

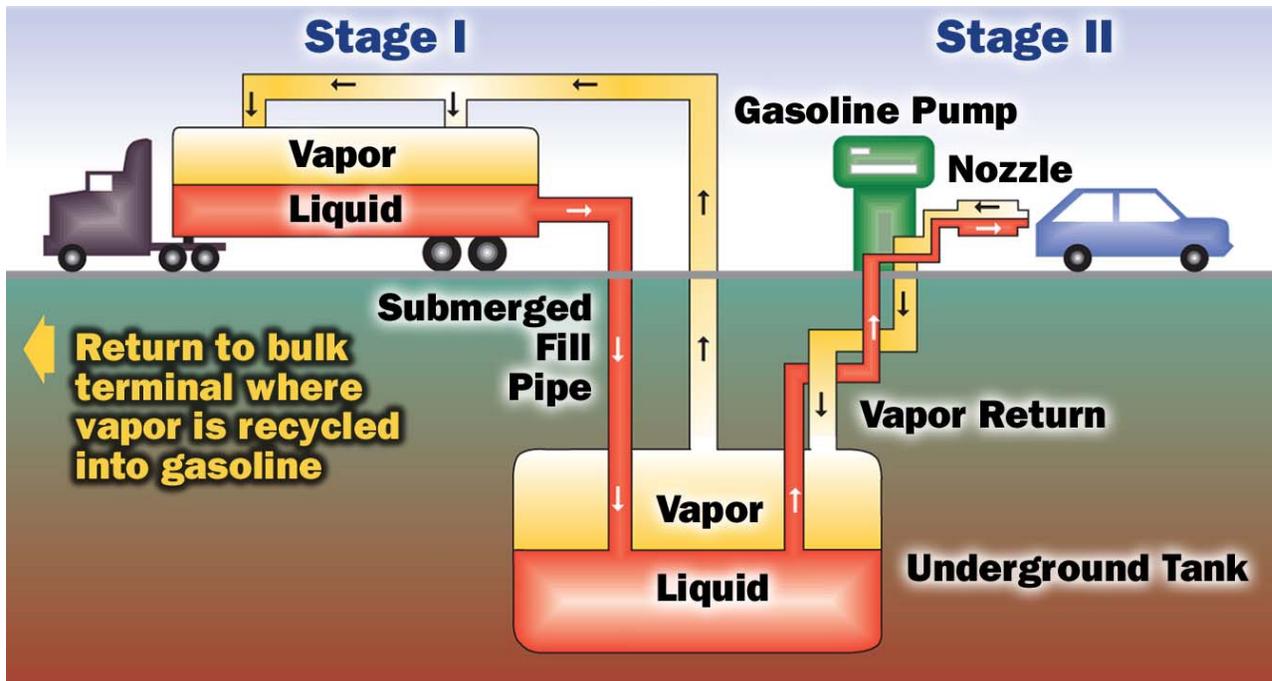
Weekly Inspection Guidance
For Stage II Vapor Recovery
Gasoline Dispensing Facilities

Healy Systems

Healy 400 ORVR UST System, CARB Order G-70-186
Healy 400 ORVR AST System, CARB Order G-70-187
Healy 600 System, CARB Order G-70-165
Hill-Vac Mobil Refueler System, CARB Executive Order G-70-193

Massachusetts Department of Environmental Protection (MassDEP)
Bureau of Waste Prevention

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Introduction

Under the MassDEP Stage II regulation, only Stage II Vapor Recovery Systems approved by the California Air Resources Board (CARB) may be installed in Massachusetts. When CARB certifies a Stage II system a CARB Executive Order is issued. CARB also issues Approval Letters to update existing Executive Orders or to certify new or redesigned Stage II components for use with particular Executive Orders.

Under the MassDEP Stage II regulation, CARB Executive Orders and Approval Letters are enforceable documents and Stage II systems must be installed, operated and maintained in accordance with the terms and conditions of each system's currently applicable CARB Executive Order and Approval Letters.

MassDEP Disclaimer

This document contains guidance information on the MassDEP Stage II regulation and applicable CARB Executive Orders and Approval Letters. This guidance is not a substitute for any requirements contained in the MassDEP Stage II regulation (310 CMR 7.24(6)) or system specific terms and conditions contained in applicable CARB Executive Orders and Approval Letters.

For more detailed program requirements, please see:

- 310 CMR 7.24(6) [Dispensing of Motor Vehicle Fuel](#)
www.mass.gov/MassDEP/air/laws/regulati.htm - apc
- CARB Executive Orders
Stage II systems for underground fuel storage tanks:
<http://www.arb.ca.gov/vapor/eo-PhaseII.htm>
Stage II systems for aboveground fuel storage tanks:
<http://www.arb.ca.gov/vapor/above/above.htm>
- CARB Approval Letters
<http://www.arb.ca.gov/vapor/approval/appr-all.htm>

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1.0 Healy 400/600 Nozzle Stage II System Training

How a Healy 400/600 Nozzle Stage II System Controls Gasoline Vapors

Healy 400/600 Nozzle Stage II systems use a vacuum pump to draw vapors back into the gasoline storage tanks through each nozzle spout. Vapors collected in the facility's gasoline storage tanks are later transferred to the fuel delivery truck tanks during fuel delivery. From the delivery truck, the vapors are then transferred to a condenser at the gasoline terminal where the fumes are condensed back into gasoline.

Training for Correct Healy 400/600 Nozzle Stage II System Installation, Operation and Maintenance

Stage II System owner/operators and their employees who perform required weekly visual inspections of the Stage II system must be trained in the correct installation, operation, and maintenance of their Stage II system. Required training can be completed by reviewing the terms and conditions of system's CARB Executive Order, Approval Letters, and the system guidance materials presented in this document.

Stage II Training Log – Requirements (see Stage II Training Log on page 29)

Upon completing Stage II System training, a log of all current persons trained to perform weekly Stage II inspections must be maintained on site at the Stage II facility. The log must include the following: the date training completed, the person's printed name and signature.

Healy Systems Covered In This Guidance

The following Healy systems are covered in this guidance.

- Healy 400 Nozzle ORVR System (CARB Executive Order G-70-186)
- Healy 600 Nozzle System (CARB Executive Order G-70-165)
- Healy 400 Nozzle ORVR for Aboveground Storage Tank System (CARB Executive Order G-70-187)
- Hill-Vac Mobile Refueler System for Cargo Tank Motor Vehicle Fueling Systems (CARB Executive Order G-70-193)

Healy Systems NOT Covered In This Guidance

The following two Healy VP-1000 systems are **NOT** covered in this guidance.

- Healy VP-1000 system, with Healy 600 nozzles (CARB Executive Order G-70-183-AA)
- Healy VP-1000 system, with Healy 800 ORVR nozzles (CARB Executive Order G-70-191-AA)

Guidance for the Healy VP-1000 systems are found in "Weekly Inspection Guidance for Vacuum Assist Systems".

CARB Executive Orders and Approval Letters

CARB Executive Orders contain the terms and conditions by which a Stage II system is correctly installed, operated, and maintained as well as specific components (nozzles, hoses, fittings, etc) approved for use with the installed Stage II system. CARB Approval Letters are issued by CARB to update existing Executive Orders or to certify new or redesigned Stage II components for use with particular Executive Orders.

Please Note: Under the MassDEP Stage II regulation, CARB Executive Orders and Approval Letters are enforceable documents and Stage II Responsible Officials must install, operate and maintain his or her Stage II system in accordance with the terms and conditions of the system's currently applicable CARB Orders and Approval Letters.

Identifying Your Stage II System's CARB Executive Order Number

The CARB Executive Order number for your Stage II system can be obtained from the following sources:

- Your facility's currently applicable Stage II Compliance Certification Form;
- Your Stage II Compliance Testing Company; or
- The MassDEP Stage II Program (617-556-1035)

Obtaining a Copy of Currently Applicable CARB Executive Order and Approval Letters

Copies of your Stage II system's currently applicable CARB Executive Order and Approval Letters can be obtained from the CARB Web Page:

Executive Orders

- Facilities with underground fuel storage tanks use the following web page:
<http://www.arb.ca.gov/vapor/eo-PhaseII.htm>
- Facilities with aboveground fuel storage tanks use the following web page:
<http://www.arb.ca.gov/vapor/above/above.htm>

Approval Letters

<http://www.arb.ca.gov/vapor/approval/appr-all.htm>

2.0 Healy 400/600 Nozzle Stage II System Installation, Operation and Maintenance

Healy 400 Nozzle ORVR Systems (CARB Executive Order G-70-186)

- Partial list of components required to be installed:
Healy 400 ORVR nozzles (see Diagram 1. on page 18)
Healy 75B or Healy 88B inverted coaxial hoses
Healy 6280 system monitor (monitor requirements and specifications are contained in CARB approval letters #97-06 and #97-20)
Healy 6275 vent sensor
Healy 93928 or 9800-1 pressure switch
Healy 9466 vapor check valve
Two point Stage I Vapor Recovery
Pressure Vacuum (PV) Valves on tank vent pipes
- The following vapor collection units are approved for this system:
Healy 9000 Mini-Jet Pump
Thomas Industries/Franklin Electric VP-500 Vane Pump
- See "Exhibit 1" of G-70-186 for a complete list of required equipment.

Healy 600 Nozzle Systems (CARB Executive Order G-70-165)

- Partial list of components required to be installed:
Healy 600 nozzles (see Diagram 2. on page 19)
Healy 75B or Healy 88B inverted coaxial hoses
Healy 6275 vent sensor
Healy 93928 or 9800-1 pressure switch
Healy 9466 vapor check valve
Two point Stage I Vapor Recovery
Pressure Vacuum (PV) valves on tank vent pipes
- The following vapor collection units are approved for this system:
Healy 9000 Mini-Jet Pump
Thomas Industries/ Franklin Electric VP-500 Vane Pump
Healy 2000C Blower
- See "Exhibit 1" of G-70-165 for a complete list of required equipment.

Healy 400 Nozzle ORVR Aboveground Storage Tank (AST) Systems (CARB Executive Order G-70-187)

- Partial list of components required to be installed:
Healy 400 ORVR nozzles (see Diagram 1. on page 18)
Healy 75B or Healy 88B inverted coaxial hoses
Healy 6280 system monitor **
Healy 6275 vent sensor assembly **
Healy 93928 or 9800-1 pressure switch
Healy 9466 vapor check valve
Two point Stage I Vapor Recovery
Pressure Vacuum (PV) Valves on tank vent pipes

** Healy System Monitor & Vent Sensor Assembly only required for facilities that dispense more than 10,000 gallons per month.
- The following vapor collection units are approved for this system:
Healy 9000 Mini-Jet Pump
Thomas Industries/ Franklin Electric VP-500 Vane Pump
Healy 100 Jet Pump (2 for each nozzle)
- See "Exhibit 1" of G-70-187 for a complete list of required equipment.

Hill-Vac Vapor Recovery System for Mobile Cargo Tank Motor Vehicle Fueling Systems (CARB Executive Order G-70-193)

- Partial list of components required to be installed:
Healy 400 ORVR nozzles (see Diagram 1. on page 18)
Healy 75B or Healy 88B inverted coaxial hoses
Healy 1258A vacuum relief valve
Two point Stage I Vapor Recovery
Pressure Vacuum (PV) Valves on tank vent pipe
- The following vapor collection units are approved for this system:
Healy 100 Jet Pump (2 for each nozzle)
- See "Exhibit 1" of G-70-193 for a complete list of required equipment.

Loose, Torn, or Damaged Boots

Nozzle boots create a tight seal around the fuel tank filler neck preventing the ingestion of air into the vapor recovery system. Loose, torn, or damaged nozzle boots must be tightly attached to the nozzle and immediately replaced if torn or damaged or taken out of service and replaced within 14 days.

Nozzle Automatic Shut-off Failure

- **Automatic shut-off failure:** A nozzle should shut-off or “click” off as gasoline reaches the top of the fuel tank. Nozzles that fail to click off indicate a broken automatic shut-off valve. Automatic shut-off failures result in over-filling of the tank, causing gasoline spillage.

Any nozzle that fails to shut off shall be immediately replaced or immediately taken out of service and replaced within 14 days.

Please Note: The most common Stage II Complaint that MassDEP receives are complaints regarding nozzles that fail to shut off.

Nozzle Continually Clicks Off During Fuel Dispensing

A nozzle that continually “clicks off” when dispensing fuel to an unfilled tank can indicate one or more of the following:

- Previous operator topped off causing a liquid blockage in hose vapor return line.
- A broken nozzle or improperly installed nozzle component.
- A liquid blockage in the dispenser piping or the underground vapor return line.

Clearing the Hose Vapor Return Line

To clear the vapor return line on hoses, raise and extend the hose so the gasoline drains back into the dispenser. Or, point the nozzle downward and drain the gasoline into a bucket. Pour the gasoline in the bucket back into the appropriate octane/grade fill pipe of the underground storage tank.

If a nozzle continues to click off after trying to clear the vapor return line, immediately replace the nozzle or immediately take the nozzle out of service and replace it within 14 days. If the problem persists, contact your maintenance contractor or Stage II Testing Company to determine if there is a liquid blockage problem in the underground piping.

Leaking Nozzles

Healy 400/600 nozzles are designed to be “dripless”. If, upon stopping the dispensing of gasoline, more than a few drops of gasoline continue to drip from the nozzle, it is an indication of a leaking nozzle.

Any nozzle that leaks gasoline must be immediately replaced or immediately taken out of service and replaced within 14 days.

Healy System Hose Length

Healy System hoses can not exceed 13' in total length. In addition, no more than six inches of the hose surface can touch the dispenser island when the nozzle is hanging in the dispenser holster.

To shorten a dispenser's hose length, the hose must be replaced with a shorter length of hose.

Hose Breakaways

Hose breakaways are designed to allow the nozzle and hose assembly to disengage from the dispenser in case a customer drives off with the nozzle still in the fuel tank filler neck. Failing to install breakaways will result in nozzle, hose, and dispenser damage, and possible personal injury to customers.

- **Breakaway Installation**

Always install the breakaway between the main hose and the whip hose, not between the whip hose and the dispenser (See Diagram 3. on page 20).

The breakaway has an arrow indicating the direction of gasoline flow. Install the breakaway with the arrow pointing toward the nozzle.

- **Breakaway Maintenance**

Gasoline residue around a breakaway is an indication of a leaking breakaway. If a breakaway is leaking, immediately replace it or immediately take the breakaway out of service and replace the breakaway within 14 days.

If a customer drives off with a nozzle still in the fuel tank filler neck resulting in the disengagement of the breakaway from the whip hose and dispenser, the breakaway must be replaced. The breakaway can only be reconnected if a CARB approved "reconnectable" breakaway has been installed (<http://www.arb.ca.gov/vapor/approval/cal-07/07-08.pdf>).

3.0 Stage I Vapor Recovery

Stage I Vapor Recovery refers to the gasoline vapor control system between the fuel delivery truck and gasoline storage tanks located at each facility. The way Stage I works is; when gasoline is delivered to a facility, the level of fuel in the storage tanks rise, forcing the vapors in the storage tanks back, through the Stage I system, to the fuel delivery truck's tanks. The tank truck then returns to the gasoline terminal where the vapors are collected and condensed back to gasoline.

Stage I Vapor Recovery for Healy 400/600 Nozzle Systems

"Two-Point" Stage I systems are the only Stage I system approved for use with Healy 400/600 Stage II Systems (See Diagram 4. on page 21). A Two-Point Stage I system has a single product fill connection for gasoline delivery, and a separate connection for vapor return.

- Coaxial Stage I Systems are not approved for use with Healy 400/600 Systems.

Maintenance of Stage I Components

Properly maintained Stage I components prevent the escape of gasoline vapors from your gasoline storage tanks. The Stage I System must be inspected and maintained to prevent the loss of vapors.

Two-Point Stage I Dry Break Valves

The vapor extraction poppet is called a "Dry Break Valve" or "Vapor Adaptor" (See Diagram 5. on page 22). The Dry Break has a spring loaded vapor seal. Press down on the vapor seal and let go (be cautious of potential excess vapors escaping from the dry-break when pressing down on the vapor seal to test). The vapor seal should snap shut making a tight seal.

Vapor Caps

All product fills and dry breaks must have vapor caps installed to keep the connection clean and vapor tight (See Diagram 5. on page 22). Vapor caps should snap on snugly and should not spin freely. Loose vapor caps must be immediately replaced or a new rubber gasket installed.

Rubber Gaskets

A rubber gasket must be installed under each vapor cap.

Please Note: Upon opening a Spill Containment Bucket, the presence of gasoline fumes is an indicator of a leaking vapor cap gasket. Leaking vapor cap gaskets must be immediately replaced.

Spill Containment Buckets

Spill containment buckets are designed to collect excess gasoline if a tank is overfilled (see Diagram 6. on page 23).

- **Bucket Lids:** Spill buckets must have a tight fitting lid to prevent the introduction of water and debris.
- **Clean Buckets:** Spill buckets must be free of water, dirt, leaves, or other debris at all times.
- **Buckets with Drain Valves:** Spill buckets with drain valves must be engaged manually after every fuel delivery to drain gasoline back into the tanks. Gasoline cannot be left in spill buckets since it will evaporate and is a source of air pollution.
- **Buckets without Drain Valves:** If the spill buckets do not have drain valves the gasoline must be removed manually with a hand pump, and drained back into the product fill pipe.
- **Gasoline/water mixtures** in spill buckets should not be drained back into the tank.

Please Note: Gasoline/Water mixtures are considered hazardous waste unless managed in accordance with 310 CMR 30.104(3)(e). Gasoline/water mixtures not managed in accordance with 310 CMR 30.104(3)(e) must be collected in sealed drums with proper labeling in accordance with 310 CMR 30.000 (other than 30.104(3)(e)).

Spill containment buckets are designed to collect excess gasoline if a tank is overfilled. An additional potential source of excess gasoline can be gasoline delivery drivers emptying residual gasoline from the delivery hose into the buckets. Consult your gasoline delivery company to ensure excess gasoline in the delivery hose is drained into the product fill pipe, not the spill bucket.

4.0 Routine Maintenance, Minor and Substantial Modifications: Compliance Testing and Certification Submittal Requirements

Definition of Routine Maintenance, Minor Modification and Substantial Modification

Routine Maintenance means, for the purposes of 310 CMR 7.24(6), the regular re-installation, repair or replacement of one or more Stage II System components including, but not limited to: hoses; nozzles; breakaways; swivels; hose retractors; bucket plow rings; "slip-on" spill or dry break buckets; "O" rings and seals; submersible pumps or suction pipes; fill adaptors; fill tubes; vapor adaptors; fill and vapor caps; drain valves; monitor caps; or riser caps.

Minor Modification means, for the purposes of 310 CMR 7.24(6), the re-installation, repair or replacement of one or more Stage II System components that is not substantial, including, but not limited to: less than 50% of the motor vehicle fuel dispensers (e.g., 1 of 4 dispensers); a central vacuum unit of a Healy 400 ORVR nozzle system or Healy 600 nozzle system; ball float extractor valve housings; dispenser mounted vapor pumps; or "screw-on" spill or dry break buckets. If the re-installation, repair or replacement of Stage II System components occurs at a motor vehicle fuel dispensing facility with two or less dispensers, the re-installation, repair or replacement of only one of the motor vehicle fuel dispensers shall be a Minor Modification.

Substantial Modification means, for the purposes of 310 CMR 7.24(6), the re-installation, repair or replacement of one or more Stage II System components including, but not limited to: 50% or more of the motor vehicle fuel dispensers (e.g., 2 of 4 dispensers); the replacement of one type of Stage II system with another type (e.g., replacement of a balance system with a vacuum assist system, or a Healy 400 ORVR nozzle system or Healy 600 nozzle system with a Healy VP-1000 system); or the re-installation, repair or replacement of Stage II System components requiring excavation below a shear valve or tank pad (e.g., vapor return piping, vent piping, vapor space tie bar, two-point or coaxial Stage I systems; or motor vehicle fuel storage tanks). If the re-installation, repair or replacement of one or more Stage II System components occurs at a motor vehicle fuel dispensing facility with two or fewer dispensers, the re-installation, repair or replacement of all motor vehicle fuel dispensers shall be a Substantial Modification.

Applicable Compliance Testing, Recordkeeping and Certification Requirements

MODIFICATION/REPAIR	TESTING REQUIRED
A. ROUTINE MAINTENANCE	
For routine maintenance and repairs, no submittal to MassDEP or compliance testing is required. Record of repairs is required to be maintained on site in applicable maintenance logs.	
1. Replace hose, nozzle, breakaway, swivel, hose retractor.	No test
2. Replace bucket plow ring	No test
3. Replace "slip-on" spill or dry break bucket. If "screw-on" spill bucket must be replaced. See screw-on spill bucket below.	No test
4. Replace "O" rings and seals	No test
5. Replace/repair submersible pump/suction pipe	No test
6. Replace/repair fill adaptor, fill tube, vapor adaptor, fill and vapor caps, drain valves, monitor caps, riser caps	No test
B. MINOR MODIFICATIONS	
For minor modifications and repairs, compliance testing is required to be performed and passed, but submittal of a Form A to MassDEP is not required. Records of repairs and test results are required to be maintained on site in applicable logs.	
1. Replace dispenser mounted vapor pump (vacuum motor).	Air-to-Liquid Ratio Test (A/L) for that vapor dispenser and applicable nozzles
2. Replace "screw-on" spill or dry break bucket.	Pressure decay
3. Isolate diesel tank or other fuel storage tank not in use from Stage II system.	Pressure decay
4. Replace/repair <50% of total dispensers (e.g., 1 of 4 dispensers).	Pressure decay, dynamic back pressure/liquid blockage, (Air-to-Liquid Ratio for vacuum assist systems)
5. Replace/repair <50% of dispenser piping.	Pressure decay, dynamic back pressure/liquid blockage
6. Replace/repair Healy central vacuum unit for Healy 400 ORVR nozzle system or Healy 600 nozzle System.	Healy vapor return line test, Healy Fillneck Pressure (Healy 400 ORVR), Air-to-Liquid Ratio (Healy 600)
7. Replace/repair ball float extractor valve housing.	Pressure decay
C. SUBSTANTIAL MODIFICATIONS	
For substantial modifications and repairs, all applicable tests are required to be performed and passed ("full system test") and a fully completed Form A must be submitted to MassDEP prior to commencing system operation. Records of repairs and testing are required to be maintained on site in applicable logs.	
1. Excavate below shear valve or tank pad to repair, replace or install vapor return piping, vent piping, vapor space tie bar, two-point or coaxial Stage I systems.	Full system test
2. Excavate below shear valve or tank pad to repair or replace Tank	Full system test
3. Replace/repair $\geq 50\%$ of the vapor recovery system	Full system test
4. Replace/repair $\geq 50\%$ of the dispensers (e.g., 2 or more of 4 dispensers)	Full system test

5. Replace Stage II system with another type (e.g., replace balance system with vacuum assist system, replace Healy 400 ORVR nozzle system or Healy 600 nozzle system with Healy VP-1000 system)	Full system test.
<p>D. Facilities Currently Exempt From Stage II Requirements For gasoline dispensing facilities currently exempt from Stage II installation requirements (i.e., the facility was installed <u>prior to</u> 11/1/1989 and since 11/1/1989 has <u>not</u> been substantially modified <u>or</u> dispensed more than 10,000 gallons of gasoline in any one month) any modification or repair of the gasoline dispensing system identified below or the dispensing of more than 10,000 gallons of gasoline in any one month <u>will trigger the requirement to</u> (a) install a Stage II system, (b) perform and pass all applicable tests and (c) submit a fully completed Form A to MassDEP, prior to commencing system operation.</p>	
1. Excavate below shear valve or tank pad to repair, replace or install vent piping and/or two-point or Coaxial Stage I systems.	
2. Install, repair or replace tank and/or fuel distribution system.	

5.0 Weekly Visual Inspection Instructions

The MassDEP Stage II regulation requires all Stage II systems to be visually inspected on a weekly basis (once every seven days) to ensure the system is operating correctly and properly maintained.

- Only persons who have been trained can conduct Weekly Stage II Inspections (see 1.0 Healy 400/600 Nozzle Stage II System Training)
- MassDEP recommends that at least two persons be trained for each Stage II facility.
- See Healy 400/600 System Inspection Checklist on page 30.

Safety Precautions When Conducting Weekly Stage II Inspections

- Place safety cones around the inspection area. Be aware of moving cars while conducting inspection.
- Wear high visibility safety vest, safety goggles, gloves, and steel toe boots.
- Use a spark resistant crowbar or spark resistant screwdriver for opening Spill Containment buckets and Vapor Connection buckets.

Completing the Healy 400/600 System Weekly Inspection Checklist

- Enter inspection date to the right of "Week of:"
 - Answer all questions, check either "Yes" or "No" for each question.
- If you do not understand an inspection question please contact the MassDEP Stage II program at 617-556-1035.
- In the right-hand column of the Inspection Checklist, actions taken in response to incorrectly installed, non-functioning, or broken components shall be noted at the time of inspection and the date any repairs completed.
 - The Weekly Inspection Checklist must be fully completed, signed and dated by the person performing the inspection.

Please Note:

If your answer to an inspection question has an asterisk (*) next to it, then the component is either incorrectly installed, non-functioning, or broken and therefore in non-compliance with applicable program requirements.

If incorrectly installed, non-functioning, or broken components are identified during a weekly inspection, the following steps must be taken:

- i. immediately repair the incorrectly installed, non-functioning or broken (broken) component(s); or, if the broken component could not be immediately repaired;
- ii. immediately stop dispensing gasoline through the broken component(s), post "Out of Service" signs on it, and repair it within 14 days; or, if the broken component(s) could not be repaired within 14 days;
- iii. immediately isolate¹ the broken component(s) from the remainder of the Stage II system so that the remainder of the Stage II system is correctly operating and post "Out of Service" signs on the broken component(s) until repaired; or, if the broken component(s) can not be isolated from the remainder of the Stage II system so that the remainder of the Stage II system is correctly operating;
- iv. immediately stop ALL dispensing of gasoline at the facility and post "Out of Service" signs on ALL motor vehicle fuel dispensers until the component(s) is repaired.

¹ **Isolate** shall mean, for the purposes of the Stage II regulations, to take out of service of one or more components of a Stage II system so that the remainder of the Stage II system operates as required by the terms and conditions of the system's currently applicable Executive Order.

6.0 Stage II Compliance Testing Requirements

Required Healy System Stage II Tests

TEST NAME	FREQUENCY	DESCRIPTON
Pressure Decay Test	Annually, Upon Installation, and Substantial Modification*	Quantifies vapor tightness of the vapor recovery system.
Vapor Space Tie Test	Annually, Upon Installation, and Substantial Modification*	Verifies if the underground tanks have been manifolded (connected by vapor piping). Multiple tanks must be manifolded together with vapor piping to distribute the collected vapors evenly to all tanks if there is a "common" Stage II vapor return line. Configurations which include dedicated Stage II vapor return lines to specific tanks do not need to be manifolded but must be verified to return to the proper tank.
Pressure Vacuum Vent Valve Test	Annually, Upon Installation, and Substantial Modification*	Determines if the Pressure Vacuum Vent Valves are opening at the correct pressure setting and closing at the correct vacuum setting.
Healy Vapor Return Line Vacuum Integrity Test	Annually, Upon Installation, and Substantial Modification*	Verifies the vapor tightness portion of the Healy system, which is subjected to relatively high levels of vacuum in the vapor return lines.
Healy Fillneck Vapor Pressure Regulation Fueling Test**	Annually, Upon Installation, and Substantial Modification*	Verifies the proper operation of the nozzle boot pressure against the automobile fuel tank fill neck.
Air to Liquid Ratio Test***	Annually, Upon Installation, and Substantial Modification*	Determines if the vapor return vacuum motors are calibrated properly and also detects defective nozzles.

* **Substantial modification:** See "Routine Maintenance, Minor/Substantial Modification" definitions and tables.

** **Healy Fillneck Vapor Pressure Regulation Fueling Test required for Healy 400 ORVR Nozzle systems; G-70-186, G-70-187 and G-70-193.**

*** **Air to Liquid Ratio Test** required for Healy 600 Systems, G-70-165.

7.0 Recordkeeping Requirements

Under the MassDEP Stage II regulation, all Stage II facilities must maintain, on-site, the following records:

- Stage II Training Log: The training log documents all facility employees currently trained to perform Stage II weekly visual inspections.
- Weekly Inspection Checklists: All weekly inspection checklists for the most recent rolling twelve-month period.
- Stage II Certification Forms: Copies of all applicable Stage II In-Use Compliance Certification forms for the most recent rolling twelve-month period.
- Stage II Test Reports: Copies of all Stage II Compliance Testing Company test reports for the most recent rolling twelve-month period.

Please Note: MassDEP recommends the above records be maintained in a single 3-ring binder.

8.0 Fuel Dispensing: Topping Off & Spill Prevention

Topping Off Results in Blocked Hoses

Overfilling or "topping off" a gas tank can draw gasoline into the vapor return openings of the nozzle, causing a blockage in the hose vapor return line. This blockage will effect the proper operation of the Stage II vapor recovery system. If a blockage occurs vapors cannot be collected.

- **Clearing the Hose Vapor Return Line:**
To clear the vapor return line, raise and extend the hose so the gasoline drains back into the dispenser. Or, point the nozzle downward and drain the gasoline into a bucket. Pour the gasoline in the bucket back into the appropriate octane/grade fill pipe of the underground storage tank.

Topping Off Results in Gasoline Spills

Overfilling or "topping off" a gas tank can result in gasoline spillage. Gasoline contains many toxic compounds that are harmful to public health and the environment.

Cleaning up Gasoline Spills and Disposal of Gasoline Absorbents

An absorbent such as "Speedy Dry" should be used to limit gasoline contamination to the environment. Disposal of gasoline absorbents must be done in accordance with Massachusetts Hazardous Waste regulations (see 310 CMR 30.302: Determination of Whether a Waste is Hazardous). If the gasoline/absorbent is determined to be hazardous, it must be collected in sealed drums with proper labeling in accordance with 310 CMR 30.000.

9.0 Stage II Cost Saving Ideas

Maintain the Stage II System. Your station may be eligible for a Form D1 (no test required) if you are diligent about maintaining your Stage II system. If you pass all certification tests on the first attempt, two years in a row, and postmark your Form C by the due date, you will be eligible for a Form D1.

Install Multi-Product Blending Dispensers to reduce the number of nozzles & hoses that need to be maintained. Blending dispensers have one nozzle/hose assembly on each side of the dispenser.

Shop around for Stage II Testing companies. The prices for Stage II Tests will vary widely so call a number of testing companies to inquire about test prices. MassDEP also recommends that you ask the testing companies for references. MassDEP does not certify Stage II testing companies.

Stage II Equipment Warranty: If purchased nozzles and hoses are under a year warranty have the Stage II system tested within the year. Equipment may fail the test and it will still be covered under the warranty. Hold on to your equipment purchase receipts.

10.0 MassDEP Resources & Other State Agency Resources

- MassDEP Stage II Resources:
Stage II Info Line Boston (Answering Machine): (617)-556-1035
MassDEP Stage II email address: aq.stage2@state.ma.us
Marc Bolivar, Database Management & Facility Information Support:
(617) 292-5527
Jeff Gifford, Regulation, Technical, & Enforcement Support:
(617) 556-1144
- MassDEP guidance regarding: hazardous wastes, handling used oil filters, etc. www.mass.gov/MassDEP/recycle/laws/policies.htm
- MassDEP Bureau of Waste Site Cleanup (cleanup of oil and hazardous material spills) www.mass.gov/MassDEP/cleanup/index.htm
24 Hour number – 888-304-1133 - to report releases of oil and hazardous materials to the Emergency Response Program
Leaking Underground Storage Tank Program- general information on leaking UST's
617-292-5887
- Department of Fire Services
Ensure proper installation, removal, permitting, and closure of underground storage tanks www.state.ma.us/dfs, 978-567-3300
- Department of Revenue
21J Underground Storage Tank Program for reimbursement for eligible UST facilities
Certificate of Compliance (COC) www.state.ma.us/ust, 617-887-5970
- MA Division of Standards
Retail Gasoline & Oil Dealers License. Weights and Measures Enforcement
www.state.ma.us/standards, 617-727-3480

Diagram 1. Healy 400 ORVR Nozzle

Healy 400 ORVR Nozzle

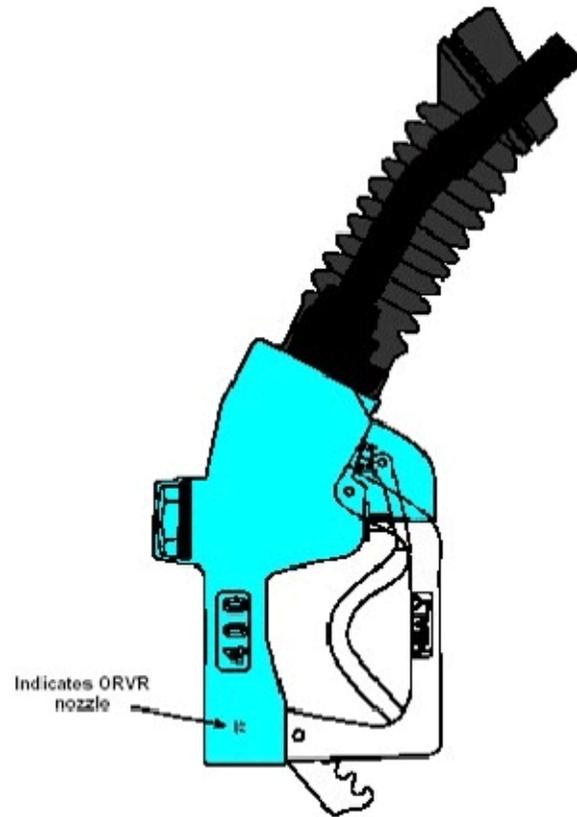


Diagram 2. Healy 600 Nozzle

Healy 600 Nozzle

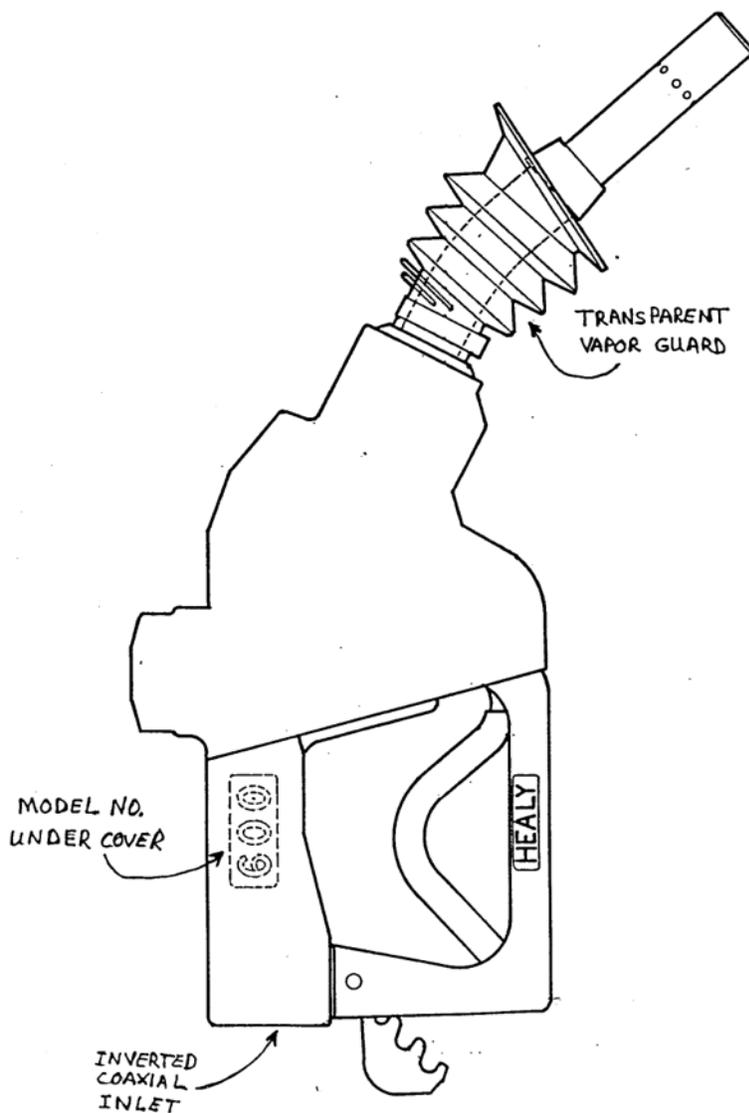


Diagram 3. Healy Dispenser

Healy Dispenser

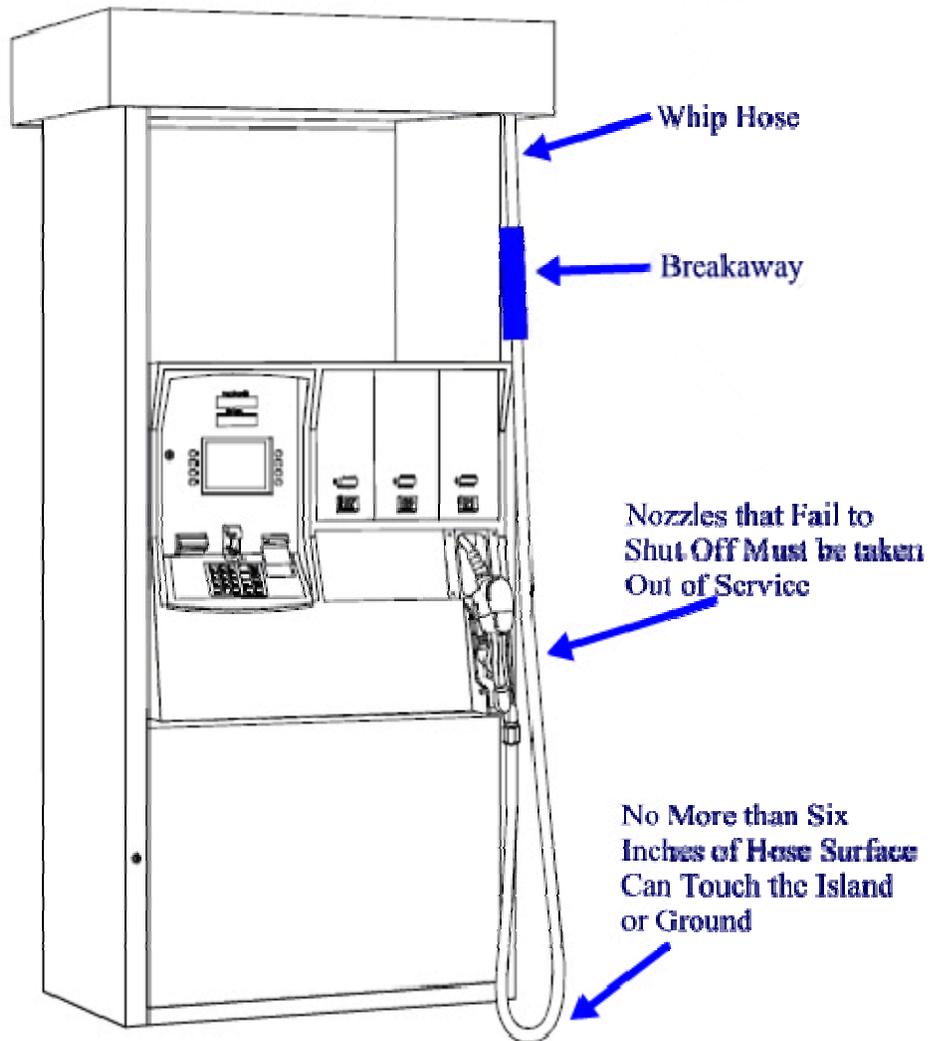


Diagram 4. Two-Point Stage I Vapor Recovery

Two-Point Stage I Vapor Recovery

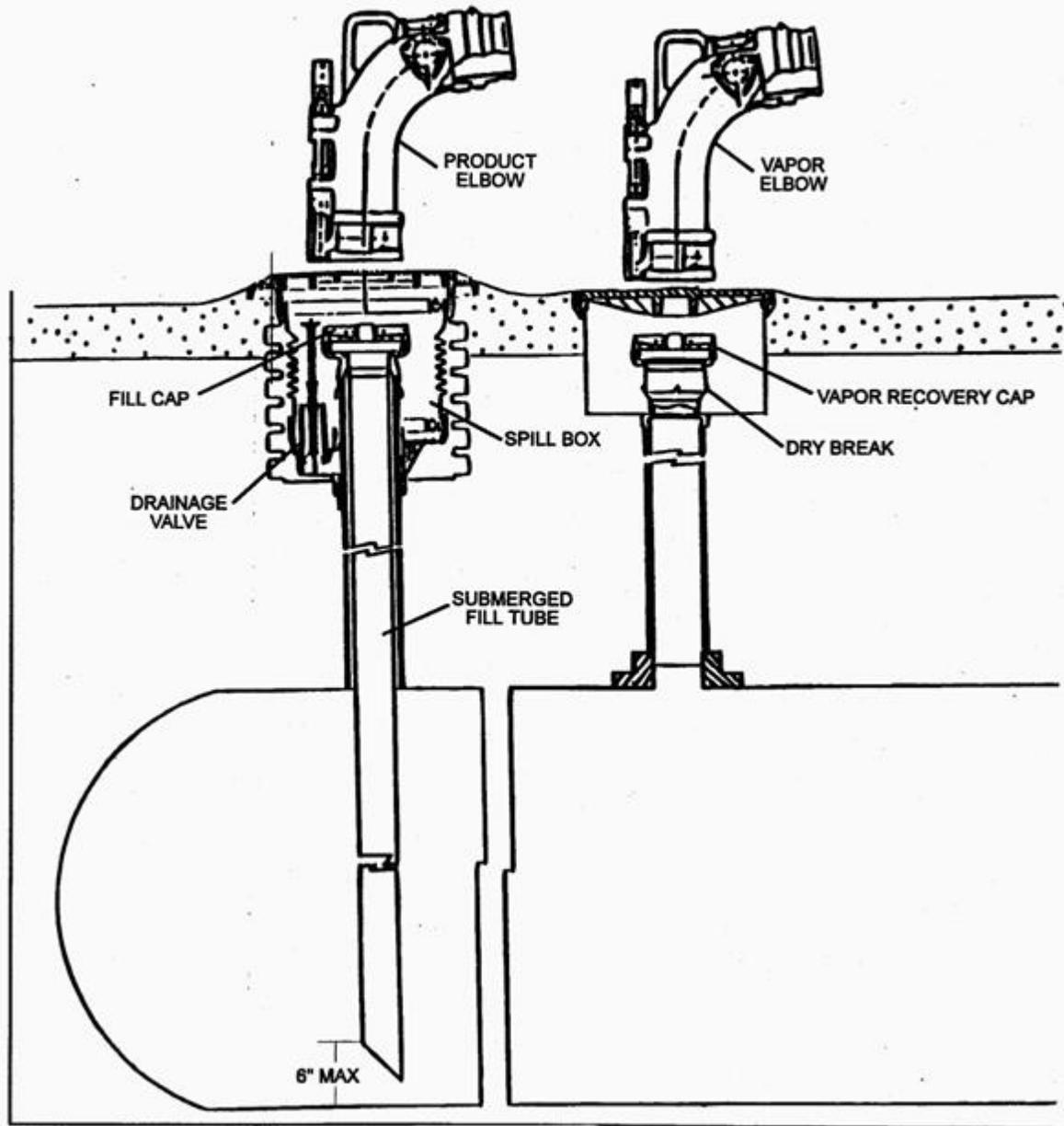


Diagram 5. Dry Break Valve for Two-Point Stage I System

Dry Break Valve for Two-Point Stage I System

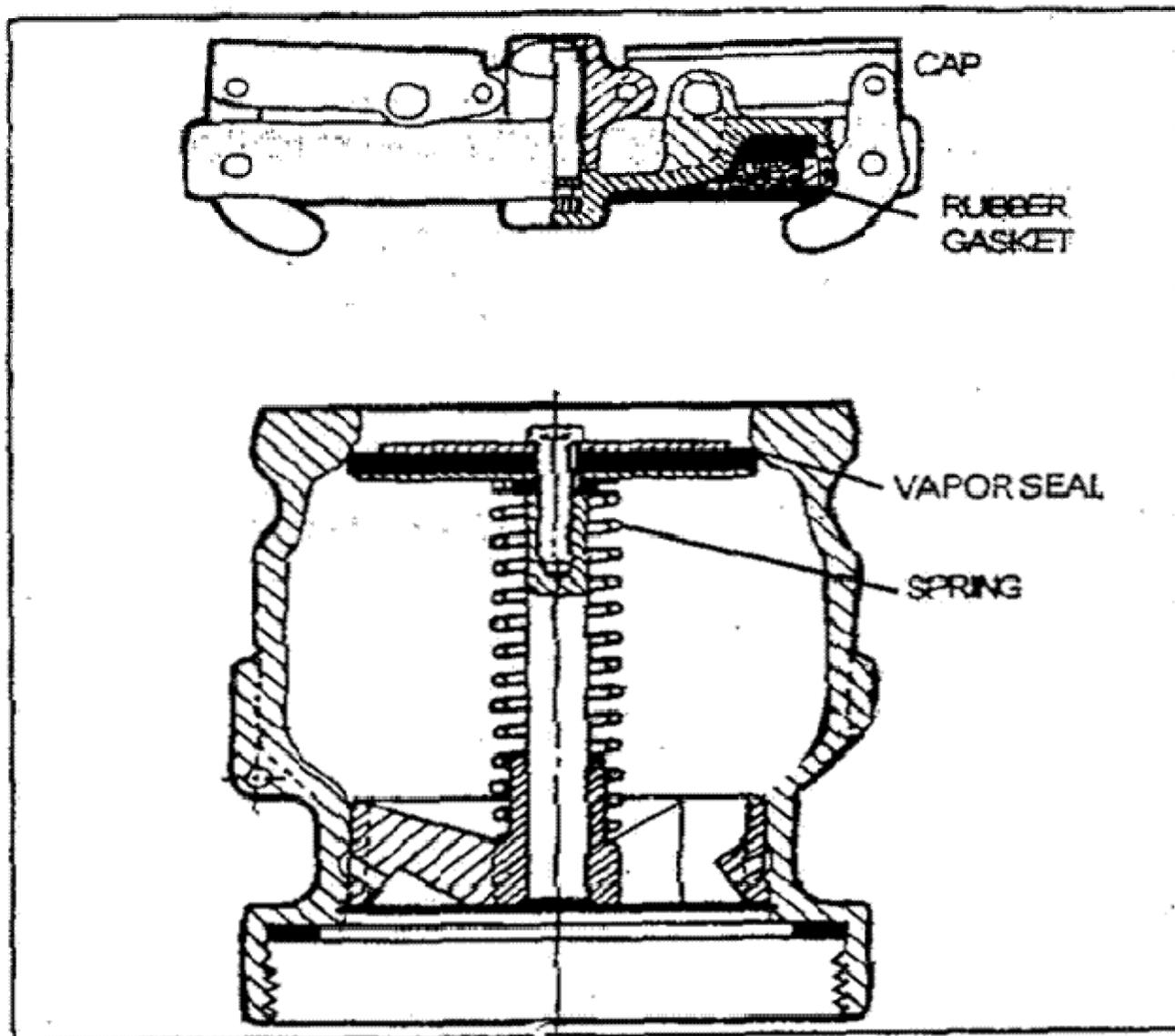


Diagram 6. Spill Containment Bucket

Spill Bucket for Gas Fill Pipe

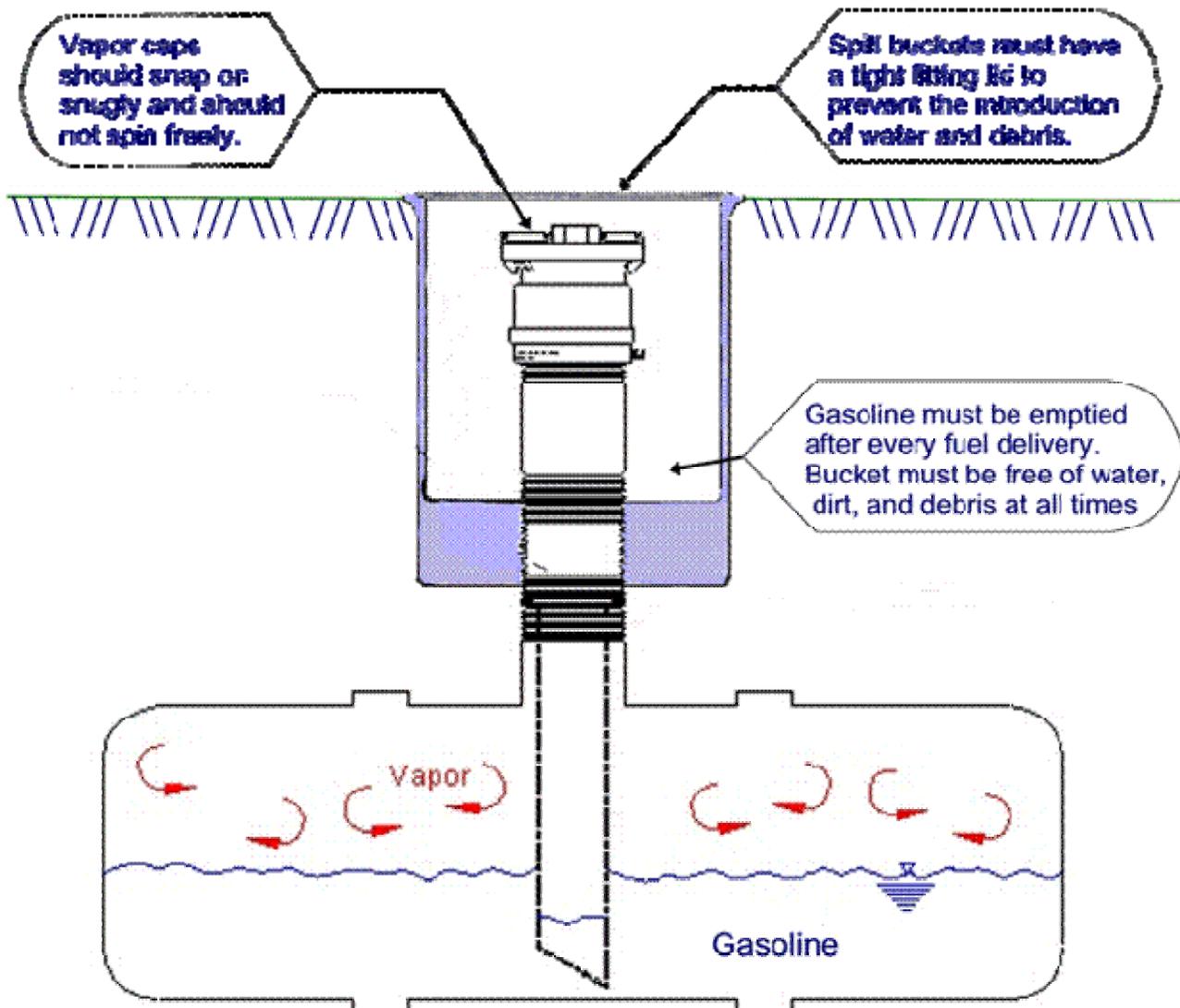


Diagram 7. Healy Vent Pipe Manifold Assembly

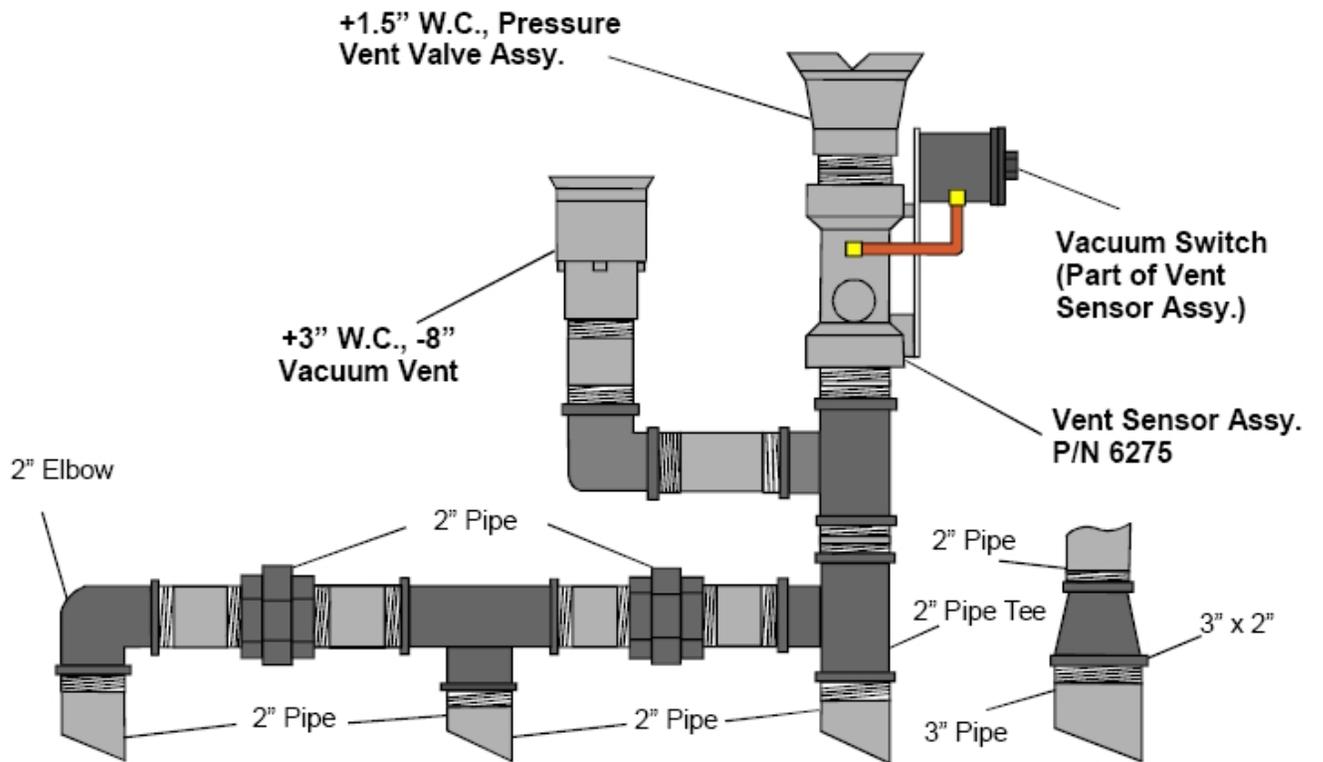


Diagram 8. Healy System Monitor

Identifying Healy Systems Monitor

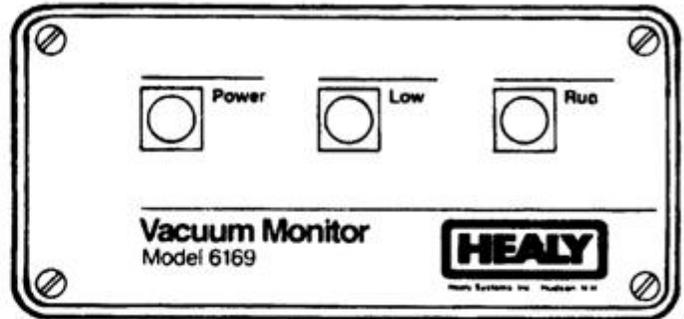
6199 VACUUM MONITOR:

Three light indicator for monitoring vacuum only. Used with central vacuum systems only.

***Decertified by CARB on
January 1, 1997***

Cannot be used after
March 1, 1997

System should be upgraded to the 6280 System Monitor.



6280 SYSTEM MONITOR:

Monitoring system for both vacuum and for outgassing. Required on all Healy central vacuum systems.

***CARB Certified for Current Use on Both
Aboveground and Belowground Systems***

G-70-187 for Aboveground Systems with
The 400 ORVR Series Nozzle.

NOTE: Not required on Aboveground Systems
if throughput is less than 10,000 gallons monthly.

G-70-186 for Belowground Systems with the
400 ORVR Series Nozzle.

G70-165 for Belowground Systems with the
600 Series Nozzle.

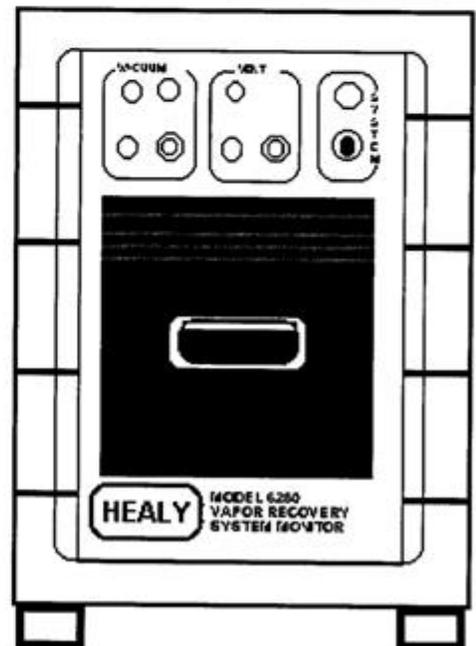


Diagram 9. Healy 6280 Monitor Maintenance Log Sheet

California Air Resources Board Compliance Division
Gasoline Vapor Recovery Certification Program

FACILITY

ADDRESS

CITY STATE ZIP CODE

SUPERVISOR / CONTACT NAME

_____ (____) - _____

FACILITY PHONE NUMBER

_____/_____/_____
INSTALLATION DATE

Date & Time of Alarm	Type of Alarm	Date & Time Maintenance Called	Date Maintenance Performed	Maintenance Contractor: Phone: Maintenance Performed
Date: Time:	Vacuum <input type="checkbox"/> Vent <input type="checkbox"/>	Date: Time:	Date:	A. Test(s) Conducted: B. Component(s) Repaired or Replaced:

Date & Time of Alarm	Type of Alarm	Date & Time Maintenance Called	Date Maintenance Performed	Maintenance Contractor: Phone: Maintenance Performed
Date: Time:	Vacuum <input type="checkbox"/> Vent <input type="checkbox"/>	Date: Time:	Date:	A. Test(s) Conducted: B. Component(s) Repaired or Replaced:



Healy 6280 System Monitor Maintenance Log Requirements

**California Environmental Protection Agency
Air Resources Board
for
Healy Model 400 ORVR System, Executive Order G-70-186
&
Healy Model 600 System, Executive Order G-70-165**

Adopted: October 26, 1998

Monitor/Maintenance Log Requirements

Any loss of integrity in the Stage II piping network between the nozzle and the Healy Central Vacuum Unit may cause excessive vent emissions which could trigger a **VENT** failure and/or **VAC** failure alarm condition detected by the Healy System Monitor. The Healy System Monitor, Model #6280, was developed to assure that such problems are quickly detected. The out of tolerance conditions the Monitor is designed to detect will cause a continuous audible alarm condition, the alarm may be silenced with a reset button, but will resound every four hours until the cause has been corrected. The station owner/operator shall call for maintenance within 24 hours of the initial alarm sounding and shall maintain a log of all alarms events and corresponding maintenance actions. This log shall be kept on site at all times and shall contain, at a minimum, the following information:

Date and Time of Alarm.
Type of Alarm(s).
Date and Time of Call for Maintenance.
Date Maintenance Performed.
Maintenance Contractors Name and Phone Number.
Maintenance Performed
Test(s) conducted.
Test Results
Components(s) Repaired or Replaced.

Test results, which document failures, shall be submitted for the purpose of tracking the performance of the system. Such test results shall not be a basis for any enforcement action, provided that the final test conducted demonstrates compliance with the specifications of certification.

Whenever a district finds a station in an alarm condition during an inspection, and the alarm condition is less than 24 hrs old, or the system has been in an alarm condition for no more than 72 hours and a call for maintenance has been placed, the district shall issue a Notice to Comply pursuant to Health and Safety Code Section 41960.2 (e).

Whenever the district finds a record of an alarm condition, if the operator provides the district, within seven days, with adequate evidence that the system was either restored to good working order within three days of the initial alarm, or was shut down and did

not dispense fuel in the alarm condition, the operator shall not be subject to liability for the alarm condition provided any one of the following conditions are met:

The facility shut down and did not dispense fuel after the alarm sounded.

Maintenance, such as replacement of the pressure indicator, was performed to correct a failure of the Monitoring System, and there is no evidence of a loss of integrity in the high vacuum portion of the system or a failure of the system to collect vapor.

Failure to achieve the minimum vacuum level and/or a loss of integrity in the high vacuum portion of the system has not previously occurred within the last three months.

The system was in an alarm condition for one day, but the alarm condition did not occur on the following day, and diagnostic testing of the high vacuum portion found no loss of integrity with no maintenance being performed to the high vacuum portion of the system or to the vacuum source. Occasionally an alarm condition is caused by something other than a failure of the Healy System, such as a Phase I system on the delivery tank, or incorrect procedures used by the driver, may cause the storage tank to pressurize. The district shall determine if a defective cargo tank is the cause and shall investigate repeated occurrences.

Note: Episodes of venting which are recorded but which do not exceed ten hours in a 24-hour period are not an indication of failure of the system and shall not be the basis for enforcement action. Venting which occurs through the 2" WC pressure valve is very low in volume and may occur from time to time during normal operation.

The following may result in a Notice of Violation issued by the local district:

Failure to call for maintenance within 24 hours of the initial alarm.

Failure to maintain the log as specified above.

Failure to log in alarm and/or corresponding maintenance action within 7 days of alarm event.

More than one alarm condition in a three-month period for which maintenance was necessary to correct a leak in the high-vacuum portion of the system, and/or to raise the vacuum level above the required minimum level.

Week of: _____

Revised MassDEP May 2009

Healy 400 ORVR & 600 Nozzle System: Weekly Visual Inspection Checklist		If “*”, Date Repaired. Other Repair Notations
<p>A. Nozzles (See Diagrams 1 & 2, pgs. 18-19)</p> <p>1. Correct nozzles installed, as per Exhibit 1 of applicable CARB Order?</p> <p>2. Nozzle boots torn, loose, or missing?</p> <p>3. Nozzle spouts dented, loose, or leaking?</p> <p>4. Nozzles fail to shut off causing spillage?</p>	<p><input type="checkbox"/> Yes <input type="checkbox"/> No*</p> <p><input type="checkbox"/> Yes* <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes* <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes* <input type="checkbox"/> No</p>	
<p>B. Hoses, Swivels, Retractors, & Breakaways</p> <p>1. Hoses damaged or leaking?</p> <p>2. More than six inches of the hose surface touching the dispenser island when the nozzle is hanging in the dispenser holster? (See Diagram 3, page 20).</p> <p>3. Hose swivels turn freely minimizing hose damage?</p> <p>4. Retractor cable assemblies loose or damaged? (If required by dispenser design)</p> <p>5. Hose breakaways installed between the hose and the whip hose? (See Diagram 3, page 20)</p> <p>6. Hose breakaways installed in the proper direction?</p> <p>7. Hose breakaways leaking gasoline?</p>	<p><input type="checkbox"/> Yes* <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes* <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No*</p> <p><input type="checkbox"/> Yes* <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No*</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No*</p> <p><input type="checkbox"/> Yes* <input type="checkbox"/> No</p>	

C. Stage I Vapor Recovery		If “*”, Date Repaired. Other Repair Notations
1. Is a Two-Point Stage I Vapor recovery system installed? (Diagram 4, pg. 21)	<input type="checkbox"/> Yes <input type="checkbox"/> No*	
2. Vapor Caps:		
• Vapor caps installed on all product fill adaptors and dry break vapor adaptors?	<input type="checkbox"/> Yes <input type="checkbox"/> No*	
• Vapor caps firmly locked so they don't swivel freely?	<input type="checkbox"/> Yes <input type="checkbox"/> No*	
• Rubber seals installed underneath all vapor caps?	<input type="checkbox"/> Yes <input type="checkbox"/> No*	
• Rubber seals cracked, torn, or worn out?	<input type="checkbox"/> Yes <input type="checkbox"/> No*	
3. Dry Break Vapor Adaptors:		
• Dry break vapor adaptors tight and in good condition? (Diagram 5, pg. 22)	<input type="checkbox"/> Yes* <input type="checkbox"/> No	
• Gasoline fumes escaping from dry break vapor adaptors with the vapor caps removed?	<input type="checkbox"/> Yes* <input type="checkbox"/> No	
4. Product Fill Adaptors and Spill Buckets:		
• Product fill adaptors tight and in good condition?	<input type="checkbox"/> Yes* <input type="checkbox"/> No	
• Spilled gasoline emptied from the spill containment buckets after fuel delivery?	<input type="checkbox"/> Yes* <input type="checkbox"/> No	
• Gasoline, water, dirt, leaves, or debris in the spill containment buckets? (See Diagram 6, pg. 23)	<input type="checkbox"/> Yes* <input type="checkbox"/> No	

D. Monitor/Sensor Checklist		If “*”, Date Repaired. Other Repair Notations
<p>1. Healy Model 6280 System Monitor installed? (See Diagram 8, page 25). Please Note: Effective 3/1/1997, the Model 6169 System Monitor is no longer approved for use and must be replaced with Model 6280.</p> <p>2. Healy System Monitor installed in an easily visible and accessible location (monitor should be installed inside building, preferably near cash registers).</p> <p>3. Healy Model 6275 Pressure Vacuum (P/V) Vent Sensor installed on the aboveground tank vent pipes? (See Diagram 7, page 24).</p> <p>4. Two Pressure Vacuum (P/V) Vent Valves installed? (See Diagram 7, pg 24)</p>	<p><input type="checkbox"/> Yes <input type="checkbox"/> No*</p>	
E. System Monitor Maintenance and Recordkeeping Logs		
<p>1. System Monitor on and working?</p> <p>2. VENT light <u>on</u> indicating excessive vent emissions?</p> <p>3. VAC light <u>on</u> indicating vacuum failure?</p> <p>4. Audible alarm <u>on</u> indicating excessive vent emissions and/or a vacuum failure?</p> <p>5. History of Venting Episodes printed? (to print History, press both “Reset” buttons on the front of the System Monitor at the same time)</p> <p>6. Paper roll in the System Monitor printer?</p> <p>7. Monitor Maintenance Log Sheet fully completed for <u>each</u> VENT or VAC light episode, or audible alarm episode? (See Diagram 9, page 27)</p> <p>8. Maintenance Contractor called within 24 hours of a VENT or VAC light episode, or audible alarm episode?</p>	<p><input type="checkbox"/> Yes <input type="checkbox"/> No*</p> <p><input type="checkbox"/> Yes* <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes* <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes* <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No*</p>	

F. Vacuum Blower, Vacuum Vane Pump, Healy 9000 Mini-Jet (See Exhibit 1 of CARB Order for required vacuum source)		If “*”, Date Repaired. Other Repair Notations
1. Model 2000 Vacuum Blower, or a Model VP500 Central Vacuum Vane Pump installed?	<input type="checkbox"/> Yes <input type="checkbox"/> No*	
2. Healy Model 9000 Mini-Jet pump installed in the tank manhole cover?	<input type="checkbox"/> Yes <input type="checkbox"/> No*	
3. Blowers, Vane Pumps, and/or jet pumps working properly? Listen for unusual noises (grinding) when they are operating.	<input type="checkbox"/> Yes <input type="checkbox"/> No*	
G. Vapor Recovery System Repair As a result of weekly visual inspections, did you find any Stage II and/or Stage I system components incorrectly installed, non-functioning or broken? If <u>YES</u> , did you:		
1. Immediately repair the incorrectly installed, non-functioning or broken (broken) component(s)? <u>or</u> ,		<input type="checkbox"/> Yes* <input type="checkbox"/> No
2. If the broken component(s) could not be immediately repaired immediately stop dispensing gasoline through the broken component(s), post “Out of Service” signs on it, and repair it within 14 days? <u>or</u> ,		<input type="checkbox"/> Yes <input type="checkbox"/> No
3. If the broken component(s) could not be repaired within 14 days; immediately isolate the broken component(s) from the remainder of the Stage II system so that the remainder of the Stage II system is correctly operating and post “Out of Service” signs on the broken component(s) until repaired? <u>or</u> ,		<input type="checkbox"/> Yes <input type="checkbox"/> No
4. If the broken component(s) can not be isolated from the remainder of the Stage II system so that the remainder of the Stage II system is correctly operating; immediately stop <u>ALL</u> dispensing of gasoline at the facility and post “Out of Service” signs on <u>ALL</u> motor vehicle fuel dispensers until the component(s) was repaired?		<input type="checkbox"/> Yes <input type="checkbox"/> No

Weekly Stage II Inspector’s Name (Printed)

Weekly Stage II Inspector’s Signature

Date