Congratulations on your purchase of a Pumptec 12V Electric Sprayer. Pumptec 12V pumps and systems are the “Future in Sprayer Technology”. With proper care and maintenance you will get dependable service from you Pumptec 12V Electric Sprayer. Pumptec pump series 356U with plunger type design is the most efficient way possible to pressurize water. This efficiency produces up to 20% more pressure or flow for a given power input compared to competitive pumps. The series offers a variety of pump and motor combinations customized to meet specific application requirements. Typical applications include pressure cleaning, pest spraying and misting. All pumps are factory lubricated for long-life performance. The only tool to completely disassemble the pump to its basic components is a 3/16” hex wrench. Durability and performance results from exclusive use of premium materials. All metallic wetted parts are stainless steel. An aircraft-grade anodized aluminum pump with Teflon hard-coat body is nearly indestructible compared to pumps made of castings. The body offers chemical compatibility with a wide variety of chemicals. Epoxy and other coatings are available for high and low pH applications. Flow and pressure can be optimized to exactly match power input to nozzle size, and offers an assortment of eccentrics for low, medium and high pressure to match your application requirement.

PERFORMANCE FEATURES

• Green technology with zero emissions
• No more gas engine noise, smell, maintenance, and trouble
• 12V simplicity of “1-pull” start
  Pumptec’s proven plunger pump design
• Low amp draw from high efficiency pump design
• No diaphragms to fail during job
• Easily rebuilt quickly with common tools
• No crankcase oil to maintain or service

12V ELECTRIC SPRAYER

Congratulations on your purchase of a Pumptec 12V Electric Sprayer. Pumptec 12V pumps and systems are the “Future in Sprayer Technology”. With proper care and maintenance you will get dependable service from you Pumptec 12V Electric Sprayer. Pumptec pump series 356U with plunger type design is the most efficient way possible to pressurize water. This efficiency produces up to 20% more pressure or flow for a given power input compared to competitive pumps. The series offers a variety of pump and motor combinations customized to meet specific application requirements. Typical applications include pressure cleaning, pest spraying and misting. All pumps are factory lubricated for long-life performance. The only tool to completely disassemble the pump to its basic components is a 3/16” hex wrench. Durability and performance results from exclusive use of premium materials. All metallic wetted parts are stainless steel. An aircraft-grade anodized aluminum pump with Teflon hard-coat body is nearly indestructible compared to pumps made of castings. The body offers chemical compatibility with a wide variety of chemicals. Epoxy and other coatings are available for high and low pH applications. Flow and pressure can be optimized to exactly match power input to nozzle size, and offers an assortment of eccentrics for low, medium and high pressure to match your application requirement.
UNPACKING
Remove all packing materials. Carefully remove the plunger pumps from the shipping carton. Inspect for any damage that may have occurred during transit. Check for any loose, missing or damaged parts.

The contents includes 1 item: See page 10 and 11.

SPECIFICATIONS
Maximum specifications refer to individual performance levels. Maximum performance ratings are maximums and may be conditional on other factors. Consult Troubleshooting section when operating near any performance maximum. Refer to individual pump data sheets for complete specifications, parts list and exploded view.

Model 348U – Simple, Single Plunger Pump
MAX PRESSURE ............... TO 1000 PSI
OPEN FLOW ................. TO 3.7 GPM
SEALS .......................... U-CUP
O-RINGS ........................ VITON
INLET PORTS (2) ............ 3/8” F NPT
DISCHARGE PORTS (2) ....... 3/8” F NPT
MAX FLUID TEMP ........... TO 140˚F
RPM (MAX) .................... 2000

MATERIALS OF CONSTRUCTION
BODY ............. ANODIZED ALUMINUM
PLUNGER ............. 304 SS
VALVES ............... STAINLESS STEEL
FASTENERS ............. STAINLESS STEEL

GENERAL SAFETY INFORMATION
Please read this manual before installing or operating pump to provide safe operation and prevent equipment problems. Observe the following symbols and definitions.

NOTE: Indicates important instructions which are not related to hazards.

IMPORTANT: Indicates factors concerned with assembly, installation, operation, or maintenance which could result in damage to the machine or equipment if ignored.

CAUTION! Warns about hazards that MAY cause minor personal injury or property damage if ignored.

WARNING! Warns about hazards that COULD cause serious personal injury, death or major property damage if ignored.

DAnger! Warns about hazards that WILL cause serious personal injury, death or major property damage if ignored.

PLEASE READ, SAVE AND REFER TO SAFETY INSTRUCTIONS BELOW:

CAUTION! Pumps build up heat and pressure during operation. Allow time for pumps to cool before handling or servicing. Only qualified personnel should install, operate, and repair pump.

IMPORTANT: For pumping liquids other than water, contact your supplier.

DANGER! Do not pump hazardous materials (flammable, caustic, etc.), unless the pump is specifically designed and designated to handle them.

WARNING! To reduce risk of electric shock, always disconnect pump from power source before handling or servicing.

WARNING! Any wiring of pumps should be performed by a qualified electrician.

CAUTION! These pumps are not intended to be submersed.

Pumptec, Inc. is not responsible for losses, injury, or death resulting from a failure to observe these safety precautions, misuse or abuse of pumps or equipment.

INSTALLATION
MOUNTING
Pump motor set can be mounted in any position EXCEPT with pump head higher than motor. To minimize amp draw, noise and vibration, use appropriate flexible hose to inlet and discharge ports.

LOCATION
CAUTION! If the pump is used in extremely dirty or humid conditions, it is recommended pump be enclosed. Do not store or operate in excessively high temperature areas or without proper ventilation.
The pumping system can be mounted where it is visible, but it must be protected from rain, dirt and chemical spray or splashing. The pump must never be installed on a vertical surface with the pump head higher than motor, like a capital letter “T”, for example.

POSITION MOTOR UNIT:
1. When selecting position, consider length and downward angle of suction line from tank to pump
2. Consider length of wire from battery to motor
3. To reduce shock and vibration, heavy duty motor mounts with lock nuts and washers are provided
4. Pump may be mounted in any position except vertical with pump above motor (water would leak into motor). Vertical mount with motor above pump is not a problem.
5. Mount pump and motor in a location where it is protected from dust, dirt, mud, water, impact shock, chemical spill, or direct sunlight. A simple well ventilated housing should be adequate.

LAYOUT AND INSTALL SUCTION LINE
MOST IMPORTANT: ALWAYS have a suction line in continuous downward slope from tank to pump. This will allow air bubbles to travel uphill back into tank thereby eliminating 99% of priming issues and erratic performance.

All poly tanks are supplied with female bulkhead fittings for tank bottom outlets. We have supplied plastic hose barbs for both ½” and ¾” NPT female bulkhead fittings.

1. Connect hose to ½” hose barb in tank fitting and carefully route to pump inlet
2. Install line strainer at convenient location
3. Trim hose length to assure continuous downward slope to pump inlet. Secure suction hose with wire ties needed.
4. Install and tighten hose clamps

NOTE: Poly spring suction hose is reinforced with stainless steel wire. Cut hose with blade, then pull apart to stretch wire and cut off excess wire with wire cutter

PRE-OPERATION
INLET CONDITIONS

CAUTION! DO NOT STARVE THE PUMP OR RUN DRY. Temperatures above 130°F will require pressurized inlet to avoid cavitation and seal damage.

DISCHARGE CONDITIONS
Open all valves in system prior to operation to avoid excessive load on motor and system from a pressure spike. Follow the instructions of proper system design. Refer to supplier if assistance is needed.

PRESSURE REGULATION
Verify pressure regulation devices are operating correctly.

NOZZLES
Nozzles create pressure in most systems and they become larger with use. Larger nozzles decrease system pressure. Verify the quality of nozzles prior to operation.

MOTOR SHAFT ROTATION

CAUTION! Motor shaft rotation must always be counterclockwise in order to assure proper function of pump or warranty may be void.

PUMPED LIQUIDS
Some liquids may require a flush between operations or before storing. For pumping liquids other than water, contact your supplier.

CAUTION! If the pump is used in extremely dirty or humid conditions, it is recommended pump be enclosed. Do not store or operate in excessively high temperature areas or without proper ventilation.

OPERATION
GENERAL OPERATING INFORMATION
Pressure is often created by forcing a volume of fluid (flow) through a specific size hole (nozzle). Additionally, pressure can be created by pumping into a non-expanding chamber. Pressure is measured and stated in PSI – pounds per square inch.

Flow is created based upon the pump displacement and speed (RPM) of the motor. Pump plunger size affects flow based upon the same RPM. The faster the motor speed, the greater the flow. Flow is measured and stated in GPM – gallons per minute.

The pump, driven by a motor or engine, draws fluid through a set of valves into the pumping chamber and the fluid is then forced out of a set of valves to exit the pump. The back and forth movement of the plunger in the sealed pumping chamber creates the suction and discharge actions.

Once the fluid has exited the pump it must be controlled until it exits the nozzle or reaches the place it needs to go. This control is achieved via the use of system components such as an unloader or regulating valve. The pumps are
positive displacement pumps providing a specific amount of fluid constantly while operating. This volume of fluid must be directed out thru a nozzle or back to a tank because it cannot be stopped completely without creating excessively high pressure and risk of damage to pump, components, property and person. It is recommended a safety device such as a regulating valve be installed directly on pump head as protection in case of a failure of another component. Pressure switches can be used to automate pump operation, but they must have a pressure regulating device installed as a safety device.

Fluid can enter a pump either from a filtered tank or pressurized fluid line.

It is common to use a tank with pumps that are mounted above the pump. Filtration is important to maintain proper function of the pump and system. The extent of filtration may be greater based upon some uses such as misting with ultra-fine nozzles.

ASSEMBLY OPERATING INFORMATION

Proper care must be taken during electrical connection to battery and/or vehicle. Wiring into the vehicle’s 12V system should be done by qualified personnel. Use proper gauge wire. Pumptec Inc. shall bear NO liability or responsibility in how purchaser and/or their installer wires and installs the system into a vehicle and they bear all losses associated with any malfunctions or other potential damages of any kind that could occur.

NOTE: It is not necessary to wire the sprayer into the vehicle to use.

To receive the maximum benefit from sprayer, Pumptec recommends use of a high quality 27 series, deep cycle battery (not included). For an excellent resource regarding batteries, chargers and battery systems, please go to http://www.schumacherproducts.com/applications.

Connect ring terminals accordingly to polarity, color and size. Red wire with large ring terminals are positive (+) and connect to positive pole of battery. Black wires with smaller ring terminals are negative (-) and connect to negative pole of battery. Pumptec Inc. bears no liability or responsibility for this installation.

Refer to Vehicle’s Owner’s Manual for guidance regarding bolting and securing to vehicle. The sprayer has several slotted holes in the frame to permit secure mounting to vehicle. Pumptec Inc. bears no liability or responsibility for this installation.

STARTUP AND OPERATION

1. Fill tank ½ full with water. Do not fill with chemical for initial start-up. NEVER fill with flammables.
2. Connect spray gun to end of spray hose and make sure the trigger is closed
3. Rotate Power Selector to correct position before pulling On-Off switch. The sprayer is prewired for position “1” to be on-board battery. Your sprayer may have a red box switch. Turn that to the ON position. Other positions will be determined based upon whether installation was made into your vehicle’s electrical system.

The power selector’s switch is NOT an On-Off switch. Use of power selector switch in this way will damage it and void warranty.

4. Open ball valve next to line strainer and verify that liquid flows into strainer

5. Refer to 9025 Multi-Function Control Valve - Open bypass/agitation valve

6. Pull On-Off switch to start sprayer
7. Allow time for air to purge from pump system and return to tank
8. Close bypass/agitation valve completely to pressurize system
9. Adjust pressure to desired level with adjusting cap
10. Squeeze trigger to clear hose of air and begin spraying. Note pressure while spraying.
11. Adjust regulator to no more than 10-15 psi higher than spray pressure. Excess pressure will drain battery unnecessarily.
12. When initial start-up is completed:
   - Push On-Off switch to OFF position
   - Rotate Power Selector to "OFF" to avoid accidental operation or unnecessary battery drain
13. Empty tank of water

Read and understand the many features of battery charger. Refer to enclosed battery charger information for more details regarding settings and features.

PUMP OPERATING INSTRUCTIONS FOR SYSTEMS

Each Pumptec system is tested and inspected prior to shipment from our facility in Minnesota. This routine includes setting the pressure to optimum performance levels. Only though tampering or extremes during shipment should a unit need pressure adjustment upon arrival to end-user. If you see shipping issues call Pumptec Inc at 763.433.0303 immediately.

We recommend that you perform an initial set up and test of your system with clean water to check for leaks. DO NOT install chemicals before completely testing pumping module and all connections.

NOTE: ALWAYS flush and rinse system after every use. NEVER change chemicals without completely rinsing tank and whole pumping system. ALWAYS read chemical label and exactly follow recommendations for system flushing.

1. Check your water and chemical supply, and then check the supply in the tank.
2. Do you have adequate filtration? Check line strainer/filter to make sure it is clean and free of debris.
3. If it is necessary to disassemble the filter to inspect or clean, be certain to seat the gasket properly, along with the screen and tighten extra firmly. Any air leakage at the point will cause drop in pressure and loss of pump prime. It may be necessary to lubricate gasket prior to re-assembly.
4. Check all plumbing connections to make sure they are tight
5. Check your power source. Make sure your power source is connected correctly
6. To prime your pump open prime valve on regulator
7. Start pump (pull on-off switch out) and allow air to purge from system which usually takes 5-15 seconds

NOTE: The pressure may be factor set as a result of the water/chemical flow restriction to the OEM system. Changing tips or guns will affect system performance.

8. Hold trigger open on spray gun and start pump. Allow all air to purge from system and liquid to spray. Trigger the spray gun a few times to check pressure and nozzle function. If you are pleased with the spraying pressure and nozzle performance you will NOT need to make any adjustments.
9. With spray gun triggered, you can adjust the spraying pressure by adjusting the regulator valve.

NOTE: NEVER adjust to a back pressure greater than machine rating.

There are two easy ways to lower your pressure:
• Turn the regulator knob counter clockwise
• Change to larger size nozzle tip and then adjust the regulator to 5-10 psi above spray pressure

NOTE: The opposite of either will raise the pressure to maximum pressure setting of the regulator.

10. Adjust the nozzle tip on the gun supplied

NOTE: higher pressure requires more amperage. Use only the pressure you need. Do not unnecessarily overload system. Should the system overload, a breaker will trip resulting in a
11. To shut down unit, push on-off switch in. DO NOT use the power selector as ON-OFF switch.

12. Open bypass valve on regulator to relieve system pressure.

13. Disconnect the trigger gun for safe storage.

NOTE:

- Always flush and rinse system after every use
- Use the entirety of tank mix. Chemical not used can be easily drained and stored using the tank drain hose.
- NEVER change chemicals without completely rinsing tank and pumping system
- Always read chemical label and exactly follow recommendations for system flushing
- Tighten all screws periodically to insure safety and proper performance
- Make sure water soluble packs fully dissolve
- It is recommended to keep repair kits in stock

**BATTERY SWITCHES**

**EASY INSTALLATION**

Guest® Heavy Duty Selector Switch is “make-before-break” single pole, triple-throw switch with alternator field circuit disconnect for use where high amperage is required, such as diesel engine starting. Rated at 360 amps continuous, 600 amps momentary, the switch is 5 1/2” square and 3 1/2” high.

**WARNING!** It is important that cold start amperage requirements of your engine do not exceed the rated capacity of this switch.

The switch features:

- Selection between either of two batteries or banks of batteries, operation of both batteries or banks of batteries in parallel, or complete disconnect of both batteries or banks of batteries.
- Alternator field disconnect, which interrupts the alternator field when switch is turned to “off” position, thus preventing electric surges in the armature circuit which might burn out the alternator diodes.
- Positive click stop in all positions, with large easy-to-read dial.
- Rugged polycarbonate case with built-in skirt to protect electrical connections. Can be panel or flush mounted.
- Heavy-duty copper contacts.
- For use with 6, 12, 24, and 32 volt systems.

**INSTALLATION INSTRUCTIONS**

**MOUNTING**

Switch should be located as close to the batteries as possible with regards to convenience of operation. The battery and starter cable should be as short as possible.

There are three mounting positions:

1. Surface mounting with the wires going through the openings at the base of the switch.

2. Surface mounted with a hole in the mounting surface to permit wires to come through at the back of the switch.

3. Recessed mounting of the switch through a hole in the mounting surface.

For surface mounting, place the switch in the desired location and, using the switch as a template, locate the four mounting holes. Then drill four equally-spaced #12 holes on 4 3/8” centers.

For recessed mounting, place the switch in the desired location, and using the switch as a template, locate the center. Cut a hole 5 1/4” dia. to permit the silver face plate to extend through the mounting surface. Then put the switch through the hole from the back and locate and drill the four #12 mounting holes. These holes should be on 4 3/8” centers. If flush mounting is desired, washers may be used on the mounting bolts between the switch flange and the mounting surface to adjust the portion of the switch that comes through the hole.

**WIRING**

1. Battery cable should be 4/0 or sized in accordance with the engine manufacturer’s recommendations. Other guides to wire sizes may be obtained from The American Boat and Yacht Council’s Electrical Standards or The National Fire Protection Association’s Standard for Motor Craft, NFPA 302. Terminals should be of the solder lug type. For 4/0 cable use Burndy #N250-250-MCM or equivalent. The brass terminal bolts are 1/2” diameter.

2. Wire for alternator field circuit disconnect switch should be #14 with terminal lugs on the ends. (See wiring diagrams for suggested installations).
RECOMMENDED MOUNTING OF CABLES AT SWITCH

1. Connect cable (A) from positive post of battery #1 to switch terminal #1.
2. Connect cable (B) from positive post of battery #2 to switch terminal #2.
3. Connect cable (C) from starter solenoid and cable (D) from accessory (load) to Feeder terminal on switch.
4. See “Wiring” for cable and terminal requirements.

CABLE LUG INSTALLATION

Remove top nut and washer only. Removing bottom nut will damage the switch. Tighten nut to 150 in-lbs.

COXREELS HAND CRANK HOSE AND CABLE REELS

IMPORTANT: Read these instructions carefully before attempting to install, operate, or maintain this product. Only qualified personnel should undertake the installation and commissioning of this product. Failure to comply with instructions could result in personal injury and/or property damage.

PERSONAL SAFETY

- Ensure reel has been properly installed before connecting supply line.
- Before connecting to reel, be certain supply line does not exceed rated pressure of the hose reel or amperage rating on cable reel.
- Thoroughly review the “Hose Installation” Instructions to properly install hose.
- Perform “Operational Check” per instructions to ensure reel is operating properly.

- If a leak should occur after applying pressure to the reel, immediately discontinue supply line pressure.

WARNING! Prevent static sparking. When working around flammables, ensure that the hose reel, hose and equipment are properly grounded. Use only grounded hose(s). Check continuity of ground circuit with ohmmeter.

MOUNT REEL/FASTEN CRANK-HANDLE

1. To mount reel to a solid structure you will need 7/16” M12 bolts, washers and nuts. Masonry bolts may be used depending on mounting application. Mounting hardware is NOT provided. Mounting patterns will vary depending on model.

NOTE: If you choose to permanently mount series CM, you will need four 1/4” screws or nails.

2. Fit mounting hardware to ceiling/wall/floor so reel can be fastened into position. Fit reel and tighten all hardware securely.

3. Reels are supplied with plastic crank handle uninstalled. Remove handle and hardware from plastic bag and install onto crank arm. Models 1275 and 600-900 will include detachable crank for bevel gear design.

4. The series DM portable reels will include a U-shaped handle. Position handle over swaged posts and fasten using hardware provided.

INSTALLATION OF INLET HOSE

1. Apply thread sealant to inlet house and connect to the swivel joint on reel.

CAUTION! It is important to use a “flexible” inlet hose. Do not use solid piping or restrain inlet hose as to cause any side force on swivel joint. The warranty is void if not properly installed.

2. Flush some product through the system before connecting inlet hose to the source. Connect end to supply source.

INSTALLATION OF OUTLET HOSE

NOTE: Before proceeding, ensure that you are installing the proper size, length and type of hose that the reel is rated for. Consult factory if unsure of rating.

1. Securely install hose reel prior to installing outlet hose. Apply thread sealant to male hose fitting and insert into the drum opening.
NOTE: It is recommended that a swivel type connector be used to ease installation of outlet hose.

2. Thread male hose fitting into outlet riser(s). Refer to figure 1.0 Challenger series 112, 117, CM, DM and SM, outlet will be inside drum area.

NOTE: Outlet riser is removable on 1195 series.

3. Using a wrench, firmly hold on to riser fitting while tightening hose connector.

4. On Series 112, 117, CM, DM, SM the reel includes a hose clamp. Fasten hose securely to reel with hose clamp provided.

NOTE: The hose clamp restrains the hoses when fully extended, preventing strain on the fitting.

FULLY EXTEND AND CHARGE HOSE BEFORE INITIALLY WINDING ON TO REEL. THIS PREVENTS FLATTENING OF HOSE AND EXCESSIVE PRESSURE ON DRUM WHEN HOSE IS FULLY CHARGED DURING OPERATION.

5. Wind hose on to reel. Hold onto crank handle and turn the operator should hand guide the hose on to reel to achieve maximum capacity.

6. Flush fluid through system. Inspect hose, connections and swivel for leaks.

INSTALLATION OF CABLE (1125WC SERIES)

NOTE: Before proceeding, ensure that you are installing the proper size, length and type of cable that the reel is rated for. Refer to label to determine amperage rating.

Ensure that the cable connector is securely crimped, soldered or clamped to cable.

1. Place connector over stud and install brass nut (supplied).

2. Using a wrench, firmly hold onto the nut under the connector while tightening the outer nut.

3. Connect the supply line in the same manner.

OPERATIONAL CHECKLIST

- Check for correct operation by pulling out some of the hose/cable. A slight friction or drag should be noticed. This drag is to prevent backlash when pulling out hose/cable.

- Adjust drag brake. Turn clockwise to add tension and counter-clockwise to decrease tension.

SWIVEL SEAL REPLACEMENT

1. Remove inlet hose from swivel.

2. Remove swivel from reel by unscrewing swivel from shaft. Disconnect hose from swivel.

3. Remove retaining ring on swivel; pull out shaft from body.

4. Replace toe seals, lubricate and reassemble swivel.

5. Fit hose to swivel then fit swivel to reel. Do not over-tighten.

6. Reconnect inlet hose and test for leakage.

NOTE: Swivels designs vary depending on the reel model. Refer to repair procedure shipped with individual seal replacement kits or consult factory.

Release line pressure prior to making any repairs or adjustments to the reel.

SLIP RING BRUSH REPLACEMENT (1125WC SERIES)

1. Remove cable completely from drum of reel.

2. Remove access panel on drum by removing four screws.

3. Remove brush retaining nut to access worn brushes.

4. Replace with new copper brushes.

5. Reverse above procedure to reassemble reel.
### TROUBLESHOOTING CHART

<table>
<thead>
<tr>
<th>SYMPTOM</th>
<th>POSSIBLE CAUSE(S)</th>
<th>CORRECTIVE ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hose/Cable wil not fully fit on to drum of reel</td>
<td>1. Hose/Cable is longer than specified.</td>
<td>1. Cut down hose/cable to meet reels specified capacity.</td>
</tr>
<tr>
<td></td>
<td>2. Outside diameter of hose is larger than specifications</td>
<td>2. Replace hose with a hose that meets the specified maximum outside diameter requirements.</td>
</tr>
<tr>
<td></td>
<td>3. Hose/cable was not hand guided onto reel and wound up unevenly on drum.</td>
<td>3. Hand guide hose/cable on to drum as it is wound on to the reel.</td>
</tr>
<tr>
<td>Reel keeps turning when operator stops pulling out hose/cable.</td>
<td>1. Tension drag brake is too loose causing hose/cable backlash.</td>
<td>1. Adjust tension drag brake by turning fastener clockwise.</td>
</tr>
<tr>
<td>No electrical current at output end of cable. (1125WC Series only)</td>
<td>1. Cable is severed.</td>
<td>1. Replace cable.</td>
</tr>
<tr>
<td></td>
<td>2. Slip ring brushes are worn</td>
<td>2. Replace slip ring brushes. Note: Ensure current does not exceed rated amperage.</td>
</tr>
<tr>
<td>Drum of reel is crushed or damaged</td>
<td>1. Hose was not charged when initially installed on to reel.</td>
<td>1. Replace damaged drum. Contact factory install hose per instructions.</td>
</tr>
<tr>
<td>Fluid path (plumbing and/or swivel) is leaking or damaged</td>
<td>1. Maximum pressure rating for reel has been exceeded.</td>
<td>1. Replace or repair damaged components. Consult factory. Check maximum pressure rating or reel.</td>
</tr>
<tr>
<td></td>
<td>2. Application is not compatible with plumbing and/or swivel seal materials</td>
<td>2. Contact factory to determine chemical compatibility or environmental issues (i.e. temperature rating)</td>
</tr>
<tr>
<td>Fluid leaks from swivel</td>
<td>1. Swivel seals are damaged or worn</td>
<td>1. Replace swivel seals. See “Swivel seal replacement”. Caution: Be sure leak is not at hose fitting.</td>
</tr>
</tbody>
</table>
INLET CONDITION CHECKLIST

Inadequate inlet conditions can cause serious malfunctions in the best designed pump. Surprisingly, the simplest of things can cause the most severe problems or go unnoticed to the unfamiliar or untrained eye. REVIEW THIS CHECKLIST BEFORE OPERATION OF ANY SYSTEM. Remember, no two systems are alike so there can be no ONE best way to setup a system. All factors must be carefully considered.

INLET SUPPLY should exceed the maximum flow being delivered by the pump to assure proper performance.
- Open inlet shut-off valve and turn on water supply to avoid starving the pump. DO NOT RUN PUMP DRY.
- Avoid closed loop systems especially with high temperature, ultra-high pressure or large flows. Conditions vary with regulating/unloader valve.
- When using an inlet supply reservoir, size it to provide adequate liquid to accommodate the maximum output of the pump, generally a minimum of 6-10 times the gPM (however, a combination of system factors can change this requirement).

INLET LINE SIZE should be adequate to avoid starving the pump
- Line size must be a minimum of one size larger than the pump inlet fitting. Avoid tees, 90-degree elbows or valves in the inlet line of the pump to reduce the risk of flow restriction and cavitations.
- The line MUST be a FLEXIBLE hose, NOT a rigid pipe, and reinforced on SUCTION systems to avoid collapsing.
- The simpler the inlet plumbing the less the potential for problems. Keep the length to a minimum, the number of elbows and joints to a minimum (ideally no elbows) and the inlet accessories to a minimum.
- Use pipe sealant to assure airtight, positive sealing pipe joints.

INLET PRESSURE should fall within the specifications of the pump.
- High RPM, high temperatures, low vapor pressures or high viscosity may increase acceleration loss of liquids.
- Optimum pump performance is obtained with +20 PSI (1.4 BAR) inlet pressure. With adequate inlet plumbing, most pumps will perform with flooded suction.
- After prolonged storage, pump should be purged of air to facilitate priming. Disconnect the discharge port to allow liquid to pass through pump and measure flow.

USING CHEMICALS

Chemicals can be mixed into the fluid and it is necessary to understand whether these chemicals will damage the pump or other system components. Another way to put chemicals into the fluid is with a downstream injector.

An injector works as a result of the difference of pressure between the inlet side of injector and discharge side. In most cases, the pressure on the discharge side cannot exceed 1/2 of the inlet pressure. For example, 1000 PSI into an injector should allow up to 500-600 PSI spray pressure on discharge side. There are dual-function nozzles that permit high pressure, chemical free rinse and low pressure, chemical spray. These are convenient for the operator and will not harm a properly designed system.

The advantages of an injector are:
Fewer items touching chemical, the chemical injection rate can be controlled, and applying chemical at lower pressure increases chemical use efficiency.

HEATING FLUID

The pumps may sometimes be used with downstream heaters and precautions need to be taken to protect the system and persons from harm. Refer to the skilled staff at the equipment manufacturer for guidance and proper system care. Please be aware that heated water expands and additional pressure release safety devices may be required.

SYSTEM DESIGN

A pump is the heart of every system and proper selection is critical to equipment function and durability. If a pumping set with excess flow is chosen, then energy and fluid is wasted. If excess pressure results, then equipment effectiveness can decrease and so can pump life.

TYPICAL APPLICATIONS AND THEIR PERFORMANCE CONSIDERATIONS

PRESSURE CLEANING

The optimal combination of PSI and GPM for cleaning is a ratio of 1 GPM for every 300-400 PSI. This combination maintains sufficient droplet size for cleaning force and distance. If the flow is increased without an increase in pressure, the cleaning impact does not increase with the increased use of fluid. If pressure increases, and flow does not, then the water droplet size reduces and has less impact force, requiring closer cleaning distances and increased risk of surface damage.

LINE LOSS

When choosing a pump for spraying, pressure loss in the hose must be considered. The pressure is greatest at pump and decreases over the length of the hose. Typically, these systems utilize very long hoses, 200-300 ft. is common, and requires a certain minimum amount of performance to move the flow
through the lengths of hose. For example, a 3 GPM system will require (lose) 50 PSI per 50 ft. of 3/8” ID hose. A pump with only 60-70 PSI may not provide the desired performance at the end of the hose. See reference charts to assist in system design.

MAINTENANCE

DISASSEMBLY AND REASSEMBLY
INSTRUCTIONS (Refer to Schematic)

1. Remove pump from motor using a 3/16” hex wrench for Model 348U, and use 5/16” hex wrench for Model 20C832. Remove bolts at each end of pump. Turn pump over so manifold is facing upward. Place manifold to side as a reference for reassembly.

2. Holding each head, pull them apart to remove plunger. Remove retaining plate from pump head. Remove internal seal parts with finger. Discard parts, keeping the head and retainer plate.

3. Clean the head with a rag or towel inspect for damage or excess corrosion. If the head is damaged, do not rebuild. Note the order and orientation of repair parts prior to installation.

4. Place one O-ring support, u-cup and u-cup support ring into bore. Verify that u-cup support ring is flush with top of u-cup. Place guide O-ring around guide and lightly grease. Press guide with O-ring installed into bore. Place retainer O-ring into recessed area around top of bore.

5. Place vacuum seal O-ring around vacuum seal. Lightly grease O-ring and press into recess in retaining plate. Be careful to apply even pressure and eliminate bulges in O-ring.

6. Grease edge of retaining plate and slide into place. If large retainer O-ring dislodges, do not slide plate, but push O-ring back into place before sliding into place completely.

7. Repeat the previous steps 3-5 with the other head.

8. Lightly grease the plunger with provided grease in small clear...
tube. Slide plunger into one head assembly and then slide the other head onto plunger. Place head and plunger assembly on work surface with valves facing upward.

9. Adjust plunger slot position towards center and have slot facing work surface. Replace all valves, O-rings and white washers. Refer to image and manifold label to understand proper orientation.

10. Place manifold on top of plunger and head assembly. It may be necessary to move heads on plunger to have valves align with valve pockets on manifold. Be careful to not lose the white washers in the manifold during reassembly.

11. Turn assembly over and place shorter bolt and washer assembly into heads and tighten finger tight. DO NOT tighten completely at this time.

12. Install black grease from included packet into corners and center of plunger slot as shown.

13. Mount pump back onto motor and tighten mounting bolts to 14 ft•lbs. of torque. Tighten head bolts to 14 ft•lbs. of torque.

**LUBRICATION**
Apply 1.5 oz of suppliers black grease to the corners and center of plunger slot at the time of service.

**STORING**
For extended storing, or between use in cold climates, drain all pumped liquids from pump and flush with antifreeze solution to prevent freezing and damage to the pump. DO NOT RUN PUMP WITH FROZEN LIQUID.

**NOTE:** Each system’s maintenance cycle will be unique. If system performance decreases, check immediately. If no wear at 500 hours, check again at 1000 hours and each 500 hours until wear is observed. Valves typically require changing every seal change. Duty cycle, temperature, quality of pumped liquid and inlet feed conditions all effect the life of a pump’s wear parts and service cycle.

**NOTE:** Remember to service the regulator/uploader at each seal servicing and check all system accessories and connections before resuming operation.

**PREVENTIVE MAINTENANCE CHECKLIST**

<table>
<thead>
<tr>
<th>Check</th>
<th>daily</th>
<th>weekly</th>
<th>50 Hrs.</th>
<th>500 Hrs.</th>
<th>1500 Hrs.</th>
<th>3000 Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clean Filters</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water Leaks</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Descale Pump</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cam &amp; Bearing</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seal Change</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Valve Change</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Troubleshooting Chart

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Possible Cause(s)</th>
<th>Corrective Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>No water flow</td>
<td>1. Tank is empty or water is not turned on</td>
<td>1. Fill tank or turn on water supply</td>
</tr>
<tr>
<td></td>
<td>2. Filter clogged</td>
<td>2. Clean filter</td>
</tr>
<tr>
<td></td>
<td>3. Pump valves clogged or damaged</td>
<td>3. Examine valves and clean or replace</td>
</tr>
<tr>
<td></td>
<td>4. Pump has lost prime</td>
<td>4. Follow priming procedure</td>
</tr>
<tr>
<td>Low pressure</td>
<td>1. Worn nozzle</td>
<td>1. Replace nozzle with new one of same size</td>
</tr>
<tr>
<td></td>
<td>2. Leak in high pressure hose or connections</td>
<td>2. Check hose and connections</td>
</tr>
<tr>
<td></td>
<td>3. Filter clogged</td>
<td>3. Clean filter and unloader</td>
</tr>
<tr>
<td></td>
<td>4. Pump valves clogged or damaged</td>
<td>4. Examine valves and clean or replace</td>
</tr>
<tr>
<td>Pump pulsates when spraying</td>
<td>1. Filter clogged</td>
<td>1. Clean filter</td>
</tr>
<tr>
<td></td>
<td>2. Pump valves clogged or damaged</td>
<td>2. Examine valves and clean or replace</td>
</tr>
<tr>
<td>Motor does not operate</td>
<td>1. Blown fuse or circuit breaker</td>
<td>1. Replace circuit breaker or fuse. Check circuit for wire damage or component damage</td>
</tr>
<tr>
<td>Leaks seen under pump</td>
<td>1. Worn pump seals</td>
<td>1. Replace with new plunger and seals</td>
</tr>
<tr>
<td></td>
<td>2. Abrasives in solution have damaged pump seals</td>
<td>2. Mix chemical thoroughly and improve filter</td>
</tr>
<tr>
<td>Regulator leaks fluid from cap</td>
<td>1. Pressure is set too low</td>
<td>1. Set pressure higher to keep internals from moving too much</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Replace seal</td>
</tr>
</tbody>
</table>

**For Repair Parts, call 763-433-0303**

Please provide following information:
- Model number
- Serial number (if any)
- Part description and number as shown in parts list
LAWN AND PEST ELECTRIC SPRAY UNIT, 50 GALLON, MANUAL REEL PN 80880
<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>PART NO</th>
<th>QTY</th>
<th>DESCRIPTION</th>
<th>PART NO</th>
<th>QTY</th>
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</thead>
<tbody>
<tr>
<td>1 Sprayer Base, 5” Height, White W/50 Gallon Tank &amp; Battery</td>
<td>40133</td>
<td>1</td>
<td>Grommet, 2- ½” Groove Diameter, 1/16” Groove Width</td>
<td>C9010-0011</td>
<td>1</td>
</tr>
<tr>
<td>2 Hose Reel, 17.5”, ½ NPT, Manual, W/Viton, White</td>
<td>30438</td>
<td>1</td>
<td>Hose Barb, ¾’ Male, ¾ Barb, Poly, Black</td>
<td>30424</td>
<td>1</td>
</tr>
<tr>
<td>3 350U-190/M130-8, Sub-Assembly for Sprayer Assembly</td>
<td>80835</td>
<td>1</td>
<td>Agitator Horizon</td>
<td>HA-HM</td>
<td>1</td>
</tr>
<tr>
<td>4 Hose, 600 PSI, 300’, 3/8” ID, PVC</td>
<td>30421</td>
<td>1</td>
<td>Clamp, Oetiker 30.1, for 3/4” Ag Hose, 1.062-1.187”</td>
<td>30510</td>
<td>6</td>
</tr>
<tr>
<td>5 Tank, 50 Gallon, PCO</td>
<td>55029</td>
<td>1</td>
<td>Clamp, Oetiker 30.1, for 3/4” Ag Hose, .937-1.062”</td>
<td>30509</td>
<td>2</td>
</tr>
<tr>
<td>6 Strainer Basket for 50 Gallon PCO Tank</td>
<td>30484</td>
<td>1</td>
<td>Washer, Flat, 1/4”, Stainless Steel</td>
<td>WSH-FLAT-1/4-SS</td>
<td>8</td>
</tr>
<tr>
<td>7 Battery Box (16” X 9” X 10 ½”)</td>
<td>BATBOX-27</td>
<td>1</td>
<td>Washer, Flat, 3/8”, Stainless Steel</td>
<td>WSH-FLAT-3/8-SS</td>
<td>8</td>
</tr>
<tr>
<td>8 Switch, Push/Pull, SPST, 75A@12V, 10-32 Screw, 15/32</td>
<td>PPS-75A-SCR</td>
<td>1</td>
<td>Washer, Flat, 5/16”, Stainless Steel</td>
<td>WSH-FLAT-5/16-SS</td>
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<tr>
<td>9 Circuit Breaker, Panel, 40A, 10-32 Terminals</td>
<td>CBPM-MR40</td>
<td>1</td>
<td>Washer, Flat, #10, Stainless Steel</td>
<td>WSH-FLAT-10-SS</td>
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</tr>
<tr>
<td>10 Battery Selector Switch, Orange, 230 A</td>
<td>30417</td>
<td>1</td>
<td>Washer, Flat, M6, Stainless Steel</td>
<td>WSH-FLAT-M6-SS</td>
<td>3</td>
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<tr>
<td>11 Hose Barb, ½ Male, ½ Barb, Brass</td>
<td>HB-1/2M X1/2B-B</td>
<td>1</td>
<td>Bolt, ¾-20 X ¾”, Hex Head, Stainless Steel</td>
<td>BOLT-3/8-16 X ¾-HEX-SS</td>
<td>4</td>
</tr>
<tr>
<td>12 Hose, 300 PSI, Bulk, ½ ID, Black, EPDM, AG</td>
<td>30041</td>
<td>36”</td>
<td>Bolt, ¾-20 X 1 ½”, Hex Head, Stainless Steel</td>
<td>BOLT-1/4-20 X1 ½-HEX-SS</td>
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<tr>
<td>13 Sprayer Battery Charger Assembly, 15A, Schumacher, Non</td>
<td>80913</td>
<td>1</td>
<td>Nut, 3/8” – 16, KEPS, Zinc Plated</td>
<td>30471</td>
<td>4</td>
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<tr>
<td>14 Bulkhead Fitting, ¾ Female, Poly, Black</td>
<td>BHF-¾ F-P</td>
<td>2</td>
<td>Nut, ⅛-20, NYLOC, Zinc Plated</td>
<td>NUT-1/8-20-NYLOC-ZP</td>
<td>4</td>
</tr>
<tr>
<td>15 Elbow, ½ Male x ¾ Female, Black, Poly SCH 80</td>
<td>30419</td>
<td>2</td>
<td>Nut, 5/16-18, NYLOC, Zinc Plated</td>
<td>NUT-5/16-18-NYLOC-ZP</td>
<td>4</td>
</tr>
<tr>
<td>16 Hose Barb, ½ Male, ¾ Barb, Poly, Black</td>
<td>30017</td>
<td>5</td>
<td>Bolt, 10-32 X ⅝”, Pan Head, Stainless Steel</td>
<td>30116</td>
<td>2</td>
</tr>
<tr>
<td>17 Nipple, ¾, Hex, Poly, Black</td>
<td>NIP-3/4-P</td>
<td>1</td>
<td>Bolt, 10-32 X 4”, Pan Head, Stainless Steel</td>
<td>30449</td>
<td>1</td>
</tr>
<tr>
<td>18 TEE, 3/4FFF, Poly, Black, SCH 80</td>
<td>30018</td>
<td>3</td>
<td>Nut, 10-32, NYLOC, Zinc Plated</td>
<td>NUT-10-32-NYLOC-ZP</td>
<td>3</td>
</tr>
<tr>
<td>19 Ball Valve, 3/4 M x 3/4F, SMC, Standard Blue Handle</td>
<td>30420</td>
<td>1</td>
<td>Clamp, Oetiker 22.6, for ¾” Ag Hose, .781-.890”</td>
<td>30508</td>
<td>2</td>
</tr>
<tr>
<td>20 J-Bolt, 5/16-18 x 2” Thread, OAL 3”, Zinc Plated</td>
<td>30493</td>
<td>4</td>
<td>Clamp, Loom Stainless Steel Cushioned 1”</td>
<td>CLAMP-LC-1</td>
<td>1</td>
</tr>
<tr>
<td>21 Hose, 200 PSI, Bulk, ¾ ID, Black, EPDM, AG</td>
<td>30563</td>
<td>30”</td>
<td>Clamp, Loom Stainless Steel Cushioned 1”</td>
<td>CLAMP-LC-1</td>
<td>1</td>
</tr>
<tr>
<td>22 Hose, 70 PSI, Bulk, ¾ ID, Clear, PVC, Poly Spring</td>
<td>SHOSE-3/4PS</td>
<td>21”</td>
<td>Clamp, Oetiker 18.5, for 3/8” Pulse Hose, .625-.734”</td>
<td>30274</td>
<td>1</td>
</tr>
<tr>
<td>23 Hose, 200 PSI, Bulk, ¾ ID, Black, EPDM, AG</td>
<td>30563</td>
<td>48”</td>
<td>QC, Socket, 3/8 Hose Barb, Foster, With Check Valve</td>
<td>30447</td>
<td>1</td>
</tr>
<tr>
<td>24 Hose, 200 PSI, Bulk, ¾ ID, Black, EPDM, AG</td>
<td>30563</td>
<td>24”</td>
<td>QC, Plug, Swivel, ½” Male, Foster</td>
<td>30445</td>
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<tr>
<td>25 Grommet, 2- ½” Groove Diameter, 1/8” Groove Width</td>
<td>30504</td>
<td>1</td>
<td>Hose Barb, ½” Male, 3/8” Barb, Brass</td>
<td>HB-1/2M X 3/8 B-B</td>
<td>1</td>
</tr>
</tbody>
</table>
LAWN AND PEST ELECTRIC SPRAY UNIT, 50 GALLON, ELECTRIC REEL PN 80881
### LAWN AND PEST ELECTRIC SPRAY UNIT, 50 GALLON, ELECTRIC REEL PN 80881

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>PARTS NO</th>
<th>QTY</th>
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<th>PARTS NO</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sprayer Base, 5&quot; Height, White w/50 Gal Tank and Bat, HOLDER</td>
<td></td>
<td>1</td>
<td>Hose Barb, ½’ Male, ¾” Barb, Poly, Black</td>
<td>30424</td>
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<tr>
<td>Hose Reel, 17.5”, ½ NPT, 12 VDC RHM, W/Viton Seal, White</td>
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<td>Agitator Horizon</td>
<td>HA-HM</td>
<td>1</td>
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<tr>
<td>350U-190/M130-8, Sub-Assembly for Sprayer Assembly</td>
<td>80835</td>
<td>1</td>
<td>Clamp, Oetiker 30.1, for 3/4” Ag Hose, 1.062-1.187”</td>
<td>30510</td>
<td>6</td>
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<tr>
<td>Hose, 600 PSI, 300’, 3/8” ID, PVC</td>
<td>30421</td>
<td>1</td>
<td>Clamp, Oetiker 30.1, for 3/4” Ag Hose, .937-1.062”</td>
<td>30509</td>
<td>2</td>
</tr>
<tr>
<td>Tank, 50 Gallon, PCO</td>
<td>55029</td>
<td>1</td>
<td>Washer, Flat, 1/4”, Stainless Steel</td>
<td>WSH-FLAT-1/4-SS</td>
<td>8</td>
</tr>
<tr>
<td>Strainer Basket for 50 Gallon PCO Tank</td>
<td>30484</td>
<td>1</td>
<td>Washer, Flat, 3/8”, Stainless Steel</td>
<td>WSH-FLAT-3/8-SS</td>
<td>8</td>
</tr>
<tr>
<td>Battery Box (16” X 9” X 10 ¼”)</td>
<td>BATBOX-27</td>
<td>1</td>
<td>Washer, Flat, 5/16”, Stainless Steel</td>
<td>WSH-FLAT-5/16-SS</td>
<td>4</td>
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<tr>
<td>Switch, Push/Pull, SPST, 75A@12V, 10-32 Screw, 15/32</td>
<td>PPS-75A-SCR</td>
<td>1</td>
<td>Washer, Flat, #10, Stainless Steel</td>
<td>WSH-FLAT-10-SS</td>
<td>3</td>
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<tr>
<td>Circuit Breaker, Panel, 40A, 10-32 Terminals</td>
<td>CBPM-MR40</td>
<td>1</td>
<td>Washer, Flat, M6, Stainless Steel</td>
<td>WSH-FLAT-M6-SS</td>
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<tr>
<td>Battery Selector Switch, Orange, 230 A</td>
<td>30417</td>
<td>1</td>
<td>Bolt, ¼-20 X ¾”, Hex Head, Stainless Steel</td>
<td>BOLT-3/8-16 X ¾-HEX-SS</td>
<td>4</td>
</tr>
<tr>
<td>Hose Barb, ½ Male, ½ Barb, Brass</td>
<td>HB-1/2M X1/28-B</td>
<td>1</td>
<td>Bolt, ¼-20 X 1 ¾”, Hex Head, Stainless Steel</td>
<td>BOLT-1/4-20 X 1 ¾-HEX-SS</td>
<td>4</td>
</tr>
<tr>
<td>Hose, 300 PSI, Bulk, ½ ID, Black, EPDM, AG</td>
<td>30041</td>
<td>36”</td>
<td>Nut, 3/8” – 16, KEPS, Zinc Plated</td>
<td>30471</td>
<td>4</td>
</tr>
<tr>
<td>Sprayer Battery Charger Assembly, 15A, Schumacher, Non</td>
<td>80913</td>
<td>1</td>
<td>Nut, ½-20, NYLOC, Zinc Plated</td>
<td>NUT-1/4-20-NYLOC-ZP</td>
<td>4</td>
</tr>
<tr>
<td>Bulkhead Fitting, ½ Female, Poly, Black</td>
<td>BHF-3/4F-P</td>
<td>2</td>
<td>Nut, 5/16-18, NYLOC, Zinc Plated</td>
<td>NUT-5/16-18-NYLOC-ZP</td>
<td>4</td>
</tr>
<tr>
<td>Elbow, ¼ Male x ¼ Female, Black, Poly SCH 80</td>
<td>30419</td>
<td>2</td>
<td>Bolt, 10-32 X ½”, Pan Head, Stainless Steel</td>
<td>30116</td>
<td>2</td>
</tr>
<tr>
<td>Hose Barb, ½ Male, ½ Barb, Poly, Black</td>
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<td>5</td>
<td>Bolt, 10-32 X 4”, Pan Head, Stainless Steel</td>
<td>30449</td>
<td>1</td>
</tr>
<tr>
<td>Nipple, ¾, Hex, Poly, Black</td>
<td>NIP-3/4-P</td>
<td>1</td>
<td>Nut, 10-32, NYLOC, Zinc Plated</td>
<td>NUT-10-32-NYLOC-ZP</td>
<td>3</td>
</tr>
<tr>
<td>TEE, 3/4FFFF, Poly, Black, SCH 80</td>
<td>30018</td>
<td>1</td>
<td>Clamp, Oetiker 22.6, for ½” Ag Hose, .781-8.90”</td>
<td>30508</td>
<td>2</td>
</tr>
<tr>
<td>Ball Valve, 3/4 M x 3/4F, SMC, Standard Blue Handle</td>
<td>30420</td>
<td>1</td>
<td>Clamp, Loom Stainless Steel Cushioned 1”</td>
<td>CLAMP-LC-1</td>
<td>1</td>
</tr>
<tr>
<td>J-Bolt, 5/16-18 x 2” Thread, OAL 3”, Zinc Plated</td>
<td>30493</td>
<td>4</td>
<td>Screw, #10-16 X ¾”, Hex Head, Self Drill and Tap, SS</td>
<td>30497</td>
<td>1</td>
</tr>
<tr>
<td>Hose, 200 PSI, Bulk, ½ ID, Black, EPDM, AG</td>
<td>30563</td>
<td>30”</td>
<td>Clamp, Oetiker 18.5, for 3/8” Pulse Hose, .625-.734”</td>
<td>30274</td>
<td>2</td>
</tr>
<tr>
<td>Hose, 70 PSI, Bulk, ½ ID, Clear, PVC, Poly Spring</td>
<td>SHOSE-3/4PS</td>
<td>21”</td>
<td>QC, Socket, 3/8 Hose Barb, Foster, With Check Valve</td>
<td>30447</td>
<td>1</td>
</tr>
<tr>
<td>Hose, 200 PSI, Bulk, ½ ID, Black, EPDM, AG</td>
<td>30563</td>
<td>48”</td>
<td>QC, Plug, Swivel, ½” Male, Foster</td>
<td>30445</td>
<td>1</td>
</tr>
<tr>
<td>Hose, 200 PSI, Bulk, ½ ID, Black, EPDM, AG</td>
<td>30563</td>
<td>24”</td>
<td>Hose Barb, ½” Male, 3/8” Barb, Brass</td>
<td>HB-1/2M X 3/8 B-B</td>
<td>1</td>
</tr>
<tr>
<td>Grommet, 2- ¾” Groove Diameter, 1/8” Groove Width</td>
<td>30504</td>
<td>1</td>
<td>Switch, Pushbutton, Momentary On, 50A @ 12V DC</td>
<td>30402</td>
<td>1</td>
</tr>
<tr>
<td>Grommet, 2- ¾” Groove Diameter, 1/16” Groove Width</td>
<td>C9010-0011</td>
<td>1</td>
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## SUB-ASSEMBLY FOR SPRAYER ASSEMBLY 350U-190/M130-8, PN 80880

<table>
<thead>
<tr>
<th>Description</th>
<th>Part No</th>
<th>QTY</th>
<th>Description</th>
<th>Part No</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 350U-190/M130-8, 12V, Viton, M-Valve, 4-3/8” Ports, Gold</td>
<td>80866</td>
<td>1</td>
<td>Nipple, ¼”, Hex, Poly, Black</td>
<td>NIP-3/4-P</td>
<td>1</td>
</tr>
<tr>
<td>2 Regulator 9025, 145 PSI, Nylon, Black</td>
<td>70095</td>
<td>1</td>
<td>TEE, ¾” FFF, Poly, Black, SCH 80</td>
<td>30018</td>
<td>1</td>
</tr>
<tr>
<td>3 Plug, ½” Male, Hex, Poly</td>
<td>PLUG-1/2 HEX-P</td>
<td>1</td>
<td>Ball Valve, ¾” Male X ¾” Female, Standard Blue Handle</td>
<td>30420</td>
<td>1</td>
</tr>
<tr>
<td>4 Pressure Gauge, 0-300 PSI, Panel Mount</td>
<td>LFG-PM-300</td>
<td>1</td>
<td>Hose Barb, ¾” Male, ¾” Barb, Poly, Brass</td>
<td>30017</td>
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<tr>
<td>5 Hose Barb Elbow, 3/8” Male, ½” Barb, Brass</td>
<td>HBEL-3/8M X 1/2B-B</td>
<td>1</td>
<td>Hose Barb, ¾” Male, ¾” Barb, Poly, Black</td>
<td>HB-3/4M X 1/2B-P</td>
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<tr>
<td>6 Clamp, Oetiker 22.6, for ¼” Ag Hose, .781-.890”</td>
<td>30508</td>
<td>2</td>
<td>Hose, 100 PSI, Bulk, ½” ID, Clear, PVC, Poly Spring</td>
<td>SHOSE-1/2PS</td>
<td>10”</td>
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<tr>
<td>7 Hose Barb, ½” Male, ½” Barb, Poly, Black</td>
<td>30424</td>
<td>1</td>
<td>Hose, 100 PSI, Bulk, ½” ID, Clear, PVC, Poly Spring</td>
<td>SHOSE-1/2PS</td>
<td>17”</td>
</tr>
<tr>
<td>8 Ball Valve, ¾” Male X ½” Female</td>
<td>PKVV-1/2M X F</td>
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<td>Hose, 300 PSI, Bulk, ½” ID, Black, EPDM, Ag</td>
<td>30041</td>
<td>18”</td>
</tr>
<tr>
<td>9 Hose Barb Elbow, ½” Male, ½” Barb, Poly, Black</td>
<td>HBEL-1/2M X 1/2B-P</td>
<td>2</td>
<td>Hose, 100 PSI, Bulk, ½” ID, Clear, PVC, Poly Spring</td>
<td>SHOSE-1/2PS</td>
<td>6”</td>
</tr>
<tr>
<td>10 Hose Barb Elbow, 3/8” Male, ½” Barb, Brass</td>
<td>HBEL-3/8M X 1/2B-B</td>
<td>2</td>
<td>Washer, Flat, M6, Stainless Steel</td>
<td>WSH-FLAT-M6-SS</td>
<td>4</td>
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<tr>
<td>11 Elbow, 3/8” Male X 3/8” Female, Brass, Close Street</td>
<td>EL-3/8M X 3/8F CLOSE</td>
<td>2</td>
<td>Bolt, ¼”-20 X 2 ½”, SHCS, Stainless Steel</td>
<td>BOLT-1/4-20 X 2 ½-SHCS-SS</td>
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</tr>
<tr>
<td>13 Line Strainer, ¾” Female, EPDM, 50 Mesh, Clear Bowl</td>
<td>30418</td>
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</tbody>
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**Pumptec Operating Instructions and Parts Manual**

**12V ELECTRIC SPRAYER**

**Version 110112**
### 350U-190/M30, 12V, VITON, M-VLAVE, 4-3/8” PORT, BD GOLD PN 80866

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>PART NO</th>
<th>QTY</th>
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<tbody>
<tr>
<td>1 MOTOR, 1/4 HP, 12V, 30A, 42 FRAME</td>
<td>M130</td>
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<tr>
<td>2 350U PUMP, VITON, M-VLAVE, 4-3/8” PORTS, GOLD</td>
<td>60074</td>
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<tr>
<td>3 KIT-C, .190 CAM</td>
<td>0100-6205-0190</td>
<td>1</td>
</tr>
<tr>
<td>4 WASHER, FLAT, M6, STAINLESS STEEL</td>
<td>WSH-FLAT-M6-SS</td>
<td>4</td>
</tr>
<tr>
<td>5 BOLT, 1/4-20 X 2-1/2, SHCS, STAINLESS STEEL</td>
<td>BOLT-1/4-20 X 2 1/2-SHCS-SS</td>
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### REGULATOR, 9025, 145 PSI, NYLON, BLACK PN 70095

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
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</thead>
<tbody>
<tr>
<td>1 REGULATOR BODY, 9025, 5-1/2” PORT, NYLON</td>
<td>40128</td>
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<tr>
<td>2 X-SEAL</td>
<td>30513</td>
<td>1</td>
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<tr>
<td>3 PLUNGER, BRASS</td>
<td>40078</td>
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<tr>
<td>4 THRUST PLATE BRASS</td>
<td>THRUST-PLATE-MV500-B</td>
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<tr>
<td>5 SPRING, LOWER PRESSURE SPRING AVAILABLE</td>
<td>SPRING-MV500-350-RD</td>
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<tr>
<td>6 CAP, NYLON</td>
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**REPAIR PARTS ILLUSTRATION FOR PLUNGER PUMP 348U**

<table>
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<tr>
<th>DESCRIPTION</th>
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<th>DESCRIPTION</th>
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<td><strong>KIT A</strong></td>
<td>10013</td>
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<td><strong>KIT B</strong></td>
<td>10004</td>
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<td>Plunger</td>
<td>▲</td>
<td>1</td>
<td>Valve</td>
<td>▲</td>
<td>4</td>
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<tr>
<td>O-Ring, 1-117</td>
<td>▲</td>
<td>2</td>
<td>White Washer, 1/2” ID</td>
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<tr>
<td>Seal Ring</td>
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<td>O-Ring, 1-116</td>
<td>▲</td>
<td>4</td>
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<tr>
<td>O-Ring, 1-124</td>
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<td>2</td>
<td>Retainer Plate</td>
<td>*</td>
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<tr>
<td>Plunger Guide</td>
<td>▲</td>
<td>2</td>
<td>Head</td>
<td>*</td>
<td>2</td>
</tr>
<tr>
<td>Support Ring</td>
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<td>2</td>
<td>Manifold</td>
<td>*</td>
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<tr>
<td>U-Cup</td>
<td>▲</td>
<td>2</td>
<td></td>
<td></td>
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<tr>
<td>O-Ring, 1-024</td>
<td>▲</td>
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</tr>
</tbody>
</table>

▲ Sold only as part of a kit. | (*) Not part of a kit, for identification only.
LAWN & PEST, ELECTRIC SPRAY UNIT, MANUAL REEL, PN: 80880/80882
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Manufactured by Pumptec, Inc. 700 McKinley St. NW, Anoka, Minnesota 55303 U.S.A. 763-433-0303