

**Executive Order VR-201-A
Healy Phase II EVR System
Not Including ISD**

**Exhibit 2
System Specifications**

This exhibit contains the installation, maintenance and compliance standards and specifications that apply to the Healy Phase II EVR System Not Including ISD installed in a gasoline dispensing facility. All components must be installed in accordance with the specifications in the **ARB Approved Installation, Operation and Maintenance Manual for the Healy Phase II EVR System Not Including ISD**.

Nozzle

1. A vapor collection boot shall be installed on the nozzle at the base of the spout, as shown in **Figure 2B-1**.
2. The Healy Model 900 nozzle has an integral vapor valve which prevents the loss of vapor from the underground storage tanks, ensures proper operation of the system and prevents the ingestion of air into the system. Any dispenser that has a nozzle installed that is determined to have a defective vapor valve, as described in items 3 or 4 below, shall be immediately removed from service (including nozzle(s) on both sides of dispenser) and a call for repair made immediately.
3. The maximum allowable leak rate for the nozzle vapor path, as determined by TP-201.2B, shall not exceed the following:
 - 0.038 cubic feet per minute (CFH) at a pressure of two inches water column (2.00" wc), and
 - 0.10 CFH at a vacuum of one hundred inches water column (-100.00" wc)
4. Verification of the integrity of the vapor valve can be performed on installed nozzles using the nozzle bag test procedure in Exhibit 7.

Vapor To Liquid Ratio

1. The V/L ratio of the system shall be **1.05 plus or minus 0.10 (0.95 to 1.15)**, measured at a flow rate between six and ten gallons per minute (6.0 – 10.0 gpm). *Any fueling point whose V/L ratio is determined to be at or below 0.80 shall be deemed defective and removed from service.* The V/L ratio shall be determined by using the test procedure in Exhibit 5 with the shut-off port excluded.

Inverted Coaxial Hoses

1. The maximum length of the hose assembly, including hose adapter, whip hose, breakaway, flow limiter (optional) and inverted coaxial hose, measured at the base of the nozzle, shall be no more than twenty (20) feet.
2. Only standard (**Figure 2B-2**), Lazy-J (**Figure 2B-3**) and Curly-Q (**Figure 2B-4**) hose configurations are permitted.

Hose Adaptors

1. Component necessary to install hanging hardware on some dispenser types.

Breakaway Couplings

1. Only the Healy Model 8701VV breakaway (which closes the vapor path) shall be used.
2. Testing is required after reconnecting the breakaway to ensure proper operation and no observed leaks. The procedure for reconnecting breakaway and fueling point testing after a drive-off, referenced in Section 1.4 of Healy Systems Scheduled Maintenance, shall be conducted to verify that breakaway, hose and nozzle are operating properly after a drive-off.

Flow Limiters

1. Component is optional for vapor recovery.
2. Flow limiter is mandatory when the flow rate is greater than 10 gallons per minute to comply with U.S. EPA requirement.

Clean Air Separator

1. The Clean Air Separator is a passive tank pressure management system, with no electrical requirements. The Clean Air Separator vapor integrity shall be evaluated using the test procedure outlined in Exhibit 4 of this Executive Order.
 - a. A Clean Air Separator that fails the leak decay test outlined in Exhibit 4 shall be considered a defect.
 - b. Unless there is maintenance or testing being conducted on the Clean Air Separator, the four ball valves shall be locked in the positions shown in **Figure 2B-5** for normal Clean Air Separator operation. A Clean Air Separator that is not in the proper operating configuration shall be considered a defect.

2. The Clean Air Separator can be installed up to 100 feet from the vent line(s), provided that this piping is sloped 1/8" per foot minimum toward the vent line(s).
3. The Air Breather Assembly for the Clean Air Separator shall be installed at least twelve feet (12') above grade.

Pressure/Vacuum Vent Valves for Storage Tank Vents

1. The P/V vent valve shall be an ARB-certified valve as specified in Exhibit 1.
2. At least one pressure/vacuum (P/V) vent valve shall be installed on each tank vent. The maximum number of P/V vent valves allowed and P/V vent valve performance specifications are listed in the applicable Phase I EVR Executive Order. Vent lines may be manifold to minimize the number of P/V vent valves and potential leak sources, provided the manifold conforms to all applicable fire regulations. At least one P/V vent valve shall be installed on vents if a manifold is incorporated. **Figure 2B-6** shows a typical manifold configuration for a single P/V vent valve with the Clean Air Separator. If two or more P/V vent valves are desired, they shall be installed in parallel, so that each can serve as a backup to the other if one should fail to open properly. **Figure 2B-7** shows a typical manifold configuration for two P/V vent valves installed in parallel with the Clean Air Separator. **Figure 2B-8** shows a typical manifold configuration for three P/V vent valves installed in parallel with the Clean Air Separator. **Figure 2B-9** shows a typical configuration for a P/V vent valve mounted on a single 3" vent line with the Clean Air Separator.

Vapor Recovery Piping Configurations

NOTE: New facilities and facilities undergoing Phase II major modifications must also meet the piping requirements specified in section 4.12 of CP-201.

1. Vapor Return and Vent Lines
 - a. For new installations and existing installations undergoing Phase II major modifications, all vapor return and vent lines shall be a minimum nominal internal diameter of 2 inches from the dispensers to the first manifold. All lines after the first manifold and back to the underground storage tank shall have a minimum nominal internal diameter of 3 inches. Prior to and after backfilling the vapor return and vent lines, the maximum pressure drop shall not exceed 0.5 inches WC at 60 standard cubic feet per hour as determined by TP-201.4, Dynamic Backpressure. The pressure drop shall be measured from the dispenser riser to the UST with pressure/vacuum vent valves installed and with the popped Phase I vapor connection open.
 - b. For existing installations, the maximum pressure drop through the system shall not exceed 0.5 inches WC at 60 standard cubic feet per hour as

determined by TP-201.4, Dynamic Backpressure. The pressure drop shall be measured from the dispenser riser to the UST with the pressure/vacuum vent valves installed and with the popped Phase I vapor connection open.

Note: The V/L test from Exhibit 5 may be used to verify proper operation of the system, in lieu of measuring the pressure drop through the lines, provided that at least two gallons of product are introduced into the system through each dispenser riser, prior to the test.

2. All vapor return lines shall have a minimum slope of 1/8 inch per foot from the dispenser riser to the riser of the UST. A slope of 1/4 inch or more per foot is recommended wherever feasible. The vapor return path from any fueling point to the underground storage tank shall be free of liquid blockage.
3. The dispenser shall be connected to the riser with either flexible or rigid material that is listed for use with gasoline. The dispenser-to-riser connection shall be installed so that any liquid in the lines will drain toward the storage tank. The internal diameter of the connector, including all fittings, shall not be less than one-half inch (1/2").
4. There is no length restriction for the vapor return piping of the system as long as the system complies with the maximum pressure drop requirement of Item 1 (or the V/L option).
5. No product shall be dispensed from any fueling point at a GDF installed with the Healy Phase II EVR System Not Including ISD if there is a vapor line that is disconnected and open to the atmosphere.
6. No liquid condensate traps are allowed with this system.

Dispenser Vapor Piping

1. Any dispenser with a dispenser piping test valve in the closed position, shall be considered a defect.

Phase I System

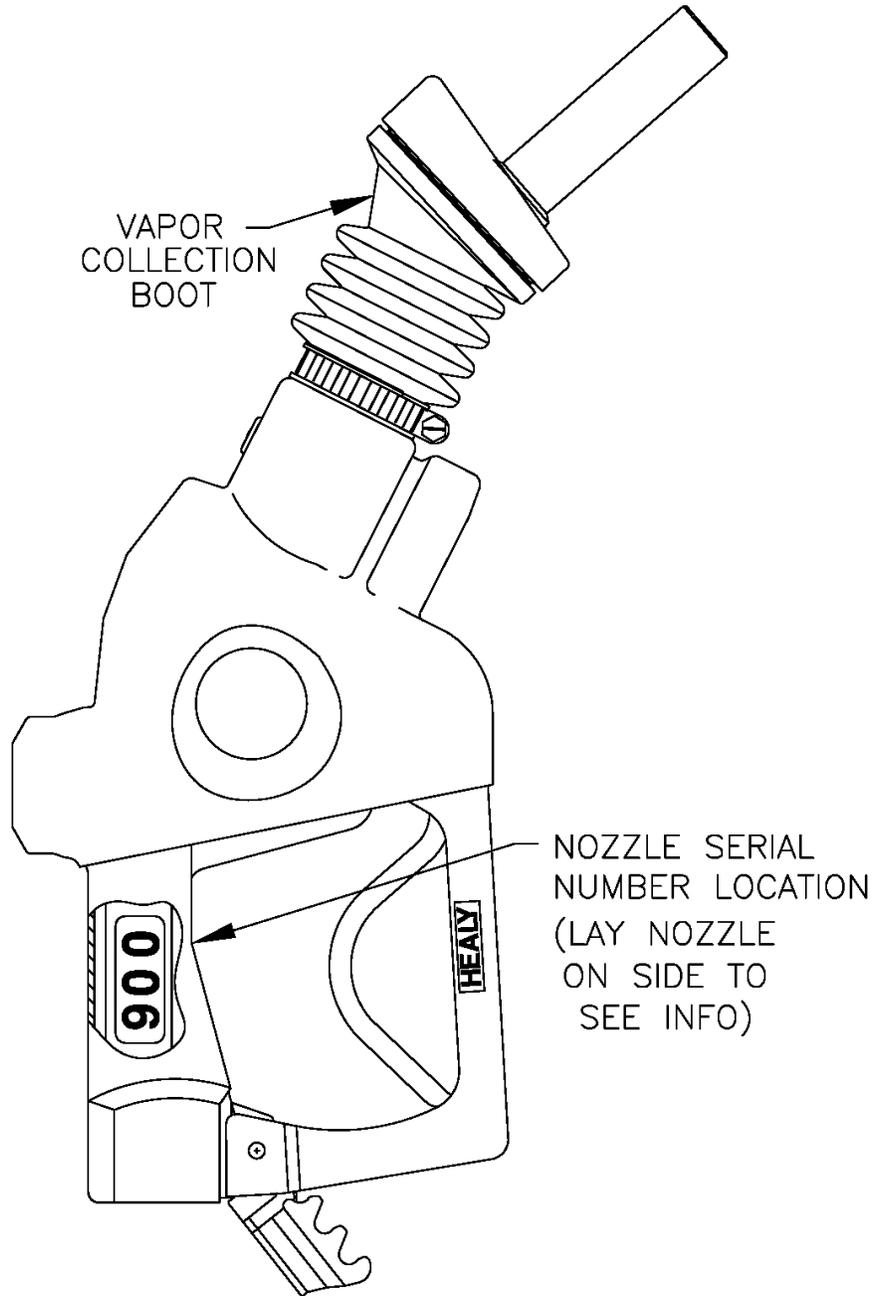
1. The Phase I system shall be an ARB-certified system.

Maintenance Records

1. Each GDF operator/owner shall keep records of maintenance performed at the facility. Such records shall be maintained on site in accordance with district requirements or policies. The records shall include: the date the component is found not to be operating properly, the date that maintenance is requested the date maintenance is performed, test date (if applicable), affiliation, telephone number and name of individual conducting maintenance and/or test. An example of a GDF Maintenance Record is shown in **Figure 2B-10**.
2. Maintenance shall be conducted in accordance with Healy Systems Scheduled Maintenance document in **Figure 2B-11**.
3. Reconnection of breakaways shall be included in the maintenance records.

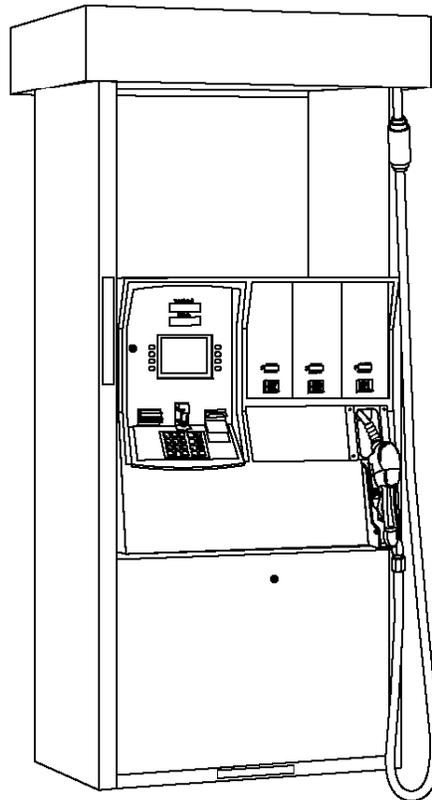
**Executive Order VR-201-A
Healy Phase II EVR System
Not Including ISD**

**Exhibit 2
Figure 2B-1
Vapor Boot for Healy 900 Nozzle**



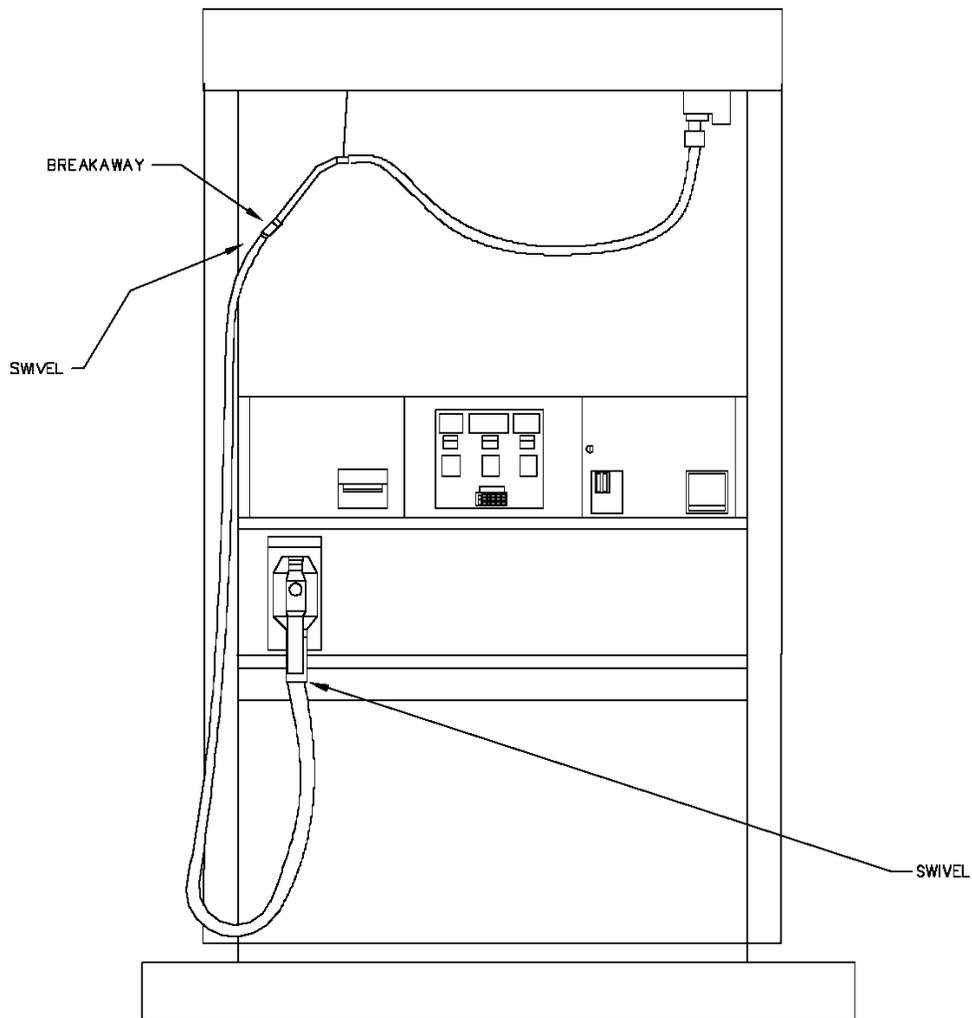
**Executive Order VR-201-A
Healy Phase II EVR System
Not Including ISD**

**Exhibit 2
Figure 2B-2
Standard Hose Configuration**



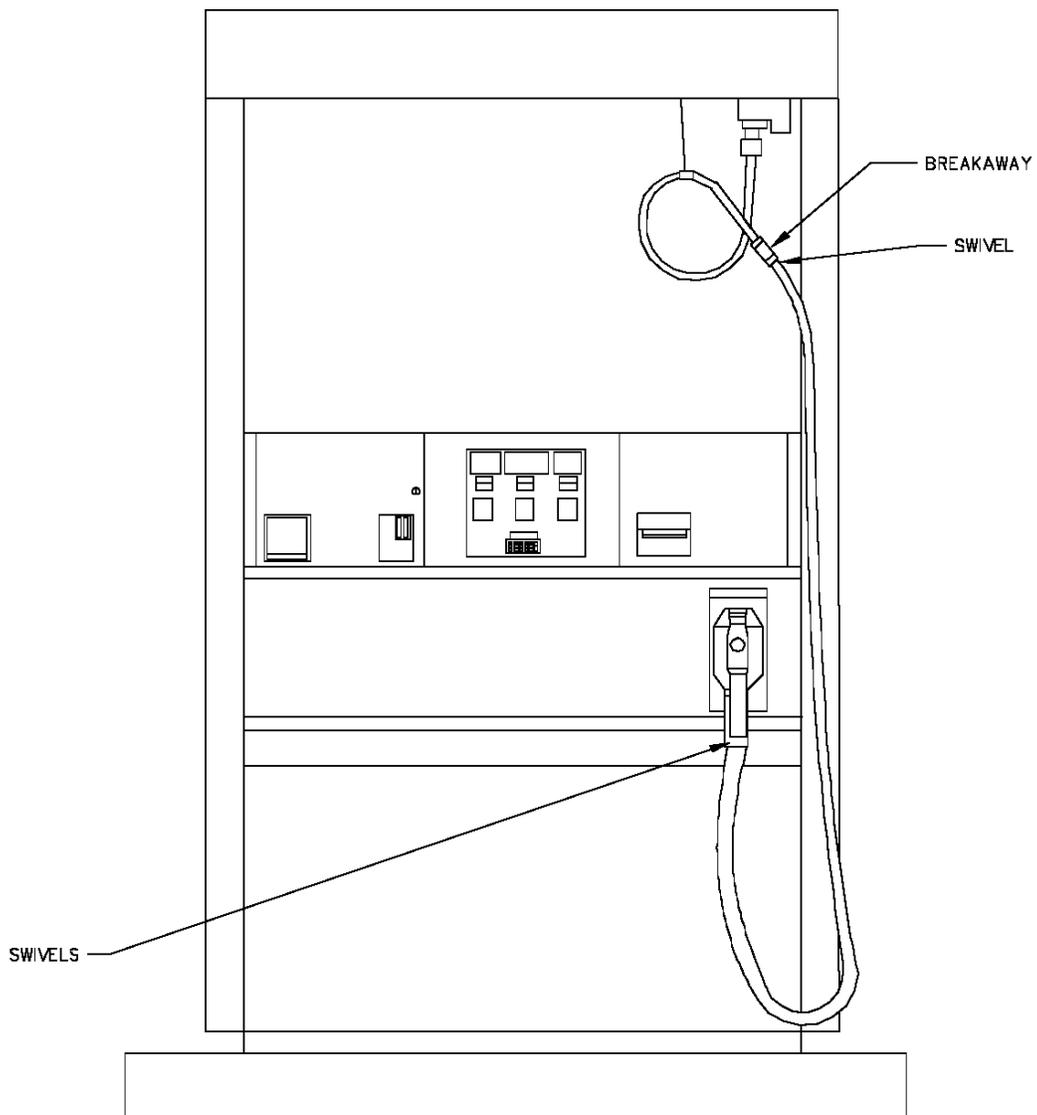
**Executive Order VR-201-A
Healy Phase II EVR System
Not Including ISD**

**Exhibit 2
Figure 2B-3
Lazy J Hose Configuration**



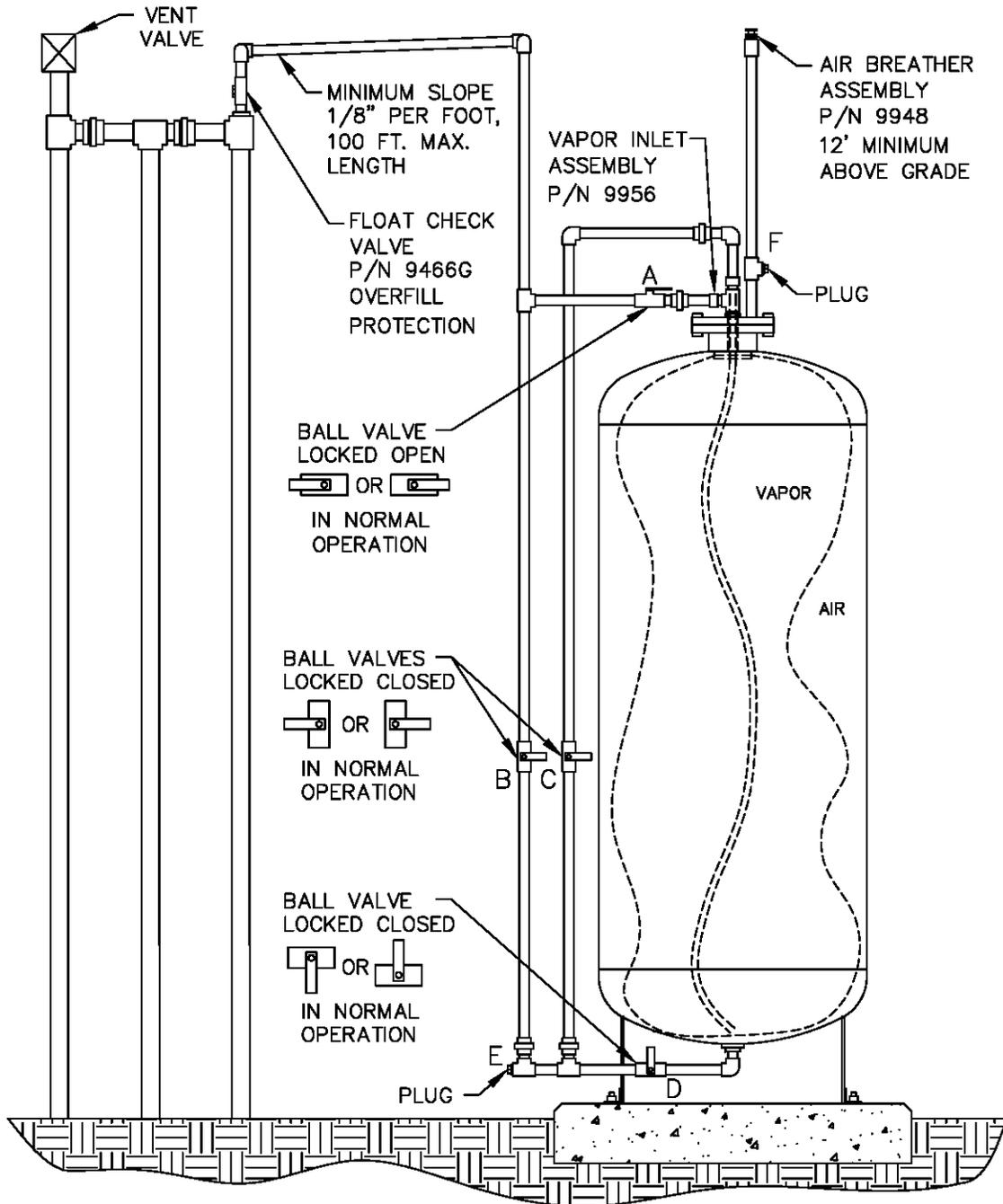
**Executive Order VR-201-A
Healy Phase II EVR System
Not Including ISD**

**Exhibit 2
Figure 2B-4
Curly Q Hose Configuration**



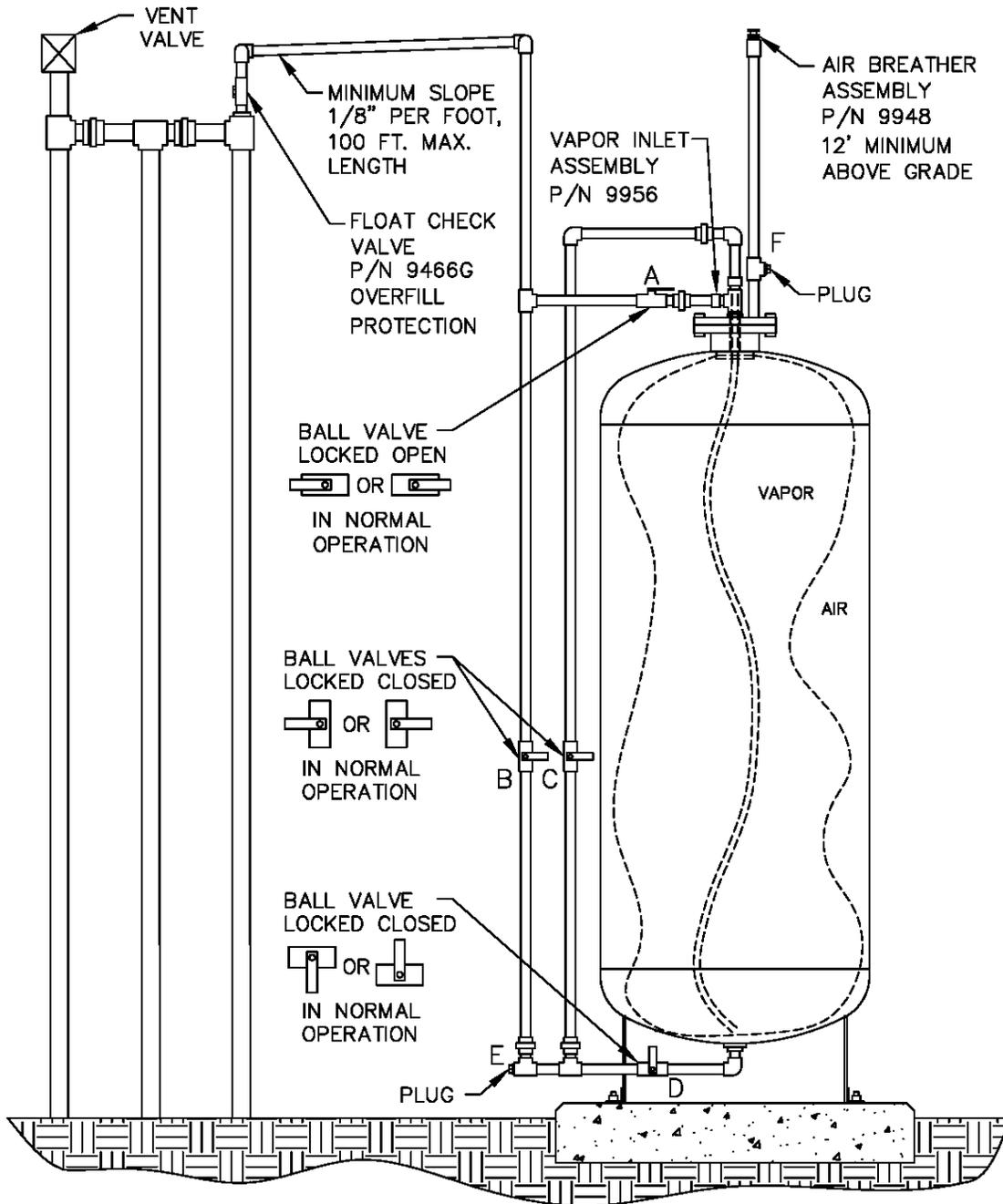
**Executive Order VR-201-A
Healy Phase II EVR System
Not Including ISD**

**Exhibit 2
Figure 2B-5
Clean Air Separator Normal Operation Configuration**



**Executive Order VR-201-A
Healy Phase II EVR System
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**Exhibit 2
Figure 2B-6
Typical Installation of a Single P/V Vent Valve Manifold
with Healy Clean Air Separator**

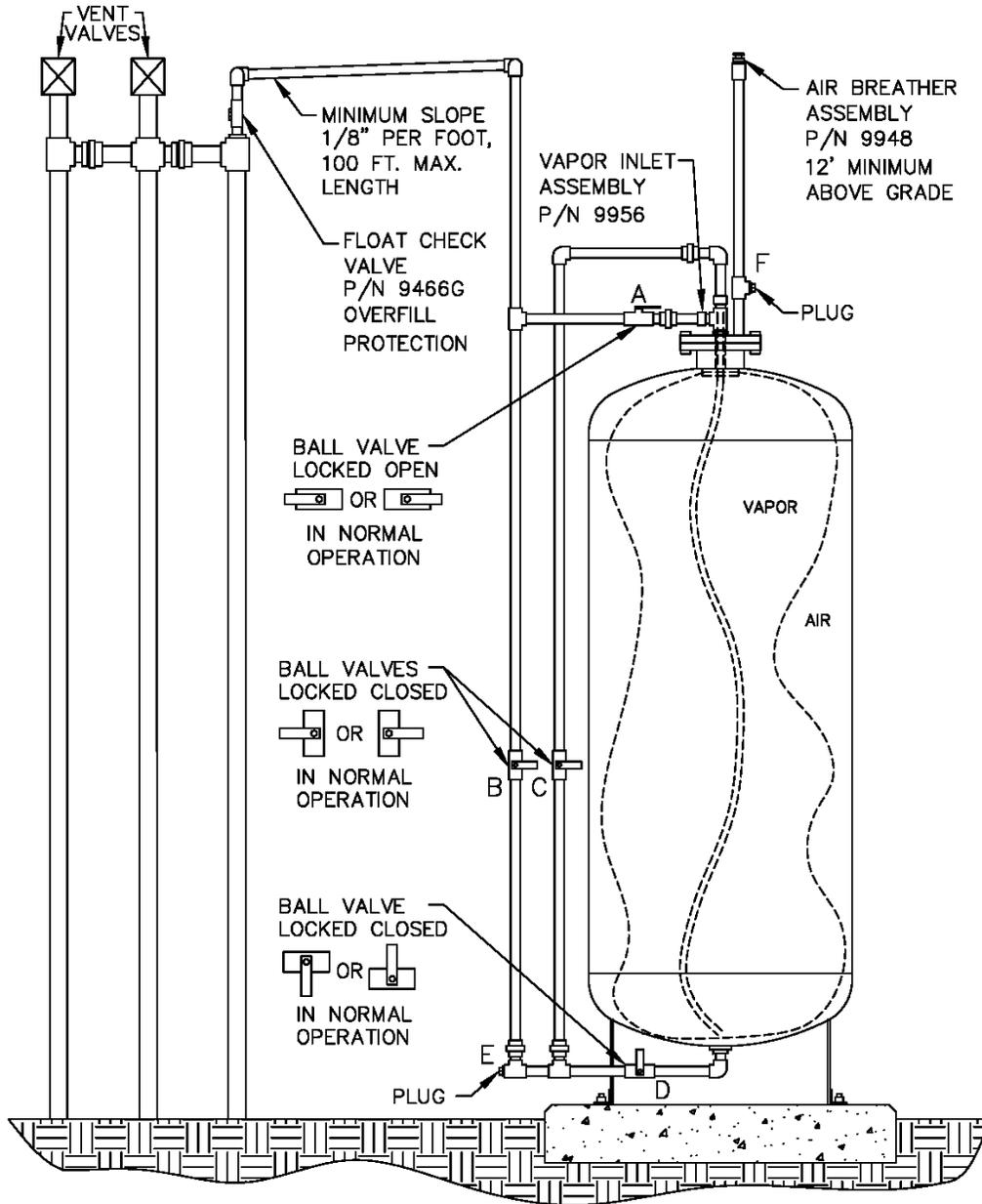


**Executive Order VR-201-A
Healy Phase II EVR System
Not Including ISD**

**Exhibit 2
Figure 2B-7**

**Typical Installation of a Two P/V Vent Valve Parallel Manifold
with Healy Clean Air Separator**

(This configuration requires additional P/V vent valves that are not supplied in the Healy installation kit)

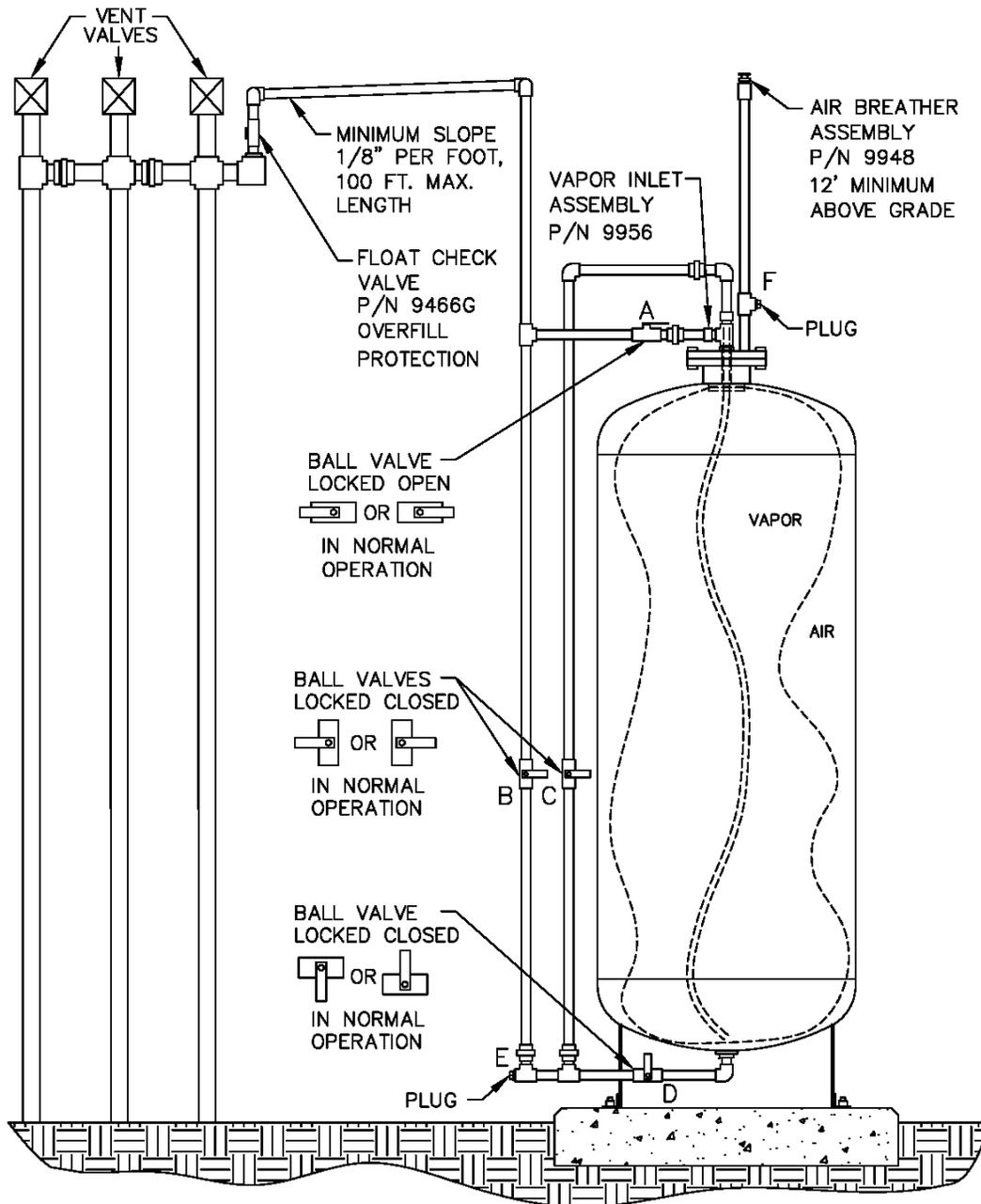


**Executive Order VR-201-A
Healy Phase II EVR System
Not Including ISD**

**Exhibit 2
Figure 2B-8**

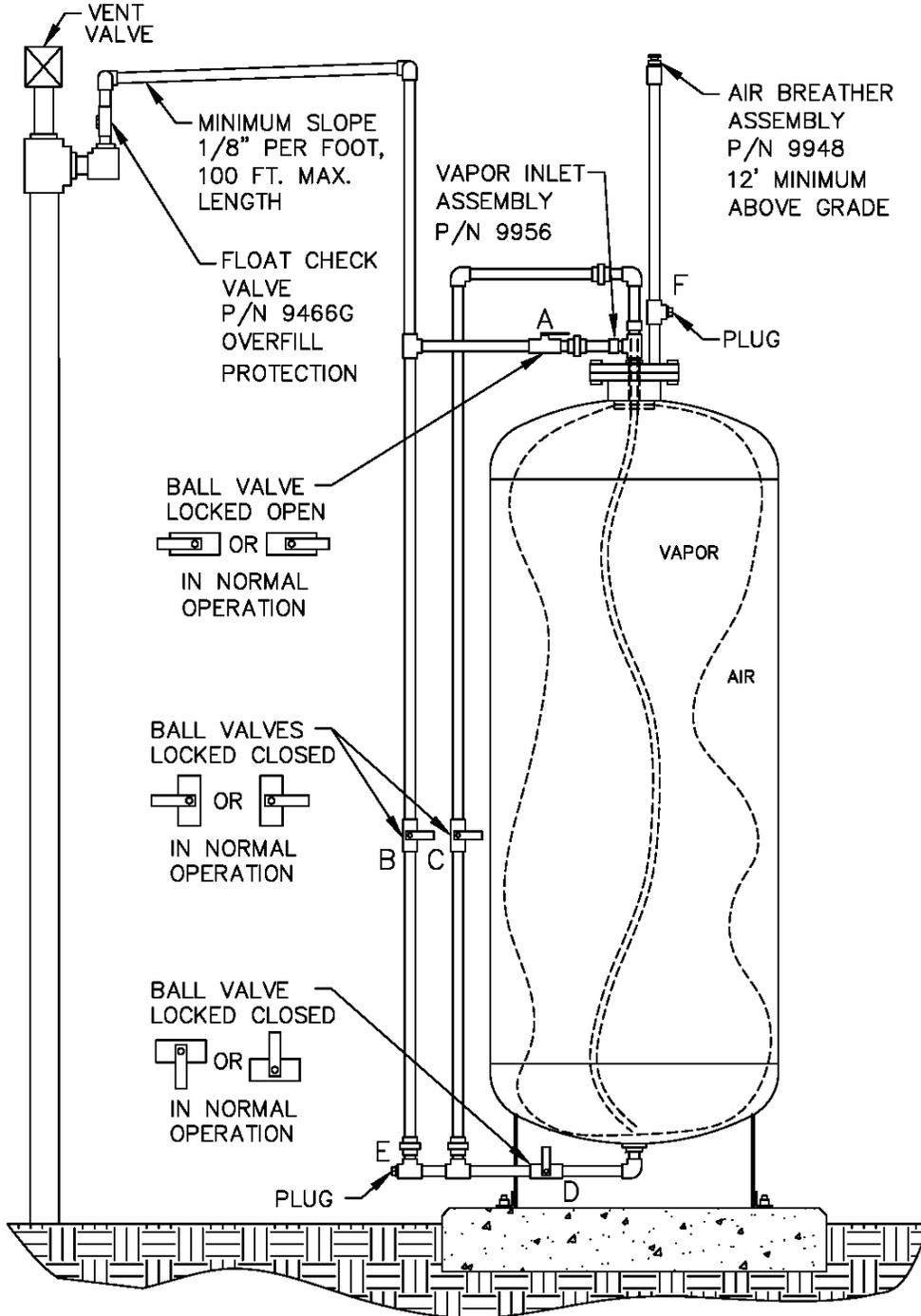
**Typical Installation of a Three P/V Vent Valve Parallel Manifold
with Healy Clean Air Separator**

(This configuration requires additional P/V vent valves that are not supplied in the Healy installation kit)



**Executive Order VR-201-A
Healy Phase II EVR System
Not Including ISD**

**Exhibit 2
Figure 2B-9
Typical Configuration of a P/V Vent Valve Mounted on a
Single 3" Vent Line with the Clean Air Separator**



**Executive Order VR-201-A
Healy Phase II EVR System
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**Exhibit 2
Figure 2B-11
Healy Systems Scheduled Maintenance**

1.0 Scheduled Maintenance Instructions for a Healy Systems with VP1000 Vacuum Source and 900 Series EVR Nozzle.

By design, the Healy System requires limited maintenance. Initial problems are usually caused by installation irregularities that are easily detected and repaired by performing the "VP1000 Vacuum Performance Test Procedure" located in the dispenser installation manual. Periodic maintenance described here will eliminate problems and maintain peak operation of the system.

Note: Only a Healy Certified Technician can service any problems discovered while conducting the Weekly or Quarterly Inspection and Testing.

1.1 Weekly Inspection and Testing

- Inspect each nozzle, hose, and breakaway for damage, loose connections, or leaks. Inspect nozzles for damaged vapor boots or spouts. Any nozzle with a vapor collection boot which is missing, or which has one half of the mini-boot faceplate or greater missing should be replaced or repaired as soon as practicable. Spouts with visible damage must be replaced.
- Inspect hoses for wear, severe kinks, cracks, and splitting. Replace if wire braid is visible.
- Test the VP1000 Vacuum Pump for normal operation using the following test procedure:
 - Normal operation will have the VP1000 Vacuum Pump running at low speed if only one side of a dispenser / pump is activated (ready to dispense fuel) and will run at full speed if both sides of the dispenser are activated (ready to dispense fuel). The VP1000 vacuum pump may continue to run for a few seconds after a nozzle is reholstered.

NOTE: If any of the four bullets below cannot be achieved, tag out dispenser and call a Healy Certified Technician for service.

- The VP1000 vacuum pump should come on immediately when a nozzle is lifted and the dispenser is activated and ready to dispense fuel.
- Repeat for each nozzle on both sides of the dispenser being tested, one at a time, to verify the VP1000 vacuum pump is

running after the dispenser is activated and ready to dispense fuel.

- Leave one nozzle activated on the first side and with the pump running, lift a nozzle on the other side of the dispenser (activated as above) and listen for a change of speed (increase) in the pump motor. Return both nozzles to the dispenser.
- Repeat the above procedures to activate both sides of the dispenser, but start with the opposite side of the dispenser. If the above procedures can be confirmed by starting with the opposite side of the dispenser, the VP1000 vacuum pump is correctly installed. After the VP1000 vacuum pump gets to second speed, it will not drop back to single speed until one nozzle is reholstered.
- **In parts of the country where the outside temperature drops below 35° F, the VP1000 vacuum pump motor will automatically run at a very low RPM to prevent freezing. This is normal operation.**

1.2 Quarterly Inspection and Testing

- 1.2.1 Perform Weekly Inspection prior to Quarterly inspection.
- 1.2.2 Inspect the VP1000 vacuum pump for loose or damaged vapor line connections. If copper tubing is kinked or loose tag out dispenser and call a Healy Certified Technician for service.
- 1.2.3 Check product dispensing flow rate at maximum (handheld) dispensing position. Replace dispenser filters when flow rate is below 6.5 gpm. If flow rates exceed 10 gpm, install Healy 1301 Flow Limiter. Verify flow rate is 10 gpm or less.
- 1.2.4 Check Clean Air Separator for proper operating configuration. See EO VR-201-A, Exhibit 2, Figure 2B-5A for guidance.

1.3 Annual Inspection and Testing to Be Performed By a Healy Certified Technician

The following procedures are recommended to be conducted in the order listed.

- 1.3.1 Perform weekly and quarterly inspection prior to Annual Inspection.
- 1.3.2 Conduct static pressure performance of the Healy Clean Air Separator. EO VR-201-A, Exhibit 4.
- 1.3.3 Conduct pressure decay test. TP 201.3 and EO VR-201-A, Exhibit 8.
- 1.3.4 Conduct dispenser vapor line tightness test found in the Healy dispenser manual under “testing the system” for each dispenser at GDF. Repair all leaks.

- 1.3.5 Conduct V/L test on all nozzles. EO VR-201-A, Exhibit 5. Adjust and replace as necessary.

1.4 Procedure for Reconnecting Breakaway and Testing Fueling Point after Drive-Off.

Note: The following procedure does not require a Healy Certified Technician. If any of the tests listed requires removing the fueling point or dispenser from service, contact a Healy Certified Technician. Breakaway reconnections and/or service by a Healy Certified Technician shall be logged in the GDF Maintenance Log.

- 1.4.1 After a Drive-Off, inspect the nozzle, hose and breakaway for damage. Spouts with visible damage must be replaced. Hoses with wire braid showing must be replaced.
- 1.4.2 Reconnect the breakaway assembly per the procedure in the Reconnectable Breakaway Coupling (P/N 8701VV) section of the ARB Approved Installation, Operation and Maintenance Manual of the Healy Phase II EVR System Not Including ISD. This procedure requires the use of the Healy reconnection clamp, P/N 795. Verify that the tip of the shear screw installed prior to the Drive-Off is removed from the dispenser end body (connected to the whip hose) of the breakaway.

Note: Do not remove the hose or nozzle from the bottom section of the breakaway, as the breakaway is holding the liquid gasoline in the hose/nozzle.

- 1.4.3 Authorize dispenser and inspect the hanging hardware for liquid leaks and meter creep (fueling position display is counting up without dispensing product). If no liquid leaks or meter creep are observed, proceed to section 1.4.4 of this procedure. If liquid leaks or meter creep are observed, remove the fueling point from service and conducting the following:
 - 1.4.3.1 Use the breakaway reconnection procedure, referenced in section 1.4.2, in reverse order to disconnect the breakaway. Remove the nozzle and hose from the dispenser. (A towel can be placed into the upper portion of the nozzle holster of the dispenser to stop the dispenser beep associated with the nozzle being removed from the holster).
 - 1.4.3.2 Install a plastic bag around the portion of the breakaway still connected to the dispenser whip hose. The plastic bag shall be large enough to enclose the breakaway and shall have a thickness of no greater than 2 mils. In California, 12" x 20" x 2 mil thick bags are available from the Air Resources Board by calling (800) 952-5588.
 - 1.4.3.3 Initialize the dispenser for fueling. **Do not dispense any fuel.**

- 1.4.3.4 With the dispenser initialized, observe the bagged breakaway for a half a minute.
- 1.4.3.5 If the bag collapses (indicating the breakaway is not maintaining vapor integrity), or liquid leaks or meter creep are observed, remove the dispenser from service. If the bag does not collapse (indicating the breakaway is maintaining vapor integrity) and no liquid leaks or meter creep are observed, the dispenser can remain in service.
- 1.4.4 Conduct the Nozzle Bag Test using the procedure from Exhibit 7 of Executive Order VR-201-A. If the bag around the nozzle does not collapse, proceed to section 1.4.5 of this procedure. A nozzle where the bag is collapsing indicates a defective vapor valve. If the nozzle bag test indicates a defective vapor valve, remove the fueling point from service and conduct the following:
 - 1.4.4.1 Use the breakaway reconnection procedure, referenced in section 1.4.2, in reverse order to disconnect the breakaway. Remove the nozzle and hose from the dispenser. (A towel can be placed into the upper portion of the nozzle holster of the dispenser to stop the dispenser beep associated with the nozzle being removed from the holster).
 - 1.4.4.2 Install a plastic bag around the portion of the breakaway still connected to the dispenser whip hose. The plastic bag shall be large enough to enclose the breakaway and shall have a thickness of no greater than 2 mils. In California, 12" x 20" x 2 mil thick bags are available from the Air Resources Board by calling (800) 952-5588.
 - 1.4.4.3 Initialize the dispenser for fueling. **Do not dispense any fuel.**
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 - 1.4.4.5 If the bag collapses (indicating the breakaway is not maintaining vapor integrity), or liquid leaks or meter creep are observed, remove the dispenser from service. If the bag does not collapse (indicating the breakaway is maintaining vapor integrity) and no liquid leaks or meter creep are observed, the dispenser can remain in service.
- 1.4.5 The following tests shall be performed after passing sections 1.4.3 and 1.4.4 of this procedure.
 - 1.4.5.1 Test the insertion interlock feature of the nozzle using the procedures outlined in Sections 1.1.7 and 1.1.8 in the Healy Model 900 Nozzle section of the ARB Approved Installation, Operation and Maintenance Manual for the Healy Phase II EVR

System Not Including ISD. If the nozzle fails either of these tests, remove the fueling point from service.

1.4.5.2 Test the automatic shutoff feature of the nozzle using the procedures outlined in Sections 1.2.8, 1.2.9 and 1.2.10 in the Healy Model 900 Nozzle section of the ARB Approved Installation, Operation and Maintenance Manual for the Healy Phase II EVR System Not Including ISD. If the nozzle fails any of the tests, remove the fueling point from service.

For more information about testing and /or maintenance of Healy products, contact Healy Technical Services @ (603) 882-2472.

HEALY PHASE II EVR SYSTEM LIMITED WARRANTY

Healy Systems Inc., products are warranted for workmanship, performance, and materials when properly installed, used and maintained using the ARB Approved Installation, Operation and Maintenance Manual for the Healy Phase II EVR System Not Including ISD. All Healy products, subassemblies, and raw materials are fully inspected and tested at the manufacturing facility. Healy warrants the workmanship and materials to be free of defects for a period in accordance with the provisions stated below:

- The equipment has been installed according to the ARB Approved Installation, Operation and Maintenance Manual for the Healy Phase II EVR System Not Including ISD.
- The nearest Healy Certified Technician qualified to perform service on the defective equipment must perform warranty service. Only Healy Certified Technicians are allowed to perform warranty service. Use of service personnel other than qualified Healy Certified Technicians without prior written approval by Healy Systems Inc. will void the warranty.
- Claims for warranty repair or replacement service must have a written "Returned Material Authorization" (RMA) from Healy Systems, and must be shipped freight prepaid to Healy Systems for inspection.
- Healy Systems Inc., upon inspection at its facilities, and after determination of a warranty claim, will, at its option, repair or replace defective parts returned to its factory. Repaired or replaced parts will be returned freight prepaid by Healy Systems.
- Healy Systems is not responsible for labor or materials necessary to disconnect or connect the warranted product for return to Healy.
- Healy reserves the right to make changes in the design or to make additions or improvements with respect to its products without incurring any obligation to modify or install same on previously manufactured products, upon written ARB approval.
- Healy warrants the workmanship and materials of the following products to be free of defects for a period of fourteen months from the date of shipment from Healy: Inverted coaxial hoses, Hose adapters, Flow limiters and Breakaways.
- EVR Nozzles 900 Series – New & Rebuilt: Healy warrants the workmanship and materials to be free of defects for a period of fourteen months from the date of shipment from Healy. Exclusions: This warranty excludes the field replaceable "rubber/plastic" parts at the front of the nozzle (i.e., boot, scuffguard, face seal assembly, etc.) or the spout or parts that have been subjected to misuse, handling or incorrect installation.
- Vacuum Pump – VP1000: Healy warrants the workmanship and materials to be free of defects for a period of twenty-six months from the date of shipment from Healy. This applies to the vacuum pump and motor assembly only. The Hardware Kits, Vapor Kits, Electrical Kits and Interface modules are warranted for workmanship and materials to be free of defects for a period of fourteen months from the date of shipment from Healy.
- Clean Air Separator - Healy warrants the workmanship and materials to be free of defects for a period of 122 months from the date of shipment from Healy except for the Lockable ball valves, Locks, Master key, Float check valve and P/V Vent valve shipped with installation kit, which are warranted for fourteen months from the date of shipment from Healy.
- General Exclusions: This warranty shall not apply to any product which has been altered in any way, which has been repaired by any party other than Healy Certified Technicians, or when such failure is due to misuse or conditions of use. Use of non-Healy replacement parts, the unauthorized addition of non-

Healy items to Healy equipment, and the unauthorized alteration of Healy equipment void this warranty. Healy shall, as to each defect, be relieved of all obligations and liabilities under a components warranty if the vapor recovery system or components shall have been operated with any accessory, equipment, or a part not specifically approved by Healy and not manufactured by Healy to Healy's design and specifications. Healy Systems makes no warranty with respect to the Healy performance of equipment or Healy's performance of services under this agreement, express or implied, and Healy Systems hereby disclaims the implied warranties of merchantability and fitness for a particular purpose.

- This warranty shall not cover any Healy System components that have been in contact with fuels containing greater than 15% methanol, 15% ethanol, or 15% MTBE by volume. Any component(s), which is exposed to M85/E85 fuel (or other alcohol-rich fuel), is not covered under the Healy Systems warranty.

This warranty is a limited warranty. Anything in the warranty notwithstanding, implied warranties for fitness, particular purpose and merchantability shall be limited to the duration of the express warranty. Healy Systems expressly disclaims and excludes any liability for consequential or incidental damage for breach of any express or implied warranty.

Healy...Specializing in Stage II Vapor Recovery Technology

In keeping with California Air Resources Board requirements that were adopted by the state in which this equipment is installed, this manual must be left on-site with facility management and it must be available for use at all times.

Site Name:	
Address:	
Date Installed:	
Installing Contractor:	
Service Contact:	
Service Telephone:	