State of California
AIR RESOURCES BOARD

Executive Order G-70-170

Certification of the
EZ-flo Rebuilt 5005 and 5015 Nozzles for use with
the Balance Phase II Vapor Recovery System

WHEREAS, the California Air Resources Board ("the Board" or "CARB") has established, pursuant to California Health and Safety Code sections 39600, 39601 and 41954, certification procedures for systems designed for the control of gasoline vapor emissions during motor vehicle fueling operations (Phase II vapor recovery systems) in its "Certification Procedures for Gasoline Vapor Recovery Systems at Service Stations" (the "Certification Procedures") as last amended December 4, 1981, incorporated by reference into Title 17, California Code of Regulations, Section 94001;

WHEREAS, the Board has established, pursuant to California Health and Safety Code sections 39600, 39601 and 41954, test procedures for determining the compliance of Phase II vapor recovery systems with emission standards in its "Test Procedures for Determining the Efficiency of Gasoline Vapor Recovery Systems at Service Stations" (the "Test Procedures") as last amended September 1, 1982, incorporated by reference into Title 17, California Code of Regulations, Section 94000;

WHEREAS, EZ-flo Nozzle and Equipment Company, a Division of Friedman Marketing Corporation (hereinafter referred to as "EZ-flo"), has requested certification of the rebuilt 5005 and 5015 nozzles as specifically identified in Exhibit 1 of this Order for use with the Balance Phase II vapor recovery systems;

WHEREAS, Section VIII-A of the Certification Procedures provides that the Executive Officer shall issue an order of certification if he or she determines that the vapor recovery system conforms to all of the requirements set forth in Sections I through VII of the Certification Procedures; and

WHEREAS, I, James D. Boyd, Air Resources Board Executive Officer, find that EZ-flo 5005 and 5015 nozzles used in conjunction with the Balance Phase II vapor recovery system conform with all the requirements set forth in Sections I through VII of the Certification Procedures, and result in a vapor recovery system which is at least 95 percent effective for attendant and/or self-serve use at gasoline service stations when used in conjunction with a Phase I vapor recovery system which has been certified by the Board.

NOW, THEREFORE, IT IS HEREBY ORDERED that the EZ-flo rebuilt 5005 and 5015 Nozzles and replacement parts, as specified in Exhibit 1, with the Balance Phase II vapor recovery systems, are certified to be at least 95 percent effective in attended and/or self-serve mode when used with a CARB-certified Phase I vapor recovery system. Fugitive emissions which may occur when the underground storage tanks are under positive pressure have not been quantified and were not included in the calculation of system effectiveness. **Compatibility of this system with the onboard refueling vapor recovery systems has not been evaluated.**

Exhibit 1 of this Order contains performance specifications and a description of the certified nozzles. All requirements and criteria not specific to the nozzles are contained in the certification Executive Orders for the specific Phase II systems, and only the specific criteria and requirements contained in this Order supersede those in the original Orders. Exhibit 2 contains a static pressure decay test procedure. Exhibit 3 contains a procedure for determining compliance with the maximum fuel dispensing rate. Exhibit 4 contains a section of the California Code of RegulationsTitle 17 which specifies what constitutes a defective nozzle.

IT IS FURTHER ORDERED that the maximum dispensing rate for installations of the EZ-flo nozzles shall not exceed ten (10.0) gallons per minute when only one nozzle associated with the product supply pump is operating as specified in Exhibit 3.

IT IS FURTHER ORDERED that compliance with the certification requirements and rules and regulations of the Division of Measurement Standards of the Department of Food and Agriculture, the State Fire Marshal's Office, and the Division of Occupational Safety and Health of the Department of Industrial Relations is made a condition of this certification.

IT IS FURTHER ORDERED that all rebuilt nozzles certified herein and all component parts manufactured by EZ-flo shall be clearly marked as shown in Figures 1 and 2 of Exhibit 1 so as to identify that they were provided by EZ-flo.

IT IS FURTHER ORDERED that EZ-flo rebuilt nozzles certified herein shall be installed consistent with the specifications contained in the applicable revision of Executive Order G-70-52.

IT IS FURTHER ORDERED that the following requirements are made a condition of certification. The EZ-flo Nozzles shall be installed only in facilities which are capable of demonstrating on-going compliance with the vapor integrity requirements of the local air pollution control district ("district") with jurisdiction over the installation. The owner or operator of the installation shall conduct, and pass, a static pressure decay test at least once in each twelve month period. The test shall be conducted in accordance with the procedure contained in Exhibit 2 of this Order. Alternative test procedures may be used if determined by the Executive Officer to yield comparable results.

IT IS FURTHER ORDERED that the EZ-flo Nozzles shall be 100 percent performance checked at the factory, including checks of the integrity of the vapor path and the proper functioning of all automatic shut-off mechanisms.

IT IS FURTHER ORDERED that the system, as installed, shall comply with the procedures and performance standards which the test installation was required to meet during certification testing. Local districts may adopt stricter procedures or performance standards in accordance with the California Health and Safety Code section 41954 (g). Failure to demonstrate compliance with district procedures or performance standards which are stricter than those imposed during certification testing does not per se constitute failure of the EZ-flo Nozzle to meet the terms and conditions of this Executive Order. If, in the judgment of the Executive Officer, a significant fraction of installations fail to meet the specifications of this certification, or if a significant portion of the vehicle population is found to have configurations which significantly impair the system's collection efficiency, the certification itself may be subject to modification, suspension or revocation.

IT IS FURTHER ORDERED that the certified EZ-flo Nozzles shall, at a minimum, be operated in accordance with the manufacturer's recommended maintenance intervals and shall use the manufacturer's recommended operation, installation, and maintenance procedures.

IT IS FURTHER ORDERED that the certified EZ-flo Nozzles shall be performance tested during installation for ability to dispense gasoline and collect vapors without difficulty in the presence of the station operator, owner or designee. The station operator, owner or designee shall be provided with copies of the installation and maintenance manuals for the EZ-flo Nozzles, to be maintained at the station, and shall also be provided with instructions in the proper use of the EZ-flo Nozzles, their repair and maintenance, where and how system and/or component replacements can be readily obtained.

IT IS FURTHER ORDERED that the certified EZ-flo Nozzles shall be warranted in writing, for at least one year, to the ultimate purchaser and each subsequent purchaser, that the vapor recovery system is designed, built and equipped so as to conform at the time of original installation or sale with the applicable regulations and is free from defects in materials and workmanship which would cause the vapor recovery system to fail to conform with applicable regulations. Copies of the manufacturer's warranty for the EZ-flo Nozzles shall be made available to the station manager, owner or operator.

IT IS FURTHER ORDERED that any alteration of the equipment, parts, design, or operation of the systems certified hereby is prohibited, and deemed inconsistent with this certification, unless such alteration has been approved by the Executive Officer or his/her designee.

Executed at Sacramento, California, this 22 day of February, 1996.

James D. Boyd
Executive Officer

Attachments

Executive Order G-70-170

Exhibit 1

Specifications for the EZ-flo Nozzles

Nozzle Component Specifications

1. The EZ-flo rebuilt 5005 nozzle consists of an Emco Wheaton 4000-series nozzle body, with internal parts manufactured by EZ-flo, and a redesigned bellows, faceplate and vapor valve mechanism. The EZ-flo 5015 is the same as the 5005, except with a shorter spout. Figures 1 and 2 illustrate the required nozzle identification locations for the EZ-flo 5005 and 5015 nozzles. EZ-flo 5005 and 5015 nozzles shall have:

   a) A nozzle body manufactured by Emco Wheaton

   b) Internal nozzle body parts manufactured and assembled by EZ-flo

   c) Nozzle front-end parts (i.e., spout, faceplate and bellows assembly with vapor valve) manufactured by EZ-flo.

Title 17 Nozzle Defects

Any certified rebuilt nozzle that is defective shall be immediately removed from service. Defects which substantially impair the effectiveness of the nozzle have been identified and listed in Title 17 of the California Code of Regulations. The relevant section of Title 17 is included in Exhibit 4 of this Order.

Nozzle Vapor Check Valves

The EZ-flo 5005 and 5015 Nozzles shall be equipped with a vapor check vapor valve that is designed to open the vapor path when the bellows is compressed. The maximum allowable leak rate for new vapor valves shall not exceed the following:

0.038 CFH at a pressure of two inches water column (2" wc).

The vapor check valve ensures proper operation of the system and prevents the ingestion of air into the system. Any nozzle with a defective vapor valve shall be immediately removed from service. The integrity of the system shall be restored by replacing the vapor valve or otherwise closing the vapor path as soon as practicable.

Dispensing Rate

The dispensing rate of the EZ-flo 5005 or 5015 nozzles installed in balance vapor recovery systems shall not exceed 10.0 gallons per minute. This shall be determined using the procedure contained in Exhibit 3.

FIGURE 1
EXECUTIVE ORDER G-70-170
CERTIFICATION OF EZ-flo REBUILT 5005

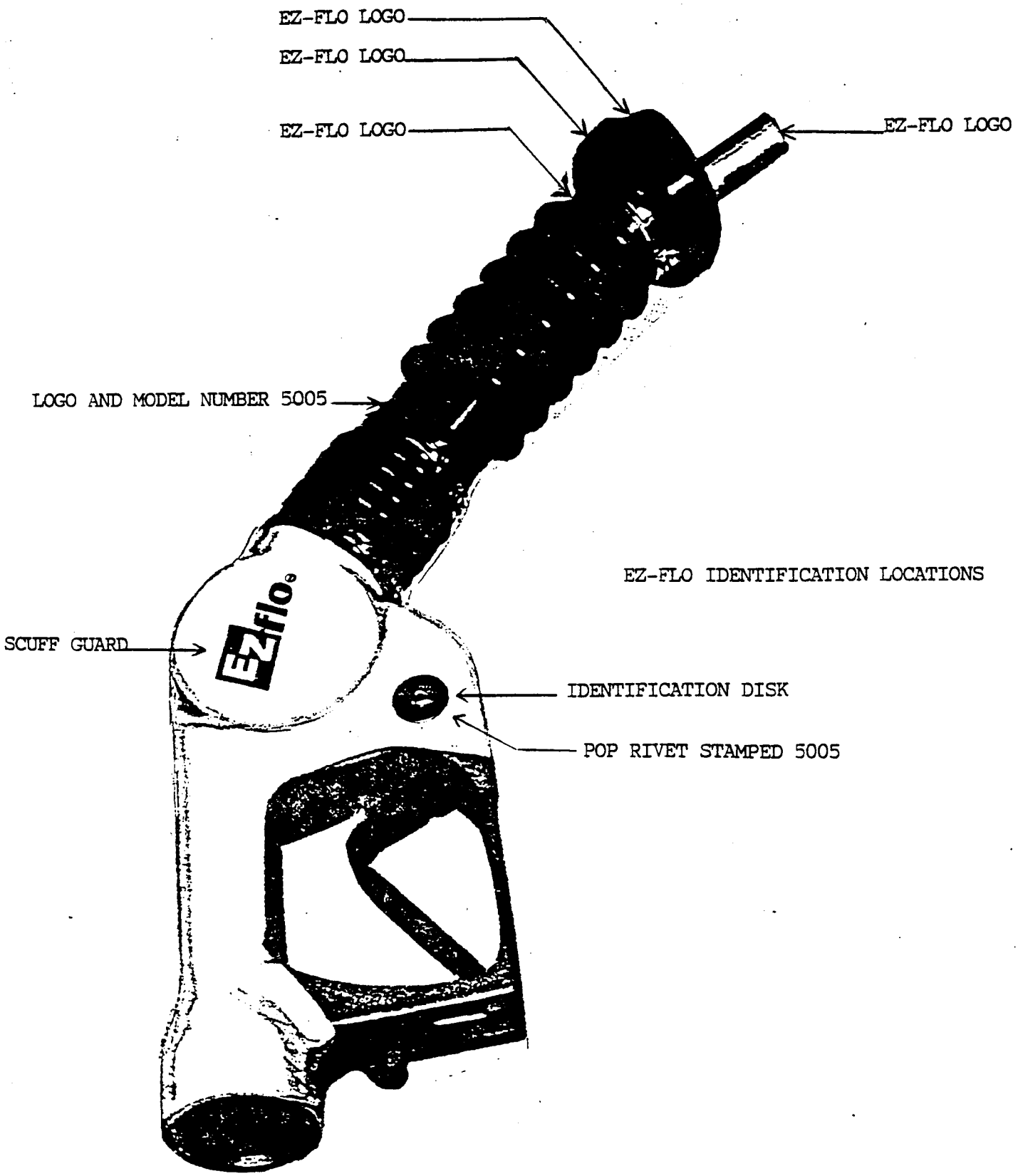
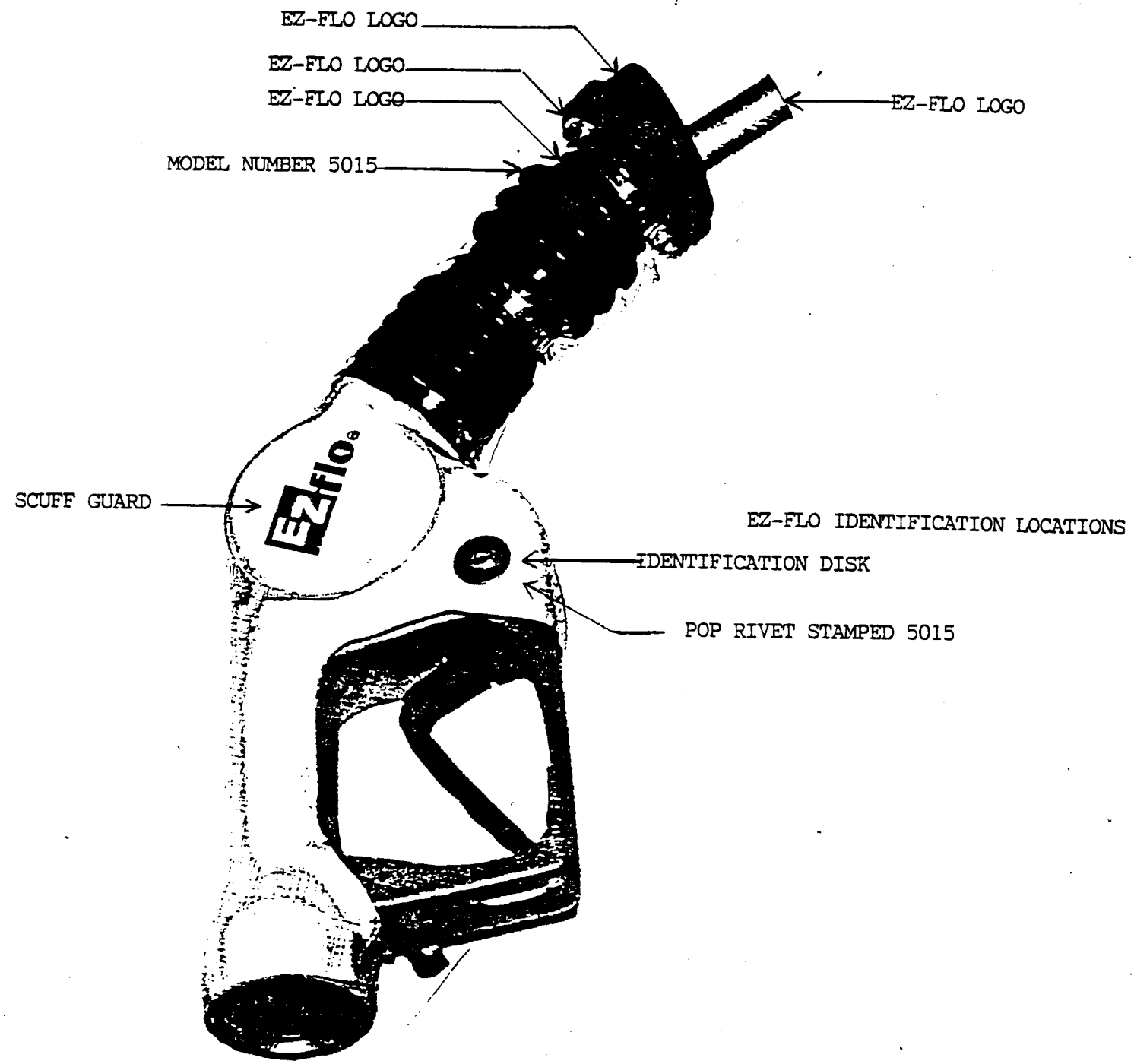


FIGURE 1
EXECUTIVE ORDER G-70-170
CERTIFICATION OF THE EZ-flo REBUILT 5015



Executive Order G-70-170

Exhibit 2

STATIC PRESSURE INTEGRITY TEST UNDERGROUND STORAGE TANKS*

1. Applicability

1.1 This test procedure is used to quantify the vapor tightness of vapor recovery systems installed at any gasoline dispensing facility (GDF) equipped with pressure/vacuum (P/V) valves, provided that the designed pressure setting of the P/V valves is a minimum of 2.5 inches water column (inches H_2O). Excessive leaks in the vapor recovery system will increase the quantity of fugitive hydrocarbon emissions and lower the overall efficiencies of both the Phase I and Phase II vapor recovery systems.

1.2 For those systems equipped with a P/V valve(s) allowed to have a designed cracking pressure less than 2.5 inches H_2O, the valve(s) shall be bagged to eliminate, from the test results, any flow contribution through the valve assembly. The valve/vent pipe connection, however, shall remain unobstructed during this test.

1.3 For those facilities not required to be equipped with a P/V valve(s), the vent pipe(s) shall be capped. For these installations, the test may be conducted at the vent pipe(s).

2. Principle

2.1 The entire vapor recovery system is pressurized with nitrogen to two (2.00) inches H_2O. The system pressure is then allowed to decay and the pressure after five (5) minutes is compared with an allowable value. The minimum allowable five-minute final pressure is based on the system ullage and pressure decay equations. For the purpose of compliance determination, this test shall be conducted after all back-filling, paving, and installation of all Phase I and Phase II components, including P/V valves, has been completed.

2.2 This test may be conducted at either a Phase II riser or a Phase I vapor coupler. If the integrity criteria specified in Section 6.8 are met, it is recommended that this test be conducted at the Phase I vapor coupler.

3. Range

3.1 If mechanical pressure gauges are employed, the full-scale range of the pressure gauges shall be 0-2.0, 0-1.0, and 0-0.50 inches H_2O column. Maximum incremental graduations of the pressure gauge shall be 0.05 inches H_2O and the minimum accuracy of the gauge shall be three percent of full scale. The minimum diameter of the pressure gauge face shall be 4 inches. An 0-2 inches H_2O inclined manometer, or equivalent, may be used provided that the minor scale divisions do not exceed 0.02 inches H_2O.

***Reference Bay Area Air Quality Management District Source Test Procedure ST-30**

3.2 If an electronic pressure measuring device is used, the full-scale range of the device shall not exceed 0-10 inches H_2O with a minimum accuracy of 0.5 percent of full-scale. A 0-20 inches H_2O device may be used, provided the equivalent accuracy is not less than 0.25 percent of full scale.

3.3 The minimum and maximum total ullages shall be 500 and 25,000 gallons, respectively. These values are exclusive of all vapor piping volumes.

3.4 The minimum and maximum nitrogen feed-rates, into the system, shall be one (1) and five (5) CFM, respectively.

4. Interferences

4.1 Introduction of nitrogen into the system at flowrates exceeding five (5.0) CFM may bias the results of the test toward non-compliance. Only gaseous nitrogen shall be used to conduct this test. Air, liquified nitrogen, helium, or any gas other than nitrogen **shall not be used** for this test procedure.

4.2 The results of this Static Pressure Integrity Test shall not be used to verify compliance if a Dynamic Back Pressure test was conducted within the twenty-four (24) hours prior to this test.

5. Apparatus

5.1 Nitrogen. Use commercial grade nitrogen in a high pressure cylinder, equipped with a two-stage pressure regulator and a one psig pressure relief valve.

5.2 Pressure Measuring Device. Use 0-2.0, 0-1.0, and 0-0.50 inches H_2O pressure gauges connected in parallel, a 0-2 inches H_2O manometer, or an electronic pressure measuring device to monitor the pressure decay in the vapor recovery system. The pressure measuring device shall, at a minimum, be readable to the 0.05 inches H_2O.

5.3 "T" Connector Assembly. See Figure 3-1 for example.

5.4 Vapor Coupler Integrity Assembly. Assemble OPW 633-A, 633-B, and 634-A adapters, or equivalent, as shown in Figure 3-2. If the test is to be conducted at the storage tank Phase I vapor coupler, this assembly shall be used prior to conducting the static leak test in order to verify the pressure integrity of the vapor poppet. The internal volume of this assembly shall not exceed 0.1 cubic feet.

5.5 Vapor Coupler Test Assembly. Use a compatible OPW 634-B cap, or equivalent, equipped with a cernter probe to open the poppet, a pressure measuring device to monitor the pressure decay, and a connection for the introduction of nitrogen into the system. See Figure 3-3 for example.

5.6 Stopwatch. Use a stopwatch accurate to within 0.2 seconds.

Figure 3-1

"T" Connector Assembly

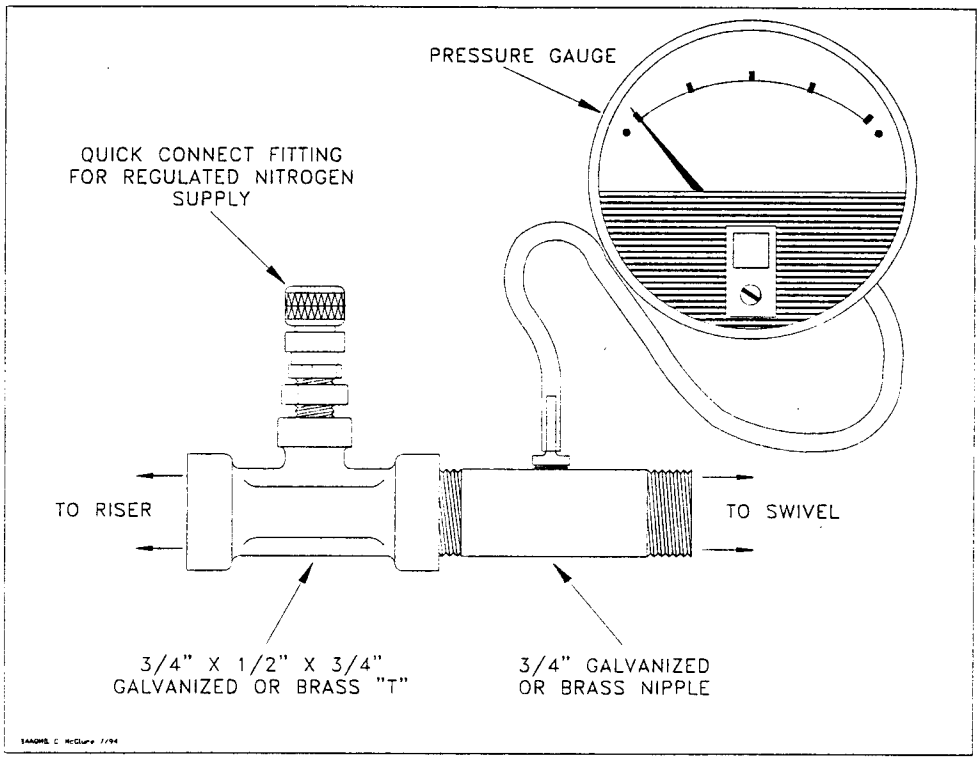


Figure 3-2

Vapor Coupler Integrity Assembly

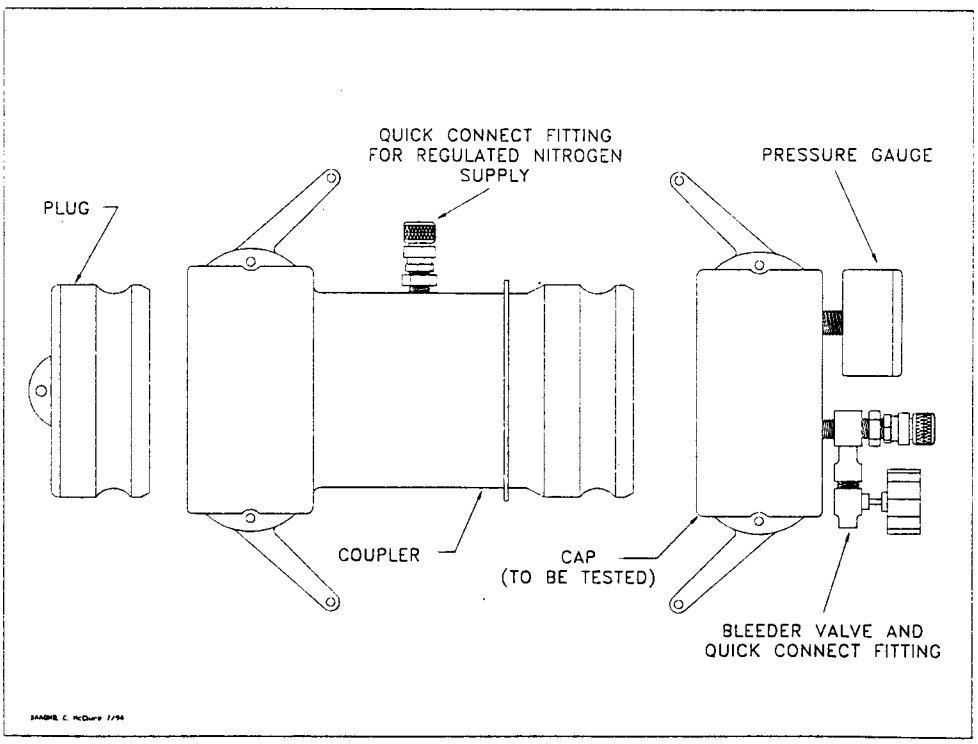
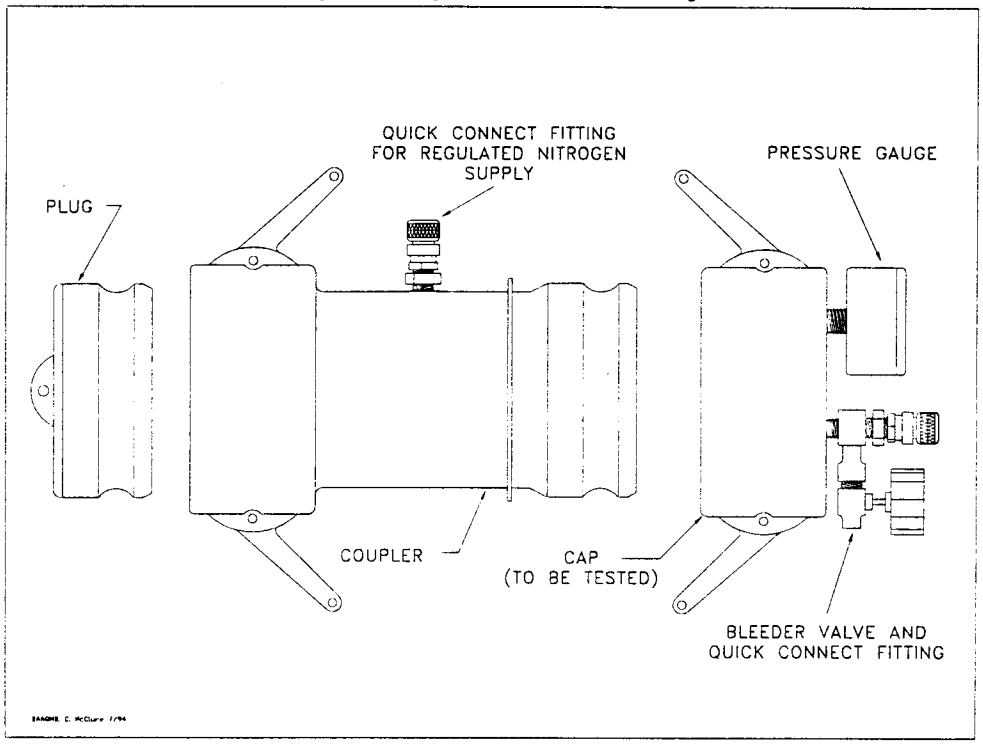


Figure 3-3

Vapor Coupler Test Assembly



5.7 Flowmeter. Use a Dwyer flowmeter, Model RMC-104, or equivalent, to determine the required pressure setting of the delivery pressure gauge on the nitrogen supply pressure regulator. This pressure shall be set such that the nitrogen flowrate is between 1.0 and 5.0 CFM.

5.8 Combustible Gas Detector. A Bacharach Instrument Company, Model 0023-7356, or equivalent, may be used to verify the pressure integrity of system components during this test.

5.9 Leak Detection Solution. Any liquid solution designed to detect vapor leaks may be used to verify the pressure integrity of system components during this test.

6. Pre-Test Procedures

6.1 The following safety precautions shall be followed:

6.1.1 Only nitrogen shall be used to pressurize the system.

6.1.2 A one psig relief valve shall be installed to prevent the possible over-pressurizing of the storage tank.

6.1.3 A ground strap should be employed during the introduction of nitrogen into the system.

6.2 Failure to adhere to any or all of the following time and activity restrictions shall invalidate the test results:

6.2.1 There shall be no Phase I bulk product deliveries into or out of the storage tank(s) within the three (3) hours prior to the test or during performance of this test procedure .

6.2.3 The headspace pressure in the tank shall be measured. If the pressure exceeds 0.50 inches H_2O, the pressure shall be carefully relieved in accordance with all applicable safety requirements. After a thirty minute period during which no product dispensing shall occur, and prior to introduction of nitrogen, the headspace pressure shall again be lowered, if necessary, to less than 0.50 inches H_2O.

6.3 Measure the gallons of gasoline present in each underground storage tank and determine the actual capacity of each storage tank from facility records. Calculate the ullage space for each tank by subtracting the gasoline gallonage present from the actual tank capacity. The minimum ullage during the test shall be 25 percent of the tank capacity or 500 gallons, whichever is greater. The total ullage shall not exceed 25,000 gallons.

6.4 This test shall be conducted with the dust cap removed from the vapor coupler. This is necessary to determine the vapor tightness of the Phase I vapor poppet. See Section 6.7 if this test is to be conducted at the Phase I vapor coupler.

6.4.1 Verify that the liquid level in the storage tank is at least four (4) inches above the highest opening at the bottom of the submerged drop tube.

6.5 If the Phase I containment box is equipped with a drain valve, the valve assembly may be cleaned and lubricated prior to the test. This test shall, however, be conducted with the drain valve installed and the manhole cover removed. See subsection 7.4.1 for further details regarding containment box drain valves.

6.6 If the test is to be conducted at a Phase II vapor riser, disconnect the dispenser end of one vapor recovery hose and install the "T" connector assembly (see Figure 3-1). Connect the nitrogen gas supply (do not use air) and the pressure measuring device to the "T" connector.

6.6.1 For those Phase II systems utilizing a dispenser mounted remote vapor check valve, the "T" connector assembly shall be installed on the vapor riser side of the check valve.

6.7 If this test is to be conducted at the Phase I vapor riser, the procedures set forth in subsections 6.7.1 and 6.7.2 shall be successfully completed prior to testing.

6.7.1 Connect the Vapor Coupler Integrity Assembly to the Phase I vapor coupler. Connect the Vapor Coupler Test Assembly. Connect the nitrogen supply to the assembly and carefully pressurize the internal volume of the assembly to two (2.00) inches H_2O. Start the stopwatch. Record the final pressure after one minute.

6.7.2 If the pressure after one minute is less than 0.25 inches H_2O, the leak rate through the Phase I vapor poppet precludes conducting the static leak test at this location. If the pressure after one minute is greater than or equal to 0.25 inches H_2O, the static leak test may be conducted at this location. This criteria assures a maximum leak rate through the Phase I vapor poppet of less than 0.0004 cubic feet per minute.

6.7.3 Disconnect the Vapor Coupler Integrity Assembly from the Phase I vapor coupler. If the requirements of subsection 6.7.2 were met, install the Vapor Coupler Test Assembly to the Phase I vapor coupler.

6.7.4 As an alternate to the requirements of subsections 6.7.1 through 6.7.3, leak detection solution may be used to verify the absence of vapor leaks through the Phase I vapor poppet. This alternative leak check is valid only for Phase I systems in which tanks are manifolded. The manifold may be at the vent pipes. Pressurize the system to two (2) inches H_2O and use the leak detection solution to verify a zero leak (absence of bubbles) condition at one of the vapor poppets on the Phase I system.

6.8 All pressure measuring device(s) shall be bench calibrated using either a reference gauge or incline manometer. Calibration shall be performed at 20, 50, and 80 percent of full scale. Accuracy shall be within two percent at each of these calibration points. Calibrations shall be conducted on a frequency not to exceed 90 days.

6.9 Use the flowmeter to determine the nitrogen regulator delivery pressures which correspond to nitrogen flowrates of 1.0 and 5.0 CFM. These pressures define the allowable range of delivery pressures acceptable for this test procedure. Also record which regulator delivery pressure setting, and the corresponding nitrogen flowrate, will be used during the test. As an alternative, the flowmeter may be connected, in-line between the nitrogen supply regulator and Vapor Coupler Test Assembly, during the test.

6.10 Use Equation 9.2 to calculate the approximate time required to pressurize the system ullage to the initial starting pressure of two (2.00) inches H_2O. This will allow the tester to minimize the quantity of nitrogen introduced into those systems which cannot comply with the static leak standards.

6.11 Attach the Vapor Coupler Test assembly to the Phase I poppet or the "T" connector assembly to the Phase II vapor riser. Read the initial pressure of the storage tank and underground piping. If the initial pressure is greater than 0.5 inches H_2O, carefully bleed off the pressure, in accordance with all applicable safety procedures, in the storage tank and underground piping to less than 0.5 inches H_2O column.

7. Testing

7.1 Open the nitrogen gas supply valve and set the regulator delivery pressure within the allowable range determined in Section 6.9, and start the stopwatch. Pressurize the vapor system (or subsystem for individual vapor return line systems) to **approximately 2.2 ± 0.1 inches H_2O** initial pressure. It is critical to maintain the nitrogen flow until the pressure stabilizes, indicating temperature and vapor pressure stabilization in the tanks. Check the test equipment using leak detecting solution or a combustible gas detector to verify that all test equipment is leak tight.

7.1.1 If the time required to achieve the initial pressure of two (2.00) inches H_2O exceeds twice the time derived from Equation 9.2, stop the test and use liquid leak detector, or a combustible gas detector, to find the leak(s) in the system. Failure to achieve the initial starting pressure within twice the time derived from Equation 9.2 demonstrates the inability of the system to meet the performance criteria. Repair or replace the faulty component(s) and restart the test pursuant to Section 7.1.

7.2 Close and disconnect the nitrogen supply. Start the stopwatch when the pressure has decreased to the initial starting pressure of two (2.00) inches H_2O. If the pressure does not decay to 2.00 inches H_2O within five minutes, use the bleeder valve on the vapor coupler test assembly to reduce the pressure to 2.00 inches H_2O.

7.3 At one-minute intervals during the test, record the system pressure. After five minutes, record the final system pressure. See Table 3-I (or Equation 9.1) to determine the acceptability of the final system static pressure results. For intermediate values of ullage in Tables 3-I, linear interpolation may be employed.

7.4 If the system failed to meet the criteria set forth in Table 3-I (or Equation 9-2), repressurize the system and check all accessible vapor connections using leak detector solution or a combustible gas detector. There should be no leaks whatsoever (absence of bubbles using leak detector solution) from any threaded fitting at the facility. If vapor leaks in the system are encountered, repair or replace the defective component and repeat the test starting with Section 6.11. Potential sources of leaks include nozzle check valves, pressure/vacuum relief valves, containment box drain valve assemblies, and plumbing connections at the risers.

7.4.1 If the facility fails to comply with the static leak test standards and the Phase I system utilizes a non-CARB-certified drain valve equipped containment box, which was installed prior to July 1, 1992, for which a CARB-certified replacement drain valve assembly is not marketed, the following two subsections shall apply:

7.4.1.1 The drain valve may be removed and the port plugged. Reset the system. If the facility complies with the static leak test standards under these conditions, the facility shall be considered complying with the requirements, provided that the manufacturer and model number of the containment box and the date of installation are submitted with the test results.

7.4.1.2 The criteria set forth in subsection 7.4.1.1 shall not apply after July 1, 1996.

7.5 After the remaining system pressure has been relieved, remove the "T" connector assembly and reconnect the vapor recovery hose, if applicable.

7.6 If the vapor recovery system utilizes individual vapor return lines, repeat the leak test for each gasoline grade. Avoid leaving any vapor return line open longer than is necessary to install or remove the "T" connector assembly.

7.7 If the applicable CARB Executive requires the test to be conducted with and without the containment box cover in place, repeat the test with the cover in place. In these cases clearly specify, on Form 3-1, which results represent the pressure integrity with and without the cover in place.

8. Post-Test Procedures

8.1 Use Table 3-I, or Equation 9.1, to determine the compliance status of the facility by comparing the final five-minute pressure with the minimum allowable final pressure.

9. Calculations

9.1 The minimum allowable five-minute final pressure, with an initial pressure of two (2.00) inches H_2O, shall be calculated as follows:

[Equation 9-1]

$$P_f = 2e^{\frac{-500.887}{V}} \quad \text{if N = 1-6}$$

$$P_f = 2e^{\frac{-531.614}{V}} \quad \text{if N = 7-12}$$

$$P_f = 2e^{\frac{-562.455}{V}} \quad \text{if N = 13-18}$$

$$P_f = 2e^{\frac{-593.412}{V}} \quad \text{if N = 19-24}$$

$$P_f = 2e^{\frac{-624.483}{V}} \quad \text{if N > 24}$$

Where:

N = The number of affected nozzles. For manifolded systems, N equals the total number of nozzles. For dedicated plumbing configurations, N equals the number of nozzles serviced by the tank being tested.
P_f = The minimum allowable five-minute final pressure, inches H_2O
e = A dimensionless constant approximately equal to 2.718
2 = The initial starting pressure, inches H_2O

9.2 The minimum time required to pressure the system ullage from zero (0) to two (2.00) inches H_2O gauge pressure shall be calculated as follows:

$$t_2 = \frac{V}{[1522]F} \qquad \text{[Equation 9-2]}$$

Where:

t_2 = The minimum time to pressurize the ullage to two inches H_2O, minutes
V = The total ullage affected by the test, gallons
F = The nitrogen flowrate into the system, CFM
1522 = The conversion factor for pressure and gallons

9.3 If the policy of the local district requires an allowable tolerance for testing error, the minimum allowable five-minute final pressure, including testing error, shall be calculated as follows:

$$P_{f-E} = 2 - \left[1 + \left(\frac{E}{100}\right)\right]\left[408.9 - \left(P_f + 406.9\right)\right] \qquad \text{[Equation 9-3]}$$

Where:

P_{f-E} = The minimum allowable five-minute final pressure including allowable testing error, inches H_2O

E = The allowable testing error, percent

P_f = The minimum allowable five-minute final pressure calculated in Equations 9-1 or 9-2, inches H_2O

2 = The initial starting pressure, inches H_2O

408.9 = Atmospheric pressure plus the initial starting pressure, inches H_2O

406.9 = Atmospheric pressure, inches H_2O

10. Reporting

10.1 The calculated ullage and system pressures for each five-minute vapor recovery system test shall be reported as shown in Form 3-1. Be sure to include the Phase II system type, whether the system is manifolded, and the one-minute pressures during the test.

Distribution:	Executive Order G-70-170 FORM 3-1 **Summary of Source Test Results**	Report No.: _____ Test Date: _____ Test Times: Run A: _____ Run B: _____ Run C: _____

Source Information		Facility Parameters
GDF Name and Address	GDF Representative and Title GDF Phone No. ( )	PHASE II EQUIPMENT System: Balance NOZZLE Type/Number
Permit Conditions	Source: GDF Vapor Recovery System GDF # _____ A/C # _____	Comments Manifolded? Y or N

Operating Parameters:

Number of Nozzles Served by Tank #1 _____ Number of Nozzles Served by Tank #3 _____

Number of Nozzles Served by Tank #2 _____ Total Number of Gas Nozzles at Facilty _____

Applicable Regualtions:	FOR OFFICE USE ONLY:

Source Test Results and Comments:

TANK #:	1	2	3	TOTAL
1. Product Grade				
2. Actual Tank Capacity, gallons				
3. Gasoline Volume, Gallons				
4. Ullage, gallons (#2 -#3)				
5. Phase I System Type				
6. Initial Test Pressure, Inches H_2O **(2.0)**				
7. Pressure After 1 Minute, Inches H_2O				
8. Pressure After 2 Minutes, Inches H_2O				
9. Pressure After 3 Minutes, Inches H_2O				
10. Pressure After 4 Minutes, Inches H_2O				
11. **Final Pressure After 5 Minutes, Inches H_2O**				
12. Allowable Final Pressure from Table 3-I				
13. Test Status [**Pass** or **Fail**]				

Test Conducted by:	Test Company Name _____ Address _____ City _____	Date and Time of Test:

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TABLE 3-1

INITIAL PRESSURE OF 2 INCHES OF H_2O

MINIMUM PRESSURE AFTER 5 MINUTES, INCHES OF H_2O

ULLAGE, GALLONS	NUMBER OF AFFECTED NOZZLES				
	01-06	07-12	13-18	19-24	> 24
500	**0.44**	**0.41**	**0.38**	**0.36**	**0.34**
550	0.50	0.47	0.45	0.42	0.40
600	**0.56**	**0.53**	**0.51**	**0.48**	**0.46**
650	0.62	0.59	0.56	0.54	0.51
700	**0.67**	**0.64**	**0.62**	**0.59**	**0.56**
750	0.73	0.70	0.67	0.64	0.61
800	**0.77**	**0.74**	**0.71**	**0.69**	**0.66**
850	0.82	0.79	0.76	0.73	0.70
900	**0.86**	**0.83**	**0.80**	**0.77**	**0.75**
950	0.90	0.87	0.84	0.81	0.79
1,000	**0.93**	**0.91**	**0.88**	**0.85**	**0.82**
1,200	1.06	1.03	1.01	0.98	0.95
1,400	**1.16**	**1.14**	**1.11**	**1.09**	**1.06**
1,600	1.24	1.22	1.19	1.17	1.15
1,800	**1.31**	**1.29**	**1.27**	**1.24**	**1.22**
2,000	1.37	1.35	1.32	1.30	1.28
2,200	**1.42**	**1.40**	**1.38**	**1.36**	**1.34**
2,400	1.46	1.44	1.42	1.40	1.38
2,600	**1.49**	**1.47**	**1.46**	**1.44**	**1.42**
2,800	1.52	1.51	1.49	1.47	1.46
3,000	**1.55**	**1.54**	**1.52**	**1.50**	**1.49**
3,500	1.61	1.59	1.58	1.57	1.55
4,000	**1.65**	**1.64**	**1.63**	**1.61**	**1.60**
4,500	1.69	1.68	1.67	1.65	1.64
5,000	**1.72**	**1.71**	**1.70**	**1.69**	**1.67**
6,000	1.76	1.75	1.74	1.73	1.72
7,000	**1.79**	**1.79**	**1.78**	**1.77**	**1.76**
8,000	1.82	1.81	1.80	1.80	1.79
9,000	**1.84**	**1.83**	**1.83**	**1.82**	**1.81**
10,000	1.85	1.85	1.84	1.84	1.83
15,000	**1.90**	**1.90**	**1.89**	**1.89**	**1.89**
20,000	1.93	1.92	1.92	1.92	1.91
25,000	**1.94**	**1.94**	**1.94**	**1.93**	**1.93**

Note: For manifolded Phase II Balance Systems, the **"Number of Affected Nozzles"** shall be the total of all gasoline nozzles. For dedicated return configurations, the **"Number of Affected Nozzles"** shall be the total of those nozzles served by the tank being tested.

Executive Order G-70-170

Exhibit 3

TEN GALLON PER MINUTE LIMITATION COMPLIANCE VERIFICATION PROCEDURE

Compliance with the 10 gallon per minute flowrate limitation shall be determined with the following methodology. It is recommended that the maximum dispensing rate through each nozzle/hose assembly be verified.

1) The facility uses identical models of hoses, nozzles, and breakaways:

Check the nozzle closest to the submersible turbine pump (STP) for each gas grade, or STP, at the facility. With no other dispensing occurring which uses the same STP, dispense gas into a vehicle or approved container. Dispensing shall be conducted in the "hand-held, wide-open" mode. Using a stopwatch accurate to at least 0.2 seconds, begin timing the dispensing rate after at least one gallon has been dispensed. This one gallon buffer is necessary due to the "slow-start" nature of some dispensers. Determine the time required to dispense 2, 3, 4, or 5 gallons of gasoline. The facility shall be deemed in compliance with the 10 gallon per minute limitations if the elapsed time meets, or exceeds, the times shown in Table 1. If the dispensing rate exceeds the allowable limit, a CARB-certified flow limiting device shall be installed.

2) The facility uses different models of hoses, nozzles, or breakaways

Due to potential differences in pressure drops through the various components, each of the nozzle/hose assemblies shall be tested for maximum dispensing rates. Using the same criteria as above, determine the maximum dispensing rate through each nozzle/hose assembly. If the maximum dispensing rate exceeds the 10 gpm limit, a CARB-certified flow limiting device shall be installed.

Table 1
Verification of 10 gpm

Product Dispensed, gallons	Minimum Allowable Time, seconds
2.0	11.8
3.0	17.7
4.0	23.6
5.0	29.5

Note: The times have been corrected to allow for the accuracy of the measurement.

Executive Order G-70-170

Exhibit 4

For the purposes of Section 41960.2 of the Health and Safety Code, the following constitute equipment defects in systems for the control of gasoline vapors resulting from motor vehicle fueling operations which substantially impair the effectiveness of the systems in reducing air contaminants:

(a) Absence or disconnection of any component required to be used in the Executive Order(s) that certified the system.

(b) A vapor hose which is crimped or flattened such that the vapor passage is blocked, or the pressure drop through the vapor hose exceeds by a factor of two or more the requirements in the system certified in the Executive Order(s) applicable to the system.

(c) A nozzle boot which is torn in one or more of the following manners:

1. Triangular-shaped or similar tear 1/2 inch or more to a side, or hole 1/2 inch or more in diameter or,

2. Slit 1 inch or more in length.

(d) Faceplate or flexible cone which is damaged in the following manner:

1. For balance nozzles and for nozzles for aspirator and eductor assist type systems, damage shall be such that the capability to achieve a seal with a fill pipe interface is affected for 1/4 of the circumference of the faceplate (accumulated).

2. For nozzles for vacuum assist-type systems, more than 1/4 of the flexible cone missing.

(e) Nozzle shutoff mechanisms which malfunction in any manner.

(f) Vapor return lines, including such components as swivels, antirecirculation valves and underground piping, which malfunction or are locked, or restricted such that pressure drop through the lines exceeds by a factor of two or more requirements specified in the Executive Order(s) that certified the system.

g) Vapor processing unit which is inoperative or severely malfunctioning.

(h) Vacuum producing device which is inoperative or severely malfunctioning.

(i) Pressure/vacuum relief valves, vapor check valves, or dry breaks which are inoperative.

(j) Any equipment defect which is identified in an Executive Order certifying a system pursuant to the Certification Procedures incorporated in Title 17, California Code of Regulations, as substantially impairing the effectiveness of the system in reducing air contaminants.