



Wayne

Ovation Dispensers

INSTALLATION OPERATION





DANGER

READ THIS MANUAL BEFORE YOU BEGIN

Dispensers have both electricity and a hazardous, flammable and potentially explosive liquid. Failure to follow the below precautions and the Warning and Caution instructions in this manual may result in serious injury. Follow all rules, codes and laws that apply to your area and installation.

SAFETY PRECAUTIONS - INSTALLATION AND MAINTENANCE

Always make sure ALL power to the dispenser is turned OFF before you open the dispenser cabinet for maintenance. Physically lock, restrict access to, or tag the circuit breakers you turn off when servicing the dispenser. Be sure to trip (close) the emergency valve(s) under the dispenser BEFORE beginning maintenance.

Make sure that you know how to turn OFF power to the dispenser and submersible pumps in an emergency. Have all leaks or defects repaired immediately.

EQUIPMENT PRECAUTIONS

Be sure to bleed all air from product lines of remote dispensers and prime suction pumps before dispensing product, otherwise, damage to the equipment may occur. Always use the approved method for lifting the dispenser. Never lift by the nozzle boot, sheet metal, valance, etc., otherwise equipment damage or personal injury may occur.

HOW TO CONTACT WAYNE

Trouble with the installation and operation of the dispenser should be referred to your authorized Wayne service personnel or Wayne Technical Support (1-800-926-3737).

INDICATORS AND NOTATIONS



DANGER

Danger indicates a hazard or unsafe practice which, if not avoided, will result in severe injury or possibly death.



WARNING

Warning indicates a hazard or unsafe practice which, if not avoided, may result in severe injury or possibly death.



CAUTION

Caution indicates a hazard or unsafe practice which, if not avoided, may result in minor injury.

NOTE:

Important information to consider, otherwise, improper installation and/or damage to components may occur.

Ovation Series Dispensers

Installation & Operation

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1 INTRODUCTION

1.1 Dispensers Covered

This manual describes the installation and operation of blending and non-blending Ovation model dispensers.

Non-blending dispensers do not combine base products. These dispensers are multi-grade dispensers unless otherwise noted.

Blending dispensers combine the base products to provide a blended grade or grades. Blending dispensers have two base products labeled LO and HI. These base products may be dispensed individually and/or combined into one or more blended grades.

Ovation series dispensers incorporate the use of the iGEM computer, iMeter Module and Intelligent Pulser components.

The iGEM computer uses software that is uploaded by a laptop. Computer function settings necessary for dispenser startup are included in this manual. If additional information on function settings and statistics is required, refer to the 3/Vista Service manual, part number 920525, which contains service information on components common to both 3/Vista and Ovation model dispensers. For service information on components that are unique to the Ovation dispenser, refer to the Service Addendum for Ovation Dispensers, part number 920525-002.

Any questions concerning installation and operation of the dispenser that are not covered in this manual should be referred to your authorized Wayne service personnel or Wayne Technical Support (1-800-926-3737).

1.2 Local, State, and Federal Codes

All tanks (both underground and above ground), piping and fittings, foot valves, leak detectors, corrosion protection devices, wiring, venting systems, etc., must be installed in accordance with the manufacturer's instructions and in compliance with local and regional building codes and requirements pertaining to service stations (or other locations where the dispenser may be installed).

These requirements may include references to the National Electrical Code (NFPA 70), Automotive and Marine Service Station Code (NFPA 30A); Flammable and Combustible Liquids Code (NFPA 30); Code of Federal Regulations, Title 40, Section 280 (40 CFR 280); United States Environmental Protection Agency (U.S. EPA) Technical Regulations of 9-23-88 and U.S. EPA Financial Responsibility Regulations of 10-26-1988.

Where local requirements do not specify applicable codes, Wayne recommends using the codes listed above. These codes are comprehensive and detailed, often requiring interpretation to cover unusual situations, and, therefore, the associated handbooks (where applicable) should also be consulted. (The handbooks are also available from the same sources.)

Due to the variety of locations encountered, further information on installation cannot be dealt with in this document except as the codes relate directly to the installation of the dispenser. Therefore, it is strongly recommended that **a qualified engineer or contractor familiar with local regulations and practices be consulted before starting installation.**

Pertinent information and codes are available from the following sources:

Association for Composite Tanks (ACT)

North State Street
Suite 720
Chicago, IL 60602
(301) 355-1307 (for information requests)

Fiberglass Petroleum Tank and Pipe Institute

One SeaGate, Suite 1001
Toledo, OH 43604
(419) 247-5412

National Fire Protection Association (NFPA)

One Batterymarch Park
Quincy, MA 02269-9101
(617) 770-3000

Petroleum Equipment Institute (PEI)

Box 2380
Tulsa, OK 74101
(918) 494-9696

Underwriters Laboratories Inc.

333 Pfingsten Road
Northbrook, IL 60062
(312) 272-8800

United States Environmental Protection Agency

Office of Underground Storage Tanks
401 M St., SW (05-400WF)
Washington, DC 20640
(703) 308-8850 (Underground Storage Tanks)

U. S. Department of Labor,

Occupational Safety and Health Administration (OSHA)
Washington, DC 20402

- Call OSHA at (202) 523-8148 to determine specific needs; OSHA rules are covered by Title 29 of the Code of Federal Regulations (29 CFR.)
- Order OSHA publications from:
Government Printing Office (GPO)
Washington, DC 22304
(202) 783-3238

American Petroleum Institute (API)

1220 L Street, N.W.
Washington, DC 20005
(202) 682-8000

**National Assoc. Corrosion Engineers
(NACE)**

Box 218340
Houston, TX 77218
(713) 492-0535

**National Leak Prevention Association
(NLPA)**

685 Fields Ertel Road
Cincinnati, OH 45241
(513) 489-9844 or 1-(800) 543-1838

Steel Tank Institute

P. O. Box 4020
Northbrook, IL 60065
(312) 498-1980

Underwriters Laboratories of Canada

7 Crouse Road
Scarsborough, Ontario, Canada N1R3A9
(416) 757-3611

Western Fire Chiefs Association

5360 South Workman Mill Road
Whittier, CA 90601
(213) 699-0541

NOTE: Other regulatory codes may apply. Consult your local and regional code requirements to determine which codes are applicable for your location.

1.3 SAFETY PRECAUTIONS

NFPA 30A states that:

“When maintenance to Class I dispensing devices becomes necessary and such maintenance may allow the accidental release or ignition of liquid, the following precautions shall be taken before such maintenance is begun:

- Only persons knowledgeable in performing the required maintenance shall perform the work.
- All electrical power to the dispensing device and pump serving the dispenser shall be shut off at the main electrical disconnect panel.
- The emergency shut-off valve at the dispenser, if installed, shall be closed.
- All vehicle traffic and unauthorized persons shall be prevented from coming within 20 ft.(6 m) of the dispensing device. ”



WARNING

Electric shock hazard! More than one disconnect switch may be required to de-energize the dispenser for maintenance and servicing. Use a voltmeter to make sure ALL circuits in the dispenser are de-energized. Failure to do so may result in serious injury.

Lockout/Tagout requirements of the U. S. Dept. of Labor, Occupational Safety and Health Administration (OSHA) may also apply. Refer to Title 29, Part 1910 of the Code of Federal Regulations (29CFR1910), *Control of Hazardous Energy Source (Lockout/Tagout)*.

NOTE: To prevent damage to components located in the hydraulic cabinet, dispenser doors should be in place during rainy and/or icy weather conditions. Also, check the nozzle boot flipper for freedom of movement. If ice has formed on the flipper, it should be cleared to prevent unnecessary damage.

1. Reprinted with permission from NFPA 30A-90, *Automotive and Marine Service Station Codes*, Copyright ©1990, National Fire Protection Association, Quincy MA 02269. This reprinted material is not the complete and official position of the National Fire Protection Association on the referenced subject, which is represented only by the standard in its entirety.

2 INSTALLATION

2.1 Inspect the Equipment

Examine the shipment immediately upon arrival to make certain there has been no damage or loss in transit. Make sure that all the component parts, including keys and optional equipment (if any), are accounted for. Check and save the Packing Slip, Bill of Lading, Invoice, and all other documents included in the shipment. Damaged or lost equipment must be reported to the carrier. Any damage or loss that may occur in transit is not covered under the Wayne/Dresser Warranty.

2.2 Island Construction, Dispenser Anchoring, and Piping

Product lines must avoid the creation of vapor in the lines and deliver a minimum pressure of 25 psi at the dispenser inlet when all dispensers at the station dispensing the same product are operating.

A concrete foundation must be provided for the dispenser. Do not pour concrete around product lines or electrical conduit risers.

Anchor bolts must be installed in the island to allow the dispenser to be bolted down in accordance with NFPA requirements. The base of the dispenser contains six bolt hole slots (5/8 inch by 2 inch) for anchoring the dispenser to the island. Position the anchor bolts in accordance with the dimensions given on the appropriate Installation Instruction drawing in Appendix B.

Vertical supply risers and electrical conduits must be located per the Installation Instruction for the appropriate model. Proper height must be maintained to avoid undue stress on the dispenser.

For convenience, a 6" high pedestal is available to install under the dispenser base at locations where there are no islands. The pedestal, shown in Figure 2-1, can be ordered separately. See the complete assembly drawing 888813 in Appendix B.

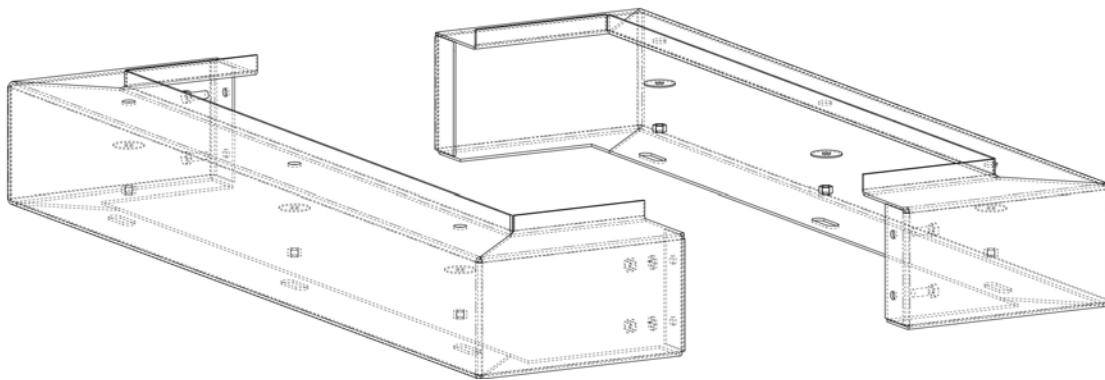


Figure 2-1 Pedestal. *The pedestal can be ordered separately as needed.*

2.3 Emergency Shut-off Valves



WARNING

For remote dispensers, a Listed¹, rigidly anchored emergency shut-off valve must be installed, in accordance with the manufacturer's instructions, in each supply line at the base of each dispenser. For a typical emergency valve installation see Figure 2-2. Failure to install the proper emergency shut-off valve will present a hazardous condition that could result in serious injury.

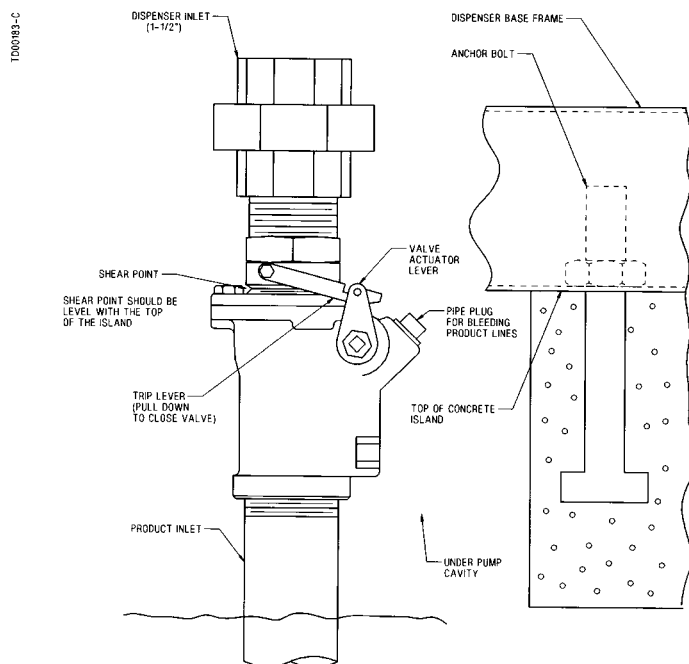


Figure 2-2 Typical Emergency Valve Installation. *The Emergency valve is designed to close the product line due to shock or fire. The shear section, shown above, functions if the dispenser is knocked out of position.*

2.4 Vapor Return Piping

NFPA 30A Section 4-3-7² states that a vapor return pipe inside the dispenser housing shall have a shear section or flexible connector so that the liquid emergency shut-off valve will function properly. Wayne's vapor connections are secured to the chassis allowing for the use of a shear section.

Wayne dispensers provide 1" NPT pipe connections at the base of the dispenser for vapor return connections. (See the installation foot print for location in Appendix B.) A minimum 1" riser at each dispenser is connected to a minimum 2" return piping to the underground tank. If more than six (6) fueling points are connected, then underground piping must be a minimum of 3". All lines should be sloped at a minimum of 1/8" per foot (1/4" per foot preferred) from the dispenser to the tank to avoid liquid traps.

1. "Listed" means published on a list by a nationally recognized testing laboratory (NRTL) which is responsible for product evaluation and is acceptable to the authority having jurisdiction. Underwriters Laboratories, Inc. is one example of a Nationally Recognized Testing Laboratory. For more information on NRTL's, see Title 29, Parts 1907 and 1910 of the Code of Federal Regulations, Safety Testing or Certification of Certain Workplace Equipment and Materials.
2. Reprinted with permission from NFPA 30A-90, *Automotive and Marine Service Stations Codes*, Copyright 1990, National Fire Protection Association, Quincy MA 02269. This material is not the complete and official position of the National Fire Protection Association on the referenced subject, which is represented only by the standard in its entirety.

2.5 Lifting and Installing the Dispenser

Remove the shipping carton from the dispenser and, if the dispenser is equipped with an optional valance, survey the site to determine if it should be installed before or after the dispenser is set on the island. Wayne recommends installing the valance after the dispenser is installed, if practical, to protect it from installation damage. See the Valance Module drawing in the back of this manual.

Use door key (p/n 1-202022) to unlock and then remove the lower doors, see Figure 2-3 for location.

Install (2) eye-bolts in the dispenser top castings and lift the dispenser onto the island as per Lifting Instructions drawing 888514-001 in Appendix B. When handling Ovation dispensers, lift only as per the Lifting Instructions drawing contained in this manual. Do not lift by the electronic enclosure, nozzle boot, or any external panels.

Bolt the dispenser into place, remove the shipping discs from the inlet unions and connect the product piping per the appropriate Installation Instruction drawing in Appendix B. When installing a blending dispenser, make sure the LO and HI product inlets (and, if applicable, the single product inlet) are correctly located.

To ensure tight, leak-proof connections when making piping connections, wash all cutting oils off the threads and use a UL-classified pipe joint sealing compound, rated for use with petroleum-based products.



WARNING

Explosive or flammable vapors may accumulate within the dispenser housing. All piping connections in the final installation must be accurately fitted and all threaded joints tightly made up with a Listed gasoline-resistant pipe joint compound. Put the compound on male threads only, being careful not to get excess inside the pipe or fittings. Failure to perform the above will present a hazardous condition that could result in serious injury.



Figure 2-3 DOOR LOCK LOCATIONS. One door key fits upper and lower door locks. Optional VGA display screen shown.

2.6 Electrical Wiring

2.6.1 General

Wayne recommends employing a qualified electrician for all wiring. A hazardous liquid is being handled, so it is important to ensure that all wiring is in accordance with the National Electrical Code (NFPA 70) as well as all federal, state and local regulations. **Note:** U.L. requires that all electrical connections to the dispenser be made with threaded, rigid conduit and properly sealed conductors. **Note:** All dispensers and electrical connection boxes must be grounded per NFPA 70.

2.6.2 Dispenser to Wayne Control System Interconnection

Dispenser installation wiring diagrams are provided in Appendix B. The system interconnection wiring diagrams supplied are for reference purposes. Use these diagrams along with the wiring diagrams supplied with the control system for laying out the system wiring requirements for a new site or when making changes to an existing one.

Two data wires to the Data Distribution Cabinet are required for the Wayne control system console operation.

Two data wires to the Site Controller Cabinet are required for dispenser card processing CAT operation.

Two data wires to the Site Controller Cabinet are required for Wayne TRAC operation.

One ethernet cable (UL AWM style 21146, Madison Cable p/n 042GA00006 recommended) is required (for dispensers equipped with the 10.4" VGA display screen option) to the Forecourt Controller PC (or, in the case of IDPOS, to the Router in the backroom).

NOTE: When data wires are installed, only the two DATA wires from the Data Distribution Cabinet used for pump control are to be terminated at the dispenser's terminal strip. The additional data wires should not be physically connected to the data terminals on the dispenser's terminal strip. Instead they should be properly terminated individually using wire nuts.

Figure 2-4 shows the location of dispenser components that may need to be accessed during installation. If the dispenser is not equipped with a junction box in the hydraulic cabinet, field wiring will terminate at the terminal strip inside the electronic enclosure as shown in Figure 2-5 and the conduit fittings shown will be potted in the field.

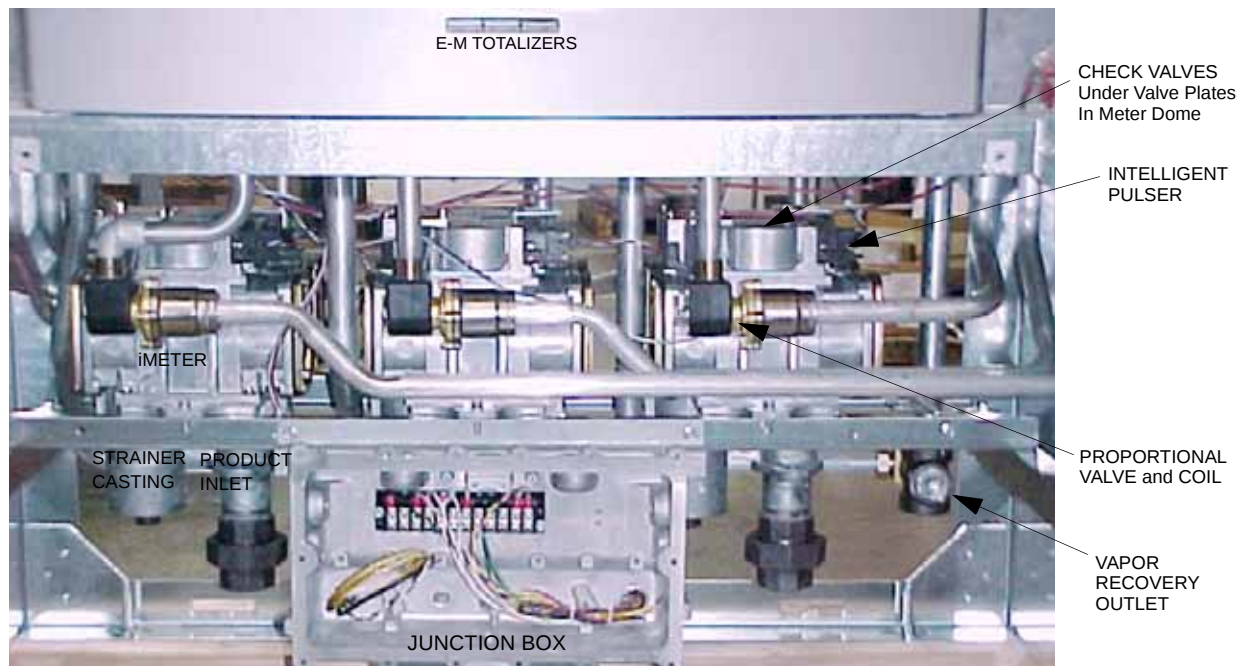


Figure 2-4 Location of Components in Lower Section. Single Hose MGD shown. Mid-grade inlet union is out of view behind the junction box.

2.6 Electrical Wiring, continued



WARNING

Electric Shock Hazard! No connections (including neutral) may be shared between groups of dispensers. A separate Control Power Circuit Breaker must be provided for each group. Failure to do so may result in serious injury.

2.6.3 Field Wiring for Dispensers Without a Junction Box

All field wiring must enter the Electronic Head via **potted conduit fittings**. When a dispenser junction box is not provided, these fittings must be potted in the field during dispenser installation.

1. Install (2) 3/4" field conduits from the UL approved seal-offs at the base of the dispenser to the conduit fittings at the vapor barrier as identified in Figure 2-5. One conduit will contain the ethernet, intercom/call button and speaker wires (Class 2 circuits). The other conduit will contain the pump power, valance lighting and data wires (Power - Class 1 circuits).



Potted Fitting for
EtherNet,
Intercom/Call Button,
and Speaker wires

TERMINAL BLOCK
used when junction box
is not installed.
MGD Wiring Shown

Potted Fitting for
Pump Power, Valance lighting
Relay Selects and Data wires.
Note: If dispenser j-box is installed,
this fitting will contain the speaker wires.

Figure 2-5 Terminal Block Inside Electronic Enclosure. Field wiring connects to this terminal block when the junction box shown in Figure 2-4 is not installed.

2. Clean conduit threads before connecting.
3. Pull continuous uninterrupted lengths of wires from the station electrical panels and control boxes to the dispenser electronic head. Allow an extra 18" lengths past the vapor barrier fitting for terminating, separating, potting and connecting to the terminal block.
4. From each conduit coupling, separate the wires using 3-201623 Wire Separator Gasket. See Photo 1.
5. Roll separator and wires into a cylinder and secure with electrical tape. Photo 2 and Photo 3.
6. Pull separator and wires back through the conduit fitting (Photo 4) forming a dam in the coupling, with the top of the separator being 1-1/4" deep inside the coupling.

2.6 Electrical Wiring, continued

7. Trim wires to appropriate length, terminate ends and connect to the terminal block as per Wiring Diagram drawing 888445-001 located in the Appendix B of this manual. Note: Field wires are to be connected to the lower terminals on the block.
8. Prepare the potting compound by pouring 4 oz. Rockite into an eight oz. paper cup.
9. Add 1-1/2 oz. of water.
10. Stir one to two minutes until reaching a consistency similar to pancake batter.
11. Pour mix into fitting and fill to within 1/8" of top of fitting.
12. Close the service door.
13. Let fitting set for 12 hours. The wires must not be moved during this time.

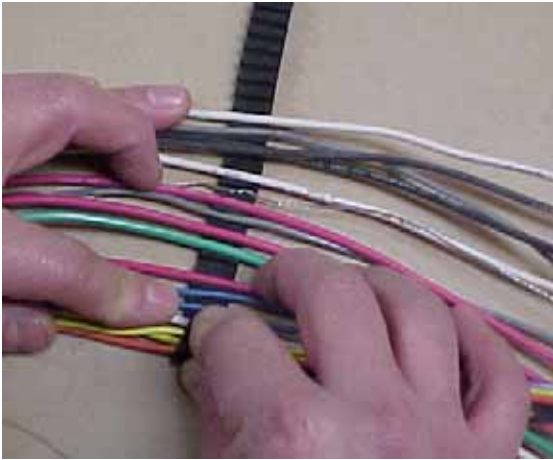


Photo 1.

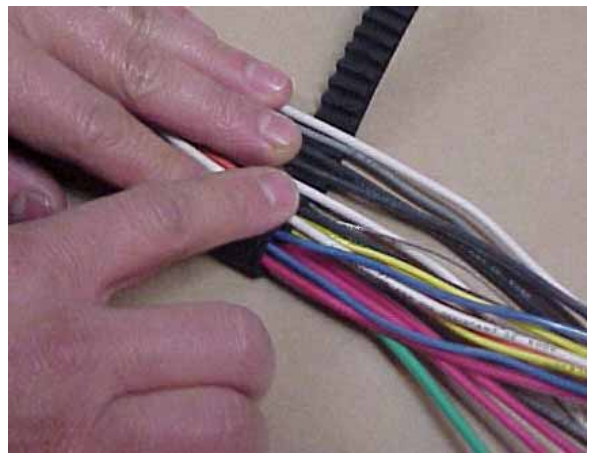


Photo 2.



Photo 3.



Photo 4.

2.6.4 Full Service (Stand-Alone) Dispenser Wiring

For full service operation, make electrical connections as shown on the Installation Wiring Diagram in Appendix B. The electrical connections illustrated are typical when additional like model dispensers are used.

Data wires shown on the wiring diagram are for connecting the dispenser to the Data Distribution Cabinet and the Site Controller Cabinet in a Wayne Control System. These data wires are not required for the full service (stand-alone) dispenser. However, the six optional data wires and cable, whichever are applicable, as described in Section 2.6.2, should be run at initial installation if a control system or optional equipment is being installed or may be installed in the future.

Remote dispensers require a relay to control the submersible pump motor. These relays are available as an option with the Wayne control system. If the dispenser is not connected to a Wayne control system, a UL Listed magnetic motor controller assembly, constructed with Potter and Brumfield Relay No. PRD7AYO (120) or equivalent, shall be used.

A maximum of 12 dispensers (24 fueling points) may be connected to a single PRD7AYO (120) relay; other relays may have different limitations. All dispensers operating the same pump control relay must be connected to the same circuit breaker; this may require multiple control relays for a submersible pump.

Ensure that the submersible pump receives its power from its own separate circuit breaker as illustrated in the Typical Site Wiring Diagram in Appendix B.

2.6.5 Multiple Dispenser Wiring

A primary requirement in dispenser installation wiring is to provide a means for disconnecting all power connections, including the neutral, to the dispensers for safe shutdown and servicing of the units. Each dispenser could be provided with a separate control Power Circuit Breaker. If this is not desirable or practical, several dispensers can be grouped together and tied to the same Control Power Circuit Breaker as illustrated in the Typical Site Wiring Diagram in Appendix B. A group of dispensers would then consist of all the dispensers and associated Submersible Pump Control Relay coils supplied by the same Control Power Circuit Breaker.

When more than one dispenser within the group activates the same submersible pump, the Relay Select lines may be commoned at the Submersible Pump Control Relay Coil terminal up to a maximum of 12 connections (24 fueling points). Where more than 12 connections activate the same submersible pump, additional relays should be used and the contacts paralleled as illustrated in the Typical Site Wiring Diagram.

In larger installations, dispensers can be separated into multiple groups.

2.6.6 Optional Equipment

Dispensers contain an extra pair of data wires in the junction box for Wayne TRAC as shown below. These wires are also identified in the installation wiring diagram in Appendix B.

Dispensers with the letter I in the model number will have an intercom call button.

Brown wires are speaker connections. Yellow wires are call button connections see Figure 2-6. Both circuits are low voltage NEC Class 2 only.

NOTE: Intercom/Call Button (NEC Class 2) and Speaker wires must be installed via a separate underground conduit to the dispenser junction box. The underground wiring for the intercom/call button and speaker is terminated with wire nuts in the main junction box. The short length of speaker wires from the junction box will enter the electronic head via the potted fitting containing the pump power and data wires as shown in previous Figure 2-5.

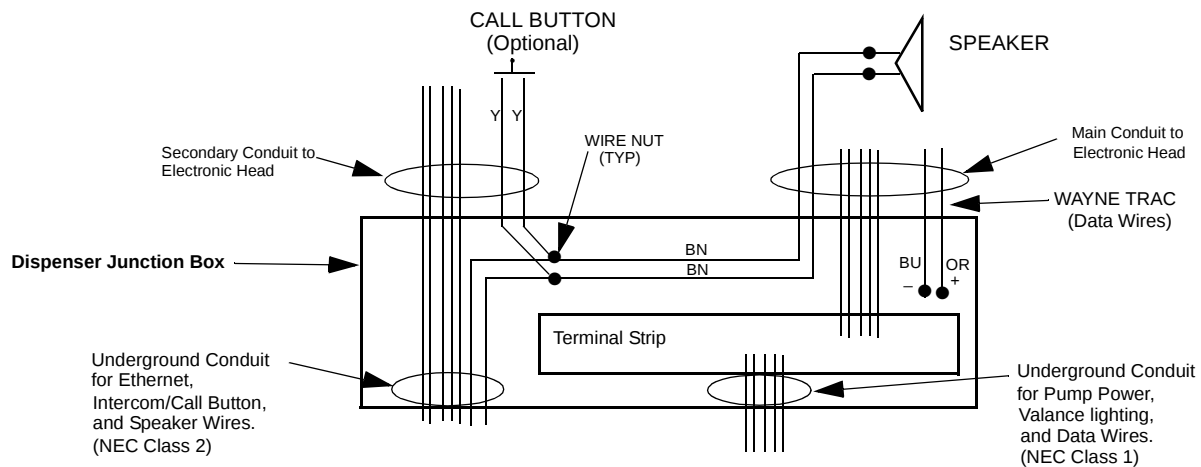


Figure 2-6 Intercom/Call Button Wiring. Ethernet, Intercom/Call Button and Speaker wiring must run in a separate underground conduit to the dispenser junction box.

2.6.7 Non-Dispenser Equipment

Do not run wiring for any non-dispenser equipment, in the same conduit as the dispenser wiring; this wiring must be run in a separate conduit.

2.7 Hose Installation

Hose assemblies should be U.L. Listed and installed in accordance with the manufacturer's instructions. To ensure a proper joint, wash all cutting oil off the threads and use a U.L. classified gasoline-resistant pipe joint sealing compound. Place the compound on male threads only; be careful not to get any excess compound inside fittings. Install the fixed end of the hose to the dispenser outlet; secure according to the instructions of the sealing compound and hose manufacturers. Install the swivel end of the hose or other swivels to the nozzle according to the manufacturer's instructions.

Exception: Do not use the sealant on balanced or inverted hoses used with vapor recovery.

NFPA code requires a Listed emergency breakaway device, designed to retain liquid on both sides of the breakaway point, must be installed on each hose dispensing Class I liquids; these devices must be installed and maintained per the manufacturer's instructions. Refer to your state and local codes for breakaway device requirements that apply to your installation.

All hoses, nozzles, and breakaways, etc., must be CARB certified for use on Wayne vapor recovery dispensers.



WARNING

Use only Listed hoses and nozzles. Continuity must be present between the dispenser outlet and nozzle spout to prevent static discharge while fueling. Continuity must be checked for each outlet/hose assembly to insure that the nozzle is grounded. Failure to do so may result in a hazardous condition that could cause serious injury.

2.8 Bleeding Product Lines (Remote Dispensers)

NOTE: To avoid severe damage to the dispenser, all air and air pockets must be bled from the product trunk lines before attempting to dispense product.

Step 1 Make sure the power to the appropriate submersible pump is OFF.

Step 2 To bleed air from a trunk line, remove the pipe plug from the safety impact valve on the dispenser farthest from the storage tank. For pipe plug location see Figure 2-2 earlier in this section.

Step 3 Attach a flexible hose to the pipe plug opening in the safety impact valve. Energize the appropriate submersible pump and allow the air to bleed out of the trunk line into a test can until product flows into the test can. De-energize the submersible pump and replace the pipe plug. Repeat the procedure for each product and each trunk line.

2.9 iMeter Calibration

All iMeters are tested, calibrated and sealed at the factory before a dispenser is shipped. Local codes and regulations may require verification of meter accuracy at Start-up. If verification or calibration is required, sufficient product must be run through each meter to thoroughly flush out all air and completely fill the system prior to the calibration process.

Each iMeter module contains two meters. The Intelligent pulser contains two sets of sensors, one set for each meter. On the front of the pulser, there are two calibration doors, one for each meter in the iMeter module. The door closest to the front of the dispenser controls calibration of the front meter and the other door controls calibration of the rear meter. It is important to verify the product grade for each module to assure the correct door is opened during the calibration process, see Figure 2-7.

iMeter dispensers have an operation mode setting that establishes the pulser's calibration mode. The operation mode is set at the factory when the meters are calibrated and sealed, and does not require resetting at Installation/Start-up.

Verification Accuracy:

1. Dispense Product into test measure and empty to wet container.
2. Dispense product into test measure until exactly 5 gallons (20 liters) are shown on dispenser display. See Note 1.
3. Compare reading on site glass of test measure to dispenser display. Volume in test measure should be within +/- 3 cu. in. (+/- 50 ml). See Note 2.
4. If values are out of range, calibrate as described below.

Calibration:

1. Identify calibration door for meter in need of calibration.
2. Remove seal wire and pin to allow access to door.
3. Dispense product into test measure and empty to wet container.
4. Open calibration door of meter to be calibrated. (Only one door can be opened at a time during the calibration process).
5. Dispense exactly 5 gallons (20 liters) into the test measure exactly to the "0" mark on the sight glass (read the bottom of the meniscus).
6. Close the calibration door. (This now redefines the calibration factor in the pulser).
7. Empty test measure (drain for 10 seconds) and verify accuracy as described above.
8. Seal calibration door.

Note 1: In the LITER mode, in addition to 20 liters, a 10 liter or 5 liter test measure may be used if required by the application. However, you should check with your jurisdiction on Weights & Measures tolerance requirements.

Note 2: For the U.S. and Canada, acceptance tolerance of ± 3 cu.in. for a 5 gallon measurement and ± 50 ml for a 20 liter measurement is only required for newly installed, newly placed in service devices for 30 days. After 30 days, the tolerance is increased to ± 6 cu.in. for 5 gallons and ± 100 ml for 20 liters.

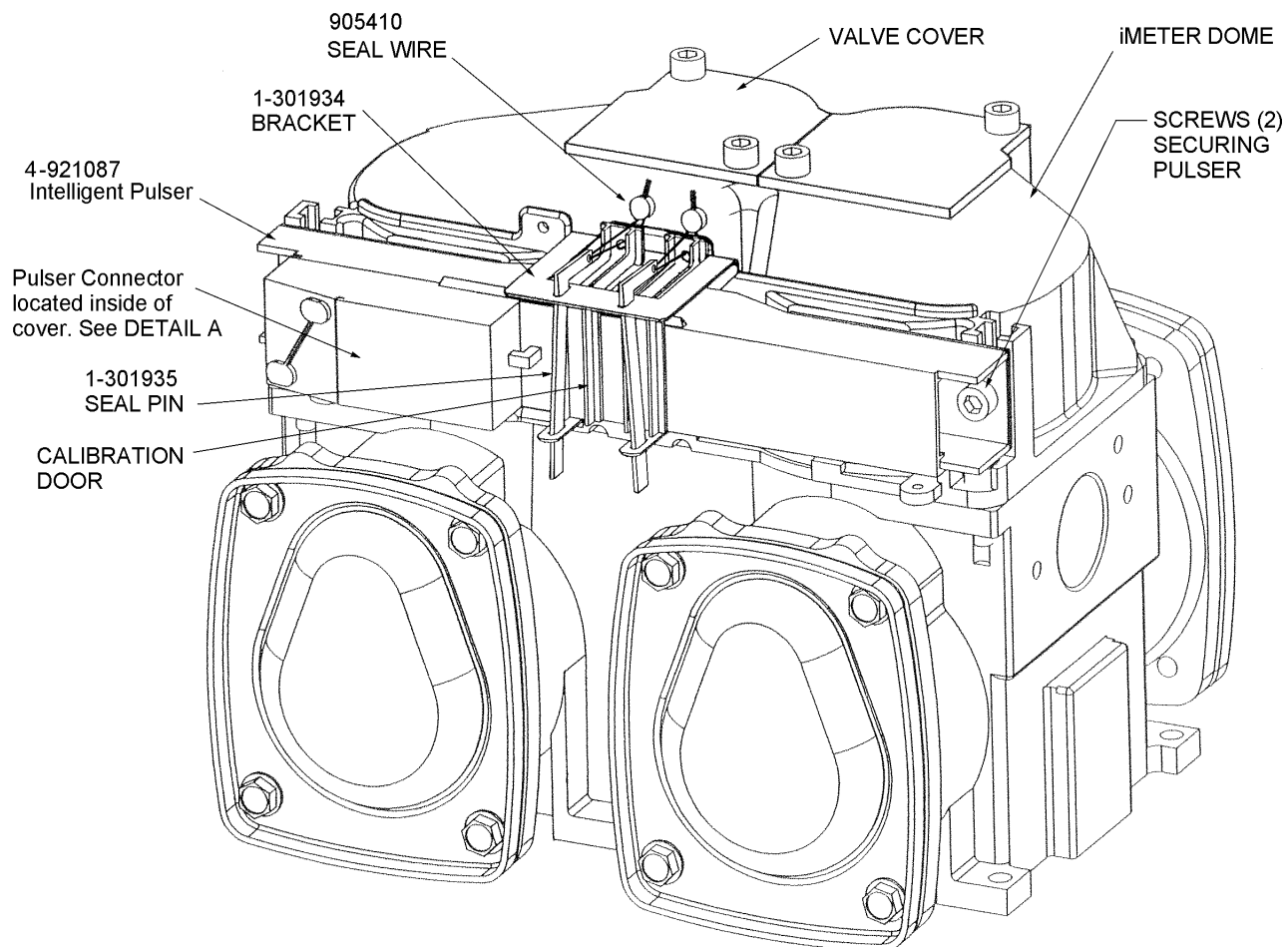


Figure 2-7 iMeter Module. *The Intelligent Pulser has two calibration doors - one for each meter. Only one door may be opened at one time during meter calibration.*

2.10 Balance Vapor Recovery System Installation Requirements

2.10.1 Dynamic Back Pressure Testing

At initial installation, balance vapor recovery dispensers should have a dynamic back pressure test performed at each nozzle to ensure there are no blockages in the vapor recovery system.

The dispenser should be connected to the underground and the hanging hardware (hoses, nozzles, breakaways, etc.) should be installed.

The following test methods or equivalent methods can be used:

“ST-27 Gasoline Dispenser Facility Back Pressure.” Available from the California Bay Air Management District via the Internet at <http://www.baaqmd.gov/mop/vol4/v4index.htm>

“TP201.4” Determination of Dynamic Pressure Performance of Vapor Recovery Systems of Dispensing Facilities.” Available from the California Air Resources Board.

Maximum allowable dynamic back pressure for an individual dispenser nozzle using either test procedure is listed below:

60 cu. ft. per hr.	≤ 0.35 in. of water
80 cu. ft. per hr.	≤ 0.62 in. of water

Note: Very low numbers for back pressure results may indicate a leak in the system and it should be checked.

2.10.2 Back Pressure System Check List

Note: Check test equipment for up-to-date calibration stickers. Normal use of rotameters and pressure gauges necessitates yearly calibration; calibration is also required if this equipment has been dropped or mishandled.

1. Check test equipment for leaks prior to use. Pressurize with nitrogen supply (plug nozzle end of the fill pipe). Adjust nitrogen until 50% on pressure gauge is reached. Close off supply. A pressure decay must not be more than 0.2 in. of water in five minutes.
2. If facility has a vapor pod (condensate pot), drain prior to testing.
3. Open dry break poppets.
4. Completely drain hoses and nozzles prior to test. A pulsating needle indicates fluid in the lines. Re-drain if necessary.
5. The following information should be included on the field data sheet:
 - Facility address and ID
 - Pump number and grade ID
 - Nozzle make and model
 - Back pressure in inches of water
 - Nitrogen flow rate

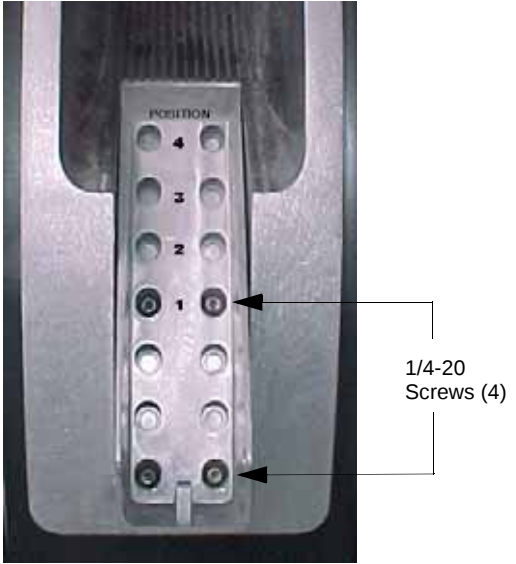
2.10 Balance Vapor Recovery System Installation Requirements, continued

6. If back pressure readings are very low (less than .02 @ 20 CFH; 0.18 @ 60 CFH; 0.4 @ 100 CFH):
 1. Check test fixture for tight seal at nozzle entry point.
 2. Check bellows and face seal for tears.
 3. Check vapor piping for leaks.
7. If back pressure readings are high:
 1. Check hoses and nozzle bellows are completely drained.
 2. Check dry break is open. (If only allowed to have one dry break open during the test, try all.)
 3. Check vapor pod.
 4. Check vapor impact valve to be open.
 5. Check piping under dispenser. Should be a minimum of 1 inch diameter piping and fitting.
 6. Check dispenser back pressure, disconnected from the underground and compare to dispenser base line data.
 7. Check hanging hardware separate from dispenser and compare to balance hardware matrix base line data.
 8. Check outlets, hose, and underground, for suspect blockage problems due to fitting bottomed out or casting flashing. Flashing is aluminum edges left over when the casting was made. This should be your last resort to diagnosing high back pressure readings since piping will have to be removed to look inside the casting for flashing. A large amount of flashing would be required to affect readings.

2.10.3 Nozzles Approved for Balance System

The Ovation nozzle boot hook can be adjusted to accommodate different nozzles. Table 2-1 shows the nozzles approved for use with a balance system and the hook position for each nozzle. Position 1 is the standard position. The hook is in position 1 in the accompanying photo. To change positions, remove the (4) screws shown, slide the hook down to the new position, and reinstall the (4) screws to secure the hook to the boot.

Table 2-1 Nozzle and Nozzle Hook Position

NOZZLE	HOOK POSITION	
Emco Wheaton A4005	3	
Emco Wheaton A4015	1	
OPW 11VF47	4	
Husky V Model 5010 and 5020	3	
Husky V(short) Model 5110 and 5210	1	

2.11 Wayne Vac Vapor Recovery System Installation Requirements

2.11.1 Dispenser Vacuum Decay

At initial installation, Wayne Vac vapor recovery dispensers should have a 27" decay test performed on each point to ensure there are no vapor leaks in the dispenser/hanging hardware - hose, nozzle, break-away, etc. This test is used to verify the dispenser/hanging hardware integrity so the vapor assist system will operate at its peak performance.

The test should be performed with the proper hanging hardware installed on the dispenser and the dispenser disconnected from the underground piping.

Connect the test equipment to the discharge of the vapor piping in the dispenser and apply 27" of water vacuum to the vapor line. Then close off the vapor line and determine if the closed vapor system can maintain the 27" of water vacuum.

The system should hold the vacuum for one minute. If it does not, apply 10" of water pressure to the system, soaping all connections to find the leak. Use a light soap solution; a heavy soap solution could mask leaks. If the system piping is tight, check hanging hardware by bagging the nozzles and doing a vacuum test again, while looking for the bags to deflate. The Wayne vacuum tester, as discussed below, is also used to test nozzles for leaks.

2.11.2 Wayne Pressure/Vacuum Tester

The Wayne Pressure/Vacuum Tester, part number 1-921168-KIT, is available from Wayne to perform this test. The Operation manual, part number 920372 included in the kit, explains the various tests that can be performed using both vacuum and pressure.

Additional information on these tests is contained in the Compliance Testing and Preventative Maintenance manual, part number 917947, supplied with each Wayne Vac equipped dispenser.

3 START-UP

3.1 Initial Checkout

Before applying power to the dispenser, double-check the wiring to make sure the wires are correctly routed and terminated. Turn on the dispenser control power circuit breaker and the submersible pump or suction pump motor circuit breakers. Make sure the dispenser comes on and all lights work. The dispenser displays will show some numbers, usually the last sale run during factory test.

The dispenser template, which configures the dispenser, has been loaded in the dispenser and tested at the factory. The dispenser will have the necessary data such as unit prices and blend ratios to allow the dispenser to operate in stand-alone at installation to purge product lines and test operation. At start-up, the procedures in this section should be performed in sequential order to ensure proper operation before the dispenser is switched over to control system operation.

3.2 IR Remote Control

The Infrared Remote (IR) Control shown in Figure 3-1 is similar to a television remote control. It has 16 buttons and, when held close (12-18 inches) to the infrared eye located on the sales display board, is used to access dispenser functions and statistics. The IR remote, as discussed in the following sections, is used to set the clock, unit prices, fueling point IDs, blend ratios, and read electronic totalizers.



Figure 3-1 IR Remote Control. *Hold remote close to the sales display to set the clock, unit prices, blend ratios and fueling point ID, read totals, view error codes and other dispenser diagnostic functions.*

3.3 Logical Nozzle/Hose Positions

The physical number of hoses on one side of the dispenser is not the same as the number of electronic hose positions on that side. Unit prices and blend ratios are set in electronic hose position or logical nozzle order. B23/3, B23/4 and B23/5 model Blenders each have 2 hoses per side and 3 inlets, but either 3, 4 or 5 grade selects/logical nozzles as shown in Figures 3-2 A-C. Logical nozzles are assigned positions 1 through 7, depending on the dispenser model as shown in Table 3-1.

Three product MGD models have one hose per side and three logical nozzles, which are positions: 1, 2, and 3. For these non-blending models, such as the R13/3, these products are shown as the X, Y, Z products in Table 3-1.

Logical nozzle positions for the Ovation models listed below are also shown in the examples in Figures 3-2 and 3-3 on the following pages.

Table 3-1 Hose (Logical Nozzle) Positions Defined by Values of N.

Ovation Model # begins with	Dispenser Description	N=7	N=6	N=5	N=4	N=3	N=2	N=1
B23/5	Two Hose (1+4) Blender		Lo Feedstock	Lo-BL	Hi-BL	Hi Feedstock		Single Grade
B23/4	Two Hose (1+3) Blender		Lo Feedstock	BL	Hi Feedstock			Single Grade
B23/3	Two Hose (1+2) Blender		Lo Feedstock		Hi Feedstock			Single Grade
B12/5	Single Hose 5 Grade Blender	Lo Feedstock	Lo-BL	Mid-BL	Hi-BL	Hi Feedstock		
B12/4	Single Hose 4 Grade Blender	Lo Feedstock	Lo-BL	Hi-BL	Hi Feedstock			
B12/3	Single Hose 3 Grade Blender	Lo Feedstock		BL		Hi Feedstock		
B12/2	Single Hose 2 Grade Blender	Lo Feedstock				Hi Feedstock		
R13/3	3 Grade Non-Blender					Z	Y	X
R22/2	2 Grade Non-Blender						Y	X
R11/1	1 Grade Non-Blender							X

Model number designations are defined as follows:

B23/5 model, B = Blender, 2 = two hoses per side, 3 = three inlets, 5 = five grade selects.

R13/3 model, R = Regular piped non-blender, 1 = one hose per side, 3 = three inlets, 3 = three grade selects.



Model B23/5220D1



Model B12/2220D3



Model B23/4220D1



Model B12/4220D3



Model B23/3220D1



Model B12/3220D3

Figure 3-2 Blending Models.



Model R11/1220D1



Model R22/2220D1



Model R13/3220D1

Figure 3-3 Non-blending Models.

3.4 Setting the Clock

The time and date is set in function **F02** Clock Configuration. The sub-functions F02.00 is the time HH.MM, F02.01 is the date MM.DD and F02.02 is the year YY.YY.

1. Press **ENTER**

PASS 1 (enter password)

2. Press **ENTER**

PASS 2 (enter password)

3. Press **ENTER**. The unit price display will show *F—* (indicating it needs a function number to proceed)

4. Press **02** to access F02

5. Press **ENTER**. The unit price display will show *F02* (indicating the function has been accessed)

6. Press **ENTER** to access the sub-functions of F02. The unit price display will show *2.00*

3.5 Setting Unit Prices

The procedure below is used to set the dispenser unit prices when operating in stand alone mode or when communication with the POS system is disabled. When communication with the POS system is enabled, the system will not allow unit price setting at the dispenser.

The pump computer recognizes code stored in memory that defines a dispenser model and assigns logical nozzle numbers to the hose positions as discussed in the previous sections. To set unit prices on side 1 and side 2, functions **F03** and **F04** are accessed using the remote control interface. Credit prices on side 1 are set using sub-functions **F03.0N** while cash prices are set using sub-functions **F03.1N**, where *N* is the logical nozzle number. Active values of *N* are given in Table 3-1. For side 2, the corresponding sub-functions are **F04.0N** and **F04.1N**, respectively.

To set the unit price, the correct sub-function is accessed, the unit price is changed to its new value and the data is saved. To access the desired sub-function, perform the following steps using the remote control.

Bold type denotes remote control function; *italicized* type denotes dispenser response.

Accessing the Unit Price Sub-function for Side 1.

1. Press **ENTER**

PASS 1 (enter password)

2. Press **ENTER**

PASS 2 (enter password)

3. Press **ENTER**. The unit price display will show *F—* (indicating it needs a function number to proceed)

4. Press **03** to access F03

5. Press **ENTER**. The unit price display will show *F03* (indicating the function has been accessed)

6. Press **ENTER** to access the sub-functions of F03. The unit price display will show *3.01*

At this point, pressing of **NEXT** will advance the sub-function to the next sub-function, incrementing the value of *N* by (.01). For example, to access F3.02, press **NEXT**. The unit price display will show *3.02*, press **NEXT**. The desired sub-function depends on the dispenser type. Table 3-1 shows the values of *N* that define the desired sub-functions for the dispenser models shown. Once the desired sub-function is accessed, the price display will show “-----” and the volume display will show the current value of the unit price. The following procedure must then be followed to set the unit price.

3.5 Setting Unit Prices, continued

Changing the Value of the Unit Price

Type in the new unit price with at least three digits for three money display digits to be shown after the decimal point. For example, to set the new unit price to **\$1.50**, **type in 1500**. **Type in 1509 for \$1.509 unit price.**

1. Press **#** key. The volume display will show the unit price with the correct number of digits after the decimal point. Again, for the example above, the volume display will show **1.500**.
2. Press **NEXT** to input the next unit price, and repeat steps 1 and 2. Continue until all the unit prices are input. Note that while inputting the unit prices, the unit price display continues to show the sub-function and not the unit price itself.

Save the New Unit Prices as follows:

1. Press **ENTER**. The price display will show “-----“, the volume display will be blank and the unit price display will show the last sub-function accessed.
2. Press **00** (to access F00)
3. Press **ENTER**. The unit price should now display *F00*, the price display will show “-----“ and the volume display will be blank.
4. Press **ENTER** and the volume display will show a *1*.
5. Press **UP** twice to change the value in the volume display from *1* to *3*
6. Press **ENTER**. The volume display should show a *3*.
7. Press **ENTER**. *CHANGE STORED* should appear on the display momentarily. The display should return to normal in a few seconds. When it does, the unit price displays should show the new prices. If they do not show the desired unit prices, access the appropriate sub-function to make sure that the unit price data is correct.

3.6 Setting Blend Ratios

The procedure below is used to set the dispenser blend ratios. When enabled, the POS system verifies and confirms that its blend ratio data corresponds to the manually set blend ratios. The Wayne POS system will not allow fuel to be dispensed if these numbers do not match.

The pump computer recognizes code stored in memory that defines a dispenser model and assigns logical nozzle numbers to the hose positions as explained in Section 3.3. Once this is done, the function **F18** is accessed to set the blend ratios, using the remote control interface. The sub-function **F18.1N**, where *N* is the logical nozzle number, is used to set the blend ratios for side 1 and the sub-function **F18.2N** is used to set the blend ratios for side 2. Active values of *N* are given in Table 3-1.

To set the blend ratio, the correct sub-function is accessed, the blend ratio is changed to its new value and the data is saved. To access the desired sub-function, the following steps must be performed using the remote control (**Bold** type denote remote control function and *italicized* type represents dispenser response):

NOTE: BLEND RATIOS MUST BE SET FOR SIDE 1 AND AGAIN FOR SIDE 2.

To access the Blend Ratio sub-function:

1. Press **ENTER**
PASS 1 (enter password)
2. Press **ENTER**
PASS 2 (enter password)
3. Press **ENTER**. The unit price display will show *F—* (indicating that it needs a function number to proceed)
4. Press **18** to access *F18*
5. Press **ENTER**. The unit price display will show *F18* (indicating that the function has been accessed)
6. Press **ENTER** to access the sub-functions of *F18*. The unit price display will show *18.11* (here *N=1*)

The volume display will indicate the value of the blend ratio corresponding to logical nozzle #1(*N=1*). If there is no data for this logical nozzle, the number “**101**” will be displayed. This applies to all logical nozzles. To access the blend ratio for the next logical nozzle, press **NEXT**. The unit price display will show *18.12* and the volume display will show whatever the value of the blend ratio is for logical nozzle #2. Successive presses of **NEXT** will advance the unit price display to *18.17*, the last logical nozzle. Pressing **NEXT** again will advance the unit price display to *18.21*. The “2” in “*18.21*” indicates Side 2 and the “1”, logical nozzle #1. The volume display will show the blend ratio assigned to *logical nozzle #1 of Side 2*.

Changing the Value of the Blend Ratio

1. When the desired logical nozzle is shown on the unit price display, enter the desired value of the blend ratio by using **UP** and **DOWN** keys on the remote control interface or by typing the # sign followed by the value of the blend ratio, followed by **ENTER**. For example, to change the value of the blend ratio from **101** to **89**, press the **DOWN** button until **89** shows up on the price display, then press **ENTER**, or type in **#89, ENTER**.
2. Continue until all the blend ratios are entered for side 1.
3. Repeat for side 2 and save as follows:

3.6 Blend Ratio Setting, continued

Saving the New Blend Ratio

1. Press **ENTER**. The price display will show “-----“, the volume display will be blank and the unit price display will show the last sub-function accessed.
2. Press **00** (to access F00)
3. Press **ENTER**. The unit price should now display *F00*, the price display will show “-----“ and the volume display will be blank.
4. Press **ENTER** and the volume display will show a 1.
5. Press **UP** twice to change the value in the volume display from 1 to 3.
6. Press **ENTER**. The volume display should show a 3.
7. Press **ENTER**. *CHANGE STORED* should appear on the display momentarily. The display should return to normal in a few seconds. When it does, the unit price displays should show the new prices. If they do not show the desired unit prices, access the appropriate sub-function to make sure that the unit price data is correct.

For reference, the following is a 50% blend ratio setting for a single hose blender, Ovation model B12/3 xxxx, as listed in Table 3-1. Any unused position has to be set to 101 not 0.

Side 1		Side 2
18.11 =	101	18.21 = 101
18.12 =	101	18.22 = 101
18.13 =	100	Super (Hi Feedstock) 18.23 = 100
18.14 =	101	18.24 = 101
18.15 =	50	Plus (Blend BL) 18.25 = 50
18.16 =	101	18.26 = 101
18.17 =	0	Regular(Lo Feedstock) 18.27 = 0

Typically, stations sell the low and high grades at zero and 100 percent ratios and may sell the middle grade at 35 percent or some other intermediate value between 0 and 100. On the above model, the technician would need to change only sub-functions 18.15 and 18.25 to the intermediate value.

As a reminder, always get the blend ratios from the station owner to avoid any confusion over which values to use.

3.7 Setting the Fueling Point ID

The procedure below is used to set the dispenser fueling point address. The dispenser FPID should be input and saved before control is transferred to the POS system.

Functions **F05** and **F06** are accessed to set the FPID on Side 1 and Side 2, respectively. To set the FPID, the desired FPID must be input and saved.

Accessing the FPID Function.

1. Press **ENTER**

PASS 1 (enter password)

2. Press **ENTER**

PASS 2 (enter password)

3. Press **ENTER**. The unit price display will show *F—* (indicating that it needs a function number to proceed)
4. Press **05** to access *F05*
5. Press **ENTER**. The unit price display will show *F05* indicating the function has been accessed and the volume display will show the current FPID or a “**0**” when no FPID has been assigned to that dispenser side.
6. Input the desired FPID by using the **UP** and **DOWN** keys on the remote control interface followed by **ENTER**, or by typing the # sign followed by the value of the FPID followed by **ENTER**.
7. Repeat the procedure for Side 2.

Saving the New FPID

1. Press **ENTER**. The price display will show “— — — — —”, the volume display will be blank and the unit price display will show the last sub-function accessed.
2. Press **00** (to access *F00*)
3. Press **ENTER**. The unit price should now display *F00*, the price display will show “— — — — —” and the volume display will be blank.
4. Press **ENTER** and the volume display will show a *1*.
5. Press **UP** twice to change the value in the volume display from *1* to *3*.
6. Press **ENTER**
7. The volume display should show a *3*.
8. Press **ENTER**. *CHANGE STORED* should appear on the display momentarily. The display should return to normal in a few seconds. When it does, the unit price displays should show the new prices. If they do not show the desired unit prices, access the appropriate sub-function to make sure that the unit price data is correct.
8. Repeat the procedure for Side 2.

Note: For models equipped with IDPOS, see configuration in Section 4.

3.8 Authorizing the dispenser

The dispenser must be authorized before it will dispense product.

The dispenser filling mode is set in programming function F01. In stand-alone mode (not connected to a control system), the dispenser is always authorized, unless the dispenser is equipped with the (optional) Authorize keyswitch on the bezel. This momentary contact keyswitch can be used for one time authorizations.

When connected to a control system, the system programming determines authorization.

NOTE: At Startup, the local AUTHORIZE switch jumper should be removed as explained in Section 3.10.

3.9 Initial Delivery

To dispense product from a newly installed dispenser, make sure unit prices and blend ratios are set (as previously described) and proceed as follows:

1. Authorize the dispenser.
2. Remove the nozzle, start the reset sequence and observe the reset cycle; make sure all sales display and unit price display elements operate.
3. Check that when reset is started, the correct submersible pump motor is activated, and at the end of the display reset (approximately three seconds) the solenoid valve(s) opens (listen for the audible click of the valve(s)).

NOTE: Make sure the product lines are properly bled before dispensing any product through a remote dispenser. Make sure suction pumps are primed before dispensing any product through a suction pump.

4. After verifying air is bled properly from each trunk line, **slowly** dispense product through each dispenser until free of air. Dispense enough product through each hose of each dispenser to ensure the dispenser and the lines are free of air, before checking the meters.
5. For dispensers equipped with Wayne Vac, verify that the correct vacuum pump motor is running when dispensing product. Verify by checking that air is being drawn through the vapor return hole(s) in each nozzle spout. Also, see Testing Procedures manual, p/n 917947.

3.10 Disable Stand-alone Operation

Once the dispenser is switched over to the POS control system, standalone operation should not be required. As an extra security measure, the jumper that enables stand-alone operation should be removed. The jumper is located on the unit price display board as shown in Appendix C of this manual.

1. Access dispenser Filling Mode function F01 and set sub-function to 1.01 for serial mode.
2. Open the service door.
3. See Appendix C for location of the Local Authorize jumper (J7) on the Unit Price Display board.
4. Remove the J7 jumper.
5. Close and lock service door.

3.11 Electronic Totalizer Readings

3.11.1 Totalizer Readings by Hose (Product) Position

Each fueling point of the dispenser maintains electronic totalizers for both money and volume. Dispensers equipped for Cash/Credit operation also keep separate cash and credit totalizers by grade. Rather than mechanical totalizers, each position has an electro-mechanical totalizer for each feedstock. See Figure 2-4 for EMT locations.

Electronic totals are stored in statistical functions that are accessed using the IR remote control. The totals for Side 1 are stored in statistical function **S01** and those for Side 2 are stored in statistical function **S02**. The associated sub-functions take the format **TN**, where **T** is the type of totals defined below and nozzle position **N** depends on the dispenser model as defined in Table 3-1.

T= totals type: 1=Volume
2=Total Money
3=Credit
4=Cash
5=Serial Filling Mode Count
6=Stand Alone Mode Filling Count

For example, volume totals by hose position for Side 1 are accessed by examining the contents of statistical function **S01.1N** while money totals are obtained by accessing **S01.2N**, where *N* is the hose position number. For Side 2, the corresponding functions for these variables are **S02.1N** and **S02.2N**, respectively.

To read the electronic totalizers, perform the following steps using the IR remote. **Bold** type denote remote control function; *italicized* type represents dispenser response:

Accessing the Totalizer Sub-function.

1. Press **ENTER**
PASS 1 (enter password)
2. Press **ENTER**
PASS 2 (enter password)
3. Press **ENTER**. The unit price display will show *F*
4. Press either **UP** or **DOWN** to enter the statistics viewing mode. The unit price display will show *S—* (indicating a number needs to be selected)
5. Press **01** to access *S01*
6. Press **ENTER**. The unit price display will show *S01* indicating the function has been accessed.
7. Press **ENTER** to access the sub-functions of *S01*. The unit price display will show *1.11* and the sales display shows the side 1, volume for nozzle position 1.

Consecutive presses of **NEXT** will advance to the next sub-function, incrementing the value of *N* by (.01). For example, pressing **NEXT** advances the statistical function to *S01.12* and the unit price display will show *1.12*. The least significant six (6) digits of the data value appear on the volume display, while higher order non-zero digits of the data value, if present, appear on the money display.

3.11.2 Totalizer Volume Readings by Meter Position

Meter volume totals are stored in statistical functions that are accessed using the remote control interface. The totals for Side 1 are stored in function **S05** and those for Side 2 are stored in function **S06**. The value of the meter totals are stored in the sub-functions that take the format **.M0**, where *M* is the meter number. Assigned values of *M* are shown in Table 3-2. For example, *M*=5 for the high feedstock iMeter located on Side 1 of a remote series blender. For Side 2 of the same meter, *M*=1.

Note: There is no relationship between meter position and hose position. For example, in Table 3-1, positions *N*=1 and *N*=5 **are not** the high feedstock of a remote series blender used in the example above.

Meter electronic totalizers are read by entering the Maintenance Mode and accessing the correct function and associated sub-functions. Perform the following steps using the remote control. **Bold** type denote remote control function; *italicized* type represents dispenser response.

Accessing the Meter Volume Totalizer Sub-function for Side 1

1. Press **ENTER**
PASS 1 (enter password)
2. Press **ENTER**
PASS 2 (enter password)
3. Press **ENTER**. The unit price display will show *F*
4. Press either **UP** or **DOWN** arrow to enter the statistics viewing mode. The unit price display will show *S—* (indicating that a number needs to be selected)
5. Press **05** to access *S05*
6. Press **ENTER**. The unit price display will show *S05* (indicating that the statistical function has been accessed)
7. Press **ENTER** to access the sub-functions of *S05*. The unit price display will show *5.10* (note here that *M*=1)

Consecutive pressing of **NEXT** will allow access to the next sub-function, incrementing the value of *M* by (.1). For example, to access *S05.20*, press **NEXT**. The unit price display will show *5.20*. The value of the meter volume totals is shown in a format such that the least significant six (6) digits of the data value appear on the volume display, while higher order non-zero digits of the data value, if present, appear on the money display. Leading zeros appear as blanks.

Values for *M* are given in Table 3-2 for the dispenser models shown.

Quick Exit

1. Press the **CLEAR** key until the unit price display window shows *S - -*.
2. Press **ENTER** three times. This causes the maintenance mode task to immediately terminate.

AA	Z	Y	X
8	7	6	5
M	M	M	M
4	3	2	1
Junction Box			

Table 3-2 Meter Positions for Ovation Dispensers

3.11.3 Electro-Mechanical Totalizer Operation

Electro-Mechanical totalizers are standard on 3/Vista model dispensers. See Figure 2-4 for location.

Electro-Mechanical totalizers are located on the junction box side of the dispenser. There is one totalizer for each meter. The totalizer positions on the bezel relate to the meter position numbers shown in Table 3-2. The physical position of the totalizers, left to right, on the bezel represent meter positions.

The totalizer shows seven digits and reads in whole units (gallons or liters). Fractional amounts that are left over from a previous sale are stored in the dispenser computer. When the next sale of the same product ends, if the fractional amounts from the new sale and previous sale(s) combined are one (1) whole unit or greater, the Electro-Mechanical totalizer is adjusted one whole increment; i.e., if five consecutive sales end with a fractional amount of .2, the Electro-Mechanical totalizer will not account for the fractions until after the fifth sale.

Note: A loose sheet of decals, part number 1-300051, with both preprinted (Low, Middle, High, Single) and non-printed labels is supplied inside the electronic head of the dispenser for marking the totalizer positions).

3.12 Nozzle Boot Switch Check

In the Ovation style nozzle boot, a proximity switch and a magnetic actuator are used for nozzle on/off operation. The proximity switch is attached to the back of the nozzle boot casting. The magnetic actuator is located inside the spring-loaded flipper, which is installed from the top front of the boot casting. When the nozzle is removed, the flipper rotates the magnetic actuator and aligns the actuator with the proximity switch, turning the switch on. There is no adjustment for the switch.

Check the operation of the nozzle switch as follows:

- Step 1** Authorize the dispenser and remove the nozzle from the nozzle boot to make sure the switch turns on. An on switch will be indicated by the lighted Push-to-Start buttons and the unit price displays blinking.
- Step 2** Insert nozzle slowly into the nozzle boot and check that the switch turns off. An off switch is indicated by the lighted Push-to-Start buttons turning off and the unit price displays stop blinking.

3.13 Annunciator Operation

Check the operation of the dispenser keypads during start-up of the dispenser. Also check that the annunciator is operating properly on each side of the dispenser. When pressing the keys on the card processing (CAT) keypad or the Push-to-Start/Grade Select buttons on the bezel, you should hear the annunciator beep.

3.14 QCAT SELF-TEST

Check the operation of the QCAT by performing the self-test procedure in Appendix A of this manual.

3.15 Wayne Vac Motor Operation

For dispensers equipped with Wayne Vac, verify that the correct vacuum pump motor is running when dispensing product. Verify by checking that air is being drawn through the vapor return hole(s) in each nozzle spout.

Also see the Wayne Vac Compliance Testing and Preventative Maintenance manual, part number 917947.

3.16 Audit Report Display Mode (For Weights and Measures Officials & Service Purposes Only)

On the computer the Weights and Measures audit trail is accessed by the use of a hand held remote. By entering the Weights and Measure mode, one can view both the blend ratio audit trail and volume metering unit change counter required by Weights and Measures.

The Weights and Measures mode is side specific, therefore, it shows the blend ratio logs and volume metering unit logs for the side that your are facing.

Entering this mode is via a hand held remote. Remotes are available at the station. Both the audit trail data and gallons to liters conversion data is obtained by the use of the hand held remote. To use the remote, point at the sales display near the center of the area where the Totals and Volume valves are displayed. Keep the remote within 12 inches of the main sales display for proper operation.

To enter the Weights and Measures mode perform the following:

1. Press **Enter** and then press **Clear** twice.
If you do not press another button in 20 seconds, the computer will step through the values without interaction from the remote.
2. The sales display will show **bLEnd rAtioS** and the current blend ratios for all blended products.
3. Press **NEXT** to view the Blend Ratio Change Counter mode
4. Press **NEXT** will allow you to toggle through each blend ratio change counter and pressing **NEXT** button again will enter into the View Volume Metering Unit Change Counters mode.
5. The sale display will show **n**, where **n** equals the Unit Change Event Number.
6. The volume display contains the metering unit that it was changed to with the following description:
LitErs Liters volume unit
US GAL U.S. Gallons volume unit
IP GAL Imperial Gallons volume unit
7. Press **CLEAR** and then **ENTER** three times to go out of the Weights and Measures mode.

3.17 IDPOS Dispensers

For additional startup procedures required for IDPOS dispensers, refer the latest version of the IDPOS Support CD.

4 OPERATION

4.1 Safety Items You Should Know

- Know how to turn OFF power to the dispenser and submersible pumps in an emergency.
- Inspect regularly, all external fuel carrying components such as, hoses, nozzles, breakaways, etc., for damage or leaks.
- Inspect regularly, the dispensers housing parts for damage or leaks.
- Have all leaks or defects repaired immediately.
- Test the Emergency (shear) valve, by opening and closing several times, at least once per year.
- Use of automatic safety nozzles prevents overfilling fuel tanks and avoids spilling fuel.
- Avoid tipping the nozzle downward spilling excess fuel.
- Sufficient lighting must be provided to allow safe use of the dispensers.
- A clearly visible and identifiable Station Emergency Stop Switch must be provided at the station to shut OFF power to all station dispensers and submersible pumps in case of an emergency.
- Portable tanks (containers) of 12 gallons (45 liters) or less shall not be filled while they are in or on a motor vehicle. See Warning information about this subject on the following pages.
- Hose retractor mechanisms are spring loaded and can pose a possible injury.
- Stow hoses to prevent tripping.
- Care should be taken to prevent fuel spillage. If spillage occurs, clean-up immediately.
- Avoid moving parts such as the V-belt on Suction pump models.
- Know the **Hazardous Zone area** around the dispenser, see Figure 4-2.

4.1.1 Portable Tanks and Containers

Portable containers of 12 gallons (45 liters) or less shall not be filled while they are in or on a motor vehicle. Filling portable containers, especially when they are sitting on a non-conductive surface such as a floor mat or a plastic bedliner in the back of a pick-up truck, can present a possible safety hazard and should be avoided as so stated in the following WARNING:



WARNING

FIRE HAZARD!

The flow of gasoline through the dispenser nozzle can produce static electricity, which can cause a fire if gasoline is pumped into an ungrounded gasoline container. To avoid static buildup and the possible resulting serious injury:

- Place approved container on the ground. Do not fill the container in the vehicle or truck bed.
- Keep the nozzle in contact with the can or container while filling. Do not use an automatic pump handle (latch-open) device.

4.1.2 Health Note

Be advised that petroleum fuel and fuel vapors can damage your health.

4.2 How To Get Service On Your Dispenser

Trouble with the operation of the dispenser should be referred to your local Wayne authorized service personnel or call the Wayne Help Desk at **1-800-289-2963**.

NOTE: Any modification, repair, or service to the dispenser not in accordance with the original design may invalidate compliance with the equipment certifications such as CE Marking, UL, etc. Consult manufacturer as necessary.

4.3 Introduction to Operation

Unit prices must be set and the dispenser must be authorized for the dispenser to operate. If the dispenser is connected to a control system, each dispenser must have a unique fueling point number set for communication with the system as discussed in Section 3.

If the dispenser is connected to a 2400 MCS, Wayne Plus or Nucleus POS system and you want to operate the dispenser in the stand-alone mode, independently from the control system, perform the following steps:

1. Move the Authorize switch on the dispenser to the full service position.
2. If the dispenser is not equipped with the Authorize switch, jumper J7 on the Unit Price Display board must be installed. See Appendix C for details.
3. Access function programming and set the Filling Mode to Stand-alone, as explained in Section 4.9.

4.4 Operation of the Dispenser

1. Authorize the dispenser via the Authorize switch on the dispenser or via the control system.
2. Remove the nozzle from the nozzle boot for either the blended hose or the single product hose. The nozzle boot switch will turn on. The unit price displays of the product(s) not selected will show dashes. If the blending hose is selected, the lighted grade selection buttons for the blending products will blink until a grade selection button is pressed; if the single product hose is selected, the lighted grade selection button for the single product will blink until it is pressed.
3. Push a grade selection button for the desired product to select one of the products from the blending hose, or the one product from the single product hose. The dispenser will reset and prepare for delivery. The sale display will show all eights, then blanks, then the money and volume portion of the display will reset to zero. The unit prices not selected will be blank or show dashes. The grade selection button that was pressed will be steadily lit; the others will be dark. The correct submersible pump(s) will start at the beginning of the reset cycle and the solenoid valve(s) will open approximately three seconds later. Product selection can be changed any time before product flow is sensed by the computer.
4. Dispense product. (Pressing the optional Stop button will stop product flow only. The nozzle boot switch must be cycled and the dispenser must then be reset before that side of the dispenser can continue operation.)
5. Return the nozzle to the nozzle boot. The nozzle boot switch will turn off; the sale will be complete and ready to pay.

NOTE: NFPA 30A requires the dispenser to be “manually activated.” This requires a separate intentional operation (Push to Start, Cash/Credit selection, or grade selection) after the nozzle is removed from its hang up position.

4.5 Restarting After Power Failure or Shutdown

After loss of power, the display accurately displays the amount of the sale, in money and volume, for approximately 15 minutes. When power is restored, all sales information returns to the displays. Any sales in progress will be ended; old sales should be paid and the dispenser reauthorized if more product is to be dispensed.

If the dispenser does not operate properly when power is restored (does not deliver product, or does not reset), record both the money and volume shown on the display (so sales can be paid for) and perform the following:

1. Ensure all nozzles on the side are in their nozzle boots.
2. Authorize the dispenser.
3. Remove the nozzle from the nozzle boot. The dispenser should operate normally. If the dispenser does not resume normal operation, try cycling power as described in the next section.

4.6 Cycling Power to Clear Faults

If a fault in the dispenser is detected by the computer, an error message will be displayed in the sale display as described in Section 4.7. **Record the displayed error message.** It may be possible to restart the dispenser by the following sequence:

1. Ensure all nozzles are properly seated in the nozzle boot.
2. Turn the control power circuit breaker off for approximately five seconds; the dispenser annunciator will sound. Turn the control power circuit breaker on; the dispenser annunciator will again sound.
3. Authorize the dispenser.
4. Remove the nozzle from the nozzle boot. The dispenser should operate normally.

If it is not possible to restart the dispenser using this procedure, or if an error message continues to be displayed, consult appropriate service personnel. Be certain to give the service personnel the amount at which the dispenser stopped and the exact error message.

4.7 Error Codes

Computer error codes are displayed on the side of the dispenser where the error occurred when any subsequent nozzle on signal is received on that side. The last sales data is retained and displayed with nozzle off. Product flow stops on that side only. That side will not dispense until reset by cycling power or the fault condition is corrected. Computer error codes are displayed sub-functions **S21.XX** for Side A and **S22.XX** for Side 2, where **XX** is between **01** and **50** and represents the error/events records maintained by the computer program - with 01 being the most recent. The computer can store up to 50 errors per side, continuing to store errors beyond the 50th by cycling the error buffer with new errors inserted at the top of the buffer. When this happens, an error is deleted at the bottom of the buffer for every new error that is inserted in the top of the buffer.

Errors are displayed in an alternating 2-page format. Information in the error pages is given below.

Page 1 Error Information

HH.MM
CC.DD.NN

Where:

HH = hour

MM = minute

CC = error code

DD = Device number

NN = logical nozzle number

Page 2 Error Information

MM.DD.YY
C

Where:

MM = month

DD = day

YY = year

C = filling count

The complete description of the error codes is given in the *3/Vista Service* manual, part number 920525.

Computer errors are read by entering the Maintenance Mode and accessing the correct statistical function and its sub-functions. Perform the following steps using the remote control. **Bold** type denote remote control function; *italicized* type represents dispenser response.

Accessing the error code Sub-function.

1. Press **ENTER**
PASS 1 (enter password)
2. Press **ENTER**
PASS 2 (enter password)
3. Press **ENTER**. The unit price display will show *F*
4. Press either **UP** or **DOWN** to enter the statistics viewing mode. The unit price display will show *S—* indicating that a number needs to be selected.
5. Press **21** to access *S21* (error data for Side A)
6. Press **ENTER**. The unit price display will show *21.01*, the first and most recent error data for Side A. The data will be displayed in the 2-page format described earlier, in an alternating sequence, at a 1 second per page rate.
7. Pressing **NEXT** accesses *21.02* and the display shows information for the second error logged. By pressing **NEXT**, the error buffer can be viewed completely.
8. To exit, press **CLEAR**, then **UP** or **DOWN**. The unit price display will show *S—*.
9. Press **ENTER** three times to exit to the normal display.

4.8 Resetting After All Stop

This section applies to models connected to a Wayne Control system. Pressing the All Stop key on the 2400 MCS or Wayne Plus or Nucleus sends a signal to the dispenser computer to interrupt product flow. To resume product flow:

- **2400 MCS** - All of the **unpaid/stopped** indicators will be illuminated on the 2400 MCS console. Press Clear until the console display is totally blank. Press Pump Start. At this point all **unpaid/stopped** indicators will go out and fuel flow may resume.
- **Wayne Plus** - All fueling point numbers will be shown in reverse index (light fueling point numbers on a dark background) on the Wayne Plus. Press 0, Pump #, and Pump Start. At this point all operational fueling points will be shown in normal format (dark fueling point numbers on a light background) and fuel flow may resume.
- **NUCLEUS** - All fueling point numbers will be shown with the STOP sign. Press the ALL START key. At this point all the fueling points will show the gas pump icon and all or each can be authorized.

4.9 Stand-alone Operation

Note: All nozzles must be hung up before performing the following procedure.

The dispenser may be placed in stand-alone operation - not operated by a control system. To set the dispenser in stand-alone, the correct function and its corresponding sub-function must be accessed. Next, the filling mode is changed to its new setting and the data is saved. To access the desired sub-function, the following steps must be performed using the remote control. **Bold** type denote remote control function and *italicized* type represents dispenser response. NOTE: See additional requirements for standalone operation in Appendix C.

Accessing the filling mode Sub-function.

1. Press **ENTER**
PASS 1 (enter password)
2. Press **ENTER**
PASS 2 (enter password)
3. Press **ENTER**. The unit price display will show *F—* , indicating that it needs a function number to proceed)
4. Press **01** to access *F01*
5. Press **ENTER**. The unit price display will show *F01*, indicating that the function has been accessed)
6. Press **ENTER** to access the sub-functions of *F01*. The unit price display will show *1.01* and the volume display will show a *1* indicating that the dispenser is in serial filling or that the dispenser is being controlled by the site controller via serial link.
7. Press **UP** to increment the value of function *1.02* by unity, followed by **ENTER**, or press **#** and type **2** followed by **ENTER** (here 2 means that the filling mode is Stand-alone Mode, dispenser not supervised by site controller)

Saving the new setting

1. Press **ENTER**. The price display will show “— — — — —”, the volume display will be blank and the unit price display will show the last sub-function accessed.
2. Press **00** (to access *F00*)
3. Press **ENTER**. The unit price should now display *F00*, the price display will show “— — — — —” and the volume display will be blank.
4. Press **ENTER** and the volume display will show a *1*.
5. Press **UP** twice to change the value in the volume display from *1* to *3*.
6. Press **ENTER**. The volume display should show a *3*.
7. Press **ENTER**
8. **CHANGE STORED** should appear on the display momentarily. The display returns to normal in a few seconds.

4.10 Printer Paper

4.10.1 Loading Paper

The following procedure refers to Figure 4-1(A -D).

1. Unlock and open the printer door on the dispenser bezel.
2. Pull down the inside printer door from top (A).
3. Important:
While holding the paper roll, pull the roll tight (B) and ensure there are no loops underneath the roll.
4. Place paper roll inside the printer and feed from top of roll through the chute(C) and (D).
5. While pulling slightly on the paper, push the door up to the closed position.
6. Wait for the printer to print the test receipt.
7. Cut receipt, close and lock printer door.

4.10.2 Paper Specification

The Clamshell printer in Ovation model dispensers uses the same thermal paper as the printer in Wayne 3/Vista series dispensers. For reference, our thermal paper specification is as follows:

Basic weight: (gm./sq. meter) 58.0+/- 5.0

Caliper (in.): .0023-.0028

Elmendorf Tear (mg):

 Main direction 20 (min.)

 Cross direction 20 (min.)

Smoothness - Berk seconds 250-550

 Base Paper- Kansaki P-300

 - Koehler KT55F18

Thermal Characteristics:

Paper shall not display a visual change in the background color during use and/or storage under cyclic conditions of temperature ranging between -5C to 52C with variable humidity ranging between 0% and 90%.

Thermal Response Range:

 Initiation 75C / 167F

 Functional 85C / 185F

Developed Image: Black

Paper Roll Configuration:

 Inside Core Diameter .68"-.79"

 Core Annular Thickness .10"-.28"

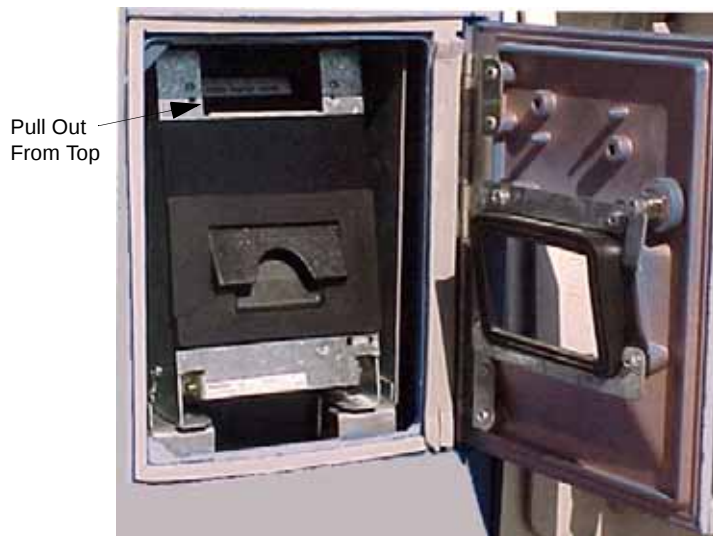
 Paper and Core Width 2.32"-2.36"

 Finished Roll Diameter 3.80"-4.00"

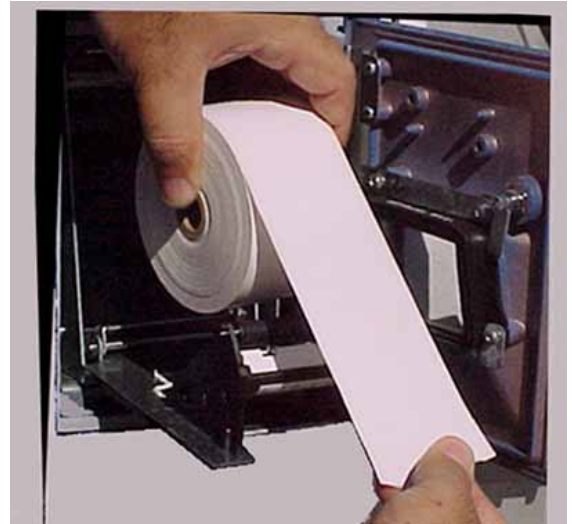
Residual Particles:

The annular area represented by the sheared edges of the paper, both sides, shall not have more than one particle per square inch nor more than five particles in total per annular surface area. The test for particles shall consist of impressing the adhesive side of a one inch square, or equivalent, strip of black adhesive tape against the surface; removing the strip of tape and examining the adhesive surface for adhering particles.

4.10 Printer Paper, continued



A.



B.

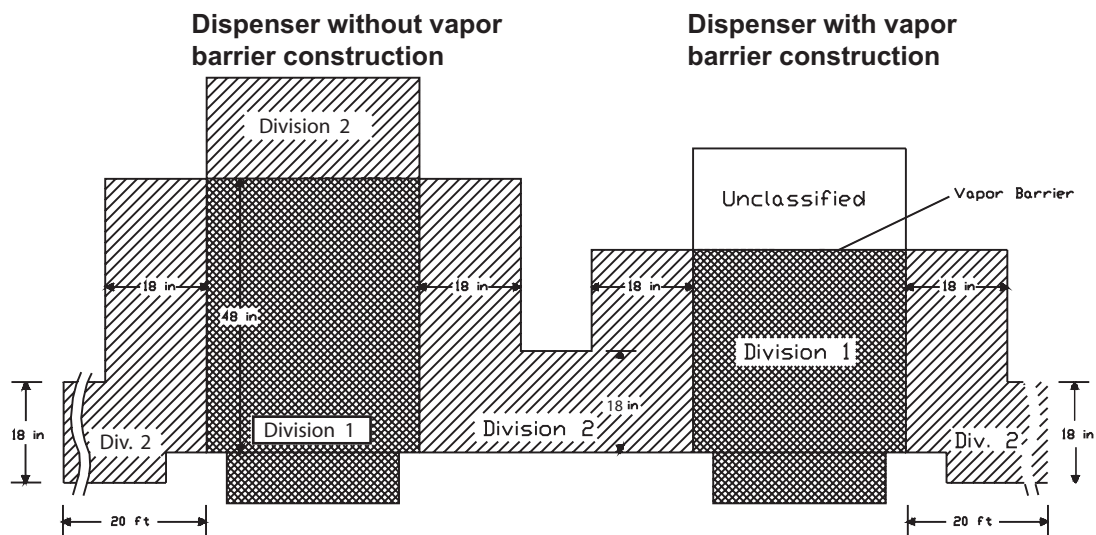


C.



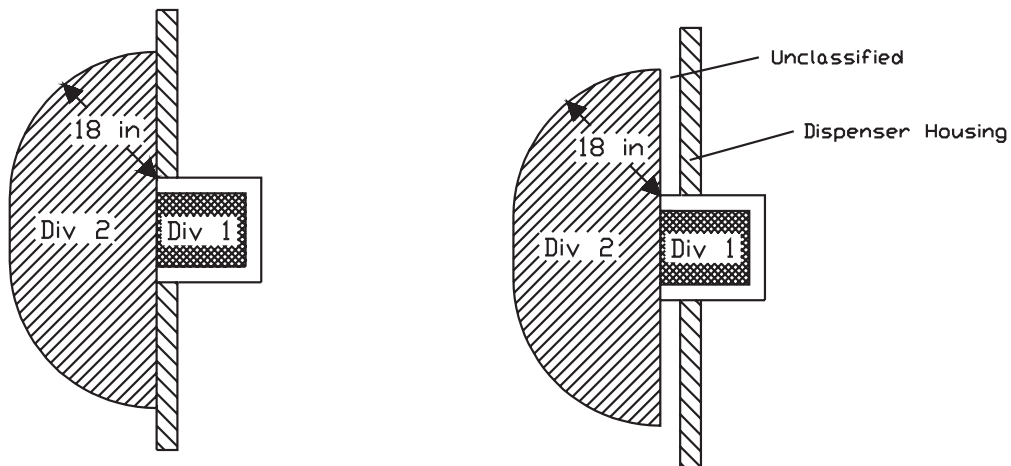
D.

Figure 4-1 Loading Printer Paper.

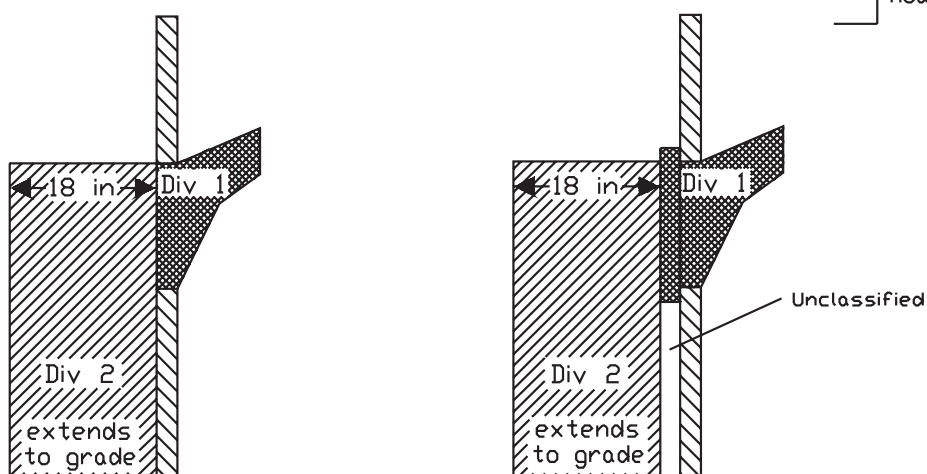


Hazardous location classifications associated with a hose nozzle boot

TOP VIEW



SIDE VIEW



Unclassified area might be a Division 2 area if there is a Division 1 area on the other side of the housing

Figure 4-2 Hazardous Zone Area Classifications for Dispensers.

5 OPERATOR MAINTENANCE

5.1 Preventive Maintenance

The safety precautions described in Section 1.3 apply to the following preventive maintenance procedures. A correctly installed dispenser, given proper preventive maintenance attention, will seldom require emergency service. Perform the following checks on a regular basis:

- Check the dispenser for internal and external leaks regularly. Check nozzles, swivels, hoses, filters, and joints for leaks and wear. Have all defects repaired immediately.
- Do not abuse the hose by trying to stretch it to reach an automobile. This will cause early failure at the couplings.
- Keep the dispenser clean at all times. Use only mild soap and water with a soft cloth. Do not use gasoline or other petroleum-based products to clean the dispenser. Do not use abrasive cleaners on any part of the dispenser. All stainless steel surfaces require polishing with a non-abrasive silicone wax a minimum of three times per year to maintain a bright finish and prevent corrosion. If it is necessary to just wipe off the dispenser, use a damp cloth. See Section 5.3 for additional information on cleaning and corrosion prevention.

NOTE: Do not spray the dispenser with water.

- Before removing the bezel, wipe off any water lying along the top edge of the dispenser so it will not run inside when the bezel is removed.
- If the bezels must be removed during rainy weather, take care to prevent rain from getting inside the dispenser.
- Test the tank for water regularly. Water in petroleum is not only a source of engine trouble but will also cause damage to the dispenser.
- Check the nozzle boot switch operation. If this does not operate easily, too much force may be applied on the switch mechanisms, causing premature failure.
- Periodically check and lubricate all key lock cylinders and locking mechanisms.

5.2 Strainer/Filter

A dirty strainer screen and/or fuel filter will slow down the delivery of product. For location see Figure 2-4. If the underground installation is new, it may be necessary replace the filter and clean the strainer screen two or three times during the first few days of operation to remove installation debris and pipe sealant. After this, filter replacement and strainer cleaning should be performed periodically.



WARNING

Before removing the filter and strainer turn the power to the dispenser and submersible pump(s) off and close the emergency shut-off valves on the dispenser being serviced. Failure to do so may result in a hazardous condition that can result in serious injury. Loosen strainer cap or spin-on filter slightly and allow gasoline to drain into a plastic container until pressure is relieved. Return product to the appropriate underground tank.

5.2 Strainer/Filter, continued

- The fuel filter is removed by unscrewing it (the same way an oil filter is removed from a car engine). Place a container under the filter to catch the product and sediment. To install the new filter, first apply a film of oil to the gasket and hand turn until gasket contacts base, then tighten one half turn. Open the emergency shut-off valve(s), turn the electrical power ON and check for leaks.
- Remove the strainer for cleaning by unscrewing the filter (or cap) and then pulling out the strainer. Place a container under the filter or cap to catch the petroleum and sediment. Wash the screen in gasoline and dislodge lint and other foreign particles with compressed air. Install the clean strainer and a new filter. Open the emergency shut-off valve(s), turn the electrical power ON and check for leaks.

NOTE: Replacement fuel filters must be UL recognized.

5.3 Cleaning Instructions - Ovation Dispensers

To properly care for your Ovation dispenser:

- Step 1** Wash the dispenser frequently with a non-abrasive cloth and warm water mixed with a mild household cleaner (such as dishwashing liquid). Use only mild soap and water for cleaning the dispenser. Absolutely no industrial strength or abrasive cleaners should be used on any other area of the dispenser, except where noted in Step 2 below. Do not use high pressure water hose to rinse off the dispenser around the upper door. After cleaning, the dispenser should be wiped down with a clean damp cloth.
- Step 2** In extreme cases of stains, such as diesel fuel stains or gas related grime build-up on or around the nozzle boot and the lower door only, use an industrial strength cleaner such as "Simple Green" or equivalent and use it mildly, avoiding heavy scrubbing that could ruin the finish in these areas. Again, absolutely no industrial strength or abrasive cleaners should be used on any other area of the dispenser. Do not use this type of cleaner on the upper door.
- Step 3** The lower door is a painted metal door and may be waxed with an automotive wax or polish. We recommend waxing or polishing the lower door at least three times a year.

Caution: Do not direct pressurized water (even from a garden hose) at the dispenser. Under no circumstances should power washers be used to clean the dispensers. This can force water into the electronic head and cause damage to the electronic components in the dispenser rendering it inoperative.

Caution: Do not use all-purpose cleaners on the surfaces of the dispenser except where note in Step 2 above. These cleaners may scratch the clear plastic, as well as break down the corrosion resistance of painted surfaces.

Caution: Do not use gasoline or other petroleum-based products to clean the dispenser.

5.4 Vapor Recovery

All hoses, nozzles, breakaways, etc., must be CARB certified for use on Wayne vapor recovery dispensers.

5.4.1 Wayne Vac

See the Compliance Testing and Preventative Maintenance manual, p/n 917947.

5.4.2 Balance

Tears or rips in the balance nozzle vapor bellows will cause the vapor system to be in non-compliance. Replace or repair the nozzles as necessary.

The bellows face-plate (where nozzle seals on vehicle fuel tank) must make a good seal when inserted into the fuel tank. Damaged or warped faces are not acceptable and will cause the system to be in non-compliance. Replace or repair as necessary.

Wire clamps at top of the bellows may have critical placement to requirement to maintain compliance. If clamp is loose or broken, it must be replaced or repaired according to the nozzle manufacturer instructions.

To ensure on-going compliance of the balance system, once per year checks of the pressure drop and tightness of the system are recommended. These test are discussed in Section 2.

5.5 Meter Maintenance Issue

It is recommended that Wayne Fuel Meters be periodically checked for acceptable accuracy based on NCWM Handbook 44 under the General Code, G-UR.4 Maintenance Requirements and Liquid Measuring Device Code, Section 3.30.

If adjustment need to be made, one would follow the prescribed procedure in the service manuals for the respective equipment. All adjustments shall be made in accordance with G-UR.4 Maintenance Requirements of Handbook 44.

APPENDIX A

QCAT SELF-TEST PROCEDURE

The following are instructions for testing the CAT (Customer Activated Terminal) on the dispenser.

1. QCAT SYSTEM SELF-TEST

The following paragraphs provide instructions for testing and setting the address of the QCAT. During the self-test, the system is designed to pause 25 seconds for a response to self-test prompts. When the 25 second time limit expires, the system automatically advances to either the next self-test or returns to the on-line mode.

1.1. ENTERING SELF-TEST MODE

Step 1 Power down the QCAT.

Step 2 Power up the QCAT while holding down any key on the keypad until the alternating message below appears on the display.

Step 3 Press the indicated key or press NEXT to continue to the next screen prompt.

CONTRAST ADJUST
PRESS NEXT TO EXIT

YES = DARKER
NO = LIGHTER

1.2. QCAT SOFTWARE REVISION LEVEL AND DATA LINK ADDRESS

Step 1 Continue holding the key down until the “REV” message below appears on the display, then release. Once the system displays the “REV” message, the module has successfully entered the self-test mode.

REV XXX MM/DD/YY
ADDRESS = YY

The top row of information in the “REV” message display represents the QCAT software revision. The bottom row is the current terminal address for the data link. Data link addresses are assigned to the module using the same number as the fueling point.

Step 2 If the CAT’s data link address is correct, press the **ENTER** key. To change the address, enter the correct address number on the keypad and press **ENTER** (if the CAT is equipped with a DES keypad, the keypad revision will be displayed).

1.2 CAT SELF TEST, continued

Step 3 Verify that the Keypad revision level is displayed on the screen.

Step 4 Press ENTER to continue.

KEYPAD REV __

1.3. CONFIGURE CARD READER

When the system displays the prompt below, proceed as follows:

*CONFIGURE CARD READER (Y/N)

Answering **YES** to the prompt causes the screen to display the prompt below

or

Answering **NO** to the prompt and the system automatically proceeds to the "Offline msg" prompt.

TRACK 1 OR 3 (1/3)

To answer the "Track 1 or 3" prompt, perform the following steps:

Step 1 Press **1** on the keypad.

Step 2 Press the **ENTER** key and the following prompt will be displayed.

INVERT INSERTED SIGNAL (Y/N)

Answer **NO** to the above prompt.

1.3 Configure Card Reader, continued

Offline of Service	msg:	Out (Y/N)
-----------------------	------	--------------

Step 3 Answer **NO** to the above prompt.

Step 4 Answer the following prompts as they appear:

Fixed Length Scanner? (Y/N)

SOFT KEY PRESENT? (Y/N)

This prompt should be set to yes only if the dispenser has softkeys along side the QVGA display. On dispensers without softkeys, answer No to the above prompt, otherwise, the numeric keypad will not work when the dispenser is online.

FULL SCREEN MODE? (Y/N)

INITIALIZE FLASH AREA? (Y/N)

Select NO to the above prompt unless installing softkeys for the first time.

Self Test? (Y/N)

Answering YES to the above prompt will begin the display, printer and card reader self test as discussed on the following pages.

Answering NO to the above prompt will display the Exit prompt shown below.

Exit Test Mode? (Y/N)

Answer YES to the above prompt to exit and return the CAT to normal operation.

Answer NO to the above prompt to return to the beginning of the Self Test mode.

1.4. DISPLAY SELF-TEST

A series of actions appear on the screen for the display self-test. Two rows of black squares followed by numbers and letters scroll from right to left across the screen during the display self-test.

At the prompt “Press Key”, press each of the Softkeys to verify they are active and installed correctly. The following values should be displayed upon key presses:

Left	Right
34	44
33	43
32	42
31	41
30	40

Note: If values are switched right to left and top to bottom, the softkey cables are reversed.

Press NEXT when finished verifying Softkeys.

1.5. PRINTER SELF-TEST

The message shown below appears continuously on the display screen during the printer self-test.



The printer self-test performs the following actions in sequence:

1. Advance the paper one half inch.
2. Print QCAT information (ROM version, processor type, etc.)
3. Print five rows of characters followed by five more rows of slashes (\ and /).
4. Advance the paper one inch and cut the paper.

Once the paper is cut, the system automatically activates the card reader self-test.

1.6. CARD READER SELF-TEST

Any type of valid credit card can be used for the card reader test. The card reader self-test begins with the screen prompt shown below.



- Step 1** Insert the card.
Once the credit card is inserted into the card reader, the CAT computer reads data from the card.



- Step 2** Remove the credit card in one smooth continuous motion when the above prompt appears on the display screen.

A series of digits appear on lines 1 and 2 of the display screen. This information is the card data.

- Step 3** Press the **NEXT** key and continue to the keypad self-test.

If either of the following prompts appear on the display screen, "TRACK READ ERROR" or "CARD READ ERROR", the credit card is invalid. Depending on the type of invalid credit card, one or two rows of digits may appear on the display screen. To complete the card reader self-test, select a different credit card and repeat procedure. If the error message continues to be displayed, the card reader may need replacing.



1.7. KEYPAD SELF-TEST

Testing the CAT keypad requires the operator to select keys on the keypad and verify the information on the display screen. Refer to the Keypad Test table on the following page.

Complete the following steps to test the keypad.

Step 1 Press a key listed under the column heading Native Mode Key.

Step 2 Verify the two digit number on the display screen with the number listed under the column heading Keypad Coordinate.

The screen does not display a two digit number when the NEXT key is pressed. This key remains functional during the keypad self-test.

Step 3 Repeat Steps 1 and 2 until all of the keys are tested.

Step 4 Press the **NEXT** key to proceed to the memory self-test.

KEYPAD TEST

Native Mode Key	Keypad Coordinate
CLEAR	00
7	01
4	02
1	03
0	10
8	11
5	12
2	13
ENTER	20
9	21
6	22
3	23
CANCEL	30
NO	32
YES	33
NEXT	Proceed to memory test.

1.8. SYSTEM MEMORY SELF-TEST

A successful memory self-test will display the message below.



An unsuccessful memory self-test will display one of the following: "BIT 0" through "BIT 7". A BIT error message is an indication of a defective board in the CAT system. An example of a BIT error message that may appear on the display screen is shown below.



1.9. EXIT SELF-TEST MODE

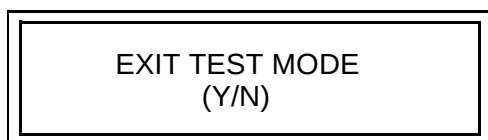
Once the system successfully completes the memory self-test, the exit prompt shown below appears on the screen.

Complete one of the following steps:

Press the **YES** key to exit the self-test mode,

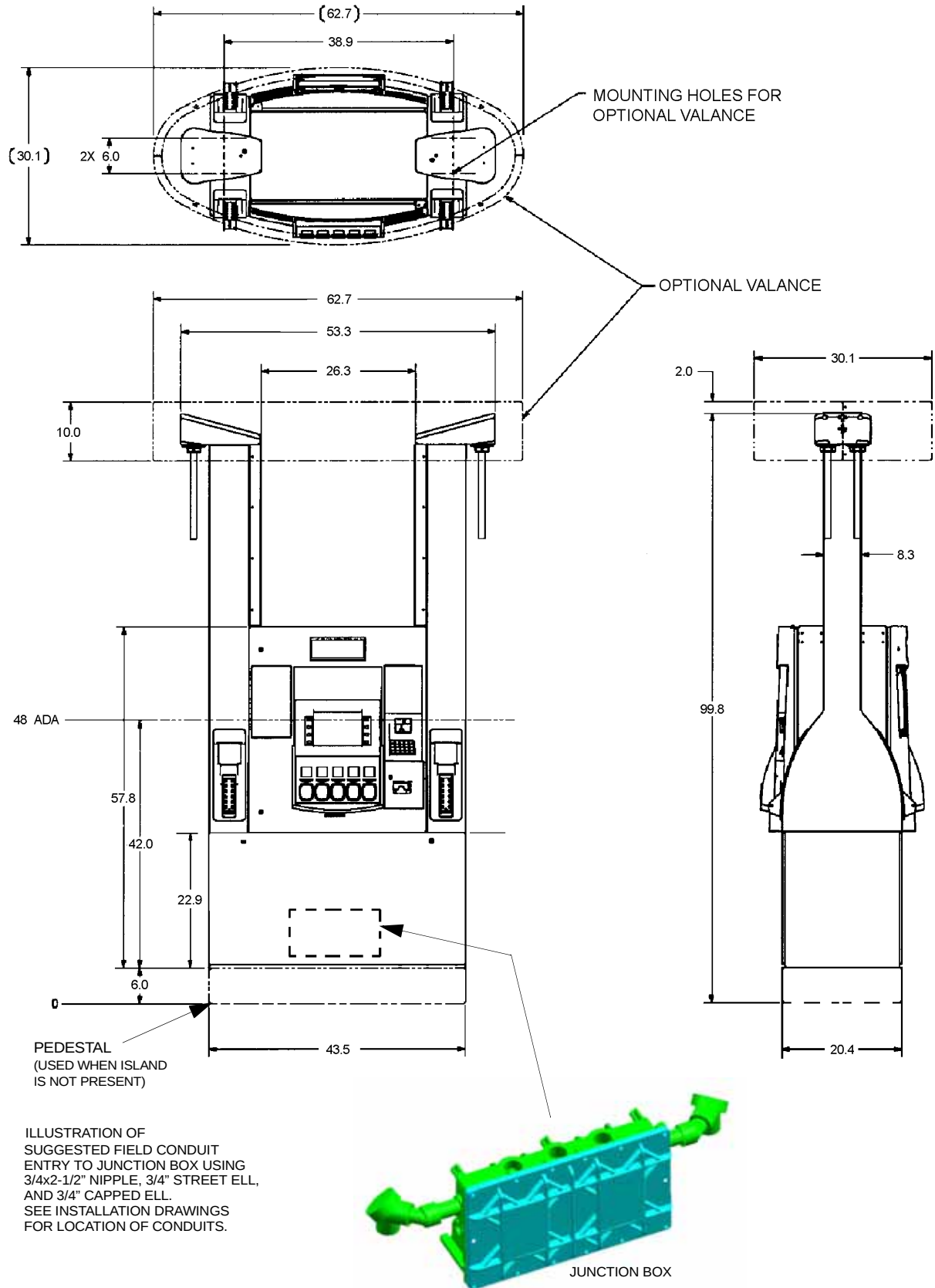
or

Press the **NO** key to begin the self-test mode again.

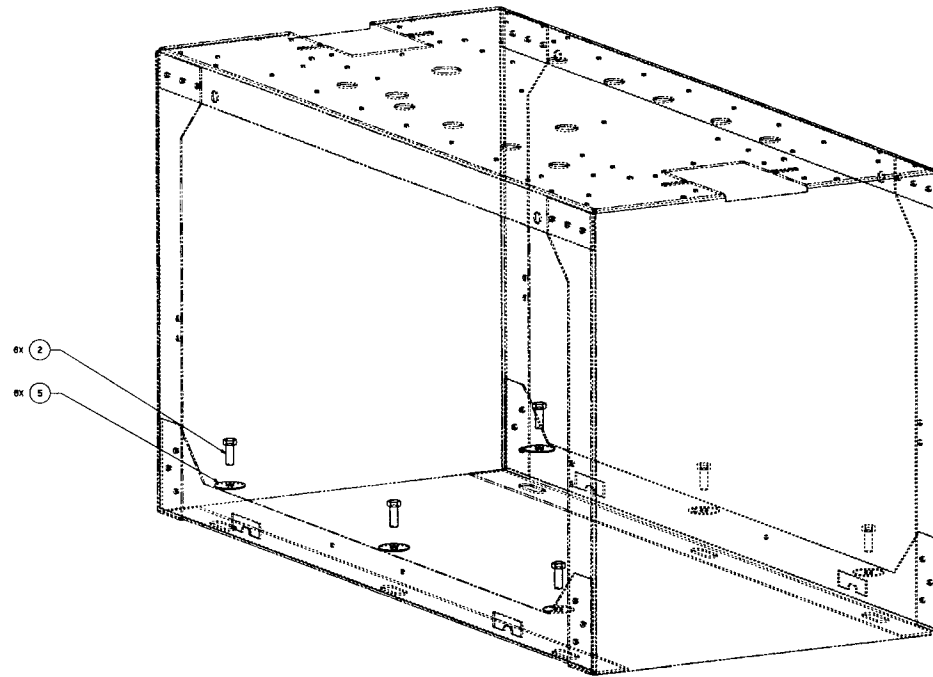


APPENDIX B INSTALLATION DRAWINGS

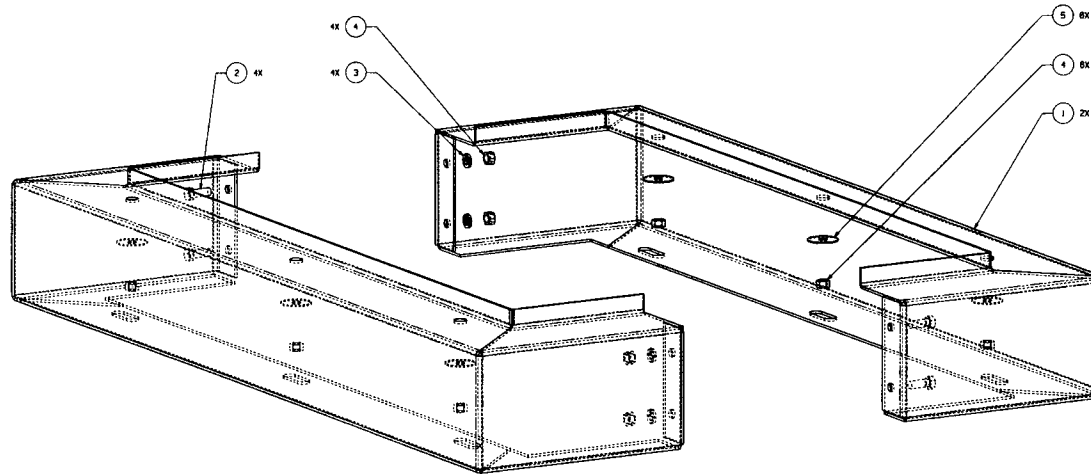
P/O 888525-001



Ovation Dimensional Drawing.



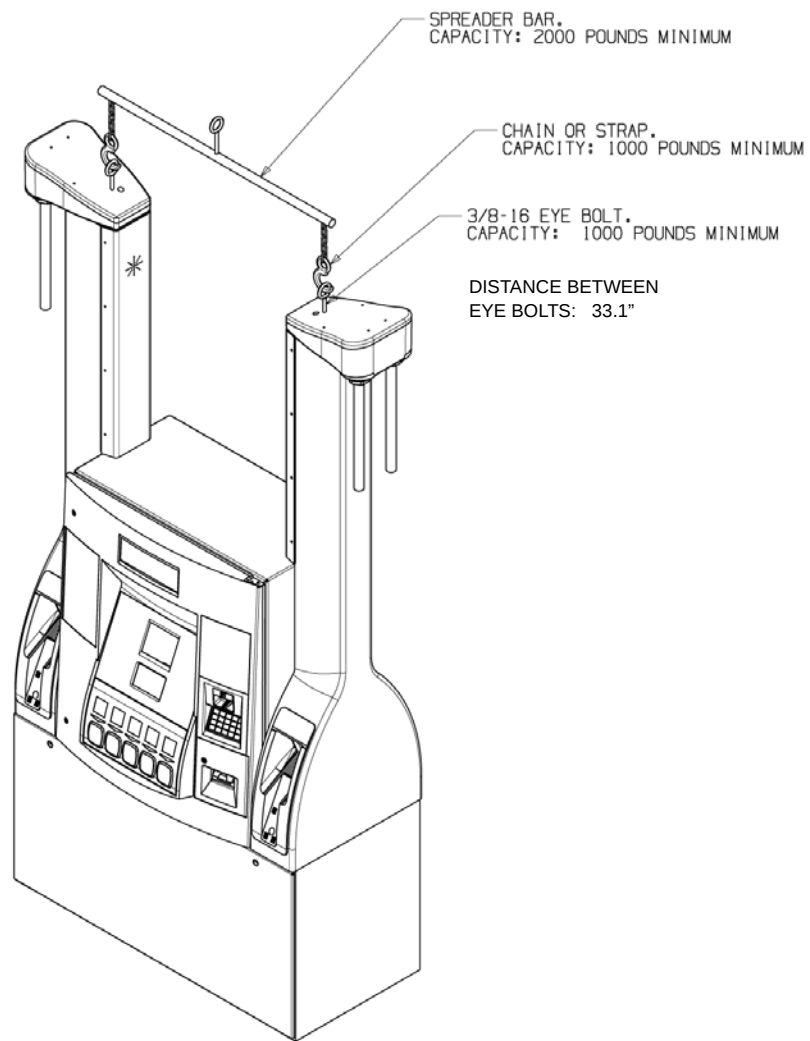
ITEM#	DESCRIPTION
1	Pedestal
2	Bolt 3/8-16x1"
3	Lockwasher 3/8"
4	Nut 3/8-16
5	Washer



Ovation Pedestal Module

888513-XXX REV A

IN THE FIELD CHECKED BY: _____ DATE: _____ PART SHALL BE FREE OF DAMAGE INITIALS: _____		REVISIONS REV. NO. 1 DATE: _____ BY: _____ FOR: _____ INITIALS: _____		DESCRIPTION DRESSER WAYNE Dallas, TX TITLE: PEDESTAL MODULE, OVATION SIZE: 888513-XXX SCALE: 1/1	
--	--	---	--	--	--

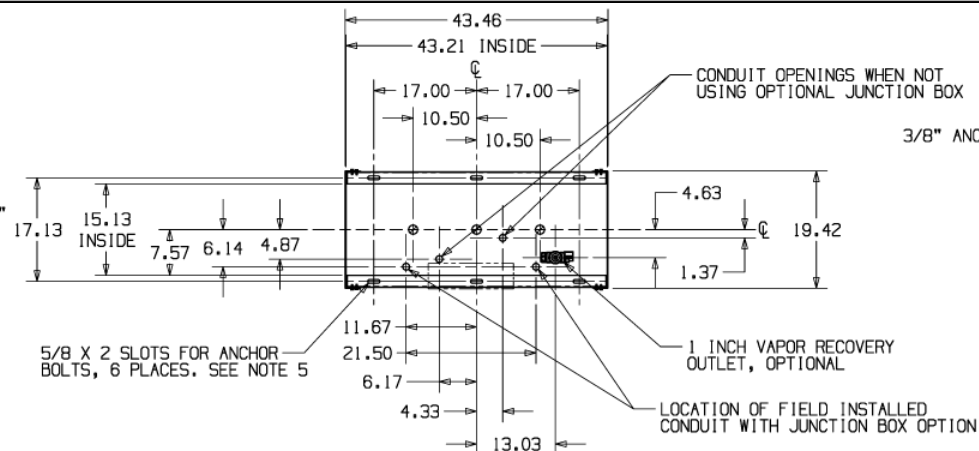


Ovation LIFTING INSTRUCTION

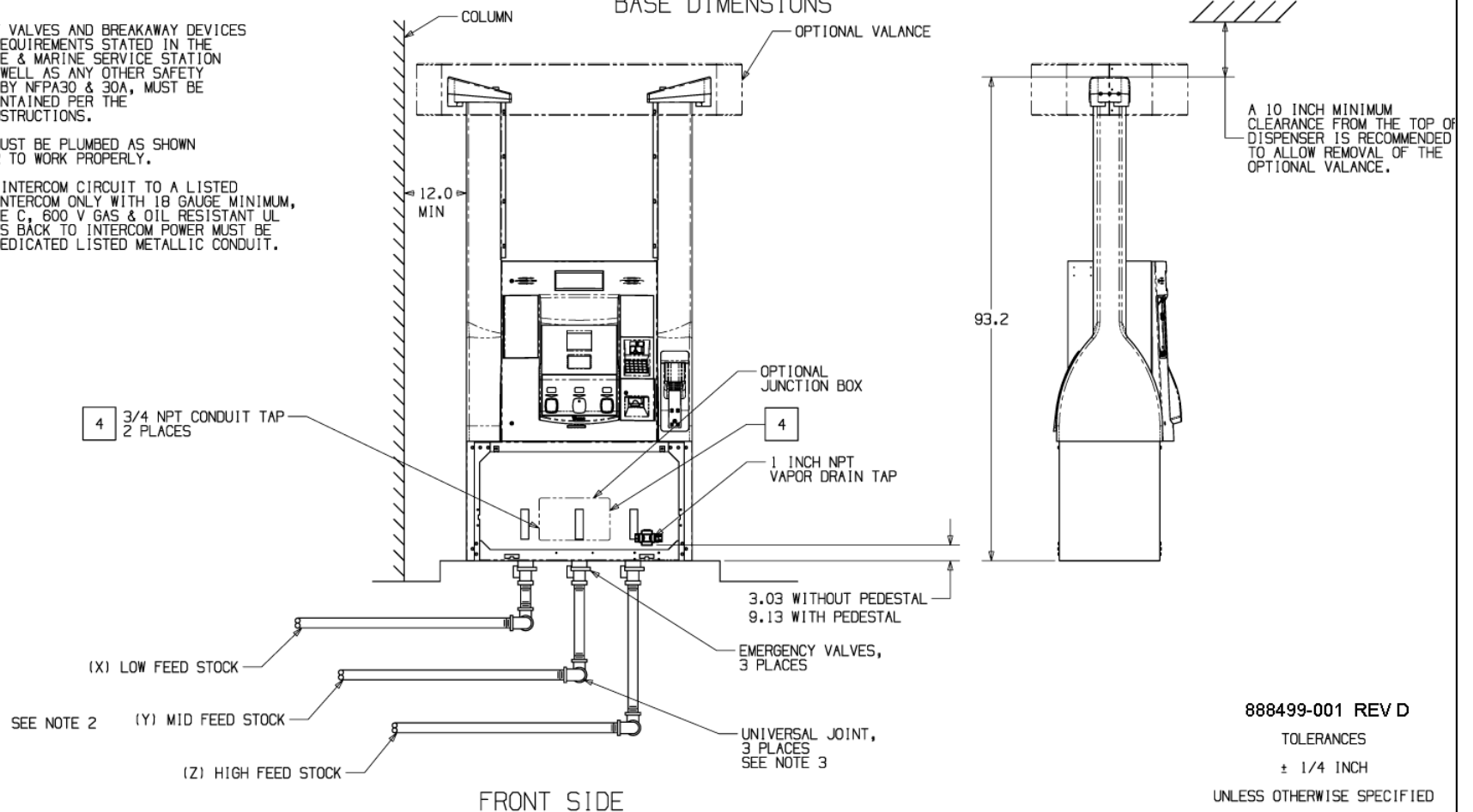
P/O DRAWING NO.
888514-001 REV A

NOTES: UNLESS OTHERWISE SPECIFIED

1. ALL PIPING AND ELECTRICAL INSTALLATIONS MUST CONFORM TO ALL APPLICABLE REGULATIONS INCLUDING NFPA30, FLAMMABLE & COMBUSTIBLE LIQUIDS CODE; NFPA30A, AUTOMOTIVE & MARINE SERVICE STATION CODE; NFPA70, NATIONAL ELECTRICAL CODE. DO NOT "DAISY CHAIN" THE DISPENSER POWER CIRCUIT TO ANY OTHER EQUIPMENT.
2. PIPING FROM TANK TO DISPENSER SHOULD SLOPE UPWARDS TO AVOID AIR OR LIQUID TRAPS.
3. USE UNIVERSAL JOINTS AT DISPENSER TO ALLOW FOR GROUND MOVEMENT.
4. WHEN USING OPTIONAL JUNCTION BOX, USE INDICATED CONDUIT TAPS SHOWN TO MAKE ELECTRICAL CONNECTIONS TO DISPENSER.
5. FIRMLY MOUNT THE DISPENSER TO THE ISLAND USING THE ANCHOR BOLT LOCATIONS SHOWN. SEE ANCHORING DETAIL. USE OF ALL ANCHORING LOCATIONS RECOMMENDED.
6. EMERGENCY SHUTOFF VALVES AND BREAKAWAY DEVICES ARE EXAMPLES OF REQUIREMENTS STATED IN THE NFPA30A AUTOMOTIVE & MARINE SERVICE STATION CODE. THESE, AS WELL AS ANY OTHER SAFETY DEVICES REQUIRED BY NFPA30 & 30A, MUST BE INSTALLED AND MAINTAINED PER THE MANUFACTURER'S INSTRUCTIONS.
7. THE FEED STOCKS MUST BE PLUMBED AS SHOWN FOR THE DISPENSER TO WORK PROPERLY.
8. CONNECT OPTIONAL INTERCOM CIRCUIT TO A LISTED CLASS 2 POWERED INTERCOM ONLY WITH 18 GAUGE MINIMUM, AT LEAST 90 DEGREE C, 600 V GAS & OIL RESISTANT UL LISTED WIRE. WIRES BACK TO INTERCOM POWER MUST BE RUN IN SEPARATE DEDICATED LISTED METALLIC CONDUIT.



BASE DIMENSIONS



888499-001 REV D

TOLERANCES

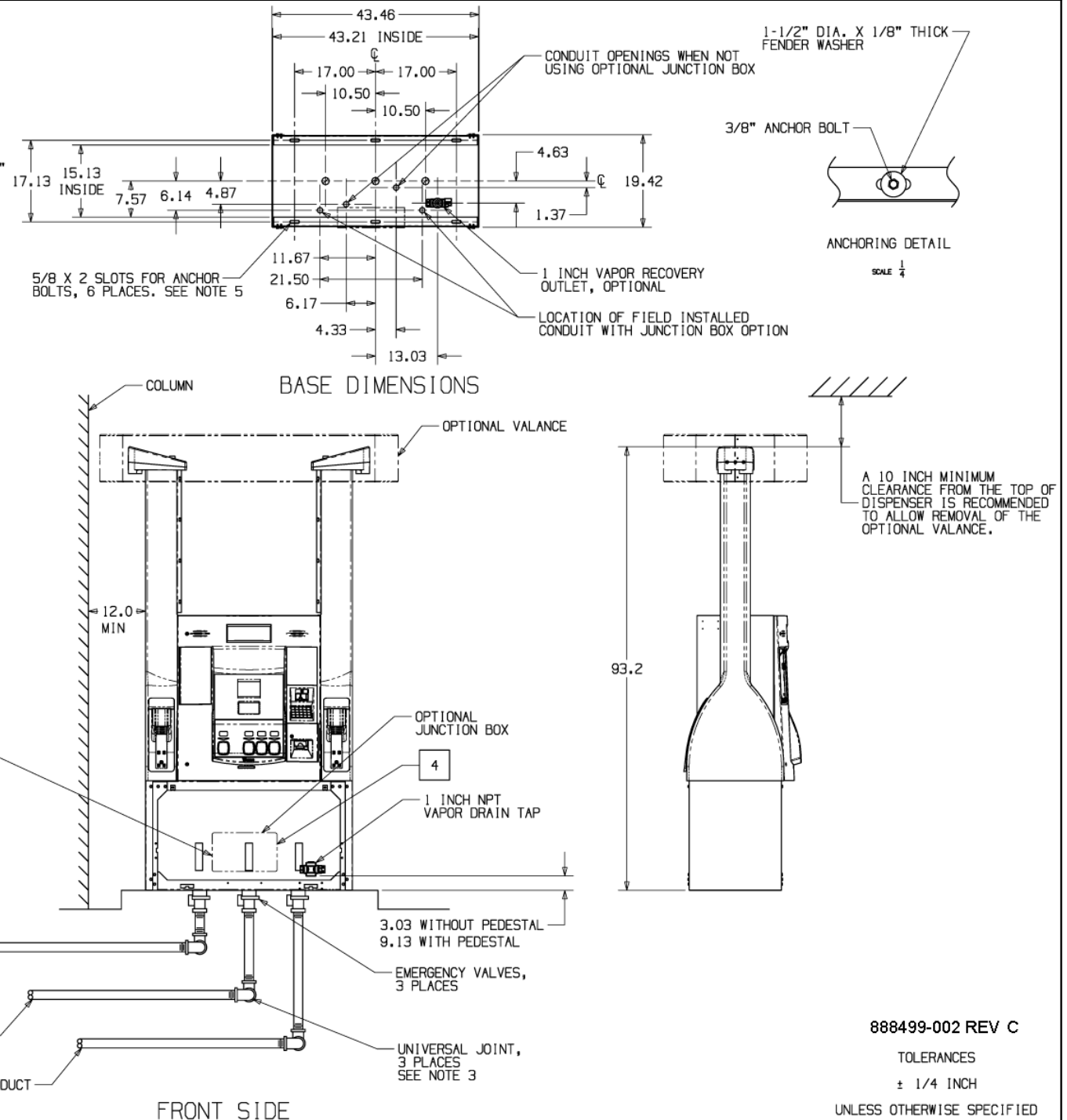
± 1/4 INCH

UNLESS OTHERWISE SPECIFIED

INSTALLATION INSTRUCTION - OVATION MODEL R13

NOTES: UNLESS OTHERWISE SPECIFIED

1. ALL PIPING AND ELECTRICAL INSTALLATIONS MUST CONFORM TO ALL APPLICABLE REGULATIONS INCLUDING NFPA30, FLAMMABLE & COMBUSTIBLE LIQUIDS CODE; NFPA30A, AUTOMOTIVE & MARINE SERVICE STATION CODE; NFPA70, NATIONAL ELECTRICAL CODE. DO NOT "DAISY CHAIN" THE DISPENSER POWER CIRCUIT TO ANY OTHER EQUIPMENT.
2. PIPING FROM TANK TO DISPENSER SHOULD SLOPE UPWARDS TO AVOID AIR OR LIQUID TRAPS.
3. USE UNIVERSAL JOINTS AT DISPENSER TO ALLOW FOR GROUND MOVEMENT.
4. WHEN USING OPTIONAL JUNCTION BOX, USE INDICATED CONDUIT TAPS SHOWN TO MAKE ELECTRICAL CONNECTIONS TO DISPENSER.
5. FIRMLY MOUNT THE DISPENSER TO THE ISLAND USING THE ANCHOR BOLT LOCATIONS SHOWN. SEE ANCHORING DETAIL. USE OF ALL ANCHORING LOCATIONS RECOMMENDED.
6. EMERGENCY SHUTOFF VALVES AND BREAKAWAY DEVICES ARE EXAMPLES OF REQUIREMENTS STATED IN THE NFPA30A AUTOMOTIVE & MARINE SERVICE STATION CODE. THESE AS WELL AS ANY OTHER SAFETY DEVICES REQUIRED BY NFPA30 & 30A, MUST BE INSTALLED AND MAINTAINED PER THE MANUFACTURER'S INSTRUCTIONS.
7. THE FEED STOCKS MUST BE PLUMBED AS SHOWN FOR THE DISPENSER TO WORK PROPERLY.
8. CONNECT OPTIONAL INTERCOM CIRCUIT TO A LISTED CLASS 2 POWERED INTERCOM ONLY WITH 18 GAUGE MINIMUM, AT LEAST 90 DEGREE C, 600 V GAS & OIL RESISTANT UL LISTED WIRE. WIRES BACK TO INTERCOM POWER MUST BE RUN IN SEPARATE DEDICATED LISTED METALLIC CONDUIT.



888499-002 REV C

TOLERANCES

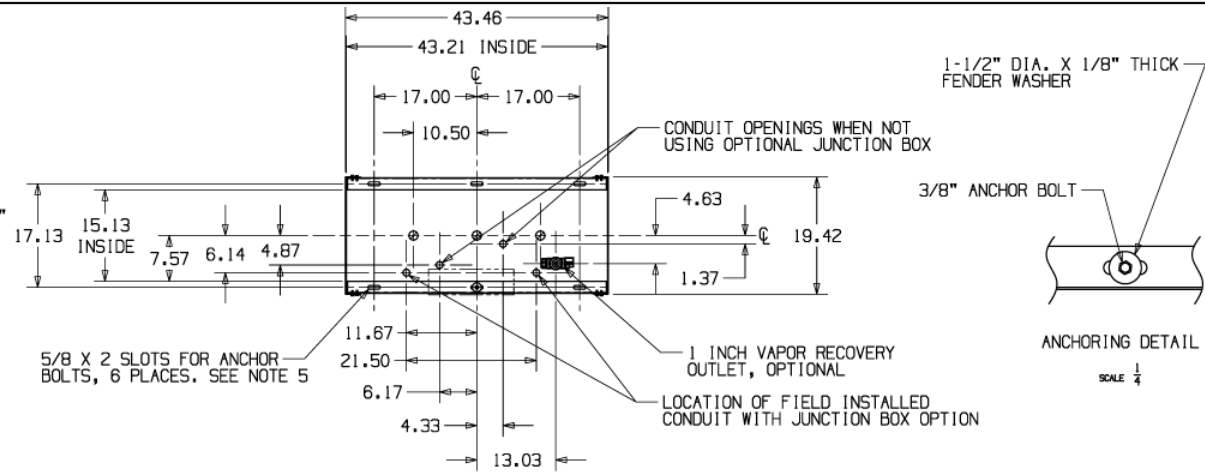
± 1/4 INCH

UNLESS OTHERWISE SPECIFIED

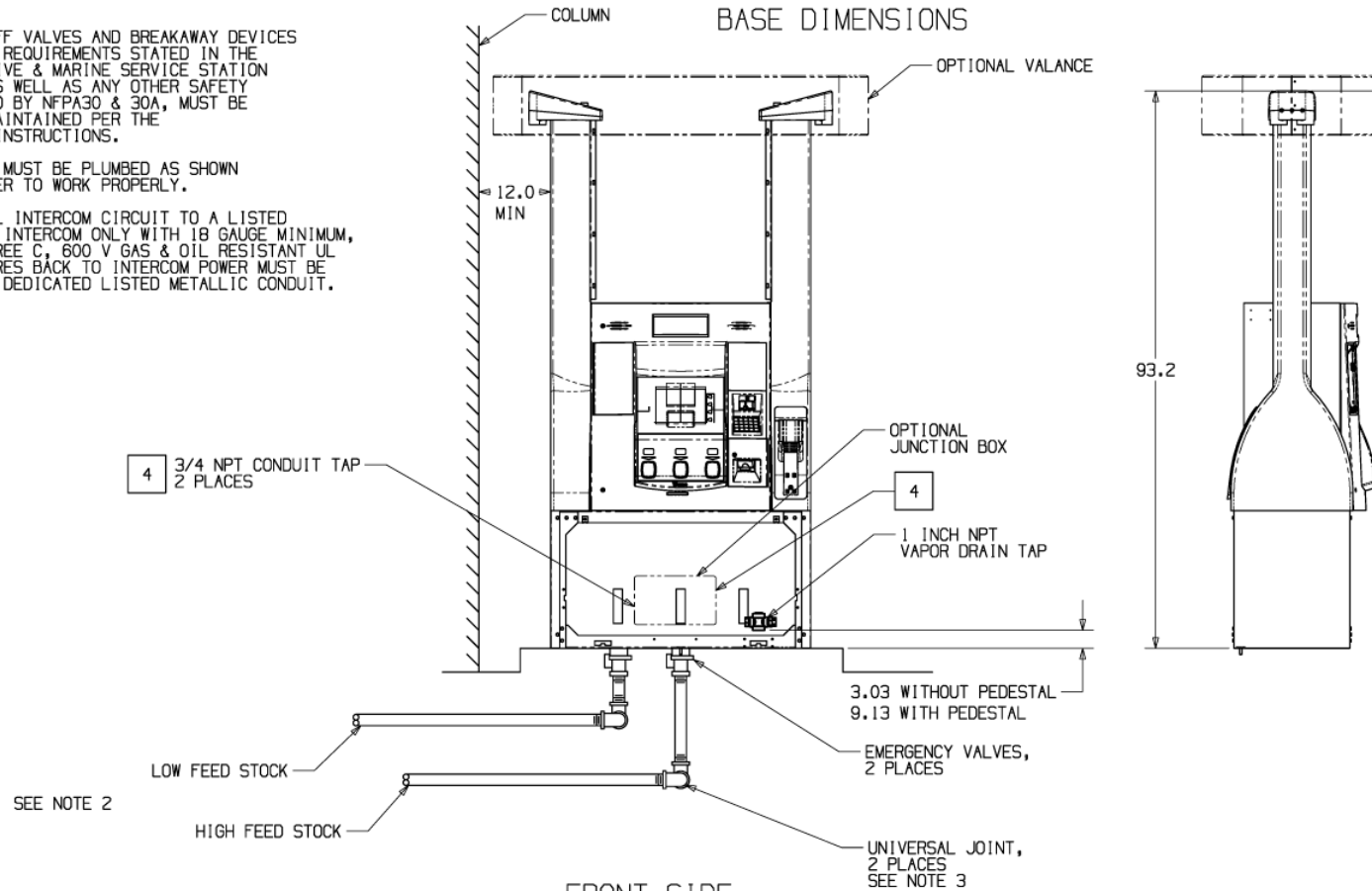
INSTALLATION INSTRUCTION - OVATION MODEL B23

NOTES: UNLESS OTHERWISE SPECIFIED

1. ALL PIPING AND ELECTRICAL INSTALLATIONS MUST CONFORM TO ALL APPLICABLE REGULATIONS INCLUDING NFPA30, FLAMMABLE & COMBUSTIBLE LIQUIDS CODE; NFPA30A, AUTOMOTIVE & MARINE SERVICE STATION CODE; NFPA70, NATIONAL ELECTRICAL CODE. DO NOT "DAISY CHAIN" THE DISPENSER POWER CIRCUIT TO ANY OTHER EQUIPMENT.
2. PIPING FROM TANK TO DISPENSER SHOULD SLOPE UPWARDS TO AVOID AIR OR LIQUID TRAPS.
3. USE UNIVERSAL JOINTS AT DISPENSER TO ALLOW FOR GROUND MOVEMENT.
4. WHEN USING OPTIONAL JUNCTION BOX, USE INDICATED CONDUIT TAPS SHOWN TO MAKE ELECTRICAL CONNECTIONS TO DISPENSER.
5. FIRMLY MOUNT THE DISPENSER TO THE ISLAND USING THE ANCHOR BOLT LOCATIONS SHOWN. SEE ANCHORING DETAIL. USE OF ALL ANCHORING LOCATIONS RECOMMENDED.
6. EMERGENCY SHUTOFF VALVES AND BREAKAWAY DEVICES ARE EXAMPLES OF REQUIREMENTS STATED IN THE NFPA30A AUTOMOTIVE & MARINE SERVICE STATION CODE. THESE, AS WELL AS ANY OTHER SAFETY DEVICES REQUIRED BY NFPA30 & 30A, MUST BE INSTALLED AND MAINTAINED PER THE MANUFACTURER'S INSTRUCTIONS.
7. THE FEED STOCKS MUST BE PLUMBED AS SHOWN FOR THE DISPENSER TO WORK PROPERLY.
8. CONNECT OPTIONAL INTERCOM CIRCUIT TO A LISTED CLASS 2 POWERED INTERCOM ONLY WITH 18 GAUGE MINIMUM, AT LEAST 90 DEGREE C, 600 V GAS & OIL RESISTANT UL LISTED WIRE. WIRES BACK TO INTERCOM POWER MUST BE RUN IN SEPARATE DEDICATED LISTED METALLIC CONDUIT.



BASE DIMENSIONS



A 10 INCH MINIMUM CLEARANCE FROM THE TOP OF DISPENSER IS RECOMMENDED TO ALLOW REMOVAL OF THE OPTIONAL VALANCE.

888499-003 REV D

TOLERANCES

± 1/4 INCH

UNLESS OTHERWISE SPECIFIED

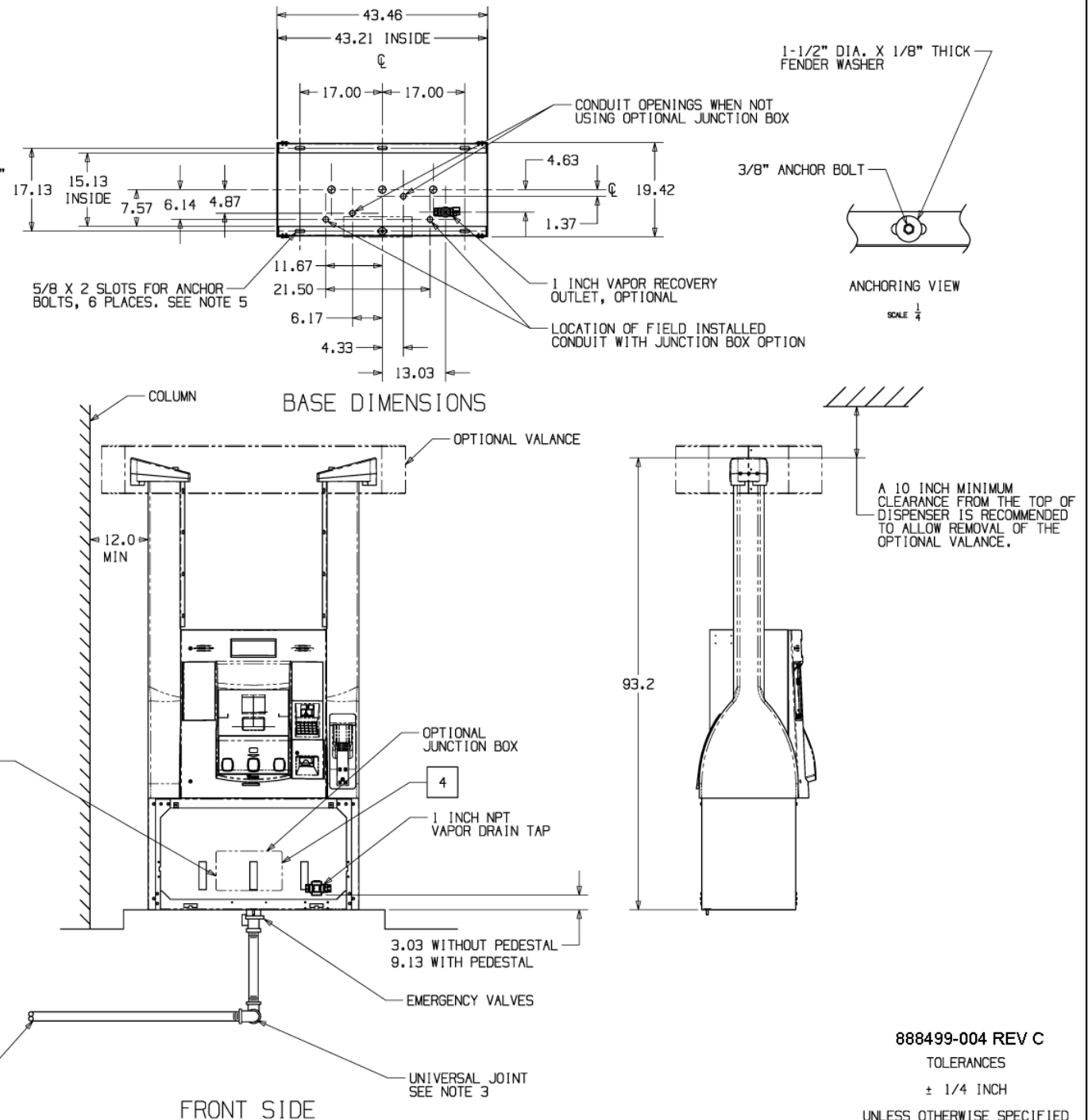
INSTALLATION INSTRUCTION - OVATION MODELS B12 AND R22

NOTES: UNLESS OTHERWISE SPECIFIED

1. ALL PIPING AND ELECTRICAL INSTALLATIONS MUST CONFORM TO ALL APPLICABLE REGULATIONS INCLUDING NFPA30, FLAMMABLE & COMBUSTIBLE LIQUIDS CODE; NFPA30A, AUTOMOTIVE & MARINE SERVICE STATION CODE; NFPA70, NATIONAL ELECTRICAL CODE. DO NOT "DAISY CHAIN" THE DISPENSER POWER CIRCUIT TO ANY OTHER EQUIPMENT.
2. PIPING FROM TANK TO DISPENSER SHOULD SLOPE UPWARDS TO AVOID AIR OR LIQUID TRAPS.
3. USE UNIVERSAL JOINTS AT DISPENSER TO ALLOW FOR GROUND MOVEMENT.
4. WHEN USING OPTIONAL JUNCTION BOX, USE INDICATED CONDUIT TAPS SHOWN TO MAKE ELECTRICAL CONNECTIONS TO DISPENSER.
5. FIRMLY MOUNT THE DISPENSER TO THE ISLAND USING THE ANCHOR BOLT LOCATIONS SHOWN. SEE ANCHORING DETAIL. USE OF ALL ANCHORING LOCATIONS RECOMMENDED.
6. EMERGENCY SHUTOFF VALVES AND BREAKAWAY DEVICES ARE EXAMPLES OF REQUIREMENTS STATED IN THE NFPA30A AUTOMOTIVE & MARINE SERVICE STATION CODE. THESE, AS WELL AS ANY OTHER SAFETY DEVICES REQUIRED BY NFPA30 & 30A, MUST BE INSTALLED AND MAINTAINED PER THE MANUFACTURER'S INSTRUCTIONS.
7. THE FEED STOCKS MUST BE PLUMBED AS SHOWN FOR THE DISPENSER TO WORK PROPERLY.
8. CONNECT OPTIONAL INTERCOM CIRCUIT TO A LISTED CLASS 2 POWERED INTERCOM ONLY WITH 18 GAUGE MINIMUM, AT LEAST 90 DEGREE C, 600 V GAS & OIL RESISTANT UL LISTED WIRE. WIRES BACK TO INTERCOM POWER MUST BE RUN IN SEPARATE DEDICATED LISTED METALLIC CONDUIT.

4 3/4 NPT CONDUIT TAP
2 PLACES

SEE NOTE 2



888499-004 REV C

TOLERANCES

± 1/4 INCH

UNLESS OTHERWISE SPECIFIED

INSTALLATION INSTRUCTION - OVATION MODEL R11

INSIDE ELECTRONIC HEAD -STD
INSIDE JUNCTION BOX - OPTIONAL

NOTES:

1. ALL EQUIPMENT TO BE INSTALLED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NFPA 70) AND THE AUTOMOTIVE AND MARINE SERVICE STATION CODE (NFPA 30A). NOTE: DATA AND RELAY SELECT WIRES ARE CONSIDERED CLASS 1 CIRCUITS.
2. FOR SUPPLY CONNECTIONS, USE WIRES RATED AT LEAST 90°C (194°F), 600V, GAS & OIL RESISTANT.
3. DISPENSER CONTROL POWER:

A. QUARTER-VGA DISPLAY

VOLTAGE: 110/120 VAC 50/60 Hz
AMPERAGE: CONTROL POWER AND LIGHTS - 1.6 AMPS
CONTROL POWER, LIGHTS, CARD AND HEATER - 5.6 AMPS
CONTROL POWER, LIGHTS, CARD, HEATER AND WAYNE TRAC - 6.4 AMPS
CONTROL POWER, LIGHTS, CARD, HEATER, WAYNE TRAC AND CASH - 6.6 AMPS

B. VGA DISPLAY

VOLTAGE: 110/120 VAC 50/60 Hz
AMPERAGE: CONTROL POWER, LIGHTS, CARD, HEATER AND VGA LIGHT - 6.3 AMPS
CONTROL POWER, LIGHTS, CARD, HEATER, VGA LIGHT AND WAYNE TRAC - 7.1 AMPS
CONTROL POWER, LIGHTS, CARD, HEATER, VGA LIGHT, WAYNE TRAC AND CASH - 7.3 AMPS

4. REMOTE DISPENSERS REQUIRE A RELAY TO INTERFACE TO THE SUBMERSIBLE PUMP MOTOR. POTTER AND BRUMFIELD RELAY PRD7AY0(120) IN A LISTED MAGNETIC MOTOR CONTROLLER ASSY IS RECOMMENDED. A MAXIMUM OF 12 DISPENSERS (24 FUELING POINTS) MAY BE CONNECTED TO A PRD7AY0 RELAY. OTHER RELAYS MAY HAVE DIFFERENT LIMITATIONS.
5. IN MULTIPLE DISPENSER INSTALLATIONS, ALL DISPENSERS OPERATING THE SAME SUBMERSIBLE PUMP CONTROL RELAY MUST BE CONNECTED TO THE SAME MAIN POWER CIRCUIT BREAKER. THIS MAY REQUIRE MULTIPLE PUMP CONTROL RELAYS FOR A SUBMERSIBLE PUMP, SEE DWG 7151-C FOR DETAILS.
6. THE ELECTRICAL INTERCONNECTIONS SHOWN ON THIS DRAWING ARE TYPICAL WHEN ADDITIONAL LIKE DISPENSERS ARE INSTALLED AT A SITE. SEE APPROPRIATE MODEL NO. INSTALLATION WIRING DIAGRAM WHEN OTHER MODELS ARE BEING INSTALLED.
7. FOR FULL DETAILS OF WAYNE CONTROL SYSTEMS INTERCONNECTIONS SEE THE MANUAL PROVIDED WITH THE WAYNE PUMP CONTROL SYSTEM OR WAYNE CARD PROCESSING SYSTEM.
8. LIGHTED VALANCE READY DISPENSERS ONLY. LIGHTED VALANCE ASSEMBLIES MUST BE LISTED FOR INSTALLATION ABOVE A CLASS 1, HAZARDOUS LOCATION. FOLLOW INSTRUCTIONS PROVIDED BY VALANCE MANUFACTURER AND SECURE ALL OPEN WIRING AWAY FROM SHARP EDGES, INCLUDING SHEET METAL.
9. OPTIONAL SPEAKER INSTALLATION WIRING IS LOCATED IN JUNCTION BOX. CONNECT INTERCOM CIRCUIT TO A LISTED CLASS 2 POWERED INTERCOM ONLY WITH 18 GAUGE MINIMUM, AT LEAST 90 DEGREE C, 600 V GAS & OIL RESISTANT UL LISTED WIRE. WIRES BACK TO INTERCOM POWER MUST BE RUN IN SEPARATE DEDICATED LISTED METALLIC CONDUIT.

DATA +
DATA - TO SITE CONTROLLER CABINET FOR CONNECTION TO WAYNE TRAC COMPONENTS, OPTIONAL.

DATA -
DATA + TO DATA DISTRIBUTION CABINET FOR CONNECTION TO A WAYNE PUMP CONTROL SYSTEM, OPTIONAL. SEE NOTE 7

DATA -
DATA + TO SITE CONTROLLER CABINET FOR CONNECTION TO A WAYNE CARD PROCESSING SYSTEM, OPTIONAL. SEE NOTE 7
(WIRES NOT USED WITH VGA CATs OPTION. SEE ETHERNET CONNECTION.)

RELAY SELECT (Z) SINGLE

RELAY SELECT (Y) HI

RELAY SELECT (X) LO

NEUTRAL

GROUND

TO SUMMERSIBLE PUMP
CONTROL RELAY COILS.
SEE NOTES 4 & 5

INSTALLATION WIRING DIAGRAM - OVATION Part of Drawing No. 888509-XXX Rev B

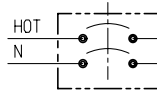
WIRE COLOR CHART

BLACK	- BK
BLUE	- BU
BROWN	- BN
GRAY	- GY
GREEN	- GN
ORANGE	- OR
PINK	- PK
RED	- R
VIOLET	- V
WHITE	- W
YELLOW	- Y

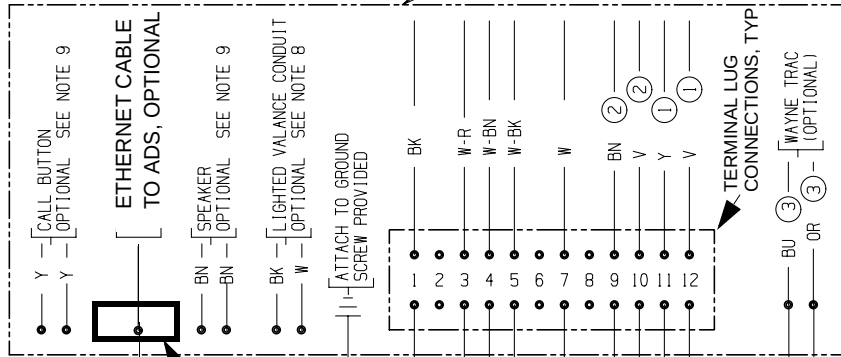
EXAMPLE:
W-BK = WHITE WIRE WITH BLACK STRIPE

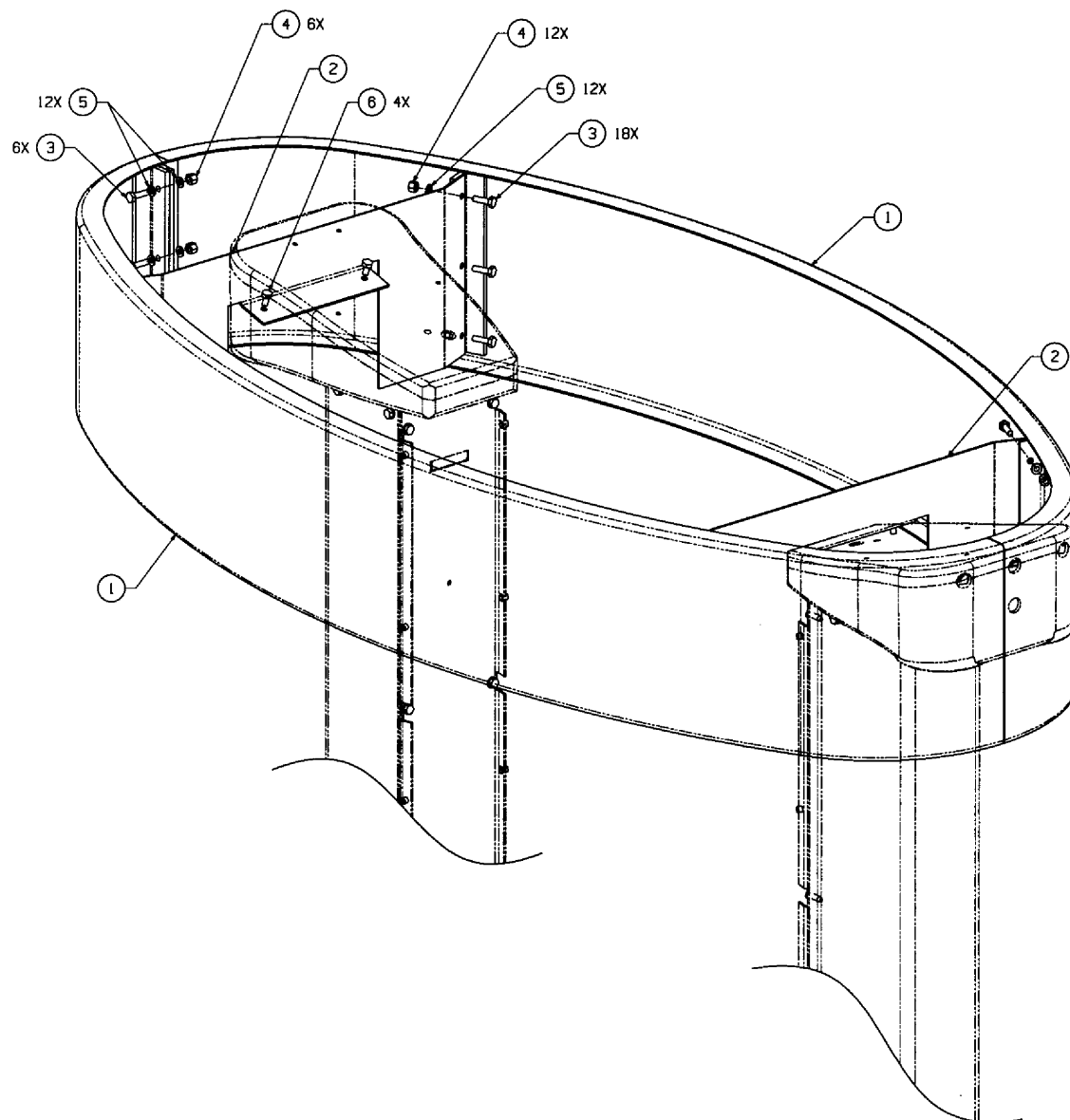
To Forecourt
Controller
Ethernet Hub
For VGA Option or
Router for IDPOS

DISPENSER CONTROL
POWER
NOTES 2 AND 3



Terminal
Block
Connection





THIS KIT CONSISTS OF:

ITEM NUMBER	DESCRIPTION	QUANTITY
1	VALANCE HALF (888684-001)	2
2	MOUNTING BRACKET (888685-001)	2
3	SCREW, 1/4-20 X 7/8 (507923)	18
4	NUT, 1/4-20 (918210)	18
5	WASHER (905245)	24
6	SCREW, 1/4-20 X 5/8 (504254)	4

ASSEMBLY INSTRUCTIONS

1. SET BOTH VALANCE HALVES (ITEM 1) ON A FLAT SURFACE WITH END FLANGES TOGETHER.
2. USING 6 SCREWS (ITEM 3), 12 WASHERS (ITEM 5), AND 6 NUTS (ITEM 4), ASSEMBLE THE VALANCE HALVES TOGETHER. BE SURE TO "SANDWICH" THE PLASTIC BETWEEN THE WASHERS. **CAUTION:** DO NOT OVER TIGHTEN.
3. POSITION THE MOUNTING BRACKET (ITEM 2) AGAINST THE INSIDE OF THE MOUNTING FLANGES. USING 12 SCREWS (ITEM 3), 12 WASHERS (ITEM 5), AND 12 NUTS (ITEM 4), ATTACH THE BRACKETS TO THE VALANCE. BE SURE TO INSTALL THE WASHERS AGAINST THE PLASTIC. **CAUTION:** DO NOT OVER TIGHTEN.
4. CAREFULLY LIFT THE ASSEMBLED VALANCE TO THE TOP OF THE DISPENSER AND ATTACH IT TO THE TOP CASTING WITH 4 SCREWS (ITEM 6)

NOTES: UNLESS OTHERWISE SPECIFIED

1. ITEMS NOT SHOWN:

(7) 888707-001 BOX

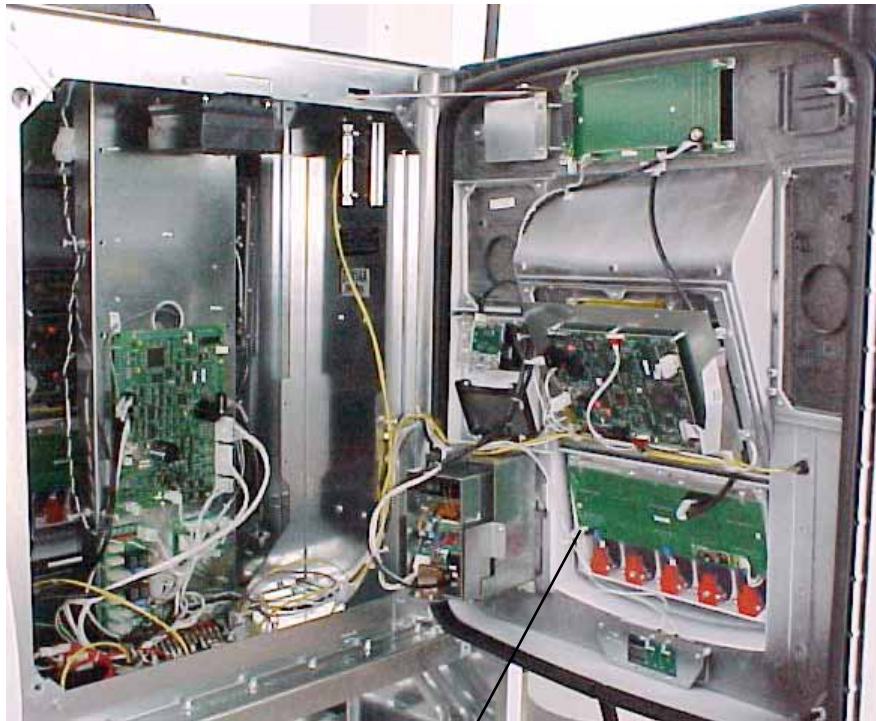
(8) 888708-001 PAD

APPENDIX C

LOCAL AUTHORIZE / STAND-ALONE OPERATION

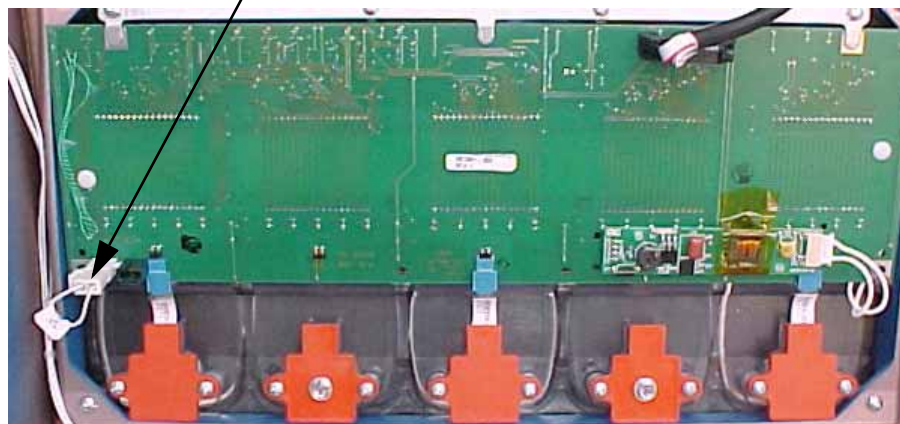
When the dispenser is not equipped with a Local Authorize Switch, the jumper (J7) shown below must be in place to enable Stand-alone operation.

At new dispenser Startups, after product lines have been purged and dispenser operations checked, once the dispenser is switched over to control system operation, the jumper should be removed as an extra security measure. If stand-alone operation is required in the future, the jumper will have to be re-installed.



Service Door

Local
AUTH
Jumper
J7



Unit Price Display Board

APPENDIX D
SITE INTERCONNECTION DIAGRAMS

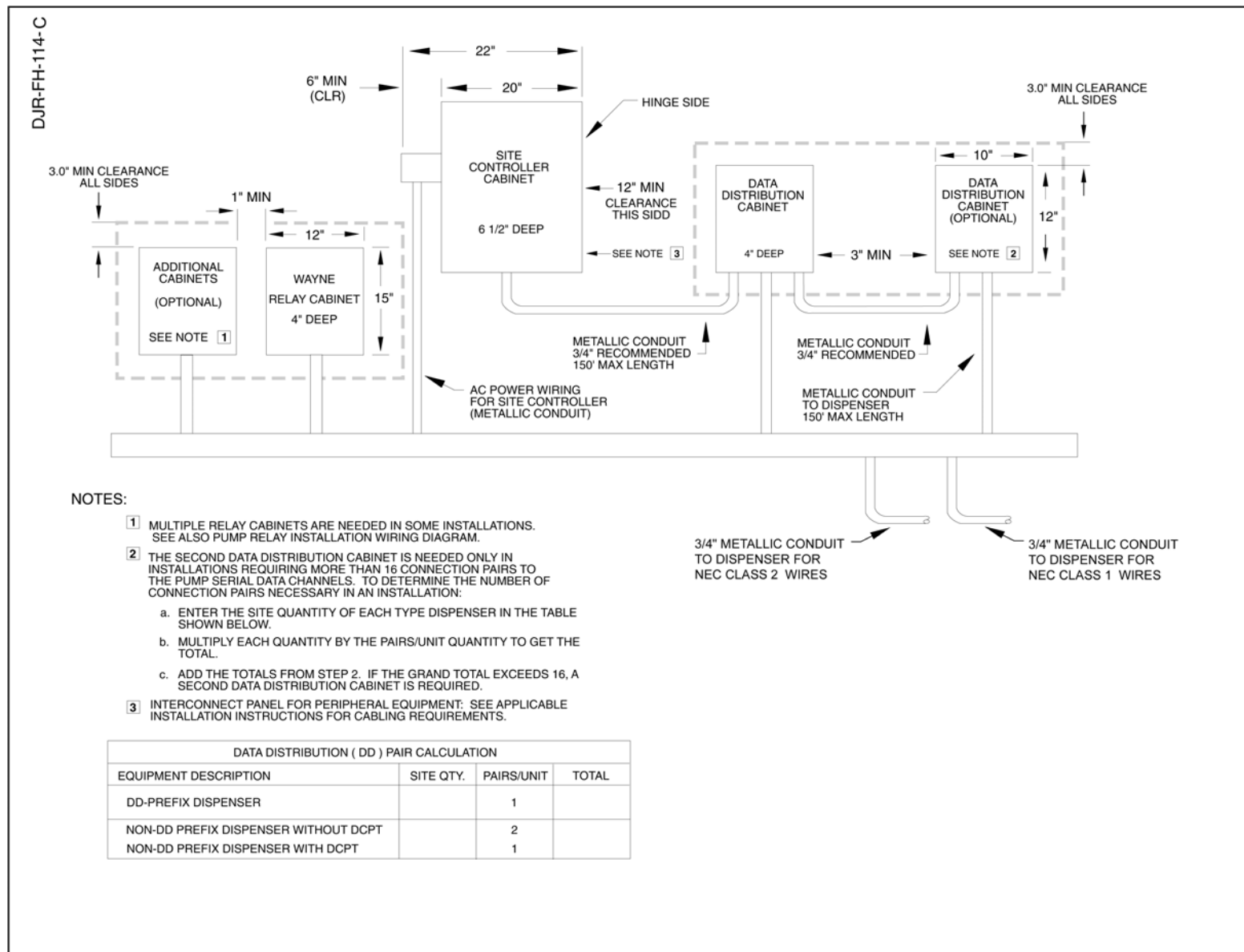


Figure D-1 Backroom Installation - Wayne Control System.

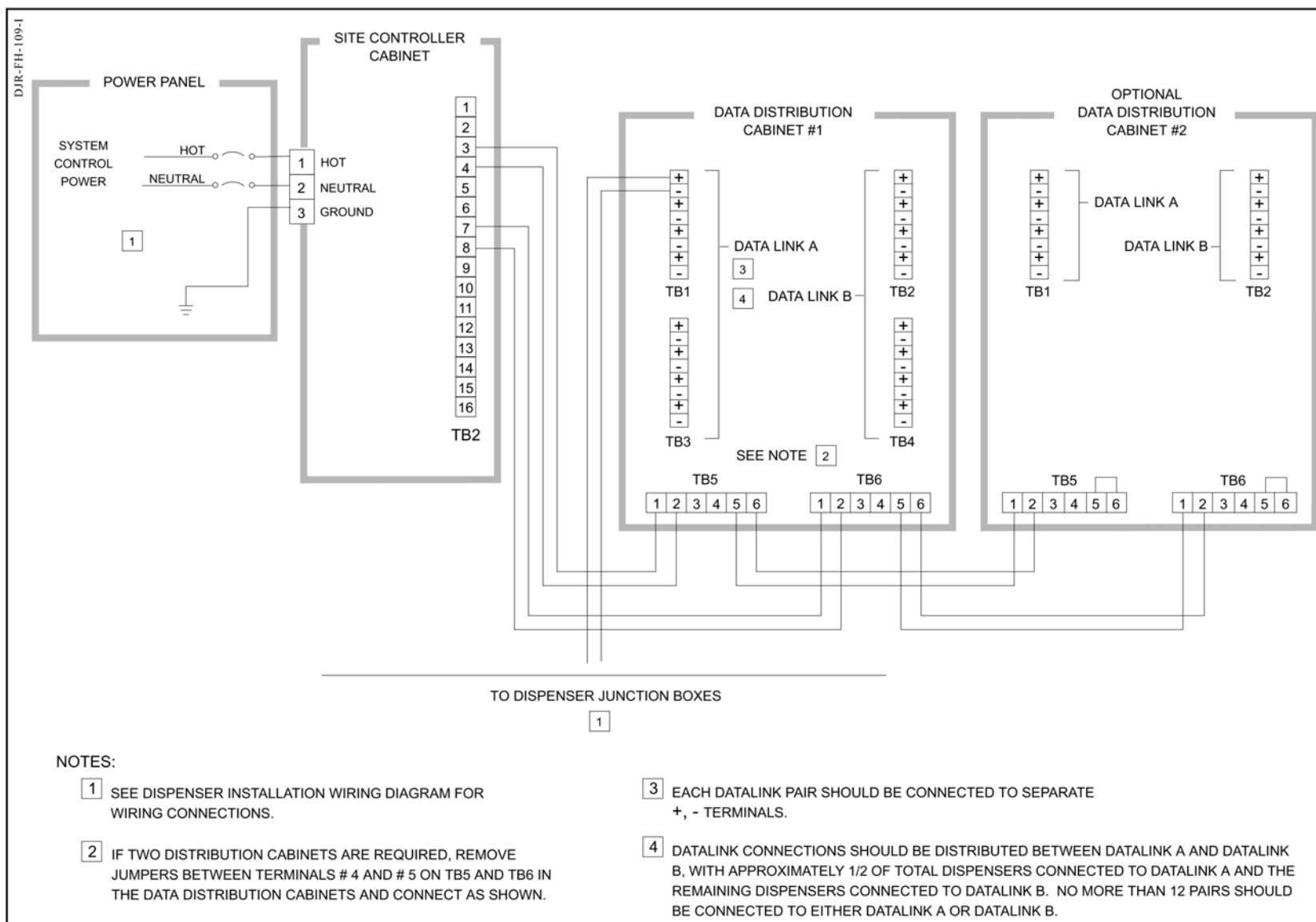
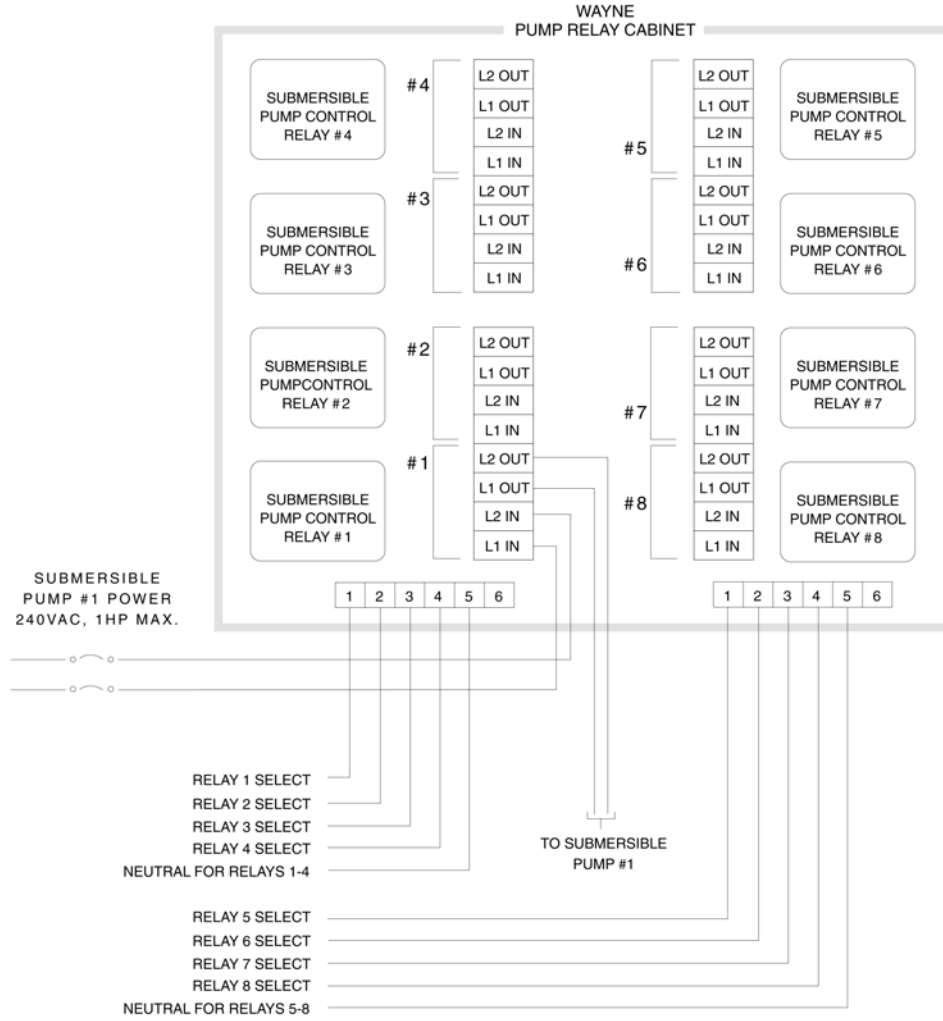


Figure D-2 Interconnection Wiring Diagram - Data Distribution Cabinet To Dispensers.

DJR-FH-123-C

**NOTES:**

1. RELAYS #5 AND #6 ARE PROVIDED ONLY IN 6 AND 8 RELAY CABINETS. RELAYS #7 AND #8 ARE PROVIDED IN AN 8 RELAY CABINET.
2. SEE DISPENSER INSTALLATION WIRING DIAGRAM FOR WIRING CONNECTIONS.

Figure D-3 Pump Relay Installation Wiring Diagram.

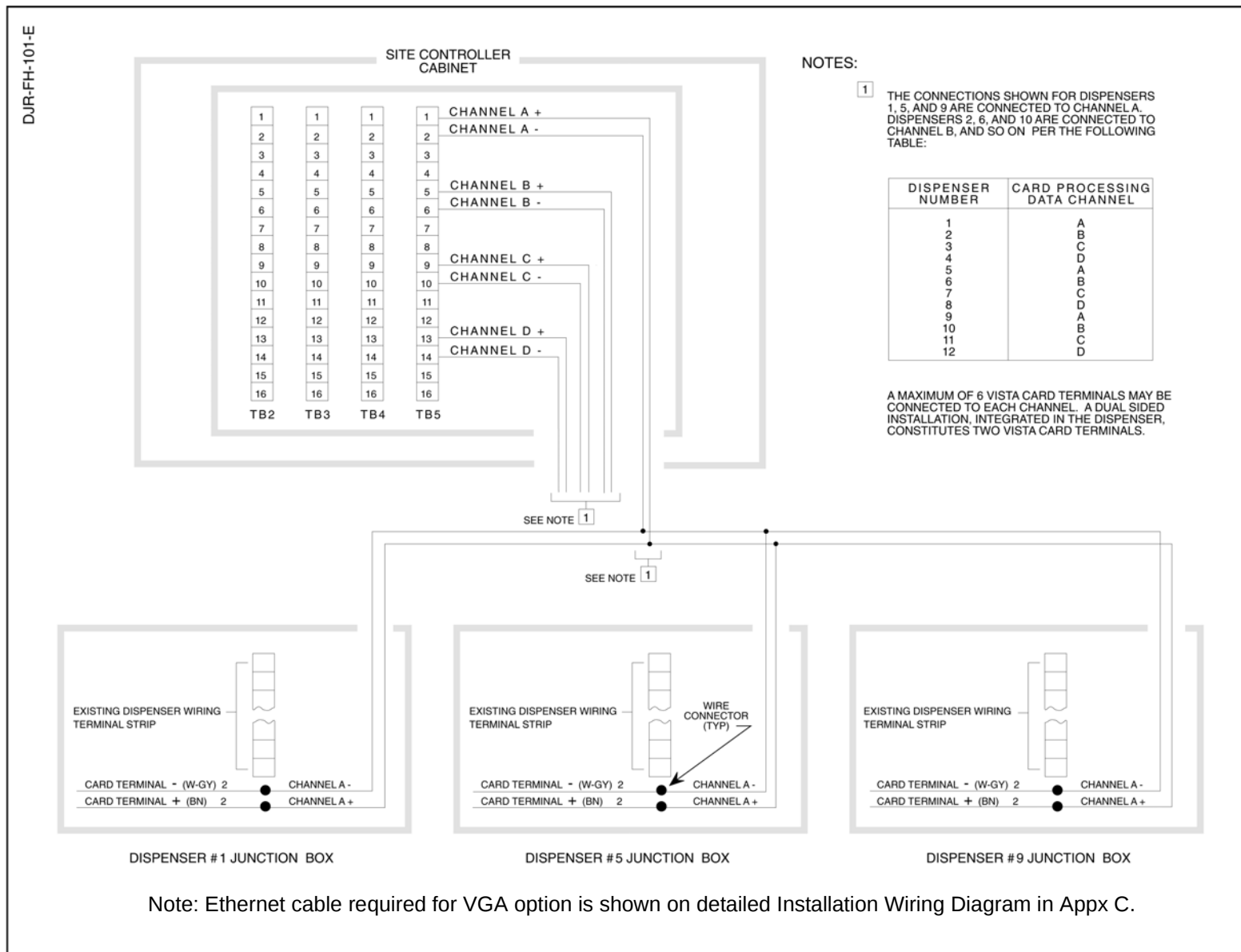


Figure D-4 Interconnection Wiring Diagram - Dispenser Card Processing (CATs) .

INSTALLATION & OPERATION MANUAL

Ovation Series Dispensers

Written by S. G. Martin

This manual was produced on a PC using Adobe® FrameMaker® and Photoshop®

Page design uses Times New Roman and Arial Fonts

Manuals were electronically printed on a Xerox Docutech Publishing System

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Wayne's general telephone number is (512)-388-8311.**

NOTE: "This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense."

