



5252 East 36th Street North
Wichita, KS USA 67220-3205
TEL: 316-686-7361
FAX: 316-686-6746

GREAT PLAINS INDUSTRIES, INC.

"A Great Plains Ventures Subsidiary"

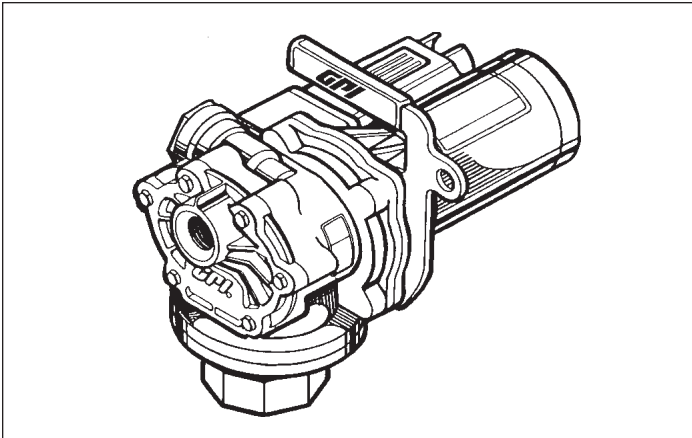
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1-800-835-0113

PA-200 Plastic Utility Pump for Petroleum Products

Owner's Manual

Manual No. 921503-4



GENERAL INFORMATION

Purpose of this Manual

This manual will assist you in operating and maintaining your pump. It provides information which will help you achieve years of dependable performance and trouble-free operation.

This pump was designed specifically for use with thin to medium viscosity petroleum fluids such as 30 weight motor oil. Fluids used with this pump should fall into NFPA listed categories for combustible fluids with a flash point above 100°F (38°C). The fluids should be clean and free of debris which might damage or impair proper operation of internal components.

Using fluids, other than those for which the pump was designed, could lead to serious personal injury and void the warranty.

Before operating your pump, read this manual thoroughly. If you have problems with your pump in the future, please refer to the Maintenance and Troubleshooting Sections.

For assistance, contact your dealer or the Customer Service Department.

How to Use this Manual

Specific part names and numbers are given in the Illustrated Parts Drawing at the end of this manual.



This symbol is used throughout the manual to call attention to safety messages.

Warnings alert you to the potential for personal injury.

Cautions call attention to practices or procedures which may damage your equipment.

Notes give you information that can improve efficiency of operations.

It is your responsibility to:

- make sure that all operators have access to adequate instructions about safe operating and maintenance procedures.
- know and follow all safety precautions for handling combustible high flash point petroleum fluids.
- know proper safety guidelines for providing electrical power to your pump.

Read Me

For your future safety, review the warnings and cautions below before operating your pump.

1. To avoid personal injury, do not use this pump with flammable fuels such as gasoline or alcohol. Do not use with diesel fuel, kerosene, chemicals, or herbicides.
2. Static discharge could result in an arc, explosion, and serious injury. To avoid personal injury, do not use this pump with flammable fluids.
3. Follow standard precautions for handling combustible high flash point fluids.
4. Serious electrical shock can result from operating electrical equipment on wet ground.
5. To avoid personal injury, use a ground fault circuit interrupter (GFCI) approved by Underwriters Laboratories Standard 943 with this pump.
6. This pump is designed for use with 115-volt power. Do not attempt installation or operation with 12-volt, 24-volt, or 230-volt power sources. Use only three-pronged, grounded connectors. Do not use two-prong adapters. Inspect power cords regularly and replace if signs of wear are evident.
7. Do not exceed standard duty cycle of 30 minutes on and 30 minutes off. Allow the pump to cool for the same length of time it is in operation.
8. Do not run the pump over 20 seconds without fluid flow. "Dry running" can cause overheating and pump damage.
9. Do not operate the pump for more than 10 minutes with the nozzle closed or pump damage may occur.
10. To avoid personal injury, turn the pump off and disconnect from power before repairing or servicing.
11. Follow cleaning solvent manufacturer's recommended safety precautions and disposal suggestions.

Damage Inspection

Upon receipt, examine all parts for visible damage. These parts include the pump, power cord, hose, and nozzle. If any items are damaged or missing, please contact your distributor.

INSTALLATION

To maximize pump performance, clean tank interior of all dirt and foreign material before installation.

NOTE: To prevent pressure build-up and possible nozzle leakage, make sure the tank is vented. A vent cap rated at 1 psi is recommended.

Priming

This pump is designed to self-prime to a minimum height of 60 inches (152 centimeters) with 10 weight oil.

If your installation requires a greater lift capacity, the pump may not prime unless the gears are coated with oil. To coat gears, remove the hose and squirt motor oil into the gear cavity. Replace the hose and turn the pump on. Using this procedure, lift of up to 18 feet (5.5 meters) is possible.

On tanks over 8 feet (2.4 meters) deep, a check valve may be required at the bottom of the suction pipe to help establish and maintain prime.

Install the Pump

To prevent leakage, seal all connecting threads with three to four turns of Teflon[®] tape during installation.

1. After sealing threads, tighten the bung adapter on the tank until snug.

The provided suction pipe has a variable length of 22 to 40 inches (56 to 102 centimeters). For additional length, use the Suction Pipe Extension described in the Illustrated Parts Drawing.

An alternate suction pipe may be constructed of 1-inch pipe cut to appropriate length. To avoid possible tank impurities which could damage your pump, determine tank depth and cut pipe a few inches shorter.

2. After sealing threads, tighten the suction pipe into the pump inlet until snug. Grip on the suction pipe's fittings.
3. Place gasket on top of bung adapter.
4. Extend the provided suction pipe to its full length and insert carefully into the tank. The provided suction pipe will adjust to the length needed to rest on the tank bottom.
5. Position pump on bung adapter, taking care not to displace gasket.
6. Hold pump in position while securely tightening union ring. Do not overtighten. Make sure union ring is not cross-threaded.

Install Hose and Nozzle

To prevent leakage, seal all connecting threads with three to four turns of Teflon[®] tape.

1. If installing accessories such as meters or filters, do so now, following manufacturer's instructions.

CAUTION: Make sure any hose and nozzle used are compatible with petroleum fluids.

2. After sealing threads, hand-tighten the hose into the outlet until snug.
3. Hand-tighten nozzle to hose.

OPERATION

This pump was designed specifically for use with thin to medium viscosity petroleum fluids such as 30 weight motor oil. Fluids used with this pump should fall into NFPA listed categories for combustible fluids with a flash point above 100°F (38°C). The fluids should be clean and free of debris which might damage or impair proper operation of internal components.

Using fluids, other than those for which the pump was designed, could lead to serious personal injury and void the warranty.

!!! WARNING !!!

To avoid personal injury, do not use this pump with flammable fuels such as gasoline or alcohol. Do not use with diesel fuel, kerosene, chemicals, or herbicides.

!!! WARNING !!!

Follow standard precautions for handling combustible high flash point fluids.

Electrical Connections

This pump is designed for use with 115-volt power. Do not attempt to install or operate the pump with 12-volt, 24-volt, or 230-volt power.

Use only three-pronged, grounded connectors. Do not use two-prong connectors or adapters. Inspect power cords regularly and replace if signs of wear are evident.

Serious electrical shock can result from operating electrical equipment on wet ground.

To avoid personal injury, use a ground fault circuit interrupter (GFCI) approved by Underwriters Laboratories Standard 943 with this pump. If your electrical service already has GFCI outlets, you are protected. If not, a portable GFCI is available through electrical equipment distributors or from GPI. Contact your distributor or GPI Customer Service for more information.

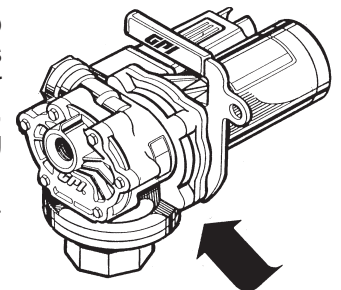
Daily Pre-Operation

Keep pump exterior clean to help identify leaks. Before each use, inspect for leaks around seals or connections. If found, refer to the Troubleshooting Section.

Check for leakage under the pump housing. A small drain hole relieves any fluid which bypasses the motor shaft seal. If any leakage is found here, replace the motor shaft seal using instructions in the Repair Section.

Make sure hoses are in good condition and connections are tight.

Make sure the work area is dry.



!!! WARNING !!!

Serious electrical shock can result from operating electrical equipment on wet ground.

Make sure the pump is connected to GFCI protected 115-volt power. Use only three-prong, grounded connectors. Inspect the power cord regularly and replace if signs of wear are evident.

CAUTION: Do not use with a 12-volt, 24-volt, or 230-volt power source.

CAUTION: Do not pump the tank dry. The tank bottom may contain impurities that could damage your equipment.

Dispense Fluid

This pump is for use with thin to medium viscosity petroleum products only. Some fluid may become too thick to pump if outside temperature is less than 50°F (10°C).

1. Make grounded GFCI protected connection to 115-volt power.
2. Insert the nozzle into the tank. Turn the pump on.
3. Open the valve on the nozzle.

This pump is designed to self-prime. If fluid does not flow within 15 to 20 seconds, turn off and refer to Priming and Troubleshooting Sections.

CAUTION: Do not run the pump over 20 seconds without fluid flow. "Dry running" can cause overheating and pump damage.

This pump contains an automatic bypass valve to prevent pressure build-up when the pump is on with the nozzle closed.

CAUTION: Do not operate the pump for more than 10 minutes with the nozzle closed or pump damage may occur.

4. Dispense the desired fluid amount.

CAUTION: Do not exceed standard duty cycle of 30 minutes on and 30 minutes off. Allow the pump to cool for the same length of time it is in operation.

NOTE: Shorten the duty cycle when pumping colder or thicker fluids.

5. When dispensing is complete, close the nozzle and turn the pump off.

Thermal Protector

This pump's motor contains an automatic thermal protector. Excessive motor heat can trip the protector. It resets automatically after the motor has cooled approximately 30 minutes.

Circuit Breaker

The magnetic circuit breaker trips automatically when the motor draws more than 3 amps. This feature provides added protection against motor damage and must be reset manually.

When the circuit breaker trips, turn the power off and disconnect from power before attempting any repairs. Inspect the pump thoroughly and clean or repair it as necessary.

CAUTION: Make sure the pump switch is in the off position before restoring power.

Reset the circuit breaker after repairs are complete. To reset, press in on the circuit breaker reset button at the end of the cover assembly.

MAINTENANCE

Although this pump is designed for minimum maintenance, proper cleaning and servicing is vital to prolong product life and promote trouble-free operation.

Perform a regular visual inspection of the system using the Daily Pre-Operation procedure in the Operations Section.



!!! WARNING !!!

To avoid personal injury, turn the pump off and disconnect from power before repairing or servicing.

When cleaning, wipe with a clean cloth and use solvent as necessary.



!!! WARNING !!!

Follow cleaning solvent manufacturer's recommended safety precautions and disposal suggestions.

Remove Pump from Tank

1. Disconnect pump from power.
2. Observing safety precautions, elevate the nozzle and hose to allow excess fluid to drain into the tank.
3. Loosen the union ring to release the inlet fitting.
4. Lift the pump from the bung adapter. The gasket may stick inside the inlet fitting.
5. Remove the suction pipe, as necessary.
6. Wipe the entire system with a clean cloth.

Clean Strainer

Clean the strainer if reduced flow indicates clogging.

1. Disconnect pump from power.
2. Remove gear coverplate and coverplate O-ring on pump housing.
3. Pull the strainer from the housing.
4. Clean the strainer and cavity. A soft-bristled brush and solvent can be used to clean the strainer. Replace strainer, as necessary.
5. Insert the strainer in the cavity.
6. Clean the coverplate and O-ring. Coat the O-ring with light weight grease.
7. Position the O-ring and coverplate. Tighten to housing. Torque screws to 25 to 35 in. lbs.

Clean Pump

During use, the pump may be exposed to impurities from the tank. If low flow or other problems occur, refer to the Troubleshooting Section.

If cleaning is required, disassemble the pump as outlined in the Repair Section. Carefully inspect all parts for wear or damage and replace, as necessary. When inspecting O-rings and seals, look for breakage, wear and signs of deterioration, such as swelling. Before seating, coat O-rings with light weight grease.

Store Pump

If the system will not be used for an extended period, store as follows:

1. Clean, as necessary, using instructions in the Repair Section.
2. Coat pump interior with clean petroleum product such as 30 weight motor oil. Allow excess to drain from the pump.
3. Wipe exterior of entire pump.
4. Store in a dry location.

REPAIR



To avoid personal injury, turn the pump off and disconnect from power before repairing or servicing.

When cleaning, wipe with a clean cloth and use solvent as necessary.



Follow cleaning solvent manufacturer's recommended safety precautions and disposal suggestions.

Replace Motor

1. Disconnect pump from power.
2. Remove the four screws holding the motor and handle to the housing.
3. Lift the motor from the housing and drive shaft.
4. Remove the screws on the planetary gear module and slip it from the motor shaft.
5. Assemble by reversing the steps above. Make sure the motor is properly seated against the motor adapter seal. Torque the four screws to 75 to 100 in. lbs.

Replace Switch

1. Disconnect the pump from power.
2. Remove the cover assembly on the side of the motor.
3. Press in on the sides of the switch. Push the switch from the switch box.

NOTE: Before disconnecting wires, note their positions on the switch. Connect to the new switch in the same positions.

4. Disconnect the terminal wires from the back of the old switch.
5. Replace the new switch by reversing steps above. Carefully position wires in switch box before replacing cover.
6. Install cover assembly and tighten screws until snug. Do not over tighten.

Replace the Drive Shaft or Motor Shaft Seal

To remove the drive shaft and motor shaft seal:

1. Disconnect pump from power.
2. Remove the motor as described in motor replacement instructions above.
3. Carefully slide the drive shaft from both the motor and the housing. Note the position of the motor shaft washer.
4. Carefully pry the motor shaft seal from the housing with a flat-bladed screwdriver.
5. Inspect the drive shaft, motor shaft washer and seal, and bearings for wear. Replace, as necessary.

To replace the drive shaft and motor shaft seal:

1. Disconnect pump from power and remove the drive shaft and motor shaft seal as detailed immediately above.

2. Press the motor shaft seal into the housing.
3. Position the motor shaft washer on the seal. Slide the notched end of the drive shaft into place in the housing.
4. During assembly, make sure the motor is properly seated against the motor adapter seal and the housing.
5. Align the drive shaft with the planetary gear module. When properly aligned, the drive shaft will slip into place with the motor against the housing.
6. Replace the screws fastening the motor and handle to the housing. Use the two longer bolts to secure the handle. Torque to 75 to 100 in. lbs.

Replace Gears, Wearplates or Drive Key

To remove the gears, wearplates and drive key:

1. Disconnect pump from power.
2. Remove the coverplate and O-ring from the housing.
3. Remove the wearplates, drive key, and gears from the housing.
4. Inspect the gears, wearplates, and key for wear or damage. Replace, as necessary. Clean cavity.

To assemble gears, wearplates and drive key:

1. Position one of the wearplates in the gear housing.

NOTE: Make sure the rounded edge of the wearplate faces the gears.

2. Place a gear over the drive shaft.
3. Position the other gear in the housing. Turn the gears to make sure they do not bind.
4. Align the slotted drive shaft end with the gear and carefully place the key in the slot.
5. Position the other wearplate with the rounded edge facing the gears. Make sure the wearplate is flush with the housing.
6. Replace the O-ring and coverplate. Torque screws to 25 to 35 in. lbs.

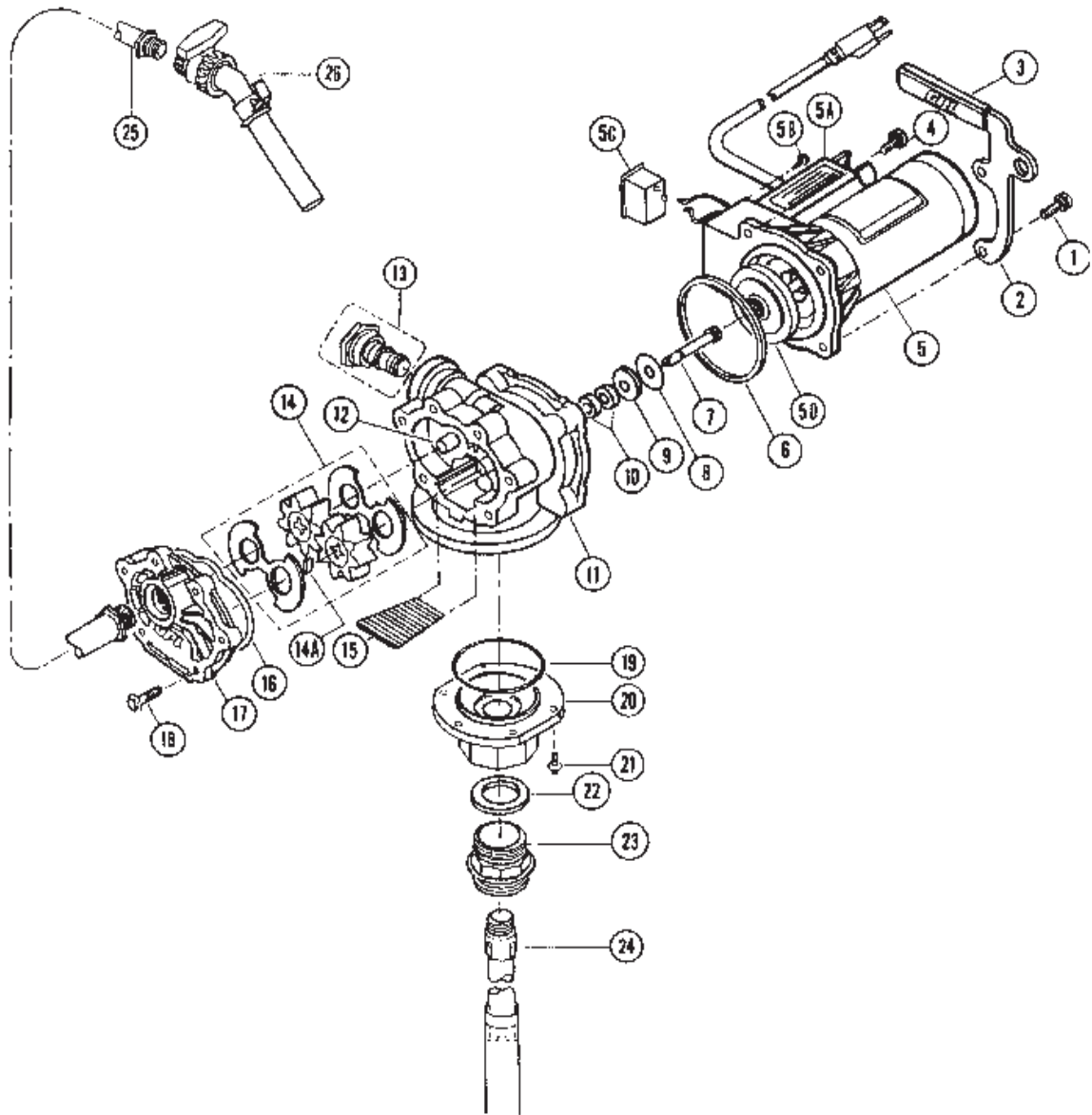
Clean or Replace Bypass Poppet

1. Disconnect pump from power.
2. Remove the bypass poppet plug.
3. Remove the spring and poppet.
4. To clean, wipe the cavity, plug, spring, and poppet with a clean cloth. As necessary, clean with an appropriate solvent.
5. Examine the poppet, O-ring and spring. Replace, as necessary.
6. To replace the poppet O-ring, remove the O-ring using a small screwdriver or similar tool. Take care not to damage the poppet or O-ring. Coat the O-ring with light weight grease and seat the O-ring on the poppet head.
7. To assemble, place the spring and poppet in the poppet cavity. Install plug and tighten snugly.

TROUBLESHOOTING

SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
A. MOTOR DOES NOT RUN	<ol style="list-style-type: none"> 1. Circuit breaker tripped 2. Switch defective 3. Motor burned out 4. Thermal protector tripped 5. GFCI tripped 	<p>Manually reset circuit breaker located in cover assembly. See Operations Section.</p> <p>Remove switch coverplate and inspect switch. Replace, if necessary.</p> <p>Remove motor and test by making grounded connection to 115-volt power. Replace, if necessary.</p> <p>Turn switch off. Allow motor to cool. Protector resets automatically after approximately 30 minutes. See Operations Section.</p> <p>Manually reset GFCI. If motor does not run, disconnect power and check for wet or damaged pump or power cord. Correct problem before resuming operation. Operate pump only in dry locations.</p>
B. MOTOR RUNS BUT DOES NOT PUMP FLUID	<ol style="list-style-type: none"> 1. System air leak 2. Drive key broken 3. Strainer clogged 4. Gear coverplate O-ring defective 5. Bypass poppet stuck 6. Suction pipe clogged, damaged or missing 7. Gear drive shaft broken 8. Gear wear 	<p>Ensure all fittings and connections are tight. Inspect suction pipe and bung adapter for leakage or damage.</p> <p>Remove coverplate and replace key.</p> <p>Remove coverplate. Clean strainer and reinstall.</p> <p>Remove coverplate. Inspect O-ring and replace if worn or damaged.</p> <p>Remove poppet, clean and reinstall.</p> <p>Remove pump from tank. Inspect suction pipe and clean or replace, as necessary.</p> <p>Remove coverplate, wearplates, gears, and motor. Remove and inspect drive shaft. Replace, if defective.</p> <p>Remove the coverplate and inspect wearplates, gears, and drive key. Gears must turn freely with the drive key removed. Replace any worn or damaged parts.</p>
C. LOW FLOW RATE	<ol style="list-style-type: none"> 1. Low voltage 2. Strainer partially clogged 3. Suction pipe clogged or damaged 4. Bypass poppet stuck 5. Gear wear 6. Discharge hose too long 7. Power cord too long 8. Fluid too thick for pump 	<p>Check for adequate power supply voltage.</p> <p>Remove the gear coverplate. Clean strainer and reinstall.</p> <p>Remove pump from tank. Inspect suction pipe and clean or replace, as necessary.</p> <p>Remove poppet, clean and reinstall.</p> <p>Remove the coverplate and inspect wearplates, gears and drive key. Gears must turn freely with the drive key removed. Replace any worn or damaged parts.</p> <p>Excessive hose lengths result in reduced flow rate.</p> <p>Excessive cord lengths result in reduced flow rate.</p> <p>Use only thin to medium combustible petroleum fluids such as 30 weight motor oil. Allow fluid to warm if operating at low temperatures.</p>
D. RAPID OVERHEATING OF MOTOR	<ol style="list-style-type: none"> 1. Duty cycle too long 2. Fluid too thick for pump 3. Strainer clogged 	<p>Do not exceed the standard duty cycle for medium viscosity petroleum fluids of 30 minutes on and 30 minutes off. Allow the pump to cool for the same length of time it is in operation.</p> <p>Use only thin to medium combustible petroleum fluids such as 30 weight motor oil. Allow fluid to warm if operating at low temperatures.</p> <p>Remove gear coverplate. Clean strainer and reinstall.</p>

ILLUSTRATED PARTS LIST



Item No.	Part No.	Description	No. Req'd.
1	904003-92	Sems Screw (5/16-18 x 7/8 in.)	2
2	118021-1	Handle	1
3	118023-1	Handle Grip	1
4	904002-24	Sems Screw (5/16-18 x 3/4 in.)	2
5	119006-2	Motor Assembly, 115-volt	1
5A	119107-1	Cover Assembly with Circuit Breaker	1
5B	904001-99	Pan HD Screw (8-32 x 5/16 in.)	4
5C	902002-91	Rocker Switch	1
5D	906001-67	Planetary Gear Module	1
	904003-50	Sems Screw (8-32 x 11/16 in.), PA-200 not shown	4
6	901001-91	Motor Adapter Seal (Kit A & B)	1
7	110204-2	Drive Shaft Assembly (Kit A)	1
8	904003-70	Motor Shaft Washer (Kit A)	1
9	110078-8	Motor Shaft Seal (Kit A & B)	1
10	118020-1	Bearing (Kit A)	2
11	118006-1	Pump Housing	1

Item No.	Part No.	Description	No. Req'd.
12	110018-2	Gear Shaft Support	2
13	118508-2	Bypass Poppet Assembly Kit	1
14	118502-1	Gear Kit	1
14A	110913-2	Key	1
15	110063-2	Inlet Strainer	1
16	118017-1	Coverplate O-ring (Kit B)	1
17	118007-1	Coverplate	1
18	904003-49	Sems Screw (1/4-20 x 1 in.)	6
19	901002-38	Inlet O-ring (Kit B)	1
20	115018-5	Lower Cover Assembly (2 in.)	1
21	904003-91	Sems Screw (1/4-20 x 3/4 in.)	6
22	114029-1	Teflon® Gasket	1
23	115097-2	Bung Adapter Assembly	1
24	110100-1	Adjustable Suction Pipe	1
25	110188-1	1 in. x 12 ft. Hose	1
26	110107-2	Discharge Nozzle	1

Kits and Accessories

- A** 118505-1 Drive Shaft Kit includes two bearings, the motor shaft seal, motor shaft washer, drive shaft assembly, and motor adapter seal.
- B** 118506-1 Seal Kit includes the coverplate O-ring, motor shaft seal, motor adapter seal, inlet O-ring, camplug O-ring, poppet O-ring, and plunger O-ring.
- 118508-2 Bypass Poppet Assembly Kit for 2-inch inlet with automatic bypass feature only.
- 115527-2 Suction Pipe Extension, 15 inches (38cm).
- 906003-65 Ground Fault Circuit Interrupt (GFCI).

SPECIFICATIONS

Applications

Fluids: Medium viscosity petroleum fluids such as 30 weight oil up to a maximum viscosity of 450 centipoise.

Operating Environment: Outdoor, year-round with an operating temperature range of -20° to +120°F (-28° to +51°C). Designed for mounting on above-ground vented storage tank.

Pump Housing

Lightweight, durable, molded plastic housing. Convenient union ring for easy installation.

Performance

Pump Rate: 8 GPM (30 LPM) with 30 weight oil at 60°F(15°C) or 20 weight oil at 40°F(4°C). Rate will vary with viscosity and temperature.

Duty Cycle: 30 minutes on, 30 minutes off. Duty cycle will vary with viscosity and temperature.

Electrical Specifications

Input: 115-volt AC, grounded

Cord: 18 gauge, 3 wire pigtail with grounded plug.

Mechanical Connections

Bung: 2 in. NPT

Inlet: 1 in. NPT

Outlet: 1 in. NPT

Accessories

Standard 1 in. x 12 ft. (3.7m) statically grounded discharge hose.

Standard 1 in. ball valve nozzle.

Standard suction pipe, plastic, adjustable 22 to 40 inches (56 to 102 cm).

Weight

Shipping: 23 lbs. (10.4 kg)

PARTS AND SERVICE

For warranty consideration, parts or other service information, please contact your local distributor. If you need further assistance, contact the GPI Customer Service Department in Wichita, Kansas, during normal business hours.

A toll free number is provided for your convenience.

1-800-835-0113

To obtain prompt, efficient service, always be prepared with the following information:

- The model number of your pump
- The serial number or manufacturing date code of your pump
- Part descriptions and numbers

Part information can be obtained from the Illustrated Parts Drawing.

For warranty work, always be prepared with your original sales slip or other evidence of purchase date.

Please contact GPI before returning any parts. It may be possible to diagnose the trouble and identify needed parts in a telephone call or letter. GPI can also inform you of any special requirements you will need to follow for transportation and handling of equipment which has been used to transfer petroleum products.

CAUTION: Do not return pumps without specific authority from the Customer Service Department. Due to strict regulations governing transportation, handling, and disposal of petroleum products, GPI cannot accept pumps for rework unless they have been drained and cleaned.

Limited Warranty Policy

Great Plains Industries, Inc. 5252 E. 36th Street North, Wichita, KS USA 67220-3205, hereby provides a limited **one year warranty** against defects in material and workmanship on all products manufactured by Great Plains Industries, Inc. except models BP-10, BP-12, LP-50, RP-5 and CP-5. These models carry a 90-day warranty. The warranty shall extend to the purchaser of this product and to any person to whom such product is transferred during the warranty period.

The warranty period shall begin on the date of the original new equipment purchase. Warrantor's obligation hereunder shall be limited to repairing defective workmanship or replacing or repairing any defective part or parts. This warranty shall not apply if:

- A. the product has been altered or modified outside the warrantor's duly appointed representative;
- B. the product has been subjected to neglect, misuse, abuse or damage or has been installed or operated other than in accordance with the manufacturer's operating instructions.

To make a claim against this warranty, notice of claim must be given in writing to the company at its above address no later than 30 days after the expiration of the warranty period. Such notice shall identify

the defect in the product. The company shall, within 14 days of receipt of such notice, notify the customer to either send the product, transportation prepaid, to the company at its office in Wichita, Kansas, or to duly authorized service center. The company shall perform all obligations imposed on it by the terms of this warranty within 60 days of receipt of the defective product.

GREAT PLAINS INDUSTRIES, INC. EXCLUDES LIABILITY UNDER THIS WARRANTY FOR DIRECT, INDIRECT, INCIDENTAL AND CONSEQUENTIAL DAMAGES INCURRED IN THE USE OR LOSS OF USE OF THE PRODUCT WARRANTED HEREUNDER.

The company herewith expressly disclaims any warranty of merchantability or fitness for any particular purpose other than for which it was designed.

This warranty gives you specific rights and you may also have other rights which vary from U.S. state to U.S. state.

Note: In compliance with MAGNUSON MOSS CONSUMER WARRANTY ACT – Part 702 (governs the resale availability of the warranty terms).

