



High Pressure Cleaning System

Standard and Pulsating
Owner's Manual



Standard Models

2X1000, 2X1500, 3X1000, 3X1250

Pulsating Models

2X1000P, 3X1000P

SAVE THESE INSTRUCTIONS

High Pressure Cleaning System ONE YEAR LIMITED WARRANTY

For one year from date of purchase, when the High Pressure Cleaning System is maintained and operated according to the instructions in the owner's manual, we will repair, free of charge, any defects in material or workmanship.

This warranty does not cover repairs necessary as a result of operator neglect or abuse or normal wear. This cleaning system may be returned to any Cat Pump distributor or directly to the factory.

SEND PREPAID to Cat Pumps, 1681 - 94th Lane N.E., Minneapolis, MN 55449 or call 612-780-5440 for assistance.

Replacement of parts or accessories with non-original items or servicing of unit other than that specifically outlined in owner's manual will VOID THE WARRANTY.

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⚠ CAUTION ⚠

READ AND FOLLOW ALL SAFETY RULES AND INSTRUCTIONS BEFORE OPERATING THIS UNIT.

INSTRUCTIONS GIVEN THIS SYMBOL ARE FOR PERSONAL SAFETY. BE SURE TO FOLLOW THEM.

FEATURES

1. The proven dependability of the SF ceramic plunger pump offering unequaled performance life in its horsepower range.
2. A custom designed, industrial electric motor featuring Thermal Overload Protection with reset button and low amp draw performance.
3. 35 foot electrical cord with Ground-Fault Circuit-Interrupter (GFCI) protection for maximum safety during operation.
4. A convenient pop-up cord wrap making carrying and storing easy and neat.
5. Impact resistant, lightweight molded plastic case free of excess weight and bulk.
6. Easy to read, flat-mount, glycerine-filled pressure gauge to monitor system operation and meet exact cleaning needs.
7. Adjustable pressure regulating unloader to set and maintain system pressure for various cleaning applications.
8. Adjustable downstream chemical injector with inlet hose and chemical strainer.
9. Shut-off spray gun with molded extension and quick coupling allows easy assembly and quick changes to many optional accessories.
10. Vari-Nozzle with extension, featuring adjustable spray angle and high/low pressure settings for chemical application and pressure cleaning flexibility.
11. 30 foot, 3/8 inch, wire braid, nonmarking high pressure hose with swivel and quick disconnect for convenience in assembly and operation.
12. Safety By-Pass hose with Thermo Valve to minimize excessive fluid heat build-up.

Note: 100V, 50HZ, 60HZ available upon request.

SPECIFICATIONS

MODEL 2X1000 and 2X1000P

Listed  LR 91309 
80U8

Flow.....	2.0 GPM	(7.6 LM)
Pressure	1000 PSI	(70 Bar)
Horsepower	1.5	(1.5)
Voltage	110 to 115V, 60 HZ	(110 to 115V, 60 HZ)
Maximum Amperage	15	(15)
Weight.....	60 lbs.	(27.1 Kg)
PUMP MODEL.....	2LIDX20E	

MODEL 2X1500

Flow.....	2.0 GPM	(7.6 LM)
Pressure	1500 PSI	(105 Bar)
Horsepower	2.0	(2.0)
Voltage	110 to 115V, 60 HZ	(110 to 115V, 60 HZ)
Maximum Amperage	20	(20)
Weight.....	73 lbs.	(33.2 Kg)
PUMP MODEL.....	2LIDX20E	

MODEL 3X1000 and 3X1000P

Flow.....	3.0 GPM	(11.3 LM)
Pressure	1000 PSI	(70 Bar)
Horsepower	2.0	(2.0)
Voltage	110 to 115V, 60 HZ	(110 to 115V, 60 HZ)
Maximum Amperage	20	(20)
Weight.....	73 lbs.	(33.2 Kg)
PUMP MODEL.....	2LIDX30E	

MODEL 3X1250

Flow.....	2.4 GPM	(9.0 LM)
Pressure	1000 PSI	(70 Bar)
Horsepower	2.0	(2.0)
Voltage	220V, 50 HZ	(220 V, 50 HZ)
Maximum Amperage	10.2	(10.2)
Weight.....	73 lbs.	(33.2 Kg)
PUMP MODEL.....	2LIDX30E	

COMMON SPECIFICATIONS

Inlet *Pressure	Flooded to 40 PSI	(Fld to 3 BAR)
Max. **Fluid Temperature	140°F	(60°C)
Pump Oil Capacity	11 oz.	(0.35 L)
Hose Length	30 ft.	(9.1M)
Cord Length (w/GFCI)	35 ft.	(10.7M)
Wand Length	36 in.	(91 cm)
Dimensions.....	21.75 x 17.0 x 9.62" (553 x 432 x 244 mm)	

*Contact factory for information on optional inlet suction kit
**or high temperature version.

IMPORTANT SAFEGUARDS

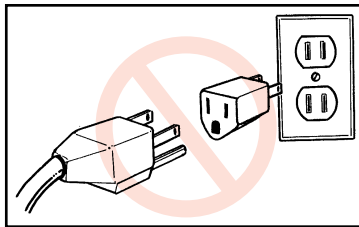
WARNING - When using this product basic precautions should always be followed, including the following:

IMPORTANT: This manual should be read and understood thoroughly before assembly and operation of this High Pressure Cleaning System. Keep this manual available for future reference in servicing or ordering parts or accessories.

Failure to follow basic safety rules and precautions could result in serious injury, shock or fire.

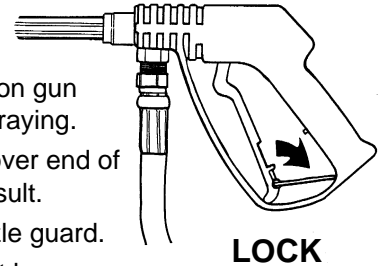
RULES FOR SAFE OPERATION

⚠ WARNING ⚠
Risk of shock or electrocution.

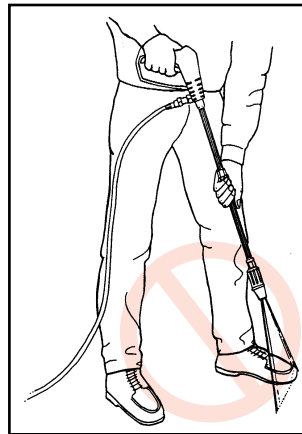


- Connect only to properly grounded outlet.
- Do not remove ground pin or use cheater.
- Know how to stop the product and bleed pressures quickly. Be thoroughly familiar with the controls.
- Do not overreach or stand on unstable support.
- Keep good footing and balance at all times.
- Do not use extension cords unless plugged into a GFCI protected outlet and cord meets specifications shown under "Extension Cords" in this manual.
- Keep all connections dry and off ground.
- Inspect electric cord before using and do not use if damaged.
- Do not spray at electrical areas.
- Do not touch plug with wet hands.
- This product is provided with a Ground-Fault Circuit-Interrupter built into the power cord plug. If replacement of the plug or cord is needed, use only identical replacement parts.
- Do not modify electric outlet. Have a qualified electrician install the properly grounded outlet.
- Unplug cord from receptacle before disconnecting cleaning system from extension cord.
- Keep operating area clear of all persons.
- Never leave unit unattended while running.

- To reduce the risk of injury, close supervision is necessary when a product is used near children.
- Stay alert - watch what you are doing.



- Engage safety lock on gun trigger when not spraying.
- Do not place hand over end of nozzle, injury will result.
- Do not remove nozzle guard.
- Do not lift or pull unit by pop-up cord wrap.
- Do not operate the product when fatigued or under the influence of alcohol or drugs.
- Do not spray at people or animals.



- **WARNING**
Risk of injection or injury - Do not direct discharge stream at persons.
- Follow the maintenance instructions specified in the manual.

SAVE THESE INSTRUCTIONS

In case of accidental injection with water, contact physician immediately or call:

EMERGENCY MEDICAL HOTLINE
1-800-228-5635.

GROUNDING INSTRUCTIONS

This product must be grounded. If it should malfunction or break down, grounding provides a path of least resistance for electrical current to reduce the risk of electric shock. This product is equipped with a cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances.

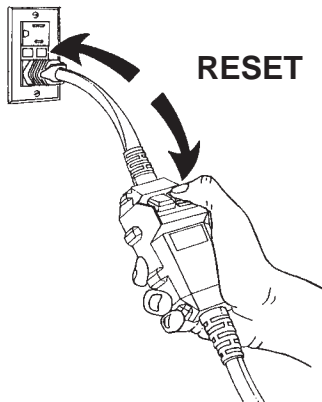
DANGER: Improper connection of the equipment-grounding conductor can result in a risk of electrocution. Check with a qualified

electrician or service person if you are in doubt as to whether the outlet is properly grounded. Do not modify the plug provided with the product—if it will not fit the outlet, have a proper outlet installed by a qualified electrician. Do not use any type of adapter with this product.

GROUND-FAULT CIRCUIT-INTERRUPTER PROTECTION

This pressure washer is provided with a GROUND-FAULT CIRCUIT-INTERRUPTER (GFCI) built into the plug of the power supply cord. This device provides additional protection from the risk of electric shock. Should replacement of the plug or cord become necessary, use only identical replacement parts that include GFCI protection.

If the GFCI is not the AUTOMATIC RESET TYPE, it must be manually TESTED and RESET each time the cleaning system is plugged in. Press firmly to assure internal spring activates switch. Push “test” then push “reset”. Motor will not start if GFCI does not reset. Check circuit breakers or outlet. If circuit breaker is not tripped and unit will not reset, contact local service center.



EXTENSION CORDS

⚠ WARNING ⚠

To reduce the risk of electrocution, keep all connections dry and off the ground. Do not touch plug with wet hands.

Use only 3-wire extension cords that have 3-prong grounding-type plugs and 3-pole cord connectors that accept the plug from the product. Use only extension cords that are intended for outdoor use. The extension cords are identified by a marking “Acceptable for use with outdoor appliances; store indoors while

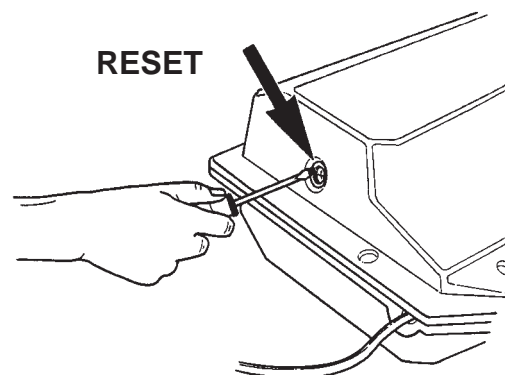
not in use”. Use only extension cords having an electrical rating not less than the rating of the product. Do not use damaged extension cords. Examine extension cord before using and replace if damaged. Do not abuse extension cord and do not yank on any cord to disconnect. Keep cord away from heat and sharp edges. Always disconnect the extension cord from the receptacle before disconnecting the product from the extension cord.

Extension Cord Length		
Model	up to 50 feet	50 to 100 feet
2X1000	14 AWG	12 AWG
2X1500	12 AWG	10 AWG
3X1000	12 AWG	10 AWG
3X1250	14 AWG	12 AWG

Extension cords are not recommended unless they are plugged into a ground-fault circuit-interrupter found in circuit boxes or protected outlet receptacles.

MOTOR RESET

This cleaning system has a motor reset button in the event the motor overheats or overloads. If the motor stalls turn the power switch to OFF and unplug. Follow the guidelines under “TROUBLESHOOTING” to determine the cause of the motor shutdown. A plastic extension inserted into the reset hole on the side of the case will initiate motor operation. TEST AND RESET THE GFCI BEFORE TURNING THE UNIT “ON”.



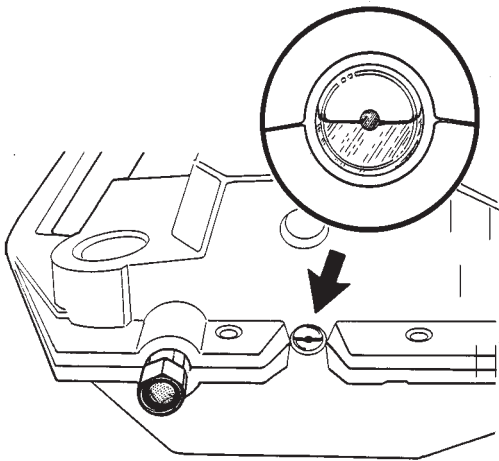
ACCIDENTAL SUBMERSION

The molded case of this cleaning system is not watertight. In case of accidental submersion, case must be opened and all internal components thoroughly dried. Pump crankcase should be drained and fresh oil added. See “LUBRICATION” for additional information.

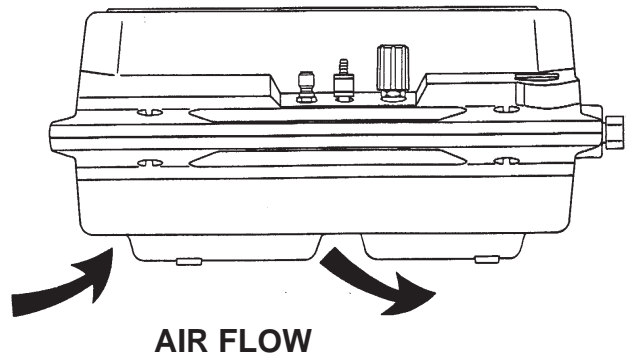
ASSEMBLY AND START-UP

Remove the cleaning system from the carton and inspect for damage or missing components. Keep box for storage or shipping unit if service is required.

Place unit on a hard level surface and visually verify that the oil level is at the dot in center of gauge. The unit is shipped slightly overfilled. Tip case to see air bubble before operation.



Set unit on a hard level surface. Do not operate unit in tall grass or on other soft surface that would restrict air flow to and from the bottom of the case.

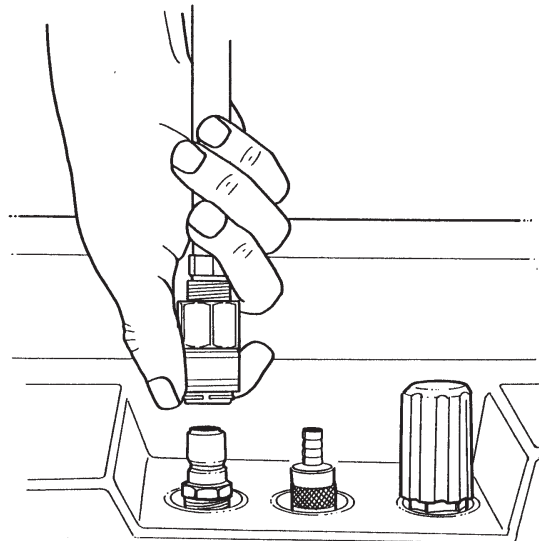
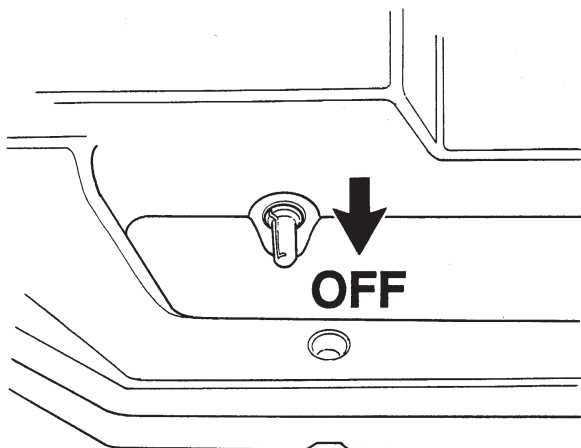


Attach the high pressure hose quick-disconnect to the discharge nipple on the top of the case by pulling back the collar and pressing over the nipple. Push down until it snaps into position.

CAUTION

Lack of proper lubrication will result in severe damage to pump. Visually check oil before each use.

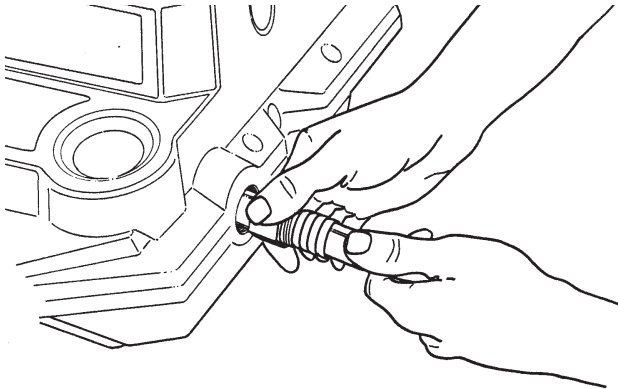
Be sure the power switch is in the "OFF" position.



NOTE

When attaching accessories to the inlet connection or chemical injector, some movement may be noticeable. Each connection is o-ring sealed and the movement is normal.

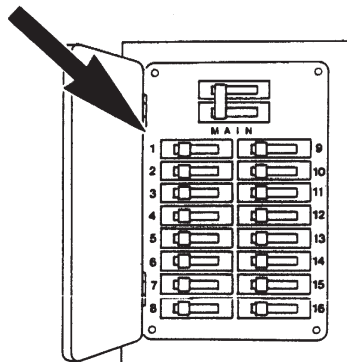
Attach a garden hose to the inlet fitting on the side of the case. Check for the gasket and screen in the fitting. The gasket assures a good seal and the screen keeps debris from entering the pump. **CLEAN THIS SCREEN** periodically to avoid restricting fluid to the pump. Inlet line must be a minimum of 1/2". Be certain the inlet water supply is sufficient before operating unit.



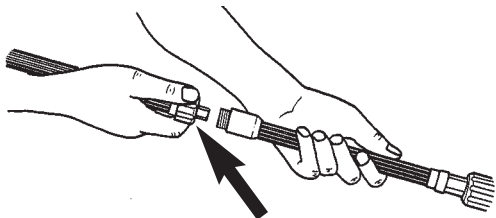
Uncoil the power cord and connect to a properly grounded receptacle. Voltage should be between 110 and 115 to avoid stalling or overloading motor. (15 amp for 1.5 H.P., 20 amp for 2.0 H.P.)

CAUTION
2 H.P. Model must be plugged into an outlet that is rated for 20 amps or greater or the circuit breaker will trip.

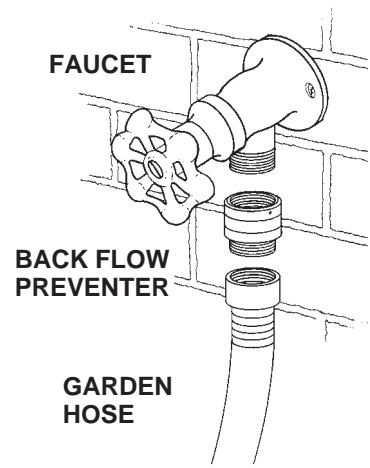
- 15 amp
- 2X1000
- 20 amp
- 2X1500
- 3X1000
- 3X1250



Attach Vari-Nozzle with extension to gun with extension. Snap Vari-Nozzle fitting into extended hex collar on gun extension and thread on hand tight.

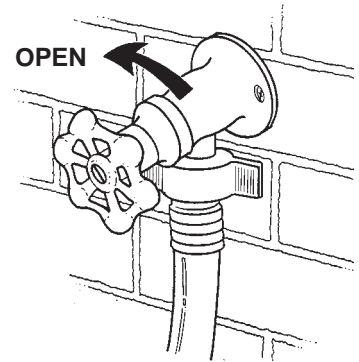


Remove the **BACK FLOW PREVENTER** from the owner's manual plastic bag. Thread female end of preventer onto water supply faucet. Then thread garden hose onto preventer.



CAUTION
Be certain to install the **BACK FLOW PREVENTER** to prevent chemicals or soap from flowing back into the supply line.

Turn inlet water supply to the unit to full open. Inlet water temperature should not exceed the maximum listed in specifications.



Bleed air from system by triggering gun. With adequate water pressure, unit should prime within one minute. Trigger the gun with the Vari-Nozzle in the (forward) low pressure position to speed the priming.

CAUTION
If the unit is run with an inadequate inlet water supply the unit will cavitate. Cavitation causes the pump to operate loudly, vibrate and cause damage to the pump.

Flip power switch from "OFF" to "ON". Then trigger gun to assure all air is bled from system.

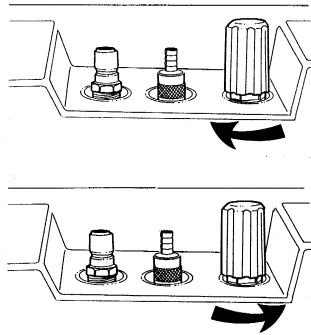
CAUTION
NEVER leave unit unattended in by-pass (with trigger gun shut off) for prolonged periods.

OPERATION

PRESSURE ADJUSTMENT AND GAUGE READING

Before using the cleaning system, the operating pressure must be set. The cleaning system is equipped with a pressure gauge for setting and monitoring system pressure.

To set or adjust pressure, rotate the unloader adjustment knob, marked "PSI" on the top of the case clockwise to increase pressure and counterclockwise to decrease pressure. **Make all**



adjustments with the gun off (trigger released). Adjust unloader 1/2 turn, squeeze trigger and read pressure. If operating pressure has not been reached, repeat until desired pressure is reached. Do not exceed the maximum operating pressure listed in specifications. Be certain to use only the Vari-Nozzle provided with cleaning system or replacement nozzle sized for the flow and pressure of unit.

CAUTION

The maximum operating pressure of your cleaning system has been secured at the factory with a Locking Collar. Tampering or removal of the Locking Collar on the unloader valve will VOID THE WARRANTY.

Check your gauge while setting pressure and periodically during operation. Changes in pressure will warn you of wear or improper operating conditions. If maximum pressure cannot be reached or pressure drops after prolonged use, it is most likely due to a worn nozzle or lack of sufficient inlet water to the unit. Consult "TROUBLESHOOTING" or call your local service center.

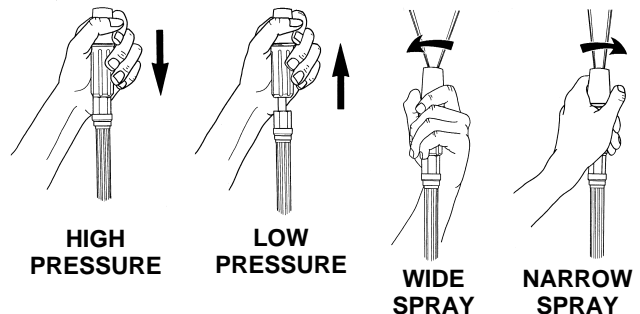
When unit is running but in by-pass (gun off, trigger released) pressure should drop to approximately 100 PSI. If the pressure reading on the gauge does not drop, trigger gun

several times and check reading. If pressure still has not dropped shut the unit off and consult "TROUBLESHOOTING". For safety and optimum life, operation in by-pass should not exceed 6 minutes. The cleaning system is equipped with an internal by-pass hose and Thermo Valve. The Thermo Valve will sense the rise in fluid temperature as a result of running the unit in by-pass and bleed a small amount of heated water from the bottom of the case. Cool inlet water will fill the line and protect the pump from overheating.

Prolonged operation in by-pass at high pressure may result in damage to the pump or the unloader. Turn system "OFF" during prolonged periods of nonuse.

VARI-NOZZLE ADJUSTMENT

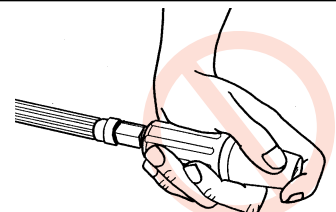
This unit is equipped with a multi-function nozzle. The Vari-Nozzle changes from high pressure (back position) to low pressure (forward position) with an easy push-pull motion. Changing from high to low pressure permits the the low pressure adjustable chemical injector to begin drawing chemical into the system. When chemical is no longer needed,



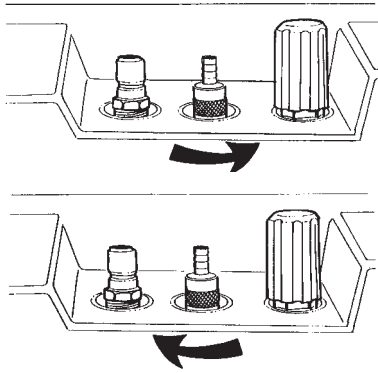
return to high pressure (back position). The Vari-Nozzle will also rotate right to left to adjust from a 0° to 60° spray angle for desired cleaning needs. **Make high to low pressure adjustments with gun off or trigger released.**

▲ WARNING ▲

Do not place hand over end of nozzle while spraying or adjusting nozzle.



CHEMICAL INJECTION



To use the injector, insert the injector hose into the bottom of the chemical bottle and connect the other end to the exposed barb on the unit. Open the

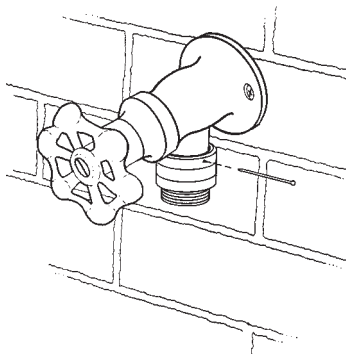
injector by turning the adjustment collar counterclockwise. The Chemical Injector will only draw chemical when pressure is below 150 PSI. Push the Vari-Nozzle (forward) to the low pressure position and chemical will begin to flow. When chemical appears at the nozzle, adjust injector to desired rate. Reduce chemical flow by rotating injector collar clockwise to desired amount. Stop chemical flow by pulling Vari-Nozzle (back) to the high pressure position. Periodically clean the filter at the end of the chemical hose to assure smooth flow.

UNIT SHUT-DOWN AND STORAGE INSTRUCTIONS

Follow these safety steps when you are done using your Cleaning System:

1. Flush chemical injector with clean water. With injector knob fully open draw clean water through injector for one minute.
2. Switch cleaning system to "OFF".
3. Shut off inlet water supply and disconnect garden hose.

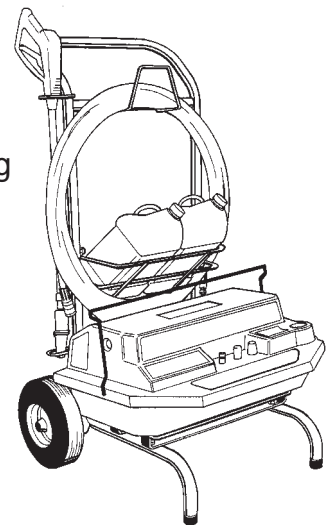
4. Remove BACK FLOW PREVENTER from supply faucet by inserting nail or small pin in the side hole on preventer. Press in to unlock the preventer and unthread preventer from faucet. Attach preventer to garden hose while storing unit.



5. Trigger the gun to relieve pressure locked in high pressure hose.
6. Turn unloader to low pressure setting.
7. Disconnect the high pressure hose and completely drain water. Squeeze trigger and hold Vari-Nozzle up in the air. Lift hose and follow length until all water drains from hose. This procedure is acceptable for short term storage or warm climates. For prolonged storage or unheated storage in cold weather see "FREEZE PROTECTION". Straighten hose and coil up for storage.
8. Unplug the electric power cord. Wind up on pop-up cord wrap. Attach GFCI to cord wrap with velcro strap.



9. Cleaning system may be stored in original carton, on the special cleaning system cart or on the wall mount.



WARNING

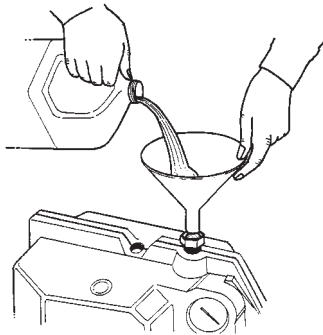
Do not store unit in unheated areas during cold weather. Severe damage can occur if water freezes in unit. If near or below freezing conditions cannot be avoided, unit must be protected from freezing.

FREEZE PROTECTION

Follow all the steps for normal shut-down and storage. Flush the cleaning system with a 50% antifreeze and 50% water solution using one of two methods:

Method One

Tip the unit on end exposing inlet garden hose fitting. Remove screen filter from fitting and pour in approximately 1/2 cup of antifreeze and water mixture. Turn on unit while pouring the mixture in to allow circulation of antifreeze. Turn unit off as soon as all solution has been poured into the system.



Method Two

Attach a short garden hose (not to exceed four feet) to inlet fitting on pump and put other end into the antifreeze and water mixture. Turn the unit on until mixture flows out of the discharge fitting. Then shut unit off.

LUBRICATION

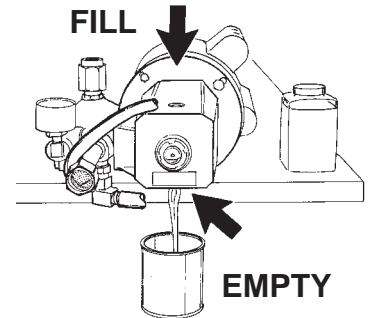
Keep crankcase filled to proper level (11 oz. capacity) with Cat Pumps special formula Premium ISO 68 Grade Non-Detergent **Hydraulic** oil. Cat Pumps oil contains anti-wear and anti-rust inhibiting additives for maximum protection and cool running. **Do not use motor oil.** Annual oil changes are recommended in heavy use applications. With normal use change oil when service to pump seals or valves becomes necessary. (See Cleaning System Parts List.)

CAUTION

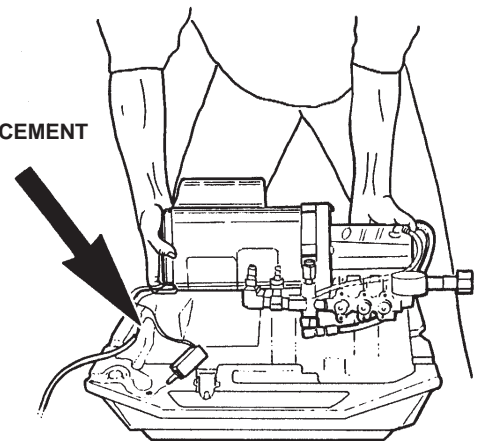
The top half of the case must be removed to add oil and the pump must be completely removed from case to drain oil.

DRAINING AND ADDING OIL

1. Remove chemical injector knob and suction tube by pulling upward.
2. Unscrew unloader knob counterclockwise and remove spring.
3. Remove the eleven case screws, lift off top half of case and remove pump motor assembly.
4. Place pump and motor on work table with pump extended over edge. Secure pump to work surface.
5. Remove oil drain plug and drain oil from crankcase. Replace drain plug when empty.
6. Ensure motor shims and air seal gasket are in place.
7. Position the pump and motor into lower case.
8. Fill pump with new oil to dot on oil gauge. Oil can be added to the pump through the oil filler cap on the top of the pump.
9. Place switch box and wires into proper slots. Use tape to retain wires if they will not lie flat in grooves.



NOTE WIRE REPLACEMENT

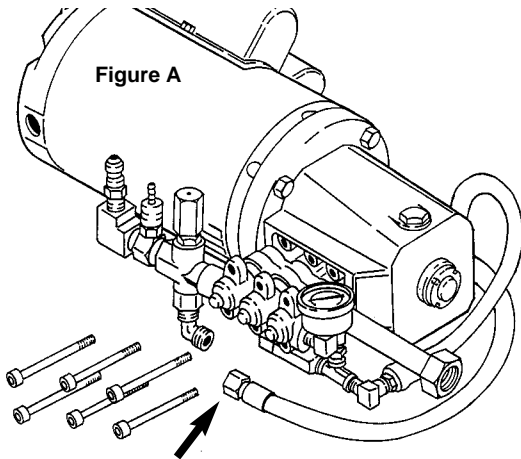


10. Ensure that the foam seals on the unloader, injector and discharge ports are in place.
11. Replace upper case half.
12. Replace all cover screws, using the two shortest in the handle area.
13. Push on injector knob and suction tube.
14. Place spring in unloader with metal insert down. Screw on unloader knob.

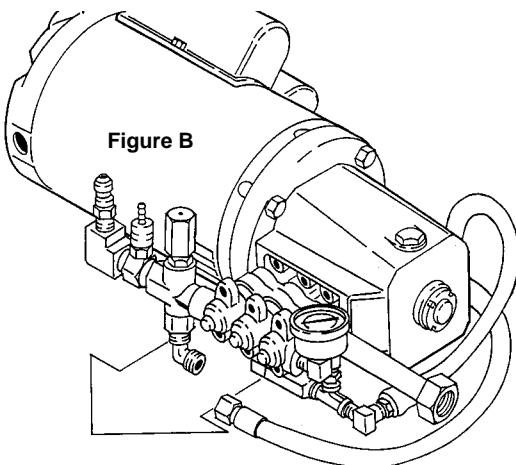
MAINTENANCE OF THE PUMP

DISASSEMBLY OF THE DISCHARGE VALVE ASSEMBLY

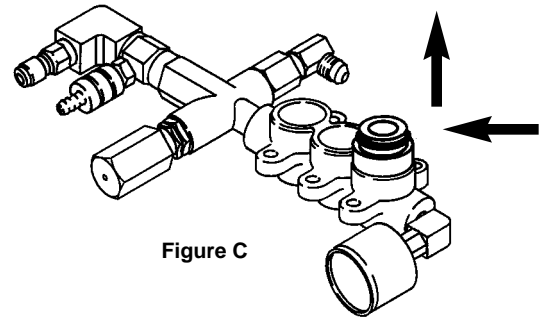
1. Remove pump and motor assembly from case and drain oil from crankcase of pump.
2. Disconnect by-pass hose from the bottom unloader by-pass fitting. (Figure A)



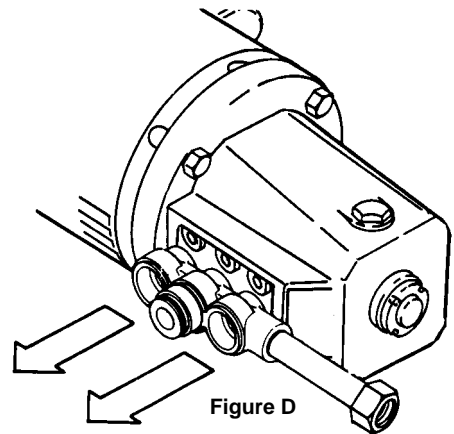
3. With a standard M6 allen wrench remove the six (6) socket head screws from the manifold. (Figure A)
4. Remove discharge manifold by tapping backside of manifold on opposite sides with a soft mallet. Support manifold and unloader assembly from underside and pull away from crankcase. (Figure B)



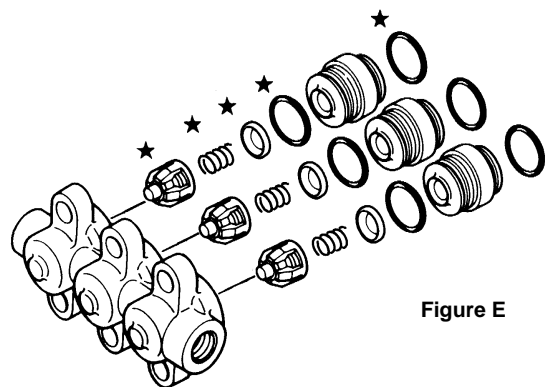
5. The discharge adapter-seats may stay with either the discharge or inlet manifold. By inserting two opposing screwdrivers between adapter-seats and manifold you can easily pry them out of the discharge manifold. (Figure C)



If the discharge adapter-seats stay in the inlet manifold, gently work them up and down as you pull away from crankcase. (Figure D)

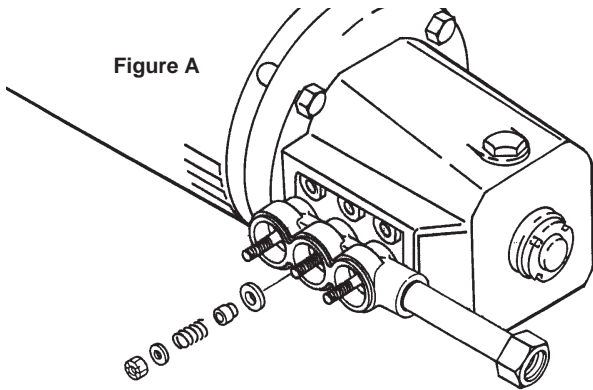


6. The valve assemblies are in the discharge manifold ports and will fall out when manifold is turned over. A complete valve assembly includes: (★) retainer, spring, valve, and o-ring. (Figure E)

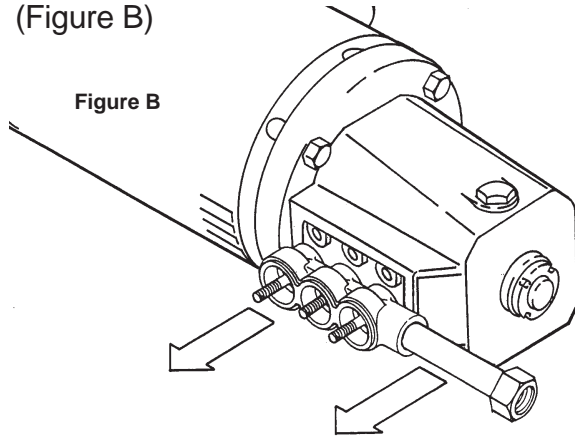


DISASSEMBLY OF THE SEAL ASSEMBLY

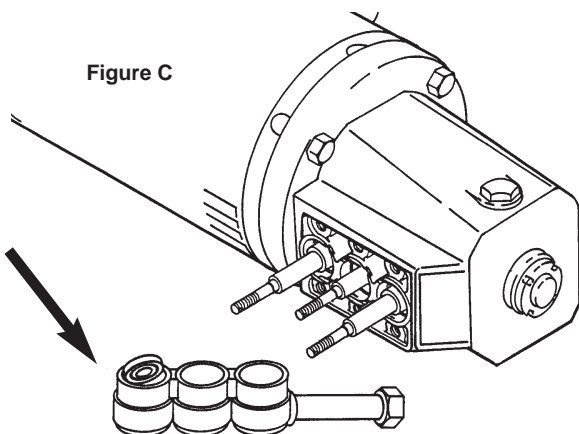
1. Next remove the inlet valve assembly from the exposed plunger rod ends, including nut, washer, spring, spacer and inlet valve. (Figure A)



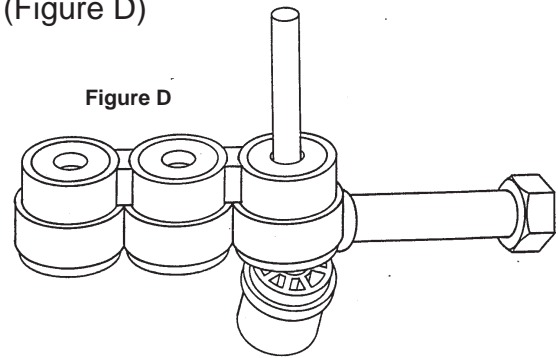
2. Grasp the inlet manifold from the front and underside and with a gentle up and down motion, pull away from crankcase. (Figure B)



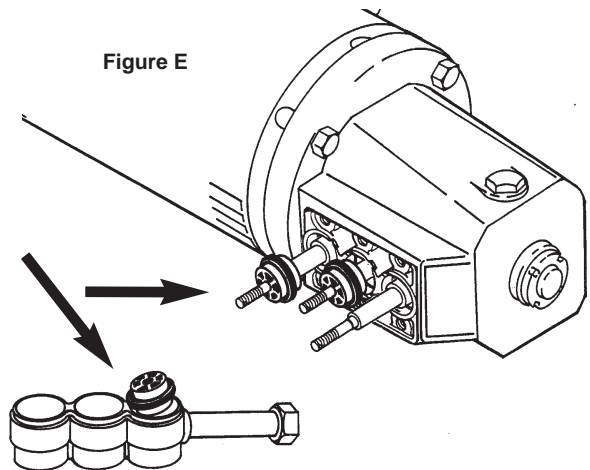
3. Carefully examine back side of low pressure seal before removing from manifold as it will be damaged during removal. If worn, insert screwdriver into inside diameter (I.D.) of seal and pry out. Exercise caution to avoid damage to the inlet manifold. (Figure C)



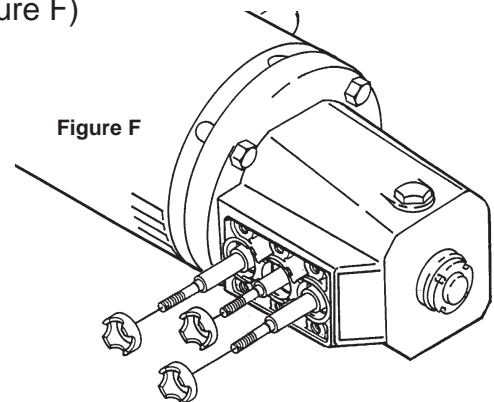
4. Next remove ceramic plunger with thumb or soft tool from backside of inlet manifold. (Figure D)



5. The high pressure seal may stay with the plunger or remain in inlet manifold. If on the plungers, rotate and pull off by hand. If in the manifold, use a reverse pliers to remove. (Figure E)

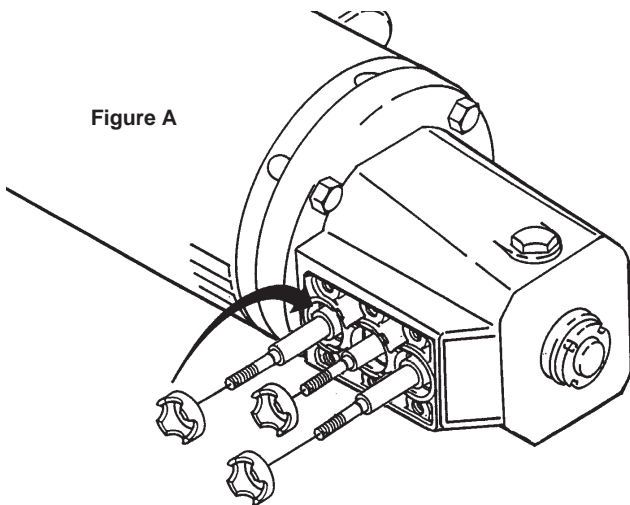


6. Remove seal retainers from crankcase by grasping tab with pliers and pulling out. Examine crankcase oil seal to determine if crankcase servicing is needed. Consult local distributor or factory if drive end servicing is needed. Also see "**MAINTENANCE OF THE CRANKCASE**" section. (Figure F)



REASSEMBLY OF THE SEAL ASSEMBLY

1. Examine seal retainers and replace if worn or damaged. Install on plunger rod and press into crankcase with tabs out. (Figure A)



2. Place inlet manifold on work surface with **small I.D. ports up**. (Figure B)

3. Lubricate new low pressure seal and press into position in the manifold chambers with **garter spring down**. (Figure B)

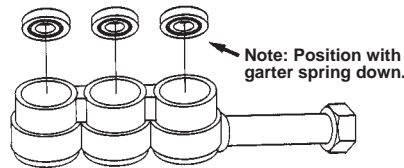


Figure B

4. Carefully examine plungers for scoring or cracks and replace if worn. Next lubricate ceramic plungers and new high pressure seals. **Place the deeper recessed hole of the plunger into**

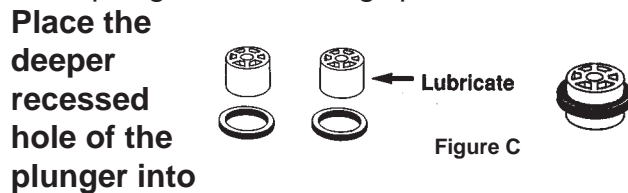


Figure C

5. Place inlet manifold on work surface with **larger I.D. ports up**. Install plungers with seals into ports with metal seal side into manifold.

6. Carefully install manifold over plunger rod ends and slowly press into crankcase. (Figure E)

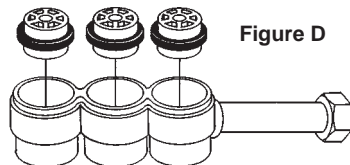


Figure D

7. Examine inlet valve and replace if worn. Inlet valve cannot be lapped or reversed if worn. Install new inlet valve with **ridged side facing away from the crankcase, toward the discharge**. (Figure F)

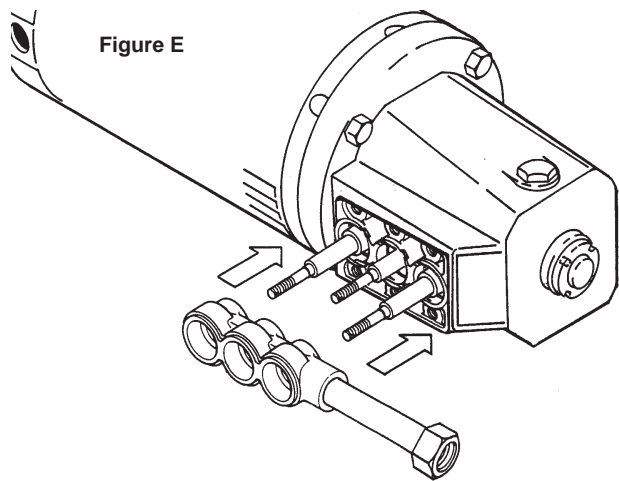


Figure E

8. Examine spacers for wear and replace as needed. Install spacer on each plunger with **smaller outside diameter (O.D.) into inlet valve**.

9. Examine springs for damage or fatigue and replace as needed. Place on plunger rods. (Figure G)

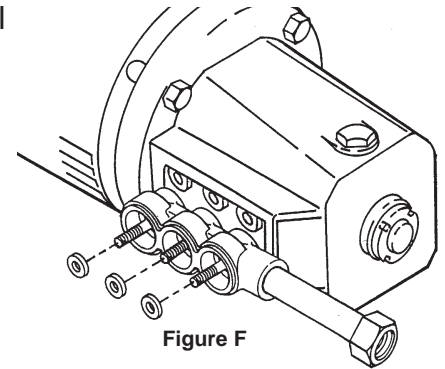


Figure F

10. Install washers next with **concave side toward manifold**.

11. Next install nuts and torque to specifications in **TORQUE CHART**. (Figure H)

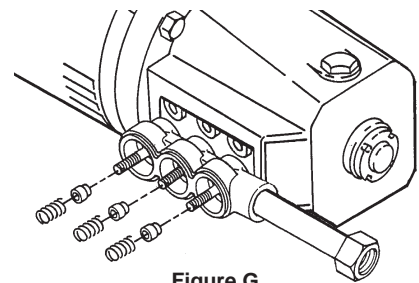


Figure G

12. Install washers next with **concave side toward manifold**.

13. Next install nuts and torque to specifications in **TORQUE CHART**. (Figure H)

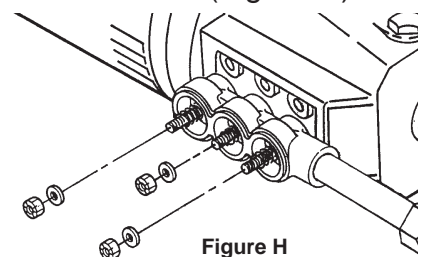
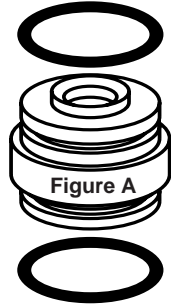


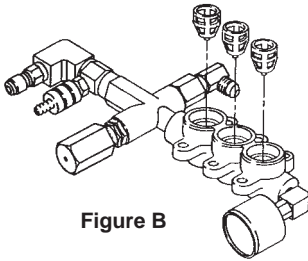
Figure H

REASSEMBLY OF THE DISCHARGE VALVE ASSEMBLY

1. Examine discharge adapter-seat o-rings and replace if worn. Lubricate and install o-rings on both front and rear of adapter-seat. (Figure A)

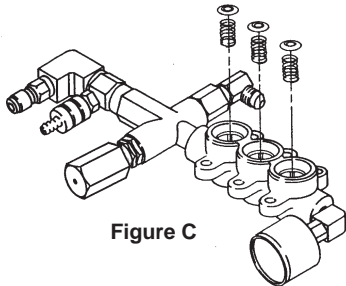


2. Place discharge manifold on work surface and install valve retainers in each port with top tab down and completely seat into the chamber. (Figure B)

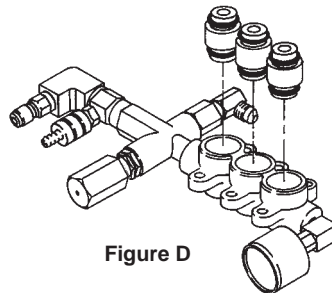


3. Replace worn or damaged springs and place into retainers.
4. Examine valves and seats for pitting, grooves or wear and replace as needed.

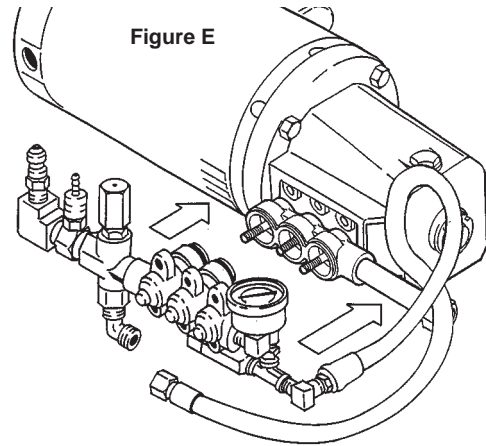
5. Place valves over springs with **concave side down**. (Figure C)



6. Lubricate O.D. of discharge adapter-seat and insert **smaller I.D. into discharge manifold ports**. Snap into position. Exercise caution not to cut or pinch o-rings. (Figure D)



7. Carefully guide manifold with adapters over plunger rod ends and press into inlet manifold. (Figure E)



8. Replace six (6) socket head screws and torque to specifications. See **TORQUE CHART** below. Torque diagonally in order shown. The outer four (4) screws, then center two (2), hand tight. Then repeat series to specifications. (Figure F)

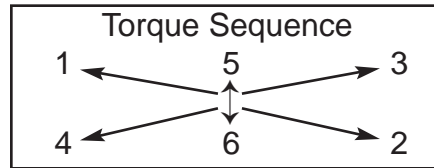


Figure F

9. Reattach by-pass hose to bottom of unloader fitting.

10. Remember to fill crankcase with oil before replacing top cover to unit. See **"LUBRICATION"** for more information. (Figure G)

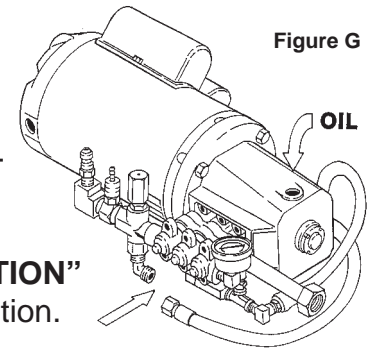


Figure G

Torque Chart

Pump Item	Thread	Tool Size	Torque		
			in.lbs.	ft.lbs.	Nm
Outer Bearing Case	M6x16	M10	50	4.0	6.0
Inner Bearing Case	M6x16	Phillips	50	4.0	6.0
Manifold Socket Head Screws	M8x75	M6	115	9.4	13
Plunger Rod Nuts	M6	M10	55	4.4	6.2
Oil Gauge	M28	Oil Gauge Tool	45	3.6	5

Maintenance of the Crankcase, Unloader and Chemical Injector

CRANKCASE

- 1) While inlet manifold, plungers and seal retainers are removed, examine crankcase seals for wear.
- 2) Check oil level and for evidence of water in oil.
- 3) Rotate crankshaft by hand to feel for smooth bearing movements.
- 4) Examine crankshaft oil seal externally for drying, cracking or leaking.
- 5) Consult factory or your local distributor if crankcase service is needed.

UNLOADER

Unloader o-rings should be examined for wear and replaced at the same frequency as servicing the valves and seals of the pump.

If after reasonable use your system cycles (repeatedly goes on and off by-pass) or will not come up to pressure you should examine the unloader for worn o-rings, flow balancer or ball and valve assembly. Refer to the **“TROUBLESHOOTING”** guide for more information.

To install a new unloader remove discharge fitting, with check valve and spring, from the unloader. Reinstall spring, then check valve into injector. Remount o-ring into injector fitting and thread into unloader discharge. Discard unloader discharge fitting.

CHEMICAL INJECTOR

The chemical injector should be inspected when chemical draw will not occur or at the same frequency as servicing the valves and seals of the pump. After prolonged use, the chemical injector orifice may wear or a build up of soap or other chemical on the ball may cause the ball to stick in the seat. Flushing with clear water after chemical application will generally prevent this. However, after prolonged use, ball and o-rings may fatigue and need replacement.

PULSATOR

Special “P” models use a modified Discharge Valve Adapter in the pump to work with the **Jetter Hose** and **Tri-Jet Nozzle** to create a pulsating action for added agitation while cleaning.

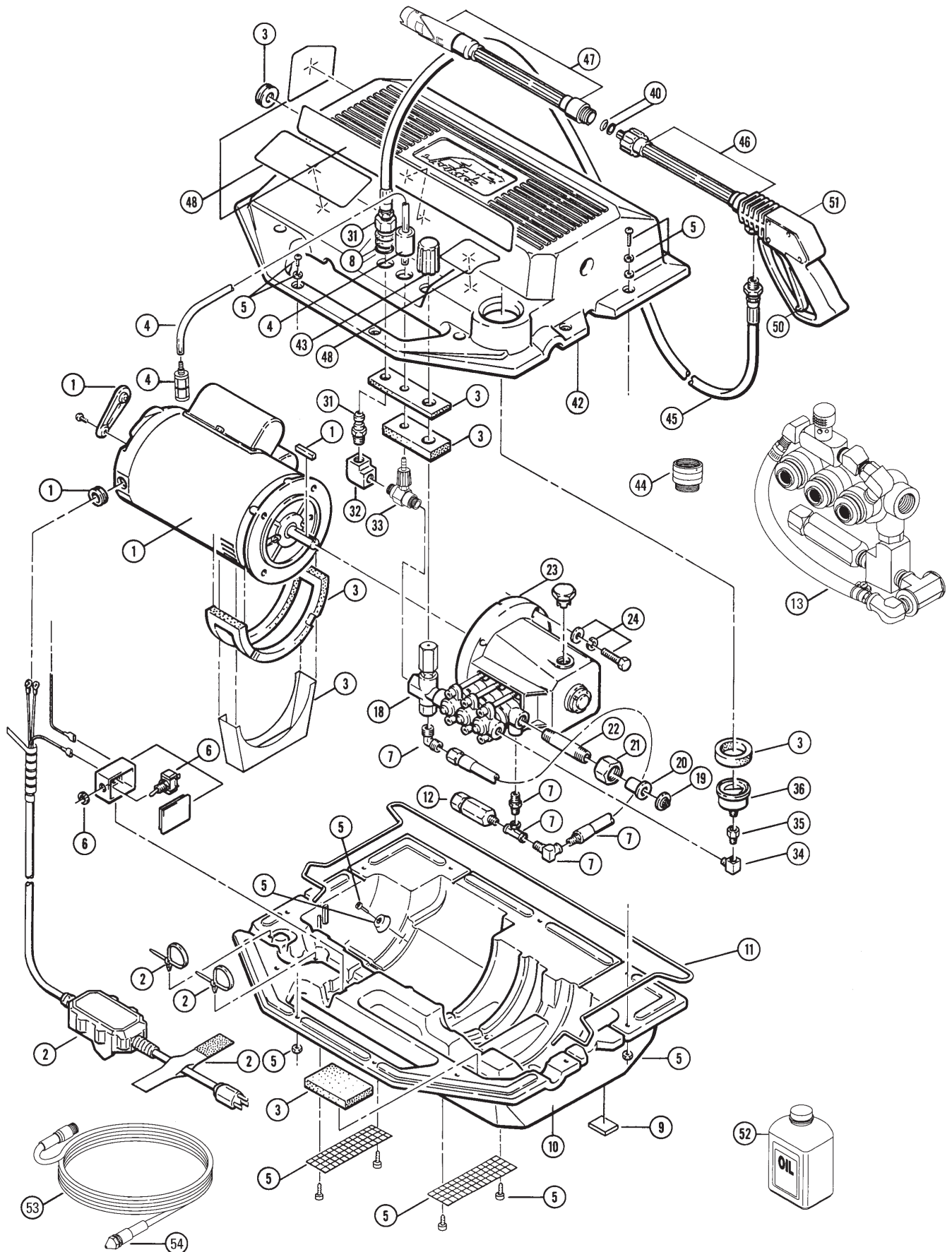
CLEANING SYSTEM PARTS LIST

ITEM	PART NO.				DESCRIPTION	QTY.
	2X1000	2X1500	3X1000	3X1250		
1	34691	34690	34690	34693	Kit, Motor	1
2	34520	34521	34521	34522	Cord, GFCI, Power Assembly	1
3	34666	34666	34666	34666	Gasket, Set	1
4	34669	34669	34669	34669	Hose, Injector Inlet Kit	1
5	34670	34670	34670	34670	Mount, Hardware Kit	1
6	34524	34524	34524	34524	Switch, Assembly	1
7	34183	34183	34183	34183	By-Pass Hose Assembly	1
8	23170	23170	23170	23170	O-Ring, Drain Plug	1
9	34560	34560	34560	34560	Pad, Foot	4
10	34726	34726	34726	34726	Case, Bottom Half	1
11	34251	34251	34251	34251	Wrap, Power Cord	1
★ 12	7140	7140	7140	7140	Valve, Thermo - 145°	1
13	34455	34455	34455	34455	Pulsator, Assembly	1
18	7500S	7500S	7500S	7500S	Unloader (See pg 19)	1
19	34402	34402	34402	34402	Gasket w/Screen	1
20	34401	34401	34401	34401	Adapter Fitting	1
21	46488	46488	46488	46488	Nut, Swivel	1
22	34400	34400	34400	34400	Nipple (3/8" NPTM x 3")	1
23	2LIDX20E	2LIDX20E	2LIDX30E	2LIDX30E	Pump with Unloader (See pg 18)	1
24	30517	30517	30517	30517	Mount, Bolt Assy	1
31	34667	34667	34667	34667	Quick Disconnect Assembly (Hose-to-Unit)	1
32	34326	34326	34326	34326	Elbow - 90° (3/8" NPTF)	1
★ 33	7193	7193	7194	7194	Adjustable Chemical Injector (See pg 19)	1
34	34450	34450	34450	34450	Elbow - 90° (1/8" NPTF) Street Elbow	1
35	34501	34501	34501	34501	Adapter, Hex (1/8" NPTF x 1/8" NPTM)	1
36	6094	●6096	6094	6094	Gauge, Pressure, 1500 PSI/●3000 PSI	1
40	34335	34335	34335	34335	Kit, Lance O-Ring	1
42	34725	34725	34725	34725	Case, Top	1
43	32088	32088	32088	32088	Handle, Black, Unloader Adjustment	1
44	34839	34839	34839	34839	Valve, Back Flow	1
45	34374	34374	34374	34374	Hose, Assembly (30 ft.-3/8")	1
★ 46	34124.220	34124.220	34124.220	34124.220	Custom I Gun w/Extension	1
★ 47	7940.521	7930.521	7960.521	7950.521	Vari-Nozzle w/Extension	1
48	34836	34873	34874	34876	Label, Set	1
50	32415	32415	32415	32415	Trigger, Assembly	1
51	32414	32414	32414	32414	Handle, Assembly	1
52	6107	6107	6107	6107	Crankcase Oil (21 oz.) ISO 68 Prem. Gr. Hyd.	1
★ 53	34643	34643	34643	34643	Jetter Hose with Tri-Jet Nozzle (30 ft.)	1
★	34644	34644	34644	34644	Jetter Hose with Tri-Jet Nozzle (50 ft.)	1
54	36634	36634	36634	36634	Nozzle, Tri-Jet - S.S.	1

★ See individual data sheets for additional information on Accessories

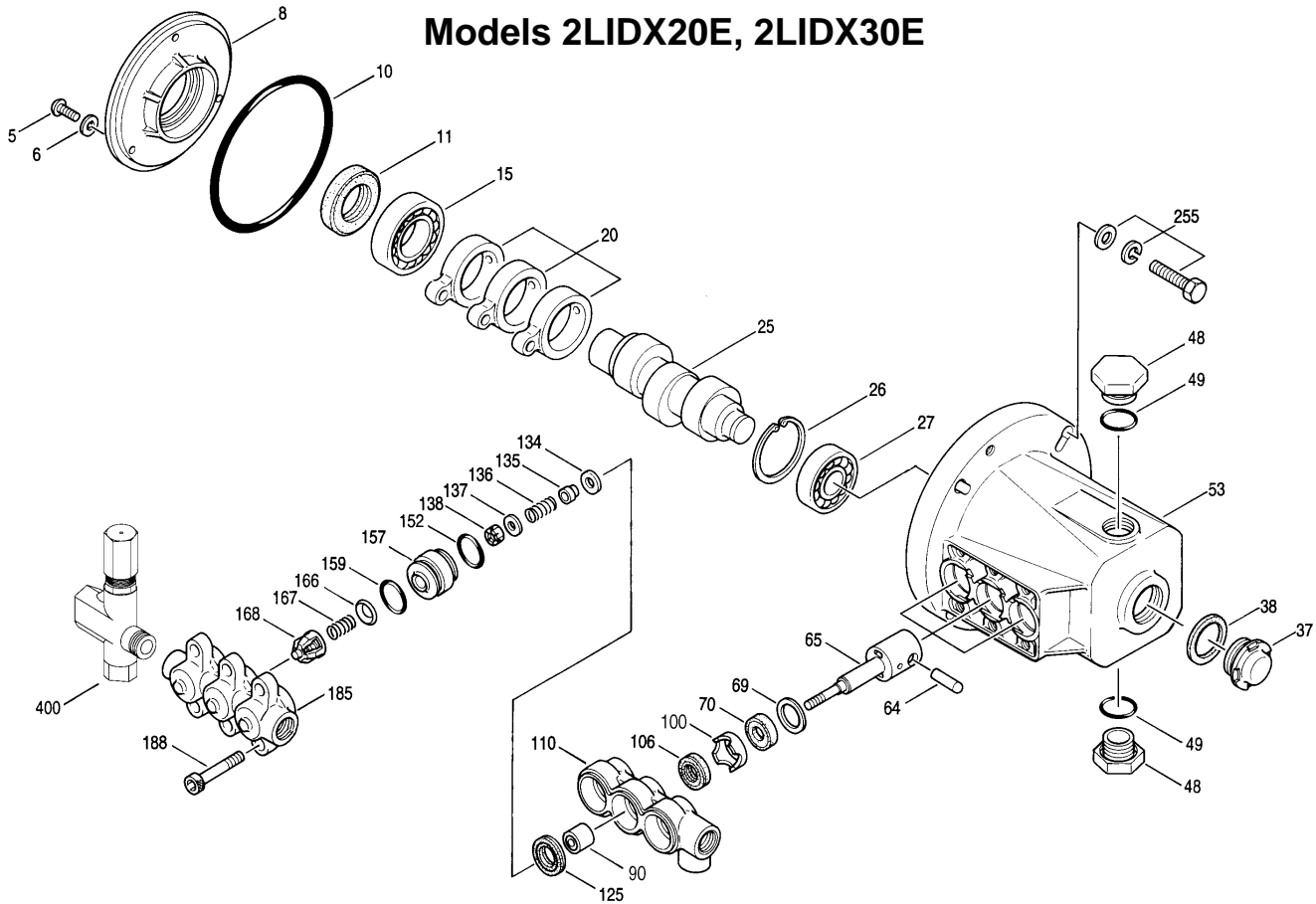
CLEANING SYSTEM EXPLODED VIEW

MODEL 2X1000, 2X1500, 3X1000, 3X1250



EXPLODED VIEW

Models 2LIDX20E, 2LIDX30E



SF PUMP PARTS LIST

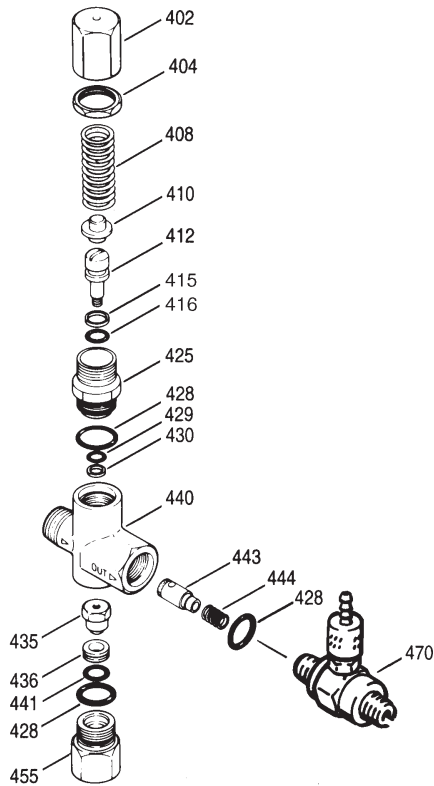
Item	P/N	MATL	Description	Model Used	Qty.	Item	P/N	MATL	Description	Model Used	Qty.
5	89551	STZP	Screw, HHC (M6x16)	All Models	3	135	44871	S	Spacer	All Models	3
6	150810	NBR	Washer, HHC (M6)	All Models	3	136	44872	S	Spring, Inlet Valve	All Models	3
8	44857	AL	Cover, Bearing, Inner	All Models	1	137	88575	S	Washer, Conical (M6)	All Models	3
10	14044	NBR	O-Ring, Bearing Cover	All Models	1	138	81240	SS	Nut, Hex (M6)	All Models	3
11	44859	NBR	Seal, Oil	All Models	1	152	26089	NBR	O-Ring, Adapter, Inner	All Models	3
15	14488	STL	Bearing, Ball, Inner	All Models	1	157	45859	BB	Discharge Adapter-Seat	Standard	3
20	44863	ZZ	Rod, Connecting	All Models	3		45923	BB	Discharge Adapter-Seat	<i>Pulsator Models</i>	2
25	45092	FCM	Crankshaft - 3450 RPM	2LIDX20E	1		45923T	BB	Discharge Adapter-Seat	<i>Pulsator Models</i>	1
	44931	FCM	Crankshaft - 3450 RPM, Tapped End (M8x1.25mm)	2LIDX30E	1	159	26089	NBR	O-Ring, Adapter, Outer	All Models	3
26	12385	STL	Retainer, Ring	All Models	1	166	43723	S	Valve	All Models	3
27	15710	STL	Bearing, Ball, Outer	All Models	1	167	541062	S	Spring	All Models	3
37	43987		Gauge, Bubble Oil	All Models	1	168	44565	PVDF	Retainer, Spring	All Models	3
38	44428	NBR	Gasket, Flat Flex., Oil Gauge	All Models	1	185	45724	BB	Manifold, Discharge	All Models	1
48	44842	NY	Plug, Drain (1/2" NPT)	All Models	2	188	87859	STZP	Screw, HSH (M8x75)	All Models	6
49	14179	NBR	O-Ring, Drain Plug	All Models	2	255	30517	STZP	Mount, Bolt Assy	All Models	1
●53	45702	AL	Crankcase	All Models	1●		30980	STZP	Washer, Flat (3/8")		4
64	16948	S	Pin, Rist	All Models	3		30921	STZP	Lockwasher, Split (3/8")		4
65	●●540073	SZZ	Rod, Piston	All Models	3		34100	STZP	Screw, HH (3/8"-16x1-3/8")		4
69	20017	STZP	Washer, Oil Seal	All Models	3		6106		Lubricant, Antiseize		1
70	25461	NBR	Seal, Oil	All Models	3		30050	STL	Key (3/16x3/16x1-1/4")		1
90	45847	CC	Plunger	All Models	3	306	34053	NBR	Kit, Seal (Incls: 106,125,152,159)	All Models	1
100	44869	PVDF	Retainer, Seal	All Models	3	310	34056	S	Kit, Valve (Incls: 152,157,159,166,167,168)	All Models	1
106	44876	NBR	Seal, LPS w/S-Spg	All Models	3	311	34668		Kit, Inlet Valve (Incls: 134,135,136,137,152,159)	All Models	1
110	44874	BB	Manifold, Inlet	All Models	1	400	7500S	BB	Unloader	All Models	1
125	43245	NBR	Seal, HPS w/S	All Models	3						
134	45854	S	Valve, Inlet	All Models	3						

●Industrial discount. *Italics are optional items.*

Material Codes (Not Part of Part Number): AL=Aluminum BB=Brass CC=Ceramic FCM=Forged Chrome-moly
NBR=Medium Nitrile (Buna-N) NY=Nylon PVDF=Fluoroplastic (High Strength) S=304SS STL=Steel STZP=Steel/Zinc Plated ZZ=Zamack

●●Effective with 6/92 mfg. date Cotterpin was eliminated.

PRESSURE REGULATING UNLOADER



PARTS LIST

Item	P/N	MATL	Description	Qty.
402	540081	BB	Cap, Hex Adjusting	1
404	31047	BB	Nut, Locking (M18x1)	1
408	32094	STZP	Spring, Coil	1
410	107672	BB	Retainer, Spring	1
412	45694	BB	Stem, Piston (M5)	1
415	20184	PTFE	Back-up-Ring, Piston Stem	1
416	14190	NBR	O-Ring, Piston Stem	1
425	107673	BB	Retainer, Piston	1
428	13969	NBR	O-Ring, Piston Retainer - 70	3
429	14759	NBR	O-Ring, Body	1
430	107675	PTFE	Back-up-Ring, Body	1
435	45696	BB	Valve and Ball Assembly (M5)	1
436	107680	S	Seat	1
440	—	BB	Body	1
441	13963	NBR	O-Ring, Valve	1
443	541060	BB	Valve, Check w/O-Ring	1
444	45924	S	Spring - 85 G	1
455	45695	BB	Fitting, By-Pass (3/8" NPTF)	1
468	32097	NBR	Kit, O-Ring (Incls: 414,415,416,428,429,430,441)	1
470	7193/7194	BB	Chemical, Injector	1

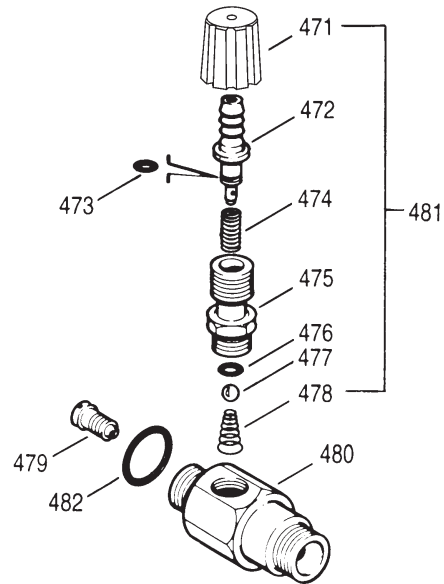
Italics are optional items.

Material Codes (Not Part of Part Number): BB=Brass
 NBR=Medium Nitrile (Buna-N) PTFE=Polytetrafluoroethylene (Teflon®)
 S=304SS STZP=Steel/Zinc Plated

SPECIFICATIONS

Model 7500S	U.S. Measure	Metric Measure
Flow	5-6.0 GPM	(2-23 L/M)
PSI	100-2000 PSI	(7-140 BAR)
Inlet Port - Rear	3/8" NPT	(3/8" NPT)
Outlet Port - Rront	M18 x 1.0	(M18 x 1.0)
By-Pass Port - Bottom	3/8" NPTF	(3/8" NPTF)
Weight	14 oz.	(0.43L)
Dimensions	3.0" x 1.0" x 4.25"	(76 x 25 x 108mm)

ADJUSTABLE CHEMICAL INJECTOR



PARTS LIST

Item	P/N	MATL	Description	Model Used	Qty.
471	33949	BBNY	Cap, Adjustment	All Models	1
472	32941	BB	Hose Barb, Adjustment	All Models	1
473	33503	NBR	O-Ring, Hose Barb	All Models	1
474	33500	S	Spring	All Models	1
475	33946	BB	Retainer, Ball Seat	All Models	1
476	33504	FPM	O-Ring, Retainer	All Models	1
477	34620	SS	Ball	All Models	1
478	33501	SS	Spring, Tapered	All Models	1
479	32373	S	Orifice, Injector (2.1mm)	7193	1
	32374	S	Orifice, Injector (2.3mm)	7194	1
480	—	BB	Body	All Models	1
481	33481	BB	Barb, Assy Adjustable (Includes: 471-478)	7193, 7194	1
482	13969	NBR	O-Ring, Body - 70	All Models	1

Italics are optional items.

Material Codes (Not Part Number):
 BB=Brass FPM=Fluorocarbon (Viton®) NBR=Medium Nitrile (Buna-N)
 NY=Nylon S=304SS SS=316SS SSS=440SS

SPECIFICATIONS

Models	7193	7194
Flow	2 GPM	3 GPM
Nozzle Orifice	2.1mm	2.3mm
Hose Barb	1/4"	1/4"
Inlet port	M18 x 1.0	M18 x 1.0
Outlet port	3/8" NPTM	3/8" NPTM
Dimensions	2 x 1 x 3"	2 x 1 x 3"
Weight	6.3 oz.	6.3 oz.

CHEMICAL INJECTOR PERFORMANCE CHART

Optional Special Ported Chemical Injector for Unloader Mounting

Model	Injector Orifice Size	SF Injector	Lo-Pressure Nozzle (Max. Injecting Press. Less Hose Friction Loss)		Hi-Pressure Nozzle "Deduction" (Pressure drop across injector)
			Max. Chemical Draw (0 PSI) (Downstream)	Max. Chemical Draw (0 PSI) (Downstream)	
2X1000	2.1 mm std.	7193	100 PSI	50 oz. / min	75 PSI
2X1500	2.1 mm std.	7193	100 PSI	50 oz. / min	75 PSI
3X1000	2.1 mm opt.	7193	225 PSI	50 oz. / min	150 PSI
3X1250	2.3 mm std.	7194	150 PSI	50 oz. / min	125 PSI

TROUBLESHOOTING

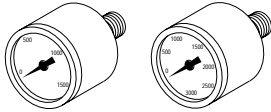
Condition	Probable Cause	Solution
<ul style="list-style-type: none"> Pump runs but pressure does not achieve rated values. 	<ul style="list-style-type: none"> Air leak in inlet plumbing or pump sucking air. Pressure gauge inoperative. Valves worn or dirty. Unloader valve seat faulty or worn. Nozzle setting incorrect or worn. Worn seals in pump. Unloader not at maximum setting. Insufficient time to fill supply line. 	<ul style="list-style-type: none"> Check that hoses and fittings are air tight. Check and replace gauge. Clean or replace-See "MAINT. OF THE PUMP" Clean or replace-See "MAINT. OF THE PUMP" Check nozzle adjustment or replace orifice in Vari-Nozzle, see parts list for correct size. Replace-See "MAINT. OF THE PUMP" Turn adjustment knob to maximum setting. Allow time to fill supply line: 2.0 gpm = 30.8 seconds, 3.0 gpm = 20.3 seconds.
<ul style="list-style-type: none"> Fluctuating or pulsing pressure. 	<ul style="list-style-type: none"> Valves worn, dirty or stuck. Pump sucking air. Worn seals. 	<ul style="list-style-type: none"> Clean or replace-See "MAINT. OF THE PUMP"-VALVES Check that hoses and fittings are air tight. Replace-See "MAINT. OF THE PUMP"-SEALS
<ul style="list-style-type: none"> Pressure drops after period of normal use. 	<ul style="list-style-type: none"> Nozzle worn. Valves worn, dirty or stuck. Unloader valve seat worn or dirty. Worn seals. 	<ul style="list-style-type: none"> Replace. Clean or replace-See "MAINT. OF THE PUMP"-VALVES Clean or replace-See "MAINT. OF THE PUMP"-UNLOADER Replace-See "MAINT. OF THE PUMP"-SEALS
<ul style="list-style-type: none"> Pump noise. 	<ul style="list-style-type: none"> Pump sucking air. Valves worn or dirty. Worn bearings. Water too hot. 	<ul style="list-style-type: none"> Check that hoses and fittings are air tight. Clean or replace-See "MAINT. OF THE PUMP"-SEALS Consult factory. Reduce temperature-check seals and o-rings.
<ul style="list-style-type: none"> Presence of water in oil. 	<ul style="list-style-type: none"> High humidity in air. Seals and oil seals worn. 	<ul style="list-style-type: none"> Change oil as needed. Replace-See "MAINT. OF THE PUMP"-SEALS
<ul style="list-style-type: none"> Water dripping from under pump or case. 	<ul style="list-style-type: none"> Seals worn. O-rings worn. Loose connection. Thermo-Valve discharging. 	<ul style="list-style-type: none"> Replace-See "MAINT. OF THE PUMP"-SEALS Replace-See "MAINT. OF THE PUMP"-SEALS Check all connections. Excessive fluid temperature from prolonged by-pass. Operate with cool fluid and if continued discharge, check pump seals and o-rings.
<ul style="list-style-type: none"> Oil dripping. 	<ul style="list-style-type: none"> Oil seal worn. 	<ul style="list-style-type: none"> Consult factory.
<ul style="list-style-type: none"> Motor does not start when switched on. 	<ul style="list-style-type: none"> Plug not well connected or lack of power supply. GFCI tripped. Circuit breaker or fuse in house tripped. Motor stopped while spraying. 	<ul style="list-style-type: none"> Check plug, cable and switch for snug connection. Reset GFCI-See "GROUND-FAULT CIRCUIT-INTERRUPTER" Disconnect other appliances on same circuit and reset circuit breaker. Totally release trigger for 5 seconds and squeeze again.
<ul style="list-style-type: none"> When switching on the unit, the motor hums but does not run. 	<ul style="list-style-type: none"> The main voltage is insufficient, lower than the minimum required. The pump is stuck or frozen. Incorrect extension cord. 	<ul style="list-style-type: none"> Check that the main power supply is adequate: 15AMP (2X1000), 20 AMP (2X1500, 3X1000). Consult factory. See "EXTENSION CORDS"

TROUBLESHOOTING

Condition	Probable Cause	Solution
<ul style="list-style-type: none"> • Motor stalls. 	<ul style="list-style-type: none"> • Overheated. • Overloaded. 	<ul style="list-style-type: none"> • Allow motor to cool 10 minutes and use Reset located on side of unit. • Check facility for power overload or low voltage service. • Check for contaminated water resulting in particles trapped in unloader and clean. • Motor capacitor failure-replace. • Consult factory.
<ul style="list-style-type: none"> • Trigger will not move. 	<ul style="list-style-type: none"> • Safety lock engaged. 	<ul style="list-style-type: none"> • Release safety.
<ul style="list-style-type: none"> • Irregular water pressure or low water pressure. 	<ul style="list-style-type: none"> • Injector drawing air. • Inadequate water supply. • Nozzle partially blocked or wrong size or worn. • Extension cord too small. 	<ul style="list-style-type: none"> • Adjust injector sleeve clockwise to increase flow. • Use proper inside diameter and length of garden hose. • Check water supply to assure sufficient delivery. • Remove nozzle and clean or select new nozzle to match desired flow and pressure. • Use 12 Gauge extension cord-See "EXTENSION CORDS"
<ul style="list-style-type: none"> • Injector does not prime. 	<ul style="list-style-type: none"> • Vari-Nozzle not set to low pressure. • Adjustment collar on chemical injector incorrectly adjusted. • Dried soap or other chemical buildup in injector. • Check-ball stuck. • Strainer blocked. 	<ul style="list-style-type: none"> • Push forward on nozzle sleeve. • Turn knob fully counterclockwise then slowly clockwise to proper soap flow. • Blow compressed air into injector barb to free ball. • Clean or replace. • Clean strainer.
<ul style="list-style-type: none"> • Leaking around chemical injector collar. 	<ul style="list-style-type: none"> • Worn injector orifice. 	<ul style="list-style-type: none"> • Replace orifice. • Replace o-ring or remove trapped foreign material.
<ul style="list-style-type: none"> • Unloader cycles. 	<ul style="list-style-type: none"> • Worn ball or valve. 	<ul style="list-style-type: none"> • Clean or replace ball and valve assembly.
<ul style="list-style-type: none"> • By-Pass at high pressure. 	<ul style="list-style-type: none"> • Fitting leaking downstream. 	<ul style="list-style-type: none"> • Check all fittings.
<ul style="list-style-type: none"> • Fluid leaking from bottom fitting. 	<ul style="list-style-type: none"> • O-ring on by-pass fitting cut or worn. 	<ul style="list-style-type: none"> • Replace with o-ring from kit.
<ul style="list-style-type: none"> • Fluid leaking from body. 	<ul style="list-style-type: none"> • O-ring for piston retainer worn or cut. • O-ring for piston stem worn or cut. 	<ul style="list-style-type: none"> • Replace with o-ring from kit. • Replace with o-ring from kit.
<ul style="list-style-type: none"> • Unloader will not come up to pressure. 	<ul style="list-style-type: none"> • Foreign material in unloader. • Piston stem o-rings worn. • Nozzle worn. 	<ul style="list-style-type: none"> • Clean unloader and reassemble. • Replace with o-ring stem kit. • Replace with nozzle sized to system flow.
<ul style="list-style-type: none"> • Extreme pressure spikes. 	<ul style="list-style-type: none"> • Adjusting cap turned completely into unloader. • Restricted by-pass. 	<ul style="list-style-type: none"> • Back off and gradually turn in to set system pressure. • Replace by-pass hose with identical length and inside diameter.

ACCESSORIES

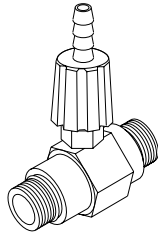
STANDARD



PRESSURE GAUGE

Easy-to-read glycerine filled pressure gauge to permit pressure adjustments to meet exact spraying or cleaning needs and to monitor system performance.

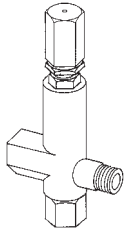
2X1000, 3X1000, 3X1250 **6094**
 2X1500 **6096**



ADJUSTABLE CHEMICAL INJECTOR

Adjustment collar over barb permits chemical and cleaning solution application at operator selected intensity. Optional stainless steel construction for extended life.

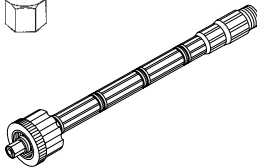
2X1000, 2X1500 **7193**
 3X1000 **7194**



UNLOADER

Adjustable pressure regulating Unloader permits the setting and maintaining of system pressure from 100 to 1000 or 1500 for optimum performance. Common to all models.

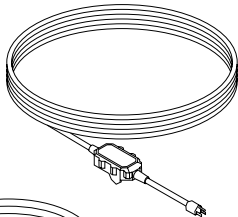
..... **7500S**



LANCE EXTENSION

Molded insulated 12" lance extension allows quick coupling of gun to a variety of standard and optional accessories.

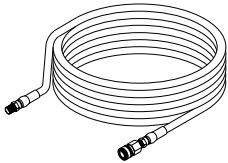
..... **33220**



ELECTRICAL CORD

35 foot electrical cord featuring a Ground-Fault Circuit-Interrupter for protection and maximum safety during operation.

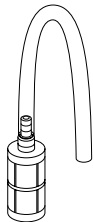
2X1000 (14 GA 15 Amp) **34520**
 2X1500, 3X1000 (12 GA 20 Amp) **34521**
 3X1250 (14 GA 20 Amp) **34522**



HIGH PRESSURE HOSE

30 foot high pressure hose with swivel and quick disconnect for ease in operation and assembly. Common to all models.

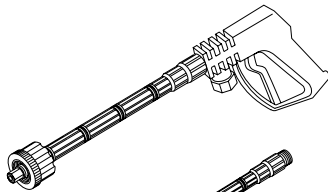
Standard **34374**
 Optional **34385**
 Hose-to-Hose Q.D. **34380**



CHEMICAL HOSE

3 foot clear plastic chemical hose easily slips over the chemical injector barb to visually monitor chemical draw. With weighted filter (32631) to hold chemical tube at bottom of supply container and prevent debris from being drawn into injector.

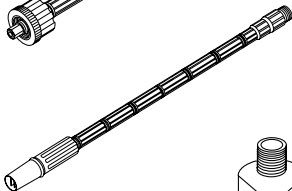
..... **34669**



SHUT-OFF GUN

Lightweight Shut-Off gun with molded extension and quick coupling allows easy assembly and quick changes to many optional accessories. Common to all models.

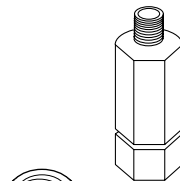
..... **34124.220**



VARI-NOZZLE

Adjustable Vari-Nozzle featuring low to high pressure, as well as 0° to 60° spray angle for chemical and cleaning flexibility with extension for quick assembly.

2X1000 **7940.521**
 2X1500 **7930.521**
 3X1000 **7960.521**
 3X1250 **7950.521**



THERMO VALVE

Thermo Valve to minimize excessive fluid heat build-up while cleaning system is in periodic by-pass mode. Common to all models.

..... **7140**



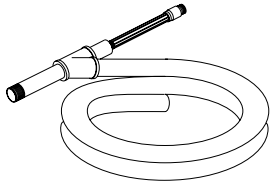
BACK FLOW PREVENTER

Prevents chemicals or soap from flowing back into the supply line. Standard on 2X1000 only.

..... **34839**

ACCESSORIES

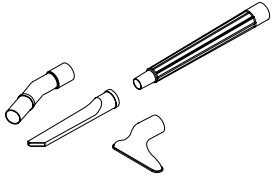
OPTIONAL



TRANSFER VAC

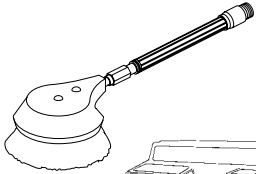
Wet or dry vacuum used with attachments draws up spills or moisture accumulation in recessed areas and transfers debris for convenient disposal. 2x1000 transfers up to 25 GPM.

2X1000 **7245.521**
2X1500, 3X1000..... **7250.521**



ATTACHMENT KIT

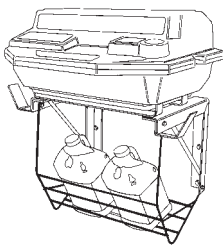
Attachment kit for Transfer-Vac provides extension arms and vacuum head options for maximum pickup for each application need. **34692**



ROTATING BRUSH

Rotating brush with extension to agitate more stubborn stains and dirt before blasting with high pressure. 32156 uses #3 Nozzle for 3X1000, 34456 uses #2 Nozzle for 2X1000 and 2X1500

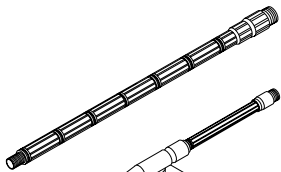
Nylon **32156.521, 34456.521**



WALL MOUNT

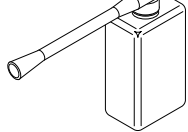
Wall mount kit for stationary, out-of-the-way operation or convenient storage. Common to all models.

Wall Mount **34115**
Chemical Rack **34807**



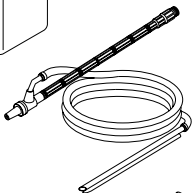
LANCE EXTENSIONS

Molded insulated lance extensions may be added to the gun with extensions for added reach in cleaning walls, truck tops and other hard to reach areas. (19.5") **33221**



FOAM LANCE KIT

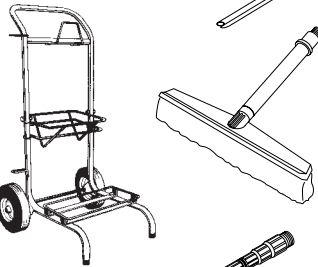
Lance extension with chemical dispenser and unique agitator sprays thick foam, adhering to surface for added cleaning action. **34595.521**



SANDBLASTER

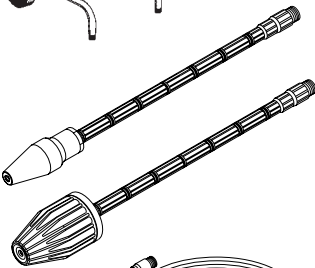
Extension, probe and 15 foot hose provides discharge line induction of sand, fertilizer, grass seed and other granular substances for special surface treatment.

2X1000 **34661**
2X1500 **34660**
3X1000 **34663**



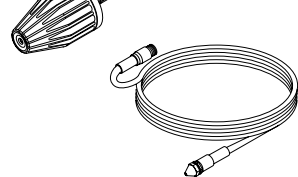
FIXED BRUSH

12 inch Fixed Brush with extension is made of soft nylon for gentle application of cleaning solutions to glass or polished surfaces. Common to all models. **34662**



INDUSTRIAL CART

Offers convenient transporting and storing. Two-wheel heavy duty construction with chemical rack, gun holder and cleaning system case basket. Common to all models. **34700**



TORNADO NOZZLE

Tornado Nozzle with extension converts 0° blasting penetration to a 25° spinning action to cut through the toughest grime.

4.5 nozzle **36402.521**
5.5 nozzle **36502.521**

JETTER HOSE WITH TRI-JET NOZZLE

Attaches quickly to gun extension. Ideal for cleaning pipes and tubes. Three-directional cleaning nozzle propels hose while blasting dirt free.

30 ft. hose **34643**
50 ft. hose **34644**



CAT PUMPS 1681 - 94th Lane N.E., Minneapolis, MN 55449
Phone: 612-780-5440 Fax: 612-780-2958

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