

California Environmental Protection Agency



ARB Approved

Installation, Operation and Maintenance Manual

for

Executive Order

VR-207-A

EMCO Wheaton Retail Balance Phase II EVR System
Not Including In-Station Diagnostics (ISD)

NOTICE:

The **ARB Approved Installation, Operation and Maintenance Manual (IOM) for the VR-207** describes the tools, methods and skill levels required to install the **EMCO Wheaton Retail Balance Phase II EVR System Including the INCON ISD**.

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 Wheaton Retail or warranty will be void.

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

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

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

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

It is the responsibility of each HCE Certified Technician to be familiar with the current requirements of state, federal, local codes and air district rules and regulations of installation and repair of gasoline dispensing equipment.

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

To schedule a training class or to confirm the status of a HCE Certified Technician, please contact:

Customer Service Department
Hirt Combustion Engineers, Inc.
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About EMCO Wheaton Retail



WHEATON RETAIL *Focusing on the Future, Serving Today's Needs*

EMCO Wheaton Retail Corporation located in Wilson, North Carolina is the premier manufacturer and supplier of a wide range of products to ensure the environmental safe handling of liquid petroleum. Under new ownership since May 1996, the company continues to be at the forefront in the development of innovative products and services for the domestic and international petroleum equipment industry.

EMCO Wheaton Retail products are grouped into four major categories:

- Vapor recovery and automatic nozzles
- Dispenser accessories including safe breaks valves and swivels
- Overfill prevention and spill containment devices
- Valves and fittings

Products are brought to market primarily through a global distributor network. In addition, the company has twenty-one domestic and international field sales offices. Our mission is to provide the highest quality, lowest total cost and quickest order response.

EMCO Contractor Requirements

Level	Component	Authorized Tasks	Training Pre-Requisites
A Must be re-certified every two-years	Hanging Hardware	<ul style="list-style-type: none"> • Installation • Functional Testing • Preventive Maintenance • Repair 	No pre-requisite
<p><u>Note:</u></p> <p>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.</p>			

- 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.
- 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 are approved to perform VCS 100 processor and indicator panel installation; wiring and conduit routing; start-up; maintenance; troubleshooting; and parts replacement.
<p><u>NOTE:</u></p> <p>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.</p>	

Executive Order VR-207
Exhibit 1
System Components

<u>Component</u>	<u>Manufacturer / Model</u>
Nozzle	EMCO Wheaton Retail Model A4005EVR, RA4005EVR (Rebuilt)
Coaxial Curb Hose	Goodyear Model Maxxim Premier Plus
Coaxial Whip Hose	Goodyear Model Maxxim Premier Plus
Hose Swivel	EMCO Wheaton Retail Model A4110EVR
Breakaway Coupling	EMCO Wheaton Retail Model A4119EVR
Vapor Processor with Indicator Panel	Hirt Combustion Engineers Model VCS-100

Overview – EMCO Balance EVR System

EMCO Model A4005EVR Dripless Nozzle - During vehicle refueling, the *nozzle* is securely latched to the vehicle fill pipe by means of a permanent band located on the spout. The position of the band permits the *nozzle* to remain in place on either a vertical or horizontal plane. The flexible bellows and soft boot face together provide the proper vapor seal connection between the spout and vehicle fill pipe as fuel passes into the vehicle tank.

The *No Seal, No Flow insertion interlock mechanism* assures adequate compression of the bellows and boot face against the vehicle fill pipe, creating a tight vapor seal for proper balance phase II vapor recovery. The *No seal, No Flow insertion interlock mechanism* prevents fuel flow through the fuel delivery system (fuel storage tank, turbine, fuel piping, dispenser and hanging hardware) unless the nozzle is properly inserted and securely latched to the vehicle fill pipe.

The integral *vapor control valve* is located within the nozzle body. The *vapor control valve* opens to allow the return of vapor through the balance phase II vapor recovery system (vapor path of the hanging hardware, dispenser, vapor piping and fuel storage tank) when the nozzle is securely latched to the vehicle fill pipe, with the bellows compressed and the nozzle lever engaged.

The *automatic shut-off* is a required safety device of the nozzle that stops and prevents the overflow and spillage of fuel once the vehicle tank is full. **Note:** "topping off" the vehicle tank is not recommended.

EMCO Model A4110EVR Coaxial Hose Swivel – The *coaxial hose swivel* installs between the dripless nozzle and the coaxial curb hose providing a full range of movement, minimizing kinking and twisting of the coaxial curb hose during vehicle refueling.

EMCO Model A4119EVR Coaxial Safe Break Valve – The *coaxial safe break valve* is a shear pin non-reconnectable component. The *coaxial safe break valve* is equipped with a dual poppet design that seals off both the fuel and vapor paths upon separation or customer drive-off, eliminating fuel spillage, vapor emissions and minimizing damage to the dispenser unit.

Goodyear Model Maxim Premier Plus Whip & Curb Hoses – The *coaxial curb hose* is a two hose design which passes fuel through the center hose and returns vapors through the outer hose. A liquid removal device (venturi) is incorporated and protected within the confines of the inner hose. As fuel gathers at the bottom of the loop typically from customer "top-offs", the liquid removal device extracts and returns the fuel to the inner fuel hose eliminating hose blockage.

Overview – EMCO Balance EVR System

Hirt VCS-100 Vapor Processor with Indicator Panel – Under conditions where the Gasoline Dispensing Facility GDF is operational and the balance system hardware is functioning normally, the inherent On Board Vapor Recovery ORVR compatibility of the balance phase II vapor recovery system will create a predominately negative pressure in the ullage space of the gasoline storage tanks. Under these conditions the *vapor processor* will typically not need to operate.

During periods of less activity, the GDF being shut down overnight, winter fuels being present or other conditions that will create the pressurization of the ullage space, the *vapor processor* will operate intermittently as required above the particular set-point to manage the positive pressure in the ullage space to an accepted level. A vacuum sensor located within the *vapor processor* determines the set-point and is factory calibrated at a nominal -0.40 inches of water.

The *vapor processor* employs a specialized turbine which collects only the excess vapor from the ullage space. A unique combustor converts the excess vapor into harmless carbon dioxide CO₂ and water vapor H₂O.

The *vapor processor* is equipped with an *indicator panel* that provides power, processing and overpressure indicators that help the station operator, district inspectors and service technicians determine the operating status of the *vapor processor* and the GDF.

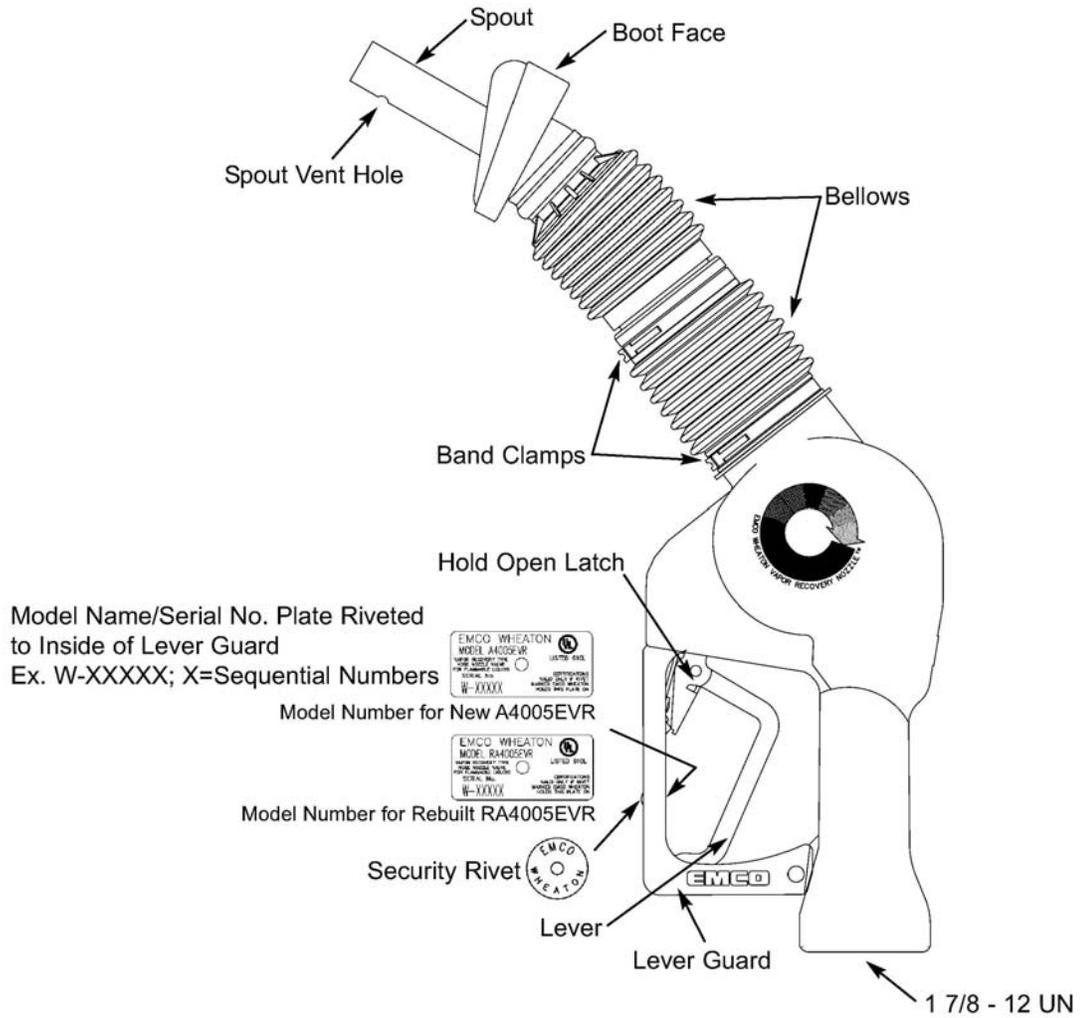


Figure 1: Model EMCO Wheaton Retail A4005EVR

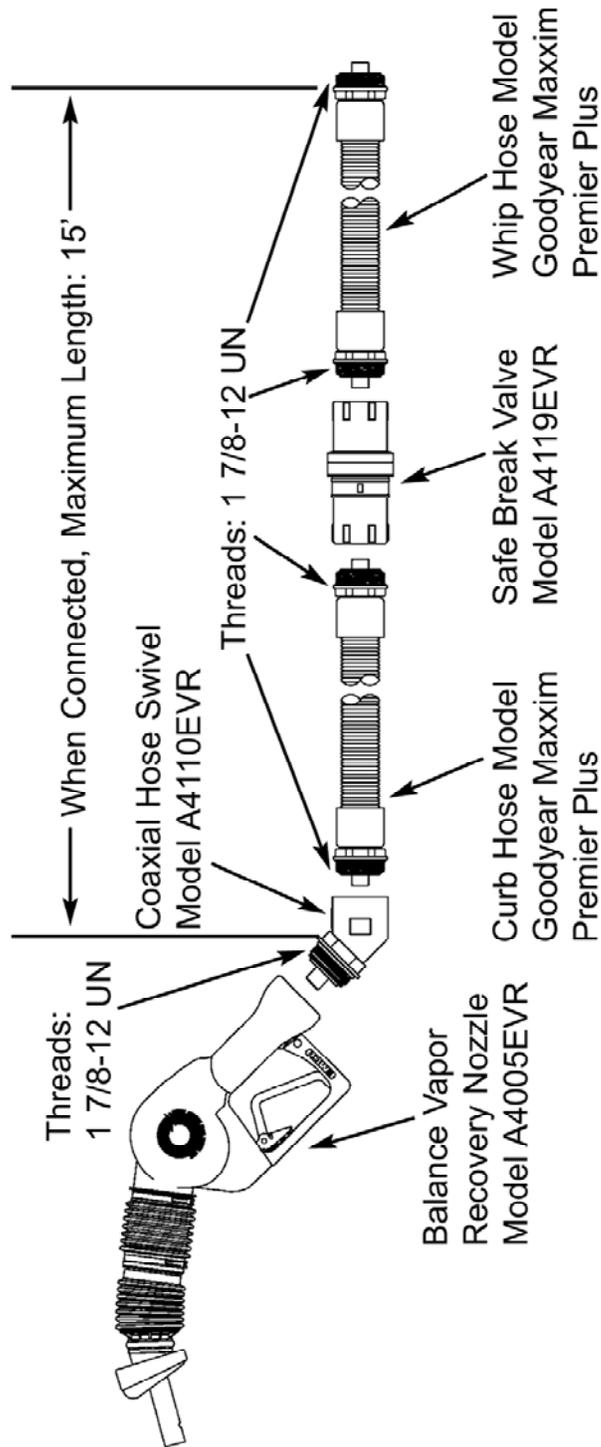
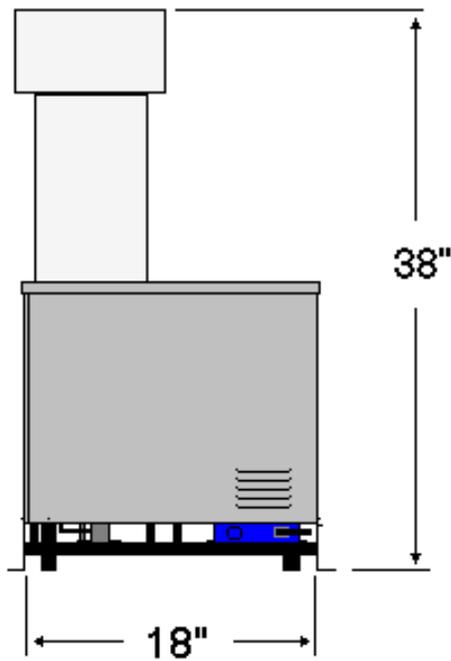
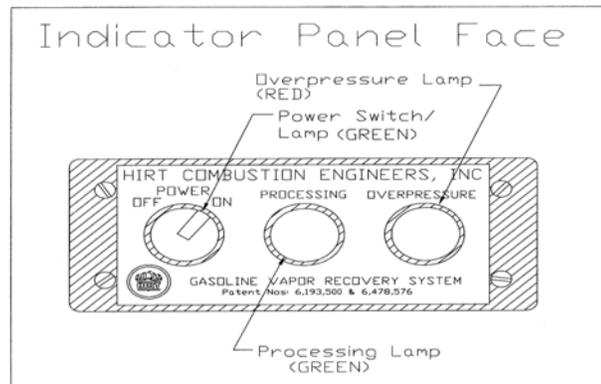


Figure 2 Model EMCO Wheaton Retail & Goodyear Hanging Hardware
(Nozzle, Coaxial Hose Swivel, Coaxial Fuel Hose, Coaxial Safe Break Valve)



Weight: 80lbs.
Electrical: 120VAC, 3Ampere Intermittent
Vapor Inlet Connection: 3/4 NPT

Figure 3: Model Hirt Combustion Engineers, Inc. VCS-100 Vapor Processor with Indicator Panel

Weekly Inspections

HANGING HARDWARE SYSTEM					
Component	Procedure	Fail Criteria	Corrective Action	Reference Manuals	Authorized Personnel
Nozzle	Inspect each whip and curb hose, safe break valve, hose swivel and nozzle for loose connections or leaks	Presence of a leak Presence of residue from a leak Visible o-ring between any component connection	Tighten connections or replace with new EMCO or Goodyear product	IOM – Section 9	Nozzle, Swivel Hose, Hose and Safe Break Valve Replacement: Station Operator or EMCO Certified Technician Level A Component Repair: EMCO Certified Technician Level A
Hose Swivel				IOM – Section 11	
Safe Break Valve				IOM – Section 12	
Hoses				IOM – Section 13	
COAXIAL WHIP & CURB HOSES					
Component	Procedure	Fail Criteria	Corrective Action	Reference Manuals	Authorized Personnel
Hoses	Inspect whip and curb hoses for wear, severe kinks, cracks, splitting and functional swivels	Kinks, cracks, splitting, non-functional swivels or any visible openings	Replace with new Goodyear hose	IOM – Section 13	Hose Replacement: Station Operator or EMCO Certified Technician Level A

COAXIAL SAFE BREAK VALVE					
Component	Procedure	Fail Criteria	Corrective Action	Reference Manuals	Authorized Personnel
Safe Break Valve	Inspect safe break valve for leaks around the scuff	Presence of a leak around the scuff or any visible openings	Replace with new EMCO safe break valve	IOM – Section 12	Safe Break Valve Replacement: Station Operator or EMCO Certified Technician Level A
COAXIAL HOSE SWIVEL					
Component	Procedure	Fail Criteria	Corrective Action	Reference Manuals	Authorized Personnel
Hose Swivel	Inspect hose swivel for leaks and functional swivel	Presence of a leak, non-functional swivel or any visible openings	Replace with new EMCO hose swivel	IOM – Section 11	Hose Swivel Replacement: Station Operator or EMCO Certified Technician Level A

NOZZLE					
Nozzle Components	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 – Sections 9 & 10	Latch Kit Repair: EMCO Certified Technician Level A Nozzle Replacement: Station Operator or EMCO Certified Technician Level A
Spout		Sheared or bent	Replace with new EMCO Spout Kit or nozzle	IOM – Sections 9 & 10	Spout Kit Repair: EMCO Certified Technician Level A Nozzle Replacement: Station Operator or EMCO Certified Technician Level A

NOZZLE					
Nozzle Components	Procedure	Fail Criteria	Corrective Action	Reference Manuals	Authorized Personnel
Spout Vent Hole	Inspect for defects, cuts or damage to the: Spout Vent Hole Boot Face Bellows	Vent hole blocked	Clear blockage	IOM – Section 9	Blockage Repair: Station Operator or EMCO Certified Technician Level A
Boot Face		> than 0.38 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 – Sections 9 & 10	Boot Face Kit Repair: EMCO Certified Technician Level A Nozzle Replacement: Station Operator or EMCO Certified Technician Level A
Bellows		A cut across 7 consecutive bellows convolutions	Replace with new EMCO bellows kit or nozzle	IOM – Sections 9 & 10	Bellows Kit Repair: EMCO Certified Technician Level A Nozzle Replacement: Station Operator or EMCO Certified Technician Level A

NOZZLE					
Nozzle Components	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 – Sections 9 & 10	Spout Kit Repair: EMCO Certified Technician Level A Nozzle Replacement: Station Operator or EMCO Certified Technician Level A
Band Clamps		Damaged or missing	Replace with new EMCO band clamp kit or nozzle	IOM – Sections 9 & 10	Band Clamp Kit Repair: EMCO Certified Technician Level A Nozzle Replacement: Station Operator or EMCO Certified Technician Level A
Serial Plate, Security Rivet		Damaged or missing	Replace with new EMCO nozzle	IOM – Section 9	Nozzle Replacement: Station Operator or EMCO Certified Technician Level A

Weekly Inspections 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 Swivel Inspection (circle one)		Hose Inspection (circle one)		Safe Break Valve Inspection (circle one)	
	Unihose	87	89	91	Other ____	Pass	Fail	Pass	Fail	Pass	Fail	Pass	Fail
	Unihose	87	89	91	Other ____	Pass	Fail	Pass	Fail	Pass	Fail	Pass	Fail
	Unihose	87	89	91	Other ____	Pass	Fail	Pass	Fail	Pass	Fail	Pass	Fail
	Unihose	87	89	91	Other ____	Pass	Fail	Pass	Fail	Pass	Fail	Pass	Fail
	Unihose	87	89	91	Other ____	Pass	Fail	Pass	Fail	Pass	Fail	Pass	Fail
	Unihose	87	89	91	Other ____	Pass	Fail	Pass	Fail	Pass	Fail	Pass	Fail
	Unihose	87	89	91	Other ____	Pass	Fail	Pass	Fail	Pass	Fail	Pass	Fail
	Unihose	87	89	91	Other ____	Pass	Fail	Pass	Fail	Pass	Fail	Pass	Fail
	Unihose	87	89	91	Other ____	Pass	Fail	Pass	Fail	Pass	Fail	Pass	Fail
	Unihose	87	89	91	Other ____	Pass	Fail	Pass	Fail	Pass	Fail	Pass	Fail

Annual Inspections

HIRT VCS-100 VAPOR PROCESSOR ANNUAL INSPECTION CHECKLIST		
DATE OF TEST:		
SERVICE COMPANY NAME:	SERVICE COMPANY'S TELEPHONE:	
SERVICE TECHNICIAN:	HIRT TECHNICIAN CERTIFICATION #: <small>(as applicable)</small>	
	CC or DISTRICT TRAINING CERTIFICATION #: <small>(as applicable)</small>	
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!	<input type="checkbox"/>
2.	Remove Weather Cover. Look inside stack and burner chamber to check for debris. Remove any debris.	<input type="checkbox"/>
3.	Remove padlocks, if any, and remove Shell from processor.	<input type="checkbox"/>
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.	<input type="checkbox"/>

HIRT VCS-100 VAPOR PROCESSOR ANNUAL INSPECTION CHECKLIST		
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.	<input type="checkbox"/>
6.	Visually check all processor piping and tubing for leaks (this is checked when conducting TP-201.3 and Exhibit 4 of Executive Order VR-207). 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 questionable components.	<input type="checkbox"/>
7.	Conduct Exhibit 8 of Executive Order VR-207 "Hirt VCS 100 Processor With Indicator Panel Operability Test Procedure"	<input type="checkbox"/>
8.	Check setting of Pilot Needle Valve adjustment (section 8.8 of Hirt VCS 100 IOM).	<input type="checkbox"/>
9.	Lower Inner Stack and tighten bolt. Replace Shell, Weather Cover, and padlocks removed for visual inspection.	<input type="checkbox"/>
10.	Verify handle on 3-way valve is in the down position – Processor to UST Ullage.	<input type="checkbox"/>
11.	Turn ON electrical power to processor.	<input type="checkbox"/>

Annual System Compliance Testing	
Test Procedure	Test Procedure Number or Exhibit
Static Pressure Decay Test	Exhibit 4 (TP-201.3)
Liquid Removal Test	Exhibit 5
Dynamic Back Pressure Test	Exhibit 6 (TP-201.4)
Nozzle Bag Test	Exhibit 7
Hirt VCS-100 Vapor Processor Operability Test	Exhibit 8

Alarm Troubleshooting Summary For Hirt VCS 100 Processor

Hirt VCS 100 Troubleshooting Summary				
VCS 100 Indicator Panel	Category	Light	Cause	Recommended Troubleshooting
OVERPRESSURE LIGHT	VCS 100 Processor or System	Red	UST ullage pressure is positive for at least 1 continuous hour.	<p>GDF Owner/Operator Responsibilities:</p> <ul style="list-style-type: none"> “Weekly Inspections” of Hanging Hardware as specified in section 5 of Installation, Operation, and Maintenance Manual. “Drive-Offs and Other Customer Abuse” as specified in section 8 of Installation, Operation, and Maintenance Manual. Exhibit 7 of Executive Order VR-207 Record findings in GDF Owner/Operator Maintenance Log. <p>Certified Contractor Responsibilities:</p> <ul style="list-style-type: none"> Follow VCS 100 Troubleshooting Guide (Contact Hirt by either Phone: (562) 692-6970 or by email: HirtVCS@aol.com to get Guide) TP-201.3 and Exhibit 4 of Executive Order VR-207 Exhibit 7 of Executive Order VR-207 Exhibit 8 of Executive Order VR-207 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 situation 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 functional 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 SAFE BREAK VALVE IS INVOLVED IN A DRIVE-OFF SITUATION, IT MUST BE REPLACED.

THE SAFE BREAK VALVE IS NON-RECONNECTABLE.



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

VISUAL ASSESSMENT OF THE HANGING HARDWARE

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

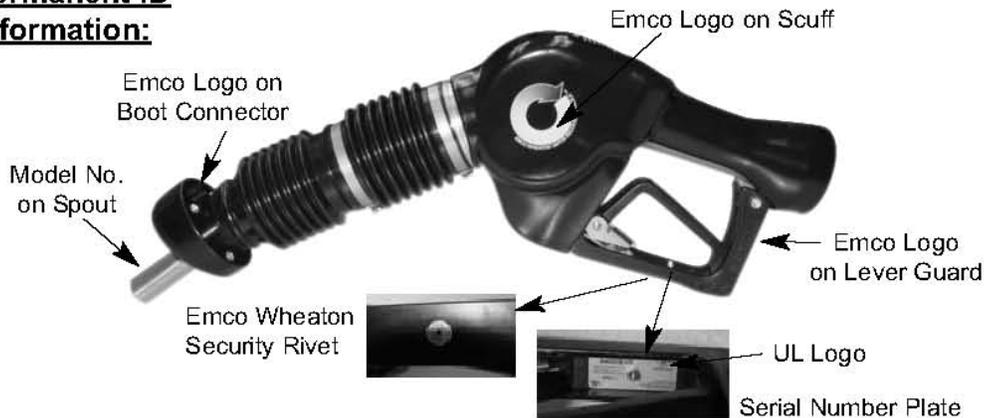
Action	Test Procedure	Corrective Action	Reference Manuals	Authorized Personnel
Perform a thorough visual examination of the exterior of the whip and curb hose for any obvious imperfections	Obvious imperfections include, but are not limited to: Damage to the swivels Damage to the couplings Kinks – flats spots Tears or slits to the outer hose	Replace with new Goodyear hose(s)	IOM – Section 13	Hose Replacement: Station Operator or EMCO Certified Technician Level A
	If there are no imperfections to the whip and curb hose, those hoses may be reused	After reassembly, conduct liquid removal test	IOM – Section 13 EO VR-207 - Exhibit 5	
		If the liquid removal test fails, replace the hose(s)	IOM – Section 13	
Perform a thorough visual inspection of the nozzle for any obvious imperfections	Obvious imperfections include, but are not limited to: 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 – Section 12	Component Repair: EMCO Certified Technician Level A
		Replace with new EMCO nozzle	IOM – Section 9	Nozzle Replacement: Station Operator or EMCO Certified Technician Level A

FUNCTIONAL TESTING OF THE HANGING HARDWARE

Perform the following functional tests prior to re-using a nozzle, hose swivel, hose or safe break valve following a drive-off situation:

Test	Test Procedure	Corrective Action	Reference Manuals	Authorized Personnel
Leak Check	<p>Verify that there are no liquid leaks in all components</p> <p>Dispense fuel and check each connection between the components</p> <p>A visual inspection of the nozzle can determine any obvious liquid leaks</p>	Any component that does not pass the functional test must be replaced	IOM – Sections 9, 10, 11 & 13	Component Replacement: Station Operator or EMCO Certified Technician Level A
Meter Creep	<p>Checking for meter creep will verify the integrity of the connections</p> <p>Dispense 1/10 to 2/10 of a gallon of fuel into an approved container then release lever, move components around and/ or gently shake the hose and verify if the displace amount on the dispenser changes</p>	Any component that does not pass the functional test must be replaced	IOM – Sections 9, 10, 11 & 13	Component Replacement: Station Operator or EMCO Certified Technician Level A
Automatic Shut-Off & Insertion Interlock	The insertion interlock mechanism shall not allow dispensing when the bellows is uncompressed as determined by direct observation	Replace with new EMCO nozzle or repair	IOM – Sections 9, 10, 11, 12 & 13	<p>Nozzle Replacement: Station Operator or EMCO Certified Technician Level A</p> <p>Repair: EMCO Certified Technician Level A</p>

**Permanent ID
Information:**



INSTALLATION INSTRUCTIONS

Service Tools Required:

- 2" 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.

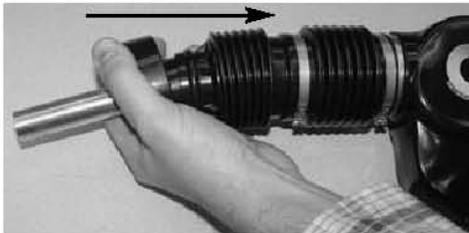
IMPORTANT: Failure to perform cautions 3 and 4 may result in a hazardous gasoline spill, damage to equipment, personal injury and/or death.

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.



6. Before attempting to install the A4005EVR nozzle onto the A4110EVR hose swivel, verify the vapor path o-ring is properly secured onto the swivel nut, 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 swivel nut, tighten by hand to avoid cross threading. Take caution to avoid pinching the vapor path o-ring.



8. Using a 2" crows foot and torque wrench tighten the swivel nut 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.

<u>Part Number</u>	<u>Description</u>
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.

WARRANTY POLICY

Emco Wheaton Retail Corporation service station products are warranted to be free from defects in material and workmanship under normal use and service. Vapor recovery nozzles are warranted for a period of twelve (12) months from date of shipment from Emco Wheaton Retail Corporation or from installation date as specified by the returned warranty card, not to exceed fifteen (15) months from the date of shipment from Emco Wheaton Retail Corporation. This warranty excludes the spout and/or front end components of balance vapor recovery nozzles unless damage is obvious when the nozzle is removed from the shipping carton and the defective nozzle is returned to Emco Wheaton Retail Corporation prior to use and within two (2) months from the date of invoice. Other service station products are warranted for a period of twelve (12) months from the date of manufacture.

Emco Wheaton Retail Corporation shall, at its option, repair or replace that part which proves to be defective. Repaired or replacement nozzles are warranted for the balance of the original warranty period. This warranty is void unless the original purchaser returns the claimed defective item to Emco Wheaton Retail Corporation for inspection to determine whether the claimed defect is covered by this warranty.

The exclusive and sole remedy under this warranty is repair or replacement of the defective part. Emco is not responsible for claims for damage caused by improper installation or maintenance; corrosive fluids; misuse of the product or use the product for other than its intended purpose; or accident, acts of God, or natural phenomena. Emco will not pay for labor or related expenses, nor shall Emco be liable for any incidental, consequential or exemplary damages. This warranty is void if the Emco Wheaton Retail Corporation product has been previously repaired with parts not approved by Emco Wheaton Retail Corporation, or if a nozzle bears the mark or imprint of a company other than Emco Wheaton Retail Corporation, indicating the nozzle has been rebuilt or repaired by a company other than Emco Wheaton Retail Corporation.

EMCO WHEATON RETAIL CORPORATION MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, (WHETHER WRITTEN OR ORAL), INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

In the event a nozzle is returned to Emco Wheaton Retail Corporation within the warranty period described above, and when tested is found to be functional and without defect, Emco Wheaton Retail Corporation reserves the right to return the nozzle to the customer or apply a Core Credit (see Nozzle Core Return Program), at Emco Wheaton Retail Corporation's discretion.

In the event of failure within the warranty period, call the Customer Service Department at **(800) 234-4394**.

Describe the problem and provide the product date stamp information to the customer service representative.

In the case of a nozzle, provide the serial number. The customer service representative will provide a product complaint number, if applicable. Ship the defective equipment **PREPAID**, to Emco Wheaton Retail Corporation for repair or replacement.

Emco Wheaton Retail Corporation products should be used in compliance with applicable federal, state and local laws and regulations. Product selection should be based on physical specifications and limitations and compatibility with the environment and material to be handled. All illustrations and specifications are based on the latest product information available at the time of publication. Emco Wheaton Retail Corporation reserves the right to make changes at any time in prices, materials, specifications and models and to discontinue models without notice or obligation.

Emco Wheaton Retail Corporation warrants the workmanship and materials to be free of defects and will comply with the performance standards of California ARB CP-201 for a period of one (1) year from the date of installation or fourteen months from the date of shipment from Emco Wheaton Retail Corporation.

Emco Wheaton Retail Corp.

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619-421-1743 (Technical Services, California)

p/n 569044
Rev. D, 06/09

**Permanent ID
Information:**



INSTALLATION INSTRUCTIONS

Service Tools Required:

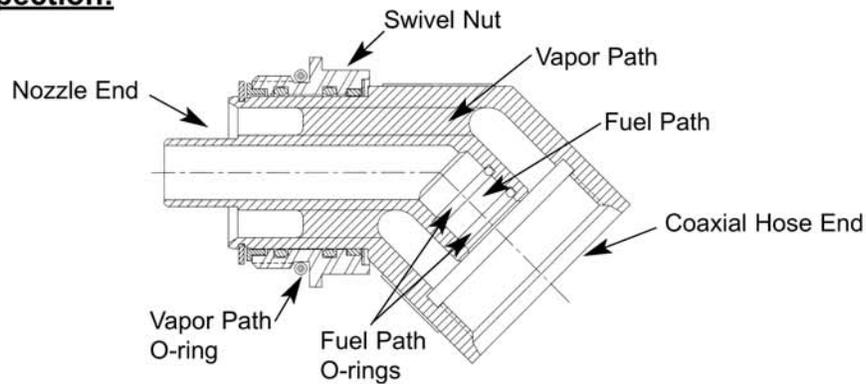
- 2" Crows Foot
- 1 7/8" Crows Foot
- Gasoline Approved Container
- Petroleum Jelly or Other Suitable Lubricant
- Torque Wrench w/ 50ft-lbs Setting
- Pipe Wrench w/ Flat Jaws

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 A4110EVR hose swivel, turn off and tag out power to the corresponding dispenser.
4. Before attempting to install, remove or service the A4110EVR hose swivel, close the emergency impact valves located inside the base of 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 the A4110EVR hose swivel from the shipping container and evaluate for any kind of damage.
2. Verify the fuel path o-rings located at the coaxial hose end of the A4110EVR hose swivel. Both o-rings must be properly secured inside the factory machined grooves.
3. Verify the vapor path o-ring located at the nozzle end of the A4110EVR hose swivel. The o-ring must be properly secured onto the swivel nut.

Pre-Installation:



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



5. Lightly lubricate the vapor path o-ring using petroleum jelly or other suitable lubricant.



6. Before attempting to install the A4110EVR hose swivel onto the curb hose, verify that the word "NOZZLE" is stamped on the outside of the curb hose connector.



7. Verify the vapor path o-ring is properly secured onto the curb hose connector and in good working condition. Lightly lubricate the o-ring using petroleum jelly or other suitable lubricant.

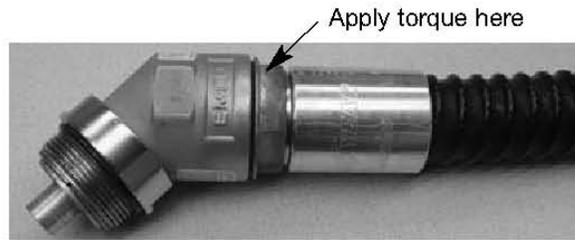
IMPORTANT: Do not use pipe thread sealant compound or Teflon tape when installing the A4110EVR hose swivel. Failure to comply will void warranty.

Installation:

IMPORTANT: If this is a new facility installation, the fueling point must be flushed into a gasoline approved container before installing the A4110EVR hose swivel. Failure to perform this procedure could result in foreign material becoming lodged inside the hose swivel's fuel path causing a reduction in fuel flow.



8. Attach the A4110EVR hose swivel onto the curb hose connector. Tighten by hand to avoid cross threading.



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



10. Attach the A4005EVR nozzle onto the A4110EVR hose swivel. Tighten by hand to avoid cross threading. Take caution to avoid pinching the vapor path o-ring.



11. Using a 2" crows foot and torque wrench tighten the swivel nut to 50 ft-lbs of torque.

Post Functional Tests:

12. 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.
13. 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 13 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:

14. 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 A4110EVR hose swivel, evaluate for any kind of damage. Damage components must be replaced with factory authorized service kits.

<u>Part Number</u>	<u>Description</u>
494748EVR	Fuel Path O-ring Kit
494749EVR	Vapor 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 0.01 inches of water column @ 60 CFH.

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

WARRANTY POLICY

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Emco Wheaton Retail Corporation shall, at its option, repair or replace that part which proves to be defective. Repaired or replacement nozzles are warranted for the balance of the original warranty period. This warranty is void unless the original purchaser returns the claimed defective item to Emco Wheaton Retail Corporation for inspection to determine whether the claimed defect is covered by this warranty.

The exclusive and sole remedy under this warranty is repair or replacement of the defective part. Emco is not responsible for claims for damage caused by improper installation or maintenance; corrosive fluids; misuse of the product or use the product for other than its intended purpose; or accident, acts of God, or natural phenomena. Emco will not pay for labor or related expenses, nor shall Emco be liable for any incidental, consequential or exemplary damages. This warranty is void if the Emco Wheaton Retail Corporation product has been previously repaired with parts not approved by Emco Wheaton Retail Corporation, or if a nozzle bears the mark or imprint of a company other than Emco Wheaton Retail Corporation, indicating the nozzle has been rebuilt or repaired by a company other than Emco Wheaton Retail Corporation.

EMCO WHEATON RETAIL CORPORATION MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, (WHETHER WRITTEN OR ORAL), INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

In the event a nozzle is returned to Emco Wheaton Retail Corporation within the warranty period described above, and when tested is found to be functional and without defect, Emco Wheaton Retail Corporation reserves the right to return the nozzle to the customer or apply a Core Credit (see Nozzle Core Return Program), at Emco Wheaton Retail Corporation's discretion.

In the event of failure within the warranty period, call the Customer Service Department at **(800) 234-4394**. Describe the problem and provide the product date stamp information to the customer service representative. In the case of a nozzle, provide the serial number. The customer service representative will provide a product complaint number, if applicable. Ship the defective equipment **PREPAID**, to Emco Wheaton Retail Corporation for repair or replacement.

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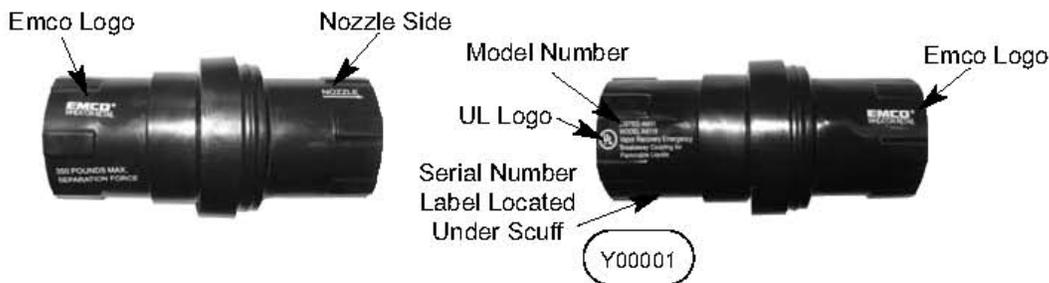
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p/n 569042
Rev. D, 06/09

**Permanent ID
Information:**



INSTALLATION INSTRUCTIONS

Service Tools Required:

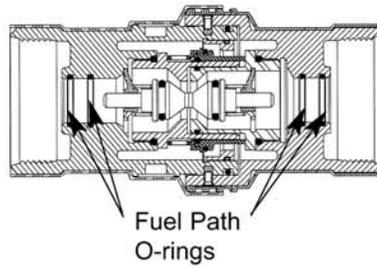
- 1 7/8" Crows Foot
- Gasoline Approved Container
- Petroleum Jelly or Other Suitable Lubricant
- Torque Wrench w/ 50ft-lbs Setting
- Pipe Wrench w/ Flat Jaws

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.

<u>Part Number</u>	<u>Description</u>
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.

WARRANTY POLICY

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Emco Wheaton Retail Corporation shall, at its option, repair or replace that part which proves to be defective. Repaired or replacement nozzles are warranted for the balance of the original warranty period. This warranty is void unless the original purchaser returns the claimed defective item to Emco Wheaton Retail Corporation for inspection to determine whether the claimed defect is covered by this warranty.

The exclusive and sole remedy under this warranty is repair or replacement of the defective part. Emco is not responsible for claims for damage caused by improper installation or maintenance; corrosive fluids; misuse of the product or use the product for other than its intended purpose; or accident, acts of God, or natural phenomena. Emco will not pay for labor or related expenses, nor shall Emco be liable for any incidental, consequential or exemplary damages. This warranty is void if the Emco Wheaton Retail Corporation product has been previously repaired with parts not approved by Emco Wheaton Retail Corporation, or if a nozzle bears the mark or imprint of a company other than Emco Wheaton Retail Corporation, indicating the nozzle has been rebuilt or repaired by a company other than Emco Wheaton Retail Corporation.

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In the event a nozzle is returned to Emco Wheaton Retail Corporation within the warranty period described above, and when tested is found to be functional and without defect, Emco Wheaton Retail Corporation reserves the right to return the nozzle to the customer or apply a Core Credit (see Nozzle Core Return Program), at Emco Wheaton Retail Corporation's discretion.

In the event of failure within the warranty period, call the Customer Service Department at **(800) 234-4394**. Describe the problem and provide the product date stamp information to the customer service representative. In the case of a nozzle, provide the serial number. The customer service representative will provide a product complaint number, if applicable. Ship the defective equipment **PREPAID**, to Emco Wheaton Retail Corporation for repair or replacement.

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p/n 569043

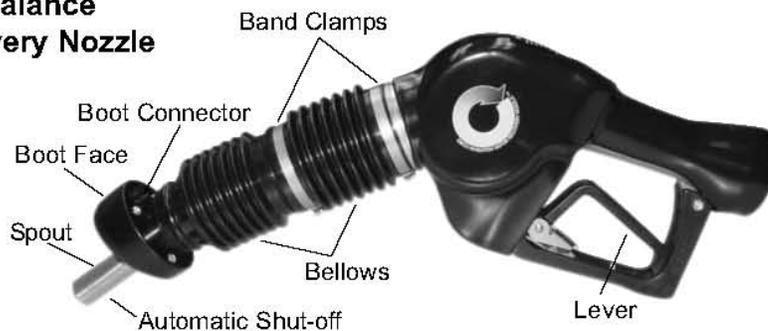
Rev. D, 06/09

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
- Bench Vise w/ 5" Jaw Width
- Bellows Retainer Plate Tool p/n 494712EVR
- Bellows Band Clamp Crimp Tool p/n 494652EVR
- 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, 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.



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.



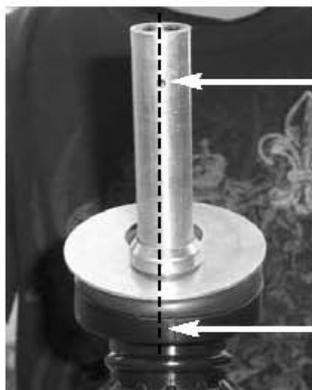
9. Install the new bellows o-ring. Verify that the o-ring seats properly into the machined groove.



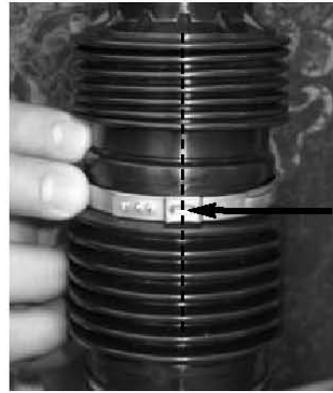
10. Slide the new bellows over the spout until the end reaches the nozzle body. Push down over the bellows o-ring until properly seated.



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.



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.

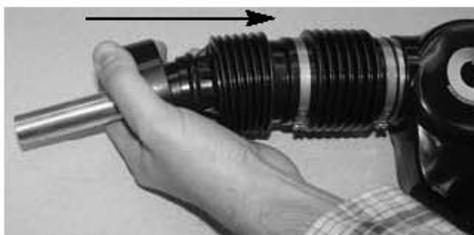


16. Use the bellows band clamp crimp tool p/n 494652EVR to crimp and secure into place.



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.

PREVENTIVE MAINTENANCE

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

<u>Part Number</u>	<u>Description</u>
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.

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619-421-1743 (Technical Services, California)

p/n 569046
Rev. A, 06/09

Packing List:

- (1) Boot Face
- (4) Mounting Screws



A4005EVR
Balance Vapor Recovery Nozzle



INSTALLATION INSTRUCTIONS

Service Tools Required:

- Phillips 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.

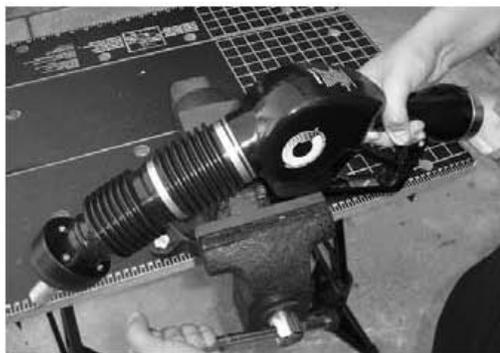
IMPORTANT: Failure to perform cautions 3 and 4 may result in a hazardous gasoline spill, damage to equipment, personal injury and/or death.

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.

2 **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.

<u>Part Number</u>	<u>Description</u>
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.

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

WARRANTY POLICY

Emco Wheaton Retail Corporation service station products are warranted to be free from defects in material and workmanship under normal use and service. Vapor recovery nozzles are warranted for a period of twelve (12) months from date of shipment from Emco Wheaton Retail Corporation or from installation date as specified by the returned warranty card, not to exceed fifteen (15) months from the date of shipment from Emco Wheaton Retail Corporation. This warranty excludes the spout and/or front end components of balance vapor recovery nozzles unless damage is obvious when the nozzle is removed from the shipping carton and the defective nozzle is returned to Emco Wheaton Retail Corporation prior to use and within two (2) months from the date of invoice. Other service station products are warranted for a period of twelve (12) months from the date of manufacture.

Emco Wheaton Retail Corporation shall, at its option, repair or replace that part which proves to be defective. Repaired or replacement nozzles are warranted for the balance of the original warranty period. This warranty is void unless the original purchaser returns the claimed defective item to Emco Wheaton Retail Corporation for inspection to determine whether the claimed defect is covered by this warranty.

The exclusive and sole remedy under this warranty is repair or replacement of the defective part. Emco is not responsible for claims for damage caused by improper installation or maintenance; corrosive fluids; misuse of the product or use the product for other than its intended purpose; or accident, acts of God, or natural phenomena. Emco will not pay for labor or related expenses, nor shall Emco be liable for any incidental, consequential or exemplary damages. This warranty is void if the Emco Wheaton Retail Corporation product has been previously repaired with parts not approved by Emco Wheaton Retail Corporation, or if a nozzle bears the mark or imprint of a company other than Emco Wheaton Retail Corporation, indicating the nozzle has been rebuilt or repaired by a company other than Emco Wheaton Retail Corporation.

EMCO WHEATON RETAIL CORPORATION MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, (WHETHER WRITTEN OR ORAL), INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

In the event a nozzle is returned to Emco Wheaton Retail Corporation within the warranty period described above, and when tested is found to be functional and without defect, Emco Wheaton Retail Corporation reserves the right to return the nozzle to the customer or apply a Core Credit (see Nozzle Core Return Program), at Emco Wheaton Retail Corporation's discretion.

In the event of failure within the warranty period, call the Customer Service Department at **(800) 234-4394**. Describe the problem and provide the product date stamp information to the customer service representative. In the case of a nozzle, provide the serial number. The customer service representative will provide a product complaint number, if applicable. Ship the defective equipment **PREPAID**, to Emco Wheaton Retail Corporation for repair or replacement.

Emco Wheaton Retail Corporation products should be used in compliance with applicable federal, state and local laws and regulations. Product selection should be based on physical specifications and limitations and compatibility with the environment and material to be handled. All illustrations and specifications are based on the latest product information available at the time of publication. Emco Wheaton Retail Corporation reserves the right to make changes at any time in prices, materials, specifications and models and to discontinue models without notice or obligation.

Emco Wheaton Retail Corporation warrants the workmanship and materials to be free of defects and will comply with the performance standards of California ARB CP-201 for a period of one (1) year from the date of installation or fourteen months from the date of shipment from Emco Wheaton Retail Corporation.

Emco Wheaton Retail Corp.

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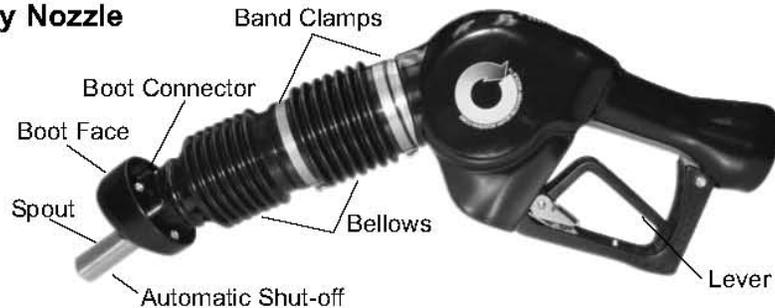
p/n 570184
Rev. A, 06/09

Packing List:

- | | |
|-------------------------|------------------------|
| (1) Spout | (1) Interlock Guide |
| (1) Bellows O-ring | (1) Interlock Push Rod |
| (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 |
| • 15" Crescent Wrench | • Needle Nose Pliers |
| • Torque Wrench w/ 45-55 ft-lbs. Setting | • 40mm Crows Foot |
| • Bench Vise w/ 5" Jaw Width | • 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.

1

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.



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.



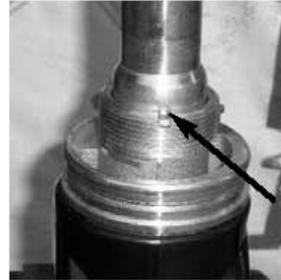
12. Use the needle nose pliers to remove the interlock push rod.

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.

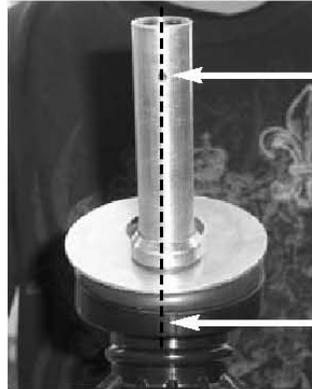


20. Slide the bellows over the spout until the end reaches the nozzle body. Push down over the bellows o-ring until properly seated.

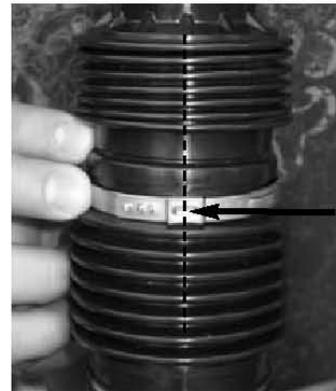
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21. Use the bellows retainer plate tool p/n 494712EVR to secure and lock the bellows and boot face in place.



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. 7



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.

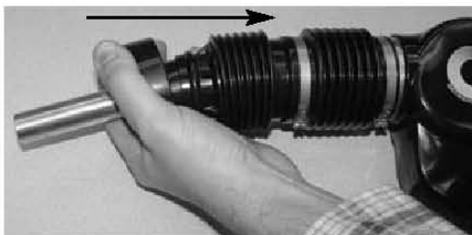


26. Use the bellows band clamp crimp tool p/n 494652EVR to crimp and secure into place.



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.

<u>Part Number</u>	<u>Description</u>
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.

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

WARRANTY POLICY

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Emco Wheaton Retail Corporation shall, at its option, repair or replace that part which proves to be defective. Repaired or replacement nozzles are warranted for the balance of the original warranty period. This warranty is void unless the original purchaser returns the claimed defective item to Emco Wheaton Retail Corporation for inspection to determine whether the claimed defect is covered by this warranty.

The exclusive and sole remedy under this warranty is repair or replacement of the defective part. Emco is not responsible for claims for damage caused by improper installation or maintenance; corrosive fluids; misuse of the product or use the product for other than its intended purpose; or accident, acts of God, or natural phenomena. Emco will not pay for labor or related expenses, nor shall Emco be liable for any incidental, consequential or exemplary damages. This warranty is void if the Emco Wheaton Retail Corporation product has been previously repaired with parts not approved by Emco Wheaton Retail Corporation, or if a nozzle bears the mark or imprint of a company other than Emco Wheaton Retail Corporation, indicating the nozzle has been rebuilt or repaired by a company other than Emco Wheaton Retail Corporation.

EMCO WHEATON RETAIL CORPORATION MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, (WHETHER WRITTEN OR ORAL), INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

In the event a nozzle is returned to Emco Wheaton Retail Corporation within the warranty period described above, and when tested is found to be functional and without defect, Emco Wheaton Retail Corporation reserves the right to return the nozzle to the customer or apply a Core Credit (see Nozzle Core Return Program), at Emco Wheaton Retail Corporation's discretion.

In the event of failure within the warranty period, call the Customer Service Department at **(800) 234-4394**. Describe the problem and provide the product date stamp information to the customer service representative. In the case of a nozzle, provide the serial number. The customer service representative will provide a product complaint number, if applicable. Ship the defective equipment **PREPAID**, to Emco Wheaton Retail Corporation for repair or replacement.

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Emco Wheaton Retail Corporation warrants the workmanship and materials to be free of defects and will comply with the performance standards of California ARB CP-201 for a period of one (1) year from the date of installation or fourteen months from the date of shipment from Emco Wheaton Retail Corporation.

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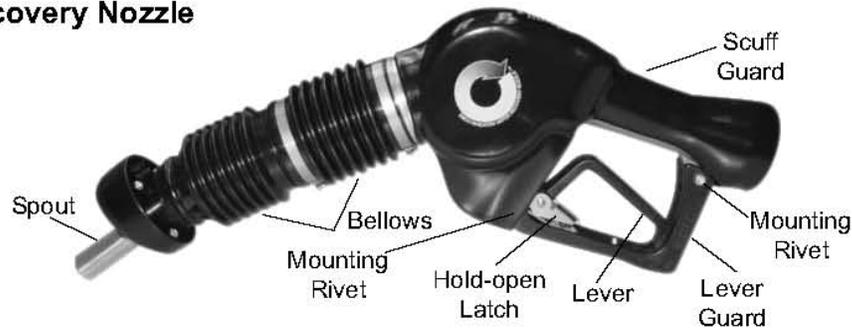
p/n 570181
Rev. A, 06/09

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
- Lever Guard Rivet Installation Tool p/n 494653EVR
- Needle Nose Pliers
- Awl w/ 1/4" Tip
- Hammer
- 5/8" Diameter Punch
- 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 latch.



3. It is necessary to remove the A4005EVR nozzle from the A4110EVR hose swivel during the removal and installation of the latch. Use the pipe wrench with flat jaws to loosen the swivel nut. Unfasten the swivel nut 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 A4110EVR hose swivel.

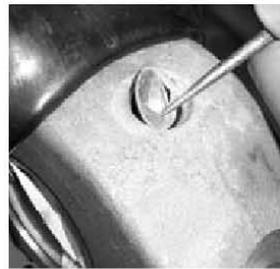
Installation:

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.

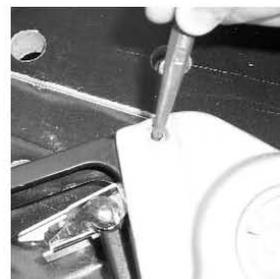
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5. Use the awl and hammer to lightly tap and remove the dust plug.



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 569044.

PREVENTIVE MAINTENANCE

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

<u>Part Number</u>	<u>Description</u>
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.

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In the event a nozzle is returned to Emco Wheaton Retail Corporation within the warranty period described above, and when tested is found to be functional and without defect, Emco Wheaton Retail Corporation reserves the right to return the nozzle to the customer or apply a Core Credit (see Nozzle Core Return Program), at Emco Wheaton Retail Corporation's discretion.

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Packing List:

(2) Fuel Path O-rings



**A4005EVR Balance
Vapor Recovery Nozzle**



**A4110EVR Coaxial
Hose Swivel**



**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, A4110EVR hose swivel 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, A4110EVR hose swivel 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, A4110EVR hose swivel and A4119EVR safe break valve during the removal and installation of the fuel path o-rings. Use the pipe wrench with flat jaws to loosen the swivel nut. Unfasten the swivel nut 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 A4110EVR hose swivel.



A4005EVR Nozzle



**A4110EVR
Hose Swivel**



**A4119EVR
Safe Break Valve**

4. Use the bench vise to properly secure the A4005EVR nozzle, A4110EVR hose swivel or A4119EVR safe break valve during service.

Installation:

Removing the Existing Fuel Path O-rings



A4005EVR Nozzle



**A4110EVR
Hose Swivel**



**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



**A4110EVR
Hose Swivel**



**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



**A4110EVR
Hose Swivel**



**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, A4110EVR hose swivel or A4119EVR safe break valve, please refer to the following installation instructions below.

- A4005EVR Balance Vapor Recovery Nozzle p/n 569044
- A4110EVR Coaxial Hose Swivel p/n 569042
- A4119EVR Coaxial Safe Break Valve p/n 569043

PREVENTIVE MAINTENANCE

1. Weekly inspect the A4005EVR nozzle, A4110EVR hose swivel and A4119EVR safe break valve connections for leaks or fuel residue. Replace with factory authorized service kits.

<u>Part Number</u>	<u>Description</u>
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.

WARRANTY POLICY

Emco Wheaton Retail Corporation service station products are warranted to be free from defects in material and workmanship under normal use and service. Vapor recovery nozzles are warranted for a period of twelve (12) months from date of shipment from Emco Wheaton Retail Corporation or from installation date as specified by the returned warranty card, not to exceed fifteen (15) months from the date of shipment from Emco Wheaton Retail Corporation. This warranty excludes the spout and/or front end components of balance vapor recovery nozzles unless damage is obvious when the nozzle is removed from the shipping carton and the defective nozzle is returned to Emco Wheaton Retail Corporation prior to use and within two (2) months from the date of invoice. Other service station products are warranted for a period of twelve (12) months from the date of manufacture.

Emco Wheaton Retail Corporation shall, at its option, repair or replace that part which proves to be defective. Repaired or replacement nozzles are warranted for the balance of the original warranty period. This warranty is void unless the original purchaser returns the claimed defective item to Emco Wheaton Retail Corporation for inspection to determine whether the claimed defect is covered by this warranty.

The exclusive and sole remedy under this warranty is repair or replacement of the defective part. Emco is not responsible for claims for damage caused by improper installation or maintenance; corrosive fluids; misuse of the product or use the product for other than its intended purpose; or accident, acts of God, or natural phenomena. Emco will not pay for labor or related expenses, nor shall Emco be liable for any incidental, consequential or exemplary damages. This warranty is void if the Emco Wheaton Retail Corporation product has been previously repaired with parts not approved by Emco Wheaton Retail Corporation, or if a nozzle bears the mark or imprint of a company other than Emco Wheaton Retail Corporation, indicating the nozzle has been rebuilt or repaired by a company other than Emco Wheaton Retail Corporation.

EMCO WHEATON RETAIL CORPORATION MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, (WHETHER WRITTEN OR ORAL), INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

In the event a nozzle is returned to Emco Wheaton Retail Corporation within the warranty period described above, and when tested is found to be functional and without defect, Emco Wheaton Retail Corporation reserves the right to return the nozzle to the customer or apply a Core Credit (see Nozzle Core Return Program), at Emco Wheaton Retail Corporation's discretion.

In the event of failure within the warranty period, call the Customer Service Department at **(800) 234-4394**. Describe the problem and provide the product date stamp information to the customer service representative. In the case of a nozzle, provide the serial number. The customer service representative will provide a product complaint number, if applicable. Ship the defective equipment **PREPAID**, to Emco Wheaton Retail Corporation for repair or replacement.

Emco Wheaton Retail Corporation products should be used in compliance with applicable federal, state and local laws and regulations. Product selection should be based on physical specifications and limitations and compatibility with the environment and material to be handled. All illustrations and specifications are based on the latest product information available at the time of publication. Emco Wheaton Retail Corporation reserves the right to make changes at any time in prices, materials, specifications and models and to discontinue models without notice or obligation.

Emco Wheaton Retail Corporation warrants the workmanship and materials to be free of defects and will comply with the performance standards of California ARB CP-201 for a period of one (1) year from the date of installation or fourteen months from the date of shipment from Emco Wheaton Retail Corporation.

Emco Wheaton Retail Corp.

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619-421-1743 (Technical Services, California)

p/n 570178
Rev. A, 05/09

Packing List:

(1) Vapor Path O-ring



**A4110EVR
Coaxial Hose Swivel**



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 A4110EVR hose swivel, turn off and tag out power to the corresponding dispenser.
4. Before attempting to install, remove or service the A4005EVR nozzle and A4110EVR hose swivel, 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 vapor path o-rings.



3. It is necessary to remove the A4005EVR nozzle from the A4110EVR hose swivel during the removal and installation of the vapor path o-ring. Use the pipe wrench with flat jaws to loosen the swivel nut. Unfasten the swivel nut 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 A4110EVR hose swivel.



4. Use the bench vise to properly secure the A4110EVR hose swivel during service.

Installation:

Removing the Existing Vapor Path O-ring



5. Use the scribe tool to remove the existing vapor path o-ring from the machined groove located on top of the swivel nut.
6. Clean and remove all existing grease, fuel residue, debris, etc. from within the machined groove.

IMPORTANT: Properly discard all removed components.

Installing the New Vapor Path O-ring



7. Install the new vapor path o-ring. Verify that the o-ring seats properly into the machined groove.



8. Lightly lubricate the vapor path o-ring using petroleum jelly or other suitable lubricant.

Post-Installation:

9. Before attempting to reinstall the A4005EVR nozzle, please refer to A4005EVR Balance Vapor Recovery Installation Instructions p/n 569044.

PREVENTIVE MAINTENANCE

1. Weekly inspect the A4110EVR hose swivel connections for leaks or fuel residue. Replace with factory authorized service kits.

Part Number Description

494749EVR Vapor 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.

WARRANTY POLICY

Emco Wheaton Retail Corporation service station products are warranted to be free from defects in material and workmanship under normal use and service. Vapor recovery nozzles are warranted for a period of twelve (12) months from date of shipment from Emco Wheaton Retail Corporation or from installation date as specified by the returned warranty card, not to exceed fifteen (15) months from the date of shipment from Emco Wheaton Retail Corporation. This warranty excludes the spout and/or front end components of balance vapor recovery nozzles unless damage is obvious when the nozzle is removed from the shipping carton and the defective nozzle is returned to Emco Wheaton Retail Corporation prior to use and within two (2) months from the date of invoice. Other service station products are warranted for a period of twelve (12) months from the date of manufacture.

Emco Wheaton Retail Corporation shall, at its option, repair or replace that part which proves to be defective. Repaired or replacement nozzles are warranted for the balance of the original warranty period. This warranty is void unless the original purchaser returns the claimed defective item to Emco Wheaton Retail Corporation for inspection to determine whether the claimed defect is covered by this warranty.

The exclusive and sole remedy under this warranty is repair or replacement of the defective part. Emco is not responsible for claims for damage caused by improper installation or maintenance; corrosive fluids; misuse of the product or use the product for other than its intended purpose; or accident, acts of God, or natural phenomena. Emco will not pay for labor or related expenses, nor shall Emco be liable for any incidental, consequential or exemplary damages. This warranty is void if the Emco Wheaton Retail Corporation product has been previously repaired with parts not approved by Emco Wheaton Retail Corporation, or if a nozzle bears the mark or imprint of a company other than Emco Wheaton Retail Corporation, indicating the nozzle has been rebuilt or repaired by a company other than Emco Wheaton Retail Corporation.

EMCO WHEATON RETAIL CORPORATION MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, (WHETHER WRITTEN OR ORAL), INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

In the event a nozzle is returned to Emco Wheaton Retail Corporation within the warranty period described above, and when tested is found to be functional and without defect, Emco Wheaton Retail Corporation reserves the right to return the nozzle to the customer or apply a Core Credit (see Nozzle Core Return Program), at Emco Wheaton Retail Corporation's discretion.

In the event of failure within the warranty period, call the Customer Service Department at **(800) 234-4394**. Describe the problem and provide the product date stamp information to the customer service representative. In the case of a nozzle, provide the serial number. The customer service representative will provide a product complaint number, if applicable. Ship the defective equipment **PREPAID**, to Emco Wheaton Retail Corporation for repair or replacement.

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Emco Wheaton Retail Corporation warrants the workmanship and materials to be free of defects and will comply with the performance standards of California ARB CP-201 for a period of one (1) year from the date of installation or fourteen months from the date of shipment from Emco Wheaton Retail Corporation.

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p/n 570179
Rev. A, 05/09

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.



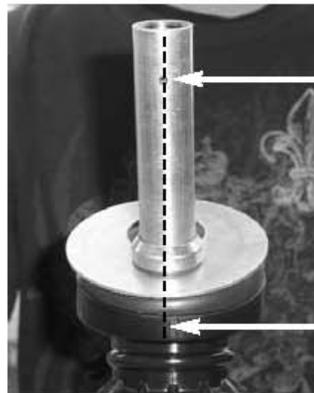
5. Locate the bottom bellows band clamp. Use the flat head screw driver to dislodge the locking mechanism and remove the band clamp from the bellows.

IMPORTANT: Properly discard all removed components.

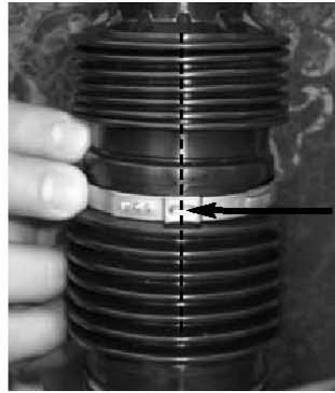
Installing the New Bellows Band Clamps



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.

<u>Part Number</u>	<u>Description</u>
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.

WARRANTY POLICY

Emco Wheaton Retail Corporation service station products are warranted to be free from defects in material and workmanship under normal use and service. Vapor recovery nozzles are warranted for a period of twelve (12) months from date of shipment from Emco Wheaton Retail Corporation or from installation date as specified by the returned warranty card, not to exceed fifteen (15) months from the date of shipment from Emco Wheaton Retail Corporation. This warranty excludes the spout and/or front end components of balance vapor recovery nozzles unless damage is obvious when the nozzle is removed from the shipping carton and the defective nozzle is returned to Emco Wheaton Retail Corporation prior to use and within two (2) months from the date of invoice. Other service station products are warranted for a period of twelve (12) months from the date of manufacture.

Emco Wheaton Retail Corporation shall, at its option, repair or replace that part which proves to be defective. Repaired or replacement nozzles are warranted for the balance of the original warranty period. This warranty is void unless the original purchaser returns the claimed defective item to Emco Wheaton Retail Corporation for inspection to determine whether the claimed defect is covered by this warranty.

The exclusive and sole remedy under this warranty is repair or replacement of the defective part. Emco is not responsible for claims for damage caused by improper installation or maintenance; corrosive fluids; misuse of the product or use the product for other than its intended purpose; or accident, acts of God, or natural phenomena. Emco will not pay for labor or related expenses, nor shall Emco be liable for any incidental, consequential or exemplary damages. This warranty is void if the Emco Wheaton Retail Corporation product has been previously repaired with parts not approved by Emco Wheaton Retail Corporation, or if a nozzle bears the mark or imprint of a company other than Emco Wheaton Retail Corporation, indicating the nozzle has been rebuilt or repaired by a company other than Emco Wheaton Retail Corporation.

EMCO WHEATON RETAIL CORPORATION MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, (WHETHER WRITTEN OR ORAL), INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

In the event a nozzle is returned to Emco Wheaton Retail Corporation within the warranty period described above, and when tested is found to be functional and without defect, Emco Wheaton Retail Corporation reserves the right to return the nozzle to the customer or apply a Core Credit (see Nozzle Core Return Program), at Emco Wheaton Retail Corporation's discretion.

In the event of failure within the warranty period, call the Customer Service Department at **(800) 234-4394**. Describe the problem and provide the product date stamp information to the customer service representative. In the case of a nozzle, provide the serial number. The customer service representative will provide a product complaint number, if applicable. Ship the defective equipment **PREPAID**, to Emco Wheaton Retail Corporation for repair or replacement.

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p/n 570180
Rev. A, 05/09

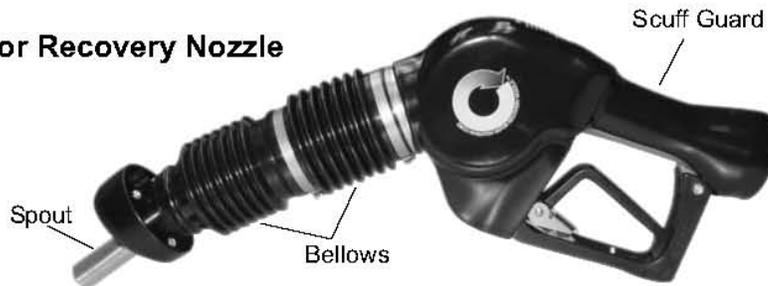
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Packing List:

(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.

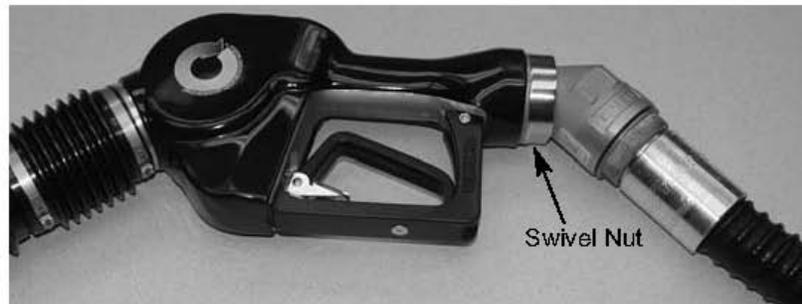
IMPORTANT: Failure to perform cautions 3 and 4 may result in a hazardous gasoline spill, damage to equipment, personal injury and/or death.

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.

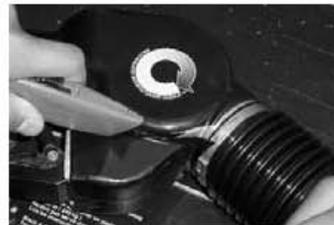


3. It is necessary to remove the A4005EVR nozzle from the A4110EVR hose swivel during the removal and installation of the scuff guard. Use the pipe wrench with flat jaws to loosen the swivel nut. Unfasten the swivel nut by hand from the A4005EVR nozzle to avoid cross threading.

IMPORTANT: Drain the fuel from the hanging hardware into a gasoline approved container when removing the A4005EVR nozzle from the A4110EVR hose swivel.

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 569044.

PREVENTIVE MAINTENANCE

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

<u>Part Number</u>	<u>Description</u>
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.

WARRANTY POLICY

Emco Wheaton Retail Corporation service station products are warranted to be free from defects in material and workmanship under normal use and service. Vapor recovery nozzles are warranted for a period of twelve (12) months from date of shipment from Emco Wheaton Retail Corporation or from installation date as specified by the returned warranty card, not to exceed fifteen (15) months from the date of shipment from Emco Wheaton Retail Corporation. This warranty excludes the spout and/or front end components of balance vapor recovery nozzles unless damage is obvious when the nozzle is removed from the shipping carton and the defective nozzle is returned to Emco Wheaton Retail Corporation prior to use and within two (2) months from the date of invoice. Other service station products are warranted for a period of twelve (12) months from the date of manufacture.

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The exclusive and sole remedy under this warranty is repair or replacement of the defective part. Emco is not responsible for claims for damage caused by improper installation or maintenance; corrosive fluids; misuse of the product or use the product for other than its intended purpose; or accident, acts of God, or natural phenomena. Emco will not pay for labor or related expenses, nor shall Emco be liable for any incidental, consequential or exemplary damages. This warranty is void if the Emco Wheaton Retail Corporation product has been previously repaired with parts not approved by Emco Wheaton Retail Corporation, or if a nozzle bears the mark or imprint of a company other than Emco Wheaton Retail Corporation, indicating the nozzle has been rebuilt or repaired by a company other than Emco Wheaton Retail Corporation.

EMCO WHEATON RETAIL CORPORATION MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, (WHETHER WRITTEN OR ORAL), INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

In the event a nozzle is returned to Emco Wheaton Retail Corporation within the warranty period described above, and when tested is found to be functional and without defect, Emco Wheaton Retail Corporation reserves the right to return the nozzle to the customer or apply a Core Credit (see Nozzle Core Return Program), at Emco Wheaton Retail Corporation's discretion.

In the event of failure within the warranty period, call the Customer Service Department at **(800) 234-4394**. Describe the problem and provide the product date stamp information to the customer service representative. In the case of a nozzle, provide the serial number. The customer service representative will provide a product complaint number, if applicable. Ship the defective equipment **PREPAID**, to Emco Wheaton Retail Corporation for repair or replacement.

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p/n 570183
Rev. A, 06/09



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.
 - 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 the Goodyear Maxguard 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 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.

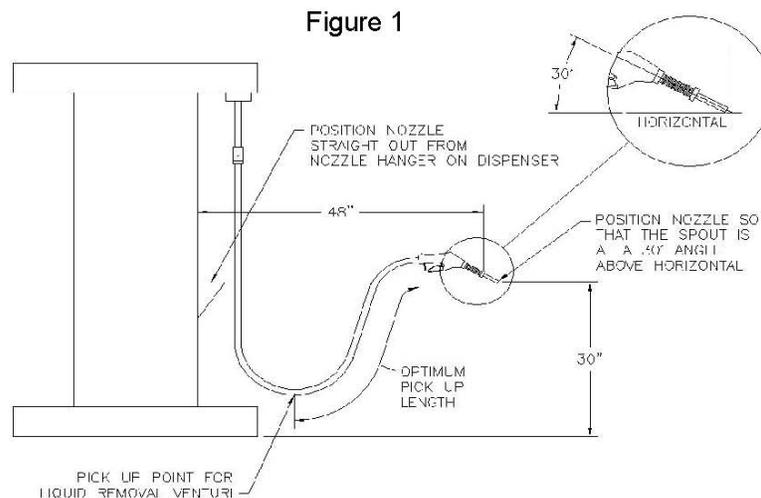
Maxxim Premier Plus Venturi Pick-up Length Instructions

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.



- 3 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 at the bottom of the loop.
- 4 If the mark on the hose is not at the bottom of the hose loop as 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 Goodyear’s Maxxim Premier Plus balance venturi hose.
 - c) Contact your local Goodyear distributor to obtain a Maxxim Premier Plus hose with the optimum venturi pick-up tube length.



Questions on installation should be directed to your local Goodyear distributor or Goodyear Customer Service, 1-800-235-4632.

INSTALLATION MANUAL

HIRT VCS 100
VAPOR PROCESSOR AND INDICATOR PANEL

FOR EXECUTIVE ORDER VR-207

HIRT COMBUSTION ENGINEERS, INC.

3659 San Gabriel River Parkway · Pico Rivera, Ca 90660

P.O. Box 6816 · Pico Rivera, CA 90661

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REV. 5:10/2008

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1. INTRODUCTION

This Manual contains the operation, installation, interconnection, start-up, and maintenance instructions for the VCS 100 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. 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 system must be a Hirt VCS 100 certified technician. To attend a VCS 100 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. Technician certification can be verified by calling or emailing Hirt Combustion Engineers, Inc.

Note to Contractors/Technicians: Contractors should always verify the training and certification requirements with the local Air Quality Management District (District) before beginning installation of CARB EVR systems. The District inspector may request to see your certification card(s) on-site for confirmation.

4. HIRT VCS 100 PROCESSOR OVERVIEW

4.1 THEORY OF OPERATION

The processor continuously measures the pressure of the vapor in the storage tanks. When that pressure is 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

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, 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 thereby 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 CO₂ and H₂O 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

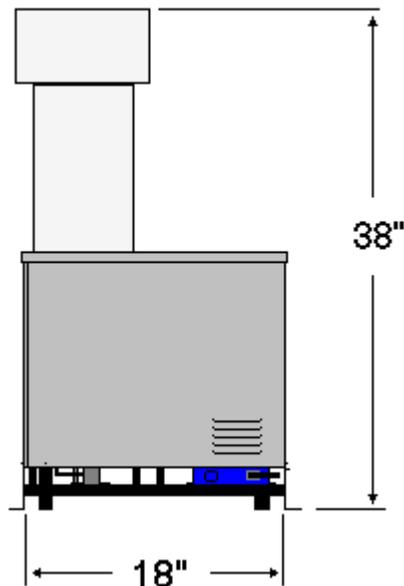
The processors' electrical power source comes thru an Indicator Panel. The panel allows the station operator to determine the current state of the

processor and 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 an OVERPRESSURE (red) lamp.

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

The OVERPRESSURE lamp is wired to the vacuum sensor/switch and a timing module. If the UST pressure is positive for at least 1 hour, then the vacuum sensor/switch will be closed and the timing module will light the OVERPRESSURE lamp. The OVERPRESSURE lamp indicates a leak in the vapor recovery system or possibly a malfunction of the Hirt VCS 100 processor. The OVERPRESSURE lamp will extinguish after the leaks or processor malfunction is corrected and the processor has restored the UST ullage to a nominal -0.40 " w.c.

4.4 Processor Dimensions, Weight, and Specifications



MODEL: VCS 100

SERVICE: Outdoor, non hazardous area

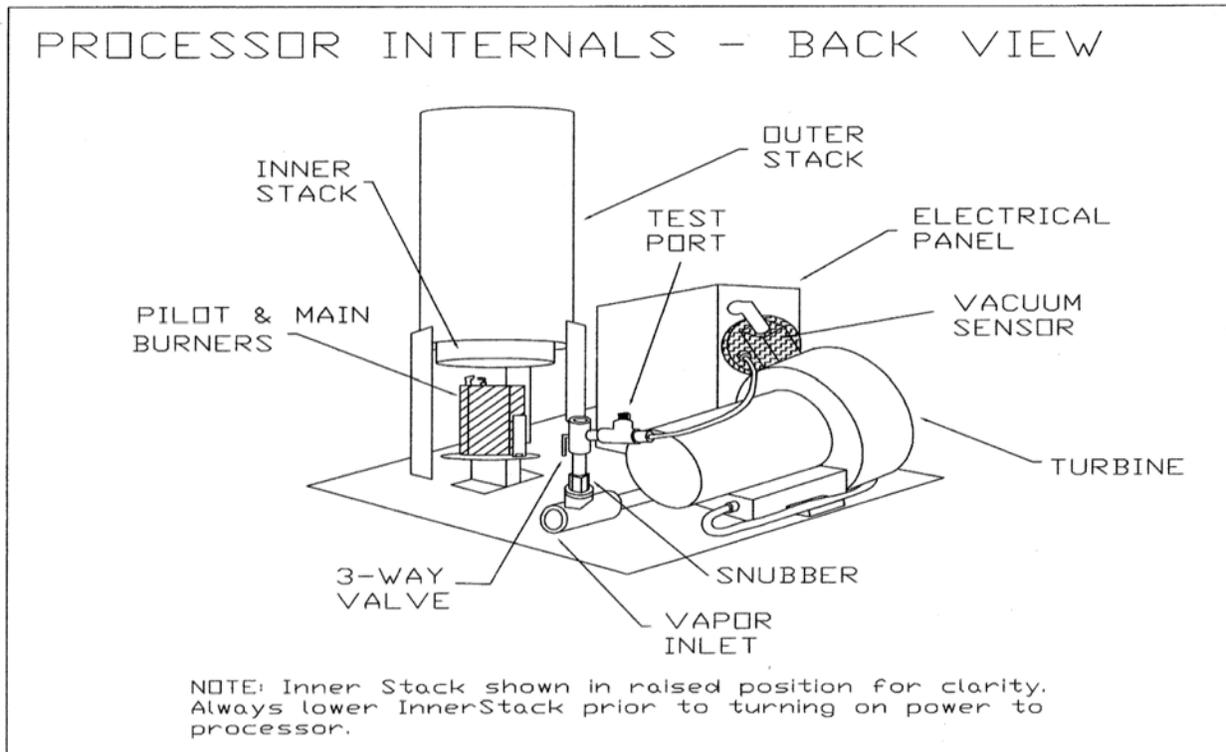
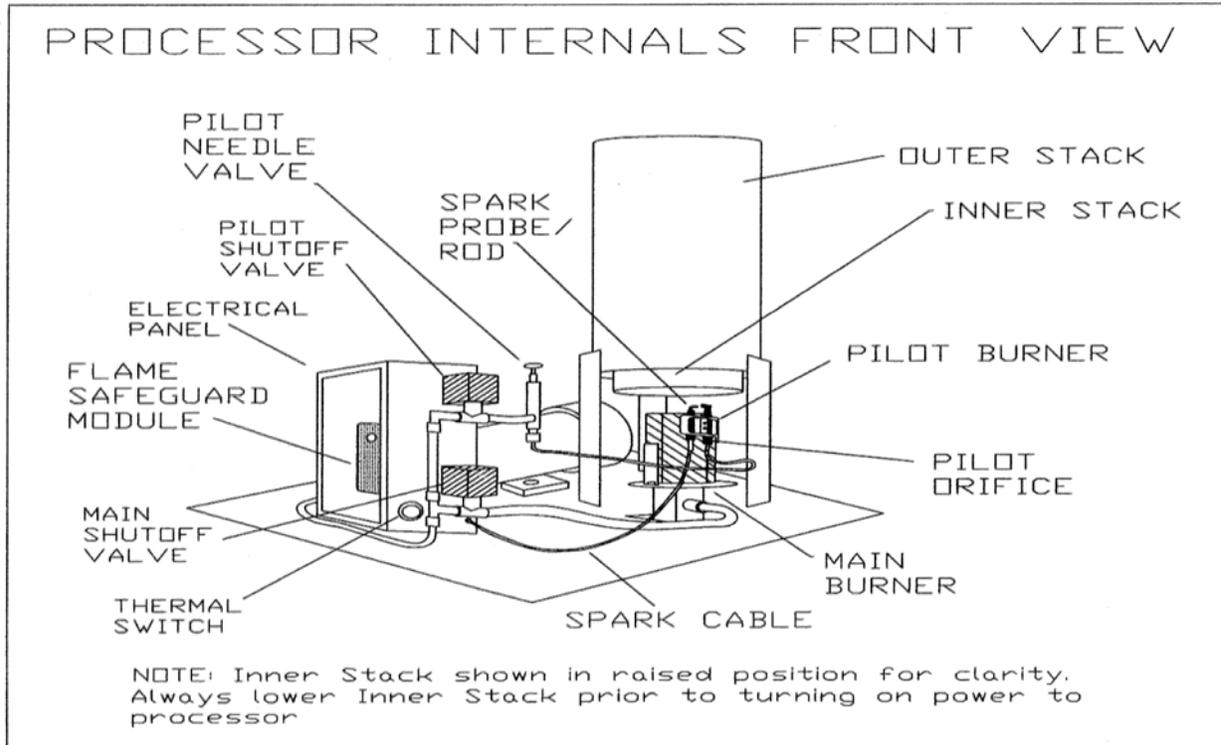
ELECTRICAL: 120 VAC, 3 Ampere, intermittent

VAPOR PIPE CONNECTION: 3/4@ NPT

WEIGHT: 80 lbs.

OVERALL DIMENSIONS: 18" wide X 18" deep x 38" high (without legs)

4.5. Processor Internal Components



5. INSTALLATION OF PROCESSOR

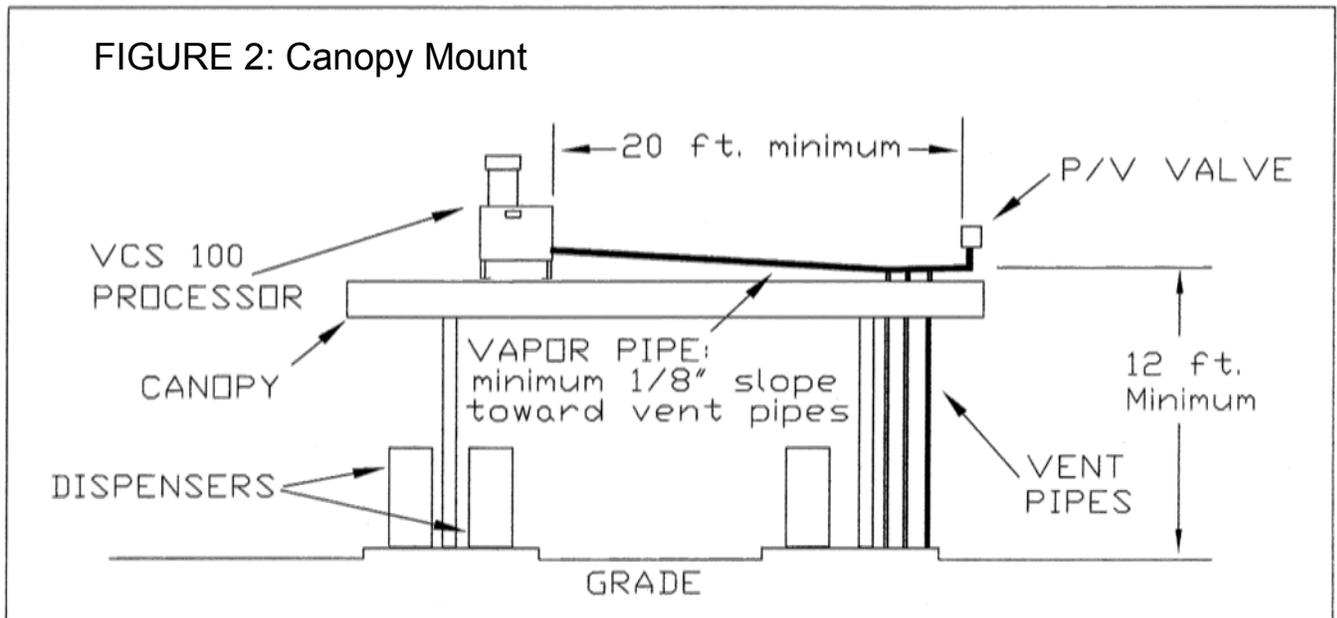
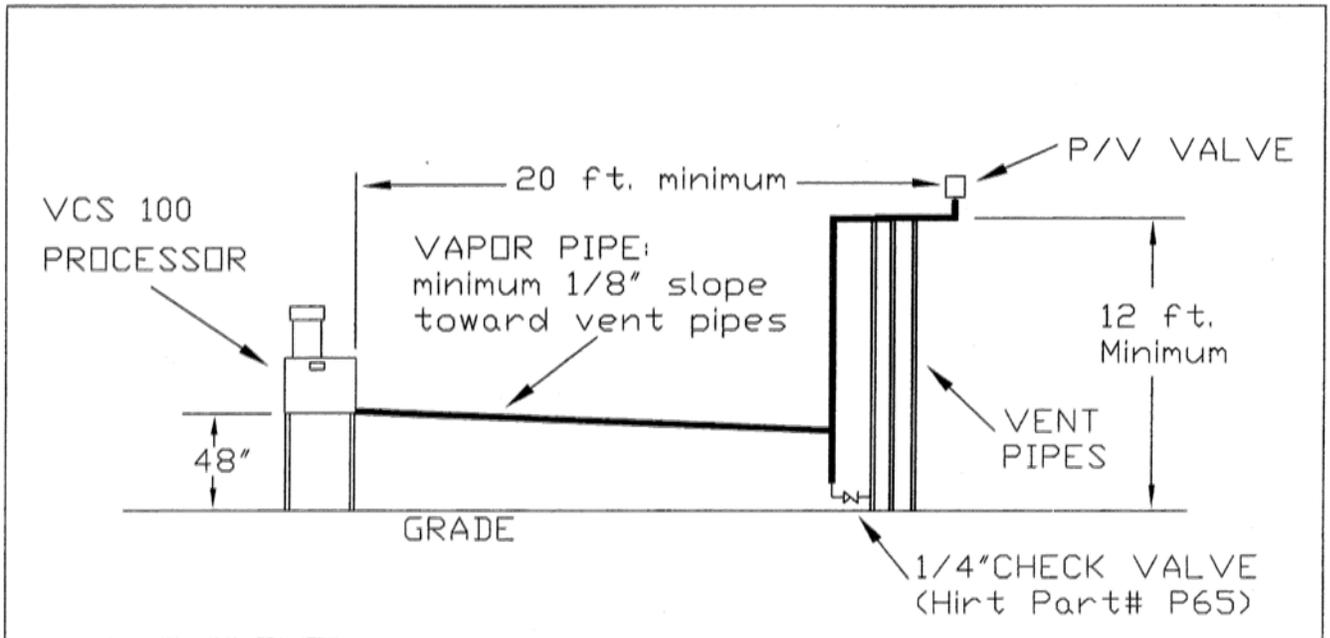
5.1 PRE-INSTALLATION SITE REQUIREMENTS

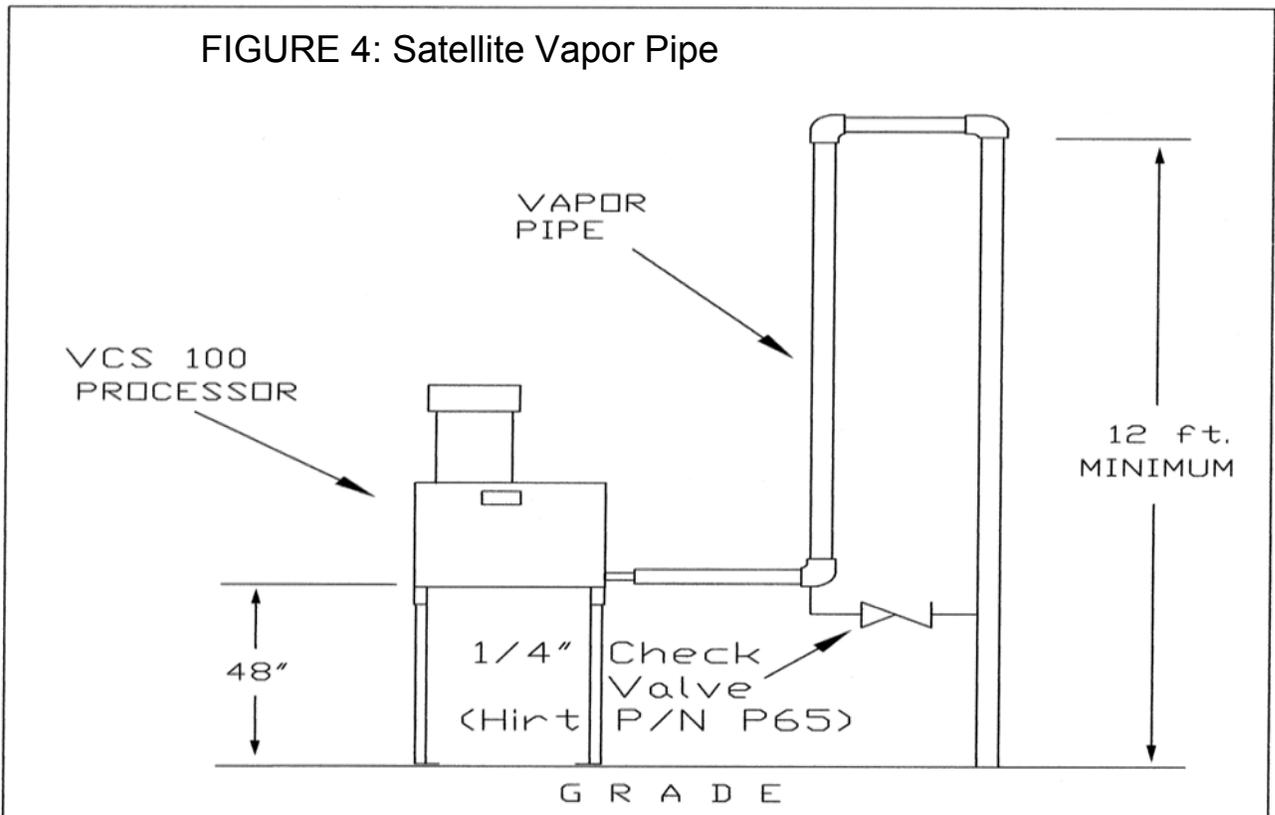
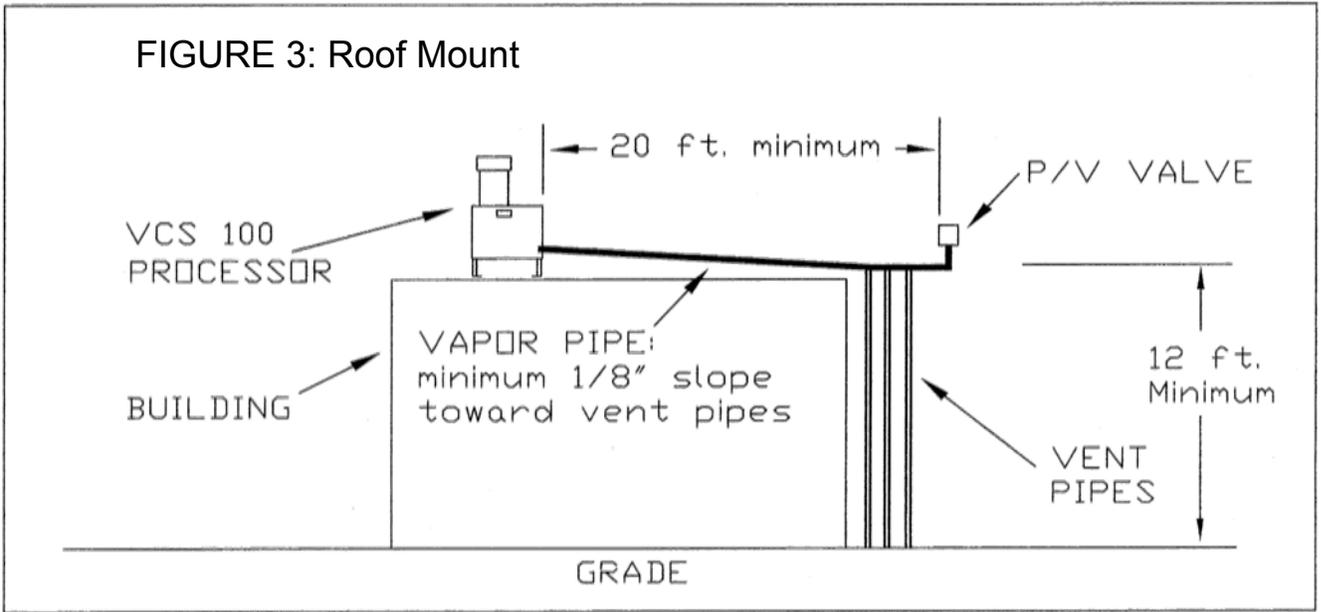
Selection of processor location should be based on the following requirements and considerations:

- 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 underground storage tanks(s). Typically the processor connects to the storage tank vent pipes. However, the processor can be connected to any tank fitting except for the dispenser's vapor return pipe. Note, the vapor piping must slope 1/8" per foot to prevent condensate from blocking vapor path. A slope of 1/4" per foot is recommended. (See section 7.2.2 and FIGURE 8)

Any installations resulting in a low point liquid trap shall use a Hirt P65 1/4" check valve to drain any liquid back to the UST (see figures 1 and 4 for typical check valve configurations).
- 5.1.7 Ease of conduit run to Indicator Panel.
- 5.1.8 Do not locate processor on property easement. Consult local authority, such as City Hall, to determine width of set back from property line.

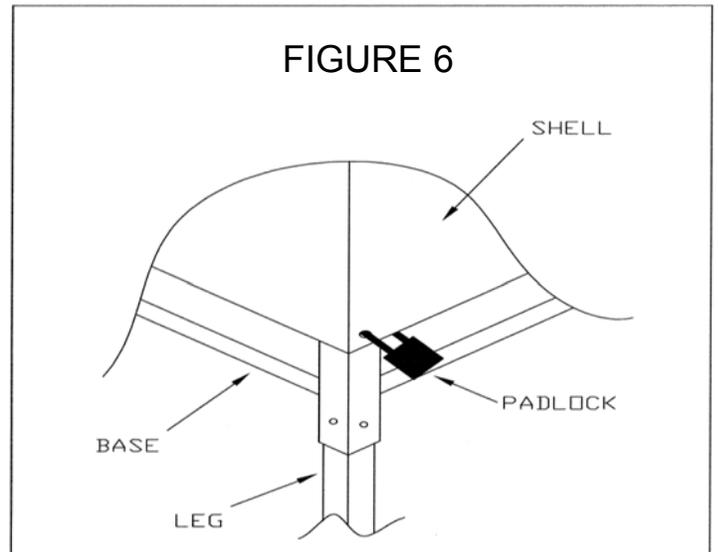
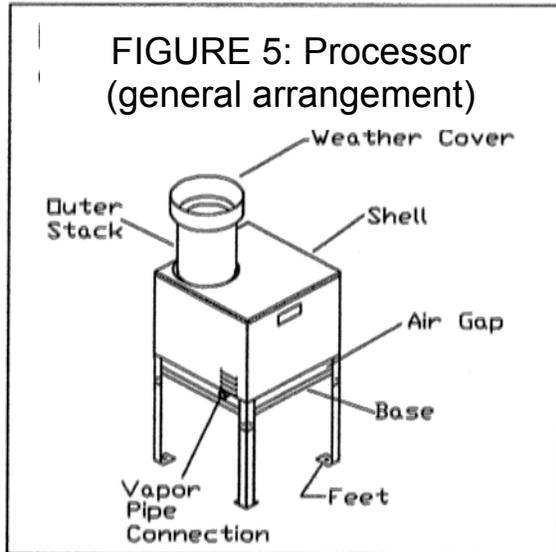
The preferred location for the processor is on the roof of the building to which the vent pipes attach. Many other locations are also practical such as ground mount, canopy mount, roof mount on a remote building, and satellite mount as noted in Figures 1 through 4.





5.2 ASSEMBLY OF LEGS TO PROCESSOR

Please refer to FIGURE 5, the processor general arrangement drawing, for the following instructions.

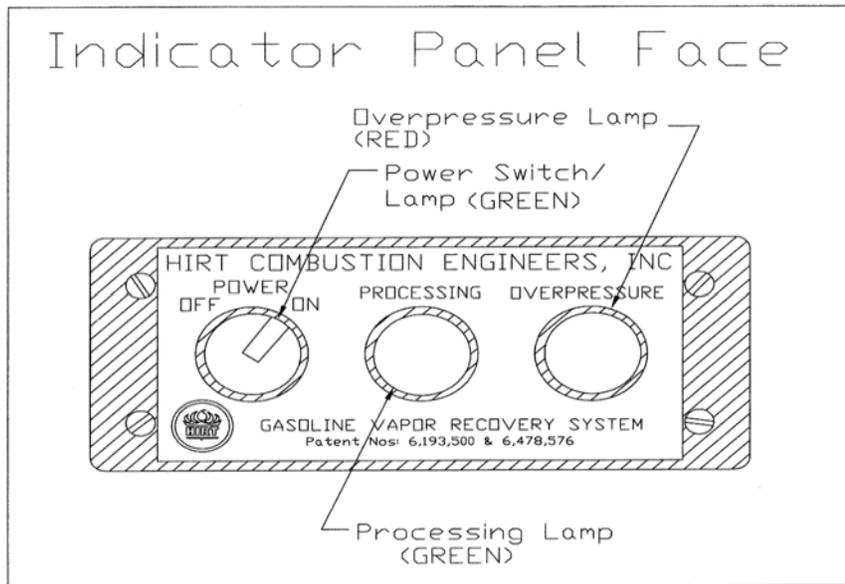


Ground level mount requires the use of the 48" Legs, and canopy or roof mount will require the 5" or longer Legs.

- 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 6 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

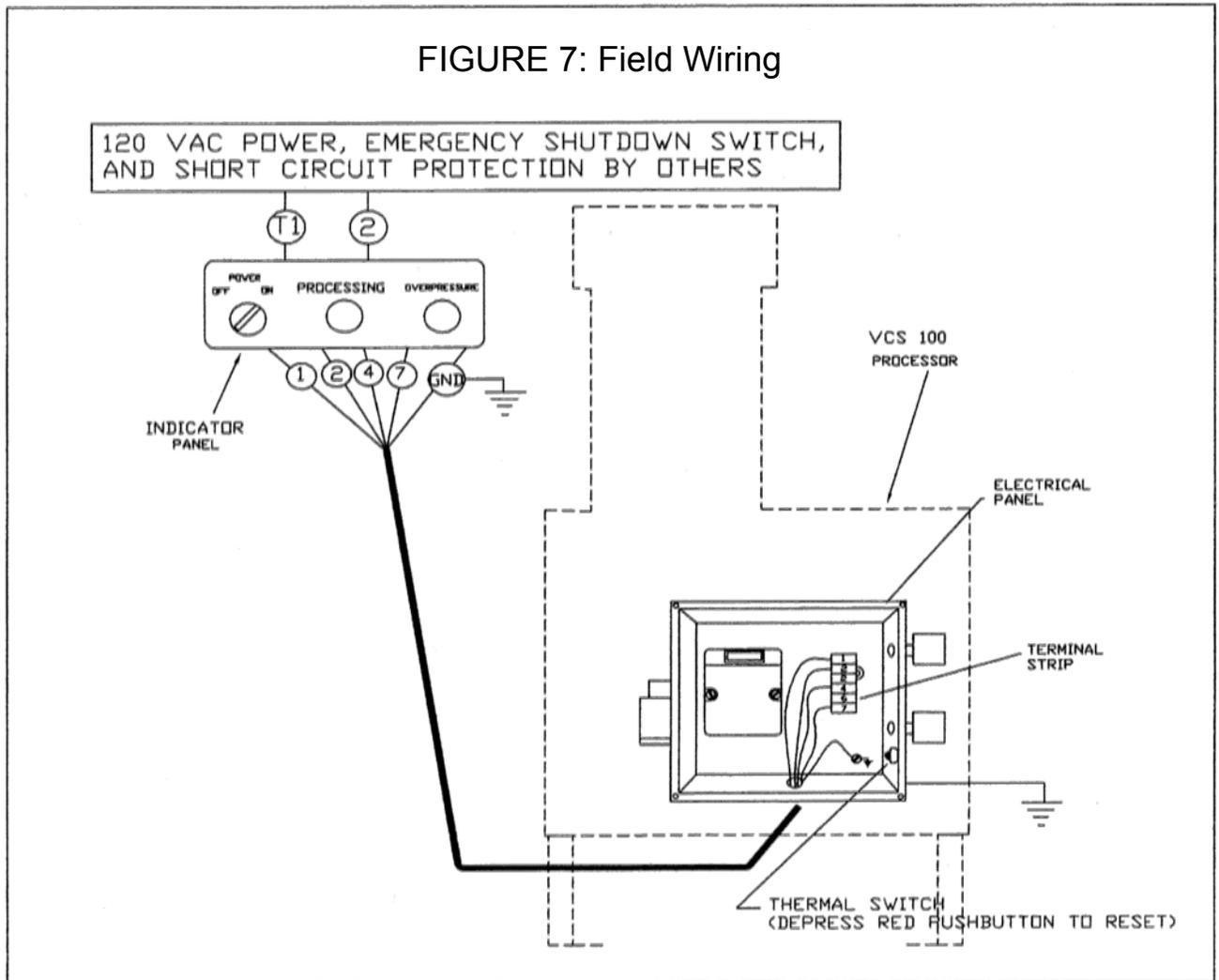
Remove Processor's Weather Cover, Shell, and electrical panel lid prior to performing the following steps.

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 7.
- 7.1.2 Wire size should be per local electrical code for an eight (8) ampere, 120 VAC load. Be sure to include circuit protection per local code. Also, system must be electrically grounded in accordance with local

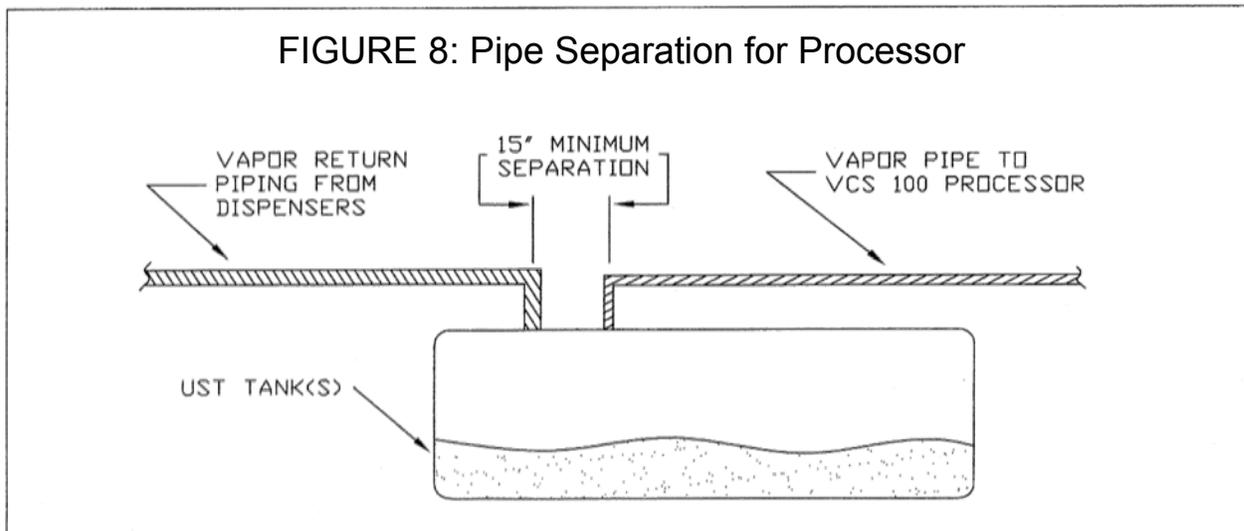
codes, or in the absence of local codes, with the current edition of the National Electrical Code, ANSI/NFPA70.

- 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 I, Groups C and D, Division 2 areas where the conduit enters the panel.



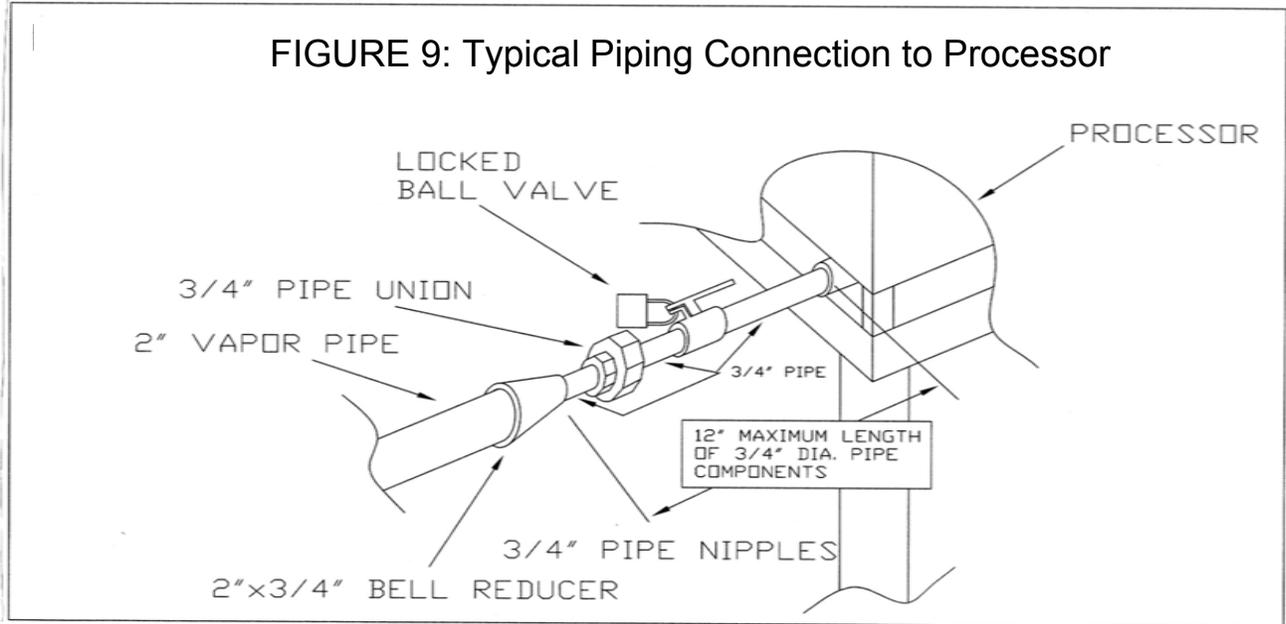
7.2 GASOLINE VAPOR SUPPLY

- 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. See FIGURE 8.



- 7.2.2 Vapor pipe must rise continuously from storage tank ullage connection to processor connection, and it needs to be supported to prevent trapping liquid in droops or sags in the pipe. Pipe slope must be at least 1/8" per foot, but a slope of 1/4" per foot is recommended. Also be sure to put a pipe support close to the processor to prevent placing undue stress on the Turbine.
- 7.2.3 Vapor pipe configuration must prevent liquid gasoline from reaching processor. Acceptable solutions include locating the processor 12 ft. above grade, connecting the vapor pipe to the top of the vent pipes, and installing a 12 ft. high loop. See FIGURES 1, 2, 3, and 4. Any installations resulting in a low point liquid trap shall use a Hirt P65 1/4" check valve to drain any liquid back to the UST (see figures 1 and 4 for typical check valve configurations).
- 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. Note: The ball valve is installed in the vapor pipe at the processor for maintenance and repair. The ball valve is to be left in the locked open position (Opened to UST Ullage) during normal operation. Failure to leave 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 9 for details.

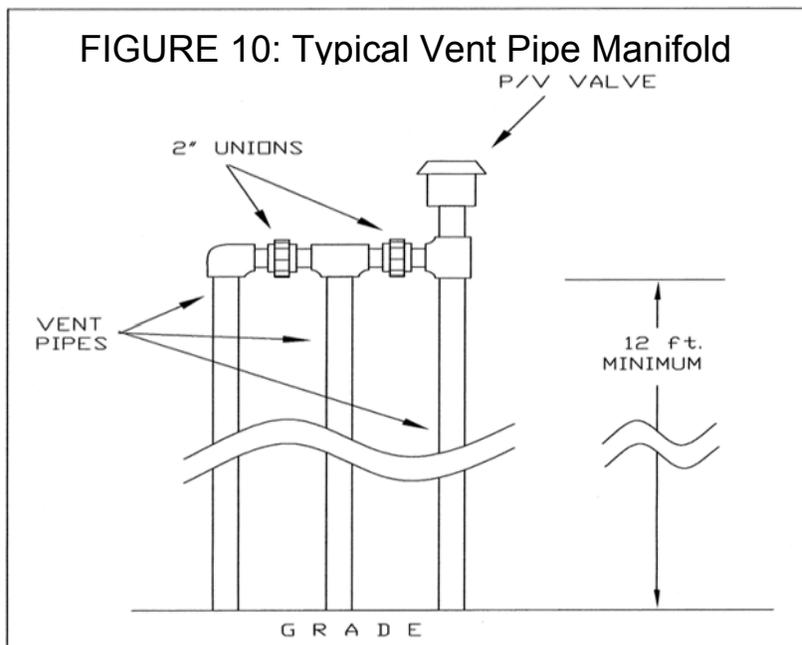
FIGURE 9: Typical Piping Connection to Processor



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

7.2.5 If the ullage of the tanks is not already interconnected underground, then manifold the vent pipes together with 2" galvanized pipe at a minimum of 12 ft. above grade. See FIGURE 10 below. Note that at least (1) P/V Valve must remain connected to the manifold.

FIGURE 10: Typical Vent Pipe Manifold



8. START-UP

If all instructions thus far have been followed, the 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 OVERPRESSURE 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 UST 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 FIGURE 7, Field Wiring Drawing. Turbine and spark should come on. If so, proceed with step 8.4. If turbine is not running or sparking is not present, refer to Hirt VCS 100 Troubleshooting Manual.
- 8.4 Within 1 hour, the processor pilot and main burner stages should ignite. Once a vacuum of approximately -0.40" 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.

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, approximately 15 minutes, 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.

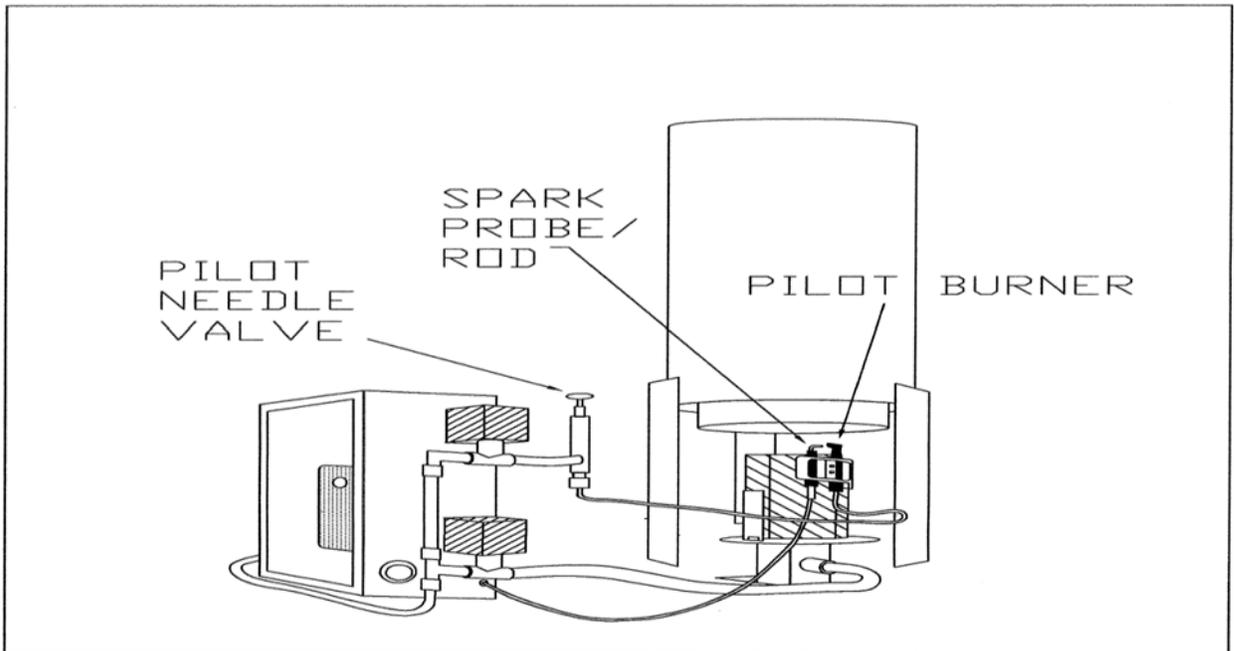
8.6 The processor will not turn on if the vacuum sensor/switch is satisfied. Therefore, any air in the vapor piping will need to be purged so the processor stages can ignite when storage tank vacuum decays. To purge this air and replace it with vapor, use 2 short pieces of wire and jump the circuit from 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, approximately 15 minutes, 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.

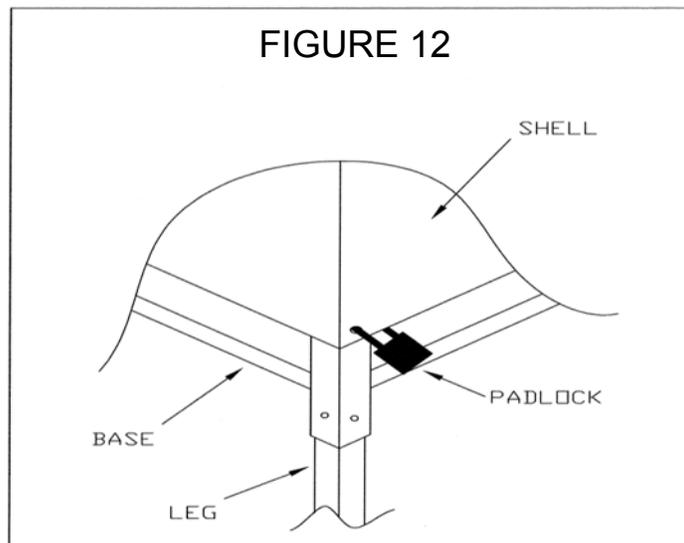
First remove the jumper wires. To find leak(s), conduct ARB test procedure TP-201.3 and Exhibit 4 (Items to consider when conducting TP-201.3). Check the pipe fittings, vent riser manifold, PV valve, storage tank fill tube caps, dry break gaskets and cover cap gaskets, hoses, nozzles, and vapor valves – any place where air could be entering the UST ullage space. 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 length 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 Installation and start-up are now complete. Turn off power to processor. Replace lid on electrical panel, Shell, and Weather Cover. If desired, the station owner can add padlocks to prevent tampering, see FIGURE 12 below. Ensure the 3/4" ball valve at the processor inlet is in the locked open position (Opened to UST Ullage). Turn on power to processor. The processor is now in normal, automatic mode.



9. MAINTENANCE INSTRUCTIONS

The Hirt VCS 100 vapor processor must be inspected and tested annually. The technician must complete the Hirt VCS 100 Annual Inspection Checklist (reference section 6 of VR-207 IOM) and leave with the site's maintenance records.

10. REPAIR AND REPLACEMENT OF COMPONENTS

Any Hirt VCS 100 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 and operation.

11. PRODUCT WARRANTY

- HCE warrants the workmanship and materials to be free from defects and will comply with the performance standards of California ARB CP-201 for a period of one (1) year from the date of installation or from date of shipment from HCE, if registration card is not returned.
- 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 by HCE voids the above described warranty.