Wayne
FUELING SYSTEMS

Installation / Operation

Wayne Select™ Electronic Dispensers
3/G7200 Series

000-920812-
Rev R

DOVER
FUELING SOLUTIONS

For the purpose of this manual: the product designated on the front cover will be defined herein after as the “Product;” and Dover Fueling Solutions (“DFS”), will reference different entities based on the point of origin for which the Product is manufactured. For Products from North America, DFS references Wayne Fueling Systems LLC located in Austin, Texas. For Products from Brazil, DFS references Wayne Industria e Comercio Ltda. located in Rio de Janeiro, Brazil. For Products from the United Kingdom, DFS references Dover Fueling Solutions UK Ltd. located in Dundee, Scotland. For Products from China, DFS references Tokheim Hengshan Technologies Company, Ltd. located in Guangzhou, China. For Products from India, DFS references Dover Fueling Solutions India Private Limited.

 **DANGER**

READ THIS MANUAL BEFORE YOU BEGIN

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

SAFETY PRECAUTIONS - INSTALLATION AND MAINTENANCE

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

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

EQUIPMENT PRECAUTIONS

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

USE ONLY GENUINE PARTS

For product liability to be valid, no changes may be made to the equipment without the written consent of Dover Fueling Solutions.

REGISTRATION OF SITE AND HOW TO CONTACT DFS

The equipment used at this site must be registered prior to contacting for warranty service. Sites can be pre-registered prior to installation by a DFS Authorized Service Organization (ASO) via the on-line registration system OR through completing the Section 1 portion of the form, at the end of this manual, and sending it to DFS (for non-ASOs). Pre-registration of a site helps to expedite warranty service in case it is needed. Please allow 2-3 days after receipt of the information for pre-registration. Final registration, which requires all of the information pertaining to the site including Start-Up date and equipment serial numbers, must be completed within 7 days of the completion of the Start-Up using the same aforementioned methods.

Trouble with the installation of this product should be referred to your DFS ASO. An ASO with a technician number can receive assistance by calling the DFS Support Center at:

1-800-926-3737

Customers, Installers or Distributors who are not an ASO, needing help with the operation or installation of this product, should contact the DFS Support Center at:

1-800-289-2963 OR support.austin@doverfs.com

INDICATORS AND NOTATIONS

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

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

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

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

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Table of Contents

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1 Introduction

1.1 Dispensers Covered

This manual describes the installation and operation of the Wayne Select™ Series Electronic Registration Fleet Dispensers. Wayne Select dispensers are designated by the 3/G7200 model number series. Model descriptions are shown in Section 1.2. The model number suffix designations are defined in Section 1.3.

Select Electronic dispensers use the iGEM™ computer powered by DFS to control the iMeter™ fuel meter powered by DFS and Intelligent Pulser (WIP). There is one iGEM computer and one iMeter fuel meter module in each dispenser. There is one WIP pulser for each iMeter fuel meter.

The iGEM computer uses software that is uploaded by a laptop. Computer function settings necessary for dispenser startup are included in this manual. If additional information on function settings and statistics is required, refer to the iGEM Computer Service manual, part number 920525. Note: When making updates to the iGEM computer using a laptop, ensure that it is done in an unclassified location.

Select Electronic dispensers may be installed and operated as a stand-alone unit, may be controlled through an internal control system, or may be controlled by a third party fuel control system. This manual provides installation and operation information for these dispensers operating as stand-alone units and with an internal control system. General information is provided for connecting to third party fuel control systems. It is also necessary to consult the applicable third party fuel control system documentation for installation and operation information and any necessary safeguards and warnings.

Trouble with the installation of this product should be referred to your DFS ASO. An ASO with a technician number can receive assistance by calling the DFS Support Center at:

1-800-926-3737

Customers, Installers or Distributors who are not an ASO, needing help with the operation or installation of this product, should contact the DFS Support Center at:

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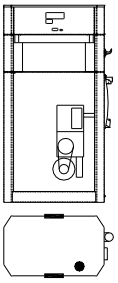
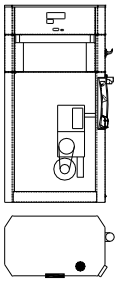
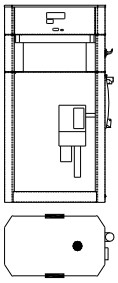
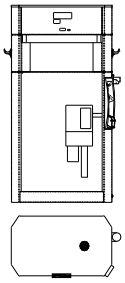
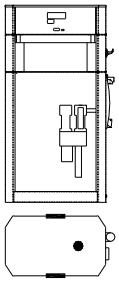
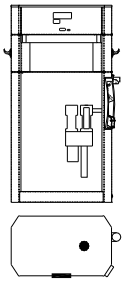
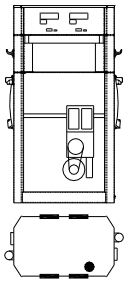
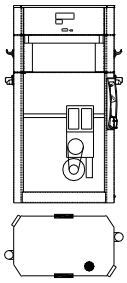
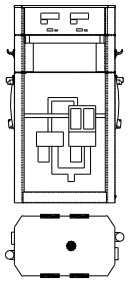
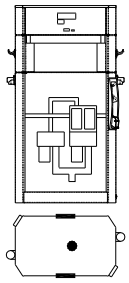
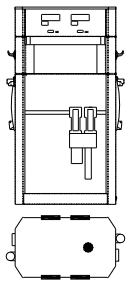
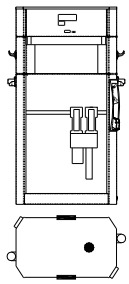
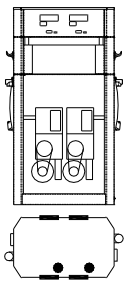
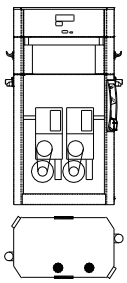
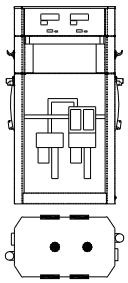
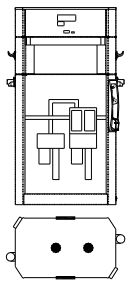
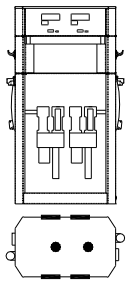
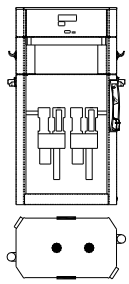
NOTE: Terminology Used in This Manual

Dispenser(s):	**Generic term used to refer to any model in the Wayne Select Series.**
Suction Pump(s):	**Models with self-contained pumping units installed in the dispenser hydraulic cabinet.**
Remote Dispenser(s):	**Models utilizing a submersible pump in the tank to provide fuel to the dispenser.**
Satellite Dispensers:	**Models that do not have their own meter, pumping units, or displays. Satellite hoses are supplied product from a "master" remote dispenser and provide an additional fueling point for that dispenser. Any fuel dispensed from the satellite hose is registered on the master dispenser to which it is connected. Satellite dispensers are typically mounted on the opposite side of the fueling lane from the related master dispenser to simplify filling vehicles with saddle tanks.**
Enhanced Capacity:	**Suction pump and remote dispenser models with one Wayne iMeter measuring chamber per hose.**
Super High Capacity (SHC):	**Remote dispenser models with two Wayne iMeter measuring chambers per hose for increased flow performance.**
Ultra High Capacity (UHC):	**Remote dispenser models using a Liquid Controls® meter per hose for maximum flow performance.**

1.2 Model Description

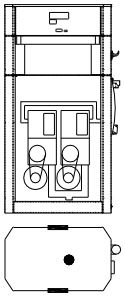
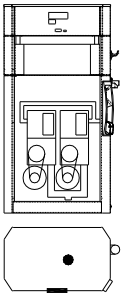
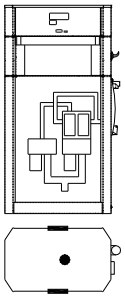
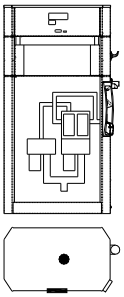
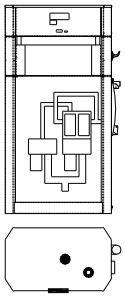
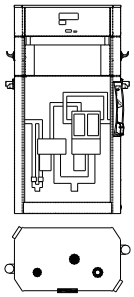
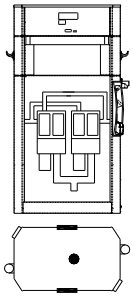
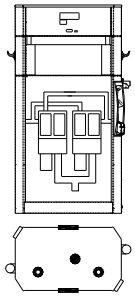
1.2.1 Enhanced Capacity Models

	SUCTION PUMPS		REMOTE DISPENSERS			
	iMeters		iMeters		Xflos	
	Island-Oriented	Lane-Oriented	Island-Oriented	Lane-Oriented	Island-Oriented	Lane-Oriented
Single	3/G7201P/2 	3/G7207P/2R 	3/G7201D/2 	3/G7207D/R 	E3/G7201D/2X 	E3/G7207D/2RX 
Twin I	3/G7202P/2 	3/G7207P/2 	3/G7242D/2 	3/G7247D/2 		
					E3/G7202D/2X 	E3/G7207D/2X 
Twin II	3/G7203P/28 	3/G7208P/28 	3/G7203D/2 	3/G7208D/2 	E3/G7203D/28X 	E3/G7208D/28X 

NOTES:

* Some of the configurations shown above are only available with iMeter2.

1.2.2 Super High Capacity Models

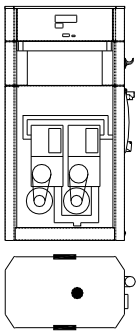
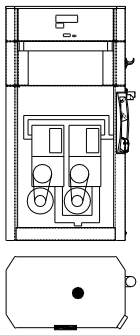
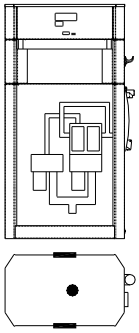
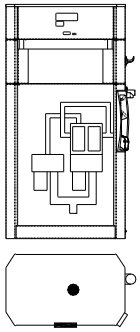
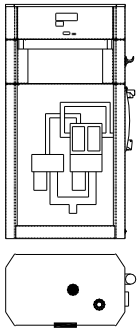
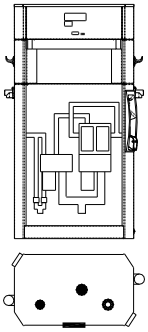
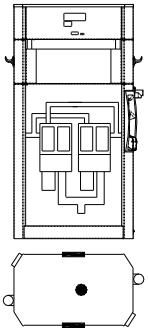
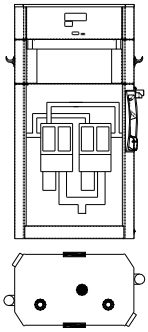
	SHC REMOTE DISPENSERS			
	STANDALONE		MASTER	MASTER/SATELLITE
	Island-Oriented	Lane-Oriented	Lane-Oriented	Lane-Oriented
Single Suction	3/G7221P/8 	3/G7227P/8 		
Single Remote	3/G7221D 	3/G7227D/R 	3/G7227D/MR 	3/G7228D/LM 
Twin I Remote		3/G7227D 	3/G7227D/M 	

NOTES:

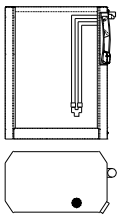
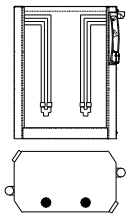
* The Master/Satellite has a single master dispenser and a single satellite dispenser housed in the same cabinet. There is a lane-oriented nozzle on one side for the master and a lane-oriented nozzle on the other side for the satellite dispenser.

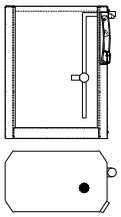
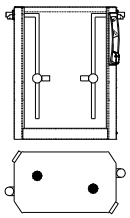
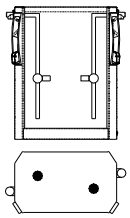
** Single SHC remote dispenser models with the Automatic Temperature Compensation option (model suffix “/C”) utilize two separate ½-populated duplex iMeters instead of the single fully populated duplex iMeter as shown.

1.2.3 Ultra High Capacity Dispenser Models

	SHC REMOTE DISPENSERS			
	STANDALONE		MASTER	MASTER/SATELLITE
	Island-Oriented	Lane-Oriented	Lane-Oriented	Lane-Oriented
Single Suction	3/G7221P/8 	3/G7227P/8 		
Single Remote	3/G7221D 	3/G7227D/R 	3/G7227D/MR 	3/G7228D/LM 
Twin I Remote		3/G7227D 	3/G7227D/M 	

1.2.4 Satellite Dispenser Models

	SHC SATELLITES
	Lane-Oriented
Single	3/G7007/JKLR 
Twin	3/G7008/JKL 

	UHC SATELLITES	
	Lane-Oriented	**Lane-Oriented 2 Nozzles Same Side**
Single	3/G7037/JKLR 	N/A
Twin	3/G7038/JKL 	3/G7039/JKLR 

1.3 Model Designation Format

Prefix / Main Body / First Suffix / Second Suffix

X / ABCDEF / ZZZZZZZZ / YYYYYYYYYY

Prefix	X	Electronic & Hydraulic Configuration	3	iGEM
			E3	iGEM for E85
	/			
Main Body	A	Model Series	G	Global
			7	Select
	C	Model Style	0	Satellite Cabinet
			2	Column Style
	D	Flow Rate Capacity	0	Standard & Enahnaced Capacity
			2	Super High Capacity
			3	Ultra High Capacity
			4	Standard & High Capacity-Max Two Hose Flow (Twin I Remote)
	E	Hose, Products, & Nozzle Configuration	1	One Hose, One Product, Island-Oriented Nozzle
			2	Two Hoses, One Product, Island-Oriented Nozzle
			3	Two Hose, Two Products, Island-Oriented Nozzle
			4	Only available with "R" suffix. Two Hoses, Single-Sided, Two Products, Lane-Oriented Nozzle
			6	Only available with "R" suffix. Two Hoses, Single-Sided, One Product, Lane-Oriented Nozzle
			7	Two Hoses (One Hose w/ "R" Suffix), One Product, Lane-Oriented Nozzle(s)
			8	Two Hoses, Two Products, Lane-Oriented Nozzles
			9	Only available with "R" suffix, Two Hoses, Single-Sided, Two Products, Lane-Oriented Nozzles
	F	Hydraulic System	D	Remote Dispenser
			P	Suction Pump
	/			
First Suffix	Z	Additional Model Designators	L	Satellite-Super & Ultra High Capacity Models
			M	Master-Super & Ultra High Capacity Models
			R	Single-Sided Lane-Oriented Model
		Standard	2	Enhanced Capacity (1" discharge, suffix not used on Super or Ultra High Models)
			8	Indicates model uses two 1/2-Populated iMeters
			9	E25 & B20 Compatible (Enhanced capacity only)
			G	Internal Filter (Remote dispensers only)
			J	Explosion-Proof Junction Box
			K	Hose Hanger (elimintaed w/ hose retractor & mast options)
			U	iMeter2
		Options	1	Price Displays
			C	Automatic Temperature Compensation-Non UL
			D3	HealyVac, Single or Twin-One Side
			D4	HealyVac, Twin with Both Sides
			H	Pulse Output Interface
			I	Satellite In Use Indicator
			N	Ethernet Switch
			S	Preset-12 Button (uses sales/volume display)
			X	Xflo Meter (Used for E85 hydraulic trees)
			Z	240 VAC Operation of Electronic Register and Light
	/			
Second Suffix	Y	Standard	W	No Solenoid on Suction Models (N/A on Twin I where solenoid is std.)
			W3	UHC Models Only-120 VAC solenoid valves (standard on units starting 9/14/2009)
		Options	D1	iX Fleet, RF Tags, 1 Sided
			D2	iX Fleet, RF Tags, 2 Sided
			D3	iX Fleet, Mag Cards, 1 Sided
			D4	iX Fleet, Mag Cards, 2 Sided
			D5	iX Fleet, Keypad, 1 Sided
			D6	iX Fleet, Keypad, 2 Sided
			D7	iX Fleet, HID Prox, 1 Sided
			D8	iX Fleet, HID Prox, 2 Sided
			D9	iX Fleet, HID Indala, 1 Sided
			D10	iX Fleet, HID Indala, 2 Sided
			H	Internal Hose Retriever
			J	Hose Mast
			K	Electro-Mechanical Totlaizer per Hose (only applicaple on Enhanced Capacity Twin I Models. EMT per hose std. on all other models)
			S2	SS Doors Only
			S3	SS Doors, Lower Sides, Base and Vapor Barrier
			S4	SS Lower Sides, Base and Vapor Barrier
			V	Pulser Security Cover (3/G723x models only)

1.4 Technical Information

Application:	For dispensing low viscosity petroleum fuels - diesel, including biodiesel blends up to 20%; kerosene; gasoline, including standard oxygenated blends; AvGas; and Jet Fuel (check with fuel supplier for any metal flow path restrictions for AvGas and Jet Fuel, you must install the appropriate filters, water separators, etc. needed for the fuel type being used.) - from aboveground or underground storage tanks in applications where only volume measurement is required. Dispensers with the "E" Prefix utilize nickel-plating, hard anodizing, stainless steel, special elastomers and a special fuel filter. While standard dispensers are Listed to handle Ethanol products up to an E10 blend, "E" prefix dispensers are Listed for use with products up to E85. Dispensers with a first suffix "9" are equipped to handle up to E25 and B20 products. Use hanging hardware rated for the available fuel type dispensed. **Note: Dispenser not Listed by a nationally recognized testing laboratory (NRTL) for Biodiesel (over 20%), AvGas, or Jet Fuel. E85, E25 and B20 listings are valid only in the US as no standards exist for these products in Canada.**
Performance:	Enhanced Capacity: Up to 22 GPM (83 LPM) maximum test rate at discharge outlet. Twin I suction pump model is 22 GPM per one hose operating, or 12 GPM (45 LPM) per hose with both operating. Super High Capacity (SHC): Up to 36 GPM (136 LPM) maximum test rate at discharge outlet. For Twin I SHC model, maximum test rate is with one hose operating at a time. Ultra High Capacity (UHC): Up to 60 GPM (227 LPM) maximum test rate at discharge outlet (total of both Master & Satellite hoses in use at same time). ***Important: Actual flow rates will depend upon the installation conditions, product dispensed, dispenser accessories, and for remote dispensers, the size of the submersible pump***.
Electronic Head:	iGEM electronics platform. Controls dispenser operation. Provides user operating messages, transaction limit controls, error monitoring, enhanced diagnostics. Allows software uploads/downloads via a PC. Infrared remote control allows configuring settings, reading totalizers, and accessing diagnostic tools. 120/240VAC 50/60 Hz operation. (Note: Light is only 120 VAC std. - 240VAC option required for 240VAC operation.)
Liquid Crystal Displays:	Backlit 1" (2.5 cm) six-digit Volume and Total $ displays (Total $ for /1 option) and ½" (1.3 cm) four-character status display per hose (Price for /1 option). Displays each side of cabinet, except models with lane-oriented nozzle boots only display on corresponding nozzle boot side. Configurable 0-4 digits to right of decimal. Programmable gallons or liters. In event of power loss, remain visible for approximately 15 minutes.
Totalizers:	7-digit electromechanical non-resettable totalizer per product. One non-resettable and one resettable electronic 6-digit totalizer per hose. Electronic totalizers display on volume display by using infrared remote control.
Light:	Light in electronic head provides backlighting for liquid crystal displays and illuminates product identification panels. 120VAC 60 HZ operation. Optional 240VAC 50/60 Hz operation.
Fuel Control System Interfaces:	Wayne dispenser US Current Loop protocol. Optional pulse output interface.
Meter:	Enhanced Capacity and Super High Capacity Models: Wayne 2-piston, positive displacement iMeter with integral intelligent pulser. E85 models utilize Xflo meter. Electronic calibration. Ultra High Capacity Models: Liquid Controls M-5 positive displacement rotary meter with Wayne optical pulser. Electronic calibration.
Pumping Unit:	Suction pump models. Wayne Compact Pumping Unit (CPU). Belt-driven, positive displacement rotary gear pump with integral centrifugal air separator. Not available on UHC or E85 models.
Motor:	Suction pump models. 1 HP, continuous duty motor. 120/240VAC, 50/60 Hz, with thermal overload. Adjustable V-link belt connects to the pump pulley.

Junction Boxes:	Explosion-proof AC junction box standard for electronic head, light, suction pump, and submersible connections. Additional explosion-proof junction box supplied with pulse output interface option for third party control system wire terminations.
Strainer:	Enhanced Capacity and Super High Capacity Models: 120-mesh; removable for cleaning. Ultra High Capacity Models: No strainer is provided. See filter section. Disposable strainer canisters are available as an option replacing filters.
Filter:	Enhanced Capacity and Super High Capacity Models: Internal filter adapter with 30-micron particulate filter element (remote dispenser models only). Ultra High Capacity Models: Two internal Cimtek Series 800 filters (40 GPM each) per hose with 30-micron particulate filter elements. (Note: User should make sure the filter element meets the application and replace with the appropriate element as necessary.)
Flow Control Valve:	Enhanced Capacity and Super High Capacity Models: Proportional 7/8" (2.2cm) 24V valve. Standard on remote dispensers, Twin I suction model, and suction models w/ price display (/1) option. Optional on other suction models. Ultra High Capacity Models "//W3": 120 VAC 2-stage 1-1/2" (3.81cm). UHC units w/o "//W3" use 24 VDC proportional valves.
Inlet:	Enhanced Capacity Models: 1 ½" (3.8cm) male NPT. Super High Capacity Models: 1 ½" (3.8cm) male or 2" female (5.1cm) NPT. Ultra High Capacity Models: 2" (5.1cm) male NPT. Satellite Models: 1 ½" (3.8cm) male NPT
Outlet:	Enhanced Capacity and Super High Capacity Models (including Satellite SHC Models): 1" (2.5cm) female NPT. ¾" (1.9cm) reducing bushing supplied for ¾" hose assemblies on non-SHC models. Outlet for satellite on Master configurations is 1-1/2" NPT. Ultra High Capacity Models (including UHC Satellite Models): 1-1/4" (3.2cm) female NPT. 1" (2.5cm) reducing bushing supplied for 1" hose assemblies. Outlet for satellite on Master configurations is 1-1/2" NPT.
Cabinet:	Galvanealed metal. Hinged front and rear doors. Optional SS on most models.
Finish:	Silver powder coat finish with blue powder coated doors. Optional black, green, red, silver, white, or yellow powder coated doors.
Nozzle Boot and Hook:	Fits standard U.L. interchangeable automatic nozzles. Balance vapor recovery nozzles: Emco Wheaton A4015 short spout and Husky V short spout. Also fits Healy nozzles 600G, 800 & 900.
Options:	Pulse output interface, external filter kit (suction models), hose mast, internal hose retractor, proportional valves (suction pump models), Price Display, Healy EVR, Preset, ATC, 240VAC 50/60 HZ operation of the electronic head, and iX Fleet.
Approvals:	Underwriter's Laboratories UL Listed: UL File MH1821 Canadian Standards Association (CSA): File LR 47352 CARB: VR-201 – Healy Phase II EVR VR-202 – Healy Phase II EVR including ISD G-70-52-AM – Balanced Vapor Recovery National Conference of W & M: C of C #99-122 Measurement Canada: Certificate AV-2394 FCC certified

2 Site Design & Preparation

2.1 Local, State, and Federal Codes

The Wayne Select Series models are only part of a fuel dispensing system. A fuel dispensing system typically comprises equipment and safety devices from a variety of manufacturers. It is the responsibility of the dispenser owner to have a qualified installer ensure that all of the necessary equipment and accessories are included to meet the requirements of the application and all tanks (both underground and aboveground), piping and fittings, check valves, leak detection and corrosion protection devices, wiring, venting systems, filtration devices, safety valves, submersible pumps, etc. are installed in accordance with the manufacturer's instructions and in compliance with local and regional building codes and requirements pertaining to private fueling facilities (or other locations where the dispenser may be installed).

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

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

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

Pertinent information and codes are available from the following sources:

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

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

Fiberglass Petroleum Tank and Pipe Institute
One SeaGate, Suite 1001
Toledo, OH 43604
(419) 247-5412

National Assoc. Corrosion Engineers
(NACE)
Box 218340
Houston, TX 77218
(713) 492-0535

National Fire Protection Association (NFPA)
One Batterymarch Park
Quincy, MA 02269-9101
(617) 770-3000

National Leak Prevention Association
(NLPA)
685 Fields Ertel Road
Cincinnati, OH 45241
(513) 489-9844 or 1-(800) 543-1838

Petroleum Equipment Institute (PEI)
Box 2380
Tulsa, OK 74101
(918) 494-9696

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

(continued on next page)

Underwriters Laboratories Inc.
333 Pfingsten Road
Northbrook, IL 60062
(312) 272-8800

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

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

U. S. Department of Labor,
Occupational Safety and Health Administration (OSHA) Washington, DC 20402
• Call OSHA at (202) 523-8148 to determine specific needs; OSHA rules are covered by Title 29 of the Code of Federal Regulations (29 CFR.)
• Order OSHA publications from:
Government Printing Office (GPO)
Washington, DC 22304
(202) 783-3238

Western Fire Chiefs Association
5360 South Workman Mill Road
Whittier, CA 90601
(213) 699-0541

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

2.2 Safety Precautions

NFPA 30A states that:

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

- Only persons knowledgeable in performing the required maintenance shall perform the work.
- All electrical power to the dispensing devices, to the pump serving the dispensing devices, and to all of associated control circuits shall be shut off at the main electrical disconnect panel.
- The emergency shutoff valve at the dispenser, if installed, shall be closed.
- All vehicular traffic and unauthorized persons shall be prevented from coming within 20 ft. (6 m) of the dispensing device." [1]

WARNING

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

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

1. Reprinted with permission from NFPA 30A, *Code for Motor Fuel Dispensing Facilities and Repair Garages 2000 Edition*, Copyright ©2000, National Fire Protection Association, Quincy MA 02269. This reprinted material is not the complete and official position of the National Fire Protection Association on the referenced subject, which is represented only by the standard in its entirety.

2.3 Ethanol and Bio-Diesel Installations

All Wayne dispensers are rated and Listed for use with Ethanol blends up to and including E10. For blends that exceed E10, the dispenser must be supplied with a first suffix option of "9" for blends up to E25 and B20 or an "E" prefix option for blends up to E85. "E" prefix dispensers are Listed for use up to and including E85 blends. The "9" suffix is available for all enhanced capacity remote dispensers. The "E" prefix is only available on remote dispenser models 3/G7201D, 3/G7202D, and 3/G7203D. When considering an installation, all fluid handling components must be rated for the type of fuel that will be dispensed. Piping connections for above E10 must use UL Classified Saf-T-Lok Teflon pipe sealant. Listings for E85, E25 and B20 are valid only in the US as no standards exist for these fluids in Canada.

WARNING

Some alternative fuels and additives can degrade the dispenser performance and integrity if the dispenser is not designed for that product. In addition, converting between fuel types (especially between an alternative fuel to a standard fuel) can degrade the dispenser performance and integrity. Before changing fuel types, always make sure that the dispenser is designed for use with the new product. In addition, the dispenser should be closely monitored for any sign of degradation or leaks after the conversion. This monitoring should take place in the days, weeks and even a month after the conversion takes place. Leaks can result related to the conversion which can create an environmental hazard.

2.4 Existing Installations

- If the dispenser is to be installed on an existing installation, it is still the responsibility of the installer to read and follow this installation manual in its entirety and make sure the existing installation meets the requirements and satisfies local, state, and federal codes.

2.5 Island Construction, Dispenser Anchoring, and Piping

- A concrete foundation must be provided for the dispenser. Do not pour concrete around product lines or electrical conduit risers. Allow for the proper dispenser containment box if required by local, state, or federal regulations. Reference Appendix A, Dimensions & Base Layouts, for dispenser dimensions.
- Anchor bolts pre-set in the concrete, or concrete anchors driven into the concrete, must be used to securely bolt the dispenser to the island in accordance with NFPA requirements. The base of the dispenser contains two bolt holes for anchoring the dispenser to the island. If anchor bolts are used, position the anchor bolts in accordance with the dimensions given on the appropriate Dimensions & Base Layout drawing in Appendix A. Use ½" diameter bolts.
- Vertical supply risers and electrical conduits must be located per the Installation Drawing for the appropriate model. Proper height must be maintained to avoid undue stress on the dispenser. See Section 3.3 for wiring and conduit requirements. Reference Appendix B for Wiring Diagrams.
- Supply piping should be selected and installed based on the product dispensed and in accordance with local, state, and federal regulations. The piping manufacturer's instructions should be followed for the proper trenching, connection, sealing, corrosion prevention, pressure relief, leak detection, containment, and testing.
- Supply lines should extend a minimum of 18" (46cm) straight down from the dispenser (more in hot climates and high altitudes to prevent product vaporization) and then slope downwards to the tank at approximately ¼" per foot (1cm drop per 48cm run). Be sure there are no traps and minimize the number of bends and elbows.
- Enhanced Capacity models: If the distance from the dispenser to the tank is 60 feet (18.2m) or less, 1½-inch (3.8cm) schedule 40 pipe may be used. For distances greater than 60 feet (18.2m), 2-inch (5.1cm) schedule 40 pipe is recommended to lessen friction.

- Super High Capacity and Ultra High Capacity models: Piping from tank to dispenser should slope upwards to avoid air or liquid traps. Use 2” minimum piping. 3” or 4” piping is recommended to maximize flow.
- Ultra High Capacity models: A double poppet emergency valve, where the top valve is normally in a closed position when there is no flow, is recommended (e.g. OPW 2” 10RUP). The top valve acts as a check valve which reduces the reverse flow of product that can occur in some high speed installations. Long lengths of flexible piping are not recommended because it can expand when the nozzle is closed and can cause excessive reverse flow. Reverse flow of product can result in pulser errors.

WARNING

Wayne dispensers are specified to work at a maximum normal operating pressure of 50 PSI. Normal operation can create pressure spikes which may exceed 50 PSI. These normal spikes are easily handled by the dispenser. Wayne dispensers are designed and tested to withstand pressures up to 250 PSI, for short durations, without rupture or permanent distortion. Certain extreme conditions, such as installations with above-ground tanks and very long runs of pipe, can create pressure spikes that may damage the dispenser and its accessories. If these conditions exist, measures must be taken to reduce or dampen these pressure spikes to prevent damage to the equipment.

2.6 Suction Pump Installations

2.6.1 Suction Pumps - General

- To maximize flow and minimize product vaporization (gasoline), position the suction pump dispenser and the tank as close together as possible, minimize the number of turns in the supply piping, and minimize the vertical lift. The vertical lift is limited by the properties of the product being dispensed [dynamic lift: gasoline – approx. 12 feet (3.6m); diesel – approx. 13 feet (4m)]. The maximum lift will vary depending upon product temperature and installation conditions.
- It is recommended that the vent line from the air separator be piped back to the storage tank. The return line should be at least ½” (1.3cm).

2.6.2 Suction Pumps With Aboveground Tanks (ASTs)

- If the suction pump is used with an AST (mounted below the product level in the tank), the installer must provide the necessary safety valves according to the local, state, and federal codes. These valves include, but may not be limited to, an emergency block valve in the piping immediately after it exits the tank followed by an electrically operated solenoid valve for anti-siphon. A vacuum-actuated valve (pressure regulator valve) with shear section, or equivalent valve, must be installed beneath the pump. All valves must be equipped with a pressure relief mechanism. Pressure in the pump cannot exceed 50 psi.

WARNING

For suction pumps installed with aboveground tanks, or with a booster pump, a Listed[1], vacuum-actuated shutoff valve with a shear section or equivalent-type valve shall be installed directly under the dispensing device. Failure to install the proper shutoff valve will present a hazardous condition that could result in serious injury and/or environmental damage. For SHC Suction models, the vacuum-actuated shutoff valve must be able to handle flow rates up to 30 GPM to prevent cavitation that will occur if the pumps are starved for fuel.

1 “Listed” means published on a list by a nationally recognized testing laboratory (NRTL) which is responsible for product evaluation and is acceptable to the authority having jurisdiction. Underwriters Laboratories, Inc. is one example of a Nationally Recognized Testing Laboratory. For more information on NRTL’s, see Title 29, Parts 1907 and 1910 of the Code of Federal Regulations, Safety Testing or Certification of Certain Workplace Equipment and Materials.

2.6.3 Suction Pump Check Valves

- Suction pumps require a check valve in the product lines to stop the product from draining back into the tank. Only one check valve should be used per supply line and it should be installed directly below, and as close as practical, to the suction pump.

NOTE: All check valves must be equipped with pressure relief valves that ensure thermal expansion pressures in excess of 50 psi (345 kPA) are relieved back to the tank. A listed valve should be used.

- 3/G7221P and 3/G7227P/R Super High Capacity suction pump models already have inlet checks valves as standard and should not have separate check valves installed in the supply line.
- Spring-loaded valves and union check valves are not recommended as they are too restrictive and may cause erratic dispenser operations.
- Install the check valve according to the check valve manufacturer's directions.

2.6.4 Connecting More Than One Suction Pump to a Tank

- Wayne recommends only one suction pump be connected to a single suction line. If connecting multiple pumps to the same suction line is unavoidable, it is very important that a swing check valve be used in each suction line branch and that each valve be placed in the line as close as possible to the connection leading to the main suction line coming from the tank. This is necessary to prevent a pump from emptying the line leading to another pump instead of pulling the product out of the tank.

2.7 Remote Dispenser Applications

- To maximize flow, position the remote dispenser and tank as close together as possible and minimize the number of turns in the piping. Consult the submersible pump manufacturer for the proper sizing of the submersible pump, any necessary leak detection equipment, and installation details.
- Product piping must avoid the creation of vapor in the lines and deliver a minimum pressure of 25 psi at the remote dispenser inlet when all dispensers connected to the same submersible pump are operating. The dispenser's maximum operating pressure is 50 psi.

WARNING

For remote dispensers, a listed, rigidly anchored, double-poppet, emergency shutoff valve must be installed, in accordance with the manufacturer's instructions, in each supply line at the base of each dispenser. Emergency valves for the dispenser supply lines must be NRTL-listed. For a typical emergency valve installation, see Figure 2-1. Failure to install the proper emergency shutoff valve will present a hazardous condition that could result in serious injury and/or environmental damage.

Ultra High Capacity models: A double poppet emergency valve, where the top valve is normally in a closed position when there is no flow, is recommended (e.g. OPW 2" 10RUP). The top valve acts as a check valve which reduces the reverse flow of product that can occur in some high speed installations. Reverse flow of product can result in pulser errors

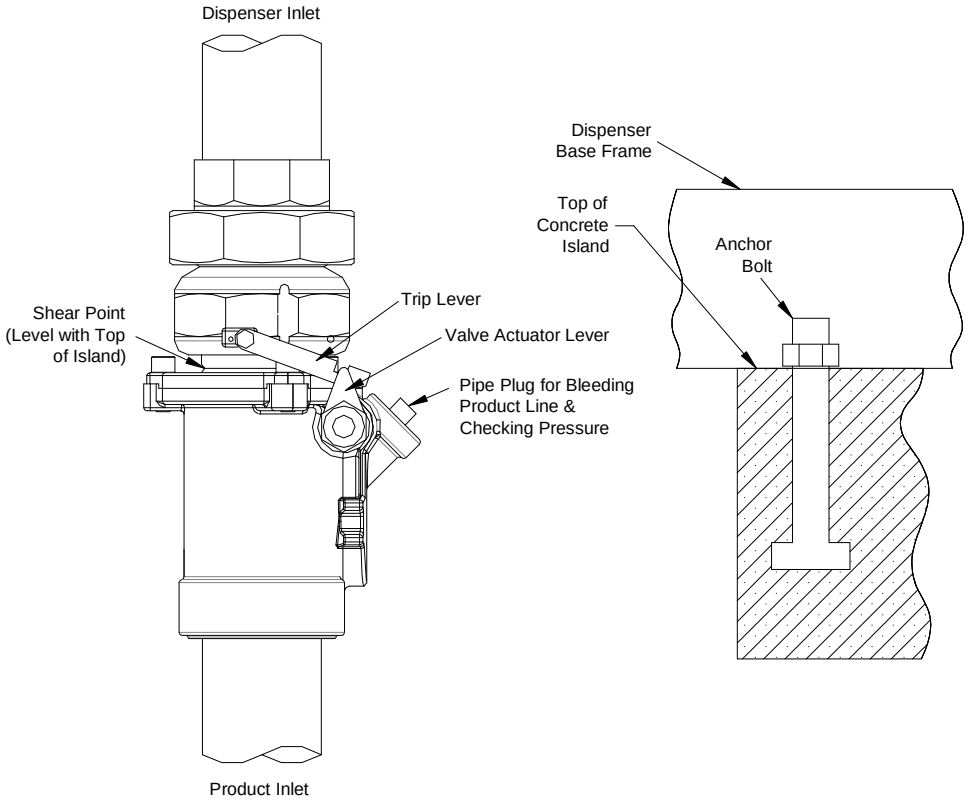


Figure 2-1 Typical Emergency Shutoff Valve Installation. *The emergency valve is designed to close the product line due to shock or fire. The shear section, shown above, functions if the dispenser is knocked out of position. Use the appropriate emergency valve to match the inlet piping.*

NOTE: On E85 dispenser models, use shear valve part number 10P-0152E85 manufactured by OPW.

3 Installation

3.1 Equipment Inspection

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

3.2 Lifting and Installing the Dispenser

Step 1 The dispenser should have already been unpacked when the equipment was received and inspected in accordance with Section 3.1.

Step 2 Unlock and remove the dispenser doors by removing screw on the bottom of each door.

Step 3 Raise the dispenser up even with the island and slide the dispenser onto the island, or lower the dispenser over the anchor bolts. Position and securely bolt the dispenser to the island using 1/2" anchor bolts or use 1/2" concrete anchors and minimum 2½” depth (9.5mm x 64mm).

CAUTION

When handling the dispenser, lift only by the base or main chassis. Lifting by the nozzle boot, hose outlet, on/off lever, or any external panels, may result in dispenser damage and/or personal injury.

Step 4 Remove the shipping plug from the dispenser inlet. Connect the product piping. To ensure tight, leak-proof piping connections, wash all cutting oils off the threads and use a UL-classified pipe joint sealing compound, rated for use with petroleum-based products.

WARNING

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

3.3 Electrical Wiring

3.3.1 General

- Wayne recommends employing a qualified licensed electrician for all wiring.
- A primary requirement in dispenser installation wiring is to provide a means for disconnecting all power connections, including the neutral, as well as the communication lines to the dispensers for a safe shutdown and servicing of the units. All wiring to the dispenser must be broken for the Emergency Electrical Disconnect.
- A hazardous liquid is being handled, so it is extremely important to ensure that all wiring and conduit are in accordance with all local, state and federal regulations, including, but not limited to, the National Electrical Code (NFPA 70), NFPA 30, and NFPA 30A.

NOTE: U.L. requires that all electrical connections to the dispenser be made with threaded, rigid conduit and properly sealed conductors. All dispensers and electrical connection boxes must be grounded per NFPA 70.

3.3.2 Electrical Termination Descriptions - All Dispensers

The following describes the standard electrical inputs and outputs utilized in the Wayne Select Series and can provide assistance in interpreting the Wiring Diagrams in Appendix B.

3.3.2.1 Ground

A good ground ensures proper operation of the equipment and provides the necessary safety factors. A ground wire must be connected between the unit's AC junction box ground lug and the main electrical service panel. One (1) earth ground connection is required per unit. Make sure that a ground rod is properly installed and wired to the ground bus strip of the main electrical service panel in accordance with the National Electrical Code.

3.3.2.2 Control Power (Hot)

The control power (hot) is a 120VAC [international (int'l) - 240VAC] input for supplying power to the electronic register. The control power must have a dedicated breaker and must remain on all the time. The light power may share the same feed if you wish the light to remain on all the time (see light power below). For sites with multiple dispensers, if it is not practical to use separate breakers for each dispenser, the number of dispensers that can be included on one breaker is determined by analyzing the power requirements of each dispenser to determine the total load required for the group of dispensers. The breaker and wire must be sized accordingly for that load and the length of the wire run.

NOTE: When the dispenser is connected to a fuel control and/or tank monitoring system, they should be powered from the same circuit breaker panel so that they share a common neutral.

3.3.2.3 Control Power (Neutral)

The control power (neutral) is an AC return line from the electronic register to the breaker panel.

3.3.2.4 Light Power (Hot)

Light power (hot) is a 120VAC [int'l - 240VAC] input for powering the fluorescent light in the electronic head. For 240VAC applications, the proper options must be ordered to have compatible light ballasts. The lights can be powered from the control power breaker; however, by using a separate breaker from the control power, the light may be turned on/off while allowing the electronics to remain on all the time as required. For sites with multiple dispensers, the lights of up to twelve (12) dispensers can be connected to the same breaker if a separate breaker is used for the lights.

3.3.2.5 Light Power (Neutral)

Light power (neutral) is the AC return line from the lights to the breaker panel. When the control power and light power share the same breaker, the light power (neutral) and control power (neutral) can be connected together.

3.3.2.6 Motor Feed (Suction pump models)

The motor feed lines are either a 120VAC or 240VAC input for powering the suction pump motor. When running the motor at 240VAC make sure to change the switch on the motor to the 240VAC setting (see Section 3.3.6 Pump Motor Setting). Two (2) sets of feed lines are provided for twins. It is possible to combine the pump feeds for twins and supply them from one (1) breaker; however, the gauge of the wire needs to be adjusted to handle the load of the two (2) motors. This feed is controlled by the electronic register. After the display resets, the 120VAC or 240VAC input is switched to power the pump motor.

Note: 3/G7221P and 3/G7227P/R Super High Capacity Suction pump models with dual pumps and motors per hose should be wired for 240VAC to reduce current draw. Before powering the motors at 240VAC, be sure that the switch on each motor is set to the "High" position.

3.3.2.7 Aboveground Storage Tank (AST) Valve (Suction pump models)

The AST valve lines are used to control an electric solenoid that may be placed at the top of the tank if a suction pump dispenser is used with an AST. This electric solenoid valve is typically used as the required anti-siphon device for AST installations. These lines will be supplying power at the same voltage (120VAC or 240VAC) that is being used by the motor in the dispenser. Only one dispenser inlet can be connected to an electric solenoid valve. Current draw on these lines should be limited to one (1) amp.

3.3.2.8 Submersible Relay Control Output (Remote dispenser models)

The submersible relay control output provides 120VAC [int'l - 240VAC] for controlling a submersible starter relay. A relay is required to interface to the submersible pump. After the display resets, the electronic register supplies power on this line to close the submersible starter relay in order to activate the submersible pump. Two outputs are provided for twin units. In multiple dispenser applications, all dispensers operating the same submersible starter relay must be on the same phase of power or must control the common starter relay through an isolation box.

3.3.2.9 Data + & Data –

The data + and data – wires are used for interfacing the dispenser with a fuel control system using the Wayne dispenser US Current Loop serial protocol. For full details on the interconnections, reference the fuel control system installation manual.

3.3.2.10 Ethernet Communication Cable (iX Fleet option)

The Ethernet Communication Cable is used for connecting to the optional iX Fleet control system. This wiring must never be in the same conduit or raceway as Class 1 wiring. For full details on the interconnections, reference the iX Fleet Appendix in this manual.

3.3.3 Electrical Termination Descriptions – Master Dispenser Models

The following describes the additional electrical inputs and outputs associated with the satellite dispenser control in master dispenser models and can provide assistance in interpreting the Wiring Diagrams in Appendix B.

3.3.3.1 Satellite Handle

Satellite handle input(s) from the satellite dispenser inform the master dispenser of the on/off status of the satellite handle(s). Simultaneous or non-simultaneous operation of the master and satellite are controlled by the master dispenser's electronic register and are set in the dispenser software configuration. Make sure that simultaneous operation of the master and satellite meets local, state, and federal codes.

The satellite handle terminology used in the wiring diagrams is defined below:

Handle	Description
S1N4	Handle input for Satellite 1 connected Dispenser Side A.
S2N4	Handle input for Satellite 2 connected Dispenser Side B.
ISB+	Common +24 VDC output to Satellite(s) Instrinsic Safe Barrier(s)
GND	Ground for Satellite(s) Instrinsic Safe Barrier(s)

3.3.3.2 Satellite Valve

Satellite valve outputs control solenoid valves in the satellite dispenser(s). The valve assignments, voltages and valve types vary according to the Master dispenser type and suffices.

Model	Valve	Voltage	Valve Type	Description
SHC Single Master 3/G7007/R Satellite	S1V9	24 VDC	2	First valve in satellite
	S1V10	24 VDC	2	Second valve in satellite
	VAL	Gnd		Valve common
SHC Twin Master 3/G7008 Satellite	S1V3	24 VDC	2	First valve in satellite 1
	S1V9	24 VDC	2	Second valve in satellite 1
	S2V7	24 VDC	2	First valve in satellite 2
	S2V10	24 VDC	2	Second valve in satellite 2
	VAL	Gnd		Valve common
UHC Single Master "//W3" 3/G7037//W3 Satellite	S1V2	115 VAC	4	Slow flow valve in satellite
	S1V4	115 VAC		Fast flow valve in satellite
	Neutral	Neutral		Valve common
UHC Twin Master "//W3" 3/G7038//W3 Satellite 3/G7039/R/W3 Satellite	S1V2	115 VAC	4	Slow flow valve in satellite 1
	S1V4	115 VAC		Fast flow valve in satellite 1
	S2V6	115 VAC	4	Slow flow valve in satellite 2
	S2V8	115 VAC		Fast flow valve in satellite 2
	Neutral	Neutral		Valve common
UHC Single Master 3/G7037 Satellite	S1V9	24 VDC	3	Valve in satellite
	VAL	Gnd		Valve common
UHC Twin Master 3/G7038 Satellite 3/G7039/R Satellite	S1V9	24 VDC	3	Valve in satellite 1
	S1V10	24 VDC	3	Valve in satellite 2
	VAL	Gnd		Valve common

NOTE: Valve Type is loaded in F08.61 and F09.61 of configuration. 2=Proportional, 3=Two stage UHC 24 VDC, 4=Two stage UHC 120 VAC

3.3.4 Electrical Termination Descriptions – Pulse Output Interface Option

The following describes the additional electrical inputs and outputs associated with the pulse output interface option and can provide assistance in interpreting the Pulse Output Interface Option Wiring Diagram in Appendix C.

NOTE: Units shipped with Price displays (/1), are always shipped with the Pulse Output cabling and junction box, but may not be shipped with the pulse output option.

3.3.4.1 Pulse Output

Pulse outputs are supplied for each hose and transmit a DC output to communicate the quantity dispensed to a fuel control system. The pulse ratio is set in the software configuration (e.g. 100:1 ratio provides 100 pulses per every gallon dispensed).

Basic features of the pulse output include:

- Two (2) separate channels (channel X and channel Y) are provided for each hose [four (4) total, two (2) hoses, two (2) channels each hose)
  - Two (2) separate channels allow connection to both a fuel control system as well as a tank monitoring system for continuous reconciliation
- Each channel provides an isolated, open collector output
- Each channel can handle up to 30 volts DC and 100 milliamps DC
- Pulses for each channel (by hose) are in sync with each other
- The ground for each channel is provided by the fuel control/monitoring system

NOTE: Pull-up resistors are recommended on the pulse output lines because they are open collector circuits. Pull-up resistors are not provided with the dispenser and should be sized according to the voltage and load required by the control/monitor device.

The dispenser programming terminology uses “side” for identification instead of “hose” due to multi-hose dispenser product lines. With the single and twin Select models, a “side” is equivalent to a hose. Therefore, singles only have a Side A (even though in island-oriented nozzle models the displays are physically on both sides of the dispenser) and twins have a Side A and a Side B. Reference Appendix D, Software Configuration, for a more detailed explanation.
The terminology used in the pulse output interface wiring diagram is defined below:

Side A	
PUL A1X+	Pulse output to primary fuel control system for Side A
PUL A1X-	Ground from primary fuel control system for Side A
PUL A1Y+	Pulse output to secondary fuel control system for Side A
PUL A1Y-	Ground from secondary fuel control system for Side A
Side B (Twin Units Only)	
PUL B1X+	Pulse output to primary fuel control system for Side B
PUL B1X-	Ground from primary fuel control system for Side B
PUL B1Y+	Pulse output to secondary fuel control system for Side B
PUL B1Y-	Ground from secondary fuel control system for Side B

3.3.4.2 Authorization Input (AUTH A1 & AUTH B1)

The authorization input signal allows a fuel control system to control the dispenser operation. When the software configuration is set for this mode of operation, power must be supplied to this line in order for the dispenser to be able to reset and turn on when the dispenser nozzle hook is lifted to "on." When power is removed from this input, the dispenser transaction will terminate even if the nozzle hook is still in the on position. Some Fuel Management Systems use solid state relays which can supply a low level voltage while in the "Off" position. In some cases, the voltage can be high enough to cause false tripping of the Auth Input. Always verify that any voltage present on this line during the "Off" position is not sufficient to turn on the Auth relay or to cause it to chatter. If such a condition does exist, contact the supplier of the Fuel Management System because an additional load may need to be placed across the Auth Input to reduce the voltage.

WARNING

Some fuel control systems, that utilize solid state relays, may require the use of a load (like a "bleed" resistor) to keep the output voltage of the system relay to a voltage level that will not be sensed by the dispenser. If not used, this can result in "chatter" on the dispenser relays. Consult the manufacturer of the fuel control system for information on how to load the system relay outputs.

Basic features of the authorization input include:

- Two (2) separate inputs; one (1) for each side (hose)
- Voltage 120VAC; typical current requirement is five (5) milliamps
- Neutral line is provided for reference, but the dispenser and control system should be powered from the same breaker panel so they use a common neutral reference

3.3.4.3 Reset Output (RESET A1 & RESET B1)

The reset output signal communicates the dispenser operating status to a fuel control system. After the dispenser is authorized and the nozzle hook is lifted to the on position, the register resets and power is supplied on the reset output line to indicate the dispenser is reset and ready to dispense product. Voltage will remain on this line until the nozzle hook is returned to the off position or the voltage is removed from the authorization input. Some Fuel Management Systems cannot sense voltage and sense current for the reset output (e.g. OPW PetroVend K800, PetroVend System2). Check the installation requirements of the fuel management system to determine if they require, and supply, additional components such as a voltage to current sense converter.

Basic features of the reset output include:

- Two (2) separate outputs; one (1) for each side (hose)
- Typical voltage output of 120VAC; maximum current rating of one (1) amp
- Neutral line is provided for reference, but the dispenser and control system should be powered from the same breaker panel so they already have a common neutral reference

3.3.5 Circuit Breakers & Emergency Electrical Disconnect

- A primary requirement in dispenser installation wiring is to provide a means for disconnecting all power connections, including the neutral and data wires, to the dispensers for a safe shutdown and servicing of the units. The power to the electronic register (control power) should be on a separate dedicated breaker for each dispenser. No other equipment should be on this breaker. For sites with multiple dispensers, if it is not practical to use separate breakers for each dispenser, the number of dispensers that can be included on one breaker is determined by analyzing the power requirements of each dispenser to determine the total load required for the group of dispensers. The breaker and wire must be sized accordingly for that load and the length of the wire run. In multiple dispenser installations, all dispensers operating the same submersible starter

relay must be on the same phase of power or must control the common starter relay through an isolation box.

- The lights may share the same breaker as the electronic register only if you wish the lights to be on all the time. If the control power and lights are on the same breaker, the maximum power requirements including the light power must be considered.
- If the dispenser is equipped with an optional heater (550W), a separate breaker is recommended for each dispenser with no more than two (2) dispensers per breaker.
- The motor feed must come from a separate breaker. Install the correct breaker size based upon the model and/or voltage setting. If two (2) pumps are handled from one (1) breaker, size the breaker to handle the total load of the two (2) motors.

Motor	120VAC 60Hz	240VAC 60Hz	240VAC 50Hz
1HP	12.4 Amps	6.2 Amps	7.3 Amps

NOTE: Twin suction and SHC suction models have two (2) motors except for the 3/G7202P/2JK and 3/G7207P/2JK Twin I models that have one (1) motor.

- A separate circuit breaker must be provided for each submersible pump.
- Both legs of any AC circuit must be broken.
- If a fuel control system and/or tank monitoring system are used with the dispenser, all should be powered from the same breaker panel so they can share a common neutral.

WARNING

In addition to the circuit breaker requirements, in accordance with local, state, and federal regulations, the fueling site should include a clearly identified emergency electrical disconnect switch that simultaneously removes power to all of the electrical equipment installed in the hazardous classified areas of the fuel site, including, but not limited to, the fuel dispensers, submersible pumps, and fuel control systems. The switch should be located within a convenient distance of the fueling equipment and all employees and fuel site users should be trained on the location and function of the emergency switch.

3.3.6 Pump Motor Voltage Setting (Suction Pumps)

- The standard Wayne Select Series motor may be set for 120VAC or 240VAC operation at 50/60 Hz. Make sure the motor setting matches the desired voltage to which the motor is wired. An improper voltage setting will cause damage to the motor.
- To check the motor operating voltage, locate the voltage plate and switch on the pulley side of the motor. The inscription next to the screw head indicates the current voltage setting of the motor: “LOW VOLTS” (120VAC) or “HIGH VOLTS” (240VAC).
- To change the operating voltage, loosen the screw. Place a flat-bladed screwdriver into the slot in the plate next to the voltage switch. Twist the screwdriver to turn the switch, so that the inscription of the desired voltage in the voltage plate is in line with the screw. Once the switch is in the desired position, re-tighten the screw.

3.3.7 Grounding

- All dispensers and electrical connection boxes must be grounded per NFPA 70.
- Connect a ground wire between the AC junction box ground lug and the main electrical service panel.
- Make sure a ground rod is properly installed and wired to the ground bus strip of the main electrical service panel in accordance with the National Electrical Code. Unless prohibited by local regulations, it is recommended that the neutral and ground bus strips be tied together.

3.3.8 Wiring

- All wiring should be UL-Listed, rated for a minimum 90^0C (194^0F), 600V, and gasoline and oil-resistant.
- All AC wire terminations must be made in the AC junction box or the optional Pulse Output Interface junction box as applicable. Take care when handling the junction box cover(s). Keep the mating flange clean and free of burrs and scratches. Make sure all wire connections are tightly spliced and secured with a wire nut. Use electrical tape to close the open end of the wire nut. After completing the wiring terminations, securely fasten the junction box cover using all of the supplied bolts. Make sure that any unused conduit entry openings are properly plugged.

3.3.8.1 Wire Size

- For suction pump models, the following table is provided as a guide for selecting the proper wire size for the motor feed and return lines based on the motor voltage. The feet/meters rows are the distance from the dispenser to the circuit breaker panel. If multiple pumps are powered from the same breaker and wires, the gauge of the wires must be increased taking into account the additional load and distance.

Recommended Wire Size (AWG) - One 1 HP Motor							
Feet	1'-25'	26'-50'	51'-100'	101'-150'	151'-200'	201'-250'	251'-300'
Meters	1m-8m	9m-15m	16m-31m	32m-46m	47m-61m	62m-76m	77m-91m
120 VAC	14	12	10	8	6	6	4
240 VAC	14	12	12	10	10	10	8

- For the Control Wiring, the size of the wire used should be determined by the power requirements of the dispenser and the length of run from the breaker panel.

Recommended Wire Size (AWG)								
Current	1'-25'	26'-50'	51'-75'	76'-100'	101'-150'	151'-200'	201'-250'	251'-300'
2.5 A	14	14	14	14	14	14	14	14
5.0 A	14	14	14	14	14	14	14	12
7.5 A	14	14	14	14	14	12	12	10
10.0 A	14	14	14	14	12	12	10	10

- For the submersible control line going to submersible starter relays, 14 AWG wire is recommended for most applications. The wire gauge for the submersible pump should be determined by the size of the motor and the length of the run according to the manufacturer's installation instructions.
- Wiring for the satellite handle control lines must be 18 AWG. Wire for Solenoid control is recommended to be 14 AWG.
- When the light is wired from a separate circuit breaker, the AC wire size for the light power hot and neutral lines should be 14 AWG for distances up to 300 feet (91m) or 12 AWG for distances over 300 feet (91m).
- The wire size for the pulse output must be 18 AWG. The authorization and reset lines must be no smaller than 18 AWG. Reference the installation instructions of the fuel control system manufacturer regarding running DC wires with AC wires and the necessary wire specifications (shielding, etc.).
- Wiring between the Master and Satellite dispensers must be limited to 50 feet in length.

3.3.9 Conduit

- Use UL Listed threaded, rigid, metal conduit and properly sealed connectors. Threaded connections must be drawn up tight and have a minimum of five threads engaged.
- Do not use flexible conduit or knockout boxes.
- When connecting to a fuel control system, consult the manufacturer's instructions for conduit requirements for AC and DC lines.
- The following charts are provided as a guide to help determine the proper conduit sizes.

Step 1 Determine the square area for each wire by looking up the desired wire gauge below and writing down the corresponding square area from the Square Area column. Calculate the total area by adding the square area for each of the wires.

THHN/THWN Wire Areas				
Wire Gauge	Diameter		Square Area	
	In	mm	In^2	mm^2
18	.090	2.29	.007	4.1
14	.118	2.95	.011	6.8
12	.135	3.43	.014	9.2
10	.169	4.29	.022	14.5
8	.216	5.49	.037	23.7
6	.259	6.60	.053	34.2
4	.331	8.41	.086	55.5
3	.359	9.14	.102	65.6
2	.394	10.01	.122	78.7

Step 2 In the 25% Fill Area column below, find the square area that is closest to, without exceeding, the calculated total area. The value listed on the same row in the Trade Size Conduit column is the diameter of the required conduit.

Trade Size Conduit Square Area						
Trade Size Conduit	Internal Diameter		Square Area		25% Fill Area	
	in	mm	in^2	mm^2	in^2	mm^2
$^1/_2$"	.629	16	.311	201	.078	50
$^3/_4$"	.826	21	.536	346	.134	86
1"	1.063	27	.887	572	.222	143
$1\ ^1/_4$"	1.378	35	1.491	962	.373	240
$1\ ^1/_2$"	1.614	41	2.046	1320	.512	330
2"	2.087	53	3.421	2207	.855	552

NOTE: The calculated conduit size may need to be increased to allow for long runs or a large number of bends.

3.4 Hose and Accessories Installation

3.4.1 General

- Hose assemblies should be U.L. Listed and installed in accordance with the manufacturer's instructions.
- Install the hose assembly after the dispenser is installed.
  - To ensure a proper joint, wash all cutting oil off the threads and use a U.L. Listed gasoline-resistant pipe joint sealing compound.
  - Place the compound on male threads only; be careful not to get any excess compound on the inside of the fittings.
  - Install the fixed end of the hose to the dispenser outlet; secure according to the instructions of the sealing compound and hose manufacturer.
  - Install the nozzle, and other hose accessories – swivels, breakaways, etc. – on the hose according to the manufacturer's instructions.
- NFPA code requires a Listed emergency breakaway device, designed to retain liquid on both sides of the breakaway point, to be installed on each hose. These devices must be installed and maintained per the manufacturer's instructions. Refer to your state and local codes for breakaway device requirements that apply to your installation.

NOTE: Models with "E" prefix, for dispensing up to and including E85, must use only the following hose and accessories. All connections for these devices must use UL Classified Saf-T-Lok Teflon pipe sealant:

OPW hose nozzle valves models: 21GE, 21GEA
OPW breakaway model: OPW 66V-0492
OPW swivel connector model: 241TPS-0492
Veyance Technologies hose assembly model: Flexsteel Futura Ethan-All

WARNING

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

3.4.2 Vapor Recovery Nozzles

- The Select nozzle boot is approved for the Emco Wheaton A4015 short spout balance vapor recovery nozzle and the Husky V short spout balance vapor recovery nozzle.
- Dispensers equipped with the HealyVac system (D3 or D4 suffix), are approved for use with Healy nozzles 600G, 800 & 900.

4 Start-Up

4.1 Initial Checkout

Verify the following items have been completed correctly and the installation meets the necessary local, state, and federal regulations as specified in Section 2.1.

- The dispenser is securely anchored to the fueling island.
- All conduit is rigid metal and is securely fastened. Do not seal the conduit until the wiring has been verified through proper operation.
- All wires are correctly routed and terminated, and the dispenser is properly grounded. Refer to the safety precautions in Section 2.2.
- All junction box covers are securely fastened with all of the supplied bolts and unused openings are properly plugged.
- The dispenser is equipped with the proper options and accessories to meet the application and satisfy local, state, and federal regulations. Refer to Section 6.2 regarding filter requirements.
- The hose and hose accessories are securely connected to the dispenser and have been checked for continuity.
- All water has been removed from the tank and the tank has a sufficient amount of fuel for testing.

NOTE: Do not use the 3/G7200 Series to remove water from the tank. It will harm the dispenser components.

To prevent damage to the components located in the hydraulic cabinet, dispenser doors should be closed during rainy and/or icy weather conditions.

4.2 Configuring the Dispenser Software

4.2.1 General

- The Select Series utilizes a very sophisticated electronics platform that offers a variety of controls, error monitoring, and diagnostics. The dispenser software configuration defines how the dispenser operates, what features are available, display formats, etc.
- The configuration settings are pre-loaded at the factory based upon the model and options. All that should be necessary is to verify the time and date settings, and if the pulse output interface option is installed, verify that the pulse ratio is set to the desired resolution.
- Appendix D contains a complete list of the dispenser functions and sub-functions and the default settings for each dispenser model should any other changes be required.

4.2.2 Making Configuration Changes

- The dispenser configuration and diagnostics can be accessed without opening the dispenser. The interface is handled through an infrared remote control (IRC). One IRC is shipped with each order of dispenser(s). See Figure 4-1. To use the IRC, point it at the dispenser's liquid crystal displays from within a distance of one foot and press the desired keys.
- Responses to the IRC commands are shown on the dispenser displays. For units without price displays, configuration function and sub-function numbers are shown in the Status display and their corresponding values are shown in the Gallons/Liters display. Reference Figure 4-2. For units with price displays, the information used during the configuration is typically displayed using all three displays.
- The configuration is password protected. To access the configuration and verify the time and date settings, follow the step by step instructions on the next page.

NOTE: The nozzle hook on/off lever must be in the "off" position to access the configuration.

Figure 4-1 Infrared Remote Control (IRC)

4.2.3 Configuration Start-Up (Units without Price Displays)

- The following steps will lead you through loading the most common features that need to be set according to the site configuration for units without price displays.

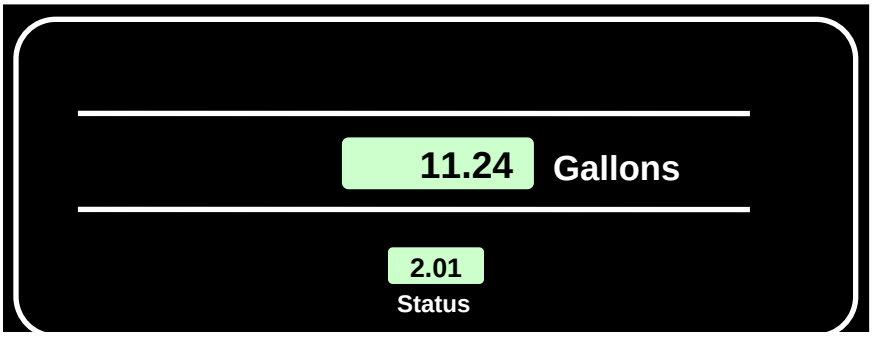


Figure 4-2 In this example, the Status display shows subfunction 2.01 (date) with its value of 11.24 (November 24) shown in the Gallons display.

4.2.3.1 Sign on to the Dispenser

Enter Configuration Mode			
Step	**IRC Command**	**Volume Display**	**Status Display**
1 Service engineer sign on	Press <ENTER>	PASS 1	[blank]
2 Enter default service engineer password	Type <111> & Press <ENTER>	PASS 2	[blank]
3 Re-enter default service engineer password	Type <111> & Press <ENTER>	[alternating software version & date]	F - -

4.2.3.2 Set the Date and Time

Change Time & Date			
4 Go to time & date function	Type<2> & Press <ENTER>	- - - - - -	F 02
5 Go to time sub-function	Press <ENTER> again	[time in HH.MM format] (if time is correct skip to step 8)	2.00
6 Clear display	Press <#>	[blank]	2.00
7 Enter current time	Type the current time in the 24-hour format of HHMM & Press <ENTER>	[entered time in HH.MM format]	2.00
8 Go to month/day sub-function	Press <NEXT>	[date in MM.DD format] (if date is correct skip to step 11)	2.01
9 Clear display	Press <#>	[blank]	2.01
10 Enter current month/day	Type the current date in the format of MMDD & Press <ENTER>	[entered date in MM.DD format]	2.01
11 Go to year sub-function	Press <NEXT>	[Year in YYYY format] (if the year is correct skip to step14)	2.02
12 Clear display	Press <#>	[blank]	2.02

13 Enter current year	Type the current year in the format of YYYY & Press <ENTER>	[entered year in YYYY format]	2.02
14 Return to function level	Press <ENTER> again	- - - - - -	F 02

4.2.3.3 Exit and Save the Configuration

Exiting and Saving the Configuration			
15 Go to exit function	Type <0> and then Press <ENTER>	- - - - - -	F 00
16 Go to exit sub-function	Press <ENTER> again	1	0.00
17 Clear display	Press"#"	[blank]	0.00
18 Enter exit choice	Type the value of the exit choice below and then press <ENTER> (example shown is 3, exit and save) 1 = Do not exit; do not save changes 2 = Exit, but do not save changes 3 = Exit and save changes	3	0.00
19 Exit configuration	Press <ENTER> again	[alternating "CHAnGE StorEd"]	0.00

4.2.4 Configuration Start-Up (Units with Price Displays)

- The following steps will lead you through loading the most common features that need to be set according to the site configuration for units with price displays.

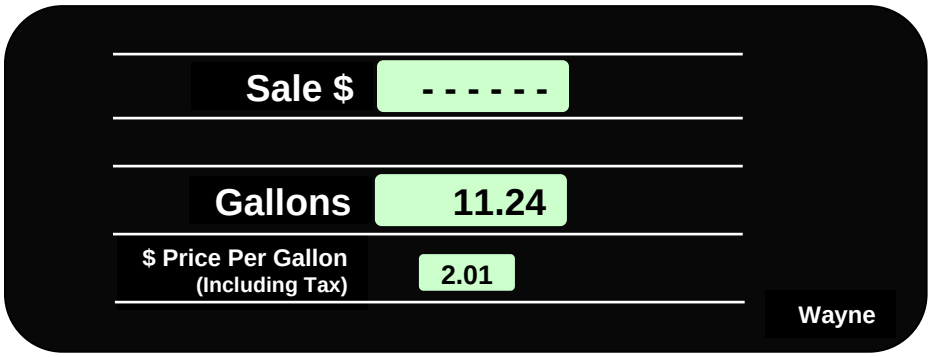


Figure 4-3 In this example, the unit price display shows subfunction 2.01 (date) with its value of 11.24 (November 24) shown in the Gallons display.

4.2.4.1 Sign on to the Dispenser

Enter Configuration Mode				
Step	**IRC Command**	**Sale $ Display**	**Volume Display**	**Unit Price Display**
1 Service engineer sign on	Press <ENTER>	PASS 1	[blank]	[blank]
2 Enter default service engineer password	Type <111> & Press <ENTER>	PASS 2	[blank]	[blank]
3 Re-enter default service engineer password	Type <111> & Press <ENTER>	Software Version	Software Date	F - -

4.2.4.2 Set the Date and Time

Change Time & Date				
Step	**IRC Command**	**Sale $ Display**	**Volume Display**	**Unit Price Display**
4 Go to time & date function	Type<2> & Press <ENTER>	- - - - - -	[blank]	F 02
5 Go to time sub-function	Press <ENTER> again	- - - - - -	[time in HH.MM format] (if time is correct skip to step 8)	2.00
6 Clear display	Press <#>	[blank]	[time in HH.MM format]	2.00
7 Enter current time	Type the current time in the 24-hour format of HHMM & Press <ENTER>	- - - - - -	[entered time in HH.MM format]	2.00
8 Go to month/day sub-function	Press <NEXT>	- - - - - -	[date in MM.DD format] (if date is correct skip to step 11)	2.01
9 Clear display	Press <#>	[blank]	date in MM.DD format	2.01
10 Enter current month/day	Type the current date in the format of MMDD & Press <ENTER>	- - - - - -	[entered date in MM.DD format]	2.01
11 Go to year sub-function	Press <NEXT>	- - - - - -	[Year in YYYY format] (if the year is correct skip to step14)	2.02
12 Clear display	Press <#>	[blank]	Year in YYYY format	2.02
13 Enter current year	Type the current year in the format of YYYY & Press <ENTER>	- - - - - -	[entered year in YYYY format]	2.02
14 Return to function level	Press <ENTER> again	- - - - - -	[blank]	F 02

4.2.4.3 Set the Correct Filling Mode of Operation

Dispensers are shipped configured for standalone/pulse output operation. If this is the mode you plan to use for this dispenser, skip to step 20.

Set Filling Mode of Operation (Standalone or Serial Interface)				
Step	**IRC Command**	**Sale $ Display**	**Volume Display**	**Unit Price Display**
15 Go to Set Filling Mode of Operation	Type<1> & Press <ENTER>	- - - - - -	[blank]	F 01
16 Go to Filling Mode sub-function	Press <ENTER> again	- - - - - -	[Filling Mode in X format, 1=Serial Mode, 2=Standalone mode]	1.00
17 Clear display	Press <#>	[blank]	[Filling Mode in X format, 1=Serial Mode, 2=Standalone mode]	1.00
18 Enter desired Filling Mode	Enter the desired Filling Mode, 1=Serial Mode 2=Standalone/ Pulse Output Mode & Press <ENTER>	- - - - - -	[Filling Mode in X format, 1=Serial Mode, 2=Standalone mode]	1.00
19 Return to function level	Press <ENTER> again	- - - - - -	[blank]	F 01

4.2.4.4 Set the Fueling Point Address

Each hose must be set for a unique ID when used in the Serial Filling Mode of operation. Set the Fueling Point Address to the Hose Number that will be used to identify the hose. If this unit is set up for Standalone/Pulse Output Filling Mode, skip to Step 30.

Set Fueling Point Address Side A (Serial Filling Mode Only) – Skip to Step 30 for Standalone Operation				
Step	**IRC Command**	**Sale $ Display**	**Volume Display**	**Unit Price Display**
20 Go to Set Fueling Point Address-Side A	Type<5> & Press <ENTER>	- - - - - -	[blank]	F 05
21 Go to Set Fueling Point Address sub-function-Side A	Press <ENTER> again	- - - - - -	[Fuel Point address for Side A in X format]	5.00
22 Clear display	Press <#>	[blank]	[Fuel Point address for Side A in X format]	5.00
23 Enter desired Fueling Point Address (Hose number) for Side A	Type the desired Fueling Point Address for Side A & Press <ENTER>	- - - - - -	[New Fuel Point address for Side A in X format]	5.00
24 Return to function level	Press <ENTER> again	- - - - - -	[blank]	F 05
Set Fueling Point Address Side B (Serial Filling Mode Only) – Skip to Step 30 for Singles				
25 Go to Set Fueling Point Address-Side B	Type<6> & Press <ENTER>	- - - - - -	[blank]	F 06
26 Go to Set Fueling Point Address sub-function-Side B	Press <ENTER> again	- - - - - -	[Fuel Point address for Side A in X format]	6.00
27 Clear display	Press <#>	[blank]	[Fuel Point address for Side A in X format]	6.00
28 Enter desired Fueling Point Address (Hose number) for Side B	Type the desired Fueling Point Address for Side A & Press <ENTER>	- - - - - -	[New Fuel Point address for Side A in X format]	6.00
29 Return to function level	Press <ENTER> again	- - - - - -	[blank]	F 06

4.2.4.5 Load Prices

Dispensers with only one price display per hose will display and use the “Credit” price in Standalone mode. If the dispenser is controlled by a POS, Cash/Credit pricing may be used. The procedure below shows loading of both the Cash and Credit prices.

Load Price – Side A				
Step	**IRC Command**	**Sale $ Display**	**Volume Display**	**Unit Price Display**
30 Go to set price function-Side A	Type<3> & Press <ENTER>	- - - - - -	[blank]	F 03
31 Go to Credit Price (Side A)	Press <ENTER> again	- - - - - -	[Current A credit price X.XXX)	3.01
32 Clear Price	Press <#>	[blank]	[Current A credit price X.XXX)	3.01
33 Enter new Credit Price	Type new price in the format of XXXX & Press <ENTER>	- - - - - -	[New A credit price X.XXX)	3.01
34 Go to Cash Price (Side A)	Press <NEXT>	- - - - - -	[Current A cash price X.XXX)	3.11
35 Clear Price	Press <#>	[blank]	[Current A cash price X.XXX)	3.11
36 Enter new Cash Price	Type new price in the format of XXXX & Press <ENTER>	- - - - - -	[New A cash price X.XXX)	3.11
37 Return for Function level	Press <ENTER>	- - - - - -	[blank]	F 03
Load Price – Side B – Skip to Step 40 for Singles				
38 Go to set price function-Side B	Type<4> & Press <ENTER>	- - - - - -	[blank]	F 04
39 Go to Credit Price (Side B)	Press <ENTER> again	- - - - - -	[Current A credit price X.XXX)	4.01
40 Clear Price	Press <#>	[blank]	[Current A credit price X.XXX)	4.01
41 Enter new Credit Price	Type new price in the format of XXXX & Press <ENTER>	- - - - - -	[New A credit price X.XXX)	4.01
42 Go to Cash Price (Side B)	Press <NEXT>	- - - - - -	[Current A cash price X.XXX)	4.11
43 Clear Price	Press <#>	[blank]	[Current A cash price X.XXX)	4.11
44 Enter new Cash Price	Type new price in the format of XXXX & Press <ENTER>	- - - - - -	[New A cash price X.XXX)	4.11
45 Return to function level	Press <ENTER> again	- - - - - -	[blank]	F 04

4.2.4.6 Exit and Save the Configuration

Exiting and Saving the Configuration				
46 Go to exit function	Type <0> and then Press <ENTER>	- - - - - -	[blank]	F 00
47 Go to exit sub-function	Press <ENTER> again	- - - - - -	1	0.00
48 Clear display	Press”#”	[blank]	1	0.00
49 Enter exit choice	Type the value of the exit choice below and then press <ENTER> (example shown is 3, exit and save) 1 = Do not exit & do not save changes 2 = Exit & do not save changes 3 = Exit & save changes	- - - - - -	3	0.00
50 Exit configuration	Press <ENTER> again	CHAnGE	StorEd	[Current Price]

4.2.5 Set the Pulse Output Resolution (Pulse output interface option only)

- Always be sure to verify the unit is properly cabled for pulse output operation. Certain models must be cabled either for standalone OR pulse output mode. If the unit is to be used in pulse output mode, the cable connection(s) from the Pulse Output board (J3A or J3B) to the Sales Display J5 must be in place. See Appendix F for additional information and Appendix K for Pulse Output cabling information.
- The pulse ratio is configurable in the dispenser configuration. The factory default setting is 100 pulses per gallon (100:1). Other available pulse ratios are shown in Section 4.2.5.1.
- Reference Section 4.2.5.1 to make sure that the desired pulse ratio is available for your model. Verify that the desired pulse ratio, and its corresponding pulse width for your model (see Section 4.2.5.2), are compatible with the fuel control or monitoring system. Section 4.2.5.3 explains how to change the pulse ratio in the dispenser configuration.

4.2.5.1 Pulse Ratios

Pulse Ratio	1:1	10:1	100:1	250:1	500:1	1000:1
Gallons						
Enhanced Capacity Models*	X	X	X	X	X	X
Super High Capacity Models*	X	X	X	X	X	N/A
Ultra High Capacity Models*	X	X	X	X	N/A	N/A
Liters						
Enhanced Capacity Models*	X	X	X	X	N/A	N/A
Super High Capacity Models*	X	X	X	N/A	N/A	N/A
Ultra High Capacity Models*	X	X	N/A	N/A	N/A	N/A

4.2.5.2 Pulse Width (seconds)

Pulse Ratio	1:1	10:1	100:1	250:1	500:1	1000:1
Gallons						
Enhanced Capacity Models*	0.100	0.100	0.010	0.001	0.001	0.001
Super High Capacity Models*	0.100	0.050	0.005	0.001	0.001	N/A
Ultra High Capacity Models*	0.100	0.050	0.005	0.001	N/A	N/A
Liters						
Enhanced Capacity Models*	0.100	0.010	0.001	0.001	N/A	N/A
Super High Capacity Models*	0.100	0.010	0.001	N/A	N/A	N/A
Ultra High Capacity Models*	0.100	N/A	N/A	N/A	N/A	N/A

- The pulse width time represents the “on” time for the pulse output. The total pulse cycle time (on and off time) will typically be at least twice the “on” time shown.

***NOTE: Enhanced capacity models can be identified by a “0” or “4” in the second position after the “7” in the model number (e.g. 3/G720<u>1</u>D). Super high capacity modes have a “2” in this position (e.g. 3/G722<u>1</u>D). Ultra High Capacity models have a “3” in this position (e.g. 3/G723<u>7</u>D).**

4.2.5.3 Changing the Pulse Ratio

NOTES: The following table shows the setting for units without price displays. Units with price displays will look slightly different as they typically utilize all three displays.

The Pulse Output mode cannot be used in conjunction with the serial communication interface.

- Follow the step by step instructions below to change the pulse ratio from 100:1 to a different ratio.
- When the pulse output ratio is changed, the display resolution is automatically adjusted to match the pulse output resolution so that a higher resolution is not implied at the dispenser than what is being recorded by the fuel management system. For example, when the pulse output ratio is set to 1000:1, the volume display shows three decimal places. When the pulse output ratio is 100:1, the volume display shows two decimal places.

Enter Configuration Mode			
Step	**IRC Command**	**Volume Display**	**Status Display**
1 Service engineer sign on	Press <ENTER>	PASS 1	[blank]
2 Enter default service engineer password	Type <111> & Press <ENTER>	PASS 2	[blank]
3 Re-enter default service engineer password	Type <111> & Press <ENTER>	[alternating software version & date]	F - -

Change the Pulse Ratio – Gallons (Skip to Step 10 if Liters)			
4 Go to volume function	Type <19> & Press <ENTER>	- - - - - -	F 19
5 Go to sub-function level	Press <ENTER> again	3	19.10
6 Go to gallons pulse ratio sub-function	Type <25> & Press <ENTER>	3	19.25
7 Clear display	Press <#>	[blank]	19.25
8 Enter –pulse ratio choice	Type the value of the pulse ratio choice below and then press <ENTER> 1 = 1 pulse per gallon 2 = 10 pulses per gallon 3 = 100 pulses per gallon 4 = 250 pulses per gallon 5 = 500 pulses per gallon 6 = 1000 pulses per gallon	[desired value]	19.25
9 Return to function level	Press <ENTER> again	- - - - - -	F 19

- Additional Steps Are Continued on Next Page -

Change the Pulse Ratio – Liters (Skip to Step 16 if Gallons)			
10 Go to volume function	Type <19> & Press <ENTER>	- - - - - -	F 19
11 Go to sub-function level	Press <ENTER> again	3	19.10
12 Go to liters pulse ratio sub-function	Type <15> & Press <ENTER>	3	19.15
13 Clear display	Press <#>	[blank]	19.15
14 Enter pulse ratio choice	Type the value of the pulse ratio choice below and then press <ENTER> 1 = 1 pulse per liter 2 = 10 pulses per liter 3 = 100 pulses per liter 4 = 250 pulses per liter	[desired value]	19.25

Exiting and Saving the Configuration			
Step	**IRC Command**	**Volume Display**	**Status Display**
15 Return to function level	Press <ENTER> again	- - - - - -	F 19
16 Go to exit function	Type <0> and then Press <ENTER>	- - - - - -	F 00
17 Go to exit sub-function	Press <ENTER> again	1	0.00
18 Clear display	Press"#"	[blank]	0.00
19 Enter exit choice	Type the value of the exit choice below and then press <ENTER> (example shown is 3, exit and save) 1 = Do not exit and do not save changes 2 = Exit, but do not save changes 3 = Exit and save changes	3	0.00
20 Exit configuration	Press <ENTER> again	[alternating "CHAnGE StorEd"]	0.00

4.3 Operating Units w/ POB Option Before Control System is Operational

- If the unit is equipped with the pulse output board (POB) interface option, it is configured and wired to require AC authorization from the fuel control system to turn on. If you need to run the dispenser prior to the fuel control system being operational, you need to apply AC Hot power to the AC authorization lines. Reference the Pulse Output Interface wiring diagram in Appendix C. If wiring the AC authorization line hot is not possible, reference the instructions in Appendix E, Local Authorize / Standalone Operation. All wiring, even if temporary, must be all regulatory codes.

4.4 Priming Suction Pumps

- Suction pumps must be primed before their initial operation. It is not advisable to run any type of internal gear pump dry during the priming process.
- The pumping unit can be primed from the top of the iMeter or from the top of the pumping unit top cover as applicable. Reference the figure below which is applicable to your model, and remove the corresponding cover and check valve, check valve assembly, or tube, and fill up the pumping unit with product before starting the pump for the first time.

Figure 4-3 Priming Single, Twin I, and Twin II/8 (two ½ populated iMeters) Models

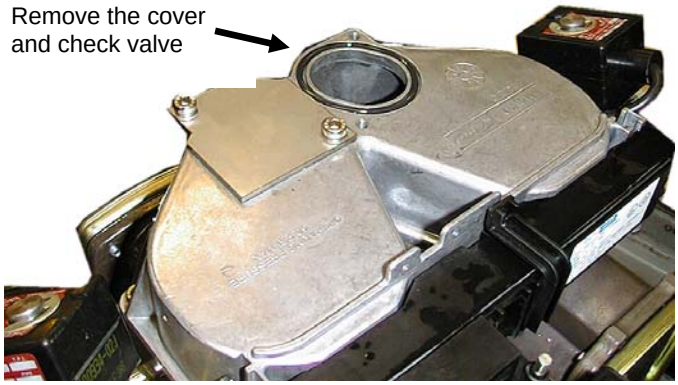
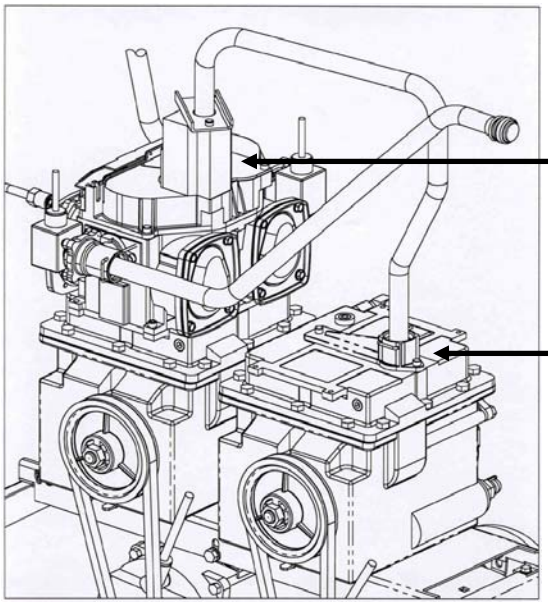


Figure 4-4 Priming Twin II Models (without the /8 suffix)



Remove the inlet check valve assembly and cage assembly plug on the one side of the duplex meter and the cover and check valve on the other side

Remove the tube by simply pulling the wire retaining clip out of the tube connector. The tube will then pull out of the connector. Be careful to not damage the o-ring.

4.5 Bleeding Product Lines (Remote Dispensers)

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

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

Step 2 To bleed air from the trunk line, remove the pipe plug from the safety impact valve on the dispenser that is farthest from the storage tank. For the pipe plug location, reference Figure 2-1 in Section 2.6.

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

Step 4 Repeat the procedure for each product and each trunk line.

NOTE: Bleeding air out of the lines is especially critical on UHC dispensers. Trapped air can compress and will cause problems with pulser errors during dispensing. All air must be bled out of the main lines, the lines to the satellites (if using satellites), and on both sides of the dispenser (if the unit is a twin.)

4.6 Initial Delivery

After verifying the items in Section 4.1 through Section 4.5 have been completed, operation of the dispenser can be checked.

Step 1 Turn on the circuit breaker(s) for the dispenser and, if applicable, the submersible pump.

Step 2 If the dispenser is connected to a fuel control system, the dispenser must be authorized.

Step 3 Remove the nozzle from the nozzle holder, and lift the on/off nozzle hook upward to turn the dispenser on. Make sure the volume display resets to zero and the message in the status display is “On.”

Step 4 Dispense fuel into a test can. Check all piping and hose connections to make sure there are not any leaks.

Step 5 Turn the dispenser off by lowering the on/off nozzle hook to the down “off” position. Return the nozzle to the holder.

Step 6 Repeat Steps 1 – 5 for each dispenser and both sides of twin dispensers.

4.7 Meter Check (Calibration) – Enhanced Capacity & Super High Capacity

NOTE: Reference section 4.8 for UHC models

4.7.1 General

- Select dispensers (except for Ultra High Capacity models) use the intelligent iMeter (or Xflo meter for E85 dispensers) to measure the fuel dispensed. For the sake of calibration, the 2 meters act identically concerning calibration. Each meter module can contain up to two meters. One meter is used per hose, except in the super high capacity models where two meters are used per hose for increased flow (iMeters only). The maximum meter calibration range is ±3.85%.

Dispenser Type	iMeter Modules	Meters per Module
Enhanced Capacity		
Single	1	1
Twin	1	2
Twin /8	2	1
Super High Capacity		
Single	1	2
Single /8	2	1
Twin	2	2

- The meter is equipped with an intelligent pulser with two sets of sensors; one set for each meter. On the front of the pulser, there are two calibration doors; one for each meter in the meter module. The door closest to the front of the dispenser controls calibration of the front meter and the other door controls calibration of the rear meter (enhanced capacity singles do not have a rear meter).

- All meters are tested, calibrated, and sealed at the factory before a dispenser is shipped. As part of the start-up procedure, the accuracy should be verified, and if re-calibration is required, the calibration procedure should be followed. To thoroughly flush out all air and completely fill the system prior to verification and calibration, dispense product from the dispenser (and satellite if applicable) until a continuous and steady flow of product is observed at each nozzle.

- In applications involving the resale of fuel, for the initial use and after any adjustments to the calibration, the meter will need to be sealed by the appropriate Weights & Measures authority.

4.7.2 Accuracy Verification – Enhanced Capacity & Super High Capacity

Step 1 Dispense product into a certified 5 gallon or 20 liter calibration container to wet the container and then empty it back into the tank, allowing it to drain for 10 seconds.

Step 2 Dispense product into the container until exactly 5 gallons (20 liters) are shown on the dispenser display.

NOTE: When temperature compensation is activated (Canada), the dispenser should be placed into Temp Comp Fueling Mode (reference Appendix F), so that the accuracy can be verified using the gross (uncompensated) volume shown on the display in this mode.

Step 3 Compare the reading on the container's sight glass to the dispenser display. For the "Acceptance" test, the container volume should be within a total of +/- 1 cu. in. plus +/- 0.5 cu. in. for each gallon dispensed for a 5 or 10 gallon prover. For larger provers, the acceptance tolerance is ±0.3% (units rated up to 30 GPM).

NOTE: **For U.S. weights & measures applications, acceptance tolerance of +/- 1 cu. in. plus +/- 0.5 cu. in. for each gallon dispensed (into a 5 or 10 gallon prover) and 0.3% into a larger prover, is required for newly placed in service devices for 30 days. After 30 days, the maintenance tolerance is increased to +/- 1 cu. in. plus +/- 1 cu. in. for each gallon dispensed (into a 5 or 10 gallon prover) and 0.5% for larger provers. Consult Handbook 44 for full information.**

Step 4 If the values are out of range, follow the calibration procedure in Section 4.7.3.

Step 5 Repeat the verification procedure for each hose.

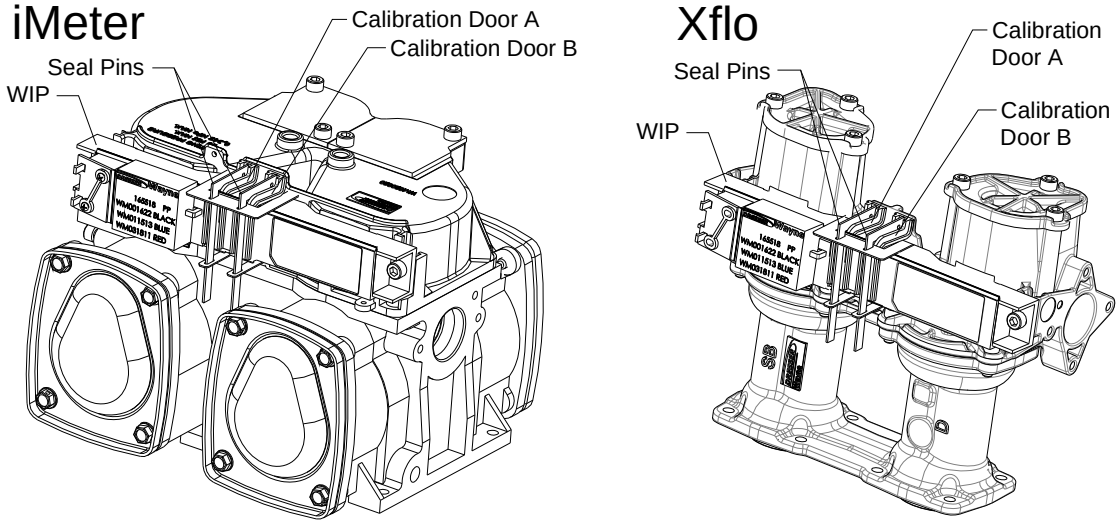
4.7.3 Calibration Procedure – Enhanced Capacity & Super High Capacity

Step 1 Dispense product into the certified calibration container to wet the container and then empty it back into the tank, allowing it to drain for 10 seconds.

Step 2 Identify the calibration door for the meter in need of calibration. Reference Figure 4-5 for the location of the calibration doors.

NOTE: An easy way to identify which meter corresponds to which hose is to start at the discharge outlet casting of the desired hose and trace the discharge line back to the meter. On super high capacity models, two meters feed one hose. At the discharge outlet casting, two discharge lines branch off from the casting. Trace each line back to its meter to determine the two meters tied to that hose. Each meter must be calibrated separately. When the calibration door of one meter is opened, it automatically closes the solenoid valve to the other meter so each meter can be calibrated independently.

Figure 4-5 Meter Modules



Step 3 Proceed directly to step 4 if the dispenser is not a master dispenser connected to a satellite dispenser.

In master dispensers connected to a satellite dispenser, there will be a satellite outlet beneath the hose outlet being calibrated. On the pair of lines manifolded into this outlet, there will be one ball valve per pair. See Figure 4-6. When calibrating both meters, you must remove the sealing guard from the valve and close the valve to prevent product from circulating between the meters.

Step 4 Remove the seal wire and pin to allow access to the calibration door.

Step 5 Open the calibration door of the meter to be calibrated. (Only one door can be opened at a time during the calibration process.)

Step 6 Fill the calibration container (5 gallons or 20 liters) to exactly the “0” mark on the sight glass (read the bottom of the meniscus). Disregard any volumes shown on the dispenser display.

NOTE: With Super High Capacity models that will get verified with a larger test container (i.e. 50 or 100 gallons), it is important to try and duplicate the same filling characteristics with the smaller calibration container that will be used when filling the larger test container (as much as possible at full flow and avoid many nozzle snaps to reach the “0” mark). Otherwise, the dispenser may be outside the acceptance tolerance when verifying with the larger test container.

Step 7 Close the calibration door (this now redefines the calibration factor in the pulser) and return the nozzle to the nozzle boot.

Step 8 Empty the container back into the tank and let it drain for 10 seconds.

Step 9 For non-super high capacity models, proceed directly to step 11.

Super high capacity models have two meters tied to one hose. Repeat steps 4 thru 8 for the second meter. (Note: super high capacity models can be identified by a “2” in the third digit following the “G” in the model number; e.g., 3/G7221D.)

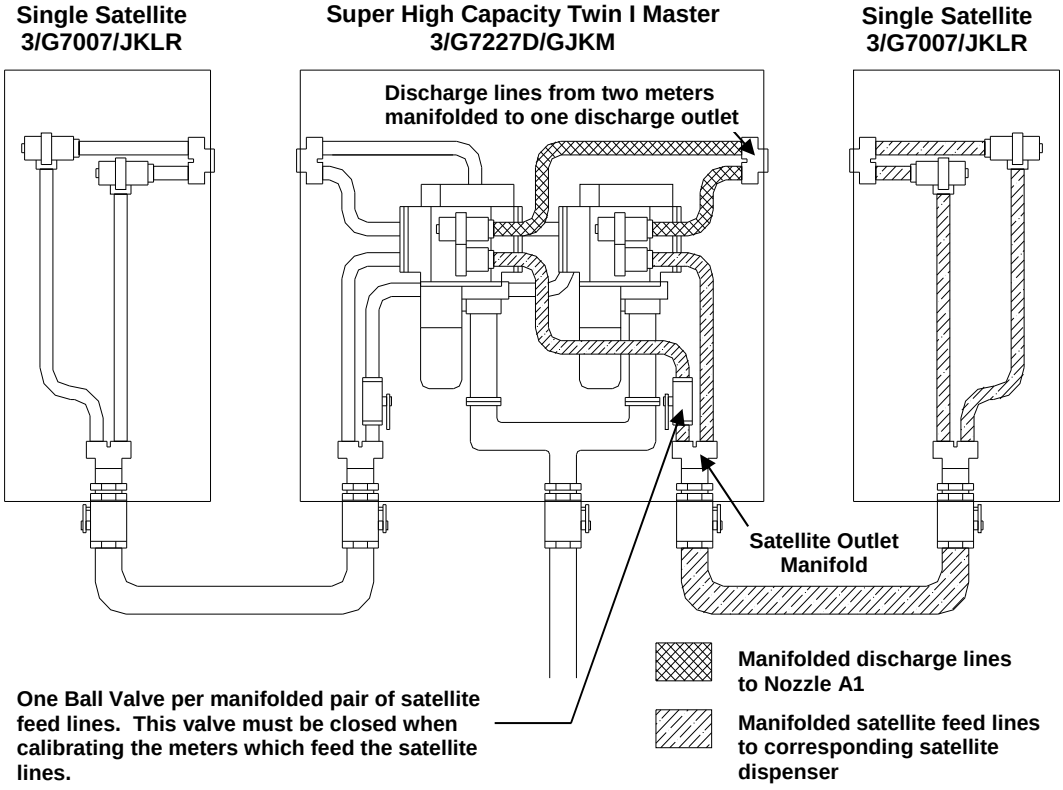
Step 10 For master dispensers connected to a satellite, after both meters have been calibrated, re-open the ball valve on the satellite line.

Step 11 Verify the accuracy by following the verification procedure in Section 4.7.2.

Step 12 Seal the calibration door (both doors if a super high capacity model) and seal the ball valve if applicable.

Step 13 Repeat the calibration procedure for each hose.

Figure 4-6 Super High Capacity Master with Satellites



4.8 Meter Check (Calibration) – Ultra High Capacity Models

4.8.1 General

- Ultra High Capacity models use the Liquid Controls (LC) M-5 meter with a Wayne optical pulser to measure the fuel dispensed. One meter is used per hose. The maximum meter calibration range is ±2.50%.
- The LC meter is used in conjunction with a Pulse Processing Module (PPM) that is located in the head of the dispenser. The PPM has a switch for each meter that is used to calibrate the meter. Switch "Side A – M1" is used to calibrate the meter on Side A while switch "Side B – M1" is used to calibrate the meter for Side B. If the dispenser has two hoses on the same side, Switch "Side A – M1" is used for Hose 1 and "Side B – M1" is used for Hose 2.
- All LC meters are tested, calibrated, and sealed at the factory before a dispenser is shipped. As part of the start-up procedure, the accuracy should be verified, and if re-calibration is required, the calibration procedure should be followed. To thoroughly flush out all air and completely fill the system prior to verification and calibration, dispense product from the dispenser (and satellite if applicable) until a continuous and steady flow of product is observed at each nozzle.
- Prior to calibrating the dispenser for the first time, make sure to follow the steps in Section 2.10, Bleeding Product Lines, to make sure all air and air pockets are bled from the product trunk lines. To thoroughly flush out all air and completely fill the system prior to verification and calibration, dispense product from the dispenser (and satellite if applicable) until a continuous and steady flow of product is observed at each nozzle.

  NOTE: If all air and air pockets are not removed from the dispenser and satellite product lines, you may receive pulser errors when the air decompresses and causes the pulser to move backwards.

- In applications involving the resale of fuel, for the initial use and after any adjustments to the calibration, the meter will need to be sealed by the appropriate Weights & Measures authority.

4.8.2 Accuracy Verification – Ultra High Capacity

NOTES: A calibration container that handles at least 50 gallons (or 190 liters) is recommended for verifying, and calibrating if necessary, this high capacity dispenser.

After replacing the Pulse Processing Module, the dispenser must be calibrated prior to running an accuracy verification test.

If position 1 (M1) on both switches is set to "On" at the same time during the calibration of the meter, a calibration "RECD" message may be displayed erroneously.

Step 1 Dispense product into a certified calibration container to wet the container and then empty it back into the tank, allowing it to drain for 10 seconds.

Step 2 Dispense product into the container until exactly the quantity of the container is shown on the dispenser display.

NOTE: When temperature compensation is activated (Canada), the dispenser should be placed into Temp Comp Fueling Mode (reference Appendix F), so that the accuracy can be verified using the gross (uncompensated) volume shown on the display in this mode.

Step 3 Compare the reading on the container's sight glass to the dispenser display. For the "Acceptance" test, the container volume should be within a total of +/- 1 cu. in. plus +/- 0.5 cu. in. for each gallon dispensed for a 5 or 10 gallon prover. For larger provers, the acceptance tolerance is ±0.2% (units rated over 30 GPM).

NOTE: For U.S. weights & measures applications, acceptance tolerance of +/- 1 cu. in. plus +/- 0.5 cu. in. for each gallon dispensed (into a 5 or 10 gallon prover) and 0.2% into a larger prover, is only required for newly placed in service devices for 30 days. After 30 days, the maintenance tolerance is increased to +/- 1 cu. in. plus +/- 1 cu. in. for each gallon dispensed (into a 5 or 10 gallon prover) and 0.3% for larger provers. Consult Handbook 44 for full information.

Step 4 If the values are out of range, follow the calibration procedure in Section 4.8.3.

Step 5 Repeat the verification procedure for each hose.

4.8.3 Calibration Procedure – Ultra High Capacity

Step 1 Verify that the dispenser calibration volume is set to match the test container that will be used to calibrate the dispenser. This can be checked (and if needed changed) using the F19.26 (Gallons) or F19.16 (Liters) function in the dispenser software configuration. The entry must be in whole Gallons or whole Liters.

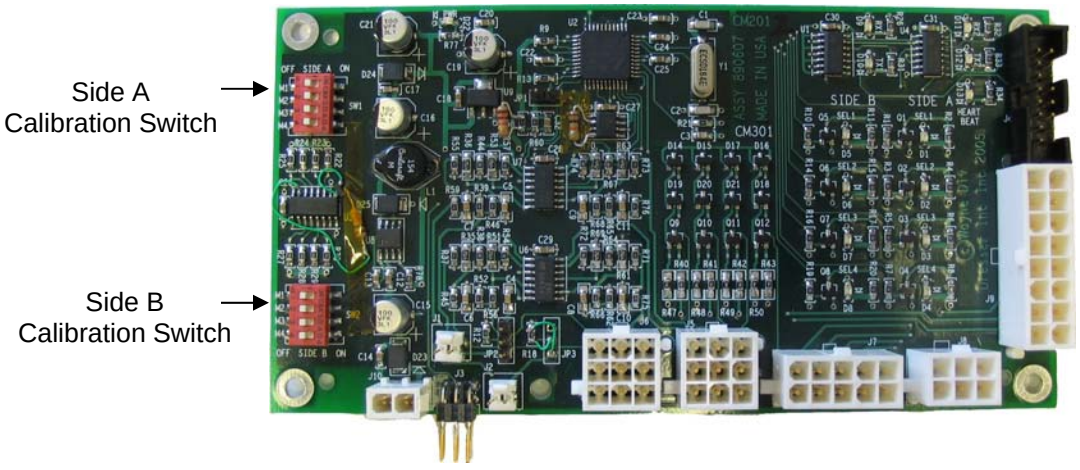
Step 2 Dispense product into the certified calibration container to wet the container and then empty it back into the tank, allowing it to drain for 10 seconds.

Step 3 Remove the seal wire and screw to allow access to the calibration switch.

Step 4 Identify the calibration switch for the meter in need of calibration. The Pulse Processing Module (PPM) is located in the electronics area of the dispenser. As you face the iGEM CPU, the PPM is mounted on a bracket on the interior of the left side column. The switches are located behind a bracket used to seal the switches. Reference Figure 4-7 for the location of the calibration switches.

NOTE: To identify the hose designation, when viewing the dispenser from the side of the iGEM CPU, the Hose A discharge outlet is always on the left side of the dispenser and the Hose B discharge outlet is always on the right side.

Figure 4-7 Pulse Processing Module



Step 5 Set the calibration switch of the meter to be calibrated to the "on" position. "CAL" will display on the dispenser status display indicating the dispenser is in calibration mode.

Step 6 Fill the calibration container to exactly the "0" mark on the sight glass (read the bottom of the meniscus). Disregard any volumes shown on the dispenser display.

Step 7 Turn off the pump handle and return the nozzle to the nozzle boot. Set the calibration switch to the “off” position (this now redefines the calibration factor in the PPM). If the calibration is accepted by the dispenser, ‘rECd” will show in the status display for 5 seconds. If the calibration is rejected, a “C-Er” message will appear in the display for 5 seconds, and the calibration procedure will need to be repeated.

Step 8 Empty the container back into the tank and let it drain for 10 seconds.

Step 9 Verify the accuracy by following the verification procedure in Section 4.8.2.

Step 10 If this is a twin dispenser, repeat the calibration procedure for the other hose.

Step 11 Replace the calibration switch cover and seal the calibration cover.

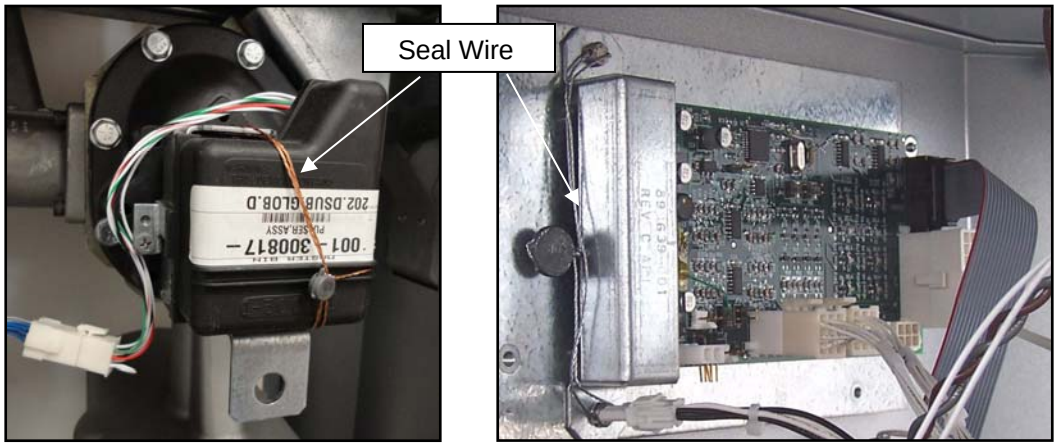


Figure 4-8 Pulser and PPM Seal

4.9 Pulley Alignment (Suction Pump Models)

WARNING

Make sure power to the dispenser is turned off before checking or realigning the pulleys. Failure to do so may result in a hazardous condition that can result in serious injury.

Step 1 Check that the suction pump pulley and the motor pulley are in straight alignment. Lay a straight edge ruler against both outer pulley sheaves, where the pump pulley is the reference surface. The motor pulley must be within 1/8” (32mm) of straight alignment with the pump pulley.

Step 2 If the motor pulley requires adjustment, loosen the set screw on the inside of the pulley which holds the key against the motor shaft. Align the pulley and retighten the set screw.

4.10 Belt Adjustment (Suction Pump Models)

WARNING

Make sure power to the dispenser is turned off before checking or adjusting the belt tension. Failure to do so may result in a hazardous condition and serious injury.

The Wayne Select Series utilizes an adjustable v-link belt. If the belt appears too loose or too tight, the belt can be disassembled to check the measurement. Links may be removed or added to change the tension. The only adjustment to change the tension on the belt should be adding or removing a link. Follow the procedures below if the belt needs adjustment.

Step 1 Remove the belt from the pulleys.

Step 2 Disassemble the link belt.

- Turn the belt inside out (tabs facing out).

- Take a section of the belt and with one hand squeeze the two sides together as tight as possible.
- With the other hand, twist one tab 90^0 so it is parallel with the slot. See Figure 4-7.
- With the same hand, pull the end of the link over the tab.
- Rotate the side of the belt with the tab 90^0 and pull the tab through the two link slots.

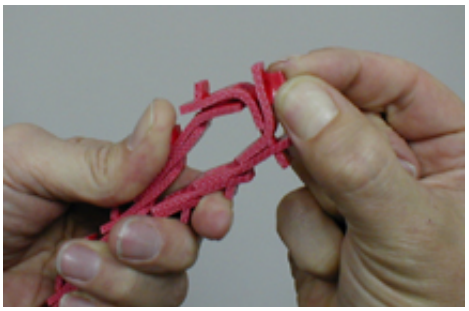


Figure 4-8 Disassembling the Link Belt

Step 2 Measure the belt for the correct tightness.

- Wrap the two ends of the belt around the motor and suction pump pulleys with the tabs facing into the pulleys.
- Pull the ends tight together. For the correct tension, when the belt is pulled tight, the ends of the belt should just touch.
- Remove or add links to achieve the required spacing.

Figure 4-9 Sizing the Link Belt

Step 3 Assemble the link belt

- With the tabs facing out, hold the ends of the belt.
- Slide the end tab through the two link slots at once and twist the belt back in straight alignment.
- Using the index finger on your hand holding the tab end of the belt, turn the second tab 90^0 (hint: twisting the tab end of the belt in toward your body at the same time will help bring the tab parallel with the slot). With the index finger of your other hand, push the tab slot down over the tab. Squeeze the belt sides together to force the tab all the way through the slot.

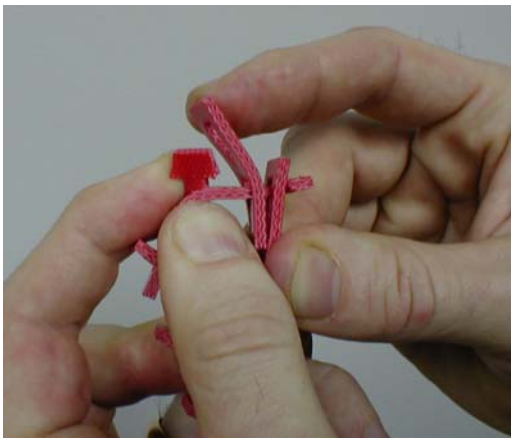


Figure 4-10 Re-Assembling the Link Belt

- Make sure the tab returns to its position across the belt. Turn the belt so the tabs are on the inside.

Step 4 Install the belt on the pulleys

- Make sure the tabs are facing the inside before installing.
- Determine the direction of the drive rotation (CCW facing the pulleys) and install the belt with the printed arrows on the outside of the belt pointing in the direction of the rotation.
- Fit the belt in the groove of the motor pulley and roll the belt into the groove of the suction pump pulley by turning the drive slowly. The belt may seem very tight. **This is okay; do not jog motor.**
- Check to make sure that all tabs are still in their correct position and are not twisted out of alignment.

4.11 Compact Pumping Unit Adjustment (Suction Pump Models)

The bypass valve pressure in the compact pumping unit should be checked and adjusted if necessary. If there is not enough pressure, the pump will deliver product slowly. If the pressure is too high, delivery of the product will not increase, but increased noise and wear will result, and an unnecessary load will be placed on the motor.

Step 1 Before checking the bypass pressure, follow the steps in Section 6.2 for cleaning the pump strainer.

Step 2 To check the bypass pressure, remove the priming plug (see Figure 4-11) and install a pressure gauge in the priming port.

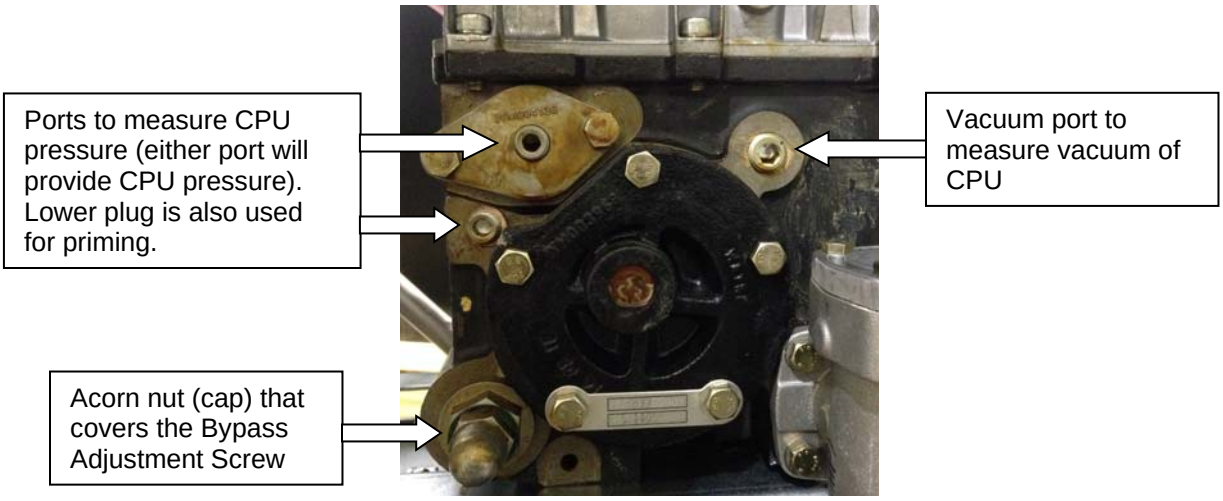
Step 3 Turn the pump on, so that the motor and pumping unit are running, but leave the nozzle closed. Verify that the pressure is in the 29 – 30 psi range (factory setting).

NOTE: The bypass pressure may be raised to increase the flow, or lowered to decrease the flow. When changing the bypass pressure, always verify that the amperage draw does not exceed the amp rating of the motor.

Step 4 If the bypass pressure needs adjustment, remove the acorn nut (cap) that covers the adjustment screw and lock nut. Loosen the lock nut and turn the adjustment screw clockwise to increase the pressure and counter-clockwise to lower the pressure. Once the correct pressure is reached, tighten down the lock nut and replace the acorn nut.

Step 5 With the nozzle open and dispensing fuel, verify that the amps are less than the motor amp rating (reference the Component Electrical Rating section in Appendix B). If the amps exceed the motor rating, the bypass must be lowered until the amps are below the rating.

Figure 4-11 Compact Pumping Unit



4.12 Fluorescent Lights

- Turn on the light circuit breaker (if on a separate circuit), and ensure that the fluorescent lights operate correctly.
- If the bulbs fail to illuminate, follow the instructions on bulb replacement in Section 6.6.

4.13 Voltage Test

- While the dispenser is turned off, verify the incoming voltage to the dispenser is within ± 10% of the rated voltage. If the voltage is not within the acceptable range, take the appropriate corrective measures before using the dispenser.
- For suction pump models, turn the dispenser on and record the voltage readings while the nozzle is open (dispensing) and then closed (bypass). Any voltage drops in excess of 10% need to be corrected.

4.14 Complete Installation

- Re-check the dispenser and all piping and hose connections to make sure all connections are tight and there are not any signs of leaks.
- Make sure you have completed all of the manufacturers' test procedures for all equipment, piping, and accessories utilized in the fuel dispensing system.
- After all tests have been completed successfully, and a proper installation and operation are verified, the tank and piping may be covered and the conduit openings should be appropriately sealed.
- The installer should make sure the following items are left with the fuel site owner:
    - All documentation and manuals
    - Infrared Remote Control
    - Local Authorization Jumper if connected to a fuel control system

4.15 Complete Warranty Registration

- Follow the instructions in Appendix L and complete the Warranty Registration.

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5 Operation

5.1 Safety Items You Should Know

- Know how to turn OFF power to the dispenser and submersible pumps in an emergency.
- Use the pump for appropriate applications. Use only low viscosity fuels – diesel, including biodiesel blends up to 20%; kerosene; gasoline, including standard oxygenated blends; AvGas; and jet fuel (check with fuel supplier for any additional metal flow path restrictions for AvGas and Jet fuel). Do not use the pump for pumping water or water-based liquids. **Note: Dispenser has not been evaluated for Biodiesel (above 20%), AvGas and Jet Fuel by UL.**
- Dispensers with the "E" Prefix utilize nickel-plating, hard anodizing, stainless steel, special elastomers and a special fuel filter which have been used successfully for E85 compatibility. The modified components are UL Listed for gasoline, diesel, kerosene (and similar products) and Ethanol blends up to and including E85.
- Make sure the dispenser is equipped with the proper accessories for the application and product dispensed – for example, the proper filters and separators to ensure product purity when refueling aircraft.
- Inspect regularly, all external fuel carrying components such as, hoses, nozzles, breakaways, etc., for damage or leaks.
- Inspect regularly, the pump housing parts for damage or leaks.
- Have all leaks or defects repaired immediately.
- For remote dispensers, test the emergency (shear) valve, by opening and closing several times, at least once per year.
- Care should be taken to prevent fuel spillage. If spillage occurs, clean-up immediately.
- Use of automatic safety nozzles prevents overfilling fuel tanks and avoids spilling fuel.
- Avoid tipping the nozzle downward spilling excess fuel.
- Sufficient lighting must be provided to allow safe use of the pump.
- A clearly visible and identifiable Site Emergency Stop Switch must be provided at the site to shut OFF power to all of the site's dispensers and submersible pumps in case of an emergency.
- Stow hoses to prevent tripping.
- Avoid moving parts such as the v-belts and pulleys on suction pump models. Do not operate the pump with the doors open.
- Beware that internal hose retractor mechanisms are spring-loaded and can cause a possible injury.
- Know the Hazardous Zone area around the dispenser.
- Do not operate the dispenser in the presence of any source of ignition including lighted cigarettes, electrical equipment, and running/hot engines.
- Always keep an operating nozzle attended and do not re-enter the vehicle after beginning the fueling sequence. Static buildup can be created from sliding in and out of the vehicle seat. Static discharge by subsequently touching an operating nozzle can create a hazardous situation.
- Portable tanks (containers) of 12 gallons (45 liters) or less shall not be filled while they are in or on a motor vehicle. See Warning information about this subject on the following pages.
- Wear safety goggles and protective clothes when dispensing any liquid that may be potentially harmful or hazardous. Change saturated clothing and wash skin promptly with soap and water.

5.1.1 Portable Tanks and Containers

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

WARNING

FIRE HAZARD!

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

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

5.1.2 Health Note

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

5.2 Dispenser Operation

To Dispense Fuel:

Step 1 If the dispenser is connected to a fuel control system, first authorize the dispenser at the control system. Otherwise, proceed directly to step 2.

Step 2 Remove the nozzle from the nozzle holder.

Step 3 Lift the on/off nozzle hook upwards to the on position.

Step 4 The dispenser display will automatically reset to all zeros. On suction pump models, the motor will then be turned on. In remote dispensers models, the submersible pump will be turned on, and then the solenoid valve in the dispenser will be opened.

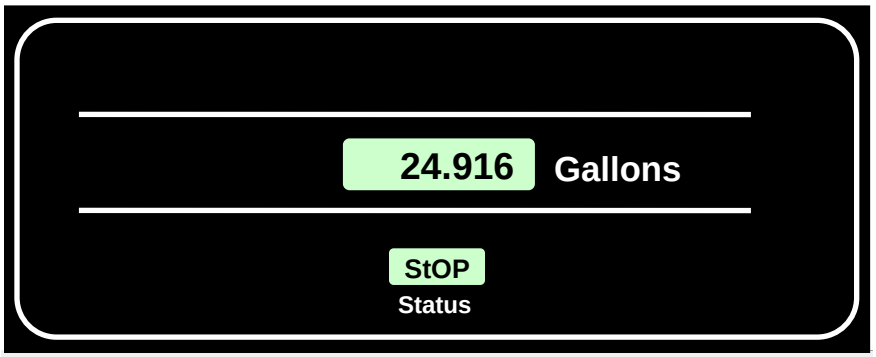
Step 5 Insert the nozzle into the vehicle's fill tank and squeeze the nozzle handle to dispense fuel.

Step 6 After fueling is complete, lower the on/off nozzle hook lever to the down "off" position to shut off the dispenser, and re-insert the nozzle into the holder.

NOTE: If a control system is not being used, the nozzle may be locked into the nozzle holder to prevent unauthorized usage.

5.3 Status Display Messages

- For units without the Price Display option, the Status display informs the user of the current operating status of the dispenser. The chart below provides the various status messages and the corresponding dispenser condition.



Status Message	Dispenser Condition
- -	Idle
SEL	Nozzle hook lifted on, but not authorized (nozzle selected)
Auth	Authorized by control system (nozzle hook in off position) (Note: In standalone operation, the dispenser will display the Auth message because it is always authorized.)
On	Authorized & nozzle hook lifted on
StOP	Stopped by control system (Auth line turned off)
Cut OFF	Reached transaction fill limit in dispenser's configuration
Err	Error interrupted the transaction (Auth line turned back on before pump handle turned off)
SAt	Satellite hose activated
CAL	UHC Dispenser is in calibration mode (calibration switch in open position)
rECd	UHC Dispenser accepted new calibration setting
C-Er	UHC Dispenser rejected new calibration setting or a transaction is attempted prior to the dispenser ever being calibrated
CErr	iMeter is not calibrated or iGEM is not communicating with WIP on iMeter

5.4 Electromechanical Totalizers

- An externally visible electromechanical non-resettable totalizer for each hose is provided as standard on all models, except for enhanced capacity Twin I models where the totalizers are per product. Enhanced capacity twin I models must be equipped with the Electromechanical Totalizer per Hose option (//K model suffix) for per hose electromechanical totals.
- The totalizer(s) records up to seven whole digits (9,999,999).
- To view the electromechanical totalizers, look towards the top of the discharge side(s) of the dispenser.
- Electronic totals are also available. See Section 5.5, Dispenser Statistics & Diagnostics.

5.5 Dispenser Statistics & Diagnostics

5.5.1 General

- The Select Series provides a variety of statistical and diagnostic information. This section covers the electronic totalizers. For a complete list of all available information, reference Appendix D.
- The statistics and diagnostics can be accessed without opening the dispenser. The interface is handled through an infrared remote control (IRC) that is shipped with the dispenser. To use the IRC, point it at the dispenser displays from within a distance of a couple of feet and press the desired keys. The nozzle hook on/off lever must be in the "off" position to access the statistics and diagnostics.
- Responses to the IRC commands are shown on the dispenser displays. Statistic function and subfunction numbers are shown in the Status display and their corresponding values are shown in the Gallons/Liters display. Reference Figure 5-1.

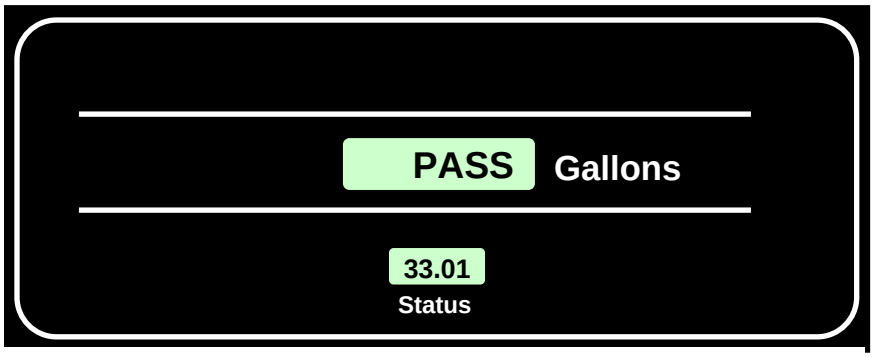


Figure 5-1 In this example, the Status display shows subfunction 33.01 (change service engineer password) with "PASS" shown in the Gallons display since the actual password is not shown for security reasons.

Figure 5-2 Infrared Remote Control (IRC)

NOTE: The following table shows the setting for units without price displays. Units with price displays will look slightly different as they typically utilize all three displays.

5.5.2 Password Protection

- Access to dispenser statistic, diagnostic, and configuration information is password-protected. Three levels of passwords are provided to control different levels of access. This allows you to provide a site operator password to an employee to read electronic totals without concern that configuration settings could be accidentally changed.

Note: The dispenser is shipped with default passwords. It is good practice to change the passwords so that only your authorized personnel have access to the dispenser settings. Section 5.5.3 provides instructions on how to change your passwords.

Password Type	Access Level	IRC Sign-on Command	Default Password
Service Engineer	Read and write access for all dispenser configuration settings, statistics, & diagnostics	ENTER	111
Site Manager	Read and write access to limited configuration settings and all statistics & diagnostics	1	22
Site Operator	Read only access to statistics (e.g. totalizers)	2	3

5.5.3 Changing Your Passwords

IMPORTANT! When changing your passwords, always make sure you record them in a safe place in case they are forgotten. The field engineer password may be required by a field engineer to work on your dispenser. If you change and forget your field engineer password, the configuration will have to be reset and you will lose any changed settings and statistics.

Enter Configuration Mode			
Step	**IRC Command**	**Volume Display**	**Status Display**
1 Service engineer sign on	Press <ENTER>	PASS 1	[blank]
2 Enter default service engineer password	Type <111> & Press <ENTER>	PASS 2	[blank]
3 Re-enter default service engineer password	Type <111> & Press <ENTER>	[alternating software version & date]	F - -
Change Your Passwords (Function F33)			
4 Go to password change function	Type <33> & Press <ENTER>	- - - - - -	F 33
Change Your Service Engineer Password (Sub-function 33.00)			
5 Go to service engineer password sub-function	Press <ENTER> again	PASS	33.00
6 Clear display	Press <#>	[blank]	33.00
7 Enter new service engineer password	Type up to 6 digits for your new service engineer password & Press <ENTER> (dashes will display as you type the digits)	[blank]	33.00
8 Re-enter new service engineer password	Re-type your new password again & press <ENTER> (dashes will display as you type the digits)	PASS	33.00

- Additional Steps Are Continued on Next Page -

Change Your Site Manager Password (Sub-function 33.01)			
Step	**IRC Command**	**Volume Display**	**Status Display**
9 Go to site manager password sub-function	Press <NEXT>	PASS	33.01
10 Clear display	Press <#>	[blank]	33.01
11 Enter new site manager password	Type up to 6 digits for your new site manager password & Press <ENTER>	[blank]	33.01
12 Re-enter new site manager password	Re-type your new password again & press <ENTER>	PASS	33.01
Change Your Site Operator Password (Sub-function 33.02)			
13 Go to site operator password sub-function	Press <NEXT>	PASS	33.02
14 Clear display	Press <#>	[blank]	33.02
15 Enter new site operator password	Type up to 6 digits for your new site operator password & Press <ENTER>	[blank]	33.02
16 Re-enter new site operator password	Re-type your new password again & press <ENTER>	PASS	33.02
17 Return to function level	Press <ENTER> again	- - - - - -	F 33
Exit and Save the Configuration			
Step	**IRC Command**	**Volume Display**	**Status Display**
18 Go to exit function	Type <0> and then Press <ENTER>	- - - - - -	F 00
19 Go to exit sub-function	Press <ENTER> again	1	0.00
20 Clear display	Press"#"	[blank]	0.00
21 Exit & save	Type <3> and then press <ENTER>	3	0.00
22 Exit configuration	Press <ENTER> again	[alternating CHAnGE StorEd]	0.00

5.5.4 Viewing the Electronic Totalizers

- The Select Series provides one resettable total and one non-resettable totalizer for each hose. These totalizers record up to 999,999 units (gallons or liters).

  Note: In the statistical functions, the following terminology is used:
  Totalizer – A non-resettable total
  Total – A resettable total

- The following total and totalizers are available. Money categories are on available on units with the price display option.

  1.11 – Volume total – Side A
  1.21 – Money total – Side A
  2.11 – Volume total – Side B
  2.21 – Money total – Side B
  11.11 – Volume totalizer – Side A
  11.21 – Money totalizer – Side A
  12.11 – Volume totalizer – Side B
  12.21 – Money totalizer – Side B

- In order to read the totalizers, you first need to understand how the dispenser sides and nozzles are identified in the software.

  - **Single Hose Models:** Single hose models only have a Side A, Nozzle #1 (A1).
  - **Twin Hose Models:** Two-hose models have a Side A, Nozzle # 1 (A1) and a Side B, Nozzle #1 (B1). Using the main junction box to determine the physical orientation of the dispenser, reference Figures 5-3 and 5-4 to find out the nozzle assignments. (Note on UHC dispensers, the j-box is centered. Dispensers with the pulse output interface option have a second junction box on the opposite side for the pulse output interface wire terminations. The main AC j-box has a ¾" conduit and the pulse output j-box has a ½" conduit.)

Figure 5-3 Twin Dispensers w/ Island-Oriented Nozzle Boots

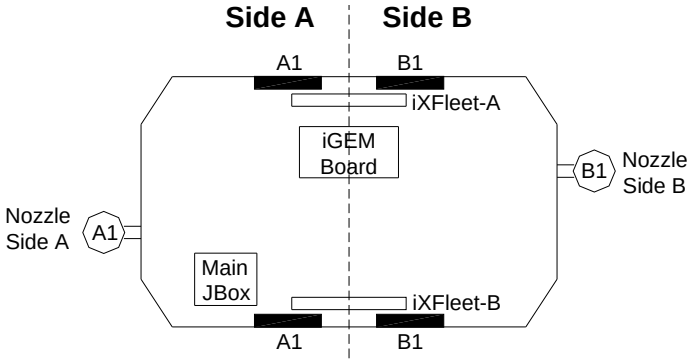


Figure 5-4 Twin Dispensers w/ Lane-Oriented Nozzle Boots

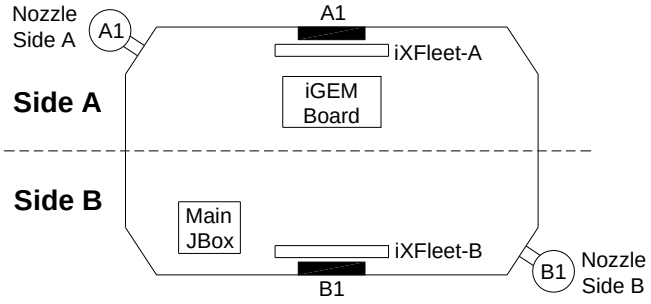
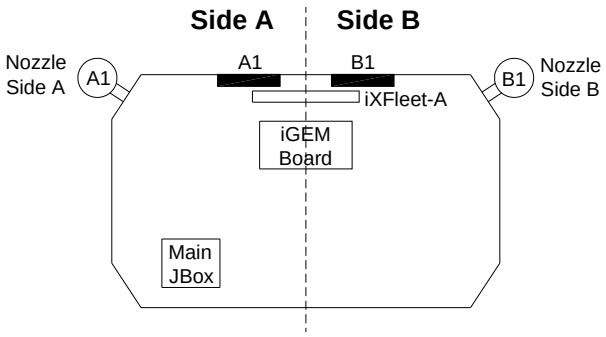


Figure 5-5 Single-Sided Twin Dispensers w/ Lane-Oriented Nozzle Boots



5.5.4.1 Non-Resettable Electronic Totalizers (Statistics S11 & S12)

Enter Statistics			
Step	**IRC Command**	**Volume Display**	**Status Display**
1 Enter sign on	Press either <ENTER>, <1>, or <2> depending upon access level	PASS 1	[blank]
2 Enter password	Type the corresponding password & Press <ENTER>	PASS 2	[blank]
3 Re-enter password	Type the password again & press <ENTER>	[alternating software version & date]	F - -
4 Go to statistics entry point	Press <DOWN>	[alternating current transaction counts for Side A & Side B]	S - -
View Non-Resettable Totalizer – Side A Nozzle #1 (A1)			
5 Go to Side A non-resettable totalizer function	Type <11> & Press <ENTER>	- - - - - -	S 11
6 Go to nozzle #A1 sub-function	Press <ENTER> again (Money-Press <NEXT> to see 11.21)	[totalizer A1 value]	11.11
7 Return to function level	Press <ENTER> again	- - - - - -	S 11
View Non-Resettable Totalizer – Side B Nozzle #1 (B1) (if you only have one nozzle, skip to Step #11)			
8 Go to Side B non-resettable totalizer function	Type <12> & Press <ENTER> or if you are at S 11, you can also just press <NEXT>	- - - - - -	S 12
9 Go to nozzle #B1 sub-function	Press <ENTER> again (Money-Press <NEXT> to see 12.21)	[totalizer B1 value]	12.11
10 Return to function level	Press <ENTER> again	- - - - - -	S 12
Exit Statistics			
11 Return to statistics entry point	Press <CLEAR>	[alternating current trans. counts for Side A & Side B]	S - -
12 Exit statistics	Press <ENTER> 3 times	[last transaction]	- -

5.5.4.2 Resettable Electronic Totals (Statistics S01 & S02)

- For units with the price display option, press <NEXT> after displaying the volume totals to display the money totals.

Enter Statistics			
Step	**IRC Command**	**Volume Display**	**Status Display**
1 Enter sign on	Press either <ENTER>, <1>, or <2> depending upon access level Note: If you only have operator access (2), you cannot reset the totals.	PASS 1	[blank]
2 Enter your password	Type your password & Press <ENTER>	PASS 2	[blank]
3 Re-enter your password	Type your password again & Press <ENTER>	[alternating software version & date]	F - -
4 Go to statistics entry point	Press <DOWN>	[alternating current trans. counts for Side A & Side B]	S - -
View Resettable Total -Side A Nozzle #1 (A1)			
5 Go to Side A resettable totals function	Type <1> & Press <ENTER>	- - - - - -	S 01
6 Go to nozzle #A1 sub-function	Press <ENTER> again	[totalizer A1 value]	1.11
Reset Total - Side A Nozzle #1 (A1) - to Zero (if you do not want to reset total, skip to Step #10)			
7 Clear total	Press <#>	CLEAr totALS	1.11
8 Confirm clear	Press <ENTER>	PASS	1.11
9 Enter reset password	Type <42> & Press <ENTER>	- - - - - -	S 01
View Resettable Total - Side B Nozzle #1 (B1) (if you only have one nozzle, skip to Step #15)			
10 Go to Side B resettable totals function	Press <NEXT>	- - - - - -	S 02
11 Go to nozzle #B1 sub-function	Press <ENTER>	[totalizer B1 value]	2.11
Reset Total - Side B Nozzle #1 (B1) - to Zero (if you do not want to reset total ,skip to Step #15)			
12 Clear total	Press <#>	CLEAr totALS	2.11
13 Confirm clear	Press <ENTER>	PASS	2.11
14 Enter reset password	Type <42> & Press <ENTER>	- - - - - -	S 02
Exit Statistics			
15 Return to statistics entry point	Press <CLEAR> Note: if you are not resetting the totals, press <ENTER> 3 times to exit statistics	- - - - - -	S - -
16 Go to function level	Press <UP>	[software ver. & date]	F - -
17 Go to exit function	Type <0> and Press <ENTER>	- - - - - -	F 00
18 Go to exit sub-function	Press <ENTER> again	1	0.00
19 Clear display	Press"#"	[blank]	0.00
20 Exit and save changes	Type <3> & then press <ENTER>	3	0.00
21 Exit configuration	Press <ENTER> again	[alternating CHAnGE StorEd]	0.00

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6 Maintenance

6.1 Preventive Maintenance

The safety precautions described in Section 2.2 apply to the following preventive maintenance procedures. A correctly installed dispenser, given proper preventive maintenance attention, will seldom require emergency service. Perform the following checks on a regular basis:

- Check the dispenser for internal and external leaks regularly. Check nozzles, swivels, hoses, filters, and joints for leaks and wear. Have all defects repaired immediately.
- Do not abuse the hose by trying to stretch it to reach a vehicle. This will cause early failure at the couplings.
- Keep the dispenser clean at all times. See Section 6.3 for cleaning/polishing instructions and warnings.
- Test the tank for water regularly. Water in petroleum is not only a source of engine trouble, but will also cause damage to the pump.
- Periodically check and lubricate all key lock cylinders and locking mechanisms.

6.2 Strainer/Filter – Enhanced Capacity & Super High Capacity Models

NOTE: Reference Section 6.3 for Ultra High Capacity models.

A dirty strainer screen and/or filter will slow down the product delivery. With new tank and piping installations, it may be necessary to replace the filter and clean the strainer screen two or three times during the first few days of operation to remove installation debris and pipe sealant. After this, filter replacement and strainer cleaning should be performed periodically. Filters should not be left in place for extended periods of time to avoid corrosion according the filter manufacturer's recommendations.

WARNING

Before removing the filter or strainer, always turn off the power to the dispenser, and if applicable, turn off the power to the submersible pump and close the emergency shutoff valve underneath the dispenser. Failure to do so may result in a hazardous condition that can result in serious injury. Make sure safety goggles are worn. Loosen the strainer cap or spin-on filter slightly and allow the product to drain into a plastic container until pressure is relieved. Return the product to the appropriate tank.

- The filter is removed by unscrewing it (the same way an oil filter is removed from a car engine). Place a container under the filter to catch the product and sediment. To install the new filter: apply a film of oil to the gasket, hand turn until gasket contacts base, then tighten 3/4 turn (follow any directions supplied with filter). Open the emergency shutoff valve (if applicable), turn the electrical power ON and check for leaks.

WARNING

The dispenser is shipped with a 400 series, 10-micron particulate filter. This filter does not provide water absorption. Also, for some fuels such as biodiesel and Ethanol blends above E10, special filter elements are required (Note: Dispenser has not been evaluated for Biodiesel (up to 20%), by UL). On E85 dispenser models, use strainer cartridges marked "E85" manufactured by Central Illinois Mfg (400BHA-01). The installer and user should make sure the filter meets the requirements of the application, satisfies local/state/federal codes, and replace the filter with an appropriate filter as necessary. Some applications, such as aircraft refueling, require special filtration equipment in order to ensure product purity. Replacement filters must be UL-recognized.

- Remove the strainer for cleaning by removing the bolts from the strainer cap. Place a container under the cap to catch the product and sediment. Pull out the strainer. Wash the screen in gasoline and dislodge lint and other foreign particles with compressed air. Install the clean strainer and replace the strainer cap. Open any emergency shutoff valves and turn the electrical power ON and check for leaks.

6.3 Filters – Ultra High Capacity Models

NOTE: Ultra high capacity models have two high capacity filters per hose prior to the meter in place of an inlet strainer. If the filters are removed for any reason (e.g. external filters are desired), they must be replaced with disposable 100-mesh strainer canisters (p/n 890255-002) in order to protect the meter. These strainer canisters still must be replaced periodically to prevent corrosion of the canister.

Dirty filters will slow down the delivery of product. With new tank and piping installations, it may be necessary to replace the filters two or three times during the first few days of operation to remove installation debris and pipe sealant. After this, filter replacement should be performed periodically. If strainer canisters are used, a drop in flow may indicate a need to replace the disposable strainer. Filters should not be left in place for extended periods of time to avoid corrosion according the filter manufacturer's recommendations.

WARNING

Before removing the filters or strainer canisters, always turn off the power to the dispenser, and if applicable, turn off the power to the submersible pump and close the emergency shutoff valve underneath the dispenser. Failure to do so may result in a hazardous condition that can result in serious injury. Make sure safety goggles are worn. Loosen the filter or strainer canister slightly and allow the product to drain into a plastic container until pressure is relieved. Return the product to the appropriate tank.

- The filters or strainer canisters are removed by unscrewing it (the same way an oil filter is removed from a car engine). Place a container under the filter to catch the product and sediment. To install the new filters or strainer canisters: apply a film of oil to the gasket, hand turn until gasket contacts base, then tighten 3/4 turn (follow any directions supplied with filter). Open the emergency shutoff valve (if applicable), turn the electrical power ON and check for leaks.

WARNING

Remote dispensers are shipped with 30-micron particulate filters (unless the dispenser is supplied with the optional strainer canister). These filters do not provide water absorption. Also, for some fuels such as biodiesel, special filter elements are recommended. The installer and user should make sure the filters meet the requirements of the application, satisfy local/state/federal codes, and replace the filters with appropriate filters as necessary. If strainer canisters are used, or for special applications even when the internal filters are supplied, external filters used on the discharge, may be required for the application. Some applications, such as aircraft refueling, require special filtration equipment in order to ensure product purity. Replacement filters must be UL-recognized.

6.4 Cleaning and Corrosion Prevention Instructions

To properly care for your dispenser:

Step 1 Wash the dispenser frequently with a non-abrasive cloth and warm water mixed with a mild household cleaner such as dishwashing liquid. The dispenser should then be wiped down with a clean damp cloth.

NOTE: Do not direct pressurized water, even a garden hose, at the dispenser.

NOTE: Do not use all-purpose cleaners on any part of the dispenser. They may scratch clear plastic, as well as break down the corrosion resistance of painted and stainless steel surfaces.

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

Step 2 Exposure to contaminants can cause discoloration of any stainless steel panels. If the discoloration persists after Step 1, the use of an abrasive powder cleaner can be used to restore the original shine. Two cleaners in particular are very effective and practical to use: **Zud Heavy Duty Cleaner** and **Bar Keepers Friend**. They can both be found in most hardware or grocery stores. Follow the manufacturers' instructions for use and always rub in the direction of the brush finish to prevent scratching the stainless steel.

Step 3 Periodic waxing (three times per year) of the dispenser surfaces is essential to maintain the original finish and inhibit corrosion. Painted surfaces should be waxed with an automotive wax or polish. Stainless steel surfaces should be polished with a non-abrasive silicone wax.

6.5 Meter Maintenance Issue

- For Weights & Measures applications, it is recommended that Wayne Fuel Meters be periodically checked for acceptable accuracy based on NCWM Handbook 44 under the General Code, G-UR.4 Maintenance Requirements and Liquid Measuring Device Code, Section 3.30.
- If adjustment needs to be made, follow the appropriate prescribed procedure in either Section 4.7, Meter Check (Calibration) – Enhanced Capacity & Super High Capacity or Section 4.8, Meter Check (Calibration) – Ultra High Capacity Models. All adjustments shall be made in accordance with G_UR.4 Maintenance Requirements of Handbook 44.

6.6 Fluorescent Light Bulb Replacement

Step 1 While supporting the weight of the display panel with your free hand, unscrew the two screws on the front bottom edge of the panel. Lower the panel and temporarily hang it by placing the slots on the top edge of the panel through the tabs in the base of the electronic compartment.

Step 2 Pull the u-shaped fluorescent light out of its fixture and replace with an equivalent bulb.

Step 3 Lift the display panel back up under the lip of the top cover and secure in place with the two screws.

6.7 How to Get Service on Your Pump

Trouble with the installation of this product should be referred to your DFS ASO. An ASO with a technician number can receive assistance by calling the DFS Support Center at:

1-800-926-3737

Customers, Installers or Distributors who are not an ASO, needing help with the operation or installation of this product, should contact the DFS Support Center at:

1-800-289-2963 OR support.austin@doverfs.com

CAUTION

Any modification, repair, or service to the dispenser, not in accordance with the original design, may invalidate compliance with the equipment certifications. Consult manufacturer as necessary.

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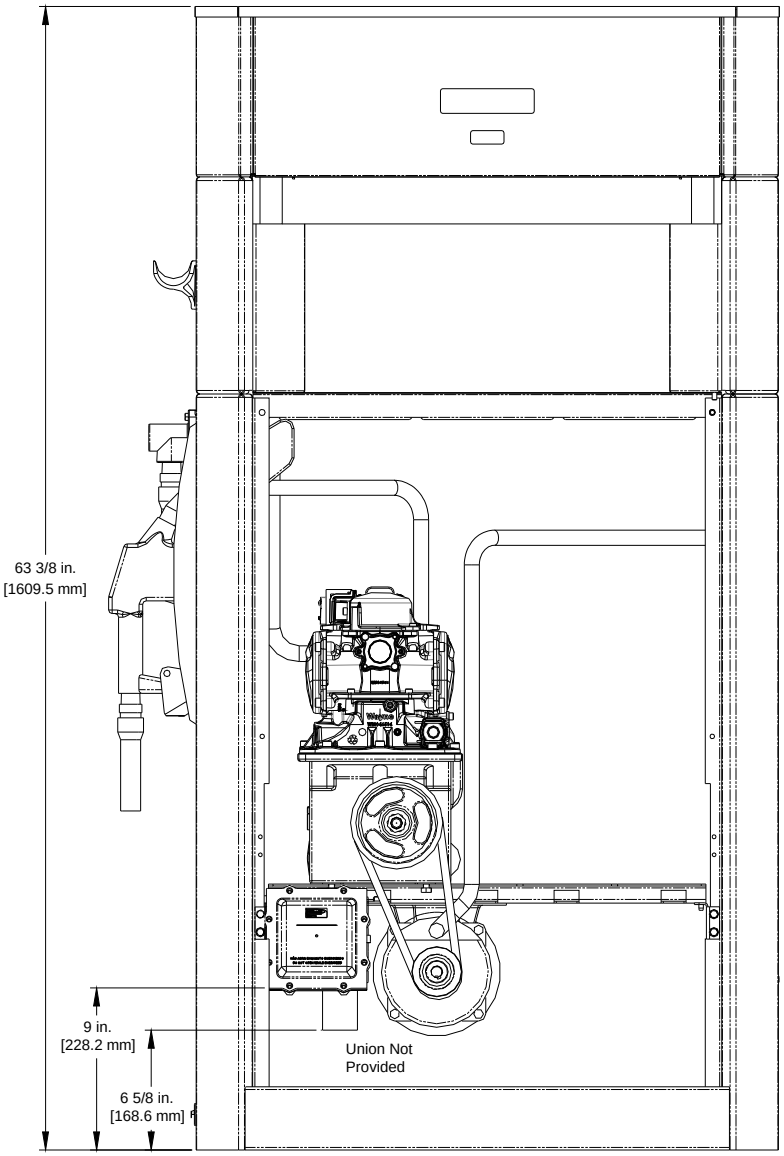
Appendix A: Dimensions & Base Layouts

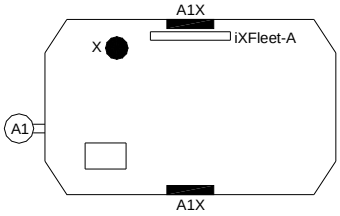
Models: 3/G7201P Single Suction Pump – Island
3/G7207P/R Single Suction Pump – Lane



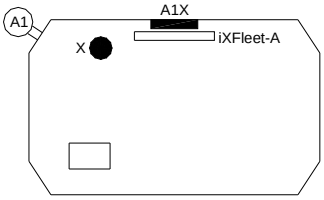
3/G7201P Shown

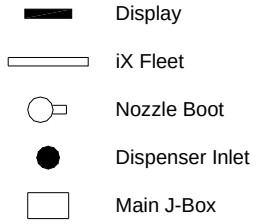
Base Orientation

3/G7201P
Single Suction Pump
Island-Oriented

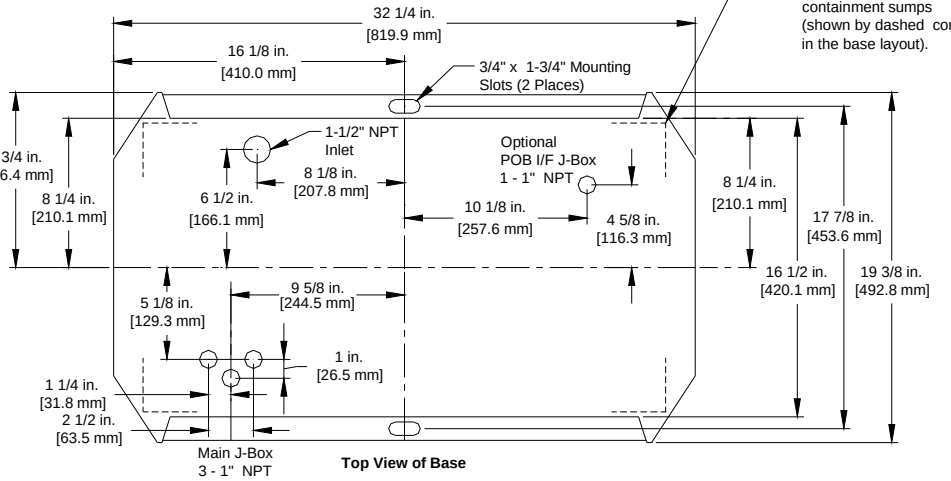


3/G7207P/R
Single Suction Pump
Lane-Oriented



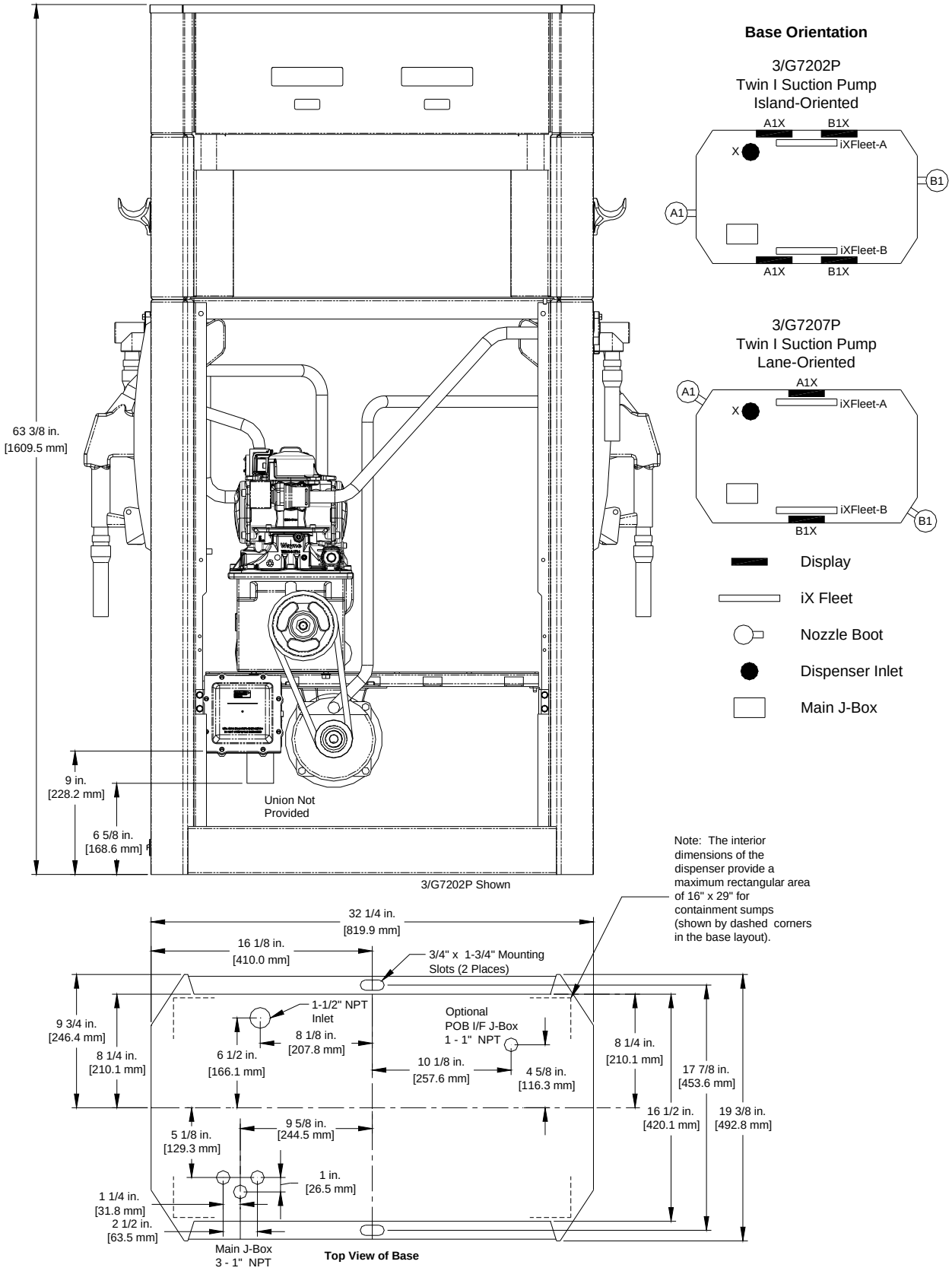


Note: The interior dimensions of the dispenser provide a maximum rectangular area of 16" x 29" for containment sumps (shown by dashed corners in the base layout).

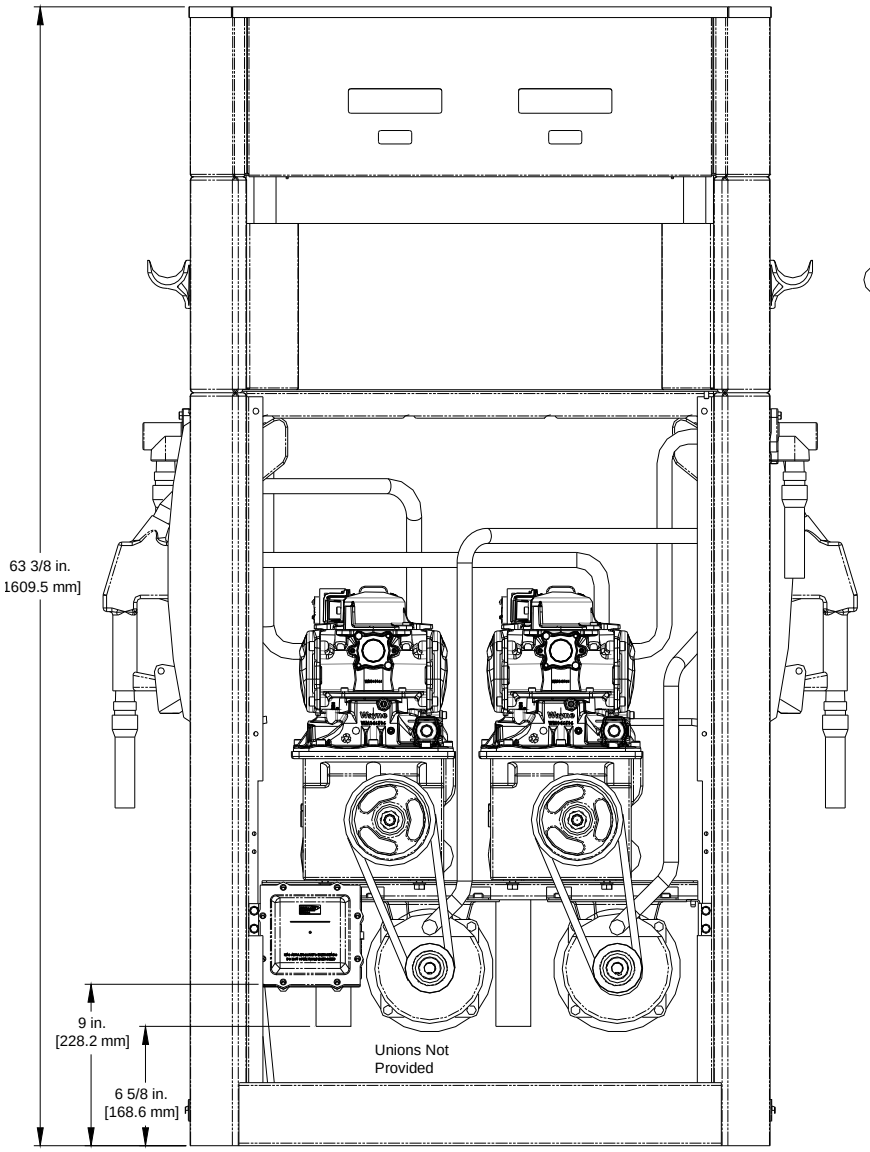


Top View of Base

Models: 3/G7202P Twin I Suction Pump – Island
3/G7207P Twin I Suction Pump – Lane



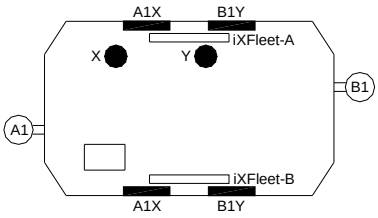
Models: 3/G7203P/8 Twin II Suction Pump – Island
3/G7208P/8 Twin II Suction Pump – Lane



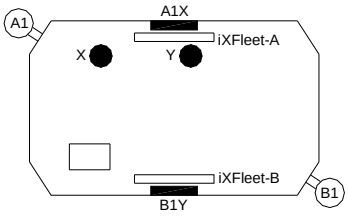
3/G7203P/8 Shown

Base Orientation

3/G7203P/8
Twin II Suction Pump
Island-Oriented



3/G7208P/8
Twin II Suction Pump
Lane-Oriented



Display

iX Fleet

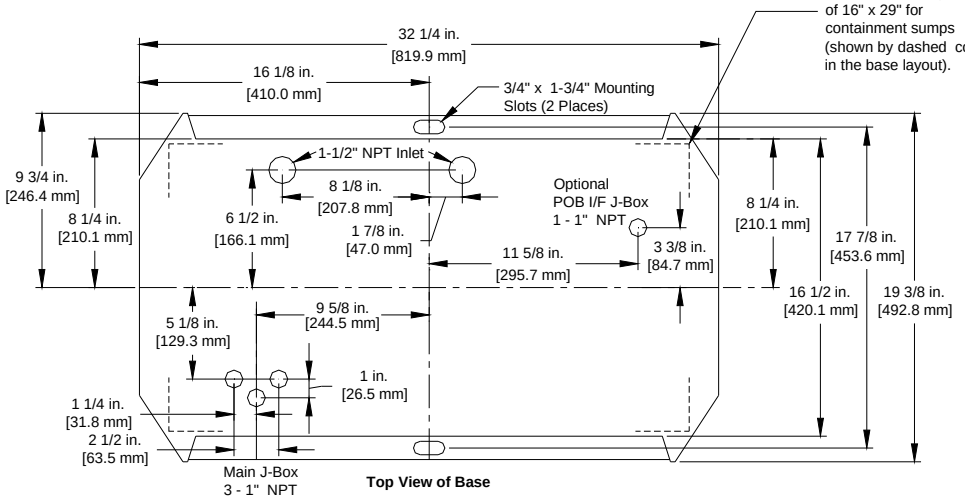
Nozzle Boot

Dispenser Inlet

Main J-Box

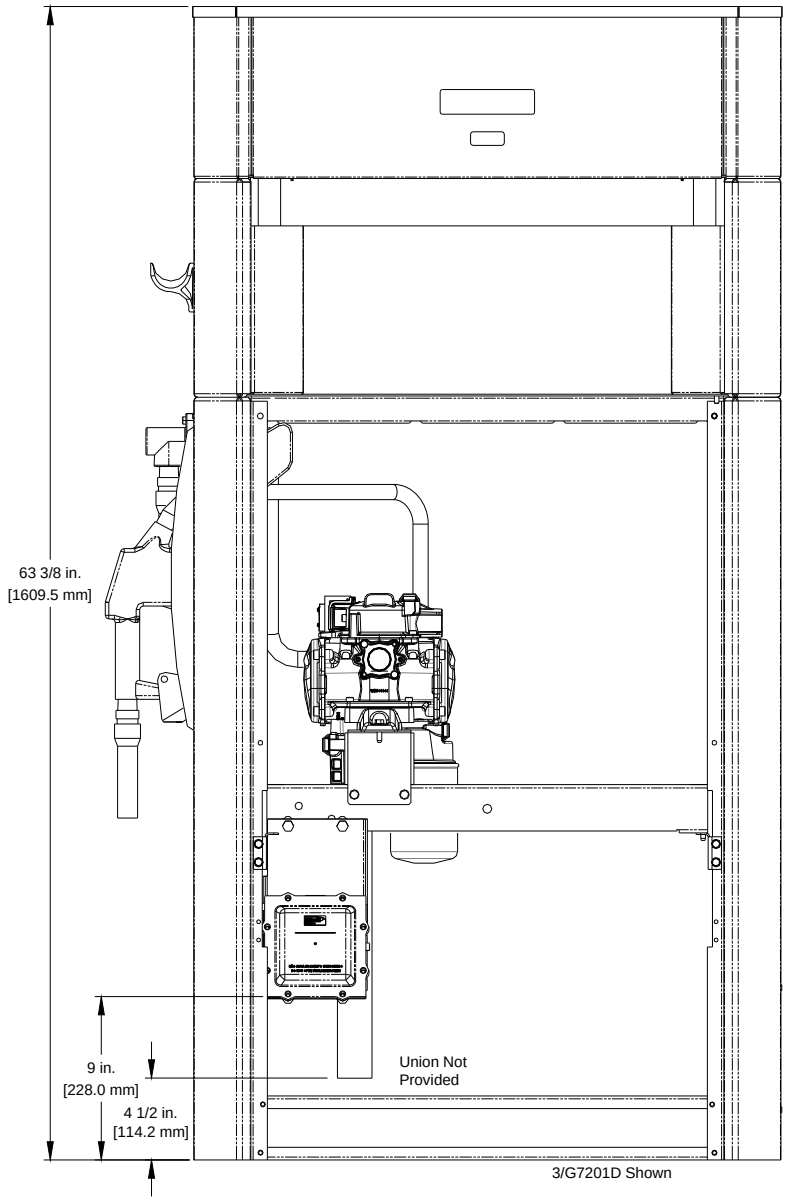
Note: Models without the "/8" suffix use the same base layout but use only 1 iMeter with both sides populated.

Note: The interior dimensions of the dispenser provide a maximum rectangular area of 16" x 29" for containment sumps (shown by dashed corners in the base layout).



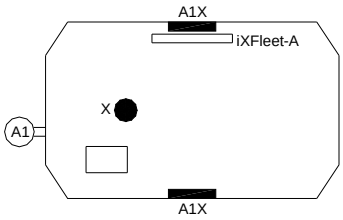
Top View of Base

Models: 3/G7201D Single Remote Dispenser – Island
3/G7207D/R Single Remote Dispenser – Lane

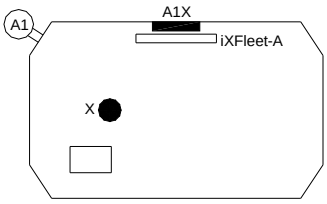


Base Orientation

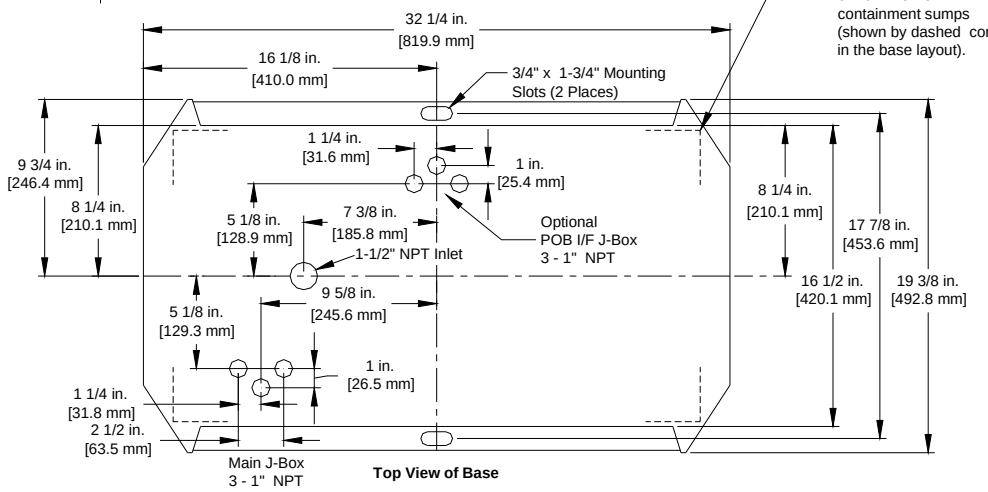
3/G7201D
Single Remote
Island-Oriented



3/G7207D/R
Single Remote
Lane-Oriented

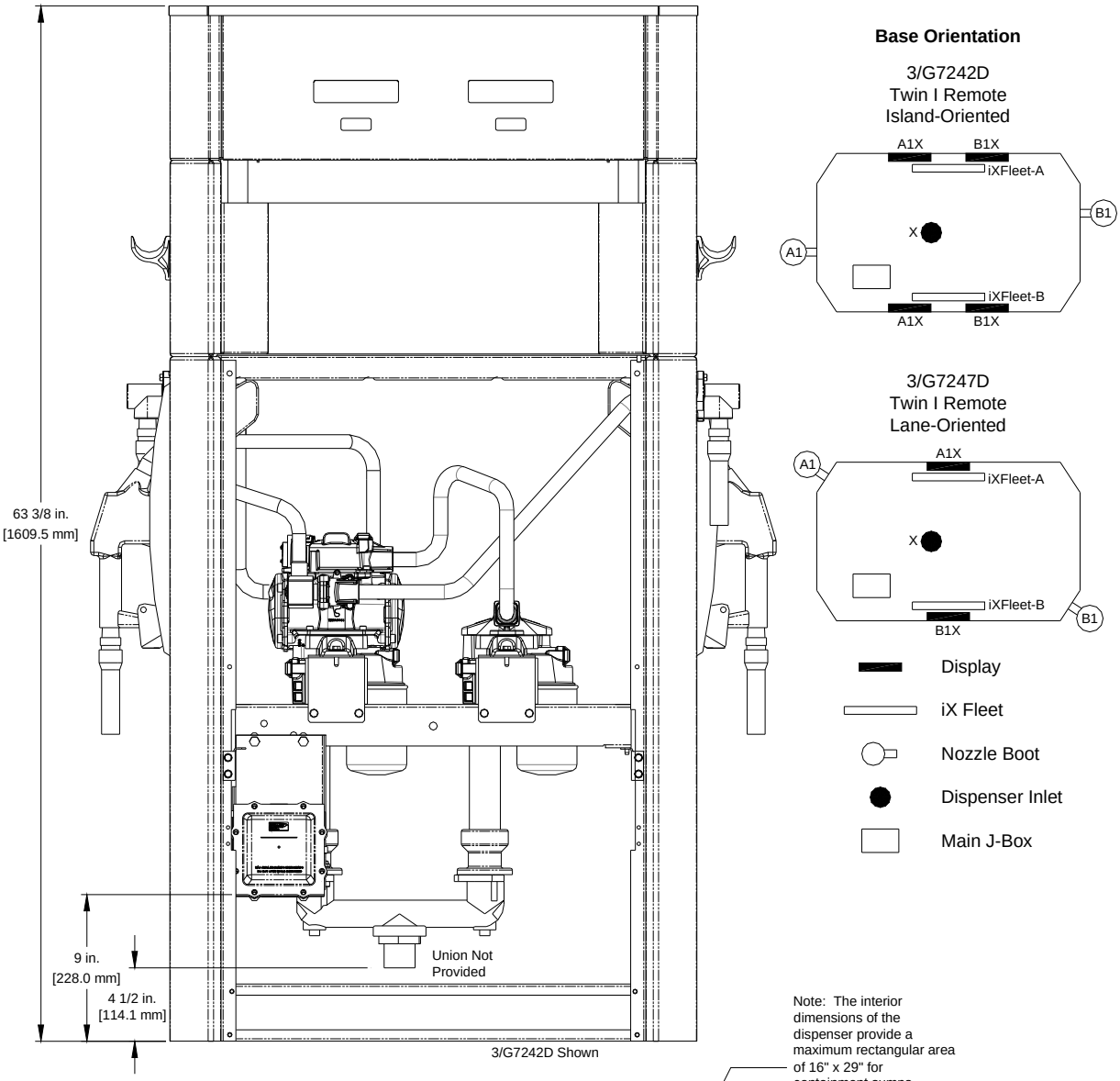


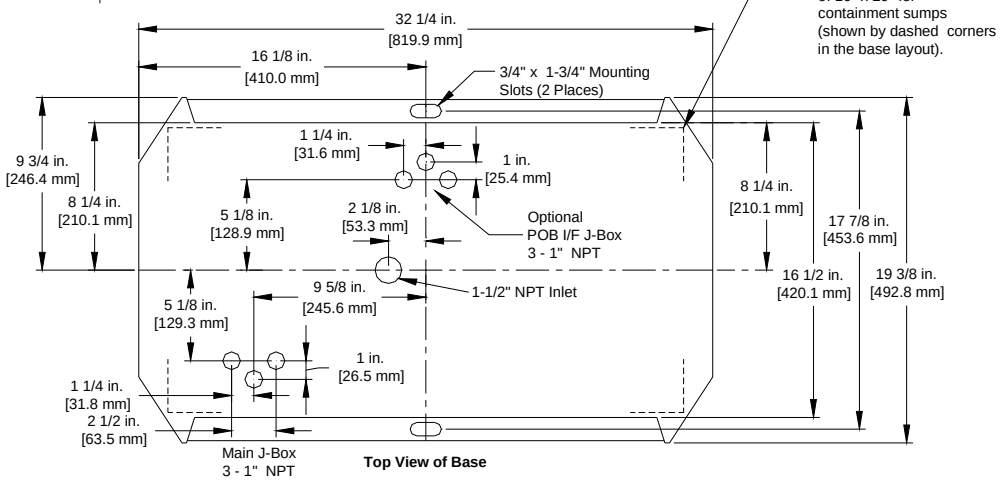
Display
iX Fleet
Nozzle Boot
Dispenser Inlet
Main J-Box



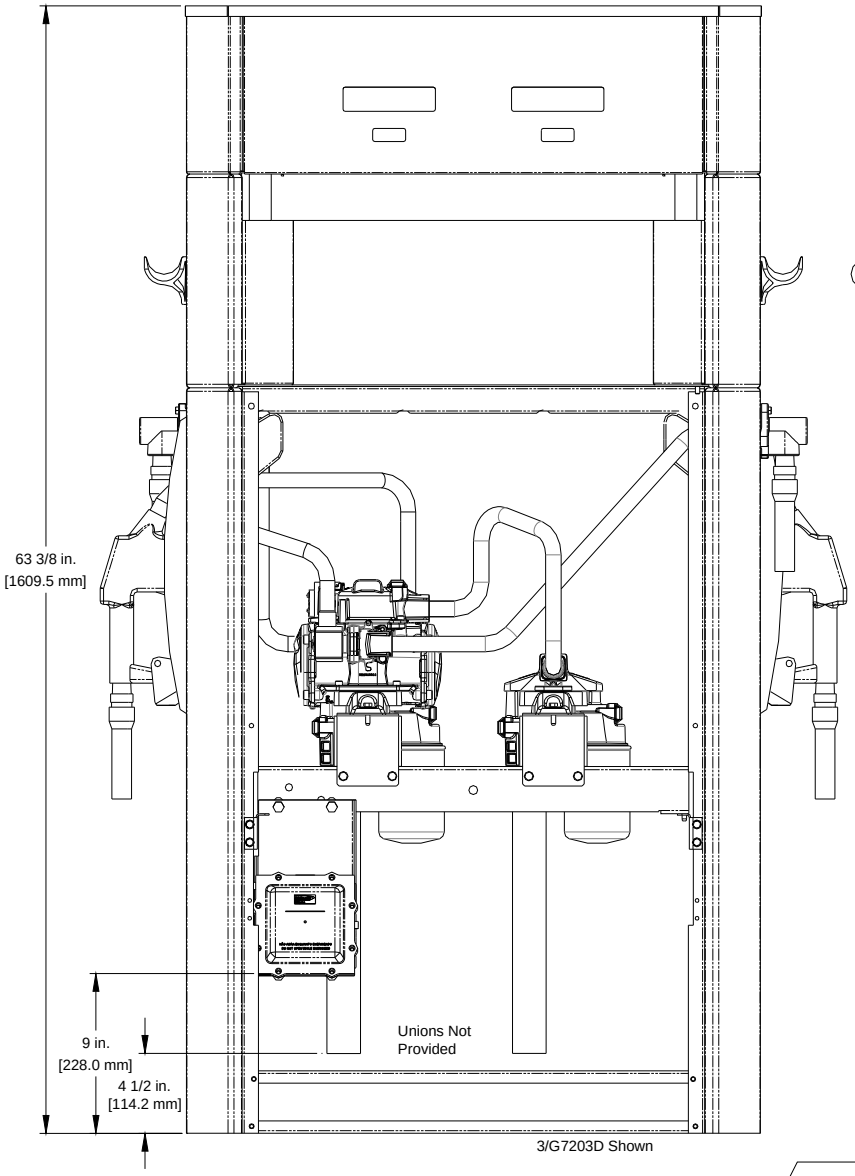
Note: The interior dimensions of the dispenser provide a maximum rectangular area of 16" x 29" for containment sumps (shown by dashed corners in the base layout).

Models: 3/G7242D Twin I Remote Dispenser – Island
3/G7247D Twin I Remote Dispenser – Lane



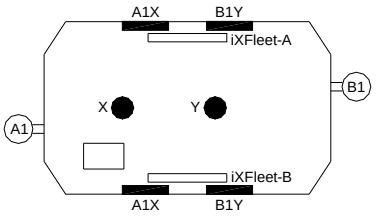


Models: 3/G7203D Twin II Remote Dispenser – Island
3/G7208D Twin II Remote Dispenser – Lane

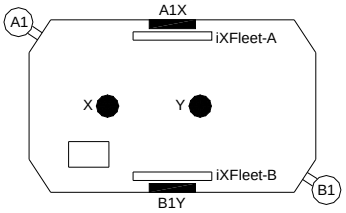


Base Orientation

3/G7203D
Twin II Remote
Island-Oriented



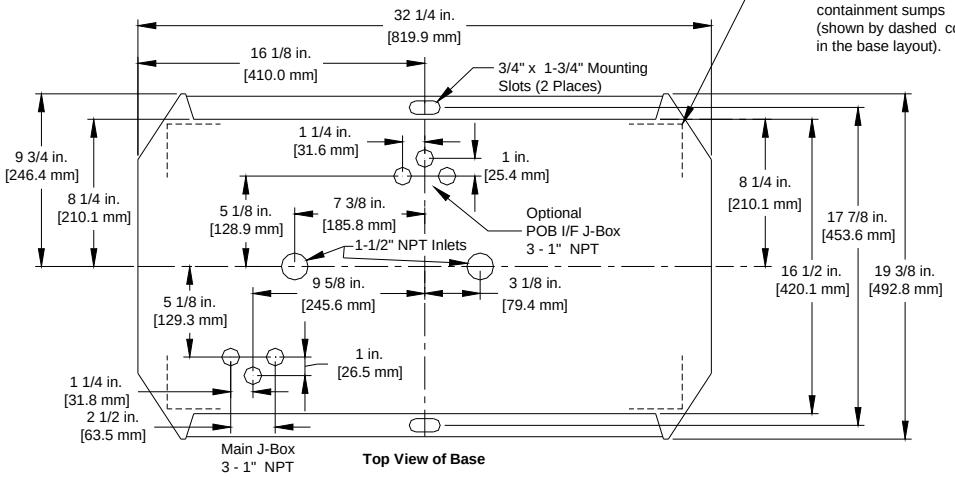
3/G7208D
Twin II Remote
Lane-Oriented



Display
iX Fleet
Nozzle Boot
Dispenser Inlet
Main J-Box

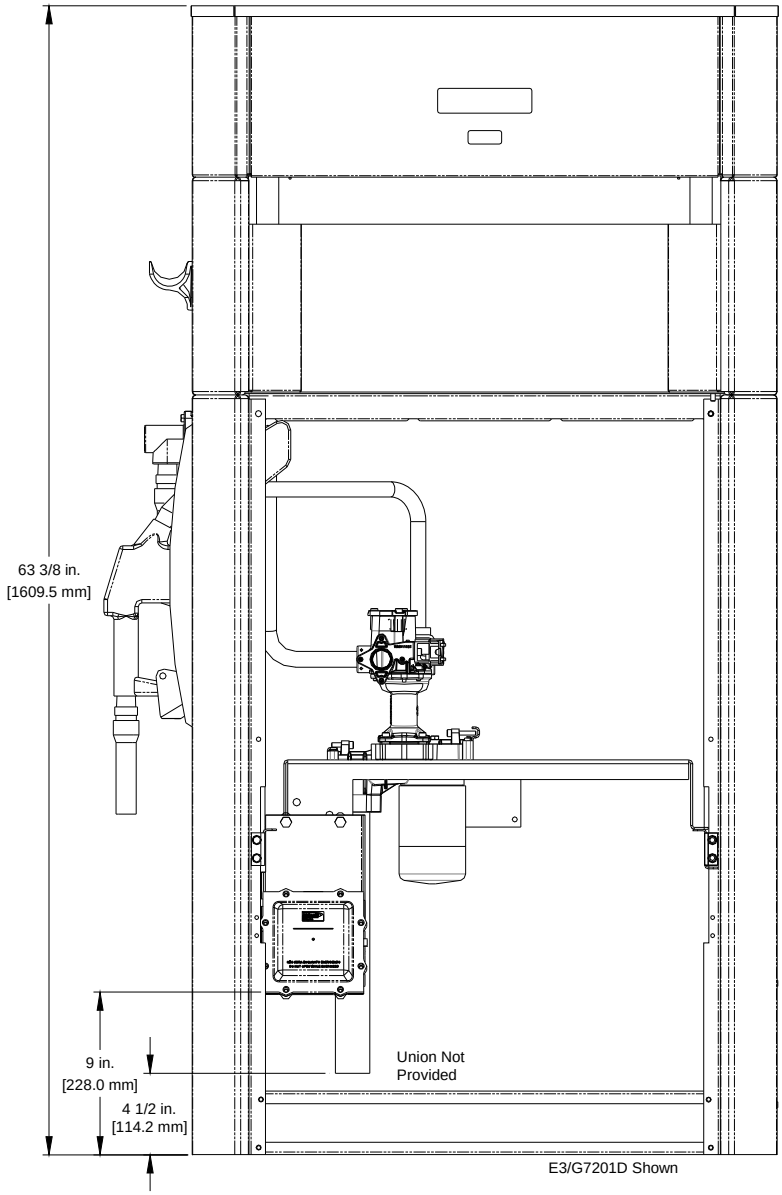
Note: Models without the "/8" suffix use the same base layout but use only 1 iMeter with both sides populated.

Note: The interior dimensions of the dispenser provide a maximum rectangular area of 16" x 29" for containment sumps (shown by dashed corners in the base layout).



Top View of Base

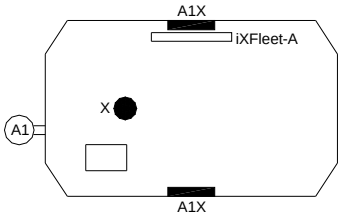
Models: E3/G7201D E85 Single Remote Dispenser – Island
E3/G7207D/R E85 Single Remote Dispenser – Lane



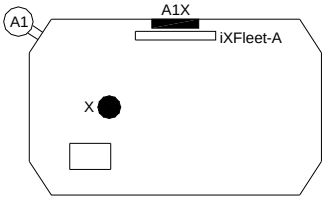
E3/G7201D Shown

Base Orientation

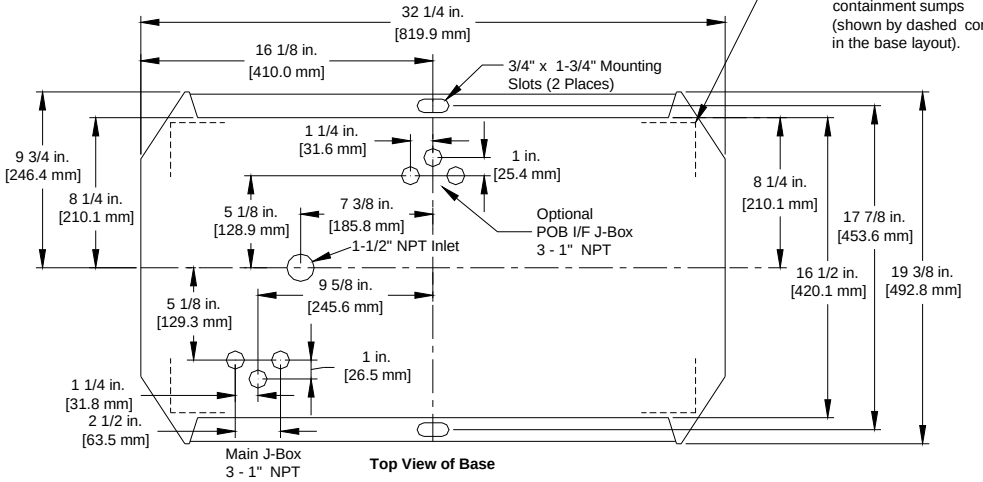
E3/G7201D
Single Remote
Island-Oriented



E3/G7207D/R
Single Remote
Lane-Oriented



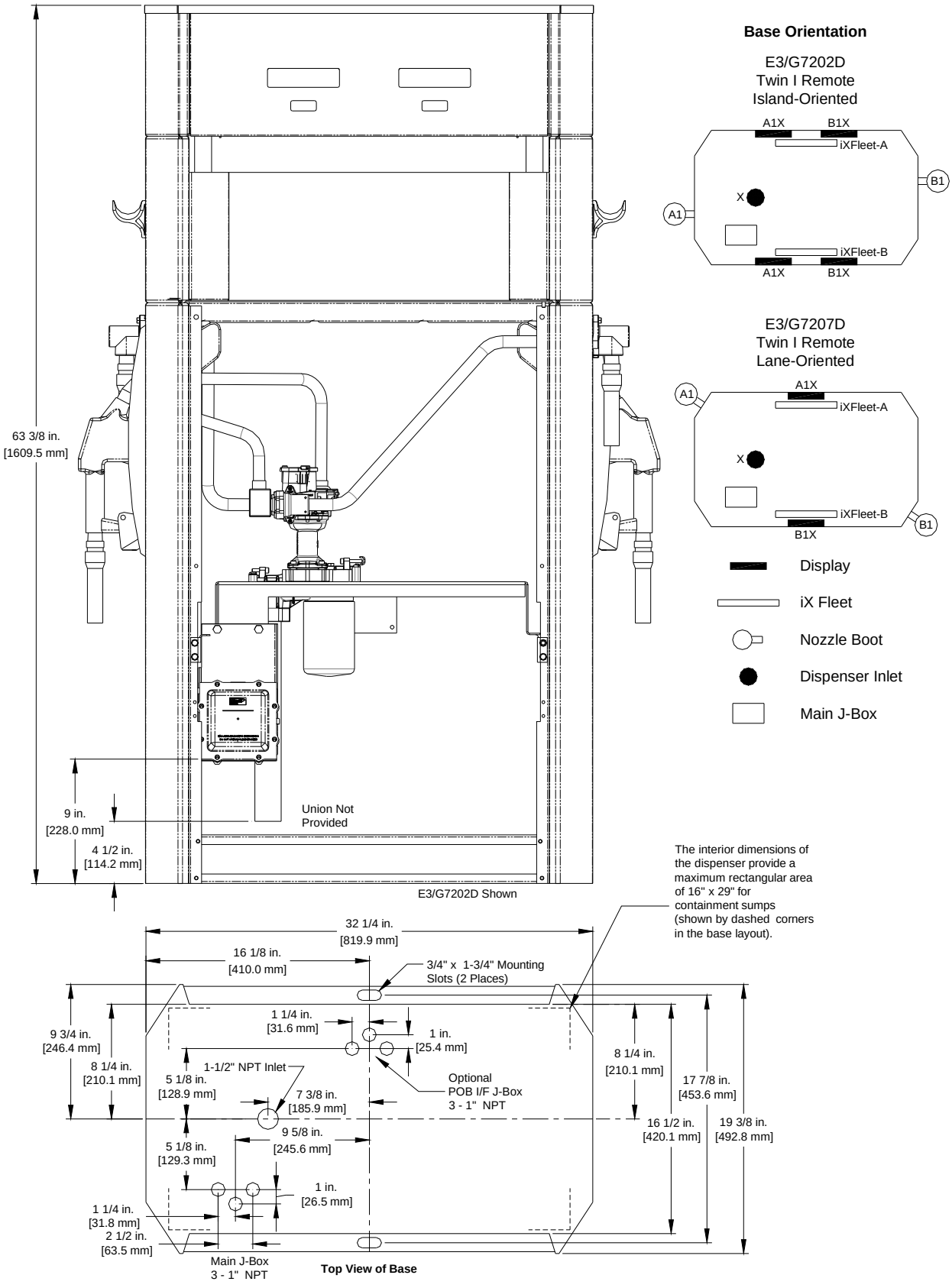
Display
iX Fleet
Nozzle Boot
Dispenser Inlet
Main J-Box



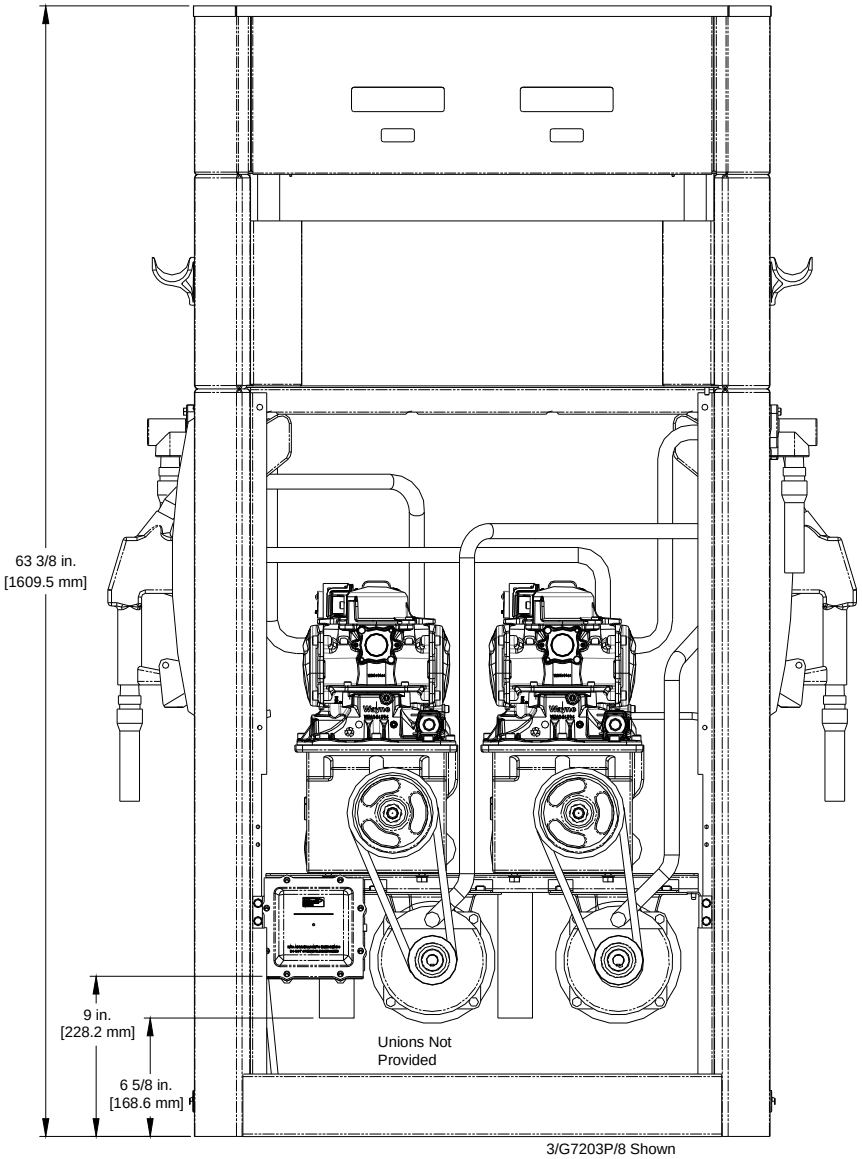
Note: The interior dimensions of the dispenser provide a maximum rectangular area of 16" x 29" for containment sumps (shown by dashed corners in the base layout).

Top View of Base

Models: E3/G7202D E85 Twin I Remote Dispenser – Island
E3/G7207D E85 Twin I Remote Dispenser – Lane



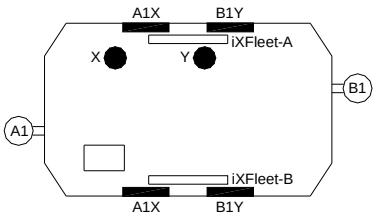
Models: E3/G7203D/8 Twin II Remote Dispenser – Island
E3/G7208D/8 Twin II Remote Dispenser – Lane



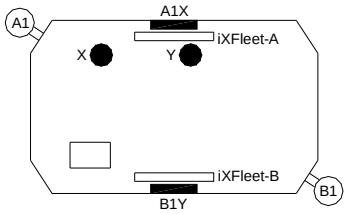
3/G7203P/8 Shown

Base Orientation

3/G7203P/8
Twin II Suction Pump
Island-Oriented



3/G7208P/8
Twin II Suction Pump
Lane-Oriented



Display

iX Fleet

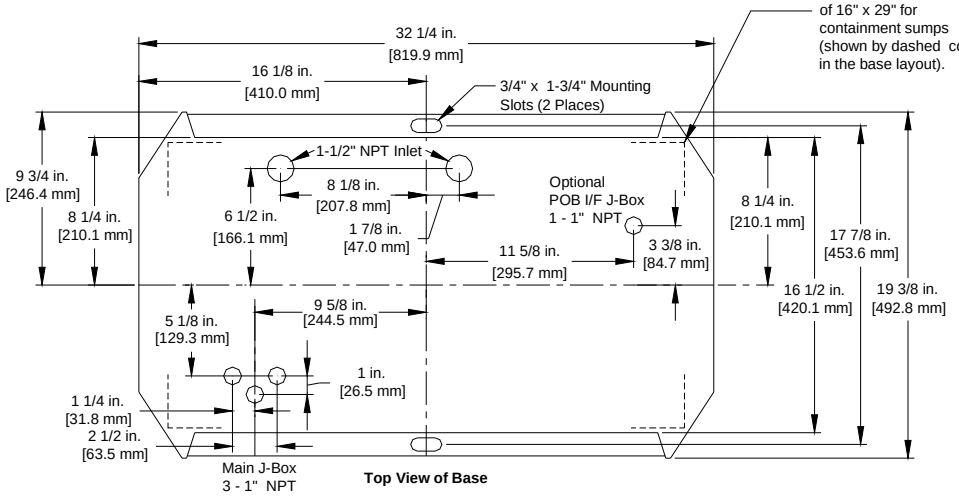
Nozzle Boot

Dispenser Inlet

Main J-Box

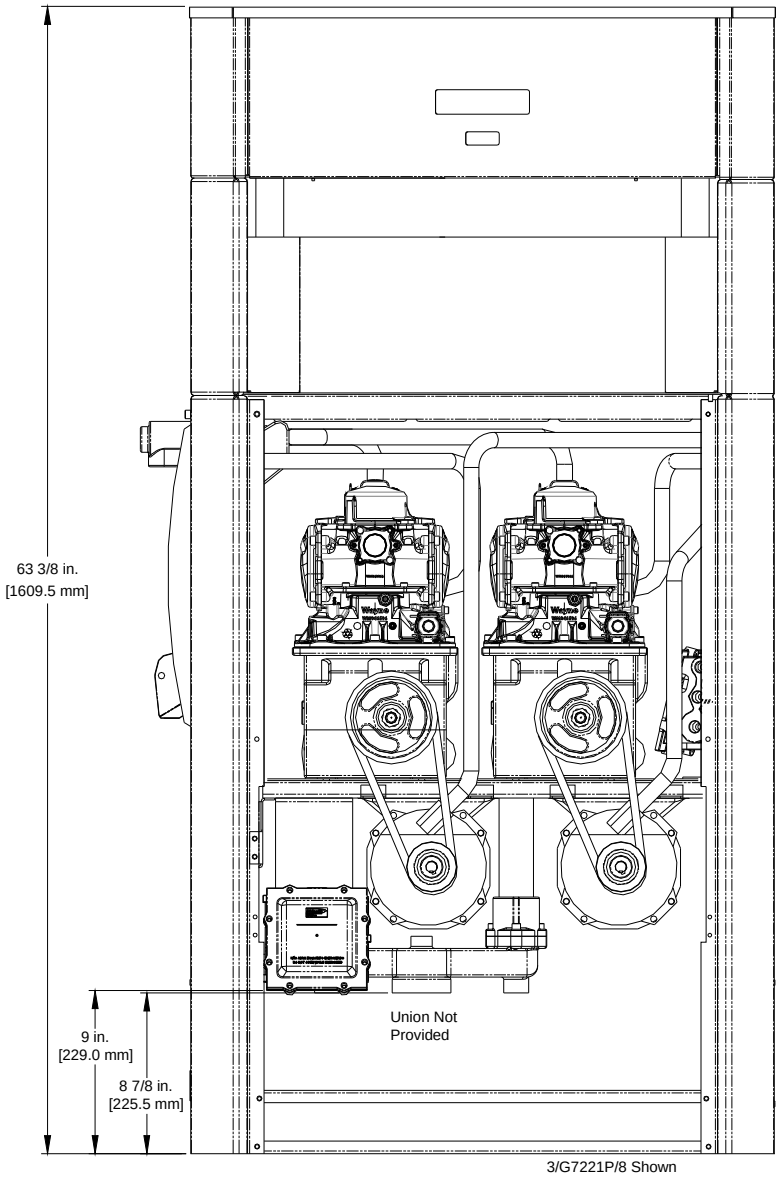
Note: Models without the "/8" suffix use the same base layout but use only 1 iMeter with both sides populated.

Note: The interior dimensions of the dispenser provide a maximum rectangular area of 16" x 29" for containment sumps (shown by dashed corners in the base layout).



Top View of Base

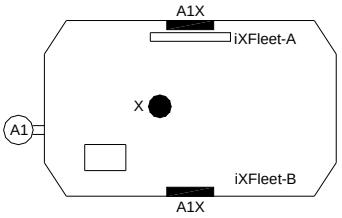
Models: 3/G7221P/8 Super High Cap. Single Suction Pump – Island
3/G7227P/8R Super High Cap. Single Suction Pump – Lane



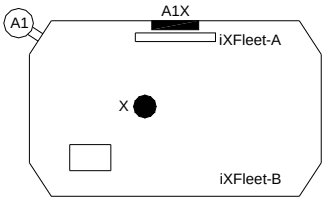
3/G7221P/8 Shown

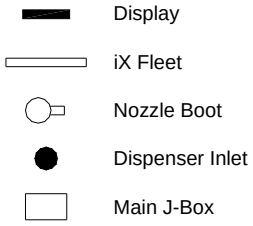
Base Orientation

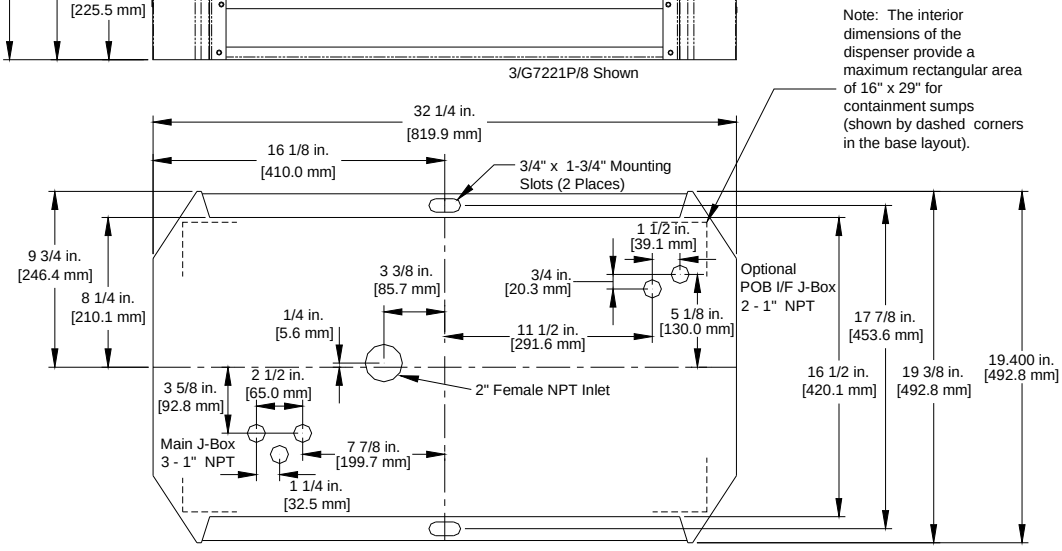
3/G7221P/8
Super High Capacity Single Suction
Island-Oriented



3/G7227P/8R
Super High Capacity Single Suction
Lane-Oriented

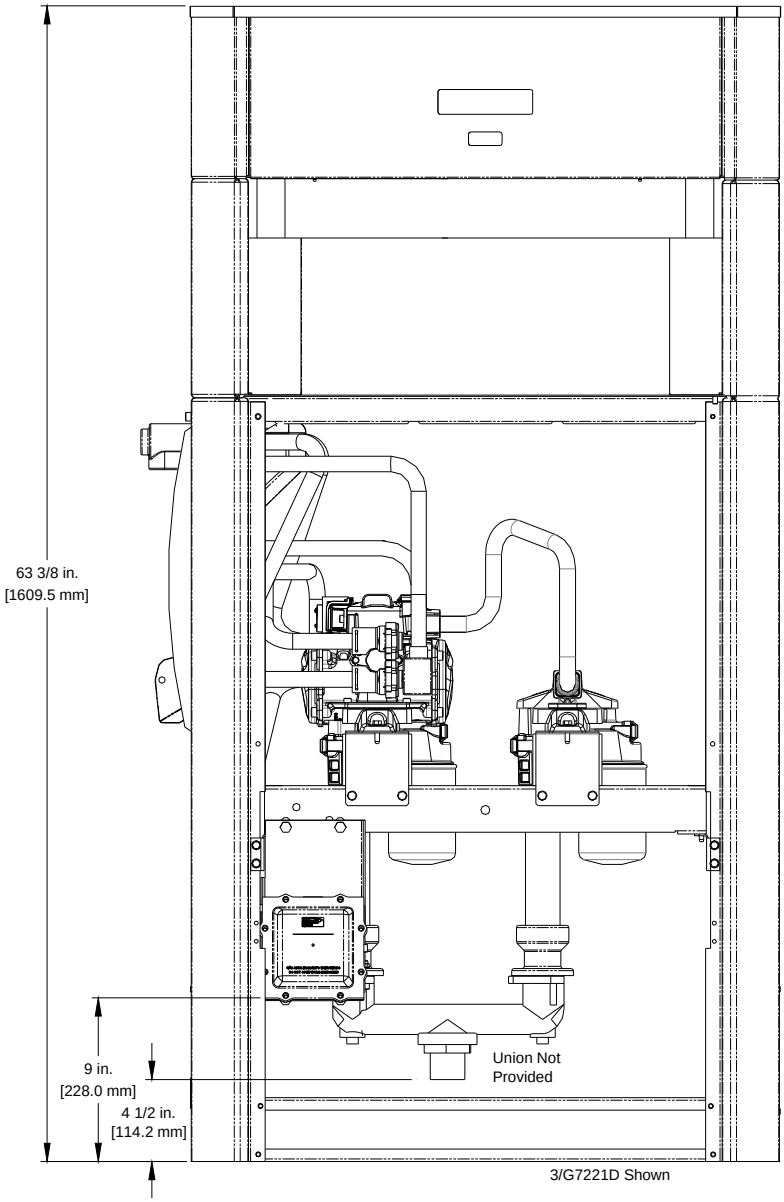






Top View of Base

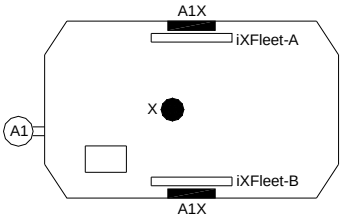
Models: 3/G7221D Super High Cap. Single Remote Dispenser – Island
3/G7227D/R Super High Cap. Single Remote Dispenser – Lane



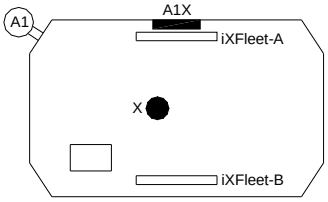
3/G7221D Shown

Base Orientation

3/G7221D
Super High Capacity Single Remote
Island-Oriented



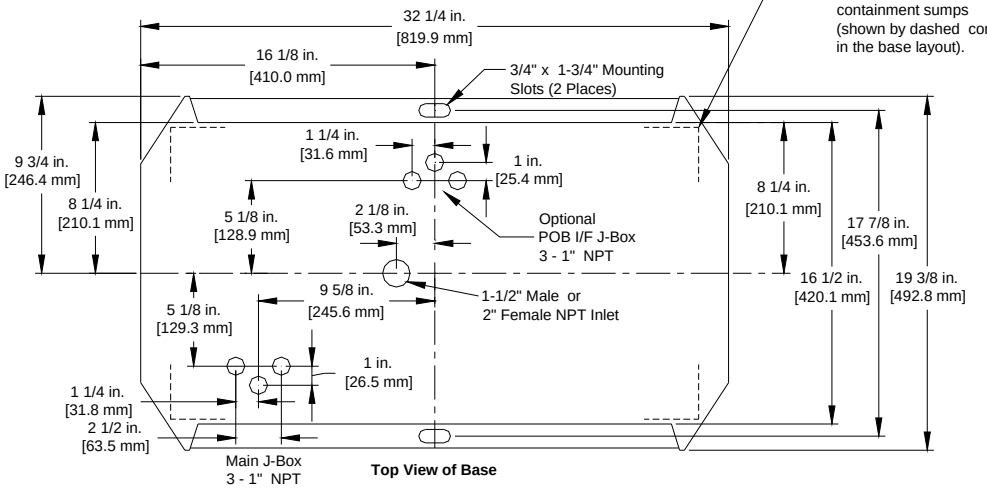
3/G7227D/R
Super High Capacity Single Remote
Lane-Oriented



Display
iX Fleet
Nozzle Boot
Dispenser Inlet
Main J-Box

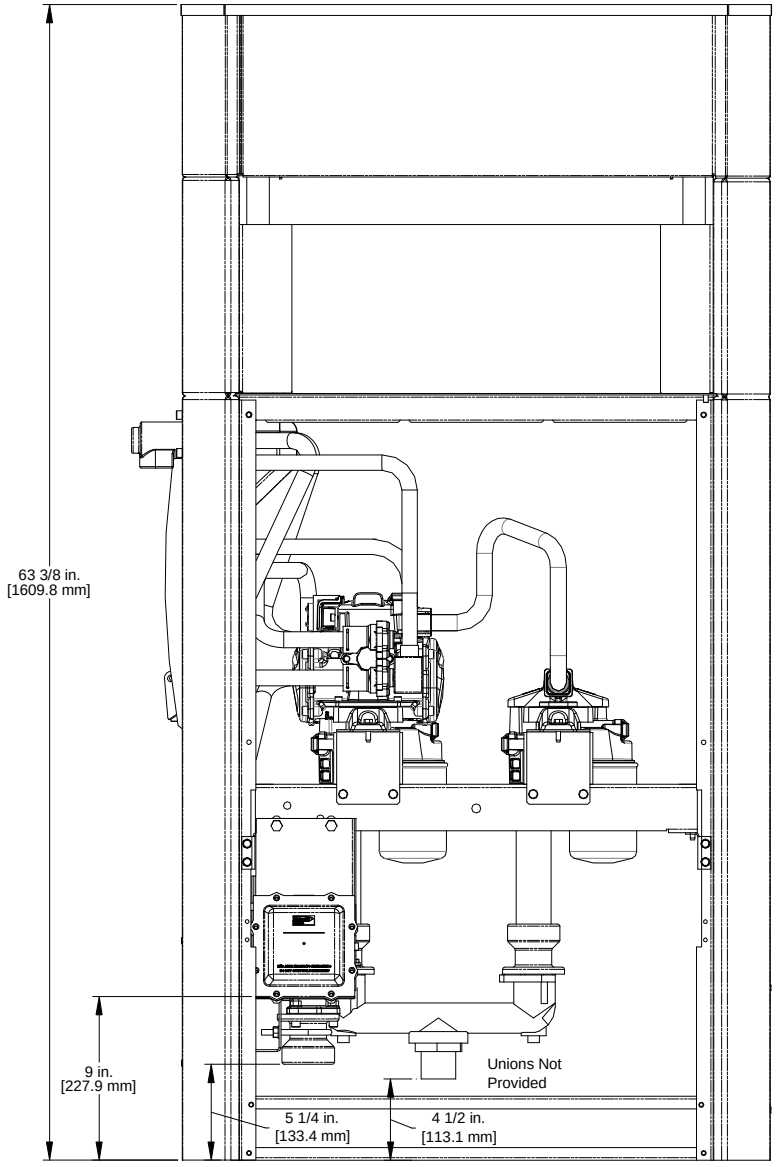
Note: The Hydraulic view for units with ATC, looks slightly different than what is shown to the left. The base layouts are the same.

Note: The interior dimensions of the dispenser provide a maximum rectangular area of 16" x 29" for containment sumps (shown by dashed corners in the base layout).



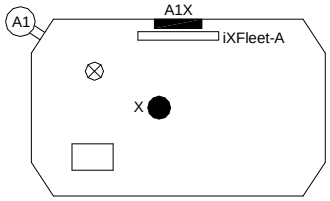
Top View of Base

Model: 3/G7227D/MR Super High Capacity Single Master Remote Dispenser – Lane



Base Orientation

3/G7227D/MR
Super High Capacity Single Remote
Master
Lane-Oriented



Display

iX Fleet

Nozzle Boot

Dispenser Inlet

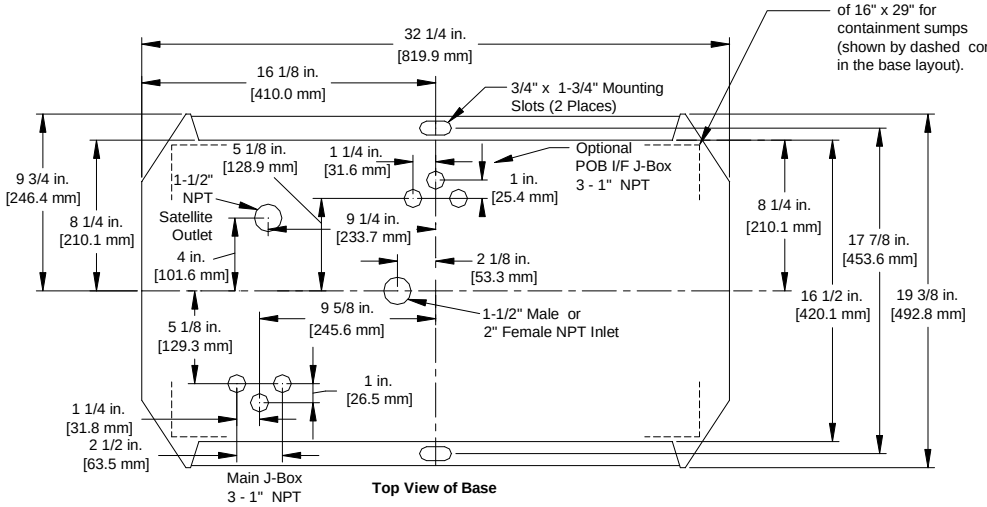
Main J-Box

Satellite Outlet

When connected to a satellite, a Wayne Super High Capacity Satellite must be used.

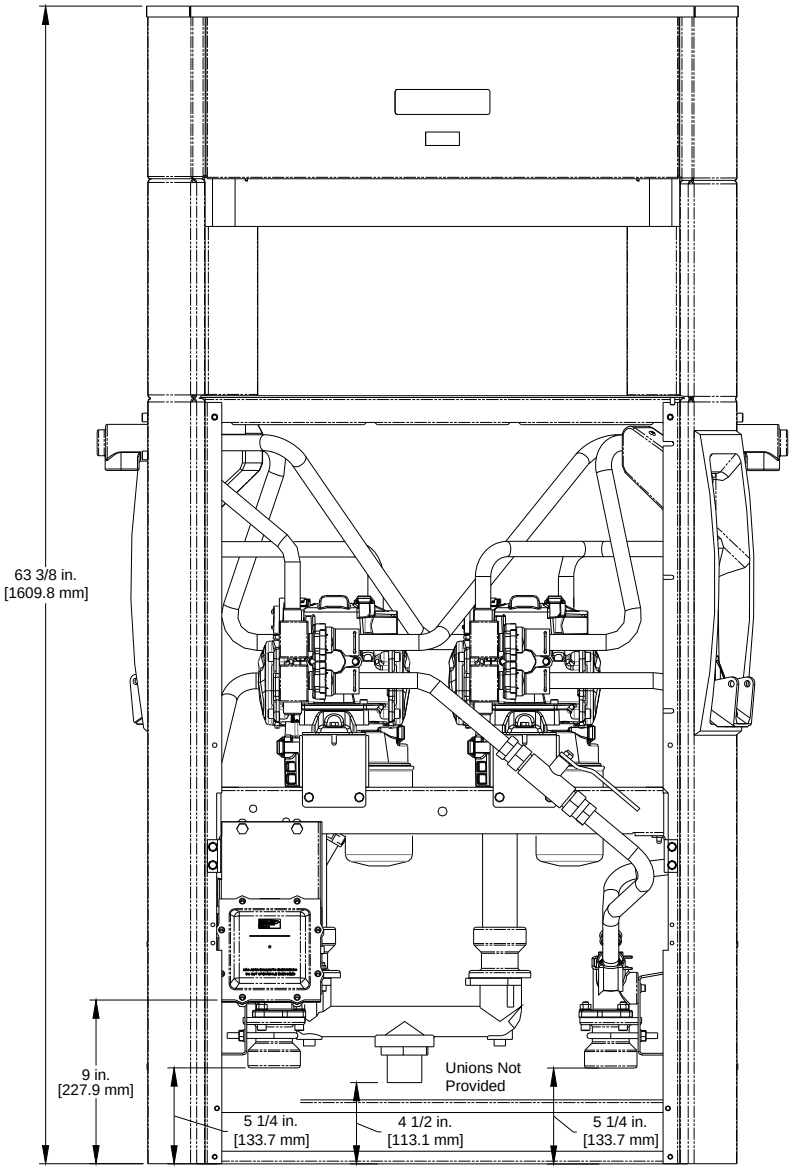
Note: The Hydraulic view for units with ATC, looks slightly different than what is shown to the left. The base layouts are the same.

Note: The interior dimensions of the dispenser provide a maximum rectangular area of 16" x 29" for containment sumps (shown by dashed corners in the base layout).



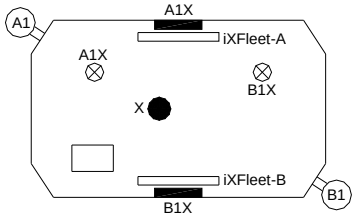
Top View of Base

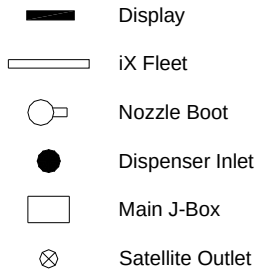
Models: 3/G7227D/M Super High Capacity Twin I Master Remote Dispenser - Lane



Base Orientation

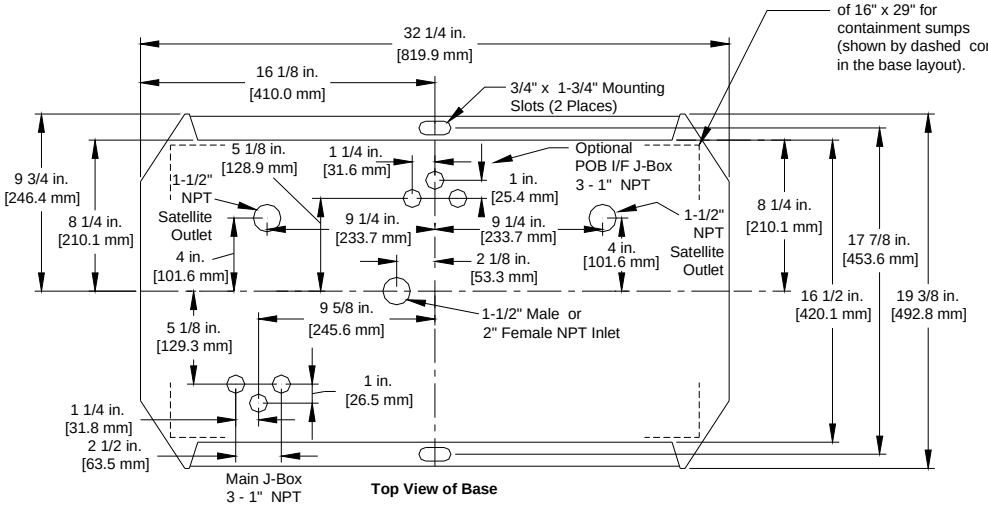
3/G7227D/M
Super High Capacity Twin I Remote
Master/Master
Lane-Oriented





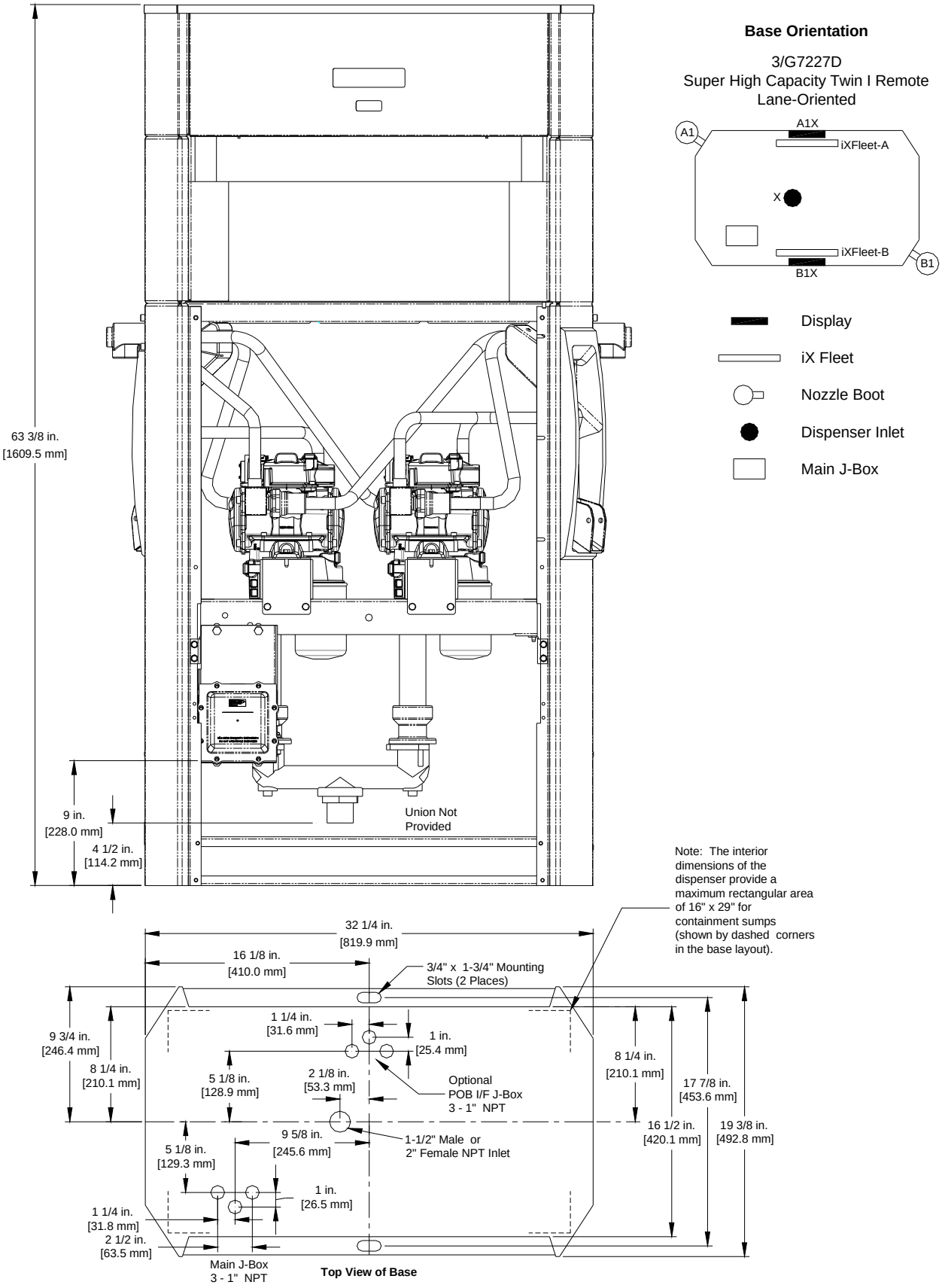
When connected to a satellite, a Wayne Super High Capacity Satellite must be used.

Note: The interior dimensions of the dispenser provide a maximum rectangular area of 16" x 29" for containment sumps (shown by dashed corners in the base layout).

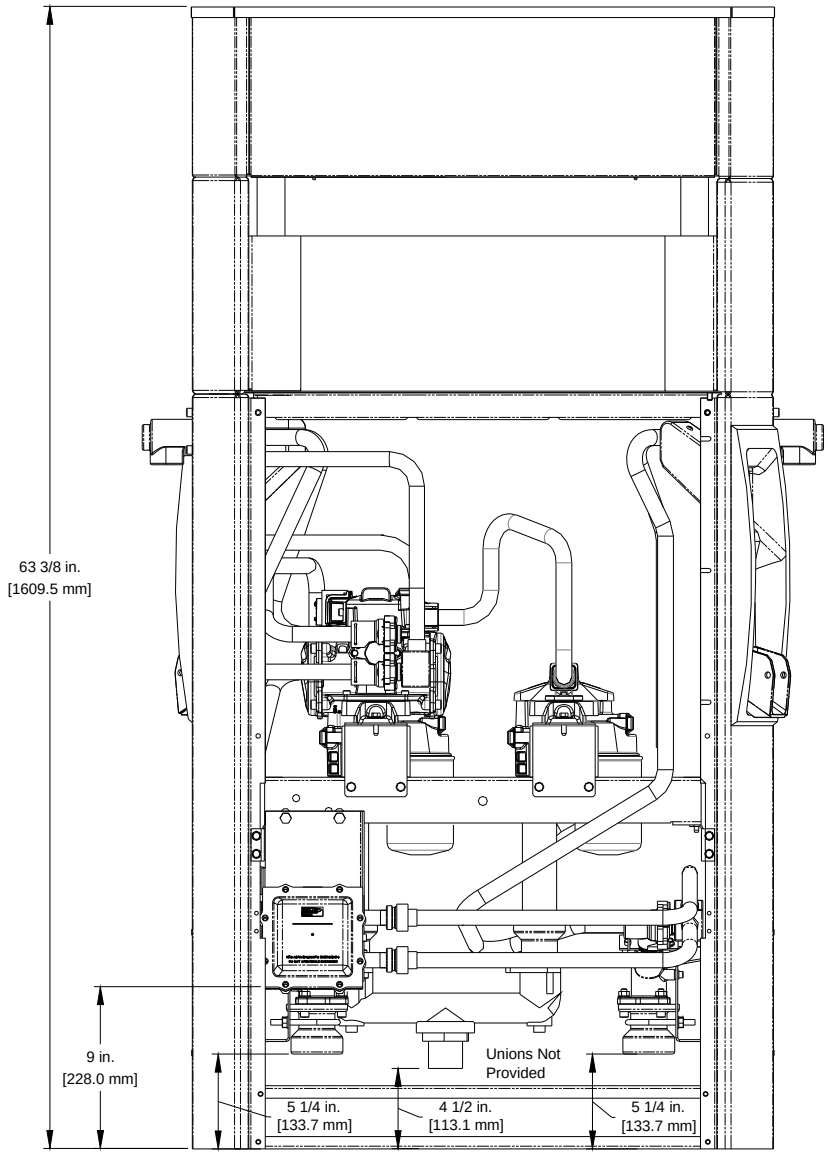


Top View of Base

Model: 3/G7227D Super High Capacity Twin I Remote Dispenser – Lane

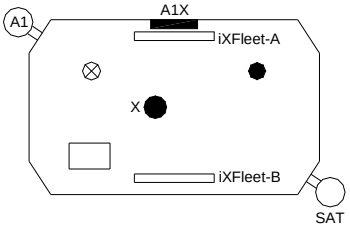


Model: 3/G7228D/LM Super High Capacity Single Master Remote Dispenser & Satellite Combination – Lane



Base Orientation

3/G7228D/LM
Super High Capacity Single Remote
Master/Satellite
Lane-Oriented



Display

iX Fleet

Nozzle Boot

Dispenser Inlet

Main J-Box

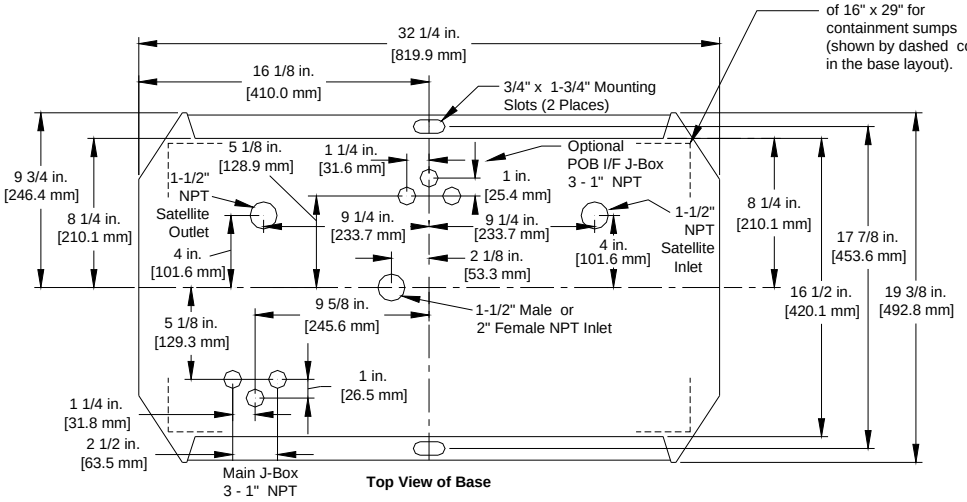
Satellite Inlet

Satellite Outlet

When connected to a satellite, a Wayne Super High Capacity Satellite must be used.

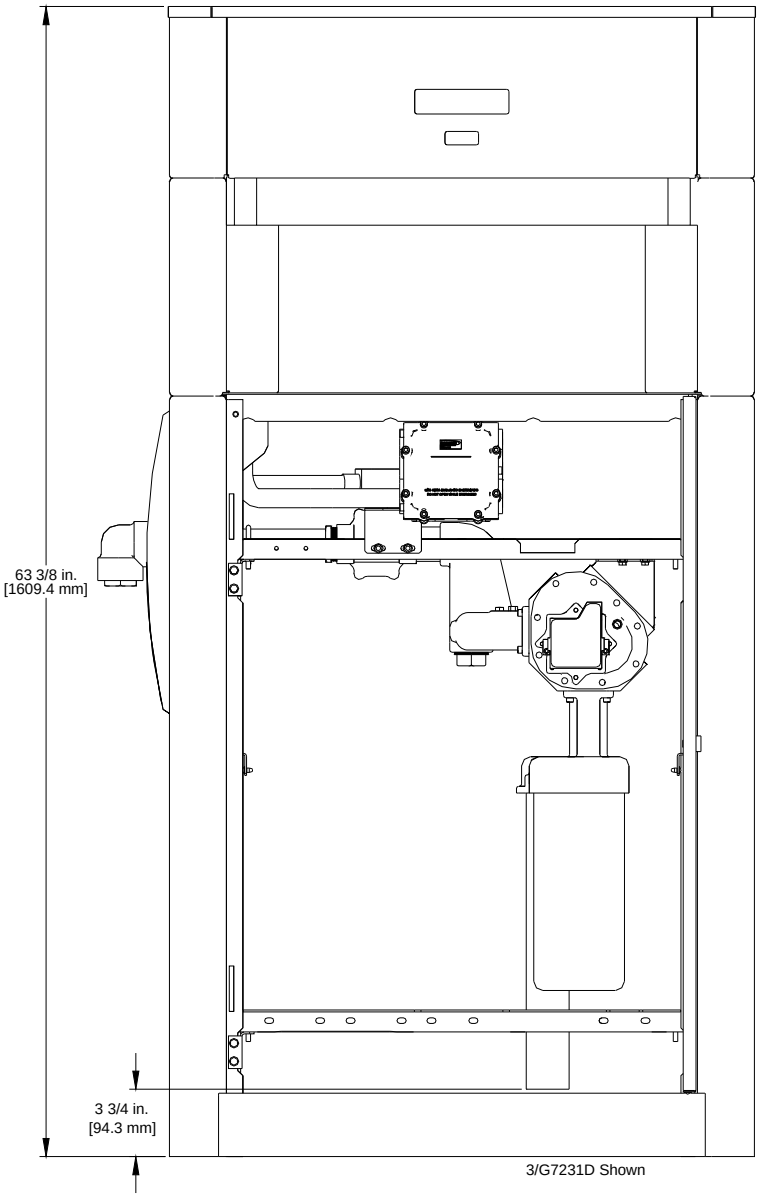
Note: The Hydraulic view for units with ATC, looks slightly different than what is shown to the left. The base layouts are the same.

Note: The interior dimensions of the dispenser provide a maximum rectangular area of 16" x 29" for containment sumps (shown by dashed corners in the base layout).



Top View of Base

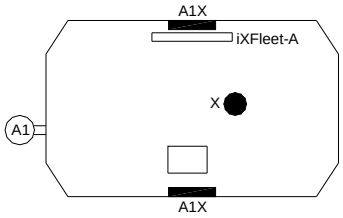
Models: 3/G7231D Ultra High Cap. Single Rem. Disp. – Island
3/G7237D/MR Ultra High Cap. Single Rem. Master Disp. – Lane



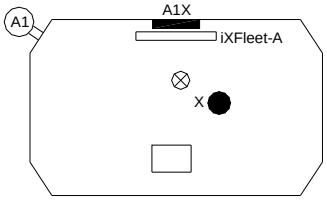
3/G7231D Shown

Base Orientation

3/G7231D
Ultra High Capacity Single Remote
Island-Oriented



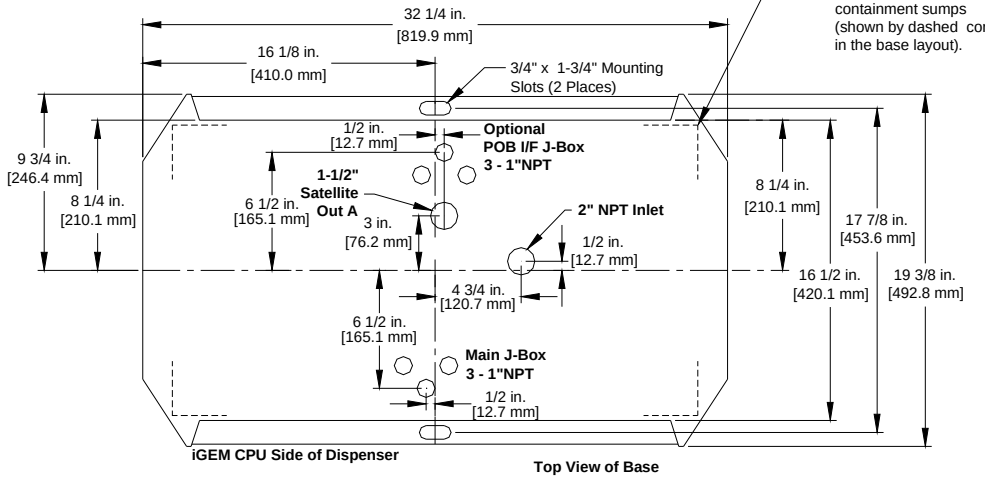
3/G7237D/MR
Ultra High Capacity Single Remote
Lane-Oriented



Display
iX Fleet
Nozzle Boot
Dispenser Inlet
Main J-Box
Satellite Outlet

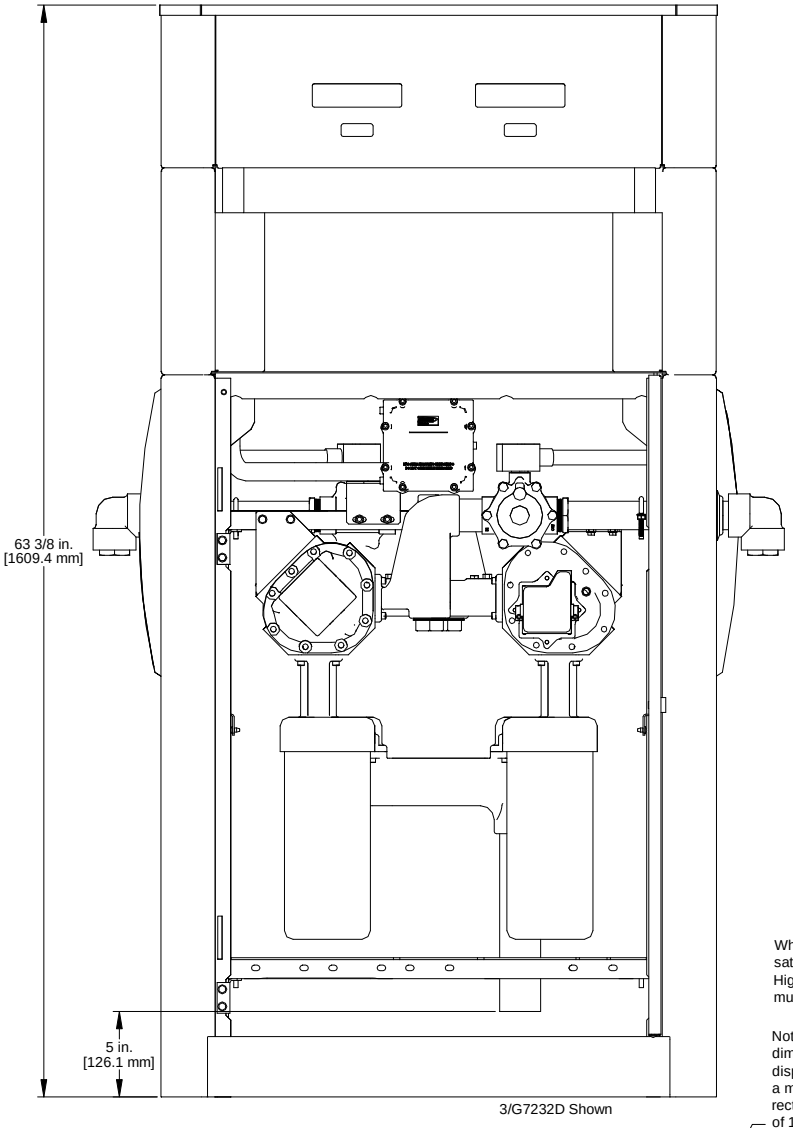
When connected to a satellite, a Wayne Ultra High Capacity Satellite must be used.

Note: The interior dimensions of the dispenser provide a maximum rectangular area of 16" x 29" for containment sumps (shown by dashed corners in the base layout).



Top View of Base

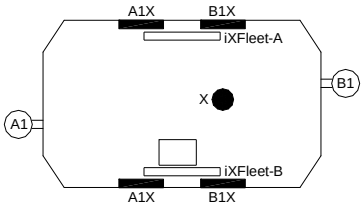
Models: 3/G7232D Ultra High Cap. Twin I Rem. Disp. – Island
3/G7237D/M Ultra High Cap. Twin I Rem. Master Disp. – Lane
3/G7236D/MR Ultra High Cap. Twin I Rem. Master Single-Sided – Lane



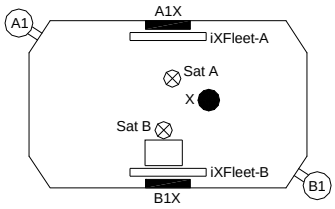
3/G7232D Shown

Base Orientation

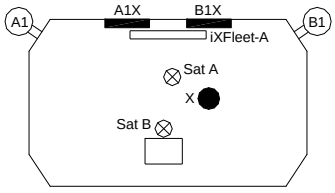
3/G7232D
Ultra High Capacity Twin I Remote
Island-Oriented



3/G7237D/M
Ultra High Capacity Twin I Remote
Lane-Oriented



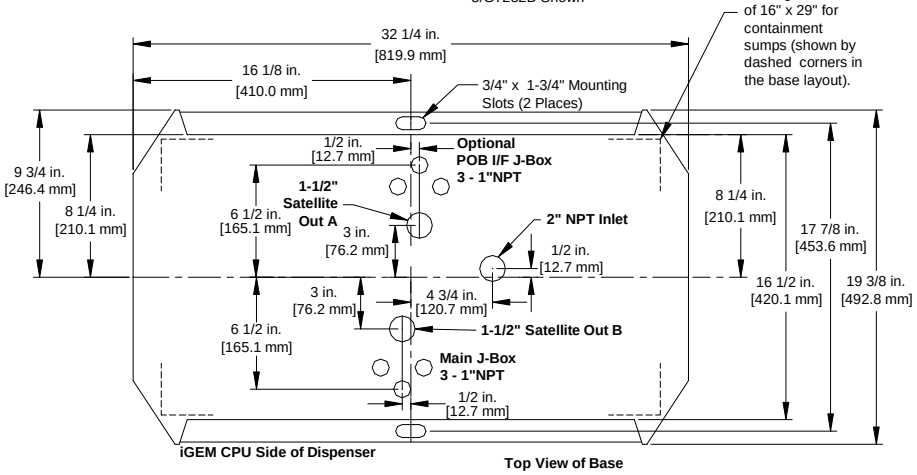
3/G7236D/MR
Ultra High Capacity Twin I Remote
Lane-Oriented, Single-Sided



When connected to a satellite, a Wayne Ultra High Capacity Satellite must be used.

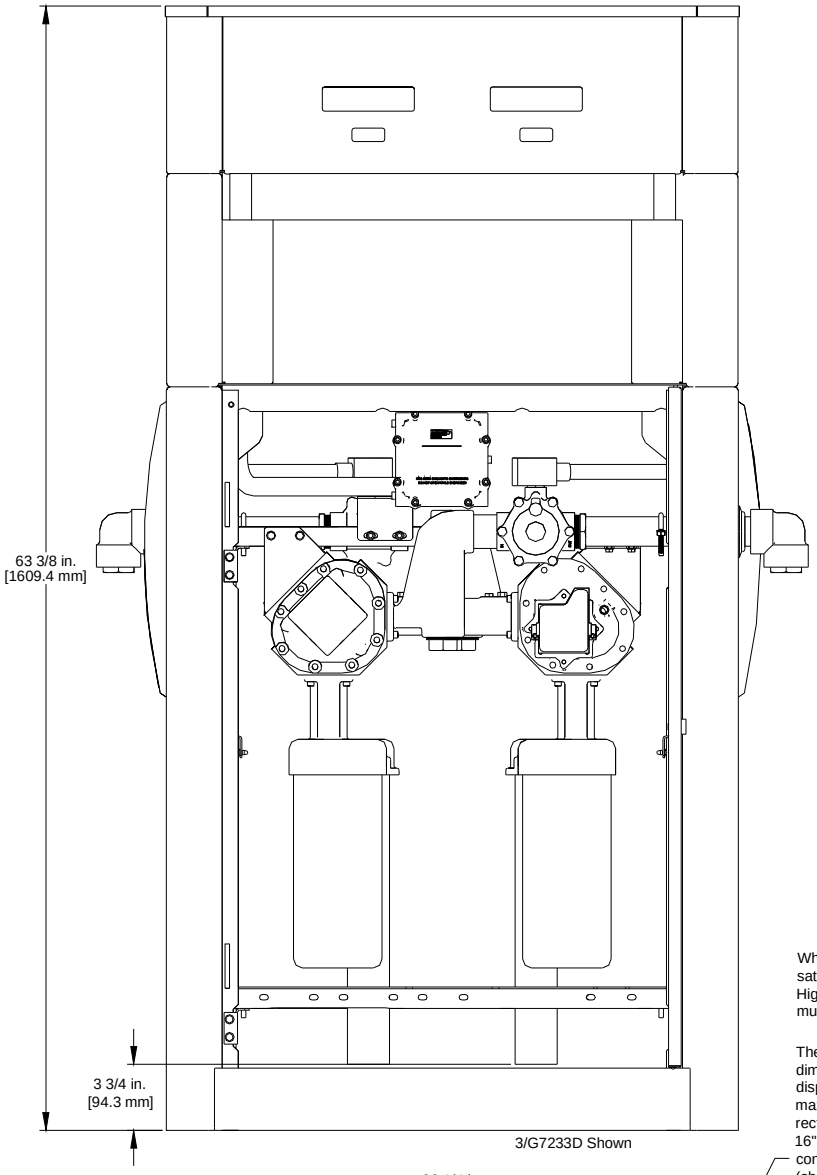
Display
iX Fleet
Nozzle Boot
Dispenser Inlet
Main J-Box
Satellite Outlet

Note: The interior dimensions of the dispenser provide a maximum rectangular area of 16" x 29" for containment sumps (shown by dashed corners in the base layout).



Top View of Base

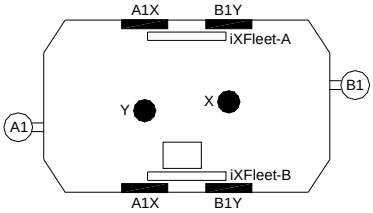
Models: 3/G7233D Ultra High Cap. Twin II Rem. Disp. – Island
3/G7238D/M Ultra High Cap. Twin II Rem. Master Disp. – Lane
3/G7234D/MR Ultra High Cap. Twin II Rem. Master Disp – Lane Single – Sided



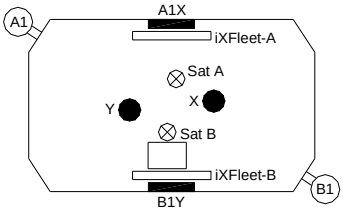
3/G7233D Shown

Base Orientation

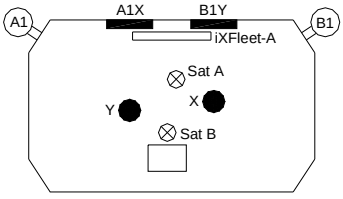
3/G7233D
Ultra High Capacity Twin II Remote
Island-Oriented



3/G7238D/M
Ultra High Capacity Twin II Remote
Lane-Oriented



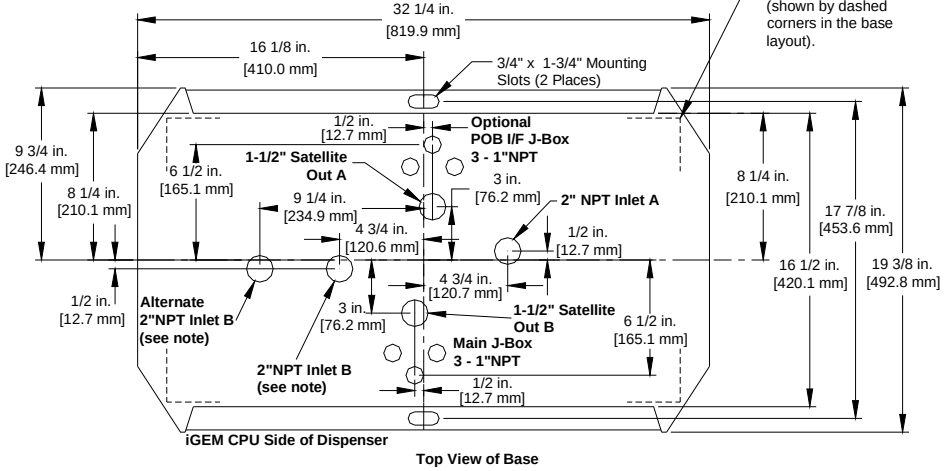
3/G7234D/MR
Ultra High Capacity Twin II Remote
Lane-Oriented, Single-Sided



When connected to a satellite, a Wayne Ultra High Capacity Satellite must be used.

The interior dimensions of the dispenser provide a maximum rectangular area of 16" x 29" for containment sumps (shown by dashed corners in the base layout).

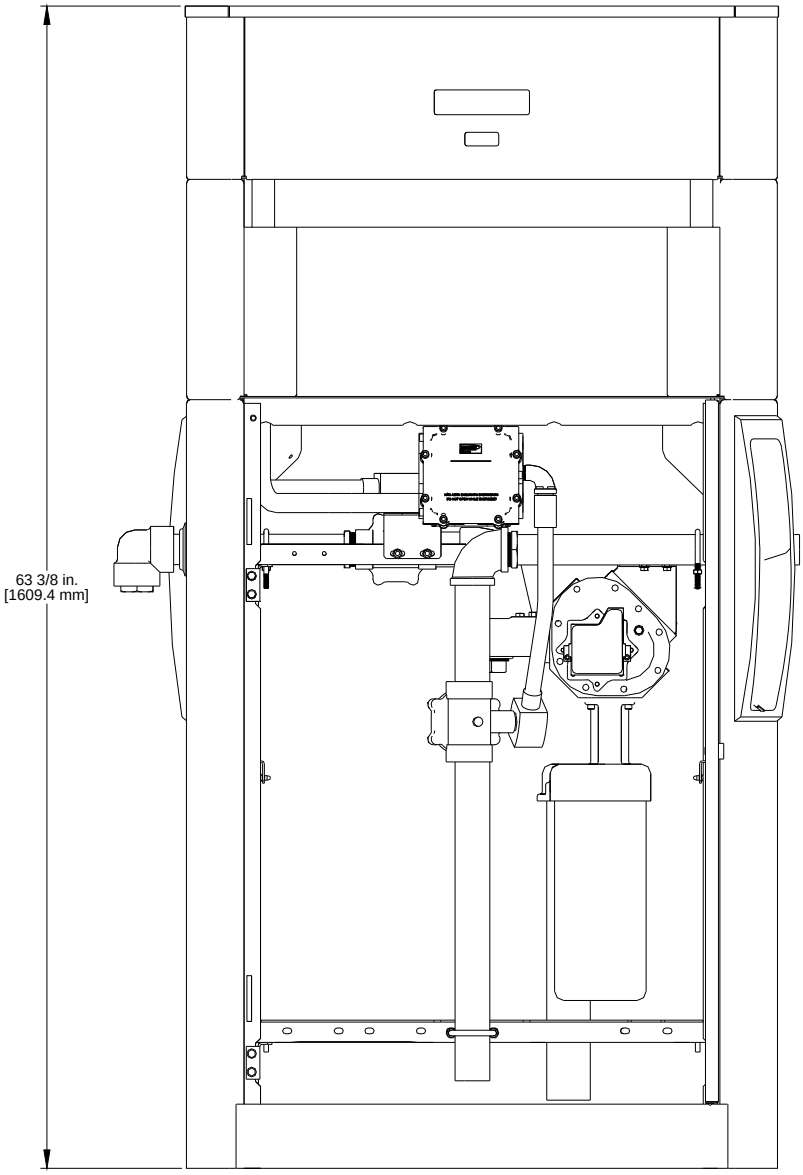
Display
iX Fleet
Nozzle Boot
Dispenser Inlet
Main J-Box
Satellite Outlet



Top View of Base

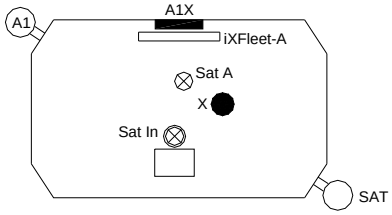
Alternate 2" Inlet Note:
Recommended for Masters with satellite piping.
This alternate inlet position may be obtained by remounting the dual filter inlet casting 180° from the supplied orientation. This creates more room between the inlet piping connections, and may simplify the installation of emergency impact valves.

Model: 3/G7238D/LM Ultra High Capacity Combo, Single Remote Master Dispenser & Satellite – Lane



Base Orientation

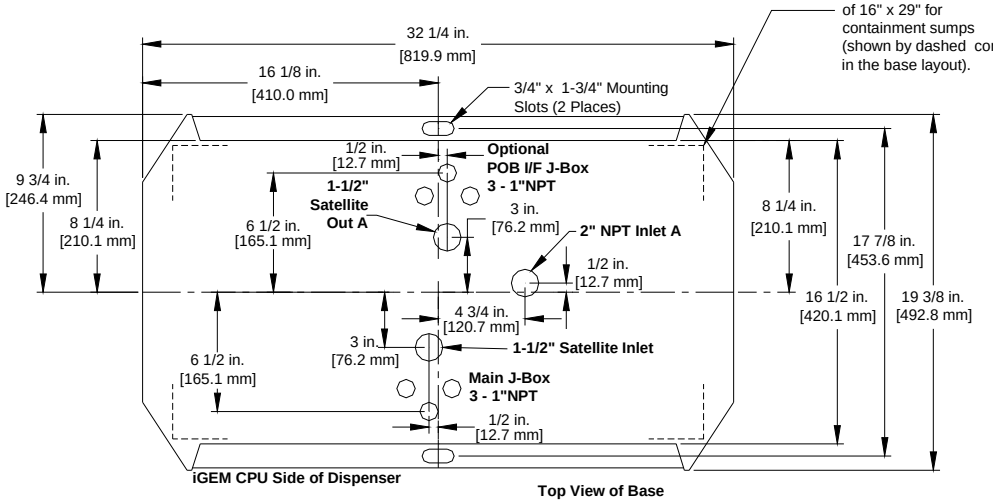
3/G7238D/LM
Ultra High Capacity Combo
Single Remote Master & Satellite
Lane-Oriented



Display
iX Fleet
Nozzle Boot
Dispenser Inlet
Main J-Box
Satellite Outlet
Satellite Inlet

When connected to a satellite, a Wayne Ultra High Capacity Satellite must be used.

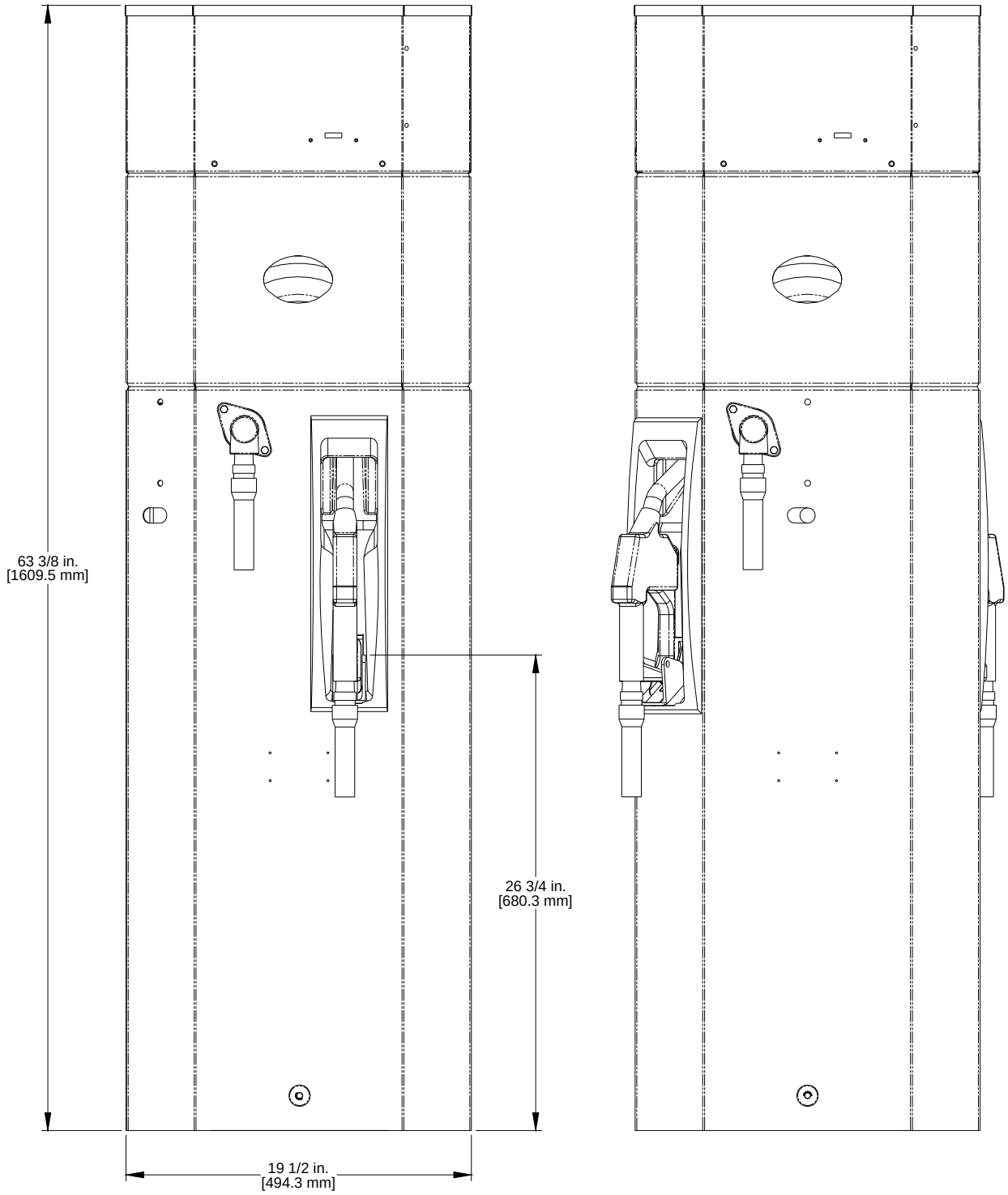
Note: The interior dimensions of the dispenser provide a maximum rectangular area of 16" x 29" for containment sumps (shown by dashed corners in the base layout).



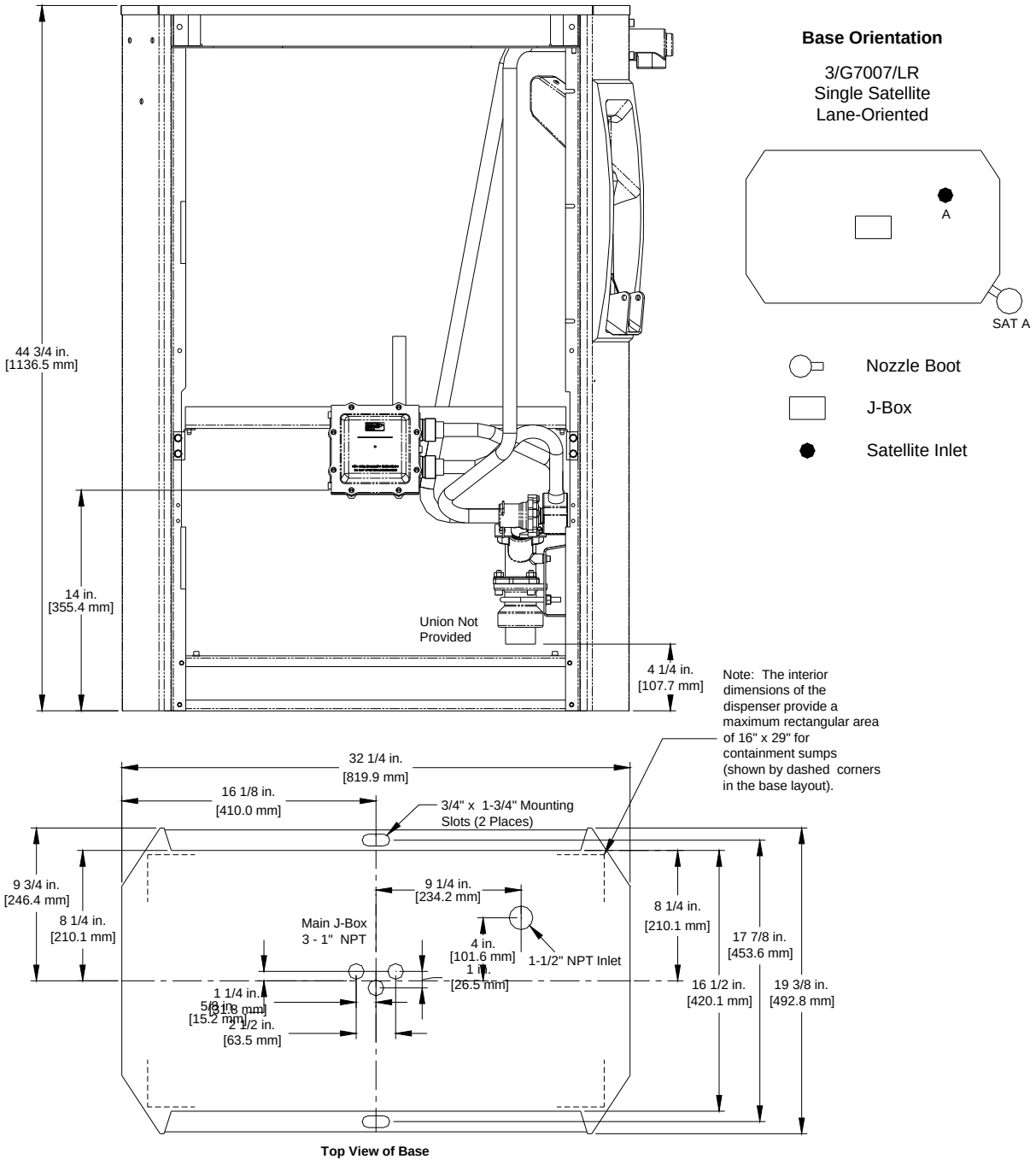
Side View (Nozzle Side) – All Select Series Models (except Satellites)

Island-Oriented
Side Load

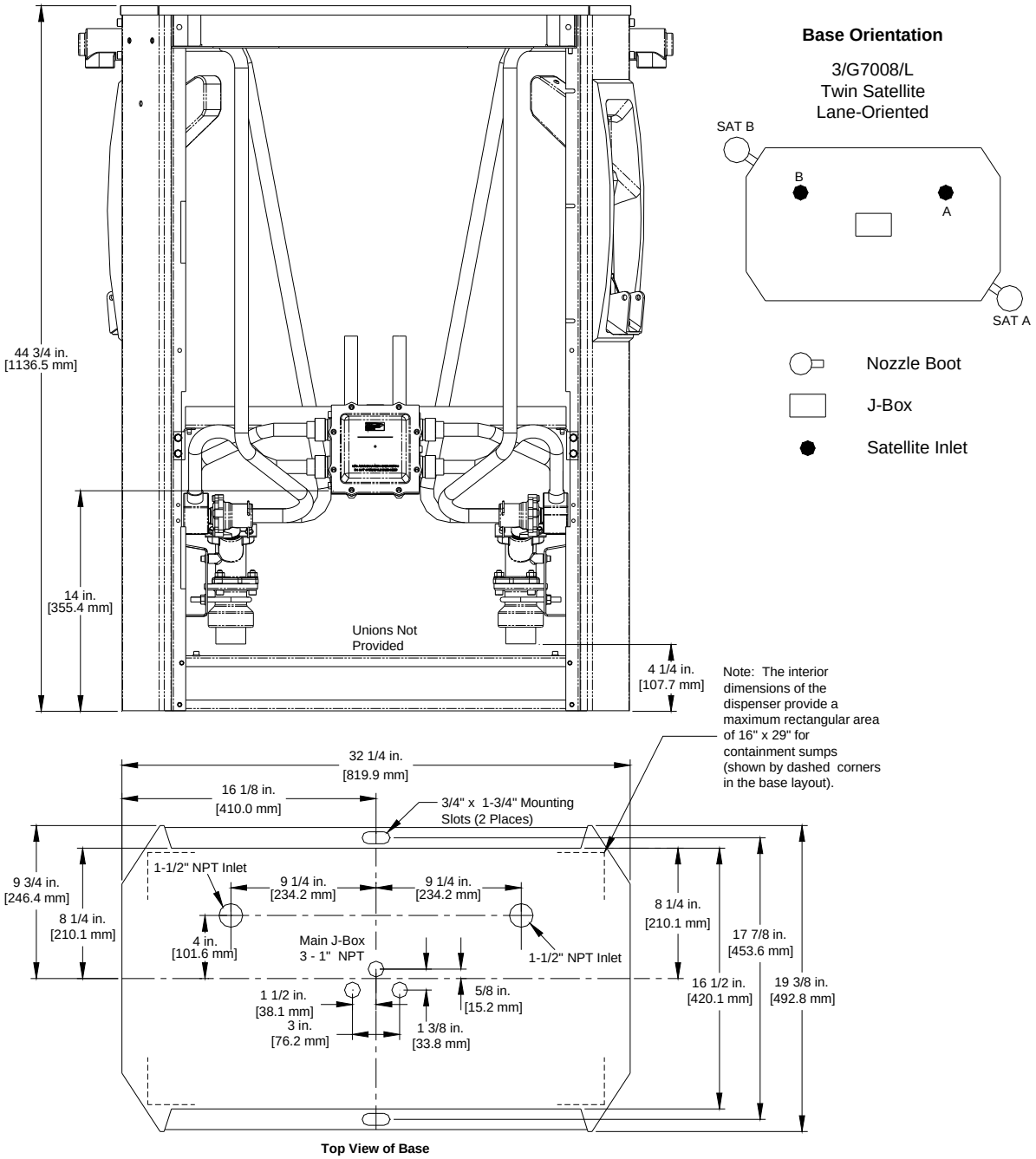
Lane-Oriented
Front Load



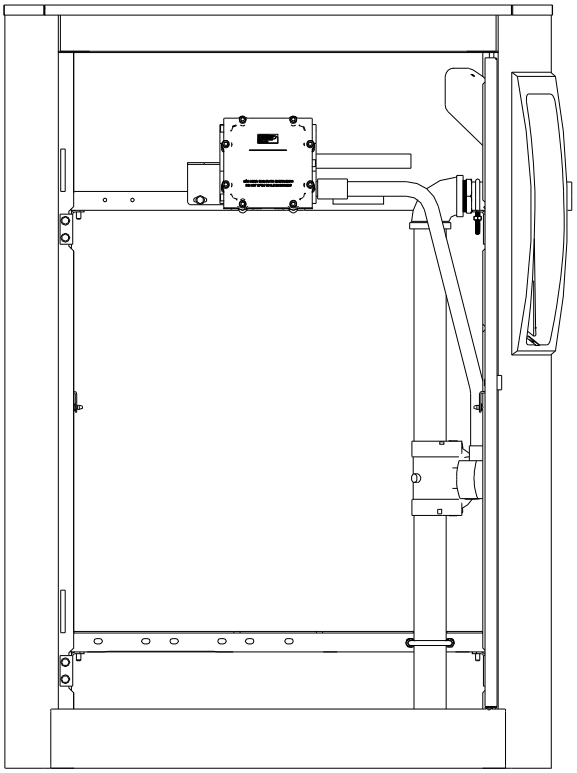
Model: 3/G7007/LR Super High Capacity, Single Satellite Disp. – Lane



Model: 3/G7008/L Super High Capacity, Twin Satellite Dispenser – Lane



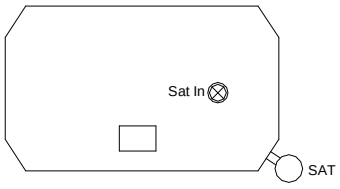
Top View of Base



3/G7037/JKLR Shown

Base Orientation

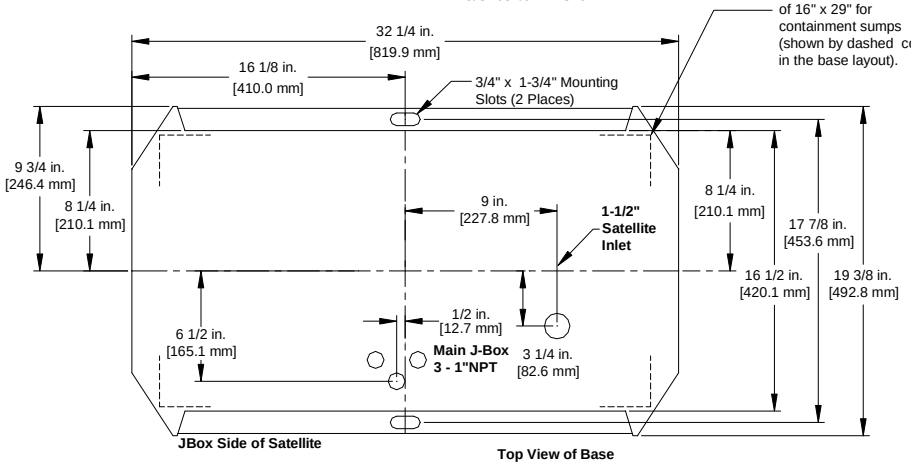
3/G7037/JKLR
Ultra High Capacity Single Satellite
Lane-Oriented



Nozzle Boot

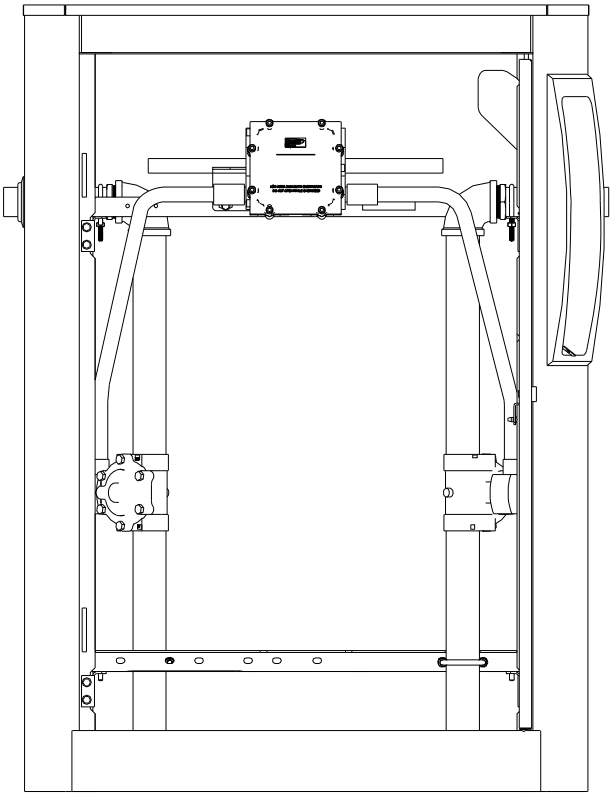
Main J-Box

Satellite Inlet



Note: The interior dimensions of the dispenser provide a maximum rectangular area of 16" x 29" for containment sumps (shown by dashed corners in the base layout).

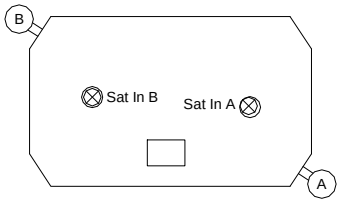
Models: 3/G7038/L Ultra High Capacity, Twin Satellite - Lane
3/G7039/LR Ultra High Capacity, Twin Satellite – Lane, Single-Sided



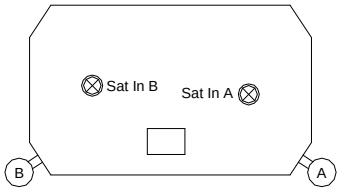
3/G7038/JKL Shown

Base Orientation

3/G7038/JKL
Ultra High Capacity Twin Satellite
Lane-Oriented



3/G7039/JKLR
Ultra High Capacity Twin Satellite
Lane-Oriented, Single-Sided

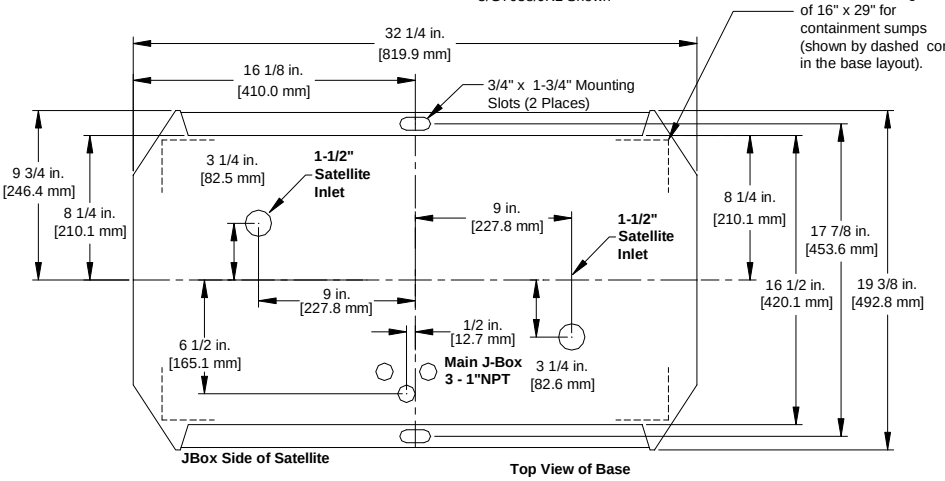


Nozzle Boot

Main J-Box

Satellite Inlet

Note: The interior dimensions of the dispenser provide a maximum rectangular area of 16" x 29" for containment sumps (shown by dashed corners in the base layout).



JBox Side of Satellite

Top View of Base

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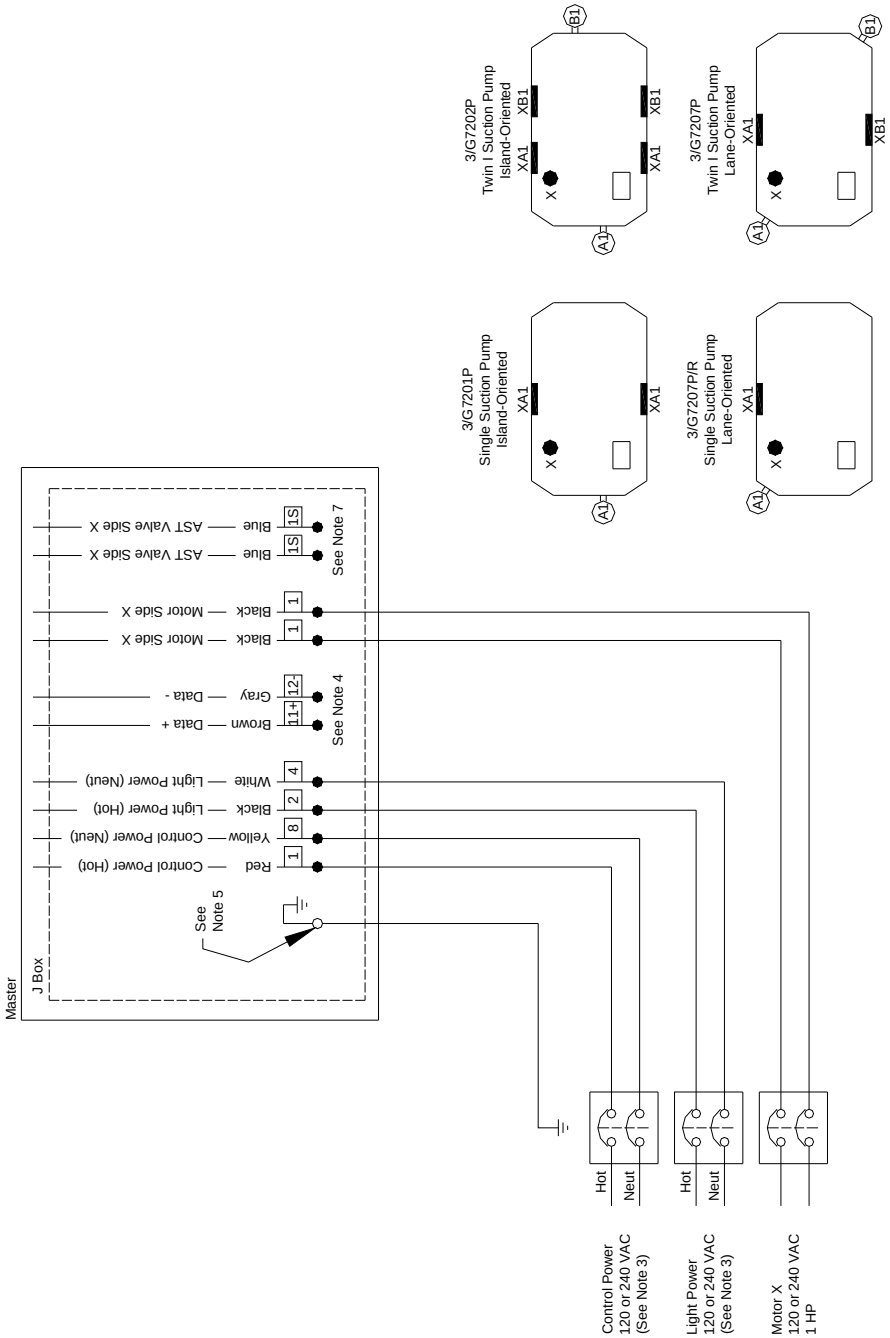
Appendix B – Electrical Ratings & Wiring Diagrams

Electrical Ratings

Component	Voltage	Amps
Dispenser Control Power	120VAC 50/60 Hz	1 Amp
	240VAC 50/60 Hz	1 Amp
Light Power	120VAC 50/60 Hz	.6 Amp
	240VAC 50/60 Hz	.6 Amp
Heater Power (Optional)	120VAC 50/60 Hz	4.6 Amp
iX Fleet Power (Optional)	120VAC 50/60 Hz	4.7 Amp
Note: Heater Power & iX Fleet Power are added to “Dispenser Control Power” and never appear on simultaneously on a dispenser.		
Suction Pump Motor – 1 HP	120VAC 60 Hz	12.4 Amps
	240VAC 60 Hz	6.2 Amps
	240VAC 50 Hz	7.3 Amps

Wiring Diagram:

3/G7201P & 3/G7207P/R Single Suction Pump (Island & Lane)
3/G7202P & 3/G7207P Twin I Suction Pump (Island & Lane)

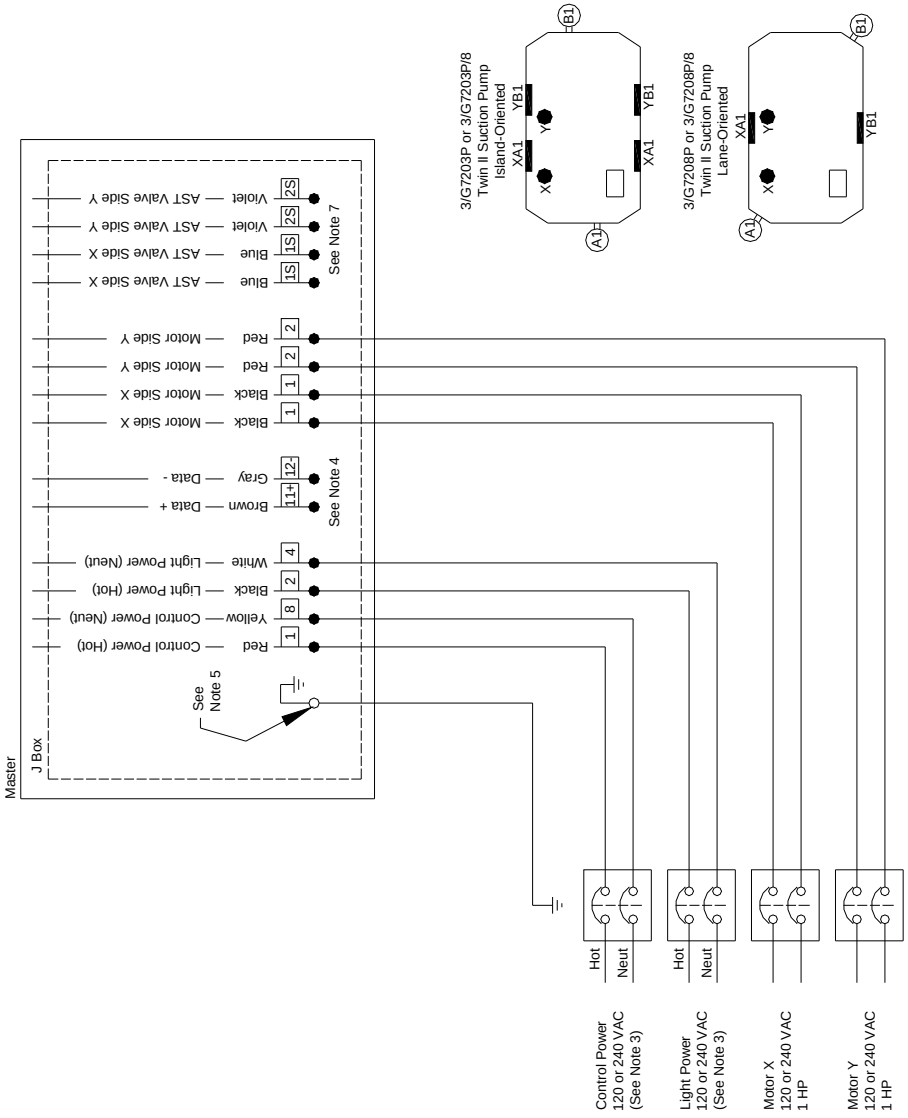


Notes:

1. All equipment to be installed in accordance with all applicable local, state, and federal codes, including, but not limited to, the National Electrical Code (NFPA 70), NFPA 30, and the Automotive and Marine Service Station Code (NFPA 30A).
2. For wiring connections, use wires rated at least 90°C, 600V, Gas & Oil Resistant.
3. See wire size chart for proper gauge of the wires.
4. For full details of Wayne control systems interconnections see the manual provided with the Wayne pump control system or Wayne card processing system.
5. Attach all grounds to the ground screw provided.
6. Pump Motor can be wired for 240VAC to reduce current draw. All other wiring remains the same. Be sure to change the switch on the motor when running the motor at 240VAC.
7. If this dispenser is used with an aboveground tank, an anti-siphon valve mounted on top of the tank must be used. Two wires are provided to control a solenoid valve on top of the tank. The valve must be run at the same voltage as the motor. Only one dispenser inlet can be connected to an electric solenoid valve.

Wiring Diagram:

3/G7203P/8 & 3/G7208P/8 Twin II Suction Pump (Island & Lane)
3/G7203P & 3/G7208P Twin II Suction Pump (Island & Lane)

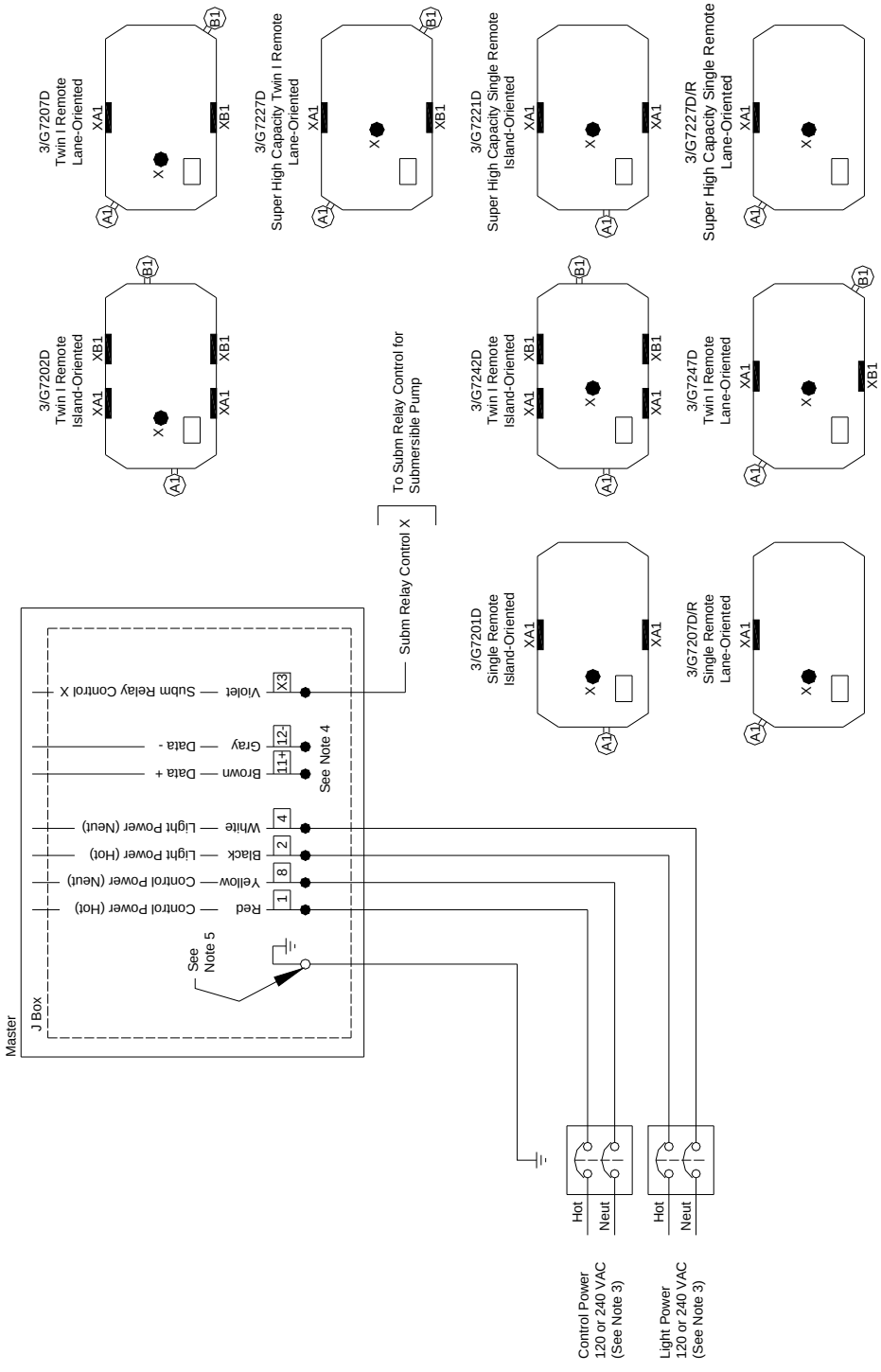


Notes:

1. All equipment to be installed in accordance with all applicable local, state, and federal codes, including, but not limited to, the National Electrical Code (NFPA 70), NFPA 30, and the Automotive and Marine Service Station Code (NFPA 30A).
2. For wiring connections, use wires rated at least 90°C, 600V, Gas & Oil Resistant.
3. See wire size chart for proper gauge of the wires.
4. For full details of Wayne control systems interconnections see the manual provided with the Wayne pump control system or Wayne card processing system.
5. Attach all grounds to the ground screw provided.
6. Pump Motor can be wired for 240VAC to reduce current draw. All other wiring remains the same. Be sure to change the switch on the motor when running the motor at 240VAC.
7. If this dispenser is used with an aboveground tank, an anti-siphon valve mounted on top of the tank must be used. Two wires are provided for each side to control a solenoid valve on top of the tank. The valve must be run at the same voltage as the motor. Only one dispenser inlet can be connected to an electric solenoid valve.

Wiring Diagram:

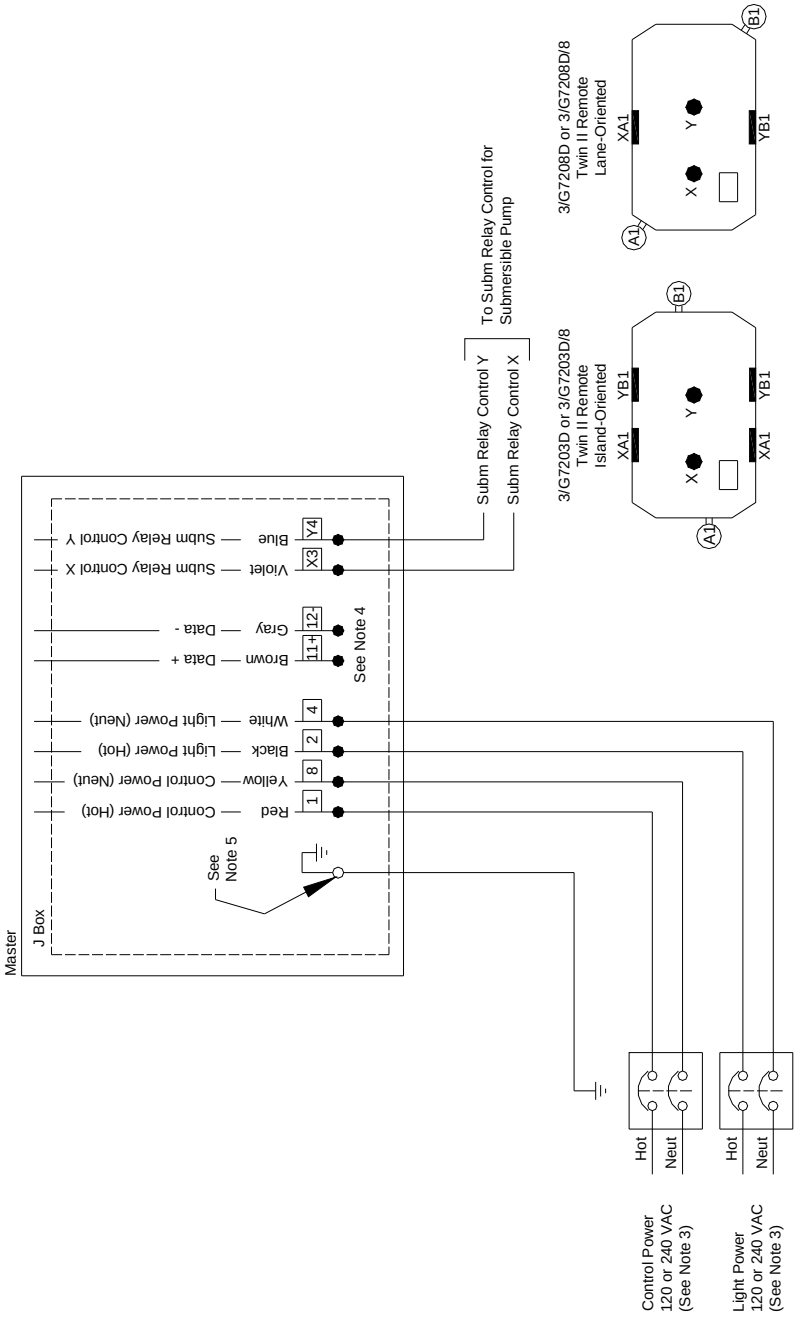
3/G7201D & 3/G7207D/R Single Remote (Island & Lane, E3/ or 3/)
3/G7242D & 3/G7247D Twin I Remote (Island & Lane)
3/G7202D & 3/G7207D Twin I Remote (Island & Lane, E3/ or 3/)
3/G7221D & 3/G7227D/R Super High Cap. Single Rem. (Island & Lane)
3/G7227D Super High Capacity Twin I Remote (Lane)



Notes:

1. All equipment to be installed in accordance with all applicable local, state, and federal codes, including, but not limited to, the National Electrical Code (NFPA 70), NFPA 30, and the Automotive and Marine Service Station Code (NFPA 30A).
2. For wiring connections, use wires rated at least 90°C, 600V, Gas & Oil Resistant.
3. See wire size chart for proper gauge of the wires.
4. For full details of Wayne control systems interconnections see the manual provided with the Wayne pump control system or Wayne card processing system.
5. Attach all grounds to the ground screw provided.
6. Remote dispensers require a relay to interface to the submersible pump motor.

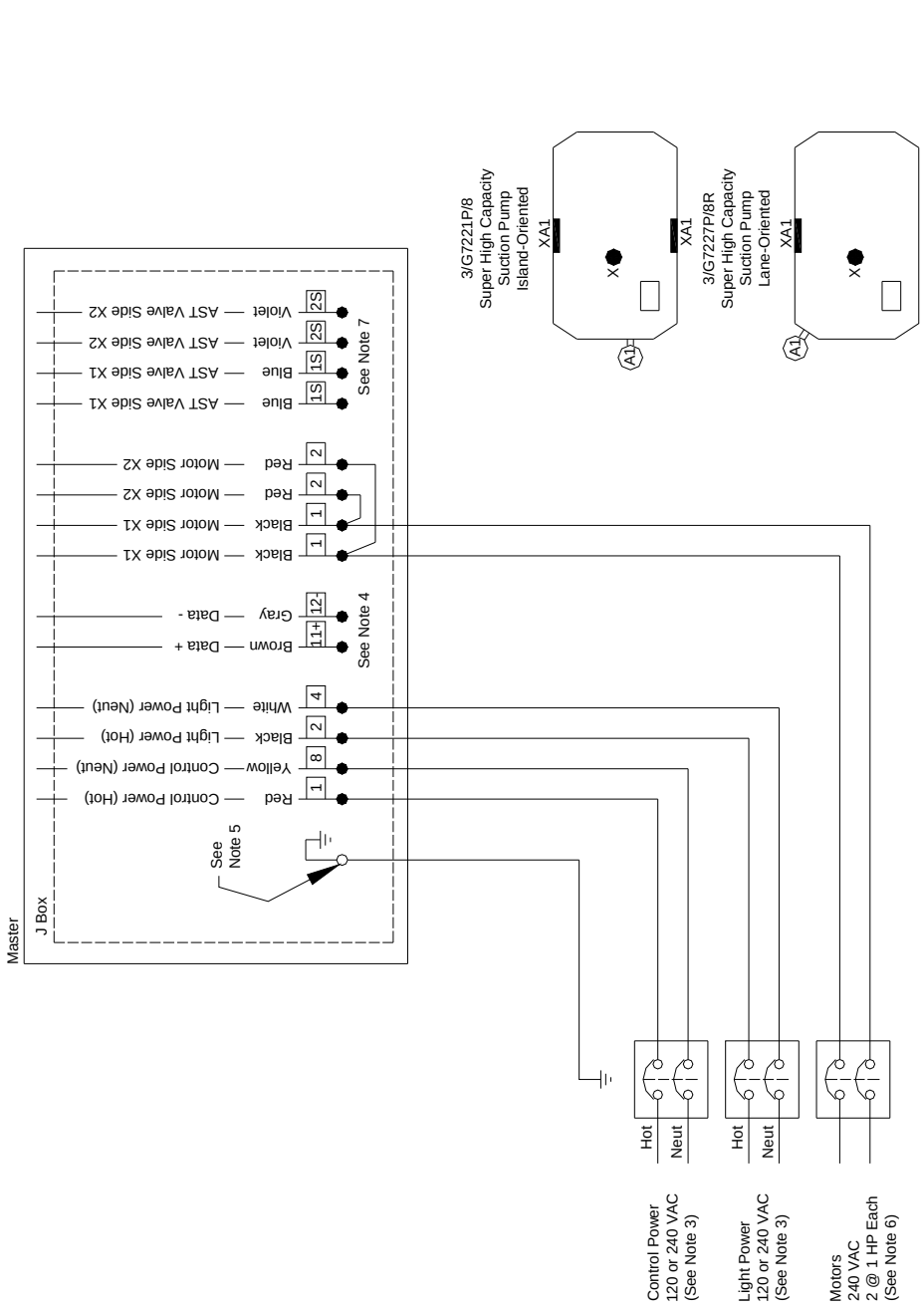
Wiring Diagram:
3/G7203D/8 & 3/G7208D/8 Twin II Remote (Island & Lane, E3/ or 3/)
3/G7203D & 3/G7208D Twin II Remote (Island & Lane)



Notes:

1. All equipment to be installed in accordance with all applicable local, state, and federal codes, including, but not limited to, the National Electrical Code (NFPA 70), NFPA 30, and the Automotive and Marine Service Station Code (NFPA 30A).
2. For wiring connections, use wires rated at least 90°C, 600V, Gas & Oil Resistant.
3. See wire size chart for proper gauge of the wires.
4. For full details of Wayne control systems interconnections see the manual provided with the Wayne pump control system or Wayne card processing system.
5. Attach all grounds to the ground screw provided.
6. Remote dispensers require a relay to interface to the submersible pump motor.

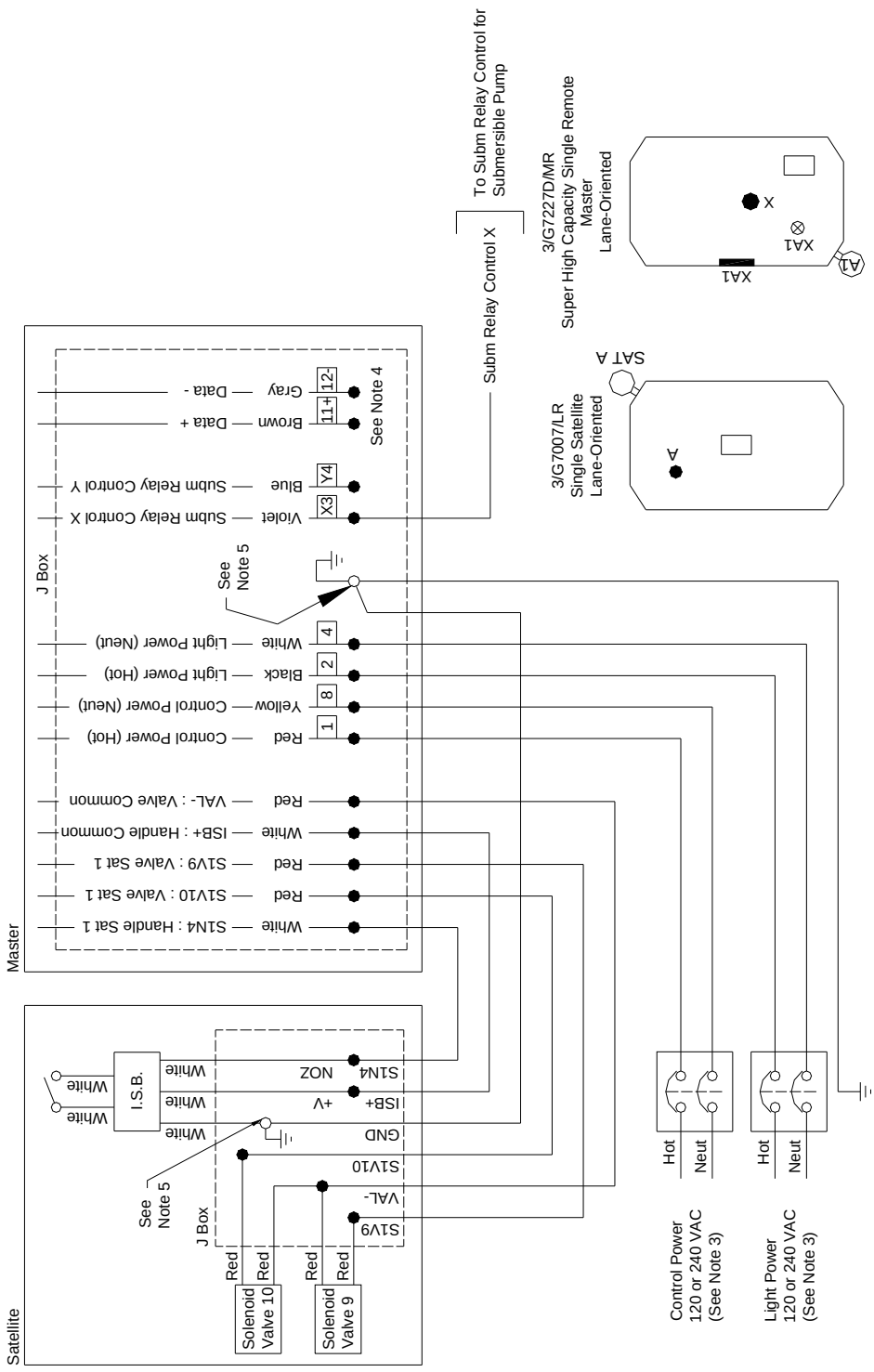
Wiring Diagram:
3/G7221P/8 & 3/G7227P/8R Super High Cap Suction (Island & Lane)



Notes:

1. All equipment to be installed in accordance with all applicable local, state, and federal codes, including, but not limited to, the National Electrical Code (NFPA 70), NFPA 30, and the Automotive and Marine Service Station Code (NFPA 30A).
2. For wiring connections, use wires rated at least 90°C, 600V, Gas & Oil Resistant.
3. See wire size chart for proper gauge of the wires.
4. For full details of Wayne control systems interconnections see the manual provided with the Wayne pump control system or Wayne card processing system.
5. Attach all grounds to the ground screw provided.
6. Pump Motors should be wired for 240VAC to reduce current draw. All other wiring remains the same. Before powering the motors at 240 VAC, be sure that the switch on each motor is set to the "High" position.
7. If this dispenser is used with an aboveground tank, an anti-siphon valve mounted on top of the tank must be used. Use one set of the AST wires (X1) provided to control a solenoid valve on top of the tank. As the motors are running at 240 VAC, the valve must also be run at 240 VAC.

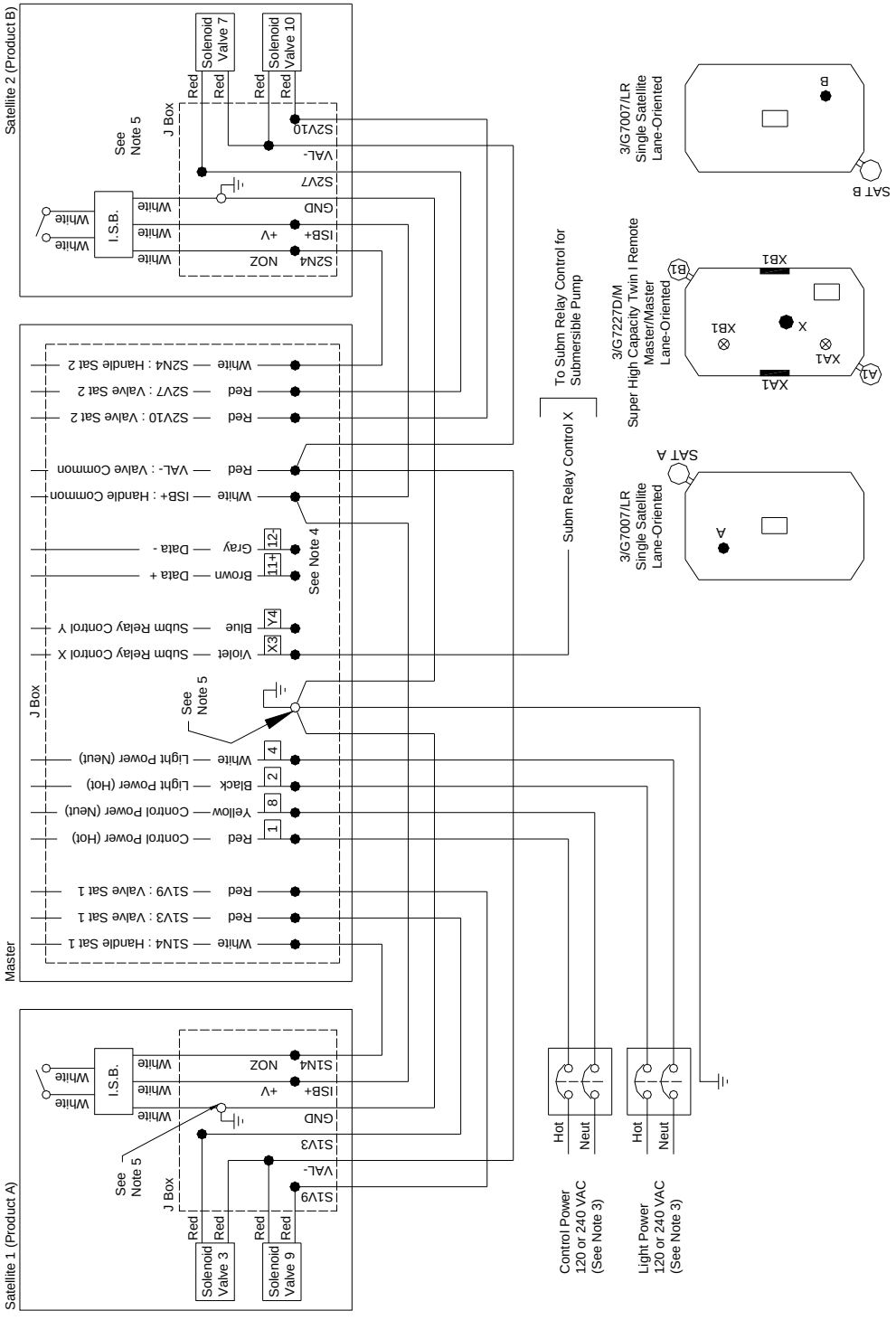
Wiring Diagram:
3/G7227D/MR Super High Capacity Single Master Remote (Lane)



Notes:

1. All equipment to be installed in accordance with all applicable local, state, and federal codes, including, but not limited to, the National Electrical Code (NFPA 70), NFPA 30, and the Automotive and Marine Service Station Code (NFPA 30A).
2. For wiring connections, use wires rated at least 90°C, 600V, Gas & Oil Resistant.
3. See wire size chart for proper gauge of the wires.
4. For full details of Wayne control systems interconnections see the manual provided with the Wayne pump control system or Wayne card processing system.
5. Attach all grounds to the ground screw provided.
6. Remote dispensers require a relay to interface to the submersible pump motor.
7. When used with a satellite, a Wayne Super High Capacity Satellite must be used.

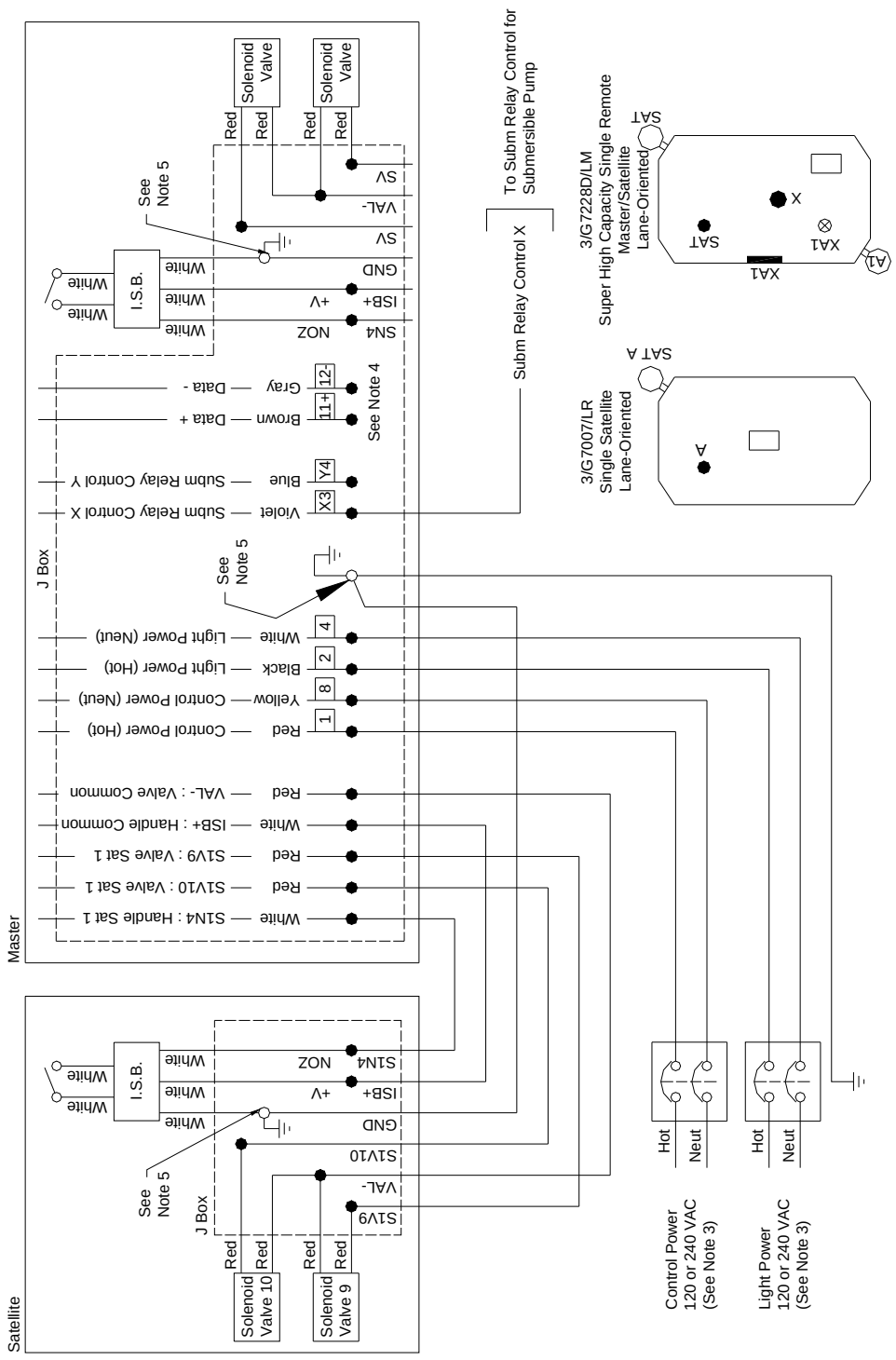
Wiring Diagram:
3/G7227D/M Super High Capacity Twin I Master Remote (Lane)



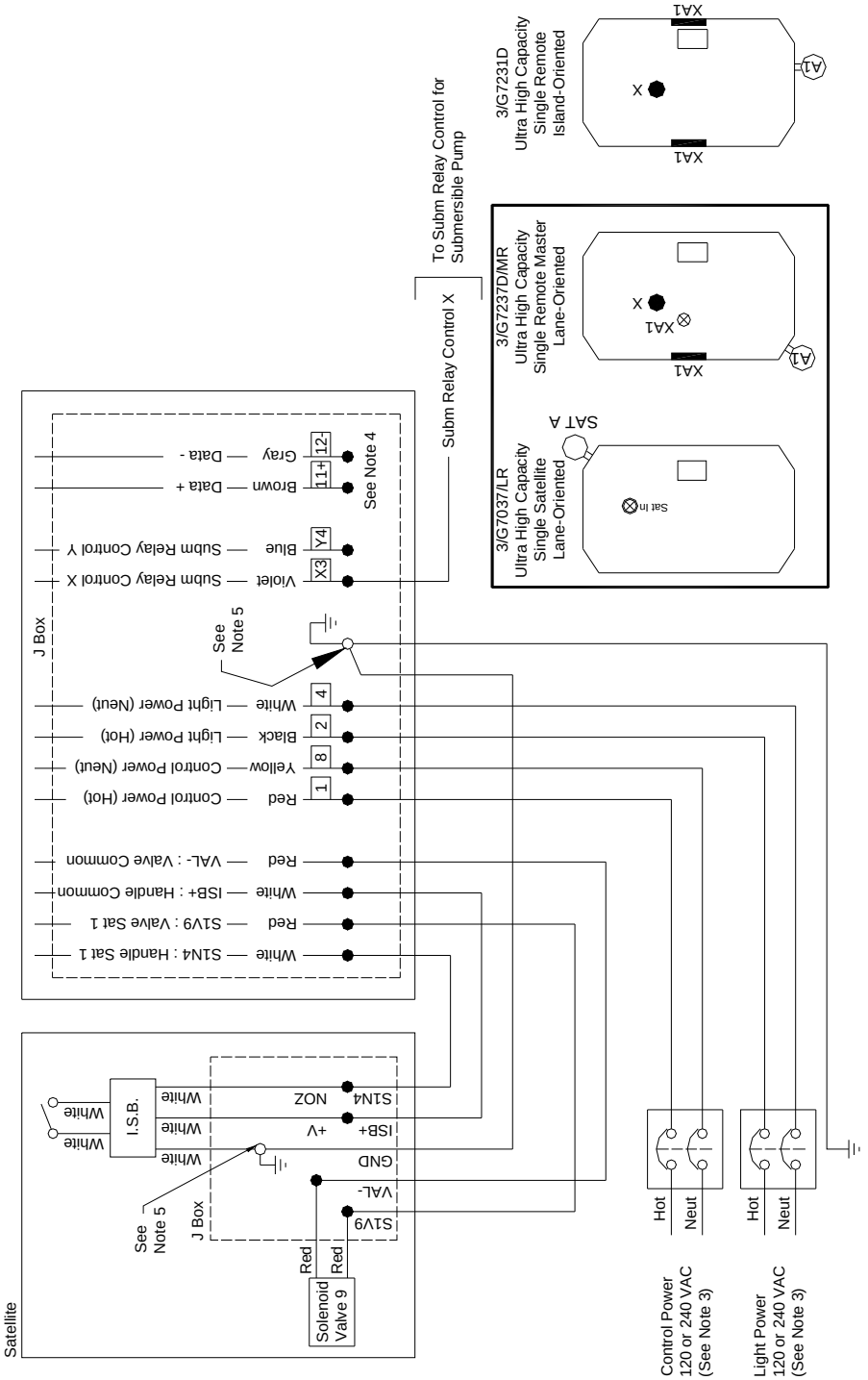
Notes:

1. All equipment to be installed in accordance with all applicable local, state, and federal codes, including, but not limited to, the National Electrical Code (NFPA 70), NFPA 30, and the Automotive and Marine Service Station Code (NFPA 30A).
2. For wiring connections, use wires rated at least 90°C, 600V, Gas & Oil Resistant.
3. See wire size chart for proper gauge of the wires.
4. For full details of Wayne control systems interconnections see the manual provided with the Wayne pump control system or Wayne card processing system.
5. Attach all grounds to the ground screw provided.
6. Remote dispensers require a relay to interface to the submersible pump motor.
7. When used with a satellite, a Wayne Super High Capacity Satellite must be used.

Wiring Diagram:
3/G7228D/LM Super High Capacity Single Master Remote Dispenser & Satellite Combination (Lane)



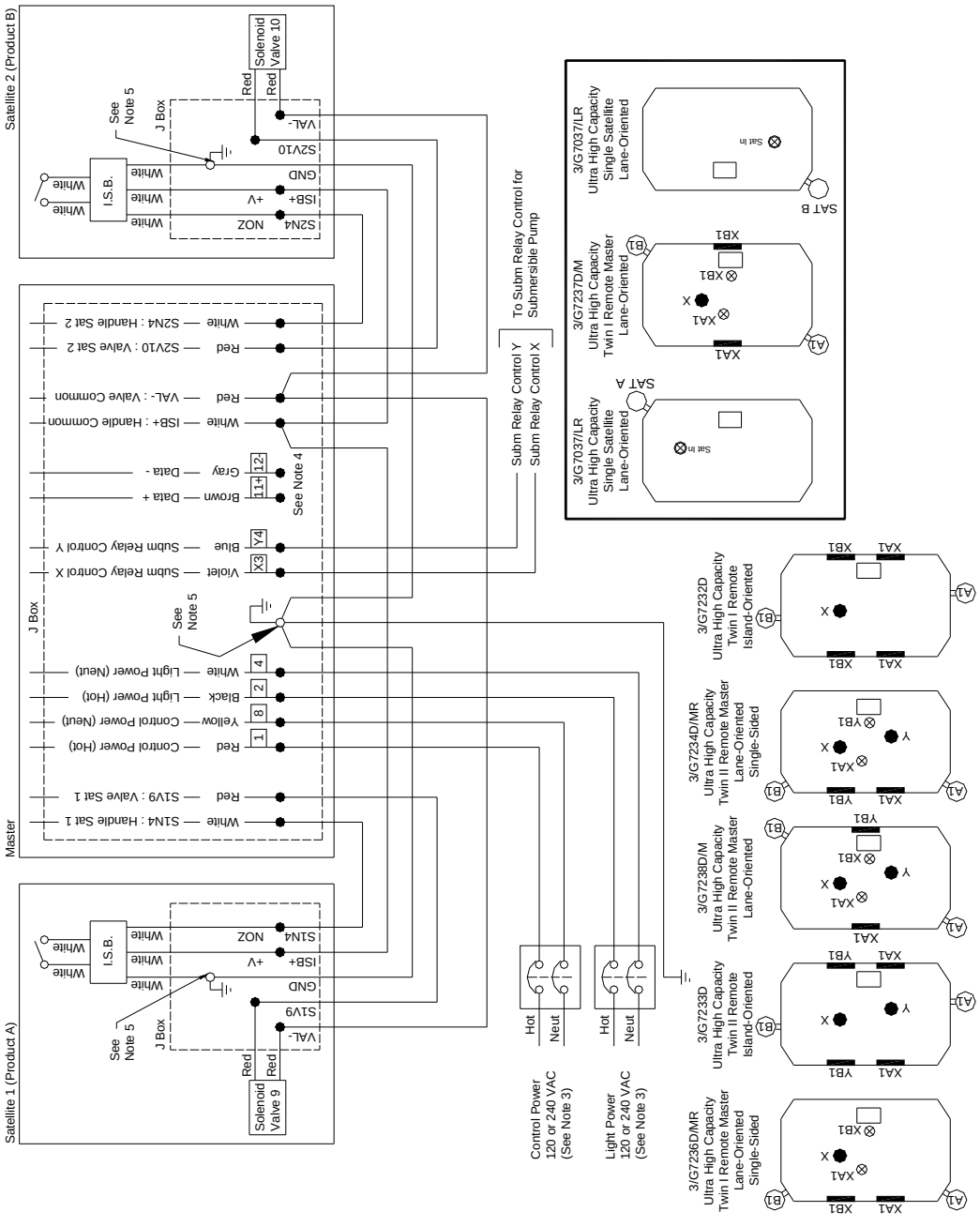
Wiring Diagram:
3/G7231D & 3/G7237D/MR UHC Single Remote (Island & Lane)



Notes:

1. All equipment to be installed in accordance with all applicable local, state, and federal codes, including, but not limited to, the National Electrical Code (NFPA 70), NFPA 30, and the Automotive and Marine Service Station Code (NFPA 30A).
2. For wiring connections, use wires rated at least 90ºC, 600V, Gas & Oil Resistant.
3. See wire size chart for proper gauge of the wires.
4. For full details of Wayne control systems interconnections see the manual provided with the Wayne pump control system or Wayne card processing system.
5. Attach all grounds to the ground screw provided.
6. Remote dispensers require a relay to interface to the submersible pump motor.
7. When used with a satellite, a Wayne Ultra High Capacity Satellite must be used. 120VAC valves (///W3 model suffix) are shown in diagram.

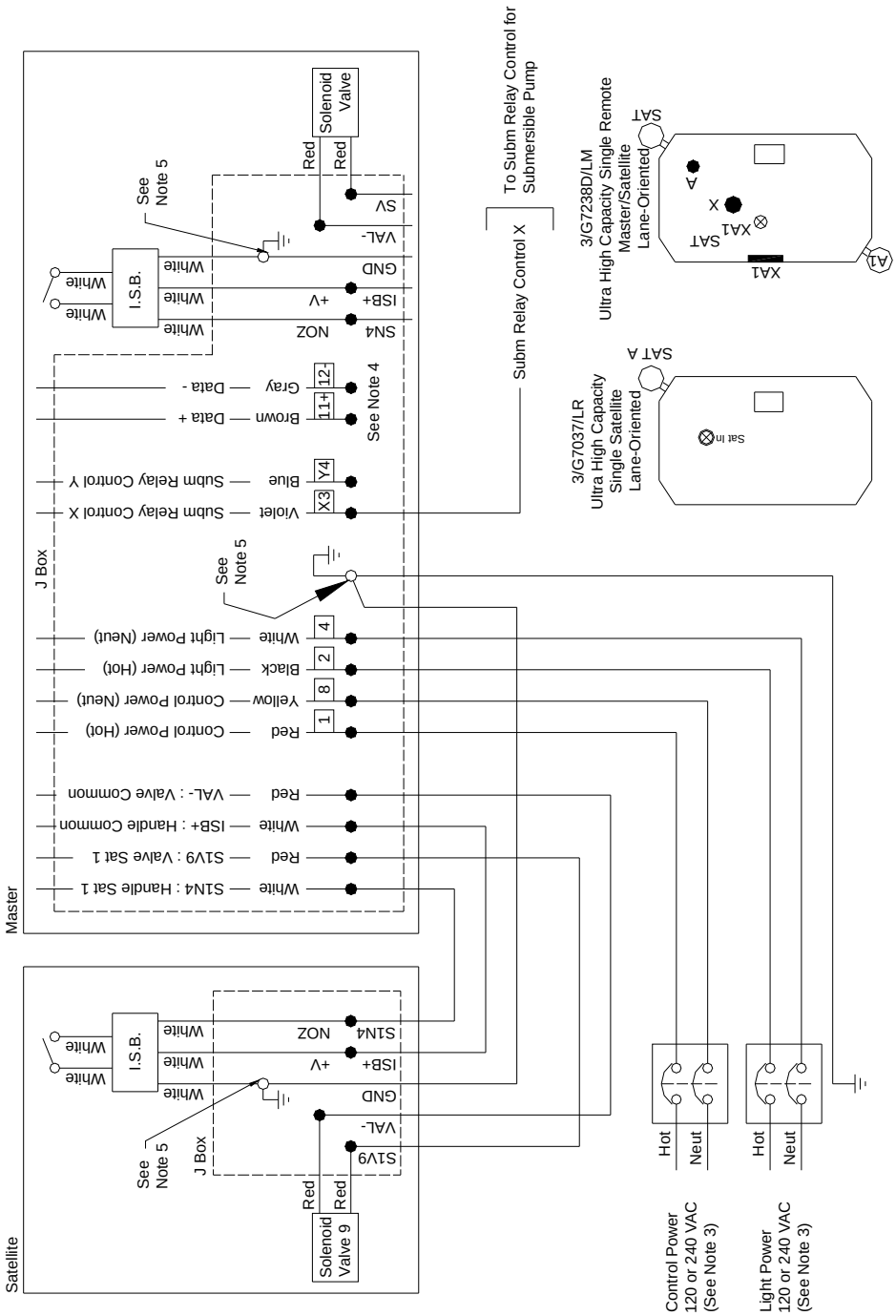
Wiring Diagram:
3/G7232D & 3/G7237D/M UHC Twin I Disp. (Island & Master Lane)
3/G7233D & 3/G7238D/M UHC Twin II Disp. (Island & Master Lane)
3/G7234D/MR UHC Twin II Master Disp., Single-Sided (Lane)
3/G7236D/MR UHC Twin I Master Disp., Single-Sided (Lane)



Notes:

1. All equipment to be installed in accordance with all applicable local, state, and federal codes, including, but not limited to, the National Electrical Code (NFPA 70), NFPA 30, and the Automotive and Marine Service Station Code (NFPA 30A).
2. For wiring connections, use wires rated at least 90°C, 600V, Gas & Oil Resistant.
3. See wire size chart for proper gauge of the wires.
4. For full details of Wayne control systems interconnections see the manual provided with the Wayne pump control system or Wayne card processing system.
5. Attach all grounds to the ground screw provided.
6. Remote dispensers require a relay to interface to the submersible pump motor.
7. When used with a satellite, a Wayne Ultra High Capacity Satellite must be used. 120VAC valves (///W3 model suffix) are shown in diagram.

Wiring Diagram:
3/G7238D/LM UHC Single Master Disp. & Satellite Combination (Lane)

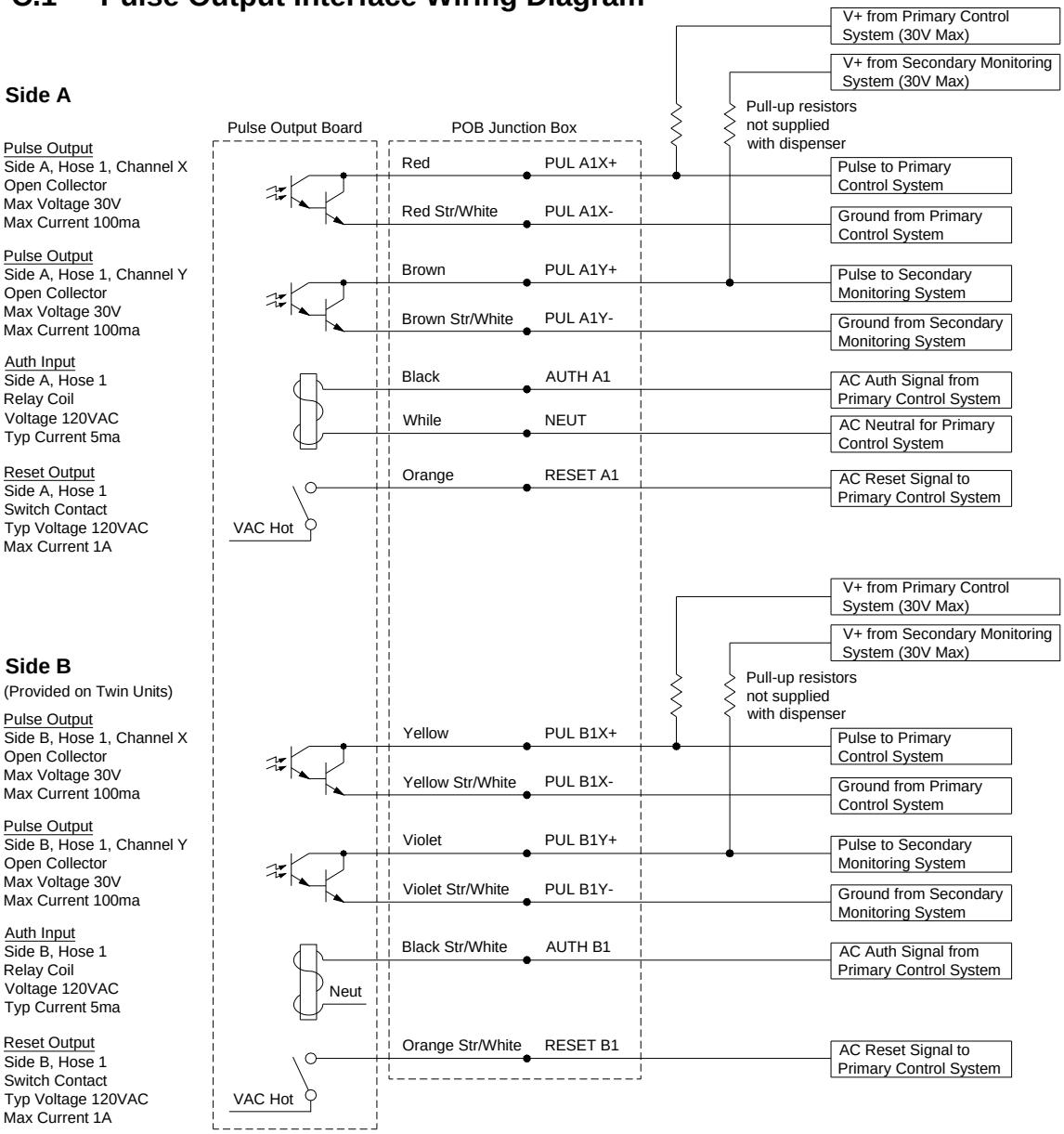


Notes:

1. All equipment to be installed in accordance with all applicable local, state, and federal codes, including, but not limited to, the National Electrical Code (NFPA 70), NFPA 30, and the Automotive and Marine Service Station Code (NFPA 30A).
2. For wiring connections, use wires rated at least 90°C, 600V, Gas & Oil Resistant.
3. See wire size chart for proper gauge of the wires.
4. For full details of Wayne control systems interconnections see the manual provided with the Wayne pump control system or Wayne card processing system.
5. Attach all grounds to the ground screw provided.
6. Remote dispensers require a relay to interface to the submersible pump motor.
7. When used with a satellite, a Wayne Ultra High Capacity Satellite must be used. 120VAC valves (///W3 model suffix) are shown in diagram.

Appendix C - Pulse Output Interface

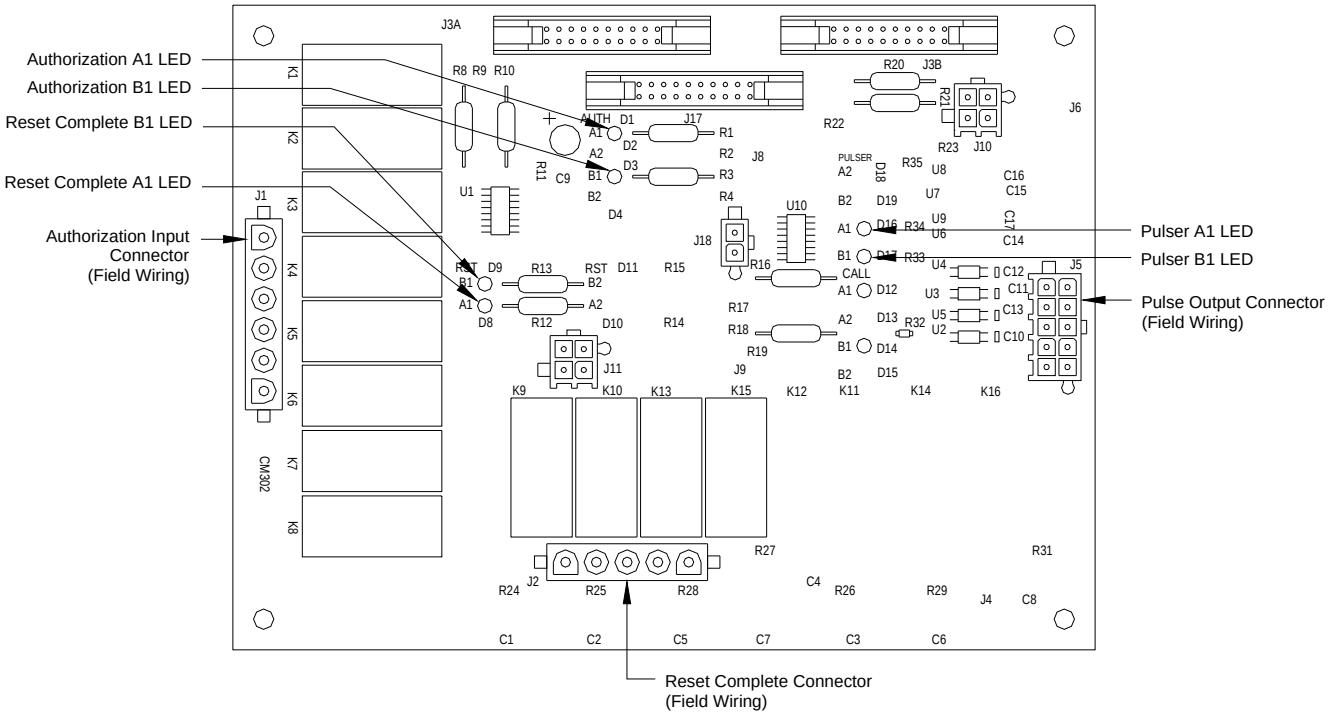
C.1 Pulse Output Interface Wiring Diagram



Notes:

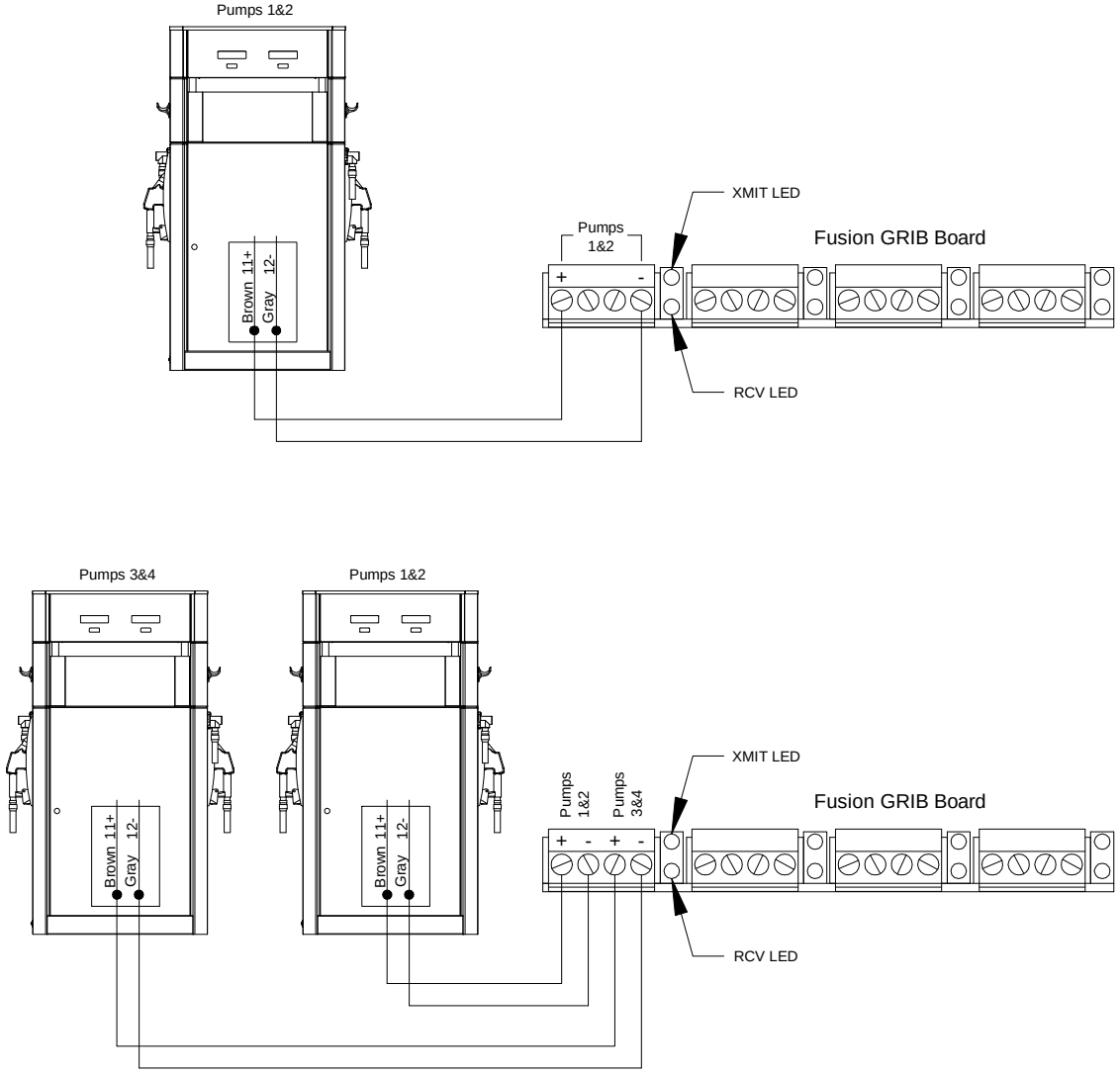
1. When facing the AC Junction Box, the Side A outlet is always to the Left Side for both singles & twins.
2. The Control and Monitoring systems should be powered from the same breaker panel as the dispenser so that they share a common Neutral.
3. Auth Input: Some Fuel Management Systems use solid state relays which can supply a low level voltage while in the "Off" position. In some cases, the voltage can be high enough to cause false tripping of the Auth Input. Always verify that any voltage present on this line during the "Off" position is not sufficient to turn on the Auth relay or to cause it to chatter. If such a condition does exist, an additional load may need to be placed across the Auth Input to reduce the voltage.
4. Reset Output: Some Fuel Management Systems cannot sense voltage and sense current for the reset output (e.g. OPW PetroVend K800, PetroVend System2). Check the installation requirements of the fuel management system to determine if they require, and supply, additional components such as a voltage to current sense convertor.
5. **See Section 3.3.4 of this manual for more detailed descriptions of the Pulse Output Interface Lines.**

C.2 Pulse Output Interface Board Layout



Appendix D - Current Loop Interface

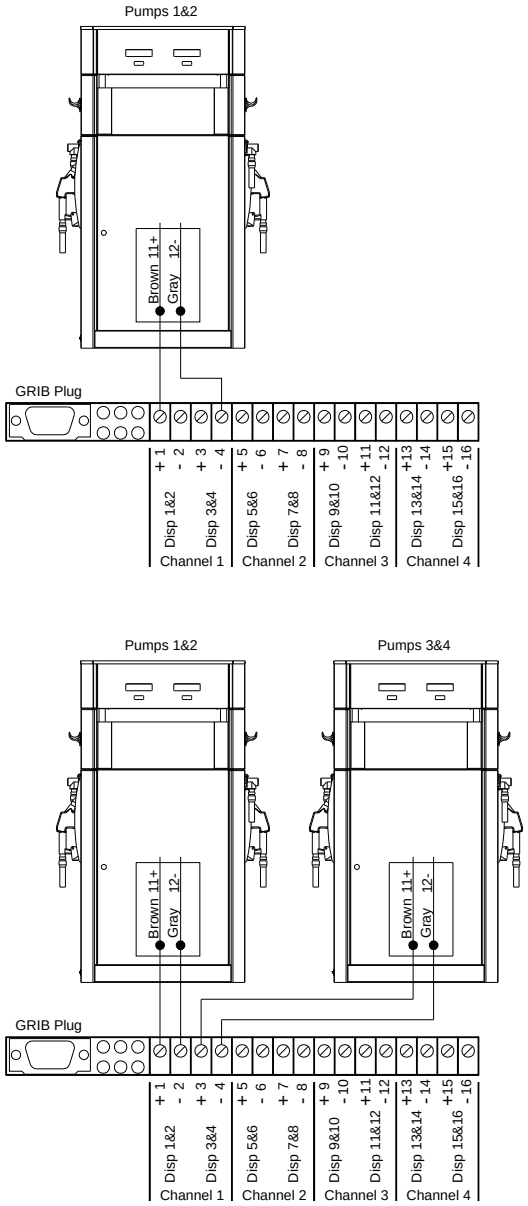
D.1 Point-to-Point Dispenser to Fusion HyperPIB Wiring



Notes:

1. All equipment to be installed in accordance with all applicable local, state, and federal codes, including, but not limited to, the National Electrical Code (NFPA 70), NFPA 30, and the Automotive and Marine Service Station Code (NFPA 30A).
2. For wiring connections, use wires rated at least 90ºC, 600V, Gas and Oil Resistant, 18 AWG. The use of twisted pair cables can enhance communication for longer distances.
3. Each GRIB connector can handle up to 2 dispensers (for up to a total of 4 fueling positions).
4. For full details of Wayne control systems interconnections see the Fusion HyperPIB manual PN 940039.

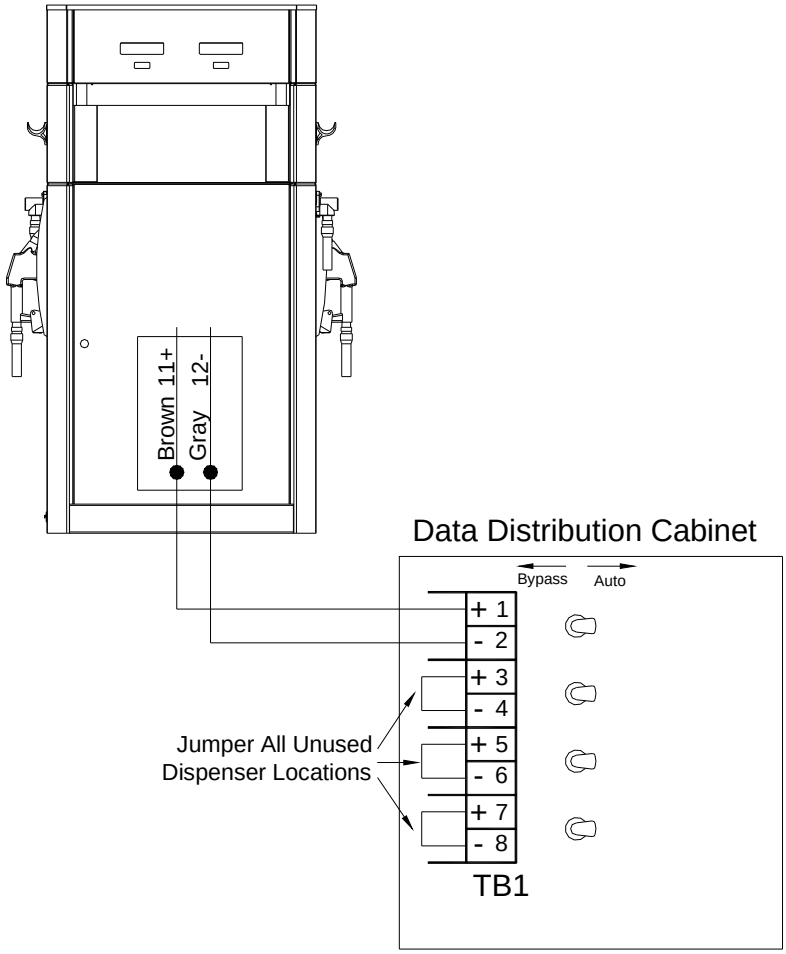
D.2 Point-to-Point Dispenser to Fusion UDB Replacement Wiring



Notes:

1. All equipment to be installed in accordance with all applicable local, state, and federal codes, including, but not limited to, the National Electrical Code (NFPA 70), NFPA 30, and the Automotive and Marine Service Station Code (NFPA 30A).
2. For wiring connections, use wires rated at least 90ºC, 600V, Gas and Oil Resistant, 18 AWG. The use of twisted pair cables can enhance communication for longer distances.
3. Each GRIB connector can handle up to 2 dispensers (for up to a total of 4 fueling positions).
4. For full details of Wayne control systems interconnections see the Fusion UDB Replacement manual PN 940050.

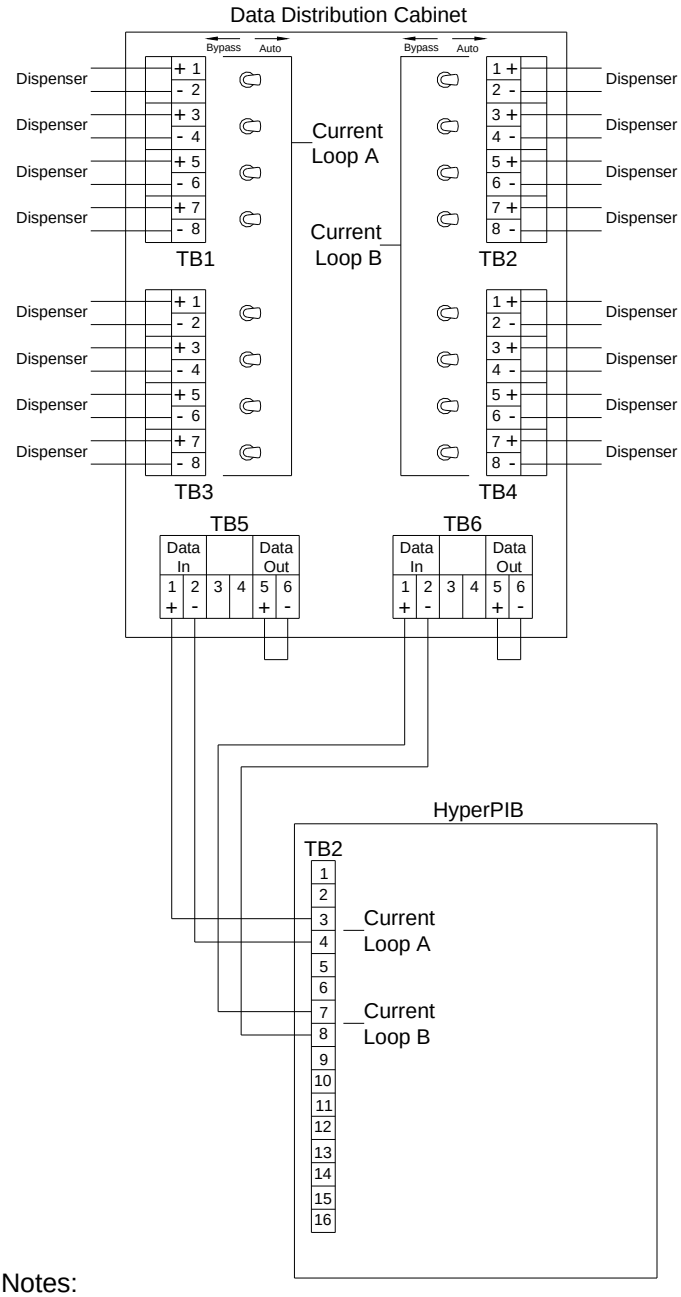
D.3 Point-to-Point Dispenser to Data Distribution Cabinet Wiring



Notes:

1. All equipment to be installed in accordance with all applicable local, state, and federal codes, including, but not limited to, the National Electrical Code (NFPA 70), NFPA 30, and the Automotive and Marine Service Station Code (NFPA 30A).
2. For wiring connections, use wires rated at least 90ºC, 600V, Gas and Oil Resistant, 18 AWG. The use of twisted pair cables can enhance communication for longer distances.
3. For full details of Wayne control systems interconnections see the manual provided with the system.

D.4 Wiring Using One Data Distribution Cabinet (Up to 16 dispensers)



TB5 or TB6

Data In				Data Out	
1	2	3	4	5	6
+	-			+	-

Jumper positions 4 & 5 for 4 or less dispensers per loop OR cumulative distances of less than 150 feet per loop.

TB5 or TB6

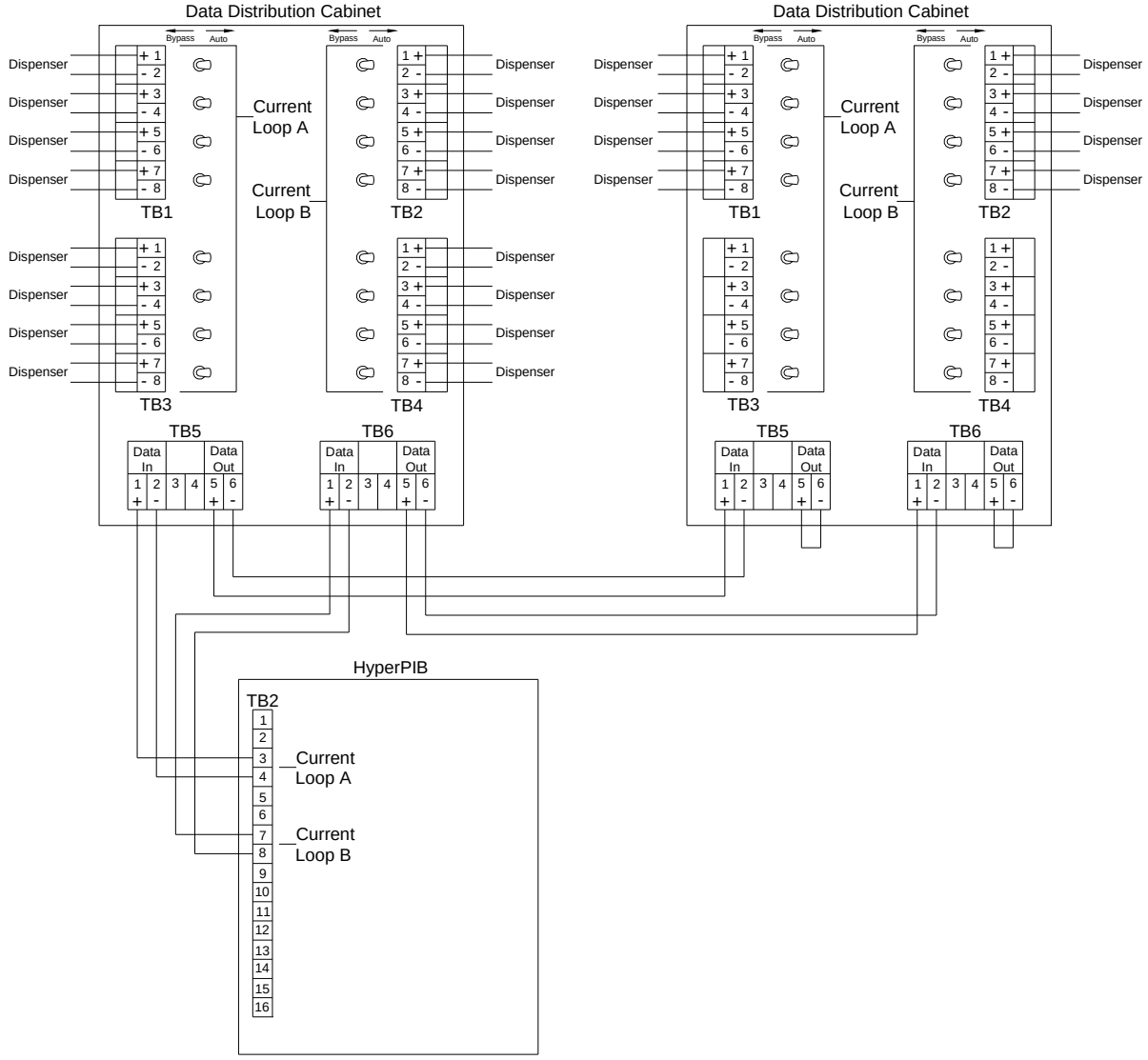
Data In				Data Out	
1	2	3	4	5	6
+	-			+	-

Jumper positions 5 & 6 for 5 or more dispensers per loop OR cumulative distances of 150 feet or greater per loop.

Notes:

1. Two Current Loops are provided for communication to the dispensers from the HyperPIB. Evenly distribute the dispenser loads across both loops in the Data Distribution Cabinet.
2. All unused dispenser positions in the Date Distribution Cabinet should be jumpered in the cabinet with the switch placed in the “Auto” position. This practice reduces the overall load on the loop.
3. Each loop in this configuration is limited to 8 dispensers and a total wire length of 1800 feet. This length of 1800 feet includes the distance between the HyperPIB and the Data Distribution Cabinet as well as the distance between each dispenser and the Data Distribution Cabinet.
4. See the TB5/TB6 jumper requirements for each loop according to the drawing above. TB5 is associated with Loop A and TB6 is associated with Loop B.

D.5 Wiring Using Two Data Distribution Cabinets (Up to 24 dispensers)



Notes:

1. Two Current Loops are provided for communication to the dispensers from the HyperPIB. Evenly distribute the dispenser loads across both loops in the Data Distribution Cabinets.
2. All unused dispenser positions in the Data Distribution Cabinets should be jumpered in the cabinet with the switch placed in the “Auto” position. This practice reduces the overall load on the loop.
3. Each loop in this configuration is limited to 12 dispensers and a total wire length of 1800 feet. This length of 1800 feet includes the distance between the HyperPIB and the Data Distribution Cabinet, the distance between the first and second Data Distribution Cabinet, and the distance between each dispenser and the Data Distribution Cabinets.

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Appendix E - Dispenser Software Config, Statistics, & Diagnostics

E.1 General

- The Select Series has a sophisticated electronic platform that offers a variety of controls, error monitoring, and diagnostics. The main section of the manual only includes the few necessary configuration changes to make the dispenser operational. It also covers retrieving the basic statistical information – volume totals. This appendix lists all of the controls, statistics, and diagnostics, and provides general instructions on how to navigate the software and make changes.
- The dispenser software configuration defines how the dispenser operates, what features are available, display formats, etc. The configuration is divided into Functions (F “xx”) and sub-functions (xx.xx). For example, the Clock Configuration function (F02) contains the sub-functions for the time (2.00), date (2.01), and year (2.02). The configuration settings are pre-loaded at the factory based upon the model and options.
- The dispenser software also includes statistical information – totalizers, counters, and diagnostic information. Statistical information is divided into Statistics (S “xx”) and sub-statistics (xx.xx). For example, the Power Cycle statistic (S25) includes the sub-statistics for the number of power cycles (25.00), number of software resets (25.01), and the number of cold start power cycles (25.02). Depending on the statistic, it may be non-resettable, resettable, or include the last “x” number of items.
- Functions and statistics are accessed using the infrared remote control (IRC). Access requires a password. See Section 5.5.2 for the default passwords.
- The following sections provide instructions on the basic operational procedures – entering and exiting functions & statistics, IRC commands, changing sub-function values, etc. At the end of this appendix, is a complete list of functions and statistics.

NOTE: The following table shows the setting for units without price displays. Units with price displays will look slightly different as they typically utilize all three displays.

E.2 Entering Functions and Statistics

Entering Functions & Statistics			
Step	**IRC Command**	**Volume Display**	**Status Display**
1 Enter sign on	Press either <ENTER>, <1>, or <2> depending upon access level (See Section 5.5.2)	PASS 1	[blank]
2 Enter password	Type the corresponding password & Press <ENTER>	PASS 2	[blank]
3 Re-enter password	Type the password again & Press <ENTER>	[alternating software version & date]	F - -

- You are now at the function level (F - - on Status display). Reference Section D.3, IRC Commands, on how to navigate the functions. If you wish to enter Statistics mode, press the <Down> key.

E.3 IRC Commands

Results of IRC Commands at Different Operating States			
IRC Keys	**Function Level F - - on Status Display**	**Function Level F "xx" on Status Display**	**Sub-function Level xx.xx on Status Display**
NEXT	F00	Next higher function #	Next higher sub-function # (cycles back to lowest at highest)
UP	S - - (Statistics Mode)	Next higher function #	Next higher sub-function # (cycles back to lowest after highest)
DOWN	S - - (Statistics Mode)	Next lower function #	Next lower sub-function # (cycles back to highest after lowest)
ENTER	Pressing 3 times will exit configuration mode without saving	Sub-function level (xx.xx)	Back to function level (except after entering new value, it displays the change)
CLEAR	N/A	F - -	Back to function level (except while entering new value can be used to erase last digit typed)
#	N/A	N/A	Clears Gallons/Liters display so new value can be entered
Digits	After pressing <ENTER> will take you to the Function level of the digits entered	After pressing <ENTER> will take you to the Function level of the digits entered	If you do not clear the display with the "#" key first, after pressing <ENTER> it will take you to the sub-function level of the digits entered. If you clear the display, it will change the value of the sub-function to the digits entered after pressing <ENTER>.

NOTE: When in Statistics Mode (S - - or S "xx" on Status display), the above commands work the same way. When at S - -, the <UP> or <DOWN> keys take you to F - -.

E.4 Changing Subfunction Values

- To change the operating characteristics of the dispenser, you need to go to the sub-function level in the configuration. The following table shows the steps for changing any sub-function value. Changing the date (sub-function 2.01) is used as an example in the table below to help explain the steps. The date values are shown in parentheses in the IRC Command column. The steps assume that you are at the point where you just signed on with your password or at any function level (F - - or F “xx” show in the status display).

Changing Sub-function Values (Example: Changing the date)			
Step	**IRC Command**	**Volume Display**	**Status Display**
1 Go to the function level of the desired sub-function	Type the function number (e.g. 2) and then press <ENTER>	- - - - - -	F 02
2 Go to the sub-function level	Press <ENTER>	[time in hh.mm]	2.00
3 Go to the desired sub-function	Use the up, next, or down keys to scroll to the desired sub-function. Or, type the digits of the sub-function number (e.g. 1) and then press <ENTER>	[date in mm.dd]	2.01
4 Clear the sub-function value	Press “#”	[blank]	2.01
5 Change the sub-function to the desired value	Type the digits of the desired change (e.g. 1124 for Nov 24) and then press <ENTER>	11.24	2.01
6 Return to function level	Press <ENTER>	- - - - - -	F 02

E.5 Resetting Totals

- Statistics listed as “totals” may be reset to zero at any time.
- You must exit using the “exit and save” feature for the reset to take place.

Resetting Totals (from sub-statistic level)			
Step	**IRC Command**	**Volume Display**	**Status Display**
1 Clear total	Press <#>	CLEAr totALS	xx.xx
2 Confirm clear	Press <ENTER>	PASS	xx.xx
3 Enter reset password	Type <42> & Press <ENTER>	- - - - - -	S xx

E.6 Exiting Functions

Exiting Functions (from function level: F - - or F “xx” in Status display)			
Step	**IRC Command**	**Volume Display**	**Status Display**
1 Go to exit function	Type <0> and then Press <ENTER>	- - - - - -	F 00
2 Go to exit sub-function	Press <ENTER>	1	0.00
3 Clear display	Press”#”	[blank]	0.00
4 Enter exit choice	Type the value of the exit choice below and then press <ENTER> (example shown is 3, exit and save) 1 = Do not exit, do not save changes 2 = Exit, but do not save changes 3 = Exit and save changes	3	0.00
5 Exit configuration	Press <ENTER>	[alternating CHAnGE StorEd]	0.00

E.7 Exiting Statistics

Exiting Statistics (from statistics level: S- - or S “xx” in Status display)			
Step	**IRC Command**	**Volume Display**	**Status Display**
1 Go to statistics entry point	Press <CLEAR> Note: if you are not resetting the totals, press <ENTER> 3 times to exit statistics	[alternating transaction counts Side A & Side B]	S - -
2 Go to function level	Press <UP>	[software ver. & date]	F - -
3 Go to exit function	Type <0> and Press <ENTER>	- - - - - -	F 00
4 Go to exit sub-function	Press <ENTER> again	1	0.00
5 Clear display	Press”#”	[blank]	0.00
6 Exit and save changes	Type <3> & then press <ENTER	3	0.00
7 Exit configuration	Press <ENTER> again	[alternating CHAnGE StorEd]	0.00

E.8 Quick Exit from Functions or Statistics

- If you do not wish to save any changes, you may use the "Quick Exit" feature.

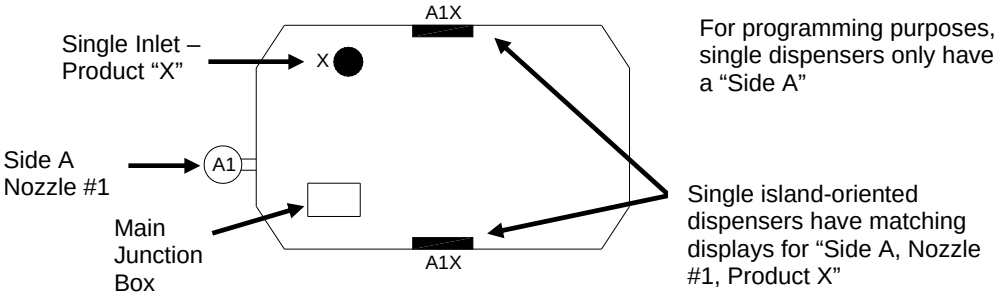
Quick Exit from Functions or Statistics w/o Saving (F "xx" or S "xx" on Status display)			
Step	**IRC Command**	**Volume Display**	**Status Display**
1 Go to statistics or function level entry point	Press <CLEAR> In Statistics, you will go to S - -. In Functions, you will go to F - -.	[if S - -, alternating trans. counts if F - -, alternating software revision & date]	S - - or F - -
2 Exit statistics or functions	Press <ENTER> three times	[last transaction volume]	- -

E.9 Dispenser Side & Nozzle Identification

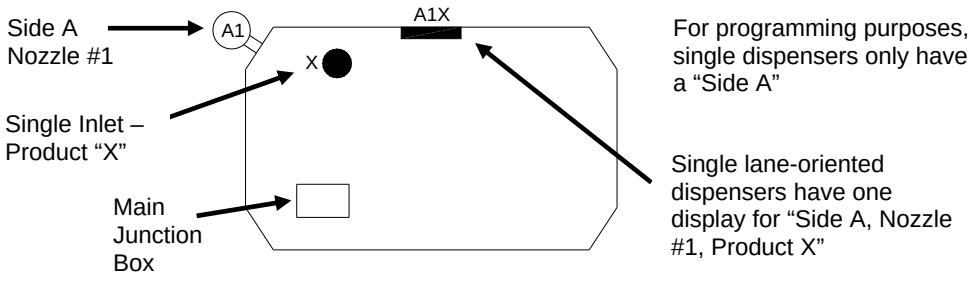
- In order to configure the dispenser correctly or understand the totalizer assignments, you need to understand how the dispenser sides and nozzles are identified in the software. UHC models are slightly different concerning the Junction Box and Inlet positions, but the same principles apply.
- The base layouts in Appendix A contain a Base Orientation drawing which show how the sides and nozzles are identified for each model.
- Figure D-1 explains how to interpret the Base Orientation drawings. Use the main junction box to determine the physical orientation of the dispenser. Note on UHC dispensers, the j-box is centered. Dispensers with the pulse output interface option have a second junction box on the opposite side for the pulse output interface wire terminations. The main junction box has a ¾" conduit and the pulse output junction box has a ½" conduit.

Figure D-1 Base Orientation Drawings

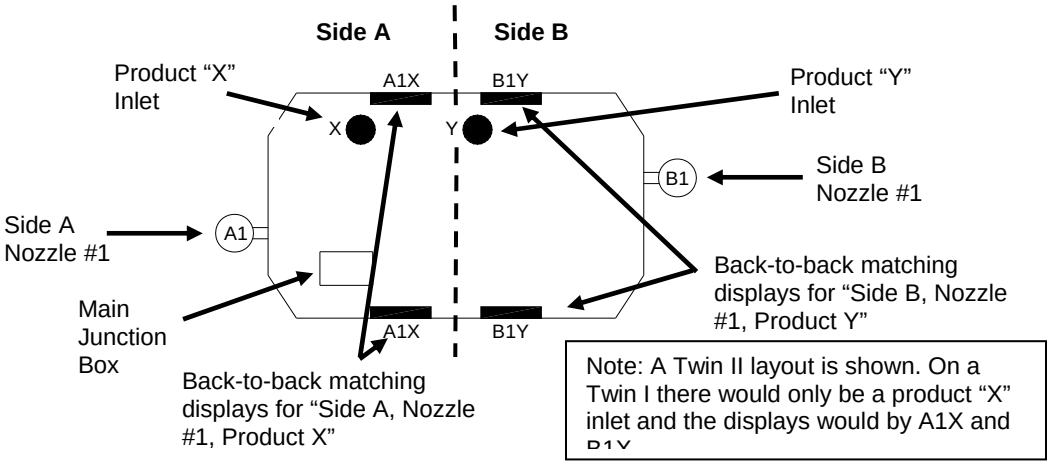
Single Dispensers w/ Island-Oriented Nozzle Boots



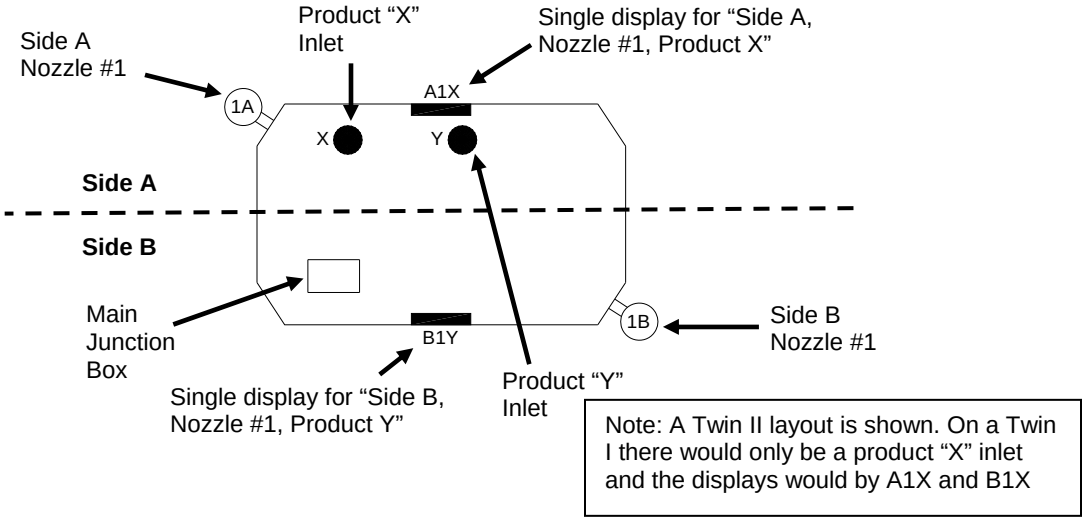
Single Dispensers w/ Lane-Oriented Nozzle Boots



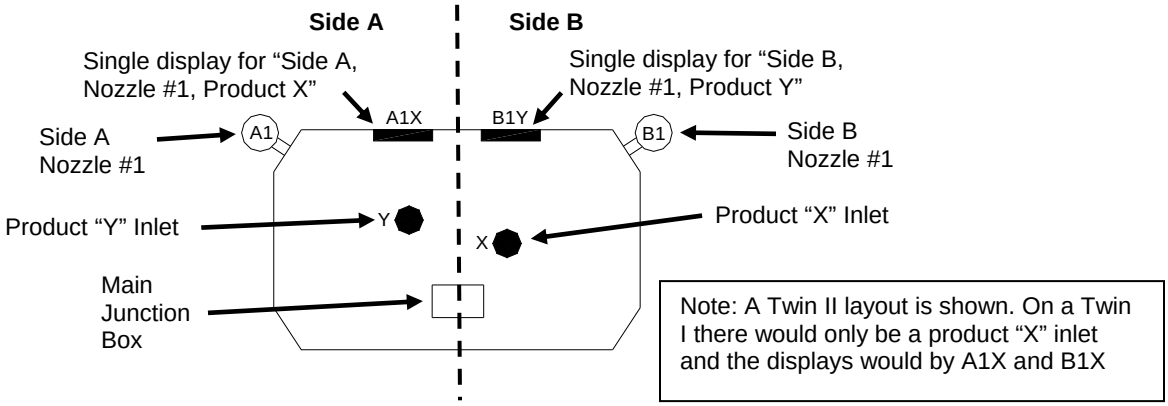
Twin Dispensers w/ Island-Oriented Nozzle Boots



Twin Dispensers w/ Lane-Oriented Nozzle Boots



Single-Sided Twin Dispensers w/ Lane-Oriented Nozzle Boots



E.10 Pulse Output Interface Option Settings

- The following functions/sub-functions are used to configure the pulse output interface option. These settings should be set at the factory when the pulse output option is ordered. The only function typically requiring any modification is selection of the desired pulse output resolution. (Note: The “MPI” acronym in the sub-function descriptions stands for “Mechanical Pump Interface” which is equivalent to Pulse Output Interface.)
- Reference the note at the base of the table regarding pulse resolution settings for liters.

Sub-function	Description	Setting
Enable Pulse Output		
41.01	Pulse Output – Side A	2 = enabled
41.02	Pulse Output – Side B	2 = enabled
Set Pulse Resolution - Gallons*		
19.25	Gallons Pulse Resolution Output	1 = 1:1 2 = 10:1 3 = 100:1 4 = 250:1 5 = 500:1 6 = 1000:1
Enable AC Authorization Input		
27.00	Local Authorization – Side A	0 = Disabled (set for MPI authorization)
27.01	MPI Authorization – Side A	6 = enabled
28.00	Local Authorization – Side B	0 = Disabled (set for MPI authorization)
28.01	MPI Authorization – Side B	6 = enabled
Enable Reset Complete		
41.03	MPI Reset Complete – Side A	10 = enabled
41.04	MPI Reset Complete – Side B	10 = enabled

***Note: For pulse output for liters, substitute the following sub-function and settings below.**

Set Pulse Resolution - Liters		
19.15	Liters Pulse Resolution Output	1 = 1:1 2 = 10:1 3 = 100:1 4 = 250:1

E.11 List of Statistics

- Following is a complete list of statistics and diagnostics available in the Select Series. Statistics identified as “Side B” only apply to twin units with two hoses.
- Statistics identified as “Totals” are resettable and statistics identified as “Totalizers” are non-resettable.

Statistic No.	Statistic Name	Sub-Statistic No.	Sub-Statistic Description
S - -	Statistics Entry Point	N/A	Transaction count for Side A & Side B (alternates)
S 01	Side A Totals	1.11	Volume total
		1.21	Money total
		1.51	Serial filling mode filling count (Wayne protocol)
		1.61	Stand alone mode filling count (standalone or pulse output)
S 02	Side B Totals	2.11	Volume total
		2.21	Money total
		2.51	Serial filling mode filling count (Wayne protocol)
		2.61	Stand alone mode filling count (standalone or pulse output)
S 03	Side A Error/Event Counter Totals	3.1 - 3.99	Sub-statistic = error/event code (1 – 99) with counter value 0-255
S 04	Side B Error/Event Counter Totals	4.1 - 4.99	Sub-statistic = error/event code (1 – 99) with counter value 0-255
S 05	Side A Meter Volume Totals	5.M0	Meter volume totals (M = meter #. Use the NEXT key to scroll through sub-functions to the meter number(s) for your desired model or reference the functions list for meter assignments. SHC models have two meters per hose.) Note: See Meter Number Assignments table at the end of section to determine the meter numbering for your model.
S 06	Side B Meter Volume Totals	5.M0	Meter volume totals (M = meter #. Use the NEXT key to scroll through sub-functions to the meter number(s) for your desired model or reference the functions list for meter assignments. SHC models have two meters per hose.) Note: See Meter Number Assignments table at the end of this section to determine the meter numbering for your model.
S 11	Side A Totalizers	11.11	Volume totalizer
		11.21	Money totalizer
		11.51	Serial filling mode filling count (Wayne protocol)
		11.61	Stand alone mode filling count (standalone or pulse output)
S 12	Side B Totalizers	12.11	Volume totalizer
		12.21	Money totalizer
		12.51	Serial filling mode filling count (Wayne protocol)
		12.61	Stand alone mode filling count (standalone or pulse output)

Statistic No.	Statistic Name	Sub-Statistic No.	Sub-Statistic Description
S 13	Side A Error/Event Counter Totalizers	13.00- 13.99	Sub-statistic = error/event code (1 – 99). Maintains counter 0-999.
S 14	Side B Error/Event Counter Totalizers	14.00- 14.99	Sub-statistic = error/event code (1 – 99). Maintains counter 0-999.
S 15	Side A Meter Volume Totalizers	15.M0	Meter volume totalizer (M = meter #. Use the NEXT key to scroll through sub-functions to the meter number(s) for your desired model or reference the functions list for meter assignments. SHC models have two meters per hose.) Note: See Meter Number Assignments table at the end of this section to determine the meter numbering for your model.
S 16	Side B Meter Volume Totalizers	16.M0	Meter volume totalizer (M = meter #. Use the NEXT key to scroll through sub-functions to the meter number(s) for your desired model or reference the functions list for meter assignments. SHC models have two meters per hose.) Note: See Meter Number Assignments table at the end of this section to determine the meter numbering for your model.
S 17	Side A WIP (Pulser) Volume Totalizers	17.M0	WIP volume totalizer (M = meter #. Use the NEXT key to scroll through sub-functions to the meter number(s) for your desired model or reference the functions list for meter assignments. SHC models have two meters per hose.) Note: See Meter Number Assignments table at the end of this section to determine the meter numbering for your model.
S 18	Side B WIP (Pulser) Volume Totalizers	18.M0	WIP volume totalizer (M = meter #. Use the NEXT key to scroll through sub-functions to the meter number(s) for your desired model or reference the functions list for meter assignments. SHC models have two meters per hose.) Note: See Meter Number Assignments table at the end of this section to determine the meter numbering for your model.
S 21	Side A Error/Event Log	21.01 – 21.50	Sub-statistic = error/event record (range 01 - 50 w/ 01 being most recent error code or event). Alternates event time (HH.MM) & data (CC.DD.NN) (CC = error code DD = device # NN = nozzle number) Press <ENTER> Alternates event date (MM.DD.YY) & filling count
S 22	Side B Error/Event Log	22.01 – 22.50	Sub-statistic = error/event record (range 01 - 50 w/ 01 being most recent error code or event). Alternates event time (HH.MM) & data (CC.DD.NN) (CC = error code DD = device # NN = nozzle number) Press <ENTER> Alternates event date (MM.DD.YY) & filling count
S 23	Side A Transaction History Log	23.01 – 23.10	Sub-statistic = transaction record (range 01 – 10 w/ 01 being the most recent transaction). Provides transaction volume.
S 24	Side B Transaction History Log	24.01 – 24.10	Sub-statistic = transaction record (range 01 – 10 w/ 01 being the most recent transaction). Provides transaction volume.

Statistic No.	Statistic Name	Sub-Statistic No.	Sub-Statistic Description
S 25	Total Number of Power Cycles	25.00	Number of power cycles
		25.01	Number of software resets
		25.02	Number of cold start power cycles
S 26	Reset History	26.01 - 26.50	Sub-statistic = reset event record (range 01 – 50 w/ 01 being the most recent reset event). Alternates event time (HH.MM) & data (TT.FFFF) (TT = trap id FFFF = value of the trap flag register Press <ENTER> Alternates event date (MM.DD.YY) & return address (SS.OOOO) (SS = hex code segment OOOO = hex code offset into segment)

E.12 Configuration Functions

- Following is a complete list of configuration functions and sub-functions. The Configuration Setting column shows the default settings loaded at the factory. Note some settings differ if the pulse output interface option is ordered. Any settings which differ based on the model are referenced to a model table at the end of the list. "N" shown in the Sub-Function number represents the logical nozzle number. For most of these applications, that will be "1".

Function Number & Name		Sub-function Number & Description		Configuration Setting	
				Std. Model	w/ Pulse Output
F - -	Function Level	N/A	Alternates software revision number and date		
F00	Exit Function	.00	1 = Do not exit and do not save changes 2 = Exit, but do not save changes 3 = Exit and save changes		
F01	Filling Modes	.00	1 = Serial mode, dispenser controlled by site controller serial link 2 = Stand Alone Mode, dispenser not supervised by a site controller w/ serial link (used for standalone and pulse output interface) 3 = Serial W&M Mode, same as #1 but vol decimal point format forced to .xxx vol units 4 = Stand Alone W&M Mode, same as #2 but vol decimal point format forced to .xxx vol units	2 (Standalone & POB option) 1 (iX Fleet option)	
F02	Clock Configuration	.00	Time in the format HH.MM		
		.01	Date in the format MM.DD		
		.02	Year in the format YYYY		
F03	Set Side A Unit Prices	.0N	Set credit price	0	
		.1N	Set cash price	0	
F04	Set Side B Unit Prices	.0N	Set credit price	0	
		.1N	Set cash price	0	
F05	Set Side A Fueling Point Address	.00	Fueling point address, 0–31, where 0=none assigned	0 (1 for iX Fleet option)	
F06	Set Side B Fueling Point Address	.00	Fueling point address, 0–31, where 0=none assigned	0 (2 for iX Fleet option)	
F07	Dispenser Configuration	.00	Max. logical nozzle number for each side, 1-8	1	
		.01	Dispenser geometry 1 = single-sided 2 = double-sided	see model chart at end	
		.02	Max. blend error allowed, 1-5 (units of %)	2	
		.03	First check set for blending if liters, 2-200 (units of 1/10 liters)	50	
		.04	First check set for blending if gallons, 5-50 (units of 1/10 gallons)	12	
		.05	Reserved		
		.06	Reserved		

Function Number & Name		Sub-function Number & Description		Configuration Setting	
				Std. Model	w/ Pulse Output
		.07	Stop button configuration 1=Stop both sides 2=Stop side	2	
		.08	Number of displays per side 0=one display per side 1=Second display on Side A 2=Second display on Side B 3=Second display on Sides A & B	0	
		.09	Error indication on display 0=Show CLOSED for error levels 2,3,4 1=Show CLOSED for error levels 2,3,4 & show error code for error levels 2,3,4 2=Show CLOSED for error levels 2,3,4 & show error code for error levels 1,2,3,4 3=Show CLOSED for error levels 2,3,4 & show error code for error levels 0,1,2,3,4	0	
F08	Side A Dispenser Type Configuration Part #1	.0N	Physical nozzle number assignment, 0–8, 0 = none assigned	.01=1	
		.1N	Product type assignment, 1 = non-blend, 2 = blend	.11=1	
		.2N	Unit price display assignment, 0–8, 0 = none assigned	.21=1	
		.3N	Primary meter number assignment, 0-8, 0 = none assigned	.31=1	
		.4N	Secondary meter number assignment, 0-8, 0 = none assigned	see model chart at end	
		.5N	Primary valve number assignment, 0-8, 0 = none assigned	.51=1	
		.6N	Primary valve type 1=on/off 2=proportional 3=Two stage UHC ASCO 4=Two stage UHC Parker	.61=2 (3 or 4 for UHC models)	
		.7N	Secondary valve number assignment, 0-8, 0 = none assigned	see model chart at end	
		.8N	Secondary valve type 1=on/off 2=proportional 3=Two stage UHC ASCO 4=Two stage UHC Parker	.81=2	
F09	Side B Dispenser Type Configuration Part #1	.0N	Physical nozzle number assignment, 0–8, 0 = none assigned	.01=1	
		.1N	Product type assignment, 1 = non-blend, 2 = blend	.11=1	
		.2N	Unit price display assignment, 0–8, 0 = none assigned	.21=1	
		.3N	Primary meter number assignment, 0-8, 0 = none assigned	.315 (2 for /8 models w/ two 1/2 iMeters)	
		.4N	Secondary meter number assignment, 0-8, 0 = none assigned	see model chart at end	
		.5N	Primary valve number assignment, 0-8, 0 = none assigned	.51=5	
		.6N	Primary valve type 1=on/off 2=proportional 3=Two stage UHC ASCO 4=Two stage UHC Parker	.61=2 (3 or 4 for UHC models)	

Function Number & Name		Sub-function Number & Description		Configuration Setting	
				Std. Model	w/ Pulse Output
		.7N	Secondary valve number assignment, 0-8, 0 = none assigned	see model chart at end	
		.8N	Secondary valve type 1=on/off 2=proportional 3=Two stage UHC ASCO 4=Two stage UHC Parker	.81=2	
F10	Side A Dispenser Type Configuration Part #2	.0N	Octane number assignment, 00-99, 00 = non assigned	.01=0	
		.1N	Product select button input number assignment, 0-8, 0 = none assigned	.11=0	
		.2N	Push-to-start button input number assignment, 0-8, 0 = none assigned	.21=0	
		.3N	Vapor recovery system enabled 0=no 1=yes	.31=0	
		.4N	Beep annunciator in a series of six beeps on physical nozzle lift 1=yes 2=no	.41=2	
F11	Side B Dispenser Type Configuration Part #2	.0N	Octane number assignment, 00-99, 00 = non assigned	.01=0	
		.1N	Product select button input number assignment, 0-8, 0 = none assigned	.11=0	
		.2N	Push-to-start button input number assignment, 0-8, 0 = none assigned	.21=0	
		.3N	Vapor recovery system enabled 0=no 1=yes	.31=0	
		.4N	Beep annunciator in a series of six beeps on physical nozzle lift 1=yes 2=no	.41=2	
F12	Side A Pump Assignments	.0N	Primary submersible pump relay assignment, 0-8, 0 = none assigned	.01=1 .02=3 (DEF)	
		.1N	Secondary submersible pump relay assignment, 0-8, 0 = none assigned	.11=0 (3 for models 3/G7221P & 3/G7227P/R)	
F13	Side B Pump Assignments	.0N	Primary submersible pump relay assignment, 0-8, 0 = none assigned	see model chart at end	
		.1N	Secondary submersible pump relay assignment, 0-8, 0 = none assigned	.11=0	
F14	Dispenser Display Configuration	.00	Number of unit price displays per side, 0-8, 0 = none supported	1	
		.01	Display mode after sale paid 1=Money is actual, volume is actual, unit price is actual 2=Money is zeros, volume is zeros, unit price is actual 3=Money is zeros, volume is zeros, unit price is blanks 4 =Money and volume actual, unit price blank	1	
		.02	Money display digits right of decimal point, 0-4	2	
		.03	Volume display digits right of decimal point, 0-4	3	2
		.04	Unit price display digits right of decimal point, 0-4	3	

Function Number & Name		Sub-function Number & Description		Configuration Setting	
				Std. Model	w/ Pulse Output
		.05	Flash selected unit price display after 8s blanks 0s 1=No flash 2=Flash until flow 3=Flash always	1	
		.06	Suppress display of leading zeros in normal mode 1=Yes 2=No	1	
		.07	Totals and totalizers amount display digits right of the decimal point, 0-4	2	
		.08	Totals and totalizers volume display digits right of the decimal point, 0-4	0	
		.09	Display functionality 0=Normal sale display 1=Fleet sale display	1	
F15	Dispenser Annunciator Configuration	.00	Beep annunciator on any button push 1=Yes 2=No	1	
		.01	Beep annunciator on physical nozzle lift 1=Yes 2=No	1	
		.02	Repeat annunciator beep if physical nozzle is out and push-to-start or grade select is not satisfied 1=Yes 2=No	1	
		.03	Beep annunciator once for each eights, blanks, and zeros 1=Yes 2=No	1	
		.04	Authorization alert (prompt cust to press payment key) 0=Disabled 1=Beep & flash unit price displays after product selected but not authorized	0	
		.05	Beep until nozzle returned 0=Disabled 01-20=Beep if nozzle out after filling (10-200 seconds, setting x10) 21-40=Beep if nozzle out after filling (110-300 seconds, setting x10+100)	0	
F16	Pulser Configuration	.00	Measurement mode 1=Liters 2=Gallons 3=Imperial gallons	2	
		.01	Pulser reverse pulse hysteresis, 1-64	10	
		.02	Reserved		
		.03	Reverse pulse limit (after hysteresis) on an idle/unused pulser, 1-255	80	
		.04	Meter type 1=WIP 2=PPM w/ LC meter 3=PPM w/ E85 meter 4=xFlo, 5=LC & iMeter combo	1 (2 for UHC, 4 for E85 using xFlo)	
F17	Dispenser Limits Configuration	.00	Max. # of pulse errors on an in-use pulser (in a transaction), 1-99	10 (50 for UHC)	
		.01	Max. # of pulse errors on an idle/unused pulser, 1-99	80	
		.02	Max. # of display errors/filling, 0-99, 0 = disabled	10	

Function Number & Name		Sub-function Number & Description		Configuration Setting	
				Std. Model	w/ Pulse Output
		.03	Stop for “no flow” time limit, 0-1000 seconds	90	
		.04	Max. # of consecutive no flow events w/o error, 0-10, 0 = disabled	3	
		.05	Max. # of flow lost events w/o error, 0-10, 0 = disabled	3	
		.06	Max. # of unfinished fillings, 0-10, 0 = disabled	0	
		.07	Max. $ filling amount/filling, 1-6 digits	9999.00	
		.08	Max. volume amount/filling, 1-6 digits	999.000	
		.09	Stop for “flow lost” time limit ,0-1000 seconds	300	
F18	Blend Ratio Configuration	SN	Blend ratio (data range 0-101) in % of hi feedstock, 101 = disabled for a non-blend	.11=101 .21=101	
F19	Volume Unit Specific Configuration	.10	Suppressed volume @ start of filling, 1-9 cl.	3	
		.11	Max. volume for selection of new product, 1-9 cl.		
		.12	Suppress overflow of preset limit, 0-99 cl.	5	
		.13	Preset/prepay slow down volume delta, 5-399 cl.	57	
		.14	Forward pulse limit on idle/unused WIP, 1-99 cl.	95	
		.15	Liters pulse output resolution 0=Disabled 1=1 pulse per unit 2=10 pulses per unit 3=100 pulses per unit 4=250 pulses per unit	0	
		.16	Calibration Test Container Volume –Liters (UHC only) 20 – 1000 Liters	20	
		.20	Suppressed volume @ start of filling, 1-99 (units of .001 gals.)	9	
		.21	Max. volume for selection of new product, 1-99 (units of .001 gals.)		
		.22	Suppress overflow of preset limit, 0-99 (units of .001 gals.)	4	
		.23	Preset/prepay slow down volume delta, 2-999 (units of .001 gals.)	150	
		.24	Forward pulse limit on idle/unused pulser, 1-999 (units of .001 gals.)	250	
		.25	Gallons pulse output resolution 0=Disabled 1=1 pulse per unit 2=10 pulses per unit 3=100 pulses per unit 4=250 pulses per unit 5=500 pulses per unit 6=1000 pulses per unit	0	3
		.26	Calibration Test Container Volume – Gallons (UHC only) 5 – 250 Gallons	5	

Function Number & Name		Sub-function Number & Description		Configuration Setting	
				Std. Model	w/ Pulse Output
F20	Dispenser Serial Link Configuration	.00	Protocol 1=RS485 Standard DART 2=RS485 Full DART 3=LON 4=U.S. Current Loop 5=Reserved 6=Reserved 7=CAN Bus Protocol 8=Reserved 9=Reserved 10=LON Standalone 11=US legacy DART	4 (7 for iX Fleet option)	
		.01	Baud rate 1=4800 2=9600 3=19200 4=38400	2	
		.02	Reserved	2	
		.03	Reserved	2	
		.04	US Current Loop Enhanced, 1=Disabled, 2=Enabled	2	
F21	Miscellaneous Configuration	.00	Pump motor ON configuration 1=ON at end of display test 2=ON at start of display test 3=ON at product selection 4=ON at nozzle lift	2	
		.01	Lock on filling mode configuration 1=access to filling mode configuration restricted 2=access allowed	2	
		.02	Standalone indication enabled (show four digits right of decimal point) 1 = yes, 2 = no	2	
		.03	Blank or dash un-selected unit price displays on product selection 1 = blank, 2 = dash	2	
		.04	Product change allowed after fueling started 1=Product change allowed after fueling started 2=Product change not allowed after fueling started	1	
		.05	Electro-mechanical totalizer configuration 1=Eeach side has its own electro-mechanical totalizer 2=One electro-mechanical totalizer per product shared by both sides	see model chart at end	
		.06	Diagnostic flow rate display 0=Display normal sale amount 1=Display primary product flow rate 2=Display secondary product flow rate 3=Display total flow rate 4=Display Wayne Vac diagnostics	0	
		.07	Product pressurization function, 1=Enable, 2=Disabled	1	
		.08	Arming key authorization 0=Disabled 1=Arming req'd in both cash & credit modes 2=Arming req'd in cash mode only 3=Arming req'd in credit mode only	0	

Function Number & Name		Sub-function Number & Description		Configuration Setting	
				Std. Model	w/ Pulse Output
		.09	Maintenance mode access thru Remote w/o pressing the CRC button on iGEM first 0=Entry possible at all levels 1=Entry with button 1,2,5 CLR w/o CRC 2=Entry with button 5 and CLR w/o CRC 3=Reserved 4=Entry with button 5 w/o CRC 5=No entry w/o pressing CRC button first 6=Entry with button 1 w/o CRC 7=Reserved 8=Entry with button CLR w/o CRC	0	
F22	Sales Amount Calculation	.00	Denomination ratio between money display and unit price display 1 =1/1 2 =10/1 3 =100/1 4 =1/10 5 =1/100 6 =1/1000	1	
		.01	Count by ones or fives in least significant digit of money display 1=Ones 2=Fives	1	
		.02	Volume digits to the right of the decimal point used in the amount calculation 0-5, 5 = use volume decimal point as defined in function 14.3	5	
		.03	Money preset configuration	0	
		.04	Default price mode 1=Credit 2=Cash	1	
F23	Miscellaneous Timers	.00	Display test time (test time also known as valve on delay), 2-24 units of ½ sec	6	
		.01	Minimum time between fillings, 0-20 units of ½ sec., 0 = disabled	0	
		.02	Stop for offline error, 0-30 sec., 0 = disabled	0	
		.03	Max. time allowed for filling, 0-60 min., 0 = disabled	0	
		.04	Time from unit price change until next start of sale, 0-15 sec.	0	
		.05	Unit price display backlight dimming control timer, 0=disabled, XX=minutes of idle time prior to dimming backlight	0	
		.06	Error display timer, XX=minutes to display current error code (see F07.09) 1-254 minutes, 255=display until next transaction	255	
F24	Local Preset Operating Configuration	.00	Preset operation 1=Money only 2=Volume only 3=Default to money 4=Default to volume	2	
		.01	Preset entry required before filling 1=Preset required 2=Preset not required	2	
		.02	Fill mode display 1=Display "------" when fill key pressed 2=Display "FILL" when fill key pressed	2	

Function Number & Name		Sub-function Number & Description		Configuration Setting	
				Std. Model	w/ Pulse Output
		.03	Preset mode display 1=Display “ “ on sale display during preset 2=Display “------“ on sales display during preset 3=Display “Preset” on sale display during preset	2	
		.04	Preset entry timeout 0-60 seconds, 0=disabled	50	
		.05	Preset entry operation 0=Accumulate preset key entries 1=Scroll preset key entries	1	
		.06	First digit entry point for money 1 through 6, digit 1 is leftmost digit	3	
		.07	First digit entry point for volume 1 through 6, digit 1 is leftmost digit	4	
		.08	Sale display option 0=Use preset keypad display 1=Use sale display to indicate preset	1	
		.09	Anti-Fraud option 0=Disabled 1=Enabled	0	
F25	Local Preset SoftKeys Configuration	.01-.32	Represent softkeys which can contain any of the following values 0=Disabled 1=Select softkey value #1 2=Select softkey value #2 3=Select softkey value #3 4=Select softkey value #4 5=Select softkey value #5 6=Select softkey value #6 7=Select softkey value #7 8=Select softkey value #8 9=Select softkey value #9 10=Select softkey value #10 11=Select money 12=Select volume 13=Toggle 14=Select FILL 15=Clear key 16=Enter key 17=Soft reset (clears preset but stays in preset mode)	Default	
F26	VAP Configuration	.00	ORVR control 1=Enabled 2=Disabled	2	
		.01	Wayne Vac board drive signal 00=100Hz drive signal 01=1000Hz drive signal	00	
F27	Side A Dispenser Configuration	.00	Button input for local authorize function 0=Disabled (set for MPI Auth) 8=Standalone (Requires jumper on display)	8	0
		.01	MPI Authorization, Side A, logical nozzle 1 0=Disabled 6=Switch 6 (normal when enabled) 7=Switch 7	0	6
		.02	MPI Authorization, Side A, logical nozzle 2 0=Disabled 6=Switch 6 (normal when enabled) 7=Switch 7	0	
		.03	Attendant arming switch 0=Disabled 6=Switch 6 (normal when enabled) 7=Switch 7	0	

Function Number & Name		Sub-function Number & Description		Configuration Setting	
				Std. Model	w/ Pulse Output
F28	Side B Dispenser Configuration	.00	Button input for local authorize function 0=Disabled (set for MPI Auth) 8=Standalone (Requires jumper on display)	8	0
		.01	MPI Authorization, Side B, logical nozzle 1 0=Disabled 6=Switch 6 (normal when enabled) 7=Switch 7	0	6
		.02	MPI Authorization, Side B, logical nozzle 2 0=Disabled 6=Switch 6 (normal when enabled) 7=Switch 7	0	
		.03	Attendant arming switch 0=Disabled 6=Switch 6 (normal when enabled) 7=Switch 7	0	
F29	Side A Liter Flow Rate Configuration	.0N	Max. slow flow rate, 3-50 (units of .1 liters/min.) For SHC units, see note in F31.01.	.01=20	
		.1N	Min. slow flow rate, 0-50 (units of .1 liters/min.), 0 = no minimum		
		.2N	Max. fast flow rate, 10-180 (units of liters/min.) For SHC units, see note in F31.01.	.21=100	
		.3N	Min. fast flow rate, 0-180 (units of liters/min), 0 = no minimum		
F30	Side B Liter Flow Rate Configuration	.0N	Max. slow flow rate, 3-50 (units of .1 liters/min.) For SHC units, see note in F31.01.	.01=20	
		.1N	Min. slow flow rate, 0-50 (units of .1 liters/min.), 0 = no minimum		
		.2N	Max. fast flow rate, 10-180 (units of liters/min.) For SHC units, see note in F31.01.	.21=100	
		.3N	Min. fast flow rate, 0-180 (units of liters/min), 0 = no minimum		
F31	Side A Gallon Flow Rate Configuration	.0N	Max. slow flow rate, 1-10 (units of .1 gallons/min.) Note: For SHC units w/ two meters, enter half of the desired total amount.	5	
		.2N	Max. fast flow rate, 3-48 (units of gallons/min.) For SHC units, see note in F31.01.	26	
F32	Side B Gallon Flow Rate Configuration	.0N	Max. slow flow rate, 1-10 (units of .1 gallons/min.) For SHC units, see note in F31.01.	5	
		.2N	Max. fast flow rate, 3-48 (units of gallons/min.) For SHC units, see note in F31.0N.	26	
F33	Password Change	.00	Service Engineer password, maximum of 6 characters (numeric only)		
		.01	Station Manager password, maximum of 6 characters (numeric only)		
		.02	Station Operator password, maximum of 6 characters (numeric only)		
		.03	Weights & Measures password, maximum of 6 characters (numeric only)		
F34	Diagnostics	.01	Switch test N = nozzle, S = Stop Switch, B = bitbus, P = Preset		
		.02	Display Test		
		.03	Vapor Recovery subsystem test, Side A (Wayne Vac)		

Function Number & Name		Sub-function Number & Description		Configuration Setting	
				Std. Model	w/ Pulse Output
		.04	Vapor Recovery subsystem test, Side B (Wayne Vac)		
F35	Side A Wayne VAC A/L Calibration Data	.00-.01	Wayne Vac calibration	.00=100 .01=100	
F36	Side B Wayne VAC A/L Calibration Data	00-.01	Wayne Vac calibration	.00=100 .01=100	
F37	Satellite Configuration Side A	.0N	Satellite Delivery type (Can Master & Sat hoses run at same time), 1=Simultaneous, 0=Non-Simultaneous	.01-1	
		.1N	Physical nozzle number assignment, 0-8, 0 = None assigned	see model chart at end	
		.2N	Product type assignment 1=Non-blend 2=Blend	.21=1	
		.3N	Primary meter number assignment, 0-8, 0 = None assigned	see model chart at end	
		.4N	Secondary meter number assignment, 0-8, 0 = None assigned	see model chart at end	
		.5N	Primary valve number assignment 0-8, 0 = None assigned	see model chart at end	
		.6N	Primary valve type 1=On/off 2=Proportional 3=Two stage ASCO 4=Two stage Parker	.61=2 (3 or 4 for UHC models)	
		.7N	Secondary valve number assignment, 0-8, 0 = None assigned	see model chart at end	
		.8N	Secondary valve type 1=On/off 2=Proportional 3=Two stage ASCO 4=Two stage Parker	.81=2	
		.9N	Satellite Indicator (unit price display)	.91=0	
F38	Satellite Configuration Side B	.0N	Satellite Delivery type (Can Master & Sat hoses run at same time), 1=Simultaneous, 0=Non-Simultaneous	.01-1	
		.1N	Physical nozzle number assignment, 0-8, 0 = None assigned	see model chart at end	
		.2N	Product type assignment, 1 = Non-blend, 2 = blend	.21=1	
		.3N	Primary meter number assignment, 0-8, 0 = None assigned	see model chart at end	
		.4N	Secondary meter number assignment, 0-8, 0 = None assigned	see model chart at end	
		.5N	Primary valve number assignment 0-8, 0 = None assigned	see model chart at end	
		.6N	Primary valve type 1=On/off 2=Proportional 3=Two stage ASCO 4=Two stage Parker	.61=2 (3 or 4 for UHC models)	
		.7N	Secondary valve number assignment, 0-8, 0 = None assigned	see model chart at end	

Function Number & Name		Sub-function Number & Description		Configuration Setting	
				Std. Model	w/ Pulse Output
		.8N	Secondary valve type 1=On/off 2=Proportional 3=Two stage ASCO 4=Two stage Parker	.81=2	
		.9N	Satellite Indicator (unit price display)	.91=0	
F39	Set Error Severity Level	.xx	xx=selected error number (.25 = price error) 0=Log Error 1=Sale Terminated 2=Semi-Fatal - Affected side of dispenser closed 3=Fully Fatal - Both sides of dispenser closed 4=Catastrophic - Both sides closed. Requires power cycle to clear error. 5=Error detection disabled (price can be zero)	5 (F39.25)	
F41	Pulse Output *Only available on fully-populated version of the Pulse Output Board	.01	Pulse output for nozzles on Side A 0=Not used 2=All nozzles Side A 12=Logical nozzle 1 only	0	2
		.02	Pulse output for nozzles on Side B 0=Not used 2=All nozzles Side B 12=Logical nozzle 1 only	0	2
		.03	Reset Complete, Side A Logical Nozzle 1 0=Not used 10=All nozzles Side A 11=Logical nozzle 1 only	0	10
		.04	Reset Complete, Side B Logical Nozzle 1 0=Not used 10=All nozzles Side B 11= Logical nozzle 1 only	0	10
		.05	Pulse Output, Side A Logical nozzle 2 * 0=Not used 12=Logical nozzle 2	0	
		.06	Pulse Output, Side B Logical Nozzle 2 * 0=Not used 12=Logical nozzle 2	0	
		.07	Reset Complete, Side A Logical Nozzle 2 * 0=Not used 11=Logical nozzle 2	0	
		.08	Reset Complete, Side B Logical Nozzle 2 * 0=Not used 11=Logical nozzle 2	0	
		.12	Call Signal, Side A Logical Nozzle 1 0=Not used 11=Enable to reset complete output 13=Enable to call output *	0	
		.13	Call Signal, Side B Logical Nozzle 1 0=Not used 11=Enable to reset complete output 13=Enable to call output *	0	
		.14	Call Signal, Side A Logical Nozzle 2 * 0=Not used 11=Enable to reset complete output 13=Enable to call output	0	
		.15	Call Signal, Side B Logical Nozzle 2 * 0=Not used 11=Enable to reset complete output 13=Enable to call output	0	

Function Number & Name		Sub-function Number & Description		Configuration Setting	
				Std. Model	w/ Pulse Output
F42	Miscellaneous Config	.00	Totals Display Mode 0=Display totalizers per meter 1=Display totalizers per logical nozzle 2=Display totals per meter 3=Display total per logical nozzle 4=Display WIP totalizers	0	
F43	Meter Channel Config M=Meter channel (1-4), 1=Meters 1 & 5 2=Meters 2 & 6 3=Meters 3 & 7 4=Meters 4 & 8 Use Setting F16 if 43.01-43.04=0 Used for dispensers with mixed meter types	.0M	Meter Type 0=No meter attached 1=iMeter 2=PPM w/ LC meter 3=PPM w/ E85 meter 4=xFlo meter If F43.01 – F43.04 all equal “0”, use single meter setting found in F16.00	0 or 1-4	
		.1M	Pulser reverse pulse hysteresis, 1=-64	0 or 10	
		.2M	Maximum number of pulse errors/reverse pulses on an “In use” WIP in a transaction (1-99)	0 or 10 or 50 (UHC)	
		.3M	Reverse pulse limit (after hysteresis) on an idle/unused meter (1-255)	0 or 80	
		.4M	Liters-Suppress overflow of preset limit (0-99 cl)	0 or 5	
		.5M	Liters-Preset/Prepay slow down volume delta (5-399 cl)	0 or 57	
		.6M	Liters-Forward pulse limit on idle/unused WIP (1-99 cl)	0 or 95	
		.7M	Gallons-Suppress overflow of preset limit (0-99, 1=0.001 gals)	0 or 4	
		.8M	Gallons-Preset/Prepay slow down volume delta (2-999, 1=0.001 gallons)	0 or 150	
		.9M	Gallons-Forward pulse limit on idle/unused WIP (1-999, 1=0.001 gallons)	0 or 250	
F50	ATC Configuration (Canada Only) N=Meter number (1-8)	.0N	Temperature probe assignment 0 = none assigned (1-4)=probe assigned		
		.1N	Product type assignment 0=Gasoline 1=Diesel		
F56	Door Security	.00	Door Security One Shot Enable 0=Not armed, 1=Armed, one-shot req’d to disarm/reset	0 or 1	
		.01	Door Security Maintenance Mode Enable 0=Not armed, 1=Armed, maint mode entry req’d to disarm/reset	0 or 1	
		.02	Bezel Switch Input 0=Disabled, 1-10 for nozzle switch	0 or 3	
		.03	Hydraulic Door Switch Input 0=Disabled, 1-10 for nozzle switch	0 or 7	
		.04	Alarm Output 0=Disabled, 1=Annunciator	0 or 1	
		.05	Alarm Output Time 0=Until 1 shot entry, 1-255=Number of minutes to sound annunciator	0 or 10	
		.06	One Shot Response Entry Time 0=Wait forever, 1-255=Minutes to wait for one-shot entry	0 or 2	
		.07	One Shot Door Access Time 1-255=Minutes to allow unarmed entry after successful one-shot entry	0 or 1	
F57	Product Select LED Variable Blink Rate	.00	Product Select LED Variable Blink Rate Enable 0=Variable blink rate not enabled 1=Variable blink rate enabled	0	

Function Number & Name		Sub-function Number & Description		Configuration Setting	
				Std. Model	w/ Pulse Output
		.01	Blink rate for SW/LED 1 2-20=Blink rate (0.2-2.0 seconds)	10	
		.02	Blink rate for SW/LED 2 2-20=Blink rate (0.2-2.0 seconds)	10	
		.03	Blink rate for SW/LED 3 2-20=Blink rate (0.2-2.0 seconds)	10	
		.04	Blink rate for SW/LED 4 2-20=Blink rate (0.2-2.0 seconds)	10	
		.05	Blink rate for SW/LED 5 2-20=Blink rate (0.2-2.0 seconds)	10	
F67	DEF Control Configuration	.00	Upper Door Switch Input Side A	0	
		.01	Upper Door Switch Input Side B	0	
		.02	Lower Door Actuator Open Signal Output Side A 0=Not used 1-10=Corresponding valve output signal	0	
		.03	Lower Door Actuator Open Signal Output Side B 0=Not used 1-10=Corresponding valve output signal	0	
		.04	Lower Door Actuator Close Signal Output Side A 0=Not used 1-10=Corresponding valve output signal	0	
		.05	Lower Door Actuator Close Signal Output Side B 0=Not used 1-10=Corresponding valve output signal	0	
		.06	Low Temperature Signal Input Side A 0=Not used 1-4=Side A Nozzle 1-4 5-8=Side B nozzle 1-4	0	
		.07	Low Temperature Signal Input Side B 0=Not used 1-4=Side A Nozzle 1-4 5-8=Side B nozzle 1-4	0	
F68	Additive Configuration	.00	Display Current Tank Volume in Liters	0.0	
		.01-.07	Number of Turns per Liter by Logical Nozzle	0	
		.08	Additive Calibration Options 0=No calibration 1=Additive calibration Side 1 only 2=Additive calibration Side 2 only 3=Additive calibration both sides 4=No additive (allows W&M to measure diesel only)	0	
F95	Upload Dispenser Function Data		Upload function data from dispenser (data dump) to PC. This information is used to report the current status of the dispenser Requires laptop and service terminal.		
F96	Upload Flash Memory		Upload software code from dispenser to PC. Requires laptop and service terminal program.		
F97	Upload Configuration		Upload template file from PC to the dispenser. Requires laptop and service terminal program.		
F98	Download Flash Memory		Download software code to dispenser from a file on PC. Requires laptop and service terminal program.		
F99	Download Configuration		Download template to dispenser from a file on PC. Requires laptop and service terminal program.		

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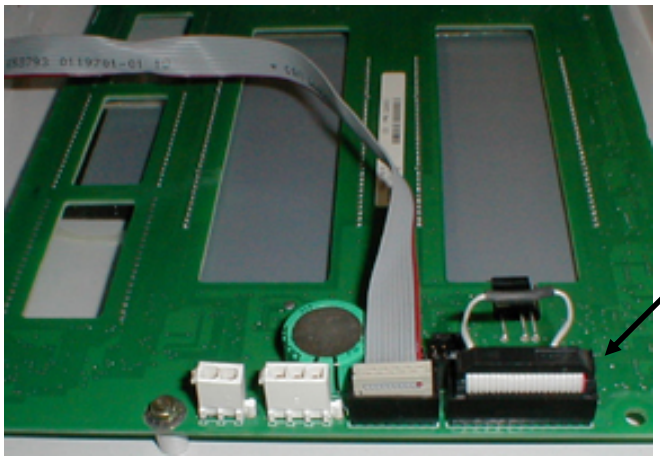
Appendix F - Local Authorize / Standalone Operation

F.1 General

- Standalone operation requires a Local Authorization jumper to be plugged into the back of the display board for each hose of the dispenser. See Figure E-1. This provides additional security than allowing the operating mode to just be changed via the infrared remote control. The jumper is factory-installed on all models that do not have the Pulse Output Interface option. If a unit is connected to a fuel control system using the Wayne serial protocol, the jumper should also be removed as an extra security measure.
- Most fuel control systems using a pulse output interface have a manual bypass mode where they authorize the dispenser for standalone use in case there is a problem with the fuel control system. With this capability, no changes need to be made at the dispenser. However, if the manual bypass mode is not available, or the fuel control system is totally non-operational, the steps on the next page can be taken to place the dispenser in standalone operation that is independent of the fuel control system.
- When the dispenser is equipped with an iX Fleet system, setting the dispenser into Standalone Operation varies if the dispenser also has the optional pulse output option.

Figure F-1 Local Authorization Jumper



Local authorization jumper installed in 20-pin connector on back of display board allows dispenser to be placed into standalone operation

F.2 Placing the Dispenser into Standalone Operation (POB) Pulse Output (with or without iX Fleet Option)

NOTE: The following table shows the setting for units without price displays. Units with price displays will look slightly different as they typically utilize all three displays.

Step 1 Turn off the power to the dispenser(s) at the breaker panel.

Step 2 You will need one Local Authorization jumper for each hose you desire to operate in standalone mode. The jumpers should have been given to you along with this manual and the infrared remote control.

Step 3 Determine the display panel(s) that need to be opened. The Local Authorization jumper needs to be plugged into the back of the display board for each hose that you desire to operate in standalone mode.
Island-oriented nozzle models – single or twin: For island-oriented nozzle models with matching displays on each side of the dispenser, the jumper only needs to be in one of the two matching displays for each hose. Open the display panel that is opposite of the main AC junction box (AC j-box has ¾" conduit and pulse output j-box has ½" conduit).
Lane-oriented nozzle models – single or twin: Lane-oriented models only have one display board per hose, so you will need to open the display panel that has the displays (singles – one side, twins – both sides).

Step 4 To open the display panel, support the weight of the display panel with your free hand, and unscrew the two screws on the front bottom edge of the panel. When you have the panel loose, slide it down from underneath the lip of the top panel. Support the panel with your right hand, so the back of the panel is facing up.

Step 5 Follow the instructions for your model type:
Island-oriented nozzle models – single or twin: There should be an empty 20-pin connector on the side of the display board. If there is a cable in this 20-pin connector, re-install the display panel and remove the opposite display panel. Carefully push the jumper into the connector (match the tab on the jumper to the notch in the connector). Repeat for both display boards on the panel if it is a twin unit.
Lane-oriented nozzle models – single or twin: There should be a cable in the 20-pin connector on the side of the display board. This cable is used for the pulse output interface. See Figure E-2. You will need to temporarily unplug this cable from the connector and substitute the jumper. Carefully push the jumper into the connector (match the tab on the jumper to the notch in the connector). Repeat for both sides of the dispenser if it is a twin unit.

Figure F-2 Pulse Output Interface Cable

In lane-oriented nozzle models that only have one display per hose, a cable for the pulse output interface will need to be temporarily unplugged from the 20-pin connector in order to install the local authorization jumper.

Step 6 Slide the display panel back underneath the lip of the top panel and re-install the two screws.

Step 7 Turn on the power to the dispenser at the breaker panel.

Step 8 Follow the steps in the following table to change the dispenser configuration to standalone operation.

Enter Configuration Mode			
Step	**IRC Command**	**Volume Display**	**Status Display**
1 Service engineer sign on	Press <ENTER>	PASS 1	[blank]
2 Enter service engineer password	Type your service engineer password & Press <ENTER>	PASS 2	[blank]
3 Enter service engineer password	Type your service engineer password & Press <ENTER>	[alternating software version & date]	F - -
Change Authorize Function to Standalone – Side A Nozzle #1 (A1)			
4 Go to Side A dispenser configuration function	Type <27> & Press <ENTER>	- - - - - -	F 27
5 Go to Side A local authorize sub-function	Press <ENTER> again	0 ("0" = set for pulse output interface authorization)	27.00
6 Clear display	Press <#>	[blank]	27.00
7 Enter standalone value	Type <8> for standalone mode & then press <ENTER>	8	27.00
8 Return to function level	Press <ENTER> again	- - - - -	F 27
Change Authorize Function to Standalone – Side B Nozzle #1 (B1) (if you only have one nozzle, skip to Step #14)			
9 Go to Side B dispenser configuration function	Press <NEXT>	- - - - - -	F 28
10 Go to Side B local authorize sub-function	Press <ENTER>	0 ("0" = set for pulse output interface authorization)	28.00
11 Clear display	Press <#>	[blank]	28.00
12 Enter standalone value	Type <8> for standalone mode & then press <ENTER>	8	28.00
13 Return to function level	Press <ENTER> again	- - - - -	F 28
Change From Serial Mode to Standalone Mode – iXFleet Only (if you do not have iXFleet, skip to Step #19)			
14 Go to Filling Mode configuration function	Type <01> & Press <ENTER>	- - - - - -	F 01
15 Go to Filling Mode parameter	Press <ENTER> again	1 (serial mode)	01.00
16 Clear display	Press <#>	[blank]	01.00
17 Enter standalone value	Type <2> for standalone mode & then press <ENTER>	2	01.00
18 Return to function level	Press <ENTER> again	- - - - -	F 01
Exit Configuration Mode			
19 Go to exit function	Type <0> and then Press <ENTER>	- - - - - -	F 00
20 Go to exit sub-function	Press <ENTER> again	1	0.00
21 Clear display	Press"#"	[blank]	0.00
22 Exit and save changes	Type <3> and then press <ENTER>	3	0.00
23 Exit configuration	Press <ENTER> again	[alternating CHAnGE StorEd]	0.00

NOTE: When you wish to return to original mode, you can follow the above steps to remove the local authorization jumper. In the configuration, change subfunction 27.00 and 28.00 to "0" instead of "8" to set the dispenser back into pulse output interface mode. If the unit has iXFleet, change subfunction 01.00 back to "1" instead of "2".

F.3 Placing the Dispenser into Standalone Operation (iX Fleet w/o POB)

NOTE: The following table shows the setting for units without price displays. Units with price displays will look slightly different as they typically utilize all three displays.

Step 1 Turn off the power to the dispenser(s) at the breaker panel.

Step 2 You will need one Local Authorization jumper for each hose you desire to operate in standalone mode. The jumpers should have been given to you along with this manual and the infrared remote control.

Step 3 Determine the display panel(s) that need to be opened. The Local Authorization jumper needs to be plugged into the back of the display board for each hose that you desire to operate in standalone mode.
Island-oriented nozzle models – single or twin: For island-oriented nozzle models with matching displays on each side of the dispenser, the jumper only needs to be in one of the two matching displays for each hose. Open the display panel that is opposite of the main AC junction box (AC j-box has ¾" conduit and pulse output j-box has ½" conduit).
Lane-oriented nozzle models – single or twin: Lane-oriented models only have one display board per hose, so you will need to open the display panel that has the displays (singles – one side, twins – both sides).

Step 4 To open the display panel, support the weight of the display panel with your free hand, and unscrew the two screws on the front bottom edge of the panel. When you have the panel loose, slide it down from underneath the lip of the top panel. Support the panel with your right hand, so the back of the panel is facing up.

Step 5 Follow the instructions for your model type:
Island-oriented nozzle models – single or twin: There should be an empty 20-pin connector on the side of the display board. See Figure F-1. Carefully push the jumper into the connector (match the tab on the jumper to the notch in the connector). Repeat for both display boards on the panel if it is a twin unit.
Lane-oriented nozzle models – single or twin: There should be a cable in the 20-pin connector on the side of the display board. See Figure F-1. Carefully push the jumper into the connector (match the tab on the jumper to the notch in the connector). Repeat for both sides of the dispenser if it is a twin unit.

Step 6 Slide the display panel back underneath the lip of the top panel and re-install the two screws.

Step 7 Turn on the power to the dispenser at the breaker panel.

Step 8 Follow the steps in the following table to change the dispenser configuration to standalone operation.

Enter Configuration Mode			
Step	**IRC Command**	**Volume Display**	**Status Display**
1 Service engineer sign on	Press <ENTER>	PASS 1	[blank]
2 Enter service engineer password	Type your service engineer password & Press <ENTER>	PASS 2	[blank]
3 Enter service engineer password	Type your service engineer password & Press <ENTER>	[alternating software version & date]	F - -
Change From Serial Mode to Standalone Mode			
4 Go to Filling Mode configuration function	Type <01> & Press <ENTER>	- - - - - -	F 01
5 Go to Filling Mode parameter	Pres <ENTER> again	1 (serial mode)	01.00
6 Clear display	Press <#>	[blank]	01.00
7 Enter standalone value	Type <2> for standalone mode & then press <ENTER>	2	01.00
8 Return to function level	Press <ENTER> again	- - - - -	F 01
Exit Configuration Mode			
9 Go to exit function	Type <0> and then Press <ENTER>	- - - - - -	F 00
10 Go to exit sub-function	Press <ENTER> again	1	0.00
11 Clear display	Press"#"	[blank]	0.00
12 Exit and save changes	Type <3> and then press <ENTER>	3	0.00
13 Exit configuration	Press <ENTER> again	[alternating CHAnGE StorEd]	0.00

NOTE: When you wish to return to original mode, you can follow the above steps to remove the local authorization jumper. In the configuration, change subfunction 01.00 back to "1".

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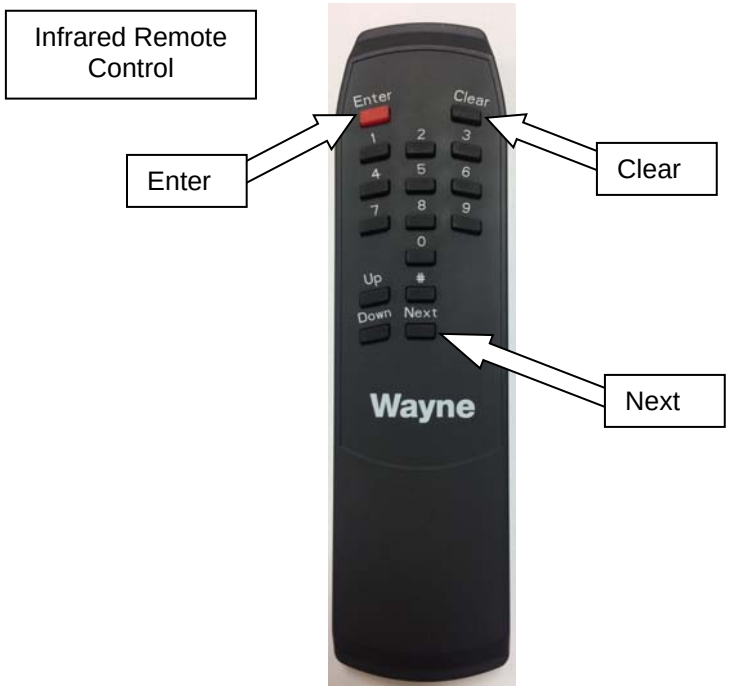
Appendix G - Weights & Measures Mode

G.1 General Information

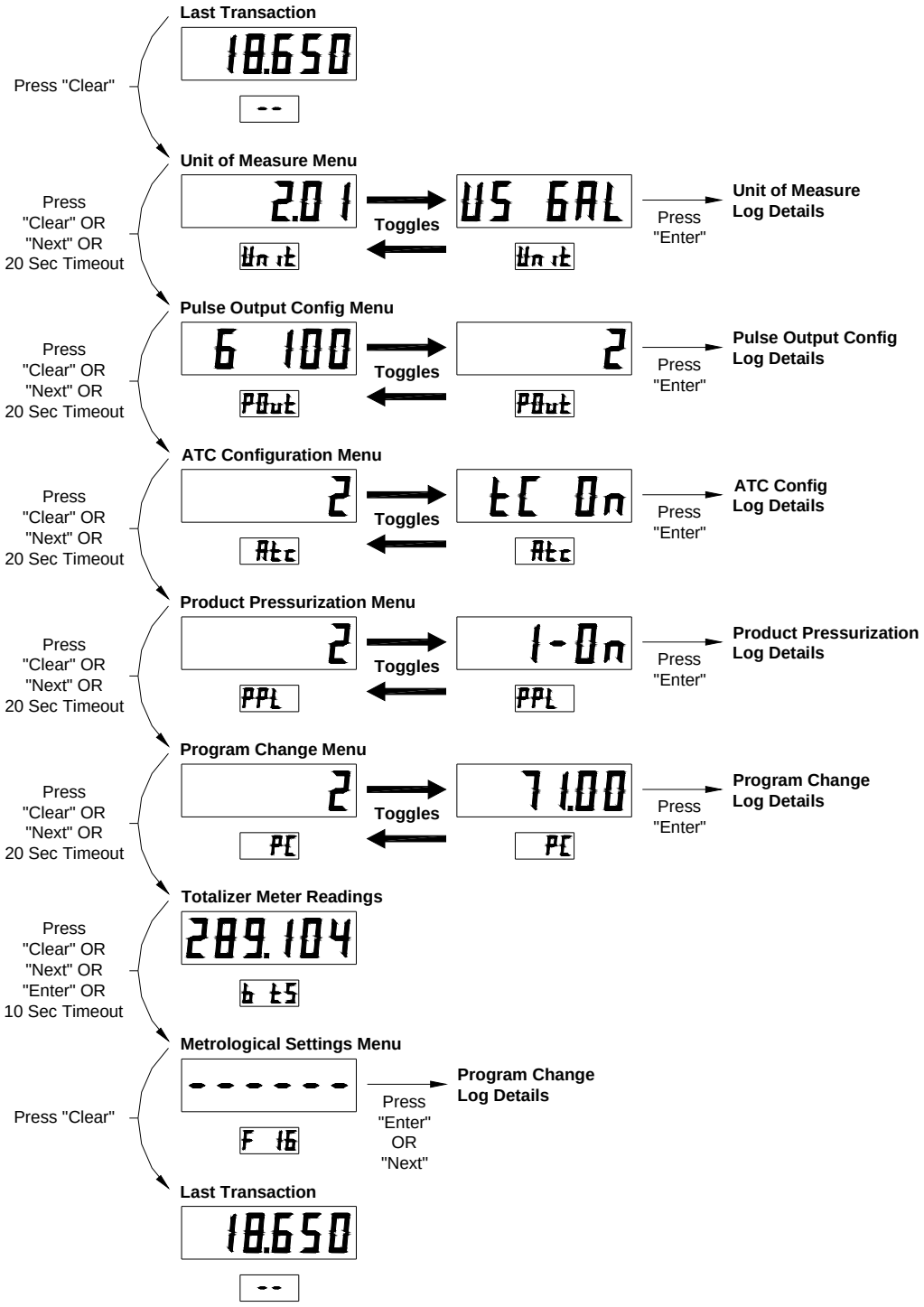
NOTE: The following information shows the settings for units without price displays. Units with price displays will look slightly different as they typically utilize all three displays for displaying information.

- Weights & Measures mode provides an audit trail of metrologically significant information that is handled through a W&M Category 2 sealing method. This function is mainly for use by Weights and Measures officials to view the events recorded in the audit trail related to the category 2 seal.
- Weights & Measures mode is accessed using the handheld Infrared Remote Control (IRC). To use the IRC, point it at the volume display within a distance of 12 to 18 inches. While most of the Weights & Measures mode information is not side specific, for information that is side specific, you will need to enter the W&M mode pointing the remote towards the display for the relevant side. For twin models with island-oriented nozzles that have two displays on each side, you may need to sign on again into Weights & Measures mode to see values for the meter totals for that side. Since the displays for each “side” of the dispenser show on both the front and back of the dispenser on these models, the software cannot determine the side of the dispenser by just the location of the remote. Reference the Meter Number Assignments table in Section D.12 in Appendix D if you need assistance in determining how meter numbering relates to the hoses.
- The Weights & Measures mode is comprised of multiple level menus. The upper level menu allows you to scan through the various choices that are available. When you reach a category where you want more information, you can choose that menu to view the additional information. You do not need a security code to access or obtain information through the Weights & Measures mode. The cabinet does not need to be opened to access this mode.



G.2 Upper Level Menu

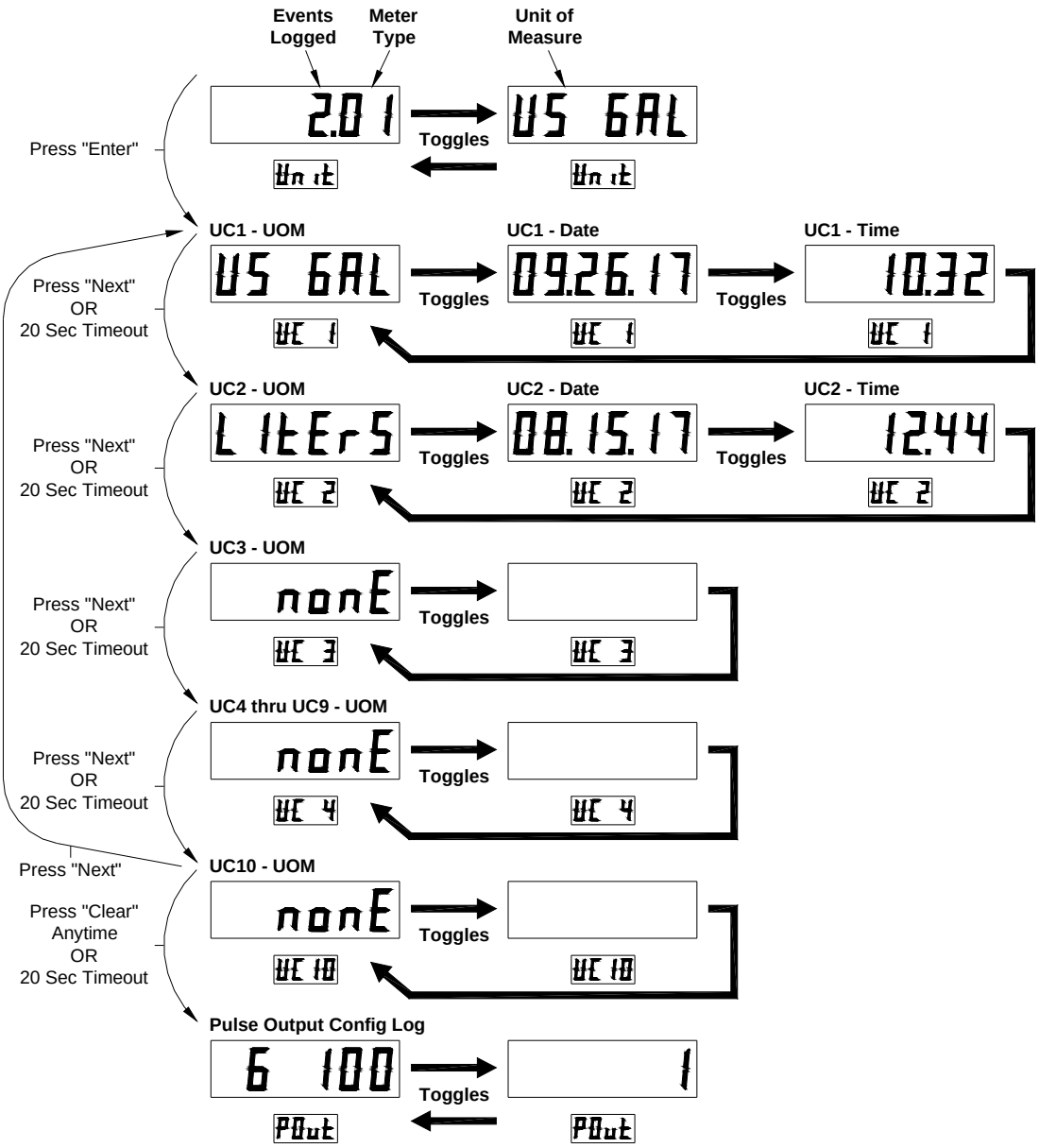
The upper level menu allows you to scan through the primary categories for the Weights & Measures mode. Enter this menu by pointing the IRC at the volume display and pressing the “Clear” button. You can continue to press the “Clear” button until the dispenser leaves the Weights & Measures mode or press “Enter” at any time to enter the sub-menu of any of the primary categories. The graphic below shows the primary categories. Each of these is fully explained in the following pages. The “Last Transaction” refers to the most recent transaction that was run on the dispenser.



G.3 Unit of Measure Menu

The Unit of Measure (UOM) menu shows the existing UOM (US Gallons or Liters), the existing meter type (see chart below), and the number of events recorded at the top level menu. You can look at the detail of each event which shows the UOM for each event along with the date and time that change took place. The log stores the most recent 10 events. The sub-menu will show “nonE” for the remaining events once no other changes were recorded. You can press “Clear” at any time to move to the next upper menu item.

Meter Type	Description
01	iMeter w/ WIP
02	LC Meter
04	xFlo Meter
05	LC & iMeter Combo

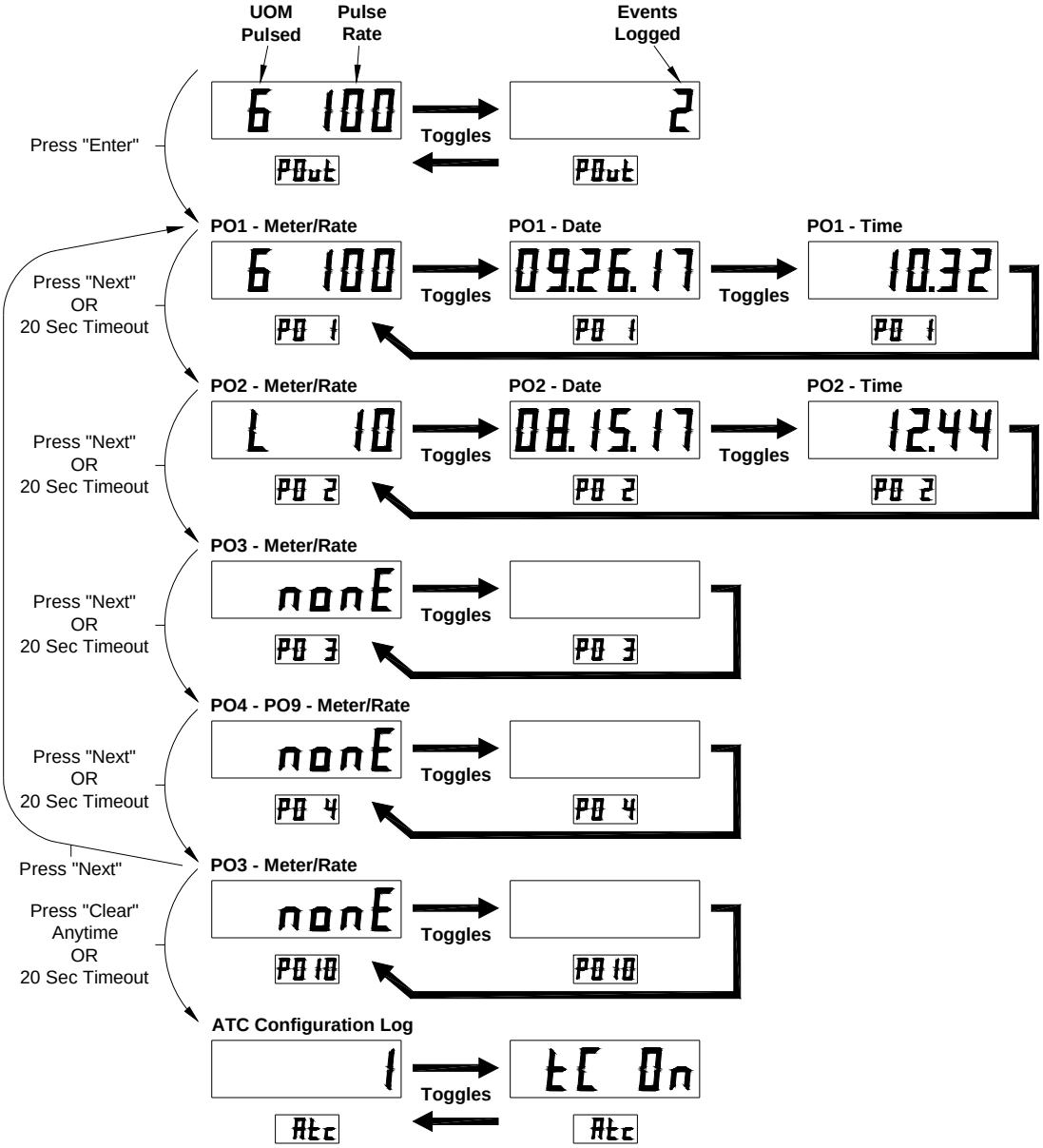


G.4 Pulse Output Menu

The Pulse Output menu shows the pulse output type (gallons or liters), the pulse rate per unit (or “0” if pulse output is off), and the number of events recorded at the top level. You can look at the detail of each event which shows the UOM along with the date and time that it took place. The log stores the most recent 10 events. The sub-menu will show “nonE” for the remaining positions once no other events were recorded. You can press “Clear” at any time to move to the next upper menu item.

UOM	Description
G	Gallons
L	Liters

Rate	Description
0	Pulse Output Off
10	10 pulses per unit
100	100 pulses per unit
250	250 pulses per unit
500	500 pulses per unit
1000	1000 pulses per unit

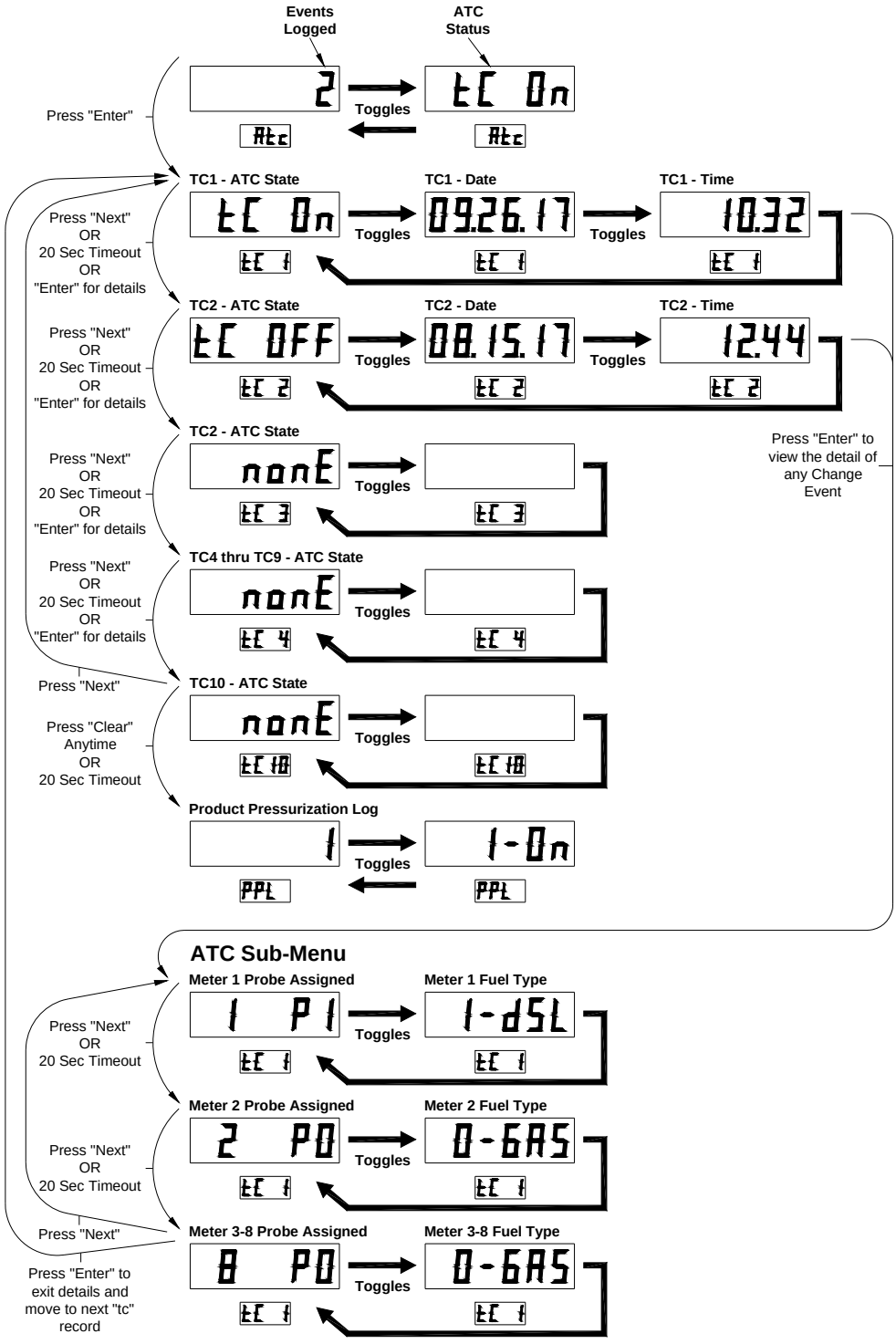


G.5 Automatic Temperature Compensation (ATC) Menu

The ATC menu shows the ATC status and the number of events recorded at the top level. The ATC feature is used only in the Canadian market. Specific hardware is required for it to be active. You can look at the detail of each event which shows the ATC status along with the date and time that it took place. The log stores the most recent 10 events. The sub-menu will show “nonE” for the remaining positions once no other events were recorded. For each of the 10 recorded events, you can see additional details which shows probe assignments and the fuel assignment for each meter (1-8), for that event by pressing “Enter” again. You can press “Clear” at any time to move to the next upper menu item.

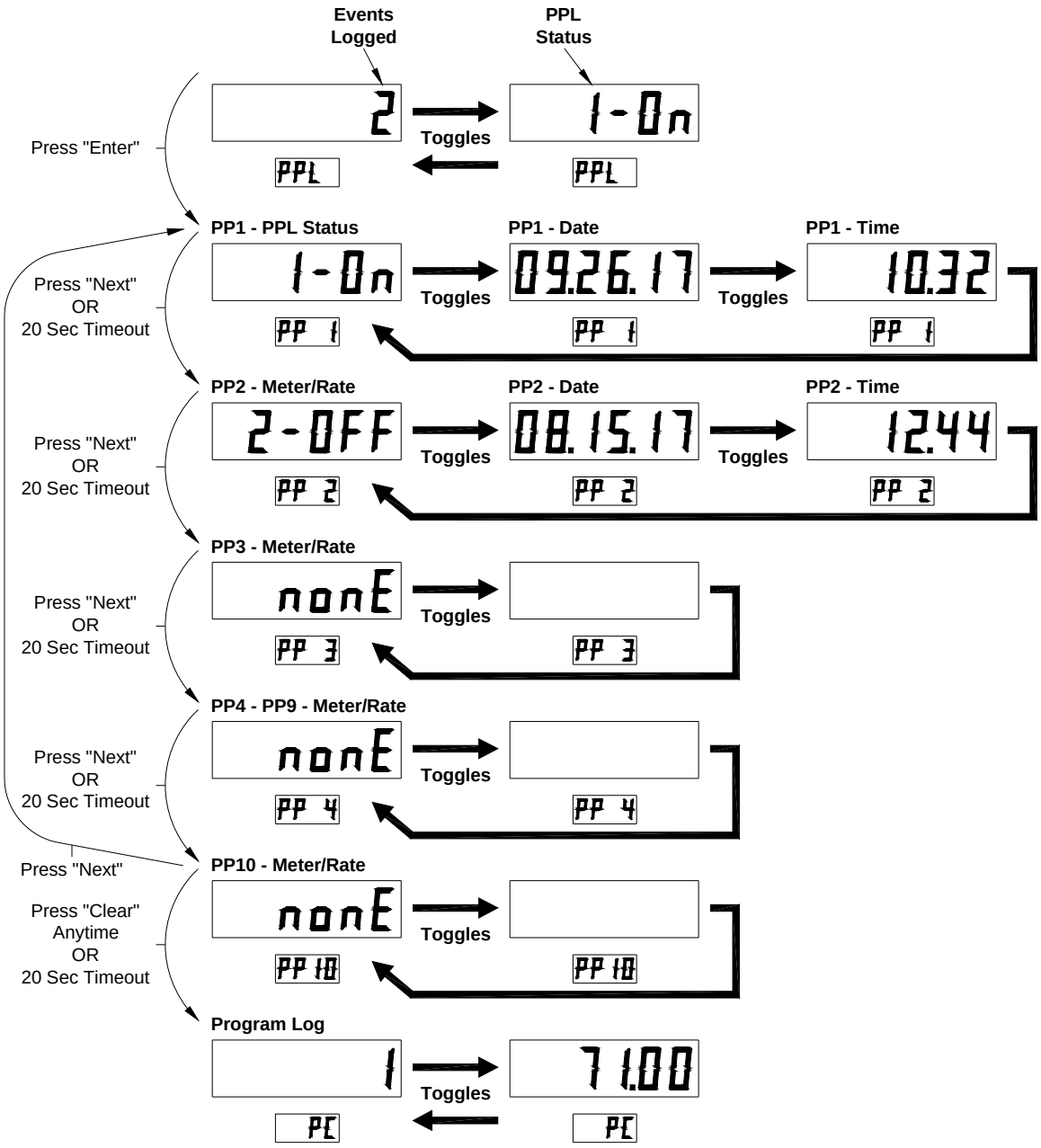
Probe	Description
P0	Not Assigned
P1	Probe 1
P2	Probe 2
P3	Probe 3
P4	Probe 4
P5	Probe 5
P6	Probe 6
P7	Probe 7
P8	Probe 8

Fuel	Description
0	Gasoline
1	Diesel



G.6 Product Pressurization Menu

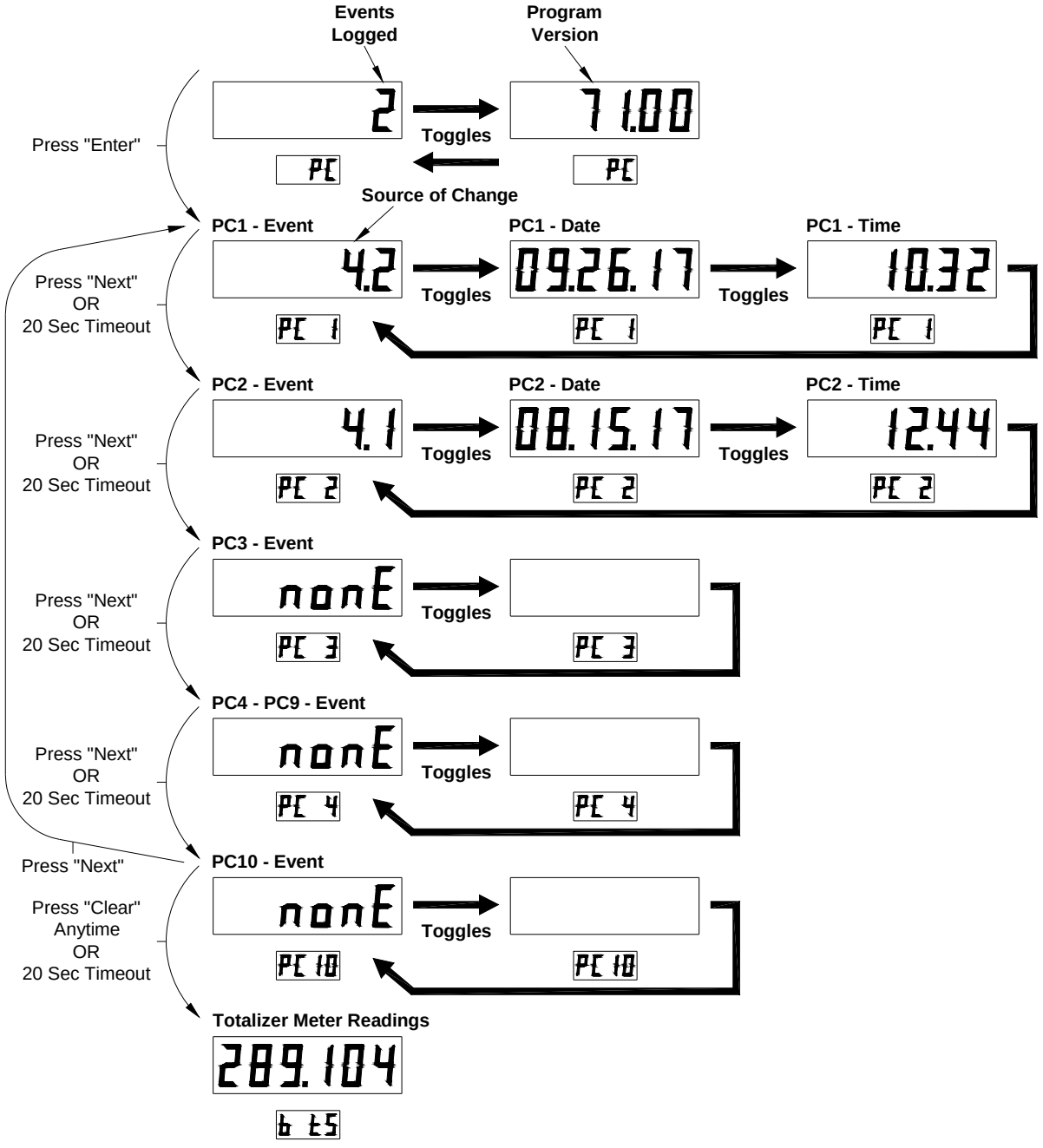
The Product Pressurization menu shows the Product Pressurization status and the number of events recorded at the top level. The Product Pressurization feature is used to make sure the hose is charged (at the very beginning of a transaction) after sitting for more than 1 hour. You can press “Enter” to look at the detail of each event which shows the product pressurization status along with the date and time that it took place. The log stores the most recent 10 events. The sub-menu will show “nonE” for the remaining positions once no other events were recorded. You can press “Clear” at any time to move to the next upper menu item.



G.7 Program Change Menu

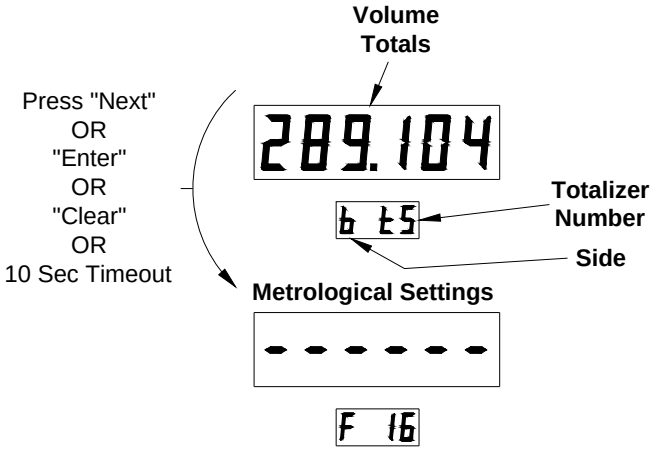
The Program Change menu shows the present version of software installed and the number of events recorded at the top level. You can press “Enter’ to look at the detail of each event which shows the source of the software download along with the date and time that it took place. The log stores the most recent 10 events. The sub-menu will show “nonE” for the remaining positions once no other events were recorded. You can press “Clear” at any time to move to the next upper menu item.

Source	Description
4	Servterm
5	iX via CAN



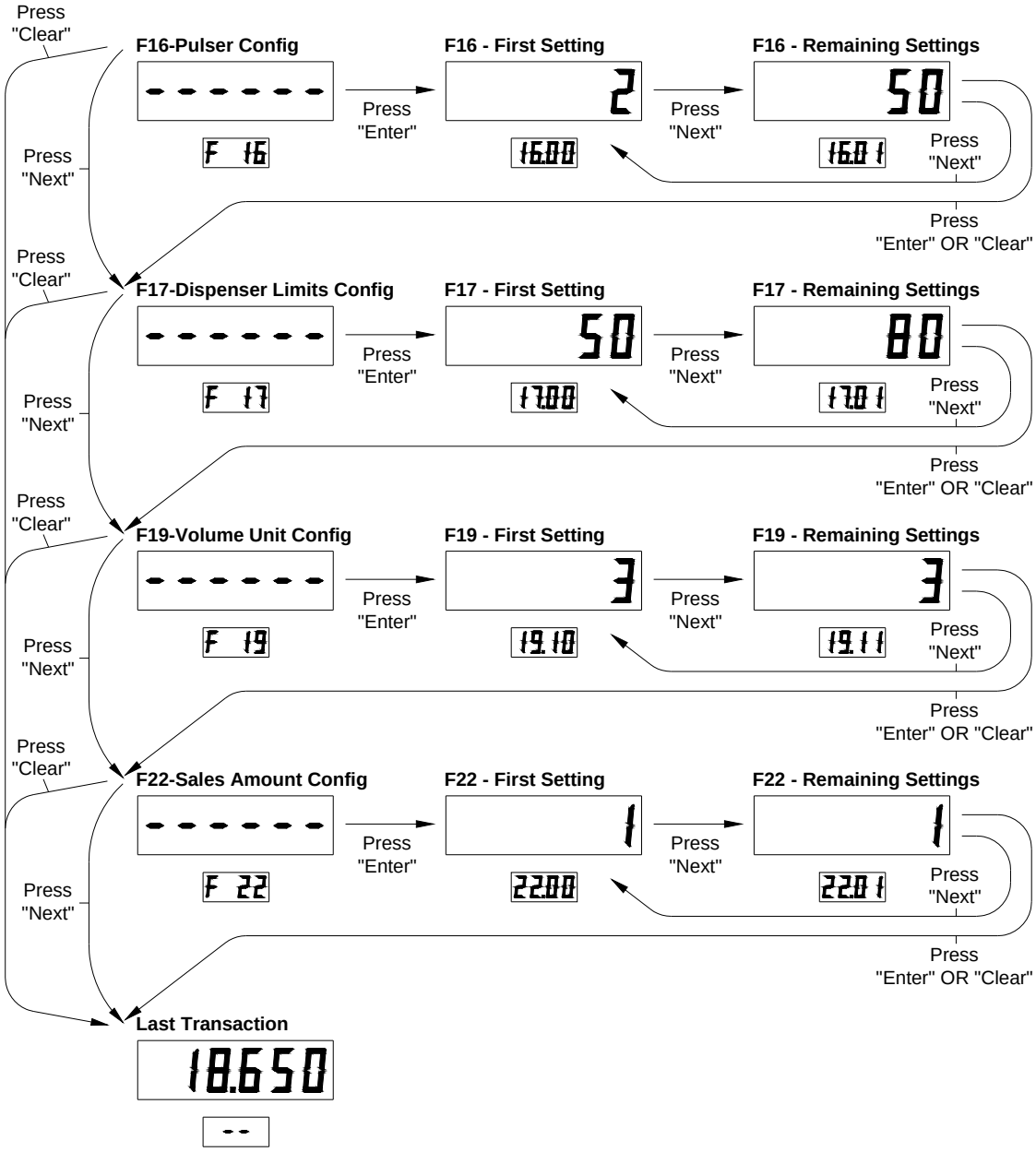
G.8 Meter Totals

The Meter Totals menu shows the volume totalizer for the side that was used when the Weights and Measures mode was activated. For twin models with island-oriented nozzles that have two displays on each side, you may need to go through the Weights and Measures mode access sequence for each side to see the totals for both sides. The Status/PPU display shows the side being accessed (a or b) and the associated totalizer assignment (tx). You can press “Clear” at any time to move to the next upper menu item.



G.9 Metrological Settings Menu

The Metrological Settings menu covers various dispenser configuration settings in the dispenser that may have an impact on the dispenser operation. Once at the first setting of F16, you can press “Enter” to scan through the F16 settings or “Next” to move to the next configuration parameter setting. You can press “Clear” at any time to exit the Weights and Measures mode.



See next page for these configuration parameter definitions.

Function	Sub-Function	Description
F16	.00	Measurement mode 1=Liters 2=Gallons 3=Imperial gallons
	.01	Pulser reverse pulse hysteresis, 1-64
	.03	Reverse pulse limit (after hysteresis) on an idle/unused pulser, 1-255
	.04	Meter type 1=WIP 2=PPM w/ LC meter 3=PPM w/ E85 meter 4=xFlo, 5=LC & iMeter combo
F17	.00	Max. # of pulse errors on an in-use pulser (in a transaction), 1-99
	.01	Max. # of pulse errors on an idle/unused pulser, 1-99
	.02	Max. # of display errors/filling, 0-99, 0 = disabled
	.03	Stop for “no flow” time limit, 0-1000 seconds
	.04	Max. # of consecutive no flow events w/o error, 0-10, 0 = disabled
	.05	Max. # of flow lost events w/o error, 0-10, 0 = disabled
	.06	Max. # of unfinished fillings, 0-10, 0 = disabled
	.07	Max. $ filling amount/filling, 1-6 digits
	.08	Max. volume amount/filling, 1-6 digits
	.09	Stop for “flow lost” time limit ,0-1000 seconds
F19	.10	Suppressed volume @ start of filling, 1-9 cl.
	.11	Max. volume for selection of new product, 1-9 cl.
	.12	Suppress overflow of preset limit, 0-99 cl.
	.13	Preset/prepay slow down volume delta, 5-399 cl.
	.14	Forward pulse limit on idle/unused WIP, 1-99 cl.
	.15	Liters pulse output resolution 0=Disabled 1=1 pulse per unit 2=10 pulses per unit 3=100 pulses per unit 4=250 pulses per unit
	.16	Calibration Test Container Volume –Liters (UHC only) 20 – 1000 Liters
	.20	Suppressed volume @ start of filling, 1-99 (units of .001 gals.)
	.21	Max. volume for selection of new product, 1-99 (units of .001 gals.)
	.22	Suppress overflow of preset limit, 0-99 (units of .001 gals.)
	.23	Preset/prepay slow down volume delta, 2-999 (units of .001 gals.)
	.24	Forward pulse limit on idle/unused pulser, 1-999 (units of .001 gals.)
	.25	Gallons pulse output resolution 0=Disabled 1=1 pulse per unit 2=10 pulses per unit 3=100 pulses per unit 4=250 pulses per unit 5=500 pulses per unit 6=1000 pulses per unit
	.26	Calibration Test Container Volume – Gallons (UHC only) 5 – 250 Gallons
F22	.00	Denomination ratio between money display and unit price display 1 =1/1 2 =10/1 3 =100/1 4 =1/10 5 =1/100 6 =1/1000
	.01	Count by ones or fives in least significant digit of money display 1=Ones 2=Fives
	.02	Volume digits to the right of the decimal point used in the amount
	.03	Money preset configuration
	.04	Default price mode 1=Credit 2=Cash

Appendix H - iX Fleet Fuel Control System

H.1 General

An iX Fleet Fuel Control System can be provided as an option for controlling a Select dispenser. When supplied from the factory, the iX Fleet In-Dispenser Terminal (IDT) and all internal connections to control the dispenser will be in place. If installed as a field retrofit, a separate manual details the installation of the iX Fleet IDT into the dispenser. For 2-sided dispensers with the iX Fleet terminal installed on only 1 side, the terminal is mounted on the side opposite of the main J-Box. The iX Fleet Operation manual (P/N 000-W2940084-) covers the operation of the system. This Appendix covers items specific to field installation of the wiring between the iX Fleet IDT and the iX Fleet Controller or LAN.

H.2 Power Requirements

Power for the iX Fleet system is supplied directly from the same AC power source that is used to power the dispenser (Control Power). The following adders must be considered for sizing the AC wiring and breaker for the dispenser in addition to the power requirements of the dispenser:

Single-sided iX Fleet	120VAC 50/60 Hz	4.7 Amp
Twin-sided iX Fleet	120VAC 50/60 Hz	4.7 Amp

H.3 Ethernet Connection

When connecting the iX Fleet system directly through an Ethernet cable (either directly to the iX Fleet Fuel Controller or through a LAN/WAN), a hardwired connection must be made to the dispenser(s). To meet code and for proper operation, the following must be adhered to:

Standards For trouble-free operation, Ethernet cable should be installed by a qualified telecommunications technician in accordance with ANSI/TIA/EIA 568-A Commercial Building Telecommunication Cabling Standards (and Amendments). It is highly recommended that for other than very simple site layouts or for when the systems will be connected to an existing LAN/WAN, a qualified engineer be used to design the network for this system. Network wiring should be tested according to ANSI/TIA/EIA TSB 67 prior to use.

Cable As the cable for this connection is passing through a fuel island hazardous area, a cable that is rated for such use must be used. The following cables are rated to be oil and gas resistant:
Belden 7928A Category 5e cable
Belden 7931A Category 6 cable
Madison 042GA00006 Category 5 cable*
*Note: Madison Ethernet cable can be purchased from Wayne using Part Number 891052-002. The cable can be purchased in 500 feet increments.

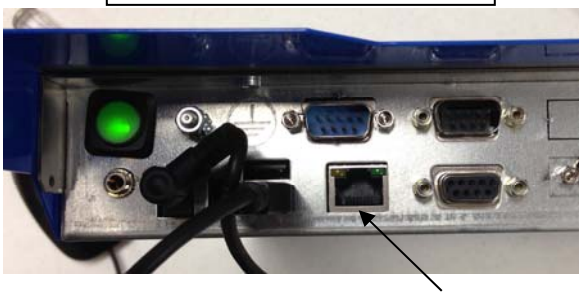
iX Fleet Fuel Controller The iX Fleet Fuel Controller is the common control device for the site(s). A controller can be used to control any dispenser that is either directly connected to the controller or connected to the controller via the Local Area Network (LAN). Remote sites without LAN access require the use of an additional iX Fleet Fuel Controller. Controllers operate independent of each other meaning they require separate employee and vehicle entries as well as generating separate reports.

Dispensers Dispensers with iX Fleet IDTs must be directly connected to the iX Fleet Fuel Controller, can be connected to the controller via an Ethernet switch, or can be connected via a LAN. Dispensers can also be interconnected with each other before the Ethernet connection is routed back to the iX Fleet Fuel Controller.

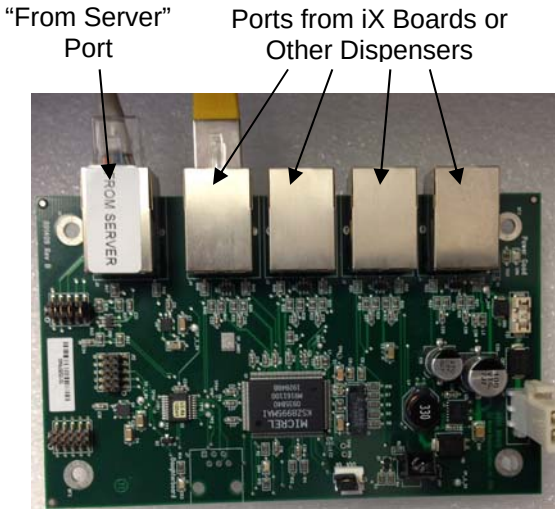
Distance The maximum distance recommended for a single Ethernet hardwired run is 100 meters (328 feet). Distances exceeding this length must employ a switch or some type of repeater device within every 100 meters. Wayne recommends that for sites exceeding 200 meters from the controller to the furthest dispenser (even with multiple switches/repeaters) or for systems requiring more than 2-3 switches/repeaters in the same line that a network engineer be used to design and test the site. Home runs to a centralized switch are recommended whenever possible to minimize the impact of a potential defective switch (or repeater). Wireless modems can be used to handle long runs.

Site Layout The number of dispensers, the configuration of the dispensers, the on-site hardware, and the desired method of connecting the dispensers together will determine the Ethernet connections.

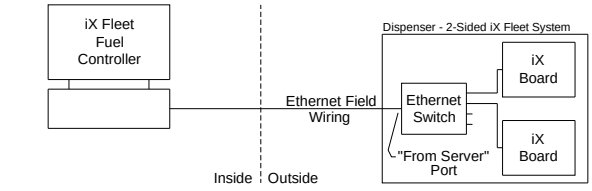
Rear of iX Fleet Controller



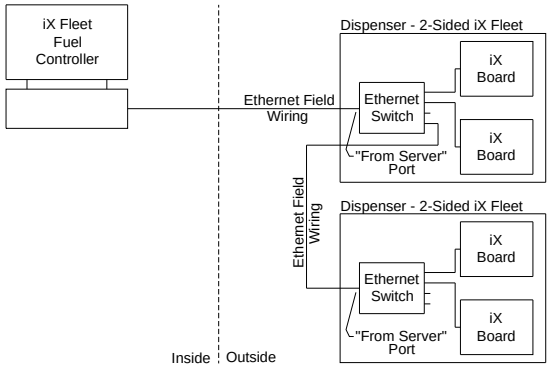
Ethernet Switch in Dispenser



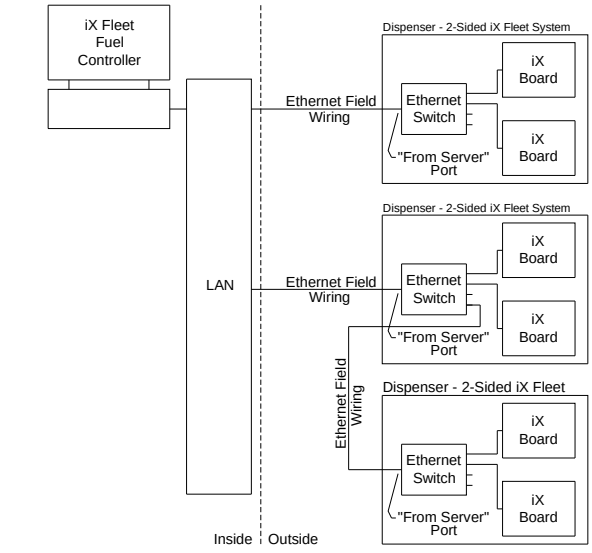
Single Dispenser, Direct Connection



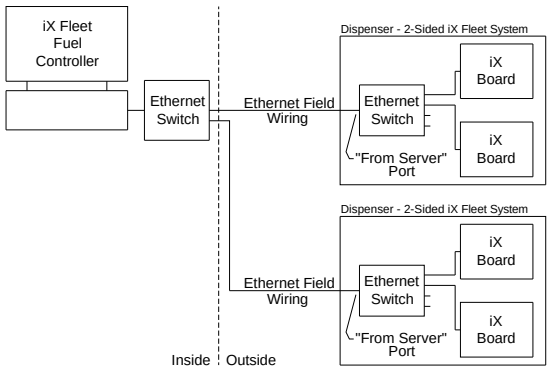
Multiple Dispensers, Dispensers Looped, Direct Connection



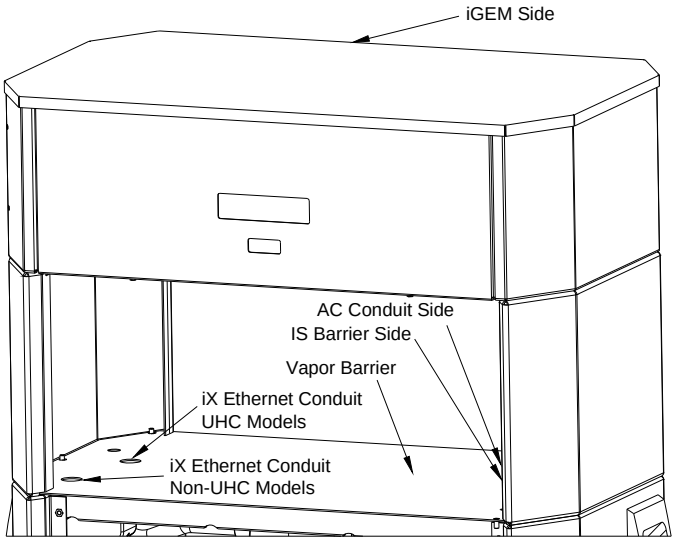
Connections Made via LAN



Direct Connection via Ethernet Switch



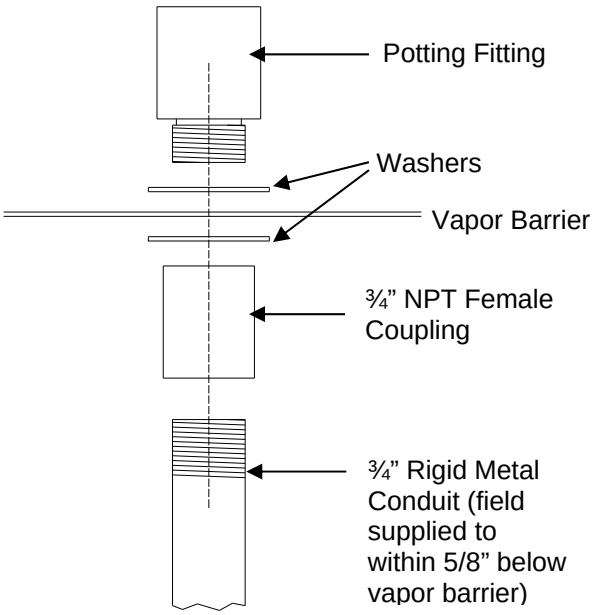
Conduit For all iX Fleet installations, the Ethernet cable must be installed in its own conduit to all iX Fleet dispensers (and between dispensers if relevant). **The run of Ethernet cable must be uninterrupted from the building to the switch in the dispenser electronic head.** The conduit is to be routed directly from the contractor installed seal-off at the bottom of the dispenser to the fitting provided at the vapor barrier below the iX Fleet electronics area. A hole already exists for a ¾" conduit in the vapor barrier for this fitting connection. This opening is sealed from the factory using flat washers, a bolt, and a nut. When installing the cable, allow the Ethernet cable to extend at least 30" above the vapor barrier.



View of area in dispenser where iX Fleet components will reside prior to them being installed. This drawing should be used to help locate the ¾" iX conduit hole (for installing Ethernet field wiring). This opening will be plugged using 2 washers, a bolt and a nut.

When running the field conduit up into the dispenser, follow these steps using the Wayne Ethernet fitting kit:

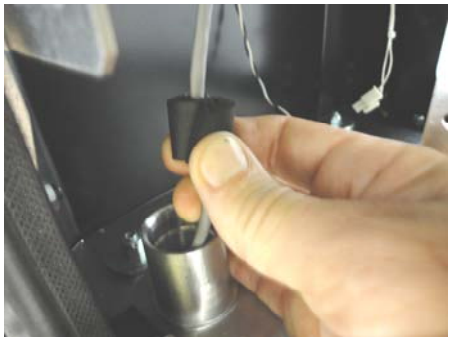
1. Screw ¾" NPT female coupling onto field conduit. At least 5 threads of the conduit must be in the coupling.
2. Position conduit and female coupling under existing hole in vapor barrier (See location for iX conduit on previous page.)
3. Position 2 washers provided as shown.
4. Screw potting fitting into female coupling from above the vapor barrier. Make sure a washer is used on both sides of the vapor barrier. Tighten until both washers are pulled snug against the vapor barrier.



Sealing After the conduit is installed and the Ethernet cable is pulled, the conduit fitting must be properly sealed.

A - Place Ethernet cable in Sealing Gasket and begin to wrap cable.

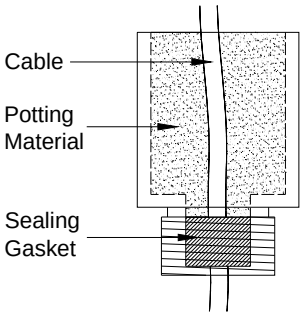
B – Continue to wrap cable until diameter is about the size of the inside of the conduit (3/4”).



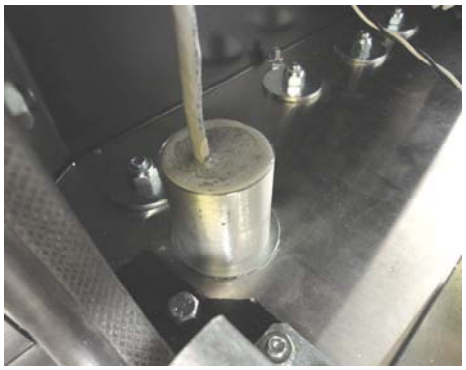
C – Wrap Sealing Gasket with tape to hold it in place.

D – Push cable and seal down into conduit fitting so that top of gasket is 1-1/4” deep into the conduit.

E – View of Ethernet cable and conduit before potting. (Picture shows fitting outside of dispenser.)

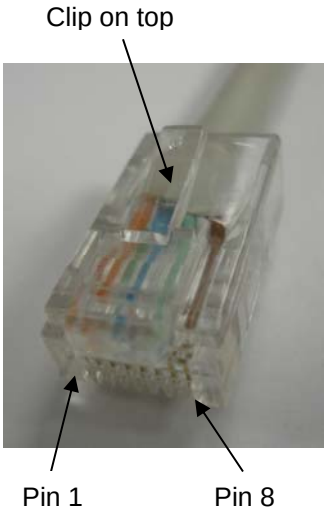


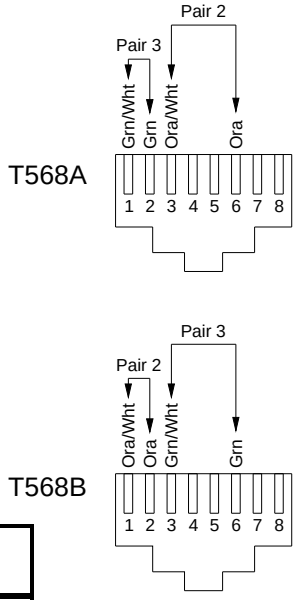
F – Mix and pour potting mix into conduit top to the top edge. Let undisturbed for 12 hours. See Note.



Note: Prepare the potting compound by pouring 4 oz. Rockite into an eight oz. paper cup. Add 1-1/2 oz. of water. Stir one to two minutes until reaching consistency similar to pancake batter. Pour mix into fitting and fill to within 1/8” of top of fitting. Cable should exit near the center of the fitting.

Termination After the Ethernet cable has been pulled into the dispenser, it must be terminated with an RJ45 jack. Two wire schemes are shown below. Most applications use T568A. Either wiring scheme can be used as long as the same scheme is used at both ends of the cable. RJ45 connectors and crimpers can be purchased at hardware and electronic chain stores.





Pin	T568A Pair	T568A Color	T568B Pair	T568B Color
1	3	green striped	2	orange striped
2	3	green	2	orange
3	2	orange striped	3	green striped
4	1		1	
5	1		1	
6	2	orange	3	green
7	4		4	
8	4		4	

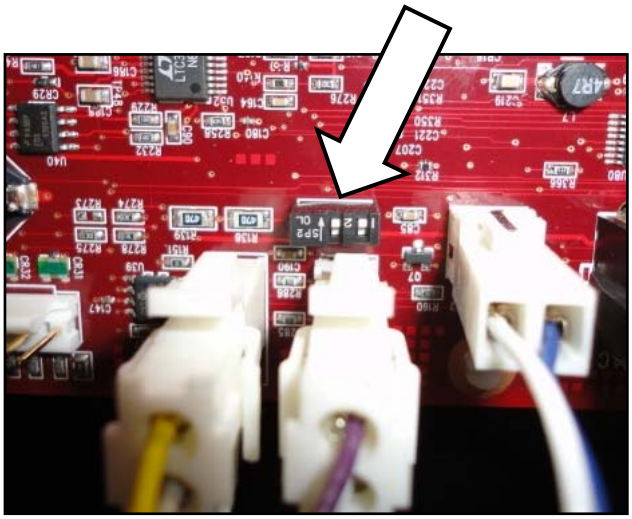
H.4 iX Fleet Board Setup

Set the communication loop termination on the R2 board according to the following iX configuration chart below using the switches shown in Figure 35.

Configuration	Side A R2 iX Board	Side B R2 iX Board
Single-Sided	Terminated	
Dual-Sided	Unterminated	Terminated

Terminated – Switches placed toward center of iX R2 board.

Unterminated – Switches placed towards edge of iX R2 board.



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Appendix I - Templates

I.1 Select High and Super-High Capacity Models

W2889320-020

TEMPLATES, SELECT ENG MATRIX

Base Template W2893141-XXX-XXX is required for all configurations. Remaining colums optional depending on dispenser configuration				Alternate Unit of Measure (Base Template default is US gallons)		Alternate Meter	ATC (/C)				Pulse Output (/H)	Alternate Fleet Display Options (Volume Only Bottom Row Default, all except Select S1)		Door Security Switches		iX Fleet (//D1-6)
							Meter 1 "X"		Meter 2 "Y"							
	MODEL		Base Template	Liters	Imperial Gallons	xFlo	Gas	Diesel	Gas	Diesel		Volume Alternate Row	Fleet Pricing	Bezel (//V4)	Hydraulics (//V5)	
Enhanced Capacity Remotes	3/G7201D/2GJ	1 HOSE ISLAND	-001-300	-009-001	-009-002	-005-001	-007-009	-007-010			-008-001	-008-004 top row	-003-046	-010-002	-010-006	-011-002
	3/G7207D/2GJR	1 HOSE LANE														
	3/G7202D/	2 HOSES 1 PRODUCT ISLAND	-001-301			-005-001	-007-001	-007-002			-008-001	-008-004 top row	-003-046	-010-002	-010-006	
	3/G7207D/	2 HOSES 1 PRODUCT LANE														
	3/G7203D/28GJ	2 HOSES 2 PRODUCTS ISLAND	-001-303			-005-001	-007-009	-007-010	(Side 2) -007-020	(Side 2) -007-021	-008-001	-008-004 top row	-003-046	-010-002	-010-006	
	3/G7208D/28GJ	2 HOSES 2 PRODUCTS LANE														
	3/G7242D/2GJ (HIGH SPEED)	2 HOSES 1 PRODUCT ISLAND	-001-301						(Side 2) -007-011	(Side 2) -007-012						
	3/G7247D/2GJ (HIGH SPEED)	2 HOSES 1 PRODUCT LANE														
Suction Pumps	3/G7201P/2J	1 HOSE ISLAND	-001-300	-009-001	-009-002		-007-009	-007-010			-008-001	-008-004 top row	-003-046	-010-002	-010-006	-011-002
	3/G7207P/2JR	1 HOSE LANE														
	3/G7202P/2J	2 HOSES 1 PRODUCT ISLAND	-001-301				-007-001	-007-002			-008-001	-008-004 top row	-003-046	-010-002	-010-006	
	3/G7207P/2J	2 HOSES 1 PRODUCT LANE	-001-301								-008-001	-008-004 top row	-003-046	-010-002	-010-006	
	3/G7203P/28J	2 HOSES 2 PRODUCTS ISLAND	-001-303				007-009	007-010	(Side 2) -007-020	(Side 2) -007-021	-008-001	-008-004 top row	-003-046	-010-002	-010-006	
	3/G7208P/28J	2 HOSES 2 PRODUCTS LANE														
Super-High Capacity Remotes	3/G7221D/GJ	1 HOSE ISLAND	-001-305	-009-001	-009-002						-008-001	-008-004 top row	-003-046	-010-002	-010-006	-011-002
	3/G7221D/CGJ	1 HOSE ISLAND ATC	-001-306				-007-024	-007-025								
	3/G7227D/GJ	2 HOSE 1 PRODUCT LANE	-001-307													
	3/G7227D/GJR	1 HOSE LANE	-001-305													
	3/G7227D/CGJR	1 HOSE LANE ATC	-001-306				-007-024	-007-025								
	3/G7227D/GJM	2 MSTR HOSES 1 PRODUCT LANE	-001-310				-007-022	-007-023					-003-048			
	3/G7227D/GJMR	1 MSTR HOSE LANE	-001-308										-003-047			
	3/G7227D/CGJMR	1 MSTR HOSE LANE ATC	-001-309				-007-024	-007-025								
	3/G7228D/GJLM	1 MSTR HOSE 1 SAT HOSE LANE	-001-308													
	3/G7228D/CGJLM	1 MSTR HOSE 1 SAT HOSE LANE ATC	-001-309				-007-024	-007-025								
3/G7220 (SHC Suctions)	3/G7221P/8 (currently for Select only)	1 HOSE ISLAND	-001-304	-009-001	-009-002		-007-024	-007-025			-008-001	-008-004 top row	-003-046	-010-002	-010-006	-011-002
	3/G7227P/8R (currently for Select only)	1 HOSE LANE														

I.2 Select Ultra-High Capacity Models

Templates, Select UHC

W2889320-020 Base Template W2893141-XXX-XXX is required for all configurations. Remaining colums optional depending on dispenser configuration				Alternate Unit of Measure (Base Template default is US gallons)		Valve Option (/W3)	ATC (/C)				Pulse Output (/H)	Alternate Fleet Display Options (Volume Only Bottom row default)			Door Security Switches		iX Fleet (//D1-6)
							Meter 1- "X"		Meter 2- "Y"								
	Model	Orientation	Base Template	Liters	Imperial Gallons	Parker 120 VAC Valves	Gas	Diesel	Gas	Diesel		Volume Only Top Row	Pricing Only (/1)	Pricing and SIU (/1I)	Bezel (//V4)	Hydraulics (//V5)	
3/G7200D Ultra High Capacity Remote Dispensers	Single 3/G7231D	1 Hose, 1 Prod, Island, 1 Fueling Point.	-001-311	-009-001	-009-002	-012-001	-007-009	-007-010			-008-001	-008-004	-003-046		-010-002	-010-006	-011-002
	Single 3/G7237D/R	1 Hose, 1 Prod, Lane, 1 Fueling Point.												-003-047			
	Twin 1 3/G7232D	2 Hose, 1 Prod, 2 Fueling Points	-001-312			-012-002	-007-013	-007-014						-003-048			
	Twin 1 3/G7237D	2 Hose, 1 Prod, Island, 2 Fueling Points.															
	Twin 1 3/G7236D/R	2 Hose, 1 Prod, Lane, 2 Fueling Points.												-003-048			
	Twin 2 3/G7233D	2 Hose, 2 Prod, Island, 2 Fueling Points.	-001-313				-007-009	-007-010	-007-011	-007-012							
	Twin 2 3/G7238D	2 Hose, 2 Prod, Lane opposite side, 2 Fueling Points.												-003-048			
	Twin 2 3/G7234D/R	2 Hose, 2 Prod, Lane same side, 2 Fueling Points.															
	Twin 2 3/G7239D/R	2 Hose, 2 Prod, Lane, 1 Fueling Point.															
	Single/Sat. Combo 3/G7238D/LM	1 Hose, 1 Prod, Lane, 1 Fueling Point.	001-311	-009-001	-003-002	-012-001	-007-009	-007-010			-008-001	-008-004	-003-046	-003-047	-010-002	-010-006	-011-002

Appendix J - Error Codes

Code	Error	Description
1	Flash program CRC error	Corrupted program data detected in POST (Power On Self Test)
2	Flash template CRC error	Corrupted Template Data detected in POST
3	RAM Error	RAM test failed. The RAM test runs in POST and before the start of a sale.
5	RAM error log CRC error	Corrupted RAM error log detected in POST
6	RAM function programming CRC error	Corrupted RAM function data detected in POST
7	RAM unit prices CRC error	Corrupted RAM unit price data detected in POST
8	RAM statistics CRC error	Corrupted RAM statistics data detected in POST
9	RAM event log CRC error	Corrupted RAM event log data detected in POST
10	RAM totals CRC error	Corrupted RAM totals data detected in POST
11	RAM totalizers CRC error	Corrupted RAM totalizer data detected in POST
12	RAM Electro-mechanic totalizers CRC error	Corrupted RAM EMT data detected in POST
13	Identi-PROM CRC error- Device #0 = Display, Device #1 = CPU	Identi-PROM data is only required for Ovation dual price posting displays and Century/Select displays.
14	RAM Timestamps CRC error	Corrupted RAM timestamp data detected in POST
16	Suppress overflow limit reached	This error is logged if overrun suppression is enabled (function 19.12 and 19.22) and the limit is exceeded)
17	RAM meter data CRC error	Corrupt RAM meter Non-volatile data detected in POST
18	RAM Door Security Data CRC Error	Corrupt RAM Door Security Data detected in POST
20	n Consecutive display read back error- Device #s: 0=Sales, 1=Unit price, 2=Preset	Data which is sent to the displays is echoed back to verify connection and display board integrity. The data received from the display does not match the data sent. The number of readback errors allowed is specified in function 17.02
25	Sale cannot start-Zero Unit price	Unit price not set
27	Sale cannot start-Unit price changed	Unit price has changed too close to the start of a sale. The time is set/disabled through function 23.04
28	Sale cannot start-Need preset entry	Sales requires an entry from preset keypad if enabled in function 24.01
30	No communications with POS timeout	Communication lost with POS for the amount of time specified in function 23.02
31	POS buffer overflow (DART)	Communication error with POS
34	Sale aborted because Stop Button pushed	Stop button signal was detected

Code	Error	Description
35	Blend ratio out of tolerance	Total sale blend ratio exceeded the limits specified in functions 7.02-7.04
39	Pulse output lags by more than 1 second	Pulse output being sent to the POS was not able to keep up with the sale flow rate
42	Vapor recovery motor on when it should be off	Signal from the WayneVac system indicating that the motor is turning when there is no fuel flow
43	Vapor recovery motor on when it should be on	Signal from the WayneVac system indicating that the motor is not turning when there is fuel flow
46	Vapor recovery motor turning wrong direction	Feedback signals from the WayneVac system indicate that the motor is turning in the wrong direction
47	Illegal sensor states from vapor recovery system	Feedback signals from the WayneVac system indicate that the sensor signals are corrupted
48	Vapor recovery motor load high	Amount of power required to run the WayneVac motor has exceeded expected levels
49	Vapor recovery motor load low	Amount of power required to run the WayneVac motor is less than expected
50	Jitter/Reverse limit reached on an In Transaction WIP	The meter has reported that amount of jitter pulses during a sale has exceeded the number of pulses specified in function 17.00
51	Jitter limit reached on an idle WIP	The meter has reported that amount of jitter pulses while the meter was idle has exceeded the number of pulses specified in function 17.01
54	Reverse flow limit reached on idle WIP	The meter has reported that amount of reverse pulses while the meter was idle has exceeded the number specified in function 16.03
56	Forward flow limit reached on an idle WIP	The meter has reported that the amount of forward pulses while the meter was idle has exceeded the number specified in function 19.14/19.24
58	Communication lost to an In Transaction WIP	Meter is not communicating with iGem. A communication timeout occurred while the meter was in use during a transaction
59	Communication lost to an idle WIP	Meter is not communicating with iGem. A communication timeout occurred while the meter was idle
62	WIP is outputting jitter during calibration	Volume exceeded expected limit during calibration
67	Meter calibration OK bit status changed	Meter status changed from un-calibrated to calibrated
68	Meter calibration door status changed	Meter calibration door was closed
69	Meter last calibration status changed	Meter last calibration indicated as successful
70	Timeout reached for No Flow	Start of flow not detected for the amount of time as specified in function 17.03
71	Consecutive No Flow timeouts	Consecutive no flow errors have been detected for the number of fillings specified in function 17.04
72	Timeout limit reached for flow lost during sale	Flow was lost for the amount of time specified in function 17.03
73	Consecutive Flow Lost timeouts	Consecutive flow lost errors have been detected for the number of fillings specified in function 17.05
74	Sale terminated before preset limit reached	Sale did not reach preset limit set
75	Consecutive unfinished fillings	Consecutive sales did not reach the preset limit. Number of sales is specified in function 17.06
76	DEF Low Temperature Event	DEF temperature change signal received; 1=Low Temp, 2=Low Temp Cleared

Code	Error	Description

77	Additive Error
	Device #s:
	0=Config error
	1=CAN comm error
	2=Tank empty
	3=Tank door open
	4=Motor failure
	5=Injection fell short
	6=Flow error
		0=Additive config conflict
		1=No response from additive
		2=Tank reported empty
		3=Tank door reported open
		4=Additive motor not turning
		5=Additive injector not able to keep up w/ flowrate
		6=Additive flow not detected

80	Software exception encountered 0=Mail buffer pool exhausted 1=Mail send failed 2=XMalloc failed 3=Print buffer overflow	Internal iGem board error indication
90	Fuel temperature board communication failure	iGem has lost communication with the FTB, Fuel Temperature Board
91	Fuel temperature board temperature probe shorted	Defective or out of range probe detected by the FTB
92	Fuel temperature board temperature probe shorted	Defective or out of range probe detected by the FTB
94	ATC configuration error	ATC function data programmed incorrectly
95	Fuel Temp Board Calib error	
96	Dispenser security breached Device numbers: 1=Bezel door 2=Hydraulic door	Door sensor switch activity detected while armed
97	Dispenser security armed status change Device numbers: 0=Dispenser unarmed 1=Dispenser armed using One-Shot 2+Dispenser armed using Maint Mode	Date/Time that door security was armed/unarmed
98	DEF errors, Device (D), Side (S)	DEF errors
99	Hardware/Software mismatch – Device #s: 0=No proportional hardware, 1=No vapor recovery hardware, 2=Meter does not match F16.04, 3=Ovation II not enough upd's installed, 4=Ovation II too many upd's installed	Hardware configuration problem detected. Hardware signal is missing

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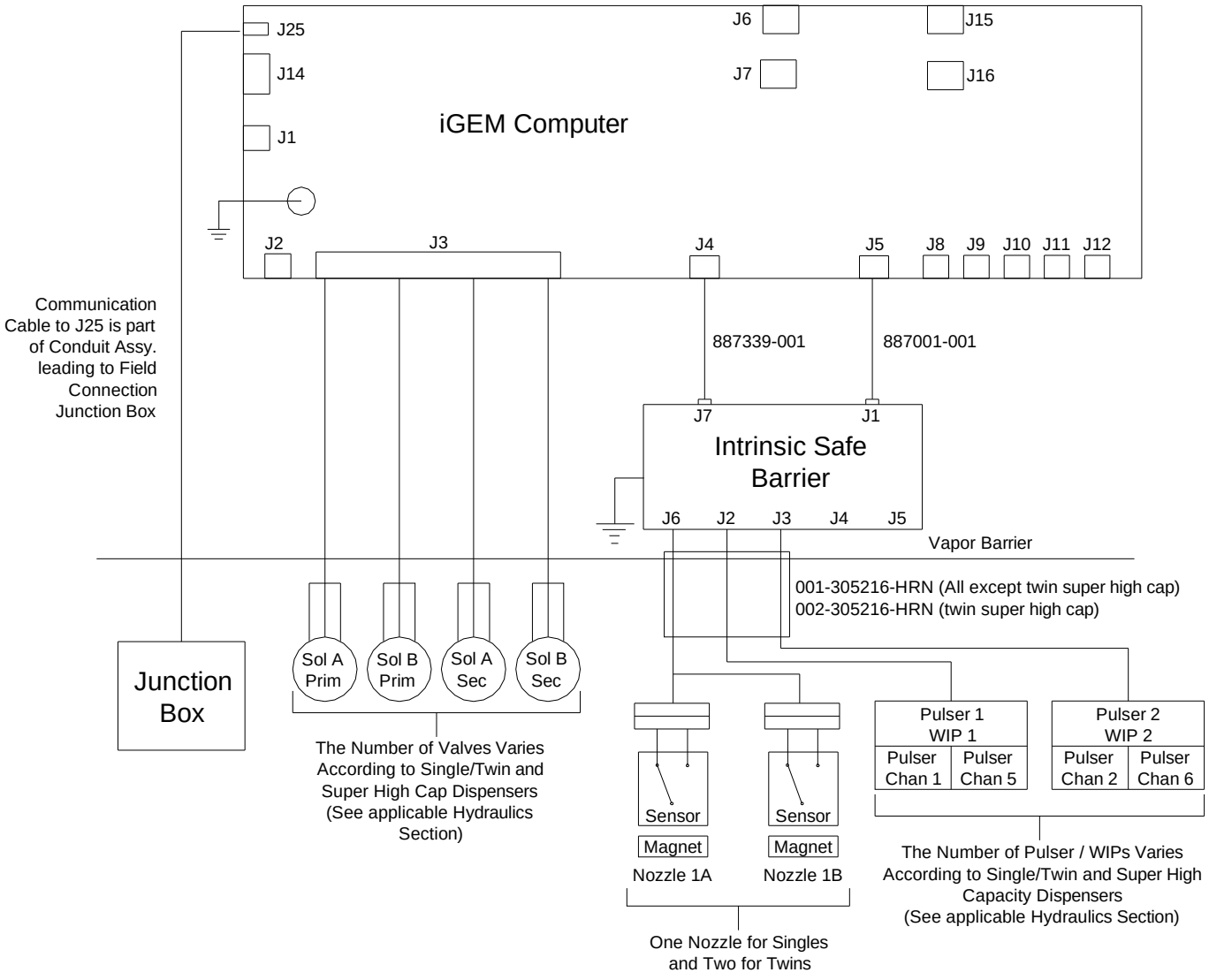
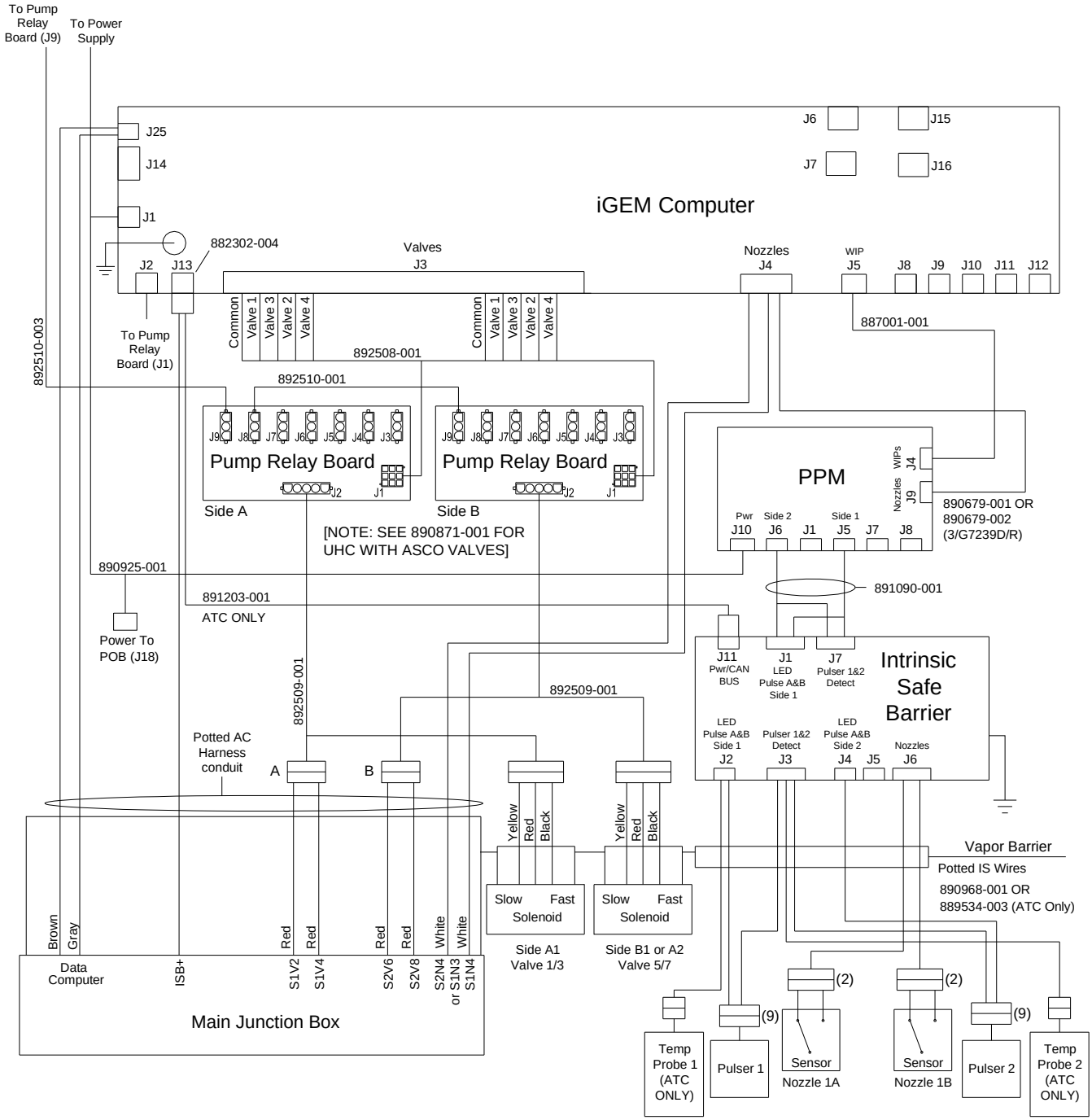
Appendix K - Internal Wiring & Connections

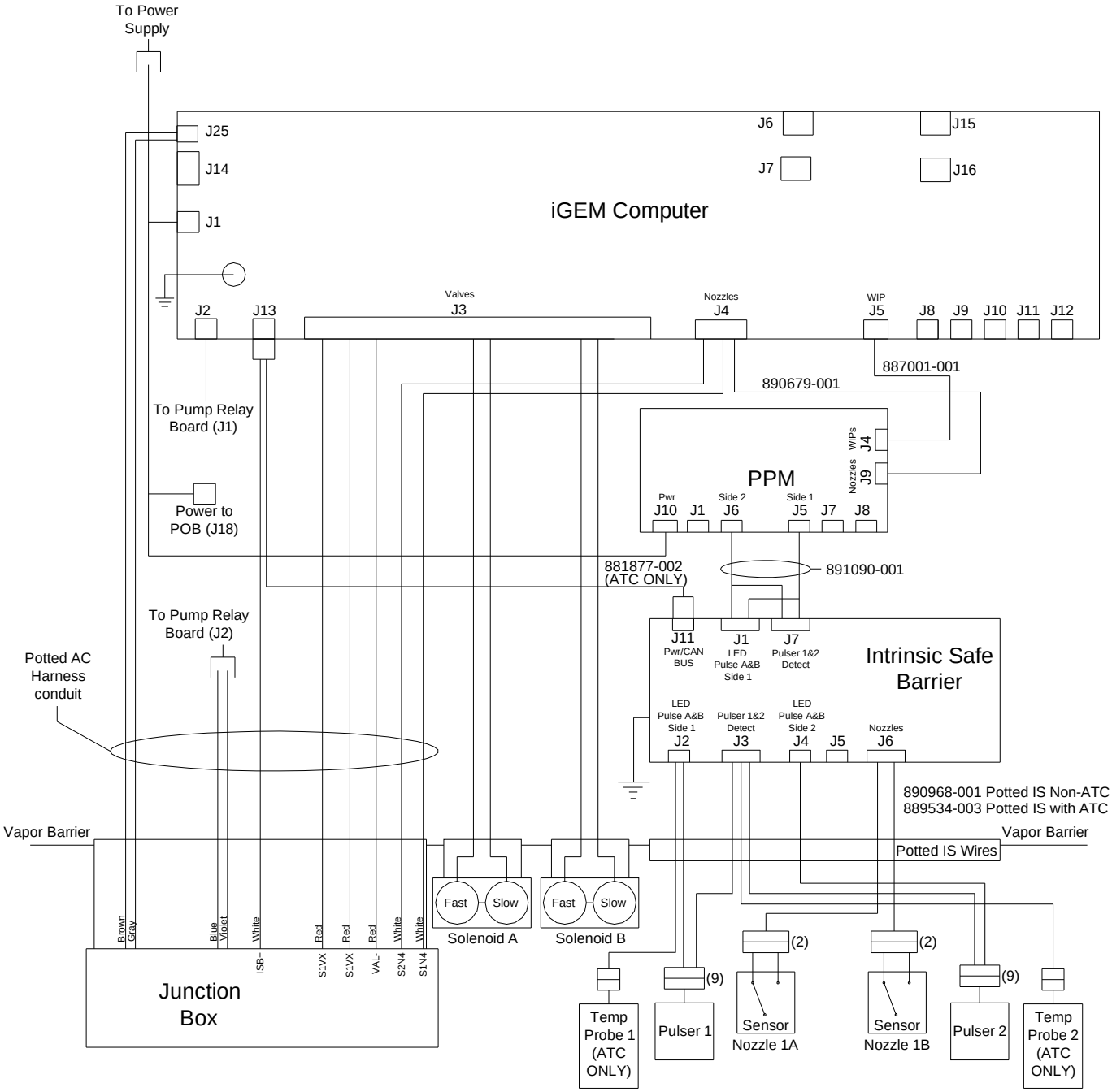
K.1 Internal Wiring – CPU (Non UHC Models)



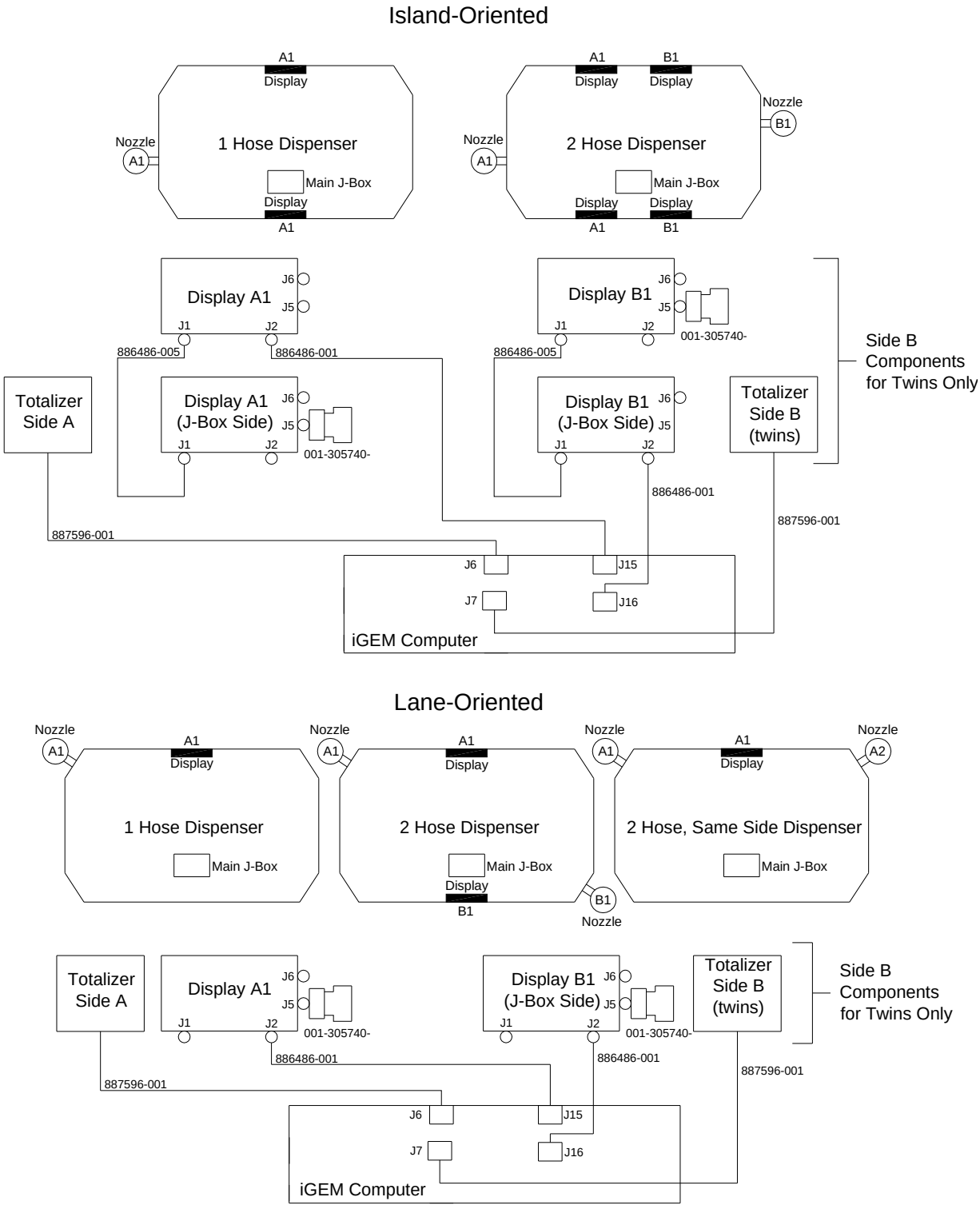
K.2 Internal Wiring – CPU (UHC Models with 115 VAC valves)



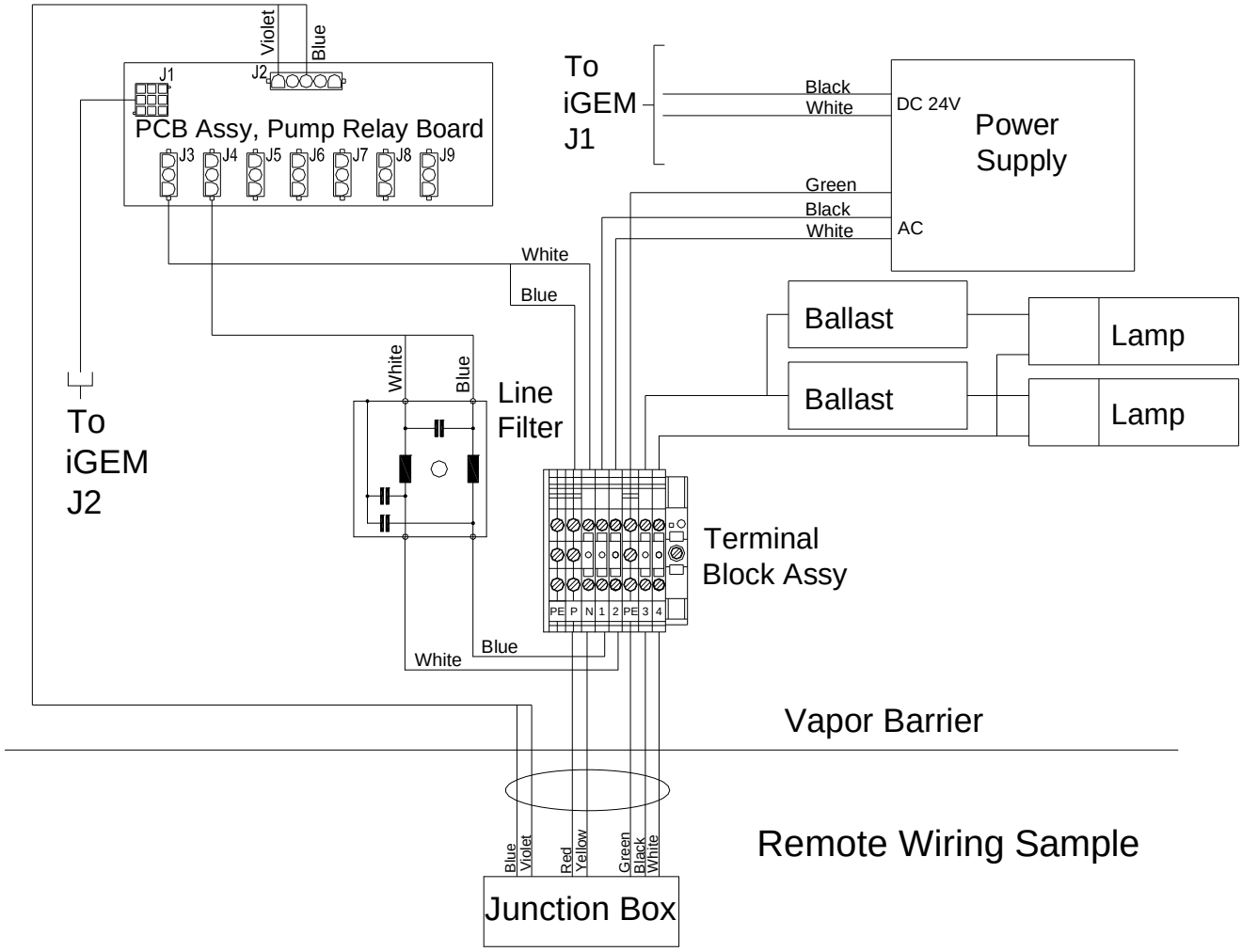
K.3 Internal Wiring – CPU (UHC Models with 24 VDC valves)



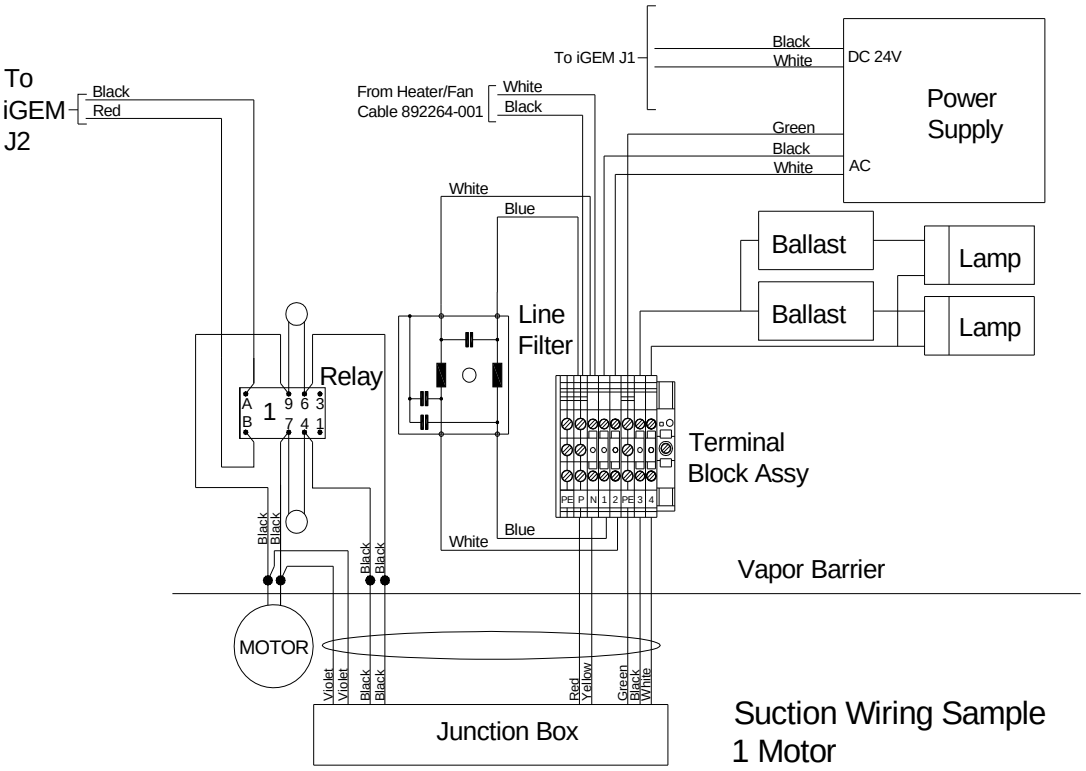
K.4 Internal Wiring – Displays



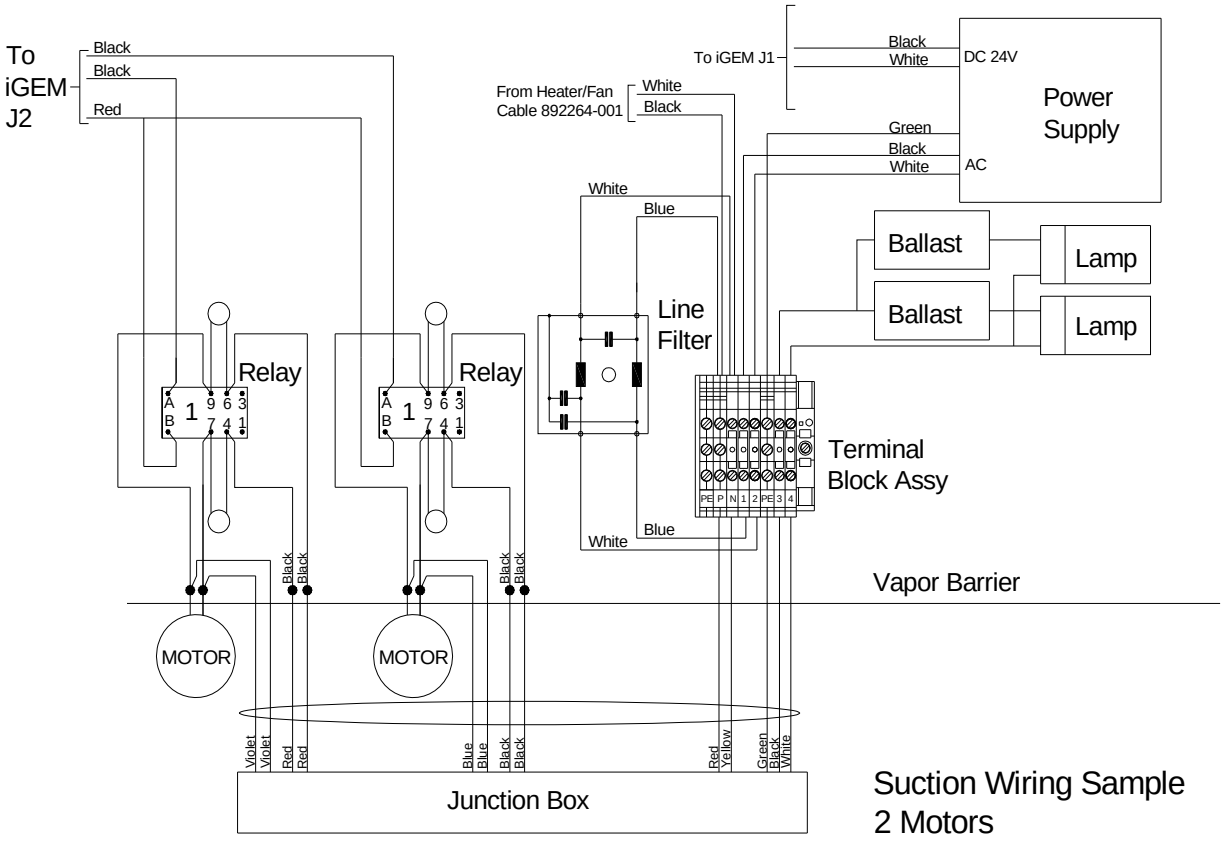
K.5 Internal Wiring – Power for Remote Dispensers



K.6 Internal Wiring – Power for Suction Pumps

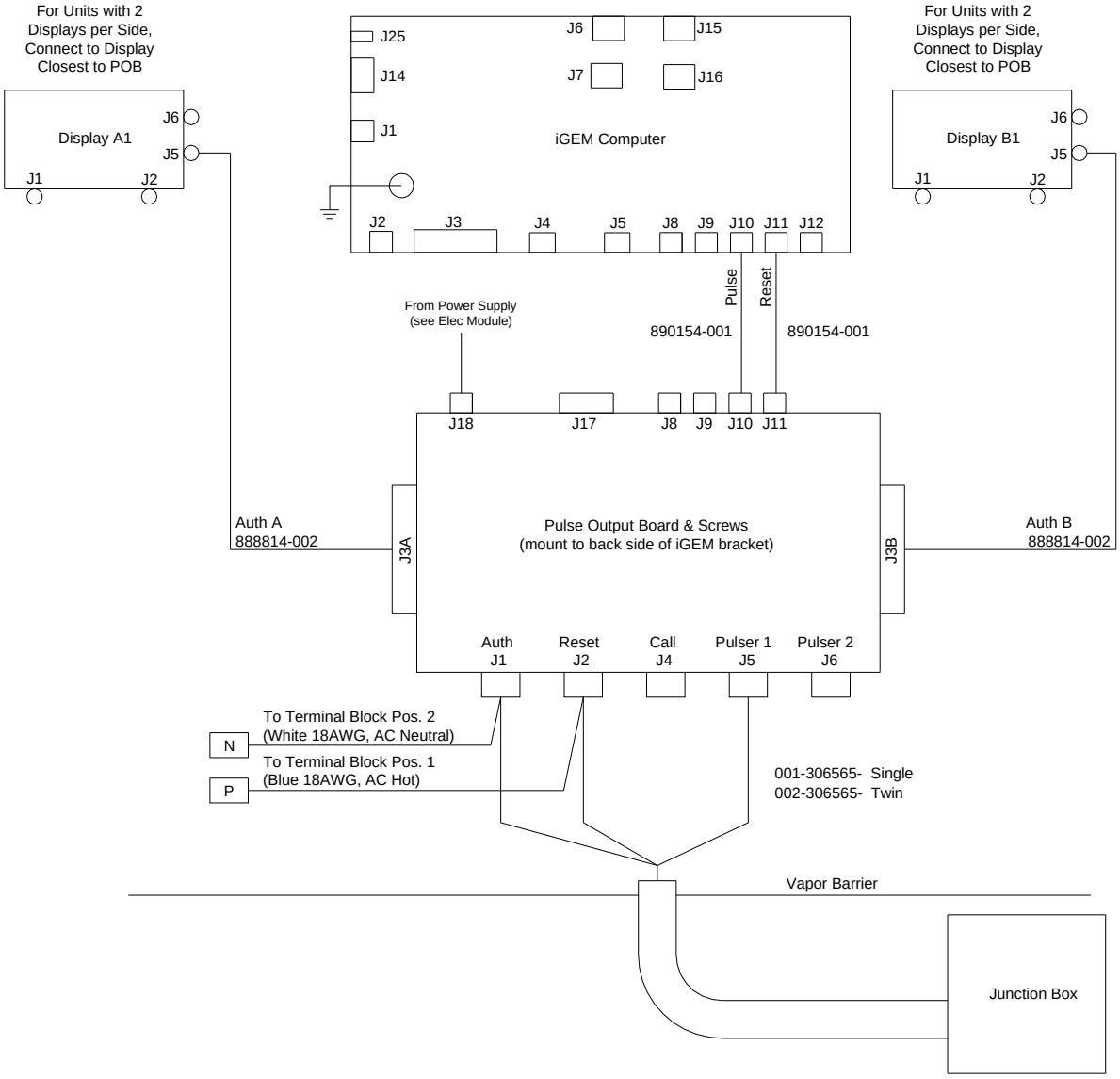


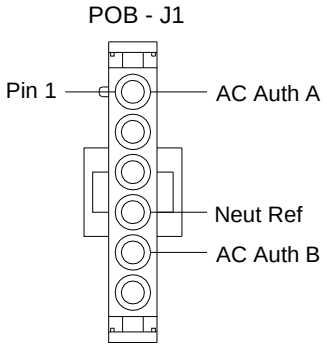
Suction Wiring Sample
1 Motor

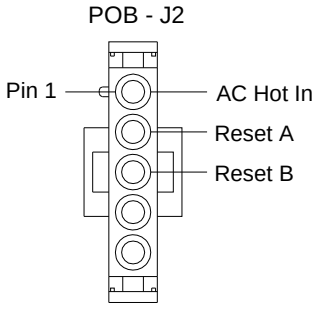


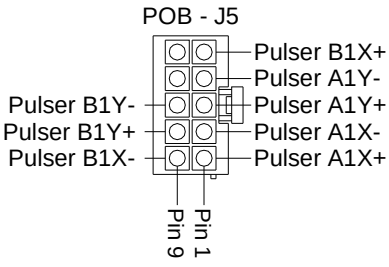
Suction Wiring Sample
2 Motors

K.7 Internal Wiring – Pulse Output

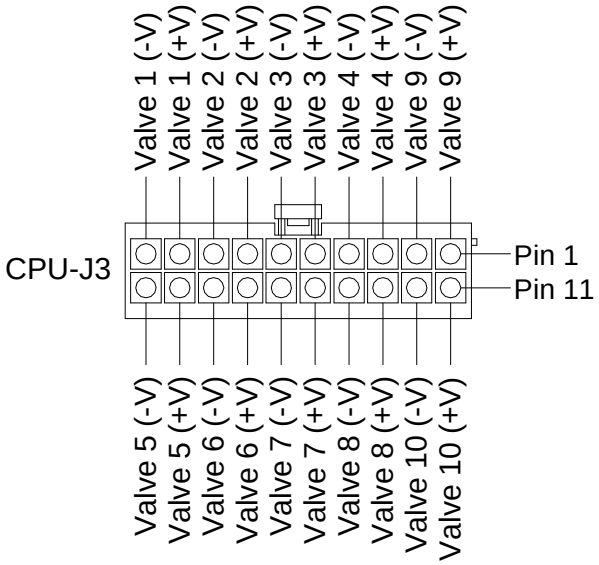


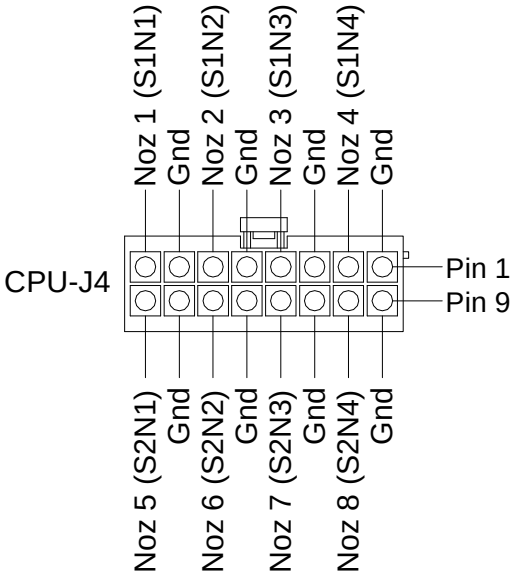


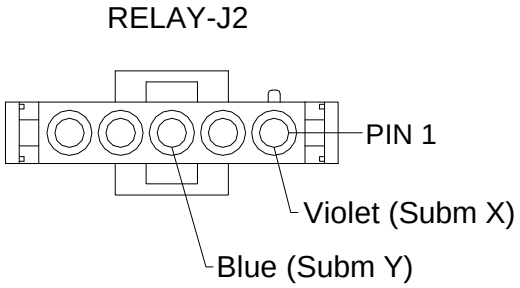


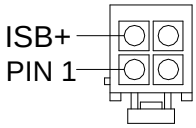


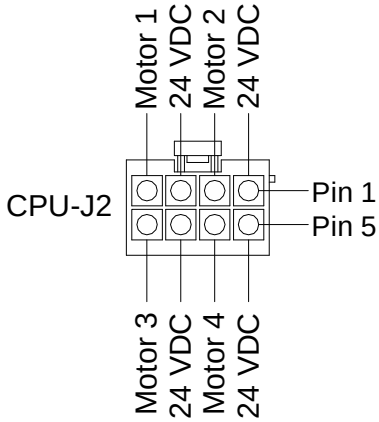
K.8 Internal Wiring – Connectors

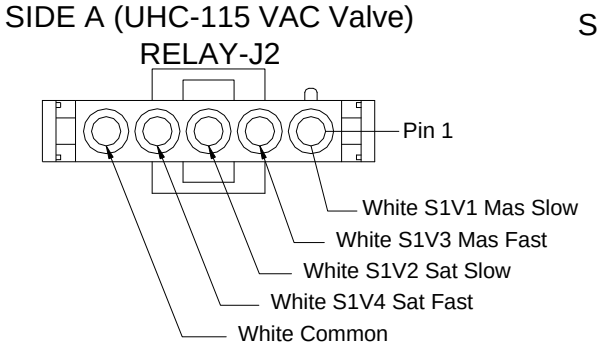


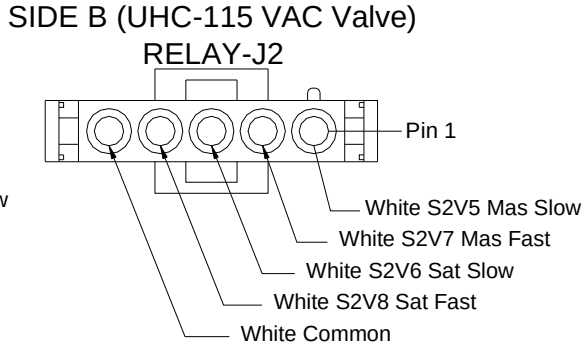




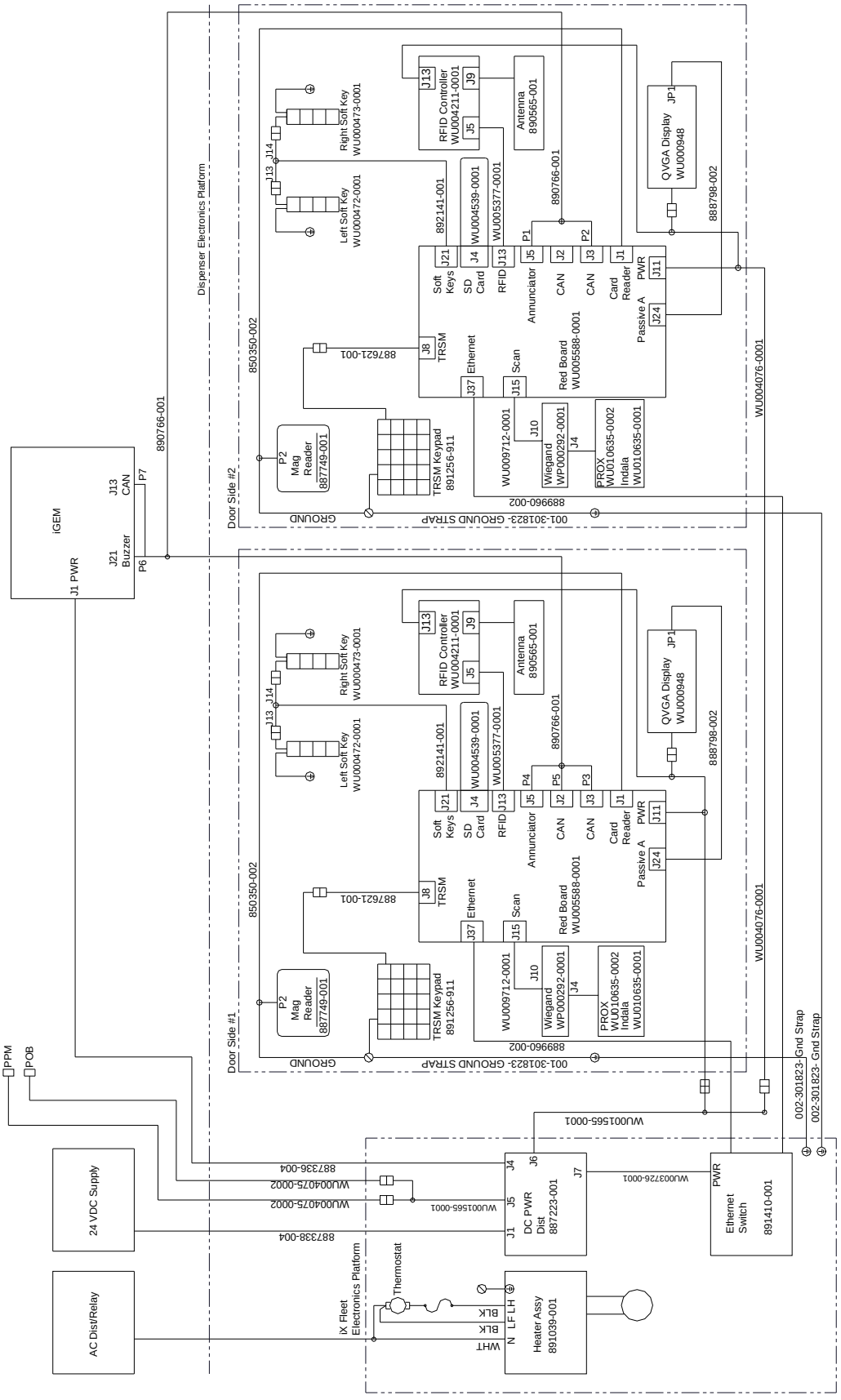








K.9 Internal Wiring – iX Fleet



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Appendix L - Warranty Registration

L.1 Warranty Registration Instructions

The equipment used at this site must be registered prior to contacting Wayne for warranty service. Sites can be pre-registered prior to installation by a Wayne Authorized Service Organization (ASO) via the on-line registration system OR through completing the Section 1 portion of the form, at the end of this manual, and sending it to Wayne (for non-ASOs). Pre-registration of a site helps to expedite warranty service in case it is needed. Please allow 2-3 days after receipt of the information for pre-registration. Final registration, which requires all of the information pertaining to the site including Start-Up date and equipment serial numbers, must be completed within 7 days of the completion of the Start-Up using the same aforementioned methods.

The installed date, which identifies the start of the equipment warranty, will be entered as either:

A. The actual date of install provided by the Installing Contractor.

– OR –

B. 30 days from the date of the Pre-Registration.

Regardless of the method used to determine the start date, all Wayne standard warranty terms and conditions still apply. Fleet equipment is are entitled to one year of full warranty coverage from the installed date, not to exceed 18 months from the date of shipment from Wayne.

NOTE: Any replacement parts or service must be performed by a Wayne Authorized Service Organization (ASO). If you are not an ASO, you must call 1-800-926-3737 to get service.

L.2 Warranty Registration Definitions

- **End User Company Name:** Name of the end user (Company) where the equipment is installed (e.g. “City of Anytown”, “Big Food Distributing”, etc.
- **Equipment Location:** Facility name, such as “Anytown Maintenance Facility.”
- **Address, City, State, Zip Code:** Address of equipment location.
- **Phone:** Telephone number at the site.
- **Start-up Date:** Date equipment was commissioned.
- **Model Number:** Model number of equipment from identification tag on equipment.
- **Serial Number:** Serial number of equipment from serial number tag on equipment.

WARRANTY REGISTRATION

The equipment used at this site must be registered prior to contacting Wayne for warranty service. Sites can be pre-registered prior to installation by a DFS Authorized Service Organization (ASO) via the on-line registration system OR through completing this form (information in Section 1) and sending it to DFS (for non-ASOs). Pre-registration of a site helps to expedite warranty service in case it is needed. Please allow 2-3 days after receipt of the information for pre-registration. Final registration, which requires all of the information pertaining to the site including Start-Up date and equipment serial numbers, must be completed within 7 days of the completion of the Start-Up using the same aforementioned methods. If submitting via this paper form, you may Fax to 512-388-8595 OR e-mail to warranty.administration@doverfs.com OR mail to the address below.

Section 1

End User Company Name _____

Equipment Location (Site Name) _____

Address _____

_____

City, State, Zip Code _____

Phone (_____) _____

Section 2

Start-Up Date _____

Model Number	Serial Number	Model Number	Serial Number

Comments _____

_____

Notes

1. Any replacement parts and service must be performed by a DFS ASO. If you are not an ASO, you must call 1-800-289-2963 to get service. Any parts and service, performed by an ASO, associated with the start-up should be reported on Service Report Form No. 917652 and attached to this report.
2. Use additional forms as necessary to list all equipment.
3. All information must be supplied/ completed.

Form No. 917653-003 Rev B

Please mail to:

Dover Fueling Solutions
Attn: Warranty
3814 Jarrett Way
Austin, TX 78728

INSTALLATION & OPERATION MANUAL

Wayne Select™ 3/G7200 Fleet Dispensers

Printed in the United States of America

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Wayne
FUELING SYSTEMS

PROTECT YOUR
WARRANTY AND
REGULATORY
CERTIFICATIONS

Insist on DFS Genuine
Parts for all equipment
Repairs and upgrades.

DFS is located at 3814 Jarrett Way, Austin TX 78728.
DFS general phone number is (512) 388-8311.

This product complies with Part 15 of the FCC rules and regulations. Operation is subject to the following two conditions: (1) This product may not cause harmful interference, and (2) this product must accept any interference received, including interference that may cause undesired operation.

This product complies with Part 15 of the FCC rules and regulations. Operation is subject to the following two conditions: (1) This product may not cause harmful interference, and (2) this product must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device as set forth in Part 15 of the FCC Rules. Those 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 it is not installed and used in accordance with the instruction manual, it may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case you will be required to correct the interference at your own expense.

Any modifications made to this product that are not approved by DFS could void your authority to operate this equipment.

Wayne
FUELING SYSTEMS

DOVER
FUELING SOLUTIONS

920812 Rev R 4/2019