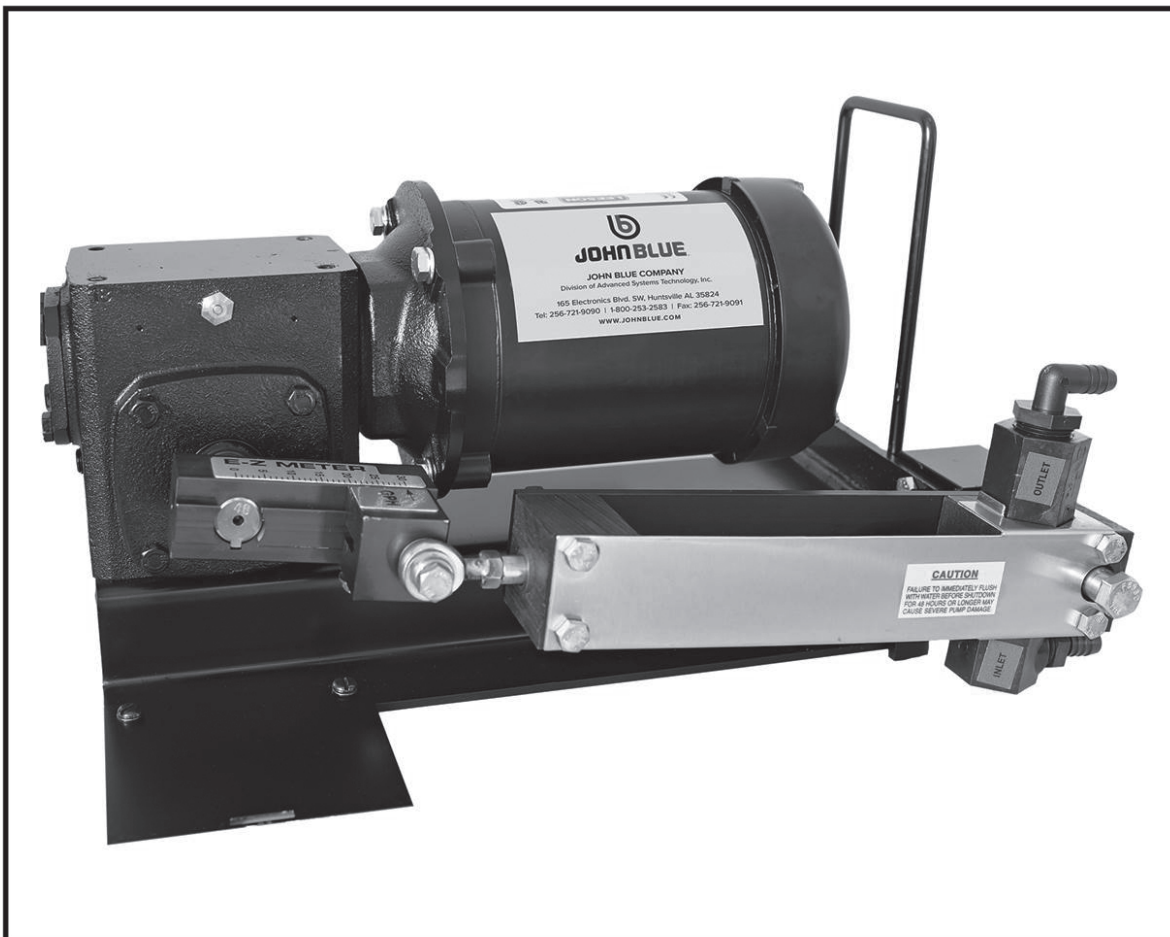




2000 Series E-Z Meter Irrigation Pumps

PARTS AND INSTRUCTION MANUAL



JOHN BLUE COMPANY

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SAFETY PRECAUTIONS

- Safety equipment such as gloves, goggles, etc. should be worn at all times while performing any repairs, adjustments, or maintenance to the pumping system.
- Never work on a pump that is in operation, always turn the pump off before working on it.
- Always keep loose clothing away from a pump in operation.
- A careful operator is the best insurance against an accident.
- Only trained and responsible people should operate equipment.
- Check all valves, filters, hose clamps, etc. for tightness and soundness before admitting chemicals to system. Also check again at regular intervals.
- Replace hoses when worn, cracked or if leaking.

WARNING:

USE OF THIS PRODUCT FOR ANY PURPOSES OTHER THAN ITS ORIGINAL INTENT, ABUSE OF THE PRODUCT, AND/OR MODIFICATION TO THE ORIGINAL PRODUCT IS STRICTLY PROHIBITED BY JOHN BLUE COMPANY. JOHN BLUE COMPANY RESERVES THE RIGHT TO DENY WARRANTY OR LIABILITY CLAIMS IN ANY/ALL SITUATIONS INVOLVING MISUSE, ABUSE OR MODIFICATION.

THE ORIGINAL INTENT OF THIS PRODUCT DOES NOT INCLUDE USE WHERE THE MAXIMUM ALLOWED SPEED, PRESSURE, OR TEMPERATURE IS EXCEEDED, AND IT DOES NOT INCLUDE APPLICATIONS UTILIZING FLUIDS THAT ARE NOT COMPATIBLE WITH THE PRODUCT'S COMPONENT MATERIALS. DO NOT USE THIS PRODUCT WITH FLAMMABLE OR COMBUSTIBLE FLUIDS SUCH AS GASOLINE, KEROSENE, DIESEL, ETC..., AND DO NOT USE IN EXPLOSIVE ATMOSPHERES. FAILURE TO FOLLOW THIS NOTICE MAY RESULT IN SERIOUS INJURY AND/OR PROPERTY DAMAGE AND WILL VOID THE PRODUCT WARRANTY. IF IN DOUBT ABOUT YOUR APPLICATION, CONTACT YOUR STOCKING DEALER OR THE JOHN BLUE TECHNICAL STAFF AT 1-800-253-2583.

WARNING:

This product can expose you to certain chemicals, which are known to the State of California to cause cancer or birth defects or other reproductive harm. For more information go to: www.P65Warnings.ca.gov.

TO THE OWNER

This manual has been prepared and illustrated to assist you in the maintenance of your JOHN BLUE product. Enter your serial number and the date of the purchase in the space provided below for future reference in service information or for ordering parts. Because our engineering department is constantly improving products, we reserve the right to make design and specification changes without notice.

Model Number: _____ Serial Number: _____ Purchase Date: _____

IMPORTANT INSTRUCTIONS

In an effort to prevent damage during the shipping process, the following items have been left uninstalled and will need to be installed by the end user before operating the pump. Reference the parts diagram on page 11 for corresponding numbers.

On all pump models, the inlet fittings (Item #24) and outlet fitting (Item #31) will need to be installed into the valves and tightened prior to use. The fittings are packaged in the bag with your instruction/operator's manual.

On all duplex model pumps, the safety covers must be installed before turning on the pump.

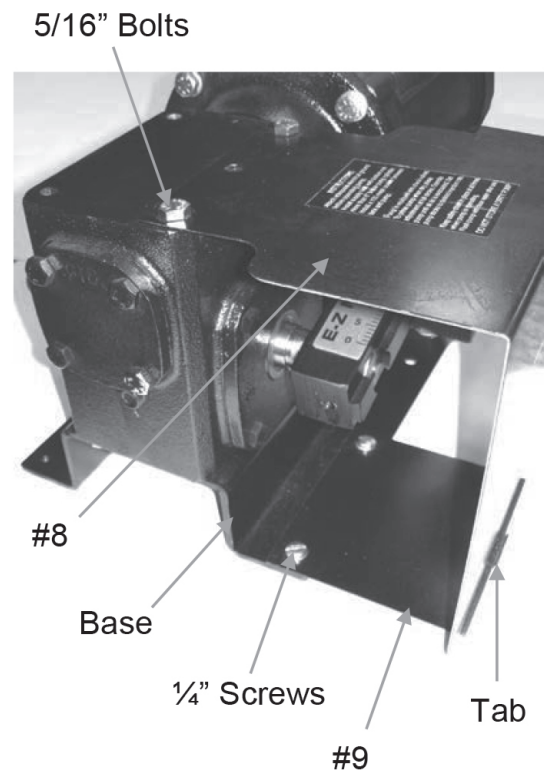
To install the safety shields:

Remove the two 1/4-20 x 3/8" slotted pan head screws located on the base plate (Item #1) just below the crank arm (Item #5). Align the two holes in the safety cover base (Item #9) with these screw holes and reinstall and tighten the pan head screws.

Align the tab on the bottom of the safety cover (Item #8) with the rectangular slot in the safety cover base (Item #9). Rotate the top of the cover away from the gearbox (Item #3) to engage the safety cover tab into the rectangular slot and then pivot the safety cover towards the gearbox sliding the two u-shaped slots in the top of the safety cover under the two 5/16" hex head bolts in the top of the gearbox. Tighten the two 5/16" hex head bolts to secure the safety cover in place.

Repeat the process for the other side.

Your John Blue E-Z Meter Irrigation Unit is now ready to use. If you have further questions, or need technical assistance, please call our factory at 1-800-253-2583.



INSTALLATION INSTRUCTIONS

Materials To Be Pumped

The pump is for liquid, not solid or granular materials. Flammable or combustible liquids cannot be used with this pump. Material with particles so small as to pass through the 80-mesh strainer should not be of concern, although if left in the pump they could crystalize and can cause the pump to malfunction.

Always pump materials that are compatible with the pump. The pump is made with various materials such as polypropylene, 316 stainless steel and Aflas seals. Materials being pumped must be compatible with these components.

Do not mix materials unless you know the results. It is important to understand that mixing of liquids, such as adding a pesticide to a fertilizer may cause a chemical reaction. The resultant product may not be compatible and may harm the pump.

Do not mix materials unless you know what will result. John Blue Company cannot be responsible for problems caused by mixing liquids.

Mounting and Pump Placement

The pump should be located below or even with the bottom of the liquid to be pumped. This will ensure that the pump does not lose prime. The pump should never be allowed to run dry.

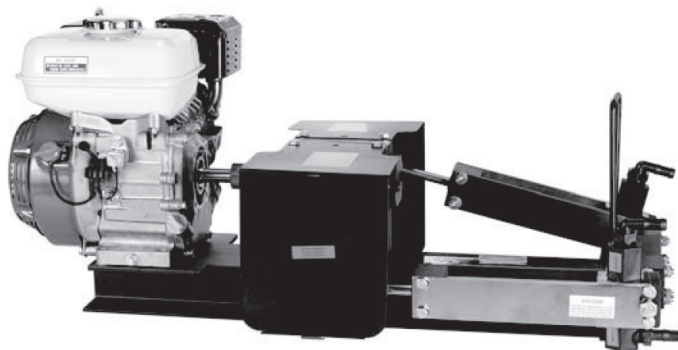
Electrical Powered Pumps



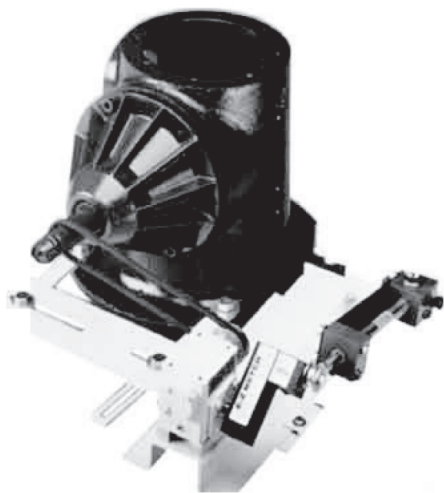
When wiring electrical motors, always **use a licensed or qualified electrician**. Both the single-phase and three-phase electric motors must be properly wired. The single-phase may be wired as either 110 or 220 volts. The three-phase may be wired as either 220 or 440 volts. On each electric motor is a wiring diagram. Make sure the power and phase match your power and have a licensed and qualified electrician install your pump. **An electrical ground must be installed. For problems with electrical motors, see the local dealer listed for the manufacturer of the motor supplied.**

Gasoline Powered Pumps

The gasoline-powered pumps are shipped without motor oil in the engine. **You must add motor oil to the gasoline engine.** The pump is designed to operate at 43 strokes per minute and must not be exceeded. The engine should run at 2150 RPM. This corresponds to 43 revolutions of the black crank or 43 strokes of the pump per minute. Verify this by counting the revolutions or pump strokes in 60 seconds.



INSTALLATION INSTRUCTIONS (continued)



Belt Drive Pumps

Instructions for mounting the belt drive pump to the well head, see photo to the left:

1. Bolt the two adjuster arms (1" x 12" flat steel) to base of the irrigation pump gear driving using the 5/8" bolts and washers.
2. Lay the 4" x 20" mounting plate across the adjuster arms making sure the slots intersect.
3. Take the 1/2" bolts and place them through the slots and loosely tighten the nuts so that all parts still move freely.
4. Slide the injection pump base under the three calmps on the 4" x 20" mounting plate.
5. Align the pulley on the injection pump's gearbox with the shaft to be used to turn it.
6. Position the mounting bracket so adequate tension is placed on the belt.
7. Tighten all mounting parts.
8. Using the variable pulley, adjust the pump to 43 strokes per minute.
9. Make sure the pump runs smoothly.

Plumbing

To make your own hose kit, the following materials are needed:

- 80 mesh Poly or 316 SS filter
- Ball valve
- 1/2" ID high pressure hose
- Male hose adapter fittings - 316 SS or Poly
- Pipe dope or Teflon tape
- Chemical injection fitting - local regulations should be followed. See your local John Blue Dealer.

The pumps are rated for 150-psi system pressure. A chemical injection fitting with a built-in spring-loaded check valve must be used at the point of injection. Refer to local codes for minimum cracking pressure required, but in no case should it be less than 10 psi. It is important that all joints are sealed properly with pipe compound or Teflon tape. Carbon steel, brass or aluminum fittings may cause pump damage as the metal may deteriorate and enter the pump. The system must have proper back flow devices and the point of injection must be downstream from these devices. Water sources may be contaminated when backflow devices are not properly installed or the injection point is not downstream. Check local codes.

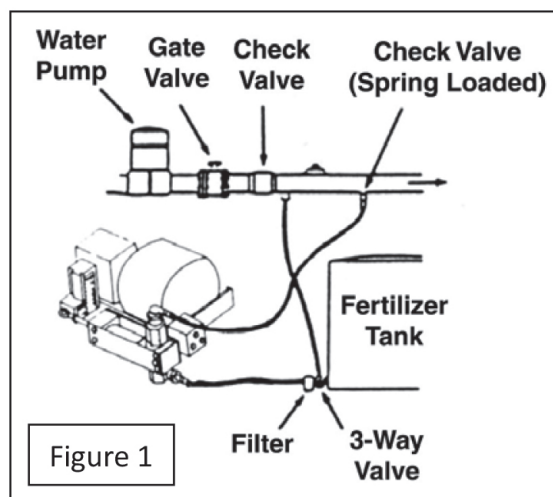


Figure 1 shows the basic configuration of the pump, tank and the point of injection. A filter is absolutely necessary in the inlet line. The three-way ball valve makes flushing the pump easy and convenient. A high-pressure hose with a minimum of 150 psi working pressure or higher, depending on application pressure is required. Hose lines should be kept as short as possible. Remember, check valves that are made from injection molded plastics should be supported when pushing the hose onto the fittings.

MAINTENANCE

Priming the Pump

The John Blue Pump must be primed and will not operate with air in the hose, filter or pump. To prime the pump set it to full stroke, do not pump against pressure, and run the pump until the air is out of the system. The discharge of the pump initially should be into a bucket or back to the supply tank or the proper container until priming is complete. This may take several minutes. Liquid should gravity feed to the pump from the supply tank. The pump will lift product but this should not be relied upon to prime the pump. To avoid liquid products from gravity feeding through the pump into the irrigation line a properly functioning check valve must be installed at the point of injection. Check local codes. Once the pump has evacuated all of the air from the system, the proper discharge rate can be set.

Pump Usage

The pump should **always** be operated with the safety shield in place. As long as liquid remains at the suction side of the pump, it is not necessary to prime the pump again as detailed above. Due to the large number of hard to handle liquid products on the market today, it is difficult to establish guidelines as to the frequency and method of flushing the pump. It is important that the products being pumped are compatible with the materials used in the pump, 316 stainless steel, polypropylene and Aflas. The pumped products must be free of granular or crystallized materials. If the liquid material does become crystallized or granular, it may decrease the life of the pump's seals.

Pump Storage

During the periods when the pump is not in use the following steps are recommended to prevent early pump failure.

- Never store a dirty pump with chemicals still in it. **It is important to completely flush the pump when it is to be stored or not used for extended periods of time.**
- Do not store the pump filled with oil or diesel fuel.

TROUBLE SHOOTING

The following trouble shooting guide is designed to assist you in fixing simple problems during the life of your John Blue E-Z Meter Injection Pumps. Please read the complete set of problems and suggested solutions as many problems overlap.

Problem: Not Pumping

No fertilizer to the pump:

Check the following when fertilizer does not reach the inlet fitting on the pump:

- PUMP HEIGHT CORRECT? The pump should gravity feed to the inlet side of the pump.
- ALL VALVES OPEN? The valves should all be open to allow flow to the pump. The valves should also be sized large enough so that viscosity and temperature do not alter their flow.
- FILTER CLOGGED? The filter should be clean and large enough to allow unrestricted flow to the pump.
- ALL JOINTS TIGHT? The fittings, pipe joints and filter bowl are connections that possibly may have air leaks and should be tightened.

TROUBLE SHOOTING (continued)

Air locking:

The pump does not clear air out of its lines. The pump is self-priming and should clear itself after five minutes of all air in the lines. If not, check the following:

- **STROKE LENGTH (Volume Setting)?** When the pump is dry, it must be set to the maximum volume setting to ensure that all air is removed from the lines. To do this, set the pump to maximum setting and continue to run until air is removed from the pump.
- **VALVES OPEN AND SIZED CORRECTLY?** Check valves are on both the inlet and the discharge lines. If there is no place for the air to discharge to, then it will remain in the pumping lines and cylinder area of the pump.
- **PUMP PRIMED?** Physically prime the pump. There may be dirt or particles in the fluid that has caused a check valve not to seal properly. Many times the material will wash itself out with the action of the pump once it is primed. If a three-way ball valve has been installed for flushing the pump, this can now be turned to water and used to force water into the pump, which will flush it out. Without the valve, a separate water line may be attached to a water source to force water into the pump while the pump is running. After you force feed the pump, reconnect to fertilizer and prime the pump.

Oscillating Fertilizer:

Fertilizer is going back and forth in the pump and not being pumped into the water system.

- **CHECK VALVES CLEAN?** Dirt or particles lodging on the sealing surfaces of the check valves can cause oscillating. The check valves should be washed out using the flushing method in "Pump Primed?" section above. If this does not solve the problem, the check valves can be removed, inspected and cleaned. To clean and inspect the check valves, first remove the rod end bearing and the front stainless steel plate by unscrewing the four 5/16 18-bolts. The check valves can then be unscrewed from the mounting block. Clean and inspect all the parts including the valve body where the balls sit and seal. Replace worn parts and reassemble. Be sure to use pipe compound or Teflon tape on all threads except the joints that hold the check valves together inside the pivot mounting block. Make sure the arrows showing the direction of the flow is correct when putting the check valves back into the manifold.

Problem: Not working against back pressure.

Pump functions normally until water pressure is increased, at which point volume decreases.

- **CHECK VALVES CLEAN?** See "Check Valves Clean" section above.
- **VALVES IN SYSTEM/INLINE CHECK VALVES RESTRICTED?** It may not be the water pressure that is causing the problem but rather increased pressure caused by closed or too small size hose or valves which restrict the pump's flow. The size of the hose and valves should be twice that of the amount being pumped since the pump is only discharging half the time. A long hose will act as a collector to absorb some discharge thus making a prolonged discharge time as the hose expands and contracts. The inlet hose is more important than the discharge hose as an undersized hose can starve a pump.

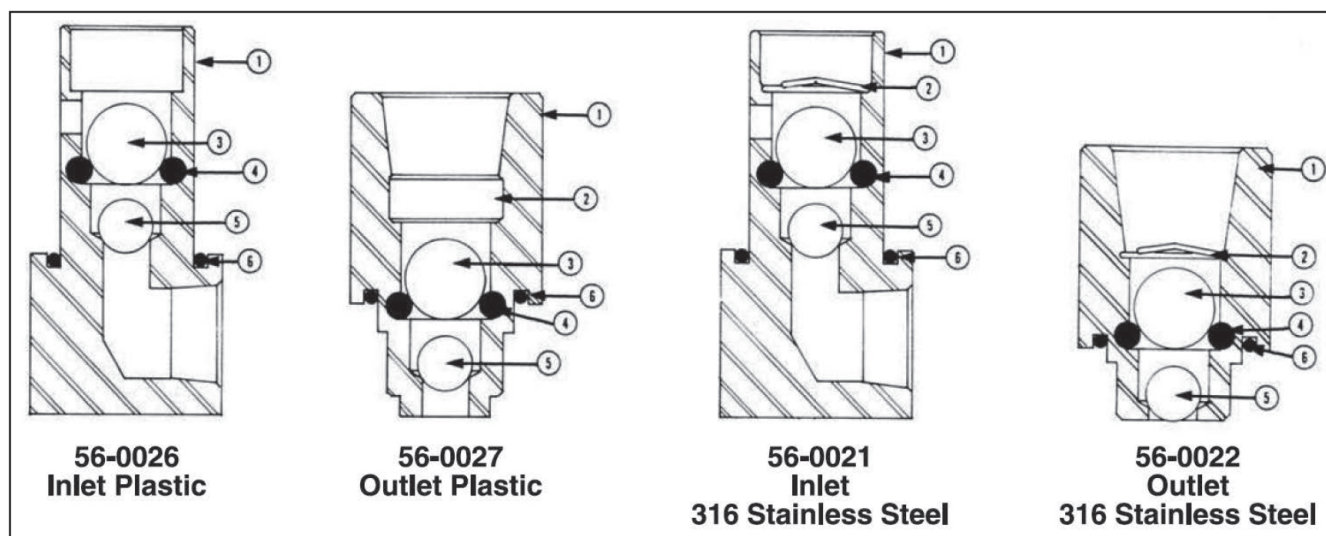
TROUBLE SHOOTING (continued)

Problem: Incorrect volume or fluctuating volume

Small variables in volume may occur because of viscosity, hoses used or head pressure. Variances should not be large enough to cause application problems. If there are significant volume differences, check the volume.

- **OSCILLATING?** Instead of putting a full stroke downstream, the pump is actually either pumping part back up the suction line or receiving some of the discharge back on the suction stroke. Be sure the liquid has not crystallized. See "Oscillating Fertilizer under Problem: Not Pumping" section.
- **AIR LEAKS?** There is a chance that the intake stroke is taking in air as well as material to be pumped. Air can enter through any loose connections or fittings including the filter bowl. Fittings should be installed with pipe compound or Teflon tape. Use non-corrosion fittings, either 316 SS or polypropylene. The filter should be checked and cleaned, being careful to reinstall the gasket properly.
- **FLOW RESTRICTION?** Make sure the pump receives an unrestricted flow of liquid. Make sure the material has not crystallized causing a blockage.
- **ROD END BEARING?** The rod end bearing will eventually wear to the point where the stroke length is affected. If this happens replace the bearing.
- **FILTER CLEAN?** The filter and its element should be checked to make sure it is clean and operate properly.

PARTS LIST – Check Valves



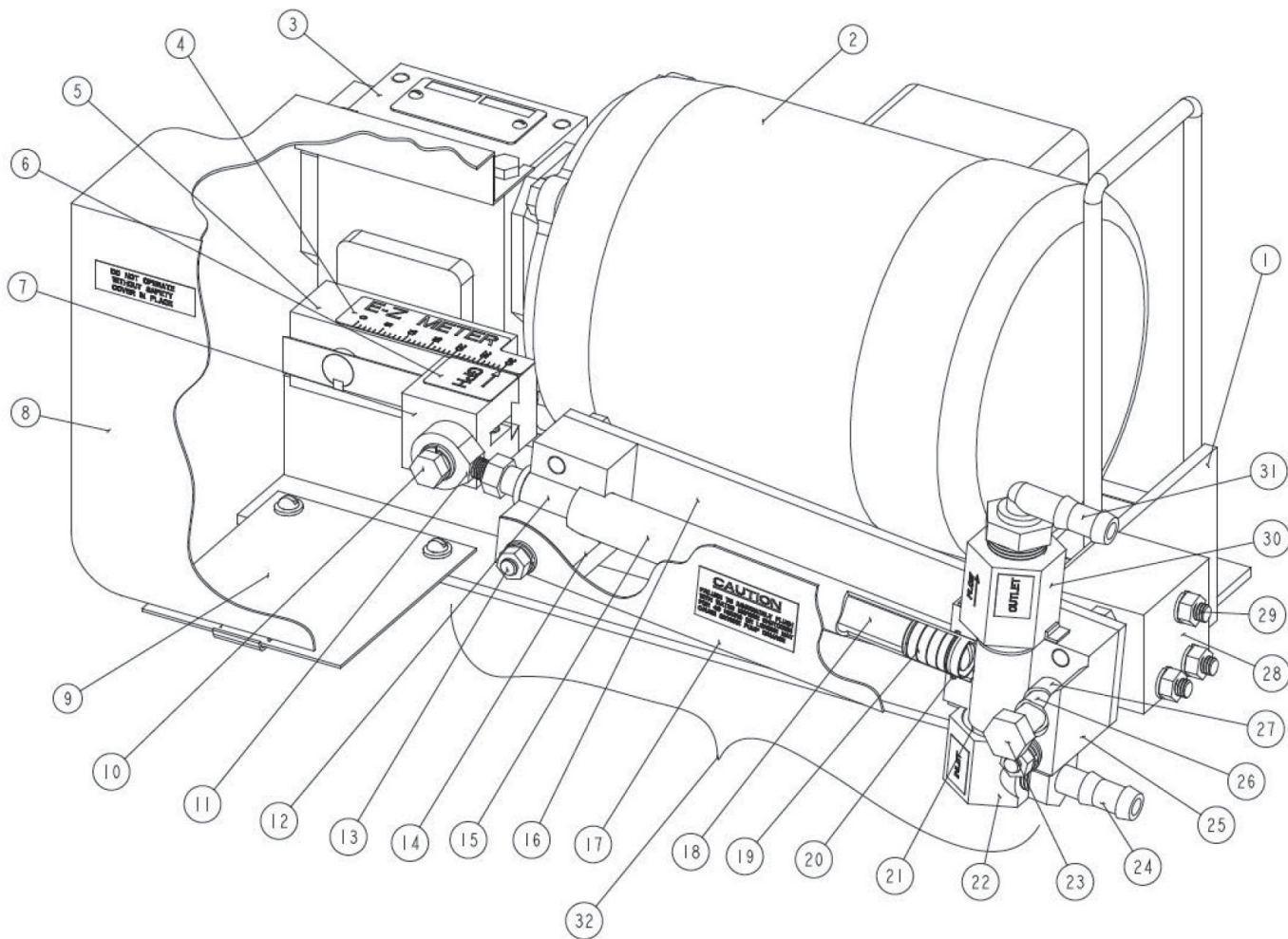
Item #	Description	Plastic Inlet	Plastic Outlet	316 SS Inlet	316 SS Outlet
	Complete Check Valve	56-0026	56-0027	56-0021	56-0022
1	Body	56-0028	56-0029	56-0024	56-0025
2	Retainer Plastic	N/A	56-0030	N/A	N/A
2	Retainer Spring	N/A	N/A	56-0023	56-0023
3	Large Ball	56-9017	56-9017	56-9017	56-9017
4	O-Ring Seal	56-9031	56-9031	56-9031	56-9031
5	Small Ball	56-9007	56-9007	56-9007	56-9007
6	Check Valve Set	56-9052	56-9052	56-9052	56-9052

Designs and specifications change from time to time, John Blue Company reserves the right to alter or upgrade equipment as necessary. Always make sure you have the most current parts list before ordering replacement parts.

PARTS LIST - Pump

Item #	Description		5-30 GPH	10-100 GPH
1 *	Base Plate	Electric Motor & Belt Drive	52-3001	
		Gasoline Engine	52-5001	
2	Electric Motor	3 Phase - 1/2 Hp	114902-01	
		1 Phase - 1/2 Hp	53-9004	
3 *	Gear Box	Electric Motor	53-9001	
		Belt and Gas Engine	53-9003	
4	Calibration Scale		50-3001	50-1001
5 *	Crank Arm - Less Calibration Scale		50-0002	
6	Calibration Arrow		50-0001	
7	Crank Arm Adjuster - Less Arrow		50-0004	50-0004
8 *	Safety Cover		51-0001	
9 *	Safety Cover Base		51-0002	
10	Crank Bolt, Lock & Flat Washer Hardware		54-0069	54-0069
11	Rod End Bearing		54-9001	54-9001
12	Cylinder Rod Bushing	Stainless Cylinder	54-0031	54-0031
		Teflon Cylinder	54-0031	54-0031
13	Cylinder Mounting Block Hardware	Bolt	54-9009	
		Lock Washer	S-3554	
		Nut	S-3566-2	
14	Cylinder Mount Block w/ Bushing	Stainless Cylinder	54-0023	54-0018
		Teflon Cylinder	54-0023	54-0016
15	Cylinder Tube	Stainless Cylinder	54-0021	54-0020
		Teflon Cylinder	54-0021-S	54-0020-S
16	Cylinder Mounting Plate		54-0063	
17	Front Plate		54-0068	
18	Cylinder Piston Rod		54-0001	54-0001
19	Piston Cup Assembly		54-2001-A	54-3001-A
20	O'ring - Cylinder Seal	Stainless Cylinder	54-9012	54-9011
		Teflon Cylinder	54-9012	54-9011
21	O'ring - Valve Seal		56-9031	
22	Inlet Valve Includes O'ring # 21	Stainless Steel	56-0021	
		Plastic	56-0026	
23	Pivot Bolt		55-9001	
24	Inlet Fitting		56-9020	
25	Cylinder Pivot Block w/ Bushing # 27 & O'ring # 20	Stainless Cylinder	54-0058	54-0059
		Teflon Cylinder	54-0058	54-0059
26	Pivot Bolt Sleeve		55-9001-A	
27	Roller Bushing		09-0007	
28	Pivot Mounting Block		55-0003	
29	Pivot Mount Block Hardware	Bolt	54-9009	
		Lock Washer	S-3554	
		Nut	S-3566-2	
30	Outlet valve Includes O'ring # 21	Stainless Steel	56-0022	
		Plastic	56-0027	
31	Outlet Fitting		56-9053	
32	Cylinder Assy. Without Ck Valve Items # 11 thru 20 & 25	Stainless Cylinder	54-2100	54-3100
		Teflon Cylinder	54-2100-1	54-3100-1
	Cylinder Assy. w/ Plastic Ck Valve Items # 11-22, 24-25, & 30-31	Stainless Cylinder	54-2110	54-3110
		Teflon Cylinder	54-2110-1	54-3110-1
Not Shown	Gas Engine Special Components Req' Gas Base and Gearbox	Gas Engine - 4 Hp	53-9013	
		Coupling for Gas Engine	53-9017	
Not Shown	Belt Drive Special Components Req' Belt Base and Gearbox	Belt Drive Mounting Bracket	52-1000	
		Adjustable Pulley - Belt Drive	53-9018	
Not Shown	Duplex Conversion Kit ** Items # 4 thru 31	Stainless Cylinder	50520	50530
		Teflon Cylinder	50520-1	50530-1
*	Pump serial # > 222500 reflects change to standard on items # 1, 3, 5, 8, 9			
**	Duplex Conversion Kits can only be used on serial # > 222500.			

PARTS LIST – Pump (continued)



LIMITED WARRANTY

THIS WARRANTY IS IN LIEU OF ALL OTHER WRITTEN OR EXPRESS WARRANTIES AND REPRESENTATIONS. ANY IMPLIED WARRANTIES INCLUDING MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE ARE EXPRESSLY LIMITED TO THIS WRITTEN WARRANTY. JOHN BLUE COMPANY SHALL NOT BE LIABLE FOR CONSEQUENTIAL DAMAGES.

Use of this product for any purpose other than its original intent, abuse of the product, and/or any modification to the original product is strictly prohibited by the manufacturer, John Blue Company. Any modification to the product should be approved by John Blue Company prior to use. John Blue Company will deny Warranty claims and liability in any situation involving misuse, abuse or modification.

Each new machine or component manufactured by John Blue Company through original buyer is warranted by John Blue Company to buyer and to any party or parties to whom buyer may resell, lease or lend the equipment to be free from defects in material and workmanship under normal use and service. This obligation of John Blue Company under this warranty is limited to the repair or replacement of defective parts or correction of improper workmanship of any parts of such equipment which shall within one year from the date of John Blue's original delivery thereof, be returned to John Blue's factory, transportation charges prepaid and which John Blue Company shall determine to its satisfaction upon examination thereof to have been thus defective. When it is impractical to return the defective parts of such equipment to John Blue's factory, then John Blue shall have no liability for the labor cost involved in repairing or replacing any such parts and shall be liable solely for supplying the material necessary to replace or repair the defective parts, provided that prior thereto John Blue Company shall have determined to its satisfaction that any such parts are thus defective.

This warranty shall not apply to any equipment which shall have been repaired or altered outside John Blue's factory in any way so as to affect its durability, nor which has been subjected to misuse, abuse, negligence or accident, or operated in any manner other than in accordance with operating instructions provided by John Blue Company. This warranty does not extend to repairs made necessary by the use of inferior or unsuitable parts or accessories, or parts or accessories not recommended by John Blue Company.

John Blue Company makes no warranties in respect to parts, accessories or components not manufactured by John Blue Company, same ordinarily being warranted separately by their respective manufacturers.

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YOUR LOCAL DEALER

