GASBOY

Model 74 and 71 Split Consumer Electric Pumps

Installation/Operation/Parts Manual

MDE-4429A

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	9100A, 9140A, 9152A, 9153A, 9800A, 9840A, 9850A, 9852A, 9853A, 9140
4997	9822A, 9823A
5046	9100Q, 9140Q, 9152Q, 9153Q, 9800Q, 9840Q, 9852Q, 9853Q
5087	8753K, 8853K, 9153K, 9853K (restricted to diesel and non-retail gasoline sales)

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 #
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™
Consola™
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.

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1 – Introduction

Purpose

The purpose of this manual is to assist the installer in installing and operating the unit. Faulty installations are the major cause of unit malfunctions. This manual should be supplied to the electrician prior to the installation of conduit and wiring. Gasboy® pumps must be installed and operated as described in this manual. This manual also contains warnings, safeguards and procedures on the use and care of the pump.

Ensure that you leave this manual with the pump owner after the installation is complete.

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

Specifications

Model 74 and 71 pump systems are made specifically for petroleum-based fuels for private use on vented tanks. These pumps can be mounted on aboveground skid tanks or mounted on pedestals for remote installations.

Model 74 Pumping System consists of all the features listed below; the Model 71 does not include the pumping unit and the motor.

Feature	Description
Pumping Unit	Self-priming, direct-drive rotary vane; 23 PSI (1.6 bars) stainless steel bypass; check valve with pressure relief valve.
Motor	1/3 HP, 1725 RPM motor with thermal overload protection and auxiliary AC line. Standard 115 VAC, 60 Hz; optional 230 VAC, 50/60 Hz. AC junction box included.
Register	4-wheel push-button reset, 7-digit master totalizer Registers show delivery in US gallons or liters and change gears are available to convert registers for unit of measure.
Meter	Nutating disk phenolic measuring chamber in aluminum die-cast housing; adjustable calibration plus (+) 0.5% at full flow
Hose and Nozzle	1"x12' (3.66 m) UL®-listed hose assembly with integral static discharge wire; automatic nozzle.
Connections	2" (5.08 cm) NPT for tank opening; 1" (2.54 cm) suction; 1" (2.54 cm) NPT discharge
Strainer	30 micron, stainless
Finish	High-gloss red urethane door, black cabinet. Stainless steel extra cost option.
Approvals	UL-listed Additional extra cost options include: vacuum breaker return line, longer hoses, hose breakaways, external filters, and 10:1 pulsers.

Warranty

For information on warranty, refer to MDE-4255 Gasboy's Warranty Policy Statement. If you have any warranty-related questions, contact Gasboy's Warranty Department at its Greensboro location.

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/dispenser and island. Locate the switch or circuit breakers that shut off all power to all fueling equipment, dispensing devices, and Submerged Turbine Pumps (STPs).

⚠ WARNING


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

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

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

Evacuating, Barricading and Shutting Off
Any procedure that requires access to the pump/dispenser or STPs requires the following actions:

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

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

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

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

Safety Symbols and Warning Words

This section provides important information about warning symbols and boxes.

Alert Symbol


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

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


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


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


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

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

Working With Fuels and Electrical Energy

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

No Open Fire

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

No Sparks - No Smoking

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

Working Alone

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

Working With Electricity Safely

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

Hazardous Materials

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

⚠ WARNING

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

⚠ WARNING

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

In an Emergency

Inform Emergency Personnel

Compile the following information and inform emergency personnel:

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

⚠ WARNING

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

⚠ WARNING

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

⚠ WARNING

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

⚠ WARNING

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

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

Lockout/Tagout

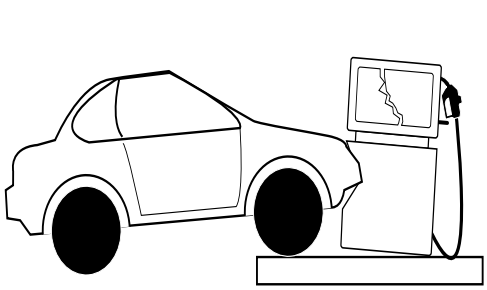
Lockout/Tagout covers servicing and maintenance of machines and equipment in which the unexpected energization or start-up of the machine(s) or equipment or release of stored energy could cause injury to employees or personnel. Lockout/Tagout applies to all mechanical, hydraulic, chemical or other energy,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

Hazards and Actions

WARNING

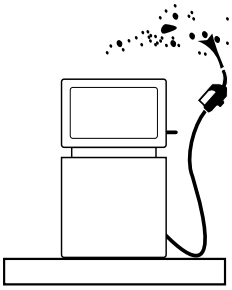
Spilled fuels, accidents involving pumps/dispensers, or uncontrolled fuel flow create a serious hazard.
Fire or explosion may result, causing serious injury or death.
Follow established emergency procedures.

The following actions are recommended regarding these hazards:



Collision of a Vehicle with Unit

Fire at Island



Fuel Spill

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

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3 – Installation

Installation Precautions

All tanks and installations must conform with all building/fire codes, all Federal, State, and Local codes, National Electrical Code, (NFPA 70), NFPA 30, Automotive and Marine Service Station Code (NFPA 30A) and NFPA 395 codes and regulations.

Plan your installation carefully. 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" on page 3. It contains important information regarding the safe use of your pumps.

2. Do install an emergency power cutoff, if the pump is used for other than personal use. 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 order to provide the highest level of safety, it is recommended that all employees be trained regarding the location and procedure for turning off power to the dispensing equipment.

3. Do use breakaway couplings on discharge hose. While not required for tanks under 1100 gallons, use is recommended for safety reasons.

4. Do have the pump installed by a competent installer/electrician.

5. Do not experiment with a pump if you are not sure that the installation is correct.

6. Do not overload sub or main breaker panels.

7. Do not install any underground piping without proper swing joints (always use shoulder nipples; never close nipples).

8. Do not cover any lines until they have been both air and liquid-tested.

9. Do not back-fill the tank or supply line with cinders or ashes (back-fill with clean sand, crushed rock, or pea gravel).

10. Do not use black iron pipe or fittings for underground installations (use only new galvanized or fiberglass pipe and fittings).
    Note: Install all fiberglass pipe and fittings according to manufacturer's specifications and requirements.

11. Do not use power line wiring of inadequate capacity (use gauge specified by the wiring diagram or wire chart provided in "Wiring" on page 19).

12 Do not use a circuit breaker of improper size (refer to "Wiring" on page 19).

13 Do not install fill pipe to tank where it can be submerged with standing water.

14 Do not use Gasboy fuel dispensing equipment to remove water ballast from the storage tank.

15 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. Tighten junction box covers before replacing panels.

16 Do not use knock-out boxes or flexible conduit for installing this unit. All power wires should be run in threaded, rigid, metal conduit. All threaded connections must be drawn up tight with five threads minimum engagement. Only one opening in the AC junction box is provided. On completion of the installation, it is the installer's responsibility to ensure that any unused openings are plugged.

Conduit

All wiring to the Gasboy pump must be installed in 1/2" threaded, rigid, metal conduit. Do not use knockout boxes and flexible conduit.

18 AWG wires are required for installation. If equipped with a DC pulser, the DC pulser wires should be installed in a separate conduit from the AC power wires; however, they can be combined in the same conduit with AC wires, provided UL-listed cable with the following specifications is used:

Feature	Description
Conductor	18 AWG stranded wire. Number of conductors to be determined by pulser.
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 600 V
Environmental	Gas and oil-resistant; suitable for wet or dry locations.

Gasboy can supply Belden® 1063A (Part Number 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.

All wiring and conduit runs must also conform with the National Electrical Code (NFPA 70), the Automotive and Marine Service Station Code (NFPA 30A) and all local codes.

The junction boxes shown below are supplied with the pump.

Figure 3-1: Junction Boxes

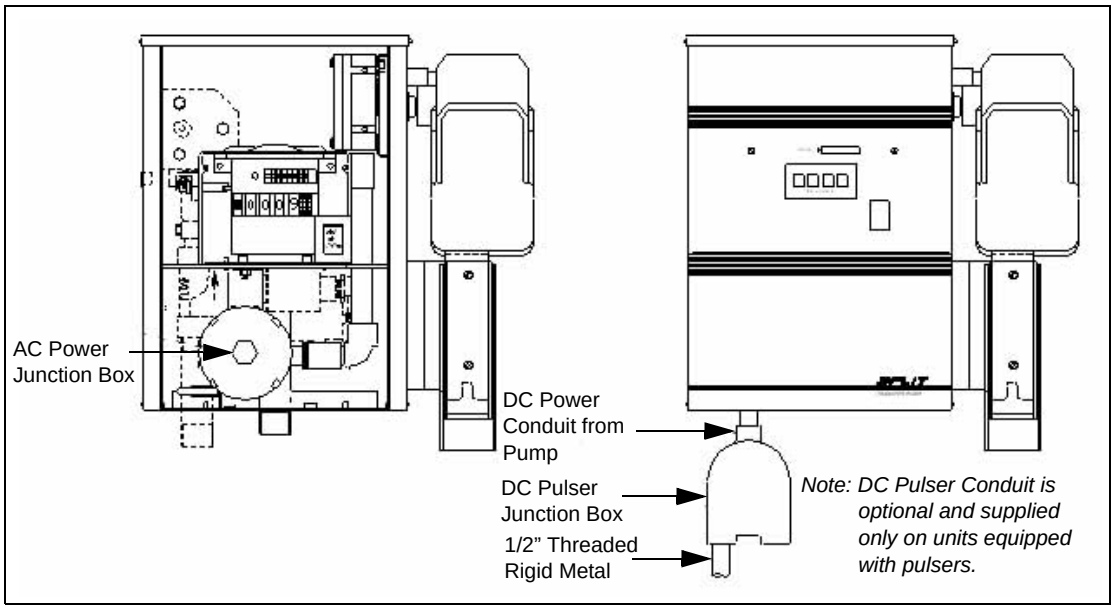


Figure 3-2: Pumping Unit Base Layout, 089701(Model 72SP) - for Model 74

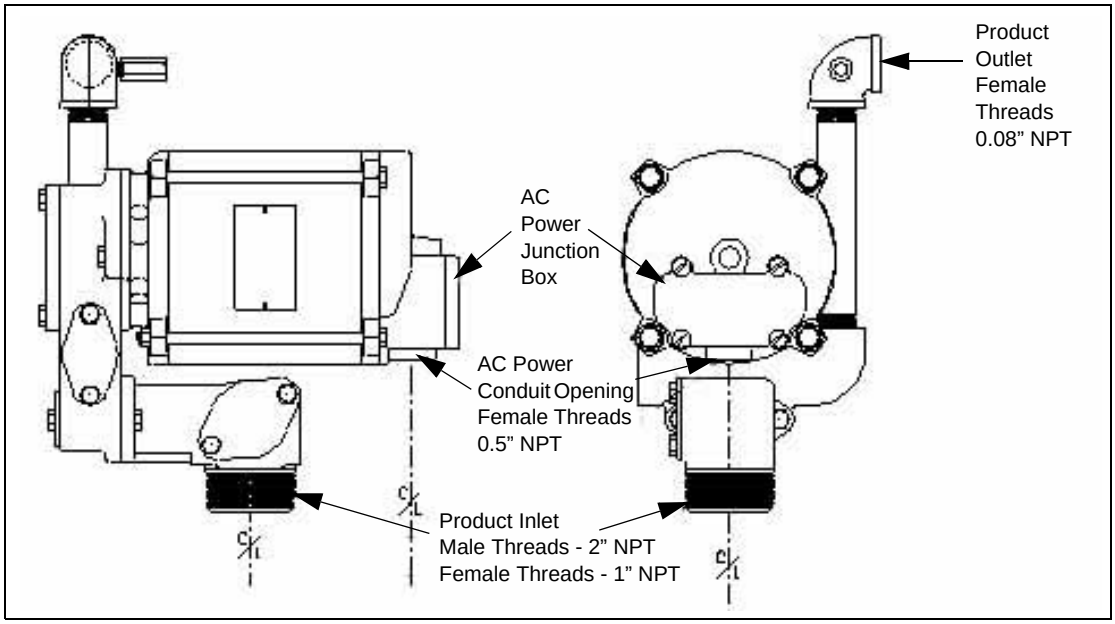


Figure 3-3: Dispenser Base Layout

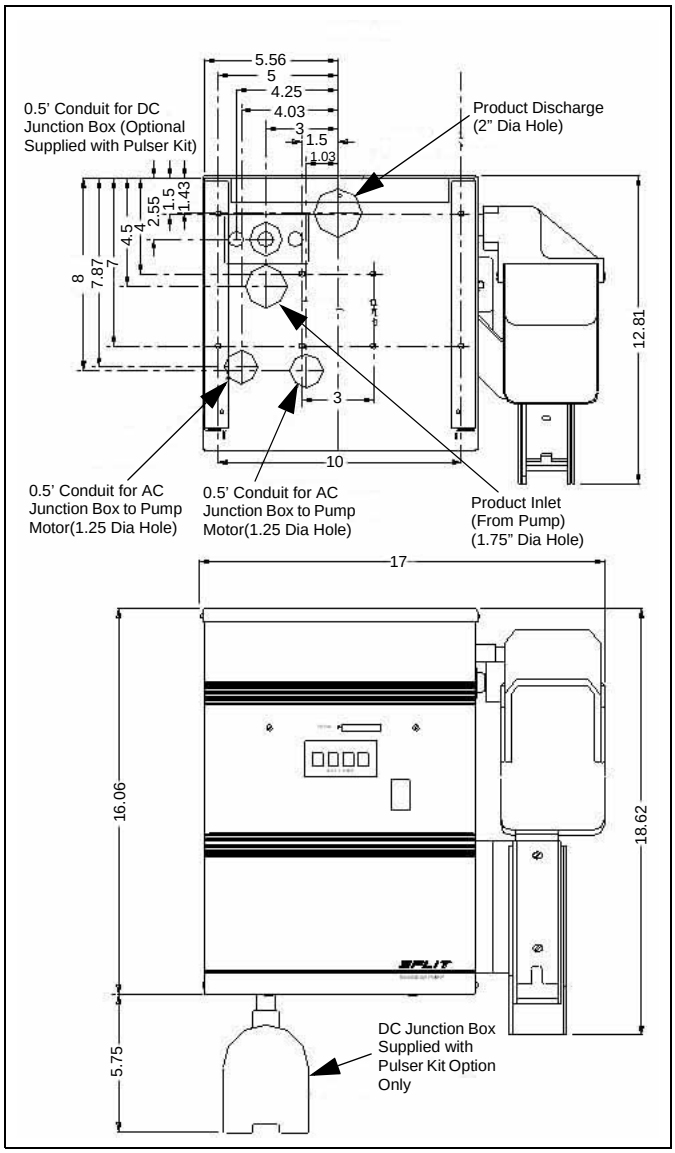
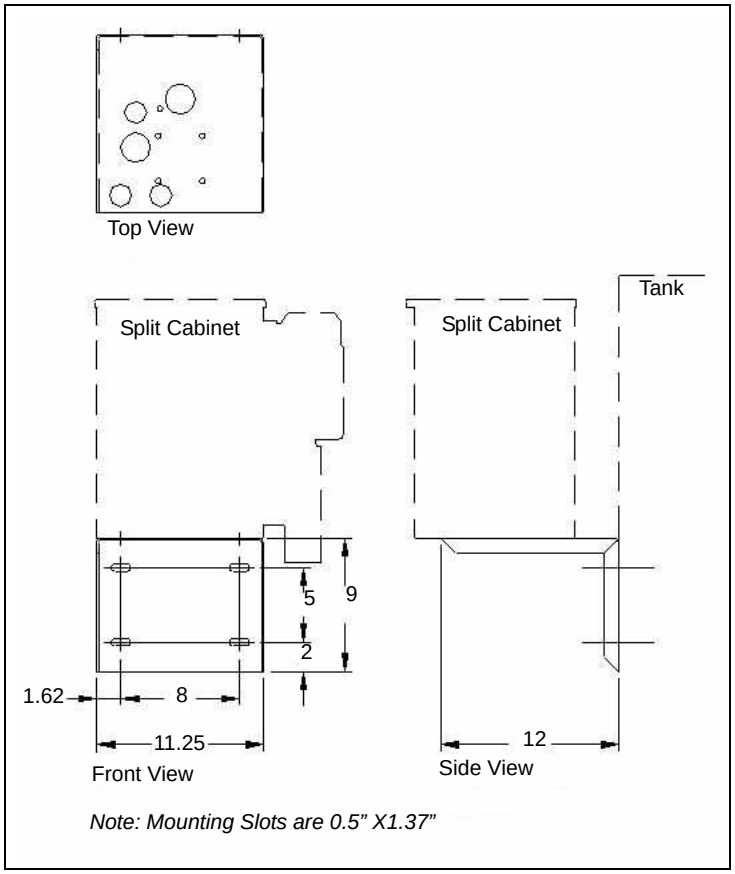


Figure 3-4: Tank Mounting Bracket Base Layout



Installation Instructions

Door Removal for Installation or Service

To remove the door for installation or service, proceed as follows:

1 Remove two screws on the front of the cabinet.

2 Push in and hold the reset button and push the cabinet panel upward until it clears the pins on base.
Note: Ensure that you do not damage the button.

Remove the panel. The top cover can be removed by removing four screws (for service only).

3 For calibration or service, remove the plug button on the left side of the cabinet.

4 To reassemble the pump cabinet, slide the front door up under the top cover, depress the front reset button and slide the door down on base pins.

Hose and Nozzle Installation

To prevent undue stress and possible damage, install hose and nozzle after installation of the pump. The hose must have static wire which provides electrical continuity between hose couplings to dissipate static electrical charge.

To install hose and nozzle, proceed as follows:

1. Screw the hose into the open end of the elbow and tighten. Apply gasoline-resistant pipe compound to male threads.
2. Screw the nozzle onto the hose.

DC J-Box Installation

To install the DC J-Box, proceed as follows:

1. Apply a light coat of thread sealant to the DC conduit threads.
2. Screw the DC junction box (provided) onto the conduit.
3. Install the junction box mounting bracket (provided) on the mounting stud with 1/4-20 nut.
4. Install the U-Bolt (provided) which clamps the top junction box hub to the mounting bracket.

Emergency Shut-off (Shear) Valve Installation

A listed emergency shut-off valve 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 inch (13 mm) or the lowest part of the dispenser cabinet without pedestal. The shear valve should be rigidly supported to ensure proper shearing and closure of the valve in the event the remote dispenser is dislodged. According to the type of shear valve, a different supply nipple may be required.

Note: 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 placing the remote dispenser into service.

Direct Mount on Aboveground Tank

Aboveground tanks require both a pressure/vacuum vent and an emergency vent. The pressure/vacuum vent reduces losses due to evaporation and is an air quality control measure. The emergency vent provides a relief from the pressure resulting from heating and boiling of the tank contents during a fire situation. Both vents must be properly sized for a given tank.

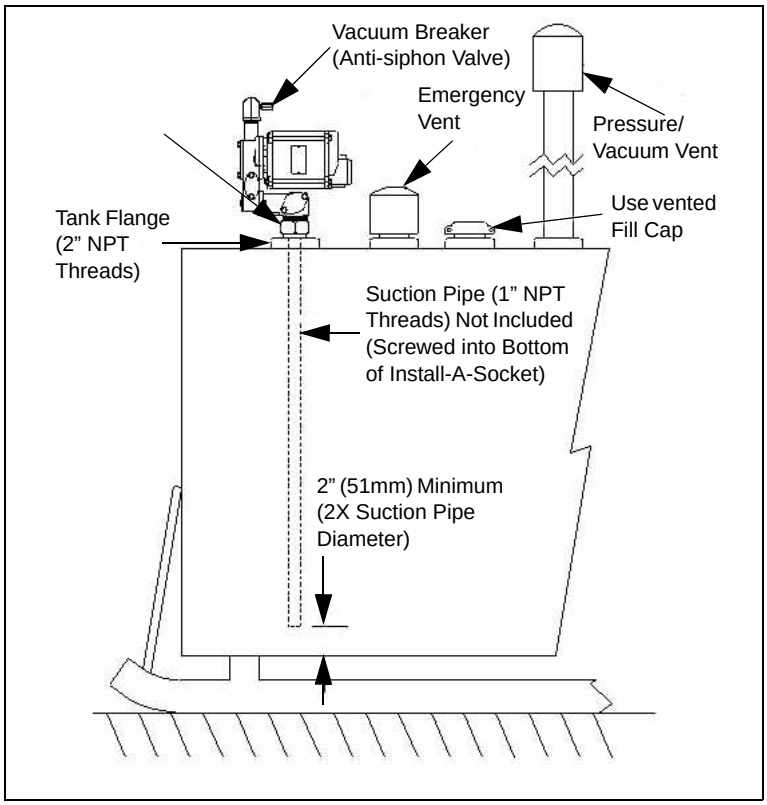
For direct mounting on the aboveground tank, proceed as follows:

1 Screw 1 inch suction pipe into install-a-socket. Suction pipe should terminate at least 2 inches from the bottom of the tank. Apply gasoline-resistant pipe compound to male threads.

2 Screw install-a-socket directly into 2 inches flange in the aboveground tank.

3 Place the pump in position and screw the install-a-socket to the pump inlet. Apply gasoline-resistant pipe compound on male thread.
Note: Refer to "Conduit" on page 8 for correct installation of electrical conduit.

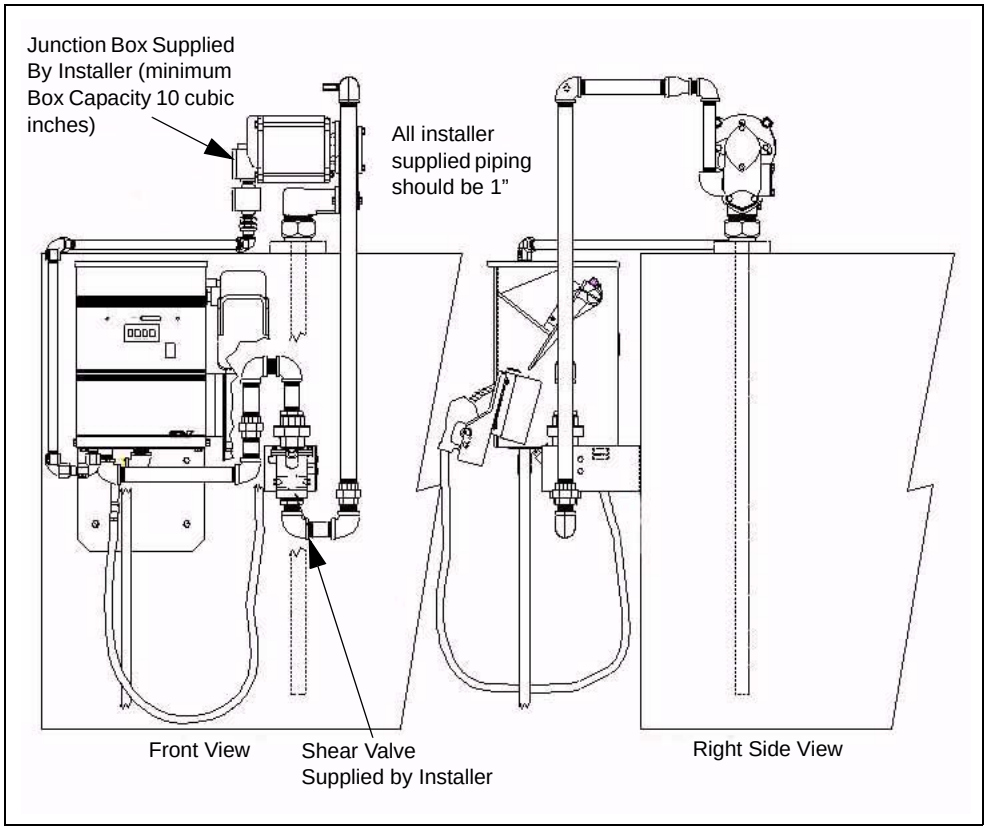
Figure 3-5: Mounting the Pump Directly on Aboveground Tank



Model 74 with Tank Mounted Register

The recommended installation for the register is mounted to the tank as shown in Figure 3-6 on page 14. The piping, and shear valve shown in Figure 3-6 on page 14 are not provided since these will vary based on your site and tank configuration. The mounting bracket (Part Number 015764) may be ordered separately. See Figure 3-4 on page 11 for details. See your distributor for assistance. Refer to "Conduit" on page 8 for correct installation of the electrical conduit.

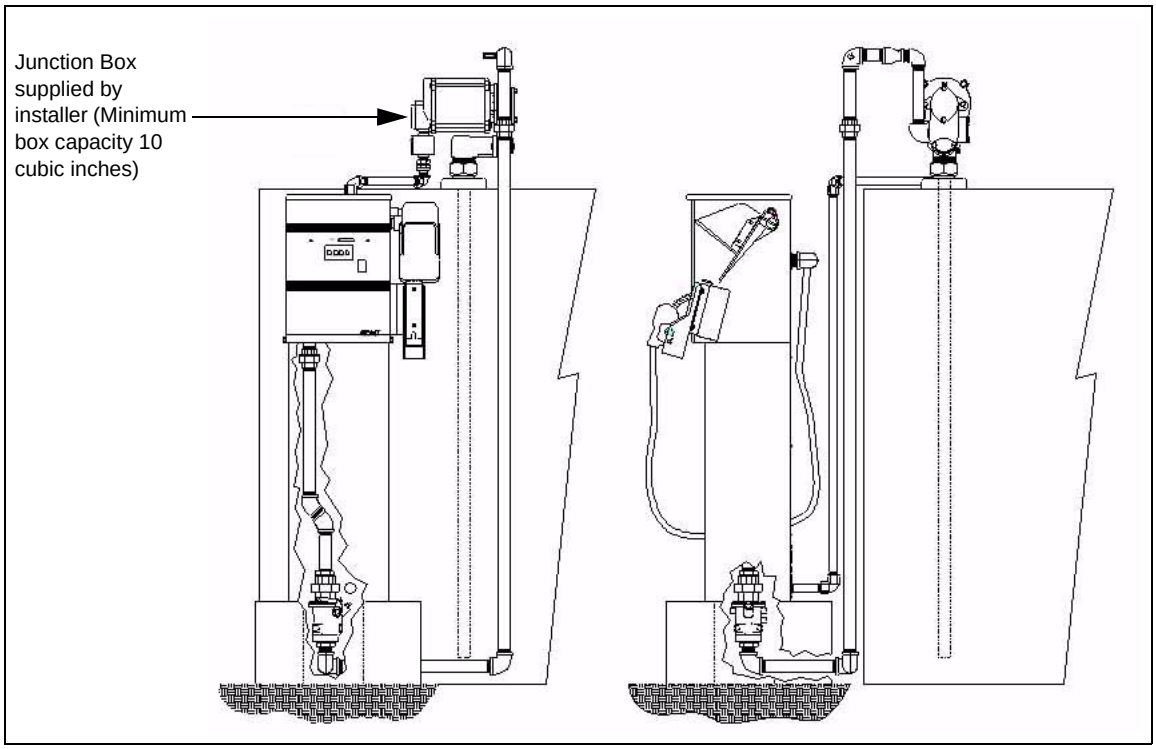
Figure 3-6: Model 74 with Tank Mounted Register



Model 74 with Pedestal Mount Register

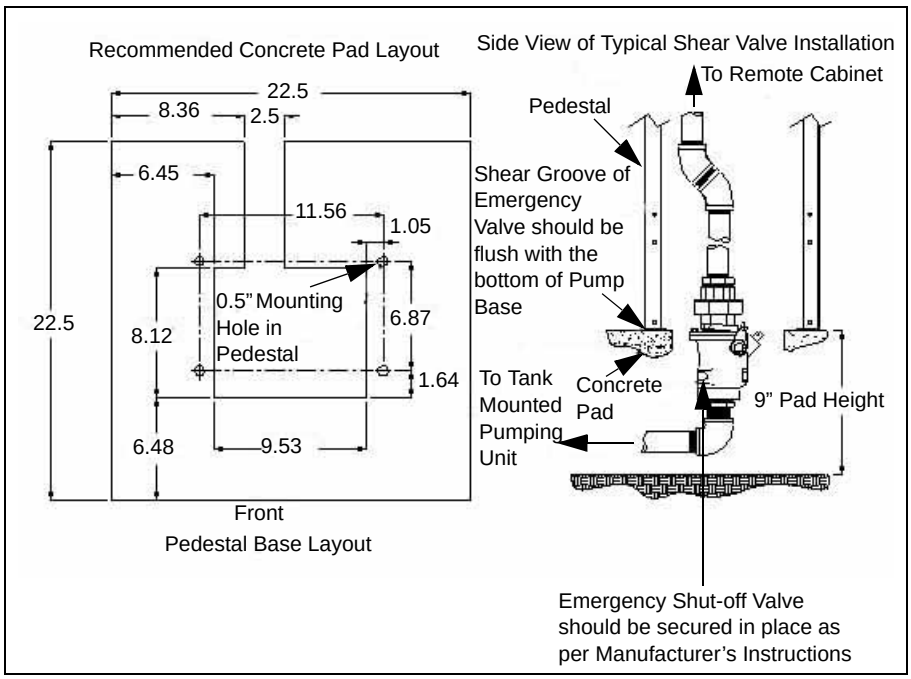
Before you begin, ensure that the post is securely installed on the island. To mount the register to the pedestal, use the hardware provided. Refer to "Conduit" on page 8 for correct installation of electrical conduit.

Figure 3-7: Model 74 with Pedestal Mount Register



Concrete Layout and Typical Piping

Figure 3-8: Concrete Layout and Typical Piping

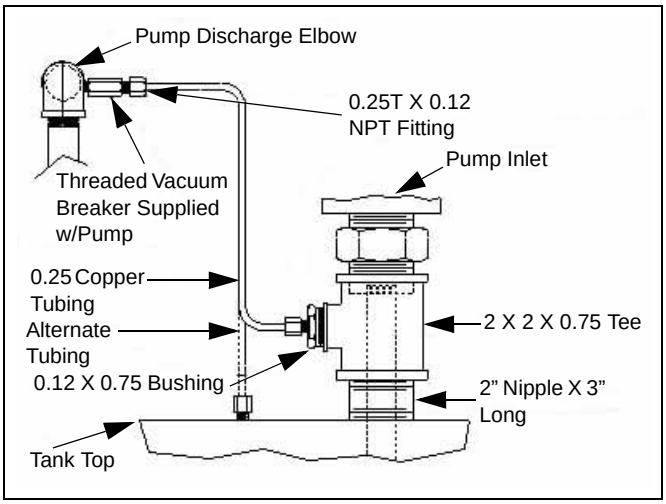


Vacuum Breaker (Anti-Siphon Valve)

The vacuum breaker is used to break a siphon should the nozzle drop below the fluid level in the tank while the nozzle is stuck in the open position. A threaded vacuum breaker (Part Number 066534) is shipped installed in the discharge elbow. Gasboy recommends that the vacuum breaker be plumbed back to the tank.

Figure 3-9 on page 17 shows two methods for installing tubing for the vacuum breaker. In all instances, the 1/4 inch tubing should be run to an area above the fluid level in the tank. If the tube is installed below the fluid level of the tank, the ability to break vacuum and prevent siphoning will be lost. Using the illustrated methods, the tube end may terminate into the annular vapor space between the 1 inch suction pipe and the 2 inches mounting pipe, or into an opening in the top of the tank. A tubing kit (Part Number 032700) is available to aid installation. All components shown are provided when you order the kit (Part Number 032700).

Figure 3-9: Installation of Tubing for the Vacuum Breaker



Note: Tubing can be piped to any available opening on top of the tank. Use reducer bushings as required.

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4 – Wiring

Wiring Precautions

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

1. Have the pump installed by a competent installer/electrician.
2. 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, Automotive and Marine Service Station Code (NFPA 30A), and NFPA 395 codes and regulations.
3. Use only threaded, rigid, metal conduit.
4. Use only UL-listed insulated gasoline and oil-resistant stranded copper wiring of the proper size.
5. Wire connections should be tightly spliced and secured with a wire nut; close the open end of the wire nut with electrical tape.
6. The line to the motor should be on a separate circuit and installed on a 15 AMP breaker. This should be sufficient for operating the Model 74 at either 115 V, 60 cycle or 230 V, 50 cycle.
7. The unit must be properly grounded.
8. Install an emergency power cutoff if the pump is used for other than personal use. 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 order to provide the highest level of safety, it is recommended that all employees be trained regarding the location and procedure for turning off power.
9. When DC pulsers are used in the pump, the AC and DC wires must not share any conduits, junction boxes, or troughs.

Circuit Breakers

Power to the unit should normally be supplied from a dedicated 15 AMP circuit breaker. No other equipment should be powered from this breaker. Consult NEC, Article 430 for current requirements of a typical 1/3 HP motor. If two pumps are supplied from one breaker, that breaker must be capable of handling the load of both motors while meeting the locked rotor requirements found in NEC, Article 430. Provisions must be made to break both legs of any AC circuit.

Grounding

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 unit's AC junction box ground lug and the main electrical service panel. One earth ground connection is required per unit. The ground rod is to be a solid, corrosion-resistant conductor and must be installed at the main electrical panel in accordance with the National Electrical Code. It should be properly tied into the ground bus strip of the panel. We recommend the neutral and ground bus strips be bonded together (unless prohibited by local codes).

The Pump Motor

Pumps are shipped from the factory with motors wired for either 115 VAC, 60 cycle, or 230 VAC, 50/60 cycle.

The pump motor is equipped with thermal overload protection. If overheated, it will shut itself off without any damage to the windings. Ensure that you turn off the pump power if this occurs. As the motor cools, it will start without warning if power is on.

Wire Size

The wire size of the AC power lines of a pump depends on the voltage at which the pump will be operated (115/230) and the distance from the circuit breaker panel to the pump. When two pumps are powered from the same breaker through the same wires, the gauge of the wires should be increased to handle the added load according to the distance from the breaker panel. Use the chart below to select the proper wire size for your installation.

Wire Size

Wire Gauge Sizes for 1/3 HP Motor		
Distance (Feet/Meters)	115 VAC Gauge	230 VAC Gauge
25 ft./7 m	14	14
50 ft./15 m	14	14

Wire Gauge Sizes for 1/3 HP Motor		
Distance (Feet/Meters)	115 VAC Gauge	230 VAC Gauge
100 ft./30 m	12	12
150 ft./46 m	10	12

The AC wire size for the reset complete (switch detect) line should be 14 AWG (when it is used).

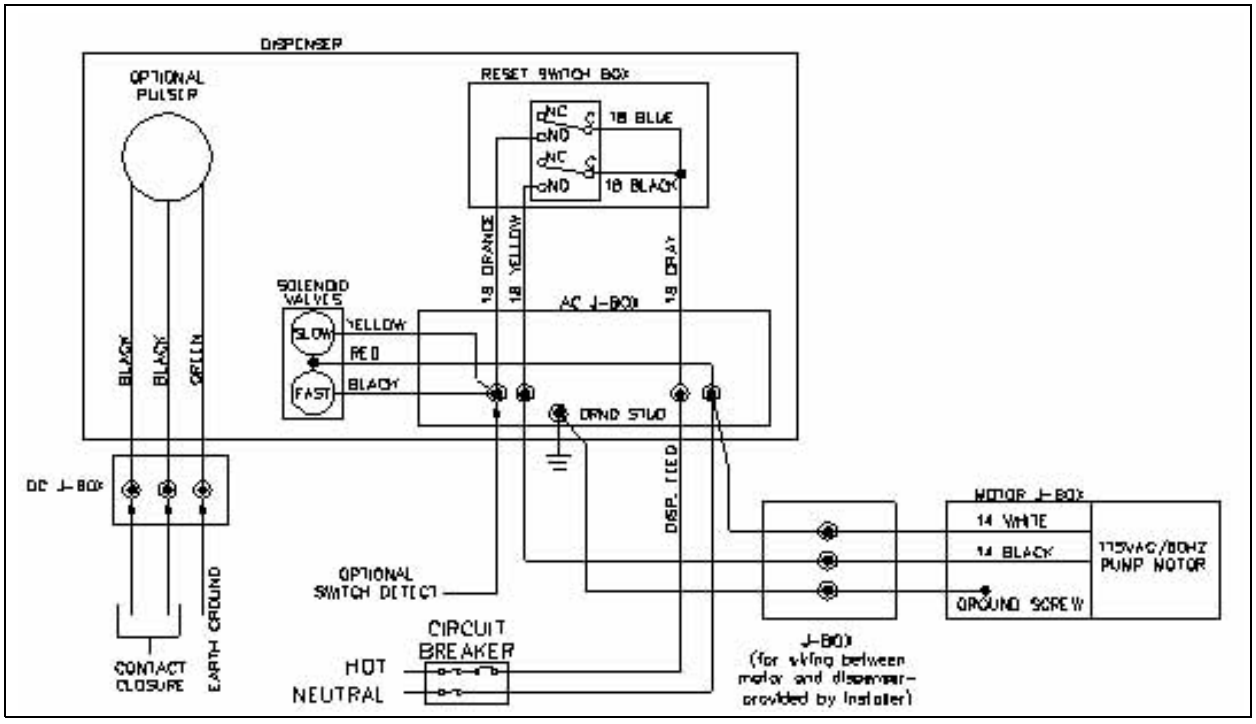
Pulser Wiring

An optional pulser is used when external monitoring of the dispensing unit operation is desired. The pulser transmits one electrical signal (pulse) for each predetermined amount of fuel dispensed. Reed 10:1 pulsers operating with DC voltages are used. Pulser wiring must be 18 AWG and installed in metal conduit separate from all AC wiring. It cannot share a common junction box, wiring trough or conduit with any AC wiring.

Pump Wiring Diagrams

115 VAC Pumps

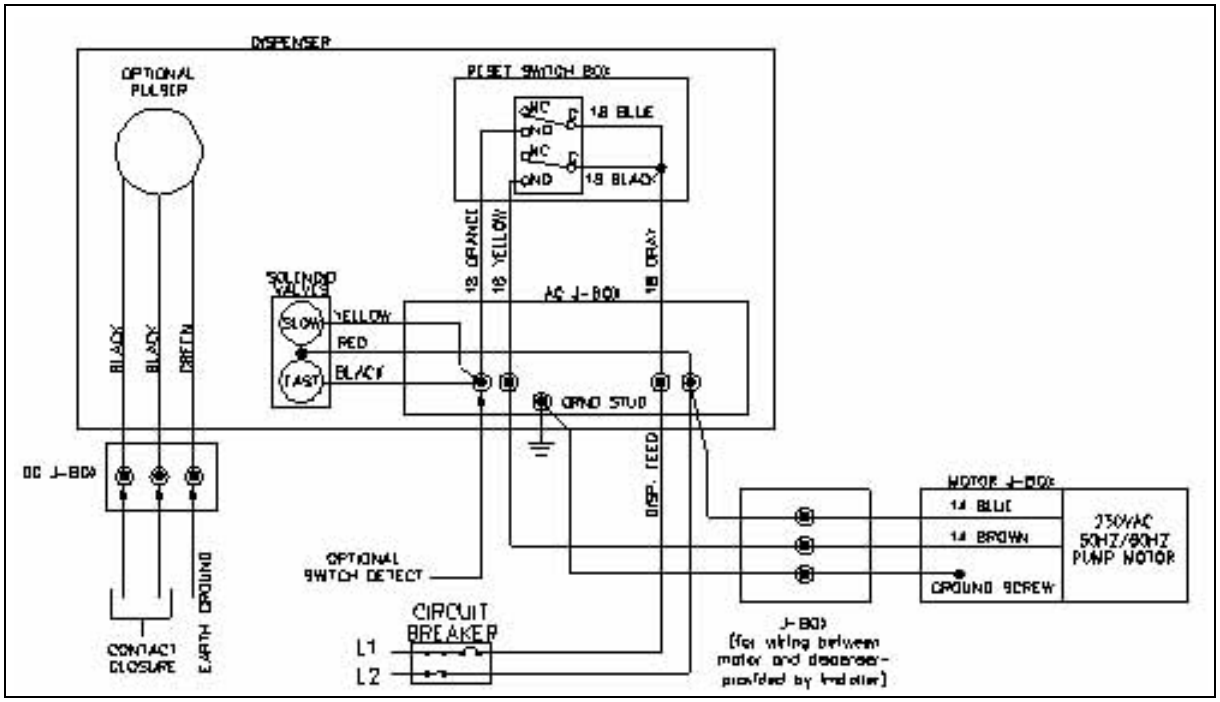
Figure 4-1: 115 VAC Pumps



230 VAC Pumps

- 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, Automotive and Marine Service Station Code (NFPA 30A), and NFPA 395 codes and regulations.
- Pulser wiring must be 18 AWG and installed in metal conduit separate from all AC wiring. It cannot share a common junction box, wiring trough or conduit with any AC wiring.
- Wiring between the pump motor and dispenser should be 14 AWG minimum for runs up to 50 feet.

Figure 4-2: 230 VAC Pumps



5 – Startup and Operation

Pre-Startup Checklist

The information below should be reviewed to help verify the proper installation of your Gasboy pump. If the installation does not meet the criteria listed, as well as any Federal, State, and Local codes and requirements, correct the problem before powering on the unit.

1 The unit must be properly secured.

2 All plumbing must be complete and tight. All liquid-carrying lines must be checked for leaks.

3 When DC pulsers are used in the pump, the AC and DC wires must not share any conduits, junction boxes, or troughs.

4 All conduit work must be complete. All junction box covers must be secured. Conduit seals should not be sealed until the wiring is verified through proper operation.

5 The unit must be properly grounded.

6 Before any testing begins, remove any water in the tank through a fill opening, using a suitable pump. Do not use the Gasboy pump to remove water. Serious damage may occur.

7 A sufficient volume of fuel must be present in the tank to ensure that the liquid level is above the bottom of the suction pipe.

8 Before placing the nozzle into service, apply a few drops of light machine oil (such as 3-in-1) on the stem. Operate the lever several times so that the oil penetrates the packing. This offsets the drying action of gasoline and keeps the packing soft and pliable.

Startup

After successfully verifying the installation against the completion checklist, the unit is ready for startup. To perform an orderly startup, proceed as follows:

1 Turn on the circuit breaker for the pump.

2 Remove the nozzle from the boot and lift the pump handle.

3 Push the reset button to zero the register.

4 Dispense fuel. Check all plumbing for leaks at this time.

5 Turn the pump handle off. Open the nozzle. No fuel should be dispensed. The amount delivered should be displayed on the register. If an optional pulser kit is attached, it will be supplying pulses which may be recorded by an external monitoring system.

6 Repeat steps 2 to 5 several times to ensure that the pump is operating satisfactorily.

Post-Startup Tests

Voltage

The incoming voltage to the pump should be checked and any reading not within 10% of rated voltage should be corrected before testing is continued. When dealing with suction pumps, it is a good practice to note down voltage readings while the suction pump is operating on bypass (turned on but not dispensing product) 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.

Meter Calibration

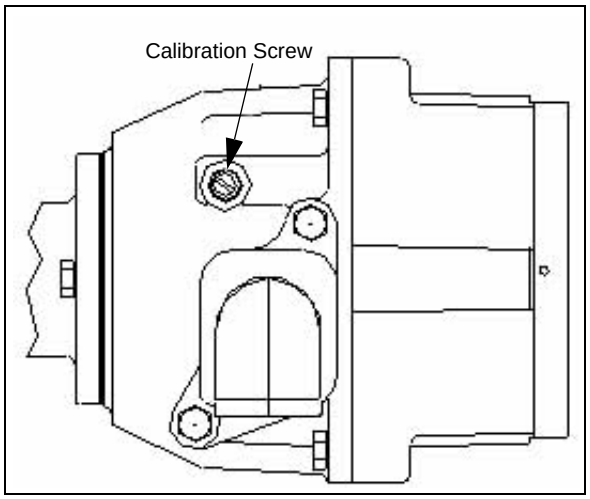
The Split Consumer Electric Pump is adjusted for accurate measure of the specified fuel (gasoline or diesel) within plus (+) 0.05 gallons at the factory. However, since the conditions of the installation can affect pump accuracy, it is the responsibility of the installer to check the pump for accuracy and make any required adjustments.

Choose the flow rate at which the meter will be used most often for the zero calibration point. For example, if the pump is being used with an automatic nozzle, calibrate with the nozzle set on the middle or top notch position, whichever is used most frequently.

Use a certified five-gallon measure with a sight glass and scale showing cubic inches over or under an exact five gallons. Fill and drain the test measure to completely wet the interior surfaces. Reset the register to zero and deliver an exact measured five gallons into the test measure at the selected flow. Read the level of the liquid in the sight glass on the scale in plus (+) cubic inches.

To access the calibration screw, remove the plug from the left side of the cabinet and insert a narrow blade screwdriver through the cabinet. Turn the adjusting screw clockwise to correct for plus (+) cubic inches or counterclockwise for minus (-) cubic inches in the test measure.

Figure 5-1: Meter Calibration



Count the number of full turns and fractional turns each time for reference in judging the number and direction of any additional turns required to calibrate the meter to exact zero.

Strainer Cleaning

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. Refer to "Maintenance and Troubleshooting" on page 27 for the procedure to be followed for cleaning the strainer.

User Operation

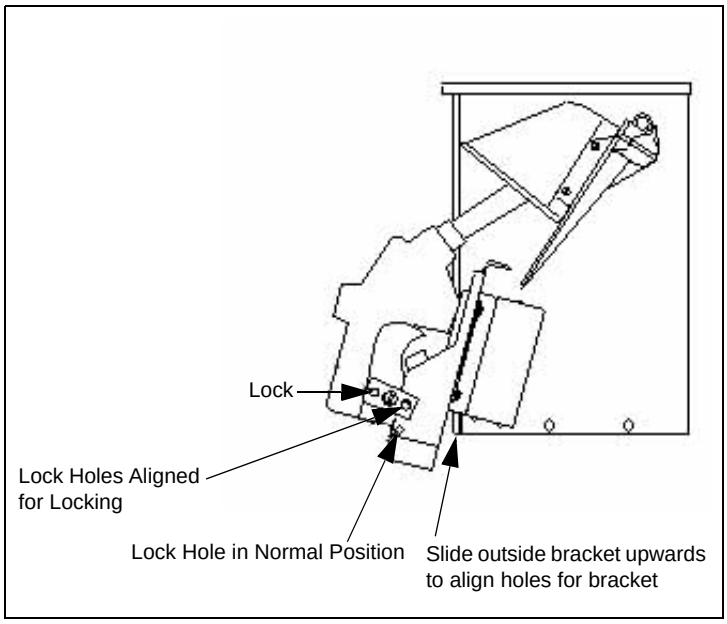
To operate the pump, proceed as follows:

1. To begin fueling, remove the nozzle from the boot and lift the pump handle to activate.
2. Push the reset button to zero the register.
3. Dispense fuel.
4. Turn the pump handle off. The amount delivered is displayed on the register.

Nozzle Locking Mechanism

A locking mechanism is supplied as part of the hook arrangement on each Model 74 or 71. This will allow the unit to be locked thus preventing unauthorized use of the dispenser. A lock with a shackle clearance of at least 2-1/2 inches is required to lock the pump (that is, Master No. 1LJ-D).

Figure 5-2: Nozzle Locking Mechanism



To lock the nozzle in place, proceed as follows:

1 Insert the nozzle onto the hook assembly with the nozzle tip inside of the boot.

2 Slide the rear bracket of the nozzle hook assembly upward until the holes near the bottom of the nozzle are aligned.

3 Slide the open padlock through holes in the moveable and stationary portions of the hook arrangement, thus capturing the nozzle in place.
Note: The four holes will not align until the moveable bracket has been slid upward.

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

6 – Maintenance and Troubleshooting

Maintaining Trouble-free Operation

Operating your pump with reasonable care will prolong its life and provide better service. Gasboy pumps are designed and built to provide years of uninterrupted service; however, certain parts of a pump are bound to wear. To keep your pump running at maximum efficiency, Gasboy recommends a periodic inspection at least twice a year.

In order to maintain trouble-free operation, do the following:

- **Remove Water from the Tank**: After every fill-up, check your tanks for water. Water can accumulate in both underground and aboveground storage tanks due to condensation or defective fill openings that are not properly protected with watertight covers. Remove any water with a sump pump to forestall serious damage to equipment. Water, sediment, and other foreign matter that accumulates in the tank can be drawn up into the pump and cause failures.
- **Clean the Dial Face**: Use a soft, clean, damp cloth as needed.
- **Preserve the Pump's Finish**: Gasboy pump housings are finished with a coating of urethane paint. To preserve this finish, thoroughly clean all painted surfaces at regular intervals with a high grade automobile polish and protect with a coat of paste wax. Do not use abrasive cleaners or polish. Do not use high-pressure spraying equipment.

  Stainless steel cabinets also require regular cleaning, especially in corrosive environments such as coastal areas. Wash with mild detergent or soap and water followed by a clean water rinse. Avoid abrasive cleaners which may scratch the finish. Stubborn stains, such as oil or grease will require a stronger cleaner.

  Note: Do not use ordinary steel wool as iron particles may adhere to the surface and cause corrosion.

  Always clean in the direction of the polishing lines in the steel, never across them. In hard water areas, wipe the surface dry with a soft clean cloth to prevent spotting. Protect the finish with a coat of paste wax.
- **Check and Change Filter**: If the unit is equipped with a filter, check and change it at regular intervals. A dirty filter in a pump will cause a slower delivery rate.
- **Clean the Strainer**:
  Note: Should be performed only by an authorized Gasboy distributor or installer.

  Clean the strainer immediately after the pump has been installed and tested, and again after a few hundred gallons have been delivered. Thereafter, once every six months, or as required. The symptoms of a dirty or clogged strainer in a pump are slow delivery, noisy operation, and pulsation.

  To clean the strainer, turn off AC power to the pump. Locate the Suction Strainer Cap on the pumping unit and unscrew it to access and remove the strainer. Use compressed air to blow the dirt out of the strainer. Always wear protective safety goggles or glasses when using compressed air.

- **Clean the Bypass Assembly**:
  Note: Should be performed only by an authorized Gasboy distributor or installer.

  The bypass valve assembly should be removed only for cleaning and should be checked if there is notable loss in system performance. No adjustment is required. To remove the valve, turn off AC power to the unit, remove the two bolts to the bypass cover and lift out the bypass valve assembly.

When Your Pump Needs Service

When your pump needs service, follow these guidelines:

- Procedures requiring disassembly of portions of the pump should be performed by competent service personnel. Gasboy has a distributor network which services fuel dispensing equipment in every part of the country.
- Turn off all power to the pump to reduce the risk of electrical shock when servicing (including changing of fuel filters or strainers). Also, block islands so that no vehicles can pull up to the pump when it is being worked on.
- Replace worn, rusted, or corroded parts immediately with new authorized service parts supplied by Gasboy. Replacing parts with incorrect or sub-standard substitutes will result in unsatisfactory pump operation. Always use new gaskets or seals when servicing or rebuilding Gasboy equipment; do not re-use old ones. Using authorized parts will ensure the continuity of the Underwriters' Label on your pump.

“Parts” on page 35 lists parts and service procedures for the Model 74 and 71 pump systems. Using part numbers when ordering will expedite your order and reduce the possibility of the wrong parts being shipped.

The remainder of this section contains troubleshooting information and assembly/disassembly procedures for various components that may need service.

Troubleshooting

If problems are encountered in the operation of the pump, follow the procedures below in an attempt to isolate the problem. When the problem is detected, follow the procedures for disassembly of the pump.

Pump Does Not Start

- Is the breaker at the panel turned on?
- Is there power at pump? Check at the junction box. Voltage cannot be below 104 V on a 115 V pump; 204 V on a 230 V pump.
- Is the motor overheated (thermal switch cutoff)?

⚠ CAUTION

The external motor surface may be hot and cause injury. Allow the surface to cool and re-try.

Note: Replace the motor if the above checks do not solve the problem.

Pump Hums But Does Not Start

- Is the voltage adequate? Check the voltage with the pump on bypass with nozzle closed. Voltage cannot be below 104 V on a 115 V pump; 204 V on a 230 V pump.
- Check the rotor, vanes, and bypass valve for free operation. Check the motor with rotor and vanes removed; shaft should turn easily and smoothly by hand (normal shaft rotation is counter-clockwise).

Note: Replace the motor if the above checks do not solve the problem.

Pump Runs But Does Not Prime or Deliver Product

- Is there fuel in the tank?
- Are you using a nozzle other than the factory-supplied automatic nozzle? Standard service station nozzles are not recommended.
- Loosen the pump cover and slide aside so you can observe the rotor and vane movement inside the pump cavity. Rotor should be turning freely in a counter-clockwise motion. If rotor turns clockwise, motor is bad.
- If the register is recording but no product is being dispensed, you may have a supply line air leak.
- Check for an air leak on the suction side of the pump. Is the check valve seated properly? Reassemble and prime pump using liberal quantity of motor oil in pump cavity; if it primes, run the pump in full flow and snap the nozzle closed; shut off the motor and check for leaks on the suction side of the pump above the check valve. Any observed liquid leakage would indicate an air leak when the pump is running with the nozzle open and would prevent priming when pump was empty.

- Are bypass, strainer, and check valve cover plates flat? They could be bent from excessive pressure created by a vehicle running over the hose.
- Is there an air leak in the suction line below the check valve. Make an accuracy check using 5 gal Seraphin test can. Any clock fast error (refer to "Inaccurate Delivery" on page 30) in excess of 2-1/2% indicates an air leak in the suction line. The most common source of an air leak in the suction line is the union - check union for alignment and tightness before checking balance of the suction line. If the pump does not prime using oil, the suction line is blocked or has a severe air leak.

Pump Delivers Product But Does Not Register

- Is the main totalizer recording? If yes, the problem is in the register assembly. Check to ensure that the reset mechanism is working properly. Reset button should return fully to its original position after being pressed. The reset lever (that is activated by the reset button) should also return to its original position.
- If the main totalizer is not working, the problem could be a broken/jammed measuring chamber or a jammed pulser drive. If the unit has a pulser, check to ensure that the pulser drive operates freely. Excessive drag exerted by this assembly will lock up the register and totalizer.

Pump Delivery Is Slow

- Check for dirty strainer.
- If the pump has a filter, change the filter.
- Check for supply line restriction by testing the pump with a vacuum gauge. If vacuum is abnormally high, there is a restriction.

Pump Loses Prime

- Inspect the check valve poppet and seat for clean mating surfaces.
- If, after a period of non-use, a pump delivers the product initially, followed by air and then full flow, there is an air leak in the suction line.
- Install pressure gauge between hose and nozzle. Operate the pump at full flow. Snap the nozzle closed and turn off the pump. If the pressure falls to zero rapidly, replace the check valve and clean and inspect the valve seat.

Inaccurate Delivery

- Calibrate the meter (Refer to "Startup and Operation" on page 23).
- A clock-fast error (more on the register than is delivered) in excess of 2-1/2% is due to air in the suction line or vaporization of gasoline in the pump. Check the pump for loss of prime and the suction line for air leak.
- A clock-slow condition may result from one of the following reasons:
  - Any slowing of the register or measuring chamber due to excessive friction resistance or mechanical failure.
  - Inadvertent bypassing of the measuring chamber.

  Check the register for zero setback; check if the reset lever returns to the top of the slot in the meter cover after setback; check for "hang-up" of number wheels in the register or gears not meshing.

Pump Delivers Product When Not Turned On

- In the aboveground storage tank, if the fluid level is higher than the pump, positive head pressure may force the product through the pump. Install a pressure regulating valve or a solenoid valve in the supply line to the pump.
- Check for a defective vacuum breaker.

Vacuum Breaker Spits Product

Clean and replace. If problem persists, install the return line kit.

Disassembly of Pump

Note: Numbers in parentheses correspond to the numbers shown in the parts illustration (see Figure 7-1: Direct Drive Motor-Pump Assembly on page 36) and the corresponding parts list in the section "Parts" on page 35.

Pump may contain product; be prepared to catch product in an appropriate container when removing any cover.

Replacement of Rotor and Vanes

To replace the rotor and vanes, proceed as follows:

1 Remove the pump cover screws and the pump cover (1) and square cut O-Ring (2).

2 Note the orientation of the rotor (4) and of the vanes (31) in rotor slots.

3 Remove the key (3) and withdraw the rotor and vanes from the pump block (12).

Since the rotor is spring loaded, ensure that the washer (6) and spring (7) remain on the pump shaft. Insert the new rotor and replace the vanes so that the trailing edge slopes away from the direction of pump rotation (counterclockwise).

4 Reinstall the key in the shaft slot and the rotor keyway.

5 Check the pump cover for scoring (if scored, replace).

6 Replace the square ring (2) and while holding the rotor in, against spring tension, slide the cover over the opening and tighten the screws.

To replace the shaft seal, remove the rotor and vanes as described in step 3 and proceed as follows:

1 Slide the spring (7) and both washers (6) off the shaft.

2 O-Ring (8) will act as a brake to resist removal of brass, rotating seal ring (9). To overcome this resistance, lightly grasp the brass ring with pliers and pull at the same time turning the shaft back and forth with the flat blade of a screwdriver in the keyslot in the end of the shaft.

3 Remove the O-Ring from the brass ring and spread some grease over the machined surface of the ring.

4 Reinsert the brass ring over the shaft and press the greased surface against the carbon, floating seal ring (10). The carbon ring can now be withdrawn stuck to the brass ring.

CAUTION

Do not break up the carbon ring to remove it, since some of the pieces may get lost in the pump casting and cause the rotor or measuring chamber to jam later in service.

5 Use a bent wire as a button-hook to hook and withdraw O-Ring (11) from recess in the back of the pump cavity.

6 Install a new seal group (5) in the reverse order.
Note: Ensure that the recess in the back of the pump cavity is clean and that the O-Ring (11) is firmly seated and not twisted in this recess.

7 The bypass valve (24) is preset to provide maximum performance without overloading the motor and can be withdrawn by removing the bypass cover plate (26).
Note: When reassembling, ensure that the holed end of the tube (27) and bullet-shaped nose of the valve (24) are inserted toward the pump.

8 The check valve is attached to the check valve cover (21) and will come out when the cover is removed.

If you can hear the product in the suction line running back into the storage tank when this assembly (16) is removed, the check valve is holding and keeping the pump primed.

Note: When reassembling, ensure that the rubber valve disc is facing down toward the valve seat.

Disassembly of Meter-Register

To disassemble the meter-register, proceed as follows:

1 Remove the B size measuring chamber for cleaning by taking out four meter body screws, lifting off the register assembly and removing the three measuring chamber screws.

2 After separating and cleaning the top and bottom half, reassemble, ensuring that the baffle is seated in grooves in the top and bottom halves and through the slot in the measuring disc.

CAUTION

Do not drop or sharply strike chamber parts while handling.

3 Rotate the disc to ensure that it turns freely and replace in the meter body.
Note: Do not overtighten screws. A torque of 20-25 ft-lbs is sufficient. When reassembling the register to the meter body, use a new O-Ring.

For calibration procedure, refer to "Meter Calibration" on page 24.

4860 4-Wheel Register Service

Note: Numbers in parentheses correspond to the numbers shown in the parts illustration [see Figure 7-4: 4860 4-Wheel Register (for Model 71) on page 41] and the corresponding parts list in the section "Parts" on page 35.

To service the push button register, proceed as follows:

1. Remove two (one on each side) screws from the door.
2. Remove the door and rest the button bracket.
3. Remove the reset button bracket to release the reset button (1) and spring (2).
4. Remove the screws (3), reset bearing (4) and screws (7) to lift the register assembly (6) out.
5. Remove the four bearing screws to remove the drive shaft assembly (8).

Replacing Bearing and Seal Assembly (22)

To replace the bearing and the shaft seal assembly (22), or service the gear train on the back of the register housing (14), remove the housing from the meter by taking out four screws.

Note: The meter housing will be full of liquid so some means should be available to catch what drains from the case and lines.

To remove gears (18-21), proceed as follows:

1. Remove the three retaining rings (16) and the drive key (17).
2. Withdraw the drive shaft and gear (10), spacer (11), and all parts of the bearing and seal assembly (22).
3. Remove the nylon washer from the Bearing and Seal Assembly (22) and note its location.
4. Remove both the oilite bearings and both O-Rings from the bore in the register housing.
5. Using new parts, which consist of a new nylon washer, two Oilite bearings, and two O-Rings, reassembly the parts in reverse order.
   Note: Ensure that you lubricate both O-Rings with an O-Ring lubricant before assembling.
6. Reassemble the gear train in the following sequence:
   - **a** Gear (21)
   - **b** Key (17)
   - **c** Cluster gear (20)
   - **d** Retaining ring (16)
   - **e** Control block (18)
   - **f** Retaining ring (16)

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7 – Parts

Using part numbers when ordering will expedite your order and reduce the possibility of the wrong parts being shipped. When ordering replacement parts, ensure that you give the complete name and part number as shown in the appropriate parts lists.

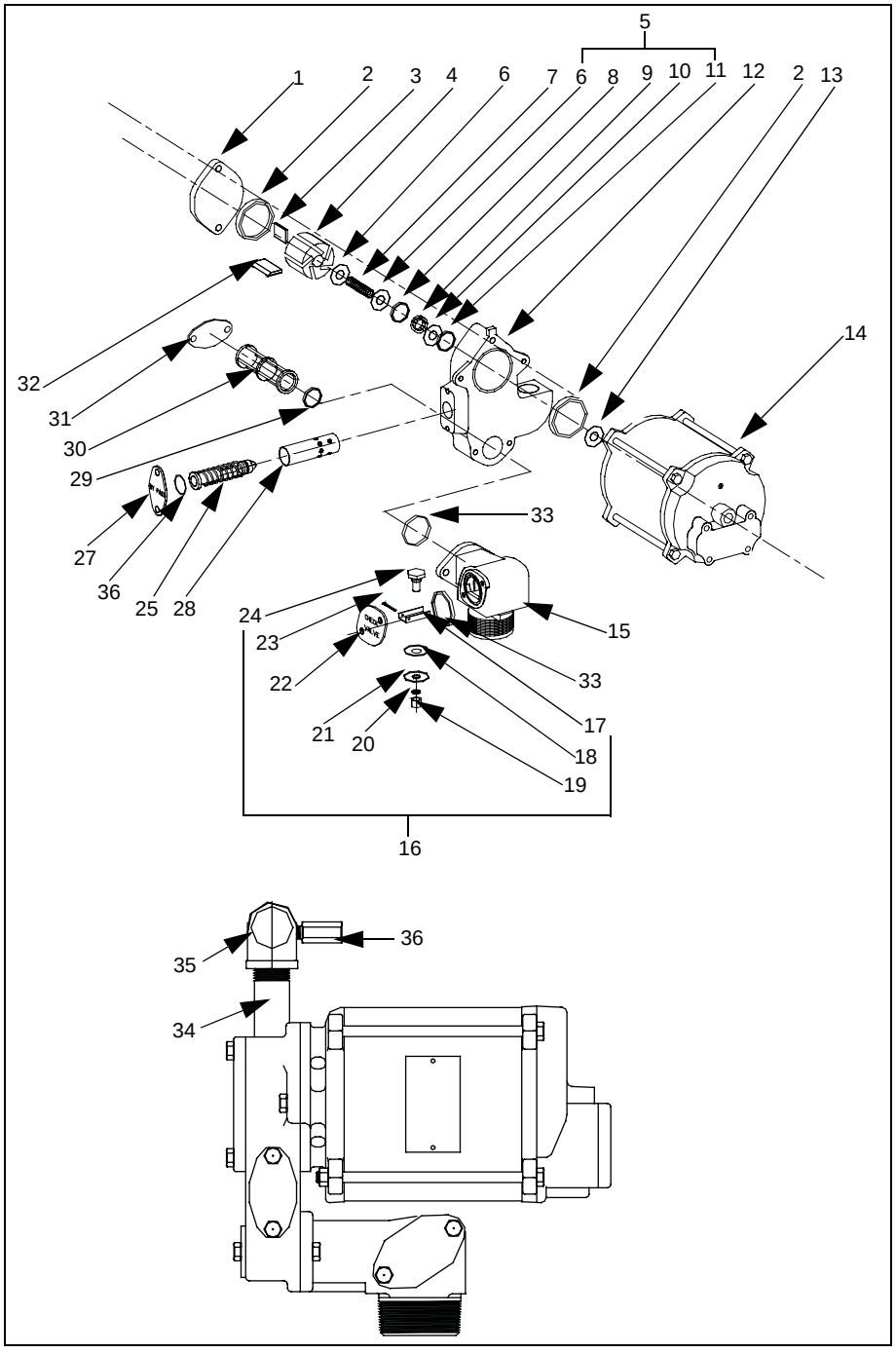
Procedures requiring disassembly of portions of the pump should be performed by competent service personnel. Do not depend upon the repair service of a general mechanic unless he is thoroughly familiar with the mechanism. Gasboy has a distributor network which services fuel dispensing equipment and management systems in every section of the country.

⚠ WARNING

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

Direct Drive Motor-Pump Assembly

Figure 7-1: Direct Drive Motor-Pump Assembly

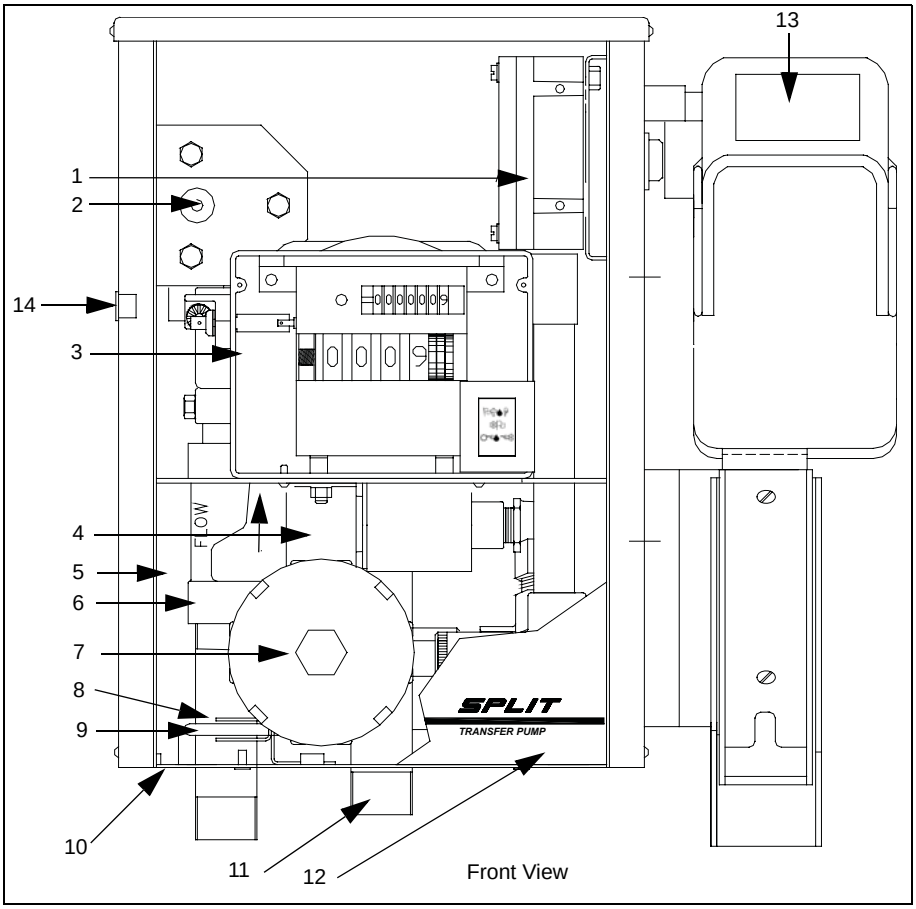


Direct Drive Motor-Pump Assembly - Parts

Item	Description	Part Number
1	Pump Cover	003490
2	Square-Cut O-Ring	049004
3	Rotor Key	031285
4	Rotor	051475
5	Seal Group (Consists of items 6-11)	054024
6	Washer	067210
7	Spring	057956
8	O-Ring	048941
9	Rotating Seal Ring	049510
10	Floating Seal Ring-Carbon	048820
11	O-Ring	048956
12	Pump Block	003210
13	Slinger Ring	049525
14	Motor, 115 V, 60 cycle	F37324
	Motor, 230 V, 50/60 cycle	F37325
15	Base	003065
16	Check Valve Assy. (Consists of items 21-25 and 28)	066655
17	Valve Guide	029155
18	Washer	068680
19	Hex Jam Nut	038980
20	Washer	068650
21	Valve Disc	024356
22	Check Valve Cover	022271
23	Cotter Pin	042370
24	Valve Stem w/Relief Valve	062620
	Relief Valve	*062365
25	Bypass Stem Assy.	062335
26	Square-Cut O-Ring	049001
27	Bypass Cover	022315
28	Tube	065725
29	Square-Cut O-Ring	049002
30	Strainer, 100 Mesh, Gasoline (optional)	063268
	Strainer, 30 Mesh, Diesel	063266
31	Strainer Cover	022900
32	Vane	067030
33	Square-Ring	049003
34	Pipe, 3/4” x 6-7/8	R11496-106
35	Elbow	024934
36	Vacuum Breaker	066534

Model 71 Register

Figure 7-2: Model 71 Register - Front View, Cover Removed

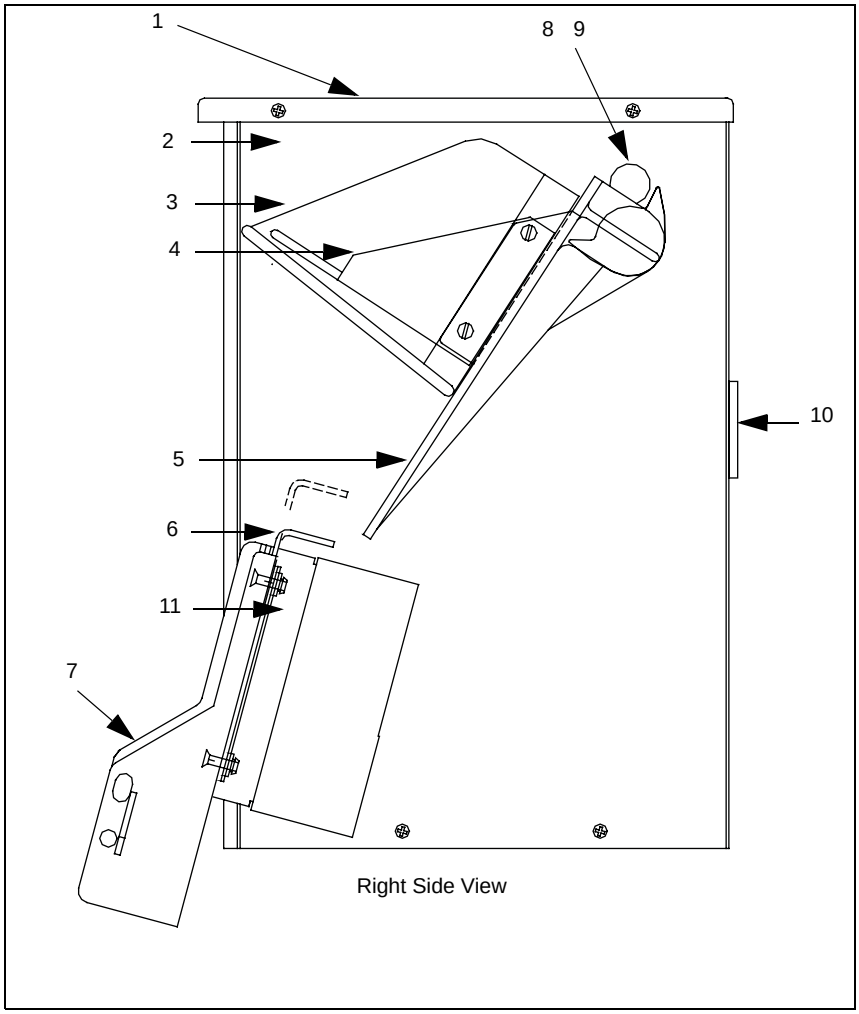


Model 71 Register - Front View, Cover Removed - Parts

Item	Description	Part Number
1	Bearing Plate/Switch Assy. (see Figure 7-5 on page 43)	
2	Pulser Assy. (see Figure 7-6 on page 44)	
3	Meter Assy. (see Figure 7-4 on page 41)	
	Gallons	
	Liters	
	Gallons for use with Pulser	
	Liters for use with Pulser	
4	J-Box Support	015924
5	Bracket Meter Support	015921
6	Inlet Assy. (see Figure 7-8 on page 46)	
7	J-Box	014113
8	Bracket	014733

Item	Description	Part Number
9	U-Bolt	013295
10	Bottom Plate, Standard (Standard Gasboy black unless otherwise specified)	041805
	Bottom Plate, Stainless Steel	041815
11	Discharge Assy. (see Figure 7-9 on page 47 and Figure 7-10 on page 47)	
	Rear Discharge Assy. (Not Shown)	049927
12	Front Panel, Standard (Standard Gasboy red and gallons unless otherwise specified)	041803
	Front Panel, Stainless Steel	041813
13	Decal, Operating Instructions	023613
14	Plug, 1/2"	Q10554-06

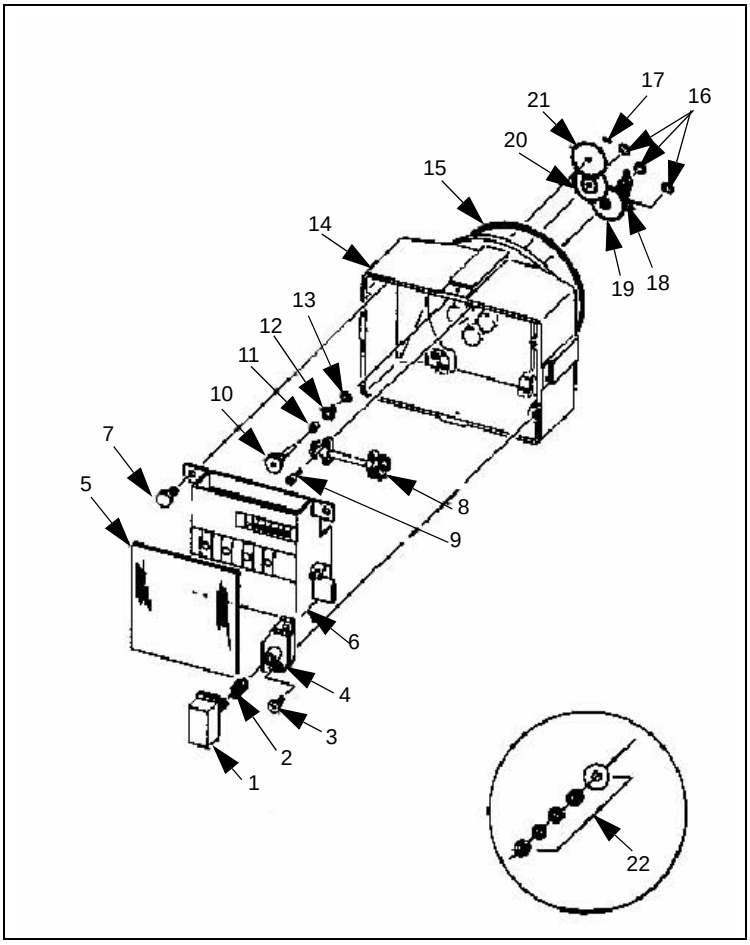
Figure 7-3: Model 71 Register - Right Side View



Model 71 Register - Right Side View - Parts

Item	Description	Part Number
1	Cover, Standard (Standard Gasboy black unless otherwise specified)	041804
	Cover, Stainless Steel	041814
2	Panel Sides/Back, Standard (Standard Gasboy black unless otherwise specified)	041802
	Panel Sides/Back, Stainless Steel	041812
3	Hood	029416
4	Hood Support	063507
5	Lever, Control	003771
6	Bracket, Nozzle Locking	015782
7	Bracket, Nozzle Support	015784
8	Stop	C09585
9	Cushion Sleeve	C09584
10	1-3/4 Plug (For Bottom Discharge models)	Q10554-21
	1" Grommet (For Rear Discharge models)	028960
11	Nozzle Hook Mounting Bracket	015929

Figure 7-4: 4860 4-Wheel Register (for Model 71)



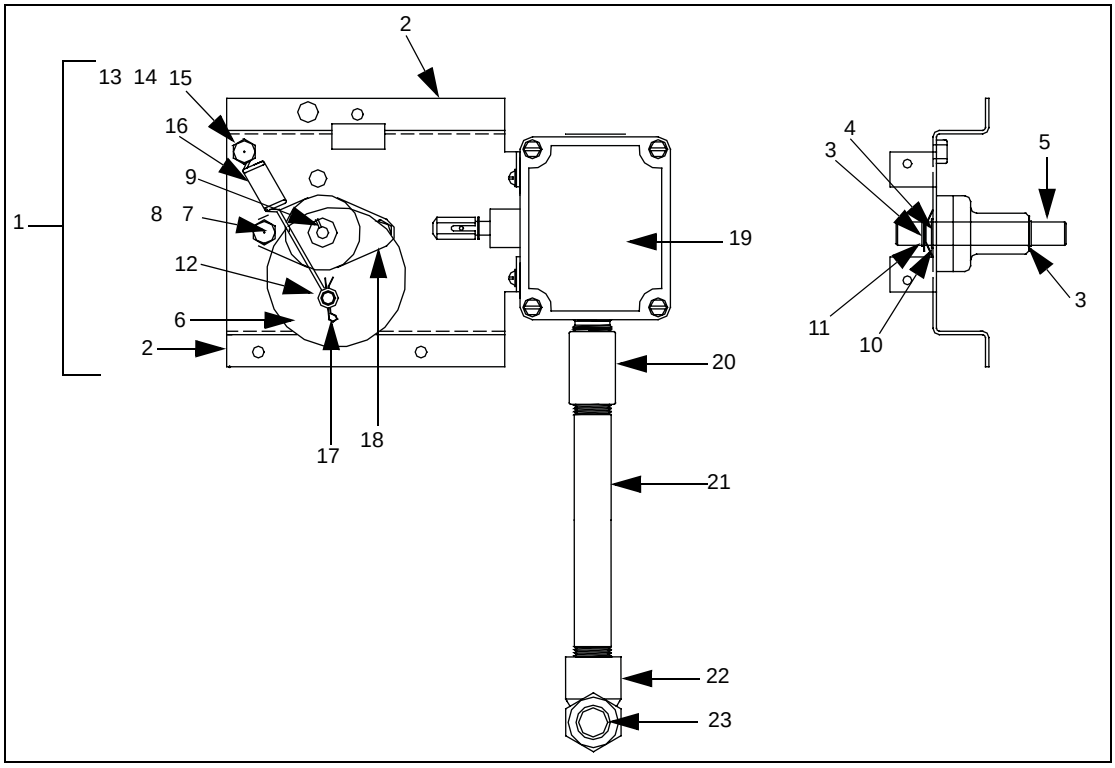
4860 4-Wheel Register (for Model 71) - Parts

036328	U.S. Measure, 71
036329	Liter Measure, 71
036326	US Measure, 71 with Pulser
036327	Liter Measure, 71 with Pulser

Item	Description	Part Number
1	Reset Button	017269
2	Spring, setback	057985
3	Reset Bearing Screw	053737
4	Reset Bearing	011816
5	Dial Glass	028736
6	Register Assy. (incl glass)	S00758
	Reg Assy, Ext Shaft (for use with pulser, incl glass)	S00765
7	Register Screw	K85736-55
8	Drive Shaft Assy	054513

Item	Description	Part Number
9	Drive Shaft Assy Screw	053626
10	Drive Shaft and Gear	054522
11	Spacer	056791
12	Bearing and Seal Assy. (Use if no letter is cast onto rear of housing #18. If Rev. G, see item 22.)	014095
13	O-Ring	048865
14	Register Housing	048994
15	O-Ring	049075
16	Retaining Ring - E	049390
17	Drive Key - Spring	031345
22	Bearing and Seal Assy. (Use only when Rev G is cast onto rear of housing #18. If no Rev. see item 12.)	036995
Change Gears-US Gallons Gasoline or Diesel		
18	Control Block,12T	012491
	Control Block, Bronze, 12T	012490
19	Cluster Gear, 12T-39T	028168
20	Cluster Gear, 15T-38T	028172
21	Drive Gear, 36T	028448
Liter Measure Gasoline or Diesel		
18	Control Block,12T	012491
	Control Block, Bronze, 12T	012490
19	Cluster Gear, 15T-38T	028172
20	Cluster Gear, 29T-36T	028175
21	Drive Gear, 25T	028151

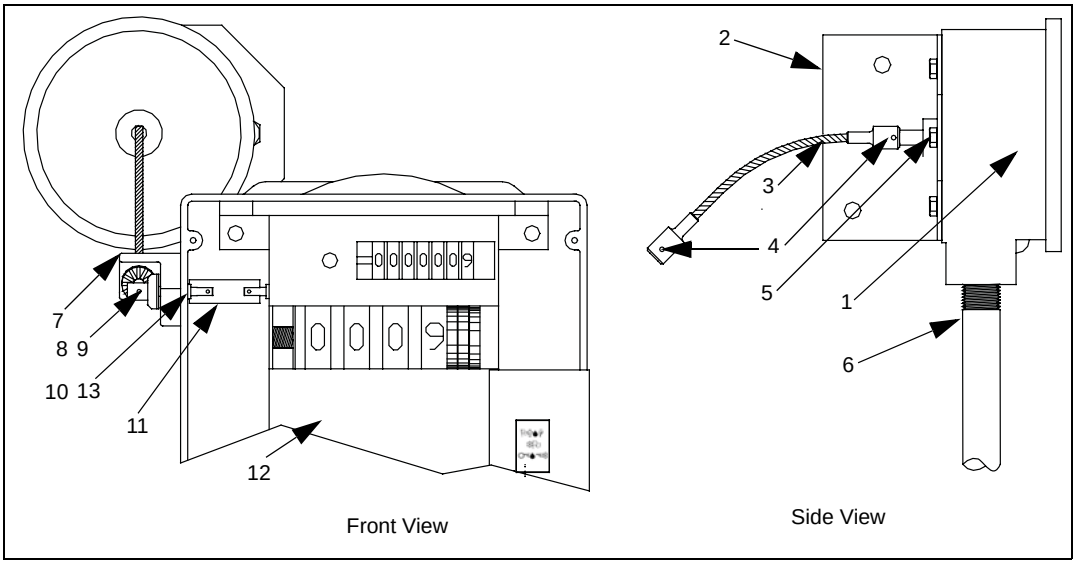
Figure 7-5: Bearing Plate and Switch Assembly-049911



Item	Description	Part Number
1	Plate-Bearing Assy. (includes items 2-18)	049910
2	Switch Bracket	015920
3	Retaining Ring	K76238-20
4	Bearing, Nyliner	011958
5	Shaft, Start	054447
6	Cam	046054
7	Screw, 5/16-18 x 5/8 HHC	K51194
8	Lockwasher, 5/16	K73278-28
9	Roll Pin, 1/8 x 1-3/8	042657
10	Spring Washer	068951
11	Brass Washer	067109
12	Nylon Bushing	C08913
13	Nut, 5/16 x 18	Q12068-06
14	Nylon Bushing	C08914
15	Screw, 5/16-18 x 1-3/4 HHC	K03782
16	Handle Spring	029358
17	Cotter Pin	K02125
18	Bearing	003184
19	Switch Housing/Wire Assy.	064440
	Switch (subpart within 064440 Assy.)	*064466
20	Coupling	021986

Item	Description	Part Number
21	Conduit, 1/2 x 7	021401
22	Elbow, Conduit, 1/2 x 90 M/F	025045
23	1/2 inch UNY Explosion-proof Conduit Union	N16289-20

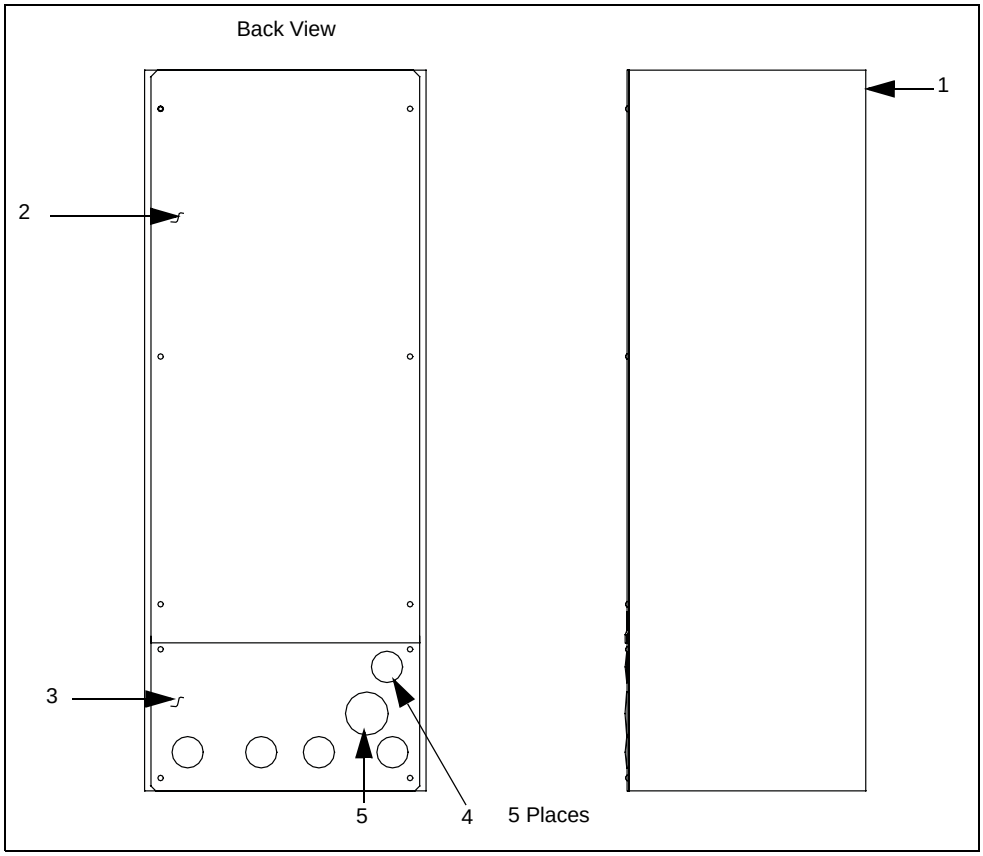
Figure 7-6: Pulser Assembly - 049912



Item	Description	Part Number
1	Pulser, 10:1 VR	021788
2	Bracket, Pulser	015919
3	Pulser Drive Cable	017377
4	Cotter Pin 1/16 x 5/8	K02137-26
5	Screw 1/4-20 x 1/2 HHC	K05287
6	Conduit, 1/2 x 11	021517
7	Block and Miter Gear Assy. (Does not include items 8 and 9)	027049
8	Miter Gear	027048
9	Groove Pin, 1/16 x 1/4	042431
10	Pulser Drive Shaft (see Note)	054035
11	Pulser Drive Coupling	054036
12	Register Assy. [see Figure 7-4: 4860 4-Wheel Register (for Model 71) on page 41]	
13	Roll Pin, 0.052 Dia. X 3/8" Long	043210

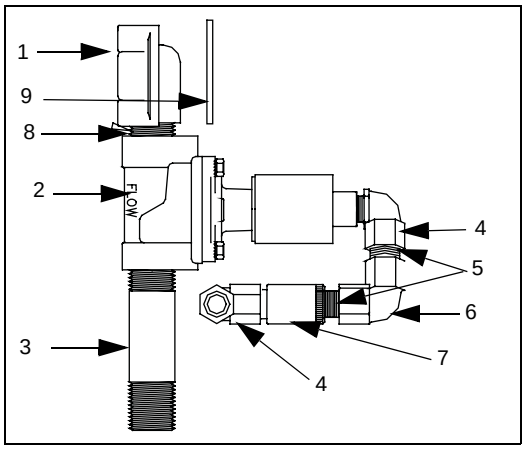
Note: For units with serial number 490100 and below, you must also order part number 054036 pulser drive coupling and 043210 roll pin.

Figure 7-7: Pedestal Assembly - 089700



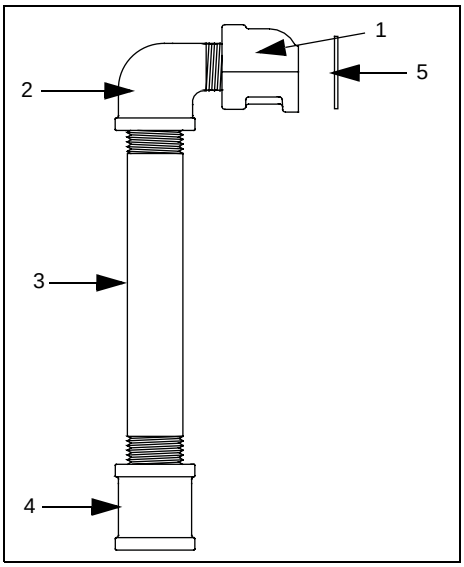
Item	Description	Part Number
1	Pedestal Body, Split	049903
2	Pedestal Panel, Split	049904
3	Panel, Lower Split	049905
4	Plug, 1-1/8 hole	Q10554-22
5	Plug, 1-1/2 hole	Q10554-20

Figure 7-8: Inlet Assembly - Front View - 049928 115 VAC; 049929, 230 VAC



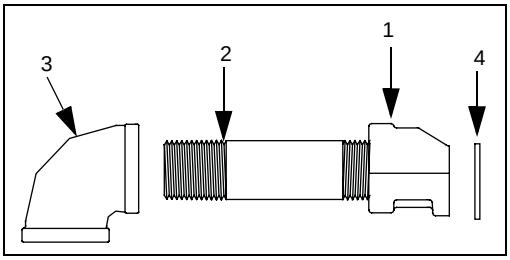
Item	Description	Part Number
1	Elbow, Flanged, 1"	003560
2	Solenoid Valve, 1" Skinner 2-Stg, 115 V	067034
	Solenoid Valve, 1" Skinner 2-Stg, 230 V	067036
3	Pipe, TBE, 1 x 5	R11495-21
4	Elbow, Conduit, 1/2 x 90, M/F	025045
5	Pipe, TBE, 1/2 x 1-1/8	N16771-21
6	Elbow, Conduit, 1/2 x 90 F/F	025030
7	1/2" UNY Explosion-proof Conduit Union	N16289-20
8	Pipe, TBE, 1 x 1-1/2	R11935-20
9	Gasket, Inlet/Outlet	M05618B001

Figure 7-9: Discharge Assembly - Standard - Bottom - 049926



Item	Description	Part Number
1	Flange, 1 inch T	003650
2	Elbow, Street	K02321-20
3	Pipe, TBE 1 x 9	R11495-94
4	Coupling, 1 inch Black Mall.	021955
5	Gasket, Inlet/Outlet	M05618B001

Figure 7-10: Discharge Assembly - Rear, Optional - 049927



Item	Description	Part Number
1	Elbow, Flanged, 1"	003560
2	Pipe, TBE 1 x 5	R11495-21
3	Elbow, 1 x 90	024895
4	Gasket, Inlet/Outlet	M05618B001

Optional Accessories - Parts

Item	Description	Part Number
1	Filter Kit	032118
2	Motor, 50/60 Cycle, 230 VAC	F37325
3	Nozzle, Automatic, Unleaded, M. Carder	038573
4	Nozzle, Automatic, Leaded, M. Carder	038574
5	Pulser Kit, 10:1 Ratio, Gallon/Liter	032689
6	Panel, Sides/Back, Stainless Steel	041812
7	Door, Front, Stainless Steel	041813
8	Cover, Top, Stainless Steel	041814
9	Base, Stainless Steel	041815
10	Mounting Pedestal	089700
11	Mounting Pedestal, Stainless Steel	089702
12	Mounting Bracket for Tank Mounted Register	015764

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MDE-4429A Model 74 and 71 Split Consumer Electric Pumps Installation/Operation/Parts Manual · November 2007