCTIONS

Service Tools Required:

- Philips Head Screw Driver w/ Fine Tip
- Bench Vise w/ 5" Jaw Width
- Gasoline Approved Container

CAUTION:

1. Always barricade work area to keep pedestrians and vehicles from accessing the dispenser.
2. Always use a gasoline approved container or test can when performing any type of preventive maintenance.
3. Before attempting to install, remove or service the A4005EVR nozzle, turn off and tag out power to the corresponding dispenser.
4. Before attempting to install, remove or service the A4005EVR nozzle, close the emergency impact valves located inside the base of the dispenser. Relieve the line pressure and standing fuel through the nozzle spout into a gasoline approved container by compressing the bellows and squeezing the lever.

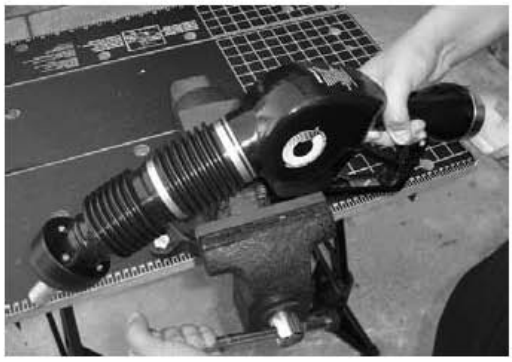
IMPORTANT: Failure to perform cautions 3 and 4 may result in a hazardous gasoline spill, damage to equipment, personal injury and/or death.

Pre-Inspection:

1. Carefully unpack and remove all kitted parts from the shipping container and evaluate for any kind of damage. Verify that no parts are missing from the packing list before proceeding with the installation.

Pre-Installation:

2. Empty all standing fuel within the spout and bellows into a gasoline approved container before attempting to service the boot face.



3. It is unnecessary to remove the A4005EVR nozzle from the fueling point during the removal and installation of the boot face. Use the bench vise to properly secure the A4005EVR nozzle during service.

Installation:

Removing the Existing Boot Face

4. Use the philips screw driver to remove the four mounting screws located on the back of the boot connector.

5. Remove the existing boot face by pulling out of the boot connector.

IMPORTANT: Properly discard all removed components.

Installing the New Boot Face

6. Install the new boot face into the boot connector by pressing evenly. Align the four mounting holes of the boot face with those of the boot connector.

7. Use the philips screw driver to install and tighten the four new mounting screws.
8. Remove the A4005EVR nozzle from the bench vise.

Post-Installation:

9. Place the A4005EVR nozzle back onto the dispenser cradle.

PREVENTIVE MAINTENANCE

1. Weekly inspect the boot face for tears, cuts and slits. Replace with factory authorized service kits.

Part Number	Description
492776EVR	Boot Face Kit

PERFORMANCE STANDARDS & SPECIFICATIONS

This component was factory tested to, and met the following specifications:

1. Meets ARB Material Compatibility with Fuel Blends as per Section 3.8 of CP-201.
2. Meets ARB Capable of Refueling Any Vehicle Standards as per Section 4.7.1 of CP-201.

EMCO® WHEATON RETAIL

492834EVR

Spout Kit

Packing List:

(1) Spout
(1) Bellows O-ring
(2) Bellows Band Clamps
(1) Interlock Guide
(1) Interlock Push Rod

A4005EVR Balance Vapor Recovery Nozzle

INSTALLATION INSTRUCTIONS

Service Tools Required:

- Flat Head Screw Driver w/ Fine Tip
- 15" Crescent Wrench
- Torque Wrench w/ 45-55 ft-lbs. Setting
- Bench Vise w/ 5" Jaw Width
- Scribe Tool w/ 90 Degree Tip
- Needle Nose Pliers
- 40mm Crows Foot
- Snap Ring Pliers w/ Fine Tip
- Bellows Retainer Plate Tool p/n 494712EVR
- Bellows Band Clamp Crimp Tool p/n 494652EVR
- Gasoline Approved Container

CAUTION:

1. Always barricade work area to keep pedestrians and vehicles from accessing the dispenser.
2. Always use a gasoline approved container or test can when performing any type of preventive maintenance.
3. Before attempting to install, remove or service the A4005EVR nozzle, turn off and tag out power to the corresponding dispenser.
4. Before attempting to install, remove or service the A4005EVR nozzle, close the emergency impact valves located inside the base of the dispenser. Relieve the line pressure and standing fuel through the nozzle spout into a gasoline approved container by compressing the bellows and squeezing the lever.

IMPORTANT: Failure to perform cautions 3 and 4 may result in a hazardous gasoline spill, damage to equipment, personal injury and/or death.

Pre-Inspection:

1. Carefully unpack and remove all kitted parts from the shipping container and evaluate for any kind of damage. Verify that no parts are missing from the packing list before proceeding with the installation.

Pre-Installation:

2. Empty all standing fuel within the spout and bellows into a gasoline approved container before attempting to service the spout.

3. It is unnecessary to remove the A4005EVR nozzle from the fueling point during the removal and installation of the spout. Use the bench vise to properly secure the A4005EVR nozzle during service.

Installation:

Removing the Existing Bellows & Boot Face

4. Locate the top bellows band clamp. Use the flat head screw driver to dislodge the locking mechanism and remove the band clamp from the bellows.

2

5. Locate the bottom bellows band clamp. Use the flat head screw driver to dislodge the locking mechanism and remove the band clamp from the bellows.

6. Remove the bellows and boot face from the A4005EVR nozzle. Grab the bellows and pull away from the nozzle body.

7. Use the scribe tool to remove the bellows o-ring.

IMPORTANT: Properly discard bellows band clamps and bellows o-ring.

Removing the Existing Spout

8. Locate the snap ring on the spout. Use the snap ring and needle nose pliers to remove the snap ring from the machined groove. Slide the snap ring upward.

9. Disassemble the interlock guide. Remove the top piece by pulling upward and sliding over the spout. Remove the bottom piece by sliding over the spout.

10. Use the 15" crescent wrench to loosen the spout nut. Unfasten the spout nut by hand to avoid cross threading.

11. Remove the spout by slowly pulling upward.

12. Use the needle nose pliers to remove the interlock push rod.

IMPORTANT: Properly discard all removed components.

Installing the New Spout

13. Use the needle nose pliers to install the new interlock push rod.

14. Install the new spout by inserting the vent tube connector into the nozzle vent port. Slowly push downward on the spout and align the dimple on the spout with the notch on the nozzle body.

15. Fasten the new spout nut by hand onto the nozzle threads to avoid cross threading. Use the 40mm crows foot and torque wrench to tighten the spout nut between 45 to 55 ft-lbs of torque.

16. Install the new interlock guide by sliding the top and bottom pieces over the spout. Press the top piece into the bottom piece.

17. Use the snap ring and needle nose pliers to install the new snap ring into the machined groove located on the spout. Slide the snap ring downward until seated properly.

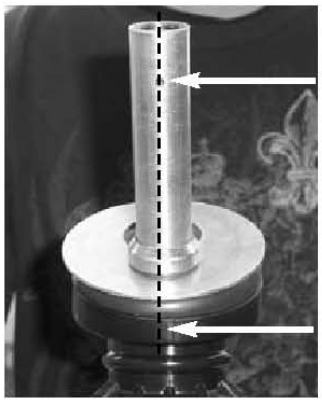
Installing the Existing Bellows & Boot Face

18. Before attempting to install the existing bellows & boot face verify that the top of the interlock push rod is properly aligned with the bottom edge of the interlock guide.

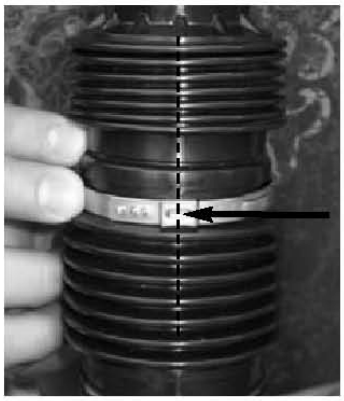
19. Install the new bellows o-ring. Verify that the o-ring seats properly into the machined groove.

20. Slide the bellows over the spout until the end reaches the nozzle body. Push down over the bellows o-ring until properly seated.

21. Use the bellows retainer plate tool p/n 494712EVR to secure and lock the bellows and boot face in place.

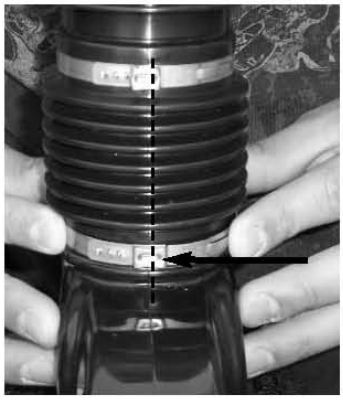


22. Slowly rotate the bellows until the parting line of the boot connector is aligned with the spout and automatic shut-off.



23. Install the new top bellows band clamp into the groove of the bellows. Lock and align the crimp portion with the parting line of the bellows.

24. Use the bellows band clamp crimp tool p/n 494652EVR to crimp and secure into place.



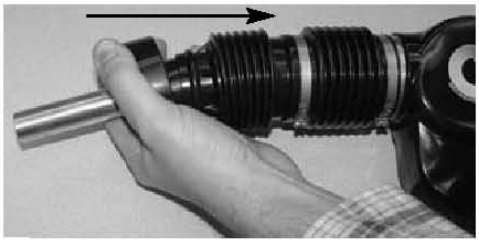
25. Install the new bottom bellows band clamp into the groove of the bellows. Lock and align the crimp portion with the parting line of the bellows.

26. Use the bellows band clamp crimp tool p/n 494652EVR to crimp and secure into place.

27. Remove the bellows retainer plate tool p/n 494712EVR from bellows and spout.

28. Remove the A4005EVR nozzle from the bench vise.

Post-Functional Test:



29. Functional test the insertion interlock of the A4005EVR nozzle by compressing the bellows and then squeezing the lever. The A4005EVR nozzle will not function unless the insertion interlock is properly engaged.

30. Functional test the automatic shutoff of the A4005EVR nozzle. Begin dispensing by compressing the bellows and then squeezing the lever. Place the hold-open latch in "high" clip position to secure the lever. Dispense one gallon of fuel into a gasoline approved container. At the same time, lower the spout tip into the standing fuel until the automatic shut is completely submersed. The main valve of the A4005EVR nozzle will automatically close causing fuel flow to stop.

IMPORTANT: Perform step 30 a minimum of three times to assure the insertion interlock , hold open latch and the automatic shutoff of the A4005EVR nozzle are operating properly.

According to UL requirement 842, the fuel flow rate must be greater than 3 gallons per minute for the automatic shutoff to operate properly. A common cause of low flow rates are dirty or clogged dispenser filters.

Post-Installation:

31. Place the A4005EVR nozzle back onto the dispenser cradle.

PREVENTIVE MAINTENANCE

1. Weekly inspect the spout for sheared, bent or blocked vent hole. Replace with factory authorized service kits.

Part Number	Description
492834EVR	Spout Kit

PERFORMANCE STANDARDS & SPECIFICATIONS

This component was factory tested to, and met the following specifications:

1. Meets ARB Material Compatibility with Fuel Blends as per Section 3.8 of CP-201.
2. Meets ARB Capable of Refueling Any Vehicle Standards as per Section 4.7.1 of CP-201.
3. Meets ARB Spout Dimension Standards as per Section 4.7.3 of CP-201.

EMCO®
WHEATON RETAIL

494748EVR
Fuel Path O-ring Kit

Packing List:
(2) Fuel Path O-rings

A4005EVR Balance Vapor Recovery Nozzle

A4119EVR Coaxial Safe Break Valve

INSTALLATION INSTRUCTIONS

Service Tools Required:

- Pipe Wrench w/ Flat Jaws
- Bench Vise w/ 5" Jaw Width
- Petroleum Jelly or Other Suitable Lubricant
- Scribe Tool w/ 90 Degree Tip
- Gasoline Approved Container

CAUTION:

1. Always barricade work area to keep pedestrians and vehicles from accessing the dispenser.
2. Always use a gasoline approved container or test can when performing any type of preventive maintenance.
3. Before attempting to install, remove or service the A4005EVR nozzle and A4119EVR safe break valve, turn off and tag out power to the corresponding dispenser.
4. Before attempting to install, remove or service the A4005EVR nozzle and A4119EVR safe break valve, close the emergency impact valves located inside the base of the dispenser. Relieve the line pressure and standing fuel through the nozzle spout into a gasoline approved container by compressing the bellows and squeezing the lever.

IMPORTANT: Failure to perform cautions 3 and 4 may result in a hazardous gasoline spill, damage to equipment, personal injury and/or death.

Pre-Inspection:

1. Carefully unpack and remove all kitted parts from the shipping container and evaluate for any kind of damage. Verify that no parts are missing from the packing list before proceeding with the installation.

Pre-Installation:

2. Empty all standing fuel within the spout and bellows into a gasoline approved container before attempting to service the fuel path o-rings.

3. It is necessary to remove the A4005EVR nozzle and A4119EVR safe break valve from the curb hose during the removal and installation of the fuel path o-rings. Use the pipe wrench with flat jaws to loosen the curb hose connector. Unfasten the curb hose connector by hand from the A4005EVR nozzle to avoid cross threading.

IMPORTANT: Drain the fuel from the hanging hardware into a gasoline approved container when removing the A4005EVR nozzle from the curb hose.

A4005EVR Nozzle

A4119EVR Safe Break Valve

4. Use the bench vise to properly secure the A4005EVR nozzle or A4119EVR safe break valve during service.

Installation:

Removing the Existing Fuel Path O-rings

A4005EVR Nozzle

A4119EVR Safe Break Valve

5. Use the scribe tool to remove the existing fuel path o-rings.
6. Clean and remove all existing grease, fuel residue, debris, etc. from within the machined grooves.

IMPORTANT: Properly discard all removed components.

Installing the New Fuel Path O-rings

A4005EVR Nozzle

A4119EVR Safe Break Valve

7. Use the scribe tool to install the new fuel path o-rings. Verify that both o-rings seat properly into the machined grooves.

A4005EVR Nozzle

A4119EVR Safe Break Valve

8. Lightly lubricate the fuel path o-rings using petroleum jelly or other suitable lubricant.

Post-Installation:

9. Before attempting to reinstall the A4005EVR nozzle or A4119EVR safe break valve, please refer to the following installation instructions below.

    - A4005EVR Balance Vapor Recovery Nozzle p/n 570435
    - A4119EVR Coaxial Safe Break Valve p/n 569043

PREVENTIVE MAINTENANCE

1. Weekly inspect the A4005EVR nozzle and A4119EVR safe break valve connections for leaks or fuel residue. Replace with factory authorized service kits.

Part Number	Description
494748EVR	Fuel Path O-ring Kit

PERFORMANCE STANDARDS & SPECIFICATIONS

This component was factory tested to, and met the following specifications:

1. Meets ARB Material Compatibility with Fuel Blends as per Section 3.8 of CP-201.

IMPORTANT: Leave these installation instructions with the station owner and/ or operator.

EMCO® WHEATON RETAIL

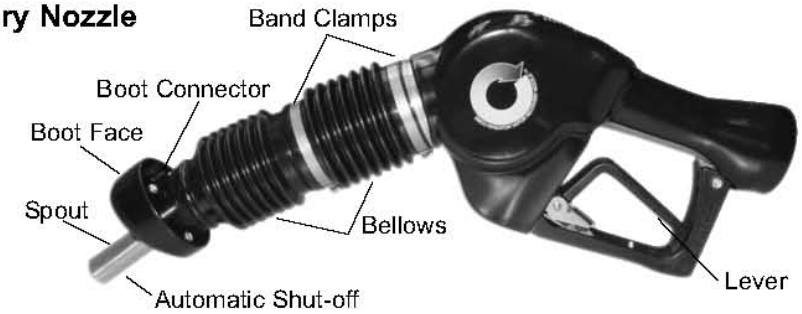
494750EVR

Bellows Band Clamp Kit

Packing List:

(6) Bellows Band Clamps

A4005EVR Balance Vapor Recovery Nozzle



INSTALLATION INSTRUCTIONS

Service Tools Required:

- Flat Head Screw Driver w/ Fine Tip
- Bench Vise w/ 5" Jaw Width
- Bellows Retainer Plate Tool p/n 494712EVR
- Bellows Band Clamp Crimp Tool p/n 494652EVR
- Gasoline Approved Container

CAUTION:

1. Always barricade work area to keep pedestrians and vehicles from accessing the dispenser.
2. Always use a gasoline approved container or test can when performing any type of preventive maintenance.
3. Before attempting to install, remove or service the A4005EVR nozzle, turn off and tag out power to the corresponding dispenser.
4. Before attempting to install, remove or service the A4005EVR nozzle, close the emergency impact valves located inside the base of the dispenser. Relieve the line pressure and standing fuel through the nozzle spout into a gasoline approved container by compressing the bellows and squeezing the lever.

IMPORTANT: Failure to perform cautions 3 and 4 may result in a hazardous gasoline spill, damage to equipment, personal injury and/or death.

Pre-Inspection:

1. Carefully unpack and remove all kitted parts from the shipping container and evaluate for any kind of damage. Verify that no parts are missing from the packing list before proceeding with the installation.

Pre-Installation:

2. Empty all standing fuel within the spout and bellows into a gasoline approved container before attempting to service the bellows band clamps.

3. It is unnecessary to remove the A4005EVR nozzle from the fueling point during the removal and installation of the bellows band clamps. Use the bench vise to properly secure the A4005EVR nozzle during service.

Installation:

Removing the Existing Bellows Band Clamps

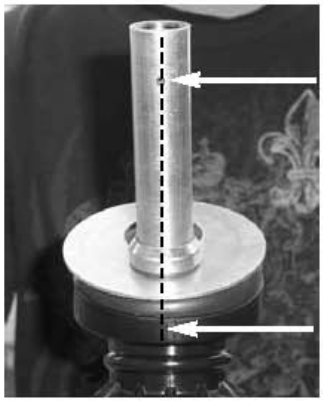
4. Locate the top bellows band clamp. Use the flat head screw driver to dislodge the locking mechanism and remove the band clamp from the bellows.

5. Locate the bottom bellows band clamp. Use the flat head screw driver to dislodge the locking mechanism and remove the band clamp from the bellows.

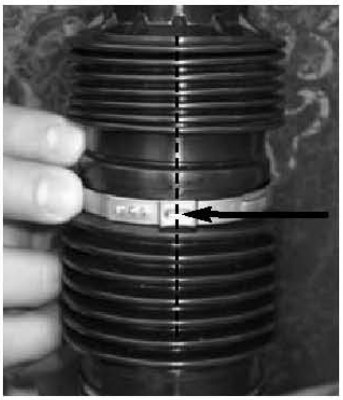
IMPORTANT: Properly discard all removed components.

Installing the New Bellows Band Clamps

6. Use the bellows retainer plate tool p/n 494712EVR to secure and lock the bellows and boot face in place.



7. Slowly rotate the bellows until the parting line of the boot connector is aligned with the spout and automatic shut-off.



8. Install the new top bellows band clamp into the groove of the bellows. Lock and align the crimp portion with the parting line of the bellows.

9. Use the bellows band clamp crimp tool p/n 494652EVR to crimp and secure into place.

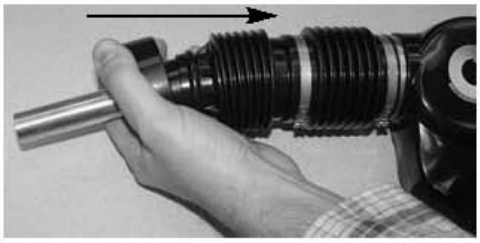
10. Install the new bottom bellows band clamp into the groove of the bellows. Lock and align the crimp portion with the parting line of the bellows.

11. Use the bellows band clamp crimp tool p/n 494652EVR to crimp and secure into place.

12. Remove the bellows retainer plate tool p/n 494712EVR from bellows and spout.

13. Remove the A4005EVR nozzle from the bench vise.

Post-Functional Test:



14. Functional test the insertion interlock of the A4005EVR nozzle by compressing the bellows and then squeezing the lever. The A4005EVR nozzle will not function unless the insertion interlock is properly engaged.

Post-Installation:

15. Place the A4005EVR nozzle back onto the dispenser cradle.

PREVENTIVE MAINTENANCE

1. Weekly inspect the bellows band clamps for damage or if missing. Replace with factory authorized service kits.

Part Number	Description
494750EVR	Bellows Band Clamp Kit

PERFORMANCE STANDARDS & SPECIFICATIONS

This component was factory tested to, and met the following specifications:

1. Meets ARB Material Compatibility with Fuel Blends as per Section 3.8 of CP-201.
2. Meets ARB Capable of Refueling Any Vehicle Standards as per Section 4.7.1 of CP-201.

IMPORTANT: Leave these installation instructions with the station owner and/ or operator.

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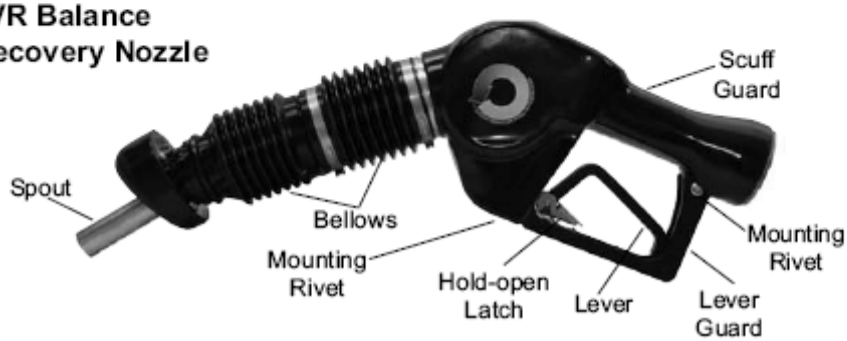
494150EVR
Latch Kit

Packing List:

(1) Latch Assembly
(2) Mounting Rivets
(1) Dust Plug

A4005EVR Balance Vapor Recovery Nozzle



INSTALLATION INSTRUCTIONS

Service Tools Required:

- Pipe Wrench w/ Flat Jaws
- Flat Head Screw Driver w/ Wide Tip
- 1/8" Diameter Punch
- Bench Vise w/ 5" Jaw Width
- Awl w/ ¼"Tip
- Hammer
- 5/8" Diameter Punch
- Gasoline Approved Container
- Lever Guard Rivet Installation Tool p/n 494653EVR
- Needle Nose Pliers

CAUTION:

1. Always barricade work area to keep pedestrians and vehicles from accessing the dispenser.
2. Always use a gasoline approved container or test can when performing any type of preventive maintenance.
3. Before attempting to install, remove or service the A4005EVR nozzle, turn off and tag out power to the corresponding dispenser.
4. Before attempting to install, remove or service the A4005EVR nozzle, close the emergency impact valves located inside the base of the dispenser. Relieve the line pressure and standing fuel through the nozzle spout into a gasoline approved container by compressing the bellows and squeezing the lever.

IMPORTANT: Failure to perform cautions 3 and 4 may result in a hazardous gasoline spill, damage to equipment, personal injury and/or death.

Pre-Inspection:

1. Carefully unpack and remove all kitted parts from the shipping container and evaluate for any kind of damage. Verify that no parts are missing from the packing list before proceeding with the installation.

Pre-Installation:

2. Empty all standing fuel within the spout and bellows into a gasoline approved container before attempting to service the latch.

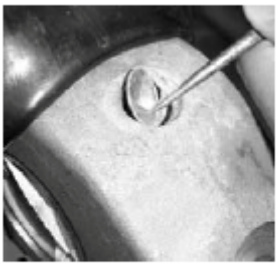
3. It is necessary to remove the A4005EVR nozzle from the curb hose during the removal and installation of the latch. Use the pipe wrench with flat jaws to loosen the curb hose connector. Unfasten the curb hose connector by hand from the A4005EVR nozzle to avoid cross threading.

IMPORTANT: Drain the fuel from the hanging hardware into a gasoline approved container when removing the A4005EVR nozzle from the curb hose.

Installation:

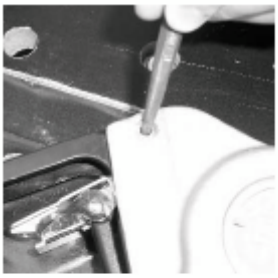
Removing the Existing Latch

4. Pull the rear end of the scuff guard over the nozzle body unit the dust plug is visible. Use the bench vise to properly secure the A4005EVR nozzle during service.

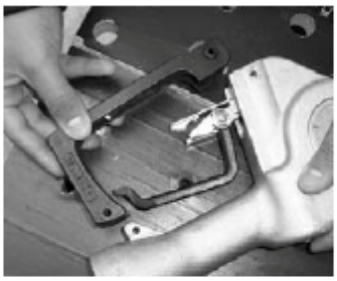


5. Use the awl and hammer to lightly tap and remove the dust plug.

6. Use the flat head screw driver to loosen the brass screw. Use the needle nose pliers to remove the brass screw and spring from the nozzle body.



7. Remove the A4005EVR nozzle from the bench vise and place on a flat surface. Use the 1/8" diameter punch and hammer to lightly tap and remove both mounting rivets located on the lever guard.

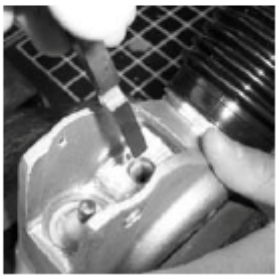


8. Remove the lever guard from the nozzle body.

9. Remove the existing latch by slowly pulling upward until the square stem clears the nozzle body.

IMPORTANT: Properly discard the dust plug and mounting rivets and latch.

Installing the New Latch



10. Locate the notch on the square stem and align to the right of the nozzle body. Install the new latch by pressing downward on the square stem.

11. Remove the A4005EVR nozzle from the bench vise and turn top side up. Install the existing spring around the square stem. Fasten the existing brass screw by hand onto the top of the square stem to avoid cross threading. Use the flat head screw driver to tighten.

12. Install the new dust plug. Use the 5/8 punch and hammer to light tap into place.

13. Remove the A4005EVR nozzle from the bench vise and place on flat surface. Install the existing lever guard onto the nozzle body using the new mounting rivets. Use the lever guard rivet installation tool p/n 494653EVR and hammer to properly flare the ends of the mounting rivets.

14. Install the existing scuff guard by pulling over the nozzle body.

Post-Installation:

15. Before attempting to reinstall the A4005EVR nozzle, please refer to the A4005EVR Balance Vapor Recovery Nozzle Installation Instructions p/n 570435.

PREVENTIVE MAINTENANCE

1. Weekly inspect the latch for damage or if missing. Replace with factory authorized service kits.

Part Number	Description
494150EVR	Latch Kit

PERFORMANCE STANDARDS & SPECIFICATIONS

This component was factory tested to, and met the following specifications:

1. Meets ARB Material Compatibility with Fuel Blends as per Section 3.8 of CP-201.

IMPORTANT: Leave these installation instructions with the station owner and/ or operator.

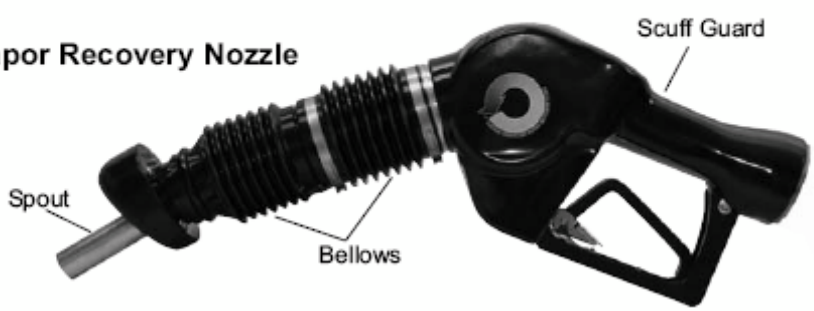
EMCO®
WHEATON RETAIL

A0557EVR
Scuff Guard Kit

Packing List:

(1) Scuff Guard

A4005EVR
Balance Vapor Recovery Nozzle



INSTALLATION INSTRUCTIONS

Service Tools Required:

- Pipe Wrench w/ Flat Jaws
- Gasoline Approved Container
- Utility Knife

CAUTION:

1. Always barricade work area to keep pedestrians and vehicles from accessing the dispenser.
2. Always use a gasoline approved container or test can when performing any type of preventive maintenance.
3. Before attempting to install, remove or service the A4005EVR nozzle, turn off and tag out power to the corresponding dispenser.
4. Before attempting to install, remove or service the A4005EVR nozzle, close the emergency impact valves located inside the base of the dispenser. Relieve the line pressure and standing fuel through the nozzle spout into a gasoline approved container by compressing the bellows and squeezing the lever.

IMPORTANT: Failure to perform cautions 3 and 4 may result in a hazardous gasoline spill, damage to equipment, personal injury and/or death.

Pre-Inspection:

1. Carefully unpack and remove all kitted parts from the shipping container and evaluate for any kind of damage. Verify that no parts are missing from the packing list before proceeding with the installation.

Pre-Installation:

2. Empty all standing fuel within the spout and bellows into a gasoline approved container before attempting to service the scuff guard.

3. It is necessary to remove the A4005EVR nozzle from the curb hose during the removal and installation of the scuff guard. Use the pipe wrench with flat jaws to loosen the curb hose connector. Unfasten the curb hose connector by hand from the A4005EVR nozzle to avoid cross threading.

IMPORTANT: Drain the fuel from the hanging hardware into a gasoline approved container when removing the A4005EVR nozzle from the curb hose.

Installation:

Removing the Existing Scuff Guard

4. Place the A4005EVR nozzle on a flat surface. Use the utility knife to make the first cut along the front side of the scuff guard.

5. Use the utility knife to make the second cut along the rear side of the scuff guard.

6. Remove the scuff guard from the nozzle body.

IMPORTANT: Properly discard all removed components.

Installing the New Scuff Guard

7. Before attempting to install the new scuff guard. Soften the scuff guard by soaking in hot water and soap.

8. Install the new scuff guard by sliding over the spout and bellows. Pull the scuff guard completely over the nozzle body.

Post-Installation:

9. Before attempting to reinstall the A4005EVR nozzle, please refer to the A4005EVR Balance Vapor Recovery Nozzle Installation Instructions p/n 570435.

PREVENTIVE MAINTENANCE

1. Weekly inspect the scuff guard for the Emco Wheaton Retail manufacturer's logo. Replace with factory authorized service kits.

Part Number	Description
A0557EVR	Scuff Guard Kit

PERFORMANCE STANDARDS & SPECIFICATIONS

This component was factory tested to, and met the following specifications:

1. Meets ARB Material Compatibility with Fuel Blends as per Section 3.8 of CP-201.

IMPORTANT: Leave these installation instructions with the station owner and/ or operator.

Emco Wheaton Retail Corp.
2300 Industrial Park Dr. • Wilson, NC 27893
252-243-0150 • 252-243-4759 (fax)
619-421-1743 (Technical Services, California)

p/n 570542
Rev. C, 10/10

Maxxim Premier Installation Instructions

1 Install the correct hose length and other hanging hardware on the dispenser. This will include whip hose, breakaway, long hose, and nozzle. The maximum length of the hose assembly shall not exceed eighteen (18) feet. Lengths greater than eighteen (18) feet are permitted if acceptable to authorities having jurisdiction.

a) When installing Maxxim Premier Plus, the end of the hose stamped “NOZZLE END” must be attached to the nozzle.

b) If a hose retractor is required, use retractor clamp; part # 532-365-105-000-00.

c) Do not use high retractor tension. High tension is difficult for customers to handle and it reduces the life of the hose. Retractor tension above 12 pounds will void the warranty.

d) Do not mix Maxxim Premier Plus outer or inner hose with components from other manufacturer’s stage II hoses. The mixed assembly may not be grounded and could cause a serious fire hazard.

e) Make sure that the long hose does not touch the pavement or the top of the island when the nozzle hangs on the dispenser hook.

2 Tighten the swivel nut to 50 ft. lbs. torque using an open end torque wrench. Do not use a pipe wrench because the teeth on the wrench will damage the fitting. This connection is sealed by an o-ring. Do not apply thread sealant.

- Alternate method: If a torque wrench is not available, turn the swivel nut by hand until snug and the o-ring is seated. Then use a wrench to tighten the swivel nut ¼ turn past snug. This connection has straight threads and must be cinched tight to prevent the threads from unscrewing in service.

One source for an open end torque wrench is Belknap Tools, both part #’s are needed:

- VB-0608005 open end wrench head
- VB-100ST-I wrench handle preset at the factory to 50 ft lbs

After extended service, the swivel nut o-ring can be lubricated with front end bearing grease or Parker O-Lube

3 Function Test - Measure the resistance between the dispenser outlet casting and the tip of the nozzle spout. Use an electronic multimeter set on the high range of the ohmmeter function. Resistance should not indicate more than 70,000 ohms per foot of hose. Example: The measured resistance for a 12-foot hose must not exceed 840,000 ohms (840 kilohms)

Maxxim Premier Plus Venturi Pick-up Length Instructions

It is the responsibility of the installer to determine the optimum venturi pick-up length and verify that hoses installed on a dispenser have the optimum pick-up location. Failure to properly size the pick-up location will reduce the effectiveness of the venturi in removing liquid blockage from the outer vapor hose and may result in failure of the liquid removal test.

When the Maxxim Premier Plus hose is assembled in the factory, a mark is placed on the outer hose to locate the venturi pick-up location. This mark will help the installer determine whether the hose has the optimum pick-up location for the installation.

4 Hold the nozzle straight out from the dispenser so that the end of the compressed bellows (simulate when the bellows is compressed in the filler neck of a car) is 48 inches away from the front face of the dispenser (see Figure 1). Hold the nozzle so that the tip of the spout is 30 inches above the pavement and the spout is at a 30° angle above the horizontal plane (see Figure 1). When the nozzle and hose are held in the position shown in Figure 1, the mark on the outer vapor hose should be within 3 inches of the bottom of the loop (see Figure 1).

5 If the mark on the hose is not within the tolerance shown in Figure 1, the installer may:

- Adjust the hose retractor (if installed);
- Install a different length whip hose; or
- Install a different long hose with the optimum venturi pick-up location. To determine the optimum venturi pick-up location (e.g., venturi pick-up tube length), conduct the following:

a) Hold the nozzle and hose in the position shown in Figure 1;
b) Measure the length from the back end of the nozzle (where the hose screws into the nozzle) to the bottom of the loop in the hose. This length is the optimum "pick-up" length for the Maxxim Premier Plus balance venturi hose.
c) Contact your local distributor to obtain a Maxxim Premier Plus hose with the optimum venturi pick-up tube length.

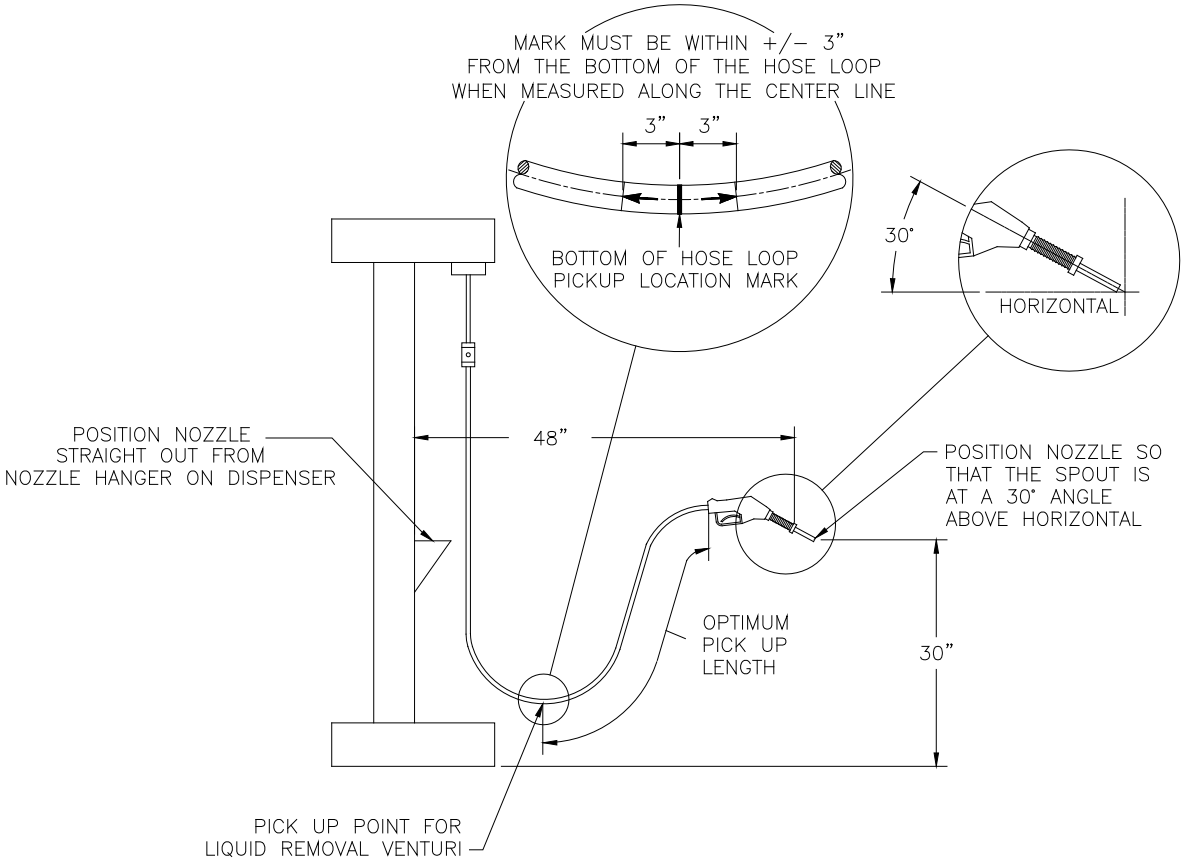


FIGURE 1

Note: It is the responsibility of the installer to be familiar with the current requirements of state, federal, local codes and air district rules and regulations for installation of gasoline dispensing equipment.
It is also the responsibility of the installer to be aware of all the necessary safety precautions and site safety requirements to assure a safe and trouble free installation.The warranty tag provided with the component is to remain with component, and must be provided to the end-user.

Questions on installation should be directed to your local distributor or Veyance Customer Service.

EMCO®
WHEATON RETAIL

A4119EVR
Coaxial Safe Break Valve

Permanent ID Information:

INSTALLATION INSTRUCTIONS

Service Tools Required:

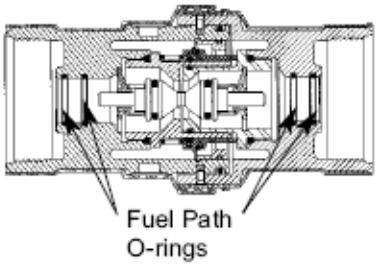
- 1 7/8" Crows Foot
- Gasoline Approved Container
- Petroleum Jelly or Other Suitable Lubricant
- Torque Wrench w/ 50ft-lbs Setting
- Pipe Wrench w/ Flat Jaws

CAUTION:

1. Always barricade work area to keep pedestrians and vehicles from accessing the dispenser.
2. Always use a gasoline approved container or test can when performing any type of preventive maintenance.
3. Before attempting to install, remove or service the A4119EVR safe break valve, turn off and tag out power to the corresponding dispenser.
4. Before attempting to install, remove or service the A4119EVR safe break valve, close the emergency impact valves located inside the base of the dispenser. Relieve the line pressure and standing fuel through the nozzle spout into a gasoline approved container by compressing the bellows and squeezing the lever.
5. If a hose retractor is used, the A4119EVR safe break valve must be attached on the nozzle side of the retractor clamp.

IMPORTANT: Failure to perform cautions 3 and 4 may result in a hazardous gasoline spill, damage to equipment, personal injury and/ or death.

Pre-Inspection:



1. Carefully unpack and remove the A4119EVR safe break valve from the shipping container and evaluate for any kind of damage.

2. Verify the fuel path o-rings located on both ends of the A4119EVR safe break valve. All o-rings must be properly secured inside the factory machined grooves.

Pre-Installation:

3. Lightly lubricate the fuel path o-rings using petroleum jelly or other suitable lubricant.

4. Before attempting to install the A4119EVR safe break valve onto the whip hose, verify the word “NOZZLE”, which is printed on the scuff guard of the safe break valve, is on the opposite end. Verify the vapor path o-ring is properly secured onto the connector, and in good working condition. Lightly lubricate the o-ring using petroleum jelly or other suitable lubricant.

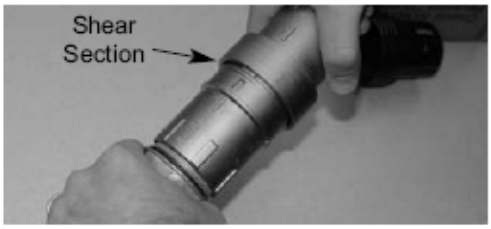
5. Before attempting to install the A4119EVR safe break valve onto the curb hose, verify the vapor path o-ring is properly secured onto the connector, and in good working condition. Lightly lubricate the o-ring using petroleum jelly or other suitable lubricant.

IMPORTANT: Do not use pipe thread sealant compound or Teflon tape when installing the A4119EVR safe break valve. Failure to comply will void warranty.

Installation:

IMPORTANT: If this is a new facility installation, the fueling point must be flushed into a gasoline approved container before installing the A4119EVR safe break valve. Failure to perform this procedure could result in foreign material becoming lodged inside the safe break valve's fuel path causing a reduction in fuel flow.

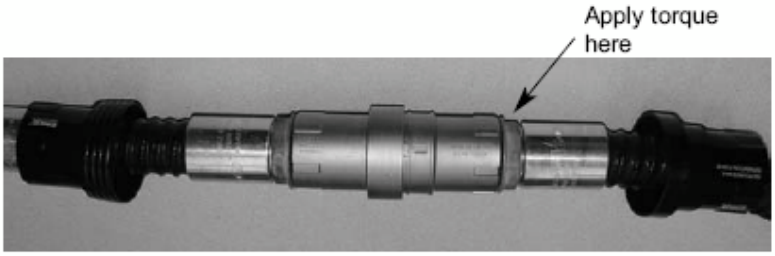
6. Remove the scuff guard by sliding on to the whip hose. Attach the A4119EVR safe break valve onto the whip hose connector. Tighten by hand to avoid cross threading. Take caution to avoid pinching the vapor path o-ring.



IMPORTANT: Never tighten across the shear section of the A4119EVR safe break valve. Failure to comply will result in damage to the safe break valve and void warranty.

7. Using a 1 7/8" crows foot and torque wrench, tighten the whip hose connector to 50 ft-lbs of torque.

8. Remove the scuff guard by sliding on to the curb hose. Attach the A4119EVR safe break valve onto the curb hose connector. Tighten by hand to avoid cross threading. Take caution to avoid pinching the vapor path o-ring.



9. Using a 1 7/8" crows foot and torque wrench, tighten the curb hose connector to 50 ft-lbs of torque.

Post Functional Tests:

10. Carefully purge the trapped air from the fueling point. Begin dispensing by compressing the bellows and then squeezing the lever. Dispense one gallon of fuel into a gasoline approved container.

11. Functional test the automatic shutoff of the A4005EVR nozzle. Begin dispensing by compressing the bellows and then squeezing the lever. Place the hold open latch in "high" clip position to secure the lever. Dispense one gallon of fuel into a gasoline approved container. At the same time, lower the spout tip into the standing fuel until the vent hole is completely submersed. The main valve of the A4005EVR nozzle will automatically close causing fuel flow to stop.

IMPORTANT: Perform step 11 a minimum of three times to assure the insertion interlock, hold open latch and the automatic shutoff of the A4005EVR nozzle are operating properly.

According to UL requirement 842, the fuel flow rate must be greater than 3 gallons per minute for the automatic shutoff to operate properly. A common problem cause of low flow rates are dirty or clogged dispenser filters.

Post Inspection:

12. Before placing the A4005EVR nozzle onto the dispenser cradle, inspect all hanging hardware connections for potential fuel leaks. Make proper adjustments if necessary.

PREVENTIVE MAINTENANCE

1. Weekly inspect the A4119EVR safe break valve, evaluate for any kind of damage. Damaged components must be replaced with factory authorized service kits.

Part Number	Description
494748EVR	Fuel Path O-ring Kit

2. Weekly inspect all hanging hardware connections for potential fuel leaks.

IMPORTANT: Should a drive-off or incidence of customer abuse occur, follow the initial inspection and function instructions found in the installation section.

PERFORMANCE STANDARDS & SPECIFICATIONS

This component was factory tested to, and met the following specifications:

1. Meets ARB Material Compatibility with Fuel Blends as per Section 3.8 of CP-201.
2. TP-201.2J – Complies with the maximum allowable component pressure drop of 0.04 inches of water column @ 60 CFH.

IMPORTANT: Leave these installation instructions with the station owner and/or operator.

EMCO®
WHEATON RETAIL

494748EVR
Fuel Path O-ring Kit

Packing List:

(2) Fuel Path O-rings

A4005EVR Balance Vapor Recovery Nozzle

A4119EVR Coaxial Safe Break Valve

INSTALLATION INSTRUCTIONS

Service Tools Required:

- Pipe Wrench w/ Flat Jaws
- Bench Vise w/ 5" Jaw Width
- Petroleum Jelly or Other Suitable Lubricant
- Scribe Tool w/ 90 Degree Tip
- Gasoline Approved Container

CAUTION:

1. Always barricade work area to keep pedestrians and vehicles from accessing the dispenser.
2. Always use a gasoline approved container or test can when performing any type of preventive maintenance.
3. Before attempting to install, remove or service the A4005EVR nozzle and A4119EVR safe break valve, turn off and tag out power to the corresponding dispenser.
4. Before attempting to install, remove or service the A4005EVR nozzle and A4119EVR safe break valve, close the emergency impact valves located inside the base of the dispenser. Relieve the line pressure and standing fuel through the nozzle spout into a gasoline approved container by compressing the bellows and squeezing the lever.

IMPORTANT: Failure to perform cautions 3 and 4 may result in a hazardous gasoline spill, damage to equipment, personal injury and/or death.

Pre-Inspection:

1. Carefully unpack and remove all kitted parts from the shipping container and evaluate for any kind of damage. Verify that no parts are missing from the packing list before proceeding with the installation.

Pre-Installation:

2. Empty all standing fuel within the spout and bellows into a gasoline approved container before attempting to service the fuel path o-rings.

3. It is necessary to remove the A4005EVR nozzle and A4119EVR safe break valve from the curb hose during the removal and installation of the fuel path o-rings. Use the pipe wrench with flat jaws to loosen the curb hose connector. Unfasten the curb hose connector by hand from the A4005EVR nozzle to avoid cross threading.

IMPORTANT: Drain the fuel from the hanging hardware into a gasoline approved container when removing the A4005EVR nozzle from the curb hose.

A4005EVR Nozzle

A4119EVR Safe Break Valve

4. Use the bench vise to properly secure the A4005EVR nozzle or A4119EVR safe break valve during service.

Installation:

Removing the Existing Fuel Path O-rings

A4005EVR Nozzle

A4119EVR Safe Break Valve

5. Use the scribe tool to remove the existing fuel path o-rings.
6. Clean and remove all existing grease, fuel residue, debris, etc. from within the machined grooves.

IMPORTANT: Properly discard all removed components.

Installing the New Fuel Path O-rings

A4005EVR Nozzle

A4119EVR Safe Break Valve

7. Use the scribe tool to install the new fuel path o-rings. Verify that both o-rings seat properly into the machined grooves.

A4005EVR Nozzle

A4119EVR Safe Break Valve

8. Lightly lubricate the fuel path o-rings using petroleum jelly or other suitable lubricant.

Post-Installation:

9. Before attempting to reinstall the A4005EVR nozzle or A4119EVR safe break valve, please refer to the following installation instructions below.

    - A4005EVR Balance Vapor Recovery Nozzle p/n 570435
    - A4119EVR Coaxial Safe Break Valve p/n 569043

PREVENTIVE MAINTENANCE

1. Weekly inspect the A4005EVR nozzle and A4119EVR safe break valve connections for leaks or fuel residue. Replace with factory authorized service kits.

Part Number	Description
494748EVR	Fuel Path O-ring Kit

PERFORMANCE STANDARDS & SPECIFICATIONS

This component was factory tested to, and met the following specifications:

1. Meets ARB Material Compatibility with Fuel Blends as per Section 3.8 of CP-201.

IMPORTANT: Leave these installation instructions with the station owner and/ or operator.

HIRT COMBUSTION ENGINEERS, INC.

3659 San Gabriel River Parkway · Pico Rivera, Ca 90660
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Website: www.HirtInc.com

HIRT VCS 100-2 VaporTek®
VAPOR PROCESSOR AND INDICATOR PANEL
FOR USE WITH ASTs

MANUAL OF
INSTALLATION, OPERATION, AND MAINTENANCE

REV. 13:5/2014

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1. INTRODUCTION

This manual contains the operation, installation, interconnection, start-up, and maintenance instructions for the VCS 100-2 VAPORTEK® processor and Indicator Panel. Note, these instructions are written to give the best installation in a sequence easiest for the installer. If there are any instructions in this manual which seem impossible, impractical, or questionable for your installation, call the Hirt Customer Service Department at (562) 692-6970 and ask for information regarding your local Hirt representative. There are some allowable alternatives, but call to be sure, don't guess. Note, this manual should be retained for future reference.

2. SAFETY/WARNINGS

WARNING: Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury, or death. Read instructions thoroughly before installing or servicing this equipment.

WARNING: When gasoline vapor abatement system (i.e. processor) is in operation, temperature inside can exceed 2,000◦F. To prevent burn hazard, do not contact any part of the gasoline vapor abatement system except controls. Do not remove protective covers while gasoline vapor abatement system is in operation.

3. CONTRACTOR REQUIREMENTS

To prevent from voiding the product warranty, all contractors who install, startup, and/or repair the VCS 100-2 VAPORTEK® system must be a Hirt VCS 100-2 certified technician. To attend a VCS 100-2 VAPORTEK® training session, call Hirt Customer Service at (562) 692-6970 or send an email request to HirtVCS@aol.com. Once Hirt training is successfully completed, the technician will receive a wallet size proof of certification card. Technicians should carry the card while on the jobsite. Hirt maintains a list of active certified installers and companies for verification. Contractors should always verify the training and certification requirements with the local Air Quality Management District before beginning installation of CARB EVR systems.

4. HIRT VCS 100-2 VAPORTEK® SYSTEM OVERVIEW

4.1 THEORY OF OPERATION

The processor continuously measures the pressure of the vapor in the ullage of the storage tanks. When that pressure is zero or negative the processor remains de-energized and completely inactive. At any time when the pressure in the storage tank vapor becomes positive, the processor energizes its turbine, which extracts vapor from the storage tanks and sends that vapor into its thermal oxidizer where that vapor is destroyed. The processor continues to extract vapor until the pressure of the vapor is returned to negative, whereupon the processor turns itself off. It remains off unless or until the pressure again becomes positive.

4.2 PROCESSOR MECHANIZATION – HOW THE PROCESSOR OPERATES

The processor is connected to the storage tanks via the tank vapor vents, or another vapor pipe. The processor contains a vacuum sensor/switch, turbine, spark igniter, pilot, flame safeguard, vapor valve, and a thermal oxidizer.

When the vacuum sensor/switch measures that the pressure in the storage tank is negative or zero, it remains open, thus not energizing the processor. In this condition the processor is inert and has zero effect on the remainder of the dispensing facility or its Stage I/II vapor recovery systems.

When the vacuum sensor/switch measures that the pressure of the vapor in the storage tanks is positive, the switch closes energizing the turbine and activating the flame safeguard. The flame safeguard generates a spark at the pilot tip (i.e. spark igniter). The vapor is forced by the turbine from the storage tanks into the pilot and hence into the spark igniter. Only ignition of the pilot can cause the flame safeguard’s relay to close*. Only when pilot ignition is present and the flame safeguard relay is closed does the vapor valve open admitting vapor to the thermal oxidizer. Note that if the pilot does not ignite, the main vapor valve does not open, thus unprocessed vapor from the thermal oxidizer cannot be vented to the atmosphere. In the thermal oxidizer the vapor is converted into CO_2 and H_2O and then vented to the atmosphere.

*This electrical interlock, built into the flame safeguard, is required by the California State Fire Marshal, ETL, American Gas Association specification 1-97, and ANSI Z21.20

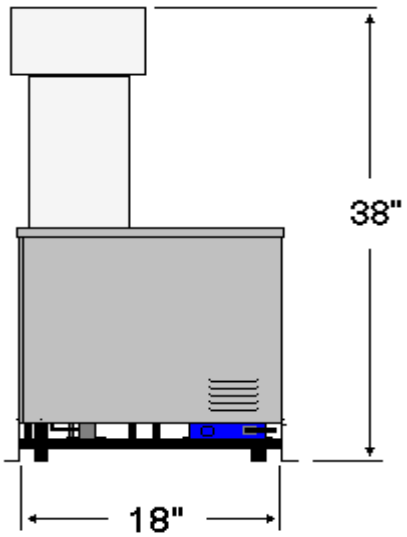
4.3 INDICATOR PANEL FUNCTION

For both the ISD equipped and non-ISD versions, the processors' electrical power source comes thru an Indicator Panel. The panel allows the station operator to determine whether or not the processor is operating properly. The panel includes a POWER switch with an integral POWER (green) lamp, a PROCESSING (green) lamp, and a MALFUNCTION (red) lamp. See Indicator Panel Face sketch at the bottom of page 7.

During normal operation the POWER switch is on, the POWER lamp is on, the PROCESSING lamp is lit intermittently, and the MALFUNCTION lamp is extinguished. The PROCESSING lamp is wired so it will light when thermal oxidation is occurring.

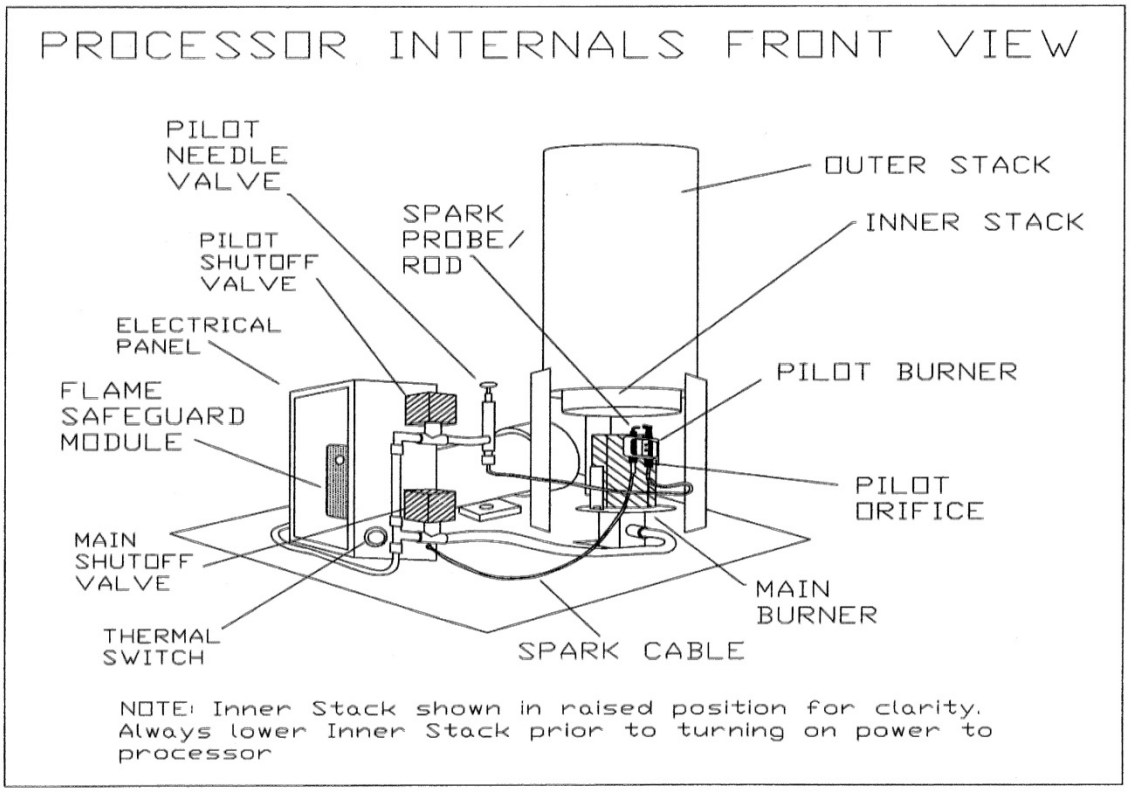
When a malfunction occurs the MALFUNCTION lamp will be lit. At this point the PROCESSING lamp may be off, lit intermittently, or lit continuously. The MALFUNCTION lamp is wired to the vacuum sensor/switch and a timing module. If the AST pressure is positive for at least 1 hour, then the vacuum sensor/switch will be closed and the timing module will light the MALFUNCTION lamp. The MALFUNCTION lamp will extinguish after the malfunction is corrected, and the processor has restored the UST ullage to a nominal –0.25" w.c.

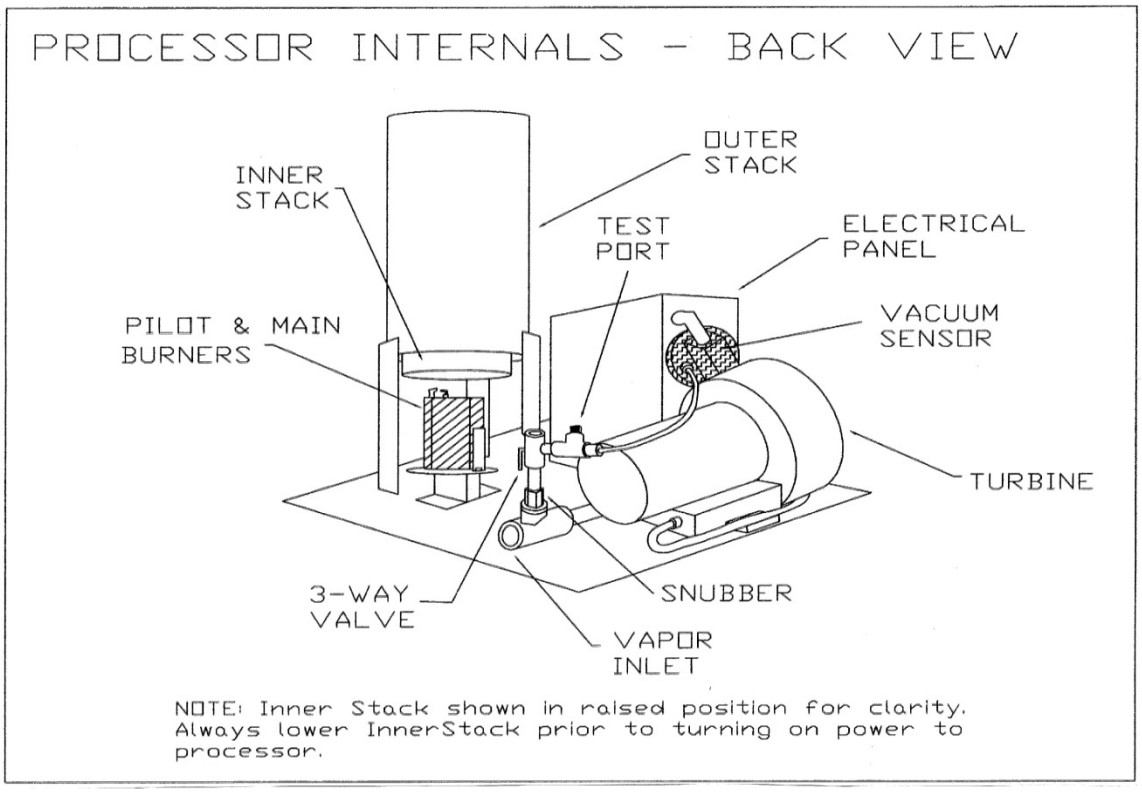
4.4 PROCESSOR: Dimensions, Weight, and Specifications



MODEL: VCS 100-2 VAPORTEK®
SERVICE: Outdoor, non hazardous area
ELECTRICAL: 120 VAC, 3 Ampere, intermittent
VAPOR PIPE CONNECTION: 3/4" NPT
WEIGHT: 80 lbs.
OVERALL DIMENSIONS: 18" wide X 18" deep x 38" high (without legs)

4.5. Processor Components





5. INSTALLATION OF PROCESSOR

5.1 PRE-INSTALLATION SITE REQUIREMENTS

Selection of processor location should be based on the following requirements and considerations:

5.1.1 Non-Hazardous area.

5.1.2 A minimum horizontal distance of 20 ft. from any fuel transfer point (i.e. nozzles or storage tank drop tubes).

5.1.3 A minimum horizontal distance of 20 ft. from pressure/vacuum valve.

5.1.4 Processor must be located so there is a 2 ft. clearance on all sides for maintenance.

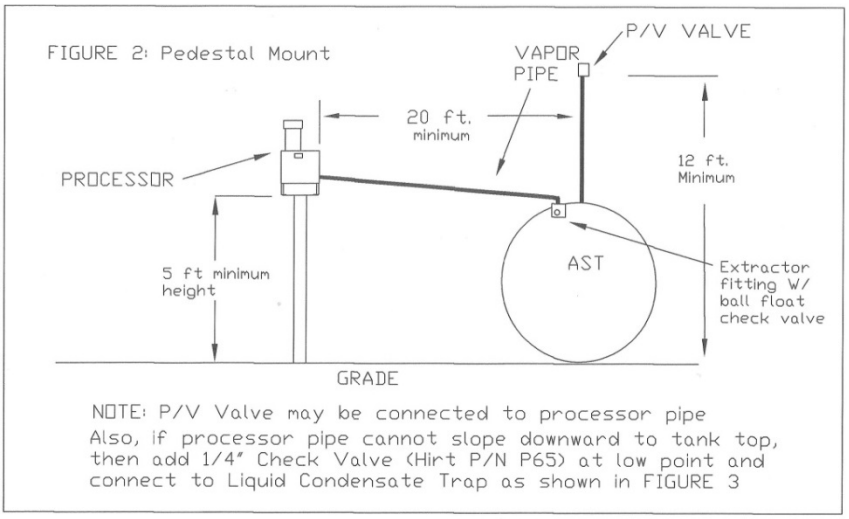
5.1.5 Remote from wheel traffic, foot traffic, and valuable ground level space.

5.1.6 Ease of pipe run to processor from aboveground storage tanks(s). Typically the processor connects to the storage tank vent pipes. However, the processor can be connected to any tank fitting <u>except</u> for the dispenser's vapor return pipe. See section 7.2.2 and FIGURE 12 & 10)

5.1.7 Ease of conduit run to Indicator Panel.

5.l.8 Do not locate processor on property easement. Consult local authority, such as City Hall, to determine width of set back from properly line.

The preferred location for the processor is on the roof of the building to which the vent pipes attach. Many other locations are also practical such as pedestal mount, ground mount, canopy mount, and roof mount on a remote building, and Satellite Mount as noted in FIGURES 2, 3, 4, 5, and 7:



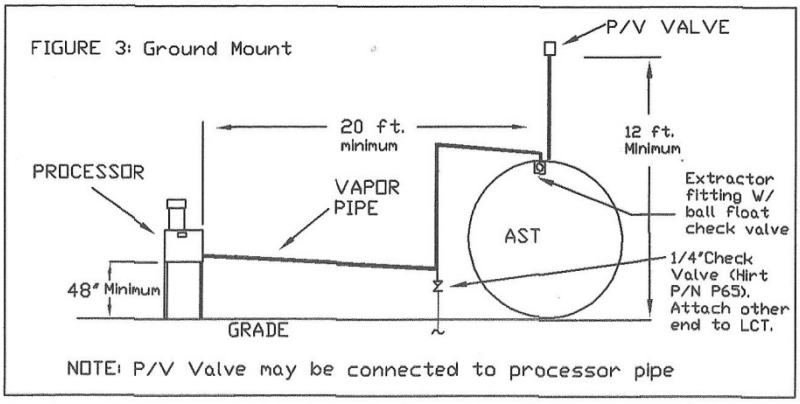


FIGURE 3: Ground Mount
P/V VALVE
20 ft. minimum
12 ft. Minimum
PROCESSOR
VAPOR PIPE
AST
Extractor fitting W/ ball float check valve
1/4"Check Valve (Hirt P/N P65). Attach other end to LCT.
48" Minimum
GRADE
NOTE: P/V Valve may be connected to processor pipe

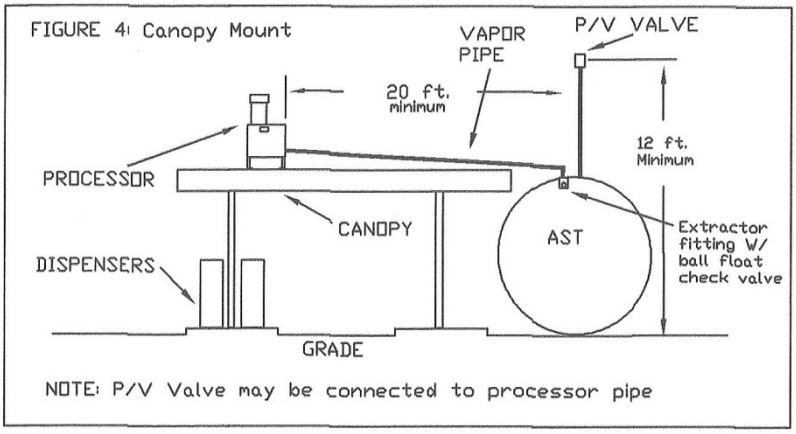


FIGURE 4: Canopy Mount
VAPOR PIPE
P/V VALVE
20 ft. minimum
12 ft. Minimum
PROCESSOR
CANOPY
AST
Extractor fitting W/ ball float check valve
DISPENSERS
GRADE
NOTE: P/V Valve may be connected to processor pipe

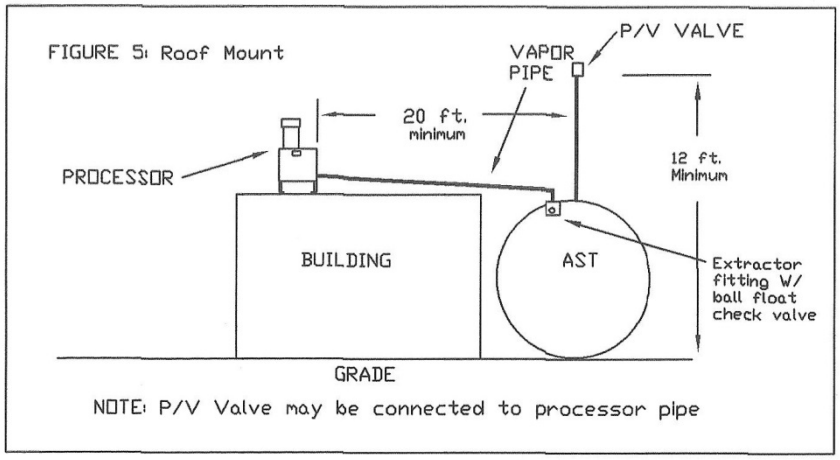


FIGURE 5: Roof Mount
P/V VALVE
VAPOR PIPE
20 ft. minimum
12 ft. Minimum
PROCESSOR
BUILDING
AST
Extractor fitting W/ ball float check valve
GRADE
NOTE: P/V Valve may be connected to processor pipe

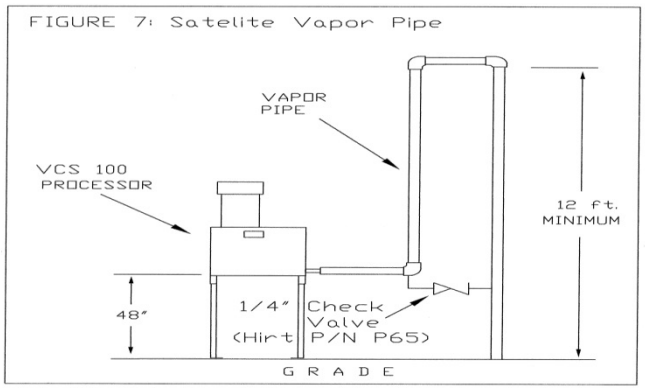
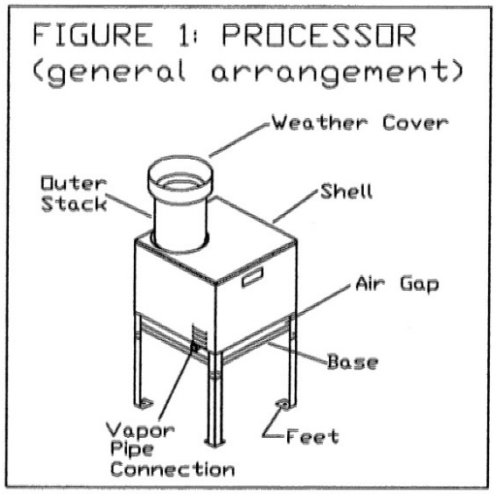


FIGURE 7: Satelite Vapor Pipe
VAPOR PIPE
VCS 100 PROCESSOR
12 ft. MINIMUM
48"
1/4" Check Valve (Hirt P/N P65)
GRADE

5.2 ASSEMBLY OF LEGS TO PROCESSOR

Please refer to FIGURE 1, the processor general arrangement drawing, for the following instructions.



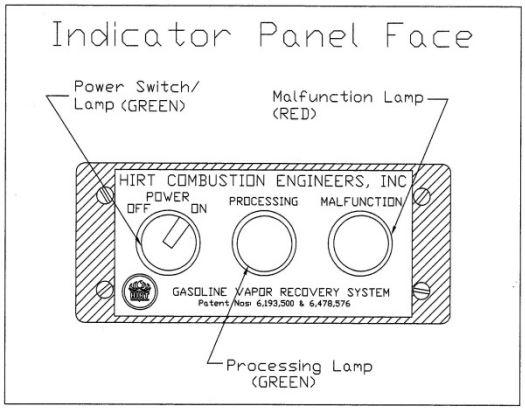
Ground level mount requires the use of the 48″ Legs or pedestal, and canopy or roof mount may require either 48″ or 5″ Legs. If Legs not already purchased, see your local distributor.

5.2.1 Bolt appropriate Legs to Base of processor. Be sure to use the bolts, lock washers, and nuts provided with the Legs. Note that Legs attach behind corner angle brackets of Base, See FIGURE 8 Step 8.9 for details.

5.2.2 Bolt feet to concrete, deck plate, and/or solid non-flammable structure. Note, concrete mount will require the use of (4) 1/4″ DIA. X 3″ RED HEAD wedge anchors (i.e. 2.5″ embedment).

WARNING: Do not block 1.5″ air gap between processor Shell and Base. This gap allows combustion air to reach thermal oxidizer. Also, keep the processor area free and clear from combustibles, keep a minimum clearance of 2 ft. all the way around processor.

6. INSTALLATION OF INDICATOR PANEL



Install the Indicator Panel at a location chosen for the following considerations:

6.1 Indoors

6.2 Access by attendant.

6.3 In view of attendant.

6.4 Ease of conduit run to station's main electrical panel.

6.5 Ease of conduit run to processor location.

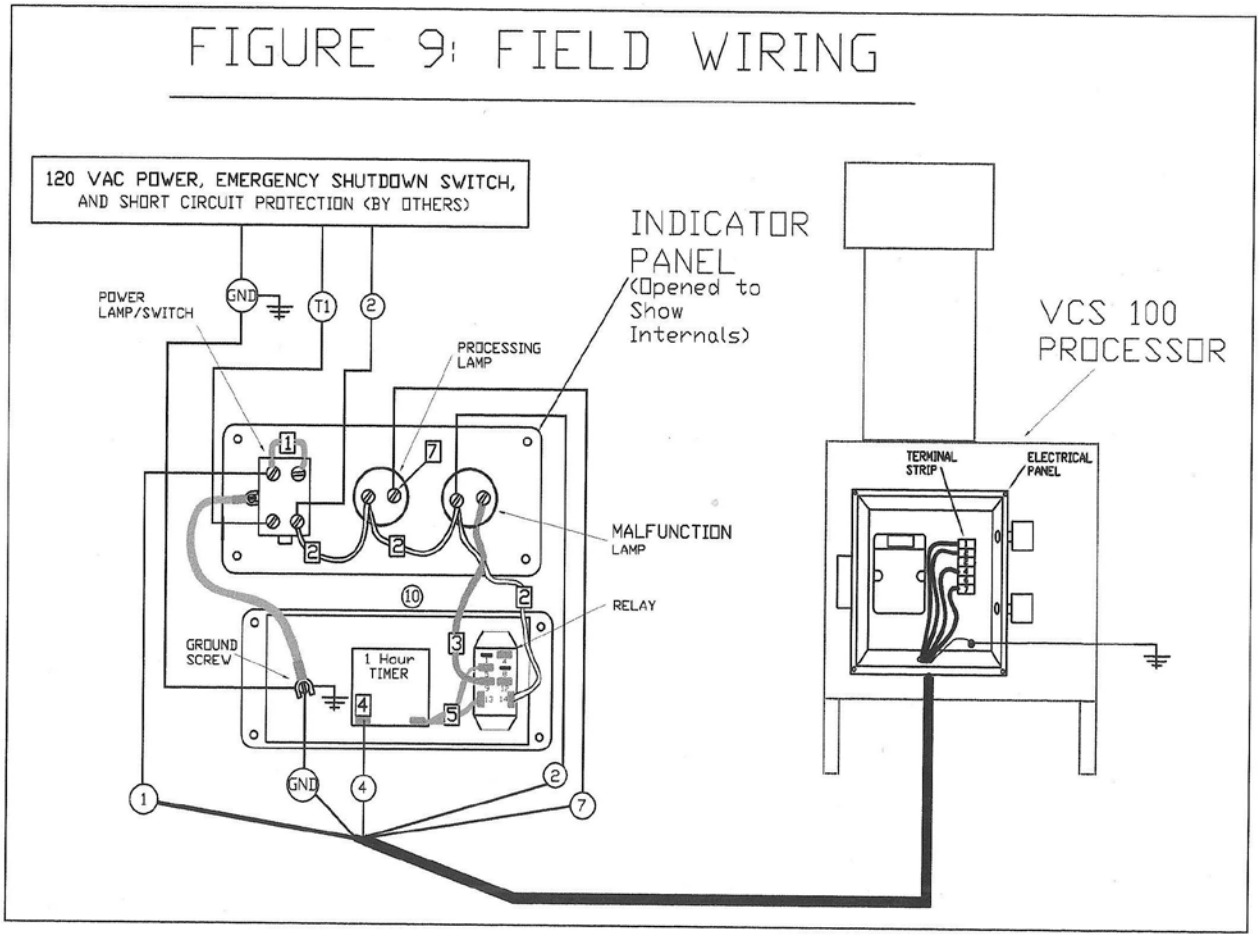
7. CONNECTION OF ELECTRICAL AND VAPOR PIPE

Remove Processor's Weather Cover, Shell, and electrical panel lid prior to performing the following steps.

7.1 ELECTRICAL POWER SUPPLY

7.1.1 Note that the power to the Indicator Panel and processor comes through the station master switch and the emergency pump shutdown switch. See FIGURE 9.

FIGURE 9: FIELD WIRING



7.1.2 Wire size should be per local electrical code for an (8) ampere, 120 VAC load. Be sure to include circuit protection per local code. Also, system must be electrically grounded in accordance with local codes, or in the absence of local codes, with the current edition of the National Electrical Code, ANSI/NFPA70.

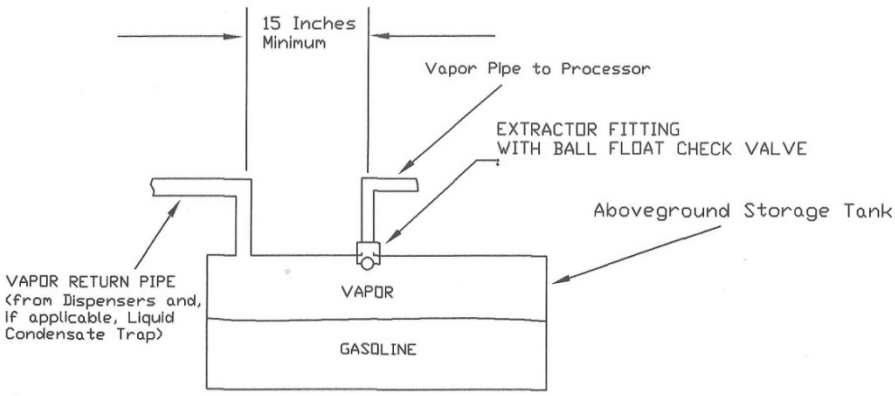
7.1.3 Conduit access to the processor is through the bottom of the processor's electrical panel. Be sure to use a sealed cable fitting approved for use in Class l, Groups C and D, Division 2 areas where the conduit enters the panel.

7.2 GASOLINE VAPOR SUPPLY

7.2.1 A vapor pipe is needed to connect the processor to the ullage of all the gasoline storage tanks. Use 2" NPT galvanized pipe for runs up to 300 ft. Usually the vapor pipe connects to the vent pipes, however, any connection to the ullage of the storage tanks, other than direct connection to the dispenser's vapor return pipe, is acceptable. Processor vapor pipe needs to slope downward 1/8" per foot towards AST top or to where 1/4" Check Valve (Hirt P/N P65)connects. See FIGURES 2,3,4,5, and 10.

FIGURE 10: PIPE SEPARATION FOR PROCESSOR

SPECIAL NOTE:
VAPOR RETURNING FROM DISPENSING NOZZLES CANNOT BE ALLOWED TO TRAVEL DIRECTLY TO PROCESSOR. VAPOR MUST PASS THRU TANK ULLAGE BEFORE REACHING PROCESSOR.

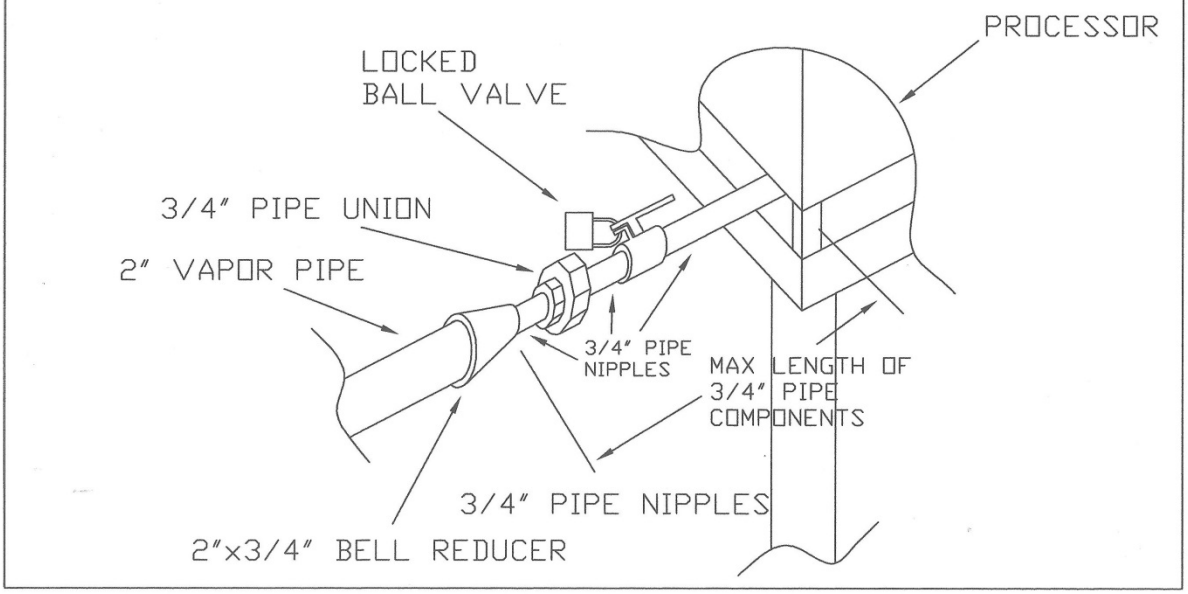


7.2.2 Vapor pipe to processor must connect to tank top at a fitting at least 15" remote from Vapor Return piping. Be sure to put a pipe support close to the processor to prevent placing undue stress on the Turbine. Vapor Return Pipe from dispensers must slope at least 1/8" per foot, but a slope of 1/4" per foot is recommended.

7.2.3 Vapor pipe configuration must prevent liquid gasoline from reaching processor. Vapor pipe to processor must have ball float valve inside extractor fitting to prevent liquid product from reaching processor. See Figure 10.

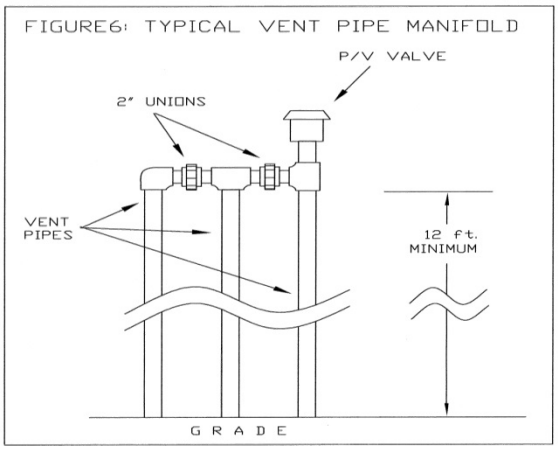
7.2.4 Vapor pipe connection at the processor is with (3) 3/4″ NPT nipples, (1) 3/4″ NPT lockable ball valve, (1) 3/4″ NPT union, and (1) 3/4″ NPT to 2″ NPT bell reducer. The ball valve is installed in the vapor pipe to the processor for maintenance and repair. The ball valve is to be left in the locked open position (open to AST ullage) during normal operation. Failure to leave the valve in an open position may result in a processor malfunction. Note, use no more than a 12″ length of 3/4″ piping components. See FIGURE 12 for details.

FIGURE 12: TYPICAL PIPING CONNECTION TO PROCESSOR



CAUTION: <u>Hold processor internal pipe train with backing wrench to prevent twisting pipe train while connecting vapor piping.</u>

7.2.5 If the ullage of the tanks is not already interconnected, then manifold the vent pipes together with 2″ galvanized pipe at a minimum of 12 ft. above grade. See FIGURE 6 on next page. Note that at least (1) P/V Valve must remain connected to the manifold.



8. START-UP

If all instructions thus far have been followed, the VCS 100-2 VAPORTEK® system should start itself and run automatically. Proceed with the following steps:

8.1 Check to see that nozzles are on their hangers and vapor hoses are connected. Check also to see that gasoline storage tank fittings (fill caps, dry breaks, drop tubes, drain valves, etc.) are seated and sealing.

8.2 At the Indicator Panel, turn the POWER switch ON. The green lamp on the switch should light, and the processor should have electrical power now. The green PROCESSING lamp will be lit intermittently (only when the processor is energized), and the red MALFUNCTION lamp should remain extinguished.

WARNING: The processor (pilot and main burner) is automatic. It will cycle its thermal oxidizer ON if vacuum diminishes in the vapor spaces and OFF if there is sufficient vacuum. Therefore use caution when working close to the thermal oxidizer. It may come ON without notice. A mirror is recommended for looking down the stack.

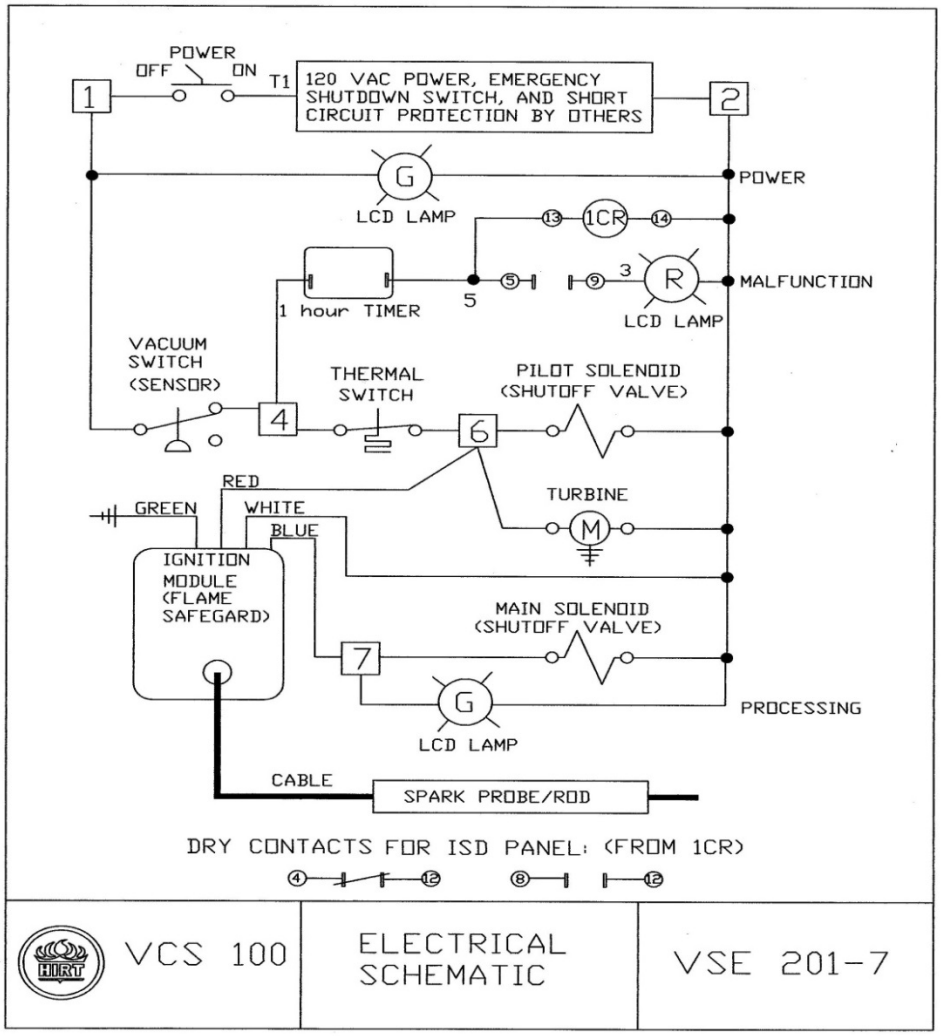
8.3 Check the pressure in storage tanks.

8.3.1 If AST ullage pressure is negative (vacuum), then proceed with step 8.6.

8.3.2 If the storage tank pressure is positive, check to see that turbine is running and either there is a flame at pilot burner tip or a spark. If not, reset thermal switch inside processor’s electrical panel, by depressing (red) pushbutton, see Section 4.5 Processor Components FRONT VIEW. Turbine and spark should come on.

8.4 Within 1 hour, the processor pilot and main burner stages should ignite. Once a vacuum of at least a nominal -0.25″ w.c. is generated, the processor should shutoff. This indicates that the processor is completely functional and controlling itself automatically. If so, go to step 8.8. If the stages don't ignite within 1 hour, or if your work schedule is such that waiting 1 hour is inconvenient, then continue with the following step 8.5.

8.5 The turbine in the processor should be running and the igniter/sensor probe sparking but the pilot will not be ignited. Failure of the pilot to ignite is probably because the station's vapor piping is full of air. To purge this air and replace it with vapor, use 2 short pieces of wire and jump the circuit from terminal [1] to [6] and [6] to [7] at the terminal strip inside the electrical panel inside the processor.



Note on the ELECTRICAL SCHEMATIC that a [1] to [6] jumper energizes the turbine, ignition module, and pilot solenoid. A [6] to [7] jumper energizes the main solenoid.

As soon as the air is purged from the vapor piping, the pilot and main stages will both ignite. As soon as pilot and main ignite, the 2 jumpers must be removed. If so, go to step 8.8.

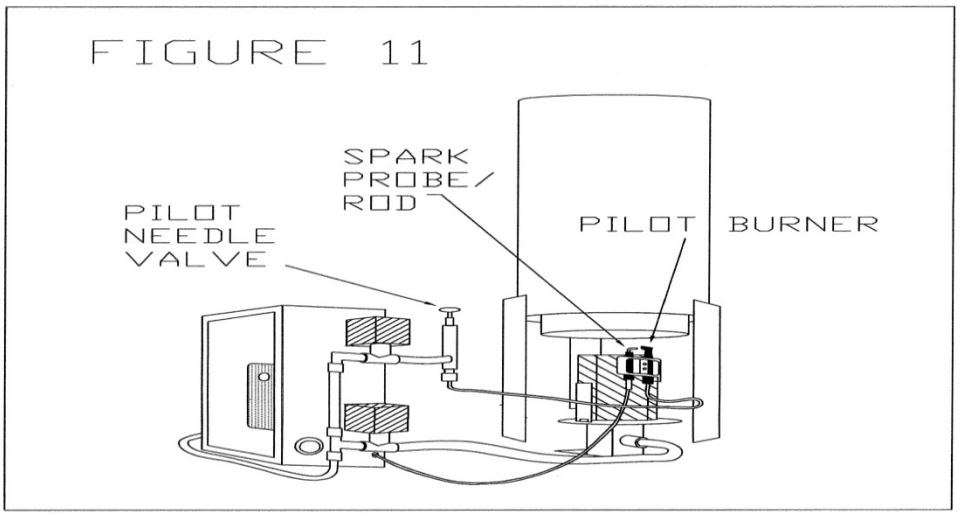
If the stages do not ignite after 15 minutes, go to step 8.7.

8.6 The processor will not turn on if the vacuum sensor/switch is satisfied. Therefore, any air in the vapor piping will need to be purged so the processor stages can ignite when storage tank vacuum decays. To purge this air and replace it with vapor, use 2 short pieces of wire and jump the circuit from Terminal [1] to [6] and [6] to [7] at the terminal strip inside the electrical panel inside the processor. Note on the ELECTRICAL SCHEMATIC that a [1] to [6] jumper energizes the turbine, igniter, and pilot solenoid. A [6] to [7] jumper energizes the main solenoid. As soon as the air is purged from the vapor piping, the pilot and main stages will both ignite. As soon as pilot and main ignite, the 2 jumpers must be removed. If so, go to step 8.8. If the stages do not ignite after 15 minutes go to step 8.7.

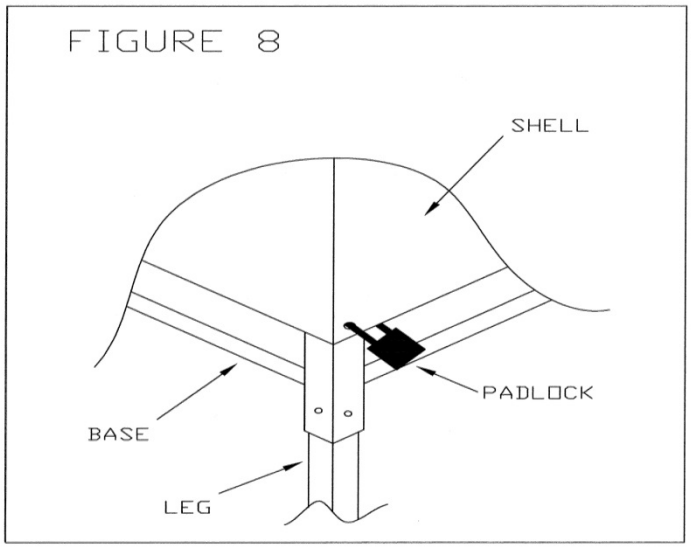
8.7 If the pilot and main do not ignite after the jumpers have been connected for 15 minutes, it is probably because there is an air leak in the vapor piping and air is entering as fast as it is being purged.

First remove the jumper wires. To find leak(s), conduct ARB test procedure TP-206.3 and review Exhibit 4 (Items to consider when conducting TP-206.3). Check the pipe fittings, vent riser manifold, P/V valve, storage tank fill tube caps, dry break gaskets and cover cap gaskets, hoses, nozzles, and vapor valves – any place where air could be entering the vapor. Correct leaks and then go back to step 8.3.

8.8 Check setting of Pilot Needle Valve adjustment. The valve is used to adjust the <u>length</u> of the (2) tongues of flame at the pilot burner. The ideal pilot flames are approximately 1″ long, blue in color, with yellow tips. One flame tongue licks the Spark Probe/Rod. The factory setting for the Pilot Needle Valve is 2 1/4 turns open. A small adjustment may be necessary to achieve the ideal flame length. If required, adjust the black knob on the Needle Valve more open or closed until ideal flame setting is achieved. See FIGURE 11.



8.9 Start-up is now complete. Turn off power to processor. Replace lid on electrical panels, Shell, and Weather Cover. If desired, the station owner can add padlocks to prevent tampering, see FIGURE 8 below. Ensure that the 3/4" ball valve at the processor inlet is in the locked open position (opened to AST ullage). Turn on power to processor. The processor is now in normal, automatic mode. To complete the installation the Hirt certified technician needs to complete the Product Warranty Card and give to station owner or operator.



9. MAINTENANCE INSTRUCTIONS

The VCS 100-2 VAPORTEK® vapor processor has only one major moving part, the Turbine. The Turbine and other internal components in the processor need no adjustments after installation and start up. The vapor processor must be inspected and tested annually. The Hirt VCS 100-2 Vaportek® annual inspection checklist (reference Section 3 of VR-501 IOM) and leave at site with the maintenance records.

10. REPLACEMENT OF COMPONENTS

The Hirt VCS 100-2 VAPORTEK® system components which have failed cannot be repaired. Failed components must be replaced. In order to maintain the product warranty, use only genuine Hirt replacement parts. Each component comes with its own written instructions covering replacement and testing to insure proper installation.

11. PRODUCT WARRANTY

- This product has a 12 month warranty, which becomes effective at time of installation. This warranty applies to the initial purchaser and any subsequent purchasers, during the warranty period.
- This product is warranted to meet all the applicable performance standards and specifications, for the duration of the warranty period.
- Liability under any implied or expressed warranty is limited to replacement of the product.
- HCE is not responsible for improperly installed or misuse of the product.
- HCE cannot be held responsible for damage to the product or its equipment due to acts of nature, vandalism, or neglect.
- HCE products are warranted to be free of defects in material and workmanship.
- In the event of a warranty claim, the purchaser must obtain a Return Authorization Number prior to returning product. All shipping costs are the responsibility of the customer.
- HCE shall repair or replace, at its option, any HCE component which proves to be defective.
- The cost of labor for any field repair, removal, replacement, or diagnosis is not covered by this warranty.
- The liability of HCE is limited solely and specifically to this warranty.
- HCE shall not be liable for any special, collateral, or consequential damages arising from this warranty, the use of this equipment or from any order accepted pursuant thereto.
- The use of parts not authorized by HCE voids the warranty.
- Installation, start-up, service, or repairs of this product by personnel not certified HCE voids the above described warranty.

Liquid Condensate Trap
Installation, Operations, and Maintenance Manual
For Protected ASTs

1. PRE-INSTALLATION NOTES:

Liquid condensate traps (LCT) are permitted as part of the Aboveground Storage Tank (AST) system and are regulated like any other AST system. Automatic evacuations of the LCTs are equipped with a suction line (typically connected to a siphon port on the submersible turbine pump) that automatically evacuates gasoline and returns it to the AST. Installers should familiarize themselves with these requirements to insure compliance. Follow Fire Codes, Aboveground Petroleum Storage Act (APSA) requirements and Code of Federal Regulations Title 40, Part 112, if applicable.

CAUTION: Always obtain approval from the local authorities having jurisdiction before beginning any work. Installation of the Liquid Condensate Trap must comply with (if applicable):

- Air Resources Board Certification Procedure CP-206
- Balance Phase II EVR Executive Order (EO) VR-501
- Veeder-Root Level 1 certification required when installing and wiring LCT liquid sensor to a Veeder-Root tank monitoring system.
- INCON Level 1 certification required when installing and wiring LCT liquid sensor to an INCON tank monitoring system.
- Certified Unified Program Agency (CUPA) – List of CUPAs can be found at (www.calepa.ca.gov/CUPA/Directory/default.aspx);
- Local fire code official;
- Local Air Pollution District;
- International Code Council (ICC) Note: Anyone working on an LCT system must have an ICC certification for AST Service Technician, or AST Installation and Retrofitter;
- NEC;
- NFPA 30 and 30A;
- UL;
- Any other applicable Federal, State and local codes.

2. LIQUID CONDENSATE TRAP PHASE II EVR COMPONENTS

Exhibit 1 of VR-501-A lists components required for a Phase II EVR System with a liquid Condensate Trap. Existing Liquid Condensate Traps may already have some of these components installed. Some of these required components are (reference all Figures):

Riser Adaptor – INCON Model TSP-K2A (or equivalent)
This riser adaptor is to be installed on all risers that are connected to the Liquid Condensate Trap, except for the Liquid Condensate Trap suction tube riser.

In-Line Filter – Swagelok B-4F2-140 or SS-4F2-140 (or equivalent)
The purpose of the in-line filter is to trap debris and rust particles that are traveling inside the suction line to prevent them from blocking the syphon jet valve at the turbine pump. This in-line filter is installed at the syphon inlet of the turbine pump.

Stainless Steel Wired Braided Hose or 1/4" Copper Tubing (rated for use with gasoline)
Connects the suction tube to the turbine pump.

Aluminum or Stainless Steel Insect Screen with Stainless Steel Hose Clamp
This screen can be purchased from almost any hardware store. The specifications are:
18 X 14 mesh for aluminum insect screen and 18 X 18 for stainless steel insect screen. A small section of this screen material is installed over the end of the suction tube inside the Liquid Condensate Trap and secured with a SS hose clamp.

Liquid Sensor Connection to the Tank Monitoring System
Many sites already have existing liquid sensors installed inside the Liquid Condensate Trap. If a liquid sensor does not exist inside the Liquid Condensate Trap then one must be installed.

Any Liquid sensor installed inside the Liquid Condensate Trap must meet the following minimal requirements:

- Provides a visual and audible alarm in case of failure of the evacuation system:
- The audible and visual alarm monitoring system must be installed at a location that is most likely to be heard by the station attendant during normal station operation;
- Set the liquid sensor to the height shown in Figure 5.

Various Pipe Fittings in ¼" and 2" Sizes
For adapting the suction line as required and to add a fuel entry point with a plug or cap to the Liquid Condensate Trap riser.

Optional Equipment:
Secondary Syphon Kit -- Franklin Fueling Systems Part Number 402507930 (or equivalent).
For use when two syphon primers are required for one Submersible Turbine Pump (STP). One to syphon the Liquid Condensate Trap, and one for siphoning two or more tanks of like product grade.

3. PRIOR TO INSTALLING THE EQUIPMENT LISTED IN EXHIBIT 1 OF EO VR-501-A

WARNING Highly flammable vapors or liquids may be present in the environment in which this equipment is installed or serviced. Installing or working on this equipment means working in an environment that presents risks of severe injury or death if instructions and standard industry practices are not followed. Follow all applicable codes governing the installation and servicing of this product and the entire system. Always lock out and tag electrical circuit breakers while installing or servicing this equipment and related equipment. Refer to the *Installation and Owner's Manual* of this equipment and any related equipment for complete installation and safety information.

Prior to installing the Liquid Condensate Trap Equipment listed in Exhibit 1 of EO VR-501-A, you must flush out the Liquid Condensate Trap to remove any dirt or debris that may have accumulated inside the Liquid Condensate Trap.

Installer will need to document the capacity, in gallons, of the Liquid Condensate Trap on an aluminum 'tag' and attach this tag to the suction riser above the Fuel Entry Port. This capacity could be documented using a metal stamp or metal engraving pen, or a waterproof ink marker on the aluminum tag. A vinyl covered steel cable or a 'zip tie' could be used to attach to the riser. Strips of aluminum can be purchased at most hardware stores.

Example LCT Capacity Tag

LCT Capacity – 9.9 Gallons

Flushing the Liquid Condensate Trap and attached Piping:

Flushing out the Liquid Condensate Trap of any debris is very important to avoid blocking the suction tube line, the in-line filter, and the syphon jet at the turbine pump during liquid evacuation. This process must be performed before installing the required Liquid Condensate Trap Equipment list in Exhibit 1 of the EO VR-501-A.

Use appropriate equipment to flush out the Liquid Condensate Trap of any debris. One method used:

a) Disconnect the suction line from suction tube at the suction riser to prevent the turbine pump syphon from sucking any debris into the suction line and syphon jet during the flushing process.

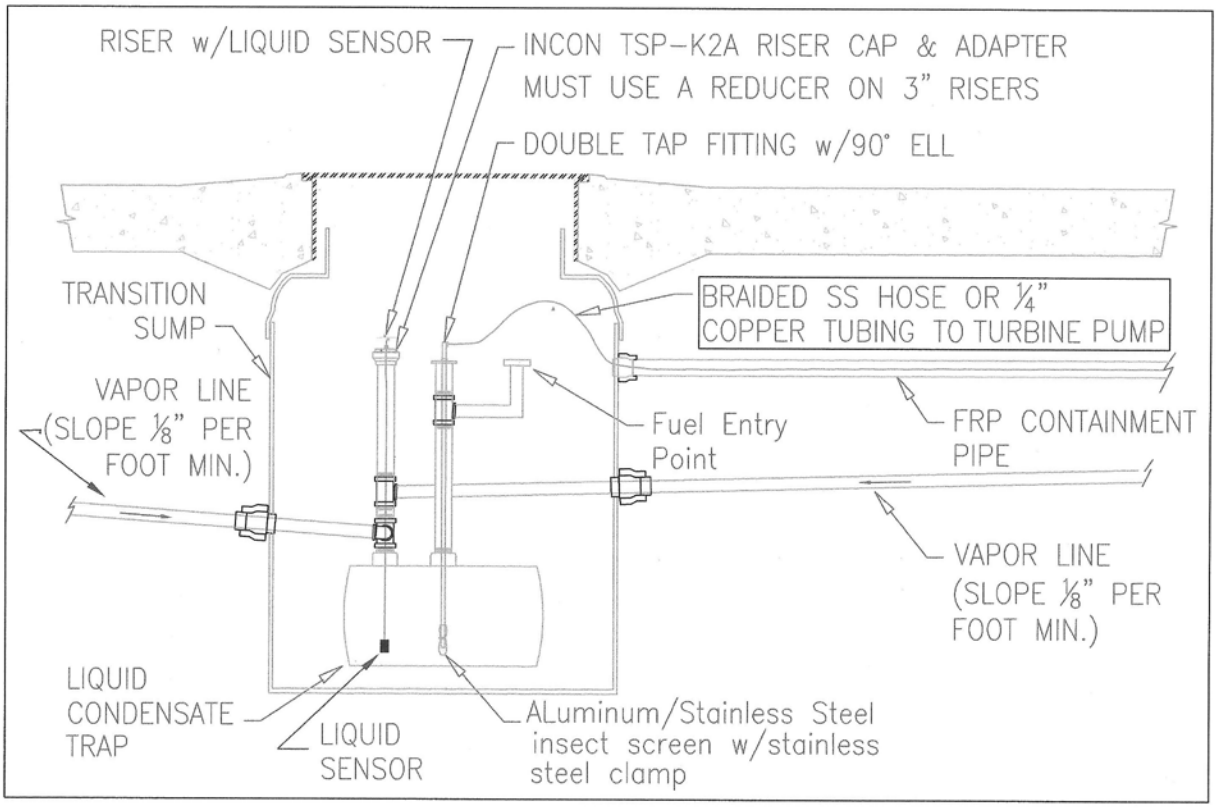
b) Using a hand pump, pump approximately 5 gallons of fresh gasoline into the Liquid Condensate Trap. Using the same hand pump, revere the hoses and pump out the gasoline you just added. Repeat this procedure using fresh clean gasoline each time until the gasoline you are removing is clean and clear. This process may require a number of flushes (may be as many as 20 or more) before the gasoline being removed is clean and clear.

WARNING: Handle gasoline in a safe manner following industry safety practices and all applicable State regulations and local codes.

c) With the suction line disconnected from the Liquid Condensate Trap and disconnected at the turbine syphon port, blow compressed air through the suction line to remove any debris and check for any blockages.

4. INSTALLATION OF THE PHASE II EVR EQUIPMENT LISTED IN EXHIBIT 1 OF EO VR-501-A

Figure 1
Example Layout of a Liquid Condensate Trap Installed in an AST System



4.1 Installation of Swagelok 140 micron In-Line Filter (or equivalent)

Swagelok instructions are used for guidance purposes. Individual manufacturer's installation instructions must be followed.

Swagelok In-Line filter B-4F2-140 Specifications:
Body----------Brass
Connection-----1/4" Male NPT
Pore Size-------140 micron

Apply Teflon tape to the male NPT threads on both ends of the in-line filter. Install The in-line filter with the direction arrow pointing towards the syphon jet port on the Submersible Turbine Pump (STP).

Figure 2
Top View of STP

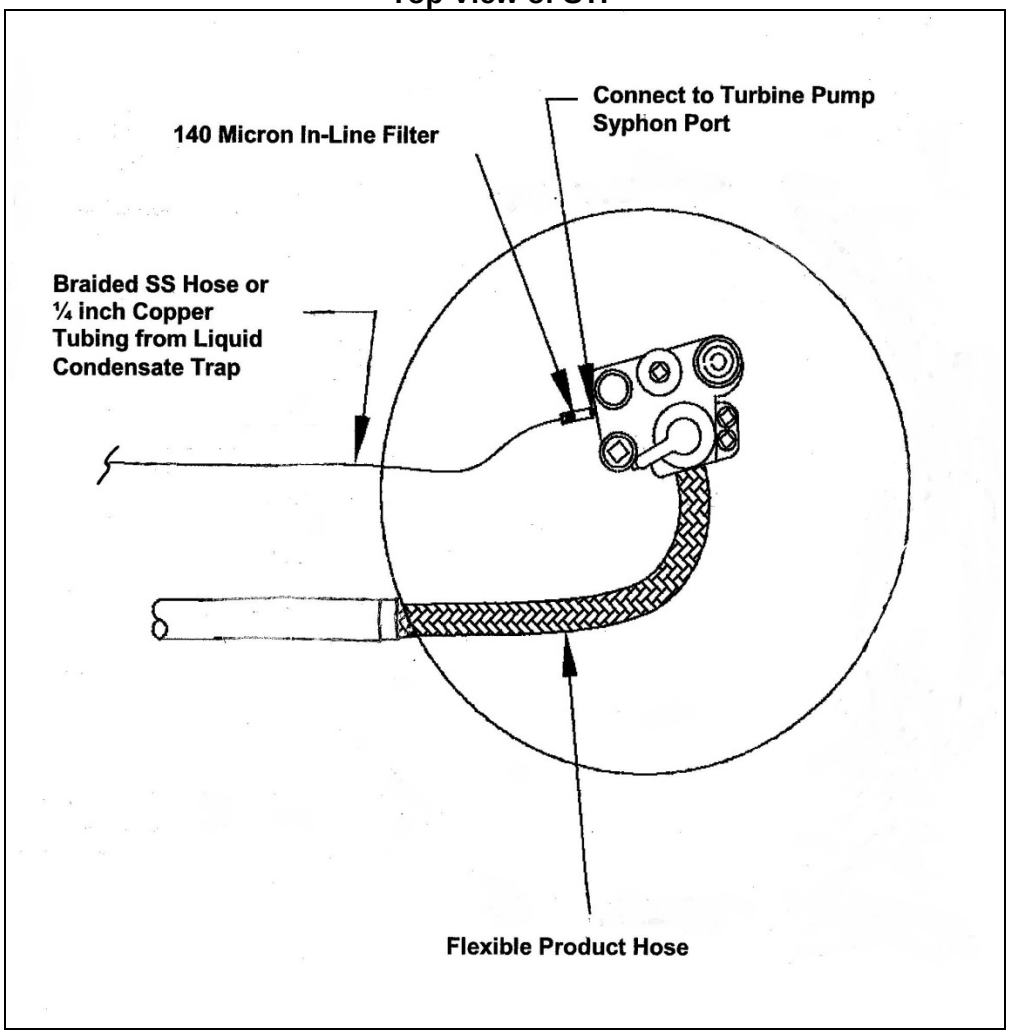


Figure 2a
Cut away view of an STP

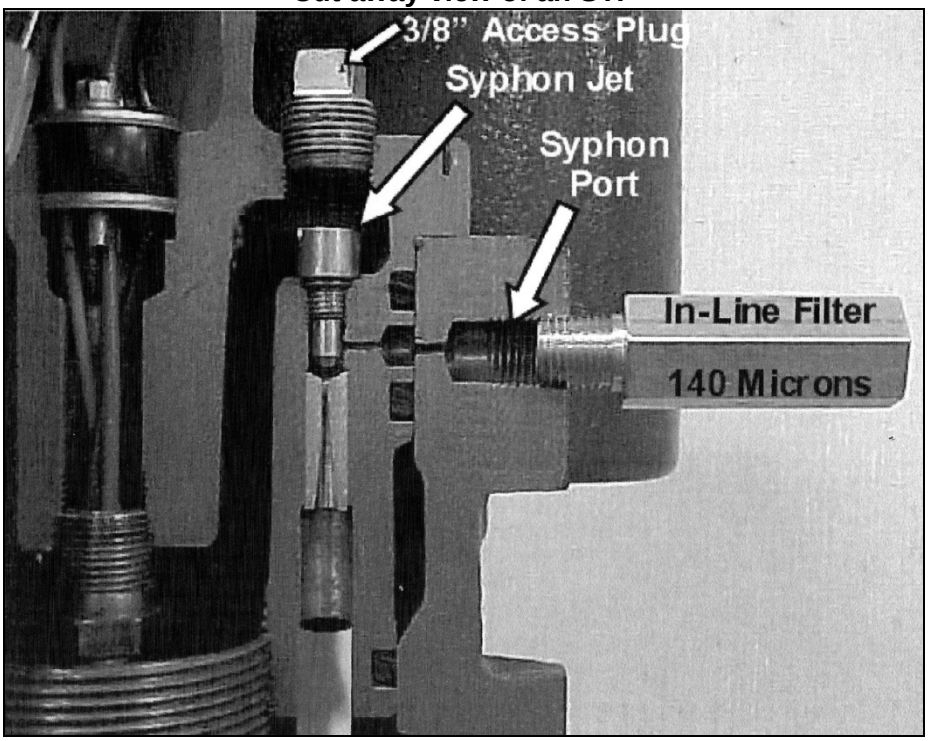
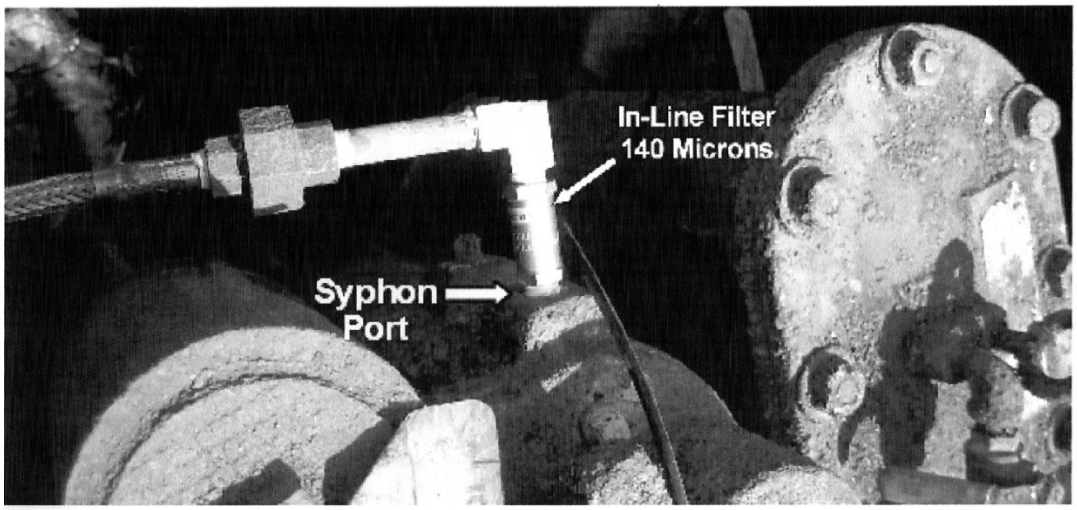


Figure 2b
In-Line filter connection to syphon port



4.2 Replacing Micron Filter Element inside the Swagelok In-Line Filter

If the filter element becomes blocked from debris clean or replace filter element – Swagelok P/N SS-4F-K4-140. Follow replacement instructions that come with new element.

4.3 Installation of INCON TSP-K2A Riser Adaptor

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.**

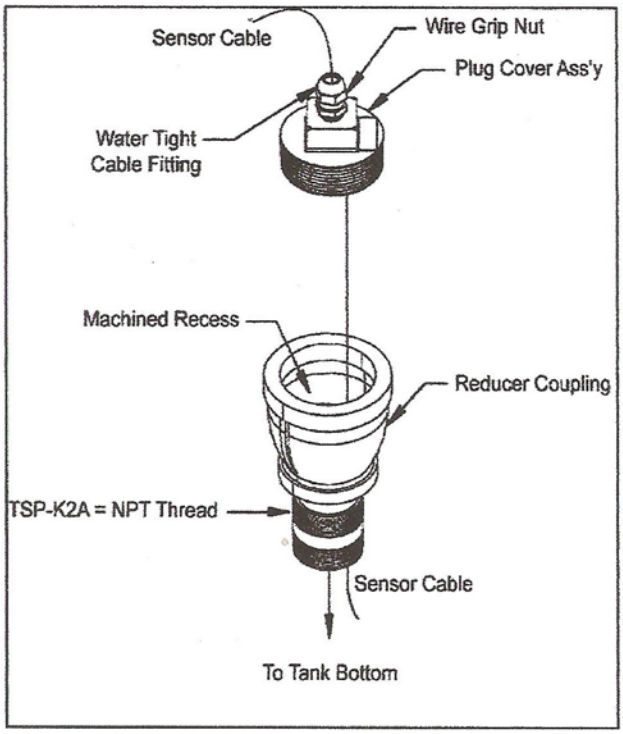
WARNING **Always secure the work area from moving vehicles. The equipment in this guide is usually mounted underground, so reduced visibility puts service personnel working on this equipment in danger from moving vehicles entering the work area. To help eliminate these unsafe conditions, secure the area by using a service truck to block access to the work environment, or by using any other reasonable means available to ensure the safety of service personnel.**

Procedure

1. Install a close fit 2" threaded nipple (field supplied) into the existing pipe.
2. Install the Reducer Coupling onto the threaded nipple.

Note: Use BOTH Teflon® Tape and a brushed-on thread sealant on all threaded connections to form a vapor-tight seal.

3. Insert the Sensor Cable through the wire grip nut so that the end of the sensor is on the inside of the Reducer Coupling.
4. Make all of the connections and test the sensor.
5. Tape and seal the Plug Cover Assembly into the Reducer Coupling. Make sure that the wire leads through the Wire Grip are loose and do not rotate when tightening the Plug Cover Assembly.
6. Tighten the Wire Grip Nut to 75-100 in. lbs. of torque to secure the cable. Use a torque wrench with McMaster Carr # 5347A148, 1-1/16 inch Open End Head, for Interchangeable-Head Torque Wrench or equivalent.



7. Retest the sensor functionality.

Figure 3
INCON TSP-K2A Riser Adapter

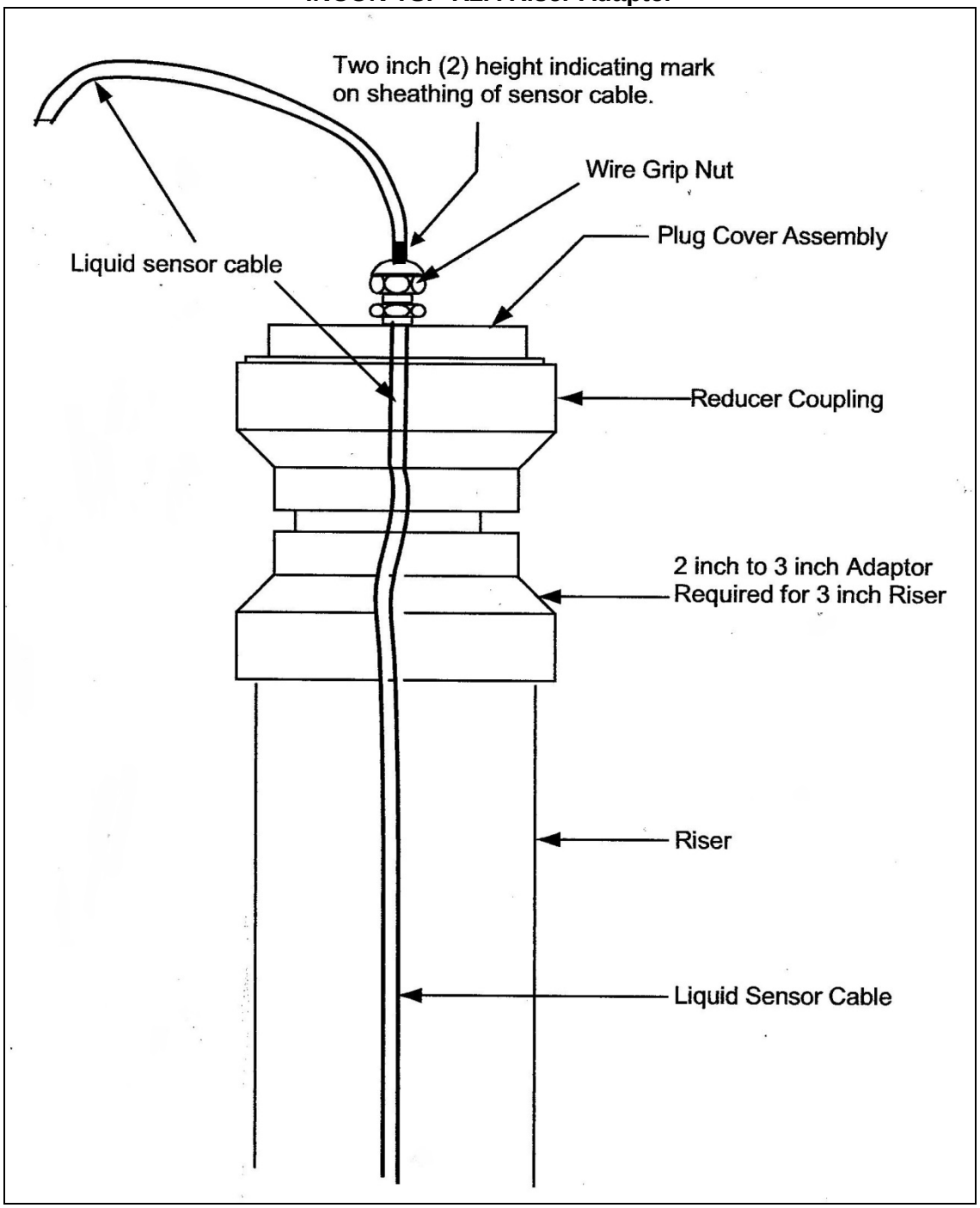
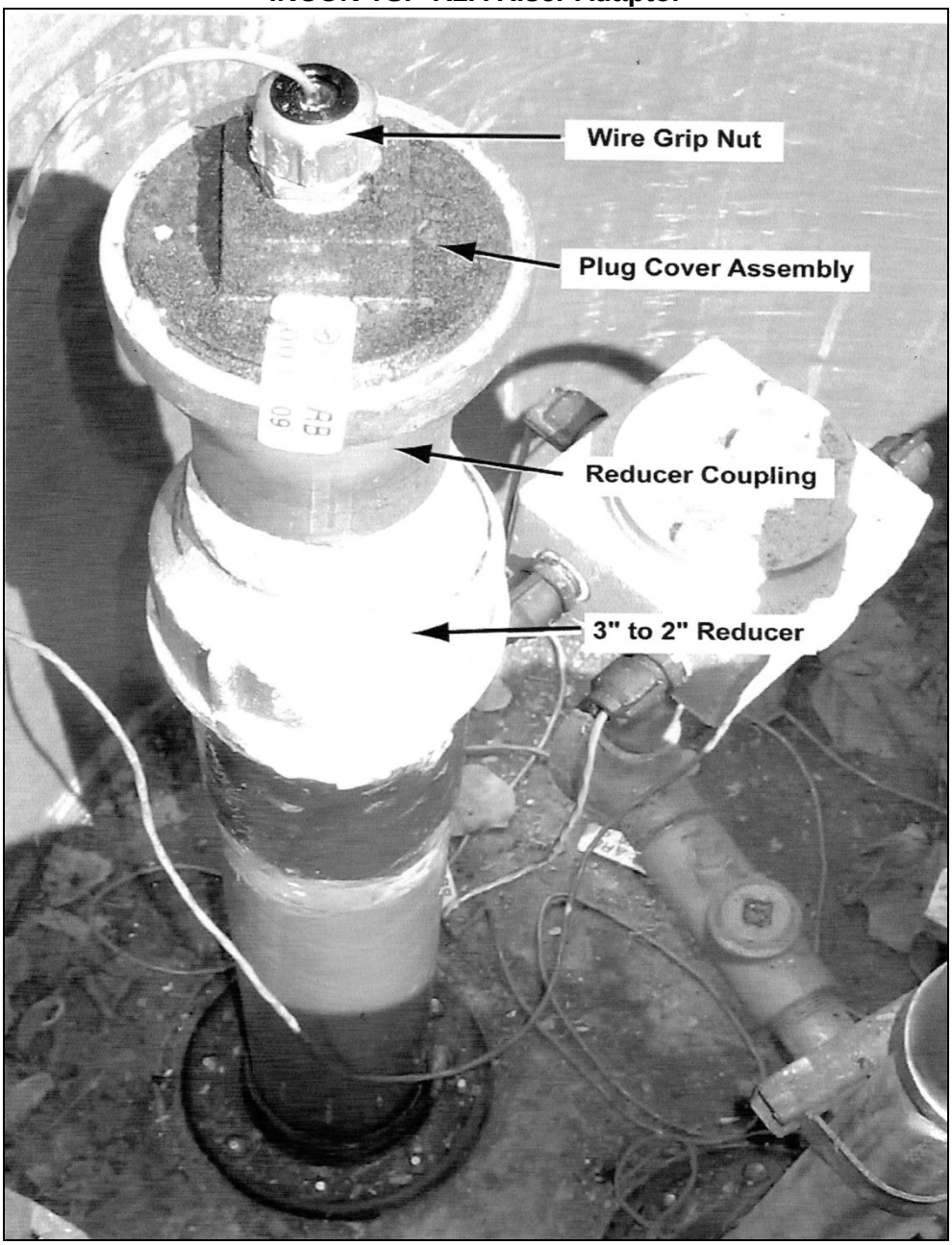


Figure 3a
INCON TSP-K2A Riser Adaptor



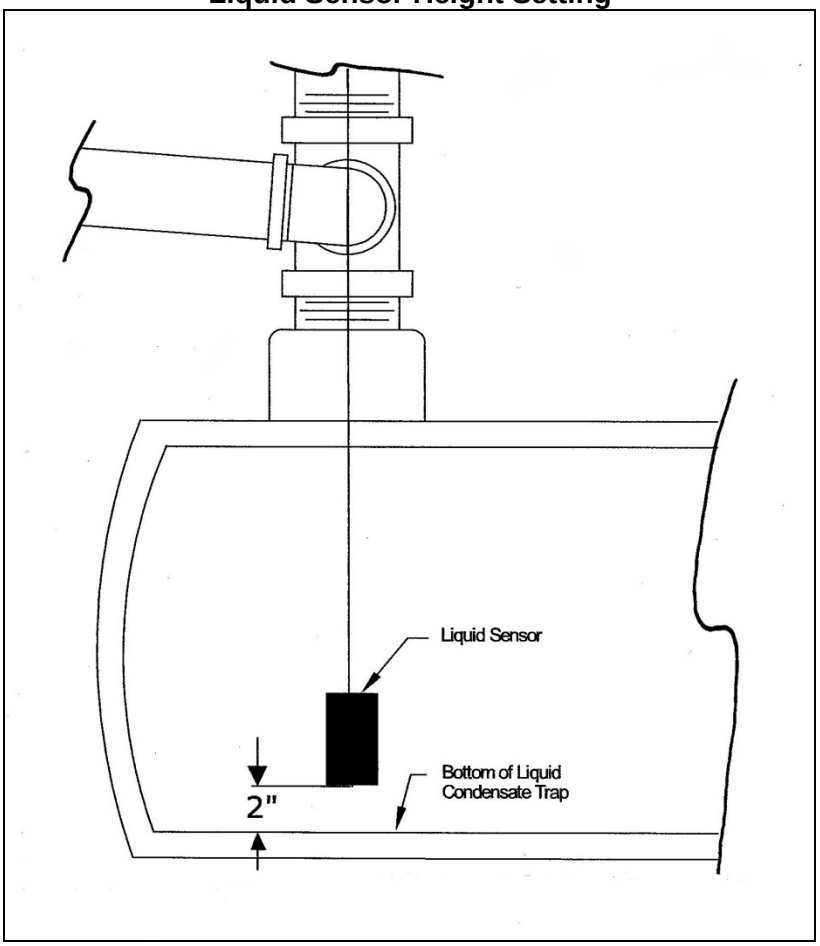
4.4 Liquid Sensor

If not already present, install a liquid sensor following the manufacturer's installation instructions. Set the liquid sensor 2 inches from the bottom of the Liquid Condensate Trap. See Figure 4. Then tighten the wire grip nut (of the TSP-K2A) around sensor cable.

At the point where the cable exits the top of the wire grip, place a permanent indicating mark on the sheathing of the cable, using a waterproof marker such as a Sharpie™, which indicates the sensor is placed 2 inches above the bottom of the Liquid Condensate Trap. See Figure 3.

When programming the LCT liquid sensor at the tank monitoring console, label the sensor with "LCT" in the title. (e.g. L10 would be labeled "LCT High Liquid")

Figure 4
Liquid Sensor Height Setting



4.5 Installation of Suction Tube Riser, Suction Tube, and Screen

For all installations, use only fuel rated pipe sealant on all threaded connections.

For new installations cut to size and thread a 2 inch galvanized steel riser for the suction tube and install it into a 2 inch bung at the top of the Liquid Condensate Trap.

For all installations install a 2 inch Tee fitting for the Fuel Entry Point on top of the 2 inch galvanized steel riser.

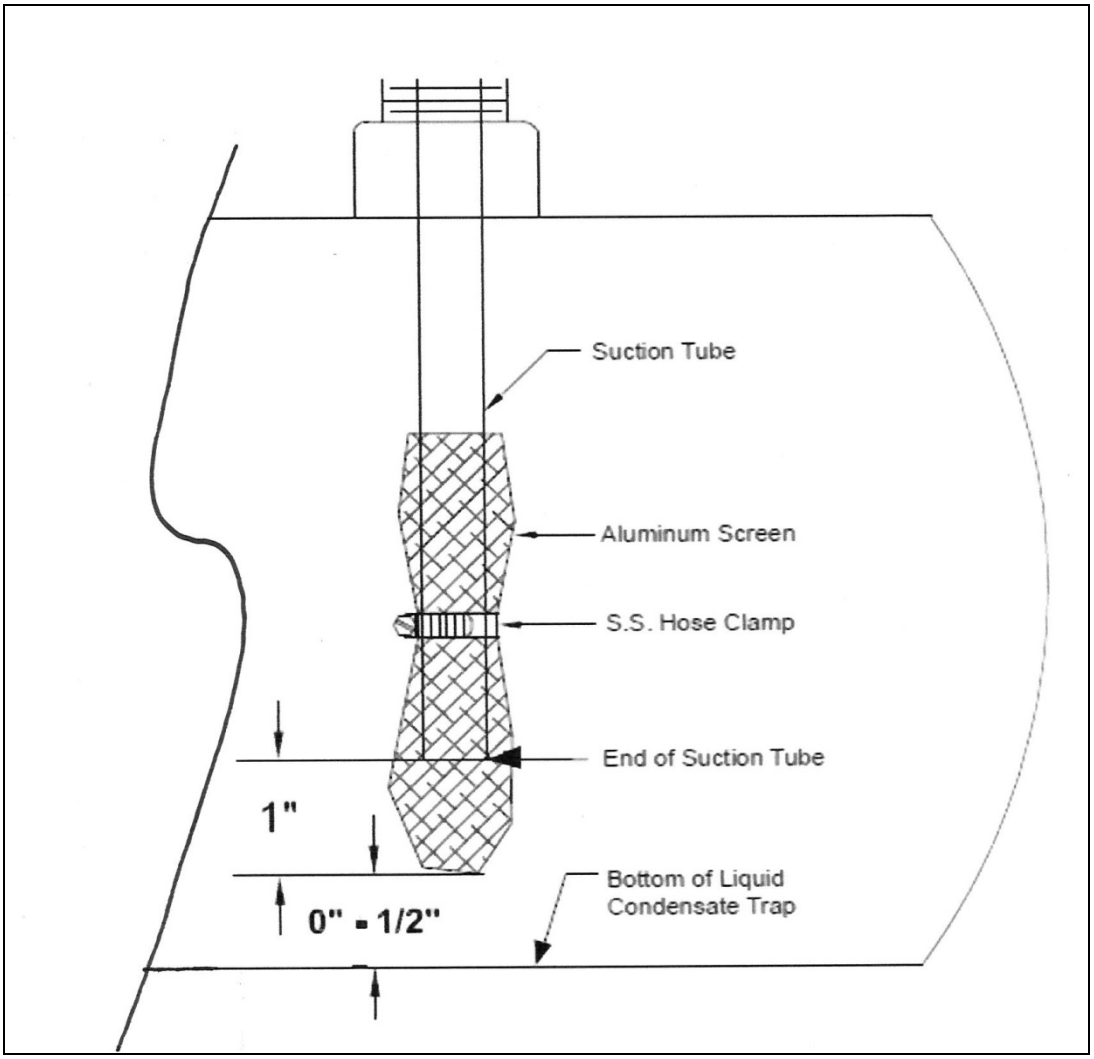
Measure the length of the suction tube to ensure it can meet the distance requirement in Figure 5. Cut the suction tube to length. When installing the suction tube, ensure the bottom of the suction tube is no more than 1 inch to 11/2 inches from the bottom of the liquid Condensate Trap.

Cut a piece of screen material, 4 inch by 4 inch square, either 18x14 aluminum mesh or 18x18 stainless steel mesh. Wrap it around the end of the suction tube as shown in Figure 5, leaving approximately 1 inch of screen below the end of the suction tube. Tighten the stainless steel hose clamp around the screen securing it approximately 3/8 inch or more from the bottom of the suction tube.

Once the aluminum screen is installed, the suction tube is ready to screw into the bottom of a double-tap bushing. This double-tap bushing, with the suction tube, is then installed into the top of the Tee fitting.

Connect the suction line to the top of the double-tap bushing using appropriate fittings and the other end of the suction line connects to the 140 micron in-line filter installed at the turbine syphon port per Section 4.1. See Figures 2a and 2b.

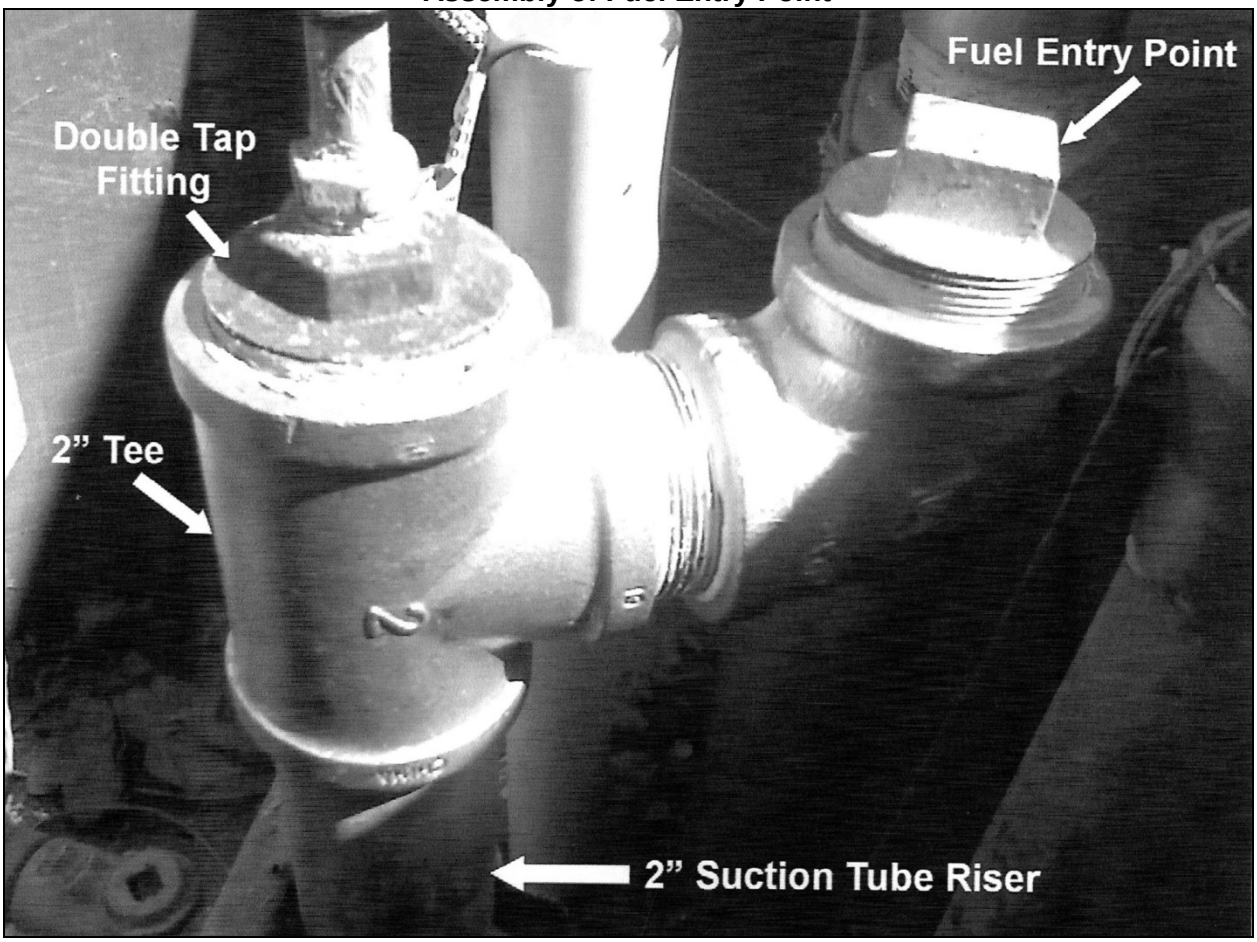
Figure 5
Aluminum Screen and Suction Tube Installation



4.6 Fuel Entry Point – On top of the 2 inch galvanized steel pipe install a 2 inch Tee, a 2 inch Nipple, a 2 inch Elbow, and additional 2 to 4 inch Nipple (if using cap). Prior to installing cap or plug, conduct Exhibit 9(VR-501-A). Install 2 inch cap or plug using pipe thread sealant. (Note, all pipe fittings must be galvanized steel.) See Figures 6, 6a, 6b, and 6c.

4.7 Conduct TP-206.3, Determination of Static Pressure Performance of Vapor Recovery Systems at Gasoline Dispensing Facilities with Aboveground Storage Tanks, and Exhibit 4.

Figure 6
Assembly of Fuel Entry Point



4.8 In the event that the turbine connected to the Liquid Condensate Trap is replaced, Exhibit 9 of Executive Order VR-501-A shall be conducted following replacement of the submersible turbine pump.

Figure 6a
Assembly of Fuel Entry Point

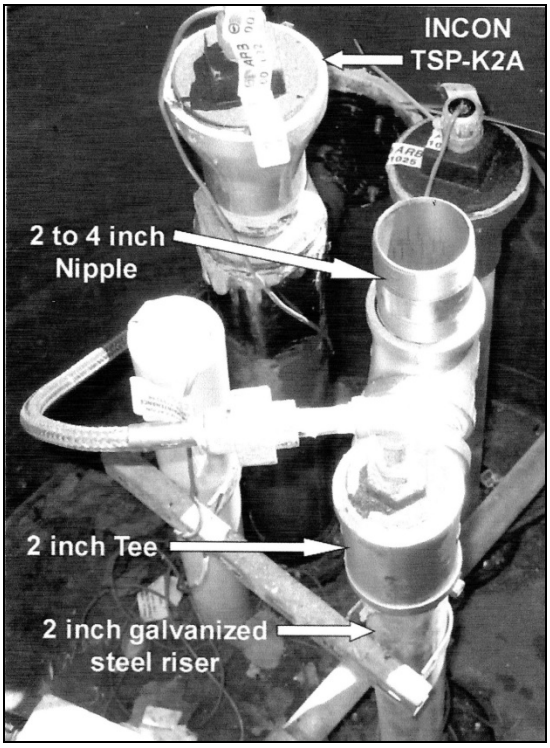


Figure 6b
Assembly of Fuel Entry Point

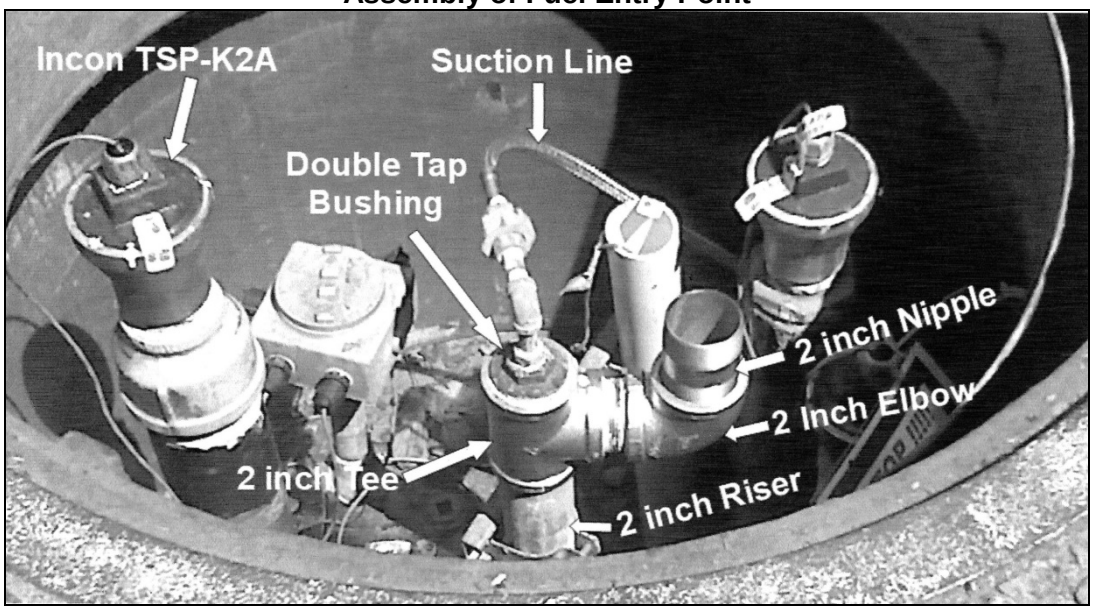
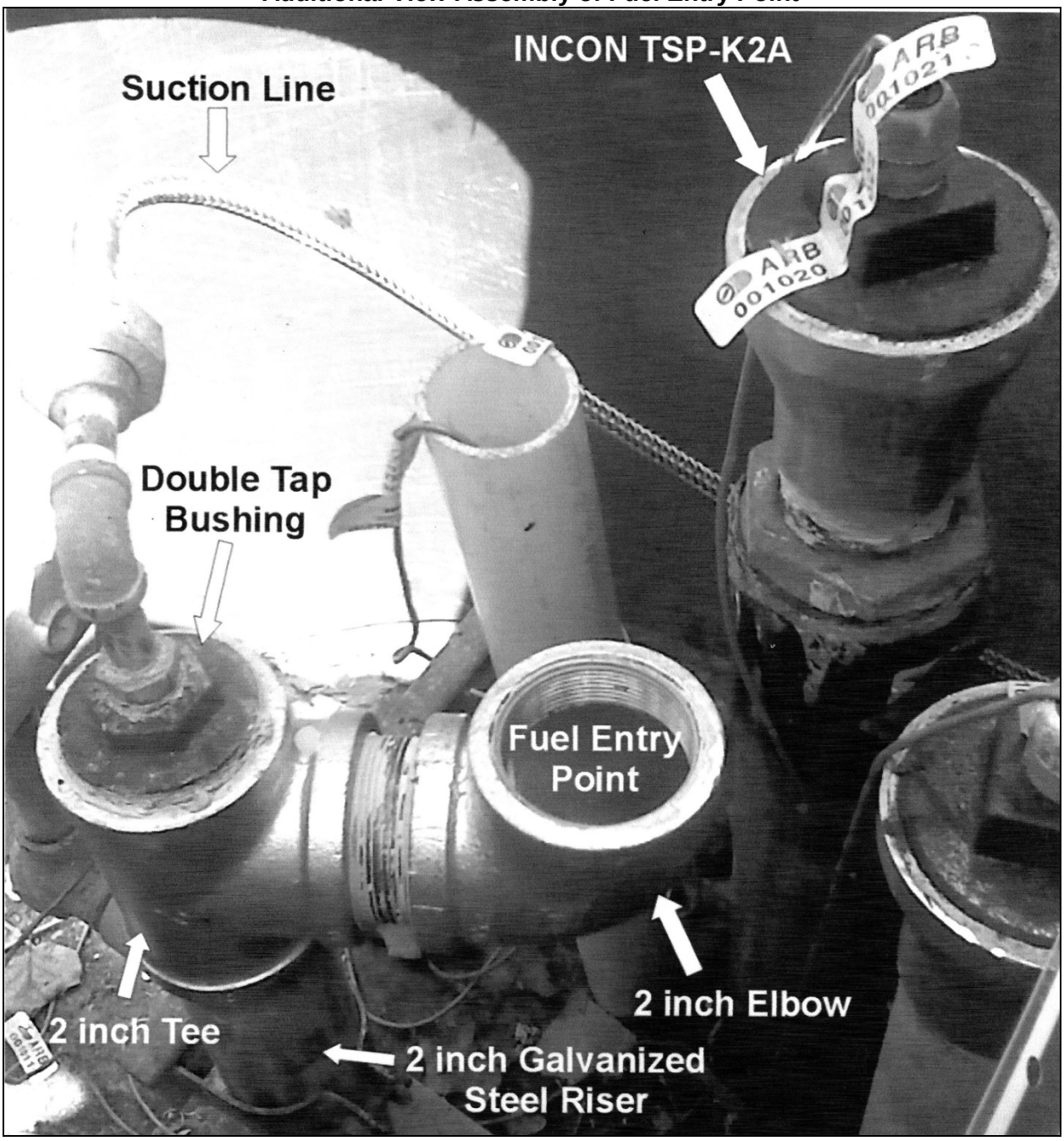


Figure 6c
Additional View Assembly of Fuel Entry Point



4.8 Liquid Sensors – To troubleshoot Liquid Sensors, see appropriate section of tank monitoring system manual.

4.9 Syphon – To troubleshoot syphon, see appropriate section of submersible turbine pump (STP) manual.

Figure 7
Typical Liquid Condensate Trap

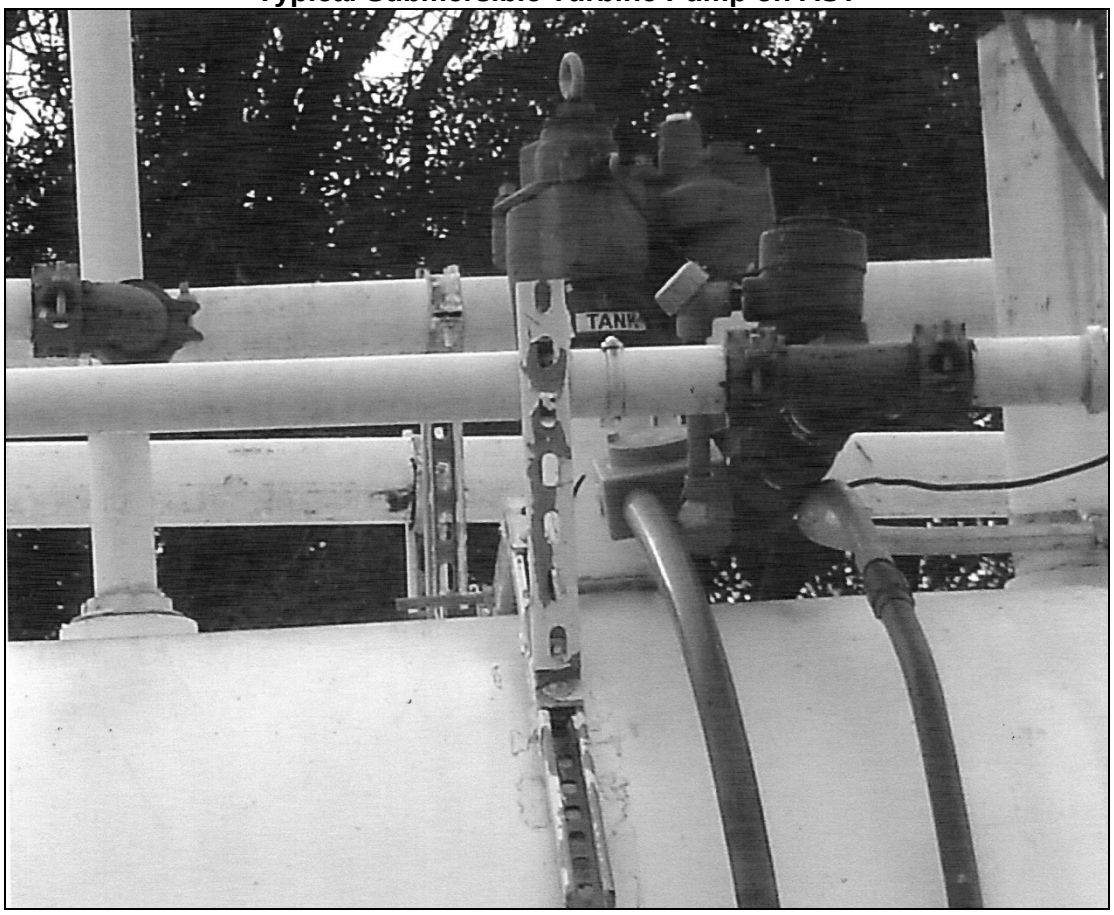



Figure 8
Typical Submersible Turbine Pump on AST