

Executive Order VR-208-A
Emco Phase II EVR System with Hirt Thermal Oxidizer Including INCON ISD

Exhibit 2
System Specifications

This exhibit contains the installation, maintenance and compliance standards and specifications that apply to the Emco Phase II EVR System Including ISD installed at a gasoline dispensing facility (GDF). All components must be installed, maintained, and operated in accordance with the specifications in the **ARB Approved Installation, Operation and Maintenance Manual (IOM)**. Installation, maintenance and repair of system components, including removal and installation of such components in the course of any required tests, shall be performed by technicians certified by the appropriate manufacturer. Additional certifications may be required in accordance with local district requirements. Provided that there are no other local district requirements, a GDF owner/operator can remove and install nozzles, hose swivels, curb hoses, safe brakes, and whip hoses without a manufacturer certification.

Nozzle

1. A vapor bellows shall be installed on the nozzle at the base of the spout, as shown in **Figure 2B-1**.
2. The Emco Model A4005EVR 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. The performance of the nozzle vapor valve can be determined by items 2.1 or 2.2.
 - 2.1. The maximum allowable leak rate for the nozzle vapor path, as determined by TP-201.2B, shall not exceed 0.07 cubic feet per hour (CFH) at a pressure of two inches water column (2.00" WC)
 - 2.2. Verification of the integrity of the vapor valve can be performed on installed nozzles using the nozzle bag test procedure in Exhibit 7.
3. The gasoline flow rate of the nozzle shall be between six (6.0) and ten (10.0) gallons per minute as determined by the applicable provisions of section 6 or 7 of Exhibit 5 or by direct observation for 30 seconds minimum at the maximum hand held position.

Vapor Collection

1. The system pressure drop from the nozzle to the UST, as determined by TP-201.4 (Methodology 1) and Exhibit 6, shall not exceed the following:

0.35 inches WC at a flow rate of 60 CFH of Nitrogen; and
0.62 inches WC at a flow rate of 80 CFH of Nitrogen.

Coaxial Hoses

1. The maximum length of the curb hose, hose swivel, safe break valve, and whip hose combined shall not exceed fifteen feet as measured from the base of the nozzle to the end of dispenser adapter or dispenser, as appropriate (reference Exhibit 1 Figure 1A-2).
2. The liquid removal rate shall not be less than five milliliters per gallon (5 ml/gal) as determined by Exhibit 5 when tested with a gasoline flow rate between six (6.0) and ten (10.0) gallons per minute. Liquid removal requirement is applicable to all grade of gasoline.
3. All hoses shall have a permanent marking indicating the liquid pick-up location.
4. Any hose configuration is allowed when installed in accordance with the IOM section titled "Hoses".

Safe Break Valve

1. The Emco Safe Break Valves are non-reconnecting and shall be replaced following a drive-off.

Flow Limiter

1. No flow limiter is allowed for this system.

Hirt VCS 100 Thermal Oxidizer

1. The processor vapor integrity shall demonstrate compliance with the static pressure decay criteria of TP-201.3 and Exhibit 4.
2. Unless there is maintenance or testing being conducted on the processor, the processor shall be on (power lamp is lit) and in the automatic vapor processor mode. The ball valve on the inlet of the processor shall be locked in the open position shown in **Figure 2B-2** and the 3-Way Valve handle shall be pointing down in the Normal Operating Position (Opened to UST Ullage) shown in Figure 2B-3 during normal processor operation. The handles of the ball valves shall not be removed.
3. Piping to the processor shall be sloped 1/8" per foot minimum toward the vent line(s).
4. The VCS 100 Indicator Panel shall be installed at a location that is most likely to be occupied by the station attendant during normal station operation (i.e., cash register).
5. The processor shall activate when the processor is exposed to an atmospheric pressure input and the Processing lamp at the Indicator Panel shall light within three (3) minutes as determined by Exhibit 8.

6. When the processor is exposed to an atmospheric pressure input, the OVERPRESSURE lamp at the Indicator Panel shall light within sixty two (62) minutes as determined by Exhibit 8.
7. If the OVERPRESSURE lamp lights, the system is not in proper working order. The GDF owner/operator shall immediately take the following actions:
 - a. record the date and time the OVERPRESSURE lamp lit in the station's maintenance and alarm records;
 - b. investigate the cause of the OVERPRESSURE light as provided by section 8 of the Installation, Operations, and Maintenance Manual. Record results of inspections, maintenance, and/or testing conducted in the station's maintenance and alarm records; and if necessary,
 - c. record the date and time when the GDF owner/operator called the maintenance contractor for service.

Pressure/Vacuum Vent Valves for Storage Tank Vents

1. All P/V vent valves shall be an ARB certified P/V valve for a Phase I system.
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.

Vapor Recovery Piping Configurations

NOTE: Vapor Return Piping shall meet the requirements specified in section 4.11 of CP-201.

1. Vapor Return and Vent Lines

For facilities installed on or after April 1, 2003, all vapor return and vent lines shall be a minimum nominal internal diameter of 2 inches from the dispensers or the vent stacks 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.

Note: Facilities permitted by a local district prior to April 1, 2003 shall be required to meet the three inch diameter standard only upon facility modification which involves the addition, replacement, or removal of 50 percent or more of the buried vapor piping.

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.

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 inch (1").

Note: The dispenser-to-riser connection is defined as the piping connection between the dispenser piping and the inlet of the dispenser riser. A vapor shear valve may also be part of the riser connection.

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, item 1 of the Vapor Collection section.
5. No product shall be dispensed from any fueling point at a GDF installed with the Emco Phase II EVR System if there is a vapor line that is disconnected and open to the atmosphere.
6. No liquid condensate traps are allowed with this system.

Dispensers

1. The dispenser vapor piping must be sized adequately to meet the maximum pressure drop requirement, item 1 of the Vapor Collection section.
2. Dispenser vapor piping shall be installed so that any liquid in the lines will drain toward the dispenser riser.
3. The INCON ISD System software version 1.1.0 does not support multi-hose (six pack) dispenser configurations and is therefore limited for use with unihose dispensers.

Phase I System

1. The Phase I system shall be an ARB-certified system that demonstrates compliance with the static pressure decay test criteria contained in TP-201.3 and Exhibit 4.

Maintenance Records

1. Each GDF operator owner shall keep records of alarms and maintenance performed at the facility. Such records shall be maintained on site in accordance with district requirements or policies. The records shall include alarm date and time, nature of the alarm, troubleshooting, maintenance or repair performed to validate and/or correct alarms, component, or system failures, date when maintenance or repair was conducted, name and Certified Technician Identification Number of individual conducting maintenance or test, affiliation, and telephone number. Additional information may be required in accordance with local district requirements. An example of a GDF maintenance and alarm record is shown in Figure 2B-4.
2. Maintenance shall be conducted in accordance with the Scheduled Maintenance section of the ARB Approved Installation, Operation, and Maintenance Manual.

Vapor Recovery Equipment Defects

The following is deemed a defect for the affected fueling point(s) or system.

1. The fueling point shall be removed from service when more than 0.38 square inches of a nozzle boot face material is missing (e.g., a triangular or similar shape in which greater than 7/16 inches of the boot face circumference is missing (accumulated)).
2. The fueling point shall be removed from service when there is slit across seven (7) consecutive bellows convolutions as determined by direct measurements.
3. The fueling point shall be removed from service when a hose is found to have greater than 150 ml of gasoline in the vapor side as determined by sections 6.1 to 6.5 of Exhibit 5. Note: Prior to draining gasoline from the vapor side of the Goodyear hose, use Emco tool P/N 494635EVR and plug the fuel spout. **Do not activate dispenser when draining gasoline from the vapor side of the Goodyear hose.**
4. The fueling point shall be removed from service when the Emco system pressure drop exceeds the following conditions as determined by Methodology 1 of TP-201.4 and Exhibit 6:

0.95 inches WC at a flow rate of 60 CFH of Nitrogen; and
1.52 inches WC at a flow rate of 80 CFH of Nitrogen.
5. The fueling point shall be removed from service when the dispensing rate is greater than ten (10) gallons per minute (gpm) or less than five (5) gpm as determined by the applicable provisions of section 6 or 7 of Exhibit 5 or by direct observation for 30 seconds minimum at the maximum hand held position.
6. The fueling point shall be removed from service when any hose has a visible opening as determined by direct observation.
7. The fueling point shall be removed from service when the insertion interlock mechanism allows dispensing when the bellows is uncompressed as determined by direct observation or GDF-09 (see Vapor Recovery Defects List).
8. The fueling point shall be removed from service when the nozzle automatic liquid shut-off mechanisms malfunction in any manner as determined by EPO No. 26-F (See Vapor Recovery Defects List) or direct observation.
9. The fueling point shall be removed from service when any nozzle has a defective vapor valve as determined by Exhibit 7 or when the vapor valve has a leak rate that exceeds 0.07 cubic feet per minute at a pressure of two (2) inches WC as determined by TP-201.2B.
10. The fueling point or system shall be removed from service when any component required by this Executive Order is absent, installed improperly or disconnected as determined by direct observation.

Figure 2B-1
Emco Model A4005EVR Nozzle

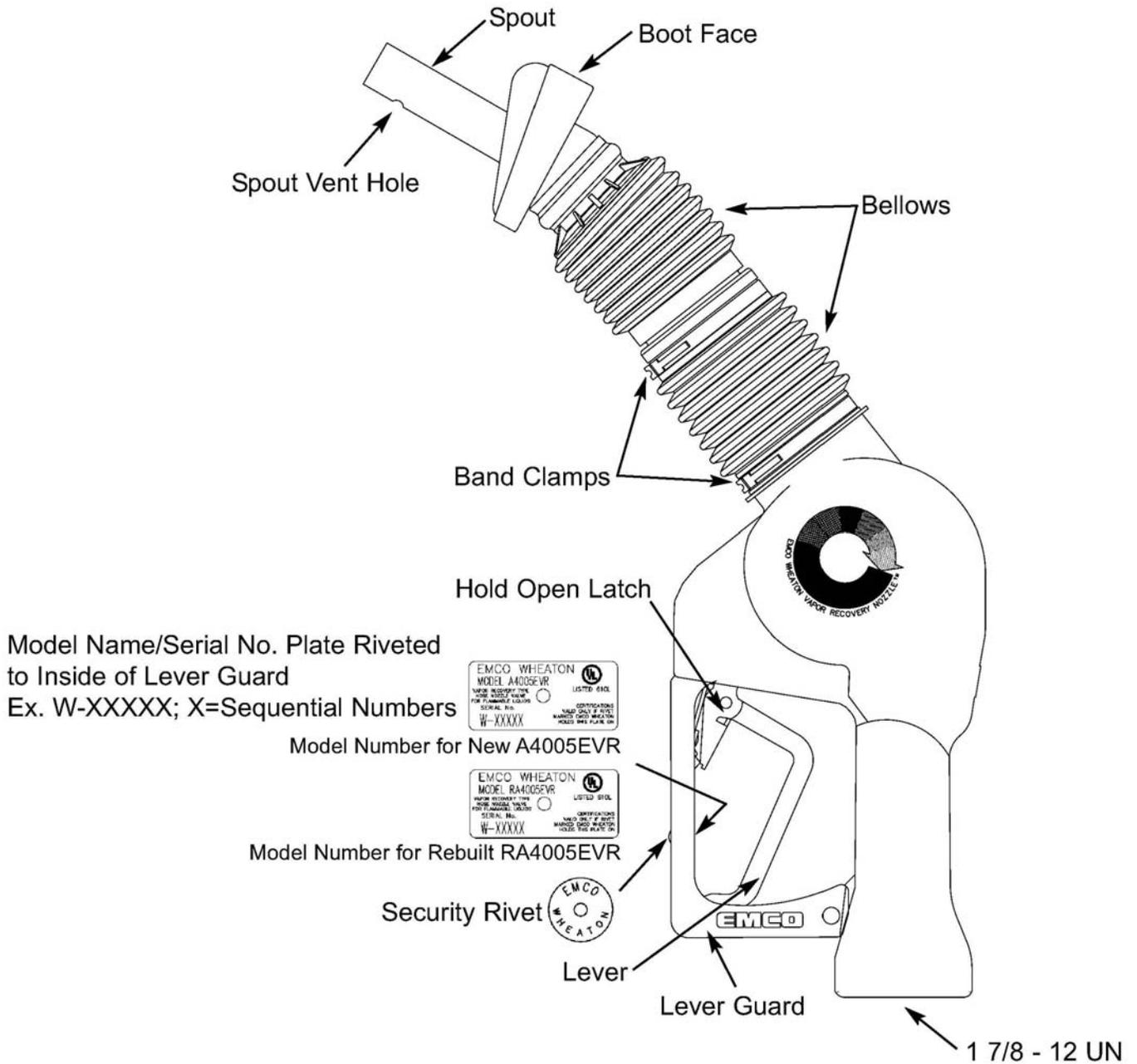


Figure 2B-2
Hirt VCS 100 Thermal Oxidizer
(shown in normal operation)

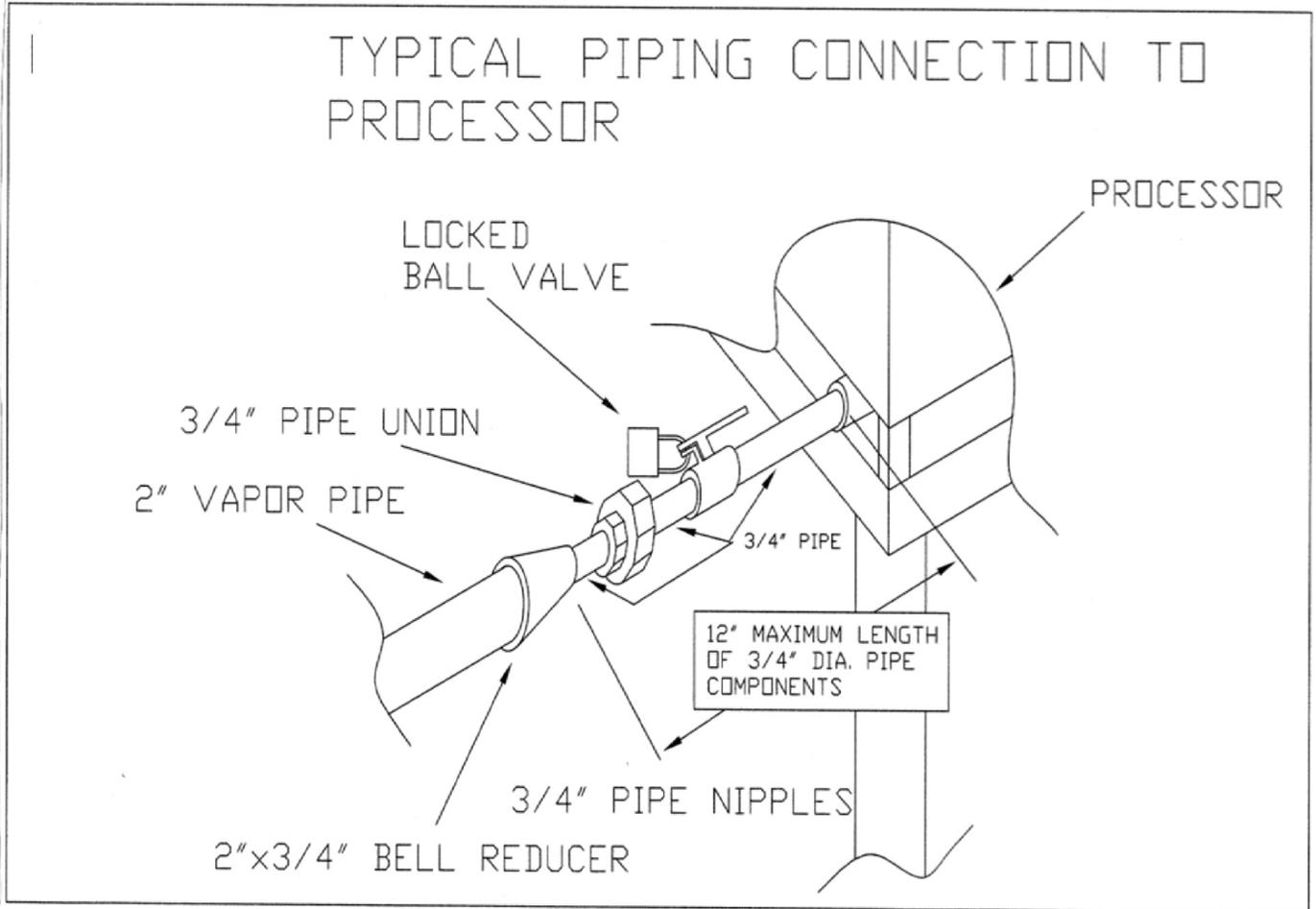


Figure 2B-3
Hirt VCS 100 Thermal Oxidizer
(3-Way Valve shown in normal operation)

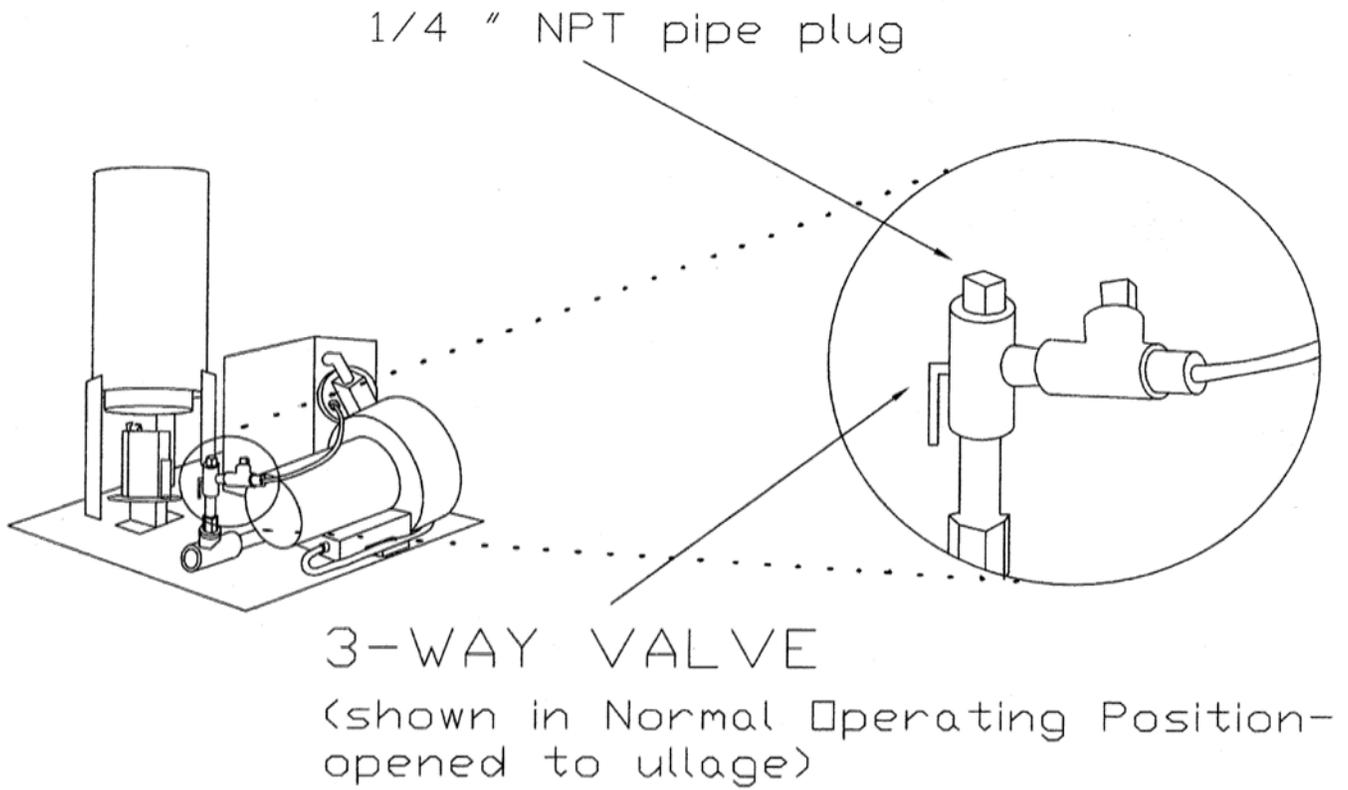


Figure 2B-4
Example of a GDF Maintenance Record and Alarm History Record

Date of Maintenance/ Test/Inspection/Failure/ alarm history (including date and time of maintenance call)	Repair Date To Correct Test Failure	Maintenance/Test/Inspection Performed and Outcome/Action Taken in Response to Alarm	Affiliation	Name and Technician ID Number of Individual Conducting Maintenance or Test	Telephone Number

INCON Vapor Recovery Monitoring (VRM) System Specifications

Console & VRM Software Version Number

The ISD audible alarms shall be installed at a location that is most likely to be heard by the station attendant during normal station operation (e.g., cash register). The console shall be installed in a location that allows the Ethernet or RS232 port (COMM 1) to be easily accessible, and if applicable, per district requirements, for use at anytime. A vacant RS232 serial port (COMM 1) shall always be available to electronically download reports.

The presence of VRM and the VRM software version number can be verified on the Console touchscreen screen by pressing the VRM Icon key or by printing a VRM Daily or Monthly Report. See **Figure 2B-5** for the verification instructions.

The Console must have a printer.

The Console is equipped with password security features which prohibit the ability to make changes to the system. Instructions and passwords shall be maintained on site in accordance with air district requirements and shall be available to the air district upon request.

The INCON ISD System software version 1.1.0 does not support multi-hose (six pack) dispenser configurations and is therefore limited for use with unihose dispensers.

Operability Test Procedure

The INCON VRM operability test procedures are provided in Exhibits 10 and 11, and in the VRM Operability Testing section of the **ARB Approved Installation, Operation and Maintenance Manual**, shall be used at GDF sites to determine the operability of the INCON VRM system to comply with applicable performance standards and performance specification in CP- 201. Testing the VRM equipment in accordance with this procedure will verify the proper selection, setup and operation of the Console sensors and interface modules.

Vapor Flow Meter

The INCON VRM system requires one Vapor Flow Meter per dispenser installed via the ARB Approved Vapor Flow Meter Manual 000-2144, Rev. A. The Vapor Flow Meter shall be installed into dispensers listed in Exhibit 1 of this Executive Order in accordance with the **ARB Approved Installation, Operation and Maintenance Manual**. The Vapor Flow Meter is an intrinsically safe sensor that is wired to the Console Probe Module via a conduit dedicated to low-voltage sensors. **Figure 2B-7** shows the Vapor Flow Meter. **Figure 2B-9** shows the installation configuration.

Vapor Pressure Sensor

The INCON VRM system requires one Vapor Pressure Sensor per GDF installed into one of the dispensers located with the shortest run to the underground storage tanks (If a row of dispensers are equal distance from the tank pad, any dispenser can be used) in

accordance with the **ARB Approved Installation, Operation and Maintenance Manual**. The Vapor Pressure Sensor shall be installed into dispensers listed in Exhibit 1 of this Executive Order. The Vapor Pressure Sensor is an intrinsically safe sensor that is wired to the Console's 4-20mA Module via a conduit dedicated to low-voltage sensors. **Figure 2B-8** shows a Vapor Pressure Sensor illustration. **Figure 2B-10** shows the installation configuration.

Dispenser Interface Module (DIM)

Existing Dispenser Interface Modules or DIM communication cards are used to interface to the dispenser Point of Sale (POS) or controller system to gather fuel transaction data. The ISD Operability Test Procedure provided in Exhibit 11 and in the **ARB Approved Install, Operators, and Maintenance Manual** can be used to verify the proper selection and setup of the Dispenser Interface Module.

Tank Inventory Probe Sensor

Existing Tank Inventory Probe sensors (one per gasoline storage tank) are used to measure the amount of vapor space in the Underground Storage Tanks (USTs). The ISD Operability Test Procedure can be used to verify the proper selection and setup of the Tank Inventory Probes. See **Figure 2B-11** for a typical Tank Inventory Probe Sensor.

Shutdown Control

The Console must be wired per the INCON VRM Install, Operators, and maintenance Manual 000-2058, Rev. C of the **ARB Approved Installation, Operation and Maintenance Manual** such that it shall automatically prohibit the dispensing of fuel through shutdown of individual dispensers during a CP-201 ISD failure alarm.

Console Modules

The VRM Operability Test Procedure in Exhibit 11 and in the INCON VRM Install, Operators, and Maintenance Manual 000-2058, Rev C of the **ARB Approved Installation, Operation, and Maintenance Manual** shall be used to verify the proper selection and setup of the Console Modules.

Training Program

All INCON contractors must successfully complete the applicable Franklin Fueling Systems training program before they can install, startup, and service INCON Console equipment. Contractors must have up-to-date Level 1 & 2 certifications to install and startup the TS Console. Contractors must have an up-to-date Level 5 certification to install, startup and service the VRM system. The schedule, fee and registration information for the Authorized Service Contractor (ASC) training program can be found at <http://www.franklinfueling.com>.

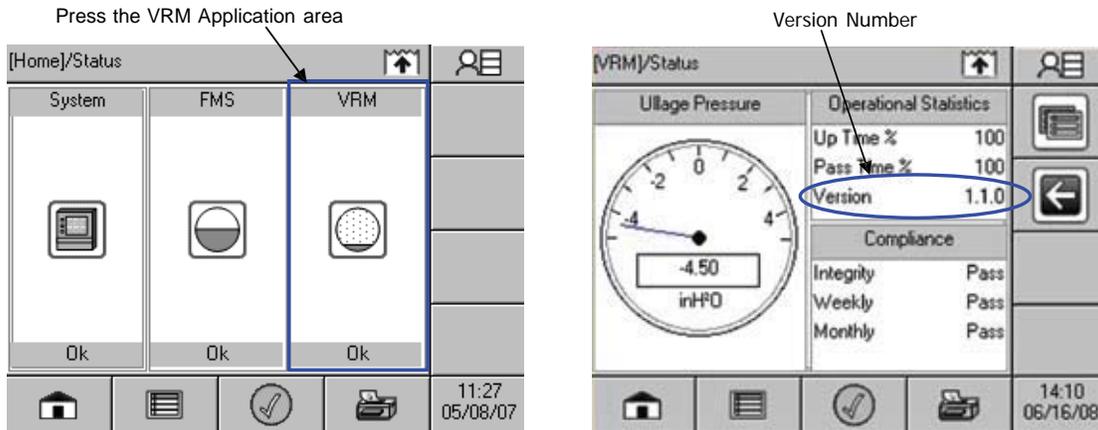
A list of certified contractors with current console and VRM training will be available at the Franklin Fueling web page, www.franklinfueling.com.

Maintenance

The console, including interface modules, do not require scheduled maintenance. The VRM System uses a Self-Test Monitoring feature that is designed to verify proper selection, setup and operation of the console and sensors. There is no recommended maintenance, inspection nor calibration for the Vapor Flow Meter or the Vapor Pressure Sensor. Servicing should be performed in response to warning or alarm conditions.

Figure 2B-5
Finding the INCON VRM Version Number

Version number on the LCD:



Version number on the VRM Daily Report or Monthly Report:

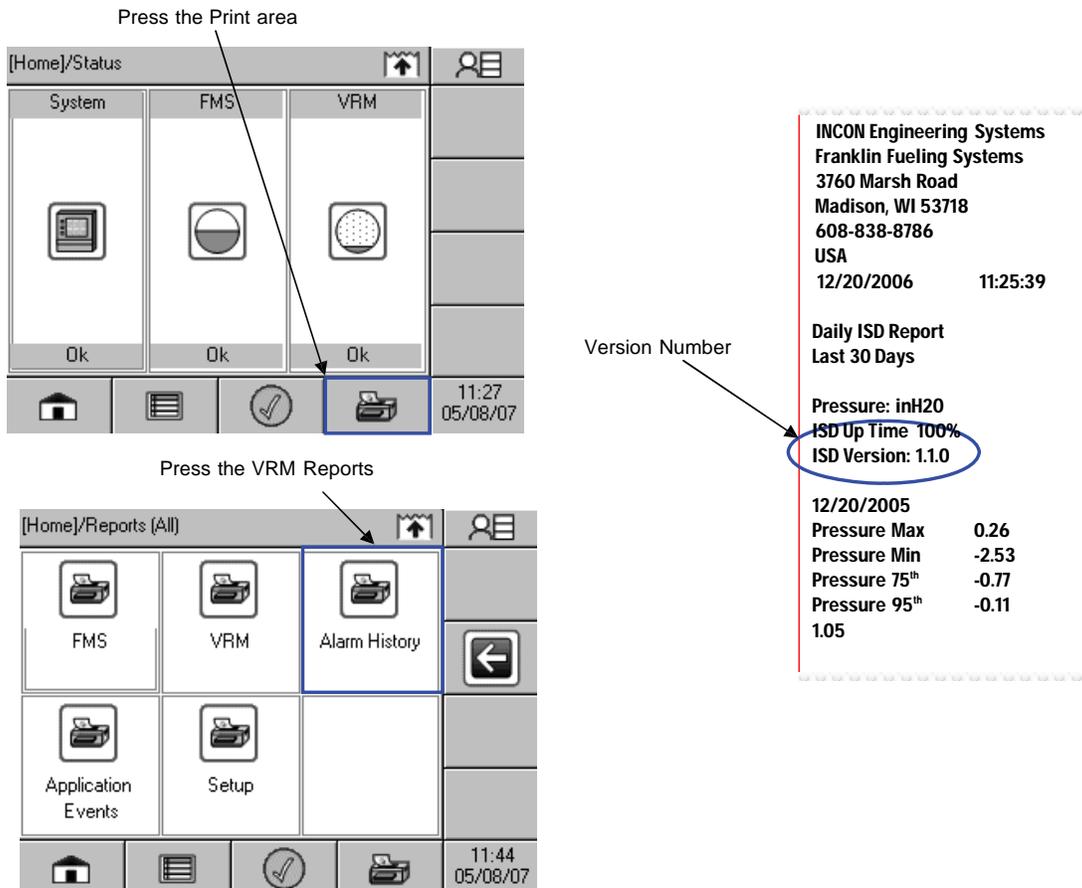
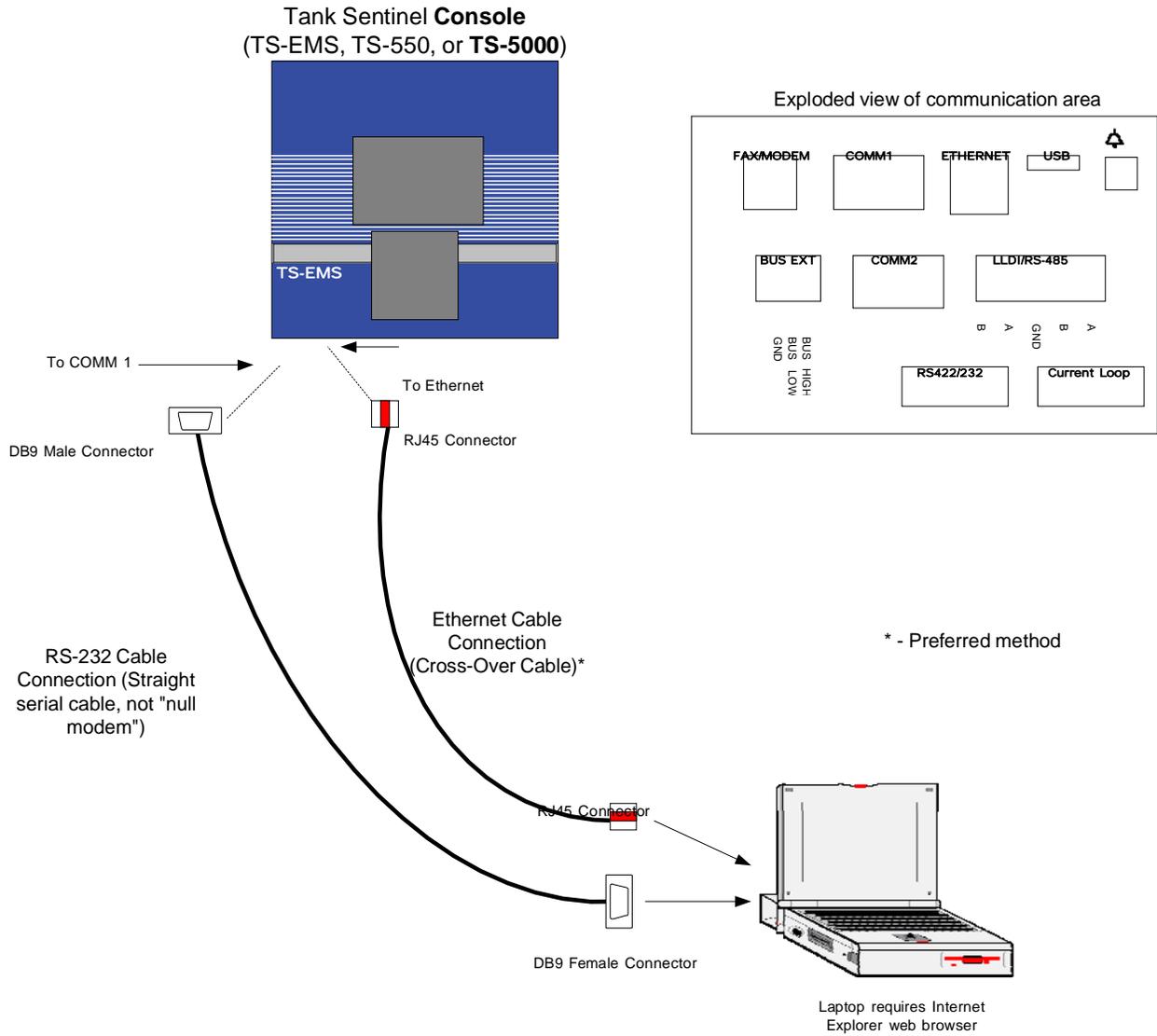


Figure 2B-6
Standard Tank Sentinel Console



**Figure 2B-7
INCON TS-VFM
Vapor Flow Meter**



**Figure 2B-8
INCON TS-VPS
Vapor Pressure Sensor**



Figure 2B-9
Typical Installation of the INCON Vapor Flow Meter

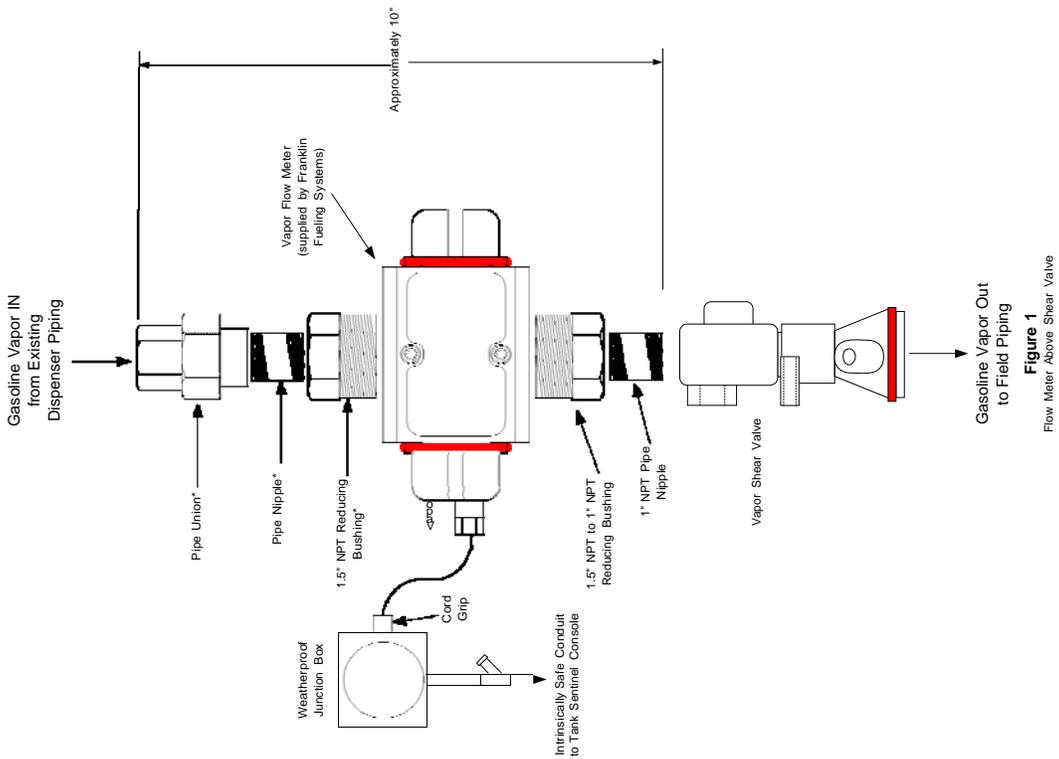
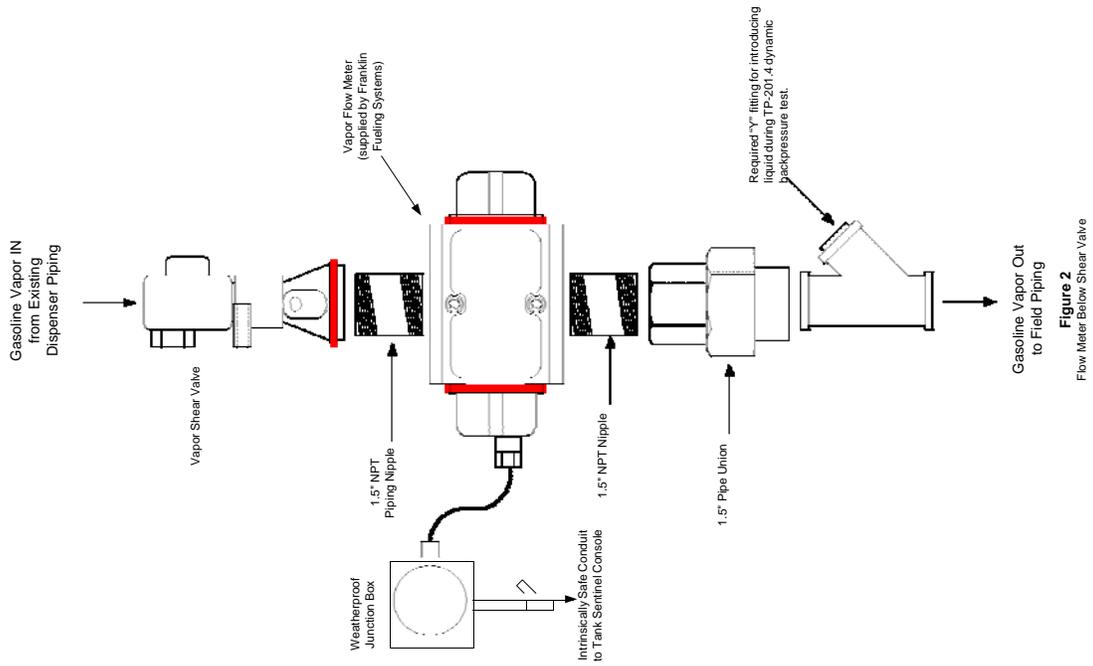


Figure 2B-10
Typical Installation of the INCON Vapor Pressure Sensor

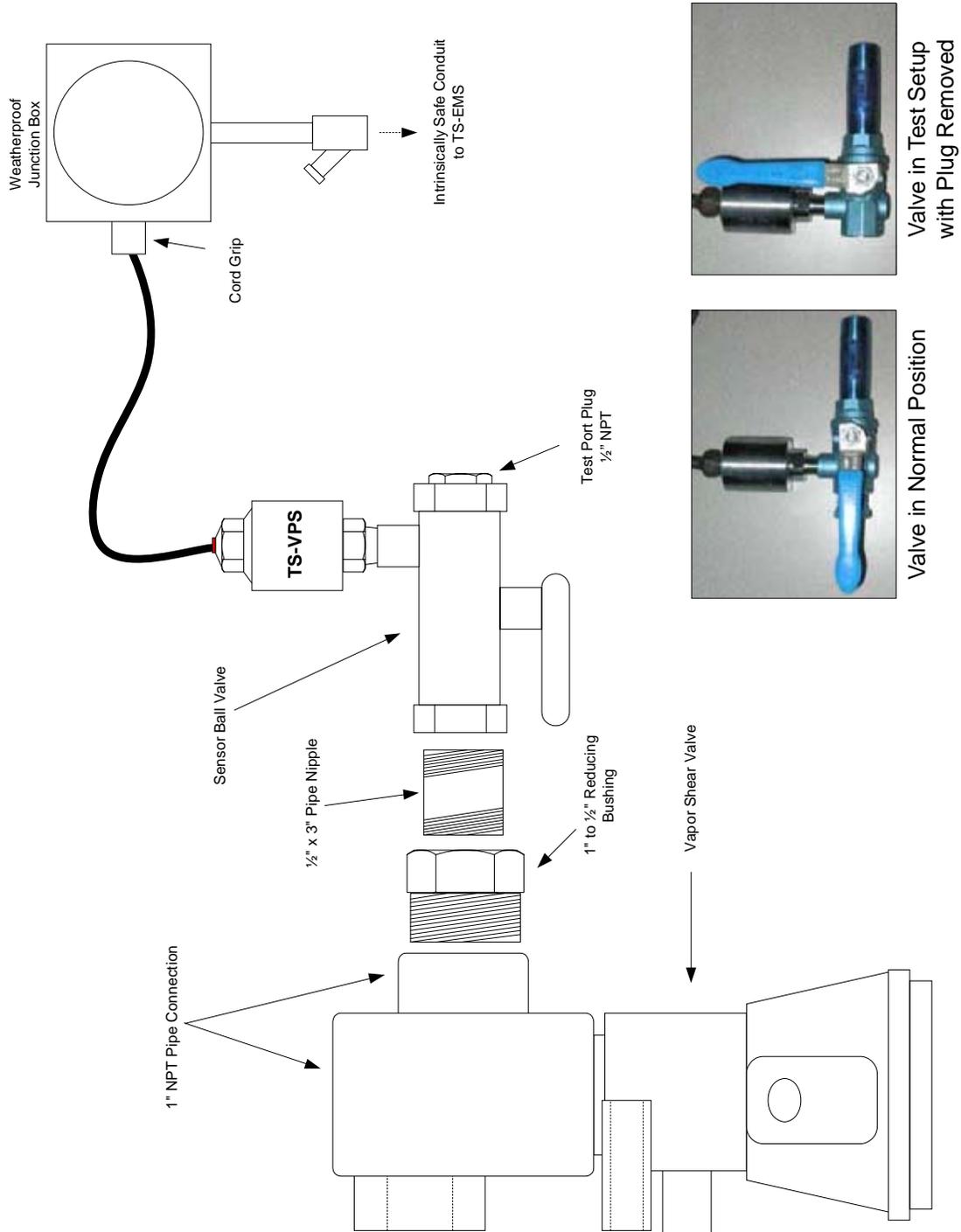


Figure 2B-11
Tank Inventory Probe Sensor

