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PumpBiz, Inc
800-PumpBiz (786-7249)
www.PumpBiz.com

Please read and save these instructions. Read carefully before attempting to assemble, install, operate or maintain the product described. Protect yourself and others by observing all safety information. Failure to comply with instructions could result in personal injury and/or property damage in which Pumptec, Inc. will not assume any liability for! Retain instructions for future reference.

PERFORMANCE FEATURES

- Long Life
- High-Pressure
- High-Efficiency
- Serviceability
- Durability
- Application Flexibility
- Chemical Compatibility
- Compact Design
- Enhanced Priming

PRESSURE WASHER



PN 80729



PN 80390

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 356U – Simple, Single Plunger Pump

MAX PRESSURE **TO 1200 PSI**
OPEN FLOW **TO 3.7 GPM**
SEALS **U-CUP**
O-RINGS **BUNA**
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 person 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.

Pumpteck, 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.

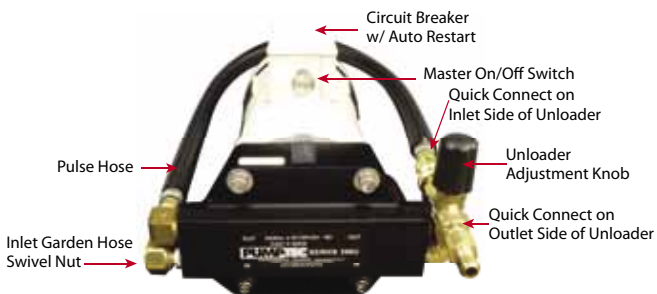
Once the fluid has exited the pump it must be controlled until it exits the nozzle or reaches the place it needs to go. This control is achieved via the use of system components such as an unloader or regulating valve. The pumps are

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



PN 80390

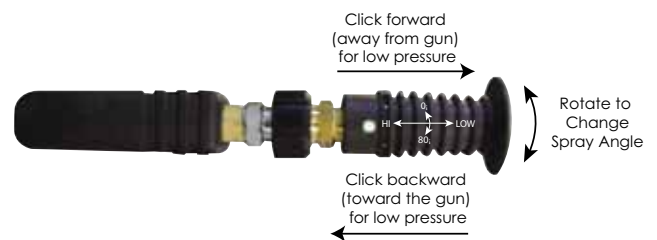


No on/off switch or circuit breaker provided

PN 80729

1. Check water supply. Is there water in tank? Is the garden hose "on" ?
2. Check for leaks.
3. Check Line Strainer, Clean?

4. Disconnect coupler on inlet side of unloader, direct hose back to tank or onto ground away from motor
Start pump and allow air to purge from system (5 -15 seconds)
Stop pump and reconnect bypass hose to inlet side of unloader
5. Connect discharge hose to outlet side of unloader
Connect spray gun assembly to other end of hose assembly
6. If you have a variable nozzle, adjust nozzle to low pressure mode . (click to forward position)



7. If you have separate nozzles with quick connects remove nozzle from spray gun
8. Unscrew knob on unloader 4-6 turns to adjust to low pressure setting
9. Hold trigger open on spray gun and start pump
Allow all air in system to purge
Stop pump
Adjust variable nozzle to high pressure (pull nozzle back toward gun)
-OR-
Install quick connect high pressure nozzle
10. Restart Motor and squeeze spray gun trigger and adjust spray angle to appropriate position.
Gradually increase pressure by adjusting unloader knob
Adjust pressure to suitable pressure for the specific cleaning task.

NOTE: Higher pressure requires more amperage. Do not unnecessarily overload the system. This could result in the premature failure of the motor and void your warranty.

CONNECT TO ELECTRICAL SUPPLY

NOTE: 12 Volt pumping systems are unique in that "problems" are most likely to be electrical. If the pump motor is running and no water is coming out of the pump - you have a pump

systems problem. Almost every other problem will be related to electrical issues.

The most common electrical problems are poor connections. Among those: Corroded battery terminals, corroded ground wire, corroded wire connector, inadequate wire size for load and damaged wire.

Our 12 volt motors with switches have circuit breakers built into the switch box.

CAUTION!

CIRCUIT BREAKERS WILL AUTOMATICALLY RESET. THE MOTOR WILL RESTART AUTOMATICALLY.
DIAGRAM A: NOT GROUNDED TO FRAME

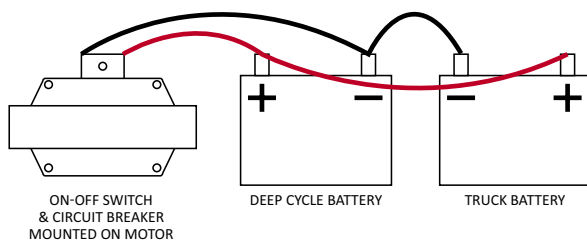


DIAGRAM B: GROUNDED TO FRAME

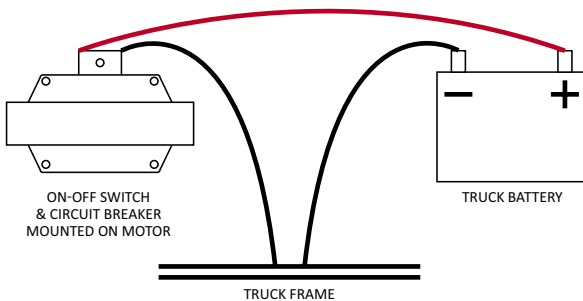
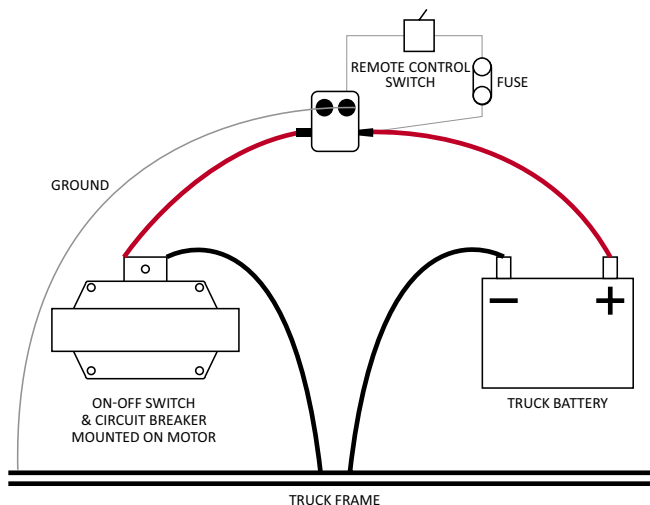


DIAGRAM C: REMOTE SWITCH



IMPORTANT: *Warranty void if you connect electrical wires backwards. Red is positive (+). Black is negative (-). Retrace electrical wires to battery to be absolutely certain (+) terminal on battery goes to red motor wire. Black wire on motor goes directly to (-) terminal on battery or truck frame.*

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. Remove bolts at each end of pump. Turn pump over so manifold is facing upward. Place manifold to side as a reference for reassembly.



Figure 1

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.



Figure 2

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.



Figure 3

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.



Figure 4

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.

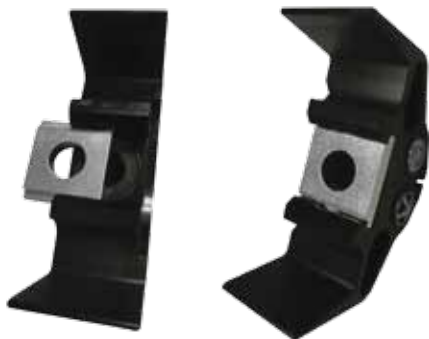


Figure 5

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.



Figure 6

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.



Figure 7

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



Figure 8

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



Figure 9

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

Check	daily	weekly	50 Hrs.	500 Hrs.	1500 Hrs.	3000 Hrs.
Clean Filters	X					
Water Leaks	X					
Descale Pump		X	X			
Cam & Bearing				X	X	
Seal Change				X	X	
Valve Change				X		X

TROUBLESHOOTING CHART

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



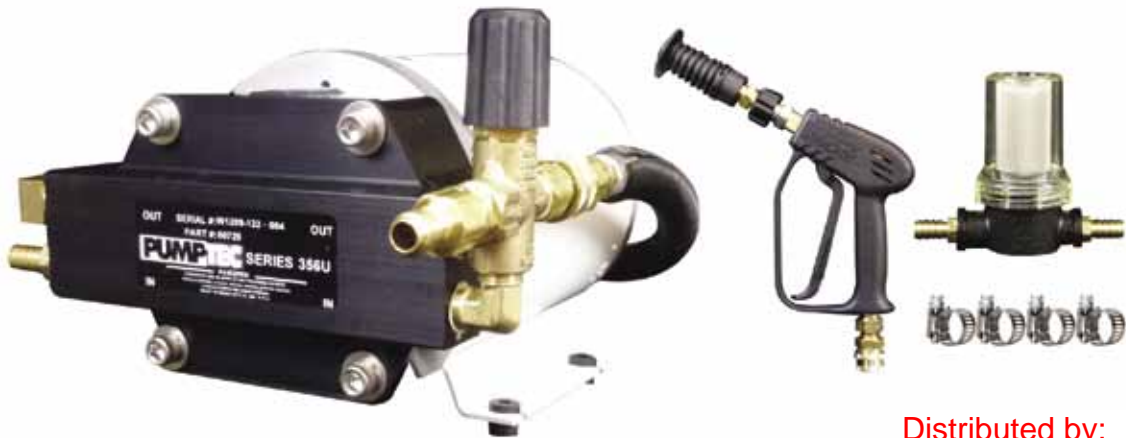
PRESSURE WASHER KIT CONTENTS PN 80390/80608

Parts shown not to scale

DESCRIPTION		DESCRIPTION		QTY
PUMP & MOTOR ASSEMBLY PN: 80390/80608		GUN & HOSE ASSEMBLY		
Pump & Motor Assembly PN: 80390 (Motor M26)	1	Gun-MV920		1
Pump & Motor Assembly PN: 80608 (Motor M60)	1	Quick Coupler 3/8" M Socket		1
Fitting Assembly F Garden Hose x 3/8" MNPT	1	Variable Nozzle, Hi-Lo & 0-80 Degree		1
Elbow 3/8" Mx3/8" M	1	Rotating Coupler 1/4" MxM22 F		1
Street Elbow 3/8"	1	Nipple for Rotating Coupler 1/4" MxM22 M		1
Plug Countersunk 3/8"	1	Pressure Hose		1
Unloader - 800 PSI Spring	1	Chemical Injector Assembly		1
Pulse Hose	1	SUCTION LINE ASSEMBLY		
Pulse Hose Shield - 3/4"ID, 30"	1	Hose Barb, 3/4" GHT Mx1/2" Barb, Brass		1
Quick Coupler 3/8" F Plug	2	Hose Barb, 3/4" GHT Mx1/2" Barb, Nylon		1
Quick Coupler 3/8" F Socket	1	Hose Barb, 3/4" NPT Mx1/2" Barb, Nylon		1
Motor Mount	4	Hose Barb, 1/2" NPT Mx1/2" Barb, Nylon		1
Nut, 3/8" lock nut	8	Hose Clamps #06		4
Washer, 3/8"	8	Line Strainer, 1/2 Bx1/2" B, 80 Mesh, Clear Bowl		1
		Suction Hose, 1/2"*		10'

(*) Not Shown

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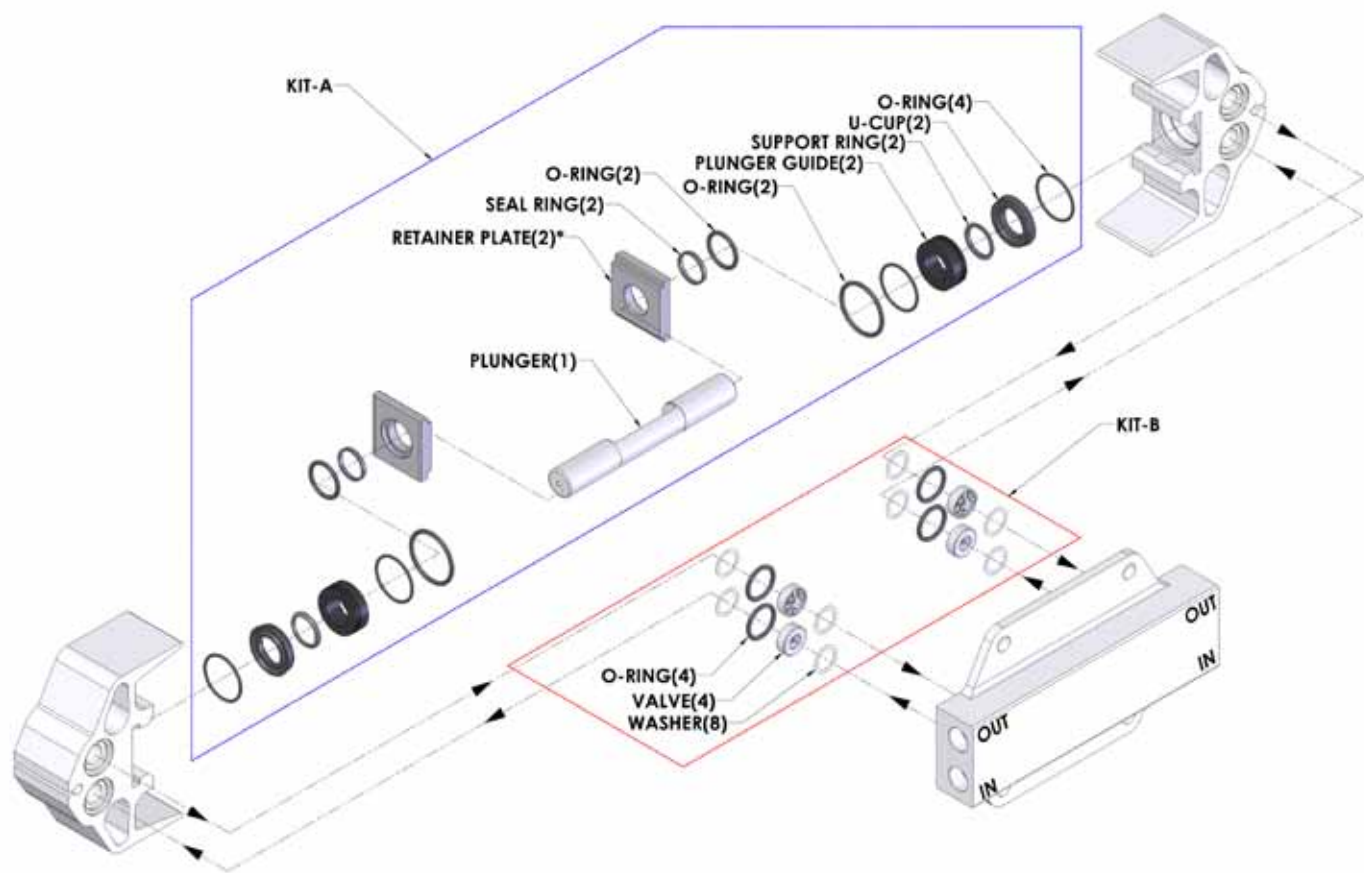


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PRESSURE WASHER KIT CONTENTS PN 8729

Parts shown not to scale

DESCRIPTION		DESCRIPTION		QTY
PUMP & MOTOR ASSEMBLY PN: 80729		GUN & HOSE ASSEMBLY		
Pump & Motor Assembly	1	Gun-MV920		1
Hose Barb, 3/8" NPT Mx1/2" Barb, Brass	1	Quick Coupler 3/8" M Socket		1
Elbow 3/8" Mx3/8" M	1	Variable Nozzle, Hi-Lo & 0-80 Degree		1
Street Elbow 3/8"	1	Rotating Coupler 1/4" MxM22 F		1
Plug Countersunk 3/8"	1	Nipple for Rotating Coupler 1/4" MxM22 M		1
Unloader - 800 PSI Spring	1	SUCTION LINE ASSEMBLY		
Pulse Hose	1	Hose Clamps #06		4
Pulse Hose Shield - 3/4"ID, 30"	1	Line Strainer, 1/2 Bx1/2" B, 80 Mesh, Clear Bowl		1
Quick Coupler 3/8" F Plug	2	Suction Hose, 1/2"*		10'
Quick Coupler 3/8" F Socket	1			
(*) Not Shown				



REPAIR PARTS ILLUSTRATION FOR PLUNGER PUMP 356U

REPAIR PARTS LIST FOR PLUNGER PUMP

DESCRIPTION	PART NO.	QTY	DESCRIPTION	PART NO.	QTY
KIT A, 356U			KIT B		
10007			10004		
Plunger	▲	1	Valve	▲	4
O-Ring, 1-117	▲	2	White Washer, 1/2" ID	▲	8
Seal Ring	▲	2	O-Ring, 1-116	▲	4
O-Ring, 1-124	▲	2	Retainer Plate	*	2
Plunger Guide	▲	2	Head	*	2
Support Ring	▲	2	Manifold	*	1
U-Cup	▲	2			
O-Ring, 1-024	▲	4			

(▲) Sold only as part of a kit. | (*) Not part of a kit, for identification only.

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LIMITED WARRANTY

PUMPTEC ONE-YEAR LIMITED WARRANTY. PUMPTEC PLUNGER PUMPS, MODELS COVERED IN THIS MANUAL, ARE WARRANTED BY PUMPTEC, TO THE ORIGINAL USER AGAINST DEFECTS IN WORKMANSHIP OR MATERIALS UNDER NORMAL USE FOR ONE YEAR AFTER DATE OF PURCHASE. ANY PART WHICH IS DETERMINED TO BE DEFECTIVE IN MATERIAL OR WORKMANSHIP AND RETURNED. AS PUMPTEC DESIGNATES, SHIPPING COSTS PREPAID, WILL BE, AS THE EXCLUSIVE REMEDY, REPAIRED OR REPLACED AT PUMPTEC'S OPTION. FOR LIMITED WARRANTY CLAIM PROCEDURES, SEE "PROMPT DISPOSITION" BELOW. THIS LIMITED WARRANTY GIVES PURCHASERS SPECIFIC LEGAL RIGHTS WHICH VARY FROM JURISDICTION TO JURISDICTION.

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Prompt Disposition. A good faith effort will be made for prompt correction or other adjustment with respect to any product which proves to be defective within limited warranty. For any product believed to be defective within limited warranty, first write or call Pumptec. Pumptec will give additional directions. If unable to resolve satisfactorily, write to Pumptec at address below, giving and serial number, invoice number and date, and describing the nature of the defect. Title and risk of loss pass to buyer on delivery to common carrier. If product was damaged in transit to you, file claim with carrier.