



AtlasX Fuel Systems

Installation Manual

MDE-5692A

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Approvals

Gasboy, Greensboro, is an ISO 9001:2000 registered facility.

Underwriters Laboratories (UL):

UL File#	Products listed with UL
MH66256	All AtlasX dispensers and self-contained pumping units.

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

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

CoC#	Product	Model #
24-005	AtlasX	8800G, 9100G, 9800G

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Suppliers Declaration of Conformity 47 CFR § 2.1077 Compliance Information

Unique Identifier: AtlasX 8800/9800

Federal Communications Commission (FCC) Compliance Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

Unique Identifier: AtlasX 9800 PRIME

Federal Communications Commission (FCC) Compliance Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Warning

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

Responsible Party - U.S. Contact Information

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27410, USA



<https://www.gasboy.com/us/content/contact-us-gasboy>

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1 – Introduction

Purpose

This manual provides step-by-step instructions for installing AtlasX pumps and dispensers. This manual does not include site preparation instructions. For site preparation instructions, refer to *MDE-5693 AtlasX Fuel Systems Site Preparation Manual*.

CAUTION

Certain special alternative fuels, such as E85 and additives, can degrade pump/dispenser performance or integrity if the dispensers are not designed for use with such fuels. Additionally, converting to certain standard fuels (gasoline, diesel, kerosene, and so on) from alternative fuels, such as those with ethanol (E85), methanol, or biodiesel, or from alternative fuels to standard fuels can degrade dispenser performance or integrity. Similar effects can also occur when converting units to different standard fuel types. As per Underwriters Laboratories (UL®) 87A requirements, nozzles dispensing E85 fuel and Diesel Exhaust Fluid (DEF) must not be used to dispense any other type of fuel such as gasoline.

Leaks and potential environmental hazards can result or components may fail prematurely.

To avoid these issues, follow the guidelines provided for dispensing DEF in this manual.

Intended Users

This manual is intended for Authorized Service Contractors (ASCs) who will be involved in the installation of AtlasX pumps and dispensers.

General Description

AtlasX Commercial Electronic Series

Gasboy® AtlasX dispensing units are UL-listed and are available in a self-contained (suction pump) or remote-controlled (dispenser) package. Both packages offer a variety of models that are available as single-hose outlets or dual-hose outlets (with single or dual product capability). The following self-contained models are available:

- High Flow (HF) models up to 22 GPM, 83 LPM, 18 IPM
- Single-hose Ultra-Hi™ Flow (UHF) models up to 50 GPM, 189 LPM, 42 IPM

The rate of delivery for remote-controlled packages varies based on the size of the submersible pump, as well as the choice of the hanging hardware, including the nozzle type. The delivery rate of both packages also varies depending on installation conditions and additional accessories.

The difference between commercial and retail pumps/dispensers can be visually identified. Commercial pumps/dispensers will only display gallons/liters on a side(s), while retail pumps/dispensers will display both gallons/liters and cost per gallon/liter.

The AtlasX series pumps/dispensers offer the following features:

Models	Suction Pumps	Remote Dispensers	Features
HF Mechanical Commercial	9153G, 9153GTW2	9153GX, 9153GXTW2	<ul style="list-style-type: none"> Inlet: 1-1/2-inch NPT female threads Discharge: 1-inch NPT female threads Motor: (self-contained) 1 HP, 115/230 V
HF Electronic Commercial	9853G, 9853GTW1, 9853GTW2	9853GX, 9853GXTW1, 9853GXTW2	
HF Electronic Retail	8853G, 8853GTW1, 8853GTW2	8853GX, 8853GXTW1, 8853GXTW2	
UHF Electronic Commercial	9850G	9850GX, 9850GXTW1, 9850GXTW2	<ul style="list-style-type: none"> Inlet: 2-inch NPT female threads Discharge: 1-inch NPT female threads

AtlasX Commercial Mechanical Series

AtlasX commercial mechanical series dispensing units are UL-listed and are available in a self-contained (suction pump) package or remote-controlled (dispenser) package. Both packages offer a variety of models that are available as single-hose outlets or dual-hose outlets (with single or dual product capability). The following self-contained model is available:

- High speed, up to 22 GPM/83 LPM

The rate of delivery for remote-controlled packages varies based on the size of the submersible pump and plumbing to the dispenser. The delivery rate of both packages also varies depending on installation conditions and additional accessories.

All models of the AtlasX commercial mechanical series offer mechanical non-computers, complete with electric resets. Mechanical pump registers display the total volume for a delivery. All non-computers read up to 999.9 gallons/liters.

AtlasX Model Codes

AtlasX Model Codes						
Digit	1 and 2	3	4	5	6	Pumps 6-8 or Dispenser 7-9
	Product Series	Model Type	Flow Rates	AtlasX	Pump/Dispenser	Hydraulic Configuration
Product Series						
	Retail Electronic	88				
	Commercial Mechanical	91				
	Commercial Electronic	98				
Model Type						
	Standard, High-Flow, Ultra-Hi	5				
Flow Rates						
	Ultra-Hi (50 GPM)		0			
	High-Flow (18-22 GPM)		3			
AtlasX Model Designation						
Pump/dispenser				G		
	Self-contained Pump				Blank	
	Dispenser				X	

AtlasX Model Codes	
Hydraulic Configuration	
1-Grade, 1-Hose	Blank
1-Grade, 2-Hose	TW1
2-Grade, 2-Hose	TW2
Combo (Ultra-Hi only)	TW3

Operating Environment

Environment	Range
Relative Humidity	20 to 95% non-condensing
Electronics Minimum Ambient Temperature	-30 °C, -22 °F
Electronics Maximum Ambient Temperature	55 °C, 131 °F
Hydraulics Minimum Ambient Temperature	-30 °C, -22 °F
Hydraulics Maximum Ambient Temperature	52 °C, 125 °F

Load Table Reference Locations

Model	Unit	Field Wiring Diagram
AtlasX	Dispenser	FE-371 Field Wiring Diagram AtlasX

Related Documents

Document Number	Title	GOLD SM Library
FE-371	Field Wiring Diagram AtlasX	Gasboy Atlas Pumps/Dispensers
MDE-4255	Gasboy Warranty Policy Statement for USA and Canada	<ul style="list-style-type: none"> • Domestic Warranty and Owners Manuals • Gasboy Safety and Warranty Docs • Gasboy Policy Documents
MDE-5411	ForeHB Islander PRIME Installation Manual	Gasboy Fleet PRIME
MDE-5414	ForeHB SiteOmat Setup and Maintenance Manual	Gasboy Atlas PRIME
MDE-5693	AtlasX Fuel Systems Site Preparation Manual	Gasboy Atlas Pumps/Dispensers
MDE-5694	AtlasX Start-up/Service Manual	Gasboy Atlas Pumps/Dispensers
MDE-5695	AtlasX Fuel Systems Owner's Manual	Gasboy Atlas Pumps/Dispensers

Abbreviations and Acronyms

Term	Description
ASC	Authorized Service Contractor
AST	Aboveground Storage Tank
ASTM	American Society for Testing and Materials
ATC	Automatic Temperature Compensation
AWG	American Wire Gauge
BSPP	British Standard Pipe Parallel
CAT5	Category 5
CC	Command Code
CD	Computer Display
CEC	Canadian Electric Code
CPU	Central Processing Unit
D-Box	Distribution Box
DEF	Diesel Exhaust Fluid
E-CAL	Electronic Calibration
FCC	Federal Communications Commission
FMS	Fuel Management System
GFI	Ground Fault Interrupter
GOLD	Gilbarco® Online Documentation
GPM	Gallons per Minute
HF	High Flow
J-box	Junction Box
LAN	Local Area Network
LPM	Liters per Minute
NCWM	National Conference on Weights and Measures
NEC®	National Electrical Code
NFPA	National Fire Protection Association
NPT	National Pipe Taper
NTEP	National Type Evaluation Program
PCB	Printed Circuit Board
POS	Point of Sale
STP	Submersible Turbine Pump
UHF	Ultra-Hi Flow
UL	Underwriters Laboratories
UST	Underground Storage Tank
UTP	Unshielded Twisted Pair
W&M	Weights and Measures
WAN	Wide Area Network

Common Terms Used

Term	Description
Combo	This unit is configured as master on one side and satellite on the other.
Dispenser	A dispensing device that receives fuel under pressure from the Underground Storage Tank [UST (if underground)] through a Submersible Turbine Pump (STP) or from an Aboveground Storage Tank (AST) using an aboveground pump located at the tank.
Grade	Fuel that is dispensed and has an assigned price.
Listed	Products bearing the authorized listing mark of UL as the manufacturer's declaration, which implies that the product complies with UL's requirements and is in accordance with terms of the UL's Listing and Follow-Up Service agreement.
Master	This unit dispenses fuel to one saddle tank and to a second saddle tank through a satellite unit.
Pump	A dispensing device that utilizes a self-contained pumping unit and motor to move fuel from a storage tank using suction.
Product	Fuel in the storage tank.
Satellite	A dispensing unit that receives the product from a master unit and registers at the master unit, allowing both saddle tanks on a vehicle to be filled at the same time.
Urea	Urea is a non-flammable liquid chemical from a separate tank that chemically interacts with exhaust to reduce emissions to nitrogen and water. Urea is used in DEF.

Warranty

For information on warranty, refer to *MDE-4255 Gasboy Warranty Policy Statement for USA and Canada*. If you have any warranty related questions, contact Gasboy's Warranty Department at Greensboro, N.C. location.

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2 – Important Safety Information

Notes: Save this Important Safety Information section in a readily accessible location.

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


Preliminary Precautions


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

Emergency Total Electrical Shut-Off

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

⚠ WARNING

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

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

Total Electrical Shut-Off Before Access

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

Evacuating, Barricading and Shutting Off

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



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

Read the Manual

Read, understand and follow this manual and any other labels or related materials supplied with this equipment. If you do not understand a procedure, call a Gasboy Authorized Service Contractor or call the Gasboy Support Center at 1-800-444-5529. It is imperative to your safety and the safety of others to understand the procedures before beginning work.

Follow the Regulations

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


Replacement Parts

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

Safety Symbols and Warning Words





This section provides important information about warning symbols and boxes.

Alert Symbol

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

Signal Words

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

-  **DANGER:** Alerts you to a hazard or unsafe practice which will result in death or serious injury.
-  **WARNING:** Alerts you to a hazard or unsafe practice that could result in death or serious injury.
-  **CAUTION** with Alert symbol: Designates a hazard or unsafe practice which may result in minor injury.
-  **CAUTION** without Alert symbol: Designates a hazard or unsafe practice which may result in property or equipment damage.

Working With Fuels and Electrical Energy Prevent Explosions and Fires

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

DEF is non-flammable. Therefore, explosion and fire safety warnings do not apply to DEF fluid lines.

Important Safety Information

No Open Fire



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

No Sparks - No Smoking



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

Working Alone

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

Working With Electricity Safely

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

Hazardous Materials

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

WARNING

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

WARNING

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



Gilbarco Veeder-Root encourages the recycling of our products. Some products contain electronics, batteries, or other materials that may require special management practices depending on your location. Please refer to your local, state, or country regulations for these requirements.

In an Emergency

Inform Emergency Personnel

Compile the following information and inform emergency personnel:

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

WARNING



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

WARNING

DEF generates ammonia gas at higher temperatures. When opening enclosed panels, allow the unit to air out to avoid breathing vapors. If respiratory difficulties develop, move victim away from source of exposure and into fresh air. If symptoms persist, seek medical attention.

WARNING



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

WARNING



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

WARNING



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

WARNING




DEF is mildly corrosive. Avoid contact with eyes, skin, and clothing. Ensure that eyewash stations and safety showers are close to the work location. Seek medical advice/recommended treatment if DEF spills into eyes.

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

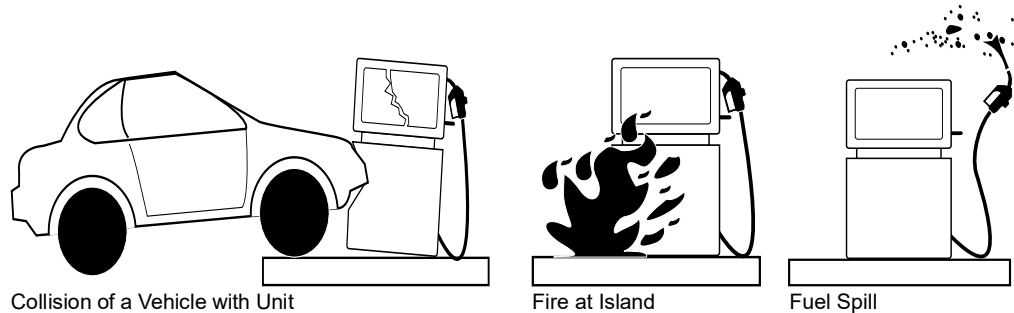
Lockout/Tagout

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

Hazards and Actions

 WARNING	
	<p>Spilled fuels, accidents involving pumps/dispensers, or uncontrolled fuel flow create a serious hazard.</p>
	<p>Fire or explosion may result, causing serious injury or death. Follow established emergency procedures. DEF is non-flammable. However it can create a slip hazard. Clean up spills promptly.</p>

The following actions are recommended regarding these hazards:



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

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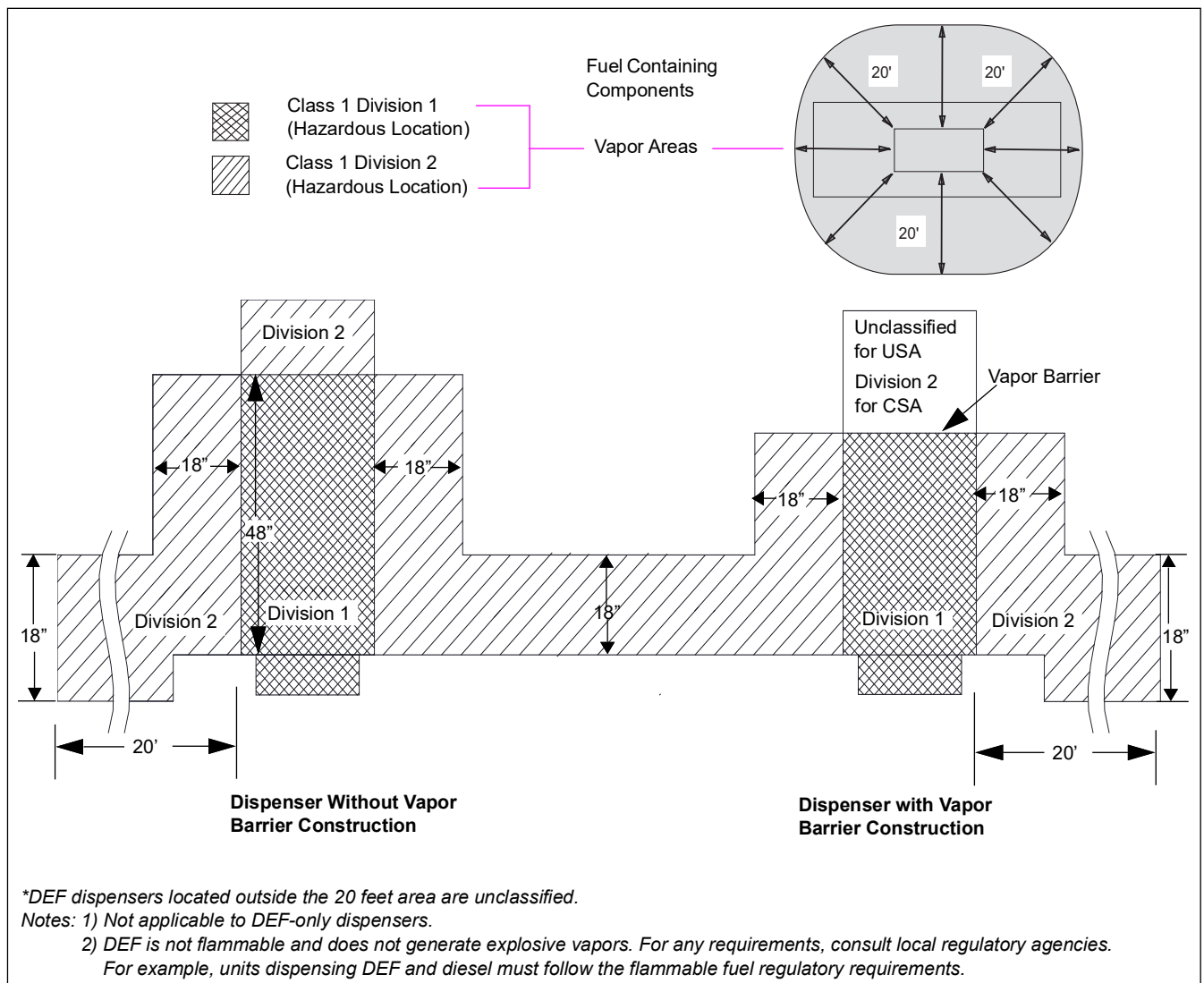
3 – Hazardous Locations

Classifying Hazardous Locations

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

Figure 3-1 is based on National Fire Protection Association (NFPA) 30A and NFPA 70®.

Figure 3-1: Hazardous Locations Diagram



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4 – Control Lines for AtlasX Electronic Series

Purpose

This section is provided to familiarize the installer with control inputs and outputs that are available for the AtlasX electronic series dispensing unit. It is recommended that installers read these descriptions to obtain a better working knowledge of the unit to guide them in planning the site wiring. For specific wiring diagrams and installation notes, refer to “Installation” on page 6-1.

If you are connecting the AtlasX electronic series unit to a Gasboy Fuel Management System (FMS), refer to the following documents:

Document Number	Title	GOLD Library
MDE-5411	ForeHB Islander PRIME Installation Manual	Gasboy Fleet PRIME
MDE-5414	ForeHB SiteOmat Setup and Maintenance Manual	Gasboy Atlas PRIME
MDE-5623	Fleet Solutions Site PRIME Installation Guide	Gasboy Fleet PRIME

Grounding

To ensure proper operation of the equipment and required safety factors, a good ground line must be provided. A ground wire (preferably green) must be connected between the ground wire of the system and the main electrical service panel. One earth ground connection is required per unit. The ground rod must be a solid, corrosion-resistant conductor and must be installed at the main electrical panel as per the National Electrical Code (NEC). It must be properly tied into the ground bus strip of the panel. It is recommended that neutral and ground bus strips be bonded together (unless prohibited by local codes).

Ground Fault Interrupter (GFI) breakers are required for DEF only units installed on and with a skid tank platform because of no underground piping, AC power in potentially wet area, and a potential for earth ground to become broken if skid tank moves.

A GFI works by having a sensor that detects changes in current to the load, by comparing the current going to and from the load. A drop off in the current equivalent to about 5 mA, turns off all power by tripping a relay within the GFI within a few hundredths of a second.

When powering a dispenser with a GFI, any device that the dispenser supplies power must have its return to the same neutral as the dispenser. For example, the STP control relay.

CD Module Feed

The Computer Display (CD) Module feed is a 115 or 230 VAC input required to power the microprocessor of the register's electronics. This power must always remain on and must be on a separate breaker from control lines (control/pump motor feed). The CD Module breaker rating must not be more than 15 A. It is recommended that this be on a separate breaker from brand panel lights to reduce electrical noise and allow separate control of lights. In a site configuration using multiple dispensing units, the power for microprocessors of up to six units can be supplied by one breaker. This line also supplies power to the AC valves (including the Reset Complete signal used for external monitoring) and optional AtlasX PRIME. If this unit is equipped with an AtlasX PRIME option, for wiring requirements and information, refer to *MDE-5411 ForeHB Islander PRIME Installation Manual*.

The cold weather DEF unit's internal heater cannot share the CD Module feed AC line and neutral circuit.

CD Module Neutral

The CD Module neutral is a return line for AC from the microprocessor of the dispensing unit to the breaker panel. This line also serves as the AtlasX return for the optional AtlasX PRIME.

AUTH Input

The AUTH input is a 115 or 230 VAC input that is required to authorize the AUTH control line. This line is used to provide authorization for the unit (when enabled, refer to *MDE-5694 AtlasX Start-up/Service Manual*). If this line is controlled by an FMS using solid state relays, a resistor assembly must be installed between the AUTH feed line and neutral to prevent false triggering of the authorization input. The resistor assembly is 8.2 K Ohm, 10 W (part number C05818) for 115 or 230 VAC domestic wiring. Two lines are provided for twins. It is possible to combine the AUTH control line(s) and CD Module feed and supply them from one breaker (15 A max.).

Submersible Starter Drive (STPx/MTRx)

The submersible starter drive is a 115 or 230 VAC output used to control a submersible starter relay. Power for the submersible start drive line originates from the CD Module feed. Two lines are provided for twins. This line is capable of supplying 300 mA of AC current to control the coil of the submersible motor contactor (starter relay). This is sufficient for directly connecting to popular models, but if in doubt, check the contactor (relay) manufacturer's data sheet for the sealed VA rating. Divide the sealed VA by the coil voltage to determine the current. This line must not be connected directly to the submersible pump, shorted to any conduit or chassis metal, or incorrectly wired; otherwise, the power supply Printed Circuit Board (PCB) will be instantly damaged. This line must be left capped when not in use. To avoid accidental damage, follow checks before applying power.

Note: When multiple dispensers are used to control a common submersible starter relay or pump, it is important that lines from the AtlasX commercial electronic unit to the submersible equipment be isolated from each other. This can be accomplished by the use of STP isolation relay. Another option is to provide a separate submersible starter relay for each hose outlet. In no case must the submersible drive lines from the AtlasX electronic unit be tied together.

Submersible Pump Drive (Subm Pump Drive)

The submersible pump drive is an option only available on AtlasX Commercial Dispensers, and is active only when submersible drive relays are supplied. Units equipped with optional relays for direct submersible drive can be connected directly to submersible pumps up to 3/4 HP at 115 VAC, or 1-1/2 HP at 230 VAC. Power for the submersible drive line originates from the Motor Feed 1 or 2 input. Two lines are provided for twins. In cases where both lines control the same starter relay or pump, they can be combined.

Note: For situations where more than one hose outlet or dispenser uses the same submersible pump, refer to the note in “Submersible Starter Drive (STPx/MTRx)”.

Motor Feed 1 or 2

The motor feed 1 or 2 is only used on commercial dispensers equipped with the submersible drive relays. The power supplied to the motor feed 1 or 2 input must be supplied from a separate breaker dedicated to the STP. The gauge of this wire must be determined according to the size of the motor, the voltage at which the motor will be powered, and the distance from the breaker panel to the pump.

Reset Complete (Switch Detect)/Slow Flow

The reset complete/slow flow is a 115 or 230 VAC output used to indicate that the reset process is complete and the unit is ready to dispense the product. It may be required when used with an FMS. It may also be used to control a remote (satellite) slow flow valve. Two lines are provided for twins.

In addition to the internal load of the slow flow valve, this line is capable of supplying a maximum of 170 mA AC to the satellite valve and FMS. When you are connecting it to a non-Gasboy satellite or FMS, ensure that this limit is not exceeded. This line must not be shorted to any conduit or chassis metal, incorrectly wired, used to control both stages of a satellite valve, or be connected to equipment requiring more than 170 mA AC from this line to operate; otherwise, the Pump Interface PCB will be instantly damaged. This line must be left capped when not in use. To avoid accidental damage, follow checks before applying power.

Fast Flow Valve

The fast flow valve is a 115 or 230 VAC line that can be used to control a remote (satellite) fast flow valve. Two lines are provided for twins. In addition to the internal load of the fast flow valve, this line is capable of supplying 170 mA AC to the satellite valve. When connected to a non-Gasboy satellite, ensure that this limit is not exceeded. This line must not be shorted to any conduit or chassis metal, incorrectly wired, used to control both stages of a satellite valve, or be connected to equipment requiring more than 170 mA from this line to operate; otherwise, the Pump Interface PCB will be instantly damaged. This line must be left capped when not in use. To avoid accidental damage, follow checks before applying power.

Motor A/B-Line 1

The Motor A/B-Line 1 is the 115/120 VAC feed that is supplied to the motor on self-contained pumping units.

Motor A/B-Neutral

The Motor A/B-Neutral is a return line for the AC current from the motor to the breaker panel.

Motor A/B-Line 2

The Motor A/B-Line 2 is a hot feed, which is the opposite phase of Motor A/B-Line 1. This line and Motor A/B-Line 1 are used for 230 VAC domestic motor applications on self-contained pumping units.

Light Feed

The light feed is a 115 or 230 VAC input required to power brand panel lights. In a site configuration using multiple remote dispensers (or pumps), the power for lights of up to eight units can be supplied by one breaker (except on dispensers that combine the AUTH control line and CD Module feed). It is recommended that this be on a separate breaker from the CD Module feed to reduce electrical noise and allow separate control of lights. If separate control of the lights is not required, it is possible to combine the light and CD Module feed and supply them from one breaker (15 A max.).

Light Neutral

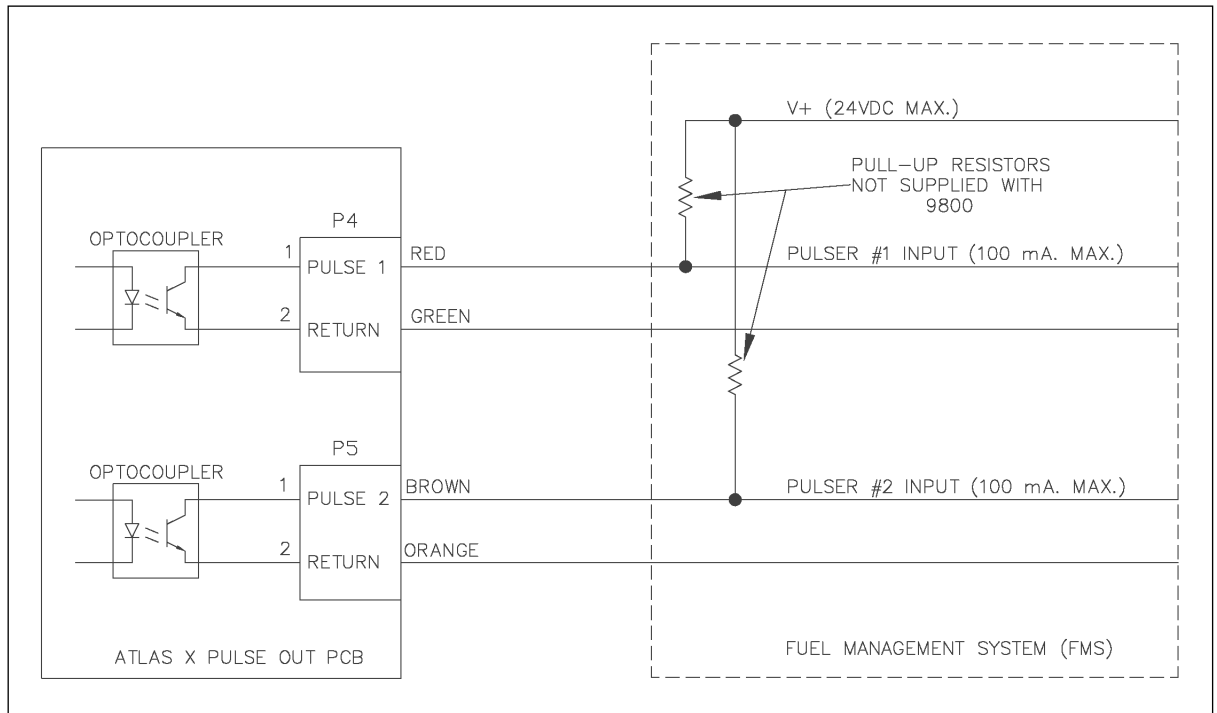
The light neutral is a return line for AC current from lights to the breaker panel. When a separate breaker is not used to control lights, the light neutral is attached to the CD Module neutral.

Pulse out

When the dispensing unit includes the optional pulse out interface, a pulse output is provided. This pulse output provides a DC output that indicates the quantity of product dispensed. The pulse rate can be configured by Command Code 19, Function Code 2 for rates of 1, 10, 100, 250, or 500 pulses per gallon, or 1, 10, or 100 pulses per liter.

The output is an open collector transistor capable of sinking up to 100 mA DC at voltages up to 24 VDC. The DC ground for the circuit comes from the FMS. Since the transistor switches between ground and high impedance, the installer must provide a voltage reference when the transistor is in the high impedance state. This reference voltage is provided by a pull-up resistor installed at the FMS between the pulser input and reference voltage. The value of this resistor is calculated based on the voltage and current requirements of the FMS pulser circuit.

Figure 4-1: Pulse Output



In the main Junction Box (J-box), the optional pulser interface is supplied with eight wires.

Wire-Pair Communication

Wire-Pair Communication is used for data communications between the dispensing unit and a POS (Point of Sale) device or FMS (Fuel Management System). For installations with ‘new’ wiring, use Unshielded Twisted Pair (UTP) data wires. Shielded wire must not be used. Wiring Specifications: Wire-Pair UTP with 10 to 12 twists per foot, stranded annealed copper tinned with 18 AWG minimum required for runs up to 1000 feet or 14 AWG minimum for runs up to 2600 feet. Do not daisy chain communications wiring. Refer to *MDE-5693 AtlasX Fuel Systems Site Preparation Manual* requirements where 14 AWG may be required. The Unshielded Twisted Pair (UTP) data wires can be run in either the AC or DC conduits. Refer to [“Canadian Electrical Code Statement”](#) on [page 6-10](#).

Local Area Network (LAN)/Wide Area Network (WAN)

When the dispensing unit includes the optional AtlasX PRIME, lines for communication to the AtlasX PRIME are provided. These lines allow you to communicate directly to the AtlasX PRIME through a LAN/WAN connection. For more information on LAN/WAN wiring, refer to [“Field Wiring Requirements \(LAN/WAN\)”](#) on [page 7-8](#).

5 – Control Lines for AtlasX Mechanical Series

Purpose

This section is provided to familiarize the installer with control inputs and outputs that are available for the AtlasX mechanical series dispensing unit. It is recommended that installers read these descriptions to obtain a better working knowledge of the unit to guide them in planning the site wiring. For specific wiring and installation notes, refer to “[Installation](#)” on [page 6-1](#).

If you are connecting the AtlasX mechanical unit to a Gasboy FMS, refer to the following documents:

Document Number	Title	GOLD Library
MDE-5411	ForeHB Islander PRIME Installation Manual	Gasboy Fleet PRIME
MDE-5623	Fleet Solutions Site PRIME Installation Guide	Gasboy Fleet PRIME

Grounding

To ensure proper operation of the equipment and required safety factors, a good ground line must be provided. A ground wire (preferably green) must be connected between the unit’s AC J-box ground lug and main electrical service panel. One earth ground connection is required per unit. The ground rod must be a solid, corrosion-resistant conductor that must be installed at the main electrical panel as per the NEC. It must be properly tied into the ground bus strip of the panel. It is recommended that the neutral and ground bus strips be bonded together (unless prohibited by local codes).

GFI breakers are required for DEF only units installed on and with a skid tank platform because of no underground piping, AC power in potentially wet area, and a potential for earth ground to become broken if skid tank moves.

A GFI works by having a sensor that detects changes in current to the load, by comparing the current going to and from the load. A drop off in the current equivalent to about 5 mA, turns off all power by tripping a relay within the GFI within a few hundredths of a second.

When powering a dispenser with a GFI, any device that the dispenser supplies power must have its return to the same neutral as the dispenser (for example, the STP control relay).

Reset Motor Feed

The reset motor feed is a 115 VAC input supplied through the pump handle switch to activate the reset motor. Without power being supplied to this line, the unit will not reset when the pump handle is turned on. Two feed lines are provided for twins.

Solenoid Valve Feed

The solenoid valve feed is a 115 VAC input supplied to the input of one of the internal switches of the electric reset. When the reset finishes its cycle, the 115 VAC input to the switch will be passed through as an output, causing the solenoid valve (optional in some models) to open and the reset complete line to indicate 115 VAC.

Pump Motor Control

The pump motor control is a 115 VAC input supplied to the input side of one of the internal switches of the electric reset. When the reset finishes its cycle, the 115 VAC input to the switch is passed through as an output, causing the pump motor internal relays to receive power and the motor begin operation. Without power to this line, the unit will reset and will be unable to fuel. Two feed lines are provided in twins that contain two motors. It is possible to combine pump motor feeds for twins and supply them from one breaker.

Pump Motor Power

The pump motor power is a 115 or 230 VAC input that is connected directly to the motor. The motor is controlled by internal relays that are controlled by the Pump Motor Control input as explained above.

Return (Neutral)

The return is the AC current return line back to the breaker panel for all attached devices (pump motor, reset motor, and solenoid valves). The gauge of this wire must be equal to that of the pump motor feed (suction pumps) or submersible feed (remote dispensers). This wire is commonly referred to as the neutral wire.

Submersible Feed, Submersible Drive

The submersible feed is a 115 or 230 VAC input supplied to the input side of one of the internal switches of the electric reset. When the reset finishes its cycle, the 115 or 230 VAC input to the switch is passed through as an output (submersible drive) to drive a starter relay or to directly drive a submersible motor up to one HP at 115 or 230 VAC. Any submersible motor exceeding this limitation must use a starter relay.

Reset Complete (Switch Detect)/Slow Flow

The reset complete is a 115 or 230 VAC output used to indicate that the reset is complete and the dispensing unit is ready to dispense the product. Two lines are provided for twins. Use this line only when monitoring a dispensing unit that is connected to a FMS. This line must be capped when not in use, and is connected to the slow-flow stage of the solenoid in the pump.

Fast Flow

The fast flow is a 115 or 230 VAC input that controls the fast flow valve of the pump/remote dispenser (when a slow/fast flow valve is available). If slow/fast-flow control is not required, this line must be tied to the reset complete/slow-flow line. If fast-flow control is required, this line must be switched through a POS or FMS and be turned on only when the pump/remote dispenser is authorized and in the fast-flow mode. This line will be switched on when the pump/remote dispenser is in the manual mode.

Light Feed

The light feed is a 115 or 230 VAC input required to power brand panel lights. In a site configuration using multiple remote dispensers (or pumps), power for lights for up to eight units can be supplied by one breaker. If separate control of lights is not required, the light feed for each dispensing unit may be taken from its reset motor feed, provided the unit is not connected to a FMS.

Light Neutral

The light neutral is a return line for AC from lights to the breaker panel. When a separate breaker is not used to control lights, the light neutral is attached to the neutral, which is connected to the reset motor.

Phase 2 Feed

The phase 2 feed is a hot feed, which is the opposite phase of pump motor feed. This line and pump motor feed are used for domestic 230 VAC motor applications.

Pulser

The pulser supplies a DC output that indicates the quantity of product dispensed. Pulsers are optional and are used only when monitoring the dispensing unit that is connected to a FMS. The pulser wiring must run in a separate conduit away from AC power control lines.

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6 – Installation

Purpose

This section provides information specific to the installation of AtlasX pumps/dispensers. The dispensing device shall be installed in accordance with the applicable Codes and Regulations. Consult the local regulatory officials as appropriate.

Required Equipment and Materials

DEF is not flammable or explosive. Therefore, installation requirements for DEF units differ from units that handle hazardous fuels. However, electrical safety requirements are applicable. When installing a DEF unit in a hazard zone defined by the location of another pump/dispenser handling hazardous fuels, the area of the DEF dispenser within the hazard zone must conform to requirements for units handling hazardous fuels.

The following items are required for the installation of the equipment:

- Anchor bolts
- UL-approved sealant (for use with fuels being encountered)
- Pit box cover plates (for use when it is required to adapt the unit to pre-existing pit boxes)
- Lifting device (forklift) to move and lift pumps/dispensers
- Breakaways, hoses, nozzles, and swivels
- Approved wire nuts
- Barricades
- Potting compound and fiber dam material (to allow potting of conduit as per class I, division II locations, as specified in the NEC)

Important Considerations when Changing Fuel Types

WARNING

Certain special alternative fuels, such as E85 and additives, can degrade pump/dispenser performance or integrity if the dispensers are not designed for use with such fuels. Additionally, converting to certain standard fuels (gasoline, diesel, kerosene, and so on) from alternative fuels, such as those with ethanol (E85), methanol, or biodiesel, or from alternative fuels to standard fuels can degrade dispenser performance or integrity. Similar effects can also occur when converting units to different standard fuel types.

As per UL 87A requirements, nozzles dispensing E85 fuel must not be used to dispense any other type of fuel such as Gasoline.

Leaks and potential environmental hazards can result or components may fail prematurely.

To avoid these issues, follow the guidelines in this section.

Follow the guidelines given below when changing fuel types for a pump/dispenser or using alternative fuels or fluids:

- Verify with your Gasboy ASC or distributor if the fuel you will be using is compatible with the pumps/dispensers dispensing the fuel.
- For flexible fuel dispensers, do not use standard hydraulic parts used in other Gasboy pumps/dispensers for service parts in these units. Standard dispenser parts may not be compatible with fluids.
- Biodiesel fuels must conform to American Society for Testing and Materials (ASTM) standards for biodiesel fuels. Mixes of diesel with cooking oils, other plant or animal derived oils, and so on, are not considered biodiesel. Use of such mixes may void warranty on the hydraulic components of the unit.
- Review the latest copy of the unit's warranty statement regarding the use of fuel.
- Certain fuels (especially fuels enhanced with alcohol) when first used in tanks previously containing a different fuel may clean out the tanks and force a large amount of contaminant into the dispenser. Other than abnormally clogging filters, this large quantity of contaminant may damage certain dispenser components. Do not run units without filters at such times. It is normally required that tanks and lines be cleaned of all water, sediment, and contaminant before such conversions to minimize potential pump/dispenser downtime or damage. Damage to hydraulic components from contamination when not using filters is not covered by warranty. For recommendations, consult your ASC or Gasboy distributor.
- Do not use any equipment that was formerly used to store or dispense any other fuel or liquid with DEF. Dispensers designed for use with DEF must only be used with DEF.
- Do not use prover cans meant for engine fuel with DEF or vice versa.
- Although conversions from one fuel to an equivalent fuel (say from another supplier) generally do not create issues, it is recommended that after making any fuel type conversions (including those to alternative fuels such as E85 or back), all units be visually inspected for leaks, two days, one week, and one month after fuel conversion. Have your ASC repair any leaks found. This must also be performed for standard fuels when significant new additives are incorporated.

IMPORTANT INFORMATION

The above guideline does not apply to flexible fuel model dispensers.

- Whenever non-equivalent fuel conversions are performed, it is recommended that all units be checked for calibration within one month of fuel conversion.
- Some non-equivalent fuel conversions will necessitate the requirement to change the pump/dispenser filter type previously used. For any changes required, consult your ASC or Gasboy distributor.
- In flexible fuel dispensers, Gasboy recommends the use of 10 micron filters for gasoline-based flexible fuels. Although the use of finer filtration is allowable, filters will tend to clog prematurely, causing excessive filter maintenance cost.
- Use only meters and registration devices for DEF that have a National Type Evaluation Program (NTEP) Certificate of Compliance issued by the National Conference on Weights and Measures (NCWM).
- Non-metallic piping and components used in aboveground DEF service must have high melting points and adequate strength and durability. Some plastic compounds that are suitable for DEF may not be compatible with petroleum products. They must be avoided at locations where they can come in contact with petroleum from a routine operation or a spill.

- An anti-siphon valve must be installed on AST where the DEF level can be at a higher elevation than the supply piping or the dispenser. The valve will prevent a potential leak in the piping from creating a siphon that can cause a product release.

Read NFPA 30, NFPA 30A, and NFPA 70

Before installing the equipment, read, understand, and follow:

- The NEC (NFPA 70)
- The Code for Motor Fuel Dispensing Facilities and Repair Garages (NFPA 30A)
- Flammable and Combustible Liquids Code (NFPA 30)
- Any national, state, and local codes that may apply

The dispensing device shall be installed in accordance with the applicable Codes and Regulations. Consult the local regulatory officials as appropriate.

CAUTION

Failure to install the equipment as per the NFPA 30, NFPA 30A, and NFPA 70 may adversely affect the safe **use** and **operation** of the system.

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

The equipment manufacturer must provide instructions for other equipment such as STPs, shear valves, and underground tanks. Complete installation instructions for other manufacturer's equipment are not provided.

Preparing for Installation

To prepare for the installation, proceed as follows:

- 1 Read all instructions before beginning the installation.
- 2 Follow all safety precautions:



- Barricade the area.
 - Do not allow vehicles or unauthorized people in the work area.
 - Do not smoke or allow open flames in the work area.
 - Do not use power tools in the work area.
 - Wear eye protection during the installation.
 - Use circuit breakers to turn off all power to pumps/dispensers and STPs. Multiple disconnects may be required.
- 3 Check the following for proper installation, as per the criteria specified in *MDE-5694 AtlasX Start-up/Service Manual*, and other manufacturer's recommendations that apply:
 - Emergency Power Cut-off Switch
 - Circuit Breakers
 - STP Control Relay Boxes - Dispensers only (see [Notes](#))
 - Isolation Relays - Dispensers only (see [Notes](#))
 - Breakaways, hoses, nozzles, and swivels (refer to "[Installing Breakaways, Hoses, Swivels, and Nozzles](#)" on [page 6-13](#))
 - Conduit and Wiring (see [Notes](#))
 - Grounding
 - Shear Valves - Dispensers only (see [Notes](#))
 - Piping and Fittings
 - Fuel Storage Tanks
 - Pressure Regulating Valves (aboveground tanks only)
 - STP - Dispensers only
 - Tank and/or Line Leak Detectors
 - Pit Boxes

Notes: 1) A shear valve is an NFPA 30A recommended safety device required for every product line at each dispenser. For installation instructions, refer to *MDE-5693 AtlasX Fuel Systems Site Preparation Manual*. Shear valves may also be required for aboveground tank installations and other situations with pumps. Consult local and state requirements.

2) Refer to *MDE-5694 AtlasX Start-up/Service Manual*.

3) Some locations require shear valves for vapor lines. Consult local and state regulations.
 - 4 Inspect the pump/dispenser cartons and contents for shipping damage. Gasboy does not cover shipping damage under its warranty policy. Notify the shipper of any damage.
 - 5 Remove the bezel and lower panels (doors) of the pump/dispenser, refer to *MDE-5694 AtlasX Start-up/Service Manual*.
 - 6 Ensure that the fuel grade for product lines matches the pump/dispenser brand panels and foundation layout. Product lines from the island pit box must have labels.

Before Placing Unit on Fuel Island

Note: Before mounting the unit on to the fuel island, read and understand this section completely. This information is essential to avoid installation errors.

Verifying and Determining Plumbing Requirements

Before placing the unit on an island, determine the correct location of piping and orientation of the unit involved. A common installation error is to install the unit backwards, which results in expensive modification for re-installation later. This section contains information regarding plumbing requirements for various models.

IMPORTANT INFORMATION

Do not make assumptions about configurations based on previous experience, hose positions, or layout of the unit being replaced, whether replacing a Gasboy unit or that of any other manufacturer.

Determining the Unit Orientation

To ensure proper unit orientation, perform the following:

- Mount the unit using the mounting bolt locations specified. Seal the base as required.
- Fill in any openings to the potentially larger pit box opening. Seal as required.

Determining the Unit Side and Type

Before lifting units on to the island, ensure the following:

- To determine the unit type, refer to the unit's model sticker.

Note: The model sticker is located at particular places and can be viewed by removing the bezel. In mechanical units, it is on the inside, left side of the top housing. In electronic computer units, it is on the electronics base plate in the front of the top housing.

- To locate the appropriate configuration for your unit, refer to [“Foundation Diagrams”](#) on [page A-2](#).

Adapting Pit Box

For installation using an existing pit box, some modifications may be required. The following list highlights the changes that may be required. These installation considerations may also apply when replacing competitive units.

To adapt plumbing/conduit to stub-up locations, ensure the following:

- Use flexible piping in the pit box for plumbing adaptation.
- When adapting a unit to an existing pit box or one that is not specifically designed for the unit, the rain lip may require modification or removal. If the rain lip is removed, then the entire base of the dispenser must be sealed to the island. Study foundation layouts and the existing pit box to determine if modifications are required, before mounting the unit on the island.
- For working in this area, refer to the following warning:

WARNING

Applicable for fluids other than DEF. You are working in a potentially hazardous environment where fuels and their vapors may be present and can be ignited with sparks from grinding and cutting tools. Ensure that sparks or open flames are not generated when you modify a rain lip where fuel or fuel vapors may be present.

Lifting Units

WARNING

Lifting heavy equipment can be hazardous. Equipment can fall, and cause severe injury or death. Use lifting equipment of proper capacity and factor of safety when moving or positioning the unit. Stand clear from the pump/dispenser when lifting, lowering, or transporting.

Before mounting the unit to the island, ensure that the pit box and unit base are compatible. Some pit box plates have rain lips that require modification before placing the unit on plate.

Lifting Units with Forklift

To lift units with a forklift, proceed as follows:

- 1 Ensure that the weight of the pump/dispenser is equally distributed on the tines to the forklift.
- 2 Lift and guide the unit, positioning it on to the island.

Connecting Pump/Dispenser Inlet Pipes

To aid in the alignment and positioning of piping, it is always recommended that the unit is not anchored securely to the island until the piping is completely aligned and tightened.

Shear valves are not required in pumps, except in special circumstances. The following procedure for a pump is identical to that of a dispenser, except that a shear valve may not be used. The contractor must provide and install pipe unions, irrespective of whether shear valves are used or not.

For units with shear valves, the contractor-provided union must be installed on the shear valve. For proper tightening of the union to the shear valve, refer to the “shear valve manufacturer’s instructions”. For units without shear valves, the contractor-provided union must be installed on the ground stub pipe.

For more information, refer to [“Shear Valves”](#) on [page 7-10](#).

CAUTION

Shear valves or other dispenser components can be damaged or broken if improper wrench techniques are used. The installer must use two wrenches, so that stress is not applied to the shear portion of the valve during tightening.

To connect pump/dispenser inlet pipes, proceed as follows:

- 1 To maximize the installation versatility, units are shipped without the inlet piping. The installer provides and installs the plumbing in the lower hydraulics cabinet. Where required, use the UL-approved sealant suitable for the applicable fuel type.
Note: For hazardous fuel applications, flexible or non-metallic pipes or hoses must not be used within the hydraulics cabinet or the shear valve may not operate correctly during an accident.

- 2 Ensure that you remove any shipping plugs or caps that may be present in pipes, shear valves, and unions. Leaving the mounting bolts a little loose at this point will require adjustment when you install the piping.

Notes: 1) The contractor-supplied pipe and fittings must be a 1-1/2-inch NPT Schedule 40 black iron. Flexible or non-metallic pipes or hoses must not be used within the dispenser.

2) For Ultra-Hi units, the contractor-supplied pipe and fittings must be a 2-inch NPT schedule 40 black iron. Flexible or non-metallic pipes or hoses must not be used within the dispenser.

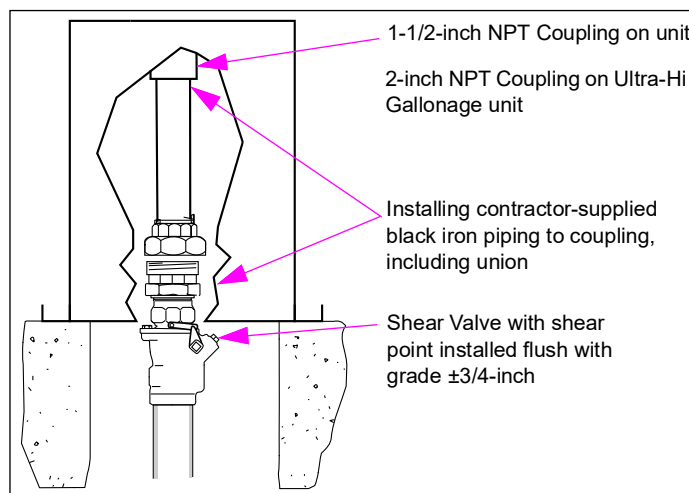
- 3 Loosely connect the union halves together (see [Figure 6-1](#)).

CAUTION

Do not use a pry (crow) bar to position the pump/dispenser over the conduit or pipes. This can damage valves, conduit, or other parts of the unit. Do not stress the unit's hydraulics, mounting frame, mechanical computer, and so on, by attempting to connect parts that are vertically too short.

- 4 Double-check the alignment of pipes, conduit, and frame (see [Figure 6-1](#)).
Note: Misaligned piping can result in a leak.

Figure 6-1: Shear Valve at Grade



Note: It is a mandatory code requirement that the shear section of the shear valve be within $\pm 3/4$ inch (or to the shear valve manufacturer's requirement, whichever is tighter) from the plane of the bottom of the base of a dispenser.

- 5 Connect and tighten the union halves (see [Figure 6-1](#)).
- 6 Tighten the anchor bolts. Ensure that the shear valves are properly tightened to the pit box or the shear valve anchor bracket.

Anchoring Pump/Dispenser to Island

WARNING

Improper anchoring of units can cause damage, severe injury, or death resulting from the unit tipping over from the impact or drive-off. Also, the hose breakaways may not function properly if the unit is not anchored. NFPA 30A requires you to anchor pumps/dispensers. Securely install anchor bolts at all anchoring locations as shown on “Foundation Diagrams” on [page A-2](#), for safe operation of shear valves and hose breakaways. Also refer to “shear valve manufacturer’s instructions”.

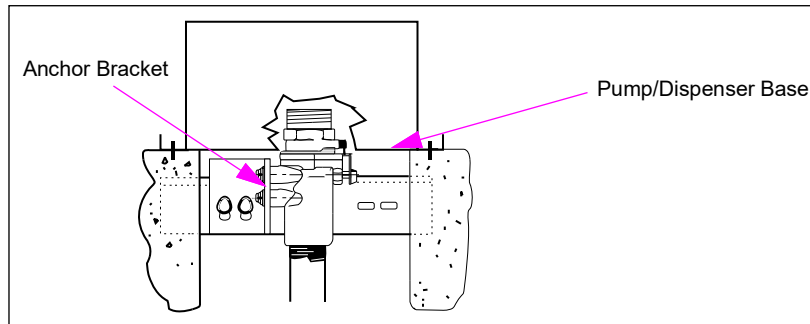
Note: Above ground tank installations require a pressure regulating valve at the base of the pump. Gasboy provides the 52 valve for this purpose.

To anchor a pump/dispenser to the island, proceed as follows:

- 1 Ensure that the shear valves are firmly anchored to the island form [concrete or pit box (see [Figure 6-2](#))].

Note: If the shear valve is not anchored properly, it may not operate correctly during a severe impact. Refer to “shear valve manufacturer’s instructions”.

Figure 6-2: Anchoring Shear Valve Using Anchor Brackets

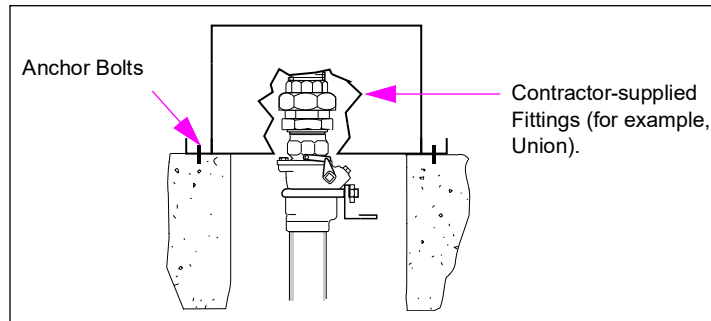


- 2 Loosely anchor the pump/dispenser to the island as per the foundation layout locations using all the required anchoring points, according to the following:
 - Use 1/2-inch anchor studs with large heavy duty washers (slot designed for that size).
 - Use bolts or studs that are of grade 5 steel.
 -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

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

- Studs/bolts must be anchored securely to the island or pit box (see [Figure 6-3](#)).
- See the anchor or pit box manufacturer's instructions for important information.

Figure 6-3: Anchors for Pump/Dispenser

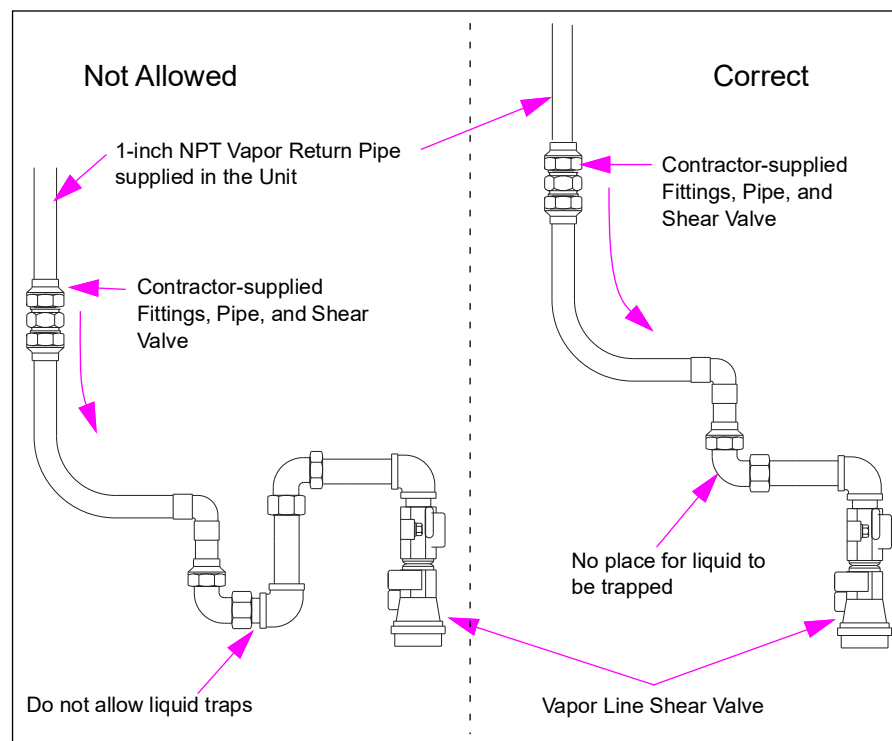


Connecting Vapor Return Line to Vapor Shear Valve

Do not create any liquid traps when connecting the vapor return line to the vapor line shear valve (see [Figure 6-4](#)). A liquid trap is a low place in the vapor return line that can accumulate fuel and cause blockage, which can cause the system to fail the vapor recovery certification tests.

Note: The contractor must provide and install the pipe union for connecting to the 1-inch NPT coupling in the unit. Some regulatory agencies require shear valves or shear sections on the vapor piping. Follow the guidelines and installation instructions from the vapor shear valve manufacturer.

Figure 6-4: Correct Vapor Line Connection Method



Wiring Dispenser (STP-Supplied Unit) for All Models

The electrician will be routing the conduit to a factory-installed J-box. For pump wiring, refer to [“Wiring Pump \(Self-contained Unit\) for All Models”](#) on page 6-11.

Preparing Field Wiring

To prepare for field wiring, proceed as follows:

- 1 Open the side 1 lower door. For instructions, refer to *MDE-5694 AtlasX Start-up/Service Manual*.
- 2 Remove the junction box cover and retain for re-assembly.
- 3 Ensure that the seal-off “Y” fitting has been installed and sealed as a first connection, where the conduit leaves the ground. This fitting must be in place and sealed before proceeding further. For more information, refer to *MDE-5693 AtlasX Fuel Systems Site Preparation Manual*.
- 4 Run a 1-inch rigid conduit to the J-box. Run the field wiring to the main J-box through a 1-inch J-box conduit. Make connections to the 1-inch conduit with class 1, division 1, explosion-proof conduit union.
- 5 Wiring must be gas- and oil-resistant, color coded or tagged for identification purposes, and rated for 300 V or greater. Data wires (two-wire communications) for new installations of electronic units must be a twisted-pair (unshielded) with 10 to 12 twists per foot (see note below). For complete wiring information, refer to *FE-371 Field Wiring Diagram AtlasX*.

Canadian Electrical Code Statement

In Canada, installing communication circuits, such as data cables and AC cables in the same conduit as AC circuits is contrary to the Canadian Electrical Code (CEC) rule 60. New installations must have separate conduit for data/communication cables and power cables in the following circumstances (wiring for two-wire, data, communications, Ethernet®, Gilbarco Long Range Ethernet (GLRE), must be in a separate conduit from the dispensers power and light conduit):

- All new installations of fuel dispensers or other electrical equipment, whether or not the raceways are exposed and made readily accessible as part of the installation process.
OR
- In any event if the raceways are exposed and made readily accessible for any reason.

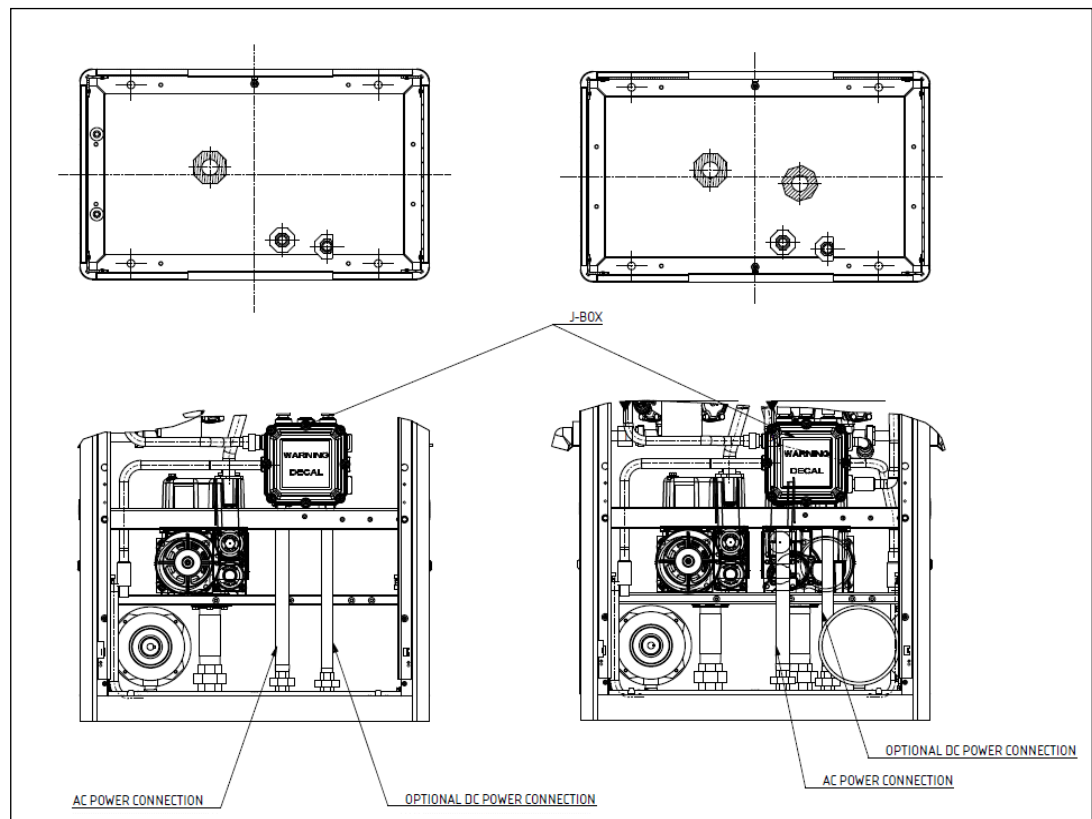
Wiring Pump (Self-contained Unit) for All Models

For dispenser wiring, refer to “[Wiring Dispenser \(STP-Supplied Unit\) for All Models](#)” on [page 6-10](#).

Preparing Field Wiring

Self-contained factory units have the factory-installed J-box on side 1 of the unit. For information on identifying side 1 of the unit, refer to “[Foundation Diagrams](#)” on [page A-2](#).

Figure 6-5: J-box Conduit Layout - Standard Models



Note: The motor and ground wiring must be sized to match the load and distance (length of the wire). Wiring must be gas- and oil-resistant, color coded, or tagged for identification purposes, and rated for 300 V or greater. It is recommended that data wires be a twisted-pair with 10 to 12 twists per foot (applicable only for electronic units).

To prepare for field wiring, proceed as follows:

- 1 Open the lower panel door (on the side with the J-box, side 1 inlet will be to the left).
- 2 Remove the junction box cover and retain for reassembly.
Note: For AtlasX units replacing older units, if the existing wire is too short to reach the installed J-box, a splice must be made. The contractor must provide and use a class 1, division 1, explosion-proof J-box in which connections are to be made as per the code. Refer to “Before Placing Unit on Fuel Island” on page 6-5.
- 3 For all units, ensure that a seal-off “Y” fitting has been installed and sealed as a first connection, where the conduit leaves the ground. This fitting must be in place and sealed before proceeding further. For more information, refer to *MDE-5693 AtlasX Fuel Systems Site Preparation Manual*. Install an adaptive 1-inch metal conduit and union to the J-box conduit.

Testing New Field Wiring

WARNING

Sparks can ignite fuel/vapors. Fire/explosion can result in severe injury or death.

Exercise care when testing wires. Do not test when exposed fuel and vapors are present. Only use a Megger® tester on new field wiring. For existing wiring, use a digital multimeter to test for continuity/resistance.

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

To test the new field wiring, proceed as follows:

- 1 Disconnect wires at both ends. If you do not disconnect wires at both ends, you may damage the pump/dispenser electronics.
- 2 Test the conduit wiring ends by using an insulation/Megger tester or digital multimeter as described in the warning above.
- 3 Connect one tester lead to the wire under test.
- 4 Connect the other tester lead to the ground.
- 5 Measure the resistance. Follow the test equipment manufacturer’s instructions. Insulation resistance greater than 50 Megaohms is satisfactory. Check the local authority requirements.
- 6 Repeat steps 1 to 5 for all wires.
- 7 Repeat the test between all wires.
- 8 When all wiring tests are successful, pot the conduit.
Note: Ensure that enough wire is retained to connect to the wiring within the J-box of the unit being installed.

Completing Field Wiring

Field power connections are made at the J-box. To complete the field wiring, proceed as follows:

- 1 Remove the cover of the J-box. For cover removal, refer to [“Preparing for Installation”](#) on [page 6-4](#).
- 2 Use pipe plugs to seal unused openings in all J-boxes. Make electrical connections as per the field engineering diagrams in *FE-371 Field Wiring Diagram AtlasX*.
- 3 Double-check all wiring connections for wire nuts, lugs, caps, and so on. Reinstall the J-box cover. Ensure that you do not pinch any wires. All J-box bolts must be used when you replace the cover.
- 4 Replace the bezel and lower doors.

Installing Breakaways, Hoses, Swivels, and Nozzles

Teflon tape must not be used for hanging hardware. Sealant must not be used for sealing connections unless the threads involved are pipe threads. O-ring seals do not require sealant. However, a small amount of silicone sealant can be used to avoid rolling or damaging of the O-ring during assembly.

WARNING

Hose pulled away from the pump/dispenser exposes fuel, or the hose can pull the unit over during a drive-off. Explosion and fire or pull-off of the dispenser during a drive-off can result in severe injury or death. Installation of breakaways is required as per NFPA 30A.

WARNING

Use of incompatible materials or components with alternative fuels such as E85 can result in leaks or unexpected failures of components resulting in fire, explosion, or environmental damage.

WARNING

Use of hoses that are not of standard lengths may create a tripping hazard. Tripping can result in severe injury or death. Do not use excessively long hoses without a hose retractor.

Note: It is important that Teflon tape is not used on threaded connections. Use a UL-approved sealant suitable for the fuel involved, only where sealing is required (not used for O-rings). Castings may fracture during assembly or later, if Teflon tape is used.

⚠ WARNING

Hose fittings and attachments that are improperly grounded can lead to a spark that may ignite fuel or its vapors. Explosion or fire can result in severe injury or death. Check hoses, breakaways, and fittings for proper conductivity after assembly. Consult the manufacturer's instructions.

To install breakaways, hoses, swivels, and nozzles, proceed as follows:

- 1 Attach the swivel (if used) to the nozzle. Follow the swivel manufacturer's instructions.
- 2 Assemble and attach the breakaway whip hose to the swivel or nozzle. Follow the hose manufacturer's instructions. For units with hose retrievers, refer to [“Units with Hose Retrievers”](#) on [page 6-15](#).
- 3 Assemble the breakaway to whip the hose. Follow the breakaway manufacturer's instructions.
- 4 Assemble the hose to the breakaway, followed by the unit outlet casting. Follow the breakaway manufacturer's instructions. The hose clamp must connect between the breakaway coupling and pump/dispenser outlet.

Nozzle Verification Procedure

The following applies to the verification of the hose nozzle valve, fitting correctly into the nozzle boot.

- 1 After installing the hose and hose nozzle valve on the dispenser, the installer must verify that the hose nozzle valve fits correctly into the dispensers hose nozzle boot.
- 2 Insert the hose nozzle valve over the nozzle hook and into the boot. Ensure that the nozzle does not slip out of the boot and starts dispensing.
- 3 Dispenser operation shall only start when the hose nozzle valve is removed from its non-dispensing position in the nozzle boot.
- 4 Dispenser operation shall stop immediately when the nozzle is returned to its non-dispensing position in the nozzle boot.
- 5 The hose nozzle valve shall be able to be padlocked to the nozzle hook or nozzle boot to prevent tampering and starting the dispenser operation so that no fluid can be discharged.

If the hose nozzle valve does not fit correctly, then the hose nozzle should be removed and must not be used with that dispenser.

Units with Hose Retrievers

For units with hose retrievers, attach the retriever clamp to a long hose that is positioned to allow maximum extension of the hose, yet prevent a trip hazard. Use hose breakaway couplings that are installed as per the manufacturer's instructions.

WARNING

Failure to position hose clamps correctly may prevent the operation of the breakaway coupling, resulting in the unit being pulled off an island during a drive-off, with fuel being spilled. This can result in serious injury or death. Ensure that the hose clamp is installed between the breakaway coupling and unit outlet casting. This ensures that the breakaway functions properly.

Do Not Turn on AC Power

WARNING

It can be hazardous to apply power before electrical and mechanical inspections are complete. Hazardous high voltage, fuel, and fuel vapors may be present or equipment may be damaged.

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

Only a Gasboy ASC must apply power during or after installation to check for leaks, verify operation, assure sealing of all enclosures, and replacement of all covers, skins, and sheathing. Failure to comply with this mandate can result in the loss of unit warranty.

When all installation procedures are complete up to this point, the system must be purged by the installing contractor, with a Gasboy ASC on site to apply the power required to perform this procedure. For start-up instructions, refer to *MDE-5694 AtlasX Start-up/Service Manual*. Proceed to and complete the [“Installation Checklists”](#) on [page 6-18](#) irrespective of whether purging is performed now or later.

Purging Air from System

For New Dispensers (Purging Through Shear Valve)

Programming changes in electronic dispensers must be complete before purging can be started.

To prepare for purging, perform the following procedure for each shear valve in all units. Be observant during purging and check for plumbing leaks as you move toward the tank. Ensure that prices are set (by the ASC) before you begin purging for electronic units.

To purge air in new dispensers, proceed as follows:

- 1** Turn OFF all power to the STPs involved.
- 2** Start with the unit farthest from the tank.
- 3** Use a UL-approved sealant to connect a “gasoline-suitable, conductive hose” to the shear valve test port.
- 4** Install the mechanical valve (petcock) to the hose. Ensure that it is closed at this point.
- 5** Place the drain end of the closed valve in an approved metallic container. Clean up any spills promptly.
- 6** Return power to the STPs. Activate the STP for the line being purged.
- 7** Slowly open the mechanical valve until you obtain a slow, constant stream of fuel flow, while maintaining contact between the metallic valve and the can.

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

CAUTION

Purging air at high flow rates through the meter can permanently damage them. Noise is not an indication of over-speed in many cases. Meter damage due to over-speeding is not covered by warranty. Follow all instructions carefully.

To purge air in new and existing pumps and dispensers, proceed as follows:

- 1 Lift the nozzle handle for the hose that is being purged.
- 2 Place the nozzle in an approved container.
- 3 Slowly open the nozzle until you obtain a slow, constant stream of fuel flow.
- 4 Purge the system with the amount of fuel as specified in the following table.

For	Pumping Quantity
Start-ups (installing new systems)	35 gallons (130 liters) per hose

Note: Improper purging of air can cause subsequent errors in calibration testing or setting. Do not purge less than the quantity shown.

- 5 Return the nozzle to the nozzle boot.
- 6 Empty the approved container into the appropriate product tank.
- 7 Repeat steps 1 to 6 for each affected hose in every meter.

Installation Checklists

To ensure proper and safe operation of all equipment, and to maintain warranty coverage, the following checklists must be completed at this time. Many of the items on the list must already have been checked by the electrician as covered earlier. Follow instructions in checklists and perform all the required inspections. After the inspection is complete, insert forms (less your copy) in the dispenser's electronic cabinet and ensure that there is no contact with any of the electronic component(s). Forms must be provided with each unit; if not, contact the Gasboy distributor.

Note: Always make copies of checklists for actual use. This way, you will always have an original to copy and use in the future.

Mechanical and Hydraulic Related Items

Item	Procedure	Refer To	Checked
1	Shear valves must be installed as per the valve manufacturer's recommendations. Shear point is $\pm 3/4$ inch of grade and properly mounted.	"Shear Valves" on page 7-10	
2	Flexible pipes must not be used within the dispenser. However, flexible pipes meeting local and state codes can be used below the pump/dispenser, as allowed by regulatory authorities.	MDE-5693 AtlasX Fuel Systems Site Preparation Manual	
3	Pumps (self-contained units) must have a vacuum-actuated pressure regulating valve to prevent positive pressure at the pump base, when used with aboveground tanks.	MDE-5693 AtlasX Fuel Systems Site Preparation Manual	
4	Pumps require a check valve.	MDE-5693 AtlasX Fuel Systems Site Preparation Manual	
5	Hose breakaways must be used and installed as per the manufacturer's recommendations.	Manufacturer's specifications	
6	The unit must be properly anchored to the island.	"Anchoring Pump/Dispenser to Island" on page 6-8	
7	Vapor recovery piping at the pump/dispenser must have no traps or sags.	"Connecting Vapor Return Line to Vapor Shear Valve" on page 6-9	
8	Ensure that the correct nozzles, hoses, and brand panels are associated with the product being dispensed.	Specific to the unit order	
9	All code, regulatory agency, or customer-specified safety warning signs, labels, or decals have been installed.	As provided with and for the unit	
10	Long hose lengths beyond Gasboy recommendations must not be used without special retrievers. For Balance Vapor Recovery, no portion of the hose may be on the ground.	NFPA 30A	
11	Unit mounted using proper quantity, size, and strength mounting hardware.	"Anchoring Pump/Dispenser to Island" on page 6-8	
12	Wiring color coded or tagged, sized for distance and application, and resistant to gas and oil.	"Preparing Field Wiring" on page 6-10	

Electrical Related Items

Item	Procedure	Refer To	Checked
1	Equipment must be installed in conjunction with an emergency power cut-off to remove all power from the equipment in case of an emergency.	<i>MDE-5693 AtlasX Fuel Systems Site Preparation Manual</i>	_____
2	STP isolation relays are required for all dispensers.		_____
3	Electronic only: Use twisted-pair wires as specified for new installations, or where new wires are pulled. Do not use shielded wires.	<i>FE-371 Field Wiring Diagram AtlasX</i>	_____
4	All wiring must be stranded with copper of specified gauge and insulation casing.		_____
5	All grounds must be properly connected as per the installation manual requirements as well as state, local, and national codes.	"Grounding" on page 7-5	_____
6	Conduit must be UL listed explosion proof conduit rated for use in Class I Group D hazardous locations and properly sized for the wiring involved.	<ul style="list-style-type: none"> • NFPA 30A • NFPA 70 	_____
7	Properly size all circuit breakers for the units/unit options involved.	NEC and local codes	_____
8	All electronic unit pump/dispenser wiring must be properly spaced and isolated from wiring for electrically noisy devices such as variable speed STPs, station equipment motors, and other devices.	<i>MDE-5693 AtlasX Fuel Systems Site Preparation Manual</i>	_____
9	All power wiring and circuit breakers to Gasboy equipment must be dedicated and not shared with other equipment.		_____
10	All circuit breakers to Gasboy equipment must be clearly labeled and readily accessible.		_____
11	Isolation relays must be used for dispensers to ensure that the power is completely removed from a dispenser during service power down.		_____
12	All pumps/dispensers must be wired to the same phase of electrical power.		_____
13	New site wiring must be Megger-tested. Old site wiring must be continuity and short-tested with a digital meter.	"Testing New Field Wiring" on page 6-12	_____

Calibration

Though all units are calibrated at the factory, all units must be checked for calibration and recalibrated as required, before their use by customers.

Note: Units must be properly purged before calibration or calibration verification.

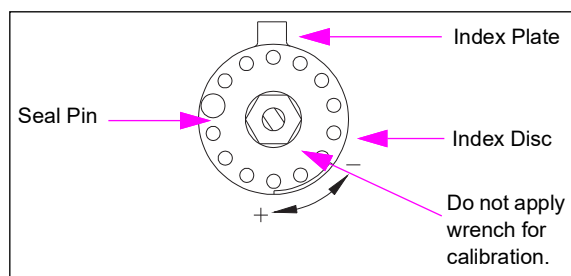
Incomplete purging of air can result in inaccurate calibration or errors in calibration verification testing.

Calibration is accomplished by first pumping the product into a correctly sized prover can to determine the accuracy of the unit. The size of the prover can is established by Weights and Measures (W&M), depending on the flow rate of the unit. To set the prover can size, use CC82. The default can size is 5 gallons or 20 liters.

Adjusting Calibration for Mechanical Register Models

If calibration is required, remove the restraint (seal-wire from locking pin) on the calibration wheel located on each meter. Each pin hole represents one cubic inch of fluid. Moving the calibration wheel counter-clockwise, one pin hole creates a negative of one cubic inch of fuel; when turning the calibration wheel clockwise, one pin hole adds one cubic inch of fuel to the total flow. To calibrate the meter, the pin must first be removed and the wheel turned in the required direction to retard or add to the rate of product flow. Reinsert the pin into the hole in the wheel and test the new setting. After the correct flow of the product has been established, the pin and wheel must be wired and a seal put in place (if required, it is the owner's responsibility to report this device to the local W&M officials for their inspection before the unit is put into service).

Figure 6-6: Calibration Wheel



Calibration Adjustment for Electronic Models

- 1 Ensure that the can size in CC 82 matches calibration can being used. W&M switch does not have to be on to check or change this function.
- 2 Remove nozzle, and lift lever of meter to be calibrated.
- 3 Dispense product in calibration can exactly to the zero mark.
- 4 Do not hang up nozzle. Turn on the W&M switch.
- 5 Wait for a double beep.
- 6 Hang up nozzle.
- 7 Turn off the W&M switch.
- 8 Enter the level 4 PIN code. You **DO NOT** need to press F1.
- 9 Press **ENTER** and wait for a double beep. The meter is now calibrated. Following notes are applicable only to this section:

- Notes:*
- 1) The above method will not be affected if steps 6 and 7 on page 20 are reversed.
 - 2) For Automatic Temperature Compensation (ATC) units, gross volume can be displayed on the money display by pressing 7 on the manager keypad.
 - 3) Electronic totals ARE updated when this method is used. The message, "MOC CRIND DEVICES WILL REBOOT" appears when this method is used.

AtlasX (Gallon Unit of Measure)

For electronic units, temporary pricing must have already been entered into the unit to allow dispensing and calibration.

Currently produced AtlasX pumps/dispensers are precalibrated to US gallons (calibration verification is still required) and programmed to default programming values. They may be operated and purged in normal mode after entering the prices. When the unit is in gallon mode, purging can be done for units eventually to be converted to metric mode.

IMPORTANT INFORMATION

The settling time for freshly dispensed DEF is longer than for gasoline or diesel. Therefore, a three-minute wait time between dispensing the DEF into the prover can and taking the reading from the sight glass is recommended.

IMPORTANT INFORMATION

Units must be properly purged before calibration or calibration verification. Incomplete purging of air can result in inaccurate calibration or errors in calibration verification testing.

CAUTION

A stainless steel prover can must be used to calibrate DEF. Do not use a can that has been used for other fluids. Contaminated DEF can cause damage to vehicle engines, or contaminated fuel can corrode dispenser material(s), vehicle catalytic converter(s), or damage vehicle engines.

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7 – Reference Information

This section contains reference information for the contractor. The contractor may or may not be required by individual contract to perform all or any of the requirements outlined. However, all installations must conform to the requirements in this section. The information in this section can be found in detail in *MDE-5693 AtlasX Fuel Systems Site Preparation Manual*.

Note: The information in this section is not to be used exclusively in lieu of MDE-5693 AtlasX Fuel Systems Site Preparation Manual, as not all information contained in that manual is found here.

Reference Contents

Section and Information	Location in MDE-4331
Electrical Requirements	page 7-2
Emergency Power Cut-off Switch	
Circuit Breakers	
STP Control Relay Boxes for Dispensers	page 7-3
STP Isolation Relays for Electronic Dispensers	
Conduit	
Wiring	page 7-5
Wire Size	
Grounding	page 7-5
Sealing 'Y' Fittings	page 7-7
Sealing 'Y' Fittings	
Field Wiring Requirements (LAN/WAN)	page 7-8
Plumbing Requirements	
Pipe Installation	page 7-9
Pipe Size	
Pumps (High Flow)	
Check Valves	
Check Valves	page 7-10
Shear Valves	

Electrical Requirements

The following are electrical requirements for installing the unit:

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

Emergency Power Cut-off Switch

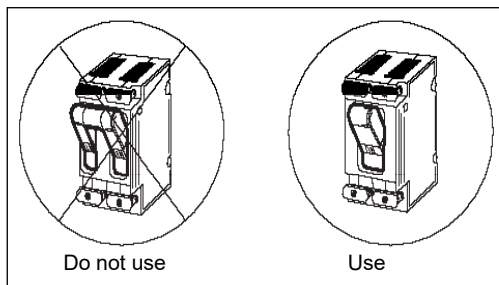
The following are the emergency power cut-off switch requirements for the unit:

- NFPA 30A and Gasboy require the installation of one or more emergency power cut-off switches.
- An emergency power cut-off switch is a single control that removes AC power to all island equipment (pumps/dispensers, STPs, canopies, lights, and so on).
- The emergency power cut-off switch must be accessible, labeled clearly, and installed away from any hazard that may occur at pumps/dispensers. Cut-off switches must not be located more than 100 feet away from pumps/dispensers.

Circuit Breakers

The following are the circuit breaker requirements for the unit:

Figure 7-1: Switched Neutral Circuit Breaker



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

STP Control Relay Boxes for Dispensers

The following are the STP control relay box requirements for the unit:

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

STP Isolation Relays for Electronic Dispensers

STP isolation relays provide electrical isolation between dispensers and prevent damage from cross phasing. For more information, refer to *MDE-5694 AtlasX Start-up/Service Manual*.

- Gasboy requires the installation of STP isolation relays in addition to STP control relays. Combined STP control relay/isolation relay boxes are recommended.
- Isolation relays must be installed for each STP control line at every dispenser or dispenser grouping on a single circuit breaker.
- A neutral wire must be routed to control relays from the dispenser circuit breaker. For more information, refer to *FE-371 Field Wiring Diagram AtlasX*.

Conduit

It is recommended that a spare conduit must be run for future high-speed communications.

- Use a minimum 1-inch conduit for all Gasboy pumps/dispensers.
- Run all power and light wires in a threaded, rigid metal conduit, or a rigid non-metallic conduit. The conduit must conform to national and local electrical codes. If a non-metallic conduit is used, it must be at least 2 feet underground. The last 2 feet of the underground run to the J-box must be a rigid metal conduit or threaded steel intermediate metal conduit.
- Never share the conduit or wire troughs with any other manufacturer's equipment (that is, speaker wires, and so on).

Note: The same conduit may be used for routing power to the pump/dispenser and wire-pair communication (two-wire data loop). The wire-pair communication is a class 1 circuit. When routed in the conduit with AC wires, the wire-pair requires isolation (via a distribution box or other device) before connecting to the POS or FMS inside the building. Refer to "Canadian Electrical Code Statement" on page 6-10.

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

Note: Extra J-boxes that are added to the pump/dispenser must be listed class 1, division 1, group C and D explosion-proof.

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

Wiring

The following are the wiring requirements for the unit:

- All pumps/dispensers must be wired as per NFPA 30A, NFPA 70 and the applicable national, state, and local codes/regulations.
- All circuits must be NEC class 1 wired.
- Only stranded, gas- and oil-resistant copper wires rated for 300 V (up to 240 VAC source) and 176 °F (80 °C) must be used.
- If wire-pair communication is included in the main conduit for electronic units, only twisted-pair or two-wire data pairs must be used for the electronic two-wire data loop.
- All dispensers must be wired on the same phase.

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

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

Wire Size

The following table lists the wire size requirements:

115 V Wire Gauge Sizes per Feet/Meters of Run								
Feet/Meters	25 feet 8 m	50 feet 15 m	100 feet 31 m	150 feet 46 m	200 feet 61 m	250 feet 76 m	300 feet 91 m	Over 300 feet (91 m), use relay at motor location
Motor HP								
115 V								
1/2	14	12	10	8	8	8	8	
3/4	14	12	10	8	6	6	6	
230 V								
1/2	14	12	12	12	10	10	10	
3/4	14	12	12	12	10	10	10	
1-1/2	12	12	10	10	8	8	6	

Wiring

When wiring the AtlasX pump/dispenser, it must be noted that there are two types of systems:

- Pulse output or LAN communications option
- Standalone or wire-pair operation

Pulse Output or LAN Communications Option

When electronic units are supplied with the pulse out or LAN communication options, the pump/dispenser utilizes two conduits, one for AC power and the other for DC signals. The two conduits must be kept away from each other to reduce signal interference. The AC conduit carries the AC power line and supplies power to valves and motors, whereas the DC conduit delivers the LAN communications or pulse output signals when the pump communicates with an FMS. In a standalone operation, they will not use either the LAN communications or pulse outputs.

Standalone or Wire-Pair Operation

The AtlasX pump/dispenser in standalone or using wire-pair communication utilizes only one main conduit as it does not require a DC conduit. The AC conduit is used to carry the AC wire and the twisted-pair interface. When routed in the conduit with AC wires, the wire-pair requires isolation (via a distribution box or other device) before connecting to the POS or FMS inside the building. Refer to [“Canadian Electrical Code Statement”](#) on [page 6-10](#).

When installed in a separate DC conduit, 18 AWG wires are required for the installation.

Data Wire Lengths

Use the following table to determine the maximum length of the data wire:

For This Distribution Box (D-Box)	Distance Between the D-Box and Dispenser	Distance Between the D-Box and Console/Controller
PA0261 Universal D-Box	No more than 2600 feet with 14 AWG	No more than 2600 feet with 14 AWG
PA0306 D-Box	No more than 2600 feet with 14 AWG	No more than 2600 feet with 14 AWG
LAN Communication	No more than 333 feet from Islander to LAN jack	-

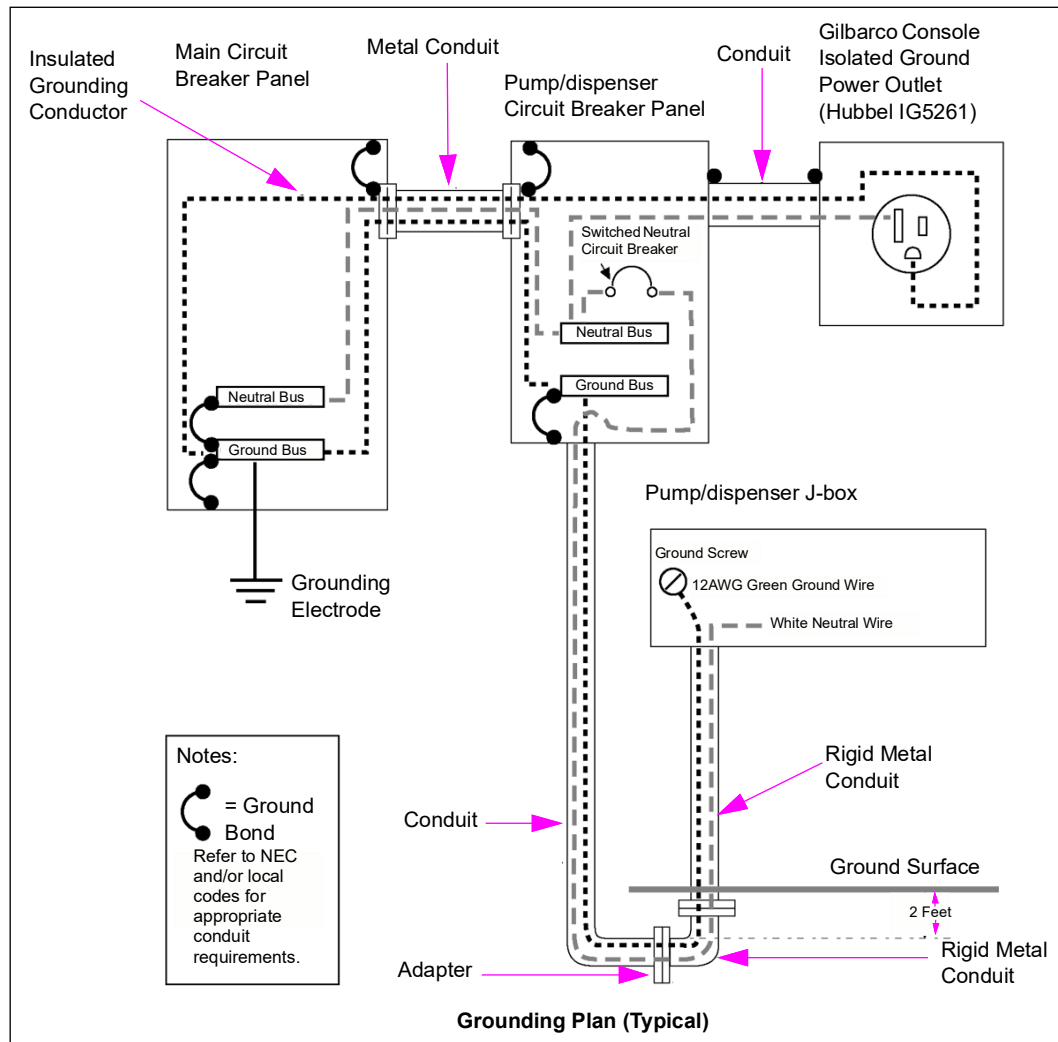
Grounding

The following are grounding requirements for the unit:

- NFPA 70 requires connecting the following to the system ground:
 - Consoles
 - Relay control boxes
 - Pumps and dispensers
 - Circuit breaker panel
 - STPs
 - Electronic leak detectors

- Gasboy requires connecting each pump/dispenser to an equipment-grounding conductor (see [Figure 7-2](#)) located in the conduit, as per NFPA 70, Article 250. The following applies to the ground conductor:
 - Use a wire that is not smaller than 12 AWG.
 - Use a wire with green or green and yellow striped insulation.
 - Connect to the green grounding screw in the J-box.
 - Ground the providing power under NFPA 70, Article 250.
 - Bond the neutral bus to an approved grounding electrode.

Figure 7-2: Grounding Plan



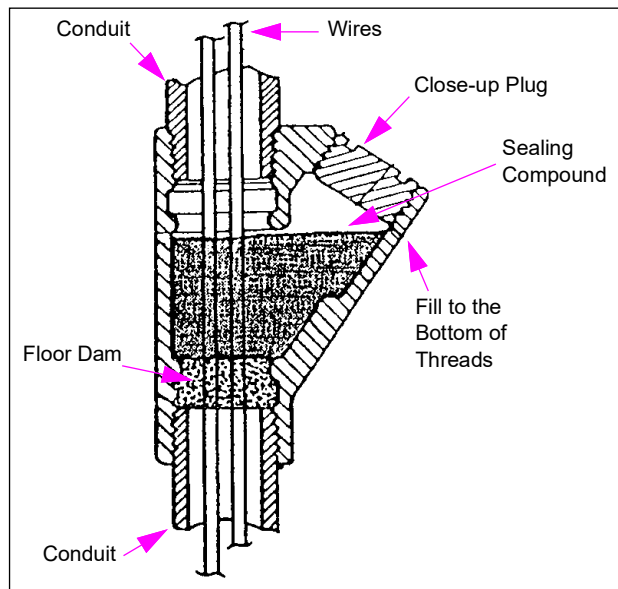
Sealing ‘Y’ Fittings

‘Y’ seals installed in a conduit run to minimize the passage of vapors, gases, or flames from one portion of the electrical installation to another through the conduit. Fittings must be installed as per articles 501-5 and 502-5 of the NEC and the manufacturer’s instructions.

Gasboy uses Killark type EY fittings and recommends them or their equivalent for vertical conduit runs. Following sealing directions are for Killark fittings only, and instructions may vary for other manufacturer’s fittings. Read through all instructions completely before you begin.

- 1 Remove the close-up plug (see [Figure 7-3](#)).

Figure 7-3: Typical ‘Y’ Sealing



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

Note: The floor dam must be even with the conduit stop in the lower hub of the fitting. Ensure that you do not damage the conductor insulation. Force pack between conductors and hubs and push any shreds of packing fiber away from conductors to block the leakage path.

- 3 Use only Killark type “SC” sealing compound with Killark fittings, and perform the following:
 - a Use a clean mixing vessel for every batch of sealant.
 - b Mix the compound at a rate of three parts compound to one part water by volume.
 - c Sprinkle the compound in water while stirring, until a thick paste is formed.
 - d Do not mix more compound than what can be used in 15 minutes.
 - e Continue mixing for at least three minutes, until the consistency is just fluid enough to pour slowly.

- 4 Slowly pour the fluid compound into the sealing fitting, up to a level below the threads in the close-up plug.

Note: Pour the fluid slowly to avoid trapping air bubbles in the seal.

- 5 Immediately wipe off any spilt compound and close the seal with a close-up plug.

Notes: 1) The initial setting of the sealing compound will occur within 30 minutes. The compound requires a minimum of eight hours at a temperature above 32 °F (0 °C) to develop sufficient strength to withstand explosion pressures.

- 2) *If the pump/dispenser has a factory mounted AtlasX PRIME, for LAN/WAN wiring requirements and sealing CAT5 cable, refer to “[Field Wiring Requirements \(LAN/WAN\)](#)”.*

Field Wiring Requirements (LAN/WAN)

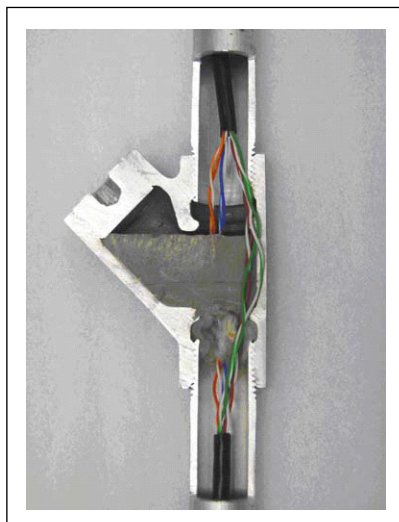
Wiring must be installed in accordance with ANSI/TIA/EIA 568 B Standards and Amendments.

Recommendations for CAT5E Cable

The following are Gasboy recommendations for installing the CAT5E cable (gas-resistant and oil-resistant) for SSE:

- The Ethernet® cable to the pumps/dispensers is designed to comply with forecourt wiring requirements, including gas-resistant and oil-resistant, and vapor-resistant properties.
- CAT5E cable is viable for typical installations under 280 feet of cable length, as long as the cable is not run near the equipment that generates electrical noise such as large motors and power switching equipment. An example of a noise source to avoid is a variable speed STP.
- It is crucial that the installer follows the NEC, Article 501 requirements by removing the outer jacket and spreading the wire pairs at the seal-off points to create a good vapor seal. This is required because most CAT5E cable will conduct vapors inside the outer jacket (see [Figure 7-4](#)).

Figure 7-4: CAT5E Cable Installation



- CAT5E cable must not share the conduit with AC but can share the conduit with pulsers or other CAT5E cables.
- If using an Ethernet hub, ensure that it is a commercial quality device. Commercial Ethernet switches are a family of fixed configuration standalone devices that provide 10/100 Fast Ethernet and 10/100/1000 Gigabit Ethernet connectivity for entry-level enterprise, medium-sized, and branch office networks to enable enhanced LAN services.
- The recommended CAT5E cable is Madison Cable (042GA00007 or 042GALF007) or an equivalent. The CAT5E qualified cable has gas- and oil-resistant inner and outer insulation, and vapor-resistant properties.
- A patch panel is recommended (optional) to connect the CAT5E cable to the Network RJ-45. The patch panel and LAN wiring must be LAN certified and follow TIA/EIA LAN 568-B wiring standards.

Plumbing Requirements

WARNING

High alcohol percentage fuels such as E85 may be incompatible with certain plumbing materials and hydraulic components.

Use of incompatible materials or components with E85 or DEF can result in leaks or unexpected failures of components resulting in fire or explosion or environmental damage. When installing components in E85 units, refer to [“Important Considerations when Changing Fuel Types”](#) on [page 6-1](#).

When dispensing alternative fuels such as E85, consult the manufacturer to verify that material of all plumbing components is compatible with the fuel (E85) or fluid being dispensed.

Pipe Installation

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

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

Pipe Size

The required pipe size depends on the number of sharing lines that the unit contains, size of STPs (dispensers only), and length of the run.

Pumps (High Flow)

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

Dispensers (High Flow and Ultra-Hi)

Except for the riser, use a new 3-, 3-1/2-, or 4-inch pipe. If the distance from the STP to the farthest dispenser is 200 feet or less, use a 3-inch pipe. If the distance exceeds 200 feet, use a 3-1/2- or 4-inch pipe to the first dispenser and a 3-inch pipe to the remainder of the dispensers.

Check Valves

(Used on Pumps Only)

See the “PEI publication RP100 and manufacturer’s installation instructions” for information on the installation of the check valve. Install the check valve as close as it is practical to the suction unit. It must be gravity-activated with minimal or no spring load. Check valves are available from Gasboy as an order entry item for internal use to the pumping unit.

- GPU+ M09593A102 - Inlet check valve kit M09593K207 (1 per pumping unit)

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

Shear Valves

(Generally Used on Dispensers Only)

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

See “PEI Publication RP100 Recommended Practices for Installation of Underground Liquid Storage Systems (Chapter 9)” and “PEI Publication RP200 Recommended Practices for Installation of Aboveground Storage Systems for Motor Vehicle Fueling”. A shear valve (see [Figure 7-5](#) on [page 7-11](#)) is an NFPA 30A required safety device. It closes automatically to stop the product flow during a fire or if the dispenser gets knocked off the island. It also provides a means of manually closing inlet pipes.

Follow the shear valve manufacturer's instructions for installation procedures and testing. Install a shear valve on each product inlet pipe.

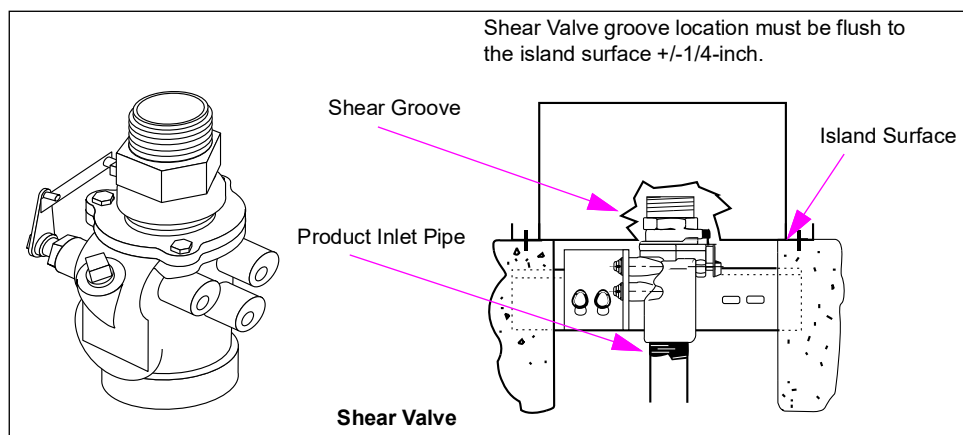
- Install a shear valve on a master dispenser satellite outlet and at satellite inlet.
- Do not mount the shear valve upside down.
- Ensure that the valve linkage is accessible and displays no interference while opening or closing, from other piping, structure, or components.

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

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

- Test the shear valve operation.
- Close the shear valve until the startup of the equipment. Cap the inlet pipe. This prevents dirt and other particles from entering the product line. It also prevents fuel spillage.

Figure 7-5: Shear Valve



Note: For model 9850GXTW1, refer to “Anchoring Pump/Dispenser to Island” on page 6-8. Follow manufacturer's installation instructions. Anchoring requirements noted within this section apply.

Pumping Unit Performance concerns with M09593A102 Pumping Units

In case of extreme inlet conditions or excessive power runs, pumping performance maybe too loud or power drawn too high. The following parts can be ordered to improve either or both:

- 60 Hz power - Motor Pulley R18900-30 and Belt R06711-38.
- 50 Hz power - Motor Pulley R18900-34 and Belt R06711-38.

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8 – Start-Up and Test for AtlasX Electronic Series

Installation Completion Checklist

Review the information below to verify proper installation of the AtlasX electronic series dispensing unit. If the installation does not meet the criteria listed, correct the problem before the start-up is performed.

To complete the installation, proceed as follows:

- 1 To avoid damage to any boards, ensure that the reset is complete and that fast flow, submersible starter drive, and slow and fast satellite return wires are not shorted to the conduit or chassis.
- 2 The unit must be properly secured to the island.
- 3 All plumbing must be complete and tight. All liquid-carrying lines must be checked for leaks.
- 4 When the DC pulser or LAN lines are used in the pump for connecting to Gasboy FMSs, the AC and DC wires must not share any conduits, J-boxes, or troughs.
- 5 All conduit work must be complete. All J-box covers must be secured. Conduits must not be sealed until the wiring is verified through proper operation.
- 6 The unit must be properly grounded.
- 7 Before testing begins, remove any water in the tank through a fill opening, using a suitable pump.

CAUTION

Do not use the Gasboy pump or remote dispenser and submersible pump to remove water. Serious damage may occur.

- 8 A sufficient volume of fuel must be present in the tank to ensure that the liquid level is above the bottom of the suction pipe (suction pumps) or is high enough to allow the submersible pump to operate efficiently (remote dispensers).
- 9 For wiring details, refer to *FE-371 Field Wiring Diagram AtlasX*.

Start-Up

After successfully verifying the installation against the completion checklist, the unit is ready for start-up.

To perform an orderly start-up of the AtlasX electronic series unit, proceed as follows:

- 1 Ensure that all command codes are set properly to various operating conditions.
- 2 Turn on circuit breakers for the CD module and brand panel lights. Ensure that both lights are lit.
- 3 Authorize the hose for side 1 through the FMS, if available.
- 4 Remove the nozzle for side 1 from its holder and turn on the pump handle. Ensure that the display goes through a proper reset sequence.
- 5 Dispense the fuel. Ensure that the high flow valve opens, if equipped. Check all plumbing for leaks at this time.
- 6 Turn the pump handle off. Open the nozzle. No fuel must be dispensed at this time.
- 7 Ensure that the correct quantity is recorded by the FMS, if available.
- 8 If applicable, repeat steps 3 through 7 for side 2.
- 9 Run the unit through all standard calibration procedures.
- 10 For M09593A102 pumping units, if noise/power is excessive, refer to [Pumping Unit Performance concerns with M09593A102 Pumping Units](#) on page 7-11.

9 – Start-Up for AtlasX Mechanical Series

Installation Completion Checklist

Review the information below to verify proper installation of the AtlasX mechanical series dispensing unit. If the installation does not meet the criteria listed, correct the problem before the start-up is performed.

To complete the installation, proceed as follows:

- 1 The unit must be properly secured to the island.
- 2 All plumbing must be complete and tight. All liquid-carrying lines must be checked for leaks.
- 3 When DC pulsers are used in the pump for connecting to Gasboy FMSs, AC and DC wires must not share any conduits, J-boxes, or troughs.
- 4 All conduit work must be complete. All J-box covers must be secured. Conduits must not be sealed until the wiring is verified through proper operation.
- 5 The unit must be properly grounded.
- 6 Before testing begins, remove any water in the tank through a fill opening, using a suitable pump. Do not use the Gasboy pump or remote dispenser and submersible pump to remove water. Serious damage may occur.
- 7 A sufficient volume of fuel must be present in the tank to ensure that the liquid level is above the bottom of the suction pipe (suction pumps) or is high enough to allow the submersible pump to operate efficiently (remote dispensers).

Start-Up

After successfully verifying the installation against the completion checklist, the unit is ready for start-up.

To perform an orderly start-up of the AtlasX mechanical series dispensing unit, proceed as follows:

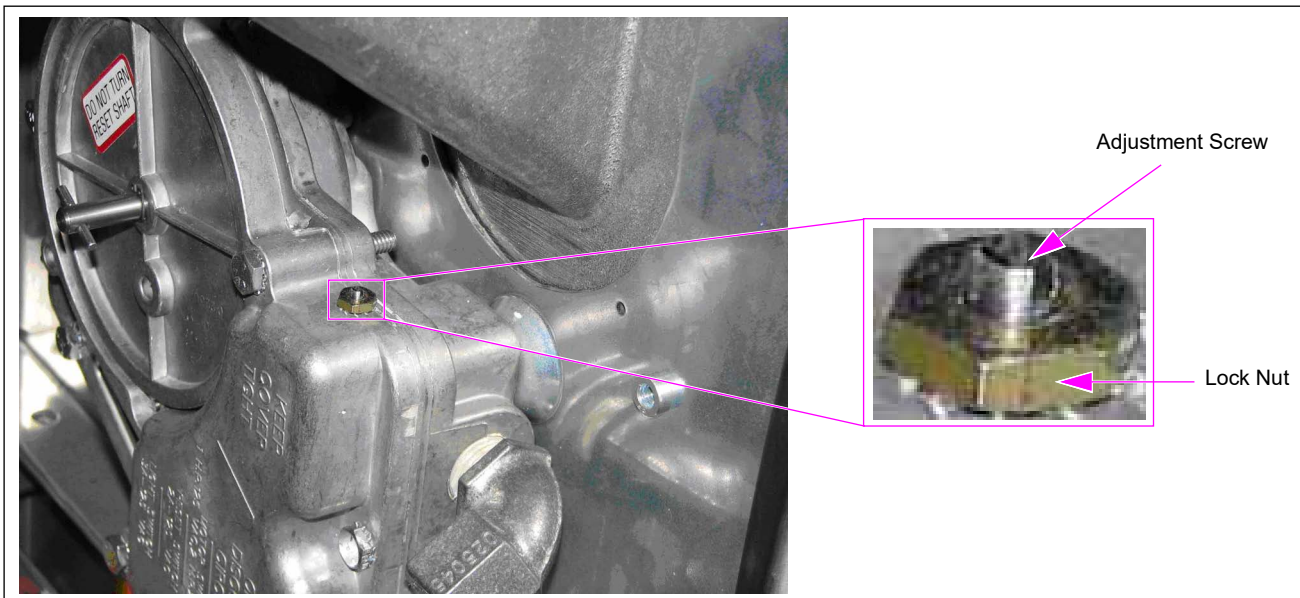
- 1 Turn on the circuit breaker(s) for various control lines to the unit.
- 2 Remove the nozzle for side 1 from its holder and turn on the pump handle. Ensure that the non-computer register goes through its reset sequence, which consists of resetting the total volume wheels to zero.
- 3 Dispense the fuel. If the unit contains a slow/fast flow valve, ensure that it opens. Check all plumbing for leaks at this time.
- 4 Turn off the pump handle and open the nozzle. No fuel must be dispensed.

Power Reset External Adjustment

If the pump or remote dispenser unit fails to reset or shut off properly, the reset motor must be adjusted. To adjust the reset motor, proceed as follows:

- 1 Loosen the lock nut on the adjusting screw and back the screw out until it stops.
- 2 Move the reset lever to the ON position.
- 3 Turn the adjustment screw to the right until the reset motor starts.
- 4 Advance the adjustment screw an additional 1/2 to 3/4 turn. Hold the screw in this position and tighten the lock nut.
- 5 Move the reset lever to the OFF position, and then back to the ON position to ensure that the reset motor operates properly. The reset coupling must make one revolution and stop.
- 6 For M09593A102 pumping units, if noise/power is excessive, refer to [Pumping Unit Performance concerns with M09593A102 Pumping Units](#) on page 7-11.
- 7 Check the pumping units.

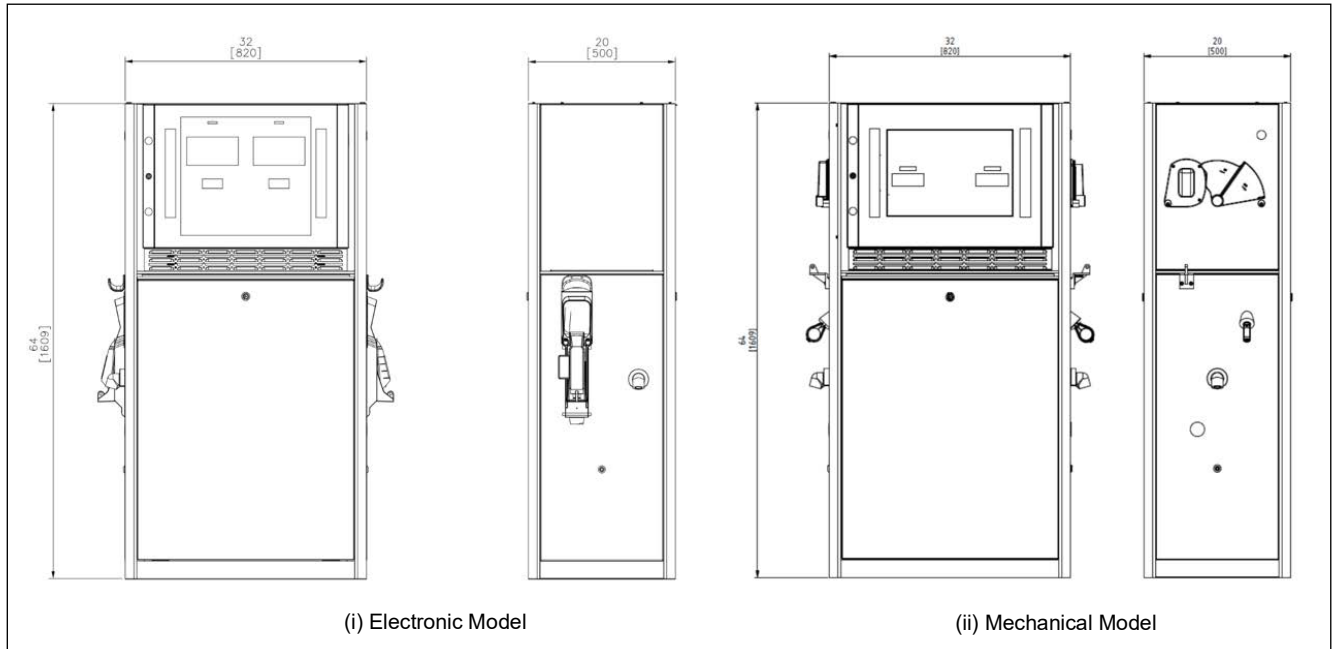
Figure 9-1: Power Reset for Pump or Remote Dispenser Unit



Appendix: AtlasX Diagrams

Elevation Diagrams

Figure A-1: AtlasX Elevation Electronic Dual Model



Note: Unless noted differently, all dimensions are in inches first and then in millimeters.

Foundation Diagrams

This section lists the details of the foundation diagrams:

Register	Flow Rating	Pump/Disp	Type	AtlasX Commercial Model	AtlasX Retail Model	Foundation Figure	
						Basic	with Satellite Piping (S)
Mech	HF	Disp	Single	9153GX		Figure A-2	Figure A-6
Mech	HF	Disp	TW1	9153GXTW1		Figure A-2	Figure A-9
Mech	HF	Disp	TW2	9153GXTW2		Figure A-3	Figure A-7
Mech	HF	Pump	Single	9153G		Figure A-4	N/A
Mech	HF	Pump	TW1	9153GTW1M		Figure A-8	N/A
Mech	HF	Pump	TW2	9153GTW2		Figure A-5	N/A
Elec	HF	Disp	Single	9853GX	8853GX	Figure A-2	Figure A-6
Elec	HF	Disp	TW1	9853GXTW1	8853GXTW1	Figure A-2	Figure A-9
Elec	HF	Disp	TW2	9853GXTW2	8853GXTW2	Figure A-3	Figure A-7
Elec	HF	Pump	Single	9853G	8853G	Figure A-4	N/A
Elec	HF	Pump	TW1	9853GTW1M	8853GTW1M	Figure A-8	N/A
Elec	HF	Pump	TW2	9853GTW2	8853GTW2	Figure A-5	N/A
Elec	UHF	Disp	Single	9850GX	N/A	Figure A-10	Figure A-10
Elec	UHF	Disp	TW1	9850GXTW1	N/A	Figure A-13	Figure A-13
Elec	UHF	Disp	TW2	9850GXTW2	N/A	Figure A-12	Figure A-12
Elec	UHF	Disp	TW3	9850GXTW3	N/A	Figure A-11	Figure A-11

Figure A-2: 1 Grade Single and TW1 Dispenser - HF

Model Numbers	
8853GX	8853GXTW1
9153GX	9153GXTW1
9853GX	9853GXTW1

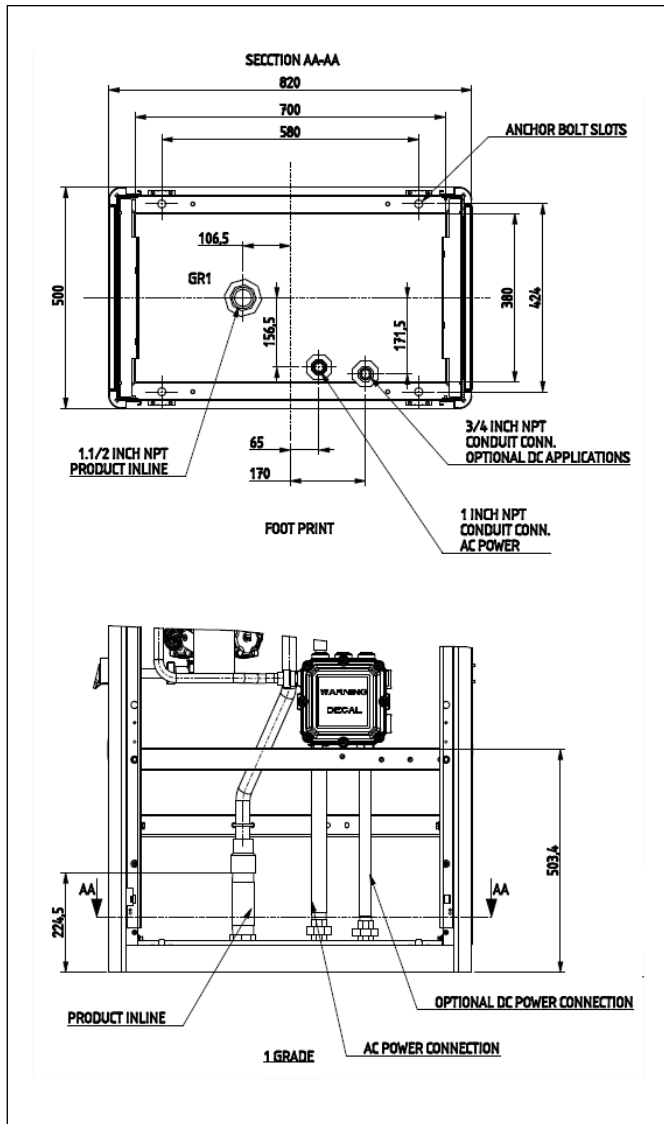


Figure A-3: 2 Grade TW2 Dispenser - HF

Model Numbers
8853GXTW2
9153GXTW2
9853GXTW2

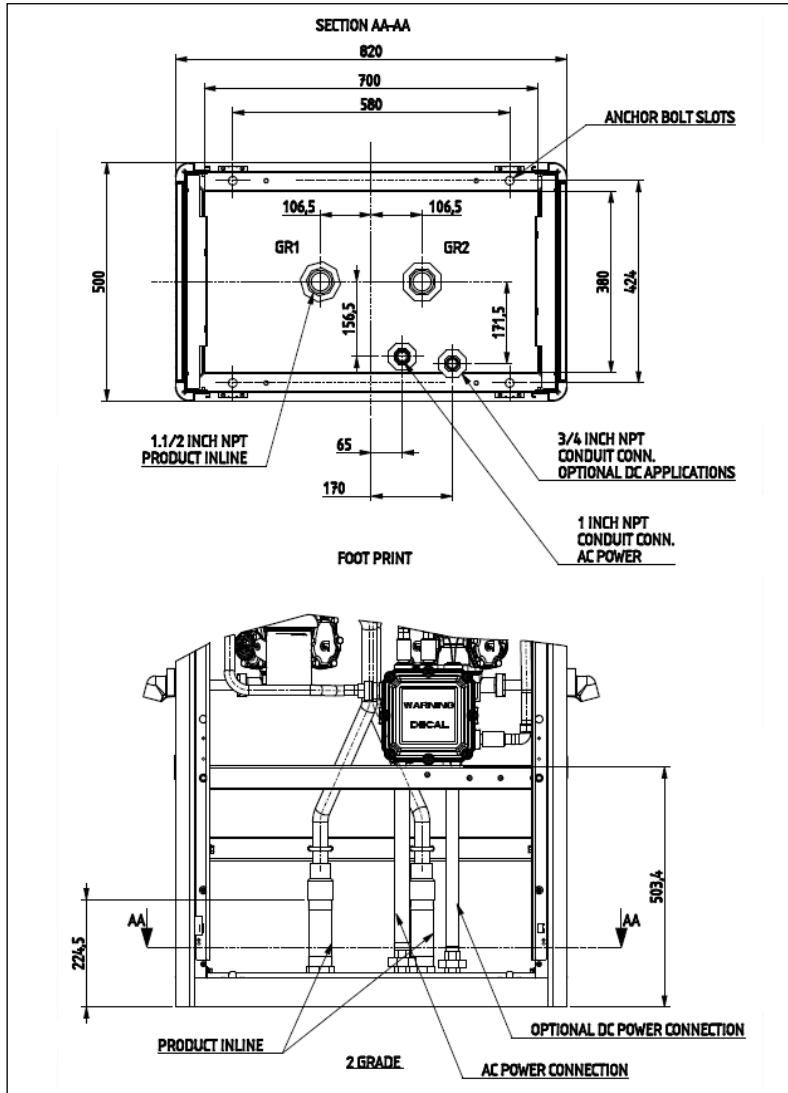


Figure A-4: 1 Grade Single Self-contained Pump - HF

Model Numbers
8853G
9153G
9853G

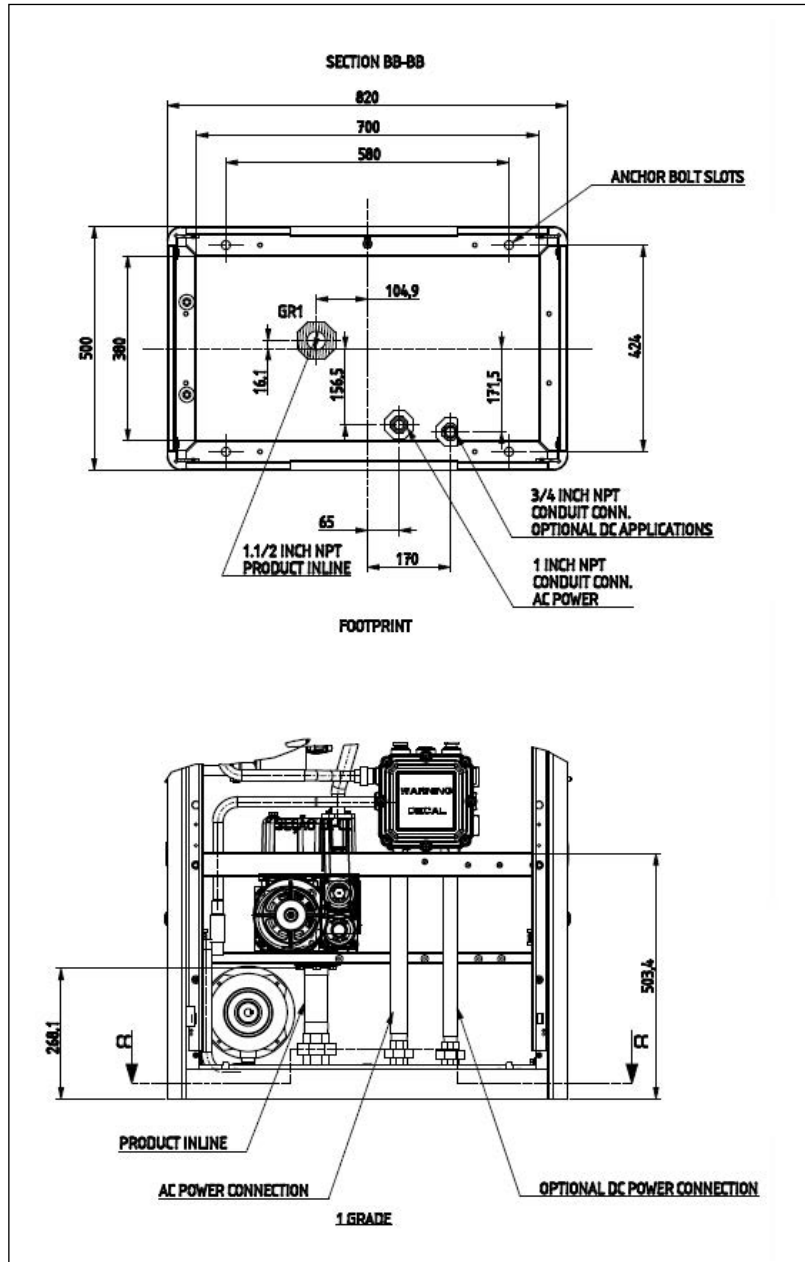


Figure A-5: 2 Grade TW2 Self-contained Pump - HF

Model Numbers
8853GTW2
9153GTW2
9853GTW2

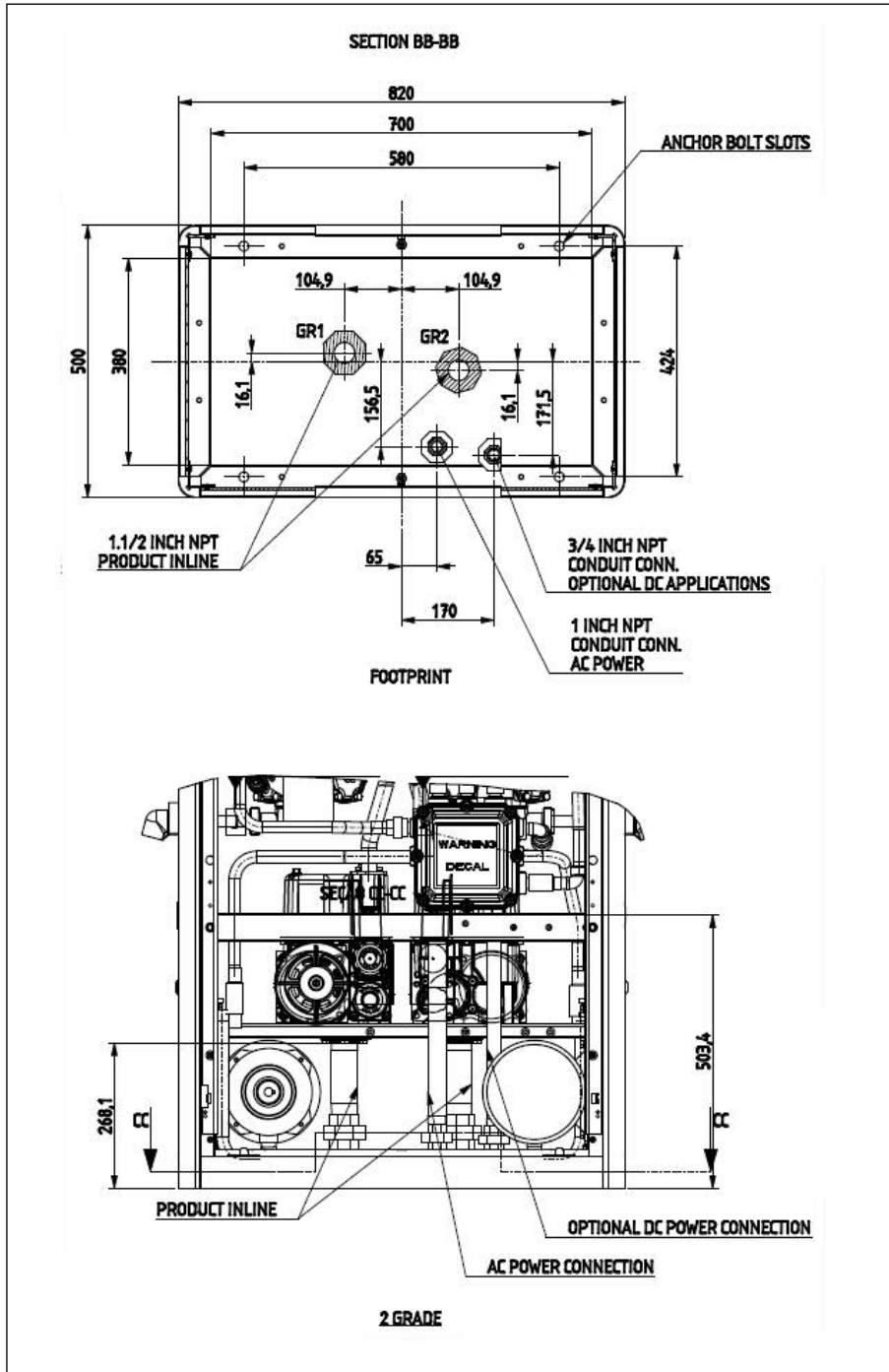


Figure A-6: 1 Grade Single Dispenser - HF with Satellite Outlet

Model Numbers

8853GX-S

9153GX-S

9853GX-S

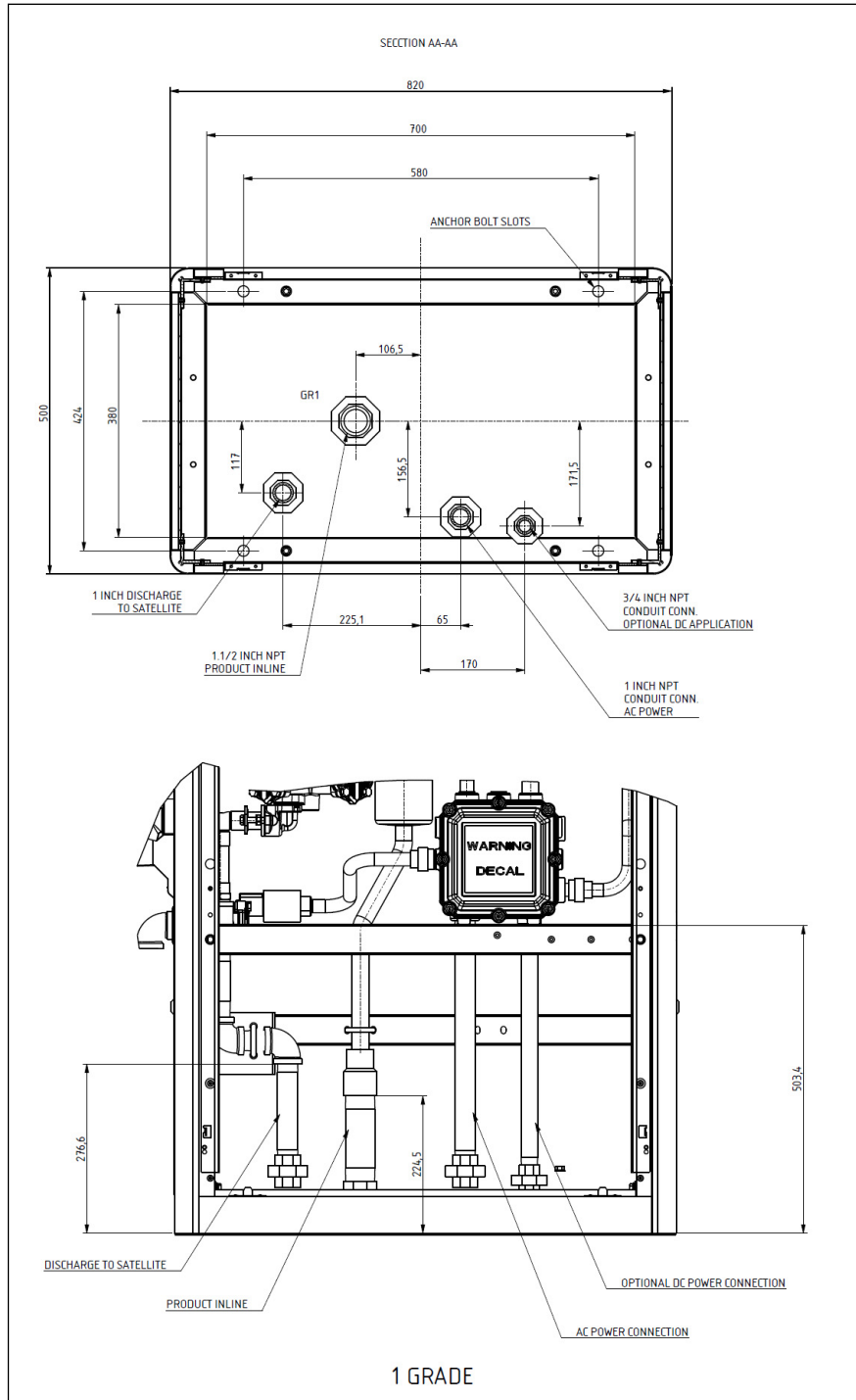


Figure A-7: 2 Grade TW2 Dispenser - HF with Satellite Outlet

Model Numbers

8853GXTW2-S

9153GXTW2-S

9853GXTW2-S

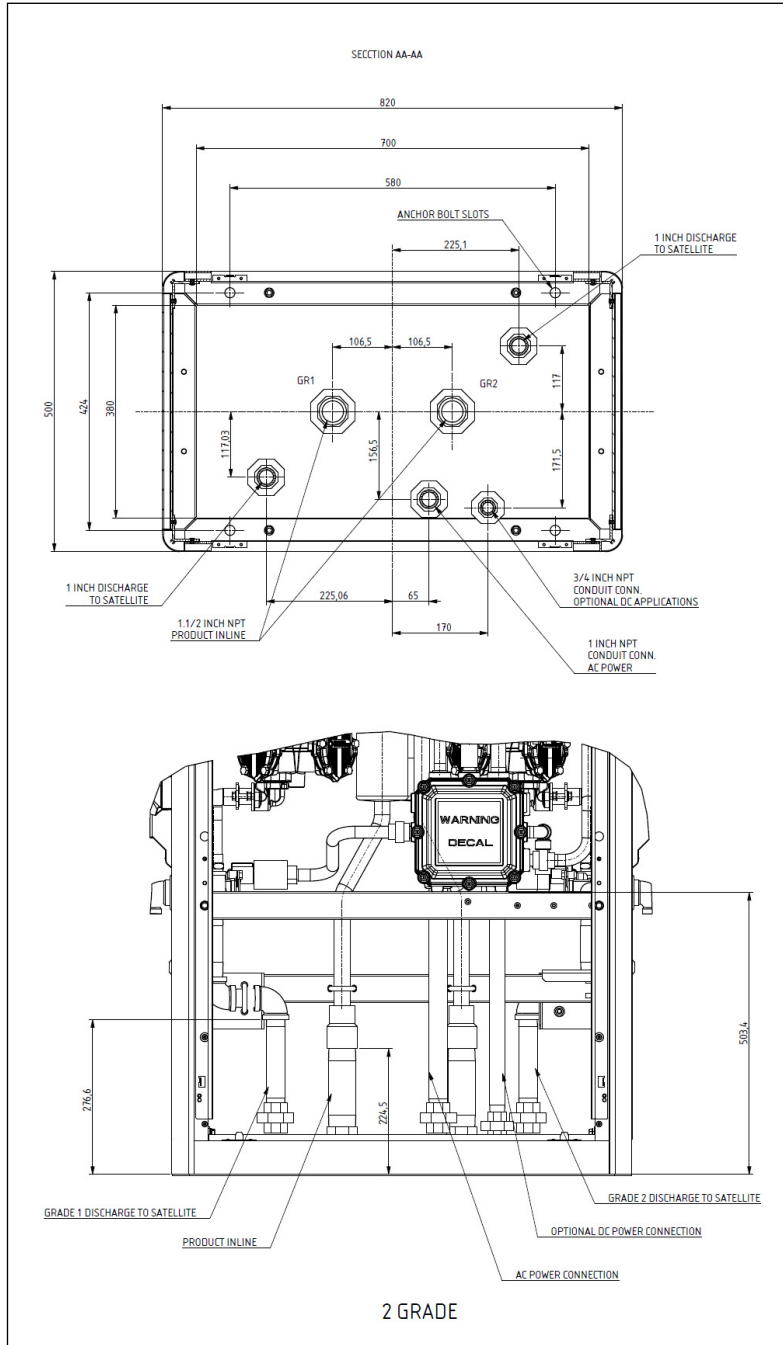


Figure A-8: Self-contained Pump - Twin Inlet Manifold (TW1-M) Model

Model Numbers
8853GTW1M
9153GTW1M
9853GTW1M

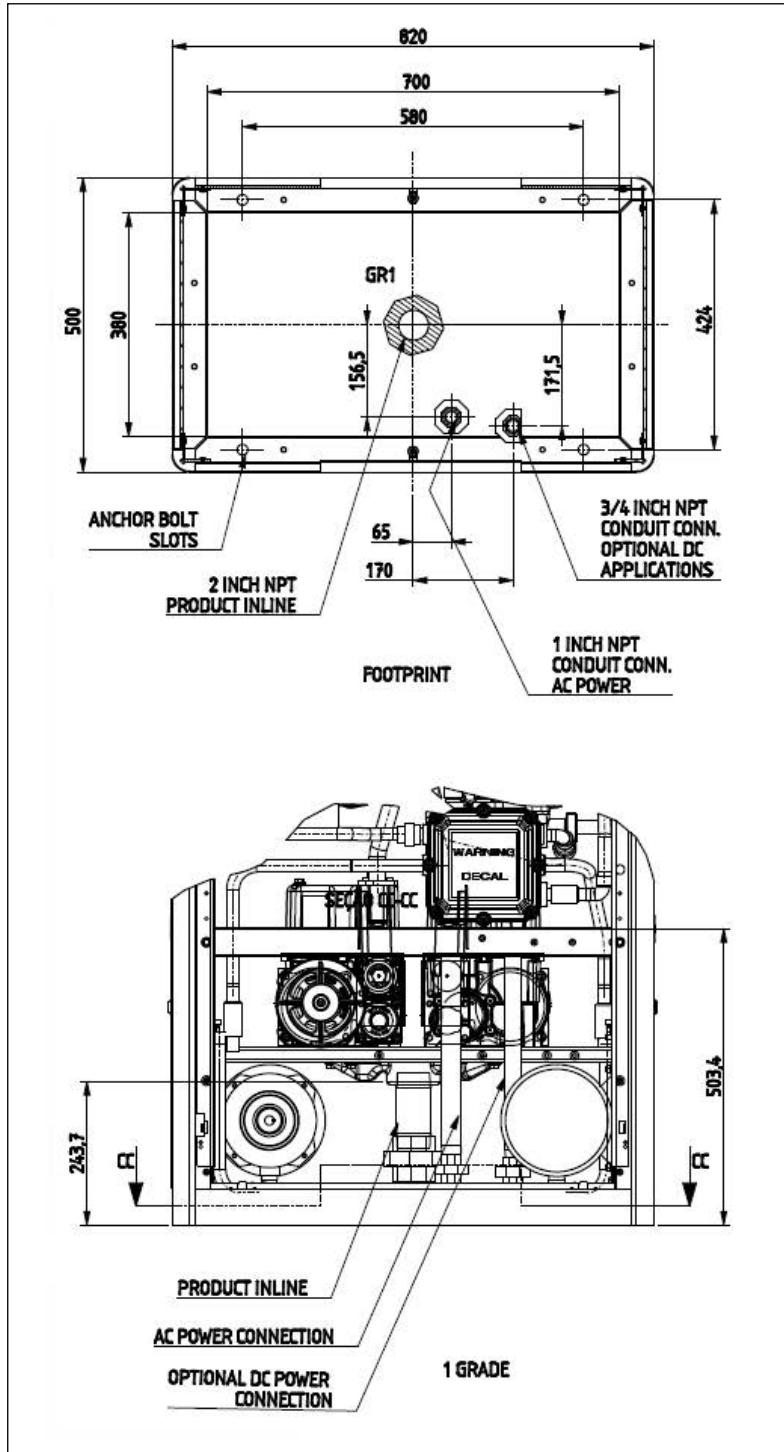


Figure A-9: Dispenser - HF with Satellite Outlet-TW1-Model

Model Numbers
8853GXTW1-S
9153GXTW1-S
9853GXTW1-S

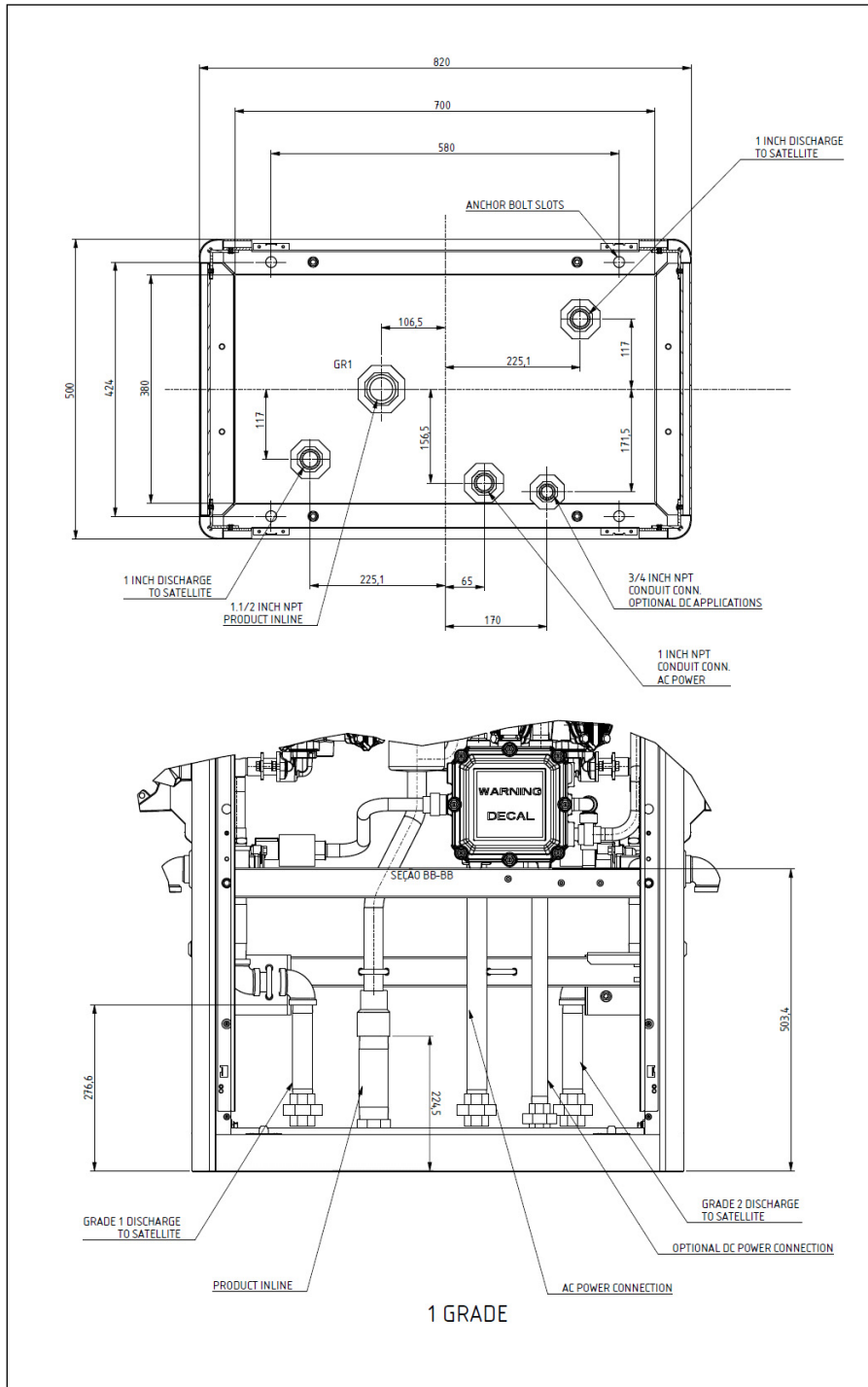


Figure A-10: Model 9850GX - UHF Dispenser Single

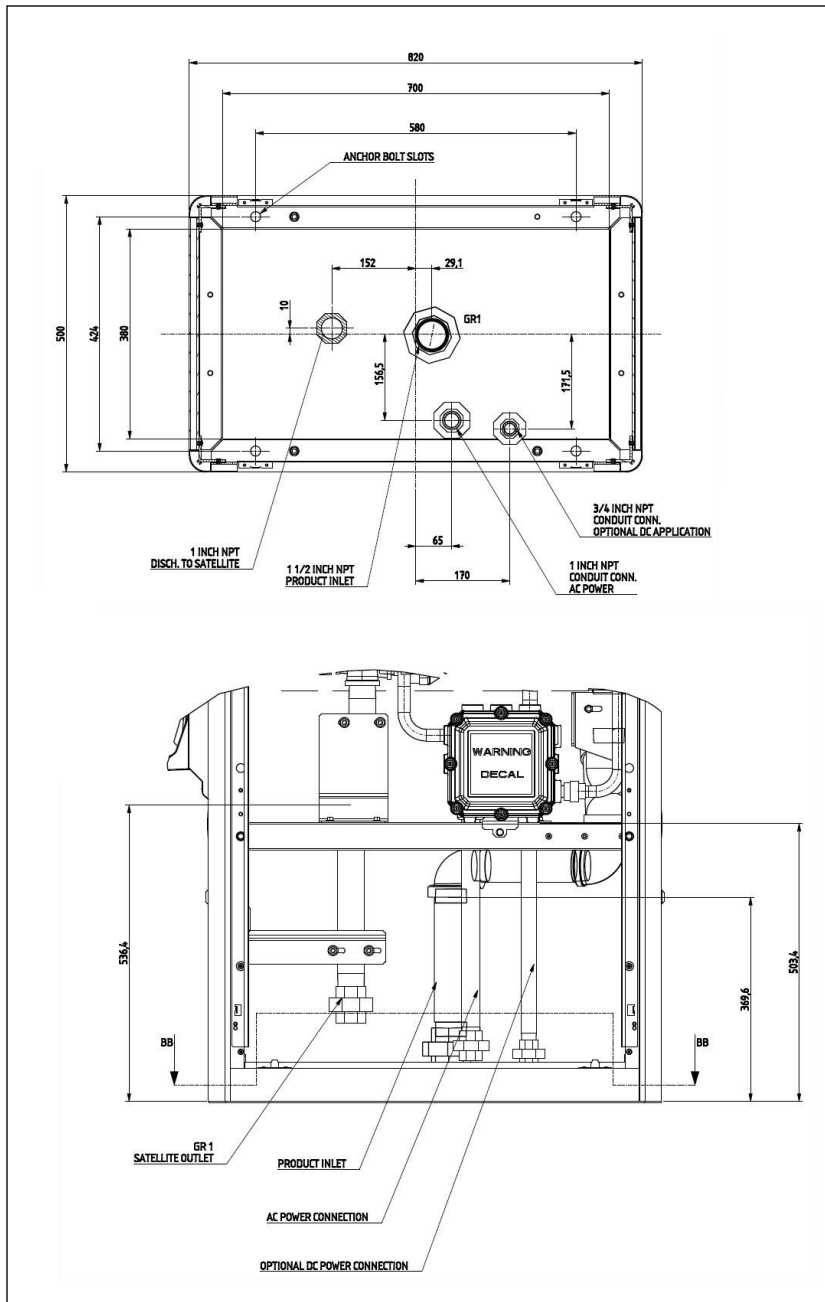


Figure A-11: Model 9850GXTW3 - UHF Dispenser Combo

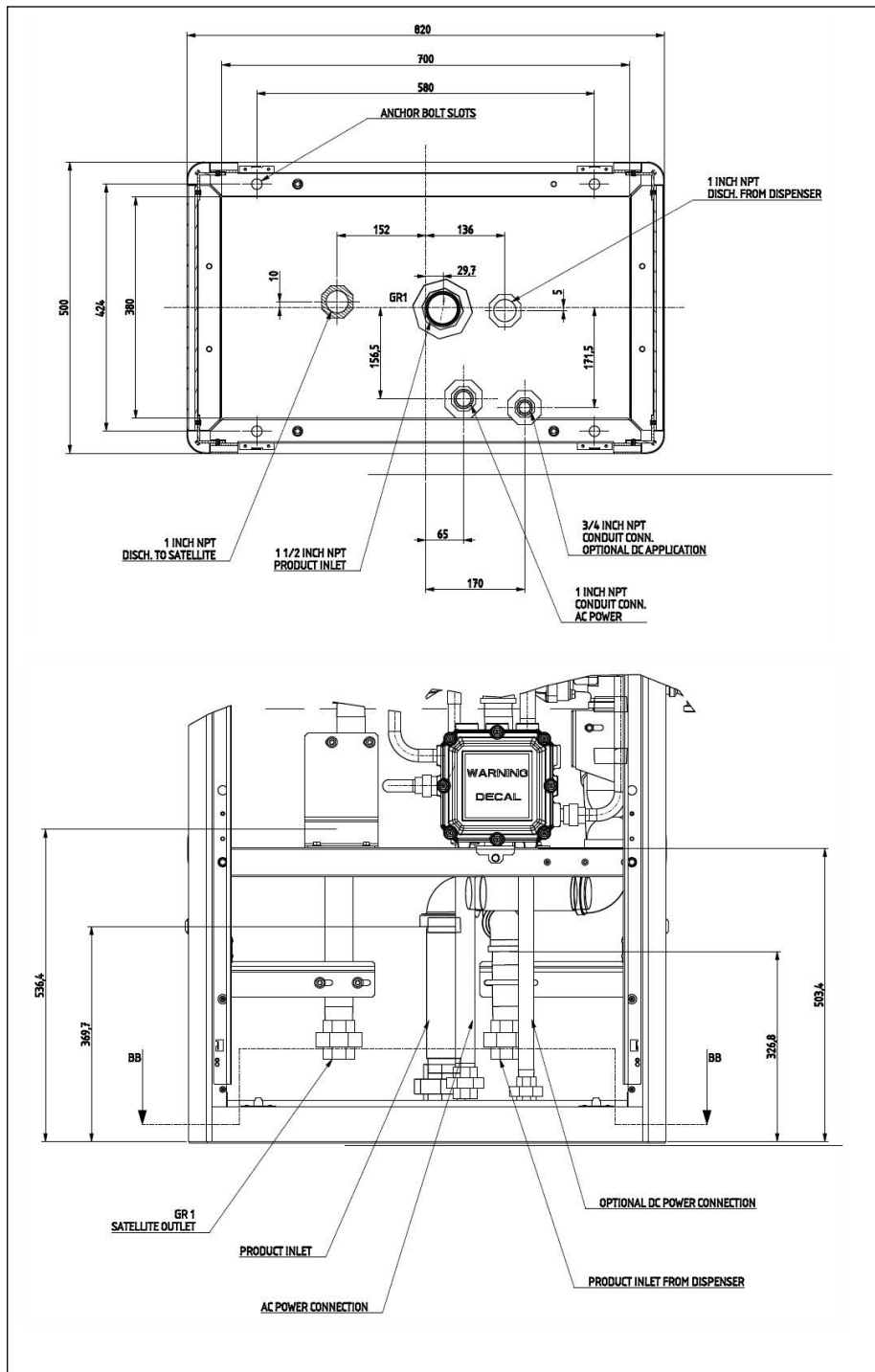


Figure A-12: Model 9850GXTW2 - UHF Dispenser (Dual)

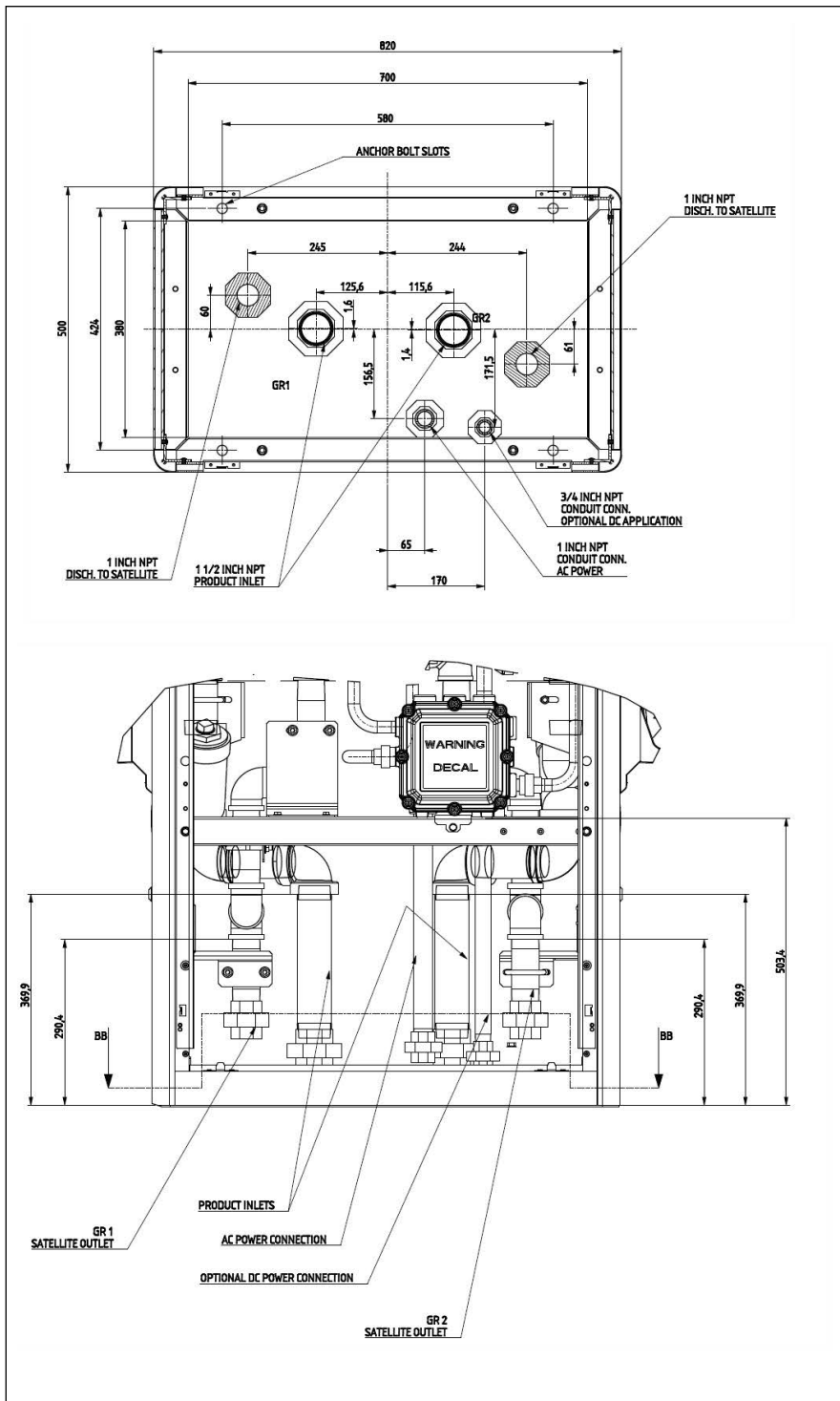
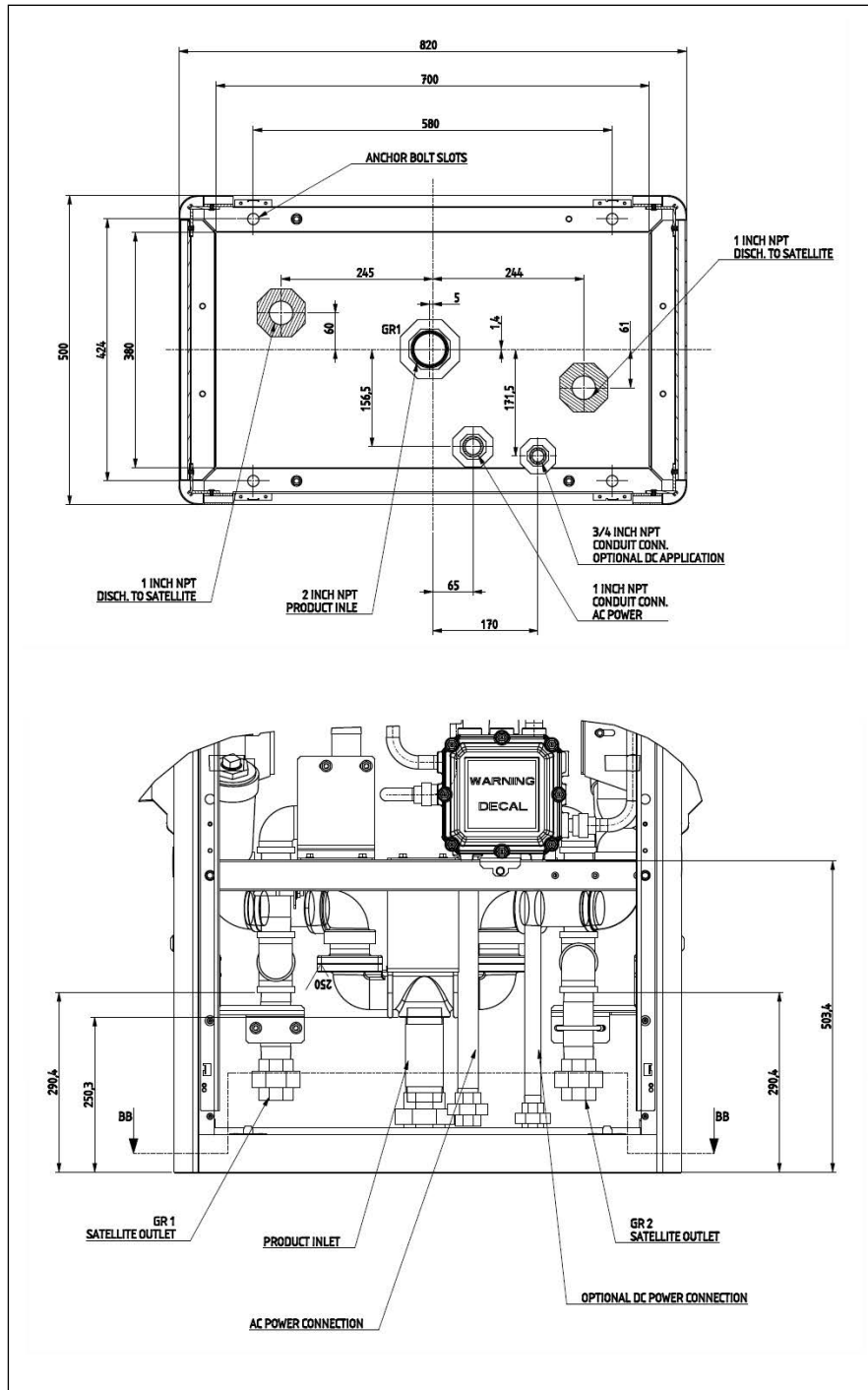


Figure A-13: Model 9850GXTW1 - UHF Dispenser (TWIN 1)



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