



Series 9800Q Pumps and Dispensers

Installation/Operation Manual

Computer Programs and Documentation

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Federal Communications Commission (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.

Approvals

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

Underwriters Laboratories (UL):

UL File#	Products listed with UL
MH4314	All dispensers and self-contained pumping units
MH6418	Power operated Transfer Pump Models 25, 25C, 26, 27, 28, 72, 72S, 72SP, 72X, 73 and 1820
MH7404	Hand operated Transfer Pump Models 1230 Series, 1243 Series, 1520 and 1720 Series
MH10581	Key control unit, Model GKE-B Series Card reader terminals, Models 1000, 1000P Site controller, Model 2000S CFN Series Data entry terminals, Model TPK-900 Series Fuel Point Reader System

New York City Fire Department (NYFD):

NYFD C of A #	Product
4823	9100K, 9140K, 9152K, 9153K, 9800K, 9840K, 9850K, 9852K, 9853K, 9140, 9100A, 9140A, 9152A, 9153A, 9800A, 9840A, 9850A, 9852A, 9853A, 9100
4997	9822K, 9823K, 9822A, 9823A
5046	9100K, 9140K, 9152K, 9153K, 9800K, 9840K, 9852K, 9853K, 9100Q, 9140Q, 9152Q, 9153Q, 9800Q, 9840Q, 9852Q, 9853Q, 9850Q

California Air Resources Board (CARB):

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

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

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

CoC#	Product	Model #	CoC#	Product	Model #	CoC#	Product	Model #
95-179A2	Dispenser	9100 Retail Series, 8700 Series, 9700 Series	91-019A2	Dispenser	9100 Commercial Series			
95-136A5	Dispenser	9800 Series	91-057A3	Controller	1000 Series FMS, 2000S-CFN Series			

Patents

Gasboy products are manufactured or sold under one or more of the following US patents:

Dispensers

5,257,720

Point of Sale/Back Office Equipment

D335,673

Additional US and foreign patents pending.

Trademarks

Non-registered trademarks

Atlas™
Console™
Infinity™

Registered trademarks

ASTRA®
Fuel Point®
Gasboy®
Keytrol®
Slimline®

Additional US and foreign trademarks pending.

Other brand or product names shown may be trademarks or registered trademarks of their respective holders.

Table of Contents

1 – Introduction	1-1
Purpose	1-1
General Description	1-1
2 – Important Safety Information	2-1
In an Emergency	2-3
3 – Installation	3-1
Installation Precautions	3-1
Foundation	3-2
Suction Pump	3-3
Remote Dispenser	3-3
Supply Line	3-4
Nozzle, Hose, and Accessories	3-5
4 – Control Lines	4-1
Purpose	4-1
Ground	4-1
Micro Feed	4-1
Micro Neutral	4-2
Control/Pump Motor Feed	4-2
External Valve	4-2
Neutral Feed	4-2
Control/Submersible Feed (Control/SubM Feed)	4-2
Submersible Starter Drive (SubM Starter Drive)	4-3
Submersible Pump Drive (SubM Pump Drive)	4-4
Reset Complete (Switch Detect)/Slow Flow	4-4
Fast Flow	4-4
Phase 2 Feed	4-5
Slow/Fast Satellite Returns	4-5
Light Feed	4-5
Light Neutral	4-5
Pulser	4-6
RS-485	4-6
RS-232 and RS-422	4-6
5 – Wiring	5-1
Wiring Precautions	5-1
Ground	5-2
Circuit Breakers	5-2
The Pump Motor	5-2
Motor Amp Ratings	5-3
Wire Size	5-3
Conduit	5-4
Pulse Output or RS-485 Wiring	5-5
Wiring Diagrams	5-7

6 – Pump/Remote Dispenser Operation **6-1**

Overview 6-1
Electronic Component Access 6-1
CPU Switch Settings 6-2
SW1 6-3
SW2 6-5
Pulser Output Rate Switches 6-5
Timeout Switch 6-6
ATC Information Sheet 6-6
Battery Back-Up Power Supply 6-7
View/Reset Totalizers 6-8
Operating Sequence 6-9
Standalone Mode Error Handling 6-10

7 – Start-Up and Test **7-1**

Installation Completion Checklist 7-1
Start-Up 7-1
Post Start-Up Tests 7-2

8 – Preventive Maintenance **8-1**

General 8-1
Hints for Better Pump Performance 8-1
Preventive Maintenance Check List 8-2

1 – Introduction

Purpose

The Gasboy Series 9800Q Pumps and Dispensers 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 that the Series 9800Q dispensing 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 9800Q dispensing unit. In addition to installation information, this manual contains warnings, safeguards and procedures on the use and care of the Series 9800Q pumps and remote dispensers. Ensure that you leave this manual with the pump/remote dispenser owner after the installation is complete.

Note: Customers and installers having any questions pertaining to the installation should contact their Gasboy distributor.

This manual provides instructions for safely operating, programming, and maintaining the Atlas™ Fuel Systems pumps/dispensers.

General Description

The Gasboy Series 9800Q dispensing units are UL®-listed and are available in a self-contained (suction pump) package or in a remote-controlled (remote dispenser) package. Both packages offer a variety of models which are available as single hose outlets or dual hose outlets (with single or dual product capability). The self-contained models are available in standard speed (up to 15 GPM/56 LPM) or in high speed (up to 22 GPM/83 LPM). The self-contained package also boasts a single hose model with high capacity speed (up to 26 GPM/98 LPM), a dual flow unit (up to 40 GPM/151 LPM) and a high flow unit (up to 50 GPM/189LPM). The rate of delivery for the remote-controlled packages will vary according to the size of the submersible pump. The delivery rate of both packages will also vary depending upon installation conditions and added accessories.

The Series 9800Q offers the following features:

	Suction Pumps	Remote Dispensers	Features
Standard	9852Q	9852QX	Inlet: 1-1/2" NPT
Speed	9852QTW1	9852QXTW1	Discharge: 3/4" NPT (female threads)
Models	9852QTW2	9852QXTW2	Motor: 3/4 HP continuous duty Valves (when used): 3/4"
High Speed	9853Q	9853QX	Inlet: 1-1/2" NPT
Models	9853QTW2	9853QXTW1	Discharge: 1" NPT (female threads)
	9853QTW1M	9853QXTW2	Motor: 3/4 HP continuous duty Valves (when used): 1"
Super Speed Model (up to 40 GPM)	9840Q	9840QX	Inlet: 2" NPT Discharge: 1-1/4" NPT (female threads) with 1-1/4"x1" reducer bushing Motor: two 3/4 HP continuous duty Valves (when used): 1-1/2"

All models of the Series 9800Q offer electronic registration of the quantity dispensed. The following lists detail the standard features and the available options found in the 9800Q:

Standard Features

- Cabinet: Painted black top and sides, white front and rear doors and white dial enclosures. Dimensions are 29-1/16"W, 18-3/8"D, 52-5/8"H.
- Meter: Four piston, positive displacement.
- Pump: Belt-driven, positive-displacement rotary vane with an 80 mesh (300 micron) strainer and integral air separation.
- Motor: (See chart earlier in this section).
- Reset Complete (switch detect) output which allows monitoring of the unit's operation when it is connected to an automated Fuel Management System.
- Dual stage solenoid valves (standard only on remote dispensers).
- Island-oriented nozzle boots.
- UL-listed hose assembly, 3/4"x 12' for standard speed; 1" x 12' for high and super speed.
- Designed to support UL-listed Interchangeable service station nozzles (not included).
- Hose hangers.
- Dual phase, error-checking pulsers.
- Non-computing register (volume only) displays, 1" backlighted LCD displays. Records up to 999.000 gallons.
- Electronic totalizers, viewed from the back side of the unit, records, up to 999,999 liters or gallons. Battery-backed, resettable.
- Fluids: Gasoline, diesel, kerosene. Not suitable for methanol/ethanol blends.
- Agencies: UL, CUL, W&M.

Optional accessories

- Pulsar output drive lines (open collector) capable of driving 1, 10, 100, 250, or 500 pulses per unit (gallons) or 1, 10, or 100 pulses per unit (liters)
- Inlet check valve
- Internal hose retractor
- Internal fuel filter adapter
- Solenoid valve
- Satellite piping
- Stainless steel exterior or special painting
- 230 or 380 VAC operation
- Liter registration
- Listed automatic nozzles
- Special lengths of hose
- Listed swivels and breakaways
- Spin-on filter elements
- Listed emergency shutoff valves
- Listed pressure regulating valve for aboveground tank applications used with suction pumps
- Front load nozzle arrangement
- TopKAT mounting
- Battery-backup for electronic display
- Export packaging
- Automatic Temperature Compensation (ATC)
- RS-485 communication for direct connect to Gasboy CFN or TopKAT equipment

- Submersible drive relays capable of handling 3/4 HP at 115 VAC or 1-1/2 HP at 230 VAC
- Fluorescent lighting for the faceplate and brand panel

Related Documentation

Document Number	Document Title	GOLD Library
035286	215A/216A Installation /Operation Manual	Gasboy Commercial & Retail Pumps
C01918	CFN Site Controller II Installation Manual.	Gasboy Fuel Management Products
C35628	Fuel Point Reader Installation and Retrofit Manual	Gasboy Fuel Management Products
C35963	CFN Series Islander II Installation Manual	Gasboy Fuel Management Products
MDE-4298	CFN Site Controller I Installation Manual	Gasboy Fuel Management Products
MDE-4344	Series 1000 Installation Manual	Gasboy Fuel Management Products

Acronym Table

The following table contains a list of acronyms used in this manual.

Note: Refer the glossary section for more detailed definitions.

Acronym	Definition
AC or ac	Alternating Current
ASC	Authorized Service Contractor
AWG	American Wire Gauge
CFR	Code of Federal Regulations
CPR	Cardiopulmonary Resuscitation
CPU	Central Processing Unit
CSA	Canadian Standards Association (Canadian equivalent of UL)
DC (or dc)	Direct Current
DIP	Dual In-line Package
DLT	Displaying Last Transaction
FMS	Fuel Management System
FPR	Fuel Point Reader
GPM (or gpm)	Gallons Per Minute
HP	Horse Power
IFSF	International Forecourt Standards Forum
LPM	Liters Per Minute
MOC	Major Oil Company
NEC	National Electrical Code
NFPA	National Fire Protection Association
OSHA	Occupational Safety and Health Association
PCB	Printed Circuit Boards (preferred term: board)
POS	Point Of Sale
PPG	Pulses Per Gallon
PPL	Pulses Per Liter
PPP	Programmable Pump Preset
RS	Request-to-Send (modem application)

Acronym	Definition
RS-485	Recommended Standard number 485 [from Electronic Industry Association (EIA)]
STP	Submerged Turbine Pump
UL	Underwriters Laboratory
VAC (or vac)	Volts Alternating Current

2 – Important Safety Information

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

Preliminary Precautions

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



Emergency Total Electrical Shut-Off

The first and most important information you must know is how to stop all fuel flow to the pump 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 only these cashier station "stops."

Total Electrical Shut-Off Before Access

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

Evacuation, Barricading and Shut-Off

Any procedures requiring accessing the pump/dispenser or STPs requires the following three actions:



- An evacuation of all unauthorized persons and vehicles using safety tape, cones or barricades to the effected units
- A total electrical shut-off of that unit

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 the Gasboy Customer Service at 1-800-444-5579, Tech Support 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

There is applicable information in NFPA 30A; *Automotive and Marine Service Code*, NFPA 70; *National Electrical Code (NEC)*, OSHA regulations and federal, state, and local codes which 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 that follow must be followed to prevent death, injury or damage to the equipment

DANGER - This signal word is used to alert you to a hazard to unsafe practice which will result in death or serious injury



WARNING - This alerts you to a hazard or unsafe practice that could result in death or serious injury.



CAUTION with Alert symbol - This signal word designates a hazard or unsafe practice which may result in minor injury.



CAUTION without Alert symbol - When used by itself, CAUTION 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 become explosive if ignited. Spilled or leaking fuels cause vapors. Even filling customer tanks will cause explosive vapors in the vicinity of dispenser or island.

No Open Flames



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 fuels and their vapors. After getting 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. Be familiar with Cardiopulmonary Resuscitation (CPR) methods if you are working 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 tag out and lock out procedures. If you are not familiar with this requirement, refer to information in the service manual and OSHA documentation.

Working With Electricity Safely

Be sure to use safe and established practices in working with electrical devices. Poorly wired devices may cause a fire, explosion or electrical shock. Be sure grounding connections are properly made. Make sure that sealing devices and compounds are in place. Be sure not to pinch wires when replacing covers. Follow OSHA Lock-Out and Tag-Out 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. Be sure to clean hands after handling equipment. Do not place any equipment in mouth.

WARNING

This area contains a chemical known to the State of California to cause cancer.

WARNING

This area contains a chemical known to the State of California to cause birth defects or other reproductive harm.

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

Emergency First Aid

Informing Emergency Personnel

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

WARNING



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

WARNING



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

WARNING



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

WARNING



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

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

Lockout/Tagout

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

In an Emergency

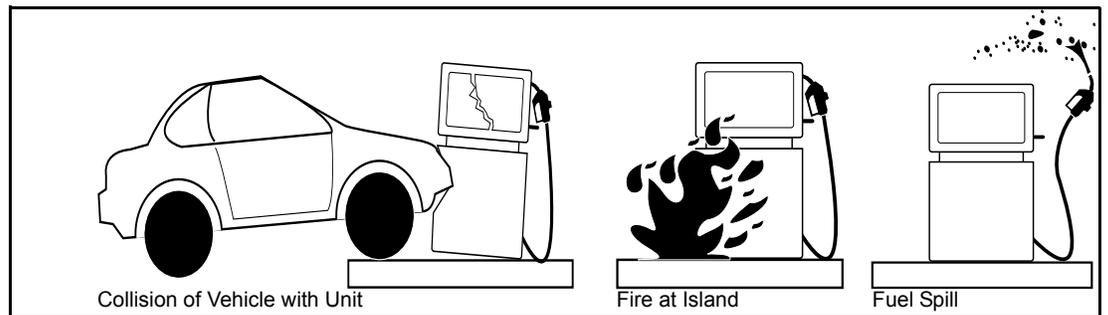
 **WARNING**

 Spilled fuels, accidents involving pumps/dispensers, or uncontrolled fuel flow creates a serious hazard.

 Fire or explosion may result causing serious injury or death.

Follow established emergency procedures.

The following actions are recommended regarding these hazards:



- Do not go near 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 keys 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. No 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 – 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/remote dispenser cannot be expected to work satisfactorily unless the underground installation is correct. Dispensing troubles, which seem to be pump-related, are frequently traced to faulty installation. Review the following list of installation DOs and DON'Ts to avoid potential problems:

- 1 DO read the Important Safety Information pages at the front of this manual. 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.
- 3 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.
- 4 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.
- 5 DO have the pump/remote dispenser installed by a competent installer/electrician.
- 6 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.
- 7 DO NOT attempt to wire a pump/remote dispenser without first reviewing the appropriate wiring diagram and notes. Wiring diagrams contain important restrictions regarding the connection of additional equipment. Failure to follow the correct wiring diagram may result in damage to the CPU PCB.
- 8 DO NOT experiment with a pump if you are not sure the installation is correct.
- 9 DO NOT overload sub- or main-breaker panels.
- 10 DO NOT install any underground piping without proper swing joints (Always use shoulder nipples, never close nipples).
- 11 DO NOT cover any lines until they have been both air- and liquid-tested.

- 12 DO NOT back-fill the tank or supply line with cinders or ashes. (Back-fill with clean sand, crushed rock, or pea gravel).
- 13 DO NOT use black iron pipe or fittings for underground installations. (Use only new galvanized or fiberglass* pipe and fittings). *Install all fiberglass pipe and fittings according to manufacturer's specifications and requirements.
- 14 DO NOT use power line wiring of inadequate capacity. (Use gauge specified by the wiring diagram or wire chart provided in [“Wiring” on page 5-1](#)).
- 15 DO NOT use a circuit breaker of improper size (See [“Wiring” on page 5-1](#)).
- 16 DO NOT install fill pipe to tank where it can be submerged with standing water.
- 17 DO NOT use the Gasboy fuel dispensing equipment to remove water ballast from the storage tank.
- 18 DO NOT use gaskets on covers of explosion-proof type boxes. The sealing compound found around wires at all junction box entrances 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.
- 19 DO NOT use knock-out boxes or flexible conduit for installing this unit. All power and lighting wires should be run in threaded, rigid, metal conduit. All threaded connections must be drawn up tight with five (5) threads minimum engagement. Only one opening in the AC junction box is provided with a plug at the factory. On completion of the installation, it is the installer's responsibility to ensure that any unused openings are plugged.

Foundation

When constructing the pump island for the dispensing equipment, be sure to extend the island excavation beyond the depth of the frost line. Leave open an area from the inside edge of the unit's base as shown on the specific base layout. Unless required by local regulations, do not cement the pipes and conduits into the island. The open area within the base will provide access for future servicing of the fittings, check valve and conduit assemblies. Fill in the boxed-in section with dry sand to keep condensation in the pump housing to a minimum and to help prevent fogging of the totalizer window.

Secure the pump/remote dispenser to the island using anchor bolts through the two mounting holes, which are 13 inches (330mm) apart and are indicated on each base layout by an X. If the dispensing unit is not securely fastened to the island, supply line leaks at unions and pipe joints may occur. Use one of two types of bolts to anchor the pump to the island. Use two (2) 1/2" x 5" (13mm x 125mm) machine bolts imbedded in the concrete, or, to meet minimum UL and API requirements for universal interchangeability of pumps, use two 1/2" x 3 1/2" (13mm x 90mm) lag screws with 2" (51mm) expansion shields.

Suction Pump

The pump and the tank should be located close to each other with as few changes in direction of the supply line, as possible. This reduces the possibility of vaporization (gasoline only), attains the highest possible flow rate, and results in a lower installation cost. Avoid long supply lines and excessive vertical lifts. The dynamic lift for this unit is rated at 12 feet (4m) for gasoline and 13 feet (4m) for diesel and can vary according to conditions of the installation and fuel temperature.

If a pump is to be used with an above-ground tank, a pressure regulator valve is required on the suction side of the pump; consult your Gasboy representative for details. The tank should be free of water and dirt. It is recommended that the tank be pressure tested to verify it is tight. This type of installation is not recommended for Models 9840Q and 9853QTW1M; consult your Gasboy representative for details.

Note: The outlet fitting at the top of the float chamber should be connected to drain back to the storage tank. The pipe size for the return line to the storage tank should be at least 3/8" (10mm).

Remote Dispenser

Locate the remote dispenser and tank with submersible pump as close to each other as possible to attain minimum possible pressure drop and the highest possible flow rate, consistent with the pump capacity. Consult the submersible pump manufacturer's recommendations for pipe sizing and installation instructions pertaining to the model of submersible pump being installed.

A Listed emergency shut-off valve (OPW 10RUS or equal) must be installed under each remote dispenser with the shear groove at the same level as the top of the concrete island + (plus) 1/2" (13mm). The shear valve should be rigidly supported to ensure proper shearing and closure of the valve in the event that the remote dispenser is dislodged. According to the type of shear valve, a different supply nipple may be required.

After a shear valve has operated on an emergency basis from fire or mechanical shock, or if it does not operate correctly when inspected, repairs must be made before putting the remote dispenser into service.

It is required by the Flammable and Combustible Liquids Code that a leak detector be installed in the system to prevent underground leaks from going unnoticed.

Supply Line

IMPORTANT INFORMATION
<p>Use a Model 52 pressure regulator valve with all self-contained models except 9840Q and 9853QTW1M. These models are not recommended for aboveground tanks. A zero differential of pressure, electric solenoid valve is required in the line at the top of the tank. Do not use an anti-siphon valve.</p>

Use new galvanized or fiberglass (see note) pipe, 1 1/2" (38mm) minimum diameter. When installing a 9840Q or 9840QX, 9850Q or 9850QX model, use a minimum of 2" (51mm) diameter supply pipe to obtain the highest possible flow rate and to reduce the possibility of vaporization (gasoline only).

Note: Fiberglass pipe is to be installed according to manufacturer's specifications and requirements.

Ensure that both the pipe and the tank are clean. Foreign matter entering the pump can cause extensive damage. Obstructions in the supply line can create pump problems and reduced flow rate.

Ensure that all pipe threads are properly cut and the inside reamed to remove burrs. Use Listed gasoline-resistant compound on all joints of gasoline handling piping. Sealing compound must also be resistant to Gasohol (Ethanol and Methanol). Do not use Teflon® Pipe Sealing Tape. 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. Install swing joints under the pump and at the tank to avoid breaks in the supply line from settling or frost heave.

To avoid product delivery problems on suction pumps, ensure that there are no traps in the supply line. Supply lines, for both suction pumps and submersible pumps, should go straight down beneath the pump to a point 18 inches (46cm) below the ground level and pitch at a rate of 1/8 inch (3mm) per foot (.305m) from there down to the storage tank. The supply line should be as short and direct as possible with swing joints at all turns. Support the horizontal run of pipe at 10-foot (3.05m) intervals to maintain pitch and prevent traps. Do not use wood as pipe supports.

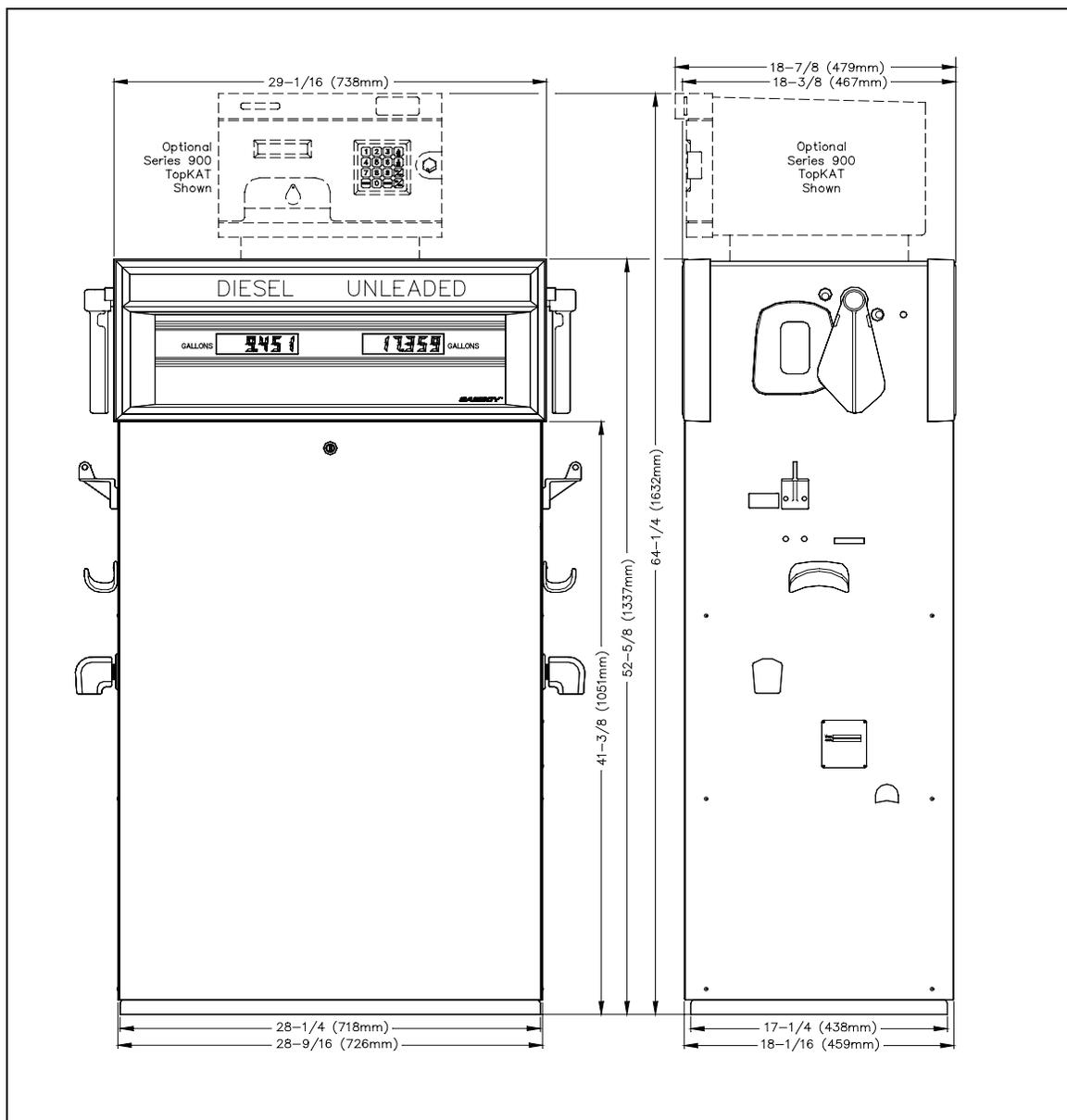
New EPA regulations require that only one check valve be used per supply line and located directly below, and as close as practical to the suction pump. Do not use spring-loaded or union check valves since these will unnecessarily reduce the flow rate and contribute to the reduction of atmospheric pressure necessary to keep gasoline in a liquid state. Upon completion of installation, all liquid-carrying lines must be checked for leaks.

Nozzle, Hose, and Accessories

This unit is normally equipped for use with a UL-listed interchangeable service station type nozzle. Only UL-listed hose assemblies and accessories are to be used with this device. A Listed breakaway connector must be installed on all hose assemblies.

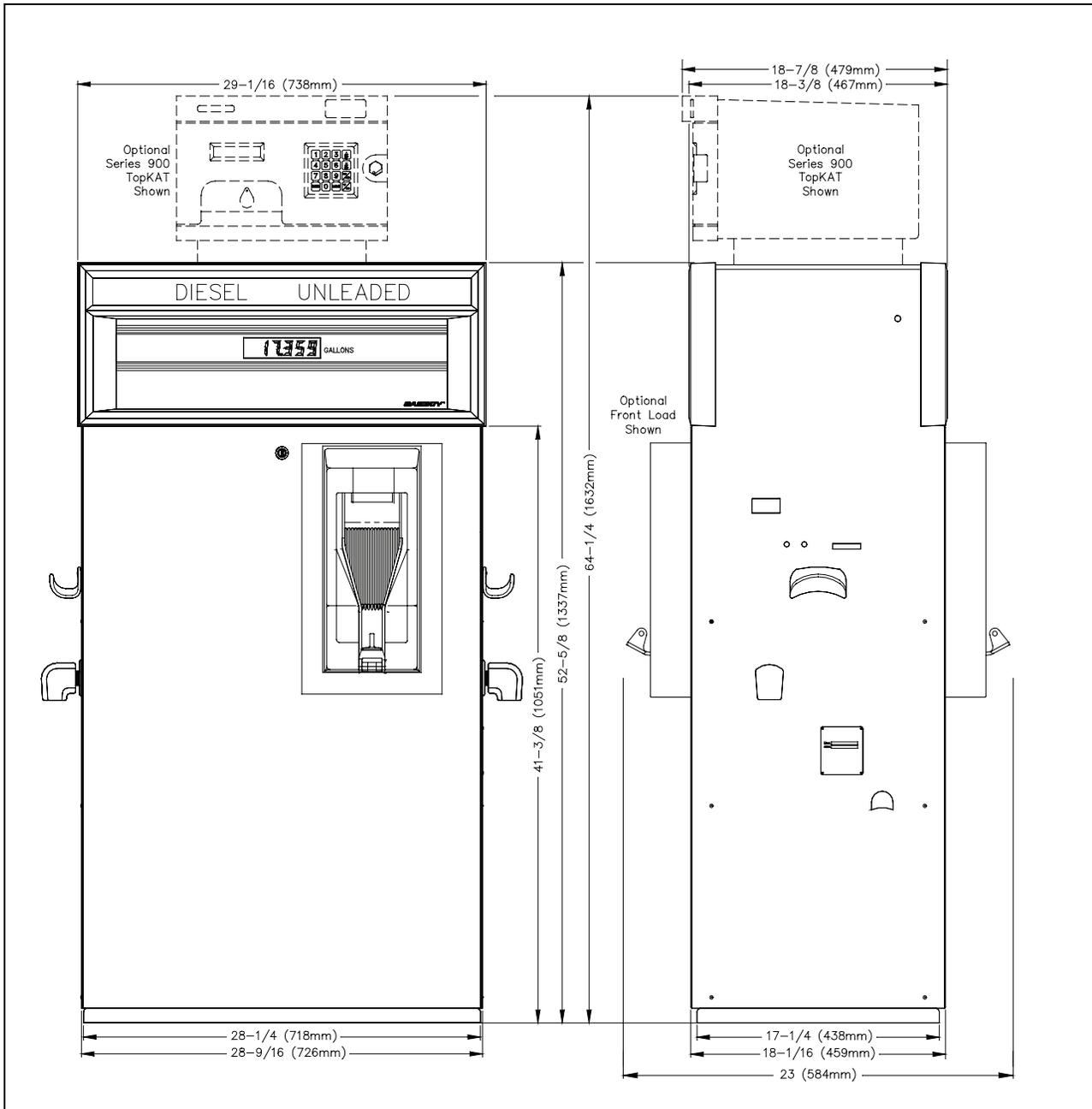
Single/Twin Pump/Remote Dispenser Dimensions

Note: Unit shown is a twin unit.

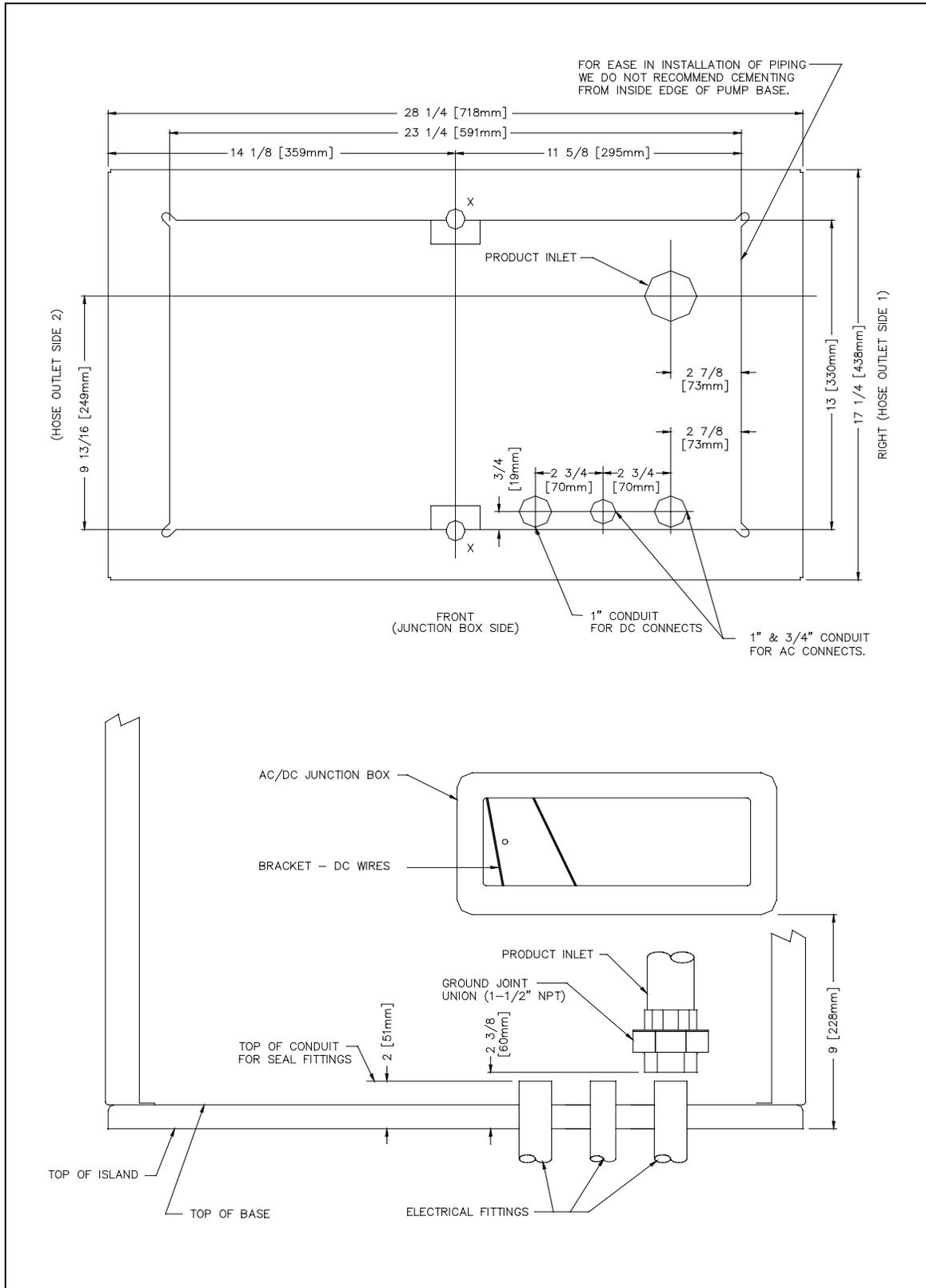


Single/Twin Pump/Remote Dispenser Front Load Nozzle Dimensions

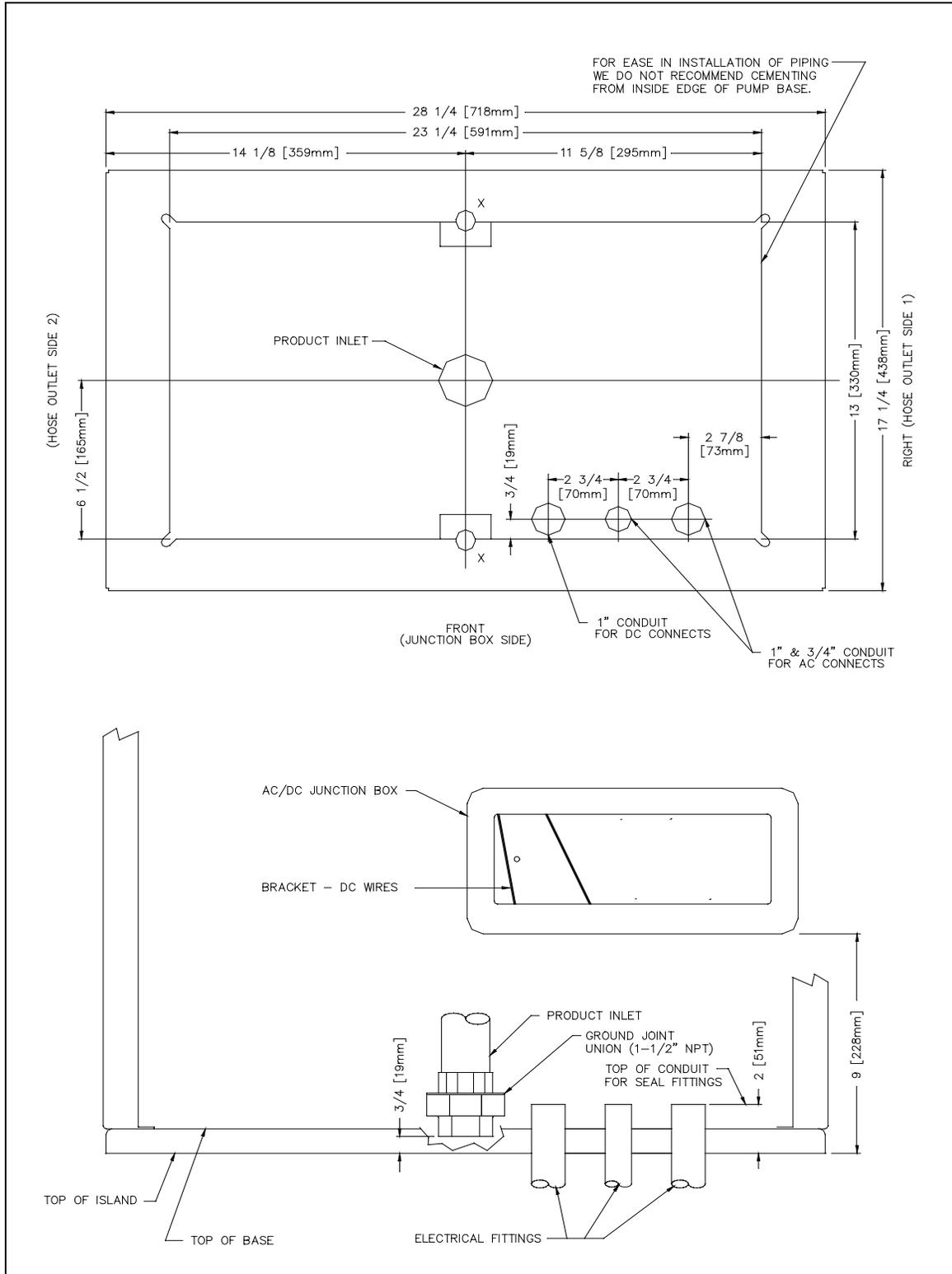
Note: Unit shown is a front load twin unit.



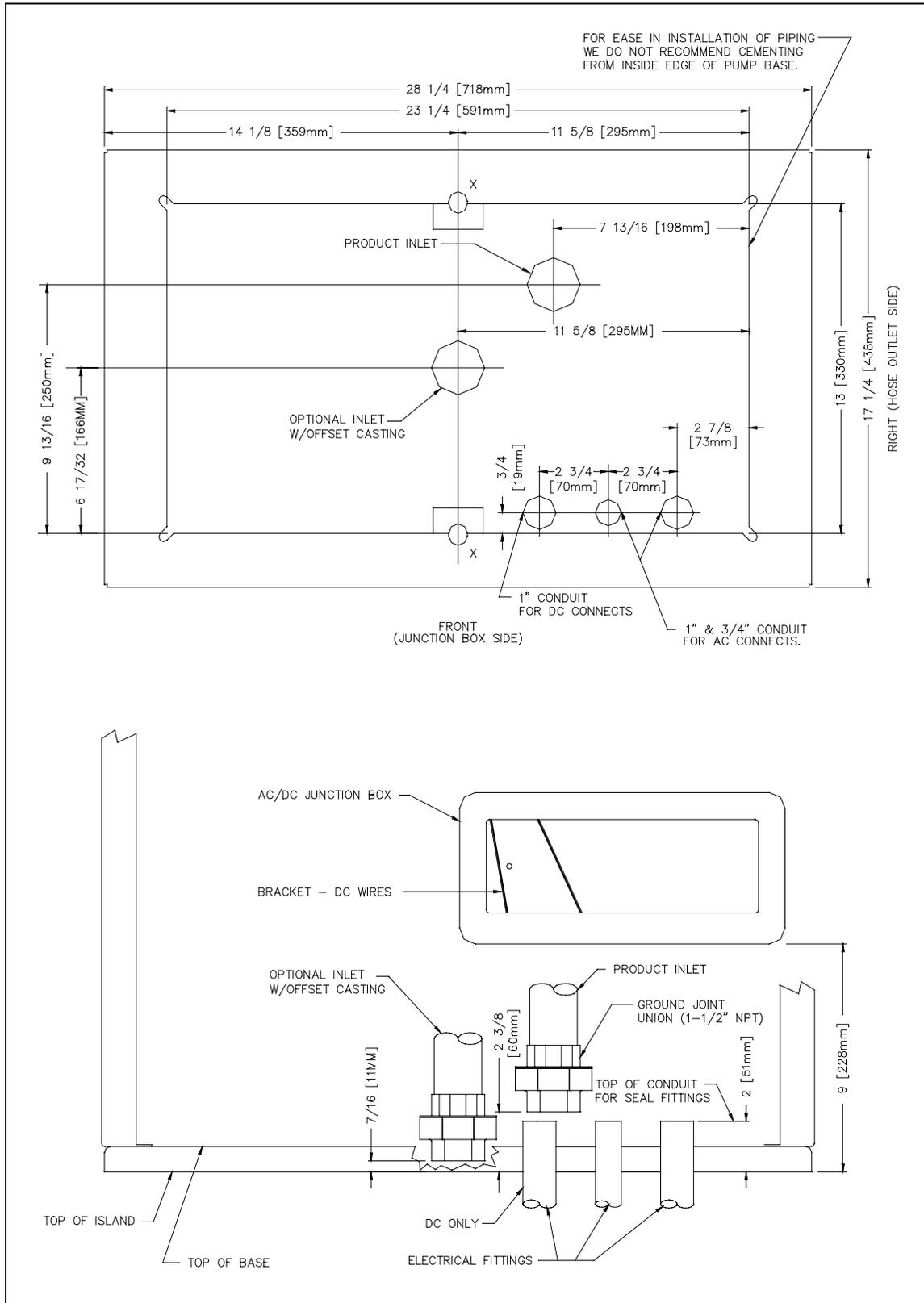
012011 Base Layout, Model 9852QTW1



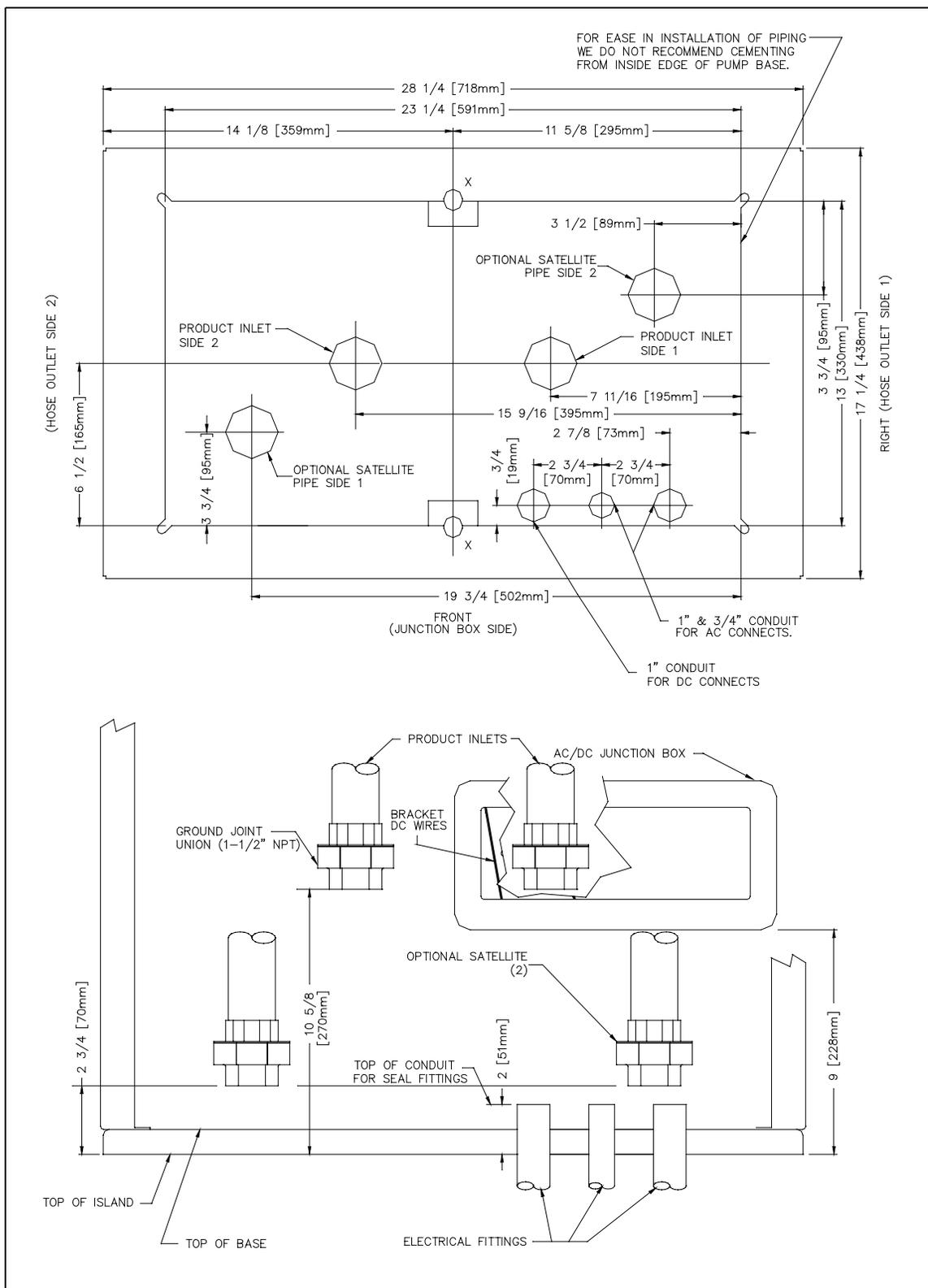
012013 Base Layout, Model 9853QTW1M



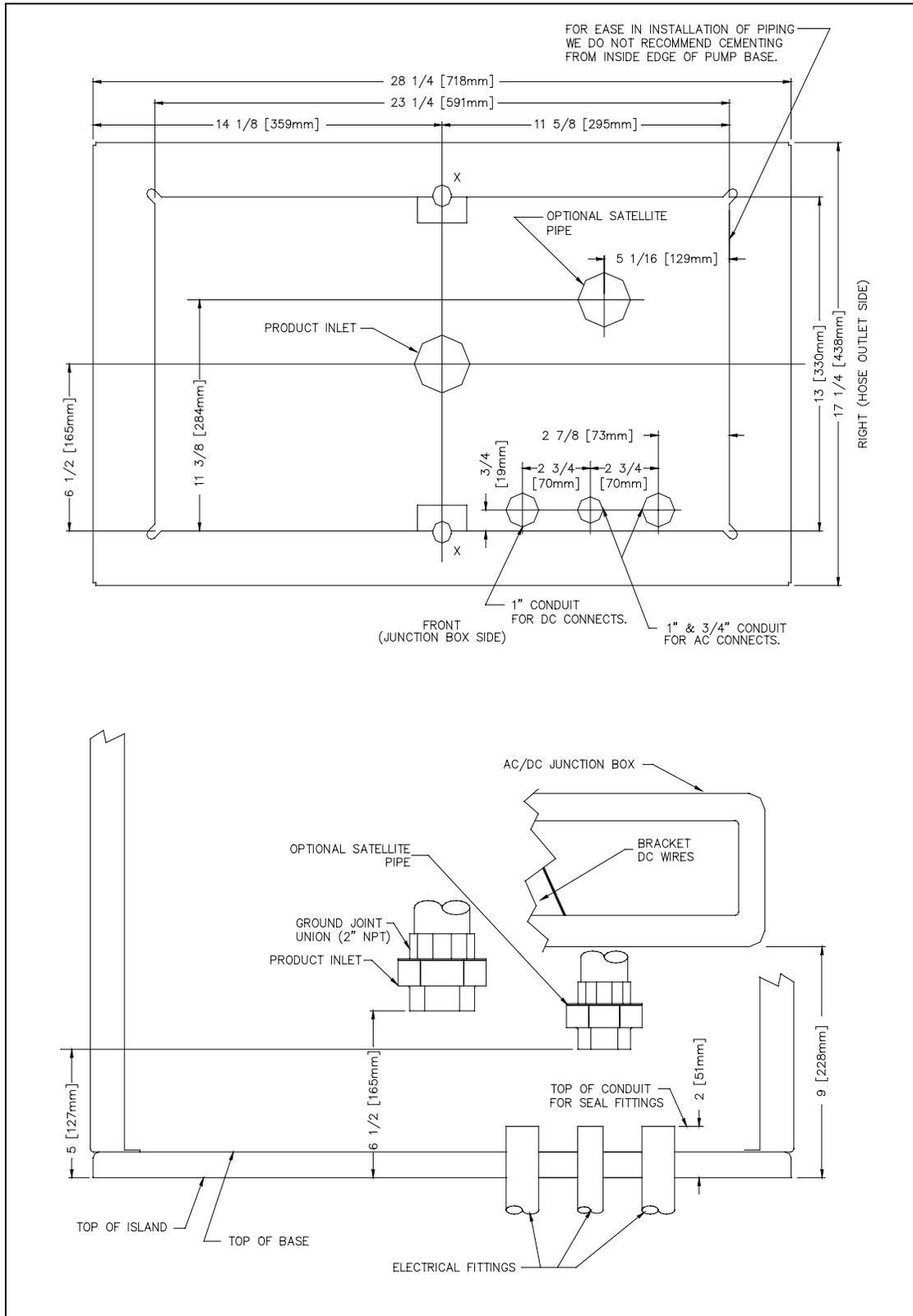
012014 Base Layout, Models 9852Q, 9853Q



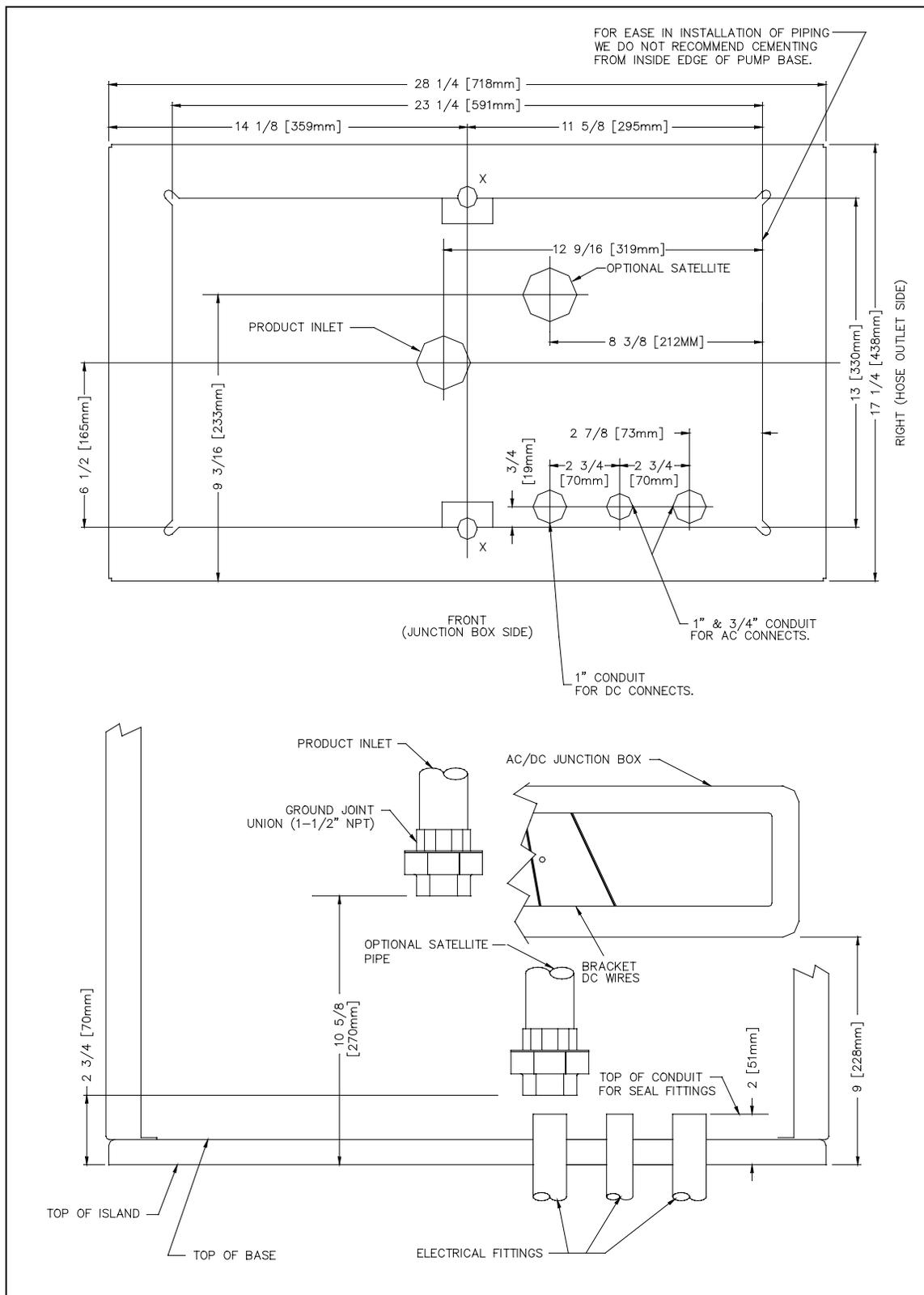
012015 Base Layout, Models 9852QXTW2, 9853QXTW2



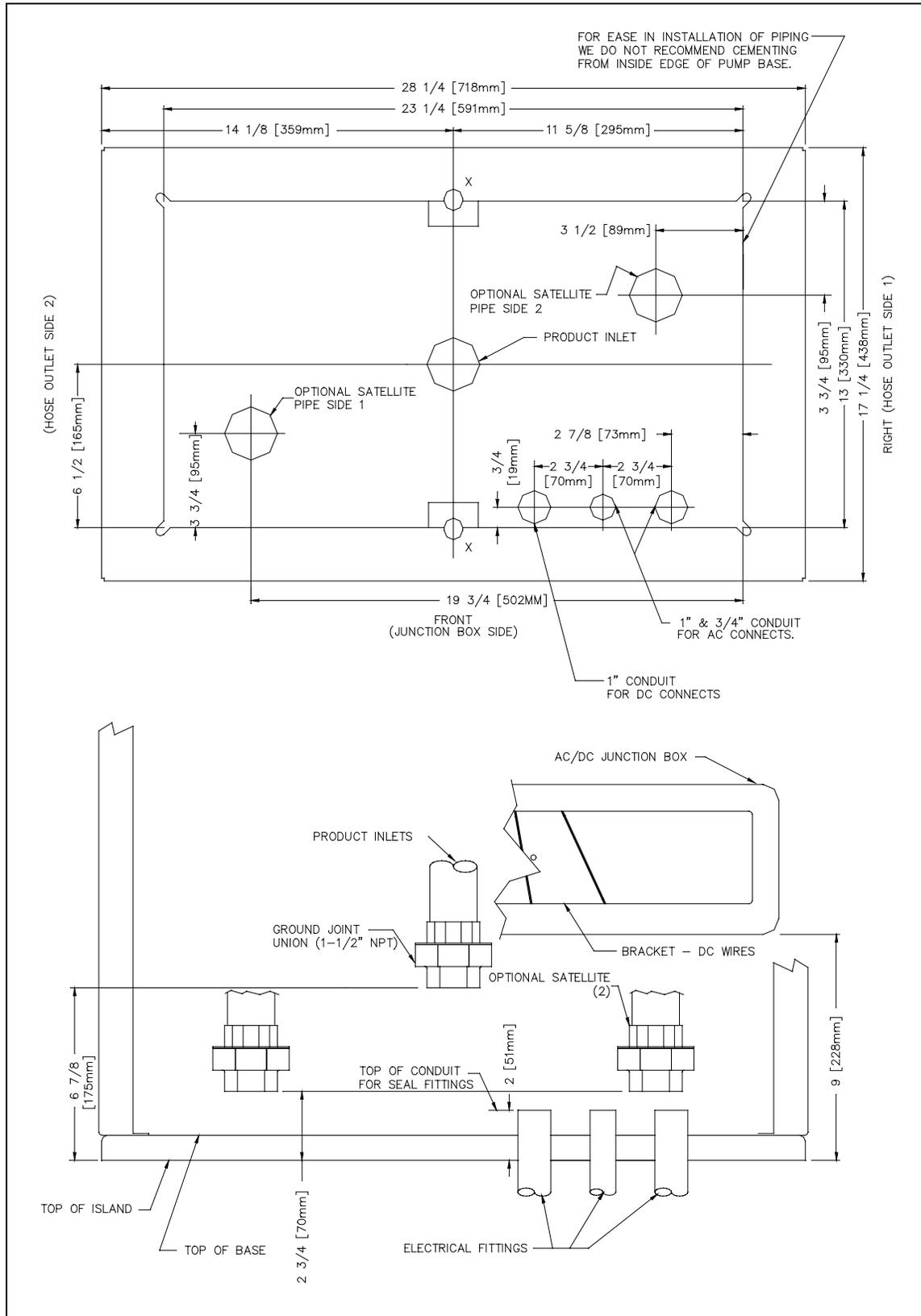
012016 Base Layout, Model 9840QX



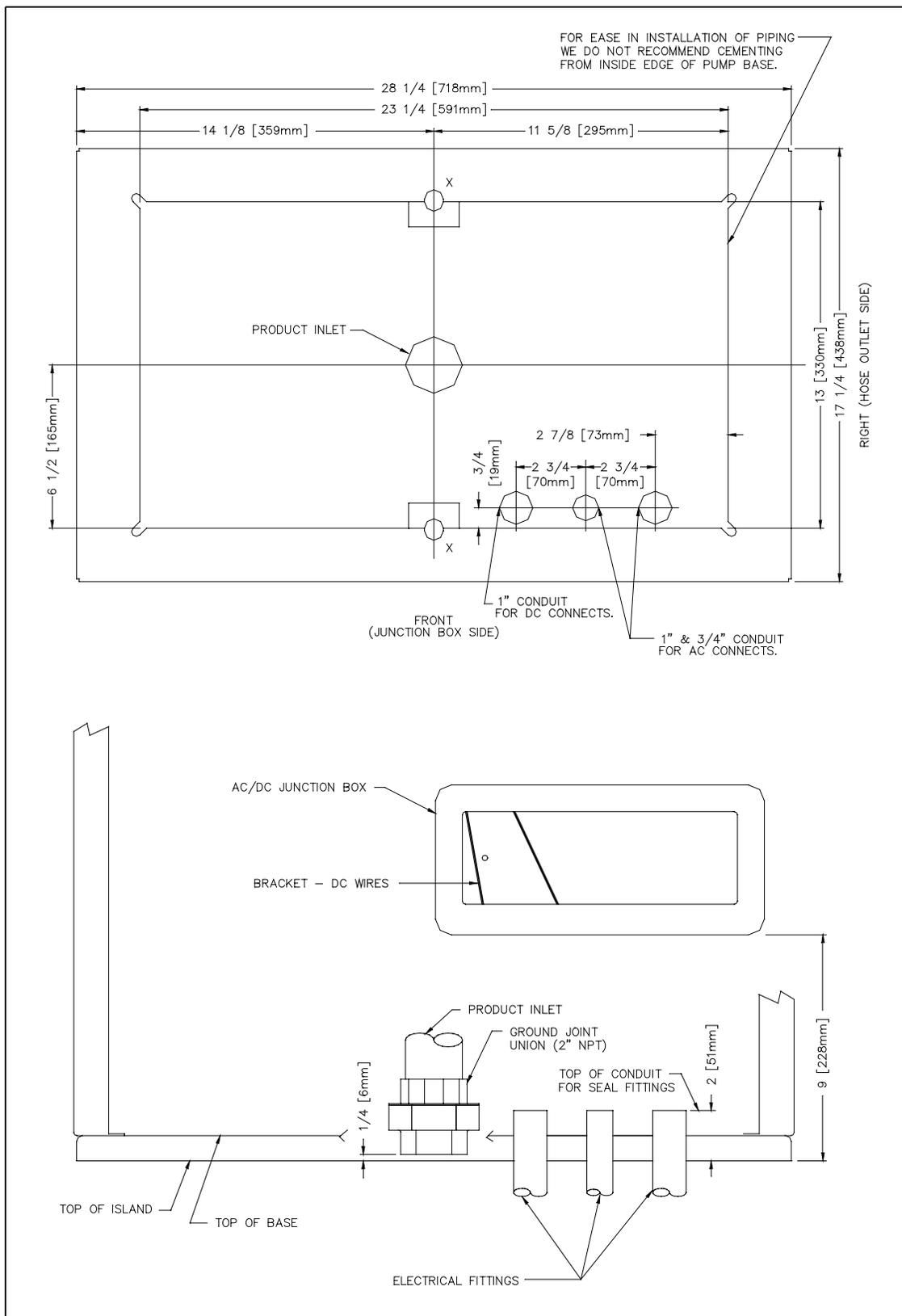
012017 Base Layout, Models 9852QX, 9853QX



012018 Base Layout, Models 9852QXTW1, 9853QXTW1



012019 Base Layout, Model 9840Q



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4 – Control Lines

Purpose

This section is provided to familiarize the installer with the control inputs and outputs that are available for the Series 9800Q dispensing unit. It is recommended that the installer read these descriptions to obtain a better working knowledge of the unit in order to guide him in planning the site wiring. Refer to [“Wiring” on page 5-1](#) for specific wiring diagrams and installation notes.

The Series 9800Q 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 9800Q to a Gasboy Fuel Management System, refer to:

- C01918 CFN Site Controller II Installation Manual
- C35963 CFN Series Islander II Installation Manual
- MDE-4298 CFN Series SC III Install Manual
- MDE-4319 TopKAT FMS Installation Manual
- MDE-4344 Series 1000 Fuel Management System

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 wire of the system 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 that 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 (Control/Pump Motor Feed or Control/SubM Feed - Side 1, Side 2). This must also be on a separate breaker from the fluorescent lights to reduce electrical noise and allow for separate control of the lights. In a site configuration using multiple dispensing units, the power for the microprocessors of up to eight units can be supplied by one breaker. This line also supplies power to the optional TopKAT. If this unit is equipped with a TopKAT option, see the TopKAT Installation Manual for wiring requirements and information.

Micro Neutral

The Micro Neutral is a return line for AC current from the microprocessor of the dispensing unit to the breaker panel. This line also serves as the return for the optional TopKAT.

Control/Pump Motor Feed

The Control/Pump Motor Feed is a 115 VAC (230 VAC Int'l) input which is required to power and authorize the control line. This line is used to provide authorization for the dispensing 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 Control 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. Two Control/Pump Motor Feed lines are provided for twins.

The Control/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. It is possible to combine the control lines for twins and supply them from one breaker; however, the gauge of the wire needs to be adjusted to handle the load of two motors. The Reset Complete signal used for external monitoring of the pump also originates from the Control/Pump Motor Feed line.

External Valve

The External Valve line is used to directly power an anti-siphon valve mounted on top of an above-ground tank. The valve must operate at the same voltage as the pump motor and the current draw must not exceed 1 Amp, or the valve must be switched through an external relay controlled by the External Valve line. Do not connect two or more External Valve lines together. If more than one pump is drawing from the tank, separate anti-siphon valves must be installed, or each External Valve line must operate an external relay which then operates the valve.

Neutral Feed

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

Control/Submersible Feed (Control/SubM Feed)

The Control/SubM Feed is a 115 VAC (230 VAC Int'l) input which is required to power and authorize the control line. This line is used to provide authorization for the dispensing 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 Control 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 TopKAT and CFN systems require the resistor assembly only when they are used with the 9800 pump/dispenser operating in standalone mode. Operating the 9800 in standalone mode with a TopKAT requires the TopKAT mechanical interface option; with a CFN system, requires an optional mechanical pump control unit. This line also supplies the power which is switched to the slow flow and fast flow valves along with the switch detect signal. Two lines are provided for twins. If the 9800 is to be controlled through authorization of this line, special care must be taken in the wiring of the submersible control lines when a common submersible is used for more than one hose outlet. See “Submersible Starter Drive” & “Submersible Pump Drive” for more information.

Units with Standard Submersible Drive (SubM Drive)

Power for the SubM Drive line originates from this input. The submersible starter relay line, in standard remote dispensers, is not capable of directly powering a submersible pump. A starter relay must be used. The control lines for twin remote dispensers can be combined together and powered by one breaker if individual control of each side is not desired. In a site configuration using multiple remote dispensers, the power for the control lines of up to eight hose outlets (8 singles or 4 twins) can be supplied from one breaker.

Units with Submersible Drive Relay Option

Power for the SubM Drive line originates from this input. Units equipped with the optional relays for direct submersible pump drive can be connected directly to submersible pumps up to 3/4 HP at 115 VAC or 1-1/2 HP at 230 VAC. The gauge of this wire should 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.

Submersible Starter Drive (SubM Starter Drive)

The SubM Starter Drive is a 115 VAC (230 VAC Int'l) output used to control a submersible starter relay. Two lines are provided for twins. This line is capable of supplying 300mA of AC current to control the coil of the submersible motor contactor (starter relay). This is sufficient for directly connecting to the popular models, but if in doubt, check the contactor (relay) manufacturer's data sheet for the sealed VA rating. Divide the sealed VA rating by the coil voltage to determine the current.

CAUTION

This line must not be connected directly to the submersible pump, shorted to any conduit or chassis metal, or mis-wired, or the CPU PC board will be instantly damaged.

This line must be left capped when not in use. Follow the checks in Section 6 prior to applying power, to avoid accidental damage.

Note: When multiple dispensers are used to control a common submersible starter-relay or pump, and the 9800 is controlled (authorized) through the Control/Pump MotorFeed line (as in the case of some Fuel Management Systems), it is important that the lines from the 9800 to the submersible equipment be isolated from each other. This can be accomplished by running the submersible control lines through a secondary set of relay contacts in the Fuel Management System. If a secondary set of contacts is not available, external control relays must be used between the 9800 and the submersible starter relay or pump. Another option is to provide a separate submersible starter relay for each hose outlet. In no case can the submersible drive lines from the 9800 be tied together.

Submersible Pump Drive (SubM Pump Drive)

This line is always present for remote dispensers, but is active only when SubM drive relays are supplied. The SubM drive is a 115/230 VAC (230 VAC Int'l) output used to control the submersible starter relay or submersible pump. When connected directly to the submersible pump, the motor size cannot exceed 3/4 HP at 115 VAC or 1-1/2 HP at 230 VAC. Two lines are provided for twins. In cases where both lines will be controlling the same starter relay or pump, they can be combined. This line is also used to control an external valve used on aboveground tank installations.

Note: See Special Note in Submersible Starter Drive for situation where more than one hose outlet will be using the same submersible pump.

Reset Complete (Switch Detect)/Slow Flow

The Reset Complete/Slow Flow is a 115 VAC (230 VAC Int'l) output which is used to indicate that the reset process is complete and the unit is ready to dispense product, such as may be required when used with a Fuel Management System (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 170 mA AC maximum to the satellite valve and FMS. When connecting 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, mis-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, or the CPU PC board will be instantly damaged! This line must be left capped when not in use.

Follow the checks in [“Pump/Remote Dispenser Operation”](#) on page 6-1 before applying power to avoid accidental damage.

Fast Flow

This is a 115 VAC (230 VAC Int'l) 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.

CAUTION

This line must not be shorted to any conduit or chassis metal, mis-wired, used to control both stages of a satellite valve, or be connected to equipment requiring more than 170mA from this line to operate, or the CPU PC board will be instantly damaged.

This line must be left capped when not in use. Follow the checks in [“Pump/Remote Dispenser Operation” on page 6-1](#) before applying power to avoid accidental damage.

Phase 2 Feed

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

Slow/Fast Satellite Returns

These lines are used only in units that come equipped with satellite piping. They are used in applications where the remote dispenser and satellite may not dispense product at the same time. These lines are not connected internally as they leave the factory. Four lines are provided for twins.

CAUTION

These lines must not be shorted to any conduit or chassis metal, or be connected to equipment requiring more than 170mA from each line to operate, or the CPU PC board will be instantly damaged.

These lines must be left capped when not in use. Follow the checks in [“Pump/Remote Dispenser Operation” on page 6-1](#) before applying power to avoid accidental damage.

Light Feed

The Light Feed is a 115 VAC input required to power the fluorescent lights. In a site configuration that use multiple remote dispensers (or pumps), the power for the lights of up to eight units can be supplied by one breaker. It is recommended that this be on a separate breaker from the Micro/Heater Feed to reduce electrical noise and allow for separate control of the lights.

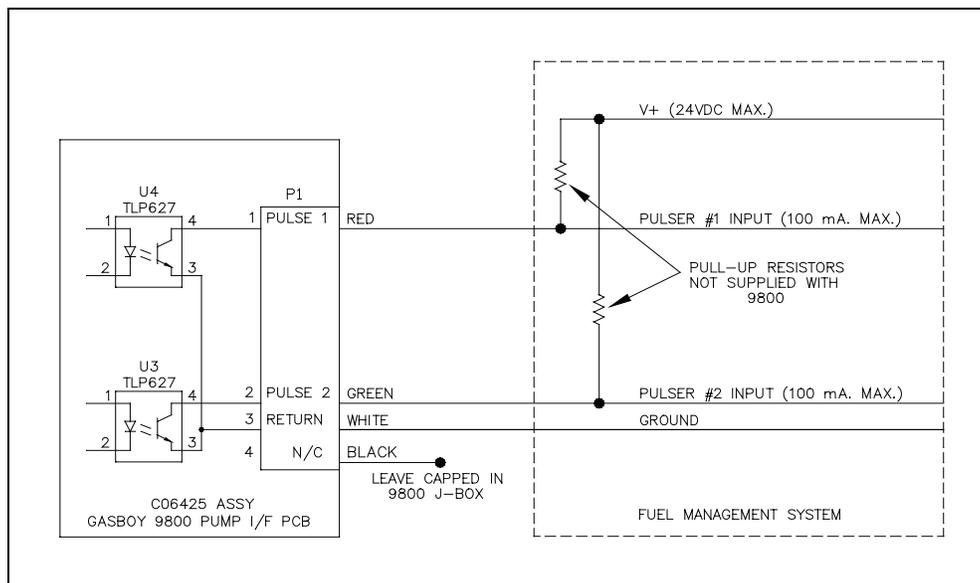
Light Neutral

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

Pulser

When the dispensing unit includes the optional pulser interface, a pulser output is provided. This pulser output provides a DC output to indicate the quantity dispensed. The pulse rate can be configured by a sealable DIP switch for rates of 1, 10, 100, 500 pulses per gallon or 1, 10, or 100 pulses per liter. For the 9840Q pump, the pulse rates are 1, 10, 100, or 500 pulses per gallon or 1, 10, or 100 pulses per liter. For the 9850Q pump, the pulse rates are 1, 10, and 100 per US Gallon, or 1 or 10 pulses per liter.

The output is an open collector transistor output capable of sinking up to 100 milliamps DC at voltages up to 24 VDC. The DC ground for the circuit comes from the Fuel Management System (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 the reference voltage. The value of this resistor is calculated based on the voltage and current requirements of the FMS pulser circuit.



The J-Box used in the optional pulser interface contains four wires. Any unused wires in the J-Box must be individually capped.

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 directly to the Series 9800Q dispensing unit. These lines must be individually capped when not in use. The RS-485 interface is included with the TopKAT option.

RS-232 and RS-422

When the dispensing unit includes the optional TopKAT, lines for communication to the TopKAT are provided. These lines allow the user to communicate directly to the TopKAT via RS-232 or RS-422. These lines must be capped when not in use.

5 – Wiring

Note: 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/remote dispenser. 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/remote dispenser. In submersible pump applications, turn off and lock out power to the submersible pump and any other remote dispensers that use that submersible pump. AC power can feed back into a shut-off dispenser when remote dispensers share a common submersible pump or starter relay.

- 7 Have the pump/remote dispenser 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 wire of the pump/remote dispenser 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 that 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 feed must come from a different breaker than that of the pump or remote dispenser control. This not only provides electrical isolation for the micro feed, but allows the unit to be disabled without shutting off power to the microprocessor PCB. The AC power for the micro feed may be grouped together for multiple units. It is recommended that no more than eight units be supplied from one breaker. Remote dispensers may be grouped together on a single breaker when the submersible pump has its own breaker. It is recommended that no more than two remote dispensers be powered from one breaker to maintain isolated control with the circuit breaker panel in case of problems. Units directly driving pumps (suction or submersible) should be supplied power from a separate breaker. A tag on the motor identifies the maximum current drawn by the motor. If two (2) pumps are supplied from one breaker, that breaker must be capable of handling the load of both motors. In cases where multiple remote dispensers supply power to a single submersible pump, all breakers controlling the remote dispenser must be on the same phase of power. Failure to do this will damage the equipment. Provisions must be made to break both legs of any AC circuit.

The 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; typically located on the shaft end of the motor, 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. Re-insert the screw and secure the plate in place.

CAUTION

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.

Motor Amp Ratings

The following chart shows the maximum running amperage that can be expected for each pump motor, unless noted otherwise:

Models	115V/60Hz units	230V/60Hz units	230V/50Hz units
9852Q, 9852QTW2, 9852QTW1, 9853Q, 9853QTW2, 9853QTW1M	10.0	5.0	6.0
9840Q (2 motors combined)	Not available	10 (See NOTES)	12.0 (See NOTES)

Note: These numbers do not account for the higher load upon startup, nor up to one additional amp associated with other electrical components (lights, solenoid valves, etc.).

Note: The 9852QTW2, 9853QTW2, and 9853QTW1M have one pump motor per side.

Note: The 9840Q model should use no less than a 20-Amp breaker to account for the high current upon startup.

Wire Size

The table below shows the required AC wire size for suction and submersible pumps based on the HP rating of the pump motor and the distance from the circuit breaker to the pump/remote dispenser for both 115 and 230 volt units. Use this table as a guide for selecting the proper size wire for the Control/Pump Motor Feed, Control/SubM Feed (Optional Drive), SubM Drive, Neutral Feed, and Phase 2 Feed.

The AC wire size for the Micro Feed, Micro Neutral, Light Feed and Light Neutral should be 14 American Wire Gauge (AWG) for runs up to 300 feet (98m) from the breaker panel or 12 AWG for distances over 300 feet (98m).

The AC wire size for the Control/SubM Feed (Standard Drive), SubM Starter Drive, and Neutral Feed of a remote dispenser should be 12 AWG. These control lines are used to power the solenoid valves and the submersible starter relay (the submersible pump cannot be directly powered from the Standard SubM Drive line).

If multiple units are powered from the same breaker through the same wires, you must increase the gauge of the wires to handle the added load according to the distance from the breaker panel and the HP rating (if applicable).

The AC wire size for the Reset Complete (Switch Detect)/Slow Flow, Fast Flow, and Slow/Fast Satellite Return lines should be 14 AWG (when they are used).

The DC wire size for the Pulse Output lines must be 18 AWG (when they are used). Shielded cable, as described in the Pulse Output or RS-485 Wiring section, allows pulser lines to run with the AC wires.

The DC wire size for the RS-485 lines for connection to a Gasboy Fuel Management System should be two twisted pair cables (when they are used). Refer to [“Pulse Output or RS-485 Wiring” on page 5-5](#) and the Installation Manual for the Gasboy Fuel Management System for specific requirements.

The DC wire for RS-232 and RS-422 lines for connection to a TopKAT are described in The TopKAT Installation Manual.

115 VOLT WIRE GUAGE SIZES PER FEET/METERS OF RUN								
FEET	25'	50'	100'	150'	200'	250'	300'	OVER 300' (91cm) USE RELAY
METERS	8m	15m	31m	46m	61m	76m	91m	AT MOTOR LOCATION
MOTOR HP								
1/2	14	12	10	8	8	8	8	
3/4	14	12	10	8	6	6	4	
230VOLT								
1/2	14	12	12	12	10	10	10	
3/4	14	12	12	10	10	10	8	
1/1/2	12	12	10	10	8	8	6	

Conduit

All wiring to the Gasboy Series 9800Q dispensing unit must be installed in threaded, rigid, metal conduit. PVC is not acceptable. When the Series 9800Q dispensing unit is used with a Gasboy Fuel Management System, it is recommended that AC power wires be installed in a separate conduit from the DC wires; they should not run in any sort of common conduit or trough. However, if AC and DC power wires share conduit, DC wiring must use the cable as specified in [“Pulse Output or RS-485 Wiring” on page 5-5](#). 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 Instructions Manual, C35628 for details.

When using a Fuel Management System other than a Gasboy system, see the manufacturer's installation manual for specific conduit requirements. All wiring and conduit runs must also conform with the National Electrical Code (NFPA 70) and the Automotive and Marine Service Station Code (NFPA 30A). All wiring and conduit runs must conform to local codes. Canadian users must also comply with the Canadian Electrical Code.

Use the charts below as a guideline to determine the proper conduit sizes for the Gasboy Series 9800Q dispensing unit. When planning the orientation of the wiring runs, follow the applicable Gasboy wiring diagram and consider the layout of the components at the site. Long runs or a large number of bends may require you to increase conduit size over what is listed.

THHN/THWN Wire Areas				
Gauge	Diameter		Area(SqUnits)	
	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	0.37	23.7
	.259	6.60	0.53	34.2

THHN/THWN Wire Areas				
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(SqUnits)		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

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

Pulse Output or RS-485 Wiring

Pulse Output

When installed in a separate DC conduit, 18 AWG wires are required for installation. Although it is recommended that DC pulser wires be run in a conduit separate from AC wires, they can be combined in the same conduit with AC wires providing UL-listed cable with the following specifications is used:

Conductor	18 AWG stranded wire. Number of conductors to be determined by number of hoses (2 conductors for 1 hose; 3 conductors for 2 hose)
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

RS-485 Wiring

Twisted pair shielded cable is highly recommended for RS-485 wiring. Although it is recommended that wires be run in a conduit separate from AC wires, they can be combined in the same conduit with AC wires providing UL-listed cable with the following specifications is used:

Conductor	18 AWG stranded wire. 2 twisted-pairs
Shield	Foil-wrapped 100% coverage and/or tinned copper braid 90% coverage

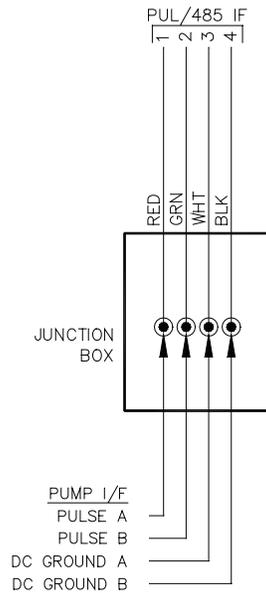
Conductor	18 AWG stranded wire. 2 twisted-pairs
Drain Wire	Stranded, tinned copper, 20 AWG or larger/or braided shield
Voltage Rating	Maximum operating voltage of 600V
Environmental	Gas- and oil-resistant; suitable for wet or dry locations

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.

Dual Pulse Output Wiring

The wiring diagram shown at right shows the changes in wiring when using a pump equipped with the dual pulse output option. The dual pulse output option provides two isolated pulse outputs from a single pulser. It is available only on 9800Q single dispensers.



Wiring Diagrams

While wiring pumps/dispensers, ensure to consult the appropriate wiring diagram and follow all notes.

CAUTION

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

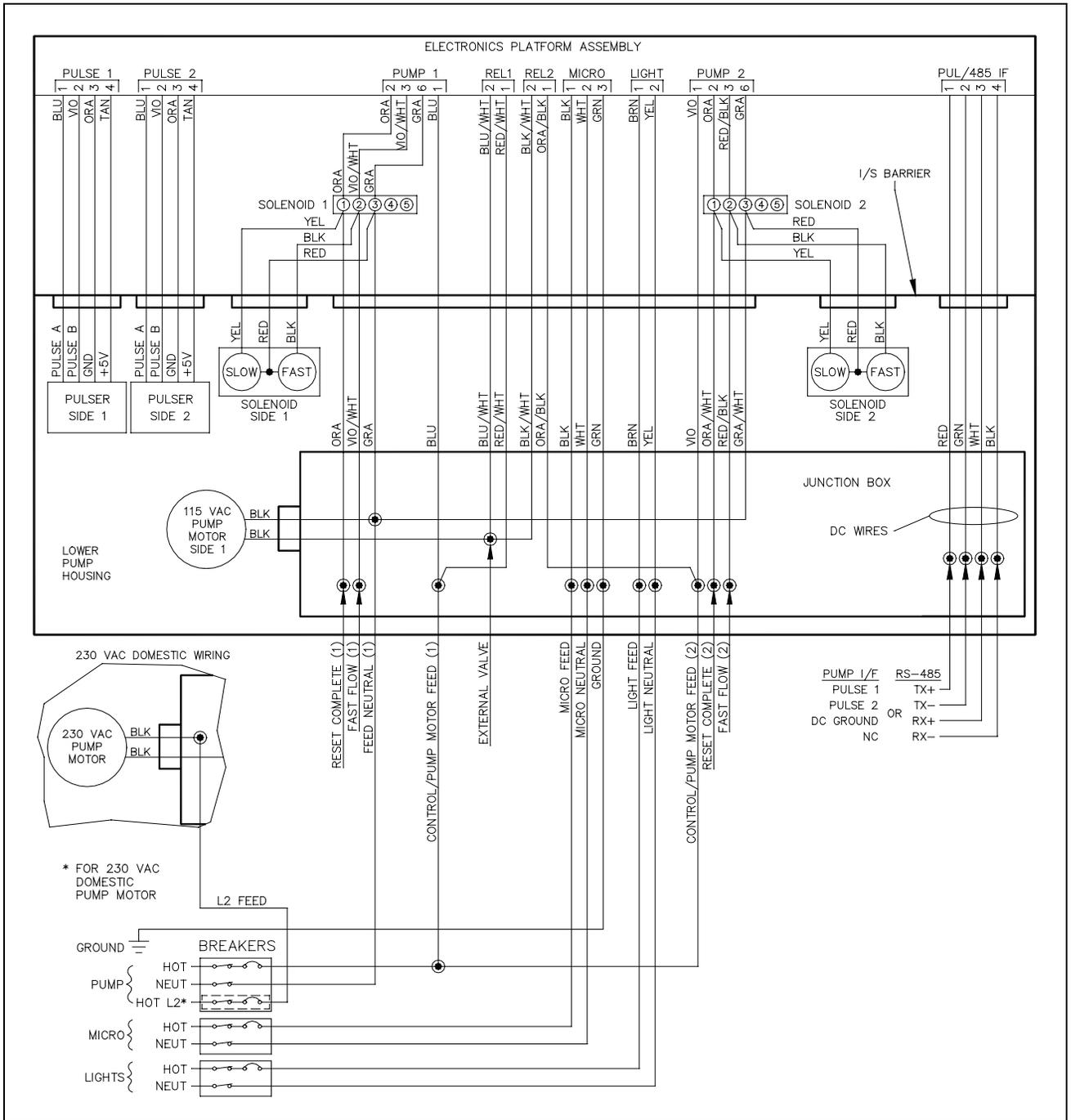
Wiring diagrams are presented in numerical order. Wiring diagram 024257 has two diagrams: one for simultaneous operation of master and satellite and one for non simultaneous operation. Ensure to use the correct one for your application.

All diagrams in this section show domestic wiring (US and Canada). Breakaway drawings are shown for international applications where wiring is different.

024251 Wiring Diagram Models 9852QTW1

Notes:

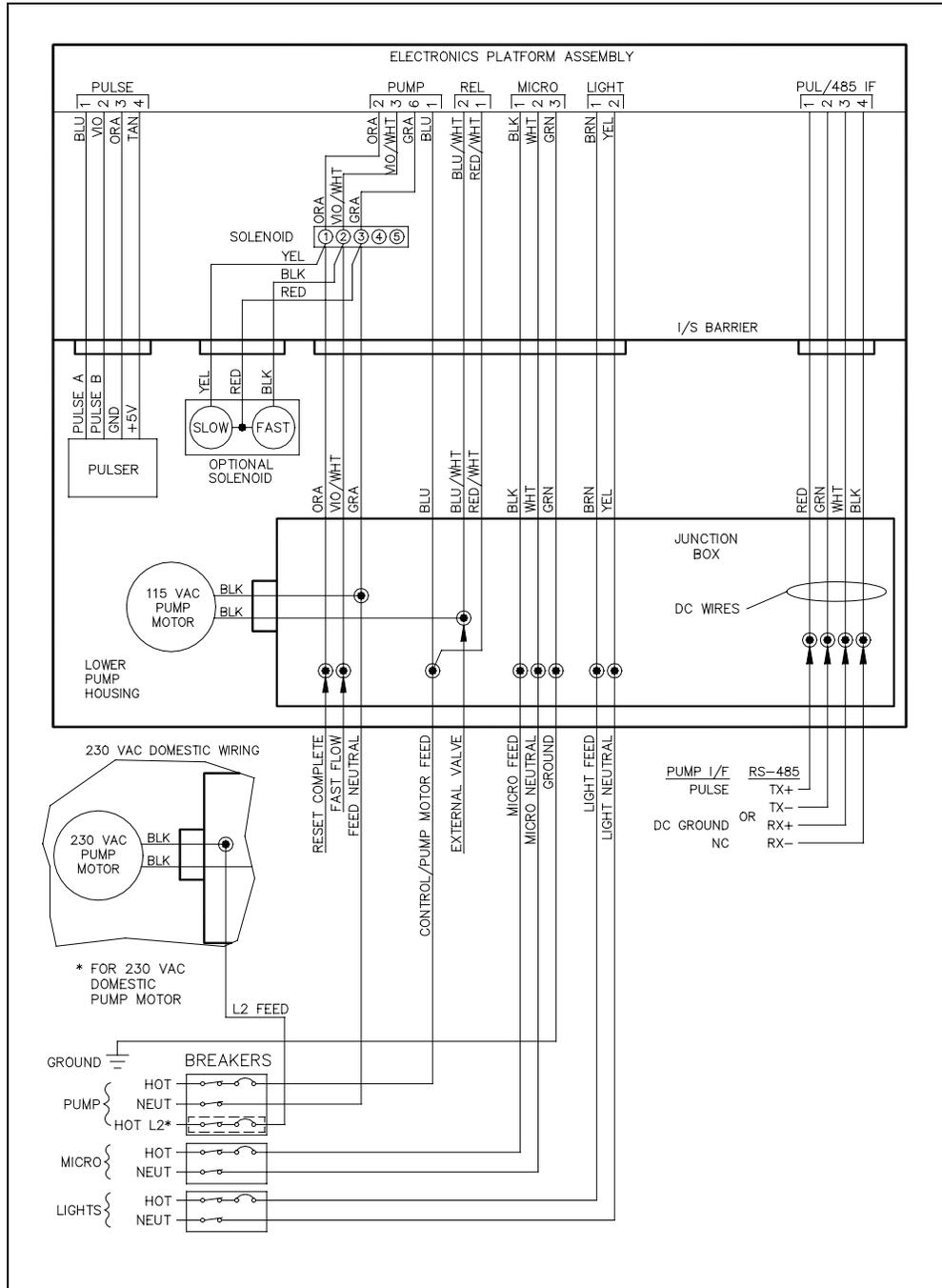
- 1 All wiring and conduit runs must conform with all building/fire codes, all Federal, State, and Local codes, National Electrical Code, (NFPA 70), NFPA 30, and Automotive and Marine Service Station Code (NFPA 30A) codes and regulations. Canadian users must also comply with the Canadian Electrical Code.
- 2 Pump motor can be wired as 230 VAC to reduce current draw. See breakaway view of 230 VAC WIRING. 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 To avoid damage to the CPU PC board, all unused wires must be individually capped, and before applying power, you must verify that the RESET COMPLETE and FAST FLOW wires are not shorted to conduit or chassis.
- 4 COMPLETE (switch detect) line can supply 170 mA AC maximum for connecting to fuel management system circuitry.
- 5 FAST FLOW line can supply 170 mA AC maximum for remote control or monitoring of the fast flow valve found in the pump.
- 6 If the CONTROL/PUMP MOTOR FEED line is controlled by a fuel management system using solid state relays, a resistor assembly must be installed between the Control 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.
- 7 When used with an aboveground tank, the anti-siphon valve mounted on the tank must be driven from the EXTERNAL VALVE line, have the same operating voltage as the pump motor, and the current draw must not exceed 1 Amp. If these conditions are not met, it must be controlled by an external relay driven from the EXTERNAL VALVE line. DO NOT connect the anti-siphon valve or external relay to the RESET COMPLETE line. DO NOT connect two or more EXTERNAL VALVE lines together. If more than one pump is drawing from the tank, separate anti-siphon valves must be installed, or each EXTERNAL VALVE line must operate an external relay which then operates the valve.
- 8 Use the wire size chart listed on [page 5-4](#) when determining the wire size for the control wiring.
- 9 If this unit is equipped for 230 VAC operation (international), wire as shown in the standard 115 VAC wiring layout diagram.
- 10 If this unit is equipped with a TopKAT option, there will be 10 wires in the junction box. See The TopKAT Installation Manual for wiring requirements and information.



024252 Wiring Diagram Models 9852Q, 9853Q

Notes:

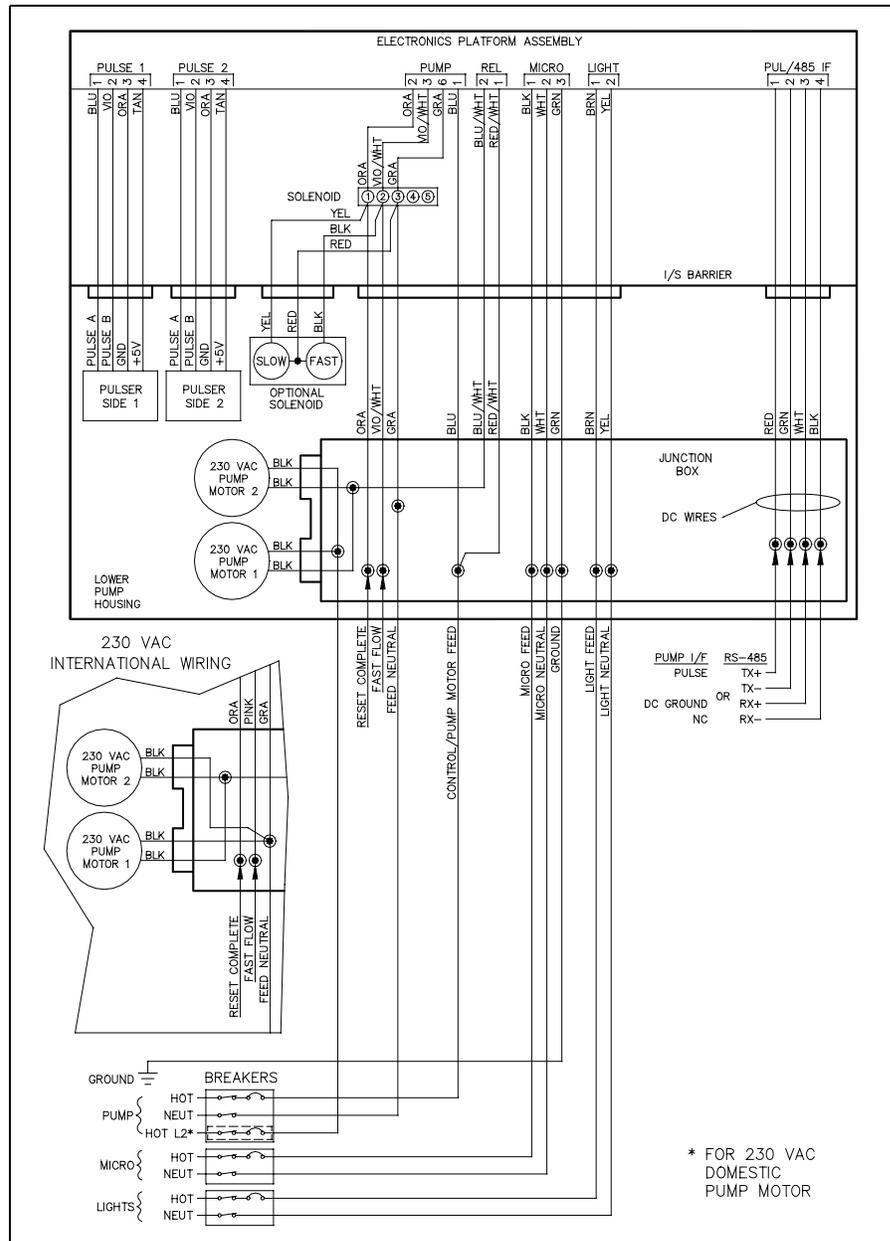
- 1 All wiring and conduit runs must conform with all building/fire codes, all Federal, State, and Local codes, National Electrical Code, (NFPA 70), NFPA 30, and Automotive and Marine Service Station Code (NFPA 30A) codes and regulations. Canadian users must also comply with the Canadian Electrical Code.
- 2 Pump motor can be wired as 230 VAC to reduce current draw. See breakaway view of 230 VAC WIRING. 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 To avoid damage to the CPU PC board, all unused wires must be individually capped, and before applying power, you must verify that the RESET COMPLETE and FAST FLOW wires are not shorted to conduit or chassis.
- 4 RESET COMPLETE (switch detect) line can supply 170 mA AC maximum for connecting to fuel management system circuitry.
- 5 FAST FLOW line can supply 170 mA AC maximum for remote control or monitoring of the fast flow valve found in the pump.
- 6 If the CONTROL/PUMP MOTOR FEED line is controlled by a fuel management system using solid state relays, a resistor assembly must be installed between the Control 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.
- 7 When used with an aboveground tank, the anti-siphon valve mounted on the tank must be driven from the EXTERNAL VALVE line, have the same operating voltage as the pump motor, and the current draw must not exceed 1 Amp. If these conditions are not met, it must be controlled by an external relay driven from the EXTERNAL VALVE line. DO NOT connect the anti-siphon valve or external relay to the RESET COMPLETE line. DO NOT connect two or more EXTERNAL VALVE lines together. If more than one pump is drawing from the tank, separate anti-siphon valves must be installed, or each EXTERNAL VALVE line must operate an external relay which then operates the valve.
- 8 Use the wire size chart listed on [page 5-4](#) when determining the wire size for the control wiring.
- 9 If this unit is equipped for 230 VAC operation (international), wire as shown in the standard 115 VAC wiring layout diagram.
- 10 If this unit is equipped with a TopKAT option, there will be 10 wires in the junction box. See The TopKAT Installation Manual for wiring requirements and information.



024253 Wiring Diagram Model 9840Q

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 motors must be wired as 230 VAC to reduce current draw (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 To avoid damage to the CPU PC board, all unused wires must be individually capped, and before applying power, you must verify that the RESET COMPLETE and FAST FLOW wires are not shorted to conduit or chassis.
- 4 RESET COMPLETE (switch detect) line can supply 170 mA AC maximum for connecting to fuel management system circuitry.
- 5 FAST FLOW line can supply 170 mA AC maximum for remote control or monitoring of the fast flow valve found in the pump.
- 6 If the CONTROL/PUMP MOTOR FEED line is controlled by a fuel management system using solid state relays, a resistor assembly must be installed between the Control 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.
- 7 If this unit is equipped for 230 VAC operation (international) wire as shown in the standard 115 VAC wiring diagram. In this case, the white (WHT) motor wires should be connected to the 230 VAC return wire (Feed Neutral). See breakaway version for international.
- 8 Use the wire size chart listed on [page 5-4](#) when determining the wire size for the control wiring.
- 9 Model 9840Q should not be used with aboveground tanks.
- 10 If this unit is equipped with a TopKAT option, there will be 10 wires in the junction box. See The TopKAT Installation Manual for wiring requirements and information.

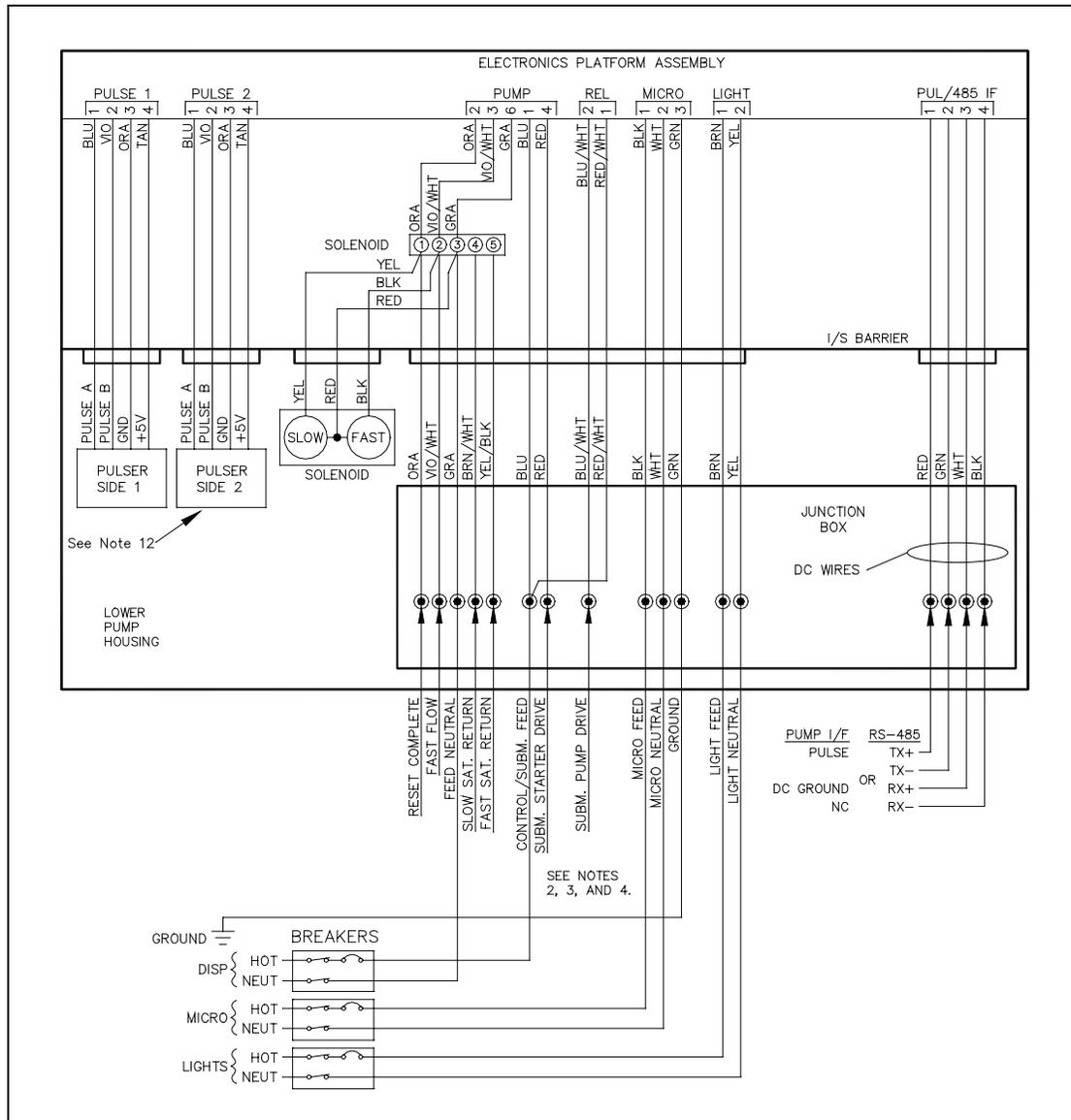


024254 Wiring Diagram Models 9852QX, 9853QX, 9840QX

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 The input line CONTROL/SUBM FEED is comprised of two wires which are tied together at the factory.

- 3** To avoid damage to the CPU PC board, all unused wires must be individually capped, and before applying power, you must verify that the RESET COMPLETE, FAST FLOW, SUBM. STARTER DRIVE, SLOW and FAST SATELLITE RETURN wires are not shorted to conduit or chassis.
- 4** SUBM. STARTER DRIVE line can supply 300 mA AC maximum to control submersible starter relays. This line must not be directly connected to a submersible pump!
- 5** External submersible relays are required unless the remote dispenser is equipped with the submersible drive relay option. The submersible drive relay option provides a SUBM PUMP DRIVE line (Blue 14) which can directly drive a submersible pump up to 3/4 HP at 115 VAC or 1-1/2 HP at 230 VAC. The 14 AWG SUBM FEED and SUBM PUMP DRIVE wires are always present. Verify that the submersible drive relay option is installed prior to wiring. The power supplied to the CONTROL/SUBM FEED must be able to handle the load of the submersible pump.
- 6** RESET COMPLETE (switch detect) line can supply 170 mA AC maximum for connecting to fuel management system circuitry and in applications where control of a remote slow flow valve (satellite) is required.
- 7** FAST FLOW line can supply 170 mA AC maximum and is provided to allow for control of a satellite along with remote control or monitoring of the fast flow valve found in the pump.
- 8** FAST SAT. RETURN and SLOW SAT. RETURN lines are used when the remote dispenser is supplied with satellite piping and connected to the satellite in a manner to prevent both the remote dispenser and satellite from dispensing product simultaneously. See the satellite wiring diagrams found in this section for correct connection of these lines. These lines are not connected as they leave the factory.
- 9** If the CONTROL/SUBM FEED line is controlled by a fuel management system using solid state relays, a resistor assembly must be installed between the Control 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.
- 10** When used with an aboveground tank, the valve mounted at the tank **MUST NOT** be connected to the RESET COMPLETE or SUBM STARTER DRIVE lines. If the optional internal relay kit is installed **AND** the valve's current draw will not exceed 1 Amp, the valve can be connected to the SUBM PUMP DRIVE line. Otherwise, it should be driven from the external submersible starter relay. In all cases, the tank valve must operate at the same voltage as the submersible pump.
- 11** If this unit is equipped for 230 VAC operation (international), wire as shown in the standard 115 VAC wiring layout diagram.
- 12** Second meter and pulser available only on 9840Q models.
- 13** Use the wire size chart listed on [page 5-4](#) when determining the wire size for the control wiring.
- 14** If this unit is equipped with a TopKAT option, there will be 10 wires in the junction box. See The TopKAT Installation Manual for wiring requirements and information.
- 15** When multiple dispensers are used to control a common submersible starter relay or pump, and the 9800 is controlled (authorized) through the Control/SubM Feed line (as in the case of some fuel management systems), it is important that the lines from the 9800 to the submersible equipment be isolated from each other. This can be accomplished by running the submersible control lines through a secondary set of relay contacts in the fuel management system. If a secondary set of contacts is not available, external control relays must be used between the 9800 and the submersible starter relay or pump. Another option is to provide a separate submersible starter relay for each hose outlet. In no case can the submersible drive lines from the 9800 be tied together.



024255 Wiring Diagram Models 9852QXTW1, 9852QXTW2, 9853QXTW1, 9853QXTW2

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 The input line CONTROL/SUBM FEED is comprised of two wires which are tied together at the factory.

CAUTION

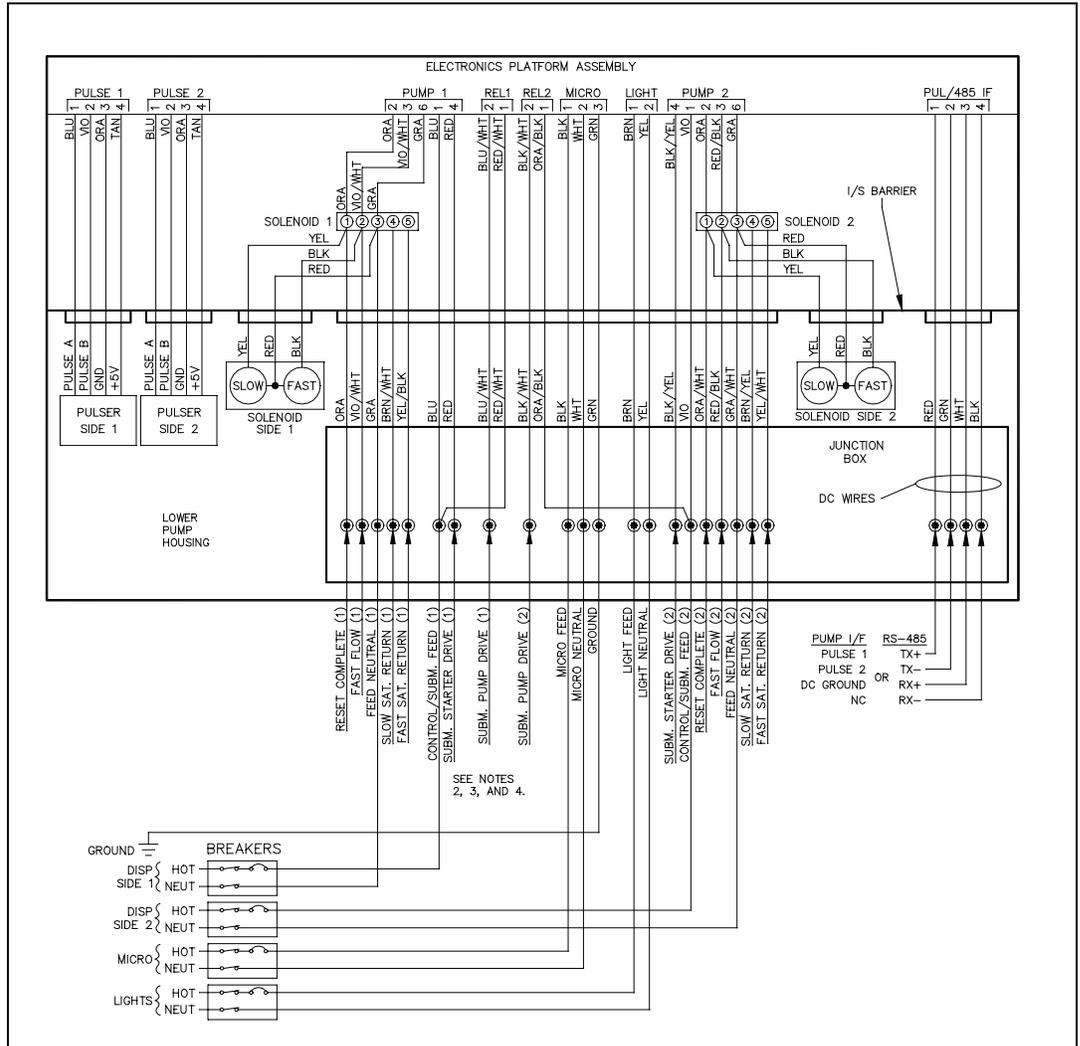
To avoid damage to the CPU PC board, all unused wires must be individually capped, and before applying power, you must verify that the RESET COMPLETE, FAST FLOW, SUBM. STARTER DRIVE, SLOW and FAST SATELLITE RETURN wires are not shorted to conduit or chassis.

- 3 SUBM. STARTER DRIVE line can supply 300 mA AC maximum to control submersible starter relays.

CAUTION

This line must not be directly connected to a pump.

- 4 External submersible relays are required unless the remote dispenser is equipped with the submersible drive relay option. The submersible drive relay option provides a SUBM PUMP DRIVE line (Blue 14) which can directly drive a submersible pump up to 3/4 HP at 115 VAC or 1-1/2 HP at 230 VAC. The 14 AWG SUBM FEED and SUBM PUMP DRIVE wires are always present. Verify that the submersible drive relay option is installed prior to wiring. The power supplied to the CONTROL/SUBM FEED must be able to handle the load of the submersible pump.
- 5 RESET COMPLETE (switch detect) line can supply 170 mA AC maximum for connecting to fuel management system circuitry and in applications where control of a remote slow flow valve (satellite) is required.
- 6 FAST FLOW line can supply 170 mA AC maximum is provided to allow for control of a satellite along with remote control or monitoring of the fast flow valve found in the pump.
- 7 FAST SAT. RETURN and SLOW SAT. RETURN lines are used when the remote dispenser is supplied with satellite piping and connected to the satellite in a manner to prevent both the remote dispenser and satellite from dispensing product simultaneously. See the satellite wiring diagrams found in this section for correct connection of these lines. These lines are not connected as they leave the factory.
- 8 If the CONTROL/PUMP MOTOR FEED line is controlled by a fuel management system using solid state relays, a resistor assembly must be installed between the Control 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.
- 9 Use the wire size chart listed on [page 5-4](#) when determining the wire size for the control wiring.
- 10 When used with an aboveground tank, the valve mounted at the tank MUST NOT be connected to the RESET COMPLETE or SUBM STARTER DRIVE lines. If the optional internal relay kit is installed AND the valve's current draw will not exceed 1 Amp, the valve can be connected to the SUBM PUMP DRIVE line. Otherwise, it should be driven from the external submersible starter relay. In all cases, the tank valve must operate at the same voltage as the submersible pump.
- 11 If this unit is equipped for 230 VAC operation (international), wire as shown in the standard 115 VAC wiring layout diagram.
- 12 If this unit is equipped with a TopKAT option, there will be 10 wires in the junction box. See The TopKAT Installation Manual for wiring requirements and information.
- 13 When multiple dispensers are used to control a common submersible starter relay or pump, and the 9800 is controlled (authorized) through the "Control/SubM Feed" line (as in the case of some fuel management systems), it is important that the lines from the 9800 to the submersible equipment be isolated from each other. This can be accomplished by running the submersible control lines through a secondary set of relay contacts in the fuel management system. If a secondary set of contacts is not available, external control relays must be used between the 9800 and the submersible starter relay or pump. Another option is to provide a separate submersible starter relay for each hose outlet. In no case can the submersible drive lines from the 9800 be tied together.



024256 Wiring Diagram Models 9852QW2, 9853QW2, 9853QW1M

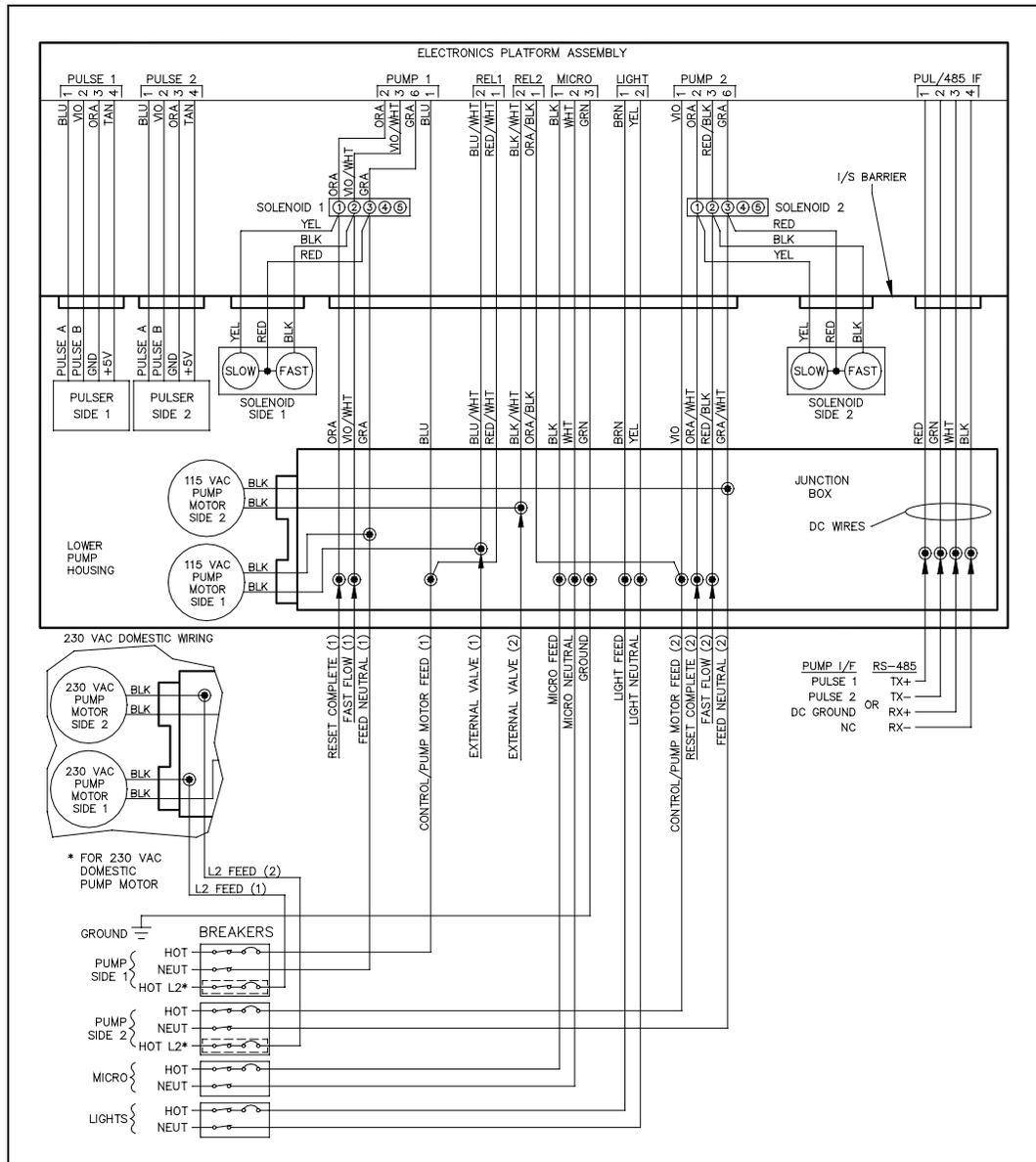
Notes:

- 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 WIRING. 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.

CAUTION

To avoid damage to the CPU PC board, all unused wires must be individually capped, and before applying power, you must verify that the RESET COMPLETE and FAST FLOW wires are not shorted to conduit or chassis.

- 3 RESET COMPLETE (switch detect) line can supply 170 mA AC maximum for connecting to fuel management system circuitry.
- 4 FAST FLOW line can supply 170 mA AC maximum for remote control or monitoring of the fast flow valve found in the pump.
- 5 If the CONTROL/PUMP MOTOR FEED line is controlled by a fuel management system using solid state relays, a resistor assembly must be installed between the Control 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.
- 6 When used with an aboveground tank, the anti-siphon valve mounted on the tank must be driven from the EXTERNAL VALVE line, have the same operating voltage as the pump motor, and the current draw must not exceed 1 Amp. If these conditions are not met, it must be controlled by an external relay driven from the EXTERNAL VALVE line. DO NOT connect the anti-siphon valve or external relay to the RESET COMPLETE line. DO NOT connect two or more EXTERNAL VALVE lines together. If more than one pump is drawing from the tank, separate anti-siphon valves must be installed, or each EXTERNAL VALVE line must operate an external relay which then operates the valve.
- 7 Use the wire size chart listed on [page 5-4](#) when determining the wire size for the control wiring.
- 8 If this unit is equipped for 230 VAC operation (international), wire as shown in the standard 115 VAC wiring layout diagram. If this unit is equipped with a TopKAT option, there will be 10 wires in the junction box. See The TopKAT Installation Manual for wiring requirements and information.
- 9 Model 9853QW1M should not be used with aboveground tanks.



024257 Wiring Diagram Models Satellite 215Q/Satellite 216Q

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 See Weights and Measures Handbook 44 to determine which mode of satellite operation is relevant for your application. In many cases, the satellite must be wired so it cannot dispense product while the master remote dispenser is dispensing and vice versa. Use the correct wiring diagram according to your application.

- 3 The input line CONTROL/SUBM FEED is comprised of two wires which are tied together at the factory.

CAUTION

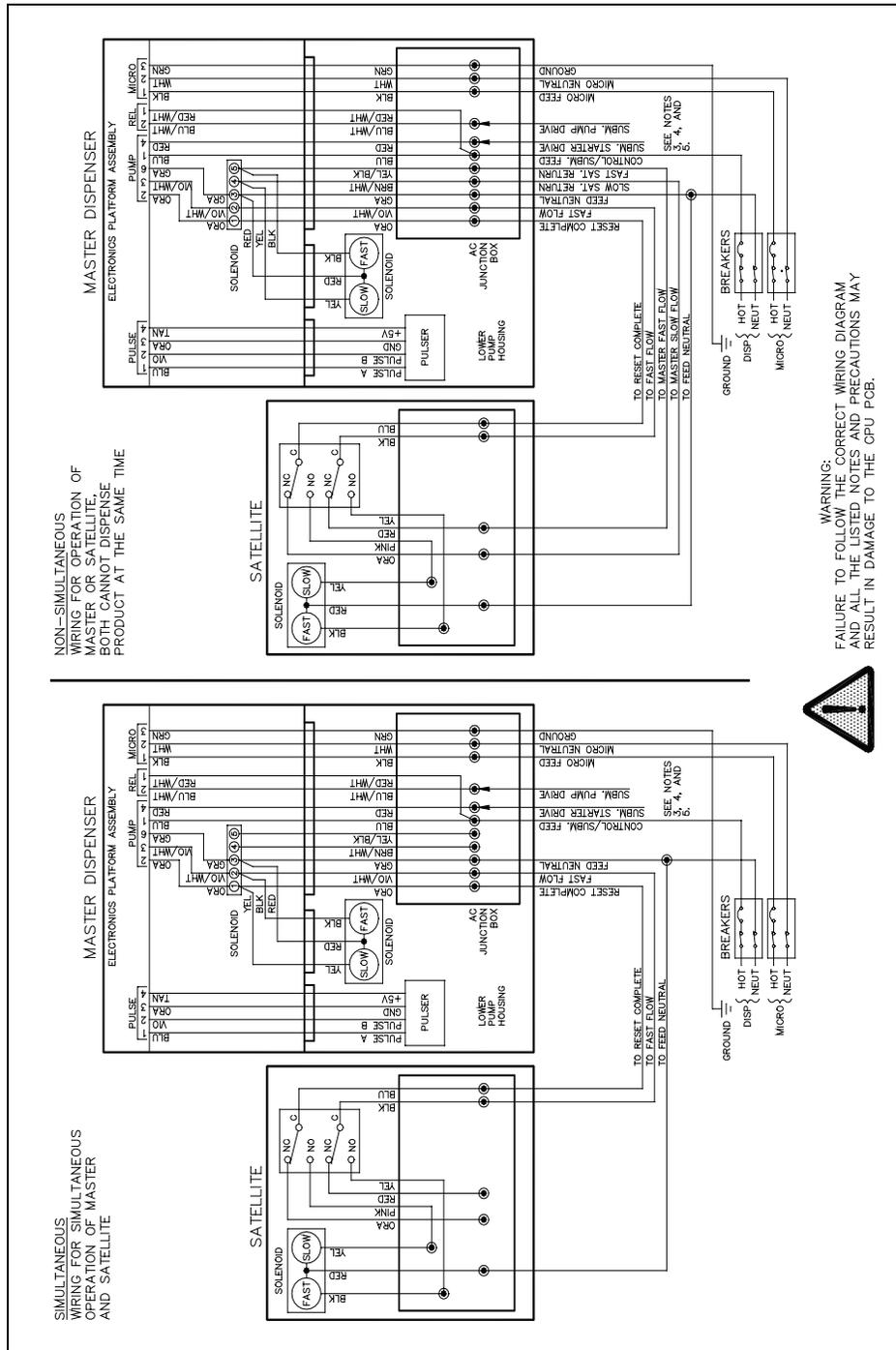
To avoid damage to the CPU PC board, all unused wires must be individually capped, and before applying power, you must verify that the RESET COMPLETE, FAST FLOW, SUBM. STARTER DRIVE, SLOW and FAST SATELLITE RETURN wires are not shorted to conduit or chassis.

- 4 SUBM. STARTER DRIVE line can supply 300 mA AC maximum to control submersible starter relays.

CAUTION

This line must not be directly connected to a submersible pump.

- 5 External submersible relays are required unless the remote dispenser is equipped with the submersible drive relay option. The submersible drive relay option provides a SUBM PUMP DRIVE line (Blue 14) which can directly drive a submersible pump up to 3/4 HP at 115 VAC or 1-1/2 HP at 230 VAC. The 14 AWG SUBM FEED and SUBM PUMP DRIVE wires are always present. Verify that the submersible drive relay option is installed prior to wiring. The power supplied to the CONTROL/SUBM FEED must be able to handle the load of the submersible pump.
- 6 If the CONTROL/SUBM FEED line is controlled by a fuel management system using solid state relays, a resistor assembly must be installed between the Control 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.
- 7 The FAST FLOW line (pink wire) is supplied from the factory disconnected. It must be connected, in the upper junction box, to the pink wire (fast flow control) coming from the electronic platform assembly.
- 8 If using a 9800Q and satellite in an application where both master and satellite cannot dispense product at the same time, a minor change in the 9800Q wiring must be made. In the solenoid J-Box, disconnect the solenoid yellow wire from the two orange wires (leave the two orange wires connected together). Connect the solenoid yellow wire to the 18 AWG brown wire. In the solenoid junction box, disconnect the solenoid black wire from the two pink wires (leave the two pink wires connected together, as described in note 5). Connect the solenoid black wire to the 18 AWG yellow wire. Wire the remote dispenser to the satellite as shown in the wiring diagram labeled Non-Simultaneous.
- 9 If this unit is equipped for 230 VAC operation (international), wire as shown in the standard 115 VAC wiring layout diagram.
- 10 These wiring diagrams are intended only to show the connections between the satellite and the dispenser. See wiring diagram for master dispenser (according to model number) for applicable warnings and proper connection of all wires.



024294 Wiring Diagram Models 9853Q 380VAC

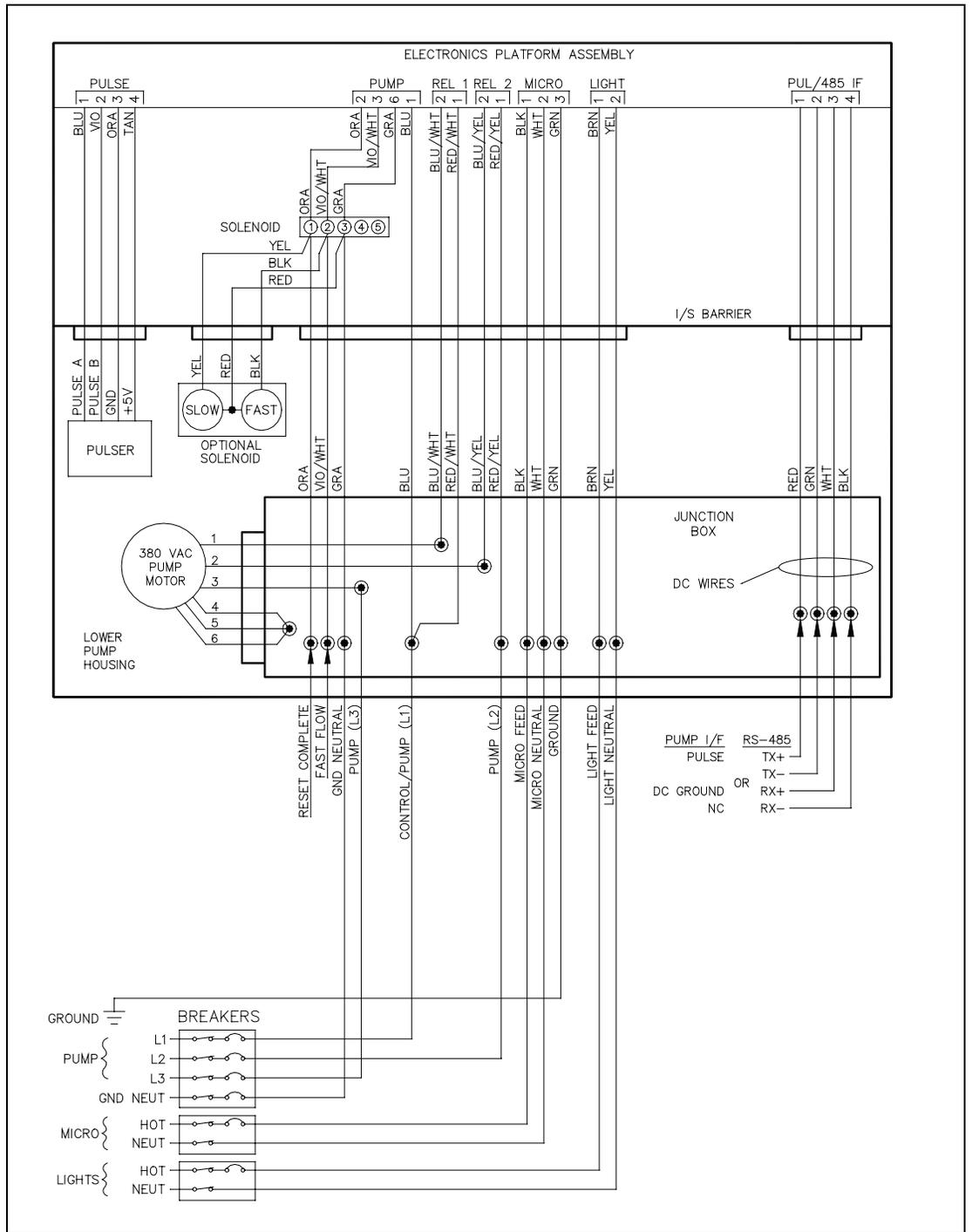
Notes:

- 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.

CAUTION

To avoid damage to the CPU PC board, all unused wires must be individually capped, and before applying power, you must verify that the RESET COMPLETE and FAST FLOW wires are not shorted to conduit or chassis.

- 2 RESET COMPLETE (switch detect) line can supply 170 mA AC maximum for connecting to fuel management system circuitry.
- 3 FAST FLOW line can supply 170 mA AC maximum for remote control or monitoring of the fast flow valve found in the pump.
- 4 If the CONTROL/PUMP MOTOR FEED line is controlled by a fuel management system using solid state relays, a resistor assembly must be installed between the Control Feed line and Feed Neutral to prevent false triggering of the authorization input. The resistor assembly is 10 Watt (P/N C06683).
- 5 Use the wire size chart (230VAC section) on [page 5-4](#) when determining the wire size for the control wiring.
- 6 If this unit is equipped with a TopKAT option, there will be 10 wires in the junction box. See the TopKAT Installation Manual for wiring requirements and information.
- 7 When used with an aboveground tank, the anti-siphon valve mounted on the tank must be driven from the EXTERNAL VALVE line, have the same operating voltage as the pump motor, and the current draw must not exceed 1 Amp. If these conditions are not met, it must be controlled by an external relay driven from the EXTERNAL VALVE line. DO NOT connect the anti-siphon valve or external relay to the RESET COMPLETE line. DO NOT connect two or more EXTERNAL VALVE lines together. If more than one pump is drawing from the tank, separate anti-siphon valves must be installed, or each EXTERNAL VALVE line must operate an external relay which then operates the valve.



024295 Wiring Diagram Model 9840Q 380 VAC

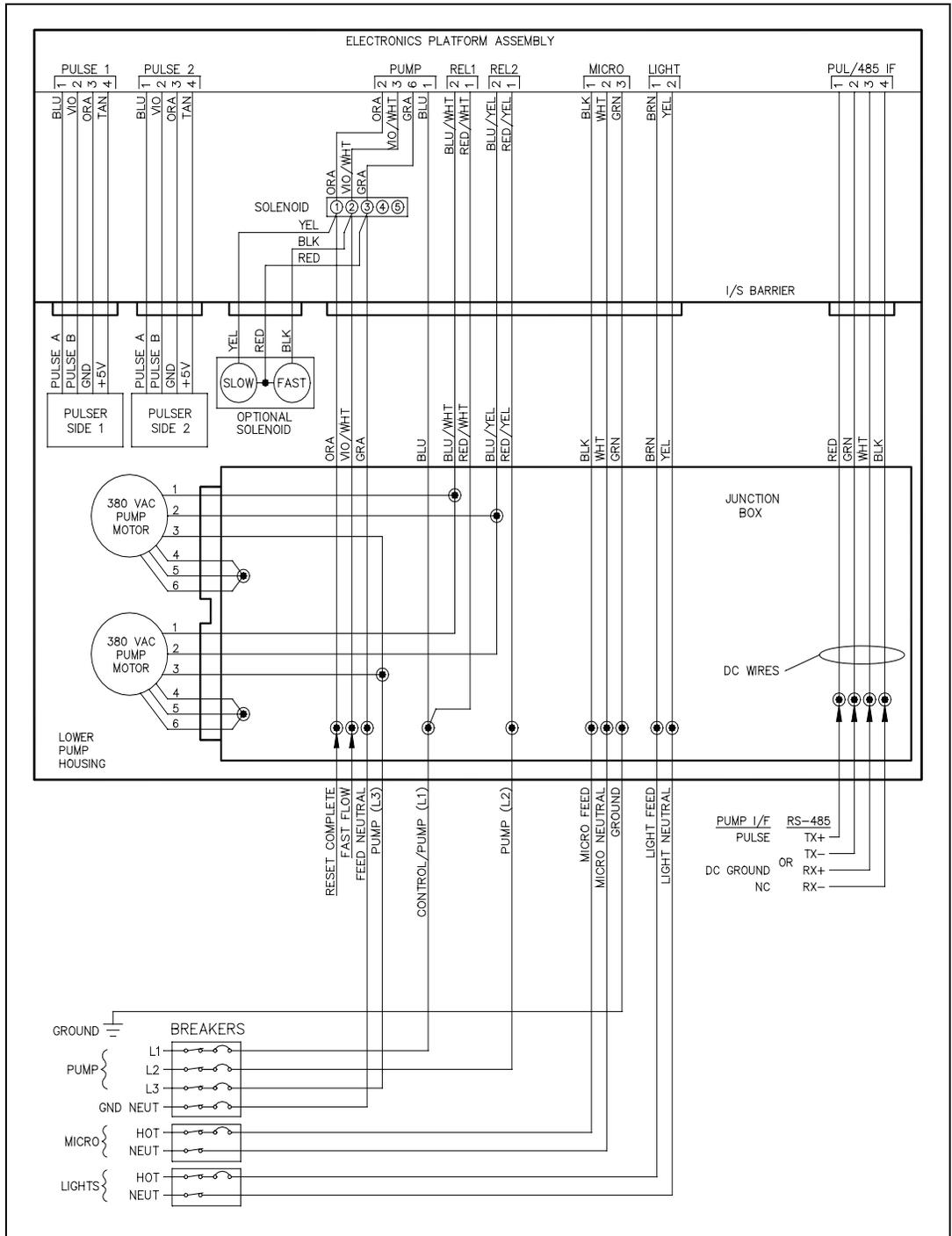
Notes:

- 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.

CAUTION

To avoid damage to the CPU PC board, all unused wires must be individually capped, and before applying power, you must verify that the RESET COMPLETE and FAST FLOW wires are not shorted to conduit or chassis.

- 2 RESET COMPLETE (switch detect) line can supply 170 mA AC maximum for connecting to fuel management system circuitry.
- 3 FAST FLOW line can supply 170 mA AC maximum for remote control or monitoring of the fast flow valve found in the pump.
- 4 If the CONTROL/PUMP MOTOR FEED line is controlled by a fuel management system using solid state relays, a resistor assembly must be installed between the Control Feed line and Feed Neutral to prevent false triggering of the authorization input. The resistor assembly is 30K OHM, 10 Watt (P/N C06683).
- 5 Second meter and pulser available only on 9840Q models.
- 6 Use the wire size chart (230VAC section) on [page 5-4](#) when determining the wire size for the control wiring.
- 7 Model 9840Q should not be used with aboveground tanks.
- 8 If this unit is equipped with a TopKAT option, there will be 10 wires in the junction box. See The TopKAT Installation Manual for wiring requirements and information.



024297 Wiring Diagram Models 9853QTW2 380 VAC and 9853QTW1M 380 VAC

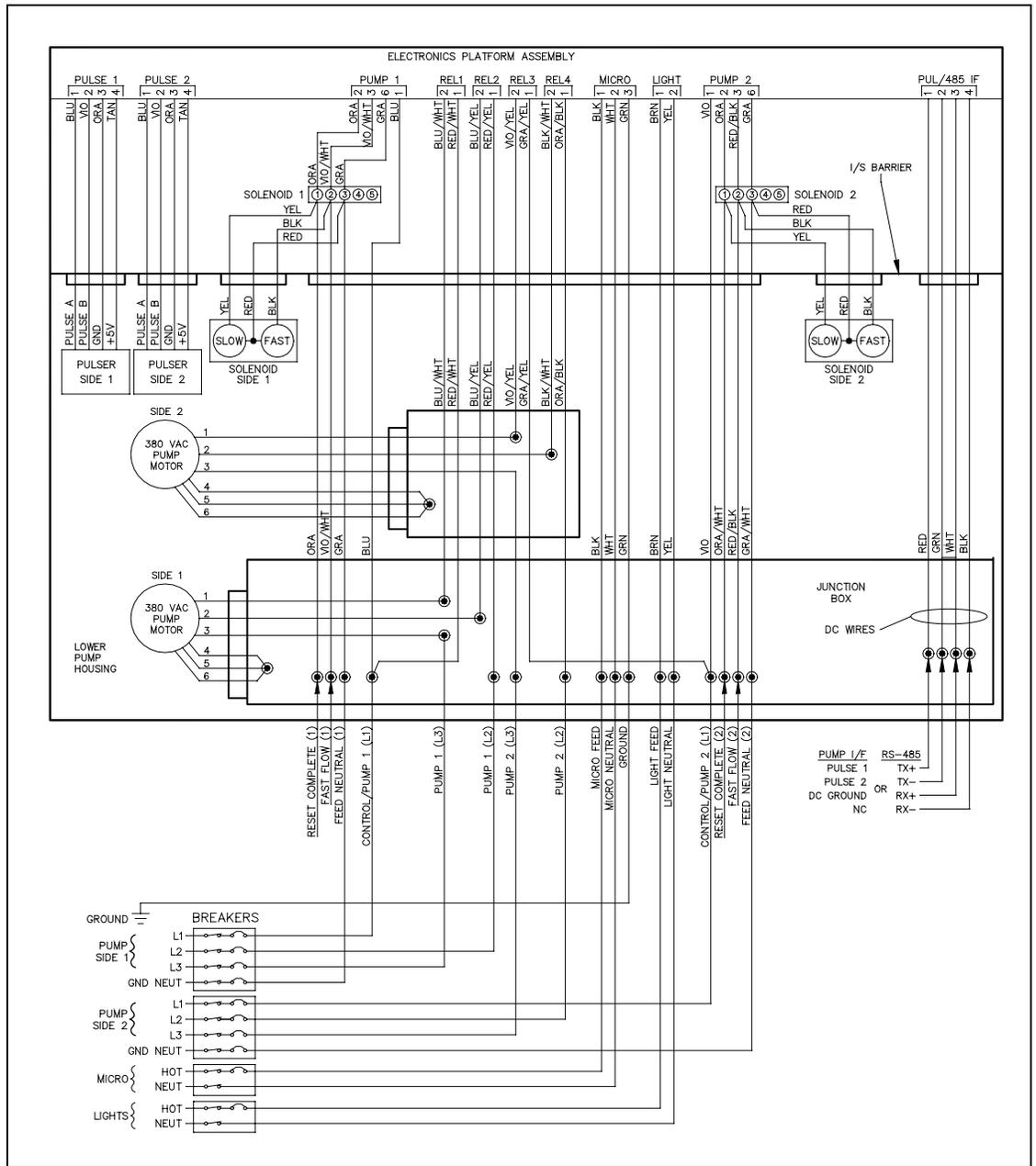
Notes:

- 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.

CAUTION

To avoid damage to the CPU PC board, all unused wires must be individually capped, and before applying power, you must verify that the RESET COMPLETE and FAST FLOW wires are not shorted to conduit or chassis.

- 2 RESET COMPLETE (switch detect) line can supply 170 mA AC maximum for connecting to fuel management system circuitry.
- 3 FAST FLOW line can supply 170 mA AC maximum for remote control or monitoring of the fast flow valve found in the pump.
- 4 If the CONTROL/PUMP MOTOR FEED line is controlled by a fuel management system using solid state relays, a resistor assembly must be installed between the Control Feed line and Feed Neutral to prevent false triggering of the authorization input. The resistor assembly is 10 Watt (P/N C06683).
- 5 Use the wire size chart (230VAC section) on [page 5-4](#) when determining the wire size for the control wiring.
- 6 If this unit is equipped with a TopKAT option, there will be 10 wires in the junction box. See The TopKAT Installation Manual for wiring requirements and information.
- 7 Model 9853QTW1M should not be used with aboveground tanks.



024319 Wiring Diagram Models Satellite 215Q Front Load Satellite 216Q Front Load

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 See Weights and Measures Handbook 44 to determine which mode of satellite operation is relevant for your application. In many cases, the satellite must be wired so it cannot dispense product while the master remote dispenser is dispensing and vice versa. Use the correct wiring diagram according to your application.
- 3 The input line CONTROL/SUBM FEED is comprised of two wires which are tied together at the factory.

CAUTION

To avoid damage to the CPU PC board, all unused wires must be individually capped, and before applying power, you must verify that the RESET COMPLETE, FAST FLOW, SUBM. STARTER DRIVE, SLOW and FAST SATELLITE RETURN wires are not shorted to conduit or chassis.

- 4 SUBM. STARTER DRIVE line can supply 300 mA AC maximum to control submersible starter relays.

CAUTION

This line must not be directly connected to a submersible pump.

- 5 External submersible relays are required unless the remote dispenser is equipped with the submersible drive relay option. The submersible drive relay option provides a SUBM PUMP DRIVE line (Blue 14) which can directly drive a submersible pump up to 3/4 HP at 115 VAC or 1-1/2 HP at 230 VAC. The 14 AWG SUBM FEED and SUBM PUMP DRIVE wires are always present. Verify that the submersible drive relay option is installed prior to wiring. The power supplied to the CONTROL/SUBM FEED must be able to handle the load of the submersible pump.
- 6 If the CONTROL/SUBM FEED line is controlled by a fuel management system using solid state relays, a resistor assembly must be installed between the Control 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.
- 7 The FAST FLOW line (pink wire) is supplied from the factory disconnected. It must be connected, in the upper junction box, to the pink wire (fast flow control) coming from the electronic platform assembly.
- 8 If using a GASBOY 9800Q and satellite in an application where both master and satellite cannot dispense product at the same time, a minor change in the 9800Q wiring must be made. In the solenoid J-Box, disconnect the solenoid yellow wire from the two orange wires (leave the two orange wires connected together). Connect the solenoid yellow wire to the 18 AWG brown wire. In the solenoid junction box, disconnect the solenoid black wire from the two pink wires (leave the two pink wires connected together, as described in note 5). Connect the solenoid black wire to the 18 AWG yellow wire. Wire the remote dispenser to the satellite as shown in the wiring diagram labeled Non-Simultaneous.
- 9 If this unit is equipped for 230 VAC operation (international), wire as shown in the standard 115 VAC wiring layout diagram.
- 10 These wiring diagrams are intended only to show the connections between the satellite and the dispenser. See wiring diagram for master dispenser (according to model number) for applicable warnings and proper connection of all wires.

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6 – Pump/Remote Dispenser Operation

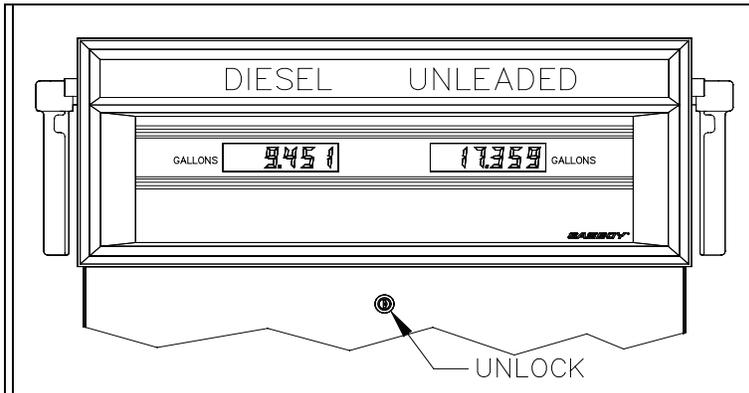
Overview

This section describes the operation of the pump/remote dispenser. It shows how to access the electronic components, setting the internal switches, the optional battery back-up power supply, the procedure for viewing and resetting the electronic totalizers using the actuator, and the operating sequences for both pumps and remote dispensers.

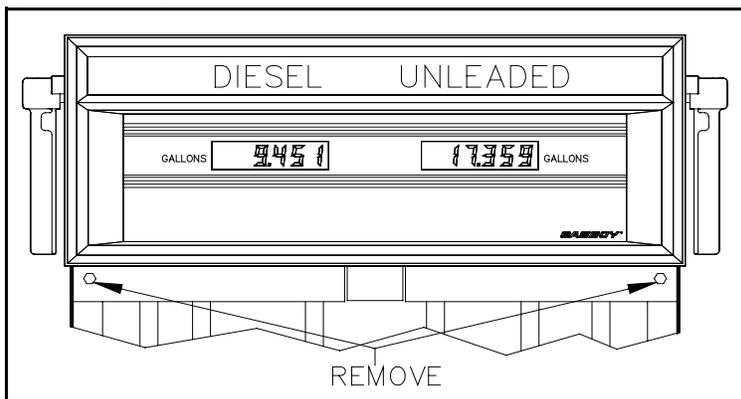
Electronic Component Access

Before attempting to start-up the 9800Q, it is important to become familiar with the location of some key components as well as the various switch-selectable operating modes.

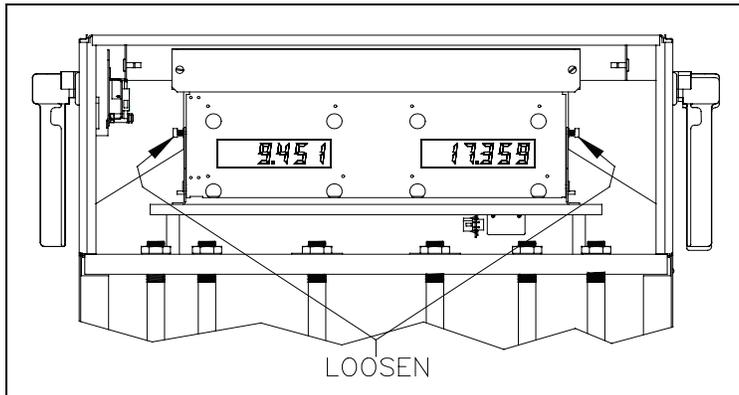
- 1 Unlock and remove the front panel.



- 2 Remove the two bolts located over the tabs of the bezel assembly. Lift the bezel assembly upwards and pull out to remove.

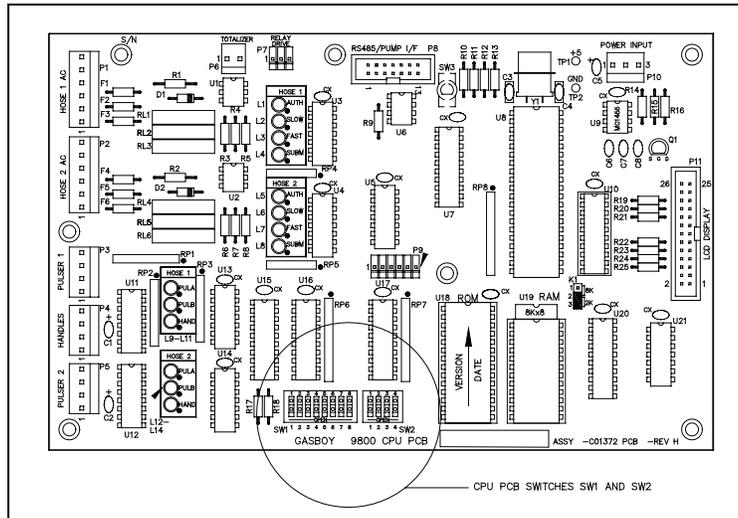


- Loosen the two screws located on the left and right door support brackets and pivot display panel.



CPU Switch Settings

The 9800Q can be configured for various operating conditions using the switches located on the CPU PCB. Check these switches and change their settings if necessary. Switch settings should be changed with the power OFF. The new settings are read by the CPU PCB when the power is turned ON again.



SW1

SW1-1 Baud Rate

This switch is set to reflect the communication rate of the Gasboy RS-485 pump loop - open for 9600 baud or closed for 1200 baud. The Gasboy CFN system and TopKAT communicate at 9600 baud.

Baud Rate	SW1-1	Fuel System
9600	Open	CFN TopKAT top-mount TopKAT electronic
1200	Closed	None currently supported

SW1-2 Mode

If the 9800 is controlled by a Gasboy CFN, TopKAT top-mount, or TopKAT electronic fuel management system, the switch should be open (on-line mode). If the 9800 is controlled by a Gasboy Series 1000 or TopKAT mechanical system, or controlled by any non-Gasboy system, or not controlled by any fuel management system at all, the switch should be closed (standalone mode).

Note: The 9800 is shipped in standalone mode unless it has the TopKAT top-mount option. With the TopKAT top-mount option, the unit is shipped in on-line mode.

Mode	SW1-2	Fuel System
On-line	Open	CFN TopKAT top-mount TopKAT electronic
Standalone	Closed	Series 1000 TopKAT Mechanical All non-GASBOY systems No fuel system

SW1-3, SW1-4 Delay Time

These two switches set the delay time used by leak detectors in submersible pump applications. The delay time is the period between activation of the submersible pump and activation of the slow flow valve. This time should be set according to the type of leak detector installed on the submersible pump to allow a normal leak test for each transaction. The delay time should be set to zero seconds for suction pumps.

Delay Time	SW1-3	SW1-4
0 seconds	Closed	Closed
4 seconds	Closed	Open
5 seconds	Open	Closed
6 seconds	Open	Open

SW1-5 Pressurization

If the Series 9800 program is configured for US Gallons, this DIP switch setting is ignored and the program will always act as if it is enabled. If the Series 9800 program is configured for Liters or Imperial Gallons, this switch will control whether pump pressurization is enabled. If a pump has been idle for more than 10 minutes or this is the first use after startup, a maximum of .02 units of unrecorded volume will be pumped into the pump hydraulics during the pump's segment test.

Pressurization	SW1-5
Enable	Closed
Disable	Open

SW1-6 Authorization

This switch allows activation of the 9800 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 top-mount, 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 on [page 6-8](#) for details.

Totalizers	SW1-7
Reset	Closed
Normal	Open

SW1-8 RS 485 Pump Stop Detection

This switch should be set to open (default) to enable RS-485 pump stop detection. The Gasboy RS 485 pump stop switch, when activated, places a serial break character on the RS 485 lines. When SW1-8 is open, this breaker character triggers the termination of the sale(s) immediately, if a transaction(s) is in progress.

This switch should be set to closed (in a TopKAT 2-Wire Communication) to disable RS-485 pump stop detection. This resolves the issue associated with the false break characters being detected that may be introduced when 2-Wire communication is 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 9800Q is connected to the Gasboy RS-485 pump loop via the 9800Q 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 does not have to be address 1. The chart at right gives the switch settings and address selections. With the TopKAT option, the address must be set to 1.

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 9800Q is connected to external control equipment other than a Gasboy CFN system (standalone), the pulser signals are sent out via the 9800Q Pump I/F PCB. The pulse rate required by the monitoring equipment can be configured by setting the switches as shown in the chart below. The pulse rate represents pulses per gallon (PPG, US Gallons and Imperial Gallons) or pulses per liter (PPL, international). For US Gallons or Imperial Gallons configurations, the pulse rate can be up to 100 PPG for the 9850Q and 500 PPG for all other models. For Liters configurations, the pulse rate can be up to 10 PPL for the 9850Q and 100 PPL for all other models. This switch may need to be sealed by a Weights and Measures paper seal if the 9800Q 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
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 following chart.

Pulse Rate	9800/9840	9850
1:1	XXX.	XXXX.
10:1	XXX.X	XXXX.X
100:1	XXX.XX	XXXX.XX
250:1	XXX.XXX	XXXX.XXX
500:1	XXX.XXX	

Timeout Switch

When the 9800Q is in standalone mode, it turns off an active hose if it does not 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	023.2
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.

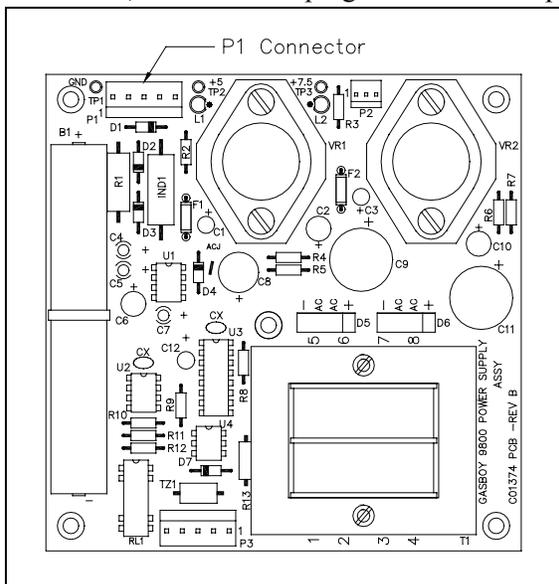
On the status display, the leftmost digits (842) are error indicators which are blank when the corresponding error condition is not active. When any of these digits are displayed, their meanings are: 8=temperature probe fault is detected; 4=pulser error occurred; 2=exceptional reset was detected.

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

9800Q 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 Totalizers

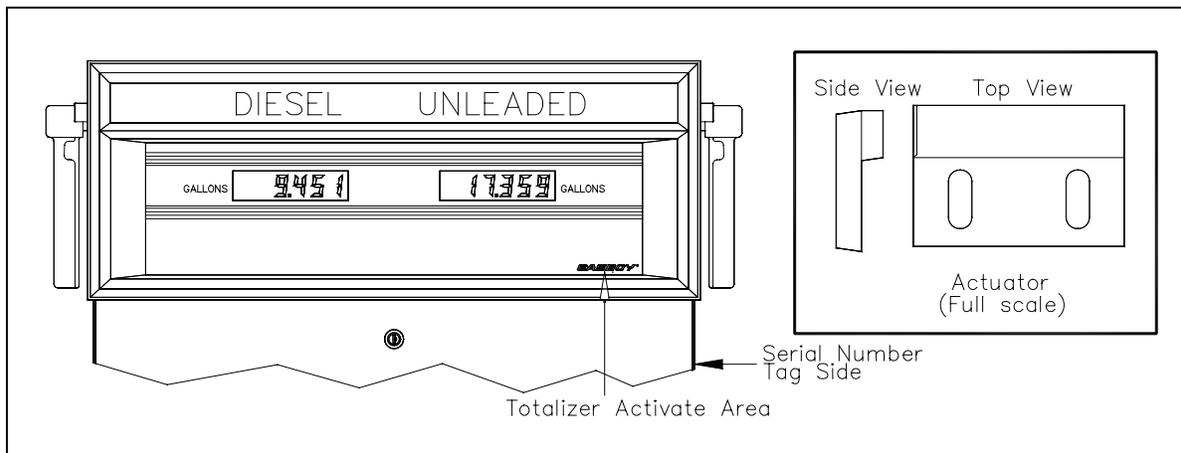
Electronic Totalizers

The 9800Q stores a running quantity total for each pump side. These electronic totalizers work independent of the optional mechanical totalizers that may be installed, and are 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 9800Q is supplied with an actuator (shown in the illustration given below) which allows you to view and reset electronic totalizers. When the 9800Q is shipped, the actuator is attached with a tie wrap to the bracket at the lower right of the head assembly (viewed with display panels removed). At installation or startup, cut the tie wrap and remove actuator, and retain for future use.

To view the pump totalizers, ensure the pump handles are off and no transactions are in progress. Locate the Gasboy dial face logo that is on the same pump side as the serial number tag (If equipped with the rear totalizer option, the totalizer can be activated from the Gasboy logo on either side of the pump). Touch the Gasboy logo with the actuator as shown. The totalizer data for each pump side will be displayed for 10 seconds. If more time is needed, touch the actuator to the logo for an additional 10-second period. To reset the electronic totalizers, follow the disassembly procedure outlined under [Electronic Component Access, Page 6-1](#). Turn off power to the 9800Q. Close SW1-7 on the CPU PCB. Hold the actuator against the totalizer bracket and turn the power on. The displays should change to all zeroes. Remove the actuator and open SW1-7.

Note: Returning switch 1-7 to the open position prevents the totalizers from being reset the next time the actuator is used to read them.



Mechanical Totalizers

Some models of 9800Q contain an optional mechanical totalizer for each pump side. Each totalizer has eight digits; seven whole gallons and one-tenth gallon column, eight whole digits for liters. The mechanical totalizers are located below each nozzle hook.

Operating Sequence

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

Pump

- 1 Turn on the pump handle. If AC is present on the Control Feed line, the reset cycle begins. The display:
 - goes blank for one second
 - shows all 8s for one second, 3 seconds for US Gallons or SW1-5 enabled.
 - goes to 0.000 (gallons) or 0.00 (liters) and remains for one (1) second.
 - 9850Q goes to 0.00 (gallons) or 0.0 (liters) and remains for one (1) second or three (3) seconds for US Gallon or if SW1-5 is enabled.

The pump motor turns on and the Reset Complete line becomes active. If equipped, the slow flow valve turns on.

- 2 The user begins to dispense fuel. Quantity is not be recorded on the display until 0.010 gallons (0.04 liters) are reached, however, all pulses are sent out on the Pulser line, if equipped. At 0.010 gallons (0.04 liters), the fast flow valve turns on, if equipped.

For 9850Q, quantities are not be recorded on the display until 0.04 gallons or 0.1 liter.

- 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 Control Feed line is turned off.
 - A pulser error is detected.
 - A timeout of 255 seconds is reached (if SW2-4 is CLOSED). 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.
 - For 9850Q: A quantity of 999.00 gallons or (9999.0 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 9800Q continues to monitor for pulses until a 2-second period with no pulses occurs. At this time, the transaction is considered completed.

Remote Dispenser

- 1 Turn on the pump handle. If AC is present on the Control Feed line, the reset cycle begins and the submersible pump turns on. The display:
 - goes blank for one second.
 - shows all 8s for one second or 3 seconds for US Gallons or if SW1-5 is enabled.
 - goes to 0.000 (gallons) or 0.00 (liters).
 - 9850Q goes to 0.00 (gallons) or 0.0 (liters) and remains for 1 second or 3 seconds for US Gallons or if SW1-5 is enabled.

The slow flow valve will turn on within 2, 3, or 4 seconds, depending on the setting of the Time Delay switches on the CPU PCB. This will give a total time of 4, 5, or 6 seconds between the time the submersible pump turns on and the time the slow flow valve turns on.

- 2 The user begins to dispense fuel. Quantity is not recorded on the display until 0.010 gallons (0.04 liters) are reached, however, all pulses are sent out on the Pulser line, if equipped. At 0.010 gallons (0.04 liters), the fast flow valve turns on. For 9850Q, quantities are not recorded on the display until 0.04 gallons (0.1 liters).
- 3 The remote dispenser continues to run until one of the following conditions occurs. These conditions turn off all relays.
 - The handle is turned off.
 - The Control Feed line is turned off.
 - A pulser error is detected.
 - A timeout of 255 seconds is reached (if SW2-4 is CLOSED). 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.
 - For 9850Q: A quantity of 999.00 gallons (9999.0 liters) is reached. If connected to a Fuel Management System, the limit set in the system is used.
 - The remote dispenser is halted by an operator of a Fuel Management System.
 - An AC power failure occurs.
- 4 The 9800Q continues to monitor for pulses until a 2-second period with no pulses occurs. At this time the transaction is considered completed.

Standalone Mode Error Handling

When operating the pump/dispenser in standalone mode (not connected to a Fuel Management System), the 9800Q displays two-digit error transaction codes on the LCD displays when transactions are terminated abnormally (by a means other than turning off the pump handle).

There are four possible error conditions that may be displayed:

Code	Condition
55	Power failure
56	Pulser error
57	Timed out
58	Limit cutoff

The error codes are displayed for two (2) seconds at the left of the LCD window, alternating with a 5-second display of the last sale amount. The display alternates between the two until a new transaction begins. When an error occurs, the user should note the error code and relay the information to the system administrator.

Transaction error codes are displayed only when the pump/dispenser is operating in standalone mode. When connected to a Fuel Management System, (on-line mode), transaction error codes are transmitted back to the Fuel Management System with the completed transaction data.

7 – Start-Up and Test

Installation Completion Checklist

Review the information below to verify the proper installation of the Series 9800Q dispensing unit. If the installation does not meet criteria listed, correct the problem before the start-up is performed.

CAUTION

To avoid damage to the CPU PC board, verify that the RESET COMPLETE, FAST FLOW, SUBM. STARTER DRIVE, and SLOW and FAST SATELLITE RETURN wires are not shorted to conduit or chassis.

- 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 pulser or RS-485 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 [“Wiring” on page 5-1](#), Conduit and Pulse Output or RS-485 Wiring and the TopKAT Installation Manual, Communication Requirements.
- 4 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.
- 5 The unit must be properly grounded.

CAUTION

Before any 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.

- 6 A sufficient volume of fuel must be put 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. Follow the procedure below to perform an orderly start-up of the Series 9800Q.

- 1 Verify if all switches on the CPU PCB are set properly for the various operating conditions as explained in [“Pump/Remote Dispenser Operation” on page 6-1](#).

- 2 Turn on the circuit breakers for the microprocessor and fluorescent lights. Ensure that both lights are lit.
- 3 Turn on the power to the 9800Q.
- 4 Authorize the hose for side 1 through the Fuel Management System, if available.
- 5 Remove the nozzle for side 1 from its holder and turn on the pump handle. Verify if the display goes through the proper reset sequence as explained in [“Pump/Remote Dispenser Operation” on page 6-1](#), 3Operating Sequence.
- 6 Dispense fuel. Verify if the high flow valve opens, if equipped. Check all plumbing for leaks at this time.
- 7 Turn the pump handle off. Open the nozzle. No fuel should be dispensed at this time.
- 8 Verify if the correct quantity was recorded by the Fuel Management System, if available.
- 9 If applicable, repeat steps 4 through 8 for side 2.
- 10 Run the unit through all standard calibration procedures.
- 11 Reset the electronic totalizers as described in View/Reset Totalizers in [“Pump/Remote Dispenser Operation” on page 6-1](#).

Post Start-Up Tests

Voltage

The incoming voltage to the pump and remote dispenser should be checked and any reading not within 10% of rated voltage should be corrected before testing is continued. When dealing with suction pumps, it is a good practice to take voltage readings while the suction 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 ensure 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 ensure that all connections are tight. In the case of a remote dispenser you should follow the submersible pump manufacturer's instructions to check the system for tightness. We recommend that the tank and all piping must not be covered until this test has been completed.

Belts (Suction Pumps Only)

Since belts do stretch slightly during the first few minutes of operation, check the belt tension after completing the operational test.

The belt can be tightened by loosening the hex nut which holds the idler pulley and sliding the pulley to either side. Tighten belt sufficiently to reduce slippage, but avoid overtightening.

Calibration

All Gasboy pumps and remote dispensers are adjusted for accurate measure at the factory. However, 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 counterclockwise to increase the amount in the prover to match the displayed. Moving the wheel one hole position changes the calibration by $\frac{2}{3}$ cubic inch per 5 gallons. To change by half of this amount, you can utilize the alternate locking pin hole on the opposing side of the calibration wheel.
- 4 Repeat the 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.

9850Q and 9850QE Models

- 1 Check meter registration by delivering product to a reliable, accurate, 50 or 100 gallon prover.
- 2 Convert the amount of the error to gallons per 100 (which gives a percent figure) or gallons per thousand (which gives tenths of a percent figure).
- 3 Read the setting indicated on the adjuster. The amount of the error is added to or subtracted from this setting. The adjuster is shown in graduated divisions of 1%, 0.1%, 0.02%.
- 4 Reset the adjuster by loosening the clamp.
 - To decrease the amount delivered, turn the thimble IN on the barrel.
 - To increase the amount delivered, turn the thimble OUT (unscrew it). After resetting the adjuster, tighten clamp.



Note: Always make the final adjustment by turning IN on the thimble. If the new setting is a higher number than the original, turn it back beyond the desired figure and come back to it.

Example: Assume the adjuster setting at the start of the test reads 2.05. Product is run through the meter into a prover until the counter registers 100 gallons. Assume the prover shows a volume of 98.7 gallons (1.3 gallons short). Since the adjuster graduations are in percent readings, this 1.3 could be added directly to the adjuster reading (2.05 plus 1.3 equals 3.35 on the adjuster). A rerun through the meter should then show 100 gallons both on the meter counter and on the prover.

If you are measuring in increments of less than 100 gallons, use this simple formula to determine the percentage by which the adjuster must be adjusted:

$$(P - M) / M = A\%$$

where P is the prover measurement, M is the meter reading, and A% is the percent adjustment for the adjuster.

8 – Preventive Maintenance

General

Gasboy pumps and remote dispensers are designed and constructed to give many years of uninterrupted service. In fact, hundreds of 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.

Procedures requiring disassembly of portions of the pump/remote dispenser should be performed by competent service personnel.



WARNING

To reduce the risk of electrical shock when servicing, turn off and lock out all power to the pump/remote dispenser. In submersible pump applications, turn off and lock out power to the submersible pump and any other remote dispensers which use that submersible pump. AC power can feed back into a shut-off dispenser when remote dispensers share a common submersible pump or starter relay. Always turn off and lock out all power to the remote dispenser and submerged pumps at the master panel and close any impact valve before performing any maintenance or service to the remote dispenser, including the changing of any fuel filters or strainers. Also block islands so no vehicles can pull up to the remote dispenser when the dispenser is being worked on.

Hints for Better Pump Performance

Demand Competent Service

If your pump should stop or fail to operate properly, do not 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, ensure they are new authorized service parts supplied by Gasboy. Every part of a pump or remote dispenser 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 old ones.

Operate with Reasonable Care

Like any machine, the pump or remote dispenser 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 Check List

Keep Water Out

Water tends to collect in underground and above ground 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 or remote dispenser and cause failures.

Hose Retrievers (If Applicable)

The cable reel assembly does not require lubrication but the cable should be checked periodically and replaced when it appears worn or frayed.

Dial Face

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

Cleaning 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. Before starting, close the 10RU safety shutoff valves under each pump you are working on. Then follow these directions:

Pump: Turn off AC power to the pump. Remove the triangular-shaped Suction Strainer Cover, located on the pulley side of the pump. Inspect cover O-Ring for damage. Carefully remove debris from strainer cavity in the pump and use compressed air to blow the dirt out of the strainer.

Remote dispenser: Turn off AC power to the dispenser, submersible pump, and any other dispensers that use that submersible pump. Locate and remove the Strainer Cap. Carefully remove debris from strainer cavity in the strainer casting and use compressed air to blow the dirt out of the strainer.

Note: Always wear protective safety goggles or glasses when using compressed air.

Filter

If the unit is equipped with a filter, check and change it at regular intervals. A dirty filter in a pump or remote dispenser 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 cartridge to prevent contamination of both the soil and the electrical components within the cabinet.

Adjusting the Belts (Suction Pumps Only)

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. The belt can be tightened by loosening the hex nut which holds the idler pulley and sliding the pulley to either side to obtain the correct belt tension. Tighten belt sufficiently to reduce slippage, but avoid overtightening.

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 high-heat baked synthetic enamel, similar to that used on automobiles. 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.

In order to retain the unmarked finish on stainless steel, occasional cleaning is required. In corrosive atmospheres, such as coastal areas, a more frequent cleaning schedule is necessary. Under ordinary conditions, washing with detergent or soap and water, followed by a clean water rinse, is sufficient. If hard water is used, the surface should be wiped dry with a soft clean cloth to prevent the formation of water spots. Marks or spots, such as grease, oily fingerprints and smudges which resist soap and detergents, will have to be removed with a stronger cleaner (DO NOT use ordinary steel wool as iron particles may adhere to the surface and cause corrosion). Care should be taken in choosing a cleaner because any cleaning compounds or powders which contain abrasives can scratch a mill-rolled finish. Care must be exercised in their use to run in the direction of the polishing lines in the steel, never across them. After cleaning, an application of paste wax is recommended to protect the surface and prolong the interval between cleaning.

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