GASBOY™

SERIES 580

INSTALLATION/OPERATION/PARTS MANUAL

035393

REV. 03/07/03

INSTALLERS - IMPORTANT

In addition to installation information, this manual contains warnings, safeguards and procedures on the use and care of the Series 580 pumps. Please leave this manual with the pump owner after the installation is complete.

GASBOY INTERNATIONAL LLC LANSDALE, PA

IMPORTANT WARNINGS AND SAFEGUARDS

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

DO insure pump is properly grounded.

DO insure hose is compatible with fluid being dispensed.

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

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

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

GASBOY INTERNATIONAL LLC
707 North Valley Forge Rd. Lansdale, PA, 19446 ● (215) 855-4631 ● FAX: (215) 855-0341

CONTENTS

Section 1

INTRODUCTION

PURPOSE

The *GASBOY 580 Series Installation/Operation/Parts Manual* is provided to assist the installer in installing and operating the unit. This manual should be supplied to the electrician prior to the installation of conduit and wiring to ensure the unit is installed properly. Faulty installations are the major cause of unit malfunctions. This unit **must** be installed and operated as described in the manual to ensure reliable operation. Be sure to leave this manual with the pump owner when the installation is complete.

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

OVERVIEW

The GASBOY 580 Series dispensers are heavy-duty suction pumps designed for the needs of local and state governments, industrial, commercial, and private fleet operations. 580 Series dispensers have the following features:

- Dimensions: Base 13-31/32" (35cm) x 18-1/16" (46cm), height 40-1/8" (102cm)
- Construction: All panels are galvanized steel and painted with a two-part urethane paint for rust resistance.
- Cabinet Colors: painted black with red front door
- Motor:
  Model 582: 1/2 HP continuous duty, dual voltage/dual frequency, 115/230VAC, 50/60 Hz
  Model 583: 3/4 HP continuous duty, dual voltage/dual frequency, 115/230 VAC, 50/60 Hz
- Pump: Rotary vane pump with carbon blades to produce suction power. Air elimination achieved through a patented static device using a vortex effect.
- Inlet Control Valve: The valve is provided with the pump and has been installed in the upstream of the pump strainer.
- Register: 4-wheel push-button reset, 7-digit master totalizer, in US gallons or liters
- Meter: Nutating disk phenolic measuring chamber in aluminum die-cast housing, adjustable calibration $\pm$ .5% at full flow.
- Display: single-sided
- Dial Face: black with silver stripes highlighting register readings
- Hose: 582 - 3/4" (2cm) x 12 feet (3.6m); 583 - 1" (2.5cm) x 12 feet (3.6m)
- Suction connection: 1-1/2" NPT union provided

- Delivery Rate: Model 582 up to 15 GPM/57 LPM. Model 583 up to 22 GPM/83 LPM. Delivery rates are maximum test rates. Actual rates will vary depending upon installation conditions, product dispensed, and added accessories.

- Nozzle: Must be purchased separately. Automatic nozzles available. Nozzle boot and hook are designed for use with a UL-Listed interchangeable automatic service-station-type nozzle.

Optional accessories include: internal filter adapter, external filter kits, stainless steel cabinet, manual hand crank, 50 Hz. version, 380V/50Hz. motor, 1:1 or 10:1 pulser, and liter registration.

Section 2

INSTALLATION

BEFORE YOU BEGIN

Before uncrating the pump, inspect the crate for damage. A damaged crate indicates possible internal damage to the dispenser, and the delivering carrier should be notified of possible concealed damage. It is recommended the original shipping crate be retained for pump re-shipment at some later date.

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.

Plan your installation carefully. A pump 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 **DO's** and **DON'T's** to avoid potential problems:

1. **DO** read the **WARNINGS** page at the front of this manual, preceding the Table of Contents. It contains important information regarding the safe use of your dispensing equipment.
2. **DO** install an emergency power cutoff. In addition to circuit breaker requirements of NFPA 70 and NFPA 30A, a single control which simultaneously removes AC power from all site dispensing equipment is recommended. This control must be readily accessible, clearly labeled, and in accordance with all local codes.

   In order to provide the highest level of safety to you, your employees, and customers, we recommend that all employees be trained as to the location and procedure for turning off power to the entire system.
3. **DO** have the pump installed by a competent installer/electrician.
4. **DO** install breakaway coupling on discharge hose. If using a high hose retriever, install breakaway approximately 12" downstream of hose clamp on nozzle side of clamp.
5. **DO NOT** experiment with a pump if you are not sure the installation is correct.
6. **DO NOT** overload sub- or main breaker panels.
7. **DO NOT** 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). *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 Section 3).
12. **DO NOT** use a circuit breaker of improper size. (See Section 3).
13. **DO NOT** install fill pipe to tank where it can be submerged with standing water.
14. **DO NOT** use the 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 various locations within conduit is a requirement of the National Electrical Code and should not be disturbed. Ensure that mating surfaces between the box and cover are free of dirt, nicks, and scratches. Tighten junction box covers before replacing panels.
16. **DO NOT** use knock-out boxes or flexible conduit for installing this unit. All 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. At 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 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 to the island using anchor bolts through the two mounting holes, which are indicated on each base layout. 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) long 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) long lag screws with 2" (51mm) long expansion shields.

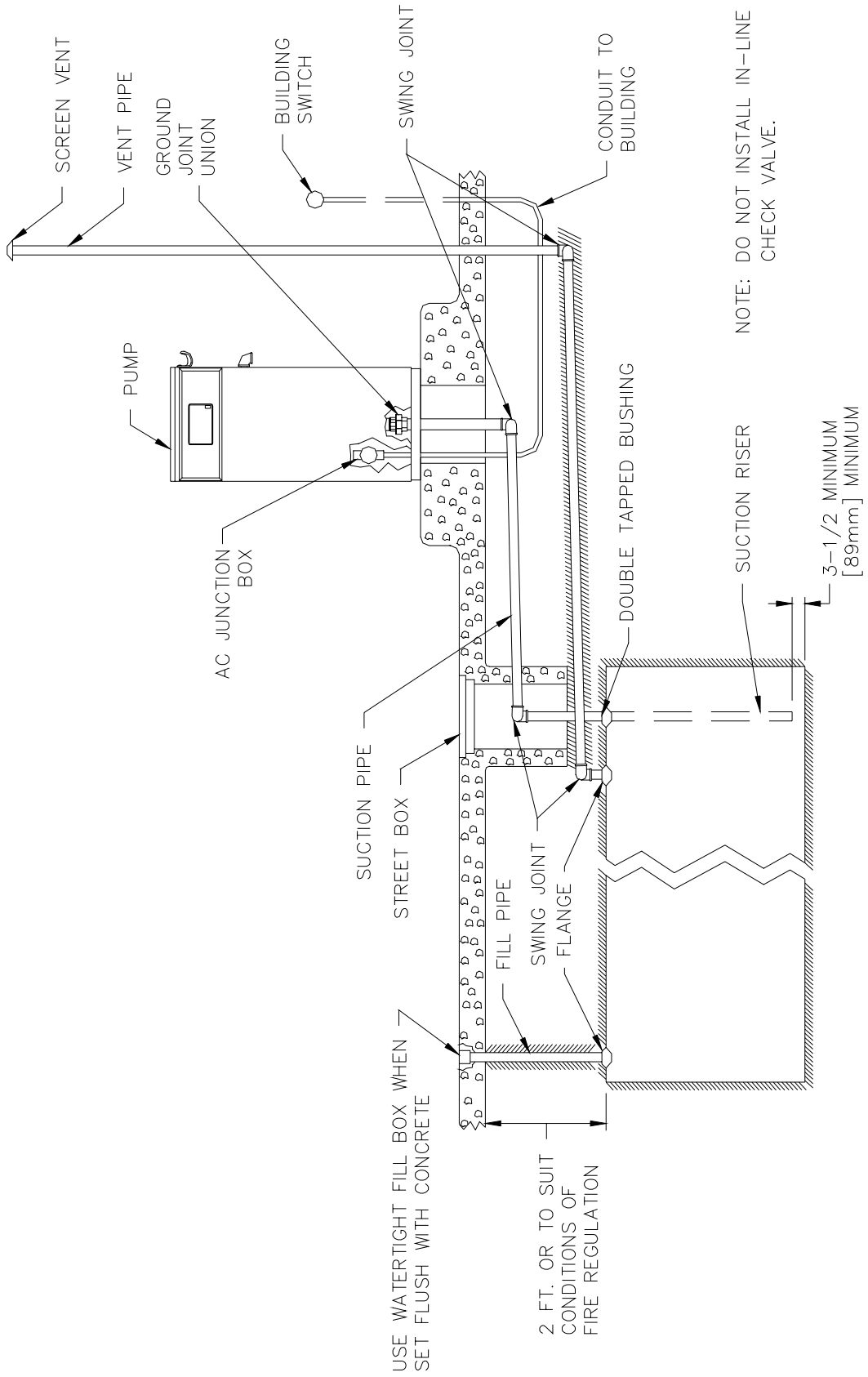
SUCTION PUMP

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 (3.66m) for gasoline and 13 feet (3.96m) 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.

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" (9.525mm).

TYPICAL INSTALLATION LAYOUT



SUPPLY LINE

Use new galvanized or fiberglass (see note) pipe, 1 1/2" (38.1mm) minimum diameter.

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

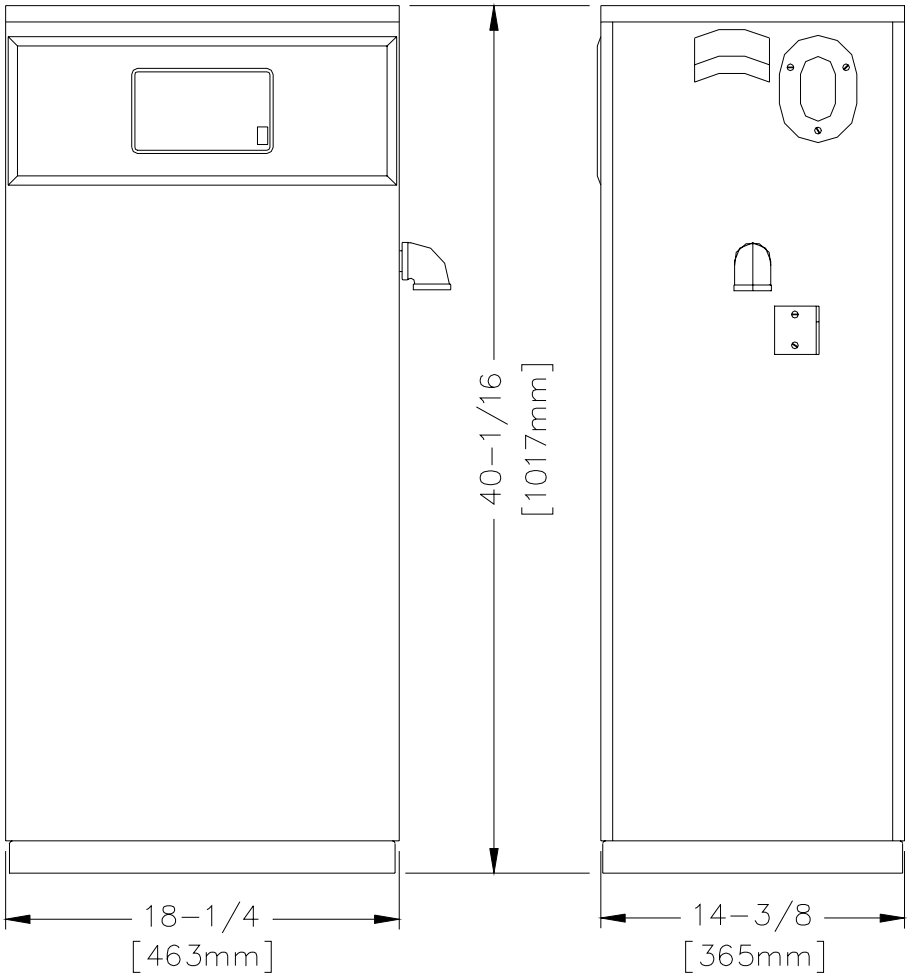
Be sure both the pipe and the tank are clean. Foreign matter entering the pump can cause extensive damage. Obstructions in the supply line can create pump problems and reduced flow rate.

Make sure 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.

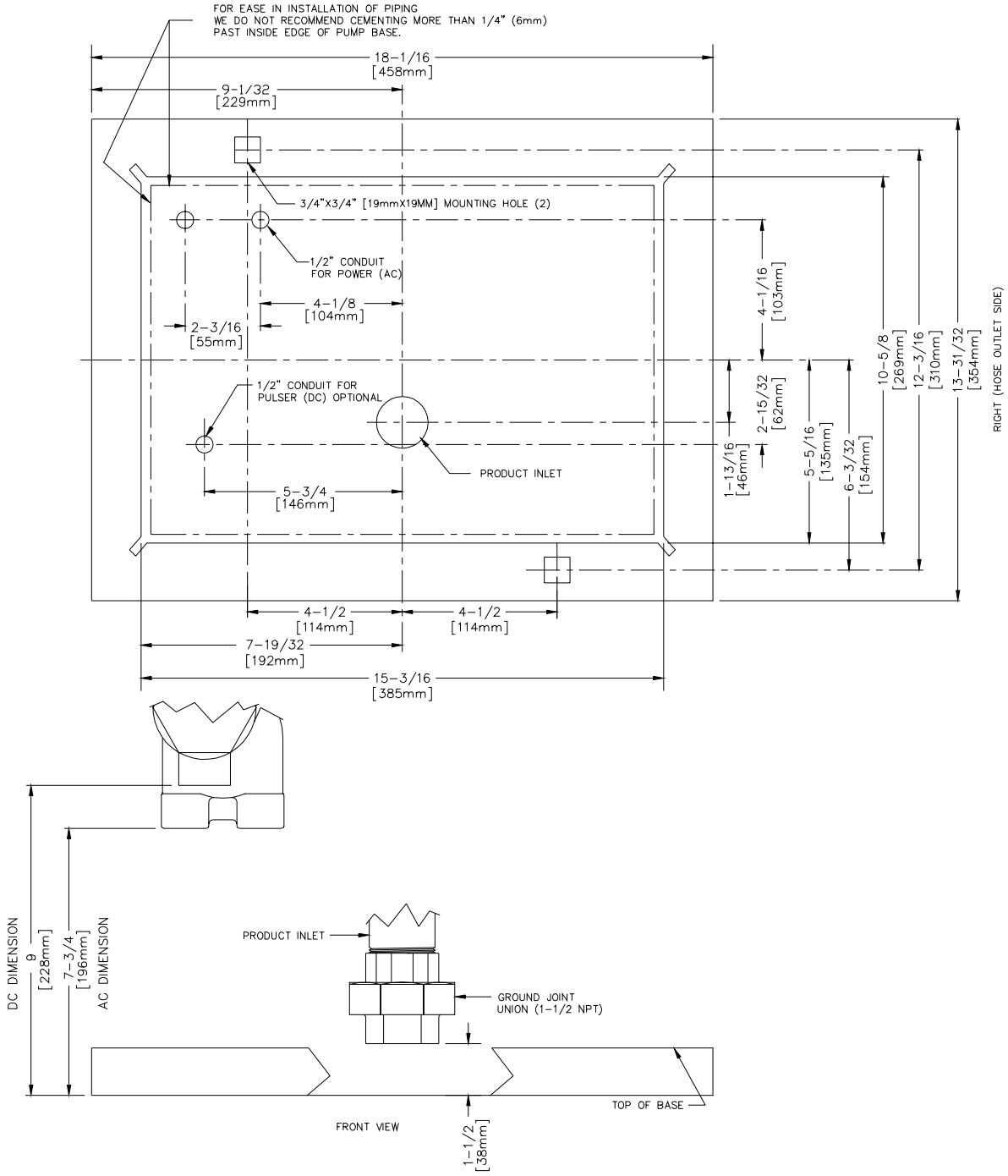
To avoid product delivery problems on suction pumps, be sure there are no traps in the supply line. Supply lines should go straight down beneath the pump to a point 18 inches (45.7cm) below the ground level and pitch at a rate of 1/8 inch (3.18mm) per foot (.305m) from there down to the storage tank. 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 intervals to maintain pitch and prevent traps. Do not use wood as pipe supports. No additional check valves are required as the suction pump contains an inlet check valve.

Upon completion of installation, all liquid-carrying lines must be checked for leaks.

DIMENSIONS



BASE LAYOUT – 011985



Section 3

WIRING

Customers & 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 pump. To assure a quality installation, follow these rules:

1. All wiring must be installed to conform with all building/fire codes, all Federal, State, and Local codes, National Electrical Code, (NFPA 70), NFPA 30, and Automotive and Marine Service Station Code (NFPA 30A) codes and regulations. Canadian users must also comply with the Canadian Electrical Code.
2. Use only threaded, rigid, metal conduit.
3. Use only UL-approved 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 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.

7. Have the pump installed by a competent installer/electrician.

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

CIRCUIT BREAKERS

Power to the unit must be supplied from a dedicated breaker. No other equipment should be powered from this breaker. A tag on the motor identifies the maximum current draw of the motor. If two units are supplied from one breaker, that breaker must be capable of handling the load of both motors.

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. Reinsert the screw and secure the plate in place. 380 VAC pumps are permanently set and cannot be changed.

Many motor failures result from improper setting of the motor change-over plate. If set for 120 VAC and a 240 VAC feed is used, the motor will burn out after running only a short time. If set for 240 VAC and a 120 VAC feed is used, the motor will run very slowly and the starting field will soon burn out.

Motor Amp Ratings

Models	115V/60Hz. Units	230V/60Hz. Units	230V/50Hz. Units	380V/50 Hz. Units
582	6.8	3.4	4.0	N/A
583	10.6	5.3	6.3	1.5

NOTE: These numbers do not account for the higher level upon startup.

PULSERS AND PULSER WIRING

A pulser is an optional device which 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. The signal is received by the external monitor (fuel management system) which keeps a running total of the quantity of fuel being dispensed during each transaction.

All Series 580 pulsers are operated with DC voltages. These are reed pulsers which are available as either 1:1 or 10:1 pulses per unit of measure. The pulser type should be selected according to the monitoring equipment, the application, and the regulations that must be met.

All Series 580 pulsers are mechanically driven by the register. The shaft which drives the pulser does not turn during reset.

CONDUIT

All wiring to the GASBOY Series 580 dispensing unit must be installed in threaded, rigid, metal conduit. **PVC is not acceptable.** When the Series 580 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 pulser; they should not run in any sort of common conduit or trough. However, if AC and DC power wires share conduit, pulser wiring must use the cable as specified in the **Pulsers** section.

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

Areas of Trade Size Conduit

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

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

WIRING NOTES

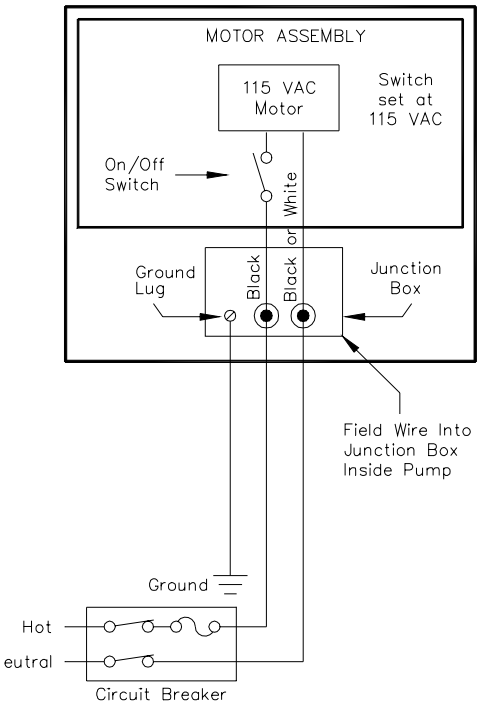
1. All wiring and conduit runs must conform with all building/fire codes, all Federal, State, and Local codes, National Electrical Code, (NFPA 70), NFPA 30, and Automotive and Marine Service Station Code (NFPA 30A) codes and regulations.

2. Some motors contain a brown wire (Switch Detect) which is capped at the factory. When used, it connects to a solenoid valve or fuel management system. Do not connect this wire without first checking the ON voltage of this line to ascertain compatibility with the equipment being connected.

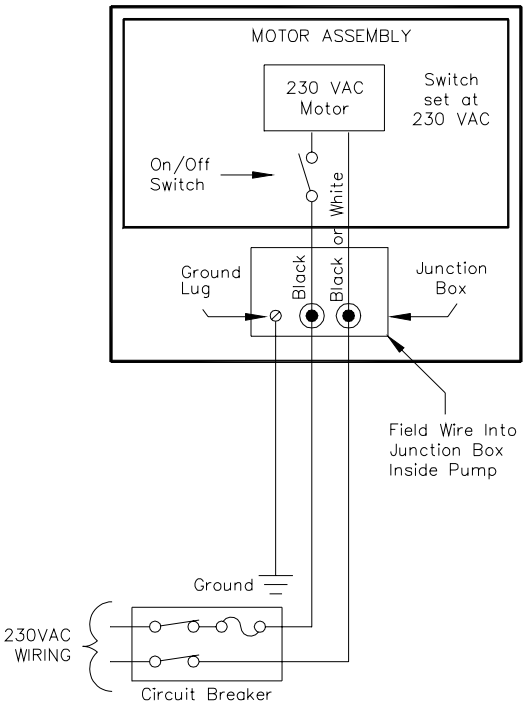
3. All wiring must be installed according to the requirements outlined in this section.

WIRING DIAGRAM – 024206

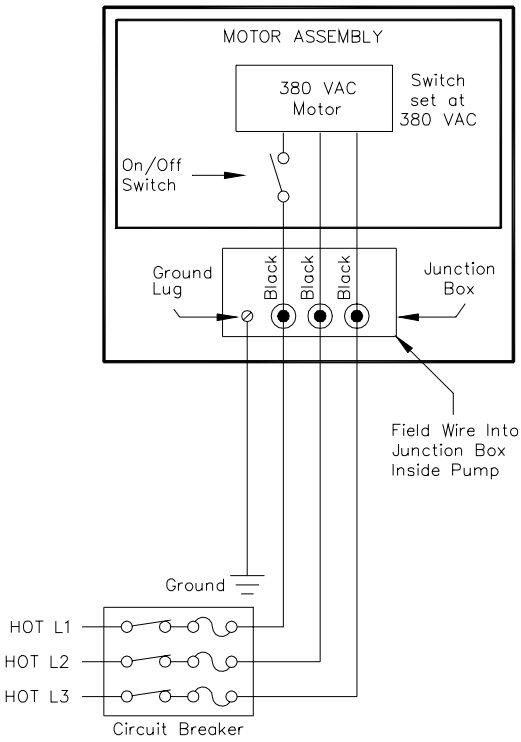
115 VAC Wiring



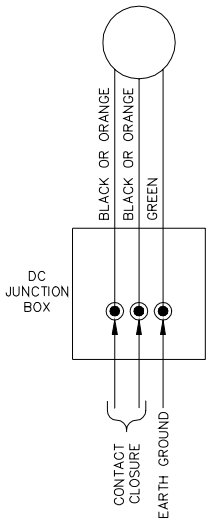
230 VAC Wiring



380 VAC Wiring



Pulser Wiring



Section 4

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 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 put in the tank to insure that the liquid level is above the bottom of the suction pipe.
8. Before placing 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 AND PUMP OPERATION

After successfully verifying the installation against the completion check list, the unit is ready for startup. Follow the procedure listed below to perform an orderly start-up.

1. Turn on the circuit breaker for the pump.
2. Remove the nozzle from the boot.
3. On the right side panel, pull out switch rod and knob assembly. This will turn on the motor and activate the pump.
4. Push the reset button to zero the register.
5. Dispense fuel. Check all plumbing for leaks at this time.
6. Push the switch rod and knob assembly in to shut off the pump motor. 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.
7. Repeat Steps 3 through 6 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 good practice to take 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 insure an adequate power supply to the pump.

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

Meter Calibration
The 580 Series Pump is adjusted for accurate measure of the specified fuel (gasoline or diesel) within $\pm$ .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 needed 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 seraphin can to conduct the test. Fill and drain the test measure to completely wet the interior surfaces. Reset the register to zero and deliver an exact amount into the test can at the selected flow. Read the level of the liquid in the sight glass on the scale in $\pm$ cubic inches.

The calibration adjustment screw is located on the underside of the meter just behind and to the left of the meter inlet. Using a flat-blade screwdriver, turn the adjusting screw clockwise to correct for plus cubic inches or counterclockwise for minus cubic inches in the test measure.

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.

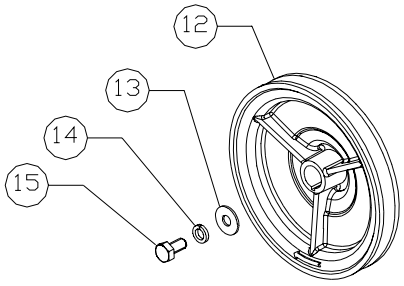
Strainer Cleaning
Clean the strainer immediately after the pump has been installed and tested, and again after a few hundred gallons have been delivered. Thereafter, once every six months, or as required. The procedure for cleaning the strainer can be found in the **Maintenance and Troubleshooting** section.

Belt
Since belts do stretch slightly during the first few minutes of operation, check the belt tension after completing the operational test. See the **Maintenance and Troubleshooting** section for details.

RECONFIGURATION OF PUMP PULLEY FOR HAND CRANK OPERATION

Before a hand crank can be used to pump fuel, you must reconfigure the pump pulley as follows:

1. Unscrew and remove the screw (15), lock washer (14), washer (13), and pump pulley (12).
2. Flip the pump pulley (12) around so the shorter groove at the back is exposed at the front end.
3. Replace the pump pulley (12), washer (13), lock washer (14), and screw (15) and tighten the screw.
4. Engage the hand crank belt (item 13 on page 6-16) to the shorter groove.



Section 5

MAINTENANCE AND TROUBLESHOOTING

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 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 substandard 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 insure the continuity of the Underwriters' Label on your pump.

  Section 6 lists parts and service procedures for the 580 Series. 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.

MAINTAINING TROUBLE-FREE OPERATION

- **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.
- **Remove Water from 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.
- **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.

- **Clean the Strainer.** *(NOTE: Should be performed only by 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:

  1. Turn off and lock out AC power to the pump.
  2. Unthread the drain plug located near the bottom of the strainer (marked "Filter") cap. Be sure you use a container of sufficient capacity to catch the fuel as it drains from the pump.
  3. Loosen the four bolts that hold the cap in place.
  4. Carefully remove this cap which holds in place the spring, strainer, and inlet check valve assembly.
  5. Use compressed air to blow the dirt from the strainer. Always wear protective safety goggles or glasses when using compressed air.
  6. Replace the inlet check valve, strainer, and spring and reinstall the strainer cap. Ensure that the o-ring that seals the cap is installed properly before tightening the bolts.
  7. Reinstall the drain plug using sealing compound approved for this application.

- **Lubrication:** Lubricate the start/stop linkage. Apply one drop of oil (SAE10) at each pivot point of the start/stop linkage every six months.

- **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. A properly tightened belt will allow twisting the belt 180 degrees midway between the motor and the pump pulleys. Before adjusting any belt, turn off AC power to the pump/remote dispenser.

  The belt can be tightened by loosening the hex nut which holds the idler pulley and sliding the pulley to the side to obtain the correct belt tension of 6-3/4 lbs. $\pm$ 3/4 (30N, $\pm$3.3N). When the adjustment is complete, remember to retighten the hex nut.

- **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.

TROUBLESHOOTING

If problems are encountered in operation of the pump, follow the procedures below in an attempt to isolate the problem.

Pump Won't Start

- ✓ Is the breaker at the panel turned on?
- ✓ Is there power at pump? Check at junction box. Voltage cannot be below 104 volts on a 115V pump; 204 on a 230V pump.
- ✓ Is motor overheated (thermal switch cutoff)? Be careful, the external motor surface could be hot enough to be painful or cause injury. Let cool and re-try.

! Replace motor if above checks do not solve the problem.

Pump hums but won't start.

- ✓ Is voltage adequate? Check voltage with pump on bypass with nozzle closed. Voltage cannot be below 104 volts on a 115V pump; 204 on a 230V pump.
- ✓ Check pump drive shaft for free operation.

! Replace motor if above checks do not solve the problem.

Pump runs but won't prime or deliver product.

- ✓ Is there fuel in the tank?
- ✓ If register is recording but no product is being dispensed, you may have a supply line air leak.
- ✓ Check for an air leak on suction side of pump. Is check valve seated properly? Reassemble and prime pump using liberal quantity of motor oil in pump cavity; if it primes, run pump full flow and snap nozzle closed; shut off motor and check for leak on suction side of pump above check valve. Any observed liquid leakage would indicate an air leak when pump is running with nozzle open and would prevent priming when pump was empty.
- ✓ Is there an air leak in the suction line below check valve. Make accuracy check using 5 gal Seraphin test can. Any clock fast error (see **Inaccurate Delivery**) 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 suction line. If pump does not prime using oil, suction line is blocked or has a severe air leak.

Pump delivers product but won't register.

- ✓ Is main totalizer recording? If yes, problem is in the register assembly. Check to be sure 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 pump has a filter, change 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 check valve poppet and seat for clean mating surfaces.

✓ If, after a period of non-use, a pump delivers 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 pump at full flow. Snap nozzle closed and turn off pump. If pressure falls to zero rapidly, replace check valve and clean and inspect valve seat.

Inaccurate delivery.

✓ Calibrate the meter (See Section 4).

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 pump for loss of prime and suction line for air leak.

A clock-slow condition may result from: any slowing of the register or measuring chamber due to excessive friction resistance or mechanical failure; inadvertent bypassing of the measuring chamber. Check register for zero setback; check reset lever return to top of slot in meter cover after setback; check for "hang-up" of number wheels in register or gears not meshing.

Pump delivers product when not turned on.

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

METER-REGISTER DISASSEMBLY

The B size measuring chamber can be removed for cleaning by taking out four meter body screws, lifting off register assembly and removing three measuring chamber screws.

After separating and cleaning top and bottom half, reassemble, making sure baffle is seated in grooves in top and bottom halves and through slot in measuring disc. Do not drop or sharply strike chamber parts while handling. Rotate disc to make sure it turns freely and replace in meter body. Do not overtighten screws. A torque of 20-25 ft-lbs is sufficient. When reassembling register to meter body, use a new O-ring.

4860 4-WHEEL REGISTER SERVICE

*NOTE: Numbers in parentheses correspond to the numbers shown on the parts illustration and parts list in Section 6 labeled **4860 4-Wheel Register**.*

Replacing Bearing and Seal Assembly (Item 26)

To replace the bearing and shaft seal assembly (26), or service the gear train on back of register housing (18), remove housing from 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 (22-25), remove three retaining rings (20) and drive key (21). Withdraw the drive shaft and gear (14), spacer (15), and all parts of bearing and seal assembly (26). Remove the nylon washer from item 26 and note its location. Remove both oilite bearings and both O-rings from bore in register housing. Using new parts, which consist of a new nylon washer, 2 oilite bearings, and 2 O-rings, reassembly parts in reverse order. Be sure to lubricate both O-rings with an O-ring lubricant before assembling.

Reassemble gear train in following sequence: gear (25), key (21), cluster gear (24), retaining ring (20), control block (22), and retaining ring (20).

Section 6

PARTS LIST

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GENERAL

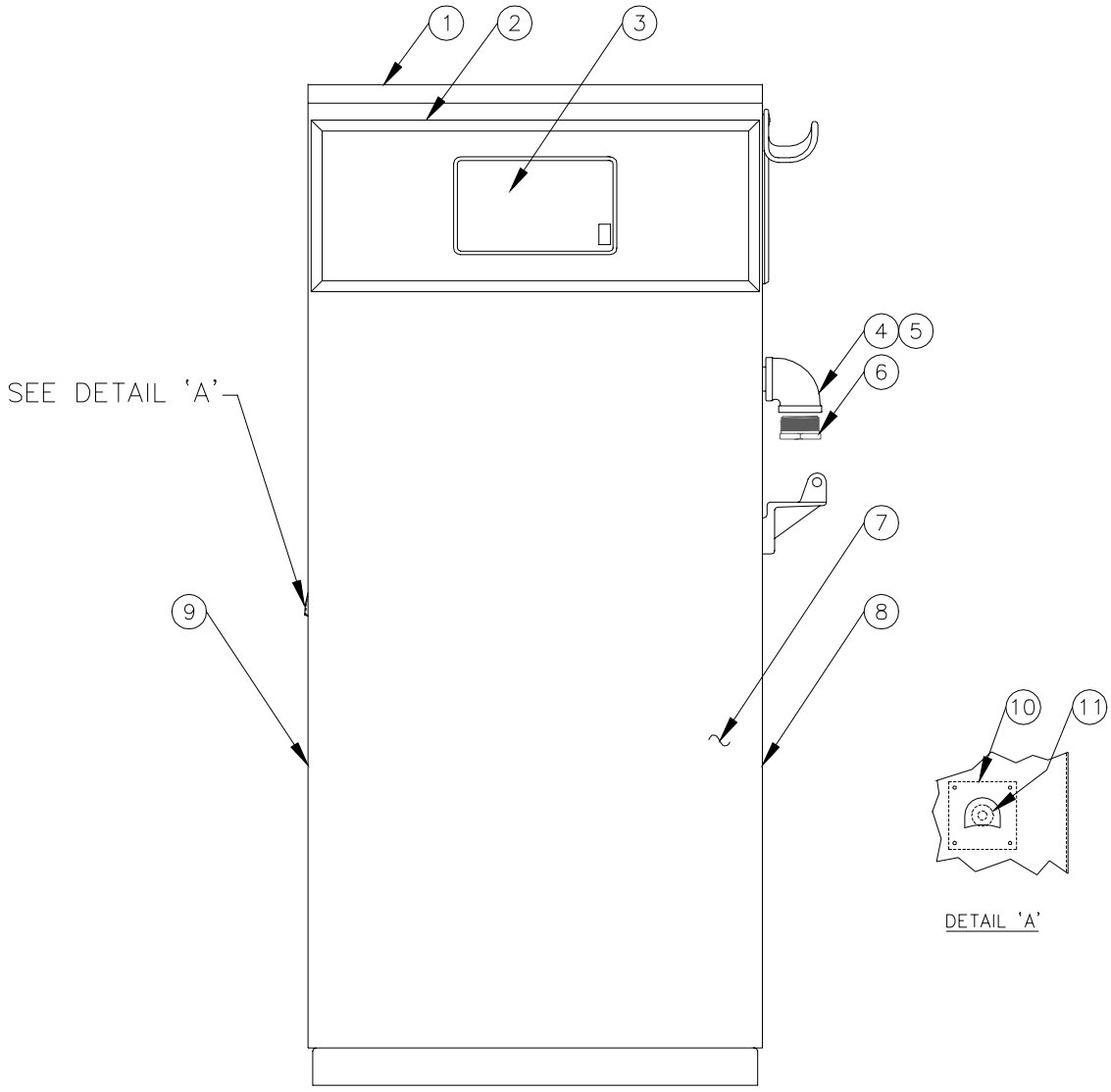
This section lists parts information for the 580 Series pumps. Using part numbers when ordering will expedite your order and reduce the possibility of the wrong parts being shipped.

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 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. Always turn off and lock out all power to the pumps at the master panel before performing maintenance or service, including the changing of any fuel filters or strainers. Also block islands so no vehicles can pull up to the pump while it is being worked on.

582/583 FRONT VIEW

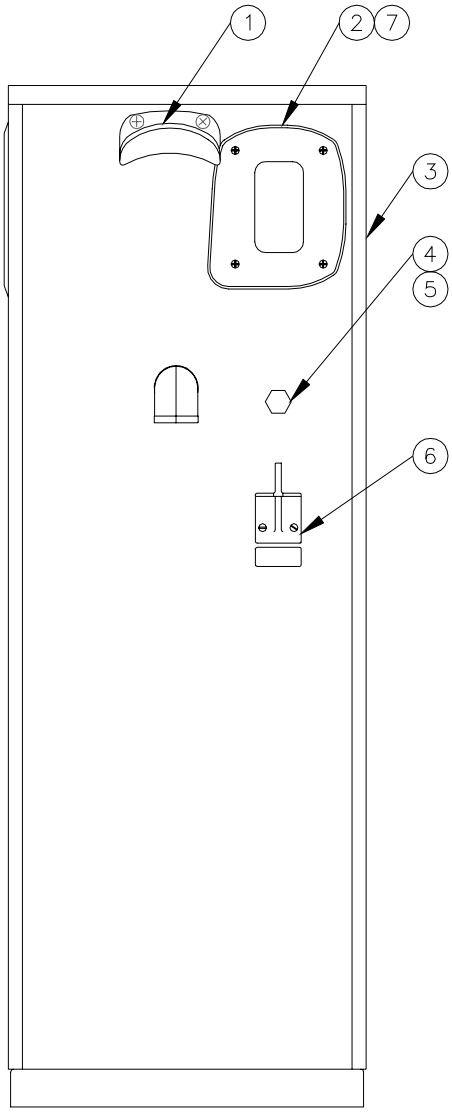


582/583 FRONT VIEW - PARTS

Item	Part No.	Description
1	042206	Cover-Top Painted *(See NOTE)*
	042207	Cover-Top SS
2	012328	Bezel-580 (Also specify standard Gasboy silkscreen, below)
	*029703	Silkscreen, Standard
3	028650	Dial Glass-580
4	028960	Grommet, 1”
5	024895	Discharge Elbow, 1”
6	017278	Reducer Bushing, 1 x ¾, 582 Only
7	024581	Door-Front-Painted, 580 *(See NOTE)*
	024852	Door-Front-SS, 580
8	041386	Panel-Side Right Painted *(See NOTE)*
	041393	Panel-Side Right SS
9	041385	Panel-Side Left Painted, 580 *(See NOTE)*
	041391	Panel-Side Left SS, 580
10	045804	Plate
11	058021	Grommet

NOTE: Painted standard Gasboy colors unless otherwise specified. See Section 1 for details on standard colors.

582/583 SIDE VIEW

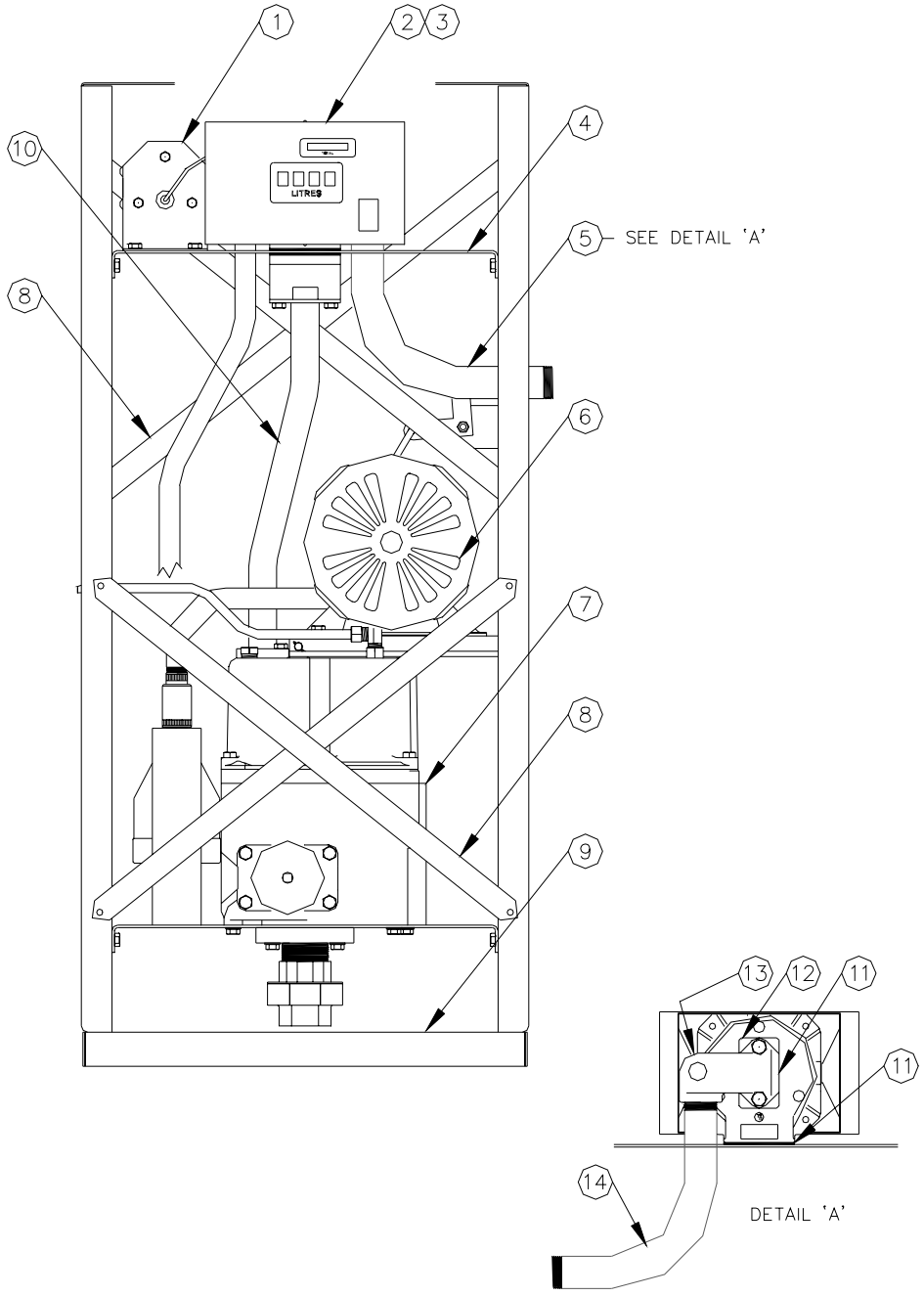


582/583 SIDE VIEW - PARTS

Item	Part No.	Description
1	003740	Hook-Hose
2	003338	Boot-Nozzle
3	030847	Panel-Rear Painted, 580 *(See NOTE)*
	041394	Panel-Rear SS, 580
4	033007	Switch Rod & Knob Assembly
5	017123	Bushing, Switch Rod
6	003700	Hook-Nozzle Mach.
7	026850	Gasket-Nozzle Boot

NOTE: Painted standard Gasboy colors unless otherwise specified. See Section 1 for details on standard colors.

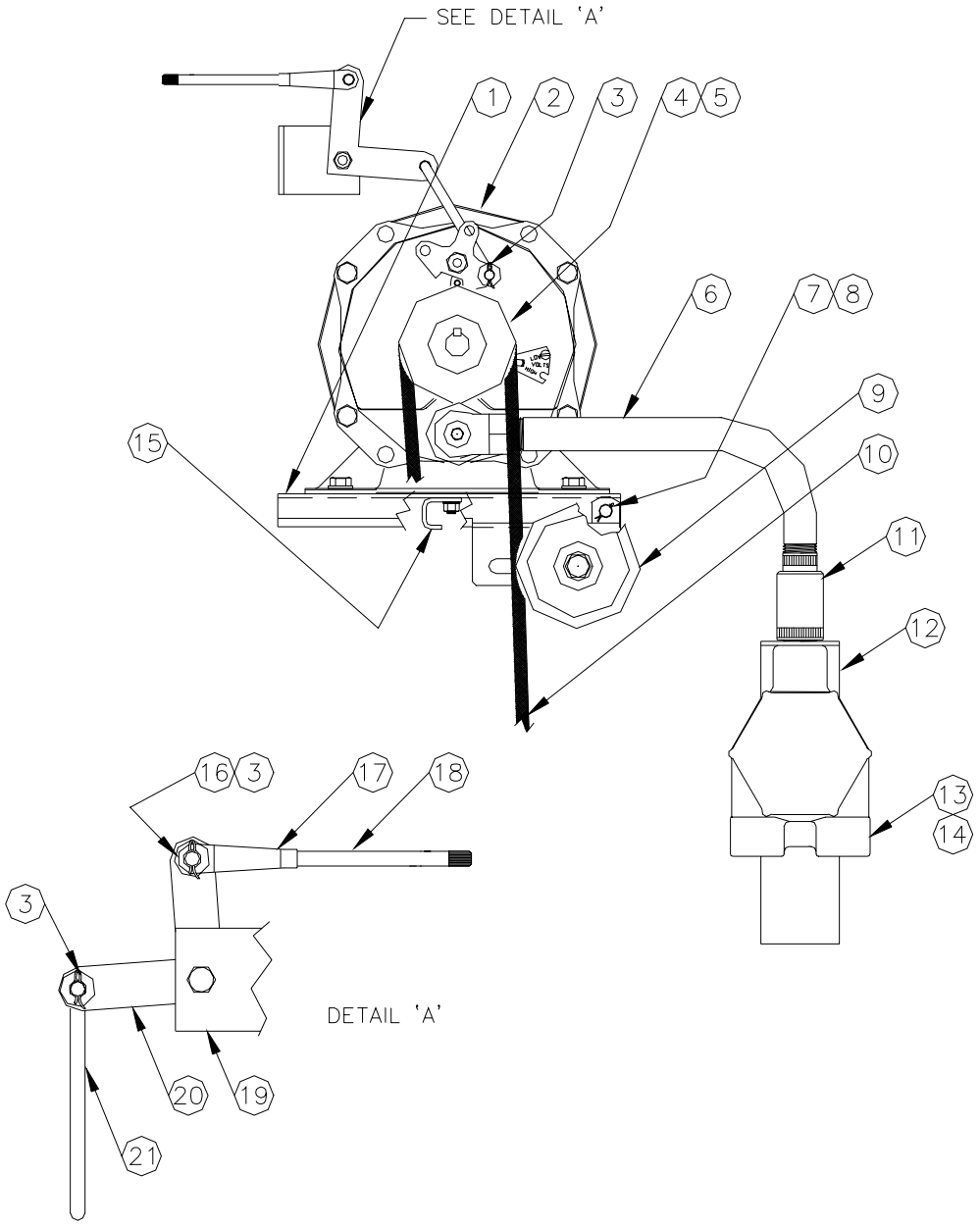
582/583 CHASSIS



582/583 CHASSIS

Item	Part No.	Description
1	023062	Pulser Assembly, CX *(See Breakdown for parts)*
2	036326	Meter Register, Gallon with Pulser
	036327	Meter Register, Liter with Pulser
	036328	Meter Register, Gallons
	036329	Meter Register, Liter
	029706	Meter Register, Litros
3	035217	Dial Mask (Must specify liters {029702}, Litres {029704}, Litros {029706}, Gallons {029705}, or Galones {029708})
4	023869	Plate
5	023088	Discharge Assembly
6		Motor Assembly *(See breakdown for your model)*
7	023083	Pump Assembly *(See breakdown for your model)*
8	015797	Column Brace
9	011902	Base
10		Pipe Assembly *(See breakdown for your model)*
11	027055	Gasket
12	023077	Spacer Plate, Meter Register
13	003560	Elbow Flange
14	044016	Discharge Pipe

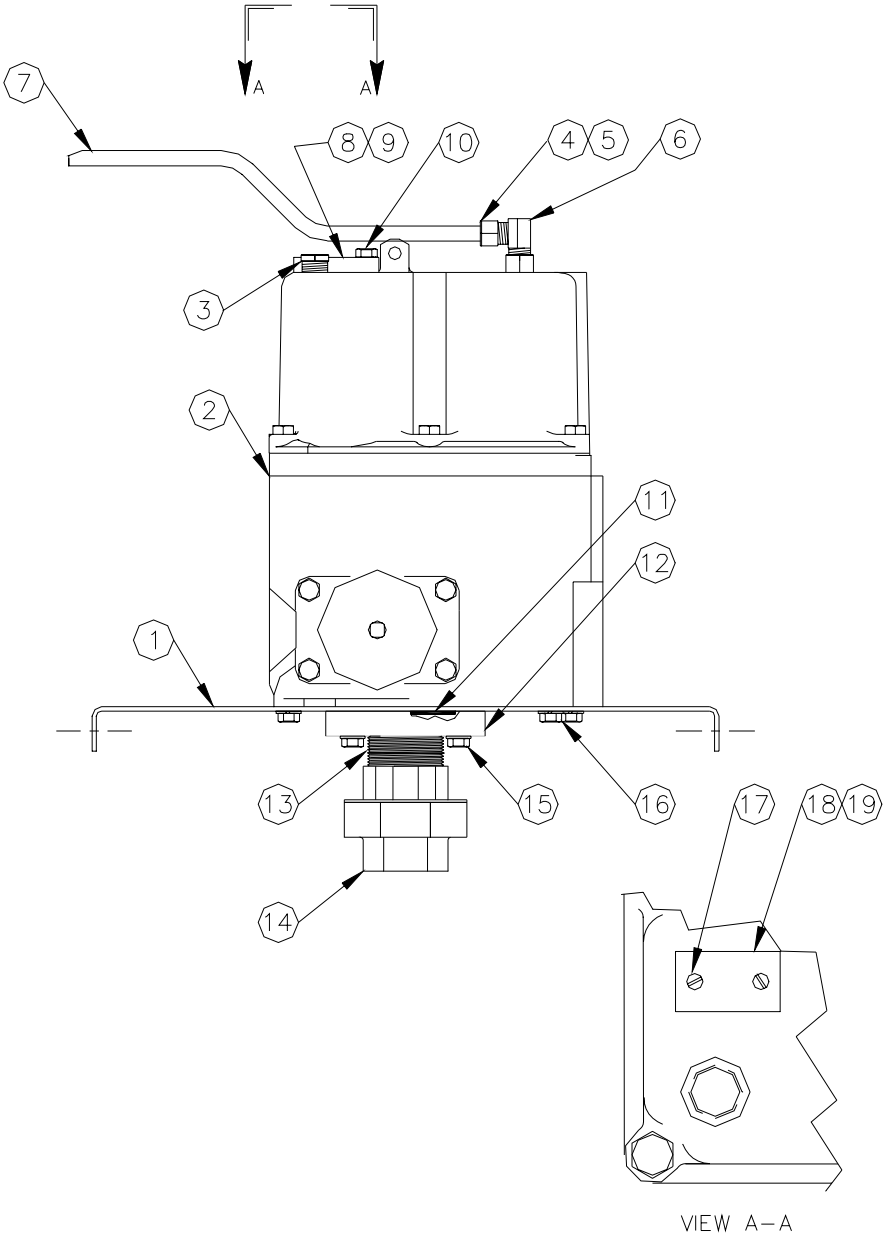
582/583 MOTOR



582/583 MOTOR

Item	Part No.	Description
1	023072	Bracket-Motor Support
2	F37609	Motor, Franklin, 3/4HP, DF, CW, 61FR, Model 583 only
	F37320	Motor, Franklin, 3/4HP, 61FR, Model 583, 380V option only
	F37630	Motor, Franklin, 1/2HP, DVDF, CW, 61FR, Model 582 only
3	042430	Cotter Pin, 1/16 x 1/2
4	047006	Pulley, 5/8 Bore, 2-3/4, 583 50H.z
	047005	Pulley, 5/8 Bore, 2.4, 583 60 Hz.
	047203	Pulley, 5/8 Bore, 1-3/4, 582 60 Hz.
	047204	Pulley, 5/8 Bore, 2.0, 582 50 Hz.
5	031315	Key
6	023075	Conduit, Motor to J-Box
7	023093	Rod-Motor Bracket
8	042355	Cotter Pin, 3/32 x 3/4
9	047009	Pulley-Idler
10	012121	Belt, 4L400-A38, 583
	012133	Belt, Tri-Power, V-AX37, 582
11	066400	1/2” UNY Explosion Proof Conduit Union
12	023074	Bracket, Junction Box
13	003337	Junction Box Machining
14	003461	Junction Box Cover, Machining
15	015458	Bracket-Motor Support
16	042145	Pin-Rod End
17	050250	Rod End
18	051209	Rod-Switch Handle
19	017001	Bracket, Support
20	017002	Switch Arm
21	023096	Rod Switch

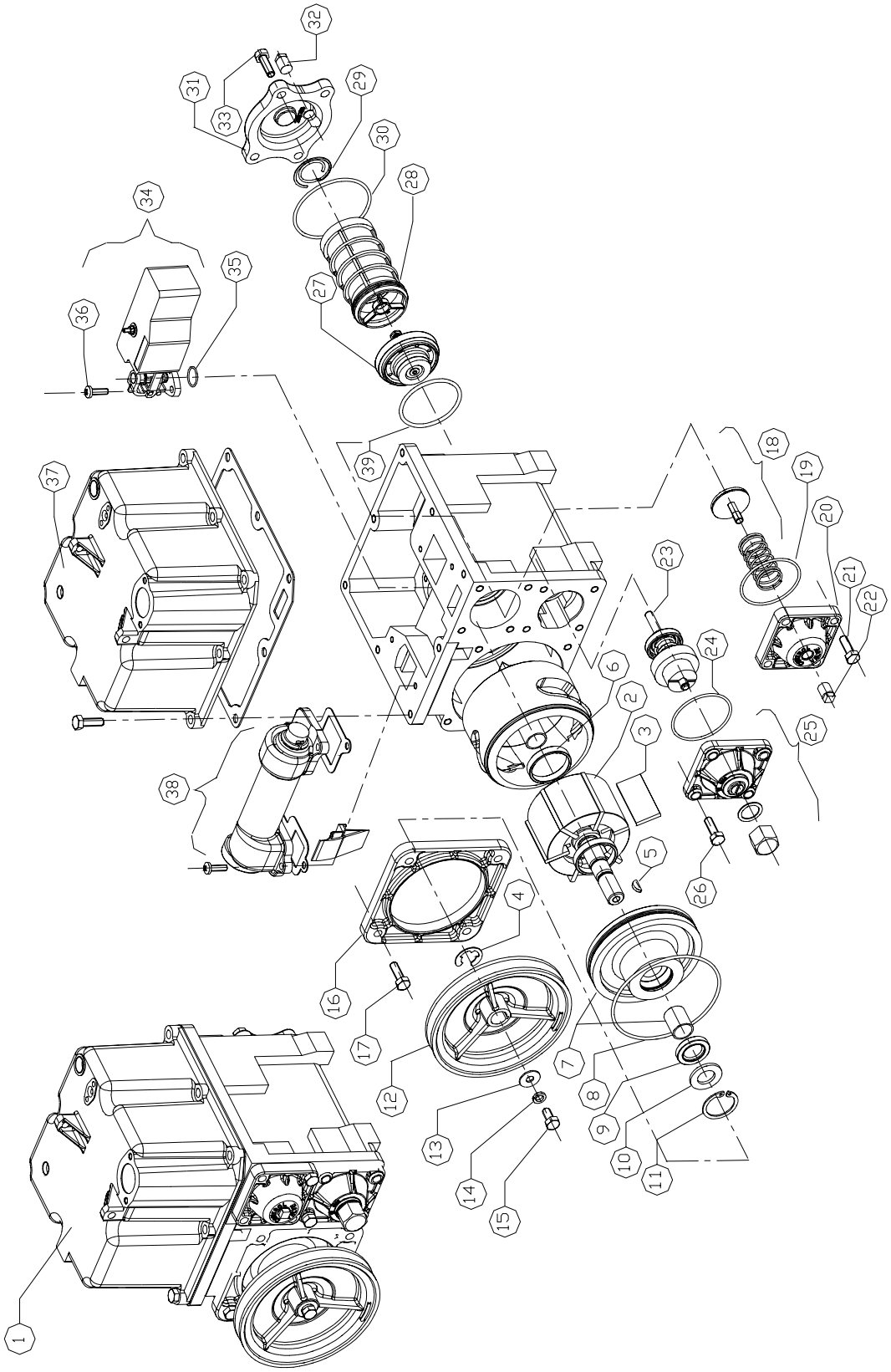
582/583 PUMP



582/583 PUMP

Item	Part No.	Description
1	023071	Support Plate Pump
2	023076	EPZ-75 Pump
3	017266	Bushing, 3/8 x 1/4
4	056605	Sleeve-Compression
5	038555	Nut-Compression
6	026038	Fitting, El, 3/8 Flare x 1/4 NPTM
7	023212	Tube-Air Vent
8	023092	Flange-Pump EPZ75 Outlet
9	023091	O-Ring, Pump EPZ75 Outlet
10	052452	Screw, M6 1.00 x 20mm
11	049061	O-Ring, 2-1/4 x 2-7/16 Buna-N
12	023073	Inlet Adapter
13	038005	Pipe, TBE, 1-1/2 x 1-3/4 Close
14	066385	Union, 1-1/2, 150 Stockham
15	052455	Screw M10, 1.50 x 25mm
16	052453	Screw M8, 1.25 x 20mm
17	053917	Screw 1/4-20 x 3/4 Hex
18	026854	Gasket, Vent Cover
19	022824	Cover, Vent, P/U

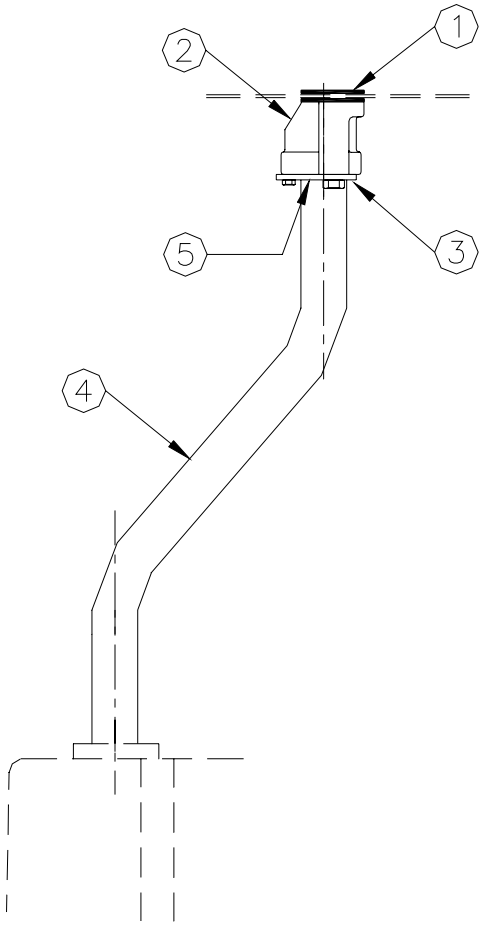
PUMPING UNIT BREAKDOWN



PUMPING UNIT BREAKDOWN – PARTS

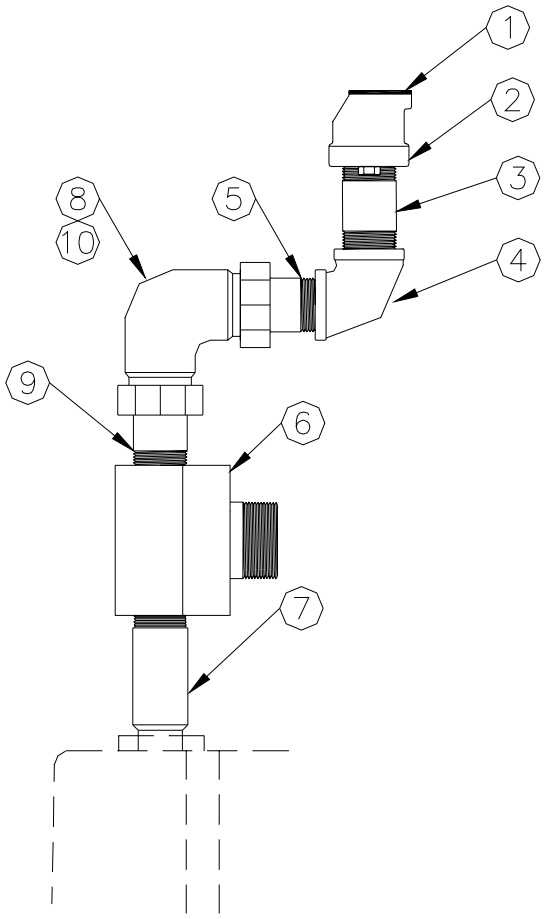
Item	Part No.	Description
1	023076	EPZ 75 Pumping Unit
2	023015	Rotor Assembly, Machined
3	023016	Blade
4	023017	Circlips (E1744D16)
5	023018	Key, Woodruff
6	023019	Throw out Ring
7	023020	Rotor Cover
8	023021	O-Ring, Viton
9	023022	Shaft Seal
10	023023	Washer, 19x34x3 ISO 7089
11	023024	Circlips Interior, DIN 472J35
12	023231	Pulley, 2 grooves
13	023232	Washer
14	023233	Lockwasher
15	023234	Screw
16	023236	Clamping Ring
17	023237	Screw and Lockwasher
18	023220	Control Valve Assembly
19	023026	O-Ring, Viton
20	023223	Control Valve Cover
21	023239	Screw
22	023240	Pipe Plug
23	023027	Bypass Assembly
24	023026	O-Ring, Viton
25	023241	Bypass Cover Assembly
26	023239	Screw
27	023028	Check Valve Assembly (with shaft crimped)
28	023029	Strainer, 70
29	023243	Spring, Strainer
30	023030	O-Ring, Viton
31	023244	Cover, Strainer
32	023240	Pipe Plug
33	023239	Screw
34	023031	Float Assembly
35	023032	O-Ring
36	023247	Self-Tapping Screw, Torx M6-20
37	023216	Cover Assembly Kit
38	023218	Air Separator Assembly Kit
39	023044	O-Ring, Viton

582/583 PIPING



023070 PIPE ASSY.

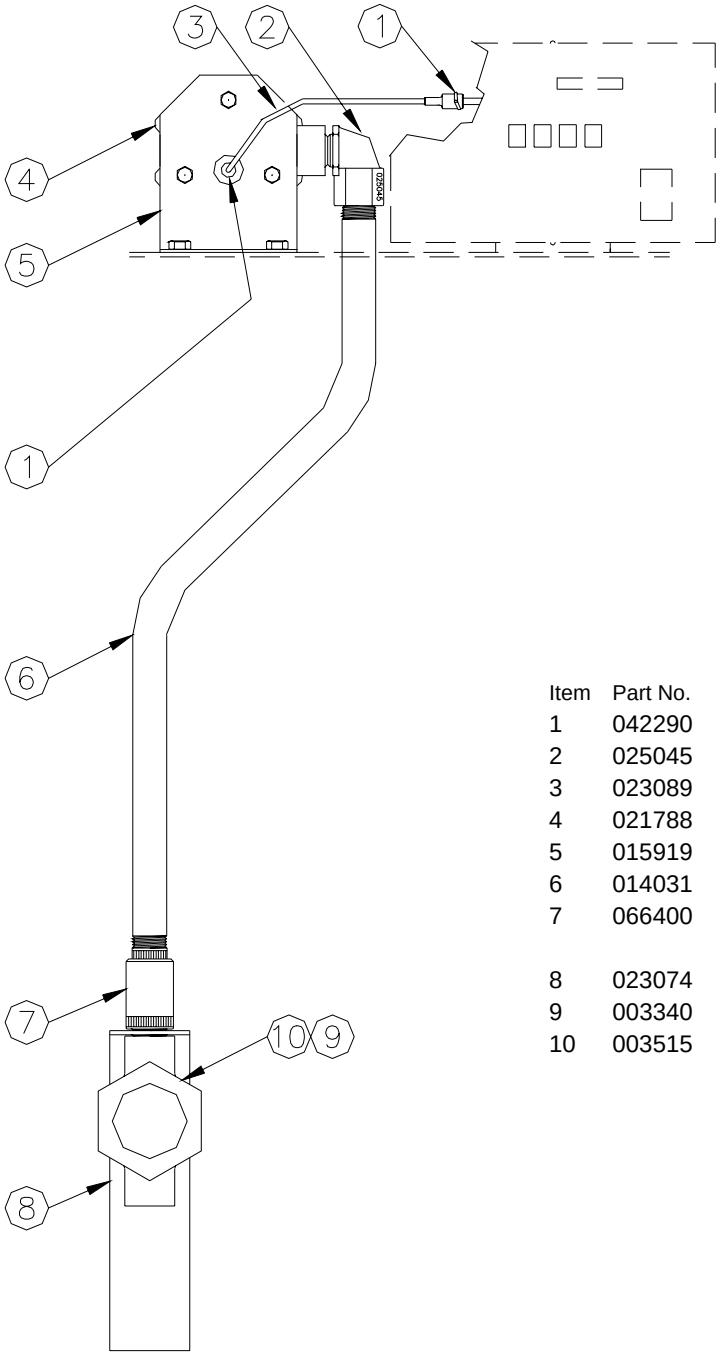
Item	Part No	Description
1	027055	Gasket-Inlet/Outlet
2	015496	Flange-Meter Inlet
3	015495	Flange Plate-Meter Inlet
4	015497	Piping-Pump Outlet
5	023091	O-Ring



023079 PIPE W/FILTER ASSY.

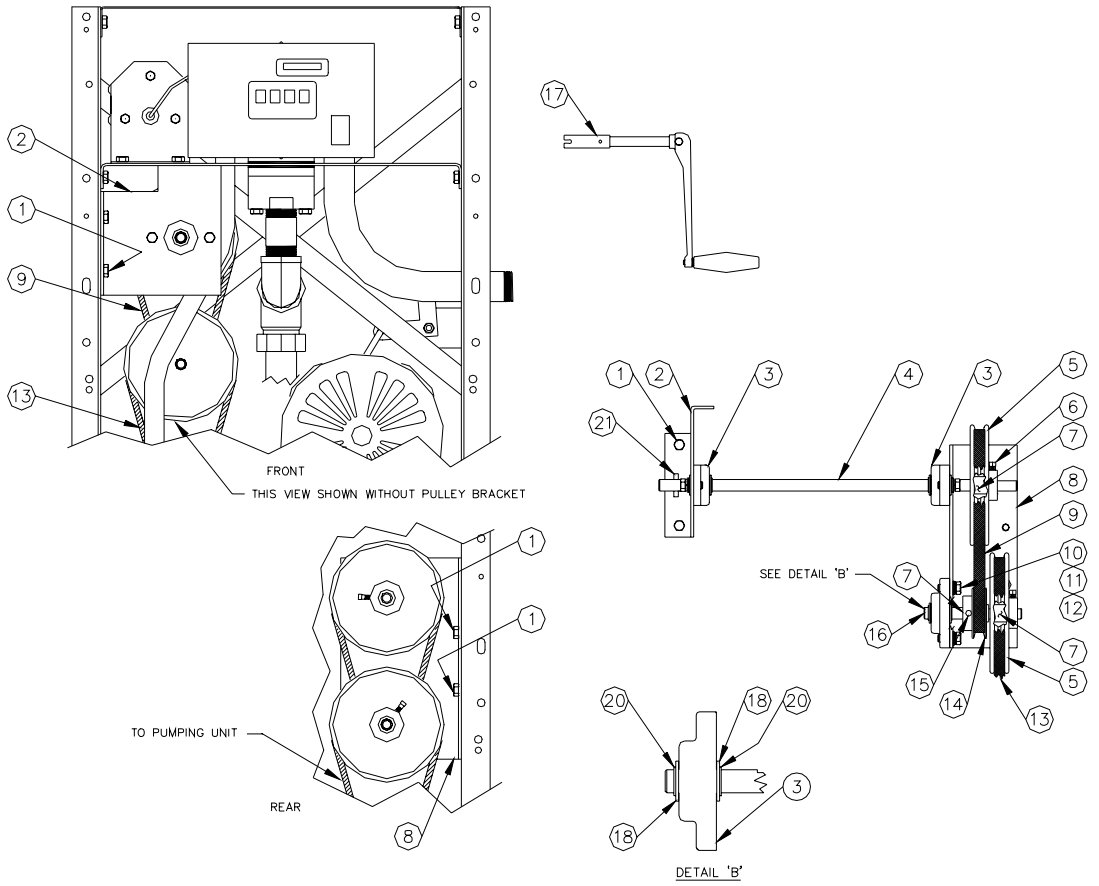
Item	Part No	Description
1	027055	Gasket-Inlet/Outlet
2	003650	Flange, 1”
3	044525	Pipe TBE, 1 x 3
4	024895	Elbow, 1” x 90
5	045235	Pipe TOE, 1 x 4
6	003087	Adapter, 1” Cimtek 400 Filter
7	015498	Coupling Nipple, 4-3/4
8	024910	Elbow, Dresser 1 x 90
9	045218	Pipe TOE, 1 x 2-1/2
10	054207	Dresser Elbow Seal, 1”

582/583 PULSER



Item	Part No.	Description
1	042290	Cotter Pin, 3/64 x 1/2
2	025045	Elbow-Conduit, ½ x 90 M/F
3	023089	Cable Assembly, Pulser Drive
4	021788	Pulser, 10:1, VR
5	015919	Bracket-Pulser
6	014031	Conduit, JBox Pulser
7	066400	1/2” UNY Explosion Proof Conduit Union
8	023074	Bracket, Junction Box
9	003340	J-Box Machining
10	003515	J-Box Cover Machining

HAND CRANK ASSEMBLY



Item	Part No.	Description
1	053910	Screw, 5/16-18 x 1/2 Hex Wsh
2	030803	Bearing-Pltd Assy.
3	030024	Housing/Bearing Assy.
4	055007	Shaft, Drive
5	047015	Pulley, 5-1/4 x 3/4" bore
6	053731	Screw, 1/4-20 x 5/8 Sq. Hd Set Cad Case Hardened
7	017130	Bushing, Hand Crank
8	014864	Bracket, Pulley
9	012166	Belt, 4L230, A21
10	051895	Screw, 5/16-18-3/4 HHC Pl

Item	Part No.	Description
11	068875	Washer, Std. Spring Lock, 5/16
12	068080	Washer, 5/16-18 x 1/2
13	012177	Belt, 4L460-A44
14	048709	Pulley, 2" x 5" Bore
15	052010	Screw, Set 5/16-18 x 1/2
16	055005	Shaft, Drive
17	023139	Handcrank Assy.
18	068040	Washer, .505ID x .880OD, .058T
20	049403	Retaining Ring, .396 Dia.
21	043030	Pin, Roll, 3/16 x 1

NOTE: See **Reconfiguration of Pump Pulley for Hand Crank Operation** *in Section 4.*

ACCESSORIES AND FIELD KITS

External Low Flow Filter Kits

Typically used on Model 582. Components are not designed for use with Methanol or Methanol blends.

032115	External Standard Speed Filter Kit (includes adapter, standard speed particulate filter element and pipe fittings)
032116	External Standard Speed Hydrosorb Filter Kit (includes adapter, standard speed Hydrosorb filter element and pipe fittings)

External High Flow Filter Kits

Typically used on Model 583. Components are not designed for use with Methanol or Methanol blends.

032754	External Single Element High Flow Kit (includes adapter, one high flow particulate filter element and pipe fittings)
032755	External Single Element High Flow Hydrosorb Kit (includes adapter, one high flow Hydrosorb filter element and pipe fittings)

Replacement Elements (for both 582 and 583 Models)

026018	Standard (removes particulates only)
026019	Hydrosorb (removes water and particulates)

Pulser Kit

023131	10:1 Pulser Kit

WARRANTY

General Statements:

Gasboy International LLC warrants all new equipment manufactured by Gasboy against defective material and/or workmanship, for the warranty period specified below, when the equipment is installed in accordance with specifications prepared by Gasboy.

This warranty does not cover damage caused by accident, abuse, Acts of God, lack of surveillance of automatic recording systems, negligence, mis-application, faulty installation, improper or unauthorized maintenance, installation or use in violation of product manuals, instructions, or warnings.

Under no circumstance shall Gasboy be liable for any indirect, special, or consequential damages, losses, or expenses to include, but not limited to, loss of product, loss of profits, litigation fees, or the use, or inability to use, our product for any for any purpose whatsoever.

Parts Only - During the warranty period, Gasboy will, at its option, repair or replace defective parts returned transportation prepaid to its factory.

On-Site Labor Included - Gasboy will also provide, within the Continental United States and during the warranty period, the services of an Authorized Service Representative (ASR) for on-site repair or replacement of defective parts.

Replacement Parts - Any system components that are not part of the original system order, including Island Card Readers, Pump Control Units, etc., are considered replacement parts.

Equipment	Term	Coverage
Commercial Pumps and Dispensers Full-Cabinet Consumer Pumps	One year from date of installation or 18 mos. from date of Gasboy International's invoice to the purchaser, whichever comes first.	Parts and Labor.
Small Transfer Pumps, Meters, Pressure Regulators	One year from date of installation or 18 mos. from date of Gasboy International's invoice to the purchaser, whichever comes first.- Excepting the Model 2020 Hand Pump, which has a 90-day warranty from date of GASBOY International's invoice.	Parts Only.
Keytrol	One year from date of installation or 18 mos. from date of Gasboy International's invoice to the purchaser, whichever comes first.	Parts and Labor.
Fuel Management Systems: - CFN/ Profit Point - Series 1000/Fleetkey - TopKAT - Fuel Point Readers (sold with new systems)	One year from date of start-up or 15 mos. from date of Gasboy International's invoice to the purchaser, whichever comes first.- The basic warranty only applies to systems which have been started up by a Gasboy Authorized Service Representative (ASR).	Parts and Labor.
Additional Fuel Point Items: - Fuel Point Readers sold for retrofitting existing systems. - Fuel Point vehicle and dispenser components.	One year from date of start-up or 15 mos. from date of Gasboy International's invoice to the purchaser, whichever comes first.	Parts Only.
Encoders, Embossers, Modems, CRTs, and Logger Printers	Purchased with Fuel Management System (Encoders, Embossers only): 90 days from the date of start-up by a Gasboy ASR, or 180 days from date of Gasboy International's invoice, whichever occurs first. Purchased with Fuel Management System (Modems, CRTs, and Logger Printers only): Matches system warranty. Purchased Separately: 90 days from date of Gasboy International's invoice to the purchaser.	Purchased with System (Encoders, Embossers only): Parts only. Purchased with System (Modems, CRTs, Logger Printers only): Matches system warranty. Purchased Separately: Parts Only.
Air Diaphragm Pumps	Three years from date of purchase (for full warranty description, see Price List).	Parts Only.
Items not manufactured by Gasboy (ex. automatic nozzles, hoses, swivels, etc.)	Not warranted by Gasboy International (consult original manufacturer's warranty).	Not Applicable.
Replacement Parts	One year from date of Gasboy International's invoice to the purchaser.	Parts Only.

To the extent permitted by law, this warranty is made in lieu of all other warranties, expressed or implied, including warranties of freedom from patent infringement, or merchantability, or fitness for a particular purpose, or arising from a course of dealing or usage of trade. No one is authorized to vary the terms of the warranty nor may anyone make any warranty of representation, or assume any liability other than that herein stated, in connection with the sale described herein. The acceptance of any order by Gasboy International is expressly made subject to the purchaser's agreement to these conditions.

GASBOY

GASBOY INTERNATIONAL LLC

P.O. Box 309, Lansdale, PA 19446 ● (800) 444-5579 ● FAX: (800) 444-5569 ● www.gasboy.com