



Encore®

Installation Manual

MDE-3985L

Computer Programs and Documentation

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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. Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

Approvals

Gilbarco is an ISO 9001:2000 registered company.

Underwriters Laboratories (UL):

| U L File# | Products listed with U L |
|-----------|--|
| MH1941 | All Gilbarco pumps and dispensers that bear the UL listing mark. |
| MH8467 | Transac System 1000 and PAM 1000 |
| E105106 | Dell DHM Mintower |
| E165027 | G-SITE and Passport Systems |

New York City Fire Department (NYFD):

| NYFD C of A # | Product |
|---------------|--|
| 4805 | The Advantage Series and Legacy Series |
| 4986 | Encore and Eclipse |

California Air Resources Board (CARB):

| Executive Order # | Product |
|-------------------|------------------------|
| G-70-52-AM | Balance Vapor Recovery |
| G-70-150-AE | VaporVac |

National Conference of Weights and Measures (NCWM) - Certificate of Compliance (CoC):

Gilbarco pumps and dispensers are evaluated by NCWM under the National Type Evaluation Program (NTEP). NCWM has issued the following CoC:

| CoC# | Product | Model # | CoC# | Product | Model # | CoC# | Product | Model # |
|--------|-----------------------------|----------------|--------|-------------------------|------------------|--------|--------------------------|------------|
| 02-019 | Eclipse | Exx | 02-026 | H111B Series | AC, RAC | 02-034 | External Mount CRIND | CECXXXXXXX |
| 02-020 | Encore | Nxx | | MPD-1 Series | AN, RAN | 02-035 | Dimension | Dxx |
| 02-021 | T-12C Console | PA0188, RA0188 | 02-027 | Fixed Blender | AF, RAF, AG, RAG | 02-037 | Legacy | Jxxx |
| | T-12C Console | PA0203, RA0203 | | Dispenser - Low Profile | AR, RAR | | G-SITE Printer (Epson) | PA0307 |
| 02-022 | T-12G Console | PA0180, RA0180 | 02-028 | Indoor Card | Q11640 | | G-SITE Distribution Box | PA0306 |
| 02-023 | T-15 Console | PA0189 | | Outdoor Card | Q11891 | | G-SITE Keyboard | PA0304 |
| | T-15 Controller C2 | PA0211 | 02-029 | CRIND | --- | | G-SITE Mini Tower | PA0301 |
| 02-024 | T-15 Controller | PA0190 | 02-030 | TS-1000 Console | PA0240 | | G-SITE Monitor | PA0303 |
| | ProBlender | AU, RAU | | TS-1000 Controller | PA0241 | | G-SITE Printer (Citizen) | PA0308 |
| | Precision Blender | AE, RAE | | Distribution Box | PA0242 | 02-038 | C+ Meter | T19976 |
| | Dispenser - Standard | AK, RAK | | Micro-T Console | PA0250 | 02-039 | Passport | PA0324 |
| | Dispenser - Low Profile | AL, RAL | | Meter - EC Series | PA024EC10 | 02-040 | Ecometer | T20453 |
| | Fixed Blender | AP, RAF | | VaporVac Kits | CV | | | |
| 02-025 | Meter - C Series | PA024NC10 | 02-031 | The Advantage Series | Bxx, RBxx | | | |
| | Meter - C Series | PA024TC10 | 02-032 | Trimline Series | AA, RAA | | | |
| | Salesmaker ProBlender | AB, RAB | 02-033 | Meter - C Series | PA024XC10 | | | |
| 99-165 | Salesmaker Series 2/2H/4/4A | AM | | MPD-A3 Series | AD, RAD | | | |

Patents

Gilbarco Inc. products are manufactured or sold under one or more of the following US patents:

Dispensers

| | | | | | | | | | | | | | |
|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 4,566,504 | 4,556,927 | 4,570,686 | 4,687,033 | 4,728,788 | 4,748,846 | 4,799,940 | 4,805,453 | 4,876,653 | 4,890,210 | 4,913,813 | 4,930,655 | 4,934,565 | 4,938,054 |
| 4,938,251 | 4,939,730 | 4,967,366 | 4,986,445 | 5,040,577 | 5,098,179 | 5,134,548 | 5,156,199 | 5,269,353 | 5,228,084 | 5,325,706 | 5,345,979 | 5,355,915 | 5,363,988 |
| 5,384,850 | 5,407,115 | 5,417,256 | 5,448,638 | 5,450,883 | 5,464,466 | 5,501,246 | 5,535,130 | 5,542,458 | 5,543,849 | 5,546,981 | 5,557,084 | 5,571,310 | 5,602,745 |
| 5,626,649 | 5,630,528 | 5,708,580 | 5,719,779 | 5,719,781 | 5,720,325 | 5,724,067 | 5,734,851 | 5,755,854 | 5,782,275 | 5,794,667 | 5,798,931 | 5,803,136 | 5,843,212 |
| 5,857,500 | 5,868,179 | 5,871,651 | 5,890,520 | 5,954,080 | 5,956,259 | 5,969,691 | 5,971,042 | 5,979,705 | 5,980,090 | 6,026,866 | 6,052,629 | 6,073,840 | 6,078,888 |
| 6,078,896 | 6,082,415 | 6,085,775 | 6,087,954 | 6,089,284 | 6,092,410 | 6,098,879 | 6,102,085 | 6,109,477 | 6,112,134 | 6,113,039 | 6,116,505 | 6,119,110 | 6,123,118 |
| 6,149,033 | 6,167,923 | 6,176,421 | 6,184,846 | 6,185,307 | 6,185,893 | 6,196,065 | 6,227,227 | 6,244,310 | 6,250,151 | 6,253,779 | 6,263,319 | 6,275,746 | 6,296,148 |
| 6,302,165 | 6,313,737 | 6,325,112 | 6,326,934 | 6,336,479 | 6,338,369 | 6,347,649 | 6,352,176 | 6,357,493 | 6,360,137 | 6,363,299 | 6,364,206 | 6,380,853 | 6,381,514 |
| 6,386,246 | 6,418,983 | 6,421,616 | 6,422,464 | 6,431,226 | 6,438,452 | 6,460,579 | 6,463,389 | 6,466,842 | 6,470,233 | 6,493,440 | 6,499,516 | 6,505,134 | 6,522,947 |
| 6,523,744 | 6,529,800 | 6,532,999 | 6,535,726 | 6,546,882 | 6,571,151 | 6,571,201 | 6,573,884 | 6,574,603 | 6,578,145 | 6,618,362 | 6,644,360 | 6,681,814 | 6,685,089 |
| 6,690,275 | 6,697,705 | 6,704,774 | 6,708,797 | 6,710,701 | 6,712,101 | 6,721,669 | 6,736,313 | 6,741,909 | 6,745,104 | 6,761,190 | 6,763,974 | 6,766,949 | RE35,238 |
| D262,971 | D265,092 | D306,719 | D309,144 | D316,471 | D413,124 | D413,311 | D413,336 | D413,337 | D413,610 | D413,901 | D413,902 | D414,192 | D414,501 |
| D414,779 | D414,779 | D414,780 | D414,781 | D414,782 | D415,166 | D415,167 | D415,168 | D415,169 | D415,170 | D415,171 | D415,172 | D415,501 | D415,777 |
| D416,915 | D416,916 | D417,226 | D418,523 | D420,684 | D421,612 | D422,285 | D422,604 | D426,555 | D428,424 | D428,897 | D429,739 | D429,740 | D431,039 |
| D431,252 | D431,573 | D432,140 | D432,141 | D432,548 | D432,552 | D433,031 | D433,032 | D433,033 | D433,034 | D433,035 | D433,036 | D433,037 | D433,420 |
| D433,421 | D433,422 | D433,423 | D433,424 | D433,685 | D433,686 | D433,687 | D433,688 | D434,424 | D434,780 | D435,051 | D440,579 | D443,624 | D456,820 |
| D457,084 | | | | | | | | | | | | | |

Point of Sale/Back Office Equipment

| | | | | | | | | | | | | | |
|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 4,967,366 | 5,228,084 | 5,448,638 | 5,798,931 | 5,980,090 | 5,708,580 | 5,719,779 | 5,719,781 | 5,724,067 | 5,734,851 | 6,073,840 | 6,078,888 | 6,116,505 | 6,185,307 |
| 6,263,319 | 6,275,746 | 6,326,934 | 6,360,137 | 6,363,299 | 6,364,206 | | | | | | | | |

Trademarks

Non-registered trademarks

| | | |
|---------------|----------------------|--------------------------|
| C-PAM™ | Highline™ | SMART Meter™ |
| CIM™ | MultiLine™ | SmartPad™ |
| ECR™ | Optimum™ Series | Surge Management System™ |
| EMC™ | PAM™ 1000 | Tank Monitor™ |
| G-CAT™ | PAM™ | TCR™ |
| Gilbert™ | SMART Connect™ | Ultra-Hi™ |
| G-SITE® Link™ | SMART CRIND™ | ValueLine™ |
| G-SITE® Lite™ | SMART Merchandising™ | |

Registered trademarks

| | | |
|-------------------|-----------------------|----------------------|
| CRIND® | InfoScreen® | Transac® System 1000 |
| Dimension® Series | Legacy® | Trimline® |
| e-CRIND® | Making Things Better® | TRIND® |
| Eclipse® | MPD® | VaporVac® |
| Encore® | Passport® | |
| G-SITE® | Performer® | |
| Gilbarco® | The Advantage® Series | |
| GOLD® | Transac® | |

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Additional US and foreign trademarks pending.

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Important Safety Information


This section introduces the hazards and safety precautions associated with installing, inspecting, maintaining or servicing this product. Before performing any task on this product, read this safety information and the applicable sections in this manual, where additional hazards and safety precautions for your task will be found. Fire, explosion, electrical shock or pressure release could occur and cause death or serious injury, if these safe service procedures are not followed.


Preliminary Precautions

You are working in a potentially dangerous environment of flammable fuels, vapors, and high voltage or pressures. Only trained or authorized individuals knowledgeable in the related procedures should install, inspect, maintain or service this equipment.

Emergency Total Electrical Shut-Off

The first and most important information you must know is how to stop all fuel flow to the pump/dispenser and island. Locate the switch or circuit breakers that shut off all power to all fueling equipment, dispensing devices, and Submerged Turbine Pumps (STPs).

**WARNING**



The EMERGENCY STOP, ALL STOP, and PUMP STOP buttons at the cashier's station WILL NOT shut off electrical power to the pump/dispenser. This means that even if you activate these stops, fuel may continue to flow uncontrolled.

You must use the TOTAL ELECTRICAL SHUT-OFF in the case of an emergency and not the console's ALL STOP and PUMP STOP or similar keys.

Total Electrical Shut-Off Before Access

Any procedure that requires access to electrical components or the electronics of the dispenser requires total electrical shut off of that unit. Understand the function and location of this switch or circuit breaker before inspecting, installing, maintaining, or servicing Gilbarco equipment.

Evacuating, Barricading and Shutting Off

Any procedure that requires access to the pump/dispenser or STPs requires the following actions:



- An evacuation of all unauthorized persons and vehicles from the work area
- Use of safety tape, cones or barricades at the affected unit (s)
- A total electrical shut-off of the affected unit (s)

Read the Manual

Read, understand and follow this manual and any other labels or related materials supplied with this equipment. If you do not understand a procedure, call a Gilbarco Authorized Service Contractor or call the Gilbarco Support Center at 1-800-800-7498. It is imperative to your safety and the safety of others to understand the procedures before beginning work.

Follow the Regulations

Applicable information is available in National Fire Protection Association (NFPA) 30A; *Code for Motor Fuel Dispensing Facilities and Repair Garages*, NFPA 70; *National Electrical Code (NEC)*, Occupational Safety and Hazard Association (OSHA) regulations and federal, state, and local codes. All these regulations must be followed. Failure to install, inspect, maintain or service this equipment in accordance with these codes, regulations and standards may lead to legal citations with penalties or affect the safe use and operation of the equipment.

Replacement Parts

Use only genuine Gilbarco replacement parts and retrofit kits on your pump/dispenser. Using parts other than genuine Gilbarco replacement parts could create a safety hazard and violate local regulations.

Safety Symbols and Warning Words

This section provides important information about warning symbols and boxes.

Alert Symbol



This safety alert symbol is used in this manual and on warning labels to alert you to a precaution which must be followed to prevent potential personal safety hazards. Obey safety directives that follow this symbol to avoid possible injury or death.

Signal Words

These signal words used in this manual and on warning labels tell you the seriousness of particular safety hazards. The precautions below must be followed to prevent death, injury or damage to the equipment:



DANGER: Alerts you to a hazard or unsafe practice which will result in death or serious injury.



WARNING: Alerts you to a hazard or unsafe practice that could result in death or serious injury.



CAUTION with Alert symbol: Designates a hazard or unsafe practice which may result in minor injury.

CAUTION without Alert symbol: Designates a hazard or unsafe practice which may result in property or equipment damage

Working With Fuels and Electrical Energy

Prevent Explosions and Fires

Fuels and their vapors will explode or burn, if ignited. Spilled or leaking fuels cause vapors. Even filling customer tanks will cause potentially dangerous vapors in the vicinity of the dispenser or island.

No Open Fire



Open flames from matches, lighters, welding torches or other sources can ignite fuels and their vapors.

No Sparks - No Smoking



Sparks from starting vehicles, starting or using power tools, burning cigarettes, cigars or pipes can also ignite fuels and their vapors. Static electricity, including an electrostatic charge on your body, can cause a spark sufficient to ignite fuel vapors. Every time you get out of a vehicle, touch the metal of your vehicle, to discharge any electrostatic charge before you approach the dispenser island.

Working Alone

It is highly recommended that someone who is capable of rendering first aid be present during servicing. Familiarize yourself with Cardiopulmonary Resuscitation (CPR) methods, if you work with or around high voltages. This information is available from the American Red Cross. Always advise the station personnel about where you will be working, and caution them not to activate power while you are working on the equipment. Use the OSHA Lockout/ Tagout procedures. If you are not familiar with this requirement, refer to this information in the service manual and OSHA documentation.

Working With Electricity Safely

Ensure that you use safe and established practices in working with electrical devices. Poorly wired devices may cause a fire, explosion or electrical shock. Ensure that grounding connections are properly made. Take care that sealing devices and compounds are in place. Ensure that you do not pinch wires when replacing covers. Follow OSHA Lockout/Tagout requirements. Station employees and service contractors need to understand and comply with this program completely to ensure safety while the equipment is down.

Hazardous Materials

Some materials present inside electronic enclosures may present a health hazard if not handled correctly. Ensure that you clean hands after handling equipment. Do not place any equipment in the mouth.

WARNING

The pump/dispenser contains a chemical known to the State of California to cause cancer.

WARNING

The pump/dispenser contains a chemical known to the State of California to cause birth defects or other reproductive harm.

In an Emergency

Inform Emergency Personnel

Compile the following information and inform emergency personnel:

- Location of accident (for example, address, front/back of building, and so on)
- Nature of accident (for example, possible heart attack, run over by car, burns, and so on)
- Age of victim (for example, baby, teenager, middle-age, elderly)
- Whether or not victim has received first aid (for example, stopped bleeding by pressure, and so on)
- Whether or not a victim has vomited (for example, if swallowed or inhaled something, and so on)

WARNING



Gasoline ingested may cause unconsciousness and burns to internal organs.
Do not induce vomiting.
Keep airway open.
Oxygen may be needed at scene.
Seek medical advice immediately.

WARNING



Gasoline inhaled may cause unconsciousness and burns to lips, mouth and lungs.
Keep airway open.
Seek medical advice immediately.

WARNING



Gasoline spilled in eyes may cause burns to eye tissue.
Irrigate eyes with water for approximately 15 minutes.
Seek medical advice immediately.

WARNING






Gasoline spilled on skin may cause burns.
Wash area thoroughly with clear water.
Seek medical advice immediately.

IMPORTANT: Oxygen may be needed at scene if gasoline has been ingested or inhaled. Seek medical advice immediately.

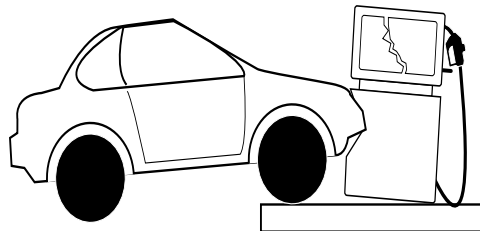
Lockout/Tagout

Lockout/Tagout covers servicing and maintenance of machines and equipment in which the unexpected energization or start-up of the machine(s) or equipment or release of stored energy could cause injury to employees or personnel. Lockout/Tagout applies to all mechanical, hydraulic, chemical or other energy, but does not cover electrical hazards. Subpart S of 29 CFR Part 1910 - Electrical Hazards, 29 CFR Part 1910.333 contains specific Lockout/ Tagout provision for electrical hazards.

Hazards and Actions

|  WARNING | |
|--|--|
|  | Spilled fuels, accidents involving pumps/dispensers, or uncontrolled fuel flow create a serious hazard. |
|  | Fire or explosion may result, causing serious injury or death. Follow established emergency procedures. |

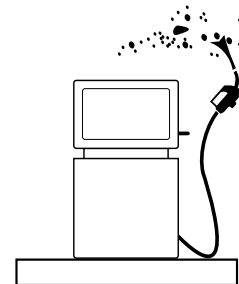
The following actions are recommended regarding these hazards:



Collision of a Vehicle with Unit



Fire at Island



Fuel Spill

- Do not go near a fuel spill or allow anyone else in the area.
- Use station EMERGENCY CUTOFF immediately. Turn off all system circuit breakers to the island(s).
- Do not use console E-STOP, ALL STOP and PUMP STOP to shut off power. These keys do not remove AC power and do not always stop product flow.
- Take precautions to avoid igniting fuel. Do not allow starting of vehicles in the area. Do not allow open flames, smoking or power tools in the area.
- Do not expose yourself to hazardous conditions such as fire, spilled fuel or exposed wiring.
- Call emergency numbers.

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1 – Introduction

Purpose of this Manual

This manual contains step-by-step instructions for installing Gilbarco® Encore® series pumps and dispensers. Installation of these pumps is similar except for some differences in field wiring and calibration. This manual does not include site preparation instructions (see MDE-3802 Encore and Eclipse® Site Preparation Manual). After the installation is complete, a Gilbarco Authorized Service Contractor (ASC) must commission the unit to activate the warranty. Reference information is contained within this manual for completing MDE-4226 Encore/Eclipse Installation Checklist. Proper completion of the checklists is required for commissioning of the unit. See [“Installation Checklists” on page 12.](#)

Encore Shipping Weight and Model Codes: N-X-X

Shipping Weights

The shipping weights for an Encore dispenser is approximately 800 lbs (363 kg). Additional shipping weights are added when options are included. The following table provides shipping weights for the dispenser and applicable option(s).

| Equipment | Weight (lbs) | Weight (kg) |
|---------------------|------------------|-----------------|
| Dispenser | 800 lbs | 363 kg |
| Ultra-Hi™ (dual) | 730 lbs | 331 kg |
| VaporVac® option | 200 lbs | 91 kg |
| Pumping Unit option | 60 lbs per grade | 27 kg per grade |

Model Codes

While new models have their serial plates located inside the bottom door, older units are located at the bottom of the dispenser directly above the serial number. The serial number uses a two letter and one number model code stamped into the serial plate. This code shows the configuration and options of the Encore unit.

For example, a serial plate stamp that uses model code “NG2” designate the unit as an Encore Single-Hose 3 Grade Pump where:

- N= represents an Encore unit
- G= represents a single-hose
- 2= represents a 3 Grade Pump + 1

Refer to the following tables to determine the model code on a Gilbarco dispenser. Note that not all model types are available in an E500/500 S or E300 series.

Encore 300 Series and 500/500 S

| N | X | X |
|----------|---------------------------------|--|
| Encore | A = Multi-Hose Dispenser | 0 = 1 Grade |
| | | 1 = 2 Grade |
| | | 2 = 3 Grade |
| | | 3 = 4 Grade |
| | C = Multi-Hose Pump | 0 = 1 Grade |
| | | 1 = 2 Grade |
| | | 2 = 3 Grade |
| | | 3 = 4 Grade |
| | G = Single-Hose | 0 = 3 Grade Dispenser |
| | | 1 = 3 Grade + 1 Dispenser |
| | | 2 = 3 Grade Pump |
| | | 3 = 3 Grade Pump + 1 |
| | | 4 = 2 Grade Single-Hose MPD® |
| | | 5 = 2 Grade Single-Hose Pump |
| | J = Multi-Hose Blender | 0 = 3 Grade Blender Dispenser |
| | | 1 = 3 Grade Blender Pump |
| | | 2 = 4 Grade Blender + 1 Dispenser |
| | | 3 = 4 Grade Blender + 1 Pump |
| | L = X+1 Blender | 0 = 2 + 1 Grade Blender Dispenser |
| | | 1 = 3 + 1 Grade Blender Dispenser |
| | | 2 = 4 + 1 Grade Blender Dispenser |
| | | 3 = 5 + 1 Grade Blender Dispenser |
| | | 4 = 2 + 1 Grade Blender Pump |
| | | 5 = 3 + 1 Grade Blender Pump |
| | | 6 = 4 + 1 Grade Blender Pump |
| | | 7 = 5 + 1 Grade Blender Pump |
| | N = X+0 Blender | 1 = 3 + 0 Grade Blender Dispenser |
| | | 2 = 4 + 0 Grade Blender Dispenser |
| | | 3 = 5 + 0 Grade Blender Dispenser |
| | | 5 = 3 + 0 Grade Blender Pump |
| | | 6 = 4 + 0 Grade Blender Pump |
| | | 7 = 5 + 0 Grade Blender Pump |
| | P = Ultra High Flow | 3 = Ultra-Hi Master |
| | | 4 = Ultra-Hi Combo |
| | | 5 = Ultra-Hi Satellite |
| | R = Special | 0 = No Hydraulics |
| | | 1 = Robot |
| | | 2 = Simulator |
| | | 3 = Pumpless Pump |
| | | 4 = No Electronics |

Encore 550/550 S with SMART Meter™

| Type | Model | Description | Product Inlets | Dispensed Grades | Hoses Per Side | Meters |
|--------------------|-------|--------------------------------------|----------------|------------------|----------------|--------|
| MPD | NA0 | MPD Dispenser 1-Grade | 1 | 1 | 1 | 2 |
| | NA1 | MPD Dispenser 2-Grade | 2 | 2 | 2 | 4 |
| | NA2 | MPD Dispenser 3-Grade | 3 | 3 | 3 | 6 |
| | NA3 | MPD Dispenser 4-Grade | 4 | 4 | 4 | 8 |
| Single Hose | NG4 | Single-hose MPD Dispenser, 2-grade | 2 | 2 | 1 | 4 |
| | NG0 | Single-hose MPD Dispenser, 3-grade | 3 | 3 | 1 | 6 |
| | NG1 | Single-hose+1 MPD Dispenser, 4-grade | 4 | 4 | 2 | 8 |
| X+0 Blender | NN1 | Blender Dispenser 3 + 0 | 2 | 3 | 1 | 4 |
| | NN2 | Blender Dispenser 4 + 0 | 2 | 4 | 1 | 4 |
| | NN3 | Blender Dispenser 5 + 0 | 2 | 5 | 1 | 4 |
| X + 1 Blender | NL0 | Blender Dispenser 2 + 1 | 3 | 3 | 2 | 6 |
| | NL1 | Blender Dispenser 3 + 1 | 3 | 4 | 2 | 6 |
| | NL2 | Blender Dispenser 4 + 1 | 3 | 5 | 2 | 6 |
| Multi-Hose Blender | NJ0 | Multi-hose Blender Dispenser | 2 | 3 | 3 | 4 |
| | NJ2 | Multi-hose+1 Blender Dispenser | 3 | 4 | 4 | 6 |

Operating Environment

| Environment | Range |
|-------------------------------------|---------------------------|
| Relative humidity | 20% to 95% non-condensing |
| Minimum outside ambient temperature | -22°F (-30°C) |
| Maximum outside ambient temperature | 104°F (40°C)* |

Operation at severe low temperatures and environments may require special options such as card reader heaters, etc. to properly ensure unit performance.

*Electronics have been evaluated and are rated for use at 131°F (55°C) maximum outside ambient temperature.

Load Table Reference Locations

| Model | Unit | Field Wiring Diagram |
|-------------------|--------------|----------------------|
| Encore 300 Series | All products | FE-364 |
| Encore 500 | All products | FE-363 |
| Encore 550 | All products | FE-353 |

Heater Load Table

10.4-inch Infoscreen Heater Option Load (Note)

6.6 AMP @ 120Vac 60 Hz

Note: The heater will only cycle when cold and unit is not in use. Refer to the table above for Infoscreen heater load rating.

Reference Manuals

| Document Number | Document Title | GOLD Library |
|-----------------|---|-------------------------------------|
| FE-321 | Field Wiring Diagram Gilbarco STP Isolation Relay Box PA0287 120 VAC | Engineering Diagrams |
| FE-353 | Field Wiring Diagram Encore 550 Dispensers (All products) | Encore and Eclipse |
| FE-363 | Field Wiring Diagram Encore 500 (All products) | Encore and Eclipse |
| FE-364 | Field Wiring Diagram Encore 300 (All products) | Encore and Eclipse |
| MDE-2183 | Domestic Warranty | Domestic Warranty & Owner's Manuals |
| MDE-3019 | Handbook 44 (reference by Department of Weights and Measures) | N/A |
| MDE-3802 | Encore and Eclipse Site Preparation Manual | Encore and Eclipse |
| MDE-3804 | Encore and Eclipse Start-Up/Service Manual | Encore and Eclipse |
| MDE-3893 | Encore/Eclipse Owner's Manual | Encore and Eclipse |
| MDE-4084 | Junction Box Retrofit Kit M01483K006 Installation Manual | Encore and Eclipse |
| MDE-4166 | Encore Island Adapter Kit M03064K001 Installation | Encore and Eclipse |
| MDE-4226 | Encore/Eclipse Installation Checklist (Form A) | Encore and Eclipse |
| MDE-4227 | Encore/Eclipse Start-Up Checklist (Form B) | Encore and Eclipse |
| MDE-4228 | Encore/Eclipse Commissioning Checklist (Form C) | Encore and Eclipse |
| MDE-4247 | SMART Connect™ System Installation, Service and Parts Manual | SMART Connect |
| MDE-4473 | Encore Water Intrusion Prevention Kit | Encore and Eclipse |
| MDE-4516 | Encore 500 S and 550 S Series Owner's Manual | Encore and Eclipse |
| PT-1936 | Encore Series Pump and Dispenser Illustrated Parts Manual | Encore and Eclipse |
| PT-1937 | Encore 300, Encore 500, Encore 550, Encore S™, Eclipse Recommended Spare Parts Manual | Encore and Eclipse |

Gaining Access to and from the Encore Cabinet

The Encore cabinets are designed to protect the equipment inside from the elements and as such require the doors and covers to be installed as directed. For more information, refer to the Owner/Service Manuals shipped with this unit.

Encore 300/500 units require that the front and back doors be removed, top door first then the bottom door second, to enable those units containing special weather protection features to retain the ability to protect the unit against the extremes in the environment. For units that require further protective features, refer to MDE-4473 Encore Water Intrusion Prevention Kit.

Encore S Series (500 S and 550 S) units have made adaptations which offer weatherized integrity for cabinet interiors. However, the doors and covers must be removed or replaced in a specific order, usually, the bottom door first, which provides access allowing the release of the security latch on the top door, and removal of the door.

Glossary of Terms

| Term | Definition |
|-------------|---|
| ASC | Authorized Service Contractor |
| AST | Above-ground Storage Tank |
| CIM Door | Customer Interface Module Door - Main pump and CRIND displays are mounted on this door |
| Combo | This unit is configured as Master on one side and Satellite on the other. |
| Dispenser | A dispensing device that receives fuel under pressure from the UST by the STP |
| Grade | Fuel that is dispensed and has an assigned price |
| Listed | Products bearing authorized Listing Mark of Underwriters' Laboratories (UL®) as manufacturer's declaration that product complies with UL's requirements in accordance with terms of UL's Listing and Follow-Up Service agreement. |
| Master | This unit dispenses fuel to one saddle tank and to a second saddle tank via a satellite unit |
| MPD | Multi-Product Dispenser |
| NPT | <ul style="list-style-type: none"> • National Pipe Taper • National Pipe Thread |
| PTFE | The chemical name (polytetrafluoroethylene) for Teflon®. |
| Pump | A dispensing device that utilizes a self-contained pumping unit and motor to move fuel from storage tank using suction. |
| Product | Refers to fuel in storage tank. |
| Satellite | A dispensing unit that receives product from and registers at the Master unit allowing both saddle tanks on a vehicle to be filled at same time. |
| SMART Meter | Electronic device that measures the flow of product from the UST to the end user. |
| STP | Submerged Turbine Pump |
| Teflon | The Du Pont trade name for PTFE. |
| UST | Underground Storage Tank |

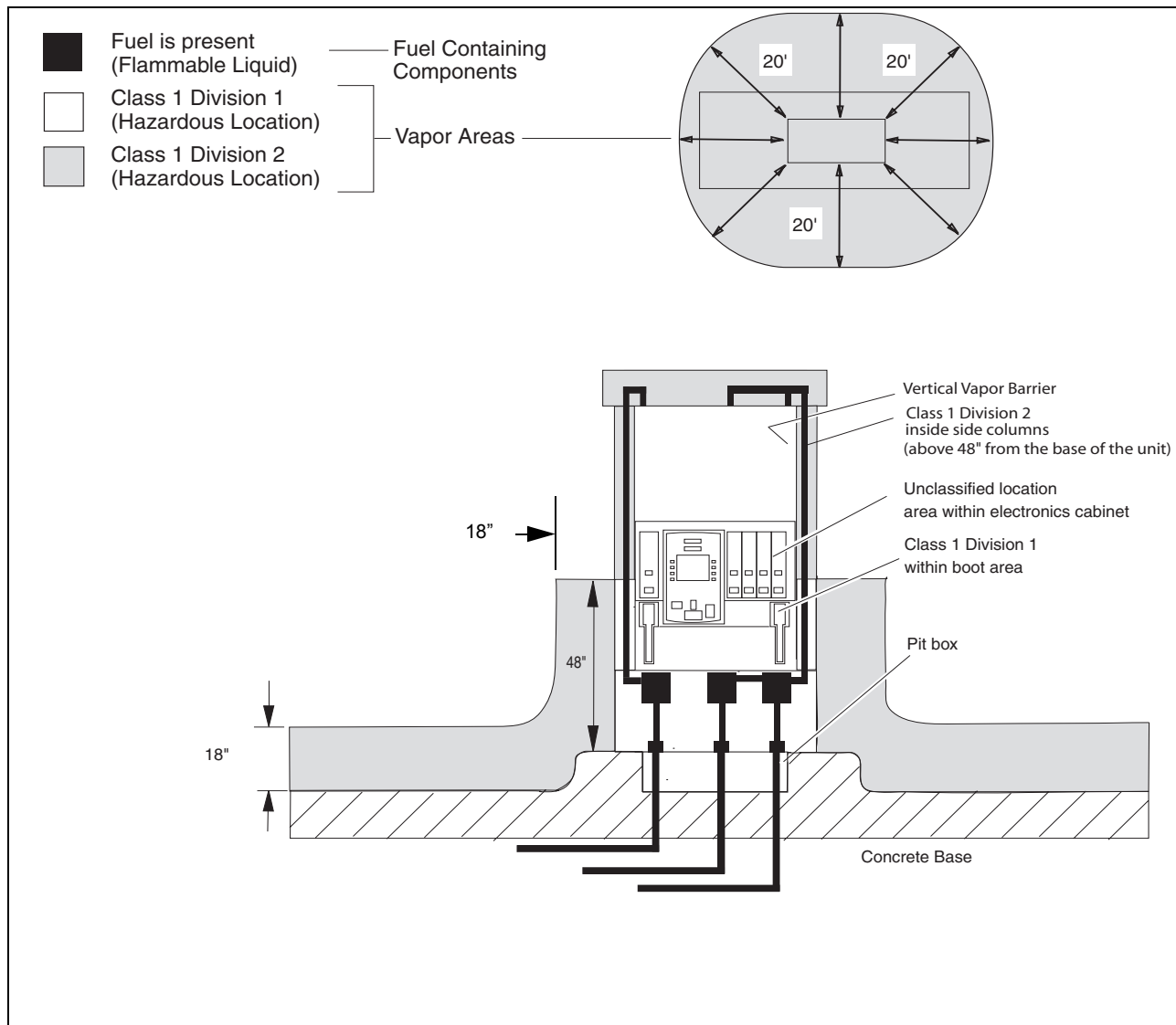
2 – Hazardous Locations

Classifying Hazardous Locations

Any activity that can cause an explosion (such as smoking or drilling) must be done well outside the vapor area.

The following diagram is based on NFPA 30A and NFPA 70.

Figure 2-1: Hazardous Locations Diagram



3 – Installation

Replacing The Advantage® Series with Encore

If replacing existing The Advantage unit(s) with Encore, before beginning read [“Installation Differences When Replacing The Advantage Series”](#) on page 68.

Required Equipment and Materials

Below is a list of items required to properly install the equipment.

- Anchor bolts
- U-bolts for fastening piping to braces.
- Sealant that is UL approved for use with fuels being encountered
- Pit Box cover plates. Use when necessary to adapt unit to pre-existing pit boxes.
- Lifting device (crane, backhoe, forklift, and so on.) to move and lift pump/dispenser
- Nylon slings (with a safety lift factor of 5) and screw-pin anchor shackles to lift high hose pump/dispenser (Reference: [See “Encore Shipping Weight and Model Codes: N-X-X”](#) on page 5)
- Breakaways, hoses, nozzles, and swivels
- Barricades
- Potting compound and fiber dam material to allow potting of conduit in accordance with Class I, Division II locations as specified in the National Electric Code.
- WAGO™ spring loaded terminal tool, WAGO Part #236-332

Note: WAGO tool is recommended but not required. Small insulated shaft and handle screwdriver or a non-conductive screwdriver can be used in lieu of this.

Read NFPA 30A and NFPA 70

WARNING

You are working in a dangerous environment of gasoline, gasoline vapor and electricity. Failure to install this equipment in accordance with NFPA 30A and NFPA 70 could result in severe injury or death.
Read, understand and follow NFPA 30A and NFPA 70.

Before installing the equipment, read, understand and follow:

- The National Electric Code (NFPA 70)
- The Automotive and Marine Service Code (NFPA 30A)
- Any national, state, and local codes that may apply

The failure to install the equipment in accordance with NFPA 30A and NFPA 70 may adversely effect the safe use and operation of the system.

Accurate, sound installations reduce service calls. Use experienced, licensed contractors that practice accurate, safe installation techniques. Careful installation can eliminate potential problems.

Equipment manufacturer must provide instructions for other equipment such as STPs, shear valves and underground tanks. Gilbarco does not provide complete installation instructions for other manufacturer's equipment.

Installation Checklists

Checklists for installation, start-up and commissioning are provided in the documentation package supplied with each unit. The installer must complete for each unit installed and insert inside of the unit in the unit's electronics cabinet. Be sure the checklists are put in an area away from electrical devices and wiring.

The Installation Checklist requires certain critical inspections by the installer to verify that the installation was done properly. Properly completed forms verify safe installation for certain critical areas and is necessary to obtain warranty coverage, to help ensure proper operation of the equipment, and provide some liability protection for the installer, manufacturer and customers. Instructions are included on the forms. Not all requirements found in this manual are included on the MDE-4226 Encore/Eclipse Installation Checklist, making it important for the installer to read, understand and follow all recommendations within this manual as well as to ensure safe and proper operation.

Preparing for the Installation

- 1 Read all instructions before beginning. It may be helpful to have a copy of MDE-4226 Encore/Eclipse Installation Checklist on hand during the installation.

- 2 Follow all safety precautions:



- Barricade the area.
 - Do not allow vehicles or unauthorized people in the work area.
 - Do not smoke or allow open flames in the work area.
 - Do not use power tools in the work area.
 - Wear eye protection during the installation.
- 3 Use circuit breakers to turn off all power to pumps/dispensers and STPs. Multiple disconnects may be required.
 - 4 Check the following for proper installation per criteria in MDE-3802 Encore and Eclipse Site Preparation Manual and other manufacturer's recommendations which also apply:
 - emergency power cut off switch
 - circuit breakers
 - STP control relay boxes - dispensers only (see note 3)
 - isolation relays - dispensers only (see note 3)
 - Breakaways, hoses, nozzles, and swivels ([See "Installing Breakaways, Hoses, Swivels, Nozzles" on page 46](#))
 - conduit and wiring (see note 1)
 - grounding
 - shear valves - dispensers only (see notes 2 and 4)
 - piping and fittings
 - fuel storage tanks

- pressure regulating valves (above ground tanks only)
- STP - dispensers only
- tank and/or line leak detectors
- pit boxes

Note: 1. If replacing an existing unit, installer may connect and extend existing field wires to electronics cabinet using junction box, if one exists. See next section, [Before Placing Unit on Fuel Island](#).

Note: 2. A shear valve is an NFPA30A required safety device required for every product line at each dispenser. See MDE-3802 Encore and Eclipse Site Preparation Manual, for installation instructions. Shear valves may also be required for above ground tank installations and other situations with pumps. Consult local and state requirements.

Note: 3. Refer to MDE-2755 STP Control and Dispenser Isolation Relay Box (PA0287).

Note: 4. Some locations require shear valves for vapor lines. Consult local and state regulations.

- 5 Inspect pump/dispenser cartons and contents for shipping damage. Gilbarco does not cover shipping damage under its warranty policy. Notify the shipper of any damage.
- 6 Open the CIM door and remove any Ty-Wraps that are holding pulsers in place.

CAUTION

.Not removing shipping Ty-Wrap may result in inaccurate calibration or failure of the pulsers.

- 7 Remove lower panels (doors) of pump/dispenser.
Refer to MDE-3804 Encore and Eclipse Start-Up/Service Manual.
- 8 Be sure that the fuel grade for the product lines matches the pump/dispenser brand panels and foundation layout. Product lines from the island pit box should have labels.

Before Placing Unit on Fuel Island

Before mounting unit to fuel island, read and understand this section completely. This information is **essential** to avoiding installation errors.

Verifying And Determining Plumbing Requirements

Before placing a unit on an island determine the correct location of piping for the unit involved and the proper orientation of the unit. A common installation error is to install units backwards and then have to make expensive modification for reinstallation later. This section contains information regarding plumbing requirements for various models of Encores.

| IMPORTANT INFORMATION |
|---|
| Do not make assumptions about configurations based on previous experience, hose positions, or layout of unit being replaced, whether replacing a Gilbarco unit or that of any other manufacturer. |

Encore model grade mapping (inlet piping) for Encore units is different than for The Advantage Series and MPD-3 series as well as other manufacturer units. Incorrect matching of unit piping to supply lines can cause costly rework, time delays and damage to units.

Encore Y and Z inlets are never used for blended products. Z is always a Straight/Unblended Product Inlet; +Z is always a Straight/Unblended +1 Product.

Typical MPD configuration: W = Product 1, X = Product 2 and Y = Product 3. Product number does not signify grade on MPD units, for example; Product 1 is not always Lo Grade, but is optionally Lo, Mid or Hi.

W = Product 1 (On Blenders only Product 1 is always Lo Product.)

Grade piping is always right to left when facing Side 1.

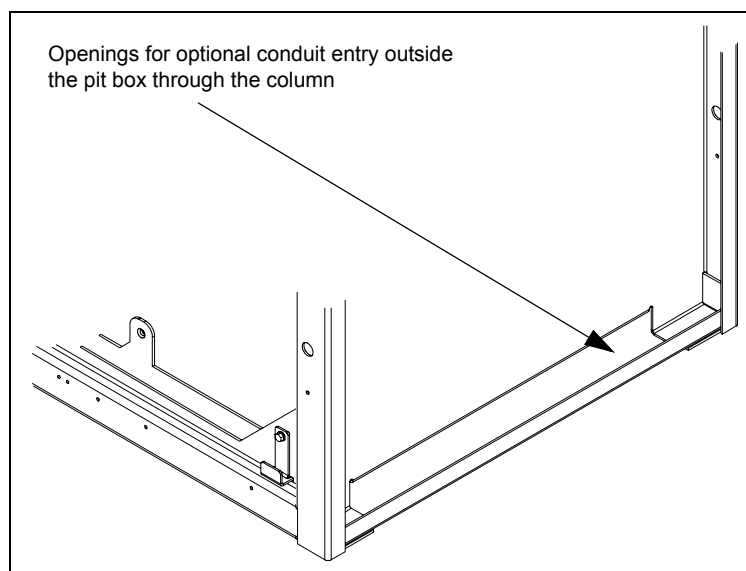
Adapting Pit Box

For installation using an existing pit box, some modifications may be necessary. The following list highlights what changes may be necessary. See [“Installation Differences When Replacing The Advantage Series” on page 68](#) for more information. These installation considerations may also apply when replacing competitive units.

To adapt plumbing/conduit to Encore stub up locations:

- Use flexible piping in the pit box for plumbing adaptation. If piping in the previous box is rigid, when possible use the adaptability of the Encore hydraulic cabinet inlets and conduit entry points versus making modifications to rigid plumbing and conduit in the pit box.
- When adapting plumbing in the dispenser cabinet, remember that the lower piping cross brace must be used to secure plumbing above the shear valve and that rigid piping must be used within the dispenser.
- Modify pit box rain lip when required (for boxes designed for The Advantage Series wide frame units). Modifications will also typically be done to the Encore base.
- Current pit boxes have modifications to the base to optionally allow for conduit entry through the column and outside of the pit box. This modification also allows some adaptations to older pit box styles.
- It is acceptable to modify an older unit with these modifications only. Improper modifications could result in loss of column strength important to structural integrity during a vehicle collision. Cut areas should be repainted with a corrosion preventing paint.

Figure 3-1: Modified Encore Base for Rain Lip Clearance and Side Column Conduit Entrance



- When adapting an Encore to an existing pit box or one that is not specifically designed for the unit the rain lip may require modification or removal. If the rain lip is removed then the entire base of the dispenser must be sealed to the island. Study the foundation layouts and existing pit box to determine if modifications are required before mounting the unit on the island. Refer to the following Warning for working in this area.



WARNING

You are working in a potentiality hazardous environment where fuels and their vapors may be present and could be ignited with sparks from grinding and cutting tools.

Always conduct work the required distance away a hazardous area and use the appropriate tools.

Lifting Encore Units



WARNING

Lifting heavy equipment can be hazardous.

Equipment could fall and cause severe injury or death.

Use lifting equipment of proper capacity and factor of safety when moving or positioning unit.

Stand clear from pump/dispenser when lifting and lowering.

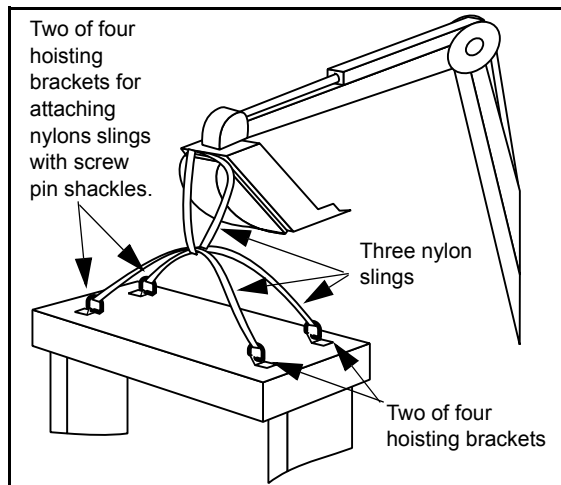
Before mounting the unit to the island, verify that pit box and unit base are compatible. Some pit box plates have rain lips that require modification to Encore unit prior to placing unit on plate. If the Encore unit will not fit properly onto pit box plate, unit will have to be lifted according to instructions in this section and moved to a safe work area. Refer to [“Encore Elevation Diagram \(Encore 550 with SMART Meter\)” on page 62](#) and [“Encore Elevation Diagram \(Encore 500/ 500 S and 550 S with SMART Meter\)” on page 63](#). If this modification is not required, do the following, and then proceed to section [“Before Placing Unit on Fuel Island” on page 14](#).

Encore Series units have hoisting brackets mounted on top of upper housing.

- 1 Verify that the hoisting brackets are tight. Use provided bolts with the brackets or grade 8 bolts.
- 2 Use three nylon slings (safety lift factor of 5) and four screw pin shackles along with hoisting brackets to lift unit onto island. See [Figure 3-2: Lifting with Hoisting Brackets](#).

Note: Do not run slings around columns or under the upper piping housing. This will damage columns or sheathing.

Figure 3-2: Lifting with Hoisting Brackets



- 3 Lift and position unit to work area for modification or onto island.
- 4 Remove slings and shackles.

Mounting Unit To Island

Before placing a unit on an island determine the correct location of piping for the unit involved and the proper orientation of the unit. A common installation error is to install the unit backward resulting in modifications or delaying installation.

- Mount unit using mounting bolt locations specified. Seal base as required.
- Fill in any openings from the smaller length Encore cabinet to the potentially longer pit box opening for The Advantage wide frame or other units. Seal as required.

Determine Unit Side and Type

Before lifting units onto island take note of the following:

- For units manufactured before January, 2003, model labels are located on Side 1.
For units manufactured after January, 2003, the FCC/Patent labels are located on the inside sheathing on the right when facing side 1.
- To determine unit type refer to the unit model label to determine whether unit to be installed is MPD (dispenser or pump) or Blender (dispenser or pump).
- Use the following table to locate the appropriate configuration for your unit.

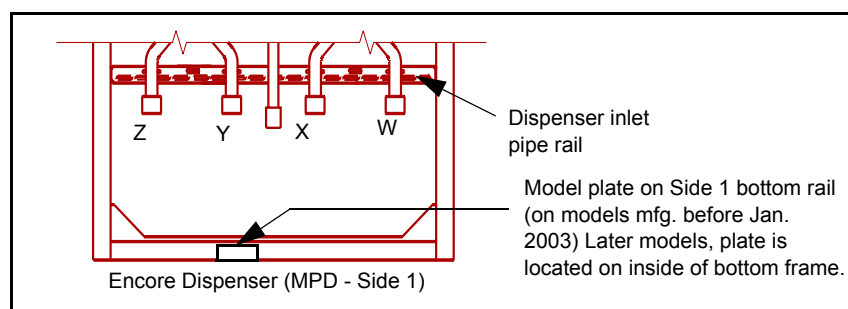
| For This Configuration | Proceed To |
|--|--|
| Dispenser (MPD) | "Dispenser (MPD) Configurations" on page 17 |
| Pump (MPD) | "Pumps (MPD) Configurations" on page 22 |
| Dispenser Blender | "Dispenser Blender Configurations" on page 24 |
| Pump Blender | "Pump Blender Configurations" on page 26 |
| Pump STP | "Wiring Dispenser (STP-Supplied Unit)" on page 33 |
| Pump Self Contained | "Wiring Pump (Self-Contained Unit)" on page 34 |
| Ultra-Hi Dispenser | "Ultra-Hi Configurations" on page 20 |
| Encore Foundation 1 to 6 | "Encore Foundation Diagrams: 1 of 6 (300/500 Dispensers)" on page 55 |
| Encore Foundation (SMART Meter) 1 to 2 | "Encore Elevation Diagram (Encore 550 with SMART Meter)" on page 62 |

Multi Product (MPD) Configurations

Dispenser (MPD) Configurations

For dispenser blenders go to "Dispenser Blender Configurations" on page 24. For additional information, refer to M01432 Foundation Layout Encore.

Figure 3-3: Encore Dispenser MPD Product Inlets



| Model # | Multi Product Dispenser Model Description | Encore Inlets | Product Inlets (Typical) |
|---------|---|---------------|---|
| NA0 | 1 Grade 2 Hose MPD Dispenser | W | W = Product 1 |
| NA1 | 2 Grade 4 Hose MPD Dispenser | W,X | W = Product 1 X = Product 2 |
| NG4 | 2 Grade Single Hose MPD Dispenser | | |
| NA2 | 3 Grade 6 Hose MPD Dispenser | W,X,Y | W = Product 1 X = Product 2 Y = Product 3 |
| NG0 | Single Hose MPD Dispenser 3 Grade 2 Hoses | | |

| Model # | Multi Product Dispenser Model Description | Encore Inlets | Product Inlets (Typical) |
|----------------|--|--------------------------|--|
| NA3 | MPD Dispenser 4 Grade 8 Hose | W,X,Y,Z | W = Product 1 X = Product 2 Y = Product 3 Z = Product 4 |
| NG1 | Single Hose +1 MPD Dispenser, 3+1 Grade, 4 Hoses | W,X,Y,+Z | W = Product 1 X = Product 2 Y = Product 3 +Z = Straight/ Unblended Product |

Notes:

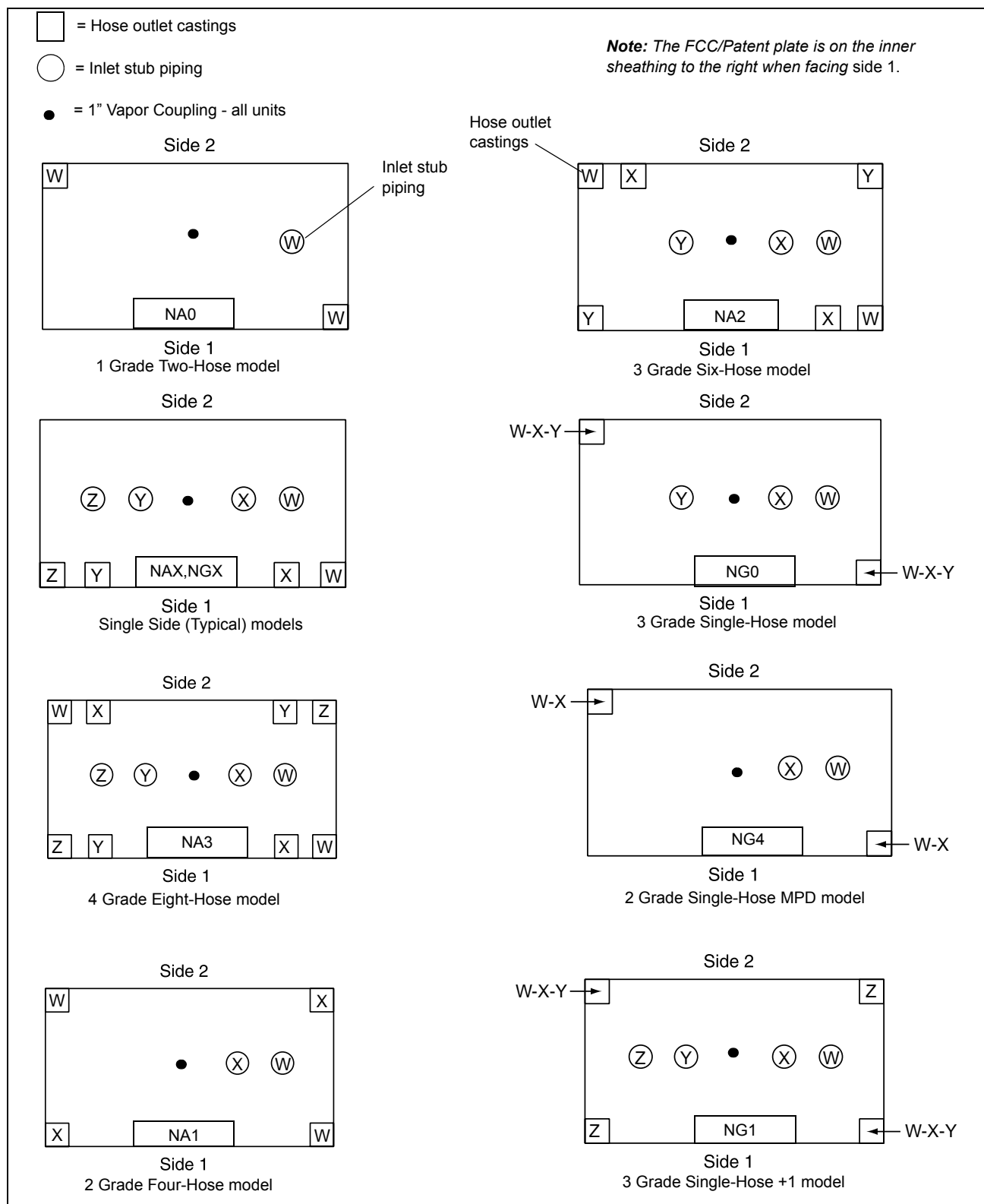
Table information assumes two-sided units.

1. Z is always a Straight/Unblended Product Inlet; +Z is always a Straight/Unblended +1 Product.
2. Product number does not signify grade on MPD units, for example; Product 1 is not always Lo Grade, but is optionally Lo, Mid or Hi.

Dispenser MPD Piping to Hose Fitting Configurations

Note: For Multi-Hose units, piping must align with graphics when facing Side 1.

Figure 3-4: Encore Dispenser MPD Piping to Hose Fitting Layout

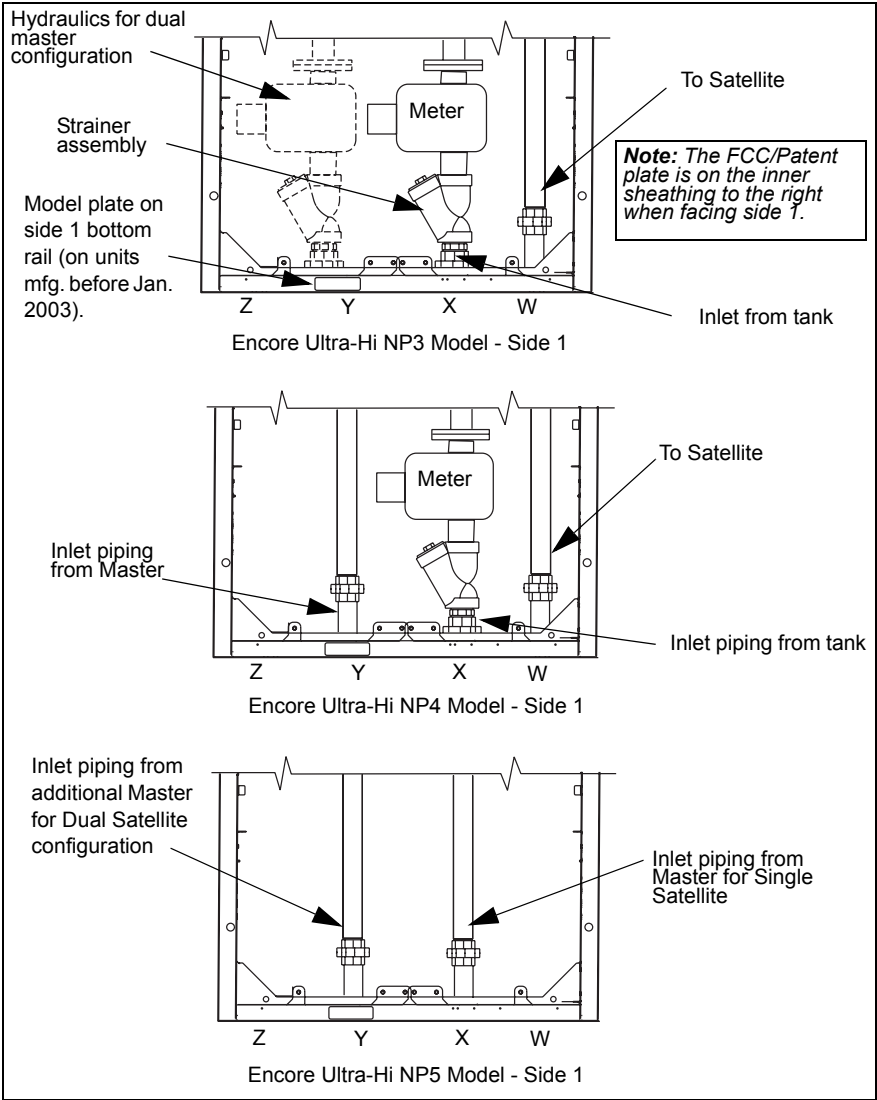


Ultra-Hi Configurations

Dispenser, Ultra-Hi Configurations

For dispenser (MPD), go to “Dispenser (MPD) Configurations” on page 17; for dispenser blender, go to “Dispenser Blender Configurations” on page 24.

Figure 3-5: Dispenser (Ultra-Hi) Product Inlets

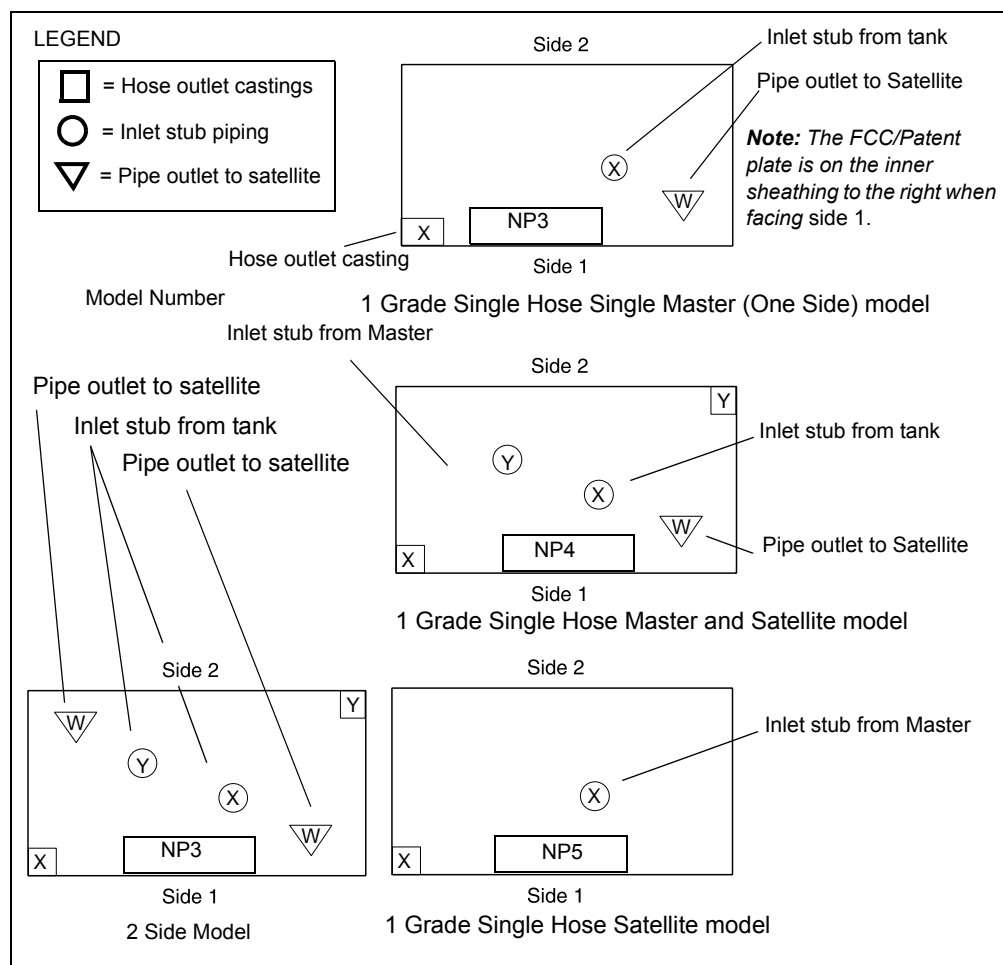


| Model # | Ultra-Hi Dispenser Model Description | Encore Inlets |
|---------|--------------------------------------|------------------------------|
| NP3 | Ultra-Hi Master Dispenser 1-Side | X from tank |
| NP3 | Ultra-Hi Master Dispenser 2-Side | X from tank Y from tank |
| NP4 | Ultra-Hi Combo Dispenser 1-Grade | X from tank Y from master |
| NP5 | Ultra-Hi Satellite Dispenser 1-Side | X from master |

| Model # | Ultra-Hi Dispenser Model Description | Encore Inlets |
|---------|--------------------------------------|--------------------------------|
| NP5 | Ultra-Hi Satellite Dispenser 2-Side | X from master Y from master |

Dispenser Ultra-Hi Piping to Hose Fitting Configurations

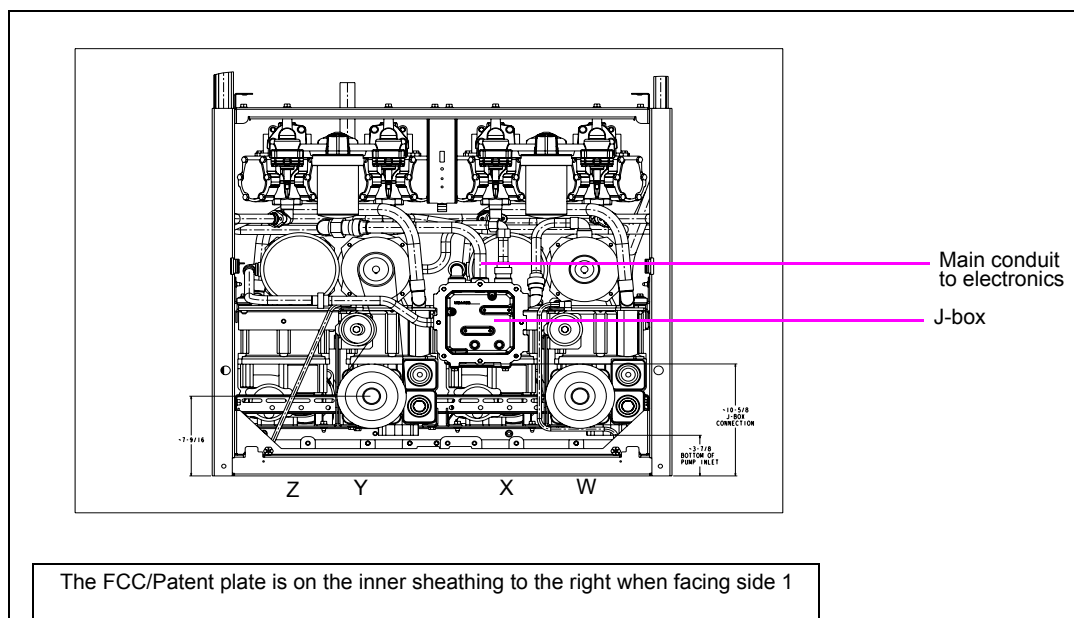
Figure 3-6: Encore dispenser Ultra-Hi Piping to Hose Fitting Layout



Pumps (MPD) Configurations

For pump blenders go to “[Pump Blender Configurations](#)” on page 26.

Figure 3-7: Encore Pump (MPD) Product Inlets and J-Box



| Model # | Multi Product Pump Model Description | Encore Inlets | Product Inlets (Typical) |
|---------|---|---------------|--|
| NC0 | 1 Grade 2 Hose MPD Pump | W | W = Product 1 |
| NC1 | 2 Grade 4 Hose MPD Pump | W,X | W = Product 1 X = Product 2 |
| NG5 | 2 Grade Single Hose MPD Pump | | |
| NC2 | 3 Grade 6 Hose MPD Pump | W,X,Y | W = Product 1 X = Product 2 Y = Product 3 |
| NG2 | Single Hose MPD Pump 3 Grade 2 Hoses | | |
| NC3 | MPD Pump 4 Grade 8 Hose | W,X,Y,Z | W = Product 1 X = Product 2 Y = Product 3 Z = Product 4 |
| NG3 | Single Hose +1 MPD Pump, 3+1 Grade, 4 Hoses | W,X,Y,+Z | W = Product 1 X = Product 2 Y = Product 3 +Z = Straight/ Unblended Product |

Notes:

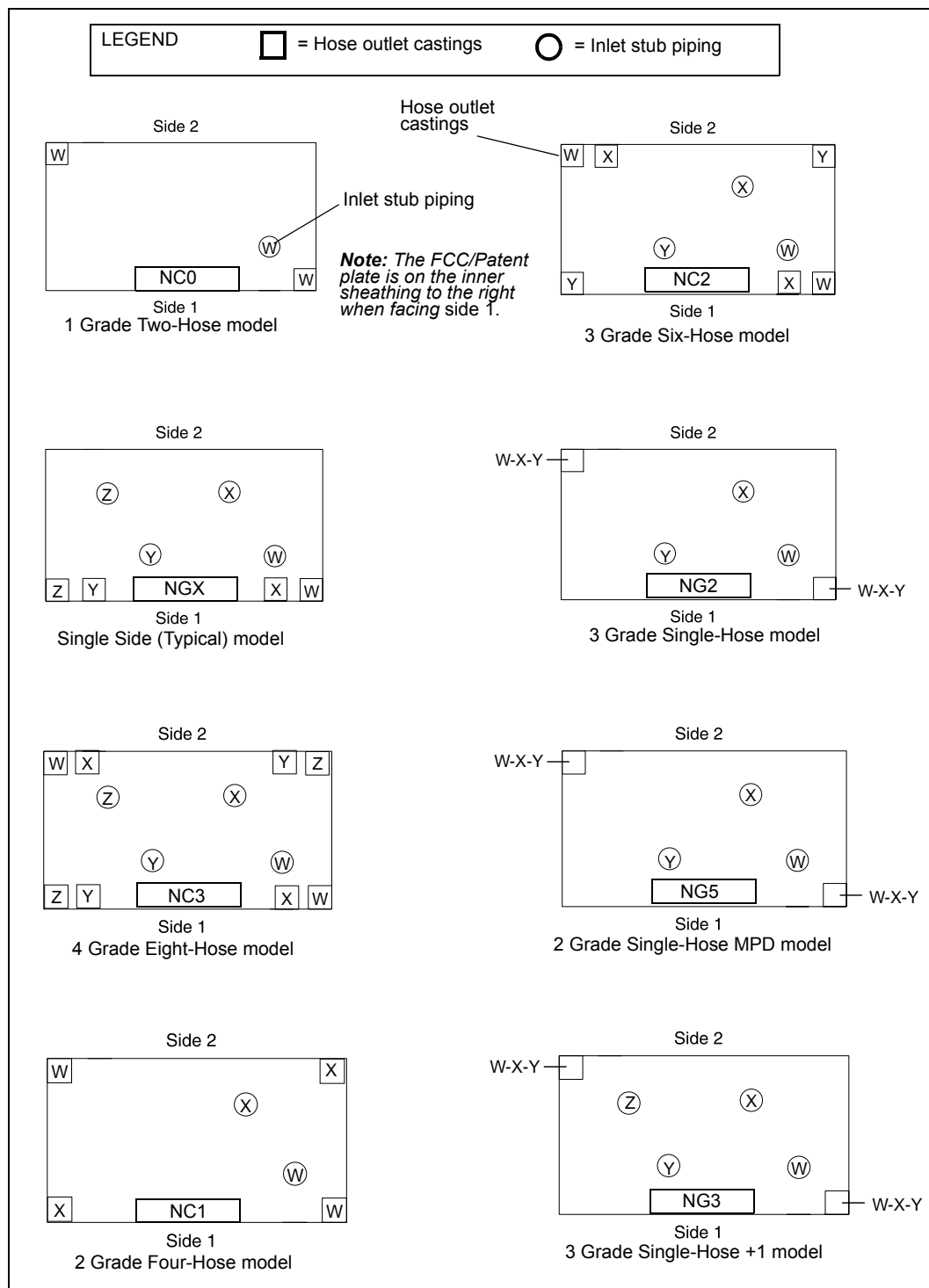
Table information assumes two-sided units.

1. Z is always a Straight/Unblended Product Inlet; +Z is always a Straight/Unblended +1 Product.
2. Product number does not signify grade on MPD units, for example; Product 1 is not always Lo Grade, but is optionally Lo, Mid or Hi.

Pump (MPD) Piping to Hose Fitting Configurations

Note: For Multi-Hose units, piping must align with graphics when facing Side 1.

Figure 3-8: Encore Pump Piping to Hose Fitting Layout



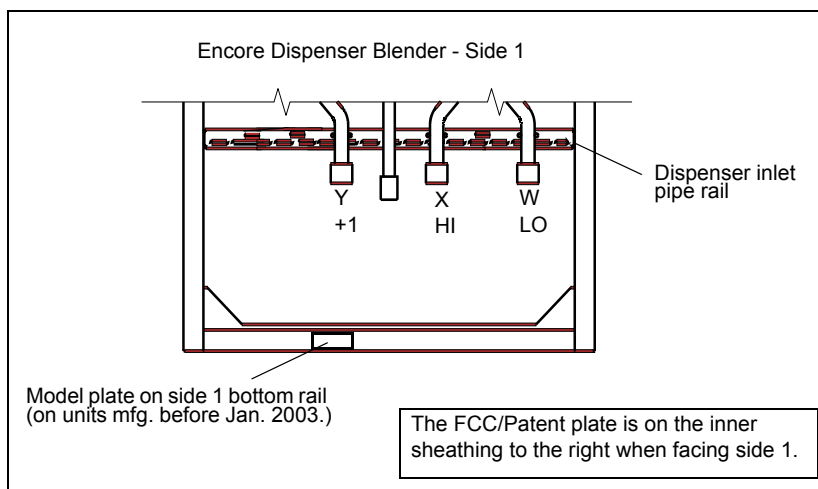
Blender Configurations

Dispenser Blender Configurations

For dispenser (MPD) go to “[Dispenser \(MPD\) Configurations](#)” on page 17.

Read and understand all information in “[Before Placing Unit on Fuel Island](#)” on page 14.

Figure 3-9: Dispenser (MPD) Product Inlets



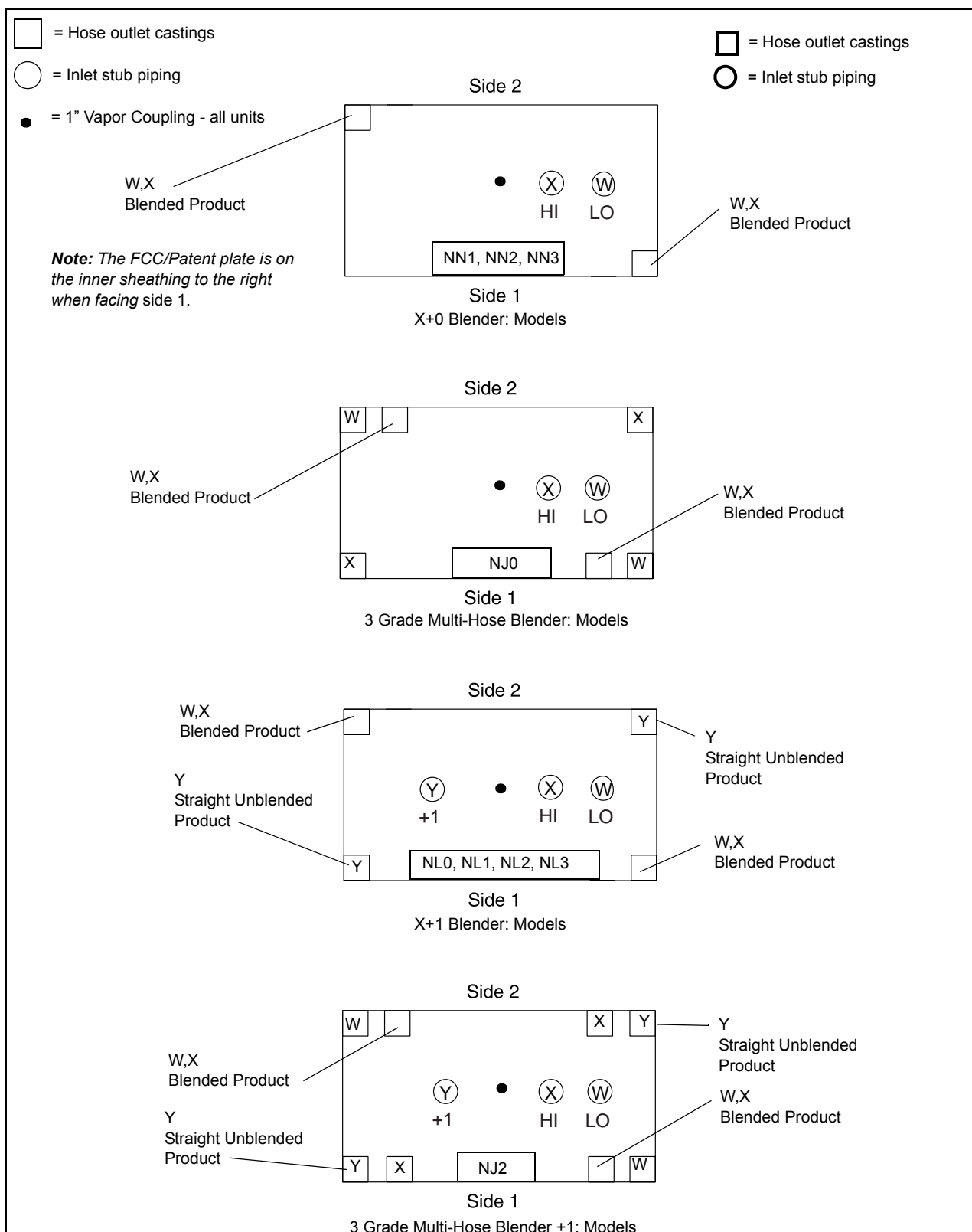
| Model # | Blender Dispenser Model Description | Encore Inlets | Product Inlets (Typical) |
|---------|--|---------------|--|
| NN1 | Blender Dispenser 3+0 | W,X | W = Lo Product X = Hi Product |
| NN2 | Blender Dispenser 4+0 | | |
| NN3 | Blender Dispenser 5+0 | | |
| NJ0 | Multi Hose Blender Dispenser 3 Grade 6 Hose | | |
| NL0 | Blender Dispenser 2+1 | W,X,Y | W = Lo Product X = Hi Product Y = +1 Straight/ Unblended Product |
| NL1 | Blender Dispenser 3+1 | | |
| NL2 | Blender Dispenser 4+1 | | |
| NL3 | Blender Dispenser 5+1 | | |
| NJ2 | Multi Hose Blender Dispenser 3+1 Grade, 8 Hose | | |

Notes:

- W = Product 1 (**On Blenders only** Product 1 is **always** Lo Product.)
- X = Product 2
- Y = Straight/Unblended Product Inlet

Dispenser Blender Piping to Hose Fitting Configurations

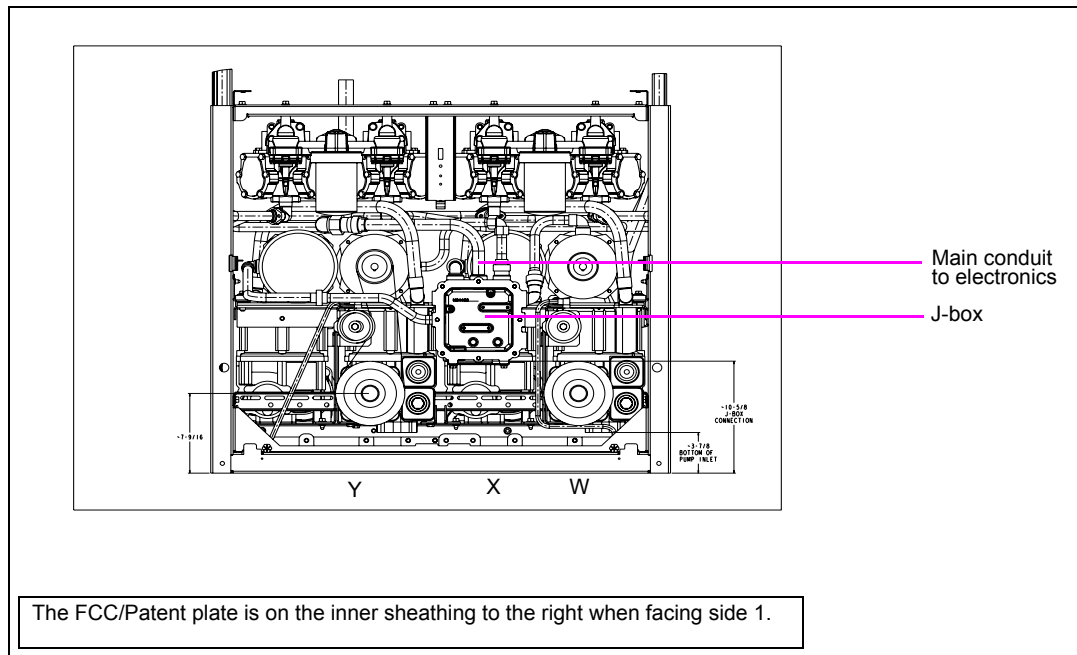
Figure 3-10: Encore Dispenser Blender Piping to Hose Fitting Layout



Pump Blender Configurations

For pump (MPD) go to “Pumps (MPD) Configurations” on page 22.

Figure 3-11: Encore Pump Blender Product Inlets



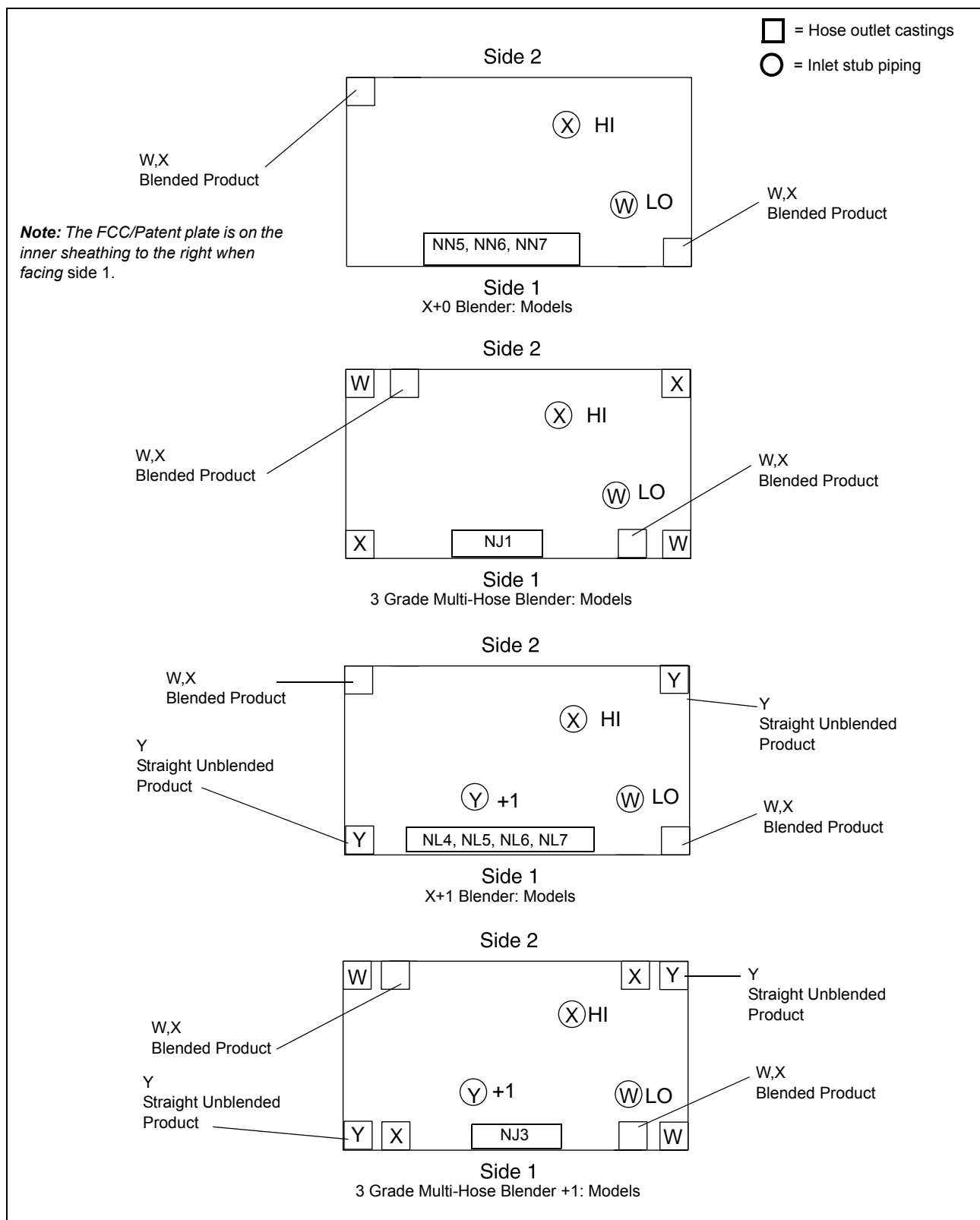
| Model # | Pump Blender Model Description | Encore Inlets | Product Inlets (Typical) |
|---------|--|---------------|---|
| NN5 | Blender Pump 3+0 | W,X | W = Lo Product X = Hi Product |
| NN6 | Blender Pump 4+0 | | |
| NN7 | Blender Pump 5+0 | | |
| NJ1 | Multi Hose Blender Pump 3 Grade 6 Hose | | |
| NL4 | Blender Pump 2+1 | W,X,Y | W = Lo Product X = Hi Product Y = +1 Straight/ Unblended Product |
| NL5 | Blender Pump 3+1 | | |
| NL6 | Blender Pump 4+1 | | |
| NL7 | Blender Pump 5+1 | | |
| NJ3 | Multi Hose Blender Pump 3+1 Grade 8 Hose | | |

Notes:

- W = Product 1 (**On Blenders only** Product 1 is **always** Lo Product.)
- X = Product 2
- Y = Straight/Unblended Product Inlet

Encore Pump Blender Piping to Hose Fitting Configurations

Figure 3-12: Pump Blender Piping to Hose Fitting Layout



Connecting Pump/Dispenser Inlet Pipes



WARNING

Shear valves must be installed correctly.

Improperly or insufficiently anchored shear valves can lead to fire or explosion. Fire/explosion could result in severe injury or death.

Anchor all shear valves per manufacturer's instructions.

Note: Pumps, except in special circumstances, do not have to use shear valves. The following procedure for a pump is identical to a dispenser, except shear valve may not be used. Contractor must provide and install pipe unions whether shear valves are used or not.

IMPORTANT INFORMATION

NPT pipe threads can at times be difficult to seal during installation or later because of various conditions such as minor thread damage, contamination, slight thread imperfections, poor assembly practice and other reasons. Gilbarco has found that although NPT threads can be sealed normally with a good quality pipe sealant alone (the normal recommendation), many times fewer issues are created during installation by using a combination of sealant and Teflon pipe tape. The slight additional expense incurred to apply both will save money for the installer in the long run by spending less time correcting leakers during installation.

When using Teflon pipe tape, it is extremely important to apply it properly so that no tape stringers are created to enter the hydraulic system. Tape stringers can cause serious issues with valves, nozzles and other hydraulic components. Refer to ["Appendix: Inlet Pipe Assembly" on page 83](#) for information on how to properly use Teflon pipe tape and thread sealant to ensure fewer installation issues and fewer subsequent pump/dispenser problems.

This information and recommendation does not apply to hanging hardware connections. Damage to aluminum parts of the hanging hardware or dispenser could occur since it is very difficult to control proper torque tightening because of the thread-assembly friction characteristics of Teflon tape.

- 1 To gain good access during installation of plumbing it may be necessary to temporarily remove the vertical low hydraulic cabinet brace found in some units. Reinstall this brace after completing plumbing installation.

For units with shear valve, contractor provided union must be installed on shear valve. See shear valve manufacturer instructions for proper tightening of union to shear valve. For units without shear valves, contractor-provided union must be installed on ground stub pipe.

Refer to [Figure 3-13: Dispenser Inlet Piping and Safety Brace](#), for additional shear valve information. Since Ultra-Hi Units require special considerations, be sure to read and understand shear valve information.

CAUTION

Shear valve or other dispenser components can be damaged or broken if improper wrench technique is used. Installer must use two wrenches so stress is not applied to the shear portion of valve during tightening.

- 2 To maximize installation versatility, Encore series units are shipped without inlet piping. The installer provides and installs plumbing in the lower hydraulics cabinet. Where required, use UL approved sealant suitable for the applicable fuel type.
- 3 Be sure to remove any shipping plugs or caps that may be present in pipes, shear valves and unions. Leaving the mounting bolts a little loose at this time will allow for more adjustment when aligning piping.

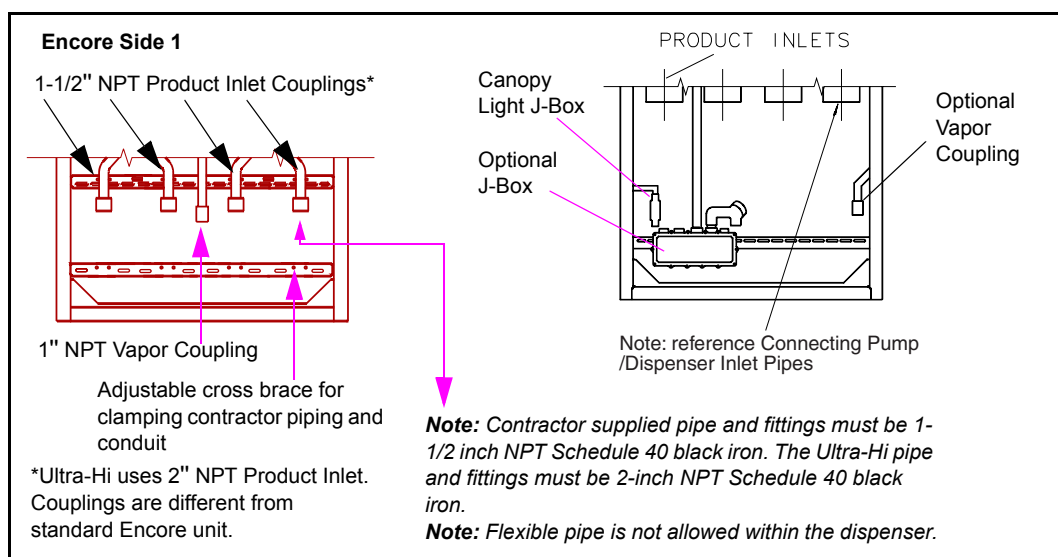
Note: Contractor supplied pipe and fittings must be 1-1/2 inch NPT Schedule 40 black iron. The Ultra-Hi pipe and fittings must be 2-inch NPT Schedule 40 black iron. Vapor Recovery is 1-inch NPT.

Note: Flexible pipe is not allowed within the dispenser.

Reference Locality and Regulatory Agencies for valve or shear valve requirements for proper recovery return line. Consult local requirements and Agencies.

To ensure proper operation of the shear valve during a vehicle collision, all piping above the shear valve must be secured to the lower cross brace using U-bolts sized for the plumbing involved.

Figure 3-13: Dispenser Inlet Piping and Safety Brace



⚠ WARNING

Always use the provided adjustable cross brace to secure plumbing in the dispenser or the shear valve may not operate properly during a vehicle collision.

The cross brace is not an optional feature!

Also, use of non-rigid piping materials such as field-bendable tubing to connect to the inlet may also result in the shear valve not operating properly during a collision.

Use of black iron pipe inside the dispenser is required.

- 4 Loosely connect union halves together.

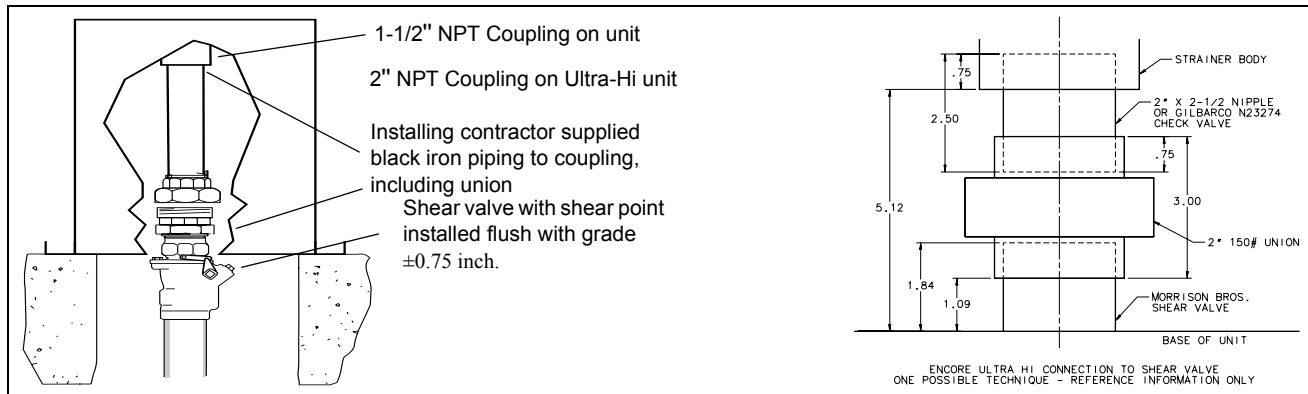
CAUTION

Do not use pry (crow) bar to position dispenser/pump over conduit or pipes. This could damage valves, conduit or other parts of the unit.

- 5 Double-check alignment of pipes, conduit, and frame and secure piping to safety brace using U-bolts or pipe clamps supplied by contractor.

Note: Misaligned piping could result in a leak.

Figure 3-14: Shear Valve at Grade



Note: It is a mandatory code requirement that the shear section of the shear valve be within $\pm 3/4$ inch (or to shear valve manufacturer's requirement, whatever is tighter) from the plane of the bottom of the base of a dispenser. Not all shear valve styles will allow maintenance of this tolerance for Encore Ultra units. A N23047 single poppet male top Morrison 2x2 636M-0200AV or code approved equivalent shear valve meets code requirements. Do not modify dispenser plumbing (for example; remove strainer housing) to accommodate other model valves or install units such that the shear groove of the shear valve is not within $\pm 3/4$ inch of the base plane of the dispenser. Use of a N23274 Check Valve between the union and strainer housing will also ensure the shear section is properly located.

- 6 Tighten union halves together.
- 7 Tighten anchor bolts at this time. Verify shear valves are properly tightened to the pit box or shear valve anchor bracket as necessary. If removed earlier, reinstall the vertical cabinet brace in the lower hydraulic cabinet.

Anchoring Pump/Dispenser to Island

Note: Pumps do not normally require shear valves. The following procedure for a pump is identical to a dispenser, except the shear valve may not be used.

WARNING

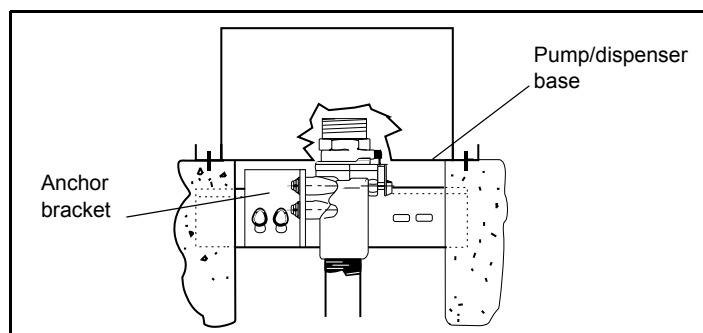
Improper anchoring of units could cause damage, server injury or death resulting from unit tipping over from impact or drive off.

NFPA 30A requires anchoring pumps/dispensers.
Securely install anchor bolts at all anchoring locations as shown on foundation diagrams for safe operation of shear valves and hose breakaways.

- 1 Verify shear valves are firmly anchored to island form (concrete or pit box). See [Figure 3-15](#).

Note: If shear valve is not properly anchored it may not operate correctly during a severe impact. Follow shear valve manufacturer instructions.

Figure 3-15: Anchoring Shear Valve using Anchor Brackets

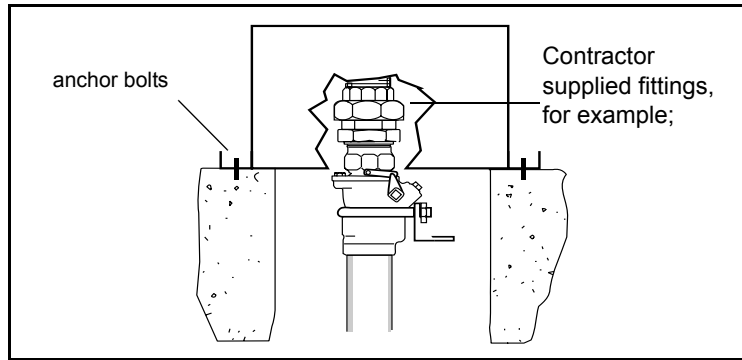


- 2 Loosely anchor the pump/dispenser to the island per foundation layout locations and using all required anchoring points according to the following:
 - Use 1/2-inch anchor studs with heavy duty large washers (slot designed for that size)
 - Use bolts or studs that are grade 5 steel.
 - Use hardware that is corrosion protected or resistant.

Note: Do not use plastic or low strength bolts, or pallet bolts

- Studs/bolts must be securely anchored to the island or pit box. See [Figure 3-16](#).
- See anchor or pit box manufacturer instructions for additional important information.

Figure 3-16: Anchors for Pump/Dispenser

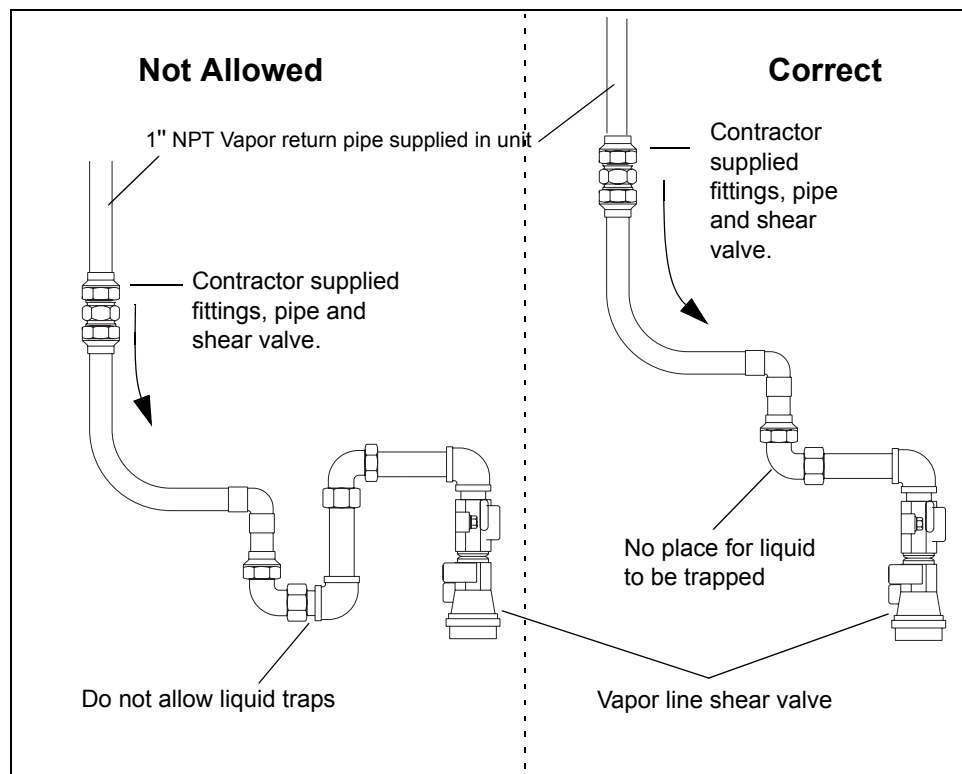


Connecting Vapor Return Line to Vapor Shear Valve

Do not create any liquid traps when connecting the vapor return line to the vapor line shear valve. See [Figure 3-17](#). A liquid trap is a low spot in the vapor return line that can accumulate fuel and cause blockage which could cause a system to fail vapor recovery certification tests.

Note: Contractor must provide and install pipe union for connection to 1-inch NPT coupling in unit.

Figure 3-17: Correct Vapor Line Connection Method



Junction Box Specifications

Encore units are provided without junction box unless the junction box option is specified at time of order. If replacing an existing unit, installing contractor may connect and extend existing wires that are too short for Encore by providing and utilizing a Class 1 Division 1 explosion-proof junction box sized to conform to or exceed the requirements of both UL87 and the National Electrical Code NFPA 70.

Note: These specifications may have requirements which are not identical.

Note: Gilbarco does supply junction box kits. Refer to MDE-4084 Junction Box Retrofit Kit M01483K006 Installation Manual for additional information.

Wiring Dispenser (STP-Supplied Unit)

Depending on the installation the electrician will be routing conduit directly to the electronics cabinet, to a factory installed junction box or to an installer supplied junction box and then to the electronics cabinet.

For Pump Wiring see [“Wiring Pump \(Self-Contained Unit\)” on page 34](#).

Preparing Field Wiring

- 1 Open Side 1 CIM door. Refer to MDE-3804 Encore and Eclipse Service/Start-Up Manual for instructions.

Note: Side 1 has electronics module access to field connections, boards and wiring. Main junction box is installed on side 1 for units with factory installed junction box.

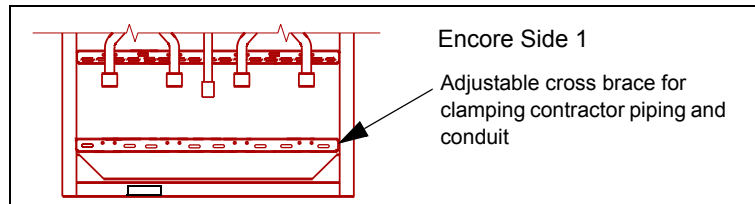
- 2 For units with junction box installed, remove box cover and save for reassembly.

Note: For Encore units replacing older units, if existing wire is too short to reach cabinet connections and a splice must be made, contractor must provide and use a Class 1 Division 1 explosion proof junction box in which to make connections according to code. Refer to section [“Before Placing Unit on Fuel Island” on page 14](#).

- 3 Verify that a Seal-Off Y fitting has been installed and sealed as a first connection where conduit leaves ground. This fitting must be in place and sealed before proceeding further. Refer to MDE-3802 Encore and Eclipse Site Preparation Manual.
- 4 In all cases where junction box is used, whether factory or contractor supplied, the following are mandatory requirements:
 - Connection of conduit to junction box must be made with a clearance of at least 9 inches from pump/dispenser base to the bottom of the junction box connection stub. To accomplish this, conduit can be routed so as to enter junction box from side or top.
 - Junction box must be securely fastened in unit by means of a bracket or brace, and cannot be held in place by only conduit. Factory supplied boxes are so fastened.
 - Installation of junction box and all fittings must be done so as to allow installer to turn any and all threaded fittings a minimum of 45 degrees in a single movement using appropriate tool, for example; pipe wrench.
 - Wiring must be gas and oil resistant, color coded or tagged for identification purposes, and rated for 300 Volts or higher. Data wires for new installations must be twisted-pair (unshielded) with 10 to 12 twists per foot.

- 5 Contractor must provide sufficient number of properly sized U-bolts or pipe clamps to securely fasten all conduit running through hydraulics cabinet to braces provided. See [Figure 3-18](#).

Figure 3-18: Cross Brace



IMPORTANT INFORMATION

Always use the provided adjustable cross brace to secure conduit in the dispenser.
The lower brace **is not an optional feature!**

- 6 For units with junction box run 1-inch rigid conduit to junction box entering unit from Side 2. Run field wiring to main junction box through 1-inch junction box conduit entering unit from side 2. Make connections to 1-inch conduit with Class 1 Division 1 explosion proof conduit union.

If conduit is entering the unit from outside the dispenser pot box, refer to “[Electrical Related Items](#)” on page 52 and “[Reference Information](#)” on page 67 before proceeding.

Conduit to be run to the electronic cabinet with a 8-inch long by 1-inch diameter conduit entering the unit from side 2 plus additional conduit and coupling as required.

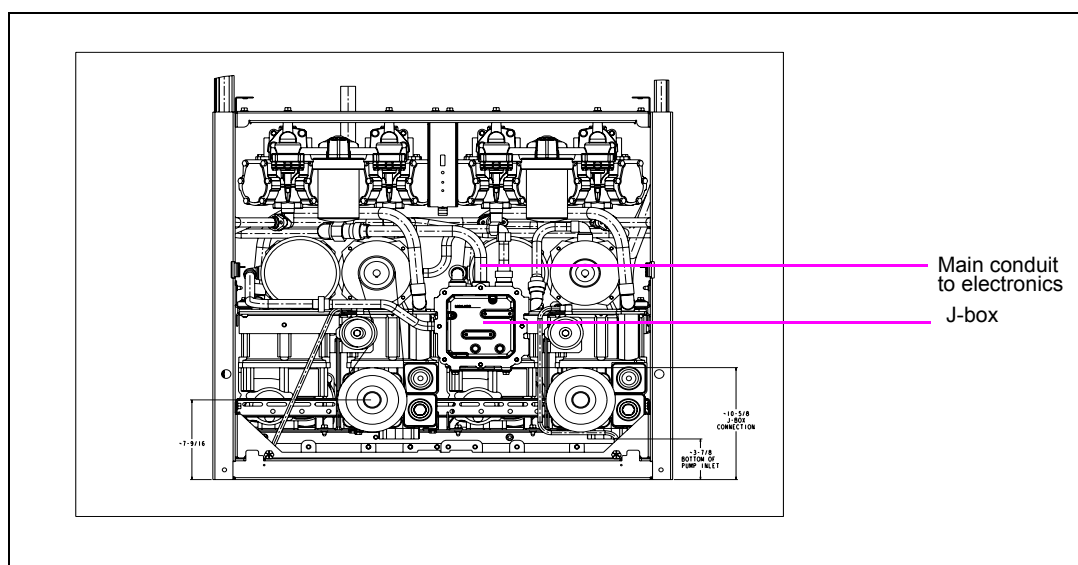
- 7 If required, install conduit for call buttons, ethernet and speaker wires being sure to follow earlier steps and warnings for installing the conduit through the air gap plate. Ethernet, call buttons, and speaker wires can share the same conduit if acceptable to the manufacture of the equipment attached. If unit will require call button and conduit, read and understand “[Call Button Conduit Installation](#)” on page 65 If unit will have a lighted canopy, read and understand section “[Lighted Canopy Conduit and Wiring Options](#)” on page 65.

Wiring Pump (Self-Contained Unit)

For dispenser wiring, see “[Wiring Dispenser \(STP-Supplied Unit\)](#)” on page 33.

Preparing Field Wiring

Self-contained factory units have factory installed junction-box on side 1 of unit. Field connections are through the supplied 1-inch conduit starting on side 2. See [Figure 3-19](#).

Figure 3-19: Junction-Box Conduit Layout

Note: The motor wiring and ground wire must be sized to match the load and the distance (length of the wire). Wiring must be gas and oil resistant, color coded or tagged for identification purposes, and rated for 300 Volts or higher. Recommend that stranded and data wires are twisted-pair with 10-12 twists per foot.

- 1 Open Side 1 CIM door. Refer to MDE-3804 Encore and Eclipse Start-Up/Service Manual for instructions.

Note: Side 1 has junction box.

- 2 Remove support brace to gain access to junction box cover. Refer to [“Wiring Pump \(Self-Contained Unit\)” on page 34](#). Save hardware for reinstallation later.
- 3 Remove box cover and save for reassembly.
Note: For Encore units replacing older units, if existing wire is too short to reach installed junction-box and a splice must be made, contractor must provide and use a Class 1 Division 1 explosion proof junction box in which to make connections according to code. Refer to [“Before Placing Unit on Fuel Island” on page 14](#).
- 4 For all units verify that a Seal-Off Y fitting has been installed and sealed as a first connection where conduit leaves ground. This fitting must be in place and sealed before proceeding further. Refer to MDE-3802 Encore and Eclipse Site Preparation Manual. Install adaptive 1-inch metal conduit and union to junction box conduit.
- 5 If unit will require call button and conduit, read and understand section [“Encore Elevation Diagram \(Encore 550 with SMART Meter\)” on page 62](#) before proceeding. If unit will have a lighted canopy, read and understand section [“Lighted Canopy Conduit and Wiring Options” on page 65](#) before proceeding.
- 6 If removed earlier, reinstall vertical support brace that was removed earlier to gain access to junction-box. The support brace is not optional.

Wiring Ultra-Hi Dispenser

Depending on the application Ultra-Hi units requires that a specific set of cables be installed. These cables are used to intercept existing cables and provide connection points from the master and/or satellite units.

Preparing Field Wiring

- 1 Open Side 1 CIM door. Refer to MDE-3804 Encore and Eclipse Start-Up/Service Manual for instructions.

Note: Side 1 has electronics module access to field connections, boards and wiring.

- 2 For units with junction box installed, remove box cover and save for reassembly.

Note: For Encore units replacing older units, if existing wire is too short to reach cabinet connections and a splice must be made, contractor must provide and use a Class 1 Division 1 explosion proof junction box in which to make connections according to code. Refer to section, titled, “Before Placing Unit on Fuel Island” on page 14.

- 3 The following table contains information on what cables are used for specific applications. Refer to section titled, “Ultra-Hi Intercept Cables” on page 37. See FE-364 Encore 300 Ultra-Hi Dispenser Field Wiring Diagram for more information on where to make connections.

| Description | Part Number | Application | Illustration in Figure |
|--------------------------|-------------|---|-----------------------------|
| Main AC | M02338 | All Ultra-Hi master units | Figure 3-20 |
| Valve Intercept | M02372 | Master of combo unit - for satellite light only | Figure 3-22 |
| Combo Neutral | M02384 | Satellite side of combo unit, Satellite | Figure 3-23 |
| Transformer sub-assembly | M02370 | Master of combo unit ~ OR ~ Encore satellite - for satellite light only ~ OR ~ Legacy satellite | Figure 3-21 |
| Combo Pump Handle | M02385A001 | Encore Satellite, Combo | Figure 3-24 |
| Combo 9VAC | M02386A001 | Encore Satellite, Combo | Figure 3-25 |

- 4 Some cables configurations will require that one of the existing connectors be cut off the wires allowing the wire to be secured to other wires with wire nuts. Refer to the illustrations noted in the table above and also the Field Wiring Diagrams.

Ultra-Hi Intercept Cables

The following figures (Figure 3-20 through Figure 3-25) contain a description, the associated cable block diagram and the device with which the cable is used.

Figure 3-20: M02338A001 Main AC Cable

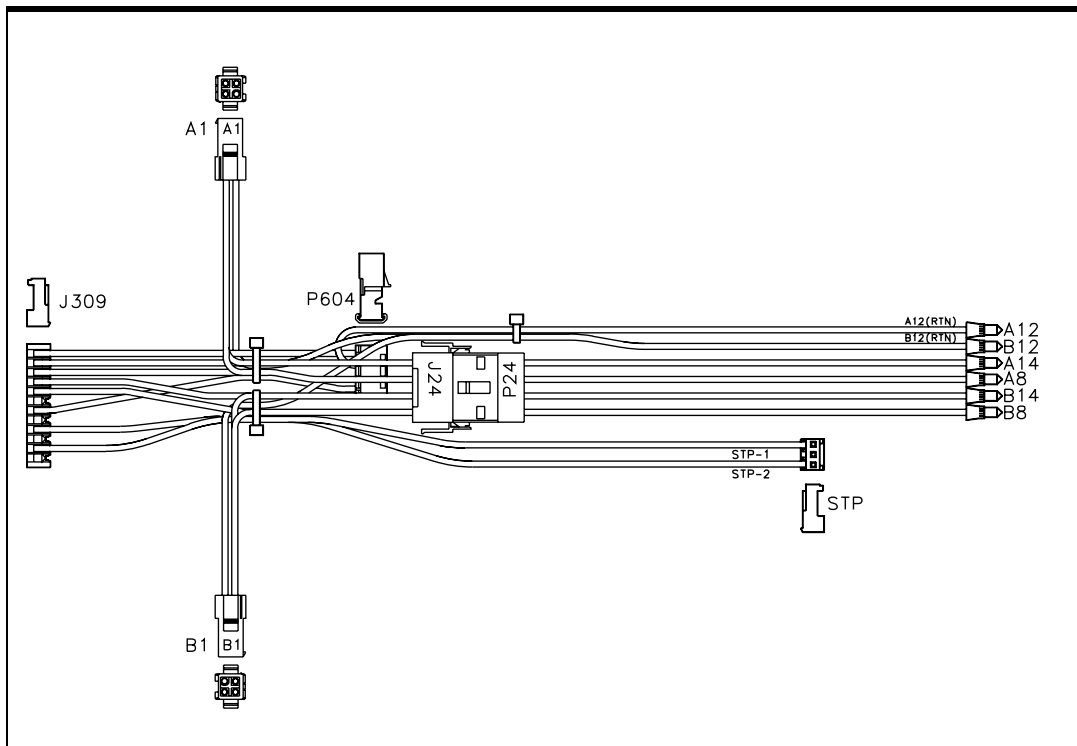


Figure 3-21: M02370A001 Transformer Sub-assembly

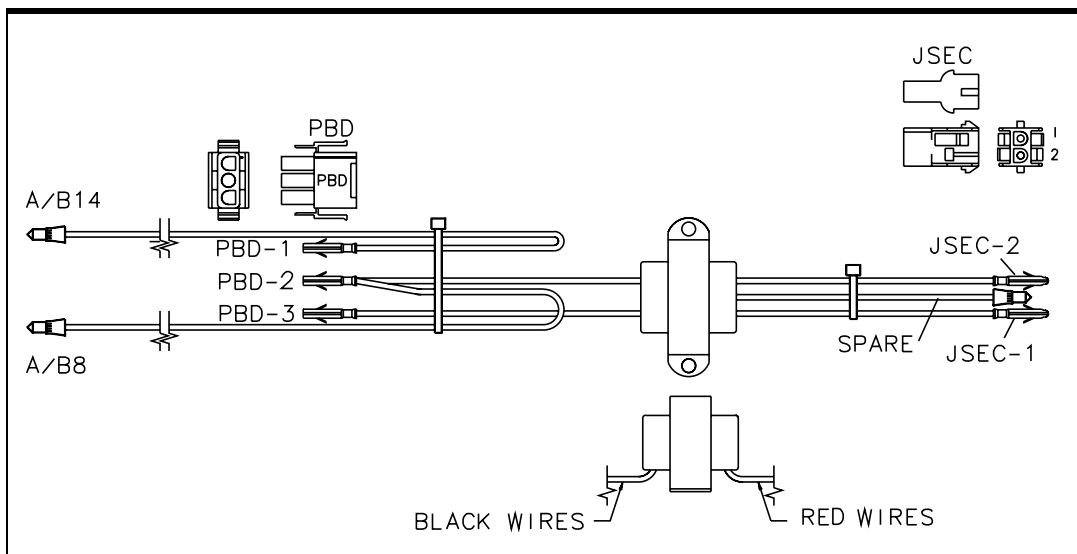


Figure 3-22: M04218A001 Valve Interceptor Cable

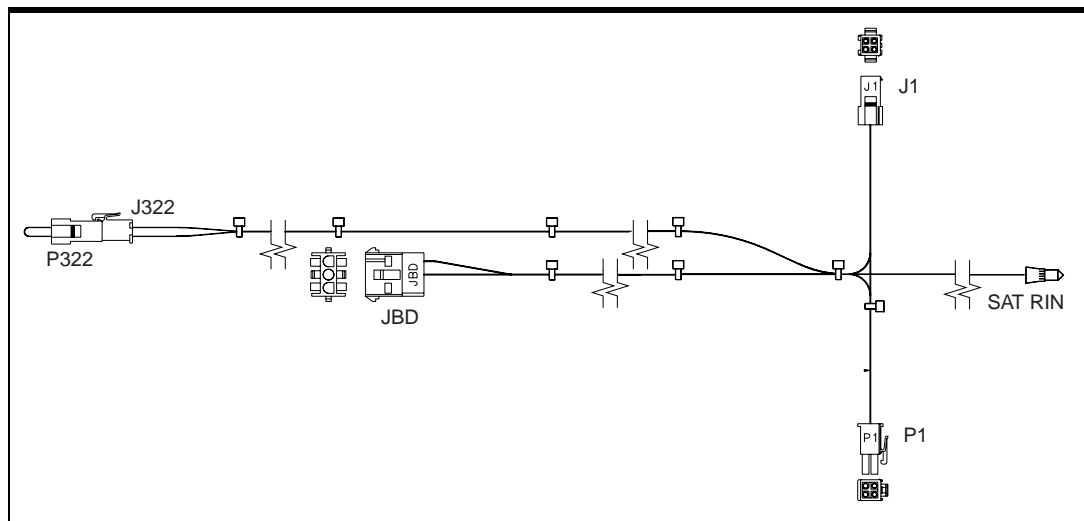


Figure 3-23: M02384A001 Combo Neutral Cable

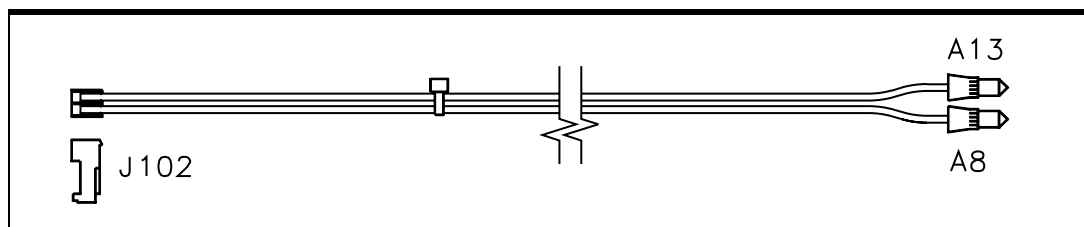


Figure 3-24: M02385A001 Combo Pump Handle Cable

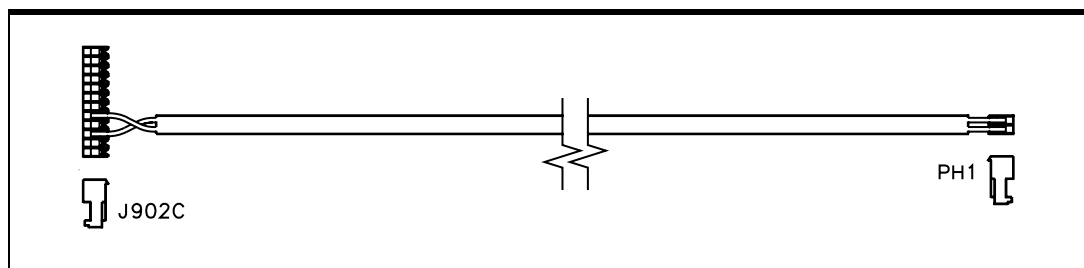
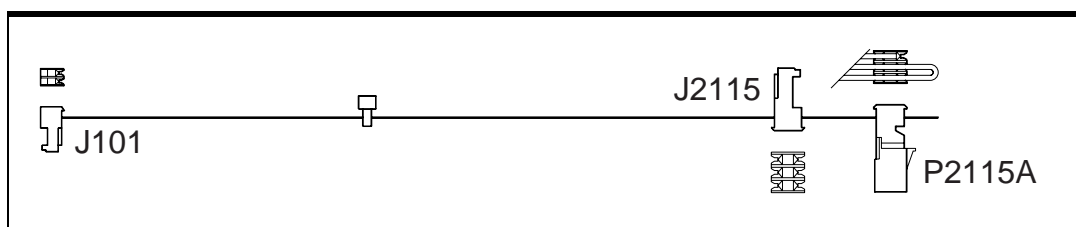


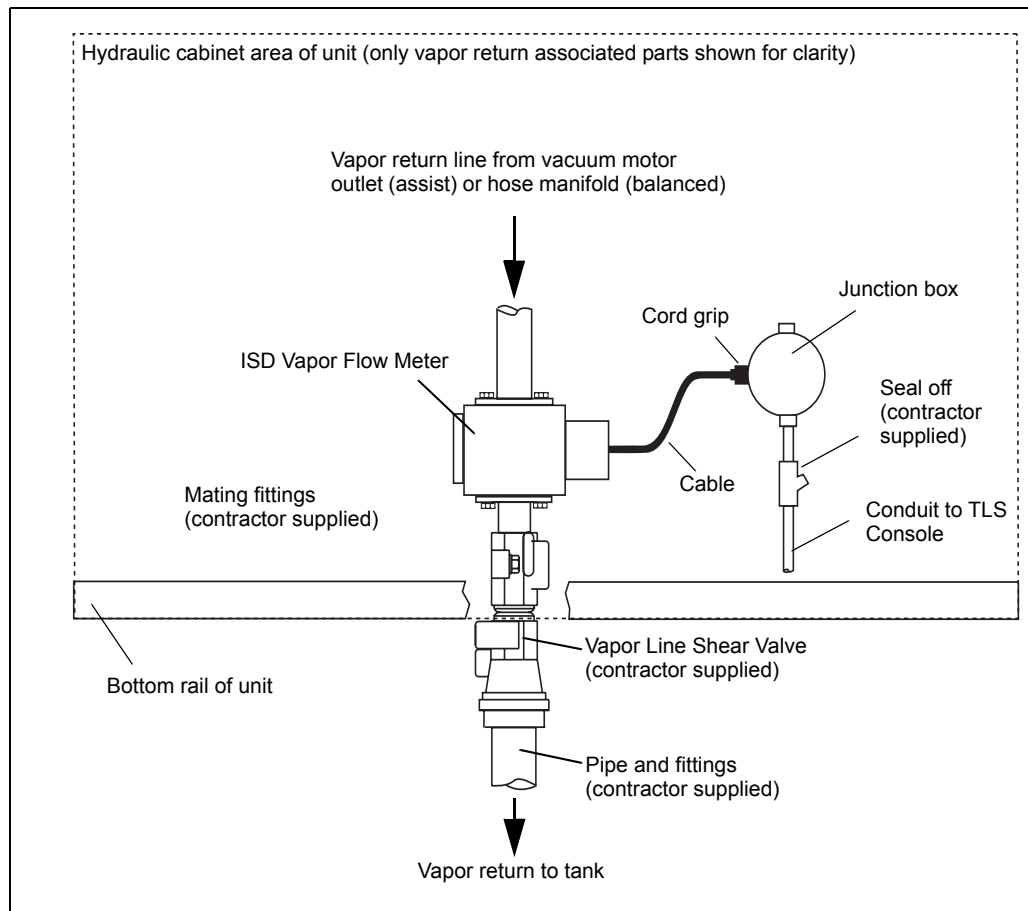
Figure 3-25: M02802A001 Call Interface Power Cable

Connecting to ISD Vapor Flow Meter

At Dispensing Unit

The vapor Flow Meter is part of an ISD (In Station Diagnostic) system to measure the amount of vapor returning to the UST (Underground Storage Tank). Wiring for this device must be intrinsically safe and run in a separate conduit. Conduit must be potted where it enters and leaves any designated hazardous zones. Potting requirements for hazardous zones must be followed so fuel vapors can not migrate to other areas. The ISD Vapor Flow Meter wiring terminates at TLS (Tank Level Sensor) console. The flow meter is in-line and near the vapor return shear valve in the hydraulic area of the unit. Do not create any liquid flow traps. Refer to [Figure 3-17: Correct Vapor Line Connection Method](#) for more information on liquid traps.

Figure 3-26: ISD Vapor Flow Meter

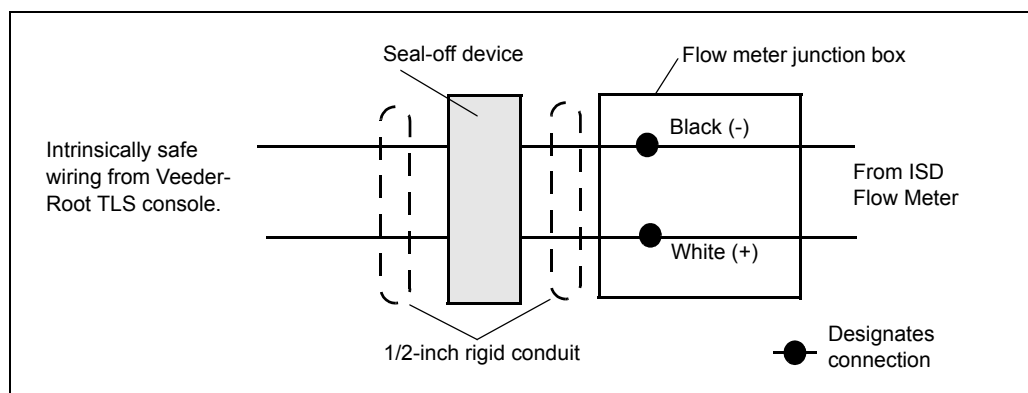


To TLS Console

Wiring from the ISD Flow Meter junction box terminates at the TLS console. Refer to ISD Vapor Flow Meter Installation Guide (Veeder-Root document number 577013-796) for additional information. See [Figure 3-27](#) for correct polarity connections.

Note: Correct polarity must be observed when making connection.




Figure 3-27: Field Wiring ISD Flow Meter Polarity



Running Wire to Electronics Cabinet (Not Factory Installed)

For units without factory installed junction boxes, the technician will need to make all wiring connections in the electronics cabinet and for units with junction boxes connections will be made in the junction box. Pump field wiring connections are made in the main junction box. Canadian applications require seals at certain air gap locations. These seals are not required for U.S. applications and most other locations.

Pull wiring to electronics cabinet for non factory installed junction box units. Do not complete field wiring at this time.

| | |
|--|--|
|  WARNING | |
|   | <p>Bottom plate of electronics cabinet and top plate of hydraulics cabinets are separated to provide an air gap between the electrical and hydraulic housings. Loss of air gap integrity through improper installation can allow fuel vapors into areas where they may ignite. Resulting fire and/or explosion can lead to serious injury or death.</p> <p>Running conduit through the air gap requires strict compliance with procedures outlined in this manual. No holes in air gap plates can be left unsealed following installation.</p> |

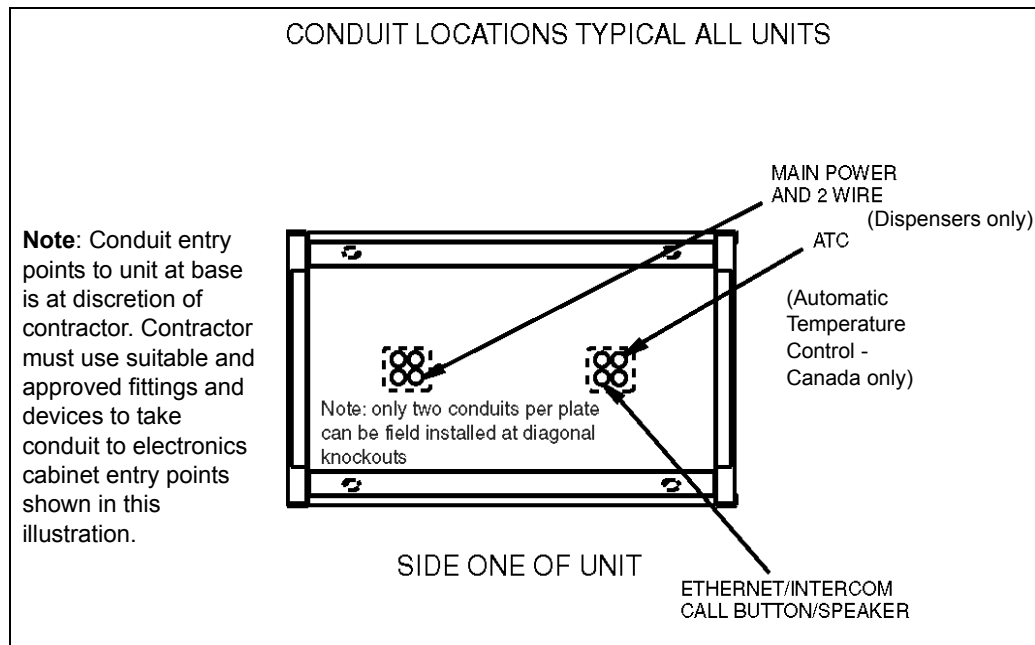
IMPORTANT INFORMATION

Air gap penetration conduit should be no longer than 8 inches. This will allow removal of the dispenser if necessary in the future and accommodate wiring a new dispenser without pulling new wire.

When a dispenser with no junction box is removed from island, conduit and wires will be cut immediately below potting dam. This will leave enough wire to splice into a Class 1, Div 1, Group C and D explosion proof junction box when a new (or previously removed) unit is installed/reinstalled over the containment box.

Use the information provided in [Figure 3-28](#) to feed wires into electronics cabinet:

Figure 3-28: Typical Conduit Locations



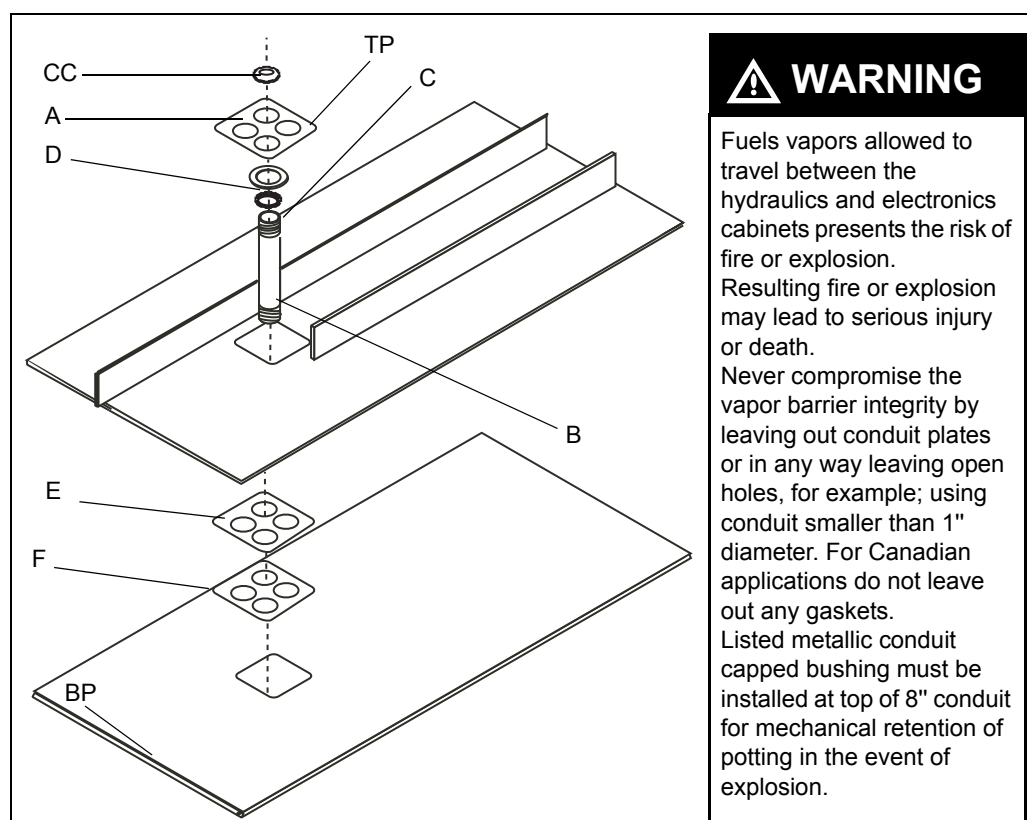
Encore has eight sets of conduit knockout holes (four on right and four on left) for access to electronics cabinet. Knock out aligned (top and bottom air gap plate) 1-inch plugs for required number and positions of contractor supplied conduits. (Do not use smaller than 1 inch conduit with the provided conduit plate.) For field installations, only two conduits at opposite corners can be installed per plate. Use knockouts on left (facing Side 1) for all power and 2-wire. Ethernet, IFSF, speaker, intercom and/or call button wiring should use knockouts on right.

Sealing Air Gaps and Conduits in Encore Units

For all Encore units each contractor-provided 8-inch x 1-inch conduit entering and exiting electronics cabinet must be sealed with sealing compound the full length of conduit. This fill-to-length is mandatory per UL requirements. See NOTICE on previous page for additional information.

- 1 Install contractor-supplied 1 inch by 8 inch Listed, metal rigid, threaded conduit through both top and bottom air gap conduit plate holes according to the following (also see [Figure 3-29](#)):
 - From electronics cabinet, remove two screws (not shown) and upper conduit plate (A) from top air gap plate (TP). Save all for reassembly.
 - Thread ends of conduit (B) approximately 1-1/2-inch from each end.
Note: Conduit can be installed to the top air gap conduit plate (A) away from unit.
 - Fasten conduit (B) to removed conduit plate (A) with machined flat conduit locknut (C) and washer (D) on bottom of plate (A) and Listed metallic conduit Capped Bushing (CC) on top of plate.
 - Remove two screws (not shown) and bottom air gap conduit plate (E) from bottom air gap plate (BP). Save all for reassembly.
Note: (Canada only) Gasket for plate (F) will come off with plate. Gasket must be reinstalled with plate.
 - Remove aligned knockout plugs from bottom air gap conduit plate (E) as required and reinstall plate and screws.

Figure 3-29: Encore Conduit Sealing Plates



- From electronics cabinet, slide conduit down through knockout in bottom air gap plate.
- Reinstall top air gap conduit plate (A) using screws onto top air gap plate to secure conduit in place.

- 2 Feed wires through all contractor supplied fittings and 8-inch installed conduit to electronics cabinet.

Note: All fittings must be Listed and suitable for use in a Class 1, Division 1 hazardous location. It is recommended that contractor use a conduit elbow or pull elbow to connect to 8-inch conduit to allow for easy potting of conduit. See illustration in section [Lighted Canopy Conduit and Wiring Options](#) on page 65.

- 3 Install fiber potting dam material in bottom of 8-inch conduit to a thickness of 3/4-inch. Refer to [“Potting Conduits”](#) on page 45.

Note: Use only fiber potting dam material specified by potting compound manufacturer and conforming to requirements of NFPA 70. Examples of permissible materials are Killark™ type ‘PF’ and/or Crouse-Hinds CHICO™ X packing fiber. A small screwdriver may be used to press fiber dam material around and between wires to prevent compound or vapor leak-by. Follow sealing compound manufacturer’s directions for type of fiber to use.




Note: Do not pot conduit at this time. Test wires before potting conduit.

- 4 Tighten all conduit unions and fittings.

Note: No more than 18 inches of wire should be left above top of conduit. All excess wire length must be trimmed and wires routed away from sharp edges.

- 5 Securely fasten conduit to slotted cross brace provided in hydraulics cabinet.
Note: See illustration in “Connecting Pump/Dispenser Inlet Pipes” on page 28.
- 6 Proceed to next section, “[Testing New Field Wiring](#)” before potting the conduit.

Testing New Field Wiring

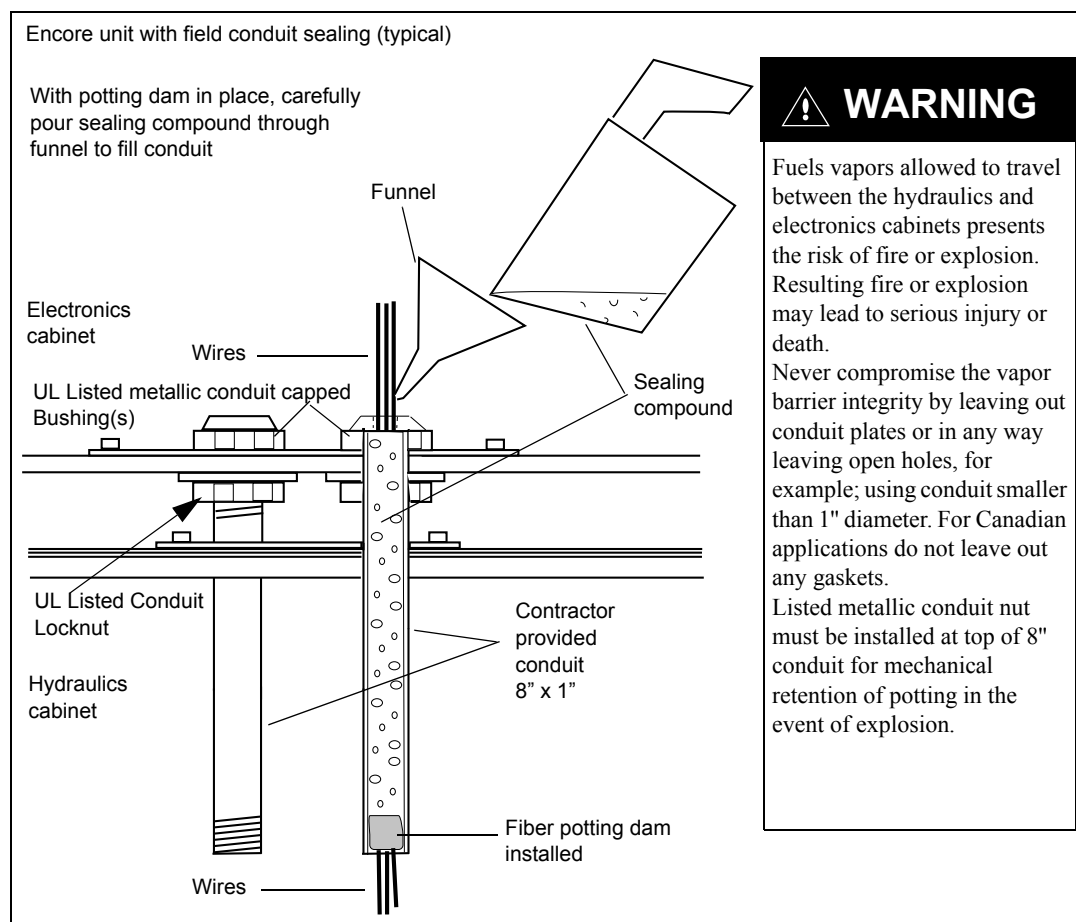
|  WARNING | |
|--|---|
|  | Sparks can ignite fuel/vapors. Fire/explosion can result in severe injury or death. Use caution when testing wires. Do not test when exposed fuel and vapors are present. |
|  | Only use a Megger® Tester on new field wiring. For existing wiring use a digital multi meter to test for continuity/resistance. |

Test insulation of new wiring from station and to the electronics cabinet before connecting the wires. Refer to Warning above. This checks for damage that can occur while pulling wires through the conduit.

- 1 Disconnect wires at both ends. If you do not disconnect wires at both ends, you can damage the pump/dispenser electronics.
- 2 Test the conduit wiring ends by using an insulation/Megger tester.
- 3 Connect one tester lead to wire under test.
- 4 Connect other tester lead to ground.
- 5 Measure resistance. Follow test equipment manufacturer instructions. Insulation resistance more than 50 megohms is satisfactory. Check local authority requirements.
- 6 Repeat above steps for all new wires.
- 7 Repeat test between all new wires.
- 8 When all wiring tests successfully, pot conduit according to next section.

Potting Conduit Stubs

All conduit entering the electronics cabinet on dispensers or pumps must be potted. Any contractor supplied conduit entering the electronics cabinet must be potted. Pot conduit according to the following:

Figure 3-30: Potting Conduits

- 1 Mix compound in a clean vessel according to compound manufacturer's directions. Mix only as much potting compound as can be used before compound hardens. Refer to compound manufacturer's instructions.
- 2 Using a funnel, carefully pour sealing compound into conduit from top until compound is within 1/4-inch of top of conduit. See [Figure 3-30](#).
Note: Be sure to pour slowly so as to prevent air bubbles from forming in compound and around wires.
- 3 Immediately clean all spilled compound from conduit threads and cabinet surfaces.
- 4 Install UL Listed metallic conduit capped bushing.

Completing Field Wiring

Field power connections in some older contractor supplied box or without a junction box, wiring is connected to WAGO spring-loaded terminals in the electronic cabinet. Newer units are wired using wire nuts. For WAGO Terminal equipped units the use of the WAGO tool (see [“Required Equipment and Materials” on page 11](#)) is highly recommended. If the tool is not available, a small insulated shank screwdriver may be used to open the spring-loaded terminal by pressing down on the spring through the slot provided, but care must be exercised to prevent damage.

- 1 Remove cover of junction box for models so equipped.
- 2 Make connections in electronics cabinet according to Field Engineering Diagrams FE-363 and FE-364. Do not disturb sealing compound around wire in existing conduit. Do not disturb factory wiring in electronic cabinet.
- 3 For units with junction boxes use pipe plugs (Referencing FE-363 and FE-364) to seal unused openings in all junction boxes, and replace cover on boxes.
- 4 Double check all wiring connections for wire nuts, lugs, caps, and so on. Reinstall junction box cover, use care not to pinch wires.
- 5 Be sure all conduit entering electronic cabinet is properly potted.
- 6 On non-SMART Meter applications, reinstall vertical support brace that was removed to gain access to junction-box.
- 7 Replace lower doors and close doors to electronics cabinet.

Installing Breakaways, Hoses, Swivels, Nozzles

WARNING

Hose pulled away from pump/dispenser exposes fuel or hose could pull unit over during a drive off. Explosion and fire or pull off of the dispenser during a drive off could result in severe injury or death.

Installation of breakaways is required by NFPA 30A.

Use of hoses other than standard lengths may create a tripping hazard.

Tripping could result in severe injury or death.

Do not use excessively long hoses without a hose retractor.

Units Without Hose Retractors

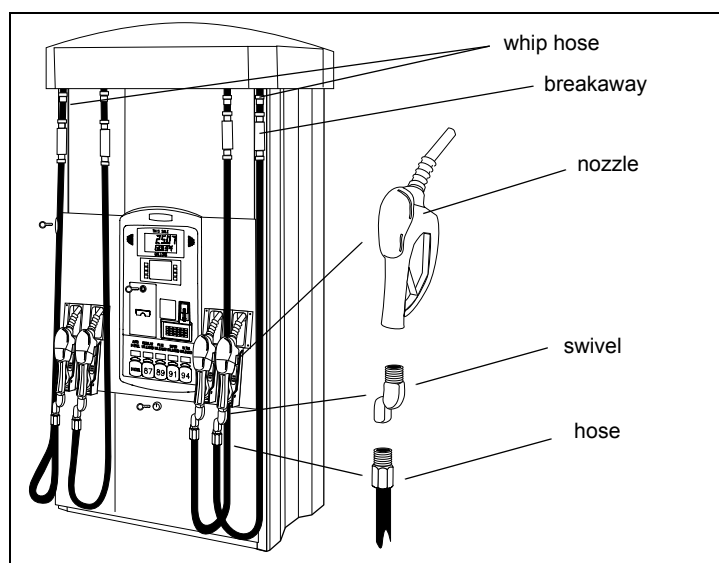
The following process is for pump/dispensers without extended reach or hose retractors.

- 1 Install breakaway whip hose to the pump/dispenser outlet casting. See [Figure 3-31](#).
- 2 Install Listed breakaways to whip hoses. Follow breakaway manufacturer instructions.
 - Clean all threads.
 - Place sealant on male threads only. Follow sealant manufacturer instructions.

Note: Use only UL classified pipe sealant approved for use with petroleum products. Remove sealant if it gets inside hose or fittings. Clean off excess. Do not use teflon tape or damage to unit may occur.

 - Use a smooth faced wrench to tighten all fittings securely. Do not over-tighten.

Note: Do not tighten breakaway by twisting hose. This could damage coupling.
- 3 Install hose to breakaway.

Figure 3-31: Hanging Hardware

- 4 Install swivel, if used, to hose. Follow swivel manufacturer instructions.
- 5 Install nozzle to swivel or hose. Follow nozzle manufacturer instructions.
Note: Check for correct nozzle cradle/hook type (vapor; non-vapor; and so on). It must not be possible to activate the nozzle boot switch with the nozzle properly held in place in the nozzle boot.
- 6 Using an ohm meter, check for continuity from end of nozzle to conductive metal surface in unit. (Applies to both types of hoses - retrievers or non-retrieving.)

Units With Hose Retrievers or Extended Reach

Note: It is important that teflon tape not be used on threaded connections. Use UL approved sealant suitable for the fuel involved only where required for sealing. (Not used for “O” rings.)

⚠ WARNING

Hose fittings and attachments, if improperly grounded, can lead to a spark that may ignite fuel or its vapors.
 Explosion or fire could result in severe injury or death.
 Check hoses, breakaways, fittings for proper conductivity after assembly.

- 1 Attach swivel (if used) to nozzle. (Follow swivel manufacture’s instructions.)
- 2 Assemble and attach breakaway whip hose to swivel or nozzle. (Follow hose manufacturer’s Instructions.)
- 3 Assemble breakaway to whip hose. Follow breakaway manufacture instructions.

- 4 Assemble hose to breakaway and then to unit outlet casting. Follow breakaway manufacture instructions.
- 5 Attach retriever clamp to long hose positioned to allow maximum extension of the hose yet not allow a trip hazard.

WARNING

Hose breakaways may not operate properly during a drive off if the retriever clamp is located between the breakaway and the pump dispenser.

The unit may be pulled off an island during a drive off or fuel may be spilled resulting in a serious injury to death.

Do not install the hose retriever clamp between the nozzle and breakaway.

Do Not Turn on AC Power!

WARNING

Applying power before electrical and mechanical inspections have been completed can be hazardous. Hazardous high voltage, fuel and fuel vapors may be present or equipment may be damaged.



Serious fires, explosions, electrical shocks, and injuries or deaths could result. Power must not be applied to unit and associated STPs when installing, servicing or making electrical wiring connections or replacing any electrical components, including light bulbs. Multiple disconnects may be required.



Only a Gilbarco Authorized Service Contractor may apply power during or after installation to check for leaks, verify operation, assure sealing of all enclosures, replacement of all covers, skins and sheathing and commission unit for operation per [“Installation Checklists” on page 12](#) prior to applying power. Failure to comply with this mandate could additionally result in loss of unit warranty.

When all installation procedures are complete to this point, the system must be purged by the installing contractor with a Gilbarco ASC on site to apply power needed to perform this procedure. Refer to MDE-3804 Encore and Eclipse Service/Start-Up Manual for start-up instructions. Whether purging is performed now or later, proceed to and complete section [“Installation Checklists” on page 50](#).

Purging Air from System

For New Dispensers (Purging through shear valve)

Encore dispensers must have some programming changes completed before purging can be started.

Encore 500/500 S

Encore 500/500 S units are received un-calibrated. Purging requires the unit to be configured for gallons, liters or imperial gallons. When purging, follow the calibration procedure in [“Purging Encore 300 Special Procedure” on page 49](#).

Encore 300

Encore 300 units are received un-calibrated. Purging requires the unit to be configured for gallons, liters or imperial gallons. When purging, follow the calibration procedure in [Purging Encore 300 Special Procedure](#) below.

- For full calibration information, refer to MDE-3804 Encore and Eclipse Start-Up/Service Manual.
- For quick reference calibration information, refer to MDE-4281 Calibration Quick Reference Card.

Programming Units of Measure

For Encore 300 units, this procedure is referred to as setting the Conversion Factor. For the other Encore units, this is referred to as setting Volume Units.

- For full programming information, refer to MDE-3804 Encore and Eclipse Start-Up/Service Manual.
- For quick reference programming information for Encore 300 units, refer to MDE-4039 Encore 300 Programming Quick Reference Card.
- For quick reference programming information for Encore 500, 550, and Eclipse units, refer to MDE-3860 Programming Quick Reference Card.

Purging Encore 300 Special Procedure

Refer to MDE-3804 Encore and Eclipse Start-Up/Service Manual for the full “Purging Air from System - Encore 300 Units” procedure.

In preparing for purging, use the following steps for each shear valve to all units. Be observant during purging and check for plumbing leaks as you move toward the tank. For Blender nozzles, select a blend grade. Make sure prices are set (by ASC) before you begin.

- Turn off all power to STPs involved.
- Start with unit farthest from tank.
- Use a UL approved sealant to connect a “gasoline suitable, conductive hose” to shear valve test port.
- Install mechanical valve (petcock) to hose.
- Place drain end of closed valve in an approved metallic container. Clean up any spills promptly.
- Return power to STPs. Activate STP for the line being purged.
- Slowly open mechanical valve until you obtain a slow, constant stream of fuel flow maintaining contact of metallic valve to the can during fuel flow.
- Perform all steps in next section for purging air from the system with fuel in lines.

For New and Existing Pumps and Dispensers with Fuel in Lines (Purging through Nozzle)

CAUTION

Purging air at high flow rates through meter can permanently damage them. Noise is not an indication of overspeed in many cases.

Overspeed meter damage is not covered by warranty. Follow all instructions carefully.

- 1 Lift nozzle handle for hose being purged. (For Encore 300 purging, follow the procedure for purging in the previous section for the selected meter.)
- 2 Place nozzle in approved container.
- 3 Slowly open nozzle until you obtain a slow, constant stream of fuel flow. (For SMART Meter equipped units, never exceed the nozzle slow latch setting until fuel flow is steady.)
- 4 Purge system with the amount of fuel specified below:

| For | Pump This Amount |
|------------------------------------|----------------------------------|
| Start-ups (installing new systems) | 35 gallons (130 liters) per hose |
- 5 Return nozzle to nozzle boot.
- 6 Empty approved container into appropriate product tank.
- 7 Repeat steps for each affected hose for each meter.

Installation Checklists

To ensure that proper and safe operation of all equipment and to maintain warranty coverage it is required that MDE-4226 Encore/Eclipse Installation Checklist (Form A) be completed at this time. The [Mechanical and Hydraulic Related Items](#) and [Electrical Related Items](#) checklists on the following pages may be used as a guide. (Many of the items on the lists should already have been checked by the electrician as covered earlier.)

| MDE-4226 Encore/Eclipse Installation Checklist (Form A) Name | In Following Checklists, MDE-4226 Checklist Referred To As |
|--|--|
| Individual Pump/Dispenser Hydraulic/Mechanical Related | List 1 |
| Individual Pump/Dispenser Electrical Related | List 2 |
| Station Electrical | List 3 |

Follow the checklists and perform all required inspections. Once the inspection has been completed, insert MDE-4226, less your copy, in the dispenser electronic cabinet away from and not touching any electronic components. Forms should be provided with each unit, if not, contact the Gilbarco Veeder-Root Distributor. It is only necessary to complete the station electrical inspection portions of the form (List 3) per form, per unit, at the station.

Note: Make copies of the checklists in this manual for actual use in order to preserve the originals for future use. In this manner, you will always have an original to copy for use in the future.

Mechanical and Hydraulic Related Items

| Item | Procedure | See | Checked | MDE-4226 Related Item |
|------|--|---|---------|-----------------------|
| 1 | Shear valves must be installed per valve manufacturer recommendations. Shear point is ± 0.75 inch of grade and properly mounted. | page 31 of this manual | | List 1, Item 1 |
| 2 | The lower piping brace must be installed per the installation manual and all product pipes properly anchored to it. | page 28 of this manual | | List 1, Item 13 |
| 3 | Flexible pipe must not be used within the dispenser. However flexible pipe meeting local and state codes can be used below the dispenser/pump where allowed by regulatory authorities. | MDE-3802 Encore and Eclipse Site Preparation Manual | | List 1, Item 2 |
| 4 | Pumps (self contained units) must have a vacuum actuated pressure regulating valve to prevent positive pressure at the pump base when used with above ground tanks. | MDE-3802 Encore and Eclipse Site Preparation Manual | | List 1, Item 3 |
| 5 | Pumps require a check valve. | MDE-3802 Encore and Eclipse Site Preparation Manual | | List 1, Item 4 |
| 6 | Hose breakaways must be used and installed per manufacturer recommendations. For units with retrievers, breakaways and whip hoses must be attached to the nozzle end. For units without retrievers it is attached to the dispenser end. | Manufacturer's specifications | | List 1, Item 5 |
| 7 | All hanging hardware must be checked for continuity. | page 46 of this manual | | List 1, Item 6 |
| 8 | The unit must be properly anchored to the island. | page 31 of this manual | | List 1, Item 7 |
| 9 | Vapor recovery piping at the dispenser/pump must have no traps or sags. | page 32 of this manual | | List 1, Item 8 |
| 10 | Verify correct nozzles, piping and brand panels for each grade. | unit order specific | | List 1, Item 9 |
| 11 | All code, regulatory agency or customer specified safety warning signs, labels or decals have been installed. | as provided with and for unit | | List 1, Item 10 |
| 12 | Long hose lengths beyond Gilbarco recommendations must not be used without special retrievers. <ul style="list-style-type: none"> For VaporVac hoses, no more than 6" of hose length may rest on the ground when nozzle is resting in boot. For Balance Vapor Recovery hoses, no portion of hose may be on ground. | NFPA 30A | | List 1, Item 11 |
| 13 | Unit mounted using proper quantity, size, and strength mounting hardware. | page 31 of this manual | | N/A |

Electrical Related Items

| Item | Procedure | See | Checked | MDE-4226 Related Item |
|------|---|---|---------|--------------------------|
| 1 | Conduit entries into the electronic cabinet must be installed per the installation manual. No openings are allowable between the electronic cabinet interior and the vapor barrier. | page 62 , page 65 and page 42 of this manual | | List 2, Item 1 |
| 2 | Field conduit into the electronic cabinet must be properly potted per local, state and national codes as per the installation manual. This is in addition to potting requirements for conduit below the base of the dispenser/pump. | | | List 2, Item 2 |
| 3 | Field conduit installed in dispenser hydraulics cabinet must be securely fastened to brace supplied with unit, using appropriately sized U-bolts or pipe clamps. | page 33 | | List 2, Item 3 |
| 4 | Equipment must be installed in conjunction with an emergency power cutoff to remove all power from the equipment in case of an emergency. | <ul style="list-style-type: none"> • MDE-3802 Encore and Eclipse Site Preparation Manual • FE-321 Field Wiring STP Control • FE-363 Field Wiring for Encore, • FE-364 Field Wiring Diagram • FE-364 Field Wiring Diagram • FE-363 Field Wiring Diagram • Grounding - page 75 | | List 3, Item 2 |
| 5 | STP isolation relays are required for all dispensers. | | | List 3, Item 3 |
| 6 | Use twisted-pair wires as specified for 2-wire communication for new installations or where new wire is pulled. Do not use shielded wire. | | | List 2, Item 5 |
| 7 | Use twisted-pair wires for color display communication wiring. | | | List 2, Item 5 |
| 8 | All wiring must be stranded copper of gauge and insulation casing specified. | | | List 2, Item 6 |
| 9 | All grounds must be properly connected per installation manual requirements as well as state, local and national codes. | | | List 2, Item 7 |
| 10 | Conduit and junction boxes should be per approved for hazardous locations and properly sized for the wiring involved. | <ul style="list-style-type: none"> • NFPA 30A • NFPA 70 • UL 87 • NEC | | List 2, Item 8 |
| 11 | Properly size all circuit breakers for the units/unit options involved. | NEC and local codes | | List 3, Item 5 |
| 12 | All dispenser/pump wiring should be properly spaced and isolated from wiring for electrically noisy devices such as variable speed STPs, station equipment motors and other devices. | MDE-3802 Encore and Eclipse Site Preparation Manual | | List 3, Item 6 |
| 13 | All power wiring and circuit breakers to Gilbarco equipment must be dedicated and not be shared with other equipment. | | | List 3, Item 7 |
| 14 | All circuit breakers to Gilbarco equipment must be clearly labeled and readily accessible. | | | List 3, Item 8 |
| 15 | All Distribution boxes must be clearly labeled showing the dispenser/pump number connections. | | | List 3, Item 9 |
| 16 | All dispensers/pumps wired to the same phase of electrical power. | | | List 3, Item 10 |
| 17 | New site wiring must be Megger tested. Old site wiring must be continuity and short tested with a digital meter. | page 45 | | List 3, Item 11 |
| 18 | Wiring color coded or tagged, sized for distance and application and resistant to gas and oil. | page 33 | | N/A |

Calibration Procedure for 500/500 S Units

All Encore 300 series meters must be calibrated, prior to their use by customers.

| IMPORTANT INFORMATION |
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|--|
| Important, units must be properly purged prior to calibration or calibration verification. Incomplete purging of air can result in inaccurate calibration or errors in calibration verification testing. |
|--|

Encore 500/500 S meters are pre-calibrated, but calibration must be verified. Depending upon whether the unit is an Encore 500/500 S or Encore 300 series the procedure is slightly different. After calibrating, the W&M switch must be seal wired to prevent calibration tampering. Be sure to draw the seal wire tight.

Encore 500/500 S (Gallon unit of measure)

Temporary pricing should have already been entered into the unit as outlined in the purging section to allow dispensing and calibration. Follow the procedure below.

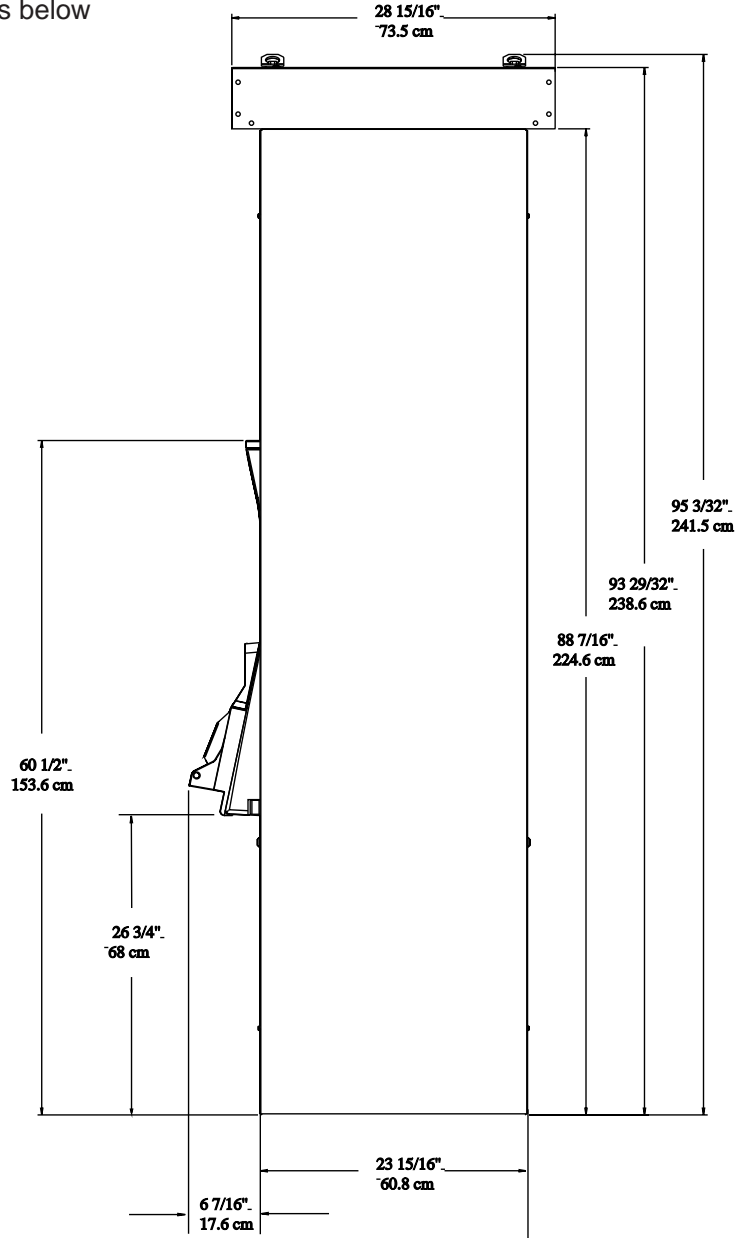
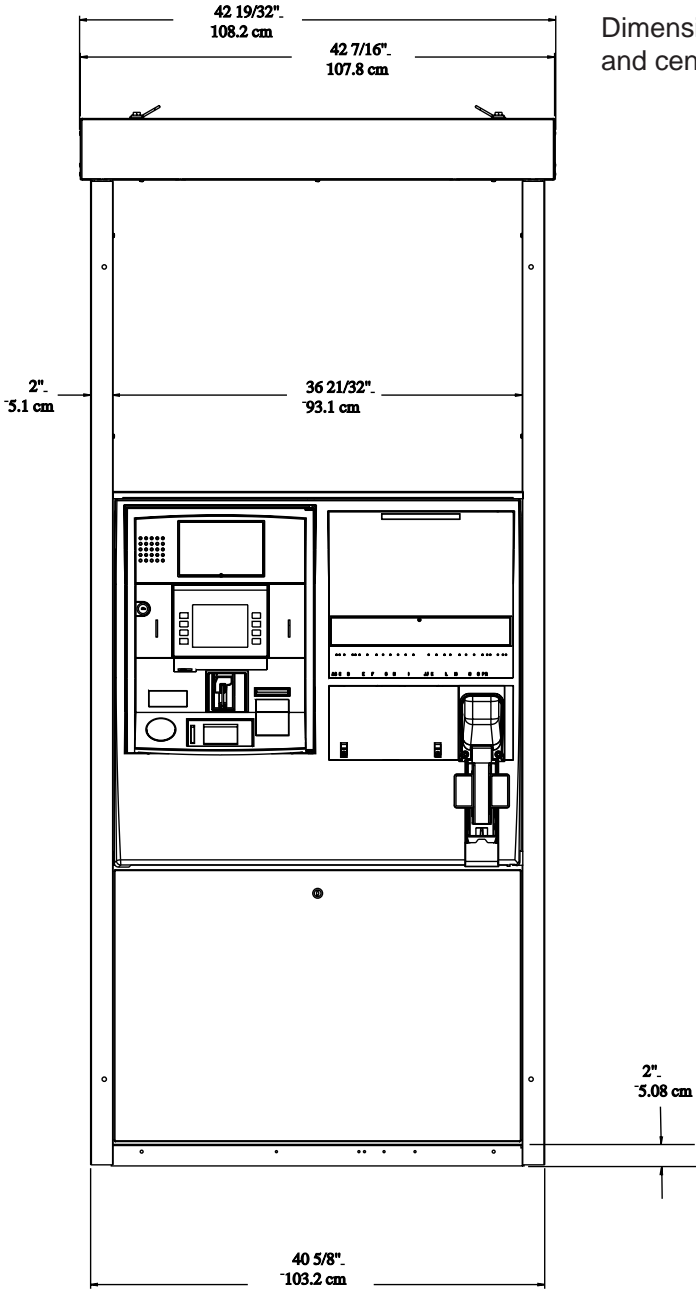
Current production Encore 500/500 S units are pre-calibrated to US gallons (*Note, calibration verification still is required*) and programmed to default programming values. They may be operated and purged in normal mode after entering prices (add pricing programming information from service manual here including how to access level 1 programming and steps for CC20). Purging can be done for units eventually to be converted to metric mode, while the unit is in the gallon mode.

| IMPORTANT INFORMATION |
|-----------------------|
|-----------------------|

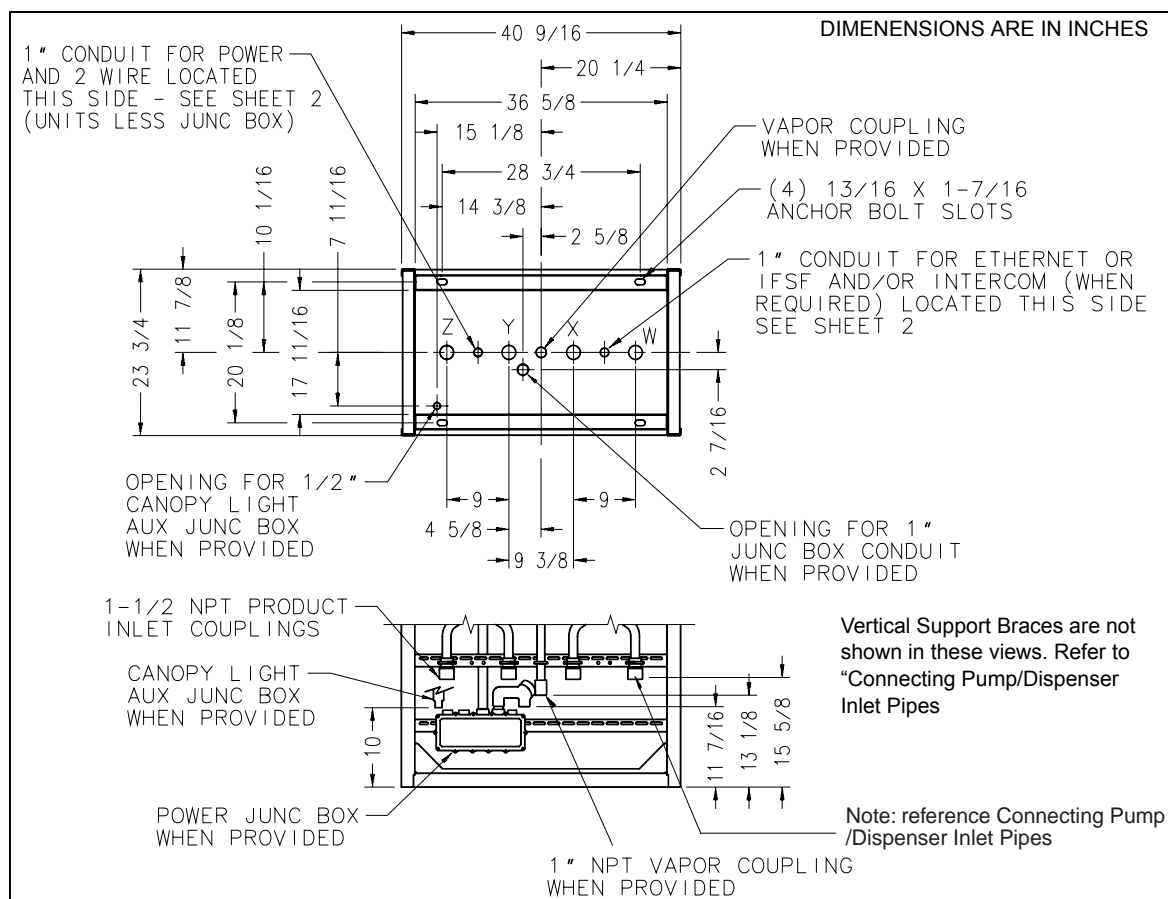
| |
|---|
| When purging Encore 500/500 S units if you exceed more than 250 volume units for any meter on a side, the start up technician will not be able to reset volume totals to zero or other value for station opening. Avoid purging more than 200 units of volume per meter as a result. This allows calibration to be checked later and retested as required plus the ability to reset totals. |
|---|

Encore 300/500 Elevation Diagram

Dimensions are in inches first
and centimeters below



Encore Foundation Diagrams: 1 of 6 (300/500 Dispensers)



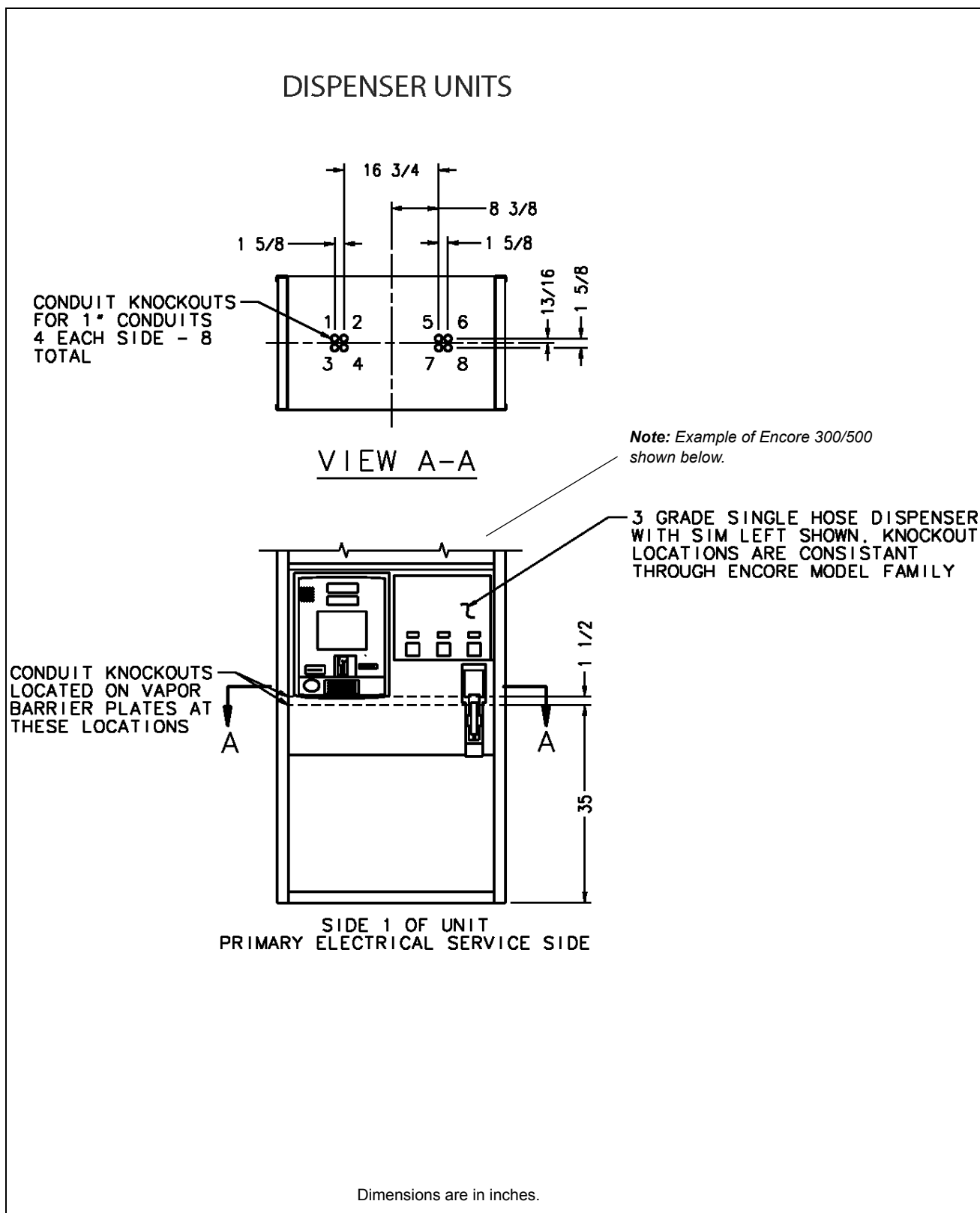
SIDE 1 OF UNIT
PRIMARY ELECTRICAL SERVICE SIDE

| INLETS | MODEL# | DISPENSER MODELS |
|-------------|----------------------------|--|
| W | NA0 | 1 GRADE 2 HOSE |
| W & X | NA1 NNO-3 NJ0 NG4 | 2 GRADE 4 HOSE X+0 SELECTABLE BLENDER 3 GR MULTI HOSE BLENDER 2 GRADE SINGLE HOSE |
| W, X & Y | NA2 NG0 NLO-3 NJ2 | 3 GRADE 6 HOSE 3 GRADE SINGLE HOSE X+1 SELECTABLE BLENDER 3+1 MULTI HOSE BLENDER |
| W, X, Y & Z | NA3 NG1 | 4 GRADE 8 HOSE 3+1 SINGLE HOSE |

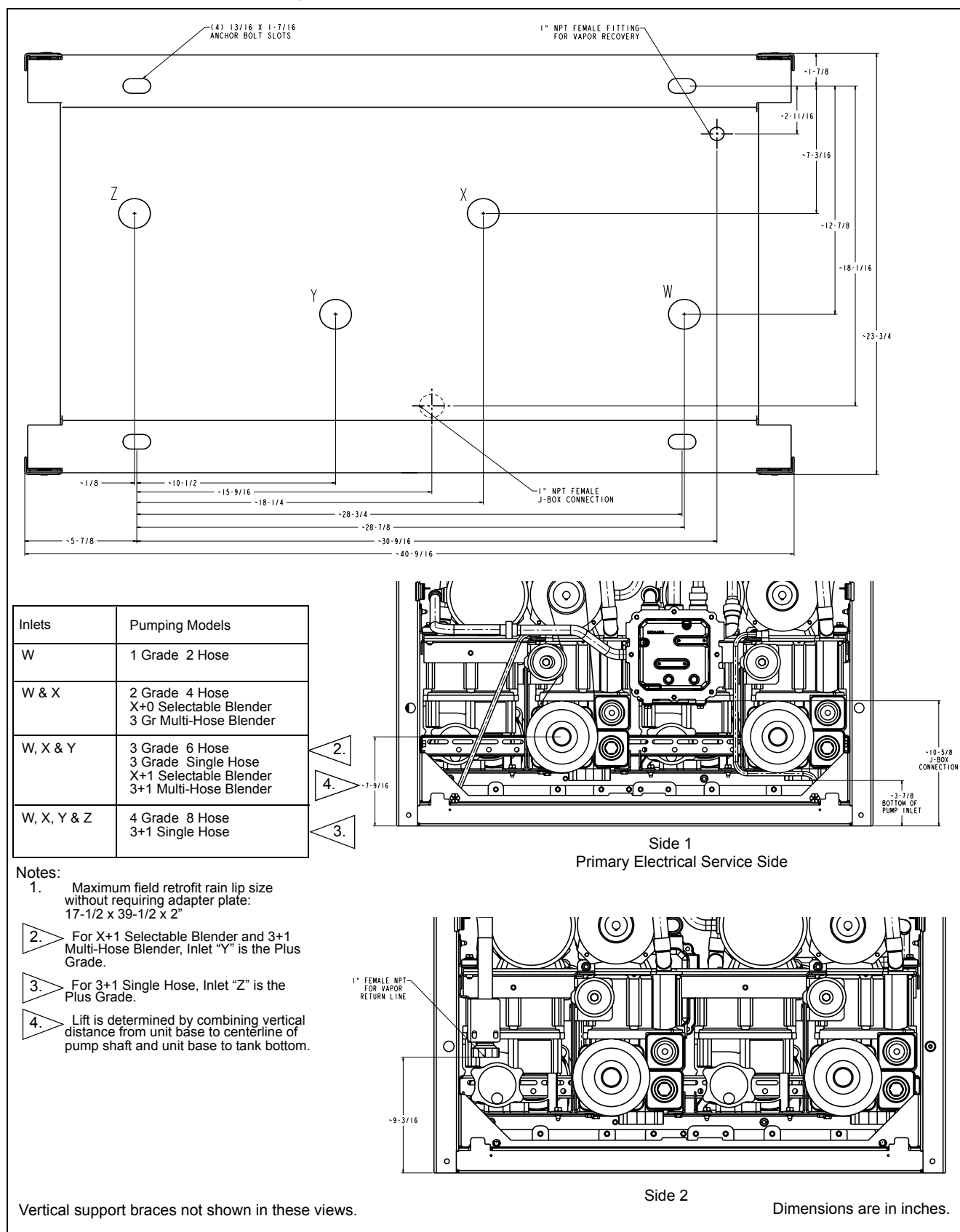
NOTES:

1. MAXIMUM FIELD RETROFIT RAIN LIP SIZE WITHOUT REQUIRING ADAPTER PLATE:
17-1/2 X 39-1/2 X 2"
2. FOR X + 1 SELECTABLE BLENDER AND 3 + 1 MULTI HOSE BLENDER, INLET "Y" IS THE PLUS GRADE.
3. FOR 3 + 1 SINGLE HOSE, INLET "Z" IS THE PLUS GRADE.

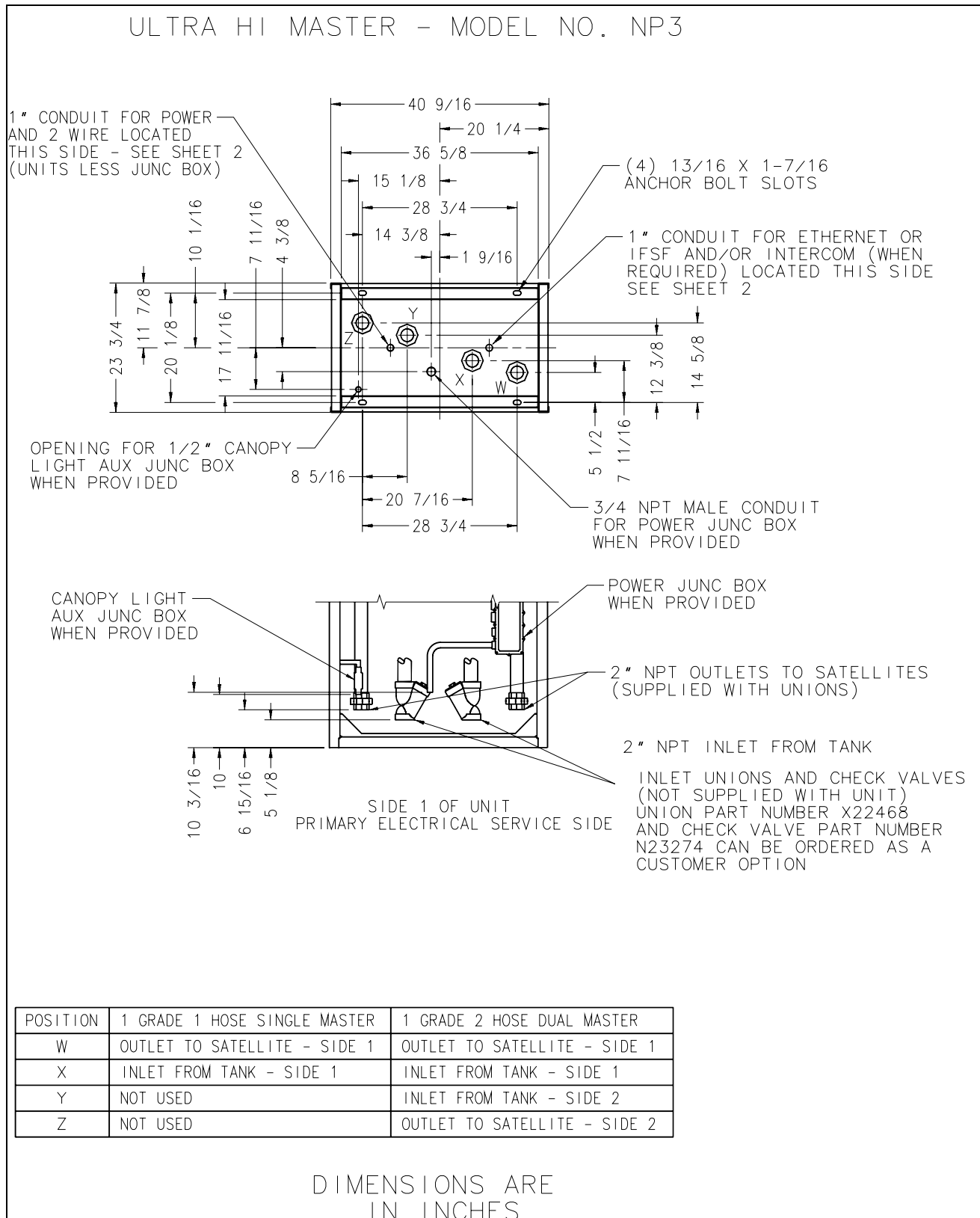
Encore Foundation Diagrams: 2 of 6 (300/500 Series Dispensers)



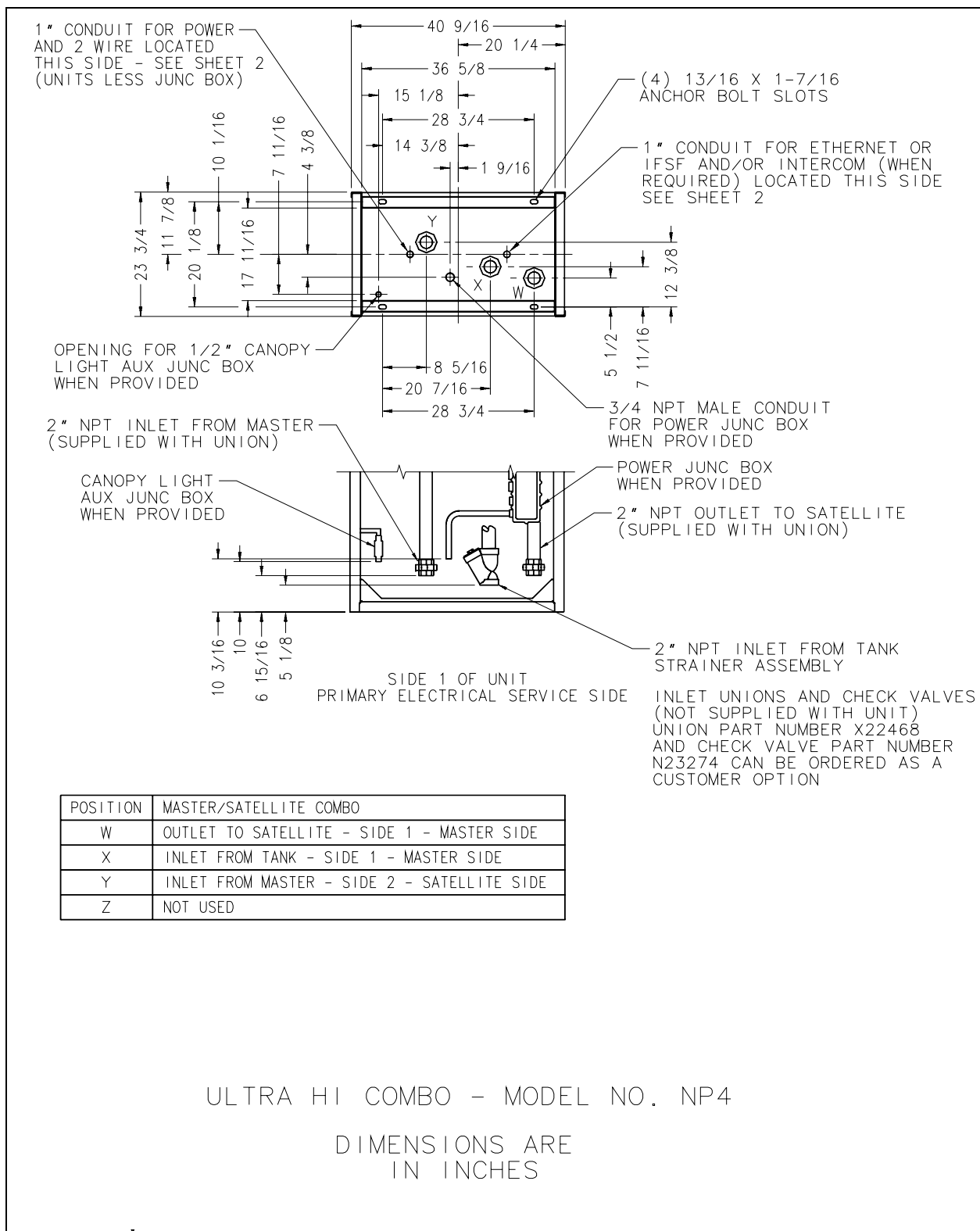
Encore Foundation Diagrams: 3 of 6 (300/500 Pumps)



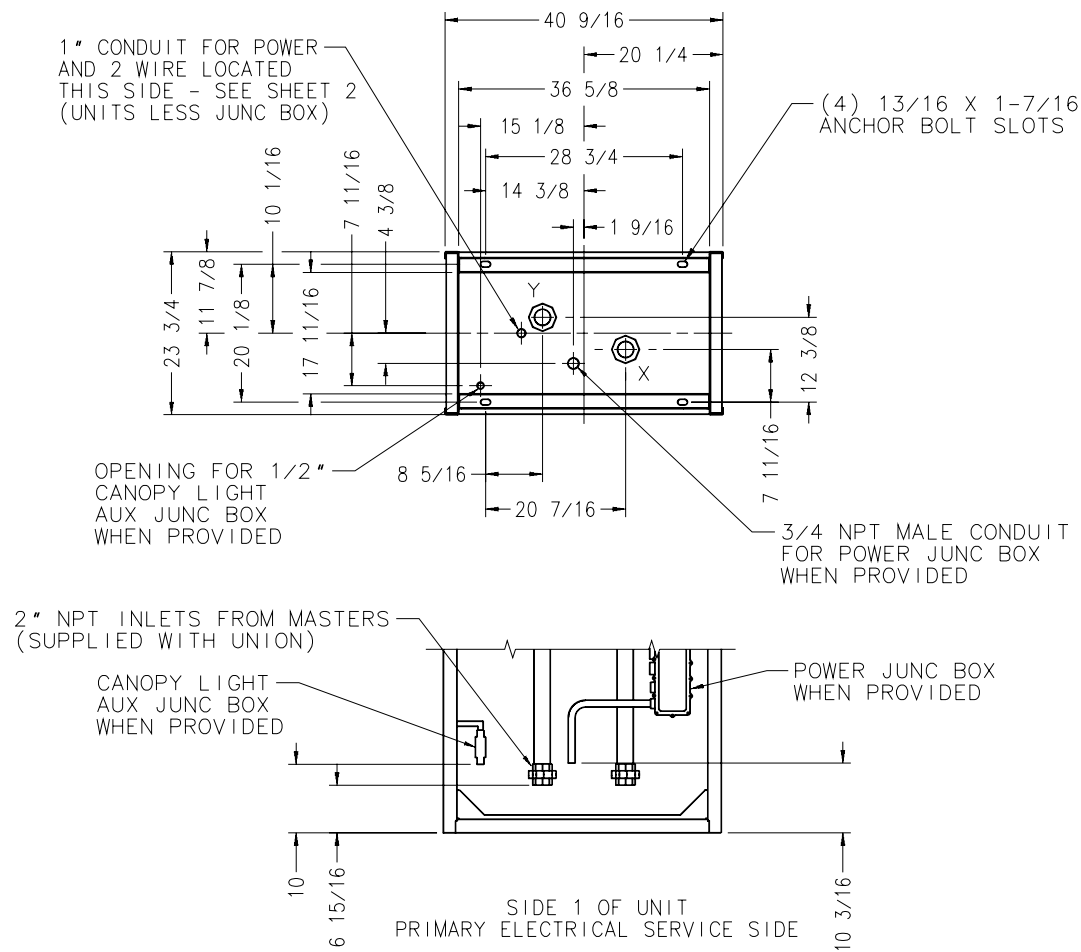
Encore Foundation Diagrams: 4 of 6 Encore Ultra-Hi NP3



Encore Foundation Diagrams: 5 of 6 (Encore Ultra-Hi NP4)



Encore Foundation Diagrams: 6 of 6 (Ultra-Hi Satellite NP5)

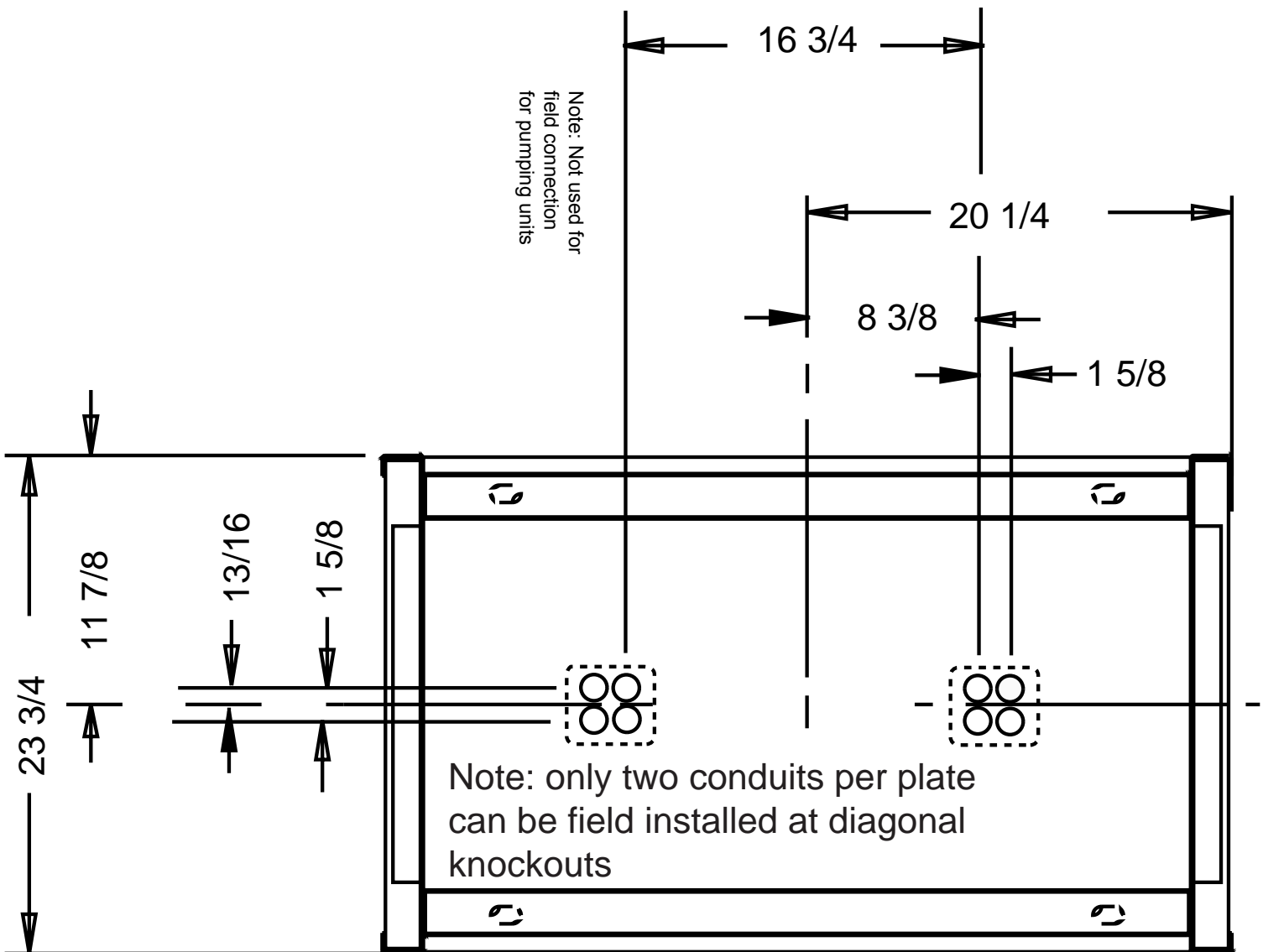


| POSITION | MASTER/SATELLITE COMBO |
|----------|----------------------------|
| W | NOT USED |
| X | INLET FROM MASTER - SIDE 1 |
| Y | INLET FROM MASTER - SIDE 2 |
| Z | NOT USED |

ULTRA HI SATELLITE - MODEL NO. NP5

DIMENSIONS ARE
IN INCHES

Main Cabinet Conduit Knockouts

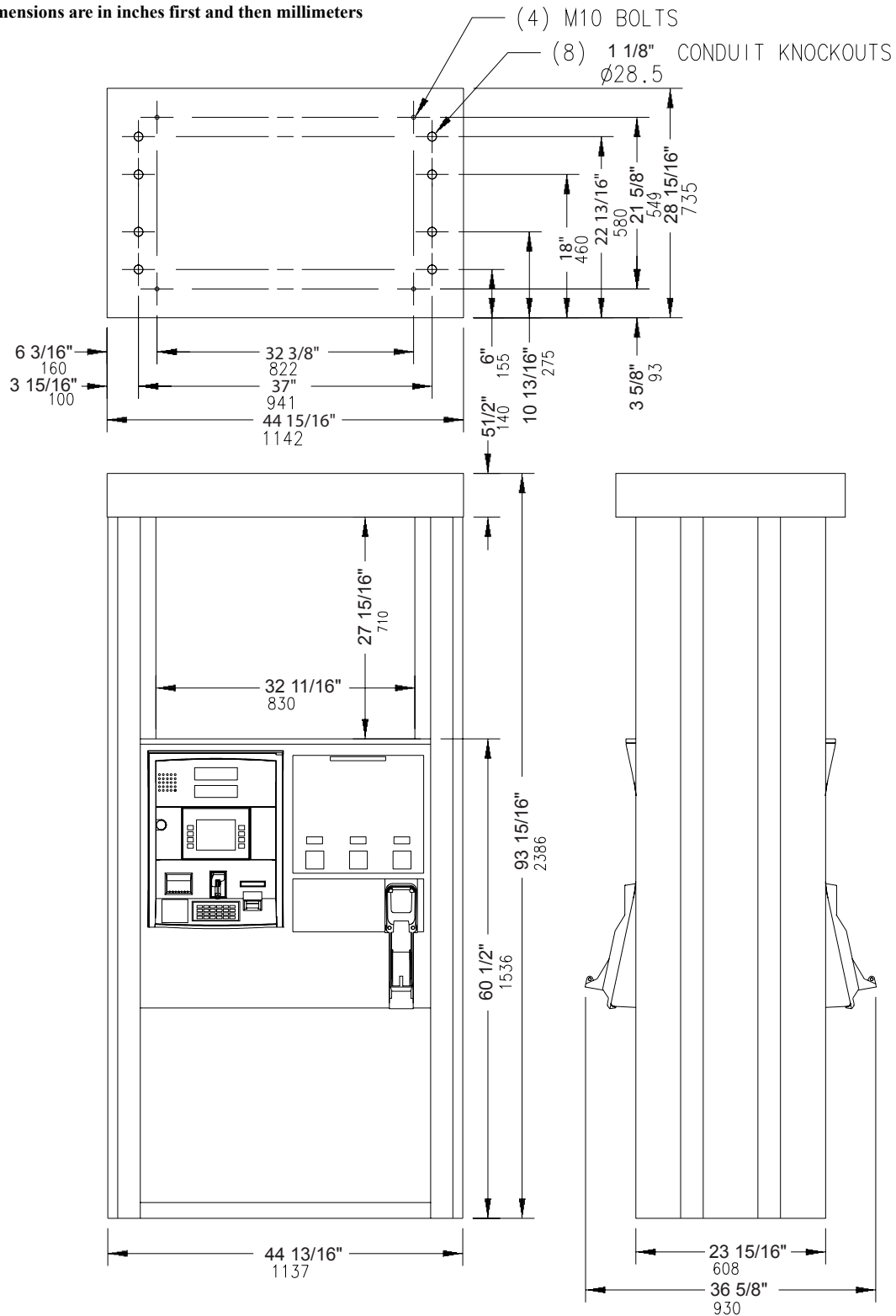


SIDE ONE OF UNIT

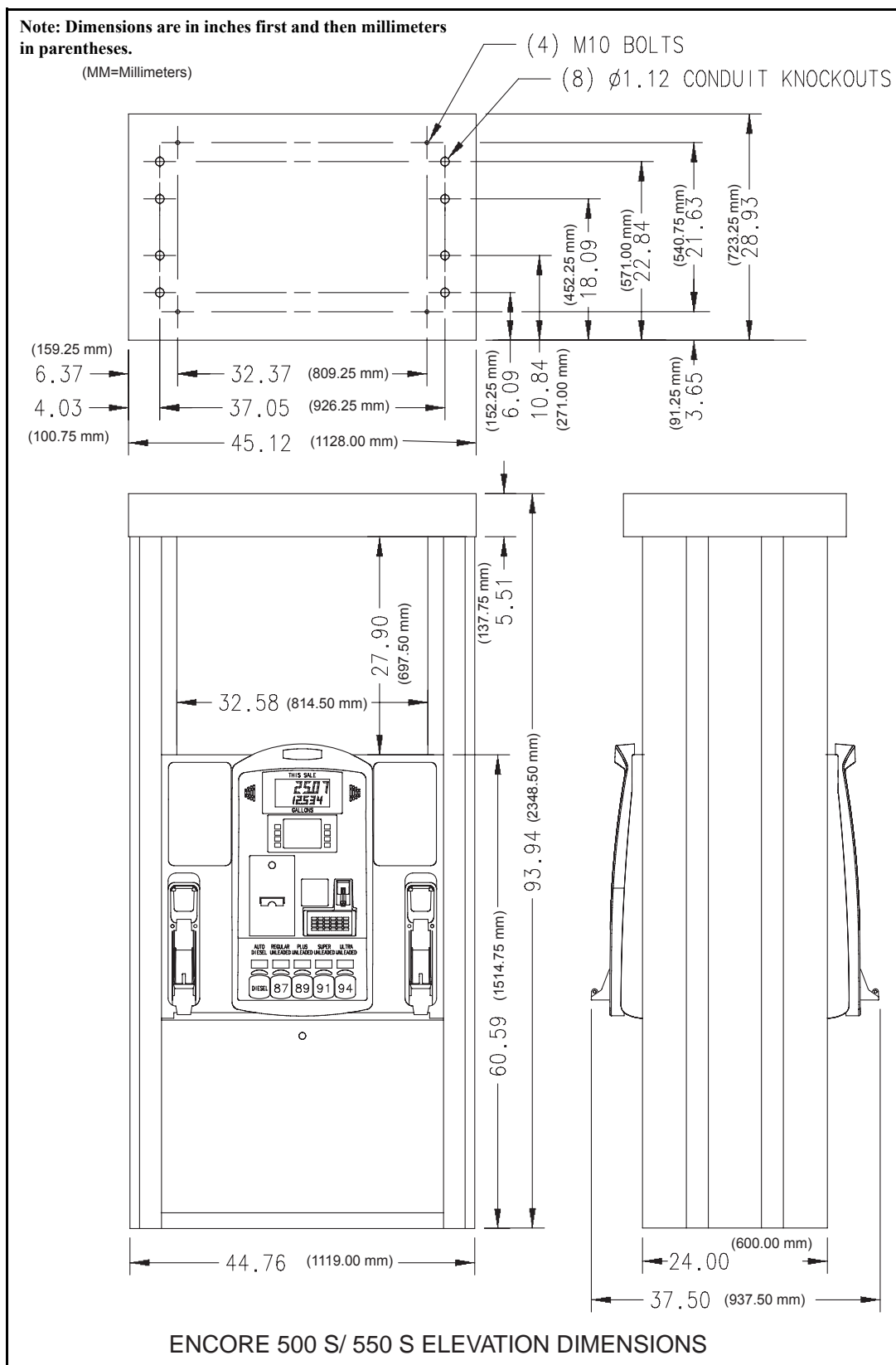
Dimensions are in inches.

Encore Elevation Diagram (Encore 550 with SMART Meter)

Note: Dimensions are in inches first and then millimeters below.

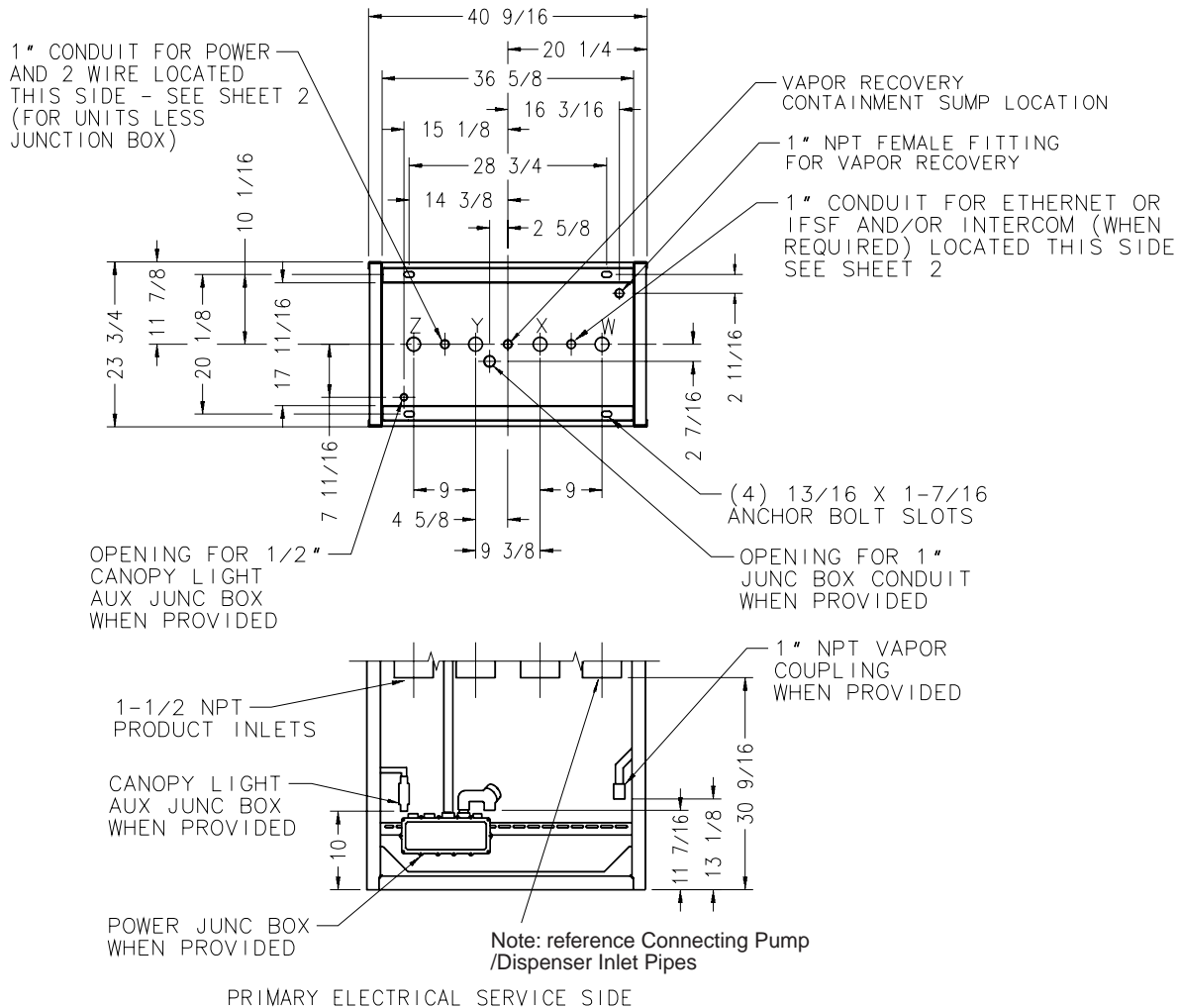


Encore Elevation Diagram (Encore 500/ 500 S and 550 S with SMART Meter)



Encore Foundation Diagrams (Encore 550/ 550 S Dispensers)

DISPENSERS WITH SMART METER



| INLETS | MODEL # | DISPENSER MODELS |
|-------------|----------------------------|--|
| W | NA0 | 1 GRADE 2 HOSE |
| W & X | NA1 NN0-3 NJ0 NG4 | 2 GRADE 4 HOSE X+0 SELECTABLE BLENDER 3 GR MULTI HOSE BLENDER 2 GRADE SINGLE HOSE |
| W, X & Y | NA2 NG0 NL0-3 NJ2 | 3 GRADE 6 HOSE 3 GRADE SINGLE HOSE X+1 SELECTABLE BLENDER 3+1 MULTI HOSE BLENDER |
| W, X, Y & Z | NA3 NG1 | 4 GRADE 8 HOSE 3+1 SINGLE HOSE |

NOTES:

1. MAXIMUM FIELD RETROFIT RAIN LIP SIZE WITHOUT REQUIRING ADAPTER PLATE: 17-1/2 X 39-1/2 X 2"
2. FOR X + 1 SELECTABLE BLENDER AND 3 + 1 MULTI HOSE BLENDER, INLET "Y" IS THE PLUS GRADE.
3. FOR 3 + 1 SINGLE HOSE, INLET "Z" IS THE PLUS GRADE.

DIMENSIONS ARE
IN INCHES

Call Button Conduit Installation

IMPORTANT INFORMATION

Conduit for call button wiring must be installed in accordance with all instructions regarding conduit as presented in MDE-3802 Encore and Eclipse Site Preparation Manual and this manual as well as appropriate unit specific addenda. Also consult the equipment manufacturer regarding considerations for equipment tied to the call buttons.

Call button circuits must be wired N.E.C. Class 2. Refer to NEC Article 729-54 and section "Wiring" in MDE-3802 Encore and Eclipse Site Preparation Manual. All requirements for speaker wiring apply also to call button wiring, and all general procedures and requirements for wiring apply.

For Encore units, conduits may be run into electronics cabinet without use of a junction box. Where a junction box is required (for example; wire connections are required), contractor must provide an appropriate Class 1 Division 1 explosion-proof junction. Refer to ["Junction Box Specifications" on page 33](#) and mandatory junction box installation requirements in step 4 of ["Preparing Field Wiring" on page 33](#) for sizing and procedures.

Conduit run for any purpose, including call button, on all units must have a seal-off 'Y' fitting installed as a first connection where conduit leaves the ground. Refer to sections 'Conduit' and 'Sealing 'Y' fittings in MDE-3802 Encore and Eclipse Site Preparation Manual for mandatory requirements.



WARNING

Bottom plate of electronics cabinet and top plate of hydraulics cabinet are separated in accordance with safety requirements.



Loss of integrity at plate penetrations or improper installation of parts can allow fuel vapors to ignite. Resulting fire and/or explosion can lead to serious injury or death. Running conduit through the air gap requires strict compliance with procedures outlined in this manual and unit specific addenda. Only listed rigid metal 1-inch conduit may be installed in any unit between hydraulics and electronics cabinets. No unused holes in air gap plates, open spaces between conduit and plates or unsealed conduit penetrations can be present following installation.

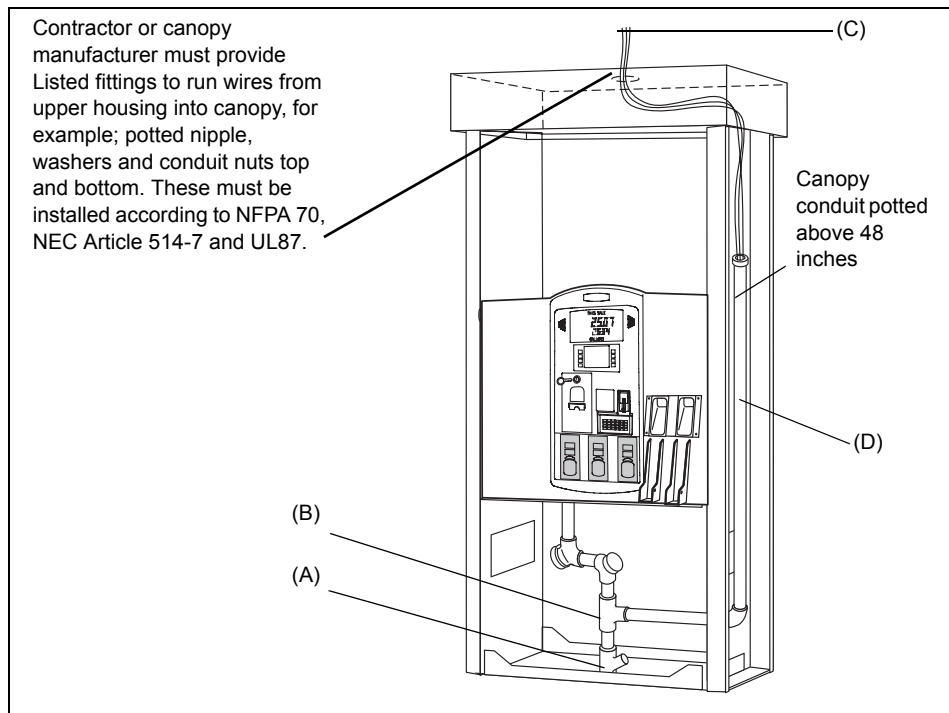
All procedures and requirements contained in subsection ["Completing Field Wiring" on page 45](#) apply with equal force to call button conduit installations. This includes mandatory use of contractor provided 1-inch by 8-inch conduit stub for any penetration of air gap, and potting of conduit, as detailed in that section. Refer to ["Encore Foundation Diagrams: 1 of 6 \(300/500 Dispensers\)" on page 55](#) showing location of penetration point for call button conduit.

Note: Conduit must be potted whether junction box is installed or not installed.

Lighted Canopy Conduit and Wiring Options

Canopy wiring must be installed in accordance with NFPA 70, UL87 and canopy manufacturer's instructions. Read entire manual before beginning conduit installation.

Figure 3-32: Lighted Canopy Conduit and Wiring



- 1 Before proceeding, determine that seal-Off Y fitting (A) has been installed according to NEC Article 514-7, this manual and fitting manufacturers' instructions. Fitting must be potted to complete installation.
- 2 Using only Listed rigid conduit and explosion proof fittings, conduit tee (B) or Class 1, Division 1 hazardous location rated junction box (option not shown; see MDE-3802 Encore and Eclipse Site Preparation Manual for references on junction box sizing) may be installed above Seal-Off fitting.
- 3 Tee or J-box allows branch off of power wires for canopy.
- 4 Canopy vertical conduit (D) is run inside side column as shown. Conduit **MUST** be potted at height of 48-inches or higher, with potting material poured to a depth equal to or greater than the trade size of the conduit, and in accord with NFPA 70 and NEC Article 514-7. See potting compound manufacturers instructions for details.
- 5 A UL Listed metallic conduit capped bushing **MUST** be slipped over wires and installed at top of conduit after potting.
- 6 Run canopy wires (C) up column and across upper housing to knockout in center of top cover, protecting wiring from sheet metal edges.
- 7 Lighted Canopy must be installed onto unit in accord with UL and NFPA requirements. This will require but not be limited to providing a potted nipple for wires going from upper housing into canopy, and appropriate Listed nuts and washers.

4 – Reference Information

Information contained in this section is provided for the installing contractor's reference. The contractor may or may not be required by individual contract to perform all or any of the requirements outlined. However, all installations must conform to the requirements of this section. The information in this section can be found in more detail in MDE-3802 Encore and Eclipse Site Preparation Manual.

Note: The information contained here is not to be used exclusively in lieu of the Site Preparation Manual, as not all the information contained in that document is found here.

Reference Contents

| Section and Information | MDE-3802 Location |
|---|-------------------|
| Installation Differences When Replacing The Advantage Series | page 68 |
| Electrical Requirements | page 69 |
| Emergency Power Cutoff Switch | |
| Circuit Breakers | |
| STP (Submerged Turbine Pump) Control Relay Boxes for Dispensers | |
| STP Isolation Relays for Electronic Dispensers | |
| Conduit | page 71 |
| Wiring | page 71 |
| Data Wire Lengths | |
| High Speed Communications Wiring | page 73 |
| Twisted-Pair Cable | page 74 |
| Twisted-Pair Cable | page 74 |
| Twisted-Pair Installation Personnel and Procedures | |
| Grounding | page 75 |
| Sealing 'Y' Fittings | page 76 |
| Plumbing Requirements | page 77 |
| Pipe Installation | |
| Pipe Size | |
| Pumps (Standard Flow) | |
| Pumps (High Flow) | |
| Dispensers (Standard Flow) | |
| Dispensers (High Flow) | |
| Dispensers (Ultra-Hi High Gallon) | |
| Check Valves | page 78 |
| Shear Valves | |

Installation Differences When Replacing The Advantage Series

The following table shows critical differences between The Advantage Series and Encore Series that will affect installation.

| Item | Description |
|---------------------|---|
| Side identification | <p>In order to emphasize plumbing differences between The Encore Series and The Advantage Series we have changed nomenclature. We no longer refer to the sides as A and B as with The Advantage Series. The serial plate front of The Encore Series (manufactured on or before December, 2002) is now Side 1 and the back is Side 2. Units manufactured after December, 2002 have the serial plate (label) mounted on the main door behind the CIM door on side 1. Side 1 is the primary service access side for electronics. Importantly, Side 1 on an Encore unit replacing an existing Advantage Series unit does not always replace The Advantage Series A Side. In most cases:</p> <ul style="list-style-type: none"> • Advantage A Side and Encore Side 1 are reversed for Encore Single Hose and Blender Units. • Advantage A Side and Encore Side 1 are the same for Multi Hose units. <p>Also the Encore Series uses letters (W, X, Y and Z) to differentiate the product pipes. The Advantage Series typically labels low and high or A, B, and so on.</p> |
| Piping layout | <p>Do not assume piping connections for the Encore based upon The Advantage Series or other unit piping.</p> <p>Dispensers: Encore product plumbing is in some cases reversed in order from The Advantage Series, is spaced somewhat different and has other differences. See one of or both of the following:</p> <ul style="list-style-type: none"> • "Dispenser MPD Piping to Hose Fitting Configurations" on page 19 • "Encore Dispenser Blender Piping to Hose Fitting Layout" on page 25 <p>Pumps: Encore product inlet and electrical connection locations on self-contained pumps are different from The Advantage Series (see "Encore Foundation Diagrams: 3 of 6 (300/500 Pumps)" on page 57). For pump product inlet to hose configurations, see one of or both of the following:</p> <ul style="list-style-type: none"> • "Pump (MPD) Piping to Hose Fitting Configurations" on page 23 • "Encore Pump Blender Piping to Hose Fitting Configurations" on page 27. |
| Piping installation | <p>Dispensers: The Encore is provided with a lower piping brace. The installer must secure plumbing to the lower brace per the installation document or improper operation of the shear valves may result if a unit is knocked over. Flexible pipe cannot be used within the dispenser, but may be used below the dispenser. Refer to MDE-3802 Encore and Eclipse Site Preparation Manual. The Encore inlet plumbing only extends partially into the hydraulics cabinet. This allows much greater installation adaptability by using rigid piping when retrofitting to competitive equipment pit boxes and plumbing layouts. In addition to side- to-side inlet adjustment capability, the lower piping brace can be mounted forward or rearward for additional adaptation.</p> <p>Pumps: Pumping units in self-contained pumps are shipped without inlet fittings. At installation, the protective closure in the pumping unit inlet must be removed and replaced with the proper inlet fittings. Refer to MDE-3802 Encore and Eclipse Site Preparation Manual.</p> |
| Frame width | <p>There is only one frame width for the Encore Series. The Advantage Series units come in wide and narrow frame types. The Encore Series width is intermediate between the wide and narrow frame width of The Advantage Series. However, it is recommended to use a pit box designed or adaptor for the Encore for new stations or major renovations. See one of the following:</p> <ul style="list-style-type: none"> • "Encore Foundation Diagrams: 1 of 6 (300/500 Dispensers)" on page 55 • "Encore Foundation Diagrams: 3 of 6 (300/500 Pumps)" on page 57 <p>Also refer to MDE-4166 The Advantage Series Unit to Encore Island Adaptor Kit M03064K001 Installation Manual.</p> |
| Junction box | <p>Dispensers: The Encore Series units may ship with or without a junction box or field conduit. Conduit and junction box not part of order is provided by installer. This allows more versatility for electrical conduit routing. As the installer may install the junction box towards the front or rear of the unit, it is not recommended to use the location of the junction box openings as an indication of front or rear of the unit. Always use the serial plate to identify Side 1.</p> <p>Pumps: The Encore Series Pumps have a factory installed junction box, located on Side 1, but the electrical power connection is a 1" NPT conduit inlet located on Side 2. All electrical power wiring to the unit must enter the conduit on Side 2 and feed to the junction box. Ethernet and intercom connections are to enter the unit on Side 2. See "Encore Foundation Diagrams: 3 of 6 (300/500 Pumps)" on page 57.</p> <ul style="list-style-type: none"> • Junction boxes, conduit and fittings must conform to all requirements listed and referenced in this manual. • For new installations, with proper pull of additional wire, it is possible for Encore to eliminate a junction box. The Advantage Series always has a junction box. |

| Item | Description |
|--|--|
| Electronic cabinet | The Encore Series electronics cabinet has two field conduit inlets. Facing side 1, the ones to the center left are for power wiring while the ones to the center right are for intercom/Ethernet/call button/ speaker wiring. In The Advantage Series, the power goes into the junction box and intercoms, and so on, usually in a special conduit up a side column. Ethernet will be an option on future Encores with installation of an optional board in the electronics cabinet. All Encores have knockouts for Ethernet wiring although the option board is not currently available. Ethernet wiring can share conduit with a speaker/intercom/call button. |
| Wiring in electronics cabinet | The Encore Series units use wiring terminal blocks as appropriate for field wiring where The Advantage Series uses wire nut connections. |
| Mandatory conduit potting requirements | The installer must pot each conduit entering the electronics cabinet in two locations as specified in this manual. One is at entry into the electronics cabinet and the other is in the pit box. The Advantage Series units only require potting below the unit. |
| Calibration | All Encore meters are electronically calibrated. Advantage meters are mechanically calibrated. Refer to MDE-3804 Encore and Eclipse Start-Up/Service Manual. |

Electrical Requirements

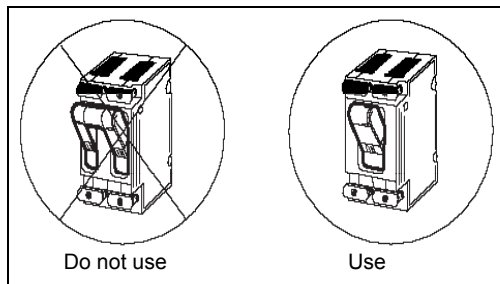
- Sites must be prepared according to NFPA 30A, NFPA 70, and applicable national, state and local codes/regulations.
- All circuit breaker panels and relay boxes must be mounted securely to the wall.
- Only UL recognized/approved components and/or systems may be used.
- Licensed electricians experienced with pump and dispenser installations must be used to make all electrical connections.
- Installation requires a dedicated circuit phase system. All electronic units must be wired to the same power leg.
- An earth ground is required for all circuits.

Emergency Power Cutoff Switch

- NFPA 30A and Gilbarco require installation of one or more emergency power cutoff switches.
- An emergency power cutoff switch is a single control that removes AC power to all island equipment (pumps/dispensers, STPs, canopies, lights, and so on.). See [Figure 4-1 on page 70](#).
- The emergency power cutoff switch must be accessible, labeled clearly and installed away from any hazard that may occur at the pumps/dispensers. Cutoff switches must not be located more than 100 feet away from the pumps/dispensers.

Circuit Breakers

Figure 4-1: Switched Neutral Circuit Breaker



- A dedicated UL/CUL/CSA listed switched neutral breaker is required for each circuit leading to a pump/dispenser or dispenser and STPs. It must be able to disconnect hot and neutral conductors simultaneously. Single-pole breakers with handle ties cannot be used.
- Only UL/CUL/CSA listed circuit breaker panels are permitted for use.
- Circuit breakers must be installed away from the pumps/dispensers, readily accessible and clearly marked.
- A separate circuit breaker is required for each STP (dispenser models) or each pump motor (self-contained models).
- One circuit breaker is required for each pump/dispenser to allow isolation of pump/dispenser.

STP (Submerged Turbine Pump) Control Relay Boxes for Dispensers

- Gilbarco requires installation of STP isolation relays in addition to STP control relays. Combined STP Control Relay/Isolation Relay boxes are recommended.
- Each STP requires a separate control relay for each STP.
- Dispenser relay must not be used to power the STP.

STP Isolation Relays for Electronic Dispensers

STP isolation relays provide electrical isolation between dispensers and prevents damage from cross phasing. Refer to MDE-2755 STP Control and Dispenser Isolation Relay Box (PA0287) and FE-321 Gilbarco STP Isolation Relay Box PA0287 120 VAC Field Wiring Diagram.

Note: For 3 phase STP, use isolation relay at the input of the 3 phase STP control box.

- Gilbarco requires installation of STP isolation relays in addition to STP control relays. Combined STP Control Relay/Isolation Relay boxes are recommended.
- Isolation relays must be installed for each STP control line at each dispenser or dispenser grouping on a single circuit breaker.
- Neutral wire must be routed to the control relays from the dispenser circuit breaker (see field wiring diagrams).

Conduit

Gilbarco recommends that spare conduit be run for future high speed communications. See section [“High Speed Communications Wiring” on page 73](#) for details.

- Use minimum 1-inch conduit for all Encore and Eclipse pumps/dispensers except use 3/4 inch for Encore Ultra-Hi to connect wires to the pump/dispenser. Infoscreen® and two-wire data wires can share this conduit (See model-specific wiring diagrams).
- Use separate 1-inch conduit for eCRIND or intercom wiring. This is required for higher data rate TCP/IP communication.
- Run all power and light wires in threaded, rigid metal conduit or in a rigid non-metallic conduit. Conduit must conform to national and local electrical codes. If nonmetallic conduit is used, it must be at least two feet underground. The last two feet of the underground run to the junction box must be rigid metal conduit or threaded steel intermediate metal conduit.
- Never share conduit or wire troughs with other manufacturers' equipment (that is, speaker wires, and so on).

Note: The same conduit may be used for routing power to the pump/dispenser and the two-wire data loop (Class 1 circuit). The two-wire data loop is a Class 1 circuit.

- Metal conduit is not sufficient to provide an equipment ground. A separate ground wire must be used.
- Knock-out boxes or flexible conduit are not permitted for installation.

Note: Extra junction boxes added to the pump/dispenser must be listed Class 1, Div. 1, Group C and D explosion-proof.

- All electrical fittings must be listed for Class 1, Group C and D hazardous locations as required by NFPA 30A and NFPA 70.
- A seal-off 'Y' fitting (example: Killark Type EY) must be installed on all units as a first connection where conduit leaves the ground.

Wiring

For high speed communications information, go to [“High Speed Communications Wiring” on page 73](#).

- All pumps/dispensers must be wired according to NFPA 30A, NFPA 70 and applicable national, state, and local codes/ regulations.
- All circuits must be wired N.E.C. Class 1 except speaker (intercom) circuit which must be N.E.C. Class 2. Speaker (intercom) circuit requires a separate 1 inch conduit.
- Only stranded gas and oil resistant copper wire rated for 300 volts (up to 240VAC source) and 80°C may be used.
- In the main conduit, for communications only twisted-pair, two wire data pairs may be used.
- All dispensers must be wired on the same phase.

Note: If Gilbarco isolation relay box is installed, dispensers are not required to be on the same phase.

- Only listed wire nuts may be used for connections. Tape is not permitted.
- Seal-off 'Y' fitting(s) must be potted after all wires are run and tested to termination points.

Data Wire Lengths

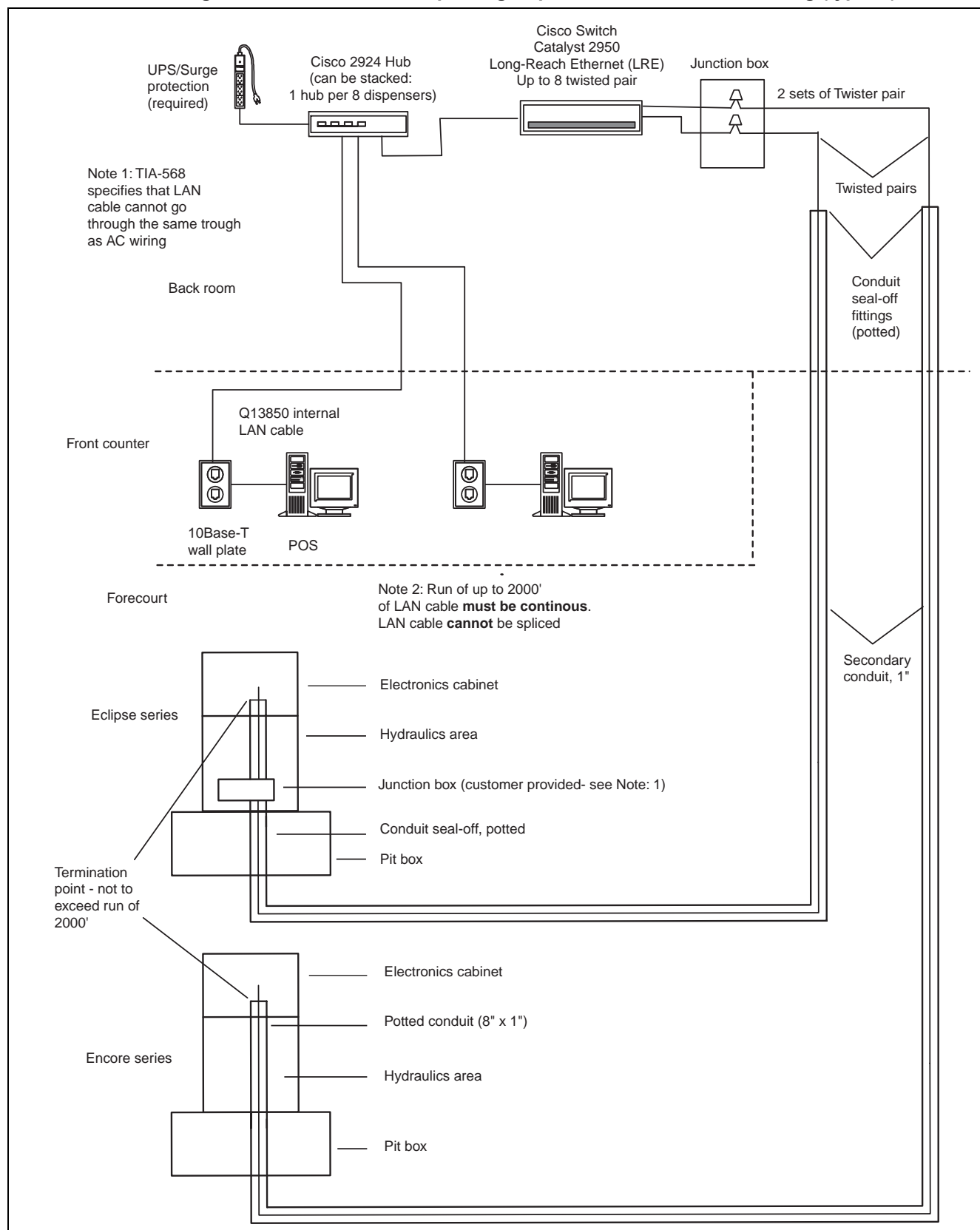
Use the following table to determine maximum data wire lengths.

| For this Distribution Box | The Distance Between the Distribution Box and Dispenser | The Distance Between the Distribution Box and Console/Controller |
|-----------------------------|---|--|
| PA0133, PA0187 G-SITE® | "Total" data wire system run no more than 2600 ft. with 14 AWG. | |
| PA0242 Transac System 1000™ | No more than 2600 ft. with 14AWG. | No more than 2600 ft. with 14AWG. |
| PA0261 Universal D-Box | No more than 2600 ft. with 14AWG. | No more than 2600 ft. with 14AWG. |
| PA0306 Distribution Box | No more than 2600 ft. with 14AWG. | No more than 2600 ft. with 14AWG. |

Note: When installing new 2-Wire Communication wiring, use unshielded twisted-pair data wires. Do not use shielded wire. Wiring spec: 2-wire twisted-pair (UTP) with 10 to 12 twists per foot, stranded annealed copper tinned with 18 AWG minimum required for runs up to 1000 feet or 14 AWG minimum for runs up to 2600 feet. Do not daisy chain communications wiring. Insulation spec: PVC insulation of type TFFN or MTW, UL approved gasoline and oil resistant. Reference C&M Corporation Part #27525 (18 AWG) or equivalent. Gilbarco part number for wire is: Q13221-02.

High Speed Communications Wiring

Figure 4-2: Encore and Eclipse High Speed Communications Wiring (typical)




Twisted-Pair Conduit



Gilbarco recommends use of 1-inch rigid conduit and fittings (See “Conduit” on page 71) for twisted-pair cable(s). This will allow up to two speakers and two call/stop buttons per side, plus ethernet.

Note: Terminate conduit in dispenser containment pan consistent with all national and local electrical codes.

Twisted-Pair Cable

Gilbarco requires use of only 10Base-T cable as specified in this document. Gilbarco specified cable **must** be used to permit issuance of a Certificate of Conformance and/or warranty. Use of other type cables may also create a hazardous situation.

 **DANGER**

Petroleum vapors may migrate inside cable insulation between conductors and sheathing of various cables, including 10Base-T cable. Vapors may ignite, leading to serious injury or death.

Use only twisted-pair cable specified by Gilbarco.

Cable has these properties: Safety Certification: UL Listing AWM Style 21094 80 degrees C 300 volts. Vapor Test: Compliant to UL Standard 87, Section 36A, Para. 22.17

Cable Ordering Information:

| Type | Comments |
|------------------|--|
| Q13221-02 | Wire - 600 Volt Stranded, Annealed Copper Tinned with PVC Insulation |
| Type TFFN or NTW | UL Approved Gasoline and Oil Resistant |
| 18 AWG | Wire with 10-12 twists per foot |

Twisted-Pair Installation Personnel and Procedures

IMPORTANT NOTICE

A copy of the ANSI/TIA/EIA TSB 67 certification of conformance from the wiring personnel must be provided to the ASC before the site can be commissioned. The certificate is part of the documentation that must be on file at the installation site. A certification of the field test will be required at equipment start-up. Contact Gilbarco with any questions regarding this procedure.

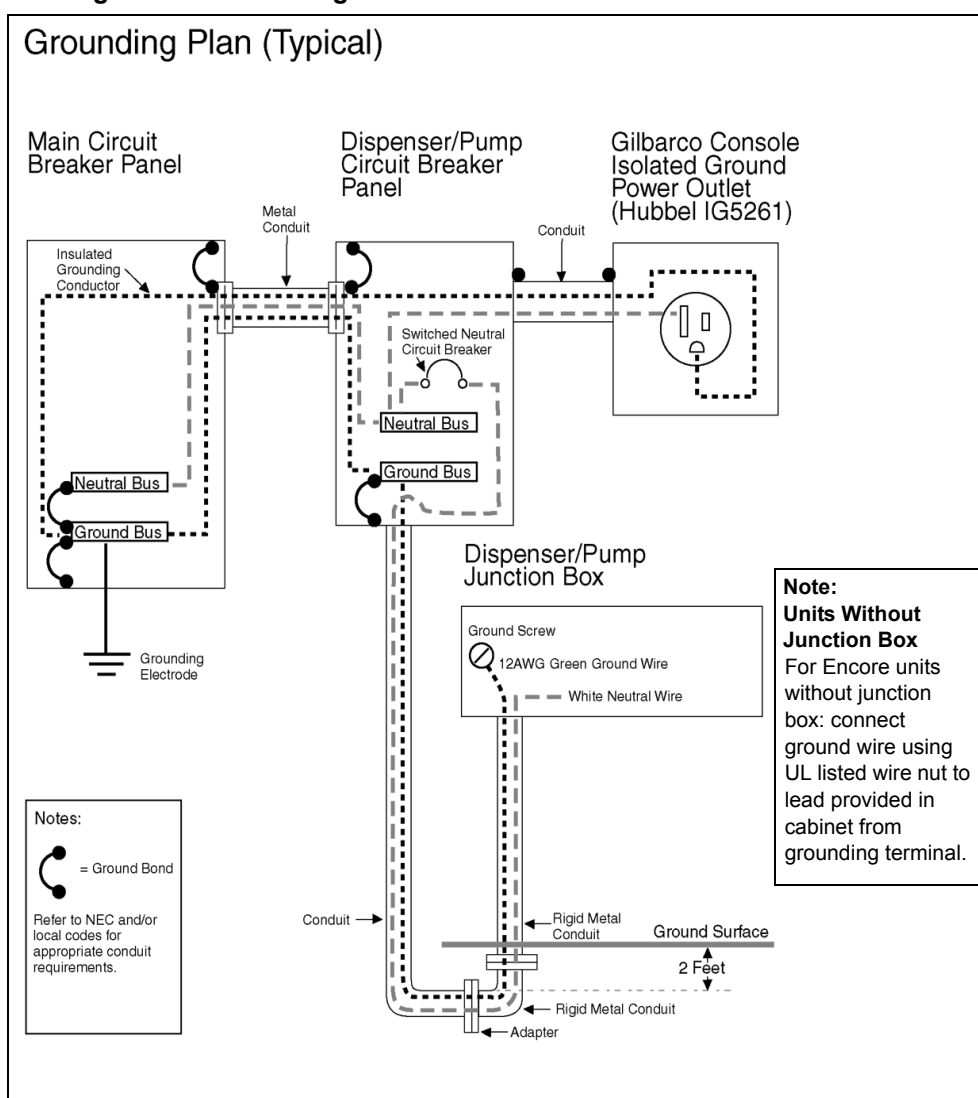
Twisted-pair wiring must be installed by certified telecommunications technicians in accordance with ANSI/TIA/EIA 568-A Commercial Building Telecommunication Cabling Standards (and Amendments). Installing technician must read and understand the following:

| Document | Title |
|--------------------|---|
| ANSI/IEEE 142-1991 | Recommended Practice for Grounding of Industrial and Commercial Power Systems (IEEE Green Book) |
| ANSI/IEEE 1100 | Recommended Practice for Powering and Grounding Sensitive Electronic Equipment (IEEE Emerald Book) |
| ANSI/TIA/EIATSB67 | Transmission Performance Specification for Field Testing of Unshielded Twisted-Pair Cabling Systems |
| ANSI/TIA/EIA568-A | Commercial Building Telecommunication Cabling Standards (with amendments) |

Grounding

- NFPA 70 requires connecting the following to system ground:
 - Consoles
 - Pumps and dispensers
 - Submerged turbine pumps
 - Relay control boxes
 - Circuit breaker panel
 - Electronic leak detectors
- Gilbarco requires connecting each pump/dispenser to an equipment grounding conductor (Figure 4-3) located in the conduit per NFPA 70, Article 250. The following applies to ground conductor:
 - Use of wire no smaller than 12AWG.
 - Use of wire with green or green and yellow striped insulation.
 - Connection to green grounding screw in junction box.
 - Grounding the providing power under NFPA 70, Article 250.
 - Bonding the neutral bus to an approved grounding electrode.

Figure 4-3: Grounding Plan



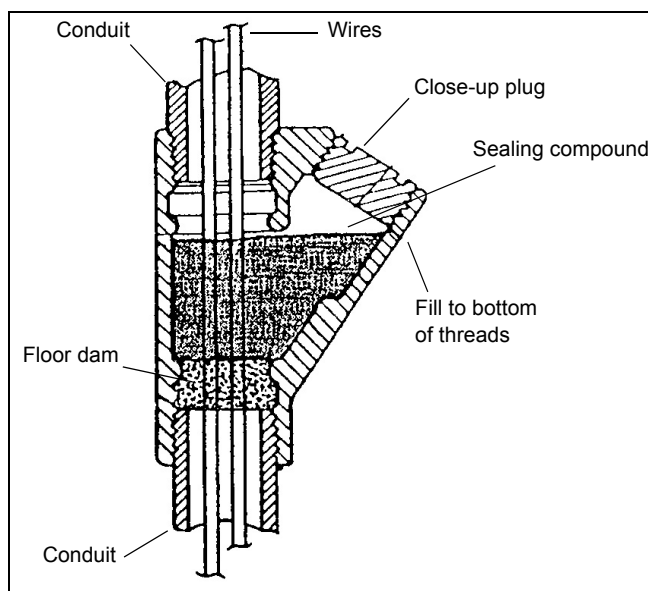
Sealing 'Y' Fittings

'Y' seals are installed in conduit runs to minimize passage of vapors, gases or flames from one portion of the electrical installation to another through the conduit. Fittings must be installed in accordance with Articles 501-5 and 502-5 of the National Electric Code and fitting manufacturers' instructions.

Gilbarco uses Killark Type EY fittings and recommends them or their equivalent for vertical conduit runs. The following sealing directions are for Killark fittings only, and instructions may vary for other manufacturer's fittings. Read and understand all instructions completely before beginning.

- 1 Remove close-up plug (Figure 4-4).

Figure 4-4: Typical 'Y' Sealing



- 2 Separate conductors and fill conduit in and around conductors using Killark type "PF" packing fiber to make a floor dam to hold fluid sealing compound.

Note: Floor dam must be even with the conduit stop in the lower hub of fitting. Use care so as not to damage conductor insulation. Force packing between conductors and hubs, pushing any shreds of packing fiber away from conductors to prevent leakage path.

- 3 Use only Killark Type "SC" sealing compound with Killark fittings, and do the following:
 - Use a clean mixing vessel for every batch of sealant.
 - Mix compound at the rate of 3 parts compound to 1 part water by volume.
 - Sprinkle compound in water while stirring, until thick paste is formed.
 - Do not mix more compound than can be used in fifteen minutes.
 - Continue mixing for at least 3 minutes, until consistency is just fluid enough to pour slowly, like thick gravy (not watery).

- 4 Slowly pour fluid compound into sealing fitting to level of bottom of threads for close-up plug.

Note: Be careful to pour slowly to avoid trapping air bubbles in seal.

- 5 Immediately wipe off any spilled compound and close seal with close-up plug.

Note: Initial setting of sealing compound will occur within 30 minutes. Compound requires a minimum of eight hours above 32 degrees F to develop sufficient strength to withstand explosion pressures.

Plumbing Requirements

Pipe Installation

Refer to PEI Publication RP100 Recommended Practices For Installation Of Underground Liquid Storage Systems (Chapter 9) and PEI Publication RP200 Recommended Practices For Installation Of Aboveground Storage Systems For Motor Vehicle Fueling. Product inlet pipes and vapor pipes for Gilbarco pumps/dispensers vary in location between models. See model-specific footprint.

- Check national, state and local regulations for installation of pipe system.
- Use containment system as required by national, state and local regulations.
- Use new black iron pipe constructed of UL approved pipe material and UL approved fittings.
- Use 1-1/2 inch pipe for riser-to-pump or dispenser.
- Use 2 inch risers on Ultra-Hi units which use a 2 inch shear valve.

Pipe Size

The required pipe size depends on the number of units sharing lines, size of the STPs (dispensers only), and length of the run. Use the following guidelines.

Pumps (Standard Flow)

Use new 2 inch, 2-1/2 inch or 3 inch pipe. Use 2 inch pipe for runs up to 50 feet to a single pump. Increase to 2-1/2 inch or 3 inch pipe for longer runs up to 75 feet to a single pump with maximum lift condition. A dedicated line is recommended to supply each self-contained pump.

Pumps (High Flow)

Use new 3 inch, 3-1/2 inch or 4 inch pipe. Use 3 inch pipe for runs up to 50 feet to a single pump. Increase to 3-1/2 inch or 4 inch pipe for longer runs up to 75 feet to a single pump with maximum lift condition. A dedicated line is recommended to supply each self-contained pump.

Dispensers (Standard Flow)

Use new 2 inch or 2-1/2 inch or 3 inch pipe. If distance from STP to farthest dispenser is 200 feet or less, use 2 inch pipe. If distance exceeds 200 feet, use 2-1/2 inch or 3 inch pipe to the first dispenser and 2 inch pipe the rest of the way.

Dispensers (High Flow)

Use new 3 inch or 3-1/2 inch or 4 inch pipe. If distance from STP to farthest dispenser is 200 feet or less, use 3 inch pipe. If distance exceeds 200 feet, use 3-1/2 inch or 4 inch pipe to the first dispenser and 3 inch pipe the rest of the way.

Dispensers (Ultra-Hi High Gallon)

Use new 3 inch or 4 inch pipe. If distance from STP to farthest dispenser is 75 feet or less, use 3 inch pipe. If distance exceeds 75 feet, use 4 inch pipe to the first dispenser and 3 inch pipe the rest of the way.

Check Valves

(Used on Pumps Only)

See PEI publication RP100 and manufacturer's installation instructions for information on installing check valve. Install check valve as close as practical to the suction unit. It should be gravity activated with minimal, or no spring load. Check valves for use internal to the pumping unit are available from Gilbarco as an order entry item.

Be sure there is only one check valve in each dedicated line. Use of multiple check valves can restrict flow and cause cavitation resulting in significant flow rate reductions. If multiple units are to be used on a single line, check valves are required at each pumping unit.

Shear Valves

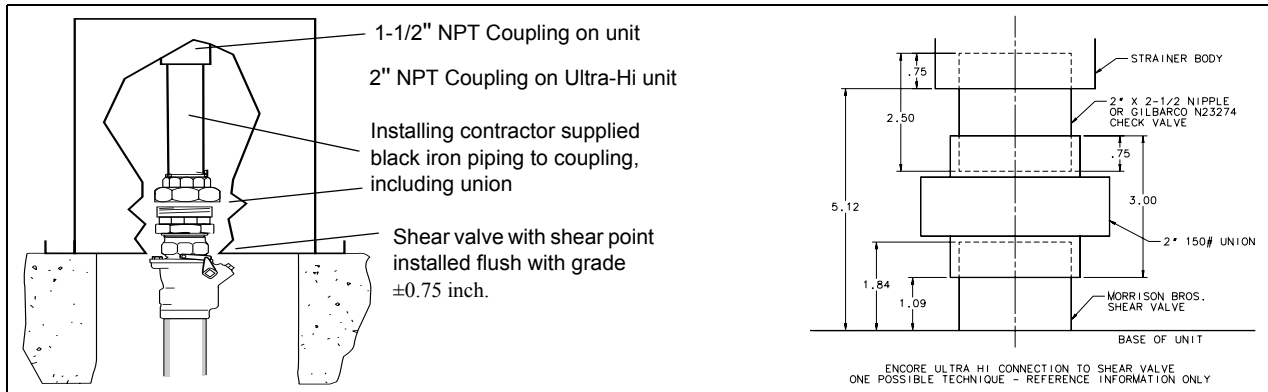
(Generally Used on Dispensers Only)

Note: Shear valves are not required on pumps but installation is discretionary.

See PEI Publication RP100 Recommended Practices For Installation Of Underground Liquid Storage Systems (Chapter 9) and PEI Publication RP200 Recommended Practices For Installation Of Aboveground Storage Systems For Motor Vehicle Fueling. A shear valve ([Figure 4-6](#)) is an NFPA 30A required safety device. It closes automatically to stop product flow during a fire or if the dispenser gets knocked off the island. It also provides a means of manually closing inlet pipes.

For Ultra Hi installations:

- Selection of proper components mounted to the bottom of the strainer housing is critical in maintaining the proper location of the shear valve groove of the shear valve to the base plane of the dispenser. You must follow the shear valve manufacturer's required positioning for this groove.
- A check valve is strongly recommended. When installed, Gilbarco recommends using N23274, which is approximately 2.5" long and can take the place of the close nipple located above the union.
- A union is required above the shear valve.
- A Morrison male end shear valve N23047 (Morrison # 636M-0200AV) can be used to properly maintain the position of the shear groove. The installer should verify that other manufacturer's shear valves would ensure proper positioning of the shear groove per their specifications.
- Double poppet shear valves will not fit the Ultra Hi
- Other combinations of unions, check valves, and shear valves may be possible and still maintain proper location of the shear groove
- Removal of a strainer from the system will void warranty.

Figure 4-5: Ultra Hi Shear Valve Installation

Follow shear valve manufacturer's instructions for installation procedures, testing, and so on.

- Install shear valve on each product inlet pipe.

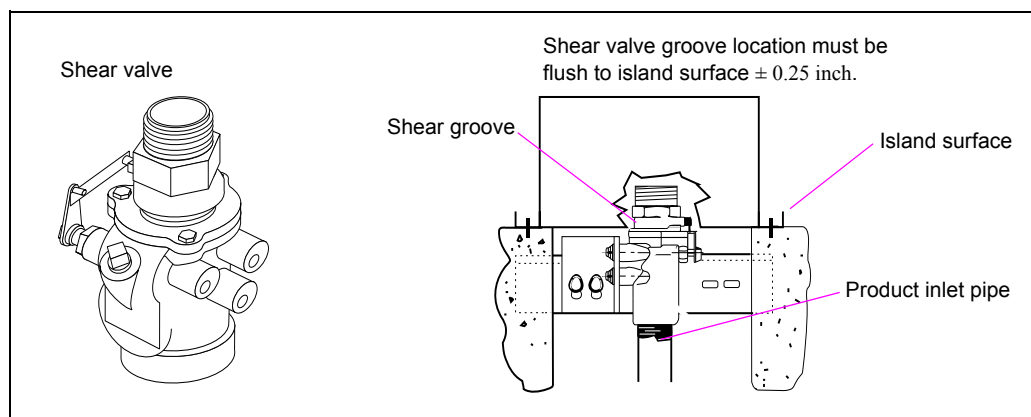
Note: Encore dispensers require 1-1/2-inch male top shear valves. Gilbarco strongly recommends using double poppet shear valves that shut off flow from both storage tanks and internal to the unit. (examples: OPW #10BHMP or Exxon - OPW # 10RMSP) The Encore Ultra-Hi dispensers use 2-inch male top shear valve. (example: Morrison Bros. 2-inch 636m)

- For Ultra-Hi units install shear valve on each 2-inch inlet and outlet.
- Install a shear valve on master dispenser satellite outlet and at satellite inlet.
- Do not mount the shear valve upside down.
- Be sure that the valve linkage is accessible and has no interference to open or close from other piping, structure or components.

Note: The dispenser product inlet pipes need to be aligned with the shear valve.

Do not restrict shear valve linkage with pipes, braces, and so on.





- Test shear valve operation.
- Close shear valve until equipment start-up. Cap inlet pipe. This prevents dirt and other particles from getting in product line. It also prevents fuel spillage.

Figure 4-6: Shear Valve

Field Wiring through Side Column

Standard Encore units are not shipped with junction box. All electrical runs for Encore units are to be provided at the site by the installer unless a junction box is ordered for the unit. Conduit may be routed through the dispenser pit box or external to the pit box through the side column.

Note: Gilbarco does supply junction box kits. For information on how to order a Junction Box, contact a Gilbarco Customer Service Representative at 1-800-800-7498 (US and Canada). For additional information on Junction Box kits, refer to MDE-4084 Junction Box Retrofit Kit M01483K006 Installation Manual.

| <div style="display: inline-block; width: 20px; height: 20px; background: white; border: 1px solid black; transform: rotate(45deg); margin-right: 5px;"></div> WARNING | |
|---|--|
|  | All standard safety precautions for hazardous locations are to be taken and maintained while this work is being performed. |
|  | Do not use electrically powered (battery or corded) tools in the work area. |
|  | Do not smoke or allow open flames in work area. |
|  | Always remember to power down all circuits before performing work. |
| Failure to following these precautions may result in serious injury or death. | |

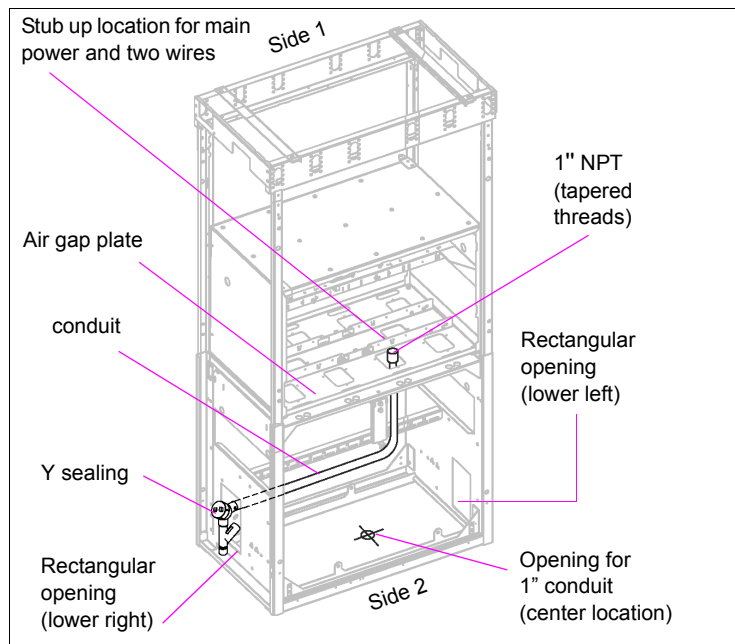
The instructions given below are for adapting conduit rising from the right of the pit box when facing side 1. The process on the left is similar in concept.

Field wiring through the side column location can be installed as follows:

Note: these instructions are for units without pre-installed junction boxes.

- 1 On the lower right corner of the frame end, locate the rectangular opening. See [Figure 4-7](#).

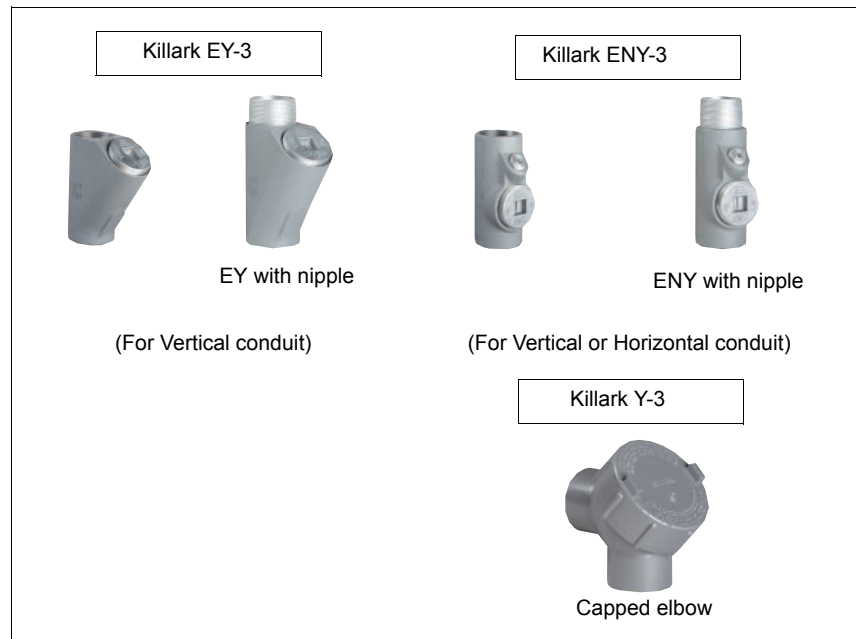
Figure 4-7: Encore Frame Assembly with Conduit



Note: Each end has an opening which is diagonally opposite of another opening. The opening can be used to pass electrical conduit from the narrow space inside the column through the frame opening. The conduit is finally run through the air gap plates into the electronic module in the location shown in [Figure 4-7](#).

- 2 Run field wiring through a 1-inch trade size conduit stub up centered in the rectangular opening.
 - 3 Stub up must be inside the column and centered in the column as closely as possible. There is very little extra room with 1-inch fittings. See [Figure 4-7](#).
- Note: If stub up is not properly located in the column, it will interfere with the column outer sheathing.*
- 4 Use a 1-inch trade size conduit stub up long enough to extend at least 1-inch above the lower edge of the rectangular opening.
 - 5 Thread end of stub up using a 1-inch NPT (tapered threads) in order to use a sealing fitting. It is recommended that the installer uses a Killark EY-3 or Killark ENY-3. These fittings are compact and will fit inside the column. See [Figure 4-8](#).

Figure 4-8: Killark Fittings



- 6 Install sealing fitting to stub up. Tighten all fittings (minimum 5 full threads of engagement).
- 7 Pull wiring through the stub up and sealing fitting.

Note: Make sure enough extra wire length (minimum of 5 feet or 2 meters) is provided in order to make the run to the stub up location at the bottom of the electronics cabinet.

Note: Remember you may be routing the conduit over to come up at the stub up to the electronic cabinet. Depending on which end of the unit the stub up is on, you may be routing across the entire unit length.
- 8 Fill sealing fitting with potting compound to seal the pathway of the field wiring. See [“Sealing Air Gaps and Conduits in Encore Units”](#) on page 42 or [“Potting Conduit Stubs”](#) on page 44.
- 9 Install a short 2-inch threaded nipple into the top of the sealing fitting.

- 10** Install capped pulling elbow. It is recommended the installer uses a Killark Y-3 fitting. See [Figure 4-8](#).
- 11** The conduit must be made up to match the installation layout for the unit at the site. Below is a list of the most common procedures for conduit entry to the right when facing side 1.
- The length of the conduit should extend straight out from the capped Y fitting.
 - Fitting should then turn 90 degrees vertical under the air gap plate knock out.
 - Use required air gap plate knock out.
 - All conduit that enters into the electronics cabinet must be potted.
 - At least 1-inch of conduit should extend above the bottom shelf of the electronics cabinet.
 - Complete conduit run with a conduit nut on the inside of cabinet.
 - Pull all wires properly through conduit. Finalize procedure by potting the conduit end.
 - Allow 18 inches of wire in electronic cabinet for field connections. Wire will be trimmed as necessary upon field connection.

5 – Appendix: Inlet Pipe Assembly

To ensure proper sealing during installation, assembly of pipe nipples to all 1-1/2 inch NPT inlet tubes should follow the following guidelines.

- Ensure the threads are good quality, full-NPT threads without obvious damage for all pipe nipples.
- Assemble using 1/2-inch width Teflon thread-seal tape.
- Assemble using a high-quality, UL-approved sealant that will not harden or wash out with the fuel being dispensed. Use Loctite® PN 56747 (TM 567) PST Pipe Sealant with PTFE (also known as Loctite 567) or equivalent.

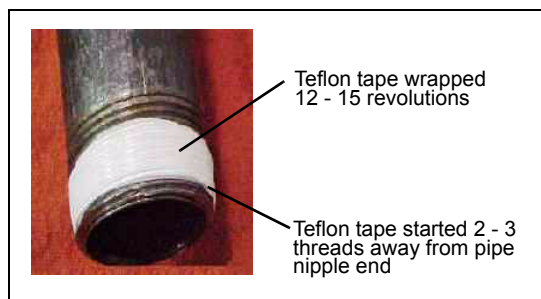
Assemble the inlet pipe assembly as follows.

- 1 Starting the Teflon tape 2 to 3 threads from pipe nipple end, wrap inlet pipe with Teflon tape (12 to 15 revolutions). Refer to [Figure 5-1](#).

CAUTION

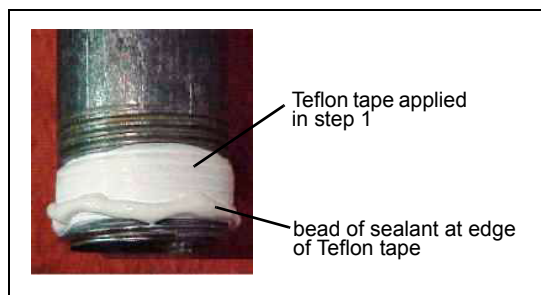
Do not use tape at the very end of the pipe nipple to avoid tape entering the dispenser hydraulics. Tape in the hydraulics can cause failures of valves, nozzles or other significant problems.

Figure 5-1: Inlet Pipe Wrapped with Teflon Tape



- 2 Apply a moderate bead of sealant completely around the nipple end at the edge of the Teflon tape. Refer to [Figure 5-2](#).

Figure 5-2: Bead of Sealant at Edge of Teflon Tape



- 3 After the sealant has been properly applied, tighten the connection to 130 foot-pounds minimum (65 pounds of force on a 2-foot wrench or 33 pounds of force on a 4-foot wrench).

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