Manual No: **577013-988** ● Revision: **B**

MPV Mechanical Proportional Valve

Installation and Maintenance Manual

THIS MANUAL MUST BE GIVEN TO THE OPERATIONS MANAGER AND KEPT ON THE PREMISES.

VEEDER-ROOT

WARNINGS AND INSTRUCTIONS

IMPORTANT SAFETY INFORMATION

This section introduces the hazards and safety precautions associated with installing, inspecting, maintaining or servicing this product. Before performing any task on this product, read this safety information and the applicable sections in this manual, where additional hazards and safety precautions for your task will be found. Fire, explosion, electrical shock or pressure release could occur and cause death or serious injury, if these safe service procedures are not followed.

PRELIMINARY PRECAUTIONS

You are working in a potentially dangerous environment of flammable fuels, vapors, and high voltage or pressures. Only trained or authorized individuals knowledgeable in the related procedures should install, inspect, maintain or service this equipment.

Read the Manual

Read, understand and follow this manual and any other labels or related materials supplied with this equipment. If you do not understand a procedure, call (800) 323-1799 to locate a qualified technician. It is imperative to your safety and the safety of others to understand the procedures before beginning work. **Make sure your employees and any service contractors read and follow the instructions.**

Follow the Regulations

Applicable information is available in National Fire Protection Association (NFPA) 30A; *Code for Motor Field Dispensing Facilities and Repair Garages*, NFPA 70; *National Electrical Code* (NEC), Occupational Safety and Hazard Association (OSHA) regulations and federal, state, and local codes. All these regulations must be followed. Failure to install, inspect, maintain or service this equipment in accordance with these codes, regulations and standards may lead to legal citations with penalties or affect the safe use and operation of the equipment.

Prevent Explosions and Fires

Fuels and their vapors will explode or burn, if ignited. Spilled or leaking fuels cause vapors. Even filling customer tanks will cause potentially dangerous vapors in the vicinity of the dispenser or island.

Working Alone

It is highly recommended that someone who is capable of rendering first aid be present during servicing. Familiarize yourself with Cardiopulmonary Resuscitation (CPR) methods, if you work with or around high voltages. This information is available from the American Red Cross. Always advise the station personnel about where you will be working, and caution them not to activate power while you are working on the equipment. Use the OSHA Lockout/Tagout procedures. If you are not familiar with this requirement, refer to OSHA documentation.

Working With Electricity Safely

Ensure that you use safe and established practices in working with electrical devices. Poorly wired devices may cause a fire, explosion or electrical shock. Ensure that grounding connections are properly made. Ensure that you do not pinch wires when replacing covers. Follow OSHA Lockout/Tagout requirements. Station employees and service contractors need to understand and comply with this program completely to ensure safety while the equipment is down. Before you start work, know the location of the Emergency Power Cutoff Switch (the E-STOP). This switch cuts off power to all fueling equipment and submerged turbine pumps and is to be used in the event of an emergency. The buttons on the console at the cashier's station WILL NOT shut off electrical power to the pump/dispenser. This means that even if you press a button on the console labeled EMERGENCY STOP, ALL STOP, PUMP STOP, or something similar, fuel may continue to flow uncontrolled.

Hazardous Materials

Some materials may present a health hazard if not handled correctly. Ensure that you clean hands after handling equipment. Do not place any equipment in the mouth.

WARNING! FAILURE TO COMPLY WITH THE FOLLOWING WARNINGS AND SAFETY PRECAUTIONS COULD RESULT IN PROPERTY DAMAGE, INJURY OR DEATH.

FIRE HAZARD! Do **NOT** use **power tools** (Class I Division I and Class I Division II) during the installation or maintenance of equipment. Sparking could ignite fuel or vapors, resulting in fire.

CHEMICAL EXPOSURE HAZARD! Wear appropriate **safety equipment** during installation or maintenance of equipment. Avoid exposure to fuel and vapors.

FUEL SPILL! Do **NOT** install unlisted ads/billboards, and do **NOT** install any other unlisted after-market device on any automatic nozzle. Doing so may change the sensitivity of the shut-off mechanism, which may cause the nozzle not to shut off, resulting in a fuel spill. Please see sensitivity test in Underwriters Laboratory Specification UL842.

REQUIREMENTS FOR USE

- The Veeder-Root product is designed for use only at facilities dispensing motor fuels.
- Application of the Veeder-Root product must be consistent with NFPA Code 30A, OSHA regulations, and federal, state and local fire codes, and other applicable local regulations.
- Injury or damage may result from splash-back or spillage if the nozzle is operated in excess of the applicable regulatory high-flow rates.
- The selection of any Veeder-Root product must be based upon physical specifications and limitations and the product's compatibility with the materials to be handled. Veeder-Root makes no warranty of fitness for a particular purpose. See Warranty below.
- All Veeder-Root products should be used in accordance with applicable federal, state and local laws, ordinances and regulations.

OPERATING PRECAUTIONS

Post the warning signs required by the current edition of NFPA 30-A, Section 9.2.5.4 in a conspicuous location. We recommend that you post the following warnings in a conspicuous location visible to those using the equipment. Contact authorities having local jurisdiction for additional required warnings.

- **TURN OFF** your engine before refueling, and **DO NOT RESTART** your engine until fueling is completed.
- **DISCHARGE YOUR STATIC ELECTRICITY** before fueling by touching with your bare hand grounded metal on your car or on dispenser away from nozzle
  - **FAILURE TO DISCHARGE** static electricity could cause a spark which could ignite fuel vapors.
  - **DO NOT** reenter your vehicle during fueling, because this could recharge your body with static electricity. If you must re-enter your vehicle, be sure to discharge your static electricity again before you touch the nozzle.
- **NO SMOKING.** Extinguish all open flames and pilot lights, such as on RV appliances.
- **TURN OFF** cell phones and other electronic devices to avoid distractions while fueling.
- **DO NOT** leave nozzle unattended. Nozzle performance and the automatic shut-off are influenced by many factors. **STOP THE PUMP IMMEDIATELY** if the nozzle does not shut off after refueling.
- **WARNING! DO NOT REMOVE NOZZLE FROM FUEL PIPE IF FIRE STARTS.** Move back from dispenser and inform the attendant. Use the emergency shut-off button to stop the pump if the attendant is not available at the site.
- **DO NOT ALLOW CHILDREN** to pump gasoline. The equipment should be used only by persons of legal driving age.
- **GASOLINE CAN BE HARMFUL OR FATAL IF SWALLOWED.** Long-term exposure may cause cancer. Keep eyes and skin away from liquid gasoline and gasoline vapors. Avoid prolonged breathing of gasoline vapors.
- **USE ONLY APPROVED PORTABLE CONTAINERS.** Dispense gasoline into approved portable containers placed on the ground. **NEVER FILL PORTABLE CONTAINERS IN OR ON THE VEHICLE.** If you do, static electricity generated in dispensing fuel can create a spark that ignites fuel vapors causing a fire.
  - **WHILE FILLING AN APPROVED PORTABLE CONTAINER**, manually hold the trigger on the nozzle for a low flow rate, and **DO NOT** engage the nozzle's hold-open clip in high position.
  - **KEEP THE NOZZLE TOUCHING THE PORTABLE CONTAINER WHEN FILLING THE PORTABLE CONTAINER** to discharge any static electricity generated in filling the container. If you do not do so, static electricity generated in dispensing fuel can create a spark that ignites fuel vapors causing a fire.
- **USE OF EQUIPMENT** is at individual's own risk.
- **ALWAYS REPLACE OR REMOVE** from service damaged or leaking equipment immediately.
  - **ALWAYS REPORT** leaks, spills and accidents to appropriate authorities.
  - **NEVER** keep in service beyond recommended life of equipment.
- **MAKE SURE** all warnings written on the handguard are legible.
  - **MAKE SURE** warnings written on the handguard are followed.
- **DO NOT USE ANY OBJECT TO HOLD OPEN A NOZZLE.** This could cause the nozzle to fail to shut off properly.
- **ALWAYS HAVE APPROPRIATE FIRE EXTINGUISHING EQUIPMENT** within 10 feet of dispensers.
- **CAUTION: DO NOT TOP OFF!** Topping off can lead to spills and splashbacks.

Notice

Veeder-Root makes no warranty of any kind with regard to this publication, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose.

Veeder-Root shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this publication.

Veeder-Root reserves the right to change system options or features, or the information contained in this publication.

Contact Technical Support for additional troubleshooting information at 800-323-1799.

DAMAGE CLAIMS / LOST EQUIPMENT

Thoroughly examine all components and units as soon as they are received. If any cartons are damaged or missing, write a complete and detailed description of the damage or shortage on the face of the freight bill. The carrier's agent must verify the inspection and sign the description. Refuse only the damaged product, not the entire shipment.

Veeder-Root must be notified of any damages and/or shortages within 30 days of receipt of the shipment, as stated in our Terms and Conditions.

VEEDER-ROOT'S PREFERRED CARRIER

1. Contact Veeder-Root Customer Service at 800-873-3313 with the specific part numbers and quantities that were missing or received damaged.
2. Fax signed Bill of Lading (BOL) to Veeder-Root Customer Service at 800-234-5350.
3. Veeder-Root will file the claim with the carrier and replace the damaged/missing product at no charge to the customer. Customer Service will work with production facility to have the replacement product shipped as soon as possible.

CUSTOMER'S PREFERRED CARRIER

1. It is the customer's responsibility to file a claim with their carrier.
2. Customer may submit a replacement purchase order. Customer is responsible for all charges and freight associated with replacement order. Customer Service will work with production facility to have the replacement product shipped as soon as possible.
3. If "lost" equipment is delivered at a later date and is not needed, Veeder-Root will allow a Return to Stock without a restocking fee.
4. Veeder-Root will NOT be responsible for any compensation when a customer chooses their own carrier.

RETURN SHIPPING

For the parts return procedure, please follow the appropriate instructions in the "General Returned Goods Policy" pages in the "Policies and Literature" section of the Veeder-Root **North American Environmental Products** price list. Veeder-Root will not accept any return product without a Return Goods Authorization (RGA) number clearly printed on the outside of the package.

WARRANTY

Please see page v.

Warranty

For Veeder-Root hanging hardware components, the following warranty applies:

We warrant that this product shall be free from defects in material and workmanship for a period of fifteen (15) months from the date of invoice thereof. We will repair or replace at our option the product if the product is returned to us transportation charges prepaid by user within the warranty period, and is determined by us to be defective. This warranty will not apply: (1) to any product which has been subject to misuse, abuse, negligence, accident, or drive-offs; (2) to systems that are misapplied or are not installed per Veeder-Root's specifications, or which have been modified, rebuilt or repaired by unauthorized persons; or (3) to damage resulting from acts of God. Repair or replacement of the defective part or component under the terms of this warranty is the EXCLUSIVE REMEDY. Veeder-Root is not liable for incidental, consequential, or indirect damages or loss, including, without limitation, personal injury, death, property damage, environmental damages, cost of labor, clean-up, downtime, installation and removal, product damages, loss of product, or loss of revenue or profits. THE WARRANTY CONTAINED HEREIN IS EXCLUSIVE AND THERE ARE NO OTHER EXPRESS, IMPLIED, OR STATUTORY WARRANTIES. WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED.

Figures

Tables

Introduction

This manual describes how to install the Veeder-Root Vacuum Assist Mechanical Proportional Valve to any standard Vacuum Assist hanging hardware assembly.

The Mechanical Proportional Valve (MPV) is an inverted coaxial configuration to be utilized in a Stage II gasoline liquid and gasoline vapor recovery environment. It contains gasoline fluid flow in the outer coaxial section and allows gasoline vapor return flow through the inner coaxial section. It is installed between the dispenser and delivery nozzle.

A ring-shaped piston and spring are located in the liquid flow section. As liquid flow rate increases, the piston is displaced and compresses against the return spring a predetermined amount. The ring-shaped piston houses a magnet which then drives a magnetically coupled vapor piston located in the inner-coaxial section.

As the vapor piston assembly is displaced in response to the liquid piston movement, the assembly moves a needle valve tip within an orifice, thereby allowing for an increase in the cross sectional vapor flow area and an increase in the vapor flow volume through the orifice. This displacement relationship with respect to the flow path flow area regulates the Air / Liquid (A/L) ratio of the vapor recovery system. Nominal intended variable vapor flow rate is 20 to 45 liter/minute.

The external threads of the mechanical proportional valve attach to the dispenser discharge casting (splitter) and the internal threads attach to an inverted coaxial hose. The Veeder-Root Mechanical Proportional Valve is compatible with the M34X1.5 thread size on standard vacuum assist inverted coaxial hoses per EN 13483. **Do not attempt to use this Mechanical Proportional Valve with other style hanging hardware hose assemblies.**

Table 1. Mechanical Proportional Valve Compatibility

Model	Vapor Pump	RPM	Nozzle
MPV-10	Durr MEX0544	2800 - 3400	AVRN

Installation work should only be done by a knowledgeable and experienced individual. If further assistance for technical support is required, please visit www.veeder.com or call (800) 323-1799 to locate a qualified technician.

Certification

Veeder-Root requires that technicians satisfactorily complete the Veeder-Root Vacuum Assist certification course before performing installation, maintenance, servicing, testing or troubleshooting of Veeder-Root Vacuum Assist Hanging Hardware Systems.

Warranty claims may only be submitted by authorized V-R Distributors and Contractors.

Related Manuals

577013-985 AVRN Vacuum Assist Nozzle Installation and Maintenance Manual

Approvals

Safety SIRA 09 ATEX 9228U

Performance TUV 85 A/L - 13.2

Safety Precautions

The following safety symbols may be used throughout this manual to alert you to important safety hazards and precautions.

	**EXPLOSIVE** Fuels and their vapors are extremely explosive if ignited.		**ELECTRICITY** High voltage exists in, and is supplied to, the device. A potential shock hazard exists.		**TURN OFF CELL PHONE** Turn off cell phone or other device until fueling is complete and nozzle is returned to cradle.
	**TURN ELECTICAL POWER OFF** Live power to a device creates a potential shock hazard. Turn Off electrical power to the device and associated accessories when servicing the unit.		**WARNING** Heed the adjacent instructions to avoid damage to equipment, property, environment or personal injury.		**DISCHARGE STATIC ELECTRICITY** Failure to discharge static electricity before fueling may ignite gasoline vapors.
	**FLAMMABLE** Fuels and their vapors are extremely flammable.		**INJURY TO EYES AND SKIN** Careless or improper handling of gasoline can result in bodily injury. If in eyes, irrigate with water for at least 15 minutes. On skin wash area thoroughly with clear water. Seek medical advice immediately.		**FILL CONTAINERS ON GROUND** DO NOT fill containers in or on the vehicle. Put approved container on ground to fill.
	**CLEAN WORK AREA** Dispose of fuel soaked materials properly and not into trash barrels that may be used by customers.		**READ ALL RELATED MANUALS** Knowledge of all related procedures before you begin work is important. Read and understand all manuals thoroughly. If you do not understand a procedure, ask someone who does.		**DO NOT REENTER VEHICLE WHILE FUELING** If you reentered your vehicle while fueling, touch grounded metal on dispenser before touching nozzle.
	**APPROVED CONTAINERS** Use nonbreakable, clearly marked containers, suitable for collecting and transporting hazardous fuels during service.		**USE SAFETY BARRICADES** Unauthorized people or vehicles in the work area are dangerous. Always use safety cones or barricades, safety tape, and your vehicle to block the work area.		**UNATTENDED VEHICLE** Do not leave nozzle unattended while dispensing fuel.
	**NO POWER TOOLS** Sparks from power tools (such as drills) can ignite fuels and their vapors.		**NO VEHICLES** Moving vehicles in the area during service can create a potential for personal injury to you or others. Sparks from starting vehicles can ignite fuels and their vapors.		**DO NOT ALLOW CHILDREN TO DISPENSE FUEL** Keep kids away from fueling area. Only licensed operators should refuel vehicles.
	**LUBRICATE** Lubricate o-rings using mineral oil or other suitable lubricant.		**DIRECTION OF FLOW** An arrow on a component indicates direction of fuel flow through the device. Install component with arrow pointing in direction of nozzle.		**AVOID BREATHING GASOLINE VAPORS** Gasoline inhaled may cause unconsciousness and burns to lips, mouth and lungs. Keep airway open. Seek medical advice immediately
	**NO SMOKING** Sparks and embers from burning cigarettes or pipes can ignite fuels and their vapors.		**NO OPEN FLAMES** Open flames from matches, lighters, welding torches, etc. can ignite fuels and their vapors.		**DO NOT SWALLOW GASOLINE** Gasoline ingested may cause unconsciousness and burns to internal organs. Do not induce vomiting. Keep airway open. Oxygen may be needed at scene. Seek medical advice immediately.

Installation

Readying Dispenser for MPV Installation

Before installing the MPV you must:

1. **Turn off electricity, tag and lockout the electrical power to the dispenser. Open the panel/cover to the base of the dispenser and close the dispenser's shear valves.**

   Lockout/Tagout covers servicing and maintenance of machines and equipment in which the unexpected energization or start-up of the machine(s) or equipment or release of stored energy could cause injury to employees or personnel. Subpart S of 29 CFR Part 1910 – Electrical Hazards, 29 CFR Part 1910.333 contains specific Lockout/Tagout provision for electrical hazards.

   WARNING! Electricity must be turned off to the dispenser and shear valves closed prior to service to avoid personal injury, damage to equipment, property, or the environment!

   Total Electrical Shut-Off For Unit Where the MPV Is To Be Installed

   The first and most important information you must know is how to stop all fuel flow to the pump/dispenser. Locate the switch or circuit breakers that shut off all power to all fueling equipment and submerged turbine pumps (STPs) affecting the fuel dispenser on which you are installing the MPV.

⚠ WARNING	
	The buttons on the console at the cashier's station WILL NOT shut off electrical power to the pump/dispenser. This means that even if you press a button on the console labeled EMERGENCY STOP, ALL STOP, PUMP STOP, or something similar, fuel may continue to flow uncontrolled. IN AN EMERGENCY, you must use the TOTAL ELECTRICAL SHUT-OFF for all of the fueling equipment, dispensing devices, and submerged turbine pumps (STPs) at the site, either by using the Emergency Power Cutoff Switch (the E-STOP) or the circuit breakers for all the fueling equipment, dispensing devices and submerged turbine pumps and not the console's buttons.

   Total Electrical Shut-Off Before Access

   Installing a MPV requires total electrical shut off of the fuel dispenser and the STP's affecting that dispenser. Understand the function and location of this switch or circuit breaker before inspecting, installing, maintaining, or servicing Veeder-Root equipment.

2. **Evacuating, Barricading and Shutting Off.** Any procedure that requires access to the pump/dispenser requires the following actions:

   

   - An evacuation of all unauthorized persons and vehicles from the work area
   - Use of safety tape, cones or barricades at the affected unit(s)
   - A total electrical shut-off of the affected unit(s)

3. Open the panel/cover to the base of the dispenser and close the dispenser's shear valves.

4. Before replacing or servicing dispensing components, such as the MPV, nozzle, hose, whip or safety breakaway, relieve the system pressure. (NFPA 30A 6.3.6) (2003 Revision)

5. If necessary, drain any product from the hanging hardware into an approved container.

Installation

WARNING! If this is a new facility installation, the fueling point must be flushed into an approved container before installing the nozzle or mechanical proportional valve. Using the nozzle or mechanical proportional valve when flushing the system could result in foreign material becoming lodged in the nozzle or mechanical proportional valve and cause it to improperly perform.

1. Before installing, inspect the threads of the dispenser coaxial hose fitting.
2. Inspect and lubricate the o-rings on the MPV using mineral oil or other suitable lubricant (see Figure 1). If O-rings are damaged or missing, replace using a Veeder Root O-ring Kit (P/N 900306-201).

WARNING! Do not use ANY type of sealant (pipe dope, Teflon tape, anti-seize, etc.).

3. Thread the MPV into the dispenser discharge casting (splitter), and hand tighten such that there is metal-to-metal contact.
4. Verify that the high and low flow A/L adjustment screws on the side of the MPV are accessible (see Figure 1). If so, continue to Step 5. If not, remove the MPV and install a clocking ring - this will rotate the location of the adjustment screws 180 degrees when installed. Order P/N 900325-001 for a bulk package of clocking rings. Slide the clocking ring over the large o-ring on the MPV. Be sure to seat the clocking ring properly on the shelf on the MPV (See Figure 2).

CAUTION! Do not use channel locks or other pliers to tighten hanging hardware connections.

5. Tighten the MPV to 50 foot-pounds (68 N•m) – Refer to UL567. Interface the wrench to the hex portion of the MPV below the label to avoid damaging the A/L adjustment screws. (See Figure 1). The o-ring provides the seal, not the thread.
6. Inspect and lubricate the o-rings on the hose using mineral oil or other suitable lubricant (Figure 3). If O-rings are damaged or missing, replace using a Veeder Root O-ring Kit (P/N 900306-201).
7. Insert the hose into the MPV body, and tighten the hose to 50 foot-pounds (68 N•m) - Refer to UL567. (See Figure 3). The o-ring provides the seal, not the thread.
8. Pump a minimum of 1/2 gallon (2 liters) of fuel into an approved container to purge the air out of the system. Inspect all connections in the hanging hardware for leaks. Make repairs as required.
9. Perform applicable hanging hardware tests as defined in “AVRN Vacuum Assist Nozzle Manual – 577013-985.”

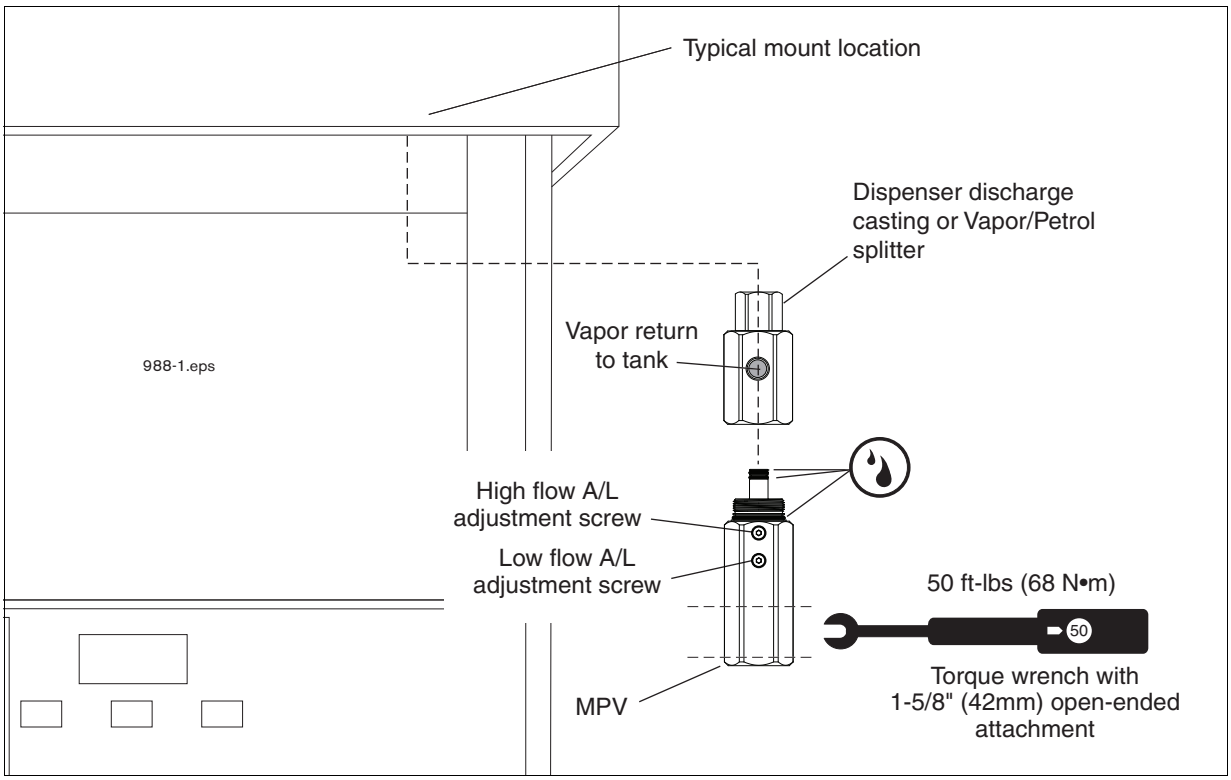

Figure 1. Installing MPV into Dispenser's Discharge Casting

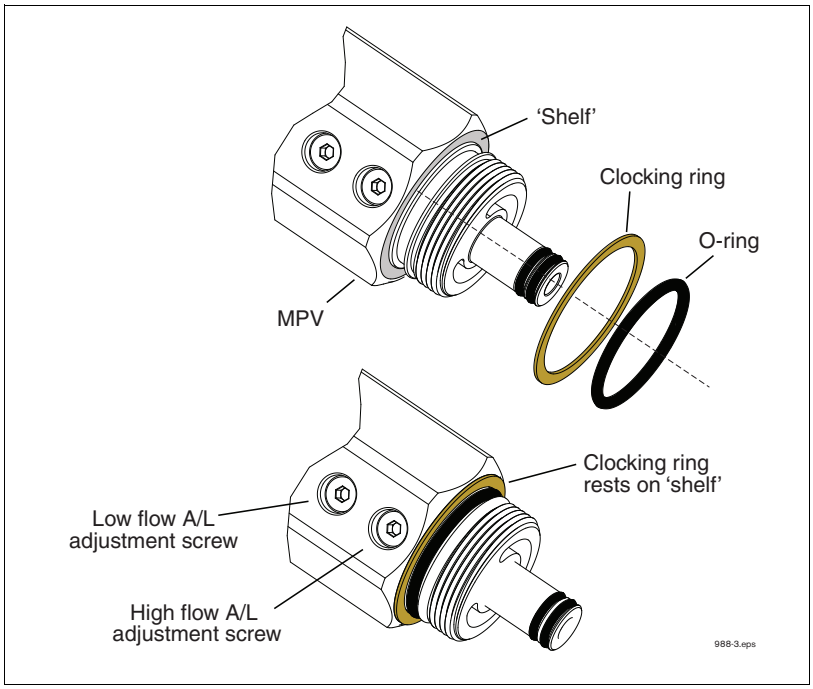

Figure 2. Installing Clocking Ring onto MPV

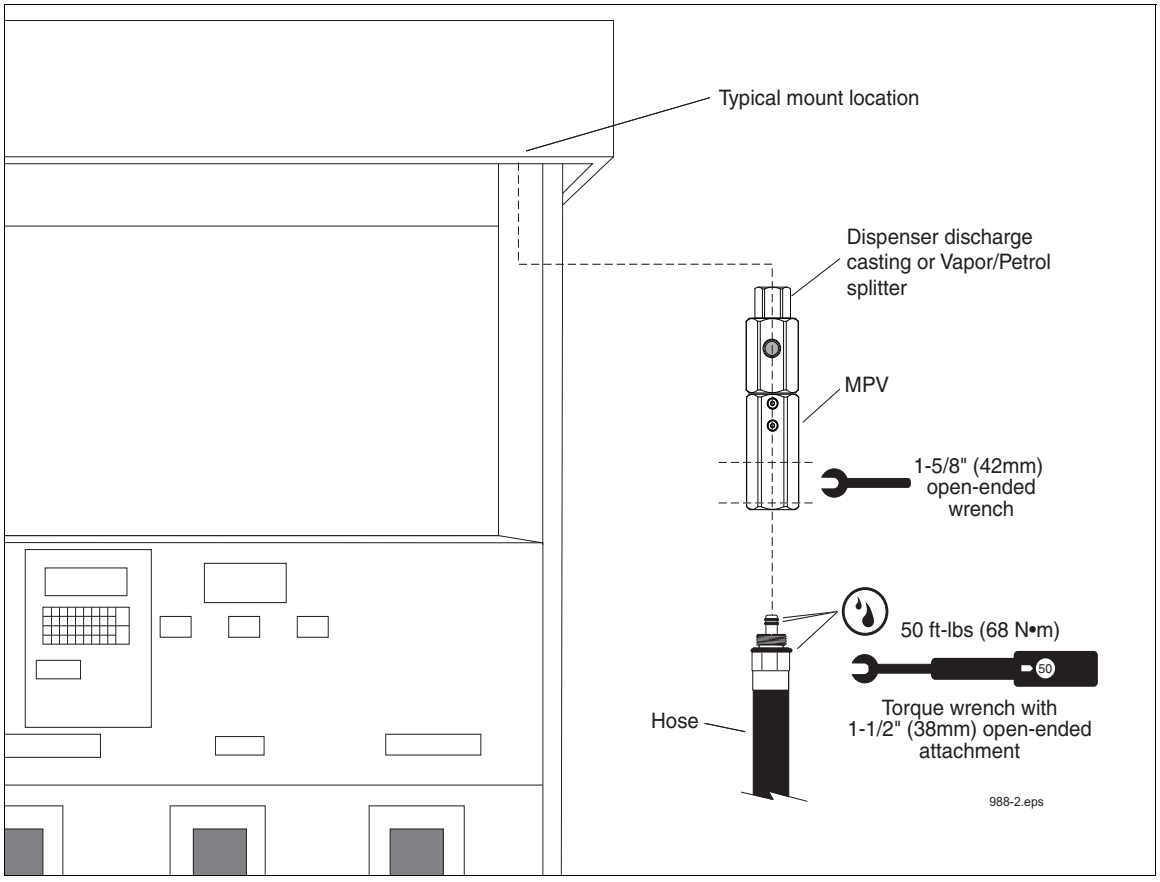

Figure 3. Installing Hose into MPV

Calibration

1. Verify that the correct mechanical proportional valve model is being used to meet the A/L ratio allowed by the local government regulation (See Table 1).
2. Verify that the vapor recovery system is using approved components as defined in the TUV certification and/or as outlined in Table 1.
3. Refer to the Dispenser and Vapor Recovery Pump Operation Manuals for proper operation of the vapor recovery pump.
4. Configure the fueling point desired for calibration per the Nozzle Setup for Wet A/L (Air-to-Liquid Ratio) Testing as described in “AVRN Vacuum Assist Nozzle Manual – 577013-985.”
5. Conduct the Wet A/L Test at high clip and low clip. Record the A/L result.
6. If the A/L ratio is within the range allowed by the local governmental regulation, no further adjustments are necessary.
7. Achieve the A/L target on the low clip setting prior to calibrating the high clip position. The low flow A/L adjustment screw impacts the A/L at high clip. The low flow adjustment screw is completely closed and the high flow adjustment screw is completely open as manufactured.

8. If the A/L ratio at **low clip** is below the limit, turn the **Low** Flow A/L Adjustment Screw counterclockwise using the 3mm hex wrench to open the vapor flow path as shown in Figure 4. The adjustment screw is prohibited from protruding beyond the surface of the MPV body. **Do not remove the screw or damage will occur.** Rerun the Wet A/L Test to determine if the adjustments achieved the desired A/L ratio.
9. If the A/L ratio at **low clip** exceeds the limit, turn the **Low** Flow A/L Adjustment Screw clockwise using the 3mm hex wrench to close the vapor flow path as shown in Figure 4. Rerun the Wet A/L Test to determine if the adjustments achieved the desired A/L ratio.
10. Repeat Steps 6 and 7 until the proper A/L ratio is achieved at low clip.
11. If the A/L ratio at **high clip** exceeds the limit, turn the **High** Flow A/L Adjustment Screw clockwise using the 3mm hex wrench to close the vapor flow path as shown in Figure 4. Rerun the Wet A/L Test to determine if the adjustments achieved the desired A/L ratio.
12. If the A/L ratio at **high clip** is below the limit, turn the **High** Flow A/L Adjustment Screw counterclockwise using the 3mm hex wrench to open the vapor flow path as shown in Figure 4. The adjustment screw is prohibited from protruding beyond the surface of the MPV body. **Do not remove the screw or damage will occur.** Rerun the Wet A/L Test to determine if the adjustments achieved the desired A/L ratio.
13. Repeat Steps 9 and 10 until the proper A/L ratio is achieved at high clip.
14. Rerun the wet A/L test to verify that the adjustments achieved the desired A/L rated at both low and high clip positions.

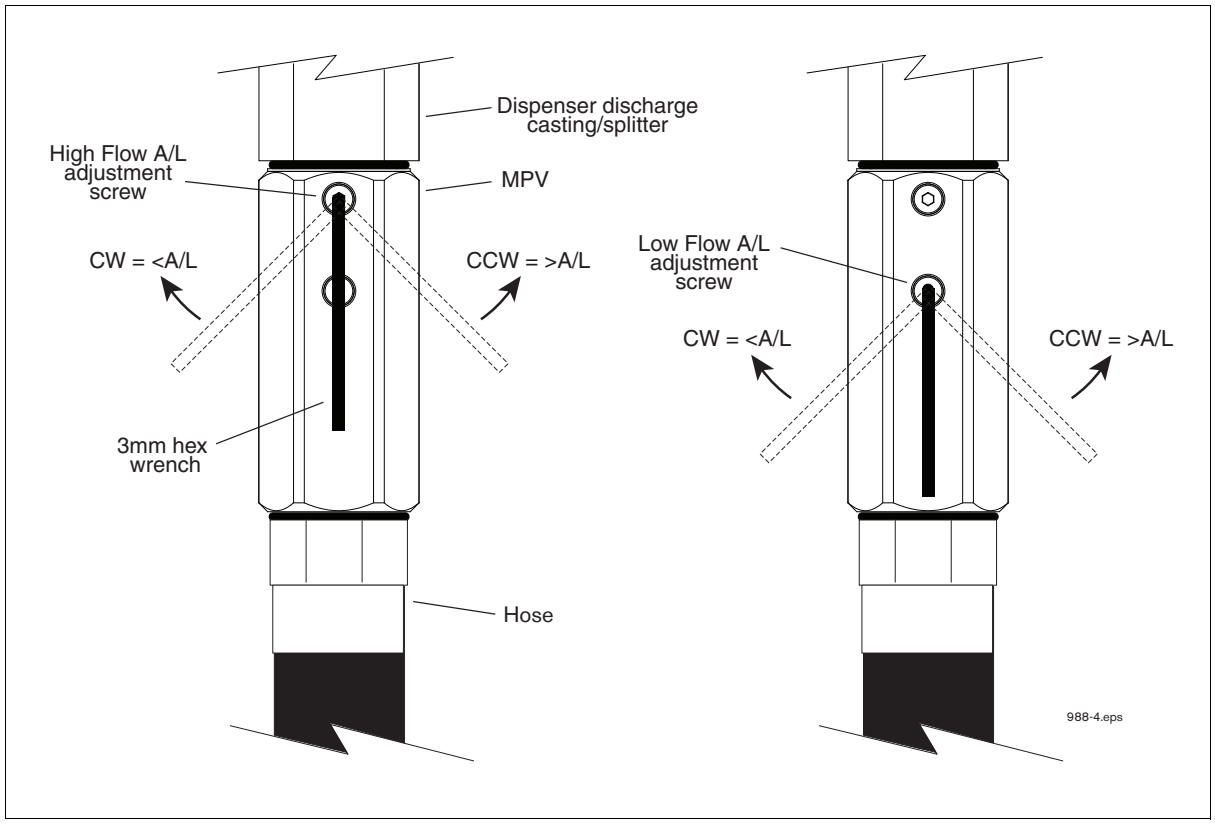

Figure 4. A/L Adjustments on MPV

Maintenance

Inspect MPV regularly for damage, loose connections or leaks. 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 replacement. Inspections and proper maintenance procedures should be followed by the station manager to determine if replacement is required. Mechanical Proportional Valves should be replaced when damaged. If O-rings are damaged or missing, replace using a Veeder Root O-ring Kit (P/N 900306-201). The MPV is designed and constructed to give lasting service if properly handled and maintained. If for any reason it should need attention, contact your V-R distributor for proper disposition.

WARNING!

Unauthorized rebuilding or modifying of the Mechanical Proportional Valve voids ALL approvals and warranties. Veeder-Root products must be used in compliance with applicable federal, state and local laws and regulations.

Replacement Parts

900306-201	Vacuum Assist O-Ring Kit
900325-001	Bulk Pack - Clocking Rings

Troubleshooting

Problem	Possible Cause	Action
Leaks at external thread area of MPV.	Damaged o-rings on MPV.	Replace o-rings as necessary using kit P/N 900306-201.
	Defective discharge casting or vapor/fuel splitter.	Replace discharge casting or vapor/fuel splitter.
Leaks at internal thread area of MPV.	Damaged o-rings on mating component.	Replace o-rings as necessary using kit P/N 900306-201.
	Defective MPV.	Replace MPV.
System fails A/L testing. (Determine component responsible for failure and refer to that components installation and operation manual.)	MPV installed in incorrect location.	Refer to manual for install location.
	MPV installed incorrectly.	The flow arrow on the valve must be in the direction of petrol flow.
	Incorrect test method used.	Follow test method per local regulation.
	Debris blocking the inlet vapor collection holes on the nozzle.	Remove debris or replace nozzle spout.
	Restriction in nozzle vapor path or faulty vapor valve.	Replace nozzle.
	Vacuum pump out of calibration for variable speed type.	Recalibrate vacuum pump.
	Vacuum pump unable to generate sufficient vacuum level.	Replace vacuum pump.
	A/L adapter o-rings block the vapor collection holes on the nozzle spout.	Reposition A/L adapter to unblock vapor collection holes.
	Nozzle spout out-of-round causing A/L adapter not to seal properly on the spout.	Lubricate o-rings in A/L adapter.
		Replace nozzle spout.
	Nozzle spout tip leaking which may indicate damaged or worn spout o-rings.	Replace nozzle spout.
	Restriction in MPV.	Remove restriction or replace MPV.
	Petrol flow fails to move MPV vapor needle.	Replace MPV.
	Petrol in vapor path caused by excessive top-offs.	Drain blockage and minimize top-offs.
	Petrol in vapor path caused by faulty component.	Replace component causing petrol to enter the vapor path.
MPV fails A/L testing at low clip.	Petrol flow rate below the minimum operating range of the product.	Increase petrol flow rate above 5 gpm (19 lpm) when tested at low nozzle clip.
	Low flow adjustment screw not set at the proper position.	Turn low flow A/L adjustment screw counterclockwise to increase A/L ratio or clockwise to decrease A/L ratio.
MPV fails A/L testing at high clip.	Petrol flow rate above the maximum operating range of the product.	Decrease petrol flow rate below 10.5 gpm (40 lpm) when tested at high nozzle clip.
	High flow adjustment screw not set at the proper position.	Turn high flow A/L adjustment screw counterclockwise to increase A/L ratio or clockwise to decrease A/L ratio.

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For technical support, sales or other assistance, please visit:
www.veeder.com