

**State of California  
AIR RESOURCES BOARD**

**EXECUTIVE ORDER NVR-1-E**

**Relating to Certification of Non-Vapor Recovery Hoses and  
Enhanced Conventional Nozzles**

**For Use at Gasoline Dispensing Facilities with  
No Phase II Vapor Recovery Systems**

WHEREAS, pursuant to California Health and Safety Code Sections 25290.1.2, 39600, 39601 and 41954, the California Air Resources Board (CARB) has established certification procedures for control of gasoline vapor emissions from low permeation hoses and nozzles with no vapor recovery function in its Certification Procedure for Enhanced Conventional (ECO) Nozzles and Low Permeation Conventional Hoses for Use at Gasoline Dispensing Facilities (CP-207), as last amended on June 4, 2019, incorporated by reference in Title 17, California Code of Regulations, Sections 94017;

WHEREAS, CARB has established, pursuant to California Health and Safety Code Sections 39600, 39601, 39607, and 41954, test procedures for determining the compliance of low permeation hoses and ECO nozzles with applicable performance standards;

WHEREAS, Executive Order NVR-1 was first issued on June 10, 2014, and was last modified on March 1, 2019, by Executive Order NVR-1-D;

WHEREAS, Vapor System Technologies, Inc. (VST) has requested certification of their Model VST-NV-ND(cc) and VST-NV-ND(cc)R ENVIRO-LOC™ ECO Nozzle;

WHEREAS, CP-207 provides that the CARB Executive Officer shall issue an Executive Order if he determines that an ECO nozzle conforms to the applicable nozzle standards set forth in CP-207;

WHEREAS, I, Richard W. Corey, CARB Executive Officer, find that the VST Model Enviro-Loc ECO Nozzle conforms with all requirements set forth in CP-207 and result in a spillage rate which shall not exceed the standard of 0.12 pounds/1000 gallons, liquid retention which shall not exceed the standard of 100 milliliter (mL)/1000 gallons, spitting which shall not exceed 1.0 mL per nozzle per test and post-fueling drips which shall not exceed 3 Drops/Refueling;

NOW, THEREFORE, IT IS HEREBY ORDERED that the above-referenced components are certified that they will not exceed their applicable performance standards when installed, operated, and maintained as specified herein and in the following exhibits. Exhibit 1 contains a list of the certified components covered by the Executive Order.

Exhibit 2 contains the performance standards and specifications applicable to the components as installed in a gasoline dispensing facility (GDF) with no Phase II vapor recovery systems. Exhibit 3 contains the warranty for each manufacturer.

IT IS FURTHER ORDERED that compliance with the applicable certification requirements, rules and regulations of the Office of the State Fire Marshal of the Department of Forestry and Fire Protection, the Division of Occupational Safety and Health of the Department of Industrial Relations and the Division of Measurement Standards of the Department of Food and Agriculture are made conditions of this certification.

IT IS FURTHER ORDERED that the manufacturer of each component listed in Exhibit 1 shall provide a warranty to the initial purchaser that shall be honored by the manufacturer for each and every subsequent purchaser of the applicable component within the warranty period. The warranty shall warrant that the applicable component listed in the Executive Order complies with all warranty requirements in Section 10.4 of CP-207 and will continue to meet all applicable performance standards for the duration of the warranty period. Manufacturers may specify that the warranty is contingent upon the use of trained installers. The manufacturer warranty tag, included with each component, shall be provided to the service station owner/operator at the time of installation.

IT IS FURTHER ORDERED that certified components shall be installed, operated, and maintained in accordance with the CARB Approved Installation, Operation, and Maintenance Manual. A copy of the Executive Order and the CARB Approved Installation, Operation and Maintenance Manual shall be maintained at each GDF where certified low permeation hoses and ECO nozzles are installed.

IT IS FURTHER ORDERED that components listed in Exhibit 1, unless exempted, shall be clearly identified by a permanent identification showing the manufacturer's name, model number, and serial number.

IT IS FURTHER ORDERED that any alteration in the equipment parts, design, installation, or operation of the listed components provided in the manufacturers' certification application or documents and certified hereby is prohibited and deemed inconsistent with this certification, unless the alteration has been submitted in writing pursuant to the process Executive Order amendments set forth in Section 12 of CP-207 and approved in writing by the CARB Executive Officer. Any sale, offer for sale, or installation of components without CARB approval as set forth above is subject to enforcement action.

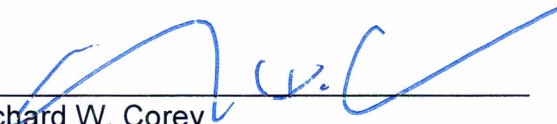
IT IS FURTHER ORDERED that the listed low permeation hoses and ECO nozzle are certified as being compatible with gasoline in common use in California at the time of certification and is not compatible with gasoline containing more than 15 percent

ethanol. Any modifications to comply with future California gasoline requirements shall be approved in writing by the CARB Executive Officer.

IT IS FURTHER ORDERED that the certification of the low permeation hoses and nozzle listed in Exhibit 1 of this Executive Order is valid through June 19, 2022.

IT IS FURTHER ORDERED that Executive Order NVR-1-D issued on March 1, 2019, is hereby superceded by this Executive Order. Low permeation hoses and ECO nozzles certified by Executive Orders NVR-1 through NVR-1-D may remain in use at existing installations up to four years after the expiration date of this Executive Order if the certification is not renewed.

Executed at Sacramento, California, this 9<sup>th</sup> day of October 2019

  
\_\_\_\_\_  
Richard W. Corey  
Executive Officer

Attachments:

Exhibit 1	Component List
Exhibit 2	Component Specifications
Exhibit 3	Manufacturer Warranties

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## EXHIBIT 1

### Component List

Component	Manufacturer / Model	Hose Size (inch)
Low Permeation Curb Hose and Whip Hose	ContiTech <sup>1</sup> Futura Low Perm	3/4
	Parker 7282 Low Perm	5/8, 3/4, 1
	VST V58EC Low Perm	5/8
	VST V34EC Low Perm	3/4
	Husky EagleFlex Low Perm	5/8, 3/4, 1
Enhanced Conventional Nozzle	OPW 14E	3/4
	VST NV-ND, NV-ND-R (R = Rebuilt)	3/4

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<sup>1</sup> Veyance brand name has changed to ContiTech.

## ContiTech Futura Low Perm Conventional Hose Assembly

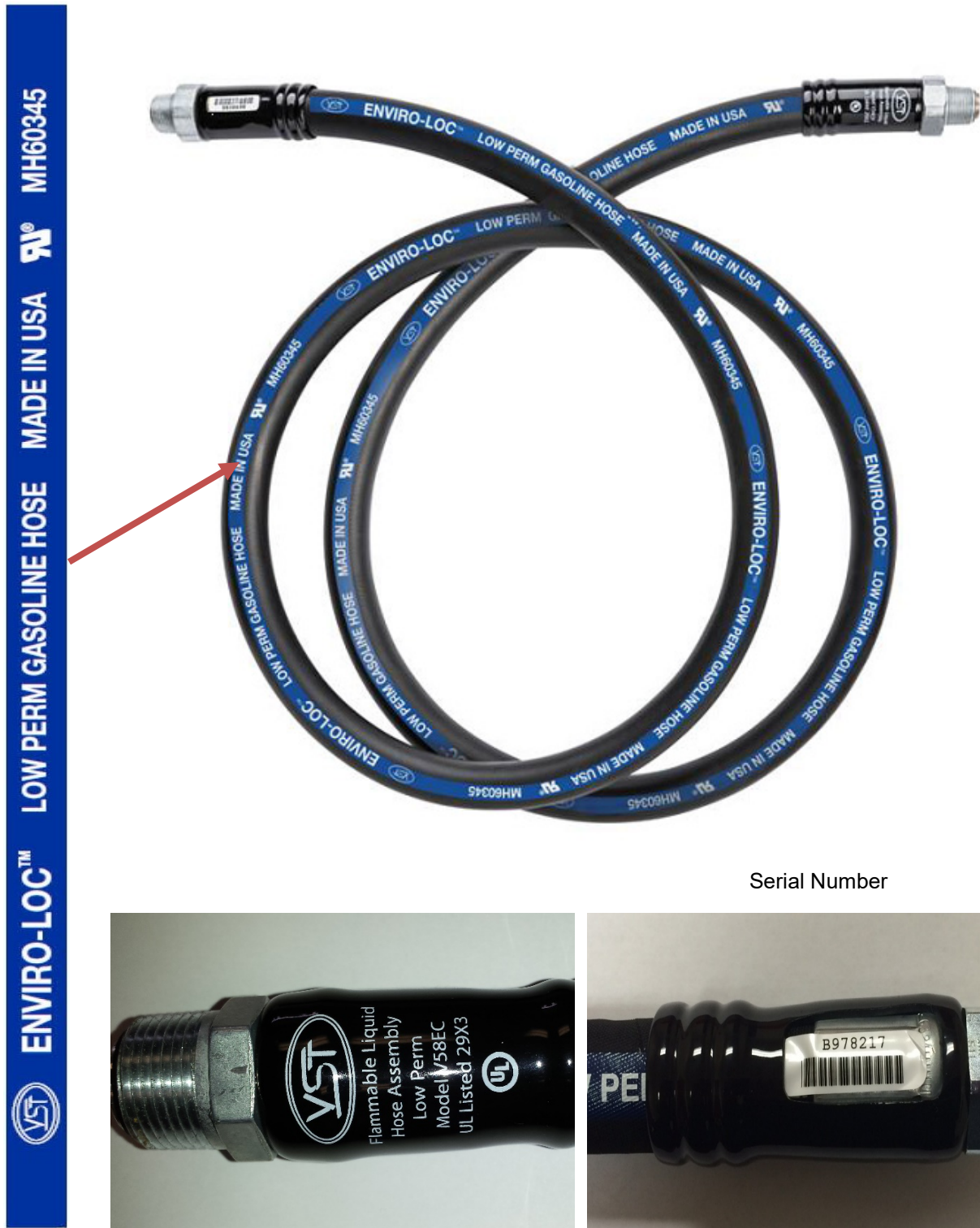


Parker 7282 Low Perm Conventional Hose Assembly





## VST V58EC and V34EC Low Perm Conventional Hose Assembly



Husky EagleFlex Low Perm Conventional Hose Assembly

Husky EagleFlex® LPHW 3/4 LOW PERM ( $\leq 10\text{g}/\text{m}^2/\text{day}$ ) HARDWALL GASOLINE HOSE MH20477 Made in USA www.husky.com



Serial Number



# OPW 14E Enhanced Conventional (ECO) Nozzle



**VST NV-ND and NV-ND-R ENVIRO-LOC™ Enhanced Conventional (ECO) Nozzle**



## EXHIBIT 2

### Low Permeation Hose and Enhanced Conventional (ECO) Nozzle Specifications

This exhibit contains the installation, maintenance and compliance standards and specifications that apply to low permeation conventional hoses and ECO nozzles installed at gasoline dispensing facilities (GDF) with no Phase II vapor recovery system. All components must be installed, maintained, and operated in accordance with the **CARB Approved Installation, Operation and Maintenance Manual (IOM)**. Installation and inspection of low permeation hoses and ECO nozzles can be performed by any technician and GDF owner/operator. Certifications to install low permeation hoses and ECO nozzles may be required in accordance with local district requirements.

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1. For **Dispenser** installations, the maximum length of the hose assembly, including the low permeation curb hose, breakaway, and low permeation whip hose combined shall not exceed eighteen (18) feet as measured from the base of the nozzle to the end of the dispenser adaptor or dispenser.
2. For **Mobile Refueler** installations utilizing a hose reel, hose lengths greater than eighteen (18) feet are permitted.
3. All hoses shall have a permanent identification showing the manufacturer name, model of hose, and serial number.
4. Any hose configuration is allowed.

### Enhanced Conventional Nozzles

1. Any nozzle that dispenses fuel with the miniboot in a free state condition, as determined by the monthly inspection procedure, shall be removed from service until repaired or replaced.
2. Any nozzle that dispenses fuel at less than five (5.0) gallons per minute (gpm) when determined as part of any CARB approved test method or direct measurement for a minimum of 30 seconds shall be removed from service until repaired or replaced.

### Flow Limiters

1. A flow limiter is mandatory when the flow rate is greater than ten (10.0) gpm to comply with U.S. EPA requirement. The flow rate can be determined as part of any CARB approved test method or direct measurement for a minimum of 30 seconds.



### **Breakaway Couplings (any manufacturer model)**

1. Breakaways that are reconnectable may be reconnected following a drive-off after conducting a visual and functional assessment.

### **Warranty**

Each manufacturer listed in Exhibit 1 shall include a warranty tag with the certified low permeation hose(s) or ECO nozzle. The manufacturer warranty tag, included with each component, shall be provided to the service station owner/operator at the time of installation.

### **Maintenance Records**

1. Each GDF operator owner shall keep records of maintenance/inspections performed at the facility. Such records shall be maintained on site in accordance with district requirements or policies. An example of a GDF maintenance and inspection form is shown in Figure 2-1.
2. Inspections shall be conducted in accordance with the CARB Approved Installation, Operation, and Maintenance Manual.

**Figure 2-1**  
**Inspection/Maintenance Record Form**

**Hose Inspection Procedure:** Inspect for leaks, kinks, blisters, bulges, flattened areas, soft spots, any cuts or gouges.

**Nozzle Inspection Procedure:** See the Inspections and Maintenance section of the installed ECO Nozzle.

Date of Inspection	Fueling Point	Pass (P) Fail (F) (circle one)	Maintenance Performed (if required)	Name of Individual Conducting Inspection/Maintenance and Affiliation
		P / F		
		P / F		
		P / F		
		P / F		
		P / F		
		P / F		
		P / F		
		P / F		
		P / F		
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**EXHIBIT 3**

**Manufacturer Warranty**

This exhibit includes the manufacturer warranty for low permeation hoses listed in Exhibit 1. The manufacturer warranty tag, included with each low permeation hose, shall be provided to the service station owner/operator at the time of installation.

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**Table of Content Manufacturer Warranties**

I. CONTITECH FUTURA LOW PERM CONVENTIONAL HOSE WARRANTY .....2

II. PARKER 7282 LOW PERM CONVENTIONAL HOSE WARRANTY .....3


III. VST V58EC AND V34EC LOW PERM CONVENTIONAL HOSE AND NV-ND ENVIRO-LOC™  
ENHANCED CONVENTIONAL NOZZLE WARRANTY .....4

IV. HUSKY EAGLEFLEX LOW PERM CONVENTIONAL HOSE WARRANTY.....6

V. OPW 14E Enhanced Conventional Nozzle .....7

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**WARRANTY FOR LOW PERMEATION HOSES USED IN CALIFORNIA:** Seller warrants Product(s) consisting of low permeation hoses used in California ("California Low Permeation Hose Product(s)") to meet the performance standards and specifications to which such Product(s) were certified by the California Air Resources Board for a period of one (1) year from the date of installation. This warranty extends to Buyer and any subsequent Buyer of the California Vapor Recovery Product(s) during the warranty period. SELLER MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND WITH RESPECT TO PRODUCT(S), EXPRESS OR IMPLIED, RESPECTING MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

<b>WARRANTY TAG</b>		
		ContiTech
PART #: _____		
INSTALLATION DATE: _____	NAME OF INSTALLER: _____	
LOCATION: _____		
<p>This hose was factory tested to and met all applicable performance standards &amp; specifications to which it was certified: Reference CARB Executive Order NVR-1, CARB Test Procedure CP-201, and UL Standard UL-330.</p>		
<p>The manufacture date is represented by a 4 digit julian date code stamped on the hose fitting. Example: "1021" represents the 102nd day of 2011.</p>		
<p>1. Complete warranty tag at time of installation. 2. Return warranty tag or other evidence of purchase and installation with hose for any necessary warranty claims.</p>		
<p><b><u>WARRANTY FOR LOW PERMEATION HOSES USED IN CALIFORNIA:</u></b> Seller warrants Product(s) consisting of low permeation hoses used in California ("California Low Permeation Hose Product(s)") to meet the performance standards and specifications to which such Product(s) were certified by the California Air Resources Board for a period of one (1) year from the date of installation. This warranty extends to Buyer and any subsequent Buyer of the California Vapor Recovery Product(s) during the warranty period. SELLER MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND WITH RESPECT TO PRODUCT(S), EXPRESS OR IMPLIED, RESPECTING MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.</p>		



## WARRANTY TAG

PART # \_\_\_\_\_

INSTALLATION DATE: \_\_\_\_\_

NAME OF INSTALLER: \_\_\_\_\_

INSTALLATION LOCATION: \_\_\_\_\_

This hose assembly was factory tested and met all applicable performance standards and specification to which it was certified: Reference all applicable CARB Executive Orders, CARB Test Procedures, Exhibits, Parker Safety Guide (4400-B.1), Parker Technical Advisory (PA 2014.08.012), and UL Standard 330.

Each hose assembly includes an engraved crimp fitting which features the 4-digit Julian date code which represents the manufacturing date. For example, "3214" represents the "321<sup>st</sup>" day of "2014".

1. Fill out the warranty tag at installation.
2. Return the warranty tag along with hose assembly for any necessary warranty claims.

### **WARRANTY FOR CONVENTIONAL LOW PERMEATION GASOLINE DISPENSER HOSE ASSEMBLIES USED IN**

**CALIFORNIA:** Seller warrant Product(s) consisting of Parker Conventional Low Permeation Gasoline Dispenser Hose Assemblies used in California to meet the performance standards and specifications to which the Product(s) were certified by the California Air Resources Board (CARB) for one (1) year from the date of installation. This warranty extend to Buyer and any subsequent Buyer of the Parker Conventional Low Permeation Gasoline Dispenser Hose Assemblies. **SELLER MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND WITH RESPECT TO PRODUCT(S), EXPRESS OR IMPLIED, EXCEPT AS EXPRESSLY PROVIDED ABOVE.**

# CUSTOMER COPY

To be left at gasoline dispensing facility, GDF,  
at time of installation

Manufacturing Date:

Serial Number: (Fill in at time of installation)

## VST Warranty Statement

This limited warranty is given by Vapor Systems Technologies, Inc. (hereinafter VST) to the initial purchaser, and any subsequent purchasers of new equipment, within the warranty period of products manufactured by VST. VST products:

- Are factory tested and meet all applicable performance standards and specifications.
- Should be used in compliance with all applicable federal, state, and local laws and regulations to which they were certified.
- Are warranted to be free from defect in material and workmanship with ongoing compliance to all applicable performance standards and specifications under normal use, service, proper installation, inspections, and maintenance practices per manufacturer specifications.

VST warrants the materials and workmanship to be free from defects in accordance with the following provisions:

1. This warranty does not apply to any products that have:
  - Been subject to misuse, abuse, tampering, negligence, accident, or irreparable drive off damage.
  - Been misapplied, improperly installed, or not installed per VST's instructions and specifications.
  - Been modified, altered, rebuilt or repaired by unauthorized persons or outside the criteria of VST specifications.
  - Been improperly maintained and/or improperly inspected in accordance with the system's or product's periodic maintenance schedule, and any inspection and/or maintenance requirements imposed by the State or any government agency.
  - Been exposed to contact with fuels containing greater than 5% methanol, 10% ethanol, or 15% MTBE by volume or any exposure to M85/E85 fuel.
  - Been subject to damage resulting from acts of God.
2. This warranty does not cover and VST is not responsible or liable for:
  - Incidental, consequential and/or indirect damages or loss including, but not limited to, personal injury, death, property damage, environmental damage, cost of labor, clean-up, downtime, installation and removal, product damage, and loss of product, revenue or profits.
  - Any claims or lawsuits against the purchaser and/or distributor.
  - Labor or materials necessary to disconnect or connect the warranted product for return to VST.

VST products used on systems that have not been listed by a nationally-recognized testing laboratory (NRTL) or use that falls outside intended field of use voids all warranties.

The duration of this warranty is TWELVE (12) MONTHS from the time of installation provided timely valid proof of installation is submitted to VST. Valid proof of installation options include, but are not limited to:

- VST Product Warranty Registration Card is properly completed and returned to VST at time of installation and within (6) SIX MONTHS from the date of manufacture.

OR

- In lieu of a legitimate, completed and returned VST Product Warranty Registration Card within the first (6) SIX MONTHS from the date of manufacture, VST requires the following:
  1. A completed gasoline dispensing facility (GDF) monthly maintenance log from the month in which the VST equipment was installed and documented, **AND**
  2. One of the following documents that may be used as a reference installation date:
    - A valid distributor invoice
    - A valid contractor invoice

The above options must be clearly marked with:

- All VST product serial numbers
- Product sale date and/or installation date
- Purchaser name, address, and phone number

If valid proof of installation is not received by VST, as noted above, the warranty period is TWELVE (12) MONTHS from the VST date of manufacture.

In the event of a warranty claim:

- The purchaser/distributor must obtain a copy of a Return Goods Authorization (RGA) from VST prior to returning product so as to ensure proper processing. All warranty claim returns must be shipped freight prepaid by the purchaser and/or distributor.
- Warranty status will be determined upon inspection at VST's facility within THIRTY (30) DAYS of receipt by VST of the warranted products. All returned merchandise deemed *Not Under Warranty*; will be held by VST for SEVEN (7) BUSINESS DAYS prior to disposal. Return of this product to the purchaser/distributor will require purchaser/distributor to issue a call tag within SEVEN (7) BUSINESS DAYS of notification.
- Repair or replacement of the warranted product is the **EXCLUSIVE REMEDY** under the terms of this warranty. No other warranty exists.

VST, as to each defect, shall be relieved of all obligations and liabilities under this Limited Warranty if the products have been operated with any accessory, equipment, or a part not specifically approved by VST and the appropriate governing regulatory agencies.

**THIS LIMITED WARRANTY IS EXCLUSIVE AND IS IN LIEU OF ALL OTHER WARRANTIES. VST MAKES NO OTHER WARRANTIES (WHETHER WRITTEN OR ORAL), EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR OTHERWISE, AND ANY OTHER SUCH WARRANTIES ARE HEREBY DISCLAIMED.**

**VST NEITHER ASSUMES NOR AUTHORIZES ANY OTHER PERSON OR ENTITY TO ASSUME FOR IT OR BIND IT TO ANY OTHER LIABILITY OR OBLIGATION RELATED TO OR IN CONNECTION WITH THIS LIMITED WARRANTY.**

VST reserves the right to make changes at any time to prices and designs, or make additions or improvements with respect to its products, without incurring any obligation to modify or install same on previously manufactured products.



## WARRANTY TAG

PART # \_\_\_\_\_

INSTALLATION DATE: \_\_\_\_\_

NAME OF INSTALLER: \_\_\_\_\_

INSTALLATION LOCATION: \_\_\_\_\_

This hose assembly was factory tested and met all applicable performance standards and specifications to which it was certified: Reference all applicable CARB Executive Orders, CARB Test Procedures, Exhibits, Husky Recommended Installation, Maintenance and Inspection Instructions 009349, and UL Standard 330.

Each hose assembly includes an engraved crimp fitting which features the 4-digit Julian date code which represents the manufacturing date. For example, "3214" represents the "321<sup>st</sup>" day of "2014".

1. Fill out the warranty tag at installation.
2. Return the warranty tag along with hose assembly for any necessary warranty claims.

### **WARRANTY FOR CONVENTIONAL LOW PERMEATION GASOLINE DISPENSER HOSE**

**ASSEMBLIES USED IN CALIFORNIA:** Seller warrant Product(s) consisting of Husky Conventional Low Permeation Gasoline Dispenser Hose Assemblies used in California to meet the performance standards and specifications to which the Product(s) were certified by the California Air Resources Board (CARB), to be free from defects of workmanship or materials, for one (1) year from the date of installation. This warranty extend to Buyer and any subsequent Buyer of the Husky Conventional Low Permeation Gasoline Dispenser Hose Assemblies. **SELLER MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND WITH RESPECT TO PRODUCT(S), EXPRESS OR IMPLIED, EXCEPT AS EXPRESSLY PROVIDED ABOVE.**

FORM 009396-A 5/2015





## WARRANTY POLICY & RETURN PROCEDURE

### OPW STANDARD PRODUCT WARRANTY / OPW TERMS & POLICIES

NOTICE: FlexWorks by OPW, Inc., VAPORSAVER™ and all other OPW products must be used in compliance with all applicable federal, state, provincial and local laws, rules and regulations. Product selection is the sole responsibility of the customer and/or its agents and must be based on physical specifications and limitations, compatibility with the environment and material to be handled. All illustrations and specifications in this literature are based on the latest production information available at the time of publication. Prices, materials and specifications are subject to change at any time, and models may be discontinued at any time, in either case, without notice or obligation.

Product	Warranty Period
FlexWorks Primary Pipe	10 years from date of manufacture
All Products and replacement parts installed in the State of California Certified to California CP-201, CP-206, and/or CP-207 Standards*	1 year from date of installation (proof of purchase from certified contractors/technicians required) OPW warrants ongoing compliance with the standards and specifications for the duration of the warranty period required by the State of California; this limited warranty is under the condition the equipment was installed and maintained by trained and certified contractors/technicians unless noted in Installation Manual
All Other Products	1 year from date of manufacture
*Products certified to California CP-201, CP-206, and/or CP-207 Standards have been factory tested and met all applicable performance standards and specifications and will have an OPW registration card enclosed/attached to the product	

OPW warrants solely to its customer (the initial purchaser and any subsequent purchasers within the warranty period) that the following products sold by OPW will be free from defects in materials and workmanship under normal use and conditions for the periods indicated.

OPW's exclusive obligation under this limited warranty is, at its option, to repair, replace or issue credit (in an amount not to exceed the list price for the product) for future orders for any product that may prove defective within the applicable warranty period (repairs or replacements are subject to prorated warranty coverage for remainder of the original warranty period). Complete and proper warranty claim documentation and proof of purchase required. All warranty claims must be made in writing and delivered during the applicable warranty period to OPW at OPW 9393 Princeton-Glendale Road Hamilton, Ohio, USA 45011, Attention: Customer Service Manager. No products may be returned to OPW without its prior written authority.

This limited warranty shall not apply to any FlexWorks or VAPORSAVER™ product unless it is installed by an OPW attested installer. This limited warranty also shall not apply to any FlexWorks, VAPORSAVER™ or other OPW product: unless all required site and warranty registration forms are completed and received by OPW within 60 days of installation; unless all piping connections are installed with a nationally-recognized or state-approved leak detection device in each tank and dispenser sump (which are not for storage and from which all discharge hydrocarbons must be removed, and the systems completely cleaned, within 24 hours); unless testable sumps utilize FlexWorks pipe and access fittings; unless a sump inspection log or an EPA recommended/required checklist is maintained and the results are furnished to OPW upon request; and unless OPW is notified within 24 hours of any known or suspected product failure and is provided with unrestricted access to the product and the site. This limited warranty also shall not apply to any product which has been altered in any way, which has been repaired by anyone other than a service representative authorized by OPW, or when failure or defect is due to: improper installation or maintenance (including, without limitation, failure to follow FlexWorks Quick Reference Manual Installation Guide and all product warning labels); abuse or misuse; violation of health or safety requirements; use of another manufacturer's, or otherwise unauthorized, substances or components; soil or other surface or subsurface conditions; or fire, flood, storm, lightning, earthquake, accident or any other conditions, events or circumstances beyond OPW's control.

THIS LIMITED WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, AND ALL OTHER WARRANTIES INCLUDING, WITHOUT LIMITATION, THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE HEREBY EXCLUDED.

OPW shall have no other liability whatsoever, whether based on breach of contract, negligence, gross negligence, strict liability or any other claim, including, without limitation, for special, incidental, consequential or exemplary damages or for the cost of labor, freight, excavation, clean-up, downtime, removal, reinstallation, loss of profit, or any other cost or charges. No person or entity is authorized to assume on behalf of OPW any liability beyond this limited warranty. This limited warranty is not assignable.


Please see OPW's website for instructions in other languages, troubleshooting guides, how to use the nozzle and the Do's and Don'ts At The Gas Pump video: [www.opwglobal.com](http://www.opwglobal.com)

9393 Princeton-Glendale Road  
Hamilton, Ohio 45011-9707

North America Toll Free – Telephone: (800) 422-2525 ♦ Fax: (800) 421-3297  
International – Telephone: (513) 870-3315 or (513) 870-3261 Fax: (513) 870-3157

Please visit OPW's website: [www.opwglobal.com](http://www.opwglobal.com) for further information, or contact  
OPW Customer Service at 1-800-422-2525 (US).

## OPW Warranty Tag

<b>OPW</b> 		<b>NOZZLE WARRANTY TAG</b>	
<small>A BOWER COMPANY</small>			
SITE _____		Phone # _____	
City: _____		Contact: _____	
Distributor: _____			
Branch: _____		Customer #: _____	
RGA #: _____			
<i>No warranty accepted without tag filled out and attached.</i>			

Nozzle: _____		Date Code: _____	
Serial #: _____		Replacement Serial #: _____	
WARRANTABLE DEFECTS (CHECK ONLY ONE)			
<input type="checkbox"/> Leaks Fuel Around Spout (200)	<input type="checkbox"/> Dispenses Fuel Without Pulling Lever (200)	H-14211-M	
<input type="checkbox"/> Leaks Fuel in Trigger Area (200)	<input type="checkbox"/> Fails Pressure Decay Test (300)		
<input type="checkbox"/> Leaks Fuel at Hose Inlet (200)	<input type="checkbox"/> Fails Air-to-Liquid Test (300)		
<input type="checkbox"/> Does Not Dispense (400)			
<input type="checkbox"/> Continues to Shut-off During Use (400)			
<input type="checkbox"/> Does Not Shut Off (500)			
Note: _____			
_____			
_____			

California Environmental Protection Agency

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**CARB Approved**

**Installation, Operation and Maintenance Manual**

For

Executive Order NVR-1-E

Low Permeation Hoses and Enhanced  
Conventional Nozzles for Use at Gasoline Dispensing  
Facilities with  
No Phase II Vapor Recovery System

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## ContiTech Low Permeation Conventional Hose Assembly

### 1.0 Low Permeation Conventional Hose Assembly

- 1.1 Select the correct whip and curb hose length. The maximum length of the hose assembly shall not exceed eighteen (18) feet. Lengths greater than eighteen (18) feet are permitted if acceptable to authorities having jurisdiction.
- 1.2 This assembly has NPT threads. Apply a suitable UL approved thread sealant compatible with gasoline to the threads prior to installation.
- 1.3 Following installation of the hose, authorize the dispenser and inspect hose connections for liquid leaks. There shall be no liquid leaks at hose connections.
- 1.4 Hose assemblies should be inspected weekly. Check the hose assembly for leaks, kinks, blisters, bulges, flattened areas, soft spots, or any cuts or gouges deep enough to expose the wire reinforcement beneath the cover of the hose. Hose assemblies showing signs of any of these issues should be replaced.

**Note:** It is the responsibility of the installer to be familiar with the current requirements of state, federal, local codes and air district rules and regulations for installation of gasoline dispensing equipment.

It is also the responsibility of the installer to be aware of all the necessary safety precautions and site safety requirements to assure a safe and trouble free installation.

**Warranty Tag:** The warranty tag provided with the component is to remain with component, and must be provided to the end-user.

ContiTech USA, Inc.  
703 S. Cleveland Massillon  
Rd. Fairlawn, OH 44333  
USA Telephone: 1-800-235  
4632



ContiTech

173532336 rev 2.

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Parker Hannifin Corporation  
Industrial Hose Division  
30242 Lakeland Boulevard  
Wickliffe, OH 44092-1747  
Telephone: (440) 833-2120  
Fax: (440) 833-2230  
www.safehose.com

## Technical Advisory

### APPLICATION UPDATE

### **Conventional Low Permeation Gasoline Dispenser Hose Assemblies** *Suggested Installation and Inspection Instructions*

#### **Hose Selection**

It is important to correctly determine the proper hose size, hose length and fitting thread/size when selecting a gasoline delivery or whip hose. The maximum length of the delivery hose assembly shall not exceed eighteen (18) feet except where permitted by authorities having jurisdiction.

#### **Pre-Installation Inspection**

Inspect hose assemblies prior to installation. Do not place a hose assembly into service if any of the following conditions exist:

- Fittings improperly crimped to hose (loose fitting).
- Scored or exposed area at hose/fitting interface where fitting slippage may have occurred.
- Damage to threads on fittings.
- Damage to hose reinforcement caused by crushed or kinked hose.
- Exposed hose reinforcement.

Contact Parker for authorization to return if any of the above conditions are discovered.

#### **Installation Instructions**

1. Turn off gasoline dispensing system and relieve line pressure.
2. Seal male threads on fitting; use *Gasoil® Soft Set Thread Sealant* or equivalent.
3. Tighten approximately 1 to 2 turns past hand-tight; do not over-tighten.
4. Pressurize system and inspect for leaks.
5. Test for proper nozzle operation according to nozzle manufacturer's installation instructions.

NOTE: The installer must be knowledgeable of all local, state and federal codes and air district rules and regulations applicable to gasoline dispensing equipment. The installer must adhere to necessary safety precautions and site safety requirements that ensure a safe, trouble free installation. The component warranty tag must be completed by the installer and provided to the service station owner/operator at the time of installation. The completed warranty tag must remain with the component thereafter.

*(Continued on page 2)*

Gasoil® is a registered trademark of Federal Process Corporation

PA 2014.08.012-rev Gasoline Dispenser Hose Assys

**ENGINEERING YOUR SUCCESS.**



Parker Hannifin Corporation  
Industrial Hose Division

## Technical Advisory

Page 2

### Conventional Low Permeation Gasoline Dispenser Hose Assemblies *Suggested Installation and Inspection Instructions*

#### Testing and Inspection

Like all rubber hoses, gasoline dispenser hose assemblies have a limited shelf life; routinely rotate all stock in a first-in-first-out (FIFO) manner. Similarly, hose assemblies have a limited service life; perform regular visual inspections.

*Weekly Inspections:*

- Check for damage or signs of stress or abuse.
- Check for blisters, bulges, flattened areas, leaks, kinks, soft spots or stains.
- Check for cracked or loose hose cover.
- Check for cuts, gouges or other defects in hose cover that may have exposed or damaged hose reinforcement.

Adhere to local, state and/or federal testing procedures as required.

#### Drive-Off Inspection

When a driver departs from the dispenser, the nozzle is occasionally left in the vehicle fill port. For this reason, gasoline dispenser hoses are to be attached to a breakaway coupling installed between the dispenser hose and the dispenser; the breakaway separates under pressure and minimizes gasoline spillage and hose damage. After every drive-off, inspect the hose assembly using the following criteria:

- Turn off gasoline dispensing system and relieve line pressure.
- Check for signs of damaged or collapsed hose reinforcement.
- Inspect hose cover for blisters, cuts, cracks or exposed reinforcement.
- Check fittings for signs of slippage.
- Pressurize system and inspect for leaks.
- Test for proper nozzle operation according to nozzle manufacturer's installation instructions.

**IMMEDIATELY REMOVE FROM SERVICE ANY HOSE THAT FAILS TESTING/INSPECTION.**

#### Warranty

Consult the Parker Hannifin Industrial Hose Division *Offer of Sale* for warranty information.

If there are any questions please contact  
Parker Customer Service toll-free at:

866.810.HOSE (4673)	800.242.HOSE (4673)
Wickliffe, OH	South Gate, CA
Eastern USA	Western USA



PA 2014.08.012-rev Gasoline Dispenser Hose Assys

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# VST Installation Procedure for Low Perm Premium Conventional Fuel Hoses

Part Number Series: V58EC, V34EC



## Vapor Systems Technologies, Inc.

650 Pleasant Valley Drive  
Springboro, Ohio 45066 (USA)

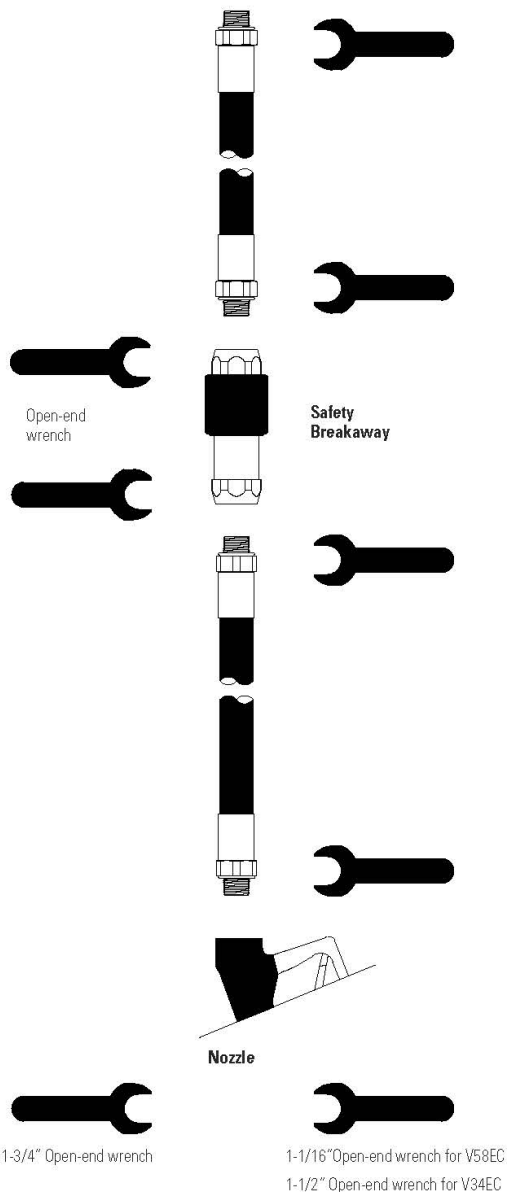
Toll Free: 1-888-878-4673

Phone: 937-704-9333

Fax: 937-704-9443

www.vsthose.com

Figure 1.



## GENERAL INFORMATION

If hanging hardware components are involved in a drive-off or incur other customer abuse, each individual component must be functionally tested prior to customer dispensing activities.

## INSTALLATION PREPARATION

This procedure must be followed to ensure leak-proof installation and operation of these hose products.

1. Turn off and tag the power to the dispenser. Dispenser must be de-energized prior to service to avoid personal injury.
2. Barricade work area to block vehicle access to the dispenser.
3. Close dispenser shear valve prior to performing any service work with the hanging hardware (hoses, safety breakaways, and nozzles).
4. Drain liquid product from the hanging hardware set into an approved container prior to replacing any hanging hardware component. (Pull nozzle lever.)  
If the nozzle has an interlock device, engage the interlock before pulling the lever.
5. Remove hanging hardware from the dispenser prior to making replacement component assembly connections. VST recommends connecting the whip hose to the dispenser as the last connection during hanging hardware assembly.

## INSTALLATION

1. The maximum length of the hose assembly shall not exceed eighteen (18) feet. Lengths greater than eighteen (18) feet are permitted if acceptable to authorities having jurisdiction.
2. Initial inspection:
  - a. Carefully unpack hose from shipping carton.
  - b. Inspect hose for any damage to threads, exterior, etc.
3. These are pipe thread couplings. Use of thread sealant is recommended. Do not use Teflon® tape. With pipe thread connections, the amount of torque necessary to obtain a seal is dependent on the mating materials and thread condition. **Only enough torque to achieve sealing should be used.**

# VST Installation Procedure for Low Perm Premium Conventional Fuel Hoses

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4. Attach hose on mating connections and tighten to finger tight. After finger tight, use wrenches **ONLY** on the hex flats to tighten an additional 1 to 1-1/2 TFFT (turns from finger tight.) This is normally sufficient to obtain a proper seal. Do not exceed 40 ft.-lbs. for 3/4" pipe threads.

a. DO NOT OVER TIGHTEN

b. DO NOT USE channel locks or pliers to tighten connections.

c. Always follow FLOW DIRECTION ARROW (where applicable)

5. Visually inspect all hose connections for signs of potential leak points. Repair any issue immediately before proceeding.

6. Purge air from the system by pumping one-tenth (1/10) to two-tenths (2/10) of a gallon of fuel into an approved container. Inspect each hose joint connection for liquid leaks and make proper adjustments if necessary.

7. Check the nozzle shut-off action by dispensing fuel into an approved container at least three times to assure proper automatic operation. The fuel flow rate must be greater than 3 gpm for the automatic shut-off mechanism to operate.

To test, operate the nozzle and submerge the spout tip in fuel until the fuel level covers the vent hole. The main valve of the nozzle automatically shuts off when liquid covers the vent hole at the end of the spout. The hold-open latch will disengage automatically when the liquid covers the vent hole in the spout.

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

## MAINTENANCE

Inspect hoses regularly for damage, loose connections, leaks, kinks, blisters, bulges, flattened areas, soft spots, or any cuts/gouges deep enough to expose the reinforcement beneath the hose cover. Replace as necessary. Subject to customer abuse, hoses should be replaced when damaged.

The hose is designed and constructed to give lasting service if properly handled and maintained. If for any reason it should need attention, contact your VST distributor for proper disposition.

**NOTE:** Due to abuse, misuse, changing fuel formulas, variation in maintenance practices, environmental conditions and/or conditions beyond the manufacturer's control, dispensing equipment may need replacement before five (5) years. Inspections and proper maintenance procedures should be followed by the station manager to determine if replacement is required before five (5) years.

## WARNING

Unauthorized rebuilding or modifying of hoses voids **ALL** approvals and warranties.

VST products must be used in compliance with applicable federal, state and local laws and regulations.



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[www.vsthose.com](http://www.vsthose.com)



IMPORTANT SAFETY INSTRUCTIONS - SAVE THESE INSTRUCTIONS IN A READILY ACCESSIBLE LOCATION.

**NOTE:** IT IS THE RESPONSIBILITY OF THE INSTALLER TO BE FAMILIAR WITH THE CURRENT REQUIREMENTS OF STATE, FEDERAL, LOCAL CODES AND AIR DISTRICT RULES AND REGULATIONS FOR INSTALLATION OF GASOLINE DISPENSING EQUIPMENT.

IT IS ALSO THE RESPONSIBILITY OF THE INSTALLER TO BE AWARE OF ALL THE NECESSARY SAFETY PRECAUTIONS AND SITE SAFETY REQUIREMENTS TO ASSURE A SAFE AND TROUBLE FREE INSTALLATION.

**⚠ WARNING:** Designed for use at motor fuel dispensing facilities only!

### INSPECTION OF HOSE PRIOR TO INSTALLATION

Select the correct whip and curb hose length. The maximum length of the hose assembly shall not exceed eighteen (18) feet. Lengths greater than eighteen (18) feet are permitted if acceptable to authorities having jurisdiction.

All hose assemblies should be carefully inspected prior to installation. Should any of the following conditions exist DO NOT place assembly into service and contact Husky® for return authorization:

- Fittings improperly fastened to the hose i.e. moveable by hand.
- Signs of coupling movement.
- Misalignment of hose and coupling and/or scored or exposed area where slippage may have occurred.
- Damage to threads on couplings.
- Damage in transit.
- Damage to reinforcement.

### INSTALLATION INSTRUCTIONS

1. Turn off dispenser and relieve the line pressure.
2. For tapered threads only, use pipe thread sealant (not Teflon® tape) approved for gasoline on the male threads of the hose couplings.
3. For tapered threads only, tighten approximately 1 or 2 turns past hand tight – do not overtighten. For straight threads with seals, tighten completely down to form seal.
4. Pressurize system and visually inspect for leaks.
5. Test nozzle for proper automatic shut off according to the manufacturers installation instructions provided with the nozzle.

**DO NOT OVERTIGHTEN. USE WRENCH ON HOSE NUT ONLY.**

### IF DRIVE OFF OCCURS

- |  |  |
|--|--|
| • Turn off dispenser and relieve line pressure.                              | cover.   |
| • Check for signs of stress or collapsed reinforcement.                      | • Check for signs of slippage on couplings (examine hose adjacent to coupling for breakage).                                   |
| • Check for abrasion to outer cover exposing reinforcement.                  | • Pressurize system and visually inspect for leaks.  |
| • Check for cuts in the hose structure which have damaged the reinforcement. | • Test nozzle for proper automatic shut off according to the manufacturers installation instructions provided with the nozzle. |
| • Check for blistering, cracked or loose outer                               |  |

**MADE IN THE USA**

Husky Corporation • 2325 Husky Way • Pacific, MO 63069 • Phone: (800) 325-3558 • Fax: (636) 825-7300 • www.husky.com  
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## TESTING / MAINTENANCE / INSPECTION

Hose has a limited life - proper periodic inspection is required.



### Weekly

- Check the hose assembly for leaks, kinks, blisters, bulges, flattened areas, soft spots, or any cuts or gouges deep enough to expose the wire reinforcement beneath the cover of the hose.
- Check for obvious signs of stress or abuse.

- All drive aways, maintenance and inspection activities must be logged using the serial number of the individual product.

- Apply city, state, or federal testing regulations as appropriate.

ANY TEST / INSPECTION FAILURE  
REQUIRES IMMEDIATE EQUIPMENT  
REPLACEMENT OR REMOVAL FROM  
SERVICE.



### Monthly

- Check for cracked or loose outer cover.
- Check for cuts in the hose structure which have damaged the reinforcement.



### ALWAYS ADHERE TO INSTALLATION / USAGE INSTRUCTIONS AND WARNINGS.

Improper use may result in injury, damage, or hazardous spill.



### GENERAL WARNINGS / INSTRUCTIONS PERTAINING TO A RISK OF FIRE, ELECTRIC SHOCK OR INJURY TO PERSONS:



- Use of equipment is at individuals' own risk.
- Always abide and adhere to city, state, and federal regulations regarding use and installation of dispensing equipment.
- Always follow the dispenser manufacturer's instructions.



- Always turn off all power to dispenser during maintenance and inspection activities.
- Always close the shear valves during maintenance and inspection activities.
- Always relieve pressure from system prior to performing maintenance activities.
- Always check continuity after installation using a megohmmeter (Refer to PEI RP 400 for details).



- Always replace or remove from service damaged or leaking dispensing equipment immediately.



- Always report leaks / spills / accidents to appropriate authorities.
- Always wear appropriate safety equipment during maintenance activities.



- Always have appropriate fire extinguishing equipment within 5 ft / 1.5 m of dispensers.
- Always use pipe sealant approved for gasoline service.



- Always place containers on the ground before filling.



- Always discharge static electricity before using or servicing equipment by touching a metal part of the dispenser before and after fueling vehicle.



- Never smoke within 20 ft / 6.1 m of dispensers.



- Never keep in service past recommended life.



- Never leave the nozzle unattended while dispensing fuel.



- Never use sparking or flaming devices within 20 ft / 6.1 m of dispensers.



- Never use power tools near dispensers or to aid in the installation process.



- Never use cell phone within 20 ft / 6.1 m of dispensers.



- Never reenter car when fueling vehicle.



- Never allow gasoline to touch eyes or skin.

- Never use at flow rates in excess of regulatory guidelines.

- Never use at flow rates less than 5 gpm / 18.9 Lpm.

- Never dispense flammable material into unapproved containers.

- Never dispense fuel without a valid driver's license.

Refer to manufacturer's installation instructions or PEI's RP500 for proper associated component installation.

### **STOCK ROTATION & SCHEDULED REPLACEMENT**

Absolute dedication to stock rotation is vital when dealing with rubber products. Curb pump and farm tank hose assemblies have a shelf life as do all other rubber products.

### **CAUTION: USE WRENCH ON HOSE NUT ONLY.**

IMPORTANT SAFETY INSTRUCTIONS - SAVE THESE INSTRUCTIONS IN A READILY ACCESSIBLE LOCATION.

## **WARRANTY**

**CONVENTIONAL LOW PERMEATION HOSE PRODUCTS** – With respect to Conventional Low Permeation Hose Products installed in California, for a period of one (1) year from the date of installation, Husky warrants that the product will be free from defects in materials and workmanship (if the installation date is in question or indeterminable, Husky will warrant the product for 12 months from sale by Husky). Husky confirms that the warranty is transferable to a subsequent purchaser within the warranty period. However, the warranty does not follow the product from its initial installation location to succeeding locations. Husky confirms these products are warranted to meet the performance standards and specifications to which it was certified by CARB for the duration of the warranty. Conventional Low Permeation Hose Products must be installed per CARB Executive Order and must follow the Husky Installation Instructions or the warranty is void. The warranty tag included with the Conventional Low Permeation Hose Product must be provided to the end user at installation. A completed warranty tag and installation documentation is required to be returned with the product to be eligible for warranty consideration.

**CONVENTIONAL HOSE PRODUCTS** – Husky Corporation will, at its option, repair, replace, or credit the purchase price of any Husky® manufactured product or Hewitt® branded product which proves upon examination by Husky, to be defective in material and/or workmanship for a period of one (1) year from the manufacture date by Husky.

Buyer must return the products to Husky, transportation charges prepaid. This warranty does not apply to equipment or parts which have been installed improperly, damaged by misuse, improper operation or maintenance, or which are altered or repaired in any way.

The warranty provisions contained herein apply only to original purchasers who use the equipment for commercial or industrial purposes. There are no other warranties of merchantability, fitness for a particular purpose, or otherwise, and any other such warranties are hereby specifically disclaimed.

Husky assumes no liability for labor charges or other costs incurred by Buyer incidental to the service, adjustment, repair, return, removal or replacement of products. Husky assumes no liability for any incidental, consequential, or other damages under any warranty, express or implied, and all such liability is hereby expressly excluded.

Husky reserves the right to change or improve the design of any Husky fuel dispensing equipment without assuming any obligations to modify any fuel dispensing equipment previously manufactured.

## 14E ENHANCED CONVENTIONAL NOZZLE



### IMPORTANT SAFEGUARDS

- For your protection, please read these safety instructions completely before installing and operating this equipment.
- Keep this manual on file for future reference.
- This manual contains material that may be required by authorities having jurisdiction to be on site at all times.
- Carefully observe all warnings, precautions and instructions for this equipment and in the operating instructions and adhere to them.



**THIS MANUAL MUST BE LEFT WITH FACILITY MANAGEMENT**

WARNINGS & INSTRUCTIONS .....	Pages 2-3
INSTALLATION .....	Pages 4-5
OPERATING INSTRUCTIONS .....	Page 6
TESTING .....	Pages 7-8
INSPECTIONS & MAINTENANCE .....	Pages 9-10
MAINTENANCE LOG INSTRUCTIONS .....	Pages 11
WARRANTY & RETURN POLICY .....	Pages 12

SITE NAME:	
ADDRESS:	
NOZZLE SERIAL NUMBER:	
DATE INSTALLED:	
INSTALLATION CONTRACTOR:	

Please visit OPW's website: [www.opwglobal.com](http://www.opwglobal.com) for further information, or contact OPW Customer Service at 1-800-422-2525 (US).



Figure 1



Figure 2

#### RESPONSIBILITIES

- Employees must enforce compliance with the safety warnings and all other instructions contained in this manual and all federal, state and local warnings/instructions.
- Keep this manual available for use by all employees and/or customers. (See Figure 1)
- For personal safety and proper operation of this equipment, read and follow all these instructions carefully. (See Figure 2)

#### GENERAL REQUIREMENTS

- This nozzle is designed for use only at facilities dispensing motor fuels.
- High flow rates in excess of the regulatory allowable may result in splash-back or spillage. Damage and/or injury may result.
- Nozzles should be limited to applications consistent with NFPA, Code 30A, OSHA CFR1910.106, UFC Section 5202, state and local fire codes, and other local regulations.
- OPW 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 materials to be handled. OPW makes no warranty of fitness for a particular use.

#### BEFORE AND DURING FUELING

- OPW recommends posting the following warnings in a visible location for the fueling public. Additional warnings may be required. Please contact authorities having local jurisdiction for requirements.



Figure 3



Figure 4

- Turn off your engine before refueling.  
Vehicle must remain off during the entire fueling procedure.
- Discharge your static electricity before refueling.
- Before using the dispenser, touch any grounded metal on the car or dispenser away from the nozzle and your vehicle's fuel pipe with bare hands. (See Figure 3)  
This will discharge static electricity on your body. Failure to discharge may ignite gasoline vapors.
- DO NOT re-enter your vehicle while refueling. This can re-charge your body with static electricity. If you must re-enter your vehicle, discharge static electricity again before touching the nozzle. (See Figure 4)





Figure 5



Figure 6



Figure 7



Figure 8



Figure 9



Figure 10



Figure 11




Figure 12

- DO NOT fill containers in or on a vehicle. Static electricity can ignite gasoline vapors and cause a fire. Fill approved portable containers on the ground. It is unlawful and dangerous to put gasoline into an unapproved container. (See Figure 5)
- Keep nozzle in contact with the container until finished filling to discharge any static generated during fueling.
- When filling an approved portable container, flow gasoline at low flow rate to prevent static build-up. DO NOT put trigger in rack position; manually hold open.
- Turn off cell phones and other electronic devices to avoid distractions. (See Figure 6)
- DO NOT smoke or allow open flame/sparking devices near the product dispensers. (See Figure 7)
- Extinguish all pilot lights and open flames. For example, the pilot light in an R.V. must be extinguished. (See Figure 8)
- If a fire starts, DO NOT REMOVE THE NOZZLE FROM THE FILL PIPE. Back away immediately and tell the attendant. If no attendant is on site, use the emergency shut-off button to stop the pump.
- DO NOT start engine during refueling. Vehicle must remain off during the entire fueling procedure. (See Figure 9)
- DO NOT leave nozzle unattended. Nozzle performance and the automatic shut-off feature are influenced by many factors. If nozzle does not shut off during refueling, stop pump immediately. (See Figure 10)
- DO NOT use foreign objects to hold open automatic nozzles. Use of foreign objects could result in failure to shut off.
- Gasoline can be harmful or fatal if swallowed. Long-term exposure to vapors has caused cancer in laboratory animals. (See Figure 11)
- Avoid prolonged breathing of vapors.
- Keep away from eyes and skin.
- Failure to use caution may cause serious injury, illness or death.
- DO NOT allow children to pump gasoline. Only persons of license age (of legal driving age) should use dispenser. Keep children away from the dispenser area. (See Figure 12)

Review and refer customers to the *Do's and Don'ts At The Gas Pump* video, which can be found at: [www.opwglobal.com](http://www.opwglobal.com) or by calling 1-800-422-2525.



	<b>WARNING</b> FAILURE TO COMPLY WITH THE FOLLOWING WARNINGS COULD RESULT IN PROPERTY DAMAGE, INJURY OR DEATH.
	<b>WARNING</b> CHEMICAL EXPOSURE HAZARD ALWAYS WEAR APPROPRIATE SAFETY EQUIPMENT DURING INSTALLATION OR MAINTENANCE OF EQUIPMENT.
	<b>WARNING</b> FIRE HAZARD DO NOT USE OPW11A OR 711A NOZZLES WITH A HOLD-OPEN DEVICE OR A DISPENSER THAT OFFERS ANY PRE-PAY OPTIONS (CREDIT CARD READER, MONEY ACCEPTOR, OR AUTHORIZATION OF EXPENSER STORE). FAILURE TO COMPLY WITH VIOLATION OF NFPA CODE 30A AND MAY RESULT IN A HAZARDOUS CONNECTION.
	<b>WARNING</b> FIRE HAZARD DO NOT USE POWER TOOLS (CLASS I DIVISION 1) AND CLASS I DIVISION 2) DURING INSTALLATION PROCESS AND MAINTENANCE OF EQUIPMENT.
	<b>WARNING</b> FIRE HAZARD DO NOT INSTALL AN UNLISTED AVALANCH OR OTHER UNLISTED AFTER-MARKET DEVICE ON ANY AUTOMATIC NOZZLE. DOING SO MAY CHANGE THE SENSITIVITY OF THE SHUT-OFF MECHANISM. NOZZLE MAY NOT SHUT OFF, CAUSING A FUEL SPILL. REFERENCE: SENSITIVITY TEST PER UNDERWRITERS LABORATORIES SPECIFICATION U842.

### INSTALLATION INSTRUCTIONS



Figure 13

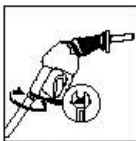


Figure 14

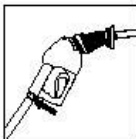


Figure 15

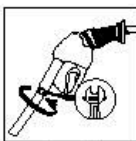


Figure 16

- Before beginning installation of the product, please carefully read all warnings. (See Figure 13)
- Follow all manufacturer's instructions.
- Use safety cones to mark-off work area.
- Shut off power to the dispenser and close the emergency shut-off valves under the dispenser. Relieve system pressure before servicing or replacing dispensing products, such as nozzles, swivels, or breakaways. (NFPA 30A §6.3.6.3) (2015 Edition)
- For nozzle replacement, secure retractor cable clamp with screwdriver (if applicable).
- For nozzle replacement, remove old nozzle with a wrench. Carefully drain fuel from hose & nozzle into approved container. (See Figure 14)
- For a new facility installation, purge/flush hose point before installing nozzles. If nozzles are used to purge/flush system, this could result in foreign material in nozzle's main valve and cause a nozzle not to shut off.
- Apply suitable thread sealant on male threads of hose or swivel. OPW recommends Loctite® 567.
- **DO NOT USE PLASTIC OR TEFLON TAPE.** Teflon tape threads may become loose and lodge in the main poppet of the nozzle, causing a leak or the nozzle to not shut off. Teflon tape may also allow for over-tightening that could crack the nozzle body and cause leaks.
- Insert hose or swivel into inlet of nozzle. (See Figure 15)
- Engage the male thread into the nozzle body and tighten the hose nut per hose instructions. (See Figure 16)

- Do not over-tighten.
- OPW recommends the use of a splash guard to prevent splash-back that may occur due to fill pipe geometry.
- Flow-test nozzles before putting nozzles in service. See testing instructions. (Reference page 6)
- Check continuity. See testing instructions. (Reference page 6)
- Check for leaks between all connections of hanging hardware. Repair or replace, as required, if any leaks are found.
- Dispenser modifications may be necessary for proper nozzle storage. Always comply with the dispenser instructions and local codes.
- After installation of the nozzle, remove the registration tag if attached to the nozzle. Facility management must complete the registration tag and return to OPW. Keep the receipt of the registration tag for your records. You may either mail the completed registration tag to OPW or register online at [www.opwglobal.com](http://www.opwglobal.com). (See Figure 17)

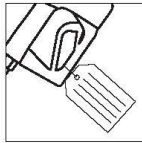


Figure 17

#### REMOVAL OF THE HOLD-OPEN LATCH ON AN OPW NOZZLE

- If local codes require that the nozzle cannot have a hold-open latch, please follow these instructions to remove the hold-open latch.
- Verify dispenser is turned off.
- Place the nozzle on a flat surface. Hold lever in open position and insert a flat-bladed screw driver alongside the hold-open rack. Pry the rack upward and off the rivets. (See Figure 18)  
**CAUTION:** Protect your face and other exposed body parts; wear safety glasses.
- Make sure broken rivets are removed from the guard. Throw away old parts.
- Do not alter the trigger or rack mechanism from its original configuration. The nozzle shut-off mechanism could be impaired as a result. Only use authorized OPW repair kits.

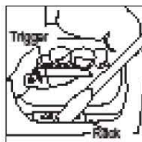


Figure 18

#### INTERLOCK FEATURE

- The actuator must be compressed approximately 1/4" to allow the lever to be operated, which will allow product to flow.
- If the actuator is released, flow of gasoline will stop.

#### HOW TO USE THE NOZZLE

- Insert the nozzle into the fillpipe until the actuator is compressed enough to allow the retaining ring on the spout to enter and latch on the fillpipe to act as an anchor for the nozzle. (See Figure 19)
- The nozzle can now be operated to dispense gasoline.

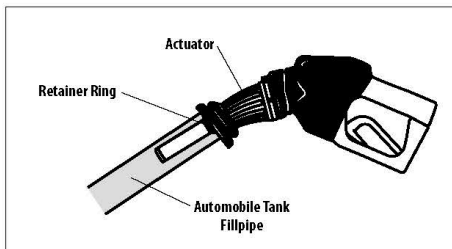


Figure 19

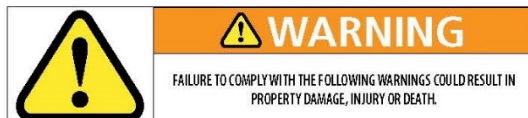


#### IF SHUT-OFF OCCURS BEFORE A FULL TANK

- This can occur as a result of too rapid filling of tanks.
- The best filling speed to use varies with the style of the fillpipe and vehicle.
- Filling too fast causes the fluid to bubble or "blow-back", and cover the sensing port in the spout. This causes the nozzle to shut-off before the tank is full. Reducing the speed of filling by using the rear notch of the hold-open rack will reduce the likelihood of this occurrence.

#### SELF-SERVICE

- Provide instructions to self-serve customers on the proper usage of the nozzle along with any other instructions necessary with your particular dispenser system.
- This includes how to insert and secure the nozzle in the fillpipe and NOT to leave the nozzle unattended.
- Instruct the self-service customer NOT to "top-off" after automatic shut-off and to wait a few seconds after shut-off before removing the nozzle from the fillpipe.
- Since the nozzle has the interlock, be sure to instruct the customer to insert or hand hold the nozzle so as to compress the actuator against the fillpipe or the nozzle will NOT operate.



#### AFTER INSTALLATION OF NOZZLE

- Each nozzle should be tested for proper operation prior to being put into service. (See Figure 20)

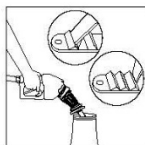


Figure 20

#### EQUIPMENT REQUIRED

- Stopwatch; approved 5-gallon (20 L) grounded, vented, metal test container; and megohmmeter. (See Figure 21)



Figure 21

#### CONTINUITY TEST

- After installation of hanging hardware and prior to flow test, check continuity following Petroleum Equipment Institute (PEI). Reference PEI-RP-400 for proper test equipment and method of testing.



#### FLOW TEST

- Compress actuator, start stopwatch, and initiate flow into an approved test container with the nozzle lever held in the full open position
- Check each hose point to verify a minimum flow rate\* and maximum flow rate.\*\* The minimum flow rate is 5 gallons per minute (GPM) and the maximum flow rate is 10 GPM.
- If hose point does not comply, check system and repair prior to putting hose point in service.

\* Minimum flow rate must be met in the lowest hold-open clip position. If hold-open clip is not present, minimum flow-rate must be met in the full open position.

\*\* Maximum flow rate must not be exceeded when nozzle is in the highest clip position or in the full open position. 10 GPM is the maximum allowed by U.S. Federal requirements.

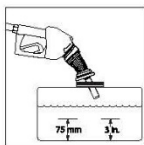


Figure 22

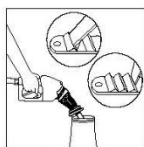


Figure 23

#### SHUT-OFF TEST

- Compress the actuator and start flow into an approved test container; place nozzle in low clip position.
- Immerse nozzle spout tip in the gasoline in the approved test container. The nozzle tip must be at least three (3) inches (75 mm) from the bottom of the container to prevent back-pressure in the spout. (See Figure 22)
- Nozzle must shut off.
- Repeat procedure for all clip positions. Nozzle must always shut off in all clip positions.
- Test each nozzle a minimum of five (5) times in each clip position. (See Figure 23)
- For models without hold-open racks, test at full open position only.
- If no shut off occurs, check to ensure flow rate is greater than 5 GPM (19 L/min.)  
If flow rate is above 5 GPM and there is no shut off, replace nozzle.

#### INTERLOCK TEST

- Compress the actuator and open lever to allow the flow of gasoline into an approved test container.
- Release the actuator and the flow of gasoline should stop.
- If the flow of gasoline does not stop with the release of the actuator, remove nozzle from service.

#### OTHER TEST

- Perform other test(s) as required by authorities having jurisdiction.



See OPW's website at [www.opwglobal.com](http://www.opwglobal.com) or contact an OPW Distributor for troubleshooting guides and/or how to use the OPW nozzle.





#### DAILY INSPECTION



Figure 24

- Visually inspect the dispensing equipment for excessively worn, abused, mistreated or leaking equipment. Replace equipment immediately. (See Figure 24)
- Visually inspect hand insulators warning labels. If illegible or excessively worn or abused, replace.

#### MONTHLY INSPECTIONS



Figure 25



Figure 26



Figure 27

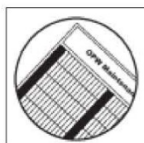


Figure 28

- Inspect the nozzle spout for wear and deformation. Spout tip diameter should be less than .840 inches (21 mm) for unleaded fuel. Replace the spout assembly as necessary.
- If the nozzle spout is bent, loose, or the shut-off hole is blocked, the nozzle spout or the entire nozzle should be replaced immediately. Failure to replace the spout may result in a hazardous spill. (See Figure 25)
- Replace spout if tip is worn. Do not cut off spout tip. This will lead to nuisance shut offs, or non-shut off, which could lead to a hazardous spill and/or injury or death. (See item A in Figure 26)
- Inspect nozzle for evidence of leakage; confirm that nozzle is leaking, and replace nozzle if necessary.
- Inspect actuator for major damage; confirm the actuator is able to engage the nozzle. Replace if necessary.
- Verify that there is a minimum flow rate greater than 5 GPM (19 L/min.) See testing instructions. (Reference page 7).
- Check for broken hold open clip spring and replace nozzle, if necessary. (See Figure 27)
- Perform shut-off test. See testing instructions. (Reference page 6).
- All maintenance and inspection activity on the nozzle must be documented. (See Figure 28) This includes replacement parts, drive-off or other testing.

#### ANNUAL INSPECTIONS

- Verify that the spout retaining screw is present and tight. Tighten if necessary.
- Lubricate with a few drops of oil where the main valve stem extends through the nozzle body. This may be performed as regular maintenance as often as wanted. Do not use grease.
- Perform continuity test. See testing instructions. (Reference page 6).

*See American Petroleum Institute, API Recommended Practice 2005, for Industry Recommended Inspections.*

See OPW's website at [www.opwglobal.com](http://www.opwglobal.com) or contact an OPW Distributor for troubleshooting guides and/or how to use the OPW nozzle.

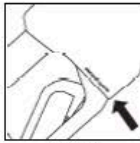


Figure 29

#### PRODUCT LIFE – Service Life Date Marking

- OPW recommends all OPW dispensing equipment be removed by or before the service life date marking on this product. (See Figure 29)

**NOTE:** Due to abuse, misuse, changing gasoline formulas, variation in maintenance practices, environmental conditions and/or conditions beyond the manufacturer's control, dispensing equipment may need to be replaced before five (5) years. Care, attention and proper maintenance procedures should be used by the service station to examine and inspect dispensing equipment to determine if replacement is indicated before five (5) years.

#### REPLACEMENT PARTS

- **DO NOT** reuse O-rings or screws when replacing components.
- Only use authorized OPW replacement kits from the distributor. All other modifications may result in nozzle failure and create a hazardous condition, resulting in personal injury, property damage, or death, and will void the warranty.
- **DO NOT** take nozzle apart. Nozzles that have been tampered with void all warranty and liability. Rebuilding an OPW nozzle voids all certifications.

#### IN CASE OF DRIVE-OFF OR SUSPECTED CUSTOMER ABUSE



Figure 30

- Immediately lock hose point out of service until a thorough inspection by a qualified service technician can be made. Inspect the nozzle, actuator, hose, breakaway, dispenser outlet casting and piping. (See Figure 30)
- Even if there is no separation of the breakaway or breakage of the nozzle spout, damage can be done that may cause leaks. Inspect and replace any damaged components, as necessary, prior to returning the hose point to service.
- Check for leaks and other damage.
- Check nozzle for liquid shut-off. See testing instructions. (Reference pages 6-7)
- Check for continuity. See testing instructions (Reference pages 6-7)
- **DO NOT** replace spout without OPW replacement kits and instructions. (See OPW's website for replacements kits). Improper parts or assembly may result in leakage or a hazardous condition. If the spout is removed or replaced for any reason, the nozzle must be retested in accordance with the Test Section (See pages 6-7) of this manual.
- Verify that the spout retaining screw(s) are present and tight. Tighten if necessary. (See Figure 31)
- Make sure to comply with any requirements of authorities having jurisdiction.



Figure 31

Maintenance Log Instructions					
<p>• For each repair or product change out, <b>complete</b> an entry on this form.</p> <p>• For each new alarm condition on the station's monitoring system, <b>complete</b> an entry on this form.</p>					
<p><b>Repair Logs</b>, which shall include:</p> <p>(i) Date and time of each repair.</p> <p>(ii) The name of person(s) who performed the repair, and if applicable, the name, address and phone number of the person's employer.</p> <p>(iii) Description of services performed.</p> <p>(iv) Each component that was repaired, serviced, or removed, including the required component identification information. <i>Example: manufacturer and product serial number.</i></p> <p>(v) Each component that was installed as replacement, if applicable, including the required component identification information. <i>Example: manufacturer and product serial number.</i></p> <p>(vi) Receipts for parts used in the repair and, if applicable, work orders, which shall include the name and signature of the person responsible for performing the repairs.</p>					
<p><b>ALL repairs should be logged!</b></p> <p>Whether the new equipment is from the station's own stock or from a maintenance company, everything should be entered into the daily repair log.</p>					
Date of Problem (MM/DD/YY)	Description of Defect, Alarm or Spill	Date/Time of Repair/Remedy (MM/DD/YY)	Description of Repair or Remedy. List each component repaired, replaced and/or installed including make, model and serial number of old and new components	Name/Company/Address/Phone Number of Person Who Performed the Repair	
4/1/00	Nozzle #: 3	4/2/00 3:30 pm	Replaced OPW 14E nozzle serial #9999999 with new OPW 14E nozzle serial #9999999.	Tom Smith, ABC Nozzle Co. 1111 E. Fourth Ave. La Habra, CA 560-345-6789	
	Grade of Gas: 87				
	Nozzle spout for 3-87 out of round, Called repair company on 4/1.				
	Nozzle #:				
	Grade of Gas:				
	Nozzle #:				
	Grade of Gas:				

See OPW's website at [www.opwglobal.com](http://www.opwglobal.com) or contact an OPW Distributor for troubleshooting guides and/or how to use the OPW nozzle



## WARRANTY POLICY & RETURN PROCEDURE

### OPW STANDARD PRODUCT WARRANTY / OPW TERMS & POLICIES

NOTICE: FlexWorks by OPW, Inc., VAPORSAVER™ and all other OPW products must be used in compliance with all applicable federal, state, provincial and local laws, rules and regulations. Product selection is the sole responsibility of the customer and/or its agents and must be based on physical specifications and limitations, compatibility with the environment and material to be handled. All illustrations and specifications in this literature are based on the latest production information available at the time of publication. Prices, materials and specifications are subject to change at any time, and models may be discontinued at any time, in either case, without notice or obligation.

Product	Warranty Period
FlexWorks Primary Pipe	10 years from date of manufacture
All Products and replacement parts installed in the State of California Certified to California CP-201, CP-206, and/or CP-207 Standards*	1 year from date of installation (proof of purchase from certified contractors/technicians required) OPW warrants ongoing compliance with the standards and specifications for the duration of the warranty period required by the State of California; this limited warranty is under the condition the equipment was installed and maintained by trained and certified contractors/technicians unless noted in Installation Manual
All Other Products	1 year from date of manufacture
*Products certified to California CP-201, CP-206, and/or CP-207 Standards have been factory tested and met all applicable performance standards and specifications and will have an OPW registration card enclosed/attached to the product	

OPW warrants solely to its customer (the initial purchaser and any subsequent purchasers within the warranty period) that the following products sold by OPW will be free from defects in materials and workmanship under normal use and conditions for the periods indicated.

OPW's exclusive obligation under this limited warranty is, at its option, to repair, replace or issue credit (in an amount not to exceed the list price for the product) for future orders for any product that may prove defective within the applicable warranty period (repairs or replacements are subject to prorated warranty coverage for remainder of the original warranty period). Complete and proper warranty claim documentation and proof of purchase required. All warranty claims must be made in writing and delivered during the applicable warranty period to OPW at OPW 9393 Princeton-Glendale Road Hamilton, Ohio, USA 45011, Attention: Customer Service Manager. No products may be returned to OPW without its prior written authority.

This limited warranty shall not apply to any FlexWorks or VAPORSAVER™ product unless it is installed by an OPW attested installer. This limited warranty also shall not apply to any FlexWorks, VAPORSAVER™ or other OPW product: unless all required site and warranty registration forms are completed and received by OPW within 60 days of installation; unless all piping connections are installed with a nationally-recognized or state-approved leak detection device in each tank and dispenser sump (which are not for storage and from which all discharge hydrocarbons must be removed, and the systems completely cleaned, within 24 hours); unless testable sumps utilize FlexWorks pipe and access fittings; unless a sump inspection log or an EPA recommended/required checklist is maintained and the results are furnished to OPW upon request; and unless OPW is notified within 24 hours of any known or suspected product failure and is provided with unrestricted access to the product and the site. This limited warranty also shall not apply to any product which has been altered in any way, which has been repaired by anyone other than a service representative authorized by OPW, or when failure or defect is due to: improper installation or maintenance (including, without limitation, failure to follow FlexWorks Quick Reference Manual Installation Guide and all product warning labels); abuse or misuse; violation of health or safety requirements; use of another manufacturer's, or otherwise unauthorized, substances or components; soil or other surface or subsurface conditions; or fire, flood, storm, lightning, earthquake, accident or any other conditions, events or circumstances beyond OPW's control.

THIS LIMITED WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, AND ALL OTHER WARRANTIES INCLUDING, WITHOUT LIMITATION, THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE HEREBY EXCLUDED.

OPW shall have no other liability whatsoever, whether based on breach of contract, negligence, gross negligence, strict liability or any other claim, including, without limitation, for special, incidental, consequential or exemplary damages or for the cost of labor, freight, excavation, clean-up, downtime, removal, reinstallation, loss of profit, or any other cost or charges. No person or entity is authorized to assume on behalf of OPW any liability beyond this limited warranty. This limited warranty is not assignable.

Please see OPW's website for instructions in other languages, troubleshooting guides, how to use the nozzle and the Do's and Don'ts At The Gas Pump video: [www.opwglobal.com](http://www.opwglobal.com)

9393 Princeton-Glendale Road  
Hamilton, Ohio 45011-9707

North America Toll Free – Telephone: (800) 422-2525 ♦ Fax: (800) 421-3297  
International – Telephone: (513) 870-3315 or (513) 870-3261 Fax: (513) 870-3157

Please visit OPW's website: [www.opwglobal.com](http://www.opwglobal.com) for further information, or contact  
OPW Customer Service at 1-800-422-2525 (US).



## NOZZLE WARRANTY TAG

SITE \_\_\_\_\_ Phone # \_\_\_\_\_

City: \_\_\_\_\_ Contact: \_\_\_\_\_

Distributor: \_\_\_\_\_

Branch: \_\_\_\_\_ Customer #: \_\_\_\_\_

RGA #: \_\_\_\_\_

*No warranty accepted without tag filled out and attached.*

Nozzle: \_\_\_\_\_ Date Code: \_\_\_\_\_

Serial #: \_\_\_\_\_ Replacement Serial #: \_\_\_\_\_

### WARRANTABLE DEFECTS (CHECK ONLY ONE)

- |   |   |
|---|---|
| <input type="checkbox"/> Leaks Fuel Around Spout (200)          | <input type="checkbox"/> Dispenses Fuel Without Pulling Lever (200) |
| <input type="checkbox"/> Leaks Fuel in Trigger Area (200)       | <input type="checkbox"/> Fails Pressure Decay Test (300)            |
| <input type="checkbox"/> Leaks Fuel at Hose Inlet (200)         | <input type="checkbox"/> Fails Air-to-Liquid Test (300)             |
| <input type="checkbox"/> Does Not Dispense (400)                |   |
| <input type="checkbox"/> Continues to Shut-off During Use (400) | Note: _____   |
| <input type="checkbox"/> Does Not Shut Off (500)                | _____   |

H-14211-M

# VST Installation Procedure for ENVIRO-LOC ECO Dripless Conventional Nozzles

Part Number Series: VST-NV-ND(cc) and VST-NV-ND(cc)R  
cc = Scuff Guard Color Code and R = Rebuilt



## Vapor Systems Technologies, Inc.

650 Pleasant Valley Drive  
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www.vsthose.com

## GENERAL INFORMATION

If hanging hardware components are involved in a drive-off or incur other customer abuse, each individual component must be functionally tested prior to customer dispensing activities.

## INSTALLATION PREPARATION

These procedures must be followed to ensure leak-proof installation and operation of these nozzles.

1. Turn off and tag the power to the dispenser. Dispenser must be de-energized prior to service to avoid personal injury.
2. Barricade work area to block vehicle access to the dispenser.
3. Close dispenser shear valve prior to performing any service work with the hanging hardware (hoses, safety breakaways and nozzles).
4. Drain liquid product from the hanging hardware set into an approved container prior to replacing any hanging hardware component. (Pull nozzle lever.)

If the nozzle has an interlock device, engage the interlock before pulling the lever.

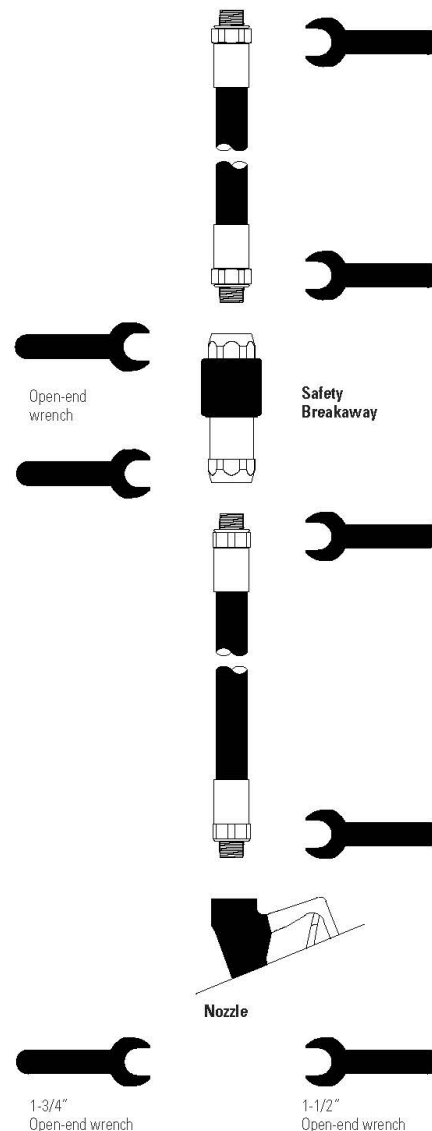
5. Remove hanging hardware from the dispenser prior to making replacement component assembly connections. VST recommends connecting the whip hose to the dispenser as the last connection during hanging hardware assembly.

## INSTALLATION AND FUNCTION TESTS

**STOP!** If this is a new facility installation, the fueling point must be flushed into an approved container before installing the nozzle. Using this nozzle to flush the system could result in foreign material becoming lodged in the nozzle's valve and cause it to not shut off.

1. Initial inspection:
  - a. Carefully unpack nozzle from shipping carton.
  - b. Inspect nozzle exterior for any damage.
  - c. Inspect threads, lever, lever lock, spout, spout boot, and face plate to determine that they are present and undamaged.
  - d. Verify interlock rod alignment. Check interlock for engagement and release. Nozzle will not function without the interlock rod properly engaged.
  - e. Inspect spout vent hole. It should be clear of debris.

Figure 1



# VST Installation Procedure for ENVIRO-LOC ECO Dripless Conventional Nozzles

Part Number Series: VST-NV-ND(cc) and VST-NV-ND(cc)R  
cc = Scuff Guard Color Code and R = Rebuilt

2. These are pipe thread connections. Use of thread sealant is recommended. Do not use Teflon tape. With pipe thread connections, the amount of torque necessary to obtain a seal is dependent on the mating materials and the thread condition.  
**Only enough torque to achieve sealing should be used.**
3. Attach nozzle on mating connections and tighten to finger tight. After finger tight, hold the nozzle securely and use a wrench **ONLY** on the hex flats of the hose coupling to tighten an additional 1 to 1½ TFFT (turns from finger tight.) This is normally sufficient to obtain a proper seal. Do not exceed 40 ft.-lbs for 3/4" pipe threads.
  - a. DO NOT OVER TIGHTEN.
  - b. DO NOT USE channel locks or pliers to tighten connections.
4. Visually inspect all hose connections for signs of potential leak points. Repair any issue immediately before proceeding.
5. Purge air from the system by pumping one-tenth (1/10) to two tenths (2/10) of a gallon of fuel into an approved container. Inspect the nozzle connection for liquid leaks and make proper adjustments at the hose connection if necessary.
6. Check the nozzle shut-off action by dispensing fuel into an approved container at least three times to assure the proper automatic operation of the interlock rod. The fuel flow-rate must be greater than 3 gpm for the automatic shut-off mechanism to operate.

To test, operate the nozzle and submerge the spout tip in fuel until the fuel level covers the vent hole. The main valve of the nozzle automatically shuts off when liquid covers the vent hole at the end of the spout. The nozzle is not designed to operate on gravity flow. The hold-open latch will disengage automatically when the liquid covers the vent hole in the spout. Verify that the fuel flow stops when the face plate is decompressed (e.g. interlock is disengaged). To test that the fuel flow stops, dispense some fuel into an approved container. Slowly remove the nozzle from the container while dispensing fuel. Fuel flow should stop when the nozzle face plate is fully decompressed.
7. Measure the resistance between the dispenser outlet casting and the tip of the nozzle spout. Use an electronic multimeter set on the high range of the ohmmeter function. Resistance should not indicate more than 70,000 ohms per foot of hose. Example: The measured resistance for a 12-foot hose must not exceed 840,000 ohms (840 kilohms).

## MAINTENANCE

Inspect nozzles regularly for damaged component parts: boot, face plate, spout, lever, lever lock, interlock rod functionality.

Damaged components must be replaced. Vent hole at the end of the spout should be clear of debris. The nozzle will not operate properly:

- If the vent hole becomes clogged.
- Without the interlock rod properly engaged.

Keep the hose connections tight.

Should there be a drive-off or incidence of customer abuse, follow the initial inspection instructions found in the INSTALLATION section. The nozzle should be replaced when damaged. The nozzle is designed and constructed to give lasting service if properly handled and maintained. If for any reason it should need attention, contact your VST distributor for proper disposition.

**NOTE:** Due to abuse, misuse, changing fuel formulas, variation in maintenance practices, environmental conditions and/or conditions beyond the manufacturer's control, dispensing equipment may need replacement before five (5) years. Inspections and proper maintenance procedures should be followed by the station manager to determine if replacement is required before five (5) years.

## WARNING

Unauthorized rebuilding or modifying of nozzles voids **ALL** approvals and warranties.

VST products must be used in compliance with applicable federal, state and local laws and regulations.

If local regulatory codes prohibit use of the nozzle's hold-open clip, it must be removed prior to nozzle installation. Remove the nozzle to a safe work area.

Place the nozzle on a flat surface.

Locate the alloy rivet securing the hold-open clip and spring in the nozzle's handle. Use a drill with a 3/16" (5mm) drill bit, drill out the rivet securing the hold-open clip, and discard the clip, spring, and all other rivet debris.



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