



Jeremiah W. (Jay) Nixon, Governor • Mark N. Templeton, Director

DEPARTMENT OF NATURAL RESOURCES

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JUN 18 2009

Mr. Jeff Deaton
Design and Development Engineer
Husky Corporation
2325 Husky Way
Pacific, MO 63069

APPROVAL LETTER 2009-1

Dear Mr. Deaton:

This letter is to inform you and Husky Corporation, of the Missouri Department of Natural Resources approval of the Husky V and VLX nozzle – casting modifications, for use in Missouri Stage II vapor recovery required gasoline dispensing facilities (GDF).

Husky Corporation requested the approval of the new casting for the Husky V and VLX nozzle at a MOPETP Technical Review Committee meeting on August 21, 2008. The Husky V and VLX (long and short) were originally MOPETP tested in 1997/1998. The Husky V nozzles (short and long) were approved (98-02), the VLX would have been approved at that time. However, that version of the VLX was withdrawn by Husky.

Subsequently, the VLX was modified so that the threads for the nozzle hose connection were reversed (left hand thread) from normal nozzles (right thread) to avoid problems with connecting the VLX nozzle with the liquid removal tube to a hose other than the Goodyear LX that has been specifically designed to be used with the Husky VLX nozzle. The Husky VLX model was approved in 2007 (2007-1) after testing at the Costco St. Peters facility.

The MOPETP Technical Review Committee determined that a combination of engineering review along with some site testing would be required. The engineering evaluation of the new casting design and backpressure data provided by Husky indicated that there should be no negative impact to emissions related to the changes in design. The new casting results in lower backpressures due to enlarged vapor pathway. Since testing was to be performed at the Costco South County site, the Husky VLX nozzles were hung at the site for testing from September 24, 2008, through February 18, 2009. This nozzle testing was done in conjunction with the long hose concept, same site, same time, and will be addressed in subsequent approvals. All CARB standards, conditions, maintenance, and testing requirements, referenced in the CARB letter.



Recycled Paper

Mr. Jeff Deaton
Page Two

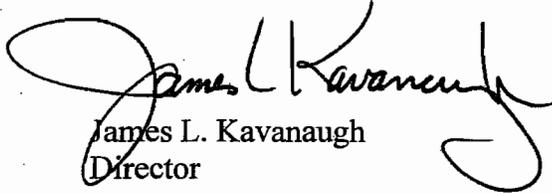
The 0703 & 0702 certification for these nozzles will also be held as a condition of this MOPETP approval.

1. The V and VLX nozzles should be as shown in Figures 1 through 6.
2. The V and VLX nozzles must be installed and maintained according to the manufactures installation instructions (see Attachment A.)

Thank you for your cooperation in this matter. If you should have any questions about this approval, please contact Mr. Bud Pratt at the Department's Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102-0176, or by telephone at (573) 751-4817.

Sincerely

AIR POLLUTION CONTROL PROGRAM



James L. Kavanaugh
Director

JLK:bpt

Enclosures

c: Vapor Recovery

Husky VLX Nozzle
Figures 1 - 6



Figure 1. Husky VLX Nozzle



Figure 2. Old vs new casting for Husky V nozzle – side view.



Figure 3. Old vs. new casting for Husky V nozzle – top view.



Figure 4. Old vs. new casting for Husky VLX nozzle – side view.



Figure 5. Old vs. new casting for Husky LVX nozzle – top view.

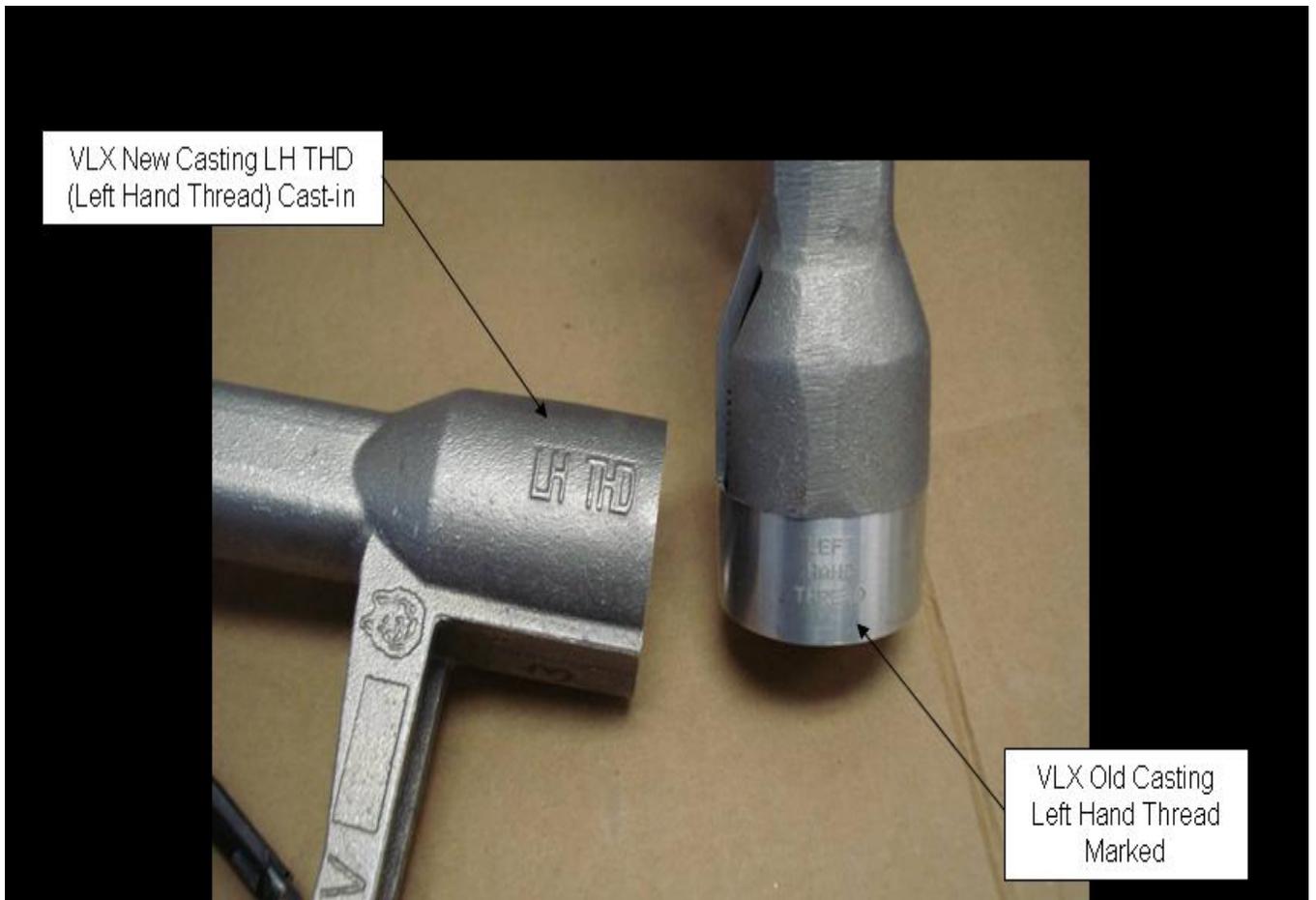


Figure 6. Old vs. new casting for Husky VLX nozzle – view of connection to hose.

Attachment A

Husky VLX

	VLX Recommended Installation, Maintenance and Inspection Instructions Balance Vapor Recovery Nozzles	
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Model #	601004 601008	601404 601408	602004 602008	602404 602408	611004 611008	611404 611408	612004 612008	612404 612408
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⚠ WARNING Designed for use at motor fuel dispensing facilities only.

INSTALLATION INSTRUCTIONS

1. With the dispenser shut off, start the fuel hose into the nozzle body. Do not use thread sealants (Teflon tape, anti-sieze, or any other kind of sealant).
2. Tighten **LEFT HAND THREADS** firmly but do not overtighten. Refer to UL 842 for details.
3. Test nozzle flow rate.
4. Test nozzle for proper automatic shut off between 5 - 10 GPM.

IF DRIVE OFF OCCURS

- Visually check for fractured spout shear groove.
- Check for leaks.
- Perform flow test of nozzle to check auto shut off.
- Check for damage to bellow - bent, out-of-round, rips, tears, elongated.
- Check vapor bellows interlock.
- Check spout tip - should be in round and sensing port should be clear of debris.
- Check for electrical conductivity.
- Refer to city, state and federal requirements for vapor integrity testing.

TESTING / MAINTENANCE / INSPECTIONS

<input checked="" type="checkbox"/>	<p>Daily</p> <ul style="list-style-type: none"> • Check for leaks / stains. • Check for loose spouts. • Check for damage. • Check for bent lever. • Check for broken clip / trigger spring. • Check for damaged or torn bellows. • Check for damaged or worn faceplate.
<input checked="" type="checkbox"/>	<p>Monthly</p> <ul style="list-style-type: none"> • Check vapor bellows interlock. • Check nozzle auto shut off. • Check flow rate to verify minimum flow rate. • Check "remove by" date.
<input checked="" type="checkbox"/>	<p>Annually</p> <ul style="list-style-type: none"> • Check for electrical conductivity. • Lubricate main valve stem. • Conduct Vapor Valve Leak Rate test. • Conduct Fuel Valve Leak test.
<p>All drive aways, maintenance and inspection activities must be logged using the serial number of the individual product.</p> <p>Apply city, state, or federal testing regulations as appropriate.</p> <p>ANY TEST / INSPECTION FAILURE REQUIRES IMMEDIATE EQUIPMENT REPLACEMENT OR REMOVAL FROM SERVICE.</p>	

The following are the approved test procedures to be used on Husky Balance nozzles. Any non-approved methods used will void the warranty.

TEST ORDER	APPROVED PROCEDURE
Nozzle liquid removal performance test	CARB TP-201.6
Interlock test	Visually inspect Bellows Spring Cable for defects
2" H ₂ O static pressure performance test	CARB TP-201.3 (test with nozzle in the dispenser)
Vapor backpressure test	CARB TP-201-4
Secondary overpressure shut off test	CCR Title 4, Div. 9, Chapter 2, Article 2, Section 4055
Nozzle Vapor Valve Leak Rate test	CARB TP-201-2B (test with nozzle in upright position)

MADE IN THE USA

NOTE: This nozzle utilizes LEFT HANDED THREADS for installations.

ALWAYS ADHERE TO INSTALLATION / USAGE INSTRUCTIONS AND WARNINGS.
 Improper use may result in injury, damage, or hazardous spill.

GENERAL WARNINGS / INSTRUCTIONS

- 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 feet 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 feet 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 feet of dispensers.
- Never use power tools near dispensers or to aid in the installation process.
- Never use cell phone within 20 feet 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 gallons per minute.
- Never dispense flammable material into unapproved containers.
- Never dispense fuel without a valid driver's license.

CAUTION: DO NOT TOP OFF!

Topping off can lead to spills, splashes, and block the vapor return path.

WARRANTY

VAPOR PRODUCTS – Husky Corporation will, at its option, repair, replace, or credit the purchase price of any Husky manufactured product which proves upon examination by Husky, to be defective in material and/or workmanship for a period of one (1) year of installation or fifteen (15) months from the manufacture date of shipment by Husky, whichever occurs first. The warranty period on repaired or replacement vapor recovery products is only for the remainder of the warranty period of the defective product.

CONVENTIONAL PRODUCTS – Husky Corporation will, at its option, repair, replace, or credit the purchase price of any Husky manufactured 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 of shipment by Husky.

Buyer must return the products to Husky, transportation charges prepaid. This Warranty excludes the replaceable bellows, bellows spring assembly, spout assembly and scuff guard, unless (i) damage is obvious when the product is removed from shipping carton and (ii) the defective product is returned to Husky prior to use. 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.

OPERATION INSTRUCTIONS

1. Activate dispenser.
2. Insert spout into fill pipe opening until the bellows is compressed approximately 1/2".
3. Lower hose end of nozzle so the spout ring catches the inside of the fill pipe opening.
4. Raise the lever and begin fueling.
5. Nozzle will shut off automatically when the tank is full. Wait 15 seconds to allow any gasoline remaining in the spout to drain before removing the nozzle from fill pipe.
6. Return nozzle to nozzle boot.

NOTE: If the nozzle is removed or falls from the fill pipe opening while dispensing, the bellows will be released causing the nozzle to shut off. The nozzle will not reopen until the Bellows has been compressed again. This bellows interlock fulfills the NFPA Code 30A requirement for self-service nozzles with a hold open latch.

TROUBLESHOOTING GUIDE

Nozzle keeps shutting off or won't dispense...	<ol style="list-style-type: none"> 1. Make sure dispenser is on and activated. 2. Insert nozzle farther into vehicle fill pipe. 3. Slow down flow rate - use lower notch on clip. 4. Drain gasoline from vapor hose. 5. Check installation of bellows and bellows spring assembly. 6. Clean spout tip end. 7. Clean or replace filter. 8. Inspect Safe-T-Break®. 9. Replace spout assembly.
Nozzle won't shut off...	<ol style="list-style-type: none"> 1. Check flow rate - minimum of 3 GPM required. 2. Remove nozzle and drain hose.
Nozzle dispenses without compressing bellows...	<ol style="list-style-type: none"> 1. Replace bellows spring assembly.
Nozzle leaking...	<ol style="list-style-type: none"> 1. Check for loose spout. 2. Check inner hose for leaks. 3. Check for cracks in nozzle and hose threads. 4. Check o-rings on inner hose at nozzle inlet.
Low flow rate...	<ol style="list-style-type: none"> 1. Remove Flo-Equalizer™ (if equipped). 2. Verify dispenser is not in slow flow rate mode. 3. Check for system leak.
Flow rate above 10 GPM...	<ol style="list-style-type: none"> 1. Verify Flo-Equalizer™ being used - either inside or outside dispenser. 2. Check Flo-Equalizer™ for debris.
Can not thread onto hose...	<ol style="list-style-type: none"> 1. Nozzle utilizes LEFT HAND THREADS.
Can not remove from hose...	<ol style="list-style-type: none"> 1. Nozzle utilizes LEFT HAND THREADS.

GENERAL TECHNICAL DATA

Fuel Type	Test and warranty for gasoline and diesel fuel		
Flow Rate	Unleaded w/o Flo-Equalizer™ = 12 GPM		
Body	Die cast aluminum		
Disc	Viton® (Fluorocarbon)		
Packing	Double O-ring seal protected by fiber reinforced Teflon		
Lever	One piece contoured steel with hard plastic cover		
Weight	Short Spout Nozzle = 3 lbs	Long Spout Nozzle = 3.5 lbs	
Threads	1-7/8" x 12 Left Handed Threads (requires special LX hose)		
Spout	Unlead = 13/16" O.D.		
Length	Short Spout Nozzle = 15-5/8"	Long Spout Nozzle = 17-3/8"	
Case Quantity	15		
Listings		Tx.TCEQ	MO DNR
Patents	5,085,258 5,127,451, 6,866,299		

FLO-EQUALIZER™ INSTALLATION INSTRUCTIONS

Model #5827 Balance Flo-Equalizer™

1. Turn off dispenser and relieve line pressure.
2. Lubricate the o-rings with light motor oil.
3. DO NOT use Teflon tape.
4. Tighten snugly -- DO NOT overtighten.

5. Confirm nozzle is properly installed, pressurize the system and check for leaks.

NOTE: In the event of pressure differential in excess of 25 PSI across the Flo-Equalizer™ or the presence of debris obstructing movement of internal components, the Flo-Equalizer™ output may exceed 10 GPM.

SPOUT REPLACEMENT INSTRUCTIONS

Model #6320 Short Spout Assembly Kit

Model #6440 Short Spout

Model #6322 Long Spout Assembly Kit

Model #6445 Long Spout

1. Remove bellows assembly, spout lock nut and spout.
2. Remove and discard spout and spout seal ring.

3. Insert new spout seal ring.
4. Insert new spout into body making sure the vent tube is in the port.
5. Tighten the spout lock nut while holding the spout in proper alignment.
6. Reinstall bellows assembly.

BELLOWS ASSEMBLY REPLACEMENT INSTRUCTIONS

Model #5801 Short Bellow Assembly

Model #5803 Short Bellow Spring

Model #5901 Long Bellow Assembly

Model #5903 Long Bellow Spring

1. Remove low profile ear clamp.
2. Remove bellows assembly.
3. Pull the bellows spring assembly out of the bellows - (unless replacing both assemblies).
4. Install the bellows spring assembly onto spout - "four-legs" towards nozzle in the openings of bellows mount.

5. Slide new low profile ear clamp onto new bellows.
6. Slide new bellows over bellows spring assembly.
7. Align holes in bellows with anti-rotation posts on bellows mount.
8. Rotate low profile ear clamp until the ears are to the lower side of nozzle then tighten firmly (latch over 2nd tooth).
9. Check operation of mechanical interlock.
10. Test nozzle for automatic shut-off.

HOLD OPEN CLIP INSTALLATION / REMOVAL INSTRUCTIONS

Model #3593 Hold Open Clip Kit

INSTALLATION

1. Remove nozzle from hose and drain.
2. Position latch spring under latch clip and hose them in place. The latch clip should straddle the mating holes in the trigger lever.
3. Insert latch rivet through latch clip and lever, making sure latch spring is secured in position by the rivet.
4. Install push nut of rivet - DO NOT hammer in place.
5. Squeeze lever several times to check operation.
6. Verify clip and lever are parallel.

NOTE: Field installation of the hold open clip is NOT U.L. approved because improper installation may cause the nozzle to fail.

REMOVAL

1. Remove nozzle from hose and drain.
2. Place nozzle on a flat surface in safe location.
3. Hold up on the latch clip to prevent rivet from rotating.
4. Drill off the riveted end using a 1/4" bit.
5. Do not remove latch plate.

NOTE: Nozzles can be ordered without clips.

GUARD REPLACEMENT INSTRUCTIONS

NOZZLE GUARD

Model #5950

1. Remove nozzle from hose.
2. Remove old guard.
3. Install new guard over spout and pull back to cover nozzle body.
4. Re-install nozzle to hose.

NOZZLE REGUARD

Model #4190

1. Cut old guard at nozzle inlet and remove from nozzle.
2. Install new guard over spout and pull back to cover nozzle body.
3. Pull tie through the eyelets and loop under nozzle inlet.
4. Pull tightly and trim off excess tie.

LEVER COVER

Model #5494

1. Remove old lever cover.
2. Snap new lever cover into place.

ACCESSORIES

Model #2879 - Bellow Clamp

Model #3364 - Bellow Clamp Tool

Model #0397 - Spout Gauge