



Series 9820Q ASTRA

Installation/Operation Manual

MDE-4339
(formerly 035090)

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Approvals

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Underwriters Laboratories:		New York City:		California Air Resources Board (CARB):	
U.L. File#	Products listed with U.L.	NYFD of A #	Product	Executive Order #	Product
MH4314	All dispensers and self-contained pumping	4823	9100A, 9140A, 9152A, 9153A, 9800A, 9840A, 9850A, 9852A, 9853A, 9140	G-70-52-AM G-70-150-AE	Balance Vapor Recovery VaporVac
MH6418	Power operated Transfer Pump Models 25, 26, 27, 28, 72, 72S, 72SP, 72X, 73 and 18:	4997	9822A, 9823A		
MH7404	Hand operated Transfer Pump Models 123 Series, 1243 Series, 1520 and 1720 Series	5046 pending	9100Q, 9140Q, 9152Q, 9153Q 9800Q, 9840Q, 9852Q, 9853Q		
MH10581	Key control unit, Model GKE-B Series Card reader terminals, Models 1000, 1000I Site controller, Model 2000S CFN Series Data entry terminals, Model TPK-900 Serie Fuel Point Reader System				

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NCWM has issued the following Certificates of Compliance (COC):

COC#	Product	Model #	COC #	Product	Model #	COC #	Product	Model #
95-179A2	Dispenser	9100 Retail Series, 8700 Series, 9700 Series	91-019A2	Dispenser	9100 Commercial Series			
95-136A5	Dispenser	9800 Series	91-0573A3	Dispenser	1000 Series FMS 2000-CFN Series			

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5,257,720

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IMPORTANT WARNINGS AND SAFEGUARDS

Gasoline and petroleum products are flammable. To avoid injury or death to persons or damage to equipment or property, follow these listed warnings and other warnings and precautions outlined in this manual when installing, using, or working around this equipment. Check with GASBOY Technical Services for compatibility of liquids with pump materials.

TURN OFF AND LOCK OUT ALL POWER TO PUMP BEFORE PERFORMING SERVICE, MAINTENANCE OR IN THE EVENT OF A FUEL SPILL.

All products must be installed by a qualified installer and used in conformance with all building, fire, and environmental codes and other safety requirements applicable to its installation and use, including, but not limited to, NFPA 30, NFPA 30A, NFPA 395 & NFPA 70. A qualified installer is familiar with fuel systems installations under the above stated building, fire, and environmental codes and other safety requirements for the particular type of installation.

This product is only part of a fuel dispensing system and additional equipment and accessories, such as, but not limited to, breakaway connectors, shear valves, pressure regulators, flow limiters, and other safety devices may be necessary to meet the applicable codes.

For maximum safety, we recommend that all employees be trained as to the location and procedure for turning off power to the entire system. Instructions regarding proper operation of the equipment along with the appropriate safety warnings should be posted in plain view at the fuel island.

Before performing service or maintenance (including changing of fuel filters or strainers) or in the event of a fuel spill, turn off and lock out all power to the system. In battery-powered pumps, disconnect power source. In submersible pump applications, turn off and lock out power at the master panel and close any impact valves to the submersible pump and any other dispensers which use that submersible pump. AC power can feed back into a shut-off dispenser when dispensers share a common submersible pump or starter relay. Also block islands so no vehicles can pull up to the dispenser when the dispenser is being worked on.

DO NOT use Teflon tape for any pipe threads in the product.

DO NOT use consumer pumps for pumping fuel or additives into aircraft.

DO NOT use commercial pumps for direct fueling of aircraft without filters and separators necessary to ensure product purity.

DO NOT use where sanitary design is required (for food products for human consumption) or with water-based liquids.

DO NOT smoke near the pump or when using the pump.

DO NOT use near open flame or electrical equipment which may ignite fumes.

DO NOT permit the dispensing of gasoline or other petroleum products into a vehicle with its motor running.

DO NOT permit the dispensing of gasoline or other petroleum products into unapproved containers or into approved containers in or on vehicles including trucks. All containers must be filled on the ground to prevent static discharge. Always use Approved and Listed hoses and nozzles with electric pumps and dispensers.

DO NOT block open the nozzle in any manner. Nozzles shall conform to UL and NFPA code requirements for attended or unattended service.

DO ensure that the pump is equipped with proper filters based on the product being dispensed and its intended use.

DO wear safety goggles and protective clothes when dispensing any liquid which may be potentially harmful or hazardous.

DO keep all parts of body and loose clothing clear of belts, pulleys, and other exposed moving parts at all times.

DO require washing and changing of clothes if fuel is spilled on a person or his/her clothing. Keep away from open flames, sparks, or people smoking.

DO provide a receptacle for catching product from pump/meter when servicing.

DO clean up product spills on the driveway. Turn off and lock out all power prior to cleanup.

DO insure pump is properly grounded.

DO insure hose is compatible with fluid being dispensed.

DO inspect hose, nozzle, and pump on a regular basis for wear, damage, or other conditions which may create a safety or environmental hazard.

DO make sure all pipe threads are properly cut and the inside reamed to remove burrs. Use UL classified gasoline-resisting compound on all joints of gasoline handling piping. Sealing compound must also be resistant to Gasohol (Ethanol and Methanol). Use gasoline-resistant pipe compound on male threads only; pipe compound used on female threads can be squeezed into the supply line where it can enter the product stream and become lodged in the pump or meter.

DO ensure that junction box covers are in place and properly tightened. Mating surfaces between the box and cover must be free of dirt, nicks, and scratches. All unused entries into the junction box must be properly plugged

FCC Information

The US Federal Communications Commission (FCC) requires specific information be supplied to the users of any equipment which may emit radio frequency energy. Please read the following information.

FCC Part 15

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 device is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed 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.

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Warranty

1. Introduction

Purpose

The GASBOY ASTRA Series 9820Q *Electronic Commercial Pumps Installation/Operation Manual* is provided to assist the installer in installing and operating the unit. This manual should be supplied to the electrician prior to the installation of conduit and wiring to ensure the unit is installed properly. Faulty installations are the major cause of unit malfunctions. The unit **must** be installed and operated as described in this manual to ensure the reliability and proper operation of the Series 9820Q unit. In addition to installation information, this manual contains warnings, safeguards and procedures on the use and care of the Series 9820Q pumps. Be sure to leave this manual with the pump owner after the installation is complete.

General Description

The GASBOY Series 9820Q ASTRA (aboveground storage tank remote access) pump units are UL-listed and are available in two models. Model 9822Q is available in standard speed (up to 15 GPM/56 LPM) with an intermittent-duty motor. Model 9823Q is available in high speed (up to 22 GPM/83LPM) with a continuous-duty motor. The delivery rate varies depending upon installation conditions and added accessories. Both models of the 9820Q offer electronic registration of the quantity dispensed.

NOTE: NFPA regulations do not allow tank-mounted pumps to be used for the resale of fuel.

The Series 9820Q consists of two metal cabinet assemblies. One assembly is mounted on top of the tank and contains the pumping unit, meter, electronic pulser, and all hydraulics. The hose and nozzle are connected to this assembly. The second assembly is mounted at a height to permit easy access by a user. It contains the electronic register, controls, display and nozzle boot.

The following lists detail the standard and optional features for the Series 9820Q.

Standard Features

- One-inch high, 6-digit, backlit LCD display
- 1000:1 dual-phase, error-checking pulser (gallons); 250:1 dual-phase, error-checking pulser (liters)
- AC authorization line for control of the unit
- Reset complete (switch detect) output which allows monitoring of the unit's operation when it is connected to an automated fueling system
- Resettable electronic totalizer
- Discharge elbow
- Four piston, positive displacement meter.
- Belt-driven, positive-displacement rotary vane pump with an 80 mesh (300 micron) strainer and integral air separation.
- The standard pumping cabinet finish is white. The electronic register cabinet is black with a blue graphics panel.

Optional Features

- Pulser output drive line (open collector), capable of driving 1, 10, 100, 250, 500, or 1000 pulses per unit (gallons) or 1, 10, 100, or 250 pulses per unit (liters)
- RS-485 communication for direct connect to Gasboy CFN equipment
- Battery backup for display of last transaction and capture of remnant pulse count in the event of a power failure
- Mechanical totalizer
- Dual stage solenoid valve
- A working voltage of 115 VAC (115/230 for motor) 60 HZ for domestic use, 230 VAC 50 HZ/60 HZ for international use
- Other options include Listed automatic nozzles, special lengths of Listed hose assembly, Listed dual swivels, UL-recognized filters, vapor recovery, and vapor recovery ready.

2. Installation

Installation Precautions

All installations must conform with all building/fire codes, all Federal, State, and Local codes, National Electrical Code, (NFPA 70), NFPA 30, and Automotive and Marine Service Station Code (NFPA 30A) codes and regulations. Canadian users must also comply with the Canadian Electrical Code.

Plan your installation carefully. A pump cannot be expected to work satisfactorily unless the installation is correct. Dispensing troubles, which seem to be pump-related, are frequently traced to faulty installation. Review the following list of installation **DO's** and **DON'T's** to avoid potential problems:

1. **DO** read the **WARNINGS** page at the front of this manual, preceding the Table of Contents. It contains important information regarding the safe use of your dispensing equipment.
2. **DO** install an emergency power cutoff. In addition to circuit breaker requirements of NFPA 70 and NFPA 30A, a single control which simultaneously removes AC power from all site dispensing equipment is recommended. This control must be readily accessible, clearly labeled, and in accordance with all local codes.
In a fuel management system application, the EMERGENCY STOP and STOP keys on the console and/or the optional EMERGENCY STOP button on the Island Card Reader do not remove AC power from equipment and under certain conditions, will not stop product flow. In order to provide the highest level of safety to you, your employees, and customers, we recommend that all employees be trained as to the location and procedure for turning off power to the entire system.
3. **DO** have the pump installed by a competent installer/electrician.
4. **DO** install breakaway coupling on discharge hose. If using a high hose retriever, install breakaway approximately 12" downstream of hose clamp on nozzle side of clamp.
5. **DO NOT** experiment with a pump if you are not sure the installation is correct.
6. **DO NOT** overload sub- or main breaker panels.
7. **DO NOT** use power line wiring of inadequate capacity. (Use gauge specified by the wiring diagram or wire chart provided in Section 4).
8. **DO NOT** use a circuit breaker of improper size. (See Section 4).
9. **DO NOT** use the GASBOY fuel dispensing equipment to remove water ballast from the storage tank.
10. **DO NOT** use gaskets on covers of explosion-proof type boxes. The sealing compound found around wires at various locations within conduit is a requirement of the National Electrical Code and should not be disturbed. Ensure that the mating surfaces between the junction box and cover are free of dirt, debris, nicks and scratches. Tighten junction box covers before replacing panels.
11. **DO NOT** use knock-out boxes or flexible conduit for installing this unit. All power wires should be run in threaded, rigid, metal conduit. All threaded connections must be drawn up tight. All but one opening in the power junction box are provided with plugs at the factory. At completion of the installation, it is the installer's responsibility to ensure that any unused openings are plugged.

Vent Line

The vent line for standard units is vented to the atmosphere. Whenever possible, it is recommended that the line be returned to the tank. A hole is provided above the normal vent opening to allow this line to exit the pumping unit and return to the tank.

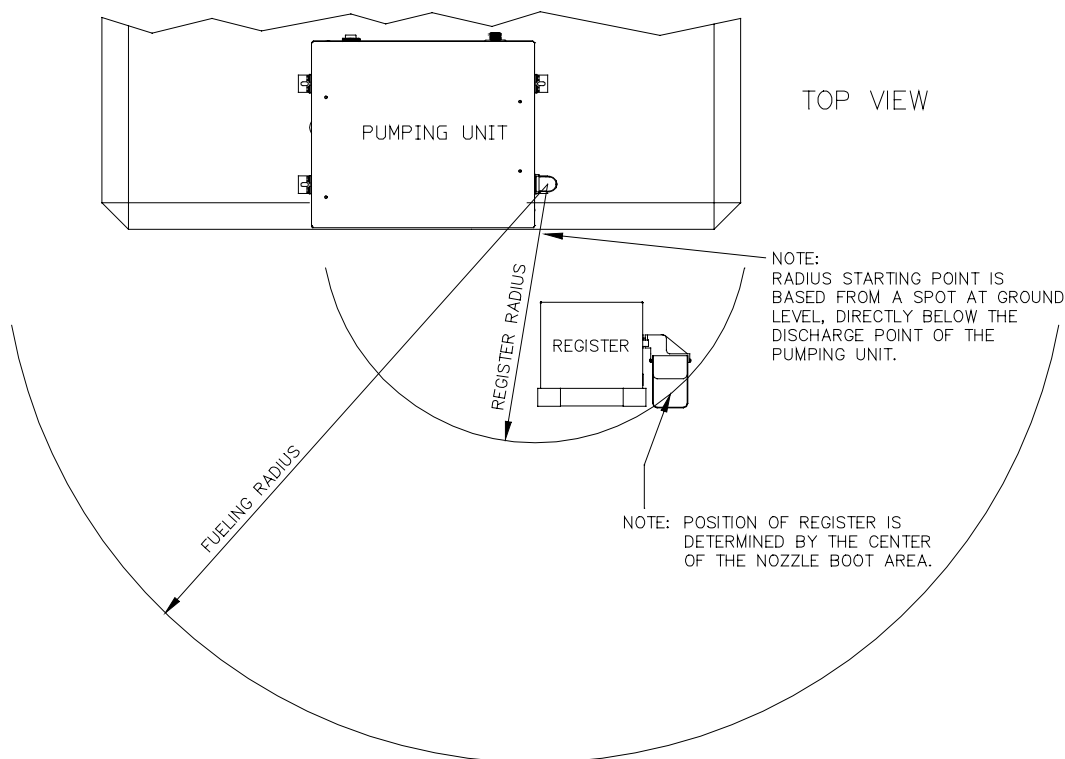
Vapor Recovery Option

This dispenser can be supplied with components necessary to provide vapor recovery. If the dispenser is equipped for vapor recovery, a splitter is located in the pump housing. A 3/4" discharge line will exit from the rear of the pump housing to return vapor/fluid to the tank. No changes are required to the nozzle hook or boot assembly when using vapor recovery nozzles. Please note that the vapor recovery nozzles approved for use are the "short spout" type. The following nozzles and hose are approved for use with vapor recovery systems:

Nozzles:	Emco Wheaton	Model A4015
	Husky Corp.	Model 5010
	OPW	Model 211V
Hose:	UL-Listed Hose Assembly	

Hose Length Estimator

Use the chart on the next page to estimate the length of hose needed for your 9820Q application. The correct length will prevent the hose from touching the ground when the nozzle is placed into the nozzle boot/hook arrangement of the register. This chart assumes that the 9820Q register is mounted on the standard pedestal and that the bottom of the pedestal is mounted flush with the bottom of the tank. The illustration below provides a visual reference for the chart.



HEIGHT (IN/CM)	HOSE LENGTH (FT/CM)	REGISTER MIN. RADIUS (FT/CM)	FUELING RADIUS (FT/CM)	HEIGHT (IN/CM)	HOSE LENGTH (FT/CM)	REGISTER MIN. RADIUS (FT/CM)	FUELING RADIUS (FT/CM)
60"–65" 152–165cm	8'/244cm	6"/15cm	8'/244cm	96"–101" 244–257cm	11'/335cm	6"/15cm	11'/335cm
	9'/274cm	4'/122cm	9'/274cm		12'/366cm	3'6"/107cm	11'6"/351cm
	10'/305cm	6'/183cm	10'/305cm		13'/396cm	5'6"/168cm	12'/366cm
	11'/335cm	7'/213cm	11'/335cm		14'/427cm	7'6"/203cm	13'/396cm
	12'/366cm	8'/244cm	12'/366cm		15'/457cm	9'/274cm	14'/427cm
66"–71" 168–180cm	8'/244cm	6"/15cm	8'/244cm	102"–107" 260–272cm	11'/335cm	6"/15cm	10'6"/320cm
	9'/274cm	3'/91cm	9'6"/290cm		12'/366cm	2'6"/76cm	11'/335cm
	10'/305cm	5'/152cm	11'/335cm		13'/396cm	5'/152cm	11'6"/351cm
	11'/335cm	6'/183cm	12'/366cm		14'/427cm	7'/213cm	12'6"/381cm
	12'/366cm	8'/244cm	13'/396cm		15'/457cm	8'6"/259cm	13'6"/411cm
72"–77" 183–196cm	9'/274cm	6"/15cm	9'6"/290cm	108"–113" 274–287cm	12'/366cm	6"/15cm	11'/335cm
	10'/305cm	3'6"/107cm	10'6"/320cm		13'/396cm	3'6"/107cm	12'/366cm
	11'/335cm	5'6"/168cm	11'6"/351cm		14'/427cm	6'/183cm	13'/396cm
	12'/366cm	7'/213cm	12'6"/381cm		15'/457cm	8'/244cm	14'/427cm
	13'/396cm	8'6"/259cm	13'6"/411cm		16'/488cm	10'/305cm	15'/457cm
78"–83" 198–211cm	9'/274cm	6"/15cm	9'/274cm	114"–119" 290–302cm	12'/366cm	6"/15cm	11'/335cm
	10'/305cm	2'6"/76cm	10'/305cm		13'/396cm	2'6"/76cm	12'/366cm
	11'/335cm	4'6"/137cm	11'/335cm		14'/427cm	4'6"/137cm	13'/396cm
	12'/366cm	6'6"/198cm	12'6"/381cm		15'/457cm	7'/213cm	14'/427cm
	13'/396cm	8'/244cm	13'6"/411cm		16'/488cm	9'/274cm	15'/457cm
84"–89" 213–226cm	10'/305cm	6"/15cm	9'6"/290cm	120"–125" 305–318cm	13'/396cm	6"/15cm	11'6"/351cm
	11'/335cm	3'6"/107cm	10'6"/320cm		14'/427cm	2'6"/76cm	12'6"/381cm
	12'/366cm	5'6"/168cm	11'6"/351cm		15'/457cm	4'6"/137cm	13'6"/411cm
	13'/396cm	7'/213cm	12'6"/381cm		16'/488cm	7'/213cm	14'6"/442cm
	14'/427cm	8'6"/259cm	13'6"/411cm		17'/518cm	9'/274cm	15'6"/472cm
90"–95" 229–241cm	11'/335cm	6"/15cm	10'6"/320cm				
	12'/366cm	4'6"/137cm	11'6"/351cm				
	13'/396cm	6'6"/198cm	12'6"/381cm				
	14'/427cm	8'/244cm	13'6"/411cm				
	15'/457cm	9'6"/290cm	14'6"/442cm				

Key for Chart Headings

Height

Measurement from the ground to the hose connection assuming the pumping unit is mounted on top of the tank with the feet provided.

Tank height + 6" , standard units; tank height + 12" for vapor recovery units.

Hose Length

Length of hose less nozzles and fittings.

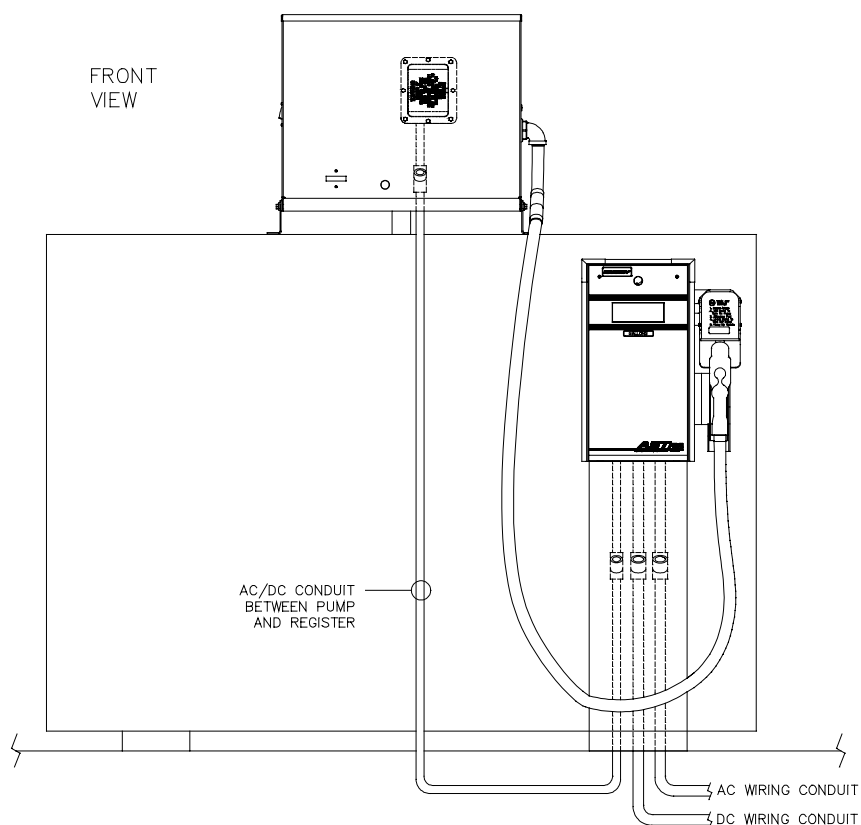
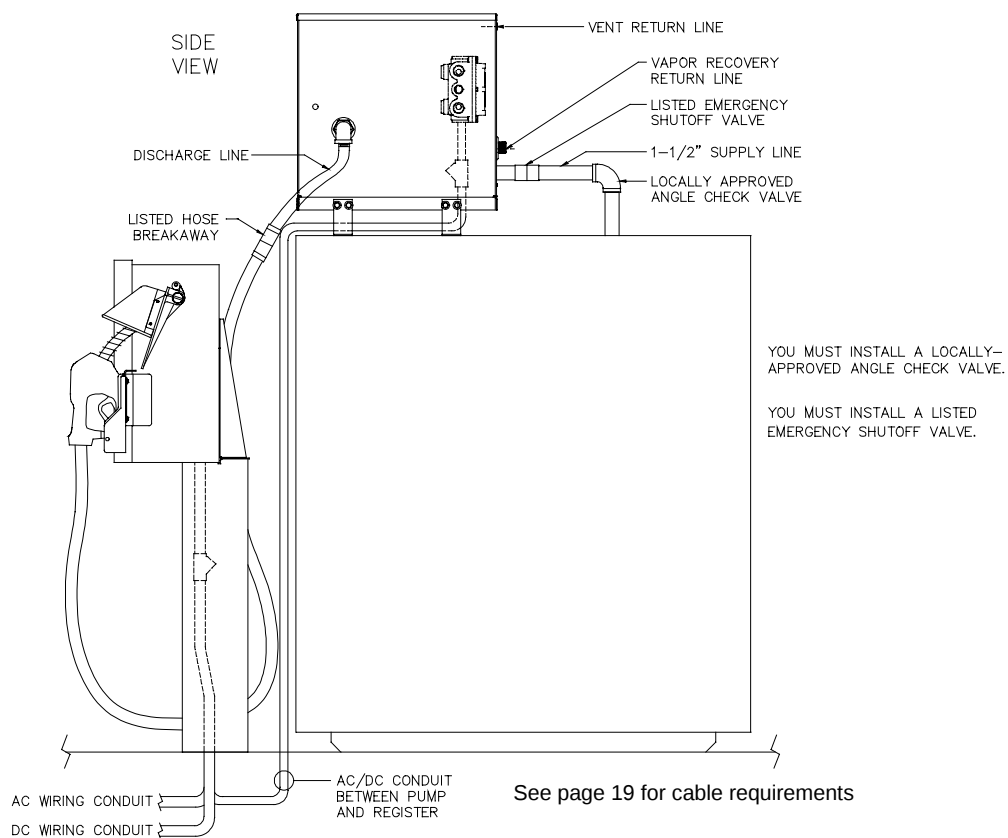
Register Minimum Radius

Indicates the closest the register assembly can be to the specified starting point; any closer than this distance may allow hose to touch the ground when unit is not in use. This radius is measured starting from a point directly below pumping unit discharge to the center of the nozzle boot/hook of the register assembly.

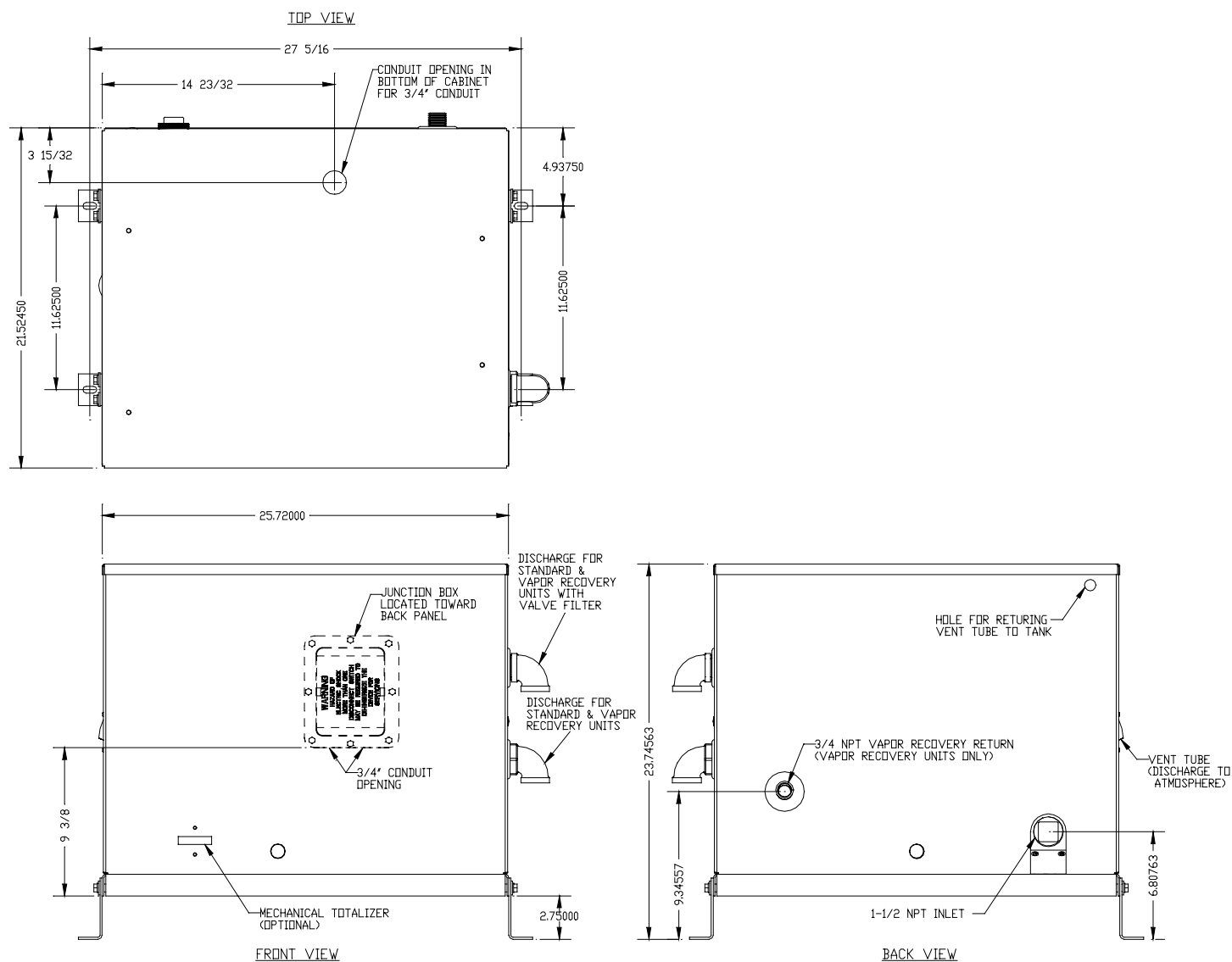
Fueling Radius

Indicates the approximate fueling radius. Measured from a point directly below pumping unit discharge to the nozzle.

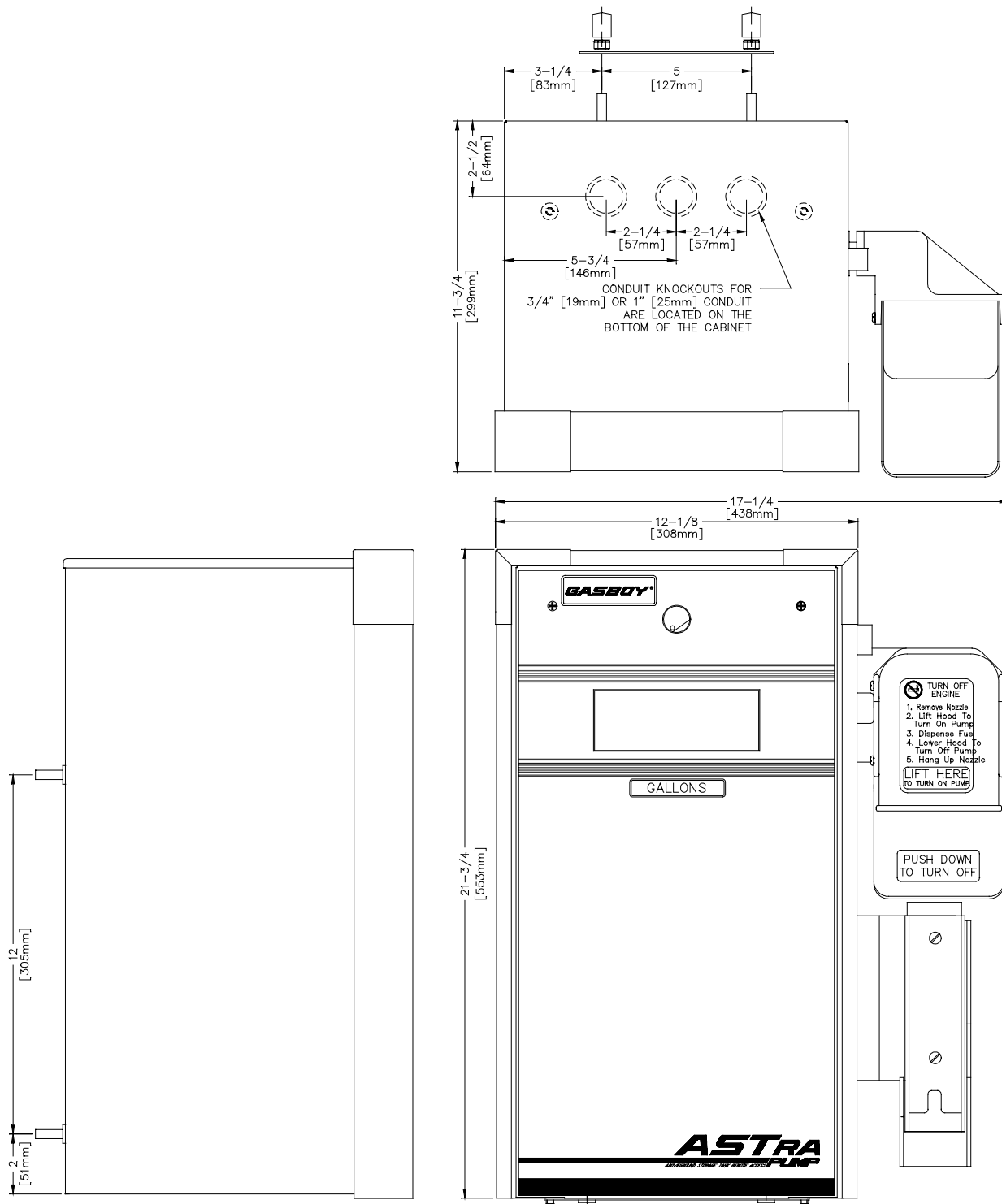
Typical Installation



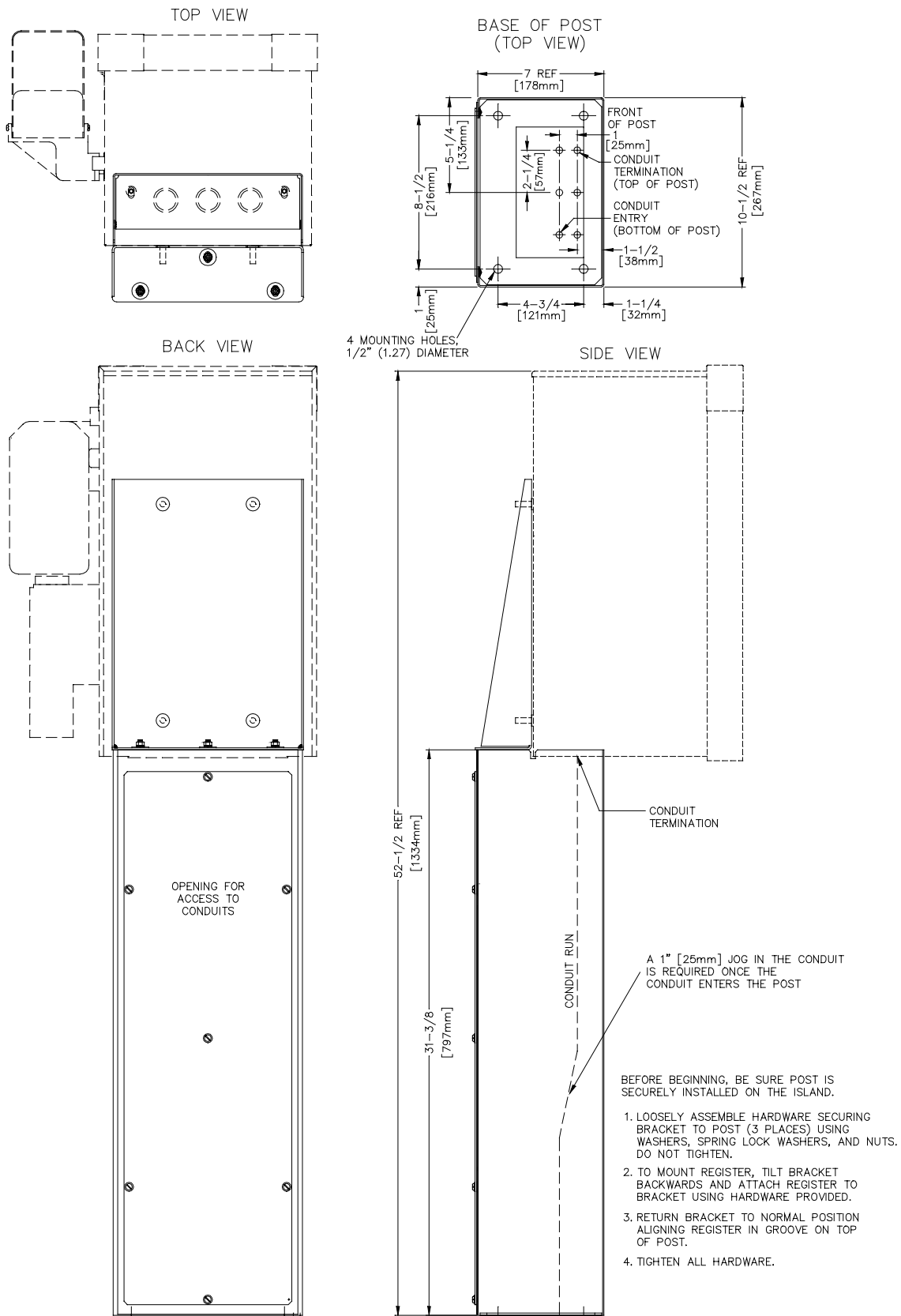
011931 Base Layout, Models: 9822Q, 9823Q **(View 1 - Pumping Unit Assembly)**



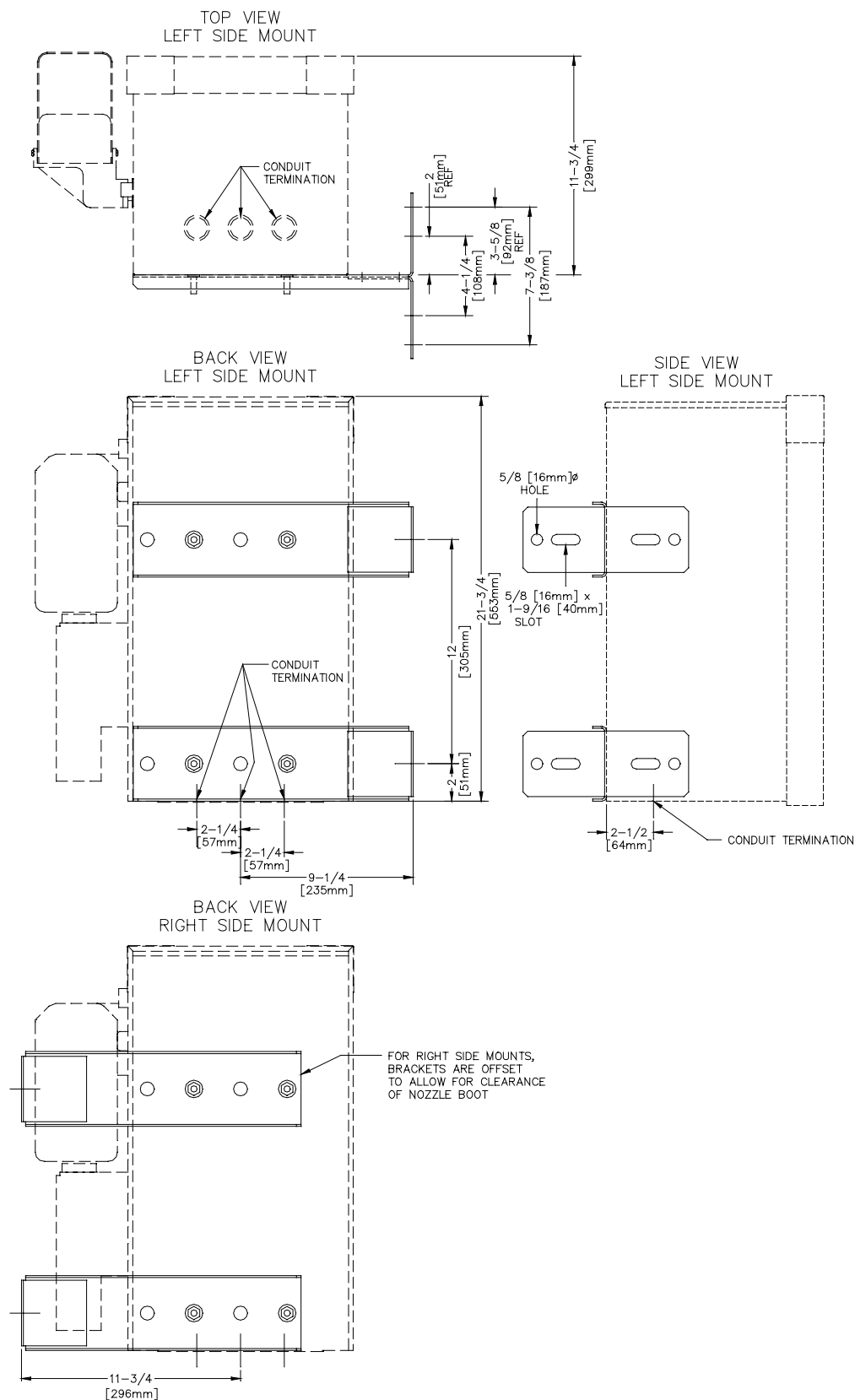
011930 Base Layout, Models: 9822Q, 9823Q (View 2 - Register Assembly)



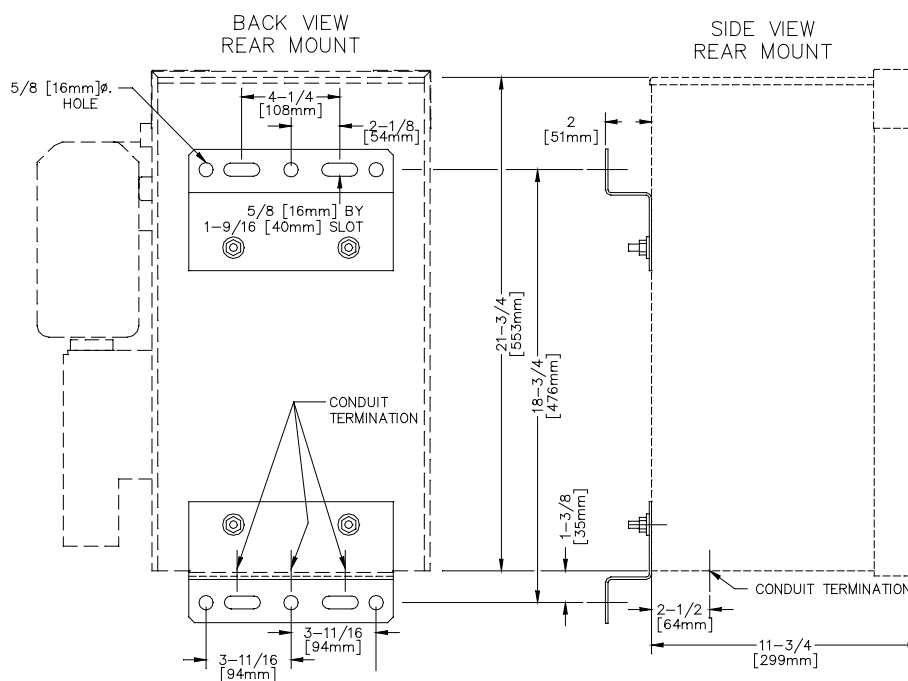
011884 Base Layout, Models: 9822Q, 9823Q (Optional Post)



011885 Base Layout, Models: 9822Q, 9823Q (Side and Rear Brackets - View 1)



011885 Base Layout, Models 9822Q, 9823Q (Side and Rear Brackets - View 2)



3. Control Lines

Purpose

This section is provided to familiarize the installer with the control inputs and outputs that are available for the Series 9820Q. It is recommended the installer read these descriptions to obtain a better working knowledge of the unit in order to guide him in planning the site wiring. Reference Section 4 for a specific wiring diagram and installation notes.

The Series 9820Q may be provided for use with 230 VAC power for international applications. The operating voltage for control lines to these units is shown in parentheses as (230 VAC Int'l).

If connecting the 9820Q to a GASBOY fuel management system, refer to the appropriate fuel management system *Installation Manual* for detailed installation information.

Ground

To ensure proper operation of the equipment and provide the necessary safety factors, a good ground line must be provided. A ground wire (preferably green) must be connected between the ground screw of the register and the main electrical service panel. One (1) earth ground connection is required per unit. The ground rod is to be a solid, corrosion-resistant conductor and must be installed at the main electrical panel in accordance with the National Electrical Code. It should be properly tied into the ground bus strip of the panel. We recommend the neutral and ground bus strips be bonded together (unless prohibited by local codes).

Micro Feed

The Micro Feed is a 115 VAC (230 VAC Int'l) 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 the control lines (Pump Motor Feed). In a site configuration using multiple units, the power for the microprocessors of up to 8 units can be supplied by one breaker.

Micro Neutral

The Micro Neutral is a return line for AC current from the microprocessor of the dispensing unit to the breaker panel.

Pump Motor Feed

The Pump Motor Feed is a 115VAC (230 VAC Int'l) input which is required to power the pump and authorize the control line. This line is used to provide authorization for the unit (when enabled through the DIP switches). If this line is controlled by a fuel management system using solid state relays, a resistor assembly must be installed between the Pump Motor Feed line and Feed Neutral to prevent false triggering of the authorization input. The resistor assembly is 8.2K OHM, 10 Watt (P/N C05818) for 115/230 VAC domestic and 30K OHM, 10 Watt (P/N C06683) for 230 VAC international wiring.

The Pump Motor Feed line is used to power the slow flow and fast flow valves (when installed). The power used to control the pump is also provided by this line. The Reset Complete signal used for external monitoring of the pump originates from the Pump Motor Feed line.

Neutral Feed

The Neutral Feed is the AC current return line back to the breaker panel for all attached devices (pump motor, solenoid valves).

Slow Flow (Reset Complete/Switch Detect)

The Slow Flow line is a 115VAC (230VAC Int'l) output which is used to control the slow flow valve of the optional solenoid valve. This line also indicates when the reset process is complete and the unit is ready to dispense product. This line can be used in conjunction with a fuel management system (for systems other than the Gasboy CFN Series systems).

This line is capable of supplying 300 mA AC maximum (170 mA maximum if already connected to the optional valve). This line must not be shorted to any conduit or chassis metal, mis-wired, or be connected to any equipment requiring more than stated maximum allowable current. If these restrictions are not followed, damage to the CPU PCB will occur.

Fast Flow

The Fast Flow line is a 115VAC (230VAC Int'l) output which is used to control the fast flow valve of the optional solenoid valve.

This line is capable of supplying 300 mA AC maximum (170 mA maximum if already connected to the optional valve). This line must not be shorted to any conduit or chassis metal, mis-wired, or be connected to any equipment requiring more than stated maximum allowable current. If these restrictions are not followed, damage to the CPU PCB will occur.

Phase 2 Feed

The Phase 2 Feed is a hot feed which is the opposite phase of the pump motor feed. This line and the pump motor feed are used for 230VAC motor applications. If connected to equipment requiring control of the authorization input, the Phase 2 Feed should be switched through a separate relay to prevent false triggering of the authorization signal.

Pulser

These lines are used to connect the pulser, mounted in the pumping unit, to the electronics in the register assembly. These are DC voltage lines and provide the information necessary for the register assembly to monitor the quantity of product dispensed. These lines are for internal use only and must not be used for the pulse output (for external monitoring of the unit). Use the optional Pulse Output interface if external pulses are required.

Pulse Output

This option provides a DC pulser output to indicate the quantity dispensed. This is an open collector output. This output can sink up to 150 milliamps DC at voltages up to 24 VDC. The pulse rate can be configured by a sealable DIP switch for rates of 1, 10, 100, 250, 500, or 1000 pulses per gallon or 1, 10, 100 or 250 pulses per liter. This output should only be used when monitoring of the unit's operation is desired.

RS-485

When the dispensing unit includes the optional RS-485 interface, RS-485 lines are provided. This interface allows the user to connect a GASBOY CFN Series System or TopKAT system directly to the Series 9820Q dispensing unit.

4. Wiring



Customers and installers having any questions pertaining to the installation should contact their GASBOY distributor.

Wiring Precautions

The quality of the electrical installation is a major factor in maintaining proper safety levels and providing trouble-free operation of your GASBOY pump. To assure a quality installation, follow these rules:

1. All wiring must be installed to conform with all building/fire codes, all Federal, State, and Local codes, National Electrical Code, (NFPA 70), NFPA 30, and Automotive and Marine Service Station Code (NFPA 30A) codes and regulations. Canadian users must also comply with the Canadian Electrical Code.
2. Use only threaded, rigid, metal conduit.
3. Use only UL-Labeled insulated gasoline- and oil-resistant stranded copper wiring of the proper size.
4. Wire connections should be tightly spliced and secured with a wire nut; close off the open end of the wire nut with electrical tape.
5. The line to the motor should be on a separate circuit and installed on a 20 to 30 AMP breaker depending on the motor size and/or the voltage setting.
6. Install an emergency power cutoff. In addition to circuit breaker requirements of NFPA 70 and NFPA 30A, a single control which simultaneously removes AC power from all site dispensing equipment is recommended. This control must be readily accessible, clearly labeled, and in accordance with all local codes.

In a fuel management system application, the EMERGENCY STOP and STOP keys on the console and/or the optional EMERGENCY STOP button on the Island Card Reader do not remove AC power from equipment and under certain conditions, will not stop product flow.

In order to provide the highest level of safety to you, your employees, and customers, we recommend that all employees be trained as to the location and procedure for turning off power to the entire system.



WARNING:

To reduce the risk of electrical shock when servicing, turn off and lock out all power to the pump.



AVERTISSEMENT

Pour réduire le risque de choc électrique lors de l'entretien/révision, coupez totalement le courant à la pompe/distributeur.

Have the pump installed by a competent installer/electrician.

Ground

To ensure proper operation of the equipment and provide the necessary safety factors, this unit must be grounded. A ground wire (preferably green) must be connected between the ground screw of the register and the main electrical service panel. One (1) earth ground connection is required per unit. The ground rod is to be a solid, corrosion-resistant conductor and must be installed at the main electrical panel in accordance with the National Electrical Code. It should be properly tied into the ground bus strip of the panel. We recommend the neutral and ground bus strips be bonded together (unless prohibited by local codes).

Circuit Breakers

Power to the unit must be supplied from dedicated breakers. No other equipment should be powered from these breakers. AC power for the micro power must come from a different breaker than that of the pump. This not only provides electrical isolation for the micro power, but allows the unit to be disabled without shutting off power to the microprocessor PCB. The AC power for the micro power may be grouped together for multiple units. It is recommended that no more than 8 units be supplied from one breaker.

Pump Motor

Pumps are shipped from the factory with motors wired according to the specifications given on the order as to kind of current, frequency and voltage.

Very often on installation, it becomes necessary to change the original setting to suit the AC power source. To do this, locate the motor change-over plate and remove the screw which secures it in place. Slide the plate so that the desired voltage, as marked on the plate, lines up with the screw hole. Reinsert the screw and secure the plate in place.

Many motor failures result from improper setting of the motor change-over plate. If set for 115 VAC and a 230 VAC feed is used, the motor will burn out after running only a short time. If set for 230 VAC and a 115 VAC feed is used, the motor will run very slowly and the starting field will soon burn out.

Pulse Output

The Pulse Output option provides the means for an external system to monitor the quantity that is dispensed by the 9820Q dispensing unit. A description of the interface is provided in **Control Lines, Pulse Output**, in Section 3. Consult the wiring diagrams provided in **Wiring** in Section 4, along with the installation manual of the system that will be connected to the 9820Q dispensing unit.

RS-485

The RS-485 option provides the means for direct connection to a GASBOY CFN Series System or TopKAT System. Consult the wiring diagrams provided in **Wiring** in Section 4, along with the installation manual of the CFN Series System or TopKAT System for proper wiring.

Wire Size

The AC wire size for the **Micro Feed** and **Neutral** should be 14 AWG. This gauge of wire will be sufficient for runs up to 300 feet from the breaker panel to the dispensing unit. Sites with distances over 300 feet should use 12 AWG wire. In cases where multiple units are powered from the same breaker through the same wires, the gauge of the wires should be increased to handle the added load according to the distance from the breaker panel.

The AC wire size of the **Pump Motor Feed, Pump Motor, Feed Neutral**, and **Neutral** is dependent upon the HP rating of the pump motor, the voltage at which the pump will be operated (115/230 VAC), and the distance from the circuit breaker panel to the pump. The chart below should be used as a guide in selecting the proper wire size according to the specific installation requirements.

The AC wire size for the **Slow Flow, Fast Flow** lines should be 14 AWG (when they are used).

The DC wire size for the **Pulser** lines connecting the pumping unit to the register assembly must use four conductor, 18 AWG shielded cable (Belden 89418, Gasboy P/N C08864). This cable allows the pulser wires to run in the same conduit as the AC wiring for the short distance between the pumping unit and the register assembly. Belden 89418 is rated as follows:

Gas and Oil resistant insulation & jacket
18 AWG tinned, stranded, copper
Four conductors
300 volt maximum operating voltage
Aluminum/Mylar shielded with drain wire

Twisted-pair shielded cable is highly recommended for the **Pulse Output** or **RS-485** field wiring (when they are used). This type of cable provides superior noise immunity and **must** be used for distances over 100 feet or any time pulse output or RS-485 wiring is included in the same conduit as the AC wires. This cable must meet the following specifications:

Conductor: 18 AWG stranded wire. 2 twisted-pairs.
Shield: Foil-wrapped 100% coverage and/or tinned copper braid 90% coverage
Drain Wire: Stranded, tinned copper, 20 AWG or larger/or braided shield
Voltage Rating: Maximum operating voltage of 600V
Environmental: Gas- and oil-resistant; suitable for wet or dry locations.

GASBOY can supply Belden 1063A (P/N C09655) which is a UL-Listed, 4-conductor cable that meets the requirements listed above. *NOTE: Belden 1063A is UL-Listed but not CSA listed.*

Cable with a voltage rating of less than 600V must be installed in a conduit separate from all AC wires.

115 VOLT WIRE GAUGE SIZES PER FEET OF RUN								
MOTOR H.P.	25'	50'	100'	150'	200'	250'	300'	OVER 300' USE RELAY AT MOTOR LOCATION
1/2	14	12	10	8	8	8	8	
3/4	14	12	10	8	6	6	4	
230 VOLT								
1/2	14	12	12	12	10	10	10	
3/4	14	12	12	10	10	10	8	

See the GASBOY Fuel Management System *Installation Manual* for specific requirements.

Conduit

All wiring to the GASBOY Series 9820Q dispensing unit must be installed in threaded, rigid, metal conduit. PVC IS NOT ACCEPTABLE. Wiring between the 9820Q register and pumping unit is installed in a single conduit. This includes the wiring for the AC control of the pumping unit and the internal pulser. A special cable, as described in Section 4, Wire Size, must be used for the connection between the pulser inside the pumping unit to the register assembly.

It is recommended that high voltage AC power wires to the register assembly (not between the register and pumping unit), be installed in separate conduit from the low voltage pulser output wires (when used). However, if AC and DC power wires share conduit, DC wiring must consist of UL-Listed cable with the specifications described in Section 4, **Wire Size**. Only AC wires for the system and dispensers can be installed in this conduit for this application. Wiring between a Fuel Point Reader (FPR) and its pre-amp junction box is intrinsically safe and must be run in a conduit with only other intrinsically safe wiring. It cannot be run in conduit with AC, DC, RS-485, or pulser wiring, regardless of the cable type used. See the *Fuel Point Reader Installation and Retrofit Manual, C35628* for details.

The GASBOY Warranty will not apply to any dispenser in which the AC and DC wires are run in the same conduit, J-Box or wireway except as noted. The GASBOY Warranty will not apply to any dispenser using PVC as conduit.

When the GASBOY Series 9820Q dispensing unit is being installed with a fuel management system other than a GASBOY system, see the manufacturer's installation manual for their specific conduit requirements.

All wiring and conduit runs must conform with all building/fire codes, all Federal, State, and Local codes, National Electrical Code, (NFPA 70), NFPA 30, and Automotive and Marine Service Station Code (NFPA 30A) codes and regulations. Canadian users must also comply with the Canadian Electrical Code.

Use the following charts as a guideline for determining the necessary conduit sizes for wiring of the GASBOY Series 9820Q dispensing unit. When actually determining the size of conduit, it may be necessary to increase the size of conduit because of a long run or large amount of bends. The installer should determine the orientation of the wire runs according to the layout of the components at the site and the applicable GASBOY wiring diagrams.

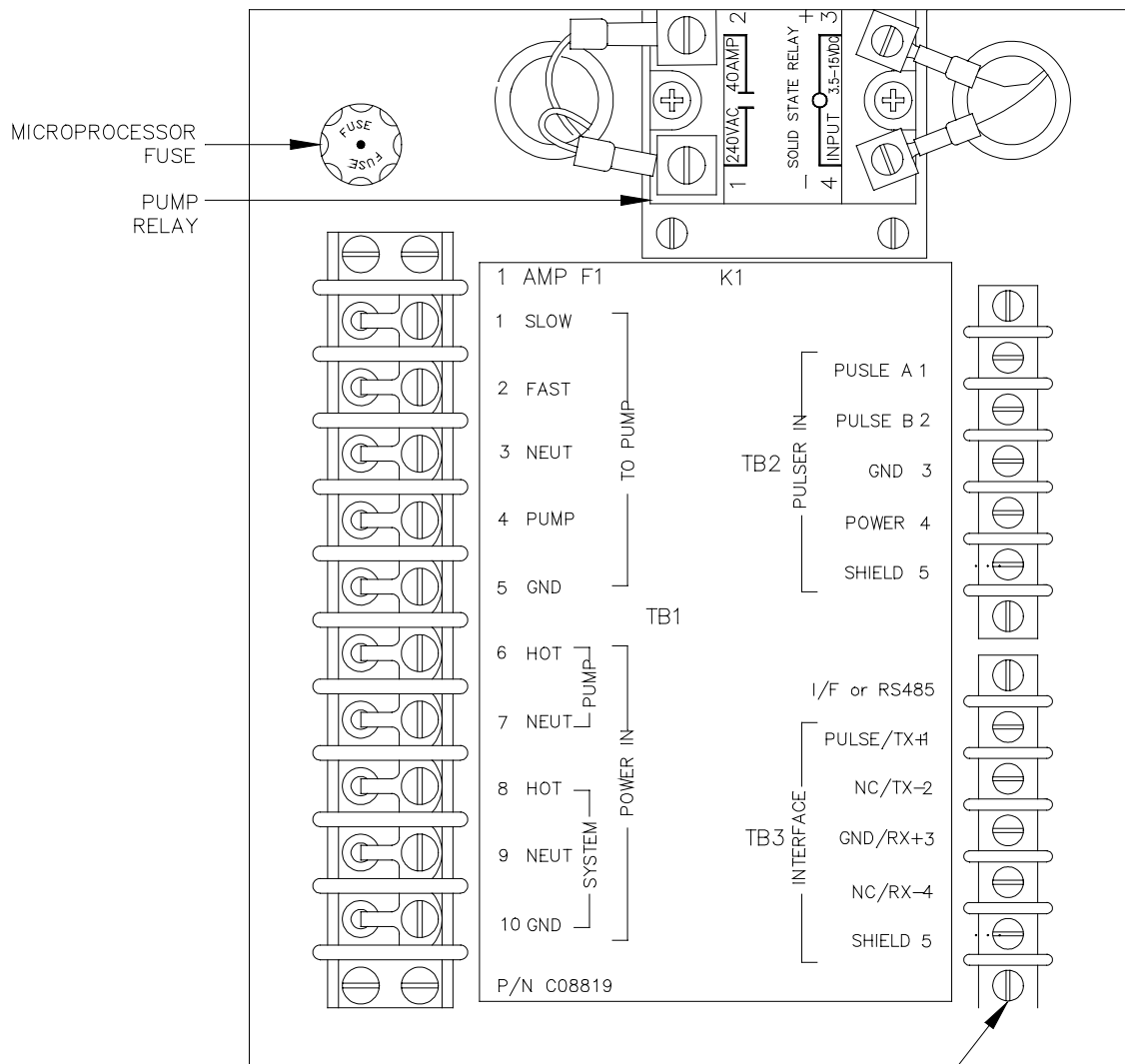
To determine conduit size needed, use the THHN/THWN Wire Areas table (left) to find the area for each wire gauge. Add up all wire areas. Use the Areas of Trade Size Conduit Table (right) to select the smallest number in the 25% fill area (based on NEC 501-1) that comes closest without exceeding the total wire area.

THHN/THWN Wire Areas				
Gauge	Diameter		Area (Sq units)	
	in	mm	in	mm
18	.090	2.29	.007	4.1
16	.104	2.64	.009	5.5
14	.118	2.95	.011	6.8
12	.135	3.43	.014	9.2
10	.169	4.29	.022	14.5
8	.216	5.49	.037	23.7
6	.259	6.60	.053	34.2
4	.331	8.41	.086	55.5
3	.359	9.14	.102	65.6
2	.394	10.01	.122	78.7
1063A	.417	10.59	.137	88.4

Areas of Trade Size Conduit						
Trade Size	Int. Diameter		Area (Sq units)		Fill Area (sq units) 25% Fill	
	in	mm	in	mm	in	mm
1/2	.629	16	.303	196	.076	49
3/4	.826	21	.532	343	.133	86
1	1.063	27	.862	556	.215	139
1-1/4	1.378	35	1.50	968	.375	242
1-1/2	1.614	41	2.04	1314	.509	329
2	2.087	53	3.36	2165	.839	541

Terminal Block ID

The terminal blocks shown below are located in the register assembly.



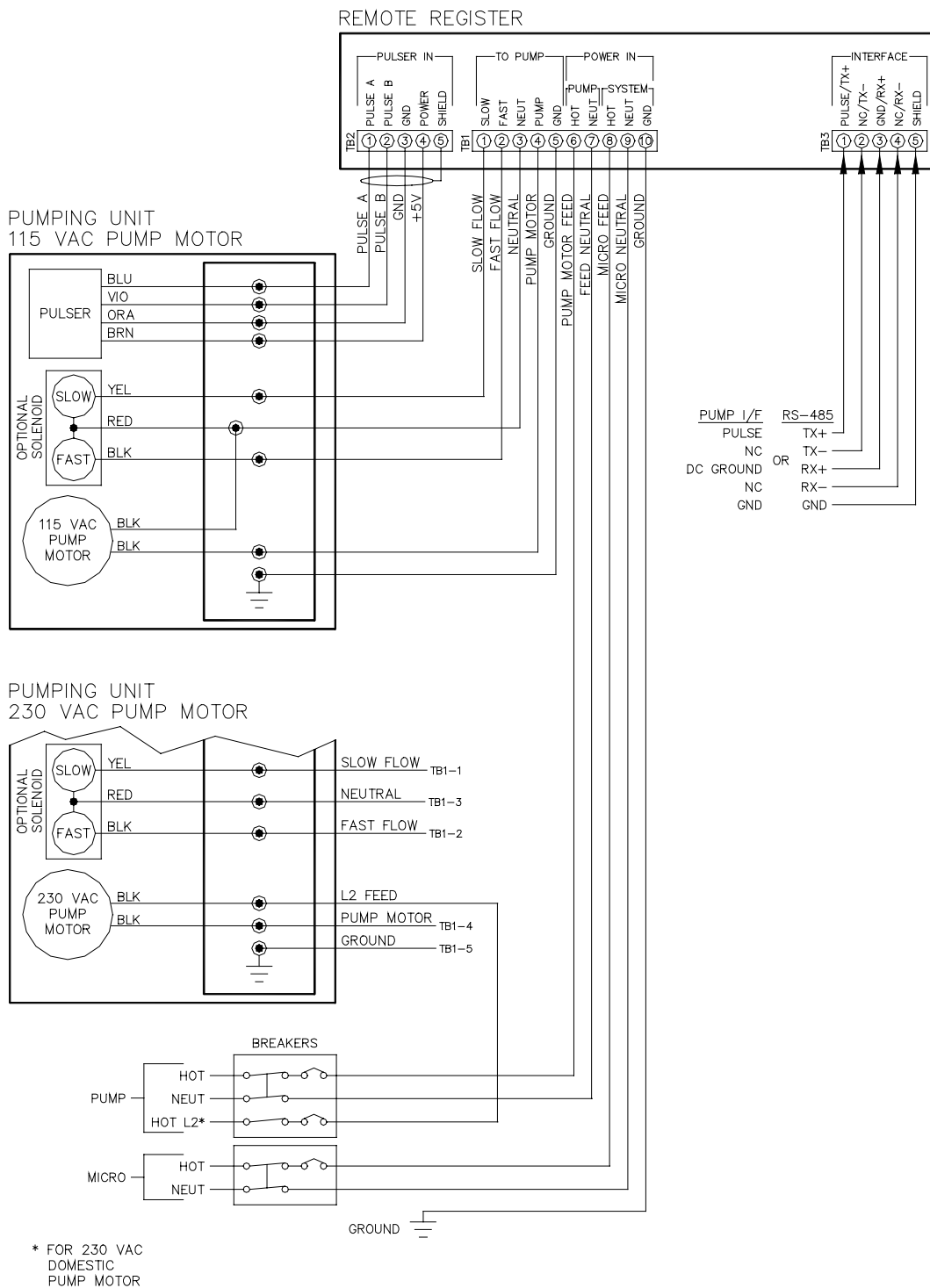
THIS CONNECTOR IS INSTALLED
ONLY WHEN PULSER OUTPUT OR
RS485 INTERFACE IS SUPPLIED

023866 Wiring Diagram, Models: 9822Q, 9823Q Domestic 115/230 VAC

NOTES:

1. All wiring and conduit runs must conform with all building/fire codes, all Federal, State, and Local codes, National Electrical Code, (NFPA 70), NFPA 30, and Automotive and Marine Service Station Code (NFPA 30A) codes and regulations. Canadian users must also comply with the Canadian Electrical Code.
2. Pump motor can be wired as 230 VAC to reduce current draw. See breakaway view of **230 VAC PUMP MOTOR**. All other wiring should remain the same except for the addition of the L2 (requires 230 VAC breaker for control). If connected to equipment requiring control of the authorization input, the Phase 2 Feed should be switched through a separate relay to prevent false triggering of the authorization signal.
3. If the **PUMP MOTOR** line is controlled by a fuel management system using solid state relays, a resistor assembly must be installed between the Pump Motor Feed line and Neutral to prevent false triggering of the authorization input. The resistor assembly is 8.2K OHM, 10 Watt (P/N C05818) for 115/230 VAC domestic and 30K OHM, 10 Watt (P/N C06683) for 230 VAC international wiring.
4. **SLOW FLOW** and **FAST FLOW** lines are typically used when connecting to an optional valve. Each of these lines is capable of supplying 300 mA AC maximum (170 mA AC maximum if already connected to the optional valve). **These lines must not be shorted to any conduit or chassis metal, mis-wired, or connected to any equipment requiring more than stated maximum allowable current. If these restrictions are not followed, damage to the CPU PCB will occur.**
5. Use the wire size chart listed when determining the wire size for the control wiring.

023866 Wiring Diagram, Models: 9822Q, 9823Q Domestic 115/230 VAC



WARNING:



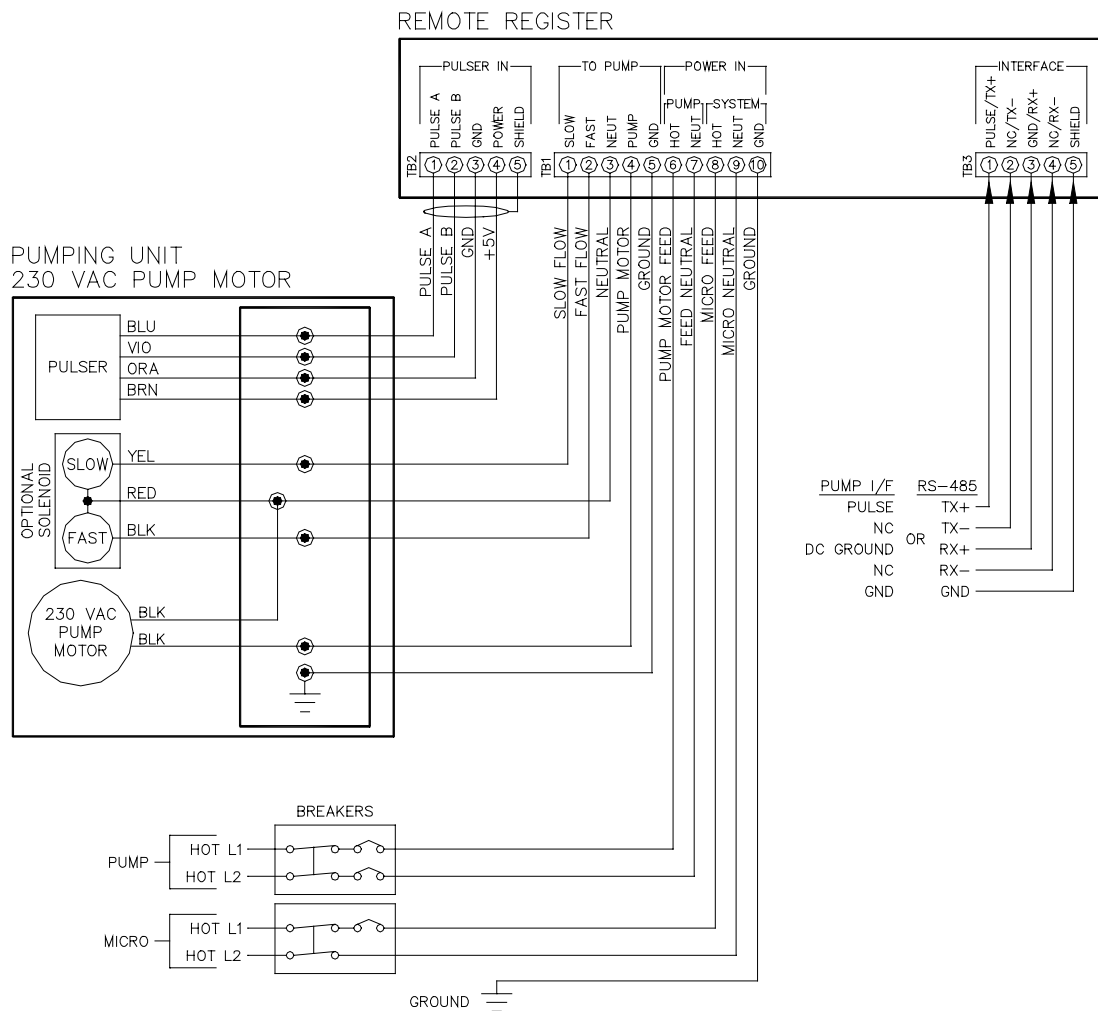
Failure to follow the correct wiring diagram and all the listed notes and precautions may result in damage to the CPU PCB.

023867 Wiring Diagram, Models: 9822Q-2, 9823Q-2 International 230VAC

NOTES:

1. All wiring and conduit runs must conform with all building/fire codes, all Federal, State, and Local codes, National Electrical Code, (NFPA 70), NFPA 30, and Automotive and Marine Service Station Code (NFPA 30A) codes and regulations. Canadian users must also comply with the Canadian Electrical Code.
2. If the **PUMP MOTOR** line is controlled by a fuel management system using solid state relays, a resistor assembly must be installed between the Pump Motor Feed line and Neutral to prevent false triggering of the authorization input. The resistor assembly is 30K OHM, 10 Watt (P/N C06683) for 230 VAC international wiring.
3. **SLOW FLOW** and **FAST FLOW** lines are typically used when connecting to an optional valve. Each of these lines is capable of supplying 300 mA AC maximum (170 mA AC maximum if already connected to the optional valve). **These lines must not be shorted to any conduit or chassis metal, mis-wired, or connected to any equipment requiring more than stated maximum allowable current. If these restrictions are not followed, damage to the CPU PCB will occur.**
4. Use the wire size chart listed when determining the wire size for the control wiring.

023867 Wiring Diagram, Models: 9822Q-2, 9823Q-2 International 230VAC



WARNING:

Failure to follow the correct wiring diagram and all the listed notes and precautions may result in damage to the CPU PCB.

5. Pump Operation

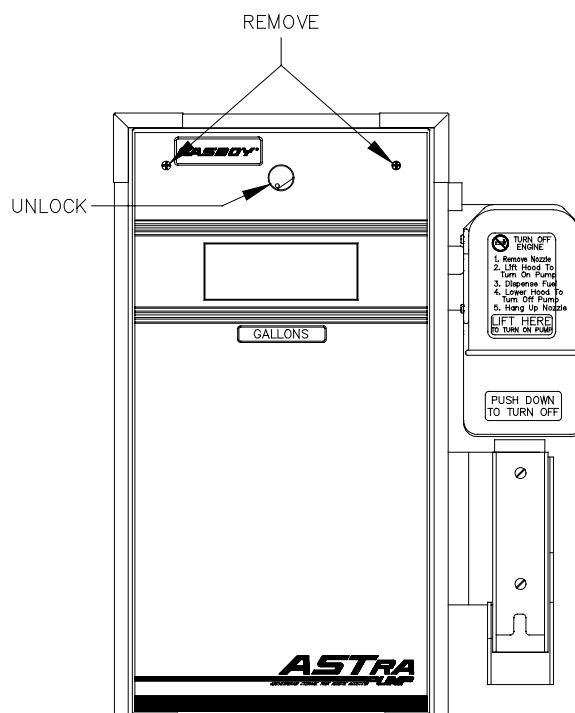
Overview

This section describes the operation of the pump. It shows how to access the electronic components, how to set the internal switches, the optional battery back-up power supply, how to view and reset the electronic totalizers using the actuator, how to operate the pump, and how to lock the nozzle.

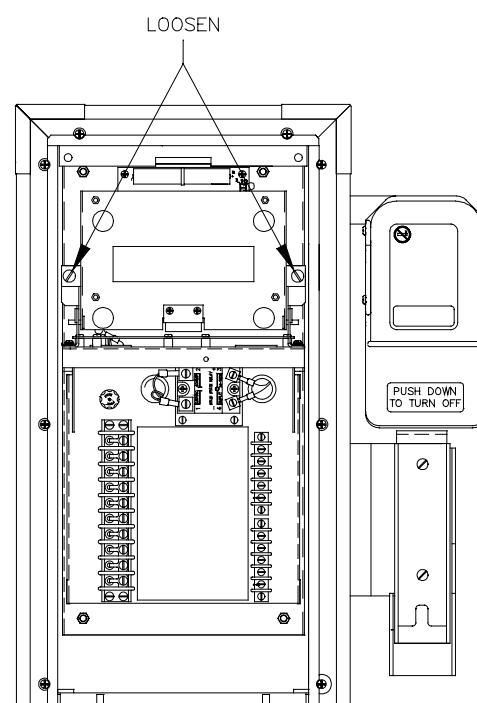
Electronic Component Access

Before attempting to start-up the 9820Q, it is important to become familiar with the location of some key components as well as the various switch-selectable operating modes.

1. Unlock and remove the front panel. Remove the two screws located at the top of the door assembly. Pull out on the top of the door and lift the door assembly to remove it.



2. Loosen the two screws located on the left and right door support brackets and pivot display panel down.



SW1-6 Authorization

This switch allows activation of the 9820Q from some types of fuel management systems. When the switch is closed, a 115 VAC (230 VAC Int'l) signal must be present on the Control Feed line for pump activation to occur (required setting for Series 1000, TopKAT mechanical, and all non-GASBOY systems). When open, the 9800 ignores the Control Feed line (required setting for CFN, TopKAT electronic, or no fuel system).

Authorization	SW1-6	Fuel System
Yes	Closed	Series 1000 TopKAT mechanical All Non-GASBOY systems
No	Open	CFN TopKAT top-mount TopKAT electronic No fuel system

SW1-7 Totalizers

This switch should be set to open for normal operation. When closed, this switch enables the reset of the electronic totalizers. See **View/Reset Totalizers** later in this section for details.

Totalizers	SW1-7
Reset	Closed
Normal	Open

SW1-8

Not used.

SW2

This four-position switch pack serves a dual purpose: as an address setting when communicating on the GASBOY RS-485 loop or TopKAT, or as a pulser output rate selector when pulser data is sent to a fuel management system other than a GASBOY CFN or TopKAT.

Address Switches

A unique address identifier must be set when the 9820Q is connected to the GASBOY RS-485 pump loop via the 9820Q RS-485 I/F PCB. Because there are 16 possible address combinations, up to 16 units (single or twin) may be connected to the pump loop. Addressing should start at 1 and continue sequentially through 16. The physical wiring order does not have to correspond with the address order; that is the first unit on the RS-485 loop doesn't have to be address 1. The chart at right gives the switch settings and address selections.

Address	SW2-1	SW2-2	SW2-3	SW2-4
1	Closed	Closed	Closed	Closed
2	Open	Closed	Closed	Closed
3	Closed	Open	Closed	Closed
4	Open	Open	Closed	Closed
5	Closed	Closed	Open	Closed
6	Open	Closed	Open	Closed
7	Closed	Open	Open	Closed
8	Open	Open	Open	Closed
9	Closed	Closed	Closed	Open
10	Open	Closed	Closed	Open
11	Closed	Open	Closed	Open
12	Open	Open	Closed	Open
13	Closed	Closed	Open	Open
14	Open	Closed	Open	Open
15	Closed	Open	Open	Open
16	Open	Open	Open	Open

Pulser Output Rate Switches

When the 9820Q is connected to external control equipment other than a GASBOY CFN system (standalone), the pulser signals are sent out via the 9820Q Pump I/F PCB. The pulse rate required by the monitoring equipment can be configured by setting the switches as shown in the chart at right. The pulse rate represents pulses per gallon (PPG, domestic) or pulses per liter (PPL, international). For domestic units, the pulse rate can be up to 1000 PPG. For international units, the pulse rate can be up to 250 PPL for all other models. This switch may need to be sealed by a Weights and Measures paper seal if the 9820Q is used for the resale of product.

Pulse Rate	SW2-1	SW2-2	SW2-3
1	Closed	Closed	Closed
10	Open	Closed	Closed
100	Closed	Open	Closed
250	Open	Open	Closed
500	Closed	Closed	Open
1000	Open	Closed	Open
None	Closed	Open	Open
None	Open	Open	Open

Leading zeros are always suppressed in the hundreds and tens positions to the left of the decimal point. When in standalone mode, positions to the right of the decimal point are displayed based on the pulse rate selected as shown in the table at right.

Pulse Rate	Display
1:1	XXX.
10:1	XXX.X
100:1	XXX.XX
250:1	XXX.XXX
500:1	XXX.XXX
1000:1	XXX.XXX

Timeout Switch

When the 9820Q is in standalone mode, it will turn off an active hose if it doesn't detect pulses for 4 minutes, 15 seconds. This timeout feature can be disabled by setting switch SW2-4 to OPEN.

Timeout	SW2-4
Enabled	Closed
Disabled	Open

ATC Information Sheet

By activating the magnet located at the opposite side of the totalizer, various items will appear on the display:

1. Volume Display	Displays uncompensated volume	0023.43
2. Probe Temperature Display	Displays probe temperature in Celsius only	0 23.2
3. Flow Reat Display	Displays flow rate (in LPM only)	189.2
4. Software Version Display	Displays software version number	1.30
5. ATC Status Display	Displays ATC Status	842.2

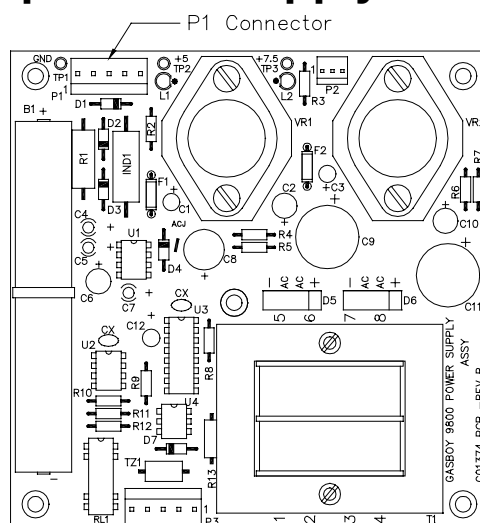
On the status display, the rightmost digit (2) indicates whether or not temperature compensation is enabled, and if so, what product is being dispensed. 0=temperature compensation enabled; 1=product is gasoline and compensation is enabled; 2=product is diesel and compensation is enabled.

On the status display, the leftmost digits (842) are error indicators which are blank when the corresponding error condition is not active. When any of these digits are displayed, their meanings are: 8=temperature probe fault is detected; 4=pulser error occurred; 2=exceptional reset was detected.

Setting the DIP Switches

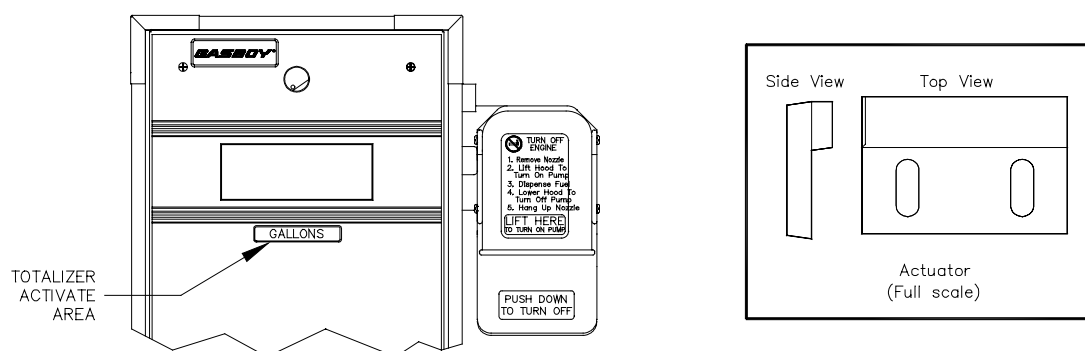
#	Use	Setting
1	Product 1	ON=Diesel; OFF=Gasoline
2	Product 2	ON=Diesel; OFF=Gasoline
3	Not Used	
4	Not Used	
5	Pulser Multiplier	ON=9850; OFF=9852/9853
6	# of Probes	ON=2, OFF=1
7	Pulser Adder	ON=9840
8	ATC	ON=ATC on; OFF=ATC off

Battery Back-Up Power Supply



9820Q models can be equipped with an optional battery back-up power supply. This allows the last transaction data to be displayed for a minimum of 15 minutes. After the batteries reach a certain low-voltage point, the power will automatically shut off. If you need to shut off the battery power before the low-voltage point is reached, momentarily disconnect, then re-connect, the cable that plugs into P1 on the power supply.

View/Reset Totalizer Electronic Totalizer



The 9820Q stores a running quantity total. This electronic totalizer works independent of the optional mechanical totalizer that may be installed, and is shown as whole gallons (liters) on the displays (decimal point is shown, although it is disregarded). The totalizer data is stored in battery-backed memory. The 9820Q is supplied with an actuator (shown in the above illustration) which allows you to view and reset the electronic totalizer. When the 9820Q is shipped, the actuator is attached with a tie wrap to the electronic chassis behind the register door. At installation or startup, cut the tie wrap and remove actuator. Retain for future use.

To view the pump totalizer, make sure the pump handle is off and no transaction is in progress. Locate the unit of measure indication (i.e., GALLONS) below the display window. Touch this area with the actuator as shown. The totalizer data will be displayed for 10 seconds. If more time is needed, touch the actuator to the same area for an additional 10 second period.

To reset the electronic totalizer, follow the disassembly procedure outlined under **Electronic Component Access** earlier in this section. Turn off the breaker supplying the 9820Q AC power. Close SW1-7 on the CPU PCB. Hold the actuator against the totalizer bracket and have someone turn the breaker on. The display should change to all zeroes. Remove the actuator and open SW1-7. After opening switch 1-7, power to the register must be recycled to recognize the switch change.

NOTE: Returning switch 1-7 to the open position prevents the totalizer from being reset the next time the actuator is used to read it.

Mechanical Totalizer

Some 9820Q models contain an optional mechanical totalizer. The totalizer has 8 digits; 7 whole gallons and 1 tenth-gallon column, 8 whole digits for liters. The mechanical totalizer is located on the front right side of the pumping unit.

Operating Sequence

The exact sequence of events that occurs during the operation of the pump is determined by various switch settings, inputs, and the user. A typical transaction is explained below.

1. Turn on the pump handle. If AC is present on the Pump Motor Feed line, the reset cycle begins. The display:
 - goes blank for one second
 - shows all 8's for one second
 - goes to 0.000 (gallons) or 0.00 (liters) and remains for one second.

The pump motor turns on. If equipped, the slow flow valve turns on.

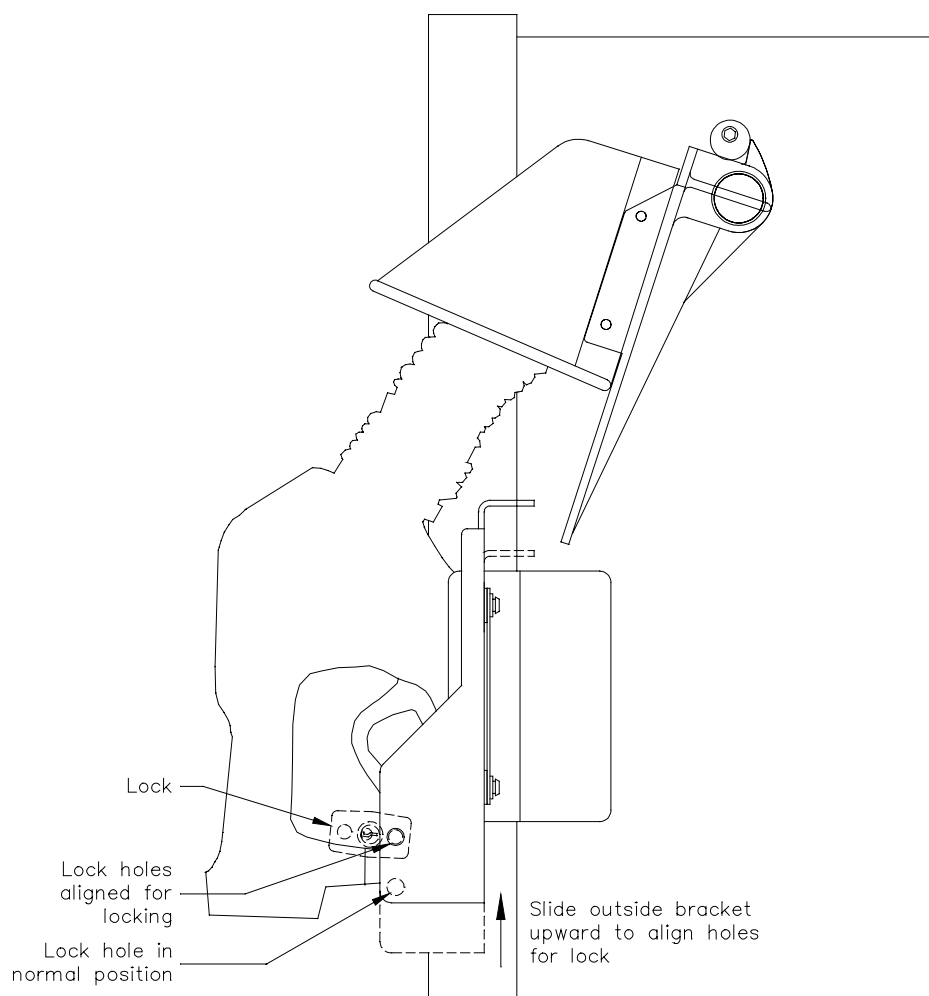
2. The user begins to dispense fuel. Quantity will not be recorded on the display until 0.010 gallons (0.04 liters) are reached, however, all pulses will be sent out on the Pulse Output line, if equipped. At 0.010 gallons (0.04 liters), the fast flow valve turns on, if equipped.
3. The pump continues to run until one of the following conditions occurs. These conditions turn off all relays.
 - The handle is turned off.
 - The Pump Motor Feed line is turned off.
 - A pulser error is detected.
 - A timeout of 255 seconds is reached. If connected to a fuel management system, the timeout loaded into the system will be used.
 - A quantity of 990.000 gallons (9900.00 liters) is reached. If connected to a fuel management system, the limit set in the system will be used.
 - The pump is halted by an operator of a fuel management system.
 - An AC power failure occurs.
4. The 9820Q continues to monitor for pulses until a 2 second period with no pulses occurs. At this time the transaction is considered completed.

Nozzle Locking

A locking mechanism is supplied as part of the hook arrangement on each 9820Q. This will allow the unit to be locked thus preventing use of the dispenser. A lock with a shackle clearance of at least 2-1/2" is required to lock the pump (i.e., Master No. 1LJ-D). To lock the nozzle in place, follow the instructions below:

1. Insert the nozzle onto the hook assembly with the nozzle tip inside of the boot.
2. Slide the rear bracket of the nozzle hook assembly upward until the holes near the bottom of the nozzle are aligned.
3. Slide the open padlock through holes in the moveable and stationary portions of the hook arrangement, thus capturing the nozzle in place. (Note that the four holes will not align until the moveable bracket has been slid upward.)
4. Close the lock.

While the nozzle is locked in place, the nozzle cannot be removed from the nozzle hook and the dispenser cannot be turned on.



6. Start-Up and Test

Installation Completion Checklist

Review the information below to verify the proper installation of the Series 9820Q dispensing unit. **If the installation does not meet criteria listed, correct the problem before the start-up is performed.**

1. **To avoid damage to the CPU PC board, verify that the SLOW FLOW and FAST FLOW wires are not shorted to any conduit or chassis metal, mis-wired, or connected to any equipment requiring more than stated maximum allowable current.**
2. The register and pumping unit must be properly secured.
3. All plumbing must be complete and tight. **All liquid-carrying lines must be checked for leaks.**
4. When DC pulse output lines are used in the pump for connecting to GASBOY fuel management systems, the AC and DC wires must not share any conduits, junction boxes, or troughs except as noted in Section 4, **Wire Size**.
5. All conduit work must be complete. All junction box covers must be secured. Conduits should not be sealed until the wiring is verified through proper operation.
6. The unit must be properly grounded.
7. Before any testing begins, remove any water in the tank through a fill opening, using a suitable pump. Do not use the GASBOY pump to remove water. Serious damage may occur.
8. A sufficient volume of fuel must be put in the tank to insure that the liquid level is above the bottom of the suction pipe.

Start-Up

After successfully verifying the installation against the completion checklist, the unit is ready for start-up. Follow the procedure below to perform an orderly start-up of the Series 9820Q.

1. Verify that all switches on the CPU PCB are set properly for the various operating conditions as explained in Section 5.
2. Turn on the circuit breakers for the microprocessor.
3. Authorize the unit through the fuel management system, if available.
4. Remove the nozzle from its holder and turn on the pump handle. Verify that the display goes through the proper reset sequence as explained in Section 5, **Operating Sequence**.
Note: when power is turned on for the register, you must reset the handle twice to go through the reset sequence.
5. Dispense fuel. Verify 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 should be dispensed at this time.
7. Verify that the correct quantity was recorded by the fuel management system, if available.
8. Run the unit through all standard calibration procedures.
9. Reset the electronic totalizer as described in **View/Reset Totalizer** in Section 5.

Post Start-Up Tests

Voltage

The incoming voltage to the pump should be checked and any reading not within 10% of rated voltage should be corrected before testing is continued. It is good practice to take voltage readings while the pump is operating on bypass and also while making a delivery. Any voltage drop in excess of 10% during either of these operating states should be considered a low voltage condition. Corrective action should be taken to insure an adequate power supply to the pump.

Tightness

After determining that the pump is operating satisfactorily and the system is fully primed, check the pump and piping to make sure that all connections are tight.

Belts

Since belts do stretch slightly during the first few minutes of operation, check the belt tension after completing the operational test; a properly tightened belt will permit twisting the belt 180 degrees midway between the motor and pump pulleys.

On the 9822Q and 9823Q, the belt can be tightened by loosening the cap screw which holds the idler arm and sliding the arm to obtain the correct belt tension of 6-3/4 lbs. ($\pm 3/4$). When the adjustment is complete, remember to retighten the cap screw.

Calibration

All GASBOY pumps are adjusted for accurate measure at the factory. However, since the conditions of the installation can affect pump accuracy, it is the responsibility of the installer to check the pump for accuracy and make any needed adjustments. *Where required*, it is the owner's responsibility to report this device to the local Weights and Measures officials for their inspection before the unit is put into service.

Each meter is equipped with a mechanism for calibration, located on the side of the meter. To adjust the volume dispensed:

1. Check meter registration by delivering product to a reliable, accurate, 50 or 100 gallon prover.
2. Remove the seal wire from the locking pin.
3. Remove locking pin and turn wheel to adjust measurement. Turn clockwise to decrease the amount in the prover to match the display, turn counter-clockwise to increase the amount in the prover to match the displayed. Moving the wheel one hole position changes the calibration by 2/3 cubic inch per 5 gallons. To change by half of this amount, you may utilize the alternate locking pin hole on the opposing side of the calibration wheel.
4. Repeat process until volume in prover and amount recorded are within tolerance.
5. After calibration is complete, reinstall locking pin and secure in place using a seal wire.

7. Preventive Maintenance

General

GASBOY pumps are designed and constructed to give many years of uninterrupted service. In fact, operators report years of trouble-free operation with absolutely no service expense. Yet, certain parts of a pump are bound to wear, and GASBOY therefore recommends a periodic inspection, at least twice a year, for such things as fuel leaks, belt tension and condition, lubrication and strainer cleanliness. If such a procedure is followed, any small adjustments that are necessary can be made before expensive, annoying breakdowns occur. The result of this sound approach is continuous, profitable service from all of your GASBOY equipment.

WARNING:

To reduce the risk of electrical shock when servicing, turn off all power to the pump.

Hints For Better Pump Performance

Demand Competent Service

If your pump should stop or fail to operate properly, don't depend upon the repair service of a general mechanic unless he is thoroughly familiar with the mechanism. Experience shows that the repair results will be much more satisfactory if you demand the service of a competent representative of the pump manufacturer. GASBOY has a Distributor Network which services fuel dispensing and management systems in every section of the country.

Use Authorized Parts

Should excessive wear, rust, or corrosion of parts cause inefficient operation, it is always best to replace them immediately; but if you want the best results and continuity of the Underwriters' Label on your pump, be sure they are new authorized service parts supplied by GASBOY. Every part of a pump is carefully designed for a particular purpose. If it is replaced by an incorrect or substandard substitute, pump operation will be unsatisfactory. Always use new gaskets or seals when servicing or rebuilding GASBOY equipment; do not re-use the old ones.

Operate With Reasonable Care

Like any machine, the pump that is operated with reasonable care will last longer and give better service. Abuse should be avoided (such as dropping the nozzle on the ground, operating the unit with a dirty strainer, dragging the hose across the concrete island or driveway, running the pump with the nozzle closed for more than two minutes, etc.). The time and care given to your pumps will be returned to you in the form of dependable service.

Preventive Maintenance Checklist

Keep Water Out

Water tends to collect in storage tanks. This is due to moisture-laden air being drawn into the storage tank and condensing, or to defective fill openings that are not properly protected with watertight covers. Storage tanks should be checked after every fill-up for water and removed with a sump pump, to forestall serious damage to equipment. Water, sediment, and other foreign matter that accumulates in the tank can be drawn up into the pump and cause failures.

Clean the Dial Face

Clean the dial face with a soft, clean, damp cloth as often as necessary.

Clean the Strainer

Clean the strainer immediately after the pump has been installed and tested, and again after a few hundred gallons have been delivered. Thereafter, once every six months, or as required.

The symptoms of a dirty or clogged strainer in a pump are slow delivery, noisy operation, and pulsation. To clean the strainer, turn off AC power to the pump. Locate the Suction Strainer Cap on the plumbing unit and unscrew it to access and remove the strainer. Use compressed air* to blow the dirt out of the strainer.

**Wear protective safety goggles or glasses when using compressed air.*

Change the Filter

If the unit is equipped with a filter, check and change it at regular intervals. A dirty filter in a pump will cause a slower delivery rate. Refer to the accessories section of your parts manual to ensure that you replace the filter with one designed for your model. Always use a drip pan directly below the filter when removing the cartridges to prevent contamination of both the soil and the electrical components within the cabinet.

Adjust the Belts

With the proper care, belts will give exceptionally good service. A loose belt not only cuts down dispensing speed, due to slipping, but also results in excessive wear. A properly tightened belt will allow twisting the belt 180 degrees midway between the motor and the pump pulleys.

On the 9822Q and 9823Q models, the belt can be tightened by loosening the cap screw which holds the idler arm and sliding the arm to obtain the correct belt tension of 6 3/4 lbs ($\pm$ 3/4). When the adjustment is complete, remember to retighten the cap screw.

Preserve the Finish of Your Pumps

Nearly all gasoline pumps are installed outdoors where their surfaces are subjected to the action of the weather. As a result, it is necessary to give the finish a reasonable amount of care if an attractive appearance is to be maintained.

The finish on GASBOY pump housings is a heat baked urethane paint. The life of this finish can be lengthened several years if, at regular intervals, the painted surfaces are thoroughly cleaned with a high grade automobile polish and then protected with a coat of paste wax. Do not use abrasive cleaners or polish. Do not use high-pressure spraying equipment.



GASBOY WARRANTY POLICY STATEMENT
A Gilbarco Veeder-Root Company
(Limited Warranty)
New Product WARRANTY for USA and CANADA

GASBOY GUARANTEES NEW SERVICE STATION EQUIPMENT MANUFACTURED BY GASBOY IN ACCORDANCE WITH THE PROVISIONS STATED BELOW:

Gasboy will repair or replace parts and equipment found to be defective in materials or workmanship during the warranty period, subject to the following:

- Labor and travel costs incurred by the Authorized Service Contractor (ASC) while servicing Gasboy equipment are included, unless excepted, and will be paid at previously contracted rates to the qualified ASC.
- Warranty services must be performed by the nearest Authorized Service Contractor qualified to perform service on the defective equipment.
- Gasboy will supply new or rebuilt parts to replace parts which are found to be defective within the warranty period. Parts returned to Gasboy must be shipped with transportation charges paid and will be replaced with parts with transportation charges prepaid by Gasboy.
- New Equipment installations must be registered with the Gilbarco Call Center within 24 hours of installation/commissioning to receive full warranty benefits; otherwise, the warranty period commences at the date of invoice.
- Warranty service response time is 24 hours from time service is requested, Monday through Friday (8:00 am until 5:00 pm), excluding weekends. Emergency warranty response time is on-site within 4 hours. Hazardous warranty response time is on-site within one hour. Priority situations, emergency and hazardous, include imminent release of hazardous or dangerous materials, situations with imminent danger to life or property, and a complete site-down situation or 50 percent or more of the fuel dispensing capacity for any one product is inoperative. Overtime will be paid for priority situations only occurring outside routine warranty service hours.
- Warranty repair requiring rented equipment, overtime premium, lodging or charter travel must be approved in advance of service expenditure by the Gasboy Warranty Administration Department.

Commercial Pumps and Dispensers, Full -Cabinet Consumer Pumps

Commercial Pumps and Dispensers, Full-Cabinet Consumer Pumps are warranted against defects in material and workmanship for one year from date of installation or 24 months from date of original invoice, whichever occurs first. Warranty coverage includes parts and labor.

Exclusions: This warranty excludes hose breakaways, nozzles, hoses and fittings, nozzle-end swivels, retriever cables, graphics materials specified by the customer, fuel filters, belts adjustments, meter calibration, fluorescent lamps, vapor recovery testing and balance system piping, customer-specified items manufactured by others, and customer requested reprogramming of equipment. Some of these excluded items may be warranted by their manufacturer, and warranty claims in connection with these items should be presented directly to the manufacturer.

Small Transfer Pumps, Meters, Pressure Regulators

Small Transfer Pumps, Meters and Pressure Regulators are warranted against defects in material and workmanship for 24 months from date of installation or 30 months from date of original invoice, whichever occurs first. Non-registered equipment warranty will default to invoice date. The warranty covers parts only. Excepting the Model 2020 Hand Pump, which has a 90-day part warranty from date of original invoice.

New Spare Parts

All new spare parts or warranted replacement parts are warranted against defects in material and workmanship for one year from date of original invoice. The warranty covers parts only.

Keytrol

The Keytrol is warranted against defects in material and workmanship for one year from date of installation or 24 months from date of original invoice, whichever occurs first. Warranty coverage includes parts and labor

Fuel Management Systems

CFN/Profit Point, Series 1000/FleetKey, TopKAT, and factory installed Fuel Point Reader are warranted against defects in material and workmanship for one year from date of installation or 24 months from date of original invoice, whichever occurs first. Warranty coverage includes parts and labor.

Standalone and Retrofit Fuel Point Readers, and Fuel Point-vehicle and dispenser components are warranted against defects in material and workmanship for one year from date of installation or 24 months from date of original invoice, whichever occurs first. The warranty covers parts only.

The warranty for field installed/retrofitted Fuel Point Readers is non-transferable. The removal and installation of such components into another pump/dispenser will void the warranty.

Fuel Management Systems

Peripherals (Modems, CRT's, Flat Screen, Scanner, PIN Pad, Customer Display,) are warranted against defects in material and workmanship for one year from date of installation or 24 months from date of original invoice, whichever occurs first. The warranty covers parts and labor.

Printers (Logger, Receipt, etc.) are warranted against defects in material and workmanship for 90 days from date of installation or 180 days from date of original invoice. The warranty coverage is parts and labor.

Peripherals (Encoders and Embossers) are warranted against defects in material and workmanship for six months from date of original invoice. The warranty covers parts only.

General Exclusions

1. Problems caused by faulty installation are not covered by this warranty. This warranty applies only if equipment has been installed and used in accordance with Gasboy Installation, Operating and Service Instructions. Problems caused by improper maintenance of equipment are not covered by this warranty.
2. Use of service personnel other than qualified Gasboy service providers without prior approval of the Warranty Administration Department will void payment of the warranty claim in question.
3. Damage suffered by Gasboy's equipment resulting from shipping, accident, power surges, neglect, misuse, act of Nature, or abuse is not covered by this warranty.
4. Use of non-Gasboy replacement parts, defects caused by the unauthorized addition of non-Gasboy items to Gasboy equipment or by the unauthorized alteration of Gasboy equipment voids this warranty.
5. **THIS WARRANTY DOES NOT COVER ANY INDIRECT DAMAGES OR LOSS OF PRODUCT OR REVENUE.** Repair or replacement of the defective part or component under the terms of this warranty is the EXCLUSIVE REMEDY. Gasboy is not liable for incidental, consequential or indirect damages or loss, including without limitation personal injury, death, property damage, environmental damages, product damages, loss of product, or loss of revenue or profits. Gasboy is not liable for any claims or lawsuits against the customer.
6. This warranty does not cover any pump or dispenser components in contact with fuels containing more than 5% methanol or 10% ethanol or 15% MTBE by Volume. This warranty does not cover any component(s) exposed to M85/E85 fuel or other alcohol rich fuel.

THE WARRANTY CONTAINED HEREIN IS EXCLUSIVE AND THERE ARE NO OTHER EXPRESSED, IMPLIED OR STATUTORY WARRANTIES. WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED.

Gasboy International LCC • Warranty Department F-43 • 7300 W. Friendly Ave., P.O. Box 22087 • Greensboro, NC 27420 • Phone 336-547-5393 • Fax: 336-547-5393

MDE-4255

10/03

Printed in U.S.A